# Cross-sectional and Longitudinal Linking of Epidemiological Quality of Life Data

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And so from April next year, we'll start measuring our progress as a country, not just by how our economy is growing, but by how our lives are improving; not just by our standard of living, but by our quality of life.

David Cameron, 25. Nov 2010

## ONS-4:

- Overall, how satisfied are you with your life nowadays?
- Overall, to what extent do you feel the things you do in your life are worthwhile?
- Overall, how happy did you feel yesterday?
- Overall, how anxious did you feel yesterday?

0 = 'not at all'
10 = 'completely'

Hicks et al. (2013). *Social Indicators Research*,*114*, 73–86.

Pictures from ONS Personal Well-Being in the UK, 2013/2014 that I presented here can be found at:
http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/rel/wellbeing/measuring-national-well-being/personal-well-being-in-the-uk--2013-14/sb-personal-well-being-in-the-uk--2013-14.html

- Other data sources exist and provide long time series of measures for related constructs (Böhnke & Croudace, 2016)

- Integration of multiple survey sources is possible and allows to answer novel research questions (Gray et al., 2015)

Böhnke & Croudace, 2015, *The British Journal of Psychiatry*, online first.
Gray et al., 2015, *Big Data & Society*, 2(1).

# LET'S TALK ABOUT...

# ...DATA

- ## Cambridge, Dundee and York

- ## General Health Questionnaire
  - Reliable instrument
  - Distress and negative affective component of hedonia
  - Mostly unidimensional
  - Well-suited for CAT

- ## Since the late 1980ies data available

Goldberg et al., 1997, *Psychological Medicine*, 27, 191–197.
Stochl et al. 2015, *Social Psychiatry and Psychiatric Epidemiology*, online first.

Annual survey looking at changes in the health and lifestyles of people all over the country

## 2005

- 13,297 full sample
  - 9,273 adults, estimation sample N = 4,415

## 2006

- 21,399 full sample
  - 12,874 adults, estimation sample N = 6,176

UK Data Service:

"[...] to further understanding of social and economic change at the individual and household level in Britain, to identify, model and forecast such changes, their causes and consequences in relation to a range of socio-economic variables"

- Ran from 1991-2009
- Now part of "Understanding Society"

**CURRENT SAMPLE**
- 2005: N = 7,532; 2006: N = 7,465 in England
- N = 6,302 estimation sample

**We want to know how your health has been in general over the last few weeks. Have you recently...**

...been able to concentrate on what you're doing?

...lost much sleep over worry?

...felt that you are playing a useful part in things?

...felt capable of making decisions about things?

...felt constantly under strain?

...felt you couldn't overcome your difficulties?

...been able to enjoy your normal day to day activities?

...been able to face up to your problems?

...been feeling unhappy or depressed?

...been losing confidence in yourself?

...been thinking of yourself as a worthless person?

...been feeling reasonably happy, all things considered?

# GOOD OLD-FASHIONED ANALYSIS

- ## Main part of work in R
  - ### eRm (Hatzinger & Rusch, 2009)
  - ### TAM (Kiefer et al., 2016)

- ## Structural 1-PL models in Mplus 7.11 (Muthén & Muthén, 1998)

