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Behavioral Effects of Carbon Pricing: Experimental Evidence on the Demand for Fuel

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Behavioral Effects of Carbon Pricing: Experimental Evidence on the Demand for Fuel

Jana Eßer *

Abstract

Carbon pricing is a key policy tool for mitigating climate change by increasing prices and thereby reducing demand for carbon-intensive products and activities. However, behavioral effects — such as crowding-in or -out of intrinsic motivation, moral licensing, or defiant behavior — can either amplify or weaken its standalone price effect. This study examines the behavioral effects of carbon pricing on the demand for fuel using a multiple price list approach in an incentivized online survey experiment, which was conducted in 2024 in Germany in a general population sample of 2,600 participants. The findings suggest that carbon price salience crowds in intrinsic motivation on average compared to a situation in which carbon pricing is in place but less salient, reinforcing the price effect. In contrast, in certain subgroups this salience weakens the price effect and tends to even increase demand for fuel due to crowding-out of intrinsic motivation and moral licensing.

Keywords: carbon pricing; willingness to pay; demand for fuel; motivation crowding; moral licensing

JEL Codes: C93; D01; D12; D91; Q41; Q58

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1 Introduction

To reduce carbon emissions and achieve the climate change mitigation goals set in the Paris Agreement, Germany introduced a national carbon price in the transport and building sectors in January 2021. This price aims to internalize the negative externalities of carbon emissions by increasing prices of fossil fuels used in the transport and building sectors. It thereby incentivizes consumers to switch to more sustainable alternatives, such as cycling instead of driving a car or replacing a fossil fuel heating system with a heat pump run with green electricity. Currently, 43 similar carbon tax schemes have been implemented worldwide, such as in Sweden, Portugal, Canada, Mexico, South Africa, or Japan, and even more countries consider implementing such schemes (The World Bank Group, 2026).

However, research has shown that consumers do not feel well informed about carbon pricing. Survey responses reveal low knowledge about its objectives and mechanisms, the impacted products, and, most notably, the financial implications for their household (e.g., Eßer et al., 2024). In addition, consumers' preference for green spending of carbon price revenues over redistribution mechanisms such as financial relief for low-income households or a per-capita reimbursement suggests that they see carbon pricing as effective only if revenues fund green initiatives, overlooking its price-driven steering effect (e.g., Bristow et al., 2010; Dütschke et al., 2023; Ewald et al., 2022; Gevrek & Uyduranoglu, 2015; Hammerle et al., 2021; Sommer et al., 2022). Therefore, it is uncertain whether carbon pricing can fully realize its steering effect when knowledge about the price, its mechanisms, and financial consequences is low.

According to standard economic theory, carbon price literacy can be considered irrelevant for the effectiveness of the policy instrument, as a rational consumer will react to a price signal by adjusting consumption irrespective of the underlying reason for this signal. Yet, the existing literature suggests that there are effects other than a pure price effect at work in the context of carbon pricing. Observational studies estimate that the carbon price elasticity is higher than the general price elasticity for fuel in the transport sector (Andersson, 2019; Rivers & Schaufele, 2015), suggesting that salient carbon pricing strengthens intrinsic motivation to reduce carbon emissions. Experimental evidence from other contexts, in contrast, suggests that demand for carbon intensive goods increases when carbon pricing is salient because the salient external incentive crowds out intrinsic motivation or triggers moral licensing, leading individuals to view carbon pricing as permission to emit (e.g., Grieder et al., 2021; Hartmann et al., 2023;

Lanz et al., 2018; Perino et al., 2014; Pizzo et al., 2025; Soregaroli et al., 2021). It remains unclear whether this contrast is driven by different study designs — observational or experimental — or whether the behavioral effects of carbon pricing vary by context. In addition, there is no evidence yet on how potential crowding-out and moral licensing effects can be counteracted.

Against this background, this study experimentally investigates the behavioral mechanisms that drive changes in fuel demand in response to carbon pricing. In an incentivized online survey experiment among a sample of approximately 2,600 respondents from the German general population, we use a multiple price list (MPL) approach to examine whether (i) the salience of carbon emissions, (ii) the salience of carbon pricing, and (iii) information on the objectives, mechanisms, and revenue recycling of carbon pricing affect consumers' willingness to pay (WTP) and the price elasticity of demand for fuel. Furthermore, we test whether experiencing carbon pricing in the MPL, as well as receiving explanatory information on carbon pricing, affect respondents' support for the policy. In the MPL, participants made repeated choices between a train trip and a car trip at increasing fuel prices. While the MPL for the control group displayed only the prices of the two options, the MPLs for the treatment groups explicitly included either the carbon emissions for the car and train trips or the increasing carbon price component embedded in the fuel cost for the car trip. In addition, one group received information on the mechanisms of carbon pricing.

The experimental design enables us to contribute to the literature in several ways. First, we experimentally explore the behavioral effects of carbon pricing on the WTP and price elasticity of demand for fuel — a highly carbon intensive consumption good for which the price elasticity of demand is typically low. For instance, Alberini et al. (2022) and Khanna et al. (2025) estimate price elasticities of -0.5 or lower for Germany, while Gillingham and Munk-Nielsen (2019) find a similar estimate for Denmark. The existing experimental literature on the behavioral effects of carbon pricing focuses on groceries (Lanz et al., 2018; Perino et al., 2014; Pizzo et al., 2025; Soregaroli et al., 2021) and electronic devices (Hartmann et al., 2023) that typically have a higher price elasticity of demand and lower carbon intensity (see e.g., Peltner & Thiele, 2021, for elasticities estimated for a variety of groceries), or on a more abstract setting without naming a certain good or category of goods (Grieder et al., 2021). Given different carbon intensities and price elasticities of demand, the behavioral effects of carbon pricing may vary between fuel and other products.

Second, we use an information treatment that explains the objectives, mechanisms, financial effects, and revenue recycling of carbon pricing. This approach addresses consumers' generally low knowledge about carbon pricing and tests whether increasing this knowledge affects their reactions to carbon pricing and thereby counteracts a potential moral licensing effect or crowding-out of intrinsic motivation. More specifically, the information treatment clarifies that carbon pricing in form of a carbon tax does not offset carbon emissions, and that green spending of its revenues is not crucial for its effectiveness, but that carbon pricing works through changing relative prices of goods with different carbon intensities. Previous studies have shown that consumers engage in moral licensing because paying a carbon price reduces feelings of guilt (Pizzo et al., 2025), while not earmarking carbon price revenues for green spending can reduce this moral licensing effect (Grieder et al., 2021). In other words, consumers appear to engage in moral licensing because they assume that paying the carbon price compensates for their climate-damaging behavior. However, no studies have yet investigated whether correcting this misperception through information provision can prevent moral licensing.

Third, we use heterogeneity analyses with respect to intrinsic motivation, beliefs, attitudes, and psychological traits to further investigate a potential crowding-in or -out of intrinsic motivation, moral licensing and defiant reactions to carbon pricing. Similar to Pizzo et al. (2025) and Hartmann et al. (2023), we compare respondents with low and high intrinsic motivation for climate-friendly behavior to test for crowding-out and moral licensing. We add to this by comparing respondents with different beliefs about the mechanisms, and revenue recycling of carbon pricing, which allows us to explore the potential mechanisms underlying moral licensing in more detail. Moreover, we examine heterogeneity with respect to the acceptability of costly climate change mitigation measures in general and psychological traits such as reactance and locus of control.

Finally, in addition to the behavioral effects of carbon pricing on fuel demand, we examine the effect of carbon price salience on policy support. While previous studies have shown that higher carbon prices reduce support (e.g., Carattini et al., 2017, 2018; Kaestner et al., 2023; Sommer et al., 2026), higher prices may be necessary for successful climate change mitigation. By simultaneously investigating the effect of different salience and information treatments on fuel demand and policy support, we are able to test whether these interventions can reduce

fuel demand without reducing policy support and can thus be used as complements to pure carbon pricing.

Results suggest that behavioral effects of carbon pricing, on average, can enhance the pure price effect by decreasing the demand and WTP for fuel. Yet, heterogeneity analyses provide evidence for crowding-out of intrinsic motivation and moral licensing among certain subgroups, which reduce the effectiveness of carbon pricing. These undesirable effects seem to be driven by misconceptions and can be mitigated through information on the mechanisms of carbon pricing. In addition, we find that all treatments increased the support for carbon pricing, with the combination of salient carbon pricing and information on its mechanisms having the highest effect, amounting to 8 percentage points.

The remainder of the paper is structured as follows. Section 2 explains the potential behavioral mechanisms that may influence the effectiveness of carbon pricing. Section 3 introduces the sample and details the experimental design. Section 4 outlines the analytical approach, while Sections 5 and 6 present the experimental results on fuel demand and the public support for carbon pricing, respectively. Finally, Section 7 offers concluding remarks.

2 Potential behavioral mechanisms of carbon pricing

Given that consumers are aware of carbon pricing, it may affect their behavior by working as a signal for carbon emissions and thus the environmental consequences, and by interacting with consumers' intrinsic motivation to behave pro-environmentally, potentially crowding intrinsic motivation in or out. In addition, carbon pricing may trigger other behavioral responses such as moral licensing or defiant behavior. In the following, we define these concepts and explain them in the context of carbon emissions and carbon pricing.

We start with the definition of intrinsic motivation: According to White (1959), one of the first scholars to mention intrinsic motivation, motivation does not necessarily "[require] a source of energy external to the nervous system" (p. 328). That is, some activities are "motivated in their own right" (White, 1959, p. 329). This intrinsic motivation arises, when individuals experience competence or efficacy, that is, when they have the skills necessary to engage in an activity or to produce a desired outcome (White, 1959). Building on this line of argument and referring to Self-Determination Theory (Deci & Ryan, 1985) and to De Charms (1968)'s argument that "[m]an strives to be a causal agent, to be the primary locus of causation for, or the

origin of, his behavior" (p. 269), Ryan and Deci (2000) emphasize that individuals additionally need to feel self-determined for intrinsic motivation to occur.

Within cognitive evaluation theory (Deci & Ryan, 1985), intrinsic motivation represents one form of autonomous motivation along a continuum ranging from externally regulated behavior to fully intrinsic motivation (Ryan & Deci, 2000). In pro-environmental contexts, individuals may not enjoy the activity itself (e.g., driving less), but they may engage in it because they value environmental protection. This is typically described as identified regulation, a form of motivation that "reflects a conscious valuing of a behavioral goal or regulation, such that the action is accepted or owned as personally important" (Ryan & Deci, 2000, p. 72). We use intrinsic motivation in a broader sense to refer to all types of internally endorsed motivations for climate change mitigation.

As an example, individuals may be intrinsically motivated to reduce their carbon emissions because they personally value climate change mitigation (identified regulation), and because they can personally choose to take action (self-determination) and feel capable to contribute to climate change mitigation by, e.g., driving less (competence). Thus, no external reward is necessary for them to reduce their emissions. The literature confirms that intrinsically motivated individuals engage in pro-environmental behavior without external incentives: Schwartz et al. (2019) find a positive relationship between intrinsic motivation and pro-environmental behavior, while Jakovcevic et al. (2014) and Sharpe et al. (2021) find that people act pro-environmentally to express intrinsic motives.

Making the pro-environmental dimension of an action more salient may activate or strengthen intrinsic motivation to engage in it by increasing the consumers' perceived competence and self-determination or autonomy to act in line with their pro-environmental values and their goal of contributing to environmental protection and climate change mitigation. Empirical evidence indeed shows that labeling the environmental quality of products can increase consumers' intrinsic motivation and shift demand towards more sustainable alternatives (e.g., Perino et al., 2014; Schulze-Tilling, 2025; Schwartz et al., 2020). One challenge with emissions salience is that consumers often exhibit low carbon literacy (Kretschmer, 2024; Schleich et al., 2024), which may limit their ability to judge whether a given level of emissions is high or low.

As an alternative to emissions labels, salient carbon pricing can affect intrinsic motivation, in addition to exerting its direct price effect. This behavioral effect of carbon pricing can work

in two opposing directions and either weaken or strengthen the price effect. First, the theory of motivation crowding suggests that external rewards are not only unnecessary for intrinsically motivated individuals to engage in an activity, but they can even crowd out, or undermine, intrinsic motivation. Referring to personal causation (De Charms, 1968), Deci (1971) shows that external rewards are perceived as control mechanism that can shift the locus of control from internal to external and let individuals reevaluate their behavior. A related argument is that fees or taxes such as carbon pricing may signal that "the government *has taken over* responsibility for the issue at stake" (Nyborg et al., 2006, p. 359). This shift in control or responsibility can reduce or fully undermine intrinsic motivation and thus the perceived self-determination when the relevant action is considered overjustified by both motivations adding up (Lepper et al., 1973). An alternative psychological process that can crowd out intrinsic motivation by its controlling nature is impaired self-esteem, triggered by the feeling that one's competence is not appreciated (Frey & Jegen, 2001). The crowding-out effect of intrinsic motivation counteracts the original idea of external rewards, namely their disciplining effect that increases engagement in an activity. Whether individuals engage more or less in an activity when external rewards are in place thus depends on the relative size of the two opposing effects. However, once intrinsic motivation is fully crowded out, only the disciplining effect remains (Frey & Jegen, 2001). This has been shown empirically in a field experiment conducted by Gneezy and Rustichini (2000): While small external rewards reduced the amount of money that pupils collected for a charity compared to a situation without rewards, pupils receiving high rewards performed as well as those receiving no rewards. In line with this, the crowding-out effect has been shown to be more pronounced for individuals with high intrinsic motivation or high valuation of the behavioral goal, while it may be less pronounced or even absent for those with low motivation (e.g. Pizzo et al., 2025; Schwartz et al., 2019).

Second, and in contrast to the crowding-out effect, carbon pricing may crowd in intrinsic motivation by helping consumers to differentiate between goods with low and high environmental quality, similar to an emissions label (Schwartz et al., 2019). In general, fees can exert a symbolic effect that underlines the individuals' responsibility and thereby leads to increased contribution to a public good (Brekke et al., 2003; Nyborg et al., 2006). In addition, supportive rewards may foster the individuals' self-esteem (Frey & Jegen, 2001). Thus, by signaling which action is more appropriate to achieve a behavioral goal, underlining the individuals' responsibility, and potentially fostering their self-esteem when being rewarded for choosing the more

climate friendly action, carbon pricing may increase the consumers' feeling of competence and self-determination, thereby crowding in their intrinsic motivation.

Given these interactions of external incentives and intrinsic motivation, the behavioral response to salient carbon pricing may depend on how consumers interpret the policy. If carbon pricing primarily increases the salience of the environmental quality of actions and helps individuals align their behavior with internal environmental goals, it may reinforce intrinsic motivation and strengthen behavioral responses in terms of emissions reductions. In contrast, if the policy is perceived as a controlling external intervention, it may undermine perceived autonomy and competence, crowd out intrinsic motivation, and lead to lower emissions reductions. The net behavioral effect of carbon pricing therefore depends on the relative strength of these opposing mechanisms as well as on the disciplining effect of the price.

Another potential reason why the salience of carbon pricing can weaken its price effect is moral licensing, which is driven by a change in the moral motivation, instead of changes in the feeling of competence and autonomy. Merritt et al. (2010) define moral licensing as the fact that "[p]ast good deeds can liberate individuals to engage in behaviors that are immoral, unethical, or otherwise problematic" (p. 344). This effect has been shown, for instance, in the context of climate friendly behavior (Burger et al., 2022) or pro-social behavior (Jordan et al., 2011) (see also Blanken et al. (2015) for a meta-analysis). In the context of carbon pricing, Hartmann et al. (2023) argue that paying a carbon tax may be interpreted as "a moral act, which leads to a boost in moral self-concept" (p. 2) and can make individuals feel less immoral when consuming a carbon-intensive good. Conducting four experimental studies, the authors can confirm their hypothesis that a salient carbon tax can trigger moral licensing and thereby weaken price effects. This effect is more pronounced for individuals with higher climate concerns — a finding that is also shown in (Pizzo et al., 2025).

A third mechanism that may weaken the effect of carbon pricing is defiant behavior (Michels et al., 2023) of individuals who oppose costly climate mitigation policies. Subjects who do not favor carbon pricing or, more generally, climate change mitigation measures that come with direct costs for citizens may show a defiant behavior when the carbon price is salient because it restricts their freedom — in the sense that it imposes a cost on certain consumption choices, making them less accessible or less affordable for some individuals — for a reason they do not consider legitimate. In a similar vein, respondents may show reactant behavior in response to carbon pricing. That is, individuals may experience "an unpleasant motiva-

tional arousal that emerges when people experience a threat to or loss of their free behaviors" (Steindl et al., 2015, p. 205). In response, they may attempt to restore their perceived freedom by engaging in behaviors that oppose the intended effects of carbon pricing, a phenomenon consistent with psychological reactance theory (Brehm & Brehm, 1981).

3 Experimental design & summary statistics

To explore the behavioral effects of carbon pricing on fuel consumption, we conducted an online survey experiment in a general population sample, in which 4,040 participants made repeated choices between a train trip and a car trip at increasing fuel prices in a multiple price list (MPL) format. Participants were randomly assigned to a control group and three treatment groups. While in the control group, the MPL only displayed prices and pay-offs of the two choice options, participants in the treatment groups received additional information on carbon emissions and carbon pricing. The experimental design and the hypotheses to be tested were pre-registered at the AEA RCT Registry (AEARCTR-0014769).

3.1 The multiple price list

To elicit the WTP for fuel, participants completed an MPL, in which they made repeated choices between a car trip and a train trip at increasing fuel prices. To mitigate hypothetical bias, we implemented an incentive-compatible mechanism: we run a lottery for a budget of €100, which could be used to purchase either the car trip or the train trip. The pay-off for the 40 winners of the lottery would thus be a voucher for the car trip or the train trip, depending on their choice in a randomly selected decision situation, plus the residual budget in form of a flexible voucher for various stores[1]. For a translation of the exact wording of the instructions and questions, see Appendix G.

The MPL, illustrated in Table 1, comprised nine distinct decision situations. The train option was the same in all these situation: In case of choosing the train trip, participants would receive a voucher for the German national railway company Deutsche Bahn worth €60. Accordingly, the price for the train voucher was €60, which would get subtracted from the budget of €100, yielding a residual budget of €40. In case of choosing the car trip, participants would

[1]The voucher was a multi-brand voucher redeemable at more than 500 participating online and physical retailers via the Wunschgutschein.de platform. The retailers include electronic suppliers, clothing brands, drugstores, food delivery services and furniture stores.

receive a voucher for 30 liters of fuel.[2] The fuel price increased from €54 in the first to €100 in the last decision situation. The residual budget would thus be €46 in the first and €0 in the last situation.

Table 1: Decision situations and carbon prices in multiple price list

	Train trip: Voucher for Deutsche Bahn		**Car trip:** Voucher for 30 liters of fuel			
Decision situation	price	pay-off	price	payoff	carbon price component	carbon price per ton
1	€60	DB voucher + €40	€54	30l voucher + €46	€4	€45
2	€60	DB voucher + €40	€60	30l voucher + €40	€10	€110
3	€60	DB voucher + €40	€66	30l voucher + €34	€16	€175
4	€60	DB voucher + €40	€72	30l voucher + €28	€22	€240
5	€60	DB voucher + €40	€77	30l voucher + €23	€27	€305
6	€60	DB voucher + €40	€83	30l voucher + €17	€33	€370
7	€60	DB voucher + €40	€89	30l voucher + €11	€39	€435
8	€60	DB voucher + €40	€95	30l voucher + €5	€45	€500
9	€60	DB voucher + €40	€100	30l voucher + €0	€50	€560

In setting the lowest fuel price stated in the MPL, we used the mean of the average price for gasoline and diesel in 2024 (as of May 2024, European Commission, Directorate-General for Energy (2025)). The starting price of €54 for 30 liters of fuel is composed of the fuel price (including taxes) in May 2024 and a €4 carbon price component, which is in accordance with the then prevailing carbon price in Germany of €45 per ton. With each situation in the MPL, the carbon price per ton increases by €65, up to €560 in the last situation. In line with this, the carbon price component increases from €4 in the first to €50 in the last situation, which results in an increase in the total fuel price from €54 to €100. The increase in the carbon price to up to €560 per ton corresponds to realistic future price increases when global warming is aimed to be limited to 1.5 °C: Estimates from the Sixth Assessment Report of the IPCC range from $60 to $120 (2015 USD) in mitigation pathways that limit global warming to 2 °C, and from $430 to $990 in pathways for a 1.5 °C scenario (Pathak et al., 2022).

The upper bound of the total fuel price is based on survey results on the WTP for fuel in Germany in 2022, in which 10% of respondents reported to be willing to pay more than €3.3 per liter of gasoline/diesel (Boneva et al., 2022). For the train voucher, we chose a value of €60, which allows to travel on the German railway over a distance roughly comparable to what a car could cover with about 30 liters of fuel. Note that the exact travel distance by train depends on the type of train and the time of booking, while the distance achievable with 30

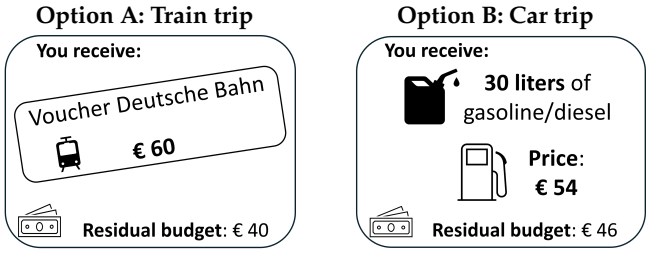
[2]The fuel voucher was worth €50, which was the average price for 30 liters of gasoline and diesel at the time of the prize draw. The voucher could be redeemed at various popular gas stations. Note that the voucher for the remaining budget could not be redeemed at gas stations but only at retail stores.

liters of fuel varies by car model and driving style. In addition, starting with a fuel price of €54 and a price for the train voucher of €60 allows us to compare the respondents' choices in a setting where the remaining budget is higher when choosing the car option (first situation), both options yield the same remaining budget (second situation) and the remaining budget is higher when choosing the train option (third to ninth situation).

3.2 Treatments

Participants were randomized into four equally sized experimental groups: control, emissions (E), carbon price (CP), and carbon price information (CPI). The MPL for the control group only provided information on the price of the train and car trips, and the corresponding pay-offs in each decision situation as illustrated in Figure 1, without any information on the composition of the fuel price or the reason for increasing fuel prices.

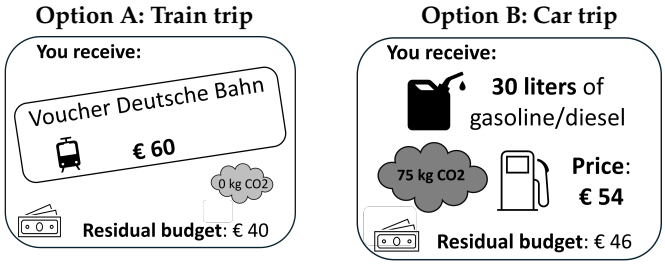
Figure 1: First decision situation in control group as illustrated in the survey



The emissions group received additional information on the carbon emissions of the car trip and the train trip. That is, before completing the MPL, group E was informed that if they opt for the car trip, they will emit around 75 kg of carbon, whereas the train trip produces no carbon emissions.[3] These carbon emissions are calculated using an emission factor of 2.5 kg of carbon per liter of fuel, representing the average emission factor for gasoline and diesel (August, 2020). Emissions are held constant across all nine choice situations and explicitly displayed in each decision situation (Figure 2). This treatment served to increase the salience of the negative externality of driving compared to taking a train trip, and to investigate whether this increases the respondents' intrinsic motivation, leading to a higher likelihood of opting for the train.

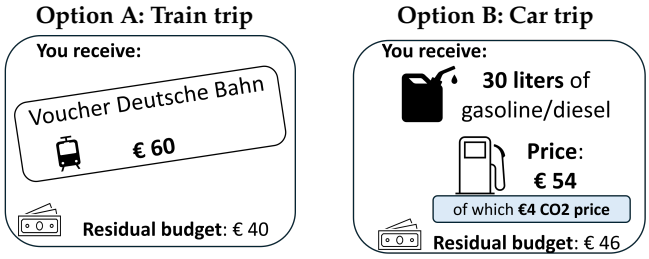
[3]The emissions refer to a trip on Deutsche Bahn's long-distance rail service. This service is powered by 100% green electricity and therefore causes no carbon emissions https://ibir.deutschebahn.com/2024/de/zusammengefasster-lagebericht/gruene-transformation/klimaschutz/treibhausgasemissionen-und-fussabdruck/.

Figure 2: First decision situation in emissions group as illustrated in the survey



The carbon price group was presented with an increasing carbon price: Participants were informed that the price of the car trip was made up of the fuel price and a carbon price component increasing with each line of the MPL, while the price for the train trip remained unchanged. In each decision situation, the carbon price component included in the total fuel price was explicitly displayed (Figure 3). In contrast to the emissions treatment, that primarily changes the salience of the externality, the carbon price treatment changes the salience of the externality as well as the salience of the reason for price increases. This allows us to test whether carbon price salience — like emissions salience — crowds in intrinsic motivation by signaling a negative climate impact of driving and thereby increases the likelihood of choosing the train trip, or whether it leads to a reduction in the share of train vouchers selected, suggesting the presence of crowding-out of intrinsic motivation, moral licensing, or defiant behavior.

