

# The Tax Treatment of Commuting Expenses and Job-Related Mobility

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June 2023

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## Abstract

Amid global climate change concerns, policymakers worldwide are increasingly scrutinizing environmentally harmful subsidies. This study examines the tax-deductibility of job-related commuting expenses, which has faced criticism for promoting longer commutes and congestion. Through a controlled, randomized experiment, we confirm that the tax-deductibility of commuting expenses does result in longer commutes but with minimal economic impact. Increasing the deduction rate by €0.10 leads to an average acceptance of 373-meter longer commutes. Surprisingly, subjects are inattentive to changes in the tax deduction's size when it is presented as tax-deductible expenses rather than as a direct cash effect. In contrast, abolishing the tax-deductibility significantly reduces average commuting distances by nearly 9 percent. These findings highlight people's responsiveness to the mere presence of the subsidy while being less sensitive to its specific size. Policymakers should consider these findings when evaluating the effectiveness of such subsidies in mitigating climate change or their economic efficiency effects.

## Keywords

Commuting Behavior - Commuting Subsidies - Tax Policy – Tax Complexity – Rational Inattention

## JEL Codes

D90 – H21 – H24 – J22 – R23 – R28 – R41

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# 1 Introduction

In light of global climate change, potentially environmentally harmful subsidies are under increased scrutiny by policymakers worldwide. One is the tax-deductibility of job-related commuting expenses, which is widespread, especially in European countries. This practice is widely claimed to lead to longer commutes and, thus, more congestion (Roy, 2014; Bretschneider and Burger, 2021). Despite this topic being highly relevant for policy considerations and a large theoretical stream of literature (e.g., Wrede, 2001; Borck and Wrede, 2005, 2009; Wrede, 2009; Hirte and Tscharaktschiew, 2013), empirical evidence on the effect of the tax-deductibility of commuting expenses is scarce. We aim to fill this gap by investigating the time costs of commuting and the effect of tax-deductibility of job-related commuting expenses on commute length in a controlled, fully randomized decision experiment. For this purpose, we use a sample of German employees representative of the population of German employees in terms of age, gender, and state.

To the best of our knowledge, only Paetzold (2019) and two working papers by Agrawal et al. (2022) and Boehm (2013) investigate the direct link between commuter tax breaks and commuting length. However, this evidence has some limitations in focusing only on specific groups<sup>1</sup> (Paetzold, 2019) or lacking a control group while being challenged by possibly confounding events (Boehm, 2013; Agrawal et al., 2022). Two main reasons might explain the research gap: First, the data needed to investigate decisions regarding commuting distance is immense because it involves (possibly simultaneous) decisions about the workplace and residence. These two decisions alone result from various individual as well as job and real estate market variables that would need to be accounted for. Investigating a tax effect would further require detailed information from tax statements to be combined with this data. Second, natural experiments rarely occur as tax reforms are usually induced and accompanied by confounding events. These confounders are, again,

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<sup>1</sup>Paetzold (2019) estimates the tax break's effect only for male low-income individuals.

difficult to adjust for due to the lack of combined data and adequate control groups.

Our study aims to overcome these caveats by using a controlled, fully randomized experiment which offers some advantages compared to observational data in this context:

1. An experiment allows us to exogenously vary the commuter tax break while confronting each subject with an otherwise identical choice set.
2. Manipulating the complexity of the tax law allows us to test whether subjects misperceive commuting subsidies implemented as tax-deductibles when deciding on a job.
3. We can collect and control for detailed socioeconomic data and combine it with data on, e.g., actual commuting times and distance, the frequency of commutes, and transport modes used, which is necessary to evaluate the commuters' reaction but is usually unavailable in observational studies.

Our experiment is two-stage. In the first stage, we confront subjects with a fictitious offer for a permanent job that pays a higher salary but is otherwise identical to their current position. Additionally, we introduce a fictitious change in tax law that allows employees to deduct commuting expenses at a randomly assigned rate between €0.00 and €0.84 per kilometer (single trip). Using a between-subjects design, we vary the tax complexity that is associated with computing the cash effect of the commuter tax break by randomly assigning subjects to either a high-complexity setting that presents the deduction rate similar to actual German tax law or a low-complexity setting in which we report not only the deduction rate but also the effective refund using subjects' marginal tax rate. Based on this setting and with the job offer leaving the exact place of work undisclosed, we asked subjects to choose their maximum acceptable commuting distance from a list of possible locations. While we required subjects to commute from their current residence in the first stage, we allowed them to adjust their decision by moving

closer to the new workplace in the second stage.

We find that, on average, a €0.10 increase in the deduction rate causes employees to accept 373-meter longer commutes. At first glance, the effect seems relatively small compared to the other three estimates in the literature. We, however, show that when controlling for vehicle-related costs, subjects value an hour of commuting at around 94 percent of their hourly net wage, which is in line with previous research on time costs of commuting (Small et al., 2005, 2007). In addition, we find that when tax complexity is high - the setting where we only present the tax-deductible commuting allowance but not the direct cash effect - subjects are fully inattentive to changes in the size of the subsidy, which is in line with prior research showing that people tend to ignore tax incentives if they are perceived as too complex (e.g., Abeler and Jäger, 2015; Zwick, 2021).

While varying the deduction rate of commuting expenses had little (low tax complexity) or no effect (high tax complexity) on commuting distance, we show that the mere possibility of deducting those expenses leads to a comparatively strong impact in both the low and high tax complexity groups. Compared to subjects assigned a positive deduction rate, those we gave a setting that abolished the commuter tax break were willing to commute 1.8 km less. This result is consistent with previous research showing that for boundedly rational subjects, the mere presence of an incentive is sometimes of greater importance than the size of the incentive (Karlan and List, 2007).

We contribute to three different streams of literature. First, we extend the few findings on how the tax treatment of commuting expenses impacts the job search radius of employees (Boehm, 2013; Paetzold, 2019; Agrawal et al., 2022) by showing that the effect of the commuter tax break is smaller than expected and that the effect depends on whether tax-deductible commuting expenses or the corresponding cash effect are presented. Using a controlled, fully randomized decision experiment, we overcome the lack of data and the endogeneity of tax reforms that usually hamper empirical research on

this topic.

Second, our paper contributes to the literature on inattention in the context of tax complexity (e.g., Abeler and Jäger, 2015; Zwick, 2021). We show that tax complexity does not lead to an over- or underestimation of the commuter tax break but leads to commuting subsidies being ignored even by subjects with above-average tax knowledge.

Third, we contribute to research on the time costs of commuting (Small et al., 2005, 2007; van Ommeren and Fosgerau, 2009) by providing a current update on the time costs of commuting and provide a better understanding of how individuals' total driving costs are composed. On average, the time costs of commuting account for about 44 percent of the total costs of commuting by car.

Our results offer different implications depending on the goal policymakers try to achieve. Suppose the expansion of employees' job search radius is desired. In that case, our evidence suggests legislators could either design the commuter tax break less complex and more salient to be in control of the magnitude of the effect or keep the deductibility but at a reduced deduction rate which would increase tax revenue at the cost of not being in control over the effect size. However, if the reduction of job-related mobility is desirable, e.g., from an ecological standpoint, and also legally possible, the abolition of the commuter tax break would have a sizable effect by reducing the average commute distance by almost 9 percent.

The remainder of this paper is organized as follows. In the next section, we discuss related literature and develop the hypotheses. In sections 3 and 4, we present the experimental design and data, section 5 explains the estimation strategy, section 6 presents the results, and section 7 concludes.

## 2 Related Literature and Hypothesis Development

While there is still little experimental or empirical evidence, especially on the effect of commuting subsidies in the form of tax-deductibles, the matter has been discussed in a broad theoretical stream of literature, a lot of which is concerned with efficiency considerations. What drives these considerations and the fundamentally different approaches by various jurisdictions worldwide is the question of to what degree, if at all, commuting expenses can be considered work-related. While commuting expenses do not qualify as tax-deductibles in the Anglo-American world, they do - in some form - in many Western European countries such as Germany, France, or Sweden but also outside of Europe, e.g., Japan (Roy, 2014; Paetzold, 2019).

While legal research mainly discusses whether the business or personal motives of commuting expenses are predominant (e.g., Holderness, 2020), economic literature is more concerned with efficiency considerations. Wrede (2001) argues within a two-region model that commuting subsidies are only inefficient if workers face fixed work locations and are perfectly mobile regarding their residence. However, their model assumes first-best taxes that do not distort labor supply, whereas this assumption does not hold in reality. In a second-best world, introducing a wage tax without allowing to deduct commuting costs could discourage workers from taking jobs they would otherwise accept, leading to a distortion of workplace choices (Diamond and Mirrlees, 1971; Wrede, 2009). On the other hand, Wrede (2009) argues that subsidizing commutes would also distort land rents since commuting longer distances and thus living further away from central business districts gets more affordable (see also Borck and Wrede, 2005, 2009). Consequently, allowing the deduction of commuting expenses presents a trade-off between these two distortions and could be welfare-enhancing if adequately designed (Wrede, 2009; Hirte and Tscharaktschiew, 2013).

Commuting and transport subsidies, in general, are often found to have beneficial

effects on labor markets. For example, both Zenou (2000) and Martin (2001) argue that transportation subsidies can reduce urban unemployment, although Zenou (2000) also finds that these would foster financial inequality. In a spatial CGE analysis, Tscharaktschiew and Hirte (2012) confirm a welfare-enhancing effect, however, only for subsidizing public transportation. Empirical findings mostly align with these results (e.g., Holzer et al., 2003; Phillips, 2014; Le Gallo et al., 2017; Franklin, 2018). Nevertheless, the consequences of discounted travel costs are not only positive. Arnott (1998) and Brueckner (2000, 2005) show that subsidizing transport systems can lead to urban sprawl and inefficiently large cities. The resulting longer commutes lead to excessive use of transportation systems and, subsequently, negative externalities such as congestion (Wheaton, 1998; Brueckner, 2000), fragmentation of natural habitats, and soil sealing (European Environment Agency, 2006). Like Zenou (2000), Heuermann et al. (2017) further emphasize that subsidizing commuting through a tax system with progressive income taxes favors high-income and urban individuals, fostering financial inequality.

A large part of the empirical and experimental literature examines direct subsidies rather than subsidies in the form of tax-deductibles. To our knowledge, only Paetzold (2019) and the two working papers of Boehm (2013) and Agrawal et al. (2022) investigate how the tax treatment of commuting expenses influences commuting distances. Although commuting deductions exist in many countries, these articles focus only on Germany (Boehm, 2013; Agrawal et al., 2022) and Austria (Paetzold, 2019).

From these authors, Boehm (2013) and Agrawal et al. (2022) exploit several changes in German tax law. The first was in 2004, when the government replaced the distance-dependent kilometer rate with a uniform rate, simultaneously reducing it by €0.06 and €0.10, respectively, to only €0.30. The second change in 2007 essentially abolished the deductibility for most commuters, allowing them to deduct €0.30 per km only for the 21st kilometer onward. However, the German Federal Constitutional Court ruled the latter

unconstitutional barely two years after becoming effective and retroactively revoked it.<sup>2</sup>

Boehm (2013) studies the moving and job-changing behavior of around half a million German employees around these events. He finds that increasing taxes paid by 100 EUR increased the probability of changing jobs (move) by only 0.9 (0.57) percent.<sup>3</sup> In particular, changes that reduced the commuting distance became more likely, leading to a distance reduction of 263 meters on average and about 1.3 km among job changers per 100 EUR increase in taxes paid. However, the result must be considered cautiously since Boehm (2013) reports that his results may be biased by multicollinearity. Also, he relies on the crow fly distance between municipalities to compute car distances. Therefore, he can only do so for employees who work in a different municipality than they live. Boehm (2013), furthermore, has no information about relevant factors such as home ownership, marital status, or children, which are important determinants of people's mobility behavior.

