



THE COMMUTING & WELLBEING STUDY

Understanding the Impact of Commuting on People's Lives

This afternoon

Introducing the study	14:35
Review of international evidence	14:50
The Commuting & Wellbeing Study approach	15:10
Findings 1: Impact on 'Domains of Wellbeing'	15:20
Break	15:40
Findings 2: Impact on life satisfaction	15:50
Findings 3: Understanding processes of change	16:00
Discussion	16:20
Close	17:00

Commuting – potential impacts

- The journey to and from work is a routine activity
 - Undertaken on 160 days on average by full-time workers
 - Consumes one hour a day on average (two hours for 1 in 7)
- The commute may be stressful/relaxing, it may be wasted/productive
- But there are good reasons for doing it
- How do the benefits balance against the drawbacks?

Wellbeing

- Subjective wellbeing (SWB) refers to an individual's evaluation of how well their life is going
- Defined formally by OECD as "Good mental states, including all of the various evaluations, positive and negative, that people make of their lives, and the affective reactions of people to their experiences"

Commuting is changing

- Average commute duration has increased from 24 to 30 mins in last 20 years
- Counteracted by workers travelling less often to their workplace
- Working from home has increased and working practices are becoming more flexible, but not all workers can choose how often and when they travel to work

The Commuting & Wellbeing Study

- ESRC Secondary Data Analysis Initiative project (Feb 16 – July 17)
- Objective to generate novel understanding of the impact of commuting upon people's lives and provide evidence to support cross-sector policies
- Used data for the lives of over 26,000 employed people living in England, using data from the Understanding Society longitudinal study

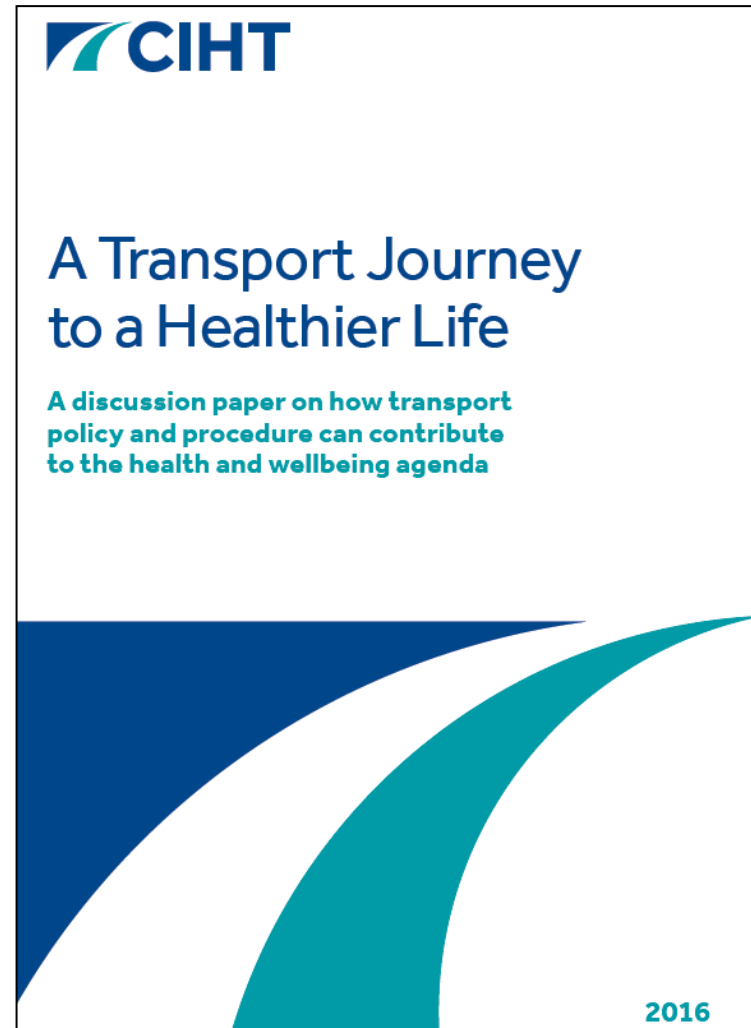


Study team

- Researchers at UWE Bristol – Kiron Chatterjee, Ben Clark, Adrian Davis and Deirdre Toher
- Researcher at University of Leeds - Adam Martin
- Project partners
 - Department for Transport
 - Department of Health
 - Department of Communities and Local Government
 - What Works Centre for Wellbeing

Transport and health

- Increasing interest in how transport policies and practices can contribute to better health
- Attention had mostly been on physical health, now turning to mental health and personal wellbeing



AUGUST 2018

RSPH
ROYAL SOCIETY FOR PUBLIC HEALTH
THINK, FEEL AND PRACTISE

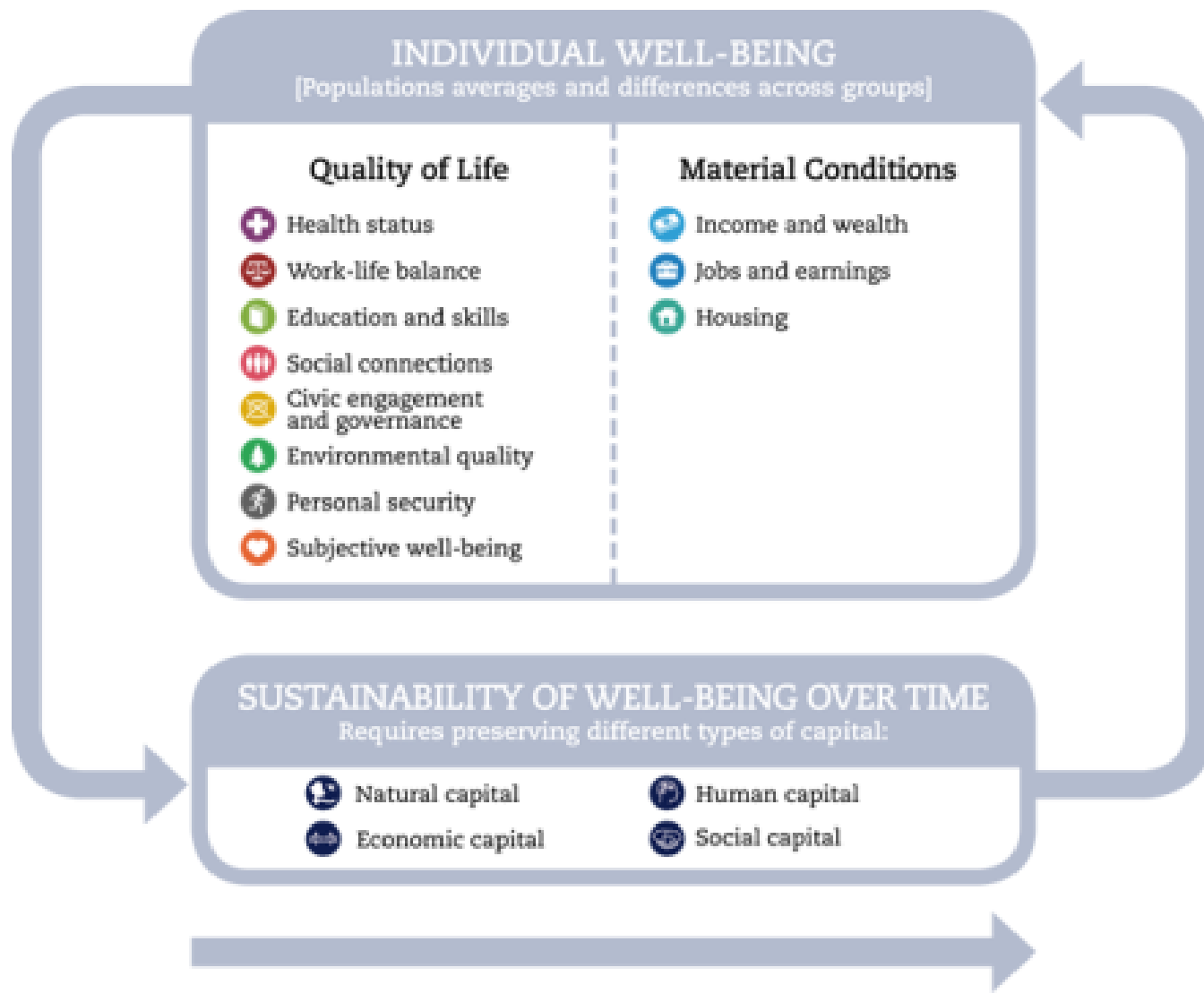
HEALTH IN A HURRY

The impact of rush hour commuting on our health and wellbeing



“Transport is inextricably linked to the health and wellbeing of our workforce – this must no longer be treated as a separate issue and instead, we call on Government and transport operating companies alike to ensure that the public’s health is a central consideration for all transport planning decisions”

OECD framework for measuring wellbeing and progress

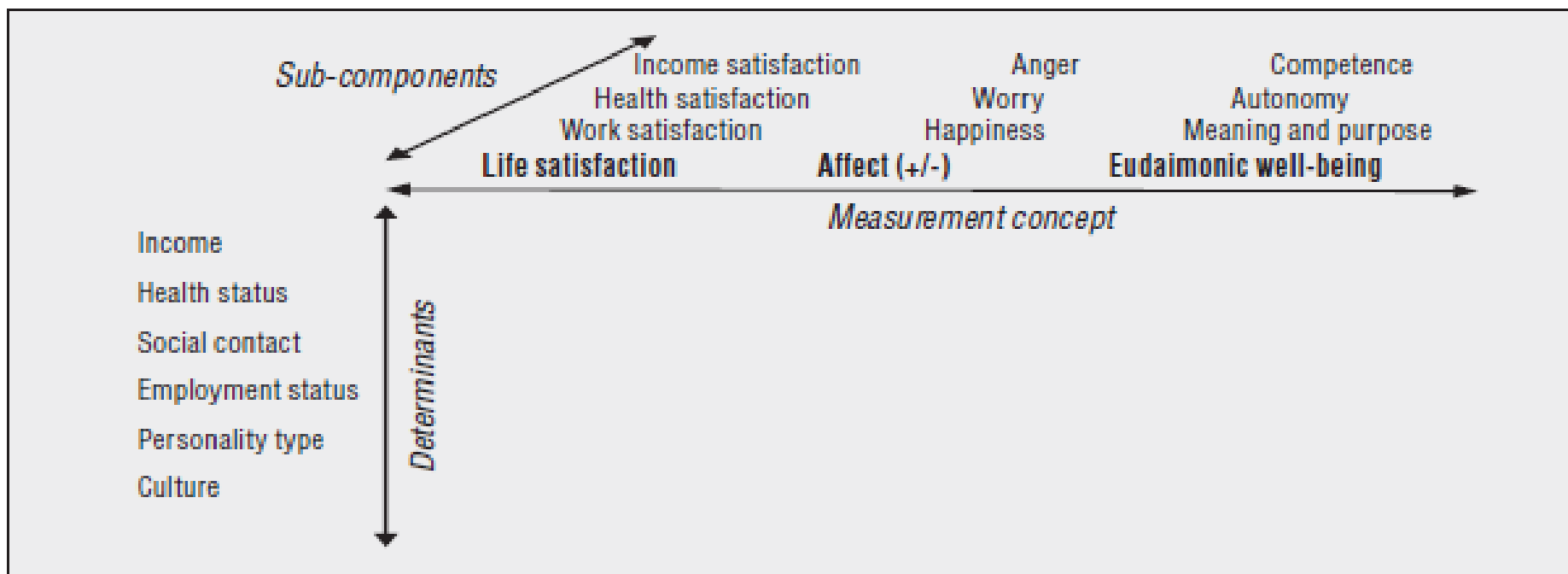


Subjective wellbeing as outcome indicator

- “How people think about and experience their lives”
- Meaningful associations shown with range of life circumstances
- How people experience and report on their lives depends on:
 - Psychological resilience in face of adversity
 - Cultural and linguistic influences
- OECD and ONS advocate capturing different:
 - Conceptual components (evaluative, experience and eudemonic)
 - Dimensions (general to domain-specific)

