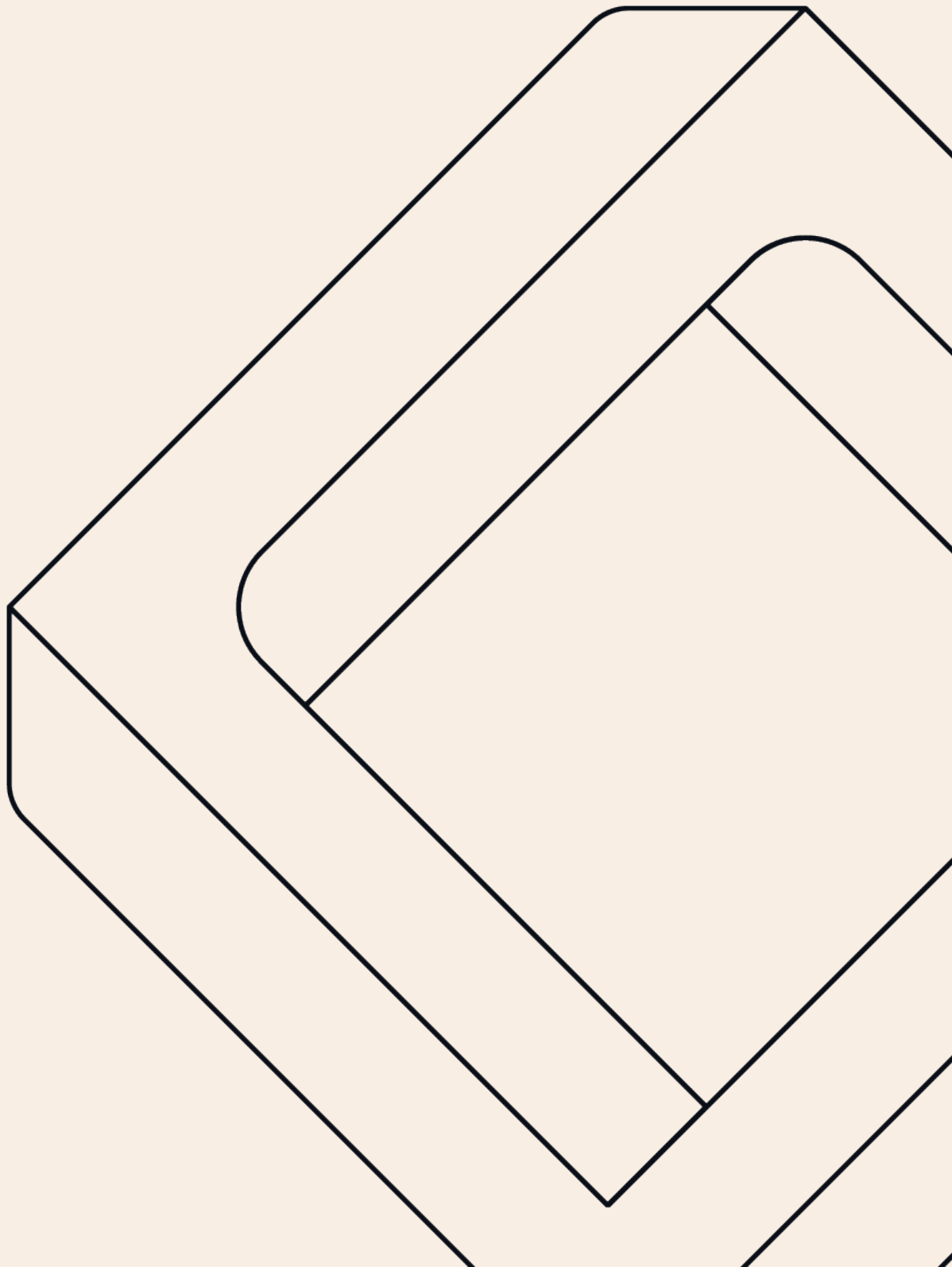


# Understanding geographic, demographic, and micro-level influences on travel choices – a discrete choice experiment: Technical annexe

July 2024



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## Data collection and analysis methods

### Construction of the DCE choice sets

A set of 32 discrete choice sets were created with a rotation design (developed from an orthogonal main-effects array) using the *Support.CEs* package in R statistical software (Aizaki, 2015). This design varied the levels of all five attributes between the optional routes and between choice sets. To avoid overburdening participants, the design was split into two 16-question blocks. Each participant answered the questions in one of the blocks (allocated at random). To control for order effects, question presentation order and screen placement of options (left- or right-hand side) were randomised between participants.

### Statistical models

The primary results of the study involve a full-sample and several subsample main effects models showing the relative weight each attribute has on participants' preferences. Verian analysed DCE responses using mixed (or random parameters) logit models run using the *mlogit* package in R statistical software (Croissant, 2020).

The models define attributes as random parameters – each with a normal distribution – to allow for preference heterogeneity across participants (Hole & Kolstad, 2012). The models allow for correlations between random parameters using Choleski decomposition because a likelihood ratio test indicated that this significantly improved fit, relative to a non-correlated model.

The resulting models include parameters for the following:

- the model alternative specific constant, representing the systematic preference for travelling via any of the routes available,
- a dummy parameter for each mode of transport, except walking/wheeling which serves as the reference mode to which others are compared,
- a dummy parameter for high chance of delays (with low chance of delays being the reference level),
- three continuous predictors representing the effects of cost, travel time, and additional time on travel preferences,
- and a random error term representing the non-systematic component in choice.

For dummy parameters, coefficients' signs reflect whether a level has a positive or a negative effect on utility compared to the reference level; further, their absolute values indicate their relative importance in selection, again compared to the reference level. For continuous predictors, coefficients' signs reflect whether a higher value of the attribute has a positive or a negative effect on utility and their absolute values indicate their relative size of impact on utility. To facilitate ease of interpretation, the coefficients were exponentiated to generate odds ratios. Verian used the conventional threshold of  $\alpha = 0.05$  to determine statistical significance of the model parameters.

As specified in the trial protocol, Verian started with the conditional/multinomial logistic regression models, which were the most widely used analytic techniques for discrete choice experiments. However, a Hausmann-McFadden test determined that one of its key theoretical assumptions – the assumption of irrelevant alternatives – had not been met (Hausman & McFadden, 1984). Therefore, Verian turned to the alternative technique – mixed (or random parameters) logit models, which allows for heterogeneity in preference between individuals and does not exhibit independence from irrelevant alternatives (Train, 2009).

In addition to the full sample model pooling participants across all arms, Verian generated a series of subsample models, splitting across the three contextual factors, the demographic factor gender, as well as overlying the contextual factors and gender.

As a robustness check, Verian also ran a hierarchical Bayes model to test the effects of contextual factors on modal preferences. Hierarchical Bayes models use the same choice-probability function as the main mixed logit analysis to estimate preference weights for each participant as an individual, rather than those for the whole population. This analysis shows out the heterogeneity produced by varying trip context between participants. If the two analyses produce similar findings, then we can be confident that the results are not a consequence of arbitrary decisions on analysis methods. For more information on how Hierarchical Bayes models for DCEs work, see Hauber et al. (2016).

### **Simulating preferred mode shares**

To estimate the proportion of people who would choose a given mode among a set of specified routes (each with a different mode), Verian applied the formula  $e^{u_i} / \sum_j e^{u_j}$  to simulate the choice probability for a decision maker, where  $u_i$  is systematic component of the utility of choosing a specified route  $i$  based on the estimated model. To generate each set of preferred mode shares, Verian simulated the choice probabilities for a sample of  $n=1,000,000$  decision makers, taking into account the variation in the random parameters. The simulated shares were produced by taking the average with equal weights for each draw.

Table 1 shows the eight alternative routes for the baseline scenario. Cost, travel time, and additional/waiting time were set at the mid-point of the two middle values for that mode, and chance of delays was set to low for all modes.

**Table 1:** Attribute values for the routes specified under the baseline scenario

<b>Mode</b>	<b>Travel time</b>	<b>Additional time</b>	<b>Cost</b>
Walk / Wheel	40.5	0	0
Private car	15	7.5	7.5
Taxi	15	7.5	7.5
Car club	15	7.5	9
Bus	30	7.5	3
Rail	20	7.5	3
Private cycle	17.5	6	0
Rental cycle	17.5	7.5	3

Attribute values of the eight routes specified under Scenario 1 were the same as under the baseline scenario, expect that the cost of bus and rail routes went down from £3 to £1.5. Values of the eight routes specified under Scenario 2 were the same as under the baseline scenario, expect that the additional time for car club and rental cycle went down from 7.5 minutes to 3 minutes.

## DCE attribute levels

This section provides the full list of the numeric values for travel time, additional time, and costs for each mode of transport used in the DCE and the sources from which they were derived. The values were generated to be realistic for 'a journey to visit your friend at their home' for each mode, for participants across England.

