
Conference or Workshop Item:
Norman, P orcid.org/0000-0002-6211-1625 People's trajectories through deprivation space: associations with health. In: Centre for Spatial Analysis & Policy seminar, 12 Dec 2017, Leeds, UK.

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People's trajectories through deprivation space: associations with health

Paul Norman (plus others named along the way)
School of Geography
University of Leeds

Health / Deprivation relationship

In socio-demographic terms, places change

Changing area deprivation

Areas with improving deprivation over time:

- Infant mortality improves more (Norman et al. 2008)
- Cancer survival improves more (Basto et al. 2014)

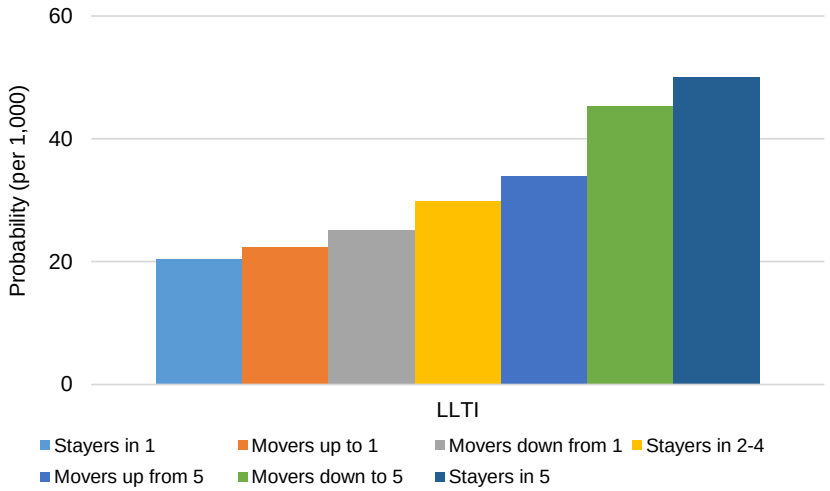
Areas of persistent (dis-) advantage over time:

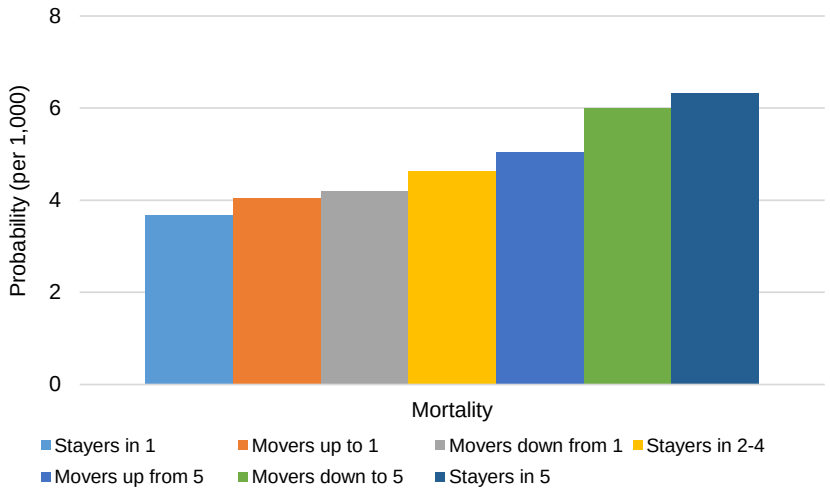
- Have the (worst) best self-reported health & mortality (Boyle et al. 2009; Norman et al. 2010; Exeter et al. 2011)

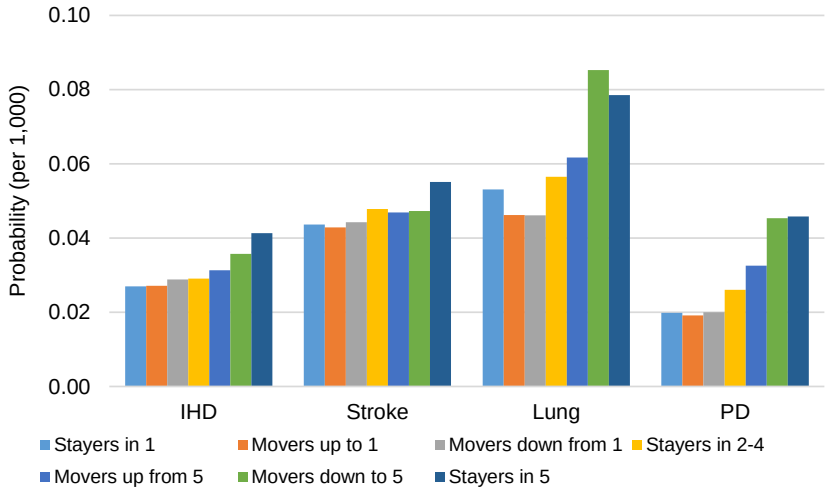
Area deprivation combinations and health

