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Commuting and individual well-being in London

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Introduction

This report uses data from the Annual Population Survey (APS) to report on commuting and well-being, focusing mainly on Londoners and compared this with data for their counterparts living in the rest of the UK (excluding London). The report 'Individual Well-being in London'¹ published by the Greater London Authority in August 2014 gave an overview of well-being in London and insight into whether a range of personal characteristics had any influence or relationship with well-being, and if this varied by location. This report is an extension of that, and focuses on establishing any potential relationships between well-being and commuting.

The Office for National Statistics (ONS) asked participants of the APS four questions on well-being, as follows:

- How **anxious** did you feel yesterday?
- Overall, how **worthwhile** do you feel the things you have done in life are?
- How **satisfied** are you with your life?
- How **happy** did you feel yesterday?

Respondents were asked to rank their answers on a scale of 0 to 10, with 0 being not at all and 10 being completely anxious/worthwhile/satisfied/happy. For all well-being indicators bar anxious, the higher the score, the better the well-being was. Anxiety increased with the score; therefore a high anxiety score was indicative of lower personal well-being. Scores for each group are expressed as mean scores to facilitate analysis. Please note that the reported differences in scores are based on rounded scores to 1 decimal place.

The APS for April 2012-March 2013 was carried out in four quarters over the year, and surveyed 309,000 people. The well-being questions were asked in three out of the four quarters, and around a half of the original sample size (166,000 people) answered these questions. The four well-being indicators have been cross-tabulated with two commuting variables: time taken to travel to work (in minutes) and usual method of travel to work². These two commuting variables have also been cross-tabulated with the work-related variable hours worked. Mean scores for London were only compared with those for the rest of the UK for the two commuting variables cross-tabbed by the well-being indicators. Analysis of the commuting variables cross-tabulated with each other and hours worked was carried out at a London-level only due to the complexity of the data.

It is worth noting here that some overall mean well-being scores for London and for the rest of the UK in this report differ slightly from the same overall mean scores reported in the report 'Individual Well-being in London'. This is because of the difference in the sample used; the commuting questions were only applicable to respondents who were in work, worked somewhere separate from their home, and answered the well-being questions, whereas the

¹ This report can be found at the following link:

<http://www.london.gov.uk/mayor-assembly/mayor/publications/gla-intelligence/demography/poverty/individual-well-being-in-london>

² If more than one method of travel is used, the one used to travel the furthest distance is recorded.

previous report was inclusive of all survey respondents that answered the well-being questions (including those who were not in work or working from home).

Most cross-tabulated variables in this paper had a sample size of over 100 people, but the majority were still not large enough to be entirely representative of Londoners. The analysis in this report is therefore limited by this sample size, and most of findings cannot be deemed to be statistically significant. However, the results can be used to form the basis for future research projects on commuting and well-being with larger sample sizes. Any values based on a sample size of less than 100 people have been clearly identified.

Confidence intervals

Confidence intervals are used as a measure of uncertainty in statistics. They are necessary because data based on a sample of the population (i.e. a survey), rather than the entire population, will not provide exact results. Rather, data collected in this way will provide a result which is representative of the population. Therefore, some measure of how accurate a result based on sample data is necessary for that result to be meaningful.

A confidence interval provides a range within which the true value of a statistic is most likely to fall. Larger sample sizes provide a more accurate representation of the population and so confidence intervals will be smaller, while small sample sizes will increase the uncertainty in a result and confidence intervals will be larger. At the 95 per cent confidence interval we can say that if we undertook the same survey again 100 times, in 95 cases the result would fall within the range defined by the highest and lowest values of the confidence interval. Confidence intervals have only been used in the overview part of the report (page 6) due to the small sample sizes in all other sections.

Key findings

Although potential relationships between variables were identified, it cannot be said that there was a definite causal link between such variables and high or low well-being. For example, just because those who cycled to work had a higher mean anxiety score than the score for all people, it cannot be stated that these people were more anxious simply because they cycle. Other characteristics associated with people who choose to cycle may be at play.

Overall

- People in London were more anxious than those in the rest of the UK: the mean anxiety score for all people living in the capital was 0.4 points above that for the rest of the UK.
- London workers travelling for **<15 minutes** to work were less anxious than average, with a mean anxiety score of 0.2 points below average.
- Those **walking** to work in London had lower happiness scores than average.
- Workers using the **bus** to get to work had lower well-being, with these people having higher mean anxiety and lower mean worthwhile scores than average.
- Mean happiness scores for workers in both London and the rest of the UK were the same, however those **walking** to work in London had a score 0.2 points below those walking to work elsewhere in the country.
- Londoners **cycling** to work had a much higher mean anxiety score than those cycling in the rest of the UK, by 0.7 points.

Time travelled by method of travel to work

Key findings in this and the following section are the result of cross-tabulating two variables and analysing the mean well-being scores for each cross-tab; for example, the mean happiness score of all people who walk to work **and** travel for 15–29 minutes.

- The mean anxiety score for people **cycling** to work for **<15 minutes** in London was 4.4; much higher than the mean scores for cycling (3.4) and travelling for <15 minutes (3.1).
- Life satisfaction for people **walking** to work for **<15 minutes** was substantially higher than the averages for both variables.
- People **walking** to work in London for **15-29 minutes** had considerably lower happiness, life satisfaction and feeling that their life had been worthwhile, with all scores between 0.4 and 0.6 points lower than the averages for both walking and travelling for 15–29 minutes.
- Workers getting the **bus** to work for **<30 minutes** had a higher mean happiness score than both averages.
- Londoners travelling to work for **60-89 minutes** by **bus** had considerably lower well-being across all four indicators than the averages.

- Those getting the **tube** to work for **<30 minutes** had notably higher than the average happiness and life satisfaction scores.

