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The role of status quo bias in shaping support for controversial transport policies: The counterfactual test

Milan L. Moleman[a,*], Bert van Wee[a], Lennard B. Steketee[a], Noor van den Hurk[b], Maarten Kroesen[a]

[a] Delft University of Technology, Faculty of Technology, Policy and Management, Department of Transport and Logistics, Jaffalaan 5, 2628 BX, Delft, the Netherlands
[b] NS Nederlandse Spoorwegen, Department of Commerce and Development, Laan van Puntenburg 100, 3500 HA, Utrecht, the Netherlands

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ABSTRACT

A biased preference for the status quo could explain the increased support for policies following their implementation. However, the influence of status quo bias on support for transport policies has been analysed to a limited extent only. The counterfactual test serves as a potential method to empirically explore this influence by framing policies as the existing or alternative situation. This paper employs the counterfactual test to ascertain whether individuals disproportionately favour the status quo. To this end, we have designed separate experiments focusing on three transport policies: road pricing, speed limits, and train ticket fare differentiation. The results indicate that status quo bias does indeed influence support for transport policies. Participants prefer each policy option when framed as the status quo. In contrast, support for the same policy option declines when presented as the alternative situation. These findings underscore the irrational tendency to adhere to the status quo, which may stem from psychological commitments or cognitive misperceptions. Therefore, politicians, policymakers, and practitioners should anticipate a bias towards the status quo when introducing controversial transport policies.

1. Introduction

Transport policies are often utilised with various goals in mind, and in doing so, they collectively aim to further reduce the negative aspects and enhance the positive aspects of the transport system. Examples include pricing policies, infrastructure policies, land-use policies, and many others (Van Wee et al., 2023). When selecting among these options, support from the wider public plays a crucial role and often determines whether an option is likely to succeed or fail (for road pricing, see Noordegraaf et al., 2014). Support is frequently expressed in terms of people's acceptability of a policy prior to implementation and acceptance following implementation (Schuitema et al., 2010). However, as Van Wee et al. (2023) highlighted, controversial transport policies such as road pricing typically encounter strong initial opposition, which is often followed by increasing acceptance after introduction.

While various theories and mechanisms are able to explain this increase in acceptance after implementation (Van Wee et al., 2023), such as the difference between expected and experienced utility, only recently has status quo bias been suggested as a possible mechanism to explain changes in support (e.g. Eliasson, 2014; Börjesson et al., 2016). Here, status quo bias refers to the biased preference of individuals to stick with the current situation and resist change altogether (Eliasson, 2014), for which three main explanations exist.

Three mechanisms can explain people's tendency to stick to the status quo. People may prefer not to make a switch in order to avoid uncertainty and/or transition costs. Uncertainty costs occur when certain expenses are unknown upfront, whereas transition costs are inherently linked to deviating from the status quo. Rational decision-making is at the heart of considering such costs (Samuelson and Zeckhauser, 1988). It might be rational to stay with the current situation, as switching to a new situation requires, for instance, new investments. This often applies to transport infrastructure. While this mechanism helps explain people's tendency to prefer the current situation, rational decision-making fails to account for individuals' biased preference for the status quo when potential gains exceed uncertainty and transition costs (Godefroid et al., 2022). Therefore, psychological commitment or

* Corresponding author.
E-mail addresses: M.L.Moleman@student.tudelft.nl (M.L. Moleman), G.P.vanWee@tudelft.nl (B. van Wee), L.B.Steketee@student.tudelft.nl (L.B. Steketee), noor.vandenhurk@ns.nl (N. van den Hurk), M.Kroesen@tudelft.nl (M. Kroesen).

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cognitive misperception are two other mechanisms which explain status quo bias. With respect to psychological commitment, individuals may wish to remain with the status quo once an investment of money, time, or effort has been made. Alternatively, in the context of cognitive misperception, individuals may disregard substantial gains when they give more weight to potential losses perceived as unrealistically large (see Tversky and Kahneman, 1991).Section 2 provides a more detailed account of these three mechanisms behind status quo bias.

While status quo bias has gained increasing attention across various research fields (Godefroid et al., 2022), its role in shaping support for transport policies has only been explored to a limited extent. Most literature regarding the growing support after implementation has studied alternative explanatory mechanisms (for a thorough discussion, see Van Wee et al., 2023). Furthermore, research frequently employs case studies that examine differences in support before, during, and after implementation within a specific region or context. The number of studies featuring an experimental design is limited, and collectively, very few empirical analyses have been conducted to evaluate the existence of status quo bias thus far.

Status quo bias can hinder innovation if improvements are overlooked, creating a need for assessing status quo bias to effectively select measures that may counter this bias (Godefroid et al., 2022). The counterfactual test proposed by Van Wee (2023) is a potential instrument to evaluate the role of status quo bias in altering support for controversial transport policies. This test inquires whether the counterfactual of a controversial policy (i.e. the proposed alternative of a given policy) would be a better idea (Van Wee, 2023). For instance, if annual road taxes represent the status quo and the government proposes to implement a per kilometre charge, questioning the counterfactual might reveal whether support for both policies is comparable in a situation where a per kilometre charge is the status quo and the government presents annual road taxes as a new road pricing mechanism. Nevertheless, to the best of our knowledge, this test has not been the subject of empirical studies so far.

