**Types of Cycling**

1,980 responses were received to this question (multiple answers were allowed), 727 female (41%) and 1,242 (71%) from male respondents.

The most common responses for both genders were on-road utility, followed by on-road recreational cycling and then off-road recreational cycling. In percentage terms, women appear most dominantly in the non-cyclist and the off-road recreational cycling categories. This may be a reflective of the request of the author for people who do not currently cycle to complete the survey as their opinions are equally sought as those who do currently cycle, or potentially, of a desire to express views on a topic of interest for women who do not currently cycle.

**Chi-squared significance test results**

**Female > Male significant results:**
- ‘Non-cyclist’ (p-value 0.00000003)
- Off-road recreational (p-value 0.015)

**Male > Female significant results:**
- ‘Mountain Biking’ (p-value 0.001).

Figure 1: Types of Cycling by Gender (Actual)

Figure 2: Types of Cycling by Gender (%)
LEVEL OF EXPERIENCE

970 respondents completed this question including 392 (40%) female and 571 (59%) male respondents.

Figures 3 and 4 show that a large proportion of the respondents had over 10 years’ experience and very few were non-cyclists. Women tended to have lower levels of experience in cycling, and men to have longer periods of experience. This may reflect the self-selecting population of women with less experience who wish to participate in such a study. Expected values for non-cyclists were too small for analysis.

Chi-squared significance test results

Female > Male significant results:
- Little experience (p-value 0.00008)
- Occasional cyclist (p-value 0.00000006)
- Up to 1 year (p-value 0.008)

Male > Female significant results:
- Up to 10 years (p-value 0.03)

More than 10 years (p-value 0.000000003)
**Type of Cycle Training**

1,187 responses were received (multiple answers were allowed) of which 464 (39%) were female and 715 (60%) male.

The most common type of training is Cycle Proficiency/Bikeability whilst at school and does not vary greatly between the genders (Figures 5 and 6) and the only significant result was a higher significance for males for specialist training.

**Chi-squared significance test results**

Male > Female significant results:

- ‘Specialist training e.g. road racing, cycling racing, mountain biking skills training’ (p-value 0.002).

[Figure 5: Type of Cycle Training by Gender (Actual)]

[Figure 6: Type of Cycle Training by Gender (%)]
Preferred Cycle Route – 1st Choice

847 responses were gathered for Preferred Cycle Route (1st choice) including 349 female (41%) and 494 (58%) male. The results shown in Figures 7 and 8 show that for both genders, the analysis shows a marked preference for off-road routes through parks and a much lower preference for all other types of infrastructure. Female preference is strongly for off-road park routes, compared to men (52% of women compared to 39% of men) stating this as their first preference, the next preferred option being on-road kerb segregation (25% of women and 35% of men) choosing this as their preferred route choice.

Chi-squared significance test results

Female > Male significant preferences:

- Off-road (park) routes (p-value 0.008)
- Shared use pavement (with line) (p-value 0.001)

Male > Female significant preferences:

- On-road fully kerb segregated infrastructure (p-value 0.009)

On-road mandatory cycle lanes (p-value 0.027)
**Preferred Cycle Route – Top 3 Choices**

When analysing the data across the Top 3 Choices, 2,520 preferences were stated for 1st, 2nd and 3rd choices with 1,039 female (41.2%) and 1,471 (58.4%) male responses.

The analysis showed that both genders had strong preferences for both off-road (park) routes and fully segregated on-road routes, with canal towpath and on-road light segregation (wands) as the next preferred options (see Figure 9).

When looking at preferences within gender (Figure 10), men’s most popular choice is on-road fully kerb segregated, whereas women’s is off-road park routes. The second choices reverse the order of these choices for men and women, with canal towpaths being the third most popular for women, and on-road light segregation with wands being the third most popular for men.