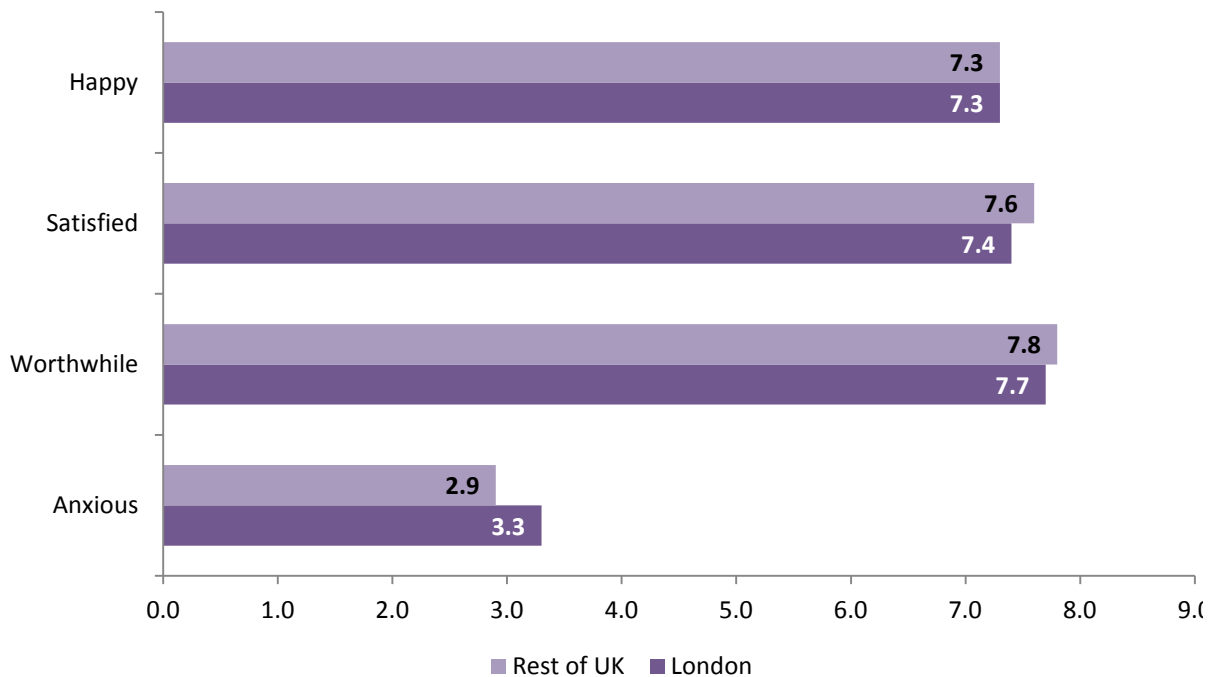
Hours worked

- Workers in London working **16-30 hours** per week and travelling for **30-44 minutes** were considerably more anxious than the averages for both categories.
- Londoners working **49 hours + per week** travelling for **<15 minutes** and **30-44 minutes** had notably lower happiness scores than average.
- Residents working **<16 hours per week** and **walking** to work had a mean anxiety score higher than the averages. Interestingly, their counterparts working **16-30 hours per week** had a mean anxiety score much lower than the averages.
- Well-being was, as with those walking to work and working <16 hours per week, lower for Londoners working **49 hours + per week** walking to work with lower mean happiness and satisfied scores than the averages.
- Those in London cycling to work and working **49 hours + per week** had considerably higher anxiety than the averages, however; their mean worthwhile score was notably higher than the averages at 8.0.
- Workers getting the bus to work and working **49 hours + per week** had an anxiety score of 3.9; between 0.4 and 0.6 points above average.

Overview

Although differences were minor, working Londoners³ generally had lower well-being than their rest of UK counterparts. Differences in scores throughout this report were only seen as noteworthy if the difference was 0.2 points or more. This is between unrounded scores; therefore some scores may have a difference of 0.2 between rounded scores, but a difference of less than 0.2 in unrounded scores are not reported on.

Figure 1: Mean Well-being scores, London and the rest of the UK, April 2012 - March 2013



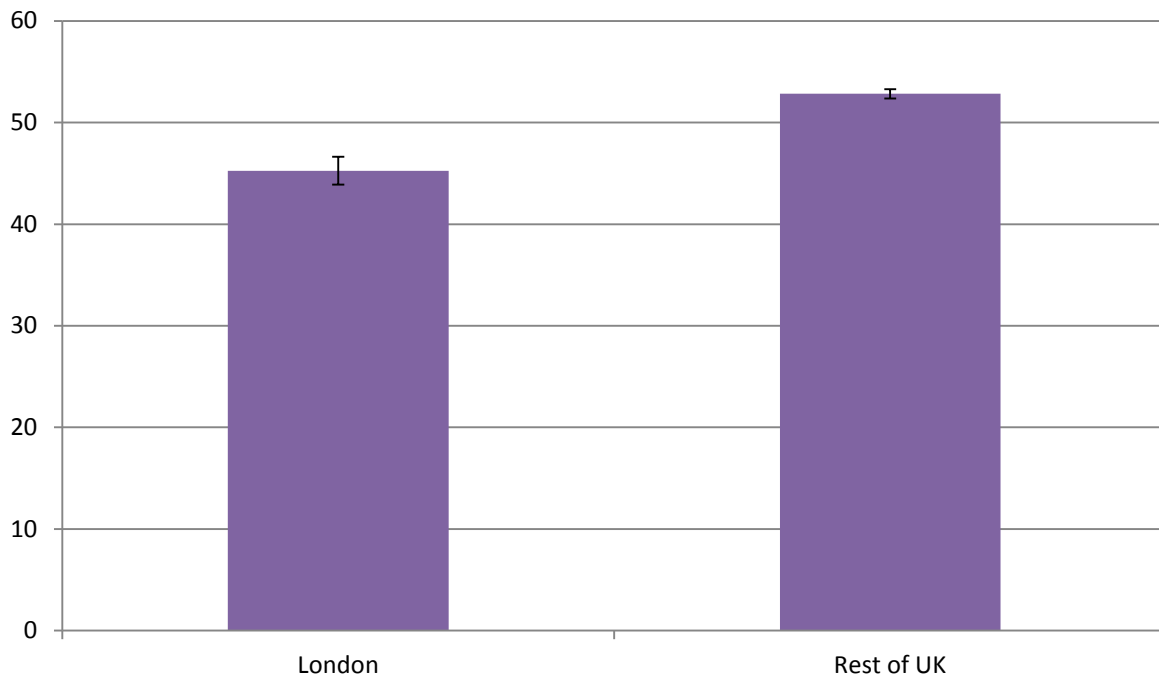
Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Most notable was the difference in mean anxiety scores; Londoners were considerably more anxious than those in the rest of the UK, with a mean score 0.4 points higher (3.3 compared to 2.9). The higher mean anxiety score for those in London compared with residents in the rest of the UK could be attributed to the lower share of Londoners scoring their anxiety between 0 and 2 on the scale (scale is from 0 to 10) than those in the rest of UK (45 per cent and 53 per cent respectively). These scores are significantly different at the 95 per cent confidence interval⁴, as shown in Figure 2. Confidence intervals are shown on Figures 2 and 3 as error bars around the columns.