Figure 3: First decision situation in carbon price (+ information) group as illustrated in the survey



To test whether a potential shift from train to car in response to carbon price salience is driven by moral licensing among respondents with low carbon price literacy or incorrect beliefs about carbon pricing mechanisms, group carbon price information was presented with both the carbon price component in each decision situation (as in group carbon price) and additional detailed information on the carbon price and its underlying mechanisms. This information was provided immediately before completing the MPL. To increase participants' engagement, the information was presented in the form of a quiz. The quiz consisted of three

multiple-choice blocks, each containing four to five items (twelve items in total) that were either correct or incorrect (Table 2). In each block, respondents were asked to identify all items that, in their opinion, correctly apply to the German carbon price.

Table 2: Statements about the German carbon price in the three multiple-choice blocks.

Objectives	• The CO2 price makes some activities that emit CO2 more expensive. *[emissions]* ✓ • One aim of the CO2 price is to protect the climate. *[climate]* ✓ • One aim of the CO2 price is to solve environmental problems such as the pollution of the oceans by plastic waste or the extinction of species. *[environment]* • One aim of the CO2 price is to reduce traffic jams and improve air quality in cities. *[congestion]* • One aim of the CO2 price is to generate higher tax revenues. *[taxes]*
Revenue recycling	• The CO2 price offsets the CO2 emissions emitted, i.e., CO2 emissions of the same amount are saved elsewhere. *[offsetting]* • The revenue generated by the CO2 price is used to finance climate change mitigation measures. *[mitigation]* ✓ • The revenue generated by the CO2 price is used to ease the financial burden on consumers. *[relief]* ✓
Mechanisms	• For the CO2 price to be effective, the revenue must be used for climate change mitigation measures. *[mitigation]* • The CO2 price works by making CO2-intensive products more expensive and therefore less purchased. *[reduce demand]* ✓ • The CO2 price makes products that cause low CO2 emissions cheaper relative to products with high CO2 emissions. *[relative prices]* ✓ • The CO2 price is intended to ensure that less CO2 is emitted. *[emissions]* ✓

Note: The question in all three blocks was "In your opinion, which of the following statements apply to the CO2 price? You can select one or more answers". ✓ denotes the correct statements.

After each multiple-choice block, respondents received an explanation of the correct answer. The provided information clarified that:

(i) the primary objective of the CO2 price is to protect the climate by making products that emit CO2 more expensive, such as gasoline, diesel and LPG, while prices for climate-friendly alternatives are not affected;

(ii) the revenue generated from the carbon price is used to alleviate financial burdens on citizens, such as reducing electricity costs through the abolition of the Renewable Energy Surcharge, and to fund climate change mitigation measures like the expansion of renewable energy and sustainable transport infrastructure;

(iii) the CO2 price can have an effect simply by increasing the price of climate-damaging products; it does not matter what the revenue is used for;

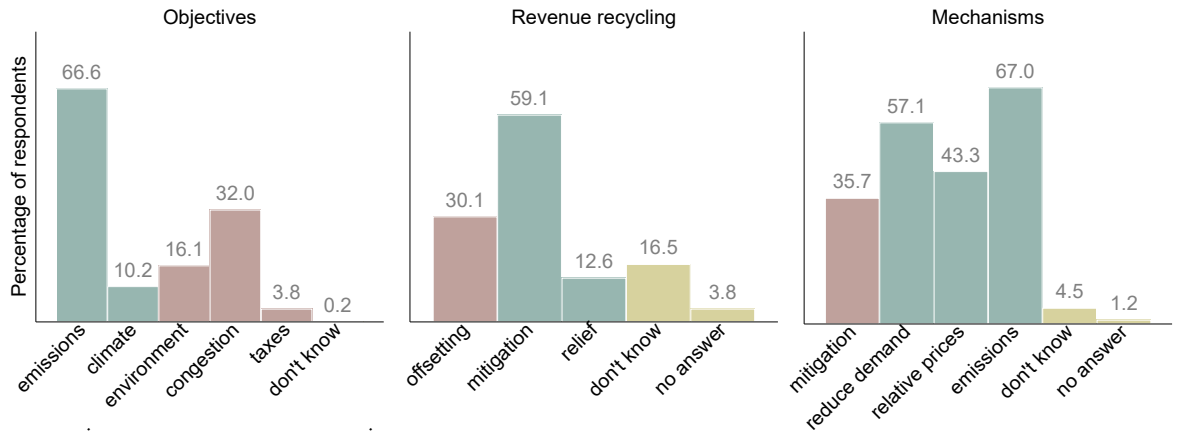
(iv) the change in relative prices is intended to steer citizens away from climate-damaging and towards climate-friendly behavior, thereby reducing CO2 emissions.

The information treatment primarily aimed to clarify that paying the carbon price does not offset emissions and to prevent respondents from viewing it as a license to emit, and that

its effectiveness is mainly driven by consumers' changes in demand in response to relative price changes, not by using revenues for green spending. At the same time, providing the information in form of a quiz allowed us to elicit the respondents' carbon price literacy, i.e., their prior knowledge and beliefs about carbon pricing. To explore treatment effect heterogeneity with respect to carbon price literacy, respondents who did not receive the quiz as a treatment before the MPL, i.e., the control, emissions, and carbon price groups, participated in the quiz after completing the MPL.

On average, those respondents who participated in the quiz on carbon pricing were able to correctly identify whether the item was correct or false for 60% of all 12 items. While respondents correctly identified 74% of the five items on the objectives of carbon pricing, they were less informed about revenue recycling and the mechanisms of carbon pricing, answering only 40% and 57% of the respective four items in each category correctly. For instance, 30% incorrectly believe that carbon price revenues are directly used to offset carbon emissions (Figure 4). Only 43% and 57%, respectively, seem to understand that carbon pricing changes relative prices and thereby reduces demand for carbon intensive products. At the same time, more than one third believe that the carbon price can only be effective when revenues are used for climate change mitigation measures.

Figure 4: Beliefs about objectives, revenue recycling, and mechanisms of the German national carbon price



Note: Green and red bars represent correct and incorrect statements, respectively.

Across all four experimental groups, the median time participants spent on the instructions of the MPL and the voucher was 0.75 minutes, while they spent 1.5 minutes on the MPL task itself. Median response times for the multiple-choice blocks were 38 seconds for objec-

tives, 24 seconds for mechanisms, and 27 seconds for revenue recycling of carbon pricing. Following each multiple-choice block, participants required approximately 8–9 seconds to read the clarifications. Excluding respondents who rushed through the full survey or through the MPL — those with response times below one half of the median (Maniaci & Rogge, 2014) — leaves results virtually unchanged, indicating that potentially inattentive respondents do not distort results.

3.3 Elicitation of attitudes and further individual and household characteristics

To approximate intrinsic motivation for sustainable behavior, we measured the participants' environmental behavior in multiple contexts. At the end of the questionnaire, we asked them whether they

(1) donate money to environmental organizations,

(2) use public transport or their bike for trips in the surrounding area (up to 30 km),

(3) purchase groceries from certified organic cultivation,

(4) draw someone's attention to behavior that is harmful to the environment.

These items were selected from the General Ecological Behavior (GEB) Scale (Kaiser, 2020) and responses could be given on a 5-point Likert scale from "never" (1) to "always" (5). Alternatively, they had the option to provide no answer or report that the corresponding behavior "does not apply" to them (see question PK.Environment in Appendix G).

Based on these questions, we constructed an index for intrinsic motivation by calculating the average over all items, such that a higher score is associated with more sustainable behavior. For the analyses, we split the index into terciles.[4] On average, respondents exhibit a moderate level of sustainable behavior, scoring 2.6 out of a possible 5, indicating that they possess at least some intrinsic motivation to reduce carbon emissions (see Figure A.1 for a histogram).

To estimate treatment effect heterogeneity with respect to attitudes toward climate mitigation measures and explore potential defiant behavior, we asked respondents

(1) to what extent they agree with the statement that political measures should be taken to limit climate change,

[4]Here, we slightly deviate from the pre-specified analyses. Rather than creating a binary variable for high versus low intrinsic motivation based on the pre-specified cut-off values, we adopt a more data-driven approach by splitting the index into terciles. Results remain qualitatively unchanged when using the pre-specified definition (Table E.1).

(2) and whether they approve or reject climate change mitigation measures that impose costs on citizens.

Responses could be given on a 5-point Likert scale from "strongly disagree" to "strongly agree" and from "strongly oppose" to "strongly support", respectively (see questions Climate4.1 and Climate4.2 in Appendix G for the exact wording). Based on these items, we construct binary variables that equal one for respondents who explicitly accept such measures and zero if they reject them or are undecided.[5] A large majority of 77% of respondents agree that policy makers should implement measures to mitigate climate change in general. Yet, when it comes to measures that impose costs on citizens, support decreases to 52%.

Finally, to account for potential reactant behavior in response to carbon pricing, we control for and explore effect heterogeneity with respect to trait reactance, a personality trait associated with "the desire to restore one's attitudinal or behavioral freedom" (Shen & Dillard, 2005, p. 74) when this freedom is threatened (Brehm & Brehm, 1981). To measure reactance, we follow Andor et al. (2025) and use three selected items from the Hong Psychological Reactance Scale (Hong & Faedda, 1996). At the end of the questionnaire, respondents indicated their level of agreement with each item on a 5-point Likert scale (see question PK.Reac in Appendix G). For the analyses, we calculate the mean over all items and divide the distribution of scores into terciles.

In addition, the questionnaire collected data on participants' socioeconomic and demographic characteristics, their driving behavior and general attitudes, which we use as control variables in the regressions. Note that participants could opt out of each question by stating "don't know" or "no answer". To maintain the full sample when controlling for sociodemographics, attitudes, and other household and individual characteristics, we use categorical variables which include a category for response options such as "don't know / no answer". In case of continuous variables, we generate categorical variables based on terciles and add a category for "don't know / no answer". Table A.1 provides an overview of all variables.

3.4 Sample

The experiment was part of an online survey on policy preferences in the context of the German energy transition, which was conducted from September 25 to October 15, 2024, in coopera-

[5]Note that we excluded respondents who explicitly rejected policy measures for climate mitigation in the question on costly measures, because we assumed that they would reject them as well. We thus code the variable on acceptance of costly measures as zero (rejection) for these respondents.

tion with the professional survey institute *forsa*. *forsa* maintains an online panel of more than 150,000 individuals that is representative of the German-speaking internet users aged 14 and above — the *forsa.omninet* panel. Participants of the panel are recruited actively, randomly and offline, which reduces self-selection.

For the survey, *forsa* randomly selected 5,413 participants of the *forsa.omninet* panel, of which 4,040 completed the questionnaire. Of these, 3,362 owned at least one gasoline- or diesel-powered car, making them eligible to participate in the experiment. These participants were randomly assigned to four experimental groups. In each group, roughly 20% of the respondents opted out of the experiment by stating that they would not like to win a voucher.[6] These respondents are excluded from all further analyses. Another 4% in each group either switched from the train to the car option when fuel prices increased, or they switched more than once. As these choices cannot be easily interpreted, we exclude them from further analyses (see Andor et al. (2019) and Tomberg (2024) for a similar approach). This leaves us with a final sample of 2,562 respondents, with the number of participants in the experimental groups ranging from 614 to 661 (Table A.1).

The final sample consists of 60% male and 40% female respondents with an average age of 60 years. They are highly educated, with 55% having obtained their A-levels, and the median net household income lies between €2,700 and €4,200 per month. Compared to the German average, the sample tends to be more male, older, and better educated (see Table A.2 for a comparison with data from the German Microcensus). On average, participants own 1.5 cars, with 57% owning one car, 35% owning two, and 8% three or more cars. Roughly half of the sample uses their car for commuting to work, school, university, etc., which is slightly below the average of 57% of the German working population (Federal Statistical Office (Destatis), 2026). The mean annual distance driven of 13,500 km is slightly above the German average of 11,800 km in 2024 (Kraftfahrt-Bundesamt (KBA), 2024). Concerning public transport use, 14% reported owning a public transport ticket valid on local and regional services throughout Germany (*DeutschlandTicket*), which is slightly below the population average (VDV, 2025), 8% reported owning another type of transport ticket, while the majority (78%) reported not owning any ticket for public transport. Thus, while some respondents seem to heavily depend

[6]These respondents are significantly older, have a lower level of education and a lower income, and are more skeptical about the anthropogenic cause of climate change than those who completed the MPL. They also own less cars, drive less, are less likely to commute by car and own a public transport ticket. In addition, they were more likely to choose the response option "don't know / no answer" in other questions (Table A.3).

on their cars, others use them less frequently, opting instead for public transport. Summary statistics are provided in Table A.1, which also demonstrates that the experimental groups are largely balanced with respect to all observed characteristics.

4 Analytical approach

To analyze the behavioral effects of carbon pricing on the choice between car and train, we rely on the average WTP for the car trip, as well as on the demand for the car trip at each fuel price in terms of the proportion of respondents opting for the car trip.

First, the MPL format allows us to estimate the WTP for the car trip using the interval regression method (Stewart, 1983). This method takes into account that the MPL does not elicit exact numbers for the WTP but that it is only observed to fall into a certain interval by using the lower and upper bounds of this interval as the outcome variable. Moreover, the interval regression allows for a censored outcome variable. Specifically, respondents who opt for the car trip even at the highest price may have a higher WTP for this option than the MPL allows for (right-censored), while those who never choose the car trip may have a WTP below the lowest price in the MPL (left-censored). Taking this into account, the interval regression can yield average WTP estimates higher or lower than the values provided in the MPL.

The interval regression model maximizes the following log likelihood (see Stata, 2024):

$$\ln L = \sum_{i \in I} \ln \left[\Phi\left(\frac{\overline{y}_i - x_i\beta}{\sigma} \right) - \Phi\left(\frac{\underline{y}_i - x_i\beta}{\sigma} \right) \right]$$
$$+ \sum_{i \in R} \ln \left[1 - \Phi\left(\frac{\underline{y}_i - x_i\beta}{\sigma} \right) \right] + \sum_{i \in L} \ln \left[\Phi\left(\frac{\overline{y}_i - x_i\beta}{\sigma} \right) \right],$$

where L is the likelihood function, and the sets I, R, and L contain interval-, right-, and left-censored observations, respectively. For each observation i, $\underline{y}_i$ and $\overline{y}_i$ denote the lower and upper bounds of the latent outcome variable. The vector x_i contains covariates, and $\Phi(\cdot)$ is the standard normal cumulative distribution function. Maximization of the log likelihood function provides estimates for the parameter vector β and the standard deviation of the error term σ.

As a robustness check, we estimate the WTP using an ordered logit regression, where the outcome variable indicates the choice situation in which a respondent switched from the car to the train option. Additionally, we use a standard OLS regression where the outcome variable corresponds to the midpoints of the intervals in the MPL. For the intervals at the borders of

the MPL, we assume that their size is the same as that of the other intervals, ensuring that the midpoints are equidistant from the borders, as in the non-border intervals. Both alternative estimation approaches yield qualitatively similar results to the interval regression (see Appendix D). Note that due to random treatment assignment, a simple mean comparison of the outcome variable across groups suffices to identify causal effects. However, to increase precision, we control for socio-demographic characteristics, mobility behavior, attitudes, and psychological traits in all WTP estimations.[7]

Second, we analyze demand for the car trip and its change across the nine distinct fuel prices by examining the proportion of respondents who choose the car option at each price. Exploiting the panel structure of choices in the MPL, we first estimate a fixed effects model with individual fixed effects and dummies for each fuel price, with standard errors being clustered at the individual level:

$$\text{car}_{ip} = \alpha_i + Price_p'\gamma + (Treat_i \times Price_p)'\delta + \varepsilon_{ip}$$

where car_{ip} denotes the outcome for individual i at price p. $Price_p$ is a vector of indicator variables for the nine price categories, with the lowest price (€54) omitted as the reference category. The interaction term $(Treat_i \times Price_p)$ captures the differential treatment effects across fuel prices, where $Treat_i$ is a vector of indicator variables for the four experimental groups, with the control group omitted as the reference category; individual fixed effects α_i absorb all time-invariant individual characteristics. Standard errors are clustered at the individual level to account for within-individual correlation in the error term ε_{ip}.

The interaction coefficients capture whether treatment modifies the slope of the demand schedule across fuel prices. Given a negative relationship between demand for the car trip and fuel prices, a more negative interaction effect implies increased price sensitivity, while positive coefficients indicate reduced responsiveness to fuel prices. Using the estimated coefficients, we predict demand for the car trip at each fuel price which allows us to quantify treatment effects on demand.

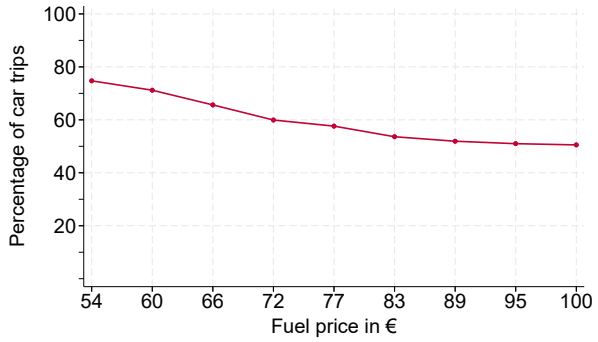
[7]We initially pre-registered an analysis without control variables in order to use the full sample and avoid dropping participants who selected "don't know" or "no answer" in any question, and to compare these estimates with regressions that included controls. However, by constructing categorical variables with an explicit "don't know / no answer" category, we can now include control variables without reducing the sample size. Since adding controls increases the precision of the estimates, we rely on this specification and set aside the pre-registered version without controls.

Note that analyses testing the main effects on the average WTP and demand for the car trip, as well as heterogeneity analyses with respect to intrinsic motivation and defiant behavior, were pre-registered. Heterogeneity analyses regarding beliefs and psychological traits are exploratory.

5 Behavioral effects of carbon pricing on demand for the car trip

In the control group, respondents on average preferred the car trip over the train trip: While 51% never switched to the train trip and preferred the car trip even at the highest fuel price of €100 per 30 liters, only 25% always preferred the train trip and did not even choose the car trip in the first decision situation, when it was cheaper than the train trip (Figure 5). The remaining 24% switched from the car to the train trip when fuel prices increased. The price elasticity of demand for the car trip of -0.38 (resulting from a 32% decrease in demand in response to a 85% increase in fuel prices) is in line with estimates of -0.37 in Alberini et al. (2022), and -0.5 in Khanna et al. (2025).

Figure 5: Demand for the car trip at each fuel price in the control group



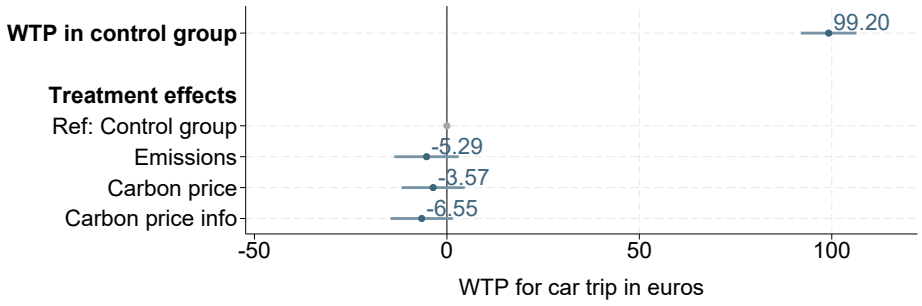
Note: The plot displays percentages of respondents in the control group that preferred the car over the train trip at the corresponding fuel price in the MPL.

These patterns suggest that respondents did not engage in strategic payoff-maximization. Theoretically, a payoff-maximizing respondent would strictly prefer the train option valued at €100 (€60 voucher + €40 residual budget) from the second choice situation onward, as the car option yields €94 (€54 fuel + €40 residual) and decreases thereafter. However, observed behavior diverges from this prediction: roughly half of the control group consistently chose the car trip across all fuel prices, even when the price reached €100 per 30 liters, leaving a zero

residual budget (Figure 5). Furthermore, among those who switched, the majority did so only at fuel prices above €60.

The average WTP in the control group, as estimated based on an interval regression, is approximately €100 for 30 liters of fuel (Figure 6). This is roughly twice the prevailing fuel price at the time of the survey and aligns with findings from Boneva et al. (2022), who reported that around 10% of respondents were willing to pay more than €3.30 per liter of fuel in 2022, where the average fuel price was roughly €1.90 per liter (ADAC, 2025).

Figure 6: The effect of carbon emissions and carbon price salience and information on the WTP for the car trip in euros based on an interval regression



Note: The plot shows point estimates and 95% confidence intervals of an interval regression. The WTP for the car trip in the control group was estimated in an interval regression of the switching interval on a constant only. Coefficients can be interpreted as marginal effects (Stata, 2024). Table B.3 provides more detailed regression results, including results of a regression without covariates and a comparison of estimates between groups E & CP and CP & CPI. Number of observations: 2,562.

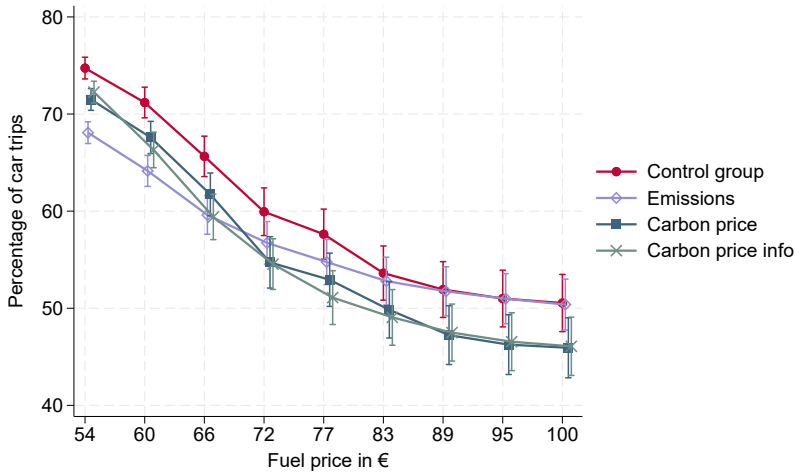
5.1 Main effects

Compared to the control group, emissions salience significantly reduced demand for the car trip at low prices, e.g., by 7 percentage points at a fuel price of €54 per 30 liters, but this effect decreases with increasing prices and fully vanishes once the fuel price reaches €89 (Figure 7). That is, emissions salience seems to have strengthened intrinsic motivation to reduce carbon emissions at low but not at high fuel prices. A potential reason for the higher effectiveness of salient carbon emissions at low fuel prices is that those respondents who care about the environment switched from car to train already at low prices. Thus, at high prices only those remained with the car trip who have a high preference for driving. Indeed, we find that respondents who always opted for the car trip or only switched to the train option at high fuel prices are less likely to believe in anthropogenic climate change, tend to have a lower environmental awareness, are less likely to support climate policies, and tend to show less voluntary climate and environmental behavior in general (Table A.4). In addition, those sticking to the car trip

are less likely to own a public transport ticket, more likely to commute by car, drive more in general, and tend to own more cars than those who switched to the train option already at low fuel prices or always opted for the train trip.

The two carbon price salience treatments reduced demand at all fuel prices (Figure 7). The effects are small but statistically significant at low prices, while being slightly stronger in magnitude, though insignificant, at higher fuel prices.

Figure 7: Comparison of demand for the car trip at each fuel price between experimental groups



Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment with standard errors clustered at the individual level. See Table B.1 for regression results and Table B.2 for a comparison of group CP with groups E and CPI. Number of observations: 23,058; number of individuals: 2,562.

From a price elasticity perspective, the findings indicate that carbon price salience — both with and without information — did not affect the price elasticity of demand for the car trip (see also Table B.1 for results of the fixed effects regressions). If anything, elasticity appears to have increased. In contrast, the emissions treatment significantly reduced demand responsiveness to price.

With respect to the average WTP we find negative effects of all treatments of approximately 5 percent (Figure 6). Even though estimates are not statistically significant at the 5% level, all treatments seem to have reduced the WTP for the car trip, with 95% confidence intervals ruling out large opposite effects, and with the effect of emissions salience not being significantly different from that of carbon price salience (Table B.3).

To address potential social desirability bias, which could have led respondents to artificially reduce car trip demand to signal environmental concern, we compare treatment effects

across participants with high and low social desirability scores.[8] We find that all treatments tended to reduce demand for the car trip in both subgroups (see Figure D.1), which suggests that our findings are robust to social desirability concerns.

Our findings suggest that carbon price salience, similar to emissions salience, works as a signal for the negative climate impact of driving and crowds in participants' intrinsic motivation to reduce carbon emissions. The finding that highlighting emissions was effective only when fuel prices were low, whereas highlighting the carbon price component reduced demand even when prices were high, may be explained by the different sense of urgency to act that was signaled by the two measures: The displayed carbon emissions remained constant and thus provided the same signal across all decision situations. In contrast, the carbon price component increased with each decision situation and may thus have signaled a higher urgency to act at higher fuel prices, which may have also influenced respondents who care less about the climate and their carbon emissions.