The aim of this paper is twofold. First, we seek to empirically assess the general applicability of status quo bias on support for transport policies. Second, we aim to contribute methodologically by examining whether the counterfactual test is suitable for evaluating individuals' support for transport policies and related changes. To achieve this, we do not focus solely on road pricing policies, as most studies did; instead, we assess three different transport policies. In addition to road pricing policies, we also examine speed limit and train ticket fare differentiation policies. For this purpose, the counterfactual test has been operationalised in three separate online surveys. A total of 161 respondents completed the experiment on speed limits, whereas 305 respondents participated in the experiment on road pricing. These experiments are complemented by a large-scale experiment on train ticket fare differentiations, which includes data from 1388 individuals in the analysis. In doing so, the generalisability of status quo bias in shaping support for transport policies is evaluated.

The remainder of this paper is structured as follows. A review of the relevant body of literature is provided in Section 2. The methods employed to achieve this paper's aim are discussed in Section 3. Subsequently, Section 4 presents the results of the analysis. Finally, Section 5 concludes the study.

2. Literature review

2.1. Status quo bias

Status quo bias refers to the biased preference for maintaining the current way of doing things or sticking with one's existing or past decisions (Samuelson and Zeckhauser, 1988), which finds its roots in behavioural economics. Rather than depicting people's decision-making processes as rational, often illustrated by the concept of homo economicus, researchers and practitioners have begun to incorporate psychological reasoning into economic theories. The concept of bounded rationality exemplifies this approach. Simon (1955) highlighted the limitations individuals face in making rational choices. Instead, individuals are bounded by the information they process and the abilities that allow them to do so (Simon, 1955). This bounded rationality results in distortions and misperceptions, which were subsequently postulated as cognitive biases (Godefroid et al., 2022). These biases describe behaviour where 'individuals draw inferences or adopt beliefs where the evidence for doing so in a logically sound manner is either insufficient or absent' (Haselton et al., 2015, p.2). Benson (2019) identified 188 biases, with status quo bias being one of them.

Samuelson and Zeckhauser (1988) present three explanatory mechanisms to status quo bias: rational decision-making, psychological commitment, and cognitive misperception. Individuals may seek to avoid uncertainty and transition costs, which are inherently associated with moving to a new situation. Here, uncertainty costs arise when the cost of a good or service is unknown in advance, while transition costs reflect the investment needed for the change (Godefroid et al., 2022). Due to these costs, individuals often prefer to stick with the positive experiences or features relevant to their preferences (Godefroid et al., 2022; Andersson et al., 2023). Secondly, psychological commitments can explain the inclination towards existing practices through sunk costs or social influence. Sunk costs refer to investments made in terms of money, time, or effort that cannot be recovered once a switch occurs (Godefroid et al., 2022). Investments in transport infrastructure are often large and sunk costs, resulting in a preference to stick with the current way of doing things. This preference is irrational when investments in alternatives are evenly or less expensive. Alternatively, social influence from the opinions of family, friends, and colleagues may shape individuals' perceptions of the change. Lastly, cognitive misperceptions may arise from evaluating alternatives against the status quo as a reference point. Consequently, individuals assign greater importance to potential losses over gains, a phenomenon known as loss aversion (see Tversky and Kahneman, 1991). A cost of change is perceived as more significant than potential benefits, leading to a biased, irrational preference for the status quo.

2.2. A biased preference towards transport policies?

While a growing interest in status quo bias has been observed, its role in influencing support for transport policies has only been marginally examined. Most literature on increasing support has focused on alternative explanatory mechanisms, such as changes in experiences, utility or attitudes. For instance, Nilsson et al. (2016) explicitly studied the attitudes and beliefs before and after the implementation of the congestion tax in Gothenburg, revealing an increase in support following implementation. A contributing factor was the positive change in attitudes measured among respondents. Winslott-Hiselius et al. (2009) also attribute changes in support for Stockholm's toll system, implemented in 2006, to shifts in attitudes. Individuals' experiences with the toll system were identified as an underlying driver of more positive attitudes. Overall, empirical evidence for increased support following implementation has (probably) been provided solely for road pricing policies (Van Wee et al., 2023).

Only a limited body of research links changes in support for transport policies after their implementation to status quo bias. Eliasson (2014) examined the case of congestion pricing inStockholm and concluded that the growing support for road pricing inStockholm could be interpreted as a general form of status quo bias. Eliasson (2014) attributes these changes to the political and public reframing of the congestion charges. In studying the case of congestion pricing in Gothenburg, Börjesson et al. (2016) reported a rise in public support (from 33 % to 50 %). To identify the underlying mechanism responsible for this increase, they assessed, among others, larger benefits than expected, smaller disadvantages than expected, changes in related attitudes, reframing, and status quo bias. Börjesson et al. (2016) found that status quo bias primarily influenced the growing support for road pricing following its implementation in Gothenburg, as the other mechanisms could not adequately explain this increase. Andersson et al. (2023), who specifically focused on active travel policies, also found evidence of status quo bias. Interestingly, neither loss aversion nor resistance to change could explain this bias towards the status quo (Andersson et al., 2023).

In general, there is little direct empirical evidence for the existence of status quo bias. Most studies establish a link between status quo bias and growing support by eliminating other potential mechanisms. Experimental designs have been used only to a limited extent to assess the role of status quo bias in shaping support for transport policies in greater detail. Furthermore, the generalisability of status quo bias in transport policies has not yet been established, as studies have either focused on road pricing or active travel policies. Therefore, this study aims to test the impact of status quo bias on support for transport policies in a quantitative setting. The applied methodology will be discussed in Section 3.