**Chi-squared significance test results**

Female > Male significant preferences:
- Off-road (parks) (p-value 0.028)
- Off-road (canals) (p-value 0.007)
- Shared use pavement without line (p-value 0.001)
- Shared use pavement with line (p-value 0.000001)

Male > Female significant preferences:
- On-road light segregation (armadillos) (p-value 0.006)
- On-road advisory cycle lane (p-value 0.016)
- On-road mandatory cycle lane (p-value 0.008).
PREFERRED CYCLE ROUTE – TOP 3 CHOICES

Figure 9: Preferred Cycle Route (Top 3 Choices) by Gender (Actual)

Figure 10: Preferred Cycle Route (Top 3 Choices) by Gender (%)
Preferred Cycle Route – Qualitative Feedback

207 respondents chose to provide further information, 85 (41%) from female and 120 (58%) from male respondents. 310 comments were made, 145 (47%) from female and 163 (53%) from male respondents.

Figure 11 shows the main patterns to be comments regarding safety when mixing with motor traffic, personal safety issues (statistically significant for women) and concerns regarding shared space infrastructure. Directness (reduced stopping) was identified as an issue by twice as many men as women.

A small number of comments regarding liking mixing with traffic were made and some views regarding cycle lanes ‘partitioning’ cyclists into a small area, sometimes unsafely so and therefore preferring having the free run of the road.

Comments regarding canal provision indicated that path width, personal safety (passive surveillance and lighting) and the potential to fall into the canal were issues that led to these stated preferences.

Chi-squared significance test results

Female > Male significant results:
Attractive (personal safety) (p-value 0.04).
**Preferred Cycle Route – By Type of Cycling**

PCR choices were analysed by the type of cycling, the hypothesis being that a cyclist with more on-road experience is more likely to prefer an on-road route than an off-road route as they feel more confident using them. 1st PCR choice was used and grouped as this provides a clearer analysis of relationships.

The types of routes were grouped into:

- on-road segregation (i.e. kerb segregation, wands and armadillos);
- on-road mixed with traffic (i.e. cycle lanes both mandatory and advisory); and
- off-road routes (parks, towpaths, and shared-use pavements).

Type of cycling was grouped into on-road, off-road and no experience. Experience classified as instruction, touring or racing were categorised as on-road experience.

Figures 12 and 13 show that, of those who cycle off-road, 51% of men would choose off-road infrastructure compared to 63% of women.

For those who cycle on-road, 46% of men would prefer on-road segregated infrastructure compared to 35% of women.

Men who cycle on-road are more likely to prefer on-road mixed with traffic: 15% of men compared to 11% of women.

Women who cycle on-road have a greater preference for off-road infrastructure: 54% of women compared to 38% of men prefer off-road routes.

Male and female non-cyclists have an almost even level of preference for off-road infrastructure (76% of men compared to 75% of women).
**Preferred Cycle Route – By Type of Cycling**

**Figure 12: 1st Preferred Route by Type of Cycling (%): Female**

- Off-road cycling experience: 6% (63%), 11% (35%), 21% (75%)
- On-road cycling experience: 31%, 35%, 4% (4%)
- Non-cyclist: 39%, 46%, 11% (51%)

**Figure 13: 1st Preferred Route by Type of Cycling (%): Male**

- Off-road cycling experience: 10%, 15%, 11% (38%)
- On-road cycling experience: 39%, 46%, 13% (76%)
- Non-cyclist: 51%
**PREFERRED CYCLE ROUTE: BY LEVEL OF EXPERIENCE**

1st PCR was used and grouped as per previous analysis as this provides a clearer analysis of relationships and is shown in Figures 14 and 15.

The patterns are very similar between the genders showing an increased preference for on-road segregation as experience grows, followed by a dip when getting to high levels of experience where both genders increase their preference for off-road routes. There is a slightly higher preference amongst men for on-road shared routes when experience increases compared to women. The preferences for on-road vs. off-road reflect the general gender trends in preferred route choice noted above.

