Adoption of Electric Bicycle for the Daily Commute: Investigating Behavioral Factors in a Pilot Study

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by

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Table of Contents

LIST OF FIGURES ..... **IX**

LIST OF TABLES ..... **X**

PREFACE ..... **XII**

EXECUTIVE SUMMARY **1**

1 INTRODUCTION **4**

1.1 PROBLEM BACKGROUND **4**
1.1.1 CYCLING FOR COMMUTING 4
1.1.2 E-BICYCLES TO INCREASE CYCLING 5
1.1.3 RESEARCH GAP 6
1.1.4 CORRESPONDING SUB-QUESTIONS 7
1.2 MAIN RESEARCH APPROACH **7**
1.2.1 CASE STUDY: DELFT UNIVERSITY OF TECHNOLOGY E-BIKE PILOT 7
1.3 RELEVANCE TO THE MASTER'S STUDIES **9**
1.4 STRUCTURE OF THE THESIS **10**

2 LITERATURE REVIEW **11**

2.1 RESEARCH ON E-BIKES **12**
2.1.1 INTRODUCTION TO THE RESEARCH FIELD 13
2.1.2 CHINA 13
2.1.3 NON-CYCLING WESTERN COUNTRIES 18
2.1.4 CYCLING WESTERN COUNTRIES 19
2.2 RESEARCH GAP **20**
2.3 RESEARCH LENS **21**
2.3.1 THEORY OF PLANNED BEHAVIOR 22
2.3.2 SUITABILITY OF THEORY OF PLANNED BEHAVIOUR 23
2.3.3 LIMITATIONS OF THE THEORY OF PLANNED BEHAVIOUR 24
2.3.4 RESULTING CONCEPTUAL MODEL 25

3 RESEARCH METHODOLOGY **28**

3.1 CHOICE OF SPECIFIC RESEARCH METHODOLOGIES **28**
3.2 PHASE I: QUALITATIVE RESEARCH **29**
3.2.1 CHOICE OF INTERVIEW QUESTIONS 29
3.2.2 INTERVIEW METHODOLOGY 30
3.3 PHASE II: QUANTITATIVE RESEARCH **33**
3.3.1 DEVELOPING ENTRANCE SURVEY 33
3.3.2 DEVELOPING EXIT SURVEY 35
3.3.3 ENTRANCE SURVEY DATA COLLECTION AND ANALYSIS 38
3.3.4 EXIT SURVEY DATA COLLECTION AND ANALYSIS 39
3.4 PHASE III: IMPLICATIONS **40**
3.5 LIMITATIONS IN RESEARCH **41**

4 RESULTS 42

4.1 QUANTITATIVE RESULTS 42
4.1.1 ATTITUDES 44
4.1.2 PERCEIVED BEHAVIORAL CONTROL 47
4.1.3 SUBJECTIVE NORMS 47
4.1.4 HABITS 48
4.1.5 INTENTION 48
4.1.6 BUYING BEHAVIOUR 49
4.1.7 DEVELOPMENT AREAS FOR DELFT UNIVERSITY OF TECHNOLOGY AND PILOT PERCEPTIONS 49
4.1.8 OVERVIEW OF INTERVIEW RESULTS 50
4.2 QUALITATIVE RESULTS 52
4.2.1 STARTING SURVEY RESULTS 52
4.2.2 END SURVEY RESULTS 54
4.3 TRIANGULATION OF QUANTITATIVE AND QUALITATIVE RESULTS 60
4.3.1 ATTITUDES 62
4.3.2 SUBJECTIVE NORMS 64
4.3.3 PERCEIVED BEHAVIORAL CONTROL 64
4.3.4 HABIT 66
4.4 IMPLICATIONS OF RESULTS 67

5 DISCUSSION 71

5.1 COHERENCE WITH PREVIOUS RESEARCH 71
5.1.1 ATTITUDES 71
5.1.2 PERCEIVED BEHAVIORAL CONTROL 73
5.1.3 SUBJECTIVE NORM 73
5.1.4 HABITS 73
5.2 RECOMMENDATIONS FOR STAKEHOLDERS 74
5.2.1 RECOMMENDATIONS FOR THE DELFT UNIVERSITY OF TECHNOLOGY 74
5.2.2 RECOMMENDATIONS FOR THE PILOT DESIGNERS AND POLICY-MAKERS 75
5.2.3 RECOMMENDATIONS FOR SCIENTISTS 76
5.3 RELIABILITY, LIMITATIONS, AND SIGNIFICANCE OF RESEARCH 77

6 CONCLUSION 81

6.1 MAIN FINDINGS 81
6.2 RECOMMENDATIONS FOR FUTURE RESEARCH 82

7 REFERENCES 84

APPENDIX A: SCIENTIFIC PAPER 92

APPENDIX B: INTERVIEW QUESTIONS 102

QUESTIONS FOR PILOT PARTICIPANTS 102
QUESTIONS FOR CURRENT E-BIKERS 102

APPENDIX C: INTERVIEW REPORTING 103

APPENDIX D: SURVEY QUESTIONS 105

ENTRANCE SURVEY 105
EXIT SURVEY 106

APPENDIX E: SEM PROCEDURE 110

MODEL ESTIMATIONS 110

APPENDIX F: END SURVEY ANALYSIS RESULTS 115

APPENDIX G: EXTENSIVE CODE LIST 117

APPENDIX H: DETAILED INTERVIEW RESULTS 120

ATTITUDES 120
ADVANTAGES 120
BARRIERS 122
SAFETY PERCEPTIONS 125
CHANGING ATTITUDES 125
PERCEIVED BEHAVIORAL CONTROL 126
DISTANCE 126
EFFORT 126
SUBJECTIVE NORMS 126
HABITS 127
INTENTION 128
INTENTION TO BUY 128
INTENTION TO LEASE 129
INTENTION TO BUY IF THERE IS SUBSIDIES 129
INTENTION TO TRY 130
BUYING BEHAVIOUR 130
PROBLEMS RECOGNIZED 131
PERCEPTIONS ABOUT THE PILOT 132

APPENDIX I: STARTING SURVEY RESULTS 133

APPENDIX J: END SURVEY RESULTS 139

APPENDIX K: INTERVIEW TRANSCRIPTS 147

INTERVIEWS WITH CURRENT E-BIKERS 147
INTERVIEW 1 – ISABELLE 147
INTERVIEW 2 – MARJA INTERVIEW 150
INTERVIEW 5 - VINCENT 153
INTERVIEW 6 – ANOUK 156
INTERVIEW 10 – ANGELINE 158
INTERVIEW 14 – SYLVIE 160
INTERVIEW 15 - ELSA 163
INTERVIEW 17 – BERT 166
INTERVIEW 18 – AREND 167
INTERVIEW 20 – ANDRE 168

INTERVIEW 21 – TINEKE 170
INTERVIEWS WITH PILOT PARTICIPANTS 171
INTERVIEW 3 – A 171
INTERVIEW 4 – PAULA 174
INTERVIEW 7 – R 177
INTERVIEW 8 - DAAN 180
INTERVIEW 9 – A2 181
INTERVIEW 11 – LARS 183
INTERVIEW 12 – JAN 185
INTERVIEW 3 – JERWIN 188
INTERVIEW 17 – CAMIEL 191
INTERVIEW 19 – PAUL 192
INTERVIEW 22 – EMELIE 194

APPENDIX L: INTERVIEW ANALYSIS 197

APPENDIX M: EXPERT INTERVIEWS 231

ROEL INTERVIEW – 3PM THE SUSTAINABLE MOBILITY COMPANY & FIETSPROMOTOR BEREIKBAAR HAAGLANDEN 231
ROMAN INTERVIEW – DUTCH CYCLING EMBASSY 234
JAN PLOEGER INTERVIEW – PROGRAM MANAGER: TRANSITION TO RENEWABLE ENERGY IN TRANSPORT & INFRASTRUCTURE, PROVINCE OF SOUTH HOLLAND 236

List of Figures

Figure 1: Theory of Planned Behaviour (Ajzen, 1991) 22
Figure 2: Conceptual Model for E-Bike Adaptation for Daily Commute 25
Figure 3: Modified Conceptual Model 36
Figure 4: Conceptual Model from Interview Results 42
Figure 5: Estimated Conceptual Model 57
Figure 6: Entrance Survey Questions, PBC Weather 105
Figure 7: Entrance Survey Questions, PBC Infrastructure 105
Figure 8: Entrance Survey Questions, Attitude 105
Figure 9: Entrance Survey Questions, Intention 105
Figure 10: Entrance Survey Questions, Habit, English 106
Figure 11: Entrance Survey Questions, Habit, Dutch 106
Figure 12: Exit Survey Questions, Intention 1 106
Figure 13: Exit Survey Questions, Intention 2 107
Figure 14: Exit Survey Questions, Intention 3 107
Figure 15: Exit Survey Questions, Attitudes 107
Figure 16: Exit Survey Questions, PBC, Infrastructure 107
Figure 17: Exit Survey Questions, PBC 107
Figure 18: Exit Survey Questions, Attitudes 1 108
Figure 19: Exit Survey Questions, Attitudes 2 108
Figure 20: Exit Survey Questions, Attitudes 3 108
Figure 21: Exit Survey Questions, Pilot's Effects 1 108
Figure 22: Exit Survey Questions, Pilot's Effects 2 108
Figure 23: Exit Survey Questions, Subjective Norms 109
Figure 24: Exit Survey Questions, Habits 1 109
Figure 25: Exit Survey Questions, Habits 2 109
Figure 26: Exit Survey Questions, Spillover Effect 109
Figure 27: Updated Conceptual Model for SEM 110
Figure 28: SEM Graphical Model 1 111
Figure 29: SEM Results Model 1 111
Figure 30: SEM Graphical Model 2 112
Figure 31: SEM Results Model 2 112
Figure 32: SEM Results Model 3 113
Figure 33: SEM Results Model 4 113
Figure 34: SEM Graphical Model 5 114
Figure 35: SEM Results Model 5 114

List of Tables

Table 1: Summary of Literature on E-Bikes 14
Table 2: Summary of Literature on Theory of Planned Behavior's Application to Mobility Behaviour 26
Table 3: Saturation of Current E-Biker Interviews 32
Table 4: Saturation of Pilot E-Biker Interviews 32
Table 5: List of Factors Identified from Interviews 43
Table 6: ANOVA Results of Conceptual Model, as Explained in 4.2.2.1.3 57
Table 7: Stated Reasons for not Buying and E-Bike 59
Table 8: Stated Reasons for Buying and E-Bike 60
Table 9: Stated Possible Improvements that can Result in E-Bike Purchase 60
Table 10: Similarities and Differences between Research Outcomes 61
Table 11: 2-tailed Pearson Correlation for Attitude and Intention Questions Excluded from the Model 63
Table 12: Similarities with Previous Research on E-Bikes 72
Table 13: Criteria for Reporting Interviews, Consolidated Criteria for Reporting Qualitative Studies (Tong et al., 2018) 103
Table 14: Interview Details 104
Table 15: Factor Analysis Results 115
Table 16: Codes and Respective Number of Quotations from Current and Pilot E-Biker Interviews 117
Table 17: Codes of Attitudinal Advantages and Detailed Explanations 120
Table 18: Codes of Attitudinal Barriers and Detailed Explanations 122
Table 19: Codes of Attitudinal Safety Perceptions and Detailed Explanations 125
Table 20: Codes of Attitudinal Changes and Detailed Explanations 125
Table 21: Code of Distance-Related PBC and Detailed Explanation 126
Table 22: Code of Effort-Related PBC and Detailed Explanation 126
Table 23: Codes of Subjective Norms and Detailed Explanations 126
Table 24: Codes of Habits and Detailed Explanations 127
Table 25: Codes of Intention to Buy and Detailed Explanations 128
Table 26: Codes of Intention to Lease and Detailed Explanations 129
Table 27: Codes of Intention to Buy with Subsidies and Detailed Explanations 129
Table 28: Codes of Intention to Try and Detailed Explanations 130
Table 29: Codes of Intention to Buy and Detailed Explanations 130
Table 30: Codes of Problems Recognized and Detailed Explanations 131
Table 31: Codes of Perceptions about the Pilot and Detailed Explanations 132
Table 32: Demographics of Pilot Participants 133
Table 33: Contractual Hours of Pilot Participants 133
Table 34: Days Pilot Participants Spend in Campus 133
Table 35: Days Pilot Participants Drove to Work before the Pilot 134
Table 36: Days Pilot Participants Cycled to Campus before the Pilot 134
Table 37: Pilot Participant's Consideration to Switch to E-Bikes before the Pilot 134
Table 38: Pilot Participant's Driving Distance 135
Table 39: Pilot Participant's Cycling Distance 135
Table 40: Pilot Participant's Difference in Distance between Cycling and Driving 136
Table 41: Pilot Participant's Driving Duration 136
Table 42: Pilot Participant's Cycling Duration 136
Table 43: Pilot Participant's Duration Differences between Cycling and Driving 137
Table 44: Stated Reasons to Join the Pilot 137

Table 45: Stated Reasons of Driving instead of Cycling 138
Table 46: Summary of Responses to TPB Questions, Entry Survey 138
Table 47: Summary of Responses to TPB Questions, Exit Survey 139
Table 48: Spillover Effect 139
Table 49: Bivariate Correlation Analysis Results 140
Table 50: Factor Analysis Results, Exit Survey 145
Table 51: ANOVA Results of Conceptual Model, as Explained in 4.2.2.1.1 146
Table 52: ANOVA Results of Conceptual Model, as Explained in 4.2.2.1.2 146

Preface

Dear reader,

Here lies in front of you, my thesis project, which is the last stepping stone for finishing my master's degree in Complex Systems Engineering and Management. By investigating the behavioral factors that surround adoption of electric bicycles for the daily commute using a case study, it aims to serve the case study itself, Delft University of Technology and give insights to future pilot designers, policymakers and scientist.

I first came to study in the Netherlands as an exchange student four years ago. Many things made me enjoy my time here so much that I came back to finish my studies here in Delft. One of these things was being able to cycle to university every day. Growing up in Istanbul, I can say that I am one of those who saw both extremes of daily commuting. That is why I was passionate to work on a thesis that can help other policymakers to stimulate cycling. While the scope of my research was different at the beginning, luckily, the university started an electric bicycle pilot for people to experiment with them as a mode of daily commuting. I want to thank Sandra Hueber and Cathelijn Dijk-Koekkoek for allowing me to work with such a suitable pilot study and always being interested in the results, responding very rapidly and help me move forward.

There are also several people I would like to express my thankfulness for in my latest phase of the study — first, those electric cyclists who took time for an interview with me. Without you, I would not have been able to find good results. I am also lucky to say they were friendly people to have a conversation with and enthusiastic about my research. Thank you for your time!

Secondly, I would like to thank my committee. To start with Jan Anne, who was more than a first supervisor for me. Master's thesis is a hard journey if you are not used to working alone. Despite his busy schedule, he always made time to give me feedback that helped me build a strong thesis. His optimism always cheered me up, and our conversations were helpful in my private life as well. I hope to work with you again someday and promise to send greetings from my new job. I am also grateful to have Gerdien and Bert as a part of my committee. They were always very friendly and there when I needed help. They gave me critical feedback that helped me move forward when I felt stuck. I would also like to thank Maarten Kroesen and Dorine Duives who took time to share their expertise with me.

Thirdly, thanks to Geertje Slingerland, I was able to finish my honors program. I would also like to thank Justus and Louise van Effen Excellence Scholarship fund for funding

my studies. It was my dream to come back here after my exchange, and I am proud to say that I am more than happy where my road took me.

Fourthly, I would like to thank my family and friends for their support over the past years. My granddad, Ahmet Habib Sandıkçı, who passed away the beginning of this year, who inspired me to follow his path and become an engineer. The way he went over his calculations in his last years to control for safety inspires me to always strive for the best. My grandma, Müberra Sandıkçı, who is the most energetic and ambitious woman I know, made me push for more. My mother, my father, and my sister, who always supported me, thanks to them, I can now support myself without them doing it. My friends spread around the world, who did not even get tired one day from my stories! My dearests from Turkey, of which I cannot acknowledge all here, who offered their support when I needed it especially in the last months: Alican, Aslı, Berk, Berna, Bükem, Burçak, Cansu, Deniz, Ekin, Elif, Emre, Esi, Gizem, Işılay, İlayda, Feride, Mali, Melis, Rana. Those that I met just here, but that feel like it's been years. My dear board members that I spoke daily, Aoibhinn, Bhavya, and Rens. Thank you for becoming friends for life. My housemates Irene and Shubham, who became my home away from home. My Turkish crew here, Ege, Hande, Kaan, Metin, and Ogan whom I should thank for helping me keep my mother tongue alive. My study mates Florian, Ine, Joep, Max, Lars, and Tom for making the faculty 'gezellig' and project work fun. Also, a shout out to Berkin, Joep, Lars and Ulaş for actually reading my thesis and giving feedback.

Lastly, I would like to thank myself for all the fun and hard work. Congratulations! I am proud of my work, and I hope you will enjoy reading it too, keep cycling!

Mina Kocaman
Delft, August 2019

Executive Summary

Cycling as a way of commuting is becoming more attractive from the eyes of the public, employers, and policymakers. By offering the ability to go faster with less physical effort, electric bicycles (e-bikes) can motivate more people to cycle to work. While the numbers of e-bicycles sold in the Netherlands is increasing (BOVAG-RAI, 2017; Plazier, Weitkamp, & van den Berg, 2017b), to reduce the amount of cars in traffic there have been initiatives to help e-bikes penetrate the market faster. However, there is a lack of research on the behavioral process to guide intervention-designers on how to facilitate this process further. To build on this gap, a case study in taken on hand: the green mobility program of Delft University of Technology (TU Delft) to explore the research question: What explains the behavioral factors behind the adoption of e-bikes as the daily commute? Within the program, there is an e-bike pilot that allows people to replace their cars with an e-bike for two months. Using TU Delft's e-bike adaptors and triers as a sample, this thesis aims to answer what explains the behavioral factors behind the adoption of e-bikes as the daily commute.

A theory is needed to explain the behaviour scientifically. Theory of Planned Behaviour (TPB) of Ajzen (1991) was chosen as it has been used in similar research before. This theory assumes that people's attitudes, perceived behavioral control (PBC) and subjective norms (SN) around the behaviour affects their intention, which affects the behaviour together with PBC. For this case, behaviour is defined as buying the e-bike, and an exploratory conceptual model is built. Surveys have been used to collect data that has been used for quantitative estimation of the model. Multiple regression and descriptive statistics have been used for the estimates. As the sample size was relatively small (n=75), and the survey did not cover all factors of the TPB, to support the quantitative part, interviews were conducted with pilot participants and current e-bikers. Triangulation of quantitative and qualitative methods allowed concluding the research question and supported each other's limitations.

The results show that TPB can be used to explain people's intention to buy an e-bike is affected by their attitudes, perceived behavioral controls, and intentions that surrounds commuting with an e-bike. Factors such as time savings, prices, convenience, enjoyment, responsibilities, health, weather, and societal perceptions affect people's intentions to use an e-bike or not. The most important finding is that these intentions are mainly blocked by the financial barrier. Options such as leasing or financial subsidies can be explored to lower this barrier.

These findings were mainly in line with previous work of other researchers, and they have several societal and scientific implications. First, as the results are in line with research from countries with different cycling maturities, it shows that Dutch cycling research can be relevant for other settings as well. Second, while it is not a full

confirmatory model, it can be said that TPB can indeed explain adopting e-cycling as a habit. However, further research is needed with a larger sample and a broader range of questions. Third, findings indicate that pilots are successful in facilitating e-cycling as they can change attitudes and PBC of individuals and SN indirectly. Fourth, as the initial investment of an e-bike is relatively higher than of a regular bicycle, this price difference remains as one of the main reasons behind the gap between intention and behaviour as people are risk-averse. Options, such as leasing, which will be easier with upcoming regulations in Dutch law, can lower the threshold. Fifth, faster e-bikes, speed pedelecs could facilitate cycling more as they allow better time savings. In short, policy-makers and employers can use pilots and better policies to increase e-cyclists and lower drivers. Several gaps have been identified. Future researchers can look into these to generate better and more important results. Moreover, they can use the exploratory conceptual models that result from the research to build better surveys that use TPB to explain changes in commuting mode changes, even outside the domain of e-bikes.

For practical purposes, this thesis has important outcomes for TU Delft. Firstly, many employees expect the university to take measures to give incentives for cycling financially, such as participating in the new tax scheme that makes leasing easier or adopting a bicycle plan again. Secondly, participants and employees generally saw the pilot positively, especially the way it was professionally organized. Thirdly, it is possible that promoting cycling is not enough to push people out of the cars, and additional car-demotivating actions should be put into place. Lastly, a faster e-bike option, speed pedelecs could get more people to leave their cars as time savings are higher. It also gives insights into the behavioral process of changing commuting mode, of which pilot designers and policymakers can utilize to design better interventions to motivate people to switch to e-bikes.

To extend the knowledge in the area, researchers can firstly focus on longitudinal studies with larger sample sizes to further investigate the suitability of TPB to offer guidance for policy-makers. Second, they can investigate how different financial incentives affect people's intentions and behaviour. Third, speed pedelecs need more attention as they have different barriers and different motivators, at least in the Netherlands. Fourth, e-bike research and pilots in non-cycling mature contexts could be interesting as the impact can is larger. Fifth, other theories can be used in similar research as well to compare whether or not they fit better than TPB or not. In conclusion, this thesis fits adopting e-biking into a behavioral theory context and offers insights to those who work to increase the percentage, in a similar context to TU Delft or not.

1 Introduction

1.1 Problem Background

1.1.1 Cycling for Commuting

Over the years, cycling as a way of commuting became more attractive as people started to recognize it as a cheaper and healthier alternative to motorized transport for themselves (Handy, van Wee, & Kroesen, 2014). Moreover, policy makers started gaining interest in increasing cycling, as compared to cars and buses because it is cleaner, requires less infrastructure investment (Weiss, Dekker, Moro, Scholz, & Patel, 2015), and it reduces congestion on roads (Coleman, 2000). There are four explanations to why policy makers try to increase cycling. Firstly it saves costs. Busca (2016) reports that in expensive cities, cycling is more cost-effective than public transport. Second, it helps to reduce carbon footprints. Road transport is one of the main contributors to greenhouse gas emissions (Fuglestvedt, Berntsen, Myhre, Rypdal, & Skeie, 2008). In specific, in the UK, it was estimated that commuting journeys make up around 20% of all road-transport related emissions (Barrett, 2008). Similarly, in 2016, road related emissions caused 21% of the carbon dioxide emissions of the European Union ("Road transport: Reducing CO2 emissions from vehicles," n.d.). Hence, replacement of motorized commuting with bicycles can have substantial effects as commute journeys make up a significant part of journeys. In the Netherlands and other developed countries, commuting consists of around 30% of all trips (Heinen, Maat, & van Wee, 2013) Third, congestion is increasingly becoming a concern in urban areas. It has negative consequences in the lives of the people who are actually in the congestion and those who live in urban areas (Prescott, 1997) as it causes pollution, noise, and time lost. Peak hours are periods where congestion is more severe as the daily commute takes place at the same time for the majority of companies. More people adopting cycling as a commute hence can relieve traffic in these peak hours. Fourth, cycling is a healthier alternative. Other than improving physical health by offering physical exercise, it could potentially improve people's mental wellbeing. Schaefer (2005) points out that commuting puts stress on people. As active commuters report better mental health (Zijlema et al., 2018), switching to cycling could minimize this effect.

Due to economic, environmental, time-related, and health benefits mentioned above, numerous international, national, and local governors and companies have started adopting policies to make cycling more popular. To give some examples, the European Union's EMPOWER project aims to reduce car usage across different European cities and provides funding for such projects ("EMPOWER," 2019). As early as 1996, the United Kingdom introduced the National Cycling Strategy to promote cycling to work (Gatersleben & Appleton, 2007). In Italy, a town called Bari is subsidizing cyclists by paying for the bike and per kilometer cycled (Pinar, 2019). Governments are also

allowing companies to pay their employees for cycling. Fleming (2019) reports that in the United Kingdom, Belgium, Luxembourg, France, the United States and in the Netherlands, this is already the case, or new legislations are due to be rolled out. Specifically, with a new law that will be in enforcement after 2020, it will become easier to lease a bicycle via the employers ("Voor paar euro per maand een fiets van de zaak: vaste bijtelling wordt zeven procent," 2018).

Despite the benefits reported above, there are obvious drawbacks to cycling. People choose other modes of transportation over cycling as it could be more comfortable, takes less time, needs less effort, they need to carry things to work and the way back and the weather conditions just to speculate. However, there is a promising solution: e-bicycles.

1.1.2 E-Bicycles to Increase Cycling

Popovich et al. (2013) report that e-bicycles can remove barriers in cycling to work as people can accelerate and maintain speed without getting tired. In this paper, e-bicycles will be referring to pedelecs, which are defined as bicycles by EU law. Pedelecs refer to bicycles that give power assistance up to 25 km/h only when pedaling, with an electric motor with up to 250 Watts of power (Bike Europe, 2018). Various other researchers have found that e-bicycles can help increase cycling as well, which will be further elaborated in 2.1. Fyhri, Heinen, Fearnley, & Sundfør (2017) also found out that those who did not normally cycle are more likely to switch to e-bikes rather than conventional cycling. By promoting e-bikes for commuting, it is possible that decision makers can achieve their targets in reducing congestion, carbon emissions and public health concerns in a better way as it imposes arguably fewer barriers than conventional bicycles. Naturally, there have been efforts aiming to do so.

There are some programs that have been initiated to promote e-bikes. Under the project Maastricht Bereikbaar in the Netherlands, people working for some companies are given the chance of joining a one-week trial (Mediatastisch, n.d.). In Melbourne, another pilot program is undertaken to look into why people prefer e-bikes (RACV, 2017). Pilots have also been a point of research (Cairns, Behrendt, Raffo, Beaumont, & Kiefer, 2017; de Kruijf, Ettema, & Dijst, 2018; de Kruijf, Ettema, Kamphuis, & Dijst, 2018; Fyhri & Fearnley, 2015; Moser, Blumer, & Hille, 2018; Plazier, Weitkamp, & Berg, 2018; Schepers, Twisk, Fishman, Fyhri, & Jensen, 2017). In Norway, Fyhri & Fearnley (2015) as well as Fyhri et al. (2017) have researched different topics with using a pilot program. Large-scale professional organizations have begun to realize their responsibilities in enabling cycling to work. One example is Delft University of Technology (TU Delft). To comply with the goals of reducing cars on campus, becoming CO2-free campus by 2030 and to deal with spatial limitations, Campus and Real Estate Directory started a project (TU Delft, 2019a): employees and students who

drive to work at least 3 times per week are given the option of sustainable transportation alternatives, of which one is 8-week testing of e-bicycles. This pilot program offers a great opportunity for research on e-bike promotion, especially as the pilot duration, 2 months, is relatively higher than some of the other pilots researched (Fyhri & Fearnley, 2015; Fyhri et al., 2017; Moser et al., 2018; Plazier, Weitkamp, & van den Berg, 2017b).

1.1.3 Research Gap

As argued above, there are various reasons why further market penetration of e-bikes is attractive for companies, policy-makers, and society. Positively, there is already an effort to improve the e-cycling rate. Nevertheless, there is limited research on the area regarding behavioral aspects of e-bike adoption to guide decision makers into suitable intervention designs. While bicycle as a way of commute has been researched in a broader since, e-bicycles in Europe is limited in exploration (Fishman & Cherry, 2015). Salmeron-Manzano and Manzano-Agugliaro (2018) report the current state of research and different areas on e-bikes: health related issues, motors, batteries, urban planning, environmental concerns, and mechanical concerns. Their list does not contain policy-making. Similarly, Dill and Rose (2012) report that there is a lack of research from transport policy side and suggest policy responses can be effective to raise the adoption of e-bikes. The literature review by Fishman and Cherry (2015) shows that there is a need to quantify the influence of e-bikes in travel behavior. Rose (2012) also suggests that there is a need for better understanding of e-bikes as it is becoming more popular. Further elaboration on literature can be found in the Literature Review.

To sum up, investigating the behavioral process that ends in adopting e-bike as the daily commute can provide insights for intervention designers to facilitate further e-biking. This leads up to the main research question:

[0] *What explains the behavioral factors behind the adoption of e-bikes as the daily commute?*

In order to answer the main research question, the problem needs to be divided into subcomponents for a systematic approach to behavioral research. The following section introduces the relevant subdivisions. These have been determined corresponding to the main research approach chosen, which will be elaborated on after the research sub-questions.

1.1.4 Corresponding Sub-Questions

The following sub-questions have been identified to help answer the main research question. They have been determined to correspond well to the chosen research methodologies, so the data collection and analysis methods. Details regarding the choice rationale will be explained in Research Methodology.

[1] *What are the barriers and facilitators that relate to e-biking as a commute in TU Delft employees in general?*

[2] *What are the barriers and facilitators that relate to e-biking as a commute in TU Delft employees that join the e-bike pilot?*

[3] *What are the characteristics of e-bike pilot participants?*

[4] *What is a conceptual model that explains how people choose to adopt the habit of e-cycling to work by joining an e-bike pilot?*

[5] *What are the implications of this research for TU Delft, pilot designers, policy-makers, and science?*

As mentioned above, these questions aim to serve the main research approach chosen, the case study. The details of the approach are presented below.

1.2 Main Research Approach

In order to explore behavioral factors behind the adoption of e-bikes, the best is to explore people who have started e-biking or in the process of doing so. Luckily, the TU Delft pilot mentioned above offers a great opportunity for such research. The pilot and TU Delft employees, in general, will be studied in a case-study manner, which will be explained in the following section. Desk research was used to search for adequate research methodologies and to support these methodologies in terms of scope. Specifically, the literature showed that Theory of Planned Behaviour (TPB) is suitable for the case on hand, which is explained in detail in Research Lens, will be used for semi-structured interviews and surveys will be used for triangulation as a method to collect data. Specific research methodologies will be presented in Research Methodology.

1.2.1 Case Study: Delft University of Technology E-Bike Pilot

TU Delft's pilot presents an excellent opportunity for research on factors that influence people to contemplate e-bicycles as a potential mode of transportation and the factors that motivate them to adopt the habit. To add more, as the Netherlands already have

a substantial e-bike penetration to the market (Harms & Kansen, 2018) and as TU Delft has a considerable percentage of employees living within e-cycling distance (van der Klugt et al., 2018), it is possible to find employees who have already adopted the habit. Moreover, the research on hand can help improve the pilot itself, draw general conclusions about the adoption of e-biking as a habit and effectiveness of pilots in doing so. The details of the free e-bike testing pilot in relevance to this project are summarized below (TU Delft, 2019a):

- 8-week long 4 blocks are available, of which block 1 (25 March-17 May 2019) and block 2 (20 May-12 July 2019) are included in the study
- 100 e-bicycles per block will be given out
- Those who join the pilot can buy an e-bicycle with a discount
- Attendants need to e-cycle to campus at least 2 days a week, and in all Tuesdays and Thursdays
- Attendants need to fill pre- and post-pilot surveys
- E-bicycles are the property of TU Delft

This specific pilot is a good candidate for several reasons, mainly as in terms of the choice of the country, the area and the university itself. First, the Netherlands is quite well developed in terms of cycling infrastructure (Harms, Bertolini, & te Brömmelstroet, 2014). Hence, the number of external factors preventing people from e-cycling, such as safety (Rose, 2012), will be minimal. This means the number of factors that affect the adoption of e-cycling as a commute is lower, as the threshold for cycling itself is lower, and hence, the analysis will be less complex. Second, e-bicycles are becoming increasingly popular in the Netherlands. In 2017 there were 1,8 million e-bicycles, and in 2018, 40% of the sales were of e-bicycles, up from 31% in 2017 (Fietsplatform, 2018). Hence, the value of research is becoming increasingly valuable. Guidance to decision-makers can help the e-bicycle penetrate to the market in a higher and faster rate. Third, the province of South Holland is planning to invest further and develop the cycling network: they aim to increase the share of cyclists in trips up to 15 kilometers by 25% by 2025 (Provincie Zuid-Holland, 2019). E-bikes could be a great facilitator of this goal. Moreover, there will be an extension on the bicycle highway network, of which one could pass through Delft (Provincie Zuid-Holland, 2019). Bicycle highways aim to give cyclists a better journey by avoiding road traffic and street lights. This highway further facilitates the replacement of car journeys from nearby cities, the Hague and Rotterdam and hence makes the e-bike adoption even more relevant.

Fourth, a university is a good research setting for the topic on hand. It has been widely used in bicycle research (Aldred & Jungnickel, 2014; Gatersleben & Appleton, 2007; Heinen & Handy, 2012; Miller & Handy, 2012; Panter, Grif, Dalton, & Ogilvie, 2013; Thigpen, Driller, & Handy, 2015). Moreover, Pitsiava-Latinopoulou, Basbas, and

Gavanas (2013) speculate using desk research that universities are the focus for shaping travel behaviors of the general population. The outcomes can help other universities and employers to adopt similar strategies. Fifth, it can serve TU Delft. Van der Klugt et al. (2018) report that 27000 people commute to university every day. As the university wants to be energy neutral by 2040 (TU Delft, n.d.) they have to take measures against reducing the number of cars used to access the campus. A way to achieve this is to promote e-bikes to replace the cars. Employees that live in a medium-distance from the campus, 5-15 kilometers, could possibly be candidates to switch from the car to an e-bike. Research showed that whereas 21% of the employees are candidates for using an e-bike, only 1% does (van der Klugt et al., 2018). Moreover, it was found out in a survey of 85 participants that in one of the parking spaces on campus, 51% of the places were occupied by those who live closer than 15 kilometers (C. Dijk-Koekkoek, personal communication, March 7, 2019). The pilot is a way to change this issue, and this research could help with this goal.

Unfortunately, the possibility also brings along certain limitations. First, there limited control over survey questions. The pilot is funded by TU Delft, and hence not all questions are considered suitable by the human resources department. These relate to managing employee's expectations and also timewise requirements from the respondents. Details could be found in Phase II: Quantitative Research. Hence, approval of the project organizers is needed. Second, due to timing issues, only a limited number of participants could be fully under investigation, limiting the survey size. Third, as it is a free pilot, it is hard to compare it with a real investment on an e-bike. Interviews with current e-bikers were conducted to deal with this, of which the details are presented in Phase I: Qualitative Research.

While the research topic's relevance to society has been already explained, it is also important that the research process just presented fits well within the domain of Complex Systems Engineering and Management (CoSEM). The following section elaborates on this.

1.3 Relevance to the Master's Studies

The research topic on hand fits well within the CoSEM domain as a societal change is explored. A disturbance in the travel behaviour of the population is occurring, and this can have an extensive impact on the environment, infrastructure, and traffic. Decision-makers need to adopt and facilitate this change if they perceive it as a favorable environment. Looking into how and why individuals choose to adopt the new habit and also evaluating the effectiveness of such pilot programs could help to guide them. This way, better pilot programs or better ways for motivating people to e-cycle to work could be designed. Moreover, as a mix of qualitative and quantitative research approach will be used, which will be explained in Research Methodology, the thesis is suitable for the study goals of the master's program. In summary, as the thesis topic

on hand explores the effectiveness of an artefact for intervention with a socio-technical system: a pilot program to change habits of commute, it is a good fit for the degree.

1.4 Structure of the Thesis

This thesis aims to present, answer, and defend the main research question: What explains the behavioral factors behind the adoption of e-bikes as the daily commute? This first chapter, the introduction, has introduced the problem and the main research approach chosen. As the main research approach was chosen with an initial literature review, the second chapter consists of the findings of the desk research. This part explores the state of the art in e-bike research, uses existing knowledge to support the research approach with suitable research methodologies, and discusses the scientific relevance of the topic chosen. The third chapter, research methodology, elaborates on the chosen methodologies in detail. The research sub-questions are matched with suitable data collection and data analysis methodologies using the existing findings of previous researches. The fourth chapter, the results, will present the outcome of the data collection and analysis and elaborates on the findings of different methodologies. The fifth chapter, discussion, focuses on implications of the findings for different stakeholders: scientists, pilot designers in TU Delft, and other institutions. It compares the results with that of previous research. It also elaborates on the reliability of the project and how to deal with the limitations in the research process and how to proceed for future work.

2 Literature Review

This section presents the developments in the e-bike research arena and supports how the research questions are scientifically relevant to fill a research gap. The literature review was also used to choose a research lens to investigate behavioral adaptation in a scientific way, which is the TPB. This is explained in the last section of this chapter, Research Lens. Furthermore, the methodologies and findings of previous research were used to divide the main research question into suitable sub-questions and support them with research methodologies, bearing in mind the research lens. This process is explained in detail in the following chapter, in section Choice of Specific Research Methodologies. In short words, existing knowledge was used to construct semi-structured interview questions, and survey questions as similar factors have been identified across different papers, which will follow in the upcoming chapter. Hence, the literature review is a research methodology, as well. For the readability of the paper, it was chosen to present the literature review first.

In order to collect papers, Google Scholar and Scopus were used as databases. For Google Scholar, the keyword "e-bike" has been used. The same keyword has been used for Scopus as well. The research on e-bikes includes a wide range of areas, such as mechanical aspects of the e-bikes, environmental impact assessments, health, and safety related papers, e-bike sharing systems and the changes in route choices. These do not relate to the topic on hand, as they are out of scope for this paper. Mechanical aspects are unrelated to the research topic. It is assumed that the product is mature enough for adoption as it has already penetrated to the market. Environmental impact assessments deal with whether the e-bikes have zero net impact as the disposal of the batteries raise concerns, but this paper deals with the adoption, not with whether that is beneficial or not. Health and safety related papers deal with how e-bikes compare to regular bicycles in terms of accident rates and health implications. Again, these are out of the scope of the paper. Of course, people's perceptions of these two areas are important, but these could be separated from the real implications. Similarly, e-bike sharing systems and changes in route choices are out of scope as well. Sharing systems are not available in the country to the best of the author's knowledge. Route choices are again a choice of the e-bike users, so not related to the process of adopting the habit. Hence, in Scopus, the subject area was restricted to "social science," "environmental science," and "decision science." For both databases, papers that were out of the scope of this paper, as explained before, were not included.

The papers also cover a wide range of geographical locations. Some include geographical locations quite different than the Netherlands, such as China and North America, these were read but will not be explored in depth in this paper as the conditions there are vastly different than in the Netherlands. The differences will be mentioned in the upcoming parts, but to sum up, in China, the economic development

of the region creates different dynamics. In North America, car dependency and primitive cycling infrastructure is the main driver of the differences.

Snowball method was also used for several papers (Fishman & Cherry, 2015; Kroesen, 2017; Popovich et al., 2013; Rose, 2012). Similarly, Mendeley's suggestions were also used to extend the literature review. Several industry reports and news articles were used as well, mainly found via the projects mentioned in the papers or referred to by experts. Lastly, three interviews with experts on the field were conducted, of which the details will be provided. The relevant results of the papers are presented below. As TPB was chosen as a suitable method, of which the details will follow, papers that have used TPB for e-bikes were obtained with snowballing method, using citations of three articles (Fyhri et al., 2017; Haustein & Møller, 2016; Kroesen, 2017). First, general e-bike literature was explored, of which an overview can be found below.

2.1 Research on E-Bikes

Table 1 below aims to present an overview of the literature on e-bikes. Exact topics, the chosen research methodologies, factors explored, and the geography in which the research was conducted is presented as well. The rationale behind the components is that research methodology can help find a suitable one for the topic on hand. The factors explored were used later on to construct interview and survey questions, which will be explained in the chapter Research Methodology. The geography is included as well as it was found that different countries bring different behaviors around e-bike research, which will be discussed after the table.

This section aims to summarize and elaborate on the findings of the articles in detail. It can be observed from Table 1, that numerous researchers have attempted to evaluate different implications that relate to e-bikes, look into user's experiences, and present current research. User's demographics, properties of their journeys, their residential conditions, their experiences of e-bikes were frequent factors explored. Similar to the research approach chosen, many projects also involved pilot/trial programs, and these were evaluated from different aspects. This shows that there is a present scientific ground for successful completion of the project. To discuss the scientific relevance of the research question, several articles are explored below. To give an overarching view, history of e-bike research will be presented first. Research in China will follow as it is one of the first markets that have adopted e-bikes in a broader sense. However, as different sociocultural and geographical environments yield differences in travel behavior, the rest will be presented in three parts. These will be China, non-cycling Western countries, and cycling western countries.

2.1.1 Introduction to the Research Field

E-bicycles have been considered as a way to remove barriers to cycling as they can help with maintaining speed and climbing from earlier on (Oman & Morchin, 1992). They proposed a system to combine e-bikes with trains to dissolve congestion. They tested their initial technology to quantify savings in human power. In 1993, Yamaha designed the first e-bike motor that was suitable for mass production (Bosch, n.d.). Rose (2012) underlines the relevance of e-bikes in a broader context, as they could be an answer to the mobility needs of the cities: it is a sustainable solution that removes the barriers to cycling. He points out that while the first adopters of the technology in the West were the elderly, penetration into other segments is a possibility. His findings reflect the reality as the adaptation phase of the technology is still going on. However, in China, e-bikes were adopted fast, and hence, earlier research focuses on China. Fishman and Cherry (2015) conducted a literature review, and they underline two facts that support the relevance of the proposed topic. First, they tell that there is a need to quantify the influence of e-bikes in travel behavior. Second, they remark that the Netherlands and Denmark are suitable locations as infrastructure is developed, safety barriers have been eliminated, and there is already a considerable number of e-bike users in the country.

2.1.2 China

One of the first and rare markets where e-bikes are adopted on a larger scale is China. It must be underlined that for the Chinese context, scooters that work without human assistance is usually also referred to as e-bikes. Cherry and Cervero (2007) aim to serve policy-makers by analyzing e-bike user demographics and motivations in China. They report that in 2005, 10 million e-bikes were produced and sold mainly domestically. They include scooter-style electric motored vehicles to their research as well. They made surveys in two cities, Kunming and Shanghai, both with a population above 1 million. Their results show that e-bikes are preferred as they require low effort, are fast, and a way to avoid crowded transit options. An et al. (2013) also surveyed in Shanghai and found out that e-bikes were still becoming more popular. They also report that trips were usually for commuting. Their results communicated that e-bikes were preferred as they offered predictable travel time, speed, low-cost, ease, and convenience. People usually replaced their conventional bikes or public transportation, and the average trip took 27.3 minutes.

Table 1: Summary of Literature on E-Bikes

Author	Topic	Methods	Factors Explored	Geography
(Cherry & Cervero, 2007)	E-bike users' characteristics and mode choice	Surveys	Gender, age, education, household income, wage, household size, types of e-bikes, alternative commute method, reason of choice, travel time difference, vehicle ownership, perception of other modes	China
(Rose, 2012)	Issues regarding e-bikes: mobility, safety and environmental	Conceptual model + desk research	Impact of e-bike usage on mobility, environment, health and safety. Policy related issues	Worldwide
(Dill & Rose, 2012)	Insights from early adopters	Interviews with 28 owners	Characteristics, reason of purchase, usage, positive-negative effects	United States
(An, Chen, Xin, Lin, & Wei, 2013)	Travel characteristics of e-bike users	Surveys	Household location, income, vehicle ownership, travel purpose, commute length and time, trip behaviour, reason of choice, attitudes, replaced mode, alternative mode	China
(Popovich et al., 2013)	Experiences of e-bike users	Interview with 27 owners	Buying behaviour, usage, positive aspects, experiences, mode replacement, negative aspects, perceptions of non-users	United States
(Wolf & Seebauer, 2014)	Technology adoption of e-bikes	Survey	Age, gender, household location, education, household income, car ownership, technophilia, environmental values, composition of all modes, technology adoption model	Austria
(Fyhri & Fearnley, 2015)	E-bikes effects on bicycle use	Survey, pilot, travel diary	Age, gender, employment, cycling habits, number of trips and mode choice	Norway
(Haustein & Møller, 2016)	Changes in cycling patterns of different e-bike user segments	Survey	Age, attitudinal factors, cycling patterns, e-bike satisfaction	Denmark
(Jones, Harms, & Heinen, 2016)	Motives, perceptions and experiences of e-bike owners and implications	In-depth interviews	Changes in travel behaviour, reason of buying, experiences, social issues, infrastructure	Netherlands, UK
(Fishman & Cherry, 2015)	Literature review on e-bikes	Desk research	Demographics, sales, user benefits, motivation to buy, changes in travel behaviour, health issues, safety	Worldwide
(Cherry, Yang, Jones, & He, 2016)	E-bike ownership and usage dynamics	Four travel diary surveys over six years	Demographics, vehicle ownership, travel reasons, alternative modes, replaced modes	China
(Lee, Molin, Maat, & Sierzchula, 2016)	E-bike usage and mode choice	Survey + one-day travel diary	Demographics, e-bike details, usage patterns	Netherlands

(Fyhri et al., 2017)	E-bike's role in removing barriers of cycling	Survey + pilot	Intention to buy an e-bike, willingness to pay, demographics, attitudes, cycling habits, e-bike familiarity, experience	Norway
(Plazier, Weitkamp, & van den Berg, 2017a)	E-bike user's motives, travel behaviour and experiences	GPS-tracking + interviews	Trip purposes, motives for e-bike usage, travel behaviour, mode choice, experience	Netherlands
(Kroesen, 2017)	Mode replacement by e-bikes	National mobility surveys	Sociodemographic, household characteristics, vehicle ownership, travel behaviour	Netherlands
(Behrendt, 2018)	E-bikes importance on e-mobility	Desk research + pilot	Experience, technology, societal norms, costs	UK
(de Kruijf, Ettema, Kamphuis, et al., 2018)	Evaluation of incentive program for e-biking	Three questionnaires + incentive program	Demographics, vehicle ownership, residential location, travel distance, travel behaviour, satisfaction with modes, travel modes	Netherlands
(Astegiano, Tampère, & Beckx, 2015)	Reason of e-bike possession	GPS tracking + weekly travel diary + survey	Demographics, mobility behaviour, travel behaviour, accidents, mode choice, facility satisfaction, alternative modes, travel time	Belgium
(Moser et al., 2018)	E-bike trial's long-term effect on driving	Pilot + Two questionnaires (longitudinal)	Demographics, vehicle ownership, mode choices	Switzerland
(Plazier et al., 2017b)	E-bike potential in younger population	Pilot + survey + interviews	Mode choices, expectations, experiences, intentions, environmental concerns, attitudes, e-bike image	Netherlands
(Edge, Dean, Cuomo, & Keshav, 2018)	Perspective of new e-bike users	Focus group interviews	E-bike usage patterns, benefits, limitations	Canada
(Zhao, Nielsen, Olafsson, Carstensen, & Meng, 2018)	Urban form, demographic and socioeconomic correlates of walking, cycling and e-biking	Survey	Neighborhood characteristics, demographics, socioeconomics, travel mode	China
(de Kruijf, Ettema, & Dijst, 2018)	Longitudinal satisfaction with e-cycling as a commute	Pilot + survey (two post-pilot surveys)	Demographics, residential conditions, satisfaction, travel behaviour, enjoyment, perceptions	Netherlands
(Seebauer, 2015)	Reason of engagement in interpersonal diffusion of new technologies	Survey on e-bike and e-scooter adopters	Sociodemographic, residential condition, interpersonal diffusion factors, social norms, personal norms, familiarity with technology, product satisfaction	Austria

(Cairns et al., 2017)	Potential impacts of e-bikes on travel behaviour	Pilot + surveys (pre and post) + interviews + focus groups + GPS tracking	Demographics, cycling habits, house location, physical activity habits, e-bike usage, intentions	UK
(Leger, Dean, Edge, & Casello, 2019)	Potential of e-bikes to support the elderly	Conceptual framework for older adult mobility: stakeholder and older adult qualitative data	Cycling history, history of automobile dependency/employment/duties regarding parenthood, cycling decline due to injury, barriers, ideal e-bike expectations	Canada
(Simsekoglu & Klöckner, 2019b)	Psychological and sociodemographic factors for e-bike use	Survey	Demographics, car and bike use, adopter segments, awareness, personal norm, perceptions	Norway
(Simsekoglu & Klöckner, 2019a)	Factors related to e-bike purchase intention	Survey	Demographics, perceived benefits, perceived barriers, intention	Norway
(Plazier et al., 2018)	Adoption of e-bikes by different groups	Desk-research	Advantages, limitations for commuters, students, rural residents	Worldwide
(Weinert, Ma, & Cherry, 2007)	History and reason for rapid growth of e-bikes	Desk-research	Technical details, economic reasons, political factors	China
(Collado, Yu, & Pettersson, 2014)	Introduction of e-bikes by utilizing behaviour change potential and user perception	Desk-research, functional analysis of mobility services, travel survey	Barriers in cycling, current cycling patterns, demographics, residential areas, current mode of transport	Sweden
(Ling, Cherry, MacArthur, & Weinert, 2017)	Differences in experiences and perceptions between e-bike and bike users	Survey	Experience, e-bike perception, e-bike expectations, purchasing behaviour, demographics	United States
(Arsenio, Dias, Lopes, & Pereira, 2017a)	Assessing the market potential of e-bikes for school commute	Survey + stated-choice experiment	Willingness to e-bike, ICT-addition preferences, perceived barriers, environmental conditions, e-bike attribute importance	Portugal

(Lopez et al., 2017)	E-bike potential for commute	GPS data analysis	Mobility habits from GPS data: distance, duration, speed, weather	Belgium
(Eto, 2017)	Regulation's effect on innovations: based on e-bikes	Desk-research	Historical technological developments and how it affected from government regulations	China, Europe, Japan
(Allemann & Raubal, 2015)	Usage differences between e-bike and regular bikes	GPS data analysis + street conditions	Age, residential location, route choices, (e-)cycling experience, speed, distance, traffic lights, bike path conditions	Switzerland
(Salmeron-Manzano & Manzano-Agugliaro, 2018)	E-bike research trends	Desk-research	History, safety issues, technical issues, urban form, environmental concerns	Worldwide
(Hu, Xu, Shen, Shi, & Chen, 2018)	Travel mode choices in a small city	Survey	Residential location, urban form, distance, commute time (peak hour or not), trip properties, trip purposes	China
(Weiss et al., 2015)	Performance of e-bikes	Desk-research	Technical features, prices, emissions, environmental impacts, social performance	Worldwide
(Oman & Morchin, 1992)	E-bikes for commuting to work	Prototyping	Technical details	-

Cherry et al. (2016) finished a 6-year longitudinal study regarding e-bike usage and the mode of transportation they replace. Four questionnaires were conducted in total, in 2006, 2008, 2010 and 2012, and this study is significant as it is the only longitudinal study in the area, to the best of the author's knowledge. It was revealed that the majority (around 65%) of the trips were home to work and this did not change over time. A change was that e-bikes were increasingly replacing bus or cars instead of bicycles, which was tied hypothetically to rapid economic development. This shows the difference in Chinese and Dutch cases: as the Netherlands is a developed country with comparably stable lifestyles over time, different motivators play a role. Hence, it is better to look into research that focuses on economically well-developed countries.

2.1.3 Non-Cycling Western Countries

E-bike research is also relevant to the Western world. However, developed countries are not developed in terms of cycling infrastructure and culture per se. The irrelevance of cycling in the societal context means travel behaviour of the population would be quite different than of countries where cycling is popular. Hence, this section focuses on locations with limited development in terms of bicycles, where e-bikes can offer solutions for different types of barriers than in the Netherlands.

An example is the United States. Dill and Rose (2012) interviewed early adopters in Portland, and they concluded that mainly older generations used e-bikes for utilitarian purposes. They reported e-cycling as an enjoyable experience and that they have motivated others to buy it as well after offering them to try the e-bike. Many said they replaced bicycles or motorized vehicles. This supports the pilot program as suitable. Popovich et al. (2013) did interviews in the greater Sacramento area. Users reported positive experiences, increase in cycling, and decreases in automobile usage. An important finding of the study is that people noted that misconceptions by non-users were demotivating as people assumed e-bikes were for recreation, were expensive and saw it as "cheating" cycling. They also suggest that awareness, incentive programs, a motivating community, and first-hand experience can boost adoption rates, all positive for the pilot.

There is also research that evaluates policies. Wolf and Seebauer (2014) conducted a survey in Austria among those who received governmental subsidies to buy e-bikes. Again, it was observed the elderly were the early adopters. Furthermore, the conclusion was that e-bikes failed to replace automobiles, and hence, the policy was unsuccessful as that was the main aim. They communicate that motivating e-cycling to daily commuters would be the best way to decrease carbon emissions. Furthermore, campaigns that show that e-cycling is effortless were suggested to be important as that was revealed as a motivator for usage.

Pilots have been used before. Fyhri and Fearnley (2015) used a pilot program to research how e-bike usage shapes travel behavior in Norway. 66 people joined, and the average cycling distance per day went up from 4.8 kilometers to 10.3 kilometers. They saw that as people get used to the technology, they start to use it more and more, at least in the short term. Share of cycling in total transportation went up from 28% to 48%. The researchers used self-reported travel diaries and also GPS systems to track behavior. They also found out that age does not make a big difference once people join the pilot, which is a positive outcome for the thesis. Fyhri et al. (2017) used the same study to see whether its increased willingness to pay for an e-bike. They found out it was indeed successful. Another interesting result was that those who cycled less before were more interested in buying an e-bike, which shows that it is a good alternative to driving. The overall conclusion was that a pilot was successful in raising awareness and provoking purchase.

As said before, there are differences between countries. However, this was not always remarked. Jones et al. (2016) used interviews to look into what motivates people to buy an e-bike, its impact on travel behavior and the experiences of users, in the UK and the Netherlands. It should be noted that barriers observed differed: in the UK infrastructure was mentioned and, in the Netherlands, social stigma was noted: users were teased about using e-bikes. This shows that subjective norms are effective in e-biking, and hence supports the choice of TPB, of which the details are explained in Research Lens. The difference between these two countries illustrates that it is better to focus on geographies with cycling maturity.

2.1.4 Cycling Western Countries

Two countries lead the world in cycling: Denmark and the Netherlands. In Denmark, Haustein and Møller (2016) divided e-bikers into different segments and then looked look into their attitudes and behaviors. The rationale is to identify different policy interventions for different groups, as mentioned in this proposal as well. They divide the market into three: enthusiasts (those who have positive attitudes towards e-bikes and aim to use it to increase cycling), utilitarian (those who cycle regularly and use e-bike to decrease travel time) and recreational. They used surveys to determine these groups. Different results were observed per group. For example, enthusiasts had the most carbon savings as they replaced car trips mostly. As the pilot only uses those who used to drive before, the characteristics identified in this group can be useful for the conceptual model. Other research focused more on the Netherlands.

Lee et al. (2016) used a survey in the Netherlands to reveal the previous mode of transportation and choice reasons. The easiness, comfort, speed, and ability to cover longer distances were communicated. Only 27% used it for cycling to work, and among that 52 % replaced a car. Another study used GPS tracking of outdoor movement of 24

users (Plazier et al., 2017a). It was found that work-related, single-destination journeys were the most common, and users tolerated longer trips than they did with conventional bicycles. In this program, behavioral factors were observed as well. Several reasons were found to motivate the change to e-bikes: they did not enjoy the previous mode, they experienced changes in work or home environments, or they joined pilot programs or received subsidies. These all show that TU Delft pilot is a good design solution. It is also important to note that the researchers point out that employee-based financial incentives could be beneficial in promoting e-bikes. Moreover, pilot/incentive programs in the Netherlands have been evaluated as well (de Kruijf, Ettema, & Dijst, 2018; de Kruijf, Ettema, Kamphuis, et al., 2018; Plazier et al., 2018). One of these is the incentive program in the province of North Brabant where e-bikers received financial compensation for the kilometers they e-cycled (de Kruijf, Ettema, & Dijst, 2018; de Kruijf, Ettema, Kamphuis, et al., 2018). This program has been organized under Beter Benutten (a program for the cooperation of the national government, provinces and businesses for improving traffic in peak hours ("Beter Benutten," n.d.)) by the Province of North-Brabant and the Ministry of Infrastructure and the Environment ("B-Riders," n.d.). The other one is organized by the local mobility office, and takes place in Groningen that gave e-bikes to educational institutions, and the research focuses on students (Plazier et al., 2017b). As the pilot on hand is organized by the employer itself, TU Delft, it could be that the dynamics are different. Moreover, as all the participants will be students or employees of the university, a more heterogenous sample will be on hand.

Finally, Kroesen (2017) looked into which mode e-bikes replace using the Dutch National Mobility Survey 2013, 2014, and 2015. He made a conceptual model of factors that affect the daily choice of travel and estimated the model using SEM. He found that e-bikes mainly replace bikes, and with half of that, cars and public transportation. Moreover, he found out that car owners prefer switching to e-bikes over bicycles or public transportation. Hence, if TU Delft wants to reduce car usage, the e-bike is indeed a good choice.

2.2 Research Gap

Researchers have tried to understand the reasons for e-bike usage. Many suggest that awareness and employer-based motivation could be a good way to increase usage. This indicates that trial programs could be beneficial to increase cycling. However, there is a limited number of studies of actual pilots. Most of the earlier research relied on existing users, mainly the early adopters prior to extensive market penetration that is prone to self-selection bias as they are those who are most excited about the technology. As the pilot participants in the case on hand were required to be driving to the work place at least three days a week, those who are just in the period where they can change their behaviour will be under research. The maximum sample size

that can be reached, 200, is also broader than other pilot research (Fyhri & Fearnley, 2015; Fyhri et al., 2017) as it is a considerable economic investment to make a pilot happen. On top of these, a pilot program organized by a single employer, hence catering to a more heterogenous population is non-existent to the best knowledge of the author. A heterogenous population might provide better analysis as non-behavioral factors could have a lower standard deviation, and hence less effective on the intention. Hence, the choice of the TU Delft pilot as the case study offers conditions that can produce interesting results for science.

Moreover, as can be seen from Table 1, behavioral components of e-bike usage were not explored as often, especially not in pilot-focused research. Exploring the behavioral process of university employees and students in the Netherlands for e-biking as a habit can carry scientific knowledge further. Especially as in the Netherlands there are less structural barriers: the well-developed cycling infrastructure, the acceptance and the know-how of cycling in the society, flatness of the terrain, the safety of the streets, availability of parking facilities and shower and similar. These make exploring of behavioral factors easier as a barrier to e-cycle becomes lower. The outcomes of the investigation of behavioral factors are also useful for policy-makers. As intervention strategies such as subsidies or marketing campaigns are faster to implement than structural changes, they can induce faster changes. The effectiveness of these are yet to be assessed, but still, as these projects take place, as mentioned in E-Bicycles to Increase Cycling, policy-makers can benefit from the insights of this research. This can, in return, help a larger proportion of the population to e-bike instead of drive. Congestion on roads, CO_2 emissions could be reduced, and health benefits can be incurred. Hence, the topic choice will build on top of existing research to produce knowledge that can be useful for future researchers.

In order to explore the behaviour of e-bike adaptation for commute scientifically, a research lens is necessary. This way, the behavioral components can be analyzed properly. Hence, theory as a research lens is necessary. Without a theory, it becomes impossible to measure factors that relate to behaviour and to define them.

2.3 Research Lens

In previous e-bike research, namely by Fyhri et al. (2017) and Haustein and Møller (2016), such a theory was used: TPB. They have used the theory to explain patterns in e-bike usage in combination with other theories and have found significant results. Similarly, it has been used to explain other types of changes in transportation behaviour as well, of which will be explored in depth in the upcoming parts. This section will first explain the TPB, its suitability to the pilot program, and its limitations. The next chapter, Research Methodology, will focus on research methodologies chosen to deal with these.

2.3.1 Theory of Planned Behavior

The main research question, *what explains the adoption of e-bikes as the daily commute?* aims to investigate changes in behavior and adoption of new habits. As there are two blocks of e-bike participants, around 200 individuals, that will be joining the pilot, the possibilities are broad to collect quantitative and qualitative data. To explain the changes in travel behaviour, a theory that relates to human psychology and behavioral sciences would be suitable. The theory should allow for qualitative evaluation of quantitative aspects of human behavior as well. This way, behavioral factors that affect e-cycling could be identified, measured, and compared with each other. The TPB is an expendable model that has been developed by Ajzen (1991), and it has been widely used and validated by numerous researches. Ajzen (1991) points out that behavior is affected by intentions and perceived behavioral control, which refers to one's believes about their control over their own behavior. In his model (Ajzen, 1991), the following components are mentioned, and the model can be visualized as follows in Figure 1: Theory of Planned Behaviour (Ajzen, 1991):

1. Attitude(s) toward the Behavior: the degree of positive/negative approach one person has to the behavior.
2. Subjective Norm(s) (SN): perceptions of the behavior which is affected by the positive or negative judgement of significant others.
3. Perceived Behavioral Control (PBC): perception about the ease of the behavior.
4. Intention(s): intention to perform the behavior.
5. Behavior (B)

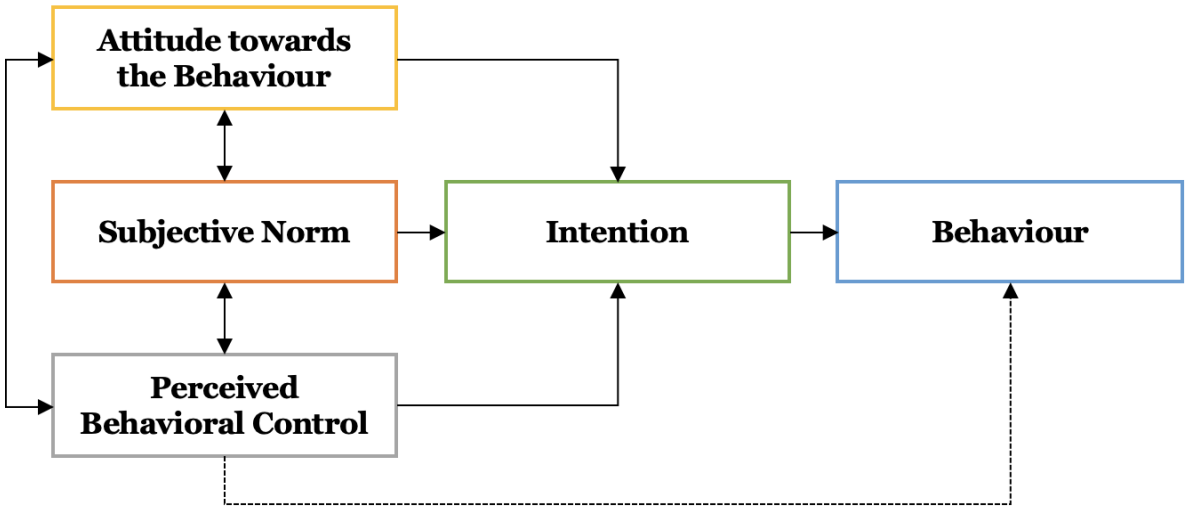


Figure 1: Theory of Planned Behaviour (Ajzen, 1991)

The theory has been extended with the addition of habits as a component for car use (Verplanken, Aarts, Van Knippenberg, & Moonen, 1998) and the experiment yielded that habits play a role in behaviour as well. As mentioned before, numerous travel

behaviour research has used TPB and the habit-extended TPB (Anable, 2005a; Bamberg, Ajzen, & Schmidt, 2010; Bamberg & Schmidt, 2003; Haustein & Hunecke, 2007; Heath & Gifford, 2002; Lois, Moriano, & Rondinella, 2015). Similar to these researches, a conceptual model of how different components interact could be drawn. The next section aims to give examples of TPB's application to mobility behaviour. Before continuing with TPB, another important assumption of this thesis is that the employees are going to be accepted as homogeneous: sociodemographic differences will be disregarded, and their behavior will be considered without the effect of these.

2.3.2 Suitability of Theory of Planned Behaviour

The previous literature supports the fact that TPB can be used for the case on hand. First, as mentioned before, several previous e-bike research has used TPB, namely by Fyhri et al. (2017) and Haustein and Møller (2016) in combination with other theories. Second, TPB has been used in mobility behaviour research. An overview of the literature that relates to the usage of TPB in a mobility related context can be found below in Table 2. This overview presents the specific topics, the extended models used, and results to decide which one will be used. Next to that, research methodologies used, and data analysis methods are presented as well. This will be elaborated on in the upcoming sections. As can be seen in Table 2, TPB offers great opportunities for travel behaviour. The result section in Table 2 illustrated which extensions to the model has been validated. The habit was found to be sometimes effective, and hence is included in the conceptual model as well. Another reason to include is that pilot requires cycling only twice a week, and relation between frequency of cycling during the pilot and the intention to buy an e-bike can be present. Moreover, if some participants already cycled to work sometimes, it could be that e-bike breaks the barriers that stopped them from cycling more often.

Second, existing literature on e-bikes has detected behavioral factors that could be interpreted in the TPB. This shows that TPB might be able to explain the modular change in commute transport behaviour to e-bikes. Just to elaborate on the findings that are summarized in Table 1: Summary of Literature on E-Bikes, using a range of different theories to explain different aspects of e-bike adoption, components of TPB were included in the research: attitudes, SN, PBC, and habits. First, attitudes towards e-bikes including prior experience and how people perceive them was explored in numerous studies (Allemann & Raubal, 2015; An et al., 2013; Arsenio et al., 2017a; de Kruijf, Ettema, & Dijst, 2018; de Kruijf, Ettema, Kamphuis, et al., 2018; Fyhri et al., 2017; Haustein & Møller, 2016; Ling et al., 2017; Simsekoglu & Klöckner, 2019a, 2019b). Second, norms about the environment and personal norms are included in research (Behrendt, 2018; Fishman & Cherry, 2015; Plazier et al., 2017b; Popovich et al., 2013; Salmeron-Manzano & Manzano-Agugliaro, 2018; Seebauer, 2015; Simsekoglu & Klöckner, 2019b; Wolf & Seebauer, 2014). The norms included in research are generally injunctive norms, so what people perceive what is expected of

them in the society and is rewarded or punished with approval or disapproval (Cialdini, Reno, & Kallgren, 1990). Travel-focused TPB, as is presented in Table 2: Summary of Literature on Theory of Planned Behavior's Application to Mobility Behaviour also uses descriptive norms, so how other members of the society actually behave (Cialdini et al., 1990). In this research, subjective norms, how people's behaviour is valued by their significant others (Ajzen, 1991) will be used. As SN contains aspects of the injunctive and descriptive norms as well, this is suitable.

Third, when it comes to PBC, only one research contains it as "facility satisfaction"(Astegiano et al., 2015) which could be counted as PBC as it might mean that people need to be satisfied with facilities to use the e-bikes. However, many other factors explored could be incorporated into PBC. For example, household location (Wolf & Seebauer, 2014), vehicle ownership (Cherry et al., 2016) or trip purpose (Plazier et al., 2017a) could influence people's perception of the ease of behaviour, and hence could be counted as PBC. Lastly, cycling or e-cycling related habits were explored often (Cairns et al., 2017; Collado et al., 2014; Fyhri & Fearnley, 2015; Haustein & Møller, 2016; Leger et al., 2019; Plazier et al., 2017a). Indeed, the suitability of these factors to the TPB, and subsequently to the case on hand can be found in Table 12: Similarities with Previous Research on E-Bikes in Coherence with Previous Research.

In short, findings of previous research were used to determine sub-factors to build an extended TPB conceptual model to explain the adoption of e-bikes for the daily commute. To the best of knowledge of the author, this will be the first-time habit-extended TPB is used on its own to explain behavioral factors behind adapting e-biking as a habit which makes the thesis unique in the research field. It is also different than the findings mentioned above as they perceive the behaviour as dependent on external factors and hence not controllable by policy-makers without changing these factors, which require long term investments. This research aims to look at how people perceive their environment and how this effects their behaviour. Policy-makers can look at these insights to build short-term strategies to change these perceptions, which makes the research topic valuable. However, there are also certain limitations of TPB.

2.3.3 Limitations of the Theory of Planned Behaviour

TPB brings certain limitations. Sniehotta, Presseau and Araújo-Soares (2014) report some of these. First, the disregard of irrational decisions, or the effect of subconscious on decisions (Sheeran, Gollwitzer, & Bargh, 2012). Second, it fails to explain variance in behavior to a full extend (McEachan, Conner, Taylor, & Lawton, 2011). Third, that is lacking in explanations when intentions fail to turn into behaviour (Orbell & Sheeran, 1998). Ajzen (2015) responds to this criticism by underlining that some concerns, such as irrational decisions and intention-behaviour gap, have been

answered in his work. Moreover, he communicates that the lack of full explanation in behaviour can stem from the limitations in the number of factors included in the final models. Specifically, he says TPB is good in interventions where people have already intentions to perform the behaviour however do not, which is a good fit to the case on hand as people already have the intention to participate in the pilot but were not e-biking before.

2.3.4 Resulting Conceptual Model

Using the outcomes of the existing literature as can be seen in Table 1: Summary of Literature on E-Bikes and Table 2: Summary of Literature on Theory of Planned Behavior's Application to Mobility Behaviour, the following conceptual model, inspired by Verplanken et al.'s (1998) habit-extended TPB was built to be used for the case on hand as can be seen in Figure 2: Conceptual Model for E-Bike Adaptation for Daily Commute. As Fishbein and Ajzen (2010) suggest the behaviour must be measurable, "buying an e-bike for commuting to work" was used instead of "adapting e-biking as the daily commute" as the latter is a complex behaviour and needs measurement in a longitudinal study. For the sake of measurement constraint, it would be assumed that people who buy an e-bike do adapt it as a way of commute.

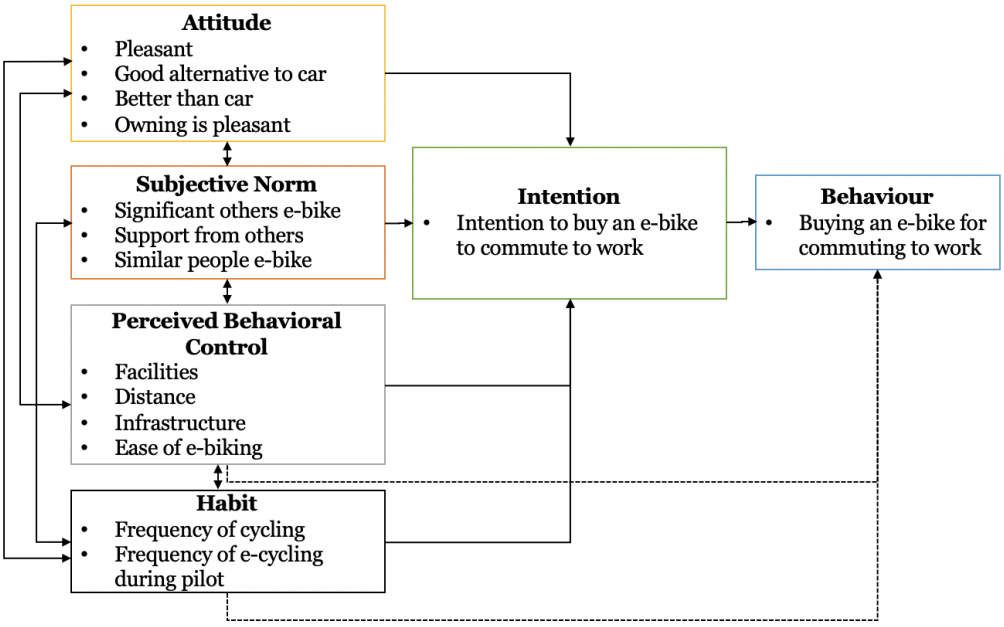


Figure 2: Conceptual Model for E-Bike Adaptation for Daily Commute

The sub-components of this model were determined in correspondence with the research methodology, which is explained in detail in the upcoming chapter, in Developing Exit Survey. In order to estimate, validate, and correct this model, adequate research methodologies are a must. The existing literature was used to make choices. The next chapter, Research Methodology, begins with explaining how this was done and how existing knowledge was fitted into the case on hand.