3. Methodology

3.1. Counterfactual test

This study employs the counterfactual test to determine whether status quo bias influences individuals' support for alternative policies. The central concept of this test is to invert the current and alternative policy options (Van Wee, 2023). In this context, a new alternative would be presented as the current situation, while the policy in effect would be represented as the alternative situation. By discussing the counterfactual, this test aims to demonstrate that both proposals have beneficiaries and detractors (Van Wee, 2023).

Take, for instance, the annual road tax. An often proposed alternative is the per kilometre charge; those who drive more will also pay more, and those who drive less will pay less. While this new mechanism may result in a fairer and more inclusive transport system, it often faces strong initial opposition. Now, suppose we have a road pricing mechanism in the form of a per-kilometre charge. When the government suggests replacing this mechanism with an annual road tax per car, opponents will likely emphasise that this new proposal is very unfair because everyone would have to pay the same annual tax for a given car type, regardless of the actual use of that car.

Public support for both policy options in each scenario (framed as current or alternative situation) should be measured to explore the role of status quo bias in support for transport policies. By comparing public support for a policy option across these scenarios, the impact of framing bias on people's preference for the current situation can be evaluated.

3.2. Participants

This study employs three self-administered surveys conducted in the Netherlands, which comprise two parts. The first part asked respondents to provide their background information (e.g., gender, age, and level of education), whereas the second part focused on the counterfactual test. Each survey assessed support for a different transport policy based on a two-stage framing experiment.

With regard to the surveys on road pricing and speed limits, respondents were recruited by bachelor students at TU Delft. These students distributed the questionnaire amongst their social networks. A total of 161 respondents completed the questionnaire on speed limit policies, while 305 completed the survey on road pricing policies. An external research agency (MWM2) distributed an additional survey on public transport fare policies to complement the counterfactual test on these policies. This agency manages the NS Panel on behalf of NS, the Dutch public transport company, which distributes surveys among current train travellers. The survey was conducted from 28 May to June 1, 2024, with 1419 respondents participating, of whom 1388 were included in the analysis.

Table 1 presents descriptive statistics of respondents' socio-demographic characteristics. Most respondents are aged between 45 and 65, whereas those under 25 are overrepresented in the speed limit and road pricing surveys. Furthermore, highly educated individuals (e.g., those with a university or college degree) are significantly over-represented in all three samples.

3.3. Experimental design

The second part of the survey focused on the counterfactual test. Policies considered in this study relate to road pricing, speed limits, and public transport fare differentiations. These policies and their corresponding options have been selected in light of the public attention they have received in the Netherlands in recent years. For instance, a debate on converting the current annual road tax into a per-kilometre charge has been ongoing for almost two decades. More concrete plans have recently emerged to introduce a per-kilometre charge. The Dutch Ministry of Infrastructure and Water Management (2022) has even stated that the per-kilometre charge, without differentiation in time and amount, will be implemented in 2030. Regarding speed limit policies, we consider only speed limits within urban Dutch areas, which are currently, apart from rare exceptions, either 30 or 50 km/h. While parliament accepted a motion to restrict speed limits on most urban roads to 30 km/h (SWOV, 2021), municipalities are permitted to deviate from this threshold (and thus apply a speed limit of 50 km/h) when deemed safe (Sweco, 2022), but at the time of writing this paper (mid 2025) these policies have only limitedly be implemented. Finally, fare differentiations in public transport have been discussed in detail over the past years. To date, the passenger railway operator Nederlandse Spoorwegen (NS) determines ticket fares based on the distance individuals travel. However, an alternative fare differentiation involves differentiating by distance and time. In this context, a distinction between peak and non-peak hours is commonplace, with individuals travelling during peak hours paying more than those travelling outside of these periods.

We designed a two-stage framing experiment to operationalise the counterfactual test for each policy. Respondents were randomly assigned to one of two experiments, in which they were asked to express their support for a given current situation in stage one and for an alternative situation in stage two. By randomising respondents across the two experiments, the current and alternative situations were varied throughout the experiment. In the following subsections, the operationalisation of the counterfactual test is discussed in more detail.

3.3.1. Speed limit experiment

Regarding the speed limit experiment, respondents were asked to indicate their support for a specific speed limit policy in two stages. The first stage involved asking respondents to imagine that they lived on a particular street, with either a 30 km/h or 50 km/h speed limit sign, depending on the random allocation to one of the two experiments. Fig. 1 illustrates an example of the first question, which measures respondents' support for the current situation. The second stage of the experiment involved asking respondents to indicate their support for the alternative speed limit, with an exemplar question shown in Fig. 2. Respondents answered both questions, while the order of presentation was varied randomly. In total, the speed limit experiment included 161 individuals.

By differentiating only the speed limit, changes in support for these policies can be attributed to alterations in speed limits. While other factors, such as road congestion, may influence support for these limits, these factors remain ceteris paribus in both stages. Consequently, changes in support for a given speed limit across different scenarios cannot be attributed to factors like congestion.

3.3.2. Road pricing experiment

For the road pricing experiment, participants were randomly

Table 1
Sample and population distributions of socio-demographics.

