

Cycle route choice

Final survey and model report

Report

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CONTENTS

EXECUTIVE SUMMARY	I
Overview.....	i
Sample	i
Cycling patterns	i
Attitudes.....	i
Impact of green spaces	ii
Impact of cycle lanes.....	ii
Journey profile	ii
Junction safety	ii
Stated preference model	iii
1 INTRODUCTION	1
The purpose of this study.....	1
The Structure of this report.....	1
2 METHODOLOGY AND SAMPLING	3
Introduction.....	3
Qualitative study	3
Quantitative study	3
Health warnings	5
3 SAMPLE PROFILE AND ATTITUDES	7
Introduction.....	7
Demographics.....	7
Cycle use	8
Route choice considerations	13
Journey profile	23
4 JUNCTION SAFETY	27
Introduction.....	27
Safety rating	27
Detour experiment.....	30
5 MODEL REPORT	35
Introduction.....	35
Methodology	35
Stated preference theory.....	37

Final survey and model report

Stated preference analysis.....	37
NB. Route A always showed a 10 minute journey.....	39
Model parameter results.....	39
Segmentations.....	41
6 CONCLUSION	47

FIGURES

Figure 3.1	Age of respondents.....	7
Figure 3.2	Home location of respondents	8
Figure 3.3	Time spent cycling in London	9
Figure 3.4	Confidence to cycle in London.....	10
Figure 3.5	Frequency of cycling by journey purpose	11
Figure 3.6	Average weekly trips by journey purpose.....	11
Figure 3.7	Use of Barclays Cycle Superhighway	12
Figure 3.8	Use of Barclays Cycle Hire bicycles	13
Figure 3.9	Route Choice considerations by Cyclist type	14
Figure 3.10	Route choice considerations by Age Group.....	15
Figure 3.11	Route choice considerations BY gender	16
Figure 3.12	Route choice considerations by Cycling Experience	17
Figure 3.13	Effect of Parks and Green Spaces on Route Choice	18
Figure 3.14	Effect of parks and green spaces on route choice - by age.....	19
Figure 3.15	Effect of parks and green spaces on route choice - by cycling experience.....	20
Figure 3.16	Effect of Cycle Superhighway on route choice.....	21
Figure 3.17	Effect of dedicated on-road cycle lane on route choice	22
Figure 3.18	Journey time for most recent trip	23
Figure 3.19	How did you find out about this route?	24
Figure 3.20	Reasons for choosing route	25
Figure 4.1	feelings of safety at junction situations	28
Figure 4.2	Average safety ratings for each junction situation.....	28
Figure 4.3	Average safety ratings by gender	29
Figure 4.4	Average safety ratings by frequency of cycling.....	30
Figure 4.5	Maximum detour taken to avoid junctions	31
Figure 4.6	Mean minutes of detour for each junction	32

Figure 4.7	Responses by order of questioning.....	33
Figure 5.1	Example SP Card.....	36
Figure 5.2	Stated Preference parameter weights - All respondents.....	41
Figure 6.1	Index of Attribute Level of Benefits	48
Figure 6.2	Index of Attribute Level of Benefits - by gender	49

TABLES

Table 2.1	Achieved sample.....	4
Table 2.2	Frequency of cycling.....	5
Table 5.1	SP Attributes and Levels	36
Table 5.2	Trading analysis.....	38
Table 5.3	Choice proportions - Cycle lane provision in route B	38
Table 5.4	Choice proportions - Type of road in route B	39
Table 5.5	Choice proportions - Journey time in route B.....	39
Table 5.6	Model parameters - all respondents	40
Table 5.7	Model parameters - Gender segmentation.....	42
Table 5.8	Model parameters - Cyclist type segmentation	43
Table 5.9	Model parameters - Journey Purpose segmentation	44
Table 5.10	Model parameters - Cycling Experience segmentation	45

APPENDICES

- A QUESTIONNAIRE
- B QUALITATIVE REPORT
- C PILOT REPORT

Executive Summary

Overview

1. This study has investigated the decisions that cyclists in London make when deciding which route to take, and the relative importance of different route features. The study has also looked at more general preferences and attitudes among cyclists.

Sample

2. Following a short qualitative stage an online survey was designed. This was completed by 100 participants during a pilot and by a further 2,307 cyclists during the full fieldwork. 1,405 of these came from two TfL contacts databases, with the remaining 902 from Research Now's panel.
3. The TfL databases achieved very high response rates with 24.8% for Barclays Cycle Hire users and 23.5% for those on the 'expressed interest in cycling' list.

Cycling patterns

4. Most of those interviewed cycled at least three times a week (1,312), with 569 cycling once to twice a week and the remaining 426 cycling at least once a month but less than once a week.
5. On average cyclists made 2.4 commuter trips per week, and 1.5 to travel to a leisure activity.
6. Use of the Barclays Cycle Superhighways was fairly mixed amongst respondents, with 20% using them at least 3 days a week, and most people having some experience of using one.
7. Though a significant proportion (27%) said that they had never used the Barclays Cycle Hire scheme, the same proportion use it at least 3 days a week.

Attitudes

8. Across all cyclists, the key considerations around route choice centred on choosing the safest routes, and avoiding traffic (either by cycling in a cycle lane separate to the traffic, or on roads where traffic volume is lower). In particular the highest score across all groups was for the statement "I would prefer cycling in a cycle lane even if it meant a longer journey".
9. It is certainly not the case that cyclists will always choose the most direct route when making a journey - even among the most frequent cyclists.
10. Female respondents were much more likely to prefer safer routes, away from other traffic, and away from difficult junctions.
11. Those with a lower amount of cycling experience in London (i.e. less than 2 years) are also more safety conscious when cycling, preferring to travel on routes with less traffic and a cycle lane, whilst avoiding the more difficult junctions.

Impact of green spaces

12. Around half of all cyclists would change their route in order to travel through parks and/or green spaces, with around 15% saying that they would be prepared to use a significantly longer route.
13. There was much greater willingness to change route for parks and green spaces amongst the over 55s. Overall 67% of over 55s said they would change their route, compared to 58% of 35-54 year olds, and 47% of under 35s.

Impact of cycle lanes

14. On average, 40% of all respondents said they would change their route in order to use a cycle superhighway, with 8% prepared to use a noticeably longer route in order to do so. This was less than the equivalent answers for green spaces, where 54% and 14% said they would change, or change to a noticeably longer route.
15. Willingness to change route for a dedicated on-road cycle lane was higher than for cycle superhighways, but lower than for parks and green spaces. 51% said that they would change their route in order to use it, with 12% willing to use a noticeably longer route in order to use it. This may be because dedicated cycle lanes are often on quieter roads than cycle superhighways.

Journey profile

16. Respondents were asked in detail about the most recent trip they made. This trip was then the focus for the stated preference exercise. The mean length of these trips was 28 minutes and the median was 25 minutes. Forty-seven per cent of respondents reported trips of 10-20 minutes (see Figure 3.18).
17. The trip length varied very little with age, gender, experience or frequency of cycling.
18. Respondents were asked how they found out about the route they chose. The most common response was that they knew the area (41% of respondents). This increased for those who had been cycling in London for the longest.
19. The newest cyclists were much more likely to use a cycle journey planner (38% compared to 24% for those cycling between 6months to 2 years and 17% for those cycling for more than two years).
20. Women were slightly less likely to use a map and more likely to use a journey planner (26% and 24% for women compared to 33% and 20% for men respectively).
21. The main reason for choosing the route taken was that it was the most direct route available to them (42% of respondents cited this as one of their reasons). This was followed by the volume of traffic (40%), familiarity with the route (38%) and that the route was the most pleasant (36%).

Junction safety

22. The majority of cyclist casualties in London occur at junctions and it has also been found that cyclists perceptions of the risk associated varies across different types of junction. There are obviously implications for route choice and so the questionnaire sought to explore this further.
23. Turning left at a signalised junction was perceived to be the safest of the range of junction scenarios shown, with 84% saying they felt safe or very safe in this

situation. Travelling straight on across a minor junction was also perceived to be fairly safe.

24. The least safe junctions were perceived to be a right turn at a two lane round-about and a right turn from a minor road onto a major one with, respectively, 66% and 70% of respondents feeling unsafe or very unsafe. On average respondents were willing to detour for 7.5 minutes to avoid these types of junction.
25. In general female respondents were slightly more likely to rate each junction as less safe than male respondents.
26. Those who cycled most regularly felt safer at most junctions than less frequent cyclists. Older respondents also tended to feel less safe than younger ones. However, all these differences were very slight.

Stated preference model

27. Each respondent was shown a total of 12 scenarios. The three key attributes tested in the model were:
 - journey time,
 - provision of cycle lane, and
 - the nature of the road (i.e. a major road, high street or residential street). This attribute took into account the volume of traffic as well as the speed.
28. Overall there is a high level of trading (the number of respondents who varied the route that they chose across the 12 cards), which indicates that people are prepared to consider a change of route under the right conditions and that the levels of each attribute have been set appropriately.
29. The most frequent cyclists were more likely to always opt for the fastest route, regardless of conditions. Those travelling for a work-based trip (either commuting to/from work or on a business trip) were again more likely to choose the fastest route in every scenario.
30. All model parameters are highly significant. However, the model results show that the extent of cycle lane provision was of far greater significance than the type of road being used.
31. The presence of an off-road route was particularly highly valued.
32. The model parameters have been adjusted to represent the value, in terms of additional time a cyclist would be prepared to add to their journey in order to use each attribute. The figures relate to journey time changes on a 10 minute journey and clearly indicate the *relative* value of different attributes. However, due to different questioning methods these values should not be directly compared with the times given during the junction detour game.
33. For every minute spent cycling on a road without a lane respondents would spend 1.4 minutes to cycle in a bus lane, 1.45 to cycle in an advisory (narrow) cycle lane, 1.67 to cycle in a mandatory (wide) lane and 3.17 to cycle off-road.
34. When the results were segmented by demographics and frequency of cycling the main difference was in the value of the off-road option, with women and newer cyclists valuing it particularly highly.
35. For every minute in a cycle lane female respondents would spend 5.19 off-road.
36. The most regular cyclists had a weight of 2.7 minutes for the off-road option, compared to the least regular cyclists whose weight was 7.2.

Final survey and model report

37. In general, as cycling frequency reduces, so does the respondent's time sensitivity, and consequently the benefits for a higher 'quality' journey increases.
38. The one attribute where the choice proportions were not as expected were for the type of road. In the pilot survey, the results of the SP exercise were such that it appeared that cycling on a high street was in fact perceived to be worse than cycling on a major road. In the final survey this was reversed but the differences between the two types of road were minimal.
39. For 1 minute cycling on a high street respondents were prepared to spend 0.98 minutes cycling on a major road. There was a small preference for the residential road, with respondents willing to spend 1.18 minutes on residential streets for each 1 minute on a high street. This did not vary greatly for demographic or cycling frequency segments.

1 Introduction

The purpose of this study

- 1.1 The aim of this study was to investigate the relative value to cyclists of various route attributes and options (such as cycle lanes and traffic speeds) and to better understand how cyclists make route choices.
- 1.2 A key aim was to provide a quantified basis for assessing the appeal or deterrent value of different route options. Where possible results have therefore been presented in terms of the additional time that respondents would be spend to cycle on a perceived 'higher quality' route, or conversely to avoid an unpleasant route or aspect of a route (such as a complex junction).
- 1.3 The figures relate to journey time changes on a 10 minute journey and indicate the relative value of different attributes. However, due to different questioning methods the time values obtained in different sections of the questionnaire should not be directly compared with each other. In particular the values placed on avoiding junctions should not be directly compared to the stated preference results.
- 1.4 The study outputs will be used to improve the representation of cyclists route choice in Transport for London's models. It will also help understand and predict the impact of various route based interventions.
- 1.5 The study consisted of qualitative research, which was used to identify the relevant route attributes, and then a quantitative on-line survey including a stated preference section.
- 1.6 This report focuses on the online survey, with the qualitative findings reported in an appendix.

The Structure of this report

- Chapter two sets out the method and reports on the achieved sample size.
- Chapter three covers the analysis of demographics, cycle use and attitudes.
- Chapter three presents the results of the junction safety questions.
- Chapter five is the stated preference model report.
- Chapter six presents the conclusion.
- Appendix A is the final, post-pilot questionnaire.
- Appendix B is the report from the qualitative study.
- Appendix C is the pilot report.

2 Methodology and sampling

Introduction

- 2.1 This chapter briefly summarises the findings from the qualitative study and the pilot and explains how these were used to design the online questionnaire. The chapter then sets out the approach to sampling and the response rates achieved.

Qualitative study

- 2.2 The purpose of the qualitative research was to inform the design of the stated preference questions and particularly the description of the alternative route options (or levels). An important consideration here was to make the research as close to real life as possible. With this in mind, it was decided to interview cyclists during their normal cycling trips. Cyclists were approached by interviewers (also on bikes) at traffic lights and bike parks. This was done at a number of locations across London, at different times of day (Morning and evening peak as well as off-peak). They were then accompanied on a 10-15 minute section of their journey and asked questions about the route they had taken and their reasons for choosing it.
- 2.3 In total, 16 accompanied cycle rides were undertaken between 2nd and 13th April 2012.
- 2.4 As this was a new method, and perceived to be potentially invasive, participants were offered a £20 Amazon Gift Voucher. However, a debrief with the interviewers suggested that most respondents would have been happy to participate for a £10 incentive.
- 2.5 The research found that route safety, volume of traffic, and also speed (of both the traffic and of the cyclist's own journey) scored most highly and were the factors that influenced route choice the most.
- 2.6 Given the small sample, the conclusions drawn from these results cannot be considered statistically significant. However the findings were used in order to inform the design of the online survey, in particular the stated preference exercises. The full results are included in Appendix B.

Quantitative study

Pilot Survey

- 2.7 The online questionnaire was piloted by our fieldwork sub-contractors Research Now, and was completed by 97 of their panel within 24 hours.
- 2.8 A link to the questionnaire was also sent out to 50 respondents from TfL databases. Five complete responses were received within 15 hours, but one had to be rejected as it was completed too quickly (implying that the questions had not been read properly). 101 responses were therefore analysed.
- 2.9 The main purpose of the pilot was to test the design of the stated preference questions. In summary, the results of the main surveys yielded sensible conclusions

Final survey and model report

and the stated preference analysis generated valuable results. However, the results also highlighted some minor issues with the design and, as a result a number of small changes were made to the design. These are set out, along with more detail on the pilot findings in Appendix C.

Online Questionnaire

2.10 The final questionnaire is included in Appendix A and comprised questions on the following:

- Screening questions to ensure that the respondent had cycled in London in the last month;
- Socio-demographic characteristics;
- Frequency of cycling;
- Attitudes;
- Perceptions of junction safety;
- Stated preference experiment on route choice.

Sample

2.11 The sample was drawn from three sources:

- Research Now's panel of respondents;
- TfL's database of people who have expressed an interest in cycling;
- TfL's database of Barclay's cycle hire users.

2.12 An email invite was sent to TfL sample respondents, which was followed by a reminder one week later.

TABLE 2.1 ACHIEVED SAMPLE

	TfL sample	RN panel	Total
Total	1,405	902	2,307

2.13 The sample was segmented by frequency of cycling into three categories: those cycling at least three times a week; those cycling at least once but less than three times a week; and those who cycle less often, but at least once a month. The majority of respondents were in the most frequent category (see Table 2.2). This represents the fact that these cyclists actually carry out the greatest proportion of trips.

TABLE 2.2 FREQUENCY OF CYCLING

	At least 3 times a week	1-2 times a week	Other cyclists
Total	1,312	569	426

Response rates

- 2.14 The response rates were very similar for both the TfL samples at 24.8% for the Barclays Cycle Hire users and 23.5% for those who had expressed an interest in cycling. This is very high for an online survey and probably reflects the fact that the sample were interested in the subject of the survey. In comparison the Research Now panel response rate was 10%.

Health warnings

- 2.15 As with any survey it is likely that those with more interest in the subject matter are more likely to respond, which may cause a bias in some of the answers.

3 Sample profile and attitudes

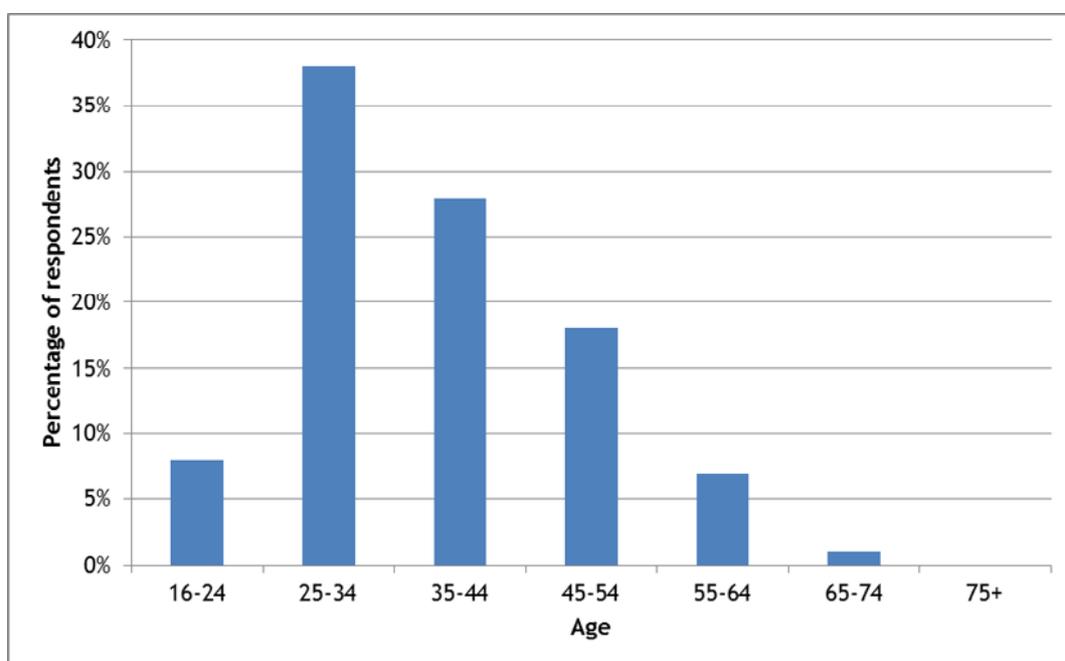
Introduction

3.1 This chapter describes the results from the questions on demographics, cycle use and attitudes.

Demographics

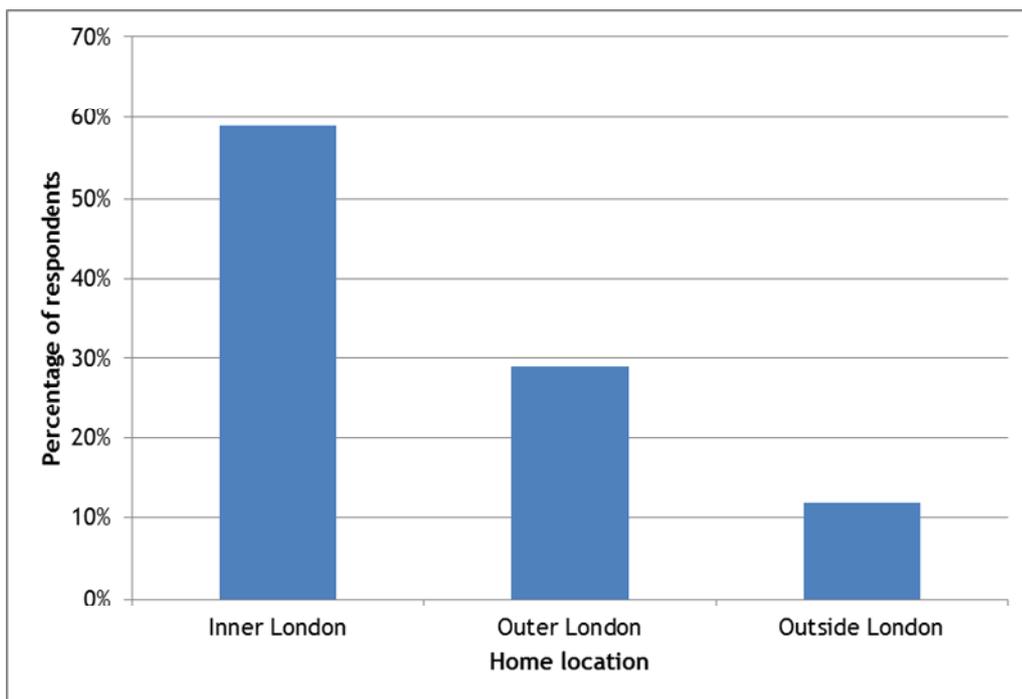
3.2 The majority of respondents were male: 65% compared with 35% female. There was a reasonable spread of ages, with the greatest proportion aged 25-34 (see Figure 3.1).

FIGURE 3.1 AGE OF RESPONDENTS



3.3 The majority of respondents lived in inner London (59%). Twenty-nine per cent lived in outer London and the remaining 12% outside of London (see Figure 3.2). All respondents were screened at the beginning of the questionnaire to ensure that they had all cycled within London in the last month.