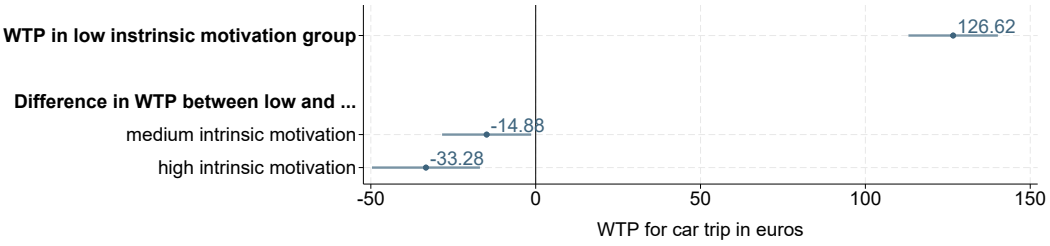
The evidence for crowding-in of intrinsic motivation is in line with the observational studies on the effects of carbon pricing on fuel demand in British Columbia, Canada (Rivers & Schaufele, 2015), and Sweden (Andersson, 2019) that estimate that the carbon price elasticity of demand for fuel is higher than the general price elasticity in the transport sector. Experimental studies that were conducted in the context of carbon-intensive groceries, in contrast, do not find any evidence for crowding-in of intrinsic motivation on average (Hartmann et al., 2023; Perino et al., 2014; Pizzo et al., 2025). However, comparing the effect of price increases from an import tax to that of a price increase from a carbon tax, Pizzo et al. (2025) find that respondents with low climate concern reduce their demand for the carbon intensive good more strongly under the carbon than the import tax scheme, with demand under the carbon tax being about 5 percentage points lower — an effect size similar to the one in our study. Hartmann et al. (2023) find a similar crowding-in effect for the purchase intention of respondents with low climate concern.

[8]Note that we merged the data on the social desirability score from the wave of the panel survey conducted in fall 2022. It was measured using the German version of the Social Desirability-Gamma Short Scale by Nießen et al. (2019). The items capture two aspects of socially desirable responding: exaggerating positive and minimizing negative qualities.

5.2 Motivation crowding and moral licensing

Comparing individuals with different levels of intrinsic motivation for climate and environmentally friendly behavior in general, defined as being in the lower, middle, or upper tercile of the distribution, we find that respondents with medium and high intrinsic motivation have a significantly and substantially lower WTP for the car trip than those with low intrinsic motivation (Figure 8). Thus, individuals with higher scores on the measure of intrinsic motivation for climate and environmentally friendly behavior in general also appear to be more intrinsically motivated to reduce their carbon emissions by preferring the train over the car trip, indicating that our measure captures intrinsic motivation as intended.

Figure 8: Relationship between intrinsic motivation and WTP for the car trip based on an interval regression



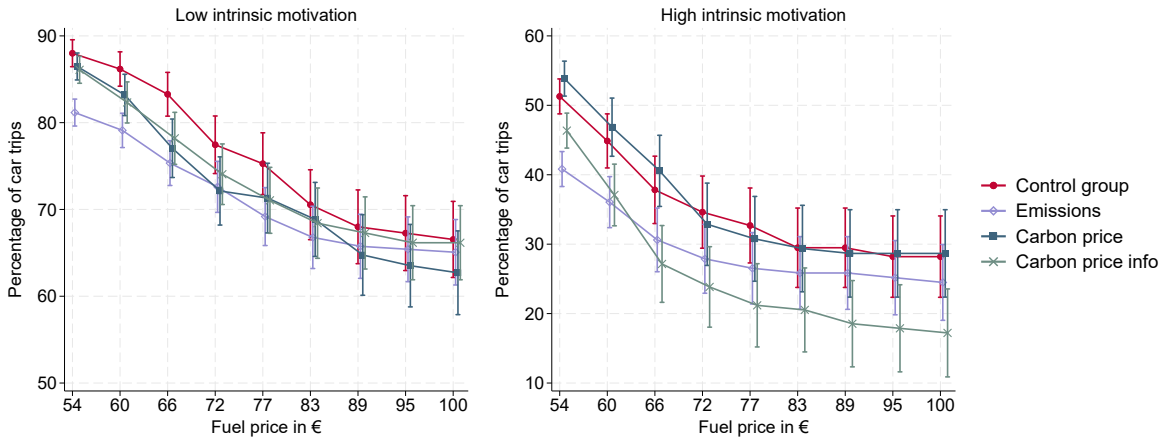
Note: The plot shows point estimates and 95% confidence intervals of an interval regression based on the control group only. The WTP in the group with low intrinsic motivation is estimated in a separate interval regression for this subgroup of the switching interval on a constant. Coefficients can be interpreted as marginal effects (Stata, 2024). Number of observations: 649.

Estimating treatment effects separately for respondents with different levels of intrinsic motivation, we find that those with low motivation tended to decrease their demand for the car trip in response to all treatments. This suggests a strengthening of intrinsic motivation, similar to the effect found for the full sample. In contrast, there seems to be a crowding-out effect in the high motivation group: While salience of carbon emissions significantly reduced demand for the car trip, salience of the carbon price component did not affect demand (Figure 9). Results of the interval regression even suggest an increase in the WTP in response to salient carbon pricing, even though estimates are not significant (Figure 10a). These results are in line with Perino et al. (2014), who show that informing consumers about monetary incentives intended to influence behavior can crowd out the intrinsic motivation that emission labels might otherwise activate.

A heterogeneity analysis with respect to the level of internal locus of control, defined as an individual's belief of being in control of events in their life instead of these events being

mainly determined by fate or luck (Gatz & Karel, 1993; Rotter, 1966), provides further evidence for crowding-out of intrinsic motivation and indicates that a lack of perceived responsibility or autonomy to reduce carbon emissions reduces the effectiveness of carbon price salience among some respondents:[9] While respondents with a high internal locus of control reduced their demand in response to all treatments, those with low internal locus of control did not react to a salient carbon price component alone, but they did so when they received additional information on carbon pricing, including that the carbon price needs consumers to react to the price in order to be effective in reducing emissions (Figure C.1). That is, feeling that one's behavior has an impact on carbon emissions and changing this behavior is even necessary to reduce emissions seems to be crucial for the effectiveness of carbon price salience.

Figure 9: Comparison of demand for the car trip at each fuel price between treatment groups for different levels of intrinsic motivation



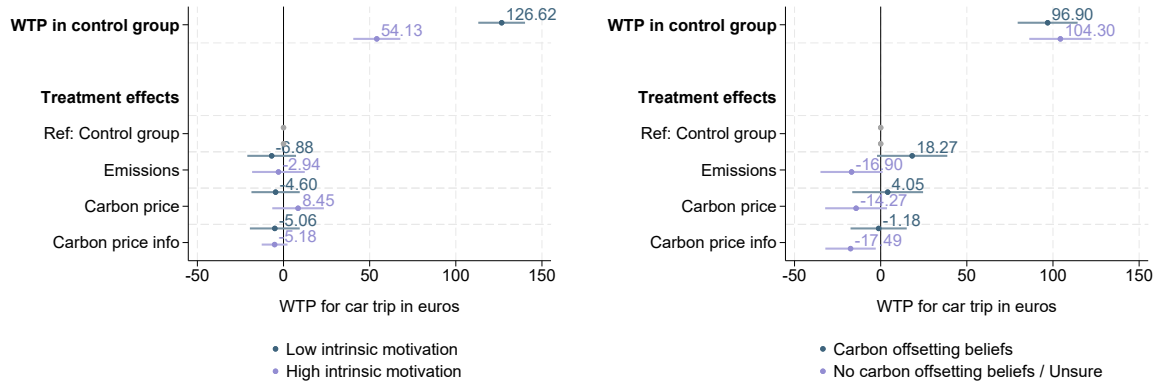
Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment with standard errors clustered at the individual level, separately for individuals in the lower and upper tercile of the distribution of intrinsic motivation. See Table C.1 for regression results. Number of observations: 9,693; 5,373; number of individuals: 1,077; 597.

Analyzing the effect of the information treatment on demand and WTP for the car trip suggests that — besides crowding-out of intrinsic motivation, which is driven by a lack of perceived responsibility and autonomy — respondents with high intrinsic motivation engage in moral licensing when carbon pricing is salient: While they did not reduce demand for the car trip in response to the salient carbon price component alone, they significantly reduced

[9]Note that we merged the data on the internal locus of control from the previous wave of the panel survey conducted in fall 2023. It was measured using the original items of the Psychological Coping Resources component of the Mastery Module by Pearlin and Schooler (1978) and captures an individual's belief about how strongly events in their life are shaped by own behavior (Gatz & Karel, 1993; Rotter, 1966). Individuals with a high internal locus of control believe that events strongly depend on own behavior, while those with external locus of control believe that events are mainly determined by fate or luck.

their demand when receiving additional information on the mechanisms of carbon pricing, with effects of up to roughly 10 percentage points (Figure 9). In addition, the average WTP for the car trip tends to have decreased by €5.2 under the information treatment (Figure 10a), and this effect is statistically significantly different from the increase in the WTP in the carbon price group without additional information by €8.5 (Table C.2). Thus, individuals with high motivation seem to view the payment of the carbon price component as a permission to emit. Once they learn that this is a misperception, the carbon price component does no longer serve as a license to emit, but rather as a signal for the negative externality of driving. This is in line with Pizzo et al. (2025): Based on their finding that the effect is mainly driven by respondents who reported to experience guilt-relief when paying a carbon tax, they argue that the reason for the decrease in demand in response to carbon pricing is moral licensing. That is, consumers with strong climate concerns feel better when they know they have to pay for their carbon emissions, which reduces their motivation to reduce emissions. Similarly, Hartmann et al. (2023) show that the moral licensing effect arises from an enhanced moral self-concept, as consumers reduce feelings of guilt.

Figure 10: Treatment effects on the WTP for the car trip in euros by intrinsic motivation and carbon offsetting beliefs based on an interval regression



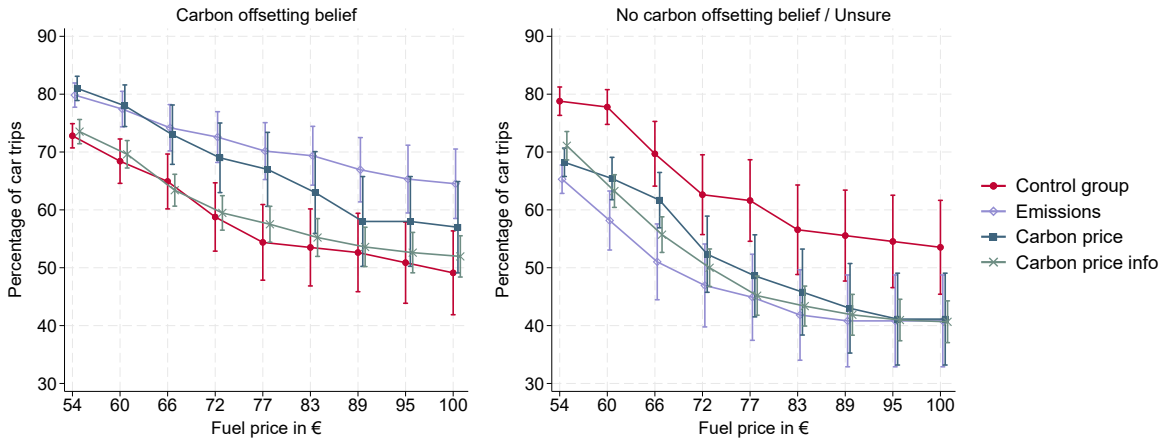
(a) Intrinsic motivation **(b)** Carbon offsetting beliefs

Note: The plots show point estimates and 95% confidence intervals of interval regressions. The WTP for the car trip in the control group was estimated in an interval regression of the switching interval on a constant only. Coefficients can be interpreted as marginal effects (Stata, 2024). Tables C.2 and C.4 provide more detailed regression results, including comparisons of treatment effects between groups E and CP, and CP and CPI, as well as the estimated differences in effects for individuals with different levels of intrinsic motivation and different offsetting beliefs, respectively. Number of observations: low intrinsic motivation: 1,077; high intrinsic motivation: 597; carbon offsetting beliefs: 644; no carbon offsetting beliefs / undecided: 636

A heterogeneity analysis with respect to the respondents' belief about whether carbon pricing offsets emissions provides further evidence of moral licensing: Among those who be-

lieve that carbon pricing directly offsets carbon emissions, the salience of emissions, as well as carbon price salience (without additional information), increased demand compared to the control group, with effects of emissions salience being significant at all price levels, and those of carbon price salience at low fuel prices (Figure 11). The average WTP for the car trip substantially increased in response to emissions salience and was unaffected, or, if anything, slightly increased when carbon pricing was salient (Figure 10b). Providing additional information that explicitly clarified that carbon pricing does not offset emissions counteracted the increase in demand. In contrast, among respondents who understand that carbon pricing does not offset emissions, or who are unsure about it, both emissions and carbon price salience (with and without additional information) substantially reduced demand by more than 10 percentage points at each price level (Figure 11), and the WTP for the car trip by €14 to €17.5 (Figure 10b), indicating a reinforcement of intrinsic motivation. Differences in the treatment effects on the WTP between belief groups are statistically significant at the 5% (emissions) and 10% level (carbon pricing with and without information) (Table C.4). Results are similar when considering the overall carbon price literacy as elicited in the carbon price literacy quiz (Figure C.2).

Figure 11: Comparison of demand for the car trip at each fuel price between treatment groups for different carbon offsetting beliefs

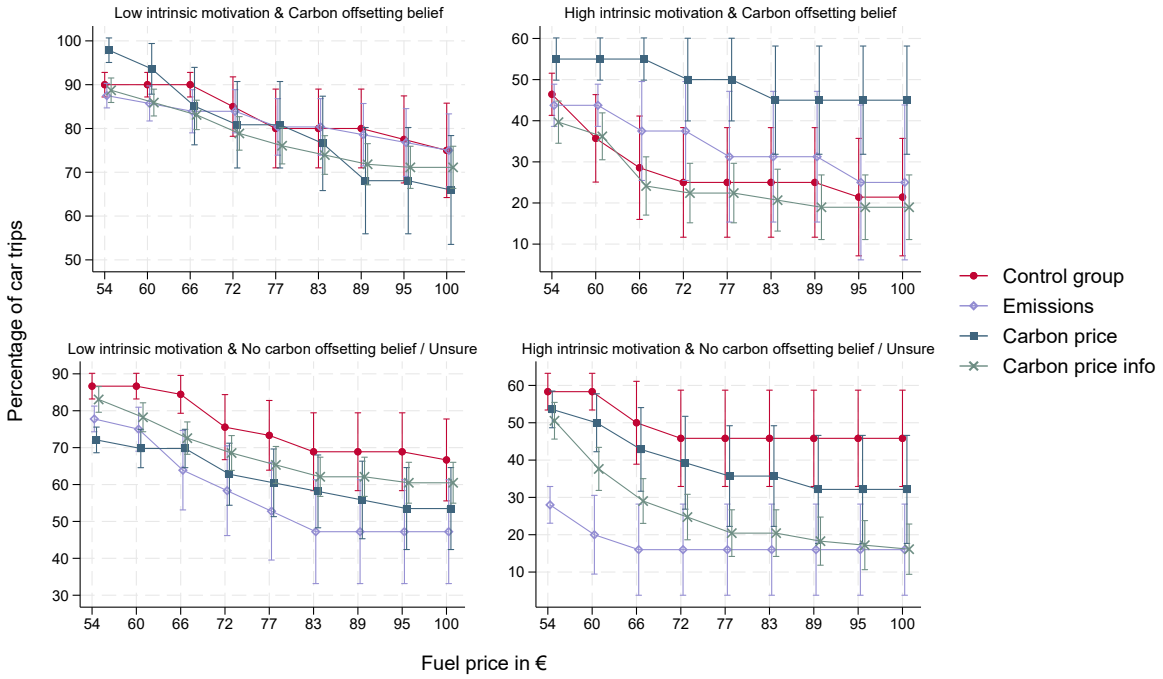


Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment with standard errors clustered at the individual level, separately for individuals with different carbon offsetting beliefs. See Table C.3 for regression results. Number of observations: 5,796; 5,724; number of individuals: 644; 636.

Interacting the level of intrinsic motivation and beliefs about carbon offsetting suggests that the increase in demand for the car trip in response to carbon price salience is solely driven by respondents who have a high intrinsic motivation for climate friendly behavior and at the

same time believe that the carbon price offsets emissions (Figure 12). For these respondents, both emissions and carbon price salience increased demand, with significant effects of carbon price salience of up to 25 percentage points. The additional information treatment, however, fully counteracted this undesirable effect. In contrast, for respondents with low intrinsic motivation who believe in the carbon offsetting mechanism of carbon pricing, there is no such effect — there are no clear patterns in responses to the treatments. For respondents without carbon offsetting beliefs, all treatments tend to have reduced demand for the car trip compared to the control group, irrespective of the participants' level of intrinsic motivation. All treatments thus seem to have rather strengthened intrinsic motivation instead of crowding it out or causing moral licensing.

Figure 12: Comparison of demand for the car trip at each fuel price between treatment groups for different combinations of carbon offsetting beliefs and intrinsic motivation



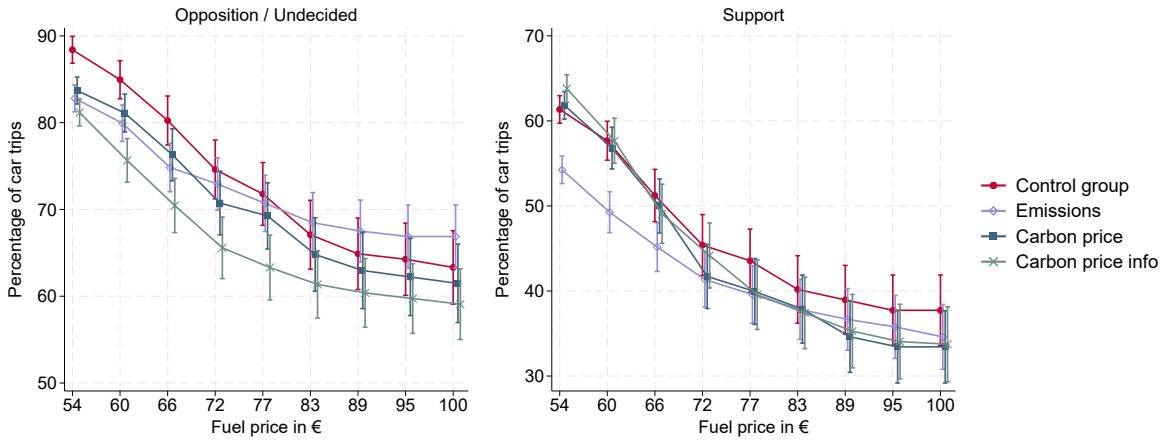
Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment with standard errors clustered at the individual level, separately for individuals with different combinations of carbon offsetting beliefs and levels of intrinsic motivation. Number of observations: 2,565; 1,098; 2,232; 1,530; number of individuals: 285; 122; 248; 170.

5.3 Defiant behavior

Separately analyzing respondents who do and do not support costly climate change mitigation policies provides suggestive evidence for defiant behavior among the latter group when fuel prices are high (Figure 13). In general, respondents who support costly climate change mit-

igation measures have a substantially lower demand for the car trip at all fuel prices, with a difference of roughly 25 percentage points. With respect to the treatments, we find that salient carbon emissions significantly reduced demand for the car trip in both subgroups at low fuel prices, with the effect being somewhat larger for accepting respondents. While this effect decreases in the accepting group, it even slightly reverses in the non-accepting group, but group differences are not statistically significant (Table C.5). Apart from this, there is no meaningful evidence for defiant behavior (see also Table C.6 for heterogeneity in the WTP). However, in case some defiant behavior exists, information provision seems be able to counteract any undesirable effects and reduce demand for the car trip under carbon price salience (Figure 13). Results are similar for individuals with high compared to low trait reactance (Figure C.3).

Figure 13: Comparison of demand for the car trip at each fuel price between treatment groups for respondents accepting and rejecting costly climate change mitigation measures



Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment with standard errors clustered at the individual level, separately for respondents who do and do not accept costly climate change mitigation measures. See Table C.5 for regression results. Number of observations: 10,899; 11,979; number of individuals: 1,211; 1,331.

6 The support for carbon pricing

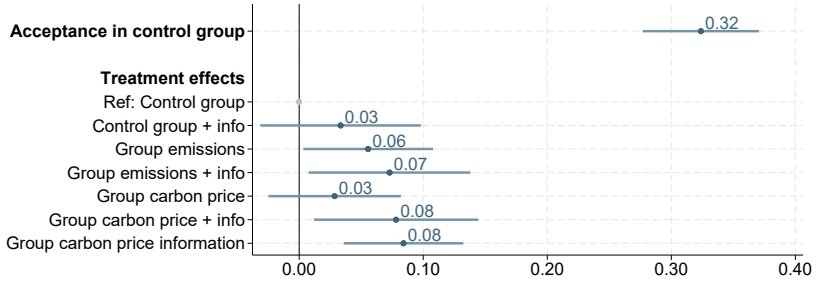
In addition to the behavioral effects of carbon pricing, we examine the effect of the different salience and information treatments on support for carbon pricing. We measured support on a 5-point Likert scale from (1) "strongly oppose" to (5) "strongly support" (see question C4.Acceptance in Appendix G for the exact wording). Based on this measure, we generate a binary variable that equals one for participants who somewhat or strongly support the policy,

and zero for those who somewhat or strongly oppose the policy, or are undecided. Respondents who did not know or preferred not to answer are excluded from the analysis.

Unlike in the previous analyses, we now distinguish between seven experimental groups. For the MPL experiment, participants were equally split into the control group and groups emissions, carbon price, and carbon price info. After the MPL, one third of the control, emissions, and carbon price groups also received the information treatment (sub-groups control + info, emissions + info, carbon price + info), while the remaining two thirds did not.

To estimate treatment effects, we use a Linear Probability Model, where the outcome variable is the binary variable for support. We control for socio-demographic characteristics, mobility behavior, attitudes, and psychological traits. Compared to the pure control group, we estimate the effects of the information treatment alone on support for carbon pricing, the individual effects of emissions salience and carbon price salience, and the combined effect of the information treatment with each salience treatment. Note that there are two groups that received the carbon price salience treatment and the information treatment — one that received the information treatment before the MPL (group CPI) and one group that received the information treatment after the MPL (group CP + info).

Figure 14: Treatment effects on support for the German carbon pricing mechanism



Note: The plot shows point estimates and 95% confidence intervals based on a Linear Probability Model. Support in the control group was estimated in a regression of the outcome variable on a constant only. Table F.1 provides more detailed regression results. Number of observations: 2,355.

In the control group, the group with no exposure to information on carbon pricing and emissions, 32% of respondents expressed support for the carbon tax. Comparing the control group to the treated groups shows that all treatments increased support (Figure 14). The largest and statistically significant effect, an increase of 8 percentage points, was observed when carbon price salience was combined with additional information on carbon pricing. Carbon price salience alone, however, did not significantly affect support. In contrast, emissions salience

produced significant increases in support — both alone and paired with additional information. Providing information on carbon pricing by itself had no significant effect on support. That is, neither carbon price salience nor information about carbon pricing alone affected the support for the policy. Combining both treatments, however, significantly increased support. In contrast, emissions salience alone already significantly increased support, and additional information on carbon pricing only marginally increased this effect.

7 Conclusions

Using a multiple price list approach where participants chose between a train trip and a car trip at increasing fuel prices, this study has experimentally investigated the effects of carbon emissions salience, carbon price salience, and carbon price salience complemented by information on demand for fuel. Results for the full sample suggest that carbon emissions salience triggered intrinsic motivation to reduce carbon emissions. Similarly, carbon price salience — explicitly reporting the carbon price component included in the fuel price — can have comparable effects by crowding in intrinsic motivation, thereby reinforcing the pure price effect.

However, heterogeneity analyses provide suggestive evidence that these positive effects are not universal. We find indications of crowding-out of intrinsic motivation and moral licensing among specific subgroups, particularly those with high intrinsic motivation who incorrectly believe that paying a carbon price offsets emissions. Crucially, these undesirable behavioral responses can be effectively counteracted by informing respondents about the actual mechanisms of carbon pricing. Our findings imply that increasing the salience of carbon pricing can enhance its effectiveness, but only if consumers are properly informed about its objectives and functioning. Without this knowledge, salience may backfire, potentially weakening the policy's steering effect.

In terms of economic magnitude, carbon price salience reduced demand for the car trip by approximately 5 percentage points, irrespective of the fuel price. This reduction is economically equivalent to a moderate fuel price increase of €6 per 30 liters (or €0.2 per liter) at prices between €54 and €83. At higher fuel prices, where the price elasticity of demand for the car trip was lower, substantially higher price increases were necessary to achieve the same demand reduction as making the carbon price component salient. For instance, to achieve the same demand reduction as a salient carbon price component of €30 per 30 liters (correspond-

ing to €1.0 per liter, or €335 per ton of carbon), a carbon price component of €50 per 30 liters (corresponding to €1.7 per liter, or €560 per ton of carbon) would have been required without salience. These results are similar when additional information on the mechanisms was provided. In contrast, salient carbon emissions were more effective than moderate price increases only as long as fuel prices remained low; their effectiveness diminished or vanished entirely once fuel prices substantially increased.