		Speed limit	Road pricing	PT fares	Dutch population[a]	PT population[b]
Gender	Male	51.6 %	44.9 %	58.6 %	49.7 %	52.4 %
	Female	46.6 %	52.1 %	41.4 %	50.3 %	47.6 %
	Other	1.9 %	1.0 %	–	–	–
	Missing	–	2.0 %	–	–	–
Age (in years)	15–25	31.7 %	43.6 %	7.0 %	14.4 %	32.9 %
	25–45	21.7 %	13.4 %	25.5 %	30.1 %	43.2 %
	45–65	39.8 %	35.7 %	51.7 %	31.2 %	22.7 %
	65 +	6.2 %	3.6 %	15.9 %	24.3 %	1.2 %
	Missing	0.6 %	3.6 %	–	–	–
Level of education	High	76.4 %	77.3 %	68.6 %	32.0 %	63.6 %
	Else	23.6 %	22.7 %	31.4 %	68.0 %	36.4 %
	Missing	–	0.3 %	–	–	–

[a] Numbers retrieved from CBS Statistics Netherlands (https://opendata.cbs.nl/statline/#/CBS/en/).
[b] Numbers based on peak travellers population obtained from NS travellers and trip survey.

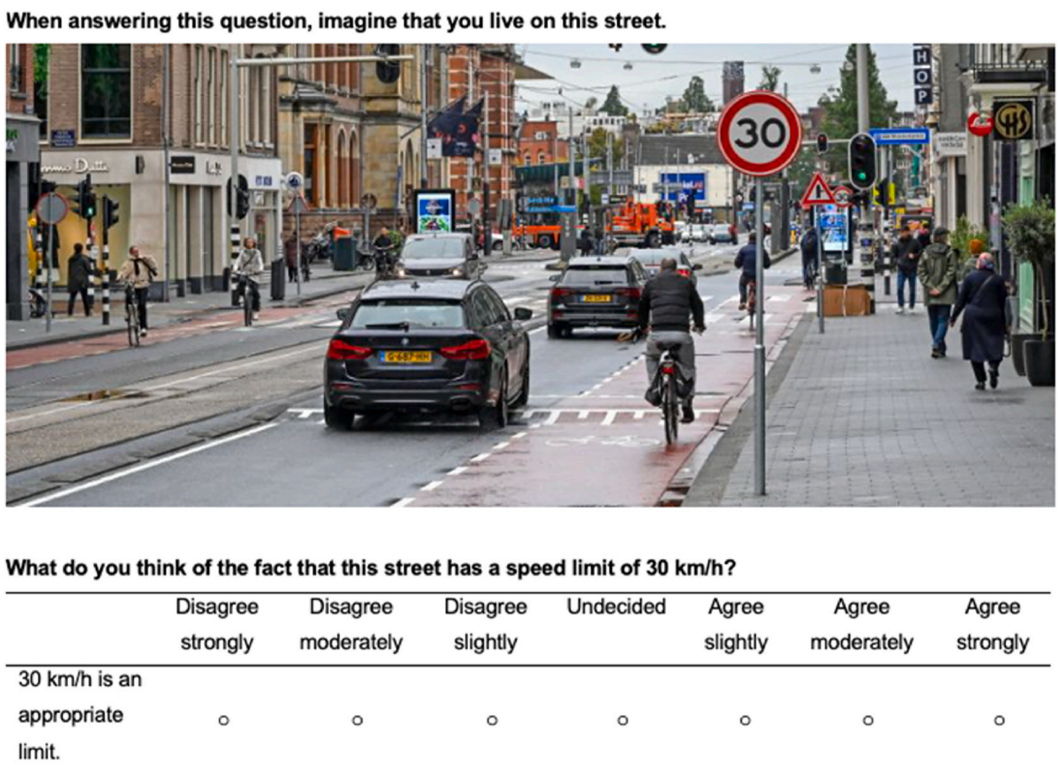

Fig. 1. An example of the first question of the speed limit experiment.

allocated to one of two groups. In the first group (N = 155), an annual road tax was presented as the current situation, while a tax per kilometre was framed as the alternative situation. The two conditions were reversed in the second group (N = 150). Consequently, these participants were first asked to indicate their support for a tax per kilometre as the current situation. Next, they were asked to express their support for an annual road tax as the alternative situation. Table 2 presents the complete set of questions posed regarding the road pricing experiment.

3.3.3. Public transport pricing experiment

The last experiment evaluates support for public transport pricing and assesses how fair these policies are according to the travellers themselves. Similar to the previous two experiments, participants were assigned to one of two groups. For both, participants first read the following brief description:

NS needs to deploy additional trains on Tuesdays and Thursdays during the morning peak hours to ensure there are enough seats for passengers. These additional trains are fully utilised for approximately 2–4 h on those days. Outside peak hours, more than 7 out of 10 seats remain empty, so not all carriages are needed. However, it is not feasible to idle the extra trains and staff during off-peak hours. The costs for additional trains and staff are covered by train passengers.

Afterwards, the first group of participants (N = 697) was asked to imagine that in the current situation, they only had to pay for their journey based on the distance they travelled. After indicating their support for a distance-based pricing policy, the same group of participants was then asked to assess the fairness of a distance- and time-based pricing policy.

For the second set of participants (N = 691), the two-stage experiment was conducted in reverse order. In this case, the distance- and time-based fare system was presented as the status quo, while the distance-based fare system was introduced as a policy alternative. Table 3 contains the complete set of questions posed regarding the fare differentiation experiment.

When answering this question, imagine that you live on this street.