Subjective wellbeing as outcome indicator

Figure 1.1. A simple model of subjective well-being



Source: OECD (2013). OECD Guidelines on Measuring Subjective Well-being, Paris: OECD Publishing

Importance of the C & W Study

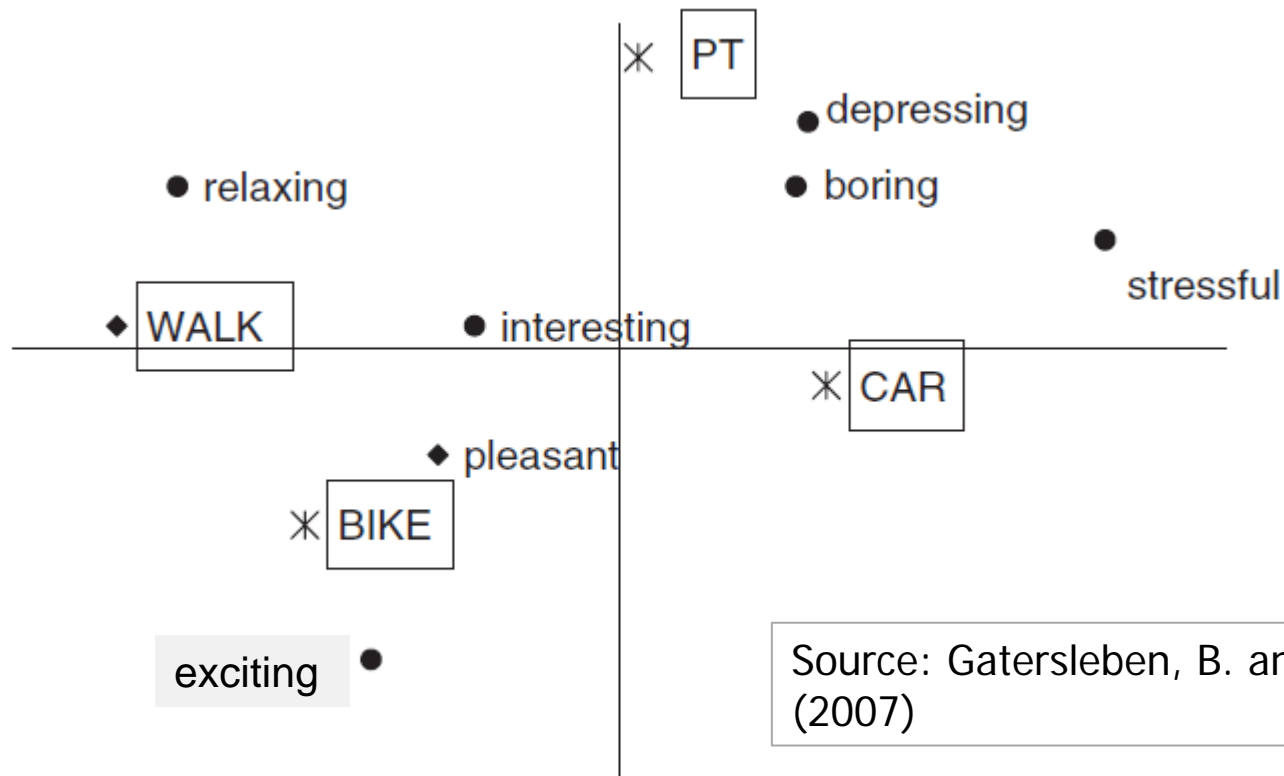
- As will be seen from international review, it fills an evidence gap on how commuting impacts upon the SWB of employed people in England

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Commute stress and boredom

- Studies show commute stress increases with commute time and unpredictability
- Varies with mode



Source: Gatersleben, B. and Uzzell, D. (2007)

Positives of commuting

- Time to relax, think and 'shift gears' between one activity and the next
- Enjoyment of the travel itself
- Productive use of time

Referred to as 'Gift of Travel Time' (Jain and Lyons, 2008)

Less time available for other activities

- Those with longer commute times spend less time on leisure activities and sleep less on weekdays (but compensate with more sleep at weekends) (Jones and Thoreau, 2008)
- Those with longer commute times decrease time spent with spouse, children and friends (Christian, 2012)

Satisfaction with commute

- Studies have used Satisfaction with Travel (STS) Scale and variants
- Satisfaction reduces with increasing commute time
- Satisfaction varies with mode (active-car-PT)
- Satisfaction increases with productive use of time, talking to others and flexibility over mode used

Positive deactivation–negative activation

Time pressed (–4) – relaxed (4)

Worried I would not be in time (–4) – confident (4)

Stressed (–4) – calm (4)

Positive activation–negative deactivation

Tired (–4) – alert (4)

Bored (–4) – enthusiastic (4)

Fed up(–4) – engaged (4)

Cognitive evaluation

Travel was worst (–4) – best I can think of (4)

Travel was low (–4) – high standard (4)

Travel worked well (–4) – worked poorly (4)

Physical health

- Best evidence is from longitudinal data tracking individuals over time
- Evidence from British Household Panel Survey (BHPS)
 - Longer duration commutes are associated with poorer health and more GP visits (particularly for car drivers and women) (Künn-Nelen, 2016)
 - Switching from car travel to walking, cycling or public transport decreases BMI (Martin et al, 2015)

SWB – main determinants

- Good physical health
- Being in employment
- Being married or cohabitating
- Being a younger or older adult
- Higher income (but diminishing returns and relative income more important)
- Gender effects depend on the SWB measure (evaluative or experience)
- Quite stable over time for individuals but affected by major life events

Sources: Dolan et al (2008), Lucas (2007).

Cross-sectional evidence for impact of commuting

- ONS study based on a sample of 62,000 British workers in 2012/13 found that longer commute times associated with lower SWB (ONS, 2014)

Longitudinal evidence for commuting (1)

- Study based on German panel data for 1985-2003 also found longer commute times associated with lower life satisfaction (Stutzer and Frey, 2008)
- Referred to this as the 'commuting paradox'
- Economic theory - rational individuals take on more burdensome commutes if compensated by better job or housing (SWB should not be lower for those with longer commutes)
- Explanation was that people incorrectly estimate the effects of commuting and their ability to adapt to it

Longitudinal evidence for commuting (2)

- Study of BHPS data (1996-2008) found longer commute times not associated with lower life satisfaction (Dickerson et al, 2014)
- Another study with same data found they were associated with worse mental health for women (Roberts et al, 2011)
- Study of BHPS data (1991-2008) found walking to work and using the bus improve mental health compared to car commuting (Martin et al, 2014)

Need for further research

- Incomplete picture on how different commuting behaviours affect different aspects of SWB
- Evidence required on how specific changes to commuting behaviour affect SWB and whether impacts grow or diminish over time
- Unclear the extent to which arduous commutes are tolerated and what commuters do to avoid them

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Research Questions

1. What specific aspects of wellbeing are affected by commuting?
2. What does this mean for overall life satisfaction?
3. How is wellbeing affected by different commuting behaviour changes and do impacts grow or diminish over time?
4. What responses do commuters make to arduous commutes?

Data set

- Understanding Society
 - Members of 40,000 households surveyed every year since 2009/10
- Analysis sample
 - Workers living in England (n~26,000)
 - Up to six completed interviews from 2009/10 to 2014/15



www.understandingsociety.ac.uk



Following the lives of people in 40,000 households and providing valuable evidence about 21st century life in the UK.

[Discover more about the study and its unique features.](#)

Measures

Commuting

Commute duration

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

Commute mode

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

Personal wellbeing

Life satisfaction

How dissatisfied or satisfied are you with your life overall?

Job satisfaction

How satisfied or dissatisfied you are with your present job overall?

Leisure time satisfaction

How dissatisfied or satisfied are you with the amount of leisure time you have?

Self reported health

In general would you say your health is [good to poor]?

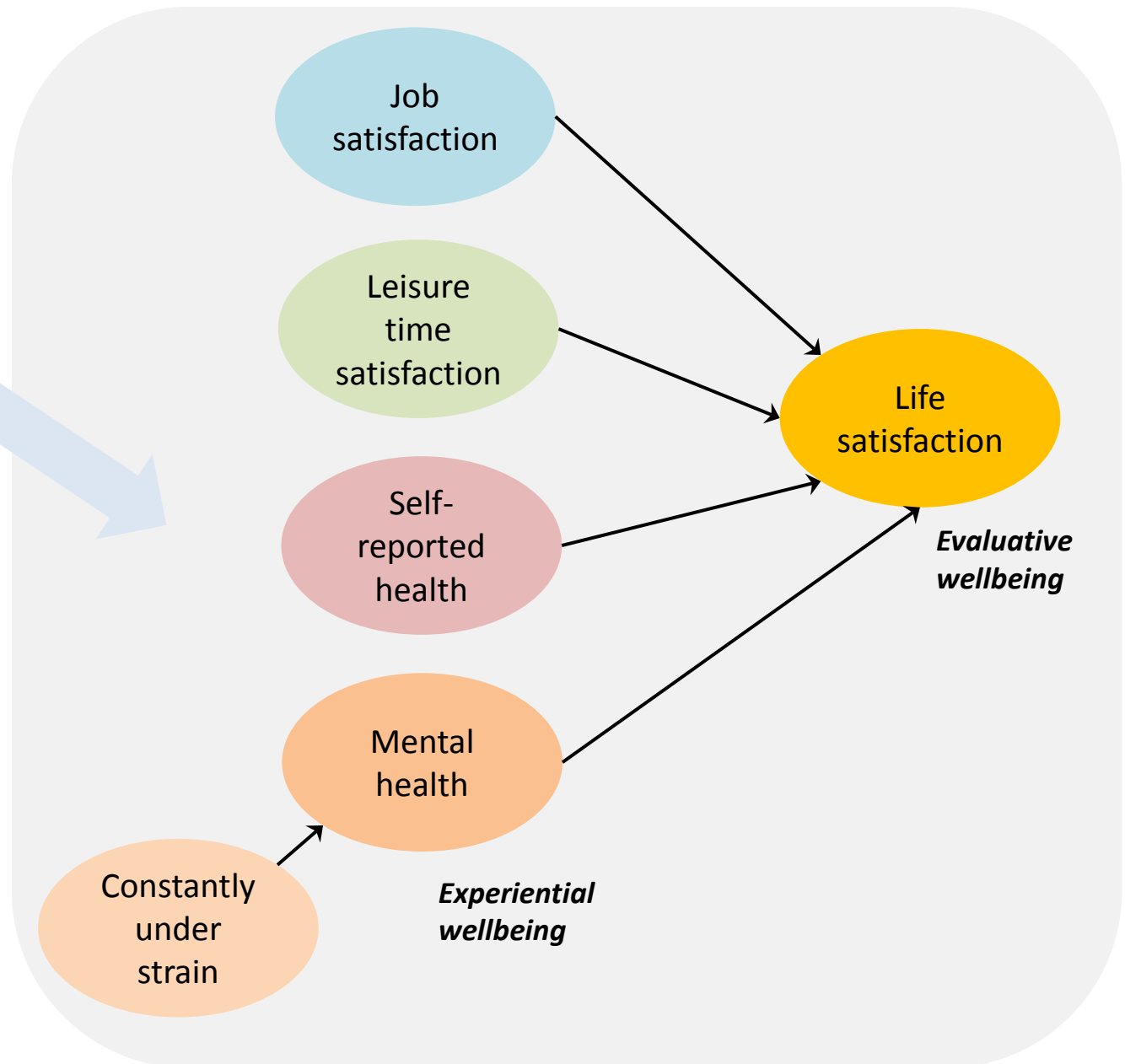
Mental health

Based on the General Health Questionnaire scale

Strain

Have you recently felt constantly under strain?