Using ONS Longitudinal Study for England & Wales

- Start : End area deprivation combinations: linked individual records
- Probabilities of health outcomes







Interim reflection (i)

- People living in differently deprived areas at different time points largely accounts for changing area inequalities
  - Driven by subnational migration between areas

But …

- **Just re-aggregations**
  - No explicit allowance for longitudinal effects for the individual
- **Time increments long**
  - What about the intervening years?

Case studies:

- Using British birth cohorts
  - Cohort study data not collected contemporary with census years

- Using New Zealand CVD data
  - More detailed time increments

Department of Epidemiology and Public Health

UCL

How important are neighbourhood effects across the life course on health and wellbeing?

Stephen Jivraj, Owen Nicholas, Emily Murray

Department of Epidemiology and Public Health, University College London

& Paul Norman

School of Geography, University of Leeds

The Leverhulme Trust

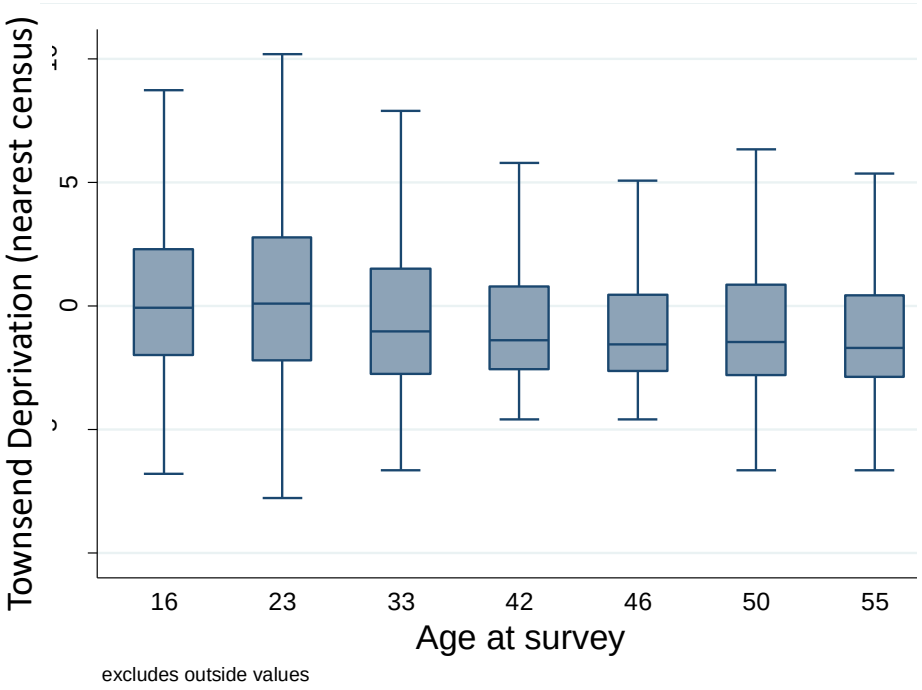
Data

- **1958** National Child Development Study and British Cohort Study **1970** birth cohort studies
- Linked to **Townsend** deprivation scores measured at censuses, **1971-2011** at 2011 Lower Super Output areas