Suppose the municipality wants to change the speed limit to 50 km/h Would you agree with this new policy?

	Disagree strongly	Disagree moderately	Disagree slightly	Undecided	Agree slightly	Agree moderately	Agree strongly
50 km/h is an appropriate limit.	○	○	○	○	○	○	○

Fig. 2. An example of the second question of the speed limit experiment.

3.4. Analytical approach

To first examine whether public support for each policy option differs between the two stages, particularly when framed as the current situation versus alternative situation, independent samples t-tests are employed. These tests allow for the examination of whether support for a policy option is statistically different between these two stages. If the policy option is indeed preferred when framed as the current situation, the hypothesis that individuals are biased towards the status quo would be supported.

Next, to assess whether these differences remain significant when accounting for individuals' socio-demographics, a regression analysis is also conducted. A total of six ordinal logistic regression models are estimated, one for each policy option measured in the surveys. In this regard, public support for a given policy option is used as the (ordinal) dependent variable, measured on a 7-point Likert scale. In addition to the stage of the experiment, overlapping background variables across the surveys, namely, gender, age, and level of education, are used as independent variables. Missing data on respondents' background information is excluded from the analysis due to the small percentage of missing values, which amounts to at most 3.6 %.

4. Results

The results of the independent samples t-tests are presented in Table 4. Regarding the speed limit policies, the variations in respondents' support for these policies indicate that 30 km/h is preferred over 50 km/h. While the support for 30 km/h is above the midpoint of the scale, suggesting that it is perceived as the most appropriate speed limit for that street, the support for 50 km/h remains well below the midpoint. Concerning the counterfactual test, support for both 30 km/h and 50 km/h varies across the two status quo situations, as highlighted in Fig. 3. The support for 30 km/h as a speed limit equals 5.78 when 30 km/h is the current situation, whereas this support diminishes to 5.30 when presented as a counterfactual. This change in support of 0.48 is significant, with a p-value of 0.022. In contrast, support for 50 km/h as a speed limit is highest when 50 km/h is the status quo, namely 3.60, which decreases to 2.60 when framed as the proposed alternative. This difference in support of 1.00 is also statistically significant, with a p-value of <0.001.

Regarding the road pricing policies, respondents support both annual road tax and tax per kilometre. All policy options, regardless of whether they represent the current or alternative situation, scored above the midpoint on the scale. Additionally, the results of the counterfactual test reveal a similar pattern as observed with the speed limit policies. The support for policy options is highest when that option is the status quo. Conversely, support for the same option decreases when framed as the counterfactual. For instance, support for annual road tax drops from 4.76 to 4.25 when the status quo shifts from annual road tax to tax per kilometre. This significant difference of 0.51 has a p-value of 0.003. In contrast, support for the charge per kilometre is highest at 4.70 when this option is the status quo, falling to 4.69 when presented as an alternative. This minimal difference of 0.01 is not statistically significant.

Lastly, support for train ticket fare differentiation is discussed. While support for a distance-based fare system ranks below the midpoint when distance- and time-based pricing is the status quo, other policy options received positive scores from respondents. Regarding the counterfactual test, the support for distance-based pricing of train tickets varies considerably across different situations, scoring 4.27 when distance-based pricing is the current standard, and dropping to 3.26 when distance- and time-based pricing is the status quo. The counterfactual indicates that support for distance- and time-based pricing peaks when this is the status quo, with a score of 4.26, decreasing to 4.20 when a distance-based fare system is implemented in practice. While the difference in support for distance-based ticket pricing of 1.01 is significant with a p-value of <0.001, the difference in support for distance- and time-based ticket pricing of 0.06 is not significant (p-value of $0.281 >$

Table 2
Experimental design for road pricing policies.

Road pricing *Status quo: annual road tax (N = 155)*	Question	Scale
Support for annual road tax	Imagine that there is a country where the following policy applies: If you own a car, you pay a fixed amount per month based on the weight of the car, the fuel and how environmentally polluting the car is. On average, people pay 47 euros per month as road tax. To what extent do you support this policy?	7-point Likert scale ranging from strongly opposed to strongly in favour of
Support for per kilometre charge	The country wants to adjust the current policy to the following situation: Instead of paying a fixed amount per month for owning a car, people will now pay an amount per number of kilometres driven. The cost for this will be 7 cents per kilometre. To what extent do you support this policy?	7-point Likert scale ranging from strongly opposed to strongly in favour of
Road pricing *Status quo: annual road tax (N = 150)*		
Support for per kilometre charge	Imagine that there is a country where the following policy applies: If you own a car, you pay an amount per number of kilometres driven. The cost for this will be 7 cents per kilometre. To what extent do you support this policy?	7-point Likert scale ranging from strongly opposed to strongly in favour of
Support for annual road tax	*The country wants to adjust the current policy to the following situation: Instead of paying an amount* per *number of kilometres driven, people will now pay a fixed amount* per *month based on the weight of the car, the fuel and how environmentally polluting the car is. On average, people pay 47 euros* per *month as road tax. To what extent do you support this policy?*	7-point Likert scale ranging from strongly opposed to strongly in favour of

0.025).

In general, all three experiments indicate that support for a policy option is highest when framed as the current situation, whereas support for the same option decreases when the counterfactual is presented (see Fig. 3). Interestingly, the difference in support for the policy options currently in effect in the Netherlands, namely a 50 km/h speed limit, annual road tax as a road pricing mechanism, and a distance-based fare system, varies significantly across the two stages. In contrast, the debated policy options exhibit a much smaller difference in support between these stages.