Agrawal et al. (2022) use exact geo-locations of both workplace and residence and study the effect of commuter tax breaks on commuting distance and job-match-quality of job changers. They combine these locations with a rich database of employee and firm characteristics on almost 2.4 million German employees who switched jobs but not their residences. They find a much stronger effect with an average increase in commuting distance of 2.3 km (1.4 mi) for a decrease in taxes paid of 100 EUR. Although Agrawal et al. (2022) use more detailed data than Boehm (2013), they focus only on job changers and exclude all employees who changed residence during the observation period. Focusing on that group can lead to a selection bias since these employees appear mobile in an occupational context but immobile in their personal lives. Additionally, the observed

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<sup>2</sup>While Agrawal et al. (2022) also include the revocation of the second change as a third event in their study, Boehm's (2013) data ended in 2007.

<sup>3</sup>Boehm (2013) expresses his results in change per 1,000 EUR change in tax-deductibles. Taking his assumption of an average marginal tax rate of 30 percent, we converted his results into change per 100 EUR change of taxes paid for better comparability.

tax law changes are no ideal natural experiments as these come with several potentially confounding events, which will be discussed in more detail later in this article.

Apart from Germany, Paetzold (2019) uses a design that exploits a kink at the lower end of the Austrian income tax schedule where the commuter benefit transforms from a fixed tax credit to a distance-dependent commuter tax break. He finds that a decrease in taxes paid by 100 EUR leads to increased commuting distances by approximately 1.6 km (1 mi). However, as Agrawal et al. (2022) already point out, the regression kink design allows only the investigation of a local treatment effect for, in this case, low-income groups. A generalization of this effect for the average taxpayer is not feasible.

Based on the theoretical literature, the tax-deductibility of commuting expenses should counteract the distorting effect of an income tax and, thus, lengthen the average commute.

Therefore, we test the following hypothesis:

**Hypothesis 1** *Subjects receiving a higher commuter tax break accept a longer additional commute when deciding on a new job.*

While this relationship seems intuitive in theory, it is less evident whether and, if so, how implementing the commuter tax break as a deduction from the income tax base impacts how taxpayers perceive it. Theoretically, it should not affect rational decision makers whether we present a tax-deductible amount or the cash effect of the same since they should know their marginal tax rate. Nonetheless, several studies show that tax complexity affects how taxes are perceived and, thus, accounted for (for a review, see Blaufus et al. (2022)).

In particular, prior research shows that tax rate complexity increases the probability of erroneous investment decisions for individuals (Boylan and Frischmann, 2006; Rupert et al., 2003; Rupert and Wright, 1998) and corporations (Graham et al., 2017). Moreover, tax complexity prevents firms from taking advantage of tax incentives (e.g., Zwick, 2021), and tax complexity leads many people to ignore tax incentives (Blaufus and Ortlieb, 2009;

Abeler and Jäger, 2015).

Thus, on the one hand, tax complexity may result in inattention to taxes. If subjects perceive the net effect of the tax break to be too small relative to the cost they expect to incur from dealing with tax complexity, they could rationally ignore the tax break altogether. Dickert-Conlin et al. (2005), Farhi and Gabaix (2020), and Maćkowiak et al. (2023) show that the complexity associated with the application process in a given tax system can cause taxpayers' inattention to and, thus, under-utilization of a tax credit.

On the other hand, tax complexity can also lead to the amount of the tax incentive being miscalculated. Individuals are often found to misestimate their marginal tax rate, especially when facing more complex progressive income taxes. While Rupert and Fischer (1995) show that taxpayers tend to overestimate marginal tax rates, more recent evidence by Blaufus et al. (2015) or Rees-Jones and Taubinsky (2020) suggests the effect depends on personal income, with high-income (low-income) earners tending to underestimate (overestimate) their marginal tax rate. Depending on the direction of misperception, subjects in the high tax complexity treatment could react more or less than optimal to the commuter tax break.

Therefore, we also test the following hypothesis:

**Hypothesis 2** *Subjects react differently to a presentation of the commuter tax break in a setting with reduced tax complexity than in a setting with high tax complexity.*

### 3 Experimental Design and Procedures

To examine the causal effect of the commuter tax break on the commute length, we introduce a fictitious tax law change that alters the commuter tax break. We randomly assign each subject a deduction rate between €0.12 and €0.84 per kilometer, which we present either as a tax-deductible expense (Treatment 1: high tax complexity) or

multiplied with the individual marginal tax rate as an effective tax refund per kilometer (Treatment 2: low tax complexity).<sup>4</sup> In a third treatment (Treatment 0), we abolish the tax break, setting the deduction rate to €0.00. Here, we do not distinguish by tax complexity since multiplying with the marginal tax rate would not provide any additional information.

After being asked about general sociodemographic data (see Appendix B for screenshots of the choice tasks and Appendix C for the questionnaire), their current commuting behavior, and their occupational and residential situation, in the central part of the study, subjects had to decide:

1. up to which distance they would be willing to accept a new job, given a monetary incentive and the requirement of a daily commute from their current residence (**commute decision**), and
2. at what distance they would prefer to move closer to the place of work of the new job rather than commuting every workday from their current residence (**commute/move decision**).

Each subject receives a fictitious job offer for a permanent position. To motivate a job change apart from tax considerations, the net salary offered is 20% higher than the current net salary reported by the subjects. The job offer indicates that their potential new employer has several job locations, but it does not yet specify to which location the offer refers. Below the job description, subjects find a table of eleven job locations, sorted in ascending order by distance and travel time regarding their current residence. Subjects were then asked to indicate the furthest job location where they would just be

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<sup>4</sup>To calculate individual marginal tax rates, we use the information on (household) income, marital status, and social security status. To avoid overwhelming subjects with too many and too detailed tax-related questions, we do not account for other tax-deductible expenses. Also, we do not believe this will bias our result since we examine an experimental setting with a fictitious tax law change that can be evaluated independently of existing tax law.

willing to accept the job offer. In order to prevent subjects from choosing the preferred rather than the just acceptable distance, the text made clear that the employer had already determined the actual place of work for the job offer and that the choice had no influence on the actual place of work. While the first location always matched the subject's current situation regarding commuting distance and time, each of the following workplace options added another 5 kilometers and 5.49 minutes, respectively.<sup>5</sup> In doing so, we assume an average speed of about 55 km/h, which we derived from the longitudinal study of the German Socio-Economic Panel (Sozio-oekonomisches Panel, 2021).<sup>6</sup> In order to create uniform conditions, we also specified in the first decision

- (i) that the place of work must be visited every workday,
- (ii) the commute could only be made by car, and
- (iii) a move closer to the workplace was not possible.

We specifically informed subjects that the job was otherwise identical to their current job. For the second decision, however, we allowed all subjects to revise their first choice. They could now indicate at which point they would prefer to move to a prespecified new residence rather than commute from their current residence. For simplicity, we specified for the new residence that

- (iv) it is 3 km away from the potential workplace,

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<sup>5</sup>Consequently, there is no option to reduce the commute below the current level besides the move option in the second decision, although some treatments come with tax breaks that are below the current level. Also, some evidence suggests that commuters value reductions in their commuting distance differently than they value extensions (see, for example, Tversky and Kahneman, 1991; de Borger and Fosgerau, 2008; Dauth and Haller, 2020). Nevertheless, since the job offer comes with a significant wage increase with otherwise identical conditions, that alone should motivate the decision-makers to accept at least the current commuting length. In fact, only 26 subjects (2.4 %) rejected the job offer altogether.

<sup>6</sup>Using a simple linear model we regressed commuting times on commuting distance and obtained a factor of 1.0972 minutes per kilometer which converts to a speed of about 55 km/h. In addition, in the pilot study conducted prior to our actual study we found that this estimate was reasonably close to the sample mean commute speed of 53 km/h.

- (v) the housing would be identical to the current situation and, if applicable,
- (vi) spouse and children would find identical working and living conditions.

## 4 Data and Descriptive Statistics

For this study, we surveyed 1,633 German employees about their mobility behavior. For the sample to represent the population of German employees, we invited subjects using combined quotas on gender, age, and federal state. The survey was conducted online in May and June 2022 using an access panel by Bilendi & respondi. All subjects who completed the survey received a fixed compensation of €3.35. At the median, it took subjects approximately 22 minutes to finish the survey, resulting in a median hourly wage of €9.14.

Two honesty tests, one attention test, and four comprehension tests were included to ensure good data quality. Consequently, we excluded dishonest and inattentive subjects immediately from further participation. In addition, subjects could only proceed with the study if they answered all comprehension questions correctly. Subjects were allowed to correct errors but were still excluded if they made more than three errors cumulatively in the four comprehension questions. The comprehension questions ensured that all subjects understood their task and were aware of the wage increase and the assigned deduction rate. Furthermore, we dropped observations afterward if the total completion time was less than ten minutes<sup>7</sup> (65), the given postal code could not be identified (45), conflicting information on working hours was given (64), or the information on commuting time and distance required unrealistic travel speeds (4). Consequently, after applying the listed filters, 1,455 observations remained.

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<sup>7</sup>Note that subjects additionally had to answer two other decision experiments not reported in this article. We found the threshold of 10 minutes to be adequate after evaluating internal testing and a preceding pilot study with 80 subjects.

Since the job offer required daily commuting by car, we excluded all subjects without a car for the experiment presented in this article (204 observations). We set this requirement because, within the design, it would have been too complex also to implement different means of transportation, which would again depend on distance, availability, and travel time. Besides, 86 percent of subjects in the entire sample own a car, while 65 percent usually also get to work by car.<sup>8</sup> Furthermore, with the experimental design relying on subjects' current commuting distance, we had to exclude all subjects exclusively working from home because we had no comparable distance to present as a starting value (98 observations). We also excluded subjects who refused the job offer even when their commuting distance and time were not altered (26 observations). Applying these additional filters led to 1,137 observations.

Descriptive statistics for the final sample can be found in Table 1. Since we used quotas on gender, age, and federal state, the mean age and sex of the sample equal that of the German population. Employees are, on average, 51% male and 44 years old. Around half of the subjects live in cities. The distribution of current commuting lengths is right-skewed, with a mean of 20.24 kilometers and a median of 15 kilometers. Subjects need 26.53 minutes at the mean (median: 20 minutes) for this distance. As expected, with 75 percent of employees already primarily using a car on their way to work, the share is higher than in the full sample, where only 65 percent use their car. One might notice that the average speed of around 46 km/h is significantly lower than the assumed 55 km/h speed for the additional commuting length. However, if we restrict our calculation to motorists, the current average speed inclines to around 52 km/h and becomes even higher the longer the distance. Hence, the added travel time for the fictitious workplaces is reasonable as it only applies to the added distance.

Regarding the occupational sphere, subjects in our sample work, on average, around

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<sup>8</sup>As expected, including non-car owners in several unreported robustness tests led to an overall weaker, but still statistically significant effect of the commuter tax break.