³ Excluding those working from home.

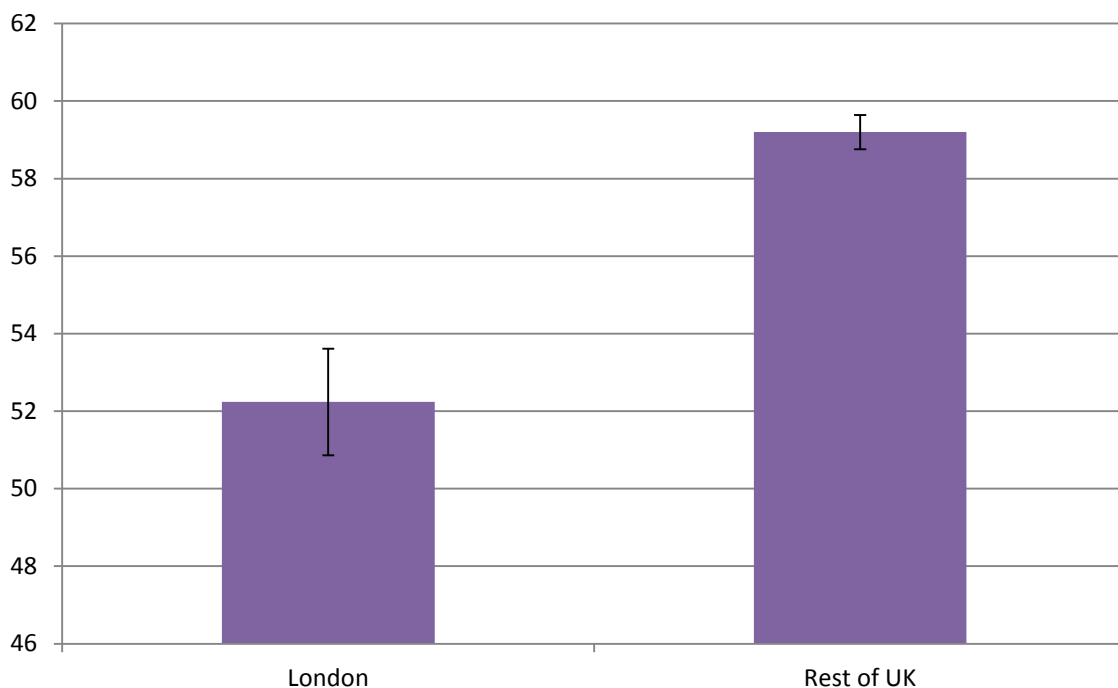
⁴ See introduction for explanation on confidence intervals.

Figure 2: Percentage of residents scoring 0 to 2 on the well-being scale for anxiety (with 95 per cent confidence intervals), London, the rest of the UK, April 2012 - March 2013



Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Figure 3: The percentage of residents scoring 8 to 10 on the well-being scale for satisfaction (with 95 per cent confidence intervals), London, the rest of the UK, April 2012 - March 2013



Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Also of note was the mean satisfied score, for which those living in London averaged 7.4; 0.2 points below the score for workers living in the rest of the UK. Of all those living in London, 52 per cent scored their life satisfaction between 8 and 10 points, whereas 59 per cent of those from the rest of the UK had a score in this range. When tested at the 95 per cent interval, these proportions were statistically different, as shown in Figure 3.

Worthwhile scores were just 0.1 points different, at 7.7 for Londoners and 7.8 for their rest of UK equivalents, and residents of both areas had a mean happiness score of 7.3.

Travel time to work and well-being

London overview

The data on time taken to travel to work were recorded in minutes. For the purposes of analysis, this variable has been grouped into sub-categories, as shown in Table 1. All time travelled sub-categories contained a minimum of 660 to a maximum of 1800 respondents. Table 1 shows mean scores from 0 to a possible 10 to one decimal place for each time travelled sub-category cross-tabbed with each well-being indicator for London.