### Travel time

Table 2 provides the values of travel time for each mode used in the DCE. To derive these numbers, Verian looked at the latest DfT Journey Time Estimates which simulated the average minimum travel time to reach the nearest key services by mode of travel in different regions of England (Department for Transport, 2021). The simulation estimated the travel time (excluding additional time) of Public Transport, Walking, Cycling, and Car to be approximately 12, 10, 5, 27 minutes respectively.<sup>1</sup> These values were used as the basis for the 'Low' level in the DCE for Bus, Walk/Wheel, the two cycling modes (Private cycle, Rental cycle), and the three car modes (Private car, Car club, Taxi). The value for the mode Rail was derived by adjusting the value for the mode Bus to account for the differences in speed. The higher values were generated by scaling up the values of the 'Low' level, for the two medium levels to represent realistic values and the 'High' level to represent more extreme but still plausible cases. All values for travel time were rounded to integers to reflect how time is typically presented in journey planner apps.

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<sup>1</sup> The estimates were derived from the averages of the numbers in Column N 'Average of 8 services' in *Table JTS0103: Average minimum travel time to reach the nearest key services by mode of travel, region, England, 2019*, weighted by region quotas used in the current study. More details of the estimates can be found here [Journey time statistics, notes and definitions: 2019 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/journey-time-statistics).

**Table 2:** Values for travel time (mins) by mode used in the DCE

<b>Mode</b>	<b>Low</b>	<b>Medium-Low</b>	<b>Medium-High</b>	<b>High</b>
Walk / Wheel	27	36	45	54
Private car	5	10	20	30
Taxi	5	10	20	30
Car club	5	10	20	30
Bus	12	24	36	48
Rail	8	16	24	32
Private cycle	10	15	20	30
Rental cycle	10	15	20	30

### **Additional time**

Table 3 provides the values of additional time for each mode used in the DCE. Walk/Wheel does not involve additional time, therefore it was always set to zero. Additional time for Bus, Rail, and Taxi included mainly the waiting time. For private car and private cycle, additional time accounted mainly for parking, while for the two shared modes – car club and rental cycle, it also took into account the hiring time. DfT Journey Time Estimates assumed 5-minute additional time for parking and for waiting for public transportation, which was used as the base for the 'Medium-low' level for all modes except for Walk/Wheel. The values for the other levels were then derived by scaling up/down this level to represent a range of possible and extreme cases. All values for additional time were rounded to integers to reflect how time is typically presented in journey planner apps.

**Table 3:** Values for additional time (mins) by mode used in the DCE

Mode	Low	Medium-Low	Medium-High	High
Walk / Wheel	0	0	0	0
Private car	2	5	10	20
Taxi	2	5	10	20
Car club	2	5	10	20
Bus	2	5	10	20
Rail	2	5	10	20
Private cycle	2	5	7	10
Rental cycle	2	5	10	20

### Travel cost

Table 4 provides the values of travel cost for each mode used in the DCE. Walk/Wheel and Private cycle were considered to be free always. Bus, Rail, and Taxi required a fare, Rental cycle required a rental fee, Car club incurred a rental fee as well as parking fees, and Private car involved the costs of fuel, charges and parking fees. Various sources of data were referred to when deriving the range of costs for each mode.<sup>2</sup>

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<sup>2</sup> Parking fee: <https://www.citybaseapartments.com/blog/uk-car-park-index/>;  
Fuel: <https://www.nimblefins.co.uk/cheap-car-insurance/average-cost-run-car-uk/>;  
Taxi fare: <https://www.regtransfers.co.uk/fungames/uk-taxi-price-index/>;  
Rental fee for car club: <https://www.zipcar.com/en-gb/car-hire/daily-hourly>  
and <https://www.enterpriseclub.co.uk/gb/en/programs/regions/south-east-england/london/rate-plans.html?ratePlanName=enhanced-plan;>  
Bus fare: [bus04i.ods \(live.com\)](https://www.live.com/buses/04i)  
Rail fare: <https://www.standard.co.uk/news/london/tube-overground-elizabeth-line-tfl-how-much-cost-travelcards-scrapped-b1112899.html#:~:text=Like%20the%20Tube%2C%20the%20cost%20of%20the%20Overground,of%20%C2%A314.90%20and%20a%20weekly%20cap%20of%20%C2%A374.40.>  
and  
<https://www.thetrainline.com/book/results?origin=urn%3Atrainline%3Ageneric%3Aloc%3ATRU3540gb&destination=urn%3Atrainline%3Ageneric%3Aloc%3AFMT3591gb&outwardDate=2024-01-05T17%3A00%3A00&outwardDateType=departAfter&journeySearchType=single&passengers%5B%5D=1994-01-4&directSearch=false&splitSave=true&selectedOutward=oYDxulYmLJc%3D%3Ah9Fn3U9BT1A%3D;>  
Rental cycle: <https://gigworker.com/limebike-pricing/>.



**Table 4:** Values for cost (£) by mode used in the DCE

<b>Mode</b>	<b>Low</b>	<b>Medium-Low</b>	<b>Medium-High</b>	<b>High</b>
Walk / Wheel	0	0	0	0
Private car	0.25	5	10	15
Taxi	2.5	5	10	20
Car club	3	6	12	18
Bus	0	2	4	6
Rail	0	2	4	8
Private cycle	0	0	0	0
Rental cycle	0	2	4	8

## Notes on benchmarking exercise

The benchmarking exercise aimed to compare the predicted preferred mode shares from the discrete choice experiment (DCE) to the estimates from the National Travel Survey (NTS), a reliable source of data on travel behaviour in England. The benchmarking exercise helped indicate to what extent the stated preferences as elicited by the DCE might differ from revealed preferences and behaviour under real world constraints, as recorded by the NTS. A main benchmarking exercise and three additional exercises were carried out.

### Main benchmarking exercise

The main benchmarking exercise calculated the real-life mode shares using the average number by main mode for leisure trips in the NTS data,<sup>3</sup> as it most closely matched the experiment's setting among the categories available in the NTS data.<sup>4</sup> The benchmarks were calculated using the most recent available dataset (2022), but an additional set of benchmarks were also calculated using the numbers for the most recent *pre-Covid* year (2019) to check the robustness of the benchmarks against the change of data collection methods in 2020-2022 as noted in the NTS data table.

The modes in the NTS data were mapped onto the modes in the study as shown in Table 5 below. Two modes – car club and rental cycle - were not explicitly included under any of the categories provided in the NTS data, and were excluded from the main benchmarking exercise. A number of modes in the NTS data were not included in the benchmarking exercise: Car or van passenger,<sup>5</sup> Motorcycle, Other private transport,<sup>6</sup> Non-local bus, Surface rail, and Other public transport<sup>7</sup>.

Mode shares were calculated as the number of trips by the mapped mode(s) as a proportion of the total count of all modes included in the benchmarking exercise. If a number was marked as '[low]', it was treated as 0.

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<sup>3</sup><https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fassets.publishing.service.gov.uk%2Fmedia%2F64e8b0257af6dd001368efd4%2Fnts0409.ods&wdOrigin=BROWSELINK>

<sup>4</sup> Leisure purpose: Visit friends at home and elsewhere, entertainment, sport, holiday and day trip.

<sup>5</sup> This was not included because in the study both private car and car club referred specifically to driving a vehicle.

<sup>6</sup> Other private transport includes electric scooters, mobility scooters, motorised wheelchairs, ambulances, hospital cars, caravans, dormobiles, quad bikes, minibuses and private hire bus (including school bus).

<sup>7</sup> Other public transport includes air, ferries and light rail.

**Table 5:** Mapping of modes in the study and in the NTS data

Mode in the study	Mode in the NTS data
Walk/Wheel	Walk <sup>8</sup>
Private cycle	Pedal cycle <sup>9</sup>
Private car	Car or van driver
Bus	Bus in London + Other local bus
Rail	London Underground
Taxi	Taxi or minicab

The predicted preferred mode shares were simulated based on the full-sample mixed-logit analysis model for a set of six routes, each with one of the six modes included in the main benchmarking exercise. The method of simulating the preferred mode shares was the same as described in Section 1 of this Technical Annex. The attribute values for the six routes were provided by DfT based on the average trip characteristics as recorded within the NTS (see Table 6).

**Table 6:** Attribute values for the six routes included in the main benchmarking exercise

Mode	Travel time	Additional time	Cost	Chance of delays <sup>10</sup>
Walk/Wheel	22	0	0	Low
Private Cycle	25	5	0	Low
Private Car	21	5	0.25	Low
Bus	39	5	2.47	Low
Rail	60	5	10	Low
Taxi	23	5	18	Low

### Additional benchmarking exercises

The first additional benchmarking exercise explored a different mapping of modes in the study and in the NTS data: car club was combined with private car to map onto 'Car or van driver' in the NTS data, and rental cycle was combined with private cycle to map onto 'Pedal cycle' in the NTS data.

The benchmark shares were the same as in the main benchmarking exercise. The predicted preferred mode shares were simulated based on the full-sample mixed-logit analysis model for a set of eight routes including the two shared modes. The attribute values for the routes with the six modes included in the main benchmarking

<sup>8</sup> Walk includes all travel on foot. It is also used when respondents ride in non-motorised wheelchairs, prams or pushchairs, as well as when they ride on toy pedal cycles, roller-skates, skateboards, non-motorised scooters, or when they jog. For example, children who accompany their parents on a visit to the shops on toy pedal cycles (where the parents are walking) are coded as having walked there.