Table 1: Descriptive Statistics

	N	Mean	SD	Median
<i>COMMUTE_ADD</i>	1137	12.69	9,21	10.00
<i>D_RATE</i>	1137	43.93	26.28	48.00
<i>TAX_COMPLEXITY_HIGH</i>	1137	0.45	0.50	0.00
<i>CURR_DISTANCE</i>	1137	20.24	26.79	15.00
<i>RELATIVE_HODAYS</i>	1137	0.12	0.22	0.00
<i>AGE</i>	1137	44.37	11.65	46.00
<i>INCOME</i>	1137	2531	1320	2250
<i>TEMPORARY</i>	1137	0.05	0.22	0.00
<i>MALE</i>	1137	0.51	0.50	1.00
<i>MARRIED</i>	1137	0.52	0.50	1.00
<i>CHILD_IN_HH</i>	1137	0.38	0.49	0.00
<i>HOUSE_OWNER</i>	1137	0.47	0.50	0.00
<i>UNIVERSITY</i>	1137	0.32	0.47	0.00
<i>CITY</i>	1137	0.54	0.50	1.00
<i>CURR_TRAVEL_TIME</i>	1137	26.53	21.70	20.00
<i>CAR_COMMUTE</i>	1137	0.75	0.43	1.00
<i>WORKHOURS</i>	1137	35.89	7.78	39.00
<i>MTR</i>	1137	0.33	0.07	0.34

Notes: This table provides descriptive statistics on the dependent variable *COMMUTE\_ADD*, all explanatory variables, and some other relevant variables. *COMMUTE\_ADD* is the maximum additional commute length in kilometers at which a subject is just willing to accept the job offer and would not prefer moving closer to the workplace over daily commuting. *D\_RATE* is the rate per kilometer (one-way) in euro cents, which ranges from zero to 84 cents, at which subjects can deduct their commuting costs. *TAX\_COMPLEXITY\_HIGH* is a dummy that is one if the observation is from the high tax complexity treatment and zero otherwise. *CURR\_DISTANCE* is the subject's current commute distance in kilometers, *RELATIVE\_HODAYS* is the share of homeoffice days per week in percent of working days per week, *AGE* is the subject's age, *INCOME* is the subject's monthly net income, *TEMPORARY* is a dummy that is one if a subject has a fixed-term employment contract and 0 otherwise, *MALE* is a dummy that is one if a subject is a male and zero otherwise, *MARRIED* is a dummy that is one if a subject is married or in a registered partnership, *CHILD\_IN\_HH* is a dummy that is one if a subject lives in a household with a child and zero otherwise, and *HOUSE\_OWNER* is a dummy that is one if a subject owns a house and zero otherwise. We also report descriptive statistics for variables we do not include in our main regressions but refer to in the text. *UNIVERSITY* is a dummy that is one if a subject holds an academic degree, *CITY* is a dummy that is one if a subject lives in a city and zero otherwise, *CURR\_TRAVEL\_TIME* is the time in minutes subjects usually spend on their way to work in their most frequently used transport mode, *CAR\_COMMUTE* is a dummy that is 1 when a subject usually uses a car to go to work, *WORKHOURS* is the weekly contractual working hours, and *MTR* is the marginal tax rate we estimated for each subject as described in section 3.

36 hours per week for a monthly net income of €2,531.<sup>9</sup> We have detailed information on the number of days worked at the employer's site versus days worked at home and, therefore, on the actual distance traveled. It shows that employees, on average, spent

<sup>9</sup>To not scare off subjects by asking too many too detailed personal questions, we decided to ask monthly net income in increments of €500. To calculate the reported average income and for further analysis (e.g., the estimation of individual marginal tax rates or the income base for salary stimulus), we use the midpoints of these increments.

12 percent (full sample: 18 percent) of their weekly workdays in their home office, with 29 percent working from home at least one day per week. We find a significant positive relationship between the current commute distance and the share of days worked from home, which aligns with previous research (see also Aksoy et al., 2022). This shows the importance of considering the distance and frequency of commutes together when examining job-related mobility.

In addition, we report essential subject characteristics separately for the treatment groups in Appendix A1. We perform an omnibus test for joint orthogonality to test whether our randomization process was successful and if these characteristics distribute evenly across our treatments. Using multinomial logit regression, we regress the assignment of the three treatments on all control variables described in section 5. The overall  $\chi^2$ -test is insignificant, suggesting evenly balanced individual characteristics. Only the coefficient of *MALE* is positive and statistically significant, suggesting a higher share of men in the low tax complexity group. However, the difference is only marginal, with men making up 48 percent of the high tax complexity group, 54 percent of the low tax complexity group, and 53 percent of the group with a commuter tax break of zero.

## 5 Estimation Strategy

To estimate the effect of the commuter tax break on the additional commute length subjects are willing to accept in the given setting, we estimate the coefficients of the following model by running robust regressions (Huber, 1973) separately for the high- and

low-complexity group:<sup>10</sup>

$$COMMUTE\_ADD_i = \alpha + \beta_1 D\_RATE_i + \gamma X_i + \epsilon_i \quad (1)$$

where  $COMMUTE\_ADD_i$  is the maximum additional commute length (in km) at which a subject  $i$  is just willing to accept the job offer and would not prefer moving closer to the workplace over daily commuting, and  $D\_RATE_i$  is the rate per kilometer (single trip) in euro cents at which subjects can deduct their commuting expenses. Note that we cannot vary the tax complexity in the setting that completely abolishes the commuter tax break, so we do not include it in our base model but investigate its effect separately (see section 6.3). Also, with  $X_i$ , we include a vector of several control variables. Although we specified most of the job aspects to be identical to the subjects' current situation, we had to specify some aspects that could also affect commuting length. Therefore, we control for these aspects by including  $RELATIVE\_HODAYS$  for the share of workdays the subject usually works from home and a dummy variable  $TEMPORARY$  that is one if a subject's employment contract is fixed-term and zero otherwise. Because we vary income and commuting distance based on their current levels, we control for these by including  $INCOME$  and  $CURR\_DISTANCE$ , respectively. Finally, with  $AGE$ ,  $MALE$ ,  $MARRIED$ ,  $HOUSE\_OWNER$ , and  $CHILD\_IN\_HH$  we control for age, gender, marital status, house ownership, and whether children live in the household, respectively.

Resulting of the design, the dependent variable can take values between zero (keeping the current distance) and 50 additional kilometers. Although we designed a two-stage decision experiment, these decisions must be interpreted in combination. We use the

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<sup>10</sup>We use robust regressions to obtain estimates, which are less affected by outliers. As a robustness test, we ran ordinary regressions with robust standard errors for all our main models. The results remain essentially unchanged compared to the robust regression. With a magnitude of 0.0296 (*p-value: 0.07*) in the low tax complexity group, the coefficient of  $D\_RATE$  is slightly weaker in the model described in Equation 1.

maximum accepted additional commuting length from the first decision unless subjects choose to move closer to the new workplace in the second decision. In the latter case, we set the dependent variable to reflect the adjusted maximum commuting length the subject would be willing to accept before moving closer to the new workplace. Had a subject decided to move in all of the presented cases, we set the dependent variable to zero since the subject would not be willing to extend her commute in any case.

We suspect that subjects in the first decision accept the job for every distance presented until they are indifferent between their old and new jobs. Thus, a subject would always accept the job if the gain in wages  $\Delta w$ , together with the tax refund caused by the modified commuter tax break  $\Delta l$ , is at least as high as the associated commuting costs  $\Delta k_c$ :

$$\Delta w - (\Delta k_c(d) - \theta \cdot \Delta l(d)) \geq 0; \quad (2)$$

with  $\theta \geq 0$  being a perception parameter presenting the rate at which the tax-deductibility is accounted for by a subject considering the costs of dealing with tax complexity or the possibility of subjects misestimating the tax effect. For subjects who know their marginal tax rate and do not incur any estimation costs in dealing with tax complexity, we expect  $\theta = 1$ . Otherwise, we expect  $\theta > 1$  for employees overreacting and  $0 \leq \theta < 1$  for those underreacting. Anyhow,  $\theta$  should never become negative since a rational decision-maker would simply ignore the tax break ( $\theta = 0$ ) if she incurs more costs than gains from such a tax break.

On the other hand, when given the option to move closer to the new workplace, subjects now face an optimization problem that also includes their opportunity costs of moving  $k_m$  to a different location.<sup>11</sup> Therefore, depending on the individual marginal costs of commuting and the personal attachment to their home, all presented workplaces

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<sup>11</sup>We limit the costs of moving to opportunity costs by promising in the task description to reimburse the direct monetary costs.

could now be accepted without subjects having to accept their maximum acceptable commute distance since the move option is fixed at a distance of 3 km. Instead, subjects with some attachment to their home might keep commuting from their current place until the additional costs of commuting  $\Delta k_c - \Delta l$  exceed their opportunity costs of moving  $\Delta k_m$ . Thus, subjects would always accept the job if:

$$\Delta w - \min(\Delta k_c(d) - \theta \cdot \Delta l(d); k_m) \geq 0 \quad (3)$$

Consequently, in the second choice scenario, the commuter tax break also affects the commute length through the switching point between commuting and moving.

## 6 Results

### 6.1 The Effect of the Commuter Tax Break on Commute Distance

Table 2 shows the regression results. In our base setting, we run separate regressions for the high and low tax complexity groups. Columns (1) and (2) show the results without controls, whereas columns (3) and (4) include the control variables described above. Since the results for both groups do not significantly change when we include control variables, in the following, we will only refer to the results of the full regression model. It can be shown that the commuter tax break has a statistically significant positive effect on commute length. For each €0.10 increase in the kilometer rate, subjects in the low tax complexity group are *ceteris paribus* willing to commute an additional 373 m. However, in the high tax complexity group, the coefficient for *D\_RATE* is statistically not significant.

To test whether the difference between the two treatment groups is significant, instead of running separate regressions, we control for *TAX\_COMPLEXITY\_HIGH<sub>i</sub>*, a

dummy that is one if the observation is from the high tax complexity group and zero otherwise, and for the interaction of  $D\_RATE$  and  $TAX\_COMPLEXITY\_HIGH_i$  in a combined regression. The results from that regression are shown in column (5) of Table 2. The estimate for  $D\_RATE$  remains essentially unchanged. If tax complexity is reduced, i.e., if the  $TAX\_COMPLEXITY\_HIGH_i$  dummy is zero, the coefficient for  $D\_RATE$  is 0.0371 and statistically significant on the 5 percent level. If tax complexity is high, i.e., the  $TAX\_COMPLEXITY\_HIGH_i$  dummy is 1, and if we consider the negative and statistically significant interaction effect between  $D\_RATE$  and  $TAX\_COMPLEXITY\_HIGH_i$  the effect of  $D\_RATE$  becomes -0.00369 ( $p$ -value: 0.816). This result indicates that subjects do not account for the size of the tax benefit in their decision making when presented as a deduction from taxable income (high tax complexity treatment).

Subjects might ignore the tax break if they expect the costs of dealing with tax complexity to exceed the expected benefits of the tax break. Therefore, subjects with high estimation costs, e.g., tax-inexperienced subjects, or a low incentive from computing the cash effect, e.g., low-taxed subjects, could ignore the tax break and thus dilute the commuter tax break's effect in our regression. Conversely, we expect subjects with lower estimation costs and higher incentives to be less affected by tax complexity and more prone to consider the commuter tax break in their decision.

To test this, we ran untabulated separate regressions for subgroups with at least average tax knowledge and subgroups that would gain the most from high deduction rates, i.e., high-income/highly taxed subjects and long-distance commuters. We also ran a regression with subjects overestimating their marginal tax rate by more than ten percentage points and, therefore, should expect a higher cash effect of the distance allowance.<sup>12</sup> However, neither of these subgroups accounts for the commuter tax break in

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<sup>12</sup>At the end of the survey, we asked subjects to estimate the income tax they would owe if their annual gross income increased by €100.