Commuting



Job satisfaction

Leisure time satisfaction

Self-reported health

Mental health

Constantly under strain

Life satisfaction

Evaluative wellbeing

Experiential wellbeing

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Impact of commuting on 'Domains of Wellbeing'

Job satisfaction

Leisure time satisfaction

Self-reported health

Mental health and strain

Sample characteristics (wave 1)

	Percentage using mode	Mean one-way commute time (mins)
Drive	54	24
Lift from household member	4	19
Lift from someone else	2	25
Motorcycle	1	26
Taxi	0	20
Bus/coach	8	38
Train	5	62
Metro	4	50
Cycle	3	20
Walk	11	14
Work from home	8	0
Total	100	27

Analytical approach

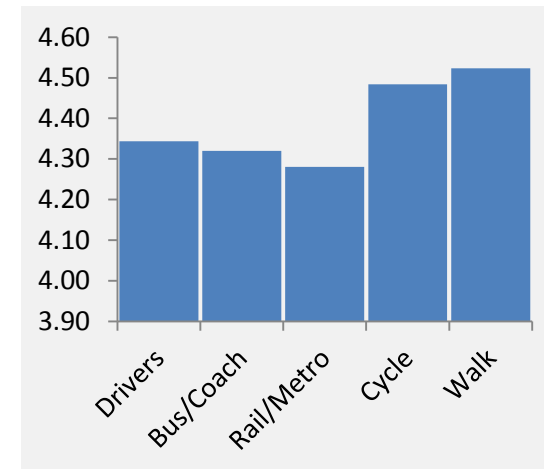
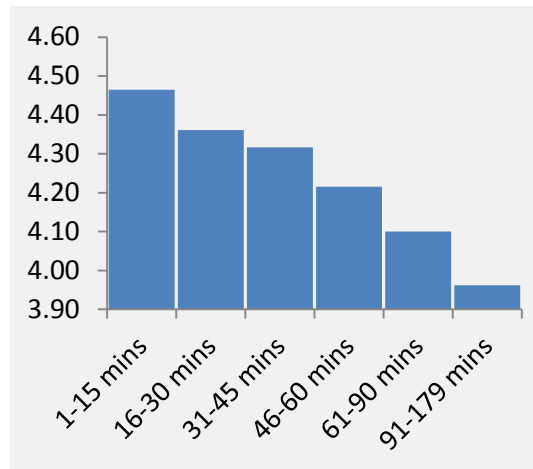
Identification of associations between commuting and wellbeing measure

1. Bar charts (indicate shape of relationship)

- How does wellbeing vary with commuting time and mode?

2. Regression models

- How does wellbeing vary with commuting time and mode **after accounting for other factors**



Between vs within person difference

Advantages of panel data:

- Sample includes ~26,000 employed people
 - Examine variation in wellbeing scores *between individuals*
- Sample includes up to 6 observations - over 6 time points - for each individual
 - Examine variation in wellbeing scores *within individuals* over 6 observations
 - Eliminates spurious *between individual* associations arising from possible unobserved personal characteristics
- **Greater weight placed on evidence of 'within individual' association**

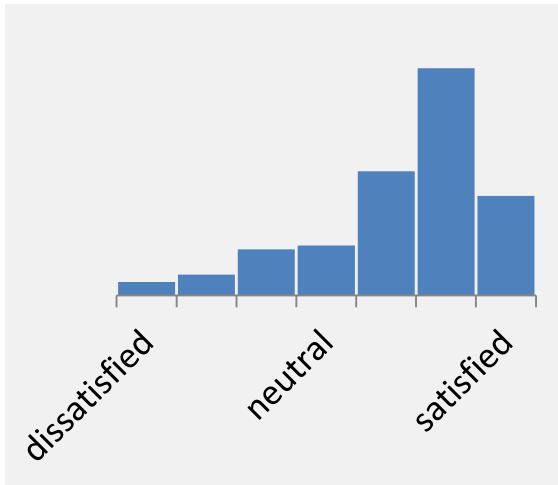
Confidence in findings

Confidence level	Rating	Based on	Significance level
Very confident	✓✓✓	Within-individual variation	$\geq 99\%$
Confident	✓✓	Within-individual variation	$\geq 95\%$
Tentative	✓	Between-individual variation	$\geq 95\%$

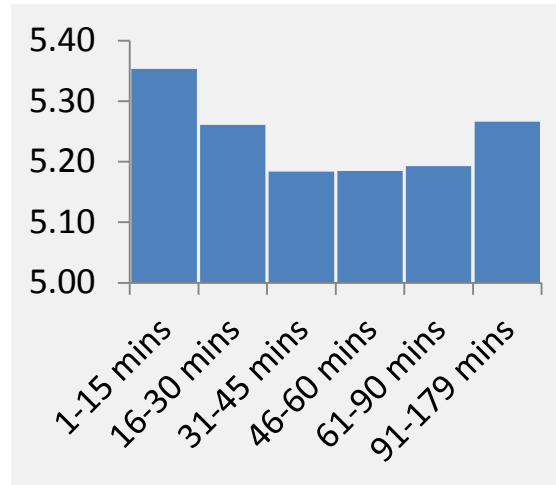
Findings sequence

1. Job satisfaction
2. Leisure time satisfaction
3. Self-reported health
4. Mental health and strain

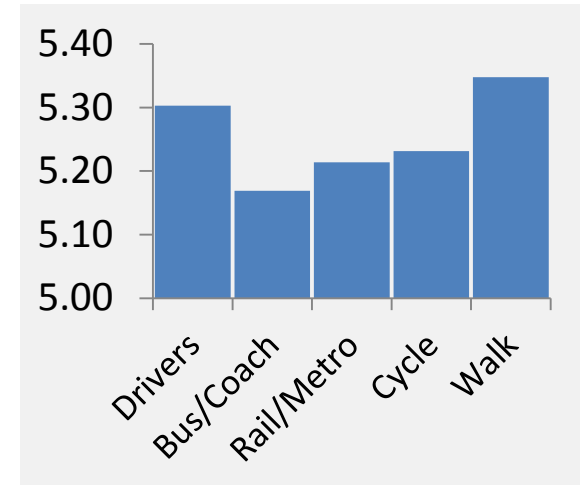
How dissatisfied or satisfied are you with your job?



78% mostly to completely satisfied



declines with commute time



higher for drivers and walkers

Commute time and job satisfaction

Insight

**Longer commute times reduce job satisfaction
(larger effect for bus commutes)**

Confidence



gender

larger effect
for women



age

does not apply to
16-29 year olds



income

larger effect
for higher earners



area type

larger effect in
metropolitan areas



Very Confident

within individual (99%)



Confident

Within individual (95%)



Tentative

Between individual (95%)

Magnitude of effect

Sensitivity of commute time relative to personal income

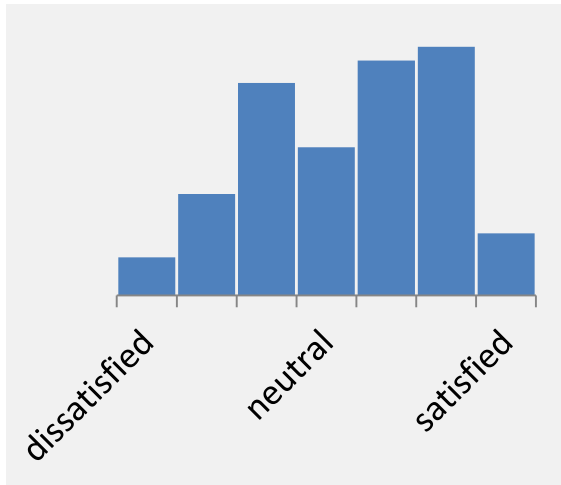
On average, the effect on **job satisfaction** of
a 10 minute increase in one-way commute time
is equivalent to:
a £480 per month decrease in gross personal income

Effect of commute mode / WFH

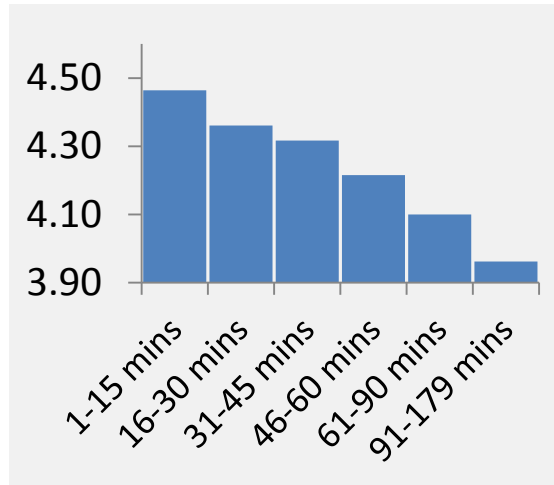
Insight	Confidence
Working from home increases job satisfaction	✓✓✓
Walking is associated with higher job satisfaction	✓

✓✓✓	✓✓	✓
Very Confident	Confident	Tentative
within individual (99%)	Within individual (95%)	Between individual (95%)

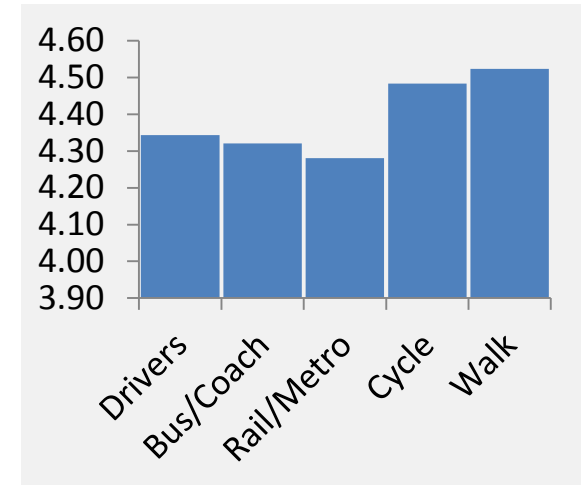
How dissatisfied or satisfied are you with the amount of leisure time you have?



Evenly spread:
52% reported being satisfied with leisure time availability



A clear downward trend as commute time increases



higher for cyclists and walkers

Commute time and leisure time sat.

Insight

Confidence

Longer commute times reduce leisure time sat.