<sup>9</sup> E-bikes are included within the main mode of pedal cycle.

<sup>10</sup> Chance of delay were set to low for all routes as it was expected that most real-world trips would not be at high chance of additional delay.

exercise remained the same and the attribute values for the two extra routes with the shares modes were provided by DfT, as shown in Table 7.

**Table 7:** Attribute values for the two routes with shared modes included in the additional benchmarking exercise

Mode	Travel time	Additional time	Cost	Chance of delays
Car Club	21	5	6.30	Low
Rental Cycle	25	5	6.25	Low

Two more additional benchmarking exercises were carried out for urban and rural areas separately. The real-life mode shares were calculated using the average number of trips by main mode and rural-urban classification of residence in the NTS data,<sup>11</sup> as data for leisure trips were not available for rural-urban classification.

The mapping of the modes in the study and the NTS data was the same as for the main benchmarking exercise, but rail was not included as it was not possible to determine representative attribute values for rail for rural and urban areas. The predicted preferred mode shares were simulated based on the full-sample mixed-logit analysis model for a set of five routes, each with one of the five modes included. The attribute values for the five routes were provided by DfT based on the average trip characteristics as recorded within the NTS data for urban and rural areas respectively (see Table 8 and Table 9).

**Table 8:** Attribute values for the five routes included in the additional benchmarking exercise for urban areas

Mode	Travel time	Additional time	Cost	Chance of delays
Walk/Wheel	23	0	0	Low
Private Cycle	26	5	0	Low
Private Car	21	5	0.25	Low
Bus	40	5	2.42	Low
Taxi	23	5	18	Low

11

<https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fassets.publishing.service.gov.uk%2Fmedia%2F64e8b0ae7af6dd000d68efd3%2Fnts9903.ods&wdOrigin=BROWSELINK>

**Table 9:** Attribute values for the five routes included in the additional benchmarking exercise for rural areas

<b>Mode</b>	<b>Travel time</b>	<b>Additional time</b>	<b>Cost</b>	<b>Chance of delays</b>
Walk/Wheel	22	0	0	Low
Private Cycle	24	5	0	Low
Private Car	21	5	0.25	Low
Bus	40	5	2.66	Low
Taxi	22	5	18	Low

## Questionnaire

### WELCOME

ASK ALL  
SINGLE CODE

Thank you for your interest in this study. Please read the information below before deciding whether to take part.

### About this study

- This study is about travel preferences. It will take about 15 minutes to complete. Please make sure you have enough time to complete it in one go, without interruption.
- As part of this research, we are asking for your: age, gender, geographical location, educational qualifications, employment status, occupation, home ownership, and vehicle ownership.
- This study also contains questions about sensitive topics, such as ethnicity and health status (disability status), that might make some people uncomfortable. If answering questions about these topics makes you uncomfortable, feel free to close the survey now or at any point during the survey.
- This data is collected because we want to understand how these factors influence transport choices.

### Do I have to take part?

- No, taking part in this study is voluntary. You can withdraw at any point before submitting your answers by closing this window, and you do not have to give a reason for doing so.

### What will happen with my data?

- All data collected in this study will be kept confidential in line with our privacy policy, and there is no way to link your identity with your answers. For more information, see our [Privacy Policy](#).

If you do not wish to proceed, please opt out below. Are you happy to continue?

- 1 Yes, I am happy to proceed with the study
- 2 No, I do not want to take part

**SCRIPTER NOTES:** Terminate if WELCOME = 2 “No, I do not want to take part”.

### AGE<sup>12</sup>

ASK ALL  
NUMERIC INPUT

---

<sup>12</sup> This question was created based on [Age and date of birth harmonised standard – Government Analysis Function \(civilservice.gov.uk\)](#)

What is your age?

SCRIPTER NOTES: Terminate if AGE < 18 or > 65. Please restrict to integers only.

**GENDER**

ASK ALL

SINGLE CODE

What best describes your gender?

- 1 Female
- 2 Male
- 3 Non-binary or gender fluid
- 99 Prefer not to say

**REGION**

ASK ALL

SINGLE CODE

Where do you live?

- 1 England
- 2 Scotland
- 3 Wales
- 4 Northern Ireland
- 5 Somewhere else

SCRIPTER NOTES: Terminate if REGION != 1 "England".

**REGION\_ENG**

ASK IF REGION = 1 "England"

SINGLE CODE

In which part of England do you live?

- 1 North East
- 2 North West
- 3 Yorkshire & The Humber
- 4 East Midlands
- 5 West Midlands
- 6 East of England
- 7 London
- 8 South East
- 9 South West



## SEG

ASK ALL

SINGLE CODE

Which of the following groups does the Chief Income Earner in your household belong to? The Chief Income Earner in the household is the person with the largest income, however this income is obtained.

- If the Chief Income Earner is retired and has an occupational pension, please select according to the previous occupation
- If the Chief Income Earner is not in paid employment and has been out of work for less than 6 months, please select according to previous occupation

- 1 Semi or unskilled manual worker (e.g. manual jobs that require no special training or qualifications. For example, manual workers, apprentices, caretakers, cleaners, nursery school assistant, park keeper, non-HGV driver, shop assistant etc.)
- 2 Skilled manual worker (e.g. skilled bricklayer, carpenter, plumber, painter, bus / ambulance driver, HGV driver, unqualified assistant teacher, AA patrolman, pub / bar worker etc.)
- 3 Supervisory or clerical / Junior managerial / Professional / administrator (e.g. office worker, student doctor, foreman with 25+ employees, sales person, student teachers etc.)
- 4 Intermediate managerial / Professional / Administrative (e.g. newly qualified (under 3 years) doctor, solicitor, board director small organisation, middle manager in large organisation, principal officer in civil service / local government etc.)
- 5 Higher managerial / Professional / Administrative (e.g. established doctor, solicitor, board director in large organisation (200+ employees), top level civil servant / public service employee, headmaster / mistress etc.)
- 6 Student
- 7 Retired and living on state pension only
- 8 Unemployed (for over 6 months) or not working due to long term sickness

**SCRIPTER NOTES:** Please generate the variable SEG\_QUOTA for the SEG quota as follows:

SEG\_QUOTA = A if SEG = 5  
= B if SEG = 4  
= C1 if SEG = 3 OR 6  
= C2 if SEG = 2  
= D if SEG = 1  
= E if SEG = 7 OR 8

## **ETHNICITY**<sup>13</sup>

ASK ALL

SINGLE CODE

What is your ethnic group?

- 1 White
- 2 Mixed / Multiple ethnic groups
- 3 Asian / Asian British
- 4 Black / African / Caribbean / Black British
- 5 Other ethnic group
- 99 Prefer not to say

## **URBAN**

ASK ALL

SINGLE CODE

Would you describe the place where you live as...

- 1 A big city
- 2 The suburbs or outskirts of a big city
- 3 A small city or town
- 4 A country village
- 5 A farm or home in the country
- 6 Other
- 88 Don't know
- 99 Prefer not to say

---

<sup>13</sup> This question was created based on [Ethnicity harmonised standard – Government Analysis Function \(civilservice.gov.uk\)](https://civilservice.gov.uk)

## INTRO1

SHOW TO ALL

NO INPUT

On the next page, we will describe an imaginary scenario in which you want to make a short journey. This scenario will stay the same throughout the experiment.

Then, we will show you a series of choices between pairs of alternative routes.

Imagine you are making the journey for real. Your job is to choose between the options presented on each page.

The two routes available on each page are the only ones you can choose. If given the two routes you would prefer not to travel, please select 'Neither route and won't travel'.

Only use the information on the options page to make your decision. You don't need to worry about the previous choices you made.

We are interested in your preferences. There are no right or wrong answers.

### SCRIPTER NOTES:

Please randomise the participants to groups 1 to 32 using the least-filled algorithm and record the group in the internal variable GROUP.