For policy design, these findings imply that displaying carbon emissions or increasing the salience of carbon pricing can serve as complements to price increases, further reducing fuel demand and carbon emissions. Alternatively, these communication strategies could substitute for price increases in scenarios where high carbon prices are politically constrained or where the price elasticity of demand is inelastic. This aligns with the broader literature on behavioral policy analysis, such as Mattauch et al. (2022), who argue that optimal policy design requires acknowledging that preferences can be endogenous to policy interventions and policy measures should thus be adjusted to account for behavioral effects such as crowding-in and -out of social preferences. Furthermore, the results of our study suggest that providing transparent information regarding the objectives, mechanisms, and revenue recycling of carbon pricing can increase public support, which is essential for maintaining the political feasibility of carbon pricing as a tool for climate mitigation.

While our results offer valuable insights into the behavioral drivers of fuel demand under salient carbon pricing, they must be interpreted with some caution due to the exploratory nature of heterogeneity analyses with respect to carbon offsetting beliefs and a lack of statistical significance in certain estimates, especially those for the effect on the WTP. Moreover, the experimental MPL setting captures one-shot decisions and does not fully account for the dynamics of habit formation or infrastructural constraints that characterize real-world fuel consumption.

Overall, regarding whether carbon pricing can fully realize its steering effect amid low carbon price literacy, our results suggest that salience is a powerful but double-edged tool. It reinforces the effectiveness of carbon pricing among well-informed consumers, but risks backfiring when misconceptions about the policy's mechanisms persist. Thus, carbon price literacy is a prerequisite for the successful implementation of salient carbon pricing schemes.

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Appendices

A Descriptives

Table A.1: Balance Table

	Total	Control Group	Emissions	Carbon price	Carbon price info	P vs. E (p-value)	P vs. CP (p-value)	E vs. CP (p-value)	CP vs. CPI (p-value)
Gender									
male (%)	59.7	61.8	60.2	57.2	59.6	0.559	0.095	0.270	0.390
female (%)	40.2	37.9	39.8	42.7	40.4	0.485	0.084	0.296	0.423
non-binary (%)	0.1	0.3	0.0	0.2	0.0	0.153	0.596	0.300	0.308
Age									
under 45 (%)	14.9	14.9	15.6	13.5	15.5	0.749	0.468	0.297	0.316
45-64 (%)	44.7	43.8	46.3	46.1	42.8	0.357	0.405	0.942	0.240
65 and older (%)	40.4	41.3	38.1	40.4	41.7	0.241	0.744	0.408	0.640
A-levels									
no (%)	45.0	47.0	43.0	44.5	45.5	0.143	0.367	0.591	0.725
yes (%)	55.0	53.0	56.7	55.5	54.5	0.175	0.367	0.668	0.725
not reported (%)	0.1	0.0	0.3	0.0	0.0	0.161	.	0.173	.
Net hh income									
under EUR 2700 (%)	24.4	24.3	22.7	25.6	24.9	0.481	0.615	0.230	0.792
EUR 2700-4200 (%)	30.3	32.2	31.0	29.3	28.7	0.644	0.267	0.510	0.805
EUR 4200 or more (%)	35.9	35.0	35.4	35.7	37.6	0.872	0.798	0.921	0.475
not reported (%)	9.4	8.5	10.9	9.4	8.8	0.139	0.546	0.394	0.681
Climate change attitudes									
does not exist (%)	5.2	6.0	4.5	5.0	5.0	0.234	0.456	0.670	0.979
anthropogenic (%)	60.3	59.3	60.4	64.5	57.2	0.701	0.059	0.128	0.008
natural (%)	26.0	24.5	26.0	23.6	29.9	0.527	0.714	0.321	0.012
both (%)	6.5	8.2	7.4	4.9	5.5	0.611	0.019	0.062	0.633
don't know/no answer (%)	2.0	2.0	1.7	2.0	2.4	0.648	0.951	0.697	0.629
Environ awareness (mean)	3.4	3.5	3.4	3.5	3.4	0.315	0.399	0.070	0.083
missings (%)	4.4	3.5	4.7	3.9	5.3	0.297	0.732	0.493	0.232
Sust motivation (mean)	2.6	2.6	2.5	2.6	2.6	0.397	0.916	0.333	0.488
missings (%)	1.5	1.4	1.1	1.8	1.7	0.590	0.565	0.268	0.928
General climate policies									
reject (%)	22.8	23.3	24.5	20.4	23.0	0.599	0.212	0.076	0.250
accept (%)	76.5	76.1	74.9	79.0	76.2	0.605	0.222	0.083	0.233
don't know/no answer (%)	0.7	0.6	0.6	0.7	0.8	0.979	0.937	0.917	0.782
Costly climate policies									
reject (%)	47.3	49.2	47.5	44.0	48.3	0.551	0.065	0.207	0.127
accept (%)	52.0	50.2	51.6	55.0	51.1	0.623	0.087	0.216	0.162
don't know/no answer (%)	0.8	0.6	0.9	1.0	0.6	0.545	0.470	0.898	0.487
Trust in government									
no (%)	67.0	68.0	68.5	65.1	66.1	0.821	0.291	0.200	0.710
yes (%)	31.0	30.5	29.0	32.4	32.1	0.563	0.467	0.193	0.916
don't know/no answer (%)	2.0	1.5	2.4	2.4	1.7	0.254	0.250	0.979	0.373
Reactance (mean)	2.9	2.9	2.9	2.8	2.9	0.722	0.075	0.163	0.379
don't know/no answer (%)	2.7	2.3	2.9	2.8	2.7	0.522	0.605	0.909	0.910
Number of cars (mean)	1.5	1.5	1.6	1.5	1.5	0.866	0.841	0.717	0.862
Yearly kilometers (mean)	13547.8	13520.6	13825.3	13142.9	13675.1	0.637	0.563	0.294	0.419
don't know/no answer (%)	4.6	5.4	4.2	3.7	5.2	0.328	0.162	0.656	0.223
outliers upper 5% (%)	2.3	2.5	1.4	2.9	2.4	0.145	0.609	0.052	0.522
Commuting by car									
no (%)	52.5	52.7	52.8	52.9	51.4	0.970	0.933	0.962	0.591
yes (%)	47.0	47.0	46.9	45.9	48.1	0.972	0.704	0.729	0.438
no answer (%)	0.5	0.3	0.3	1.1	0.5	0.985	0.079	0.074	0.183
Public transport ticket									
Deutschlandticket (%)	14.2	13.4	14.5	15.0	13.8	0.560	0.422	0.817	0.549
monthly (%)	1.1	1.2	1.8	0.3	1.1	0.390	0.069	0.011	0.106
semester (%)	0.2	0.3	0.2	0.0	0.2	0.553	0.169	0.335	0.327
yearly (%)	2.3	2.8	1.8	2.3	2.5	0.247	0.577	0.558	0.792
other (%)	2.1	2.3	2.1	2.3	1.7	0.812	0.971	0.844	0.482
none (%)	77.6	77.2	78.2	77.2	77.9	0.658	0.999	0.663	0.767
don't know/no answer	0.1	0.3	0.0	0.0	0.0	0.153	0.169	.	.
Number of observations	2562	649	661	614	638	1310	1263	1275	1252

Table A.2: Distribution of socioeconomic characteristics in German population based on the Microcensus 2024

Gender	
male (%)	49.0
female (%)	51.0
Age	
under 45 (%)	38.2
45-64 (%)	34.8
65 and older (%)	27.0
A-levels (%)	37.6
Net hh income (%)	
under EUR 2500 (%)	28.0
EUR 2500-4000 (%)	27.1
EUR 4000 or more (%)	44.8
not reported (%)	0.1

Note: Data for gender and age are retrieved from Federal Statistical Office (Destatis) (2026c); data for education are retrieved from Federal Statistical Office (Destatis) (2026a); data for income are retrieved from Federal Statistical Office (Destatis) (2026b). For age and gender, we only consider individuals aged 20 and older as the study sample is restricted to adults. For education, Microcensus data were adjusted by excluding individuals still in education, thereby defining the remaining population as the new full population.

Table A.3: Attrition analysis: comparison of participants who completed the MPL and those who opted out

	Participants	Attritors	Comparison (p-value)
Gender			
male (%)	59.0	58.0	0.613
female (%)	40.8	42.0	0.576
non-binary (%)	0.1	0.0	0.387
Age			
under 45 (%)	14.8	3.6	0.000
45-64 (%)	45.0	29.4	0.000
65 and older (%)	40.2	67.1	0.000
A-levels			
no (%)	45.2	52.8	0.000
yes (%)	54.7	46.5	0.000
not reported (%)	0.1	0.7	0.001
Net hh income			
under EUR 2700 (%)	24.2	27.7	0.056
EUR 2700-4200 (%)	30.2	31.1	0.637
EUR 4200 or more (%)	36.2	23.8	0.000
not reported (%)	9.5	17.3	0.000
Climate change att			
does not exist (%)	5.3	6.1	0.417
anthropogenic (%)	60.3	53.4	0.001
natural (%)	25.9	28.8	0.133
both (%)	6.4	7.5	0.305
don't know/no answer (%)	2.1	4.3	0.001
Environ awareness (mean)	3.5	3.4	0.072
missings (%)	4.5	6.7	0.018
Sust motivation (mean)	2.6	2.5	0.034
missings (%)	1.4	4.8	0.590
General climate policies			
reject (%)	22.5	24.7	0.221
accept (%)	76.8	74.2	0.158
don't know/no answer (%)	0.7	1.0	0.313
Costly climate policies			
reject (%)	46.8	47.5	0.739
accept (%)	52.4	49.9	0.245
don't know/no answer (%)	0.7	2.5	0.000
Trust in government			
no (%)	66.4	69.0	0.208
yes (%)	31.5	28.6	0.141
don't know/no answer (%)	2.0	2.4	0.540
Reactance (mean)	2.9	2.9	0.333
don't know/no answer (%)	2.6	6.1	0.000
Number of cars (mean)	1.5	1.4	0.000
Yearly kilometers (mean)	13562.4	11604.7	0.000
don't know/no answer (%)	4.6	5.5	0.325
outliers upper 5% (%)	2.3	4.8	0.001
Commuting by car			
no (%)	52.4	67.1	0.000
yes (%)	47.1	31.9	0.000
no answer (%)	0.6	1.0	0.163
Public transport ticket			
Deutschlandticket (%)	14.3	6.0	0.000
monthly (%)	1.1	0.9	0.619
semester (%)	0.2	0.3	0.568
yearly (%)	2.3	1.9	0.603
other (%)	2.2	0.9	0.029
none (%)	77.5	85.1	0.000
don't know/no answer	0.1	0.6	0.004
Number of observations	2691	671	3362

Figure A.1: Distribution of the index for environmentally friendly behavior

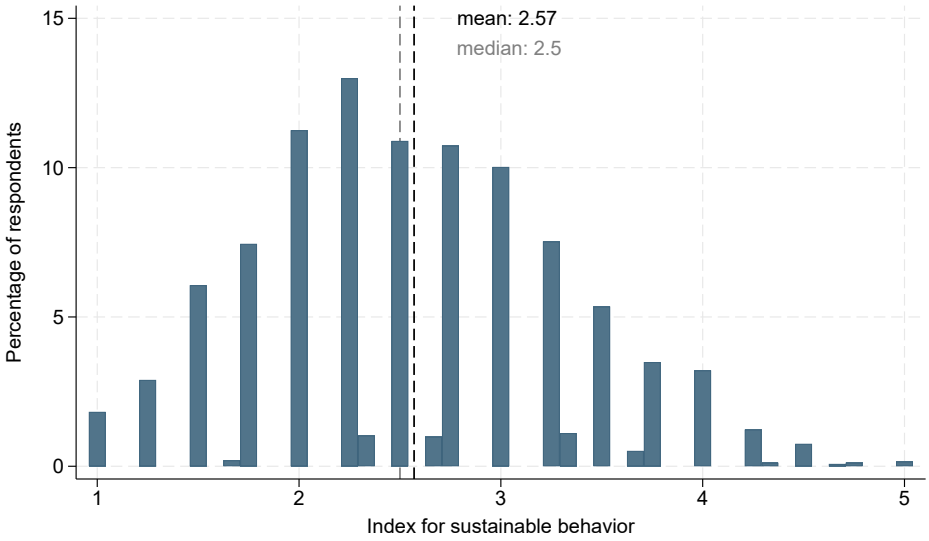


Table A.4: Characterization of individuals with different switching behaviors in the control group

	Always train	Switch at low prices	Switch at high prices	Always fuel
Gender				
male (%)	54.3	65.8	65.2	63.7
female (%)	45.7	34.2	34.8	35.7
non-binary (%)	0.0	0.0	0.0	0.6
Age				
under 45 (%)	14.6	19.8	19.6	12.8
45-64 (%)	37.2	45.9	47.8	45.7
65 and older (%)	48.2	34.2	32.6	41.5
A-levels				
no (%)	32.3	41.4	45.7	56.4
yes (%)	67.7	58.6	54.3	43.6
not reported (%)	0.0	0.0	0.0	0.0
Net hh income				
EUR under 2700 (%)	21.3	18.9	15.2	29.0
EUR 2700-4200 (%)	29.3	33.3	37.0	32.6
EUR 4200 or more (%)	37.2	40.5	45.7	30.5
not reported (%)	12.2	7.2	2.2	7.9
Climate change att				
does not exist (%)	4.3	2.7	0.0	8.8
anthropogenic (%)	77.4	68.5	56.5	47.6
natural (%)	15.9	23.4	28.3	28.7
both (%)	1.2	4.5	13.0	12.2
don't know/no answer (%)	1.2	0.9	2.2	2.7
Environ awareness (mean)	4.0	3.6	3.3	3.2
missings (%)	3.0	1.8	6.5	4.0
Sust motivation (mean)	3.0	2.7	2.4	2.3
missings (%)	0.6	0.0	2.2	2.1
General climate policies				
reject (%)	9.8	12.6	23.9	33.5
accept (%)	89.6	87.4	76.1	65.5
don't know/no answer (%)	0.6	0.0	0.0	0.9
Costly climate policies				
reject (%)	22.6	47.7	58.7	61.6
accept (%)	76.8	52.3	41.3	37.5
don't know/no answer (%)	0.6	0.0	0.0	0.9
Trust in government				
no (%)	51.8	58.6	73.9	78.4
yes (%)	45.7	38.7	26.1	20.7
don't know/no answer (%)	2.4	2.7	0.0	0.9
Reactance (mean)	2.6	2.8	3.0	3.1
don't know/no answer (%)	1.2	0.9	2.2	3.4
Number of cars (mean)	1.4	1.5	1.8	1.6
Yearly kilometers (mean)	12351.7	12334.6	13191.0	14567.3
don't know/no answer (%)	4.3	4.5	4.3	6.4
outliers upper 5% (%)	3.7	1.8	2.2	2.1
Commuting by car				
no (%)	67.1	49.5	41.3	48.2
yes (%)	32.9	50.5	56.5	51.5
no answer (%)	0.0	0.0	2.2	0.3
Public transport ticket				
Deutschlandticket (%)	27.4	15.3	10.9	6.1
monthly (%)	2.4	0.9	0.0	0.9
semester (%)	0.0	0.0	0.0	0.6
yearly (%)	5.5	0.0	0.0	2.7
other (%)	3.0	1.8	2.2	2.1
none (%)	57.9	76.6	84.8	86.0
don't know/no answer	0.6	0.0	0.0	0.3
Number of observations	164	111	46	328

B Main Results

Table B.1: Treatment effects on demand for the car trip based on a fixed effects regression

	Coeff.	p-val	95% CI
Price effect in control group			
60 EUR	-0.035***	(0.000)	[-0.050,-0.021]
66 EUR	-0.091***	(0.000)	[-0.113,-0.069]
72 EUR	-0.148***	(0.000)	[-0.175,-0.121]
77 EUR	-0.171***	(0.000)	[-0.200,-0.142]
83 EUR	-0.211***	(0.000)	[-0.243,-0.180]
89 EUR	-0.228***	(0.000)	[-0.260,-0.196]
95 EUR	-0.237***	(0.000)	[-0.270,-0.205]
100 EUR	-0.242***	(0.000)	[-0.275,-0.209]
Additional effect in group E			
60 EUR	-0.004	(0.710)	[-0.024,0.017]
66 EUR	0.006	(0.693)	[-0.025,0.037]
72 EUR	0.034*	(0.064)	[-0.002,0.071]
77 EUR	0.038*	(0.056)	[-0.001,0.077]
83 EUR	0.058***	(0.006)	[0.017,0.100]
89 EUR	0.065***	(0.003)	[0.022,0.108]
95 EUR	0.066***	(0.003)	[0.023,0.110]
100 EUR	0.065***	(0.004)	[0.021,0.109]
Additional effect in group CP			
60 EUR	-0.004	(0.733)	[-0.025,0.017]
66 EUR	-0.007	(0.679)	[-0.039,0.025]
72 EUR	-0.020	(0.335)	[-0.060,0.020]
77 EUR	-0.015	(0.498)	[-0.057,0.028]
83 EUR	-0.006	(0.811)	[-0.051,0.040]
89 EUR	-0.015	(0.541)	[-0.062,0.032]
95 EUR	-0.015	(0.532)	[-0.063,0.032]
100 EUR	-0.014	(0.571)	[-0.062,0.034]
Additional effect in group CPI			
60 EUR	-0.024**	(0.042)	[-0.047,-0.001]
66 EUR	-0.038**	(0.031)	[-0.072,-0.003]
72 EUR	-0.029	(0.156)	[-0.070,0.011]
77 EUR	-0.041*	(0.064)	[-0.084,0.002]
83 EUR	-0.021	(0.368)	[-0.066,0.025]
89 EUR	-0.020	(0.409)	[-0.066,0.027]
95 EUR	-0.020	(0.412)	[-0.067,0.027]
100 EUR	-0.020	(0.413)	[-0.067,0.028]
Constant	0.716***	(0.000)	[0.705,0.727]
Observations		23058	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table B.2: Differences in price effects between group CP and groups E and CPI based on a fixed effects regression

	group CP vs. E			group CP vs. CPI		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
60 EUR	-0.000	(0.982)	[-0.022,0.021]	–	–	–
66 EUR	0.013	(0.422)	[-0.019,0.045]	–	–	–
72 EUR	0.054***	(0.005)	[0.016,0.093]	–	–	–
77 EUR	0.053**	(0.011)	[0.012,0.093]	–	–	–
83 EUR	0.064***	(0.003)	[0.021,0.106]	–	–	–
89 EUR	0.079***	(0.000)	[0.035,0.123]	–	–	–
95 EUR	0.081***	(0.000)	[0.037,0.126]	–	–	–
100 EUR	0.079***	(0.001)	[0.033,0.124]	–	–	–
60 EUR	–	–	–	-0.020*	(0.094)	[-0.044,0.003]
66 EUR	–	–	–	-0.031*	(0.085)	[-0.066,0.004]
72 EUR	–	–	–	-0.009	(0.661)	[-0.051,0.033]
77 EUR	–	–	–	-0.026	(0.251)	[-0.070,0.018]
83 EUR	–	–	–	-0.015	(0.515)	[-0.062,0.031]
89 EUR	–	–	–	-0.005	(0.838)	[-0.053,0.043]
95 EUR	–	–	–	-0.005	(0.852)	[-0.053,0.044]
100 EUR	–	–	–	-0.006	(0.807)	[-0.055,0.043]
Observations	11475			11268		

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table B.3: Treatment effects on the WTP for fuel based on an interval regression

	Model I			Model II		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Group emissions	-6.227	(0.212)	[-15.999,3.546]	-5.286	(0.217)	[-13.682,3.109]
Group carbon price	-8.258+	(0.090)	[-17.802,1.286]	-3.570	(0.395)	[-11.789,4.649]
Group carbon price information	-8.068+	(0.093)	[-17.492,1.356]	-6.550	(0.113)	[-14.654,1.555]
Age (ref: 65 and older)						
under 45	–	–	–	1.405	(0.780)	[-8.476,11.286]
45 - 64	–	–	–	-2.268	(0.566)	[-10.009,5.472]
Female	–	–	–	-0.838	(0.794)	[-7.124,5.448]
A-levels	–	–	–	-9.703**	(0.003)	[-16.127,-3.278]
Net hh income (ref: EUR 4200 and more)						
under EUR 2700	–	–	–	0.772	(0.861)	[-7.888,9.431]
EUR 2700 - 4200	–	–	–	3.484	(0.363)	[-4.019,10.986]
Number of cars	–	–	–	3.972*	(0.029)	[0.412,7.532]
Kilometers driven (ref: lower tercile)						
middle tercile	–	–	–	8.678*	(0.026)	[1.045,16.312]
upper tercile	–	–	–	1.485	(0.716)	[-6.510,9.480]
Commutes by car	–	–	–	10.516**	(0.004)	[3.364,17.668]
Public transport ticket	–	–	–	-37.719***	(0.000)	[-45.276,-30.161]
Climate change attitudes (ref: anthropogenic)						
does not exist	–	–	–	4.354	(0.580)	[-11.081,19.788]
anthropogenic and natural	–	–	–	19.066*	(0.018)	[3.229,34.902]
natural	–	–	–	7.334+	(0.064)	[-0.424,15.092]
Environmental attitudes (ref: lower tercile)						
middle tercile	–	–	–	-8.170*	(0.039)	[-15.928,-0.412]
upper tercile	–	–	–	-16.821***	(0.000)	[-26.121,-7.521]
Intrinsic motivation (ref: lower tercile)						
middle tercile	–	–	–	-14.822***	(0.000)	[-21.906,-7.738]
upper tercile	–	–	–	-33.044***	(0.000)	[-41.830,-24.257]
Trust in government	–	–	–	-11.633**	(0.001)	[-18.574,-4.692]
Rejects general measures	–	–	–	18.131***	(0.000)	[8.153,28.109]
Rejects costly measures	–	–	–	5.293	(0.184)	[-2.517,13.103]
Trait reactance (ref: lower tercile)						
middle tercile	–	–	–	6.160+	(0.093)	[-1.029,13.349]
upper tercile	–	–	–	20.768***	(0.000)	[11.940,29.596]
Constant	100.341***	(0.000)	[93.389,107.294]	103.915***	(0.000)	[88.666,119.164]
Observations		2562			2562	
σ		76.366			62.376	
F-Statistic: p-value		0.281			0.000	
Wald test: p-value						
E vs. CP		.685			.691	
CP vs. CPI		.969			.474	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. σ is the standard deviation of the unobserved (latent) outcome of the interval regression. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretability.