The response rate for non-cyclist women was very low (3 respondents) and therefore the percentage analysis is slightly skewed by the low response rate in this category.
**Preferred Cycle Route: By Level of Experience**

**Figure 14: 1st Preferred Route by Level of Experience (%): Female**

- Non-cyclist: 67%
- Little experience: 20%
- Occasional cyclist: 16%
- Up to 1 year: 19%
- Up to 2 years: 43%
- Up to 5 years: 44%
- Up to 10 years: 32%
- More than 10 years: 36%

**Figure 15: 1st Preferred Route by Level of Experience (%): Male**

- Non-cyclist: 77%
- Little experience: 72%
- Occasional cyclist: 46%
- Up to 1 year: 50%
- Up to 2 years: 28%
- Up to 5 years: 30%
- Up to 10 years: 44%
- More than 10 years: 44%
**Preferred Cycle Routes (PCR) by Type of Training**

PCR preferences were analysed by the type of training undertaken by a respondent. 1st PCR choice was used as this provides a clearer analysis of relationships. The types of training were grouped into ‘No Training’ and ‘Training’. Figures 16 and 17 show there were no visible effects of training upon preferred route choice for either gender; the patterns reflect overall route preference.

![Figure 16: 1st Preferred Route by Training (%): Female](image16)

![Figure 17: 1st Preferred Route by Training (%): Male](image17)
Safest Cycle Route: 1st Choice

843 responses were gathered for SCR (1st choice): 350 (41.5%) from female and 490 (58.1%) from male respondents.

For both genders the analysis shows a marked perception of safety in favour of off-road (park) routes and on-road fully kerb segregated routes, and a much lower preference for all other types of infrastructure (see Figures 18 and 19).

Chi-squared significance test results

Female > Male preferences:

- On-road light segregation with wands (p-value 0.01)

Shared-use pavement (with lines) (p-value 0.03).
SAFEST CYCLE ROUTE: BY TYPE OF CYCLING

A second level of analysis was carried out by grouping together respondents’ 1st, 2nd and 3rd choices (referred to as the Top 3 Choices) to give a wider view of the perception of the most safest route choices. 840 choices were stated for Top 3 choices: 350 (41.5%) from female and 490 (58.1%) from male respondents.

The analysis showed that both genders had strong preferences for both off-road (park) routes and on-road fully kerb segregated routes (see Figures 20 and 21). Women next prefer on-road light segregation (wands) whereas men’s next most popular choice is off-road (canal) routes, both genders having a 3% share.

Chi-squared significance test results

Female > Male preferences:

- Shared use pavements (no line) (p-value 0.028)
- Shared use pavement (with line) (p-value 0.011).
**Safest Cycle Route: By Type of Cycling**

120 respondents chose to provide further information on safest cycle routes of whom 55 (46%) were female and 64 (53%) male. In terms of the number of comments, 153 comments were coded, 77 from female (50.3%) 76 from male (49.7%) respondents with the results shown in Figure 22.

There were a small number of comments regarding bus lanes – some for and some against. Those for, liked the space it allowed for cyclists and that most bus drivers were courteous however opposing views disliked having vulnerable users mixing with large vehicles and felt them to be unsafe, and disliked feeling they were holding up the progress of buses.

**Chi-squared significance test results**

No significant gender differences identified.
**Safest Cycle Route: By Type of Cycling**

SCR preferences were analysed by the type of cycling, the hypothesis being that a cyclist undertaking a certain type of cycling develops a sense of safety about that particular type of infrastructure. 1st SCR was used and grouped as per previous analysis.

Figures 23 and 24 show that the clearest differences between the genders is for non-cyclists’ perception of safest routes. 82% of non-cyclist men choose off-road routes, compared to 71% of non-cyclist women, and on-road segregation is higher for non-cyclist women (28%) compared to non-cyclist men (13%).

The analysis shows that, regardless of the type of cycling someone undertakes, their perception of safety is in favour of off-road routes, follow by on-road segregation. Those who perceive on-road mixed with traffic routes as safest is very low (1-5% maximum).
Safest Cycle Route: By Level of Experience

1"SCR was used and grouped as per previous analysis and are shown in Figures 25 and 26. This shows similar patterns for both genders across the levels of experience. The perception of safety with off-road infrastructure is more dominant through the low levels of experience, then an increase in the preference for on-road segregated routes through medium levels of experience. This then decreases with the higher levels of experience and off-road routes again increase their popularity. There is a slight preference amongst men for on-road shared routes when experience increases compared to women, and a preference amongst women with low levels of experience for on-road segregation compared to men. Conversely, men with low levels of experience rate off-road routes as safer compared to women.