✓✓✓



gender

no different
(but women
have lower
scores)



age

no different



income

smaller effect for
mid-income earners



area type

No different

✓✓✓

Very Confident

within individual (99%)

✓✓

Confident

Within individual (95%)

✓

Tentative

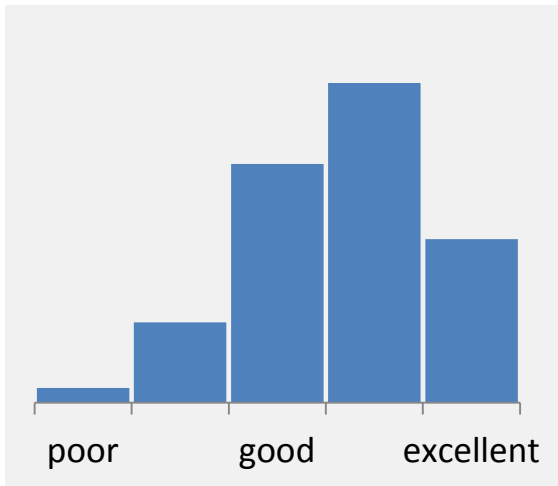
Between individual (95%)

Effect of commute mode / WFH

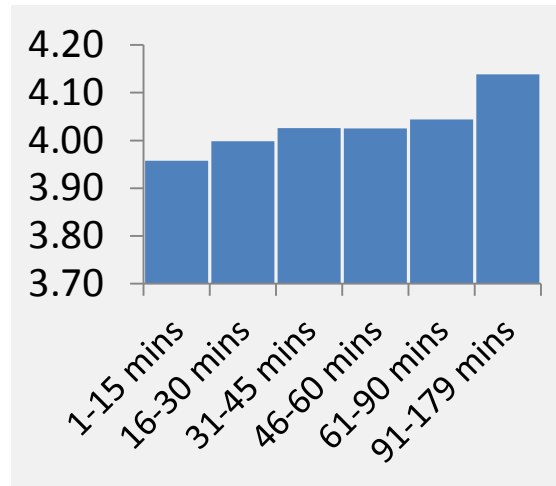
Insight	Confidence
WFH increases leisure time sat.	✓✓✓
Walking / cycling increases leisure time sat. (larger effect for women)	✓✓

✓✓✓	✓✓	✓
Very Confident	Confident	Tentative
within individual (99%)	Within individual (95%)	Between individual (95%)

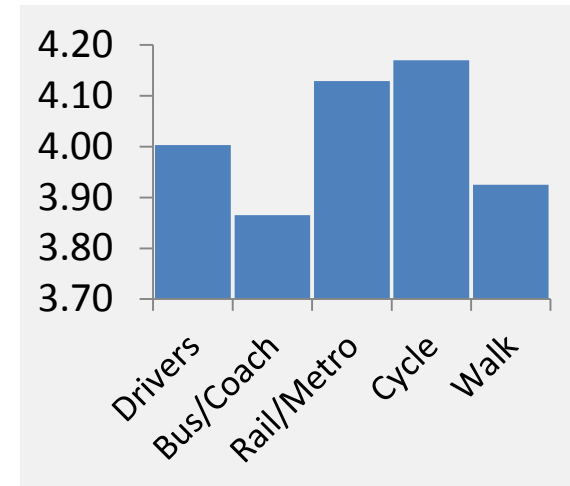
In general, would you say your health is (excellent to poor)?



nearly 90% indicated good or better levels of self-reported health



higher amongst those with longer commutes



higher for cyclists and rail users

Commute time and health

Insight	Confidence
No effect	

A caveat - direction of effect tentatively indicates:

- Healthier people undertake longer duration commutes
- But increasing commute duration for an individual reduces self-reported health score
- Not statistically significant

✓✓✓	✓✓	✓
Very Confident	Confident	Tentative
within individual (99%)	Within individual (95%)	Between individual (95%)

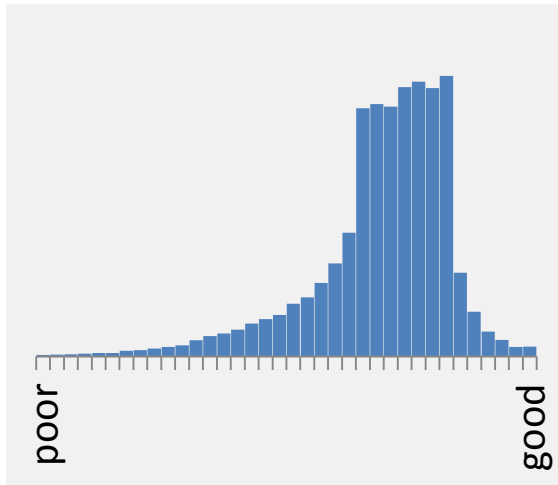
Effect of commute mode / WFH

Insight	Confidence
Cycling is associated with higher self reported health	✓
Bus is associated with lower self reported health	✓

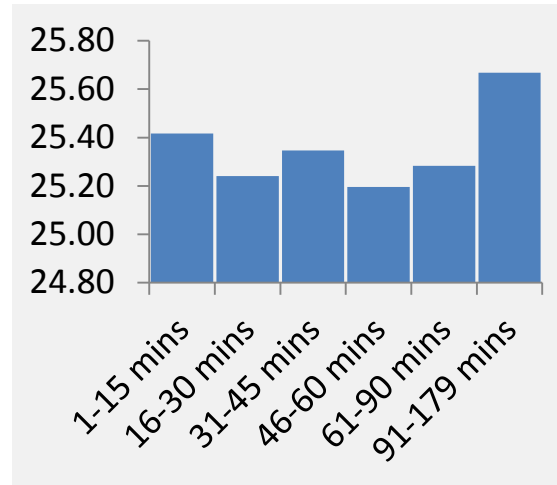
✓✓✓	✓✓	✓
Very Confident	Confident	Tentative
within individual (99%)	Within individual (95%)	Between individual (95%)

Mental health - General Health Questionnaire

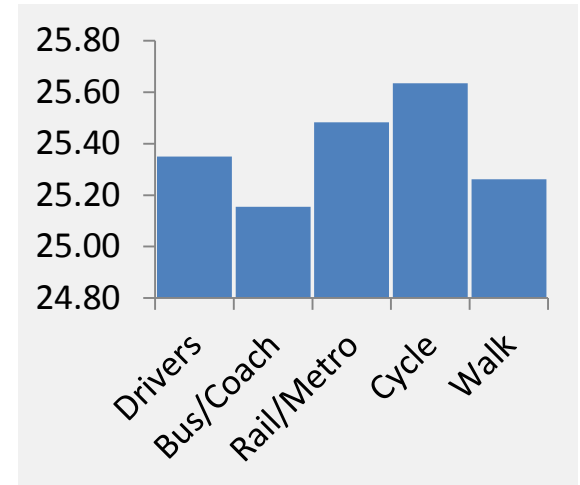
12



The majority of the GHQ12 responses indicate good mental health.



Scores decrease slightly as commute duration increases. But are higher for those with the longest duration commutes



Lowest amongst bus users. Highest amongst cyclists.

Commute time and mental health

Insight

Confidence

Longer commute times reduce mental health
(larger effect for bus commuters)



gender

no different



age

no different



income

no different



area type

no different



Very Confident

within individual (99%)



Confident

Within individual (95%)



Tentative

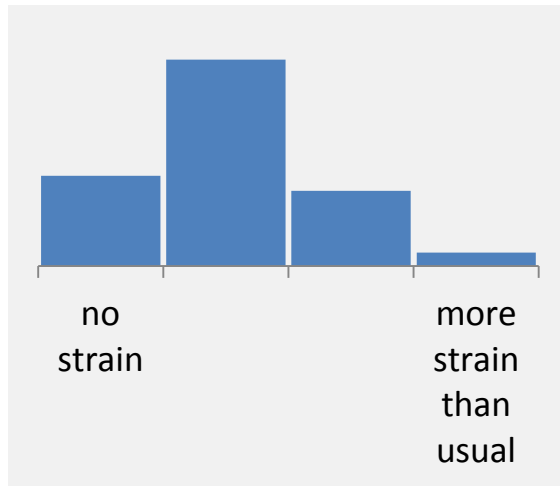
Between individual (95%)

Effect of commute mode / WFH

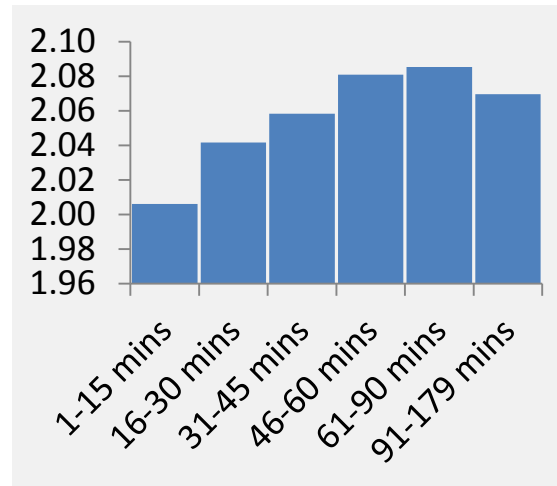
Insight	Confidence
No effect	

✓✓✓	✓✓	✓
Very Confident	Confident	Tentative
within individual (99%)	Within individual (95%)	Between individual (95%)

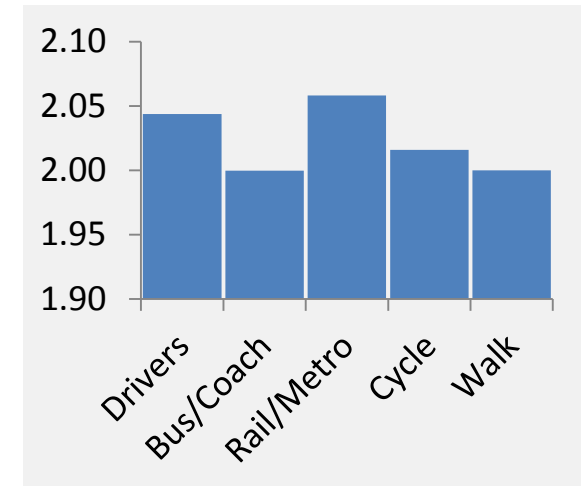
Have you recently felt constantly under strain?