C Heterogeneity Analyses

Table C.1: Treatment effect heterogeneity with respect to intrinsic motivation based on a fixed effects regression

	Low intrinsic motivation			High intrinsic motivation			Comparison		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Price effect in control group									
54 EUR	–	–	–	–	–	–	–	–	–
60 EUR	-0.018**	(0.025)	[-0.034,-0.002]	-0.064***	(0.001)	[-0.103,-0.025]	-0.018**	(0.025)	[-0.034,-0.002]
66 EUR	-0.047***	(0.000)	[-0.072,-0.022]	-0.135***	(0.000)	[-0.188,-0.081]	-0.047***	(0.000)	[-0.072,-0.022]
72 EUR	-0.105***	(0.000)	[-0.142,-0.069]	-0.167***	(0.000)	[-0.225,-0.108]	-0.105***	(0.000)	[-0.142,-0.069]
77 EUR	-0.127***	(0.000)	[-0.167,-0.088]	-0.186***	(0.000)	[-0.247,-0.124]	-0.127***	(0.000)	[-0.167,-0.088]
83 EUR	-0.175***	(0.000)	[-0.220,-0.130]	-0.218***	(0.000)	[-0.283,-0.153]	-0.175***	(0.000)	[-0.220,-0.130]
89 EUR	-0.200***	(0.000)	[-0.247,-0.153]	-0.218***	(0.000)	[-0.283,-0.153]	-0.200***	(0.000)	[-0.247,-0.153]
95 EUR	-0.207***	(0.000)	[-0.255,-0.159]	-0.231***	(0.000)	[-0.297,-0.164]	-0.207***	(0.000)	[-0.255,-0.159]
100 EUR	-0.215***	(0.000)	[-0.263,-0.166]	-0.231***	(0.000)	[-0.297,-0.164]	-0.215***	(0.000)	[-0.263,-0.166]
Additional effect in group E									
60 EUR	-0.002	(0.838)	[-0.025,0.020]	0.016	(0.533)	[-0.035,0.068]	-0.002	(0.838)	[-0.025,0.020]
66 EUR	-0.011	(0.560)	[-0.048,0.026]	0.033	(0.381)	[-0.040,0.106]	-0.011	(0.560)	[-0.048,0.026]
72 EUR	0.020	(0.423)	[-0.029,0.068]	0.037	(0.360)	[-0.043,0.118]	0.020	(0.424)	[-0.029,0.068]
77 EUR	0.007	(0.789)	[-0.047,0.062]	0.043	(0.313)	[-0.041,0.127]	0.007	(0.789)	[-0.047,0.062]
83 EUR	0.031	(0.319)	[-0.030,0.091]	0.068	(0.125)	[-0.019,0.156]	0.031	(0.319)	[-0.030,0.091]
89 EUR	0.046	(0.154)	[-0.017,0.109]	0.068	(0.125)	[-0.019,0.156]	0.046	(0.154)	[-0.017,0.109]
95 EUR	0.050	(0.126)	[-0.014,0.114]	0.074	(0.101)	[-0.015,0.163]	0.050	(0.126)	[-0.014,0.114]
100 EUR	0.054	(0.103)	[-0.011,0.118]	0.068	(0.140)	[-0.022,0.157]	0.054	(0.103)	[-0.011,0.118]
Additional effect in group CP									
60 EUR	-0.015	(0.297)	[-0.042,0.013]	-0.006	(0.841)	[-0.063,0.051]	-0.015	(0.297)	[-0.042,0.013]
66 EUR	-0.047**	(0.039)	[-0.092,-0.002]	0.002	(0.965)	[-0.076,0.079]	-0.047**	(0.039)	[-0.092,-0.002]
72 EUR	-0.038	(0.193)	[-0.095,0.019]	-0.043	(0.343)	[-0.132,0.046]	-0.038	(0.193)	[-0.095,0.019]
77 EUR	-0.024	(0.426)	[-0.084,0.036]	-0.045	(0.342)	[-0.138,0.048]	-0.024	(0.426)	[-0.084,0.036]
83 EUR	-0.002	(0.960)	[-0.067,0.064]	-0.027	(0.585)	[-0.123,0.069]	-0.002	(0.960)	[-0.067,0.064]
89 EUR	-0.017	(0.631)	[-0.088,0.053]	-0.034	(0.493)	[-0.131,0.063]	-0.017	(0.631)	[-0.088,0.053]
95 EUR	-0.022	(0.542)	[-0.094,0.049]	-0.021	(0.673)	[-0.119,0.077]	-0.022	(0.542)	[-0.094,0.049]
100 EUR	-0.023	(0.530)	[-0.096,0.049]	-0.021	(0.673)	[-0.119,0.077]	-0.023	(0.530)	[-0.096,0.049]
Additional effect in group CPI									
60 EUR	-0.019	(0.172)	[-0.047,0.008]	-0.029	(0.353)	[-0.089,0.032]	-0.019	(0.172)	[-0.047,0.008]
66 EUR	-0.032	(0.131)	[-0.073,0.009]	-0.057	(0.175)	[-0.140,0.026]	-0.032	(0.131)	[-0.073,0.009]
72 EUR	-0.015	(0.586)	[-0.068,0.039]	-0.058	(0.198)	[-0.148,0.031]	-0.015	(0.586)	[-0.068,0.039]
77 EUR	-0.023	(0.438)	[-0.082,0.035]	-0.066	(0.165)	[-0.159,0.027]	-0.023	(0.438)	[-0.082,0.035]
83 EUR	-0.002	(0.948)	[-0.066,0.062]	-0.040	(0.409)	[-0.136,0.055]	-0.002	(0.948)	[-0.066,0.062]
89 EUR	0.012	(0.724)	[-0.055,0.079]	-0.060	(0.224)	[-0.157,0.037]	0.012	(0.724)	[-0.055,0.079]
95 EUR	0.008	(0.817)	[-0.060,0.076]	-0.054	(0.281)	[-0.152,0.044]	0.008	(0.817)	[-0.060,0.076]
100 EUR	0.015	(0.661)	[-0.053,0.084]	-0.061	(0.228)	[-0.159,0.038]	0.015	(0.661)	[-0.053,0.084]
High motivation x price									
54 EUR	–	–	–	–	–	–	-0.046**	(0.031)	[-0.088,-0.004]
60 EUR	–	–	–	–	–	–	-0.087***	(0.004)	[-0.147,-0.028]
66 EUR	–	–	–	–	–	–	-0.061*	(0.082)	[-0.130,0.008]
72 EUR	–	–	–	–	–	–	-0.059	(0.115)	[-0.132,0.014]
77 EUR	–	–	–	–	–	–	-0.043	(0.282)	[-0.122,0.036]
83 EUR	–	–	–	–	–	–	-0.018	(0.662)	[-0.098,0.063]
89 EUR	–	–	–	–	–	–	-0.023	(0.574)	[-0.105,0.058]
100 EUR	–	–	–	–	–	–	-0.016	(0.699)	[-0.098,0.066]
Group E x high motivation x price									
60 EUR	–	–	–	–	–	–	0.019	(0.513)	[-0.038,0.075]
66 EUR	–	–	–	–	–	–	0.044	(0.296)	[-0.038,0.125]
72 EUR	–	–	–	–	–	–	0.018	(0.713)	[-0.076,0.111]
77 EUR	–	–	–	–	–	–	0.036	(0.483)	[-0.064,0.135]
83 EUR	–	–	–	–	–	–	0.038	(0.487)	[-0.068,0.144]
89 EUR	–	–	–	–	–	–	0.022	(0.683)	[-0.085,0.130]
95 EUR	–	–	–	–	–	–	0.025	(0.659)	[-0.085,0.134]
100 EUR	–	–	–	–	–	–	0.014	(0.804)	[-0.096,0.124]
Group CP x high motivation x price									
60 EUR	–	–	–	–	–	–	0.009	(0.785)	[-0.054,0.072]
66 EUR	–	–	–	–	–	–	0.049	(0.285)	[-0.041,0.138]
72 EUR	–	–	–	–	–	–	-0.005	(0.924)	[-0.111,0.101]
77 EUR	–	–	–	–	–	–	-0.021	(0.715)	[-0.131,0.090]
83 EUR	–	–	–	–	–	–	-0.025	(0.672)	[-0.142,0.091]
89 EUR	–	–	–	–	–	–	-0.017	(0.785)	[-0.136,0.103]
95 EUR	–	–	–	–	–	–	0.001	(0.984)	[-0.120,0.122]
100 EUR	–	–	–	–	–	–	0.002	(0.972)	[-0.119,0.124]
Group CPI x high motivation x price									
60 EUR	–	–	–	–	–	–	-0.009	(0.786)	[-0.076,0.057]
66 EUR	–	–	–	–	–	–	-0.026	(0.585)	[-0.118,0.067]
72 EUR	–	–	–	–	–	–	-0.044	(0.410)	[-0.147,0.060]
77 EUR	–	–	–	–	–	–	-0.043	(0.445)	[-0.152,0.067]
83 EUR	–	–	–	–	–	–	-0.038	(0.516)	[-0.153,0.077]
89 EUR	–	–	–	–	–	–	-0.072	(0.229)	[-0.190,0.045]
95 EUR	–	–	–	–	–	–	-0.062	(0.308)	[-0.181,0.057]
100 EUR	–	–	–	–	–	–	-0.076	(0.214)	[-0.196,0.044]
Constant	0.853***	(0.000)	[0.838,0.869]	0.481***	(0.000)	[0.456,0.506]	0.720***	(0.000)	[0.707,0.734]
Observations		9693			5373			15066	

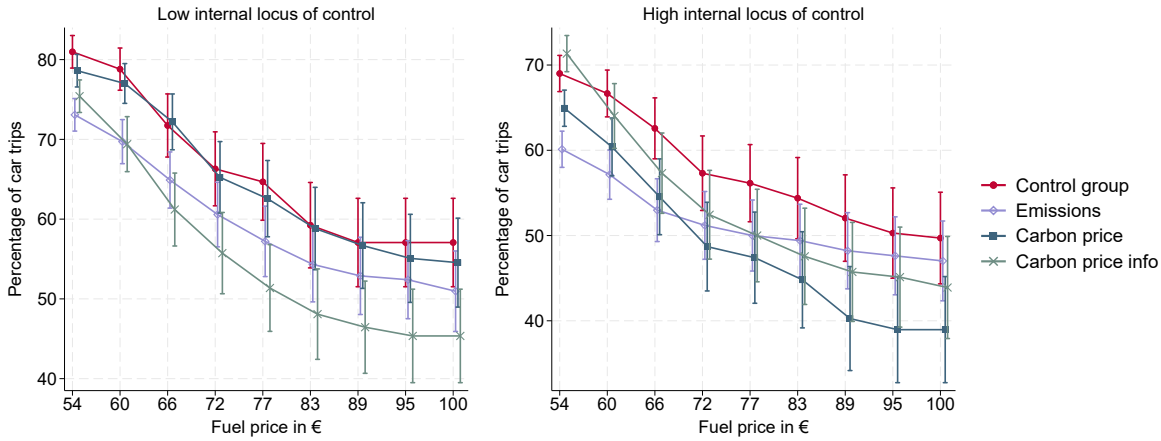
Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. The interaction effects for Group x motivation x price show how treatment effects on changes in demand differ between respondents in the lower and upper tercile of intrinsic sustainability motivation. The interaction of High motivation x price shows how reactions to price increases differ between respondents with high compared to low intrinsic motivation.

Table C.2: Treatment effect heterogeneity with respect to intrinsic motivation on the WTP for fuel based on an interval regression

	Low intrinsic motivation			High intrinsic motivation			Comparison		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Group emissions	-6.878	(0.340)	[-21.016,7.261]	-2.938	(0.706)	[-18.224,12.348]	-6.292	(0.356)	[-19.664,7.079]
Group carbon price	-4.602	(0.520)	[-18.617,9.414]	8.449	(0.269)	[-6.532,23.429]	-4.455	(0.509)	[-17.689,8.778]
Group carbon price information	-5.060	(0.493)	[-19.523,9.403]	-5.179	(0.175)	[-12.658,2.301]	-4.458	(0.520)	[-18.048,9.133]
Age (ref: 65 and older)									
under 45	-7.475	(0.387)	[-24.415,9.465]	5.702	(0.539)	[-12.469,23.874]	1.598	(0.751)	[-8.257,11.452]
45 - 64	-8.551	(0.223)	[-22.295,5.192]	0.896	(0.901)	[-13.151,14.942]	-2.120	(0.591)	[-9.847,5.607]
Female	5.555	(0.327)	[-5.563,16.673]	-3.912	(.)	[-3.912,-3.912]	-0.527	(0.869)	[-6.810,5.756]
A-levels	-7.710	(0.167)	[-18.640,3.221]	-14.289**	(0.018)	[-26.111,-2.468]	-9.401***	(0.004)	[-15.826,-2.976]
Net hh income (ref: EUR 4200 and more)									
under EUR 2700	3.871	(0.582)	[-9.901,17.643]	-3.370	(0.682)	[-19.466,12.727]	0.792	(0.858)	[-7.860,9.444]
EUR 2700 - 4200	5.971	(0.373)	[-7.172,19.115]	8.767	(.)	[8.767,8.767]	3.667	(0.338)	[-3.837,11.172]
Number of cars	2.988*	(0.060)	[-0.130,6.107]	0.817	(0.830)	[-6.662,8.296]	3.863**	(0.033)	[0.308,7.419]
Kilometers driven (ref: lower tercile)									
middle tercile	3.031	(0.654)	[-10.228,16.289]	16.221	(.)	[16.221,16.221]	8.739**	(0.025)	[1.092,16.385]
upper tercile	-5.161	(0.459)	[-18.811,8.488]	7.890	(0.252)	[-5.618,21.397]	1.455	(0.721)	[-6.542,9.452]
Commutes by car	17.617***	(0.006)	[5.093,30.141]	10.313	(0.128)	[-2.983,23.609]	10.313***	(0.005)	[3.168,17.458]
Public transport ticket	-46.067***	(0.000)	[-61.481,-30.653]	-30.517***	(0.000)	[-42.510,-18.524]	-37.481***	(0.000)	[-45.018,-29.943]
Climate change attitudes (ref: anthropogenic)									
does not exist	9.359	(0.423)	[-13.514,32.232]	42.110	(.)	[42.110,42.110]	4.894	(0.534)	[-10.533,20.321]
anthropogenic and natural	14.829	(0.187)	[-7.183,36.841]	37.073	(0.294)	[-32.134,106.279]	19.146**	(0.018)	[3.326,34.965]
natural	8.128	(0.214)	[-4.687,20.942]	2.848	(0.725)	[-13.000,18.697]	7.453*	(0.060)	[-0.319,15.225]
Environmental attitudes (ref: lower tercile)									
middle tercile	-10.798*	(0.083)	[-22.998,1.402]	-11.840	(.)	[-11.840,-11.840]	-8.067**	(0.041)	[-15.817,-0.317]
upper tercile	-19.693**	(0.029)	[-37.385,-2.000]	-21.889***	(0.000)	[-33.612,-10.166]	-16.947***	(0.000)	[-26.223,-7.671]
Trust in government	-2.287	(0.745)	[-16.085,11.511]	-14.240**	(0.013)	[-25.436,-3.044]	-11.089***	(0.002)	[-18.046,-4.132]
Rejects general measures	23.476***	(0.001)	[9.146,37.805]	18.103	(0.211)	[-10.243,46.449]	18.306***	(0.000)	[8.317,28.294]
Rejects costly measures	5.989	(0.384)	[-7.490,19.467]	12.333	(0.156)	[-4.697,29.364]	5.086	(0.202)	[-2.726,12.898]
Trait reactance (ref: lower tercile)									
middle tercile	6.639	(0.295)	[-5.776,19.055]	9.287	(0.157)	[-3.588,22.162]	6.143*	(0.093)	[-1.022,13.307]
upper tercile	20.333***	(0.004)	[6.626,34.040]	23.023**	(0.044)	[0.658,45.388]	20.777***	(0.000)	[11.965,29.589]
Intrinsic motivation (ref: lower tercile)									
middle tercile	–	–	–	–	–	–	-14.973**	(0.029)	[-28.433,-1.513]
upper tercile	–	–	–	–	–	–	-34.492***	(0.000)	[-50.014,-18.970]
Effect heterogeneity w.r.t. instrinsic motivation									
Emissions x middle tercile	–	–	–	–	–	–	3.232	(0.743)	[-16.052,22.517]
Emissions x upper tercile	–	–	–	–	–	–	-0.129	(0.991)	[-21.884,21.627]
Carbon price x middle tercile	–	–	–	–	–	–	-1.207	(0.900)	[-19.998,17.585]
Carbon price x upper tercile	–	–	–	–	–	–	10.141	(0.346)	[-10.930,31.212]
Carbon price information x middle tercile	–	–	–	–	–	–	-1.662	(0.864)	[-20.614,17.290]
Carbon price information x upper tercile	–	–	–	–	–	–	-4.723	(0.661)	[-25.826,16.379]
Constant	105.428***	(0.000)	[82.222,128.634]	69.012	(.)	[69.012,69.012]	103.494***	(0.000)	[87.050,119.939]
Observations		1077			597			2562	
σ		65.748			59.323			62.237	
F-Statistic: p-value		0.000			0.000			0.000	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. σ is the standard deviation of the unobserved (latent) outcome of the interval regression. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretability.

Figure C.1: Comparison of demand for the car trip at each fuel price between treatment groups for different levels of internal locus of control



Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment, separately for individuals with different levels of internal locus of control. Number of observations: 6,858; 5,913; number of individuals: 762; 657.

Table C.3: Treatment effect heterogeneity with respect to carbon offsetting beliefs based on a fixed effects regression

	Carbon offsetting belief			No carbon offsetting belief / Unsure			Comparison		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Price effect in control group									
54 EUR	–	–	–	–	–	–	–	–	–
60 EUR	-0.044**	(0.023)	[-0.082,-0.006]	-0.010	(0.317)	[-0.030,0.010]	-0.044**	(0.023)	[-0.082,-0.006]
66 EUR	-0.079***	(0.002)	[-0.129,-0.029]	-0.091***	(0.002)	[-0.148,-0.034]	-0.079***	(0.002)	[-0.129,-0.029]
72 EUR	-0.140***	(0.000)	[-0.204,-0.076]	-0.162***	(0.000)	[-0.235,-0.089]	-0.140***	(0.000)	[-0.204,-0.076]
77 EUR	-0.184***	(0.000)	[-0.256,-0.113]	-0.172***	(0.000)	[-0.246,-0.097]	-0.184***	(0.000)	[-0.256,-0.113]
83 EUR	-0.193***	(0.000)	[-0.266,-0.120]	-0.222***	(0.000)	[-0.305,-0.140]	-0.193***	(0.000)	[-0.266,-0.120]
89 EUR	-0.202***	(0.000)	[-0.276,-0.128]	-0.232***	(0.000)	[-0.316,-0.149]	-0.202***	(0.000)	[-0.276,-0.128]
95 EUR	-0.219***	(0.000)	[-0.296,-0.143]	-0.242***	(0.000)	[-0.327,-0.158]	-0.219***	(0.000)	[-0.296,-0.143]
100 EUR	-0.237***	(0.000)	[-0.315,-0.158]	-0.253***	(0.000)	[-0.339,-0.166]	-0.237***	(0.000)	[-0.315,-0.158]
Additional effect in group E									
60 EUR	0.020	(0.407)	[-0.027,0.066]	-0.061**	(0.029)	[-0.116,-0.006]	0.020	(0.407)	[-0.027,0.066]
66 EUR	0.022	(0.493)	[-0.042,0.087]	-0.052	(0.257)	[-0.142,0.038]	0.022	(0.493)	[-0.042,0.087]
72 EUR	0.068*	(0.092)	[-0.011,0.147]	-0.022	(0.683)	[-0.128,0.084]	0.068*	(0.092)	[-0.011,0.147]
77 EUR	0.087*	(0.053)	[-0.001,0.176]	-0.032	(0.562)	[-0.142,0.077]	0.087*	(0.053)	[-0.001,0.176]
83 EUR	0.088*	(0.057)	[-0.003,0.179]	-0.012	(0.836)	[-0.130,0.105]	0.088*	(0.057)	[-0.003,0.179]
89 EUR	0.073	(0.133)	[-0.022,0.168]	-0.013	(0.837)	[-0.132,0.107]	0.073	(0.132)	[-0.022,0.167]
95 EUR	0.074	(0.140)	[-0.024,0.173]	-0.002	(0.968)	[-0.123,0.118]	0.074	(0.140)	[-0.024,0.173]
100 EUR	0.084	(0.105)	[-0.017,0.185]	0.008	(0.902)	[-0.114,0.129]	0.084	(0.104)	[-0.017,0.185]
Additional effect in group CP									
60 EUR	0.014	(0.591)	[-0.037,0.064]	-0.018	(0.344)	[-0.055,0.019]	0.014	(0.591)	[-0.037,0.064]
66 EUR	-0.001	(0.977)	[-0.074,0.072]	0.025	(0.498)	[-0.048,0.099]	-0.001	(0.977)	[-0.074,0.072]
72 EUR	0.020	(0.659)	[-0.070,0.111]	0.003	(0.957)	[-0.098,0.104]	0.020	(0.659)	[-0.070,0.111]
77 EUR	0.044	(0.381)	[-0.055,0.143]	-0.025	(0.650)	[-0.131,0.082]	0.044	(0.380)	[-0.055,0.143]
83 EUR	0.013	(0.808)	[-0.092,0.118]	-0.002	(0.972)	[-0.117,0.112]	0.013	(0.808)	[-0.092,0.118]
89 EUR	-0.028	(0.618)	[-0.139,0.083]	-0.020	(0.738)	[-0.138,0.098]	-0.028	(0.618)	[-0.139,0.083]
95 EUR	-0.011	(0.852)	[-0.123,0.102]	-0.029	(0.640)	[-0.149,0.091]	-0.011	(0.852)	[-0.123,0.102]
100 EUR	-0.003	(0.957)	[-0.118,0.112]	-0.019	(0.764)	[-0.139,0.102]	-0.003	(0.957)	[-0.118,0.112]
Additional effect in group CPI									
60 EUR	0.005	(0.835)	[-0.039,0.048]	-0.068***	(0.000)	[-0.103,-0.033]	0.005	(0.835)	[-0.039,0.048]
66 EUR	-0.022	(0.467)	[-0.083,0.038]	-0.063*	(0.075)	[-0.132,0.006]	-0.022	(0.466)	[-0.083,0.038]
72 EUR	-0.000	(0.996)	[-0.075,0.075]	-0.049	(0.257)	[-0.134,0.036]	-0.000	(0.996)	[-0.075,0.075]
77 EUR	0.024	(0.567)	[-0.059,0.107]	-0.087*	(0.053)	[-0.176,0.001]	0.024	(0.567)	[-0.058,0.107]
83 EUR	0.010	(0.818)	[-0.075,0.095]	-0.055	(0.260)	[-0.150,0.041]	0.010	(0.817)	[-0.075,0.095]
89 EUR	0.002	(0.957)	[-0.084,0.089]	-0.060	(0.226)	[-0.157,0.037]	0.002	(0.956)	[-0.084,0.089]
95 EUR	0.010	(0.823)	[-0.079,0.099]	-0.059	(0.241)	[-0.157,0.040]	0.010	(0.823)	[-0.079,0.099]
100 EUR	0.021	(0.649)	[-0.070,0.112]	-0.052	(0.308)	[-0.151,0.048]	0.021	(0.648)	[-0.070,0.112]
No offsetting belief x price									
60 EUR	–	–	–	–	–	–	0.034	(0.120)	[-0.009,0.076]
66 EUR	–	–	–	–	–	–	-0.012	(0.756)	[-0.087,0.064]
72 EUR	–	–	–	–	–	–	-0.021	(0.667)	[-0.118,0.076]
77 EUR	–	–	–	–	–	–	0.012	(0.812)	[-0.091,0.116]
89 EUR	–	–	–	–	–	–	-0.029	(0.601)	[-0.139,0.081]
89 EUR	–	–	–	–	–	–	-0.031	(0.591)	[-0.142,0.081]
95 EUR	–	–	–	–	–	–	-0.023	(0.691)	[-0.137,0.091]
100 EUR	–	–	–	–	–	–	-0.016	(0.791)	[-0.132,0.101]
Group E x no offsetting belief x price									
60 EUR	–	–	–	–	–	–	-0.081**	(0.027)	[-0.153,-0.009]
66 EUR	–	–	–	–	–	–	-0.074	(0.186)	[-0.185,0.036]
72 EUR	–	–	–	–	–	–	-0.090	(0.182)	[-0.222,0.042]
77 EUR	–	–	–	–	–	–	-0.120*	(0.095)	[-0.261,0.021]
83 EUR	–	–	–	–	–	–	-0.101	(0.184)	[-0.249,0.048]
89 EUR	–	–	–	–	–	–	-0.085	(0.273)	[-0.238,0.067]
95 EUR	–	–	–	–	–	–	-0.077	(0.334)	[-0.232,0.079]
100 EUR	–	–	–	–	–	–	-0.076	(0.345)	[-0.234,0.082]
Group CP x no offsetting belief x price									
60 EUR	–	–	–	–	–	–	-0.032	(0.320)	[-0.094,0.031]
66 EUR	–	–	–	–	–	–	0.027	(0.616)	[-0.077,0.130]
72 EUR	–	–	–	–	–	–	-0.018	(0.799)	[-0.153,0.118]
77 EUR	–	–	–	–	–	–	-0.069	(0.353)	[-0.214,0.076]
83 EUR	–	–	–	–	–	–	-0.015	(0.849)	[-0.170,0.140]
89 EUR	–	–	–	–	–	–	0.008	(0.920)	[-0.153,0.170]
95 EUR	–	–	–	–	–	–	-0.018	(0.831)	[-0.182,0.146]
100 EUR	–	–	–	–	–	–	-0.015	(0.857)	[-0.182,0.151]
Group CPI x no offsetting belief x price									
60 EUR	–	–	–	–	–	–	-0.073**	(0.011)	[-0.129,-0.017]
66 EUR	–	–	–	–	–	–	-0.040	(0.387)	[-0.132,0.051]
72 EUR	–	–	–	–	–	–	-0.049	(0.396)	[-0.163,0.064]
77 EUR	–	–	–	–	–	–	-0.111*	(0.071)	[-0.232,0.009]
83 EUR	–	–	–	–	–	–	-0.065	(0.319)	[-0.192,0.063]
89 EUR	–	–	–	–	–	–	-0.062	(0.347)	[-0.192,0.068]
95 EUR	–	–	–	–	–	–	-0.069	(0.308)	[-0.201,0.064]
100 EUR	–	–	–	–	–	–	-0.073	(0.289)	[-0.208,0.062]
Constant	0.758***	(0.000)	[0.737,0.779]	0.709***	(0.000)	[0.685,0.734]	0.734***	(0.000)	[0.717,0.750]
Observations		5796			5724			11520	

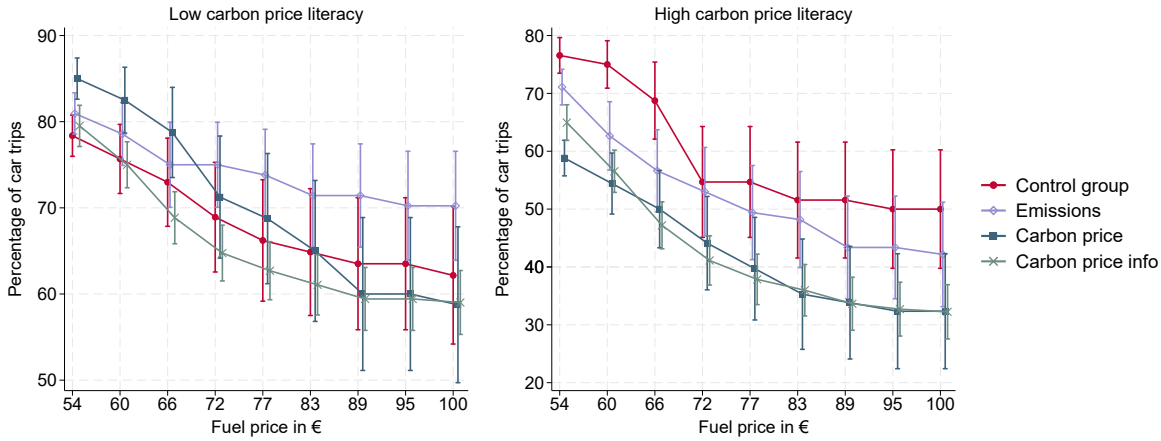
Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. The interactions effects for Group x motivation x price show how treatment effects on changes in demand differ between respondents with different carbon offsetting beliefs.