Table 2: Summary of Literature on Theory of Planned Behavior's Application to Mobility Behaviour

Author	Topic	Method	Analysis	Components	Results
(Bamberg & Schmidt, 2003)	Car use of students	Survey (Likert-scale)	Simultaneous Factor Analysis	A, SN, BC, I, B, Behavioral beliefs, Normative beliefs, Control beliefs	TPB validated
(Bamberg et al., 2010)	Prepaid bus ticket's ability to change travel behaviour	Survey (Likert-scale), long term study	SEM	A, SN, PBC, I, Past behaviour, B	TPB validated, Past behaviour not really effective
(Anable, 2005b)	Travel behaviour segments	Survey (Likert-scale)	Factor analysis	Moral norm, environmental attitudes and knowledge, PBC, behavioral norm, habit	TPB, especially attitudes, used to segment the market
(De Groot & Steg, 2007)	Intention to use park-and-ride facility	Survey (Likert-scale)	Correlation coefficients between components	A, SN, PBC, I, egoistic & altruistic & biospheric concerns	TPB confirmed, only environmental concerns found related
(Verplanken et al., 1998)	Change in car use	Survey + travel diary	Regression	A, SN, PBC, I, habits	Intention-behaviour relation stronger when habit is weak
(Heath & Gifford, 2002)	Change in bus ridership of students after acquiring a bus pass	Survey (Likert-scale). Two phases: prior and post bus pass	Principal component analysis + hierarchical multiple regression analysis, paired-sample t-tests	A, SN, PBC, I, descriptive norm, moral norm, value orientation, car use awareness & responsibility	TPB validated + interaction between PBC & I improved prediction, descriptive norm related
(Haustein & Hunecke, 2007)	Change to motorized transport due to perceived mobility necessities	Survey (Likert-scale) + in-depth interviews	SEM + regression analysis	A, SN, PBC, I, Perceived mobility necessities	TPB extended with PMN validated
(Ajzen, Joyce, Sheikh, & Cote, 2011)	Role of information accuracy in the TPB	Comparison of four studies using TPB with each other	Logistic regression, correlation	TPB + knowledge on given areas	TPB validated, knowledge on the area irrelevant
(Lois et al., 2015)	Intention for bicycle commuting	Survey	Confirmatory factor analysis + SEM	TPB + social identity (identify as a cyclist)	TPB + social identity validated
(Ajzen, 1991)	Theory of Planned Behaviour	Using various research that supports TPB	Multiple correlation, SEM	TPB	TPB validated

(Donald, Cooper, & Conchie, 2014)	Extended TPB for transport mode choice	Survey	Confirmatory factor analysis, SEM	TPB, moral norm, descriptive norm, subjective norm, environmental concern, habit	TPB validated, habit also effective, additional variables vary according to transportation mode
(Bamberg et al., 2010)	Effects of an intervention: prepaid bus ticket for students	Two survey s (Likert-scale): post and pre intervention	SEM	TPB	TPB validated

3 Research Methodology

As just mentioned, existing literature was used to choose and support adequate research methodologies for research sub-questions, and hence was used as a research methodology as well. The details of the research methodologies applied will be presented in this chapter as well.

3.1 Choice of Specific Research Methodologies

A conceptual model for the case on hand has been drawn, as can be seen in Figure 2: Conceptual Model for E-Bike Adaptation for Daily Commute using the outcomes of prior research. This conceptual model needs validation. As can be seen from Table 2, for TPB, surveying is used widely to collect data and quantitatively estimate the conceptual model (Ajzen, 1991; Anable, 2005a; Guell, Panter, Jones, & Ogilvie, 2012; Heath & Gifford, 2002; Lois et al., 2015). The data has been analyzed with different methods. Hankins, French and Horne (2000) suggest using multiple linear regression or structural equation modelling (SEM) in their statistical guidelines for TPB. SEM has been used for e-bikes already (Kroesen, 2017). Both of these methodologies could be suitable for the research on hand, and both were tried along with descriptive statistics. Further elaboration on the results will be provided in the Results chapter.

However, surveying carries its own limitations. Firstly, there could be errors in the conceptual model. This will lead to incomplete analysis and could lead to unreliable results, so further validation is needed. Second, surveying inherently carries issues such as self-selection bias or incorrect reporting. It could be that people are not honest in answering or simply not able to answer correctly, especially as actual behaviour, buying the e-bike requires a relatively big investment. Third, as the first phase of the pilot project ends in May, there is not a possibility of testing long-term adoption of the behavior. As the participants would now pay for the e-bike themselves and the weather will be worse, this could yield different results than initially observed. Fourth, the generalizability of the pilot is questionable as the general population is quite different from university employees demographically. Fifth, an in-depth understanding of issues is not possible via Likert-scale surveys as people are not able to give their reasoning.

Triangulation will be used to address these problems. Triangulation refers to the usage of multiple data sources, collection, and analysis to deal with the limitations of using single data collection and analysis methods (Rothbauer, 2008). This way, the outcomes of the research can be validated in two ways.

Previous e-bike research have already used interviews as the main research method or to support their survey results (Cairns et al., 2017; Dill & Rose, 2012; Edge et al., 2018; Jones et al., 2016; Lois et al., 2015; Plazier et al., 2017b, 2017a; Popovich et al., 2013). In specific, as the scope of the topic hand is known but to explore the factors, it is best to ask open-ended questions (Ayres, 2008) and hence semi-structured interviews were chosen to address different limitations of surveying. First, they will allow addressing factors that were accidentally or practically not included in the conceptual model for the survey. Second, as they will be conducted face-to-face, they allow for better and in-depth understanding of the issues. Third, by including employees who have already been e-biking, so not participating in the pilot, long-term adoption habits can be explored as well.

The semi-structured interviews also carry certain limitations. First of all, the lack of anonymity can cause people to answer in a dishonest way. However, as the topic on hand is not sensitive, the effect is minimal. Another issue is the language skills: as the interviewee does not speak the native tongue in the country, people's ability to express themselves can be limited. Another limitation of the whole methodology is that it deals with human subjects, and hence, ethical concerns become more relevant. Permission from TU Delft's Human Research Ethics Committee was asked, and the thesis was approved.

To answer the main research question, theory and corresponding methodologies have been identified. To divide the main question into manageable parts by the methodologies, the sub-questions were identified, as provided in Chapter 1, Corresponding Sub-Questions. These sub-methodologies aim to use data to produce outcomes that can be used as an input to subsequent parts. As triangulation is used, not all build on top of each other. The data requirements and collection methods will be presented in this sub-chapter as well. The first phase refers to the qualitative part of the research.

3.2 Phase I: Qualitative Research

3.2.1 Choice of Interview Questions

In order to answer the main research question using a semi-structured interview, the following two sub-questions were determined. These aim to investigate the barriers, and facilitators e-bikers have towards e-bikes. In order to take a look into long-term adaptation, interviews were also conducted with those who cycle already. The following two sub-questions have been used as the basis of the interviews:

[1] *What are the barriers and facilitators that relate to e-biking as a commute in TU Delft employees in general?*

[2] *What are the barriers and facilitators that relate to e-biking as a commute in TU Delft employees that join the e-bike pilot?*

Using questions that will trigger extensive answers are necessary for semi-structured interviews. As TPB was chosen as the basis for looking into adopting e-bike as a commute, the questions were assembled to explore different components of the habit-extended TPB, namely AttB (attitudes toward the behaviour), SN (subjective norms), PBC (perceived behavioral control), H (habits), I (intentions) and B (behaviour). Here, the behaviour is determined as "buying an e-bike for commuting to work," so the frequency of e-bike usage is not of concern. Nevertheless, this was included as it can perhaps give insight about habits. Moreover, existing literature was used to determine further potential barriers or facilitators and ask about them: societal benefits, facilities and infrastructure and weather (Arsenio et al., 2017a; Astegiano et al., 2015; Behrendt, 2018; de Kruijf, Ettema, & Dijst, 2018; Dill & Rose, 2012; Edge et al., 2018; Jones et al., 2016; Ling et al., 2017; Lopez et al., 2017; Plazier et al., 2017b, 2017a, 2018; Popovich et al., 2013; Salmeron-Manzano & Manzano-Agugliaro, 2018; Seebauer, 2015; Simsekoglu & Klöckner, 2019a, 2019b; Weiss et al., 2015; Wolf & Seebauer, 2014). These affect PBC and attitude. Using this theoretical base, questions were constructed, as can be seen in Appendix B: Interview Questions. Separate questions were made for pilot participants and current e-bikers. The component they refer to is indicated on the parenthesis next to them.

3.2.2 Interview Methodology

To give a comprehensive summary of the interview procedure, consolidated criteria for reporting qualitative studies (Tong, Sainsbury, & Craig, 2018) has been used, as can be seen below in Table 14: Criteria for Reporting Interviews in Appendix C: Interview Reporting. These sum up the details of the interviews that are relevant for results. Moreover, some questions were skipped, or follow-up questions were asked according to the flow of the interviews.

To reach to a broad range of interviewees, the pilot program, personal connections and flyers were used. CRE sent e-mail to some of the pilot participants to ask whether they would be interested in helping the interviews. Those that were e-mailed were chosen by the author to get a more "diverse" group, in terms of age and gender. However, not everyone was enthusiastic. Those that were eventually interviewed were usually the staff rather than the academic personnel, possibly as the faculty is busier with work. Nevertheless, the background details of the interviewees were not collected for confidentiality. Moreover, as the population of TU Delft is assumed to be homogenous, it is not relevant for the research on hand. For current e-bikers, people were found via

personal connections of the author. E-mails to staff and faculty that she had a personal connection with were sent to ask whether they had colleagues that e-cycled to work. As this can lead to a snowball effect, to get more random participants, flyers were hanged to locked bicycle parking facilities on the campus.

Prior to the interviews, the consent of the participants was taken, and they were informed about the goal of the research. The interviews were recorded with an application called JustPressRecord, that allows them to be transcribed automatically. The transcriptions were corrected and sent to the interviewees for approval. After the approvals, the recordings were deleted, and the transcripts were used for further purposes as the participants were informed. Some were anonymized as it was preferred.

After the transcripts were finalized, a qualitative data analysis software ATLAS.ti was used for coding the interviews. Using the guidance of Boeije (2009), the following methodology steps were followed:

1. Open-coding: The transcripts were read completely. When re-reading, quotations that were found relevant for presenting end results were summarized with short texts.
2. Axial coding: Single codes were assigned to suitable components of TPB. Some additional "components" were created, such as "problems with the pilot" to include results that are relevant to research but not under the umbrella of TPB. This was easily done as ATLAS.ti allows "code families" where it is possible to assign codes to families.
3. Selective coding: Using these families, components of TPB were divided further into specific factors that go under those. For example, PBC was given "weather" as a factor. So, separate codes were assigned to these specific factors, which became families. Super families were created to represent components of TPB. In this step, some open codes were merged as they represented concepts that could be considered similar.
4. Saturation analysis: The codes were renamed to represent which component group they belonged into. This list was exported with codes and the transcripts they got tagged in. Using Excel, a saturation analysis was conducted to see whether data collection became "saturated." With saturation, what is aimed is that with each additional interview, less and less new codes will be acquired. When there are not many new codes occurring, it is meant that data collection may come to an end. This was done separately for interviews with pilot participants and with those who already use an e-bike.
5. Iterations: The first four steps were repeated again for new interviews until the saturation is acquired. Open coding was used only when new concepts appeared.

This process leaded to 11 interviews from both pilot participants and current e-bikers. The result of the saturation analysis can be found below in Table 3 and Table 4. In Table 15: Interview Details in Appendix C: Interview Reporting, the names of the interviews, their chronological number, and the group they belong to can be found. The results will be presented in the Results. The second phase of the study, the quantitative part is presented below.

Table 3: Saturation of Current E-Biker Interviews

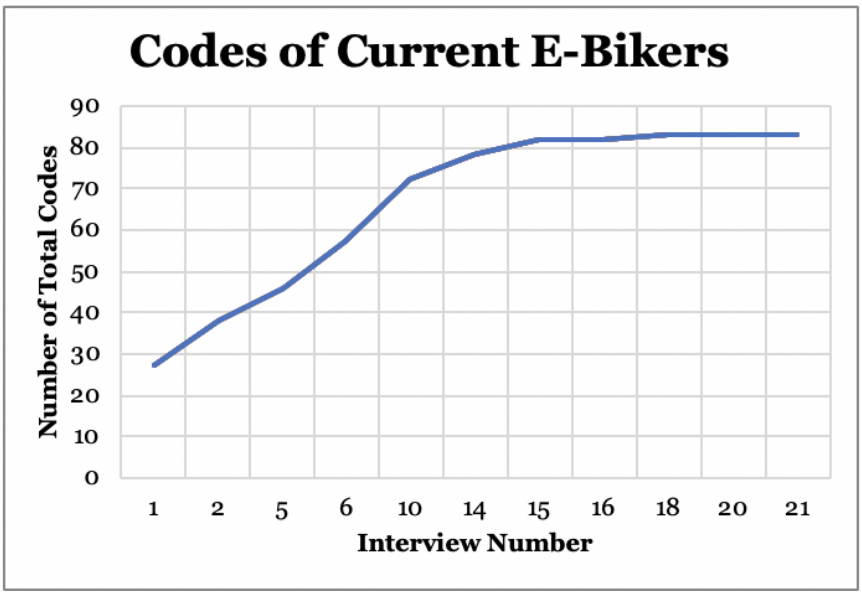
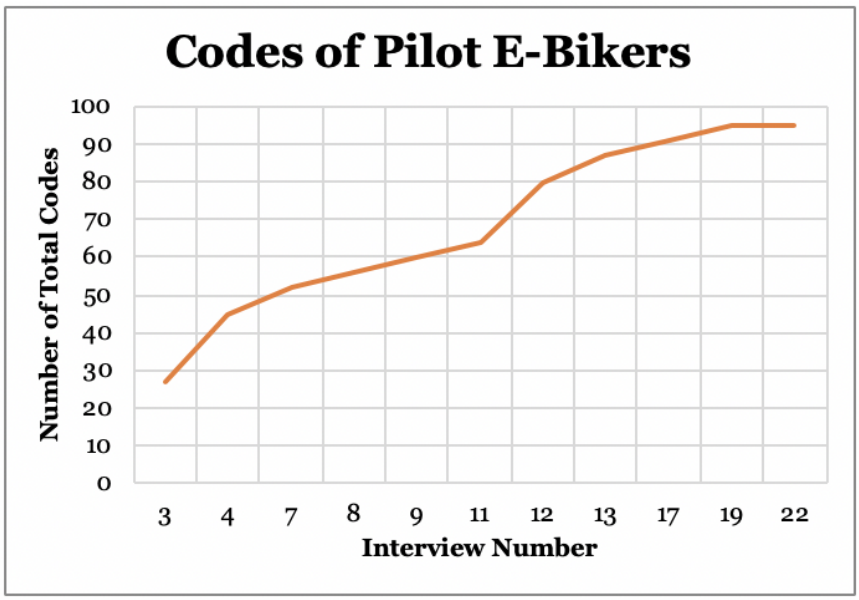


Table 4: Saturation of Pilot E-Biker Interviews



3.3 Phase II: Quantitative Research

3.3.1 Developing Entrance Survey

The surveys are the main methodology used for TPB research, as can be seen in Table 2. Luckily, one of the conditions of joining the pilot is filling out surveys prior and post the trial. This can ensure a high response rate from participants. With this part, the main aim was to estimate a conceptual model of adopting e-bike as a commute. In order to assess how successful, the pilot is, it was also aimed to measure the changes in the levels of components of TPB. However, due to timing issues, there was not a possibility to change the entrance surveys of 1st block participants. Similarly, only the results of the exit survey of the 1st block were available by the time of the Greenlight. Hence, next to the behavioral factors, the characteristics of e-bike pilot participants were explored as well as that information was already available. This is also beneficial to compare the pilot participants to the general TU Delft population and be able to speculate indications for the general Dutch population. The following two research sub-questions were identified for the quantitative part of the study:

[3] *What are the characteristics of e-bike pilot participants?*

[4] *What is a conceptual model that explains how people choose to adopt the habit of e-cycling to work by joining an e-bike pilot?*

In order to get results, there is a need for survey questions. As the thesis project is conducted under the Campus and Real Estate department's project on alternative mobility, there are certain limitations that affect the number and content of the survey questions. Due to the department's needs and the needs of a research group also involved in research regarding e-bike mobility, they need to ask questions as well, so the number of questions that could be asked are limited for the author. Moreover, due to timing, as mentioned before, changes were not possible for all surveys, and results were not ready on time. Also, as the project is funded by the university, their approval was required, which created certain limitations that will be explained in the upcoming parts.

So, for the questions that correspond to the 3rd research question, characteristics, were already present before the author started the research. They were mainly asked in the entrance surveys. For the entrance survey of the second block, the question regarding the role in the university was extended with the option of Ph.D. as well, adding up to the choices of student and employee. This was extended as the interviews have already started, and it was observed that as PhDs do not know if they will be employed at the university eventually, they are less willing to invest in an e-bike. They were not sure if their next job will be in the distance, they can e-cycle to. Details will follow regarding characteristic findings.

In order to make the survey questions, Fishbein and Ajzen (2011)'s guidelines were used. Initially, 7-point Likert scales were planned to be used as they provide a good balance between the reliability of answers and ease of use by the participants (Preston & Colman, 2000). However, Dorine Duives, the other researcher that uses the pilot and the advisor of the CRE for the pilot, suggested that in travel-related research 5-point and 7-point Likert scales do not really differ in results, and respondent, preference is towards 5-point scales (personal communication, April 18, 2019). Hence, 5-point scales were used. The survey questions were controlled by Jan Anne Annema and the second supervisor, Gerdien de Vries (personal communication, April 15, 2019). Afterwards, suggestions were sent to Dorine Duives, and Sandra Hueber, the external supervisor and the pilot organizer. After drafting, control and updates, the questions were finalized. The survey questions were translated to Dutch by the CRE.

For Block 2, there was only space for four more questions. The original aim of entrance surveys for research on hand was to assess the initial levels of different components of TPB and see if the pilot worked to improve them or not. Hence, previous research has been used to determine what factors could be the most important to ask about them. Moreover, as the interview process has already begun, insights from them were also present.

The first component to be included is PBC. As pilot participants already want to use the e-bike, results affecting the frequency of cycling would be more interesting to use. As asking about the affordability is not favorable for the Human Resources department not to create false expectations, the weather and the e-bike connection (reflecting both infrastructure and distance) is chosen as the determinant. Another reason to choose weather is to measure how much people's perception of weather's effect change over the time of the pilot. Moreover, in several e-bike research weather (Edge et al., 2018; Lopez et al., 2017; Simsekoglu & Klöckner, 2019a), infrastructure (Edge et al., 2018; Jones et al., 2016; Leger et al., 2019; Wolf & Seebauer, 2014) and distance (Collado et al., 2014; de Kruijf, Ettema, Kamphuis, et al., 2018; Fyhri & Fearnley, 2015; Plazier et al., 2017a; Wolf & Seebauer, 2014) were found to be an effective determinant.

At first, the question was structured as asking about bad weather. However, Dorine Duives and Sandra Hueber elaborated on differences between rainy weather and windy weather (personal communication, April 18, 2019), so the final questions were determined to be: "To what extend do you agree with the following statement: I expect that I can e-bike to and from work when it is windy" and "To what extend do you agree with the following statement: I expect that I can e-bike to and from work when it is raining". The answers' range is disagreed, slightly disagree, neither disagree nor agree, slightly agree and agree. This range is only valid for this question due to an error. In other questions and also in Dutch, the range is strongly disagree, disagree, neither

agree nor disagree, agree, and strongly agree. The number of English respondents is not high as can be seen in Qualitative Results

Starting Survey Results, so this is not a big problem. The Dutch translations can be found in Appendix D: Survey Questions, Figure 7. A question regarding the infrastructure was asked as "To what extend do you agree with the following statement: There is a good (e-)cycle route between my house and campus." Translation can be found in Appendix D: Survey Questions, Figure 8.

The second component is attitudes. To capture the overall attitudes towards e-biking as a commute, the question "To what extend do you agree with the following statement: I expect commuting by an e-bike to and from work to be a good alternative for me" was included in the questionnaire. The translation is in Appendix D: Survey Questions, Figure 9. The third component is the intention to buy an e-bike to commute to work, which was measured by "Did you already consider switching to an e-bike before hearing about the pilot," of which the translation can be found in Appendix D: Survey Questions, Figure 10. There was also already a question about the current means of transport modes used, which included cycling, e-cycling, and driving as well. This was used to measure habit. The structure of the question and the translation can be found in Appendix D: Survey Questions, Figure 11, and Figure 12. The possibility for exit surveys was broader, as can be seen below.

3.3.2 Developing Exit Survey

The possibility to add questions to the end survey was broader. With the exit survey, Likert-scale questions were included that relate to the habit-extended TPB as suggested by Bamberg and Schmidt (2003). These questions were checked by the CRE team, HR department of TU Delft and Dorine Duives. The number of these questions were restricted due to several reasons. First, lengthy surveys cause people to get tired and give incorrect answers. Second, a lengthy survey might mean that people will not be willing to respond in follow-up surveys that will be conducted by CRE. Third, some questions were not allowed by the HR department as they might lead to incorrect expectations by the employees. Hence, the conceptual model in Figure 2: Conceptual Model for E-Bike Adaptation for Daily Commute was built in correspondence to these limitations. The sub-components present there were turned into measurable components as can be seen in Figure 3: Modified Conceptual Model. The way these were made into questions will be explained right after. However, some clarification is needed for some sub-components. First, in PBC, "ease of e-biking" was turned into "twice a week easy" as the pilot required participants to bike twice a week. Second, "facilities" in PBC was turned into TU Delft facilities as the answer to this can be useful for TU Delft. The facilities at home locations could be unsuitable as well, but as that is not of the university's interest, this was not included. Third, "infrastructure" was

adapted as “there is a good e-bike connection” for clarity. Fourth, for habit, to again make it more relating to the pilot, “using an e-bike for other activities” outside commute and “coming more than expected” was included to see whether people were able to integrate e-bikes into their daily rhythms. Fifth, different questions to measure intention was present, as will be explained in the following parts. Lastly, the behaviour was excluded from the final model as the information is not present to the author.

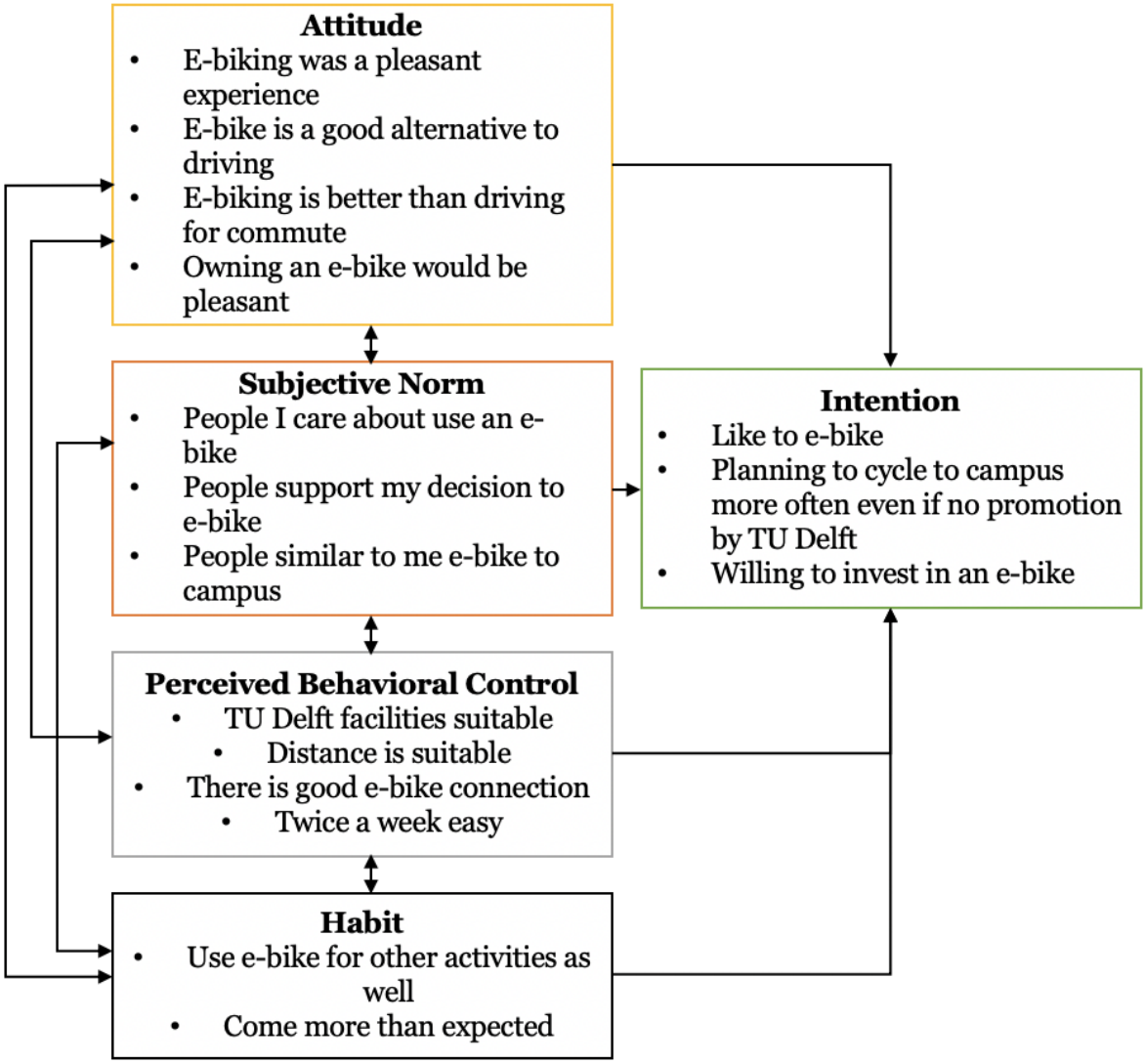


Figure 3: Modified Conceptual Model

As the information on whether people buy the e-bike or not is not available to the researcher, it is not possible to measure the behaviour. Some sub-components were ignored at the end, which will be explained in the upcoming parts. The first measurement refers to intentions. Three different questions were asked in the final survey. A limitation here is that the author also wanted to ask questions whether people intended to use e-bikes if there was an option for leasing or subsidy. However, the Human Resources (HR) department did not want to create false expectations. So, the finalized questions were first “Are you planning to cycle to campus more often,

even though TU Delft does not make the use of an e-bike more attractive" with options yes, maybe and no. The second was, "To what extend do you agree with the following statement: I am willing to invest in an (e-)bike as an alternative for traveling by car from home to campus." The third was "Would you like to continue to use the e-bike for travelling to campus," with a range from no, yes on average once a month, yes on average once a week and yes on average 2-5 times a week. With this question, in the Dutch version a fifth option, more than 5 times a week was included as well. Again, as the number of English respondents is limited, this can be ignored. The Dutch versions can be found in Appendix D: Survey Questions, respectively Figure 13, Figure 14, and Figure 15.

Attitudes towards e-bikes is also an important part of TPB. As e-bikes replaced cars in this case, attitudes towards e-bikes compared to cars were also asked. These aimed to capture people's perceptions towards owning an e-bike. Participants were asked to the extend they agree with the following statements: "E-biking to and from the campus was overall a pleasant experience," "E-biking is better than driving my car for commuting to and from campus," "Owning an e-bike for commuting to and from campus would be pleasant." "The e-bike is a good alternative for driving by car to campus" was also asked, possibly due to an error, so it was featured twice. Questions in Dutch could be found in Appendix D: Survey Questions, Figure 19, and Figure 20. To measure how the pilot affected people's attitudes, the following questions were asked. "Testing the e-bike … met my expectations" with the scale did not, somewhat, fully, more than. "Testing the e-bike … has altered my thought about the e-bike" and "Testing the e-bike has … altered my thought about using the car for my travel to the campus" with the scale much more negative, slightly negative, not, slightly positive, much more positive. Again, the language of the scale is different than of other questions, but the limited number of answers makes it less significant. Dutch versions are in Appendix D: Survey Questions, Figure 21, Figure 22, and Figure 23.

Subjective norm, what people perceive what other's expectations of them are were measured with the degree people agree with the following questions. "People I care about use an e-bike to travel to and from campus," "People I care about would support my decision to buy an e-bike to commute to and from campus" and "People similar to me buy an e-bike to use for commuting to and from work/study." Translations are provided in Appendix D: Survey Questions, Figure 24. When it comes to subjective norms, it can influence the intention positively or negatively. In TPB, the perceived norms are what people feel pressured to adhere or not adhere to a certain behaviour (Fishbein & Ajzen, 2010). This could be negative as well as in the Netherlands, e-biking is perceived as something for older people and is considered as lazy (Jones et al., 2016). People might be ashamed to e-bike, or do not consider to use it for the commute as it is not perceived as something for them. Hence, these questions try to assess whether this is valid in the case or not.

Another component of TPB measured is PBC. As the HR department did not allow for questions regarding financials, that aspect was removed. Instead, questions regarding facilities in TU Delft and perceived suitability of distance were asked. These were formulated as follows: "To what extend do you agree with the following statement: Facilities at TU Delft are suitable for me to e-bike to and from the campus" and "To what extend do you agree with the following statement: The distance between the campus and my home is a suitable distance for me to e-bike to and from work/study". Translations can be found in Appendix D: Survey Questions, Figure 16. There were also two questions already present that was used for PBC. These were "To what extend do you agree with the following statement: There is good e-bike connection between my house and the campus" and "How hard or easy was it to use the e-bike twice a week to travel to the campus" (scale: very hard, hard, not hard not easy, easy, very easy). Translations of these are in Appendix D: Survey Questions, Figure 17 and Figure 18.

Lastly, the habit was measured with people's reporting of how much they used the e-bike and whether they used if or non-commute purposes as well. The degree they agreed with the statement "I use my e-bike to perform other activities as well" (Dutch version in Appendix D: Survey Questions, Figure 25) and "Did you come to the campus with the e-bike more often than expected?" (scaled yes, maybe or no) were used. The translation is available in Appendix D: Survey Questions, Figure 26.

Moreover, as from interviews, of which the results will be shared later, it was seen that people got inspired by others to e-bike, people were asked who else has tried their e-bike. Potential answers were their partners, children, other members of the family, friends, colleagues, or no one else. The Dutch version is in Appendix D: Survey Questions, Figure 27.

3.3.3 Entrance Survey Data Collection and Analysis

The data has been collected by CRE using SurveyMonkey. Two separate surveys were made in Dutch and English. In order to present results from entrance surveys, first data had to be cleaned. Data has been merged (Dutch respondents and English respondents) and cleared of false responses regarding location names or similar minor errors. The answers to the TPB part of the survey was converted from text into numeric scales, with lowest scores being set to 1 and highest to 5. If one question had less than 5 possible responses, the answers were scaled between 1 to 5 as well.

To get descriptive statistics, Excel's Pivot function was used. There was a need to get data from external sources as well. Excel Pivot tables have been used to provide descriptive statistics. Statistics about the general TU Delft population has been acquired from the website ("Staff," 2017; "Student Population," 2017). All students have been assumed to be under 24 years old for the convenience of the analysis.

Moreover, while respondents have provided their postal code, the distance from their home to work was missing. Hence, Google Directions API ("Web Services - Directions API - Get Started," n.d.) was used to acquire driving distance, cycling distance, driving time, and cycling time. Here, TU Delft's general postcode was assumed workplace location, with postcode 2628CD. The results will be provided in the upcoming chapter.

3.3.4 Exit Survey Data Collection and Analysis

In order to quantify the components of TPB and their interaction, there is a need for a statistical approach. Hankins et al. (2000) state that multiple linear regression or structural equation modelling (SEM) could be used in this means, and mention that SEM is superior as it is able to assess how successful items attributed to components are in measuring them as well. Several papers have used SEM for estimations in cycling research (Kroesen, 2017; Lois et al., 2015; Wolf & Seebauer, 2014). Lecture notes (Molin, 2017) were used as a guide for SEM modeling in IBM SPSS Amos 25. Unfortunately, the model yielded to be inconclusive. Unfortunately, with the limited data size and limitations in the questions, the SEM model was failed to be built for the conceptual model on hand, and hence, it could not be estimated. One potential reason is that the sample size is limited (n=75). Another important missing element is the economic factor in PBC and the effect of the fact that there is no accurate knowledge about whether leasing will be available for people or not. As interviews showed, that was one of the biggest barriers that were present. It is possible that the lack of the economic element prevented the conceptual model from being estimated, as e-bikes are still expensive, and the economic barrier is a big gap. The details of the procedure that relate to the SEM modeling procedure can be found in Appendix E: SEM Procedure. Furthermore, existing questions in the survey that asks about reasons to not to or to adopt e-biking was present. These will be included in the results as well. As SEM yielded to be inconclusive, it was removed from the research as a methodology. The trial of SEM is included in this paper for future researchers: with a larger sample size and a better survey, it could become an adequate model.

Instead, multiple linear regression was used. Again, lecture notes were used as a guide (Molin, 2019). First, false responses were removed from data, and Dutch and English surveys were merged together. Using Excel Pivot Tables, descriptive statistics that relate to TPB-questions are acquired, which can be seen in Results. Then, the data was cleared from empty responses. In order to estimate the model, latent variables (intention, PBC, attitude, SN, and habit) need to be estimated first from the answers to the survey questions. These latent variables serve as the sub-components in the conceptual model provided in Figure 3. To estimate the latent variables, factor analysis is conducted as Molin's (2019) lecture notes suggest.

The details of the data analysis procedure are presented in the next chapter, in Estimation of the Conceptual Model as it makes it easier for the reader to understand the steps with examples. Nevertheless, a summary is provided here for readability. First, the answered questions are assumed to be indicators that will end up being used to construct latent variables. Second, to determine the composition of latent variables, factor analysis for all answers given to the questions, the observed variables, was conducted using IBM SPSS 25. The principal component analysis was used for the analysis as the sample size is limited (n=75). This way, it was possible to identify new groups that are formed from questions, as it was possible that some answers could fit other groups as well. The rotation method used is Varimax, and the rotated component matrix was displayed as well. As a result, 7 components are extracted. Third, some of these components were decided to be used for latent variables, but not all factors were considered for the final latent variables. Fourth, the survey respondent's answers were used to calculate individual scores per latent variable. Fifth, multiple regression analysis of these variables was used to estimate the conceptual model. The details will be presented in the Results.

3.4 Phase III: Implications

While the initial two phases focused more on data collection and analysis, this phase focuses on what it means for the scientific community and society. To deal with the implications of the knowledge produced by the research process, the following question was determined to be studied.

[5] *What are the implications of this research for TU Delft, pilot designers, policy-makers, and science?*

Results from existing literature, three interviews with experts, and results from the first two phases will be combined together to give insights about how people adopt e-biking as a habit and how further facilitation is possible. This way, possible improvements for the program and key insights for future designers could be drawn.

There were three semi-structured interviews with experts that was conducted. The questions were determined according to the expertise area and modified during the interview if needed. These can be found in the interview transcripts in Appendix M: Expert Interviews. Similar to the interviews in the first phase, they were conducted in the expert's office environments. They were informed about the goal of the research, and the interviews were recorded with JustPressRecord. Transcripts were sent to the interviewees, and after their approval, they were included in the research. There was no in-depth data analysis. They were simply used as research input. LinkedIn was used to reach out to the first two experts, Roel Lenoir, and Roman Herzog. Jan Ploeger was

reached out via personal connection of Bert van Wee, the chair of the thesis. The expertise of the interviewees is explained below.

Roel Lenoir is a mobility consultant. He is the partner of 3pm the sustainable mobility company. He is currently working as the "fietspromotor" on the e-bike trial project of Bereikbaar Haaglanden en Rijnland, where people can try an e-bike for two weeks (Bereikbaar Haaglanden en Rijnland, n.d.). Roman Herzog is an intern at the Dutch Cycling Embassy. The original interview was going to be conducted with Mirjam Borsboom, the director of the institution, but due to timing issues, this was not possible. Finally, Jan Ploeger is a program manager in the Province of South Holland and works on the transition to renewables in transportation. The results will be provided in the upcoming chapter.

3.5 Limitations in Research

There are various limitations in the research process itself. First, with the interviews, the level of honesty of participants is debatable. However, in this case, this is limited. Even when the interviewees were given the option to be anonymized, they commonly stated that "they had no secrets," as the topic does not include much personal information. Second, there is a selective bias in interviews: those who agree to do an interview are those who are more enthusiastic about e-bikes. Third, as semi-structured interview questions were based on TPB, they were self-proving in the sense that they trigger answers that would suit the theory on hand. Same applies to the coding methodology followed: it is possible that available data was "overfitted" into TPB. Fourth, as there were only one interviewer and data analyst, it is possible that the responses were nudged towards a direction. Same could apply to the coding procedure as well.

In terms of surveys, the main problem is with sample size. Due to timing issues, only a certain part of pilot participants was able to be included in the survey. Hence, a relatively small sample size (n=75) for TPB was investigated. This sample size is considered somewhere between very poor to poor for factor analysis (Comrey, Lee, & Lee, 2013). Second, people might have felt "obligated" to report that they are more likely to buy an e-bike as they had benefitted freely from the pilot, identified by Fyhri et al. (2017) in a similar pilot study. To tackle this issue, a follow-up survey could be used to see if people really did start e-biking or not. Third, the pilot took place in a good season. When winter comes, people might go back to cars, and this could not be tackled as the thesis project ends in August. Fourth, some translations limitations are present. As mentioned before, some answers were scaled with incorrect wordings. Nevertheless, as the number of responses were limited, this will be ignored for the sake of simplicity. Next chapter aims to present the results and contemplate over them.

4 Results

4.1 Quantitative Results

This section presents the findings of the interviews, grouped according to the factors they refer to and explained. To make it clearer for the reader, Table 5 and Figure 4: has been assembled to give an overview of these results. As both pilot participants and current e-bikers mentioned similar codes, the explanations are provided together. To elaborate on the differences, the full list of codes and how many quotes they had from the respective group is provided in Appendix G: Extensive Code List in Table 17. The transcription of all interviews can be found in Appendix K: Interview Transcripts. All codes and respective quotations can be found in Appendix L: Interview Analysis. The results of the codes are elaborated here, and not all codes are discussed as they are not as significant for answering the research question. However, a list of all codes, the number of quotations and explanation of the quote can be found in Appendix H: Detailed Interview Results. While some codes are presented in their own, some are grouped into broader concepts. The reason this was done is that it was possible to group them. However, this could lead to a loss of meaning. Table 5 is followed by a detailed explanation of the results.

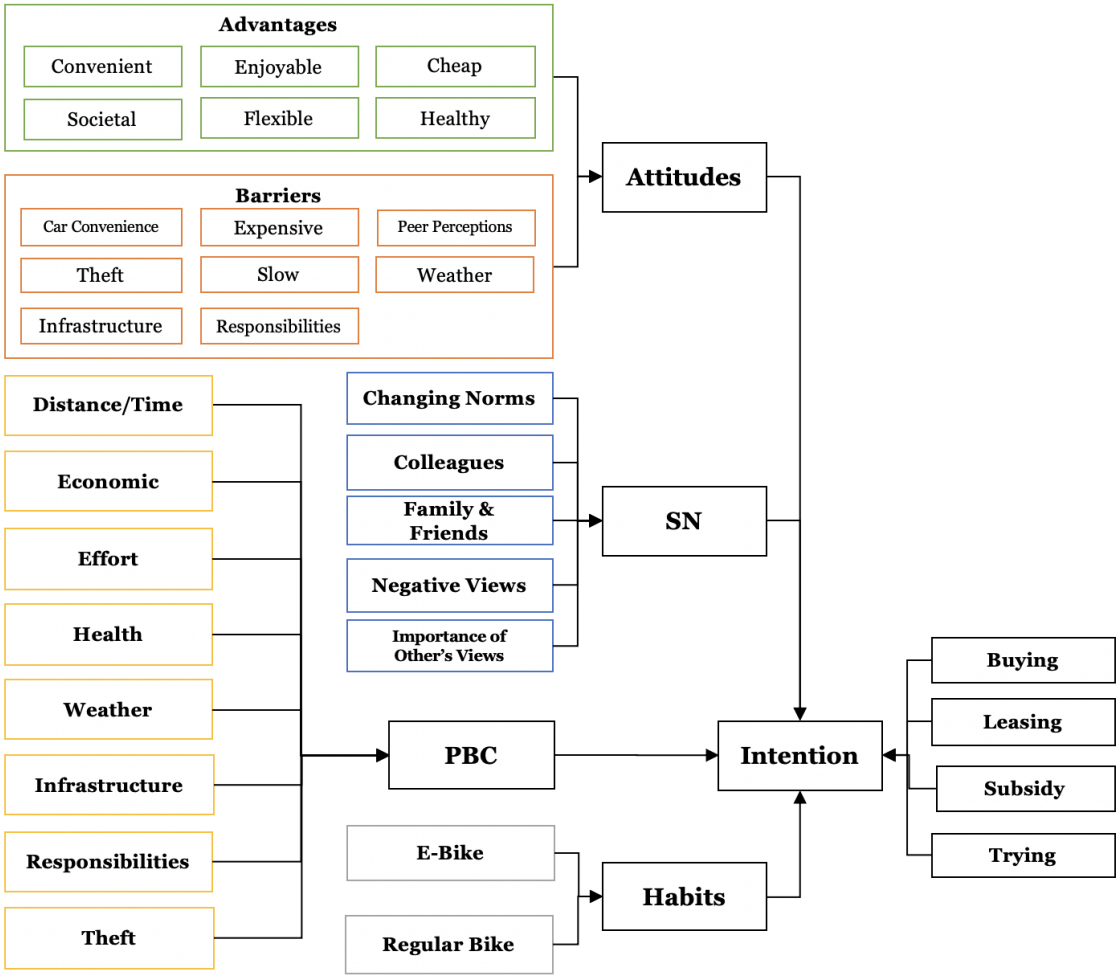


Figure 4: Conceptual Model from Interview Results

Table 5: List of Factors Identified from Interviews

Sub-factor	**# of Quotations**	**Sub-factor Group**
Attitudes - Positive		
Cheaper than alternatives	5	
Not arriving sweaty	12	
Not tiring	16	
Skipping congestion	4	
Faster/same time with other modes	14	
Enjoyment	6	Enjoyment
Liking cycling more than driving	4	
Liking being outside	12	
Flexibility	6	
Weather less negative on e-bike	4	Changing Attitudes
Pilot changes attitudes about e-bikes	4	
Healthy	9	Healthy
Cannot use regular cycle due to health condition	6	
Exercising	9	
Mindfulness	3	
Not driving	10	Societal
Sustainability	7	
Attitudes - Negative		
Needing the car	5	
More expensive than alternatives	12	
Infrastructure	3	
Other responsibilities	15	
Theft concerns	12	Safety Concerns
Locked bicycle parking facilities overcapacity	7	
More dangerous than regular bicycle	11	
Too slow	6	Time/Speed
Distance	10	
Takes too much time	8	
Not cycle in bad weather	6	Weather
Not cycle in cold	3	
Not cycle in rain	14	
Use weather predictions to decide	3	
Willing to cycle in bad weather	7	
Perceived Behavioral Control		
Range anxiety	3	
Subjective Norms		
E-bike is cheating	4	Societal norms
E-bike is for old people	10	
Not caring what others think	5	
Younger generation e-biking too	8	

E-bike is real biking	4	Changing norms
Getting inspired by/inspiring colleagues to e-bike	7	Interactions with Others
Discussing e-biking with colleagues	6	
Knowing people who e-bike before the pilot	7	
Partner buying an e-bike too	4	
Positive support	9	
Habits		
Cycle more often with the e-bike	10	E-bike
Use e-bike only for commute	3	
E-cycle as much as possible	13	
E-cycle for non-commute purposes as well	9	
Already cycle to work before e-bike	10	Regular bike
Use regular bike for shorter distances	6	
Intentions		
Considering e-biking before the pilot	2	
Interest in leasing	5	
Wait for the decision on leasing before buying	3	
Interest in subsidies	4	
Join pilot out of curiosity	4	
Tried an e-bike before	4	

4.1.1 Attitudes

Attitudes towards e-bikes were divided into sub-categories during coding. This was done due to a large number of codes present at the end. Furthermore, as the results can be used in future research independent from the TPB lens, it is good to make it easy for future researchers. These categories are (perceived) advantages, barriers, safety concerns, as well as attitudes that change.

4.1.1.1 Advantages

First, it was observed that e-bikes were perceived as being cheaper than alternatives by some (n=5). The main supporting point mentioned was that e-bikes were a one-time expense whereas cars and public transport need funds in the continuum. There are contradictory quotations as well, which will be mentioned in barriers. Second, a common positive side was convenience. People pointed out factors such as being able to arrive without sweating, getting tired, not being affected by the wind, skipping congestion, saving and being able to predict the time accurately made the e-bike convenient. It is also important to underline convenience was more important for many than societal benefits – a fact that will be explained further. Third, e-bikes were enjoyable for many: skipping traffic, taking over others, preference of cycling over driving, and being outside were why it is fun. Users self-identified as “proud users” and promoted e-bikes to others. Fourth, e-biking was seen as healthy. It made people

cycle more, either by removing some barriers that stand in front of cycling or by helping people with health limitations to remain on the bike. It was a good way to combine exercise and commute in a utilitarian way. Moreover, some said it helped them clear their minds. Lastly, while it was seen more of an additional positive aspect, e-bikers mentioned societal benefits as well. By not taking the car, people recognized they reduced carbon dioxide emissions and congestions and contributed to a more sustainable world.

4.1.1.2 Barriers

Users mentioned barriers that stand in front of buying an e-bike or e-biking less frequently. The first one is the convenience of cars. People thought that they need cars for their responsibilities. For some, they also thought that it was easy to park in the TU Delft terrain, so it made it more attractive. The duties and responsibilities mentioned was the need to carry things, going to the sports after work, grocery shopping and their family responsibilities. Second, contradicting with the responses in the advantages part, it was mentioned 12 times that the e-bikes were too expensive. It was not prioritized in investments. Especially younger people mentioned they would be interested when they have more money. Here, interest in a subsidy scheme by TU Delft was mentioned as well, of which details will be provided in upcoming parts. Third, infrastructure was still a barrier, even in the Netherlands, but rarely. Only one respondent pointed out that on the road between her home, in Schiedam and Delft, the roads are too dark in the winter.

Fourth, peer perceptions were a barrier too, but not necessarily to stop people from actually buying the e-bike. Nevertheless, these relate to subjective norms, and hence important. People mentioned that e-bikes were seen as “cheating” (n=4) and that it is for old people (n=10). It was also pointed out that people did not care what others thought. One respondent said while he was hesitant to share when he just had the e-bike, now he stopped caring. The fifth barrier that people mentioned as a reason to take additional action is the concerns about theft. Compared to bicycles, as it is more expensive, concerns related to theft is more and people took preventative measures. These include using double chains, insurance, removing the battery when parked and one respondent even kept his speed pedelec (a more expensive model that goes up to 45 km/h) to his own office. People were happy with the locked bicycle facilities, but it was recognized to be overcapacity in some faculties.

Sixth, the speed, and the time e-bikes allow were seen as a problem. For many, the 25 km/h limit was too low as it did not create enough savings in time. Hence, several users were interested in speed pedelecs instead and would have liked the pilot to include them as well. Two users were owners of these pedelecs. However, these fall under the scooter category by law, which means people need to wear helmets and cannot user

bicycle paths inside the cities. So, different barriers are present. Furthermore, the distance was too far for some participants. For one Ph.D. student, she was not sure if she would get a tenure position, and hence was unsure where her next employers will be, and that was a reason not to buy an e-bike. The time was also a concern for the frequency of trips: if people have early appointments at work, they do not want their commute to take too long. Or, if they are flexible in their working hours, they choose to bypass the rush hour, and hence the car does not take that long.

Finally, the weather was a major barrier for the daily choice to e-bike or not. The definition of "bad" weather differed from person to person. While some mentioned hard rain, for some lighter rain was already above the threshold. What was done often was that people checked the weather predictions to decide to take the e-bike or not. For many rain on the way home was not a problem as they can change easily, they also did not mind the cold, but as they want to avoid arriving wet, they care about the rain. There were also cyclists who did not like the cold or could not cycle in the cold due to health concerns. It was also good that seven times it was mentioned that they would cycle in any weather condition possible, except snowy and icy weather which is not possible as the probability of accidents rise if that is the case. One respondent pointed out that the weather is not as bad as people think. She cycled every day throughout the year and said it occurs maybe five times a year that she is completely wet. She explained this with the fact that people do not really encounter real weather when they drive and cannot judge that the rain is not as harsh to create real wetness.

4.1.1.3 Safety Perceptions

People have different perceptions about the safety of e-bicycles compared to regular ones. Only one respondent said that for her it felt as safe as a regular one. 11 quotes mentioned that e-bicycles were indeed more dangerous, as in what they perceived it to be and also what they saw from the news. It was reported that the severity of injuries increased, due to the changes in the control and the behaviour of the vehicle in traffic. People said turns and breaking become harder, starting was too easy and that other vehicles did not expect cyclists to go that fast.

4.1.1.4 Changing Attitudes

People mentioned that their attitudes towards e-bikes or the environment changed when they started using the e-bike. The weather's effect on the decision to cycle or not got less. Joining the pilot or starting to use an e-bike also changed perceptions around the e-bike.

4.1.2 Perceived Behavioral Control

Many of the codes that fell within the PBC also fall under other criteria as well. Here, a general overview of those will be presented. First, people's perception of distance leads them into thinking that it is perhaps too much for them to cover with an e-bike, or that it takes too long. Range anxiety, people's concerns that the battery they have would not make the trip, adds up to the perceived control as, without the support, e-bikes become quite heavier than other cycles. Second, there are different takes on the economic affordability of e-bikes. Whereas for some, it was identified as a cheaper alternative, for others, it was an investment that was too large for them to make, at least at their current stage in life. Third, while the weather still remained as a reason not to bike as people did not like arriving wet to their workplace, it was effective in removing the effect of the wind. With a regular bike, the wind was mentioned as a barrier where in e-bike, this was no longer the case. This was the case for other weather conditions as well: people care less about the weather on an e-bike. Fourth, people perceive their responsibilities as a reason to use the car instead of the e-bike, because for them they are not suitable for a bike, such as carrying things or going to the sports afterwards. Fifth, as people are concerned about theft, they take actions to protect their bikes against it, as explained in the previous section. What is good about e-bikes is that they are (or at least, perceived as) more convenient and less energy intensive than regular ones. That is why people perceive it as a behaviour they are more likely to engage in. Even for the factors mentioned above, e-bikes are superior to the regular bikes, and hence can the behaviour could be observed as an easier one. Nevertheless, the relatively high price to the normal bikes creates a strong barrier for the e-bikes.

4.1.3 Subjective Norms

There are numerous subjective norms that relate to e-biking. These were grouped to make it easier to understand general factors. The first is that societal norms that relate to e-biking are changing. People said that in the last couple of years (generally mentioned as the last five years) people's perceptions changed and that it is more normal for the younger generation to e-bike as well. This was also due to the fact that their own experiences with the e-bike showed them its benefits. Second is that people discuss their mobility behaviors with their colleagues. The pilot program was a topic of discussion among them. It was also mentioned often that they got inspired or inspired a colleague to start using an e-bike to work. Third, family and friends are usually environments where people received support towards their choice of e-biking. It was also seen in two interviewees that their partners bought e-bikes too, or they were planning to buy together. Still, there were negative subjective norms as well, mainly relating to the perceptions that e-bikes are for old people and that it is not real biking. A couple of participants openly said that other people's opinions are not important as well.

4.1.4 Habits

As it is possible that people's habits that relate to regular bikes effect their e-biking habits as well, participants were asked for their habits. Furthermore, to understand more about how people adopt e-biking as a habit and behaviour around that, people's e-biking habits were explored as well. First of all, some users were already using regular bikes to come to work before buying an e-bike or joining the pilot. They did this as a mean of exercising, when their journey was shorter or when their health condition was better. Second, e-bikers still use their regular bikes for shorter journeys: to do the groceries, to go to the gym or travel inside the town.

When it comes to habits that relate to e-biking, people said that with the e-bike they cycle more. Some took longer trips that they would have not with a normal bicycle before. For one participant with a sickness, it means that now she can bike to social events more, so she was able to go back to her life before the sickness. She said that as her sickness prevented her from biking, her life got "smaller," so e-bike helped her get her life back. Second, while for some e-bike was used only for commuting purposes, some used it for other purposes as well. Third, while some did not e-bike every day (four times it was mentioned they e-biked twice a week), some tried to use the e-bike as much as possible (n=13). This related to the pilot participants as well. People have different barriers present that depends on the weather, but still, they aim to bike as much often as they can, according to their own perceptions.

4.1.5 Intention

People had different intentions that related mainly to the pilot program. As current owners already had e-bikes, there is not much to be said about their side, but some minimal insights are present.

4.1.5.1 Intention to Own an E-bike

Unfortunately, there were not many people who were actually interested in buying the e-bike. While two participants said they were already thinking of buying an e-bike before the pilot, the rest did not. Apart from the barriers mentioned above, such as that still takes too long, there is also the financial barrier. For two people, the deal at the end of the trial was attractive; for one, it was not. People were also interested in financial subsidies. Before, it was possible in TU Delft to buy an e-bike on discount by the taxing scheme available in the Netherlands. As it is no longer possible, two said they would like to see that come back.

While people were not interested in investing in an e-bike, five mentioned that they were indeed interested in leasing one. While some did not know how long they will be working for TU Delft, for some the opportunity to have insurance and free repairs were what made leasing interesting. Three openly said that they are reluctant to buy an e-

bike now because they expected TU Delft to apply the tax allowance plan in 2020, which makes it possible to lease an e-bike via your employer. They were willing to wait for the decision and then decide to invest or not.

4.1.5.2 Intention to Try an E-Bike

People had different intentions while joining the pilot. For some, it was out of curiosity. They were interested to see it as an optional commuting option or experience its differences with a regular bike. One joined the pilot to try a better e-bike: he already had one but wanted to replace it. Participant's prior experiences with the e-bike different as well. While two said they never tried one before, four said they did. Two even said that they joined a shorter pilot that was in TU Delft as well, which lasted three days only.

4.1.6 Buying Behaviour

As participants mentioned quite often their behaviour or habits while making the purchase or purchase related activities, this was identified as an extra component during axial coding. As the buying is the actual bottleneck between the intention and the behaviour, it was interesting to include it in the research. First, it was found out that indeed people wanted to try and experience an e-bike prior to buying as it is a considerable amount to invest. Two respondents bought a cheap e-bike first and replaced it with a better quality one eventually. There was also three respondent who received e-bikes from their relatives involuntarily: they could not use it or do not use it anymore. All three of them said they would replace the e-bike if something happens.

4.1.7 Development Areas for Delft University of Technology and Pilot Perceptions

As TU Delft aims to reduce cars on campus, there need to be developments to support further facilitation of e-bikes. There were feedbacks to the pilot program and for the campus development. First, it was mentioned that the bicycle paths are too crowded, especially by the elderly participants. Second, it was recognized that chargers in the bicycle parking facilities could be useful for e-bike users. Third, there were some physical problems with the bikes, of which the details could be found in Appendix H: Detailed Interview Results.

Generally, people had positive attitudes about e-bikes. They appreciated TU Delft for such an initiative to reduce cars on campus. The appreciated clear communication, good advertisements, and professional organization. Two users were interested in buying speed pedelecs and said they would like to see that in the pilot. Perhaps more could be interested as they give better savings in time.

4.1.8 Overview of Interview Results

First of all, interviews give an overview of the attitudes people have towards e-bikes. These usually refer to its superiority or shortcomings over other modes of transport, and these differ from user to user. However, a general perception exists. It is seen as a convenient way of commute that allows the combination of exercise and commute in a non-tiring way and helps keep you healthy. Its societal benefits are seen as an extra, and not really important in the decision to buy one. Those who try it are generally positive about it, but the time savings are not attractive enough for the investment to be seen worthy of. Those who invested in it become advocates, and there is a spillover effect that helps it penetrate into the market. The image around it has been changing as well, and the perception that it is only for old people who cannot cycle anymore is becoming less relevant.

Other advantages over biking include convenience in terms of requiring less physical effort. This supports the fact that e-bike can help remove barriers that stand in front of biking as a habit. While many pilot participants in the interviews said they liked to work sometimes, they did not do this every day. E-bike can help leverage the advantages of biking over driving while avoiding the barriers that stand in front. On top of that, people saw e-biking as an enjoyable experience that had positive health and societal effects as well. When it comes to barriers, car convenience is the major reason: people perceive that their responsibilities that they cannot fulfill with an e-bike push themselves to cars.

Weather and distance still remain as barriers as well. People are usually not willing to cycle in the rain, which would decrease the frequency of e-biking even if it is not strong enough to prevent buying the e-bike. The speed of the e-bikes is mentioned as not fast enough and that it does not save much time: they save on congestion, but as the limit is 25 km/h, they end up spending similar time on the way. Theft and peer perceptions are also present. For theft, many users adopted preventative measures such as double locks or insurance. About peer perceptions, it was mentioned often that they are changing, and it was not mentioned as a reason not to buy. However, many said that they were hesitant themselves when they first heard of it, but when they started using it, they saw the benefits of having the support of the electric motor. This is a barrier, an attitude, in people's heads that stops them from developing the incentive. Four quotes each remark that with the pilot, their perception of the e-bikes changed. Peer perceptions could be assessed under subjective norm as well. First, it shows that there are subjective norms present about e-bikes and that peer perceptions, however a proof that it is effective on intentions is not present. Second, the pilot can be successful in changing subjective norms, or at least lessen the effect of the negative ones on intention. More is explained in the upcoming paragraph.

Majority of these facilitators and barriers also effect perceived behavioral control. An issue that is related is the range of anxiety. Due to the battery and the motor system, e-bikes are heavier than regular bikes. Without support, it gets hard to bike with them. Hence, people are scared to take their e-bike for longer trips as they are afraid the battery would not suffice, and they would need to push hard for the remainder of the trip. Again, this does not relate to the buying the e-bike but more the frequency.

Effect of the subjective norm is hard to judge from interviews. While there is obviously an interaction between friends, colleagues, and family regarding the choice of the mode, it is not really apparent whether that affects the actual behaviour or not. What is notable is that many recognized that the image around the e-bikes are changing, becoming more positive, as they see the younger generation e-biking as well. Some also pointed out that while they thought e-bikes were for the elderly before they started e-biking themselves, now they see the benefits, and their social circle shares the same believes. An interesting outcome was that colleagues and partners inspired people to buy an e-bike: it shows how the technology diffuses into the population and is beneficial for the pilot program. In fact, in the pilot program on hand, people also reported that their acquittances tried it as well, which will be mentioned in the next section. Again, the pilot can introduce positive norms about e-biking, and replace the negative image around it that it is for old and lazy people.

Habits regard the repetitiveness of e-biking and whether prior behaviour regarding biking effects e-biking or not. It was noted by users that when they bought an e-bike, they started biking more often and also take longer trips than they used to. It is interesting to underline that some e-bike owners still continued using their regular bikes for shorter trips. As one of the concerns about e-bike market penetration is that it replaces regular bicycles instead of cars (Kroesen, 2017), these are interesting results. One finding that related to TPB is the fact that many e-cyclists were already irregular cyclists to work and used the e-bike to do it more often or more easily. Hence, it can indicate that people who already like cycling use the e-bike to do it more often, and that habit indeed does play a role in adopting e-bike as a habit.

Most complex responses from the interviews come in the intention part. Pilot participants did not really show interest in investing in an e-bike eventually. Reasons include the economic barrier majorly; for many, it is too much of an investment. Nevertheless, participants joined the pilot for curiosity, and if they were already interested in e-bikes to try how it is like as a way of commuting. On the other hand, there was an interest in leasing or subsidies if made available for TU Delft. Especially with the legislation that will go into the practice 2020, the leasing will become easier. The reason leasing is more attractive than buying is that repairs and insurance is provided. This could be a portrayal of regret aversion (Zeelenberg, Beattie, Van Der Pligt, & De Vries, 1996) by the employees. Some participants who were interested in

buying regardless of the support or not said they would at least wait until the decision. This shows leasing is more attractive than buying for the employees.

Interviews also allowed insights into the buying behaviour of users, and it shows people consider the decision by trying out with a cheap e-bike, comparing brands and trying. These show that a pilot can be effective. Interviews also revealed points of improvement for TU Delft, which are not necessarily solid barriers. These could be summarized as a need for larger bike paths on the terrain, charging facilities in the bicycle sheds and increase in the capacity of locked bicycle parking facilities. Overall, the perception of the pilot was quite positive, and participants were satisfied with the organization.

4.2 Qualitative Results

4.2.1 Starting Survey Results

In the first block answers, there were 131 participants, of which 97 were joining the e-bike program. 111 were responding in Dutch and remaining in English. In the second block, there were 125 participants and 93 e-bike participants that answered the survey. Only 5 were responding in English. The data analyzed is of respondents since the 13th of June 2019. The following insights are summaries of their responses according to different categories.

4.2.1.1 Demographics

In Table 33 in Appendix I: Starting Survey Results, descriptive statistics of available demographic information of participants are listed. The statistics relating to the first and second block are presented separately also, as the mobility program also includes other modes of transportation, the demographics of the participants of the whole pilot, and solely of those who participate in the e-bike pilot.

It can be seen that the mobility program represents the TU Delft to a good level: while the young adult generation is not represented widely, it is due to the fact that students were considered to be in this group strictly. It is then safe to say that the program appealed more to the employees than students: possibly as it was for those who travelled by car to the campus, and Dutch students have free public transportation passes or already live nearby and bike to the university. International students can be assumed to be rarely of a hold of a driving license valid in the Netherlands.

Women are overrepresented in the pilot program. In e-bike research, the gender difference in e-cyclists was not present for the best of knowledge of the author. However, late adults were underrepresented. It is possible that this age group already switched to e-bike more easily, as suggested by societal norms in the previous part.

4.2.1.2 Working Conditions

The working conditions of e-bike pilot participants are summarized in Table 34 and Table 35 in Appendix I: Starting Survey Results. Their total working hours per week and the number of days they travel to the campus per week. It is interesting to underline that while in the first block the majority of the workers were nearly full time, around 70%, in the second block this is down to around 44%. However, the average days on the campus of e-bikers did not differ much. This can indicate women who joined the program have short working days. Again, days of pilot participants that they drive to work with their own car decreased as well. As the aim of the pilot was to decrease the number of cars travelling to the campus, it can be said that the first block was theoretically more successful. On the other hand, the existing cycling days of the participants increased. This could be due to the fact that the second block took place in a warmer period of the year. It is even possible that some spillover effect changed some cyclists' minds: as also the percentage of people who considered switching to e-bikes before the pilot decreased as well.

4.2.1.3 Mobility Behaviour

Table 36 and Table 37 in Appendix I: Starting Survey Results summarize the travel behaviour of the participants with descriptive statistics. Non-respondents have been counted as they have answered 0. It is important to underline that in the English entrance survey of block 2, the question regarding travel days was asked referring to the mode they used the most. However, the number of respondents is only 11, and they answered for multiple modes. While driving days to campus and cycling days to campus are found by Excel Pivots, the driving distance, cycling distance, time by car, and time by bike has been acquired using Google Maps Distance API. It is important to underline that cycling time provided by Google Maps is not the most reliable.

An interesting result is that while the average driving kilometers of overall mobility participators decreased from block one to two, those that belong to e-bikers did not change. Same goes with cycling kilometers. While Google Maps API is not fully reliable in cycling times, if assumed consistent, it shows that there is probably an upper limit where people think it is acceptable to bike through due to time limitations. If explored from a time perspective, and again assuming the cycling time is accurate, pilot participants are mostly those who loose 11-20 minutes if they cycle instead of driving. This can indicate important trade-off insights. An interesting finding is that the correlation coefficient between the percentage of days cycled and the cycling time between home and work was nearly -0.359.

4.2.1.4 Reason for Joining the Pilot and Prior Mobility Decisions

Respondents were asked the reasons behind participating in the pilot and why they used to drive rather than cycle. They were able to choose between multiple choice answers. The summary of the results can be seen in Table 45 in Appendix I: Starting Survey Results. Looking into the reason of joining the pilot, health was the first, and sustainability was the second most mentioned responses, similar to previous research (Lee et al., 2016). The reason for choosing driving over cycling is mostly distance and time (which are related), arriving sweaty, lack of suitable bicycle and rain. While distance, time, and suitable bicycles are barriers that can be overcome with an e-bike to a certain degree, sweatiness could be prevented while rain effects are minimal.

4.2.1.5 Components of Theory of Planned Behaviour

The goal of the research is to assess whether e-bikes are effective in changing behaviour about e-bikes. As the main assumption is that TPB can indeed explain the adoption of the habit, the initial level of different factors that correlate to TPB was measured with the following questions. As mentioned before, 5-point Likert scales were used, and these were converted to points 1 to 5, 1 referring to the most negative answer. The results are as follows in Table 47 in Appendix I: Starting Survey Results.

With the question regarding components of TPB, it can be seen that wind is seen less of a barrier than rain. The rain's average answer is "neither agree neither disagree" (M=3.04), possibly as people think while they can rain, it is not really attractive to do so. It can also be seen that those who join the e-bike trial were more likely to consider switching than other participants that join other methods of commute. People also agree that routes are well connected, as reported to be in the case in the country (Buehler & Pucher, 2007). Moreover, positive attitudes toward e-biking are already present as it is seen as a good alternative.

4.2.2 End Survey Results

The average response per question in the end survey are provided in Table 48 Appendix J: End Survey Results, which was calculated using Excel Pivot Tables. The correlations between these variables, calculated using SPSS, can be found in Table 50 in Appendix J: End Survey Results as well. The interpretation of end survey results will be contemplated together in the triangulation section.

4.2.2.1 Estimation of the Conceptual Model

As explained in the methodology section, factor analysis was conducted for all variables to see how these can be grouped together to form latent variables. Factor analysis helps to group questions together regarding their similarities to each other. In other words, it shows which questions measure similar aspects. Hence, it is used to

group sub-factors together to form latent variables that measure components of TPB. The optimal outcome would be all questions made for the specific components of TPB coming together and forming latent they are meant for. However, this is not the case, and this part explains this procedure in detail. The rotated component matrix of the factor analysis can be found in Table 51 in Appendix J: End Survey Results. The following latent variables were constructed using this table and the natural grouping of questions. It can be explained as follows:

1. Attitude: The factor analysis resulted in extraction of seven components, that can be seen in Table 51: Factor Analysis Results, Exit Survey. The first component resulted in numerous factors. Nevertheless, due to comparably low factor loadings and the suitability of questions with higher loadings to become subcomponents of attitude, two were grouped together to construct attitude as a latent variable. "Owning an e-bike for commuting to and from campus would be pleasant" and "E-biking to and from the campus was overall a pleasant experience" with respective loadings 0.823 and 0.845 were chosen. Some of the other factors were ignored either because they have loadings below 0.5, which is not significant as the sample size is smaller than 100 (Hair, Black, Babin, & Anderson, 2014). Others were ignored as they did not fit well into the latent variable attitude regarding what they ask. In order to check if these two final choices are comparable, reliability analysis was conducted. For these two factors, Cronbach's Alpha was 0.787. As this is larger than 0.7, it shows the scale is a reliable one (Robinson, Shaver, & Wrightsman, 1991).
2. PBC: Component 3 yields to "Did you come to the campus with the e-bike more often than expected?" and "How hard or easy was it to use the e-bike twice a week to travel to the campus?" to be used as factors with loadings 0.807 and 0.797. Again, two other variables of lower than 0.6 were present. However, these can be ignored easily as their factor loadings are too low to be significant, given the sample size (n=75) (Hair et al., 2014). A problem here is the fact that question "Did you come to the campus with the e-bike more often than expected?" was originally not made for PBC but for habit. However, given the high factor loading and the fact that it can be related to the perceived ease of the behaviour, it was decided to be included in PBC as well. Again, the reliability analysis returned Cronbach's Alpha value of 0.669. This is barely below 0.7 which is considered the limit for statistical significance, but as this is exploratory research, a limit of 0.6 was considered to be acceptable (Robinson et al., 1991).
3. Subjective Norm: Using the component 4, "People I care about use an e-bike to travel to and from campus" and "People similar to me buy e-bikes to use for commuting to and from work/study" were determined to be factors with loadings of 0.853 and 0.787. While two more factors are present, they have loadings below 0.5, and given the sample size is smaller than 100 (n=75), it

would not be considered significant (Hair et al., 2014). Cronbach's Alpha for these two was calculated as 0.751, which shows the scale is reliable as it is higher than 0.7 (Robinson et al., 1991).

4. Intention and Habit: There were no components that had significantly high factor loadings assigned to factors that could be grouped together to construct latent variables, intention, and habit. As habit was an extension to the TPB, this is ignored from the final model. For intention, individual questions were tried to see which question best fits into an estimation of the conceptual model provided in Figure 3: Modified Conceptual Model.

For all three latent variables decided above, the Cronbach's alpha is above 0.6. So, summated scales were used (Hair et al., 2014) to build these variables. This means in order to calculate the answer given to the latent variable by each individual, the average of their answers given to the questions determined for that latent variable was used. It was also possible to use factor scores instead; however, as not all extracted components calculated by SPSS were used, it was more logical to use summated scales.

After the latent variables were calculated, in order to determine which question to use for intention, for all three questions, multiple linear regression was conducted using ENTER method with SPSS. The dependent variables were taken as the intention questions, and the independent variables the latent variables listed above. Unstandardized coefficients were taken into consideration as the unit of measurement of SN, PBC, and attitude are the same of with that of intention. The result of the regression analysis is as follows.

4.2.2.1.1 Would like to continue to use the e-bike for travelling to the campus?

The results of the regression coefficients can be found in Appendix J: End Survey Results in Table 52. The ANOVA resulted in a significance level of p=0.021 and R^2=0.129. As p>.001 for SN and PBC for this case as can be seen in Table 52, SN and PBC are not significant predictors of the model. As p>.001 for the overall model, this model is not validated by statistical tests.

4.2.2.1.2 Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more attractive?

The results of the regression coefficients can be found in Appendix J: End Survey Results in Table 53. The ANOVA resulted in a significance level of p=0.004 and R^2=0.172. As can be seen from the coefficients in Table 53, PBC and attitude are not significant predictors of the model as p>.001. As p>.001 for the overall model, this model is not validated by statistical tests.

4.2.2.1.3 I am willing to invest in an e-bike as an alternative for travelling by car from home to campus.

The results of the regression coefficients can be found below in Table 6. The ANOVA resulted in a significance level of p=0.000 and R^2=0.451. As can be seen from the coefficients in Table 6, only PBC is not a significant predictor of the model as only for PBC p>.001. Despite this, as the significance level of PBC is p=0.065, it will be included in the model due to three reasons. First, as p is close to 0.05 which is used commonly as the critical value, it could be that with a larger sample size significance can be achieved, so it is better to keep PBC in the model. Second, as the model is an exploratory one, it is better to include PBC for future, more detailed research. Third, when PBC is removed from the multiple linear regression, R^2=0.423 and p=0.000. So, the difference between R^2 when PBC is kept and not kept is not much. Hence, the validity of the model is not harmed much when PBC is included, so it will not be removed. This results in the following estimated conceptual model in Figure 5 below. The coefficients used are unstandardized coefficients as the unit of measurement of the dependent variables, and independent variables are the same. The correlation between attitude and SN is included as well, which was ignored during regression analysis. The explanation regarding this follows in the Triangulation of Quantitative and Qualitative Results.