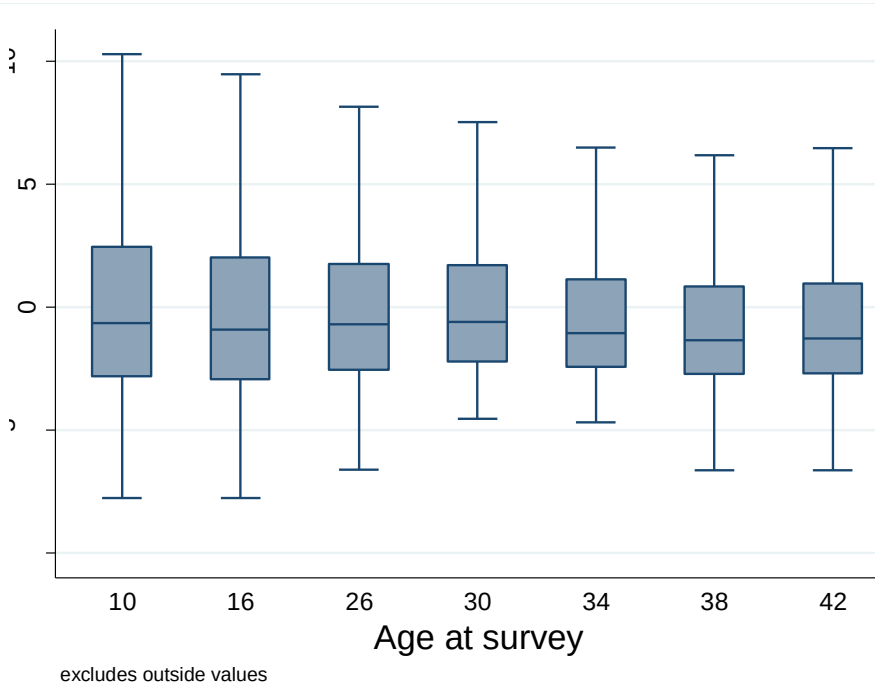
- Self-rated health: in general, would you say your health is...
  - excellent, very good, good, fair or poor