Table 1: Well-being by time travelled to work, London, April 2012-March 2013

Travel Time (minutes)	Anxious	Happy	Worthwhile	Satisfied
London Average	3.3	7.3	7.7	7.4
<15	3.1	7.3	7.8	7.4
15-29	3.2	7.3	7.7	7.4
30-44	3.4	7.2	7.6	7.4
45-59	3.2	7.3	7.6	7.5
60-89	3.4	7.2	7.6	7.4
90+	3.4	7.1	7.6	7.3

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

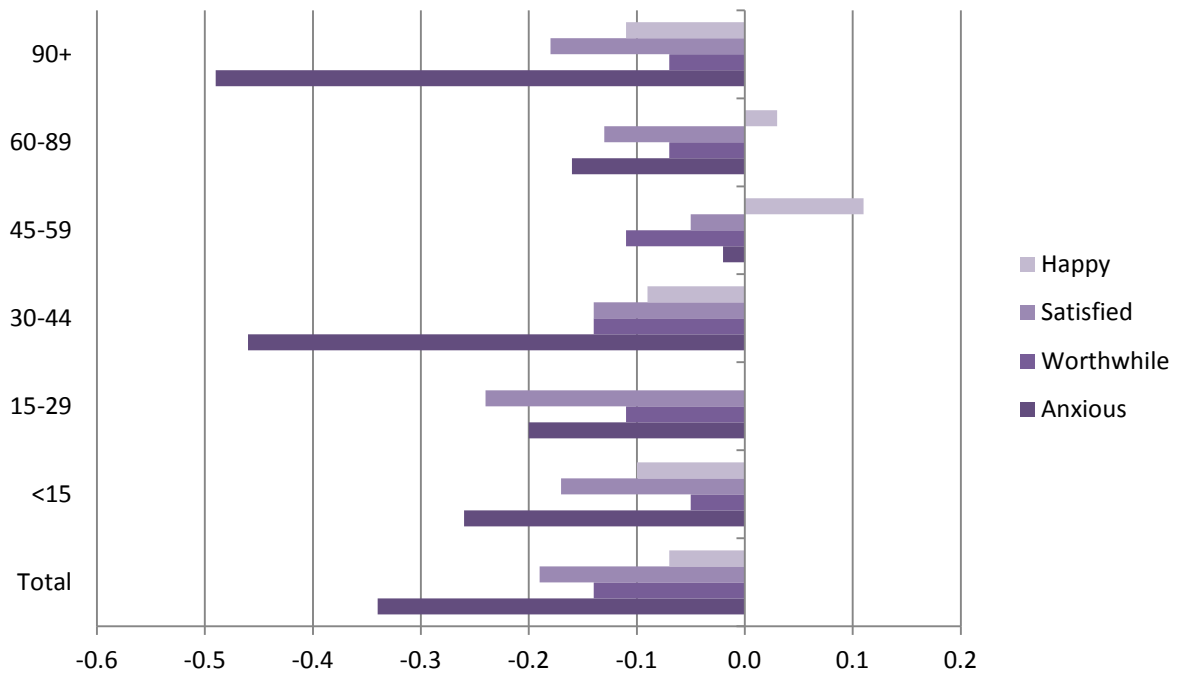
Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

Overall, the time taken to travel to work did not appear to affect well-being considerably in London. The only difference of note from the overall scores was the mean anxiety score for those travelling < 15 minutes to work, which was lower than average (3.1 compared with the average of 3.3).

London and the rest of the UK

Figure 4 shows the difference between mean well-being scores for London and the rest of the UK for each time travelled to work category. Negative scores indicate that mean scores for London were lower than for the rest of the UK (please note the anxiety scores have been inverted here). There were few variations from the overall difference in mean scores (see the total bars in Figure 4). Most deviations from the average difference were found in the anxiety well-being scores. Overall mean anxiety scores for the two areas differed by 0.4 points (3.3 and 2.9 respectively). Most notably, there was no difference in mean anxiety scores between those commuting 45-59 minutes in both London and the rest of the UK (the mean score was 3.2 for both).

Figure 4: Difference in mean well-being scores by time travelled, London and the rest of the UK, April 2012 – March 2013



Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

The only other considerable difference in mean scores between the two areas was in the scores for life satisfaction. Overall, Londoners had lower life satisfaction (7.4) than those from the rest of the UK (7.6). When breaking down by time travelled to work, the mean scores for those travelling 45-59 minutes in both areas were the same, at 7.5.

Method of travel to work and well-being

London overview

Participants of the APS who were in work were asked which main method of travel they used to get to work. The following methods of travel to work have not been reported on due to a very small sample size for each: Motorbike, moped or scooter, Taxi, and Other method. All other method of travel categories had a sample size between 370 and 2,900. Table 2 shows the mean well-being scores for each method of travel at a London level.

There were some notable deviations from the average mean scores⁵ when breaking down by method of travel to work. Those travelling to work by bus had lower well-being. Residents using this method scored higher than average on the anxiety scale by 0.2 points (3.5 compared to 3.3), and lower on feeling daily activities were worthwhile (7.2 compared with 7.4).

The only other mean score which varied notably from the overall mean was for those walking to work, who had lower happiness than overall with a score of 7.1 (overall mean 7.3).

Table 2: Well-being by method of travel, London, April 2012-March 2013

Method of travel	Anxious	Happy	Worthwhile	Satisfied
Total London	3.3	7.3	7.4	7.7
Car ⁶	3.1	7.3	7.4	7.8
Bicycle	3.4	7.3	7.5	7.7
Bus ⁷	3.5	7.2	7.2	7.5
Train	3.4	7.3	7.6	7.7
Underground ⁸	3.3	7.4	7.5	7.6
Walk	3.1	7.1	7.3	7.6

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

London and the rest of the UK

There was not much variation from the average difference in mean scores between London and the rest of the UK when breaking down by method of travel to work. The only methods of travel that had a difference between the two areas that were considerably different to that of the averages were cycling and walking, as shown in Figure 5. Negative scores indicate that mean scores for London were lower than for the rest of the UK (please note the anxiety scores have been inverted here).