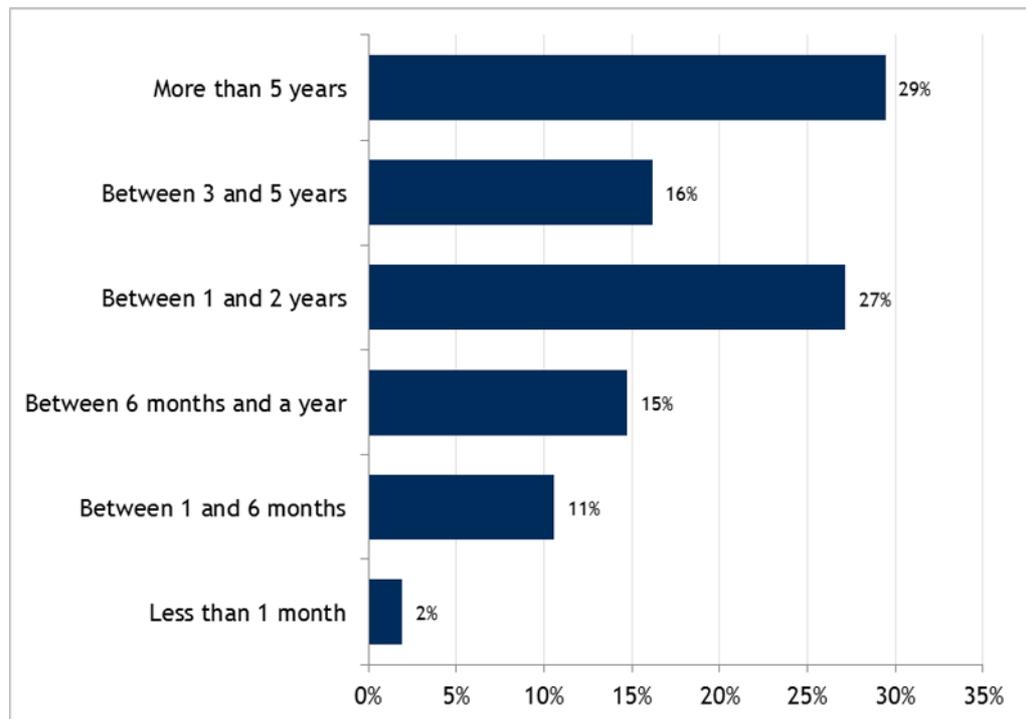
FIGURE 3.2 HOME LOCATION OF RESPONDENTS



Cycle use

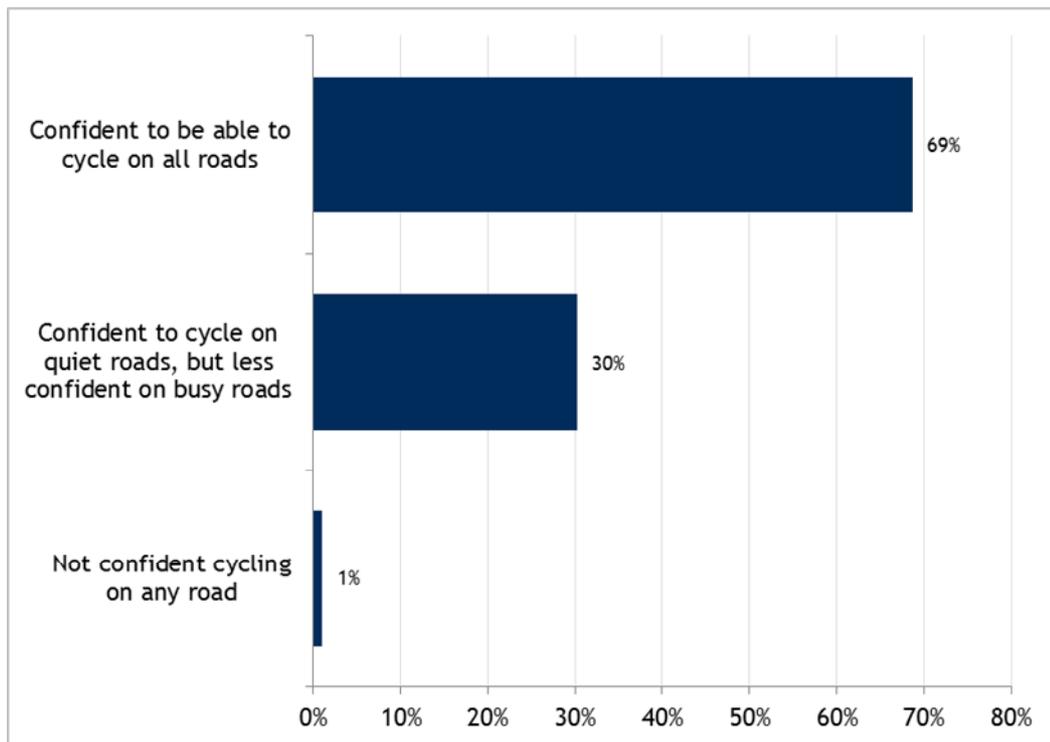
- 3.4 The following section examines the cycling profile of the 2,307 survey respondents, in terms of how frequently they travel by bike (and for what purpose they are travelling for), how they view themselves as cyclists, and (prior to the junction and stated preference exercises) what factors are most important to them when deciding upon their route.
- 3.5 The majority of respondents (71%) have been cycling in London for a reasonably long period of time (i.e. over a year, with 29% having cycled for more than 5 years). However, a significant minority have only started cycling relatively recently with 13% having only started within the last six months.

FIGURE 3.3 TIME SPENT CYCLING IN LONDON



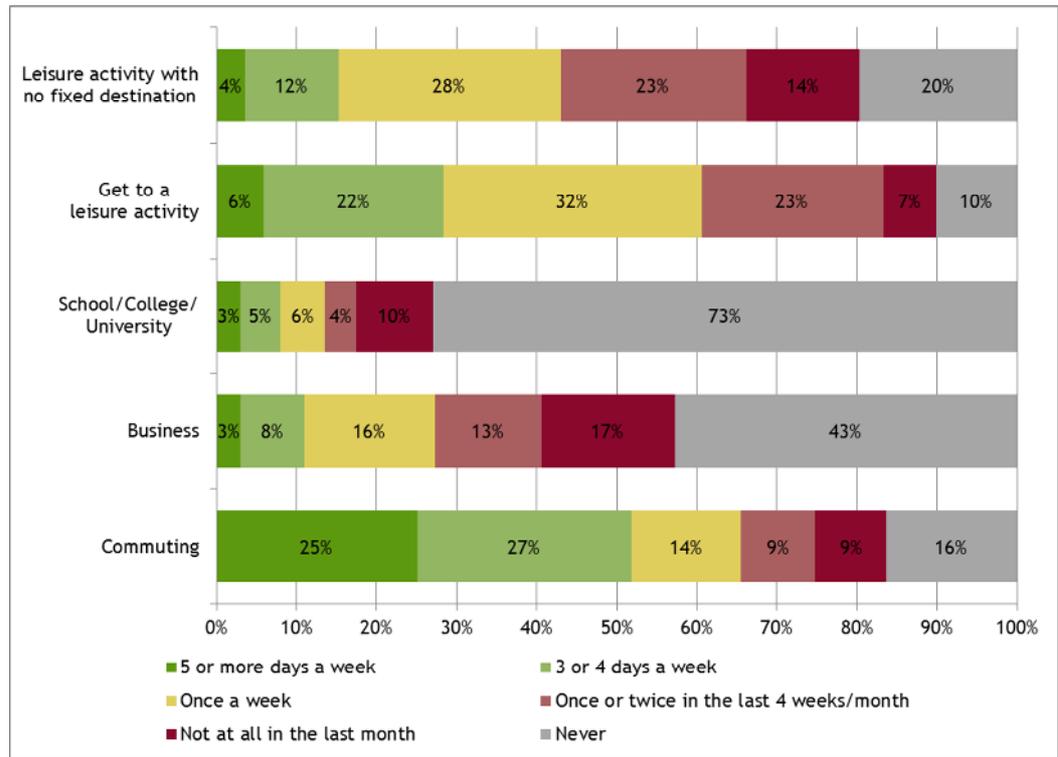
- 3.6 Reflecting the length of time that survey respondents have been cycling in London, most said that they felt confident cycling on any kind of road in the city: 69% said that they felt confident enough to be able to cycle on all roads, with a further 30% saying that they felt confident to cycle on quiet roads, but less so on busy roads.
- 3.7 There was a significant difference in the level of confidence between male and female respondents, with 79% of male respondents saying they felt confident enough to cycle on all roads, compared to only 50% of female respondents. This may in part be explained by the greater proportions of male respondents who have been cycling for a long period of time with 75% of male respondents having cycled for over a year, compared with 67% of females.

FIGURE 3.4 CONFIDENCE TO CYCLE IN LONDON



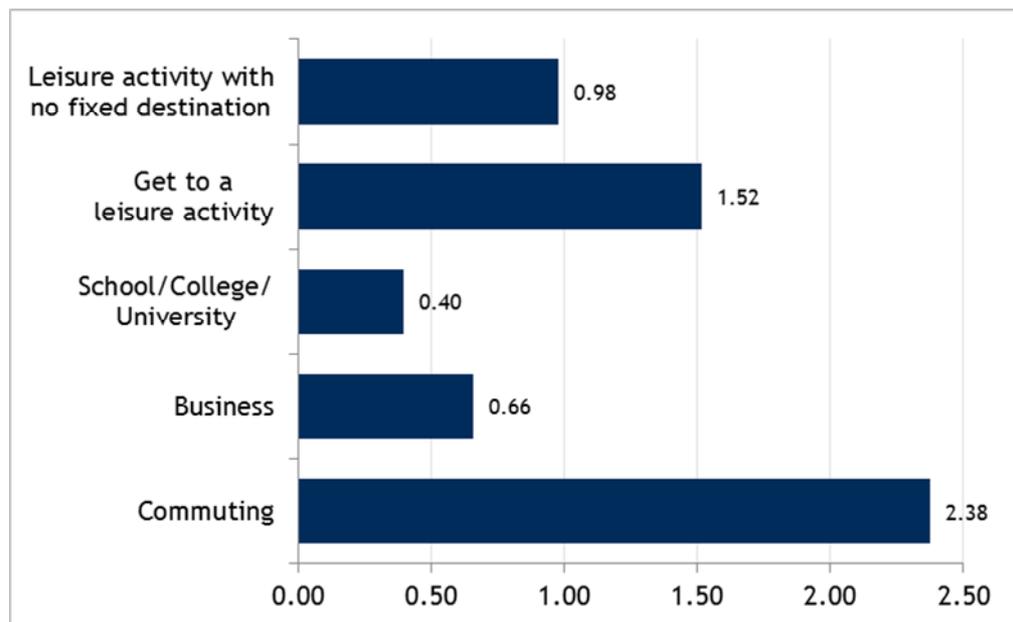
3.8 Commuting to and from work is the principal reason for cycling most frequently. Over a quarter of respondents said that they cycle to/from work at least 5 days a week, with a further 27% doing so 3 or 4 days a week. Though there are more people who commute by bike on a frequent basis, overall there were more people who had cycled to get to a leisure activity in the last month (83%) than had commuted (75%).

FIGURE 3.5 FREQUENCY OF CYCLING BY JOURNEY PURPOSE



3.9 Frequency of travel by journey purpose has been converted using assumptions on trip rates in order to estimate an average number of weekly trips for each journey purpose. The result is illustrated in Figure 3.6 which shows that on average cyclists make 2.4 commuter trips per week, and 1.5 to travel to a leisure activity.

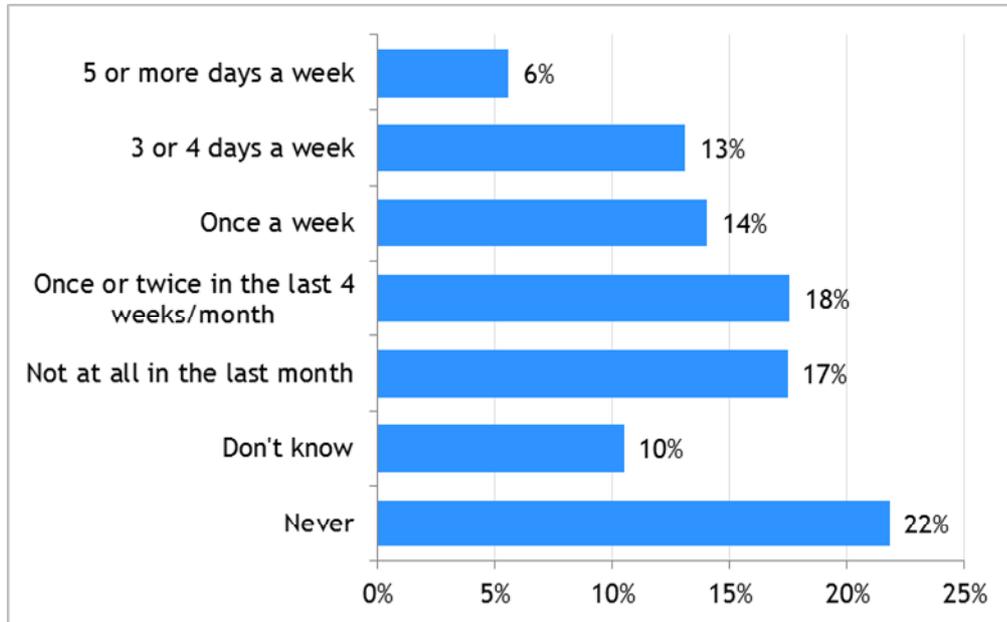
FIGURE 3.6 AVERAGE WEEKLY TRIPS BY JOURNEY PURPOSE



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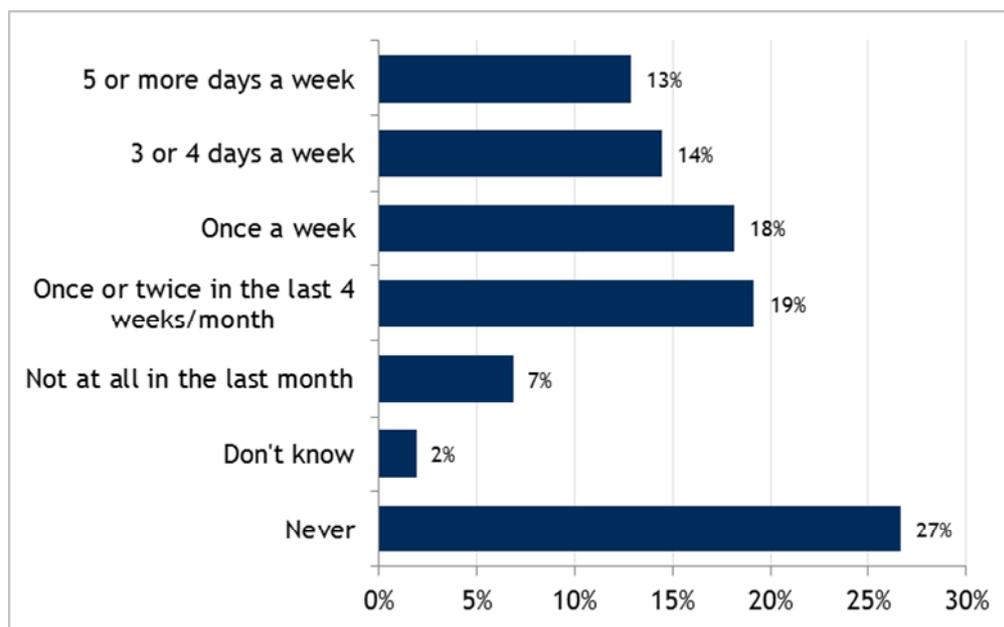
- 3.10 Use of the Barclays Cycle Superhighways was fairly mixed amongst respondents, with 20% using them at least 3 days a week, and most people having some experience of using one. However over 20% said that they had never used one and 10% were not sure.

FIGURE 3.7 USE OF BARCLAYS CYCLE SUPERHIGHWAY



- 3.11 Though a significant proportion (27%) said that they had never used the Barclays Cycle Hire scheme, the same proportion use it at least 3 days a week. Half of all the most frequent cyclists use Cycle Hire bikes for their journeys.

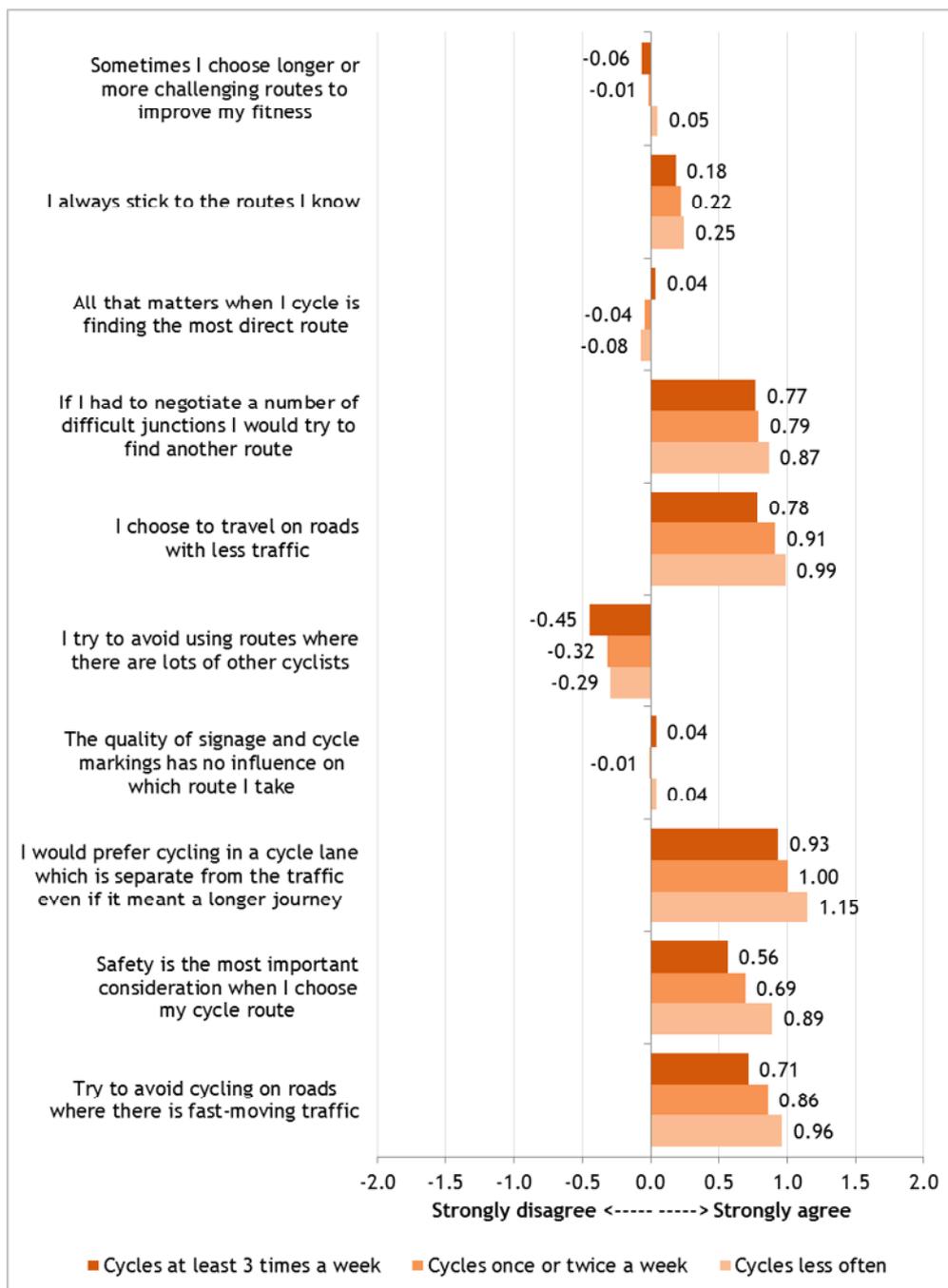
FIGURE 3.8 USE OF BARCLAYS CYCLE HIRE BICYCLES



Route choice considerations

- 3.12 Respondents were asked a series of ten attitudinal questions concerning how they choose their route when cycling. They were asked to rate each on a five point scale from strongly agree (+2) to strongly disagree (-2). Average scores have been calculated for each statement for each of the segments. The following chart compares the differences between those that cycle very frequently (the 3-times a week cyclists) and those that cycle less so.
- 3.13 Across all cyclists, the key considerations around route choice centred around choosing the safest routes, and avoiding traffic (either by cycling in a cycle lane separate to the traffic, or on roads where traffic volume is lower). In particular the highest score across all groups for the statement “I would prefer cycling in a cycle lane even if it meant a longer journey” suggest that most cyclists would rather take a longer journey in order to maintain at least some distance between themselves and other traffic on the road.
- 3.14 It is certainly not the case that cyclists will always choose the most direct route when making a journey - even the most frequent cyclists, and those that had a fixed time they had to arrive at their destination had an average score close to zero for this statement. This would imply that although some cyclists have a fixed time that they had to arrive, they would start their journey earlier in order to have an easier journey.
- 3.15 All groups disagreed with the idea that they would avoid routes where there were lots of other cyclists - in particular the most frequent cyclists. This suggests that for many, having other cyclists around them when cycling is a comfort rather than a hindrance.

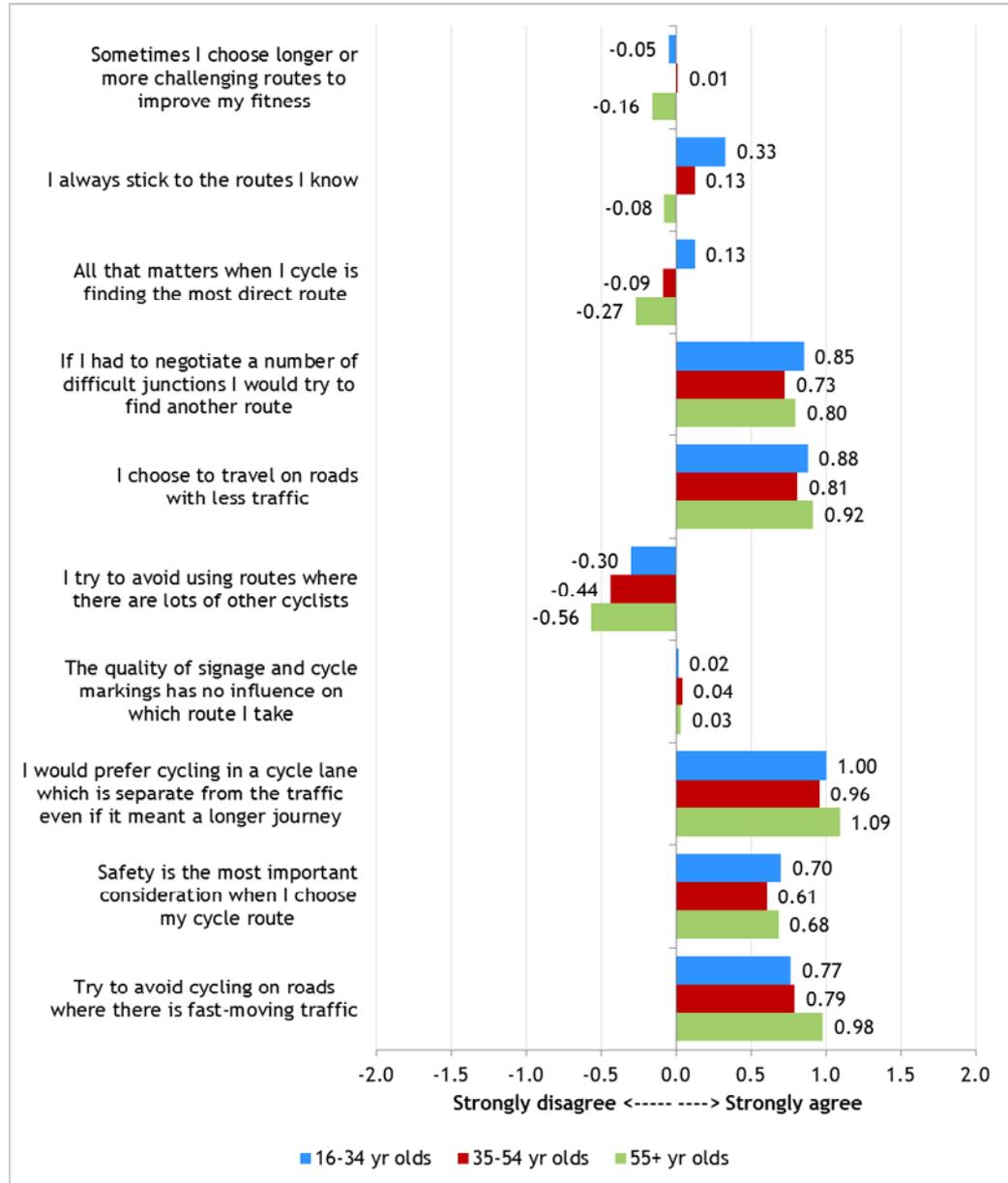
FIGURE 3.9 ROUTE CHOICE CONSIDERATIONS BY CYCLIST TYPE



- 3.16 Those aged 55 or over, and those aged under 35 were more likely to choose to cycle on safer routes with less traffic (or in a cycle lane separating them from the traffic).
- 3.17 Over 55s were also the most likely to want to cycle on routes with a higher volume of other cyclists. Those under 35, were the least likely (score of -0.3 compared to -0.56 for over 55s), though the score for that statement was below zero for each group, meaning that every group would rather cycle on routes with more cyclists.

3.18 Those under 35 were much more likely to stick to the routes that they know and are familiar with (they gave an average score of 0.33, compared to 0.13 for 35-54 year olds, and -0.08 for over 55s).