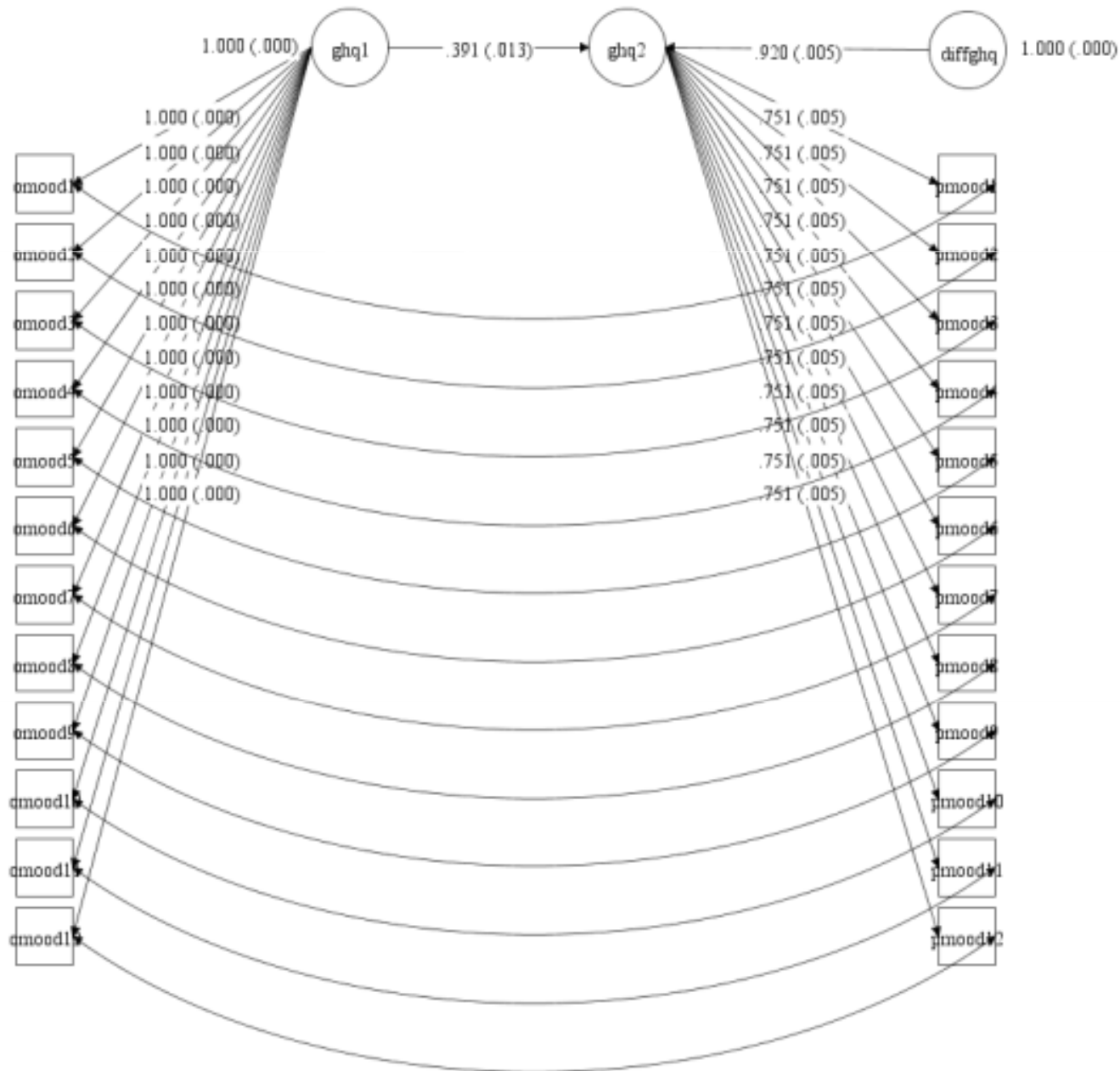Hatzinger & Rusch, 2009, *Psychology Science Quarterly*, *51*, 87–120.
Kiefer, Robitzsch & Wu (2016). TAM: Test Analysis Modules. R package version 1.17-0.
Muthén, L. K., & Muthén, B. O. (1998). *Mplus user's guide* (7th edition). Los Angeles, CA: Muhén & Muthén.

# MERGING DATASETS

- # BHPS 2005

| government office region | Freq. | Percent | Cum. |
|---|---|---|---|
| missing | 27 | 0.45 | 0.45 |
| north east | 302 | 4.99 | 5.43 |
| north west | 889 | 14.67 | 20.11 |
| yorkshire & humber | 673 | 11.11 | 31.21 |
| east midlands | 620 | 10.23 | 41.45 |
| west midlands | 613 | 10.12 | 51.57 |
| east of england | 700 | 11.55 | 63.12 |
| london | 552 | 9.11 | 72.24 |
| south east | 986 | 16.28 | 88.51 |
| south west | 696 | 11.49 | 100.00 |
| Total | 6,058 | 100.00 | |

- # HSE 2005

| government office region | Freq. | Percent | Cum. |
|---|---|---|---|
| north east | 534 | 6.01 | 6.01 |
| north west | 1,247 | 14.04 | 20.05 |
| yorkshire and the humber | 953 | 10.73 | 30.77 |
| east midlands | 835 | 9.40 | 40.17 |
| west midlands | 948 | 10.67 | 50.84 |
| east of england | 1,012 | 11.39 | 62.24 |
| london | 897 | 10.10 | 72.33 |
| south east | 1,455 | 16.38 | 88.71 |
| south west | 1,003 | 11.29 | 100.00 |
| Total | 8,884 | 100.00 | |