Neighbourhood deprivation score by sweep

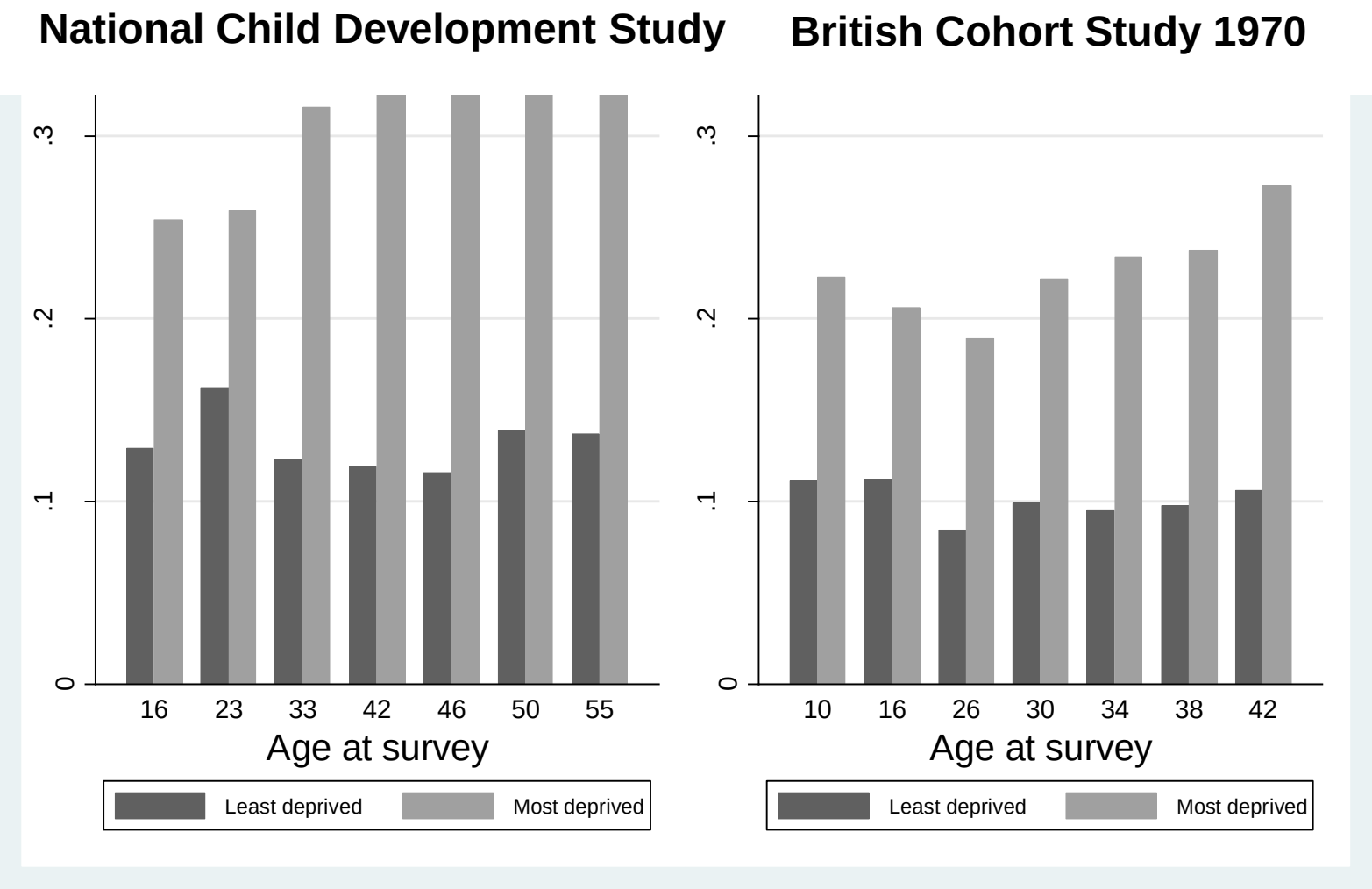
National Child Development Study



British Cohort Study 1970



Poor-rated health by neighbourhood deprivation decile



Risky moves and cardiovascular disease in New Zealand

Nichola Shackleton, University of Auckland
Fran Darlington-Pollock, University of Liverpool
Dan Exeter, University of Auckland
Paul Norman, University of Leeds

Vascular Informatics using Epidemiology & the Web (VIEW) longitudinal data

Variable	Category
Sex	Female; Male
Age	30-44; 45-54; 55-64; 65-74; 75-84
Ethnicity (prioritised)	Maori; Pacific; Indian; Other Asian; New Zealand European & Other (NZEO)
CVD hospitalisations (events)	CVD; No CVD
Deprivation (NZDep2006)	Q1- least deprived; Q2; Q3; Q4; Q5 – most deprived

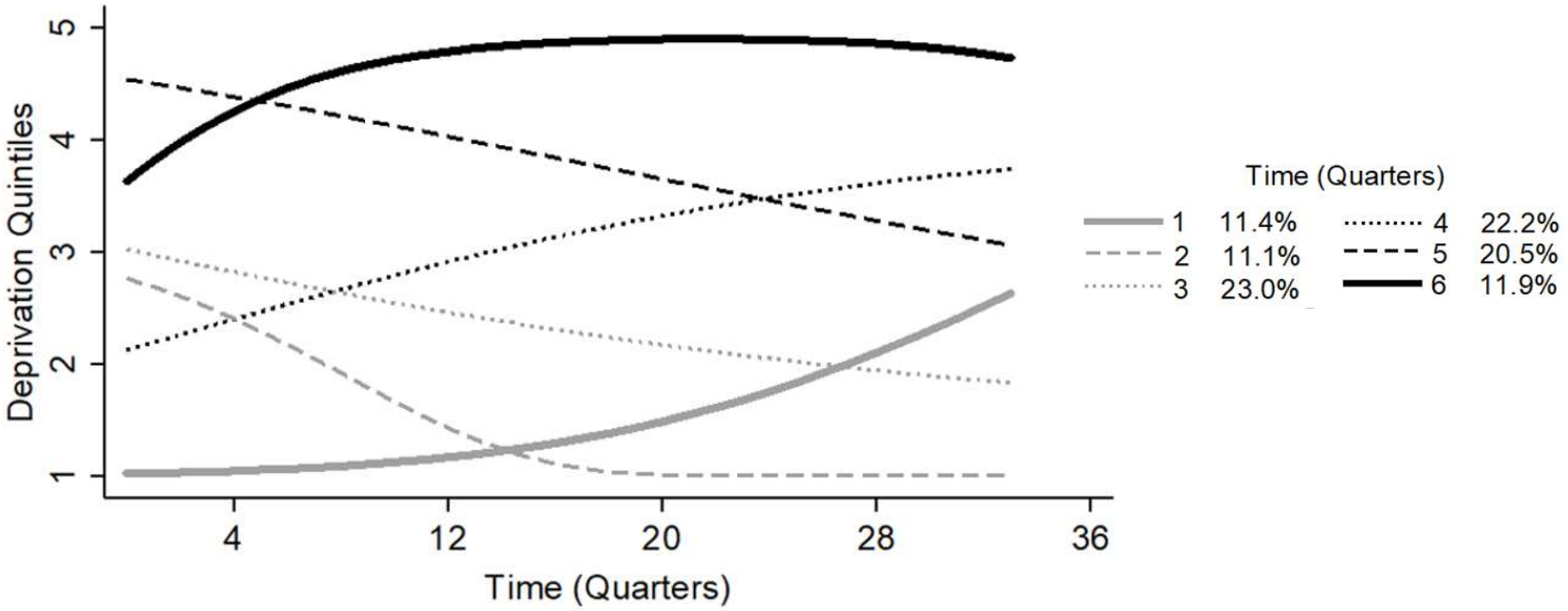
- Data from 2,418,397 individuals enrolled in NZ Primary Health Organisation
- Aged between 30 and 84 years
- During at least **1 of 34 calendar quarters** between 1st January 2006 to 30th June 2014