The results of the ordinal logistic regression analysis are presented in Table 5. These models estimate the effects of status quo framing on support for transport policy options while controlling for respondents' demographic characteristics. Status quo framing significantly increased support for three specific policy measures: a 50 km/h speed limit, an annual road tax, and distance-based public transport (PT) fare pricing. Participants were more likely to express higher levels of support for these options when framed as the current situation. Specifically, the odds of expressing more substantial support for the 50 km/h speed limit were 2.89 times higher (OR = 2.89, $\beta = 1.06$, $p < .05$) when this option was presented as the default. Similarly, the odds of higher support were 1.84 times greater for annual road pricing (OR = 1.84, $\beta = 0.61$, $p < .05$) and 2.69 times greater for distance-based PT pricing (OR = 2.69, $\beta = 0.99$, $p < .05$) when these were framed as the status quo. These findings indicate a consistent framing effect, whereby presenting a policy as the current standard increases public support.

In contrast, status quo framing did not significantly influence support

Table 3
Experimental design for public transport fare differentiation policies.

Fare differentiation *Status quo: distance-based (N = 697)*	Question	Scale
Support for distance-based fare pricing	Imagine the current fare system is as follows: the price for a train journey is calculated based on the distance travelled. The price for a particular route is the same during peak hours and off-peak hours. The extra costs incurred for additional trains and staff during peak hours are distributed among all train passengers. How fair do you think this is?	7-point Likert scale ranging from extremely unfair to extremely fair
Support for distance- and time-based fare pricing	Imagine the fare system from the first statement is replaced by a new fare system as follows: the price for a train journey is calculated based on the distance travelled and the time of travel. The price for a particular route is higher during peak hours than during off-peak hours. The extra costs incurred for additional trains and staff during peak hours are distributed among peak-hour passengers. As a result, 20 % of journeys become more expensive than before because they fall during peak hours. 80 % of journeys become cheaper than before because they fall outside peak hours.	7-point Likert scale ranging from extremely unfair to extremely fair
Fare differentiation *Status quo: distance- and time-based (N = 691)*		
Support for distance- and time-based fare pricing	Imagine the current fare system is as follows: the price for a train journey is calculated based on the distance travelled and the time of travel. The price for a particular route is higher during peak hours than during off-peak hours. The extra costs incurred for additional trains and staff during peak hours are distributed among peak-hour passengers. How fair do you think this is?	7-point Likert scale ranging from extremely unfair to extremely fair
Support for distance-based fare pricing	Imagine the fare system from the first statement is replaced by a new fare system as follows: the price for a train journey is calculated based on the distance travelled. The price for a particular route is the same during peak hours and off-peak hours. The extra costs incurred for additional trains and staff during peak hours are distributed among all train passengers. As a result, 20 % of journeys become cheaper than before because they fall during peak hours. 80 % of journeys become more expensive than before because they fall outside peak hours. How fair do you think this is?	7-point Likert scale ranging from extremely unfair to extremely fair

Table 4
Results of the independent samples t-tests for the different transport policies.

Support for transport policies Likert scale 1-7	Status quo framing		Statistics		
Speed limits	30 km/h	50 km/h	*Difference*	*t statistic*	*p-value*
30 km/h	5.78 (1.13)	5.30 (1.82)	0.48	2.038	0.022
50 km/h	2.60 (1.59)	3.60 (1.95)	−1.00	−3.574	<0.001
Road pricing	*Annual road tax*	*Tax per km*	*Difference*	*t statistic*	*p-value*
Annual road tax	4.76 (1.60)	4.25 (1.67)	0.51	2.745	0.003
Tax per km	4.69 (1.73)	4.70 (1.65)	−0.01	−0.050	0.480
Train ticket fare differentiation	*Distance*	*Distance and time*	*Difference*	*t statistic*	*p-value*
Distance	4.27 (1.83)	3.26 (1.72)	1.01	10.555	<0.001
Distance and time	4.20 (1.97)	4.26 (1.95)	−0.06	−0.581	0.281

for a 30 km/h speed limit, a per-kilometre road pricing mechanism, or distance-and-time-based PT fare pricing. Other socio-demographic factors, however, had significant effects. Regarding the 30 km/h speed limit, age was a notable predictor of support. Respondents aged between 25 and 45 years exhibited the highest levels of support, with 11.37 times greater odds of expressing higher support (OR = 11.37, $\beta = 2.43$, $p < .05$) in comparison to the reference group (65 years and older). Those aged 45–65 also demonstrated higher odds of support (OR = 8.76, $\beta = 2.17$, $p < .05$), as did respondents aged 15–25 (OR = 5.11, $\beta = 1.63$, $p < .05$), suggesting a clear age gradient in support for lower speed limits.

Education attainment emerged as a predictor in the models on support for a per kilometre charge and distance- and time-based PT pricing. Respondents with lower educational attainment were significantly less likely to express strong support for both the per-kilometre charge (OR = 0.58, $\beta = -0.54$, $p < .05$) and distance-and-time-based PT pricing (OR = 0.65, $\beta = -0.43$, $p < .05$). Gender also played a role in shaping acceptance towards PT fare structures: women had 30 % higher odds of supporting distance-and-time-based pricing compared to men (OR = 1.30, $\beta = 0.26$, $p < .05$).