The response rate for non-cyclist women was very low (3 respondents) and therefore the percentage analysis is slightly skewed by the low response rate in this category.
SAFE CYCLE ROUTE: BY TRAINING

The SCR preferences were analysed by the type of training undertaken by a respondent. 1st safest route choice was used as this provides a clearer analysis of relationships. The types of training were grouped into ‘No Training’ and ‘Training’. Figures 27 and 28 show that for men there are no differences between those with and without training in perception of route safety. For women, those with training perceive on-road segregation light segregation (wands) and full-kerb segregated as safer than those without training.
**Hi-vis - Usage**

Respondents were asked an initial question ‘Do you ever wear hi-vis clothing?’ 857 respondents answered this question including 352 (41%) from female and 500 (58%) from male respondents.

This shows that a larger proportion of male respondents (66%) wear hi-vis compared to female respondents (60%) (see Figure 29), however this difference was not significant.

**Chi-squared significance test results**

No significant gender differences identified.
HI-VIS WHEN?

If the respondent answered yes to wearing hi-vis, they were then asked in which circumstances they wore hi-vis clothing.

657 responses were received to this question (multiple answers allowed) including 259 (39%) from female and 398 (61%) from male respondents. Figure 30 shows that cycling in the dark was the most commonly cited reason for wearing hi-vis followed by on-road cycling. More men than women responded that they ‘Always’ wore hi-vis clothing (18% compared to 14%). However, none of the differences were statistically significant.

Chi-squared significance test results

No significant gender differences identified

Figure 30: Hi-vis Use Occasions by Gender (%)
HI-Vis - Views

662 responses were provided, 253 (38%) from female and 407 (61%) from male respondents with results shown in Figure 31. The biggest gender differences are that 63% of women compared to 55% of men stated that they feel safer when wearing hi-vis.

The summary of the comments received under the ‘Other’ option highlight that although respondents stated that felt safer when wearing hi-vis, a number then stated that they do not actually feel safer but they wish to be seen, an option not presented in the multiple-choice question.

Chi-squared significance test result

No significant gender differences were identified.
HI-VIS - VIEWS

Figure 31: Hi-vis Views by Gender (%)

- Male:
  - 55%: I feel safer when I wear hi-vis
  - 18%: I wish I didn't have to wear hi-vis
  - 23%: I only wear hi-vis because the Highway Code says I should
  - 15%: I only wear hi-vis because the cultural/media messages say I should
  - 18%: Other (please specify)

- Female:
  - 63%: I feel safer when I wear hi-vis
  - 15%: I wish I didn't have to wear hi-vis
  - 18%: I only wear hi-vis because the Highway Code says I should
  - 18%: I only wear hi-vis because the cultural/media messages say I should
  - 23%: Other (please specify)
HI-VIS - VIEWS

‘Other’ comment summary (from both the ‘occasions’ and ‘views’ on hi-vis use comments fields):

- A large number said they don’t feel safer but want to be seen
- Only a small number said they felt safer wearing hi-vis
- Some use only in certain conditions (dark/twilight)
- To avoid victim blaming in the case of an accident/reduce perception of negligence
- Don’t want to
- Don’t see the benefit
- To compensate for poor driving by motorists
- Comments from drivers that they see people wearing hi-vis more easily
- Setting an example to children
- To reduce nagging/worry by family members
**Helmet - Usage**

Respondents were asked an initial question ‘Do you ever wear a helmet whilst cycling’.

861 respondents answered this question including 354 (41%) female and 502 (58%) male. Figure 32 shows that a higher percentage of women compared to men (81% to 77%) state that they wear a helmet but these differences were not significant. It is however interesting to note the difference between this result and that of the hi-vis question which showed the opposite result.

**Chi-squared significance test results**

No significant gender differences identified.
**Helmet – When?**

If the respondent answered yes to wearing a helmet, they were then asked in which circumstances they wore a helmet.