Table 6: ANOVA Results of Conceptual Model, as Explained in 4.2.2.1.3

Variables	Unstandardized B	Significance Level
Attitude	0.740	0.000
SN	0.576	0.000
PBC	0.183	0.065

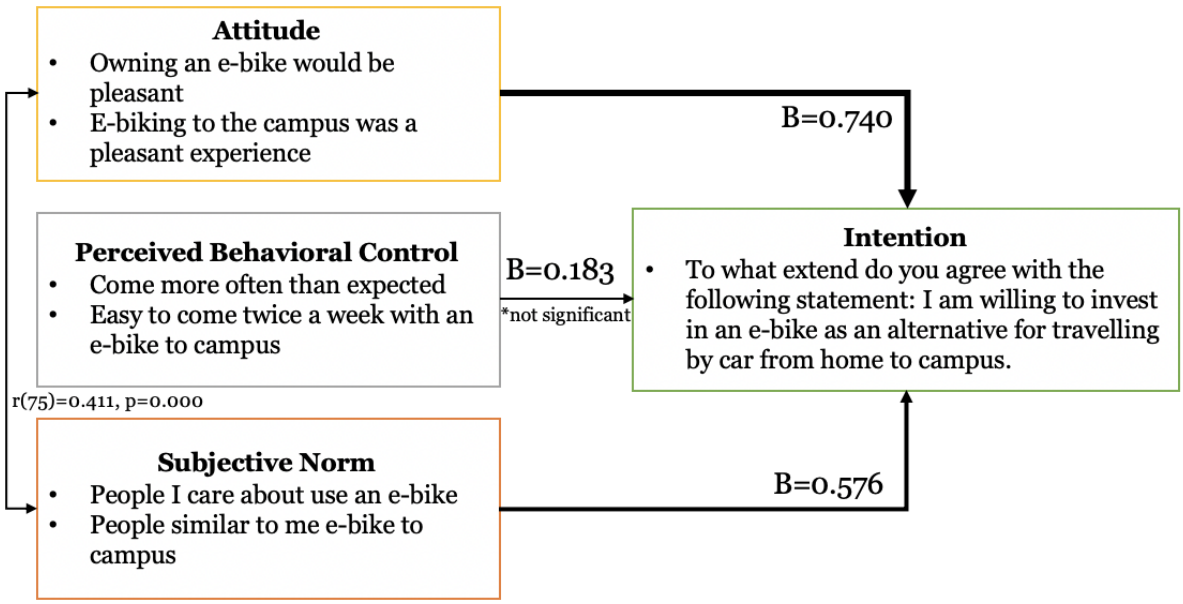


Figure 5: Estimated Conceptual Model

With this resulting model, it can be concluded that TPB is a suitable theory of adopting e-biking as a habit. However, this model does not include the behaviour itself. As it will be elaborated in detail in the next chapter, in order to make sure TPB is suitable, data about the actual behaviour "using an e-bike to commute to work regularly" is needed. This could be measured with a longitudinal study with better data outreach. As there is a possibility that e-bike lease will be available in TU Delft, the gap between intention and behaviour is an interesting aspect to study. There are also limitations of the estimated conceptual model, and these were tested for improvements.

4.2.2.2 Evaluation of Potential Improvements to the Estimated Conceptual Model

As there were several limitations present in the estimated conceptual model, the following procedures were conducted to see whether it could be improved by including more factors. First, the habit was not included in the model. While one of the questions that relate to habit ended up in the model under PBC, the latent variable was not a significant predictor of the model. However, when correlation between i) people's cycling habit prior to the program, the percentage of days they used the bicycle for commute, and questions regarding measuring intention that was not included in the estimated model ii) "Would like to continue to use the e-bike for travelling to the campus?" and iii) "Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more attractive?" was checked, the results were respectively ($r(75)=0.256$, $p=0.026$) and ($r(74)=0.299$, $p=0.01$). Hence, they were indeed correlated as $p<.05$. Hence, it is possible with better questions; habit could indeed be a predictor as well.

Second, in SN the question about expected support from people who matter was not grouped with any of the other factors. This was also the question with the highest average of responses with $M=3.45$ from SN. The other two, "People I care about use an e-bike to travel to and from campus" and "People similar to me buy e-bikes to use for commuting to and from work/study" had respectively $M=2.50$ and $M=2.72$. Similar to the previous limitation, in bivariate 2-tailed Pearson's correlation between "People I care about would support my decision to use an e-bike to travel to and from campus" and "willing to invest" was ($r(73)=0.473$, $p=0.000$). To check whether this could be included in the model separately, this question was put into the conceptual model as well separately from SN. However, as the resulting was $p=0.362$, it is not to be found to be a significant predictor.

Third, in attitude, two factors that were not included in the latent variable ("E-biking is better than car" and "E-biking is a good alternative to car") were correlated to "willing to invest" with ($r(75)=0.472$, $p=0.000$) and ($r(75)=0.483$, $p=0.000$). Similar to the procedure in SN, they were included in the conceptual model separately from Attitude, and they were not significant predictors, and hence, they were not included.

Lastly, PBC is barely not statistically significant. This could be due to the fact that economic constraints are quite important over what people perceive as a barrier to actually buying the e-bike, which was elaborated on earlier on in 4.2.2.1.3. Of those components not included in the model, "suitability of distance" is the only one correlated to "willing to invest" with ($r(75)=0.347$, $p=0.002$). When ran together with the model, separate from PBC, this was not a significant predictor with $p=0.437$. Hence it was not included.

4.2.2.3 Inspiring Others to E-bike

The results in Table 49 Appendix J: End Survey Results were obtained from the question regarding whether participants made non-participants try the e-bike or not. 84 responses were acquired. It can be seen that roughly half of the participants did not share their e-bikes for a trial with anybody else. However, at total, around one quarter of the participant's family members tried the e-bike. This could indicate the importance of SN, that people do get affected by their loved ones when it comes to e-bikes. A limitation here is that in the e-bike pilot, the e-bikes can be unlocked only via a mobile application, so it is not that easy to make someone else try. In another pilot in which this is not the case, it could be that more people try the e-bike. This can enhance the effect of trials: one trial can help more than one individual to try an e-bike and possibly consider it for the commute.

4.2.2.4 Reasons for Intention

The survey already included questions that relate to looking deeper into reasons why people want to or do not want to buy an e-bike and how they could be motivated further. In Table 7,
Table 8 and Table 9 summary of these could be found.

Table 7: Stated Reasons for not Buying and E-Bike

Reasons to Not to Use E-bike	**%**	**#**
Other (Various)	22.62%	19
Hard to combine with other activities	19.05%	16
Car convenience	16.67%	14
Distance	11.90%	10
Lack of parking facilities at home/work	7.14%	6
Arriving sweaty	5.95%	5
Weather	57.14%	3
Complicated journey	2.38%	2
Takes too much energy	2.38%	2
Journey is too expensive	2.38%	2
Cycling infrastructure is not good	1.19%	1

Table 8: Stated Reasons for Buying and E-Bike

Reasons to Continue E-biking Twice a Week	**%**	**#**
Like being outside	69.05%	58
Relax during travelling	61.90%	52
Congestion	59.52%	50
Combine sports and travelling	42.86%	36
Can use e-bike for personal activities	32.14%	27
Easier journey	28.57%	24
Weather is suitable for e-biking	27.38%	23
Distance is shorter than car	16.67%	14
Other (Various)	16.67%	14
Easy to combine with other activities	14.29%	12

Table 9: Stated Possible Improvements that can Result in E-Bike Purchase

What could make you buy an e-bike?	**%**	**#**
Financial incentives by TU Delft	72.62%	61
Discount	61.90%	52
More charging places for the e-bikes	25.00%	21
More pleasant cycling lanes	17.86%	15
More locked parking space for e-bikes	15.48%	13
More sheltered parking space for e-bikes	14.29%	12
More facilities in the faculties to change	11.90%	10
Wider cycling lanes	10.71%	9
Safer cycling lanes	10.71%	9
Nothing	9.52%	8
More parking space for e-bikes	8.33%	7
Speed pedelec	4.76%	4
Competition program	1.19%	1

4.3 Triangulation of Quantitative and Qualitative Results

This section aims to reflect upon similarities and differences between the quantitative and qualitative research results to reflect upon the findings of adopting e-biking as a habit from the TPB lens. There are similarities and differences between the findings, and whereas the interviews allow for exploration for wider factors, the surveys support existing and new findings with hard data. Below, Table 10 has been drawn to summarize the differences and similarities between the outcomes.

Table 10: Similarities and Differences between Research Outcomes

Similarity/Difference	Explanation
Similarities	
Attitudes	In interviews, most facts mentioned were grouped under attitudes. In survey results, attitudes had the largest influence on intentions.
SN	SN was found to have a moderate effect on both methods. While in interviews other's opinions were mentioned, it was not clear to what extend they actually affected the behaviour. Positive SN, such as support from the loved ones, were present as well as negative ones, such as the perception that e-bikes are for old or lazy people. Whether these SN are effective is inconclusive. However, the negative perception around e-bikes could be a reason why people are ashamed to use it or the reason they do not consider it as an option for the commute. Moreover, there were findings that SN is changing to become more positive. People's own experiences make them see it as a viable option for commute, and it was also mentioned that in the society they are becoming more relevant. In the surveys, this was found to be effective, but in a lesser extend compared to the attitudes.
Intention-Behaviour	The gap between intention and behaviour was hard to assess as data regarding the actual behaviour was not possible to collect. Hence, it was ignored. Nevertheless, with the statements in the interviews and questions asked regarding this gap in surveys, it was found that there was indeed a gap between the intention and the behaviour. This was stemming due to the relatively highly perceived economic barrier. Hence, subsidies or leasing options could indeed be used to close this gap.
Differences	
Habit	In interviews, regular cycling habits were mentioned. In survey results, this was inconclusive, and hence, habits were not included in the final model.
PBC	PBC had the least effect among TPB elements in survey results. In interviews, people mentioned responsibilities, but it could be interpreted that this more of a comfortable choice of cars rather than being able to do them on a cycle. Affordability was seen as an issue in interviews, in the survey it was not possible to investigate this.

To elaborate on the findings in more detail, TPB was found to be a candidate for an explanatory theory for the intention to buy an e-bike for the daily commute for TU Delft employees in the quantitative part. While PBC and habits were not found to be statistically significant, this could be due to research limitations, which will be further elaborated on in Reliability, Limitations, and Significance of Research. Whereas qualitative findings allow for a broader exploration of the behavioral process, they naturally lack quantified comparison. They support the findings of the quantitative part and allow for an in-depth understanding of the findings. This part aims to present the meaning of the findings and how two parts support each other, per each component of the TPB.

4.3.1 Attitudes

The estimated conceptual model shows that the attitudes are the most effective predictor of intention to buy an e-bike for commuting. These attitudes are measured with observed pleasantness of owning an e-bike and also participating in the pilot. This shows that the more people enjoy the e-bikes, or at least they think they will, the more they are likely to invest in one for commuting. This could be quite a straightforward finding; however, it shows that people care about their own experience rather than a "greater goal" such as concerns for the environment, the influence of family members or overall behaviour in the society. The interview results support this. Many mentioned that while environmental concerns are good to have, it was more of an additional benefit rather than a decision factor. Similarly, they remarked that they had received positive support from their loved ones, but the connection to this to actual purchasing behaviour was inconclusive. They were more likely to mention attitudinal factors, either in favor or against the e-bikes, such as but not limited to convenient/not convenient, enjoyable, cheap/expensive, flexible, healthy and slow/fast. Hence, this research shows that attitudes are the most influencing part of TPB on the decision to e-bike as a commute. Pilot programs can indeed change these attitudes, and hence are effective. Moreover, developments in the infrastructure to make cycling more enjoyable, subsidies to make e-bikes more acceptable could also create a change, which are notable findings for the policy-makers.

Another interesting finding of the quantitative part is that two questions that measured attitudes towards e-bikes as compared to cars, "e-biking is better than driving my car" and "the e-bike is a good alternative for driving" are both correlated to all three questions that were aimed to measure intention, as can be seen in Table 11: 2-tailed Pearson Correlation for Attitude and Intention Questions Excluded from the Model below. They were not included in the conceptual model as they were not merging into one component. This correlation shows that people compare e-bikes to other modes when deciding on switching. Interview findings support this claim, as well. When people made attitudinal statements, they usually compared e-bikes to

other modes of transportation, mainly the car. However, the pilot only created a minor decrease in car-related positive attitudes. The average answer was M=2.49 for the answers given to the question regarding changes about the views of the car, and 3 was the neutral answer. To say more about car-related attitudes, Heinen et al. (2013) found that the availability of free car parking effects cycling negatively. This was mentioned in the interviews as well, that the availability of car parking makes people take the car more. Some, possibly those who work in a faculty where the car park is busier, liked that with the bicycle they did not need to search for a parking spot. Policies that change attitudes towards the car, such as paid parking or awareness campaigns, could make car-related attitudes more negative, which would push people to cycle more.

Table 11: 2-tailed Pearson Correlation for Attitude and Intention Questions Excluded from the Model

Components	"willing to invest in an e-bike"	"like to continue e-biking"	"e-cycle more often despite no financial subsidy"
"e-biking is better than driving my car"	(r(75)=0.472, p=0.000)	(r(75)=0.274, p=0.017)	(r(74)=0.433, p=0.000)
"the e-bike is a good alternative for driving"	(r(75)=0.483, p=0.000)	no correlation	(r(74)=0.257, p=0.027)

Relating to other attitudinal factors, the survey results show that experiences with e-bikes are generally positive. M=4.02 for the question regarding how their thoughts about e-biking changed: this means on average people have somewhat more positive attitudes towards e-bikes after the pilot. The idea that e-bikes are healthy is also the most recognized reason to join the pilot, followed by sustainability and then reducing the costs as can be seen in Table 45: Stated Reasons to Join the Pilot in Appendix I: Starting Survey Results. Sustainability was also mentioned in the interviews as an "additional positive aspect", however only when triggered about it in contrast to being mentioned as one of the main reasons in survey results. However, as that question was multiple-choice, it is possible that the respondents were triggered as well.

The fact that reducing cost is the third option shows that people are aware that e-bikes can be cheaper in the long term despite the high initial investment. It could also just be the fact that the pilot means a free e-bike for 2 months. In fact, many were interested in financial subsidies: 72.62% of participants said if there were financial incentives made available by TU Delft, they would be interested in buying. On the other hand, for "Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more attractive?", out of 74 responses, 16 said no, 24 said maybe, and 34 said yes. So, financial subsidies can shift more people to buying e-bikes. Another option is the leasing: many interviewees said they were even waiting for the decision of the university to join the tax scheme or not before making a decision to buy an e-bike or not. Furthermore, parallel to the interview finding of e-bikes being seen as an opportunity to combine exercise and commute, 42.86% of participants said in the survey, this was a reason to continue e-biking. Other attitudinal factors detected

from the interviews, such as being outside, skipping congestion and enjoyment are also among reasons people choose from the multiple-choice list, as can be seen in Table 8 in Appendix J: End Survey Results.

4.3.2 Subjective Norms

The second most effective component found in the quantitative part is SN. While the questions in the final model do not include support of the loved ones, it is correlated to "willing to invest" separately. This indicates that with better questions about intention, more inclusive models can be achieved. Moreover, interview results do support the suitability of TPB. First, they show that e-bikes are discussed with colleagues, and seeing other with e-bikes do make people consider e-biking as an option. This is in parallel with the inclusion of "similar people to me e-bike" in the final model. Second, as people mentioned perceptions such as "e-bikes are for old people" and "e-bikes are cheating," it shows that when people do not identify themselves with such qualities might hold themselves away from adapting the habit. Luckily, they also brought up the fact that perceptions are changing, which means the SN around e-bikes will be changing. This indicates improvement in adoption rates as SN was found to be effective, and they are becoming more positive.

4.3.3 Perceived Behavioral Control

The third component, PBC, was barely not statistically significant in the quantitative part. The reasons behind this limitation were elaborated before as well. This could stem from two reasons. Firstly, as there is a lack of complete control over survey design, factors identified for PBC from the interviews were not included. Including these can push PBC into the model. First, it was not possible to ask questions about the perceived affordability of e-bikes. As this is a considerable barrier observed from the interviews, excluding this barrier could cause a PBC latent variable that is unable to capture the real lack of perceived control: money. Second, insights about the weather were not present in the end survey. In the entrance survey, people stated on average that they neither agree nor disagree with biking to work when it is rainy. In the interviews, many stated they do not like to cycle when it gets wet. Indeed, in the end, surveys, 57.14% said they would not e-bike as the weather is not suitable. Similar to the interview results, some did not see this as a problem: 27.38% said it was indeed suitable. Hence, similar to affordability, including the weather, could make PBC a statistically significant independent variable. Secondly, it could be that as the Netherlands is a cycling country, people's answer to the question that assesses the ease of cycling twice a week does not necessarily measure their perceived control over the behaviour especially as the pilot program took place during the warm months and not the winter.

Another issue with PBC is that it is hard to separate it from attitude. In the final conceptual model, two-tailed Pearson correlation between Attitude and PBC is ($r(75)=0.411$, $p=0.000$). This means people's attitudes are related to what they perceive the control over their behaviour is and vice versa. This correlation was ignored in the conceptual model, but a more complex analysis with more respondents can yield interesting results. Its implications for intervention designers will be discussed in the upcoming parts. Qualitative part also found out that many sub-components that are part of attitudinal factors also apply to PBC. People say the time/distance it takes to e-cycle, economic requirements, the effort required, their health conditions, the weather, the infrastructural availabilities, and responsibilities they have to allow or disallow them to perform commuting with e-bikes, or it affects how easy it is for them. A possible challenge in this approach is that the correlation between attitude and PBC. Multiple linear regression ignores this. However, with larger sample size, statistical methods that regard such correlations (such as SEM) could be used to overcome this limitation.

To elaborate on the relation between PBC and actual ease of the behaviour, it is possible to look to findings of the distance. For the question regarding the suitability of distance from home to work, $M=4.15$. This means people on average find the distance somewhat suitable for e-biking. Only 11,9% said distance is the reasons they will not continue with an e-bike. Two-tailed Pearson's correlation test was conducted between answer give to suitability of distance between campus and home for e-biking and cycling kilometers from home to work and ($r(75)=-0.524$, $p=0.000$). However, as the coefficient is not 1, the perception is not completely dependent on the actual kilometers. Hence, PBC is correlated to ease of behavior to an extent. To decrease the effect of the distance, and have a better PBC, an option was revealed via the interviews: speed pedelecs. There were several that wanted to try it. According to the interview with Roel, which can be found in Appendix M: Expert Interviews, the leasing plan only becomes financially attractive for expensive models, such as speed pedelecs, which is a reason for TU Delft to consider it. Hence, leasing availability for speed pedelecs can be a good option to skip barriers and even further broaden the suitable ratio, especially as it also lowers the perceived financial barrier.

It is also important to underline that a pilot is also a good way to change attitudes and PBC around e-bikes as one-hand experiences work this way. People reported that their thoughts about the e-bikes improved after the pilot in the end surveys. As there were no attitudinal questions in the entrance survey of the first block, it is not possible to compare changes in the reported levels of positive attitudes. What is knows is that for "there is a good e-bike connection between my house and the campus" in the end survey of the first block is $M=3.81$, whereas for the entry survey of the second block $M=4,11$. Average cycling kilometer from home to work is $M=11.95$ for the first block and $M=11.25$ for the second block. The differences in perception of connectivity can be

due to the actual difference in kilometers as they were found to be correlated. It could also mean that the experience made people realize the distance was more than they expected, which would be disproof the case of the pilots. However, broader survey questions and availability of more data can help researchers better estimate how different components of TPB connect to the intention and the behaviour.

4.3.4 Habit

The extended component, the habit was not included in the estimated model at all. Nevertheless, there is a correlation between prior cycling habit and interest in e-bikes. While the cycling percentage was not correlated too willing to invest, two-tailed Pearson correlation to other questions regarding the intentions, "would like to continue using the e-bike" and "planning to e-bike despite no financial incentives were respectively ($r(75)=0.256$, $p=0.026$) and ($r(74)=0.299$, $p=0.01$). Some similar findings were present in the qualitative part. Many current e-bikers said they used to cycle to work already before they switched to an e-bike. They made a choice to switch due to health restrictions, increase in the distance between work and home, wanting to exercise more or simply receiving the e-bike free from someone else. Again, a better survey that contains incentive questions in a better way could indeed result in a conceptual model that includes habit as well.

Overall, survey results and interview results are in line with each other. With a greater number of respondents and a better choice of questions, habit-extended TPB could indeed explain the adoption of e-biking as a habit. In future research, this could be explored. More explanation on these issues will be provided in the upcoming chapter,

Discussion. These conclusions also have implications for e-bike policy-makers and researchers. In order to assess these, interviews with experts were conducted. The following section aims to support the research into revealing implications, as mentioned in Phase III: Implications.

4.4 Implications of Results

As the findings are similar to previous research, of which the details will follow in the next chapter in Coherence with Previous Research, it shows that there is a wider application potential of the results. The psychological process that facilitates buying of an e-bike for the commute is similar across different cultures, despite differences in physical factors such as hilliness, weather, and development of bicycle infrastructure. In order to elaborate on the implication of the results to the wider policy-making, fill in some of the gaps in the research method and to discuss wider implication in the society of e-bikes, three interviews with experts were conducted. This section aims to communicate the findings of these interviews. All interview transcripts can be found in Appendix M: Expert Interviews.

One basic limitation of the research is that there is a lack of data about actual behaviour. This makes it impossible to analyze the complete conceptual model that can be seen in Figure 2: Conceptual Model for E-Bike Adaptation for Daily Commute. Moreover, there are only two longitudinal studies about e-bike commuting (de Kruijf, Ettema, & Dijst, 2018; Moser et al., 2018). On the other hand, this gap between the intention and behaviour is quite important as the results revealed the required investment is perceived as high. From the interview with Roel Lenoir, it is known that only 30% of participants of a two-week trial who stated they would buy an e-bike actually ended up buying it within the month following the trial. As previous research has found out that commuting with the e-bike is something people "get used to," or do more and more over time (Fyhri & Fearnley, 2015), it is possible that a longer pilot yields to higher purchase rate. Especially with this pilot, as the pilot gives access to a discount, it could be that the conversion rate is higher. Long-Term research is necessary to look into this and to compare how different pilot characteristics yield to different purchase rates. This way, better pilots can be designed that effects components of TPB in a way to increase the frequency of intention and behaviour.

It is validated that experience with e-bikes can break prejudices against e-bikes, and hence change attitudes. Interviewees reported that when they experienced e-bikes, they realized it was "something for them." Moreover, Roman Herzog reported that in a recent study it was found that four biggest barriers that were reported by non e-bikers are the possibility of bad weather, price, commuting distance and arriving sweaty ("Quarter of European commuters willing to switch to e-bikes," n.d.). From the interviews, it was revealed that these attitudes could change. The lack of sweating was

mentioned as a positive aspect of e-biking. The perception of weather's control over the behaviour also changed for some participants when they started e-biking. Also, the distance barrier becomes less effective as the e-bikes are faster. Furthermore, as the e-bike is seen as an enjoyable experience, people reported making longer trips start to make longer trips which illustrates that people care less about the distance, especially as their effort does not change substantially. With faster models, such as speed pedelecs, this barrier can be lowered further. However, the price still remains as a barrier. People expressed their interest in leasing and in financial subsidies via the survey. As the government's tax regulation will be in place, by participating TU Delft can remove the number of cars on campus and respond to the expectations of the employees. Roel Lenoir reports that with the tax scheme, in long term e-bikes will end up being more expensive whereas for speed pedelecs this would not be the case. Nevertheless, with additional benefits such as insurance and repairs being outsourced, people can be more willing to lease than buy to minimize their regret.

While speed pedelecs offer even better conditions in overcoming barriers in cycling, the legislative structure around them makes it less attractive especially as they cannot use the bicycle roads inside the city and the need to wear a helmet as Roel Lenoir reported. While whether if this is secure legislation or not is a debatable issue, without this barrier, speed pedelec could be even a stronger replacement for the car with its speed advantage. As they will become more attractive with the new tax legislation, the government can consider evaluating these regulations to boost the effect. Another government-led action could be installing better parking facilities in residential areas. Both Roel Lenoir and Roman Hertog that people's lack of safe parking facilities in the crowded, urban areas demotivate people from investing in an expensive bicycle due to theft concerns, which is supported by the interviews.

While the share of cycling in overall transportation is highest in the world with 27%, the Dutch government has recognized the opportunity to increase this, especially as half of the trips below 7,5 kilometers is made by cars ("Opportunities for expanding the use of bicycles," n.d.). They suggest some options to be bicycle highways, financial compensation for bicycle usage, and employer policies such as facility development and mileage allowance. Bicycle highways were recognized as a method to increase cycling levels by others as well. Roman Hertog reports that in a Danish study found that a bicycle highway increased the number of commuters 10% as it provides a faster connection to people and better time savings. This can lead to a change in attitudes. What is good for the future, the Province of South Holland is working on extending the cycling infrastructure and building bicycle highways, as Jan Ploeger told the author. He reported that while the province does not necessarily promote cycling, they aim to facilitate comfortable cycling. First, they have analyzed the network and have published which potential extensions in the network could be beneficial for connectivity. When communities, municipalities, or organizations such as TU Delft

wants to build them, they provide the funds. Second, he stated that they have investigated whether or not to build public charging stations for the e-bikes. The result was that the investment was not needed, at least in the recreational areas as the range of the batteries are broad enough. Third, he pointed out that the bicycle path standards are too small, especially as the mopeds share them as well. This is clearer with the e-bikes as they go faster for e-bikes, and as well the standards are too tight. He remarked that in TU Delft these lanes are even smaller than the standards, and hence development in this area is needed. This was pointed out in the participant interviews often as well, as several current e-bike users said that it became too crowded on the bicycle paths.

The demand for e-bikes are rising and will continue to rise (van der Kloof, 2015). In 2015 and 2016, nearly one-third of all new bicycles sold was an e-bike in the Netherlands (BOVAG-RAI, 2017). Roman Herzog reported that 47% of the Dutch population was considering replacing their cars with e-bikes ("Quarter of European commuters willing to switch to e-bikes," n.d.). While e-bikes are used mainly for recreation, the share of work-related kilometers has risen up to 24% in 2016 (Harms & Kansen, 2018). As interview results show that the society's perception of e-bikes usage areas is changings as well, this can cause changes in subjective norms. Which, as the estimates conceptual model show, can rise intention levels.

Those who aim to promote e-biking should aim to change the attitudes as this was the most effective component in TPB. This involves the attitude about the weather in the Netherlands. One interviewee who cycles every day to work said that it was quite rare that she got completely wet: maybe once or twice a year. People were also willing to check the weather predictions and modify their behaviour, such as waiting for the rain to stop, wearing suitable clothing such as rain trousers or driving just for the day. As someone who cycled to work for the last 30-40 years, Jan Ploeger said that cycling as a commute in winter has become more common over the years, despite the infrastructure not developing significantly. What is interesting is that the Dutch stereotype of that "it rains everyday" is not as true as people believe it to be. Roman Hertog mentioned an experiment of a man who cycled every day to work for 10 years, between 2008-2018 and recorded the weather. As a result, he had "dry rides" 90,3% of the time (Poels, 2018). With creating awareness on such manners, using the tax scheme to offer discounts on bicycles and related accessories ("Fietsplan en de belastingdienst," n.d.), people can be motivated to cycle more and drive less. Another option to further facilitate biking is financial compensation by the employer per kilometer cycled. This was found to be effective in number of studies (Fioreze, Thomas, Huang, & van Berkum, 2018; Heinen et al., 2013; Heinen, Maat, & Van Wee, 2011; Martin, Suhrcke, & Ogilvie, 2012; Vanoutrive et al., 2009; Wardman, Tight, & Page, 2007) and could be researched in TU Delft context, especially as this is possible under Dutch Tax Law (Bicycle Compensation and Income Tax Benefit, 2013).

The next chapter aims to discuss the results: coherence with previous research, implications for different stakeholders, the significance of the results, and how to deal with the limitations.

5 Discussion

This thesis has used a case-study approach to explore what can explain, adopting cycling as a commuting habit. It has tried to fit the phenomena to its main research lens, the TPB, be estimating attitudes, SN, and PBC. Interviews and surveys have been used to validate the assumed model qualitatively and quantitatively. The survey allowed the conceptual model to be estimated in a numerical way, while the interviews give insights into the basis of different factors. The methodology shows what people value while changing their travel behavior through a well-thought, planned process. This chapter aims to discuss the results in terms of where it stands in the current research field, its implications for different stakeholders and its transferability, the reliability and the limitations in the research process and how these can be dealt with in future work to show the significance of the research efforts.

5.1 Coherence with Previous Research

The findings presented in the results are in line with the previous research on e-bikes from different parts of the world. Hereby in Table 12, these similarities have been summarized, and an explanation follows the table.

5.1.1 Attitudes

As can be seen from the table, many of the factors identified by previous research are similar. While only two of these researchers have used TPB (Fyhri et al., 2017; Haustein & Møller, 2016), researched components could easily be fit into TPB. As can be seen in Table 12: Similarities with Previous Research on E-Bikes, people's attitudes towards e-bikes, or in other words things they consider important when contemplating to switch modes of transportation for commute is time savings, punctuality, convenience, ease of use, economics, health-related benefits, being able to arrive to work in a proper way, societal benefits, their enjoyment and their safety. Additional responsibilities were not included before and are a contribution. They are critical for e-bikes, especially for those who have responsibilities at home. Taking children to school, doing the groceries, or the need to carry bulky luggage are example responsibilities that are perceived as not possible to discharge with e-bikes. This is an important aspect that has to be evaluated in future research as it is indeed effective in the decision to an e-bike or not. Especially for research focusing on the frequency of e-cycling, it could be more important as it could indicate that people decide on their daily schedules.

Table 12: Similarities with Previous Research on E-Bikes

Papers & Components		(An et al., 2013)	(Arsenio, Dias, Lopes, & Pereira, 2017b)	(Cairns et al., 2017)	(Cherry & Cervero, 2007)	(Collado et al., 2014)	(de Kruijf, Ettema, Kamphuis, et al., 2018)	(Dill & Rose, 2012)	(Edge et al., 2018)	(Fyhri et al., 2017)	(Jones et al., 2016)	(Lee et al., 2016)	(Leger et al., 2019)	(Ling et al., 2017)	(Plazier et al., 2017a)	(Plazier et al., 2017b)	(Plazier et al., 2018)	(Popovich et al., 2013)	(Simsekoglu & Klöckner, 2019a)	(Simsekoglu & Klöckner, 2019b)	(Weinert et al., 2007)	(Wolf & Seebauer, 2014)
Attitude	Time savings	✓			✓	✓			✓			✓		✓		✓		✓	✓		✓	
	Punctuality	✓																				
	Convenience	✓			✓				✓			✓	✓			✓					✓	
	Ease of use	✓			✓							✓	✓			✓				✓		
	Cheaper	✓			✓	✓								✓			✓					
	Health and exercise							✓	✓		✓		✓	✓	✓		✓	✓	✓	✓		
	Not sweaty					✓		✓	✓						✓							
	Societal benefits								✓					✓		✓	✓	✓		✓		
	Enjoyment						✓							✓		✓		✓				
	Theft scare								✓									✓				
	Safety concerns		✓								✓		✓		✓	✓		✓	✓			
	Expensive					✓												✓				
PBC	Range anxiety							✓	✓		✓							✓				
	General																					✓
	Weather		✓						✓							✓						
Habits	E-bike for commute	✓		✓				✓	✓			✓		✓	✓							
	Cycling habit						✓						✓									
	Cycle more								✓		✓							✓				
SN	Not real biking							✓	✓		✓		✓			✓		✓				
	For old people															✓	✓					
	General																		✓	✓		✓
	Inspiring/ inspired							✓	✓									✓				
	Support																		✓			
	Partner e-biking									✓									✓			

5.1.2 Perceived Behavioral Control

Similar to the similarities between PBC and attitudes in the results of this research, as can be seen in Figure 4: some of the attitudinal factors listed in Table 12: Similarities with Previous Research on E-Bikes could also be placed under PBC as well. These are time savings, costs, ease of use/effort (also named general PBC), health-related limitations and safety concerns (also relating to the level of infrastructural development). For future researchers that want to use this conceptual model for research, it is important to underline the difference between using sub-factors for measuring attitude or PBC. For example, an attitude measurement question can be phrased as: "To what extend do you agree with the following statement: E-bikes are healthy.". On the other hand, a PBC-measurement can be phrased as: "To what extend do you agree with the following statement: My health condition allows me to e-cycle to work for commuting." In other words, whereas attitudes refer to ideas people have about e-bikes, PBC refers to what extend people believe they have control over their own behaviour. Hence, measurement questions should reflect this difference. On top of these joint factors, parallel to research outcomes range anxiety (which was placed until distance/time in this work) and the weather was recognized as well.

5.1.3 Subjective Norm

In SN, previous research has used norms in general. On top of that, negative norms such as "not real biking" and "for old people" surrounding e-bikes were often detected by previous researchers. When it comes to the actual interactions with others, support from loved ones, and inspiring each other was detected as well. What was not present in previous research but was revealed with this study is the changing norms: that the idea around e-bikes are changing. This could be due to the fact that lack of recent e-bike research in the Netherlands as it has just become more relevant.

5.1.4 Habits

Many of the past research has concerned itself with habits: for which activities they used the e-bike, the frequency of e-bike usage for commute, their past or present cycling habit and experiences and e-bikes' effect in increasing overall cycling. The author also detected a correlation between regular cycling habit and e-biking. There were also some insights into habit of e-biking for non-commute purposes as well: many continued using their regular bicycle for such purposes.

5.2 Recommendations for Stakeholders

The research outcomes have different implications for different stakeholders: TU Delft, pilot designers, and scientists. This section aims to go over them to give recommendations and reflect on what this research has contributed to.

5.2.1 Recommendations for the Delft University of Technology

This thesis has important practical outcomes for TU Delft and how they should proceed in the policy side to motivate people to leave their cars and switch to bicycles, especially as there are upcoming changes in the socio-economic system: implementation of bicycle highways that can further facilitate biking (Appendix M: Expert Interviews) and introduction of tax schemes. Leveraging these with proper policies can indicate a significant decrease in cars on campus. Firstly, the participants and employees, that were already e-biking, generally perceived the pilot as positive. Pilot participants found the organization of the pilot very professional, and communication efforts, including marketing, as positive. This means the expertise of the TU Delft pilot could be an example to other employers as universities also portray an example to the general public (Pitsiava-Latinopoulou et al., 2013). Details about marketing and communication are out of the scope of this research. Hence it is not possible to give specific advice. Secondly, many employees expect the university to incentivise cycling financially. Multiple interview respondents have said that they would be interested in leasing options or financial subsidies. Similarly, in the surveys, the majority of participants said financial incentives could get them interested in an e-bike. On top of that, as TU Delft used to have a bicycle plan, several mentioned that as an aspect they miss from their current contract. These show that with implementing the new tax scheme for leasing and to making a bicycle plan available again, TU Delft can address the demands of the employees and possibly decrease the number of cars on campus. Also, in terms of physical developments, results show that there is a need for more locked parking facilities, chargers in the facilities, and broader bicycle paths.

Thirdly, it is possible that promoting cycling is not enough to push people out of cars. This is due to the finding that people compare modes to each other when deciding to change it, as mentioned in 4.3.1. On top of that, the survey results show that people's attitudes about cars did not change much after the pilot as can be seen in Table 48: Summary of Responses to TPB Questions, Exit Survey in Appendix J: End Survey Results. Hence, in order to change these car-related attitudes, demotivating interventions are needed. These could include paid parking measures. However, for this co-working with the municipality is a must to avoid illegal parking elsewhere, as revealed by Jan Ploeger (Appendix M: Expert Interviews). More research is needed for additional recommendations. Lastly, speed pedelecs could get more people to leave their cars as time savings are higher. As time factor is present in both attitudes and PBC, an improvement could affect intentions substantially. Moreover, Roel Lenoir

(Appendix M: Expert Interviews) reported that unlike leasing e-bikes, leasing speed pedelecs are actually financially beneficial in the long term. With e-bikes, people end up paying more in total in the long term, and this is not the case with speed pedelecs. The downside to speed pedelecs, as reported from interviews, is the legal barriers. They cannot drive in the regular bicycle paths in the city centers, helmets are required as well as driving licenses. Nevertheless, it could be an interesting option to explore, also to include it in a future pilot.

5.2.2 Recommendations for the Pilot Designers and Policy-Makers

This research has analyzed the behavioral factors that facilitate adopting e-biking as a commute from a TPB perspective. It has used an exploratory model for the process, and while the model needs further approval, an estimated model is present. Pilot designers and policy-makers should target these sub-factors with different strategies to create changes in attitudes, SN, PBC, and habits to trigger changes in intentions.

There are tangible and intangible changes that can be arranged to change attitudinal factors. The tangible ones are mainly those that can be changed by policy-makers, are relatively more long term and high investment requiring as they are infrastructural. These can be listed as better bicycle infrastructure, better and more secure facilities for bicycle parking. Those that are intangible could be developed by policy-makers and pilot designers alike. There are perceptions that are needed to be changed, which can be tackled with marketing. First, communicating the societal benefits of switching to e-bikes and not taking the car could raise more awareness. Second, the convenience of weather is also an aspect that could be played upon: it rains less, or at least less intense than people expect it to (Poels, 2018). Third, as people already mention benefits as not requiring much effort, ability to combine exercise with the commute, which has health benefits and is fun, these could be used in the communication efforts. Some attitudes can also be transformed by changing the actual levels of benefits. First, financial benefits can make the e-bikes more attractive. Second, the leasing option can lower the initial trial threshold and hence get people on the bikes. Third, with speed pedelecs, time savings can be increased. Policy-makers should reevaluate the legislations around them to make them even more attractive. Fourth, with making accessories for e-bikes cheaper (such as baskets, rainwear, or child seats), the barrier of responsibilities can be lifted as people can then fulfill them with e-bikes. The measures taken to leverage attitudes are similar to that of PBC as they are closely retarded. Hence this component will be skipped in order to prevent repetition.

In terms of targeting SN, there is already a spillover effect from organizing pilots: more people become familiar with the concept. Surveys showed people let other people try their e-bikes, and also inspire each other to switch to e-bikes. Moreover, when marketing for the campaign, it is good to show examples of e-cyclists. Indeed, the TU Delft pilot does this successfully: they advertise to “bring a colleague” for trial as well

as testimony videos (TU Delft, 2019b). This way, negative norms, such as e-bikes for being old and not fit people, could be broken. For the policy-makers, it is good to leverage the existing hype about e-bikes. It was revealed through the interviews: e-bikes are becoming more common in society. Awareness campaigns, public service ads could do beneficial work.

For habits, not much could be done as people already have their own habits. However, it could be that the duration of the pilot and the frequency of using the e-bike during the pilot effects the intention. More research is necessary to give precise recommendations. Still, it is good to point out that the pilot duration and required frequency of using the e-bike during the pilot can be optimized.

In terms of recommendations that do not fit perfectly into TPB, it should also be pointed out that speed pedelecs were also a point of interest. Hence, a pilot that includes them could adhere to a wider audience, who live further away. For a pilot that only includes e-bikes, it is safe to say targeting people who live within circa 11-kilometer radius to work is efficient as this was the average distance of the participants, and only around 10% said the distance was too far. Moreover, as the interest in leasing is present, it could be that people are willing to pay for participating in a pilot as well. By financing the pilot, a larger number of pilots can be organized. As a closing mark for policy-makers, it must be said that some factors, such as weather, economics, or infrastructure, might be too strong to overcome with nudging. To improve cycling in a country, good urban planning and investment in cycling infrastructure is a must, possibly together with car-demotivating measures.

5.2.3 Recommendations for Scientists

The research outcomes offer a ground for future scientists to build upon. While there are also limitations that are present in the research methodology, those will be presented in the upcoming section, Reliability, Limitations, and Significance of Research. There are also potential research areas this ground can be used to grow for, and that will be presented in the next chapter, in Recommendations for Future Research. This section aims to elaborate on indications of research findings.

First of all, this research offers great opportunities for scientists who want to explore e-bike adoption. The findings also indicate what dictates people's behavioral changes in commuting behaviour, and hence can be applied to other mobility decisions as well. With the increasing awareness about global warming and the way modern societies' commute behaviour contributes to it, mobility decisions are becoming more critical. While the survey did not reflect the findings of the interviews to the full extend, the findings from both methods could be used to build i) better conceptual models and ii) design more comprehensive surveys to estimate these models.

Second, the findings can be used to consider whether TPB is suitable for changes in mobility behaviour or not. One problem in this project is that it was not possible to measure the behaviour, and hence, a final decision cannot be made. However, this illustrates a general problem in the fit of TPB to mobility behaviour. First of all, the actual measurement of the behaviour would call for participant observation over a longitudinal study. This brings a number of challenges: finding volunteers, time limitations, and data privacy issues. Even in this study where people had to fill in the surveys as the requirement of the program, the number of responses was limited. Second, as they are stated behaviors or opinions, it is hard to validate the extend in which they reflect the reality. Third, it is hard to define the behaviour itself. While in this study, "buying an e-bike" was considered the same thing as adopting the habit, this is just an assumption. A concrete definition of "habit" is needed to be defined: the proportion of commute travels that is conducted with the given mode. However, this is even prone to change due to external reasons, such as the weather. Hence, there is a challenge of defining and measuring mobility behaviors, which poses a question over the suitability of TPB. Fourth, it is possible that when the gap between intention and behaviour also depends on economics, other dynamics are present. As surveys were not covering the economic part of PBC, it is not possible to draw conclusions on whether PBC is suitable for behaviour that includes mobility decisions. An extension of the model might be necessary.

Third, as sub-components are openly presented as well as the interview transcripts, if future researchers decide to interpret another theory to explain the behaviour, they can use the available data. While the semi-structured interviews mainly stem from TPB-revealing questions, they could still be used for further analysis. Lastly, for scientists that will do similar research or replicate the research, it is important to reflect on the research process critically. Hence, the next part aims to elaborate on the limitations, reliability, and significance of the research flow.

5.3 Reliability, Limitations, and Significance of Research

The reliability, the limitations, and the significance of the research are entangled to each other and depend on similar strategies for improvement. Hence, these will be presented together, along with a discussion of transferability of results to the general population as it uses a case study only, namely TU Delft.

The first set of limitations come from the choice of TPB that was elaborated on Limitations of the Theory of Planned Behaviour. First, the theory of TPB was criticized in general, for not including the subconscious decision-making and the inability the explain the gap between intention and behaviour (Sheeran et al., 2012). In defense of the comment about the subconscious, Ajzen's (2015) said that the TPB could be applied to those processes that people already have existing intentions. This is the case

for the forenamed process as people try the e-bike for two months before they fill in the end survey and already portrayed interest as they joined the pilot. On the other hand, the gap between intention and behaviour could be partially explained in this study with the economic barrier, a PBC. As can be seen in Figure 1: Theory of Planned Behaviour (Ajzen, 1991), PBC has a proposed effect on behaviour and hence supports the TPB. Second, the suitability of TPB to the specific process can be debated. This has been debated in the previous chapter, in Recommendations for Scientists. It is possible that other theories can approach the process in another way, or possible extensions to the TPB can help improve the predictability of the model. Future research can possibly deal with this, especially by inserting theories that deal with technology adoption, commercial behaviour and organizational decision making. Third, it can be said that the research lens is too simplified to explain the structure-agency problem and only looks at the self-observed autonomous behaviour of TU Delft employees as not many norms were identified regarding demotivating car usage. Nevertheless, i) as e-bikes are not deeply penetrated to the market and hence are not common enough to pressure people out of their cars ii) as only a limit,ed number of participants mentioned the concern for the environment to be a reason to switch iii) as car usage is still common in the Netherlands and iv) as people mentioned that they valued personal convenience over societal benefits, it could be said that it was still suitable. However, as e-bikes become more common and environmental concerns become more relevant in the future this could change. To sum up, future researchers can use the outcomes of this research to better test, validate and extend TPB for e-bike adoption.

The second set of limitations comes from the lack of complete quantitative data. First, the potential errors in the initial conceptual model and lack of complete control in survey design could have yielded to partial results. Hence, the estimated conceptual model should be evaluated as an exploratory one. In hindsight, it would be better to use interview outcomes to guide survey design, which was not possible due to timing errors. Nevertheless, the triangulation of different methods offers a good framework for future researchers to build on. Second, the sample size is limited (n=75), which decreases the reliability of results. Strongly, the model estimations were parallel with previous research and qualitative results, and hence, this creates confidence in the exploratory estimated model. Third, self-selection bias and self-observing bias is always present in surveying. It could also be that people do not answer honestly or are simply incapable of predicting their own behaviour, especially as the season changes. To deal with this, a longitudinal study with direct participant observation can be conducted. This would require a more time-intensive research project and volunteers willing to share personal data. Fourth, some questions were not constructed and translated well, and hence, some variability in answer due to this could be present, which is not extensive as the number of English respondents are relatively low. A professional survey maker can overcome this problem. Moreover, a study that includes people who do not join the pilot can give better information about the overall

behavioral process. Their attitudes, PBC, and SN could help better identify the shortcomings of the theory.

Third, there are limitations in the quantitative data analysis procedure. First, with factor analysis, new latent variables are constructed with the summation of factors. This assumes the question answers' have equal weight on the latent variables which the case might not be. In a replicative study, other methods can be tried. Second, the factor analysis reduces the data and hence disregards some. The degree to which it failed to include important data was tested as presented in detail (see Evaluation of Potential Improvements to the Estimated Conceptual Model) but still this limitation is present. Third, multiple linear regression procedure was conducted with an ordinal dependent variable, the intention. Ordinal linear regression could also be applied, but continuity was assumed for simplicity. Fourth, in the regression model correlation between dependent variables were ignored. As mentioned before, with a larger sample size, SEM can be performed, which is a more complex statistical analysis methodology that regards such correlations.

Fourth, semi-structured interviews also carry limitations. First, it could be that people are not honest, but as said before, many did not even have problems with their names being openly public, so this concern is minimal. Second, it could be that people who volunteer to do interviews are more enthusiastic. This could be solved with interviewing those who i) quitted e-biking, ii) considered but did not start to and iii) are not familiar with them at all. Third, as semi-structured interview questions and coding methodology were TPB-based, together with the lack of full objectivity of the analyst, it could be that the process was overfitted into TPB. The availability of open data offers future researchers to look into this, possibly with open coding and multiple analysts. Fourth, as the interviewer did not speak the mother tongue of the participants, mainly Dutch, interviews in Dutch could yield more honest answers and clearer communication. However, as all interview transcripts were checked by the interviewees as well, this is not a big concern. Fifth, there is only a limited number of interviews, but to make sure the number of factors not identified is minimized, saturation principle has been used. Sixth, in the coding procedure, oversimplification is present. While people were mentioning attitudes, they usually "compared" the situation: e-bikes with either cars or public transportation, the weather with good or bad. In hindsight, these comparisons could have been included in the analysis for more detailed results.

Finally, the generalizability of the results is questionable. First, the general population is quite different from university employees demographically. However, as many interviewees were actually not academic staff, this socio-economic divide might be tighter than what it initially appears to be. As can be seen in Appendix I: Starting Survey Results in Table 33: Demographics of Pilot Participants, women are

underrepresented. This research's outcomes can be used to make a TPB based e-bike adoption research in the general population in the Netherlands. Second, the Netherlands is quite different than in other countries when it comes to cycling. Nevertheless, as can be seen in Coherence with Previous Research, the similarity with research from different contexts makes the applicability promising. Third, as Delft is located within a suitable distance from two big cities, Rotterdam and the Hague, it is a better candidate for e-bike potential. In more sub-urban or rural areas, results can be different, and this calls for future research as well. Fourth, as there are road constructions, driving, and public transportation takes longer, which makes e-bikes more attractive. In regular conditions, its advantage will be less. In summary, this chapter has discussed the results, its implications, and limitations. The following chapter aims to wrap up the research questions and give recommendations for future research.

6 Conclusion

6.1 Main Findings

With this thesis, the main aim was to explain the process of adopting e-biking as a commuting habit to give insights to intervention designers on how to facilitate this process. Using TPB as the main research lens, a mix of quantitative and qualitative methods were used in triangulation. These methods support each other and cover up for each other's limitations. The results are in line with previous research, and they allowed for estimation of a conceptual model as can be seen in Figure 5: Estimated Conceptual Model. A more detailed analysis of the sub-factors of the TPB can be found in Figure 4: Conceptual Model from Interview Results. While confirmatory research is needed to validate this exploratory model, the outcomes could be used as a ground for such research. Hence, it can be said with initial results that the habit-extended TPB does explain the behavioral factors behind the adoption of e-bikes as a daily commute, at least for TU Delft employees, and possible for a larger population and even other countries. Especially in countries with hills, it could be a good option to remove barriers, such as in Istanbul, the author's hometown.

In detail, people's intention to buy an e-bike is affected by their attitudes, perceived behavioral controls, habits, and intentions that surrounds commuting with an e-bike. This behavioral analysis gives insights for TU Delft, pilot designers, policy-makers, and future scientists. Factors such as time savings, prices, convenience, enjoyment, responsibilities, health, weather, and societal perceptions affect people's intentions to use an e-bike or not. The process is similar for those employees that have adopted the habit before, and also those who join the pilot. As the pilot itself gives people hand-on experience with e-bikes, it can make people realize they have more control over the behaviour than they think initially. Moreover, e-bikes can remove barriers that stand in front of cycling and enhance positive attitudes. As it also makes e-bikes more visible and familiar to the loved ones of the participants, SN could be changed as well. These are already changing as societal norms around e-bikes are changing. By further facilitating this change, policy-makers could push the levels of cycling higher. Hence, the findings support the fact that pilots are indeed a good method to motivate people to buy e-bikes. It could be even that people might be willing to pay for pilots.

One of the most important findings of the research is the gap between intention and behaviour: the high price of the e-bikes creates a gap between intention and behavior. Risk aversion explains how people are not sure that they will use the e-bikes as much to make up for the investment, and they have a hard time estimating whether it is cheaper in the long run or not. Options such as leasing or financial incentives can mobilize people into the behaviour as they can minimize their regret. A leasing option can help close the gap between intention and behaviour by lifting up the risk of the

high initial investment. Even a paid pilot could be of use, as people could be willing to pay for the trial. In this way, longer pilots could become more financially viable as well. Faster models, such as speed pedelecs, can remove barriers further and hence can help get more people on bicycles. Policy makers need to reshape policies to address these needs if they find out that life-cycle analysis and usage patterns of e-bikes are beneficial for the society overall.

In short, people like to cycle, and e-cycle once they experience it. However, when it is used for commuting even in the Netherlands, there are certain barriers that stand in the way. E-bikes are increasingly seen as a way to tackle those barriers and can replace car trips up to 11 kilometers in the Netherlands. This becomes even more important when considering that half of all trips up to 7,5 kilometers are made by cars ("Opportunities for expanding the use of bicycles," n.d.). Upcoming infrastructural and legislative developments can facilitate cycling more, and a better policy can help TU Delft boost this effect. These policies refer to making the leasing or financial subsidies available, and/or changes in the car parking rules.

While several limitations are present, given the time constraint and scope of research, the thesis has managed to deal with these to minimize inaccurate analysis. For future work, it is important to build on top of the research findings while addressing the limitations. The following section aims to give recommendations for future scientists.

6.2 Recommendations for Future Research

There are two general recommendation groups: one about research methodologies and another one in terms of topics to explore. To start with the methodologies, first, the greatest strength of the research outcome is that it can be used as a ground to analyze behavioral changes in commute-related mobility choices. The results can be used to build better surveys that can analyze such areas, that is beneficial as due to climate, health, and congestion concerns switching to more active modes of transportation is interesting. Second, with a larger sample that involves other populations as well, especially those who do not actively consider e-biking, a better estimation of the conceptual model could be achieved. Moreover, with a larger sample, more complex statistical methods can be used, such as SEM. This way, a more accurate factor analysis, better latent variables, and simultaneous estimations between the latent variables and factors rather than indirect estimation can be achieved. This will improve the reliability of the research considerably. Third, with a longitudinal study with possibly participant observation, more accurate data about the behaviour can be collected, and hence, TPB can be validated fully. In a TU Delft context, the bicycle provider of the program and the buyers can also grant permission to share usage behaviour with future researchers. Contacting other e-bike retailers for similar research is possible. With such knowledge, pilot designers can also optimize their

pilots' duration and requirements for participants to maximize the probability of actual performance of the behaviour.

When it comes to research topics, first, comparative studies between the pilots could be useful, especially the duration and the marketing campaigns. This can help what kind of pilot and marketing organization is the most successful in treating different components of TPB. Second, a paid pilot program can be designed. If a financially sustainable pilot is achieved, pilots could be more widely applied. Third, more speed pedelec-specific research is needed as they have different barriers and advantages. A pilot involving them can give an interesting result. Fourth, as the weather is a great barrier when it comes to e-bikes, a pilot taking place in the colder and wetter season could yield different results. It could either change perceptions about the weather in a positive way by showing it does not rain that often or the other way around. Fifth, with the new tax regulation in 2020, e-bike leasing will become easier. Research around this policy change could be useful for other countries and policy makers as well. Looking into other incentive methods, possibly with stated or revealed choice experiments could guide policy-makers and companies. Sixth, more insight into the behavioral process of stop using a car is needed, especially the norms surrounding environmentally friendly behaviour. Seventh, research in a culture and city where cycling is not common can help to validate the transferability of results and can extend the exploratory model further. It can also create more impact, as bicycles are increasingly seen as a solution to congestion and e-bikes could potentially change the way people in such contexts look at bicycles. The pilot program from TU Delft and also the TU Delft population offers opportunities for such studies, the potential for other Master or Ph.D. theses as well.

In closing words, e-bikes can make cycling relevant again for those who have stopped cycling. They can help people overcome their perceived barriers that stand in front of cycling, and their wider adoption means less congestion, fewer emissions, and healthier population. It could create the "critical mass" for policy makers to develop cycling infrastructure and legislative environment. In a rapidly urbanizing world in the midst of a climate crisis, bicycles offer great opportunities. E-bikes make them better.

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Appendices

Appendix A: Scientific Paper

Explaining Adoption of Electric Bicycles with Theory of Planned Behaviour: Insights into the Components

Abstract This paper aims to explain the behavioral factors behind the adoption of electric bicycles as the daily commute. In order to look into the behavior from an individual choice perspective, the theory of planned behavior was chosen as the research lens (Ajzen, 1991). As it is convenient and suitable, the electric bicycle pilot at the Delft University of Technology was chosen as a case study. As the research arena is not developed well enough, the research was exploratory. Hence, semi-structured interviews were conducted with 11 pilot participants and 11 current electric cyclists to detect as many factors as possible. The findings show that the theory of planned behaviour can indeed explain the phenomena. The results show that policymakers can stimulate cycling by implementing leasing as an option for electric bicycles, effective marketing campaigns, and by demotivating car usage. Future research on quantitative methods for numerical estimation of the conceptual model, comparison of different financial subsidies and methods for discouraging car usage can help further stimulate electric cycling.

Keywords e-bicycle, theory of planned behaviour, mobility, commuting behaviour, active transport

Introduction Over the years, cycling as a way of commuting became more attractive as it gained recognition as a cheaper and healthier alternative to motorized transport (Handy, van Wee, & Kroesen, 2014). Moreover, policymakers started gaining interest in stimulating cycling, as it is cleaner and requires less infrastructure investment compared to cars and buses (Weiss, Dekker, Moro, Scholz, & Patel, 2015) and it reduces congestion on roads (Coleman, 2000). Due to the factors mentioned above, numerous international, national, and local governments and companies have started adopting policies to popularize cycling. Despite the benefits reported above, there are obvious drawbacks to cycling. People choose other modes of transportation over cycling as they perceive them as being more comfortable, faster, less effortful, more suitable for the weather or they think they cannot fulfill their responsibilities with a bicycle. However, there is a promising solution that can help people leverage the advantages of other vehicles while cycling: electric bicycles (e-bicycles). Popovich et al. (2013) report that e-bicycles can remove barriers in cycling as it helps people maintain speed and accelerate without getting tired. While there are numerous e-bike technologies, this paper refers to pedelecs. European law classifies these devices under bicycles. They give power assistance up to 25 km/h only when pedaling and have an electric motor with up to 250 Watts of power (Bike Europe, 2018).

Numerous initiatives have tried to stimulate e-biking. Under the project Maastricht Bereikbaar in the Netherlands, people working for some companies were given the chance of joining a one-week trial (Mediatastisch, n.d.). In Melbourne, another pilot program tries to investigate why people prefer e-bikes (RACV, 2017). Researchers were also interested in pilot

programs. Using the same Norwegian pilot program, Fyhri & Fearnley (2015) and Fyhri et al. (2017) have researched different topics. Along with governments and scientists, professional organizations have begun recognizing their potentials to stimulate cycling to work as well. However, existing research mainly focuses on tangible and intangible factors that affect rates of e-cycling. These refer to infrastructure, socio-demographics, policies, and similar components of the socio-economic systems that a singular stakeholder cannot have full control. On the other hand, only a limited number of researchers have looked into this change in behavior as an individual choice. This paper aims to investigate the adoption of e-biking as a behavioral process, using the theory of planned behavior (TPB) as a research lens. This choice will be supported in the upcoming parts. This theory divides the factors driving the behaviour to components that stem from individual perceptions (Ajzen, 1991). It can be argued that perceptions are easier to shape than actual factors. Hence, by analyzing the adoption of e-biking from a TPB perspective, intervention designers can gain insights into what perceptions to target to promote behavior. This paper aims to *explain the adoption of e-bikes as a daily commute from a behavioral perspective*. In order to do so, a case study is undertaken as the research timing is coinciding with is an ongoing e-bike pilot at Delft University of Technology (TU Delft).

There are four reasons why the case study is suitable. First, as just mentioned, there was a mobility pilot where people try e-bikes for two months (TU Delft, 2019). One hundred e-bikes were handed out per block, and the research ran simultaneously with two blocks (TU Delft, 2019). Second, as the Netherlands is a cycling-mature country (Harms, Bertolini, & te Brömmelstroet, 2014), the number of external factors preventing people from e-cycling, such as safety (Rose, 2012) will be minimal. Hence, the behavior will depend more on perceived rather than actual factors, which makes the case easier to investigate from a TPB perspective. Third, e-bicycles are becoming increasingly popular in the Netherlands. In 2017, 1,8 million e-bicycles were sold, and in 2018, 40% of all bicycles sales were electric, climbing up from 31% in 2017. So, it was also possible to find people who already adopted the habit along with pilot participants. They can give insights into real, long term behavioral change. Fourth, a university is a proper research setting for the topic on hand: it was used widely in bicycle research (Aldred & Jungnickel, 2014; Gatersleben & Appleton, 2007; Heinen & Handy, 2012; Miller & Handy, 2012; Panter, Grif, Dalton, & Ogilvie, 2013; Thigpen, Driller, & Handy, 2015). The paper will start by presenting the materials and methods where the research approach and methodology will be presented. It will then communicate the results and follow with concluding the outcomes.

Materials and Methods

There is a need for a theory that explains behaviors from a psychological perspective as the paper focuses on individual decision. TPB of Ajzen (1991) is such a theory. A conceptual model of the theory is provided in Figure 1. It was used widely for mobility research (Anable, 2005; Bamberg, Ajzen, & Schmidt, 2010; Bamberg & Schmidt, 2003; Haustein & Hunecke, 2007; Heath & Gifford, 2002; Lois, Moriano, & Rondinella, 2015), and also specifically for e-bikes in combination with other theories (Fyhri et al., 2017; Haustein & Møller, 2016). In detail, Ajzen (1991) states that the following components determine behaviour: 1) Attitudes: the degree of positive/negative approach one person has to the behavior. 2) Subjective Norms (SN): what people expect as the judgment of their loved

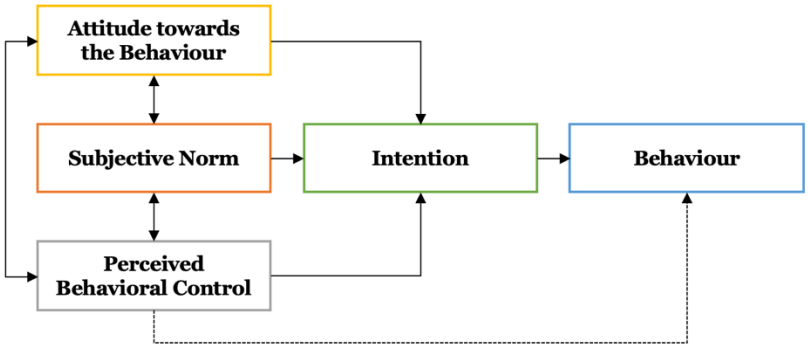


Figure 6: Theory of Planned Behaviour (Ajzen, 1991)

ones if they perform the behaviour. 3) Perceived Behavioral Control (PBC): to what extent people perceive the behavior as controllable. 4) Intention: people's intention to perform the behavior.

TPB can be used to explain many different phenomena. In this paper, the behaviour on hand is the "adoption of e-bikes for the daily commute." However, this definition is not measurable. It is possible to define it as a minimum percentage of share of e-bikes over the commuting days. This might vary from person to person. The behaviour will be defined as "buying an e-bike" for the sake of a more straightforward analysis. As only two articles have used TPB before for e-bikes, an exploratory approach is undertaken. Semi-structured interviews are chosen as a method in order to detect as much as sub-factors as possible (Ayres, 2008). The interviews are also a suitable method for e-bike research. It was used widely as the main or the supporting methodology before (Cairns, Behrendt, Raffo, Beaumont, & Kiefer, 2017; Dill & Rose, 2012; Edge, Dean, Cuomo, & Keshav, 2018; Jones, Harms, & Heinen, 2016; Lois et al., 2015; Plazier, Weitkamp, & van den Berg, 2017a, 2017b; Popovich et al., 2013).

Semi-structured interview questions were designed to explore different components of TPB. Also using the potential barriers and facilitators that previous, non-behavioral research has detected, open-ended questions were included. These were namely the societal benefits, facilities, infrastructure and weather (Arsenio, Dias, Lopes, & Pereira, 2017a; Astegiano, Tampère, & Beckx, 2015; Behrendt, 2018; de Kruijf, Ettema, & Dijst, 2018; Dill & Rose, 2012; Edge et al., 2018; Jones et al., 2016; Ling, Cherry, MacArthur, & Weinert, 2017; Lopez et al., 2017; Plazier, Weitkamp, & Berg, 2018; Plazier et al., 2017a, 2017b; Popovich et al., 2013; Salmeron-Manzano & Manzano-Agugliaro, 2018; Seebauer, 2015; Simsekoglu & Klöckner, 2019a, 2019b; Weiss et al., 2015; Wolf & Seebauer, 2014). Two sub-groups were included in the interviews: pilot participants and current e-bikers. This way, both people who are currently adopting the habit and those who already did can be researched. As the two sub-groups have different characteristics, a slightly different set of questions were made. These can be found in Appendix I and II, respectively. In the list, next to the questions, the TPB component that the question aims to measure is listed.

Different methods were used to recruit interviewees. Pilot participants were reached out by e-mails sent out by the organizers of the mobility scheme. Current e-bikers were found via personal connections of the author. In order to avoid snowballing effect, flyers were hanged to bicycle parking facilities. Saturation principle was used to include as many factors as possible while investing a reasonable amount of time. So, until there were nearly no new factors detected in new interviews, more candidates were found. A total of 11 participants from each subcategory was reached. A comprehensive summary of the interview procedure has been summarized with consolidated criteria for reporting qualitative studies (Tong et al., 2018) in Appendix III. Background details of the interviewees are not investigated for confidentiality and to make sure people were as honest as possible.

The interviews were fully transcribed and approved by the participants. Boeije's (2009) guidance was used for analyzing the transcripts. ATLAS.ti was used as a supporting software tool. After each interview, the first step was open-coding. The transcripts were read completely. When re-reading, quotations that were relevant to TPB components were coded using short texts. The second step was axial coding. Open codes were assigned to suitable components of TPB. "Code families" in ATLAS.ti were used to create these components. The third step was selective coding. The code families were used to make "superfamilies" and new code families were defined to construct sub-components of TPB. For example, as the weather is a sub-component for PBC, the weather was defined as a code family and PBC as a

superfamily. All open codes that fit into weather were assigned to this family. Also, in this step, some open codes were merged if they were similar. Finally, saturation analysis was conducted to see how many additional codes were detected, and if there were still upcoming ones, more interviews were conducted, and first four steps were repeated. As mentioned before, 11 participants were included from both sub-groups. The following section communicates the results of the data analysis.

Results The resulting conceptual model can be seen in Figure 2. This section will explain the findings in detail. As can be seen clearly, there are many attitudinal factors that are detected, and they have been separated as advantages and barriers. However, subcategories inside these may refer to similar aspects. First, people have attitudes towards the affordability of e-bikes. Whereas for some, it was perceived as cheap as it is a one-time investment, for some, it was expensive. The interviews also revealed that people tried to go around this barrier: some bought cheaper models to experiment with and ended buying higher quality ones at the end. This perception also depended on what people compared e-bikes with. Those that compared to cars and public transportation recognized that they were cheaper in the long run. However, those who compared it to regular bicycles found it expensive.

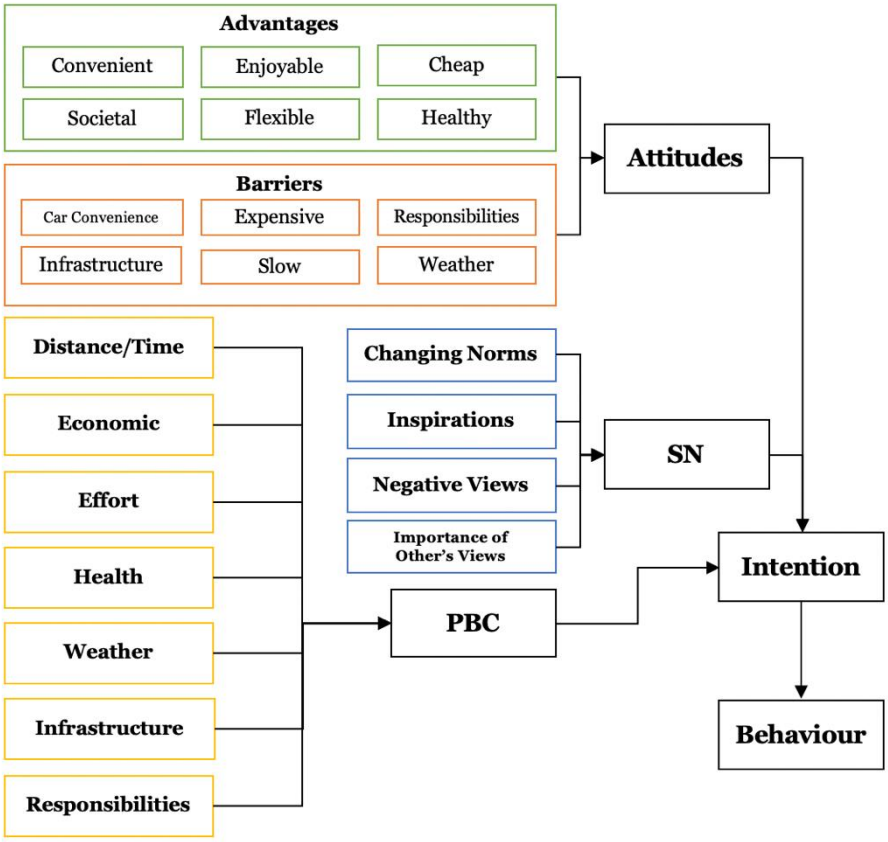


Figure 2: Conceptual Model for Adapting E-Bike for Commute

Second, there are convenience related attitudes. The positive ones related to perceptions about being able to arrive without sweating, not requiring much effort even when there is wind, avoiding congestion, time savings, and predictability. On the other hand, negative perceptions are there as cars are seen as mandatory for specific responsibilities and duties, mainly relating to carrying things. Third, e-bikes are enjoyable. They offer the ability to skip traffic, take over others easily, cycling without getting tired and being outside during commute. Fourth, e-bikes are healthy: they make people cycle more often, help people combine their commute with a moderate level of exercise and help those who cannot cycle anymore get back on their bikes.

Fifth, e-bikes are seen beneficial for society as they reduce emission and congestion. It is essential to underline that the majority of respondents pointed out that this was an additional benefit; it was not their primary reason to change their behavior. Sixth, people had attitudes related to the suitability of infrastructure for e-cycling. These included too narrow bicycle

roads and lack of space in locked parking facilities. Seventh, time was an important attribute that had differing perceptions. Some stated they were better as they took the same or less amount of time compared to other modes, especially during rush hours. For others, time savings were not enough and/or the distance was too far. This also affected the frequency of trips; some people did not take their bicycles when they had an early appointment at work or home. Eighth, people generally perceived e-bikes to be more dangerous than regular bikes. Lastly, it is essential to say that people pointed out that their attitudes toward the e-bikes improved as they used it more.

Different aspects affect people's PBC over using an e-bike for their commute. These are often similar to attitudes. It could be helpful for the reader to repeat that while attitudes refer to what people perceive the behavior as the PBC refers to their perceived control over it. For example, one might find e-bikes expensive, yet still think they can afford them. The first one is an attitude while the latter is PBC. The first PBC relates to the distance between home and work. Range anxiety adds up to this: people are afraid the batteries would not last through the whole journey, and hence they would need to put extra effort to complete the journey. Second, affordability is also an issue for people, which was explained in attitudes. Third, the weather effects people's decision to different extends. While some people said they could cycle in any weather, some said they cared about not getting wet on the way to work and hence not willing to cycle all the time. Fourth, some people perceived some responsibilities as not suitable for the e-bike, such as taking children to school. Overall, as e-bikes were seen as more convenient and less energy-intensive than regular bicycles, they were perceived as a more comfortable behavior with a higher financial requirement.

SN is the component that is prone to the most change as e-bikes are a new concept and are still penetrating the market. It was often mentioned that the perceptions around e-bikes have changed in the last five years. It was perceived as something for the elderly and those with limited physical capabilities. Now more and more it is becoming as a suitable option for the commute. While some interviewees said they did not care about others' opinions, it was also found out that people inspired or got inspired by colleagues to start using it.

Subjective norms are possibly the most variable component in e-bikes now as it is relatively a new technology and spreading fast. People mentioned often in the last five years perceptions around it changed and now it is more relevant as a commuting vehicle. The perception that e-bikes are for older people with limited physical capabilities and that it is cheating is still relevant. While some interviewees said others', opinions are not important for them, e-bikes are still a topic of discussion. People said they inspired or got inspired from their colleagues to use an e-bike for work-home travel. When it comes to intention and behaviour, it was observed that the cause of the gap is mainly economical. People are regret-aversive (Zeelenberg, Beattie, Van Der Pligt, & De Vries, 1996) and hence are hesitant to make an investment they are not sure it will pay back. Further elaboration on these results, the limitations of the research and recommendations for future work will be provided in the upcoming chapter.