Please also generate the following hidden variables based on GROUP:

ARM = 1 if GROUP = 1 OR 9 OR 17 OR 25  
= 2 if GROUP = 2 OR 10 OR 18 OR 26  
= 3 if GROUP = 3 OR 11 OR 19 OR 27  
= 4 if GROUP = 4 OR 12 OR 20 OR 28  
= 5 if GROUP = 5 OR 13 OR 21 OR 29  
= 6 if GROUP = 6 OR 14 OR 22 OR 30  
= 7 if GROUP = 7 OR 15 OR 23 OR 31  
= 8 if GROUP = 8 OR 16 OR 24 OR 32

BLOCK = 1 if GROUP < 17  
= 2 if GROUP > 16

LEFT = 1 if GROUP < 9 OR GROUP > 24  
= 2 otherwise

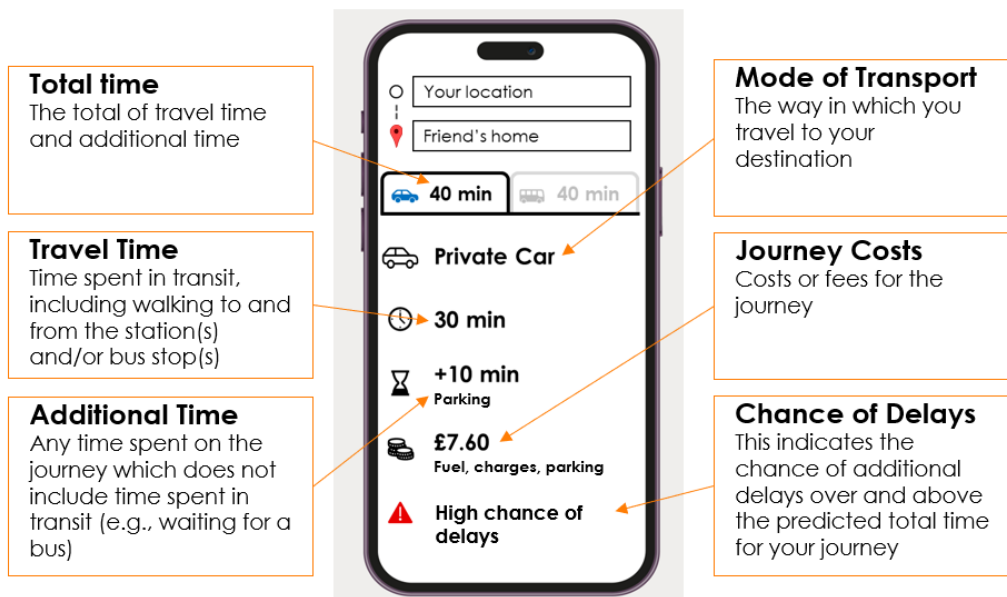
Please find the value for ARM, BLOCK, and LEFT for each GROUP in the table below. The randomisation should make sure the arms and blocks are properly balanced.

ARM	BLOCK = 1 & LEFT = 1	BLOCK = 1 & LEFT = 2	BLOCK = 2 & LEFT = 2	BLOCK = 2 & LEFT = 1
1	GROUP 1	GROUP 9	GROUP 17	GROUP 25
2	GROUP 2	GROUP 10	GROUP 18	GROUP 26
3	GROUP 3	GROUP 11	GROUP 19	GROUP 27
4	GROUP 4	GROUP 12	GROUP 20	GROUP 28
5	GROUP 5	GROUP 13	GROUP 21	GROUP 29
6	GROUP 6	GROUP 14	GROUP 22	GROUP 30
7	GROUP 7	GROUP 15	GROUP 23	GROUP 31
8	GROUP 8	GROUP 16	GROUP 24	GROUP 32

## INTRO2

SHOW TO ALL  
NO INPUT

We will provide details about the journey in a picture of a journey planner app, like the one below. Please read through the explanation of each element before continuing.



## INTRO3

SHOW TO ALL

NO INPUT

You may be offered routes using different modes of travel. Please read through the different modes below to ensure you are familiar with all of them.



### Car Club

Driving a vehicle hired for this journey only through an app (e.g. [ZipCar](#)) or using a membership card.



### Private Car

Driving using a car or van that you privately own or have continuous access to.



### Rental Cycle

Cycling using a pedal cycle (including e-cycles) hired for this journey (e.g. through services like Lime Bike).



### Private Cycle

Using a pedal cycle that you privately own or have continuous access to. This includes e-cycles.



### Walk/Wheel

Walking or using a wheelchair or mobility scooter (i.e. an electrically powered scooter that has a seat, not an e-scooter) all the way to the destination.



### Taxi

Using a pre-booked or hailed vehicle (including ride-share services like Uber).



### Train/Tram/Tube/Light Rail/Metro

Using a regional rail (including underground) service, or local tram or light rail service.



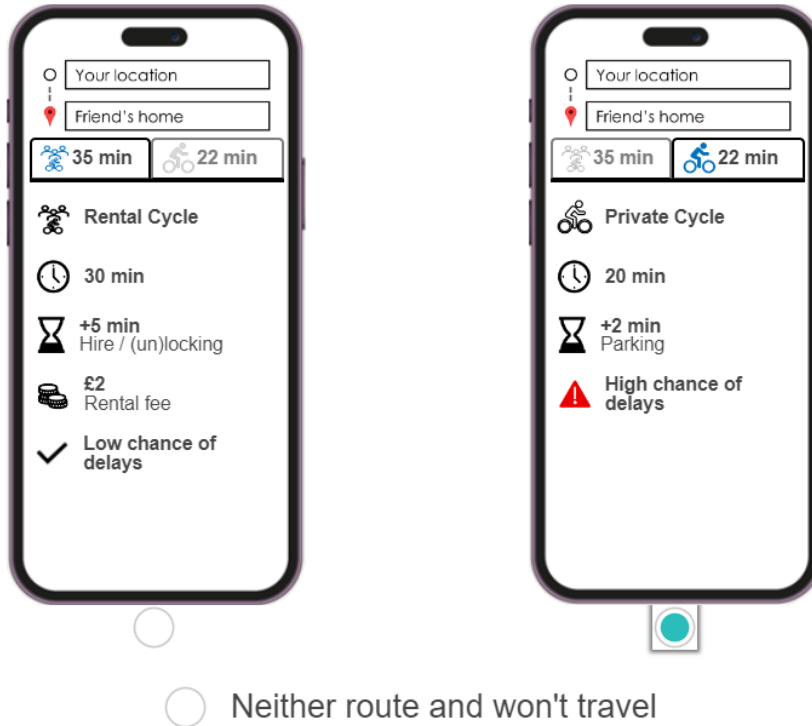
### Bus

Using a regional or local bus service.

## INTRO4

SHOW TO ALL  
NO INPUT

Each choice will look like this. Use the buttons below the pictures to choose your preferred route and then continue. If given the two routes you would prefer not to travel, please select "Neither route and won't travel".



## INTRO5

SHOW TO ALL  
NO INPUT

You will begin the task on the next page, where we will explain the circumstances in which you are making your imaginary journey. Please read this carefully as we will ask you questions about it later.

## SCENARIO

SHOW TO ALL

NO INPUT

Please imagine you are planning a journey to visit your friend at their home.

#trip\_purpose#

It is #trip\_light# outside, and #trip\_dry#. The weather is expected to remain the same for the rest of the day.

When you are ready, please click the 'Continue' button.

SCRIPTER NOTES: Please pipe #trip\_purpose# as follows:

If ARM < 5, pipe "You agreed to arrive at some point, but the exact time you arrive doesn't matter."

If ARM > 4, pipe "You agreed to arrive at a specific time and it is important you get there on time."

Please pipe #trip\_light# as follows:

If ARM = 1 OR 2 OR 5 OR 6, pipe "light"

If ARM = 3 OR 4 OR 7 OR 8, pipe "dark"

Please pipe #trip\_dry# as follows:

If ARM = 1 OR 3 OR 5 OR 7, pipe "it is clear and dry outside"

If ARM = 2 OR 4 OR 6 OR 8, pipe "it is raining"

## ATTENTION

ASK ALL

SINGLE CODE

In the imaginary scenario we just gave you, what was the weather like?

- 1 It was clear and dry outside
- 2 It was raining
- 3 I don't remember

SCRIPTER NOTES: Please generate the variable ATTENTION\_PASS as follows:

ATTENTION\_PASS = 1 if ATTENTION = 1 "It was clear and dry outside" AND ARM = 1 OR 3 OR 5 OR 7

OR if ATTENTION = 2 "It was raining" AND ARM = 2 OR 4 OR 6 OR

8

= 2 if ATTENTION = 3 "I don't remember"

= 3 otherwise

Terminate if ATTENTION\_PASS = 3

## ATTENTION2\_INTRO

SHOW IF ATTENTION\_PASS = 2

NO INPUT

Please re-read the scenario on the next page carefully. We will then ask you another question, which you will need to answer correctly in order to proceed.

## SCENARIO2

SHOW IF ATTENTION\_PASS = 2

NO INPUT

Please imagine you are planning a journey to visit your friend at their home.

**#trip\_purpose#**

It is **#trip\_light#** outside, and **#trip\_dry#**. The weather is expected to remain the same for the rest of the day.

When you are ready, please click the 'Continue' button.

SCRIPTER NOTES: Please pipe **#trip\_purpose#** as follows:

If ARM < 5, pipe "You agreed to arrive at some point, but the exact time you arrive doesn't matter."

If ARM > 4, pipe "You agreed to arrive at a specific time and it is important you get there on time."

Please pipe **#trip\_light#** as follows:

If ARM = 1 OR 2 OR 5 OR 6, pipe "light"

If ARM = 3 OR 4 OR 7 OR 8, pipe "dark"

Please pipe **#trip\_dry#** as follows:

If ARM = 1 OR 3 OR 5 OR 7, pipe "it is clear and dry outside"

If ARM = 2 OR 4 OR 6 OR 8, pipe "it is raining"



## ATTENTION2

ASK IF ATTENTION\_PASS = 2

SINGLE CODE

Thinking back to the imaginary scenario we gave you, what was the weather like?