77% of responses -
'no strain' or 'no more
strain than usual'



increases with
commute time



higher for drivers and
rail users

Commute time and strain

Insight

Confidence

Longer commute times increase strain (larger effect for men)



Apart from for rail commutes:

Longer commutes by rail are less strenuous than shorter rail commutes



Very Confident

within individual (99%)



Confident

Within individual (95%)



Tentative

Between individual (95%)

Effect of commute mode / WFH

Insight	Confidence
Walking to work reduces strain	✓✓✓

✓✓✓	✓✓	✓
Very Confident	Confident	Tentative
within individual (99%)	Within individual (95%)	Between individual (95%)

Summary: Domains of wellbeing

Commute Time

- Longer duration commutes:
 - Reduce job satisfaction (especially for bus commuters & women)
 - Reduce leisure time satisfaction
 - Increase strain (apart from for rail)
 - Worsen mental health (especially for bus commuters)

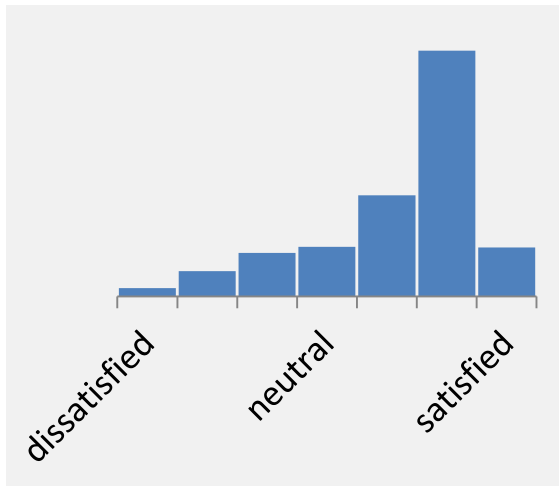
Active Commuting

- Walking and cycling
 - Increase leisure time satisfaction (especially for women)
- Walking
 - Decreases strain
 - Increases job satisfaction
- Cycling
 - Is associated with higher self-reported health

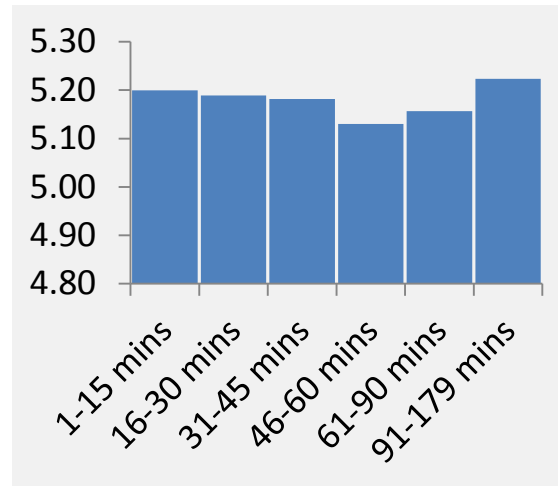
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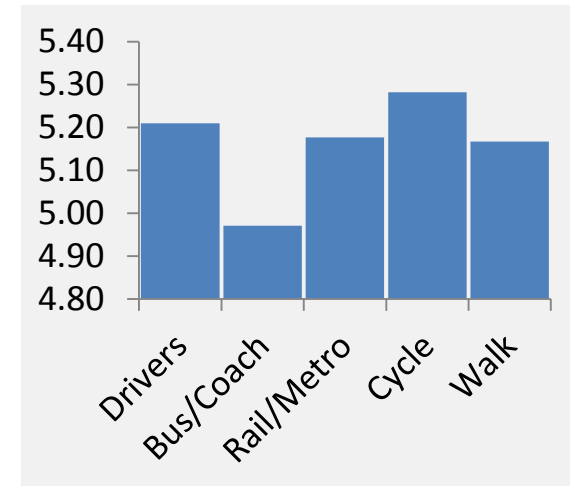
How dissatisfied or satisfied are you with your life overall?



Three quarters reported being somewhat to completely satisfied



Decreases *slightly* as commute duration increases



Scores are lowest amongst bus users. Cyclists have the highest scores

Major determinants of life satisfaction



Effect of time spent commuting

Insight

Confidence

Longer commute times are associated with lower life satisfaction

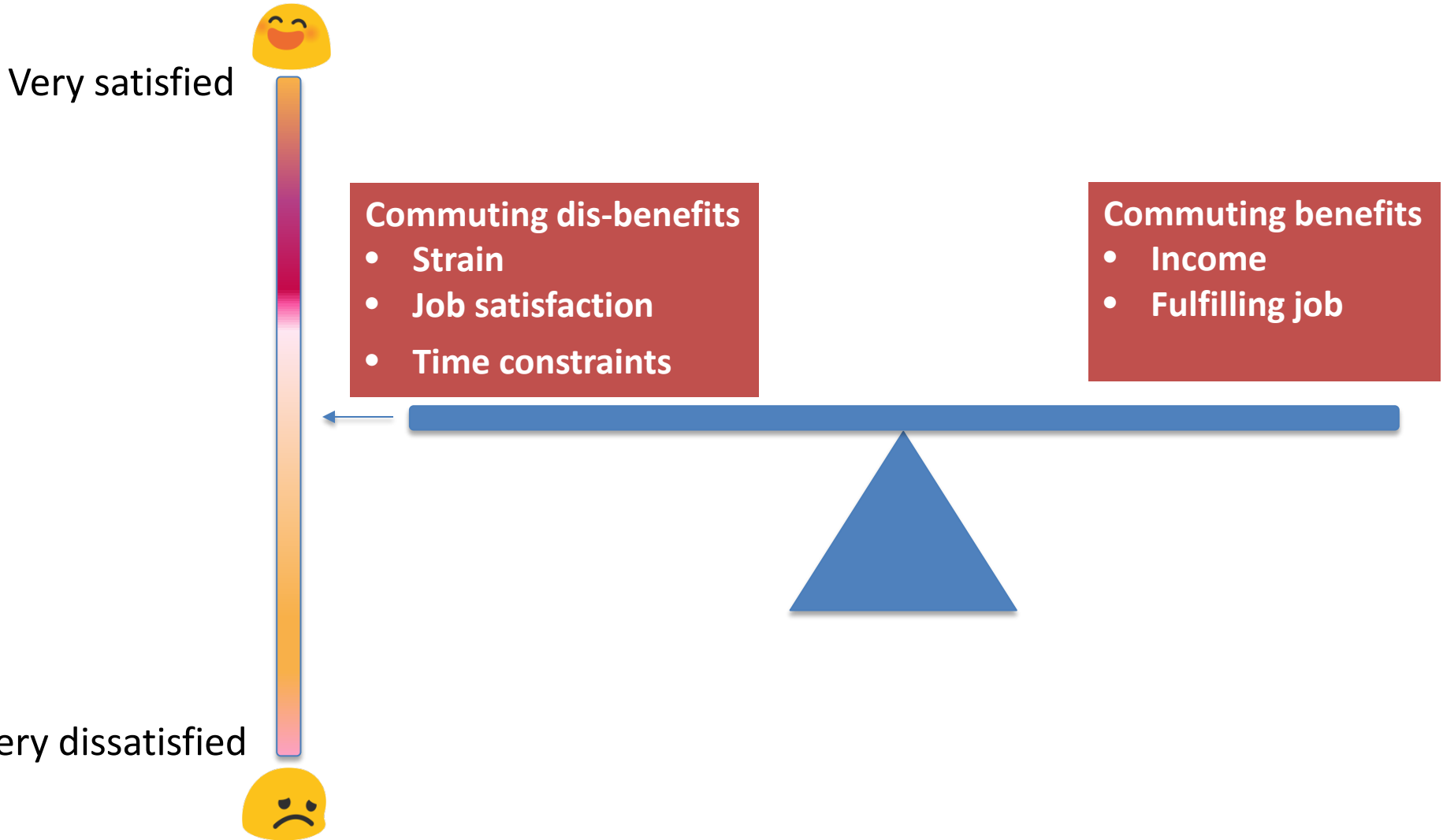


A 'between individual' association only

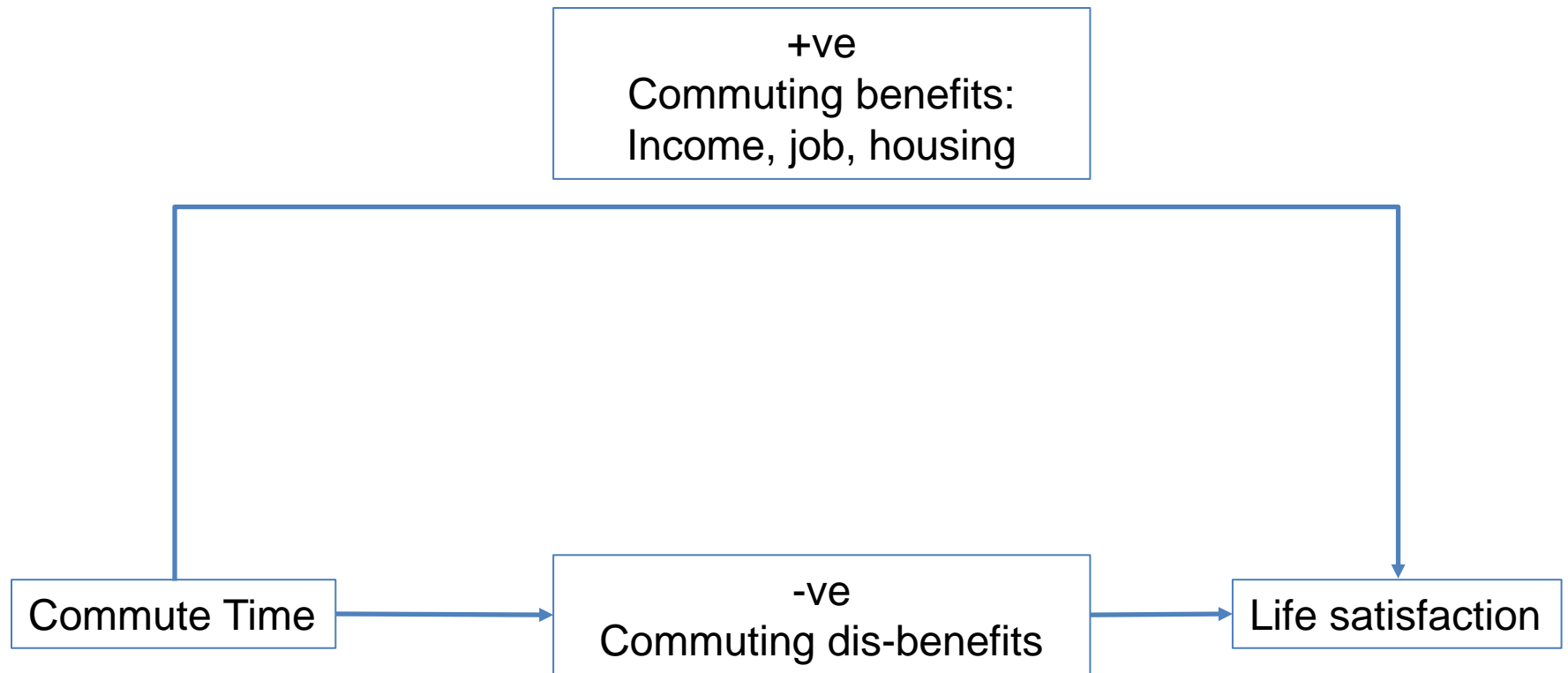
- Comparing individuals, longer commutes are associated with lower life satisfaction
- But we did not find that life satisfaction scores reduce for individuals when their commute time increases

✓✓✓	✓✓	✓
Very Confident	Confident	Tentative
within individual (99%)	Within individual (95%)	Between individual (95%)