Table 2: Regression Results:  
The Effect of the Commuter Tax Break on Commute Distance

Tax Complexity: VARIABLES	(1) High COMMUTE_ADD	(2) Low COMMUTE_ADD	(3) High COMMUTE_ADD	(4) Low COMMUTE_ADD	(5) High & Low COMMUTE_ADD
D_RATE	0.000424 (0.0162)	0.0309* (0.0164)	-0.00695 (0.0156)	0.0373** (0.0160)	0.0371** (0.0157)
TAX_COMPLEXITY_HIGH					1.088 (1.188)
TAX_COMPLEXITY_HIGH*D_RATE					-0.0408* (0.0223)
CURR_DISTANCE			-0.121*** (0.0202)	-0.0419*** (0.0115)	-0.0651*** (0.00992)
RELATIVE_HODAYS			-0.932 (1.796)	-2.084 (1.746)	-1.832 (1.247)
AGE			0.0138 (0.0336)	-0.0472 (0.0340)	-0.0176 (0.0239)
INCOME			0.00102*** (0.000308)	0.00153*** (0.000323)	0.00123*** (0.000223)
TEMPORARY			1.807 (1.628)	3.210* (1.842)	2.593** (1.216)
MALE			-0.416 (0.801)	-1.200 (0.816)	-0.777 (0.572)
MARRIED			0.0355 (0.848)	0.165 (0.889)	0.159 (0.615)
CHILD_IN_HH			0.768 (0.852)	-0.170 (0.880)	0.313 (0.613)
HOUSE_OWNER			1.134 (0.806)	1.003 (0.818)	1.083* (0.574)
Constant	11.55*** (0.865)	11.05*** (0.873)	11.05*** (1.811)	10.56*** (1.792)	9.946*** (1.394)
Observations	516	533	516	533	1,049
R <sup>2</sup>	0.000	0.006	0.075	0.074	0.063
F-Test	0.000682	3.565	5.085	4.643	7.336
p-Wert	0.979	0.0596	< 0.001	< 0.001	< 0.001
Wald Test					
High vs. Low Tax Complexity					0.816

Notes: This table presents the results of the Huber (1973) robust regressions with *COMMUTE\_ADD* as the dependent variable. *COMMUTE\_ADD* is the maximum additional commute length in kilometers at which a subject is just willing to accept the job offer and would not prefer moving closer to the workplace over daily commuting. In models 1 and 2, we regress *COMMUTE\_ADD* on *D\_RATE* without control variables separately for the high and the low tax complexity treatment, respectively. *D\_RATE* is the rate per kilometer (one-way) in euro cents, which ranges from 12 to 84 cents, at which subjects can deduct their commuting costs. Model 3 and 4 are identical but include control variables. *CURR\_DISTANCE* is the subject's current commute distance in kilometers, *RELATIVE\_HODAYS* is the share of homeoffice days per week in percent of working days per week, *AGE* is the subject's age, *INCOME* is the subject's monthly net income, *TEMPORARY* is a dummy that is one if a subject has a fixed-term employment contract and 0 otherwise, *MALE* is a dummy that is one if a subject is a male and zero otherwise, *MARRIED* is a dummy that is one if a subject is married or in a registered partnership, *CHILD\_IN\_HH* is a dummy that is one if a subject lives in a household with a child and zero otherwise, and *HOUSE\_OWNER* is a dummy that is one if a subject owns a house and zero otherwise. In model 5, we include both the high and low tax complexity treatments and control for *TAX\_COMPLEXITY\_HIGH* and *TAX\_COMPLEXITY\_HIGH \* D\_RATE*. *TAX\_COMPLEXITY\_HIGH* is a dummy that is one if the observation is from the high tax complexity treatment and zero otherwise. *TAX\_COMPLEXITY\_HIGH \* D\_RATE* is the interaction of the two variables. Standard errors are reported in parentheses. \*, \*\*, and \*\*\* represent significance at the 0.10, 0.05, and 0.01 levels, respectively.

their job decision.

This suggests that inattention to the commuter tax break in the context of tax complexity persists regardless of high tax knowledge or an (expected) higher incentive. We suspect that several factors cause the non-response. Among low-taxed and less tax-experienced subjects, the incentive from tax-deductible commuting expenses might be too low compared to the costs of dealing with tax complexity. On the other hand, highly taxed subjects and those with high tax knowledge might receive a higher absolute incentive and face lower costs for dealing with tax complexity but, simultaneously, have higher time costs which the deductible amount does not consider. The benefit from the commuter tax break, therefore, decreases relative to salary.

One could argue that subjects would account for the commuter tax break in a real choice scenario but did not in a hypothetical choice scenario, having no monetary incentive to calculate the cash effect within the hypothetical setting correctly. However, the fact that subjects in the low-tax-complexity treatment did calculate despite also having no monetary incentive and only the additional information about their marginal tax rate contradicts this argument. Additionally, we tested whether we could find any difference in the time subjects in the low and high tax complexity treatment spent on the two decisions, including the time it took them to read the instructions and answer the comprehension questions. If subjects in the high tax complexity treatment did not calculate at all, we would expect them to have spent less time on the decision than subjects in the low tax complexity treatment. However, we find no statistically significant difference between the two groups.

The result in our high tax complexity group mostly aligns with our inattention hypothesis, which states that subjects do not necessarily consider all available information, especially when processing this information requires a certain amount of effort. This is consistent with the results of other papers on inattention to complex information (Blaufus

and Ortlieb, 2009; Farhi and Gabaix, 2020; Maćkowiak et al., 2023).

Turning the focus back to the low tax complexity group, we can conclude that although employees are willing to accept longer commutes when receiving higher tax refunds in the low tax complexity group, the magnitude of that effect is small from an economic viewpoint. To compare our results with those of Paetzold (2019) and Agrawal et al. (2022), we convert our estimates into additional kilometers per €100 reduction in taxes paid. For this, we calculate the income tax effect of an increase in the per-kilometer deduction rate of €0.10 using mean values of current commute distance, annual workdays, and marginal tax rates.<sup>13</sup>

On average, subjects accept a 0.254 km longer commute for every €100 decrease in taxes paid, which is about nine times smaller than the effect observed in Agrawal et al. (2022) and six times smaller than the one from Paetzold (2019).<sup>14</sup> Focusing on Agrawal et al. (2022) first, who also exploit data from German employees, we see several reasons why their approach might lead to overestimating the effect. First and foremost, both of the tax law changes they are focusing on came paired with other revenue-enhancing measures, with Germany being in a state of economic stagnation and high unemployment rates (Agrawal et al., 2022). In fact, from 2003 to 2005, right around the first event, the German government implemented the so-called *Agenda 2010*, the most profound labor and welfare reform in post-war Germany, which allowed for, among others, facilitated temporary employment and subcontracted labor as well as relaxed worker protection against dismissal (Ehrich et al., 2018). Additionally, the full reinstatement of commuting costs deductibility in December 2008 preceded the global financial crisis, which led to the massive use of short-time work. In Germany, short-time work (*Kurzarbeit*) is a gov-

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$$\frac{10,000 * \beta_1}{distance * workdays * mtr} = \frac{10,000 * \beta_1}{20.24 km * 217 * 0.3349} \quad (4)$$

<sup>14</sup>Even if we calculate using the lower median distance (15 km) instead of the mean, the effect still amounts to only 0.342 km per €100 decrease in taxes paid.

ernmental measure that temporarily reduces working time and employer-paid wages for workers in entitled companies to avoid unemployment. Workers instead receive a portion of their lost wages from social security during that time.<sup>15</sup> Since it is well documented that job uncertainty is associated with longer commutes, these confounding events may have forced workers to accept longer commutes than they would typically do (Crane, 1996; Parenti and Tealdi, 2019; Laß et al., 2023). Furthermore, focusing only on job changers who did not change residence could even produce a selection bias since workers with higher job uncertainty (e.g., a fixed-term contract) are also less likely to move closer to their work (Parenti and Tealdi, 2019; Laß et al., 2023) and thus more likely to be affected by the possible confounders.

Even if we put aside the possibly confounding events, the lack of information on actual commuting times causes an underestimation of total costs per kilometer, leaving a significant part of the observed job changes unexplained. While Agrawal et al. (2022) have exact information on commute distances, they rely on estimating travel times made under ideal traffic conditions. The resulting average travel speed amounts to 63 km/h, whereas in our sample, commuters travel with an average speed of just around 42 km/h (median: 40 km/h).<sup>16</sup> If we scale their estimated time costs induced by an increase in the commuter tax break proportionally, we arrive at additional time costs of €257 instead of the reported €171. This back-of-the-envelope calculation does not even consider monetary costs and still shows that there must have been other reasons for a job change than the mean wage increase of €152 and the €100 decrease in taxes paid.

Although, compared to Agrawal et al. (2022), the disparity between our results and those of Paetzold (2019) is smaller, it is still significant. However, the difference be-

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<sup>15</sup>Employers reported short-time work for more than 3.6 million employees (around 13 % of the employees subject to social security contributions) throughout 2009, with a peak of almost 1.5 million employees receiving short-time benefits at the same time in early 2009.

<sup>16</sup>Note that this average speed differs from the one reported in section 4. For comparison, here we used the whole sample without filters for car ownership or workers exclusively working from home since these groups were not excluded in Agrawal et al.'s(2022) .

comes plausible if we account for three main differences in the institutional and empirical settings. First, in German tax law (2022), the deductible employment-related expenses (*Werbungskosten*) must exceed the applicable lump sum of 1,200 EUR per year for the commuter tax break to have any effect. In contrast, in Austria, this lump sum amounts to only 132 EUR making the commuter tax break affect after-tax income even on short commutes.

Second, as mentioned by Paetzold (2019, p. 137), the estimation and application process for the commuter tax break is much more straightforward in Austria than in Germany. Employees claim the tax credit through their employer using an online tool that calculates the tax break by asking only for the work and home address, typical work hours, and workdays. The tax break, therefore, lowers the monthly taxable income, immediately increasing the net wage. Conversely, in Germany, taxpayers usually claim the tax break through their annual income tax return, potentially yielding a refund the following year.<sup>17</sup> It has been shown that a gap between the time of the tax filing of an expense and the time of the actual expense affects the amount spent (e.g., Hickey et al., 2019). Also, the complexity associated with the application process in a given tax system can cause taxpayers' inattention to and, thus, under-utilization of a tax credit (Farhi and Gabaix, 2020; Maćkowiak et al., 2023; Dickert-Conlin et al., 2005) as well as an incorrect estimation of the actual tax burden (Chetty et al., 2009; Blaufus et al., 2013; Taubinsky and Rees-Jones, 2018).

Third, and most importantly, the Austrian progressive income tax at that time has a sharper incline than the German counterpart. For example, between 2005 and 2011, the Austrian income tax starts with a marginal tax rate of 38% for an income of €10,000 (after 2009: €11,000). In Germany, the marginal tax rate starts at 14% with an income

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<sup>17</sup>Taxpayers could also apply for a reduction in payroll taxes. However, for the application to be granted, they must provide sufficient evidence of income-related expenses expected to be at least €1,800. Assuming 220 working days, the commute distance would have to be at least 26 km to exceed this amount with the commuter tax break alone.

of €10,348, with an MTR of 38% reached only at an annual taxable income of approx. €49,000. Consider, for example, an employee with an income at the lower end of the income tax schedule, a commute of 20 km, and 230 workdays per year. While both Austrian and German tax law, in this case, allow a similar deductible amount of €1,476 and €1,380, respectively, the Austrian after-tax cash value of that tax break amounts to €560, which is significantly higher than the value of €213 in Germany. Considering that Paetzold (2019) focuses on low-income individuals around the first income tax threshold, whereas we estimate an average effect, the individuals in his sample have a stronger and more immediate incentive from any tax break while bearing lower time costs.