There are also findings of the gap between the intention and the behavior. It was observed that this was caused due to the economic constraint. They said with financial investment, such as a bicycle plan or leasing, they could be pushed to the behavior. This could be explained with regret-aversion: they are hesitant to make an investment that they are not sure of being able to pay back (Zeelenberg, Beattie, Van Der Pligt, & De Vries, 1996). Further elaboration on these results, the limitations of the research and recommendations will be provided in the upcoming chapter.

Conclusions The previous chapter has fitted TPB with suitable subcomponents. While previous research did not use a behavioral approach, their findings are generally parallel to of this paper. These similarities can be seen below in Table I. This shows that TPB is indeed an excellent way to explain the behavioral process that surrounds adopting e-biking as a habit. Previous research has usually accepted these factors as structures. However, when looked upon from an agent's view, it is more the perception of the individual that depends on whether they develop the intention and consequently the behavior. Hence, the results are confirming the conceptual model in Figure 1. Attitudes, PBC, and SN, are affecting the intention to buy an e-bike. The intention, together with PBC, affects the behavior. With a quantitative study that builds on top of these findings, this can be proved numerically as well. This gives a power to the policymaker: by targeting these aspects, they can stimulate cycling to a certain extend.

Table 13: Similarities with Previous Research

	Similarities	Resources
Attitudes	Time Savings	(An et al., 2013; Cherry & Cervero, 2007; Collado et al., 2014; Edge et al., 2018; Lee et al., 2016; Ling et al., 2017; Plazier et al., 2017b; Popovich et al., 2013; Simsekoglu & Klöckner, 2019a; Weinert et al., 2007)
	Convenience	(An et al., 2013; Cherry & Cervero, 2007; Edge et al., 2018; Lee et al., 2016; Leger et al., 2019; Plazier et al., 2017b; Weinert et al., 2007)
	Ease of Use	(An et al., 2013; Cherry & Cervero, 2007; Lee et al., 2016; Leger et al., 2019; Plazier et al., 2017b; Simsekoglu & Klöckner, 2019b)
	Monetary Issues	(An et al., 2013; Cherry & Cervero, 2007; Collado et al., 2014; Ling et al., 2017; Plazier et al., 2018)
	Healthy	(Dill & Rose, 2012; Edge et al., 2018; Jones, Harms, & Heinen, 2016; Leger et al., 2019; Ling et al., 2017; Plazier et al., 2018; Plazier, Weitkamp, & van den Berg, 2017a; Popovich et al., 2013; Simsekoglu & Klöckner, 2019a, 2019b)
	Not Arriving Sweaty	(Collado et al., 2014; Dill & Rose, 2012; Edge et al., 2018; Plazier et al., 2017a)
	Societal Benefits	(Edge et al., 2018; Ling et al., 2017; Plazier et al., 2018, 2017b; Popovich et al., 2013; Simsekoglu & Klöckner, 2019b)
	Enjoyment	(de Kruijf, Ettema, & Dijst, 2018; Ling et al., 2017; Plazier et al., 2017b; Popovich et al., 2013)
PBC	Range Anxiety	(Dill & Rose, 2012; Edge et al., 2018; Jones et al., 2016; Popovich et al., 2013)
	Weather	(Arsenio, Dias, Lopes, & Pereira, 2017; Edge et al., 2018; Plazier et al., 2017b)
SN	E-Biking is Cheating	(Dill & Rose, 2012; Edge et al., 2018; Jones et al., 2016; Leger et al., 2019; Plazier et al., 2017b; Popovich et al., 2013)
	E-Biking is for Elderly	(Plazier et al., 2018, 2017b)
	Inspiring Each Other	(Dill & Rose, 2012; Edge et al., 2018; Popovich et al., 2013)

The results have implications for policymakers and pilot designers that want to stimulate cycling. First, they can invest in physical structures to improve attitudes and increase PBC. These include developing better infrastructure and better parking facilities. Second, they can implement policies and rules that change PBC. This is mainly related to the economic barrier as that was the largest observed one. Interest in bicycle plans and leasing options were expressed in the interviews. These measures lower the threshold between the intention and behavior as PBC becomes higher with rising affordability. TU Delft could use the availabilities in Dutch law to adhere to this possibility. A good financial incentive would be leasing, especially as there is upcoming tax legislation in the Netherlands that will make this possible ("Fietsplan en de belastingdienst," n.d.). Leasing could be evaluated as similar to a pilot.

People get to experience e-bikes without a high initial investment. As it was revealed, more experience with the e-bike yields to better attitudes, it can be assumed that people would like to continue using the e-bike. Moreover, as more and more people use the e-bike, SN surrounding them can change as well as people were reported to inspire colleagues and family members.

Second, marketing campaigns can help create differences in all three components. Communicating the positive sides of e-biking, such as health benefits, not sweating, societal benefits ease of use and enjoyment could help to provoke positive attitudes in people. They can also replace the negative image around e-bikes that it is for those who cannot cycle regularly. Showing the e-bikes as an alternative for cars is a better approach as people who compare it to regular bicycles develop negative attitudes.

Third, policymakers can focus on creating policies to demotivate people from using the car. It was seen that the perceived convenience of cars prevents people from switching to bicycles. It was not reported in the results, but people mentioned the availability of free parking was a reason they were still willing to take the car. This can be changed easily. Also, currently, the societal benefits are seen as an additional aspect. However, by making descriptive norms more visible, people can be motivated to act more "green" (Demarque, Charalambides, Hilton, & Waroquier, 2015) and can be pushed away from driving.

The research findings also have implications for future researchers. First of all, as the behavioral factors were in line with the factors identified from various research from a wide variety of geography, it can be said that the results are transferable to a broader context. A question here is whether TPB is good at explaining e-bike adaption in a culture where cycling is not relevant. However, as TPB separates the agent's perception from the structure to a certain extent, it could be said that external factors can be ignored to a certain extent. Moreover, the subfactors identified could be used for other changes in commuting behavior as well. They show what people consider as crucial in relating to their commute, and what their expectations are. Furthermore, this exploratory model can be used to construct surveys for quantitative studies. These can validate the usage of TPB for travel behavior.

There are also certain limitations to the research. First of all, there could be other theories present that can fit this topic as well. As interview questions were constructed by keeping TPB in mind, as well as the data analysis procedure, overfitting might be present. As the data is open to the public, future researchers can use this to see if other theories fit better, possibly with multiple analysts. Second, there are questions about the transferability of the research to the general public. The relatively high level of education of university employees and the location of Delft between two large cities could make it an "ideal setting" for e-bikes. Again, while the levels of components of TPB might be different than of the general population, it is not illogical to expect that the considerations are similar. Future research could indeed try to explore these factors as well. Third, the sample size is limited to 22, so it might be possible that some factors were not included. Saturation analysis was conducted to minimize the risk of this happening.

Many exciting research areas can help carry the knowledge on this are further. First of all, quantitative studies can be used to validate the model as well as provide policymakers with numerical data. This numerical data can help them make tradeoffs and determine priority areas. The exploratory model in Figure 2 can be used to construct surveys for these types of studies. Second, comparing the effectiveness of different financial incentives could be beneficial. People's reactions to the leasing or subsidies can differ, and hence policymakers

can decide which one to implement. Third, as interviews showed that the negative SN surrounding driving is not strong enough, potential intervention strategies could be researched. With increasing concern about the environment, studies about promoting green behaviors in other domains can be a basis for such research.

In conclusion, this paper has used interviews to explore behavioral factors behind the adoption of e-biking as the mode of the daily commute from a TPB perspective. The outcomes could be a strong basis to build on top of by future researchers as it shows what people perceive as crucial for the choice of commuting mode. These insights can also help pilot designers and policymakers to target better aspects that can provoke the behavior. As cycling is seen as a solution to many urban challenges, e-bikes could help people readily adopt the habit. While investments in infrastructure are essential, nudging correctly can stimulate cycling as well, and this paper points policymakers towards correct targets.

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Appendix I: Questions for Pilot Participants

1. What do you think about e-bikes? Do you know anyone who has an e-bike? Have you tried e-biking? [Attitude]
2. What do you think about using an e-bike? Did you consider it before? [Attitude]
3. What does your family/employer/friends think about you joining an e-bike pilot/buying an e-bike? [SN]
4. What was surprising with the pilot? [Attitude]
5. What do you think of the pilot and what are your expectations? Why did you decide to join the pilot program? [Attitude]
6. Have you considered biking/e-biking to work before the pilot program? Have you ever done it before? [Attitude]
7. How many times and how often do you plan to use your e-bike? For which purposes? [Attitude]
8. What are advantages/disadvantages/benefits of e-cycling to work: for yourself, the environment, society, TU Delft? [Attitude]
9. Do you think your current conditions allow you to e-bike to work? What external factors play a role in e-biking? [PBC]
10. Do you think you can finish the program requirements? [PBC]
11. Are you really considering to switching to e-biking? [Intention]
12. Are there enough facilities in TU Delft to serve e-bikers? [PBC]

Appendix II: Questions for Current E-bikers

1. What do you think of e-bikes, and how did you decide to buy one? What other mode of transportation were you using before the e-bike? Have your views changed after starting to use one? [Attitude]
2. How did your family/employer/friends react to you using an e-bike? [SN]
3. Have you heard of the pilot program? What do you think about it and do you think it will be effective? [Attitude]
4. What are advantages/disadvantages/benefits of e-cycling to work: for yourself, the environment, society, TU Delft? [Attitude]
5. What external factors play a role in your e-biking to work? Did your perception of their effects changed after you started using one? Does weather or any other uncontrollable factors affect your decision? [PBC]
6. Are there enough facilities in TU Delft to serve e-bikers? [PBC]

Appendix III: Consolidated Criteria for Reporting Qualitative Studies (Tong, Sainsbury, & Craig, 2018)

No	Item	Description
Domain 1: Research team and reflexivity		
Personal Characteristics		
1	Interviewer	Mina Kocaman
2	Credentials	BSc, MSc Candidate
3	Occupation	Student
4	Gender	Female
5	Experience and Training	None
Relationship with participants		
6	Relationship established	None
7	Participant knowledge of the interviewer	Information about master thesis and the main aim of research
8	Interviewer characteristics	-
Domain 2: Study design		
Theoretical Framework		
9	Methodological orientation and theory	Theory of Planned Behavior
10	Sampling	Pilot Participants: Convenience and variety: e-mailed pilot participants randomly/tried to choose a variety of demographics. Current Users: Mailed faculty known personally + flyers put into bicycle parking facilities
11	Method of approach	E-mail
12	Sample size	Pilot: 11, Current: 11
13	Non-participation	None
Setting		
14	Setting of data collection	Offices of the participants/for student participants where they study
15	Presence of non-participants	Generally, none, there were some colleagues in the room in some interviews, but they didn't intervene
16	Description of sample	Pilot: TU Delft employees/students that have joined the pilot program. Current users: TU Delft employees/students that already cycled
Data collection		
17	Interview guide	Questions determined beforehand, see below.
18	Repeat interviews	None
19	Audio/visual reporting	JustPressRecord application for iPhone was used
20	Field notes	-
21	Duration	As long as the questions took, ranges between 5-15 minutes
22	Data saturation	Achieved, see further chapters
23	Transcripts returned	Yes, all corrected/validated
Domain 3: Analysis and findings		
Data analysis		
24	Number of data coders	1, Mina Kocaman
25	Description of coding tree	None
26	Derivation of themes	Themes were determined beforehand, several identified during axial coding
27	Software	ATLAS.ti
28	Participant checking	No
Reporting		
29	Quotations presented	Yes
30	Data and findings consistent	Yes
31	Clarity of major themes	Yes
32	Clarity of minor themes	Yes

Appendix B: Interview Questions

Questions for Pilot Participants

13. What do you think about e-bikes? Do you know anyone who has an e-bike? Have you tried e-biking? [AttB]
14. What do you think about using an e-bike? Did you consider it before? [AttB]
15. What does your family/employer/friends think about you joining an e-bike pilot/buying an e-bike? [SN]
16. What was surprising with the pilot? [AttB]
17. What do you think of the pilot and what are your expectations? Why did you decide to join the pilot program? [AttB]
18. Have you considered biking/e-biking to work before the pilot program? Have you ever done it before? [AttB]
19. How many times and how often do you plan to use your e-bike? For which purposes? [AttB, H]
20. What are advantages/disadvantages/benefits of e-cycling to work: for yourself, the environment, society, TU Delft? [AttB, f/b]
21. Do you think your current conditions allow you to e-bike to work? What external factors play a role in e-biking? [PBC]
22. Do you think you can finish the program requirements? [PBC]
23. Are you really considering to switching to e-biking? [I]
24. Are there enough facilities in TU Delft to serve e-bikers? [f/b, PBC]

Questions for Current E-bikers

7. What do you think of e-bikes, and how did you decide to buy one? What other mode of transportation were you using before the e-bike? Have your views changed after starting to use one? [AttB, H]
8. How often do you use your e-bike to come to work? Do you use it for other purposes? [H]
9. How did your family/employer/friends react to you using an e-bike? [SN]
10. Have you heard of the pilot program? What do you think about it and do you think it will be effective? [AttB]
11. What are advantages/disadvantages/benefits of e-cycling to work: for yourself, the environment, society, TU Delft? [AttB, f/b]
12. What external factors play a role in your e-biking to work? Did your perception of their effects changed after you started using one? Does weather or any other uncontrollable factors affect your decision? [PBC]
13. Are there enough facilities in TU Delft to serve e-bikers? [PBC]

Appendix C: Interview Reporting

Table 14: Criteria for Reporting Interviews, Consolidated Criteria for Reporting Qualitative Studies (Tong et al., 2018)

No	Item	Description
Domain 1: Research team and reflexivity		
Personal Characteristics		
1	Interviewer	Mina Kocaman
2	Credentials	BSc, MSc Candidate
3	Occupation	Student
4	Gender	Female
5	Experience and Training	None
Relationship with participants		
6	Relationship established	None
7	Participant knowledge of the interviewer	Information about master thesis and the main aim of research
8	Interviewer characteristics	-
Domain 2: Study design		
Theoretical Framework		
9	Methodological orientation and theory	Theory of Planned Behavior
10	Sampling	Pilot Participants: Convenience and variety: e-mailed pilot participants randomly/tried to choose a variety of demographics Current Users: Mailed faculty known personally + flyers put into bicycle parking facilities
11	Method of approach	E-mail
12	Sample size	Pilot: 11, Current: 11
13	Non-participation	None
Setting		
14	Setting of data collection	Offices of the participants/for student participants where they study
15	Presence of non-participants	Generally, none, there were some colleagues in the room in some interviews, but they didn't intervene
16	Description of sample	Pilot: TU Delft employees/students that have joined the pilot program Current users: TU Delft employees/students that already cycled
Data collection		
17	Interview guide	Questions determined beforehand, see below.
18	Repeat interviews	None
19	Audio/visual reporting	JustPressRecord application for iPhone was used
20	Field notes	-
21	Duration	As long as the questions took, ranges between 5-15 minutes
22	Data saturation	Achieved, see further chapters
23	Transcripts returned	Yes, all corrected/validated
Domain 3: Analysis and findings		

Data analysis		
24	Number of data coders	1, Mina Kocaman
25	Description of coding tree	None
26	Derivation of themes	Themes were determined beforehand, several identified during axial coding
27	Software	Atlas.ti
28	Participant checking	No
Reporting		
29	Quotations presented	Yes, can be found in Appendix L: Interview Analysis. The owner of the quotations and the group they belong to (pilot/current) is provided as well.
30	Data and findings consistent	Yes
31	Clarity of major themes	Yes, TPB components present, explained in Qualitative Results Starting Survey Results
32	Clarity of minor themes	Yes, explained in Qualitative Results Starting Survey Results.

Table 15: Interview Details

Chronological Order	Name of Participant	Current/Pilot
1	Isabelle	C
2	Marja	C
3	A	P
4	Paula	P
5	Vincent	C
6	Anouk	C
7	R	P
8	Daan	P
9	A2	P
10	Angeline	C
11	Lars	P
12	Jan	P
13	Jerwin	P
14	Sylvie	C
15	Elsa	C
16	Bert	C
17	Camiel	P
18	Arend	C
19	Paul	P
20	Andre	C
21	Tineke	C
22	Emelie	P

Appendix D: Survey Questions

Entrance Survey

39. Ik verwacht dat ik met de e-bike van huis naar campus kan reizen als het waait.

- ◯ zeer mee oneens
- ◯ mee oneens
- ◯ niet eens, niet oneens
- ◯ mee eens
- ◯ zeer mee eens

40. Ik verwacht dat ik met de e-bike van huis naar campus kan reizen als het regent.

- ◯ zeer mee oneens
- ◯ mee oneens
- ◯ niet eens, niet oneens
- ◯ mee eens
- ◯ zeer mee eens

Figure 7: Entrance Survey Questions, PBC Weather

35. In hoeverre ben je het eens met de volgende stelling:
Er is een goede (e-)fietsverbinding tussen mijn huis en de campus.

- ◯ zeer mee oneens
- ◯ mee oneens
- ◯ niet eens, niet oneens
- ◯ mee eens
- ◯ zeer mee eens
- ◯ weet ik niet

Figure 8: Entrance Survey Questions, PBC Infrastructure

38. Ik verwacht dat het reizen met de e-bike van mijn huis naar de campus voor mij een goede optie is.

- ◯ zeer mee oneens
- ◯ mee oneens
- ◯ niet eens, niet oneens
- ◯ mee eens
- ◯ zeer mee eens

Figure 9: Entrance Survey Questions, Attitude

37. Heb je al eerder overwogen een e-bike te gebruiken voor de reis van huis naar de campus, voor je over de pilot hoorde?

- ◯ zeer mee oneens
- ◯ mee oneens
- ◯ niet eens, niet oneens
- ◯ mee eens
- ◯ zeer mee eens

Figure 10: Entrance Survey Questions, Intention

13. How many days in an average workweek do you commute by the following means of transport to campus? Choose the means of transport that you use the most.

Amount of days walking	
Amount of days bicycle	
Amount of days e-bike	
Amount of days scooter	
Amount of days motorbike	
Amount of days car (driver)	
Amount of days car (passenger)	
Amount of days train	
Amount of days bus/tram/metro	
Amount of days other	

Figure 11: Entrance Survey Questions, Habit, English

13. Hoeveel dagen in een gemiddelde werk- of studieweek gebruik je het volgende vervoermiddel om naar je werk of studie te reizen?

Aantal dagen te voet	
Aantal dagen fiets	
Aantal dagen e-bike	
Aantal dagen scooter	
Aantal dagen motor	
Aantal dagen auto (bestuurder)	
Aantal dagen auto (passagier)	
Aantal dagen trein	
Aantal dagen bus/tram/metro	
Aantal dagen anders	

Figure 12: Entrance Survey Questions, Habit, Dutch

Exit Survey

25. Ben je van plan om vaker naar de campus te fietsen, ook al maakt de TU Delft het gebruik van een e-fiets niet financieel aantrekkelijker?

- ◯ Ja
- ◯ Misschien
- ◯ Nee

Figure 13: Exit Survey Questions, Intention 1

26. In hoeverre ben je het eens met de volgende stelling:
Ik ben bereid te investeren in een (e-)fiets als alternatief voor de auto naar de campus.

- ◯ Zeer mee oneens
- ◯ Mee oneens
- ◯ Niet eens, niet oneens
- ◯ Mee eens
- ◯ Zeer mee eens

Figure 14: Exit Survey Questions, Intention 2

21. Zou je de e-fiets willen blijven gebruiken voor je reis naar de campus?

- ◯ Ja, gemiddeld meer dan 5 keer per week
- ◯ Ja, gemiddeld 2 tot 5 keer per week
- ◯ Ja, gemiddeld 1 keer per week
- ◯ Ja, gemiddeld 1 keer per maand
- ◯ Nee

Figure 15: Exit Survey Questions, Intention 3

29. In hoeverre ben je het eens met de volgende stellingen?

	Zeer mee oneens	Mee oneens	Niet eens, niet oneens	Mee eens	Zeer mee een
Faciliteiten op de TU Delft vind ik geschikt om met de e-bike naar de campus te reizen	◯	◯	◯	◯	◯
De afstand tussen mijn huis en de campus vind ik een geschikte afstand om met de e-bike te reizen	◯	◯	◯	◯	◯

Figure 16: Exit Survey Questions, Attitudes

5. In hoeverre ben je het eens met de volgende stellingen?

	Zeer mee oneens	Mee oneens	Niet eens, niet oneens	Mee eens	Zeer mee eens
Er is een goede e-fietsverbinding tussen mijn huis en de campus	◯	◯	◯	◯	◯

Figure 17: Exit Survey Questions, PBC, Infrastructure

18. Hoe moeilijk of makkelijk was het om 2 keer in de week met de e-fiets naar de campus te reizen?

- ◯ Heel gemakkelijk
- ◯ Makkelijk
- ◯ Niet moeilijk, niet makkelijk
- ◯ Moeilijk
- ◯ Zeer moeilijk

Figure 18: Exit Survey Questions, PBC

27. In hoeverre ben je het eens met de volgende stellingen?

	Zeer mee oneens	Mee oneens	Niet eens, niet oneens	Mee eens	Zeer mee eens
Fietsen met de e-bike was over het algemeen een plezierige ervaring	◯	◯	◯	◯	◯
Fietsen met de e-bike is beter dan autorijden voor mijn woon-werkverkeer	◯	◯	◯	◯	◯
Een e-bike hebben voor mijn woon-werkreis zou fijn zijn	◯	◯	◯	◯	◯

Figure 19: Exit Survey Questions, Attitudes 1

20. In hoeverre ben je het eens met de volgende stelling:
De e-fiets is een goed alternatief voor de auto om mee naar de campus te gaan.

◯ Helemaal oneens
◯ Oneens
◯ Neutraal
◯ Eens
◯ Helemaal eens

Figure 20: Exit Survey Questions, Attitudes 2

14. Het testen van de e-bike voldeed ..... aan mijn verwachtingen

◯ niet
◯ beetje
◯ geheel
◯ meer dan

Figure 21: Exit Survey Questions, Attitudes 3

16. Door de deelname aan deze proef ben ik ... gaan denken over de e-fiets

◯ veel negatiever
◯ iets negatiever
◯ niet anders
◯ iets positiever
◯ veel positiever

Figure 22: Exit Survey Questions, Pilot's Effects 1

17. Door de deelname aan deze proef ben ik ..... gaan denken over het gebruik van de auto voor mijn rit naar de campus.

◯ Veel negatiever
◯ iets negatiever
◯ niet anders
◯ iets positiever
◯ veel positiever

Figure 23: Exit Survey Questions, Pilot's Effects 2

28. In hoeverre ben je eens met de volgende stellingen?

	Zeer mee oneens	Mee oneens	Niet eens, niet oneens	Mee eens	Zeer mee eens
Mensen die belangrijk voor mij zijn gebruiken een e-bike om naar hun werk/studie te reizen	○	○	○	○	○
Mensen die belangrijk voor mij zijn, zouden mijn beslissing ondersteunen om een e-bike te kopen voor mijn woon-werk/studieverkeer	○	○	○	○	○
Mensen die net zoals ik zijn, kopen een e-bike voor hun woon-werk/studieverkeer	○	○	○	○	○

Figure 24: Exit Survey Questions, Subjective Norms

Ik gebruik mijn e-bike ook voor het uitvoeren van andere activiteiten dan mijn reis naar de campus.	○	○	○	○	○

Figure 25: Exit Survey Questions, Habits 1

19. Ben je vaker dan verwacht met de e-bike naar de campus gekomen?

- ○ Ja
- ○ Hetzelfde
- ○ Nee

Figure 26: Exit Survey Questions, Habits 2

30. Welke andere mensen hebben jouw e-bike geprobeerd?

- ○ Mijn partner
- ○ Mijn kinderen
- ○ Andere familieleden
- ○ Vrienden
- ○ Collega's
- ○ Geen andere mensen

Figure 27: Exit Survey Questions, Spillover Effect

Appendix E: SEM Procedure

The descriptive statistics of the survey results were analyzed. SPSS 25 was used as the software toll. “There is a good e-bike connection between my house and the campus” and “Facilities at TU Delft are suitable for me to e-bike to and from the campus” were not correlated to any other factors significantly, and hence will not be included in the final model. As there is no possibility to measure the actual model, that is left out as well. Hence, the conceptual model is updated as follows below in Figure 28: Updated Conceptual Model to be estimated.

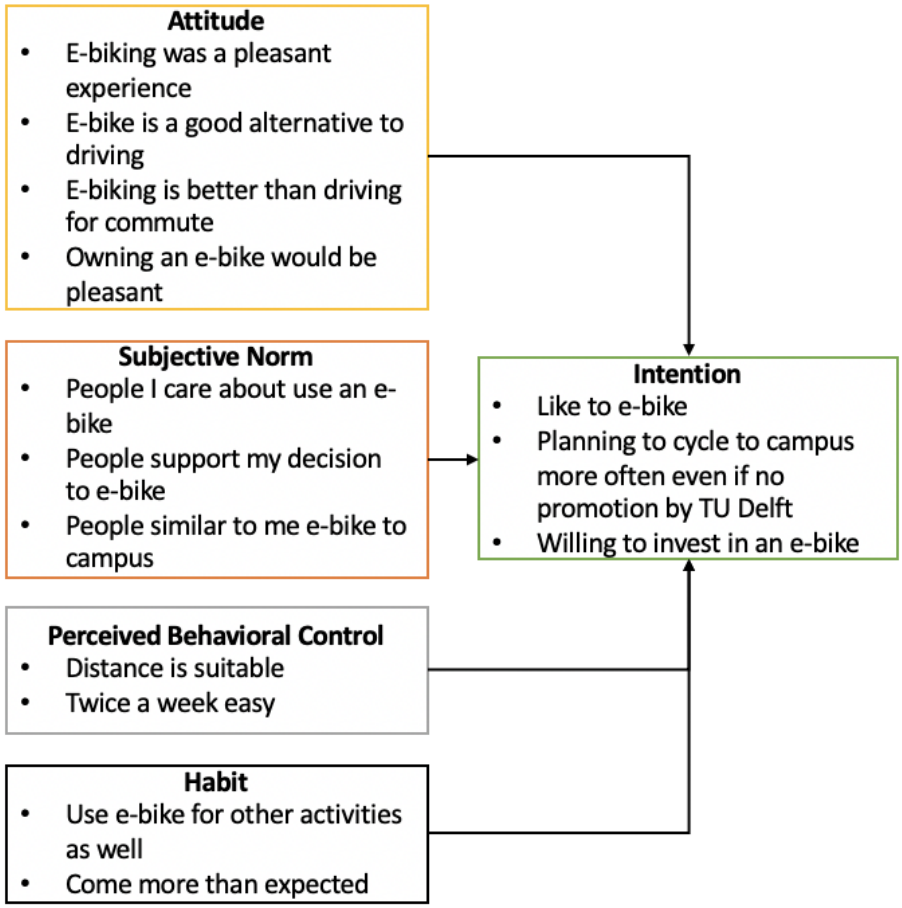


Figure 28: Updated Conceptual Model for SEM

Model Estimations

The conceptual model was modeled with SEM. IBM SPSS Amos 25 was used as the software tool. Lecture notes (Molin, 2017) were used for guidance. The graphics can be seen below in Figure 29.

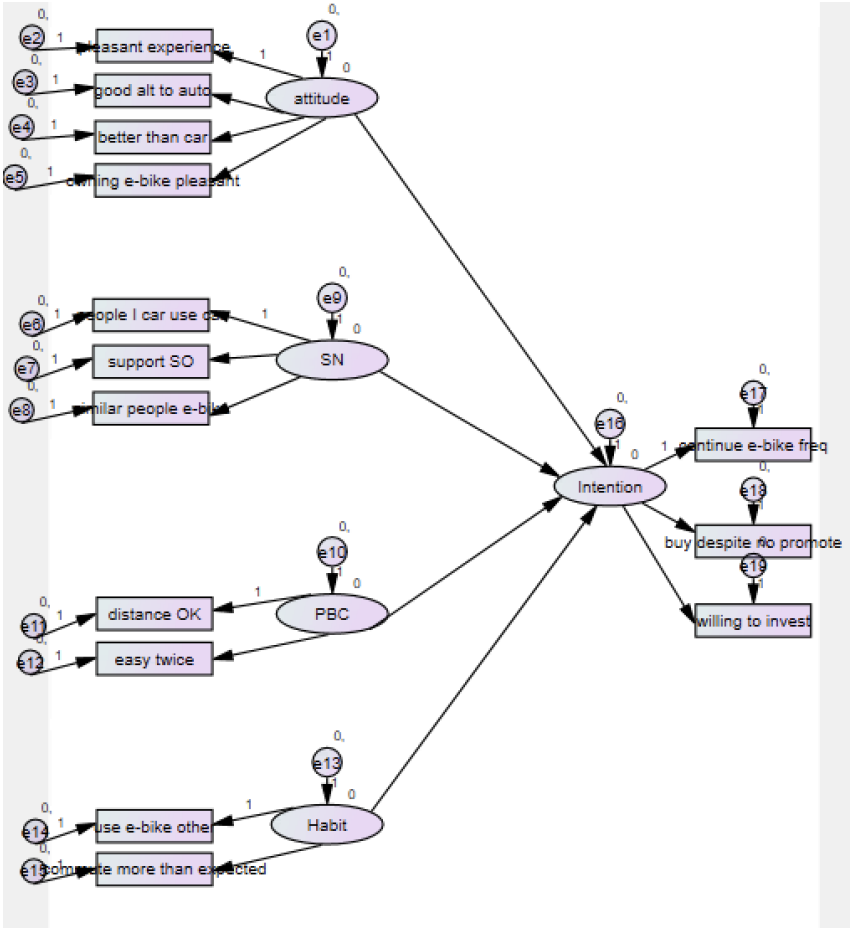


Figure 29: SEM Graphical Model 1

However, the resulting model returned a probability level of 0. The estimates of different variables can be seen below in Figure 30.

Regression Weights: (Group number 1 - Default model)

		Estimate	S.E.	C.R.	P	Label
Intention	<--- attitude	.406	.179	2.267	.023	
Intention	<--- SN	.331	.154	2.154	.031	
Intention	<--- PBC	.085	.086	.987	.324	
Intention	<--- Habit	-.001	.166	-.008	.994	
pleasantexperience	<--- attitude	1.000				
goodalttoauto	<--- attitude	1.237	.222	5.575	***	
betterthancar	<--- attitude	1.325	.209	6.334	***	
peopleIcarusecar	<--- SN	1.000				
similarpeopleebike	<--- SN	1.383	.291	4.748	***	
distanceOK	<--- PBC	1.000				
continueebikefreq	<--- Intention	1.000				
buydespitenopromote	<--- Intention	2.615	1.186	2.205	.027	
easytwice	<--- PBC	2.038	2.939	.693	.488	
supportSO	<--- SN	.822	.239	3.443	***	
commutemorethanexpected	<--- Habit	.008	.943	.008	.994	
useebikeother	<--- Habit	1.000				
willingtoinvest	<--- Intention	2.890	1.227	2.355	.019	
owningebikepleasant	<--- attitude	1.367	.186	7.363	***	

Figure 30: SEM Results Model 1

It can be seen that Habit has by far the least effect on Intention. Hence, it was removed from the model and it was run again as can be seen in Figure 31. The model and the estimation results can be found below, again the probability was found to be 0 as in Figure 32.

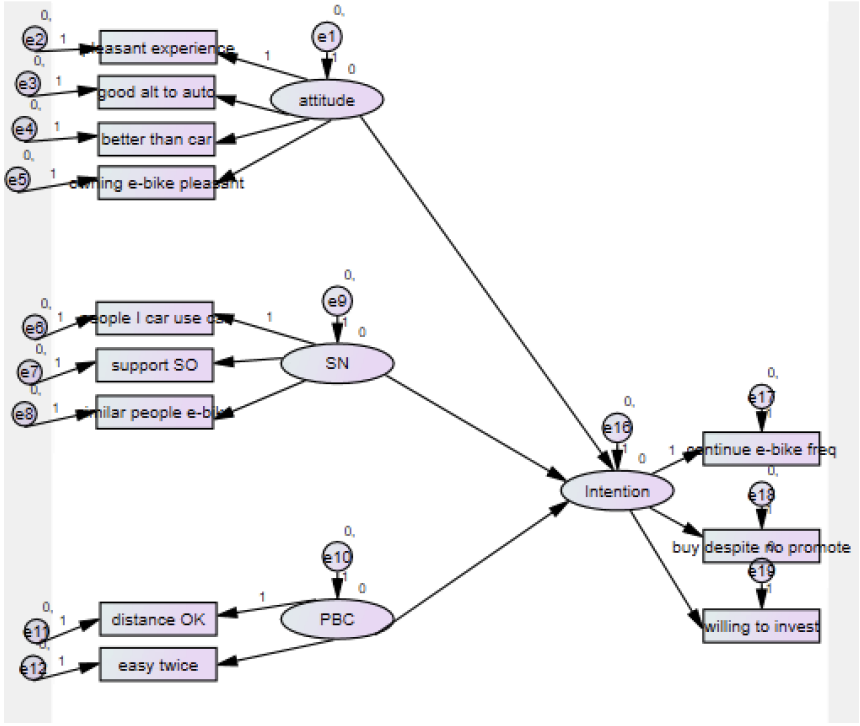


Figure 31: SEM Graphical Model 2

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Intention	<---	attitude	.403	.179	2.251	.024	
Intention	<---	SN	.350	.162	2.160	.031	
Intention	<---	PBC	.090	.094	.954	.340	
pleasantexperience	<---	attitude	1.000				
goodalttoauto	<---	attitude	1.232	.222	5.539	***	
betterthancar	<---	attitude	1.315	.210	6.265	***	
peopleIcarusecar	<---	SN	1.000				
similarpeopleebike	<---	SN	1.364	.289	4.715	***	
distanceOK	<---	PBC	1.000				
continueebikefreq	<---	Intention	1.000				
buydespitenopromote	<---	Intention	2.506	1.142	2.195	.028	
easytwice	<---	PBC	8.839	60.781	.145	.884	
supportSO	<---	SN	.813	.237	3.429	***	
willingtoinvest	<---	Intention	2.654	1.134	2.341	.019	
owningebikepleasant	<---	attitude	1.373	.187	7.347	***	

Figure 32: SEM Results Model 2

It can be seen that Habit has by far the least effect on Intention. Hence, it was removed from the model and it was run again. The model and the estimation results can be found below, again the probability was found to be 0. The fixed regression weight on PB was changed to "easy to bike twice a week", and the estimates were found as follows in Figure 33:

Regression Weights: (Group number 1 - Default model)

		Estimate	S.E.	C.R.	P	Label
Intention	<--- attitude	.406	.180	2.259	.024	
Intention	<--- SN	.350	.162	2.165	.030	
Intention	<--- PBC	.006	.074	.088	.930	
pleasantexperience	<--- attitude	1.000				
goodalttoauto	<--- attitude	1.232	.222	5.540	***	
betterthancar	<--- attitude	1.316	.210	6.268	***	
peopleIcarusecar	<--- SN	1.000				
similarpeopleebike	<--- SN	1.363	.289	4.716	***	
distanceOK	<--- PBC	.074	.813	.091	.928	
continueebikefreq	<--- Intention	1.000				
buydespitenopromote	<--- Intention	2.506	1.138	2.201	.028	
easytwice	<--- PBC	1.000				
supportSO	<--- SN	.813	.237	3.429	***	
willingtoinvest	<--- Intention	2.652	1.130	2.348	.019	
owningebikepleasant	<--- attitude	1.373	.187	7.350	***	

Figure 33: SEM Results Model 3

Hence, PBC was completely removed from the model, and the "distance between my house and TU Delft is suitable" was connected directly to Intention. The resulting standardized regression weights are as follows, and probability is 0 again as in Figure 34.

Standardized Regression Weights: (Group number 1 - Default model)

		Estimate
Intention	<--- attitude	1.037
Intention	<--- SN	.406
pleasantexperience	<--- attitude	.793
goodalttoauto	<--- attitude	.622
betterthancar	<--- attitude	.702
peopleIcarusecar	<--- SN	.720
similarpeopleebike	<--- SN	.824
continueebikefreq	<--- Intention	.323
buydespitenopromote	<--- Intention	.389
supportSO	<--- SN	.445
willingtoinvest	<--- Intention	.573
owningebikepleasant	<--- attitude	.813
distanceOK	<--- Intention	.587

Figure 34: SEM Results Model 4

As lecture notes (Molin, 2017) suggest, those exogenous variables with an estimate lower than 0.5 were removed from the model. The resulting model can be seen below in Figure 35.

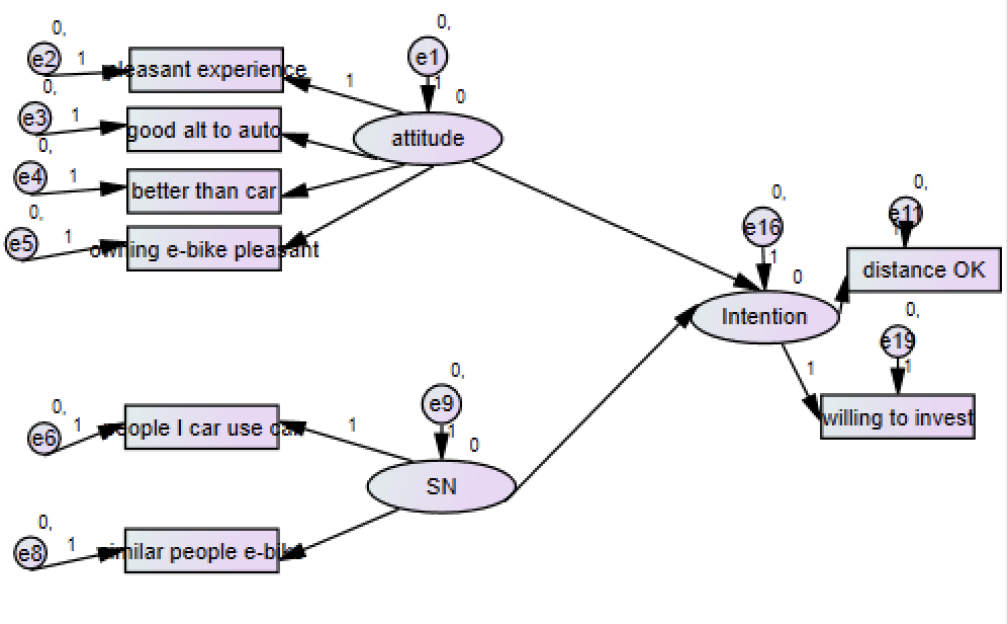


Figure 35: SEM Graphical Model 5

When the model is run again, 0 probability is obtained again. Estimates are as follows in Figure 36.

Standardized Regression Weights: (Group number 1 - Default model)

		Estimate
Intention	<--- attitude	1.112
Intention	<--- SN	.293
pleasantexperience	<--- attitude	.803
goodalttoauto	<--- attitude	.625
betterthancar	<--- attitude	.683
peopleIcarusecar	<--- SN	.977
similarpeopleebike	<--- SN	.616
willingtoinvest	<--- Intention	.538
owningebikepleasant	<--- attitude	.817
distanceOK	<--- Intention	.609

Figure 36: SEM Results Model 5

Appendix F: End Survey Analysis Results

Table 16: Factor Analysis Results

Rotated Component Matrix[a]							
	Component						
	1	2	3	4	5	6	7
Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more attractive?				0.415	0.436	-0.450	
To what extend do you agree with the following statement: I am willing to invest in an (e-) bike as an alternative for traveling by car from home to campus.	0.554					-0.459	
Would you like to continue to use the e-bike for traveling to campus?					0.698		
Bicycle km home to work		0.929					
car km home to work		0.956					
car time htw		0.849					
cycling percentage					0.741		
There is a good e-bike connection between my house and the campus							0.786
I use my e-bike to perform other activities as well	0.476						
E-biking is better than driving my car for commuting to and from campus	0.479		0.534				
Owning an e-bike for commuting to and from campus would be pleasant	0.823						
Did you come to the campus with the e-bike more often than expected?			0.807				
Testing the e-bike has ... altered my thoughts about using the car for my travel to the campus	-0.535						
How hard or easy was it to use the e-bike twice a week to travel to the campus?			0.797				
To what extent do you agree with the following statement? The e-bike is a good alternative for driving by car to campus	0.488		0.592				
Testing the e-bike has ... altered my thoughts about the e-bike	0.610						
E-biking to and from the campus was overall a pleasant experience	0.845						

People I care about use an e-bike to travel to and from campus				0.853			
People I care about would support my decision to buy an e-bike to commute to and from campus	0.749						
People similar to me buy e-bikes to use for commuting to and from work/study				0.787			
Facilities at TU Delft are suitable for me to e-bike to and from the campus						0.775	
The distance between the campus and my home is a suitable distance for me to e-bike to and from work/study	0.656	-0.440					
There is a good connection with public transport between my house and the campus				0.473			
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.[a]							
a. Rotation converged in 10 iterations.							

Appendix G: Extensive Code List

Table 17: Codes and Respective Number of Quotations from Current and Pilot E-Biker Interviews

	#C Codes	#P Codes
ad - che - pbc - eco - e-bike cheaper than car/public transport	2	3
ad - con - arriving not sweaty	3	6
ad - con - e-bike more comfortable than public transport	1	0
ad - con - e-bike not tiring	6	7
ad - con - pbc - eff - wind reason to e-bike	4	1
ad - con - personal reasons/convenience over societal benefits	7	3
ad - con - reason to e-bike: congestion	3	0
ad - con - reason to e-bike: convenient	1	3
ad - con - reason to e-bike: faster/same time with others	5	6
ad - con - reason to e-bike: predictable timing	2	0
ad - con - want to get rid of the car/not buy a car	1	1
ad - enj - enjoy skipping traffic	2	0
ad - enj - enjoyment	2	2
ad - enj - happy taking over others	2	0
ad - enj - int - try - positive experience with e-bikes before the program	0	2
ad - enj - prefer bike over car	3	1
ad - enj - proud user	4	0
ad - enj - reason to e-bike: like being outside	4	7
ad - enj - reason to e-bike: not enjoying cycling normally	1	0
ad - fle - reason to e-bike: flexibility	5	1
ad - hea - e-bike is healthy	2	4
ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons	4	1
ad - hea - reason to e-bike: exercise	6	3
ad - hea - reason to e-bike: mindfulness	0	3
ad - soc - battery: bad for environment	0	1
ad - soc - environmental concerns main reason	2	0
ad - soc - societal benefit additional positive aspect	3	0
ad - soc - societal benefit: not using the car	3	5
ad - soc - societal benefit: reduce congestion	0	2
ad - soc - societal benefit: sustainability	3	3
att - cha - bar - wea - pbc - wea - think about the weather less on e-bike	2	0
att - cha - pilot changes perceptions about e-bike	2	1
att - saf - e-bike is as safe as a regular one	1	0
att - saf - more dangerous than regular bike	4	2
bar - car - car parks available: makes it easy	0	2
bar - car - pbc - res - reason not to e-bike: needing the car	2	3
bar - eco - pbc - eco - reason not to buy: too expensive	2	6
bar - inf - pbc - inf - reason not to e-bike: bike roads too dark	1	0

bar - inf - pro - parking spaces limited as need to park down	1	0
bar - oth - pbc - res - reason not to e-bike: carry things	0	4
bar - oth - pbc - res - reason not to e-bike: clothing	0	1
bar - oth - pbc - res - reason not to e-bike: daytime duties	0	1
bar - oth - pbc - res - reason not to e-bike: going to sports	1	2
bar - oth - pbc - res - reason not to e-bike: grocery shopping	2	1
bar - oth - pbc - res - reason not to e-bike: responsibilities at home	0	2
bar - pee - sn - neg - peer perception - e-bike is cheating	1	2
bar - pee - sn - neg - peer perception - e-bike is for old people	5	4
bar - pee - sn - val - not caring what others think	3	1
bar - the - pbc - the - concerned about theft & prevention	6	3
bar - the - pro - facilities: sheds are too small	4	3
bar - tim - e-bike is too slow: annoying	0	4
bar - tim - pbc - dis - distance is too far	3	5
bar - tim - pbc - dis - reason not to e-bike: takes too long	2	3
bar - wea - pbc - wea - don't use e-bike in bad weather	3	3
bar - wea - pbc - wea - perception: weather is not as bad as people think	1	0
bar - wea - pbc - wea - reason not to e-bike: cold	1	2
bar - wea - pbc - wea - reason not to e-bike: rain to different degrees	5	5
bar - wea - pbc - wea - reason not to e-bike: wind	1	0
bar - wea - pbc - wea - use weather predictions for decision	2	1
bar - wea - pbc - wea - willing to cycle in bad weather	4	2
buy - buy a cheap e-bike to see if you like it or not	2	0
buy - buy accessories for e-biking	2	1
buy - extended battery recommended	1	0
buy - int - buy - buy again if this one fails	3	0
buy - look into several options before buying	1	0
buy - receive an e-bike without buying	2	1
buy - salesman advice important	1	0
buy - try before buy	1	0
hab - ebi - bike more often with e-bike	6	2
hab - ebi - e-bike only for commuting	2	1
hab - ebi - get used to e-biking over time	1	1
hab - ebi - not e-bike everyday	1	4
hab - ebi - road choice changes	2	1
hab - ebi - use e-bike as much as possible	5	6
hab - ebi - use e-bike for non-commute purposes	4	4
hab - ebi - use e-bike to carry heavy stuff	0	1
hab - ebi - use the battery until it dies out	1	0
hab - reg - already bike to work sometimes	5	5
hab - reg - use regular bike for short distances	2	3
int - buy - considering e-bike before	0	2

int - buy - happy from trial, end in buying	1	0
int - buy - pil - available deal not attractive enough	0	1
int - buy - pil - pilot offer is attractive	0	2
int - lea - interest in leasing plan	1	3
int - lea - wait to see if TU delft will participate in leasing or not	0	2
int - sub - interested in tu delft subsidy	2	2
int - try - join for curiosity	0	4
int - try - join pilot: to try a better e-bike	0	1
int - try - never tried an e-bike before	0	2
int - try - trying e-bike before the pilot	0	4
int - try - wanted to try an e-bike before but wasn't possible	0	1
pbc - dis - range anxiety	1	2
pbc - eff - e-bike as an option for hilly cities	1	0
pil - appreciate pilot	0	1
pil - appreciate pilot: clear communication	0	1
pil - appreciate pilot: good advertisement	0	2
pil - appreciate pilot: professional organisation	0	1
pil - appreciate pilot: reduce number of cars in campus	0	1
pil - pilot good to check if you'll actually use it	0	1
pil - pilot perception: it is too commercial	1	0
pil - pilot: needs speed pedelcs as well	0	2
pil - want the pilot to last longer	0	1
pro - bike paths too crowded	2	1
pro - chargers in the bike park are needed	6	1
pro - locking by app is annoying	0	2
pro - maintenance facility in campus for e-bike	0	1
pro - not enough information available about the discount at the end	0	1
pro - physical problems with the bike	0	4
pro - pilot banning batteries to be taken to the office: annoying	0	2
pro - pollution as a concern for e-biking	0	1
sn - cha - changing perceptions, younger generation e-biking too	4	2
sn - cha - changing perceptions: it is real biking	1	2
sn - cha - changing perceptions: it was not something for me, now positive	1	1
sn - cha - news: more e-bikes sold than regular bikes	1	0
sn - col - colleagues inspiring to e-bike	5	0
sn - col - discuss the pilot program with colleagues	1	5
sn - ff - e-biking community	0	1
sn - ff - family not believing that they'll use	0	1
sn - ff - know someone who has an e-bike prior to program	0	7
sn - ff - partner buying e-bike too	1	1
sn - ff - people want to try e-bike	0	1
sn - ff - positive support from people who matter	3	6

Appendix H: Detailed Interview Results

Attitudes

Advantages

Table 18: Codes of Attitudinal Advantages and Detailed Explanations

Code	# Mentioned	Explanation
Cheaper than alternatives	5	While in the further codes, the cost of e-bikes is mentioned as a barrier, several respondents pointed out that e-bikes are recognized as a cheaper alternative to cars and public transportation as it is a "one-time expense".
Convenience		
Arriving not sweaty	12	People mentioned as e-bikes require less effort, you do not sweat. It provides convenience as it means you do not need to take a shower or feel uncomfortable at work.
E-bike is more comfortable than public transport	1	E-bike's superiority to public transportation is mentioned as public transportation is quite crowded in peak hours, and e-bike provides independency over schedules.
E-bike is not tiring	16	Interviewees often mentioned that e-biking allows cycling as an activity without getting tired. They want to keep a high energy level throughout the working day and when they are back home. It stops "being a hassle".
Wind is a reason to e-bike	6	As it gets harder, and even dangerous to bike when there is strong front or side wind, users mentioned that the effect of wind is eliminated with e-bikes. As wind is common in the country, e-bikes increases the days you can cycle.
Personal reasons/convenience over societal benefits	10	When prompted with whether they have considered societal benefits about switching to e-bike, many said while they feel good that it is better for the greater good, their personal reasons were more important, and it was not really a reason to consider switching due to societal benefits.
Congestion	5	People said that with cycling they can avoid traffic. As working usually requires commuting in peak hours, this is especially beneficial for work-home trips.
Convenience (general)	4	Some mentioned convenience in general, and then explained details that made it convenient

Faster/same time with other modes	14	Many mentioned e-biking as a faster mode of transportation than cycling, public transportation or driving. Some mentioned that it saves time as parking is faster as well, or by avoiding the rush hour.
Predictable timing	2	As with e-bike timing is predictable (avoiding traffic or slow cycling due to weather conditions) it was preferred.
Getting rid of the car/avoid buying a car	3	People replace/plan to get rid of their car or second car and see e-bike as an alternative. One said especially for short distances she really did not want to use a car for environmental reasons.
Enjoyment		
Enjoying skipping traffic	2	The joy of taking over others and not being stuck in traffic is mentioned.
Enjoyment	6	Enjoyment as a general aspect is mentioned, especially compared to a normal bike. One defines it as “driving in a Cabrio, you’re cruising”.
Happy taking over others	2	The ability to take over others, being faster than others is recognized as a fun-factor.
Positive experience with e-bikes before the program	2	Some participants had experience with an e-bike before the pilot, so they already found it enjoyable prior to the start of the program.
Preference of cycling over driving	4	Biking was seen as more attractive than driving as it is a more enjoyable activity.
Being a proud user	5	Users were “proud” of being an e-bike owner: they were promoting it to others. This was often an answer when prompted about whether they were made fun of.
Like being outside	12	Being in open air, enjoying the surroundings, mainly the nature is seen as an enjoyable aspect of biking in general.
Not enjoying regular cycling	1	One participant did not find regular cycling enjoyable due to an accident in youth, and as e-bike makes it easier it made cycling attractive for her again.
Flexibility	6	Various aspects made e-bikes flexible for people: being able to determine when to leave by yourself, being able to use it in bike paths were scooters are forbidden, independence from parking places like cars do not have, enlarging mobility for people with disabilities, not being dependent on traffic.
Health		
E-bike is healthy	9	E-bikes were seen as a healthy alternative to driving as it allows exercise in combination with commute. It also helps people with injuries/disabilities/other health issues to remain active.
Regular cycling not possible due to health issues	6	Many mentioned knee problems as a barrier to cycling. One respondent had a rheumatic illness, and one a heart condition.
Exercise	9	As it allows combining exercise with commute, e-bikes are valued. Some already cycled to work, but with a bike they mentioned they were more likely to actually end up not doing it.

Mindfulness	3	Cycling helped people clear their heads and feel better.
Societal		
Battery	1	Concern about the battery's negative effect on the environment.
Environmental concerns main reason to e-bike	2	One respondent mentioned that they bought an e-bike instead of a car as she was concerned people use the car too much.
Societal benefits seen as an additional positive aspect	3	People did not see the societal benefits as the main driver for switching to e-bike, but they were happy they were contributing positively, or at least not negatively.
Not driving	10	It was recognized that not driving is more sustainable and that e-bikes can replace cars or at least car trips. People realize that there are too many cars, and like that they are not one of them.
Reducing congestion	2	Not contributing to the traffic jam and replacing car trips that are doable with a bike is perceived as a societal benefit.
Sustainability	7	E-bikes are seen as a sustainable/environment friendly option and that it reduces CO2 emissions.

Barriers

Table 19: Codes of Attitudinal Barriers and Detailed Explanations

Code	**# Mentioned**	**Explanation**
Convenience of Cars		
Available car parks	2	As TU Delft has enough parking spaces, it is still seen convenient to drive to work.
Need for the car	5	People see other appointments and having a family as a reason to need the car, and that these duties are not conductible with a bike.
E-bikes are too expensive	12	People were considering/is considering buying an e-bike but for them it is seen as too expensive. Other priorities in life are present. Younger people also said they would be interested if they started making money. Interest in financial incentives from the TU Delft is also there.
Infrastructure		
Bike roads too dark	2	One respondent remarked two times that the bike roads between her home to TU Delft are too dark in winter.
Parking spaces are limited as it is too hard to park to the second level	1	As the e-bike is heavier, it is harder to park them up as one respondent pointed out. Hence, the number of available places decreases for e-bikes.
Other duties/responsibilities		

Need to carry things	5	Users pointed out when they need to carry heavy or bulky things, such as books or suit, it is then easier to take the car instead of a bike.
Clothing requirements	1	One respondent said that when he needs to wear a suit, biking is not comfortable. As a solution he also suggested to leave the suit in his office room.
Daytime duties	1	People's daytime duties were mentioned as a reason not to bike, potentially as they will need the car.
Going to sports	3	People said they did not bike to the gym or the sports club for different reasons: some for carrying their sports bags, some to save up their energy for the sports itself.
Grocery shopping	3	Users took their cars to the supermarket in order to be able to carry the groceries in an easier way. However, some used the e-bike for this purpose as well, all coded under using the e-bike for non-commute purposes.
Responsibilities at home	2	This has not been explained in detail, but responsibilities at home was mentioned as a reason to need the car, including childcare.
Peer perceptions		
E-bike is cheating	4	People said that themselves or their peers see e-biking as "not real biking" or it is for lazy people. One respondent said his own perception changed after the tried the e-bike in the pilot.
E-bike is for old people	10	Family, friends or colleagues made fun of people that "they are old" as they started using an e-bike instead of a regular one. Some of them were also anticipating this response and hence reluctant to share the news, and some were resistant to e-biking as they found themselves "sportive and healthy".
Not caring what others think	5	Some people mentioned that they did not care about other people's opinions about e-bikes, they are perfectly happy with it. One respondent said when he first started using it, he was shy to share it but now he does not care.
Theft		
Concerned about theft and taking preventative measures	12	E-bikes were seen as more "vulnerable to theft" and people were happy there was a locked bicycle parking facility at the faculties. Some preventative measures include using double chain, insurance, removing the battery when parked and even bringing the bike to the office.
Bike sheds in the university is overcapacity	7	It was shared that the locked bicycle parking facilities in the faculties are too small, and usually too crowded. As the e-bikes are heavier, it was pointed out that maneuvering is harder and hence the small space creates a problem as well.
Time/speed		
E-bike is too slow, which is annoying	6	As the support of e-bikes stop after 25 km/h as regulated by law, several users mentioned that this limit makes it annoying. Hence, several users were interested in speed pedelecs (support up to 45 km/h), and even would like that to be available for the pilot. Two current users were

		already using a speed pedelec. However, as the law prohibits speed pedelecs from using the bike paths inside the cities and helmets are required, additional barriers are present.
Distance is too far	10	When people have to travel to other locations for work, if that is too far, it was mentioned as a reason to drive instead of e-biking. For one PhD student, as she was not sure if her next job will be in a location where she can bike to, it was a reason not to invest on an e-bike.
E-bike takes too long	8	For some people, biking was attractive, however as it took too long it was not a feasible option for everyday commute. People also pointed out that they took the car if they had an early appointment, and that if they have flexible working times, they can bypass the rush hours.
Weather		
Not e-bike in bad weather	6	People pointed out that they will not e-bike when the weather is bad. The definition for bad weather varies while some only mention the rain, others mention the cold or the wind as well as will be explained in following codes.
Weather is not as bad as people think	1	One respondent pointed out that despite cycling every day in the year, she is only completely wet around 5 times a year, and that people do not realize it is less rainy than perceived on a car.
Not e-bike in the cold	3	For some users, the cold in the winter was a reason not to e-bike. One pilot participant pointed out that in a normal bike it is easy to get warm but, in an e-bike it can take longer, but also mentioned he did not try in cold yet as the weather was still warm when he participates in the pilot.
Rain to different degrees	14	The rain was the main reason not to e-bike due to weather, but the level of rain varied from people to people. For some rain showers was the limit, but for some even if they were a bit wet it was a problem. Some also waited for rain to stop before cycling. Also, the rain on the way to work was problematic while the other way around was alright as it was possible to change easily at home for some.
Wind	1	For one respondent, wind was still a reason not to take the e-bike, despite pointing out that it is a lot better than a regular bike.
Use weather predictions to decide	3	People check the weather predictions to check whether they should take the bike or not. Two respondents were more flexible, and sometimes waited for the rain to stop.
Willing to cycle in bad weather	7	There were seven respondents who said they cycle in any weather condition possible. Here, icy and snowy weather were included as well as that makes it actually dangerous to bike. Two interviewees had rain jackets and trousers.

Safety Perceptions

Table 20: Codes of Attitudinal Safety Perceptions and Detailed Explanations

Code	# Mentioned	Explanation
E-bike as safe as a regular bike	1	Only one said that she sees the e-bike as safe as a regular bike.
E-bike more dangerous than a regular bike	11	E-bike was seen more dangerous, and also it was often said that it was on the news that it was more dangerous. The need for a helmet was mentioned as well. Danger issues mentioned were that the severity of injuries increased, sharp turns become harder, breaking is more instant, other vehicles expected you to react differently, starting was too easy. One also discussed that for people with less experience in cycling it could cause problems.

Changing Attitudes

People mentioned that their attitudes towards e-bikes or the environment.

Table 21: Codes of Attitudinal Changes and Detailed Explanations

Code	# Mentioned	Explanation
Weather becomes less of a decision factor on the e-bike	4	People perceive the weather as less effective in the decision to cycle or not when they have an e-bike.
Pilot changing their perception about the e-bike	4	Having experience with the e-bike changes the perception about them. One person said, “it changes the way you look at biking”.

Perceived Behavioral Control

Distance

Table 22: Code of Distance-Related PBC and Detailed Explanation

Code	# Mentioned	Explanation
Range anxiety	3	Users are scared their battery would not make their destination sometimes, so they avoid taking the e-bike for longer trips.

Effort

Table 23: Code of Effort-Related PBC and Detailed Explanation

Code	# Mentioned	Explanation
E-bike is a good option for hilly cities	1	A current commuter pointed out that for cities with a lot of congestion and hills e-biking could be a great option

Subjective Norms

Table 24: Codes of Subjective Norms and Detailed Explanations

Code	# Mentioned	Explanation
Changing societal norms		
Younger generation is e-biking too	8	Some due to their own experiences and some due to the perceptions of the society, people mentioned that now they think e-bikes are for the younger generation as well.
E-biking is real biking	4	People's experiences with the e-bike changed how they see it: it still requires effort and it is fun.
Seeing e-biking as something suitable for yourself	2	When people started using an e-bike, they saw that it was something useful and valuable for them.
News: more e-bikes sold than regular bikes	1	It was in the news that more e-bikes were sold than regular bikes as stated by one participant. It shows those who adapt to the commute also pay more attention to the news/overestimate them.
Colleagues		

Inspiring/getting inspired by colleagues to e-bike	7	Many people mentioned that they saw e-biking as a commute from colleagues or they have inspired to do so as well.
Discuss the pilot program with colleagues	6	People discussed the pilot program with their colleagues: they knew if they took part, they also advice their teams to join/got advised by supervisor to join.
Family & Friends		
E-biking community	1	One participant said where she lives people e-biked a lot, so she was used to it as a concept.
Family not believing that they'll e-bike	1	Family of one pilot participant did not believe that she would e-bike as often as she plans to as she is used to the car.
Already know someone who has an e-bike prior to the program	7	People knew family members and colleagues that e-biked already.
Partner buying an e-bike too	4	For two participants, their partners bought and e-bike as well or they were planning to buy together.
Other people want to try an e-bike	1	Friends of a pilot participant (student) wanted to try the e-bike as well but as it is connected to the phone it was not possible.
Positive support	9	People encountered positive support: it is good to leave the car, it is healthier, nice to see someone who has a sickness to be on the bike again.

Habits

Table 25: Codes of Habits and Detailed Explanations

Code	**# Mentioned**	**Explanation**
E-bike		
Bike more often with the e-bike	10	E-bike users recognized that e-bike made you bike more often as it removed bikes. Some also mentioned now they take longer trips that they would have not taken the regular bike before. For one participant with a sickness, it means that now she can bike to social events more, so she was able go back to her life before the sickness. She said that as her sickness prevented her from biking, her life got "smaller".
Use e-bike only for commuting	3	For some participants, e-bike was meant for commuting purposes only or mostly, not for other activities.
Get used to e-biking over time	2	People mentioned the more they used the e-bike, the more they got used to it. One participant pointed out that regular bikes felt "broken" once he was used to e-bikes

Not e-bike every day	5	E-bikers did not cycle to work every day, even those who are not a part of the program. Twice a week was mentioned four times.
Choose different roads with e-bike	3	Cyclists consciously took retours to make the ride more enjoyable in terms of views or crowdedness.
Use the e-bike as much as possible	13	Some pilot participants or current users declared that they aim to bike as much as they can, nearly every day. Their level of barriers differs (such as the weather) but nevertheless they take/aim to take the bike as much as possible. One defined it as "rain or shine, every day!".
Use the e-bike for non-commute purposes	9	People used the e-bike for travelling to the city center, sports, shopping or leisure. Three said they were now able to keep up with their partners who are more fit and that was enjoyable for their partners.
Use e-bike to carry heavy things	1	One pilot participant used the e-bike to carry things he bought from IKEA.
Use the e-bike until the battery dies out	1	The current e-biker aimed to use the e-bike until the battery completely dies out and then she wants to replace it.
Regular bike		
Sometimes using the regular bike to commute to work before buying the e-bike	10	Some participants used their regular bikes to come to work already, but not always. Some pointed they did this as a mean of exercising or used to do it when their home-work distance was less or when their health condition was better.
Continue using the regular bike for shorter distances	6	E-bikers still used their regular bikes for shorter journeys/exercising: groceries, gym, inside the town or similar. One said she continued cycling as she felt e-bike did not provide enough exercise.

Intention

Intention to Buy

Table 26: Codes of Intention to Buy and Detailed Explanations

Code	**# Mentioned**	**Explanation**
Considering buying an e-bike before the pilot	2	Two pilot participants openly said they were contemplating buying an e-bike before hearing about the pilot.

Trying an e-bike resulted in buying one	1	One current commuter used a cheap second hand bike for a while, and as she was satisfied with it ended up buying one.
Pilot deal not attractive enough	1	As the discount pilot program offers was not attractive enough for one participant, he did not feel the push to actually buy it immediately.
Pilot offer is attractive	2	For two, the discount that is available at the end of the pilot is attractive.

Intention to Lease

Table 27: Codes of Intention to Lease and Detailed Explanations

Code	# Mentioned	Explanation
Interest in the leasing plan	5	Employees were interested in a possibility to lease e-bikes instead of buying it. For one it was a good option as she was not sure how long she will work in TU Delft. The easier repairs and insurance were also mentioned by one as a reason to be interested. One student also said if a company such as Swapfiets made e-bikes available for rent it would be a good option.
Wait to see if TU Delft will participate in the leasing plan or not before buying	3	As mentioned in the earlier parts of the paper, the government allowed leasing an e-bike via the employers to be easier after 2020. Hence, people are reluctant to invest on an e-bike prior to the decision to participate in the plan or not.

Intention to Buy if there is Subsidies

Table 28: Codes of Intention to Buy with Subsidies and Detailed Explanations

Code	# Mentioned	Explanation
Interested in subsidy by TU Delft	4	As TU Delft stopped participating in IKA that allows people to buy a bicycle with a discount through the employer, two mentioned they would like to see that again.

Intention to Try

Table 29: Codes of Intention to Try and Detailed Explanations

Code	# Mentioned	Explanation
Join the pilot for curiosity	4	People decided to join the pilot as they were curious to see how it works, how it is as a commute option and how it is different from a regular bike.
Join pilot to try a better e-bike	1	One participant already had an e-bike, but he wanted to test the ones TU Delft had on offer as he is thinking of buying a new one or a speed pedelec.
Never tried an e-bike before	2	Two pilot participants never tried an e-bike prior to the pilot.
Tried an e-bike before the pilot	4	Four participants declared they did indeed try an e-bike before the pilot. Two said they joined a short e-bike pilot from TU Delft too, that lasted three days.
Wanted to try an e-bike before but was not able to	1	One participant said that while he wanted to try an e-bike before, it was not possible to do so as there were no options and he had no one he could ask to try their e-bike.

Buying Behaviour

Table 30: Codes of Intention to Buy and Detailed Explanations

Code	# Mentioned	Explanation
Buying a cheap e-bike to try	2	Two respondents bought cheap e-bikes to try if they liked it or not, and then replaced it with a good one. One bought a second hand one while the other just bought a low-quality one.
Buying accessories for e-biking	4	People bought accessories for e-biking, similar to biking: raincoat, bags and a helmet (for speed pedelec). Moreover, one participant bought a mask as he was annoyed from the exhaust gasses he inhaled from scooters.
Recommend extended battery	1	One e-bike current user told that she always recommends people to buy the extended battery for the e-bike.
Replace current e-bike if it fails	3	People mentioned that they have replaced a broken e-bike or would if the current one dies out.
Compare e-bikes before buying	1	One e-biker said she “visited several shops and looked at lots of reviews, reports and test results” before actually buying the bike.

Receive an e-bike without buying it	3	Three participants received e-bikes from relatives as they could not use it/do not use it anymore and started using it. They all also declared they want to replace it if it is broken down.
Salesman's advice is valued	1	One current user was very content with the advice she got from the salesman.
Trying before buying	1	One current e-biker said she tried several e-bikes before buying one.

Problems Recognized

Table 31: Codes of Problems Recognized and Detailed Explanations

Code	# Mentioned	Explanation
Bike paths are too crowded	4	It was mentioned especially in the TU Delft terrain the bicycle paths are quite narrow, especially in the rush hours. For two participants, they felt unsafe due to large number of students and their fast reactions.
Chargers in bicycle parks are needed	7	As the current locked sheds lack chargers, it was often mentioned that having a plug there would make it easier for the e-bikers.
Pilot problem: having to lock by using an application is annoying	2	The program requires the users to lock/unlock their bike using a mobile application. For some participants this was too much of a hassle.
Maintenance facility for the e-bike on campus	1	One participant said having a maintenance facility on the campus would be nice if the number of e-bikers increased vastly.
Lack of information about the pilot discount	1	One participant was not able to find information about the discount offered by the pilot program.
Physical problems with the pilot e-bike	5	Some physical problems were present with the e-bikes: the steer was loose (for two people), the handles were loose, there was a connection problem with the motor and the screen computer. They were able to fix it themselves or it was easy to get help for it. For one person who used the child seat, she mentioned it was unhandy as it meant not being able to use the bags and also the need to remove the seat every time when the charging is needed.
Bike batteries banned from the	2	As the pilot prohibited the batteries to be taken into offices for charging, it was found annoying. One participant needed to do it as he cycles far.

office is found annoying		
Pollution on the roads	1	One participant got annoyed by the exhaust gasses on the road between the Hague-Delft, and hence bought a mask.

Perceptions about the Pilot

Table 32: Codes of Perceptions about the Pilot and Detailed Explanations

Code	# Mentioned	Explanation
Appreciate pilot	1	One participant told that his peers were happy that TU Delft was doing a pilot program for e-bikes
Clear communication	1	It was pointed out that the pilot communication was clear, and the responsible people were helpful.
Good advertisements	2	Advertisements were defined as “well” and “positive”.
Professional organization	1	The pilot was praised for being organized professionally
Good attempt to reduce number of cars in campus	1	A current commuter said that the pilot was a good way to promote alternative ways of transport to the campus.
Pilot useful to check if you would actually use an e-bike to come to work	1	Participant pointed out that the e-bike is a big investment and it was good to test if it would be actually useful to use for commute.
Pilot is too commercial	1	A current commuter perceived the pilot as something commercial for the sponsor e-bike company and felt as if it was not for sustainability.
Pilot needs to include speed pedelecs	2	Two people were actually interested in buying speed pedelecs and pointed out that they would like to see that in the pilot.
Want the pilot to last longer	1	One participant would like to join the pilot for a longer time, possibly as he wanted to have an e-bike but found it too expensive.