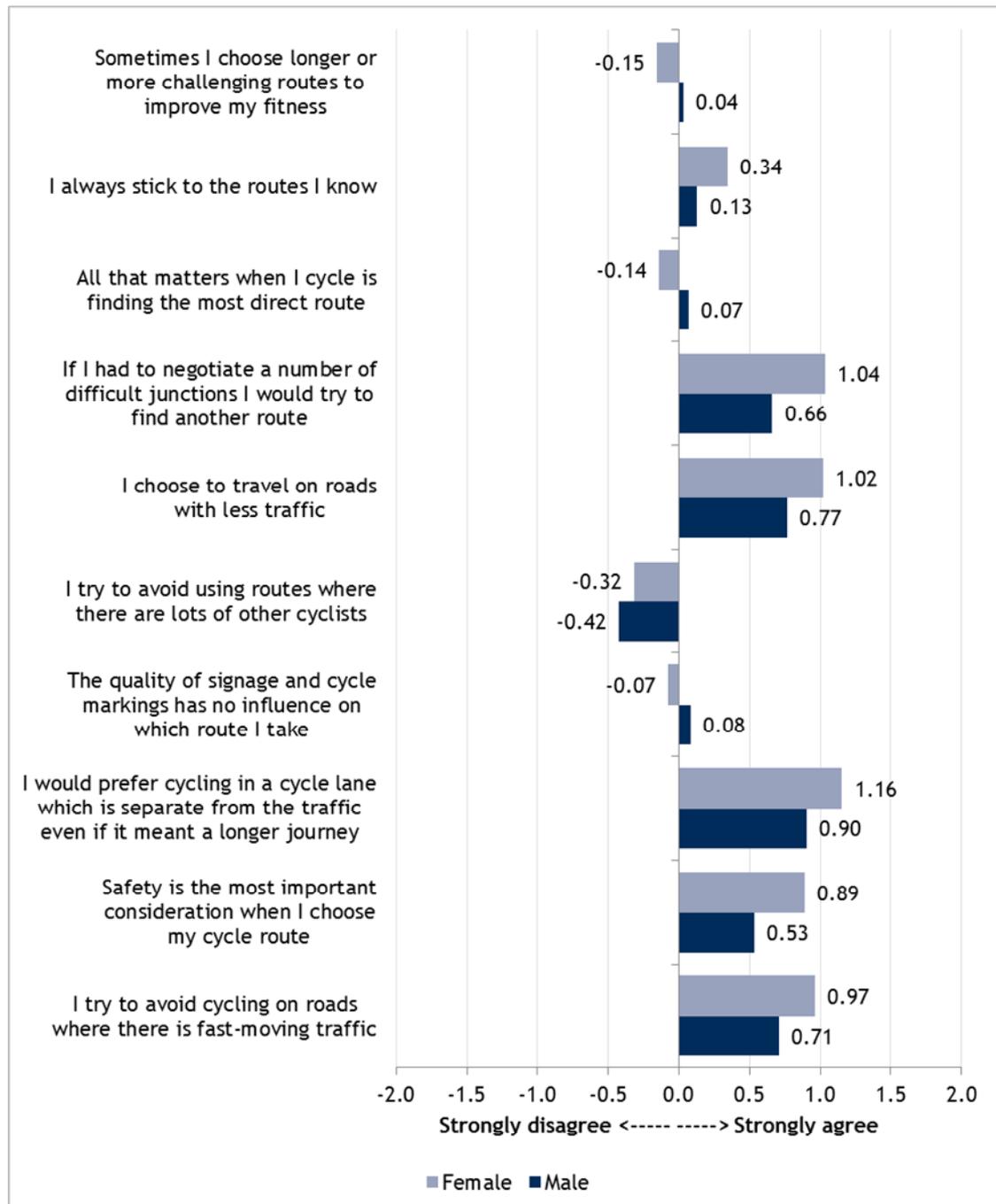
FIGURE 3.10 ROUTE CHOICE CONSIDERATIONS BY AGE GROUP



Final survey and model report

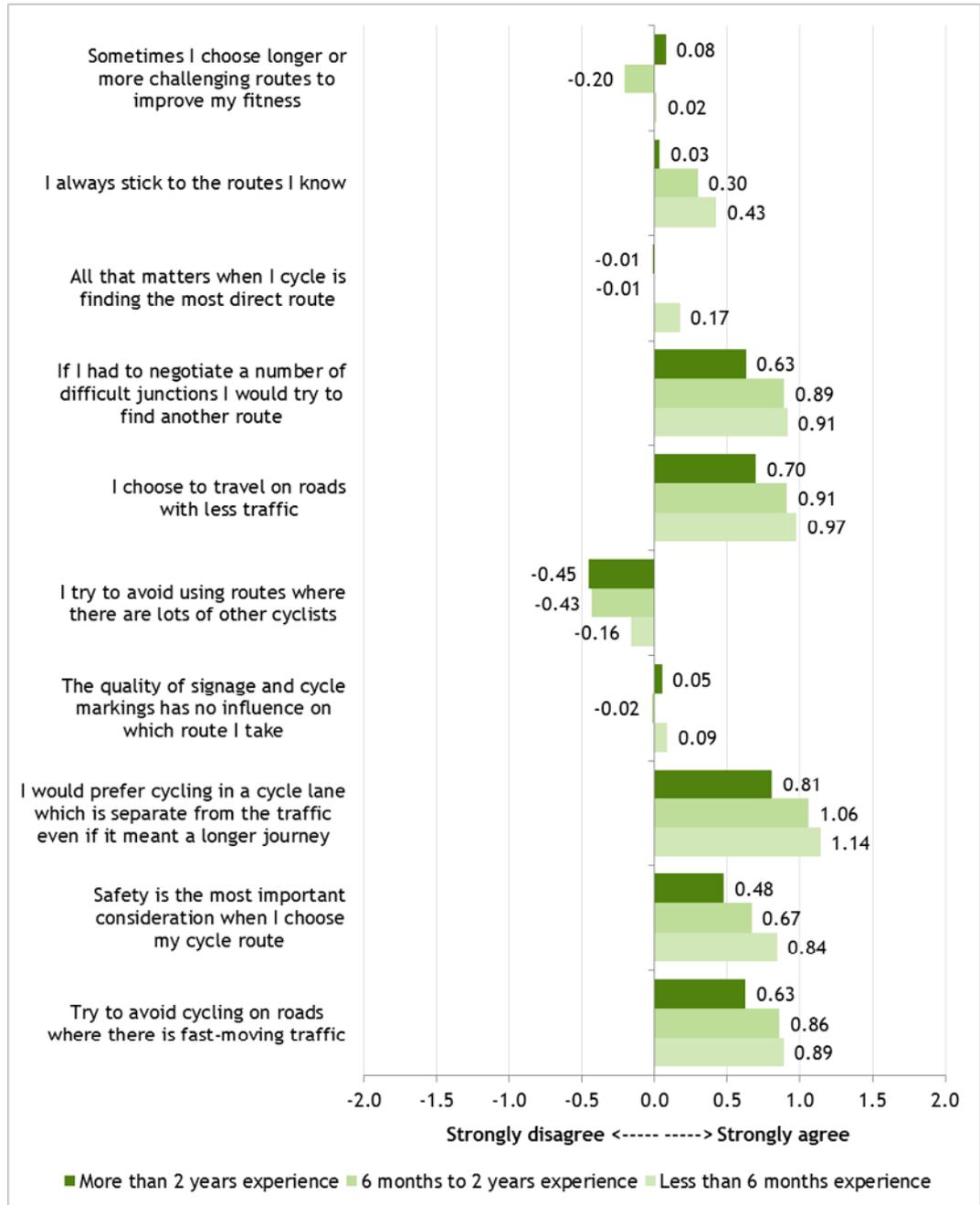
- 3.19 Female respondents were much more likely to prefer safer routes, away from other traffic, and away from difficult junctions. The average score for “Safety is the most important consideration when choosing a cycle route” for females was 0.89, compared to 0.53 for males.
- 3.20 Though male respondents also agreed on average that they would avoid a route if they had to negotiate a number of difficult junctions, they were less certain that they would avoid that particular route (0.66 compared to 1.04 for females).

FIGURE 3.11 ROUTE CHOICE CONSIDERATIONS BY GENDER



3.21 Those with a lower amount of cycling experience in London (i.e. less than 2 years) are more safety conscious when cycling, preferring to travel on routes with less traffic and a cycle lane, whilst avoiding the more difficult junctions. Those with more experience are seemingly more comfortable on difficult routes, but nonetheless prefer to cycle more on routes with other cyclists.

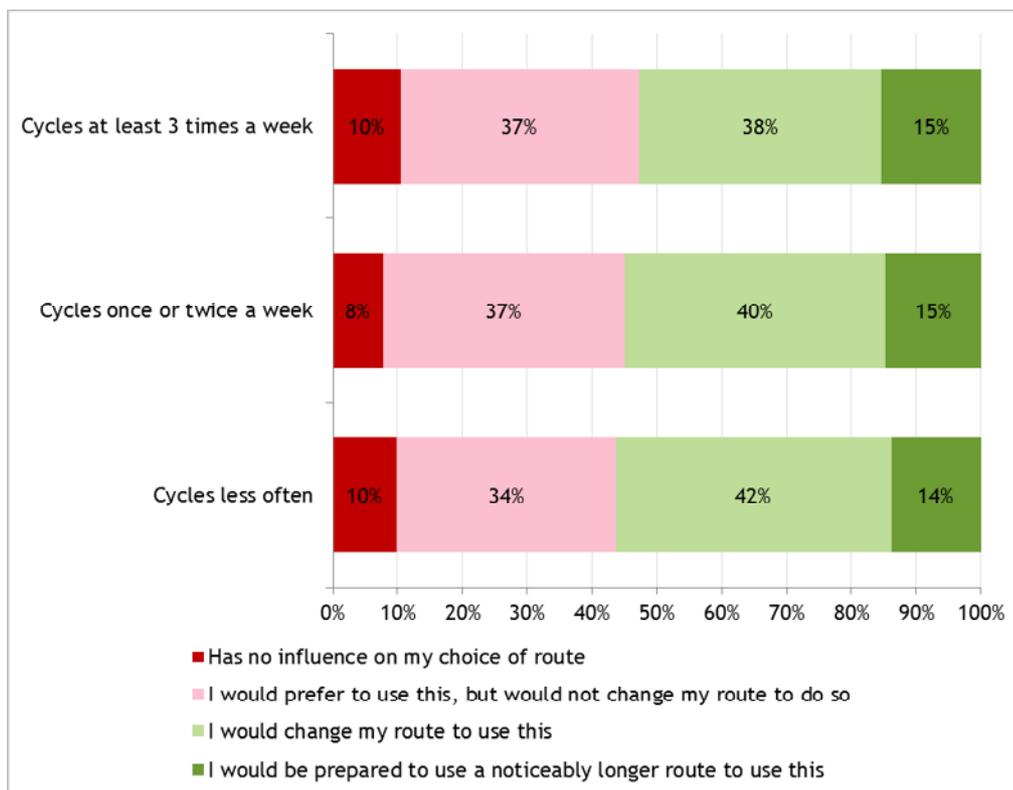
FIGURE 3.12 ROUTE CHOICE CONSIDERATIONS BY CYCLING EXPERIENCE



Effect of Parks and Green Spaces

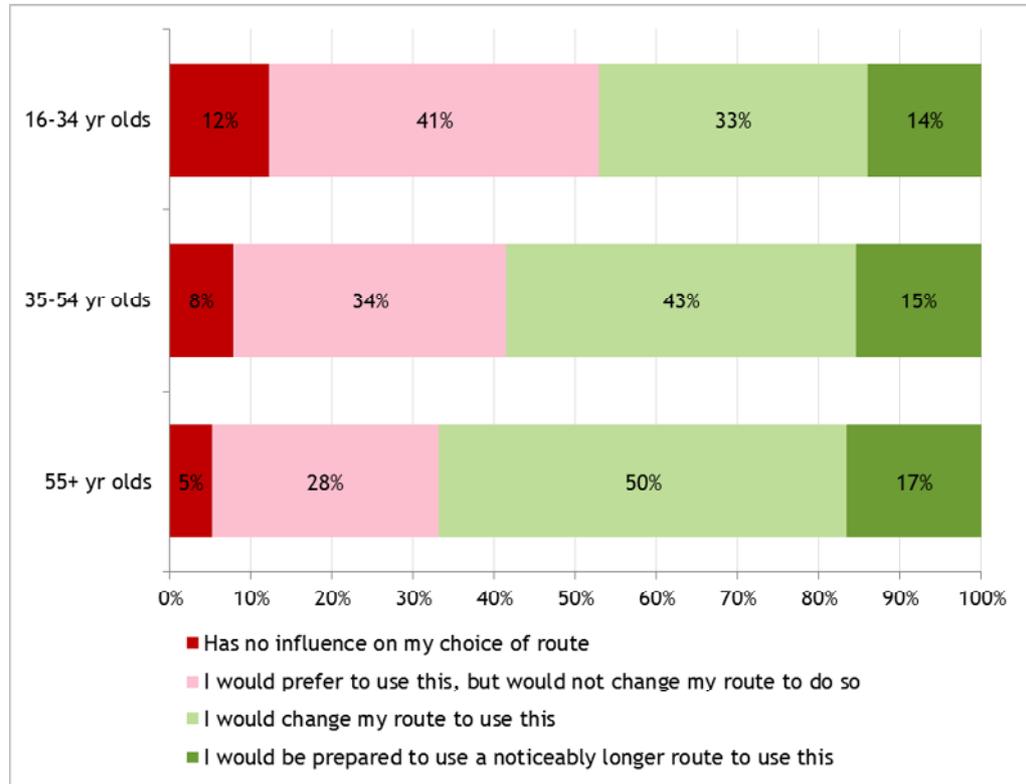
- 3.22 Respondents were asked if they would change their route in order to cycle through a park or green space. There were no images shown for this questions. Around half of all cyclists would change their route in order to travel through parks and/or green spaces, with around 15% saying that they would be prepared to use a significantly longer route. There was very little variation across the different cyclist types, but those with more time pressure attached to their journey (i.e. where they had to arrive at a fixed time) showed less willingness to change their route (50%) compared to those with greater flexibility in their arrival time (56%).
- 3.23 Those that cited the health benefits or fun and enjoyment as having a big influence on their decision to cycle were more willing to change their route in order to cycle in parks and green spaces compared with those that chose to cycle in order to save time or money.
- 3.24 The effect of park and green spaces on route choice was also slightly dependent on the journey purpose, with 50% of commuters indicating that they would be prepared to change their route, compared to 62% of leisure cyclists.

FIGURE 3.13 EFFECT OF PARKS AND GREEN SPACES ON ROUTE CHOICE



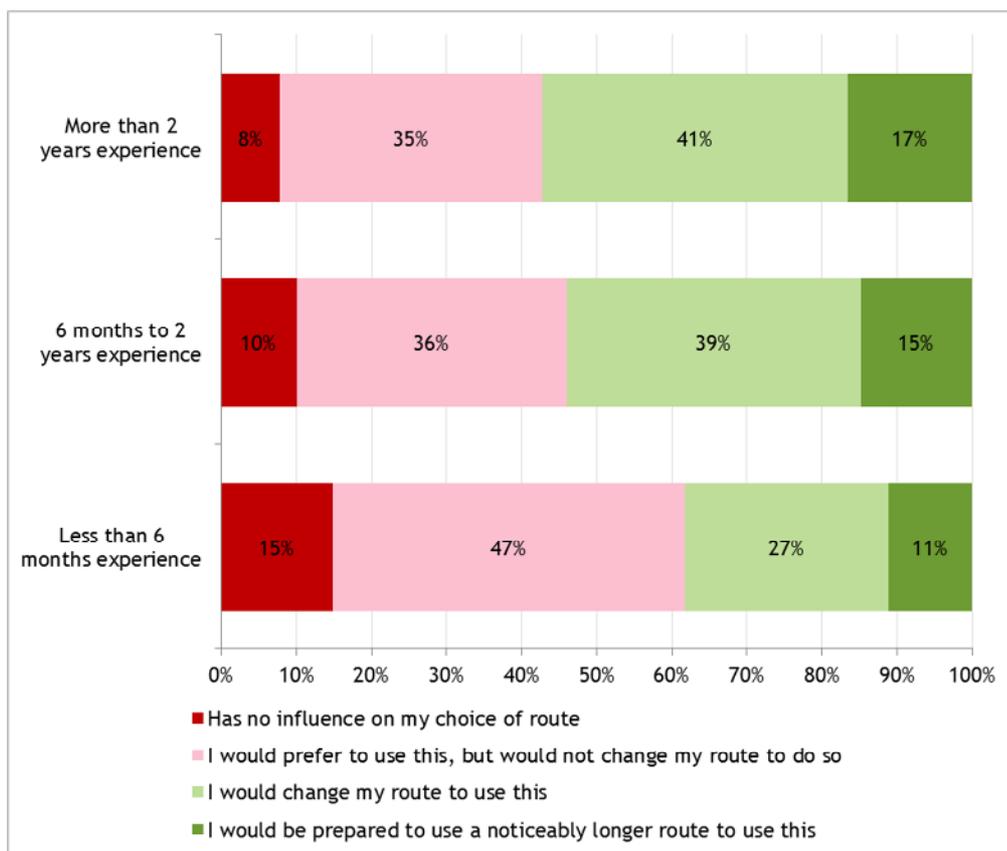
3.25 There was much greater willingness to change route for parks and green spaces amongst the over 55s. Though the willingness to use a noticeably longer route was very similar across all age groups, overall 67% of over 55s said they would change their route, compared to 58% of 35-54 year olds, and 47% of under 35s.

FIGURE 3.14 EFFECT OF PARKS AND GREEN SPACES ON ROUTE CHOICE - BY AGE



3.26 Those with very little cycling experience were less willing to change their route in order to travel through a park or a green space: 38% said that they would change their route (11% substantially so), compared with 54% of those with 6 months to 2 years’ experience, and 58% of those with more than 2 years’ experience. This may be due to those with little experience being less willing to deviate from the route that they know and are familiar with - and that taking a “greener” route away from this for part of the journey would mean they were unsure of where to go upon leaving that route.

FIGURE 3.15 EFFECT OF PARKS AND GREEN SPACES ON ROUTE CHOICE - BY CYCLING EXPERIENCE

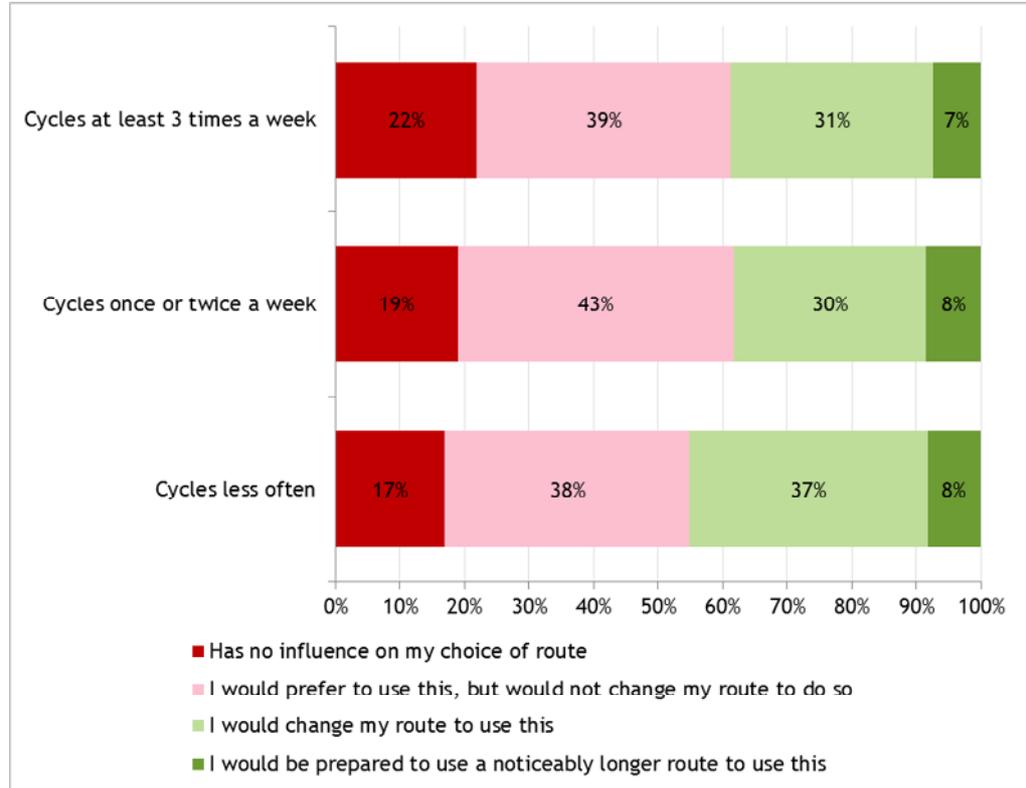


Effect of Cycle Superhighway and Cycle Lanes

3.27 Respondents were also asked if they would change their route in order to cycle on a cycle superhighway or other dedicated cycle lane. Again, there were no images shown for this questions. On average, 40% of all respondents said they would change their route in order to use a cycle superhighway, with 8% prepared to use a noticeably longer route in order to do so. This was less than the equivalent answers for green spaces, where 54% and 14% who said they would change, or change to a noticeably longer route.

3.28 Again there was little variation amongst cyclist types, though cycle superhighways had slightly less influence on the route choice of the most regular cyclists. There was no variation between male and female cyclists, and generally the willingness to consider change routes to use a cycle superhighway increases slightly with age.

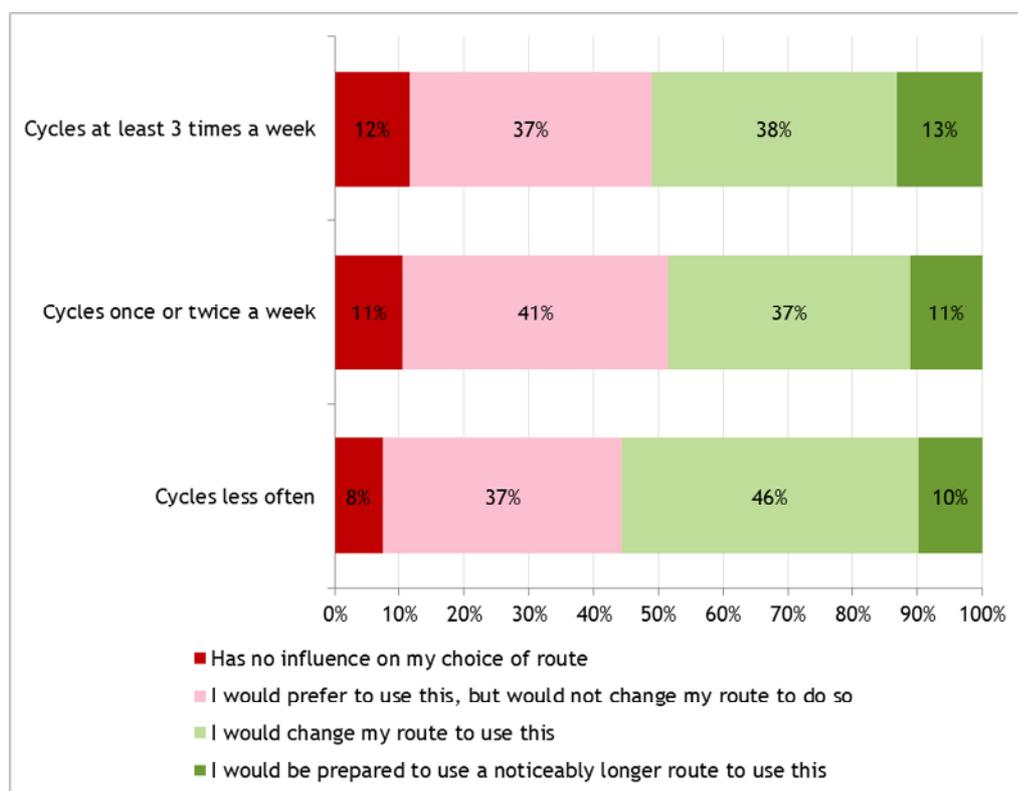
FIGURE 3.16 EFFECT OF CYCLE SUPERHIGHWAY ON ROUTE CHOICE



Final survey and model report

- 3.29 Willingness to change route for a dedicated on-road cycle lane was higher than for cycle superhighways, but lower than for parks and green spaces. 51% said that they would change their route in order to use it, with 12% willing to use a noticeably longer route in order to use it. This may be because dedicated cycle lanes are often on quieter roads than cycle superhighways.
- 3.30 There was again no significant variation amongst the different cyclist types or between the different experience levels, and unlike parks and green spaces, there was little difference between age groups. On the other hand, female cyclists were slightly more willing to change their route in order to use a dedicated on-road cycle lane (56% of females said they would change their route, compared to 48% of males).