- Trajectory analysis
- Compare CVD risk for movers according to their deprivation trajectory

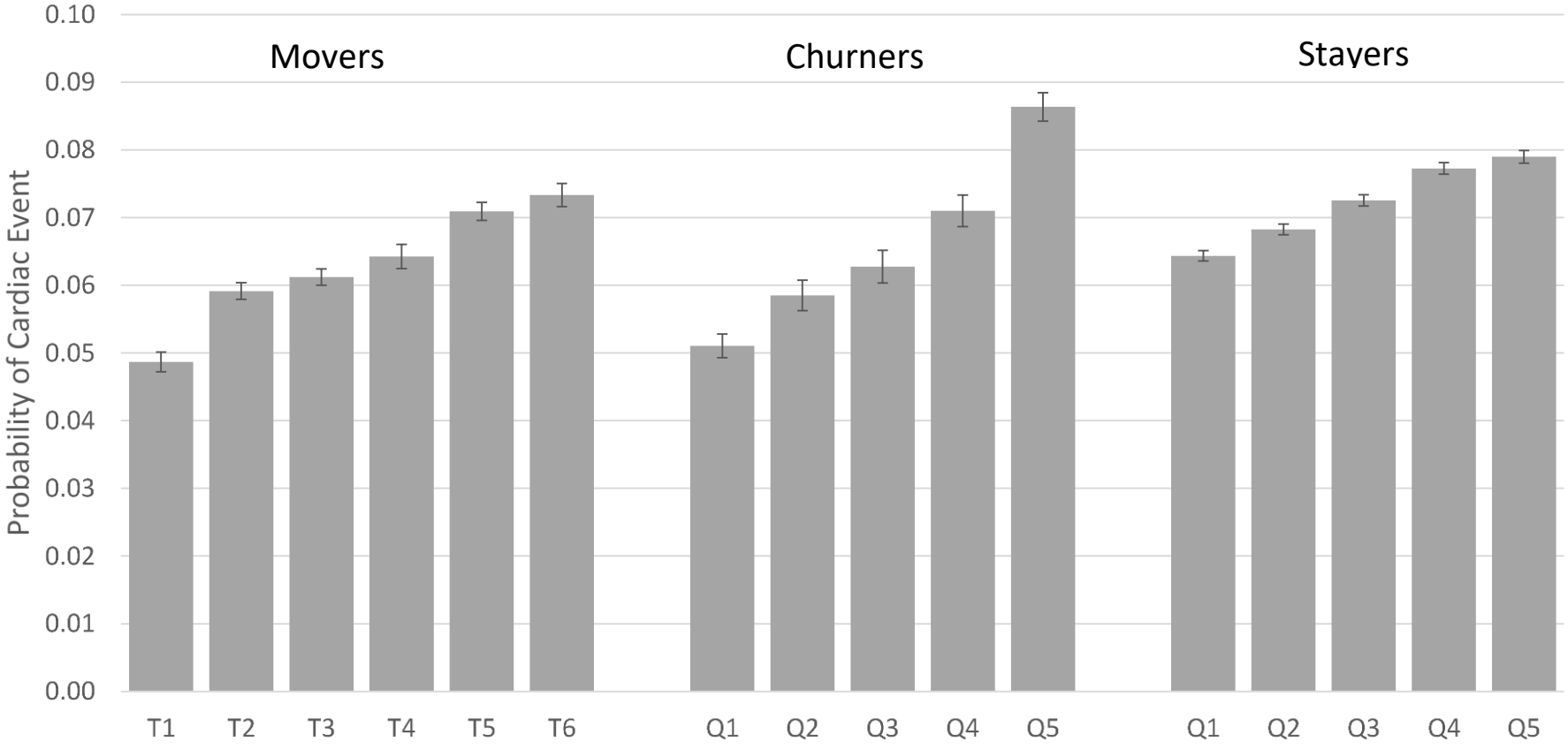
Trajectories

Classify people into deprivation-mobility groups:

- ‘Stayers’ → do **not** move on the observation period
- ‘Churners’ → move at least once but within the **same** level of deprivation
- ‘Movers’ → move to an area with a **different** level of deprivation



Results



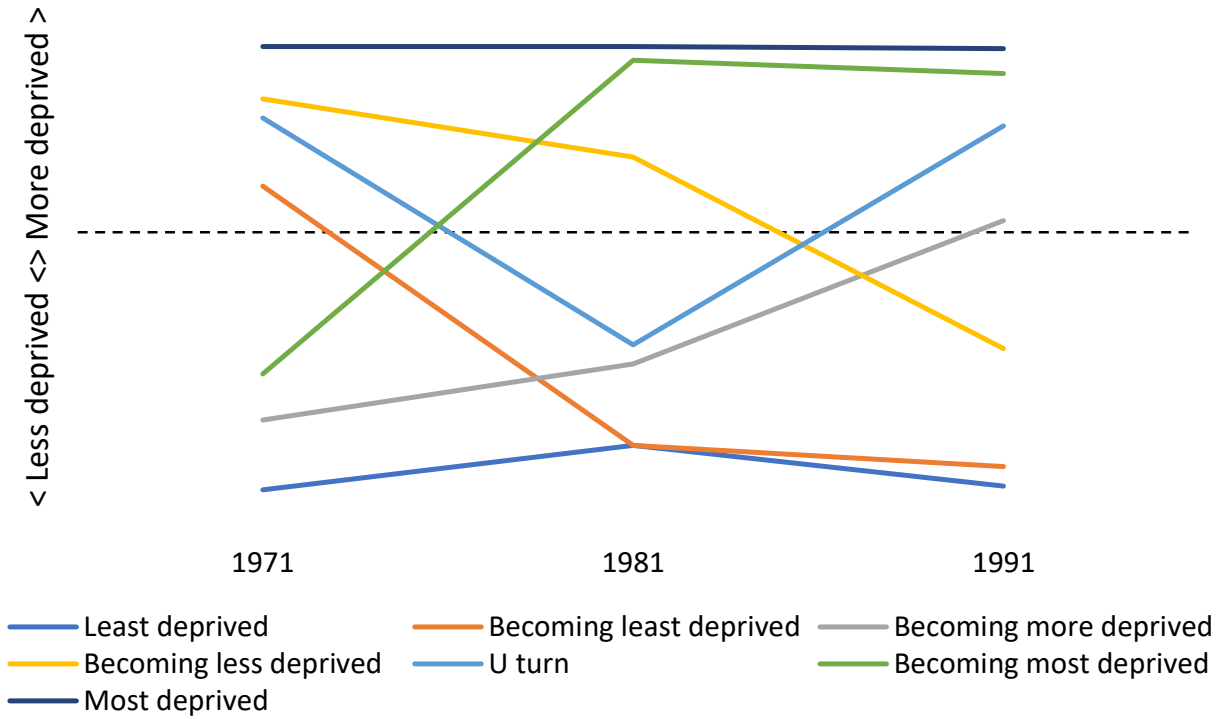
Error bars represent 95% confidence intervals.
Models adjusted for Age, Age squared, Gender, Ethnicity, number of quarters observed prior to event, and number of moves.
Trajectory analysis conducted on Movers (those who move to a different deprivation quintile)
T1: move from least deprived quintile to higher deprivation, T2: move from mid deprivation to least deprived areas, T3: move from mid deprivation to less deprived area, T4: move from lower mid deprivation to higher deprivation, T5: move from most deprived to lower deprivation, T6: move from lower deprivation into most deprived areas.