Appendix I: Starting Survey Results

Table 33: Demographics of Pilot Participants

	TU Delft Population	Participants of E-bike Pilot, Block 1	Participants of E-bike Pilot, Block 2
Woman Ratio	28.53%	31.63%	53.76%
Young Adult (19-24)	23.85%	8.16%	6.45%
Early Adult (25-29)	20.16%	13.27%	18.28%
Adult (30-39)	27.71%	34.69%	20.43%
Middle Age (40-54)	32.22%	30.61%	41.94%
Late Adult (55-)	17.86%	12.24%	12.90%
Student Ratio	81.89%	15.31%	17.20%
PhD Ratio	4.94%	-	4.30%

Table 34: Contractual Hours of Pilot Participants

Working Hours per Week	%, 1st Block	#, 1st	%, 2nd Block	#, 2nd
Below 20	1.22%	1	0.00%	0
20-29	8.54%	7	19.12%	13
30-37	20.73%	17	36.76%	25
38-40	69.51%	57	44.12%	30

Table 35: Days Pilot Participants Spend in Campus

Days Spent in Campus per Week	#, 1st Block	#, 2nd Block
1	1	0
2	3	0
3	6	11
4	31	42
5	64	39
6	3	1
7	1	1
Average	4.53	4.35

Table 36: Days Pilot Participants Drove to Work before the Pilot

Days Driving to Campus per Week	**#, 1st Block**	**#, 2nd Block**
0	5	10
1	1	4
2	12	7
3	25	21
4	20	30
5	34	21
Average	3.61	3.29

Table 37: Days Pilot Participants Cycled to Campus before the Pilot

Days Cycling to Campus per Week	**#, 1st Block**	**#, 2nd Block**
0	69	65
0,2	1	1
0,5	2	3
1	19	11
1,5	0	1
2	3	4
3	3	2
4	0	3
5	0	3
Average	0.36	0.59

Table 38: Pilot Participant's Consideration to Switch to E-Bikes before the Pilot

Would you consider switching to E-bike without the pilot?	**#, 1st Block**	**#, 2nd Block**
Yes	53	47
No	44	46
Percentage	**54.64%**	**50.54%**

Table 39: Pilot Participant's Driving Distance

Distance between Home-Work, Driving	**1st Block, All Participants**	**1st Block, E-bike Pilot Participants**	**2nd Block, All Participants**	**2nd Block, E-bike Pilot Participants**
0-5 km	4	3	6	6
5-10 km	18	17	22	18
10-15 km	24	21	17	15
15-20 km	48	37	46	33
20-25 km	18	13	16	11
25-30 km	7	5	10	9
30-35 km	2	1	1	1
35-50 km	4	1	1	0
50-65 km	3	0	1	0
65+ km	6	0	5	0
Average	20.21	15.91	18.92	15.60

Table 40: Pilot Participant's Cycling Distance

Distance between Home-Work, Cycling	**1st Block, All Participants**	**1st Block, E-bike Pilot Participants**	**2nd Block, All Participants**	**2nd Block, E-bike Pilot Participants**
0-5 km	15	14	18	16
5-10 km	19	16	27	20
10-15 km	57	44	46	36
15-20 km	22	18	19	14
20-25 km	5	4	7	6
25-30 km	3	1	1	1
30-35 km	2	0	1	0
35-50 km	3	1	0	0
50-65 km	2	0	1	0
65+ km	6	0	5	0
Average	16.39	11.95	14.34	11.25

Table 41: Pilot Participant's Difference in Distance between Cycling and Driving

Kilometers Saved between Home-Work by Cycling instead of Driving	1st Block, All Participants	1st Block, E-bike Pilot Participants	2nd Block, All Participants	2nd Block, E-bike Pilot Participants
Negative	7	2	1	0
0-1 km	4	2	8	4
1-2 km	7	6	5	4
2-2,5 km	10	8	11	11
2,5-3 km	28	25	17	15
3-3,5 km	16	12	12	8
3,5-4 km	9	8	11	11
4-4,5 km	7	4	10	7
4,5-5 km	8	4	5	4
5-5,5 km	8	7	5	3
5,5-6 km	7	6	8	6
6-7 km	9	3	7	4
7-10 km	12	9	20	14
10-14 km	2	2	5	2
Average	3.82	3.96	4.58	4.35

Table 42: Pilot Participant's Driving Duration

Duration Home-Work by Car	1st Block, All Participants	1st Block, E-bike Pilot Participants	2nd Block, All Participants	2nd Block, E-bike Pilot Participants
0-10 mins	3	2	7	7
11-15 mins	16	15	17	15
16-20 mins	42	35	40	31
21-25 mins	32	26	27	19
26-30 mins	28	19	23	17
31-40 mins	5	1	5	4
41-50 mins	4	0	3	0
51-60 mins	4	0	2	0
1 hour +	0	0	1	0

Table 43: Pilot Participant's Cycling Duration

Duration Home-Work by Bicycle	1st Block, All Participants	1st Block, E-bike Pilot Participants	2nd Block, All Participants	2nd Block, E-bike Pilot Participants
0-10 mins	8	7	14	14
11-20 mins	11	10	12	9
21-30 mins	10	9	18	12
31-40 mins	32	28	26	21
41-50 mins	34	23	27	20
51-60 mins	17	14	12	9
1 hour +	22	7	16	8

Table 44: Pilot Participant's Duration Differences between Cycling and Driving

Time Lost between Home-Work by Cycling instead of Driving	1st Block, All Participants	1st Block, E-bike Pilot Participants	2nd Block, All Participants	2nd Block, E-bike Pilot Participants
Negative-0	10	10	19	16
1-10 mins	16	14	23	17
11-20 mins	51	40	41	33
21-30 mins	35	27	24	17
31-40 mins	5	5	4	4
41-60 mins	5	1	8	6
1 hour+	12	1	6	0

Table 45: Stated Reasons to Join the Pilot

Reasons to Join the Pilot	1st Block%	1st Block#	2nd Block%	2nd Block#
Traffic Jams	9.36%	32	9.18%	28
Reduce travel time	6.73%	23	5.57%	17
Reduce costs	10.82%	37	11.48%	35
Avoid parking problems	9.06%	31	6.89%	21
Arrive relaxed to work	9.06%	31	7.87%	24
Sustainability	18.42%	63	19.67%	60
Curiosity	11.11%	38	15.08%	46
Health reasons	23.10%	79	22.62%	69
Other	2.34%	8	1.64%	5

Table 46: Stated Reasons of Driving instead of Cycling

Reasons to Drive instead of Cycle	**1st Block%**	**1st Block#**	**2nd Block%**	**2nd Block#**
Distance	11.81%	43	13.02%	41
Time	15.79%	54	16.07%	49
Easy parking available	7.60%	26	6.56%	20
Sweaty arriving	16.08%	55	14.10%	43
Clothing policy	4.39%	15	6.23%	19
Don't like cycling	0.88%	3	2.62%	8
Physical disability	0.88%	3	0.33%	1
Too much rain	11.11%	38	10.82%	33
Cycling doesn't suit my image	0.58%	2	0.33%	1
Lack of sheds	0.88%	3	0.98%	3
Lack of showers	3.80%	13	3.28%	10
Carrying stuff	5.56%	19	5.25%	16
No right bicycle	9.36%	32	12.13%	37
No good bicycle routes	0.58%	2	0.33%	1
No cycling mate	1.17%	4	0.98%	3
Not safe to cycle	0.58%	2	0.33%	1
Need to carry children around	4.39%	15	3.28%	10
Bad experiences with cycling	1.17%	4	0.33%	1
Car to change locations due to work duties	2.34%	8	1.64%	5
Other	6.73%	23	4.26%	13

Table 47: Summary of Responses to TPB Questions, Entry Survey

To what extent do you agree with the following statement: There is a good (e-)cycle route between my house and campus.	4.11
Did you already consider switching to an e-bike before hearing about the pilot?	3.19
To what extent do you agree with the following statement: I expect commuting by an e-bike to and from work to be a good alternative for me.	4.13
To what extent do you agree with the following statement: I expect that I can e-bike to and from work when it is windy.	4.02
To what extent do you agree with the following statement: I expect that I can e-bike to and from work when it is raining.	3.04
Would you also consider switching to the alternative way of commuting (E-bike, OV-card, OV-card with OV-bicycle, more working from home) without this pilot?	3.02

Appendix J: End Survey Results

Table 48: Summary of Responses to TPB Questions, Exit Survey

Question	Average	Stan.Dev.
There is a good e-bike connection between my house and the campus	3.81	1.363
Testing the e-bike … met my expectations	4.02	1.105
Testing the e-bike has … altered my thoughts about the e-bike	4.21	0.874
Testing the e-bike has … altered my thoughts about using the car for my travel to the campus	2.49	0.906
How hard or easy was it to use the e-bike twice a week to travel to the campus?	4.17	1.018
Did you come to the campus with the e-bike more often than expected?	3.80	1.644
To what extent do you agree with the following statement? The e-bike is a good alternative for driving by car to campus	4.20	1.027
Would you like to continue to use the e-bike for traveling to campus?	3.81	1.111
Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more attractive?	3.49	1.581
To what extend do you agree with the following statement: I am willing to invest in an (e-) bike as an alternative for traveling by car from home to campus.	3.56	1.188
E-biking to and from the campus was overall a pleasant experience	4.40	0.593
E-biking is better than driving my car for commuting to and from campus	3.91	0.961
Owning an e-bike for commuting to and from campus would be pleasant	4.19	0.865
People I care about use an e-bike to travel to and from campus	2.50	0.763
People I care about would support my decision to buy an e-bike to commute to and from campus	3.45	0.972
People similar to me buy e-bikes to use for commuting to and from work/study	2.72	0.820
Facilities at TU Delft are suitable for me to e-bike to and from the campus	3.76	0.852
The distance between the campus and my home is a suitable distance for me to e-bike to and from work/study	4.15	0.881
I use my e-bike to perform other activities as well	3.80	0.930

Table 49: Spillover Effect

Other family members	3
Collega's	4
Geen andere mensen	46
Mijn kinderen	6
Mijn partner	14
Vrienden	10

Table 50: Bivariate Correlation Analysis Results

Correlations

		There is a good e-bike connection between my house and the campus	How hard or easy was it to use the e-bike twice a week to travel to the campus?	Did you come to the campus with the e-bike more often than expected?	To what extent do you Mee eens with the following statement?The e-bike is a good alternative for driving by car to campus	Would you like to continue to use the e-bike for traveling to campus?	Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more	To what extend do you Mee eens with the following statement:I am willing to invest in an (e-) bike as an alternative for	E-biking to and from the campus was overall a pleasant experience
There is a good e-bike connection between my house and the campus	Pearson Correlation	1	-0.103	-0.017	0.008	-0,077	0.046	0.090	-0.124
	Sig. (2-tailed)		0.379	0.886	0.948	0.512	0.695	0.440	0.290
	N	75	75	75	75	75	74	75	75
How hard or easy was it to use the e-bike twice a week to travel to the campus?	Pearson Correlation	-0.103	1	.562**	.509**	.268*	0.205	.377**	.398**
	Sig. (2-tailed)	0.379		0.000	0.000	0.020	0.080	0.001	0,000
	N	75	75	75	75	75	74	75	75
Did you come to the campus with the e-bike more often than expected?	Pearson Correlation	-0.017	.562**	1	.384**	0.172	0.041	.335**	.277*
	Sig. (2-tailed)	0.886	0.000		0.001	0.141	0.729	0.003	0.016
	N	75	75	75	75	75	74	75	75
To what extent do you Mee eens with the following statement?The e-bike is a good alternative for driving by car to campus	Pearson Correlation	0.008	.509**	.384**	1	0.175	.257*	.483**	.489**
	Sig. (2-tailed)	0.948	0.000	0.001		0.133	0.027	0.000	0.000
	N	75	75	75	75	75	74	75	75
Would you like to continue to use the e-bike for traveling to campus?	Pearson Correlation	-0.077	.268*	0.172	0.175	1	0.177	0.183	0.176
	Sig. (2-tailed)	0.512	0.020	0.141	0.133		0.132	0.117	0.130
	N	75	75	75	75	75	74	75	75
Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more attractive?	Pearson Correlation	0.046	0.205	0.041	.257*	0.177	1	.575**	.291*
	Sig. (2-tailed)	0.695	0.080	0.729	0.027	0.132		0.000	0.012
	N	74	74	74	74	74	74	74	74

To what extend do you Mee eens with the following statement:I am willing to invest in an (e-) bike as an alternative for traveling by car from home to campus.	Pearson Correlation	0.090	.377**	.335**	.483**	0.183	.575**	1	.503**
	Sig. (2-tailed)	0.440	0.001	0.003	0.000	0.117	0.000		0.000
	N	75	75	75	75	75	74	75	75
E-biking to and from the campus was overall a pleasant experience	Pearson Correlation	-0.124	.398**	.277*	.489**	0.176	.291*	.503**	1
	Sig. (2-tailed)	0.290	0.000	0.016	0.000	0.130	0.012	0.000	
	N	75	75	75	75	75	74	75	75
E-biking is better than driving my car for commuting to and from campus	Pearson Correlation	0.079	.569**	.373**	.594**	.274*	.433**	.472**	.493**
	Sig. (2-tailed)	0.498	0.000	0.001	0.000	0.017	0.000	0.000	0.000
	N	75	75	75	75	75	74	75	75
Owning an e-bike for commuting to and from campus would be pleasant	Pearson Correlation	-0.062	.346**	.350**	.338**	.402**	0.217	.515**	.696**
	Sig. (2-tailed)	0.599	0.002	0.002	0.003	0.000	0.063	0.000	0.000
	N	75	75	75	75	75	74	75	75
People I care about use an e-bike to travel to and from campus	Pearson Correlation	-0.046	0.070	0.098	0.157	0.057	.294*	.338**	0.136
	Sig. (2-tailed)	0.697	0.551	0.406	0.182	0.632	0.012	0.003	0.247
	N	74	74	74	74	74	73	74	74
People I care about would support my decision to buy an e-bike to commute to and from campus	Pearson Correlation	-0.113	.308**	0.166	.393**	.304**	0.151	.473**	.526**
	Sig. (2-tailed)	0.340	0.008	0.161	0.001	0.009	0.206	0.000	0.000
	N	73	73	73	73	73	72	73	73
People similar to me buy e-bikes to use for commuting to and from work/study	Pearson Correlation	0.095	0.138	0.086	.259*	.252*	.343**	.442**	0.176
	Sig. (2-tailed)	0.422	0.242	0.468	0.026	0.030	0.003	0.000	0.134
	N	74	74	74	74	74	73	74	74
Facilities at TU Delft are suitable for me to e-bike to and from the campus	Pearson Correlation	0.077	0.173	-0.035	0.025	0.066	-0.093	-0.092	0.219
	Sig. (2-tailed)	0.510	0.137	0.767	0.833	0.572	0.428	0.430	0.058
	N	75	75	75	75	75	74	75	75
The distance between the campus and my home is a suitable distance for me to e-bike	Pearson Correlation	-0.033	.484**	.329**	.475**	0.208	0.182	.347**	.533**
	Sig. (2-tailed)	0.777	0.000	0.004	0.000	0.074	0.120	0.002	0.000

to and from work/study	N	75	75	75	75	75	74	75	75
I use my e-bike to perform other activities as well	Pearson Correlation	-0.115	.265*	0.212	.283*	0.160	0.105	0.152	.417**
	Sig. (2-tailed)	0.325	0.021	0.068	0.014	0.172	0.375	0.194	0.000
	N	75	75	75	75	75	74	75	75

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		E-biking is better than driving my car for commuting to and from campus	Owning an e-bike for commuting to and from campus would be pleasant	People I care about use an e-bike to travel to and from campus	People I care about would support my decision to buy an e-bike to commute to and from campus	People similar to me buy e-bikes to use for commuting to and from work/study	Facilities at TU Delft are suitable for me to e-bike to and from the campus	The distance between the campus and my home is a suitable distance for me to e-bike to and from work/studv	I use my e-bike to perform other activities as well
There is a good e-bike connection between my house and the campus	Pearson Correlation	0.079	-0.062	-0.046	-0,113	0.095	0.077	-0.033	-0.115
	Sig. (2-tailed)	0.498	0.599	0.697	0.340	0.422	0.510	0.777	0.325
	N	75	75	74	73	74	75	75	75
How hard or easy was it to use the e-bike twice a week to travel to the campus?	Pearson Correlation	.569**	.346**	0.070	.308**	0.138	0.173	.484**	.265*
	Sig. (2-tailed)	0.000	0.002	0.551	0.008	0.242	0.137	0.000	0.021
	N	75	75	74	73	74	75	75	75
Did you come to the campus with the e-bike more often than expected?	Pearson Correlation	.373**	.350**	0.098	0.166	0.086	-0.035	.329**	0.212
	Sig. (2-tailed)	0.001	0.002	0.406	0.161	0.468	0.767	0.004	0.068
	N	75	75	74	73	74	75	75	75
To what extent do you Mee eens with the following statement?The e-bike is a good alternative for driving by car to campus	Pearson Correlation	.594**	.338**	0.157	.393**	.259*	0.025	.475**	.283*
	Sig. (2-tailed)	0.000	0.003	0.182	0.001	0.026	0.833	0.000	0.014
	N	75	75	74	73	74	75	75	75

Would you like to continue to use the e-bike for traveling to campus?	Pearson Correlation	.274*	.402**	0.057	.304**	.252*	0.066	0.208	0.160
	Sig. (2-tailed)	0.017	0.000	0.632	0.009	0.030	0.572	0.074	0,172
	N	75	75	74	73	74	75	75	75
Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more attractive?	Pearson Correlation	.433**	0.217	.294*	0.151	.343**	-0.093	0.182	0.105
	Sig. (2-tailed)	0.000	0.063	0.012	0.206	0,003	0.428	0.120	0.375
	N	74	74	73	72	73	74	74	74
To what extend do you Mee eens with the following statement:I am willing to invest in an (e-) bike as an alternative for traveling by car from home to campus.	Pearson Correlation	.472**	.515**	.338**	.473**	.442**	-0.092	.347**	0.152
	Sig. (2-tailed)	0.000	0.000	0.003	0.000	0.000	0.430	0.002	0.194
	N	75	75	74	73	74	75	75	75
E-biking to and from the campus was overall a pleasant experience	Pearson Correlation	.493**	.696**	0.136	.526**	0.176	0.219	.533**	.417**
	Sig. (2-tailed)	0.000	0.000	0.247	0.000	0.134	0.058	0.000	0.000
	N	75	75	74	73	74	75	75	75
E-biking is better than driving my car for commuting to and from campus	Pearson Correlation	1	.493**	0,112	.349**	.292*	0,055	.511**	.463**
	Sig. (2-tailed)		0.000	0.341	0.002	0.012	0.640	0.000	0.000
	N	75	75	74	73	74	75	75	75
Owning an e-bike for commuting to and from campus would be pleasant	Pearson Correlation	.493**	1	0.135	.608**	0.148	0.080	.673**	.366**
	Sig. (2-tailed)	0.000		0.252	0.000	0.207	0.495	0.000	0.001
	N	75	75	74	73	74	75	75	75
People I care about use an e-bike to travel to and from campus	Pearson Correlation	0.112	0.135	1	0.226	.602**	0.159	0.143	0.039
	Sig. (2-tailed)	0.341	0.252		0.055	0.000	0.175	0.225	0.743
	N	74	74	74	73	74	74	74	74
People I care about would support my decision to buy an e-bike	Pearson Correlation	.349**	.608**	0.226	1	.332**	0.127	.485**	.367**
	Sig. (2-tailed)	0.002	0.000	0.055		0.004	0.282	0.000	0.001

to commute to and from campus	N	73	73	73	73	73	73	73	73
People similar to me buy e-bikes to use for commuting to and from work/study	Pearson Correlation	.292*	0.148	.602**	.332**	1	0.012	0.073	0.171
	Sig. (2-tailed)	0.012	0.207	0.000	0.004		0.919	0.538	0.146
	N	74	74	74	73	74	74	74	74
Facilities at TU Delft are suitable for me to e-bike to and from the campus	Pearson Correlation	0.055	0.080	0.159	0.127	0.012	1	0.120	.263*
	Sig. (2-tailed)	0.640	0.495	0.175	0.282	0.919		0.307	0.023
	N	75	75	74	73	74	75	75	75
The distance between the campus and my home is a suitable distance for me to e-bike to and from work/study	Pearson Correlation	.511**	.673**	0.143	.485**	0.073	0.120	1	.498**
	Sig. (2-tailed)	0.000	0.000	0.225	0.000	0.538	0.307		0.000
	N	75	75	74	73	74	75	75	75
I use my e-bike to perform other activities as well	Pearson Correlation	.463**	.366**	0,039	.367**	0.171	.263*	.498**	1
	Sig. (2-tailed)	0.000	0.001	0.743	0,001	0.146	0.023	0.000	
	N	75	75	74	73	74	75	75	75

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 51: Factor Analysis Results, Exit Survey

Rotated Component Matrix[a]							
	Component						
	1	2	3	4	5	6	7
Are you planning to cycle to campus more often, even though TU Delft does not make the use of an e-bike more attractive?				0.415	0.436	-0.450	
I am willing to invest in an (e-) bike as an alternative for traveling by car from home to campus.	0.554					-0.459	
Would you like to continue to use the e-bike for traveling to campus?					0.698		
Bicycle km home to work		0.929					
car km home to work		0.956					
car time htw		0.849					
cycling percentage					0.741		
There is a good e-bike connection between my house and the campus							0.786
I use my e-bike to perform other activities as well	0.476						
E-biking is better than driving my car for commuting to and from campus	0.479		0.534				
Owning an e-bike for commuting to and from campus would be pleasant	0.823						
Did you come to the campus with the e-bike more often than expected?			0.807				
Testing the e-bike has ... altered my thoughts about using the car for my travel to the campus	-0.535						
How hard or easy was it to use the e-bike twice a week to travel to the campus?			0.797				
The e-bike is a good alternative for driving by car to campus	0.488		0.592				
Testing the e-bike has ... altered my thoughts about the e-bike	0.610						
E-biking to and from the campus was overall a pleasant experience	0.845						
People I care about use an e-bike to travel to and from campus				0.853			
People I care about would support my decision to buy an e-bike to commute to and from campus	0.749						
People similar to me buy e-bikes to use for commuting to and from work/study				0.787			
Facilities at TU Delft are suitable for me to e-bike to and from the campus						0.775	
The distance between the campus and my home is a suitable distance for me to e-bike to and from work/study	0.656	-0.440					
There is a good connection with public transport between my house and the campus				0.473			
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.[a]							
a. Rotation converged in 10 iterations.							

Table 52: ANOVA Results of Conceptual Model, as Explained in 4.2.2.1.1

Variables	**Unstandardized B**	**Significance Level**
Attitude	0.434	0.036
SN	0.183	0.308
PBC	0.097	0.397

Table 53: ANOVA Results of Conceptual Model, as Explained in 4.2.2.1.2

Variables	**Unstandardized B**	**Significance Level**
Attitude	0.518	0.074
SN	0.706	0.006
PBC	-0.007	0.967

Appendix K: Interview Transcripts

Interviews with Current E-bikers

Interview 1 – Isabelle

M: So, thank you for your interest in my project. Name of the projects is adoption of you e-bikes as a daily commute investigating motivators and factors in a palace study and its relations with the pilot study. Maybe you've already heard about it and my aim with my thesis is to explore factors that affect people to actually use bikes as a part of their daily commute and their decision to buy a bike. And that's why I wanted to do interviews with people who already used e-bikes as well. In this context I would like to ask you questions and I will use your answers to structure a model about adult adoption of e-bikes as a commute. And this interview will be recorded and then I will convert it to a report. After your approval of the report, I'll be sending it to you. I will be using that for my research purposes, and it will be included in the appendix of my Master thesis that will be published in the repository. And if you're interested, I can also send you the results and it will be defended on 26 of August. And please let me know if you want your name to be on my report or not. And then I will process the data accordingly. Thank you again. Do you approve?

I: It sounds good.

I: So basically, you're using e-bike to cycle to work daily or sometimes?

I: More Now Again. In the winter there was a few times where I decided not to. Yeah, it's my aim to do it daily.

M: Okay. And how did you decide to buy one? And what did you think about before buying one? How did your perception actually change then?

I: Actually, the first one I didn't decide to buy myself. Actually, my mom bought one day. She very much disliked cycling and she thought maybe at least with an e-bike it's a little bit more like she would do it and then she ended up not using it. But she had to cycle quite far to work and she's older. but now she's retired so, it was a plan she had. But then she just had this e-bike that was sitting there so she gave it to me instead. So, I started using it and got very used to it. Having just like when you have the wind against it just nice to have that extra support. I'm also not a huge fan of cycling. I fell down once when I was young. I don't enjoy it so much. So, having an e-bike makes me cycle more often than I would do. Usually I cycle twelve kilometers between work and home and that is probably doable on a regular bike. I just know for myself that I would not do it. Definitely not as much, maybe even not at all if I just had a normal bike. So, I didn't decide to buy it, but I would buy one again if this one at some point would give out. I just wouldn't want to go back to a normal bike.

M: And if you don't use the e-bike in the winter then what else do you use? Do you use a car or?

I: Ah I go by bus. I don't have a license so. Okay.

M: What do you generally think of E-bikes. Because usually people say that it is for old people.

I: I am a proud e-bike user. People usually say like oh I like you spend so much money on a bike like that it's a waste but then if you compare to how much people spend on their car it's like it's still cheaper but in terms of you know like having e-bike it's a one-time expense. It is still a lot of people say like ah why don't you just bike normally I was like well, at least I bike now. Which again, I would not do otherwise. So, my perception, when it just started coming up, I would always be like surprised that people overtake me as I was biking on my normal bike and they come cycling by like with no effort at all and I was very frustrated it was happening. Now I know they were probably with e-bikes and now I am that person and I am perfectly happy with that. I don't care what other people think to be honest.

M: And do you use a helmet or not?

I: No.

M: You feel safe with the e-bike?

I: Yeah, as safe as another bike.

M: And your route from here to work. Is it like a cycling route only or do you have to go with traffic?

I: It is largely cycling path. I think only the very end here you share some roads in the neighborhoods that doesn't have designated cycle lanes but it's largely cycling paths. I used to go actually to look through a nature reserve. Just for bikes and pedestrians. Unfortunately, that is closed off now, so I just take another route. But it's all cycle paths. That's part of reason why you can cycle so well in the Netherlands.

M: Yeah and you said in winter you don't cycle as much, is it because of the cold or the wind?

I: It is more rain. Just now like, last couple of weeks I wanted to cycle but then you know it was like predicted that it would rain in the afternoon and then on the way home It's okay because at least you come home you can dry off and you know you can change your clothes and take a shower. But if I arrive in the office already wet, I really don’t like that. You can wear stuff against that, I know, but then I just play it safe and take the bus. So, the cold you can dress for, the rain I find more annoying.

M: So, you look at the predictions and then decide according to that?

I: Yeah, I'm annoyed if they're not right. If it's a nice day, you're like ah I could have cycled. it's a misfortune.

M: You said you got the e-bike from your mom. Yeah. Did you have any like reactions? When did this happen?

I: It's a long time ago. It is also the second one now because that one got stolen at some point. No, it was insured so she got another one and I gave it to us again. But that was possibly even 10 years ago already. Maybe more like 8. And then it got stolen on some point and then there was a new one. So, I think the new one is now like five or six years old, so it is fairly old, so it only has one battery that's kind of like running out of charge. So, it doesn't go as far anymore. So, I'm just going to drive this one until it's you know until it is dead. Or rather my boyfriend's. He bought one recently because he needs to cycle to Leiden for his work which is further than what I'm cycling. So, he got a really good one and so if mine dies I get his and he gets a new one.

M: Yeah that's nice. OK and did your boyfriend also start after you e-biking or?

I: Yeah, he also started using it. Because we were already together. So, we start using it together. Both recognizing that it is nice.

M: It's like you have back and it is very nice. And did you have any like specific reactions from TU Delft, your colleagues. your friends or?

I: No. I mean like it's come up and then you get the responses that I just mentioned. Some people say oh that's nice. A lot of people say my oh why do you just cycle normally, you're lazy but I don't care.

M: And you heard of the pilot program. Do you think it could be an effective method?

I: I don't know the details of it. You can tell me more about.

M: Yeah. For 8 eight weeks, you have to use it every two twice every week. And then if you use that you have a discount at the end for buying one, the discount can apply to you as well I think but need to check.

I: I know incentives, but it depends on the employer, they have some kind of a fietsplan, and I couldn't find it last time I checked here. So, I thought this was a very good incentive because it was there at some point and then not anymore. So, I thought it was a good incentive. And it sounded like you try for 2 months and then that's it, that kind of sad.

M: the idea they have is that people will try it and that maybe it motivates people to actually buy it because it's a big investment compared to a regular bike. But a lot less than a car as you said.

I: Yeah no I think it's a good initiative and that it picks up. Yeah that people pick it up.

M: And uh one you are e biking maybe. And that's not really related to you, but do you think of the advantages and disadvantages to the society to yourself. Is there anything. That you consider bigger than just commuting or for you is it just commuting? for example it's closer more environmentally friendly than a car for example. Does that affect your behavior?

I: Of course, for me it was not the motivation to get it cause I just. But now, I mean is that I don't actually have my license. I've been wondering about whether I should get it. But then in part because not having to use a car and then also the fact that I can get around well with public transport and a bike and an e-bike makes it easier to get around. It is in part also an environmental decision that I would not want to get my license just to have a car. It is like no I can get around. I wish some things would be improved obviously but more so public transport. But it is definitely a factor in terms of output. So, I wouldn't say it was the motivation to get an e-bike was that but now I do feel better about it that I know that I'm using that. Of course, the bike is even better because it doesn't use electricity. But you know.

M: In the research it's obvious that after especially five to eight kilometers people stopped biking and it's not even feasible because as you said you arrive really sweaty and if you're not the sportiest person on earth then it's not really enjoyable. Also, in winter it's not even possible some days because of the wind.

I: Yeah, I know definitely, in the route you're quite exposed to like farmland or like you're next to swampland, if there is a lot of side wind like I don't feel very safe cycling. it's a side thing that's I mean I tried to be somewhat environmentally conscious in other things as well and I'm not the best in that, but it is nice that at least in this particular part I feel like I'm contributing. At least I don't have a car

M: Except not including whether because you mentioned that already. Are there any other factors that make you not take your bike?

I: Mm hmm. Sometimes, like today I don't bike because first I had to go to a meeting in the Hague and then I had to come here later and then go home. Now I can theoretically bike to The Hague and then to Delft. But then I'm not completely sure if the one battery I have left would make the trip to the Hague and then here. that's one thing that's just because of the bike that I have right now it has very limited range. I do have a charger here so I could charge up here. But then if you need to be at a meeting then later you don't want to end your battery halfway through and have to cycle half the way with very heavy bike which in newer bikes are better. They're not as heavy, like a normal bike. The motor gives out so this one that I have is very heavy. So, it is not possible, it kind of defeats the purpose of having the e-bike you know. So like today was just more because of my schedule that I decided to not. And also, a vague prediction of rain in the afternoon. But if not for these variables I would prefer to have cycled because you're not dependent on like bus times for instance and stuff like that. So that might be one thing. Like schedule-related or time related that I would decide to not take on a day. But generally, if I can, I prefer the bike, you're more flexible and you don't have to sit in a full bus with you know when everyone's going home at the same time. Yeah, it's nice to be able to. You know. On your own. So, I think that is the only, so generally it is not there.

M: Thank you.

Interview 2 – Marja Interview

M: First of all, as you know it was on e-mail already, but my thesis topic is adoption of E bikes as a daily commute. And I want to investigate the motivators and factors in a pilot study that is in TU Delft. Maybe you already heard about that as well. And my

aim with the thesis is to explore why people start using e bikes as a daily commute and what really makes them buy a bike and what makes them stick to it. And in this context, I'm not only interviewing people from the pilot program but also people who have e-cycled already. So, I will ask you questions that help me build a model about adoption of E bikes. this interview will be recorded and then I will convert it to our reports, and I will send the report to you. And if you approve it, I will delete the recording and use the report for my research purposes and the report will be included in the appendix of my master's thesis. And that is in the TU Delft repository. So, if you don't want to be there, I can anonymize your name. And if you're interested, I can send you the teasers and it will be also defended on 26 of August. And please let me know if your preferred to be anonymized or not.

Ma: So, let me think about it after I heard all the questions. Then I know exactly that it is no problem at all.

M: Thank you already! So, first of all how did you decide to buy an e-bike? And how did your perception of you bikes change after buying one?

Ma: I had a friend from TU Delft. I spoke to her. she said that it was the best thing I ever buy was an E bike. I asked her about why and what and things like that. somehow it lingered in my mind. I do have bad knees. I'm 63 years old so it's not uncommon for older people who have bad knees and one day I decided it's time to start using a bike again because I avoided biking because of the knee problems, and I started using the car more often than I needed it. Usually I only need a car if it is rainy weather and I noticed that my behavior changed so it kept lingering and then I decided if she says, “it was the best thing I ever did”. it must be something that I would really like as well.

M: And you like it as well.

Ma: Yeah, I do.

M: Is it the best thing you ever bought?

Ma: No maybe not. But yeah, I'm very glad.

M: So, you were cycling before then switched to car completely and then back to a bike. And how many years has it been since?

Ma: Right now, I use it a year and a half.

M: What were your perceptions before and how have they changed? when I mean perceptions, people sometimes say, “it's cheating, it's not biking” and then it changes. I've seen that it changed when people who actually buy it. Did you have any changes?

Ma: Well in the beginning I did not need an E bike so I never thought about it as something that would be useful for me. But my perception changed. As soon as I started using an e-bike and suddenly: Ah! my freedom is back. And I can go wherever I want and not need a car. And so, it’s changed in a way that I really liked. So, I started making longer trips and I work one day a week in The Hague, and I've cycled to the Hague. Oh, I never have done that. Yeah. So, it does really extend my radius.

M: Do you also cycle when the weather is bad as well?

Ma: Well only yesterday I did. I miscalculated so I come back in the Hague and I was very wet.

M: Yeah. Because it started raining really weird. so, you use it nearly every day to come to work except the rainy days.
Ma: So, if it rains in the morning then I use the car but if I can see that it will be dry weather in the rest of the day I might consider cycling or not. And if it just rains in the afternoon I don't care. I'm going home.

M: And how did your family your other colleagues or friends react to using an E bike? have you also made other people buy an E bike like your friends?

Ma: Well My kids said we never thought that you would really like an e-bike. And I said I never did as well so I can understand that. But old people in my age they don't really agree on measures to keep active as long as you can. But I do tell other people that I'm really glad. And I always advise them to have the extended version of the battery. Because that's the best thing I've ever done.

M: And you heard of the pilot program already? Do you have colleagues who do you think it will be effective for? Because the aim of the pilot program is people try for two months and then they have a discount on buying the e-bike. Do you think its effective methods?

Ma: I'm not sure. I think that people who already are thinking about buying one maybe they want-discount. They will not be forced into buying it or later because they were already interested. I do have one colleague who really did the program from TU Delft. So, he used it for like six weeks or so in the previous program like three years ago.

M: Oh, I didn't know there was the program!

Ma: And afterwards he bought one himself. So that's one person who already thought about it and then it's a good way to try but I'm not sure if he uses it a lot.

M: Yeah

Ma: If the goal is to get more people on a bike and less people in a car, I'm not sure if he's the one to be an example.

M: Yeah. And it's always, I think, in winter the problem is not really solved because people... it's raining a lot. do you think about the advantages the e-cycling has to the environment or like to the society or to TU Delft like it occupies less space? Are these your concerns or it's just that your comfort you like it.

Ma: I wasn't really very much concerned about that. So, it didn't influence my choice. Right now, it's always nice to tell it. Well that's nice. But it wasn't on purpose that I wanted to be more of an environmentalist.

M: Yeah. Okay. Except the weather is there any other reason that you don't take the bike like external errands or?

Ma: Hmm, not take the bike? Maybe for shopping. I do shop once a week and then I use my car. So that's when I don't use my bike.

M: And comparing to normal cycling: do you think the weather affects you more or less or the same?

Ma: I think less you know; every day has now had its advantages. And it's good to look at the trees and the animals.

M: So, these were all my questions. OK. Yeah okay. Should I anonymize it or not?

Ma: Not at all. It is not personal. one of the advantages I see is that I don't have to look for parking spaces anymore. Saves time and money.

M: Yeah. And maybe you know they're going to remove 200 places more, so it is more.

Ma: Some of the disadvantages is if I use my bike in the morning, but that's not something from an e-bike. There are so many students that I struggle. But that is more like the old age problem and not a bike problem. So that's why I come a little later so I can do my own stuff and just not worry about hitting another biker.

M: Yeah because you're a lot faster of course.

Ma: But maybe not in reaction time so it helps me. It is also important to say that people can motivate each other to buy a bike, so that is a good method. Also, of course it is just too expensive for some people.

M: Thank you.

Interview 5 - Vincent

M: *Information on thesis*

V: No top secrets, you don’t need to anonymize

M: How did you decide to buy an E-bike and what were you using before the e-bike?

V: A scooter, sometimes the ordinary bike, sometimes the car. But I'm living in the Hague, 12-13 km away. Congestion was horrible and I wanted to exercise also little bit. So, I decided to buy an E-bike.

M: But you keep it in the office because you are afraid of stealing?

V: It is a speed pedelec. it's an expensive one, so I don’t want it stolen. I have room here in the office, and I can also charge it here.

M: Does this have a license plate?

V: Yes, it is like a scooter, it can go up to 45 km/h. You're also obliged to use a helmet, and a license for scooter or a regular driver's license.

M: What do you think about the bikes in general?

V: Very nice, but very dangerous. What we see in the cycling infrastructure is that first, it is getting more and more crowded, so we have traditional bikes, e-bikes, speed pedelecs, bakfiets. We have in Amsterdam the Biros, the small cars going 30-40 km/h. These are all using the bike lane, so it is becoming a mess, very crowded. Second, formally this is a 45 km/h-scooter. So, I inside the urban areas I often need to use the road, not the cycle lane. However, also in urban areas, I use the cycle lane because it too dangerous to use the road. So, for safety reasons it's a difficult trade-off.

M: I heard from others that in campus since there's a lot of students and the lanes are not big enough to accommodate for e-bikes. do you also experience that?

V: Yes, you have to be careful in crowded areas because people don't expect you to approach that fast. Also, they don't hear you coming, the e-bike is very silent. Unlike a conventional scooter which you can hear coming very well. So, you really need a helmet.

M: Do you use it every day also in bad weather?

V: If the weather is really bad not, but if it's cold it's OK. If it's a little rainy, I try to see if I can go earlier or later. But I usually use it 3 to 4 days a week.

M: And you use the car instead then?

V: Yes, but I also work in Nijmegen. Then I take the train, but often I go to the station with my e-bike.

M: So, in the station you trust?

V: You have a guarded bicycle parking, I pay for it, like e.g. at the Delft railway station. Supervised parking.

M: how did your family, colleagues, your friends react to you having an e-bike?

V: Positive. But even if they wouldn't have, I don't care.

M: Did you hear about the pilot program already?

V: No!

M: so, they're going to give e-bikes to people for two months, they get to experience it, and they get a discount at the end of the day. Do you think it is effective?

V: Yes, people have to experience it.

M: Yeah, did you have people try your e-bike?

V: You need to experience it; it really changes the way you look to biking.

M: Do you know how it changes?

V: Positive

M: I think initially people were thinking that it's for old people

V: It is not only for old people; it is also for young people. Through e-bikes trips of 10-20 km become easier, hence, it is a competitor. Congestion is horrible. I'm faster with my bike than with my car from the Hague to Delft. 30-35 minutes by car, this is 25 minutes max.

M: For the train, you also need to find a parking spot.

V: Then I park under the station.

M: do you think in general what's your attitude? Is it a positive thing for the society?

V: Yes, very positive. We're doing very well in the Netherlands. Of course, some cycling infrastructure can be improved but we're doing a lot better than other countries.

M: Yeah, I cycled in Istanbul, it is very different, and I was not allowed by my boss and it is very dangerous.

V: So, people not cycling there?

M: Some people do, around the university. But very rare, not common at all.

V: How do people go to the university then? Public transportation?

M: Walking. It is too short for public transportation and traffic is very bad. Cycling is not suitable as it is very hilly. Now we had e-bikes in campus, but even with that people don't want to cycle upwards because it is very hilly. Do you have any other reason not to e-bike, like you mentioned sometimes you work in Nijmegen or bad weather, any other reasons? Errands? Shopping?

V: I use it for shopping too. Not when it is too close. But I put it inside my house, always inside as it is an expensive thing. You can't just park it around, especially in the Hague.

M: Anything you want to add.

V: I think it is very interesting for other cities, like Istanbul. It is hilly, but the congestion is also far worse in such megacities. It could be very good alternative there. How many people live there?

M: We have 15 million now.

V: what is average commuting time.

M: I don't know for sure, but I had 1,5 hours one way in high school.

V: What a waste of time!

M: Yes, we get used to it but once I was used here it is quite bad once you go back. After exchange I just couldn't do it. It is very different, but you get used to it.

V: yeah, I go to Nijmegen twice a week, 1-1.5 hours one way. But in the train, I can sit, I have Wi-Fi, I can read, I can do whatever. If it is too crowded, I sit in the silent place. I can work nearly 75% of my time, something you can't do in a car.

M: Yes, in Istanbul it's different.

V: It is really different. I have lots of PhD students around the world and I always ask them to tell me about your transport situation.

M: Even not comparable!

V: I want to learn from it. Here we can discuss a lot, but from these cities you can learn a lot. You can't change it overnight. 15 million Turkish people in Istanbul, they're used to it.

M: now they build a lot of bike roads, also government puts shared biking in the hubs now. Some parts you can bike, but if you need to cycle up the hill it is bad. You think cyclists are crazy. My dad couldn't believe I wanted to bike, even though my dad and mom biked to school as young. When my mom was growing in Istanbul it was different as it was a flat area and wasn't that crowded. But it is different, bikes sold in Istanbul don't even have the rain sheds. People would never bike in rain, and they're also very slow, here I get surprised how I got faster. They never used it for commute, just for recreation. They also see commute cycling as being active during the day, as sports. Perceptions are different.

V: So, a lot to improve in terms of biking in Istanbul. Not only there, but also in other 10 million plus cities. But it works, for me it is a very good thing. I want to look at the pilot. Good luck with the thesis! Send me a copy.

M: Thank you for your time.

Interview 6 – Anouk

M: *Information on thesis* How long have you been using any bike now?

A: About 5 years.

M: how did you decide to buy one?

A: I have painful knees, so a normal bike wasn't possible. So, I thought an e-bike could be possible.

M: Were you biking before that to work?

A: No, I didn't come to Delft by bike, 14 km is too long. I thought it was good to have more exercise, but because of my knees I needed an e-bike.

M: How did you first hear of E-bikes? Did you see it from someone?

A: Hmm. Well. Those days, there is a lot of developments on how people look at e-bikes. It changed a lot and I think even five years ago it was only for old people. So, I went to buy a 2nd hand e-bike to test if I like it and use it, all those things. I think because my mother in law had one, so for old people. So, I was like okay, let's see. Then I liked it, but it was really a lousy one, a real 2nd hand one, so I bought a new one.

M: So, your views change after you started using it.

A: Well, more of the people's views changed. 5 years ago, it was only old people who wanted to do day trips, men and women in the same jacket. Now it is more common. I heard on the news that more e-bikes are sold than normal ones.

M: Do you use it every day for commute?

A: No, I try to use it twice a week.

M: Do you come by car then?

A: Yes, well sometimes by OV, but not often because I don't have good connection.

M: When you don't come by e-bike, why do you choose not to?

A: most of the time because of the time it takes. it's 45 minutes. If I have an early appointment in the morning, or have to be at home in time, something like that. Also, for other appointments. Stuff like that. Ah, also the weather. I don't bike if it is raining.

M: So, in the summer more and more?

A: Well, in the winter it is also OK, but in the rain not.

M: So cold is not an issue?

A: No, but the rain is. Also, lots of wind is another issue. It is better than a normal bike, but not comfortable.

M: How did your acquittances reacted to you using an e-bike?

A: Some of them thought, "oh, you're getting old". But most of them said it was good I was biking and not by car. Now it is different, my 16-year-old daughter wants to use my bike.

M: have you heard of the pilot program; do you think its effective? Any colleagues?

A: Yes, I have 2 of them, I think.

M: Do you think of general advantages of e-biking? Not only you but environment.

A: Also, that, but mainly for myself. Of course, it is good for my knees, but I think it is already good you don't use the car.

M: you said sometimes you don't use your E-bike if you want to be early here early or at home and also because of the weather. is there any other reason that makes you not take it?

A: If I have appointments abroad, I can't take it.

M: For shopping?

A: Ah, I have a basket in front, so I go with e-bike as well.

M: For TU Delft, do you think there are enough facilities?

A: No! What I am missing is my ability to recharge my e-bike outside. There are ones for e-cars, but not the bikes.

M: Is parking an issue

A: No, we have our own parking area, that is fine. But charging points I miss.

M: Have your acquittances started e-biking because of you? For example, colleagues, or your daughter as you mentioned.

A: yeah, maybe two of them were "inspired" let's say! Most people live a bit further, let's say 10 km, so for normal bike it is a bit too far, but for e-bike it is OK. So due to distance.

M: Thank you! This is it.

Interview 10 – Angeline

M: *Information about the research.* How long have you been e-biking?

A: Since last year May. (a year)

M: how did you decide to buy one? how did you first tried one?

A: I visited several shops. Looked at lots of reviews, reports, test results. finally, I came with a store, which is where I live. They gave me wonderful advice, so I decided to follow that advice! of course I tried several of bikes.

M: how did you first think of the idea of e-biking to work?

A: because I already went on my bike, but it is about 11 km. It is a lot of, well if you're coming from Schiedam like me, there are a lot of open roads, so loads of wind. Well of course the Netherlands has a lot of wind already. So, I though well, I can come by car, but I prefer to go by bike. But it is nice to make it a little smoother, and not that sweaty when you come to work. It is also healthier of course!

M: You always take the e-bike then, never the bike?

A: No, when I'm in Schiedam, when I need to go to the shop, gym or whatever, if it is there then I take my normal bike.

M: E-bike is for commuting then, like a car?

A: yeah.

M: Do you still use the car?

A: A lot in winter. There are not that many good roads. Or it is a bit dangerous, or it is too small or there is no light. Or no specific road for bikers. It depends on the route I take, but in the winter, it is very dark. And some places with the bike road, there is no light. So, it is not really comfortable for me. So, in the winter, that is why, I take lot of time, also with the weather, I don't take the bike. In spring, summer, autumn, in good weather and with longer days, then it is nice to go by bike.

M: So usually in summer, in good season, you nearly always come with e-bike or does any other stuff stop you?

A: Yeah of course, there are other stuff, but also if I have to go somewhere else after work, if I have private appointments. Or the gym, sports, then of course it is easier to go by car. Or also, if I need to get some groceries then I still take the car.

M: How did your friends/family/colleagues react to you getting an e-bike?

A: well my partner is very delighted because when we now have a bike trip during the weekend, he takes the normal bike and I can keep up with him.

M: Your colleagues?

A: Yes, I had one collegue, Janneke, who was also the one who inspired me to think about the e-bike.

M: did you hear about the pilot program here, and do you think it will be effective? do you know anyone who is participating now.

A: I don't actually. But I actually had several people asking me where I got the bike and my experiences. But I'm not sure if she took part in the pilot. I think she bought it by herself.

M: Do you also consider the consequences for the general environment or the society when you chose to buy an e-bike?

A: Not really, I also have a hybrid car, half electric half gasoline. So maybe in that way, yes, but mostly for my health. It is healthier to bike.

M: Did your perceptions of e-biking change or is it what you expect it to be?

A: Well, initially I thought it was for older people, but now I think it is a great invention. I take the bike more often. It was easier to say I go by car before, but now with the traffic jam sometimes, it is nice to go by the cars and pass them. For me it is a really good invention.

M: do you think of the facilities TU Delft has, for example there are no chargers, with parking there are not enough spaces and that the lanes are too tight as well.

A: Well specifically it would be easier if you have the electricity in the park. But now I take it with me upstairs to the office. So not really. The only thing is sometimes I see that other people can drive really hard, in my opinion for the safety reasons whether I should wear a helmet. They say with the e-bike you drive faster and when you have an accident, injuries are more severe than a normal bike. IN that case I took that to consideration but haven't bought yet.

M: With the parking you don't have problems?

A: Not really, but there could be more spaces for the bikes. There are the closed ones, that is nice to have it there, but sometimes it is a bit too crowdy there. I also have two very big bags to bring all my stuff with me. sometimes it's very tight.

M: I heard, of course not here, but in the faculties the sheds are overcapacity so people can't lock their cars because there is no space left there. And people are scared their bikes will get stolen.

A: I have my own two chains to lock it.

M: Do you have an insurance as well?

A: Yes.

M: you didn't experience any problems in the roads inside the TU? Some people said lanes were too small.

A: No. Well, there is lots of students, but it isn't too small. Between 8.30-8.45 there are a load of students, but it is okay. If you have bigger lanes, that won't be a solution.

Interview 14 – Sylvie

M: How did you decide to buy an e-bike at the first place? What was the initial thing that made you try it?

S: I had a job within the distance of my home that is doable by a bike. However, with bike it took me too long to have a good balance between work and home. But I didn't want to buy a second car, I want to keep using a bike but then a fast one. That's why I bought one.

M: Were you using the car before?

S: No, also the bike, but then the distance between my home and work was shorter.

M: How long have you been using it now?

S: Like 3 1/2 years.

M: Before buying an e-bike, what was your perceptions of it? How did they change?

S: The first perception was that the electric bike is for old people who don't have the force anymore to bike themselves for long distances. Then I heard somebody saying that he's going to Zoetemeer daily on the bike. I think he lives in the same place as I do. It's a very long distance and I know many people who do that distance with the car. But he made a choice to do it by an electric bike. Then I thought that's a good idea to stay on the bike but then make your travel time not much longer by using an e-bike.

M: Do you use it every day to come to work.

S: Yeah.

M: Even in bad weather?

S: Yeah definitely!

M: Really nice, not many people do that.

S: I like it so much that sometimes my husband goes to work without the car so I can take it. But I know I'm faster on my bike and I don't like to be in the traffic. Then I don't know how long it takes. Now I know exactly how much time it will take. One of the things I like the most is that I know it will take 10-15 minutes. If there is strong front wind, no problem. With normal bike, with strong wind it can even take twice as much. It can also happen in the car with traffic. That's my reason to keep using bike.

M: How did people, colleagues, family, react when you first bought it?

S: It's okay. But I have a speed bike, so I need a helmet. That's the only thing people say: helmet on a bike? Of course, it is necessary, but it looks a bit silly.

M: So, you have the 45 km/h one?

S: Yes, that's very fast.

M: Then you can't use the bike paths?

S: That's a problem because the rules have been changed and it is a problem. You can use the bike path when you're outside the city/village. But in the cities, you need to use the normal road. When you take a bike path sometimes, if there is no road besides, when the bike path ends it is problematic. I don't want to drive where people drive with 50-60. But I have to! But then I take the bike path and avoid the rules. In other words, when you use the road without a bike path, sometimes you need to merge with a very fast road. And that's dangerous. That is why I stay on the bike path because I know it continues and that I'm not merged into a fast road. I want to keep safe on my bike.

M: Do you use the e-bike for non-commute purposes?

S: Mostly I use it to go to work and back. In other cases, I try to take my normal bike as much as possible. Because what I realized is that as the e-bike doesn't take too much energy, your energy level goes down. That's what I don't want, so I force myself to use the other bike to stay energetic.

M: Heard before that you feel like the normal bike is broken once you're used to the e-bike.

S: Yes! It's not nice anymore. I noticed before using an e-bike my energy level was higher and now I use my speed bike daily, my energy level is more down. It is always back wind, it is very nice, lovely. If I want to stay healthy and energetic, I should exercise. That's the only reason to me to use my normal bike sometimes. For me cycling on an e-bike feels like driving in a Cabrio. You're cruising, your hair is blown, wind is blowing, and it doesn't take any energy and you go very fast.

M: Do you also consider environmental concerns? Was that a reason for you?

S: yes, number one. I think for myself, and also other people it is so easy to take often the bike to certain locations you need to go, especially short distances. I see people use car for short distances, and I don't want to. This was the main reason to go for this solution instead of a second car. I think the environment is very important.

M: That's really nice. Is there any reason that makes you not to take the e-bike?

S: No never. Ah, you asked what else I did with the e-bike. Sometimes when I go somewhere around 20 km, then I take the e-bike as well instead of the car. When I go alone, I like it.

M: Quite nice, that is also even faster than the car with the speed pedelecs.

S: Yeah! And you need to find a parking place or pay for it. Its lovely, you're outside, the wind in your hair, you're doing exercise even if your energy level isn't high.

M: Did your perception of external factors such as the weather change with e-biking?

S: No, I always bike, so that didn't change.

M: Do you think TU has enough facilities (parking place, roads) to serve e-bikers?

S: Well I'm lucky we have a closed shed, its safe and it stays inside under the building. But I don't know how it is in other places. Especially safety is important because I don't want my bike on the road, people hit it and it can get damaged. Also, one day it was cold below 5 degrees and I couldn't put my bike inside a shed. My battery is inside the frame so I can't take it out to take it with me inside. With cold temperatures I noticed that my battery drained without using it. At the end of the day my battery was over. For me, that's a problem. But I know lots of bikes have detachable batteries, so not for all. My distance is just 5 km so that's quite close. But the distance is not the reason, the time is. When I leave work, I need to hurry up to be at time at home to prepare food for children and things like that. SO, on the normal bike I was always racing, sweating, then I come home tired, etc. Now it's a pleasant commute. I know when I leave here, within 15 minutes I'm home. I'm not tired, I'm not sweating, I just have a nice 15 minutes outside, enjoying the environment.

M: Good! Also, really good you do it every day.

S: Why do people don't do it everyday

M: Due to weather

S: For me that's no problem, and to be honest, if I count the days I'm wet from the rain, it is like 5 times a year.

M: Thanks!

Interview 15 - Elsa

M: How did you decide to buy an e-bike?

E: I have a rheumatic illness in my muscle tissue so any physical movement is really hard and will takes a lot of energy from me. So, I was always the slowest on my bike and I would just not go to people because I couldn't get there because biking is too heavy for my physical needs. So, I really wanted to have an e-bike. Then my grandfather, he became ill and he wouldn't use his bike anymore. So, I pre-inherited my grandfather's electric bike and now I can keep up with my friends biking through the city again.

M: You're probably faster than them?

E: Yeah!

M: What was your perception of e-bikes before using them and how did it change?

E: Well, I think the perception that e-bikes are for old people so they can continue riding bikes. Because they're all old, instable and get tired very fast. But then I got my own illness and I realized that I was one of those old, slow people. I think it also changed because it became more affordable. So, there's a lot of people now with a job who just buy it.

M: Some people just use it for commute, it is faster and more convenient than a car.

E: Yeah, especially if you live in the city. For example, if I worked in the Hague I would just bike there.

M: Do you use it every day to come to the university from Delft.

E: Yeah

M: How do you make sure it's not stolen?

E: My e-bike is really old; I mean my grandfather bought it a long time ago. I have it on double lock. We have a rule of thumb: we park our bike next to one that is more expensive and easier to steal than your own. If I'm scared it might be stolen, for example, in the night somewhere, then I usually take the battery out.

M: How did your friends, family react to you using an e-bike?

E: They were just happy I was on a bike. Because of my illness, my life became way smaller because I couldn't travel as much. So, they were really happy because now my boyfriend and me, we can just bike together. While he used to be having to push me because I couldn't get anywhere with my bike. So yeah, I'm using my e-bike in combination with my wheel chair to get around. It enlarges my mobility.

M: So, you really like it.

E: Yeah.

M: If this gets broken, will you buy a new one as well?

E: If I get a job, and the money: yeah definitely! Because without it, I will not be able to come here to study every day. A normal bike is not an option for my physical condition.

M: Do you also realize the advantages for the society? Sustainability side of it? Of course, you didn't have a car before so for you it is a bit different.

E: Well, I wouldn't want a car because e-bikes are so easy. I really like the bike-train combination. People ride their bikes to the train station and take a train to the city they work in. Because I think that's more sustainable. I think a lot of like 50-40 years old and also younger people, they work in the Hague. That's 30-45-minute ride. Usually they would be really sweaty or tired biking there. But now with an e-bike it's way easier. So, I think it's really good for the carbon foot print in the cities.

M: Do you think in TU Delft are there enough facilities to serve the e-bikers, like parks, roads, chargers?

E: Honestly, only way to know is to go to the e-bike triers in the university. As a previous e-bike owner, I don't even know if there are facilities.

M: Did you never needed a charger?

E: I have to take my battery out of my bike and just take it to wherever I'm studying and plug it in.

M: So that was not a problem

E: No, but I think it would be nice to have plugs where you can load your bike.

M: Some people mention locked sheds for the employees?

E: Yeah, would be nice to have those. But then, there are also students and employees who pay €2000 for a non e-bike. That's also expensive, shouldn't they also be on a shed? Also, here in the campus with this "buy an e-bike" campaign, they have this one huge sponsor, one brand that people should buy. Of course, it is good, but it's mostly promotion from the company and not really about sustainability anymore. And it's mostly for employees, not for students. I think, for example Swapfiets would introduce e-bikes, something student-priced, that would be great.

M: A leasing option might be allowed in 2020 by the government.

E: They should be careful about safety though! Because Dutch people ride their bikes all their life. So, I know what point of the road is dangerous or where I should slow down. But I can imagine exchange students from abroad who are just learning to cycle, it could be disastrously dangerous.

M: Do you think it's more dangerous than a normal bike?

E: Yeah, definitely. So, I think exchange people who don't know how to ride a bike, if you put them on a bike that can easily go up to 30 km an hour, they'll just crash, bump around.

Friend: They're dangerous even when they're riding 10 km/h.

E: There is actually more deaths because of the e-bikes. There are 50-year-olds who ride 30 km/h and cars think it is a normal bike and they can go before. But bike goes faster because they think they can cross before the car. Then there are crashes. So, I think danger is there. Possibly, before the lease, a tiny course is needed, especially about the turns. Because e-bikes are heavier to make turns with.

M: Ah, really?

E: Yes, did you try one before?

M: They let me try the one on the pilots but didn't realize as it was a short one.

E: If you ride it in the city center, you have the sidewalks, sharp turns, sudden cars that you need to break instantly, then you realize it is much heavier. Also, for parking on top, you can't. That's really different, so you always need to park down.

M: Anything to add?

E: Be careful of foreigners who think e-bikes are easier and actually making more problems with them!

M: Thanks.

Interview 17 – Bert

M: Thank you for your time. How long have you been using an e-bike and how did you decide to buy one?

B: I'm riding, but now my bike is broken, for one year. The reason is if I go by car, I'm all day inside this building. So, it's pleasant to ride a bike. On the mornings it's not that pleasant to bike. Especially when it's raining, and the wind is in front of you. But in the end, when you go home and sit all day inside. It's nice being outside. That's why I started to go by an e-bike. Otherwise, the threshold is a little bit too high to start biking in the morning.

M: Is it still a problem to bike in the mornings?

B: No, with the e-bike it's a little bit faster and easier.

M: And the wind is not a problem anymore?

B: No.

M: Were you coming by car before the e-bike?

B: No, when the weather was nice, I came by bike. When it was raining or whatever, I came by car.

M: Now you even bike when it's raining?

B: Yes, because it is much shorter, easier.

M: How did your family and your friends react to you using an e-bike, also your colleagues?

B: Nothing, I had an e-bike that's it!

M: So, no particular reactions.

B: No. I wanted to try how it was, and I bought a very cheap one. It was actually brand-new but was quite cheap. I found it in some kind of market place. I set the goal: I can go by car, but first I need to earn the bike back by saving money on petrol. That was actually one year, but then it broke down. So, I bought a new one.

M: And its broken again?

B: There is a malfunction with the software.

M: So, it will be fixed, but is annoying! Did you also consider environmental concerns while switching to the e-bike?

B: No, not really. That's nonsense (laughs).

M: Daily, do you have any things that make you not take the e-bike.

B: No, no. Maybe when it's snowing. It's very slippery and then it's safer to have four wheels on the ground than two wheels.

M: Do you think in TU Delft there are enough facilities for e-bikes?

B: For e-bikes, it is just a normal bike. But, if you look at this faculty, in the basement, there is some kind of area to park your bike. However, it is always overcrowded, and that can damage your e-bike because it is so crowded.

M: That's it! Any more remarks.

B: Maybe one. In the past we had some kind of fietsplan, IKA that allowed to buy a bike really cheap. They quit doing that, but they should bring it back.

M: I heard this a lot.

B: It is a little bit silly. On one hand, we economize on parking space for cars. On the other hand, we build new faculties, we remove parking space. We build new houses, new schools like Applied University of the Hague. And that all needs parking space, but there is not enough. So, bikes must be motivated more.

M: Thank you.

Interview 18 – Arend

M: You said you have been e-biking for couple of years, right?

A: Yeah, for a long time.

M: How did you decide to buy one for using for commute?

A: It was just for health conditions. I have a heart condition and then my heart specialist said: "Well, you need more exercise." And I'm not the sportive type. Well, sports are OK, but I'm not so active. Then I thought it would be a good way to incorporate your daily commute with exercise. That's how I started cycling.

M: For you the normal bike was too much of an effort?

A: Initially it was just a normal bike, and then my heart condition got worse. It was either that I stopped cycling, or I use an e-bike. So, the choice was easy, I would of course use an e-bike.

M: Were you using a car before?

A: Very long time ago, so let's say 25 years ago, I was.

M: Ah I see! Really long indeed. How did your views of the e-bike change after you started?

A: I enjoyed it a lot. So, the thing was that since it is not so tiring anymore, I was suddenly the tiredness didn't stop me from cycling anymore. Going back in the evening wasn't a hassle. And I make my routes longer, I take detours now. I am like: "Why don't I take this one today, and that one tomorrow". The route becomes longer.

M: When you first started using the e-bike, how did others react to it?

A: Well, not so very positive. "You're not that old, e-bikes are for older people" and so on. It's negative.

M: Is that still the perception?

A: Still they laugh a little bit, but they also understand that it's fun.

M: Did you consider the societal benefits of e-biking as well?

A: That was not the primary thing, but it's a nice, beneficial thing. I must also add that time-wise you're precise about timing. You know when you arrive. Whereas with other modes of transport it is always very uncertain. With the e-bike you are very certain that you arrive on time. I also call myself a new rich person. I'm free! No traffic jam, no one is holding me up.

M: Do you not cycle to work for any external reasons such as the weather, responsibilities?

A: Nope. Rain or shine, everyday!

M: Great. Do you think TU Delft should provide additional facilities?

A: Well, one thing, it's very obvious that in the storages there are no outlets for charging your bike. That's a bit strange. But also, for cars! I recently heard there was somebody coming in with an electric car and wanted to plug in but couldn't, it was just a TU Delft thing. So, for bikes that would be nice. The storage is quite minimal at the moment, it is quite crowded. You want to store your e-bike in a safe space, it is more sensitive for theft.

M: Great, anything else to add?

A: Well the charging your bike, that's an important thing, I think. TU Delft should facilitate that.

M: Thanks!

Interview 20 – Andre

M: How long have you been e-biking?

A: Since May last year.

M: How did you decide to buy one and what was your perception of the e-bike?

A: Well I commuted by scooter. Then my scooter was more or less dying out. Also, it's not anymore allowed to drive with the scooter on the bike path. So, I decided to buy an e-bike.

M: So, what is the reason you don't use a car or any other mode of transport over the e-bike?

A: The car doesn't give me much time advantage because of the traffic on the road.

M: How often do you use it to come to work?

A: Almost every working day.

M: Is there any reason you don't take it? Like responsibilities or the weather?

A: Well, the weather doesn't really stop me unless it's really icy on the roads or it's stormy. Otherwise, usually I take it.

M: So, if you need to carry something you still take it?

A: Well, usually I can carry my laptop in my bag, so no problem.

M: When you first bought the e-bike, what did your friends, family or fellow colleagues think?

A: Well, I don't know! Didn't really ask them.

M: When you were choosing for it, were you also considering the societal benefits of the e-bike?

A: Partly.

M: Finally, you've been already using it for a while. Do you think that TU Delft has enough facilities to cater for the e-bikes, like parks or the roads? Are they suitable?

A: Well, most roads are quite OK. Few short pieces are a bit rough, but most of it is just bike paths.

M: Chargers are not a problem for you?

A: No, no. My batter runs about 200 to 250 km on one charge, so it's not a problem.

M: Anything else to add?

A: Another reason I do it is for exercising!

M: Thanks!

Interview 21 – Tineke

M: How long have you been using an e-bike and why did you decide to buy one?

T: Since December, I bought my e-bike then. It's 12 km to my home address. I started using a regular bike. But I found out that I don't do that that often. I work 4 days a week, and 24 km 4 days a week was too much for me. But now I use my e-bike almost every day.

M: Nice. You said nearly every day, why do you not use it every day?

T: Well if its really raining cats and dogs, or when I really have only 15 minutes. Because it takes costs about 35 minutes from my home to here. If I really have to be fast, with car I can make it in 15 minutes. But mostly I use the e-bike now.

M: Do you only use it to come to work or do you use it for other purposes as well?

T: I also use it to go to the shop sometimes, but mostly for work.

M: When you first decided to buy one how did your family, your colleagues and friends react?

T: Well, I think when e-bikes first came on the market, they were seen as something for elderly people, with heart problems or anything, who can't ride a normal bicycle. So, there were a few people who were laughing like: "ha-ha, are you that old already?". But most people were quite positive and happy. Everyone knows how much an issue parking is here.

M: Why did you decide to come by a normal bike at the first place?

T: Well I used to work in the Hague, and I had a commute of 5,5 km. I just love cycling. Also, I hate being stuck in traffic. I hate it when people are so stressed during rush hours. Especially on A13, A4. People are very aggressive. I really don't like that; it makes me stressed.

M: Have you also considered the societal impact of going with a bike instead of a car?

T: Societal, or environmental?

M: Both!

T: I am very much concerned; I eat vegan too. So, I'm very concerned with the climate. So of course, this was one of the reasons I started to bike and bought an e-bike as well. But it was also because I wanted to keep fit. Although an e-bike is not very strenuous, you're still outside, you have a bit of exercise.

M: And also, you cycle more than before so it's still more exercise.

T: Well, I think I cycle a bit more. Before starting to work here I cycled 60 km a week, and I think I still… Well, I don't know how to fit in the e-bike, I don't know if that counts as 60 km because it feels so effortless. As if you're doing nothing.

M: Do you think in TU Delft there are enough facilities to cater for the e-bikes? For example, the bicycle parks, the roads?

T: Yeah, I always park my bike in the shed here, which is locked. So, I'm happy with that. But I think in summer time the shed will be quite full. But we'll see how it goes.

M: Who did you get the e-bike idea from?

T: It was my own idea. There was a colleague in my previous job. She lived in Naaldwijk and she went to the Hague, she e-biked quite a lot. And you know, when I first heard I was also making a bit of fun. I said: "Why don't you use a normal bike?" and she said "Oh, it's 20 km, are you crazy?" And you know, it started making sense. I had an example.

M: Great. Do you have anything else to add?

T: No, thank you. What are you going to do with the research?

M: *Information about my research.*

Interviews with Pilot Participants

Interview 3 – A

Mina: *Information*

A: I prefer to be anonymized

M: What do you think about e-bikes and did you know anyone who had an e-bike before the program?

A: Yes, my grandparents. I believe many e-bike users used to be older people. I know them, but now I live somewhere West of Delft, a bit more rural, lot of people e-bike there. Not only elderly who are unable to bike normally physically but also more commuters and younger people. So now it is broader, at least the way I see it.

M: Did you e-bike before?

A: No, I never had one or not even have ride. I'll join the pilot in 2nd block.

M: Were you considering buying an e-bike before, or were you just interested to try when you saw the pilot?

A: I was considering beforehand, then I thought it was too expensive, it is 1500 Euros for a good e-bike I believe, and I am PhD candidate so I will work here for a year,

maybe a bit more. After this I might go to another job and that could be not in biking distance. So, I was hesitant then this pilot showed up, so I was interested.

M: How did your friends and family react to you joining the pilot program?

A: I told them, and they really liked it. I was kind of a bit afraid, maybe not the right word, that they'll make fun of me as it is for the elderly, you're so lazy, etc. But that is not what they told me, they told me that they liked it.

M: So, you cycle quite far?

A: Just checked it, it is 19 kms.

M: Oh, that is not really doable with a bike then

A: Well actually I sometimes do it on a regular bike, but then it is like an exercise.

M: You have a racing bike then?

A: I have a racing bike and a regular bike.

M: What did you think of the pilot in general and what do you expect from it?

A: I can very well understand why it is being held because usually I come by car and when I arrive there is usually parking problems. And for that reason, I can understand that they want to find alternative ways to get employees and students toward the university. So, I can understand why it is being held and I like the idea in general. I also think it is well present, promotion and flyers are everywhere. It is advertised quite well. What was the other question?

M: What are your expectations?

A: I think for me personally; I see it as a good exercise. That is why I like it better than the car, I usually come by the car and I like exercise a bit more, but it is not only exercise, it has to be functional. I just have to come from my house to here so it shouldn't take so much time or very tiring or whatever. I like the exercise, but exercise is not the goal itself. So, it should be convenient, and I think e-bike does provide the convenience.

M: You also don't get sweaty.

A: Exactly.

M: Would you also e-bike in bad weather?

A: Um, well, actually I believe Tuesdays and Thursday are obligatory to participate in the research. So, if it rains then I'll wear my raingear and come here. But in any other day I won't be willing to use the e-bike if it is not obligatory for the research. While if, for example, if the weather is nice any other day, I'll take it.

M: Do you plan to use you e-bike for other purposes as well?

A: I don't think so, I think e-bike is particularly for commuting. I live in a particularly remote village, so to do groceries or so whatsoever I don't need to use the e-bike, it is just easier to pick a normal bike, or it doesn't matter. Why would you need an e-bike when the distance is so short? I think it is particularly useful for commuting.

M: Are you aware of the advantages/disadvantages for you/society/environment/TU Delft?

A: I once heard, I don't know whenever if it is true, that major part of commuting activities that people do within a car is actually within the distance that is doable with an e-bike, so I think in the ideal situation where everyone is kind of in a distance where everyone in a distance to do an e-bike actually uses an e-bike than I think it will solve major traffic problems I think. This is for the society in general, but also more in a specific level for the university. And also, in a view towards sustainability I really like e-biking, though I must admit that convenience was the major reason for me, and not sustainability, that was just nice to have.

M: Can you imagine of any situation, of course we talked about weather, that will force you not to take the e-bike. So, any obligations related to work or?

A: Sometimes I have to go to Utrecht for work, just to have a meeting over there, and Utrecht is just too far for biking. So, perhaps, you need to take the car or public transport. But car is usually more far convenient. So, if I have work appointments not here in Delft, then it is unlikely I use the e-bike.

M: Do you think you have the capability to finish the program requirements, of course not relevant given you're young?

A: I expect no problems.

M: If you're satisfied with it, would you really consider buying an e-bike? Or for you, is it just a?

A: Yeah, I think as I meant earlier, due to the fact that my PhD ends in some point, so I may have some job not in Delft, due to that reason I'm considering not actually buying it, I think, unless it turns out that I'm working here for additional time, I might buy it. But I'm not planning to buy it, to do so. I heard that there are some government plans to make it more attractive to do e-biking via your employer, with leasing plans. Then that can work for me because then it is useful for shorter amount of time.

M: That's nice plan, but I'm not sure if it will happen soon.

A: Yeah, not sure if it will happen within the time I'm here.

M: Yeah, I think it is in 2020 I think

A: Then it is too late for me, but I'm pretty much in favor of this idea.

M: One more, you said you came with a racing bike. That is also quite an expensive bike. Do you think university has enough facilities to cater for e-bike parking or any other concerns?

A: well actually, bike shed here is quite small. If you arrive here after 9am, it is basically filled. So, I think If the university wants to make people come by their bike, they should definitely do something on parking spaces. I think that is very important, especially for the faculty over here (3ME). There are normal parking spaces for everyone, like students, but if you're an employee, like a PhD student you can park on the employee part, which is locked. I would be very, prefer to be in that shed instead of regular place. So, extension of bicycle sheds should be of attention.

M: Great, thank you so much.

A: I will be interested in receiving the thesis, and also would be glad to be anonymous!

Interview 4 – Paula

Mina: I*nformation on research*

Paula: I don't mind you using my name on end report.

Mina: Which pilot are you joining?

P: Well, in fact all three of them. I start it now with the working different one, so working from home. Because I'm also going on vacation for 2 weeks and then I can also work from there. So, I didn't choose for the E bike this quarter. Next quarter I'll try the E-bike. I've tried it before so I am very glad, I can have it again. After the summer I start with OV.

M: Did you try e-bikes before in a pilot program?

P: No, what was it? Also, something from TU Delft. It was to try. It is because I always have very long days. yet and for a short for while we had a restaurant in Greece. So, I had to arrange a lot of things at home. Sometimes I had to do the dogs in the in the lunchtime. So it wasn't that I didn't want to bike, but I was always in a hurry. So, the E-bike was for me perfect solution because from here to my home it's around 7 km. But when I have to bike and bike back and so forth it takes too long. So, I tried the bike for five days, I think. My husband is also a very active racer with the mountain bike, and me not. He was driving with his bike and I could join him with the E bike. He was behind me for the first time! I enjoyed it very much. Well we had a restaurant, we sold it two years ago. We had it in Greece, so it was very active period in our lives with three children. but now he's at home it is a different situation. But it's always the children first you know. When you buy an e-bike for yourself, you don't do that as a mother. you don't reserve €3000 for yourself. my car is for the whole Family, like for my son when he's gone to tennis, or whatever, for the dogs. But my e-bike would only be for me and that is very expensive. I'm very interested in the E bike, but I was thinking whether it is possible with EKA (choosing package deal from employer?). Because then you don't have anything left. You have only mobility

and vakbondlid (union) and other small things left, like vacation days you can buy or sell or whatever. So, it is hard.

