How commuting impacts upon well-being and physical and mental health: insights exploiting the longitudinal nature of UKHLS data

Luke Munford (University of Manchester)
On behalf of colleagues and co-authors
Acknowledgement

Does commuting affect health and well-being: If so for whom?

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Department Name: Centre for Health Economics

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Two papers


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The disutility of commuting? The effect of gender and local labor markets

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RESEARCH ARTICLE

Does commuting mode choice impact health?

Nikita Jacob 1, Luke Munford 2, Nigel Rice 3, Jennifer Roberts 4
What is commuting and why is it important?

• Commuting is the spatial interactions between the housing market and the labour market
  • Housing and labour are both incredibly important economically (e.g. GDP, living standards, etc.) but also typically the biggest components of time-use

• Has been widely studied in economics and beyond, but typically within sub-disciplinary silos:
  • Labour economists: assume housing/urban markets are in equilibrium
  • Urban economists: assume labour markets are in equilibrium
What is commuting and why is it important?

- It has been argued that commuting is a ‘choice’ variable, and we – as rational individuals – should only engage with commuting if we are somehow compensated for it
  - Higher wages, increased job security, better working conditions, etc.
  - Better quality housing, nicer neighbourhoods, etc.

- Time spent commuting cannot be spent doing other activities, such as work or leisure
  - Exceptions? Commuting mode: walking or cycling as leisure?

- Places a non-trivial constraint on the time use of many working people
  - We consider aged 16 – 65 years
  - Drop the self-employed
Commuting time over time; UKHLS

“About how much time does it usually take you to get to work each day, door to door (in minutes)?”

![Graph showing the mean one way commuting time over time, from 2009/10 to 2017/18. The graph indicates a steady increase in commuting time, from 26.3 minutes in 2009/10 to 29.8 minutes in 2017/18.](image)
Commuting mode in UKHLS

“And how do you usually get to your place of work?”

<table>
<thead>
<tr>
<th>Mode</th>
<th>%</th>
<th>Our categorisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive myself by car or van</td>
<td>62.8%</td>
<td>Car</td>
</tr>
<tr>
<td>Get a lift with someone from household</td>
<td>3.4%</td>
<td>Car</td>
</tr>
<tr>
<td>Get a lift with someone outside the household</td>
<td>2.1%</td>
<td>Car</td>
</tr>
<tr>
<td>Motorcycle/moped/scooter</td>
<td>0.7%</td>
<td>Car</td>
</tr>
<tr>
<td>Taxi/minicab</td>
<td>0.4%</td>
<td>Car</td>
</tr>
<tr>
<td>Bus/coach</td>
<td>7.2%</td>
<td>Public Transport</td>
</tr>
<tr>
<td>Train</td>
<td>5.0%</td>
<td>Public Transport</td>
</tr>
<tr>
<td>Underground/Metro/Tram/Light railway</td>
<td>2.9%</td>
<td>Public Transport</td>
</tr>
<tr>
<td>Cycle</td>
<td>3.3%</td>
<td>Walk or cycle</td>
</tr>
<tr>
<td>Walk</td>
<td>11.6%</td>
<td>Walk or cycle</td>
</tr>
<tr>
<td>Other</td>
<td>0.7%</td>
<td>Other</td>
</tr>
</tbody>
</table>
Commuting mode over time; UKHLS

Percentage using each mode

- Car
- Public Transport
- Walk or Cycle

Other mode not shown; c. 1-2% per wave
The pandemic changed a lot

We have ‘saved nine days’ by not commuting in 2020

Natalie Morris
Wednesday 4 Nov 2020 1:19 pm

Commute savings worth half a year’s wages for Londoners post Covid-19

With working habits disrupted since March and the unplanned rise of working from home, UK workers had to pause their daily commutes. Totaljobs uses its Commuter Calculator to see how the pandemic will affect how we commute from now on.
Possible effects of commuting

- Commuting can potentially affect many aspects of our lives:
  - Housing
  - Employment
  - Monetary costs and opportunity costs

- The particular ‘angle’ we focus on is health and well-being:
  - Well-being affected by commuting time
    - Positive or negative?
  - Health (physical and mental) affected by commuting mode
    - Sedentary vs. active mode of travel?

- However, we need to get ‘good’ estimates of the relationship between commuting and these outcomes
Why do we need longitudinal data?

