# Universal Basic Income: the future of social welfare?

## Trade-off between acceptance of Universal Basic Income, labor participation, budget neutrality and poverty reduction in the Netherlands

by

C.W. Ouwehand

To obtain the degree of Master of Science in Engineering and Policy Analysis

at the Delft University of Technology,

to be defended publicly on the 14th of May 2024.

Student number: 4293053

Project duration: June 29th, 2023 – May 14th, 2024

Thesis committee: S. Renes, TU Delft, first supervisor

M. Kroesen TU Delft, chair of the committee and second supervisor

TU Delft

# Preface

Poverty and inequality are closely intertwined, with inequality often exacerbating poverty by limiting access to resources and opportunities for marginalized groups. While individuals in poverty may receive significant monthly cash payments in the form of welfare benefits and allowances, these supports are often conditional and subject to reductions as income increases. This can lead to a situation where individuals are effectively trapped in poverty, as marginal taxation rates exceed 100% in certain scenarios, creating what is known as the welfare cliff. This perpetuates a cycle of poverty, as individuals are unable to escape it through increased labor participation. Conversely, the wealthiest members of society may also benefit from government assistance through tax deductions and mortgage rate deductions that are not based on income.

A potential solution to address these inequalities is Universal Basic Income (UBI), a social welfare policy that provides an unconditional sum of money to every citizen in the Netherlands. However, UBI is often criticized for several reasons, including its potential to decrease labor participation, its affordability for the government budget, and its perceived inefficiency, as it provides the same amount to both the most in need and the wealthiest citizens. Consequently, questions regarding the level of support for this policy arise.

The decision to explore UBI as the subject of this master's thesis in Engineering and Policy Analysis at Delft University of Technology stems first to verify if these criticisms on UBI are true, would it lead to less labor? even with the current welfare cliff? Is it true that it cannot be financed? Are citizens not in favor of this policy? and why? Secondly, I am fascinated by its potential to reduce disparities in government assistance between the rich and poor, its capacity to significantly alleviate poverty, its potential to streamline governmental processes, and its promise to foster a society where individuals can enhance their income through labor.

I am deeply grateful to Sander Renes and Maarten Kroesen for providing me with the opportunity to undertake this project, for their unwavering patience over the last year, and for expertise in the areas of taxation economics, welfare economics, political economics, statistical analysis, survey design, and behavioral analysis. Their sometimes hard, but always constructive criticism and guidance have been invaluable in steering this project in the right direction. I would also like to extend my appreciation to Ewout ter Hoeven, a fellow student and close friend, for his contributions to the brainstorming, conceptualization, and visualization processes of this project.

This project has significantly increased my interest in governmental finance, as it has provided me with valuable insights into the complexities and challenges of designing effective social welfare policies while balancing budgetary constraints. Seeing the limitations of the Dutch taxations system makes me eager to work more on financial questions in the future.

*C.W. Ouwehand*
*Delft, 29-04-2024*

# Summary

The tax system in the Netherlands is complex, with certain individuals facing marginal taxation rates as high as 80% or even exceeding 100% (Quist, 2015; Goderis & Vlekke, 2023). These elevated rates stem from the loss of allowances, tax deductions, and other social benefits as income rises, affecting around 66% of households and discouraging them from increasing their labor participation. This effect is called the welfare cliff. This welfare cliff is present at two individual gross income levels from 0 to 14,000 euros and from 27,000 to 45,000 euros making it very difficult to escape poverty by increasing labor participation. Simultaneously, approximately one million inhabitants, constituting 6.8% of the population, live below the poverty line (Goderis, Hulst, Wildeboer Schut, & Ras, 2018). This is partly due to the non-uptake of allowances, driven by fears of repayment if income exceeds certain thresholds, as well as eligibility criteria based on factors beyond income and wealth, such as rental type and costs.

To address poverty and alleviate the welfare cliff phenomenon, this study accesses a proposed solution in the form of Universal Basic Income (UBI). UBI entails providing every regular resident of the Netherlands with a monthly, unconditional sum of money. The primary objective of UBI is to establish a baseline of financial security and stability, thereby reducing poverty and inequality (Van Parijs, 2004). Additionally, UBI serves as an incentive for individuals to engage in employment, as it removes the disincentive posed by the welfare cliff, ensuring that income increases gradually with work participation.

Although the idea counted large support at first due to its calculated potential to reduce poverty by 60% (ING Bank, 2018; I&O research, 2020), the discussion regarding UBI in the Netherlands took a turn after macroeconomic studies suggested that its implementation would require an additional tax increase of 50 to 100 billion euros, Depending on the level of generosity of the UBI, decreasing the support and could potentially lead to a 4 to 8% decrease in labor participation (Olsthoorn et al., 2020).

Based on these findings, this study seeks to address 8 fundamental questions on the ongoing discourse surrounding UBI. It aims to investigate the trade-off between UBI support, labor participation, and poverty reduction in the Netherlands across diverse financial policy scenarios. Additionally, the research endeavors to analyze the behavioral responses of Dutch citizens to explore potential less quantifiable benefits of UBI, such as enhanced educational investment, improved (mental) health conditions, or increased engagement in volunteer work. Ultimately, the study seeks to offer policy recommendations regarding UBI based on its empirical findings. This study analyzes all these questions through the impact UBI has on the disposable income of the recipient.

1. What are potential financial policies for UBI?
2. Which specific groups within the Dutch population may differ in behavioral patterns from the rest of the population in response to UBI?
3. How does UBI affect marginal taxation rates?
4. How will labor participation patterns evolve in the Netherlands under different UBI policies?
5. What is the trade-off between labor participation and support for UBI policies?
6. What UBI policies are budget-neutral and supported?
7. How does UBI affect poverty?
8. How would Dutch citizens allocate their financial resources and utilize their time if UBI were implemented in the Netherlands?

The introduction of UBI necessitates a substantial reform of the Dutch welfare system and tax framework to ensure the maintenance of governmental fiscal equilibrium. For example, leveraging the allowance system and tax deduction mechanisms may serve as viable means to finance UBI policies; however, such measures may prove insufficient to fully offset the total expenses associated with said policies. Table 1 provides an

overview of the reallocation of existing systems and the exploration of potential new forms of taxation aligned with the philosophical underpinnings of UBI.

Table 1: How to finance UBI

| **Policy** | **Explanation** | **Estimated revenue** |
|---|---|---|
| No allowance system | Removed allowances:<br>• Rent allowance<br>• Health allowance<br>• Student allowance<br>• General child allowance<br>• Income-specific child allowance<br>• Childcare allowance | 27.4 billion euros<br>• *4.0 billion euros*<br>• *6.6 billion euros*<br>• *5.3 billion euros*<br>• *6.8 billion euros*<br>• *2.5 billion euros*<br>• *4.2 billion euros* |
| No tax deduction | The following tax deduction will be removed:<br>• General tax deduction<br>• Work tax deduction<br>• Individual tax deduction<br>• Mortgage interest rate deduction<br>• Other tax deduction | 76.3 billion euros<br>• *28.7 billion euros*<br>• *24.7 billion euros*<br>• *4.8 billion euros*<br>• *14.7 billion euros*<br>• *3.3 billion euros* |
| Inefficient fiscal exemptions | From the 116 fiscal exemptions, 73 were analyzed by Ministerie van Financien (2023): 41 were categorized as uncertain in their effects, and 21 identified as inefficient. The ramifications of these uncertainties and inefficiencies translate into significant missed opportunities for the Dutch government. | 47 billion euros |
| Increase income tax | New four bracket income tax policy:<br>• 0 to 27.000 36%<br>• 27.000 to 65.000 40%<br>• 65.000 to 100.000 50%<br>• 100.000 + 60% | 14 billion euros<br>• *0 euro*<br>• *4 billion euros*<br>• *8 billion euros*<br>• *2 billion euros* |
| Make UBI taxable | Implementing a tax on UBI and subjecting it to income tax for citizens, while considering whether to maintain existing tax deduction policies, could be a viable strategy. This approach would involve taxing the UBI received by higher-income individuals, effectively redistributing wealth to support lower-income residents. | Depending on the level of the UBI.<br>• *210 euros per month: 14.7 billion euros*<br>• *1200 euros per month: 71.0 billion euro* |
| Land value and property tax | These are taxes based on the value of the land, and the value of the property an individual owns. These taxes have the potential for UBI since land is a finite attribute and properties are always owned by someone. | 16.5 billion euros for the property tax, no estimate is found or made for the land value tax. |
| Less governmental employees | The introduction of a 1200 euro UBI engages that fewer employees are needed to control the condition of the welfare program. | 7.4 billion (estimation) |

Macroeconomic studies suggested a decrease in labor participation under UBI, there is a growing interest in validating and refining these results through alternative methodologies, such as survey-based investigations into the attitudes and behaviors of Dutch citizens regarding UBI. To achieve this, a linear regression model was constructed based on a conjoint experiment, which systematically evaluates various UBI policies and funding mechanisms. The experiment was designed with specific attributes, including the amount of UBI per adult (set at 1200, 630, or 210 euros per month), a UBI per child (set at 300, 185, or 100 euros per month),

adjustments to the taxation system (no tax deductions, making UBI taxable, or increasing income tax), and modifications to existing allowances (only retaining the health allowance, eliminating all allowances, or only retaining the rent allowance).

To ensure respondents could provide informed responses based on how UBI affects their financial position, the survey estimated their potential disposable monthly income under various profiles within the experiment. This approach aimed to mitigate biases in UBI opinions influenced by political views or prepossession opinions. Additionally, the survey included a second section where citizens responded to a traditional questionnaire regarding their actions under two UBI policies: a high-UBI policy providing 1200 euros per month per adult and 300 euros per month per child, financed by the removal of tax deductions and allowances; and a mid-UBI policy offering 630 euros per month and 185 euros per child, funded by making UBI taxable and eliminating allowances. These policies were selected due to their ability to address the welfare cliff for middle-income individuals and their alignment with proposed policies in current Dutch political discourse.

The survey was conducted in November 2023 and obtained 346 valid responses. To address potential issues with representativeness in the survey data, adjustments were made by re-weighting the sample based on labor participation patterns (full-time, part-time, etc.) in the Netherlands. Afterward, regression coefficients were employed to estimate alterations in labor participation (measured in hours per week) and support (rated on a 5-point Likert scale). These estimations took into account income levels and housing types (homeownership, social housing, and another form of housing), as these variables demonstrated statistical significance in the model.

The coefficients derived from the regression model indicate that the implementation of a high-UBI policy is associated with an average increase of 0.89 hours of labor per week for the Dutch population, while a mid-UBI policy is linked to an average increase of 1.60 hours per week. While these findings may seem counterintuitive compared to macroeconomic studies on UBI implementation, it's crucial to acknowledge the uncertainty surrounding these estimates, as evidenced by the wide confidence intervals. For the high-UBI policy, the interval ranges from a decrease of 1.67 hours to an increase of 3.44 hours per week, and for the mid-UBI policy, it spans from a decrease of 0.85 hours to an increase of 4.05 hours per week. Similar patterns were observed with the support for the high- and mid-UBI policies: the average was 3.11 out of 5 for the high-UBI policy (ranging between 2.52 and 3.71) and 3.12 for the mid-UBI policy (ranging between 2.55 and 3.69). With a larger sample size, the confidence intervals would likely be smaller, leading to more precise estimates of the average change in labor participation and support for the policies.

The observed counterintuitive increase in labor participation may also be influenced by certain demographic factors. One factor is the under-representation of homeowners and the overrepresentation of young single adult households in the survey sample. Homeowners, who are often wealthier individuals, are perceived as beneficiaries of UBI because they rely less on governmental aid and can thus afford to decrease their labor participation more easily. Conversely, young single adult households are typically more reliant on allowances and would therefore see little change in their financial situation under UBI, leading to either no decrease or a slight increase in labor participation due to the removal of the welfare cliff.

While recalibrating the survey based on these demographic factors was considered, it posed its own challenges. The labor participation patterns observed in the survey were also not representative, which would have introduced further issues. Moreover, the number of respondents was insufficient to recalibrate the survey on both parameters simultaneously, as the opinions and behaviors of some respondents would have disproportionately influenced the results compared to others.

To gain deeper insights into the general results for the Netherlands, this study has strategically focused on distinct demographic groups likely to display unique behavioral tendencies. The targeted groups encompass second earners in households or part-time workers, with a specific emphasis on women; single-parent households; families with children under 5 years old (given limited data availability, the analysis will concentrate on this broader age until 12 years old); individuals receiving welfare payments; young adults aged 18 to 27 years; and elderly workers aged 55 to 67 years. However, upon analyzing the regression model for both support and labor participation, it becomes evident that only single parents and citizens receiving welfare payments exhibit different behaviors: while they increase labor participation across all values of their confidence interval, they do not support UBI. This phenomenon can be interpreted through the lens of income, as these groups are most vulnerable to income losses under UBI, particularly if they reside in single adult households.

Additionally, demographic elements introduced in the regression model, such as current income and housing type, warrant attention as more interesting sub-part of the population. Income is particularly significant, as higher-income citizens may choose to reduce labor participation more than lower-income citizens but do not support UBI. This outcome aligns with the individualistic nature of respondents' responses, which was a deliberate focus of the research aimed at tailoring the survey budget to each respondent. Housing type reveals intriguing patterns of support; homeowners may exhibit lower support for UBI compared to individuals residing in social housing. These factors strongly contribute to an individual's wealth, which plays a pivotal role in eligibility for allowances. Citizens receiving allowances tend to derive less benefit from UBI compared to those with higher wealth levels if not taxed back appropriately and therefore slightly increase or do not reduce their labor participation. Another group that is interesting to analyze is students, despite being young and often economically disadvantaged from an income point of view, they do not fit their age group or income group when it comes to supporting UBI. Surprisingly, their views align more with wealthier individuals, suggesting they see future financial stability beyond their current constraints.

The trade-off between support and labor participation for UBI policies reveals nuanced dynamics. A UBI of 1200 euros per month generates the highest increase in support but also the largest decline in labor participation, whereas a UBI of 630 euros per month increases labor participation with a more modest, but still positive, impact on support. Introducing a UBI of 300 euros per child slightly enhances support without significantly affecting labor participation, but reducing this amount leads to decreased support.

Financing mechanisms such as removing allowances and eliminating tax deductions tend to decrease support while increasing labor participation. In contrast, making UBI taxable has a minor impact on labor participation but enhances support. Maximizing support may benefit from making UBI taxable, while efforts to enhance labor participation may be better served by eliminating tax deductions.

If policies maximizing support within the budgetary constraints of this study are formulated, two significant findings emerge: the inclusion of the rent allowance and a 300 euro UBI per child is crucial due to their positive impact on support. Additionally to these, the following policies can be considered: a 1200 euro UBI made taxable, a 630 euro UBI funded through tax deductions, and a 210 euro UBI, also taxable. However, it is essential to note that further research is warranted, particularly concerning the effects of various financial policies such as the inefficient tax exemption, the land and property tax, and the reallocation of governmental employees, in conjunction with a 1200 euro per adult UBI policy, as these were not explored in this study. Without these other forms of taxation a high UBI of 1200 euros proves unattainable.

When examining the impact of the five proposed policies on poverty, a clear pattern emerges, highlighting single adult households, especially single parents, as the demographic most vulnerable to increased poverty. Only the 1200 euro-supported policies, which include rent allowances, show promise in augmenting the income of single-parent households receiving welfare payments. However, beyond this income-threshold, these policies prove inadequate in combating poverty. Conversely, in all other policies, single parents appear to fare worse. Single adult households, reliant on allowances, experience worsened financial conditions under the mid- and high-UBI policies surveyed. However, policies with high support and rent allowances possess the potential to ameliorate their financial standing, further underlining the efficacy of rent allowances in alleviating poverty.

In contrast, for multi-adult households, UBI presents an effective strategy for poverty alleviation, as the disposable incomes of these groups increase under all five proposed policies. To make UBI successful, a paradigm shift in policy is necessary to stop encouraging individual living which is currently prevalent in the Netherlands where the current welfare system may disincentivize increasing household size due to loss of allowances, UBI could encourage cohabitation and discourage living alone.

At first glance, the proposed UBI policy of 210 euros per month appears effective in alleviating poverty up to the point where the rent allowance ends. However, it poses challenges for middle- and high-income earners due to the removal of the childcare allowance, which is not offset by the UBI. This could have negative implications for labor participation, particularly for second earners and women, as the childcare allowance has been shown to significantly boost participation in these demographics (Del Boca, Pasqua, & Pronzato, 2008; Del Boca, 2015). This aligns with the advocacy for free childcare proposed by several political parties during the elections on November 22, 2023 (CPB, 2023).

If we exclude the childcare allowance from the income calculation, the 210 euro per month UBI policy increases the disposable income of recipients up to a gross income of 60,000 euros. Beyond this threshold, the

impact on disposable income remains unchanged compared to the current situation.

One challenge of UBI lies in addressing the welfare cliff and poverty at the same time at the lower end of the income spectrum. Despite facing marginal tax rates of 100% or higher on welfare payments, this policy remains indispensable, even under a UBI framework. Failing to address this issue could lead to the emergence of extreme poverty, given that individuals receiving welfare payments also rely on allowances. Utilizing welfare payments and allowances to fund UBI would result in a drastic reduction in income for the most economically disadvantaged individuals. Therefore, addressing the welfare cliff between 0 and 14,400 euros of gross income proves to be unfeasible within the current governmental budgetary constraints.

Analyzing the impact of UBI on the welfare cliff above the gross income threshold of the welfare payments reveals notable distinctions among the proposed policies. The high-UBI policy tested in the survey presents the purest form of marginal taxation rates, as no form of governmental support is withdrawn from respondents when income increases, resulting in a marginal taxation rate equivalent to the income tax rate. Conversely, all other proposed policies entail a reduction in aid and therefor increases the marginal taxation rate compared to the high-UBI policy. Making UBI taxable is coupled with the existing tax deduction system in the Netherlands leading to an incremental increase in marginal taxation rates by 3% from 23,000 euros of gross income to 37,000 euros, followed by a 9% increase above this threshold. Consequently, the mid-UBI policy proposed in the survey yields a marginal taxation rate of 45%. However, the inclusion of the rent allowance amplifies the marginal taxation rate by 24% for gross incomes ranging from 27,000 to 41,000 euros, resulting in mid-income citizens facing marginal taxation rates of 69%. Although this represents a significant improvement compared to the current scenario, such high marginal tax rates passed the maximum threshold of 60% before a Laffer curve effect may ensue, potentially leading to a decline in labor participation due to excessively high marginal taxation rates (Van Ravestein & Vijlbrief, 1988; Heijman & van Ophem, 2005).

The second objective of this research is to discern the anticipated behaviors of Dutch citizens under the mid and high UBI policies. Contrary to findings in UBI literature from Western economies, there is no significant indication of increased investment in education among respondents. This absence may be attributed to the substantial proportion of highly educated and student respondents in the dataset. Another plausible explanation could be the accessibility of the Dutch education system.

However, under a high-UBI policy, there is a discernible inclination among respondents, particularly secondary earners, women, part-time workers, and young adults, notably students, towards seeking employment opportunities that align better with their preferences. This trend suggests a potential shift in labor market dynamics, with individuals opting for roles that offer greater personal fulfillment or align more closely with their career aspirations.

Secondly, a notable portion of respondents, particularly those from lower and middle-income brackets residing in households with two or more adults, expressed their intention to save more money under both mid- and high-UBI policies. These demographic groups, which are the primary beneficiaries of the policy aimed at augmenting income, exhibit a propensity to allocate a portion of their additional funds to savings. This trend may hold positive implications, given that 30% of Dutch households have less than 5,000 euros in savings (Centraal Bureau voor de Statistiek, 2022). However, single adult households expressed concerns about the risk of further descent into poverty under these UBI policies.

The study further explores the potential health implications of UBI policies. It posits that the introduction of UBI may result in favorable health outcomes, such as decreased stress levels, improved access to healthier food choices, increased frequency of medical consultations, enhanced levels of physical activity, and reduced occurrences of mental health issues. Specifically, households with children and individuals receiving welfare payments anticipate notable reductions in stress levels and enhancements in dietary practices.

These findings align with the assessment of poverty, indicating that UBI holds significant potential to enhance the quality of life, particularly in terms of health and food quality, for multi-adult households. However, they also highlight the heightened risk of severe poverty for single adults under UBI policies.

Implementing UBI requires careful planning and consideration, especially given its political sensitivity. A camel nose strategy, which involves implementing a policy gradually, can be effective in this regard. Here are the recommended steps for implementing UBI:

1. UBI proves to be highly effective in alleviating poverty for multi-adult households. Consequently, a paradigm shift in policy is necessary to stop encouraging individual living which is currently increas-

ingly prevalent in the Netherlands, echoing the neo-liberal notion of economies of scale. The study unequivocally demonstrates that single adult households are worse off than now under UBI. Without embracing this socio-political shift, the successful implementation of UBI in the Netherlands remains doubtful.

2. A low-taxable UBI per adult, coupled with a high UBI per child and complemented by rent allowance and free childcare, emerges as a surprisingly promising policy for poverty reduction and mitigating a part of the welfare cliff.
3. Further research is needed to understand the impact of eliminating inefficient taxes to fund higher UBI policies. This is crucial in financing mid to high-levels of UBI and should be explored thoroughly.
4. Based on the findings and the need for further research mentioned in point 3, I would suggest gradually increasing UBI from 210 euros per month to 630 euros per month. This level of UBI shows some improvement in quality of life without causing a significant decline in labor participation. The potential benefits include reduced stress, improved health, better access to healthcare, and higher quality food, which are important for a developed country like the Netherlands.
5. Once UBI reaches 630 euros per month, it can be evaluated whether to increase it further to 1200 euros per month. This decision would depend on research into other forms of taxation and effective ways to tax UBI from the wealthiest individuals to prevent a decline in labor participation. If UBI is increased, removing the rent allowance to smooth out marginal taxation is recommended.

# Contents

# List of Tables

# List of Figures

# Acronyms, vocabulary and definitions

| Vocabulary | Acronym | Definition |
|---|---|---|
| **A** | | |
| Adverse selection | | A motivation to work less since you are not gaining any money |
| Alaska Permanent Dividend Fund | APDF | UBI in Alaska |
| Allowance | | A conditioned sum of money from the Netherlands |
| **C** | | |
| Caregiving | | Provision of physical support to individuals who are unable to fully care for themselves due to age, illness, or disability |
| Care work | | The same as caregiving |
| Centraal Plan Bureau | CPB | Netherlands Bureau for Economic Policy Analysis |
| Cherokee Casino Dividend Fund | CCDF | UBI for the members of the Cherokee clan |
| Crowding out | | The phenomenon where increased government spending leads to offsetting the investment in other sectors |
| Confidence Interval | CI | Statistical range within the true parameter lies with 95% chance. The CI quantifies the uncertainty |
| **E** | | |
| Elderly workers | | Citizen between 51 and 67 years old |
| **F** | | |
| Full-time | | Working more than 35 hours per week |
| **G** | | |
| General tax deduction | | Tax deduction scheme for people earning less than 75.518 euros gross |
| **I** | | |
| Individual tax deduction | | A deduction up to 60.360 of gross income for self-employed |
| **J** | | |
| Job-less | | Having no work, even if you want to |
| **L** | | |
| Labor participation | | Amount of hours worked in a week |
| **M** | | |
| Marginal taxation rate | | It is the tax rate over 1000 euros of extra gross income |
| Minimum income experiment Manitoba | Mincome | UBI pilot in Canada between 1974 and 1979 |
| **P** | | |
| Part-time | | Working between 12 and 36 hours a week |
| Poverty line | | This 70% of the minimal wages, or 1216 euros per month in the Netherlands |
| Poverty gap | | The extent by which the income of households living in poverty fall below the poverty line by a change in policy |
| **S** | | |
| Side-job | | Working between 1 and 12 hours a week |
| Significant | | The probability that an observed result in a study is not due to random chance but represents a true effect in the population |
| **T** | | |
| Tax deduction | | A reduction of your income tax based on a condition |
| **U** | | |
| Undeclared work | | Work where no income tax is payed on |
| Universal Basic Income | UBI | Monthly, unconditional sum of money to every regular inhabitant of the Netherlands |
| **Y** | | |
| Young adults | | Adults between 18 and 27 years old |
| **W** | | |
| Welfare cliff | | If you are losing allowances and or welfare payments due to higher labor participation |
| Welfare payments | | Conditioned sum of 1212 euro per month for the poorest inhabitants of the Netherlands, also called 'bijstand' in Dutch |
| Welfare program | | All policies to support citizen of a country against poverty. |
| Work tax deduction | | A tax deduction scheme for people earning less than 115.295 euros of gross income |

Table 2: List of vocabulary

# 1

# Introduction

## 1.1. Poverty and the welfare cliff in the Netherlands: What is the problem?

In the current tax system of the Netherlands, some individuals face marginal tax rates exceeding 100% due to its complexity, which includes various allowances, deductions, and social benefits (Quist, 2015; Goderis & Vlekke, 2023). These allowances are provided when gross income falls below a specific threshold to reduce poverty, with approximately 66% of Dutch households receiving them (Ministerie van Financiën, 2023; Centraal Bureau Voor de Statistiek, 2023a). However, crossing a certain income threshold leads to a gradual loss of these benefits, resulting in a higher marginal tax rate, known as the welfare cliff[1].

This situation creates adverse incentives, discouraging low and middle-income individuals from increasing their work efforts to avoid losing government assistance or allowances. Consequently, many find themselves caught in a poverty trap, unable to substantially improve their financial situation through increased work. For instance, Figure 1.1[2]. middle-income earners in the Netherlands face significant marginal tax rates, ranging from 9% to 109%, primarily due to reductions in allowances (Rijksoverheid, 2023).

This phenomenon contributes to the high percentage of part-time workers in the Netherlands, currently at 48% of the workforce (De Nederlandse Bank, 2023; Centraal Bureau Voor de Statistiek, 2021; Eurostat, 2023). Income inequality in the country has remained stable since 1990[3], with approximately one million individuals persistently living below the poverty line[4] (Caminada, Jongen, Bos, Brakel, & Otten, 2021; OECD, 2023; Goderis & Vlekke, 2023; Ince, 2021).

Two key factors contribute to the persistence of poverty in the Netherlands: a significant portion of approximately 18%[5] do not claim allowances they are entitled to. These numbers are even higher within the subgroup of the poorest members in society, those receiving welfare payments, where 35% does not pick up its allowances due to fear of paying them back or mistrust in the government (Berkhout, Koot, & Bosch, 2019; Arbeidsinspectie, 2023). Additionally, the rent allowance, a potent poverty reduction tool, has limitations, excluding households with rents above a certain threshold, estimated at around 136,000, thus contributing to poverty (Olsthoorn et al., 2020; van Elk, Griffioen, Verberk, & Weyzig, 2023).

Secondly, the rent allowance, acknowledged as one of the most effective tools in poverty reduction (Olsthoorn et al., 2020), faces additional non-financial constraints. An estimated 136,000 individuals experience poverty as they are ineligible for the allowance due to these constraints. Extending eligibility for this allowance to such households could potentially reduce overall poverty rates by 1.3% or 19% of total poverty (van Elk et al., 2023).

[1] In the Netherlands, citizens earning up to 38.520 euro gross income can lose allowances, and earning up to 115.000 euro lead to a loss of tax deduction

[2] Assumptions of this plot can be found in Appendix A

[3] The Gini coefficient for the Netherlands stood at 0.291 in 2019 a relatively low figure compared to the OECD average of 0.315.

[4] Approximately 6.8% of the adult population and 3.9% of the child population

[5] 156.000 households

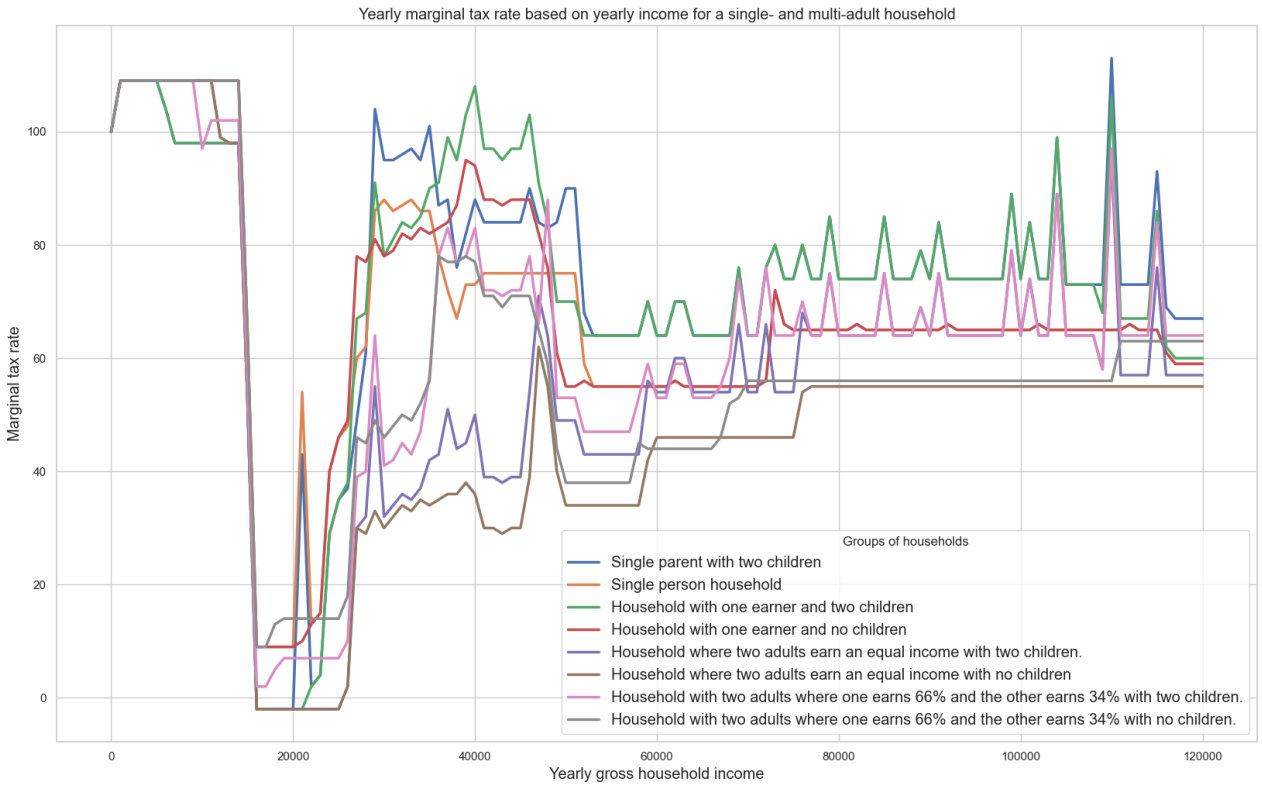



Figure 1.1: Marginal taxation rate for different types of household as income is increasing

In summary, the current system's high and inconsistent marginal taxation rates discourage labor participation, as seen in studies showing reduced participation rates when taxation rates exceed 60% (Van Ravestein & Vijlbrief, 1988; Heijman & van Ophem, 2005). Despite aiming to alleviate poverty, the allowance system paradoxically contributes to its perpetuation by factors such as non-uptake or ineligibility for rental allowances, which are significant contributors to poverty in the Netherlands.

## 1.2. Is it the right time for Universal Basic Income?

A potential solution to reduce poverty and remove the welfare cliff is universal basic income (UBI), a social welfare policy that provides a monthly, unconditional sum of money to every regular inhabitant of the Netherlands. UBI aims to provide a minimum level of financial security and stability for individuals to reduce poverty and inequality (Van Parijs, 2004). For example, introducing a monthly UBI of 1200 euros would completely eliminate the welfare cliff for the least advantaged individuals in the Netherlands, incentivizing them to accept a job, and is projected to reduce poverty by 60% (J. Bos & Verberk-De Kruik, 2019).

The removal of the welfare cliff is expected to lead to an increase in labor participation. However, the discourse surrounding UBI in the Netherlands shifted following the release of macroeconomic studies by the Dutch Economic Bureau for Policy Analysis (CPB) on the impact of UBI on the government's budget and labor participation. These studies indicated that implementing UBI would necessitate an additional tax income of 50 to 100 billion euros (depending on the UBI amount), and labor participation would decline by 4 to 8% (Olsthoorn et al., 2020; Jongen, de Boer, & Dekker, 2015). Consequently, it appears that the effect of unconditional income on labor participation outweighs the impact of the welfare cliff. Since these findings are derived from simulations, it is valuable to corroborate them through alternative methods, such as surveying

the behavior of Dutch citizens (Ping Jr, 2004), to explore similarities and discrepancies in outcomes.

In the event that citizens choose to reduce their work hours as a result of UBI policy, it is important to consider the potential actions they may undertake. The Mincome experiment conducted in Canada from 1974 to 1979 provides some insights into this matter. Calnitsky and Latner (2017) and Marinescu (2018) reported a comparable reduction of between 4.0 and 11.3% in labor force participation among citizen. This decline was particularly noticeable among households headed by single parents, older inhabitants, and young adults. In their study, several factors explained the observed decrease in labor force participation. Caregiving responsibilities, illness, and investment in education are three notable findings for individuals opting to work fewer hours. Pursuing higher education can lead to increased labor productivity in the mid- long term and skill development among individuals, ultimately benefiting the economy. Similarly, individuals with caregiving responsibilities, such as caring for children or elderly family members, may allocate more time to these important responsibilities and reduce the need for professional, and expensive care. Understanding these dynamics is crucial for designing effective UBI policies that balance individual freedom, societal well-being, and economic sustainability. For example, in the Mincome experiment, they observed an 8.5% reduction in hospitalizations and mental health disorders (Marinescu, 2018). These are notable potential reductions[6] in spending on health care since they are expected to crowd out governmental health budget in the following years (Aalbers & Roos, 2022).

The final aspect to be investigated is the feasibility of financing UBI. Previous studies conducted by ING Bank (2018) and I&O Research (2020) have revealed that Dutch citizens generally support the concept of UBI. However, this support tends to waver when individuals become aware of the associated increase in taxes required to finance such a program. The UBI proposals put forth by Nibud, as outlined by J. Bos and Verberk-De Kruik (2019), involve funding through an augmented income tax system and adjustments to the allowance system. It is important to note that Nibud's proposals provide a narrow framework for financial implementation and do not fully account for potential alternative approaches. The same observation can be made for Olsthoorn et al. (2020) while analyzing different UBI proposals and their economic impact. These works are limited to a redesign of the welfare program combined with an increase in income taxation. However, these calculations may not encompass the full range of possibilities, such as the exploration of new forms of taxation, the potential simplification of governmental finances that are narrowly related to the philosophical origins of UBI, and the examination of additional financial benefits, such as those related to healthcare or governmental employees that can be relocated. This study delved deeper into these potential financing mechanisms to broaden and open the discussion on potential reforms that can be introduced to facilitate a UBI.

## 1.3. Research questions for this study

By (partially) removing the welfare cliff, reducing poverty, and simplifying the Dutch welfare system, it is evident that UBI offers some advantages. However, the significant cost associated with this policy, along with uncertainties regarding its impact on labor force participation, pose challenges in garnering support. The primary objective and main research questions of this study are to investigate the relationship between the support of UBI, labor participation, and poverty reduction in the Netherlands under various financial policies. Additionally, the research aims to analyze the behavioral responses of Dutch citizens under UBI policies to explore whether other, less quantifiable advantages may also apply to the Netherlands. Ultimately, the study seeks to provide policy advice regarding UBI based on its findings.

To address this objective, the following research questions are investigated:

1. What are potential financial policies for UBI?
2. Which specific groups within the Dutch population may differ in behavioral patterns from the rest of the population in response to UBI?
3. How does UBI affect marginal taxation rates?
4. How will labor participation patterns evolve in the Netherlands under different UBI policies?
5. What is the trade-off between labor participation and support for UBI policies?

[6] The cost of hospitalization for the Dutch government is 29 billion euros per year (Ministerie van Financiën, n.d.)

6. What UBI policies are budget neutral and supported?
7. How does UBI affect poverty?
8. How would Dutch citizens allocate their financial resources and utilize their time if UBI were implemented in the Netherlands?

This study analyzes all these questions through the impact UBI has on the disposable income of the recipient.

## 1.4. How is this research assessed?

These research questions serve as the guiding framework for this study, facilitating an in-depth exploration of the relationship between UBI support, labor participation dynamics, and poverty influence in the Dutch context through the lens of the disposable income of dutch citizens. The first research question about potential financial policies for UBI is addressed through literature research. Questions related to labor participation and support for UBI in response to UBI policies are investigated using a conjoint survey experiment and regression analysis. Utilizing these coefficients, an estimation of the change in labor participation for the Netherlands is derived, along with an assessment of the trade-off between support and labor participation. Optimal support policies within budgetary constraints from the financial policies are determined based on the regression coefficient for support.

Citizen behavior regarding UBI policies is estimated through a traditional survey. This survey inquires whether citizens would exhibit similar behaviors under UBI as observed in previous UBI experiments from the literature. This provides insight into whether observed advantages from outside the Netherlands would also manifest here or if different behaviors emerge.

All research questions concerning marginal taxation rates and the effect of UBI on poverty are analyzed using self-generated data based on the tables of Gielens, Roosma, and Achterberg (2023). This data calculates disposable income based on a 1000 euro increase in gross income. The proposed UBI policies were integrated into the model to assess their impact on disposable income.

## 1.5. Outline of the report

Chapter 2 encompasses a comprehensive literature review aimed at addressing the anticipated outcomes of UBI regarding labor participation, support levels, its impact on poverty, and citizen behavior regarding their basic income. Additionally, it serves to glean insights from previous survey experiments investigating social policies to increase the quality and effectiveness of the survey used in this study. The literature review is instrumental in addressing the research question concerning the financing of UBI. Based on the findings from the literature review, a conceptual model has been constructed to delineate the scope and limitations of this study.

Chapter 3 delineates the methodologies employed in this study. Initially, it addresses research question two by delineating the distinctive populations exhibiting potentially divergent behaviors concerning support and labor participation. Subsequently, the chapter expounds on the design and execution of the conjoint experiment within the survey, elucidating the selected methodology for acquiring data on labor participation and support. Furthermore, it introduces the UBI policies slated for utilization in the survey to address the research question regarding individual responses to UBI and the data methodology for assessing its impact on poverty. Additionally, the chapter encompasses the calculation of participant numbers and provides insights into the survey's coding scheme.

In Chapter 4, a comprehensive analysis of the results is provided. Initially, it offers detailed insights into the characteristics of the survey sample and the re-weighting of the responses to make the results more representative. Subsequently, the chapter investigates the impact of the UBI policies proposed in Chapter 3 on labor participation in the Netherlands, evaluating potential variations in reactions within the targeted population. Additionally, it visually represents the trade-off between support and labor participation and proposes budget-neutral policies aimed at maximizing support.

The subsequent subsection delves into the effects of UBI on poverty in the Netherlands, examining the pro-

posed policies from the survey and the support maximized while maintaining budget neutrality policies from the previous sub-section. Following this, the chapter answers what people will do with their UBI. Finally, the political support for the policy is analyzed in the concluding section of the Results chapter to see how opinions of different population subgroups differ towards UBI.

In Chapter 5, an exploration of the assumptions and limitations of the model is undertaken, alongside an examination of potential avenues for further research utilizing the chosen methodology and the results obtained from this study. The chapter also underscores the relevance of this study within the context of Engineering and Policy Analysis master program, providing policy recommendations based on the research findings. Finally, the last chapter of the report presents a comprehensive response to the two research objectives outlined earlier.

# 2

# Literature overview and background

In the contemporary landscape, no nation has fully implemented a Universal Basic Income (UBI) program; however, certain geographic regions have undertaken experimental or provisional UBI-like initiatives. This literature review aims to offer a comprehensive synthesis of previous research endeavors that have investigated such policies, including microsimulations of basic income schemes. The primary focus of these investigations is to assess the impact of UBI on labor participation, levels of support, its effects on poverty reduction, and the financial mechanisms underpinning these policies. Additionally, the review endeavors to highlight both the advantages and disadvantages observed in regions where these initiatives have been introduced.

The review commences with an examination of international experiments about basic income initiatives, providing insights into the outcomes and implications of such endeavors. Subsequently, the focus shifts to a more localized context, with a specific emphasis on the Netherlands, to explore the pertinent findings and implications within this context. Following this contextual overview, attention is directed towards an exploration of financial policies relevant to UBI implementation.

This review serves as a foundational framework for the subsequent survey, laying the groundwork for the empirical investigation. Furthermore, it encapsulates key insights garnered from prior survey studies within the welfare domain, enriching the quality and depth of the research. In the final subsection, the literature research is synthesized to formulate a conceptual model, which serves as the theoretical underpinning of this study.

## 2.1. What do we know about UBI in Western countries?

The most important UBI schemes presented were held in Canada, the United States, and Finland. All these initiatives unconditionally provide cash transfers to members of their Western society. These experiments were selected because these countries have similar economic patterns as those of the Netherlands. It is important to acknowledge that UBI was one of the research topics that led Banerjee, Duflo, and Kremer (2007) to winning the Nobel prize in 2019 for their work on understanding poverty and how to fight it in third-world countries. In their research, they compared how basic income experiments could help decrease poverty and increase economic activity in Kenya. They fund a general increase in nutrition quality, a shift away from agricultural economics, and a more self-employed economy.

### 2.1.1. What were the policies?

Mincome, conducted in Dauphin, Manitoba, Canada, from 1974 to 1979, was a pivotal basic income pilot project. It was meticulously designed to evaluate the consequences of offering a guaranteed minimum income, equivalent to 60% of the poverty line, to all residents of the city. This unique experiment provided each recipient with an income substantial enough to cover their living expenses, amounting to approximately €24,600[1]. The disbursement was made every month to all residents and was financed through a higher in-

[1] adjusted to today's euros

come tax rate (Forget, 2011).

In 1982, the Alaska Permanent Dividend Fund (APDF) was established to allocate a portion of the earnings generated from oil extraction to the residents of Alaska, United States. The exact dividend amount fluctuates annually and is determined through a formula that takes into account the fund's performance over five years. Consequently, the value of the dividend varies between $1,000 and $2,000 per annum. This dividend was included in the total income of each Alaskan resident and was subject to standard income tax rates.

Similarly, the Cherokee clan members in North Carolina, United States, are receiving an annual dividend (CCDF) that ranges from $4,000 to $6,000 from the clan's casinos (Marinescu, 2018). Since this income is designated for a specific group within the state, it is subject to standard income tax rates.

Finland conducted a two-year trial of universal basic income between 2017 and 2019, which offered a monthly payment of 890[2] euros net to a randomly selected group of 2,000 unemployed individuals. The regular Finnish social welfare program remained available to these individuals alongside the basic income scheme (Allas et al., 2020; De Wispelaere, Halmetoja, & Pulkka, 2018). This initiative served as a trial run to evaluate its feasibility before potential nationwide implementation. As of now, there have been no formal plans established for financing it on a larger scale (Kangas, Jauhiainen, Simanainen, & Ylikännö, 2019).

Several smaller-scale experiments were conducted in the United States. These include the "Minneapolis Income Experiment" in the 1970s, the "RISE" (Real Income Simulation Experiment) in Gary, Indiana, in the 1980s, and the "Guaranteed Income Demonstration" in Denver, Colorado, during the 1990s. These studies found that the programs did not have a significant impact on employment or the number of hours worked. However, they did result in improvements in recipients' mental health and overall well-being (Hoynes & Rothstein, 2019; Widerquist, 2017). Due to the relatively small number of participants in these studies (30 to 200), I have not delve into further details.

It will be particularly interesting to monitor the progress of a new UBI pilot program in the UK, specifically in Wales. In this pilot, 500 young people between the ages of 18 and 25 will receive a monthly UBI of £1,600 for a duration of 2 years. The selection of participants for this project will take place over the next 3 years. The primary objective of this pilot is to assess the long-term impact of basic income on poverty, and unemployment, as well as its potential to enhance overall health and well-being within this population demographics (Wales Governement, 2023). In the United States, the Stanford University has established the Basic Income Lab, a novel department dedicated to investigating UBI (Hasdell, 2020). They have initiated an experiment across various cities in the U.S. involving thousands of participants, with UBI ranging from 500 to 1200 dollars per month (Standford Basic Income Lab, 2024).

### 2.1.2. How did the labor participation evolve?

Table 2.1 presents a comprehensive summary of the overall effects of UBI policies on labor participation.

| Experiment | Effect on labor participation | Source |
|---|---|---|
| Mincome | 11.3% reduction | (Calnitsky & Latner, 2017) |
| | 4% reduction | (Marinescu, 2018) |
| | 3.3% reduction | (Price & Song, 2018) |
| | Between 1 and 5% reduction | (Hum & Simpson, 2001) |
| APDF | No significant effect on full time employment | (Jones & Marinescu, 2022) |
| | 17% increase in part time work | |
| CCDF | No significant effect on labor participation | (Singh, Brown, Copeland, Costello, & Bruckner, 2020) |
| | | (Marinescu, 2018) |
| | | (Lewis, 2017) |
| Finland | No increase nor decrease | (Kangas & Pulkka, 2016) |
| | 6 days increase per year | (Van Parijs, 2020) |

Table 2.1: Estimates of the change in labor participation in Mincome, APDF, CCDF, and the Finish experiment

The Mincome experiment had the highest value for UBI. However, within the academic discourse, there is no consensus on its exact effect on labor participation. According to Calnitsky and Latner (2017), there was

[2] 560 euros of UBI, and 330 euro of housing allowance (Allas, Maksimainen, Manyika, & Singh, 2020)

a significant 11.3% reduction in labor participation, particularly among single-parent households and young adults. Price and Song (2018) conducted an estimation of the revenue decline that Canadian families would have experienced as a result of the Mincome experiment. Their findings indicate a 3.3-percentage-point reduction in labor participation, leading to a 7.4% decrease in earnings (equivalent to €1,700 annually) for individuals who were part of the experiment, and this reduction persisted for several years after the experiment concluded. On the other hand, Hum and Simpson (2001) indicated that participants reduced their labor supply by 1% for men, 3% for married women and 5% for unmarried women. Hum and Simpson classified these disincentive effects as minimal. This suggests that determining the impact of a higher UBI on labor participation is a challenging endeavor.

In the Finnish UBI pilot, divergent findings have emerged across various research studies. Initially, Kangas et al. (2019) noted no significant impact on the total hours worked or overall labor market engagement. However, upon closer examination of sub-groups within the Finnish pilot, Van Parijs (2020) uncovered notable discrepancies in the results. Specifically, during the second year of the pilot, statistically significant increases in labor participation were observed. For instance, compared to the control group (comprising unemployed individuals not receiving UBI), there was a documented increase of 6 days in labor participation. Moreover, immigrants experienced a noteworthy 13-day rise in labor participation, while individuals residing in rural areas exhibited an 8-day increase compared to their counterparts in the capital city, Helsinki. Additionally, households with children demonstrated significant increases in labor participation, with single-parent households showing a 9-day increase and dual-parent households experiencing a 14-day increase. These disparities may be attributed to the existence of a welfare cliff, particularly in rural regions where housing benefits are less prevalent and lower in comparison to Helsinki. In the latter, certain individuals receive up to 600 euros per month in income-tested rent allowance.

### 2.1.3. What advantages were observed?

According to Calnitsky and Latner (2017), the reason for a drop in labor participation in the Mincome experiment is majorly for care work, disability, illness, or educational investment. Care work and educational investment are interesting because these are good reasons for a decline in labor participation. Higher education level is good for labor productivity of individuals and more care limits crowding out health expenditure for the government (Aalbers & Roos, 2022). In this experiment, health outcomes were investigated, and it found that recipients experienced an 8.5 percent decrease in hospitalizations compared to the control group, especially for mental health, accidents, and injuries (Forget, 2011). Also, an observation was made that Canadian citizen increased their expenditures on food. Salkind and Haskins (1982) interpreted this as a potential increase in nutrition quality. School attendance, grades, and test scores for the children of Mincome recipients were typically higher than the control population, especially for younger and poorer children (Marinescu, 2018). From a criminal perspective, violence and property crime decreased during the Mincome experiment (Calnitsky & Gonalons-Pons, 2021)

Some conclusions of Mincome are shared by Kangas et al. (2019) and Van Parijs (2020) for the Finish experiment, UBI did also lead there to improvements in recipients' mental and financial well-being (Allas et al., 2020). The Average life satisfaction among the treatment group was 7.3 out of 10, compared with 6.8 in the control group. To experience a similar lift in life satisfaction, Allas et al. (2020) estimate that a person's income would need to go up by as much as €800 to €2,500 per month in Finland, or 60 to 170 percent of the average per-capita household income in the European Union. Specifically, the study found that the program led to a significant reduction in stress and an increase in self-reported well-being among recipients. In the open response survey research from Kangas (2021) individuals who received UBI indicated that it "made more sense financially to accept a job offer and would be easier to start a business [...] and reduce the bureaucracy involved when accepting a job offer." A major disadvantage of the Finish experiment was is lack of political viability since it has a 11 billion euro budget deficit where there was yet no plan to finance the policy (Kangas & Pulkka, 2016). De Wispelaere et al. (2018) concluded therefore that the different tax treatment of the experiment introduces distortions that affect the internal validity of the experiment. There is limited information available regarding the health implications of this experiment. One possible explanation for this gap is the general generous nature of the healthcare system in Scandinavian countries.

The Cherokee casino Dividend helped reduce criminality and school dropouts among members of the clan and poverty in general (Singh et al., 2020; Lewis, 2017). The additional $4,000 to $6,000 per year for the poorest households in the casino dividend program increased educational attainment by one year (Marinescu, 2018).

Casino dividend payments improved mental health among members of the clan. Once they reached adulthood, children who received casino dividends were significantly less likely to experience alcohol or cannabis use or dependence (Costello, Erkanli, Copeland, & Angold, 2010).

### 2.1.4. What can we learn from previous conjoint analysis on UBI?

The selection of a conjoint experiment as the chosen type of survey for this study is motivated by the significant role played by the attributes of a component, which exhibit variations based on personal characteristics. They can also be used in policy research to assess public preferences and inform decision-making on trade-offs between the attributes. The trade-off I want to investigate in this research is the trade-off between labor participation and acceptance of UBI.