M: So, there is no incentive to buy a bike.

P: Yeah, in the earlier days you could buy for less money when you were part of the university, once in every three years I thought. Now it isn't there. Bags, coats were all included in there. But now there is nothing anymore!

M: Yeah, the government is thinking in 2020 to make a lease plan for employers.

P: Good! That would be so nice, I would start tomorrow, I think!

M: Yeah, they want to do it, but I think they're still exploring the options.

P: OK, well I will be the first to join!

M: So, you have tried an e-bike before, and you have friends who have it as well or not?

P: I have colleagues who have e-bikes, not friends, but many colleagues.

M: With this pilot program: what are your expectations? Just to experiment with it or?

P: First my motivation was: I didn't realize 26,000 people. Such an amount of people. So, I thought well, the Sebastianburg is closed, there are a lot of things happening on the road. So, I thought it's really absurd that I'm going with my car. I want to try. But well, I am 56 and I am always used to work on my workplace. Really, for myself, I find it difficult to work at home. Because for long time, what you saw in videos or TV spots was that there were always people working at home were sitting in the swimming pool or on the telephone. So, they were not actually working. So, working at home was always "oh, he's working at home". But nowadays it is changing, it has another meaning. With the mobility plan it is called "working in another way". So, I though, I'll try it! Really, I must say I've done enough for three days! On Thursday nobody's at home, so I work much harder than here! It did affect me because, well of course I need to take my stuff to home. Because here there is a fairly new team so there is always someone asking me questions. They interrupt me a lot, and I also talk to others. There is always something happening. At home it's quiet and I'm sitting there, and I can read stuff with 20 pages. It was very good experience. Last year my daughter was pregnant, and she had to go for study to Amsterdam, Schipol. Then in the last weeks, I said: "I bring you and I stay there for you and then I take you home again", because otherwise I keep on traveling. Then I was working at Schipol, and it's also a lovely place to work. Because it's quiet, it's for business people so you can sit there quietly, and you have a good table and a good chair and good surrounding. So, I think I can get used to work in a different place. And always, I was with the bus before. It takes also seven minutes, 10 minutes. Only problem is that in the holidays it goes once in a half an hour. so, when I miss it, it's terrible. because then I have to wait 30 minutes. If I catch the bus, it is opposite my home, and I'm here in 15 minutes. It stops in Aula, not knowing where it stops now but still.

M: When you have the e-bike, do you want to use it every day, and also for other purposes?

P: I think every day! my family thinks I'm not going to do that, but I have always lived here, in Delftgauw I was cycling every day. Only thing is when you cycle to Pijnacker it is quick. But when I live in Delft I should also go by bike, I think. It is nice to bicycle. I shall take the long route, because it's a nice one and then I'm home in 10 minutes. And if it's raining, I said to my family, then I wait for 30 minutes. I can leave 30 minutes later, doesn't matter when I'm at work. it doesn't rain as much as you think, you also don't get that wait. So, I think I use it every day.

M: Other purposes?

P: Also, for my health. I think it is good to move. You're in open air. Also refreshing after sitting in front of the computer whole day. Nice to be doing nothing for 20 minutes.

M: What do you think about the dis/advantages of e-biking to work, and not only for yourself but for the environment, for TU Delft?

P: There are a lot of cars and I know some people cannot come in another way. When you have a family, when you have children, you have to bring them to the daily care, you have to shop. I know how difficult it is when you our mother, I don't know if fathers are also active these days. but when you are a mother there are lots of things you have to arrange. You have to go the library to bring the books. Maybe it is then it is easier to have a car. It is a lot of things with children. Between 30-40. But there comes an age where children are 13-14. But I can understand some people need the car.

M: Do you think except of the rain, would there be any reason that you don't want to take the e-bike?

P: First I thought it is hard with the battery. When it is empty, fill it at home, a bit hard. My husband said also, the e-bike, it's a beautiful instrument but I realize that the battery is terrible for the environment. So, what is the solution for all these batteries?

M: *explain situation with batteries, remark the problem and existing lifecycle research, battery problems, etc.*

P: Yeah, that is one thing. Good part is that bicycling is healthy.

M: Do you normally cycle still? For example, shopping?

P: No, my husband shops so he uses my bike.

M: Do you think TU has enough facilities for e-bikes at work? Parking, showers, etc.? Some people are scared of theft.

P: Well, in the TU I would walk around so it is no problem. Here I have a shed that is locked. So, I think it is not a problem. What can be a problem?

M: Maybe showers?

P: Ah with the normal bike I get sweaty, and then the whole day I am cold, and I get hungry earlier and I want to go back home again, and it is a hassle. But with e-bike you don't get that!

M: How did your family react to you?

P: They liked it very much. But the only thing is they don't believe I'll take the e-bike. But that's not true! Of course, I take the car everyday today. But I was very happy when I had the e-bike. And I know I will cycle. Only thing is maybe, in TU wijk, you have a lot of people but very small bicycle lanes. It is difficult to get out of the wijk when you want to take it easy. There are so many students! If you have to go to left/right, it is hard. My grandma lived here, and she was carrying her grandchild one day with the bike. She had an accident and she fell. So that is difficult for the elderly who want to take it easy. Students are very fast, and lanes are small.

M: Yes, they're fast! Also hard for internationals, and I got used to fastness and now I realize I overtake very fast if someone is in front of me.

P: That is why I should take the road parallel to the TU road, the one behind Aula, it is the whole bicycle road to Pijnacker. It is an easier road than going that way. There are a lot of students too much.

M: Thank you!

P: I really enjoy the program. It is advertised in a very positive way! I also told my own team to join the program, it is a good initiative.

M: Did they join as well? The team you manage.

P: One did, the other was cycling already. The other one was interested but she is new, only for 2 months. And she already had an e-bike!

M: Ah, then she can't join the program as you need to replace a car for the pilot. Because that is better for the environment.

P: Good luck!

Interview 7 – R

M: *Information about thesis* First of all, what did you think about the e-bikes? Did you know anyone who e-biked before joining the program?

R: I think one or two people, they're mostly elderly. I haven't owned one. I have ridden one once.

M: why were you interested in the E-bikes? did you consider buying an e-bike before the program?

R: yes, I have been meaning to let go of the car for a while and the e-bike was one of the alternatives indeed. I just bought a new house, so I moved closer to the university, which is just inside reach of the daily e-bike commute. It is doable with a regular bike. It is not as much as enjoyable, and e-bikes make it more enjoyable. So, it was something I considered, and the pilot program came in just in the right time, and an opportunity to try it.

M: So, you're in pilot 1. Have you been using the e-bike every day, or did you mean to use it every day?

R: I have been using it twice a week, I do need the car on the other days unfortunately still. But still two days a week I do. I need to adapt my schedule a little bit, but it is nice to see what it could be like in a 5-day a week commute.

M: What did your family or friends or your other colleagues think about you joining the e-bike program? Did you receive support or were they like why are you doing this?

R: They found it interesting. They are curious to hear about my experiences. I am guessing because they also never tried an e-bike, they have seen one whoosh pass them on the road, much like myself wondering what it's like to ride one. There is not a place where you can rent one. There are 3 people I know, and it is a little awkward to ask "hey, can I try your e-bike?". It's not a thing you can do. If OV-fiets or other rental companies were to offer e-bike rentals, I'm guessing people would rent it out to try it. I also had support, in a sense that some people were happy I was switching from my car into a bicycle for health reasons. But mostly curiosity.

M: do you also think of the advantages/disadvantages of moving from e-Bike to the car? You already mentioned for health reasons and also that you're just trying to get rid of the car. Why did you want to get rid of the car?

R: actually, it's expensive. It costs money. I've had it because my past employment, it helped me get around. Kept me flexible as well. Now with working in the university, I'm starting to feel it burning a hole in my pocket. With the added expenses because of the house recently, it would make sense. It would free up some money. But as far as the disadvantages, I'm aware of the weather factor. in the car it's nice and warm when it's cold out, it's dry. You can carry a lot more stuff. the pilot program is taking place in spring. it is very convenient. It is perfect time to do it. I'll be curious to hear the result when the pilot program takes place in the winter. For now, it's lovely.
M: I think it is different with the cold with the rain.

R: The rain, isn't pleasant. Not nice to arrive at work late, you know. When you get home, you can just change to something dry. Arriving to work, it's different, it kind of ruins your day.

M: You said in some days you need the car. why do you consider that you need the car but not the e-bike in those days, except the weather of course?

R: I guess it the distances and the weight. I have to drive to shop far away, need to carry heavy stuff. A lot difficult to do in an e-bike.

M: Do you think TU Delft has enough facilities to cater for e-bikes? for example the roads the parking places something that would make you not use the bike?

R: The Netherlands in general has a great network of bike paths. TU Delft specifically, the fact that the campus is closed off to bikes. it's nice but I mean it's only the last km or two. As far as facilities for e-bikes, there are no charging facilities, but again, every e-bike will have a different system. Theft could be an issue. As far as parking, as an employee, you have a separate bicycle shed which is reaching capacity. Those e-bikes are little heavier as well it's hard to maneuver them in tight spaces, and sheds are rather tight. if I were not to be an employee, if I were to be a student, then I would have parked my e-bike outside along with the other bicycles, which I would imagine, would make me hesitate. In the city center there are places where you can park your bike with guards. You have to pay a monthly fee or something, would be neat. But then again, we have 2 distinct populations. We have students who don't like spending the extra money on a bicycle storage. And we have employees who have storage facilities. So, I think TU Delft manages these two groups fairly well.

M: Do you have anything to end? This is the end of my questions.

R: Hmm. Specifically, about the bike, perhaps. I think this is about the law that it limits the extra push to 25 km/h.

M: Yes, this is the limit to e-bikes. *Information about speed pedelecs, speed limit is 45 km/h.*

R: That's pretty neat. Well, 25 km/h is not bad, I think on the edge of safety.

M: *Information about EU regulations.*

R: 25 is good, significantly faster than regular cyclists, that you feel like it is a worthy expense of a more expensive bicycle, a worthy trouble. It would have been nice if it was a bit faster.

M: *Comment on how 25 makes you go faster, but not really save much on time.*

R: This e-bike is nice in that I don't arrive to work sweaty. A drive would have taken an hour, now it takes 40 minutes. An hour in a bike and arriving sweaty versus 40 minutes, which is still quite a track, both ways it is still significant, but at least I'm relatively fresh arriving to work. If it were to rain, that's 40 minutes in the rain. I wouldn't be pleased about that.

M: With speed pedelecs, you'd need to go off bike roads some places.

R: Well, maybe some point in time there can be separate ways for e-bikes, or high ways, but of course infrastructure will take forever to catch up.

M: Well no. Oh, in Zuid-Holland they're thinking/planning/building bike highways. Actually, the road that was just built will be a part of it, not the main parts but connection, so lot is being done. This was it, thank you.

Note: Also mentioned the difference in how gears work compared to normal bicycles.

Interview 8 - Daan

M: *Information on the thesis*. Which pilot are you joining?

D: 2nd pilot.

M: What do you think about e-bikes? Did you know already someone who has an e-bike?

D: My daughter has an e-bike. I know the e-bikes

M: Why did you want to join an e-bike pilot program? Have you tried it before?

D: Because it is sitting in the car is not too healthy. Also, with petrol prices e-bikes became more convenient. I also have arthroses knees and back. So, moving is better for me, I feel a lot better if I cycle in the morning. With the normal bicycle the distance is just a bit too long. Now they have a few detours on the road and then it is just a bit too far. And then when I come back at the evening then I'm dead. I work 4 days a week here. That's why I want to participate, and I heard there will be a possibility to buy the by the bicycle for a reasonable price. but that's the lack of information they have because there is totally no information about that.

M: I think they'll give 10%. I will ask them again, loads of people ask this already. So, you're planning to buy an e-bike and now you could also try it.

D: Well, it depends what the university can give. 10% is not interesting

M: The government is trying to make a lease plan for 2020. That could be nice. What did your family, the friends and colleagues think about you joining an e-bike program?

D: Oh, they think it's wonderful that TU is doing such a program!

M: Good! If you buy an e-bike, or during the pilot program, do you want to use it as much as possible, or in mandatory days?

D: Ah, I want to use it as much as possible. I work 4 days a week. But since I have arthroses knees and back, when it's very cold and rainy, then I don't use it, it's impossible.

M: Do you also think of advantages for the society or the environment?

D: Of course! As I said, my car takes about the same time. With bike I drive through the polders and nature, it is a lot better.

M: You said you had to health issues that can from prevent you from e-biking. Do you also have errands like shopping or something that can stop you from and e-biking?

D: Depends what I have to do in the day time.

M: Oh, do you need to go around in the campus?

D: No, I just work here and that's it.

M: Do you think in TU Delft facilities are enough? Bicycle parks, roads?

D: The Netherlands is blessed with perfect facilities!

M: You don't need a locked shed?

D: Not here, it is inside anyways!

M: Thanks!

Interview 9 – A2

M: *Information about the project*

A: Prefer to be anonymized.

M: What do you think about E bikes and did you know anyone who had an E bike before joining the program?

A: I know that my mom had an e-bike, so I know when I tested that one, I know it's very nice to have one. Because if you have to go long distance, then it takes a lot of energy. I live myself in the Hague and I have to travel to Delft every day, it's about a 15 to 20 km drive. So, having an E bike can help you a little bit, it is very helpful.

M: what did you're of what did your family, friends and your colleagues think about you joining the program?

A: I think they were also were very interested in the participating in this project. Because they also have a car and they also like to travel the other way. So, I just informed them about it, and then I think it also joined the program.

M: Do you think with the pilot program triggered you to think about an e-bike or were you considering before as well?

A: I think it is a very nice opportunity to use an e-bike because I prefer biking to work and this option came, and it is very interesting. It has two reasons, I also like to be environment, more CO2 neutral in this area. Also, because I just like to ride the bike outside.

M: Do you aim to use the e-bike more than 2 days?

A: Yeah, I aim to use it at least five times a week and sometimes also in the weekend if I need to go to the center.

M: Did you already join the pilot, or will you join for the 2nd one?

A: I already joined, but I would like to use it in the 2nd one as well

M: Maybe you can ask them. 3rd and 4th still has places

A: When I applied for it, there were options to prefer which one to join, and I chose for all of them.

M: So, at the end, you want to buy one?

A: well I don't know because an e-bike costs a lot of money. I think it's like 2000 for a good quality one. Currently I'm just focusing on my marriage and I'm also going to take over the house of my brother and renovate it. These are more priority than an e-bike.

M: TU might be supporting people to buy an e-bike, also with a lease plan in the future.

A: I think it is a good idea to do that. because I think more people will be interested in that. They have to make a good deal out of. Then more people would be willing to buy an e-bike and come to school with it.

M: would you also cycle in bad weather?

A: Well I tried it once. It was 5 o'clock and I wanted to go home, it was raining a lot. I didn't have any rain coat or anything. So, I was very wet in the Hague. After that I went to Action to buy a raincoat. So, I'll be dry the next time! I think it is OK, but you need to be prepared. If you're going more than 2 times a week, you need to have a raincoat, just in case it rains.

M: do you think all other conditions except the weather is allowing you to cycle to work? For example, if you have shopping errands or some other stuff that would force you to take the car?

A: There is one. in case the battery is depleted, and you don't have the charger yet. if you don't have battery power, then you really need to give more energy than a normal bike in order to get it going. if you have to travel far distant, that is also just better to take the car.

M: Do you think in TU Delft there is enough capacity to cater for the e-bikes? Like bicycle parks, or bicycle lanes?

A: No, I really have no problem with that at all. I know that it can be very busy as a lot of students are always traveling by bike. But it doesn't bother me at all, I have nearly 0 delays. If there is more e-bikes on the road, I don't think it will affect.

M: These were all my questions, any other remarks?

A: Yeah, a few. If you travel long distance and with the bike, then there are a lot of scooters, and along the highway, there are lots of gasses you smell. Then in that case it is good to have the mask to absorb the gas. It is very annoying because I travel from the Hague to Delft and then you smell the gasses every time a scooter passes you. But if you have a mask it can help a lot. So, I just ordered one for 5 Euros.

M: Yes, it is very annoying in the city center as well

A: Yes, I have it at least 4 times a day, so I thought it would be good to have it.

M: there's also another road from the polders, right? There are alternative roads.

A: Yes, a lot of alternatives

M: Then it takes longer?

A: Well longer but a lot less crowded.

M: Thanks!

Interview 11 – Lars

M: *Information on* research. When are you starting the pilot?

L: I'm in the first one, using the bike for a month already, I guess.

M: How did you become interested in the pilot?

L: Well, I heard from my supervisor that there is a pilot. I'm living currently in the Hague, just moved there. I heard that the pilot was there, and I thought it a very nice opportunity to go with the e-bike for the first time.

M: Were you considering buying before?

L: No not really. I was going with the train and by the bike already, and sometimes by the car as well. But not really considered an e-bike. I have some friends who have it. But it is too expensive for me.

M: So, you're not considering buying one after the pilot?

L: Well no, not at first. But now I like it quite a lot, but still I think it is too much for me. Maybe in the future if I start working.

M: There are also other options to buy it.

L: Yes, heard about some plan.

M: *Information about leasing plan.* What did people close to you think about you getting an e-bike?

L: Well, first they all laughed. They said: “Wow, at your age, come on, you’re still able to cycle yourself”. That’s the first response mostly, and after a while they understand it as well. But first they all laugh.

M: Did anyone try your e-bike for example?

L: Well, it is connected to my phone, so I can’t lend it to other people, but there were people who wanted to try.

M: Do you use it for other purposes than commute as well.

L: Yes, it is easy, I now park it outside my house, in front of my door. It is now more effort to go for my normal bike now.

M: Oh, also here? Because I heard some people were scared of getting it stolen as there is no locked shed.

L: No, I always use an extra chain. So, I don’t really worry. But we have an app to open and close the bike. I sometimes forget to open the app and lock it again. It is a bit annoying. At home I have a really good chain. Here I also have quite an OK chain, so it is always locked. But sometimes I forget to lock it by the app.

M: So how many times are you using it now.

L: Everyday

M: Even in hard rain?

L: Yeah, that didn’t occur yet but I’ll. For me it is the cheapest way to go.

M: You don’t have the week OV?

L: No, not anymore. With the public transport I have 40% off but not in peak hours. So, I need to pay 5 euros to come here, back and forth.

M: Yeah, also, I don’t know where you live but sometimes transport takes longer than e-bike.

L: Yes, it takes nearly equal by public transport, by car or e-bike now. It is all the same in the peak hours. I like being outside, so it is nice.

M: Does all your current conditions work for you for an e-bike. For example, if you have to carry something heavy or if you're going to sports afterwards or anything?

L: even more! It is even easier to move now. You don’t have to put effort to cycling so you can focus on carrying some other stuff.

M: Did you have any problems with the charger? Not at home but here.

L: No, not with the charger. First the bike was making a bit of noise, the chain was touching something, I fixed that quite easy. There is sometimes a problem with the connection between the wires, the connection between the motor and the computer. So that it didn't work anymore, but that was just the connection.

M: did they fix it for you?

L: I fixed it myself. Works now. There are no other problems.

M: So, you're happy with it, but it's a bit expensive?

L: I really like it, but it is too expensive for me as a student.

M: Do you have any remarks, something to add?

L: No, don't think so. I think it is a good way to exchange the car for an e-bike in a range between 10-25 km, 10-20 km. It is a really good thing.

M: Also, good to hear your friends were more positive about it. A spillover from the pilot program.

L: Yeah you hear it increasing, it is a good hype.

M: Thanks!

Interview 12 – Jan

M: *Information about research.* First of all, are you joining this pilot or the second block?

J: This one. (first)

M: how did you decide to join the pilot? what did you think about E bikes before?

J: When you think of an e-bike, you say "it's not real biking". For me it is very easy to go by car. It saves a lot of time, there are always parking lots here, you got all the things to do during the day. I use my regular bike once a week. Then I though, I was curious how it works. That is why I wanted to join, maybe it's something for me.

M: You didn't think of buying one before?

J: Not really, because I use my regular bike or car, and I have lots of things at home to take care of.

M: Are you happy with the e-bike now.

J: Yes, its interesting. I'm thinking about it a little bit more and see the advantages. I don't agree it's not real biking anymore, it helps you. I was surprised that the main thing is that it helps you get started. The most help is in the beginning. And I found that you can't go harder than 25. So, I was surprised at the beginning the help

stopped, but then I was more relaxed, taking it easy. The dangerous thing is that starting is a bit too easy. But it helps you take the bike more.

M: do you now cycle More than two days a week?

J: I do it 2 days a week. Still the car is easy. Well, that is 100% more!

M: what did your family, your colleagues, your friends think about you trying an e-bike? how did they react?

J: My colleagues are interested, on why I want to do it. Also, you say it to your friends, and some agree with me that it helps you to bike more and leave your car. I'm a bit more positive about it. I have more support, a guy who bikes a lot was saying "it isn't real biking", but it only helps you and it is ok.

M: Do you still take the regular bike once a week.

J: No. I am also little bit injured in my knee. So, it helps to go by bike anyway. Because it is good to exercise but not too heavy. So maybe that's an advantage as well.

M: Are you also aware of the advantages for the society, TU Delft?

J: main reason for me to get interested, because it's not handy to just buy a bike, if you're not sure if you'll use it. By coincidence, today we had to say goodbye to our second car because it was too old to repair. Then we thought should we have a scooter for one of us? But nowadays maybe the helmet will be mandatory again. So, if we both get an e-bike that could be a good solution. Because you think a little bit more about which way of transport is best for us and bike is now one of them.

M: So, it has entered into consideration?

J: Yes, nice way to say it!

M: Will you buy it then, or still considering whether to buy it or not?

J: Yeah, yes. Still considering. I also asked if I could buy this bike, and they said they had a special offer, 25% off. Which is quite good.

M: so, you said sometimes the car is easy because of responsibilities at home. what kind of responsibilities at home makes you take the car or at work and that makes you take the car and not the bike?

J: More than responsibility, it takes time. Especially if you go like 6 o'clock, there's no traffic anymore I'm home in 15 minutes. With bike it is still 30 minutes. Time is important. And sometimes you go straight to your sports club or something, so then it's easy as well. Also, to save time, because the club is further away and then you need to go back. But also, for carrying the stuff.

M: Are facilities enough in TU? Showers, parking, sheds, bike roads?

J: Roads are narrow as they're for regular bikes, that's no problem. Showers is fine, because you don't need one, you don't get sweaty. Maybe there are showers, but they're not that attractive:maybe better have it close to the office, not need to go down or something. Until now it was not necessary to load batteries here, I do that home. Maybe it is not nice that you can't take it to your room, it is not allowed.

M: It is not allowed?

J: yeah, maybe for security reasons?

M: That's not nice. Maybe, now you don't need it but if your battery is drained then you'd need to reload it on the office. Is it not allowed by the program?

J: I think by the program!

M: I will ask them.

J: Normally, for your phone, it is easy to load it in the office. For the bike, at home, you leave it on the bike because there is electricity everywhere. But if not, it is easy to take the battery out. Also, for safety it is important, it is less probability it gets stolen if you remove the battery. There are also some electricity spots in the bike park, but there is no guarantee that you can use them. What do you do if someone is using, and now you want to use it? You can't be like: "let's put it out and put mine!".

M: Any other remarks.

J: So, it is very interesting, helps me consider a bike. I think I will buy at least one, maybe one for my wife as well. I see the advantages; you bike a lot more. Scooters maybe will be forbidden from the bike paths. And helmet is much more important, you don't want that.

M: What was surprising about the pilot?

J: that you still have some exercise. It helps you with hard parts, like wind and hills. Well, not hills bridges, I know ☺.

M: With the wind it is most important, I think. Would you still cycle in bad weather?

J: Not when it is very wet with showers. The wind is not a reason for me not to go, unless there is a storm. It just takes more time and effort. I have a raincoat anyway. I would like the bike to go faster.

M: that is legal unfortunately.

J: Yeah, but if the weather is good, people are clever enough, there is a bike path and no one is there, you can go by 30. Then you can save some more time. Now it is only 5 minutes savings.

M: there are speed pedelecs as well.

J: yeah, but they told me you need a helmet then. Even I can go, if it is flat and wind in your back, harder than 25 with my regular bike! If you save a little bit more time, it would be a good consideration as well.

M: also, it's a European Union legislation, but of course in other countries it's different. but the Netherlands biking is really different from other countries. so, I think that's why it's 25 because in other countries, you know, it is in traffic, etc.

J: Maybe, likewise for cars, they can say for bikes: within a town it is 25 and outside faster. That would be good. Of course, with the car you can go 180, but it's not allowed. There is speed limit on it. I think it is a bit silly there the limitation is enforced by technical means. I want to take my own responsibility. I am not going 40 in my car in crowded areas, it is still not done. You can't change the law.

M: Any more remarks?

J: There was some loose parts. My seat was getting loose. It wasn't too bad. But they should have told us maybe that you need to fasten it after two weeks. I did it myself.

M: surprising, I thought they were really good bikes.

J: Yeah, I thought so. My steer got loose as well. That was dangerous. What if I break and it went off? But it was OK to fix that, but seat was loose twice, now I really put effort to it. I'll tell them, it is not for your interest!

M: I'll tell them this as well!

J: Yeah, told them once already. And of course, if there is more biking, it would be nice to have maintenance here.

M: Forgot to ask, did you know already people who e-biked to work or not?

J: Not really. One man, but he left TU already. But I think that was more than 20 km, and he was coming by e-bike every day.

M&J: *Talking about the research and master studies.*

J: still in town, I would use a regular bike. E-bike is not needed then. It is heavy, the battery is heavy. Yesterday we went to Amsterdam and we hired an OVfiets. But I thought it was breaking itself, you get used so much to the help, but after half a day you get used to the regular bike again

Interview 3 – Jerwin

M: *Info about thesis.* Which pilot are you participating in?

J: First one, e-biking

M: how did you decide to join the pilot? what did you think about e-biking before?

J: the first question is why I joined the pilot. I think actually biking to work is very

good way to get to work. First, it is good for the environment. Second, it is exercise as well. It makes you feel better as well. The only thing was that I live 10 km away, like half an hour away. If there are heavy winds, it takes you a lot of energy to get here. I start sweating, stuff like that. I already play volleyball, so I don't need the exercise. It is not about the exercise for me, it is just more convenient way to get to work. So, I decided to join because of those reasons. Also, because if I take the car it takes about 25 minutes or 20 minutes depending on how busy traffic is. So, it already takes me quite a while to get to work with the car. So, it is not that big of a difference.

M: Does it take shorter with the e-bike?

J: It takes a bit longer than the car, but not that much more.

M: Have you tried an e-bike before.

J: yes, once. Before this pilot I cycled to work once or twice a month. In summer 4 times-5 times. My parents have e-bikes, so I tried one of theirs once. I really liked it but buying an e-bike is a big investment, so I didn't do that. So, at the end I didn't bike to work often, so this is a good opportunity.

M: IS it a positive experience for you?

J: Absolutely. I've only not bike to work one time. I do it pretty much every day. And I had to bike through rain in one trip, back home. Because Tuesday-Thursdays we need to take the e-bike and it rained on a Tuesday. I would have taken the car normally.

M: Would you still take the car if it's bad weather?

J: yes. I have a rain suit, and it works fine but it is a hassle. I would take the car even on Tuesday-Thursday when it's busy.

M: how did your family or friends or like your colleagues react to you joining the pilot.

J: In different ways. Most people were positive. some people say, isn't that for old people? You probably hear it a lot as well. I think the perception is changing a bit. I explained to them that I don't want to get to work sweaty and tired, but I do want to be outside. Not take the car due to environment, etc. So, when I explain then they react positive as well. Overall usually positive reactions.

M: did the pilot meet your expectations? and what was surprising actually? was there something that you didn't expect to experience that you have experienced?

J: there were no actual surprises, I think. It was all professionally organized. My steer was loose, but I was lucky the guys were still on campus the day after, so I stopped by and they fixed it. No surprised, clear communication, helpful people.

M: have you also used it outside commuting?

J: yes, I went to IKEA to get some stuff we need for the house. But I don't actually use it that often for personal use. Because when I go to volleyball practice, I take my regular bike. It is a 10-minute bike drive, and some stuff has been stolen there, I don't want to leave my bike there. Don't want to take the risk. The lock we get with the bikes is not very tick, you can just cut it with the cement scissors. Don't want to leave my bike there.

M: Are you already thinking of buying the bike.

J: I am thinking about it. But it is still quite an investment with 25% discount. It is a good deal. But there is this other thing in the works. The government wants to stimulate e-biking by loosening the rules of leasing the e-bike. That is much more interesting for me than actually buying it. Because it is also insured, if a thing happens, they repair it. That would be a much better option for me and a lot of people. But a question is whether TU delft will participate in the scheme. so, I'm still waiting on the fence. If I'm 100% sure that TU Delft won't do this, I will buy an e-bike. If it is unclear, or there's a chance that they will not, then I'll wait for this lease scheme. It would be great, only couple of euros per month.

M: Yeah, but TU is also not in the cycle tax scheme anymore.

J: yeah, that is true. But I don't know, if they take it seriously, this pilot, this initiative of getting to work differently, more environmentally friendly, I think it suits TU Delft as well. We're working towards a better society, more sustainable work. This will fit well with values of TU Delft as well. So, I'm expecting them to take a serious look at this.

M: there is also less places available now for a car.

J: exactly, also the roads are getting clogged. so, I think they will have to take a serious look at this. So, I will probably not buy an e-bike and will wait. Otherwise there will be other good deals for e-bikes, probably just as good as the 25% off.

M: Is there any other thing that makes you not take the e-bike?

J: Extreme cold. If you take a normal bike to work, you heat up quickly. Of course, you can set the ECO mode and put some energy to it. But it takes longer to get warm. So, I think in winter I will take it less, but not sure yet. Now we had cold days and it was fine, 4 degrees of so. But if it below 0, I don't know, I need to try and see how it feels. But probably not every day, maybe once-twice a week.

M: do you think TU has enough facilities for e-bikes? For example, are there enough bike parks suitable for them, or chargers and other things that comes to your mind?

J: I don't need a charger, I can do 3 trips back and forth, and then I need to charge. So, I don't need to charge it here. so, it's not very interesting for me. It would be nice if you can just plug it in and charge it here, don't have to worry about getting the battery out at work. We don't have that here, in this building 22. I think in Applied sciences they are installed or have installed the batteries. So, it would be nice, but not absolutely necessary for me. In terms of space, I think if more people would buy the

e-bike or some other bike by this program it will become a problem in this building at least. It is crowded in the staff shed already.

M: Yeah, for students they also need to park outside.

J: well for students they have space in the basement here for bike. Pretty big space, but it is always still filled. Of course, there is lots of people here, so not sure what they can do to solve this issue.

M: any remarks?

J: no, I think it is all covered.

Interview 17 – Camiel

M: Before the pilot, did you consider buying an e-bike and did you try an e-bike before?

C: Yes, I did it once, in the pilot two years ago. It was also from the bicyclists, here in Delft. I loaned a bike for 3 days.

M: What is your perception of e-bikes, what do you see it as?

C: Well, it is more like a normal bike, because they're quite slow, 25 km/h. I prefer more the speed pedelecs, 45 km/h. That's a better replacement for the car. Otherwise it takes a lot of time to Delft.

M: When the pilot ends, are you considering buying a pedelec?

C: I think I'll wait for the lease. The government announced last year in Prinsjesdag that lease bikes will be available for more people and it will become easier to lease one. I hope the university also joins it as well and there will be an arrangement. So, I'll wait for it.

M: What were your expectations from the pilot then? Just to experiment?

C: Yes, just to see how it is with the normal e-bike.

M: But you'll buy something faster?

C: Yes, because this is very time consuming, 25 km/h. Because I have to travel 28 kilometers. It takes one hour and 15 minutes. I am even quicker with my own racing bike.

M: Have you been using it every day?

C: Pilot started 2 weeks ago, and I went 3 times now.

M: Are you planning to go everyday with the pedelec?

C: Yes, I plan to do it but not in winter time.

M: What is the problem in the winter, the rain?

C: The rain and the cold as I'm coming from far, the cold is also the problem.

M: Are you also considering the overall societal benefits?

C: For me, it's just transport.

M: Why do you prefer it over the car?

C: I like to bike, and I like being outside. If it isn't time consuming, it is okay.

M: Are the facilities in the TU enough? For example, parking facilities for e-bikes.

C: In this area (RID) there are enough parking places for cars and bikes. However, in the other areas like the Aula, car parking is a problem. Our bike shed is perfect because it's behind a fence and is quite secured.

M: Because of the shed?

C: There are a lot of parking spaces and they're very crowded. The parking garage over here it is not a problem, there is always space.

M: Do you have any other remarks?

C: If you have to carry some stuff with you, or you have to wear a suit, it is more comfortable to come with car or public transportation. A laptop would be okay, but heavier things or wearing a suit is a problem, or you need to put your suit on forehand into your room. Also, if you have a speed pedelec, it is better to have chargers in the parking place. With the pilot, I wished there were speed pedelecs because that is what I'm interested in. With the pilot, the lock by the app is annoying, and also, we can't charge our batteries in our rooms, however as I cycle far, I do need to do that.

Interview 19 – Paul

M: How long have you been e-biking?

P: I think for the last 5 years. I received the e-bike from my father in law, he couldn't use it anymore, so he gave it to me, and I started using it.

M: What were you using before? Were you using a car?

P: I had a normal bike and a car. Normally I went to Delft by car 2-3 days a week.

M: Now you e-bike 2 days a week?

P: Yeah, it's more convenient. Because before I had to take a shower after I arrived here. Now I can just start working immediately.

M: Why did you bike twice a week?

P: For exercising and to be fit. When I have other meetings in the evening, like on Mondays I go directly to Dordrecht after working hours, then I take the car. When I go sporting in the evening, like going to gym, I have a running club I go twice a week, or a meeting, I use my car. Or else I'm already tired before starting to exercise.

M: What was your perception before receiving the e-bike, and how did it change after you started using it?

P: Five years ago, I was hesitant to start using the e-bike. I thought, well, it's not for me, I'm sportive and still healthy. But it has several advantages. Just as I mentioned, I don't have to take a shower, so it saves me 15 minutes every day. And it gives you a lot of energy once you've done your cycling.

M: How did your colleagues responded to your e-bike?

P: At first, I didn't tell it around, I kept quiet. People still thought I was on a normal bike. But it started to become more regular, and now I don't hesitate to tell that I use an e-bike. That changed in the last 5 years, that perception.

M: Did you also consider the advantages for the society for using an e-bike?

P: I think main reason was to be fit and clear my head when I went home. I think only second or third place I thought about society.

M: Do you also decide depending on the weather?

P: No, I have good jacket and rain trousers. That's not important for me. Only when it's freezing outside and roads are slippery, I take the car or sometimes the train.

M: Do you think in Delft the facilities are enough? Like the e-bike parking, the charging stations?

P: Here in the library we have a locked parking which we can lock/unlock with our employee cards. There we don't have chargers, but my battery is strong enough for a round trip.

M: If this e-bike gets broken will you replace it by a new one?

P: Well, I just decided today to step into the program of TU Delft for e-bike. I have it in the last block. I hope it will be better than the one I use now. That one is quite old and there is a limitation at 25 km an hour. When you go faster it starts to slow down.

M: This one also has it unfortunately due to law.

P: I think I would rather have a pedelec, but I think TU Delft doesn't offer one.

M: Yeah, unfortunately not.

P: Yeah, that one is quite fast. Now it takes me 35 minutes to go to Vlaardingen where I live. Then, I can do it in 15 minutes.

M: These were my questions. Do you have anything else to add?

P: Well, I don't think so. But I just had an accident here in Mekelweg. There was a scooter coming from the left and I had the priority to pass. But scooter thought he had it, and we collapsed and fell to the ground. He just stopped and we talked, there was no material damage. But that's interesting, I wouldn't had it if I was on a normal bike, then you can break faster.

M: People think it's a normal bike, that's a problem as well. Did you ever inspire another colleague who got inspired by you to buy an e-bike?

P: Well, I have a colleague, he is also joining the Pilot. He lives 12 km away. I'm not sure if I inspired him, but he also decided to apply for an e-bike, which is nice.

M: Thanks!

Interview 22 – Emelie

M: Did you know anyone with an e-bike before the pilot and how did you decide to join the pilot?

E: Yeah, I know some people that came to work by an e-bike indeed. I live in Rotterdam, so I come to TU Delft with a normal bike or car normally. When I saw the pilot, I thought it would be nice to come to improve the speed on my journey.

M: How often did you bike here then?

E: Three times a week.

M: Ah, quite often. Did you consider e-biking before, or was it just nice to try when you had the option?

E: Well, yes. As I went by a normal bike, and it was not that the journey was too long when I go by bike. But I thought it would be nice to come faster to work. But before it wasn't really in my consideration to buy an e-bike, I just wanted to see whether it improves the time or not.

M: Are you going to buy an e-bike?

E: No, not yet. It was a bit faster, but not that much faster. So, with my normal bike it is still OK. I also think the purpose of the pilot was that more people come by bike to the university instead of the car. Normally I come maybe one or two days by bike to the campus. Other days I come by car. It also depends on other things. I have small kids; I have to go to the daycare to pick them up. Sometimes you don't have time to go by bike to Delft.

M: Is picking up the kids only reason for you to come by car?

E: Also, the time. With the car it is within 15 minutes until I'm home. With the bike it is 40 minutes. If I go by car to home and take the bike to pick up the kids. But then that 50 minutes going home from here is wasted, so sometimes I go by car to win that time by staying longer here.

M: Does the weather also affect your choice?

E: No, not really. Depends on the extremities of course. If there is rain the whole day, then I think it is better to go by car instead of the bike. But otherwise I like being outside.

M: Do you find it comfortable, for example when you come to work to change your clothes or to have a shower here?

E: No, mostly no. Mostly I do not go so fast that I get sweaty, so I don't need to change or take a shower.

M: How did your family, your colleagues, your friends react to you using an e-bike? Did you have positive reactions?

E: Yeah! Some people still find it a long way to Delft, but I think it's not long, the time. People were like "oh, now you're going by e-bike, do you like it?". Yeah, positive reactions.

M: What is the reason you cycle? Do you think of the societal benefits as well?

E: A combination. For the environment biking is better than driving by car. And for me, I like to be outside, 40 minutes fresh cycling is a good way to wake up in the morning. When you're going home you also really switch off from the work for half an hour. So, a combination.

M: Do you think facilities in TU Delft are suitable for e-bikers and bikers? For example, like the parks, showers.

E: Yes, I think the facilitation is good. For e-bikes we have downstairs the sheds, you can put them there. I guess in other faculties that is the same.

M: Some places do not have enough space, but I guess here in the valorization center that is not the case.

E: No, not at all. Here we have enough space, it's really nice over here. If you want to take a shower that is also available. It's good

M: These were my questions; do you have anything else to add?

E: I liked the pilot, for me it was that I went more often with the e-bike than I did with my regular bike to Delft. That's an improvement.

M: Were you able to pick up the kids with the e-bike, or not?

E: No, well they gave me the option to have a child seat on the back. I used it in the beginning. But for this e-bike, maybe not relevant for your research, but there are also the bags to put your stuff in at the back. When you use that, then you can't it together with the seat anymore, not very handy. Also, the battery. I place it outside with the lock as we don't have a basement for the bikes. But then you need to bring the battery home. Then the key was behind the child seat. So, then you had to remove the whole seat! So that wasn't handy, so I decided not to use it anymore. I just go home and use my regular bike to pick up the kids. It's also that there are two kids and my regular bike has seats for two. So, for this purpose the e-bike it wasn't so handy.

M: Maybe a final question. Did you use the e-bike outside commute purposes or not?

E: I think no! Maybe a combination. Sometimes when I go for private appointments after work, I use it.

M: Thanks!

Appendix L: Interview Analysis

Codes-quotations list
Code-Filter: All

HU: Thesis - E - bikes - 18 June
File: [H:\Desktop\Thesis - E - bikes - 18 June.hpr7]
Edited by: Super
Date/Time: 2019-06-19 11:51:08

Code: ad - che - pbc - eco - e-bike cheaper than car/public transport {5-0}
P 5: Daan Interview - analys.docx - 5:3 [Also, with petrol prices e-bik..] (9:9) (Super)
Codes: [ad - che - pbc - eco - e-bike cheaper than car/public transport - Families (3): *Perceived Behavioral Control - Buying, Advantages - Cheaper than Alternatives, PBC - Economic]
No memos
Also, with petrol prices e-bikes became more convenient
P 6: Isabelle Interview_adjusted - analy.docx - 6:9 [how much people spend on their..] (21:21) (Super)
Codes: [ad - che - pbc - eco - e-bike cheaper than car/public transport - Families (3): *Perceived Behavioral Control - Buying, Advantages - Cheaper than Alternatives, PBC - Economic]
No memos
how much people spend on their car it's like it's still cheaper but in terms of you know like having e-bike it's a one time expense
P 9: lars interview - analys.docx - 9:11 [M: Even in hard rain? L: Yeah,..] (23:24) (Super)
Codes: [ad - che - pbc - eco - e-bike cheaper than car/public transport - Families (3): *Perceived Behavioral Control - Buying, Advantages - Cheaper than Alternatives, PBC - Economic]
No memos
M: Even in hard rain?
L: Yeah, that didn't occur yet but I'll. For me it is the cheapest way to go.
P12: R Interview - analys.docx - 12:10 [R: actually, it's expensive. I..] (12:12) (Super)
Codes: [ad - che - pbc - eco - e-bike cheaper than car/public transport - Families (3): *Perceived Behavioral Control - Buying, Advantages - Cheaper than Alternatives, PBC - Economic]
No memos
R: actually, it's expensive. It costs money.
P17: Bert Interview.docx - 17:11 [I set the goal: I can go by ca..] (16:16) (Super)
Codes: [ad - che - pbc - eco - e-bike cheaper than car/public transport - Families (3): *Perceived Behavioral Control - Buying, Advantages - Cheaper than Alternatives, PBC - Economic]
No memos
I set the goal: I can go by car, but first I need to earn the bike back by saving money on petrol.

Code: ad - con - arriving not sweaty {12-0}
P 1: A Interview Final - analys.docx - 1:16 [You also don't get sweaty. A: ..] (43:45) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
You also don't get sweaty.
A: Exactly.
P 3: Angeline Interview - analys.docx - 3:8 [and not that sweaty when you c..] (8:8) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
and not that sweaty when you come to work.
P 7: Jan Interview - analy.docx - 7:25 [Showers is fine, because you d..] (26:26) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
Showers is fine, because you don't need one, you don't get sweaty.
P 8: Jerwin Interview - analys.docx - 8:6 [I start sweating,] (6:6) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
I start sweating,
P 8: Jerwin Interview - analys.docx - 8:19 [I don't want to get to work sw..] (16:16) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
I don't want to get to work sweaty and tired,
P11: Paula Interview - analy.docx - 11:20 [P: Ah with the normal bike I g..] (34:34) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
P: Ah with the normal bike I get sweaty, and then the whole day I am cold, and I get hungry earlier and I want to go back home again, and it is a hassle. But with e-bike you don't get that!
P12: R Interview - analys.docx - 12:18 [This e-bike is nice in that I ..] (26:26) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
This e-bike is nice in that I don't arrive to work sweaty.
P15: Sylvie Interview.docx - 15:26 [SO on the normal bike I was al..] (36:36) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
SO on the normal bike I was always racing, sweating, then I come home tired,
P15: Sylvie Interview.docx - 15:28 [I'm not tired, I'm not sweatin..] (36:36) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
I'm not tired, I'm not sweating, I just have a nice 15 minutes outside, enjoying the environment.
P16: Elsa Interview.docx - 16:16 [I think a lot of like 50-40 ye..] (22:22) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos

I think a lot of like 50-40 years old and also younger people, they work in the Hague. That's 30-45-minute ride. Usually they would be really sweaty or tired biking there.
P20: Paul Interview.docx - 20:3 [P: Yeah, it's more convenient...] (8:8) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - reason to e-bike: convenient - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
P: Yeah, it's more convenient. Because before I had to take a shower after I arrived here. Now I can just start working immediately.
P20: Paul Interview.docx - 20:10 [Just as I mentioned, I don't h..] (12:12) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
Just as I mentioned, I don't have to take a shower, so it saves me 15 minutes every day. And it gives you a lot of energy once you've done your cycling.

Code: ad - con - e-bike more comfortable than public transport {1-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:36 [I prefer the bike, you're more..] (77:77) (Super)
Codes: [ad - con - e-bike more comfortable than public transport - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Advantage - Convenience]
No memos
I prefer the bike, you're more flexible and you don't have to sit in a full bus with you know when everyone's going home at the same time.

Code: ad - con - e-bike not tiring {16-0}
P 1: A Interview Final - analys.docx - 1:14 [very tiring] (41:41) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
very tiring
P 2: A2 - analys.docx - 2:3 [you have to go long distance, ..] (6:6) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
you have to go long distance, then it takes a lot of energy
P 3: Angeline Interview - analys.docx - 3:7 [make it a little smoother] (8:8) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
make it a little smoother
P 5: Daan Interview - analys.docx - 5:6 [nd then when I come back at th..] (9:9) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
nd then when I come back at the evening then I'm dead.
P 7: Jan Interview - analy.docx - 7:8 [The most help is in the beginn..] (10:10) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
The most help is in the beginning
P 8: Jerwin Interview - analys.docx - 8:5 [it takes you a lot of energy t..] (6:6) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
it takes you a lot of energy to get here.
P 8: Jerwin Interview - analys.docx - 8:19 [I don't want to get to work sw..] (16:16) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
I don't want to get to work sweaty and tired,
P11: Paula Interview - analy.docx - 11:20 [P: Ah with the normal bike I g..] (34:34) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
P: Ah with the normal bike I get sweaty, and then the whole day I am cold, and I get hungry earlier and I want to go back home again, and it is a hassle. But with e-bike you don't get that!
P15: Sylvie Interview.docx - 15:15 [Because what I realized is tha..] (24:24) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
Because what I realized is that as the e-bike doesn't take too much energy, your energy level goes down.
P15: Sylvie Interview.docx - 15:26 [SO on the normal bike I was al..] (36:36) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
SO on the normal bike I was always racing, sweating, then I come home tired,
P15: Sylvie Interview.docx - 15:28 [I'm not tired, I'm not sweatin..] (36:36) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
I'm not tired, I'm not sweating, I just have a nice 15 minutes outside, enjoying the environment.
P16: Elsa Interview.docx - 16:16 [I think a lot of like 50-40 ye..] (22:22) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
I think a lot of like 50-40 years old and also younger people, they work in the Hague. That's 30-45-minute ride. Usually they would be really sweaty or tired biking there.
P17: Bert Interview.docx - 17:4 [M: Is it still a problem to bi..] (5:6) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
M: Is it still a problem to bike in the mornings?
B: No, with the e-bike it's a little bit faster and easier.
P19: Arend Interview.docx - 19:3 [So, the thing was that since i..] (12:12) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos

So, the thing was that since it is not so tiring anymore, I was suddenly the tiredness didn't stop me from cycling anymore. Going back in the evening wasn't a hassle.
P20: Paul Interview.docx - 20:11 [Just as I mentioned, I don't h..] (12:12) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
Just as I mentioned, I don't have to take a shower, so it saves me 15 minutes every day. And it gives you a lot of energy once you've done your cycling.
P22: tineke interview.docx - 22:8 [T: Well, I think I cycle a bit..] (18:18) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience]
No memos
T: Well, I think I cycle a bit more. Before starting to work here I cycled 60 km a week, and I think I still... Well, I don't know how to fit in the e-bike, I don't know if that counts as 60 km because it feels so effortless. As if you're doing nothing

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Code: ad - con - pbc - eff - wind reason to e-bike {6-0}
P 3: Angeline Interview - analys.docx - 3:5 [so loads of wind] (8:8) (Super)
Codes: [ad - con - pbc - eff - wind reason to e-bike - Families (4): *Attitude - Buying an E-bike, *Perceived Behavioral Control - Buying, Advantage - Convenience, PBC - Effort]
No memos
so loads of wind
P 6: Isabelle Interview_adjusted - analy.docx - 6:4 [Having just like when you have..] (13:13) (Super)
Codes: [ad - con - pbc - eff - wind reason to e-bike - Families (4): *Attitude - Buying an E-bike, *Perceived Behavioral Control - Buying, Advantage - Convenience, PBC - Effort]
No memos
Having just like when you have the wind against it just nice to have that extra support
P 6: Isabelle Interview_adjusted - analy.docx - 6:31 [Yeah I know definately, in the..] (73:73) (Super)
Codes: [ad - con - pbc - eff - wind reason to e-bike - Families (4): *Attitude - Buying an E-bike, *Perceived Behavioral Control - Buying, Advantage - Convenience, PBC - Effort]
No memos
Yeah I know definately, in the route you're quite exposed to like farmland or like you're next to swampland, if there is a lot of side wind like I don't feel very safe cycling
P 8: Jerwin Interview - analys.docx - 8:4 [If there are heavy winds,] (6:6) (Super)
Codes: [ad - con - pbc - eff - wind reason to e-bike - Families (4): *Attitude - Buying an E-bike, *Perceived Behavioral Control - Buying, Advantage - Convenience, PBC - Effort]
No memos
If there are heavy winds,
P15: Sylvie Interview.docx - 15:10 [If there is strong front wind] (16:16) (Super)
Codes: [ad - con - pbc - eff - wind reason to e-bike - Families (4): *Attitude - Buying an E-bike, *Perceived Behavioral Control - Buying, Advantage - Convenience, PBC - Effort]
No memos
If there is strong front wind
P17: Bert Interview.docx - 17:2 [On the mornings it's not that ..] (4:4) (Super)
Codes: [ad - con - pbc - eff - wind reason to e-bike - Families (4): *Attitude - Buying an E-bike, *Perceived Behavioral Control - Buying, Advantage - Convenience, PBC - Effort] [bar - wea - pbc - wea - don't use e-bike in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
On the mornings it's not that pleasant to bike. Especially when it's raining, and the wind is in front of you.

Code: ad - con - personal reasons/convenience over societal benefits {10-0}
P 1: A Interview Final - analys.docx - 1:23 [though I must admit that conve..] (57:57) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience]
No memos
though I must admit that convenience was the major reason for me, and not sustainability, that was just nice to have.
P 3: Angeline Interview - analys.docx - 3:24 [but mostly for my health] (24:24) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience]
No memos
but mostly for my health
P 4: Anouk Interview - analys.docx - 4:18 [Also, that, but mainly for mys..] (28:28) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience]
No memos
Also, that, but mainly for myself.
P 6: Isabelle Interview_adjusted - analy.docx - 6:32 [t's a side thing that's I mean..] (73:73) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience]
No memos
t's a side thing that's I mean I tried to be somewhat environmentally conscious in other things as well and I'm not the best in that but it is nice that at least in this particular part I feel like I'm contributing
P10: Marja Interview Final - analy.docx - 10:12 [I wasn't really very much conc..] (53:53) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience] [ad - soc - societal benefit additional positive aspect - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
I wasn't really very much concerned about that. So, it didn't influence my choice. Right now, it's always nice to tell it. Well that's nice. But it wasn't on purpose that I wanted to be more of an environmentalist.
P17: Bert Interview.docx - 17:12 [Did you also consider environm..] (19:20) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience]
No memos
Did you also consider environmental concerns while switching to the e-bike?
B: No, not really. That's nonsense (laughs).
P18: Camiel Interview_ck-1.docx - 18:8 [M: Are you also considering th..] (19:20) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience]
No memos
M: Are you also considering the overall societal benefits?
C: For me, it's just transport.
P19: Arend Interview.docx - 19:13 [M: Did you consider the societ..] (17:18) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience] [ad - soc - societal benefit additional positive aspect - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
M: Did you consider the societal benefits of e-biking as well?

A: That was not the primary thing, but it's a nice, beneficial thing
P20: Paul Interview.docx - 20:13 [P: I think main reason was to ..] (16:16) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience]
No memos
P: I think main reason was to be fit and clear my head when I went home. I think only second or third place I thought about society.
P21: Andre Interview.docx - 21:6 [M: When you were choosing for ..] (17:18) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience]
No memos
M: When you were choosing for it, were you also considering the societal benefits of the e-bike?
A: Partly.

Code: ad - con - reason to e-bike: congestion {5-0}
P13: Vincent Interview - analys.docx - 13:1 [Congestion was horrible and I ..] (6:6) (Super)
Codes: [ad - con - reason to e-bike: congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
Congestion was horrible and I wanted to exercise also little bit. So, I decided to buy an E-bike.
P13: Vincent Interview - analys.docx - 13:12 [Congestion is horrible.] (32:32) (Super)
Codes: [ad - con - reason to e-bike: congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
Congestion is horrible.
P15: Sylvie Interview.docx - 15:8 [ike to be in the traffic. Then..] (16:16) (Super)
Codes: [ad - con - reason to e-bike: congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
ike to be in the traffic. Then I don't know how long it takes
P15: Sylvie Interview.docx - 15:11 [With normal bike, with strong ..] (16:16) (Super)
Codes: [ad - con - reason to e-bike: congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
With normal bike, with strong wind it can even take twice as much. It can also happen in the car with traffi
P22: tineke interview.docx - 22:6 [T: Well I used to work in the ..] (12:12) (Super)
Codes: [ad - con - reason to e-bike: congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - enj - prefer bike over car - Families (2): *Attitude - Pilot, Advantage - Enjoyment]
No memos
T: Well I used to work in the Hague, and I had a commute of 5,5 km. I just love cycling. Also, I hate being stuck in traffic. I hate it when people are so stressed during rush hours. Especially on A13, A4. People are very aggressive. I really don't like that; it makes me stressed.

Code: ad - con - reason to e-bike: convenient {4-0}
P 8: Jerwin Interview - analys.docx - 8:7 [it is just more convenient way..] (6:6) (Super)
Codes: [ad - con - reason to e-bike: convenient - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
it is just more convenient way to get to work
P 9: lars interview - analys.docx - 9:14 [L: even more! It is even easie..] (30:30) (Super)
Codes: [ad - con - reason to e-bike: convenient - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
L: even more! It is even easier to move now. You don't have to put effort to cycling so you can focus on carrying some other stuff.
P16: Elsa Interview.docx - 16:5 [M: Some people just use it for..] (9:10) (Super)
Codes: [ad - con - reason to e-bike: convenient - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
M: Some people just use it for commute, it is faster and more convenient than a car.
E: Yeah, especially if you live in the city. For example, if I worked in the Hague I would just bike there.
P20: Paul Interview.docx - 20:3 [P: Yeah, it's more convenient...] (8:8) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - reason to e-bike: convenient - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
P: Yeah, it's more convenient. Because before I had to take a shower after I arrived here. Now I can just start working immediately.

Code: ad - con - reason to e-bike: faster/same time with others {14-0}
P 1: A Interview Final - analys.docx - 1:13 [it shouldn't take so much time..] (41:41) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
it shouldn't take so much time
P 5: Daan Interview - analys.docx - 5:13 [Of course! As I said, my car t..] (17:17) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
Of course! As I said, my car takes about the same time
P 8: Jerwin Interview - analys.docx - 8:8 [So, it already takes me quite ..] (6:6) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
So, it already takes me quite a while to get to work with the car. So, it is not that big of a difference.
P 9: lars interview - analys.docx - 9:12 [L: Yes, it takes nearly equal ..] (28:28) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
L: Yes, it takes nearly equal by public transport, by car or e-bike now.
P11: Paula Interview - analy.docx - 11:2 [So it wasn't that I didn't wan..] (8:8) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
So it wasn't that I didn't want to bike, but I was always in a hurry.
P13: Vincent Interview - analys.docx - 13:13 [I'm faster with my bike than w..] (32:32) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
I'm faster with my bike than with my car from the Hague to Delft. 30-35 minutes by car, this is 25 minutes max.
P15: Sylvie Interview.docx - 15:1 [However, with bike it took me ..] (4:4) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
However, with bike it took me too long to have a good balance between work and home.
P15: Sylvie Interview.docx - 15:7 [But I know I'm faster on my bi..] (16:16) (Super)

Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
But I know I'm faster on my bike
P15: Sylvie Interview.docx - 15:21 [Yeah! And you need to find a p..] (32:32) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
Yeah! And you need to find a parking place, or pay for it.
P15: Sylvie Interview.docx - 15:25 [But the distance is not the re..] (36:36) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
But the distance is not the reason, the time is.
P16: Elsa Interview.docx - 16:5 [M: Some people just use it for..] (9:10) (Super)
Codes: [ad - con - reason to e-bike: convenient - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
M: Some people just use it for commute, it is faster and more convenient than a car.
E: Yeah, especially if you live in the city. For example, if I worked in the Hague I would just bike there.
P17: Bert Interview.docx - 17:4 [M: Is it still a problem to bi..] (5:6) (Super)
Codes: [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
M: Is it still a problem to bike in the mornings?
B: No, with the e-bike it's a little bit faster and easier.
P21: Andre Interview.docx - 21:2 [A: The car doesn't give me muc..] (8:8) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
A: The car doesn't give me much time advantage because of the traffic on the road.
P23: Emelie Interview.docx - 23:2 [I live in Rotterdam, so I come..] (4:4) (Super)
Codes: [ad - con - reason to e-bike: faster/same time with others - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
I live in Rotterdam, so I come to TU Delft with a normal bike or car normally. When I saw the pilot, I thought it would be nice to come to improve the speed on my journey.

Code: ad - con - reason to e-bike: predictable timing {2-0}
P15: Sylvie Interview.docx - 15:9 [Now I know exactly how much ti..] (16:16) (Super)
Codes: [ad - con - reason to e-bike: predictable timing - Family: Advantage - Convenience]
No memos
Now I know exactly how much time it will take
P19: Arend Interview.docx - 19:7 [A: That was not the primary th..] (18:18) (Super)
Codes: [ad - con - reason to e-bike: predictable timing - Family: Advantage - Convenience]
No memos
A: That was not the primary thing, but it's a nice, beneficial thing. I must also add that time-wise you're precise about timing. You know when you arrive. Whereas with other modes of transport it is always very uncertain. With the e-bike you are very certain that you arrive on time.

Code: ad - con - want to get rid of the car/not buy a car {3-0}
P12: R Interview - analys.docx - 12:3 [R: yes, I have been meaning to..] (6:6) (Super)
Codes: [ad - con - want to get rid of the car/not buy a car - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [int - buy - considering e-bike before - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Intention - Buying]
No memos
R: yes, I have been meaning to let go of the car for a while and the e-bike was one of the alternatives indeed.
P15: Sylvie Interview.docx - 15:2 [But I didn't want to buy a sec..] (4:4) (Super)
Codes: [ad - con - want to get rid of the car/not buy a car - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience]
No memos
But I didn't want to buy a second car
P15: Sylvie Interview.docx - 15:19 [yes, number one. I think for m..] (28:28) (Super)
Codes: [ad - con - want to get rid of the car/not buy a car - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - soc - environmental concerns main reason - Family: Advantage - Societal] [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
yes, number one. I think for myself, and also other people it is so easy to take often the bike to certain locations you need to go, especially short distances. I see people use car for short distances, and I don't want to. This was the main reason to go for this solution instead of a second car. I think the environment is very important.

Code: ad - enj - enjoy skipping traffic {2-0}
P 3: Angeline Interview - analys.docx - 3:29 [traffic jam sometimes, it is n..] (26:26) (Super)
Codes: [ad - enj - enjoy skipping traffic - Families (2): *Attitude - Daily, Advantage - Enjoyment]
No memos
traffic jam sometimes, it is nice to go by the cars and pass them
P19: Arend Interview.docx - 19:8 [I also call myself a new rich ..] (18:18) (Super)
Codes: [ad - enj - enjoy skipping traffic - Families (2): *Attitude - Daily, Advantage - Enjoyment] [ad - fle - reason to e-bike: flexibility - Families (2): *Attitude - Buying an E-bike, Advantages - Flexibility]
No memos
I also call myself a new rich person. I'm free! No traffic jam, no one is holding me up.

Code: ad - enj - enjoyment {6-0}
P11: Paula Interview - analy.docx - 11:25 [P: I really enjoy the program…] (40:40) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [pil - appreciate pilot: good advertisement - Families (2): *Attitude - Pilot, Pilot Perception]
No memos
P: I really enjoy the program. It is advertised in a very positive way! I
P12: R Interview - analys.docx - 12:4 [It is doable with a regular bi..] (6:6) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment]
No memos
It is doable with a regular bike. It is not as much as enjoyable, and e-bikes make it more enjoyable.
P15: Sylvie Interview.docx - 15:18 [For me cycling on an e-bikeI f..] (26:26) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [ad - enj - happy taking over others - Families (2): *Attitude - Daily, Advantage - Enjoyment]
No memos

For me cycling on an e-bike feels like driving in a Cabrio. You're cruising, your hair is blown, wind is blowing and it doesn't take any energy and you go very fas
P15: Sylvie Interview.docx - 15:22 [Its lovely, you're outside, th..] (32:32) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
Its lovely, you're outside, the wind in your hair, you're doing exercise even if your energy level isn't high.
P15: Sylvie Interview.docx - 15:27 [Now it's a pleasant commute] (36:36) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment]
No memos
Now it's a pleasant commute
P19: Arend Interview.docx - 19:2 [How did your views of the e-bi..] (11:12) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment]
No memos
How did your views of the e-bike change after you started?
A: I enjoyed it a lot

Code: ad - enj - happy taking over others {2-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:11 [Now I know they were probably ..] (21:21) (Super)
Codes: [ad - enj - happy taking over others - Families (2): *Attitude - Daily, Advantage - Enjoyment]
No memos
Now I know they were probably with e-bikes and now I am that person and I am perfectly happy with that.
P15: Sylvie Interview.docx - 15:18 [For me cycling on an e-bikeI f..] (26:26) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [ad - enj - happy taking over others - Families (2): *Attitude - Daily, Advantage - Enjoyment]
No memos
For me cycling on an e-bikeI feels like driving in a its Cabrio. You're cruising, your hair is blown, wind is blowing and it doesn't take any energy and you go very fas

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Code: ad - enj - int - try - positive experience with e-bikes before the program {2-0}
P 2: A2 - analys.docx - 2:2 [I know when I tested that one,..] (6:6) (Super)
Codes: [ad - enj - int - try - positive experience with e-bikes before the program - Families (3): *Attitude - Pilot, Advantage - Enjoyment, Intention - Trying]
No memos
I know when I tested that one, I know it's very nice to have one
P11: Paula Interview - analy.docx - 11:22 [But I was very happy when I ha..] (36:36) (Super)
Codes: [ad - enj - int - try - positive experience with e-bikes before the program - Families (3): *Attitude - Pilot, Advantage - Enjoyment, Intention - Trying]
No memos
But I was very happy when I had the e-bike.

Code: ad - enj - prefer bike over car {4-0}
P 3: Angeline Interview - analys.docx - 3:6 [I can come by car, but I prefe..] (8:8) (Super)
Codes: [ad - enj - prefer bike over car - Families (2): *Attitude - Pilot, Advantage - Enjoyment]
No memos
I can come by car, but I prefer to go by bike
P16: Elsa Interview.docx - 16:13 [E: Well, I wouldn't want a car..] (22:22) (Super)
Codes: [ad - enj - prefer bike over car - Families (2): *Attitude - Pilot, Advantage - Enjoyment]
No memos
E: Well, I wouldn't want a car because e-bikes are so easy.
P18: Camiel Interview_ck-1.docx - 18:9 [M: Why do you prefer it over t..] (21:22) (Super)
Codes: [ad - enj - prefer bike over car - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
M: Why do you prefer it over the car?
C: I like to bike, and I like being outside. If it isn't time consuming, it is okay.
P22: tineke interview.docx - 22:6 [T: Well I used to work in the ..] (12:12) (Super)
Codes: [ad - con - reason to e-bike: congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - enj - prefer bike over car - Families (2): *Attitude - Pilot, Advantage - Enjoyment]
No memos
T: Well I used to work in the Hague, and I had a commute of 5,5 km. I just love cycling. Also, I hate being stuck in traffic. I hate it when people are so stressed during rush hours. Especially on A13, A4. People are very aggressive. I really don't like that; it makes me stressed.

Code: ad - enj - proud user {5-0}
P 3: Angeline Interview - analys.docx - 3:26 [but now I think it is a great ..] (26:26) (Super)
Codes: [ad - enj - proud user - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
but now I think it is a great invention.
P 6: Isabelle Interview_adjusted - analy.docx - 6:8 [I am a proud e-bike user] (21:21) (Super)
Codes: [ad - enj - proud user - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
I am a proud e-bike user
P10: Marja Interview Final - analy.docx - 10:3 [Mina: And you like it as well...] (11:13) (Super)
Codes: [ad - enj - proud user - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
Mina: And you like it as well.
00:02:38
Marja: Yeah, I do.
P10: Marja Interview Final - analy.docx - 10:11 [But I do tell other people tha..] (37:37) (Super)
Codes: [ad - enj - proud user - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
But I do tell other people that I'm really glad
P16: Elsa Interview.docx - 16:11 [M: So, you really like it. E: ..] (17:18) (Super)
Codes: [ad - enj - proud user - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
M: So, you really like it.
E: Yeah.

Code: ad - enj - reason to e-bike: like being outside {12-0}
P 2: A2 - analys.docx - 2:7 [because I just like to ride th..] (10:10) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
because I just like to ride the bike outside
P 5: Daan Interview - analys.docx - 5:14 [With bike I drive through the ..] (17:17) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
With bike I drive through the polders and nature, it is a lot better
P 8: Jerwin Interview - analys.docx - 8:18 [but I do want to be outside] (16:16) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
but I do want to be outside
P 9: lars interview - analys.docx - 9:13 [I like being outside, so it is..] (28:28) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
I like being outside, so it is nice.
P10: Marja Interview Final - analy.docx - 10:14 [And it's good to look at the t..] (61:61) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
And it's good to look at the trees and the animals.
P11: Paula Interview - analy.docx - 11:12 [You're in open air.] (22:22) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
You're in open air.
P15: Sylvie Interview.docx - 15:28 [I'm not tired, I'm not sweatin..] (36:36) (Super)
Codes: [ad - con - arriving not sweaty - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - con - e-bike not tiring - Families (2): *Attitude - Daily, Advantage - Convenience] [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
I'm not tired, I'm not sweating, I just have a nice 15 minutes outside, enjoying the environment.
P17: Bert Interview.docx - 17:1 [The reason is if I go by car, ..] (4:4) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
The reason is if I go by car, I'm all day inside this building. So it's pleasant to ride a bike
P18: Camiel Interview_ck-1.docx - 18:9 [M: Why do you prefer it over t..] (21:22) (Super)
Codes: [ad - enj - prefer bike over car - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
M: Why do you prefer it over the car?
C: I like to bike, and I like being outside. If it isn't time consuming, it is okay.
P22: tineke interview.docx - 22:7 [T: I am very much concerned; I..] (16:16) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related] [ad - soc - environmental concerns main reason - Family: Advantage - Societal]
No memos
T: I am very much concerned; I eat vegan too. So, I'm very concerned with the climate. So of course, this was one of the reasons I started to bike and bought an e-bike as well. But it was also because I wanted to keep fit. Although an e-bike is not very strenuous, you're still outside, you have a bit of exercise.
P23: Emelie Interview.docx - 23:7 [E: No, not really. Depends on ..] (14:14) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
E: No, not really. Depends on the extremities of course. If there is rain the whole day, then I think it is better to go by car instead of the bike. But otherwise I like being outside.
P23: Emelie Interview.docx - 23:9 [E: A combination. For the envi..] (20:20) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [ad - hea - reason to e-bike: mindfulness - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related] [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
E: A combination. For the environment biking is better than driving by car. And for me, I like to be outside, 40 minutes fresh cycling is a good way to wake up in the morning. When you're going home you also really switch off from the work for half an hour. So, a combination.

Code: ad - enj - reason to e-bike: not enjoying cycling normally {1-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:5 [I'm also not a huge fan of cyc..] (13:13) (Super)
Codes: [ad - enj - reason to e-bike: not enjoying cycling normally - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment]
No memos
I'm also not a huge fan of cycling. I fell down once when I was young. I don't enjoy it so much. So having an e-bike makes me cycle more often than I would do.

Code: ad - fle - reason to e-bike: flexibility {6-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:35 [But if not for these variables..] (77:77) (Super)
Codes: [ad - fle - reason to e-bike: flexibility - Families (2): *Attitude - Buying an E-bike, Advantages - Flexibility]
No memos
But if not for these variables I would prefer to have cycled because you're not dependent on like bus times for instance and stuff like that.
P 7: Jan Interview - analy.docx - 7:30 [Scooters were forbidden from t..] (34:34) (Super)
Codes: [ad - fle - reason to e-bike: flexibility - Families (2): *Attitude - Buying an E-bike, Advantages - Flexibility]
No memos
Scooters were forbidden from the bike paths. And helmet is much more important, you don't want that.
P10: Marja Interview Final - analy.docx - 10:5 [Ah! my freedom is back. And I ..] (25:25) (Super)
Codes: [ad - fle - reason to e-bike: flexibility - Families (2): *Attitude - Buying an E-bike, Advantages - Flexibility]
No memos
Ah! my freedom is back. And I can go wherever I want and not need a car.
P16: Elsa Interview.docx - 16:10 [So yeah, I'm using my e-bike i..] (16:16) (Super)
Codes: [ad - fle - reason to e-bike: flexibility - Families (2): *Attitude - Buying an E-bike, Advantages - Flexibility]
No memos

So yeah, I'm using my e-bike in combination with my wheel chair to get around. It enlarges my mobility.
P19: Arend Interview.docx - 19:8 [I also call myself a new rich ..] (18:18) (Super)
Codes: [ad - enj - enjoy skipping traffic - Families (2): *Attitude - Daily, Advantage - Enjoyment] [ad - fle - reason to e-bike: flexibility - Families (2): *Attitude - Buying an E-bike, Advantages - Flexibility]
No memos
I also call myself a new rich person. I'm free! No traffic jam, no one is holding me up.
P21: Andre Interview.docx - 21:1 [A: Well I commuted by scooter...] (6:6) (Super)
Codes: [ad - fle - reason to e-bike: flexibility - Families (2): *Attitude - Buying an E-bike, Advantages - Flexibility]
No memos
A: Well I commuted by scooter. Then my scooter was more or less dying out. Also, it's not anymore allowed to drive with the scooter on the bike path. So, I decided to buy an e-bike.

Code: ad - hea - e-bike is healthy {9-0}
P 1: A Interview Final - analys.docx - 1:15 [I like exercise a bit more but..] (41:41) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related]
No memos
I like exercise a bit more but it is not only exercise, it has to be functional
P 3: Angeline Interview - analys.docx - 3:9 [It is also healthier of course..] (8:8) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related]
No memos
It is also healthier of course!
P 3: Angeline Interview - analys.docx - 3:23 [It is healthier to bike] (24:24) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related]
No memos
It is healthier to bike
P 4: Anouk Interview - analys.docx - 4:19 [it is good for my knees] (28:28) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related]
No memos
it is good for my knees
P 5: Daan Interview - analys.docx - 5:2 [Because it is sitting in the c..] (9:9) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related]
No memos
Because it is sitting in the car is not too healthy
P 5: Daan Interview - analys.docx - 5:4 [I also have arthroses knees an..] (9:9) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related]
No memos
I also have arthroses knees and back. So, moving is better for me, I feel a lot better if I cycle in the morning.
P11: Paula Interview - analy.docx - 11:11 [Also, for my health. I think i..] (22:22) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related]
No memos
Also, for my health. I think it is good to move.
P11: Paula Interview - analy.docx - 11:18 [P: Yeah, that is one thing. Go..] (28:28) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related]
No memos
P: Yeah, that is one thing. Good part is that bicycling is healthy.
P12: R Interview - analys.docx - 12:9 [I also had support, in a sense..] (10:10) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
I also had support, in a sense that some people were happy I was switching from my car into a bicycle for health reasons. But mostly curiosity.