Commuting behaviour(s)  

Longitudinal data / changes

Health and/or well-being

Other factors/traits
Longitudinal data allows us to study changes

- If we can see how health and well-being change after a change in commuting behaviour, this helps alleviate against some concerns (but not all)

- Paper 1: firm decided to change location and/or change in transport infrastructure
  - We need to assume this given same household location, same job, same commuting mode, but > 5 minute change in commuting time

- Paper 2: people decide to change commuting mode
The disutility of commuting? The effect of gender and local labor markets

Nikita Jacob, Luke Munford, Nigel Rice, Jennifer Roberts

a Centre for Health Economics, University of York, UK
b Health Organisation, Policy and Economics, School of Health Sciences, University of Manchester, UK
c Centre for Health Economics & Department of Economics and Related Studies, University of York, YO10 5DD, UK
d Department of Economics, University of Sheffield, UK
Background and motivation

• From an economics point of view, people should not engage in long commutes if they are not compensated through employment and/or housing factors

• We use well-being as a proxy for utility

• We then derive a theoretical model based on a number of assumptions that allows us to test this ‘compensation’ argument

• Effects may differ by individual and area-level characteristics
**Background and motivation**

- How can commuting time affect well-being?
  - Time spent commuting can’t be used to do other things
    - Less time for leisure, work, or other
  - Commuting time can be quite stressful – congestion, crowded trains, etc.
    - Could also be positive: time to ‘switch off’ and/or ‘switch on’
  - Limit the availability of jobs and/or housing
Methodological framework

• Key assumptions: well-being/utility is affected positively by job characteristics (wages, employment conditions, etc.) and housing costs and characteristics (size, location, etc.) and affected negatively by commuting

• If everything else is held constant, and commuting time increases/decreases, there should be no resulting change in well-being/utility
Identification strategy

• In order to test the predictions of our model, we need good quality longitudinal data
  • Same people interviewed in multiple time points
  • Can include individual level fixed-effects

• We need to observe some unexpected – or exogenous – shock to commuting time that an individual cannot really control
  • But, holding all other things constant

• Our idea:
  1. People do not move house or change household characteristics
  2. People do have the same job for the same employer with the same characteristics
  3. Commuting time has changed by more than some threshold (5, 10, or 15 mins.)
How UKHLS helps here

1. People do not move house or change household characteristics
   - Asked when moved to residential address
   - Lower layer Super Output Area (LSOA)
   - Household characteristics (# of rooms, garden, central heating, etc.)

2. People do have the same job for the same employer with the same characteristics
   - Self reported data on ‘new job’, ‘new employer’ and ‘date of start’
   - Standard Occupational Classification (SOC)
   - Self-reported wage data

3. Commuting time has changed by more than some threshold (5, 10, or 15 mins.)
   - Compare commuting times in consecutive waves
### How many people?

Information on inclusion criteria and sample size.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observations</td>
<td>Individuals</td>
</tr>
<tr>
<td></td>
<td>NT</td>
<td>N</td>
</tr>
<tr>
<td>Full UKHLS Sample</td>
<td>291,871</td>
<td>81,102</td>
</tr>
<tr>
<td>In at least two waves</td>
<td>271,410</td>
<td>60,641</td>
</tr>
<tr>
<td>Employed in all waves</td>
<td>127,444</td>
<td>35,439</td>
</tr>
<tr>
<td>No change of house</td>
<td>96,492</td>
<td>27,253</td>
</tr>
<tr>
<td>Same Job as last year</td>
<td>84,990</td>
<td>21,964</td>
</tr>
<tr>
<td>Change in commuting time ≠ 0</td>
<td>59,928</td>
<td>16,876</td>
</tr>
<tr>
<td>Change in commuting time ≥ ± 5 min.</td>
<td>56,828</td>
<td>15,855</td>
</tr>
<tr>
<td>Non-missing H&amp;WB information</td>
<td>56,635</td>
<td>15,846</td>
</tr>
</tbody>
</table>

Large UKHLS sample size (both N and NT) crucial here
Measures of well-being

• Our main outcome of interest was the General Health Questionnaire (GHQ)

• Series of 12-questions designed to identify minor psychiatric disorders and investigate psychological health

• Each of the 12-questions is answered on a 0-3 scale, giving a range of 0-36

• We reverse-code so that higher responses relate to ‘better’ well-being
The GHQ questions

“The next questions are about how you have been feeling over the last few weeks.”