- 1 It was clear and dry outside
- 2 It was raining
- 3 I don't remember

SCRIPTER NOTES: Please generate the variable ATTENTION\_PASS2 as follows:

ATTENTION\_PASS2 = 1 if ATTENTION2 = 1 "It was clear and dry outside" AND ARM = 1  
OR 3 OR 5 OR 7

OR if ATTENTION2 = 2 "It was raining" AND ARM = 2 OR 4 OR 6 OR 8 = 2  
otherwise

Terminate if ATTENTION\_PASS2 = 2

## DCE\_Q1 to DCE\_Q16

ASK ALL

SINGLE CODE

Please imagine you are planning a journey to visit your friend at their home.

#trip\_purpose# It is #trip\_light# outside, and #trip\_dry#. The weather is expected to remain the same for the rest of the day.

Imagine you are making the journey for real. The two routes shown here are the only ones you can choose. If given these two routes you would prefer not to travel, please select 'Neither route and won't travel'.

- 1 [card for option 1]
- 2 [card for option 2]
- 3 Neither route and won't travel

### SCRIPTER NOTES:

Please pipe #trip\_purpose# as follows:

If ARM < 5, pipe "You agreed to arrive at some point, but the exact time you arrive doesn't matter."

If ARM > 4, pipe "You agreed to arrive at a specific time and it is important you get there on time."

Please pipe #trip\_light# as follows:

If ARM = 1 OR 2 OR 5 OR 6, pipe "light"

If ARM = 3 OR 4 OR 7 OR 8, pipe "dark"

Please pipe #trip\_dry# as follows:

If ARM = 1 OR 3 OR 5 OR 7, pipe "it is clear and dry outside"

If ARM = 2 OR 4 OR 6 OR 8, pipe "it is raining"

If LEFT = 1, show Option 1 always on the left-hand-side. If LEFT = 2, show Option 1 always on the right-hand-side.

There are 16 questions in this block. Please randomise for each respondent the order in which respondents see the questions within this block. The tables below shows the attribute levels for each option in each question for participants with BLOCK = 1 and BLOCK = 2 respectively. Numeric values will be shown for each level of costs, travel time, and additional time in place of the generic labels.

<b>BLOCK = 1</b>										
<b>Question</b>	<b>Option 1</b>					<b>Option 2</b>				
	<b>Mode</b>	<b>Costs</b>	<b>Travel time</b>	<b>Addition al time</b>	<b>Chance of delays</b>	<b>Mode</b>	<b>Costs</b>	<b>Travel time</b>	<b>Addition al time</b>	<b>Chance of delays</b>
BLK_1_Q 1	Taxi	5	20	20	Low chance of delays	Car Club	12	30	2	High chance of delays
BLK_1_Q 2	Rental Cycle	8	10	10	Low chance of delays	Bus	0	24	20	High chance of delays
BLK_1_Q 3	Taxi	10	10	2	High chance of delays	Car Club	18	20	5	Low chance of delays
BLK_1_Q 4	Taxi	20	5	5	High chance of delays	Car Club	3	10	10	Low chance of delays
BLK_1_Q 5	Car Club	18	10	2	High chance of delays	Private Cycle	0	20	5	Low chance of delays
BLK_1_Q 6	Rental Cycle	0	30	5	High chance of delays	Bus	2	12	10	Low chance of delays

BLK_1_Q 7	Train/ Tram/ Tube/ Light Rail/ Metro	4	24	5	Low chance of delays	Walk / Wheel	0	54	0	High chance of delays
BLK_1_Q 8	Walk / Wheel	0	54	0	High chance of delays	Private Car	0.25	5	2	Low chance of delays
BLK_1_Q 9	Bus	6	36	5	Low chance of delays	Train/ Tram/ Tube/ Light Rail/ Metro	0	32	10	High chance of delays
BLK_1_Q 10	Walk / Wheel	0	36	0	Low chance of delays	Private Car	10	20	10	High chance of delays
BLK_1_Q 11	Private Cycle	0	15	10	Low chance of delays	Rental Cycle	0	20	2	High chance of delays
BLK_1_Q 12	Private Car	5	5	2	Low chance of delays	Taxi	10	10	5	High chance of delays
BLK_1_Q 13	Rental Cycle	2	20	2	High chance of delays	Bus	4	48	5	Low chance of delays

BLK_1_Q 14	Car Club	6	30	10	Low chance of delays	Private Cycle	0	10	10	High chance of delays
BLK_1_Q 15	Car Club	3	20	20	Low chance of delays	Private Cycle	0	30	2	High chance of delays
BLK_1_Q 16	Private Cycle	0	30	5	High chance of delays	Rental Cycle	4	10	10	Low chance of delays

<b>BLOCK = 2</b>										
<b>Question</b>	<b>Option 1</b>					<b>Option 2</b>				
	<b>Mode</b>	<b>Costs</b>	<b>Travel time</b>	<b>Addition al time</b>	<b>Chance of delays</b>	<b>Mode</b>	<b>Costs</b>	<b>Travel time</b>	<b>Addition al time</b>	<b>Chance of delays</b>
<b>BLK_2_Q 1</b>	Train/ Tram/ Tube/ Light Rail/ Metro	2	16	10	High chance of delays	Walk / Wheel	0	45	0	Low chance of delays
<b>BLK_2_Q 2</b>	Bus	2	12	20	High chance of delays	Train/ Tram/ Tube/ Light Rail/ Metro	4	16	2	Low chance of delays
<b>BLK_2_Q 3</b>	Private Car	10	30	20	High chance of delays	Taxi	20	5	2	Low chance of delays
<b>BLK_2_Q 4</b>	Bus	4	48	2	Low chance of delays	Train/ Tram/ Tube/ Light Rail/ Metro	8	8	5	High chance of delays
<b>BLK_2_Q 5</b>	Private Car	15	20	10	High chance of delays	Taxi	2.5	30	20	Low chance of delays
<b>BLK_2_Q 6</b>	Private Car	0.25	10	5	Low chance	Taxi	5	20	10	High chance

					of delays					of delays
BLK_2_Q 7	Bus	0	24	10	High chance of delays	Train/ Tram/ Tube/ Light Rail/ Metro	2	24	20	Low chance of delays
BLK_2_Q 8	Rental Cycle	4	15	20	Low chance of delays	Bus	6	36	2	High chance of delays
BLK_2_Q 9	Walk / Wheel	0	45	0	High chance of delays	Private Car	15	30	20	Low chance of delays
BLK_2_Q 10	Private Cycle	0	20	2	High chance of delays	Rental Cycle	2	30	5	Low chance of delays
BLK_2_Q 11	Taxi	2.5	30	10	Low chance of delays	Car Club	6	5	20	High chance of delays
BLK_2_Q 12	Train/ Tram/ Tube/ Light Rail/ Metro	0	8	20	High chance of delays	Walk / Wheel	0	36	0	Low chance of delays
BLK_2_Q 13	Walk / Wheel	0	27	0	Low chance	Private Car	5	10	5	High chance

					of delays					of delays
BLK_2_Q 14	Car Club	12	5	5	High chance of delays	Private Cycle	0	15	7	Low chance of delays
BLK_2_Q 15	Private Cycle	0	10	7	Low chance of delays	Rental Cycle	8	15	20	High chance of delays
BLK_2_Q 16	Train/ Tram/ Tube/ Light Rail/ Metro	8	32	2	Low chance of delays	Walk / Wheel	0	27	0	High chance of delays



## **SURVEY\_INTRO**

SHOW TO ALL

NO INPUT

Now, a few questions about the task and your experiences with different modes of travelling in real life.

## **MODEUSE**

ASK ALL

SINGLE CODE GRID

Thinking about the last 6 months, in what proportion of trips have you personally travelled by the following modes of transport?

Columns

- 1 All
- 2 Most
- 3 Some
- 4 A few
- 5 None

Rows

- 1 Private car/van
- 2 Car club
- 3 Taxi
- 4 Bus
- 5 Train/Tram/Tube/Light Rail/Metro
- 6 Private cycle
- 7 Rental cycle
- 8 e-cycle
- 9 Walking or wheeling for at least 5 minutes

**SCRIPTER NOTES:** Please randomise the order of the rows and flip the scale for half of the participants.

## **TRAVEL\_OTH**

ASK ALL

SINGLE CODE

Thinking about the last 6 months, in what proportion of trips have you personally travelled with children, or with adults requiring care?

- 1 All
- 2 Most
- 3 Some
- 4 A few
- 5 None

## **AWARE\_CARCLUB**

ASK ALL

SINGLE CODE

A car club allows you to hire a vehicle for a specific journey through an app (e.g. ZipCar) or using a membership card.

Before today, how much, if anything, would you say you knew about car clubs?

- 1 A great deal
- 2 A fair amount
- 3 Just a little
- 4 Heard of them but know nothing about them
- 5 Never heard of them
- 998 Don't know

## **AWARE\_EBIKE**

ASK ALL

SINGLE CODE

An electric cycle or e-cycle, commonly referred to as an e-bike, is a pedal cycle which reduces the effort of cycling by providing assistance with a motor and battery.