5. Discussion

A limited number of studies have examined the role of status quo bias in changing support for transport policies. For instance, Eliasson (2014) interpreted the change in attitude towards road pricing in Stockholm after its introduction as a general status quo bias. Additionally, loss aversion is proposed as a possible indicator. Moreover, Börjesson et al. (2016) attributed the growing support for road pricing in Gothenburg after its implementation to status quo bias as well. Lastly, Andersson et al. (2023) focused specifically on active travel policies, concluding that bias towards the status quo is impacting support for these policies as well.

This paper differs from earlier studies in the sense that, to the best of our knowledge, it is the first time the counterfactual test has been applied in a two-stage framing experiment. While Andersson et al. (2023) evaluated the role of status quo bias in support for active travel policy using an experiment, this study only assessed support for an active travel policy option by framing it as the current situation for one group and as the alternative situation for another group. However, the test in its original format, as proposed by Van Wee (2023), would involve asking each group of respondents about the counterfactual as well. Both groups would be asked to provide their policy support in both the current and alternative situations.

In addition, the current analysis involved not only the examination of road pricing policies, as often evaluated in before-and-after case studies (Van Wee et al., 2023), but also assessed the role of status quo bias in altering support for other policies. Frequently, tailored approaches for specific contexts are employed to examine status quo bias (Godefroid et al., 2022).

Overall, the present analysis suggests that bias towards the status quo influences support for transport policies. In all three experiments discussed in this paper, a similar pattern is observed. Policy options are consistently preferred when they represent the status quo, while the same options are preferred to a lesser extent when framed as alternatives to an existing situation. These findings align with the interpretations of Eliasson (2014) and Börjesson et al. (2016) as well as the results presented by Andersson et al. (2023), underscoring the tendency of individuals to adhere to the status quo.

While respondents consistently favoured policy options framed as the default, the effect of status quo framing did not reach statistical significance for all options. Significant effects were observed for the 50 km/h speed limit, annual road pricing, and distance-based train ticket pricing. However, for the remaining options (30 km/h speed limit, per kilometre road pricing, distance- and time-based PT ticket pricing), support levels remained similar across both framing stages, indicating that the framing effect did not significantly influence the support of the wider population. In these instances, demographic factors such as gender, age, and education level were the primary contributors to the

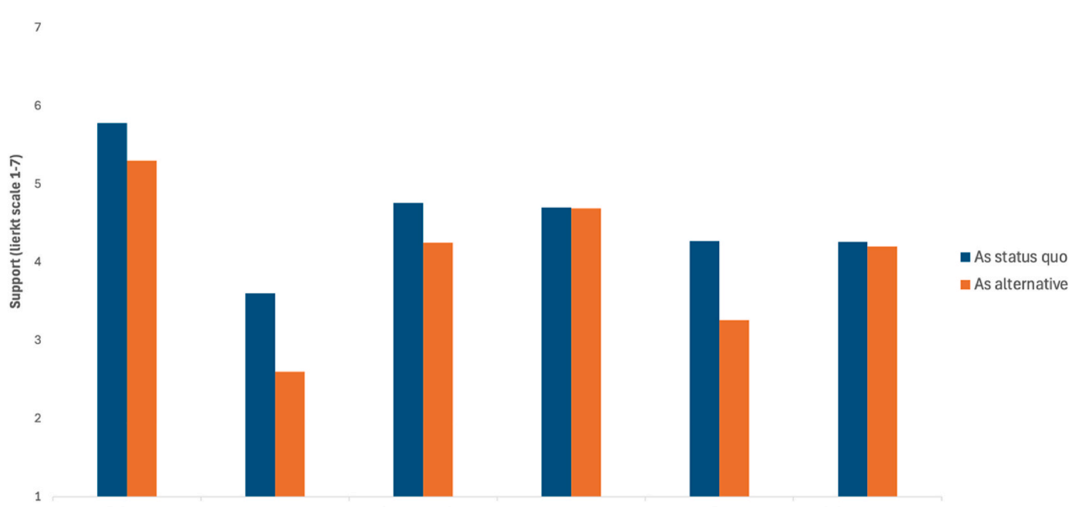

Fig. 3. Support for transport policies for the different sets of respondents on a Likert scale (1–7).

Table 5
Results of the ordinal logistic regression analysis.

	Support for speed limit		Support for road pricing		Support for PT fare pricing	
	50 km/h	30 km/h	Annual tax	Tax per km	Distance	Distance and time
Variables						
Framing (ref. as alternative)						
As status quo	1.06 *** [0.47–1.64]	0.36 [-0.23 – 0.94]	0.61*** [0.20–1.02]	−0.18 [-0.59 – 0.23]	0.99 *** [0.80–1.18]	0.07 [-0.12 – 0.25]
Gender (ref. male)						
Female	0.19 [-0.46 – 0.84]	−0.34 [-1.01 – 0.33]	−0.33 [-0.75 – 0.09]	−0.13 [-0.55 – 0.28]	0.10 [-0.09 – 0.28]	0.26 *** [0.07–0.45]
Age (ref. 65 years and older)						
15–25 years	0.72 [-0.57 – 2.00]	1.63 *** [0.32–2.93]	0.82 [-0.28 – 1.92]	0.14 [-0.96 – 1.24]	0.24 [-0.18 – 0.67]	0.05 [-0.38 – 0.48]
25–45 years	−0.20 [-1.46 – 1.05]	2.43 *** [1.12–3.75]	0.47 [-0.71 – 1.65]	−0.69 [-1.87 – 0.49]	0.04 [-0.26 – 0.34]	−0.08 [-0.38 – 0.22]
45–65 years	−0.25 [-1.45 – 0.95]	2.17 *** [0.93–3.41]	−0.09 [-1.19 – 1.01]	0.48 [-0.62 – 1.59]	0.06 [-0.20 – 0.33]	−0.12 [-0.39 – 0.15]
Level of education (ref. high)						
Low	−0.16 [-0.93 – 0.61]	−0.58 [-1.37 – 0.22]	0.09 [-0.41 – 0.59]	−0.54 *** [-1.04 to −0.05]	−0.01 [-0.21 – 0.20]	−0.43 *** [-0.64 to −0.22]
Model fit						
Nagelkerke R-square	0.13	0.14	0.09	0.07	0.08	0.02
Number of respondents	160	160	305	305	1388	1388