Code: ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons {6-0}
P 4: Anouk Interview - analys.docx - 4:1 [I have painful knees, so a nor..] (6:6) (Super)
Codes: [ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons - Families (3): *Perceived Behavioral Control - Buying, Advantages - Health Related, PBC - Health]
No memos
I have painful knees, so a normal bike wasn't possible
P 7: Jan Interview - analy.docx - 7:15 [No. I am also little bit injur..] (16:16) (Super)
Codes: [ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons - Families (3): *Perceived Behavioral Control - Buying, Advantages - Health Related, PBC - Health]
No memos
No. I am also little bit injured in the knee. So, it helps to go by bike anyway. B
P10: Marja Interview Final - analy.docx - 10:2 [I do have bad knees. I'm 63 ye..] (9:9) (Super)
Codes: [ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons - Families (3): *Perceived Behavioral Control - Buying, Advantages - Health Related, PBC - Health]
No memos
I do have bad knees. I'm 63 years old so it's not uncommon for older people who have bad knees and one day I decided it's time to start using a bike again because I avoided biking because of the knee problems, and I started using the car more often than I needed it
P16: Elsa Interview.docx - 16:1 [E: I have a rheumatic illness ..] (4:4) (Super)
Codes: [ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons - Families (3): *Perceived Behavioral Control - Buying, Advantages - Health Related, PBC - Health]
No memos
E: I have a rheumatic illness in my muscle tissue so any physical movement is really hard and will takes a lot of energy from me. So, I was always the slowest on my bike and I would just not go to people because I couldn't get there because biking is too heavy for my physical needs
P16: Elsa Interview.docx - 16:4 [Because they're all old, insta..] (8:8) (Super)
Codes: [ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons - Families (3): *Perceived Behavioral Control - Buying, Advantages - Health Related, PBC - Health]
No memos
Because they're all old, instable and get tired very fast. But then I got my own illness and I realized that I was one of those old, slow people
P19: Arend Interview.docx - 19:1 [A: It was just for health cond..] (6:8) (Super)
Codes: [ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons - Families (3): *Perceived Behavioral Control - Buying, Advantages - Health Related, PBC - Health] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos

A: It was just for health conditions. I have a heart condition and then my heart specialist said: “Well, you need more exercise.” And I’m not the sportive type. Well, sports are OK, but I’m not so active. Then I thought it would be a good way to incorporate your daily commute with exercise. That’s how I started cycling.
M: For you the normal bike was too much of an effort?
A: Initially it was just a normal bike, and then my heart condition got worse. It was either that I stopped cycling, or I use an e-bike. So, the choice was easy, I would of course use an e-bike.

Code: ad - hea - reason to e-bike: exercise {9-0}
P 1: A Interview Final - analys.docx - 1:12 [I think for me personally, I s..] (41:41) (Super)
Codes: [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
I think for me personally, I see it as a good exercise
P 4: Anouk Interview - analys.docx - 4:2 [I thought it was good to have ..] (8:8) (Super)
Codes: [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
I thought it was good to have more exercise
P 8: Jerwin Interview - analys.docx - 8:2 [Second, it is exercise as well..] (6:6) (Super)
Codes: [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
Second, it is exercise as well.
P13: Vincent Interview - analys.docx - 13:1 [Congestion was horrible and I ..] (6:6) (Super)
Codes: [ad - con - reason to e-bike: congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
Congestion was horrible and I wanted to exercise also little bit. So, I decided to buy an E-bike.
P15: Sylvie Interview.docx - 15:22 [Its lovely, you’re outside, th..] (32:32) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
Its lovely, you’re outside, the wind in your hair, you’re doing exercise even if your energy level isn’t high.
P19: Arend Interview.docx - 19:1 [A: It was just for health cond..] (6:8) (Super)
Codes: [ad - hea - pbc - hea - e-bike as regular bike not possible due to health reasons - Families (3): *Perceived Behavioral Control - Buying, Advantages - Health Related, PBC - Health] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
A: It was just for health conditions. I have a heart condition and then my heart specialist said: “Well, you need more exercise.” And I’m not the sportive type. Well, sports are OK, but I’m not so active. Then I thought it would be a good way to incorporate your daily commute with exercise. That’s how I started cycling.
M: For you the normal bike was too much of an effort?
A: Initially it was just a normal bike, and then my heart condition got worse. It was either that I stopped cycling, or I use an e-bike. So, the choice was easy, I would of course use an e-bike.
P20: Paul Interview.docx - 20:5 [M: Why did you bike twice a we..] (9:10) (Super)
Codes: [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
M: Why did you bike twice a week?
P: For exercising and to be fit
P21: Andre Interview.docx - 21:7 [M: Anything else to add? A: An..] (23:24) (Super)
Codes: [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
M: Anything else to add?
A: Another reason I do it is for exercising!
P22: tineke interview.docx - 22:7 [T: I am very much concerned; I..] (16:16) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related] [ad - soc - environmental concerns main reason - Family: Advantage - Societal]
No memos
T: I am very much concerned; I eat vegan too. So, I’m very concerned with the climate. So of course, this was one of the reasons I started to bike and bought an e-bike as well. But it was also because I wanted to keep fit. Although an e-bike is not very strenuous, you’re still outside, you have a bit of exercise.

Code: ad - hea - reason to e-bike: mindfulness {3-0}
P 8: Jerwin Interview - analys.docx - 8:3 [It makes you feel better as we..] (6:6) (Super)
Codes: [ad - hea - reason to e-bike: mindfulness - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
It makes you feel better as well
P11: Paula Interview - analy.docx - 11:13 [Also refreshing after sitting ..] (22:22) (Super)
Codes: [ad - hea - reason to e-bike: mindfulness - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related]
No memos
Also refreshing after sitting in front of the computer whole day. Nice to be doing nothing for 20 minutes.
P23: Emelie Interview.docx - 23:9 [E: A combination. For the envi..] (20:20) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [ad - hea - reason to e-bike: mindfulness - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related] [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
E: A combination. For the environment biking is better than driving by car. And for me, I like to be outside, 40 minutes fresh cycling is a good way to wake up in the morning. When you’re going home you also really switch off from the work for half an hour. So, a combination.

Code: ad - soc - battery: bad for environment {1-0}
P11: Paula Interview - analy.docx - 11:17 [My husband said also, the e-bi..] (26:26) (Super)
Codes: [ad - soc - battery: bad for environment - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
My husband said also, the e-bike, it's a beautiful instrument but I realize that the battery is terrible for the environment. So, what is the solution for all these batteries?

Code: ad - soc - environmental concerns main reason {2-0}
P15: Sylvie Interview.docx - 15:19 [yes, number one. I think for m..] (28:28) (Super)
Codes: [ad - con - want to get rid of the car/not buy a car - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - soc - environmental concerns main reason - Family: Advantage - Societal] [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]

No memos
yes, number one. I think for myself, and also other people it is so easy to take often the bike to certain locations you need to go, especially short distances. I see people use car for short distances, and I don't want to. This was the main reason to go for this solution instead of a second car. I think the environment is very important.
P22: tineke interview.docx - 22:7 [T: I am very much concerned; I..] (16:16) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [ad - hea - reason to e-bike: exercise - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related] [ad - soc - environmental concerns main reason - Family: Advantage - Societal]
No memos
T: I am very much concerned; I eat vegan too. So, I'm very concerned with the climate. So of course, this was one of the reasons I started to bike and bought an e-bike as well. But it was also because I wanted to keep fit. Although an e-bike is not very strenuous, you're still outside, you have a bit of exercise.

Code: ad - soc - societal benefit additional positive aspect {3-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:30 [So I wouldn't say it was the m..] (69:69) (Super)
Codes: [ad - soc - societal benefit additional positive aspect - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
So I wouldn't say it was the motivation to get an e-bike was that but now I do feel better about it that I know that I'm using that.
P10: Marja Interview Final - analy.docx - 10:12 [I wasn't really very much conc..] (53:53) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience] [ad - soc - societal benefit additional positive aspect - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
I wasn't really very much concerned about that. So, it didn't influence my choice. Right now, it's always nice to tell it. Well that's nice. But it wasn't on purpose that I wanted to be more of an environmentalist.
P19: Arend Interview.docx - 19:13 [M: Did you consider the societ..] (17:18) (Super)
Codes: [ad - con - personal reasons/convenience over societal benefits - Families (2): *Attitude - Pilot, Advantage - Convenience] [ad - soc - societal benefit additional positive aspect - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
M: Did you consider the societal benefits of e-biking as well?
A: That was not the primary thing, but it's a nice, beneficial thing

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Code: ad - soc - societal benefit: not using the car {10-0}
P 2: A2 - analys.docx - 2:5 [Because they also have a car a..] (8:8) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
Because they also have a car and they also like to travel the other way
P 4: Anouk Interview - analys.docx - 4:15 [But most of them said it was g..] (24:24) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
But most of them said it was good I was biking and not by car.
P 4: Anouk Interview - analys.docx - 4:20 [but I think it is already good..] (28:28) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
but I think it is already good you don't use the car.
P 7: Jan Interview - analy.docx - 7:13 [some agree with me that it hel..] (14:14) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
some agree with me that it helps you to bike more and leave your car
P 9: lars interview - analys.docx - 9:16 [L: No, don't think so. I think..] (38:38) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
L: No, don't think so. I think it is a good way to exchange the car for an e-bike in a range between 10-25 km, 10-20 km. It is a really good thing.
P11: Paula Interview - analy.docx - 11:8 [First my motivation was: I did..] (18:18) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
First my motivation was: I didn't realize 26,000 people. Such an amount of people. So, I thought well, the Sebastianburg is closed, there are a lot of things happening on the road. So, I thought it's really absurd that I'm going with my car. I want to try.
P11: Paula Interview - analy.docx - 11:14 [P: There are a lot of cars] (24:24) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
P: There are a lot of cars
P15: Sylvie Interview.docx - 15:19 [yes, number one. I think for m..] (28:28) (Super)
Codes: [ad - con - want to get rid of the car/not buy a car - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [ad - soc - environmental concerns main reason - Family: Advantage - Societal] [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
yes, number one. I think for myself, and also other people it is so easy to take often the bike to certain locations you need to go, especially short distances. I see people use car for short distances, and I don't want to. This was the main reason to go for this solution instead of a second car. I think the environment is very important.
P16: Elsa Interview.docx - 16:14 [I really like the bike-train c..] (22:22) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
I really like the bike-train combination. People ride their bikes to the train station and take a train to the city they work in. Because I think that's more sustainable. I think a lot of like 50-40 years old and also younger people, they work in the Hague. That's 30-45-minute ride.
P23: Emelie Interview.docx - 23:9 [E: A combination. For the envi..] (20:20) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [ad - hea - reason to e-bike: mindfulness - Families (2): *Attitude - Buying an E-bike, Advantages - Health Related] [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos
E: A combination. For the environment biking is better than driving by car. And for me, I like to be outside, 40 minutes fresh cycling is a good way to wake up in the morning. When you're going home you also really switch off from the work for half an hour. So, a combination.

Code: ad - soc - societal benefit: reduce congestion {2-0}
P 1: A Interview Final - analys.docx - 1:21 [I once heard, I don't know whe..] (57:57) (Super)

Codes: [ad - soc - societal benefit: reduce congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

I once heard, I don't know whenever if it is true, that major part of commuting activities that people do within a car is actually within the distance that is doable with an e-bike, so I think in the ideal situation where everyone is kind of in a distance where everyone in a distance to do an e-bike actually uses an e-bike than I think it will solve major traffic problems I think

P 8: Jerwin Interview - analys.docx - 8:31 [also the roads are getting clo..] (26:26) (Super)
Codes: [ad - soc - societal benefit: reduce congestion - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

also the roads are getting clogged

Code: ad - soc - societal benefit: sustainability {7-0}
P 1: A Interview Final - analys.docx - 1:22 [sustainability I really like e..] (57:57) (Super)
Codes: [ad - soc - societal benefit: sustainability - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

sustainability I really like e-biking

P 2: A2 - analys.docx - 2:6 [I also like to be environment,..] (10:10) (Super)
Codes: [ad - soc - societal benefit: sustainability - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

I also like to be environment, more CO2 neutral in this area

P 3: Angeline Interview - analys.docx - 3:22 [I also have a hybrid car, half..] (24:24) (Super)
Codes: [ad - soc - societal benefit: sustainability - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

I also have a hybrid car, half electric half gasoline. So maybe in that way, yes

P 6: Isabelle Interview_adjusted - analy.docx - 6:29 [It is in part also an environm..] (69:69) (Super)
Codes: [ad - soc - societal benefit: sustainability - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

It is in part also an environmental decision that I would not want to get my license just to have a car

P 8: Jerwin Interview - analys.docx - 8:1 [First, it is good for the envi..] (6:6) (Super)
Codes: [ad - soc - societal benefit: sustainability - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

First, it is good for the environment.

P 8: Jerwin Interview - analys.docx - 8:20 [Not take the car due to enviro..] (16:16) (Super)
Codes: [ad - soc - societal benefit: sustainability - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

Not take the car due to environment,

P16: Elsa Interview.docx - 16:15 [E: Well, I wouldn't want a car..] (22:22) (Super)
Codes: [ad - soc - societal benefit: sustainability - Families (2): *Attitude - Buying an E-bike, Advantage - Societal]
No memos

E: Well, I wouldn't want a car because e-bikes are so easy. I really like the bike-train combination. People ride their bikes to the train station and take a train to the city they work in. Because I think that's more sustainable. I think a lot of like 50-40 years old and also younger people, they work in the Hague. That's 30-45-minute ride. Usually they would be really sweaty or tired biking there. But now with an e-bike it's way easier. So, I think it's really good for the carbon foot print in the cities.

Code: att - cha - bar - wea - pbc - wea - think about the weather less on e-bike {4-0}
P10: Marja Interview Final - analy.docx - 10:15 [I think less you know; every d..] (61:61) (Super)
Codes: [att - cha - bar - wea - pbc - wea - think about the weather less on e-bike - Families (4): *Perceived Behavioral Control - Daily, Attitude - Changing, Barrier - Weather, PBC - Weather]
No memos

I think less you know; every day has now had its advantages.

P17: Bert Interview.docx - 17:3 [That's why I started to go by ..] (4:4) (Super)
Codes: [att - cha - bar - wea - pbc - wea - think about the weather less on e-bike - Families (4): *Perceived Behavioral Control - Daily, Attitude - Changing, Barrier - Weather, PBC - Weather]
No memos

That's why I started to go by an e-bike. Otherwise, the threshold is a little bit too high to start biking in the morning.

P17: Bert Interview.docx - 17:5 [M: And the wind is not a probl..] (7:8) (Super)
Codes: [att - cha - bar - wea - pbc - wea - think about the weather less on e-bike - Families (4): *Perceived Behavioral Control - Daily, Attitude - Changing, Barrier - Weather, PBC - Weather]
No memos

M: And the wind is not a problem anymore?
B: No.

P17: Bert Interview.docx - 17:7 [When it was raining or whateve..] (10:10) (Super)
Codes: [att - cha - bar - wea - pbc - wea - think about the weather less on e-bike - Families (4): *Perceived Behavioral Control - Daily, Attitude - Changing, Barrier - Weather, PBC - Weather]
No memos

When it was raining or whatever, I came by car.

Code: att - cha - pilot changes perceptions about e-bike {4-0}
P 3: Angeline Interview - analys.docx - 3:28 [It was easier to say I go by c..] (26:26) (Super)
Codes: [att - cha - pilot changes perceptions about e-bike - Family: Attitude - Changing]
No memos

It was easier to say I go by car before

P 7: Jan Interview - analy.docx - 7:6 [Are you happy with the e-bike ..] (9:10) (Super)
Codes: [att - cha - pilot changes perceptions about e-bike - Family: Attitude - Changing]
No memos

Are you happy with the e-bike now.
J: Yes, its interesting.

P 7: Jan Interview - analy.docx - 7:19 [So, it has entered into consid..] (19:20) (Super)
Codes: [att - cha - pilot changes perceptions about e-bike - Family: Attitude - Changing]
No memos

So, it has entered into consideration?
J: Yes, nice way to say it!

P13: Vincent Interview - analys.docx - 13:11 [V: You need to experience it; ..] (28:28) (Super)
Codes: [att - cha - pilot changes perceptions about e-bike - Family: Attitude - Changing]
No memos

V: You need to experience it; it really changes the way you look to biking.

Code: att - saf - e-bike is as safe as a regular one {1-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:13 [Yeah, as safe as another bike...] (29:29) (Super)
Codes: [att - saf - e-bike is as safe as a regular one - Families (2): *Attitude - Buying an E-bike, Attitude - Safety]
No memos
Yeah, as safe as another bike.

Code: att - saf - more dangerous than regular bike {11-0}
P 3: Angeline Interview - analys.docx - 3:31 [The only thing is sometimes I ..] (28:28) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
The only thing is sometimes I see that other people can drive really hard, in my opinion for the safety reasons whether I should wear a helmet
P 3: Angeline Interview - analys.docx - 3:32 [They say with the e-bike you d..] (28:28) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
They say with the e-bike you drive faster and when you have an accident, injuries are more severe than a normal bike
P 7: Jan Interview - analy.docx - 7:10 [The dangerous thing is that st..] (10:10) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
The dangerous thing is that starting is a bit too easy
P13: Vincent Interview - analys.docx - 13:3 [V: Very nice, but very dangero..] (12:12) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
V: Very nice, but very dangerous.
P15: Sylvie Interview.docx - 15:13 [S: It's okay. But I have a spe..] (18:18) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
S: It's okay. But I have a speed bike so I need a helmet. That's the only thing people say: helmet on a bike? Ofcourse it is necessary but it looks a bit silly.
P16: Elsa Interview.docx - 16:23 [E: They should be careful abou..] (32:32) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
E: They should be careful about safety though! Because Dutch people ride their bikes all their life. So, I know what point of the road is dangerous or where I should slow down. But I can imagine exchange students from abroad who are just learning to cycle, it could be disastrously dangerous.
P16: Elsa Interview.docx - 16:24 [M: Do you think it's more dang..] (33:35) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
M: Do you think it's more dangerous than a normal bike?
E: Yeah, definitely. So, I think exchange people who don't know how to ride a bike, if you put them on a bike that can easily go up to 30 km an hour, they'll just crash, bump around.
Friend: They're dangerous even when they're riding 10 km/h.
P16: Elsa Interview.docx - 16:25 [E: There is actually more deat..] (36:36) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
E: There is actually more deaths because of the e-bikes. There are 50-year-olds who ride 30 km/h and cars think it is a normal bike and they can go before. But bike goes faster because they think they can cross before the car. Then there are crashes. So, I think danger is there
P16: Elsa Interview.docx - 16:26 [Possibly, before the lease, a ..] (36:40) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
Possibly, before the lease, a tiny course is needed, especially about the turns. Because e-bikes are heavier to make turns with.
M: Ah, really?
E: Yes, did you try one before?
M: They let me try the one on the pilots but didn't realize as it was a short one.
E: If you ride it in the city center, you have the sidewalks, sharp turns, sudden cars that you need to break instantly, then you realize it is much heavier.
P16: Elsa Interview.docx - 16:28 [M: Anything to add? E: Be care..] (41:42) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
M: Anything to add?
E: Be careful of foreigners who think e-bikes are easier and actually making more problems with them!
P20: Paul Interview.docx - 20:17 [P: Well, I don't think so. But..] (28:28) (Super)
Codes: [att - saf - more dangerous than regular bike - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Attitude - Safety]
No memos
P: Well, I don't think so. But I just had an accident here in Mekelweg. There was a scooter coming from the left and I had the priority to pass. But scooter thought he had it, and we collapsed and fell to the ground. He just stopped and we talked, there was no material damage. But that's interesting, I wouldn't had it if I was on a normal bike, then you can break faster.

Code: bar - car - car parks available: makes it easy {2-0}
P 7: Jan Interview - analy.docx - 7:2 [For me it is very easy to go b..] (6:6) (Super)
Codes: [bar - car - car parks available: makes it easy - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Car Convenience]
No memos
For me it is very easy to go by car. It saves a lot of time, there are always parking lots here, you got all the things to do during the day.
P18: Camiel Interview_ck-1.docx - 18:15 [C: In this area (RID) there ar..] (24:24) (Super)
Codes: [bar - car - car parks available: makes it easy - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Car Convenience]
No memos
C: In this area (RID) there are enough parking places for cars and bikes. However, in the other areas like the Aula, car parking is a problem. Our bike shed is perfect because it's behind a fence and is quite secured.

Code: bar - car - pbc - res - reason not to e-bike: needing the car {5-0}
P 3: Angeline Interview - analys.docx - 3:16 [but also if I have to go somew..] (16:16) (Super)
Codes: [bar - car - pbc - res - reason not to e-bike: needing the car - Families (3): *Perceived Behavioral Control - Daily, Barrier - Car Convenience, PBC - Responsibilities]
No memos
but also if I have to go somewhere else after work, if I have private appointments

P 4: Anouk Interview - analys.docx - 4:9 [Also, for other appointments] (18:18) (Super)
Codes: [bar - car - pbc - res - reason not to e-bike: needing the car - Families (3): *Perceived Behavioral Control - Daily, Barrier - Car Convenience, PBC - Responsibilities]
No memos
Also, for other appointments
P11: Paula Interview - analy.docx - 11:15 [I know some people cannot come..] (24:24) (Super)
Codes: [bar - car - pbc - res - reason not to e-bike: needing the car - Families (3): *Perceived Behavioral Control - Daily, Barrier - Car Convenience, PBC - Responsibilities] [bar - oth - pbc - res - reason not to e-bike: grocery shopping - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
I know some people cannot come in another way. When you have a family, when you have children, you have to bring them to the daily care, you have to shop.
P12: R Interview - analys.docx - 12:6 [I do need the car on the other..] (8:8) (Super)
Codes: [bar - car - pbc - res - reason not to e-bike: needing the car - Families (3): *Perceived Behavioral Control - Daily, Barrier - Car Convenience, PBC - Responsibilities]
No memos
I do need the car on the other days unfortunately still.
P20: Paul Interview.docx - 20:6 [When I have other meetings in ..] (10:10) (Super)
Codes: [bar - car - pbc - res - reason not to e-bike: needing the car - Families (3): *Perceived Behavioral Control - Daily, Barrier - Car Convenience, PBC - Responsibilities]
No memos
When I have other meetings in the evening, like on Mondays I go directly to Dordrecht after working hours, then I take the car.

Code: bar - eco - pbc - eco - reason not to buy: too expensive {12-0}
P 1: A Interview Final - analys.docx - 1:5 [I was considering beforehand, ..] (17:17) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic] [int - buy - considering e-bike before - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Intention - Buying]
No memos
I was considering beforehand, then I thought it was too expensive
P 2: A2 - analys.docx - 2:11 [well I don't know because an e..] (18:18) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
well I don't know because an e-bike costs a lot of money
P 2: A2 - analys.docx - 2:12 [These are more priority than a..] (18:18) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
These are more priority than an e-bike.
P 5: Daan Interview - analys.docx - 5:9 [Well, it depends what the univ..] (11:11) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
Well, it depends what the university can give. 10% is not interesting
P 8: Jerwin Interview - analys.docx - 8:12 [I really liked it but buying a..] (10:10) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
I really liked it but buying an e-bike is a big investment, so I didn't do that.
P 8: Jerwin Interview - analys.docx - 8:27 [I am thinking about it. But it..] (22:22) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
I am thinking about it. But it is still quite an investment with 25% discount. It
P 9: lars interview - analys.docx - 9:3 [But it is too expensive for me..] (8:8) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
But it is too expensive for me.
P 9: lars interview - analys.docx - 9:4 [L: Well no, not at first. But ..] (10:10) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
L: Well no, not at first. But now I like it quite a lot, but still I think it is too much for me. Maybe in the future if I start working.
P10: Marja Interview Final - analy.docx - 10:17 [Also, of course it is just too..] (73:73) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
Also, of course it is just too expensive for some people.
P11: Paula Interview - analy.docx - 11:4 [When you buy an e-bike for you..] (8:8) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic]
No memos
When you buy an e-bike for yourself, you don't do that as a mother. you don't reserve €3000 for yourself. my car is for the whole Family, like for my son when he's gone to tennis, or whatever, for the dogs. But my e-bike would only be for me and that is very expensive.
P11: Paula Interview - analy.docx - 11:5 [I'm very interested in the E b..] (8:8) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic] [int - sub - interested in tu delft subsidy - Families (2): *Intention - Behaviour Gap: Buying, Intention - Subsidy]
No memos
I'm very interested in the E bike, but I was thinking whether it is possible with EKA (choosing package deal from employer?). Because then you don't have anything left. You have only mobility and vakbondlid (union) and other small things left, like vacation days you can buy or sell or whatever. So, it is hard.
P16: Elsa Interview.docx - 16:12 [M: If this gets broken, will y..] (19:20) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic] [buy - int - buy - buy again if this one fails - Families (4): *Attitude - Buying an E-bike, *Intention, Buying Behaviour, Intention - Buying]
No memos
M: If this gets broken, will you buy a new one as well?

E: If I get a job, and the money: yeah definitely! Because without it, I will not be able to come here to study every day. A normal bike is not an option for my physical condition.

Code: bar - inf - pbc - inf - reason not to e-bike: bike roads too dark {2-0}
P 3: Angeline Interview - analys.docx - 3:13 [There are not that many good r..] (14:14) (Super)
Codes: [bar - inf - pbc - inf - reason not to e-bike: bike roads too dark - Families (3): *Perceived Behavioral Control - Daily, Barriers - Infrastructure, PBC - Infrastructure]
No memos
There are not that many good roads. Or it is a bit dangerous, or it is too small or there is no light
P 3: Angeline Interview - analys.docx - 3:14 [it is very dark] (14:14) (Super)
Codes: [bar - inf - pbc - inf - reason not to e-bike: bike roads too dark - Families (3): *Perceived Behavioral Control - Daily, Barriers - Infrastructure, PBC - Infrastructure]
No memos
it is very dark

Code: bar - inf - pro - parking spaces limited as need to park down {1-0}
P16: Elsa Interview.docx - 16:27 [Also, for parking on top, you ..] (40:40) (Super)
Codes: [bar - inf - pro - parking spaces limited as need to park down - Families (2): Barriers - Infrastructure, Problems to be Fixed]
No memos
Also, for parking on top, you can't. That's really different, so you always need to park down.

Code: bar - oth - pbc - res - reason not to e-bike: carry things {5-0}
P 7: Jan Interview - analy.docx - 7:24 [But also, for carrying the stu..] (24:24) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: carry things - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
But also, for carrying the stuff.
P11: Paula Interview - analy.docx - 11:16 [You have to go the library to ..] (24:24) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: carry things - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
You have to go the library to bring the books.
P12: R Interview - analys.docx - 12:13 [You can carry a lot more stuff..] (12:12) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: carry things - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
You can carry a lot more stuff.
P12: R Interview - analys.docx - 12:15 [R: I guess it the distances an..] (16:16) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: carry things - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities] [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
R: I guess it the distances and the weight. I have to drive to shop far away, need to carry heavy stuff. A lot difficult to do in an e-bike.
P18: Camiel Interview_ck-1.docx - 18:10 [C: If you have to carry some s..] (28:29) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: carry things - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities] [bar - oth - pbc - res - reason not to e-bike: clothing - Families (2): Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
C: If you have to carry some stuff with you, or you have to wear a suit, it is more comfortable
to come with car or public transportation. A laptop would be okay, but heavier things or wearing a suit is a problem, or you need to put your suit on forehand into your room.

Code: bar - oth - pbc - res - reason not to e-bike: clothing {1-0}
P18: Camiel Interview_ck-1.docx - 18:10 [C: If you have to carry some s..] (28:29) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: carry things - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities] [bar - oth - pbc - res - reason not to e-bike: clothing - Families (2): Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
C: If you have to carry some stuff with you, or you have to wear a suit, it is more comfortable
to come with car or public transportation. A laptop would be okay, but heavier things or wearing a suit is a problem, or you need to put your suit on forehand into your room.

Code: bar - oth - pbc - res - reason not to e-bike: daytime duties {1-0}
P 5: Daan Interview - analys.docx - 5:15 [Depends what I have to do in t..] (19:19) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: daytime duties - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
Depends what I have to do in the day time.

Code: bar - oth - pbc - res - reason not to e-bike: going to sports {3-0}
P 3: Angeline Interview - analys.docx - 3:17 [Or the gym, sports, then of co..] (16:16) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: going to sports - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
Or the gym, sports, then of course it is easier to go by car
P 7: Jan Interview - analy.docx - 7:23 [And sometimes you go straight ..] (24:24) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: going to sports - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
And sometimes you go straight to your sports club or something, so then it's easy as well.
P20: Paul Interview.docx - 20:7 [When I go sporting in the even..] (10:10) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: going to sports - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
When I go sporting in the evening, like going to gym, I have a running club I go twice a week, or a meeting, I use my car. Or else I'm already tired before starting to exercise.

Code: bar - oth - pbc - res - reason not to e-bike: grocery shopping {3-0}
P 3: Angeline Interview - analys.docx - 3:18 [Or also, if I need to get some..] (16:16) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: grocery shopping - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos

Or also, if I need to get some groceries then I still take the car
P10: Marja Interview Final - analy.docx - 10:13 [Hmm, not take the bike? Maybe ..] (57:57) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: grocery shopping - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
Hmm, not take the bike? Maybe for shopping. I do shop once a week and then I use my car. So that's when I don't use my bike.
P11: Paula Interview - analy.docx - 11:15 [I know some people cannot come..] (24:24) (Super)
Codes: [bar - car - pbc - res - reason not to e-bike: needing the car - Families (3): *Perceived Behavioral Control - Daily, Barrier - Car Convenience, PBC - Responsibilities] [bar - oth - pbc - res - reason not to e-bike: grocery shopping - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
I know some people cannot come in another way. When you have a family, when you have children, you have to bring them to the daily care, you have to shop.

Code: bar - oth - pbc - res - reason not to e-bike: responsibilities at home {2-0}
P 7: Jan Interview - analy.docx - 7:5 [Not really, because I use my r..] (8:8) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: responsibilities at home - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities]
No memos
Not really, because I use my regular bike or car, and I have lots of things at home to take care of.
P23: Emelie Interview.docx - 23:5 [M: Are you going to buy an e-b..] (9:10) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: responsibilities at home - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities] [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
M: Are you going to buy an e-bike?
E: No, not yet. It was a bit faster, but not that much faster. So, with my normal bike it is still OK. I also think the purpose of the pilot was that more people come by bike to the university instead of the car. Normally I come maybe one or two days by bike to the campus. Other days I come by car. It also depends on other things. I have small kids; I have to go to the daycare to pick them up. Sometimes you don't have time to go by bike to Delft.

Code: bar - pee - sn - neg - peer perception - e-bike is cheating {4-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:25 [A lot of people say my oh why ..] (53:53) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is cheating - Families (4): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
A lot of people say my oh why do you just cycle normally, you're lazy
P 7: Jan Interview - analy.docx - 7:1 [When you think of an e-bike, y..] (6:6) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is cheating - Families (4): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
When you think of an e-bike, you say "it's not real biking".
P 7: Jan Interview - analy.docx - 7:14 [I'm a bit more positive about ..] (14:14) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is cheating - Families (4): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
I'm a bit more positive about it. I have more support, a guy who bikes a lot was saying "it isn't real biking",
P20: Paul Interview.docx - 20:9 [I thought, well, it's not for ..] (12:12) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is cheating - Families (4): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Barrier - Peer Perceptions, Subjective Norm - Negatives] [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
I thought, well, it's not for me, I'm sportive and still healthy

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Code: bar - pee - sn - neg - peer perception - e-bike is for old people {10-0}
P 1: A Interview Final - analys.docx - 1:8 [I was kinda a bit afraid, mayb..] (21:21) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
I was kinda a bit afraid, maybe not the right word, that they'll make fun of me as it is for the elderly, you're so lazy, etc
P 4: Anouk Interview - analys.docx - 4:14 [Some of them thought, "oh, you..] (24:24) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
Some of them thought, "oh, you're getting old".
P 8: Jerwin Interview - analys.docx - 8:16 [some people say, isn't that fo..] (16:16) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
some people say, isn't that for old people?
P 9: lars interview - analys.docx - 9:5 [Well, first they all laughed. ..] (14:14) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
Well, first they all laughed. They said: "Wow, at your age, come on, you're still able to cycle yourself".
P10: Marja Interview Final - analy.docx - 10:9 [Marja: Well My kids said we ne..] (37:37) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
Marja: Well My kids said we never thought that you would really like an e-bike. And I said I never did as well so I can understand that. But old people in my age they don't really agree on measures to keep active as long as you can.
P15: Sylvie Interview.docx - 15:4 [The first perception was that ..] (10:10) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos

The first perception was that the electric bike is for old people who don't have the force anymore to bike themselves for long distances
P19: Arend Interview.docx - 19:5 [M: When you first started usin..] (13:14) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
M: When you first started using the e-bike, how did others react to it?
A: Well, not so very positive. “You’re not that old, e-bikes are for older people” and so on. It’s negative.
P19: Arend Interview.docx - 19:6 [M: Is that still the perceptio..] (15:16) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives] [sn - cha - changing perceptions: it is real biking - Family: Subjective Norm - Changing]
No memos
M: Is that still the perception?
A: Still they laugh a little bit, but they also understand that it’s fun.
P20: Paul Interview.docx - 20:9 [I thought, well, it’s not for ..] (12:12) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is cheating - Families (4): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Barrier - Peer Perceptions, Subjective Norm - Negatives] [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives]
No memos
I thought, well, it’s not for me, I’m sportive and still healthy
P22: tineke interview.docx - 22:5 [T: Well, I think when e-bikes ..] (10:10) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives] [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing]
No memos
T: Well, I think when e-bikes first came on the market, they were seen as something for elderly people, with heart problems or anything, who can’t ride a normal bicycle. So, there were a few people who were laughing like: “ha-ha, are you that old already?”. But most people were quite positive and happy.

Code: bar - pee - sn - val - not caring what others think {5-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:12 [I don't care what other people..] (21:21) (Super)
Codes: [bar - pee - sn - val - not caring what others think - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Value of Others]
No memos
I don't care what other people think to be honest.
P 6: Isabelle Interview_adjusted - analy.docx - 6:26 [ut I don't care.] (53:53) (Super)
Codes: [bar - pee - sn - val - not caring what others think - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Value of Others]
No memos
ut I don't care.
P13: Vincent Interview - analys.docx - 13:10 [But even if they wouldn’t have..] (22:22) (Super)
Codes: [bar - pee - sn - val - not caring what others think - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Value of Others]
No memos
But even if they wouldn’t havev, I don’t care.
P20: Paul Interview.docx - 20:12 [P: At first I didn’t tell it a..] (14:14) (Super)
Codes: [bar - pee - sn - val - not caring what others think - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Value of Others] [sn - cha - changing perceptions: it is real biking - Family: Subjective Norm - Changing]
No memos
P: At first I didn’t tell it around, I kept quiet. People still thought I was on a normal bike. But it started to become more regular, and now I don’t hesitate telling that I use an e-bike. That changed in the last 5 years, that perception.
P21: Andre Interview.docx - 21:5 [M: When you first bought the e..] (15:16) (Super)
Codes: [bar - pee - sn - val - not caring what others think - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Value of Others]
No memos
M: When you first bought the e-bike, what did your friends, family or fellow colleagues think?
A: Well, I don’t know! Didn’t really ask them.

Code: bar - the - pbc - the - concerned about theft & prevention {12-0}
P 1: A Interview Final - analys.docx - 1:28 [I would be very, prefer to be ..] (81:81) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
I would be very, prefer to be in that shed instead of regular place
P 3: Angeline Interview - analys.docx - 3:35 [I have my own two chains to lo..] (32:32) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
I have my own two chains to lock it.
P 3: Angeline Interview - analys.docx - 3:36 [Do you have an insurance as we..] (33:34) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
Do you have an insurance as well?
A: Yes.
P 6: Isabelle Interview_adjusted - analy.docx - 6:20 [No it was insured so she got a..] (45:45) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
No it was insured so she got another one and I gave it to us again
P 7: Jan Interview - analy.docx - 7:27 [Also, for safety it is importa..] (32:32) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
Also, for safety it is important, it is less probability it gets stolen if you remove the battery.
P 9: lars interview - analys.docx - 9:8 [L: No, I always use an extra c..] (20:20) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
L: No, I always use an extra chain.
P13: Vincent Interview - analys.docx - 13:2 [V: It is a speed pedelec. it's..] (8:8) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft] [pro - chargers in the bike park are needed - Family: Problems to be Fixed]
No memos
V: It is a speed pedelec. it's an expensive one, so I don’t want it stolen. I have room here in the office, and I can also charge it here.

P13: Vincent Interview - analys.docx - 13:8 [V: You have a guarded bicycle ..] (20:20) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
V: You have a guarded bicycle parking, I pay for it, like e.g. at the Delft railway station. Supervised parking.
P13: Vincent Interview - analys.docx - 13:14 [V: I use it for shopping too. ..] (42:42) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft] [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
V: I use it for shopping too. Not when it is too close. But I put it inside my house, always inside as it is an expensive thing. You can't just park it around, especially in the Hague.
P15: Sylvie Interview.docx - 15:23 [S: Well I'm lucky we have a cl..] (36:36) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
S: Well I'm lucky we have a closed shed, its safe and it stays inside under the building
P16: Elsa Interview.docx - 16:8 [E: My e-bike is really old; I ..] (14:14) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft]
No memos
E: My e-bike is really old; I mean my grandfather bought it a long time ago. I have it on double lock. We have a rule of thumb: we park our bike next to one that is more expensive and easier to steal than your own. If I'm scared it might be stolen, for example, in the night somewhere, then I usually take the battery out.
P19: Arend Interview.docx - 19:12 [The storage is quite minimal a..] (22:22) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft] [bar - the - pro - facilities: sheds are too small - Families (2): Barrier - Theft, Problems to be Fixed]
No memos
The storage is quite minimal at the moment, it is quite crowded. You want to store your e-bike in a safe space, it is more sensitive for theft.

Code: bar - the - pro - facilities: sheds are too small {7-0}
P 1: A Interview Final - analys.docx - 1:27 [well actually, bike shed here ..] (81:81) (Super)
Codes: [bar - the - pro - facilities: sheds are too small - Families (2): Barrier - Theft, Problems to be Fixed]
No memos
well actually, bike shed here is quite small
P 3: Angeline Interview - analys.docx - 3:33 [ut there could be more spaces ..] (30:30) (Super)
Codes: [bar - the - pro - facilities: sheds are too small - Families (2): Barrier - Theft, Problems to be Fixed]
No memos
ut there could be more spaces for the bikes. There are the closed ones, that is nice to have it there, but sometimes it is a bit too crowdy there
P 8: Jerwin Interview - analys.docx - 8:34 [I think if more people would b..] (30:30) (Super)
Codes: [bar - the - pro - facilities: sheds are too small - Families (2): Barrier - Theft, Problems to be Fixed]
No memos
I think if more people would buy the e-bike or some other bike by this program it will become a problem in this building at least. It is crowded in the staff shed already.
P12: R Interview - analys.docx - 12:16 [As far as parking, as an emplo..] (18:18) (Super)
Codes: [bar - the - pro - facilities: sheds are too small - Families (2): Barrier - Theft, Problems to be Fixed]
No memos
As far as parking, as an employee, you have a separate bicycle shed which is reaching capacity. Those e-bikes are little heavier as well it's hard to maneuver them in tight spaces, and sheds are rather tight.
P17: Bert Interview.docx - 17:14 [B: For e-bikes, it is just a n..] (24:24) (Super)
Codes: [bar - the - pro - facilities: sheds are too small - Families (2): Barrier - Theft, Problems to be Fixed]
No memos
B: For e-bikes, it is just a normal bike. But, if you look at this faculty, in the basement, there is some kind of area to park your bike. However, it is always overcrowded, and that can damage your e-bike because it is so crowded.
P19: Arend Interview.docx - 19:12 [The storage is quite minimal a..] (22:22) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft] [bar - the - pro - facilities: sheds are too small - Families (2): Barrier - Theft, Problems to be Fixed]
No memos
The storage is quite minimal at the moment, it is quite crowded. You want to store your e-bike in a safe space, it is more sensitive for theft.
P22: tineke interview.docx - 22:9 [T: Yeah, I always park my bike..] (20:20) (Super)
Codes: [bar - the - pro - facilities: sheds are too small - Families (2): Barrier - Theft, Problems to be Fixed]
No memos
T: Yeah, I always park my bike in the shed here, which is locked. So, I'm happy with that. But I think in summer time the shed will be quite full. But we'll see how it goes.

Code: bar - tim - e-bike is too slow: annoying {6-0}
P 7: Jan Interview - analy.docx - 7:33 [. I would like the bike to go ..] (38:38) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed]
No memos
. I would like the bike to go faster.
P12: R Interview - analys.docx - 12:17 [Hmm. Specifically, about the b..] (20:20) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed]
No memos
Hmm. Specifically, about the bike, perhaps. I think this is about the law that it limits the extra push to 25 km/h.
P18: Camiel Interview_ck-1.docx - 18:2 [C: Well, it is more like a nor..] (6:6) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed]
No memos
C: Well, it is more like a normal bike, because they're quite slow, 25 km/h. I prefer more the speed pedelecs, 45 km/h. That's a better replacement for the car. Otherwise it takes a lot of time to Delft.
P18: Camiel Interview_ck-1.docx - 18:5 [C: Yes, because this is very t..] (12:12) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed] [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
C: Yes, because this is very time consuming, 25 km/h. Because I have to travel 28 kilometers. It takes one hour and 15 minutes. I am even quicker with my own racing bike.
P20: Paul Interview.docx - 20:15 [P: Well, I just decided today ..] (22:22) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed] [int - try - join pilot: to try a better e-bike - Family: Intention - Trying] [pil - pilot: needs speed pedelcs as well - Family: Pilot Perception]
No memos

P: Well, I just decided today to step into the program of TU Delft for e-bike. I have it in the last block. I hope it will be better than the one I use now. That one is quite old and there is a limitation at 25 km an hour. When you go faster it starts to slow down.
P20: Paul Interview.docx - 20:16 [M: Yeah, unfortunately not. P:..] (25:26) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed]
No memos
M: Yeah, unfortunately not.
P: Yeah, that one is quite fast. Now it takes me 35 minutes to go to Vlaardingen where I live. Then, I can do it in 15 minutes.

Code: bar - tim - pbc - dis - distance is too far {10-0}
P 1: A Interview Final - analys.docx - 1:6 [After this I might go to anoth..] (17:17) (Super)
Codes: [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
After this I might go to another job and that could be not in biking distance
P 1: A Interview Final - analys.docx - 1:24 [Sometimes I have to go to Utre..] (61:61) (Super)
Codes: [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
Sometimes I have to go to Utrecht for work, just to have a meeting over there, and Utrecht is just too far for biking
P 1: A Interview Final - analys.docx - 1:25 [Yeah, I think as I meant earli..] (69:69) (Super)
Codes: [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
Yeah, I think as I meant earlier, due to the fact that my PhD ends in somepoint, so I may have some job not in Delft, due to that reason I'm considering not actually buying it, I think, unless it turns out that I'm working here for additional time, I might buy it
P 2: A2 - analys.docx - 2:17 [if you have to travel far dist..] (24:24) (Super)
Codes: [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
if you have to travel far distant
P 4: Anouk Interview - analys.docx - 4:21 [If I have appointments abroad,..] (30:30) (Super)
Codes: [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
If I have appointments abroad, I can't take it
P 5: Daan Interview - analys.docx - 5:5 [With the normal bicycle the di..] (9:9) (Super)
Codes: [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
With the normal bicycle the distance is just a bit too long. Now they have a few detours on the road and then it is just a bit too far
P 6: Isabelle Interview_adjusted - analy.docx - 6:33 [Sometimes, like today I don't ..] (77:77) (Super)
Codes: [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
Sometimes, like today I don't bike because first I had to go to a meeting in the Hague and then I had to come here later and then go home. Now I can theoretically bike to The Hague and then to Delft
P12: R Interview - analys.docx - 12:15 [R: I guess it the distances an..] (16:16) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: carry things - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities] [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
R: I guess it the distances and the weight. I have to drive to shop far away, need to carry heavy stuff. A lot difficult to do in an e-bike.
P13: Vincent Interview - analys.docx - 13:7 [V: Yes but I also work in Nijm..] (18:18) (Super)
Codes: [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
V: Yes but I also work in Nijmegen. Then I take the train, but often I go to the station with my e-bike.
P18: Camiel Interview_ck-1.docx - 18:5 [C: Yes, because this is very t..] (12:12) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed] [bar - tim - pbc - dis - distance is too far - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
C: Yes, because this is very time consuming, 25 km/h. Because I have to travel 28 kilometers. It takes one hour and 15 minutes. I am even quicker with my own racing bike.

Code: bar - tim - pbc - dis - reason not to e-bike: takes too long {8-0}
P 4: Anouk Interview - analys.docx - 4:8 [most of the time because of th..] (18:18) (Super)
Codes: [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
most of the time because of the time it takes. it's 45 minutes.
P 4: Anouk Interview - analys.docx - 4:11 [If I have an early appointment..] (18:18) (Super)
Codes: [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
If I have an early appointment in the morning, or have to be at home in time, something like that.
P 7: Jan Interview - analy.docx - 7:21 [More than responsibility, it t..] (24:24) (Super)
Codes: [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
More than responsibility, it takes time
P 7: Jan Interview - analy.docx - 7:22 [Especially if you go like 6 o'..] (24:24) (Super)
Codes: [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
Especially if you go like 6 o'clock, there's no traffic anymore I'm home in 15 minutes. With bike it is still 30 minutes. Time is important.
P18: Camiel Interview_ck-1.docx - 18:9 [M: Why do you prefer it over t..] (21:22) (Super)
Codes: [ad - enj - prefer bike over car - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
M: Why do you prefer it over the car?
C: I like to bike, and I like being outside. If it isn't time consuming, it is okay.
P22: tineke interview.docx - 22:3 [T: Well if its really raining ..] (6:6) (Super)
Codes: [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time] [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos

T: Well if its really raining cats and dogs, or when I really have only 15 minutes. Because it takes costs about 35 minutes from my home to here. If I really have to be fast, with car I can make it in 15 minutes. But mostly I use the e-bike now.
P23: Emelie Interview.docx - 23:5 [M: Are you going to buy an e-b..] (9:10) (Super)
Codes: [bar - oth - pbc - res - reason not to e-bike: responsibilities at home - Families (3): *Perceived Behavioral Control - Daily, Barriers - Other Duties or Responsibilities, PBC - Responsibilities] [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
M: Are you going to buy an e-bike?
E: No, not yet. It was a bit faster, but not that much faster. So, with my normal bike it is still OK. I also think the purpose of the pilot was that more people come by bike to the university instead of the car. Normally I come maybe one or two days by bike to the campus. Other days I come by car. It also depends on other things. I have small kids; I have to go to the daycare to pick them up. Sometimes you don't have time to go by bike to Delft.
P23: Emelie Interview.docx - 23:6 [E: Also, the time. With the ca..] (12:12) (Super)
Codes: [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time]
No memos
E: Also, the time. With the car it is within 15 minutes until I'm home. With the bike it is 40 minutes. If I go by car to home and take the bike to pick up the kids. But then that 50 minutes going home from here is wasted, so sometimes I go by car to win that time by staying longer here.

Code: bar - wea - pbc - wea - don't use e-bike in bad weather {6-0}
P 1: A Interview Final - analys.docx - 1:17 [But in any other day I won't b..] (49:49) (Super)
Codes: [bar - wea - pbc - wea - don't use e-bike in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
But in any other day I won't be willing to use the e-bike if it is not obligatory for the research.
P 3: Angeline Interview - analys.docx - 3:15 [also with the weather, I don't..] (14:14) (Super)
Codes: [bar - wea - pbc - wea - don't use e-bike in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
also with the weather, I don't take the bike.
P 5: Daan Interview - analys.docx - 5:12 [But since I have arthroses kne..] (15:15) (Super)
Codes: [bar - wea - pbc - wea - don't use e-bike in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
But since I have arthroses knees and back, when it's very cold and rainy, then I don't use it, it's impossible.
P10: Marja Interview Final - analy.docx - 10:7 [Marja: Well only yesterday I d..] (29:29) (Super)
Codes: [bar - wea - pbc - wea - don't use e-bike in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Marja: Well only yesterday I did. I miscalculated so I come back in the Hague and I was very wet.
P12: R Interview - analys.docx - 12:11 [But as far as the disadvantage..] (12:12) (Super)
Codes: [bar - wea - pbc - wea - don't use e-bike in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
But as far as the disadvantages, I'm aware of the weather factor
P17: Bert Interview.docx - 17:2 [On the mornings it's not that ..] (4:4) (Super)
Codes: [ad - con - pbc - eff - wind reason to e-bike - Families (4): *Attitude - Buying an E-bike, *Perceived Behavioral Control - Buying, Advantage - Convenience, PBC - Effort] [bar - wea - pbc - wea - don't use e-bike in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
On the mornings it's not that pleasant to bike. Especially when it's raining, and the wind is in front of you.

Code: bar - wea - pbc - wea - perception: weather is not as bad as people think {1-0}
P15: Sylvie Interview.docx - 15:29 [S: For me that's no problem, a..] (40:40) (Super)
Codes: [bar - wea - pbc - wea - perception: weather is not as bad as people think - Families (2): Barrier - Weather, PBC - Weather]
No memos
S: For me that's no problem, and to be honest, if I count the days I'm wet from the rain, it is like 5 times a year.

Code: bar - wea - pbc - wea - reason not to e-bike: cold {3-0}
P 3: Angeline Interview - analys.docx - 3:12 [A lot in winter] (14:14) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: cold - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
A lot in winter
P 8: Jerwin Interview - analys.docx - 8:33 [Extreme cold. If you take a no..] (28:28) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: cold - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Extreme cold. If you take a normal bike to work, you heat up quickly. Of course, you can set the ECO mode and put some energy to it. But it takes longer to get warm. So, I think in winter I will take it less, but not sure yet. Now we had cold days and it was fine, 4 degrees of so. But if it below 0, I don't know, I need to try and see how it feels. But probably not every day, maybe once-twice a week.
P18: Camiel Interview_ck-1.docx - 18:7 [C: Yes, I plan to do it but no..] (16:16) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: cold - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather] [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
C: Yes, I plan to do it but not in winter time.

Code: bar - wea - pbc - wea - reason not to e-bike: rain to different degrees {14-0}
P 4: Anouk Interview - analys.docx - 4:10 [Ah, also the weather. I don't ..] (18:18) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Ah, also the weather. I don't bike if it is raining
P 4: Anouk Interview - analys.docx - 4:12 [Well, in the winter it is also..] (20:20) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Well, in the winter it is also OK, but in the rain no
P 6: Isabelle Interview_adjusted - analy.docx - 6:15 [It is more rain.] (37:37) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
It is more rain.
P 6: Isabelle Interview_adjusted - analy.docx - 6:16 [Just now like, last couple of ..] (37:37) (Super)

Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Just now like, last couple of weeks I wanted to cycle but then you know it was like predicted that it would rain in the afternoon
P 6: Isabelle Interview_adjusted - analy.docx - 6:17 [It's okay because at least you..] (37:37) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
It's okay because at least you come home you can dry off and you know you can change your clothes and take a shower. But if I arrive in the office already wet I really don't like that.
P 7: Jan Interview - analy.docx - 7:32 [Not when it is very wet with s..] (38:38) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Not when it is very wet with showers. T
P 8: Jerwin Interview - analys.docx - 8:14 [Because Tuesday-Thursdays we n..] (12:12) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Because Tuesday-Thursdays we need to take the e-bike and it rained on a Tuesday. I would have taken the car normally.
P10: Marja Interview Final - analy.docx - 10:8 [Marja: So, if it rains in the ..] (33:33) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Marja: So, if it rains in the morning then I use the car but if I can see that it will be dry weather in the rest of the day I might consider cycling or not. And if it just rains in the afternoon I don't care. I'm going home.
P12: R Interview - analys.docx - 12:12 [it's dry.] (12:12) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
it's dry.
P12: R Interview - analys.docx - 12:14 [R: The rain, isn't pleasant. N..] (14:14) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
R: The rain, isn't pleasant. Not nice to arrive at work late, you know. When you get home, you can just change to something dry. Arriving to work, it's different, it kind of ruins your day.
P13: Vincent Interview - analys.docx - 13:6 [V: If the weather is really ba..] (16:16) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather] [bar - wea - pbc - wea - use weather predictions for decision - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
V: If the weather is really bad not, but if it's cold it's OK. If it's a little rainy, I try to see if I can go earlier or later. But I usually use it 3 to 4 days a week.
P18: Camiel Interview_ck-1.docx - 18:7 [C: Yes, I plan to do it but no..] (16:16) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: cold - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather] [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
C: Yes, I plan to do it but not in winter time.
P22: tineke interview.docx - 22:3 [T: Well if its really raining ..] (6:6) (Super)
Codes: [bar - tim - pbc - dis - reason not to e-bike: takes too long - Families (3): *Perceived Behavioral Control - Daily, Barrier - Time/Speed, PBC - Distance/Time] [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
T: Well if its really raining cats and dogs, or when I really have only 15 minutes. Because it takes costs about 35 minutes from my home to here. If I really have to be fast, with car I can make it in 15 minutes. But mostly I use the e-bike now.
P23: Emelie Interview.docx - 23:7 [E: No, not really. Depends on ..] (14:14) (Super)
Codes: [ad - enj - reason to e-bike: like being outside - Families (2): *Attitude - Buying an E-bike, Advantage - Enjoyment] [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
E: No, not really. Depends on the extremities of course. If there is rain the whole day, then I think it is better to go by car instead of the bike. But otherwise I like being outside.

Code: bar - wea - pbc - wea - reason not to e-bike: wind {1-0}
P 4: Anouk Interview - analys.docx - 4:13 [Also, lots of wind is another ..] (22:22) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: wind - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
Also, lots of wind is another issue. It is better than a normal bike, but not comfortable

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Code: bar - wea - pbc - wea - use weather predictions for decision {3-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:18 [So you look at the predictions..] (39:41) (Super)
Codes: [bar - wea - pbc - wea - use weather predictions for decision - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
So you look at the predictions and then decide according to that?
00:05:57
Isabelle: Yeah
P11: Paula Interview - analy.docx - 11:10 [And if it's raining, I said to..] (20:20) (Super)
Codes: [bar - wea - pbc - wea - use weather predictions for decision - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
And if it's raining, I said to my family, then I wait for 30 minutes. I can leave 30 minutes later, doesn't matter when I'm at work. it doesn't rain as much as you think, you also don't get that wait. So, I think I use it every day.
P13: Vincent Interview - analys.docx - 13:6 [V: If the weather is really ba..] (16:16) (Super)
Codes: [bar - wea - pbc - wea - reason not to e-bike: rain to different degrees - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather] [bar - wea - pbc - wea - use weather predictions for decision - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
V: If the weather is really bad not, but if it's cold it's OK. If it's a little rainy, I try to see if I can go earlier or later. But I usually use it 3 to 4 days a week.

Code: bar - wea - pbc - wea - willing to cycle in bad weather {7-0}
P 2: A2 - analys.docx - 2:14 [So, I'll be dry the next time!..] (22:22) (Super)
Codes: [bar - wea - pbc - wea - willing to cycle in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
So, I'll be dry the next time! I think it is OK, but you need to be prepared.
P15: Sylvie Interview.docx - 15:6 [M: Even in bad weather?
S: Yea..] (13:14) (Super)
Codes: [bar - wea - pbc - wea - willing to cycle in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
M: Even in bad weather?
S: Yeah definitely!
P17: Bert Interview.docx - 17:8 [M: Now you even bike when it's..] (11:12) (Super)
Codes: [bar - wea - pbc - wea - willing to cycle in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
M: Now you even bike when it's raining?
B: Yes, because it is much shorter, easier.
P17: Bert Interview.docx - 17:13 [M: Daily, do you have any thin..] (21:22) (Super)
Codes: [bar - wea - pbc - wea - willing to cycle in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
M: Daily, do you have any things that make you not take the e-bike.
B: No, no. Maybe when it's snowing. It's very slippery and then it's safer to have four wheels on the ground than two wheels.
P19: Arend Interview.docx - 19:9 [M: Do you not cycle to work fo..] (19:20) (Super)
Codes: [bar - wea - pbc - wea - willing to cycle in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather] [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
M: Do you not cycle to work for any external reasons such as the weather, responsibilities?
A: Nope. Rain or shine, everyday!
P20: Paul Interview.docx - 20:14 [P: No, I have a good jacket an..] (18:18) (Super)
Codes: [bar - wea - pbc - wea - willing to cycle in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
P: No, I have a good jacket and rain trousers. That's not important for me. Only when it's freezing outside and roads are slippery, I take the car or sometimes the train.
P21: Andre Interview.docx - 21:4 [M: Is there any reason you don..] (11:12) (Super)
Codes: [bar - wea - pbc - wea - willing to cycle in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather]
No memos
M: Is there any reason you don't take it? Like responsibilities or the weather?
A: Well, the weather doesn't really stop me unless it's really icy on the roads or it's stormy. Otherwise, usually I take it.

Code: buy - buy a cheap e-bike to see if you like it or not {2-0}
P 4: Anouk Interview - analys.docx - 4:4 [So, I went to buy a 2nd hand e..] (10:10) (Super)
Codes: [buy - buy a cheap e-bike to see if you like it or not - Families (4): *Attitude - Buying an E-bike, *Intention, *Intention - Behaviour Gap: Buying, Buying Behaviour]
No memos
So, I went to buy a 2nd hand e-bike to test if I like it and use it, all those things
P17: Bert Interview.docx - 17:9 [B: No. I wanted to try how it ..] (16:16) (Super)
Codes: [buy - buy a cheap e-bike to see if you like it or not - Families (4): *Attitude - Buying an E-bike, *Intention, *Intention - Behaviour Gap: Buying, Buying Behaviour]
No memos
B: No. I wanted to try how it was, and I bought a very cheap one. It was actually brand-new but was quite cheap. I found it in some kind of market place.

Code: buy - buy accessories for e-biking {4-0}
P 2: A2 - analys.docx - 2:15 [After that I went to Action to..] (22:22) (Super)
Codes: [buy - buy accessories for e-biking - Families (2): *Attitude - Daily, Buying Behaviour]
No memos
After that I went to Action to buy a raincoat
P 2: A2 - analys.docx - 2:19 [So, I just ordered one for 5 E..] (28:28) (Super)
Codes: [buy - buy accessories for e-biking - Families (2): *Attitude - Daily, Buying Behaviour]
No memos
So, I just ordered one for 5 Euros.
P 3: Angeline Interview - analys.docx - 3:34 [I also have two very big bags ..] (30:30) (Super)
Codes: [buy - buy accessories for e-biking - Families (2): *Attitude - Daily, Buying Behaviour]
No memos
I also have two very big bags to bring all my stuff with me
P15: Sylvie Interview.docx - 15:12 [It's okay. But I have a speed ..] (18:18) (Super)
Codes: [buy - buy accessories for e-biking - Families (2): *Attitude - Daily, Buying Behaviour]
No memos
It's okay. But I have a speed bike so I need a helmet. That's the only thing people say: helmet on a bike? Ofcourse it is necessary but it looks a bit silly.

Code: buy - extended battery recommended {1-0}
P10: Marja Interview Final - analy.docx - 10:10 [And I always advise them to ha..] (37:37) (Super)
Codes: [buy - extended battery recommended - Families (2): *Attitude - Buying an E-bike, Buying Behaviour]
No memos
And I always advise them to have the extended version of the battery

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Code: buy - int - buy - buy again if this one fails {3-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:7 [So I didn't decide to buy it b..] (13:13) (Super)
Codes: [buy - int - buy - buy again if this one fails - Families (4): *Attitude - Buying an E-bike, *Intention, Buying Behaviour, Intention - Buying]
No memos
So I didn't decide to buy it but I would buy one again if this one at some point would give out
P16: Elsa Interview.docx - 16:12 [M: If this gets broken, will y..] (19:20) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic] [buy - int - buy - buy again if this one fails - Families (4): *Attitude - Buying an E-bike, *Intention, Buying Behaviour, Intention - Buying]
No memos
M: If this gets broken, will you buy a new one as well?

E: If I get a job, and the money: yeah definitely! Because without it, I will not be able to come here to study every day. A normal bike is not an option for my physical condition.
P17: Bert Interview.docx - 17:10 [That was actually one year, bu..] (16:16) (Super)
Codes: [buy - int - buy - buy again if this one fails - Families (4): *Attitude - Buying an E-bike, *Intention, Buying Behaviour, Intention - Buying]
No memos
That was actually one year, but then it broke down. So, I bought a new one.

Code: buy - look into several options before buying {1-0}
P 3: Angeline Interview - analys.docx - 3:1 [I visited several shops. Looke..] (6:6) (Super)
Codes: [buy - look into several options before buying - Families (3): *Attitude - Buying an E-bike, *Intention - Behaviour Gap: Buying, Buying Behaviour]
No memos
I visited several shops. Looked at lots of reviews, reports, test results.

Code: buy - receive an e-bike without buying {3-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:2 [But then she just had this e-b..] (13:13) (Super)
Codes: [buy - receive an e-bike without buying - Families (2): *Intention, Buying Behaviour]
No memos
But then she just had this e-bike that was sitting there so she gave it to me instead.
P16: Elsa Interview.docx - 16:2 [Then my grandfather, he became..] (4:4) (Super)
Codes: [buy - receive an e-bike without buying - Families (2): *Intention, Buying Behaviour] [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
Then my grandfather, he became ill and he wouldn't use his bike anymore. So, I pre-inherited my grandfather's electric bike and now I can keep up with my friends biking through the city again.
P20: Paul Interview.docx - 20:1 [I received the e-bike from my ..] (4:4) (Super)
Codes: [buy - receive an e-bike without buying - Families (2): *Intention, Buying Behaviour]
No memos
I received the e-bike from my father in law, he couldn't use it anymore, so he gave it to me, and I started using it.

Code: buy - salesman advice important {1-0}
P 3: Angeline Interview - analys.docx - 3:3 [They gave me wonderful advice,..] (6:6) (Super)
Codes: [buy - salesman advice important - Families (2): *Intention - Behaviour Gap: Buying, Buying Behaviour]
No memos
They gave me wonderful advice, so I decided to follow that advice

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Code: buy - try before buy {1-0}
P 3: Angeline Interview - analys.docx - 3:2 [of course I tried several of b..] (6:6) (Super)
Codes: [buy - try before buy - Families (3): *Attitude - Buying an E-bike, *Intention - Behaviour Gap: Buying, Buying Behaviour]
No memos
of course I tried several of bikes

Code: hab - ebi - bike more often with e-bike {10-0}
P 3: Angeline Interview - analys.docx - 3:27 [I take the bike more often] (26:26) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
I take the bike more often
P 6: Isabelle Interview_adjusted - analy.docx - 6:6 [I just know for myself that I ..] (13:13) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
I just know for myself that I would not do it. Definately not as much, maybe even not at all if I just had a normal bike.
P 6: Isabelle Interview_adjusted - analy.docx - 6:10 [y like ah why don't you just b..] (21:21) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
y like ah why don't you just bike normally I was like: well, at least I bike now
P 7: Jan Interview - analy.docx - 7:9 [But it helps you take the bike..] (10:10) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
But it helps you take the bike more.
P 7: Jan Interview - analy.docx - 7:29 [I see the advantages; you bike..] (34:34) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
I see the advantages; you bike a lot more.
P10: Marja Interview Final - analy.docx - 10:6 [So, I started making longer tr..] (25:25) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
So, I started making longer trips and I work one day a week in The Hague, and I've cycled to the Hague. Oh, I never have done that. Yeah. So, it does really extend my radius.
P15: Sylvie Interview.docx - 15:20 [Sometimes when I go somewhere ..] (30:30) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
Sometimes when I go somewhere around 20 km, then I take the e-bike as well instead of the car. When I go alone I like it.
P16: Elsa Interview.docx - 16:9 [E: They were just happy I was ..] (16:16) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike] [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
E: They were just happy I was on a bike. Because of my illness, my life became way smaller because I couldn't travel as much. So, they were really happy because now my boyfriend and me, we can just bike together. While he used to be having to push me because I couldn't get anywhere with my bike.
P22: tineke interview.docx - 22:2 [But I found out that I don't d..] (4:4) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike] [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
But I found out that I don't do that that often. I work 4 days a week, and 24 km 4 days a week was too much for me. But now I use my e-bike almost every day.
P23: Emelie Interview.docx - 23:10 [E: I liked the pilot, for me i..] (26:26) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike]

No memos
E: I liked the pilot, for me it was that I went more often with the e-bike than I did with my regular bike to Delft. That's an improvement.

Code: hab - ebi - e-bike only for commuting {3-0}
P 1: A Interview Final - analys.docx - 1:19 [I think e-bike is particularly..] (53:53) (Super)
Codes: [hab - ebi - e-bike only for commuting - Families (2): *Attitude - Daily, Habits - E-bike]
No memos
I think e-bike is particularly for commuting
P 3: Angeline Interview - analys.docx - 3:11 [E-bike is for commuting then, ..] (11:12) (Super)
Codes: [hab - ebi - e-bike only for commuting - Families (2): *Attitude - Daily, Habits - E-bike]
No memos
E-bike is for commuting then, like a car?
A: yeah.
P15: Sylvie Interview.docx - 15:14 [M: Do you use the e-bike for n..] (23:24) (Super)
Codes: [hab - ebi - e-bike only for commuting - Families (2): *Attitude - Daily, Habits - E-bike]
No memos
M: Do you use the e-bike for non-commute purposes?
S: Mostly I use it to go to work and back

Code: hab - ebi - get used to e-biking over time {2-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:3 [So I started using it and got ..] (13:13) (Super)
Codes: [hab - ebi - get used to e-biking over time - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
So I started using it and got very used to it.
P 7: Jan Interview - analy.docx - 7:38 [esterday we went to Amsterdam ..] (54:54) (Super)
Codes: [hab - ebi - get used to e-biking over time - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
esterday we went to Amsterdam and we hired an OVfiets. But I thought it was breaking itself, you get used to it so much to the help, but after half a day you get used to it again.

Code: hab - ebi - not e-bike everyday {5-0}
P 4: Anouk Interview - analys.docx - 4:7 [No, I try to use it twice a we..] (14:14) (Super)
Codes: [hab - ebi - not e-bike everyday - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
No, I try to use it twice a week
P 7: Jan Interview - analy.docx - 7:11 [I do it 2 days a week. Still t..] (12:12) (Super)
Codes: [hab - ebi - not e-bike everyday - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
I do it 2 days a week. Still the car is easy. Well, that is 100% more!
P12: R Interview - analys.docx - 12:5 [R: I have been using it twice ..] (8:8) (Super)
Codes: [hab - ebi - not e-bike everyday - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
R: I have been using it twice a week,
P18: Camiel Interview_ck-1.docx - 18:6 [C: Pilot started 2 weeks ago, ..] (14:14) (Super)
Codes: [hab - ebi - not e-bike everyday - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
C: Pilot started 2 weeks ago, and I went 3 times now.
P20: Paul Interview.docx - 20:4 [M: Now you e-bike 2 days a wee..] (7:8) (Super)
Codes: [hab - ebi - not e-bike everyday - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
M: Now you e-bike 2 days a week?
P: Yeah, it's more convenient.

Code: hab - ebi - road choice changes {3-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:14 [I used to go actually to look ..] (33:33) (Super)
Codes: [hab - ebi - road choice changes - Families (2): *Attitude - Daily, Habits - E-bike]
No memos
I used to go actually to look through a nature reserve.
P11: Paula Interview - analy.docx - 11:24 [P: That is why I should take t..] (38:38) (Super)
Codes: [hab - ebi - road choice changes - Families (2): *Attitude - Daily, Habits - E-bike]
No memos
P: That is why I should take the road parallel to the TU road, the one behind Aula, it is the whole bicycle road to Pijnacker. It is an easier road than going that way. There are a lot of students too much.
P19: Arend Interview.docx - 19:4 [And I make my routes longer, I..] (12:12) (Super)
Codes: [hab - ebi - road choice changes - Families (2): *Attitude - Daily, Habits - E-bike]
No memos
And I make my routes longer, I take detours now. I am like: "Why don't I take this one today, and that one tomorrow". The route becomes longer.

Code: hab - ebi - use e-bike as much as possible {13-0}
P 1: A Interview Final - analys.docx - 1:18 [While if, for example, if the ..] (49:49) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
While if, for example, if the weather is nice any other day I'll take it.
P 2: A2 - analys.docx - 2:8 [Yeah, I aim to use it at least..] (12:12) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
Yeah, I aim to use it at least five times a week
P 5: Daan Interview - analys.docx - 5:11 [Ah, I want to use it as much a..] (15:15) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
Ah, I want to use it as much as possible. I work 4 days a week.
P 6: Isabelle Interview_adjusted - analy.docx - 6:1 [Yeah it's my aim to do it dail..] (9:9) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
Yeah it's my aim to do it daily.

P 6: Isabelle Interview_adjusted - analy.docx - 6:19 [I'm annoyed if they're not rig..] (41:41) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
I'm annoyed if they're not right. If it's a nice day, you're like ah I could have cycled. it's a misfortune.
P 6: Isabelle Interview_adjusted - analy.docx - 6:28 [wondering about whether I shou..] (69:69) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
wondering about whether I should get it. But then in part because not having to use a car and then also the fact that I can get around well with public transport and a bike and an e-bike makes it easier to get around.
P 8: Jerwin Interview - analys.docx - 8:13 [IS it a positive experience fo..] (11:12) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
IS it a positive experience for you?
J: Absolutely. I've only not bike to work one time. I do it pretty much every day.
P 9: lars interview - analys.docx - 9:10 [So how many times are you usin..] (21:22) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
So how many times are you using it now.
L: Everyday
P11: Paula Interview - analy.docx - 11:9 [M: When you have the e-bike, d..] (19:20) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
M: When you have the e-bike, do you want to use it every day, and also for other purposes?
P: I think every day!
P16: Elsa Interview.docx - 16:6 [M: Do you use it every day to ..] (11:12) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
M: Do you use it every day to come to the university from Delft.
E: Yeah
P19: Arend Interview.docx - 19:9 [M: Do you not cycle to work fo..] (19:20) (Super)
Codes: [bar - wea - pbc - wea - willing to cycle in bad weather - Families (3): *Perceived Behavioral Control - Daily, Barrier - Weather, PBC - Weather] [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
M: Do you not cycle to work for any external reasons such as the weather, responsibilities?
A: Nope. Rain or shine, everyday!
P21: Andre Interview.docx - 21:3 [M: How often do you use it to ..] (9:10) (Super)
Codes: [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
M: How often do you use it to come to work?
A: Almost every working day.
P22: tineke interview.docx - 22:2 [But I found out that I don't d..] (4:4) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike] [hab - ebi - use e-bike as much as possible - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
But I found out that I don't do that that often. I work 4 days a week, and 24 km 4 days a week was too much for me. But now I use my e-bike almost every day.