Before today, how much, if anything, would you say you knew about e-cycles?

- 1 A great deal
- 2 A fair amount
- 3 Just a little
- 4 Heard of them but know nothing about them
- 5 Never heard of them
- 998 Don't know

## **AWARE\_SHAREDICYCLE**

ASK ALL

SINGLE CODE

A rental cycle allows you to hire a pedal cycle (including e-cycles) for a specific journey (e.g., through services like Lime Bike).

Before today, how much, if anything, would you say you knew about rental cycles?

- 1 A great deal
- 2 A fair amount
- 3 Just a little
- 4 Heard of them but know nothing about them
- 5 Never heard of them
- 998 Don't know

## **ACCESS**

ASK ALL

MULTI CODE

Which of the following transport modes, if any, do you own or have access to?

*Please select all that apply.*

- 1 Private car
- 2 Car club
- 3 Taxi
- 4 Bus
- 5 Train/Tram/Tube/Light Rail/Metro
- 6 Private cycle
- 7 Rental cycle
- 8 E-cycle
- 9 None of these **\*EXCLUSIVE\***

## **CYCLE\_ABILITY**

ASK ALL

SINGLE CODE

Can you ride a pedal cycle, such as a bicycle, tricycle, recumbent cycle?

- 1 Yes
- 2 No

## **DRIVING\_LICENSE<sup>14</sup>**

ASK ALL  
SINGLE CODE

Do you hold a full driving licence valid in Great Britain?

- 1 Yes
- 2 No

## **MOTIVATION1**

ASK ALL  
SINGLE CODE GRID

To what extent do you agree or disagree with the following statements:

Columns

- 1 Strongly agree
- 2 Tend to agree
- 3 Neither agree nor disagree
- 4 Tend to disagree
- 5 Strongly disagree
- 88 Don't know

Rows

- 1 I am concerned about the environment
- 2 I am concerned about my personal finances
- 3 I am concerned with getting places as fast as I can

**SCRIPTER NOTES:** Please randomise the order of the rows and flip the scale for half of the participants.

---

<sup>14</sup> This question was adapted from question "DLFull" in [Appendix A3 - Questionnaire specification.odt \(live.com\)](#)

## MOTIVATION2

ASK ALL

SINGLE CODE GRID

To what extent do you agree or disagree with the following statements:

Columns

- 1 Strongly agree
- 2 Tend to agree
- 3 Neither agree nor disagree
- 4 Tend to disagree
- 5 Strongly disagree
- 88 Don't know

Rows

- 1 I think about the weather when making travel decisions
- 2 I think about whether it is light or dark outside when making travel decisions
- 3 I think about what else I can do while travelling (e.g. reading, working, socialising)
- 4 I think about protecting my health when travelling
- 5 I am concerned about my personal safety when travelling

**SCRIPTER NOTES:** Please randomise the order of the rows and flip the scale for half of the participants.

## DEMOG\_INTRO

SHOW TO ALL

NO INPUT

Finally, a few questions about you.

## EMPLOYMENT

ASK ALL

SINGLE CODE

Did you do any paid work in the 7 days ending Sunday the [date of last Sunday], either as an employee or as self-employed?

- 1 Yes
- 2 No

## EDUCATION1

ASK ALL  
SINGLE CODE

Do you have any educational qualifications for which you received a certificate?

- 1 Yes
- 2 No

## EDUCATION2

ASK IF EDUCATION1 = 2 "No"  
SINGLE CODE

Do you have any professional, vocational or other work-related qualifications for which you received a certificate?

- 1 Yes
- 2 No

## EDUCATION

ASK IF EDUCATION1 = 1 "Yes" or EDUCATION2 = 1 "Yes"  
SINGLE CODE

Do you have any of the educational or school qualifications listed?

*Please select all that apply.*

- 1 Higher degree or postgraduate qualifications (e.g. M.A., MSc., M.Ed, Ph.D. etc)
- 2 First degree level qualification Degree, or degree level equivalent (e.g. BA; BSc) including foundation degrees; such as PGCE
- 3 Diploma in higher education; HNC; HND; Nursing or Teaching qualification (excluding PGCE)
- 4 A level; AS level; NVQ level 3; GNVQ Advanced; or equivalent
- 5 GCSE grade A\* to C or 4 to 9; O level; CSE grade 1; NVQ level 2; GNVQ intermediate; or equivalent
- 6 GCSE grade D to G or 1 to 3; CSE below grade 1; NVQ level 1; GNVQ Foundation level; or equivalent
- 7 None of these **\*EXCLUSIVE\***

## HOME\_OWN

ASK ALL

SINGLE CODE

Do you (or your household) own or rent your current accommodation?

- 1 Own outright
- 2 Buying it with the help of a mortgage/loan
- 3 Part own and part rent (shared ownership)
- 4 Renting it (includes being on Housing Benefit or Local Housing Allowance)
- 5 Living rent-free (includes living rent-free in a relative's/friend's property but excluding squatting)
- 6 Squatting
- 7 Other

## DISABILITY<sup>15</sup>

ASK ALL

SINGLE CODE

Do you have any physical or mental health conditions or illnesses lasting or expected to last 12 months or more?

- 1 Yes
- 2 No
- 88 Don't know
- 99 Prefer not to say

## DISABILITY2<sup>16</sup>

ASK IF DISABILITY = 1 "Yes"

SINGLE CODE

Does your condition or illness/do any of your conditions or illnesses reduce your ability to carry out day-to-day activities?

- 1 Yes, a lot
- 2 Yes, a little
- 3 Not at all
- 88 Don't know
- 99 Prefer not to say

---

<sup>15</sup> This question was created based on [Long lasting health conditions and illness harmonised standard – Government Analysis Function \(civilservice.gov.uk\)](#)

<sup>16</sup> This question was created based on [Activity restriction harmonised standard – Government Analysis Function \(civilservice.gov.uk\)](#)

**FINAL**  
SHOW TO ALL  
NO INPUT

You have now completed the study. Thank you for your participation.



## Additional results

### Hierarchical Bayes analysis

The results in Table 10 below from the hierarchical Bayes analysis align with those arising from the mixed logit analysis – preferences for private cars increase when it is raining or dark outside but decrease when one needs to arrive at a specific time, and preferences for walking/wheeling and cycling decrease in the dark and in the rain. This gives confidence that these findings are not the result of arbitrary decisions on analytic methods, and instead reflect genuine underlying preferences.

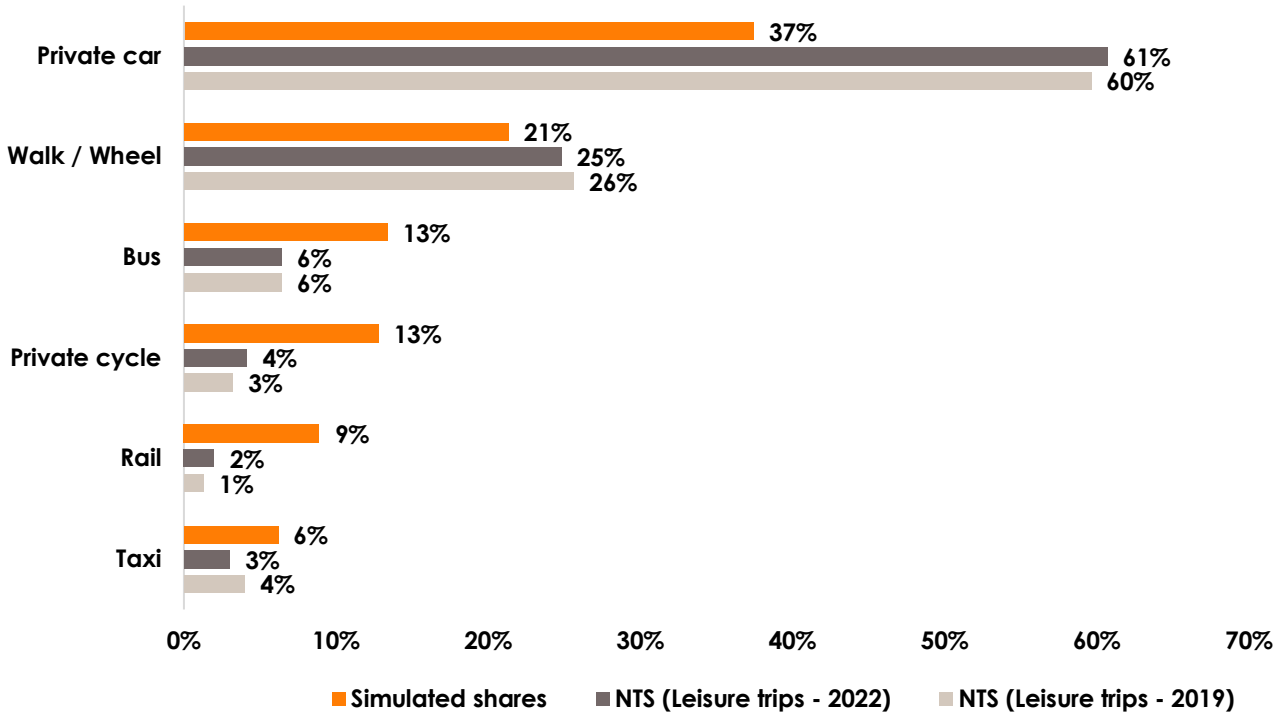
**Table 10:** Part-worths with contextual factors, derived from the hierarchical Bayes analysis. The part worths presented here are the mean parameter coefficients over 1,000 fits and are equivalent to those shown in the 'Estimate' columns in the tables for the mixed-logit models. The core estimates denote preferences for a trip taken in dry weather, in the light, and with a flexible arrival time. The adjustments then denote the cumulative changes as contextual factors change.