Table C.4: Treatment effect heterogeneity with respect to carbon offsetting beliefs on the WTP for fuel based on an interval regression

	Carbon offsetting beliefs			No carbon offsetting beliefs / Unsure			Comparison		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Group emissions	18.268*	(0.079)	[-2.128,38.664]	-16.898*	(0.067)	[-34.951,1.155]	20.055**	(0.036)	[1.315,38.795]
Group carbon price	4.053	(0.699)	[-16.508,24.615]	-14.272	(0.119)	[-32.227,3.683]	9.632	(0.314)	[-9.128,28.392]
Group carbon price information	-1.183	(0.887)	[-17.501,15.135]	-17.494**	(0.019)	[-32.126,-2.862]	0.932	(0.903)	[-14.040,15.903]
Age (ref: 65 and older)									
under 45	-5.494	(0.611)	[-26.634,15.646]	2.041	(0.811)	[-14.668,18.750]	0.033	(0.996)	[-13.270,13.336]
45 - 64	-3.592	(0.648)	[-19.008,11.825]	-12.523*	(0.068)	[-25.955,0.909]	-7.536	(0.147)	[-17.729,2.656]
Female	-0.526	(0.938)	[-13.796,12.745]	0.561	(0.918)	[-10.101,11.222]	-1.041	(0.806)	[-9.325,7.243]
A-levels	-6.863	(0.302)	[-19.885,6.159]	-22.510***	(0.000)	[-33.868,-11.152]	-14.690***	(0.001)	[-23.263,-6.117]
Net hh income (ref: EUR 4200 and more)									
under EUR 2700	9.541	(0.315)	[-9.054,28.136]	-6.188	(0.376)	[-19.891,7.515]	1.712	(0.762)	[-9.342,12.766]
EUR 2700 - 4200	0.630	(0.939)	[-15.534,16.794]	-0.357	(0.955)	[-12.862,12.148]	-0.171	(0.973)	[-10.107,9.765]
Number of cars	5.604	(0.251)	[-3.966,15.175]	2.573	(0.137)	[-0.817,5.963]	3.436*	(0.058)	[-0.112,6.984]
Kilometers driven (ref: lower tercile)									
middle tercile	7.642	(0.354)	[-8.518,23.801]	8.207	(0.205)	[-4.483,20.896]	10.243**	(0.047)	[0.146,20.340]
upper tercile	5.310	(0.542)	[-11.745,22.365]	-3.838	(0.593)	[-17.902,10.225]	2.013	(0.716)	[-8.815,12.841]
Commutes by car	19.267***	(0.009)	[4.901,33.633]	15.023**	(0.018)	[2.546,27.501]	14.812***	(0.002)	[5.363,24.261]
Public transport ticket	-53.668***	(0.000)	[-69.684,-37.653]	-31.794***	(0.000)	[-44.547,-19.041]	-41.144***	(0.000)	[-51.202,-31.086]
Climate change attitudes (ref: anthropogenic)									
does not exist	-6.744	(0.637)	[-34.737,21.250]	-1.368	(0.930)	[-31.712,28.976]	-5.054	(0.611)	[-24.515,14.407]
anthropogenic and natural	12.389	(0.442)	[-19.209,43.988]	9.485	(0.518)	[-19.239,38.209]	9.760	(0.363)	[-11.254,30.775]
natural	8.728	(0.297)	[-7.659,25.115]	-6.686	(0.334)	[-20.240,6.867]	1.053	(0.842)	[-9.286,11.392]
Environmental attitudes (ref: lower tercile)									
middle tercile	-14.234*	(0.075)	[-29.918,1.451]	-22.446***	(0.002)	[-36.515,-8.378]	-18.214***	(0.001)	[-28.548,-7.880]
upper tercile	-14.437	(0.145)	[-33.872,4.999]	-28.431***	(0.000)	[-44.414,-12.449]	-22.096***	(0.000)	[-34.369,-9.824]
Intrinsic motivation (ref: lower tercile)									
middle tercile	-17.001**	(0.020)	[-31.298,-2.704]	-6.426	(0.302)	[-18.641,5.788]	-10.005**	(0.033)	[-19.180,-0.831]
upper tercile	-44.925***	(0.000)	[-64.790,-25.060]	-23.864***	(0.002)	[-39.176,-8.553]	-31.353***	(0.000)	[-43.413,-19.293]
Trust in government	-3.685	(0.641)	[-19.186,11.816]	-1.300	(0.818)	[-12.357,9.757]	-2.470	(.)	[-2.470,-2.470]
Rejects general measures	17.885*	(0.064)	[-1.028,36.798]	16.013*	(0.095)	[-2.806,34.831]	16.336**	(0.014)	[3.302,29.369]
Rejects costly measures	-2.023	(0.820)	[-19.409,15.363]	-1.868	(0.777)	[-14.806,11.070]	0.329	(0.951)	[-10.125,10.783]
Trait reactance (ref: lower tercile)									
middle tercile	3.097	(0.685)	[-11.860,18.055]	15.013**	(0.016)	[2.760,27.267]	9.031*	(0.062)	[-0.439,18.500]
upper tercile	25.576***	(0.007)	[7.088,44.064]	23.541***	(0.002)	[8.340,38.741]	24.899***	(0.000)	[13.199,36.599]
No offsetting (ref: offsetting)	–	–	–	–	–	–	15.398	(0.109)	[-3.452,34.249]
Effect heterogeneity w.r.t. offsetting belief									
Emissions x no offsetting	–	–	–	–	–	–	-36.977***	(0.007)	[-63.731,-10.223]
Carbon price x no offsetting	–	–	–	–	–	–	-24.599*	(0.071)	[-51.271,2.073]
Carbon price information x no offsetting	–	–	–	–	–	–	-18.446*	(0.094)	[-40.032,3.140]
Constant	102.788***	(0.000)	[68.420,137.155]	131.018***	(0.000)	[104.292,157.744]	105.907***	(0.000)	[83.521,128.293]
Observations		636			632			1268	
σ		61.235			52.540			57.107	
F-Statistic: p-value		0.000			0.000			0.000	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. σ is the standard deviation of the unobserved (latent) outcome of the interval regression. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretability.

Figure C.2: Comparison of demand for the car trip at each fuel price between treatment groups for different levels of carbon price literacy



Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment, separately for different levels of carbon price literacy. Number of observations: 4,338; 3,861; number of individuals: 482; 429.

Table C.5: Treatment effect heterogeneity with respect to support for costly climate change mitigation measures based on a fixed effects regression

	Opposition / Undecided			Support			Comparison		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Price effect in control group									
54 EUR	–	–	–	–	–	–	–	–	–
60 EUR	-0.034***	(0.001)	[-0.055,-0.014]	-0.037***	(0.000)	[-0.057,-0.016]	-0.034***	(0.001)	[-0.055,-0.014]
66 EUR	-0.082***	(0.000)	[-0.112,-0.051]	-0.101***	(0.000)	[-0.134,-0.068]	-0.082***	(0.000)	[-0.112,-0.051]
72 EUR	-0.138***	(0.000)	[-0.176,-0.100]	-0.160***	(0.000)	[-0.199,-0.120]	-0.138***	(0.000)	[-0.176,-0.100]
77 EUR	-0.166***	(0.000)	[-0.207,-0.125]	-0.178***	(0.000)	[-0.220,-0.136]	-0.166***	(0.000)	[-0.207,-0.125]
83 EUR	-0.213***	(0.000)	[-0.258,-0.168]	-0.212***	(0.000)	[-0.256,-0.167]	-0.213***	(0.000)	[-0.258,-0.168]
89 EUR	-0.235***	(0.000)	[-0.282,-0.188]	-0.224***	(0.000)	[-0.269,-0.179]	-0.235***	(0.000)	[-0.282,-0.188]
95 EUR	-0.241***	(0.000)	[-0.288,-0.194]	-0.236***	(0.000)	[-0.282,-0.190]	-0.241***	(0.000)	[-0.288,-0.194]
100 EUR	-0.251***	(0.000)	[-0.298,-0.203]	-0.236***	(0.000)	[-0.282,-0.190]	-0.251***	(0.000)	[-0.298,-0.203]
Additional effect in group E									
60 EUR	0.006	(0.676)	[-0.021,0.033]	-0.013	(0.408)	[-0.044,0.018]	0.006	(0.676)	[-0.021,0.033]
66 EUR	0.002	(0.931)	[-0.041,0.044]	0.010	(0.652)	[-0.035,0.055]	0.002	(0.931)	[-0.041,0.044]
72 EUR	0.039	(0.127)	[-0.011,0.090]	0.030	(0.264)	[-0.023,0.084]	0.039	(0.127)	[-0.011,0.090]
77 EUR	0.045	(0.106)	[-0.010,0.100]	0.031	(0.274)	[-0.025,0.087]	0.045	(0.106)	[-0.010,0.100]
83 EUR	0.070**	(0.021)	[0.010,0.129]	0.047	(0.118)	[-0.012,0.107]	0.070**	(0.021)	[0.010,0.129]
89 EUR	0.082***	(0.009)	[0.021,0.144]	0.048	(0.122)	[-0.013,0.109]	0.082***	(0.009)	[0.021,0.144]
95 EUR	0.082***	(0.010)	[0.020,0.144]	0.051	(0.104)	[-0.011,0.113]	0.082***	(0.010)	[0.020,0.144]
100 EUR	0.092***	(0.004)	[0.029,0.154]	0.040	(0.214)	[-0.023,0.102]	0.092***	(0.004)	[0.029,0.154]
Additional effect in group CP									
60 EUR	0.009	(0.544)	[-0.019,0.036]	-0.013	(0.395)	[-0.045,0.018]	0.009	(0.544)	[-0.019,0.036]
66 EUR	0.007	(0.737)	[-0.036,0.051]	-0.017	(0.481)	[-0.065,0.031]	0.007	(0.737)	[-0.036,0.051]
72 EUR	0.008	(0.768)	[-0.047,0.064]	-0.042	(0.163)	[-0.100,0.017]	0.008	(0.768)	[-0.047,0.064]
77 EUR	0.022	(0.468)	[-0.037,0.080]	-0.041	(0.185)	[-0.102,0.020]	0.022	(0.469)	[-0.037,0.080]
83 EUR	0.024	(0.464)	[-0.041,0.089]	-0.028	(0.389)	[-0.092,0.036]	0.024	(0.464)	[-0.041,0.089]
89 EUR	0.028	(0.420)	[-0.040,0.095]	-0.048	(0.150)	[-0.114,0.017]	0.028	(0.420)	[-0.040,0.095]
95 EUR	0.027	(0.444)	[-0.041,0.095]	-0.048	(0.160)	[-0.115,0.019]	0.027	(0.444)	[-0.041,0.095]
100 EUR	0.029	(0.416)	[-0.040,0.097]	-0.048	(0.160)	[-0.115,0.019]	0.029	(0.416)	[-0.040,0.097]
Additional effect in group CPI									
60 EUR	-0.021	(0.212)	[-0.053,0.012]	-0.025	(0.147)	[-0.058,0.009]	-0.021	(0.212)	[-0.053,0.012]
66 EUR	-0.026	(0.273)	[-0.072,0.020]	-0.046*	(0.075)	[-0.097,0.005]	-0.026	(0.273)	[-0.072,0.020]
72 EUR	-0.018	(0.527)	[-0.074,0.038]	-0.037	(0.220)	[-0.096,0.022]	-0.018	(0.527)	[-0.073,0.038]
77 EUR	-0.012	(0.681)	[-0.072,0.047]	-0.064**	(0.043)	[-0.127,-0.002]	-0.012	(0.681)	[-0.072,0.047]
83 EUR	0.015	(0.640)	[-0.048,0.079]	-0.052	(0.118)	[-0.118,0.013]	0.015	(0.640)	[-0.048,0.079]
89 EUR	0.027	(0.411)	[-0.038,0.092]	-0.061*	(0.072)	[-0.128,0.006]	0.027	(0.411)	[-0.038,0.092]
95 EUR	0.027	(0.419)	[-0.039,0.093]	-0.061*	(0.077)	[-0.129,0.007]	0.027	(0.419)	[-0.039,0.093]
100 EUR	0.030	(0.377)	[-0.037,0.097]	-0.064*	(0.063)	[-0.132,0.004]	0.030	(0.377)	[-0.037,0.097]
Constant	0.841***	(0.000)	[0.825,0.856]	0.603***	(0.000)	[0.586,0.619]	0.716***	(0.000)	[0.705,0.727]
Support x price									
54 EUR	–	–	–	–	–	–	-0.002	(0.874)	[-0.031,0.026]
60 EUR	–	–	–	–	–	–	-0.020	(0.385)	[-0.064,0.025]
66 EUR	–	–	–	–	–	–	-0.022	(0.442)	[-0.077,0.033]
72 EUR	–	–	–	–	–	–	-0.012	(0.693)	[-0.070,0.047]
77 EUR	–	–	–	–	–	–	0.002	(0.963)	[-0.062,0.065]
83 EUR	–	–	–	–	–	–	0.011	(0.736)	[-0.054,0.076]
89 EUR	–	–	–	–	–	–	0.005	(0.878)	[-0.061,0.071]
100 EUR	–	–	–	–	–	–	0.015	(0.667)	[-0.052,0.081]
Group E x support x price									
60 EUR	–	–	–	–	–	–	-0.019	(0.370)	[-0.060,0.022]
66 EUR	–	–	–	–	–	–	0.008	(0.789)	[-0.053,0.070]
72 EUR	–	–	–	–	–	–	-0.009	(0.816)	[-0.082,0.065]
77 EUR	–	–	–	–	–	–	-0.014	(0.729)	[-0.092,0.064]
83 EUR	–	–	–	–	–	–	-0.022	(0.601)	[-0.107,0.062]
89 EUR	–	–	–	–	–	–	-0.034	(0.437)	[-0.121,0.052]
95 EUR	–	–	–	–	–	–	-0.031	(0.493)	[-0.118,0.057]
100 EUR	–	–	–	–	–	–	-0.052	(0.251)	[-0.140,0.037]
Group CP x support x price									
60 EUR	–	–	–	–	–	–	-0.022	(0.299)	[-0.064,0.020]
66 EUR	–	–	–	–	–	–	-0.025	(0.455)	[-0.089,0.040]
72 EUR	–	–	–	–	–	–	-0.050	(0.224)	[-0.130,0.031]
77 EUR	–	–	–	–	–	–	-0.063	(0.145)	[-0.147,0.022]
83 EUR	–	–	–	–	–	–	-0.052	(0.260)	[-0.143,0.039]
89 EUR	–	–	–	–	–	–	-0.076	(0.113)	[-0.170,0.018]
95 EUR	–	–	–	–	–	–	-0.074	(0.126)	[-0.170,0.021]
100 EUR	–	–	–	–	–	–	-0.076	(0.119)	[-0.172,0.020]
Group CPI x support x price									
60 EUR	–	–	–	–	–	–	-0.004	(0.872)	[-0.050,0.043]
66 EUR	–	–	–	–	–	–	-0.020	(0.559)	[-0.089,0.048]
72 EUR	–	–	–	–	–	–	-0.019	(0.647)	[-0.100,0.062]
77 EUR	–	–	–	–	–	–	-0.052	(0.237)	[-0.138,0.034]
83 EUR	–	–	–	–	–	–	-0.067	(0.148)	[-0.158,0.024]
89 EUR	–	–	–	–	–	–	-0.089*	(0.063)	[-0.182,0.005]
95 EUR	–	–	–	–	–	–	-0.088*	(0.067)	[-0.183,0.006]
100 EUR	–	–	–	–	–	–	-0.094*	(0.052)	[-0.190,0.001]
Observations	10899			11979			23058		

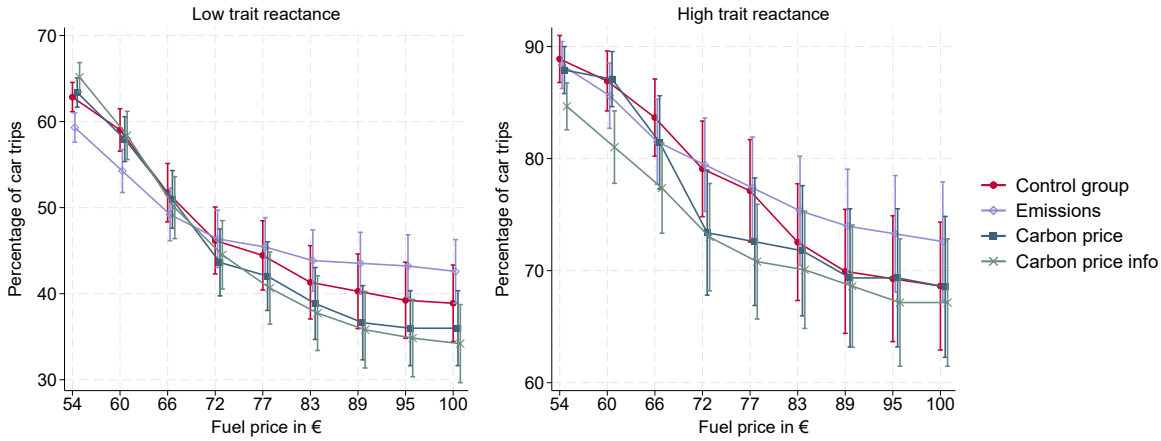
Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. The interactions effects for Group x motivation x price show how treatment effects on changes in demand differ between respondents who do and do not accept costly climate change mitigation measures.

Table C.6: Treatment effect heterogeneity with respect to acceptance of costly climate change mitigation measures on the WTP for fuel based on an interval regression

	Opposition / Undecided			Support			Comparison		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Group emissions	0.783	(0.901)	[-11.563,13.129]	-9.525	(0.108)	[-21.152,2.102]	-9.079	(0.126)	[-20.702,2.545]
Group carbon price	-3.107	(0.624)	[-15.525,9.310]	-3.378	(0.543)	[-14.266,7.510]	-3.145	(0.576)	[-14.157,7.867]
Group carbon price information	-8.755	(0.150)	[-20.684,3.173]	-3.933	(0.480)	[-14.839,6.973]	-3.887	(0.490)	[-14.916,7.143]
Age (ref: 65 and older)									
under 45	-7.724	(0.317)	[-22.863,7.414]	6.893	(0.295)	[-6.013,19.800]	1.431	(0.777)	[-8.459,11.321]
45 - 64	-11.773**	(0.046)	[-23.351,-0.195]	3.140	(0.548)	[-7.116,13.396]	-2.340	(0.554)	[-10.090,5.409]
Female	-5.332	(0.263)	[-14.664,4.001]	3.269	(0.443)	[-5.091,11.630]	-0.971	(0.762)	[-7.248,5.305]
A-levels	-12.357***	(0.010)	[-21.725,-2.989]	-7.855*	(0.075)	[-16.491,0.781]	-9.529***	(0.004)	[-15.943,-3.114]
Net hh income (ref: EUR 4200 and more)									
under EUR 2700	15.062**	(0.019)	[2.455,27.669]	-11.693*	(0.055)	[-23.653,0.268]	1.111	(0.802)	[-7.555,9.778]
EUR 2700 - 4200	8.604	(0.146)	[-3.004,20.212]	-0.285	(0.954)	[-9.956,9.386]	3.406	(0.375)	[-4.116,10.928]
Number of cars	7.850**	(0.013)	[1.639,14.061]	2.201	(0.203)	[-1.191,5.594]	3.881**	(0.034)	[0.287,7.475]
Kilometers driven (ref: lower tercile)									
middle tercile	13.640**	(0.022)	[1.948,25.332]	6.102	(0.233)	[-3.936,16.141]	8.847**	(0.024)	[1.189,16.506]
upper tercile	3.253	(0.591)	[-8.601,15.106]	1.699	(0.758)	[-9.108,12.506]	1.668	(0.683)	[-6.335,9.671]
Commutes by car	14.505***	(0.008)	[3.812,25.199]	6.449	(0.181)	[-3.006,15.905]	10.407***	(0.004)	[3.256,17.558]
Public transport ticket	-37.646***	(0.000)	[-49.519,-25.773]	-36.337***	(0.000)	[-46.011,-26.664]	-37.550***	(0.000)	[-45.127,-29.973]
Climate change attitudes (ref: anthropogenic)									
does not exist	0.887	(0.921)	[-16.662,18.436]	-1.837	(0.926)	[-40.553,36.880]	4.854	(0.539)	[-10.625,20.333]
anthropogenic and natural	12.298	(0.144)	[-4.209,28.806]	309.184***	(0.000)	[276.337,342.031]	19.039**	(0.018)	[3.255,34.822]
natural	2.718	(0.612)	[-7.789,13.226]	12.600**	(0.032)	[1.105,24.094]	7.495*	(0.058)	[-0.264,15.254]
Environmental attitudes (ref: lower tercile)									
middle tercile	-12.638**	(0.016)	[-22.892,-2.384]	-2.971	(0.630)	[-15.056,9.115]	-8.125**	(0.040)	[-15.890,-0.360]
upper tercile	-27.698***	(0.002)	[-44.963,-10.433]	-9.787	(0.125)	[-22.281,2.706]	-16.609***	(0.000)	[-25.926,-7.293]
Intrinsic motivation (ref: lower tercile)									
middle tercile	-14.157***	(0.005)	[-24.006,-4.308]	-15.180***	(0.003)	[-25.214,-5.146]	-14.575***	(0.000)	[-21.645,-7.504]
upper tercile	-17.187**	(0.028)	[-32.473,-1.901]	-39.205***	(0.000)	[-50.418,-27.992]	-33.080***	(0.000)	[-41.856,-24.304]
Trust in government	-20.043***	(0.002)	[-32.445,-7.641]	-8.914**	(0.036)	[-17.247,-0.582]	-11.613***	(0.001)	[-18.557,-4.668]
Rejects general measures	15.201***	(0.004)	[4.846,25.557]	69.360**	(0.020)	[11.010,127.710]	18.101***	(0.000)	[8.131,28.071]
Trait reactance (ref: lower tercile)									
middle tercile	2.354	(0.684)	[-8.963,13.670]	8.644*	(0.066)	[-0.566,17.854]	6.349*	(0.084)	[-0.845,13.544]
upper tercile	22.279***	(0.000)	[10.481,34.077]	13.241*	(0.066)	[-0.890,27.371]	20.862***	(0.000)	[12.025,29.698]
Rejects costly measures	–	–	–	–	–	–	4.502	(0.484)	[-8.119,17.122]
Effect heterogeneity w.r.t. rejection of costly measures									
Emissions x reject	–	–	–	–	–	–	8.336	(0.337)	[-8.677,25.348]
Carbon price x reject	–	–	–	–	–	–	-0.165	(0.984)	[-16.777,16.447]
Carbon price information x reject	–	–	–	–	–	–	-5.480	(0.509)	[-21.739,10.779]
Constant	106.206***	(0.000)	[83.086,129.325]	102.030***	(0.000)	[82.702,121.358]	103.840***	(0.000)	[87.954,119.725]
Observations		1210			1330			2560	
σ		60.631			61.457			62.278	
F-Statistic: p-value		0.000			0.000			0.000	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. σ is the standard deviation of the unobserved (latent) outcome of the interval regression. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretability.

Figure C.3: Comparison of demand for the car trip at each fuel price between treatment groups for different levels of trait reactance



Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment, separately for individuals with low and high trait reactance. Number of observations: 17,811; 5,040. Number of individuals: 1,229; 560.

D Robustness checks

Table D.1: Relationship between intrinsic sustainability motivation and WTP for fuel based on OLS regression

	Model I			Model II		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Intrinsic motivation (ref: lower tercile)						
middle tercile	-10.643***	(0.000)	[-14.485,-6.802]	-4.989**	(0.015)	[-9.021,-0.957]
upper tercile	-21.140***	(0.000)	[-25.365,-16.915]	-10.820***	(0.000)	[-15.820,-5.820]
Age (ref: 65 and older)						
under 45	–	–	–	0.895	(0.759)	[-4.834,6.624]
45 - 64	–	–	–	-0.207	(0.927)	[-4.648,4.233]
Female	–	–	–	1.273	(0.492)	[-2.362,4.907]
A-levels	–	–	–	-3.809**	(0.033)	[-7.309,-0.309]
Net hh income (ref: EUR 4200 and more)						
under EUR 2700	–	–	–	1.888	(0.440)	[-2.912,6.687]
EUR 2700 - 4200	–	–	–	1.370	(0.516)	[-2.766,5.506]
Number of cars	–	–	–	2.017*	(0.085)	[-0.281,4.316]
Kilometers driven (ref: lower tercile)						
middle tercile	–	–	–	2.735	(0.222)	[-1.657,7.127]
upper tercile	–	–	–	2.942	(0.175)	[-1.311,7.196]
Commutes by car	–	–	–	2.562	(0.221)	[-1.548,6.672]
Public transport ticket	–	–	–	-9.215***	(0.000)	[-13.249,-5.181]
Climate change attitudes (ref: anthropogenic)						
does not exist	–	–	–	3.068	(0.397)	[-4.044,10.179]
anthropogenic and natural	–	–	–	5.745	(0.102)	[-1.146,12.637]
natural	–	–	–	1.587	(0.470)	[-2.720,5.893]
Environmental attitudes (ref: lower tercile)						
middle tercile	–	–	–	-0.202	(0.925)	[-4.418,4.014]
upper tercile	–	–	–	-4.071	(0.149)	[-9.606,1.465]
Trust in government	–	–	–	-2.840	(0.177)	[-6.965,1.284]
Rejects general measures	–	–	–	1.790	(0.479)	[-3.175,6.754]
Rejects costly measures	–	–	–	1.440	(0.552)	[-3.314,6.193]
Trait reactance (ref: lower tercile)						
middle tercile	–	–	–	3.650*	(0.090)	[-0.573,7.873]
upper tercile	–	–	–	7.385***	(0.001)	[3.002,11.769]
Constant	90.531***	(0.000)	[88.240,92.821]	79.699***	(0.000)	[71.524,87.873]
Number of observations		649			649	
F-statistic (p-val)		0.000			0.000	
R-squared		0.140			0.269	
Adjusted R-squared		0.136			0.226	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretabiliy.