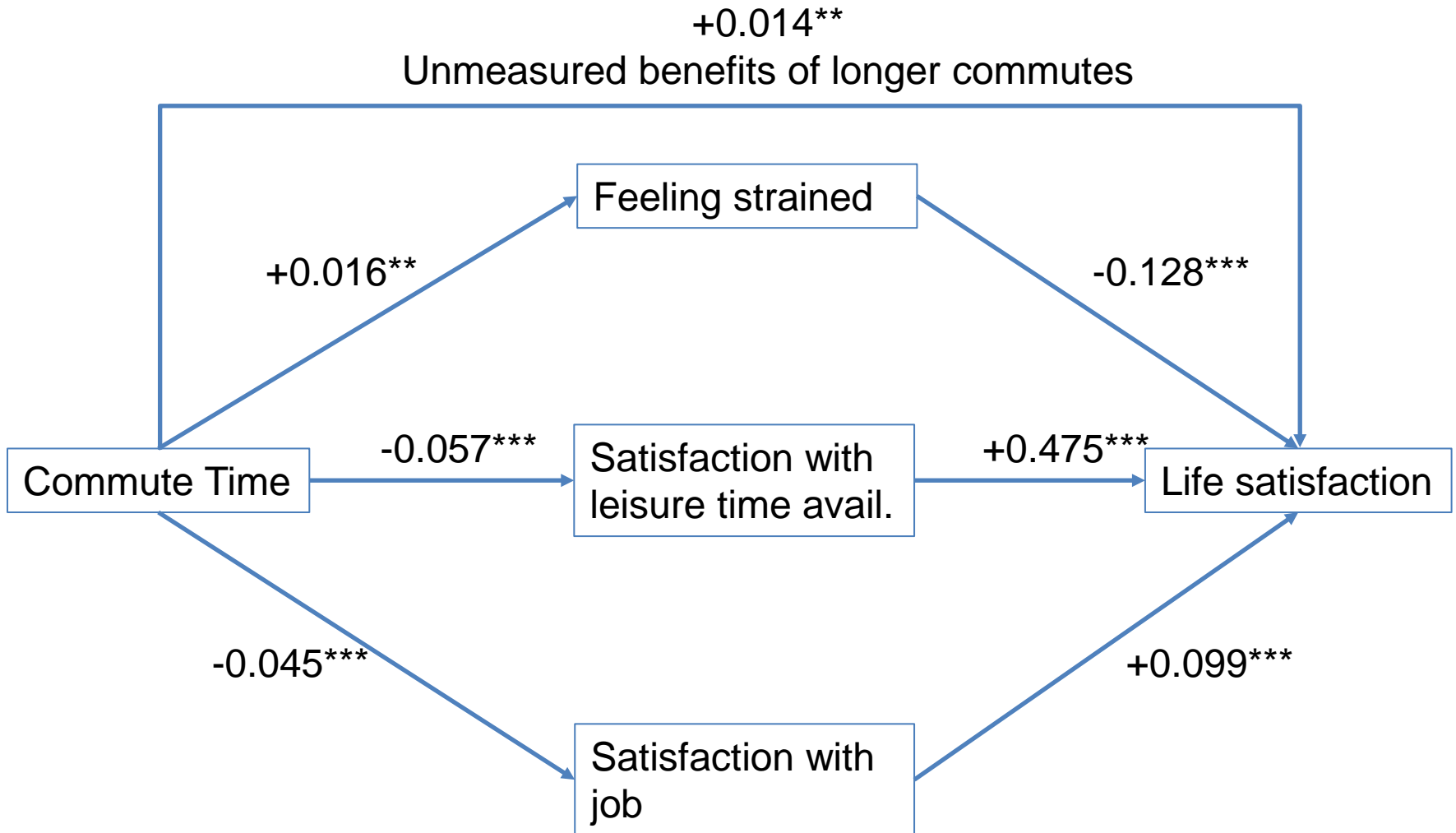
Commute time compensation?



Unpicking the relationship



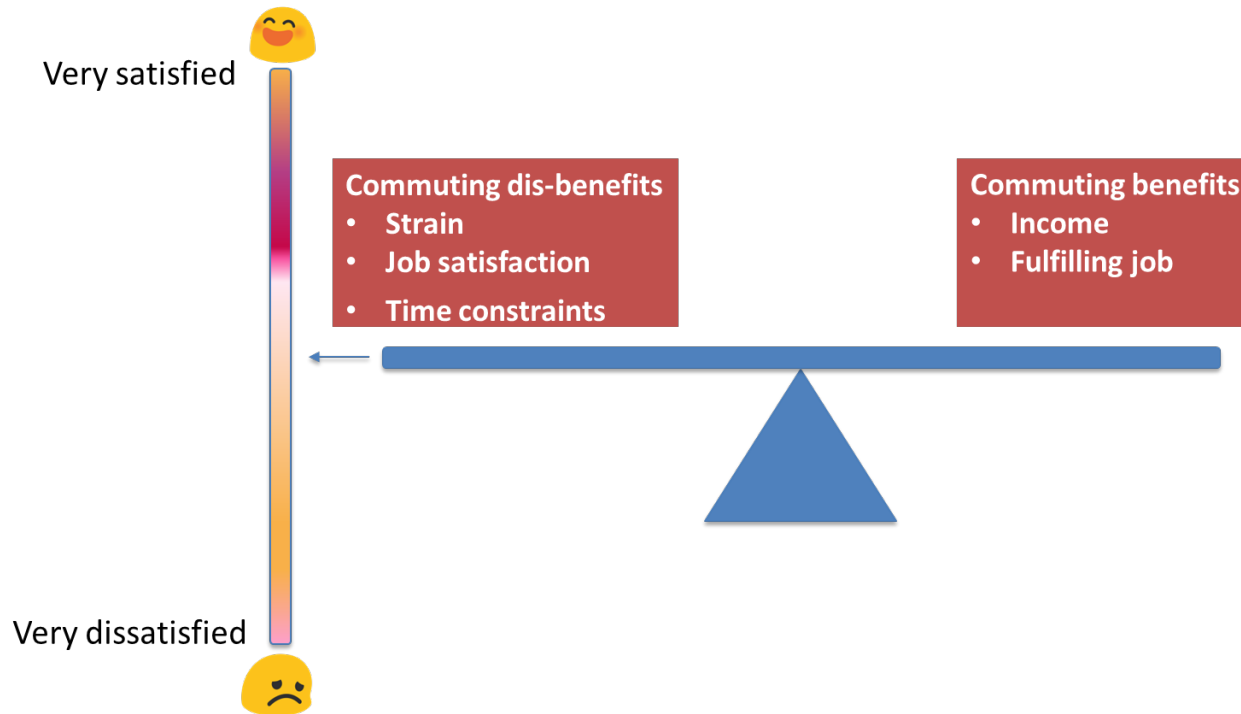
Unpicking the relationship

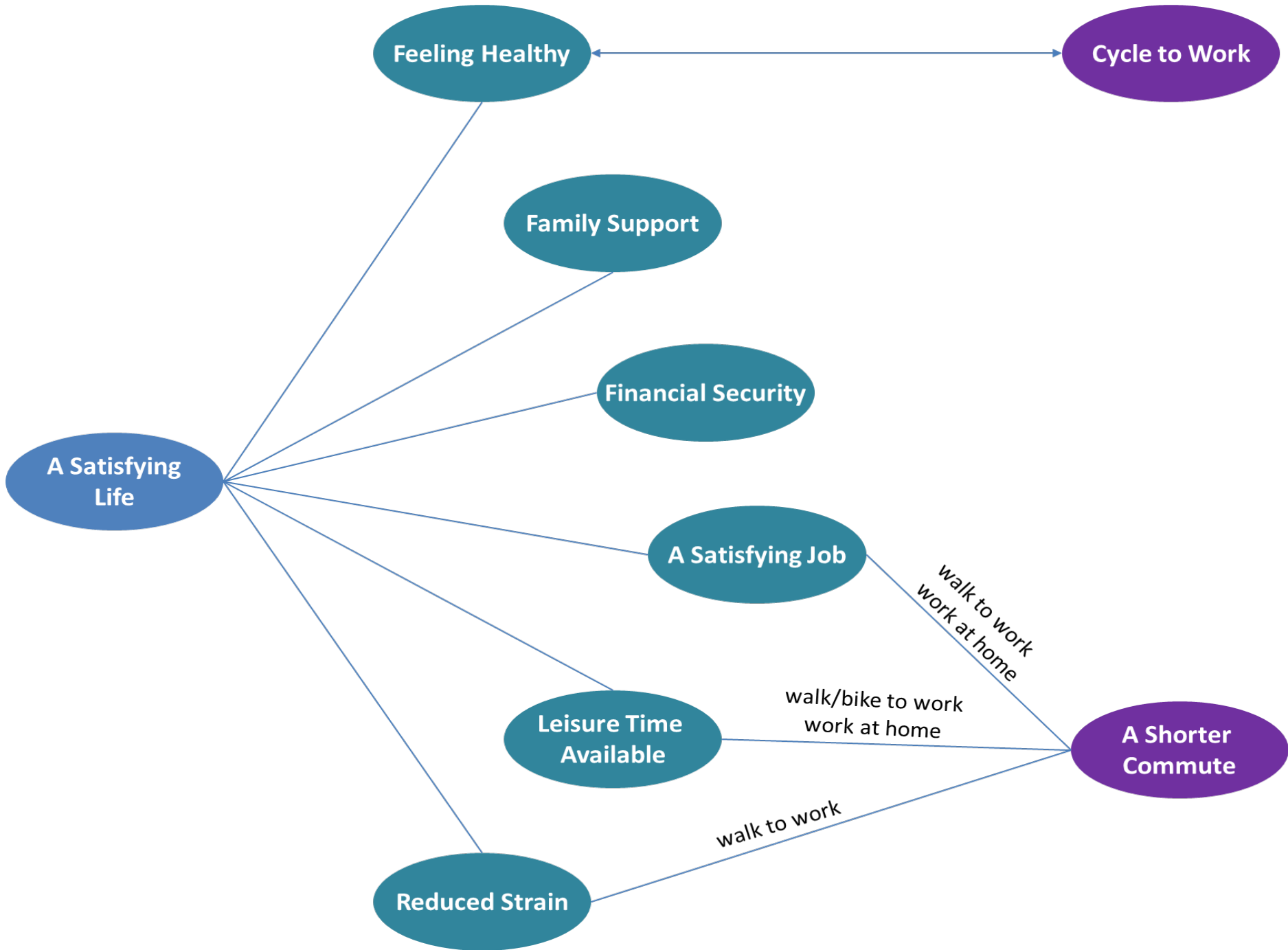


Sig level: 99%***, 95%** , 90%*

Life satisfaction: Conclusion

People are generally successful in trading-off the drawbacks of a longer commute journey against the benefits that they bring





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Understanding change over time

1. Immediate effects of commuting behaviour changes
2. Evidence that effects grow / diminish over time
3. Longer term effects of sustained commuting behaviours
4. Feedback – Do people make life changes to avoid long duration commutes?