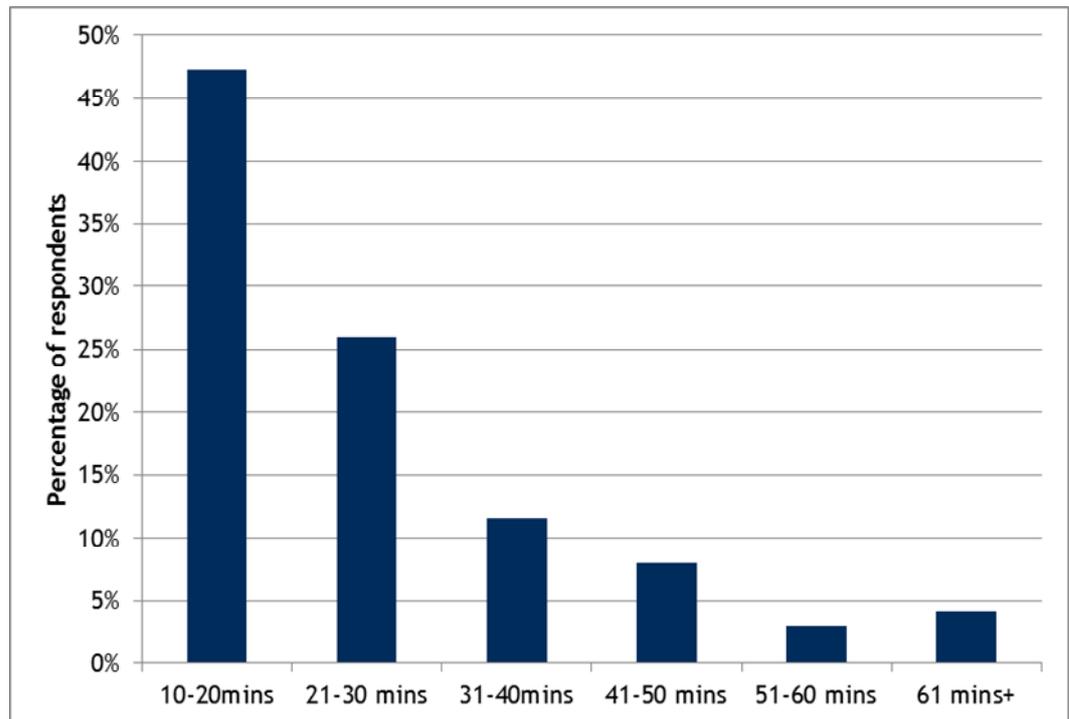
FIGURE 3.17 EFFECT OF DEDICATED ON-ROAD CYCLE LANE ON ROUTE CHOICE



Journey profile

- 3.31 Respondents were asked to think about a specific trip that they had recently taken, that lasted at least 10 minutes. The stated preference questions were asked in relation to this journey. This helps ensure that the results represent real choices as far as possible.
- 3.32 The mean length of these trips was 28 minutes and the median was 25 minutes. Forty-seven per cent of respondents reported trips of 10-20 minutes (see Figure 3.18). The trip length varied very little with age, gender, experience or frequency of cycling.

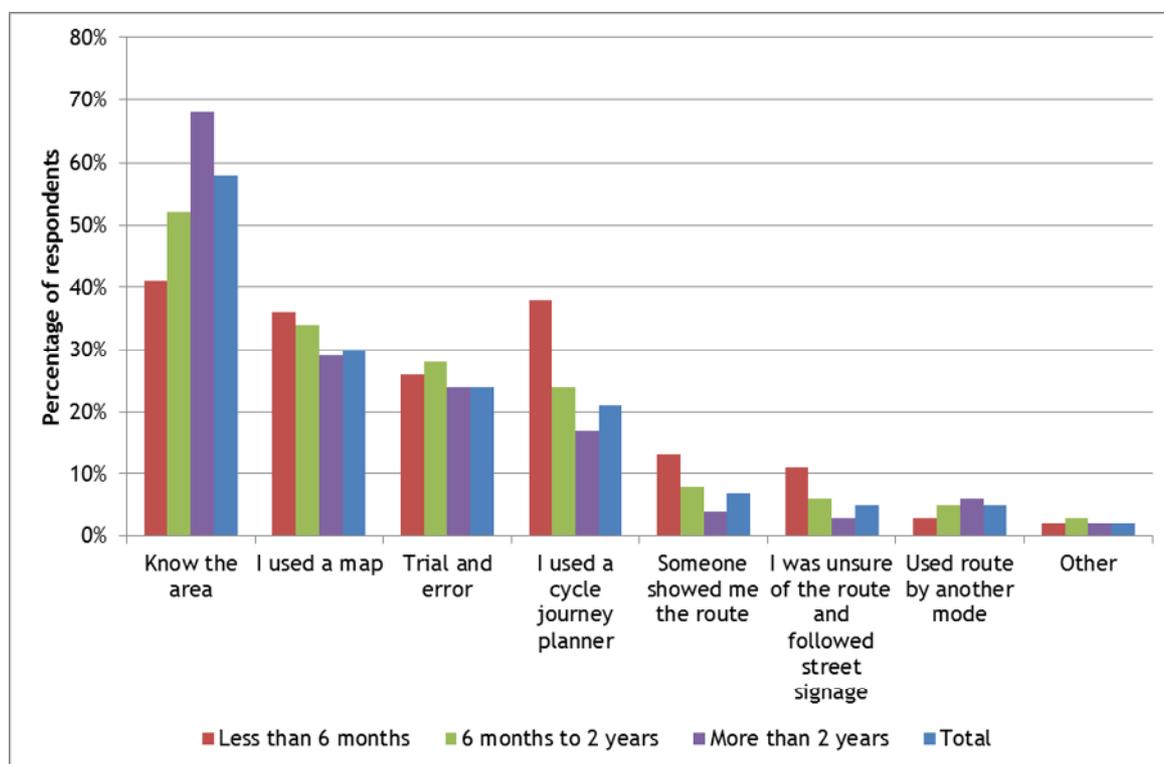
FIGURE 3.18 JOURNEY TIME FOR MOST RECENT TRIP



Final survey and model report

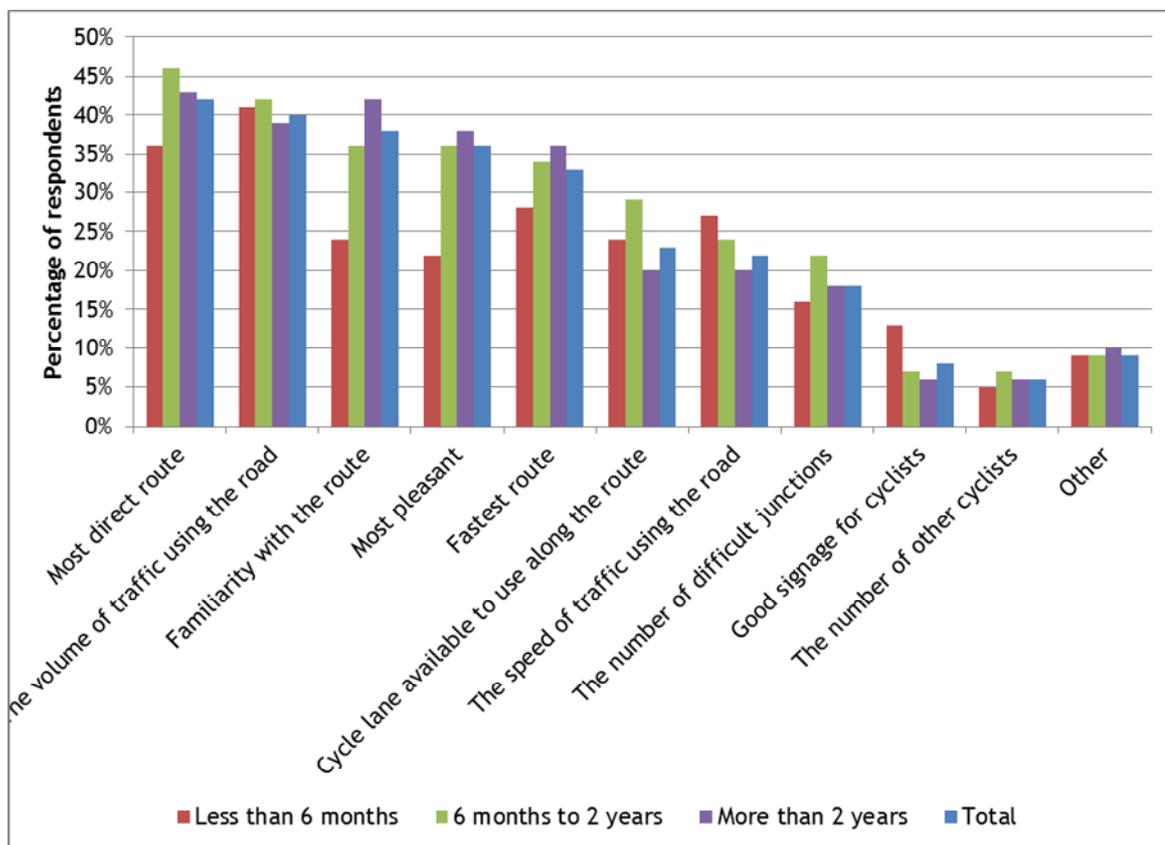
- 3.33 Respondents were asked how they found out about the route they chose on their most recent journey. The most common response was that they knew the area (41% of respondents). This increased for those who had been cycling in London for the longest. This was followed by using a map, and then ‘trial and error’. The newest cyclists however, were much more likely to use a cycle journey planner (38% compared to 24% for those cycling between 6 months to 2 years and 17% for those cycling for more than two years).
- 3.34 Women were slightly less likely to use a map and more likely to use a journey planner (26% and 24% for women compared to 33% and 20% for men respectively). Older people were less likely to use a map (11% for over 55s compared to 30% average) or a journey planner (9% for over 55s compared to 21% average), and more likely to rely on knowing the local area (78% for over 55s compared to 58% average).

FIGURE 3.19 HOW DID YOU FIND OUT ABOUT THIS ROUTE?



- 3.35 The main reason for choosing the route taken was that it was the most direct route available to them (42% of respondents cited this as one of their reasons). This was followed by the volume of traffic (40%), familiarity with the route (38%) and that the route was the most pleasant (36%).
- 3.36 There was some difference depending on length of time respondents had been cycling in London (see Figure 3.20). The most notable difference is between those cycling for less than six month in London and other cyclists. The newest cyclists were less likely to choose a route due to familiarity, pleasantness, or speed of the route. They were however, more likely to choose a route based on the speed of the traffic and the signage.
- 3.37 Those with less confidence cycling on busy roads were slightly more likely to choose a route based on the speed or volume of traffic, otherwise there was very little difference in the route choice considerations with those of more confidence.

FIGURE 3.20 REASONS FOR CHOOSING ROUTE



4 Junction safety

Introduction

- 4.1 The majority of cyclist casualties in London occur at junctions and it has also been found that cyclists perceptions of the risk associated varies across different types of junction¹. There are obviously implications for route choice and so the questionnaire sought to explore this further. Respondents were first asked a simple safety rating and were subsequently taken through a 'detour experiment'.

Safety rating

- 4.2 Respondents were first asked to simply rate eight types of junction situation for how safe they would feel cycling through them. The scale used was five points from very unsafe to very safe. The junction situations were all shown pictorially (see question B7 in appendix A). The results are shown as percentages of responses in Figure 4.1. The responses have also been presented as a relative rating, with zero being neutral, very safe being '2' and very unsafe '-2'. The average ratings for each junction situation are shown in Figure 4.2.
- 4.3 Turning left at a signalised junction was perceived to be the safest, with 84% saying they felt safe or very safe in this situation, and an average rating of 1.2. Travelling straight on across a minor junction was also perceived to be fairly safe.
- 4.4 The least safe junctions were perceived to be a right turn at a two lane roundabout and a right turn from a minor road onto a major one with, respectively, 66% and 70% of respondents feeling unsafe or very unsafe and average ratings of -0.8 and -0.9.

¹ Parkin, J., Wardman, M. and Page, M. 2007 'Models of perceived cycling risk and route acceptability'. *Accident Analysis and Prevention* 39 (364-371)

FIGURE 4.1 FEELINGS OF SAFETY AT JUNCTION SITUATIONS

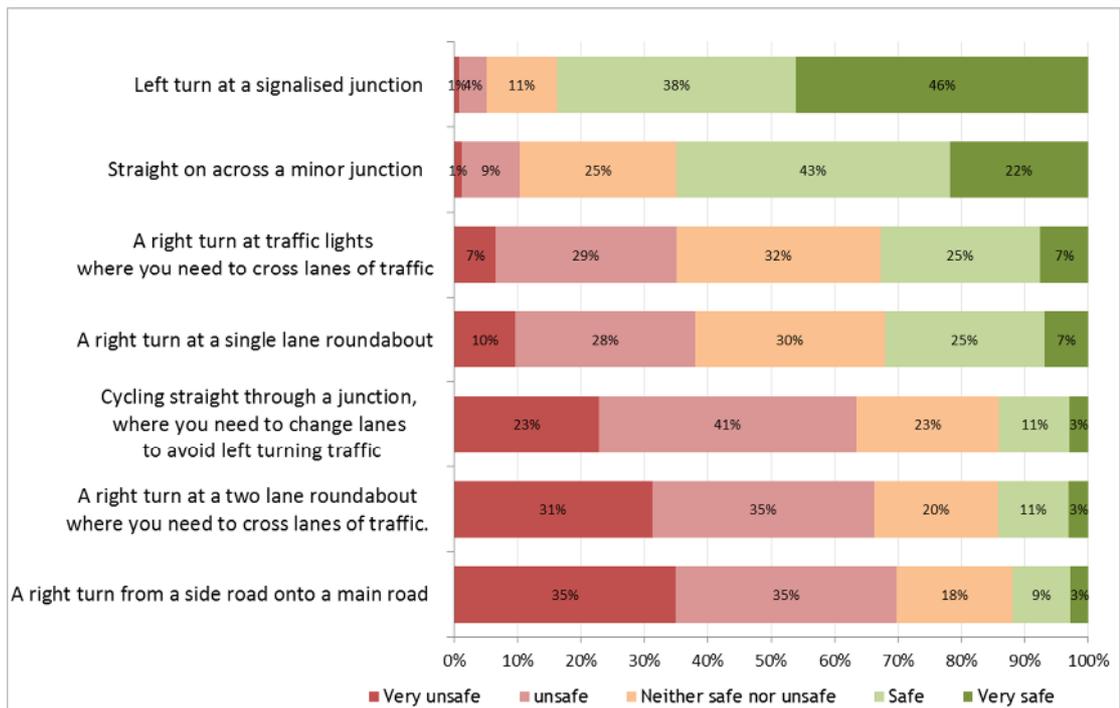
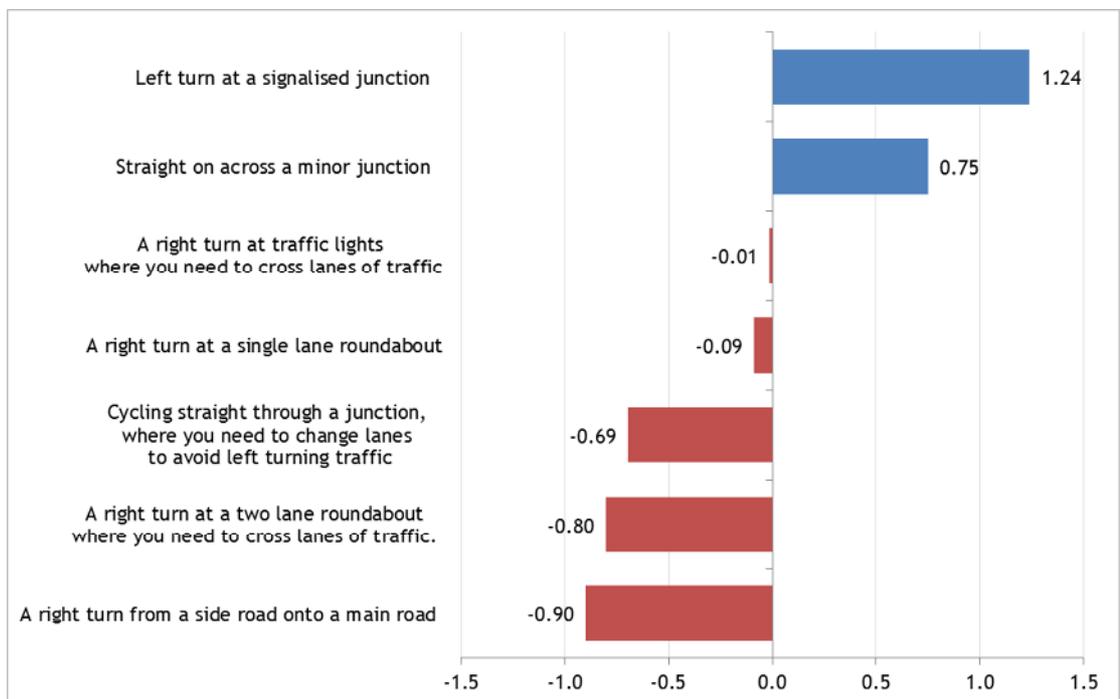


FIGURE 4.2 AVERAGE SAFETY RATINGS FOR EACH JUNCTION SITUATION



- 4.5 In general female respondents were slightly more likely to rate each junction as less safe than male respondents (see Figure 4.3). As might be expected, those who cycled most regularly felt safer at most junctions than less frequent cyclists (see Figure 4.4). Older respondents also tended to feel less safe than younger ones. However, these differences were very slight.
- 4.6 Those with less cycling experience also tended to feel less safe overall than those with more experience, though again these differences were very small.

FIGURE 4.3 AVERAGE SAFETY RATINGS BY GENDER

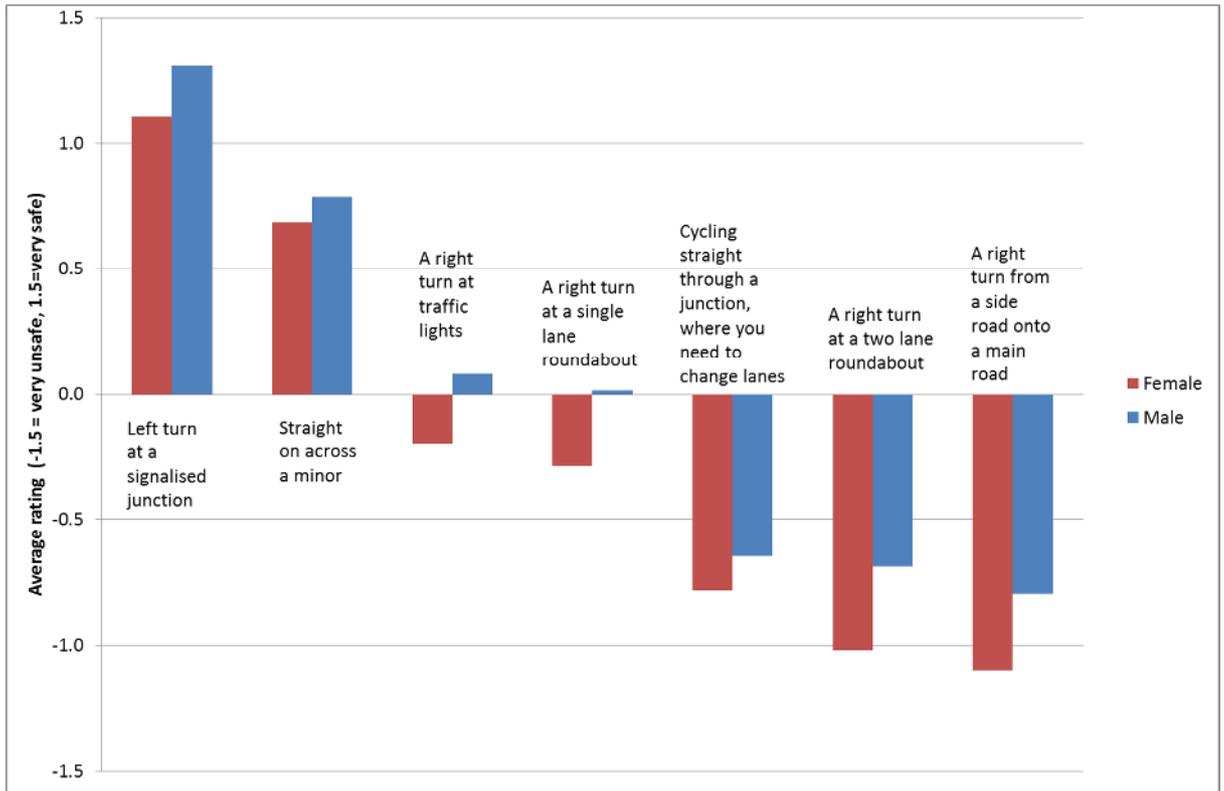
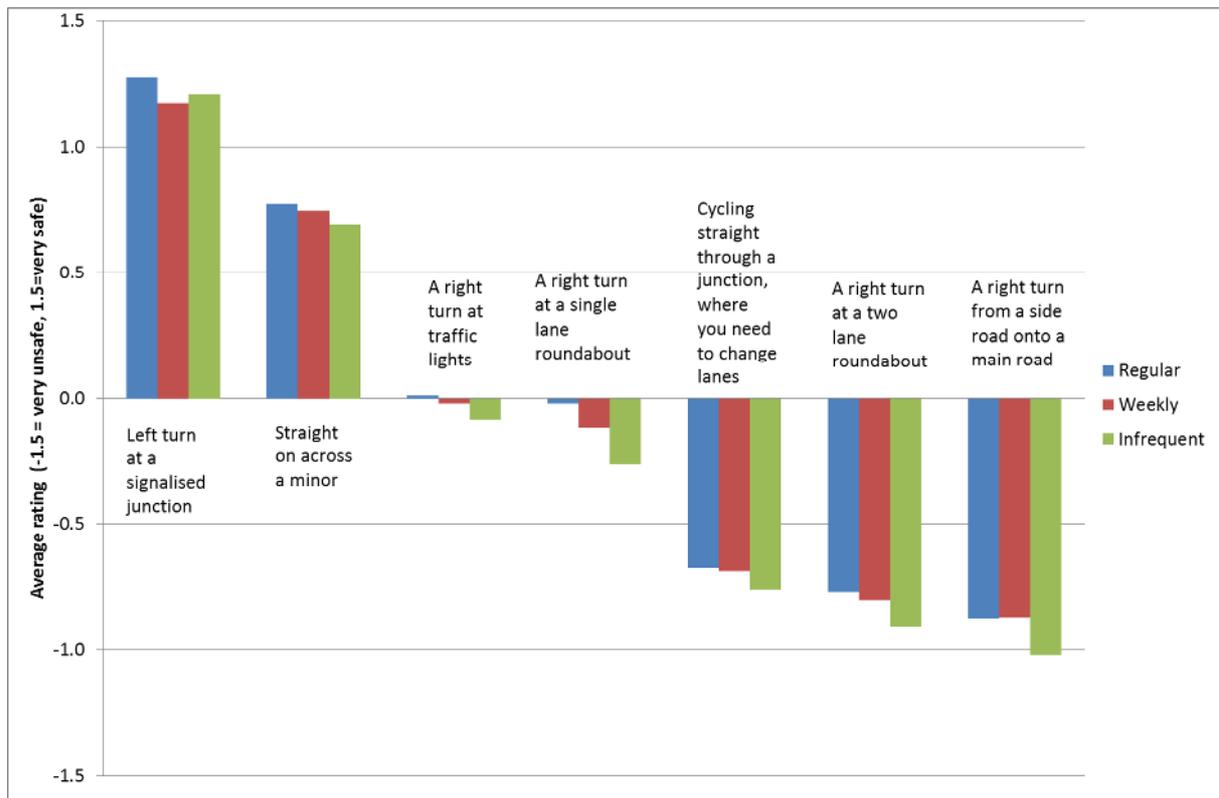