This methodology has previously been applied in studies examining support for welfare and labor market policies (Gallego & Marx, 2017). They found that higher benefit support, financed by the wealthiest members of society, received the highest level of support. Similar approaches have been utilized in the evaluation of Universal Basic Income (UBI) support (Stadelmann-Steffen & Dermont, 2020; Rincon, 2023; Rincón, Vlandas, & Hiilamo, 2022; Wispelaere & Noguera, 2012; Rincón & Hiilamo, 2019). Studies conducted in Spain, Switzerland, the United Kingdom, and Finland revealed that individuals were more supportive of a high-value UBI restricted to nationals, but faced opposition due to its universality, particularly in Spain where preference was shown for means-tested policies. Conditional policies, requiring recipients to actively seek employment or demonstrate genuine inability to work, were preferred. However, implementing such policies without creating a "welfare cliff" effect poses a challenge, particularly if the tax-back rate is not appropriately structured, as is currently observed in the Netherlands. Additionally, individuals showed less inclination to endorse UBI if it involved reducing existing benefits but expressed greater support when funded through increased taxation on the wealthiest members of society.

Differences between these studies and the presented one lie in their respective objectives. While previous studies aimed to assess respondents' evaluation of the unconditional aspect of UBI, changes in taxation, alterations to welfare programs, shifts in poverty levels, and adjustments in inequality, the current study seeks to investigate the impact of UBI on labor participation and explore potential trade-offs with public support.

Today, the application of conjoint experiments for estimating labor participation has been constrained. Prevailing literature utilizing this method predominantly concentrates on evaluating the social acceptance of UBI. Nevertheless, the exploration of conjoint experiments for investigating labor participation, particularly in the specific context of the Netherlands, is conspicuously underrepresented in academic discourse.

## 2.2. UBI in the Netherlands: a recap from 2013 until today

In the Netherlands, despite the interest of several cities (Deventer, Groningen, Nijmegen, Tilburg, Utrecht, and Wageningen), there has not yet been a UBI experiment (Betkó, 2023). These cities have participated in research on the effectiveness of Dutch welfare programs conducted by De Boer, Bolhaar, Jongen, and Zulkarnain (2020) and Betkó (2023), specifically focusing on welfare payments (1216 euro per month) for the most economically disadvantaged individuals in society.

### 2.2.1. What UBI policies were proposed for the Netherlands?

Several UBI policies have been proposed for the Netherlands, with some designed to be budget-neutral. Table 2.2 provides an overview of these policies, which can be broadly categorized into two types: those implemented at the household level and those provided to every adult (Bidadanure, 2019). Appendix B, specifically Table B.1, offers estimates of the financial implications associated with these policies.

In all proposed policies, welfare payments are reduced by the amount of individual UBI provided. This adjustment serves to diminish the welfare cliff effect for the affected demographic. For instance, under a UBI of 600 euros per month, individuals currently receiving welfare payments would still obtain a total monthly income of 1212 euros, comprising 600 euros from UBI and 612 euros from welfare payments. Consequently, the threshold to exit the welfare system is lowered, requiring a minimum of 12 hours of work per week compared

to the previous 23 hours[3]. This signifies a significant reduction in the welfare cliff due to the UBI policy.

Table 2.2 reveals a noteworthy resemblance in the differentiation between moderate and high values of UBI when compared to American and Canadian models from section 2.1.1. An intriguing distinction in these proposals is the introduction of a UBI per child to mitigate child poverty, as cited in (Ince, 2021). Of particular academic interest is the persistence of allowances in schemes featuring lower UBI values. This approach is aimed at shielding society's most financially vulnerable members from potential income reductions. It is worth noting that the concept of allowances, with its specific and targeted nature, enjoys substantial favor in public discourse, as the universality of UBI remains a contentious subject in political circles (Rincon, 2023; Rincón et al., 2022; Rincón & Hiilamo, 2019).

### 2.2.2. Labor participation and poverty development based on microsimulations in the Netherlands

Some macroeconomic simulations have been conducted to make estimates for the labor participation. The impact of UBI on the labor participation rate in the Netherlands has been examined by the Netherlands Bureau for Economic Policy Analysis (CPB). Their model has been employed between 2015 and 2020 to estimate labor participation rates and levels of inequality.

According to pre-COVID-19 research conducted by Jongen et al. (2015), the implementation of a UBI scheme with a monthly amount of 600 euros[4] (see Table 2.2) is projected to result in a reduction of the labor participation rate by 4 to 5%. This UBI policy is anticipated to lead to an 8% reduction in income inequality due to the higher taxation rate based on the MICSIM model of the CPB (Jongen, De Boer, & Dekker, 2014). However, no specific information regarding the impact on poverty reduction is provided in this analysis.

In a subsequent simulation study, van Gils (2020) and Olsthoorn et al. (2020) estimate a higher decrease in the labor participation rate ranging from 6 to 8%. It should be noted that the proposed UBI values in these policies are based on household size. Their UBI policies were based on two proposals from J. Bos and Verberk-De Kruik (2019) where households are receiving higher values of UBI than other experiments (Table 2.2). Importantly, these policies have the potential to significantly reduce poverty, with a projected poverty reduction of 60%. Consequently, the implementation of such UBI policies could lead to a reduction of inequality by approximately 10 to 11%. In their study, Goderis and Vlekke (2023) adopted the UBI proposals initially put forth by J. Bos and Verberk-De Kruik.

The research conducted by Aerts, Marx, and Verbist (2023) focuses on examining the impact of UBI on poverty reduction, the poverty gap[5], and income inequality. Notably, their study did not delve into the labor participation of UBI recipients. The findings of this investigation yielded two significant conclusions. Firstly, it was observed that a higher value of UBI (up to a maximum of 1235 euros, as indicated in Table 2.2) did not necessarily translate to a proportionally higher level of poverty reduction, particularly concerning the magnitude of the reform itself. In this context, a partial UBI approach appeared to offer more favorable outcomes. Secondly, the study revealed that policies geared towards greater efficiency in reducing poverty and minimizing the poverty gap were not congruent. Specifically, a lower UBI (amounting to 205 euros per adult and 60 euros per child) exhibited the most substantial reduction in the poverty gap, whereas a medium UBI (comprising 618 euros per adult and 185 euros per child) emerged as the most effective in reducing overall poverty levels. However, it was noted that this medium UBI policy led to a 3.2 percent increase in the poverty gap compared to the baseline and a 5.3 percent point difference with the low UBI value. This research underscored the intricate dynamics of UBI reforms, wherein they had the potential to diminish the percentage of individuals living in poverty while simultaneously pushing the most vulnerable households further into poverty.

### 2.2.3. What can we learn from other survey research on UBI in the Netherlands?

Before the COVID-19 crisis, in the Netherlands, surveys conducted by the ING Bank bank revealed that a larger group of Dutch citizens were in favor of UBI (39% positive, 29% neutral, 28% negative and 4% have no idea) when they know the definition of Van Parijs (2004). However, this opinion changed when respondents

[3] Based on a minimum wage of 13 euro per hour and 4.2 weeks per month on average.

[4] half of the social minimum in the Netherlands

[5] The poverty gap refers to the extent by which the income or resources of households living in poverty fall below the poverty line by a change in policy. It measures the depth or severity of poverty and represents the shortfall between the actual income of those living in poverty and the income required to meet their basic needs.

Table 2.2: Overview of proposed UBI policies in the Netherlands

| Researcher | UBI Value | Financial plan |
|---|---|---|
| Jongen et al. (2015) (CPB) | • 600 euro per individual<br>• Keep other forms of allowances | • Flat tax rate at 56.6%<br>• No work tax credit |
| J. Bos and Verberk-De Kruik (2019) (Nibud, verified by CPB) | • 525 euro per individual<br>• 500 euro per household<br>• Keep allowances | • No tax deduction<br>• Increase income tax category 2 to 47,85%[a] |
| | • 600 euro per individual<br>• 600 euro per household<br>• 300 euro per child | • No tax deduction<br>• No allowances<br>• Increase income tax category 2 to 50% and category 3 to 72%[a]<br>• No child benefit |
| Aerts et al. (2023) (verified by Euromod) | • 205 euro per individual<br>• 60 euro per child<br>• Keep allowances | • No work tax credit |
| | • 618 euro per individual<br>• 185 euro per child<br>• Keep health & rental allowances | • No tax deduction<br>• The basic income is taxable<br>• No child benefits |
| | • 1235 euro per individual<br>• 300 euro per child | • No tax deduction<br>• The basic income is taxable<br>• No child benefits<br>• No allowances<br>• Increase income tax category 2 to 51% and category 3 to 65%[a] |
| | • 1235 euro per individual<br>• 300 euro per child | • No tax deduction<br>• The basic income is taxable<br>• No child benefits<br>• No allowances<br>• Flat tax rate at 27% |
| Denktank Basisinkomen (2023) (Verified by CPB) | • 600 euro per individual<br>• 300 euro per child | • No tax deduction<br>• No allowances<br>• No child benefits |
| | • 900 euro per individual<br>• 300 euro per child | • No tax deduction<br>• No allowances<br>• No child benefit<br>• Extra income tax category 50% Highest income tax category at 60%[a] |

[a] Based on the old Dutch tax system (see Table B.2 in the appendix)

are informed of an increase in tax (20% positive, 24% neutral, 51% negative, and 5% have no idea). Thus, it is important to have a low tax increase to finance UBI and to keep political support. Restructuring of social welfare policies and the current tax system seems to be more supported by the Dutch population.

The survey conducted by De Nederlandse Bank in (2023) diverged from a focus on UBI and instead sought to comprehend the prevalence of part-time employment within Dutch workforce. The primary reasons reported by respondents for opting for part-time work include caregiving responsibilities for children (approximately 27%), a desire for more leisure time (33%), and pursuit of educational objectives (21%). A noteworthy 36% of participants identified the potential for higher net income growth as a motivating factor for increasing their working hours. Additionally, a significant portion (22%) indicated that a loss of household income would prompt an elevation in labor participation.

ING also investigated the respondents' expectations for labor participation of others, and the results indicated that 74% of individuals believe that unemployed people will not find a job more quickly with UBI, while 26% believe that UBI will lead to a faster return to the workforce. For employed individuals, a majority (77%) believe that Dutch citizens will work less, while 23% think that people will work more or the same number of hours. These findings are consistent with the conclusions drawn by Chrisp, Pulkka, and García (2020) in their

examination of UBI surveys conducted throughout the European Union. Chrisp et al. determined that the level of detail and information provided regarding UBI significantly can bias the outcomes of such surveys. This insight aligns with prior research on tax acceptance and elasticity conducted by Kuziemko, Norton, Saez, and Stantcheva (2015).

In the study conducted by Gielens et al. (2023), comprehensive survey research was conducted to assess public support for the universal, redistributive, and unconditional aspects of UBI in the Netherlands. The findings of the study reveal distinct patterns in public attitudes. Conservative voters, tend to express greater support for the redistributive elements of UBI while simultaneously rejecting its unconditional nature. Conversely, liberals and self-employed individuals exhibit a preference for universal benefits while opposing redistribution, reflecting their support for policies aligned with social investment principles. Meanwhile, left-wing voters tend to prioritize the importance of redistribution towards the least fortunate. Of particular significance is the study's conclusion that educational attainment levels do not exert a significant influence on the level of support for UBI. These three dimensions contribute significantly to the ongoing welfare controversy associated with UBI, rendering it a complex and politically challenging issue of citizen view on UBI.

Combining the findings of Chrisp et al. (2020), Kuziemko et al. (2015), and Gielens et al. (2023), it becomes evident that individuals harbor certain predispositions toward UBI, underscoring the importance of providing comprehensive information regarding its implications. Interestingly, increased awareness of financing policies correlates with reduced overall support for UBI. However, this trend varies among different sub-groups, with several exhibiting similar levels of support despite varying degrees of information provided.

## 2.3. How to finance a UBI policy in the Netherlands?

In this section, an overview of potential UBI financing mechanisms essential for funding and aligned with the philosophical ideology is provided. Additionally, specific policies to be employed for the survey are introduced. There is a lot of resemblance between all the previously analyzed UBI proposals (Table 2.2) from a financial point of view. The most frequently mentioned financial approach to fund UBI policies involves two main components: tax increases and the restructuring of the existing tax system.

### 2.3.1. Restructuring of the welfare system towards UBI

**The allowance system**

To implement an unconditional income for everyone, it is essential to assess the existing financial support provided to individuals. In almost all the proposals outlined in Table 2.2, allowances are suggested as a funding source for UBI. Some variations, especially those with the most significant impact on poverty reduction (such as rent and health allowances), are retained. Currently, the allowances in the Netherlands encompass health allowances, rental allowances, income-specific child allowances, general child allowances, childcare allowances, student allowances, disabled (WAO/WIA/Wajong) allowances, welfare payments, and retirement pensions. Collectively, these allowances constitute a budget of 91.2 billion euros (Ministerie van Financiën, n.d.) (a detailed breakdown is provided in Table B.1). Since retired citizens are beyond the scope of this project, and the disabled allowances operate as insurance, where citizens' contributions fund these budgets, they won't be utilized to finance UBI. This results in a remaining budget of 27.4 billion euros. To remove the welfare cliff, the allowance system is crucial to use in the model.

**Tax deduction to finance UBI**

The second component of the existing financial support consists of tax deductions, which encompass the general tax credit deduction, work tax credit deduction, individual worker tax credit deduction, mortgage interest deduction, and other minor tax deductions (see Appendix B). Together, these deductions amount to a budget of 76.3 billion euros. Similar to allowances, tax deductions play a crucial role in the model, as they are disbursed to a large group of workers, contributing to the welfare cliff, and to homeowners, indicating a substantial portion of the population receiving government funds. Moreover, the budget freed up by these deductions is essential to address the gap in governmental expenditures.

The analysis conducted by Ministerie van Financien (2023) critically evaluated the efficiency of 116 fiscal exemptions in the Netherlands. Among these exemptions, 73 underwent analysis, with only 11 deemed efficient, 41 categorized as uncertain in their effects, and 21 identified as inefficient. The ramifications of these

uncertainties and inefficiencies translate into a significant missed opportunity for the Dutch government, resulting in a loss of 47 billion euros in tax revenue. This substantial amount represents a potential source of funding that could be harnessed to support the implementation of a UBI. These inefficiencies are used to fill up budget-neutral profiles of the conjoint experiment but are not varied in the survey itself.

### 2.3.2. Increasing current taxes or are their new forms of taxes to introduce?

**Increasing income tax**

In Table 2.2, many UBI policy proposals incorporate an increase in income tax. This is partly due to the Dutch Economic Bureau (CPB) using this tax in a non-dynamic manner to achieve budget neutrality for the policies. However, raising income tax is not a guaranteed means of generating higher governmental revenue. This is because elevated tax rates can potentially discourage economic activity, diminish incentives for work, investment, entrepreneurship, foster undeclared work, and may promote tax evasion and other avoidance strategies. This phenomenon is referred to as the Laffer Curve, suggesting that there exists an optimal income tax rate in the economy, and surpassing this point might result in a decrease in revenue. It's essential to acknowledge that the Laffer Curve is a theoretical concept, and the precise shape and location of the curve are subjects of debate. The optimal tax rate is likely to vary based on economic conditions, the tax system's structure, and other influencing factors. Previous research on the subject indicates that the peaks of the Laffer curves generally fall between 50% and 60% for the top income (Van Ravestein & Vijlbrief, 1988; Heijman & van Ophem, 2005). This makes the proposals of J. Bos and Verberk-De Kruik (2019) and the second proposal of Aerts et al. (2023) unrealistic to be budget neutral. An increase in income tax as suggested by Denktank Basisinkomen (2023) (see Table 3.2) would lead to an increase in governmental income of 14 billion euros (Koot, Kempen, Tommelen, & Verkade, 2020). Since the increase in income tax has a high impact on reducing income inequality it is introduced in the conjoint experiment.

Forget (2011) also used the Laffer curve as a potential explanation for the reduction in labor participation during Mincome. Therefore, the highest value of income tax is assumed as the top of the Laffer curve for this study. This joins the wishes of a large group supporting UBI when it is paid by the richest in society.

**Make UBI Taxable**

The "Make UBI taxable" policy, proposed by Aerts et al. in (2023), aims to include the annual value of UBI in an individual's existing income and calculate the tax based on the combined total. This approach serves as an effective means to recapture UBI funds from the wealthiest members of society and increase the progressive taxation system. Taxing UBI could be perceived as contradictory to the idea of providing a basic income without conditions. It may lead to public resistance if not communicated effectively. For instance, with a UBI of 1200 euros per month, as per Euromod calculations, it could generate 71 billion euros in revenue for the government. The APDF and in the Cherokee Casino dividend are forms of UBIs that are taxable for the US federal income tax. Like the tax deductions, making UBI taxable has a large potential to fill the gap in governmental expenditures. In some policies of Aerts et al. (2023) they even combined both policies. The taxback of UBI for high incomes is also close to the philosophical origin of UBI. Therefore this financial policy is included in the survey.

**Flat tax rate**

Another proposed policy by Jongen et al. (2015) and Aerts et al. (2023) is the implementation of a flat taxation system, where individuals contribute the same percentage of their income in taxes irrespective of their earnings. The simplicity inherent in a flat tax is considered a primary advantage, streamlining tax codes and alleviating administrative burdens. Advocates assert that a flat tax fosters fairness by treating all taxpayers equally, eliminating loopholes exploitable by the affluent. This is also close to the origin of UBI.

However, critics argue that a flat tax may disproportionately burden low-income individuals, as a uniform percentage could constitute a larger proportion of their overall income compared to higher earners. The disparity in proposed policies is notable; Jongen et al. suggests a flat tax of 56.6%, maintaining the existing welfare system alongside a UBI of 600 euros monthly. In contrast, Aerts et al. proposes a flat tax of (only) 27% with a UBI of 1235 euros, excluding any additional welfare system. Despite these differences, both studies converge on the conclusion that a flat tax would exacerbate income inequality.

An intriguing finding from Heijman and van Ophem (2005) is that, even with a low willingness to pay taxes,

the optimal marginal tax rate never falls below 36% (similar to the first income tax bracket). This suggests that Aerts' policy could incorporate a 9% increase in income tax, potentially mitigating income inequality through the establishment of a general poverty allowance (Olsthoorn et al., 2020). However, this prospective policy combination requires further research and is not explored in this thesis.

**Land Value tax and Property tax**

Land valuation tax and property tax are subjects frequently deliberated in the philosophical discourse on UBI, aligning with the principles highlighted by Van Parijs (2004). Property tax is a levy imposed on the assessed value of properties such as residential homes, commercial establishments, and land owned by individuals. In contrast, a land value tax is specifically imposed on the assessed value of the land itself, rather than on any structures or improvements (such as buildings) that may be situated on the land.

These taxes, esteemed for their progressive nature, target economic rent derived from valuable assets like land or property. As significant components of individual wealth, taxing these immobile assets allows governments to generate revenue without discouraging economically desirable activities.

According to Kuiiper and Kaathman (2015), the property tax in the Netherlands generates 16.5 billion euros per year. This amounts to approximately 1.6% of the Dutch Gross Domestic Product (GDP), 5% of the total Ductch tax income, and 8 to 10% of municipal income. In comparison to countries such as the United Kingdom and France, the Netherlands collects a relatively modest amount of tax on properties. In these countries, property taxes contribute from 3 to 4% of GDP, indicating the potential for the Netherlands to potentially double its income through this tax revenue. This policy is politically difficult to implement, therefore it is not included in the experiment. A more in-depth political analysis and explanation is given in the Appendix B.3.1.

**Less Governmental employees**

This assessment explores the potential reduction or restructuring of the civil service workforce, particularly those engaged in the management of social welfare programs and taxation, following the introduction of a comprehensive UBI set at 1200 euros[6]. The insights from this assessment are utilized in evaluating the budget neutrality of profiles with the highest UBI allocations.

The projected cost savings stem from an anticipated reduction in the workforce by approximately 114,000 employees, equating to a financial impact of €7.4 billion annually. Details regarding the calculation methodology for this estimation are provided in Appendix B.4.

## 2.4. Literature on UBI in the Netherlands and other Western countries: a synthesis

### 2.4.1. What have we learned from other experiments?

Based on previous international and domestic studies, the implementation of a Universal Basic Income (UBI) policy in the Netherlands is anticipated to result in a decrease in labor participation which is also anticipated for this study. This decline is estimated to be in the range of 3% to 11%. Examining the general relationship between UBI and labor participation reveals a discernible pattern: as the UBI value increases, the decline in labor participation also increases. This observation is intriguing as lower UBI values (around 600 euros per citizen) have a more substantial impact on reducing poverty and are more manageable within the government budget (Aerts et al., 2023). This finding contrasts with the conclusion drawn by ING Bank (2018), who asserted that a UBI is either "Unaffordably high or socially low" and I would therefore expect some support for these mid-value UBI policies.

In the Mincome experiment, a substantial number of individuals who opted to decrease their labor participation chose to engage in caregiving activities or pursue educational programs. Furthermore, noteworthy reductions were observed in hospitalization rates, stress levels, school results, and instances of violence. These outcomes are particularly intriguing in light of projections indicating potential crowding-out effects in healthcare expenditures in the coming years (Aalbers & Roos, 2022). Additionally, the emphasis on education as a response aligns with the broader economic benefits associated with increased labor productivity.

[6]The level of the welfare payements

Given the relevance of these findings, the survey questionnaire incorporated inquiries regarding how individuals would allocate their basic income. This investigation aims to discern whether the Dutch population would similarly choose paths such as caregiving, education, less stress, and better food quality aligning with the outcomes observed in the previous experiments.

An essential justification, as articulated by Olsthoorn et al. (2020), is that nearly every citizen in the Netherlands receives financial assistance from the government. While the most economically disadvantaged individuals receive direct monetary support in the form of welfare payments and allowances, tax deductions also represent a form of government-to-citizen transfer. Notably, these benefits hold greater appeal for citizens with higher incomes as well as shown in Figure 2.1. Additionally, homeowners, who often belong to higher income brackets, can avail themselves of mortgage rate tax deductions based on their property values, indebtedness, and interest rates. This mortgage rate tax deduction can be comparable to rent allowances for certain households, it remains unaffected by increases in income. This constitutes a form of income inequality in governmental aid as individuals with lower incomes face a higher marginal taxation rate compared to wealthier inhabitants. Hence, it is anticipated that individuals with higher incomes will experience a more pronounced decrease in labor participation compared to those with lower incomes. This expectation arises from the likelihood that higher-income individuals are less dependent on government assistance and stand to gain more from UBI if it is not subject to proper taxation. Analyzing the impact of the mortgage rate deduction would be especially intriguing, given its potential to constitute a significant transfer from the government to the wealthy segment of the population and could therefore influence support and labor participation.

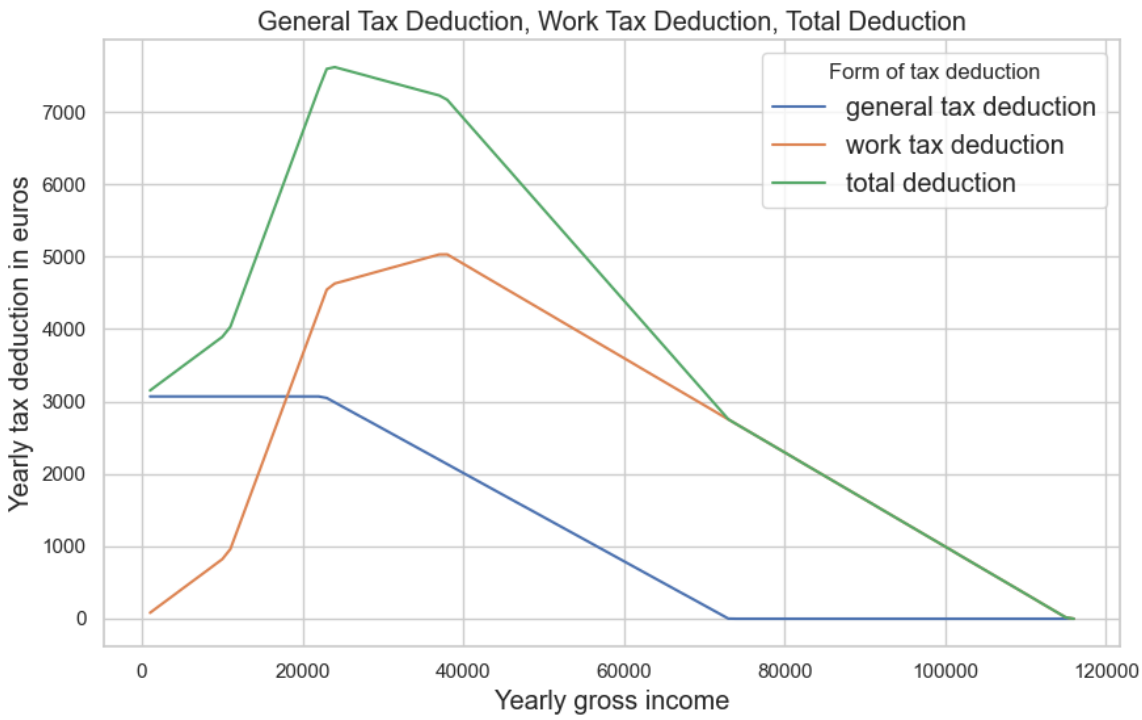



Figure 2.1: Overview of the tax deduction dependent on yearly income

While the welfare system in the Netherlands is generally perceived as designed to assist households in greater need, it is inaccurate to assert that only the disadvantaged receive governmental assistance. Although effective in reducing poverty, it also creates strong incentives to work less, as evidenced by the loss of allowances for many lower- and middle-class individuals, as indicated in the tables provided by Goderis and Vlekke (2023). The effectiveness of the welfare system becomes questionable in this context. However, the question arises: would unconditional support enhance labor participation? Previous experiments with citizens receiving welfare payments and the unemployed (Betkó, 2023; Kangas & Pulkka, 2016) provide no clear indication. While these initiatives reduce the welfare cliff, they do not eliminate it. Therefore, a closer examination of these groups in scenarios involving a high value of UBI could be particularly insightful. It is also important to ac-

knowledge one of the major disadvantages of UBI: if implemented incorrectly, it could potentially exacerbate poverty among certain individuals (Aerts et al., 2023). This specific situation is measured in the effect of the proposed policy on poverty reduction.

### 2.4.2. What have we learned from other surveys?

Prior surveys conducted in OECD countries have predominantly focused on exploring the acceptance of various UBI policies (Rincon, 2023; Rincón et al., 2022; Lee, 2021; Stadelmann-Steffen & Dermont, 2020; Chrisp et al., 2020; De Wispelaere et al., 2018; Wispelaere & Noguera, 2012). However, these investigations primarily delve into the political policy window for UBI, with a notable absence of economic considerations of labor participation. This omission is significant, given the crucial role economic aspects play in the discourse, especially in light of the fiscal challenges faced by the Finnish government following the conclusion to end the UBI pilot (Kangas, 2021).

To ensure a comprehensive understanding of UBI in a survey context, it is crucial to consider the impact of the information provided to respondents, as demonstrated by Stadelmann-Steffen and Dermont (2020) and Kuziemko et al. (2015). Notably, survey designs should carefully consider the framing of information, as illustrated by ING Bank (2018), who, by simply indicating an increase in taxes associated with UBI, stimulated tax aversion among Dutch citizens. In contrast, the research by Rincon (2023); (2022); (2019) emphasized the re-distributive effects of tax increments by including taxes for the wealthiest members of society, potentially fostering more favorable attitudes. Given these nuances, it is imperative to maintain a neutral stance in survey design, particularly regarding one's opinion on UBI and its financial mechanisms. Given that political opinions appear to significantly influence the biases of Dutch citizens regarding their views on UBI (Gielens et al., 2023), it becomes crucial to incorporate a customized estimation of what UBI would mean for the monthly net budget of each survey respondent.

To achieve this neutrality, the survey provides respondents with detailed information on the financial implications of their available monthly budget for each measure, allowing them to form opinions grounded in factual financial data rather than personal impressions on the policy. This approach aims to foster opinions rooted in factual financial data rather than subjective impressions of the policy. By prioritizing transparency in conveying the effects on available income, the survey seeks to mitigate biases and empower respondents to make well-informed judgments. The provision of information regarding the reduction or elimination of the welfare cliff through UBI may introduce a positive bias toward the policy. However, this disclosure is intended to inform respondents of the potential reduction or elimination of the welfare cliff, ensuring transparency in the survey process.

### 2.4.3. How can UBI be financed?

A crucial aspect in determining the feasibility of financing UBI policies lies in the introduction of new taxes, the adjustment of existing taxation rates, and the restructuring of the welfare system, given that UBI renders several social benefits redundant. Particularly noteworthy among potential restructuring measures are the allowances, as they significantly contribute to the welfare cliff and have the risk of increasing poverty through non-pickup or strict eligibility criteria unrelated to income (Berkhout et al., 2019; Arbeidsinspectie, 2023) leading to non-support of the economic worse off citizen. Therefore, the restructuring of allowances holds paramount importance within this study.

From a budgetary perspective, financing UBI necessitates substantial sums of money. In this context, restructuring tax deductions assumes considerable significance, as it has the potential to generate up to 74 billion euros. Hence, tax deductions are included in the experimental framework due to their significant potential in bolstering financial resources for UBI policies. Additionally, the introduction of a new tax measure, making UBI taxable, holds comparable potential in terms of financial benefits for financing the policies. Therefore, it is deemed pertinent to incorporate this measure into the experimental design.

Regarding taxation, one avenue involves augmenting income tax rates. However, it's crucial to note that such increases cannot be indefinitely escalated to meet budgetary requirements, as demonstrated in studies such as J. Bos and Verberk-De Kruik (2019) or Aerts et al. (2023), as governmental revenue does not exhibit linear growth with heightened taxation rates. It holds the potential to yield the contrary outcome, as per the Laffer curve theory, wherein excessively high taxation can result in diminished tax revenue for the government (Van Ravestein & Vijlbrief, 1988; Heijman & van Ophem, 2005).

Excluded from the experimental framework are certain financial policies due to their potential drawbacks and current limitations in research. These exclusions include the implementation of a flat tax rate, which carries the risk of exacerbating inequality and further impoverishing the economically disadvantaged (Aerts et al., 2023). Similarly, the introduction of a land value tax and an augmented property tax is omitted due to their political sensitivity and fragility (CPB, 2023). Moreover, the consideration of reducing governmental employees is based on estimations and lacks robust empirical validation. Additionally, the exploration of inefficient taxation exemptions is deferred, as ongoing research, such as that conducted by Ministerie van Financiën (2023), is not yet concluded.

It is crucial to acknowledge that despite their exclusion from the current study, these financial policies harbor significant potential to finance UBI and warrant close scrutiny in the forthcoming years. Furthermore, these excluded policies may exhibit intriguing patterns of support and labor participation, rendering them suitable subjects for future research endeavors.

### 2.4.4. Conceptual model

Based on insights garnered from prior experiments, survey studies, and potential financial reforms for UBI, Figure 2.2 presents an outline of the research methodology. Each yellow box delineates a distinct model employed in the study.

The first model computes disposable income based on the taxation system in the Netherlands, the proposed UBI policies, and financial reforms tailored to each respondent's gross income and number of children. The envisaged UBI policies (involving both a UBI per adult and a UBI per child) in conjunction with financial reforms such as changes in allowances, tax deductions, or income tax adjustments constitute the profiles utilized in the conjoint experiment segment of the survey. The disposable income model facilitates the attachment of a disposable income customized to each respondent for every proposed UBI in the conjoint experiment. It is also used to calculate the influence the UBI policies have on poverty. To do so, it uses the supported policy from the conjoint experiment.

Within the conjoint analysis model, each respondent articulates their level of support for the proposed policies and how these policies might impact their labor participation. This data is compared to their current labor participation to estimate the influence of UBI on labor participation across the population of interest. This comparative analysis is conducted for each sub-group to discern behavioral patterns in the results.

The final model entails a traditional survey, wherein respondents provide insights into their attitudes and behaviors regarding the proposed UBI policies. These behavioral responses are subsequently contrasted with the findings derived from the literature review, thereby enriching the analysis.

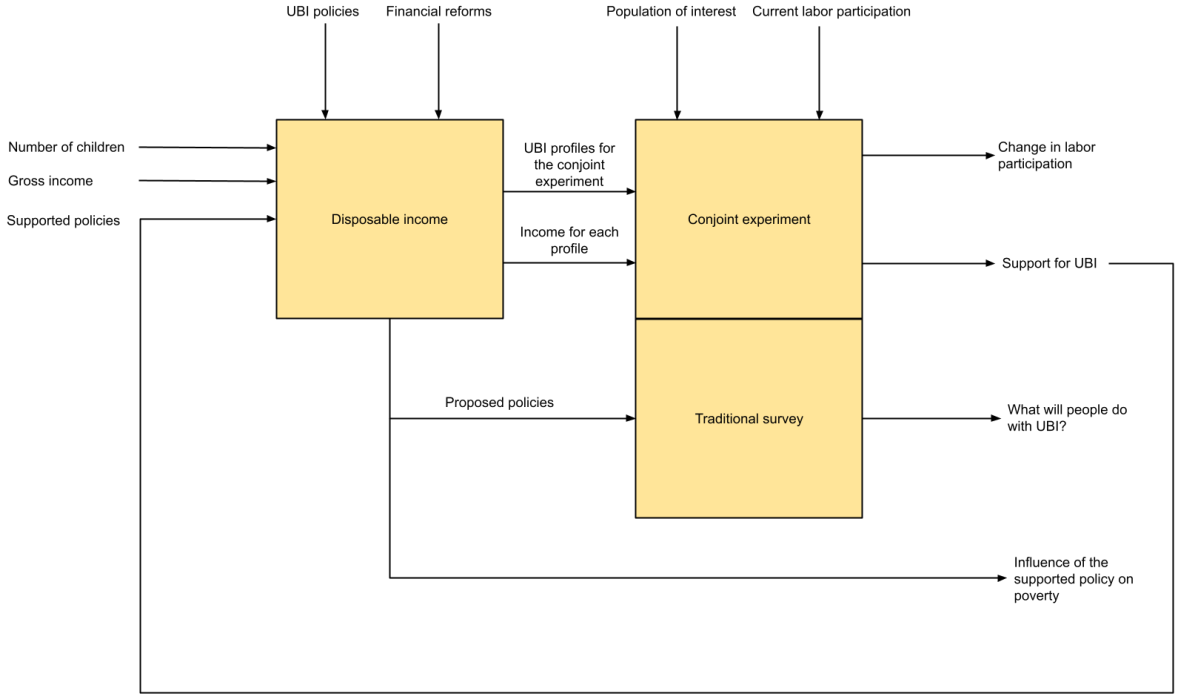



Figure 2.2: Conceptual model of this research

In the subsequent chapter, an in-depth exploration of the selection process for the population of interest, the delineation of UBI policies, and the identification of pertinent financial reforms for this study is provided. Furthermore, a comprehensive examination of the conjoint analysis methodology and the criteria guiding the selection of profiles is undertaken.

# 3

# Methods

## 3.1. Population and variables of interest for UBI

This study focuses on specific demographic groups that have been identified as of particular interest because they can show different behavior than the general population based on prior research to answer the second research question.

### 3.1.1. Second earners, part-time workers and women

Empirical research based on econometric analyses consistently demonstrates that the responsiveness of labor supply varies between primary earners and secondary earners, often working part-time in the Netherlands (De Nederlandse Bank, 2023). Specifically, primary earners exhibit relatively low sensitivity to labor market activation, whereas secondary earners show a higher degree of responsiveness to such activation Robins; Saez, Slemrod, and Giertz; Boone et al.. For example, Robins (1985) conducted a study in the United States and estimated that the implementation of a UBI policy would lead to an average reduction of approximately three weeks in the number of work weeks for women or second earners compared to primary earners. In a separate study in 2012, Saez et al. (2012) examined the elasticity of labor supply among the US population using taxation data and found that an increase in the taxation rate would result in a decrease in labor supply for secondary earners within households. These findings have been further supported and generalized by Sociaal Cultureel Planbureau (2020), Boone et al. (2018) and Jongen et al. (2015) in their studies on the labor effects of UBI in the Netherlands. Given the significance of secondary earners in understanding the dynamics of labor participation, it is crucial to investigate their behavior through surveys that specifically focus on labor participation.

### 3.1.2. Single-Parent Household and families with children under 5 years old

Single-parent households and families with young children often bear significant caregiving responsibilities. In the context of UBI, these households may experience changes in labor force participation due to the availability of financial support and the alleviation of immediate employment needs. With UBI providing a stable income, individuals in these households may choose to allocate more time to caregiving activities, such as attending to the needs of children or other family members. This phenomenon, observed in the data of Calnitsky and Latner (2017), reflects the potential of UBI to enable parents to prioritize their caregiving roles and reduce their reliance on external employment.

Families with young children commonly face substantial childcare costs, which can often outweigh the financial benefits of engaging in paid work for women. Prescott, Swidinsky, and Wilton (1986) found that prior to the implementation of UBI in the Mincome experiment, the expenses associated with childcare often exceeded the earnings of women, discouraging their labor force participation. However, the introduction of UBI can potentially mitigate these costs by providing a basic income that helps cover daily expenses, including childcare expenses. As a result, families may find it more feasible to re-enter the workforce or increase

their labor force participation as observed by Van Parijs (2020) for the Finland experiment.

Conversely, UBI's financial support can also enable parents to spend more time with their children and reduce their reliance on external childcare services. This may lead to a reduction in labor participation as parents prioritize caregiving responsibilities over paid work. The impact of UBI on labor participation in families with young children is thus multifaceted, and its effects may vary depending on individual circumstances and preferences.

### 3.1.3. Inhabitants receiving welfare payments

Individuals who receive welfare payments in the Netherlands often encounter the welfare cliff phenomenon, as highlighted by Quist (2015) and Goderis and Vlekke (2023). This situation creates a significant discontinuity in their benefits as they transition into employment, which can deter them from re-entering the labor force. However, under UBI policies, these individuals may experience greater flexibility and incentives to reintegrate into the workforce, as indicated by research conducted by Mastrogiacomo, Bosch, Gielen, and Jongen (2017) and Boone et al. (2018).

Interestingly, findings from the UBI pilot study conducted in Finland by Kangas et al. (2019) did not reveal statistically significant impacts on labor force participation for this group of individuals. Despite this lack of significance, the potential for individuals receiving welfare payments to re-enter the working population under UBI policies remains an intriguing area for investigation. Understanding the dynamics and responses of this group to UBI can shed light on the effectiveness and implications of UBI as a social policy tool.

### 3.1.4. Young adults

Many young adults (18 to 27 years old) place a high priority on pursuing higher education or acquiring additional skills during their formative years. The implementation of UBI can potentially provide these individuals with the financial freedom necessary to invest more time and resources in their educational pursuits, without the immediate pressure to enter the workforce. By offering a basic income, some of the financial burdens associated with education are alleviated, allowing young adults to dedicate themselves more fully to their studies or training.

This phenomenon has been observed in previous studies. For example, Calnitsky and Latner (2017), analyzing data from the Mincome program, identified young adults as a group that significantly reduced their labor force participation to pursue educational opportunities. Furthermore, Robins (1985) estimated that, on average, young adults would reduce their labor participation by approximately four weeks per year under a UBI policy. By investigating the behavior and choices of young adults in response to UBI, we can gain a deeper understanding of the potential impacts of UBI on educational attainment and workforce entry. This knowledge can inform policy discussions and help shape effective strategies to support the educational aspirations of young adults within the context of UBI implementation.

### 3.1.5. Elderly workers

Elderly workers (50 to 67) often find themselves approaching or already in the retirement phase of their lives. UBI can play a significant role in providing financial stability and security for this demographic, reducing their reliance on employment income and easing the transition into retirement. It can create opportunities for them to explore non-remunerated activities that align with their interests and values, such as engaging in voluntary work, providing care for family members, or contributing to community service. This allows them to remain active and involved in meaningful pursuits that contribute to society. Robins (1985) estimated that, on average, elderly male workers would reduce their work time by approximately two weeks per year under a UBI policy. These findings further highlight the potential impact of UBI on the labor force participation of elderly individuals, suggesting that it can provide them with the means to gradually transition into retirement and pursue activities that bring them fulfillment and purpose in their later years.

## 3.2. Survey set-up

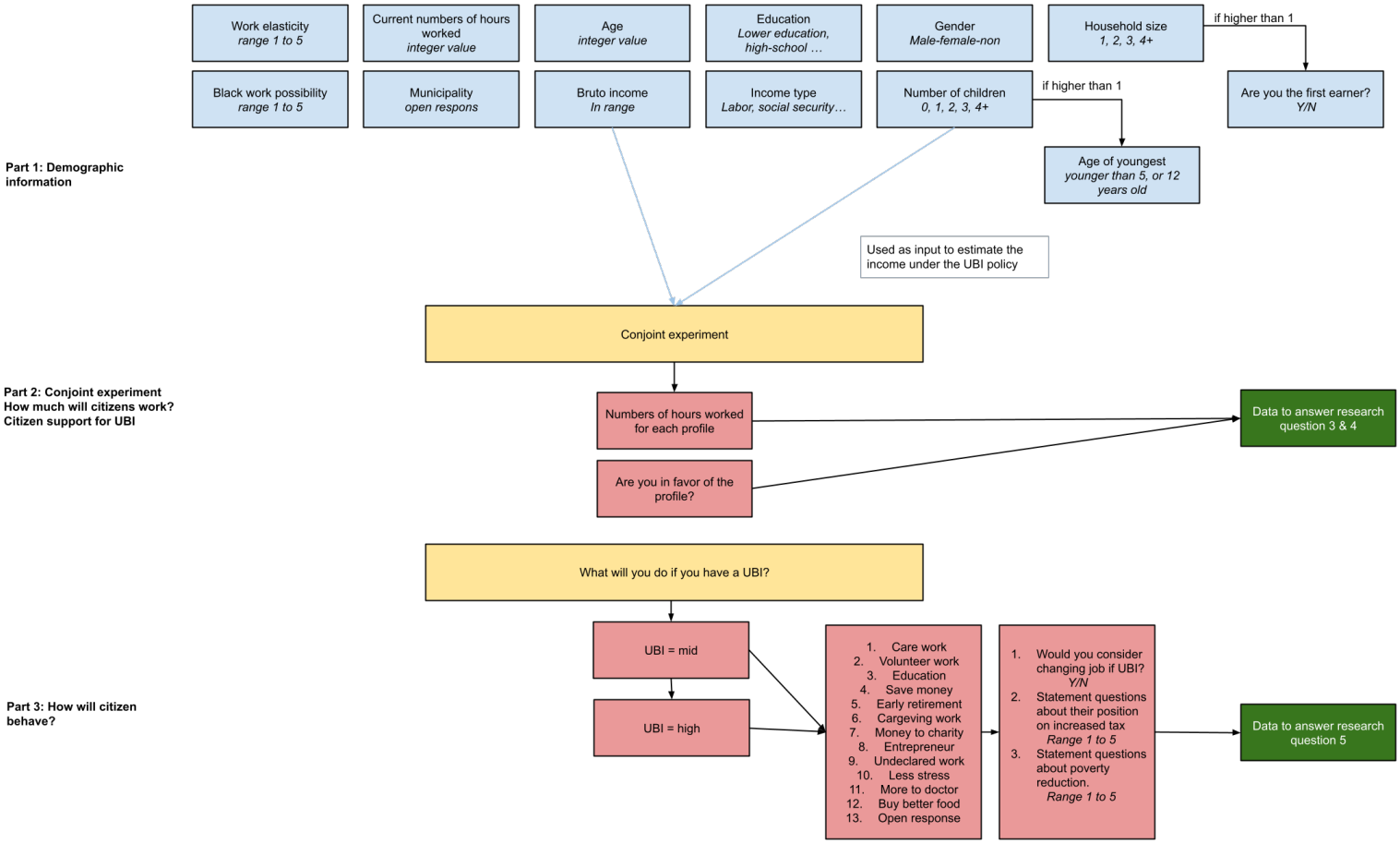



Figure 3.1: Set-up of the three-part survey questionnaire

Figure 3.1 provides an overview of the survey structure comprising three distinct parts. The first part focuses on gathering respondent information, including details such as their number of working hours, age range, education level, income range, gender, income type, and household size. To further evaluate the individual's role as the primary earner within the household, a follow-up question is posed in relation to the household size. If the respondent indicates having children, an additional question is included to determine whether the children are below the age of 5 or 12 (individuals in the Netherlands receive a tax benefit if they have young children). Furthermore, respondents are asked about their housing type to assess their eligibility for mortgage rent deductions or housing benefits. The final question in this first part pertains to work elasticity, acknowledging that certain individuals may not have the flexibility to increase or decrease their working hours. These questions are used to categorise a respondent in the category of the population of interest. All other demographic information is added to the regression model as constant (more information in Section 3.6). The questionnaire can be found in Section C.1.

The second part of the survey entails the implementation of a conjoint experiment, with Section 3.3 providing a detailed explanation of the model. The data obtained from this experiment is used to make a regression analysis with the number of hours worked and the support of the policy as an independent variable dependent on the value of UBI, the value of UBI per child, the change in the taxation system, and the change in the allowance system. This data is used to answer research questions 3 and 4. Conjoint experiments are particularly well-suited to measure trade-offs because they allow researchers to assess individuals' preferences by presenting them with sets of hypothetical alternatives that vary systematically in their attributes. It simulates realistic decision contexts by presenting participants with choices between alternative policies that vary in

multiple attributes. Participants are asked to make trade-offs between these attributes, similar to real decisions they might face under the existence of these policies. The regression results give a coefficient for each level of the experiment which can later on be used to examine trade-offs and to create an optimal profile depending on distinct criteria. By systematically varying attribute levels across choice sets, I can identify which attributes drive decision-making and the trade-offs individuals are willing to make.

The third part of the survey comprises a traditional questionnaire. In this section (Appendix C.3), data is collected to address research question 5. Respondents are asked to indicate how they would allocate the additional money or time gained from a reduction in labor participation for each UBI value presented. They are also asked about their perception of tax increment and poverty reduction. A traditional questionnaire gives a more tailored approach to ask more precisely how people would change their behavior under UBI policies. It also has the opportunity to gain qualitative data to get potential behavior that was not expected at the start.

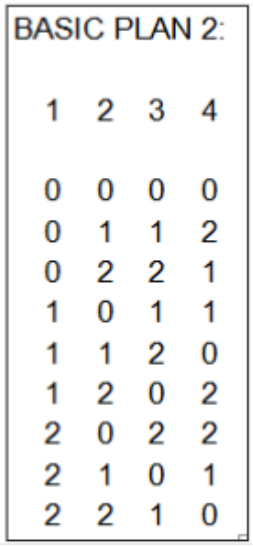
## 3.3. The conjoint experiment

The objective of the conjoint experiment is to develop two linear regression models. The first model is an estimate of the number of hours worked as the independent variable. The second model is an estimate of the acceptance of the proposed UBI profiles as the independent variables. By analyzing these models, we can examine the trade-off between acceptance of UBI and labor participation. This allows us to gain valuable insights into the relationship between the two variables and better understand the potential impact of different UBI proposals on labor participation behavior in the Netherlands. This is also used for a sub-set analysis among the population of interest from Section 3.1.

Table 3.1: Attributes and levels of the conjoint experiment

| Attribute | Level |
|---|---|
| UBI per adult | 0. 1200 euro<br>1. 630 euro<br>2. 210 euro |
| UBI per child | 0. 300 euro<br>1. 185 euro<br>2. 100 euro |
| Change in tax system | 0. No tax deduction<br>1. Make UBI taxable<br>2. New income tax system |
| Allowances | 0. Only health allowance<br>1. No allowances<br>2. Only rental allowance |

Figure 3.2: Basic Plan 2




Since every attribute of Table 3.1 has 3 levels, the conjoint experiment is balanced. This means the occurrence of each level of each attribute is equal and set to 3. Therefore, there is no attribute level biasing the outcome, this is one of the two requirements for an optimal design. The second requirement is that the attributes are designed to be orthogonal, meaning they are not correlated. For this experiment, Basic Plan 2 (Figure 3.2) is used for an optimal design. The basic plan typically includes a limited number of attributes with multiple levels or options.

The four columns of Basic Plan 2 have three levels each, where column one corresponds to UBI per adult, column two to UBI per child, column three to the change in tax system, and column four to the change in allowances. The values 0, 1, and 2 from Figure 3.2 correspond to the value of Table 3.1. In total, there are 9

different UBI profiles or scenarios created. The interpretation is as follows: The first profile (0, 1, 1, 2) can be read as: UBI per adult = 1200 euro, UBI per child = 185 euro, Change in taxation: make UBI taxable, Allowance = only rental allowance.

### 3.3.1. Attribute selection

For each of the four attributes, the third level of Table 3.1 is selected as the reference category as it closely resembles the current situation in the Netherlands.

*Attribute 1: UBI per adult*

Table 2.2 presents recurring levels of UBI proposals, categorized as low, medium, and high values. The low value ranges from 200 to 300 euros, the medium value is approximately 600 euros, and the high value exceeds 1000 euros per month. Aerts et al. (2023) determine the value of UBI based on percentages of the median income, specifically 10%, 30%, and 60%. According to Centraal Bureau Voor de Statistiek (2023a), the median income in the Netherlands amounts to 25,200 euros per year, equivalent to 2,100 euros per month. Consequently, the monthly UBI values at 10%, 30%, and 60% of the median income are calculated as follows: 210, 630, and 1,260 euros. As the latter exceeds the monthly welfare payments in 2023, it is adjusted to 1,200 euros.

210 euro per month is selected as the reference value because it represents the lowest UBI policy. This amount is anticipated to result in the most significant decline in income for the majority of individuals, potentially incentivizing them to increase their work efforts (De Nederlandse Bank, 2023). As a result, it is expected to receive the lowest level of support.