## 6.2 Time Cost of Travel

Based on the mean effect, Paetzold (2019) estimates the wage rate at which employees are willing to accept an additional hour of commuting to around €6.40, which is about 71 percent of the gross hourly wage rate in his sample. We replicate this calculation to examine whether our small average effect means that subjects underestimate the tax breaks' effect even in the low complexity treatment. The estimated effect of 254 m per €100 change means that €392 would be necessary for employees to accept a 1 km longer commute. Considering the sample mean of 217 annual workdays, that amounts to €1.82 per kilometer in distance or €0.79 per kilometer driven.<sup>18</sup> While Paetzold (2019) ignores monetary costs in his calculation, having no information about the travel mode used, we not only restrict subjects to using a car but also asked for their estimation of monetary costs per kilometer. Subtracting the mean monetary costs of €0.44 per kilometer from total costs per kilometer driven results in time costs of €0.35 for traveling one additional kilometer at the mean. Having used a fixed speed of around 55 km/h for calculating the

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<sup>18</sup>Since we have specified that subjects must visit their new workplace every workday, employees who currently work in part from home consequently have to commute more frequently from now on. Therefore, when calculating the distance driven, we do not divide the €1.55 by two but by 2.3141 to reflect this additional frequency.

time needed for the additional distance, the per-kilometer estimate of €0.44 equals an hourly net wage of €18.88, about 94 percent of the mean hourly net wage. Although at the higher end of the scale, our time costs estimate blends in well with the results of other papers, which usually report travel time costs between 50 and 90 percent in revealed preference data. However, it exceeds the 20 to 50 percent usually observed in stated preference data (Small et al., 2005, 2007, pp. 52-55).

This result shows that, on average, subjects account for the commuter tax break correctly if tax complexity is reduced. Having relative time cost estimates comparable to those of Paetzold (2019) explains that the difference in magnitude between the kilometer-per-€100 estimates is probably due to the different institutional settings paired with sociodemographic (mainly income) differences in the samples.

### **6.3 Abolition of the Commuter Tax Break**

Since no calculation of taxes is required in case of the abolition of the commuter tax break, we cannot alter the tax complexity in this case. However, this particular case of manipulation allows us to test whether subjects in the high-tax-complexity treatment, although not considering the size, account for the mere existence of a commuter tax break. Therefore, in a subsequent regression, we include only the high tax complexity group and those who were given a commuter tax break of €0.00 and control for the dummy  $D\_RATE\_ZERO$  that is one if  $D\_RATE = 0$  and zero if  $D\_RATE > 0$ . The results of that regression are shown in Table 3.

Surprisingly, compared to the size effect of the commuter tax break, its mere existence has a much stronger impact on commute length. On average, abolishing the commuter tax break resulted in subjects willing to travel 1.8 km less than subjects with a positive deduction rate regardless of the magnitude of that rate. If we compare the abolition effect to the effect we estimated for the variation of a positive deduction rate in the low

tax complexity group, the reaction to abolition equals that to an increase of a deduction rate by around €0.48.

Table 3: Regression Results: Abolition

VARIABLES	High Tax Complexity COMMUTE_ADD
D_RATE_ZERO	-1.805* (0.973)
Constant	11.38*** (1.530)
Controls	Yes
Observations	604
$R^2$	0.086
F-Test	6.913
p-Wert	< 0.001

Notes: This table presents the results of the Huber (1973) robust regression with *COMMUTE\_ADD* as the dependent variable. *COMMUTE\_ADD* is the maximum additional commute length in kilometers at which a subject is just willing to accept the job offer and would not prefer moving closer to the workplace over daily commuting. We regress *COMMUTE\_ADD* on *D\_RATE\_ZERO*, a dummy that is one if *D\_RATE* = 0 and zero otherwise. We include all control variables described in section 5. Standard errors are reported in parentheses. \*, \*\*, and \*\*\* represent significance at the 0.10, 0.05, and 0.01 levels, respectively.

To rule out the possibility that subjects simply overreacted as some form of protest to being stripped of the commuter tax break, we tested whether subjects reacted differently to being worse off, quasi-equal, or better off relative to the current German tax law, which allows a deduction of €0.30/km for the first 20 km and €0.38/km from the 21st km. We assume subjects treated with a deduction rate of 0.36 euro/km to be treated quasi-equal to the status quo. To this end, in an untabulated regression using only the high tax complexity group, we substitute *D\_RATE* in equation 1 by the categorical variable *REL\_D\_RATE* that is zero if *D\_RATE* = 0, one if *D\_RATE* = 12 or *D\_RATE* = 24, two if *D\_RATE* = 36, and three if *D\_RATE* > 36.

Our results (unreported) show that reducing the commuter tax break in the high tax complexity treatment to a level below current German tax law does not have any impact on *COMMUTE\_ADD* relative to treating subjects quasi-equal or better than current

German tax law. Hence, the relationship between the commuter tax break and average commute length seems to be non-linear at the lower end. This finding supports previous research suggesting that people with bounded rationality may be more influenced by the presence of an incentive than by its actual size (Karlan and List, 2007).

## 7 Conclusion

In the context of climate change and as an aftermath of the COVID-19 pandemic, tax incentives for job-related mobility, widespread in many Western European countries, have recently been scrutinized. Although classified as a potentially environmentally harmful subsidy, empirical evidence on the impact of tax-deductible job-related commuting costs on job search radius or commuting distance is scarce. This study is the first to use a controlled randomized decision experiment to test for a causal effect of the tax-deductibility of commuting expenses on commuting distance.

We find that the rate at which employees can deduct commuting costs is only taken into account in their job location choice when it is presented as an effective tax refund (low tax complexity treatment). In this case, an increase in the deduction rate by €0.10 leads to an average acceptance of 373-meter longer commutes.

In contrast, when the commuter tax break is presented as a deduction from the tax base (high tax complexity treatment), as is the case in existing tax law, subjects do not respond to changes in the size of the deduction rate. We suspect this is because the costs taxpayers expect from dealing with tax complexity are too high compared to the expected tax benefit, leading to employees not calculating and considering it when deciding on a job location. Our evidence, however, also shows that employees in the high tax complexity group do consider the mere existence of a commuter tax break, with subjects not being able to deduct commuting expenses on average accepting 9 percent shorter commutes

than any group with a positive deduction rate in the high tax complexity group.

Our evidence offers several policy implications depending on what is desirable regarding job-related mobility. If, on the one hand, the expansion of employees' job search radius is desired, our evidence suggests that the commuter tax break should be less complex and more salient for employees to consider it correctly in their decision making. With its current implementation, employees do not consider the amount deductible but the mere existence of a commuter tax break, making any deduction rates above a bare minimum inefficient. On the other hand, if a reduction of job-related mobility is desired, abolishing the deductibility of commuting expenses could reduce average commutes by about 9 percent.

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# Appendix

## A Additional Tables

Table A1: Distribution of Control Variables Across Treatments

	Abolition	Low Tax Complexity	High Tax Complexity	Total
D_RATE	0.00	47.56	47.66	43.93
CURR_DISTANCE	19.59	19.86	20.71	20.24
RELATIVE_HODAYS	0.15	0.12	0.12	0.12
AGE	43.57	44.43	44.44	44.37
INCOME	2,398	2,535	2,548	2,531
TEMPORARY	0.03	0.06	0.05	0.05
MALE	0.53	0.48	0.54	0.51
MARRIED	0.50	0.50	0.54	0.52
CHILD_IN_HH	0.42	0.37	0.39	0.38
HOUSE_OWNER	0.48	0.46	0.47	0.47
Observations	88	533	516	1,137

Notes: This table provides descriptive statistics on the explanatory variables of model 1 separately for the three treatments described in section 3. *D\_RATE* is the rate per kilometer (one-way) in euro cents, which ranges from zero to 84 cents, at which subjects can deduct their commuting costs. *CURR\_DISTANCE* is the subject's current commute distance in kilometers, *RELATIVE\_HODAYS* is the share of homeoffice days per week in percent of working days per week, *AGE* is the subject's age, *INCOME* is the subject's monthly net income, *TEMPORARY* is a dummy that is one if a subject has a fixed-term employment contract and 0 otherwise, *MALE* is a dummy that is one if a subject is a male and zero otherwise, *MARRIED* is a dummy that is one if a subject is married or in a registered partnership, *CHILD\_IN\_HH* is a dummy that is one if a subject lives in a household with a child and zero otherwise, and *HOUSE\_OWNER* is a dummy that is one if a subject owns a house and zero otherwise.

## B Screenshots of the Choice Scenarios

Structure of the study

Comprehension questions

### Task 1: Commute decision (instruction)

Imagine you are offered a permanent job at a location different from your current place of residence. The following key points are already clear from the offer:

- The job requires you to commute daily according to your work week.
- The workplace can only be reached by car.
- It is not possible to move to a location closer to the workplace.
- Your monthly net salary would be € 450.00 higher.

Apart from that, the conditions, your job and the new employer do not differ from your current employment. Your daily tasks would be equally interesting.

Assume that, due to a change in tax law, from now on you will no longer be able to deduct commuting expenses between home and work as income-related expenses on your income tax return. if SUBSIDY = 0

Assume that, due to a change in tax law, from now on, you can deduct commuting costs at a rate of €0.48 per distance kilometer (one-way) per working day for the outward journey to your place of work as income-related expenses on your income tax return. if SUBSIDY > 0 and Tax complexity = High

Considering your personal tax rate, this results in an effective reimbursement of €0.12 per distance kilometer. if SUBSIDY > 0 and Tax complexity = Low

You learn that the employer has several branches and that it has already been determined where you will be working. However, the exact work location is not yet apparent from the offer. You will be shown a list of possible job locations, sorted in ascending order according to the distance to your place of residence. **Before you inquire about the actual job location, please consider for yourself at which job location you would just accept the offer under the stated conditions. To do this, click on "Accept job" in the table that will appear in a moment for the job locations where you would accept the job. Click "Reject job" at the job locations where you would no longer accept the job.**

Next

## Comprehension test

Before the actual study begins, we would like you to answer the following comprehension questions. If anything is unclear, you can view the [instructions](#) as often as you like [by clicking on the "Back" button or the "Structure of the study" tab](#).

**Please note that we will not compensate you if you have not read the instructions carefully and consequently do not answer the following questions conscientiously.**

### 1. Question

In the task, you get a job offer. Which of the following statements about this offer is correct?

- Your net salary remains unchanged
- There is no information about the salary
- Your net salary increases by € 450.00
- Your net salary increases by € 300.00
- Your net salary decreases by € 450.00

### 2. Question (Tax Complexity = High)

The text also dealt with a change in tax law concerning the tax deductibility of travel expenses between home and work. Accordingly, to what extent can you deduct your travel expenses as income-related expenses for tax purposes?

- 0,00 €
- 0,12 €
- 0,24 €
- 0,48 €
- 0,54 €

### 2. Question (Tax Complexity = Low)

The text also dealt with a change in tax law concerning the tax deductibility of travel expenses between home and work. For this purpose, you were given the effective reimbursement per distance kilometer in the task description, taking into account your personal tax rate. How high is it?

- 0,00 €
- 0,12 €
- 0,24 €
- 0,48 €
- 0,54 €

### 3. Question

For the task, you will be shown a table with different places of activity. Which of the following statements is true?

- The table contains job offers from different employers.
- The place of work is already fixed for the job offer. You only choose the maximum distance/travel time you would be willing to accept for the job described.
- Commuting by bicycle to the place of work is required each workday.
- As an alternative to commuting, it is also possible to move to a location near the place of work.

[Back](#)[Check](#)

## Task 1: Commute decision

Now please make your decision in the table below.  
As a reminder, we show you the task text again.

Imagine you are offered a permanent job at a location different from your current place of residence. The following key points are already clear from the offer:

- The job requires you to commute daily according to your work week.
- The workplace can only be reached by car.
- It is not possible to move to a location closer to the workplace.
- Your monthly net salary would be € 450.00 higher.

Apart from that, the conditions, your job and the new employer do not differ from your current employment. Your daily tasks would be equally interesting.

Assume that, due to a change in tax law, from now on you will no longer be able to deduct commuting expenses between home and work as income-related expenses on your income tax return.