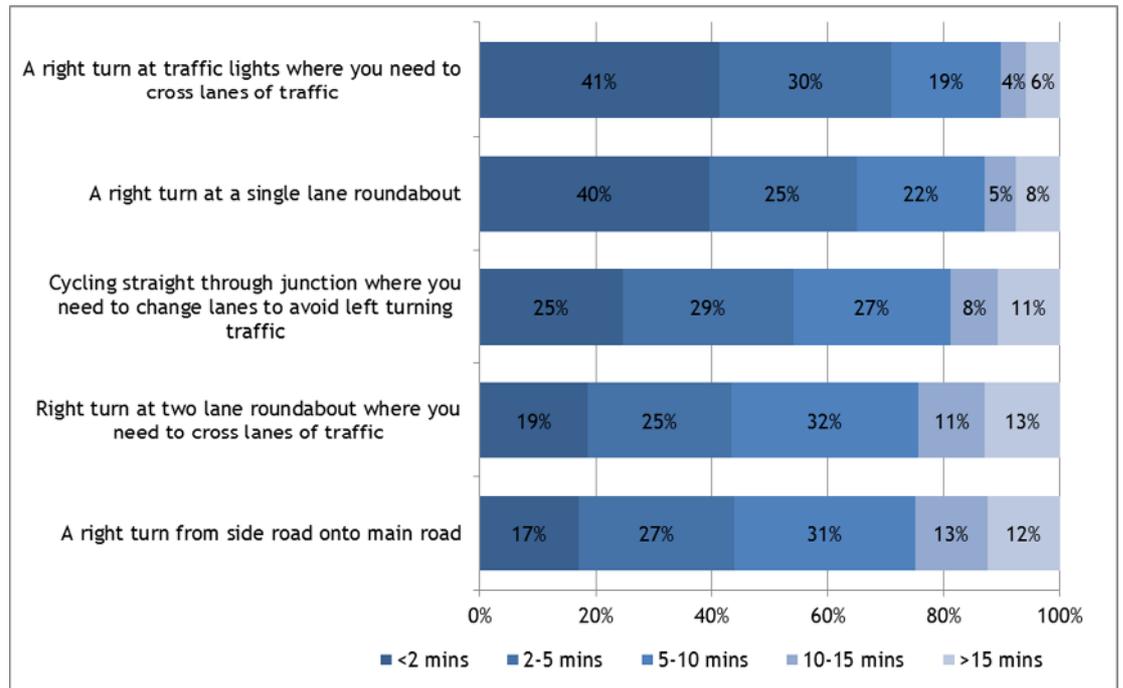
FIGURE 4.4 AVERAGE SAFETY RATINGS BY FREQUENCY OF CYCLING



Detour experiment

- 4.7 To investigate how perceptions of safety may translate into route choice a question was designed to estimate the extent cyclists would go to avoid a junction perceived to be unsafe.
- 4.8 A subset of five junction situations was selected, ensuring that the most complex ones were included. Each respondent was shown a random four of these five and asked for each whether they would take a longer detour to avoid it. If respondents said that they would take a two minute detour they were asked whether they would still take it if it took five minutes, then ten minutes and then 15 minutes. Once a respondent said that they would not take the detour then the question moved onto the next junction.
- 4.9 Broadly the results reflect the responses to the safety question. The right turn from a side road onto a major road and the right turn on a two-lane round-about are the junctions that respondents would go furthest to avoid. In both cases over half (56%) of respondents were prepared to extend their journey by more than five minutes to avoid it (see Figure 4.5).
- 4.10 Respondents were also keen to avoid cycling through a junction where they had to change lanes, with 46% taking a detour of at least five minutes.

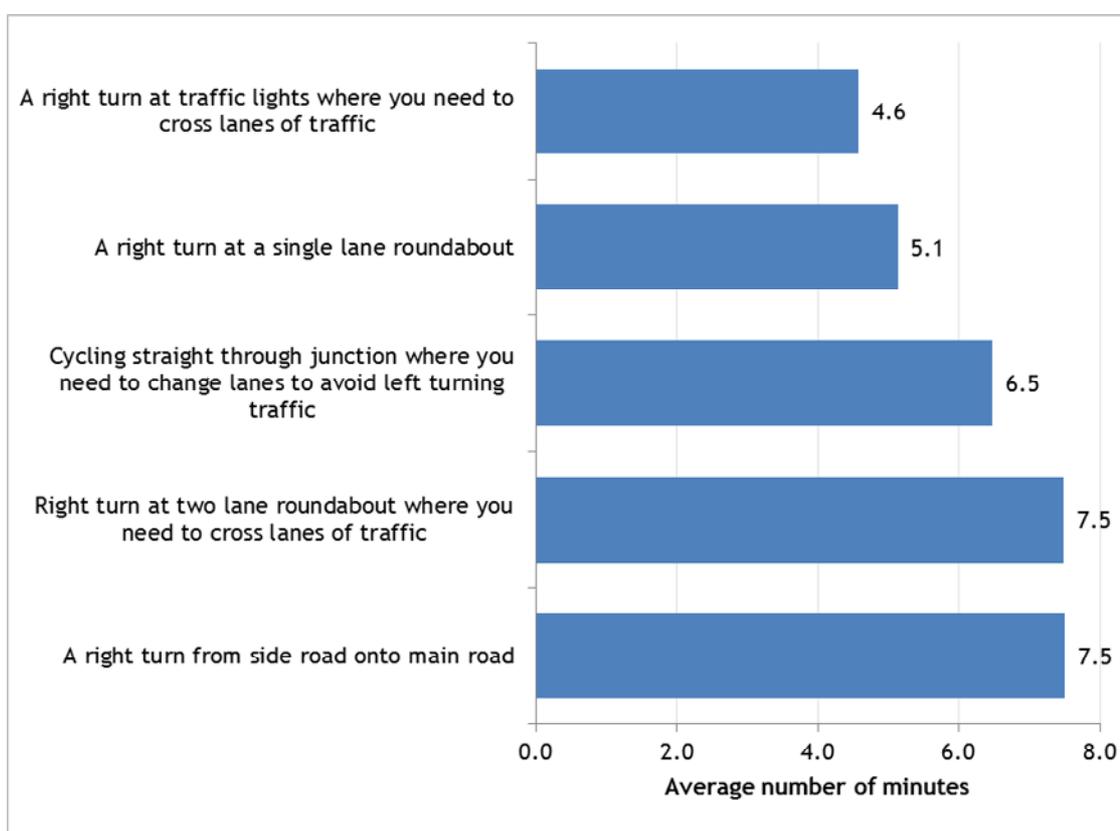
FIGURE 4.5 MAXIMUM DETOUR TAKEN TO AVOID JUNCTIONS



Final survey and model report

- 4.11 These findings have been transformed into an average detour length for each junction (see Figure 4.6). This method provides a relative rating for each junction, but does not necessarily provide an accurate result for each junction specifically. This is because the question was framed in terms of time intervals and to calculate an average we have had to make assumptions about the values these intervals represent.
- 4.12 The mid-point was taken for the first four intervals². However, there is no mid-point for the last category (>15 mins) so answers in this category were allocated as 20 minutes. The results range from an average of 4.6 minutes delay to avoid a right turn at traffic lights, to a 7.5 minutes delay to avoid a right turn at a two lane roundabout, or a right turn from a side road onto a main road.

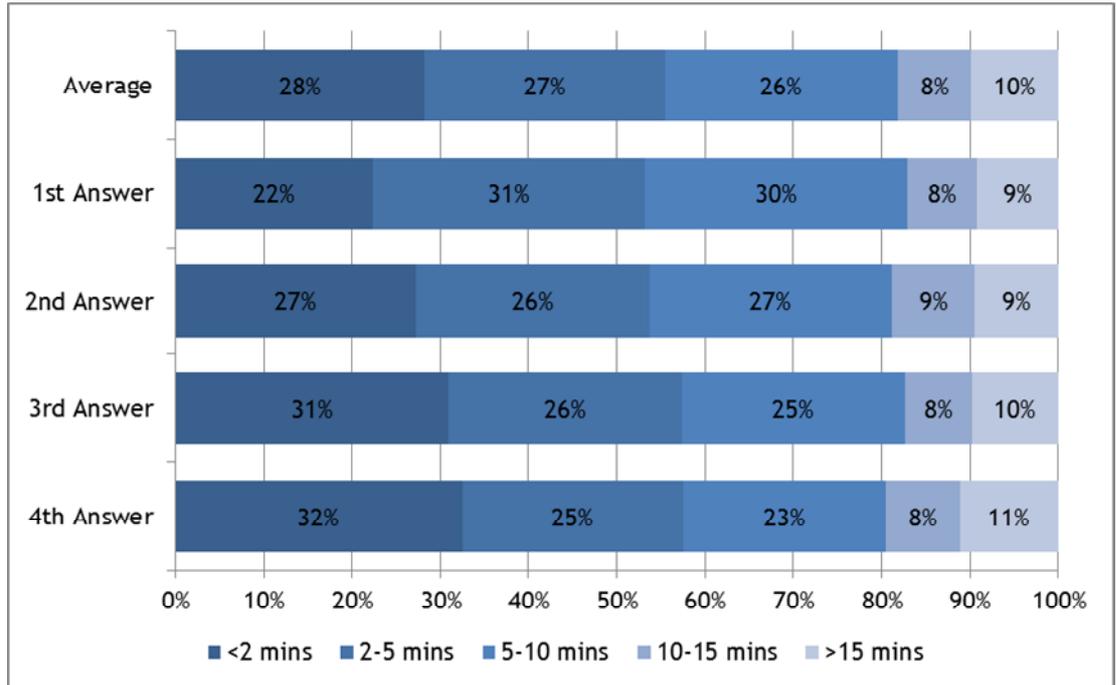
FIGURE 4.6 MEAN MINUTES OF DETOUR FOR EACH JUNCTION



² In reality many of those selecting less than 2 minutes of detour may actually have effectively been saying that they would not accept any time delay

4.13 This was a long question and as Figure 4.7 shows, there was a gradual increase in the proportion of respondents taking the two minute detour as they moved through the questions³. To minimise the bias as a result of this trend, the order in which the junctions were shown was randomised. The overall effect is therefore limited. However, it should be recognised that the real detour values may in fact be slightly higher than the findings show here. This is because as respondents have worked through the questions they may have chosen to reject detours that they would in reality take, in order to reduce the number of questions they were asked.

FIGURE 4.7 RESPONSES BY ORDER OF QUESTIONING



³ This effect was also seen in the pilot and, as a result the number of junctions shown was decreased from five to four. The effect is now less pronounced.

5 Model report

Introduction

- 5.1 The following chapter details the development and analysis of the Stated Preference (SP) section of the online survey. It presents the methodology behind the SP exercise, the parameters from the models calibrated from the SP results, and an interpretation of the impact of each parameter on cycle route choice. The final section of this chapter outlines the results of tests carried out on different segmentations, in order to assess whether the model parameters vary between segments (i.e. are different groups of people willing to travel different amounts of time on a certain type of cycle route).

Methodology

- 5.2 The online survey included a single Stated Preference (SP) exercise, together with a separate junction-based exercise, which were designed to identify the impact on cycle route choice of a number of different key attributes.
- 5.3 The key attributes were decided upon following the completion of the accompanied cycle rides conducted in April 2012. In addition to the nature of different junctions (which was assigned to a separate exercise and is discussed earlier in this report), the three key attributes were deemed to be:
- journey time,
 - provision of cycle lane⁴, and
 - the nature of the road that the person would be travelling on: i.e. a major road (30mph, medium traffic), high street (20mph, heavy traffic) or residential street (20mph, low traffic). This attribute took into account the volume of traffic as well as the speed.
- 5.4 For the questions leading into the SP exercise, respondents were asked to think of the most recent journey that involved at least a 10 minute journey by bicycle, and were then asked about the specific details of that journey (i.e. the time of day, where the journey started and ended, and why they had chosen that route)⁵. For the SP exercise itself, respondents were then asked to imagine that they were making a new journey similar to that journey, and that for a 10 minute section of that journey they would have a choice of two cycle routes with certain varying characteristics, these being the key attributes of journey time, provision of cycle lane, and nature of the road.
- 5.5 The cycle route characteristics of road type and the nature of the cycle lane were presented as images to respondents, with a description of each of the images shown to them at the beginning of the exercise. These are included in the questionnaire in Appendix A.

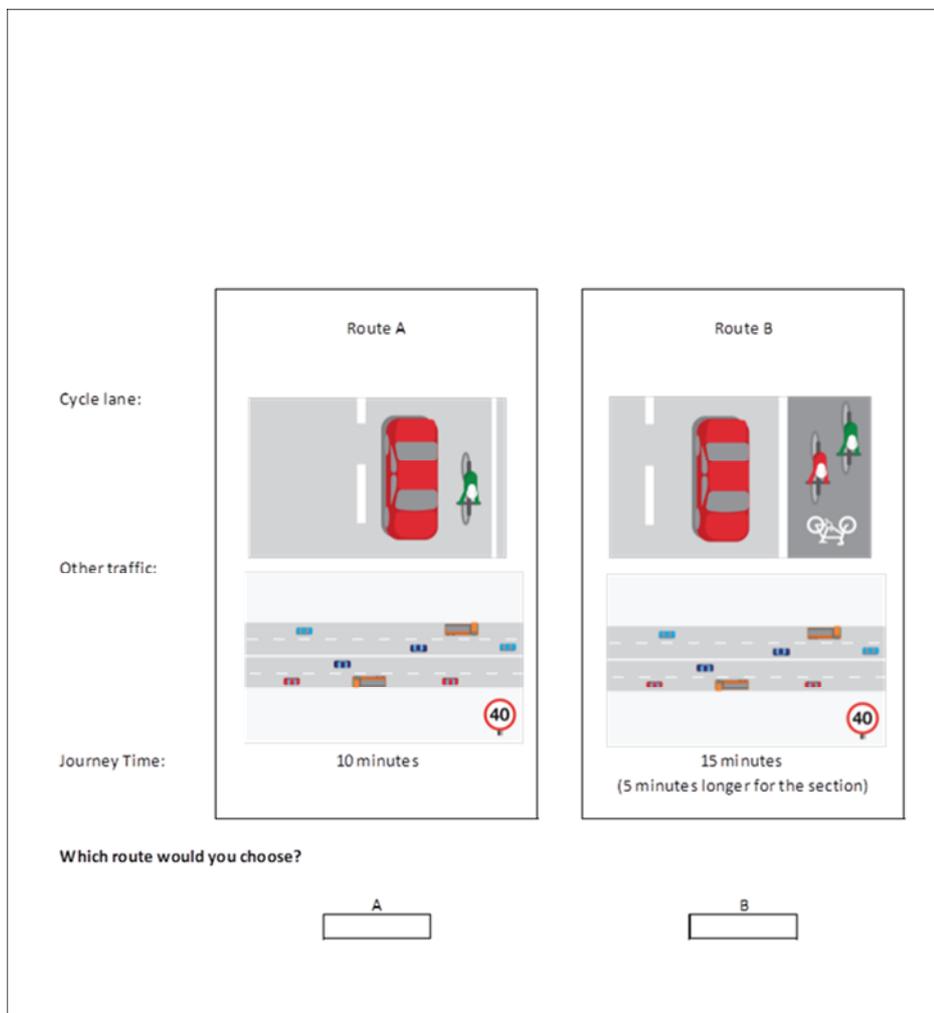
⁴ 3 levels of cycling lane were shown: no lane; a narrow advisory lane (i.e. a poor quality cycle lane); and a wide mandatory cycle lane (i.e. a good quality cycle lane)

⁵ The findings from these questions are presented in chapter 3.

Final survey and model report

5.6 Each respondent was shown a total of 12 scenarios ('cards'), an example of which can be seen in Figure 5.1. (All the images used are shown in section C of the questionnaire in Appendix A.) In order to capture data on as many different choices as possible the SP scenarios were designed in three blocks, with a third of the total respondents seeing each of the three blocks.

FIGURE 5.1 EXAMPLE SP CARD



5.7 The following table shows the different descriptions, or “levels” of the key attributes. The attributes as presumed to increase in ‘quality’ as they move up through the levels. This was tested during the pilot.

TABLE 5.1 SP ATTRIBUTES AND LEVELS

Attribute	Level 1	Level 2	Level 3	Level 4	Level 5
Cycle lane provision	No cycle lane	Bus lane	“Advisory” cycle lane	“Mandatory cycle lane”	Off-road
Nature of road	High street	Major road	Residential street	Off-road	
Journey Time	10 minutes	15 minutes	20 minutes	25 minutes	

- 5.8 Respondents were consistently presented with all attributes at level 1 as their Route A (i.e. a 10 minute journey on a high street with no cycle lane) to ensure that comparisons can be made across the different cards, with the levels on Route B varying from card to card. Certain attribute levels were restricted on what other attribute levels were shown; for example, the two off-road attribute levels could only be shown together.

Stated preference theory

- 5.9 Stated Preference analysis is based on Random Utility Theory. We assume that the ‘attractiveness’ or utility of a choice is related to the attribute levels or values. So, for example, if the utility of choice A is higher than that of B, it is more likely a respondent will choose A. Conversely, if choice A is chosen we infer that its utility is likely to be higher than that of B. It is important to note that utility is only a modelling device; it does not have a physical existence, therefore it is not possible to know precise relationships between attributes.
- 5.10 We assume a relationship of the form:

$$Utility\ of\ A = \left(\sum_i a_i x_{i,A} \right) * t_A$$

where a_i are parameters to be estimated, $x_{i,A}$ are the attribute levels and t_A is the benefit associated with A (i.e. the parameter weight relative to time).

- 5.11 The SP exercises have been analysed using Multinomial Logistic Regression Models using the Stata software package.

Stated preference analysis

Overview

- 5.12 The data from the SP exercise was collated together with the results from the rest of the survey, and was then cleaned by Research Now, with final cleaning completed by SDG. In total, all 2,307 respondents that completed the rest of the survey also completed the SP exercise, and were taken forward for analysis.

Trading analysis

- 5.13 Trading analysis, or analysis of the number of respondents who varied the route that they chose across the 12 cards that they were shown, looks at the proportions of respondents who would always choose either the fastest route, or the highest “quality” route. It also provides a good indication of the quality of the SP exercise, in that if the different attribute levels are defined in such a way that respondents are receptive to them, then the level of trading will be high, and the model parameter estimates will be more robust.
- 5.14 The following table shows the trading analysis results for the SP exercise, both overall and then segmented by cyclist type. Overall there is a high level of trading, which indicates that people are prepared to consider a change of route under the right conditions. The more frequent commuter cyclists were more likely to always opt for the fastest route, regardless of conditions. Those travelling for a work-

based trip (either commuting to/from work or on a business trip) were again more likely to choose the fastest route in every scenario. It is worth noting however, that a person’s habits will in reality reduce the likelihood of choosing a different route.

TABLE 5.2 TRADING ANALYSIS

	Overall (100%)	At least 3 times a week cyclists (57%)	1-2 times a week cyclists (25%)	Other cyclists (18%)
Traded	87%	85%	88%	89%
Always chose fastest route	10%	12%	8%	6%
Always chose highest quality route	3%	3%	4%	5%

Choice proportions

- 5.15 The choice proportions for each attribute level allows us to sense check the proportions of respondents choosing the alternative route when each of the levels are shown.
- 5.16 As demonstrated in the following tables, the results of the choice proportion analysis were intuitively sensible, with greater proportions of respondents opting for the alternative route (route B) as the quality of each attribute increased in route B. Route A always showed a 10 minute journey on a residential road, with no cycle lane.
- 5.17 The following three tables highlight how choices changed across each of the three attributes. Taking the choices on all cards we can see, for each attribute level, what proportion chose route A and route B on all cards where that level was shown. The one attribute where the choice proportions were not as expected were for the type of road. In the pilot survey, the results of the SP exercise were such that it appeared that cycling on a high street was in fact perceived to be worse than cycling on a major road. In the final survey however, the reverse was true, because more people selected Route A (which always had high street) when major road appeared in Route B than when high street was on Route B, as Table 5.4 demonstrates. The actual differences were very small however.

TABLE 5.3 CHOICE PROPORTIONS - CYCLE LANE PROVISION IN ROUTE B

	No cycle lane in B	Bus lane in B	Advisory cycle lane in B	Mandatory cycle lane in B	Off-road in B
Chose Route A	76%	64%	62%	53%	30%
Chose Route B	24%	36%	38%	47%	70%

NB. Route A always showed no cycle lane.

TABLE 5.4 CHOICE PROPORTIONS - TYPE OF ROAD IN ROUTE B

	High Street in B	Major Road in B	Residential Street in B	Off-road in B
Chose Route A	60%	71%	56%	30%
Chose Route B	40%	29%	44%	70%

NB. Route A always showed a residential road.

TABLE 5.5 CHOICE PROPORTIONS - JOURNEY TIME IN ROUTE B

	15 minutes in B	20 minutes in B	25 minutes in B
Chose Route A	38%	64%	78%
Chose Route B	62%	36%	22%

NB. Route A always showed a 10 minute journey.

Model parameter results

- 5.18 The next section of this chapter outlines the final models together with the associated parameter values. The analysis has been carried out taking account of the fact that the value of the parameters will interact with journey length. The parameter values are therefore presented on a per minute of journey basis.

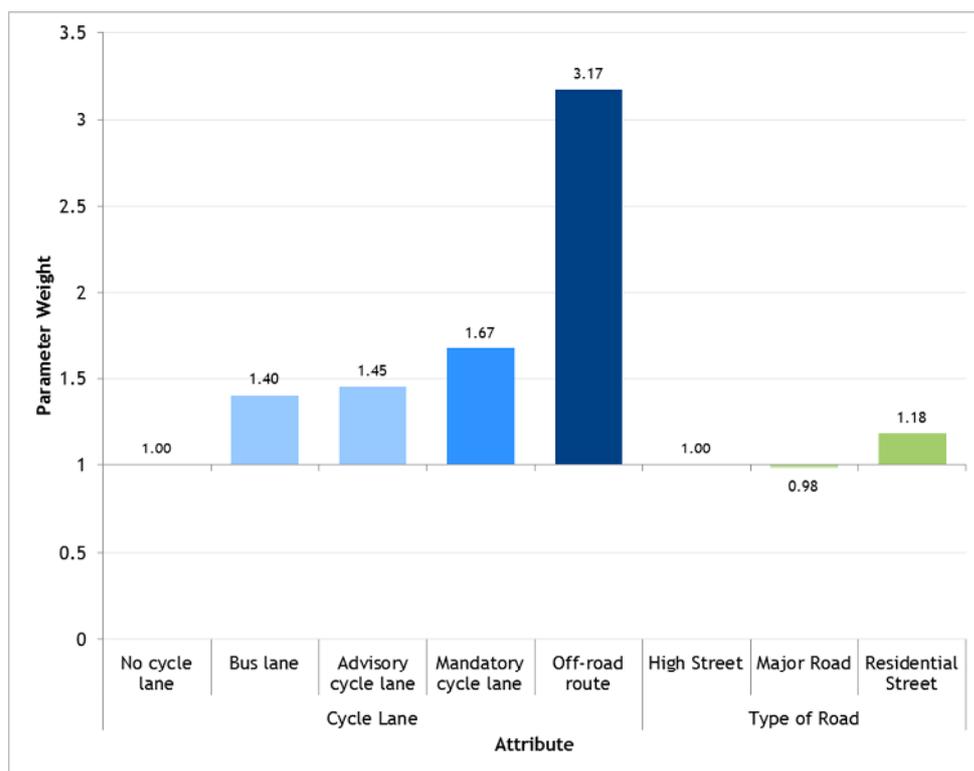
Parameters reported - units and meanings

- 5.19 The following table demonstrates the following parameters and the meaning associated with them:
- **Coefficients:** these are used to calculate the relative importance of each attribute level. The units of these coefficients are 'utils' and do not relate to any physical units. - these are then factored using the journey time parameter to calculate a journey time increase.
 - **Parameter weight relative to time:** this is, essentially, the benefit that respondents placed on each particular "improvement" in relation to the base level. This is calculated on a per minute basis. For example, a parameter weight of 1.4 for a bus lane (compared to the base level of 1 for no cycle lane) means that cyclists perceive the benefits of using a bus lane to be worth an additional 0.4 minutes for every minute of cycling without any cycle lane.
- 5.20 The level of significance of each parameter is shown in the z-statistic column. A z-statistic of 1.96 or greater shows significance at a 95% level - i.e. we can be 95% certain that the value of the parameter is not zero.
- 5.21 Ninety-five per cent confidence intervals have also been calculated for both the coefficients and for the additional journey time. This means that we can be 95% certain that the coefficients (and consequently the additional journey time) lie within that particular interval.