- To understand variation within and between social groups sample sizes have to be large enough
  - ...to test the fairness of assessment
  - ...to provide reliable estimates within groups // along continua

- Maybe not one survey can achieve this
- Raise our game by integration

The Department of Health Sciences

# DISCUSSION (REGARDING IMPLEMENTATION)
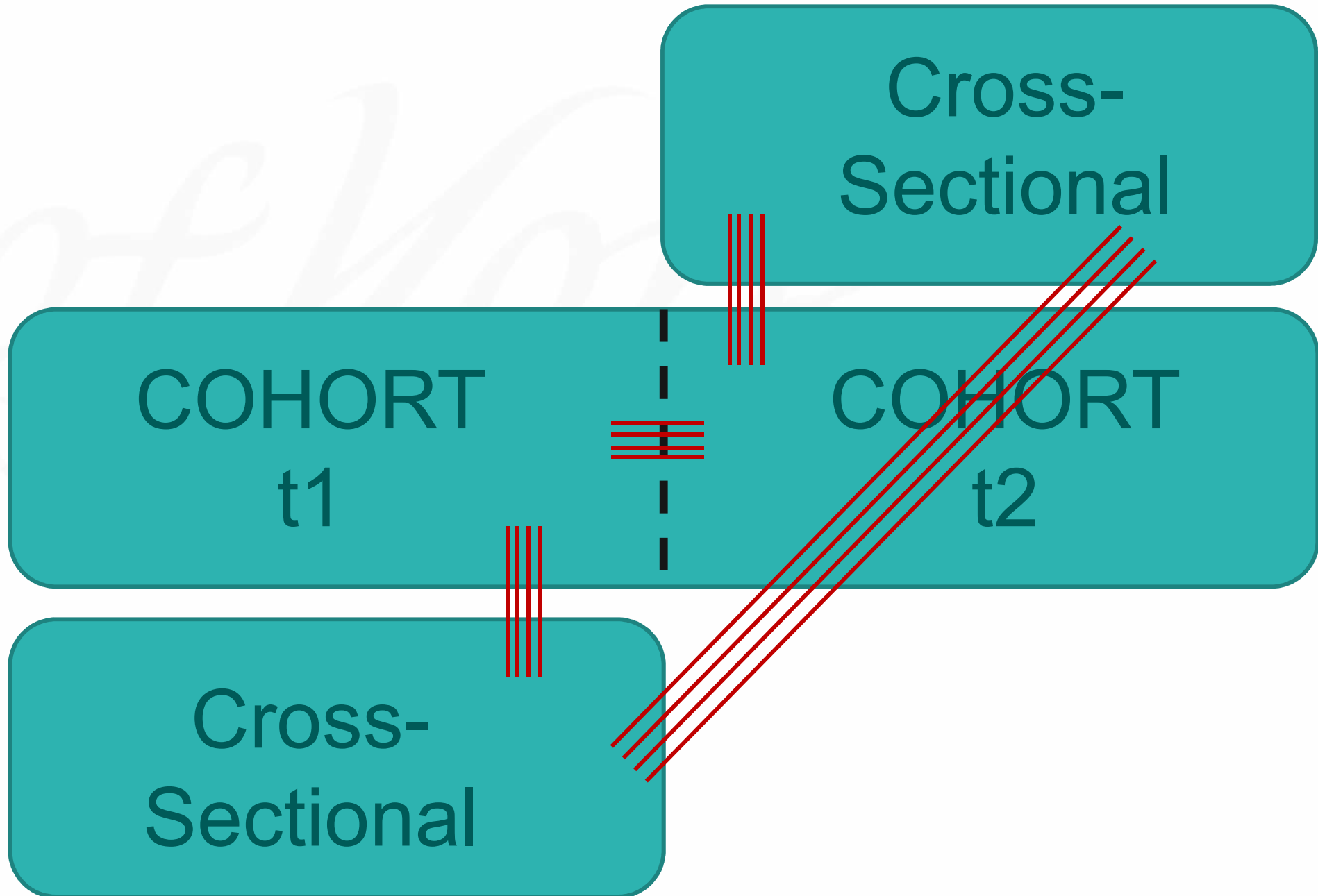
- Non-observed cross-sectional data is MCAR (in principle)

Nevertheless, in classic estimation frameworks:

- Relationship across time is completely driven by cohort data
- No dataset specific means possible to control for latent differences