Table D.2: Relationship between intrinsic sustainability motivation and willingness to pay for fuel based on an ordered logit regression

	Model I			Model II		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
switch$_s$*ituation*						
Intrinsic motivation (ref: lower tercile)						
middle tercile	-0.923***	(0.000)	[-1.267,-0.579]	-0.433**	(0.030)	[-0.825,-0.042]
upper tercile	-1.837***	(0.000)	[-2.240,-1.434]	-0.996***	(0.000)	[-1.460,-0.531]
Age (ref: 65 and older)						
under 45	–	–	–	0.113	(0.690)	[-0.443,0.669]
45 - 64	–	–	–	0.003	(0.990)	[-0.437,0.442]
Female	–	–	–	0.113	(0.550)	[-0.256,0.481]
A-levels	–	–	–	-0.403**	(0.027)	[-0.760,-0.045]
Net hh income (ref: EUR 4200 and more)						
under EUR 2700	–	–	–	0.158	(0.550)	[-0.361,0.678]
EUR 2700 - 4200	–	–	–	0.118	(0.584)	[-0.305,0.541]
Number of cars	–	–	–	0.159	(0.210)	[-0.090,0.409]
Kilometers driven (ref: lower tercile)						
middle tercile	–	–	–	0.241	(0.270)	[-0.187,0.669]
upper tercile	–	–	–	0.318	(0.145)	[-0.109,0.746]
Commutes by car	–	–	–	0.294	(0.145)	[-0.102,0.690]
Public transport ticket	–	–	–	-0.976***	(0.000)	[-1.366,-0.585]
Climate change attitudes (ref: anthropogenic)						
does not exist	–	–	–	0.571	(0.212)	[-0.325,1.466]
anthropogenic and natural	–	–	–	0.574	(0.197)	[-0.298,1.445]
natural	–	–	–	0.190	(0.387)	[-0.240,0.620]
Environmental attitudes (ref: lower tercile)						
middle tercile	–	–	–	0.006	(0.980)	[-0.437,0.448]
upper tercile	–	–	–	-0.361	(0.183)	[-0.893,0.171]
Trust in government	–	–	–	-0.301	(0.121)	[-0.680,0.079]
Rejects general measures	–	–	–	0.254	(0.360)	[-0.289,0.797]
Rejects costly measures	–	–	–	0.132	(0.567)	[-0.320,0.583]
Trait reactance (ref: lower tercile)						
middle tercile	–	–	–	0.334	(0.103)	[-0.068,0.737]
upper tercile	–	–	–	0.762***	(0.001)	[0.301,1.223]
/						
cut1	-1.938***	(0.000)	[-2.218,-1.658]	-1.119***	(0.006)	[-1.914,-0.325]
cut2	-1.734***	(0.000)	[-2.003,-1.466]	-0.885**	(0.029)	[-1.681,-0.089]
cut3	-1.437***	(0.000)	[-1.690,-1.185]	-0.541	(0.181)	[-1.334,0.252]
cut4	-1.155***	(0.000)	[-1.402,-0.909]	-0.215	(0.597)	[-1.011,0.581]
cut5	-1.046***	(0.000)	[-1.290,-0.803]	-0.089	(0.827)	[-0.885,0.707]
cut6	-0.862***	(0.000)	[-1.103,-0.621]	0.123	(0.761)	[-0.670,0.916]
cut7	-0.786***	(0.000)	[-1.028,-0.544]	0.210	(0.604)	[-0.583,1.002]
cut8	-0.745***	(0.000)	[-0.985,-0.504]	0.256	(0.526)	[-0.536,1.049]
cut9	-0.724***	(0.000)	[-0.965,-0.483]	0.280	(0.489)	[-0.512,1.072]
Number of observations		649			649	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretabiliy.

Table D.3: Effect of information on carbon emissions and carbon pricing on the willingness to pay for fuel based on an OLS regression

	Model I			Model II		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Group emissions	-1.589	(0.220)	[-4.129,0.950]	-1.656	(0.146)	[-3.888,0.575]
Group carbon price	-2.216+	(0.087)	[-4.752,0.321]	-1.161	(0.308)	[-3.395,1.073]
Group carbon price information	-2.495+	(0.052)	[-5.014,0.023]	-2.391*	(0.034)	[-4.598,-0.184]
Age (ref: 65 and older)						
under 45	–	–	–	0.034	(0.980)	[-2.659,2.727]
45 - 64	–	–	–	-1.108	(0.299)	[-3.198,0.982]
Female	–	–	–	-0.339	(0.699)	[-2.057,1.380]
A-levels	–	–	–	-2.507**	(0.005)	[-4.254,-0.761]
Net hh income (ref: EUR 4200 and more)						
under EUR 2700	–	–	–	0.258	(0.827)	[-2.054,2.571]
EUR 2700 - 4200	–	–	–	1.275	(0.217)	[-0.752,3.303]
Number of cars	–	–	–	1.111*	(0.019)	[0.181,2.041]
Kilometers driven (ref: lower tercile)						
middle tercile	–	–	–	2.402*	(0.023)	[0.325,4.480]
upper tercile	–	–	–	0.711	(0.517)	[-1.443,2.865]
Commutes by car	–	–	–	2.439*	(0.015)	[0.466,4.412]
Public transport ticket	–	–	–	-10.766***	(0.000)	[-12.828,-8.704]
Climate change attitudes (ref: anthropogenic)						
does not exist	–	–	–	0.948	(0.620)	[-2.800,4.697]
anthropogenic and natural	–	–	–	4.557**	(0.008)	[1.180,7.935]
natural	–	–	–	2.111+	(0.056)	[-0.054,4.275]
Environmental attitudes (ref: lower tercile)						
middle tercile	–	–	–	-2.035+	(0.058)	[-4.142,0.072]
upper tercile	–	–	–	-4.830***	(0.000)	[-7.481,-2.180]
Intrinsic motivation (ref: lower tercile)						
middle tercile	–	–	–	-4.463***	(0.000)	[-6.464,-2.462]
upper tercile	–	–	–	-10.064***	(0.000)	[-12.591,-7.538]
Trust in government	–	–	–	-3.411**	(0.001)	[-5.451,-1.371]
Rejects general measures	–	–	–	4.082**	(0.001)	[1.601,6.563]
Rejects costly measures	–	–	–	1.507	(0.198)	[-0.790,3.805]
Trait reactance (ref: lower tercile)						
middle tercile	–	–	–	1.941+	(0.064)	[-0.111,3.993]
upper tercile	–	–	–	5.451***	(0.000)	[3.195,7.707]
Constant	82.089***	(0.000)	[80.330,83.847]	84.300***	(0.000)	[80.107,88.492]
Observations		2562			2562	
F-Statistic: p-value		0.208				0.000
R-squared		0.002				0.254
Adjusted R-squared		0.001				0.242
Wald test: p-value						
E vs. CP		.635			.67	
CP vs. CPI		.831			.283	

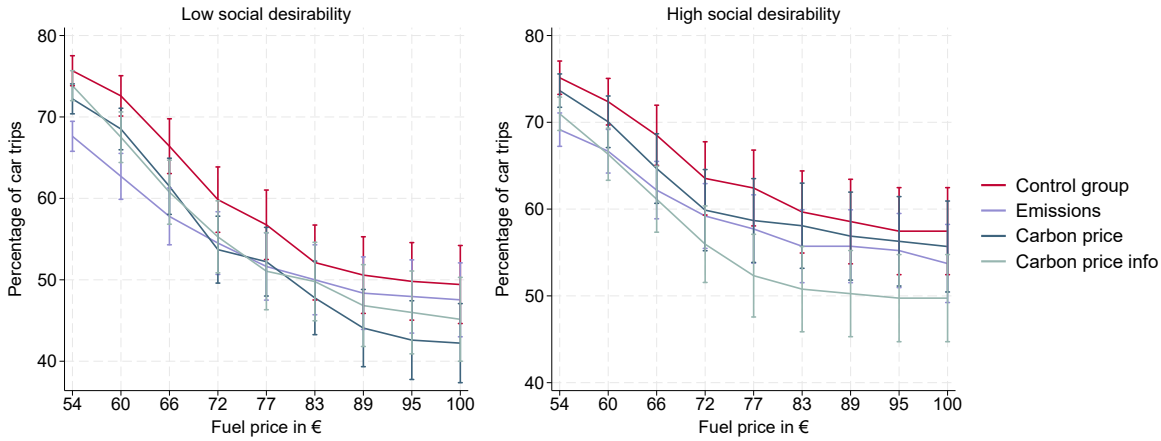
Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretability.

Table D.4: Effect of information on carbon emissions and carbon pricing on the willingness to pay for fuel based on an ordered logit regression

	Model I			Model II		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Group emissions	-0.141	(0.189)	[-0.350,0.069]	-0.157	(0.173)	[-0.383,0.069]
Group carbon price	-0.175+	(0.088)	[-0.375,0.026]	-0.099	(0.375)	[-0.319,0.120]
Group carbon price information	-0.181+	(0.074)	[-0.379,0.018]	-0.164	(0.137)	[-0.381,0.052]
Age (ref: 65 and older)						
under 45	–	–	–	0.062	(0.647)	[-0.204,0.329]
45 - 64	–	–	–	-0.058	(0.592)	[-0.268,0.153]
Female	–	–	–	-0.019	(0.824)	[-0.188,0.150]
A-levels	–	–	–	-0.270**	(0.002)	[-0.443,-0.096]
Net hh income (ref: EUR 4200 and more)						
under EUR 2700	–	–	–	0.009	(0.939)	[-0.229,0.247]
EUR 2700 - 4200	–	–	–	0.104	(0.316)	[-0.099,0.307]
Number of cars	–	–	–	0.113*	(0.050)	[0.000,0.225]
Kilometers driven (ref: lower tercile)						
middle tercile	–	–	–	0.244*	(0.019)	[0.040,0.448]
upper tercile	–	–	–	0.050	(0.651)	[-0.166,0.265]
Commutes by car	–	–	–	0.287**	(0.003)	[0.095,0.480]
Public transport ticket	–	–	–	-1.004***	(0.000)	[-1.201,-0.807]
Climate change attitudes (ref: anthropogenic)						
does not exist	–	–	–	0.123	(0.562)	[-0.293,0.539]
anthropogenic and natural	–	–	–	0.535*	(0.016)	[0.100,0.971]
natural	–	–	–	0.196+	(0.067)	[-0.014,0.406]
Environmental attitudes (ref: lower tercile)						
middle tercile	–	–	–	-0.205+	(0.053)	[-0.412,0.003]
upper tercile	–	–	–	-0.440***	(0.001)	[-0.689,-0.191]
Intrinsic motivation (ref: lower tercile)						
middle tercile	–	–	–	-0.404***	(0.000)	[-0.594,-0.213]
upper tercile	–	–	–	-0.907***	(0.000)	[-1.140,-0.675]
Trust in government	–	–	–	-0.305**	(0.001)	[-0.490,-0.120]
Rejects general measures	–	–	–	0.489***	(0.000)	[0.218,0.759]
Rejects costly measures	–	–	–	0.121	(0.259)	[-0.089,0.332]
Trait reactance (ref: lower tercile)						
middle tercile	–	–	–	0.176+	(0.075)	[-0.018,0.370]
upper tercile	–	–	–	0.562***	(0.000)	[0.325,0.799]
/						
cut1	-1.050***	(0.000)	[-1.200,-0.901]	-1.404***	(0.000)	[-1.828,-0.980]
cut2	-0.845***	(0.000)	[-0.993,-0.698]	-1.145***	(0.000)	[-1.566,-0.723]
cut3	-0.596***	(0.000)	[-0.741,-0.451]	-0.824***	(0.000)	[-1.245,-0.402]
cut4	-0.385***	(0.000)	[-0.529,-0.241]	-0.553*	(0.010)	[-0.974,-0.132]
cut5	-0.289***	(0.000)	[-0.433,-0.145]	-0.429*	(0.045)	[-0.849,-0.010]
cut6	-0.178*	(0.015)	[-0.321,-0.034]	-0.287	(0.179)	[-0.706,0.132]
cut7	-0.109	(0.138)	[-0.252,0.035]	-0.201	(0.348)	[-0.620,0.218]
cut8	-0.073	(0.320)	[-0.216,0.071]	-0.155	(0.468)	[-0.574,0.264]
cut9	-0.054	(0.461)	[-0.198,0.090]	-0.132	(0.538)	[-0.551,0.287]
Observations		2562			2562	
F-Statistic: p-value		0.248			0.000	
Wald test: p-value						
E vs. CP		.751			.623	
CP vs. CPI		.950			.563	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretability.

Figure D.1: Comparison of demand for the car trip at each fuel price between treatment groups for different levels of social desirability



Note: The figure shows predicted margins and 95% confidence intervals based on a fixed effects regression of the choice in the MPL on group assignment, separately for individuals in the lower and upper tercile of the distribution of social desirability. Social desirability was measured with the German version of the Social Desirability-Gamma Short Scale by Nießen et al. (2019). The scale was elicited in a previous survey with the same sample in 2022. Number of observations: 9,090; 6,678; number of individuals: 1,010; 742.

E Pre-specified analyses

Table E.1: Relationship between intrinsic sustainability motivation and WTP for fuel based on an interval regression

	Model I			Model II		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
High intrinsic motivation	-51.145***	(0.000)	[-64.924,-37.365]	-20.874***	(0.001)	[-33.612,-8.136]
Age (ref: 65 and older)						
under 45	–	–	–	2.846	(0.769)	[-16.169,21.860]
45 - 64	–	–	–	-0.939	(0.904)	[-16.267,14.390]
Female	–	–	–	3.409	(0.601)	[-9.367,16.185]
A-levels	–	–	–	-14.902**	(0.018)	[-27.204,-2.601]
Net hh income (ref: EUR 4200 and more)						
under EUR 2700	–	–	–	5.980	(0.509)	[-11.759,23.720]
EUR 2700 - 4200	–	–	–	1.636	(0.825)	[-12.840,16.112]
Number of cars	–	–	–	5.423	(0.216)	[-3.174,14.021]
Kilometers driven (ref: lower tercile)						
middle tercile	–	–	–	6.299	(0.404)	[-8.500,21.098]
upper tercile	–	–	–	8.767	(0.252)	[-6.229,23.764]
Commutes by car	–	–	–	10.165	(0.156)	[-3.865,24.195]
Public transport ticket	–	–	–	-33.846***	(0.000)	[-47.616,-20.076]
Climate change attitudes (ref: anthropogenic)						
does not exist	–	–	–	17.607	(0.251)	[-12.437,47.652]
anthropogenic and natural	–	–	–	19.719	(0.183)	[-9.309,48.747]
natural	–	–	–	8.967	(0.236)	[-5.871,23.805]
Environmental attitudes (ref: lower tercile)						
middle tercile	–	–	–	1.188	(0.877)	[-13.807,16.183]
upper tercile	–	–	–	-15.735*	(0.089)	[-33.888,2.418]
Trust in government	–	–	–	-10.480	(0.112)	[-23.400,2.440]
Rejects general measures	–	–	–	8.183	(0.391)	[-10.534,26.900]
Rejects costly measures	–	–	–	6.714	(0.400)	[-8.912,22.339]
Trait reactance (ref: lower tercile)						
middle tercile	–	–	–	11.095	(0.116)	[-2.733,24.923]
upper tercile	–	–	–	26.524***	(0.001)	[10.348,42.700]
Constant	116.053***	(0.000)	[106.790,125.316]	86.187***	(0.000)	[59.229,113.144]
Number of observations		640			640	
σ		66.979			58.550	

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. σ is the standard deviation of the unobserved (latent) outcome of the interval regression. To increase sample size, categorical variables contain categories for *not reported* and *outliers*. Due to limited interpretability of these categories, respective coeffients are not reported. The coefficient on the gender *non-binary* is not reported due to the low number of observations and the resulting limited interpretabiliy.

F Support for carbon pricing

Table F.1: Treatment effect on acceptance of carbon pricing based on a linear probability model

	Model I			Model II		
	Coeff.	p-val	95% CI	Coeff.	p-val	95% CI
Control + info	0.052	(0.208)	[-0.029,0.134]	0.033	(0.313)	[-0.031,0.098]
Emissions	0.067+	(0.052)	[-0.001,0.135]	0.056*	(0.037)	[0.003,0.108]
Emissions + info	0.071+	(0.084)	[-0.010,0.153]	0.073*	(0.028)	[0.008,0.138]
Carbon price	0.070*	(0.044)	[0.002,0.139]	0.029	(0.295)	[-0.025,0.082]
Carbon price + info	0.089*	(0.038)	[0.005,0.172]	0.078*	(0.021)	[0.012,0.144]
Carbon price information	0.093**	(0.003)	[0.032,0.154]	0.084***	(0.001)	[0.036,0.132]
Constant	0.324***	(0.000)	[0.277,0.371]	0.391***	(0.000)	[0.301,0.481]
Control variables		NO			YES	
Observations		2355			2355	
Wald test: p-value						
Control + info vs. E + info		.692			.315	
Control + info vs. CP + info		.674			.887	
E vs. E + info		.921			.611	
CP vs. CP + info		.675			.156	
CP vs. CPI		.908			.855	

Note: +, *, ** and *** indicate statistical significance at the 10%, 5%, 1% and 0.1% level, respectively. Control variables include socio-demographic characteristics, mobility behavior, attitudes, and psychological traits.

G Questionnaire

G.1 Climate

Question Climate4.1

To what extent do you agree with the statement that political measures should be taken to limit climate change?

- strongly disagree
- tend to disagree
- neither
- tend to agree
- Agree completely
- Don't know
- no answer

[*If Climate4.1 does not equal "strongly disagree" or "somewhat disagree"*]

Question Climate4.2

Climate protection measures can result in costs for citizens. What is your opinion of such measures?

- I strongly oppose (=1)
- I tend to reject them
- neither
- I am rather in favor
- I am strongly in favor (=5)
- I do not know
- no answer

G.2 Energy

Question C0

Prices for diesel and petrol are subject to strong fluctuations in some cases. For example, prices have risen sharply as a result of Russia's attack on Ukraine: from an average of EUR 1.52 for a

liter of Super E10 in 2021 to EUR 1.86 in 2022. Please use the slider to indicate the percentage by which you estimate that such a price increase would reduce car use by drivers on average. [*Slider from "no reduction in car use (0 %)" to "halving of car use (reduction by 50 %)" to "no car use (reduction by 100 %)", 5 % increments*]

- no answer

G.3 Steering Effects and Use of CO2 Price

PROGRAMMING:

Division into four equally sized groups: Control, E, CP, CPI Group Control is further subdivided into Control.Info (1/3) and Control.Control (2/3) Group E is further subdivided into E.Info (1/3) and E.Control (2/3) Group CP is further subdivided into CP.Info (1/3) and CP.Control (2/3) If group CPI: Show questions C3 - C4.2 and corresponding information. Groups Control, E, and CP: Continue with Multiple Price List.]

Question C3

The CO2 price was introduced in Germany on January 1, 2021. How well informed do you feel about this?

- Not informed at all
- Rather poorly informed
- Neither well nor poorly informed
- Rather well informed
- very well informed
- I do not know
- no answer

In the following, we would like to find out how well informed you are about the CO2 price. Knowing how well informed the population is can help to create transparency and eliminate possible misunderstandings. We would therefore like to ask you to indicate on the following pages which statements you think apply to the CO2 price.

Question C4

In your opinion, which of the following statements apply to the CO2 price? You can select one or more answers. [*Multiple selection; randomize items*]

- The CO2 price makes some activities that emit CO2 more expensive.
- One aim of the CO2 price is to protect the climate.
- One aim of the CO2 price is to solve environmental problems such as the pollution of the oceans by plastic waste or the extinction of species.
- One aim of the CO2 Prize is to reduce traffic jams and improve air quality in cities.
- One aim of the CO2 price is to generate higher tax revenues.
- I do not know
- no answer

The aim of the CO2 price is to **protect the climate**. To this end, the CO2 price makes products whose production or use emits CO2 more expensive. For example, petrol, diesel and LPG, and therefore driving, become more expensive, while the use of climate-friendly means of transport does not become more expensive.

Question C4.1

In your opinion, which of the following statements apply to the CO2 price? You can select one or more answers. [*Multiple selection; randomize items*]

- The CO2 price offsets the CO2 emissions emitted, i.e. CO2 emissions of the same amount are saved elsewhere.
- The revenue generated by the CO2 price is used to finance climate protection measures.
- The revenue generated by the CO2 price is used to ease the financial burden on consumers.
- I do not know
- no answer

The **revenue** generated by the carbon price is used, among other things, to **relieve the financial burden on citizens**, for example by reducing the price of electricity (abolition of the EEG levy).

They are also used to **finance climate protection measures**, such as the expansion of renewable energies or investments in sustainable transport infrastructure. **There is no direct compensation for CO2 emissions.**

Question C4.2

In your opinion, which of the following statements apply to the CO2 price? You can select one or more answers. [*Multiple selection; randomize items*]

- For the CO2 price to be effective, the revenue must be used for climate protection measures.
- The CO2 price works by making CO2-intensive products more expensive and therefore less purchased.
- The CO2 price makes products that cause low CO2 emissions cheaper than products with high CO2 emissions.
- The CO2 price is intended to ensure that less CO2 is emitted.
- I do not know
- no answer

The CO2 price can have an effect simply by increasing the price of climate-damaging products. It does not matter what the revenue is used for.

The CO2 price makes climate-friendly activities and products cheaper than climate-damaging alternatives. This is intended to **steer citizens away from climate-damaging behavior and towards climate-friendly behavior**, thereby **reducing CO2 emissions**. For example, the aim is to encourage people to use climate-friendly means of transportation such as buses, trains and bicycles more often instead of cars.

[From here on all groups again, but new filter:
The following information page and multiple price lists (tables) only if M1 greater or equal to 1 (at least 1 car) and M4 = petrol, diesel, plug-in hybrid or hybrid without external charging option]

[Multiple Price List]

You can take part in a **voucher prize draw** below. You have a **budget of 100 euros** at your disposal. You can use this to **buy a voucher for a car journey or a train journey**. **The remaining**

budget will be given to you in the form of a Wunschgutschein [*Info button: You will receive a voucher from the provider WUNSCHGUTSCHEIN, which can be redeemed in over 500 partner stores. These include electronics suppliers, clothing brands, drugstores, food delivery services and furniture stores. Further details on the WUNSCHGUTSCHEIN can be found at https://www.wunschgutschein.de/*] paid out. We are about to show you a list of different decision situations and would like to ask you to choose either the voucher for a car journey or the voucher for Deutsche Bahn (DB).

A total of 40 winners will be drawn from among all participants, for whom one of the chosen decisions will actually be implemented. If you are drawn, one of the decision situations will be chosen at random and you will receive the voucher you chose in this situation.

Decision options

(A) If you choose the **train journey (option A)**, you will receive a **voucher for Deutsche Bahn worth 60 euros**. [*Info button: You will receive a voucher for Deutsche Bahn, which you can redeem on the website or in the DB app. The voucher can be used for DB tickets for regional and long-distance travel, but not for the DeutschlandTicket or other travelcards*]. Your remaining budget corresponds to 40 euros and will be paid out to you in the form of a Wunschgutschein.

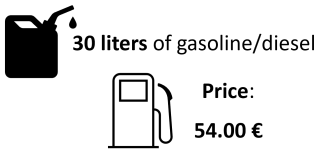
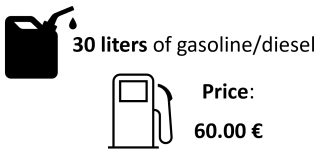
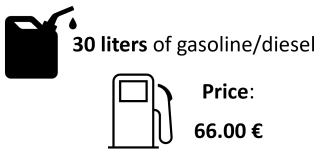
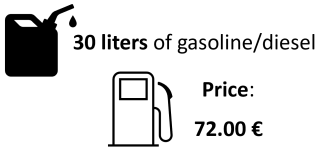
(B) If you decide to **travel by car (option B)**, you will always receive a **fuel voucher for around 30 liters of petrol/diesel**. [*Info button: Note: You will receive a fuel voucher for the value that you can use to fill up with 30 liters of petrol or diesel at the time of the prize draw. The voucher can be redeemed at Aral, Esso, JET, Shell and TOTAL ENERGIES filling stations*]. Your remaining budget depends on the price of the fuel voucher for 30 liters of petrol/diesel **in the respective decision situation** and will be paid out to you in the form of a voucher of your choice.