1. Have you recently been able to concentrate on whatever you're doing?
2. Have you recently lost much sleep over worry?
3. Have you recently felt that you were playing a useful part in things?
4. Have you recently felt capable of making decisions about things?
5. Have you recently felt constantly under strain?
6. Have you recently felt you couldn't overcome your difficulties?
7. Have you recently been able to enjoy your normal day-to-day activities?
8. Have you recently been able to face up to problems?
9. Have you recently been feeling unhappy or depressed?
10. Have you recently been losing confidence in yourself?
11. Have you recently been thinking of yourself as a worthless person?
12. Have you recently been feeling reasonably happy, all things considered?

Responses are (versions of):
More so than usual; Same as usual; Less than usual; Much less able
## Summary statistics

Summary statistics for estimation sample.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHQ score</td>
<td>25.22</td>
<td>4.91</td>
<td>0</td>
<td>36</td>
</tr>
<tr>
<td>Male</td>
<td>0.44</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Age</td>
<td>43.71</td>
<td>10.63</td>
<td>16</td>
<td>65</td>
</tr>
<tr>
<td>University level qualification</td>
<td>0.45</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>College level qualification</td>
<td>0.22</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>School level qualification</td>
<td>0.22</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Household size</td>
<td>3.04</td>
<td>1.31</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Number of children</td>
<td>0.71</td>
<td>0.98</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Usual hours worked</td>
<td>33.55</td>
<td>9.82</td>
<td>0.1</td>
<td>97.7</td>
</tr>
<tr>
<td>Married/Cohabiting</td>
<td>0.6</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Divorced</td>
<td>0.09</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Log household income</td>
<td>7.56</td>
<td>0.51</td>
<td>1.55</td>
<td>9.9</td>
</tr>
</tbody>
</table>

The sample size is $NT = 56,635$, based on an unbalanced sample of $N = 15,846$ individuals.
The effect of commuting time on well-being (GHQ)

\[ \text{SWB}_{it} = \beta C_{it} + X'_{it} \gamma + \alpha_i + \varepsilon_{it} \]

<table>
<thead>
<tr>
<th></th>
<th>Everyone</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commuting time (hours)</td>
<td>-0.198**</td>
<td>-0.466***</td>
<td>0.012</td>
</tr>
<tr>
<td></td>
<td>(0.097)</td>
<td>(0.155)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Other controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N (NT)</td>
<td>15,871</td>
<td>8,759</td>
<td>7,082</td>
</tr>
<tr>
<td></td>
<td>56,635</td>
<td>31,635</td>
<td>24,900</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses. * p<0.1; ** p<0.05; *** p<0.001.
Additional control variables include: age (and its square), number of children in the household, usual number of hours worked, indicators of marital status, the natural logarithm of equivalised household income, and dummy variables for each survey wave/year.
Robustness checks

• Same house and job for at least five years before shock to commute

• Income: restrict income changes between waves to be +/- 5% or less
  • Although larger effects for below median income earners

• Results not driven by shift-workers

• Definition of the shock:
  • Similar results for 10 minute changes (and 15, although small N)
  • ‘Absorbent shock’ to avoid misreporting; new CT must be maintained for 2 or 3 years post-shock
Why females and not males?

• Females have the largest share of child caring responsibilities
  • When we break down the effects based on age of children, those women with children aged 0-4 yrs. have the biggest detriment to well-being
  • Smaller less significant effect for school-aged children (5-15 yrs.)

• Females are more likely to work part time, therefore commuting is a bigger part of working day
  • However, we find larger effects for full-time women than for part-time women

• Other household tasks?
  • Single females have bigger effect sizes than single males
  • Single females have bigger effect sizes than married/cohabiting females
Why females and not males?

• Thinness of local labour markets and job search models (Manning, 2003)

• Thinness: \( \theta = \frac{v}{u_g} \) [vacancies / unemployment count, for males and females at LAD level]

• Gender segregation of labour markets: males and females operate in different labour markets, even if they live in the same geographic areas (Anker, 1997)
  • Primary vs. secondary wage earners within a household
  • Links back to allocation of tasks within a household too
Why females and not males?

- We classify labour markets as thin if $\theta < 25^{th}$ centile and tight if $\theta > 75^{th}$ centile
  - Should be easier to secure a job in a tight labour mkt.

Using measure of labor market tightness = Vacancy count/Unemployment count.