*Attribute 2: UBI per child*

In Aerts et al. (2023), the authors utilize the OECD equivalence scale to determine the UBI per child. They estimate that 30% of the UBI value allocated to an adult is required for each child. Referring to the previously calculated UBI levels, this would result in UBI per child values of 63, 189, and 378 euros per month. Considering the current value of the general child allowance, which stands at 69 euros per month per child for children younger than 5, 84 euros per month per child for children between 6 and 11, and 100 euros per month per child for children between 12 and 18 years old. 63 euros a month is too low. Therefore the current level of 100 euros per month is considered as the lowest chosen level and the reference category.

The UBI per child attribute aligns with one of the fundamental concepts of UBI, as it has the potential to replace existing allowances. The other proposed levels per child are set based on the framework presented by Aerts et al., with a second level at 185 euros per month and the highest level at 300 euros per month, as proposed in the UBI policies by J. Bos and Verberk-De Kruik (2019) and Denktank Basisinkomen (2023).

*Attribute 3: Change in the tax system*

In order to finance UBI, significant tax restructuring is required.

Level 1: The abolition of tax deductions would encompass various key credits, including the general tax credit, work tax credit, individual tax credit, and mortgage tax deduction. Tax deductions significantly contribute to the welfare cliff, as illustrated in Figure 2.1, resulting in an increased marginal taxation rate of 3% on income ranging between 23,000 and 37,000 euros of gross income. Between 37,000 and 77,000 euros, the tax deduction system adds a 9% marginal taxation rate. Afterward, its marginal taxation due to tax deduction drops at 6.5%. These deductions represent a significant redistribution mechanism within the Dutch welfare system, substantially reducing the tax burden for individuals with low to moderate incomes.

Level 2: Make UBI taxable, meaning that the UBI amount would be added to an individual's income, and subsequently, income tax would be calculated based on the revised total income. These tax restructuring measures are fundamental aspects of UBI proposals aimed at ensuring the financial feasibility and sustainability of the program. This is in line with the UBI's of the Alaskan Permananent Dividend Fund and the Cherokee Casino Dividend.

Level 3: Increase the income tax rates as suggested by the CPB. Table 2.2 presents various mechanisms proposed for this purpose. These mechanisms include increasing income tax through higher top-income tax rates and an augmented tax percentage in the middle bracket. Table 3.2 provides an overview of the proposed tax reform. It is chosen as the reference since in nearly all proposal an increase of income tax is needed to make the policy budget neutral.

Table 3.2: New income tax system used for conjoint experiment

| Tax bracket | Tax rate |
|---|---|
| 0 to 27.000 euro | 36% |
| 27.000 to 65.000 euro | 40% |
| 65.000 to 100.000 euro | 50% |
| 100.000+ euro | 60% |

The proposed tax reform is based on the calculations of Koot et al. (2020), which incorporates a four-layer income taxation system. Additionally, UBI proposals commonly suggest reducing or eliminating various tax cuts and implementing taxation on UBI itself.

In various proposals, these three forms are often amalgamated to achieve budget neutrality for the policy. However, in this experiment, the decision has been made not to combine them, as the combination of making UBI taxable and eliminating tax deductions could disproportionately impact lower incomes, rendering the profile politically unviable.

*Attribute 4: Value of the allowances*

The experiment also considers three different levels of allowances: health allowance only, no allowance at all, and rental allowance only.

Level 1: “The health allowance” is a specific allowance aimed at ensuring that every individual in the Netherlands can afford mandatory health insurance. The Dutch government has prioritized universal access to healthcare as one of its key missions (Ministerie van Volksgezondheid, Welzijn en Sport., 2022). Therefore, this allowance is included in the experiment. Since health insurance is individual, the allowance is also provided on an individual basis. Citizens with an income below 37,496 euros or households with two or more adults with a combined income below 47,368 euros per year is eligible for this benefit. The maximum benefit is 123 euros for individuals earning less than 26,000 euros per year and is gradually phased out with 14.4%[1]. An overview of this allowance is given in Figure 3.3.

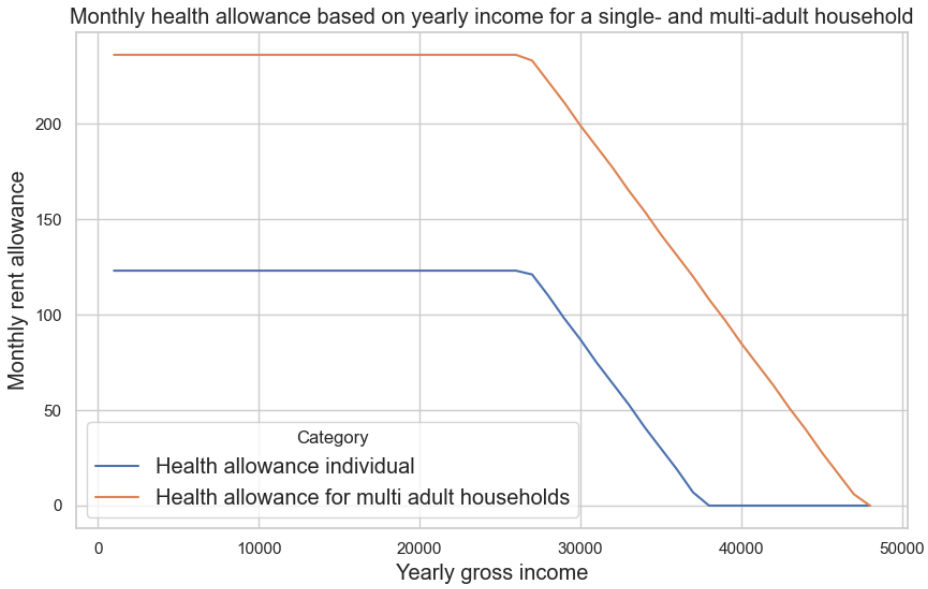



Figure 3.3: Amount of health allowance depending on yearly income and the number of adults living in it

Level 2: "No allowance at all," which aligns with one of the fundamental principles of UBI: providing a single budget for each citizen. This approach can be particularly interesting when combined with high values of UBI

[1] With a yearly gross income increase of 1000 euros, citizens lose 12 euros per month of allowance or 144 euros per year.

and/or UBI per child. Replacing existing allowances with UBI can have positive effects on the welfare cliff. If the total impact of a column on the budget is negative, it does not necessarily imply that every alteration in the tax system, allowance, or correction must be executed. However, for a very low level of UBI per adult, this could have an important impact on labor participation since the childcare allowance is the most efficient allowance to increase labor participation, especially among women (Del Boca, 2015; Del Boca et al., 2008). It is therefore interesting to make childcare free as proposed by various political parties in the 2023 elections (CPB, 2023) for lower versions of UBI.

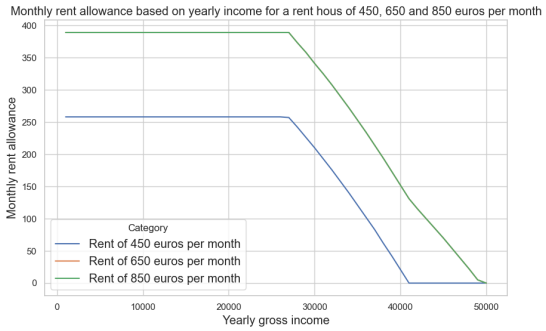



Figure 3.4: Amount of rent allowance depending on your monthly rent and yearly income for households with more than one adult living in it

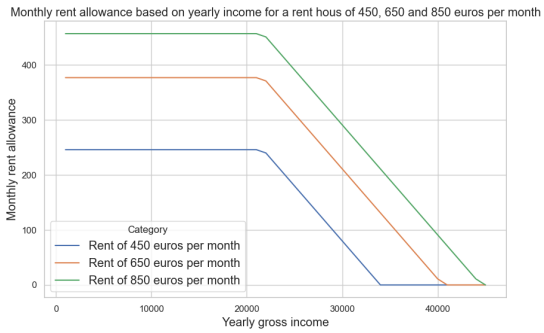



Figure 3.5: Amount of rent allowance depending on your monthly rent and yearly income

Figure 3.6: Welfare cliff created by rent allowance in the Netherlands

Level 3: "The rental allowance". This targeted allowance is provided to single-household citizens with individual incomes below 32,500 euros or multi-citizen households below 40,500 euros. Individuals earning less than 20,700 euros per year or households earning less than 25,000 euros per year are eligible for the maximum rental allowance of 457 euros per month (see Figure 3.5 (Ministery van Volkshuisvesting, 2024)). Although this allowance currently contributes to the welfare cliff [2], it has been identified by Olsthoorn et al. (2020) as the most efficient allowance for reducing poverty. This is why it is retained in the experiment and chosen as the reference category. An overview of the effect of rent allowance is given in Figure 3.6.

### 3.3.2. Governmental budget impact of the profiles

In order to provide an overview of the impact on the governmental budget for each profile, a calculation has been conducted. The input values used for the calculation can be found in Section 2.3 and Tables B.1 of the Appendix B. Table 3.3 provides an overview of the budget neutrality of each profile, expressed in billion euros. A positive value indicates a governmental expense, while a negative value indicates a revenue or budget reduction.

It is observed that profiles 2, 4, and 6 result in the largest governmental budget deficits per value of UBI, indicating that the increased governmental income from the new income taxation scheme is not sufficient. Nearly all profiles are budget neutral except profiles 0, 1, 2 & 4 because there is a large deficit larger than 10 billion euros. This is because, as shown in Table 2.2, a combination of proposed allowance deductions and tax reforms is necessary to achieve budget neutrality for UBI. Consequently, correlations between the policy recommendations are introduced, making it challenging to analyze the acceptance of each attribute level by the respondents. By utilizing this model, the effect of each attribute level can be estimated separately in terms of acceptance and labor participation among the respondents. Due to the orthogonal design, it is not possible to analyze the interaction between specific effects as is done in Jongen et al. (2014), J. Bos and Verberk-De Kruik (2019), Aerts et al. (2023), and (Denktank Basisinkomen, 2023) (2023).

From Section 2.3, the elimination of inefficient tax deductions is also integrated into the financing framework of UBI for profiles 0 to 4, given its significant impact on the overall government budget. Additionally, for

[2] With a yearly gross income increase of 1000 euros, citizens lose 20 euros per month of allowance or 240 euros per year. This leads to a marginal taxation rate of 24%

Table 3.3: Overview of the impact of each profile on the Dutch governmental budget

| Profile | UBI per adult | UBI per child | Change in tax system | Allowances | Correction [a] | Total impact on budget |
|---|---|---|---|---|---|---|
| 0 | 163.44 | 14.94 | -76.30 | -22.90 | -54.4 | 24.78 |
| 1 | 163.44 | 9.21 | -71.00 | -25.50 | -54.4 | 21.75 |
| 2 | 163.44 | 4.98 | -14.00 | -29.50 | -54.4 | 70.52 |
| 3 | 85.80 | 14.94 | -35.10 | -29.50 | -47.0 | -10.85 |
| 4 | 85.80 | 9.21 | -14.00 | -22.90 | -47.0 | 11.12 |
| 5 | 85.80 | 4.98 | -76.30 | -25.50 | 0 | -11.01 |
| 6 | 28.60 | 14.94 | -14.00 | -25.50 | 0 | 4.04 |
| 7 | 28.60 | 9.21 | -14.70 | -29.50 | 0 | -6.39 |
| 8 | 28.60 | 4.98 | -11.30 | -22.90 | 0 | -0.62 |

[a] Correction for inefficient tax exemptions and governmental employees

profiles 0 to 2, the reductions in civil service personnel costs are included, as these profiles receive a 1200 euro UBI.

## 3.4. Which UBI policies are analyzed?

### 3.4.1. The mid- and high-UBI policies, an introduction

To analyze the trade-off between UBI acceptance and changes in labor participation, it is crucial to calculate policies that are more politically feasible. In the current debate, a high UBI of 1200 euros per month or a mid UBI of 630 euros per month is more likely to be implemented. To address child poverty, these UBI policies are coupled with mid and high values (e.g., 185 and 300 euros per month per child). Given that abandoning the tax deduction system is the most lucrative means to finance UBI, it will be used for the high-value policy, while making UBI taxable will be employed to finance the mid-value policies. Both policies will not have an allowance system in parallel, aligning with the preferences of most political parties who aim to abolish them (CPB, 2023).

Therefore, to analyze the trade-offs, the following policies are used in Chapter 4:

1. High-UBI: A 1200 euro UBI, with 300 euro UBI per child, no tax deduction, and no allowance. This policy is coded as 0, 0, 0, 1. The implication for the governmental budget is a deficit of 18.18 billion euros.
2. Mid-UBI: A 630 euro UBI, with 185 euro UBI per child, making UBI taxable, and no allowance. This policy is coded as 1, 1, 1, 1. The implication for the governmental budget is a surplus of 16.59 billion euros if all inefficient tax exemptions are corrected to finance UBI.

These two policies were presented to respondents in the traditional survey part. They serve as a reference to see how respondents will react towards the introduction of UBI.

### 3.4.2. How do these policies transform the welfare cliff?

The impact on the welfare cliff, as compared to Figure 1.1, is depicted in Figure 3.7. The selected marginal taxation rates represent single households with and without children under the mid- and high-UBI policies. The thinner lines denote the marginal taxation rates under the current situation in the Netherlands.

A notable observation is that only a partial reduction of the welfare cliff has been achieved. This partial mitigation arises from the necessity to preserve welfare payments as a critical tool in addressing poverty, given the targeted nature of the allowance system. Utilizing these allowances to finance UBI would entail reallocating nearly half of the resources from the most economically disadvantaged individuals who rely on targeted welfare support.

Despite the potential reduction in marginal tax rates, estimated to hover around the lowest income tax bracket (36.9%), and the resultant incentive for increased workforce participation, the financial ramifications for these individuals could exacerbate their plight, driving them deeper into poverty, as demonstrated by Aerts et al. (2023). For instance, in the current situation, an individual with no income and no children residing in social housing receives 14,400 euros in welfare payments and 9,960 euros in allowances (rent and health). Removing these allowances and welfare payments would halve their income with a UBI of 1200 euros per month and quarter their income with a UBI of 630 euros.

Retaining welfare payments within the social welfare system perpetuates a scenario where a marginal tax rate exceeding 100% is applied to the initial 14,400 euros of income and can be seen as the general poverty allowance policy outlined in CPB (2023). Subsequently, the welfare cliff is eliminated with the implementation of UBI policies, which is set at the level of the income tax rate for the high UBI policy due to the absence of a tax deduction scheme. This represents the most straightforward manifestation of marginal taxation rates. The mid-UBI policy, characterized by a combination of tax deductions and taxation of UBI, exhibits a higher marginal taxation rate but still remains below 60%. This policy proves more effective in recouping UBI from higher-income segments of society.

### 3.4.3. Maximizing support and budget neutrality for UBI policies

A strength of conjoint experiments lies in their ability to estimate the values of all other profiles for a full factorial design, utilizing a limited set of optimal profiles that are uncorrelated and balanced, as illustrated in basic plan 2 from Figure 3.2. This approach enables the assessment of the policies' support levels and their

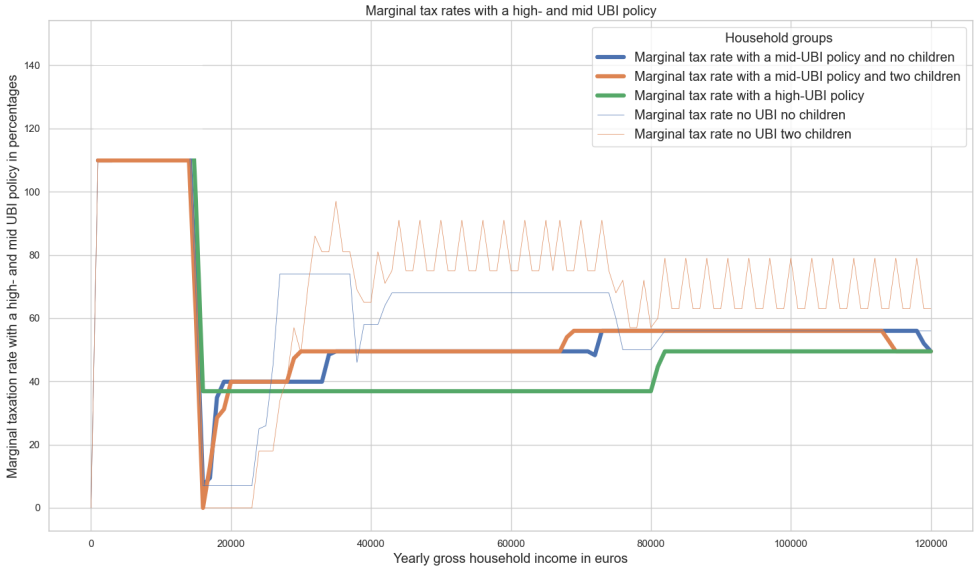



Figure 3.7: Marginal taxation rates under the proposed UBI policies

feasibility within the financial constraints outlined in the study, as demonstrated by the impact of the UBI policies on the governmental budget in Table 3.4.1.

In the results section dedicated to optimizing support while ensuring budget neutrality, both UBI policies that can be financially sustained through the attributes of the conjoint experiment—namely, alterations in allowances and adjustments to the taxation system are presented. Furthermore, policies aligned with the fundamental principles of UBI, such as the implementation of a land value tax, increased property tax, and reductions in governmental employment are included. Additionally, ongoing investigations into inefficient tax deductions is considered. The inclusion of these policies has shed light on how a larger budget, and consequently more generous UBIs, may potentially enhance support for the policies. Moreover, these estimates underscore the magnitude of the impact that reductions in support resulting from changes in taxation measures can have on maintaining the viability of these policies.

This framework serves as a foundational basis for future research on these tax mechanisms and deductions as potential funding sources for UBI in the Netherlands. This research is needed to finance higher values of UBI since they have a more fundamental impact on the governmental budget.

### 3.4.4. How to measure the impact UBI policies have on poverty?

To initiate the assessment of the impact of UBI on poverty, establishing a baseline model is crucial. This model constructs a representation of the current optimal scenario, wherein every citizen is assumed to avail themselves of their welfare payments and all the allowances to which they are entitled.

The model assesses the impact of UBI on disposable income for households with a gross income ranging from 0 to 120,000 euros per year. It deducts a pension savings contribution of 9% and the paid income tax from the gross income. The received tax deduction is then added to calculate the net income from labor. Subsequently, the entitlement to allowances (health, rent, child-specific, and childcare) are determined, if applicable, and added to the net income to compute the disposable income.

It is noteworthy that the individual's contribution to childcare costs are also deducted in the model. Although the childcare allowance can be considered as an indirect cash transfer with no direct boost to disposable income, it is included in the base model. This is because the receipt of this allowance can significantly influence labor force participation decisions, particularly for women, second earners, and part-time workers. Thus, its inclusion in the model is essential for a comprehensive analysis.

Then, various household types are distinguished to assess how UBI impacts their disposable income and influences their poverty. The household compositions chosen align with those in the study by J. Bos and Verberk-De Kruik (2019). These household compositions are further divided into two subgroups: those with children and those without. The selected household compositions include single adult households (thus encompassing single parents with two children), two-adult households with only one earner, two-adult households where both earners have the same income, and households where one earner earns 66% of the income while the other earns 34%. For detailed information regarding the assumptions underlying the households and the criteria for allocating allowances, please refer to Appendix A.

It is imperative to acknowledge that poverty is influenced by a multitude of factors, including instances where individuals do not receive certain allowances or are ineligible for (rental) allowance due to criteria beyond income. These nuances are challenging to capture within the confines of this model, which assumes an ideal scenario. However, it is anticipated that individuals in such situations may experience a significant improvement in disposable income under UBI policies, as they are likely to receive more support from the government compared to the current system where they may not be eligible for or utilize welfare programs. This model is instrumental in assessing whether individuals who fully utilize the Dutch welfare system would fare better or experience an increase in disposable income under UBI policies. Figure 3.8 illustrates the impact of the mid- and high-UBI policies from the survey on the income of households with two adults earning the same salary, as compared to the current situation.

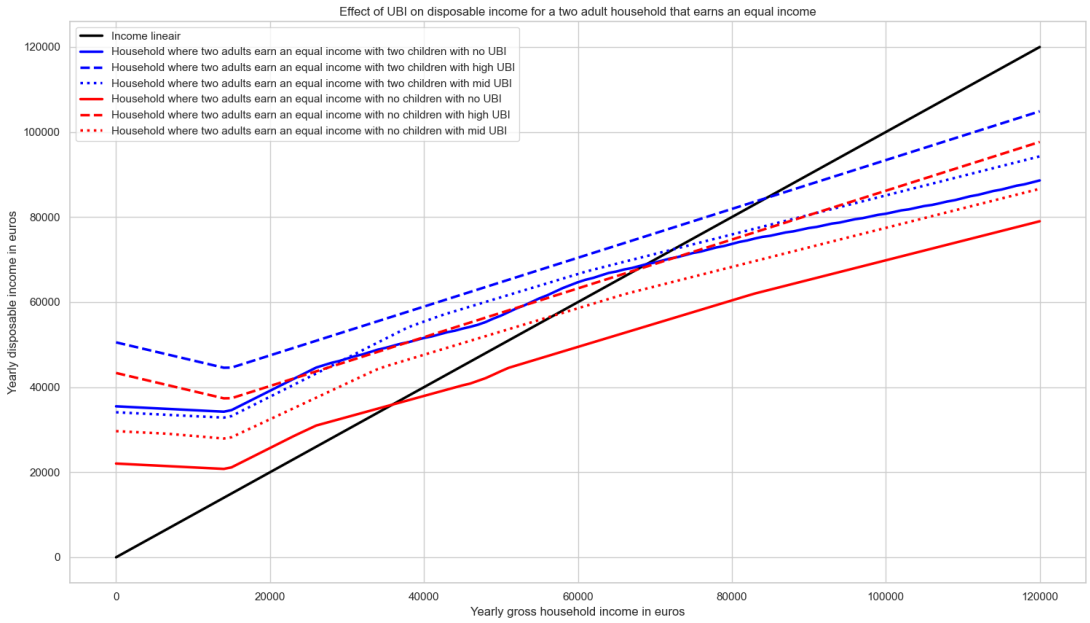



Figure 3.8: Disposable income for households with two adults earning an equal share of income

## 3.5. Respondent strategies

### 3.5.1. Minimal number of respondents to achieve statistical significance

From Section 3.1, the interesting population characteristics are second earners and women, single-parent households, families with children under 5 years old, inhabitants receiving welfare payments, young adults (18 to 27 years old), and elderly workers (55 to 67 years old). A division of the population statistics can be found in Table 3.4. The assumptions behind this table can be found in the Appendix D.1. Besides the number of women and second earners, these groups are small proportions of the Dutch population. Therefore, these specific groups were over-sampled to obtain statistically significant results. The study cohort consists

of adults below the age of 67, constituting approximately 64.5% of the total population. Individuals aged 67 and above are not included in this group, as they are already beneficiaries of a Universal Basic Income in the form of a state pension. The percentages presented in the third column represent the proportion of the given indicator within the population aged 18 to 67 years old.

Table 3.4: Population statistics of the Netherlands

| Indicator | Value | Percentage of the population |
|---|---|---|
| Citizens between 18- and 67-years old [a] | 11,349,542 | 64.5%[d] |
| Citizens between 18- and 27-years old[a] | 2,882,605 | 25.4%[e] |
| Citizens between 28- and 50-years old[a] | 5,636,021 | 49.7%[e] |
| Citizens between 51- and 67-years old[a] | 2,830,916 | 24.9%[e] |
| Citizens receiving welfare payments [b] | 394,000 | 3.7% |
| Number of single parents' households[c*] | 566,972 | 4.2%[e] |
| Children under 5 years old[a] | 864,653 | - |
| Average amount of children per family[c] | 1.66 | - |
| Number of women with children under 5 years old | 520,875 | 9.2% |

[a] (Centraal Bureau Voor de Statistiek, n.db)
[b] (Centraal Bureau Voor de Statistiek, 2023b)
[c] (Nederlands Jeugdinstituut, 2022)
[c*] (Nederlands Jeugdinstituut, 2022) corrected for the the age groups
[d] of the total dutch Population of 17.590.672 (Centraal Bureau Voor de Statistiek, n.db)
[e] Of the citizens between 18- and 67-years old

In general, larger sample sizes are known to offer more precise and dependable outcomes. The widely accepted convention is that a minimum sample size of 30 is frequently employed as the lowest threshold for statistical analyses in a conjoint experiment.[3] However, the suitability of this threshold may be dependent on the nature of the research question and study design. Table 3.5 gives an overview of the number of respondents needed in this survey.

The total number of participants in the study is determined by setting the population proportion of the lowest minority group, which corresponds to citizens receiving welfare payments (3.7% based on Table 3.4), at 30 respondents. To maintain a proportional representation of different segments of the Dutch population, a total of 810 individuals[4] should be included in the survey. However, reaching respondents may present challenges. Therefore, it is necessary to reweight the sample size to ensure representativeness. To achieve this, weighing coefficients were applied within the range of 0.1 to 3, resulting in a minimum of 270[5] respondents for the survey.

To address the objective of oversampling specific age groups, the proportion of citizens aged 28 to 50, whose behavior is deemed less significant for this study, is under-sampled. This has been achieved by assigning an equal number of 90 respondents to each age category within this range. Similarly, at least 30 respondents are included in specific strata such as women with children under 5 years old and single parents. If survey responses permit, efforts will be made to distribute them equally according to their respective income distributions.

It is important to recognize that the numbers presented in Table 3.5 represent the minimum required respondents, and obtaining a larger sample size may yield more precise and reliable results. However, it should be noted that failing to reach the specified numbers does not automatically render the results uninterpretable or statistically insignificant. The interpretation of the data depends on various factors and should be evaluated at the time of analysis, considering the specific context and research objectives. For strata in which the theoretical minimum of 30 respondents is not attained, a post hoc power analysis will be conducted using G*Power by Faul et al. (2007) to ascertain whether the effect size and power fall below the threshold of 80%.

[3] According to Faul, Erdfelder, Lang, and Buchner's GPower software (2007), a large effect is obtained with an effect size of at least 0.5, with an $\alpha$ of 5% and a minimal power of 80% this leads to a sample size of at least 30 for a model with four predictors
[4] 30/0.037 = 810
[5] 810/3 = 270

Table 3.5: Minimum number of respondents needed for each indicator.

| Indicator | Number of respondents |
|---|---|
| Minimum total number of respondents | 270 |
| Number of women | 135 |
| Citizens between 18- and 27-years old | 90 |
| Citizens between 28- and 50-years old | 90 |
| Citizens between 51- and 67-years old | 90 |
| Citizens receiving welfare payments | 30 |
| Number of women with children under 5 years old | 30 |
| Number of single parents | 30 |

### 3.5.2. Sub-set analysis

Given that the population of interest has been deliberately over-sampled to facilitate estimation of how this group behaves within the broader Dutch population, they were subject to separate analysis using a subset analysis methodology. Subset analysis within regression analysis entails examining the relationship between a subset of predictor variables and the outcome variable, rather than considering all predictor variables simultaneously.

The population of interest is filtered based on their responses to specific survey questions. All respondents meeting the criteria are segregated into a distinct data file where regression analysis is conducted. For example, the question "What are your average weekly working hours for remuneration?" serves as a filter. Respondents indicating zero hours of work are categorized as jobless, those reporting between 1 and 12 hours as having a side job, individuals working between 12 and 34 hours are classified as part-time workers, and those working more than 34 hours are categorized as full-time workers.

Given the limited size of the dataset, employing a hard cut-off method was deemed necessary to maintain the significance of multiple interactions and prevent the occurrence of unwanted interactions between certain variables. An alternative approach to encoding the results for the population of interest involved utilizing the entire dataset and setting the dummy code to zero for specific variables (further details provided in Table 3.7). This method allows for the selection of the behavior of the subgroup of interest while preserving the integrity of the analysis.

### 3.5.3. How to obtain respondents?

**From my network**

Within my personal network, I approached individuals whom I am acquainted with and request their participation in the survey. Additionally, I have encouraged them to share the survey with their families, particularly those who belong to the identified strata that may be challenging to reach through other means, especially single parents, elderly workers, and citizens receiving welfare payments. It is worth noting that within my network, a significant proportion of individuals falling within the age range of 18 to 30 can be identified of which a large number are students or respondents with a higher education degree.

**Help from municipalities in the Netherlands**

Given that municipalities are tasked with overseeing welfare payments and have extensive connections with hard-to-reach demographics, I sought their assistance. However, this proved challenging due to the decentralization of social welfare services to inter-municipal organizations. Ultimately, support was obtained from Delft municipality (via Werkse, the entity overseeing work rehabilitation in Delft), as well as the municipalities from Diemen, Amsterdam, and Etten-Leur (via Werkplein, responsible for welfare services in the North-west Brabant region). This method proved to be time-consuming, although it holds significant potential. However, it requires extensive planning and may fall outside the scope of a master's thesis. Notably, I did not share any data with the municipality, adhering to the data management plan established for this study.

**From Surveyswap & SurveyCicle**

Survey Swap and SurveyCicle are platforms that facilitate the free sharing of surveys among students and respondents (SurveySwap, n.d) & (SurveyCicle, n.d.). Utilizing these platforms, I distributed my survey to a

wide range of potential respondents; however, at this stage, I have limited knowledge regarding the specific characteristics or demographics of the respondents who participated in the survey.

## 3.6. Data encoding of the sample for the regression analysis

Categorical variables play a crucial role in regression analysis, enabling researchers to incorporate qualitative information into models. However, to include these variables in regression models, appropriate coding schemes are essential. Two common coding methods are dummy coding and effect coding, each serving distinct purposes in capturing categorical information within a regression framework.

Given that the survey provided an estimate of the respondent's monthly available budget, I proceeded to compare this value with the calculated impact of UBI on the budget across all nine profiles. The alteration in the available budget minus the estimate of the current situation, is divided by 100 to gauge the effect of a budget change on labor participation and support for UBI.

**Effect Coding**

Effect coding is a technique employed for coding categorical variables within regression models, especially beneficial when dealing with variables that possess more than two levels. In effect coding, each level of a categorical variable is encoded as the deviation from the overall mean of the variable. This results in contrast coefficients that can be interpreted as the effect of each level in comparison to the grand mean. In effect coding, the categorical variable is encoded such that the sum of the coded values for each level is zero. This is achieved by assigning values of -1 to the reference category and 1 to the other categories.

Effect coding is employed for the primary effects in the conjoint experiment, representing the levels of the attributes outlined in Section 3.3.1 representing the policies tested. For instance, Table 3.6 illustrates that the value of UBI per adult is encoded in two variables (1200 euros & 630 euros both coded with +1). Since 210 euro UBI is the reference category, it is encode as -1 the coefficient of 1200 euro UBI and -1 the coeffiient of 630 euro UBI. An exemple is ginve in Appendix D.3.

**Dummy Coding**

Dummy coding, also known as indicator coding, is a widely employed technique for representing categorical variables with two or more levels in regression analysis. In this method, a categorical variable with *k* levels is encoded into *k-1* binary variables, or "dummy variables." Each dummy variable represents the presence or absence of a specific category, with one category designated as the reference category.

For example, consider a categorical variable *Age* with three levels: *18 to 27*, *28 to 50*, and *51 to 67*. According to Table 3.7 Dummy coding would create two dummy variables $D_{18\text{ to }27}$ and $D_{51\text{ to }67}$ where $D_{18\text{to}27}$ equals 1 if the observation is that the respondent has an age between 18 and 27 years old. If not it would be coded 0. $D_{51\text{ to }67}$ equals 1 if the respondent is between 51 and 67 years old, and 0 otherwise. In this context, the middle age group, *18 to 27*, serves as the reference category since it is not identified as the group of interest in Section 3.1. The results for the other two dummy variables are then compared to this reference group. Specifically, our study aims to ascertain the change in support for the age group *18 to 27* concerning the reference group *28 to 50* years old. By designating one category as the reference, the dummy variables capture deviations from the reference category, allowing the model to estimate unique coefficients for each category. This coding scheme also aids in interpreting regression coefficients as the effect of moving from the reference category to the specified category. If the dummy is deemed statistically insignificant, it implies no significant difference between the respective category and the reference category.

**When to use which coding?**

Choosing between dummy coding and effect coding depends on the research question and the desired interpretation of regression coefficients. While dummy coding is well-suited for estimating category-specific effects relative to a reference category, effect coding emphasizes the average effect of each category relative to the grand mean. Dummy coding is used to code the potential demographic diversion on UBI support or labor participation from the population of interest. It is also used to mark the interaction effect within the sample that took the survey. Effect coding is used to show the impact of the UBI policies of the conjoint experiment. Dummy coding is not applicable to these policies since none of them represent existing policies

and, therefore, cannot serve as the reference category.

**Effect coding model**

Table 3.6 gives an overview of the coding scheme used to analyze the effect of each policy.

Table 3.6: Coeficient added to the attribute levels in effect coding

| **UBI per adult** | **1200 euro** | **630 euro** |
|---|---|---|
| 1200 euro | 1 | 0 |
| 630 euro | 0 | 1 |
| 210 euro | -1 | -1 |
| **UBI per child** | **300 euro** | **185** |
| 300 euro | 1 | 0 |
| 185 euro | 0 | 1 |
| 100 euro | -1 | -1 |
| **Change in tax system** | **No tax deduction** | **Make UBI taxable** |
| No tax deduction | 1 | 0 |
| Make UBI taxable | 0 | 1 |
| New income tax system | -1 | -1 |
| **Allowances** | **Only health allowance** | **No allowance** |
| Only health allowance | 1 | 0 |
| No allowances | 0 | 1 |
| Only rental allowance | -1 | -1 |

**Dummy coding model**

Table 3.7 provides an overview of the coding scheme utilized to assess the impact of each policy on various population groups. The table is divided into two sections. The first section presents the coding scheme for the population of interest. The second section outlines other characteristics queried in the survey (see Figure 3.1 and Appendix C.1) that may influence or elucidate changes in labor participation and support for UBI.

Table 3.7: Overview of the dummy coding for the population of interest, interaction effects, and the other effect

| **Population of interest** | **Level** | **Code** | | |
|---|---|---|---|---|
| Woman | | Woman | | |
| | Man | 0 | | |
| | Woman | 1 | | |
| Second earner | | Second earner | | |
| | First earner | 0 | | |
| | Second earner | 1 | | |
| Part-time workers | | Jobless | Side-job | Part-time |
| | Full-time | 0 | 0 | 0 |
| | Job-less | 1 | 0 | 0 |
| | Side-job | 0 | 1 | 0 |
| | Part-time | 0 | 0 | 1 |
| Single-parents | | Single-parent | | |
| | Two-parent household | 0 | | |
| | Single parents | 1 | | |
| Families with children | | Younger than 5 | Between 5 and 12 | Older than 12 |
| | No children | 0 | 0 | 0 |
| | Younger than 5 years old | 1 | 0 | 0 |
| | Between 5 and 12 | 0 | 1 | 0 |
| | Older than 12 | 0 | 0 | 1 |
| Inhabitants receiving welfare payment | | Welfare payments | | |
| | No welfare payments | 0 | | |
| | Receiving welfare payment | 1 | | |
| Age group | | 18 to 27 years old | 51 to 67 years old | |
| | 28 to 50 years old | 0 | 0 | |
| | 18 to 27 years old | 1 | 0 | |
| | 51 to 67 years old | 0 | 1 | |
| **Other characteristics of interest** | | | | |
| Income | | Welfare-cliff | Mid-income | High-income |
| | Low | 0 | 0 | 0 |
| | Welfare-cliff | 1 | 0 | 0 |
| | Mid-income | 0 | 1 | 0 |
| | High | 0 | 0 | 1 |
| Housing type | | Social housing | Homeowner | |
| | Others[a] | 0 | 0 | |
| | Social housing | 1 | 0 | |
| | Homeowner[b] | 0 | 1 | |
| Student | | Student | | |
| | No student | 0 | | |
| | Student | 1 | | |
| Can easily change their working hours | | Can easy | | |
| | Can not easy | 0 | | |
| | Can easy | 1 | | |
| Education level | | High | | |
| | High[c] | 0 | | |
| | Low[d] | 1 | | |

[a] Student room, non-social housing (rent)
[b] Home owner with mortgage rate deduction
[c] HBO, university bachelor, university master, and PhD
[d] Lower education, high school, and MBO

# 4

# Results

## 4.1. Population sample

### 4.1.1. Response

In total, 535 citizens entered the survey. Given respondents had the option to abstain from answering questions they chose not to address, the dataset exhibited a notable presence of missing values. In an effort to address this issue, respondents who failed to respond to at least 80% of the questions were excluded from the analysis, resulting in a reduction of 157 respondents. Additionally, instances where missing values were observed in the conjoint questions prompted the exclusion of respondents (32 in total). Consequently, the dataset was refined to encompass a total of 346 valid responses. The division of the respondents can be found in Figure 4.1 and Table 4.1.

Table 4.1: Percentage of respondents per group compared to Dutch population statistics

| Sub-group | % in sample | % in population | Reweighing coefficient |
|---|---|---|---|
| Man[a] | 51.4 | 50.0 | 0.97 |
| Women[a] | 48.6 | 50.0 | 1.03 |
| First earner in household[d] | 56.4 | 62.1 | 1.10 |
| Second earner in household[d] | 43.6 | 37.9 | 0.87 |
| Working full time[g] | 56.3 | 38.1 | 0.67 |
| Working part-time[g] | 30.1 | 35.1 | 1.17 |
| Having a side job[g] | 12.1 | 18.1 | 1.50 |
| Jobless[g] | 17,9 | 8.4 | 0.47 |
| Single parents[c] | 6.4 | 4.2 | 0.65 |
| Household with children[c] | 17.6 | 38.8 | 2.20 |
| Citizens with children younger than 5[c] | 5.8 | 11.2 | 1.93 |
| Citizens with children between 5 and 12[c] | 5.8 | 8.0 | 1.37 |
| Citizens with children older than 12[c] | 6.1 | 8.3 | 1.36 |
| Citizens receiving welfare payments[b] | 7.8 | 3.7 | 0.47 |
| Age group between 18 and 27[a] | 45.7 | 25.4 | 0.56 |
| Age group between 28 and 50[a] | 31.5 | 49.7 | 1.58 |
| Age group between 51 and 67[a] | 22.8 | 24.9 | 1.09 |
| Income lower than 18.750[d] | 40.4 | 32.3 | 0.80 |
| Income between 18.751 and 38.520[d] | 16.5 | 33.5 | 2.03 |
| Income between 38.521 and 50.000[d] | 19.1 | 12.3 | 0.64 |
| Income higher than 50.000[d] | 24.0 | 21.9 | 0.91 |
| Homeowners[e] | 27.1 | 56.7 | 2.09 |
| Social housing[e] | 20.0 | 28.4 | 1.42 |
| Other form of housing[e] | 52.9 | 14.9 | 0.28 |
| Students[f] | 27.7 | 6.0 | 0.21 |
| Low educated[f] | 14.7 | 25.8 | 1.76 |
| High educated[f] | 85.3 | 74.2 | 0.87 |

[a] (Centraal Bureau Voor de Statistiek, n.db)
[b] (Centraal Bureau Voor de Statistiek, 2023b)
[c] (Nederlands Jeugdinstituut, 2022)
[d] (Centraal Bureau Voor de Statistiek, n.da)
[e] (Centraal Bureay Voor de Statistiek, 2024)
[f] (van der Mooren & de Vries, 2022)
[g] (Centraal Bureay Voor de Statistiek, 2023)

From Table 4.1, can be seen that the sample demonstrates a balanced distribution across gender and the distinction between first and second earners. However, certain disparities exist within the work division category, where full-time workers and unemployed individuals are overrepresented. Conversely, single parents and households with children are underrepresented among the respondents due to their difficulty to reach.

The age distribution reveals an overrepresentation of individuals aged 18 to 27, with approximately 60% of them being students. Conversely, the mid-age group is somewhat underrepresented; however, this deviation is considered less significant as this group was not specifically targeted (see Section 3.5.1) and can be reweighed.

Regarding income distribution, the sample composition is noteworthy. Due to the overrepresentation of students, there is a higher number of individuals in the lowest income bracket. However, this segment does not perfectly reflect this income group, as students' financial status tends to improve post-graduation. Conversely, there is a slight overrepresentation of individuals in the modal and high-income brackets.

Additionally, the prevalence of students and young citizens in the sample leads to an underrepresentation of homeowners, while other forms of housing (particularly student housing) are disproportionately represented. Social housing, meanwhile, exhibits a slight underrepresentation.

Furthermore, an educational bias is observed, with a higher proportion of highly educated individuals (those with higher vocational education or higher) compared to the general population.

To mitigate these biases, I have opted to reweight the coefficients by dividing the proportion of each subgroup in the population by the proportion of that subgroup in the sample. Various options exist for reweighting the sample, including age statistics, income statistics, or labor participation (full-time, part-time, etc.). Given that labor participation is a measured variable, it has been selected as the weighting factor for the population. Since students are the primary source of bias, it is crucial to include them in the reweighting process of the dataset. No interaction effect are included between the potential divisions since it could increase the difference between the most highly wighted profile and the lowest waitening very fast including a new form of bias.

A correlation plot is available in Figure E.1 in the Appendix. The most notable correlations are: students and side jobs (0.44), students and age group 18 to 27 (0.58), welfare payments with social housing (0.56), single parents with young children (0.39), social housing and part-time employment (0.56), and high income and age group 18 to 27 (-0.42).

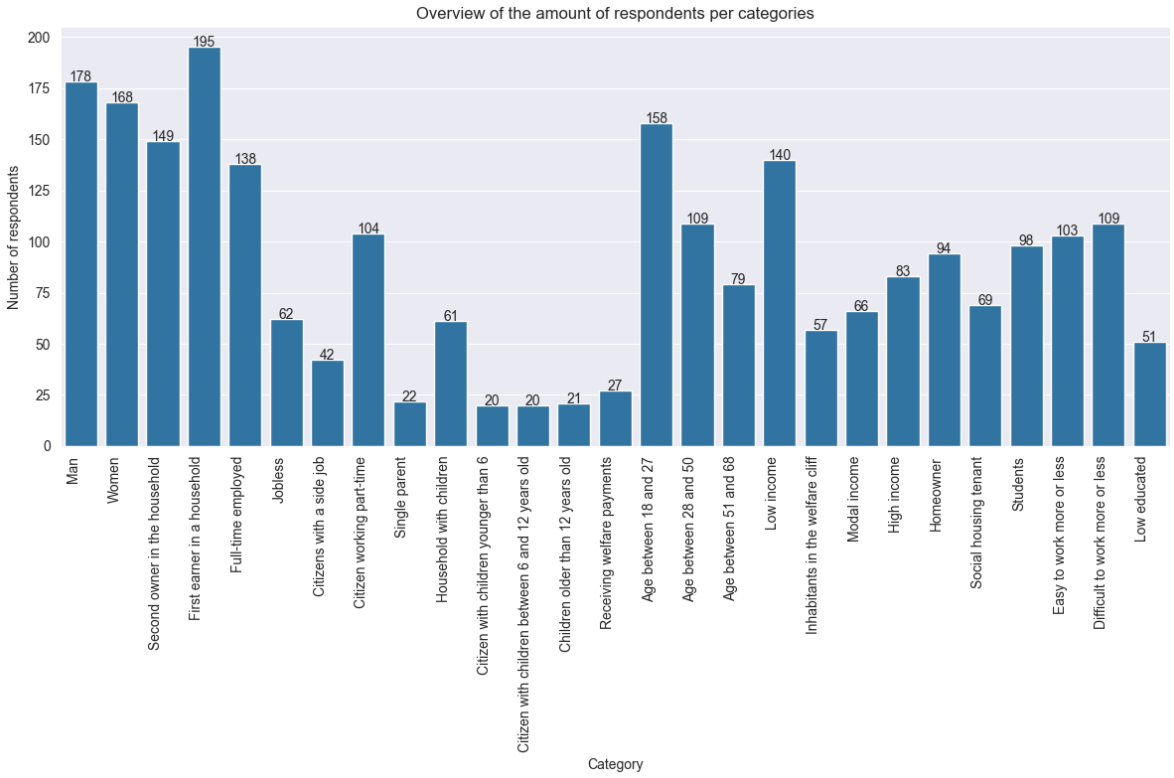



Figure 4.1: Overview of the number of respondents per category

### 4.1.2. Post hoc power analysis of the sample

Statistical power refers to the probability that a study will accurately reject a false null hypothesis, thus detecting a true effect if it exists. Therefore, a value of 0.8 should be achieved to provide meaningful results to the total population. However, subgroups single parents, individuals receiving welfare payments, and citizens with children across different age brackets (0 to 5, 6 to 12, and older than 12) failed to meet the theoretical minimum requirement of 30 respondents, as outlined in Section 3.5.1. Consequently, a post hoc power analysis was undertaken to ascertain the effect size and power of these subgroups. The analysis was executed using G*Power, following the methodology delineated by Faul et al. (2007), with the results tabulated in Table 4.2.

For the post hoc power analysis, a regression was conducted to estimate support for the UBI policies without incorporating any demographic indicators for the subgroups failing to meet the threshold of 30 respondents.

The $R^2$ value from these regression models was utilized to compute the effect size using G*Power. Subsequently, the effect size, along with the significance value ($\alpha = 0.05$) and the number of predictors (4 attributes in the conjoint analysis), were employed to perform an F-test. This test evaluates whether the independent variables collectively have a statistically significant effect in explaining the variability in the dependent variable. It tests the null hypothesis that all regression coefficients are equal to zero, indicating no explanatory power in the model. Additionally, $R^2$, a statistical measure indicating the proportion of variance in the dependent variable explained by independent variables in a regression model. Effect size, a statistical concept quantifying the magnitude of a relationship or difference between groups, was derived from $R^2$ and used to calculate the statistical power. In simpler terms, $R^2$ illustrates how well independent variables account for the variability of the dependent variable. The higher the $R^2$ the more precise the model can predict variance, and the higher the effect size. Effect size provides a standardized measure to understand the practical significance of findings.

Table 4.2: Power for sub-groups that have less than 30 respondents

| **Societal sub-group** | **Number of Respondents** | $R^2$ | **Estimated Effect Size** | **Estimated Power** |
|---|---|---|---|---|
| Single parents | 22 | 0.451 | 0.821 | 0.857 |
| Citizen receiving welfare payments | 27 | 0.545 | 1.198 | 0.991 |
| Children younger than 6 years old | 20 | 0.261 | 0.416 | 0.481 |
| Children between 6 and 12 years old | 20 | 0.185 | 0.227 | 0.272 |
| Children older than 12 years old | 21 | 0.049 | 0.052 | 0.09 |
| Children under 12 years old | 40 | 0.249 | 0.332 | 0.786 |
| Children | 61 | 0.182 | 0.222 | 0.819 |

The analysis of Table 4.2 reveals an insufficient number of responses different age groups of children, as the estimated power is below 0.8. Consequently, there is an inadequacy of responses in these specific groups.

To present results for young children in a more generalized manner as identified in Section 3.1, a test was conducted to assess whether the power was sufficiently high when the age groups of 0 to 5 and 6 to 12 were combined. The results indicated that this was nearly the case (power = 0.79) the case. Therefore, going forward, the outcomes are generalized for citizens with children younger than 12.

Additionally, it is noteworthy that the effect sizes for the indicators "Single parents" and "Citizens receiving welfare payments" exceed 0.35. This implies that only large effects will be statistically significant. In the case of "Children under 12 years," the effect size ranges between 0.15 and 0.35, indicating that medium effects will also achieve statistical significance (Faul et al., 2007).

## 4.2. Estimation of change in labor participation and the trade-off with support for the UBI policies

In Tables 4.3 and 4.4, subset analyses for the dependent variables of labor participation and support for UBI policies, respectively can be found. These tables showcase the results of the conjoint analysis conducted for each subgroup and the general population, comparing them to the overall estimates derived from the survey respondents using linear regression (specifically, the least squares method). This regression approach aims to identify the line that minimizes the sum of squared differences between observed values (i.e., actual data points) and the values predicted by the regression line. Essentially, it determines the "best fit" line through the data, minimizing the overall discrepancy between observed and predicted values.

These tables serves as the foundation for estimating the overall shifts in labor participation and support across the Netherlands. Subsequent sections offers detailed insights into the outcomes for each subgroup, providing a deeper exploration of the uncertainty and reliability of the results.

### 4.2.1. Sub-set analysis for labor participation

When examining labor participation across all demographic groups as outlined in Table 4.3, several observations emerge. Notably, the regression constant for all groups indicates an inclination toward increased weekly

working hours under UBI policies, with the exception of women and individuals aged 18 to 27 years old. It's important to note that the UBI policies are effect-coded, meaning that in the context of linear regression, the regression constant signifies the value of the dependent variable when all independent variables in the model, including the UBI policies and demographic factors, are set to zero. Specifically, for demographic factors that are dummy-coded, the regression constant represents the labor participation of the reference category of those demographic factors in the absence of UBI policies. Thus, it is the effect of the reference policies (UBI of 210 euro per month, UBI of 100 euros per month per child, increase income tax, and the rent allowance) on the control population (where the dummy code have value 0 from Table 3.7).

The financing mechanism "No tax deduction" exhibits a notable increase in labor participation across all subgroups. This effect is attributed to the significance of the tax deduction mechanism as a substantial component of income for the majority of the Dutch population. For further details, refer to Figure 2.1. Conversely, the other funding mechanisms, namely "Make UBI taxable" and "Increase income tax," do not demonstrate statistical significance. This is primarily because these mechanisms have a lesser impact on disposable income and are more geared toward affluent individuals within the Netherlands.

Allowances play a role in the income of up to 66% of the Netherlands' population (Ministerie van Financiën, 2023), particularly for those with children. This is because child-specific allowances and childcare allowances constitute a significant portion of their monthly budget. Consequently, the coefficients associated with allowances are most pronounced for single parents and families with children under 12 years old. Additionally, individuals receiving welfare payments are highly incentivized to increase their labor participation through the removal of these allowances.