Code: hab - ebi - use e-bike for non-commute purposes {9-0}
P 2: A2 - analys.docx - 2:9 [sometimes also in the weekend ..] (12:12) (Super)
Codes: [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
sometimes also in the weekend if I need to go to the cente
P 3: Angeline Interview - analys.docx - 3:19 [well my partner is very deligh..] (18:18) (Super)
Codes: [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
well my partner is very delighted because when we now have a bike trip during the weekend, he takes the normal bike and I can keep up with him.
P 9: lars interview - analys.docx - 9:7 [M: Do you use it for other pur..] (17:18) (Super)
Codes: [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
M: Do you use it for other purposes than commute as well.
L: Yes, it is easy, I now park it outside my house, in front of my door. It is now more effort to go for my normal bike now.
P11: Paula Interview - analy.docx - 11:3 [My husband is also a very acti..] (8:8) (Super)
Codes: [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
My husband is also a very active racer with the mountain bike, and me not. He was driving with his bike and I could join him with the E bike. He was behind me for the first time! I enjoyed it very much.
P13: Vincent Interview - analys.docx - 13:14 [V: I use it for shopping too. ..] (42:42) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft] [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
V: I use it for shopping too. Not when it is too close. But I put it inside my house, always inside as it is an expensive thing. You can't just park it around, especially in the Hague.
P16: Elsa Interview.docx - 16:2 [Then my grandfather, he became..] (4:4) (Super)
Codes: [buy - receive an e-bike without buying - Families (2): *Intention, Buying Behaviour] [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
Then my grandfather, he became ill and he wouldn't use his bike anymore. So, I pre-inherited my grandfather's electric bike and now I can keep up with my friends biking through the city again.
P16: Elsa Interview.docx - 16:9 [E: They were just happy I was ..] (16:16) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike] [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
E: They were just happy I was on a bike. Because of my illness, my life became way smaller because I couldn't travel as much. So, they were really happy because now my boyfriend and me, we can just bike together. While he used to be having to push me because I couldn't get anywhere with my bike.
P22: tineke interview.docx - 22:4 [T: I also use it to go to the ..] (8:8) (Super)

Codes: [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
T: I also use it to go to the shop sometimes, but mostly for work.
P23: Emelie Interview.docx - 23:12 [E: I think no! Maybe a combina..] (30:30) (Super)
Codes: [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
E: I think no! Maybe a combination. Sometimes when I go for private appointments after work, I use it.

Code: hab - ebi - use e-bike to carry heavy stuff {1-0}
P 8: Jerwin Interview - analys.docx - 8:24 [J: yes, I went to IKEA to get ..] (20:20) (Super)
Codes: [hab - ebi - use e-bike to carry heavy stuff - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
J: yes, I went to IKEA to get some stuff we need for the house.

Code: hab - ebi - use the battery until it dies out {1-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:21 [has one battery that's kinda l..] (45:45) (Super)
Codes: [hab - ebi - use the battery until it dies out - Families (2): *Habits - Cycling, Habits - E-bike]
No memos
has one battery that's kinda like running out of charge. So it doesn't go as far anymore. So I'm just gonna drive this one until it's you know until it is dead

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Code: hab - reg - already bike to work sometimes {10-0}
P 1: A Interview Final - analys.docx - 1:9 [Well actually I sometimes do i..] (29:29) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
Well actually I sometimes do it on a regular bike, but then it is like an exercise
P 3: Angeline Interview - analys.docx - 3:4 [because I already went on my b..] (8:8) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
because I already went on my bike, but it is about 11 km
P 7: Jan Interview - analy.docx - 7:3 [I use my regular bike once a w..] (6:6) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
I use my regular bike once a week
P 8: Jerwin Interview - analys.docx - 8:10 [Before this pilot I cycled to ..] (10:10) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
Before this pilot I cycled to work once or twice a month. In summer 4 times-5 times.
P15: Sylvie Interview.docx - 15:3 [No, also the bike, but then th..] (6:6) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
No, also the bike, but then the distance between my home and work was shorter
P17: Bert Interview.docx - 17:6 [M: Were you coming by car befo..] (9:10) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
M: Were you coming by car before the e-bike?
B: No, when the weather was nice, I came by bike.
P19: Arend Interview.docx - 19:10 [A: Initially it was just a nor..] (8:8) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
A: Initially it was just a normal bike, and then my heart condition got worse. It was either that I stopped cycling, or I use an e-bike. So, the choice was easy, I would of course use an e-bike.
P20: Paul Interview.docx - 20:2 [P: I had a normal bike and a c..] (6:7) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
P: I had a normal bike and a car. Normally I went to Delft by car 2-3 days a week.
M: Now you e-bike 2 days a week?
P22: tineke interview.docx - 22:1 [T: Since December, I bought my..] (4:4) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
T: Since December, I bought my e-bike then. It's 12 km to my home address. I started using a regular bike
P23: Emelie Interview.docx - 23:3 [M: How often did you bike here..] (5:7) (Super)
Codes: [hab - reg - already bike to work sometimes - Families (2): *Habits - Cycling, Habits - Regular Bike]
No memos
M: How often did you bike here then?
E: Three times a week.
M: Ah, quite often.

Code: hab - reg - use regular bike for short distances {6-0}
P 1: A Interview Final - analys.docx - 1:20 [live in a particularly remote ..] (53:53) (Super)
Codes: [hab - reg - use regular bike for short distances - Families (3): *Attitude - Daily, *Habits - Cycling, Habits - Regular Bike]
No memos
live in a particularly remote village, so to do groceries or so whatsoever I don't need to use the e-bike, it is just easier to pick a normal bike or it doesn't matter. Why would you need an e-bike when the distance is so short?
P 3: Angeline Interview - analys.docx - 3:10 [when I need to go to the shop,..] (10:10) (Super)
Codes: [hab - reg - use regular bike for short distances - Families (3): *Attitude - Daily, *Habits - Cycling, Habits - Regular Bike]
No memos
when I need to go to the shop, gym or whatever, if it is there then I take my normal bike.
P 7: Jan Interview - analy.docx - 7:37 [still in town, I would use a r..] (54:54) (Super)
Codes: [hab - reg - use regular bike for short distances - Families (3): *Attitude - Daily, *Habits - Cycling, Habits - Regular Bike]
No memos
still in town, I would use a regular bike. E-bike is not needed then.
P 8: Jerwin Interview - analys.docx - 8:25 [Because when I go to volleybal..] (20:20) (Super)
Codes: [hab - reg - use regular bike for short distances - Families (3): *Attitude - Daily, *Habits - Cycling, Habits - Regular Bike]
No memos

Because when I go to volleyball practice, I take my regular bike. It is a 10-minute bike drive, and some stuff has been stolen there, I don't want to leave my bike there.
P15: Sylvie Interview.docx - 15:16 [. That's what I don't want, so..] (24:24) (Super)
Codes: [hab - reg - use regular bike for short distances - Families (3): *Attitude - Daily, *Habits - Cycling, Habits - Regular Bike]
No memos
. That's what I don't want, so I force myself to use the other bike to stay energetic.
P15: Sylvie Interview.docx - 15:17 [S: Yes! It's not nice anymore...] (26:26) (Super)
Codes: [hab - reg - use regular bike for short distances - Families (3): *Attitude - Daily, *Habits - Cycling, Habits - Regular Bike]
No memos
S: Yes! It's not nice anymore. I noticed before using an e-bikeI had moremy energyenergy level was higher andso now I use my speed bike daily, so my energy level is more down. I don't exercise anmymore. It is always back wind, it is very nice, lovely. If I want to stay healthy and energetic, I should exercise. That's the only reason to me to use my normal bike sometimes.

Code: int - buy - considering e-bike before {2-0}
P 1: A Interview Final - analys.docx - 1:5 [I was considering beforehand, ..] (17:17) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic] [int - buy - considering e-bike before - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Intention - Buying]
No memos
I was considering beforehand, then I thought it was too expensive
P12: R Interview - analys.docx - 12:3 [R: yes, I have been meaning to..] (6:6) (Super)
Codes: [ad - con - want to get rid of the car/not buy a car - Families (2): *Attitude - Buying an E-bike, Advantage - Convenience] [int - buy - considering e-bike before - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Intention - Buying]
No memos
R: yes, I have been meaning to let go of the car for a while and the e-bike was one of the alternatives indeed.

Code: int - buy - happy from trial, end in buying {1-0}
P 4: Anouk Interview - analys.docx - 4:5 [Then I liked it, but it was re..] (10:10) (Super)
Codes: [int - buy - happy from trial, end in buying - Families (2): *Attitude - Buying an E-bike, Intention - Buying]
No memos
Then I liked it, but it was really a lousy one, a real 2nd hand one, so I bought a new one

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Code: int - buy - pil - available deal not attractive enough {1-0}
P 8: Jerwin Interview - analys.docx - 8:32 [Otherwise there will be other ..] (26:26) (Super)
Codes: [int - buy - pil - available deal not attractive enough - Families (3): *Intention - Behaviour Gap: Buying, Intention - Buying, Pilot Perception]
No memos
Otherwise there will be other good deals for e-bikes, probably just as good as the 25% off.

Code: int - buy - pil - pilot offer is attractive {2-0}
P 5: Daan Interview - analys.docx - 5:7 [I heard there will be a possib..] (9:9) (Super)
Codes: [int - buy - pil - pilot offer is attractive - Families (3): *Intention, Intention - Buying, Pilot Perception]
No memos
I heard there will be a possibility to buy the by the bicycle for a reasonable price.
P 7: Jan Interview - analy.docx - 7:20 [they said they had a special o..] (22:22) (Super)
Codes: [int - buy - pil - pilot offer is attractive - Families (3): *Intention, Intention - Buying, Pilot Perception]
No memos
they said they had a special offer, 25% off. Which is quite good.

Code: int - lea - interest in leasing plan {5-0}
P 1: A Interview Final - analys.docx - 1:26 [I'm not planning to buy it, to..] (69:69) (Super)
Codes: [int - lea - interest in leasing plan - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing]
No memos
I'm not planning to buy it, to do so. I heard that there are some government plans to make it more attractive to do e-biking via your employer, with leasing plans. Than that can work for me because then it is useful for shorter amount of time.
P 8: Jerwin Interview - analys.docx - 8:26 [The government wants to stimul..] (22:22) (Super)
Codes: [int - lea - interest in leasing plan - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing]
No memos
The government wants to stimulate e-biking by loosening the rules of leasing the e-bike. That is much more interesting for me than actually buying it.
P 8: Jerwin Interview - analys.docx - 8:28 [Because it is also insured, if..] (22:22) (Super)
Codes: [int - lea - interest in leasing plan - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing]
No memos
Because it is also insured, if a thing happens, they repair it.
P11: Paula Interview - analy.docx - 11:6 [P: Good! That would be so nice..] (12:12) (Super)
Codes: [int - lea - interest in leasing plan - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing]
No memos
P: Good! That would be so nice, I would start tomorrow, I think!
P16: Elsa Interview.docx - 16:18 [Also, here in the campus with ..] (30:31) (Super)
Codes: [int - lea - interest in leasing plan - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing] [pil - pilot perception: it is too commercial - Family: Pilot Perception]
No memos
Also, here in the campus with this "buy an e-bike" campaign, they have this one huge sponsor, one brand that people should buy. Of course, it is good, but it's mostly promotion from the company and not really about sustainability anymore. And it's mostly for employees, not for students. I think, for example Swapfiets would introduce e-bikes, something student-priced, that would be great.
M: A leasing option might be allowed in 2020 by the government.

Code: int - lea - wait to see if TU delft will participate in leasing or not {3-0}
P 8: Jerwin Interview - analys.docx - 8:29 [But a question is whether TU d..] (22:22) (Super)
Codes: [int - lea - wait to see if TU delft will participate in leasing or not - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing]
No memos
But a question is whether TU delft will participate in the scheme. so, I'm still waiting on the fence. If I'm 100% sure that TU Delft won't do this, I will buy an e-bike. If it is unclear, or there's a chance that they will not, then I'll wait for this lease scheme. It would be great, only couple of euros per month.
P 8: Jerwin Interview - analys.docx - 8:30 [if they take it seriously, thi..] (24:24) (Super)
Codes: [int - lea - wait to see if TU delft will participate in leasing or not - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing]

No memos
if they take it seriously, this pilot, this initiative of getting to work differently, more environmentally friendly, I think it suits TU Delft as well. We're working towards a better society, more sustainable work. This will fit well with values of TU Delft as well. So, I'm expecting them to take a serious look at this.

P18: Camiel Interview_ck-1.docx - 18:3 [C: I think I'll wait for the l..] (8:8) (Super)
Codes: [int - lea - wait to see if TU delft will participate in leasing or not - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing]
No memos
C: I think I'll wait for the lease. The government announced last year in Prinsjesdag that lease bikes will be available for more people and it will become easier to lease one. I hope the university also joins it as well and there will be an arrangement. So, I'll wait for it.

Code: int - sub - interested in tu delft subsidy {4-0}

P 2: A2 - analys.docx - 2:13 [They have to make a good deal ..] (20:20) (Super)
Codes: [int - sub - interested in tu delft subsidy - Families (2): *Intention - Behaviour Gap: Buying, Intention - Subsidy]
No memos
They have to make a good deal out of. Then more people would be willing to buy an e-bike and come to school with it

P 6: Isabelle Interview_adjusted - analy.docx - 6:27 [I know incentives, but it depe..] (61:61) (Super)
Codes: [int - sub - interested in tu delft subsidy - Families (2): *Intention - Behaviour Gap: Buying, Intention - Subsidy]
No memos
I know incentives, but it depends on the employer, they have some kind of a fietsplan and I couldn't find it last time I checked here. So I thought this was a very good incentive because it was there at some point and then not anymore.

P11: Paula Interview - analy.docx - 11:5 [I'm very interested in the E b..] (8:8) (Super)
Codes: [bar - eco - pbc - eco - reason not to buy: too expensive - Families (4): *Intention - Behaviour Gap: Buying, *Perceived Behavioral Control - Buying, Barrier - Economic, PBC - Economic] [int - sub - interested in tu delft subsidy - Families (2): *Intention - Behaviour Gap: Buying, Intention - Subsidy]
No memos
I'm very interested in the E bike, but I was thinking whether it is possible with EKA (choosing package deal from employer?). Because then you don't have anything left. You have only mobility and vakbondlid (union) and other small things left, like vacation days you can buy or sell or whatever. So, it is hard.

P17: Bert Interview.docx - 17:15 [B: Maybe one. In the past we h..] (26:29) (Super)
Codes: [int - sub - interested in tu delft subsidy - Families (2): *Intention - Behaviour Gap: Buying, Intention - Subsidy]
No memos
B: Maybe one. In the past we had some kind of fietsplan, IKA that allowed to buy a bike really cheap. They quit doing that, but they should bring it back.
M: I heard this a lot.
B: It is a little bit silly. On one hand, we economize on parking space for cars. On the other hand, we build new faculties, we remove parking space. We build new houses, new schools like Applied University of the Hague. And that all needs parking space, but there is not enough. So, bikes must be motivated more.
M: Thank you.

Code: int - try - join for curiosity {4-0}

P 7: Jan Interview - analy.docx - 7:4 [Then I though, I was curious h..] (6:6) (Super)
Codes: [int - try - join for curiosity - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
Then I though, I was curious how it works. That is why I wanted to join, maybe it's something for me.

P12: R Interview - analys.docx - 12:19 [R: I have been using it twice ..] (8:8) (Super)
Codes: [int - try - join for curiosity - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
R: I have been using it twice a week, I do need the car on the other days unfortunately still. But still two days a week I do. I need to adapt my schedule a little bit, but it is nice to see what it could be like in a 5-day a week commute.

P18: Camiel Interview_ck-1.docx - 18:4 [C: Yes, just to see how it is ..] (10:10) (Super)
Codes: [int - try - join for curiosity - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
C: Yes, just to see how it is with the normal e-bike.

P23: Emelie Interview.docx - 23:4 [E: Well, yes. As I went by a n..] (8:8) (Super)
Codes: [int - try - join for curiosity - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
E: Well, yes. As I went by a normal bike, and it was not that the journey was too long when I go by bike. But I thought it would be nice to come faster to work. But before it wasn't really in my consideration to buy an e-bike, I just wanted to see whether it improves the time or not.

Code: int - try - join pilot: to try a better e-bike {1-0}

P20: Paul Interview.docx - 20:15 [P: Well, I just decided today ..] (22:22) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed] [int - try - join pilot: to try a better e-bike - Family: Intention - Trying] [pil - pilot: needs speed pedelcs as well - Family: Pilot Perception]
No memos
P: Well, I just decided today to step into the program of TU Delft for e-bike. I have it in the last block. I hope it will be better than the one I use now. That one is quite old and there is a limitation at 25 km an hour. When you go faster it starts to slow down.

Code: int - try - never tried an e-bike before {2-0}

P 1: A Interview Final - analys.docx - 1:4 [No I never had one or not even..] (13:13) (Super)
Codes: [int - try - never tried an e-bike before - Families (3): *Attitude - Pilot, *Habits - Cycling, Intention - Trying]
No memos
No I never had one or not even have ride

P 9: lars interview - analys.docx - 9:2 [I heard that the pilot was the..] (6:6) (Super)
Codes: [int - try - never tried an e-bike before - Families (3): *Attitude - Pilot, *Habits - Cycling, Intention - Trying]
No memos
I heard that the pilot was there, and I thought it a very nice opportunity to go with the e-bike for the first time.

Code: int - try - trying e-bike before the pilot {4-0}

P 8: Jerwin Interview - analys.docx - 8:9 [Have you tried an e-bike befor..] (9:10) (Super)
Codes: [int - try - trying e-bike before the pilot - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
Have you tried an e-bike before.
J: yes, once.

P11: Paula Interview - analy.docx - 11:1 [Did you try e-bikes before in ..] (7:8) (Super)
Codes: [int - try - trying e-bike before the pilot - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
Did you try e-bikes before in a pilot program?
P: No, what was it? Also, something from TU Delft. It was to try.
P12: R Interview - analys.docx - 12:1 [I haven't owned one. I have ri..] (4:4) (Super)
Codes: [int - try - trying e-bike before the pilot - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
I haven't owned one. I have ridden one once.
P18: Camiel Interview_ck-1.docx - 18:1 [C: Yes, I did it once, in the ..] (4:4) (Super)
Codes: [int - try - trying e-bike before the pilot - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
C: Yes, I did it once, in the pilot two years ago. It was also from the bicyclists, here in Delft. I loaned a bike for 3 days.

Code: int - try - wanted to try an e-bike before but wasn't possible {1-0}
P12: R Interview - analys.docx - 12:8 [There is not a place where you..] (10:10) (Super)
Codes: [int - try - wanted to try an e-bike before but wasn't possible - Families (2): *Attitude - Pilot, Intention - Trying]
No memos
There is not a place where you can rent one. There are 3 people I know, and it is a little awkward to ask "hey, can I try your e-bike?". It's not a thing you can do. If OV-fiets or other rental companies were to offer e-bike rentals, I'm guessing people would rent it out to try it

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Code: pbc - dis - range anxiety {3-0}
P 2: A2 - analys.docx - 2:16 [in case the battery is deplete..] (24:24) (Super)
Codes: [pbc - dis - range anxiety - Families (2): *Perceived Behavioral Control - Daily, PBC - Distance/Time]
No memos
in case the battery is depleted, and you don't have the charger yet
P 6: Isabelle Interview_adjusted - analy.docx - 6:34 [elft. But then I'm not complet..] (77:77) (Super)
Codes: [pbc - dis - range anxiety - Families (2): *Perceived Behavioral Control - Daily, PBC - Distance/Time]
No memos
elft. But then I'm not completely sure if the one battery I have left would make the trip to the Hague and then here. that's one thing that's just because of the bike that I have right now it has very limited range. I do have a charger here so I could charge up here. But then if you need to be at a meeting then later you don't want to end your battery halfway through and have to cycle half the way with very heavy bike which in newer bikes are better. They're not as heavy, like a normal bike. The motor gives out so this one that I have is very heavy
P11: Paula Interview - analy.docx - 11:19 [P: First I thought it is hard ..] (26:26) (Super)
Codes: [pbc - dis - range anxiety - Families (2): *Perceived Behavioral Control - Daily, PBC - Distance/Time]
No memos
P: First I thought it is hard with the battery. When it is empty, fill it at home, a bit hard.

Code: pbc - eff - e-bike as an option for hilly cities {1-0}
P13: Vincent Interview - analys.docx - 13:15 [V: I think it is very interest..] (44:44) (Super)
Codes: [pbc - eff - e-bike as an option for hilly cities - Families (2): *Attitude - Buying an E-bike, PBC - Effort]
No memos
V: I think it is very interesting for other cities, like Istanbul. It is hilly, but the congestion is also far worse in such megacities. It could be very good alternative there. How many people live there?

Code: pil - appreciate pilot {1-0}
P 5: Daan Interview - analys.docx - 5:10 [Oh, they think it's wonderful ..] (13:13) (Super)
Codes: [pil - appreciate pilot - Families (2): *Attitude - Pilot, Pilot Perception]
No memos
Oh, they think it's wonderful that TU is doing such a program!

Code: pil - appreciate pilot: clear communication {1-0}
P 8: Jerwin Interview - analys.docx - 8:23 [No surprised, clear communicat..] (18:18) (Super)
Codes: [pil - appreciate pilot: clear communication - Families (2): *Attitude - Pilot, Pilot Perception]
No memos
No surprised, clear communication, helpful people.

Code: pil - appreciate pilot: good advertisement {2-0}
P 1: A Interview Final - analys.docx - 1:11 [It is advertised quite well] (37:37) (Super)
Codes: [pil - appreciate pilot: good advertisement - Families (2): *Attitude - Pilot, Pilot Perception]
No memos
It is advertised quite well
P11: Paula Interview - analy.docx - 11:25 [P: I really enjoy the program...] (40:40) (Super)
Codes: [ad - enj - enjoyment - Families (2): *Attitude - Pilot, Advantage - Enjoyment] [pil - appreciate pilot: good advertisement - Families (2): *Attitude - Pilot, Pilot Perception]
No memos
P: I really enjoy the program. It is advertised in a very positive way! I

Code: pil - appreciate pilot: professional organisation {1-0}
P 8: Jerwin Interview - analys.docx - 8:21 [I think. It was all profession..] (18:18) (Super)
Codes: [pil - appreciate pilot: professional organisation - Families (2): *Attitude - Pilot, Pilot Perception]
No memos
I think. It was all professionally organized.

Code: pil - appreciate pilot: reduce number of cars in campus {1-0}
P 1: A Interview Final - analys.docx - 1:10 [I can very well understand why..] (37:37) (Super)
Codes: [pil - appreciate pilot: reduce number of cars in campus - Families (3): *Attitude - Daily, *Attitude - Pilot, Pilot Perception]
No memos
I can very well understand why it is being held because usually I come by car and when I arrive there is usually parking problems. And for that reason I can understand that they want to find alternative ways to get employees and students toward the university. So I can understand why it is being held and I like the idea in general.

Code: pil - pilot good to check if you'll actually use it {1-0}
P 7: Jan Interview - analy.docx - 7:16 [J: main reason for me to get i..] (18:18) (Super)

Codes: [pil - pilot good to check if you'll actually use it - Families (2): *Attitude - Daily, Pilot Perception]
No memos
J: main reason for me to get interested, because it's not easy to just buy a bike, if you're not sure if you'll use it.

Code: pil - pilot perception: it is too commercial {1-0}
P16: Elsa Interview.docx - 16:18 [Also, here in the campus with ..] (30:31) (Super)
Codes: [int - lea - interest in leasing plan - Families (2): *Intention - Behaviour Gap: Buying, Intention - Leasing] [pil - pilot perception: it is too commercial - Family: Pilot Perception]
No memos
Also, here in the campus with this "buy an e-bike" campaign, they have this one huge sponsor, one brand that people should buy. Of course, it is good, but it's mostly promotion from the company and not really about sustainability anymore. And it's mostly for employees, not for students. I think, for example Swapfiets would introduce e-bikes, something student-priced, that would be great.
M: A leasing option might be allowed in 2020 by the government.

Code: pil - pilot: needs speed pedelcs as well {2-0}
P18: Camiel Interview_ck-1.docx - 18:12 [With the pilot, I wished there..] (29:29) (Super)
Codes: [pil - pilot: needs speed pedelcs as well - Family: Pilot Perception]
No memos
With the pilot, I wished there were speed pedelecs because that is what I'm interested in
P20: Paul Interview.docx - 20:15 [P: Well, I just decided today ..] (22:22) (Super)
Codes: [bar - tim - e-bike is too slow: annoying - Families (3): *Attitude - Buying an E-bike, *Attitude - Daily, Barrier - Time/Speed] [int - try - join pilot: to try a better e-bike - Family: Intention - Trying] [pil - pilot: needs speed pedelcs as well - Family: Pilot Perception]
No memos
P: Well, I just decided today to step into the program of TU Delft for e-bike. I have it in the last block. I hope it will be better than the one I use now. That one is quite old and there is a limitation at 25 km an hour. When you go faster it starts to slow down.

Code: pil - want the pilot to last longer {1-0}
P 2: A2 - analys.docx - 2:10 [I already joined, but I would ..] (14:14) (Super)
Codes: [pil - want the pilot to last longer - Families (2): *Attitude - Pilot, Pilot Perception]
No memos
I already joined, but I would like to use it in the 2nd one as well

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Code: pro - bike paths too crowded {4-0}
P10: Marja Interview Final - analy.docx - 10:16 [Some of the disadvantages is i..] (69:69) (Super)
Codes: [pro - bike paths too crowded - Family: Problems to be Fixed]
No memos
Some of the disadvantages is if I use my bike in the morning, but that's not something from an e-bike. There are so many students that I struggle. But that is more like the old age problem and not a bike problem. So that's why I come a little later so I can do my own stuff and just not worry about hitting another biker.
P11: Paula Interview - analy.docx - 11:23 [And I know I will cycle. Only ..] (36:36) (Super)
Codes: [pro - bike paths too crowded - Family: Problems to be Fixed]
No memos
And I know I will cycle. Only thing is maybe, in TU wijk, you have a lot of people but very small bicycle lanes. It is difficult to get out of the wijk when you want to take it easy. There are so many students! If you have to go to left/right, it is hard. My grandma lived here, and she was carrying her grandchild one day with the bike. She had an accident and she fell. So that is difficult for the elderly who want to take it easy. Students are very fast, and lanes are small.
P13: Vincent Interview - analys.docx - 13:4 [What we see in the cycling inf..] (12:12) (Super)
Codes: [pro - bike paths too crowded - Family: Problems to be Fixed]
No memos
What we see in the cycling infrastructure is that first, it is getting more and more crowded, so we have traditional bikes, e-bikes, speed pedelecs, bakfietsen.
P13: Vincent Interview - analys.docx - 13:5 [M: I heard from others that in..] (13:14) (Super)
Codes: [pro - bike paths too crowded - Family: Problems to be Fixed]
No memos
M: I heard from others that in campus since there's a lot of students and the lanes are not big enough to accommodate for e-bikes. do you also experience that?
V: Yes, you have to be careful in crowded areas

Code: pro - chargers in the bike park are needed {7-0}
P 3: Angeline Interview - analys.docx - 3:30 [Well specifically it would be ..] (28:28) (Super)
Codes: [pro - chargers in the bike park are needed - Family: Problems to be Fixed]
No memos
Well specifically it would be easier if you have the electricity in the park
P 4: Anouk Interview - analys.docx - 4:22 [A: No! What I am missing is my..] (34:34) (Super)
Codes: [pro - chargers in the bike park are needed - Family: Problems to be Fixed]
No memos
A: No! What I am missing is my ability to recharge my e-bike outside.
P13: Vincent Interview - analys.docx - 13:2 [V: It is a speed pedelec. it's..] (8:8) (Super)
Codes: [bar - the - pbc - the - concerned about theft & prevention - Families (3): *Perceived Behavioral Control - Buying, Barrier - Theft, PBC - Theft] [pro - chargers in the bike park are needed - Family: Problems to be Fixed]
No memos
V: It is a speed pedelec. it's an expensive one, so I don't want it stolen. I have room here in the office, and I can also charge it here.
P15: Sylvie Interview.docx - 15:24 [Also, one day it was cold belo..] (36:36) (Super)
Codes: [pro - chargers in the bike park are needed - Family: Problems to be Fixed]
No memos
Also, one day it was cold below 5 degrees and I couldn't put my bike inside a shedrealized when its cold, mMy battery is inside the frame so I can't take it out to take it with me inside. I have to charge it inside. With cold temperatures I noticed below 5 degreesthat my battery drainеds without using it. So once it was cold and I couldn't put my bike inside. At the end of the day my battery was over. For me, that's a problem.
P16: Elsa Interview.docx - 16:17 [M: Did you never needed a char..] (25:28) (Super)
Codes: [pro - chargers in the bike park are needed - Family: Problems to be Fixed]
No memos
M: Did you never needed a charger?
E: I have to take my battery out of my bike and just take it to wherever I'm studying and plug it in.
M: So that was not a problem>
E: No, but I think it would be nice to have plugs where you can load your bike.

P18: Camiel Interview_ck-1.docx - 18:11 [Also, if you have a speed pede..] (29:29) (Super)
Codes: [pro - chargers in the bike park are needed - Family: Problems to be Fixed]
No memos
Also, if you have a speed pedelec, it is better to have chargers in the parking place.
P19: Arend Interview.docx - 19:11 [A: Well, one thing, it's very ..] (22:22) (Super)
Codes: [pro - chargers in the bike park are needed - Family: Problems to be Fixed]
No memos
A: Well, one thing, it's very obvious that in the storages there are no outlets for charging your bike. That's a bit strange. But also, for cars! I recently heard there was somebody coming in with an electric car and wanted to plug in but couldn't, it was just a TU Delft thing. So, for bikes that would be nice.

Code: pro - locking by app is annoying {2-0}
P 9: lars interview - analys.docx - 9:9 [I sometimes forget to open the..] (20:20) (Super)
Codes: [pro - locking by app is annoying - Families (2): *Attitude - Pilot, Problems to be Fixed]
No memos
I sometimes forget to open the app and lock it again. It is a bit annoying. At home I have a really good chain. Here I also have quite an OK chain, so it is always locked. But sometimes I forget to lock it by the app.
P18: Camiel Interview_ck-1.docx - 18:13 [With the pilot, the lock by th..] (29:29) (Super)
Codes: [pro - locking by app is annoying - Families (2): *Attitude - Pilot, Problems to be Fixed]
No memos
With the pilot, the lock by the app is annoying

Code: pro - maintenance facility in campus for e-bike {1-0}
P 7: Jan Interview - analy.docx - 7:36 [it would be nice to have maint..] (50:50) (Super)
Codes: [pro - maintenance facility in campus for e-bike - Family: Problems to be Fixed]
No memos
it would be nice to have maintenance here.

Code: pro - not enough information available about the discount at the end {1-0}
P 5: Daan Interview - analys.docx - 5:8 [but that's the lack of informa..] (9:9) (Super)
Codes: [pro - not enough information available about the discount at the end - Family: Problems to be Fixed]
No memos
but that's the lack of information they have because there is totally no information about that.

Code: pro - physical problems with the bike {5-0}
P 7: Jan Interview - analy.docx - 7:34 [There was some loose parts. My..] (46:46) (Super)
Codes: [pro - physical problems with the bike - Family: Problems to be Fixed]
No memos
There was some loose parts. My seat was getting loose. It wasn't too bad. But they should have told us maybe that you need to fasten it after two weeks. I did it myself.
P 7: Jan Interview - analy.docx - 7:35 [Yeah, I thought so. My steer g..] (48:48) (Super)
Codes: [pro - physical problems with the bike - Family: Problems to be Fixed]
No memos
Yeah, I thought so. My steer got loose as well. That was dangerous. What if I break and it went off? But it was OK to fix that, but seat was loose twice, now I really put effort to it. I'll tell them, it is not for your interest!
P 8: Jerwin Interview - analys.docx - 8:22 [My steer was loose, but I was ..] (18:18) (Super)
Codes: [pro - physical problems with the bike - Family: Problems to be Fixed]
No memos
My steer was loose, but I was lucky the guys were still on campus the day after, so I stopped by and they fixed it.
P 9: lars interview - analys.docx - 9:15 [he chain was touching somethin..] (32:32) (Super)
Codes: [pro - physical problems with the bike - Family: Problems to be Fixed]
No memos
he chain was touching something, I fixed that quite easy. There is sometimes a problem with the connection between the wires, the connection between the motor and the computer. So that it didn't work anymore, but that was just the connection.
P23: Emelie Interview.docx - 23:11 [E: No, well they gave me the o..] (28:28) (Super)
Codes: [pro - physical problems with the bike - Family: Problems to be Fixed]
No memos
E: No, well they gave me the option to have a child seat on the back. I used it in the beginning. But for this e-bike, maybe not relevant for your research, but there are also the bags to put your stuff in at the back. When you use that, then you can't it together with the seat anymore, not very handy. Also, the battery. I place it outside with the lock as we don't have a basement for the bikes. But then you need to bring the battery home. Then the key was behind the child seat. So, then you had to remove the whole seat! So that wasn't handy, so I decided not to use it anymore. I just go home and use my regular bike to pick up the kids. It's also that there are two kids and my regular bike has seats for two. So, for this purpose the e-bike it wasn't so handy.

Code: pro - pilot banning batteries to be taken to the office: annoying {2-0}
P 7: Jan Interview - analy.docx - 7:26 [aybe it is not nice that you c..] (26:26) (Super)
Codes: [pro - pilot banning batteries to be taken to the office: annoying - Family: Problems to be Fixed]
No memos
aybe it is not nice that you can't take it to your room, it is not allowed.
P18: Camiel Interview_ck-1.docx - 18:14 [we can't charge our batteries ..] (29:29) (Super)
Codes: [pro - pilot banning batteries to be taken to the office: annoying - Family: Problems to be Fixed]
No memos
we can't charge our batteries in our rooms, however as I cycle far I do need to do that.

Code: pro - pollution as a concern for e-biking {1-0}
P 2: A2 - analys.docx - 2:18 [If you travel long distance an..] (28:28) (Super)
Codes: [pro - pollution as a concern for e-biking - Families (2): *Attitude - Daily, Problems to be Fixed]
No memos
If you travel long distance and with the bike, then there are a lot of scooters, and along the highway, there are lots of gasses you smell.

Code: sn - cha - changing perceptions, younger generation e-biking too {8-0}
P 1: A Interview Final - analys.docx - 1:2 [I believe many e-bike users us..] (9:9) (Super)
Codes: [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing]
No memos

I believe many e-bike users used to be older people. I know them, but now I live somewhere West of Delft, a bit more rural, lot of people e-bike there. Not only elderly who are unable to bike normally physically but also more commuters and younger people.

P 3: Angeline Interview - analys.docx - 3:25 [Well, initially I thought it w..] (26:26) (Super)
Codes: [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing]
No memos
Well, initially I thought it was for older people

P 4: Anouk Interview - analys.docx - 4:3 [Those days, there is a lot of ..] (10:10) (Super)
Codes: [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing]
No memos
Those days, there is a lot of developments on how people look at e-bikes. It changed a lot and I think even five years ago it was only for old people.

P 4: Anouk Interview - analys.docx - 4:6 [Well, more of the people's vie..] (12:12) (Super)
Codes: [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing] [sn - cha - news: more e-bikes sold than regular bikes - Families (2): *Subjective Norm - Buying an E-bike, Subjective Norm - Changing]
No memos
Well, more of the people's views changed. 5 years ago, it was only old people who wanted to do day trips, men and women in the same jacket. Now it is more common. I heard on the news that more e-bikes are sold than normal ones

P 4: Anouk Interview - analys.docx - 4:16 [Now it is different, my 16-yea..] (24:24) (Super)
Codes: [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing]
No memos
Now it is different, my 16-year-old daughter wants to use my bike.

P 8: Jerwin Interview - analys.docx - 8:17 [I think the perception is chan..] (16:16) (Super)
Codes: [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing]
No memos
I think the perception is changing a bit

P16: Elsa Interview.docx - 16:3 [Well, I think the perception t..] (8:8) (Super)
Codes: [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing]
No memos
Well, I think the perception that e-bikes are for old people so they can continue riding bikes. Because they're all old, instable and get tired very fast. But then I got my own illness and I realized that I was one of those old, slow people. I think it also changed because it became more affordable. So, there's a lot of people now with a job who just buy it.

P22: tineke interview.docx - 22:5 [T: Well, I think when e-bikes ..] (10:10) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives] [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing]
No memos
T: Well, I think when e-bikes first came on the market, they were seen as something for elderly people, with heart problems or anything, who can't ride a normal bicycle. So, there were a few people who were laughing like: "ha-ha, are you that old already?". But most people were quite positive and happy.

Code: sn - cha - changing perceptions: it is real biking {4-0}

P 7: Jan Interview - analy.docx - 7:7 [I'm thinking about it a little..] (10:10) (Super)
Codes: [sn - cha - changing perceptions: it is real biking - Family: Subjective Norm - Changing]
No memos
I'm thinking about it a little bit more and see the advantages. I don't agree it's not real biking anymore. it helps you.

P 7: Jan Interview - analy.docx - 7:31 [that you still have some exerc..] (36:36) (Super)
Codes: [sn - cha - changing perceptions: it is real biking - Family: Subjective Norm - Changing]
No memos
that you still have some exercise. It helps you with hard parts, like wind and hills. Well, not hills bridges, I know ϑ.

P19: Arend Interview.docx - 19:6 [M: Is that still the perceptio..] (15:16) (Super)
Codes: [bar - pee - sn - neg - peer perception - e-bike is for old people - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Negatives] [sn - cha - changing perceptions: it is real biking - Family: Subjective Norm - Changing]
No memos
M: Is that still the perception?
A: Still they laugh a little bit, but they also understand that it's fun.

P20: Paul Interview.docx - 20:12 [P: At first I didn't tell it a..] (14:14) (Super)
Codes: [bar - pee - sn - val - not caring what others think - Families (3): *Subjective Norm - Buying an E-bike, Barrier - Peer Perceptions, Subjective Norm - Value of Others] [sn - cha - changing perceptions: it is real biking - Family: Subjective Norm - Changing]
No memos
P: At first I didn't tell it around, I kept quiet. People still thought I was on a normal bike. But it started to become more regular, and now I don't hesitate telling that I use an e-bike. That changed in the last 5 years, that perception.

Code: sn - cha - changing perceptions: it was not something for me, now positive {2-0}

P10: Marja Interview Final - analy.docx - 10:4 [Well in the beginning I did no..] (25:25) (Super)
Codes: [sn - cha - changing perceptions: it was not something for me, now positive - Family: Subjective Norm - Changing]
No memos
Well in the beginning I did not need an E bike so I never thought about it as something that would be useful for me. But my perception changed. As soon as I started using an e-bike and suddenly: Ah! my freedom is back.

P20: Paul Interview.docx - 20:8 [P: Five years ago, I was hesit..] (12:12) (Super)
Codes: [sn - cha - changing perceptions: it was not something for me, now positive - Family: Subjective Norm - Changing]
No memos
P: Five years ago, I was hesitant to start using the e-bike. I thought, well, it's not for me, I'm sportive and still healthy. But it has several advantages. Just as I mentioned, I don't have to take a shower, so it saves me 15 minutes every day. And it gives you a lot of energy once you've done your cycling.

Code: sn - cha - news: more e-bikes sold than regular bikes {1-0}

P 4: Anouk Interview - analys.docx - 4:6 [Well, more of the people's vie..] (12:12) (Super)
Codes: [sn - cha - changing perceptions, younger generation e-biking too - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Changing] [sn - cha - news: more e-bikes sold than regular bikes - Families (2): *Subjective Norm - Buying an E-bike, Subjective Norm - Changing]
No memos

Well, more of the people's views changed. 5 years ago, it was only old people who wanted to do day trips, men and women in the same jacket. Now it is more common. I heard on the news that more e-bikes are sold than normal ones

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Code: sn - col - colleagues inspiring to e-bike {7-0}
P 3: Angeline Interview - analys.docx - 3:20 [Yes, I had one collegue, Janne..] (20:20) (Super)
Codes: [sn - col - colleagues inspiring to e-bike - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
Yes, I had one collegue, Janneke, who was also the one who inspired me to think about the e-bike
P 3: Angeline Interview - analys.docx - 3:21 [But I'm not sure if she took p..] (22:22) (Super)
Codes: [sn - col - colleagues inspiring to e-bike - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
But I'm not sure if she took part in the pilot. I think she bought it by herself.
P 4: Anouk Interview - analys.docx - 4:23 [yeah, maybe two of them were "..] (38:38) (Super)
Codes: [sn - col - colleagues inspiring to e-bike - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
yeah, maybe two of them were "inspired" let's say! Most people live a bit further, let's say 10 km, so for normal bike it is a bit too far, but for e-bike it is OK. So due to distance.
P10: Marja Interview Final - analy.docx - 10:1 [Marja: I had a friend from TU ..] (9:9) (Super)
Codes: [sn - col - colleagues inspiring to e-bike - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
Marja: I had a friend from TU Delft. I spoke to her. she said that it was the best thing I ever buy was an E bike. I asked her about why and what and things like that. somehow it lingered in my mind. I
P10: Marja Interview Final - analy.docx - 10:18 [It is also important to say th..] (73:73) (Super)
Codes: [sn - col - colleagues inspiring to e-bike - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
It is also important to say that people can motivate each other to buy a bike
P15: Sylvie Interview.docx - 15:5 [Then I heard somebody saying t..] (10:10) (Super)
Codes: [sn - col - colleagues inspiring to e-bike - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
Then I heard somebody saying that he's going to Zoetemeer daily on the bike. I think he lives in the same place as I do. It's a very long distance and I know many people who do that distance with the car. But he made a choice to do it by an electric bike. Then I thought that's a good idea to stay on the bike but then make your travel time not much longer by using an e-bike.
P22: tineke interview.docx - 22:10 [T: It was my own idea. There w..] (22:22) (Super)
Codes: [sn - col - colleagues inspiring to e-bike - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
T: It was my own idea. There was a colleague in my previous job. She lived in Naaldwijk and she went to the Hague, she e-biked quite a lot. And you know, when I first heard I was also making a bit of fun. I said: "Why don't you use a normal bike?" and she said "Oh, it's 20 km, are you crazy?" And you know, it started making sense. I had an example.

Code: sn - col - discuss the pilot program with colleagues {6-0}
P 2: A2 - analys.docx - 2:4 [I think they were also were ve..] (8:8) (Super)
Codes: [sn - col - discuss the pilot program with colleagues - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
I think they were also were very interested in the participating in this project
P 4: Anouk Interview - analys.docx - 4:17 [: Yes, I have 2 of them, I thi..] (26:26) (Super)
Codes: [sn - col - discuss the pilot program with colleagues - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
: Yes, I have 2 of them, I think.
P 7: Jan Interview - analy.docx - 7:12 [My colleagues interested, on w..] (14:14) (Super)
Codes: [sn - col - discuss the pilot program with colleagues - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
My colleagues interested, on why I want to do it.
P 9: lars interview - analys.docx - 9:1 [: Well, I heard from my superv..] (6:6) (Super)
Codes: [sn - col - discuss the pilot program with colleagues - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
: Well, I heard from my supervisor that there is a pilot
P11: Paula Interview - analy.docx - 11:26 [I also told my own team to joi..] (40:41) (Super)
Codes: [sn - col - discuss the pilot program with colleagues - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
I also told my own team to join the program, it is a good initiative.
M: Did they join as well? The team you manage.
P20: Paul Interview.docx - 20:18 [P: Well, I have a colleague, h..] (30:30) (Super)
Codes: [sn - col - discuss the pilot program with colleagues - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Colleagues]
No memos
P: Well, I have a colleague, he is also joining the Pilot. He lives 12 km away. I'm not sure if I inspired him, but he also decided to apply for an e-bike, which is nice.

Code: sn - ff - e-biking community {1-0}
P 1: A Interview Final - analys.docx - 1:3 [lot of people e-bike there] (9:9) (Super)
Codes: [sn - ff - e-biking community - Families (2): *Subjective Norm - Buying an E-bike, Subjective Norm - Family & Friends]
No memos
lot of people e-bike there

Code: sn - ff - family not believing that they'll use {1-0}
P11: Paula Interview - analy.docx - 11:21 [P: They liked it very much. Bu..] (36:36) (Super)
Codes: [sn - ff - family not believing that they'll use - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
P: They liked it very much. But the only thing is they don't believe I'll take the e-bike

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Code: sn - ff - know someone who has an e-bike prior to program {7-0}
P 1: A Interview Final - analys.docx - 1:1 [Yes, my grandparents] (9:9) (Super)
Codes: [sn - ff - know someone who has an e-bike prior to program - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
Yes, my grandparents
P 2: A2 - analys.docx - 2:1 [I know that my mom had an e-bi..] (6:6) (Super)
Codes: [sn - ff - know someone who has an e-bike prior to program - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]

No memos
I know that my mom had an e-bike
P 5: Daan Interview - analys.docx - 5:1 [My daughter has an e-bike. I k..] (7:7) (Super)
Codes: [sn - ff - know someone who has an e-bike prior to program - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
My daughter has an e-bike. I know the e-bikes
P 8: Jerwin Interview - analys.docx - 8:11 [My parents have e-bikes,] (10:10) (Super)
Codes: [sn - ff - know someone who has an e-bike prior to program - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
My parents have e-bikes,
P11: Paula Interview - analy.docx - 11:7 [P: I have colleagues who have ..] (16:16) (Super)
Codes: [sn - ff - know someone who has an e-bike prior to program - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
P: I have colleagues who have e-bikes, not friends, but many colleagues.
P12: R Interview - analys.docx - 12:2 [R: I think one or two people, ..] (4:4) (Super)
Codes: [sn - ff - know someone who has an e-bike prior to program - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
R: I think one or two people, they're mostly elderly.
P23: Emelie Interview.docx - 23:1 [E: Yeah, I know some people th..] (4:4) (Super)
Codes: [sn - ff - know someone who has an e-bike prior to program - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
E: Yeah, I know some people that came to work by an e-bike indeed

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Code: sn - ff - partner buying e-bike too {4-0}
P 6: Isabelle Interview_adjusted - analy.docx - 6:22 [So he got a really good one an..] (45:45) (Super)
Codes: [sn - ff - partner buying e-bike too - Families (2): *Subjective Norm - Buying an E-bike, Subjective Norm - Family & Friends]
No memos
So he got a really good one and so if mine dies I get his and he gets a new one.
P 6: Isabelle Interview_adjusted - analy.docx - 6:23 [did your boyfriend also start ..] (47:49) (Super)
Codes: [sn - ff - partner buying e-bike too - Families (2): *Subjective Norm - Buying an E-bike, Subjective Norm - Family & Friends]
No memos
did your boyfriend also start after you e-biking or?
00:07:09
Isabelle: Yeah he also started using it. Because we were already together. So we start using it together. Both recognizing that it is nice
P 7: Jan Interview - analy.docx - 7:18 [So, if we both get an e-bike t..] (18:18) (Super)
Codes: [sn - ff - partner buying e-bike too - Families (2): *Subjective Norm - Buying an E-bike, Subjective Norm - Family & Friends]
No memos
So, if we both get an e-bike that could be a good solution
P 7: Jan Interview - analy.docx - 7:28 [think I will buy at least one,..] (34:34) (Super)
Codes: [sn - ff - partner buying e-bike too - Families (2): *Subjective Norm - Buying an E-bike, Subjective Norm - Family & Friends]
No memos
think I will buy at least one, maybe one for my wife as well.

Code: sn - ff - people want to try e-bike {1-0}
P 9: lars interview - analys.docx - 9:6 [L: Well, it is connected to my..] (16:16) (Super)
Codes: [sn - ff - people want to try e-bike - Family: Subjective Norm - Family & Friends]
No memos
L: Well, it is connected to my phone, so I can't lend it to other people, but there were people who wanted to try.

Code: sn - ff - positive support from people who matter {9-0}
P 1: A Interview Final - analys.docx - 1:7 [I told them and they really li..] (21:21) (Super)
Codes: [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
I told them and they really liked it
P 6: Isabelle Interview_adjusted - analy.docx - 6:24 [Some people say oh that's nice..] (53:53) (Super)
Codes: [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
Some people say oh that's nice
P 7: Jan Interview - analy.docx - 7:13 [some agree with me that it hel..] (14:14) (Super)
Codes: [ad - soc - societal benefit: not using the car - Families (2): *Attitude - Buying an E-bike, Advantage - Societal] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
some agree with me that it helps you to bike more and leave your car
P 8: Jerwin Interview - analys.docx - 8:15 [Most people were positive] (16:16) (Super)
Codes: [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
Most people were positive
P11: Paula Interview - analy.docx - 11:21 [P: They liked it very much. Bu..] (36:36) (Super)
Codes: [sn - ff - family not believing that they'll use - Families (3): *Subjective Norm - Buying an E-bike, *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
P: They liked it very much. But the only thing is they don't believe I'll take the e-bike
P12: R Interview - analys.docx - 12:9 [I also had support, in a sense..] (10:10) (Super)
Codes: [ad - hea - e-bike is healthy - Families (4): *Attitude - Buying an E-bike, *Attitude - Daily, *Attitude - Pilot, Advantages - Health Related] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
I also had support, in a sense that some people were happy I was switching from my car into a bicycle for health reasons. But mostly curiosity.
P13: Vincent Interview - analys.docx - 13:9 [how did your family, colleague..] (21:22) (Super)
Codes: [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
how did your family, colleagues, your friends react to you having an e-bike?
V: Positive
P16: Elsa Interview.docx - 16:9 [E: They were just happy I was ..] (16:16) (Super)
Codes: [hab - ebi - bike more often with e-bike - Families (2): *Habits - Cycling, Habits - E-bike] [hab - ebi - use e-bike for non-commute purposes - Families (2): *Habits - Cycling, Habits - E-bike] [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]

No memos
E: They were just happy I was on a bike. Because of my illness, my life became way smaller because I couldn't travel as much. So, they were really happy because now my boyfriend and me, we can just bike together. While he used to be having to push me because I couldn't get anywhere with my bike.
P23: Emelie Interview.docx - 23:8 [E: Yeah! Some people still fin..] (18:18) (Super)
Codes: [sn - ff - positive support from people who matter - Families (2): *Subjective Norm - Joining Pilot, Subjective Norm - Family & Friends]
No memos
E: Yeah! Some people still find it a long way to Delft, but I think it's not long, the time. People were like "oh, now you're going by e-bike, do you like it?". Yeah, positive reactions.
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Appendix M: Expert Interviews

Roel Interview – 3pm the sustainable mobility company & Fietspromotor Bereikbaar Haaglanden

M: In the NL half of car trips are shorter than 7.5 km, and 1/3 are shorter than 5 km. But people, despite being used to bike, choose not to bike for comfort, responsibilities or weather. But people think e-bikes can overcome some of these obstacles. Do you think this is really the case? I've heard from people that weather is still a concern. However, in your experience, when they actually try the e-bike, their attitude towards these changes?

R: I think that main goal of the e-bike pilot we're doing is to get people on the bike to replace a trip they don't do by bike usually. It's not a rational decision to travel by car or not. It's just convenience, people don't think about it. I see the e-bike pilot as a means of getting people to think again by making it really easy to try to e-bike. People are willing to do that. The bike is right in front of them, they just try it. There is no discussion anymore, if you ask them why they don't cycle, they'll give these reasons. But that is not the real reason, it is just a habit to go by car. If that is the habit you don't think about it, there is not a need for a reason, you just do it.

M: I agree! When I went back to Istanbul from my exchange here, I wanted to cycle there even though it is not seeing as "logical".

R: Side effect of e-bike trial is that, if they're lucky, they see that it doesn't rain that much in the NL. Everybody says it rains all the time, but it actually doesn't.

M: People also say they don't care cycling in the rain back home, but the other way.

R: Yes, I can imagine that.

M: When it rains, you still have people going back to the car, which means you need to build parking spaces. Is this a challenge in the adoption, as it means public space is still occupied by car parks?

R: Well, with parking space, if you build it, people use it. If not, they won't. With employers that don't have the space, people don't come by car. I know employers who adapt paid parking, and then people stop driving. It is a difficult decision as an employer, it takes some guts.

M: I heard from women that when they're mothers, it is actually when they need a car to carry children around. Of course, dads are also helping, but I hear it more often from women that they really need a car. It makes it hard to target them. Is it possible to market to them?

R: Of course, you'll need a different proposition. I heard this too. When my children were small, I was taking them to school with the bike. Friends of my children came by car, because their parents said by bike it is too dangerous. And then I said, it is dangerous because you take them by car to school. That changed their minds.

M: Maybe with the e-bike it is easier.

R: Well, children need a bike too. They can be on the bike, also possible but I don't think e-bike is a better alternative than the bike. The advantage of the e-bike is for distances longer than 7.5 km. That's a distance, if you have to school, then you don't go by bike. Too far for children to cycle to school.

M: Have you heard often about people's interest on the lending scheme that will be arranged by the government in 2020?

R: For bike producers and bike shops think that the regulation will raise the demand for the e-bikes, but I doubt it. Because the only difference is that it is a tax regulation. So, if your company leases an e-bike to you as their employee, you get part of the value of the bike added to your income, so you pay tax on that. This part added to the income is not very clear at the moment, but technically you can still do it now. It is possible but a bit difficult but will be easier on 2020. I don't think much will change. It is a nice regulation for expensive e-bikes, 3-5K e-bikes, maybe speed pedelecs. It will be interesting; people will lease an expensive e-bike instead of a car. I don't think people will lease instead of buying. It is a very expensive way. A bike of 1-1,5K, if you lease it you pay 2-3K. That is a very expensive way to buy. That is what I think, but hard to tell now.

M: I heard from existing bikers, maybe specific to the TU, that lanes are too crowded. Do you hear this as well?

R: Yes, E-bikers need to adapt themselves to the general flow of traffic. When it is very crowded, you can't go fast. In the Hague, peak hours are very crowded, when children go to school. Paths are getting crowdy, they need to invest on that.

M: There are a lot of investments on the bike highways, that is nice too. What do you think that it's missing in the current research area? What could be useful for you, from the theoretical side?

R: Thing that is missing is, I wanted to do this but didn't have time, to know if people still use them after a year. We send them an inquiry before, after and 1 month after the pilot. Would be interesting to see if people are still e-biking a year later. What is the structural change?

M: People also get motivated from others to start e-biking. It would be interesting to see how other people in TU Delft will be inspired.

R: Also, how many people actually buy after the pilot. I'll be interested in all the answer you get from these. Our cyclists also give interesting answers.

M: With your pilot program, what was the greatest challenge? Did people really buy it?

R: 1 month after I ask that. At the end of the pilot, I ask people if they'll buy it, and some say maybe or yes. Among those, I ask a month later, and from that group 30% bought a bike after the pilot. Quite a big number. I think that's high.

M: It also depends on people's finances. So, TU Delft is also looking into how they can help with that, possibly not for sure, for employees. Also, more and more Dutch students live with their parents, that changes.

R: That means they live further away from the university than before.

M: We also don't have space left, so people are moving away. Also, for internationals don't have the image that e-bikes are for old people like Dutch students. Some buy racing bikes, but that is tiring due to the position.

R: At the moment our pilot is more successful than it has ever been. We do a pilot with 13 shops in the region, all have 2 e-bikes in the system. We started on 1st of March, this morning I had 134 who reserved an e-bike. More people are willing to try.

M: I also heard someone wanted to try, but couldn't try as there was no renting abilities, and renting e-bike would be an expensive system.

R: What we try is to stimulate the employers to adjust regulations to increase cycling to work. Such as investing in bicycle parking, that kind of things, charging facilities, allowance to invest on bike. Also, safe parking due to theft

M: There is also insurance for theft.

R: Yes, but that is extra costs.

M: These were my questions. Do you have questions?

R: I am interested in the result of the pilot of TU Delft. If you can send them, it would be great. Also, these bicycles you have, the smart bicycles, you also know where they cycle?

M: Yes, but I have no access.

R: That would be interesting too.

M: Heard there is a research as well but haven't met them yet.

R: These are all I wanted to ask.

M: Any comments, anything I miss? I found that facilities are important. Showers too, but e-bikes make this far less needed.

R: Facilities at home is also an issue. People living in the city lack bicycle sheds, that could be an issue as well. What we learned from our pilots in last 2 years is that e-bikes are interesting for people who can't cycle anymore, due to knee issues or injuries. Also, people with breathing problems, they're really happy to cycle again, that is nice.

M: Perception about younger people e-biking is also changing, I think. Also, good that cycling is improving in NL, still!

R: We've been doing the pilot for 5 years, and every year we think: now everyone knows what an e-bike is, so we should maybe stop this. And every year, participators are growing, and there are still people who cycle to school, but not to work. People stop cycling after university years.

M: If OV wasn't free, a lot more people would have cycled as well. I've read that if you give public transportation, people choose that over bikes. In this pilot, e-bikes were more attractive than other alternatives, that was good as well.

R: Also due to location, some are harder to access by OV.

M: Yes, for people who live outside Rotterdam, Den Haag, OV becomes hard. So, Delft's location is quite good for it. I even saw people from Leiden taking the e-bike, it is a long way.

R: How did you find my name?

M: From the reports of Bereikbaar Haaglanden. By the way, other programs in other provinces were easier to find in English, but it would be nice here as there are a lot of expats.

R: Yes, we're translating the website to English.

M: Do you also agree that if you're using a car, e-bike is more attractive as it is also private, and more comfortable and flexible.

R: Yes, there are theories about travelling by car is more similar to bike than OV as it is individual mode of transport: can choose when to leave and where to go. It is a similarity, and the electric part makes it even more attractive for people who love technical solutions or similar.

M: I also know someone who uses a speed pedelecs, which is quite fast, 45 km/h.

R: That is an interesting market for 30-40 km distance. But there is also issues with the requirement for license, helmet, and you're officially a scooter so you need to ride on the road, not the bike path. Yes, that is imaginable if you drive 40 km/h, but to ride that fast you have to put a lot of effort, so they don't always go that fast. Driving between cars when you're going 20-30 km/h is not ideal.

M: Driving between cars is really annoying, in Istanbul I felt insecure and never got used to it. Thanks a lot!

Roman Interview – Dutch Cycling Embassy

M: Can e-bikes remove barriers that stand in front of cycling? Had the cycling embassy done any projects with e-bikes?

R: We have some partners. The cycling embassy has a network of organizations and research institutes, also some partners that build e-bikes. We do some projects with them, can't name any specific projects right now but we definitely do some.

M: In the NL the cycling levels haven't risen despite being quite high. Do you think e-bikes can push the level up?

R: That can definitely help pushing up. We looked at some studies, 47% of people in the NL consider switching to a e-bike rather than a car. The study also found in other EU countries this was only 24%. So, NL is more special. It was a Shimano study; I'll send the link to you.

M: With bad weather people don't cycle, also other responsibilities such as carrying children also push people out of their bikes to the car. Do you think e-bikes can also help with this?

R: Definitely. For example, with the weather, people driving don't feel the weather. There is this website, a guy who did a 10-year study, he is driving his car to work every day. He found out only 10% of the days it was raining, not that much rain indeed. If you're doing a pilot with e-bikes, people will notice the weather more.

M: Young parents, especially mothers, do not want to buy e-bikes due to errands and they don't want to invest on a thing that is only for themselves. Did you experience barriers with the same group?

R: Not really. What we thought of is that lot of people with children buy cargo bikes, and now there are a lot of e-cargo bikes, and that is quite a good alternative for families with children. But we haven't experienced the resistance you mentioned.

M: What infrastructural, institutional and societal barriers did you see that stand in front of wider adoption of e-bikes.

R: In Shimano study, they listed 4 biggest barriers. 1 is possibility of bad weather, 2 is that they're too expensive, 3 is that commute was too far and 4 was arriving sweaty. These were the barriers reported by those who don't have an e-bike ("Quarter of European commuters willing to switch to e-bikes," n.d.)

M: Arriving to work sweaty is actually not the case, lots of users say that they don't sweat with the e-bike

R: Exactly, it is more like a prejudice. With e-bike its actually easy.

M: People that I have talked to that use an e-bike also don't find it expensive anymore because they use it a lot more than a normal bike.

R: Compared to car its very cheap.

M: Racing bikes are also quite expensive, so e-bikes can be OK.

R: E-bikes used to be more popular with the older generation. But its changing. We have some numbers. Half of the e-bike kilometers travelled are by people older than 65. But recent years more and more younger people are buying it.

M: In Zuid Holland they're going to build bike highways. Do you think this makes e-bikes more attractive?

R: Definitely. A Danish study found that building a bike highway led to 10% rise in the number of commuters, from suburbs to Copenhagen. This helps people to get out of cars: it helps you go faster, doesn't take you as long as before.

M: For Delft that is good, as the distances to other cities is not that much.

R: Good thing about these highways is that they're generally new, so in good shape. With e-bike you need good surface so you can really use it and go fast, that is very positive.

M: What do you think would be interesting for you from my research? What are you missing from the research arena?

R: Difficult question, we don't look into research much ourselves, we share results in media but not really a lot. We use our own network, also of some researchers, we make projects abroad, send our experts, but we are more like an intermediate. We found some research into e-bike potential of NL; I'll send you the links as well (Beenker & van der Aa, 2018)(Beenker & van der Aa, 2018)

M: Thank you! Any other remarks?

R: Maybe about the safety concerns. E-bikes are faster, and helmet isn't mandatory for them. Also, you need safe parking spaces, you don't want to leave it outside in the street, could be a barrier for some people.

Jan Ploeger Interview – Program Manager: Transition to Renewable Energy in Transport & Infrastructure, Province of South Holland

M: I've seen from your website about the Samen Verder program. There it said you wanted to increase percentage of the cyclists in the trips up to 15 km.

J: That is said on the website but really not the formal goal of the "Omgevingsvisie" (former Visie Ruimte en Mobiliteit), no shift of mode goal. It is appropriate to people who already cycle, the goal is to facilitate people who like to cycle. Maybe with the energy transition policy this could be a new goal. But now it is formulated as: everyone who travels, we facilitate them. All are equally important.

M: In the provincial level increasing cycling is not a policy?

J: No, but it slips in the texts, because for many reasons such as air quality, CO_2, it is a good measurement. But still it isn't an explicit goal, but implicitly it's there. It is a goal because the funds are raising, there is politics to give more funding to cyclists to facilitate them.

M: There will be a bike highway that goes through here, right?

J: There is a whole network planned, more focused on long distance cycling but not particularly e-biking, we don't know if that increased. We count cycling mechanically but only way to figure out is to analyze the speeds in the data. Could be a nice job for you. We have 10-year data of cycling, but we don't know the number of mopeds, cyclists and e-bikes. We count 2 wheelers by units but using the speeds you can see the number of e-bikes. It could be interesting for you to analyze whether the sale of e-bikes is reflected on the usage in commute.

M: I will talk to my supervisor and let you know if it fits in my research. So, does the province build the bicycle roads?

J: In general, we provide the funds, but the communities build the roads. We fund their roads. Cities and communities take them over and use them. Only if the bicycle path is part of the provincial road (like N470, Kruithuisweg for example) we built and manage the bicycle path as province.

M: CRE said the bicycle road here was funded by the province as well.

J: Delft and the campus owns the roads, and we fund them. We have the network approach together, if you look at the maps, there is an analysis available. There you can see which routes would be good to build. Together with the local governments, communities and big cities we make them happen.

M: I was going to ask about the forecasts of e-bike usage, but then I guess you won't have it.

J: No, the union of bike shops have the numbers of e-bikes sold and that numbers are quite accurate. Also, heavy mopeds and snorfietsen numbers are accurate.

M: Mopeds also have the same speed as the e-bike, right?

J: Well, yeah. We have 2 types of mopeds: blue number plate, snorfietsen, which is actually an insurance plate that shows they're insured for damage. They're allowed 25 km/h everywhere. The yellow plates are the bromfietsen, they have to wear a helmet, and they have to have a license. They're allowed 45 km/h on the road (if there is no bicycle path or if they are not allowed to use them, 30 km/h on the fietspad in town and 40 km/h on the fietspad in the country side. But we don't have appropriate data in CBS mobility research there are limited numbers. (For more information, visit the website ("Brom- en snorfiets," n.d.).

M: Last year they started including e-bikes, right?

J: Yes, but they still have small numbers to give insights specific to Zuid Holland. I'll show you, in our website we have specific Zuid Holland data on our website. It is from CBS, but specific for Zuid Holland. If you go to our website, section "cijfers, feiten en kaarten" and then you can select open-data mobility, then you can find the maps with data from bike usage on the routes. Stad van Zuid Holand>Mobility>Fietsnetwerk, and there you can find a lot of information.

M: Do you have the speed of people that pass through also there?

J: No, that is micro data, if you're interested, we can provide it for trend analysis.

M: People mention, especially for TU Delft that bike paths were too crowded. Also, a woman who cycles from Schiedam said the routes were too park. I guess these will be better as you're building new routes.

J: Yeah.

M: Also, for electric cars, they have chargers on the roads. Are you also thinking the same for e-bikes, given you have innovative bicycle roads?

J: No, because we did some experiments in recreational hubs, but batteries are improving a lot, and cyclists can cycle 100 km a day. Commuter distance is 15 km, so this is not needed.

M: Are paths also growing larger? As it is more crowdy every year, will the standards go up?

J: Well, it is a bit problematic. I worked on the guidelines for the bicycle path, I was the chair of the group who made the guideline book. We did it around 2000. Then the policy was for mopeds to go to motorway inside towns. We had few on mopeds and e-bikes. For e-bikes, there was a moped with a small motor, it wasn't an electric motor even. But they had 25 km/h and was not of concern. We made the guidelines with 75 cm for a cycle, so two cycles were 150 cm, with extra 180 cm. But most mopeds are 1 m, and they have the mirrors as well. They also drive faster, and cyclists don't go in a straight line but zigzag a bit. In general, our bicycle paths are too small. What is very strange is that on campus the bike roads are not even fitting to the guidelines, so it is even smaller.

M: Yes, I was surprised as an international but now I even hear Dutch people complain about TU-wijk.

J: I can show you some details about these guidelines. This was my presentation 4 years ago for the bike congress, about designing bike-friendly infrastructure. Guidelines are there to design bicycle friendly, but we see a lot of bicycle design that is not properly designed. For example, distance to a wall has to be considered as people don't ride close to the wall (*there is a picture where the road has a wall next to it*). To make a concrete wall there needs to be an incline, not a direct wall. 60% of bad injuries in NL happens with only 1 involved in the accident, no vehicles or people. It can be a steering error, not seeing a pillar in the route. SWOV makes the research and shown that local governments don't follow the guidelines. So many injuries are due to bad infrastructure. Number of serious wounded cyclists is increasing. Serious wounded refers to people who go to hospital, stay 1 or 1+ nights have more than 1 injury. These are severe accidents. One of the first action was to take away the pillars, which are dangerous at night. Even new routes have strange details (*picture isn't flag, the route makes a small zigzag)*. Bicycles are not stable, when it is slippery people can fall. I fell here as well; it was a temporary situation with wooden plates on the road and one was very slippery due to rain. Here there are

stones in the pavement (*between two lines there is a sideway with stones inside)* and if you have a steering fault you come here, and stones can create problems. But of course, it can be very nice as well, with good design. So, you need to take into account all the room you need for cycling. The space needed is larger due to side wind (like the EWI building), when there is traffic signs or wall they should be further away. In 1978 we made research about how people, mopeds keep their track, so how they drive, that it is not straight, and when there is a curve, they need more room. The new users of the lane, we didn't expect them to be there, the mopeds. They are 1 m wide and they have the mirrors. They're also faster. Snorfietsen are non-existing in Europe. So, when they're first produced, they're faster than this. They make a break in the electric circuit. But people who buy it know where this break is, so they fix it, and go faster. There are also a lot of users of the lane, because it is useful for other transport systems as well, that don't fit well to the car routes, like bakfiets. Here, you can also see symbols of bad design. One is here (*bike trying to switch lanes, but he is sharing the lane with normal car*) where the cyclist has priority, but he sees the car is 70 km/h and he doesn't use his priority. Second is the one here in campus (*crossing in front of TPM where people were guiding cars/bikes to stop*), I argued that when you need people it's not good design.

M: But now they have the lights.

J: Yeah, but this is 2nd best solution. They could have moved the bicycle lane to the other side of the road to better fit the routes cyclists use and reduce number of interactions point with cars.

M: Bike highways could be very beneficial for TU, more people can e-bike as it is even better.

J: If you look at the literature in the NL, it is very interesting to read 95% of people like cycling. But they don't cycle due to stolen bicycles, unsafe in the dark or its not fast. So, it competes with other modes. So, when you fix the infrastructure, and it can compete with car use better, than you have a good bicycle policy. Its free parking here in the campus area. That is very bad for bike usage. If there is a better car park policy, I don't like it because then all cars come and park at my street ☺. We'll solve that. But when there is better parking policy, behaviors will change. It's nice when there are better quality bike routes.

M: Also, as it is free there are student cars as they don't need to pay.

J: Yes, or they park here but not in the city where they live, where they need to pay or not enough space.

M: For e-bikes, as they help with congestion and CO_2 emissions, is there a method you use to quantify these improvements, perhaps financial tools?

J: No. We increase the funding, but we don't know what the effect is.

M: What do you think it is missing in the research field, interesting for you?

J: For example, where I work in province office, I see increasingly the e-bikes. More people come by it, and they tell me that they cycle long distance, not using the bus or

train. Because we have almost no parking place for cars, so people need to bike or use OV. Only a small number is allowed with private car. So, they changed from OV to e-bike. You can interview them

M: Thanks! But I have quite a few from the TU.

J: Yes, but it's interesting to see why they switched from OV to e-bike. Its faster, reliable, as OV is overcrowded.

M: There are delays and schedule problems as well.

J: And the bicycles are better! I cycled all through my 40-year working period to the Hague from Delft, 13 km. In the first 10 years, every month there was one flat tire. There were punctures, iron things, glass.

M: Were people lithering more?

J: Well, I cycled through an industrial area and there were things on the ground. But we've improved bicycle tires. They're puncture proof, and I don't have flat tires anymore. Now I have a very good bike with the belt and not a chain. It will decrease my chain issues, and maintenance costs. I also have better clothes, a really good jacket.

M: There are also more showers and changing rooms at work places too.

J: Yes! I can shower and change in my work, there is storage for my wet clothes.

M: Do you cycle every day, even in rain?

J: Yes, winter too. But I have this observation in 80s and 90s in the autumn, in the winter I was alone in the route. People were going to bus or train. In summer a lot were there. Now I notice people cycle all year around.

M: But the infrastructure is a lot better now, right?

J: No! Some parts are better, but some parts decreased in quality. More traffic lights, more interaction with cars. I go pass the situation near the central station in the Hague. It is quite bad, and they didn't improve it nowadays.

M: I also cycled in Istanbul, and that wasn't enjoyable after a while.

J: I see new improvements today that make my route better.

M: Good, but now people nowadays are less affected by weather?

J: Yeah, I see that. I used to be the fastest cyclists anymore, maybe it's my age ☺

M: Ah, I think lots of people are very sporty about cycling now.

J: Young girls are really faster as well.

M: There is also better training options.

J: Yeah, but they also use e-bikes to combine tasks, such as bringing children to school, then they hurry to work. It is the new society.

M: Thank you!