<table>
<thead>
<tr>
<th></th>
<th>GHQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin labor markets &lt;25th percentile</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td></td>
</tr>
<tr>
<td>Comuting time (hours)</td>
<td>$-0.452^{**}$</td>
</tr>
<tr>
<td></td>
<td>(0.197)</td>
</tr>
<tr>
<td>Other controls</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>14,073</td>
</tr>
<tr>
<td>N</td>
<td>3857</td>
</tr>
<tr>
<td>Tight labor markets &gt;75th percentile</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td></td>
</tr>
<tr>
<td>Comuting time (hours)</td>
<td>$-0.012$</td>
</tr>
<tr>
<td></td>
<td>(0.185)</td>
</tr>
<tr>
<td>Other controls</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>14,053</td>
</tr>
<tr>
<td>N</td>
<td>3637</td>
</tr>
</tbody>
</table>

Standard errors in parentheses. $^{*}p < 0.1; ^{**}p < 0.05; ^{***}p < 0.01$.

Other controls include age (and its square), number of children in the household, usual number of hours worked, a married indicator, the log of equivalent household income, and year dummies. Married includes those legally married, living as a couple and same sex unions. <25th percentile and >75th percentile are the bottom and top quartiles of the labor market tightness indicator, computed as number of vacancies/unemployment count in the local authority districts.
Which females in thin markets?

- Full time females
- Females with no children
- Females who are married
- Females in managerial and professional occupations
Conclusion of Paper 1

• Rich longitudinal data contained within UKHLS allowed us to explore relationship between commuting and well-being following exogenous shocks to commuting time

• Females and not males negatively affected
  • Local labour market conditions, marital status, and presence of children all combine to make the effects worse
Does commuting mode choice impact health?

Nikita Jacob¹  |  Luke Munford²  |  Nigel Rice³  |  Jennifer Roberts⁴
Background and motivation

- National governments and local policy makers are encouraging people to switch away from cars towards public transport and active modes of commute.

- Lot of cross-sectional evidence on the positive association between active travel/commuting and improved health and well-being.
  - However, may suffer from endogeneity bias and reverse causality.
Background and motivation

- How can commuting mode affect health?
  - Sedentary commuting modes: generally bad
    - Can impact both physical and mental health
      - Physical health: associated with higher rates of obesity and associated conditions (e.g. diabetes and hypertension) and high blood pressure
      - Mental health: negative mood and stress
  - Active commuting modes: generally good
    - Increase physical activity associated with better physical and mental health
      - Physical health: lower BMI, lower prevalence of obesity and associated conditions (e.g. diabetes and hypertension)
      - Mental health: more relaxing and stimulating, associated with higher life satisfaction and lower rates of mental distress
      - Also reduced air pollution, which further improves health
UK workers consume 800 extra calories a week while commuting

Royal Society for Public Health study finds snacking on junk food largely to blame for additional consumption on work journeys

The average UK commuter consumes nearly 800 additional calories a week while travelling to and from work, often as a result of unhealthy snacking, a study has found.

The Royal Society for Public Health (RSPH), which commissioned the research, said longer commutes are potentially shortening lives by increasing stress, limiting sleep and physical activity, and encouraging unhealthy eating.
What did we do?

- We used UKHLS to look at changes in commuting mode and examined if these led to changes in health, relative to a ‘control group’ who did not switch.

- The choice to change commuting mode is not ‘random’, and so we need to exploit the rich longitudinal data within UKHLS to create a ‘matched control’ group for each type of mode switch.

- Again, constructed a conceptual framework to base our empirical examination on – similar to first paper only now allow mode to directly and indirectly (through health) affect utility.
Empirical approach: entropy balancing

Match people who do switch to similar people who do not:
- Age, gender, marital status
- Commuting time
- Job characteristics
- Pre-switch health
- Information on time in survey

Not just group equivalence of means, but also higher order moments of the distribution

Compare changes in health for mode switchers to changes in health for non-switchers
## Transition probabilities

<table>
<thead>
<tr>
<th>Period t-1</th>
<th>Car</th>
<th>Public transport</th>
<th>Walk or cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>95%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Public transport</td>
<td>13%</td>
<td>81%</td>
<td>6%</td>
</tr>
<tr>
<td>Walk or cycle</td>
<td>16%</td>
<td>5%</td>
<td>78%</td>
</tr>
</tbody>
</table>
Measures of health: Short-Form 12

1. In general, would you say your health is:

- □ Excellent
- □ Very good
- □ Good
- □ Fair
- □ Poor

The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

<table>
<thead>
<tr>
<th>YES, limited a lot</th>
<th>YES, limited a little</th>
<th>NO, not limited at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

2. Moderate activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.

3. Climbing several flights of stairs.

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

4. Accomplished less than you would like.
5. Were limited in the kind of work or other activities.

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

6. Accomplished less than you would like.
7. Did work or activities less carefully than usual.

8. During the past 4 weeks, how much did pain interfere with your normal work (including work outside the home and housework)?