Parameter	Core estimate*	Adjustment (dark)	Adjustment (raining)	Adjustment (specific arrival time)
ASC	7.571	-1.452	-1.793	0.152
Mode - Bus	1.331	0.497	1.244	-0.016
Mode – Car club	-0.997	0.691	1.139	0.309
Mode – Private car	2.601	1.243	1.913	-0.424
Mode – Private cycle	-2.581	-0.002	-1.121	0.247
Mode – Rental cycle	-2.812	0.178	-0.641	0.181
Mode - Taxi	1.875	1.198	1.401	0.327
Mode – Train / Tram / Tube / Light rail / Metro	1.414	0.733	1.434	0.148
Cost	-0.295	0.022	-0.015	0.034
Travel time	-0.085	0.007	-0.009	0.004
Additional time	-0.083	-0.010	0.002	-0.023
High chance of delays	-2.790	0.038	-0.019	-0.842

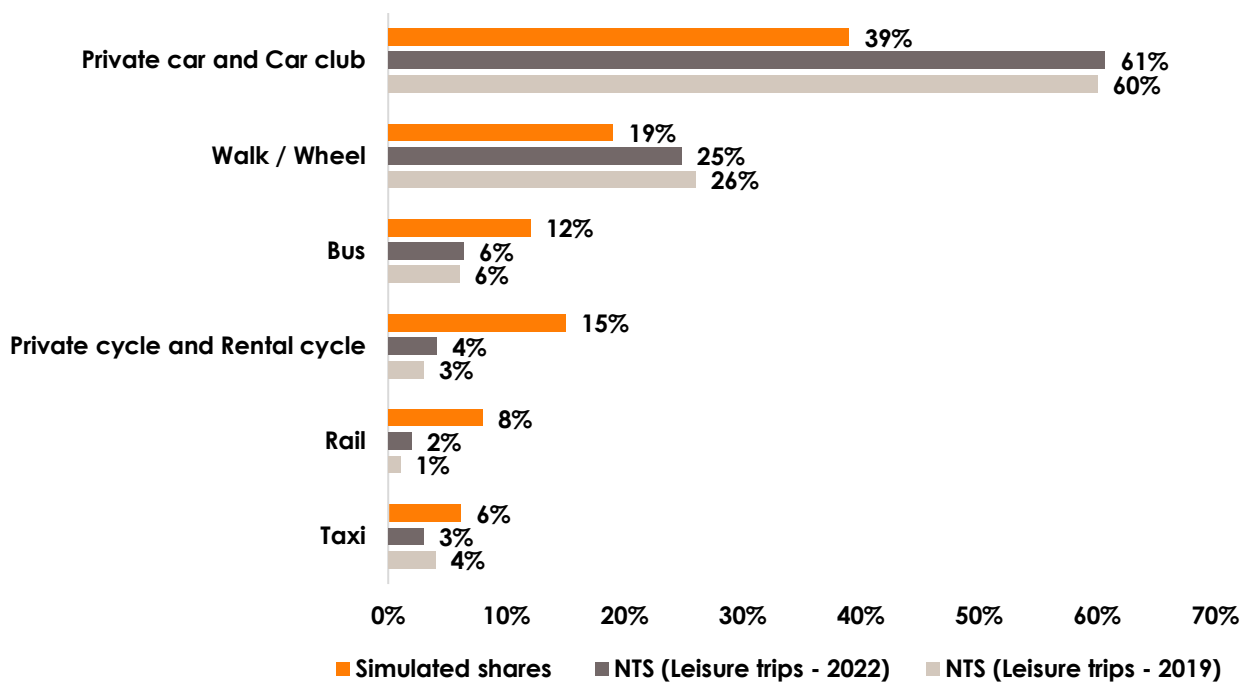
\* Light, Dry, Flexible arrival time

## Benchmarking exercise

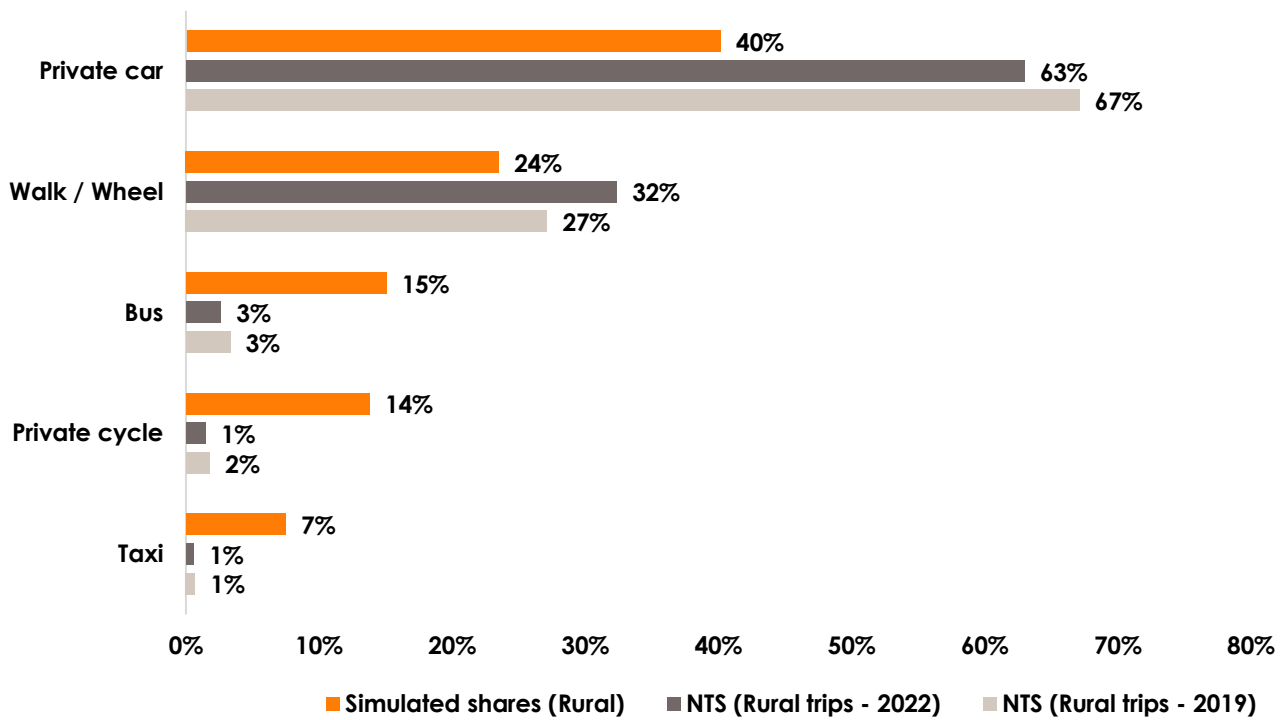
**Figure 1:** Results of the main benchmarking exercise comparing simulated preferred mode shares based on average NTS trip characteristics to the NTS estimates of shares of leisure trips by mode (2019 and 2022)