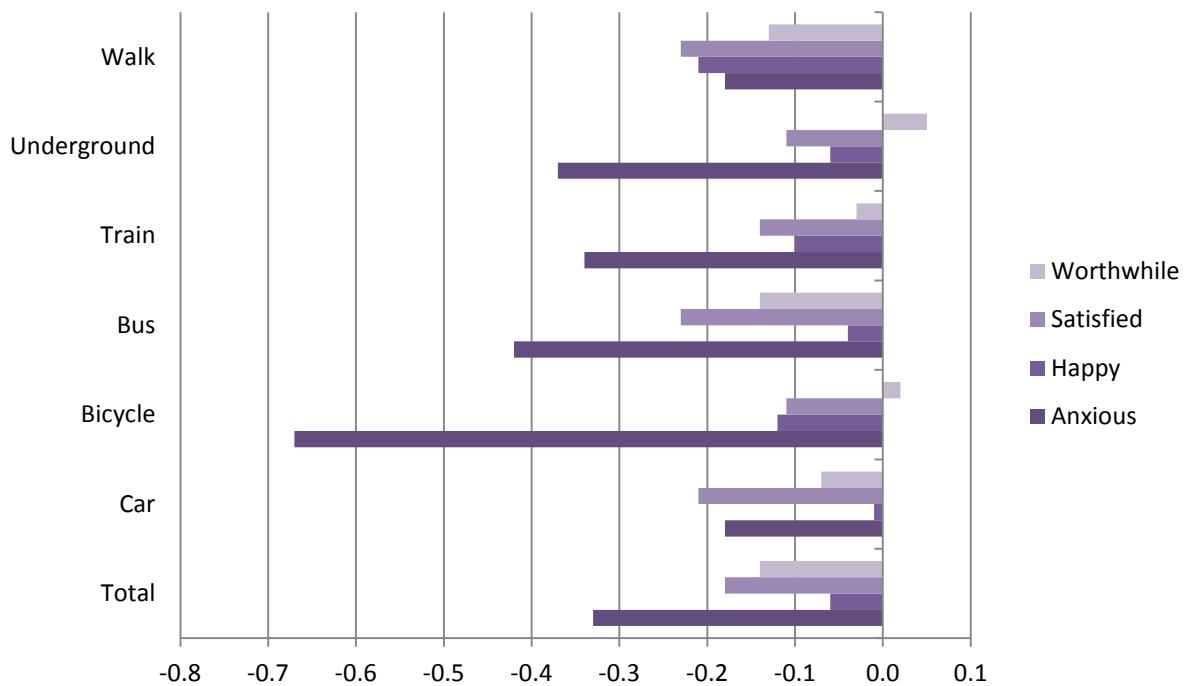
⁵ Please note that only differences of 0.2 points or more between unrounded scores and the averages have been reported on here. Scores in the table are rounded.

⁶ Car includes car, van, minibus, works van

⁷ Bus includes bus, coach, private bus

⁸ Underground includes Underground, light railway, tram

Figure 5: Difference in mean well-being scores by method of travel to work, London and the rest of the UK, April 2012 – March 2013



Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

The average difference between the two areas mean anxiety scores was 0.4 points. However, those in London travelling by bicycle were considerably more anxious than those in the rest of the UK, with the difference between the two being even higher than the average, by 0.7 points (3.4 and 2.7). Also noteworthy was that those cycling to work resident in the rest of the UK were less anxious than the average by 0.2 points, at 2.7 compared to 2.9. This was not true of those cycling in London, who had a mean score of 0.1 points higher than the London average (3.4 compared to 3.3).

There was no difference in mean happiness scores between those resident in London and those in the UK; both scores were 7.3. When categorising by method of travel to work, the only variation to this was mean scores for those walking to work. Residents walking to work in London were less happy than those in the rest of the UK, with a mean happiness score of 7.1 compared with 7.3).

Travel time by method of travel

The following analysis has cross-tabulated method of travel with time taken to travel to work (minutes), and examines the mean scores for each of the cross-tabulations for respective well-being indicators. In each case the mean score for the cross-tabulated variable is compared to the mean of the particular method of travel and the mean of the particular time taken category. However, the sample sizes of some sub-categories when using the original time travelled groups were very small; therefore further aggregation of time travelled groups was necessary.

Data for modes of transport with small sample sizes in the larger time travelled categories have been analysed aggregating all time travelled categories of 45 minutes and over (45 minutes +). These methods were bicycle and walking. The car category had large sample sizes in all time travelled categories, but has also been included in this aggregation as the sample sizes were much larger in the smaller time travelled groups. The new aggregated time travelled categories for these three methods of travel are as follows:

Car, Bicycle, Walk

- < 15 minutes
- 15 minutes - 29 minutes
- 30 minutes - 44 minutes
- 45 minutes+

Data on the modes of transport which had small sample sizes in the lesser time travelled categories have been analysed aggregating all categories of less than 30 minutes (< 30 minutes). These methods were bus, train, and underground, and time aggregates for these are as follows:

Bus, Train, Underground

- < 30 minutes
- 30 minutes - 44 minutes
- 45 minutes - 59 minutes
- 60 minutes - 89 minutes
- 90 minutes +

There were still some groups which had small sample sizes even after aggregation, which have been noted in the paper.

Car

Table 3 shows mean well-being scores for people using a car to get to work, broken down by travel time. There were no mean scores that varied considerably⁹ from the averages for both the time travelled groups and travelling by car across all well-being indicators.

Table 3: Well-being by time travelled, those using a car to get to work, London, April 2012-March 2013

Time travelled (mins)	Anxious	Happy	Worthwhile	Satisfied
Total	3.2	7.3	7.8	7.4
<15	3.0	7.2	7.8	7.3
15-29	3.2	7.4	7.8	7.4
30-44	3.4	7.3	7.8	7.5
45+	3.1	7.4	7.8	7.4

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Bicycle

Table 4 shows the mean well-being scores of those travelling to work by bicycle by time travelled. The score most different to the average for cycling was the mean anxiety score for cycling for <15 minutes, which was 4.4. This was 1.0 points above the average anxiety score for those riding a bicycle in London (of 3.4), and 1.3 points above the average for those travelling <15 minutes to get to work. This seems to indicate that those travelling by bike are more anxious when undertaking short journeys. However, as the sample size was very small at less than 100 people, these results cannot be deemed to be representative, but indicate this could be a potential area for future research.