- □ Not at all
- □ A little bit
- □ Moderately
- □ Quite a bit
- □ Extremely

These questions are about how you have been feeling during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the past 4 weeks...

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>A good bit of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>10.</td>
<td>11.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

- □ All of the time
- □ Most of the time
- □ Some of the time
- □ A little of the time
- □ None of the time
SF12 Instrument

- Responses to the SF12 can be used to create a number of measures:
  - The SF12 Physical Component Summary (SF12PCS)
  - The SF12 Mental Component Summary (SF12MCS)
  - The SF6D Health Utility Index

- Again, very useful to have a repeated instrument that can be used to create multiple measures of health asked to the same people to allow us to track changes over time
## Entropy balancing (car to public transport)

<table>
<thead>
<tr>
<th></th>
<th>Treated (N=646)</th>
<th>Control (N=39,636)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Variance</td>
</tr>
<tr>
<td>Age</td>
<td>40.10</td>
<td>126.40</td>
</tr>
<tr>
<td>Married</td>
<td>0.67</td>
<td>0.22</td>
</tr>
<tr>
<td>SF12 PCS</td>
<td>53.49</td>
<td>64.79</td>
</tr>
<tr>
<td>SF12 MCS</td>
<td>49.44</td>
<td>77.44</td>
</tr>
<tr>
<td>CT#</td>
<td>3.23</td>
<td>0.49</td>
</tr>
</tbody>
</table>

All other variables are also included, but omitted here for brevity.

#: commuting time (CT): the natural logarithm of commuting time in minutes, expressed in 5 minute bands.
### Results: switching between car and active

#### Car to active

<table>
<thead>
<tr>
<th></th>
<th>Physical health (SF12 PCS)</th>
<th>Mental health (SF12 MCS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total sample</td>
<td>Females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car to active</td>
<td>0.279</td>
<td>0.651*</td>
</tr>
<tr>
<td></td>
<td>(0.250)</td>
<td>(0.344)</td>
</tr>
</tbody>
</table>

Each cell represents a separate regression model, and each additionally controls for other variables. Dependent variables are measures at time \( t+1 \), treatment occurs at period \( t \), and entropy balance matching occurs at period \( t-1 \). Robust standard errors in parentheses. * \( p<0.1 \); ** \( p<0.05 \); *** \( p<0.001 \).

#### Active to car

<table>
<thead>
<tr>
<th></th>
<th>Physical health (SF12 PCS)</th>
<th>Mental health (SF12 MCS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total sample</td>
<td>Females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active to car</td>
<td>-0.824***</td>
<td>-0.815*</td>
</tr>
<tr>
<td></td>
<td>(0.302)</td>
<td>(0.428)</td>
</tr>
</tbody>
</table>

Each cell represents a separate regression model, and each additionally controls for other variables. Dependent variables are measures at time \( t+1 \), treatment occurs at period \( t \), and entropy balance matching occurs at period \( t-1 \). Robust standard errors in parentheses. * \( p<0.1 \); ** \( p<0.05 \); *** \( p<0.001 \).
Other results

• Declines in mental health when people switch away from active travel to public transport
  • Though no detectable effect of switching from public transport to active for either physical or mental health
  • However, females do report that they are more satisfied with their health following switches from public transport to active modes of commuting

• Results are consistent in period t and also last until at least period t+2

• Don’t seem to be driven by seasonality (e.g. more likely to walk/cycle in the summer)

• We checked to see if attrition could be a factor: full sample and restricted sample very similar on observable characteristics
Conclusion of Paper 2

• Rich longitudinal data contained within UKHLS allowed us to explore relationship between commuting mode and health following an individual’s decision to switch mode

• Switching to active modes of travel from a car improves mental health for males and females and physical health for females

• The opposite switches (active to car) lead to reduction in physical health for females and males, although no statistically significance effect on mental health
Overall commuting conclusions

• Increases in commuting times of females is bad for their well-being
  • We need to make sure that if firms relocate, there is support available

• We should continue to promote active modes of travel as there are benefits to health, as well as wider benefits through e.g. reduced pollution
  • Cycle routes, reduced price cycles, etc. are all sensible policy suggestions
Data conclusion

• Without the rich longitudinal data contained within UKHLS, we would not have been able to conduct this research
  • Very rare to have such a large sample size AND such rich, detailed information AND a longitudinal element
  • Without all of these, subgroup analyses and moving beyond associations is very difficult
• There are many unanswered questions relating to commuting and travel still, and UKHLS is a great asset to utilise
Thank you

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