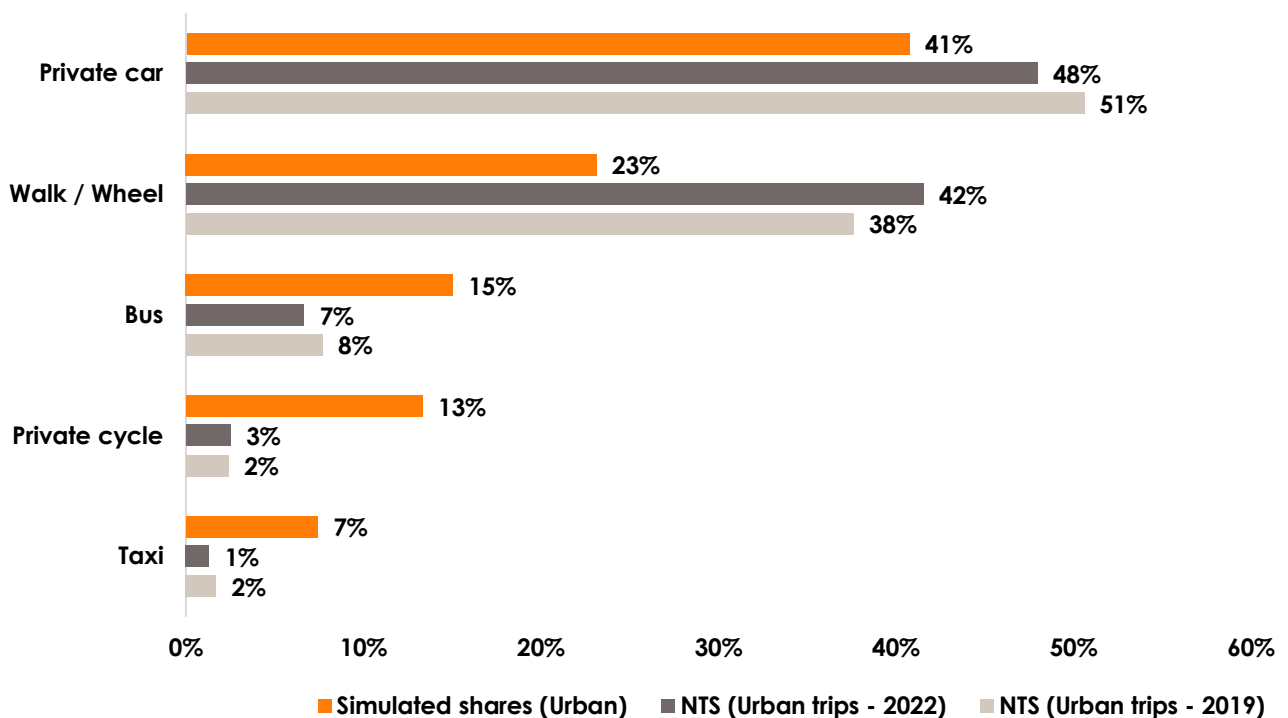
**Figure 2:** Results of the additional benchmarking exercise comparing simulated preferred mode shares (including Car club and Rental cycle) based on average NTS trip characteristics to the NTS estimates of shares of leisure trips by mode (2019 and 2022)



**Figure 3:** Results of the additional benchmarking exercise comparing simulated preferred mode shares based on average NTS trip characteristics for rural areas to the NTS estimates of shares of trips in rural areas by mode (2019 and 2022)



**Figure 4:** Results of the additional benchmarking exercise comparing simulated preferred mode shares based on average NTS trip characteristics for urban areas to the NTS estimates of shares of trips in urban areas by mode (2019 and 2022)



## Sensitivity analysis

To check the robustness of the results of the DCE, Verian conducted three sensitivity analyses for the full-sample mixed-logit analysis model with correlated random parameters. The sensitivity analyses examined whether the results were robust to the exclusion of three sets of participants who could potentially have completed the study without paying sufficient attention.

Firstly, Verian reran the main mixed-logit model excluding the participants who did not answer the attention check question correctly the first time ( $n = 345$ ). The second sensitivity analysis excluded participants who chose 'Neither route and won't travel' for all 16 questions in the DCE ( $n = 57$ ). The final sensitivity analysis excluded a combination of participants who gave potentially conflicting responses in the post-DCE questionnaire ( $n = 81$ ) – these were participants who fell in either of the three groups:

- Among the participants who did not report having long-term health conditions,<sup>17</sup> those who indicated they had not travelled with any of the listed modes in any of their trips in the last 6 months<sup>18</sup> ( $n = 7$ ).
- Among the participants who did not report having long-term health conditions, those who indicated that they did not own or have access to any of the eight listed modes of transport<sup>19</sup> but reported they had travelled with some of the modes in the last 6 months<sup>20</sup> ( $n = 45$ ).
- Participants who reported having travelled with car club in the last 6 months<sup>21</sup> but reported either not having heard of or 'don't know' when asked how much they knew about car club<sup>22</sup> ( $n = 33$ ).

All of the three sensitivity analyses produced results similar to the full-sample model, suggesting that the findings were not driven by a subset of participants who might have given problematic responses. See Tables 11-13 for the model summary tables for the three sensitivity analyses.

---

<sup>17</sup> Did not choose 'Yes' in the question 'Do you have any physical or mental health conditions or illnesses lasting or expected to last 12 months or more?'

<sup>18</sup> Chose 'None' for all the nine modes in the question 'Thinking about the last 6 months, in what proportion of trips have you personally travelled by the following modes of transport?'

<sup>19</sup> Chose 'None of these' in the question 'Which of the following transport modes, if any, do you own or have access to?'

<sup>20</sup> Did not choose 'None' for all the nine modes in the question 'Thinking about the last 6 months, in what proportion of trips have you personally travelled by the following modes of transport?'

<sup>21</sup> Did not choose 'None' for car club in the question 'Thinking about the last 6 months, in what proportion of trips have you personally travelled by the following modes of transport?'

<sup>22</sup> Chose 'Never heard of them' or 'Don't know' in the question 'A car club allows you to hire a vehicle for a specific journey through an app (e.g. ZipCar) or using a membership card. Before today, how much, if anything, would you say you knew about car clubs?'

**Table 11:** Mixed logit model for the first sensitivity analysis – Excluding participants who did not answer the attention check correctly at the first attempt

Predictor	Estimate	Odds ratio	Confidence interval	p
ASC	2.40	11.04	2.26 - 2.54	< .001
Mode - Bus	0.20	1.22	0.10 - 0.30	< .001
Mode – Car club	-0.57	0.56	-0.71 - -0.43	< .001
Mode – Private car	0.73	2.07	0.61 - 0.85	< .001
Mode – Private cycle	-1.10	0.33	-1.24 - -0.97	< .001
Mode – Rental cycle	-1.28	0.28	-1.43 - -1.13	< .001
Mode - Taxi	0.27	1.31	0.14 - 0.40	< .001
Mode – Train / Tram / Tube / Light rail / Metro	0.25	1.28	0.15 - 0.34	< .001
Cost	-0.09	0.92	-0.09 - -0.08	< .001
Travel time	-0.03	0.97	-0.03 - -0.03	< .001
Additional time	-0.02	0.98	-0.03 - -0.02	< .001
High chance of delays	-0.97	0.38	-1.03 - -0.91	< .001

Note: Mode – Walk / Wheel is used as the baseline attribute level for Mode, and Low chance of delays is used as the baseline attribute level for 'Chance of delays'. Estimates of the parameter correlations and random effects are not included in the table. Observations = 98,640. Participants = 2055

**Table 12:** Mixed logit model for the second sensitivity analysis – Excluding participants who responded 'Neither route and won't travel' to all 16 questions in the DCE

Predictor	Estimate	Odds ratio	Confidence interval	p
ASC	2.49	12.10	2.38 - 2.61	< .001
Mode - Bus	0.24	1.27	0.14 - 0.33	< .001
Mode – Car club	-0.52	0.60	-0.66 - -0.38	< .001
Mode – Private car	0.75	2.12	0.64 - 0.87	< .001
Mode – Private cycle	-1.08	0.34	-1.20 - -0.96	< .001
Mode – Rental cycle	-1.18	0.31	-1.31 - -1.05	< .001
Mode - Taxi	0.31	1.36	0.18 - 0.44	< .001
Mode – Train / Tram / Tube / Light rail / Metro	0.26	1.29	0.17 - 0.35	< .001
Cost	-0.09	0.92	-0.10 - -0.08	< .001
Travel time	-0.03	0.97	-0.03 - -0.03	< .001
Additional time	-0.02	0.98	-0.03 - -0.02	< .001
High chance of delays	-0.98	0.38	-1.03 - -0.93	< .001

Note: Mode – Walk / Wheel is used as the baseline attribute level for Mode, and Low chance of delays is used as the baseline attribute level for 'Chance of delays'. Estimates of the parameter correlations and random effects are not included in the table. Observations = 112,464. Participants = 2343

**Table 13:** Mixed logit model for the third sensitivity analysis – Excluding participants who had potentially problematic responses in the post-DCE questionnaire

Predictor	Estimate	Odds ratio	Confidence interval	p
ASC	2.35	10.44	2.22 - 2.47	< .001
Mode - Bus	0.29	1.34	0.2 - 0.39	< .001
Mode – Car club	-0.50	0.61	-0.65 - -0.35	< .001
Mode – Private car	0.74	2.10	0.62 - 0.86	< .001
Mode – Private cycle	-1.06	0.35	-1.18 - -0.93	< .001
Mode – Rental cycle	-1.21	0.30	-1.36 - -1.05	< .001
Mode - Taxi	0.38	1.46	0.25 - 0.51	< .001
Mode – Train / Tram / Tube / Light rail / Metro	0.31	1.37	0.22 - 0.4	< .001
Cost	-0.09	0.91	-0.1 - -0.08	< .001
Travel time	-0.03	0.97	-0.03 - -0.03	< .001
Additional time	-0.02	0.98	-0.03 - -0.02	< .001
High chance of delays	-0.99	0.37	-1.04 - -0.93	< .001

Note: Mode – Walk / Wheel is used as the baseline attribute level for Mode, and Low chance of delays is used as the baseline attribute level for 'Chance of delays'. Estimates of the parameter correlations and random effects are not included in the table. Observations = 111,312. Participants = 2319

## References

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