Interestingly, only the UBI of 1200 euros per month per adult is statistically significant and leads to a decline in labor participation across all respondent groups. This outcome was expected, as it also increases the net income for a sizable portion of the population. Additionally, the UBI of 630 euros is only statistically significant for citizens receiving welfare payments. Conversely, the UBI per child does not appear to have a statistically significant influence on labor participation for the overall population. However, upon analyzing subsets, it is not surprising that single parents and families with children under 12 years old show significant effects, as they are significantly impacted by such policies. One reason for the less influential effect of UBI per child on the total population could be the underrepresentation of citizens with children in the dataset.

The variable "Change of 100 euros net income" signifies the alteration in labor participation for each 100 euros of additional income. For instance, if a citizen gains an extra 200 euros of net income per month, their labor participation will decrease by 0.065 hours per week. Conversely, if their net income decreases by 200 euros, their labor participation will increase by 0.130 hours per week. This variable demonstrates statistical significance in the population and generally leads to a decline in labor participation.

Consequently, an increase of 100 euros in net income per month would result in a reduction of 8.19 euros in monthly labor income [1]. This effect is lower than that observed in a study by Marinescu (2018) on lottery winners in Sweden, who estimated a decrease of 11 dollars in labor income per month for every 100 dollars of monthly lottery winnings.

When analyzing specific demographic groups, divergent outcomes emerge. Part-time workers and individuals aged 51 to 67 are anticipated to experience a decline in labor participation. In contrast, women, single parents, families with children under 12, recipients of welfare payments, and individuals aged 18 to 27 are expected to see an increase in labor participation.

If we examine the income categories, we observe their significance across nearly all subsets, rendering them valuable indicators for evaluating population policies. However, other demographic factors do not exhibit statistical significance, except for education level. This finding is intriguing, as it nuances the conclusion by Gielens et al. (2023) that education level does not significantly impact support but appears to do so for labor participation.

The $R^2$ values observed for the general population, women, part-time workers, and the age groups 18 to 27 and 51 to 67 are notably low. These values indicate that only a small proportion of the variation in the outcome variable (change in labor participation) can be explained by the predictor variables included in the model. In the survey, respondents were asked to provide their anticipated change in labor participation within a broad range, spanning from their current number of hours worked. This wide range of potential

[1] Based on an average salary of 25 euros per hour

responses suggests that the anticipated effects of UBI on labor participation could vary significantly among respondents. Consequently, the model's ability to accurately predict these outcomes may be limited, resulting in relatively low $R^2$ values.

The other groups have a moderated $R^2$ suggesting that the predictor variables in the model explain a sizable proportion of the variation in the outcome variable, indicating a good fit to the data, this is especially interesting since the sample sizes are small. This means that the respondents within these groups have a similar reaction towards UBI and labor participation.

Table 4.3: Regression results for change in labor participation due to UBI with re-weighted coefficients

| | Labor participation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **All respondents** | **Women** | **Part-time** | **Single parents** | **Children under 12** | **Welfare payments** | **Age 18 to 27** | **Age 51 to 67** |
| **Constant** | 2.544*** | -0.252 | 2.638*** | 2.550 | 2.558** | 4.465* | -0.477 | 2.950*** |
| **No tax deduction** | 0.570** | 0.994*** | 0.668** | 0.824* | 0.519* | 1.930*** | 1.018** | 0.467** |
| **Make UBI Taxable** | -0.146 | -0.330 | -0.212 | 0.330 | 0.126 | -0.628 | -0.313 | -0.042 |
| **Increase income tax** | -0.424 | -0.664 | -0.456 | -1.154 | -0.645 | -1.302 | -0.705 | -0.976 |
| **Health allowance** | -0.200 | -0.382* | -0.397* | -0.651 | 0.067 | -0.602 | -0.559** | -0.020 |
| **No allowances** | 0.782*** | 0.817*** | 1.139*** | 2.473*** | 1.179*** | 3.237*** | 0.605** | 0.589** |
| **Rental allowance** | -0.582 | -0.435 | -0.742 | -1.822 | -1246 | -2.635 | -0.046 | -0.569 |
| **1200 euro UBI** | -0.992*** | -1.364*** | -1.230** | -2.222*** | -1.265*** | -1.809*** | -2.638*** | -0.930** |
| **630 euro UBI** | 0.109 | 0.002 | 0.038 | 0.476 | -0.166* | -0.614** | 0.260 | 0.270 |
| **210 euro UBI** | 0.883 | 1.362 | 1.192 | 1.746 | 1.431 | 2.423 | 2.378 | 0.660 |
| **300 euro UBI per child** | -0.136 | -0.270 | -0.271 | -0.668* | -0.530* | -0.902** | -0.133 | -0.012 |
| **185 euro UBI per child** | 0.193 | 0.272 | -0.065 | 0.437 | 0.161 | 1.112** | 0.267 | 0.191 |
| **100 euro UBI per child** | -0.057 | -0.002 | 0.336 | 0.231 | 0.369 | -0.21 | -0.134 | -0.203 |
| **Change of 100 euro net income** | -0.065*** | 0.015 | -0.066 | 0.097 | 0.042 | 0.076 | 0.187 | -0.058 |
| **Income lower than 18.750** | 0.000 | | | | | | | |
| **Income between 18.751 to 38.520** | -2.876** | -3.431*** | -2.140*** | -0.774 | -2.319** | (-) | 0.357 | -3.699*** |
| **Income between 38.521 and 50.000** | -3.312*** | -2.605*** | -2.779*** | -8.410** | -6.064*** | (-) | -0.564 | -3.503*** |
| **Income higher than 50.000** | -3.254*** | -3.637*** | -2.691*** | -8.257*** | -3.619*** | (-) | -0.647 | -3.340*** |
| **Other form of housing** | 0.000 | | | | | | | |
| **Social housing** | 0.559** | 0.720 | -0.158 | 4.595** | 3.468*** | -1.389 | 0.815* | -0.475 |
| **Home owners** | 0.527** | 0.717 ** | -0.083 | 6.216** | 0.503 | (-) | -0.184 | 0.381 |
| **Student** | -0.639* | -0.660* | -1.131** | (-) | (-) | (-) | 1.108** | (-) |
| **Difficult change work hours** | 0.000 | | | | | | | |
| **Easy change work hours** | -0.256 | 0.267 | 0.010 | 2.280** | -2.283** | -0.450 | -0.401 | 0.368 |
| **Low education level** | 0.000 | | | | | | | |
| **High education level** | -0.055 | -0.370 | 0.705* | -4.455** | 1.234 | 0.705 | -1.365*** | -0.422 |
| R-squared: | 0.120 | 0.122 | 0.125 | 0.355 | 0.365 | 0.403 | 0.075 | 0.115 |
| Adj. R-Squared: | 0.115 | 0.112 | 0.108 | 0.298 | 0.366 | 0.367 | 0.064 | 0.091 |
| Number of respondents: | 346 | 168 | 104 | 22 | 40 | 27 | 158 | 70 |
| Notes: | *p<0.1 | **p<0.05; | ***p<0.01 | (-) no value | | | | |

Attributes

Demographic factors

### 4.2.2. Sub-set analysis for support of UBI

To measure support, respondents were queried in the survey regarding their stance on the proposed UBI policies outlined in Table 3.1 and Figure 3.2, utilizing a five-point Likert scale. A score exceeding three indicates support for the policy. Analysis of the support regression model in Table 4.4 reveals that, on average, respondents favor UBI, with a constant of 3.071. The highest constants are observed for part-time workers and citizens with children under 12 years old. Notably, relatively low support is evident among single parents (constant = 0.638) and recipients of welfare payments (constant = 2.210).

The statistical significance of taxation reforms. 'No tax deduction' and 'Make UBI taxable', in measuring support is notable. While the former decreases support for the policy, the latter increases it. These findings are consistent with the anticipated impact of these policies on disposable monthly income. Moreover, the removal of allowances, as proposed in the policies under evaluation, is associated with a decrease in support across all respondents.

Of particular interest is the substantial increase in support observed for a UBI of 1200 euros per month per adult. This increase is most pronounced among citizens receiving welfare payments and single parents. However, it falls short of raising support for the latter group above a threshold of three out of five. Additionally, the moderate value of UBI per adult per month is statistically significant but does not significantly influence the level of support.

In contradiction to labor participation, the highest level of UBI per child per month is statistically significant making it an important attribute to increase support for the policies. If we look at the demographic factors, the change of 100 euros of extra net income is increasing support among all subsets. This is an interesting trade-off for certain subgroups that can be made since we evaluated the effect of 100 euro extra net income as uncertain for labor participation since it for some subgroups decreased the hours worked and for others, it led to more labor. The fact that more available money per month increases support is in line with expectations.

The demographic factors that exhibit statistically significant effects on support for UBI include housing type and student status. Citizens residing in social rental housing demonstrate a positive level of support, whereas homeowners are less favorable toward UBI, potentially due to the loss of mortgage rent deductions.

Students also display a statistically significant decrease in support for UBI. A more comprehensive analysis of this phenomenon is provided in the Political section (Section 4.5). Contrary to previous findings by Gielens et al. (2023), education level does not significantly impact the level of support for UBI. However, exceptions are observed within the age group of 18 to 27 and part-time workers, as these groups exhibit a considerable overlap with students.

If we compare the $R^2$ values from the support regression with those of the labor participation regression, we observe that for all groups, the $R^2$ values are higher. This is because the range of potential outcomes is smaller, given that support was measured on a 1 to 5 Likert scale. Interestingly, the patterns of groups remained consistent, indicating that the sub-groups exhibited comparable behavior when responding to both questions. Groups that previously had low $R^2$ values now range from low to moderate, while those that were moderate have values that vary between moderate and high.

Table 4.4: Regression results for support of UBI with a reweighted sample size

| | Support | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **All respondents** | **Women** | **Part-time** | **Single parents** | **Children under 12** | **Welfare payments** | **Age 18 to 27** | **Age 51 to 67** |
| **Constant** | 3.255** | 2.936*** | 3.767*** | 0.639 | 3.839*** | 2.210*** | 2.994*** | 2.977*** |
| **No tax deduction** | -0.228*** | -0.214*** | -0.161** | -0.340 | -0.182** | -0.379*** | -0.131 | -0.264*** |
| **Make UBI Taxable** | 0.115*** | 0.089** | 0.057 | 0.144 | 0.117 | 0.089 | 0.086** | 0.115** |
| **Increase income tax** | 0.113 | 0.125 | 0.104 | 0.196 | 0.065 | 0.290 | 0.045 | 0.149 |
| **Health allowance** | 0.051** | 0.098** | 0.054 | -0.063 | -0.072* | 0.047 | 0.081* | 0.08 |
| **No allowances** | -0.113*** | -0.142*** | -0.194*** | 0.013 | -0.032* | -0.227*** | -0.173 | -0.067 |
| **Rental allowance** | 0.062 | 0,044 | 0.257 | 0,05 | 0,104 | 0,18 | 0,092 | 0,059 |
| **1200 euro UBI** | 0.251*** | 0.242*** | 0.221*** | 0.749 | 0.485*** | 1.552*** | 0.030 | 0.363*** |
| **630 euro UBI** | 0.068** | 0.052 | 0.107** | 0.093 | 0.099 | 0.102 | 0.051 | 0.085 |
| **210 euro UBI** | -0.183 | -0,294 | -0.328 | -0,842 | -0,584 | -1,654 | -0,054 | -0,448 |
| **300 euro UBI per child** | 0.116*** | 0.110** | 0.075 | 0.238 | 0.137 | 0.384*** | 0.077* | 0.097 |
| **185 euro UBI per child** | -0.038 | -0.055 | -0.053 | 0.078 | -0.06 | -0.111 | -0.043 | -0.04 |
| **100 euro UBI per child** | -0.078 | -0,055 | -0.022 | -0,316 | -0,197 | -0,273 | -0,034 | -0,093 |
| **Change of 100 euro net income** | 0.061** | 0.063*** | 0.063*** | 0.07 | 0.063*** | 0.065*** | 0.074** | 0.037*** |
| **Income lower than 18.750** | 0.000 | | | | | | | |
| **Income between 18.751 to 38.520** | 0.009 | 0.179 | -0.322** | 0.211*** | -0.883*** | (-) | 0.008 | 0.321* |
| **Income between 38.521 and 50.000** | 0.081 | 0.024* | -0.267** | 1.615* | 0.616* | (-) | 0.05 | -0.027 |
| **Income higher than 50.000** | 0.110 | 0.119 | -0.335** | 1.135 | -0.486 | (-) | 0.369** | -0.115 |
| **Other form of housing** | 0.000 | | | | | | | |
| **Social housing** | 0.052 | 0.220 | 0.045* | 1.038*** | -1.279*** | 0.722 | 0.140* | 0.647*** |
| **Home owners** | -0.278*** | -0.114** | -0.360 | 0.913 | -0.519** | (-) | -0.138* | 0.111 |
| **Student** | -0.409*** | -0.155* | -0.798*** | (-) | (-) | (-) | -0.275*** | (-) |
| **Difficult change work hours** | 0.000 | | | | | | | |
| **Easy change work hours** | -0.003 | -0.04 | -0.216*** | 0.051 | -0.446** | 0.302 | 0.022 | -0.199 |
| **Low education level** | 0.000 | | | | | | | |
| **High education level** | -0.046 | -0.062 | -0.294** | 1,257 | 0.840*** | 0.064 | -0.166** | -0.144 |
| R-squared: | 0.192 | 0,204 | 0.238 | 0.634 | 0,419 | 0,625 | 0,145 | 0,221 |
| Adj. R-Squared: | 0.187 | 0,195 | 0.224 | 0.602 | 0,391 | 0,602 | 0,135 | 0,201 |
| Number of respondents: | 346 | 168 | 104 | 22 | 40 | 27 | 158 | 70 |
| Notes: | *p<0.1 | **p<0.05; | ***p<0.01 | (-) no value | | | | |

Demographic factors

Attributes

### 4.2.3. Estimate for change in labor participation for the Netherlands

To estimate changes in labor participation at the country level, we employed income division as a demographic indicator, categorizing the population into measurable sub-groups. Our analysis revealed the significant relevance of income indicators, as evidenced in Table 4.3 for the change in labor participation. Furthermore, upon scrutinizing demographic indicators for support (refer to Table 4.4), housing type emerged as an interesting factor. This is interesting since home ownership is an important indicator of wealth and therefore a criterion for allowances. A cross-division of income and housing type can be found in Table 4.5. While these values were not statistically significant in both regression models (although significant in some subsets), they serve as crucial indicators for understanding the mechanisms underlying labor participation and support. Every indicator utilized holds statistical significance ($p < 0.05$) in either (or both) the 'All respondent' regression with the dependent variable of support or labor participation.

Conversely, statisticaly significant demographic characteristics such as education level, student status, and changes in net income of 100 euros were not selected from a data standpoint. Students constitute a small portion of the Dutch population, rendering them unsuitable as indicators. While education level was only significant in the change in labor participation model and strongly correlated with income, the latter was deemed a more appropriate metric for population segmentation, especially since it was statistically significant in some sub-sets of the support data as well. Moreover, the variation in net income of 100 euros is heavily dependent on factors such as salaries, eligibility for allowances and other governmental support, making it challenging to accurately categorize the Dutch population using this variable.

To estimate a change in labor participation, the coefficients needs to be reweighted following patterns from the Dutch population. The distribution of income and housing type per income can be found in Table 4.5. This table is based on the work of Centraal Bureau Voor de Statistiek (n.da) and Groot, Mohlmann, and Lejour (2016). For a more detailed division of income statistics, please refer to Table D.1 of Appendix D.

Table 4.5: The percentage of each income group present in the population and the type of house they are living in

| **Income bracket**[a] | **% in population** | **% living in social housing** | **% of home-owner** | **% living in other types of houses** |
|---|---|---|---|---|
| Less than 18.750 euro | 28% | 60% | 35% | 5% |
| Between 18.751 and 38.520 | 28% | 60% | 35% | 5% |
| Between 38.521 and 50.000 euro | 12% | 36% | 55% | 9% |
| Over 50.000 euros | 32% | 8% | 85% | 7% |

[a] (Centraal Bureau Voor de Statistiek, n.da)

A summary of the regression models is provided in Table 4.6. This Table also includes the 95% confidence interval since the regression coefficients are estimates and therefore introduce uncertainty in the calculations.

The effect of the high-UBI policy

The methodology for calculating the change in labor participation is detailed in Appendix E.2. According to the regression model, implementing a high-UBI policy would result in an average increase of 0.89 hours per week in labor participation. Given that the average working hours for a Dutch citizen is 33.2 hours per week (Centraal Bureau Voor de Statistiek, 2021), this translates to an increase of approximately 2.68%.

However, it's crucial to acknowledge the uncertainty associated with these estimates. Accounting for the confidence interval, the change in labor participation ranges from a decrease of -1.67 hours per week (-5.03%) at the lower end of the confidence interval to an increase of 3.44 hours per week (10.36%) at the upper end. This variability underscores the uncertainty surrounding the impact of this policy.

Support for the UBI policy is evaluated using a 5-point Likert scale, where a score of at least 3 out of 5 indicates a positive evaluation. The average level of support for the high-UBI policy is 3.11, which falls below the threshold for positivity.

However, accounting for the uncertainty associated with the estimates, it's important to consider that the confidence interval for support ranges from 2.52 to 3.71 out of 5. This wide range illustrates the lack of a clear consensus among respondents regarding support for the high UBI policy, underscoring the ambiguity surrounding public opinion on this matter.

Table 4.6: Regression results for change in labor participation and trade-off between acceptance with a reweighted sample

| | | Labor participation | | | Support | | |
|---|---|---|---|---|---|---|---|
| | | **Coefficient** | **0.025** | **0.975** | **Coefficient** | **0.025** | **0.975** |
| Attributes | **Constant** | 2.544*** | 1.906 | 3.182 | 3.255** | 2.106 | 3.404 |
| | **No tax deduction** | 0.570** | 0.295 | 0.844 | -0.228*** | -0.292 | -0.163 |
| | **Make UBI Taxable** | -0.146 | -0.454 | 0.145 | 0.115*** | 0.054 | 0.175 |
| | **Increase income tax**[a] | -0.424 | (-) | (-) | 0.113 | (-) | (-) |
| | **Health allowance** | -0.200 | -0.405 | 0.112 | 0.051* | -0.01 | 0.112 |
| | **No allowances** | 0.782*** | 0.0523 | 1.039 | -0.113*** | -0.173 | -0.053 |
| | **Rental allowance**[a] | -0.582 | (-) | (-) | 0.062 | (-) | (-) |
| | **1200 euro UBI** | -0.992*** | -1.338 | -0.645 | 0.251*** | 0.170 | 0.332 |
| | **630 euro UBI** | 0.108 | -0.150 | 0.368 | 0.067** | -0.002 | 0.128 |
| | **210 euro UBI**[a] | 0.884 | (-) | (-) | -0.184 | (-) | (-) |
| | **300 euro UBI per child** | -0.136 | -0.395 | 0.123 | 0.116** | 0.055 | 0.177 |
| | **185 euro UBI per child** | 0.193 | -0.068 | 0.453 | -0.038 | -0.099 | 0.023 |
| | **100 euro UBI per child**[a] | -0.053 | (-) | (-) | -0.078 | (-) | (-) |
| Demographic factors | **Income lower than 18.750**[a] | 0.00 | (-) | (-) | 0.000 | (-) | (-) |
| | **Income between 18.751 to 38.520** | -2.876*** | -3.465 | -2.287 | -0.009 | -0.147 | 0.128 |
| | **Income between 38.521 and 50.000** | -3.312*** | -3.960 | -2.664 | 0.081 | -0.233 | 0.071 |
| | **Income higher than 50.000** | -3.254*** | -3.897 | -2.610 | -0.110 | -0.260 | 0.041 |
| | **Other form of housing**[a] | 0.000 | (-) | (-) | 0.000 | (-) | (-) |
| | **Social housing** | 0.559** | 0.012 | 1.107 | 0.005 | -0.123 | 0.133 |
| | **Home owners** | 0.527** | 0.072 | 0.982 | -0.277*** | -0.384 | -0.171 |
| | Notes: | *p<0,1 | **p<0,95 | ***p<0,99 | (-) no value | | |

[a] Is a reference category and therefore has no confidence interval in dummy and effect coding since they serve as a baseline for comparison

The effect of the mid-UBI policy

Similar trends in labor participation are observed for the mid-UBI policy, albeit with a slightly greater increase. This is largely due to a decrease in disposable income for a significant portion of the population, as illustrated in Figures A.9 to A.10. On average, the mid-UBI policy results in an additional 1.60 hours of weekly work, equivalent to a 4.82% increase. However, it's important to note the wide confidence interval, spanning from -0.85 (-2.56%) to 4.05 (12.20%) hours per week, reflecting the uncertainty surrounding these estimates.

The level of support for the mid-UBI policy is comparable to that of the high variant, with an average score of 3.12, indicating a slightly positive reception. The confidence interval for support ranges from 2.55 to 3.69, showing a narrower range compared to the high-UBI policy.

From a broader perspective within the general population, there appears to be no definitive consensus regarding whether UBI has a positive or negative effect on labor participation. Similarly, assessing support for UBI proves challenging, further complicating efforts to identify a trade-off between these factors. To gain deeper insights, let's examine specific subsets of the data to ascertain if any consensus can be discerned within these groups.

### 4.2.4. Support and labor participation for the population of interest

In the broader population, although the average level of support was moderate and the change in labor participation was slightly positive, a conclusive consensus regarding the expected impact of the proposed policies on both support for the policy and labor participation remained undecided. This uncertainty was evidenced by a range of outcomes, including both declines and increases in labor participation, as well as assessments of support that varied both below and above the average when the confidence intervals were examined. To obtain additional insights, a more thorough investigation of subgroup dynamics is necessary to identify potentially robust patterns within these subsets.

Table 4.7 provides a comprehensive overview of the labor participation and support exhibited by respondents from various subgroups towards different UBI policies and the corresponding confidence intervals. These averages and confidence intervals are calculated the way as the impact UBI would have on the total population as detailed in Appendix E.2. The general regression tables comparable to Table 4.6 for each group of interest can be found in the Appendix, specifically in Tables E.1 to E.7.

Table 4.7: Change in labor participation (hours per week) for the study group under high- and mid-UBI policies, and support (garage out of 5)

| | **Labor Participation** | | **Support** | |
|---|---|---|---|---|
| | **High-UBI policy** | **Mid-UBI policy** | **High-UBI policy** | **Mid-UBI policy** |
| **Women**[a] | +0.75<br>(-2.75, 4.25) | +1.05<br>(-1.36, 3.46) | 3.03<br>(2.34, 3.72) | 2.98<br>(2.52, 3.45) |
| **Part-time workers**[a] | +1.42<br>(-3.09, 5.93 ) | +1.98<br>(-0.89, 4.85) | 3.25<br>(2.21, 4.28) | 3.29<br>(2.50, 4.09) |
| **Single parents** | +3.16<br>(3.00, 3.32) | +3.06<br>(0.02, 6.10) | 2.56<br>(1.00, 4.71) | 2.23<br>(1.00, 4.33) |
| **Parents with children younger than 12 years old** | +1.21<br>(-0.68, 3.10) | +2.25<br>(1.09, 3.47) | 3.92<br>(3.24, 4.61) | 3.23<br>(3.10, 3.36) |
| **Inhabitants receiving welfare payments** | +6.82<br>(3.52, 10.12) | +6.54<br>(3.13, 9.95) | 2.94<br>(1.21, 4.67) | 2.06<br>(1.00, 3.70) |
| **Young adults**[a] | -1.01<br>(-4.22, 2.19) | 0.61<br>(0.13, 1.08) | 3.02<br>(2.42, 3.63) | 3.03<br>(CI: 2.43, 3.63) |
| **Elderly workers**[a] | +0.55<br>(-3.79, 4.89) | +1.01<br>(-2.16, 4.19) | 3.32<br>(2.42, 4.22) | 3.33<br>(2.60, 4.07) |
| Notes: | ( , ) = 95% Confidence Interval | | | |

[a] Re-weighted
[b] Not re-weighted since there is a strong effect size (see Table 4.2)

For a high UBI policy, assessing the direction of labor participation presents challenges, as most demographic groups display both positive and negative values within their 95% confidence intervals. However, single parents and citizens receiving welfare payments consistently exhibit solely positive values within their confidence intervals, indicating a probable increase in labor participation under such a policy. This outcome is attributable to their loss of income. Regarding support for the high UBI policy, single parents, and citizens receiving welfare payments show an average support far below the middle value of 3 on a 5-point scale, indicating a lack of support within this population subgroup, although the confidence interval spans a wide range across various response possibilities. In contrast, parents with children under 12 years old are likely to favor the high-UBI policy, as each confidence interval value exceeds the average support level of three on a five-point Likert scale.

Upon examination of the mid-UBI policy, a consistent increase in labor participation is observed across single parents, parents with children younger than 12 years old, inhabitants receiving welfare payments, and young adults within the study. Confidence intervals for most groups solely contain positive values, suggesting a probable rise in labor participation, as expected due to the decrease in disposable income for certain groups. Once again, single parents and citizens receiving welfare payments are not supportive of these policies.

Parents with children under 12 years old and elderly workers display support levels higher than the average, indicating a favorable inclination toward the policy within these specific demographic groups. The results between the high and mid-UBI policies are therefore highly similar.

In terms of trade-offs, a higher UBI policy introduces more uncertainty regarding its impact on labor participation, albeit with potentially positive effects for specific groups. While average support values may be higher than those for a mid-UBI policy, both policies have an equivalent number of subgroups with a 95% likelihood of favoring them: Parents with children younger than 12 and young adults.

Conversely, the mid-UBI policy demonstrates a more consistently positive impact on labor participation across various groups, although certain groups may still exhibit mixed outcomes. Despite potentially lower support values compared to a high UBI, it remains a noteworthy aspect.

In the next sub-section, I try to generalise these founding by showing the trade-off between support and labor participation.

### 4.2.5. The trade-off between support and labor participation for the UBI policies

To analyze the trade-off between support and labor participation for UBI across the entire population, the average regression coefficients extracted from Table 4.6 are depicted as scatter plots in Figure 4.2, with the change in labor participation represented on the x-axis and the change in support on the y-axis.

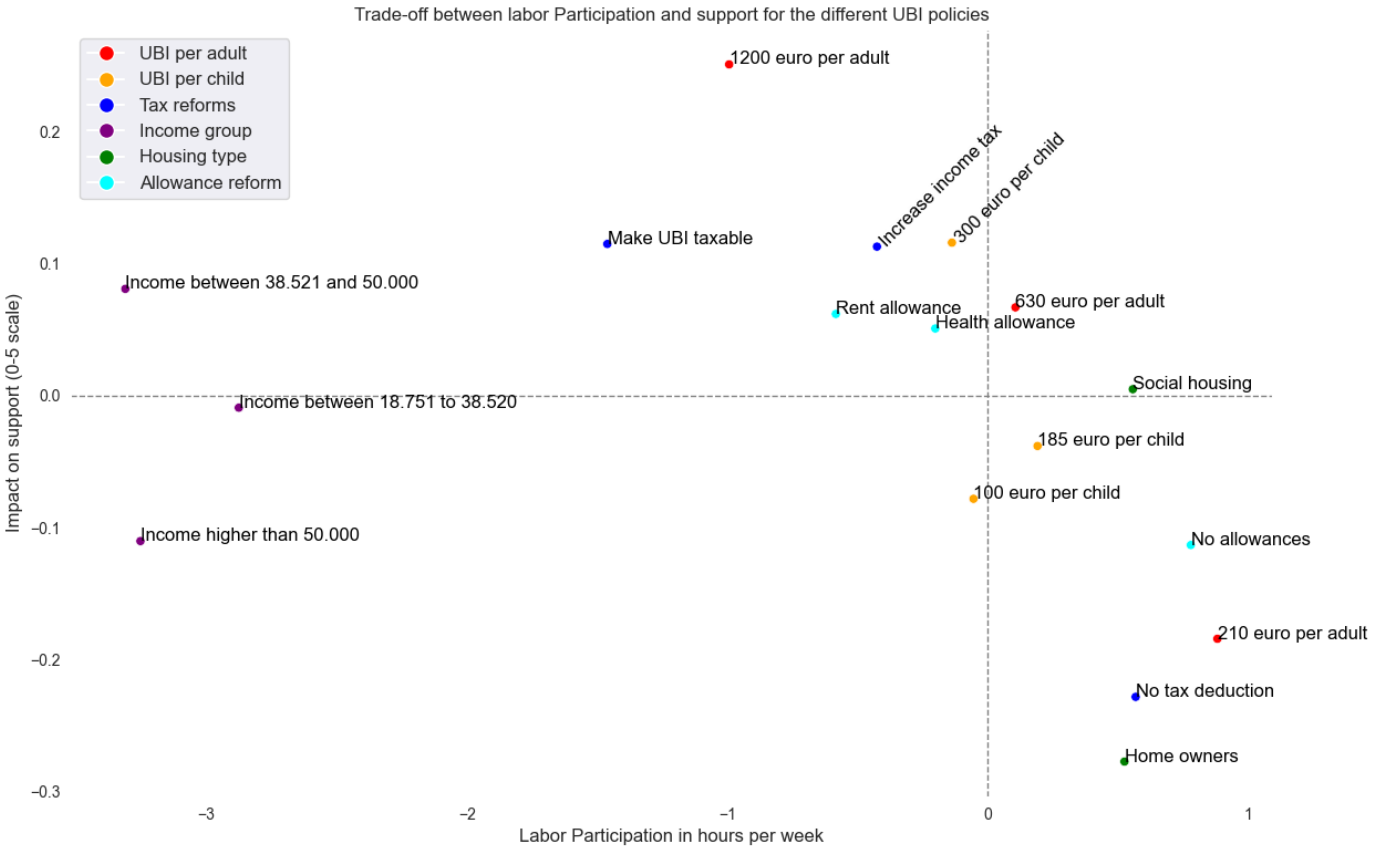



Figure 4.2: Trade-off between support and labor participation based on the average regression coefficient from Tabel 4.6

From the various UBI policies considered, it's evident that implementing a UBI of 1200 euros per month generates the highest increase in support but also results in the largest decline in labor participation. Conversely, a UBI of 630 euros per month induces a lower decrease in labor participation but does not substantially enhance support. Given the relatively modest average level of support across all policies, it becomes imperative to acknowledge the trade-off between changes in labor participation resulting from a high UBI and efforts to mitigate this through financing policies aimed at boosting labor participation.

Indeed, the introduction of a UBI of 300 euros per child results in a slight increase in support while having minimal adverse effects on labor participation. This suggests that such a policy could be beneficial in boosting overall support levels without significantly impacting labor participation. However, reducing this amount, as seen with the 185 euros per month per child policy, leads to a decrease in support, indicating the importance of maintaining a certain level of support for families with children.

From a budgetary perspective, it may be worth considering excluding UBI per child from the policies alto-

gether. This is because the policy does not contribute significantly to increasing support levels, nor does it have a substantial impact on labor participation. By reallocating resources from UBI per child to other areas where they may have a greater impact, policymakers can ensure that resources are utilized more effectively to achieve desired outcomes.

Analyzing the financing mechanisms, both the removal of allowances and the elimination of tax deductions are positioned in the bottom-right quadrant of the figure, indicating their simultaneous reduction in support and increase in labor participation. Surprisingly, making UBI taxable has a relatively minor effect on labor participation while increasing support. However, it's noteworthy that despite similar impacts on the government budget, as observed in Tables 1 & B.1, the two policies exhibit contrasting effects on support and labor participation. Therefore, maximizing support would benefit from making UBI taxable, while efforts to enhance labor participation would be better served by eliminating tax deductions.

From the demographic analysis, income groups across the board are associated with a decrease in labor participation of approximately two and a half hours per week when compared to individuals with incomes lower than 18,750 euros. Additionally, these income groups do not contribute positively to support levels.

Conversely, housing types, specifically social house rentals and home ownership, exhibit contrasting effects on labor participation. Individuals residing in social housing rentals and homeownership tend to have higher levels of labor participation compared to those living in other forms of housing. Interestingly, there is a notable trade-off within this group: while individuals in social housing, who typically receive rent allowances, contribute to the support of UBI, homeowners tend to oppose it, thereby decreasing support levels.

### 4.2.6. Policy that are budget neutral with maximal support

From a policy perspective, it is interesting to see which policies are optimizing support while keeping the budget close to zero. Table 4.8 gives an overview of the cost and benefits of each policy and its anticipated average support effect.

Table 4.8: Overview of the effect on governmental budget and the change in support

| Policy | Budget impact (in billion euro) | Average support (on a 5 point scale) |
|---|---|---|
| Health allowance | +20.8 | +0.051 |
| No allowance | +27.4 | -0.113 |
| Rent allowance | +23.4 | +0.062 |
| No tax deduction | + 76.3 | -0.228 |
| Make UBI taxable | For UBI 1200 = +71.0 | +0.115 |
| | For UBI 630 = +35.1 | +0.115 |
| | For UBI 210 = +14.7 | +0.115 |
| Increase income tax | 14 | +0.113 |
| 1200 euro UBI | -168.2 | +0.251 |
| 630 euro UBI | -84.1 | +0.067 |
| 210 euro UBI | -27.9 | -0.184 |
| 300 euro UBI per child | -14.9 | +0.116 |
| 185 euro UBI per child | -9.2 | -0.038 |
| 100 euro UBI per child | -5.0 | -0.078 |
| No UBI per child | 0 | U |
| Inefficient fiscal exemptions | +47.0 | U |
| Less governmental employees | For UBI 1200= +7.4 | U |
| Land value and property tax | +16.5 | U |
| Notes: | + = increase disposable budget<br>- = decrease disposable budget | U = Uncertain effect on support |

From the table, it is observed that the rent allowance policy garners the highest support concerning the trade-off of money for the allowance. This pattern is mirrored in the "make UBI taxable" policy for the change of taxation; however, its support decreases as the value of UBI increases. Regarding the value of UBI itself, the high UBI policy of 1200 euros generates the most support but also incurs the highest cost compared to the 630

UBI policy. When calculating the support per billion for both policies, it's observed that the high UBI policy costs 1.49 billion euros to increase support by 0.001, whereas the mid-UBI policy costs 0.79 billion per 0.001 increase in support. This implies that the support for UBI diminishes per billion euros it costs. Regarding the UBI per child policy, only the variant offering 300 euros per child increases support. However, the lower values do not significantly decrease support, making them worthy of consideration.

In the subsequent sections of the Table, additional policies with uncertain impacts on the support for UBI schemes are incorporated to evaluate the feasibility of further exploration into these measures. Of particular interest is the analysis of the influence of the "no UBI per child" policy on support levels. Furthermore, the importance of inefficient fiscal exemptions in achieving budget neutrality for UBI is emphasized, as discussed in Section 3.4. The reduction of governmental employees is considered relevant primarily within the context of a UBI set at 1200 euros or the elimination of conditions on welfare payments. Additionally, the introduction of a land value and property tax warrants attention, especially considering the advocacy for such taxation by certain political parties in the Netherlands in the recent election (CPB, 2023). However, this remains a politically contentious issue due to ongoing debates regarding tax competition among municipalities (Allers & Elhorst, 2005) and the adverse effects of current housing sector taxation, including a decline in housing construction (Priemus, 2014).

For each category, the highest level of support is observed for the rent allowance, making UBI taxable, a 1200 euro UBI, and a 300 euro UBI per child. Cumulatively, these policies garner a support level of 0.544. However, the impact on the government budget for this policy is significant, amounting to -78.7 billion euros, indicating a considerable strain on governmental finances. To mitigate this, the uncertainties associated with new forms of taxes not included in the conjoint analysis should be considered. When these uncertainties are factored in, the budget deficit is reduced to -7.8 billion euros. To maintain high policy support, the total value of uncertainties should not fall below 0.544, as this would not lead to an increase in support. If a UBI per child is replaced by the 100 euro per child policy, support could decline by 0.194 but the policy is budget neutral with a support of 0.350.

If we consider a policy entailing a 630 euro UBI, making this UBI taxable, incorporating the rent allowance, and providing a 300 euro UBI per child, the resulting support is 0.36, with a budget deficit of 40.5 billion euros. To offset this deficit, inefficient fiscal exemptions could be utilized if the uncertainty associated with this approach is lower than the 0.36 support gained, thereby maintaining a level of support superior to 3.

If the aim is to create a budget-neutral policy without relying on uncertain tax measures, the option of including a 1200 euro UBI is not feasible due to its high cost. Consequently, the most viable option entails implementing a 630 euro UBI, alongside the rent allowance, eliminating tax deductions, and providing 300 euros per child. This configuration results in a budget surplus of 0.7 billion euros, with an average increase in support of 0.017. This increase in support is low, especially if the uncertainty of the 95% confidence interval from Table 4.4 are taken into account.

Another alternative is to implement a UBI of 210 euros, subject to taxation, in conjunction with the rent allowance and a 300 euro UBI per child. This policy configuration achieves an average support rating of 0.109 but results in a budget deficit of 4.7 billion euros.

Developing a budget-neutral UBI policy that garners public support poses a significant challenge. Only two policies succeed within a range of 5 billion euros. However, there is considerable potential to enhance support for the policy by exploring the impact of reducing governmental expenses, eliminating inefficient taxes, and introducing land value and property taxes.

However, the introduction of the rent allowance to garner more support for the policies, while having a minimal impact on the governmental budget and aiming to reduce poverty, introduces a new, smaller, welfare cliff. This is evident for single households facing higher marginal taxation rates between 15,000 and 32,000 euros of gross income. Figure 4.3 illustrates how budget-neutral policies impact the welfare cliff. The bold lines represent the newly introduced mid-UBI with rent allowance and the low-UBI with rent allowance. These are juxtaposed with the thinner lines representing the current situation, as well as the proposed mid- and high-UBI policies from the survey in the dotted lines.

Particularly noteworthy is the impact of the low UBI policy (illustrated by the orange and red bold lines), which results in marginal taxation rates exceeding 60% due to the discontinuation of rent allowance and the reduction of tax deductions as income rises.


Figure 4.3: Marginal taxation rate of the support UBI policies compared to the current situation and the mid- and high-UBI policies.

## 4.3. How does UBI influence poverty?

Figure 3.7 illustrates the effectiveness of UBI in mitigating the welfare cliff for middle-income citizens, thereby enabling them to augment their income by increasing labor participation. Despite the strong decrease in labor participation indicated by the regression coefficient for this group, it can potentially be counteracted by the method of UBI financing (see Figure 4.3).

The subsequent section examines how UBI influences poverty by analyzing graphs depicting disposable income. Firstly, it is examined how the proposed mid- and high-UBI policies from the survey influenced poverty. Secondly, it investigates how the optimized policies for support and budget neutrality affect poverty.

In the subsequent Figures, the red lines depict households with no children, whereas the blue lines represent households with two children. The graphs show how income is affected by UBI for households earning up to 40.000 euros as it stands close to the modal income of the Netherlands.

### 4.3.1. The effect of the mid- and high UBI policy

Firstly, when examining the effect of UBI on the yearly disposable income for households with multiple adults, and consequently multiple UBIs, Figure 4.4 demonstrates that households with two earners earning the same income fare better with both the mid and high UBI if they do not have children. However, if they do have children, their income will be slightly lower up to a gross income of 25,000 euros for the mid-UBI policy. Beyond this threshold, their income will surpass the current level, particularly. The high UBI policy

results in an increase in disposable income across all income groups.

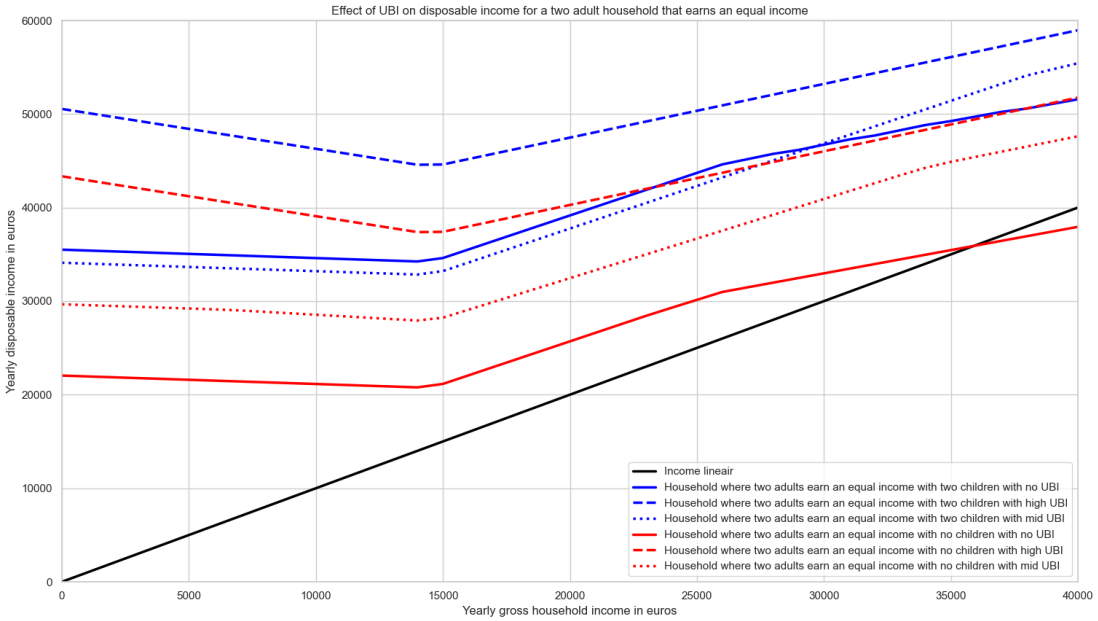



Figure 4.4: Disposable income for households with two adults earning an equal share of income

The income fluctuations for other multi-adult households are comparable. Similar graphs depicting these relationships can be found in the Appendix: Figure A.9 for households with two adults with one earner and Figure A.10 for households with one adult earning 66% of the income and the other 34%. It's crucial to acknowledge that these graphs do not consider the cost of loss of mortgage rate deduction, which can significantly impact the increase in disposable income, particularly for higher-income earners.

A consistent trend observed across these figures is that a high UBI policy tends to increase household income for multi-adult households, irrespective of whether they have children. In contrast, a mid-UBI policy initially leads to a slight decrease in income for households earning up to 25,000 euros, after which it begins to enhance the annual household budget. These multi-adult households can be regarded as the beneficiaries or "winners" of the UBI policies.

Secondly, if we examine single-adult households, the impact of UBI on poverty reduction is virtually nonexistent and could, in fact, increase poverty. This constitutes a notable drawback of the mid- and high-UBI policies. Figure 4.5 illustrates how these UBI policies influence the income of this demographic. To sustain or exceed their current financial status, single parents would need to earn approximately 65,000 euros in gross income with the high-UBI policy. The mid-UBI policy is entirely ineffective for this group and would significantly enhance poverty among single parents.

If we look at the group with no children, single adults receiving welfare payments would increase their disposable income with a high-UBI policy, but the group earning between 14,000 and 37,000 euros would experience a decrease in their financial status compared to the current situation under a high UBI policy. The mid-UBI policy would lead to a decrease in disposable income for everyone earning below 52,000 euros of gross income. This demographic represents the group most directly affected by the existing allowance system. The single adult household can be identified as the net "losers" of UBI.

It's crucial to recognize that the current Dutch welfare system predominantly supports single-adult households over multi-adult households due to the conditionality of allowances based on household composition. A comparable trend is evident for households with children, as they are eligible for two additional allowances:

the child-specific allowance, specifically aimed at alleviating child poverty, and the childcare allowance, accessible to all (with the amount being income-dependent) to encourage labor force participation. The childcare allowance can be particularly substantial, as reflected in a similar trend to Figure 4.5 where no childcare allowance is provided, as seen in Figure A.11. In this scenario, the high-UBI policy only increases the budget for citizens receiving welfare payments. All other income groups still fare worse, potentially leading to a further decline in labor force participation, especially among those unable to access childcare services.

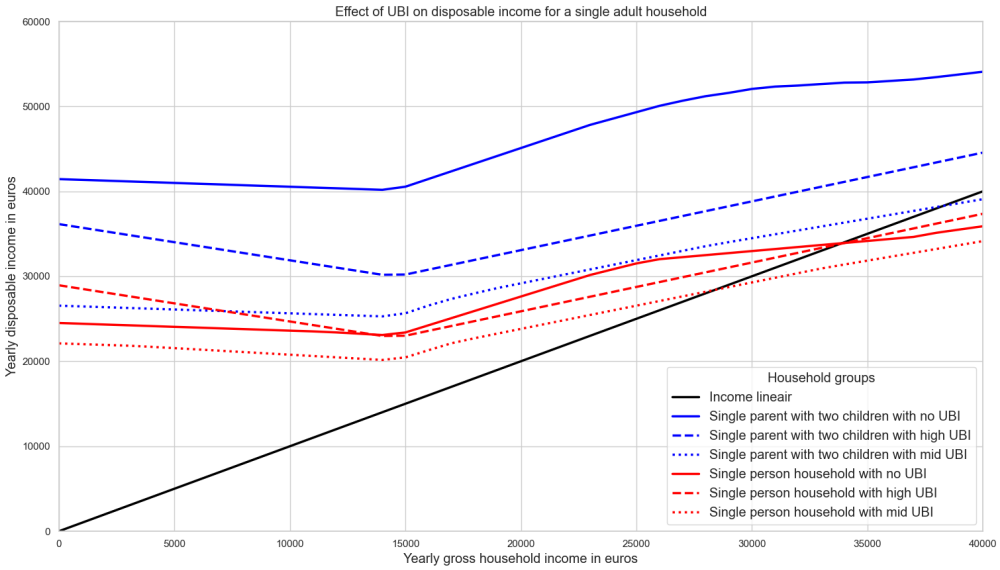



Figure 4.5: Change in income for single household due to UBI policies

Figure 4.6 shows the relationship between the income of single parents with two children compared to the income of other households with two children. From this comparison, it is observed that single parents receive significant governmental aid compared to other households with the same number of children.

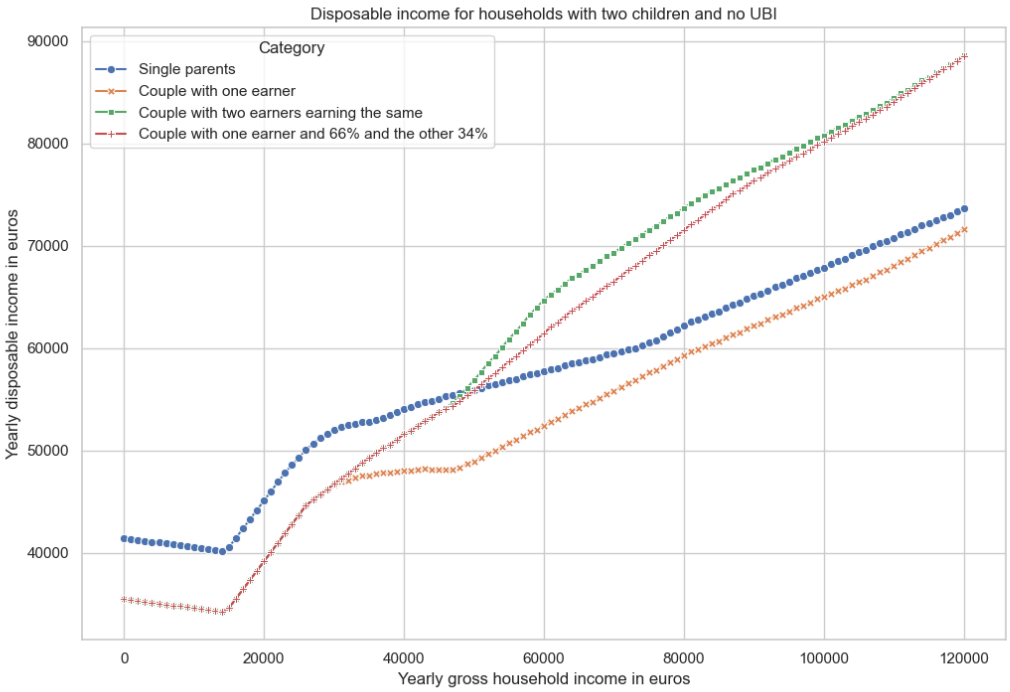



Figure 4.6: Income for different household types with two children

These findings of how UBI affects income across different household compositions partially coincide with the conclusions drawn by Jacobs, Jongen, and Zoutman (2017), who conducted an analysis on the distributional weighting of Dutch political parties' policies across income groups in society. Jacobs et al. (2017) found that all parties adjusted their policies to allocate less weight to the poorest segments of society and more to middle and modal-income citizens, while imposing higher taxes on the wealthiest individuals. Should UBI be subject to taxation for the wealthiest group, these policies would align with the viewpoints of a majority of parties.

### 4.3.2. The effect of the high support policies on poverty

In Figure 4.5, it was observed that the implementation of UBI increased poverty among low-income single adult households, particularly evident under the mid-UBI policy, leading to a decline in income for both single parents and single households. Interestingly, the high UBI policy demonstrated an increase in income only for single households. To delve deeper into the analysis and assess the potential impact of integrating rent allowance to optimize UBI support and alleviate poverty, akin to the policies previously mentioned, a comparative graph was recalculated. This new analysis juxtaposes the low UBI and mid-UBI with rent allowance since they maximize support and budget neutrality with the current income status of single adult households and those under a high UBI policy from the survey. The outcomes of this analysis are depicted in Figure 4.7.