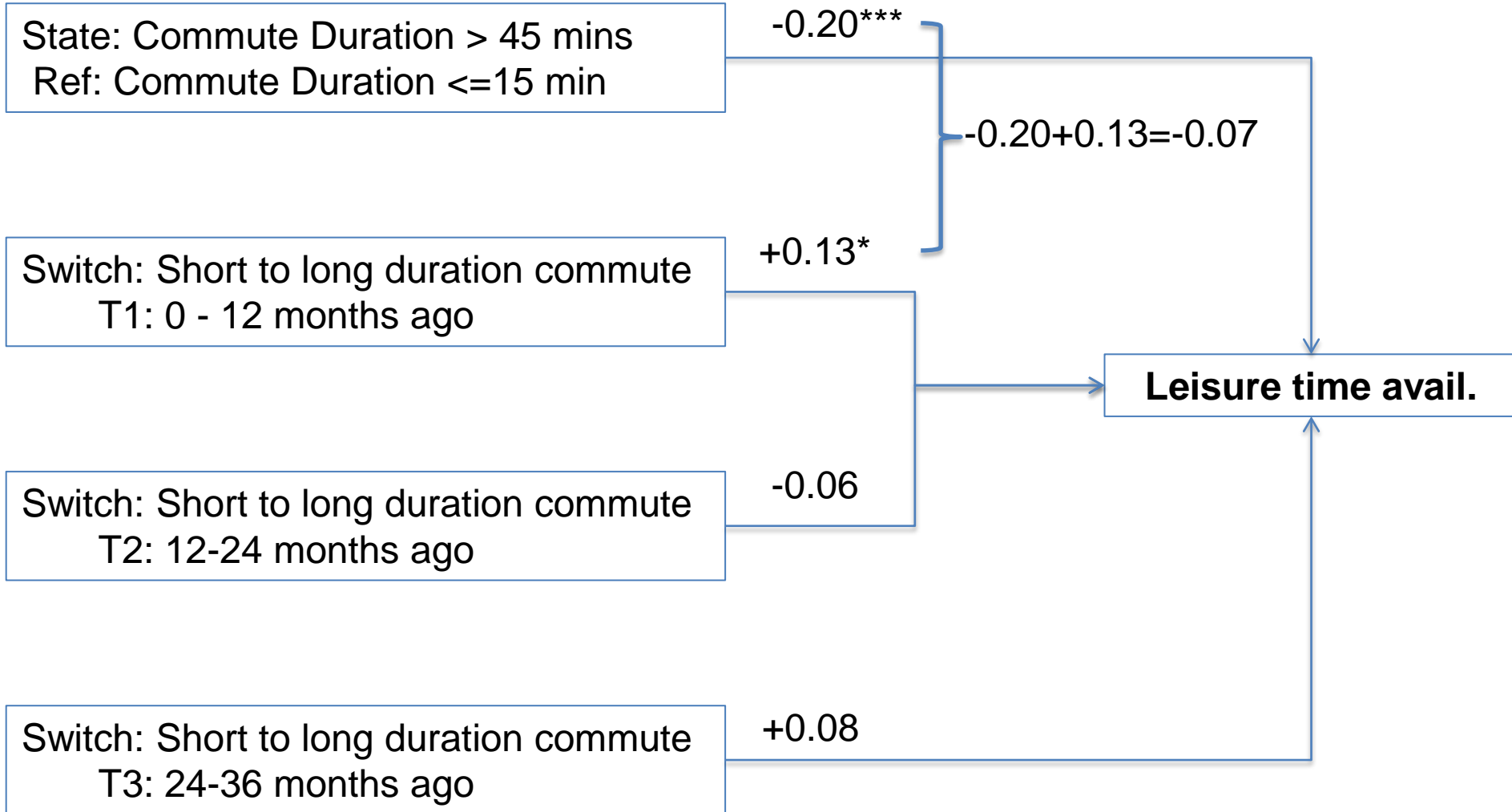
Immediate effects of behaviour changes

Wellbeing measure	Short to long	Drive to walk	Drive to cycle	Walk to drive
Job satisfaction	-ve	+ve	+ve	+ve
Leisure time satisfaction	-ve	+ve	+ve	
Self-reported health			+ve	
Strain	+ve	-ve	-ve	
Mental health	-ve			+ve

Longer run effects of behaviour changes

Wellbeing measure	Short to long	Drive to walk	Drive to cycle	Walk to drive
Job satisfaction	-ve	+ve	+ve	+ve
Leisure time satisfaction	-ve	+ve	+ve	
Self-reported health			+ve	
Strain	+ve	-ve	-ve	
Mental health	-ve			+ve

How does **starting a long duration commute** affect wellbeing over the longer term?



Sig level: 99%^{***}, 95%^{**}, 90%^{*}

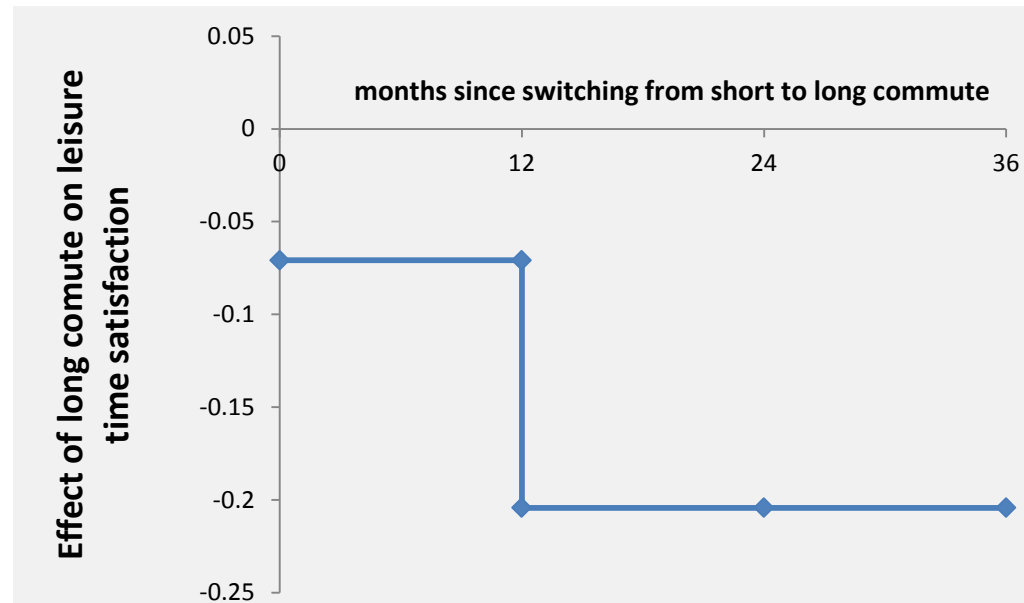
How does **starting a long duration commute** affect wellbeing over the longer term?

Implications

- Long duration commutes are linked to lower satisfaction with leisure time availability (in any period)

Dynamics

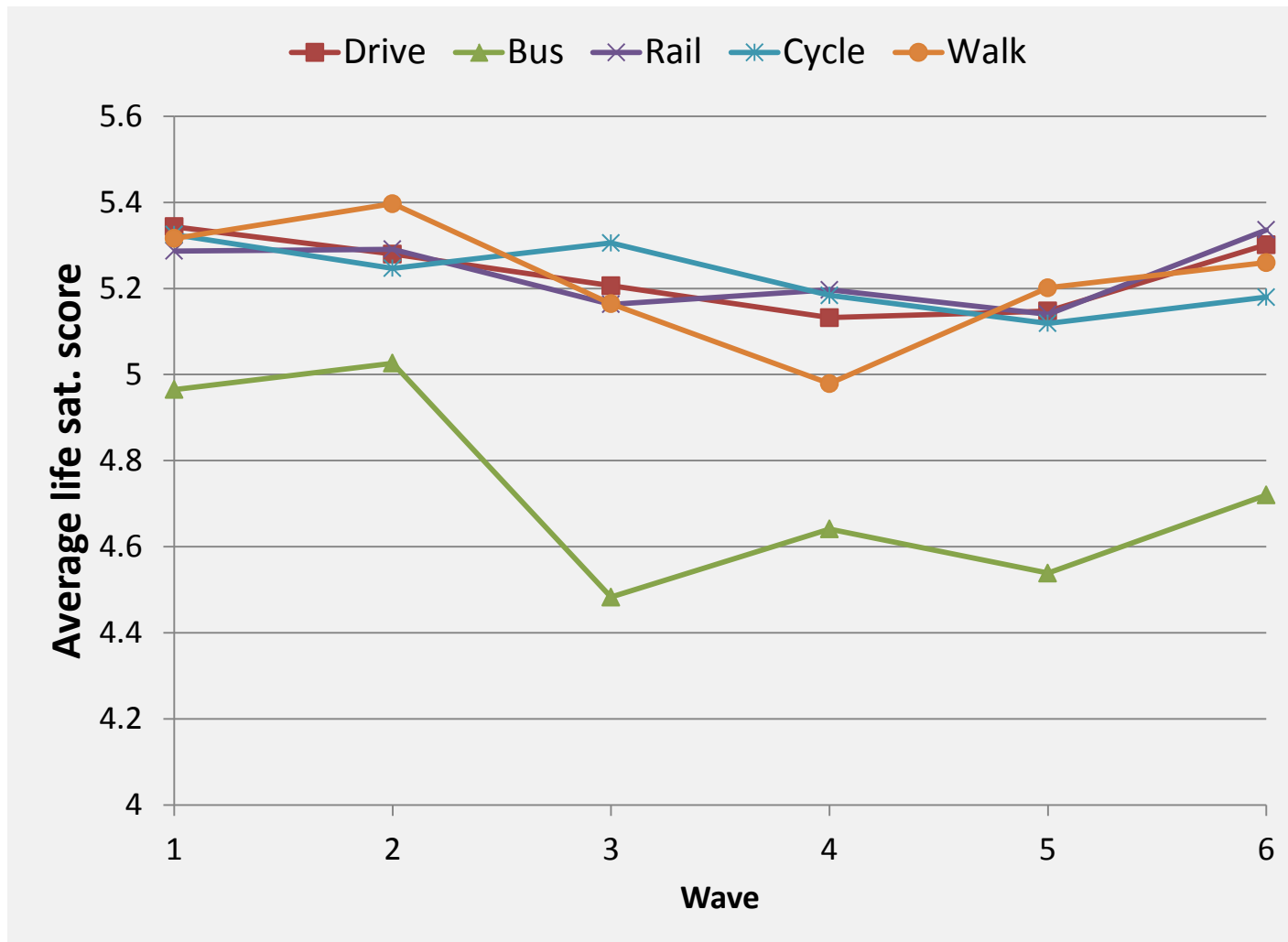
- The full negative effect of *starting* a long duration commute takes over 12 months to kick in
- It then stays the same...