TABLE 5.6 MODEL PARAMETERS - ALL RESPONDENTS

Attribute	Base Level	Level (as a difference on the base level)	Z-statistic	Parameter coefficient estimate	Parameter weight relative to time	95% Confidence Interval	
						Parameter	Parameter weight relative to time
Cycle Lane	No cycle lane	No change	n/a	n/a	1	n/a	n/a
		Bus lane	25.85	0.0594	1.40	(0.0549, 0.0639)	(1.34, 1.48)
		Advisory cycle lane	28.04	0.0644	1.45	(0.0599, 0.0689)	(1.38, 1.54)
		Mandatory cycle lane	35.14	0.0832	1.67	(0.0786, 0.0879)	(1.57, 1.81)
		Off-road	43.07	0.141	3.17	(0.135, 0.148)	(2.65, 4.06)
Type of road	High Street	No change	n/a	n/a	1	n/a	n/a
		Major road	-2.43	-0.00337	0.98	(-0.00609, -0.000654)	(0.97, 1.00)
		Residential street	25.99	0.0321	1.18	(0.0297, 0.0345)	(1.16, 1.21)
Journey Time			-39.03	-0.207	n/a	(-0.217, -0.196)	n/a

FIGURE 5.2 STATED PREFERENCE PARAMETER WEIGHTS - ALL RESPONDENTS



- 5.22 The model results show that the extent of cycle lane provision was of far greater significance than the type of road being used. All model parameters are highly significant. Though some parameter weights (particularly the off-road parameter) are quite high, the response to earlier questions in the survey around route choice preferences, and the lengths respondents would go to remain on an off-road route, the likelihood is that there is strong preference for off-road routes across all respondents.
- 5.23 The negative parameter value for “upgrading” from a high street to a major road demonstrates that the results of the pilot surveys have been reversed, and that the major road is perceived to be worse than a high street for cyclists. It is important to note however that the difference is very small, and so in reality people are relatively indifferent between the two.

Segmentations

- 5.24 This section summarises the analysis undertaken of the different parameter values between different segments of respondents. All segmentations have been tested on the all-respondents model. The segmentations tested and detailed in this section are:
 - Gender;
 - Cyclist type;
 - Journey purpose; and
 - Level of cycling experience

Final survey and model report

Gender

- 5.25 The split between male and female respondents (as described in the demographics section) was 65% male, 35% female.
- 5.26 Reflecting the results of the attitudinal questions, where female respondents were more likely to want to avoid fast traffic, and cycle in a designated cycle lane, females placed much greater weight on being able to use certain facilities, in particular an off-road route. It is important to note however, that a higher proportion of females always selected the off-road option, and also were prepared to accept lengthy diversions in the detour experiment on several journeys, which suggests that for many females, they would always choose to cycle off-road, regardless of the available alternatives. Although some of the differences in the table are negligible, due to the large sample size, all are statistically significant.

TABLE 5.7 MODEL PARAMETERS - GENDER SEGMENTATION

Attribute	Base Level	Level (as a difference on the base level)	Parameter weight relative to time		Parameter weight relative to time (all respondents)
			Male	Female	
Cycle Lane	No cycle lane	No change	1	1	1
		Bus lane	1.36	1.51	1.40
		Advisory cycle lane	1.40	1.58	1.45
		Mandatory cycle lane	1.59	1.90	1.67
		Off-road	2.73	5.19	3.17
Type of road	High Street	No change	1	1	1
		Major road	0.99	0.98	0.98
		Residential street	1.17	1.23	1.18

Cyclist type

- 5.27 The second segmentation looks at the three cyclist types, which were at least three times a week cyclists (57%), once-twice a week cyclists (25%) and others (18%).
- 5.28 The table shows that as cycling frequency reduces, so does the respondent's time sensitivity, and consequently the benefits for a higher 'quality' journey increases. The difference is, as with other segmentations, most noticeable for the off-road option, where the most regular cyclists had a weight of 2.7, compared to the least regular cyclists whose weight was 7.2. Again many of the least regular cyclists were cycling for leisure, with no time pressure to the journey, and so would always select the off-road option. Again, although some differences are small, all are statistically significant due to the sample size.

TABLE 5.8 MODEL PARAMETERS - CYCLIST TYPE SEGMENTATION

Attribute	Base Level	Level (as a difference on the base level)	Parameter weight relative to time			Parameter weight relative to time (all respondents)
			At least 3 times a week cyclists	1-2 times a week cyclists	Other cyclists	
Cycle Lane	No cycle lane	No change	1	1	1	1
		Bus lane	1.35	1.45	1.56	1.40
		Advisory cycle lane	1.39	1.50	1.64	1.45
		Mandatory cycle lane	1.58	1.76	2.02	1.67
		Off-road	2.66	3.82	7.25	3.17
Type of road	High Street	No change	1	1	1	1
		Major road	0.99	0.98	0.98	0.98
		Residential street	1.17	1.20	1.24	1.18

Journey purpose

- 5.29 Journey purpose was collapsed into two categories from four, work-based and non-work-based. Work-based trips comprise of trips that were made either for commuting or business reasons, non-work based trips comprise all other trips.
- 5.30 The following table shows that respondents making a work-based journey were slightly more sensitive to time, with the benefits of each improvement rated lower than for non-work based trips. Again the difference is more noticeable for the larger parameter values, for example off-road, which is worth 2.8 minutes for every minute without any form of cycle lane for work based journeys, and 4.2 for non-work based journeys. These differences were also near identical to what was observed when comparing the split between leisure and non-leisure trips. Again, all differences are statistically significant.

TABLE 5.9 MODEL PARAMETERS - JOURNEY PURPOSE SEGMENTATION

Attribute	Base Level	Level (as a difference on the base level)	Parameter weight relative to time		<i>Parameter weight relative to time (all respondents)</i>
			Work-based journey	Non-work based journey	
Cycle Lane	No cycle lane	No change	1	1	1
		Bus lane	1.37	1.47	1.40
		Advisory cycle lane	1.41	1.53	1.45
		Mandatory cycle lane	1.61	1.81	1.67
		Off-road	2.81	4.22	3.17
Type of road	High Street	No change	1	1	1
		Major road	0.99	0.98	0.98
		Residential street	1.17	1.21	1.18

Level of Cycling Experience

5.31 Finally the model was then segmented based on the level of cycling experience respondents had for the journey. The proportions in each category were as follows:

- Less than 6 months experience (10%)
- Between 6 months and 2 years' experience (34%)
- More than 2 years' experience (56%)

5.32 The following table shows that there is a clear distinction between those with little cycling experience, and those that have more than 6 months of experience. In particular, the attraction of an off-road facility was much greater among those with little cycling experience. As with the three previous segmentations, the differences are statistically significant.

TABLE 5.10 MODEL PARAMETERS - CYCLING EXPERIENCE SEGMENTATION

Attribute	Base Level	Level (as a difference on the base level)	Parameter weight relative to time			Parameter weight relative to time(all respondents)
			Less than 6 months	6 months - 2 years	More than 2 years	
Cycle Lane	No cycle lane	No change	1	1	1	1
		Bus lane	1.50	1.40	1.39	1.40
		Advisory cycle lane	1.57	1.45	1.44	1.45
		Mandatory cycle lane	1.88	1.67	1.65	1.67
		Off-road	4.94	3.18	3.01	3.17
Type of road	High Street	No change	1	1	1	1
		Major road	0.98	0.98	0.98	0.98
		Residential street	1.22	1.18	1.18	1.18

6 Conclusion

6.1 This study has comprised a short qualitative stage, which directly fed into the design of an online survey including a stated preference section. The response rate was very high and the analysis has generated significant conclusions relating to the reasons cyclists choose specific routes. In particular:

- Attitudes around route choice
- Relative perceived safety of different junction types and how this may influence route choice.
- The relative value of different types of cycle lane, bus lane and off-road routes
- The importance of the type of street (including traffic levels and speeds)

Attitudes

6.2 Safety appeared to be an important overall factor for all respondents, but particularly for women and newer cyclists. Although the most regular cyclists and those who were under time-pressure were more likely to choose shorter journey times, very few respondents claimed to ‘*always* take the most direct route’. Directness was a strong influence on route choice but others included the attraction of cycle lanes and off-road routes, volume of traffic and familiarity with the route.

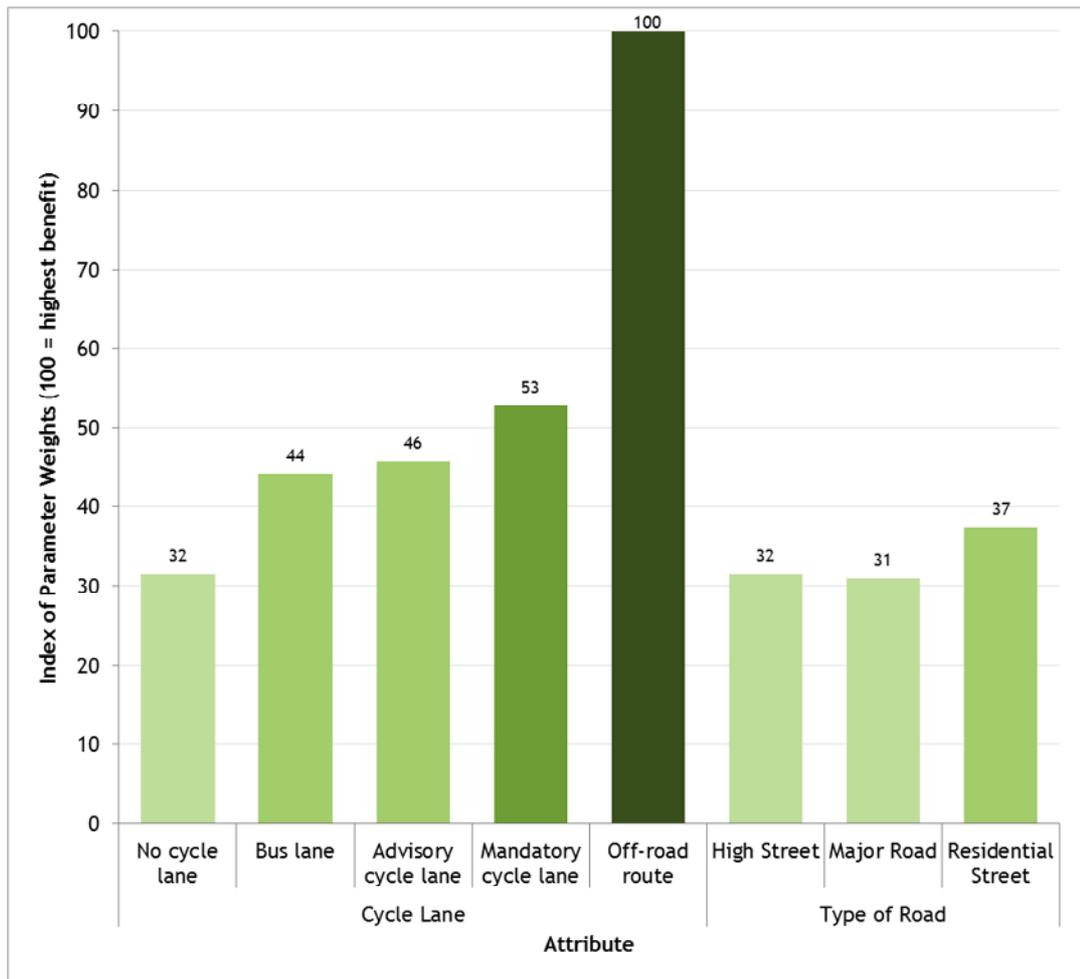
Junction safety

6.3 There was a strong consensus among respondents in terms of perceived junction safety with left turns the safest and right turns, particularly when involving crossing several lanes of traffic the most unsafe. On average respondents were prepared to add 7.5 minutes to their most recent journey to avoid a right turn at a two lane roundabout or a right turn from a side road onto a main road. Again, women, newer cyclists and older cyclists were prepared to detour most.

Stated Preference

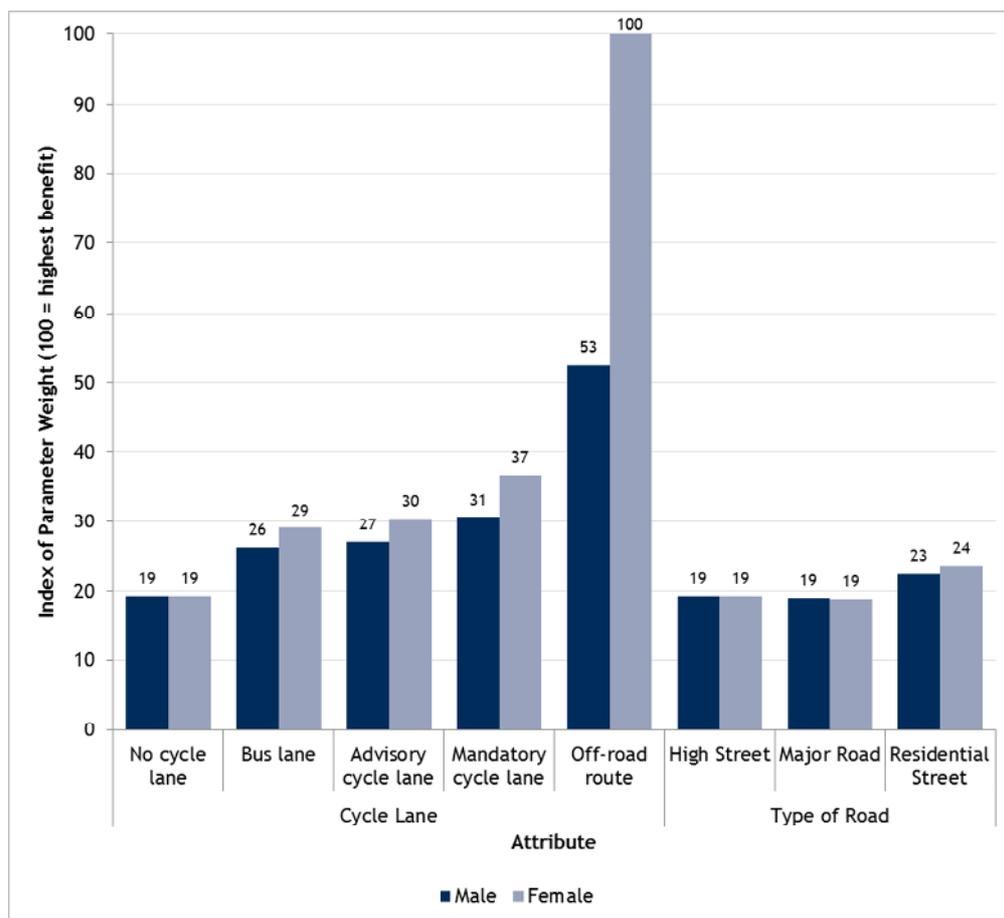
6.4 The results of the stated preference exercise highlighted that having an off-road route available to cyclists has by far the greatest benefit - its presence was worth an additional 2 minutes for every minute of cycling. The following chart shows the relative value of each of the different attribute levels in comparison to one another, which demonstrates how much larger the benefit of an off-road route is compared to other attributes.

FIGURE 6.1 INDEX OF ATTRIBUTE LEVEL OF BENEFITS



6.5 Female cyclists placed much greater weight on the different “improvements” to their journey - they had much higher benefits for each attribute level, most notably for the off-road route, which is demonstrated in the following chart. These results were supported by responses throughout the survey, which showed that overall females were more inclined to use safer routes that avoid traffic as much as possible, and were more willing to extend their journey times in order to use these routes.

FIGURE 6.2 INDEX OF ATTRIBUTE LEVEL OF BENEFITS - BY GENDER



6.6 Other segmentation analysis demonstrated that cyclists with little experience (i.e. less than 6 months) were also willing to spend a lot more time cycling in order to be able to cycle on an off-road route, as were those making trips for leisure (or non-work) purposes, and those that were classed as infrequent cyclists (i.e. cycle less than once a week).

Summary

6.7 These findings, taken together with the cyclists’ attitudes and responses to junction scenarios will help interpret and predict, as well as explain, cyclists’ route choices in London. Although speed and directness are important to cyclists in London, particularly commuters and those under time pressure, it is clear that there are many influences on route choice. Cyclist will spend longer on a journey in order to cycle in a bus lane or cycle lane and particularly off-road and many will also take significant detours to avoid a difficult junction.

Final survey and model report

- 6.8 These findings imply that there are many route treatments or designs that could have a significant effect on both the number of cyclists using a specific route, and potentially the overall levels of cycling in London.

APPENDIX
A
QUESTIONNAIRE

A1 QUESTIONNAIRE

SURVEY NAME: Cycle Route Choice 2012

SURVEY LENGTH (MINS): 15

Section A: Introduction/Screening

ASK ALL

TERMINATE IF OPTION 7 NOT SELECTED

Region. **Within which of the following regions have you regularly travelled in the last month?**

Please select all that apply

1. North East
2. North West
3. Yorkshire and Humberside
4. East Midlands
5. West Midlands
6. East of England
7. Greater London
8. South East
9. South West
10. Wales
11. Scotland
12. Northern Ireland
13. Channel Islands/Isle of Man
99. None of the above

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ASK ALL

TERMINATE IF ROW 5 OR 6 =!1,2,3,4

A1. How often have you used the following modes of transport in London in the last month?

Single code per row

	1	2	3	4	5	6	99
	5 or more days a week	3 or 4 days a week	Once a week	Once or twice in the last 4 weeks/ month	Not at all in the last month	Not in the last 12 months	Never
1. Car							
2. Bus							
3. Underground /DLR							
4. Train/ overground							
5. Bicycle (your own/borrowed bicycle)							
6. Barclays Cycle Hire scheme bicycle							

DUMMY TO ALLOCATE RESPONDENTS FROM QA1

SET QUOTAS HERE - CROSS WITH DSAMPLE DSEGMENT.

1. SEGMENT1(Commuter Cyclists) = IF ROW 5 OR 6 = COLUMN 1 OR 2
2. SEGMENT2(At least once a week cyclists) = IF ROW 5 OR 6=COLUMN 3 AND NOT ALLOCATED IN SEGMENT1
3. SEGMENT3(Other cyclists)=IF ROW 5 OR 6=COLUMN 4 AND NOT ALLOCATED - IN SEGMENT1 AND SEGMENT2

ASK ALL

TERMINATE IF OPTION 2 SELECTED

A2. Of the journeys by bicycle that you have made in London in the last month, can you think of one that was longer than 10 minutes?

- (1) Yes
- (2) No

ASK ALL

A3. What was the reason for making that journey?

- (1) Commuting to/from work
- (2) Business travel (travel as part of your job during working hours)
- (3) Travel to/from school/college/university
- (4) To get to a leisure activity (i.e. meeting friends, going shopping etc.)
- (5) For leisure/exercise with no appointment at your destination (i.e. cycling around a park)
- 98. Other (please specify)

ASK IF QA3=5

TERMINATE IF OPTION 5 SELECTED

A4. Have you made any other journey by bicycle for a different reason?

- (1) Yes - Commuting to/from work
- (2) Yes - Business travel (travel as part of your job during working hours)
- (3) Yes - Travel to/from school/college/university
- (4) Yes - To get to a leisure activity (i.e. meeting friends, going shopping etc.)
- (5) No - only for leisure/exercise with no appointment at your destination (i.e. cycling around a park)

Section B: Cycle Use

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ASK ALL

B1. How often do you travel by bicycle for the following reasons?

Single code per row

	1	2	3	4	5	99
	5 or more days a week	3 or 4 days a week	Once a week	Once or twice in the last 4 weeks/ month	Not at all in the last month	Never
1. Commuting to/from work						
2. Travelling for business (during working hours)						
3. Commuting to school/college/university						
4. To get to a leisure activity (i.e. meeting friends, going shopping etc.)						
5. For leisure/exercise with no appointment at your destination (i.e. cycling around a park)						

ASK ALL

B2. How often do you cycle on a Barclays cycle superhighway?

1. 5 or more days a week
2. 3 or 4 days a week
3. Once a week
4. Once or twice in the last 4 weeks/ month
5. Not at all in the last month
99. Never
97. Don't know

ASK IF A1.5 Bicycle = 1,2,3 OR A1.6 Barclays Bike = 1,2,3

B3. How long have you been cycling regularly within London?

- (1) Less than 1 month
- (2) Between 1 and 6 months
- (3) Between 6 months and a year
- (4) Between 1 and 2 years
- (5) Between 3 and 5 years
- (6) More than 5 years.

ASK ALL

B4. How would you describe yourself as a cyclist?

- (1) Confident to be able to cycle on all roads.
- (2) Confident to cycle on quiet roads, but less confident on busy roads.
- (3) Not confident cycling on any road.

ASK ALL

RANDOMIZE ROWS

B5

Thinking about your choice of cycle route, please indicate how strongly you agree or disagree with each of the following statements

Single code per row

		1	2	3	4	5
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1	I try to avoid cycling on roads where there is fast-moving traffic.					
2	Safety is the most important consideration when I choose my cycle route.					
3	I would prefer cycling in a cycle lane which is separate from the traffic even if it meant a longer journey.					
4	The quality of signage and cycle markings has no influence on which route I take.					
5	I try to avoid using routes where there are lots of other cyclists.					
6	I choose to travel on roads with less traffic					
7	If I had to					

Final survey and model report

		1	2	3	4	5
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	negotiate a number of difficult junctions I would try to find another route.					
8	All that matters when I cycle is finding the most direct route.					
9	I always stick to the routes that I know.					
10	Sometimes I choose longer or more challenging routes to improve my fitness.					