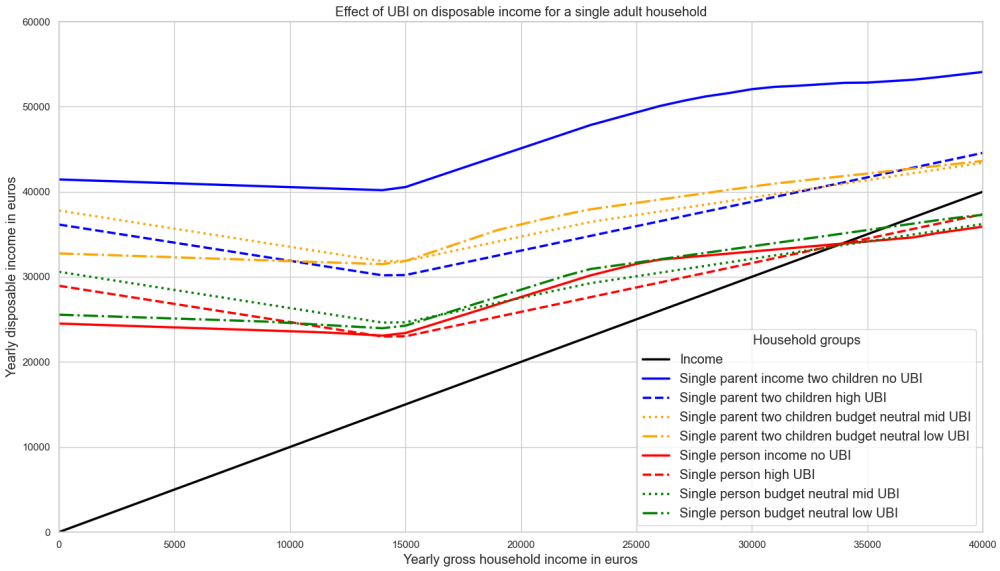



Figure 4.7: Change in income due to the introduced budget-neutral mid-UBI policy and low UBI policy compared to current income and the income of the high-UBI policy

In Figure 4.7, we can see that the budget-neutral mid-UBI policy increases the monthly income for single parents compared to the high-UBI policy. However, it falls short of bridging the gap with the current state of this group of inhabitants. Also notably, the low budget-neutral UBI policy outperforms the high-UBI policy in poverty reduction efficiency if the single parent's gross income falls between 10,000 and 35,000 euros.

When analyzing single households, it becomes apparent that the budget-neutral mid-UBI policy is the most effective in reducing poverty, followed by the high-UBI policy, and then the low-UBI policy. However, both the high and low UBI policies impede income growth for citizens earning between 15,000 and 33,000 euros per year of gross income compared to the current state. In contrast, only the budget-neutral mid-UBI consistently improves or maintains income levels relative to the current situation.

Figure 4.8 illustrates the performance of these budget-neutral policies in comparison to both the mid- and high-UBI policies analyzed in the survey and the current disposable income. This decline can be attributed to the significant portion of childcare costs within the current income structure. When this aspect is removed, as depicted in Figure A.12 of the Appendix, it becomes apparent that the low UBI policy, coupled with free childcare as advocated in CPB (2023), is particularly effective in augmenting the budget for households earning up to 60,000 euros of gross income. Beyond this threshold, the UBI is taxed back and its impact on disposable income diminishes. The provision of free childcare is crucial not only to prevent a decline in labor participation but also to specifically address concerns regarding female workforce participation (Del Boca, 2015; Del Boca et al., 2008).

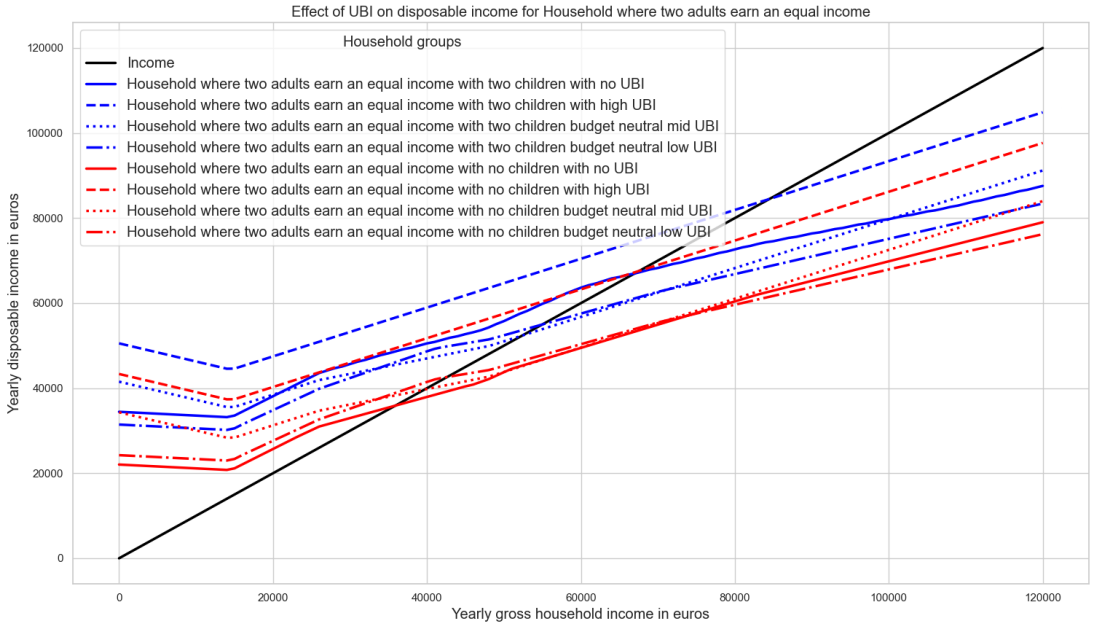



Figure 4.8: Effect of the budget neutral UBI's compared to the mid-and high-UBI policies on available income for household earning an equal share of the income

Finally to see if the gap can be bridged for single parents, the most generous form of UBI, which gathers the highest support with the highest uncertainty, the policy of 1200 euro UBI, 300 euro UBI per child, rent allowance, make UBI taxable is tested as well. The results of this are shown in Figure 4.9.

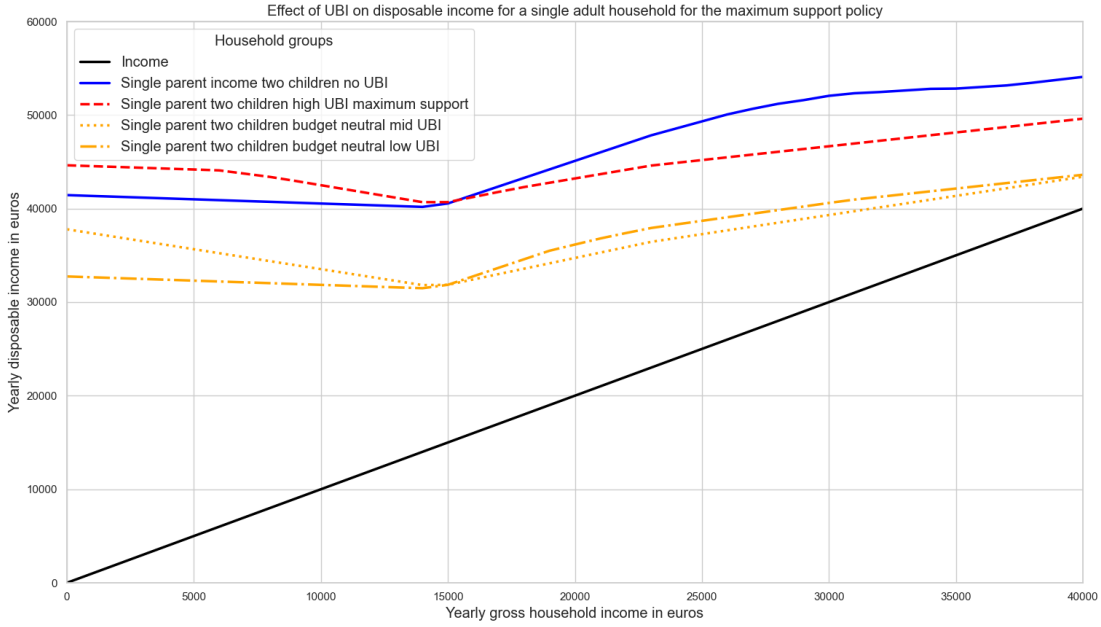



Figure 4.9: Effect of the max support UBI on income

The maximum support high-UBI policy exhibits a noteworthy capacity to mitigate poverty among single parents receiving welfare payments, particularly those with a gross income below 14,400 euros annually, thereby fostering a reduction in poverty within this demographic. However, beyond this income threshold, the policy's effectiveness diminishes compared to the existing system, leading to a decrease in income for single parents earning below the modal income level.

In summary, both the low- and mid-UBI budget-neutral policies demonstrate where not able to mitigate extreme poverty among single households. Nevertheless, while the financial circumstances for single parents improve relative to the mid- and high-UBI policies considered in the survey, this demographic still experiences inferior outcomes compared to the current state. Although the maximum support policy succeeds in augmenting income for the most economically disadvantaged members of society, any increase in income beyond the welfare payments threshold leads to a subsequent reduction in disposable income for single parents compared to their current situation.

## 4.4. What will people do with UBI?

To evaluate the potential actions of citizens under mid- and high-UBI policies, respondents were presented with two questions, detailed in Appendix C.3. Initially, they were asked whether they would contemplate resigning from their current employment to seek a more suitable position. Subsequently, they were prompted to choose from twelve different options regarding their intended actions under these UBI policies, with the opportunity to add additional behaviors. This section first outlines the responses regarding job resignations and then presents the outcomes of the actions selected by respondents under the two policy scenarios. This analysis is geared towards addressing research question 5: How would Dutch citizens allocate their financial resources and utilize their time if UBI were implemented in the Netherlands?

### 4.4.1. Leaving their jobs

First, let's examine whether citizens would entertain the idea of leaving their current jobs to seek better-suited employment. The responses are illustrated in Figure 4.10. A comparison between the two figures suggests that individuals in the Netherlands are more inclined to contemplate job changes under a high-UBI policy compared to a mid-UBI policy. To ascertain if this difference is statistically significant, a Chi-square test was conducted. The results of this analysis are presented in Table E.8. With a p-value of 0.0431, it can be inferred that a mid-UBI has a lesser impact on individuals resigning from their jobs to seek better-suited ones compared to a high-UBI policy.

This inclination is particularly pronounced when accounting for citizens who are currently unemployed, with 9.9% expressing a strong likelihood of changing jobs and 25% indicating openness to the idea[2]. Moreover, upon further analysis, considering individuals satisfied with their current employment, 12.7% express a strong likelihood of changing jobs, with 32.3% being open to the prospect [3]. The implementation of a high UBI policy could significantly facilitate the reallocation of jobs according to individuals' preferences.

The particular sub-groups showing openness to changing jobs under a high-UBI policy if accounted for the two non-applicable bars include second earners (44.4%), women (37.7%), part-time workers (42.7%) and young adults (38.7%) (especially students (56.6%), as depicted in Figure E.4). Their distribution is illustrated in the bar diagrams provided in Appendix E, spanning from Figure E.2 to Figure E.7. Since students may opt to stop working due to UBI, several industries like food services, consumer retail, or administrative workers may encounter labor shortages on the short-time introduction of a UBI policy. This behavior was also observed by the reintroduction of the student allowance in September 2023 (Advalvas VU, 2024).

### 4.4.2. What will citizens do: an overview of their responses

Now, let's examine the general responses regarding what citizens would do if they received a mid- and high-UBI. Figure 4.11 provides an overview of respondents' intended actions with their time and money. It is noteworthy that there are fewer responses regarding the mid-UBI policy compared to the high-UBI policy. To compare both bars another Chi-square test was conducted (Table E.9). Since the p-value is 0.901, no

[2] They are open to the idea if they have chosen likely or very likely
[3] When accounting for both, the non-applicable bars

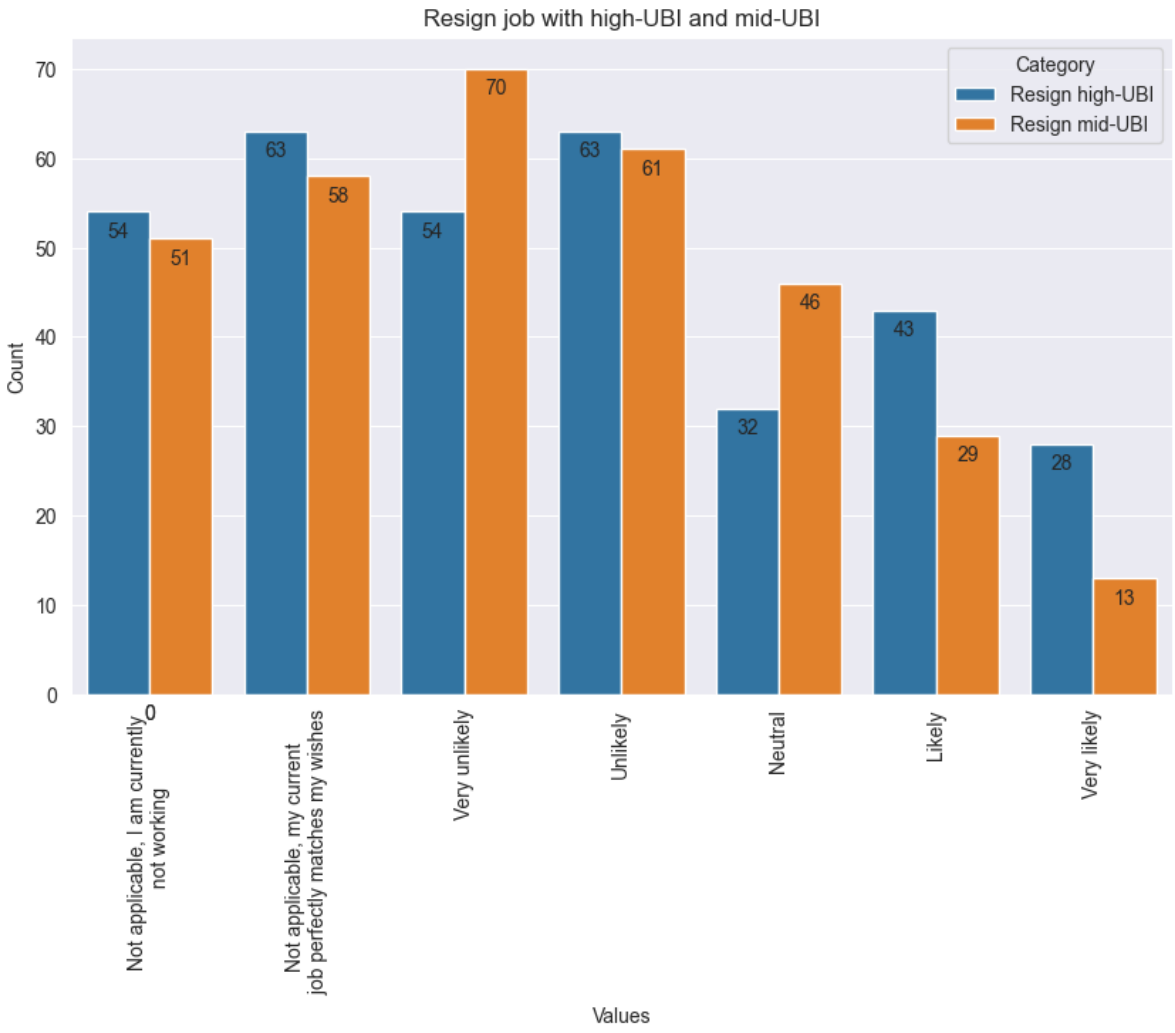



Figure 4.10: Distribution of the respondents that would resign their job under a high-UBI policy

statistically different effect is observed between a high and mid-UBI.

From the Figure, it is observed that both UBI policies would elicit similar reactions, as the top four responses are consistent (albeit in varying order). Citizens express their intention to save more money, experience less stress, purchase healthier food, and allocate more time to leisure activities.

Interestingly, the data reveals that few respondents choose to pursue additional education or increase their study time, despite the significance of such outcomes in the Mincome experiment or of the study of De Nederlandse Bank (2023). Also, it seems that respondents would live healthier with UBI policies since a large group is indicating they will go to the doctor more often and buy healthier food. One notable difference is the proportion of individuals expressing a desire to engage in volunteer work. This proportion is twice as high for those favoring the high-UBI policy compared to those supporting the mid-UBI policy.

When examining specific sub-groups of the population to discern their preferences regarding a high- or mid-UBI, several noteworthy findings emerge. The percentage of respondents from each group choosing what they will do with UBI is very similar for both policies. These results are depicted in Figure E.8, provided in Appendix E.

Households with children predominantly lean towards the health-related benefits of a high UBI, as evidenced by their reported reductions in stress (48%), increased doctor visits (37%), and more frequent purchases of healthy food items (35%). In terms of income categories, expected behaviors are observed. Individuals with mid and low incomes express intentions to save more money (52% for the high-UBI policy, 36% for mid-UBI

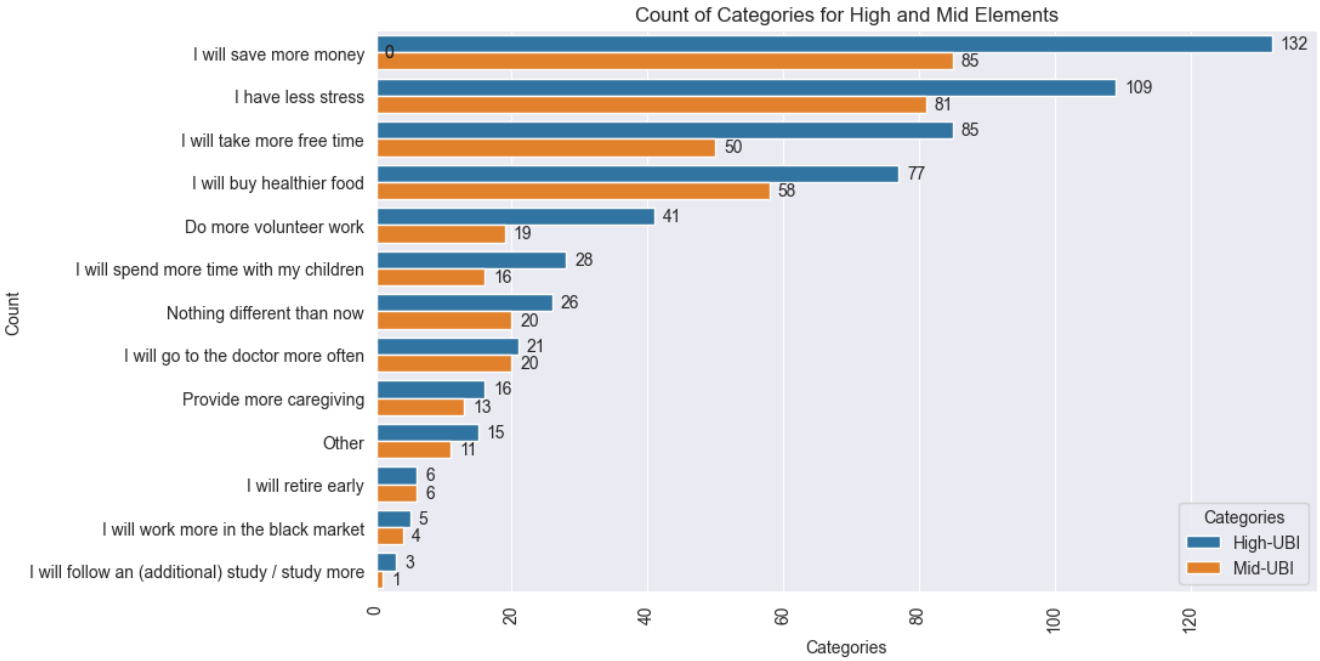



Figure 4.11: Distribution of the respondents what respondents will do with their time and money under a high-UBI policy

policy), aligning with the targeted assistance offered by UBI policies (if they are living in a multi-adult household). This could be viewed as a positive development, considering that the modus of household savings in the Netherlands is relatively low, with 19% of households having savings of 2,500 euros or lower, and 30% having savings totaling less than 5,000 euros (R. Bos, 2023; Centraal Bureau voor de Statistiek, 2022). High-income earners indicate similar intentions to save more (30% for high-UBI policy, 7% for mid-UBI policy), despite UBI aiming to provide a net benefit to this demographic. This discrepancy could stem from a lack of understanding regarding the direct effects of UBI, particularly regarding changes in mortgage rate deductions and other tax adjustments.

Notably, a significant reduction in stress levels is reported by unemployed individuals and those currently receiving welfare payments (48% for high, 44% for mid). This finding is intriguing, considering that UBI does not increase the monthly budget for these individuals; in fact, it may lead to a decrease in income, especially for those currently receiving substantial allowances. One possible explanation for this phenomenon is that the existing conditions within the Dutch welfare system may be a significant source of stress for beneficiaries.

Among other demographic groups, preferences are less distinct. Notably, there is no significant indication from any group regarding an intention to increase caregiving activities, although there is a notable overall increase in this activity across all groups.

Here are the responses provided when "Other" was selected in the survey, along with the frequency of each response:

- "I will work more" (12 times)
- "I will have more time for sportive activities" (2 times)
- "Pay off my (mortgage or study) debt faster" (3 times)
- "Moving to a more comfortable apartment/house" (3 times)
- "Due to the introduction of UBI I will lose money (mortgage tax deduction...)" (2 times)
- "Invest money in sustainable initiatives"
- "Buy sustainable food"
- "Doing more charity gifts"

- "Less mental health issues"

If the survey has to be retaken, it can be interesting to include these options in the question to see if they are widely supported by the rest of the population. The division of work responses reveals a nuanced picture: 7 out of the 12 respondents were in the welfare cliff category and indicated that they would work more under both the mid and high-UBI policies, as it would be financially beneficial for them. However, 5 respondents, classified as low-income and highly dependent on the allowance system, stated that they would need to work more under both policies because they would lose money as a result of the policy changes. This increase in work could potentially lead to less time available for caregiving and volunteer work. Respondents expressing concerns about income loss were classified as high-income earners, underscoring the policy's complexity and the lack of a one-size-fits-all solution. A poorly implemented UBI policy has the potential to cause more harm than good.

Three respondents expressed a desire to utilize UBI for sustainable development or to donate it to charity. Interestingly, these respondents were categorized in the high-income group. This phenomenon echoes similar behavior observed with the introduction of the Energy Allowance at the end of 2022, when every Dutch household received 380 euro in compensation for rising energy prices due to the conflict in Ukraine. Many households chose to donate this money as they did not require it for their own needs (De Volkskrant, 2022).

## 4.5. Political support

In this political analysis, we aim to delve into public sentiment regarding UBI through the exploration of survey responses. The survey, conducted using a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree," focuses on two key areas: taxation and poverty alleviation. The questions on taxation are:

- I believe that taxes should not be increased to finance the universal basic income.
- I think the universal basic income should be funded by higher incomes.
- I believe the universal basic income should replace the allowances.
- I think the universal basic income of 1200 euros should replace the welfare payments.

The questions on poverty alleviation are:

- I found it important that I do not end up worse off if a universal basic income is introduced.
- I believe it is important that the poorest people in the Netherlands benefit from UBI, even if it means I am worse off.
- I think the universal basic income should be high enough to live on, even if it makes working less attractive.
- I believe the government should focus on helping people in poverty, even if it makes working less attractive.
- I think people should not have to repay benefits if they work more hours.
- I think people should not have to repay welfare if they work more hours.
- The universal basic income, for every Dutch citizen, is a good form of social security.

In this section, only Likert means that exceed 3.50 or fall below 3 will be addressed, as respondents are demonstrating either predominantly positive or below-average opinions on the subject. These are shown in Figure 4.12 and 4.13. The remaining six statements have mean values ranging between 3 and 3.50 and are available in the Appendix, Figures E.9 to E.14.

### 4.5.1. Taxation

The first set of statements pertains to taxation and how UBI should be financed. Among the four questions, respondents rated higher than 3.50 only the statement advocating for UBI to replace allowances and welfare payments as presented in the two sub-plots at the top of Figure 4.12. This suggests that respondents generally

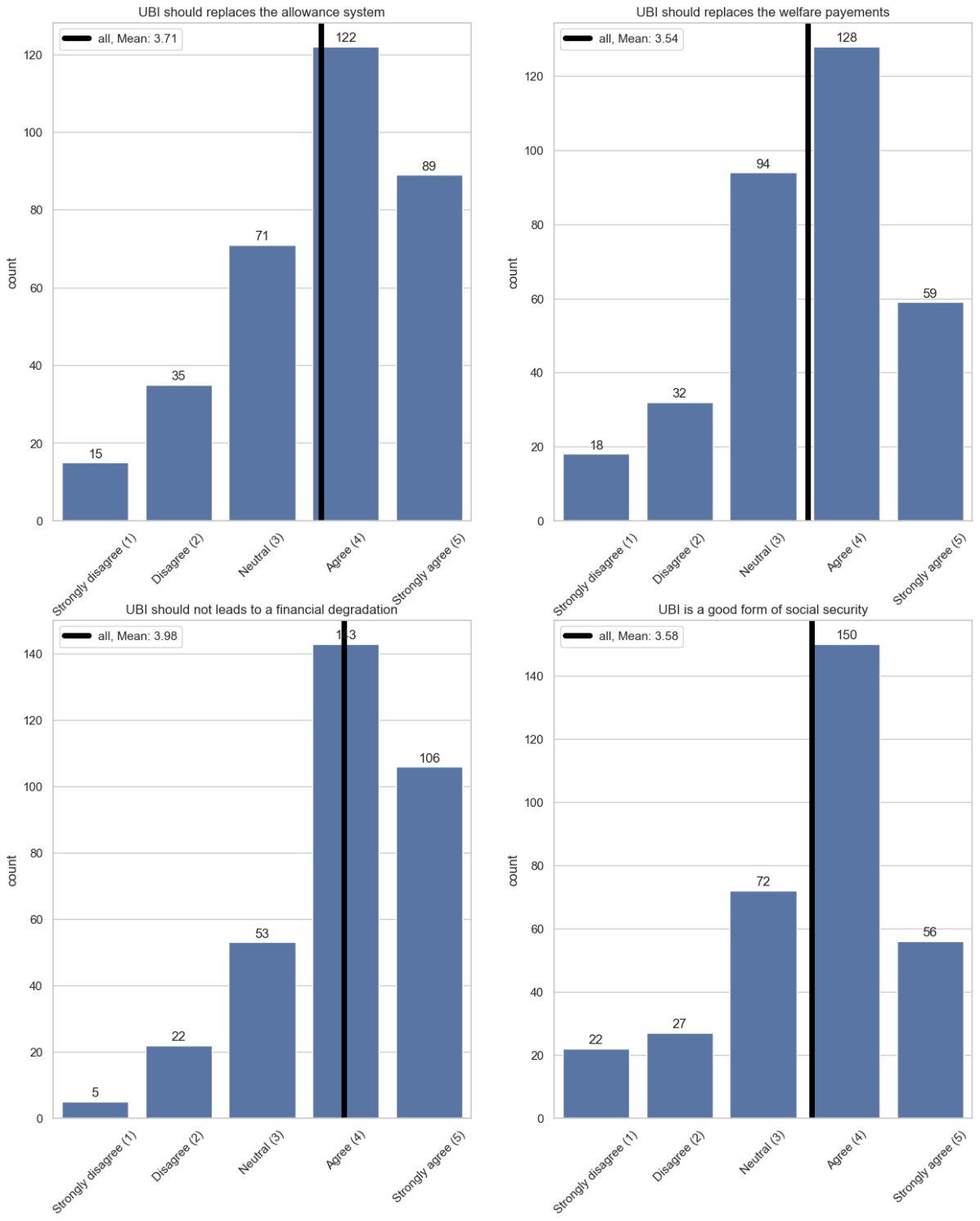



Figure 4.12: Above average valuation of UBI replacing the allowances, the welfare payments, no financial degradation, and UBI as form of social security

support the idea of UBI being provided unconditionally. This inclination could be influenced by various factors, including the fallout from the childcare allowance scandal that began in 2018. This scandal significantly eroded trust in the Dutch government (Fenger & Simonse, 2024).

Contrary to the findings of Rincon (2023), respondents in this study do not appear to favor a strong redistribution effect with UBI. Figure E.10 illustrates that only a small segment of the population supports the notion

that taxation rates should be increased for the wealthiest individuals in society.

### 4.5.2. Poverty alleviation

The second set of statements revolves around poverty alleviation and the role of UBI in improving individuals' financial situations. In Figure 4.12, the bottom two graphs display the statements with a mean score higher than 3.50. It is noteworthy that respondents highly value the idea that UBI should not worsen their personal financial situation. This is interesting because respondents also do not prioritize the improvement of others' financial positions. Figure E.12 indicates that respondents do not particularly view UBI as a solution to poverty, as they are not inclined to prioritize increasing the financial position of the poorest members of society if it might affect labor participation. This sentiment is reflected in the graph shown in Figure 4.13, where respondents do not particularly favor a UBI sufficient to live on. This may pose political challenges for the implementation of a high-UBI policy. However, the last sub-plot of Figure 4.12 suggests that respondents do view UBI as a solid foundation for social welfare, as they consider it a good form of social security. This presents political opportunities for a mid-UBI policy.

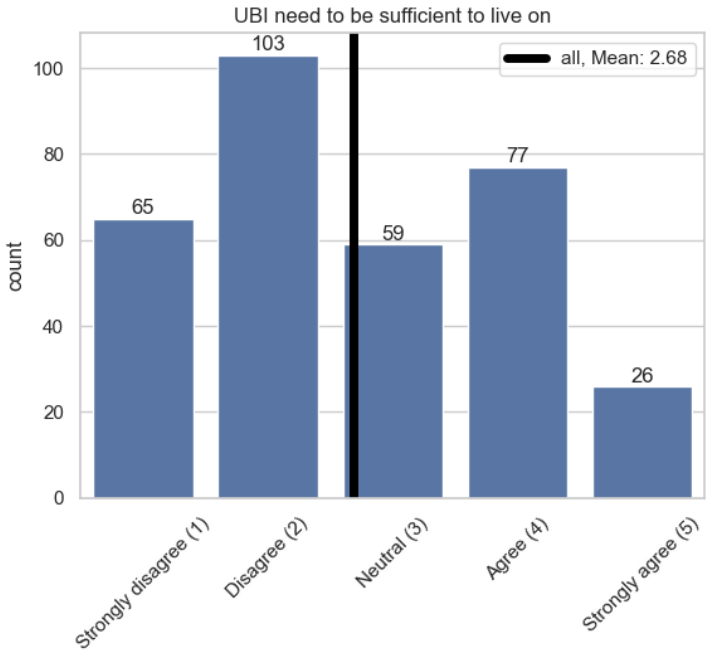



Figure 4.13: Bellow average valuation of a UBI value that is sufficient to live from

### 4.5.3. How do sub-groups influence these results?

From Figure 4.1 we can see that the sample is not a perfect representation of the population. This is due to oversampling of certain subgroups and some under representation of others.

To assess whether various subgroups within the population exhibit divergent opinions regarding the survey questions, statistical analysis is utilized to discern the statistical significance of any observed differences. This involves examining the mean difference between the study groups and the overall population[4] to determine if it deviates significantly from what would be anticipated by chance alone. This is accomplished through the application of t-tests, which allow for the comparison of means between different groups and the identification of statistically meaningful distinctions. An overview of the statistical results can be seen in Table E.10 in the Appendix.

Firstly, most subgroups respond to the questions based on their individual interests: lower-income groups tend to support funding mechanisms where wealthier members contribute to UBI, while citizens receiving welfare payments prefer UBI policies that do not worsen their financial situation and provide sufficient income to live on. This self-interested behavior is logical, as individuals prioritize their own financial well-being

[4]All the respondents of the survey

when evaluating policy options. Analyzing mean values alone does not reveal solidarity towards the poor, as respondents tend to prioritize personal gain over collective welfare. Higher-income individuals may resist paying higher taxes, while part-time workers may not prioritize assisting the poorest members of society if they are worse of for example.

Significant differences emerge when examining subgroups regarding the question of replacing allowances. Single parents and welfare recipients are generally opposed to replacing allowances, as they would incur financial losses under such a policy. Conversely, households with children, across all age groups, tend to support the replacement of allowances with UBI. This support for unconditioned support among households with children contrasts with the current means-tested allowance system, which is generous toward children.

In considering whether a UBI of 1200 euros should replace welfare payments, single parents and welfare recipients express greater support for the idea compared to other respondents, indicating strong support for unconditional support among these groups. Conversely, high-income individuals and students tend to support the conditional nature of this policy since it is a solidarity mechanism of 'last resort'.

Students stand out in this survey, primarily due to their overrepresentation. Despite benefiting from student allowances, which resemble a form of targeted Basic Income, students are not universally supportive of UBI policies. They tend to oppose increasing taxes to finance UBI and taxing the highest incomes for this purpose. This reluctance may stem from their perspective as future graduates, potentially indicating a reluctance to contribute to UBI once their financial circumstances change. Additionally, students express strong opinions on dilemmas related to UBI's impact on labor participation and poverty reduction.

Table 4.9: Subsets that have a statistically significantly different vision than the population

| Survey question | Increasing the average | Decreasing the average |
|---|---|---|
| Taxes should not be increased to finance UBI. | 1. Single parents<br>2. Welfare payments<br>3. Social housing tenants | 1. Students |
| UBI should be funded by higher incomes. | 1. Single parents<br>2. Children between 6 and 12<br>3. Welfare payments<br>4. Age group 28-50<br>5. Social housing<br>6. Low educated | 1. High income<br>2. Students |
| A UBI should replace the allowances. | 1. Children younger than 6<br>2. Age group 51 to 68 | 1. Single parents<br>2. Welfare payments<br>3. Students |
| A UBI of 1200 euros should replace the welfare payments. | 1. Receiving welfare payments<br>2. Single parents<br>3. Social housing | 1. High income<br>2. Students |
| I do not end up worse off if a universal basic income is introduced. | 1. Receiving welfare payments | |
| The poorest people in the Netherlands benefit from UBI, even if it means I am worse off. | 1. Receiving welfare payments | 1. Working part-time<br>2. Students |
| UBI should be high enough to live on, even if it makes working less attractive. | 1. Jobless<br>2. Single parents<br>3. Receiving welfare payments | 1. Students |
| The government should focus on helping people in poverty, even if it makes working less attractive. | 1. Jobless<br>2. Single parents<br>3. Receiving welfare payments<br>4. Age group 51 to 68<br>5. Social housing<br>6. Low educated | |
| People should not have to repay benefits if they work more hours. | 1. Citizens with side jobs<br>2. Single parents<br>3. Household with children<br>4. Receiving welfare payments<br>5. Low income<br>6. Social housing | 1. High income |
| People should not have to repay welfare if they work more hours. | 1. Citizens with a side job<br>2. Single parents<br>3. Receiving welfare payments<br>4. Low income<br>5. Social housing tenants | 1. Citizens in the welfare cliff<br>2. High income |

# 5

# Discussion and limitations of this study

## 5.1. Discussion of the results

### 5.1.1. A decrease in labor participation was expected, why is it not observed?

The Netherlands has seen a consistent trend of reduced work hours in previous studies on UBI and labor participation, with declines ranging from 3% to 11%. This decline is primarily attributed to increased income or a high marginal tax rate, prompting individuals to opt for fewer work hours in exchange for more leisure time. However, our findings reveal an inconclusive trend, showing an average increase in labor participation (2.68% for high UBI and 4.82% for mid UBI). It's worth noting that these results come with uncertainty, as both positive and negative values were observed in the confidence interval.

One of the primary objectives of UBI is to mitigate high marginal taxation rates and eliminate the welfare cliff. The welfare cliff, particularly pronounced after a gross income of 27,000 euros, arises from the loss of allowances (refer to Figure 1.1). Table 5.1 provides an overview of the financial eligibility criteria for obtaining allowances. Notably, most allowances have both an income cap and a wealth cap, wherein exceeding the specified value of assets disqualifies individuals from receiving the allowance.

Homeownership emerges as the most significant factor contributing to wealth, with 56.7% of the population identified as homeowners (refer to Table 4.1). For homeowners, exceeding the mortgage payment value of €177,301 for a couple or €140,213 for an individual disqualifies them from receiving allowances other than childcare, even if their income falls below the specified threshold. Given that only 27.1% of the respondents are homeowners, it suggests that the respondents are not particularly affluent, as homeownership correlates strongly with wealth (See Figure E.1).

Within the highest income group, comprising 83 respondents or 24% of the total sample are ineligible for allowances. Conversely, 76% of the respondents are entitled to receive some form of allowance, slightly higher than the population statistics indicating that 66% of households receive allowances. However, when recalculating the percentage of citizens receiving allowances, considering that rent, child, and childcare allowances are paid at the household level while health allowance is individual, only approximately 42% of individuals are eligible for allowances (Ministerie van Financiën, 2023).

This indicates that a significant portion of respondents stand to lose some form of government assistance with the implementation of UBI. However, due to the compensation provided by UBI, the net increase in monthly disposable income is less substantial for lower and mid-income individuals. Given that this demographic constitutes the majority of respondents (76%), compared to the actual 42% of individuals eligible for allowances and the 56% of homeowners in the Netherlands, the proportion of respondents experiencing significant losses in allowances is higher among survey respondents than in reality. Consequently, their increase in income is less pronounced compared to higher-income individuals who primarily lose tax deductions (in the case of the high UBI policy) and mortgage rate deductions.

Table 5.1: Financial requirements for allowances

| | Maximum income (in euros) | Maximum wealth (in euros) |
|---|---|---|
| **Health allowance** | Single adult household: 37.496<br>Multi adult household: 47.368 | 140.213<br>177.301 |
| **Rent allowance** | Single adult household: 34.000<br>Multi adult household: 44.540 | 36.952<br>73.904 |
| **Child allowance** | Single adult household: 150.185<br>Multi adult household: 108.820 | 140.213<br>177.301 |
| **Childcare allowance** | All households: No income limit | No wealth limit |

For instance, let's examine the scenario of an individual earning €65,000 annually with no dependents. Under the high UBI policy, they would experience a loss of €3,763 in tax deductions. To compensate for this loss and maintain their previous income level, they would require a mortgage interest deduction of €10,637 annually. This implies an annual mortgage interest payment of €29,547, which would necessitate a mortgage of €738,000[1]. However, given their income, they would only be eligible for a mortgage of €311,000[2]. If the individual's actual interest payments are lower, they would benefit (a lot) from the high UBI policy.

In contrast, consider an individual earning €27,000 annually, residing in social housing with no dependents. Under the same high UBI policy, they would lose €7,527 in tax deductions, €7,826 in rent allowance, and €1,332 in health allowance. Consequently, they would experience a net loss of €2,285, necessitating an increase in their work hours to maintain their previous income level.

Applying the same analogy to the mid-UBI policy, the individual earning €65,000 annually would receive an additional €7,560, of which €3,745 would be taxed back. This would result in a net increase of €3,815 in income. To offset this increase and maintain their previous budget, they would need to pay €10,310 annually towards their mortgage, suggesting a more plausible mortgage value of €257,000.

Similarly, for the individual earning €27,000 annually, the increase of €7,560 in income would result in €3,025 being taxed back. However, the loss of €7,826 in rent allowance and €1,332 in health allowance would lead to a net loss of €4,623 per year.

These examples illustrate that a bias towards low-income, single-household earners and allowance recipients may lead to a higher emphasis on labor participation among respondents. Individually, respondents perceive themselves as worse off under the UBI policy, necessitating increased work efforts to maintain their income levels biasing the outcome result of the survey towards an increase in labor participation. Since in the Netherlands there is a large group of homeowners who are therefore less dependent on the allowance system, they would be faster net beneficiaries of UBI. This could explain why other researchers found a decrease in labor participation while I found the opposite behavior.

Although the impact of the unbalanced survey is corrected based on housing type and income category there still are some balance issues, these are highlighted in the next subsection.

### 5.1.2. The influence of an unbalanced sample

From Figure 4.1 and Table 4.1 can be seen that the sample is not well-balanced for every subgroup in the population. The most important source of distraction is the high amount of students in the sample creating a bias in the income group since students are mostly low-income but with a bright wealth perspective. This was also seen from the Political analysis from Section 4.5 where students have a strong opinion, more leaning towards the higher income groups than the low-income group where they are quantified.

In estimating labor participation and support at the national level in the Netherlands, low-income individuals, including students, are designated as the reference category for dummy coding. However, since this subgroup does not fully represent the low-income due to an over-representation of students whose opinions align more closely with those of the high-income group, the use of dummy coding may not effectively capture the relationship, potentially resulting in a loss of information about both student behavior and low-income behavior.

[1] based on a 4% interest rate
[2] Based on data from (Independer.nl, 2024)

It is noteworthy that the calibration of the effect in the total population relies on the dummy coding scheme. This correction addresses the bias resulting from the unequal sample sizes in the main effects of the policy. Consequently, interpreting the main effects of the policies for the total population without demographic corrections can be challenging. Conversely, the values in the subset analysis are more interpretable as they pertain specifically to a subgroup.

The bias stemming from the high number of students, low-income individuals, and young adults is particularly present in Section 4.4, as recalibration was not conducted in this section. While the strong inclination of students and young adults towards seeking better-suited employment may influence the outcomes, the conclusion remains robust due to the representative nature of gender and first and second-earner characteristics, which also seek alternative employment. However, the issue of employment better suited to the preferences of employees remains an intriguing question for further exploration in this survey, particularly with a more representative sample of the population in future research.

Another bias introduced by the high number of students and already highly educated respondents pertains to educational investment. It is unsurprising to see that the option of quitting labor for educational investment is not highly favored, as depicted in Figure 4.11, given that a significant portion of respondents is already highly educated or on track to attain higher education.

The observation that people indicate to save more money under UBI policies is intriguing, considering that these policies are not explicitly designed for saving. The following groups generally stand to benefit more from UBI, these benefits could lead to more savings:

1. High-income respondents, who may save more money depending on their tax deductions (other than labor) and their mortgage rate deductions.

2. Respondents living in a multi-adult household.

3. Respondents who receive a low amount of allowances.

4. Respondents with zero income from labor or welfare payments, often students.

In Figure E.8, it is noteworthy that low-income households indicate a propensity to save more in 56% of cases, particularly when they reside in multi-adult households. This observation aligns with the assumption that 76% of respondents in the low-income category are situated in multi-adult households, whereas 8% are single parents and 16% are single households.

### 5.1.3. Lack of power

Table 4.2 showed a lack of statistical power for the interesting sub-group citizens with children younger than 5 years old. This is specifically the group that is opting out for caregiving responsibilities for their young ones. This trade-off within these subgroups is not measured. Due to the addition of children up to 12 years, the effect of children going to daycare and after-school care is still present in combination with the loss of childcare allowance in all profiles, since this allowance is very high to motivate this group to take part in labor a higher drop was expected. All other sub-groups achieved the wished power of 80%.

### 5.1.4. Financial assumptions

The adjustment for inefficient tax exemptions is applied in a static manner, implying an anticipation of the government reclaiming the current cost of 47 billion euros. However, this assumption does not inherently hold true, as each tax increment possesses its unique Laffer curve effect. These effects can potentially hinder economic activity, reduce incentives for work, investment, and entrepreneurship, encourage undeclared work, and foster tax evasion and other avoidance strategies.

## 5.2. Limitations of the model

### 5.2.1. Limitations of the conjoint experiment: the impact of non-budget neutrality of the profiles

Conjoint experiments typically involve selecting a subset of attributes and levels due to practical constraints such as respondent fatigue and complexity of analysis. Consequently, not all funding mechanisms outlined in Section 2.3 are included in the experiment. However, to achieve a budget-neutral UBI, it is imperative to incorporate the inefficient tax mechanism proposed by Ministerie van Financien (2023). Unfortunately, the experiment does not gauge respondents' attitudes toward these measures, limiting the overall understanding of the calculation of the monthly budget. Furthermore, opinions on new forms of taxation, such as land value and property tax, are omitted from consideration. This exclusion of crucial attributes may result in biased results or overlook opportunities to gain valuable insights into consumer preferences.

To address these limitations, conducting pilot studies or utilizing advanced techniques like Adaptive Conjoint Analysis (ACA) could prove beneficial. ACA dynamically adjusts the attributes presented to respondents based on their previous choices, thereby optimizing attribute selection and enhancing the validity of the experiment (Huertas-Garcia, Gázquez-Abad, & Forgas-Coll, 2016).

Another notable limitation of conjoint analysis lies in the simplification of the profiles it presents. As illustrated in Table 3.3, certain profiles pose political challenges in achieving budget neutrality, resulting in a substantial increase in the available monthly budget for profiles 0, 1, 2, and 4. Conversely, profiles 3 and 5 exhibit negative values, indicating governmental austerity measures to finance UBI. This limitation may compromise the accuracy of the results by failing to fully capture the complexity and nuances of respondents' decision-making processes. To address this issue, incorporating interviews with respondents could provide deeper insights into decision-making processes within real-world contexts. This approach holds particular promise for understanding the behavior of citizens receiving welfare payments, who have demonstrated intriguing patterns that defy rational decision-making based solely on available monthly budgets.

However, the introduction of the calculation of monthly available budget may also influence respondents' behavior, potentially promoting more rational decision-making. This calculation could lead respondents to focus solely on the presented budget, diminishing their personal opinion on the proposed policy. Consequently, it becomes more challenging to discern potential emotional factors that may influence respondents' attitudes toward specific UBI financial policies. For instance, policies introducing new, higher-income tax systems may garner significant support from lower-income groups, as they perceive minimal impact on their financial circumstances. This behavior aligns with rational budgetary calculations; however, it contrasts with observed phenomena in the Netherlands, where lower-income individuals have been known to vote against their own social interests (Achterberg & Houtman, 2006; Derks, 2006).

A third limitation of this study is the absence of interaction effects between attribute levels. Many of the calculated UBI policies for the Netherlands, as outlined in Table 2.2, involve interactions between attributes such as 'No tax deduction' and 'New form of income tax'. These interactions are crucial for achieving budget neutrality in UBI implementations. Moreover, for UBI amounts of 1200 euros per month, the combination of 'No tax deduction' and 'Make UBI taxable' requires analysis. Advanced techniques like Hierarchical Bayes modeling or Choice-based conjoint analysis can partially detect interaction effects, they may struggle to fully capture all possible interactions realistically.

However, it is important to note that the primary goal of the experiment was to assess individual perspectives on policy options rather than interaction effects. Explaining which factors cause changes in labor participation or support for the policy becomes challenging when considering interaction effects.

This limitation in design aligns with the findings of De Wispelaere et al. (2018), who noted that the different tax treatments and lack of budget neutrality in the Finnish experiment introduced distortions affecting internal validity. Similarly, in this study, the UBI policies lack budget neutrality, not all potential financial plans are included, and the interaction effects of important financial policies could not be fully examined.

### 5.2.2. The limitation of the survey calculations: UBI at individual level

As delineated by Bidadanure (2019), the initial decision in designing a social welfare policy revolves around whether it will operate at the household level or the individual level. In the context of my UBI design, I opted to assess the trade-off between labor participation and support at the individual level, aligning with the ideology advocated by Van Parijs ((2004)), which I personally endorse. However, this choice diverges from many welfare policies in the Netherlands, which are calculated at the household level.

This individual-centric approach introduced challenges for some respondents in predicting their behavior, particularly concerning changes in labor participation that might depend on their household partner's choices. Practically, this complexity complicated the calculation of individual allowance amounts and was thus excluded from the survey's monthly budget estimation.

To navigate this issue, certain assumptions were made in the analysis: firstly, it was assumed that citizens receiving allowances possess knowledge of the precise amount they receive each month, enabling them to evaluate changes in the allowance system accurately. Secondly, for the analysis of low- and mid-income groups, it was assumed that these groups fully avail themselves of the allowances to which they are entitled.

A similar rationale applies to the estimation of mortgage rate deductions. Gathering additional information about respondents' housing situations would necessitate more questions, potentially leading to respondent fatigue or non which to respond, particularly among wealthier participants. Consequently, the analysis for these groups is restricted to distinguishing between citizens eligible for the deduction and those who are not.

If the survey were to be conducted again, conducting it at the household level would offer valuable insights. This approach would provide a comprehensive understanding of how benefits and challenges associated with UBI are distributed among household members. By capturing the dynamics within households, researchers can explore how UBI impacts decisions related to labor participation, household finances, and overall well-being. Furthermore, conducting the survey at the household level allows for the investigation of potential trade-offs and synergies between the preferences and behaviors of household members regarding UBI policies. This approach aligns closely with the structure of the current welfare system and provides a more holistic perspective on the implications of UBI for households.

## 5.3. Potential further research with this data set and this methodology

### 5.3.1. Information from the data set not used in this study

**Recalibration of students and housing typs**

As discussed before in Section 5.1.2, students are forming a form of bias in the data set. It could be very interesting to re-run the analysis with this group in ratio to their proportion of their income and housing group to see if this affects results.

**Geographical location**

Another aspect of the survey that remains unanalyzed is the geographic location of the respondents. This could be of interest, as it was found in a study by Van Parijs (2020) that the geographic dimension can influence perceptions of UBI. For instance, in Finland, a more positive respons and increase in labor participation in responses to UBI were observed by residents outside Helsinki. Similarly, the Netherlands exhibits cultural differences between urban and rural areas, suggesting that geographic location may play a role in shaping attitudes toward UBI.

**Diminishing marginal utility of income**

Indeed, the concept of diminishing marginal utility of income is pertinent in understanding how individuals perceive and value changes in income, particularly in the context of UBI policies. As income increases, the additional satisfaction or utility gained from each additional unit of income tends to decrease.

In the context of UBI, this concept suggests that individuals with lower incomes may place a higher value on each additional unit of income, such as the extra 100 euros, due to their limited disposable income. Consequently, they may perceive greater utility from such an increase and may be more supportive of policies aimed at income redistribution, such as UBI.

Conversely, individuals with higher incomes may experience diminishing marginal utility of income, indicating that they derive less additional satisfaction from each additional unit of income. Consequently, they may attach less importance to a similar increase in income. Higher-income groups might perceive UBI as a way to sustain their utility while also providing them with the choice to withdraw from the labor force.

Given the imbalance in income and wealth levels within the dataset, it would be compelling to reassess the coefficient value of 'Change of 100 euro net income.' Currently, this coefficient averages the benefits and losses without considering the impact of allowances. One potential approach to address this issue is to create two new variables: one representing an increase of 100 euros in net income and another representing a decrease of 100 euros in net income. By analyzing these variables separately, we can gain insights into how the impact on support and labor participation varies across different income groups.