Interim reflection (ii)

- CVD differences for stayers and churners
  - Similar to other health investigations
- Trajectory analysis a novel approach
  - **Health relationships analogous to Start : End combinations**
- Emulate using ONS LS?
  - Only three time points

Trajectories using ONS LS

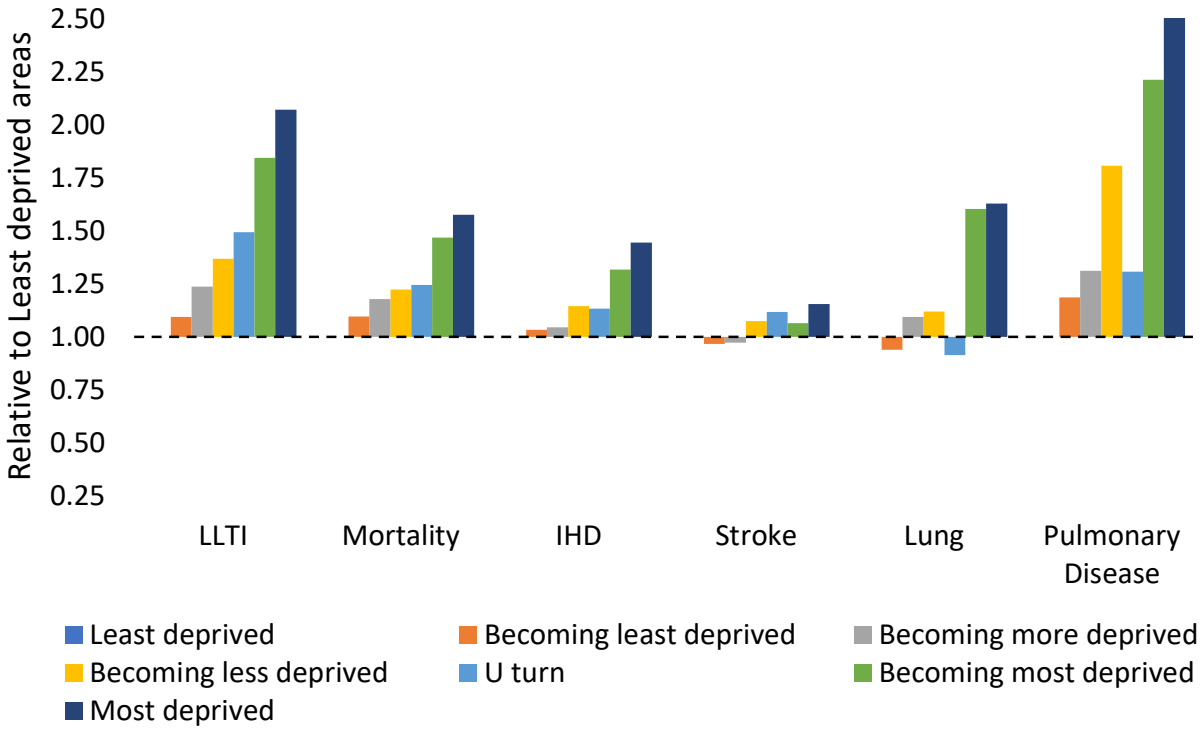
- 315,683 individuals followed 1971 to 1991



Most deprived	24.62
Becoming most deprived	14.86
U turn	8.13
Becoming less deprived	13.49
Becoming more deprived	12.82
Becoming least deprived	12.90
Least deprived	13.18

Trajectories using ONS LS

- 315,683 individuals followed 1971 to 1991
  - 50,903 with LLTI in 1991; 38,180 died post 1991



Individual trajectories through deprivation space

- Decennial censuses can provide comparable deprivation measures
  - Admin data can provide other years (maybe annual) but harder to be comparable

- Longitudinal Studies: individual records from census years with some (event) data for other years
- Cohort studies: sweeps at uneven time increments
- Patient records: versatile for time increments

- Trajectory analysis (in Stata for the NZ data) new approach
  - See whether NZ population by ethnic group have different trajectories

- **Tomorrow** in SSP on deprivation health inequalities by age-group

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Data suppliers

- ONS Longitudinal Study access via CeLSIUS is supported by the ESRC Census of Population Programme (award ref. H 507 25 5179), the authors alone are responsible for the interpretation of the data (LS project clearance 30033 & 30163)
- National Statistics Agencies, CASWEB & Nomisweb for supply of census data
- EDINA / UKBORDERs, National Statistics Agencies, etc. for supply of GIS data
- UKDS for the National Child Development Study and British Cohort Study
- Access to the VIEW data in New Zealand