830 responses were received (multiple answers allowed) including 340 (41%) from female and 487 (59%) from male respondents with the results shown in Figure 33. Gender differences are within the ‘Always’ category (Female 61% to Male 52%) and a greater percentage of male responses indicating use whilst cycling on road (25% to 20%).

**Chi-squared significance test results**

Male > Female preferences:

‘When I do mountain biking’ (p-value 0.001).

![Figure 33: Helmet Use Occasions By Gender (%)](image-url)
848 responses were received, 374 (44%) from female and 471 (55%) from male respondents (multiple answers were allowed). The results are shown in Figure 34 including a summary of the comments from the ‘Other’ comment fields. This shows a higher number of women who wish they did not have to wear a helmet (20% of women compared to 14% of men) and more women than men felt safer when they wear a helmet (54% of women compared to 50% of men). The views are similar to those shown towards hi-vis usage.

Chi-squared significance test results

Female > Male preferences:

‘I wish I didn’t have to wear a helmet’ (p-value 0.049).
‘Other’ comment summary (from both the ‘occasion’s and ‘views’ on helmet use comments fields):

- A large number of comments saying helmet wearing helps if a cyclist falls off but not if hit by a vehicle.
- To prevent head injury
- Speed dependent use (would be used in fast cycling conditions such as racing or mountain biking, but less likely for local cycling or commuting).
- To avoid victim blaming in the case of an accident/reduce perception of negligence
- Habit
- Setting an example to children
- To reduce nagging/worry by family members
- Sun/rain protection
- Weather dependent (icy/foggy conditions)
- Helmet used to mount camera on
- Helmets are a nuisance to wear/carry

- Helmets make your head sweaty
- Location dependent use (Cambridge = cycle friendly, London = not, Australia/NZ = mandatory usage, NL/Sweden = no)
- Infrastructure dependent use (canals/parks = no, roads = yes)
- Trip distance (short, local trips = no, longer distance = yes)
- Trip purpose (road racing, commuting = yes, recreation = no, utility = yes and no)
- Differing views on mandatory use
DATA COLLECTION QUALITY ISSUES

A number of issues became evident in the feedback to the online survey and comments in the responses.

- The survey did not ask respondents to state their geographical location, and therefore the terminology may not translate to other areas of the world, although using pictures rather than simply descriptions may have gone some way to addressing this issue.
- The author fell foul of ‘industry-speak’ whereby a comment was received about not knowing what a mandatory cycle lane was and querying whether this meant that a cyclist was required to use the lane, which it does not, it means that a vehicle should not cross the solid white line into the cycle path.
- Within the ‘Type of cycling’ question the author had omitted to allow for off-road utility cycling e.g. towpaths and parks (although most journeys for commuting purposes will require some form of on-road utility cycling to link up sections of off-road cycling) and this may skew the analysis of this data. Based on comments received to this question, where a respondent made such a comment, additional categories of type of cycling were coded including off-road utility, racing, touring and instruction/courier, which were categorised as on-road experience for the preferred and safest route analysis.
- Some respondents indicated through their qualitative feedback that their preferences would vary depending upon the type of cycling being undertaken i.e. they may feel comfortable using an on-road cycle lane when they were commuting, but would prefer off-road routes through parks when cycling for leisure or with family; or they may prefer on-road routes for rural leisure cycling but would prefer segregated cycle routes through busier urban areas. The aim of the research was not to be as inclusive as possible however this potentially means the results are not specific to types of cycling or cyclists. This feedback supported the rationale for using both ‘1st’ and ‘Top 3’ preferences for preferred and safest routes which enabled respondents to select more than one option and enter qualitative
information to explain those choices and enables a broader context of preferences to be established.

- The route options for preference did not include a ‘mixed with traffic’ option i.e. no provision at all. This would have been useful to determine more direct relationships between experience and preference i.e. if you very experienced/confident are you more likely to want to fully mix with traffic or do cycle lanes cause more conflict than help for cyclists when interacting with traffic.

NOTES FOR REFERENCE

The responses to those from respondents identifying as ‘Other’ and ‘Prefer not to say’ were too low to be significant and therefore excluded from further analysis. Totals may therefore not tally, as these responses are not referred to in the analysis. For ease, respondents are referred to as male or female.