ASK ALL

B6. How do the following factors influence your choice of route:

Single code per row

		1	2	3	4
		Has no influence on my choice of route	I would prefer to use this, but would not change my route to do so	I would change my route to use this	I would be prepared to use a noticeably longer route to use this
1	Travel through parks or green spaces				
2	Cycle Superhighway				
3	Dedicated on road cycle lane				

START LOOP FOR - JUNCTION IMAGES (7 IMAGES) - STATEMENTS

PLEASE FIT TO ONE SCREEN-NO SCROLL DOWN

PAGE LOOKS ORDER = QUESTION - IMAGE - STATEMENT - SLIDER

ASK ALL

SLIDER 1-5

- 1. Very Unsafe
- 5. Very Safe

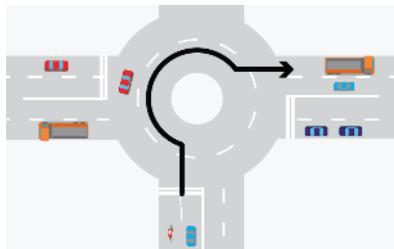
B7. For the following junction type please indicate how safe you would feel in each situation.

SHOW JUNCTION IMAGES AS STATED BELOW

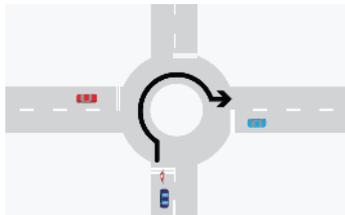
Please click to enlarge

RANDOMIZE BELOW IN THE LOOP

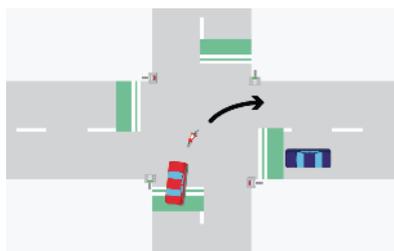
- 1. A right turn at a two lane roundabout where you need to cross lanes of traffic.



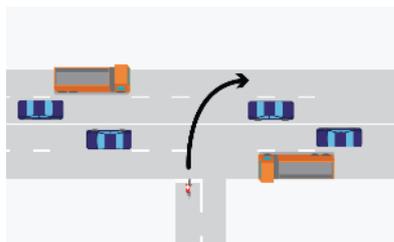
- 2. A right turn at a single lane roundabout



- 3. 3. A right turn at traffic lights where you need to cross lanes of traffic.

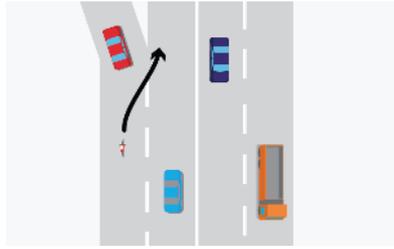


- 4. A right turn from a side road onto a main road

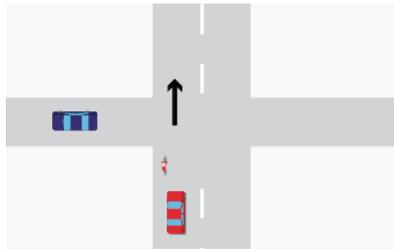


- 5. Cycling straight through a junction where you need to change lanes to avoid left turning traffic

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5. Straight on across a minor junction



6. Left turn at a signalised junction



END OF LOOP

Section C: Most Recent Trip

INFO1-SEPARATE PAGE

For the rest of the survey we would like you to think about the most recent trip that you made for the purpose of **[pipe answer to A3 (or A4 if A3 = 5)]** which involved at least a **10 minute journey by bicycle**.

This can include a journey which also used other modes, but when answering these questions please **only consider** the cycling part of your journey.

Please click `NEXT` to continue.

ASK ALL

C1. Did you travel by any other modes as part of the entire journey?

- (1) Yes
- (2) No, I cycled the entire journey

ASK IF QC1=1

C1a. Which mode did you use immediately before starting your cycle journey?

- (1) Car (as driver or passenger)
- (2) National Rail
- (3) Underground/DLR
- (4) Bus
- 98. Other (please specify)

ONLY SHOW IF QC1=1 INFO 2- SEPARATE PAGE

Please remember to answer the following questions thinking about the cycle part of your journey only.

Please click `NEXT` to continue.

ASK ALL

C2. Did you use your own (or a borrowed) bicycle or a Barclays Cycle Hire bicycle?

- (1) My own bicycle (or borrowed)
- (2) Barclays Cycle Hire scheme bicycles (ie. Boris Bike)
- 98. Other

ASK ALL

C3. Please write in the postcode or borough name which you started and ended your journey

SHOW LONDON BOROUGH MAP

Please click to enlarge to see London Borough Map

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JOURNEY STARTED TITLE - AT LEAST ONE ANSWER NEEDED

1. Borough Name (Please specify)- **DROP DOWN LIST - SEE BOROUGH EXCEL LIST -**

2. Postcode: **FIRST PART OF POSTCODE MUST BE VALID**

97. Don't know **LL**

JOURNEY ENDED TITLE - AT LEAST ONE ANSWER NEEDED

1. Borough Name (Please specify)- **DROP DOWN LIST - SEE BOROUGH EXCEL LIST**

2. Postcode: **FIRST PART OF POSTCODE MUST BE VALID**

97. Don't know **EXCLUSIVE**

ASK ALL

C4. To what extent did each of these influence your decision to cycle this trip?

Single code per row

		1	2	3
		Had a large influence on my decision	Had some influence on my decision	Had no influence on my decision
1	Fastest way to travel			
2	Cheapest way to travel			
3	I like the health benefits that come from cycling			
4	The least stressful way to travel			
8	Fun, pleasant, enjoyable			
98	Other (Please specify)			

ASK ALL

(MIN 10 - MAX 120)

C5. How long did this journey take to cycle? (In minutes)

Please enter numbers

ASK ALL

C6. Did you undertake this journey on a weekday or a weekend?

(1) Weekday

(2) Weekend

ASK ALL

DROP DOWN LIST

C7. At what time did you begin your journey?

1. 05:00 - 05:59

2. 06:00 - 06:59

3. 07:00 - 07:59

4. 08:00 - 08:59

5. 09:00 - 09:59

6. 10:00 - 10:59

7. 11:00 - 11:59

8. 12:00 - 12:59

9. 13:00 - 13:59

10. 14:00 - 14:59

11. 15:00 - 15:59

12. 16:00 - 16:59

13. 17:00 - 17:59

14. 18:00 - 18:59

15. 19:00 - 19:59

16. 20:00 - 20:59

17. 21:00 - 21:59

18. 22:00 - 22:59

19. 23:00 - 23:59

20. After midnight 00:00 - 04:59

ASK ALL

C8. How often do you make this journey?

(1) More than 3 times a week

(2) 2-3 times a week

(3) Once a week

(4) At least once a month, but less than once a week

(5) Less than once a month

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ASK ALL

C9. Was this journey time-pressured (i.e. was there a fixed time you had to arrive at your destination, or a fixed time period within which you had to complete your journey?)

- (1) Yes - I had a fixed time that I had to arrive at my destination
- (2) Yes, but it didn't matter if I arrived up to 15 minutes later
- (3) Yes, but it didn't matter if I arrived up to 1 hour later
- (4) No, there was no time-pressure

INFO 2- SEPARATE PAGE

We would now like to ask more specifically about the route that you took on this journey.

Please click 'NEXT' to continue.

ASK ALL

C10. How did you find out about this route?

Please select ALL that apply

- (1) Someone showed me the route
- (2) I used a cycle journey planner
- (3) I used a map
- (4) I was unsure of the route and followed street signage
- (5) Trial and error
- (6) Know the area
- (7) Used route by another mode
- 98. Other (please specify)

ASK ALL

C11. Have you ever cycled using an alternative route to make this journey?

- (1) Yes
- (2) No

ASK IF QC11=1

C12. why did you choose the route that you used instead of this alternative?

Please select ALL that apply

- (1) Most direct route
- (2) The volume of traffic using the road
- (3) The speed of traffic using the road
- (4) Cycle lane available to use along the route
- (5) Good signage for cyclists
- (6) The number of other cyclists
- (7) Fastest route
- (8) The number of difficult junctions
- (9) Familiarity with the route
- (10) Most pleasant
- 98. Other (please specify)

INTRO

ASK ALL

SEPARATE PAGE

Info1. Please imagine that you are making a new journey which is similar to your most recent journey.

For a 10 minute section of your journey you have the choice of 2 routes.

The only differences between these 2 routes are the type of cycle lane, volume and speed of other motor traffic and the amount of time it takes you to cycle the section.

Please imagine that all other factors about both routes are the same as your most recent journey (for example - the reason you are making the journey, the weather and the time of day)

Please click `NEXT` to continue.

ASK ALL

SEPARATE PAGE

Info2. We will ask you to choose between different types of cycle lane, which will be described with the following pictures

PLEASE ADD ` Please click to enlarge ` BELOW THE IMAGES

- 1. Cycling on the road.**

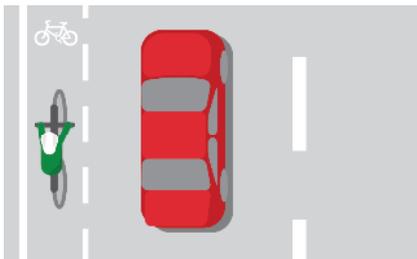
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2. Cycling in a wide cycle lane denoted by a solid white line whereby motorists cannot enter the cycle lane at anytime and there is enough space to overtake other cyclists without leaving the cycle lane.



3. **IMAGE 10** Cycling in a narrow cycle lane denoted by a dashed line but motorists can only enter the lane when it is clear of cyclists.



4. Cycling in a bus lane with a cycle symbol in it, assuming there would be a few buses in the bus lane.



5. Off-road lane



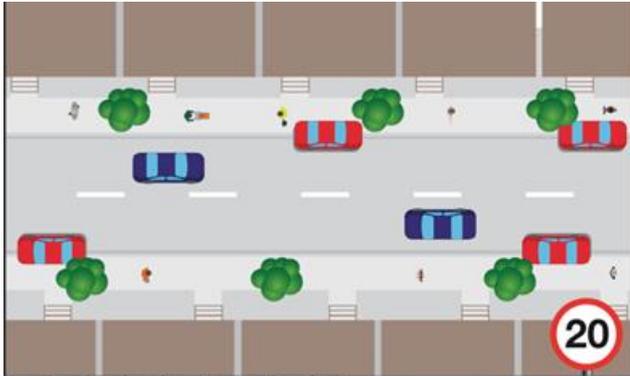
Please click 'NEXT' to continue.

ASK ALL

SEPARATE PAGE

Info3. We will ask you to choose between levels of traffic and traffic speed, which will be described with the following pictures

1. A residential road with parked cars and a low level of slow moving traffic (less than 20mph), like this.

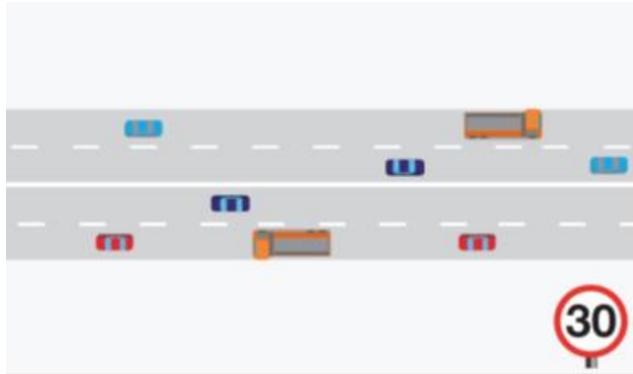


2. District High Street, with a mix of shops and residential blocks, and a high level of slow moving traffic (less than 20mph)



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3. A City Route with a medium level of traffic at approximately 30mph *a major road*



travelling at



Please click 'NEXT' to continue.

ASK ALL

SEPARATE PAGE

Info4. You will also be told how long each section of the journey would take.

Please click `NEXT` to continue.

Section D: SP Exercise(s) Conjoint PART

START LOOP

ASK ALL

EACH RESPONDENT SEES 12 CARDS - RANDOMIZE THE CARDS REMOVE LABELS FOR IMAGES

Cycle lane : See Question Info 2 images and texts

Other Traffic : See Question Info 3 images and texts

Journey Time: See `GAME LAYOUTS D SECTION` EXCEL SHEET

D.1 Imagine that you have the choice between these 2 routes for a section of your journey, which route would you choose?

1. Route A
2. Route B

END LOOP

The survey card displays two route options side-by-side:

- Route A:** Features a cycle lane with a red car and a cyclist, other traffic, and a journey time of 10 minutes. A 40 km/h speed limit sign is shown.
- Route B:** Features a cycle lane with a red car and a cyclist, other traffic, and a journey time of 15 minutes (5 minutes longer for the section). A 40 km/h speed limit sign is shown.

Below the route descriptions, the question "Which route would you choose?" is followed by two input boxes labeled "A" and "B".

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JUNCTION DETOUR GAME

Junction1. RANDOMIZE THE BELOW JUNCTIONS IN THE LOOP

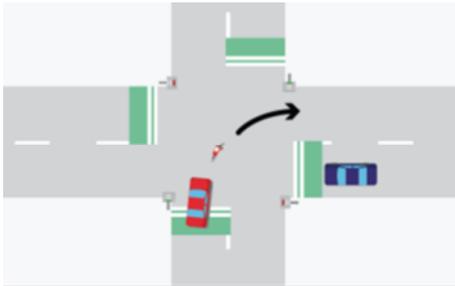
1. A right turn at a two-lane roundabout where you need to cross lanes of traffic.



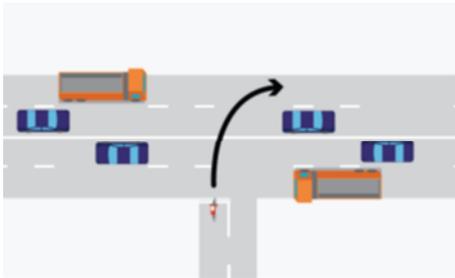
2. A right turn at a single lane roundabout



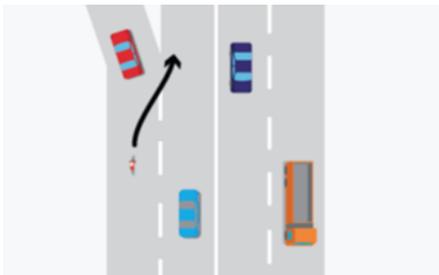
3. A right turn at traffic lights where you need to cross lanes of traffic.



4. A right turn from a side road onto a main road



5. straight through a junction where you need to change lanes to avoid left turning traffic



ADD BEFORE THE LOOP

Please imagine that you are making a new journey which is similar to your most recent journey.

There is also an alternative well signed route along minor roads which will add time to your journey but avoids this junction.

Please imagine that all other factors are the same as your most recent journey (for example - the reason you are making the journey, the weather and the time of the day).

START LOOP - (Each respondents sees 4 or 5 junctions)

ASK ALL

D2. Part of this journey involves **FOR EACH LOOP PUT THE TEXT FROM JUNCTION1**

There is also an alternative well signed route along minor roads which will add time to your journey but avoids this junction.

Would you take the route to avoid this junction if it added 2 (BOLD AND UNDERLINED) MINUTES to your journey? IF RESPONDENT ANSWERS `NO` GO TO THE NEXT JUNCTION (NUMBER OF MINUTES AND THE TEXT MINUTES IN CAPITAL AND BIGGER FONT-DIFFERENT COLOUR PLEASE)

1. YES - 2. NO

IF RESPONDENT ANSWERS `YES` ASK THE SAME JUNCTION WITH THE BELOW TEXT FOR 2, 5, 10 OR 15 MINUTES CONSEQUENTLY AS LONG AS RESPONDENT ANSWERS `YES` - ONCE RESPONDENT ANSWERS `NO` GO TO NEXT JUNCTION

And what if it added 5, 10, 15 (BOLD AND UNDERLINED) MINUTES? FOR EACH JUNCTION Would you use the longer alternative avoiding the junction then?

END LOOP

Final survey and model report

Please imagine that you are making a new journey which is similar to your most recent journey.

Part of this journey involves a **[right turn at a roundabout]**

There is also an alternative well signed route along minor roads which will add time to your journey but avoids this junction.

Please imagine that all other factors are the same as your most recent journey (for example - the reason you are making the journey, the weather and the time of day).

Would you take the route to avoid this junction if it added **[5 minutes]** to your journey?

Yes

No

Section E: Demographics

ASK ALL

E1. Which age group do you fall into?

- (1) 16-24
- (2) 25-34
- (3) 35-44
- (4) 45-54
- (5) 55-64
- (6) 65-74
- (7) 75+

ASK ALL

E2. What is your gender?

- (1) Male
- (2) Female

ASK ALL

E3. What is your current employment status?

- (1) Working full time (30+ hours a week)
- (2) Working part time (<30 hours a week)
- (3) Student
- (4) Retired
- (5) Unemployed
- (6) Looking after family and home
- (7) Other (please specify)
- 96. Prefer not to answer

ASK ALL

E4. What is your current annual household income? (Please include all sources of income, e.g. salary, benefits)

- (1) Under £4,999
- (2) £5,000 to £9,999
- (3) £10,000 to £14,999
- (4) £15,000 to £19,999
- (5) £20,000 to £29,999

Final survey and model report

- (6) £30,000 to £39,999
- (7) £40,000 to £49,999
- (8) £50,000 to £75,000
- (9) £75,000 or over
- 99. Don't know/prefer not to say

ASK ALL

E5. What is your ethnicity?

- (1) White
- (2) Mixed or multiple ethnic groups
- (3) Asian or Asian British
- (4) Black or Black British
- (5) Other Ethnic Group
- 96. Prefer not to answer

ASK ALL

STANDARD POSTCODE VALIDATION CHAR AND NUM

UNLESS 96 SELECTED FIRST PART OF THE POSTCODE IS NECESSARY

OPTION 96 EXCLUSIVE

Please enter the first part of your home postcode

96. Prefer not to answer

ASK ALL

Bfo4. Where do you live?

SHOW THE MAP FOR Q E61

Please click to enlarge

- 1. Inner London
- 2. Outer London
- 3. Outside London

ASK ALL

E7. Are you a member of any of the following?

- (1) Cyclists Touring Club (CTC)
- (2) London Cycling campaign
- (3) Other cycling group or organisation
- 99. None

ASK ALL

E8. Do you take part in cycling-based events?

(1) Yes

(2) No

E9. Would you be happy to be contacted by email in future for similar research?

(1) Yes

(2) No

APPENDIX

B

QUALITATIVE REPORT

B1 QUALITATIVE REPORT

Introduction

The following memo provides a summary of the findings of the accompanied cycle rides undertaken between 2nd and 13th April 2012. A total of 16 interviews were conducted.

Methodology

Participants were recruited by interviewers as they were making a journey by bicycle. This was done at a number of locations across London, at different times of day (Morning and evening peak as well as off-peak).

Interviewers followed the participant on their journey for 10-15 minutes, before conducting a short roadside interview with them to establish more information about their propensity to cycle, the journey that they were currently making, and the level of importance they place on a number of attributes when deciding to use that particular route. The interviewer also noted the type of route used by the cyclist (i.e. whether it was a main road, quiet road or off-road, and whether there was a cycle/bus lane available to use).

As this was a new method, and perceived to be potentially invasive, participants were offered a £20 amazon voucher. However, a debrief with the interviewers suggested that most respondents would have been happy to participate for a £10 incentive.

Participant Profile

Seven participants were female. Four of the participants were aged 30 or under, six were aged 35-40 and five over 45 (one missing). All participants were frequent cyclists, with each one stating that they cycle at least twice a week. A couple who were making a recreational journey (i.e. not commuting to/from work or school/college) were tourists, so although cycling every day would have been unfamiliar with their location.

Ten were cycling to or from work or education and six were making non-work related trips. All participants said that, even if the particular journey was not a commuting trip, they do cycle to and from work or school/college. There was nobody interviewed that said they would make leisure/recreational trips by bike but did not also cycle to and from work/college. Around 75% of participants travelled by bicycle for more than one reason generally (i.e. commuting & leisure, commuting & personal business).

Journey Profile

Ten journeys were at least in part on main roads, eight on quiet roads and four off-roads. Six journeys included a cycle superhighway, four included an on-road cycle lane, four included an off-road cycle lane and two did not include a cycle lane at all. Nine journeys included a bus lane.

The length of journey that participants were undertaking varied considerably, with some making short 5-10 minute journeys, but others making journeys of over an hour.

Final survey and model report

Familiarity with the route was also quite varied. Some make the same journey by bicycle every day - these were predominantly commuters. Others made the journey less frequently (i.e. once a week or less), these were typically those travelling for non-commuting purposes.

Participants were also asked whether there was an alternative route available for them to use, and if so, why did they choose their current route over that alternative. 13 of the 16 said that there was an alternative route they could have taken (1 further person did not know). The three key reasons behind the choice was speed, directness and safety. Those that were surveyed off-road said that they felt much safer not having to cycle on-road, and those on a road with a cycle lane, in particular a cycle superhighway, focused on the directness of the route.

Importance of Route Features

Respondents were asked to grade the level of importance that they place on a number of different attributes when deciding on which route to use. They were asked to give each attribute a score between 1 and 4, 1 being not at all important, and 4 being very important. The average scores for each attribute are listed in the table below.

TABLE 11 ROUTE ATTRIBUTE AVERAGE SCORES

Attribute	Average score
Safety of the route	3.3
Volume of traffic	3.0
Speed of traffic	3.0
Speed of your journey	3.0
Wayfinding (Easy route to remember and follow)	2.5
Presence of a cycle lane	2.5
Avoiding difficult junctions	2.4
Presence of a bus lane	2.3
Availability of cycle parking	2.3
Scenery	2.1
Presence of a cycle superhighway	2.1
Number of other cyclists	1.9
Steep gradients	1.9

The table shows that route safety, volume of traffic, and also speed (of both the traffic and of the cyclist's own journey) scored most highly and were the factors that influenced route choice the most.

Final survey and model report

Certain attributes, such as “presence of a cycle superhighway”, were very dependent on participants having that feature on their current route. For example, those that were not using a cycle superhighway all said that the presence of one was not at all important. In contrast, those that were using one all said it was either quite important or very important. Another example of this was availability of cycle parking, for which users of the Barclays Cycle Hire scheme placed more importance.

Given the small sample, the conclusions drawn from these results can be considered statistically significant. However the findings will be used in order to inform the design of the online survey, in particular the stated preference exercises.

APPENDIX

C

PILOT REPORT

C1 PILOT REPORT

Introduction

C1.1 This report presents the findings from the piloting of the Cycle Route Choice online questionnaire. Key questions are analysed here and full tables are provided separately. The report is structured as follows:

- Methods and response rates
- Sample profile
- Stated preference results
- Junction detour game responses
- Summary and recommendations
- Next steps
- Appendix A is the email sent out to the TfL sample

Pilot Survey

C1.2 The questionnaire was launched online by our fieldwork sub-contractors Research Now, and was completed by 97 of their panel within 24 hours.

C1.3 A link to the questionnaire was also sent out to 50 respondents from TfL databases. Five complete responses were received within 15 hours. Although this is a small sample it represents a 10% response rate, which is higher than expected. However, one response had to be rejected due to being completed too quickly.

C1.4 Once 101 responses had been received the link was closed for analysis.

C1.5 The questionnaire took an average of 16 minutes to complete.

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Sample Profile

Cyclist quotas

- C1.6 Table 12 below shows the different types of cyclists who responded to the survey. Over half of the respondents were regular cyclists and over 81% cycled at least once a week.

TABLE 12 TYPE OF CYCLIST

	Number of Respondents	Percentage
Regular Cyclist (at least 3 times a week)	58	57
At least once a week	24	24
Other	19	19
Total	101	100

Regular cyclists

- C1.7 The survey results illustrated that over 60% of respondents had been cycling regularly for longer than one year, as demonstrated by Table 13 below.