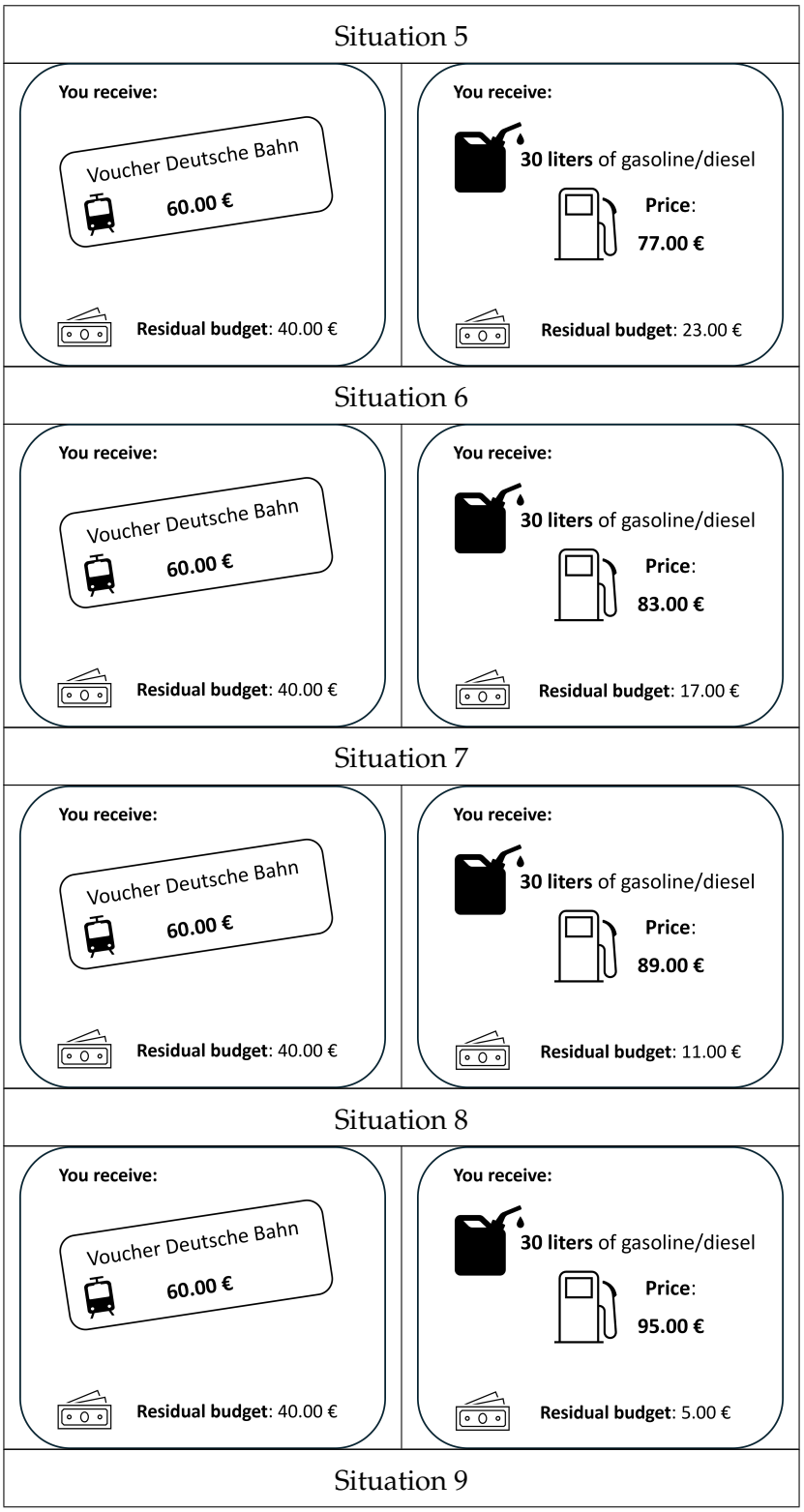
[GROUP "P: PRICE INCREASE"]

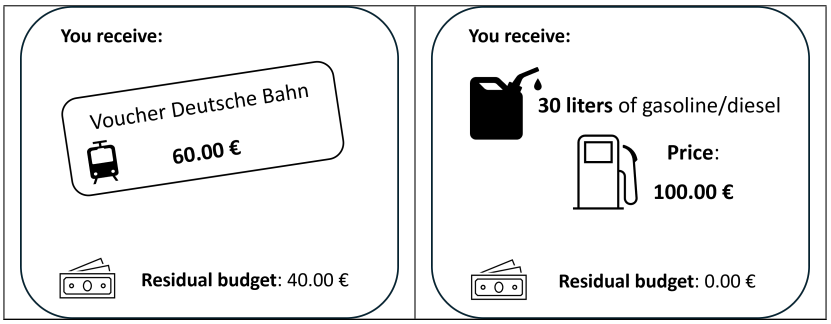
In the following table you can see the different decision situations. In each of these situations, you can **choose whether you want to buy a voucher for a car journey or for a train journey from your budget of 100 euros**. The remaining budget will be paid out to you in the form of a Wunschgutschein.

The price of the car journey increases with each line, which reduces your remaining budget. The price for the train journey, on the other hand, remains unchanged.

Please choose option A or option B in each situation.

Option A: Train journey - purchase of a voucher for Deutsche Bahn worth 60 euros	Option B: Car journey - purchase of a voucher for 30 liters of petrol/diesel
Situation 1	
You receive:  **Residual budget**: 40.00 €	**You receive:**  **Residual budget**: 46.00 €
Situation 2	
You receive:  **Residual budget**: 40.00 €	**You receive:**  **Residual budget**: 40.00 €
Situation 3	
You receive:  **Residual budget**: 40.00 €	**You receive:**  **Residual budget**: 34.00 €
Situation 4	
You receive:  **Residual budget**: 40.00 €	**You receive:**  **Residual budget**: 28.00 €


Situation 5
You receive:
Voucher Deutsche Bahn
60.00 €
Residual budget: 40.00 €
You receive:
30 liters of gasoline/diesel
Price:
77.00 €
Residual budget: 23.00 €
Situation 6
You receive:
Voucher Deutsche Bahn
60.00 €
Residual budget: 40.00 €
You receive:
30 liters of gasoline/diesel
Price:
83.00 €
Residual budget: 17.00 €
Situation 7
You receive:
Voucher Deutsche Bahn
60.00 €
Residual budget: 40.00 €
You receive:
30 liters of gasoline/diesel
Price:
89.00 €
Residual budget: 11.00 €
Situation 8
You receive:
Voucher Deutsche Bahn
60.00 €
Residual budget: 40.00 €
You receive:
30 liters of gasoline/diesel
Price:
95.00 €
Residual budget: 5.00 €
Situation 9



- I do not want to receive vouchers
- no answer

[GROUP "C: CARBON PRICE INCREASE" &

"CI: CARBON PRICE INCREASE + INFO"]

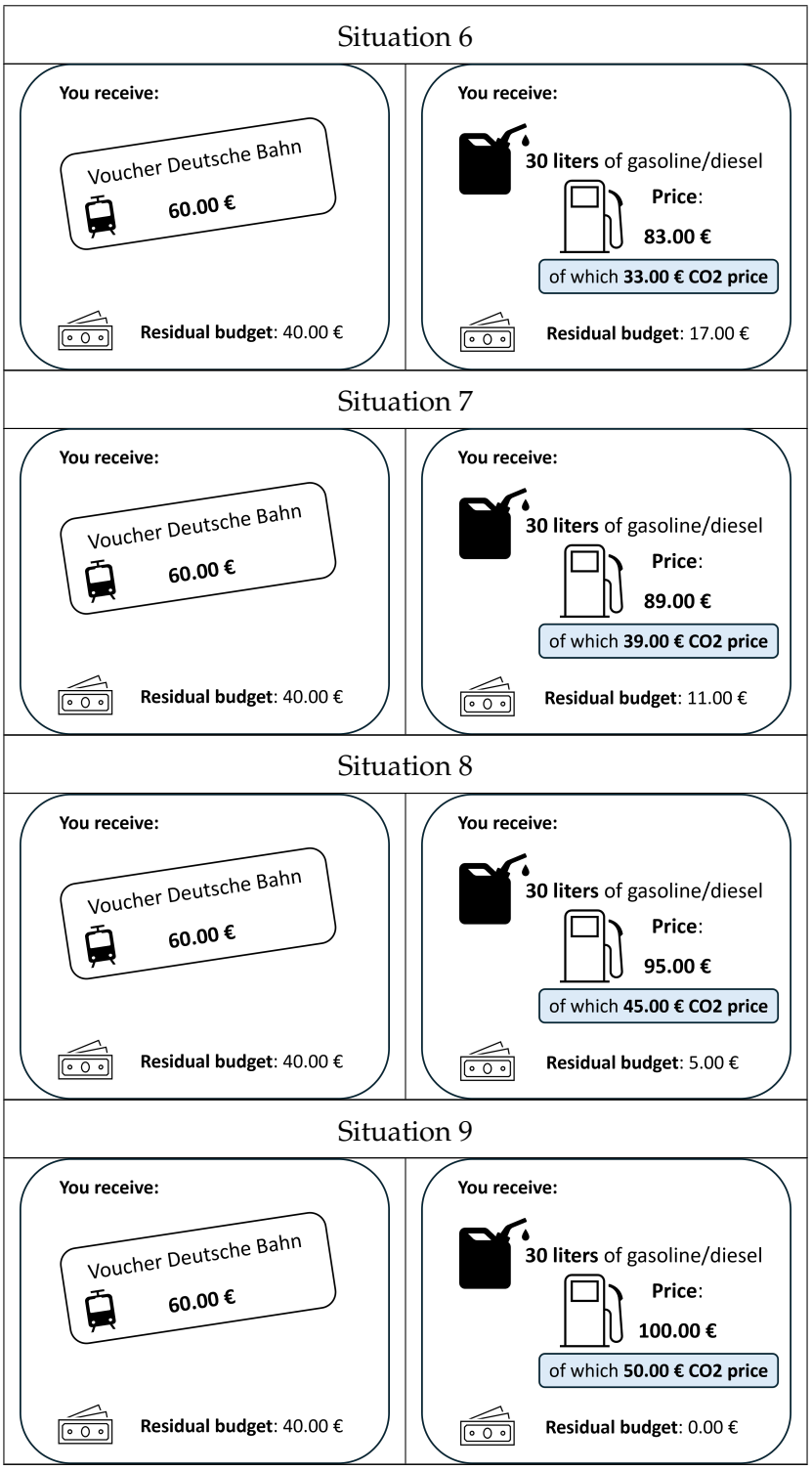
In the following table you can see the different decision situations. In each of these situations, you can **choose whether you want to buy a voucher for a car journey or for a train journey from your budget of 100 euros**. The remaining budget will be paid out to you in the form of a Wunschgutschein.

The price of the car journey is made up of **the price of petrol/diesel and a CO2 price**, which increases with each line. Your remaining budget therefore decreases with each line. The price for the train journey, on the other hand, remains unchanged.

Please choose option A or option B in each situation.

Option A: Train journey - purchase of a voucher for Deutsche Bahn worth 60 euros	Option B: Car journey - purchase of a voucher for 30 liters of petrol/diesel
Situation 1	

You receive: Voucher Deutsche Bahn **60.00 €** **Residual budget**: 40.00 €	**You receive:** **30 liters** of gasoline/diesel **Price**: **54.00 €** of which **4.00 € CO2 price** **Residual budget**: 46.00 €
Situation 2	
You receive: Voucher Deutsche Bahn **60.00 €** **Residual budget**: 40.00 €	**You receive:** **30 liters** of gasoline/diesel **Price**: **60.00 €** of which **10.00 € CO2 price** **Residual budget**: 40.00 €
Situation 3	
You receive: Voucher Deutsche Bahn **60.00 €** **Residual budget**: 40.00 €	**You receive:** **30 liters** of gasoline/diesel **Price**: **66.00 €** of which **16.00 € CO2 price** **Residual budget**: 34.00 €
Situation 4	
You receive: Voucher Deutsche Bahn **60.00 €** **Residual budget**: 40.00 €	**You receive:** **30 liters** of gasoline/diesel **Price**: **72.00 €** of which **22.00 € CO2 price** **Residual budget**: 28.00 €
Situation 5	
You receive: Voucher Deutsche Bahn **60.00 €** **Residual budget**: 40.00 €	**You receive:** **30 liters** of gasoline/diesel **Price**: **77.00 €** of which **27.00 € CO2 price** **Residual budget**: 23.00 €



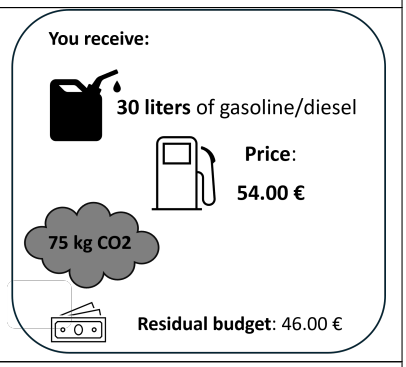
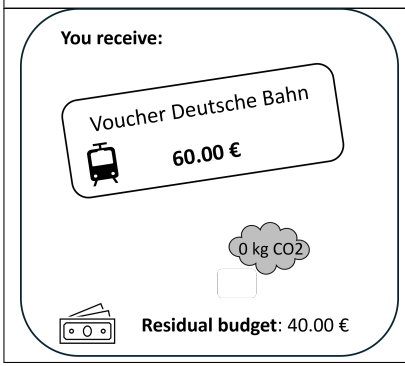
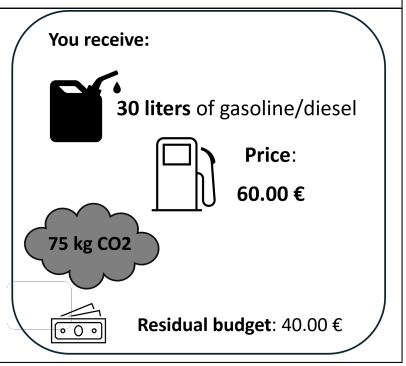
- I do not want to receive vouchers
- no answer

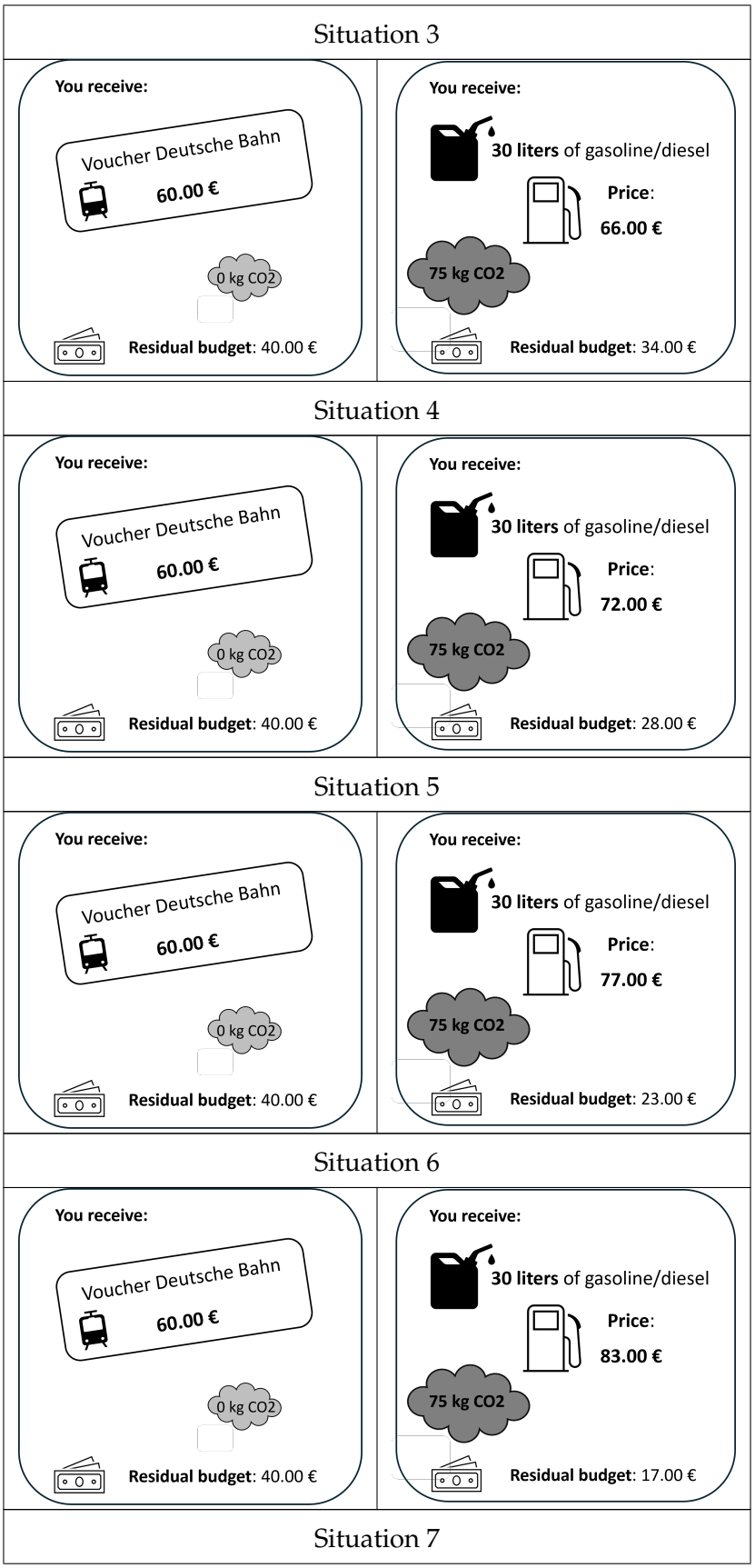
[GROUP "PE: PRICE INCREASE + EMISSIONS"]

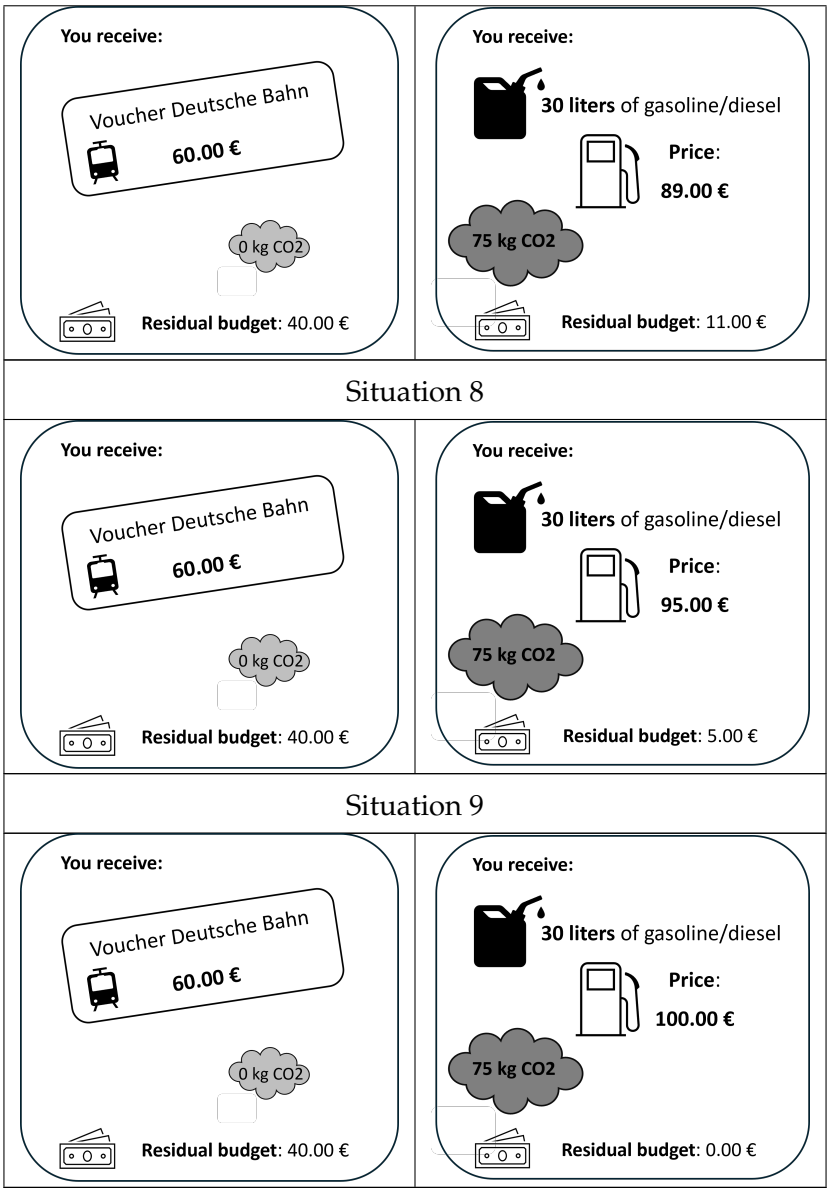
In the following table you can see the different decision situations. In each of these situations, you can **choose whether you want to buy a voucher for a car journey or for a train journey from your budget of 100 euros**. The remaining budget will be paid out to you in the form of a Wunschgutschein.

The price of the car journey increases with each line, which reduces your remaining budget. The price of the train journey, on the other hand, remains unchanged. If you opt for the **car journey**, you will emit **around 75 kg of CO2**, whereas the train journey produces almost no CO2 emissions [*Info button: The emissions refer to a journey on Deutsche Bahn's long-distance services. This is powered by 100% green electricity and therefore causes virtually no CO2 emissions (key figures, ratings and reports (deutschebahn.com))*].

Please choose option A or option B in each situation.

Option A: Train journey - purchase of a voucher for Deutsche Bahn worth 60 euros	Option B: Car journey - purchase of a voucher for 30 liters of petrol/diesel
Situation 1	
	
Situation 2	
	


Situation 3
You receive:
Voucher Deutsche Bahn
60.00 €
0 kg CO2
Residual budget: 40.00 €
You receive:
30 liters of gasoline/diesel
Price:
66.00 €
75 kg CO2
Residual budget: 34.00 €
Situation 4
You receive:
Voucher Deutsche Bahn
60.00 €
0 kg CO2
Residual budget: 40.00 €
You receive:
30 liters of gasoline/diesel
Price:
72.00 €
75 kg CO2
Residual budget: 28.00 €
Situation 5
You receive:
Voucher Deutsche Bahn
60.00 €
0 kg CO2
Residual budget: 40.00 €
You receive:
30 liters of gasoline/diesel
Price:
77.00 €
75 kg CO2
Residual budget: 23.00 €
Situation 6
You receive:
Voucher Deutsche Bahn
60.00 €
0 kg CO2
Residual budget: 40.00 €
You receive:
30 liters of gasoline/diesel
Price:
83.00 €
75 kg CO2
Residual budget: 17.00 €
Situation 7



- I do not want to receive vouchers
- no answer

[From here on, all independent of M1 and M4, filtering according to the programming instructions Groups P.Info, C.Info, PE.Info receive the questions and information from C3 to C4.2 that group CI has already received.

Groups P.Control, C.Control, PE.Control should only receive question C3 and then continue with C2. For groups C.Control and C.Info, the question text of C3 should be rearranged as follows if M1 greater or equal to 1 (at least 1 car) and M4 = petrol, diesel, plug-in hybrid or hybrid without external charging option: "The CO2 price was introduced in Germany on January 1, 2021. How well informed do you

feel about this?"

Group CI continues directly with question C2.]

Question C4.Acceptance

What is your opinion of the German CO2 price?

- Strongly oppose (=1)
- Somewhat oppose
- Neither nor
- Somewhat support
- Strongly support (=5)
- Don't know
- No answer

Question PK.Environment

Please indicate how frequently you engage in the following activities. Select "Does not apply" if a question does not apply to your current life situation (for example, you cannot answer questions about your driving behavior if you do not have a driver's license).

Table G.4: Self-reported frequency of sustainable behaviors

Item	Never	Rarely	Occasionally	Often	Very often	Does not apply	Don't know / No answer
I point out to others when they behave in an environmentally harmful way.	☐	☐	☐	☐	☐	☐	☐
I donate money to environmental organizations.	☐	☐	☐	☐	☐	☐	☐
In winter, I turn down the heating when I leave my home for more than 4 hours.	☐	☐	☐	☐	☐	☐	☐
For trips to nearby areas (up to 30 km), I use public transportation or a bicycle.	☐	☐	☐	☐	☐	☐	☐
I buy food from certified organic sources.	☐	☐	☐	☐	☐	☐	☐

Question PK.Reactance

To what extent do you agree with the following statements?

Table G.5: Agreement with statements on autonomy and resistance

Statement	Strongly disagree	Rather disagree	Neither agree nor disagree	Rather agree	Strongly agree	Don't know / No answer
I become frustrated when I I am unable to make free and independent decisions.	☐	☐	☐	☐	☐	☐
Regulations trigger a sense of resistance in me.	☐	☐	☐	☐	☐	☐
Advice and recommendations usually induce me to do just the opposite.	☐	☐	☐	☐	☐	☐

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