***$p < 0.05$.

minor variations in support. This suggests that the influence of status quo framing on policy support may depend on the specific type of policy and the context in which it is framed.

The results underscore an irrational, disproportional preference for the status quo. As underscored by Samuelson and Zeckhauser (1988), status quo bias can only be viewed as part of rational decision-making when individuals aim to avoid uncertainty or transition costs. Such costs, however, did not play a role in the framing experiments used in this study. Furthermore, the results do not indicate a symmetric preference for a policy option, regardless of whether it is the default option or not. Consequently, the results suggest that individuals' tendency towards the current situation is driven by either psychological commitments (e.g. sunk costs or social influences) or cognitive misperceptions (e.g. loss aversion).

6. Conclusions

This paper has been concerned with examining the role of status quo bias in explaining changes in support for transport policies. Overall, the analysis indicates that individuals do indeed have a biased preference for the status quo regarding transport policies. As a first contribution, this paper has introduced an operationalisation of the counterfactual test as proposed by Van Wee (2023) to evaluate changes in support for controversial transport policies. By framing policy options as current and alternative situations in a two-stage framing experiment, the counterfactual test enabled us to examine bias towards the status quo in the context of transport policies.

As a second contribution to the literature on changing support for controversial transport policies, we find that all three transport policies (road pricing, speed limits, PT ticket pricing) we included in our experiments are consistently preferred when they represent the status quo. In contrast, the same policy receives less support when framed as an alternative to the current situation. This pattern of variation in support for transport policies is observed across all three experiments.

In general, politicians, policymakers, and practitioners (decision makers) should anticipate status quo bias when proposing alternative transport policies. Growing support for certain controversial policies after real-world implementation can be expected, as results indicate that changes in support and acceptance of pricing and speed limit policies can be attributed to status quo bias. By anticipating status quo bias and the increasing support following their introduction, decision-makers may successfully introduce controversial transport policies that initially face strong opposition.

A specific drawback of the present analysis relates to the examination of other mechanisms in light of changing support for transport policies. Van Wee et al. (2023) mentioned multiple mechanisms that can explain the change in support for transport policies, in addition to status quo bias. For one, the expected utility before implementation of the new policy alternative may not align with the experienced utility after implementation (Van Wee et al., 2023). Another mechanism is the change in attitude towards the policy option (Van Wee et al., 2023). These mechanisms and their interaction with status quo bias are not explored in this paper. While Börjesson et al. (2016) demonstrated that several mechanisms were unable to explain the change in support for road pricing in Gothenburg after its introduction, it remains unclear whether this also holds true for speed limit and train ticket fare differentiation policies, which are examined in addition to road pricing policies in the present analysis.

It would also be interesting to evaluate other operationalisations of the counterfactual test for future work. In its current format, a two-stage framing experiment has been employed to understand participants' support for both a given current and alternative policy situation. In addition, participants were randomly assigned to one of two experiments, in which the current and alternative situations were framed in reverse order. However, other operationalisations of the counterfactual test may also suffice. For instance, respondents could be asked to indicate their support for the proposed policy options at both stages. Therefore, future studies aiming to apply the counterfactual test are encouraged to explore potential new operationalisations and their impact on the results.

Another interesting avenue for future research would relate to the application of the counterfactual test to other (controversial) transport policies in different regional contexts. Tailored approaches for specific policies are often used to examine status quo bias (Godefroid et al., 2022). While Eliasson (2014) and Börjesson et al. (2016) evaluated bias towards the status quo concerning road pricing policies, Andersson et al. (2023) assessed active travel policies. Although we believe our results could apply to several other controversial policies given that we selected and assessed three quite different policies in this study, it remains worthwhile to evaluate other policies in both similar and different (regional) contexts. The significant effects of status quo framing for some policies, but not others, indicate that further research is necessary to explore the conditions under which status quo bias leads to divergence in support. Applying the counterfactual test to policies in different countries is likely to enrich our understanding of how status quo bias acts as a determinant of changing support for controversial transport policies.

CRediT authorship contribution statement

Milan L. Moleman: Writing – original draft, Methodology, Formal analysis, Conceptualization. **Bert van Wee:** Writing – original draft, Methodology, Conceptualization. **Lennard B. Steketee:** Formal analysis. **Noor van den Hurk:** Writing – original draft, Supervision. **Maarten Kroesen:** Writing – original draft, Supervision, Methodology, Conceptualization.

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Declarations of interest

None.

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Data availability

The data that has been used is confidential.

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