TABLE 13 CYCLING EXPERIENCE

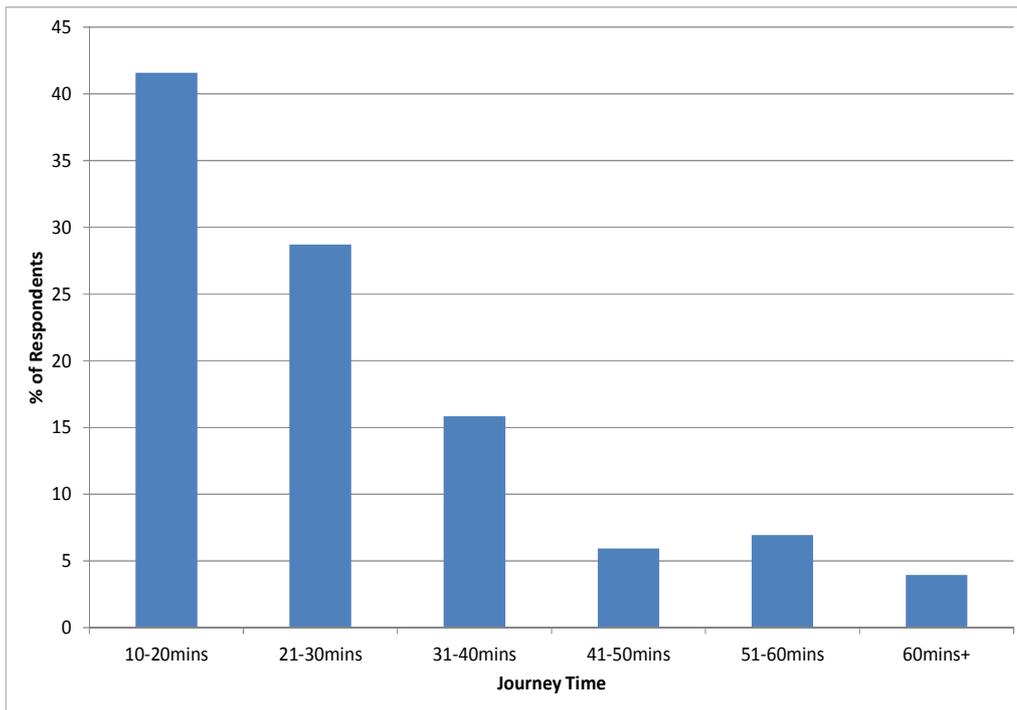
	Number of Respondents	Percentage
Less than 1 month	4	4
Between 1 and 6 months	8	8
Between 6 months and a year	9	9
Between 1 and 2 years	16	16
Between 3 and 5 years	18	18
More than 5 years.	27	27
Not regular	19	19
Total	101	100

Note: Percentage figures rounded to the nearest percentage point.

Journey times

- C1.8 Figure 3 below shows the total journey time upon which the respondents based their responses. Over 40% had a total journey time of less than 20 minutes. The average journey time was just over 30 minutes.

FIGURE 3 JOURNEY TIME



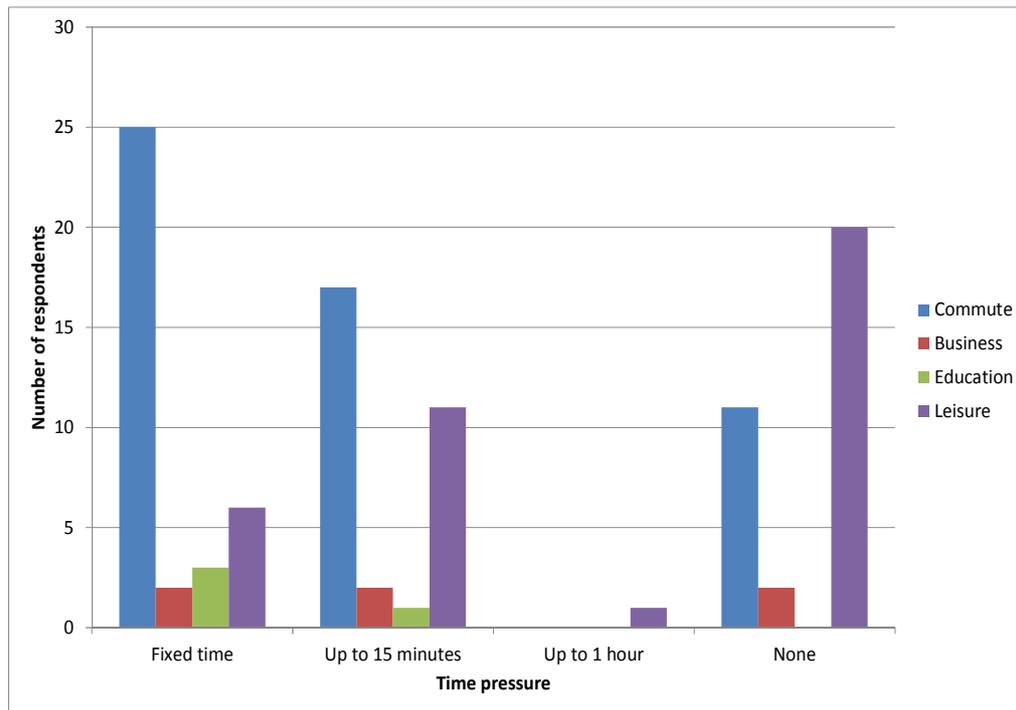
Type of bicycle

C1.9 77% of the sample used their own bicycle or a borrowed bicycle for the journey upon which they were basing their responses on. The remainder had used a Barclays Cycle Hire bicycle.

Level of time pressure

C1.10 It is evident from Figure 4 below, that commuter journeys were the most likely to be restricted by time. Just under half of commuter respondents had a fixed time at which they must reach their destination. A large number of commuters also have 15 minutes flexibility around their arrival time. Leisure travellers tend to have no time pressure

FIGURE 4 TIME PRESSURE BY TYPE OF JOURNEY



Alternative route

C1.11 Over half of respondents surveyed stated that they had used an alternative route at some stage to make the same journey. The most popular reason for choosing their current route were the fact that it was the most direct.

Preferences

SP Game

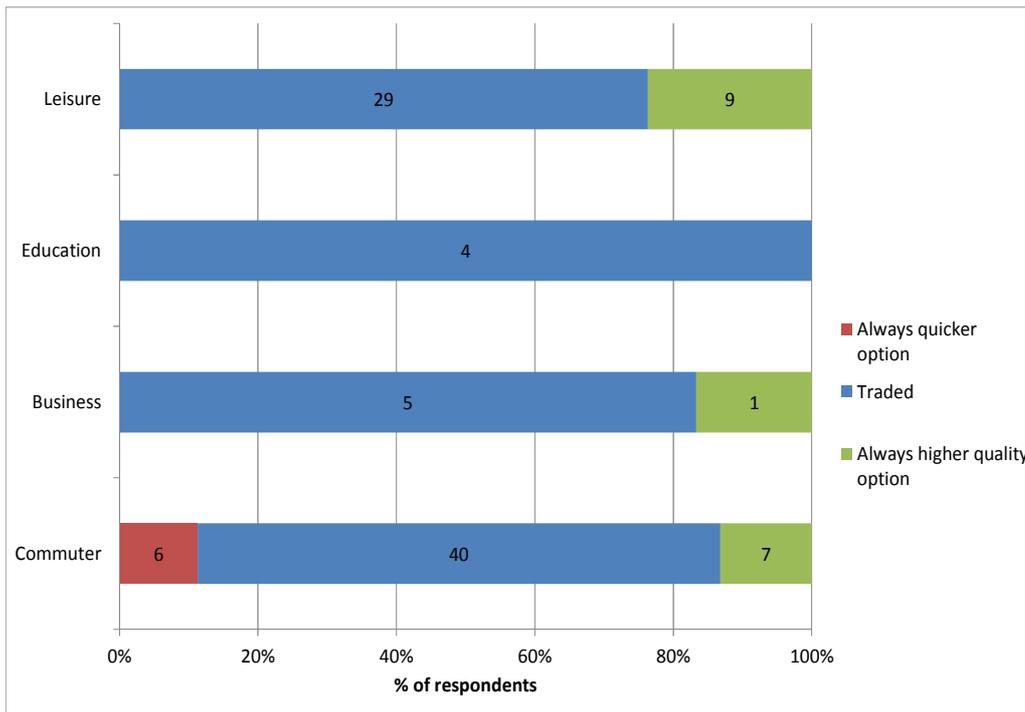
C1.12 Table 14 illustrates that 77% of respondents traded between the stated preferences cards with just under 6% of the sample always choosing the quickest option and 17% always the choosing the higher quality route.

TABLE 14 OVERALL TRADING LEVELS

	Frequency	Percentage
Traded	78	77
Always left - quickest	6	6
Always right - quality	17	17

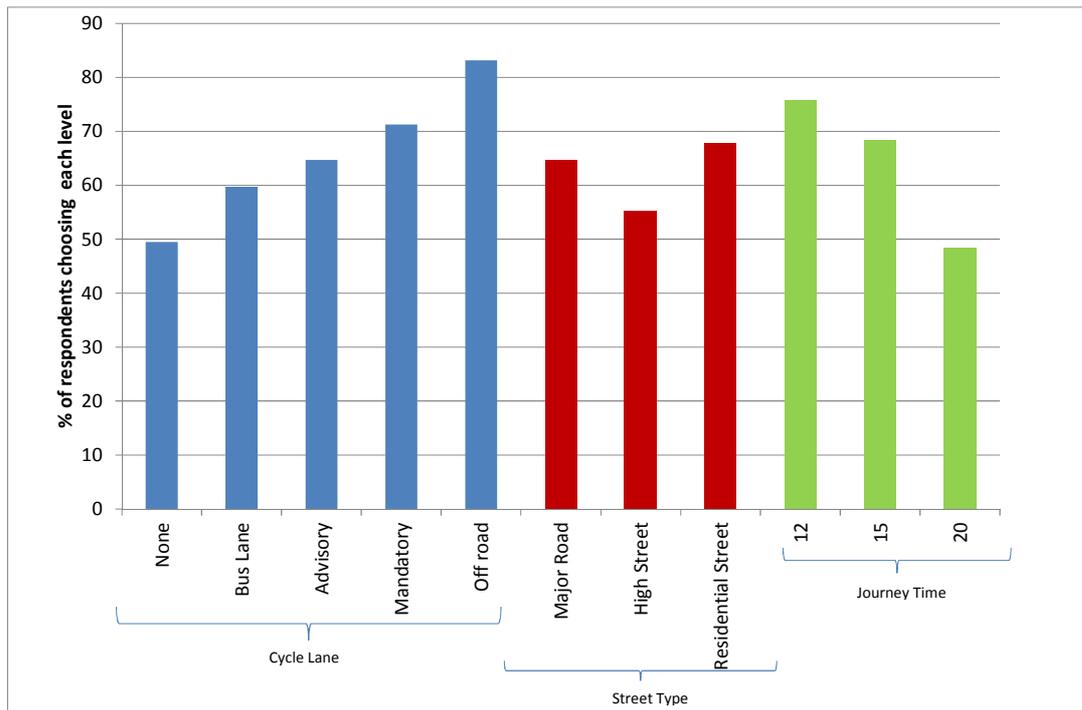
C1.13 Figure 5 demonstrates that all the respondents who always choose the quickest option were all commuters while leisure cyclists had the highest proportion of respondents who always chose the higher quality option.

FIGURE 5 TRADING BY JOURNEY PURPOSE



- C1.14 Figure 6 displays the choices of the respondents. The proportion of those choosing bus lanes, advisory cycle lanes and mandatory cycle lanes increased incrementally in the order expected, while a larger difference was found when choosing an off road lane. Regarding the street type, high streets were less likely to be chosen than a major road. This was unexpected but probably represents the fact that the high street is associated with more stopping and starting, due to buses, pedestrians and crossings, whereas the major road is a smoother journey. In addition, major roads in London tend to be only 30mph.
- C1.15 Finally, a significant proportion of respondents were willing to double the journey time for a 10 minute section of their trip to 20 minutes in exchange for higher quality facilities.

FIGURE 6 CHOICE PROPORTIONS BY LEVEL



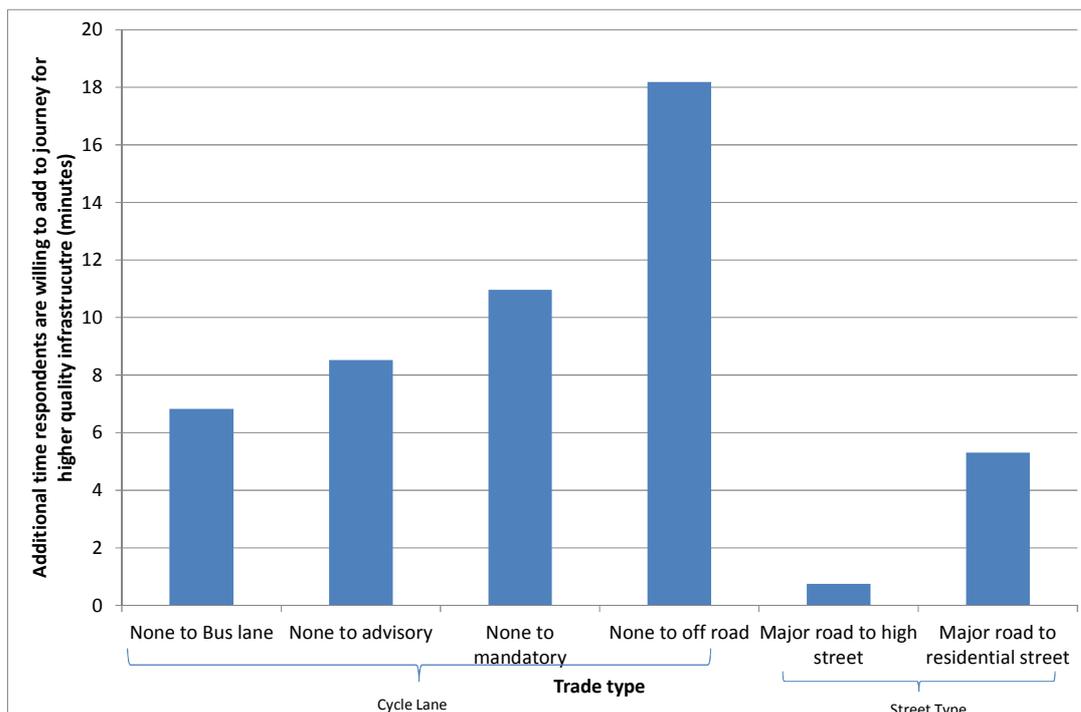
- C1.16 Table 15 displays the results from the logit analysis. The coefficients have been translated into time penalties that are shown in Figure 8. Respondents considered it worth an extra six to seven minutes to cycle in a bus lane, eight minutes to cycle in an advisory (i.e. narrow) cycle lane and around 11 minutes to cycle in a mandatory (i.e. wide) cycle lane. Respondents were willing to add an average of 18 minutes extra to their journey in order to use an off road cycle lane. However, this figure is likely to change with more data. As, in most cases respondents always chose the off-road route, it was difficult to measure its value accurately (see recommendations below).
- C1.17 Respondents were prepared to add an extra three to four minutes to their journey to cycle on a residential road as opposed to a major road. However, respondents were willing to add less than a minute to their journey in order to cycle on a high street as opposed to a major road (the coefficient for this was not significant). This may reflect the fact that major road was preferred to high street (see recommendations below).

Final survey and model report

TABLE 15 SP RESULTS

	Coefficient	Standard Error	z
None to Bus lane	0.903598	0.1537696	5.88
None to advisory	1.128715	0.1580619	7.14
None to mandatory	1.452538	0.1785859	8.13
None to off road	2.408745	0.3034436	7.94
Major road to high street	0.0996814	0.1365891	0.73
Major road to residential	0.7038027	0.1579313	4.46
Journey time difference	-0.1324686	0.0195225	-6.79

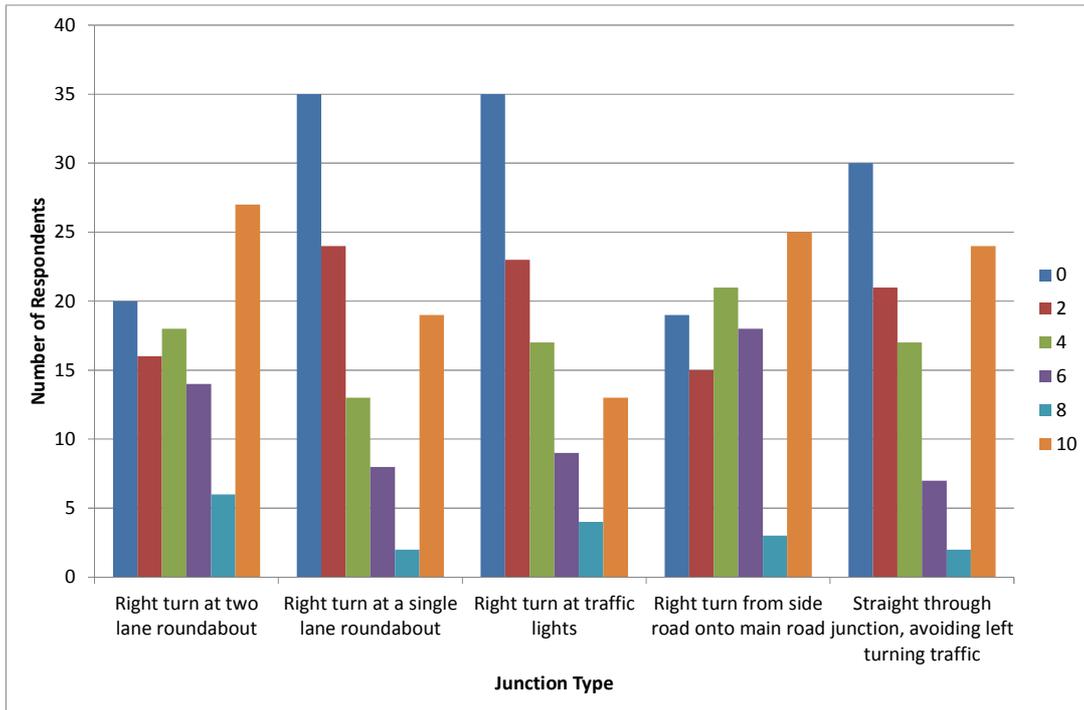
FIGURE 36 SP RESULTS



Junction Game

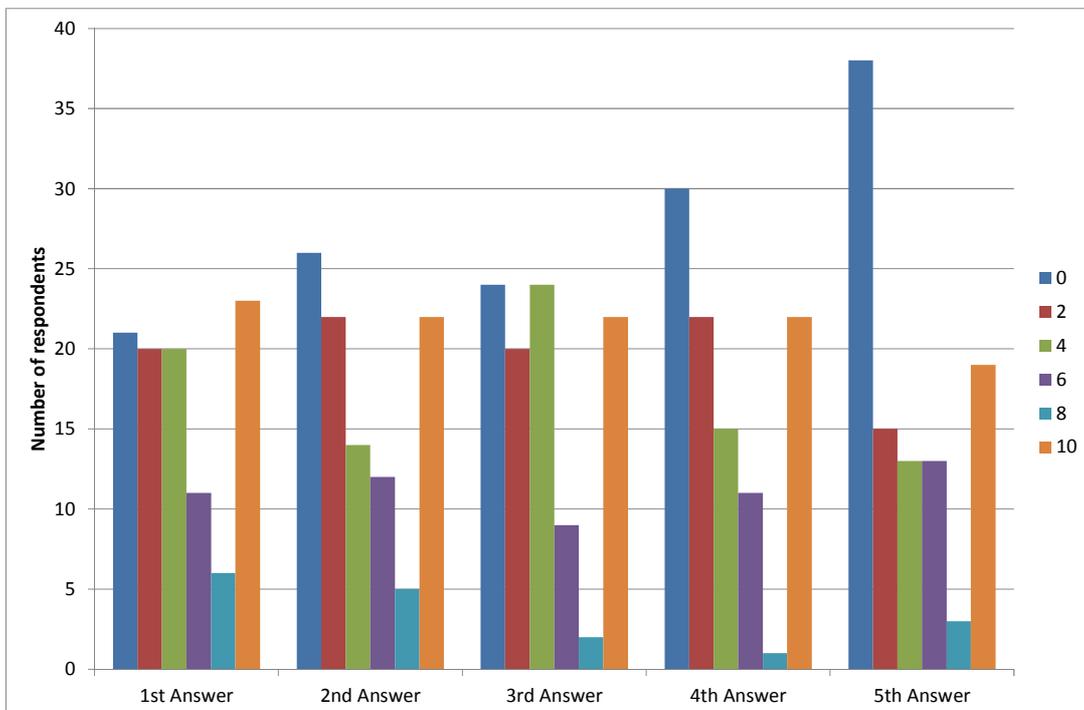
- C1.18 The survey found that cyclists would be most willing to add time to their journey in order to avoid a right turn at a two lane roundabout and a right turn from a side road onto a main road. It also showed that there was a group of respondents who chose to use a detour adding 10 minutes to their journey for all junctions. The results are displayed in Figure 8.

FIGURE 8 JUNCTION DETOUR GAME RESPONSES



C1.19 The respondents were each presented with the five junctions in a random order. When this is taken into account, it is clear that a considerable number of respondents were more likely to answer zero minutes for the fifth junction they saw, as is demonstrated in Figure 38.

FIGURE 38 EFFECT OF QUESTION ORDER IN JUNCTION DETOUR GAME



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Summary and recommendations

- C1.20 In summary, a good split has been received across the results and the stated preference analysis has generated valuable results. However, we have implemented four changes that will improve the survey. These are listed below:
- **Increase number of minutes in the SP cards.** We found that the off-road option was almost always selected, even at the highest levels of time increase. This makes it difficult to accurately value this attribute and therefore we have increased the time intervals from 12,15, 20 to 15, 20, 25 minutes. **The order of preference for road types.** The original design assumed that the preferred road type would be residential, followed by high street and that major road would be least preferred. However, the results showed that the major road was actually preferred to the high street. We have therefore adjusted the card layouts to reflect this.
 - **Adjust time intervals in junction detour game.** In the original junction game respondents were asked if they would take a two minute detour to avoid five types of junction. The junctions were shown in a random order. If respondents took the detour they were successively asked if they would take a 4,6,8 or 10 minute detour. The results showed that across all junctions many more respondents than expected still took the detour at 10 minutes. We therefore adjusted the time intervals to 2,5,10 and 15 minutes. This also shortens the question length.
 - **Show only 4 junctions in junction detour game.** In addition, we found that significantly more respondents refused the 2 minute detour at the fifth junction they saw than at any other, suggesting that five junctions was too many. We have therefore adjusted the design so that each respondent see only four of the five junctions, on a random basis.

Next steps

- C1.21 The adjusted questionnaire is now live online.
- We expect to receive the final data on 6th June.
 - Analysis will be completed by 18th June.
 - Draft outputs will be provided on 25th June.

Appendix 1 - invite email for TfL sample

[Email Subject:]TfL cycling research - please complete our survey - £100 prize draw

Dear [name]

Please can we ask for your help with some research being conducted on behalf of Transport for London? The research will be used to improve our understanding about what matters to cyclists in London and to inform future planning for cycling across London.

Below you'll see a link to an online questionnaire. Please click on this and answer the survey that comes up. It will take about 15 minutes to complete, and the questions are easy to answer.

All respondents will be entered into a **Prize Draw to win £100.**

[LINK HERE]

TfL have commissioned Research Now to carry out this survey. Research Now is a leading market research agency, and the research is being conducted in strict accordance with the Code of Conduct of the UK Market Research Society. All responses will remain confidential and there will be no further unsolicited contact as a direct result of your participation in this research. Your answers will be incorporated with those from many other respondents.

With many thanks in advance for your help

The draw for the prize will take place on 3rd July 2012. There will be three winners, who will be notified by email. Please email TfLCyclingSurvey@researchnowsurveys.com if you have any questions about this research, or have any problems with the survey.

About this email

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