You learn that the employer has several branches and that it has already been determined where you will be working. However, the exact work location is not yet apparent from the offer. You will be shown a list of possible job locations, sorted in ascending order according to the distance to your place of residence. **Before you inquire about the actual job location, please consider for yourself at which job location you would just accept the offer under the stated conditions. To do this, click on "Accept job" in the table that will appear in a moment for the job locations where you would accept the job. Click "Reject job" at the job locations where you would no longer accept the job.**

Work location	Distance and travel time	Accept job	Reject job
Work location 1	Distance: 15 km Travel time: 20 min.	<input type="radio"/>	<input type="radio"/>
Work location 2	Distance: 20 km Travel time: 25 min.	<input type="radio"/>	<input type="radio"/>
Work location 3	Distance: 25 km Travel time: 30 min.	<input type="radio"/>	<input type="radio"/>
Work location 4	Distance: 30 km Travel time: 36 min.	<input type="radio"/>	<input type="radio"/>
Work location 5	Distance: 35 km Travel time: 41 min.	<input type="radio"/>	<input type="radio"/>
Work location 6	Distance: 40 km Travel time: 47 min.	<input type="radio"/>	<input type="radio"/>
Work location 7	Distance: 45 km Travel time: 52 min.	<input type="radio"/>	<input type="radio"/>
Work location 8	Distance: 50 km Travel time: 58 min.	<input type="radio"/>	<input type="radio"/>
Work location 9	Distance: 55 km Travel time: 63 min.	<input type="radio"/>	<input type="radio"/>
Work location 10	Distance: 60 km Travel time: 69 min.	<input type="radio"/>	<input type="radio"/>
Work location 11	Distance: 65 km Travel time: 74 min.	<input type="radio"/>	<input type="radio"/>

Next

## Task 1: Commute decision

Now please make your decision in the table below.  
As a reminder, we show you the task text again.

Imagine you are offered a permanent job at a location different from your current place of residence. The following key points are already clear from the offer:

- The job requires you to commute daily according to your work week.
- The workplace can only be reached by car.
- It is not possible to move to a location closer to the workplace.
- Your monthly net salary would be € 450.00 higher.

Apart from that, the conditions, your job and the new employer do not differ from your current employment. Your daily tasks would be equally interesting.

Assume that, due to a change in tax law, from now on you will no longer be able to deduct commuting expenses between home and work as income-related expenses on your income tax return.

You learn that the employer has several branches and that it has already been determined where you will be working. However, the exact work location is not yet apparent from the offer. You will be shown a list of possible job locations, sorted in ascending order according to the distance to your place of residence. **Before you inquire about the actual job location, please consider for yourself at which job location you would just accept the offer under the stated conditions. To do this, click on "Accept job" in the table that will appear in a moment for the job locations where you would accept the job. Click "Reject job" at the job locations where you would no longer accept the job.**

Work location	Distance and travel time	Accept job	Reject job
Work location 1	Distance: 15 km Travel time: 20 min.	<input checked="" type="radio"/>	<input type="radio"/>
Work location 2	Distance: 20 km Travel time: 25 min.	<input checked="" type="radio"/>	<input type="radio"/>
Work location 3	Distance: 25 km Travel time: 30 min.	<input checked="" type="radio"/>	<input type="radio"/>
Work location 4	Distance: 30 km Travel time: 36 min.	<input checked="" type="radio"/>	<input type="radio"/>
Work location 5	Distance: 35 km Travel time: 41 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 6	Distance: 40 km Travel time: 47 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 7	Distance: 45 km Travel time: 52 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 8	Distance: 50 km Travel time: 58 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 9	Distance: 55 km Travel time: 63 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 10	Distance: 60 km Travel time: 69 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 11	Distance: 65 km Travel time: 74 min.	<input type="radio"/>	<input checked="" type="radio"/>

Next

## Task 1: Commute decision

You selected that you **would just accept the job** if the actual job location was a **maximum of 30 km or 36 minutes by car** from your current home.  
If this is correct and corresponds to your wish, please click on "Confirm" below the table. If you want to adjust your choice, you can return to the selection by clicking on the "Back" button.

Work location	Distance and travel time	Accept job	Reject job
Work location 1	Distance: 15 km Travel time: 20 min.	<input type="radio"/>	<input type="radio"/>
Work location 2	Distance: 20 km Travel time: 25 min.	<input checked="" type="radio"/>	<input type="radio"/>
Work location 3	Distance: 25 km Travel time: 30 min.	<input type="radio"/>	<input type="radio"/>
Work location 4	Distance: 30 km Travel time: 36 min.	<input checked="" type="radio"/>	<input type="radio"/>
Work location 5	Distance: 35 km Travel time: 41 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 6	Distance: 40 km Travel time: 47 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 7	Distance: 45 km Travel time: 52 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 8	Distance: 50 km Travel time: 58 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 9	Distance: 55 km Travel time: 63 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 10	Distance: 60 km Travel time: 69 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 11	Distance: 65 km Travel time: 74 min.	<input type="radio"/>	<input checked="" type="radio"/>

Back

Confirm

## Task 2: Move decision (instruction)

Now imagine the same job offer as in the previous question (permanent job, job comparable to current job), with the difference that you can now choose between commuting daily from your current place of residence and moving (main residence) to the respective place of work. Keep the following points in mind:

- The job requires you to visit your workplace every day according to your work week.
- The place of work can still only be reached by car from your current place of residence.
- You have the option of moving to a residential area close (3 km) to the new potential workplace. The location, amenities and price level of the properties there are comparable to your current living situation. The relocation costs would be reimbursed.
- Assume that - if applicable - your spouse or partner as well as your children have the same conditions locally (same job prospects, same school and childcare facilities, etc.).
- Your monthly net salary would be € 450.00 higher.

The tax law according to which you can no longer deduct travel expenses between home and work as income-related expenses in your income tax return continues to apply. if SUBSIDY = 0

The tax law, according to which you can deduct commuting costs at a rate of €0.48 per distance kilometer (one-way) per working day for the outward journey to your place of work as income-related expenses on your income tax return, continues to apply. if SUBSIDY > 0 and Tax complexity = High

Considering your personal tax rate, this results in an effective reimbursement of €0.12 per distance kilometer. if SUBSIDY > 0 and Tax complexity = Low

In a moment, you will again be presented with the list of possible job locations, sorted in ascending order by distance from your current residence. Now, please indicate the **distance at which you would prefer to move rather than commute daily**. Since you have already indicated that you would not commute for job locations 5 through 11, selecting the right option for these job locations means that you are turning down the job.

Next

## Comprehension test

Before the actual study begins, we would like you to answer the following comprehension questions. If anything is unclear, you can view the [instructions](#) as often as you like [by clicking on the "Back" button or the "Structure of the study" tab.](#)

**Please note that we will not compensate you if you have not read the instructions carefully and consequently do not answer the following questions conscientiously.**

What decision are you asked to make in this task?

- You are to decide which place of residence you like best.
- You are to decide when you prefer a move closer to work over a daily commute by car
- You are to decide by which means of transport you like to commute to the place of work.
- You are to decide whether the job offer is better than the one from the previous task

Back

Check

## Task 2: Move decision

Now please make your decision in the table below.  
**As a reminder, we show you the task text again.**

Now imagine the same job offer as in the previous question (permanent job, job comparable to current job), with the difference that you can now choose between commuting daily from your current place of residence and moving (main residence) to the respective place of work. Keep the following points in mind:

- The job requires you to visit your workplace every day according to your work week.
- The place of work can still only be reached by car from your current place of residence.
- You have the option of moving to a residential area close (3 km) to the new potential workplace. The location, amenities and price level of the properties there are comparable to your current living situation. The relocation costs would be reimbursed.
- Assume that - if applicable - your spouse or partner as well as your children have the same conditions locally (same job prospects, same school and childcare facilities, etc.).
- Your monthly net salary would be € 450.00 higher.

The tax regulation according to which you can no longer deduct travel expenses between home and work as income-related expenses in your income tax return continues to apply.

Below you will again see the list of possible job locations, sorted in ascending order by distance from your current home. In the table below, indicate the **distance at which you would prefer to move rather than commute daily**. Since you have already indicated that you would not commute for job locations 5 through 11, for these job locations, selecting the right option means that you are declining the job.

Work location	Distance and travel time	Move	Commute or refuse job
Work location 1	Distance: 15 km Travel time: 20 min.	<input type="radio"/>	<input type="radio"/>
Work location 2	Distance: 20 km Travel time: 25 min.	<input type="radio"/>	<input type="radio"/>
Work location 3	Distance: 25 km Travel time: 30 min.	<input type="radio"/>	<input type="radio"/>
Work location 4	Distance: 30 km Travel time: 36 min.	<input type="radio"/>	<input type="radio"/>
Work locations 5 to 11	Distance: 35 km to 65 km Travel time: 41 min. to 74 min.	<input type="radio"/>	<input type="radio"/>

Next

## Task 2: Move decision

Now please make your decision in the table below.  
**As a reminder, we show you the task text again.**

Now imagine the same job offer as in the previous question (permanent job, job comparable to current job), with the difference that you can now choose between commuting daily from your current place of residence and moving (main residence) to the respective place of work. Keep the following points in mind:

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- The place of work can still only be reached by car from your current place of residence.
- You have the option of moving to a residential area close (3 km) to the new potential workplace. The location, amenities and price level of the properties there are comparable to your current living situation. The relocation costs would be reimbursed.
- Assume that - if applicable - your spouse or partner as well as your children have the same conditions locally (same job prospects, same school and childcare facilities, etc.).
- Your monthly net salary would be € 450.00 higher.

The tax regulation according to which you can no longer deduct travel expenses between home and work as income-related expenses in your income tax return continues to apply.

Below you will again see the list of possible job locations, sorted in ascending order by distance from your current home. In the table below, indicate the **distance at which you would prefer to move rather than commute daily**. Since you have already indicated that you would not commute for job locations 5 through 11, for these job locations, selecting the right option means that you are declining the job.

Work location	Distance and travel time	Move	Commute or refuse job
Work location 1	Distance: 15 km Travel time: 20 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 2	Distance: 20 km Travel time: 25 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 3	Distance: 25 km Travel time: 30 min.	<input type="radio"/>	<input checked="" type="radio"/>
Work location 4	Distance: 30 km Travel time: 36 min.	<input checked="" type="radio"/>	<input type="radio"/>
Work locations 5 to 11	Distance: 35 km to 65 km Travel time: 41 min. to 74 min.	<input checked="" type="radio"/>	<input type="radio"/>

Next

## Task 6: Choice of residence

Imagine you have to move for whatever reason. For the characteristics listed below, please indicate on a scale from 1 (Unimportant) to 5 (Very important) how important each issue is to you when choosing a new place to live.