### 5.3.2. Re-use of the survey

**Information from this survey and the regression model**

An intriguing limitation of this study is its reliance on pre-defined UBI policies to gauge individuals' potential responses to UBI. Specifically, the mid- and high-UBI policies outlined in Section 3.4 were employed to evaluate both the impact of UBI on labor participation and the level of support garnered for each policy. However, it is worth noting that within the proposed financial budget constraints, alternative policies may emerge as more favorable options. Regrettably, due to time constraints, these alternative policies were not subjected to examination regarding their effects on labor participation. Furthermore, they were not included in the survey to assess citizens' reactions and to investigate whether the anticipated benefits in terms of health and poverty reduction would also be observed.

**The sample size**

In Tables 4.3 and 4.4, many predictors are found to be statistically insignificant, indicating a lack of evidence to conclude that their coefficients are different from 0. This could stem from the relatively small sample size of the survey.

For instance, studies like those conducted by Rincón and Hiilamo ((2019), (2022), (2023)) have larger and more representative sample sizes with 1000 well-selected respondents. In contrast, our study involved 346 respondents, which may have contributed to fewer predictors being statistically significant. The ideal number for our design with well-selected respondents would have been 810. Increasing the sample size could potentially yield more statistically significant results, making it easier to assess the impact of different UBI policies on labor participation and support. Another advantage of a large sample size is that it narrows down the confidence intervals leading to a more precise estimation of support and labor participation. Table 4.6 shows quite a large variation of these intervals which leads to insignificant effects at the scale of the Netherlands.

However, it's crucial to acknowledge that the lack of significance may also be influenced by sampling variability. With larger sample sizes, even small effects can become statistically significant. Therefore, non-significance may be a result of limited sample size rather than a true absence of an effect.

Furthermore, it's important to note that a statistically significant result doesn't necessarily imply practical significance or relevance for analysis. For example, while the effect of income on labor participation may be strongly significant, it may not be as relevant for analyzing support. Thus, careful consideration of both statistical significance and practical relevance is essential in interpreting the results.

## 5.4. Poverty: a relevant grand challenge for the Engineering and Policy Analysis program

### 5.4.1. How does poverty fit into the thematic of Engineering and Policy Analysis?

The Master Engineering and Policy Analysis program focuses centrally on the analysis and resolution of complex policy issues involving multiple stakeholders with conflicting interests. As discussed in Section 4.5, it is evident that various segments of society hold divergent perspectives on UBI. Notably, when viewed through a budgetary lens, individuals from economically disadvantaged backgrounds are reluctant to accept UBI if

it worsens their financial situation, while affluent citizens are resistant to increased tax burdens. Moreover, there exist divergent views on the relationship between labor and UBI. Elderly workers and welfare recipients perceive the potential benefits of a UBI as adequate for sustenance, whereas students, high-income earners, and part-time workers exhibit opposition. This political polarization underscores the highly contentious nature of UBI implementation, with the multi-actor dynamics elucidated in this study primarily reflecting the diverse subgroups within society rather than distinct stakeholder entities.

An indispensable facet of multi-actor and political dilemmas is their inherent difficulty or potential impossibility to resolve, a phenomenon commonly referred to as a grand challenge or a wicked problem (Rittel & Webber, 1973). Poverty serves as a prime illustration of this concept, given the perpetual existence of a segment of society experiencing destitution. This phenomenon aligns with the notion of relative poverty where there is always a poorest person in a society. In theory, this is not a problem as long as this individual has enough money for essential things like food, healthcare, and housing. However, in practice, these conditions remain unmet. This form of poverty encompasses deficiencies in standards of living, education, and social inclusion, as viewed through the lens of a capability approach (Nussbaum & Sen, 1993). Then poverty becomes a complex problem that need to be improved to the relative situation as desicribed in the United Nations Development Program (United Nations, 2023).

In addition to the multi-actor and political dimensions, the master program emphasizes system thinking and modeling. In this study, the focal system under investigation is the Dutch welfare system and its impact on poverty, labor participation, and support for UBI within the country. This system is intricately linked with the taxation system, as tax income is a prerequisite for the redistributive function of the welfare state. Therefore, as illustrated in Figure 2.2, the cornerstone of this study lies in a model that simulates the Dutch income taxation system and the redistributive effects of welfare policies. The disposable income model generates profiles for the conjoint analysis model, from which data is derived. A linear regression model is then employed to estimate the regression coefficient for support and labor participation. Subsequently, these coefficients are used to estimate the impact they have on the total labor participation in the Netherlands, and the trade-off with support is assessed.

### 5.4.2. Fundamentals for policy recommendation on the trade-off between labor participation, support, governmental budget, and poverty

Furthermore, an evaluation of poverty is conducted for both the mid-UBI and high-UBI policies proposed in the survey, along with the supported budget-neutral policies, using the disposable income model for various household configurations. These models yield several noteworthy findings that serve as valuable insights for future policy development regarding UBI. The following facts are observed if we try to combine support, labor participation, poverty reduction, budget neutrality, and marginal taxation rates of UBI policies.

- A UBI policy of 1200 euros per month per adult generates maximum support but is currently not financially viable without additional financial policies not accounted for in the model. Therefore, all policies with a 1200 euro UBI exhibit uncertainty in terms of support. The impact on labor participation is also uncertain, as tax reforms affecting income would be necessary to finance this policy. However, the identified insufficiencies in taxes, as highlighted by Ministerie van Financiën (2023), primarily target companies rather than individuals directly, thus limiting the effect on income.
- A UBI policy of 630 euros per month per adult falls within the budget constraints of this study. However, it does not sufficiently increase support for the policy, nor does it affect labor participation. As observed in the mid-UBI policy, it has the potential to increase poverty among single adult households.
- A UBI of 210 euros per month per adult garners relatively low support but increases labor participation, as it leads to a decrease in disposable income for several sub-groups, particularly high-income individuals with a risk of decreasing labor participation for second earners and women. To enhance support, it needs to be paired with rent allowance, the most effective allowance for poverty reduction in the Netherlands, albeit contributing to the welfare cliff.
- The financial policy of making UBI taxable garners the most support for UBI since it taxes back a larger proportion of UBI from the wealthiest members of society. However, this policy is less effective in poverty reduction since it also taxes back UBI from poorer individuals. Although effective in financing high levels of UBI, it is less effective for mid and low values.

- Conversely, removing tax deductions garners lower support as it has the potential to significantly reduce labor income but increases labor participation. However, it is effective in reducing poverty, especially among low-income citizens who are less affected by tax deductions than high-income individuals. Additionally, it effectively reduces marginal taxation rates and is the most efficient means of financing UBI, leading to the largest increase in the governmental budget.
- Increasing income tax is not an effective means of increasing governmental finance and is therefore not recommended in this policy advice. Further research could explore its interaction effect with making UBI taxable and removing tax deductions.
- Health allowance was not included in this assessment due to its lesser effectiveness in poverty reduction, impact on labor participation, and minimal increase in support.
- The absence of all allowances is highly effective in removing the middle part of the welfare cliff and increasing labor participation, as low- and mid-income individuals depend on these allowances. Interestingly, in the political analysis there is support for the idea, but in the regression analysis, it decreases support.
- Only rent allowance, as also indicated by Olsthoorn et al., is effective in combination with UBI for poverty reduction. However, it increases marginal taxation rates by 24%.
- A UBI policy of 300 euros per child is essential for increasing support for UBI and has minimal effect on labor participation. It is also crucial for poverty reduction, as families with children receive substantial governmental support in the current system. Exploring the support for a 0 euro per child UBI could elucidate whether the freed budget can finance a 1200 euro per child UBI.
- UBI policies of 185 and 100 euros per child are not recommended as they are too low to effectively combat poverty and do not increase support for UBI.

# 6

# Conclusion

In conclusion, this research highlights the broad range of government financial aid available in the Netherlands, which caters to various segments of the population through a variety of support programs. As stated by Olsthoorn et al. (2020), this assistance spans from direct monetary aid, such as allowances and welfare payments targeting socioeconomically disadvantaged individuals, to tax deductions and mortgage interest tax relief primarily benefiting higher-income groups. Consequently, this system contributes to income inequality in governmental aid, with lower-income individuals facing disproportionate marginal taxation compared to their wealthier counterparts, potentially perpetuating a cycle of poverty that is difficult to escape with an increase in labor participation. Considering the widespread presence of governmental support, there emerges the idea of streamlining the system by implementing universal assistance for all Dutch citizens through a monthly Universal Basic Income (UBI). This study aims to investigate eight essential questions crucial to the ongoing discussion on UBI.

1. What are potential financial policies for UBI?
2. Which specific groups within the Dutch population may differ in behavioral patterns from the rest of the population in response to UBI?
3. How does UBI affect marginal taxation rates?
4. How will labor participation patterns evolve in the Netherlands under different UBI policies?
5. What is the trade-off between labor participation and support for UBI policies?
6. What UBI policies are budget-neutral and supported?
7. How does UBI affect poverty?
8. How would Dutch citizens allocate their financial resources and utilize their time if UBI were implemented in the Netherlands?

This study analyzes all these questions through the impact UBI has on the disposable income of the recipient.

## 6.1. Answer of the research questions

To finance UBI, two different approaches are seen in academic literature: the restructuring of the welfare policies and the increase in tax revenue by increasing taxes or introducing new ones. One of the pivotal welfare policies in the Netherlands is the allowances system. While highly effective in mitigating poverty, these allowances also contribute significantly to the welfare cliff phenomenon, wherein individuals face exceptionally high marginal tax rates, at times surpassing 100%. Eliminating these allowances proves to be an effective strategy for eradicating the welfare cliff for individuals earning more than 27,000 euros annually. This is because each allowance incrementally adds to the marginal tax rate by approximately 14% (health allowance) to 24% (rent allowance), as they are gradually phased out with increasing income levels. However, the elimination of these allowances could potentially exacerbate poverty among single parents, as they heavily rely

on these allowances for financial support, which may outweigh the benefits received from certain forms of UBI. This is the reason that removing the allowances increases labor participation, and decreases the support for UBI. From a financial perspective, all the allowances put together represent 27 billion euros of the government budget to finance UBI.

Among all the allowances, the rent allowance stands out as the most effective in reducing poverty. Therefore, it remains a significant consideration alongside a lower UBI policy, particularly since it only marginally decreases labor participation but increases support for UBI. The childcare allowance is effective in increasing labor participation, especially among second earners and women. However, this allowance is heavily criticized in the Netherlands. Making childcare free is therefore strongly present on the political agenda.

One challenge of UBI lies in addressing the welfare cliff at the lower end of the income spectrum. Despite facing marginal tax rates of 100% or higher on welfare payments, this policy remains indispensable, even under a UBI framework. Failing to address this issue could lead to the emergence of extreme poverty, given that individuals receiving welfare payments also rely on allowances. Utilizing welfare payments and allowances to fund UBI would result in a drastic reduction in income for the most economically disadvantaged individuals. Therefore, addressing the welfare cliff between 0 and 14,400 euros of gross income proves to be unfeasible within the current governmental budgetary constraints.

The second facet of current financial support that could potentially contribute to financing UBI pertains to tax deductions and inefficiencies within the tax system. These policies play a pivotal role in augmenting net income and reducing the overall amount of income tax paid, particularly for individuals earning less than 23,000 euros in gross income. Beyond this income threshold, tax deductions result in a gradual increase of the marginal taxation rates, with rates increasing by 3% up 37,000 euros and 9% untill 77,000 euros, and 6.5% afterwards. For individuals with moderate incomes, these deductions constitute a substantial proportion of their total income. However, considering that tax deductions represent up to 76 billion euros, they warrant careful consideration as a potential source of financing for UBI. Also, Removing the tax deductions would lead to an increase in labor participation since it lowers the income from labor for a vast majority of Dutch workers. Consequently, it also decreases the support for the UBI policy. However, since it is affecting higher income more than lower income, this policy is interesting to reduce poverty.

Another proposed policy involves making UBI taxable by integrating its annual value into an individual's existing income and computing taxes based on the combined total. This strategy aims to reclaim UBI funds from the wealthiest individuals, thereby reinforcing the progressive taxation system. This policy is particularly intriguing when coupled with the tax deduction system, as demonstrated in this experiment, where mid- and low-income citizens may experience greater benefits from UBI compared to higher-income individuals. Additionally, this approach has minimal impact on labor participation but increases support for UBI. It also has a non-negligible impact on government finances, as with a UBI of 1200 euros per adult per month, it generates an additional 71 billion euros in income tax revenue. However, since it also taxes income from lower-income citizens, making UBI taxable is not the most effective policy in reducing poverty.

If we examine the impact of implementing a high UBI policy of 1200 euros per month, with an additional 300 euros per child, financed through the removal of allowances and tax deductions, and compare it to a mid-UBI policy of 630 euros per month, with an additional 185 euros per child, financed by making UBI taxable and removing the allowance, the results indicate an average increase of 0.89 hours of labor per week for the Netherlands under the high UBI policy. However, the degree of this increase is subject to uncertainty, as evidenced by the wide range of the confidence interval, which spans from a decrease of 1.67 hours per week to an increase of 3.44 hours per week.

Similarly, the mid-UBI policy shows an anticipated average increase in labor participation of 1.60 hours per week, with a confidence interval ranging from a decrease of 0.85 hours per week to an increase of 4.05 hours per week. This uncertainty in estimates is attributed to the relatively small sample size (346 respondents), leading to larger confidence intervals. With a larger sample size (over 810), the estimates would likely be more precise.

From the academic literature, several demographic groups have emerged as populations of interest: women and part-time workers, single parents and families with children under the age of 5, citizens dependent on welfare payments, and young and elderly workers. However, when analyzing the regression model for both support and labor participation, only single parents and citizens receiving welfare payments exhibit different behaviors: while they increase labor participation through all values of their confidence interval, they do not

support UBI. This can be understood through the lens of income, as these groups are at risk of losing the most income under UBI, particularly if they are living in single adult households.

Additionally, demographic elements introduced in the regression model, such as current income, housing type, and general net wealth, warrant attention as more interesting sub-part of the population. Income is particularly significant, as higher-income citizens may choose to reduce labor participation more than lower-income citizens. This outcome aligns with the individualistic nature of respondents' responses, which was a deliberate focus of the research aimed at tailoring the survey budget to each respondent. Housing type reveals intriguing patterns of support; homeowners may exhibit lower support for UBI compared to individuals residing in social housing. These factors strongly contribute to an individual's wealth, which plays a pivotal role in eligibility for allowances. Citizens receiving allowances tend to derive less benefit from UBI compared to those with higher wealth levels if not taxed back appropriately. The survey data from this study also highlights students as an intriguing group worth noting. Despite often belonging to the young and economically disadvantaged demographic, their perspectives on UBI diverge from those typically associated with these groups. Instead, their views align more closely with those of wealthier members of society. This unexpected pattern suggests that students may not adhere to the conventional logic whereby an increase in income correlates with greater support for UBI as seen in other groups. This phenomenon could be attributed to the unique circumstances of students, who, while currently experiencing financial constraints, may anticipate improved prospects and financial stability in the future.

The trade-off between labor participation and support becomes evident when examining disposable monthly income. Different UBI policies exhibit distinct patterns in terms of both support and labor participation. Among the policies considered, the mid-UBI option of 630 euros per month appears to be the most intriguing, as it not only enhances support but also stimulates labor participation. Conversely, the high UBI policy, offering 1200 euros per month, is associated with a decline in labor participation, attributed to the substantial increase in disposable income it affords. However, despite this decline, it garners the highest level of support. These effects tend to balance out the effect of no tax deduction.

Utilizing the trade-off coefficients alongside their governmental budget implications enables the creation of policies that are both budget-neutral and garner high support. Three particularly noteworthy policies emerge a high UBI, made taxable, a mid-UBI funded through tax deductions, and a low UBI, also taxable. Each of these policies includes a high UBI per child and retains rent allowances. However, it's crucial to highlight that further research is needed, particularly regarding the impact of several financial policies of the high UBI police on support was not explored in this study.

The impact of UBI on poverty reveals a distinct pattern, with single adult households, particularly single parents, emerging as the primary demographic at risk of increased poverty. Interestingly, only the high-supported policies featuring rent allowances show potential for increasing the income of single adult households without children. Conversely, single parents appear to (fare) worse across all five proposed policies. In contrast, for multi-adult households, UBI presents an effective strategy for poverty alleviation, as the disposable incomes of these groups increase under all five proposed policies. To make UBI successful, a paradigm shift in policy is necessary to stop encouraging individual living which is currently prevalent in the Netherlands where the current welfare system may disincentivize increasing household size due to loss of allowances, UBI could encourage cohabitation and discourage living alone.

Furthermore, if we look at the second part of this study, focusing on measuring if potential benefits from UBI seen in literature also might occur in the Netherlands the following conclusions can be drawn. The implementation of a high UBI policy may prompt job relocation, particularly among secondary earners, women, part-time workers, and young adults, notably students, leading to a temporary decline in labor participation. Nevertheless, this outcome could prove advantageous if individuals subsequently reintegrate into the labor force in more suitable roles. Similarly, this study underscores UBI's potential to improve the health of Dutch citizens by reducing stress and other mental health issues, enhancing food quality, and physical activity levels, and expanding access to healthcare. Specifically, households with children and those receiving welfare payments anticipate significant stress reduction and improved dietary habits. Also, in line with the disposable income conclusions, individuals from the lower and middle-income brackets living in multiple-adult households indicate their intention to save more. These societal trade-offs merit careful consideration.

## 6.2. Universal Basic Income: an introduction strategy and policy advice

Implementing UBI requires careful planning and consideration, especially given its political sensitivity. A camel nose strategy, which involves implementing a policy gradually, can be effective in this regard. Here are the recommended steps for implementing UBI:

1. UBI proves to be highly effective in alleviating poverty for multi-adult households. Consequently, a paradigm shift in policy is necessary to stop encouraging individual living which is currently increasingly prevalent in the Netherlands, echoing the neo-liberal notion of economies of scale. The study unequivocally demonstrates that single adult households are worse off than now under UBI. Without embracing this socio-political shift, the successful implementation of UBI in the Netherlands remains doubtful.
2. A low-taxable UBI per adult, coupled with a high UBI per child and complemented by rent allowance and free childcare, emerges as a surprisingly promising policy for poverty reduction and mitigating a part of the welfare cliff.
3. Further research is needed to understand the impact of eliminating inefficient taxes to fund higher UBI policies. This is crucial in financing mid to high-levels of UBI and should be explored thoroughly.
4. Based on the findings and the need for further research mentioned in point 3, I would suggest gradually increasing UBI from 210 euros per month to 630 euros per month. This level of UBI shows some improvement in quality of life without causing a significant decline in labor participation. The potential benefits include reduced stress, improved health, better access to healthcare, and higher quality food, which are important for a developed country like the Netherlands.
5. Once UBI reaches 630 euros per month, it can be evaluated whether to increase it further to 1200 euros per month. This decision would depend on research into other forms of taxation and effective ways to tax UBI from the wealthiest individuals to prevent a decline in labor participation. If UBI is increased, removing the rent allowance to smooth out marginal taxation is recommended.

# References

## References


Aalbers, R., & Roos, A.-F. (2022). Zorguitgaven, ons een zorg? *Centraal Plan Bureau*.

Achterberg, P., & Houtman, D. (2006). Why do so many people vote 'unnaturally'? a cultural explanation for voting behaviour. *European Journal of Political Research*, *45*(1), 75–92.

Advalvas VU. (2024). *Studenten hoeven minder te werken voor hun geld.* (https://advalvas.vu.nl/wetenschap-onderwijs/europese-studenten-hoeven-minder-te-werken-voor-hun-geld/)

Aerts, E., Marx, I., & Verbist, G. (2023). Not that basic: How level, design and context matter for the redistributive outcomes of universal basic income. *IZA Discussion Paper No. 15952*.

Allas, T., Maksimainen, J., Manyika, J., & Singh, N. (2020). An experiment to inform universal basic income. *McKinsey & Company*.

Allers, M. A., & Elhorst, J. P. (2005). Tax mimicking and yardstick competition among local governments in the netherlands. *International tax and public finance*, *12*, 493–513.

Arbeidsinspectie. (2023). *Niet-gebruik toeslagenwet leidt tot leven onder sociaal minimum.* (https://www.nlarbeidsinspectie.nl/actueel/nieuws/2023/10/25/niet-gebruik-toeslagenwet-leidt-tot-leven-onder-sociaal-minimum)

Banerjee, A. V., & Duflo, E. (2007). The economic lives of the poor. *Journal of economic perspectives*, *21*(1), 141–167.

Banerjee, A. V., Duflo, E., & Kremer, M. (2016). The influence of randomized controlled trials on development economics research and on development policy. *The state of Economics, the state of the world*, 482–488.

Belastingdienst. (2023). *Werken bij de belastingdienst.* https://werken.belastingdienst.nl/daarom-de-belastingdienst#:~:text=Onze%20ruim%2020.000%20medewerkers%20werken,kunnen%20maken%20van%20hun%20rechten..

Berkhout, E., Koot, P., & Bosch, N. (2019). *Gebruik (en niet-gebruik) van toeslagen in nederland [take-up (and non-take-up) of benefits in the netherlands].* The Hague: CPB Netherlands Bureau for Economic Policy Analysis. Available at ....

Betkó, J. (2023). *Effects of welfare policies based on autonomy and unconditionality: A social experiment with social assistance recipients* (Unpublished doctoral dissertation). Sl: sn.

Bidadanure, J. U. (2019). The political theory of universal basic income. *Annual Review of Political Science*, *22*, 481–501.

Boone, J., Marchal, S., Marx, I., Van Cant, L., Van Lancker, W., & Verbist, G. (2018). *Feit en fictie omtrent het basisinkomen in nederland: een wetenschappelijke verkenning mogelijk gemaakt door instituut gak* (Unpublished doctoral dissertation). Universiteit Antwerpen.

Bos, J., & Verberk-De Kruik, M. (2019). Inkomenseffecten van het basisinkomen 2.0. *NIBUD*. (https://basisinkomen.nl/wp-content/uploads/Inkomenseffecten-basisinkomen.pdf)

Bos, R. (2023). *Hoeveel moet je per maand sparen?* (https://www.quest.nl/maatschappij/economie/a44873867/hoeveel-sparen-per-maand/)

Calnitsky, D., & Gonalons-Pons, P. (2021). The impact of an experimental guaranteed income on crime and violence. *Social Problems*, *68*(3), 778–798.

Calnitsky, D., & Latner, J. P. (2017). Basic income in a small town: Understanding the elusive effects on work. *Social Problems*, *64*(3), 373–397.

Caminada, C., Jongen, E., Bos, W., Brakel, M., & Otten, F. (2021). Inkomens verdeeld, 40 jaar in vogelvlucht. *CBS-Webmagazine*(14 October 2021).

Centraal Bureau Voor de Statistiek. (2021). *Arbeidseelname van de nederlandse bevolking gesoorteerdd op geslacht en leeftijd.* https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82309NED/table?dl=9C20A.

Centraal Bureau voor de Statistiek. (2022). *Bank- en spaartegoeden sterk toegenomen.* (https://www.cbs.nl/nl-nl/nieuws/2022/42/bank-en-spaartegoeden-sterk-toegenomen)

Centraal Bureau Voor de Statistiek. (2023a). *Huishoudens nu.* https://www.cbs.nl/nl-nl/visualisaties/dashboard-bevolking/woonsituatie/huishoudens-nu#:~:text=Hoeveel%20huishoudens%20zijn%20er%20in,gemiddelde%20huishoudensgrootte%20nog%203%2C53.

Centraal Bureau Voor de Statistiek. (2023b). *Personen met bijstand.* https://www.cbs.nl/nl-nl/cijfers/detail/82016NED#.

Centraal Bureau Voor de Statistiek. (n.da). *Inkomensverdeling nederland.* https://opendata.cbs.nl/statline/?dl=D4D1#/CBS/nl/dataset/83931NED/tabl.

Centraal Bureau Voor de Statistiek. (n.db). *Mannen en vrouwen.* https://www.cbs.nl/nl-nl/visualisaties/dashboard-bevolking/mannen-en-vrouwen.

Centraal Bureay Voor de Statistiek. (2023). *Samenstelling beroepsbevolking.* The Hague. (https://www.cbs.nl/nl-nl/visualisaties/dashboard-beroepsbevolking/deeltijd)

Centraal Bureay Voor de Statistiek. (2024). *Voorraad woningen.* The Hague. (https://opendata.cbs.nl/CBS/nl/dataset/82900NED/table)

Chrisp, J., Pulkka, V.-V., & García, L. R. (2020). Snowballing or wilting? what affects public support for varying models of basic income? *Journal of International and Comparative Social Policy*, *36*(3), 223–236.

Costello, E. J., Erkanli, A., Copeland, W., & Angold, A. (2010). Association of family income supplements in adolescence with development of psychiatric and substance use disorders in adulthood among an american indian population. *Jama*, *303*(19), 1954–1960.

CPB. (2023). *Keuze in kaart 2025-2028.* https://www.cpb.nl/sites/default/files/omnidownload/Keuzes-in-Kaart-2025-2028.pdf.

De Nederlandse Bank. (2023). *Wat mensen prikkelt om meer of minder te werken?* https://www.dnb.nl/algemeen-nieuws/dnbulletin-2023/wat-mensen-prikkelt-om-meer-of-minder-te-werken/#:~:text=Eind%20vorig%20jaar%20werkten%204,kan%20dit%20de%20krapte%20verlichten.

De Volkskrant. (2022). *Doneer je 190 euro energietoeslag en andere manieren om geld te delen in december.* (https://www.volkskrant.nl/beter-leven/doneer-je-190-euro-energietoeslag-en-andere-manieren-om-geld-te-delen-in-december~b7012ed8/?referrer=https://www.google.com/)

De Boer, H., Bolhaar, J., Jongen, E., & Zulkarnain, A. (2020). Evaluatie experimenten participatiewet: Effecten op de uitstroom naar werk. *Evaluatie experimenten Participatiewet: Effecten op de uitstroom naar werk.*, 1–68.

Del Boca, D. (2015). *Child care arrangements and labor supply* (Tech. Rep.). idb working paper series.

Del Boca, D., Pasqua, S., & Pronzato, C. (2008). Motherhood and market work decisions in institutional context: a european perspective. *Oxford Economic Papers*, *61*(suppl_1), i147–i171.

Denktank Basisinkomen. (2023). *Eerlijker & eenvoudiger: het bescheiden basisinkomen.* Internal communication between Alexander de Roo, GronLinks and Denktank Basisinkomen. (This was a preparation for the GroenLinks Party Congress)

Derks, A. (2006). Populism and the ambivalence of egalitarianism. how do the underprivileged reconcile a right wing party preference with their socio-economic attitudes? *World Political Science*, *2*(3).

De Wispelaere, J., Halmetoja, A., & Pulkka, V.-V. (2018). The rise (and fall) of the basic income experiment in finland. In *Cesifo forum* (Vol. 19, pp. 15–19).

Eurostat. (2023). *Part-time and full-time employment - statistics.* https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Part-time_and_full-time_employment_-_statistics#Worker_profile_and_countries.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G* power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, *39*(2), 175–191.

Fenger, M., & Simonse, R. (2024). The implosion of the dutch surveillance welfare state. *Social Policy & Administration*.

Forget, E. L. (2011). The town with no poverty: The health effects of a canadian guaranteed annual income field experiment. *Canadian Public Policy*, *37*(3), 283–305.

Gallego, A., & Marx, P. (2017). Multi-dimensional preferences for labour market reforms: a conjoint experiment. *Journal of European public policy*, *24*(7), 1027–1047.

Gielens, E., Roosma, F., & Achterberg, P. (2023). Dimensions of controversy: Investigating the structure of public support for universal basic income in the netherlands. *International Journal of Social Welfare*.

Goderis, B., Hulst, B. v., Wildeboer Schut, J. M., & Ras, M. (2018). De scp-methode voor het meten van armoede. *Sociaal en Cultureel Planbureau*.

Goderis, B., & Vlekke, M. (2023). Tax and benefit policies to reduce poverty in the netherlands: A microsimulation analysis. *International Journal of Microsimulation*, *16*(1), 108–133.

Groot, S., Mohlmann, J., & Lejour, A. (2016). *De positie van de middeninkomens op de woningmarkt (the position of medium incomes on the housing market)*. The Hague.

Hasdell, R. (2020). What we know about universal basic income. *A cross-synthesis. Standfor Basic Income Lab*.

Heijman, W. J., & van Ophem, J. A. (2005). Willingness to pay tax: The laffer curve revisited for 12 oecd countries. *The Journal of Socio-Economics*, *34*(5), 714–723.

Hoynes, H., & Rothstein, J. (2019). Universal basic income in the united states and advanced countries. *Annual Review of Economics*, *11*, 929–958.

Huertas-Garcia, R., Gázquez-Abad, J. C., & Forgas-Coll, S. (2016). A design strategy for improving adaptive conjoint analysis. *Journal of Business & Industrial Marketing*, *31*(3), 328–338.

Hum, D., & Simpson, W. (2001). A guaranteed annual income: From mincome to the millennium. *POLICY OPTIONS-MONTREAL-*, *22*(1), 78–82.

Ince, D. (2021). *Cijfers over armoede in gezinnen*. `https://www.nji.nl/cijfers/armoede-gezinnen#:~:text=Minderjarige%20kinderen%20met%20risico%20op,gezin%20met%20een%20laag%20inkomen.`

Independer.nl. (2024). *Maximale hypotheek*. (`https://www.independer.nl/hypotheek/info/maximale-hypotheek-berekenen?refer=adwordshypotheek-touch08&gad_source=1&gclid=Cj0KCQjwwMqvBhCtARIsAIXsZpbnUHTwSNxofjO77Yp9SUbkNhpVtqWCDkN9gANIs9jLPa9O0cu4BdUaAhDOEALw_wcB`)

ING Bank. (2018). *'basisinkomen? meerderheid ziet het eigenlijk niet zitten'*. `https://www.ing.nl/media/ING_EBZ_basisinkomen_tcm162-151961.pdf.`

I&O research. (2020). *Basisinkomen: nu meer voor- dan tegenstanders*. `https://www.ioresearch.nl/actueel/basisinkomen-nu-meer-voor-dan-tegenstanders/.`

Jacobs, B., Jongen, E. L., & Zoutman, F. T. (2017). Revealed social preferences of dutch political parties. *Journal of Public Economics*, *156*, 81–100.

Jones, D., & Marinescu, I. (2022). The labor market impacts of universal and permanent cash transfers: Evidence from the alaska permanent fund. *American Economic Journal: Economic Policy*, *14*(2), 315–340.

Jongen, E., De Boer, H.-W., & Dekker, P. (2014). Micsim–a behavioural microsimulation model for the analysis of tax-benefit reform in the netherlands. *CPB Background Document*, *27*.

Jongen, E., de Boer, H.-W., & Dekker, P. (2015). De effectiviteit van fiscaal participatiebeleid, cpb policy brief. *De effectiviteit van fiscaal participatiebeleid, CPB Policy Brief*.

Kangas, O. (2021). 3. making of the finnish basic income experiment. *Experimenting with Unconditional Basic Income*, 18.

Kangas, O., Jauhiainen, S., Simanainen, M., & Ylikännö, M. (2019). The basic income experiment 2017–2018 in finland: Preliminary results. *Julkaisurakisto Valto*.

Kangas, O., & Pulkka, V. (2016). From idea to experiment: Report on universal basic income experiment in finland. *Kela Report*, *88*.

Koot, P., Kempen, M. V., Tommelen, A., & Verkade, E. (2020). Doorrekening herziening socialezekerheids- en belastingstelsel groenlinks. *CPB Policy Brief*.

Kuiiper, M., & Kaathman, R. (2015). Property valuation and taxation in the netherlands. *Land Tenure Journal*, *15*(2), 47–62.

Kuziemko, I., Norton, M. I., Saez, E., & Stantcheva, S. (2015). How elastic are preferences for redistribution? evidence from randomized survey experiments. *American Economic Review*, *105*(4), 1478–1508.

Lee, S. (2021). Politics of universal and unconditional cash transfer: Examining attitudes toward universal basic income. *Basic Income Studies*, *16*(2), 191–208.

Lewis, C. (2017). Betting on western north carolina: Harrah's cherokee casino resort's regional impacts. *Journal of Appalachian Studies*, *23*(1), 29–52.

Marinescu, I. (2018). No strings attached: The behavioral effects of us unconditional cash transfer programs. *NBER publications*.

Mastrogiacomo, M., Bosch, N. M., Gielen, M. D., & Jongen, E. L. (2017). Heterogeneity in labour supply responses: Evidence from a major tax reform. *Oxford Bulletin of Economics and Statistics*, *79*(5), 769–796.

Ministerie van Binnenaldse Zaken en Koninkrijkrelaties. (2018). *Jaarrapportage.* https://www.rijksoverheid.nl/onderwerpen/overheidspersoneel/documenten/rapporten/2018/05/01/jaarrapportage-bedrijfsvoering-rijk-2017.

Ministerie van Binnenaldse Zaken en Koninkrijkrelaties. (2022). *Trends en cijfers over aantal ambtenaren.* https://www.kennisvandeoverheid.nl/cijfers-overheidspersoneel/documenten/rapporten/2022/10/01/trends--cijfers-2022.

Ministerie van Financiën. (n.d.). *Jaarverslag 2022.* https://www.rijksfinancien.nl/visuals/2022/jaarverslag/uitgaven?graph=pie.

Ministerie van Financien. (2023). *Ambtelijk rapport aanpak fiscale regelingen.* https://www.rijksoverheid.nl/ministeries/ministerie-van-financien/documenten/rapporten/2023/06/30/ambtelijk-rapport-aanpak-fiscale-regelingen.

Ministerie van Financiën. (2023). *Feiten en cijfers over toeslagen.* https://www.overtoeslagen.nl/over-ons-werk/feiten-en-cijfers.

Ministerie van Volksgezondheid, Welzijn en Sport. (2022). *Missie en visie. over ons | zorginstituut nederland.* https://www.zorginstituutnederland.nl/over-ons/organisatie/missie-en-visie.

Ministery van Volkshuisvesting. (2024). *Werking en berekening huurtoeslag.* (https://www.volkshuisvestingnederland.nl/onderwerpen/huurtoeslag/werking-en-berekening-huurtoeslag)

Nederlands Jeugdinstituut. (2022). *Cijfers over gezinnen.* https://www.nji.nl/cijfers/gezinnen#:~:text=Gegevens%20in%20een%20tabel&text=In%202022%20zijn%20er%20596.408,eenoudergezin%2Dtweeoudergezin%20percentueel%20hetzelfde%20gebleven.

NOS. (2023). *Overheid neemt maatregelen tegen woz-bezwaarbureaus.* (https://nos.nl/artikel/2466369-overheid-neemt-maatregelen-tegen-woz-bezwaarbureaus)

Nussbaum, M., & Sen, A. (1993). *The quality of life.* Clarendon press.

OECD. (2023). Income inequality (indicator). *DOI: 10.1787/459aa7f1-en.*

Olsthoorn, M., Koot, P., Hoff, S., Ras, M., Hulst, B. v., Wildeboer Schut, J. M., ... Haard, M. (2020). *Kansrijk armoedebeleid.* Centraal Plan Bureau (CPB).

Ping Jr, R. A. (2004). On assuring valid measures for theoretical models using survey data. *Journal of business research*, *57*(2), 125–141.

Prescott, D., Swidinsky, R., & Wilton, D. A. (1986). Labour supply estimates for low-income female heads of household using mincome data. *Canadian Journal of Economics*, 134–141.

Price, D. J., & Song, J. (2018). The long-term effects of cash assistance. *Industrial Relations Section working paper*, *621*.

Priemus, H. (2014). Is the landlord levy a threat to the rented housing sector? the case of the netherlands. *International Journal of Housing Policy*, *14*(1), 98–106.

Quist, A. (2015). Marginale druk en participatiebelasting per huishoudtype in 2015. *CPB Background Document, The Hague.*

Rijksoverheid. (2023). *Marginale en gemidelde belastingdruk.* https://www.rijksoverheid.nl/onderwerpen/belastingplan/belastingplanstukken.

Rincon, L. (2023). A robin hood for all: a conjoint experiment on support for basic income. *Journal of European Public Policy*, *30*(2), 375–399.

Rincón, L., & Hiilamo, H. (2019). Understanding multidimensional preferences towards basic income policy: A conjoint experiment. In *Proceedings of ecpr general conference 2019.*

Rincón, L., Vlandas, T., & Hiilamo, H. (2022). What's not to like? benefit design, funding structure and support for universal basic income. *Journal of European Social Policy*, *32*(4), 467–483.

Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy sciences*, *4*(2), 155–169.

Robins, P. K. (1985). A comparison of the labor supply findings from the four negative income tax experiments. *Journal of human Resources*, 567–582.

Saez, E., Slemrod, J., & Giertz, S. H. (2012). The elasticity of taxable income with respect to marginal tax rates: A critical review. *Journal of economic literature*, *50*(1), 3–50.

Salkind, N. J., & Haskins, R. (1982). Negative income tax: The impact on children from low-income families. *Journal of Family Issues*, *3*(2), 165–180.

Singh, P., Brown, R., Copeland, W. E., Costello, E. J., & Bruckner, T. A. (2020). Income dividends and subjective survival in a cherokee indian cohort: a quasi-experiment. *Biodemography and social biology*, *65*(2), 172–187.

Sociaal Cultureel Planbureau. (2020). *Willen vrouwen meer werken, en mannen minder?* (https://digitaal.scp.nl/emancipatiemonitor2020/willen-vrouwen-meer-werken-en-mannen-minder)

Stadelmann-Steffen, I., & Dermont, C. (2020). Citizens' opinions about basic income proposals compared–a conjoint analysis of finland and switzerland. *Journal of Social Policy*, *49*(2), 383–403.

Standford Basic Income Lab. (2024). *Experiment map.* (https://basicincome.stanford.edu/experiments-map/)

SurveyCicle. (n.d.). *Respondenten gezocht?vind respondentenen ondersteun onderzoek.in de grootste community voor online onderzoek.* (https://www.surveycircle.com/nl/surveycircle)

SurveySwap. (n.d). *Find survey participants today.* https://surveyswap.io/nl/students.

United Nations. (2023). *Global multidimensional poverty index.* (https://hdr.undp.org/content/2023-global-multidimensional-poverty-index-mpi#/indicies/MPI)

van der Mooren, F., & de Vries, R. (2022). *Steeds meer hoogopgeleiden in nederland: wat voor beroep hebben ze?* Centraal Bureau voor de Statistiek. (https://www.cbs.nl/nl-nl/longread/statistische-trends/2022/steeds-meer-hoogopgeleiden-in-nederland-wat-voor-beroep-hebben-ze-?onepage=true:~:text=Was20in20198120nog2011,tot20752Djarigen20in202021.)

van Elk, R., Griffioen, E., Verberk, M., & Weyzig, F. (2023). *Doorrekening beleidsopties voor terugdringen armoede.* (https://www.cpb.nl/sites/default/files/omnidownload/CPB-Publicatie-Doorrekening-beleidsopties-voor-terugdringen-armoede.pdf)

van Gils, s. (2020). Vermindering armoede mogelijk maar kost geld en banen. *Sociaal en Cultureel Planbureau.*

Van Parijs, P. (2004). Basic income: a simple and powerful idea for the twenty-first century. *Politics & Society*, *32*(1), 7–39.

Van Parijs, P. (2020). Basic income: Finland's final verdict. *Recuperado de https://socialeurope. eu/basic-income-positive-results-from-finland.*

Van Ravestein, A., & Vijlbrief, H. (1988). Welfare cost of higher tax rates: An empirical laffer curve for the netherlands. *De Economist*, *136*(2), 205–219.

Wales Governement. (2023). *Basic income for care leavers in wales, pilot announced.* https://www.gov.wales/basic-income-care-leavers-wales-pilot-announced.

Widerquist, K. (2017). The basic income guarantee experiments of the 1970s: a quick summary of results. *Basic Income News.*

Wispelaere, J. D., & Noguera, J. A. (2012). On the political feasibility of universal basic income: An analytic framework. In *Basic income guarantee and politics: International experiences and perspectives on the viability of income guarantee* (pp. 17–38). Springer.

# A

# Appendix A: Welfare cliff and Income

## A.1. Assumptions of the welfare cliff

The assumptions behind Figure 1.1 are:

1. Citizens earning less than 43.000 euros gross income have a lower total asset value than 37.000 euros. This entitles them to rent and health allowances.
2. Citizens earning less than 43.000 euros of gross income have a rent of 850 euros per month. This is the maximum rent that allows you to obtain rent allowance.
3. Citizens earning more than 43.000 euros gross income have a lower total asset value than 177.000 euros. This entitles them to child-specific and childcare allowances.
4. The different household types are stereotyped households as defined by J. Bos and Verberk-De Kruik (2019). They are:
   (a) Single person
   (b) Single-parent with two children
   (c) Two-person households with one earner
   (d) Two-person households with one earner and two children
   (e) Two-person households with two earners earning the same
   (f) Two-person households with two earners earning the same with two children
   (g) Two-person households with one earner earning 66% and the other 34% of the income
   (h) Two-person households with one earner earning 66% and the other 34% of the income with two children
5. The children in the household are younger than 5
6. The childcare allowance is based on 42 hours per month of childcare per child (10 hours per week).
7. The cost of Childcare are 7 euros per hour (the maximum allowed to obtain the allowance)

## A.2. Individual plot of the welfare cliff for every household type

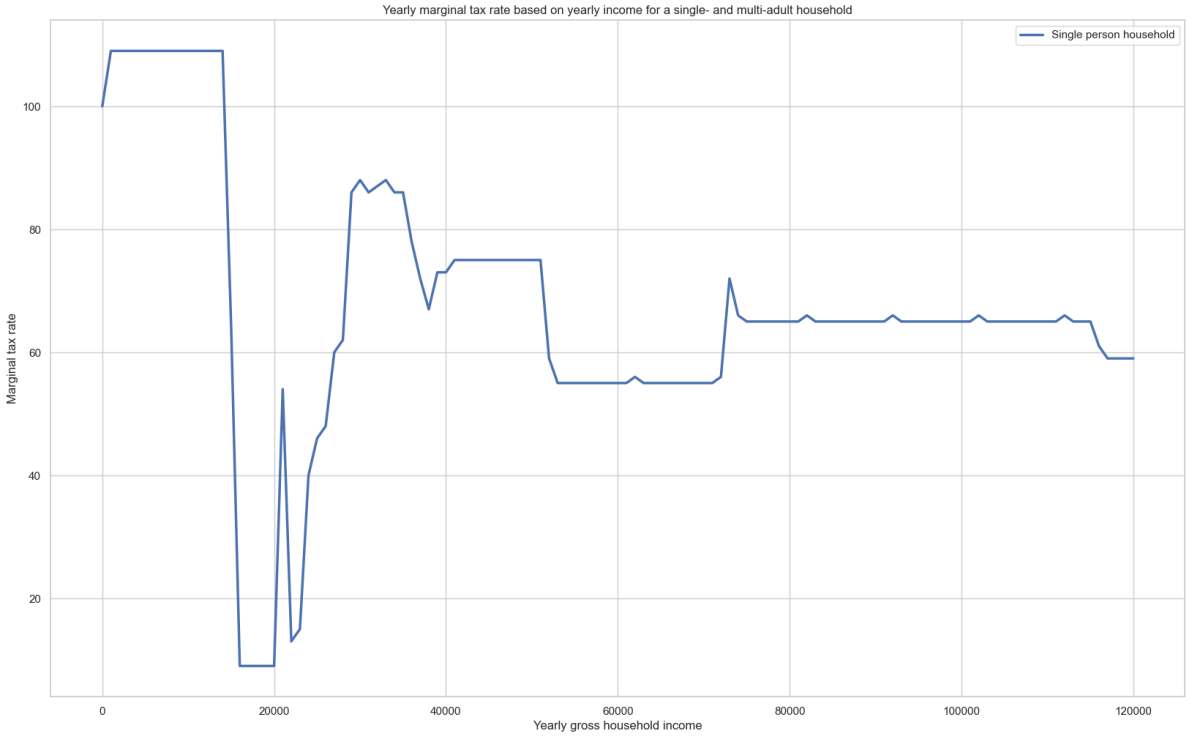



Figure A.1: Marginal taxation rate for an individual household

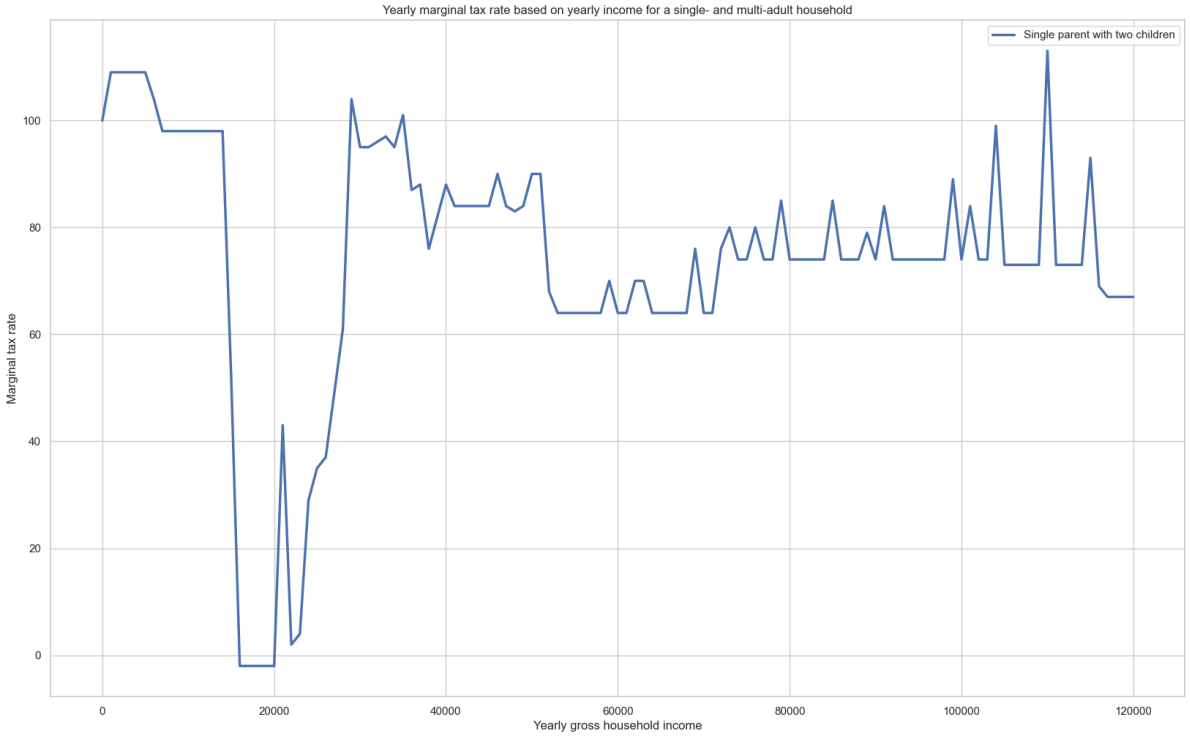



Figure A.2: Marginal taxation rate for a single parent with two children

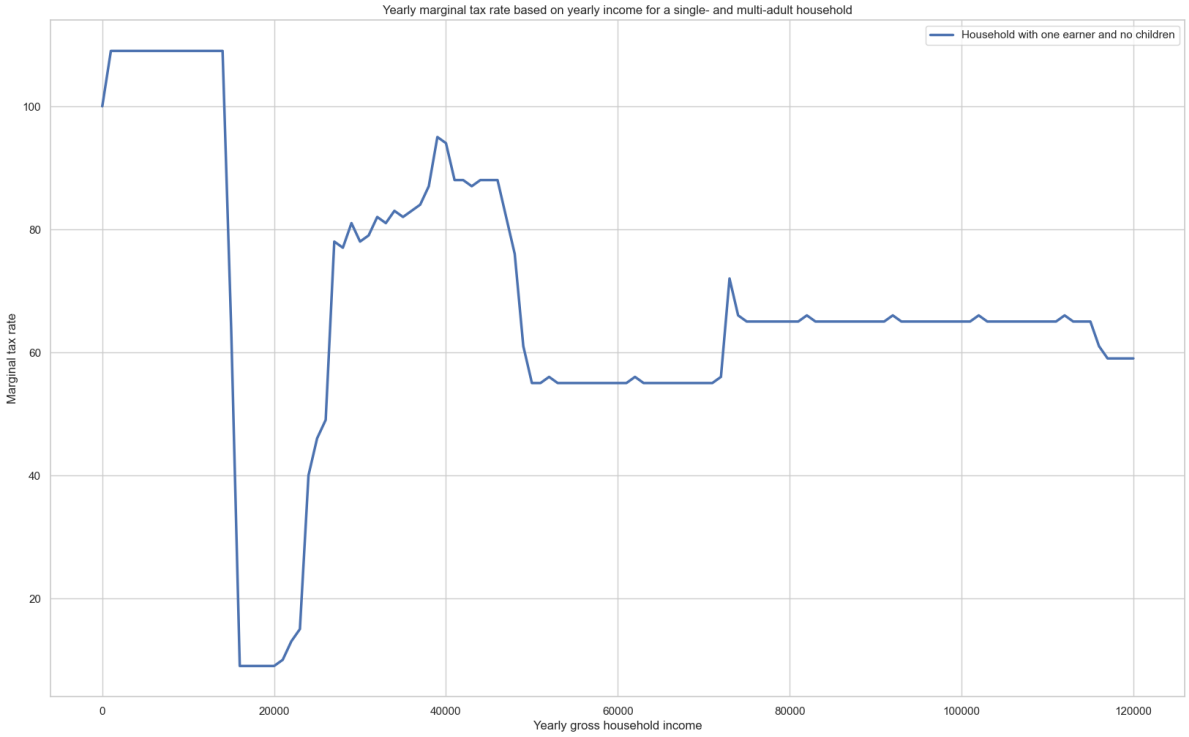



Figure A.3: Marginal taxation rate for a two-person household with no children

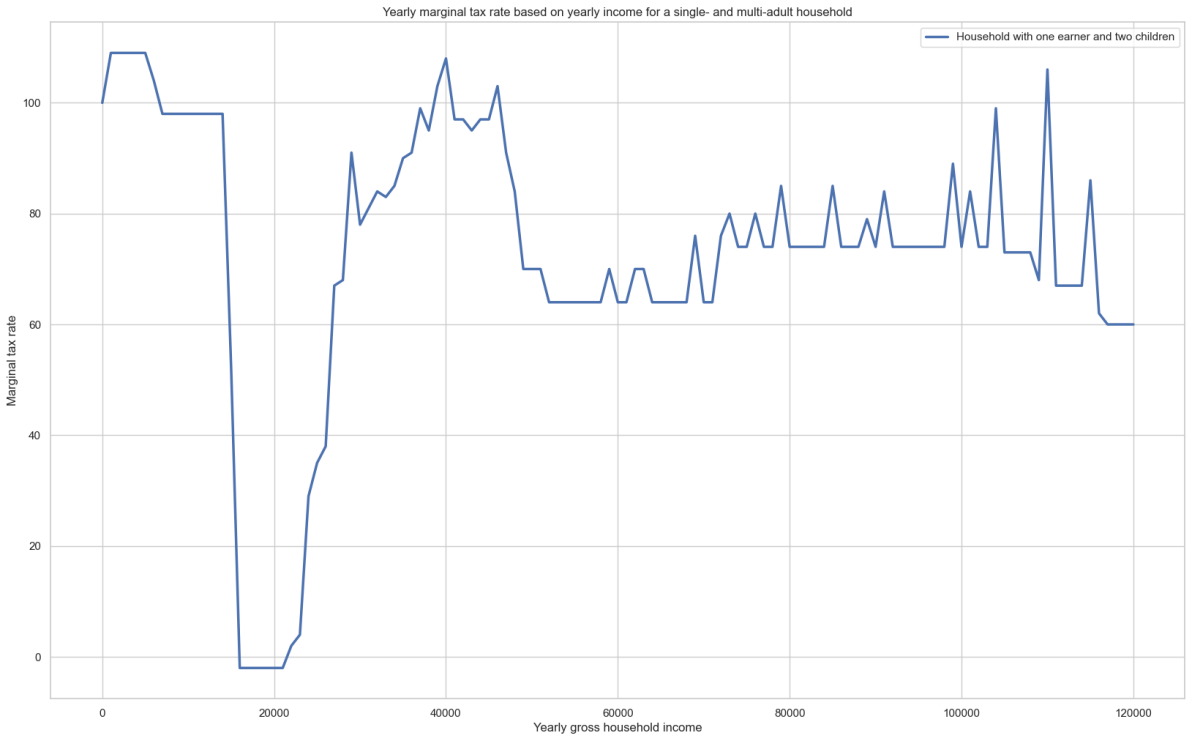



Figure A.4: Marginal taxation rate for a two-person household with no children

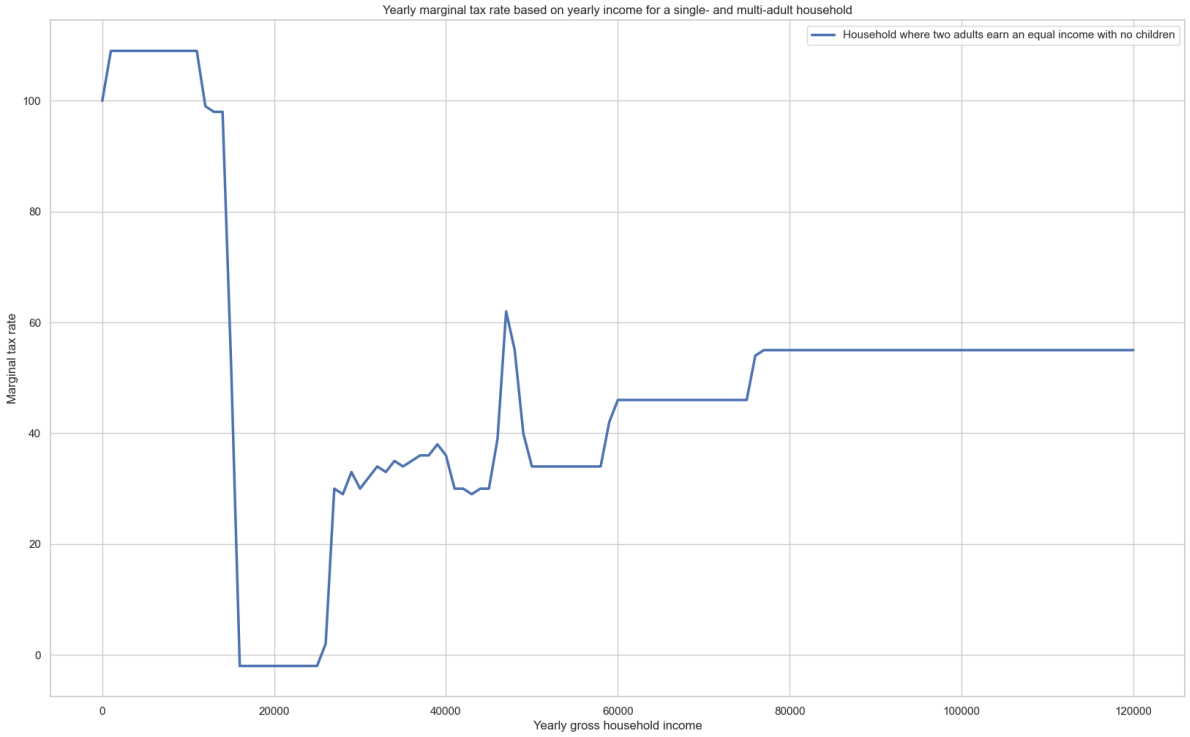



Figure A.5: Marginal taxation rate for a two-person household earning the same with no children