Table 4: Well-being by time travelled, those using a bicycle to get to work, London, April 2012-March 2013

Time travelled (mins)	Anxious	Happy	Worthwhile	Satisfied
Total	3.4	7.3	7.8	7.5
<15	4.4	7.3	7.8	7.5
15-29	3.1	7.5	7.9	7.5
30-44	3.6	7.1	7.6	7.4
45+	2.5	7.2	8.0	7.6

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

⁹ Of 0.2 points or more between unrounded scores

People cycling for 15–29 minutes were happier than both the average for this time-travelled category and this method of travel, by 0.2 points.

The well-being of those travelling for 45 minutes + by bicycle to work was higher than average on the worthwhile indicator. The mean anxiety score for those cycling 45 minutes + to work was much lower than the averages. Those cycling for this length of time had a mean anxiety score of just 2.5; 0.9 points below the average for cycling and 0.6 points below that for travelling 45 minutes +. The mean worthwhile score was also higher than both averages, at 8.0 (0.2 higher than cycling average and 0.4 above average for this travel time). However, the sample size was less than 100 people; therefore this result cannot be assumed to hold to the population as a whole.

Walking

Table 5 shows the mean well-being scores of those walking to work by time travelled.

Table 5: Well-being by time travelled, those walking to work, London, April 2012–March 2013

Time travelled (mins)	Anxious	Happy	Worthwhile	Satisfied
Total	3.1	7.1	7.6	7.3
<15	3.1	7.4	7.9	7.6
15-29	2.9	6.7	7.2	6.9
30-44	3.5	7.1	7.7	7.4
45+	3.7	7.1	7.6	7.6

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

Those walking to work for <15 minutes had higher life satisfaction than average. This group had a mean score higher than the average for both walking to work and travelling for <15 minutes at 7.6 (0.3 and 0.4 points above the averages respectively).

Interestingly, although life satisfaction was higher than average among people walking <15 minutes, those walking 15–29 minutes to work in London had lower than average well-being on the indicators happy, satisfied and worthwhile. The mean life satisfaction score for people walking this distance was 6.9; 0.4 points below the average for walking and 0.5 points below the average for travelling 15–29 minutes. Those walking this distance also had a much lower worthwhile score than the average mean for this method by 0.5 points at 7.2 (average mean was 7.7), and a mean happiness score of 6.7; much lower than the mean scores for this method of travel and time travelled categories (7.1 and 7.3 respectively).

Also of note, respondents who walked to work for 45 minutes + had much higher anxiety levels than average, with a mean score of 3.7; 0.6 points above the average for walking (of 3.1) and 0.4 points above the average for travelling 45 minutes + to work. However, the sample size was too small to suggest any definite relationship between the two variables, at well under 100 respondents.

Bus

The mean scores for those travelling to work by bus broken down by time travelled are shown in Table 6, along with the averages for travelling by bus.

Table 6: Well-being by time travelled, those using a bus to get to work, London, April 2012-March 2013

Time travelled (mins)	Anxious	Happy	Worthwhile	Satisfied
Total	3.5	7.2	7.5	7.2
<30	3.3	7.7	7.9	7.5
30-44	3.7	6.8	7.4	7.1
45-59	3.4	7.4	7.6	7.2
60-89	3.7	6.7	7.3	6.8
90+	3.0	7.3	6.9	6.5

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

There were some notable variations in the well-being of people travelling to work by bus when grouping into time travelled categories. Most considerable was mean scores for those travelling <30 minutes by bus to work, with higher well-being across all indicators than average. The happiness mean score for these residents was 0.2 points above the average mean score for this time travelled category, and for travelling by bus by 0.5 points. The mean scores for happiness also varied the most when comparing time travelled categories, with those travelling for <30 minutes by bus having a mean score 0.9 points above those travelling 30-44 minutes.

People travelling for 60-89 minutes to work in London did not have significantly lower than average well-being mean scores across any indicators. However, when travelling this distance by bus, they were more anxious than average, with a mean score 0.2 points above the average for using this method (3.7), and the mean happiness, satisfied and worthwhile scores were all notably below average (by 0.5, 0.4 and 0.2 points).

Train

Table 7 shows mean well-being scores for those travelling to work by train by the time travelled groups.

Table 7: Well-being by time travelled, those getting the train to get to work, London, April 2012-March 2013

Time travelled (mins)	Anxious	Happy	Worthwhile	Satisfied
Total	3.4	7.3	7.7	7.6
<30	3.2	7.4	7.7	7.5
30-44	3.4	7.4	7.6	7.5
45-59	3.4	7.1	7.5	7.6
60-89	3.3	7.3	7.7	7.6
90+	3.5	7.1	7.8	7.5

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

The time taken to travel to work by train did not appear to significantly affect the majority of well-being scores; most scores when breaking down by time travelled were around the same as the averages. The only category that differed from this was those travelling by train for 45-59 minutes, who were less happy than average by 0.2 points.

Underground

The time taken to travel to work by underground had some notable effects on well-being mean scores, as shown in Table 8.

Table 8: Well-being by time travelled, those using the tube to get to work, London, April 2012-March 2013

Time travelled (mins)	Anxious	Happy	Worthwhile	Satisfied
Total	3.3	7.3	7.6	7.5
<30	3.3	7.5	7.9	7.8
30-44	3.3	7.3	7.5	7.6
45-59	3.0	7.5	7.5	7.5
60-89	3.5	7.2	7.6	7.3
90+	3.3	7.2	7.2	6.9

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

Of all well-being indicators, the mean scores for anxiety varied the most by time taken to travel to work. People using the tube for 45-59 minutes were less anxious than average by 0.3 points.

This is interesting, given those travelling on the tube for <30 minutes and 30-44 minutes had scores matching the average.

Although travelling for <30 minutes did not appear to have any significant effect on well-being, mean scores for those travelling for this time period by tube were considerably higher than average for happiness and life satisfaction (by 0.2 and 0.3 points).