	1 Unimportant	2 Rather unimportant	3 Rather important	4 Important	5 Very important
Good infrastructure for motorists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proximity to family and/or friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proximity and diversity of cultural and other leisure activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good infrastructure of public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low population density	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proximity to nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proximity to shopping facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proximity and quality of local schools/daycare centers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Real estate/rent prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good infrastructure for pedestrians/bicyclists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low crime rate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proximity to the work location	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proximity to medical care facilities (general practitioners, specialists, hospitals, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attention question: Please select "5 Very important" here	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other:					
<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next

## C Questionnaire

Notation Example

Question # Asked only conditional on ---- Variable derived from Question #	Question text
	<input type="radio"/> Single-select multiple choice option [response value] <input type="checkbox"/> Multi-select multiple choice option [response value]

Entry questions 1/4

Question 1 MALE	What is your gender?
	<input type="radio"/> Female [0] <input type="radio"/> Male [1] <input type="radio"/> Other [2]
Question 2	In which year were you born? <a href="#">[Free text field]</a>
Question 3	In which federal state do you live (main residence)?
	<input type="radio"/> Baden-Wuerttemberg [0] <input type="radio"/> Bavaria [1] <input type="radio"/> Berlin [2] <input type="radio"/> Brandenburg [3] <input type="radio"/> Bremen [4] <input type="radio"/> Hamburg [5] <input type="radio"/> Hesse [6] <input type="radio"/> Mecklenburg-Western Pomerania [7] <input type="radio"/> Lower Saxony [8] <input type="radio"/> North Rhine-Westphalia [9] <input type="radio"/> Rhineland-Palatinate [10] <input type="radio"/> Saarland [11] <input type="radio"/> Saxony [12] <input type="radio"/> Saxony-Anhalt [13] <input type="radio"/> Schleswig-Holstein [14] <input type="radio"/> Thuringia [15]

Question 4	What is your profession (main job)?
	<ul style="list-style-type: none"> <li><input type="radio"/> Employee [0]</li> <li><input type="radio"/> Worker [1]</li> <li><input type="radio"/> Apprentice [2]</li> <li><input type="radio"/> Self-employed without employees (including freelancers, persons with a contract for work and services) [3].</li> <li><input type="radio"/> Self-employed with employees [4]</li> <li><input type="radio"/> Family worker (unpaid work) [5]</li> <li><input type="radio"/> Civil servant, judge, civil service employee [6]</li> <li><input type="radio"/> Regular soldier, professional soldier [7]</li> <li><input type="radio"/> Basic military/civilian service [8]</li> <li><input type="radio"/> Part-time jobber, 1-Euro jobber [9]</li> </ul>

Entry questions 2/4

Question 5 <b>UNIVERSITY</b>	What is your highest educational attainment? (If not listed, select a comparable degree).
	<ul style="list-style-type: none"> <li><input type="radio"/> Lower secondary school (Hauptschule) [1]</li> <li><input type="radio"/> Intermediate secondary school (Realschule) [2]</li> <li><input type="radio"/> Upper secondary school (Abitur) [3]</li> <li><input type="radio"/> Dual university/college of advanced vocational studies [4]</li> <li><input type="radio"/> University of applied sciences [5]</li> <li><input type="radio"/> University [6]</li> <li><input type="radio"/> Doctoral [7]</li> </ul>
Question 6 <b>MARRIED</b>	What is your marital status?
	<ul style="list-style-type: none"> <li><input type="radio"/> Single [0]</li> <li><input type="radio"/> Married [1]</li> <li><input type="radio"/> Divorced [2]</li> <li><input type="radio"/> Widowed [3]</li> <li><input type="radio"/> Registered civil partnership [4]</li> <li><input type="radio"/> Registered partner deceased [5]</li> <li><input type="radio"/> Registered civil partnership divorced [6]</li> </ul>
Question 7	Do you have children?
	<ul style="list-style-type: none"> <li><input type="radio"/> Yes [1]</li> <li><input type="radio"/> No [0]</li> </ul>
Question 8	Do you have a driver's license (car)?
	<ul style="list-style-type: none"> <li><input type="radio"/> Yes [1]</li> <li><input type="radio"/> No [0]</li> </ul>
Question 9	Do you work <u>exclusively</u> in a home office?
	<ul style="list-style-type: none"> <li><input type="radio"/> Yes [1]</li> <li><input type="radio"/> No [0]</li> </ul>

Entry questions 3/4

Question 10 if Question 6 = 1 or 5	Is your spouse/life partner employed?
	<ul style="list-style-type: none"> <li><input type="radio"/> Yes [1]</li> <li><input type="radio"/> No [0]</li> </ul>
Question 11 if Question 7 = 1 CHILD_IN_HH	Does at least one child live in your household?
	<ul style="list-style-type: none"> <li><input type="radio"/> Yes [1]</li> <li><input type="radio"/> No [0]</li> </ul>
Question 12 if Question 7 = 1	Is at least one of the children of school age?
	<ul style="list-style-type: none"> <li><input type="radio"/> Yes [1]</li> <li><input type="radio"/> No [0]</li> </ul>
Question 13	Please assign the company in which you work to an industry/sector.
	<ul style="list-style-type: none"> <li><input type="radio"/> Mining and extraction of crude oil, natural gas, stone, and earth [1].</li> <li><input type="radio"/> Manufacturing/production of goods (e.g., food, textiles, electronics, machinery, vehicles, petroleum processing, printed matter) [2].</li> <li><input type="radio"/> Repair and installation of machinery and equipment [3].</li> <li><input type="radio"/> Energy supply [4]</li> <li><input type="radio"/> Water supply; sewage and waste disposal, and pollution removal [5].</li> <li><input type="radio"/> Construction, building, and civil engineering [6]</li> <li><input type="radio"/> Wholesale and retail trade; repair of motor vehicles and motorcycles [7].</li> <li><input type="radio"/> Passenger and freight transport [8]</li> <li><input type="radio"/> Warehousing (also postal and courier services) [9].</li> <li><input type="radio"/> Hospitality/accommodation and food service [10]</li> <li><input type="radio"/> Information and communications (e.g., telecommunications, information technology services, media, and publishing) [11].</li> <li><input type="radio"/> Banks/financial and insurance service providers [12]</li> <li><input type="radio"/> Real estate and housing [13]</li> <li><input type="radio"/> Professional, scientific, and technical services (e.g., business, legal and tax consulting, auditing, architectural/engineering, research and development services, advertising, and market research) [14].</li> <li><input type="radio"/> Other economic services for companies and private individuals (e.g., rental of movable property, security services, building maintenance/cleaning, gardening/landscaping, travel agency/organizer, placement of workers, secretarial services, trade fair organizer) [15].</li> </ul>

	<ul style="list-style-type: none"> <li>○ Public administration, courts, public security and order, defense, social security [16].</li> <li>○ Education (e.g., colleges, schools, other schools (including driving schools), kindergartens) [17].</li> <li>○ Health care and social services (e.g., hospitals, medical practices, retirement, and nursing homes) [18].</li> <li>○ Other predominantly personal services; general repairs of goods and equipment (e.g., hair and beauty salon, laundry, solarium/sauna/bath, funeral) [19].</li> <li>○ Arts, entertainment, sports, and recreation (e.g., theaters, museums, writing activities, sports, and fitness centers) [20].</li> <li>○ Trade unions, associations, political parties and other interest groups, church and religious associations [21].</li> <li>○ Consulates, embassies, international and supranational organizations [22].</li> <li>○ Private households with employees [23]</li> </ul>
Question 14 TEMPORARY	Is your current employment contract fixed-term or permanent?
	<ul style="list-style-type: none"> <li>○ Fixed-term [1]</li> <li>○ Indefinite [0]</li> </ul>
Question 15 if Question 9 = 0	Could you theoretically perform part of your current job in your home office (regardless of whether your employer currently allows it)?
	<ul style="list-style-type: none"> <li>○ Yes [1]</li> <li>○ No [0]</li> </ul>
Question 16 INCOME	What is your monthly net income?
	<ul style="list-style-type: none"> <li>○ under 500 € [0]</li> <li>○ 500 - 1.000 € [1]</li> <li>○ 1.000 - 1.500 € [2]</li> <li>○ 1.500 - 2.000 € [3]</li> <li>○ 2.000 - 2.500 € [4]</li> <li>○ 2.500 - 3.000 € [5]</li> <li>○ 3.000 - 3.500 € [6]</li> <li>○ 3.500 - 4.000 € [7]</li> <li>○ 4.000 - 4.500 € [8]</li> <li>○ 4.500 - 5.000 € [9]</li> <li>○ 5.000 - 5.500 € [10]</li> <li>○ 5.500 - 6.000 € [11]</li> <li>○ 6.000 - 6.500 € [12]</li> <li>○ 6.500 - 7.000 € [13]</li> <li>○ 7.000 - 7.500 € [14]</li> <li>○ 7.500 - 8.000 € [15]</li> <li>○ 8.000 - 8.500 € [16]</li> <li>○ 8.500 - 9.000 € [17]</li> <li>○ 9.000 - 9.500 € [18]</li> <li>○ 9.500 - 10.000 € [19]</li> <li>○ over €10,000 [20]</li> </ul>

Question 17 if Question 6 = 1 or 5	What is the monthly net income of your spouse/partner?
	<input type="radio"/> no own income [0] <input type="radio"/> 5.000 - 5.500 € [11] <input type="radio"/> under 500 € [1] <input type="radio"/> 5.500 - 6.000 € [12] <input type="radio"/> 500 - 1.000 € [2] <input type="radio"/> 6.000 - 6.500 € [13] <input type="radio"/> 1.000 - 1.500 € [3] <input type="radio"/> 6.500 - 7.000 € [14] <input type="radio"/> 1.500 - 2.000 € [4] <input type="radio"/> 7.000 - 7.500 € [15] <input type="radio"/> 2.000 - 2.500 € [5] <input type="radio"/> 7.500 - 8.000 € [16] <input type="radio"/> 2.500 - 3.000 € [6] <input type="radio"/> 8.000 - 8.500 € [17] <input type="radio"/> 3.000 - 3.500 € [7] <input type="radio"/> 8.500 - 9.000 € [18] <input type="radio"/> 3.500 - 4.000 € [8] <input type="radio"/> 9.000 - 9.500 € [19] <input type="radio"/> 4.000 - 4.500 € [9] <input type="radio"/> 9.500 - 10.000 € [20] <input type="radio"/> 4.500 - 5.000 € [10] <input type="radio"/> over €10,000 [21]
Question 18 if Question 8 = 1	Do you own a car (including leased or company cars for private use)?
	<input type="radio"/> Yes [1] <input type="radio"/> No [0]
Question 19 if Question 9 = 0 CURR_COMMUTE	Which means of transport do you typically use to reach your workplace? If you use multiple means of transport on your way to work, indicate the means of transport you use for the longest part of your commute.
	<input type="radio"/> Car [1] <input type="radio"/> Local public transport (e.g., bus, streetcar, metro) [2]. <input type="radio"/> Regional local transport (e.g. RegionalExpress, Regional-Bahn) [3]. <input type="radio"/> Long-distance rail traffic (e.g., IC, ICE) [4] <input type="radio"/> Motorcycle/scooter [5] <input type="radio"/> Bicycle [6] <input type="radio"/> On foot [7] <input type="radio"/> Collective transportation by employers [8] <input type="radio"/> Other [9]

Entry questions 4/4

(displayed only if Question 9 = 0 or Question 18= 1)

Question 20 if Question 18 = 1	Is your car a company car that you are allowed to use privately?
	<input type="radio"/> Yes [1] <input type="radio"/> No [0]
Question 21 if Question 9 = 0 CURR_DISTANCE	What is the distance you typically travel between your residence and your workplace? (Please round to full kilometers) [Free text field].

Question 22 if Question 9 = 0 CURR_TRAVEL_TIME	How long does it usually take you to get from home to your workplace? (Indication in minutes) [Free text field].
Question 23 if Question 19 ≠ 1	How long would it take you to get from home to your workplace by car? [Free text field]
Question 24 if Question 19 = 9	Please indicate which means of transport you use exactly [Free text field]

Task 1: Commute decision (see Appendix B)

Task 2: Commute/move decision (see Appendix B)

Follow-up questions on commuting and/or moving decision

(displayed only if a subject rejected commuting and/or moving for all job sites).