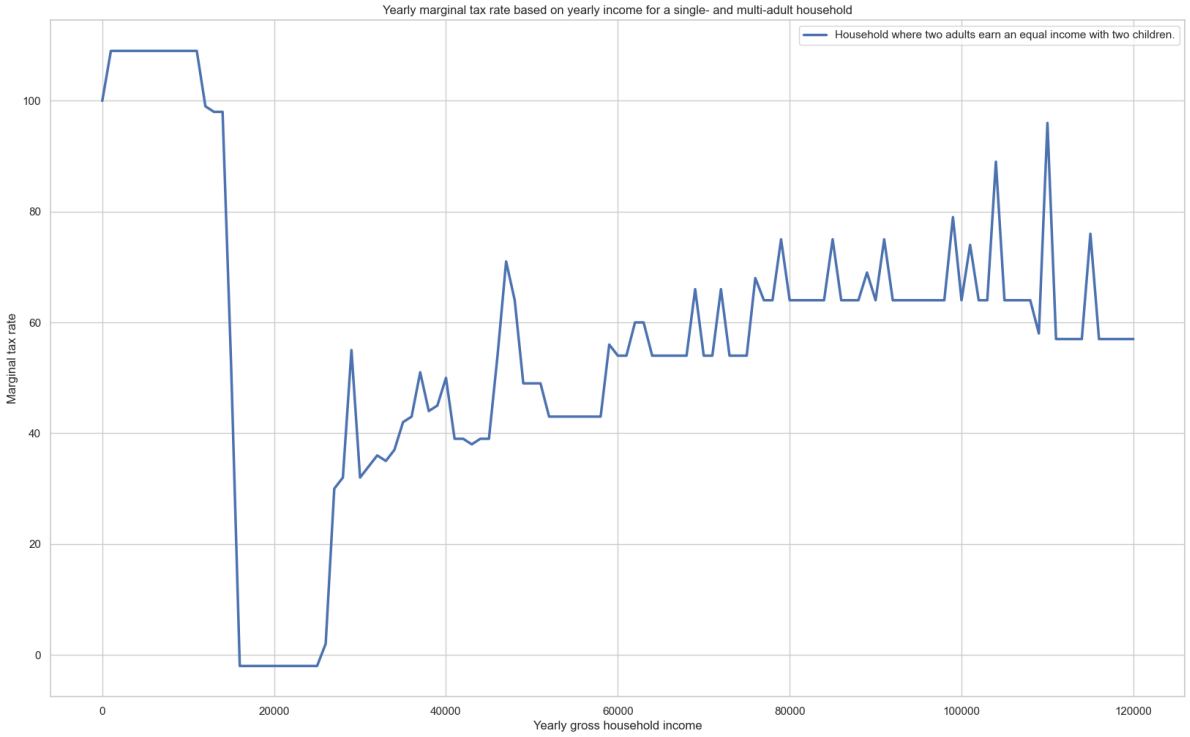



Figure A.6: Marginal taxation rate for a two-person household earning the same with two children

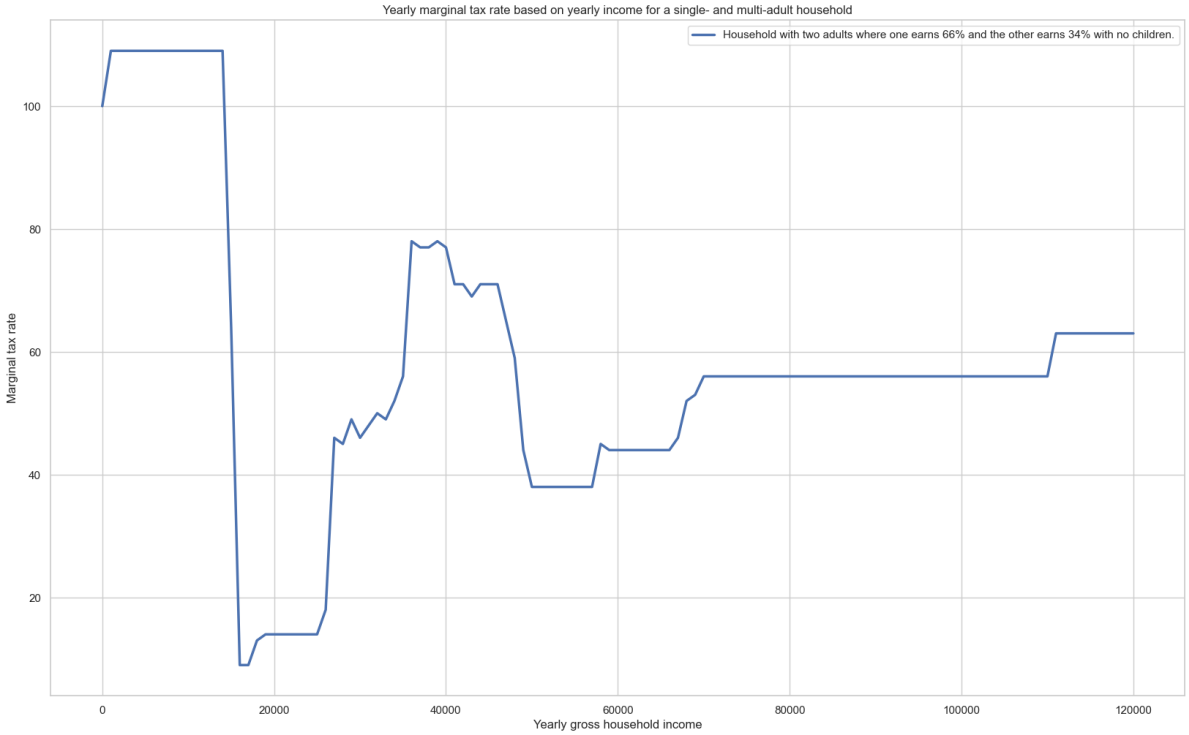



Figure A.7: Marginal taxation rate for a two-person household where one is earning 66% of the income and the other 34% with no children

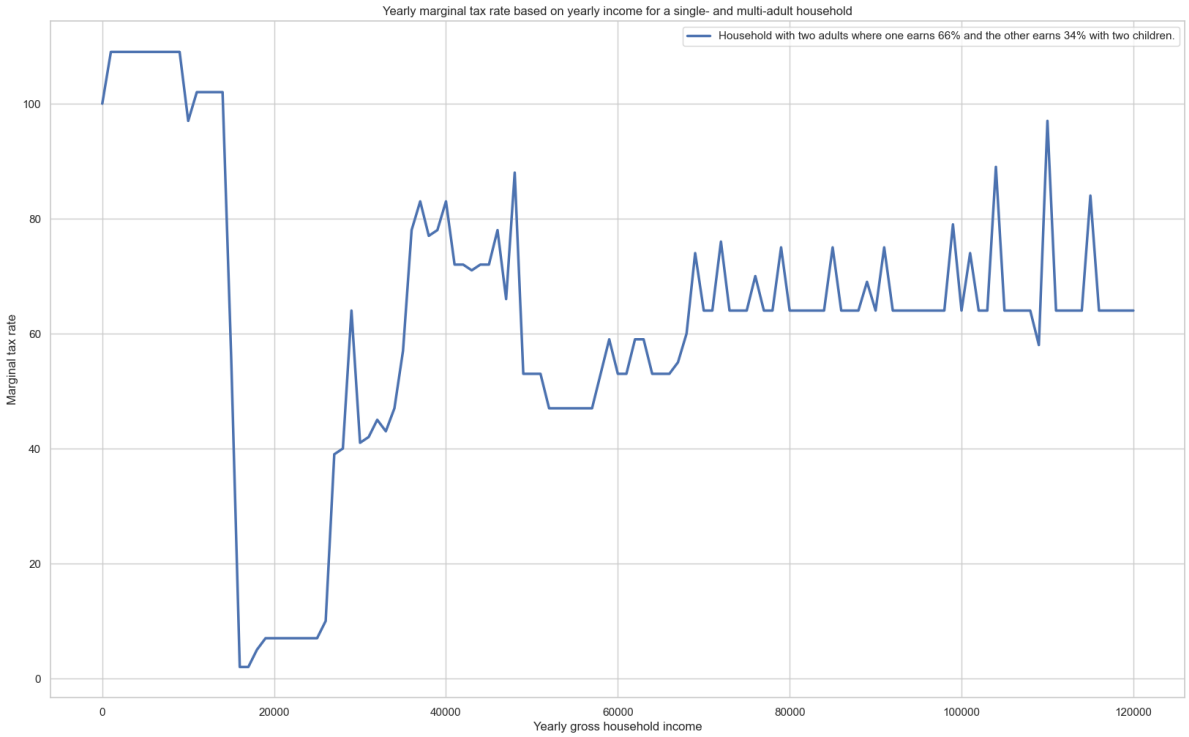



Figure A.8: Marginal taxation rate for a two-person household where one is earning 66% of the income and the other 34% with two children

## A.3. Change in income due to high- and mid-UBI policies

It's crucial to acknowledge that these graphs do not consider the cost of loss of mortgage rate deduction, which can significantly impact the increase in disposable income, particularly for higher-income earners.

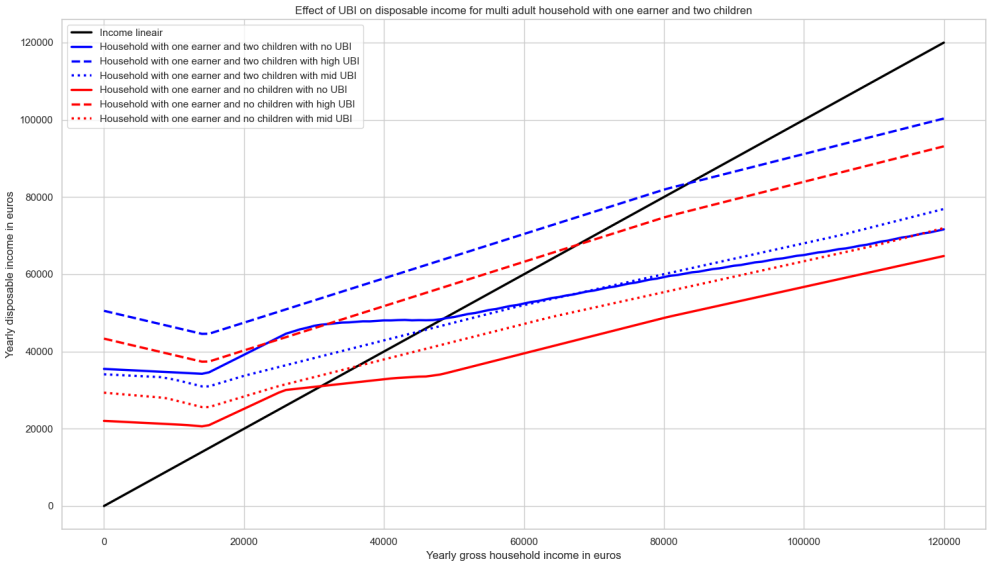



Figure A.9: Income for a household with two adults and one earner

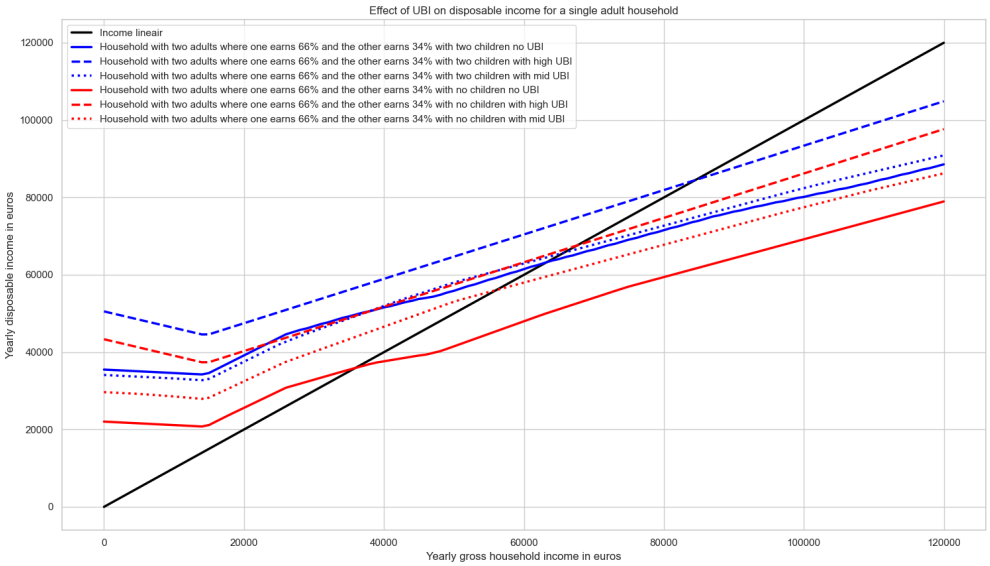



Figure A.10: Income for a household with two earners one earning 66% and the other 34%

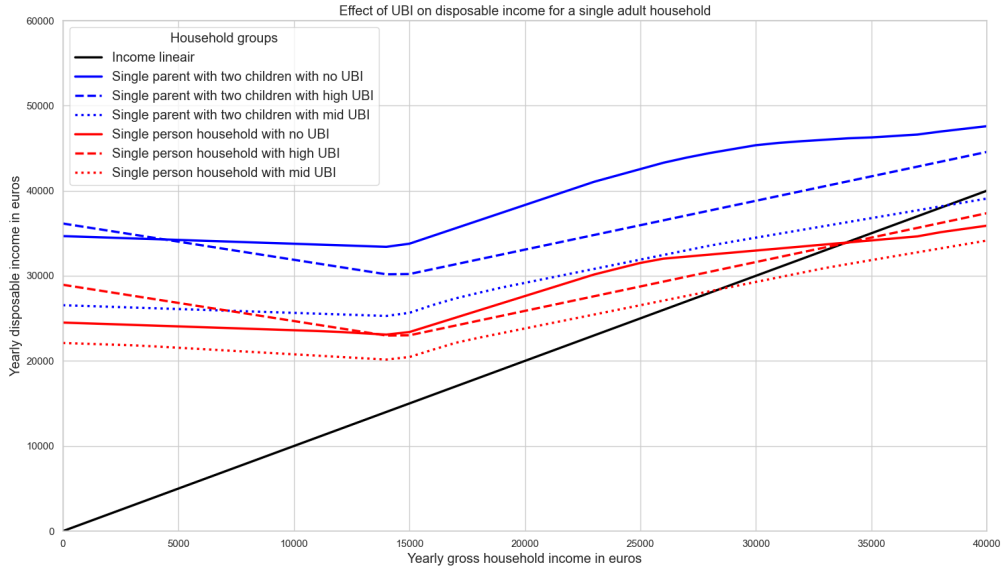



Figure A.11: Income for single adult household with no childcare allowance

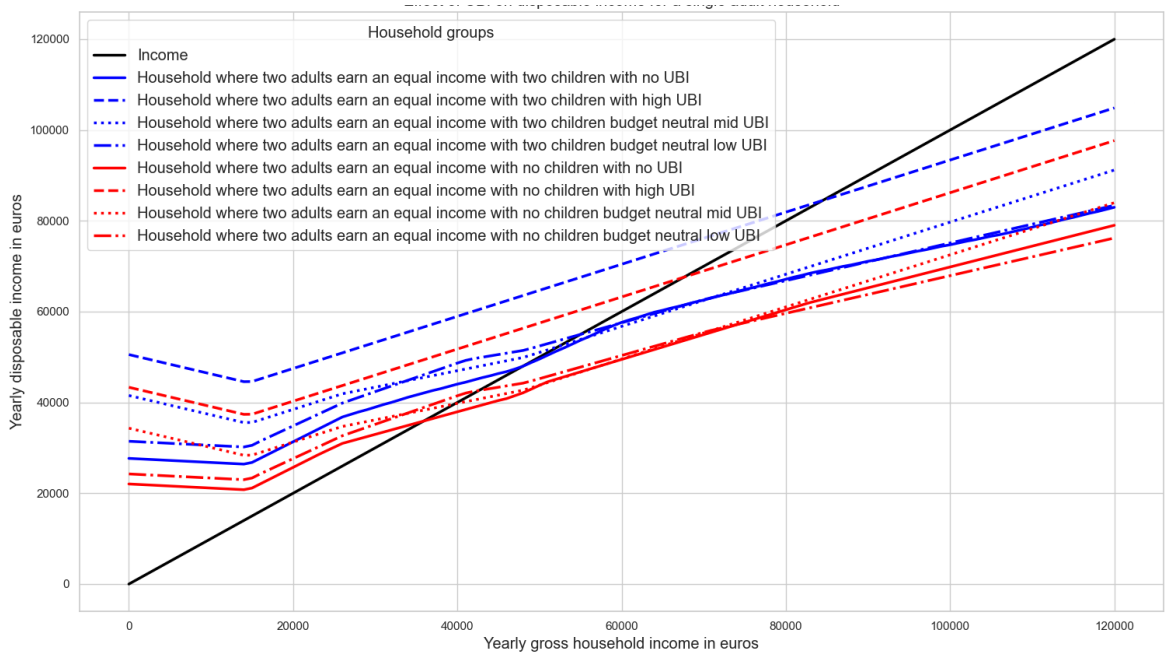



Figure A.12: Income for a household where both adults earn an equal share of the income with no childcare allowance

# B

# Appendix B: additional information regarding Dutch tax system and potential reforms

## B.1. How to finance UBI

Table B.1: Income generated by the financial plan of UBI from Table 2.2

| **Allowance/tax cut/tax increase** | **Estimate income (in billion euros)** |
|---|---|
| *Allowances* | |
| Health allowance | 6.6 |
| Rental allowance | 4 |
| Income-specific child allowance | 2.5 |
| General child allowance | 6.8 |
| Childcare allowance | 4.2 |
| Student allowance | 5.3 |
| WAO/WIA/Wajong allowances | 9.8 |
| AOW | 44 |
| *Tax cut* | |
| General tax credit | 28.7 |
| Work tax credit | 24.8 |
| Individual worker Tax credit | 4.8 |
| Elderly tax credit deduction | 5.3 |
| Reduction in welfare payments (partially and full) | 5 or 8 |
| Mortgage interest deduction | 14.7 |
| Other tax deduction | 3.3 |
| *Increase in income tax* | |
| New middle-income tax (27.000 to 65.000) of 40% | 4 |
| New middle-income tax (65.000 to 100.000) of 50% | 8 |
| Top income (100.000 euro +) tax at 60% | 2 |
| Making UBI taxable (630 or 1200 euro) | 35.1 or 71 |
| Tax on AOW | 6.1 |
| Make welfare tax (Box 3) equal to income tax (box 1) | 2.3 |
| *Company taxes* | |
| Increase company taxes to 30% | 4.2 |
| Financial transaction tax | 1 |

This data is based on (Koot et al., 2020), and (Aerts et al., 2023), (Ministerie van Financiën, n.d.)

All tax deduction = General tax credit + Work tax credit + Individual worker + Tax credit + Mortgage interest deduction

## B.2. Old en new taxation systems

Table B.2: Old and new taxation system in the Netherlands

| Year | Income tax bracket (euros) | Tax rate (%) |
|---|---|---|
| 2023 | 0 to 73.031 | 36.93 |
| | + 73.031 | 49.50 |
| 2019 | 0 to 20.384 | 36.65 |
| | 20.385 to 68.507 | 38.1 |
| | + 68.507 | 51.57 |

Assumptions of Table B.2

As the Dutch Statistics Bureau (CBS) does not provide the amount of Dutch citizens between 18 and 67 years old directly, the number of 18 to 20 years old was estimated by dividing the total number of young adults between 15 and 20 four years old by 5 and multiply it by 3. The same has been done for the population between 65 and 70. This number was divided by 5 and multiplied by 2 to get the number of citizens between 65 and 67. The percentage of citizens receiving welfare payments is calculated by dividing the number of inhabitants that receive the payment by the number of inhabitants between 18 and 67 years old. The number of women with children under 5 years old was calculated by dividing the total number of children 5 years and younger by the average amount of children in a family. It should be noted that this method provides a rough approximation of the target population.

## B.3. How to finance UBI?

### B.3.1. Political analysis of property and land value tax

Land valuation tax and property tax are subjects frequently deliberated in the philosophical discourse on UBI, aligning with the principles highlighted by Van Parijs (2004). Property tax is a levy imposed on the assessed value of properties such as residential homes, commercial establishments, and land owned by individuals. In contrast, a land value tax is specifically imposed on the assessed value of the land itself, rather than on any structures or improvements (such as buildings) that may be situated on the land.

These taxes, esteemed for their progressive nature, target economic rent derived from valuable assets like land or property. As significant components of individual wealth, taxing these immobile assets allows governments to generate revenue without discouraging economically desirable activities.

According to Kuiiper and Kaathman (2015), the property tax in the Netherlands generates 16.5 billion euros per year. This amounts to approximately 1.6% of the Dutch Gross Domestic Product (GDP), 5% of the total federal tax income, and 8 to 10% of municipal income. In comparison to countries such as the United Kingdom and France, the Netherlands collects a relatively modest amount of tax on properties. In these countries, property taxes contribute from 3 to 4% of GDP, indicating the potential for the Netherlands to potentially double its income through this tax revenue.

Although these forms of taxes seem very efficient, the general tax aversion is a serious political burden. The perception that governments are taking a larger share of individuals' hard-earned assets can lead to resentment and resistance. Critics argue that property and land taxes may disproportionately affect lower-income individuals or retirees on fixed incomes who own property. This creates concerns about exacerbating existing socioeconomic disparities. There's a fear that property taxes could negatively impact the real estate market. Higher property taxes may lead to reduced property values or discourage real estate investments, affecting housing markets. Critics worry that higher property taxes may lead to increased rents, making housing less affordable for tenants. This is a particular concern for those who do not own property but may face indirect

consequences. For instance, between 2013 and 2023, the Dutch government implemented a tax on social housing for corporations owning more than 50 houses. Since the maximum rent is regulated in the Netherlands, this taxation did not directly impact the monthly budget for the less affluent. However, it resulted in a halt in the construction of social housing. This tax has been identified as one of the primary factors contributing to the housing crisis, particularly in the social housing sector, in the Netherlands.

The practical implementation of property tax and land valuation tax, particularly in the context of the Netherlands, remains a formidable challenge. Effectively executing property or land taxes necessitates precise assessments of the value of each property. This undertaking is intricate, and inaccuracies in the evaluation process may result in discontent and legal disputes, as evidenced by existing challenges (NOS, 2023). Despite the potential advantages, none of the victorious political parties in the 2023 election incorporated these taxes into their programs. In contrast, some potential opposition parties advocated for their adoption (CPB, 2023). The current dual nature of property tax in the Netherlands, wherein homeowners pay 0.35% of the government-estimated value (WOZ) of their houses as additional income tax, and municipalities collect property tax to balance their budgets, presents both opportunities and challenges in utilizing this taxation framework for financing a UBI.

## B.4. Estimation of the effect UBI has on governmental employees

The Netherlands currently harbors a public workforce comprising 361,000 individuals, distributed across various governmental entities. Specifically, 139,000 individuals are employed by the national government, with 29,000 personnel at the Ministry of Finance (Ministerie van Binnenaldse Zaken en Koninkrijkrelaties, 2018), and 20,000 at the Tax and Customs Administration (Belastingdienst, 2023). Municipalities engage 163,000 individuals, a third of whom are dedicated to tasks related to social welfare (Betkó, 2023). Additionally, 23,000 individuals are employed by water boards and provinces, and 30,000 work at the Employee Insurance Agency (UWV), administering diverse social insurance programs (Ministerie van Binnenaldse Zaken en Koninkrijkrelaties, 2022).

This assessment delves into the potential reduction or reorganization in/of the number of civil servants, specifically those occupying roles connected to the administration of social welfare programs and taxation, as a consequence of the implementation of a comprehensive UBI set at 1200 euros. The magnitude of the national government's revenue collection efforts is considerable, with responsibilities encompassing the oversight of four major allowances totaling €29.4 billion and the management of 116 regulations resulting in a reduction of tax payments amounting to €150 billion, equivalent to 40% of the total Dutch tax revenue (Ministerie van Financien, 2023) and the collection of in total 360.9 billion euro (Ministerie van Financiën, n.d.).

This contrasts markedly with the operational efficiency demonstrated by the Sociale Verzekering Bank (SVB), responsible for the administration of generic schemes applicable to all, such as the general child allowance (6.8 billion euros) and old-age pension (AOW, 44 billion euros), with a workforce comprising only 3,000 officials. The absence of conditionality further underscores the efficiency of these operations.

An estimation of potential cost savings is derived from a projected reduction in the workforce by 114,000 employees[1]. This estimation places the financial impact at €7.4 billion on a yearly basis and incorporates an analysis of the average monthly salary of civil servants, approximately €50,000 gross income per year (Ministerie van Binnenaldse Zaken en Koninkrijkrelaties, 2022), with an additional 30% in employer contributions.

[1] Comprising 54,000 civil servants at municipalities, 20,000 at UWV (assumption), and 40,000 at the Ministry and Tax and Customs Administration (assumption)

# C

# Appendix C: The survey

## C.1. The survey part 1: information about the respondent

### C.1.1. Informed consent

Beste deelnemer,

Hartelijk dank dat u de tijd neemt om deel te nemen aan dit onderzoek. In dit onderzoek wordt de reactie op het basisinkomen van de Nederlandse bevolking bestudeert. Dit onderzoek wordt uitgevoerd door mij, Christiaan Ouwehand van de Technische Universiteit (TU) Delft. De verzamelde, anonieme gegevens worden gebruikt voor mijn afstudeerscriptie. Het invullen van deze enquête duurt ongeveer 20 minuten.

Het doel van deze enquête is om inzicht te krijgen of de Nederlandse bevolking voorstander is van het basisinkomen en op welke manier mensen er gebruik van zouden maken. Deze enquête wordt gebruikt voor onderzoeksdoeleinden en zal op korte termijn geen invloed hebben op uw toeslagen en belastingen.

De enquête bestaat uit drie delen:
1. Algemene informatie.
2. Negen voorstellen voor het basisinkomen.
3. Wat zou u doen met een basisinkomen?

De enquête is anoniem, er worden geen IP-adressen, e-mailadressen of andere persoonlijke informatie verzameld. Uw identiteit kan niet worden achterhaald op basis van de gestelde vragen. Uw antwoorden worden gebruikt voor wetenschappelijk onderzoek. De resultaten worden verwerkt in mijn scriptie. Hierna worden alle antwoorden zonder identificerende gegevens openbaar gemaakt in de database van de TU Delft voor mogelijk toekomstig onderzoek. Mocht u interesse hebben in de resultaten, mijn scriptie zal naar verwachting rond december 2023 openbaar worden gemaakt in de repository van de TU Delft.

Uw deelname aan dit onderzoek is volledig vrijwillig U kunt op elk moment stoppen door dit venster te sluiten. In dat geval worden uw antwoorden niet opgeslagen. Het staat u vrij om vragen niet te beantwoorden. Zodra u de enquête heeft ingevuld, is het niet mogelijk om uw anonieme antwoorden te verwijderen want we weten niet welk antwoorden van u zijn.

Indien u gereed bent om de enquête in te vullen en akkoord gaat met de genoemde voorwaarden, klik dan op 'Volgende' en daarna op het pijltje om te beginnen. Dank u wel voor uw waardevolle bijdrage aan mijn onderzoek!

Met vriendelijke groet,

Christiaan Ouwehand

### C.1.2. Questionair general information

1. Wat is uw geslacht?

- Vrouw
- Man
- Overig
- Zeg ik liever niet

2. Hoe oud bent u?

3. In welke gemeente woont u?

4. Wat is uw hoogst behaalde opleidingsniveau? Als u in een ander land uw opleiding gevolgd heeft, klik dan de Nederlandse gelijkwaardige opleiding aan.

- Lagere school
- Middelbare school
- MBO
- HBO of WO bachelor
- WO Master
- Doctoraat

5. Hoeveel kinderen onder de 18 heeft u?

5.a Als het antwoord op de vorige vraag 1 of hoger is, de leeftijd van mijn jongste kind is?

- Jonger dan 6
- Tussen de 6 en de 13
- Ouder dan 13

6. Uit hoeveel leden bestaat uw huishouden?

7. Wat is uw huidige werksituatie? Meerdere antwoorden zijn mogelijk.

- Zelfstandige zonder personeel (ZZP'er)
- In loondienst
- Eigenaar van een bedrijf
- Student
- Gepensioneerd
- Arbeidsongeschikt
- Werkloos
- Bijstandsgerechtigde
- Zeg ik liever niet
- Thuisblijfouder
- Anders:

8. Hoeveel uur per week werkt u gemiddeld tegen betaling?

9. Over uw persoonlijk inkomen: Reken alleen uw inkomen uit werk of uit een uitkering mee. Als u een toeslag of studiefinanciering ontvangt, telt u deze niet mee. Hoeveel verdient u bruto per jaar?

- Zeg ik liever niet

- Minder dan 6.500 euro
- Tussen de 6.501 en 14.400 euro
- Tussen de 14.401 en 18.750 euro
- Tussen de 18.751 en 25.000 euro
- Tussen de 25.001 en 30.000 euro
- Tussen de 30.001 en 38.520 euro
- Tussen de 38.521 en 50.000 euro
- Tussen de 50.001 en 65.000 euro
- Tussen de 65.001 en 73.000 euro
- Tussen de 73.001 en 85.000 euro
- Tussen de 85.001 en 100.000 euro
- Tussen de 100.001 en 150.000 euro
- Tussen de 150.001 en 200.000 euro
- Meer dan 200.000 euro

10 Heeft u het hoogste inkomen in uw huishouden?

- ja
- nee

11. In hoeverre kunt u makkelijk meer of minder uur per week werken?

1. Heel makkelijk
2. Redelijk makkelijk
3. Lastig
4. Heel lastig

12. In hoeverre bent u bereid meer of minder uur per week te werken?

1. Veel minder
2. Minder
3. Evenveel
4. Meer
5. Veel meer

13. Ik woon in een ...

- Studentenkamer
- Sociale huurwoning (huur lager dan 808 euro per maand)
- Vrijesector huurwoning (huur hoger dan 808 euro per maand)
- Koopwoning met hypotheekrenteaftrek
- Koopwoning zonder hypotheekrenteaftrek

## C.2. The survey part 2: the conjoint experiment

### C.2.1. Introduction text for the conjoint experiment

Hierna volgen 9 ideeën voor het basisinkomen, deze worden in een willekeurige volgorde aan u gepresenteerd. Hierover zou ik graag uw mening willen weten.

Een basisinkomen is een vast bedrag dat elke volwassene die in Nederland ingeschreven staat ontvangt, ongeacht of iemand werkt of hoeveel iemand verdient. Het basisinkomen bestaat uit twee delen: een bedrag per volwassene en een bedrag per kind (jonger dan 18 jaar). Met het basisinkomen zult u minder inkomen verliezen aan extra belastingen en financiële steun wanneer u meer gaat verdienen.

Om een basisinkomen in te voeren, moeten we het belastingsysteem aanpassen. Dit kan op verschillende manieren, zoals het invoeren van nieuwe inkomstenbelastingen, het afschaffen van belastingvoordelen en kortingen, het belasten van het basisinkomen en het herzien van toeslagen. Voor elk voorstel zullen we bekijken hoe het gefinancierd kan worden en welke veranderingen er in toeslagen zullen plaatsvinden.

1. Nieuwe vorm van inkomstenbelasting

- U betaalt 36% inkomstenbelasting over uw inkomsten tot 36.000 euro per jaar.
- U betaalt 40% inkomstenbelasting over uw inkomsten tussen 36.000 en 65.000 euro per jaar.
- U betaalt 50% inkomstenbelasting over uw inkomsten tussen 65.000 en 100.000 euro per jaar.
- U betaalt 60% inkomstenbelasting over uw inkomen boven 100.000 euro per jaar.

Bijvoorbeeld: als u een bruto inkomen heeft van 40.000 euro per jaar, betaalt u 36% belasting over de eerste 36.000 euro en 40% belasting over de resterende 4.000 euro.

2. Afschaffen van aftrekposten en heffingskortingen

Om de invoering van het basisinkomen te financieren komen de volgende aftrekposten en heffingskortingen komen te vervallen:

- Arbeidskortingen (Algemene heffingskorting en arbeidskorting, ook bekend als loonheffing)
- Inkomensafhankelijke combinatiekorting
- Hypotheekrenteaftrek
- Kortingen voor zzp'ers

3. Belasting op het basisinkomen

Het basisinkomen wordt bij uw inkomen opgeteld en dit bepaalt volgens het huidige belastingstelsel uw bruto inkomen. Stel dat u een bruto inkomen heeft van 40.000 euro per jaar en dat u twee kinderen heeft. U ontvangt 1.200 euro bruto basisinkomen per maand en 185 euro bruto basisinkomen per kind per maand. Dit betekent dat u 1.570 euro bruto basisinkomen per maand ontvangt, oftewel 18.840 euro bruto basisinkomen per jaar. Uw bruto jaarinkomen is dan 58.840 euro.

4. Hervorming van het toeslagensysteem

Bij instelling van het basisinkomen worden alle toeslagen afgeschaft, waaronder zorg-, huur-, kinderopvangtoeslag, kindgebonden budget, studiefinanciering en kinderbijslag. In bepaalde situaties behoudt u mogelijk de zorg- of huurtoeslag, dit zal specifiek worden vermeld.

Gebaseerd op uw antwoorden op vraag 9 over uw bruto inkomen in deel 1 (u heeft ingevuld: $q://QID14/ChoiceGroup/Selec
schat ik het effect op uw netto maandinkomen. Hiervoor neem ik het midden van de inkomenscategorie die u hebt opgegeven als uitgangspunt. Bijvoorbeeld, als u aangeeft dat uw jaarinkomen tussen de 25.001 en 30.000 euro bruto ligt, gaan we uit van een inkomen van 27.500 euro bruto per jaar.

Ik schat dat u $e://Field/Huidig euro netto per maand te besteden heeft, plus eventuele toeslagen als u daar recht op heeft. Dit bedrag kunt u gebruiken als referentiepunt voor de volgende 9 voorstellen. Voor elk voorstel zullen we u 2 of 3 vragen stellen.

De volgende tabel leest u als volgt:
- U ontvangt 1200 euro netto basisinkomen
- U ontvangt 100 euro netto per kind
- Het basisinkomen wordt betaald door het nieuwe belastingsysteem.
- U ontvangt geen toeslagen meer.

| Basisinkomen | Bedrag per kind | Verandering in belastingsysteem | Toeslagen |
|---|---|---|---|
| 1200 euro netto | 100 euro netto | Nieuwe belastingsysteem | Geen toeslagen |

Dit betekent dat **u per maand 8753 euro netto te besteden heeft** (7553 euro aan salaris, 1200 euro aan basisinkomen).

Hoe waarschijnlijk is het dat u de invoering van deze vorm van basisinkomen zou ondersteunen?

Zeer onwaarschijnlijk

Onwaarschijnlijk

Neutraal

Waarschijnlijk

Zeer waarschijnlijk

Figure C.1: Profile 2 on PC


Figure C.2: Profile 2 on smartphone.

Figure C.3: Overview of profile 2 on different device

De resultaten kunnen afwijken van de werkelijkheid, aangezien het hier om een schatting van uw inkomsten gaat.

### C.2.2. The conjoint questionair

For each of the nine profiles the impact of the tax change system will be calculated so that the respondent has a good view of the impact the policy has for him. The following questions will be asked for every profile:

Hoe waarschijnlijk is het dat u de invoering van deze vorm van basisinkomen zou ondersteunen?

1. Zeer onwaarschijnlijk
2. Onwaarschijnlijk
3. Neutraal
4. Waarschijnlijk
5. Zeer waarschijnlijk

Gaat u hierbij minder, hetzelfde, of meer uur werken?

- Minder
- Hetzelfde
- Meer

Als minder of meer, hoeveel uur denkt u meer of minder te gaan werken per week?

Here is an exemple of the presentation of profiles:

## C.3. The survey part 3: the tradition questions

The following questions for both the high- and the mid-UBI policy were asked:

1. Hoe waarschijnlijk is het dat u ontslag zou nemen om te zoeken naar een baan die beter bij uw wensen past bij deze vorm van basisinkomen?

- Zeer onwaarschijnlijk
- Waarschijnlijk
- Neutraal
- Waarschijnlijk
- Zeer waarschijnlijk
- Niet van toepassing, mijn huidige baan past perfect bij mijn wensen
- Nieet van toepassing, ik heb momenteel geen werk

2. Wat zou u doen met het hierboven gepresenteerd basisinkomen? meerdere antwoorden zijn mogelijk.

- Niets anders dan nu.
- Meer mantelzorg uitvoeren.
- Meer vrijwilligerswerk doen.
- Ik ga een (extra) opleiding volgen/meer studeren.
- Ik ga meer tijd spenderen met mijn kinderen.
- Ik neem meer vije tijd.
- Ik ga meer sparen.
- Ik ga meer sparen voor vervroegd pensioen.
- Ik ga met vervoregd pensioen.
- Ik ga een eigen bedrijf beginnen.
- Ik heb minder stress.
- Ik ga vaker naar de dokter.
- Ik ga gezonder voesel kopen.
- Anders

Stellingen over belastingen allemaal in te vullen op de volgende shcaal:

1. Zeer oneens
2. Oneens
3. Neutraal
4. Eens
5. Zeer eens

Stellingen over armoede allemaal in te vullen op de volgende shcaal:

1. Zeer oneens
2. Oneens
3. Neutraal
4. Eens

5. Zeer eens

- Ik vond het belangrijk dat ik er niet op achteruit ga als er een basisinkomen komt.
- Ik vind het belangrijk dat de armste mensen in Nederland er op vooruit gaan, zelds als dat betekent dat ik er op achteruit ga.
- Ik vind dat het basisinkomen hoog genoeg moet zijn om van te leven ook al betekent dit dat het minder aantrekkelijk wordt om te werken.
- Ik vind dat de overheid erop gericht moet zijn mensen in armoede te helpen, ook al betekent dit dat het minder aantrekkelijk wordt om te werken.
- Ik vind dat men toeslagen niet hoeft terug te betalen als men meer uren gewerkt heeft.
- Ik vind dat men de bijstand niet hoeft terug te betalen als men meer uren gewerkt heeft.
- Het basisinkomen, voor elke Nederlander, is een goede vorm van sociale zekerheid.

# D

# Appendix D: Demographic information & methods

## D.1. Assumptions made for population statistics

As the Dutch statistics bureau (CBS) does not provide the amount of Dutch citizens between 18 and 67 years old directly, the number of 18 to 20 years old was estimated by dividing the total number of young adults between 15 and 20 four years old by 5 and multiply it by 3. The same has been done for the population between 65 and 70. This number was divided by 5 and multiplied by 2 to get the number of citizens between 65 and 67. The percentage of citizens receiving welfare payments is calculated by dividing the number of inhabitants that receive the payment by the number of inhabitants between 18 and 67 years old. The number of women with children under 5 years old was calculated by dividing the total number of children 5 years and younger by the average amount of children in a family. It should be noted that this method provides a rough approximation of the target population.

## D.2. Detailed population statistics and the equivalent number of respondents

Table D.1: annual gross income data per individual Dutch citizen

| Indicator[a] | Value | Percentage of population | Number of respondents |
|---|---|---|---|
| Less than 10.000 euro | 1,830,200 | 13% | 35 |
| Between 10.000 and 20.000 euro | 3,106,200 | 22% | 59 |
| Between 20.000 and 30.000 euro | 2,474,000 | 18% | 49 |
| Between 30.000 and 40.000 euro | 2,045,900 | 15% | 40 |
| Between 40.000 and 50.000 euro | 1,353,200 | 10% | 27 |
| Between 50.000 and 100.000 euro | 2,459,900 | 18% | 49 |
| Between 100.000 and 200.000 euro | 419,100 | 3% | 8 |
| Over 200.000 euro | 7,150 | 1% | 3 |

[a] (Centraal Bureau Voor de Statistiek, n.da)

## D.3. Exemple of effect coding

As an illustrative example to aid interpretation of effect coding is given in Appendix , Table D.2 present a regression model for UBI support with statistically significant coefficients.

Table D.2: Example of a regression model

| | **Coefficient** |
|---|---|
| **const** | 2,5 |
| **Tax1** | -1 |
| **Tax2** | 0,7 |
| **Allowance1** | 0,1 |
| **Allowance2** | -0,5 |
| **UBI1** | 1,5 |
| **UBI2** | 0,7 |
| **UBI_Child1** | 0,5 |
| **UBI_Child2** | 0,1 |

For the variable "support," each numerical value signifies a shift in support on a scale ranging from 1 to 5. The regression model of Table D.2 is interpreted as follows:

- The average support for UBI = 2.5
- A UBI of 1200 increases support by 1.5 up to 4.
- A UBI for children of 300 increases support by 0.5 to 4.5
- Make UBI taxable decrease support by 1 to 3.5
- Only health allowance increases support by 0.1 to 3.6

Figure D.1 gives a graphical overview of Table D.2 and Table 3.6 combined to show the condition of the last variable.
So the support for Profile 1 (1200, 300, no tax deduction, only health allowance) would be:

$$\text{Support} = 2.5+1.5+0.5-1.0+0.1 = 3.6$$

The support for Profile 7 (210, 300, New Income tax, rent allowance) would be:

$$\text{Support} = 2.5-2.2+0.5+1.5+0.4 = 2.7$$

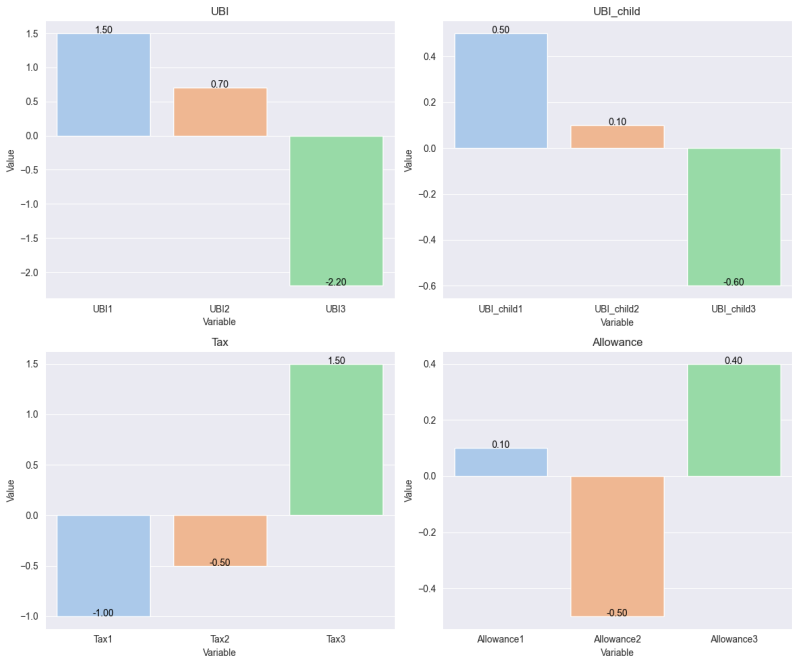



Figure D.1: Example plot of effect coding

# E

# Appendix E: Results

## E.1. Correlation between indicators

In Figure E.1 all correlations between the indicators used for the regression are repressed to ensure visibility.