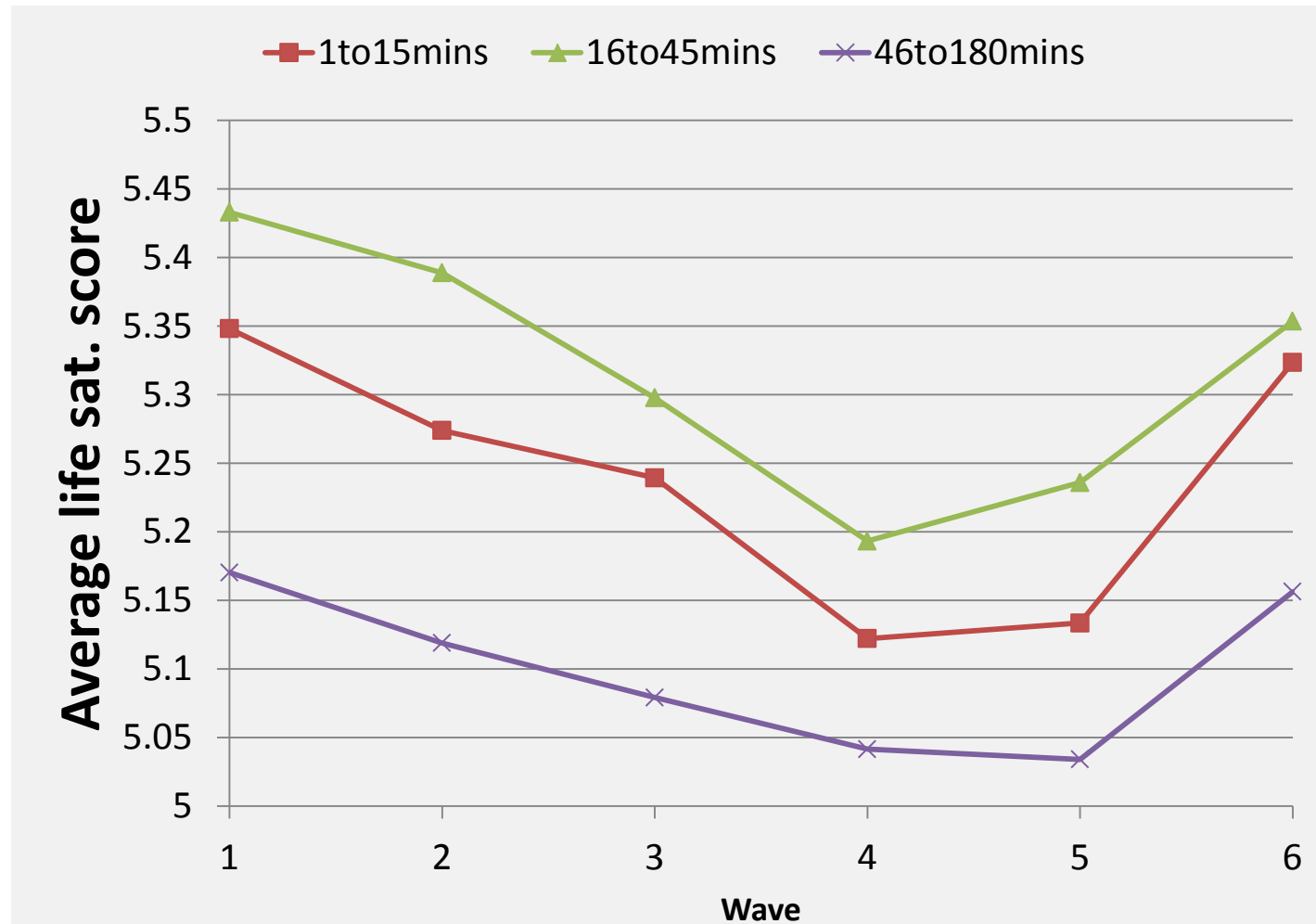
Understanding change over time

1. Immediate effects of commuting behaviour changes
2. Evidence that effects grow / diminish over time
3. Longer term effects of sustained commuting behaviours
4. Feedback – Do people make life changes to avoid long duration commutes?

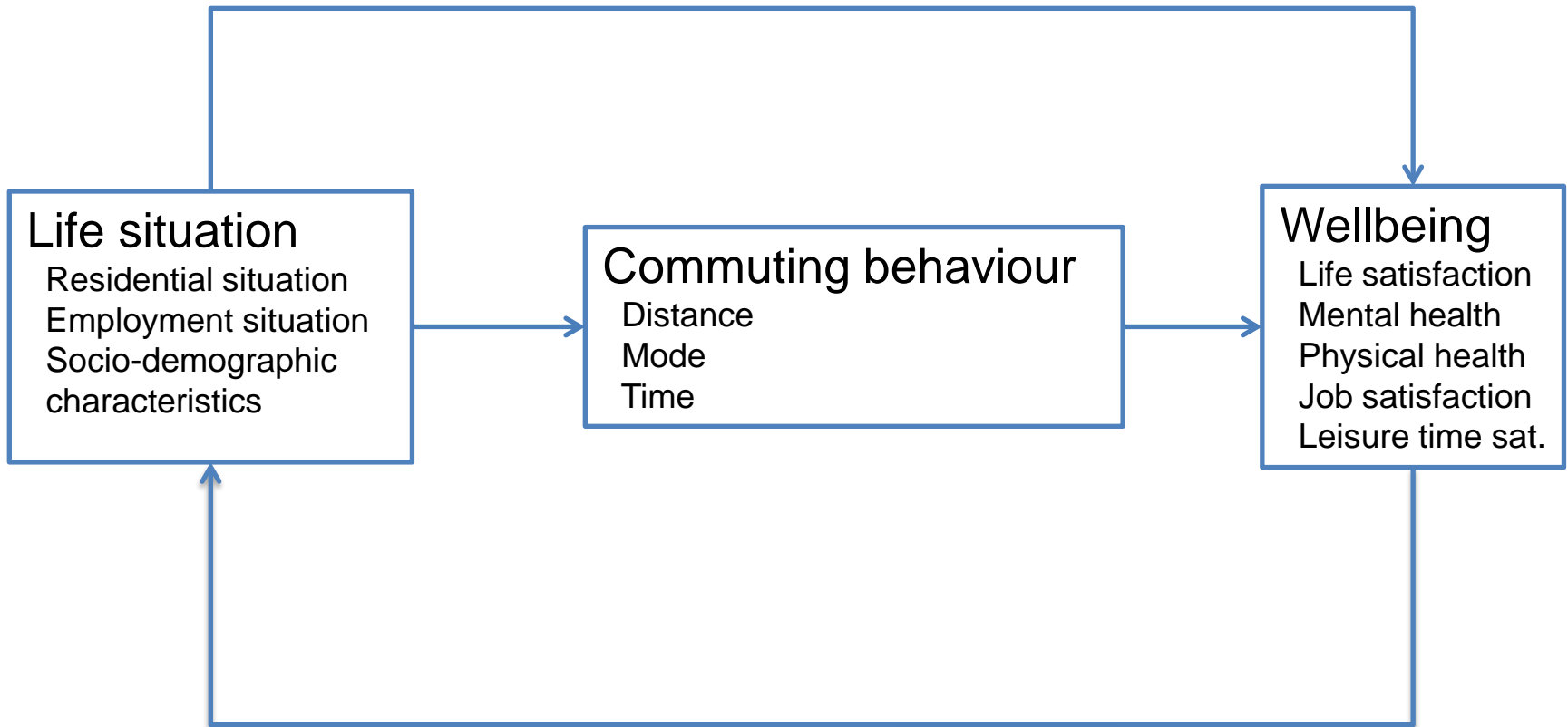
Maintaining the same mode



Maintaining a long duration commute



Do people adjust their situation to improve their lives?



The case of long duration commuting (>45 mins)

People start doing a long duration commute to increase their earnings

Indicative earnings change:

- Short to long duration commute:
£165 per month more in gross personal income on average.
- Short to short duration commute:
£79 per month more in gross personal income on average.

The case of long duration commuting (>45 mins)

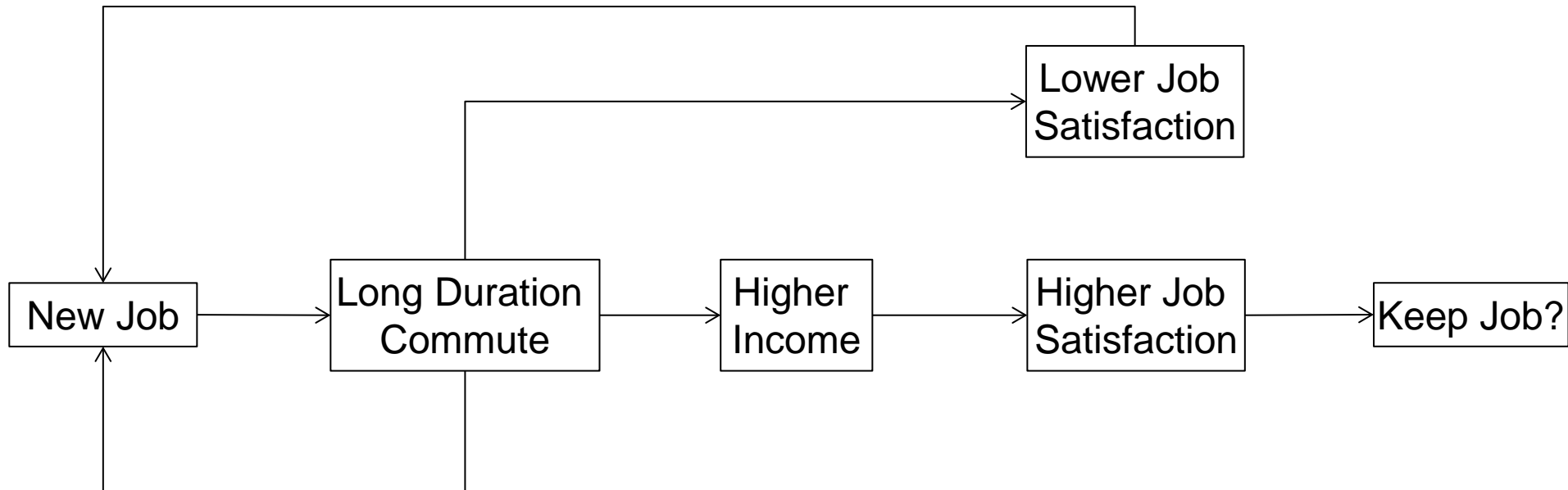
Factors associated with **maintaining long duration commute**

- Higher income
- Higher job satisfaction
- Rail commuting
- Not active commuting

Factors associated with **higher likelihood of changing job**

- Being a long duration commuter
- Lower job satisfaction

The case of long duration commuting (>45 mins)



Longer duration commutes maintained if:

- the benefits of higher income and a satisfying job outweigh the drawbacks of the commute journey

Seeking life improvements

- People adjust their lives to improve their situation and to meet their aspirations
- This could explain absence of a strong association between commute duration and life satisfaction
- Remaining questions
 - Complexity of people's lives and processes through which long-term lifestyle decisions are made
 - Variation in the extent to which people have agency to improve their situations

C & W Study: The Main Messages

Every Minute Counts

- **Every extra minute of commute time** reduces job satisfaction, reduces leisure time satisfaction, increases strain and reduces mental health

The Benefits of Active Commuting

- **Walking to work** reduces strain and increases leisure time satisfaction
- **Cycling to work** increases leisure time satisfaction and is associated with better self-reported health

Insights for Public Transport

- **Bus commuters** feel the negative impacts of longer commute journeys more strongly than users of other transport modes
- **Shorter duration commutes by rail** are more strenuous than longer duration commutes

Women's Work-Life Balance

- **Women's job satisfaction** is particularly sensitive to longer commute times
- Women suffer more than men from lack of leisure time but an **active commute** (walking, cycling) is found to help with this.

Job Satisfaction and Employee Retention

- **Working from home, walking to work and shorter commute times** increase job satisfaction and shorter commute times make it more likely that an employee will stay with their job – these are ways to increase employee retention and hence reduce costs to businesses.

This afternoon

Introducing the study	14:35
Review of international evidence	14:50
The Commuting & Wellbeing Study approach	15:10
Findings 1: Impact on 'Domains of Wellbeing'	15:20
Break	15:40
Findings 2: Impact on life satisfaction	15:50
Findings 3: Understanding processes of change	16:00
Discussion	16:20
Close	17:00

Themes for discussion

1. Job satisfaction and employee wellbeing
2. Active commuting
3. Public transport

Theme 1 - Job satisfaction and employee wellbeing

What actions can be taken to help employees find attractive housing close to their workplaces?

What can be done to ensure different transport alternatives provide reasonable journey times to employment destinations?

Theme 2 - Active commuting

How can networks be developed to support safe and relaxing access to employment destinations on foot and by bicycle?

What can be done to promote the physical and mental health benefits of active commuting and increase the uptake of active commuting?

Theme 3 - Public transport

How can the infrastructure and services necessary for good quality local public transport access to employment destinations be developed?

What can be done to enable rail operators to provide comfortable conditions for commuters?