Those travelling 90 minutes + by tube were less satisfied and had lower feeling of life being worthwhile than average. The mean life satisfaction score was 6.9; 0.7 points (unrounded) below the average for this method of travel and 0.8 points lower than the average for travelling 90 minutes +. The mean worthwhile score was 7.2, compared with 7.6 for this method and time travel group. This was not the case for all workers travelling this distance, where mean scores were not notably different to average for these well-being indicators. Due to a sample size of less than 100 people for those travelling by tube for 90 minutes +, mean scores cannot be said to be notably different from the averages.

Hours worked

Hours worked per week was cross-tabulated with time travelled and method of travel to work in this paper to establish any effect these variables combined may have on a person's well-being. The following section compares mean well-being scores of those working different hours per week to identify any differences before cross-tabulating the data with the two commuting to work variables.

London

The hours worked in London seemed to have little effect on well-being¹⁰, as shown in Table 9. There were no notable variations when breaking down by hours worked to the average mean scores.

Table 9: Well-being by hours worked, London, April 2012-March 2013

Hours worked	Anxious	Happy	Worthwhile	Satisfied
Total	3.2	7.3	7.7	7.4
<16	3.3	7.3	7.8	7.4
16-30	3.3	7.4	7.8	7.4
31-48	3.1	7.4	7.6	7.4
49 +	3.3	7.2	7.6	7.5

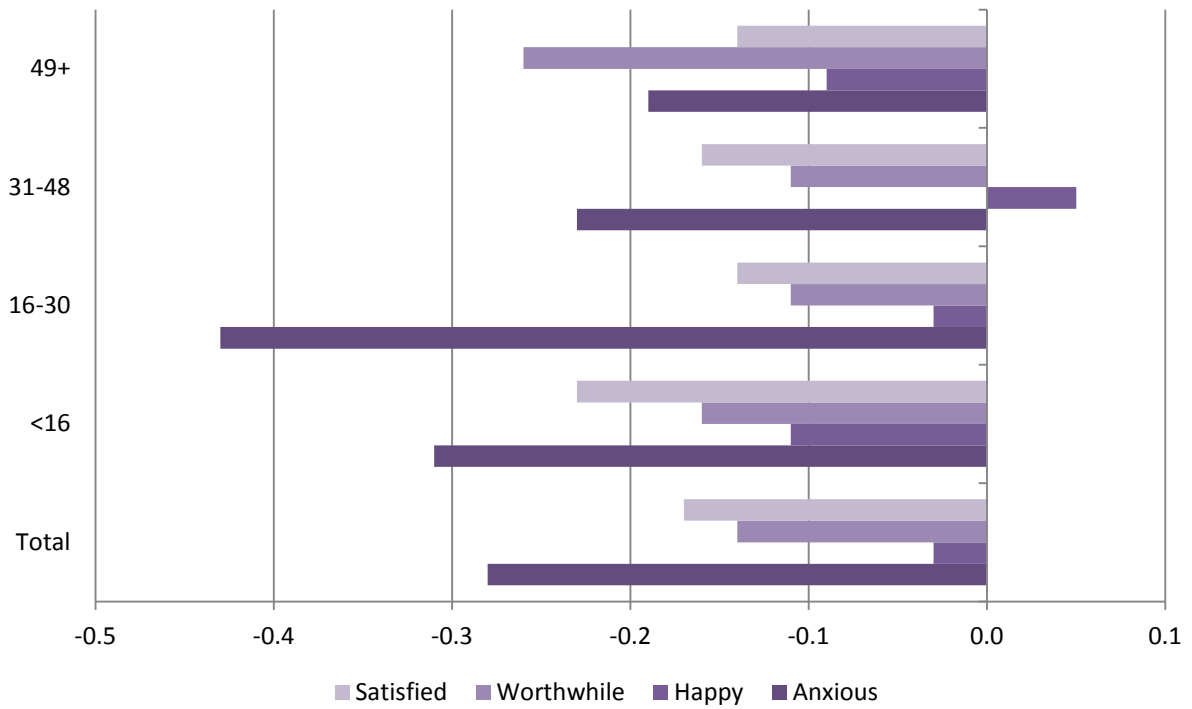
Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

London and the rest of UK

Figure 6 shows the difference between mean well-being scores for London and for the rest of the UK. Negative scores indicate that mean scores for London were lower than for the rest of the UK (please note the anxiety scores have been inverted here). Most differences in scores were similar to the average (see the bars for total), except for the worthwhile scores for those working 49 hours + per week. On average, those from the rest of the UK had a mean worthwhile score 0.1 points above Londoners (7.8 and 7.7 respectively). However, those working 49 hours + in London had a score 0.1 points below the London average at 7.6; 0.3 points lower than their rest of UK counterparts (who had a score 0.1 point above the rest of the UK average of 7.9). This indicates Londoners working 49 hours + had notably lower feelings of their life being worthwhile than those living in the rest of the UK.

¹⁰ Please note the overall mean anxiety score is slightly different to that at the beginning of the report (by 0.1 points). This is due to a marginally different sample which was everyone in work answering the hours worked and well-being questions.

Figure 6: Difference in mean well-being scores by hours worked, London and the rest of the UK, April 2012 – March 2013



Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Hours worked by commuting variables

Time travelled to work

<16 hours per week

Feelings of life being worthwhile had the most notable potential relationship with time taken to travel to work. Those working <16 hours per week travelling <15 minutes to work had higher feelings of worthwhile than average, by 0.3 points for this hours worked category and 0.2 points above the average for travelling <15 minutes, at 8.0.

Also noteworthy was that those travelling 30-44 minutes to work and working for <16 hours per week had lower feelings that their life was worthwhile than average. Those in both these categories had a mean worthwhile score of 7.4; 0.2 and 0.3 points (unrounded) below the average for this time travelled and hours worked categories.

16-30 hours per week

Those working 16-30 hours per week and travelling <15 minutes to work were considerably less anxious than average, at 2.9 (average for this hours worked group 3.4, time travelled category 3.1). Their counterparts travelling for 30-44 minutes to work had a mean anxiety score 1.0 points above this, at 3.9; 0.5 points above the average for both time travelled and hours worked categories.