Question 25 if all places of work have been rejected (commuting decision)	You indicated that you would not accept the proposed job, regardless of the actual job location, if you had to commute from your current residence each workday. Please indicate the reason(s) why you would not take the job if you had to commute from your current residence. (multiple answers possible) [multiple choice]
	<input type="checkbox"/> The distance or travel time is too long for all presented places of work <input type="checkbox"/> I do not want to/cannot go to work by car <input type="checkbox"/> I do not want to have to visit my place of work every working day <input type="checkbox"/> I do not want to change my employer <input type="checkbox"/> Other reason [free text field]
Question 26 if a move has always been rejected (move decision)	You indicated that you would commute for the proposed job but would not move closer to the work location, regardless of the actual location. Please indicate the reason(s) why moving would not be an option for you in this case. (multiple answers possible) [multiple choice]
	<input type="checkbox"/> I do not want to give up my current apartment/house <input type="checkbox"/> I cannot/would not like to move away due to private obligations (e.g., care for relatives) <input type="checkbox"/> I want to stay close to my friends/relatives <input type="checkbox"/> Other reason [free text field]

Question 27 if the job offer was always rejected (commute decision and re-location decision)	You have indicated that you would not accept the proposed job regardless of the actual job location and would not accept it even if you could move to the new job location instead of commuting from your current residence. Please indicate the reason(s) why the offer is not an option for you. (multiple answers possible) [multiple choice]
	<input type="checkbox"/> The distance or travel time is too long for all presented places of work <input type="checkbox"/> I do not want to/cannot go to work by car <input type="checkbox"/> I do not want to have to visit my place of work every working day <input type="checkbox"/> I do not want to change my employer <input type="checkbox"/> I do not want to give up my current apartment/house <input type="checkbox"/> I cannot/would not like to move away due to private obligations (e.g., care for relatives) <input type="checkbox"/> I want to stay close to my friends/relatives <input type="checkbox"/> Other reason [free text field]

Task 3: Choice of residence (see Appendix B)

Final questions 1/6

Question 28 AGE	How old are you? [Free text field]
Question 29	How long have you worked for your current employer?
	<input type="radio"/> less than 2 years [1] <input type="radio"/> between 2 and 5 years [2] <input type="radio"/> between 6 and 10 years [3] <input type="radio"/> more than 10 years [4]
Question 30	How satisfied are you with your current job?
	<input type="radio"/> dissatisfied [1] <input type="radio"/> rather dissatisfied [2] <input type="radio"/> neither satisfied nor dissatisfied [3] <input type="radio"/> rather satisfied [4] <input type="radio"/> satisfied [5]
Question 31 WORKHOURS	How many hours per week do you have to work according to your employment contract? [Free text field]
Question 32	How many days a week do you typically work?
	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7

Question 33 if Question 9 = 0 RELATIVE_HO-DAYS	How many days a week do you typically visit your workplace?
	<input type="radio"/> not at all [0] <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
Question 34 if Question 15 = 1 and Question 9 = 0 RELATIVE_HO-DAYS	How many days a week do you typically work from a home office?
	<input type="radio"/> not at all [0] <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
Question 35	How many vacation days are you entitled to per year? <a href="#">[Free text field]</a>

Final questions 2/6

(displayed only if Question 8 = 1 or Question 19  $\geq$  1 and  $\leq$ 6)

Question 36 if Question 8 = 1	Do you use car-sharing services?
	<input type="radio"/> Never [1] <input type="radio"/> Rarely [2] <input type="radio"/> Occasionally [3] <input type="radio"/> Frequently [4] <input type="radio"/> Very commonly [5]
Question 37 if Question 19 = 1	Do you carpool to and from work (e.g., with other colleagues)?
	<input type="radio"/> Never [1] <input type="radio"/> Rarely [2] <input type="radio"/> Occasionally [3] <input type="radio"/> Frequently [4] <input type="radio"/> Always [5]
Question 38 if Question 18 = 1	What type of drive does your car have?
	<input type="radio"/> Internal combustion engine (gasoline/diesel/gas) [1] <input type="radio"/> Electric motor [2] <input type="radio"/> Hybrid vehicle drivetrain [3] <input type="radio"/> Other [4]

Question 39 if Question 18 = 1	What type of vehicle is your car?
	<ul style="list-style-type: none"> <li><input type="radio"/> Mini car [1]</li> <li><input type="radio"/> Small car [2]</li> <li><input type="radio"/> Medium car [3]</li> <li><input type="radio"/> Large car [4]</li> <li><input type="radio"/> Executive car [5]</li> <li><input type="radio"/> Luxury car [6]</li> <li><input type="radio"/> Multipurpose, sports car [7]</li> </ul>
Question 40 if Question 18 = 1	How old is your car?
	<ul style="list-style-type: none"> <li><input type="radio"/> under 1 year [1]</li> <li><input type="radio"/> 1 to under 3 years [2]</li> <li><input type="radio"/> 3 to under 6 years [3]</li> <li><input type="radio"/> 6 to under 9 years [4]</li> <li><input type="radio"/> 9 to under 12 years [5]</li> <li><input type="radio"/> older than 12 years [6]</li> </ul>
Question 41 if Question 18 = 1 and Question 20 = 0	Does your employer contribute to the costs of travel between home and work?
	<ul style="list-style-type: none"> <li><input type="radio"/> Yes [1]</li> <li><input type="radio"/> No [0]</li> </ul>
Question 42 if Question 18 = 1 and Question 20 = 1	Does your employer bear all company car costs (including fuel, etc.)?
	<ul style="list-style-type: none"> <li><input type="radio"/> Yes [1]</li> <li><input type="radio"/> No [0]</li> </ul>
Question 43 if Question 18 = 1 or Question 19 = 1	How much do you estimate your private car costs per kilometer (after deducting employer subsidies, if applicable)? [Free text field]
Question 44 if Question 19 = 2, 3 or 4	What is your monthly cost for public transportation (after deducting employer subsidies, if applicable)? [Free text field]
Question 45 if Question 19 = 5	How much do you estimate the costs you incur privately from your motorcycle/scooter per kilometer (after deducting employer subsidies, if applicable)? [Free text field]

Final questions 3/6

(displayed only if Question 43 was asked)

Question 46	You have indicated that the travel costs with your car are [X,XX] € per kilometer. Which of the following costs did you include in your indication? (multiple answers possible)
	<input type="checkbox"/> Fuel costs (for e-vehicles: electricity costs) <input type="checkbox"/> Other operating costs (oil, AdBlue, car wash and maintenance, etc.) <input type="checkbox"/> Fixed costs (insurance, taxes, inspection decal, parking space rent, etc.) <input type="checkbox"/> Workshop costs (inspection, wear and tear repairs, tire wear, etc.) <input type="checkbox"/> Loss of value due to wear and tear <input type="checkbox"/> Leasing/rental fees <input type="checkbox"/> Other [free text field]

Final questions 4/6

Question 47 HOUSE_OWNER	What type of property do you live in?
	<input type="radio"/> Apartment for rent in an apartment building [1] <input type="radio"/> Condominium in apartment building [2] <input type="radio"/> Single-family house for rent (also terraced house/ semi-detached house) [3]. <input type="radio"/> Owned single-family house (also terraced house/ semi-detached house) [4]. <input type="radio"/> Other [5]
Question 48 if Question 6 ≠ 2 and 5	Do you live with a partner with whom you are neither married nor in a registered same-sex civil partnership?
	<input type="radio"/> Yes [1] <input type="radio"/> No [0]
Question 49 CITY	What is the best way to categorize your living environment?
	<input type="radio"/> Big city [1] <input type="radio"/> Small town [2] <input type="radio"/> Surroundings big city [3] <input type="radio"/> Surroundings small town [4] <input type="radio"/> Village [5] <input type="radio"/> Isolated house in the country [6]
Question 50	What is the postal code of your place of residence? [Free text field]
Question 51	How long have you lived at your current home address?
	<input type="radio"/> less than 2 years [1] <input type="radio"/> between 2 and 5 years [2] <input type="radio"/> between 6 and 10 years [3] <input type="radio"/> more than 10 years [4]

Question 52	How satisfied are you with your current housing situation?
	<input type="radio"/> dissatisfied [1] <input type="radio"/> rather dissatisfied [2] <input type="radio"/> neither satisfied nor dissatisfied [3] <input type="radio"/> rather satisfied [4] <input type="radio"/> satisfied [5]

#### Final questions 5/6

Question 53	Have you filed at least one income tax return in the last three years?
	<input type="radio"/> Yes [1] <input type="radio"/> No [0]
Question 54 if Question 47 = 1 or 3	You have indicated that you live in rented accommodation. What is your current monthly rent?
	<input type="radio"/> Less than 500 € [1] <input type="radio"/> 500 to under 1,000 € [2] <input type="radio"/> 1,000 to under 1,500 € [3] <input type="radio"/> 1,500 to under €2,000 [4] <input type="radio"/> 2,000 € or more [5]

#### Final questions 6/6

Question 55 if Question 53 = 1	Were your income-related expenses higher than the lump sum of € 1,000 when you filed your last tax return?
	<input type="radio"/> Yes [1] <input type="radio"/> No [0] <input type="radio"/> Don't know [-1]
Question 56	Imagine that your gross annual salary was to increase by €100. How much do you estimate the income tax due on this (in euros, excluding social security contributions)? <a href="#">[Free text field]</a>
Question 57	How would you rate your tax knowledge?
	<input type="radio"/> No knowledge [1] <input type="radio"/> Little knowledge [2] <input type="radio"/> Average knowledge [3] <input type="radio"/> Good knowledge [4] <input type="radio"/> Expert [5]
Question 58 if Question 53 = 1	When preparing my income tax return, I...
	<input type="radio"/> do not use external help [1] <input type="radio"/> get help from a tax advisor [2] <input type="radio"/> get help from a wage tax assistance association [3]. <input type="radio"/> get help from a person in my household [4]. <input type="radio"/> get help from a member of the family [5]. <input type="radio"/> get help from an acquaintance [6]

Question 59	<p>According to the current legal situation, from the 21st distance kilometer, the rate for commuting expense deductions increases from €0.30 to €0.35 per kilometer for commutes between the home and the first place of work. The legislator plans to raise this increased value from the current €0.35 to €0.38. Considering your current situation, please indicate (estimate) what additional tax relief will result for you in 2022 from the planned change. (Indication in euros)</p> <p><a href="#">[Free text field]</a></p>
Question 60	<p>The legislature plans to amend the Energy Tax Act to temporarily reduce the tax burden on fuels to cushion the impact of higher fuel prices. This could reduce the price of gasoline by up to €0.30 per liter and the price of diesel by up to €0.14 from June 1, 2022, to August 31, 2022.</p> <p>I consider this measure to be reasonable.</p>
	<ul style="list-style-type: none"> <li><input type="radio"/> Disagree [1]</li> <li><input type="radio"/> Rather Disagree [2]</li> <li><input type="radio"/> Neither agree nor disagree [3].</li> <li><input type="radio"/> Rather Agree [4]</li> <li><input type="radio"/> Strongly Agree [5]</li> </ul>
Question 61	<p>By amending the Income Tax Act in 2022, the legislator plans to grant a one-time payment of (gross) €300 to all actively employed individuals (employees, salaried employees, self-employed persons) to cushion the increase in energy costs. This amount of €300 is taxable and, in the case of employees, is to be paid out by the employer together with the regular wage in September 2022.</p> <p>I consider this measure to be reasonable.</p>
	<ul style="list-style-type: none"> <li><input type="radio"/> Disagree [1]</li> <li><input type="radio"/> Rather Disagree [2]</li> <li><input type="radio"/> Neither agree nor disagree [3].</li> <li><input type="radio"/> Rather Agree [4]</li> <li><input type="radio"/> Strongly Agree [5]</li> </ul>
Question 62	<p>From June to August 2022, the legislature plans to provide an additional temporary subsidy to enable a nationwide ticket for public transport at a price of €9 per month.</p> <p>I consider this measure to be reasonable.</p>
	<ul style="list-style-type: none"> <li><input type="radio"/> Disagree [1]</li> <li><input type="radio"/> Rather Disagree [2]</li> <li><input type="radio"/> Neither agree nor disagree [3].</li> <li><input type="radio"/> Rather Agree [4]</li> <li><input type="radio"/> Strongly Agree [5]</li> </ul>