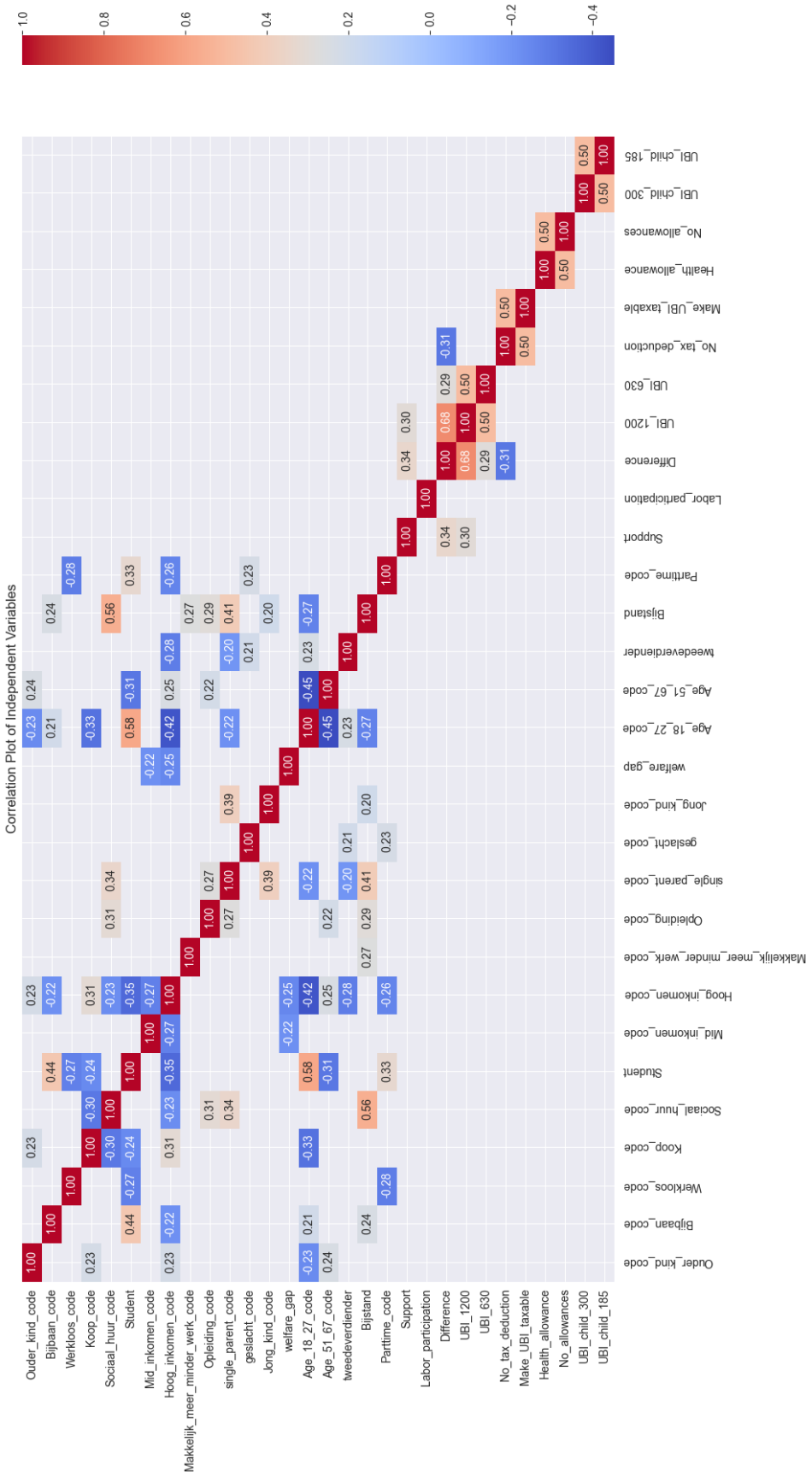



Figure E.1: Correlation between the variable

## E.2. Change in labor participation in the Netherlands: An estimate

This is an example calculation of the change in labor participation on average, the low value of the CI, and the high value of the CI. These calculation are based on information from Table 4.6 and 4.5.

**Low value of the confidence interval:**

The effect of the attributes:

$$1.592 + 0.186 + 0.370 - 1.517 - 0.421 = 0.210$$

This is the sum of all the low values of the confidence interval from Table 4.6.

Demographic effect:

$$\begin{aligned} 0,28 \times (-3,117 + 0,244 \times 0,6 + 0,35 \times -0,154) + \\ 0,12 \times (-3,171 + 0,244 \times 0,36 + 0,55 \times -0,154) + \\ 0,32 \times (-3,555 + 0,0244 \times 0,08 + 0,85 \times -0,154) = -2.410 \end{aligned}$$

This is the percentage each income group has in the population times, in parenthesis the labor decline of the income group corrected for the housing type times the percentage this income group has.

Total change in labor participation:

$$0.210 - 2.410 = -2.20 \text{ hours per week.}$$

**High value of the confidence interval:**

The effect of the attributes:

$$2,979 + 0,839 + 0,968 - 0,652 + 0,18 = 4.31$$

Demographic effect:

$$\begin{aligned} 0,28 \times (-1,733 + 1,455 \times 0,6 + 0,35 \times 0,927) + \\ 0,12 \times (-1,826 + 1,455 \times 0,36 + 0,55 \times 0,927) + \\ 0,32 \times (-2,095 + 1,455 \times 0,08 + 0,85 \times 0,927) = -0.63 \end{aligned}$$

Total change in labor participation:

$$4.31 - 0.63 = 3.69 \text{ hours per week.}$$

**Average change in labor participation**

The effect of the attributes:

$$2.286 + 0.513 + 0.669 - 1.085 - 0.120 = 2.26$$

Demographic effect:

$$\begin{aligned} 0,28 \times (-2,425 + 0,85 \times 0,6 + 0,35 \times 0,386) + \\ 0,12 \times (-2,498 + 0,85 \times 0,36 + 0,55 \times 0,386) + \\ 0,32 \times (-2,825 + 0,85 \times 0,08 + 0,85 \times 0,386) = -1.51 \end{aligned}$$

Total change in labor participation:

$$2.263 - 1.513 = 0.75 \text{ hours per week.}$$

## E.3. Change in labor participation and support regression tables for the sub groups

Table E.1: Regression table women

| | Coef. | Labor Participation CI | Support Coef. | Support CI |
|---|---|---|---|---|
| **Constant** | 2.3550 | [1.344, 3.366] | 2.9356 | [2.729, 3.142] |
| **No tax deduction** | 0.9274 | [0.466, 1.388] | -0.2141 | [-0.308, -0.120] |
| **Make UBI Taxable** | -0.3327 | [-0.731, 0.066] | 0.0892 | [0.008, 0.170] |
| **Health allowance** | -0.3634 | [-0.767, 0.040] | 0.0979 | [0.016, 0.180] |
| **No allowances** | 0.8184 | [0.420, 1.217] | -0.1421 | [-0.223, -0.061] |
| **UBI 1200** | -1.2238 | [-1.856, -0.591] | 0.2418 | [0.113, 0.371] |
| **UBI 630** | -0.0111 | [-0.412, 0.390] | 0.0524 | [-0.029, 0.134] |
| **UBI child 300** | -0.2567 | [-0.658, 0.144] | 0.1095 | [0.028, 0.191] |
| **UBI child 185** | 0.2507 | [-0.154, 0.656] | -0.0547 | [-0.137, 0.028] |
| **Welfare gap** | -3.4308 | [-4.371, -2.491] | 0.1790 | [-0.013, 0.371] |
| **Mid income code** | -2.6049 | [-3.478, -1.732] | 0.0239 | [-0.154, 0.202] |
| **High income code** | -3.6374 | [-4.643, -2.632] | 0.1189 | [-0.086, 0.324] |
| **Social housing** | 0.7202 | [-0.167, 1.608] | 0.2199 | [0.039, 0.401] |
| **Home omwners** | 0.7165 | [0.008, 1.425] | -0.1143 | [-0.259, 0.030] |

Table E.2: Regression result parttime

| | Coef. | Labor CI | Support Coef. | Support CI |
|---|---|---|---|---|
| **Constant** | 2.6377 | [1.218, 4.057] | 3.7666 | [3.469, 4.065] |
| **No tax deduction** | 0.6683 | [0.000, 1.336] | -0.1611 | [-0.301, -0.021] |
| **Make UBI Taxable** | -0.2116 | [-0.702, 0.278] | 0.0573 | [-0.046, 0.160] |
| **Health allowance** | -0.3965 | [-0.894, 0.101] | 0.0541 | [-0.050, 0.158] |
| **No allowances** | 1.1387 | [0.650, 1.627] | -0.1940 | [-0.297, -0.091] |
| **UBI 1200** | -1.2304 | [-2.197, -0.264] | 0.2211 | [0.018, 0.424] |
| **UBI 630** | 0.0382 | [-0.456, 0.533] | 0.1069 | [0.003, 0.211] |
| **UBI child 300** | -0.2706 | [-0.765, 0.224] | 0.0753 | [-0.029, 0.179] |
| **UBI child 185** | -0.0649 | [-0.566, 0.436] | -0.0535 | [-0.159, 0.052] |
| **Welfare gap** | -2.1403 | [-3.148, -1.133] | -0.3215 | [-0.533, -0.110] |
| **Mid income code** | -2.7788 | [-3.915, -1.643] | -0.2674 | [-0.506, -0.029] |
| **High income code** | -2.6910 | [-4.394, -0.988] | -0.3352 | [-0.693, 0.022] |
| **Social housing** | -0.1580 | [-1.252, 0.936] | 0.0450 | [-0.185, 0.275] |
| **Home owners** | -0.0831 | [-1.062, 0.896] | -0.3604 | [-0.566, -0.155] |

Table E.3: Regression table single parents

| Variable | Labor Participation | Support | Labor Participation CI | Support CI |
|---|---|---|---|---|
| const | 2.5496 | 0.6395 | [-3.785, 8.884] | [-0.549, 1.828] |
| No_tax_deduction | 0.8241 | -0.3403 | [-0.212, 1.860] | [-0.535, -0.146] |
| Make_UBI_taxable | 0.3295 | 0.1438 | [-0.674, 1.333] | [-0.045, 0.332] |
| Health_allowance | -0.6512 | -0.0634 | [-1.658, 0.356] | [-0.252, 0.126] |
| No_allowances | 2.4733 | 0.0127 | [1.470, 3.477] | [-0.176, 0.201] |
| UBI_1200 | -2.2219 | 0.7491 | [-3.400, -1.044] | [0.528, 0.970] |
| UBI_630 | 0.4765 | 0.0930 | [-0.530, 1.483] | [-0.096, 0.282] |
| UBI_child_300 | -0.6683 | 0.2381 | [-1.698, 0.362] | [0.045, 0.431] |
| UBI_child_185 | 0.4367 | 0.0776 | [-0.572, 1.445] | [-0.112, 0.267] |
| welfare_gap | -0.7740 | 0.2109 | [-3.823, 2.275] | [-0.361, 0.783] |
| Mid_inkomen_code | -8.4095 | 1.6151 | [-13.803, -3.016] | [0.603, 2.627] |
| Hoog_inkomen_code | -8.2569 | 1.1354 | [-12.372, -4.142] | [0.363, 1.908] |
| Sociaal_huur_code | 4.5946 | 1.0377 | [0.003, 9.187] | [0.176, 1.900] |
| Koop_code | 6.2160 | 0.9133 | [0.961, 11.471] | [-0.073, 1.900] |

Table E.4: Regression results parent with children younger than 12

| | Coef. | Labor CI | Support Coef. | Support CI |
|---|---|---|---|---|
| **Constant** | 4.4655 | [-0.393, 9.324] | 2.2097 | [1.296, 3.124] |
| **No tax deduction** | 1.9296 | [0.850, 3.009] | -0.3794 | [-0.582, -0.176] |
| **Make UBI Taxable** | -0.6279 | [-1.599, 0.343] | 0.0886 | [-0.094, 0.271] |
| **Health allowance** | -0.6025 | [-1.563, 0.358] | 0.0469 | [-0.134, 0.228] |
| **No allowances** | 3.2370 | [2.277, 4.197] | -0.2266 | [-0.407, -0.046] |
| **UBI 1200** | -1.8089 | [-3.123, -0.495] | 0.9517 | [0.705, 1.199] |
| **UBI 630** | -0.6138 | [-1.575, 0.348] | 0.1023 | [-0.079, 0.283] |
| **UBI child 300** | -0.9023 | [-1.879, 0.075] | 0.3843 | [0.201, 0.568] |
| **UBI child 185** | 1.1124 | [0.149, 2.076] | -0.1112 | [-0.293, 0.070] |
| **Welfare gap** | -9.9385 | [-13.242, -6.635] | 1.3456 | [0.724, 1.967] |
| **Mid income code** | 6.185e-17 | [-1.09e-16, 2.33e-16] | -3.245e-17 | [-6.46e-17, -2.97e-19] |
| **High income code** | 1.076e-16 | [-1.54e-16, 3.69e-16] | 1.504e-17 | [-3.41e-17, 6.42e-17] |
| **Social housing code** | -1.3889 | [-5.705, 2.928] | 0.7222 | [-0.090, 1.534] |
| **Ownership code** | 2.559e-16 | [1.46e-16, 3.66e-16] | -1.231e-17 | [-3.3e-17, 8.39e-18] |

Table E.5: Inhabitants receiving welfare payements

| | Coef. | Labor Participation CI | Support Coef. | Support CI |
|---|---|---|---|---|
| **Constant** | 2.5576 | [0.062, 5.053] | 3.8389 | [3.142, 4.536] |
| **No tax deduction** | 0.5189 | [-0.101, 1.139] | -0.1816 | [-0.355, -0.008] |
| **Make UBI Taxable** | 0.1265 | [-0.463, 0.716] | 0.1175 | [-0.047, 0.282] |
| **Health allowance** | 0.0670 | [-0.526, 0.660] | -0.0717 | [-0.237, 0.094] |
| **No allowances** | 1.1794 | [0.590, 1.769] | -0.0323 | [-0.197, 0.132] |
| **UBI 1200** | -1.2650 | [-1.972, -0.559] | 0.4848 | [0.287, 0.682] |
| **UBI 630** | -0.1663 | [-0.758, 0.425] | 0.0992 | [-0.066, 0.264] |
| **UBI child 300** | -0.5302 | [-1.138, 0.077] | 0.1369 | [-0.033, 0.307] |
| **UBI child 185** | 0.1609 | [-0.433, 0.755] | -0.0601 | [-0.226, 0.106] |
| **Welfare gap** | -2.3192 | [-3.994, -0.645] | -0.8831 | [-1.351, -0.415] |
| **Mid income code** | -6.0639 | [-8.576, -3.552] | 0.6151 | [-0.087, 1.317] |
| **High income code** | -3.6186 | [-5.831, -1.406] | -0.4862 | [-1.104, 0.132] |
| **Social housing code** | 3.4680 | [1.641, 5.295] | -1.2794 | [-1.790, -0.769] |
| **Home owners** | 0.5025 | [-0.791, 1.796] | -0.5195 | [-0.881, -0.158] |

Table E.6: Age group 18 to 27

| | Coef. | Labor CI | Support Coef. | Support CI |
|---|---|---|---|---|
| **Constant** | -0.4766 | [-2.464, 1.511] | 2.9943 | [2.662, 3.327] |
| **No tax deduction** | 1.0177 | [0.048, 1.988] | -0.1313 | [-0.293, 0.031] |
| **Make UBI Taxable** | -0.3128 | [-0.799, 0.173] | 0.0860 | [0.005, 0.167] |
| **Health allowance** | -0.5594 | [-1.062, -0.057] | 0.0813 | [-0.003, 0.165] |
| **No allowances** | 0.6054 | [0.127, 1.084] | -0.1731 | [-0.253, -0.093] |
| **UBI 1200** | -2.6380 | [-4.396, -0.880] | 0.0300 | [-0.264, 0.324] |
| **UBI 630** | 0.2600 | [-0.238, 0.758] | 0.0515 | [-0.032, 0.135] |
| **UBI child 300** | -0.1334 | [-0.612, 0.345] | 0.0770 | [-0.003, 0.157] |
| **UBI child 185** | 0.2665 | [-0.249, 0.782] | -0.0431 | [-0.129, 0.043] |
| **Welfare gap** | 0.3573 | [-1.259, 1.974] | 0.0080 | [-0.262, 0.278] |
| **Mid income code** | -0.5641 | [-1.810, 0.682] | 0.0501 | [-0.158, 0.258] |
| **High income code** | -0.6475 | [-2.630, 1.336] | 0.3693 | [0.038, 0.701] |
| **Social housing** | 0.8154 | [-0.218, 1.849] | 0.1397 | [-0.033, 0.313] |
| **Home owners** | -0.1836 | [-1.285, 0.917] | -0.1377 | [-0.322, 0.046] |

Table E.7: Age group 51 to 67

| | Coef. | Labor CI | Support Coef. | Support CI |
|---|---|---|---|---|
| **Constant** | 2.9500 | [1.338, 4.562] | 2.9769 | [2.556, 3.397] |
| **No tax deduction** | 0.4674 | [-0.060, 0.995] | -0.2644 | [-0.402, -0.127] |
| **Make UBI Taxable** | -0.0422 | [-0.563, 0.479] | 0.1145 | [-0.021, 0.250] |
| **Health allowance** | -0.0197 | [-0.543, 0.504] | 0.0796 | [-0.057, 0.216] |
| **No allowances** | 0.5890 | [0.069, 1.109] | -0.0672 | [-0.203, 0.068] |
| **UBI 1200** | -0.9296 | [-1.570, -0.289] | 0.3629 | [0.196, 0.530] |
| **UBI 630** | 0.2695 | [-0.251, 0.790] | 0.0846 | [-0.051, 0.220] |
| **UBI child 300** | 0.0120 | [-0.508, 0.533] | 0.0975 | [-0.038, 0.233] |
| **UBI child 185** | 0.1909 | [-0.333, 0.715] | -0.0399 | [-0.177, 0.097] |
| **Welfare gap** | -3.6993 | [-5.048, -2.350] | 0.3212 | [-0.031, 0.673] |
| **Mid income code** | -3.5034 | [-5.087, -1.920] | -0.0271 | [-0.440, 0.386] |
| **High income code** | -3.3399 | [-4.817, -1.863] | -0.1146 | [-0.500, 0.271] |
| **Social housing code** | -0.4752 | [-1.737, 0.787] | 0.6467 | [0.317, 0.976] |
| **Home owners** | 0.3814 | [-0.563, 1.326] | 0.1114 | [-0.135, 0.358] |

# E.4. What will inhabitants do with UBI?

## E.4.1. Resign for their jobs

| Total sum of square (X) | Degrees of Freedom | Significance p>t |
|---|---|---|
| 12,99 | 6 | 0.043 |

Table E.8: Chi-square test to verify if the difference in observation on resigning jobs between High- and Mid-UBI policies is statistically significant

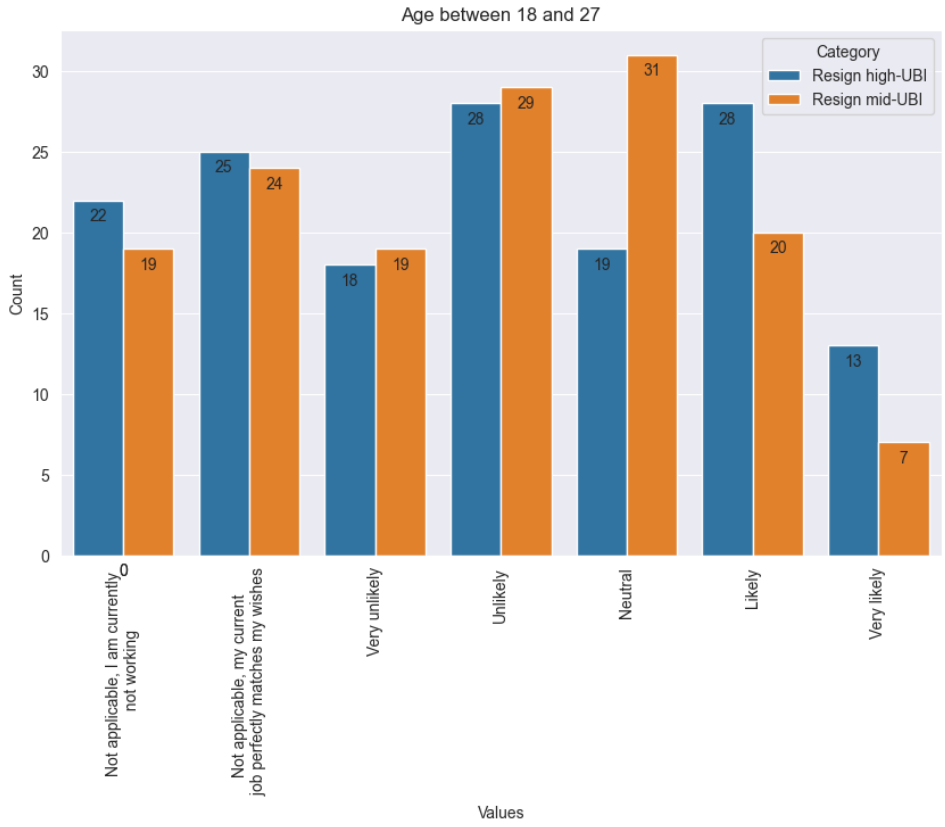



Figure E.2: Distribution of young that would resign their job under a high-UBI policy

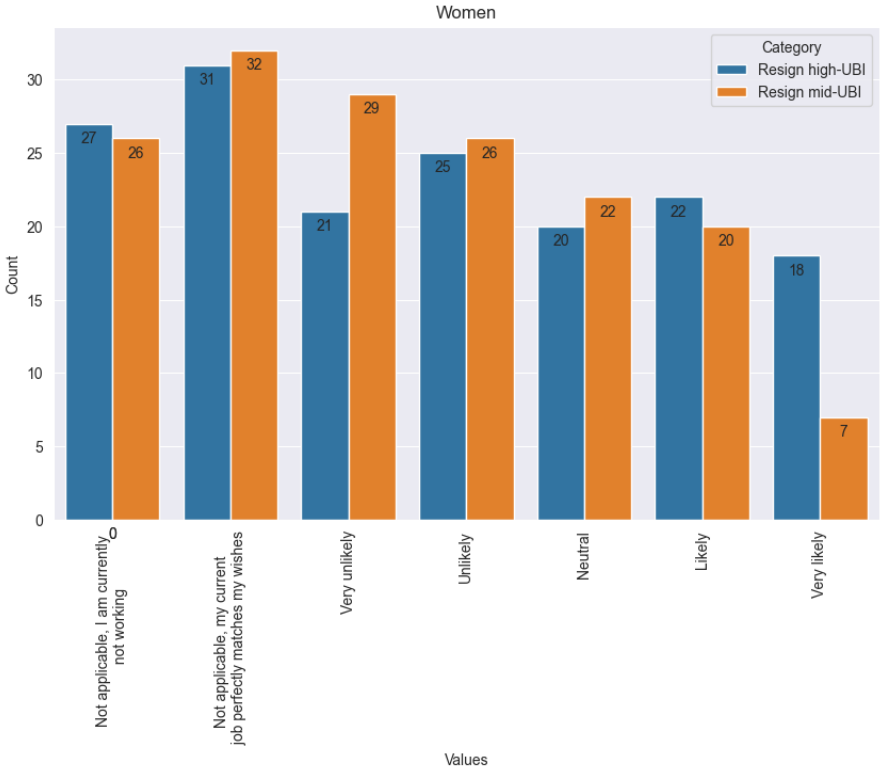



Figure E.3: Distribution of women that would resign their job under a high-UBI policy

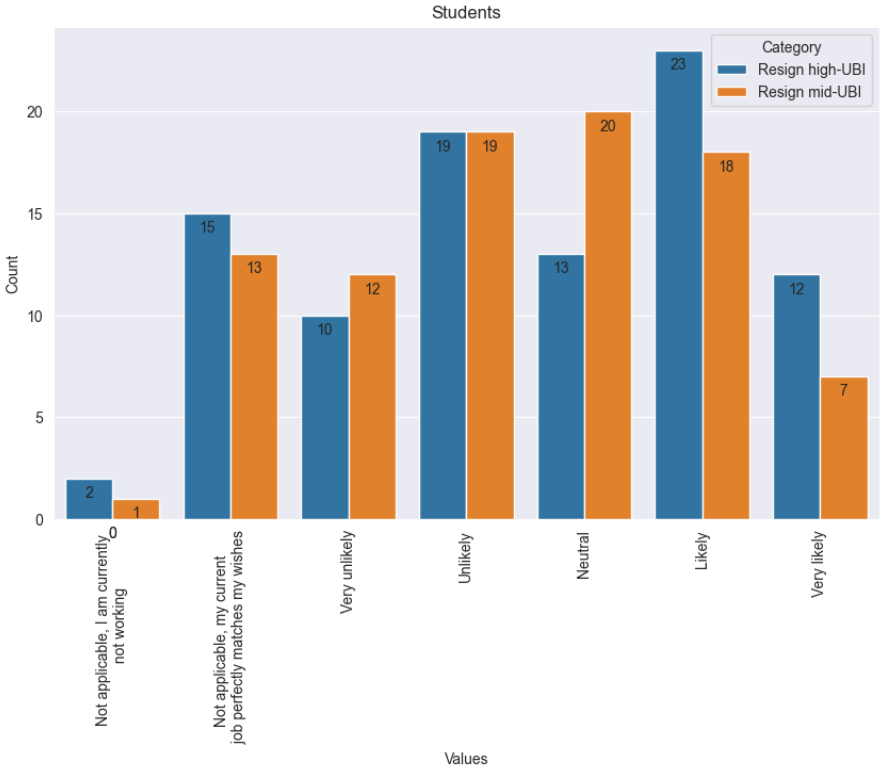



Figure E.4: Distribution of students that would resign their job under a high-UBI policy

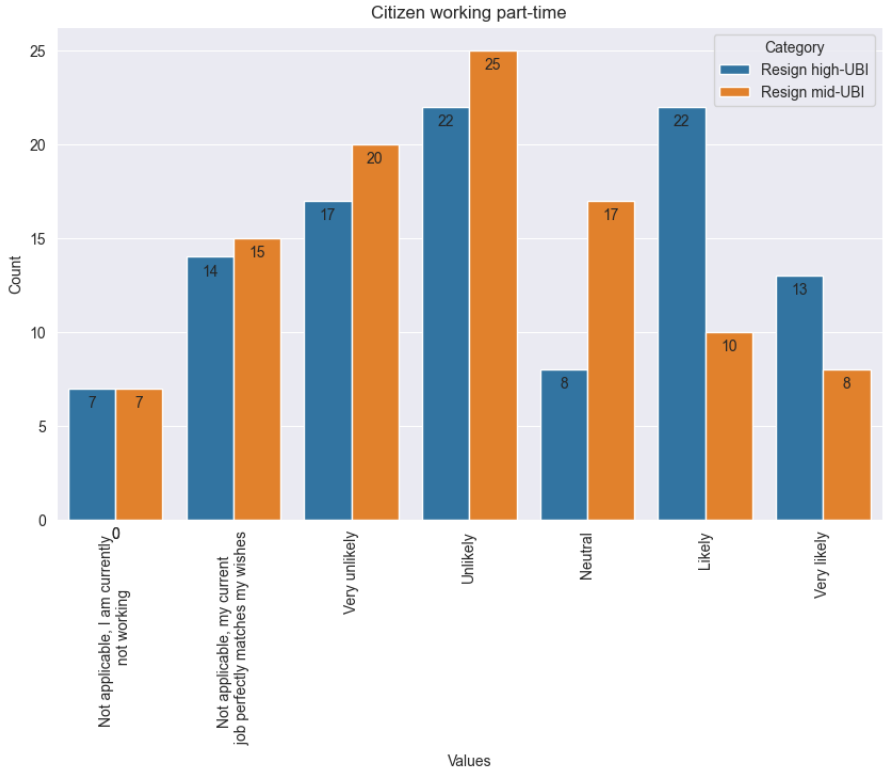



Figure E.5: Distribution of part-time workers that would resign their job under a high-UBI policy

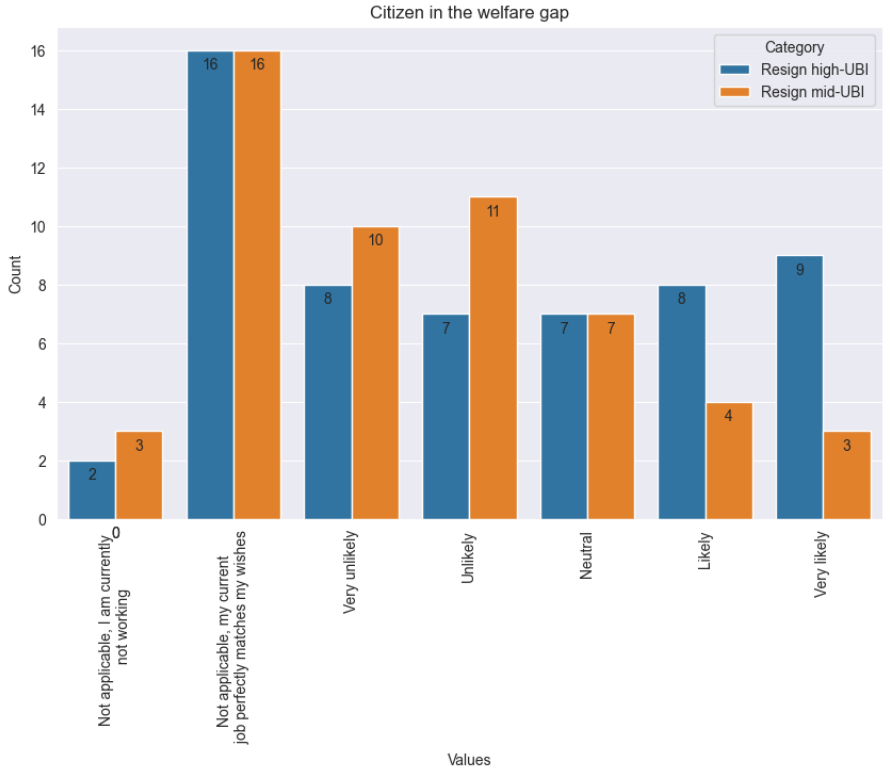



Figure E.6: Distribution of citizen in the welfare gap that would resign their job under a high-UBI policy

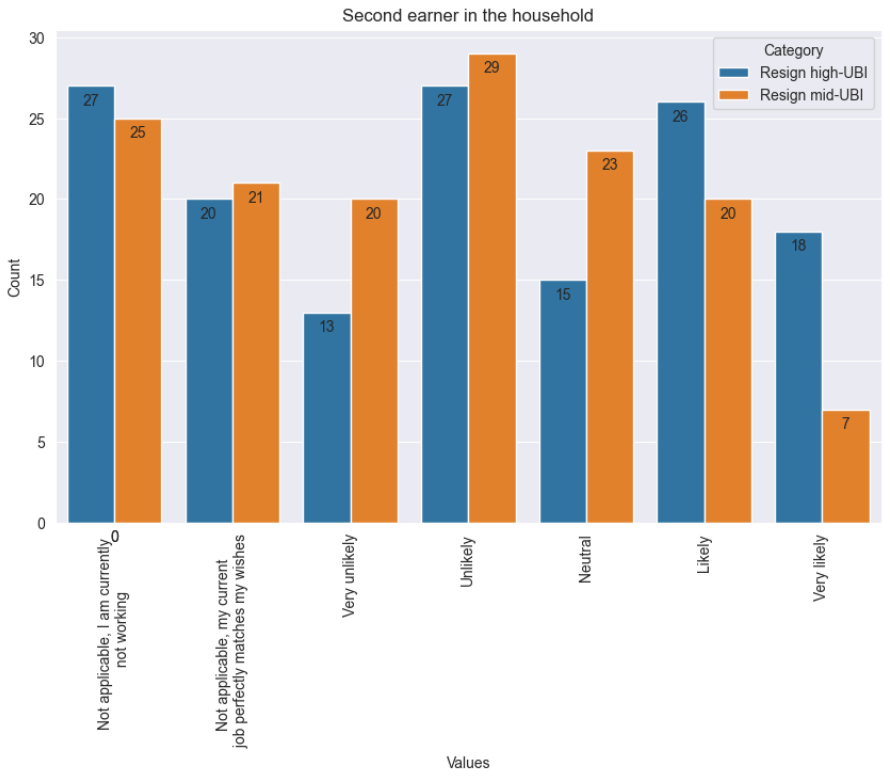



Figure E.7: Distribution of second earners that would resign their job under a high-UBI policy

### E.4.2. Overview of the response

| Total sum of square (X) | Degrees of freedom | P-value P>t |
|---|---|---|
| 6.287 | 12 | 0.901 |

Table E.9: Chi-square test to verify if the difference in observation on what people will do with High- and Mid-UBI policies is statistically significant

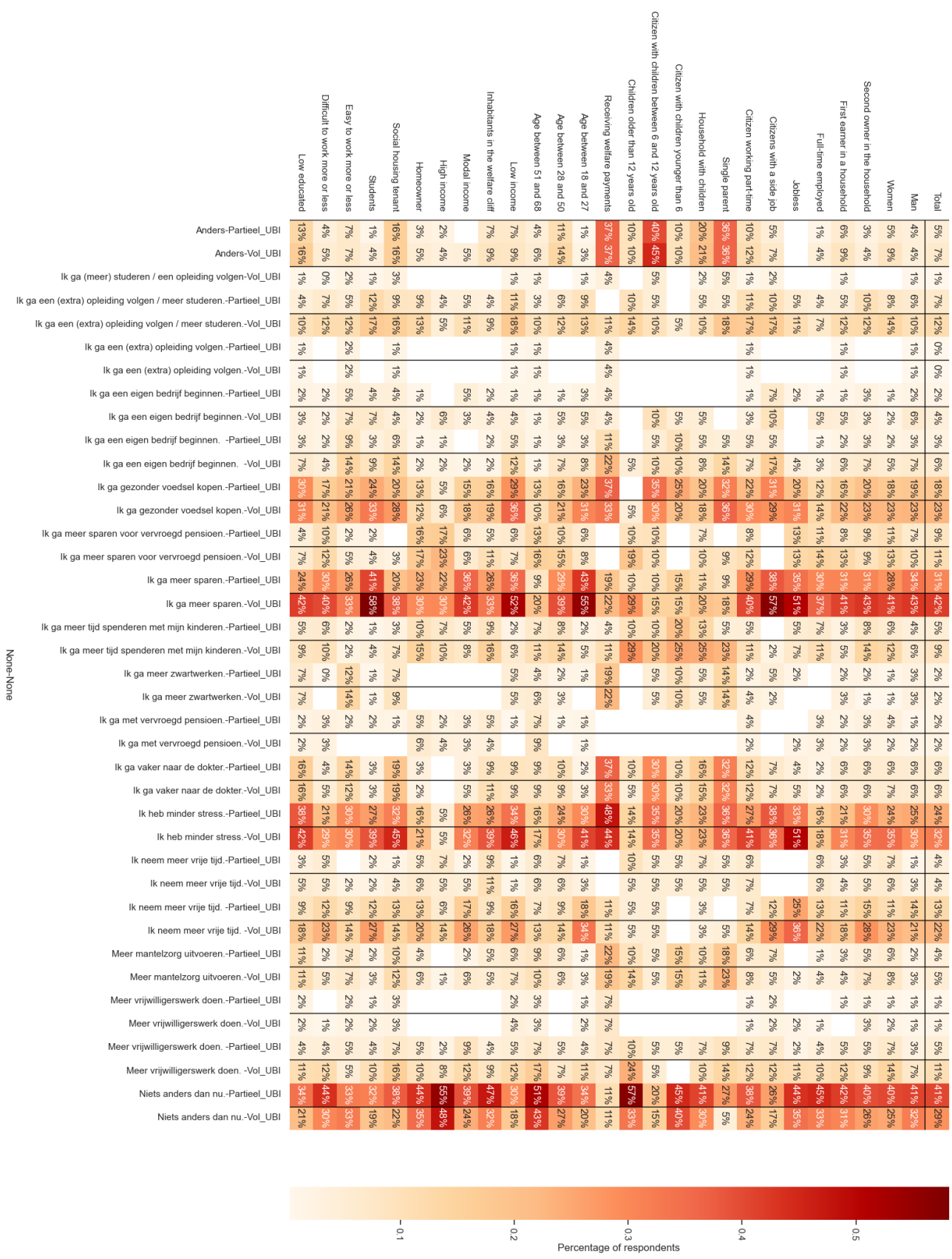



Figure E.8: Percentage of what will people do per category

## E.5. Political support

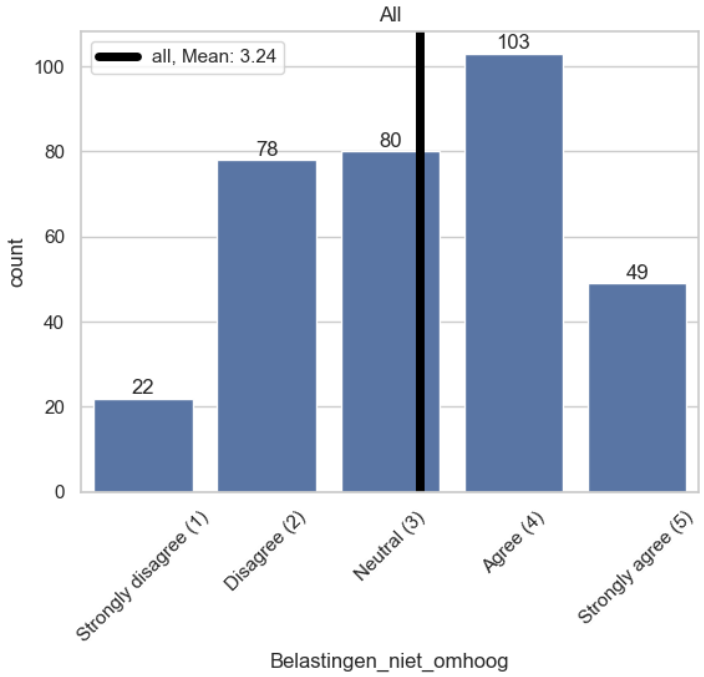



Figure E.9: The government should not increase tax to finance UBI

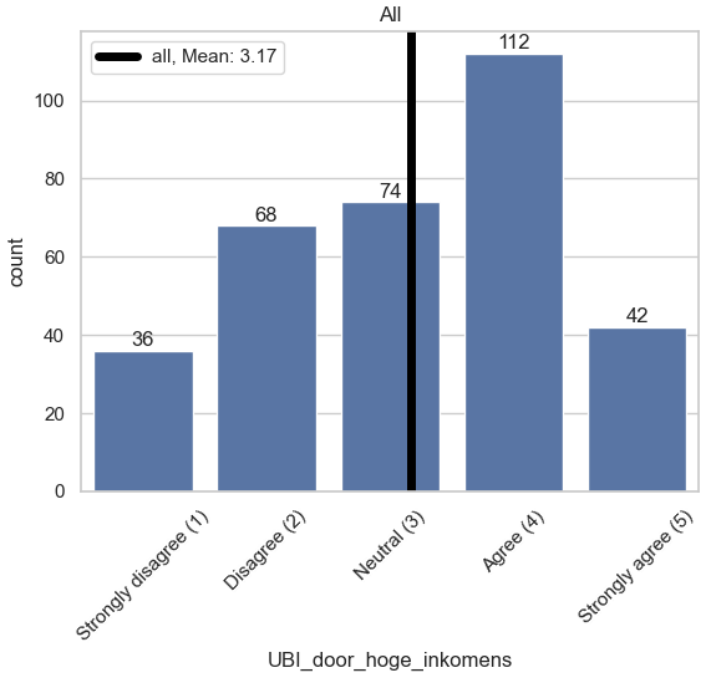



Figure E.10: UBI should be paid by the highest earners

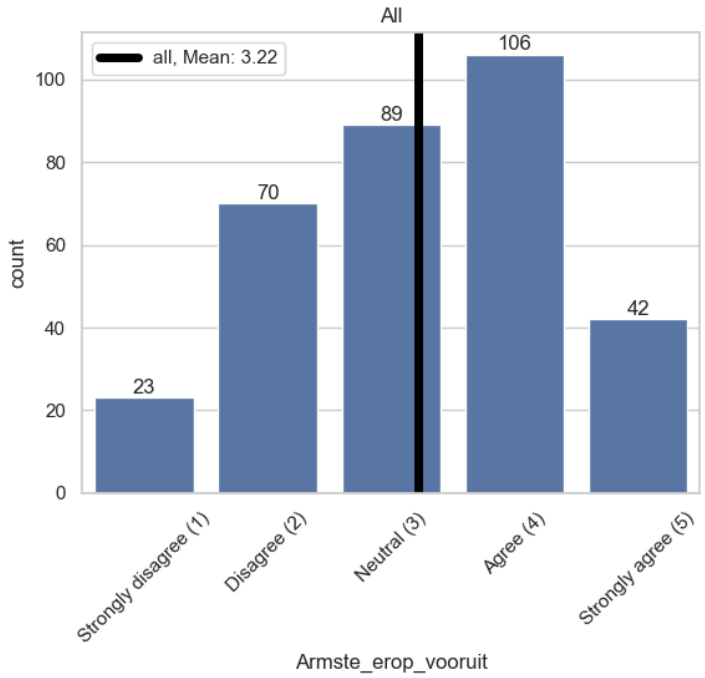



Figure E.11: The poorest members in society should benefit from UBI

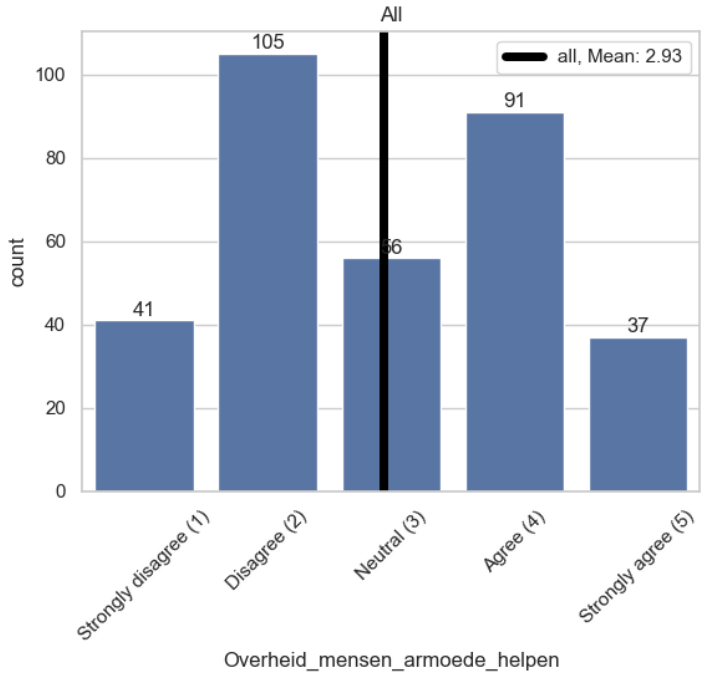



Figure E.12: The government should help the poorest members in society

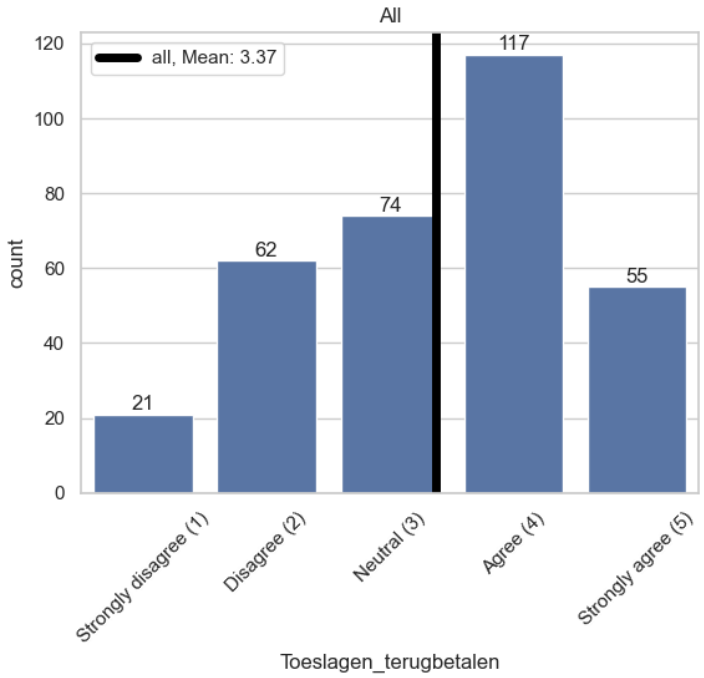



Figure E.13: You should not have to pay your allowance back if you have earned over the limit

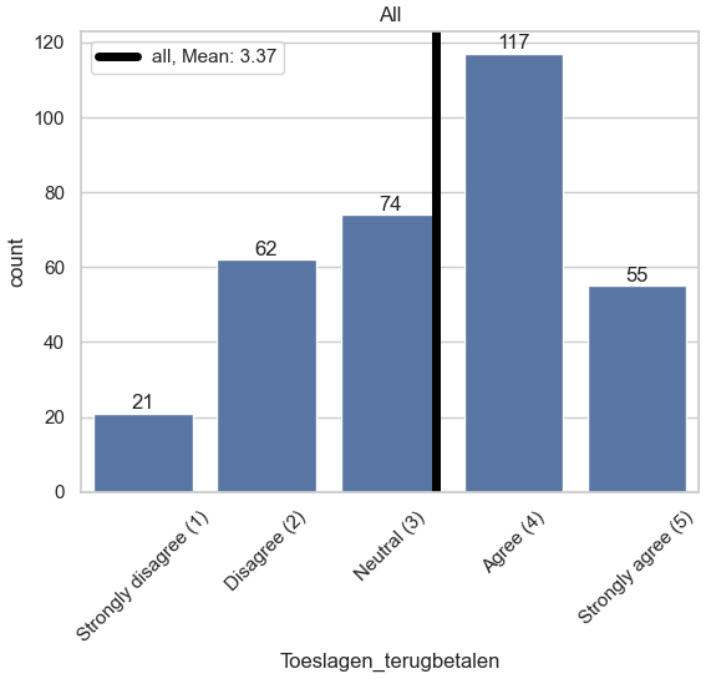



Figure E.14: You should not have to pay your welfare payments back if you have earned over the limit

A positive t-value indicates that the mean in the population is higher than in the group of interest. Conversely, if the t-value is negative, it indicates that the mean value of all respondents is lower than the sample mean of the group of interest, suggesting that the group values the question more than the population does.

Table E.10: Results of t-tests

| Survey question | t-statistic | p-value | Study group |
|---|---|---|---|
| Taxes not increased | 1.98498 | 0.0479247 | Single parent |
| Taxes not increased | 2.90208 | 0.00393707 | Receiving welfare payments |
| Taxes not increased | 2.18557 | 0.029429 | Social housing tenant |
| Taxes not increased | -2.34352 | 0.019565 | Students |
| UBI has to be financed by the highest incomes | -2.17365 | 0.0303992 | Single parent |
| UBI has to be financed by the highest incomes | -2.36377 | 0.0186375 | Children between 6 and 12 years old |
| UBI has to be financed by the highest incomes | -4.25549 | 2.66884e-05 | Citizen receiving welfare payments |
| UBI has to be financed by the highest incomes | -2.24763 | 0.0251014 | Age between 28 and 50 |
| UBI has to be financed by the highest incomes | 2.89431 | 0.00400384 | High income |
| UBI has to be financed by the highest incomes | -3.74566 | 0.000206491 | Social housing tenant |
| UBI has to be financed by the highest incomes | 2.20435 | 0.0280373 | Students |
| UBI has to be financed by the highest incomes | -2.75792 | 0.00607218 | Low educated |
| UBI should replace the allowances | 2.94293 | 0.00346747 | Single parent |
| UBI should replace the allowances | 4.47469 | 1.0062e-05 | Household with children |
| UBI should replace the allowances | -3.36473 | 0.000851119 | Children younger than 6 |
| UBI should replace the allowances | -2.33069 | 0.020339 | Children between 6 and 12 years old |
| UBI should replace the allowances | -2.33437 | 0.0201416 | Children older than 12 years old |
| UBI should replace the allowances | -4.04166 | 6.5037e-05 | Receiving welfare payments |
| UBI should replace the allowances | 3.32698 | 0.000944871 | Age between 18 and 27 |
| UBI should replace the allowances | -3.08511 | 0.00217435 | Age between 51 and 68 |
| UBI should replace the allowances | 2.976 | 0.00308785 | Students |
| UBI should replace the welfare payements | 2.33461 | 0.0201288 | Single parent |
| UBI should replace the welfare payements | -4.49907 | 9.25387e-06 | Receiving welfare payments |
| UBI should replace the welfare payements | -2.50367 | 0.0126928 | Social housing tenant |
| UBI should replace the welfare payements | 2.23302 | 0.0260725 | Students |
| UBI should not worsen my personal financial situation | -2.42123 | 0.0159704 | Receiving welfare payments |
| The poorest members in society should be favored | 2.18743 | 0.0292486 | Working part-time |
| The poorest members in society should be favored | -3.06866 | 0.00231556 | Receiving welfare payments |
| The poorest members in society should be favored | 2.11955 | 0.0345563 | Age between 18 and 27 |
| The poorest members in society should be favored | 3.25158 | 0.0012402 | Students |
| UBI should be high enough to live from | -2.65793 | 0.00818644 | Jobless |
| UBI should be high enough to live from | -2.99561 | 0.00293478 | Single parent |
| UBI should be high enough to live from | -4.97636 | 1.01203e-06 | Receiving welfare payments |
| UBI should be high enough to live from | -3.21778 | 0.00139821 | Social housing tenant |
| UBI should be high enough to live from | 2.19985 | 0.0283614 | Students |
| The government should help the poorest | -2.28325 | 0.0229546 | Jobless |
| The government should help the poorest | -2.79273 | 0.00551461 | Single parent |
| The government should help the poorest | -4.09733 | 5.18218e-05 | Receiving welfare payments |
| The government should help the poorest | -2.02876 | 0.0431393 | Age between 51 and 68 |
| The government should help the poorest | -3.04437 | 0.0024874 | Social housing tenant |
| The government should help the poorest | 2.48796 | 0.0132347 | Students |
| The government should help the poorest | -2.04125 | 0.0418565 | Low educated |
| No payback of allowances | -2.23596 | 0.0259552 | Citizens with a side job |
| No payback of allowances | -3.70105 | 0.000249512 | Single parent |
| No payback of allowances | -2.11925 | 0.0347088 | Household with children |
| No payback of allowances | -2.54999 | 0.0112017 | Children younger than 6 |
| No payback of allowances | -6.44827 | 3.71132e-10 | Receiving welfare payments |
| No payback of allowances | -2.14962 | 0.0321058 | Low income |
| No payback of allowances | 2.82164 | 0.00501427 | High income |
| No payback of allowances | -3.40813 | 0.000721365 | Social housing tenant |
| No payback of welfare payments | -2.6216 | 0.00911498 | Citizens with a side job |
| No payback of welfare payments | -3.24237 | 0.0012997 | Single parent |
| No payback of welfare payments | -7.52662 | 4.33177e-13 | Receiving welfare payments |
| No payback of welfare payments | -2.93443 | 0.0035084 | Low income |
| No payback of welfare payments | 2.25769 | 0.0245275 | Inhabitants in the welfare cliff |
| No payback of welfare payments | 2.51268 | 0.0123695 | High income |
| No payback of welfare payments | -3.05979 | 0.00236563 | Social housing tenant |