The other notable difference to the averages was the mean worthwhile score for those working 16-30 hours per week travelling for 15-29 minutes to work. The mean worthwhile score for this group was 0.2 points higher than the average for this hours worked group, and 0.3 points above the average for those travelling for this amount of time (8.0).

31-48 hours per week

The only score that varied notably from the average for those working 31-48 hours per week were those who travelled for 15-29 minutes, who had lower anxiety, with a mean score 0.2 points below the average for this time travelled group and hours worked category. All other times travelled categories had mean well-being scores around the averages.

49 hours+

Table 10 shows mean scores for workers travelling 49 hours + to work cross-tabulated with time travelled categories. Scores that varied considerably from average mean scores are highlighted in the table.

Table 10: Well-being by time travelled, those working 49+ hours per week, London, April 2012-March 2013

Time travelled (mins)	Anxious	Happy	Worthwhile	Satisfied
Total	3.3	7.1	7.6	7.4
<15	2.9	6.8	7.6	7.2
15-29	3.5	7.1	7.6	7.4
30-44	3.4	6.9	7.6	7.4
45+	3.2	7.3	7.7	7.4

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

There was some variation in anxiety mean scores between time travelled groups, with those travelling for <15 minutes having considerably lower anxiety than average at 2.9 (average score 3.1 for time travelled category and 3.3 for hours worked group), and those travelling for 15-29 minutes 0.6 points higher than this and notably higher than average at 3.5.

Also of note was that people working 49 hours + travelling for <15 minutes and 30-44 minutes had noticeably lower happiness scores than the averages, at 6.8 and 6.9 respectively. The average happiness score for those travelling <15 minutes was 7.3 and for those travelling 30-44 minutes was 7.2. The only other score that varied notably from the averages was the life satisfaction score for those travelling <15 minutes working 49 hours +, which was 0.2 points below both averages (7.2).

Method of travel

<16 hours per week

Most noticeably, those working <16 hours per week and walking to work had a mean anxiety score considerably higher than the average for working these hours (3.4) and using this method of travel (3.1), at 3.7 points. Also of note was the mean satisfied score for their counterparts using a bicycle to get to work of 7.0; 0.4 and 0.5 points below the averages for working <16 hours per week and cycling to work (respectively). However, the sample size was less than 100 people so these results may not be representative of London as a whole.

16-30 hours per week

People working 16-30 hours per work had a mean anxiety score of 3.4. However, those working these hours and walking to work had much lower anxiety than this, with a score 0.6 points lower (2.8). This score was also lower than the average for this method (3.1). The mean worthwhile score for those getting the train to work and working these hours per week was also of note, at 8.1; 0.3 points above the average for this hours worked group and 0.4 points above the average for those getting the train to work.

31-48 hours per week

There were no mean scores across all well-being indicators that varied from the average means when cross-tabbing 31-48 hours per week with method of travel.

49 hours +

There were some notable variations to average scores when cross-tabbing the hours worked category 49 hours + with method of travel to work. London workers travelling to work by bus working for 49 hours + had a much higher anxiety score than both averages, at 3.9 (0.4 and 0.6 points above).

Table 11: Well-being by method of travel, those working 49+ hours per week, London, April 2012-March 2013

Method of travel	Anxious	Happy	Worthwhile	Satisfied
Total	3.3	7.1	7.6	7.4
Car	3.1	7.2	7.6	7.2
Bicycle	3.7	7.0	8.0	7.6
Bus	3.9	7.0	7.6	7.2
Train	3.5	7.2	7.5	7.6
Underground	3.3	7.5	7.8	7.7
Walk	2.9	6.2	7.3	7.0

Source: Annual Population Survey April 2012 to March 2013, ONS (Special License Dataset)

Highlighted cells are scores that vary from the average mean scores by 0.2 points (unrounded) or more

Sample sizes were less than 100 people for the following cross-tabulation scores, therefore cannot be relied upon as statistically significant. However, they do provide some suggestions for further research ideas. Those working 49 hours + per week travelling to work by bicycle had higher than average anxiety with a mean score of 3.7 (average for cycling, 3.4 and working 49 hours and over, 3.3). However, conversely this group's worthwhile score was higher than the averages by 0.4 and 0.3 points, at 8.0.

A relationship between working 49 hours + and walking to work was also apparent. Most noticeably, those walking to work working these hours had a much lower mean happiness score than average. On average, those working these hours scored 7.1 for happiness, as did those walking to work. However, the mean score for those walking and working 49 hours + per week was 6.2; 0.9 points below both these averages. Those using this method and working these hours were also less satisfied than average, and had a lower worthwhile score, by between 0.3 and 0.4 points.

Recommendations for future research

- Londoners walking to work had a lower mean happiness score than those living in the rest of the UK, despite the overall mean scores being the same. Are factors associated with walking to work in London influencing lower happiness scores among these London residents, and if so, what are they? If not, are the personal characteristics associated with people walking to work in London having more of an impact?
- What is it about travelling to work in London by bus that makes people more anxious and less likely to feel like their daily activities are worthwhile? In particular, anxiety was highest among those working 49+ hours per week. Are factors associated with working long hours and using this method of travel having a combined negative effect on anxiety, or are other influences at play here?
- Cycling to work in London had a significantly negative impact on anxiety, with the mean score being much higher than the same score for all people in London. On the contrary, working people living in the rest of the UK (excluding London) had a much lower mean anxiety score than their London counterparts and a score lower than the mean score for all people living in the rest of the UK. Is there something about cycling in London that is causing this discrepancy in mean scores between the two areas, or are there other factors affecting this?
- Following on from the above point, cycling for less than 15 minutes had a more negative impact on anxiety than any other time travelled to work group. Are people cycling to work for less than 15 minutes in London more likely to be living in areas with harsher and more dangerous road conditions than those cycling for longer? Or are the individual attributes linked to those cycling for short time periods having a negative impact on anxiety?

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