Does Perceived Neighborhood Social Cohesion Moderate the Effects of County Demographic Changes on Health?

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Outline

Motivation

- Regional deprivation leads to population changes as those seeking better perspectives leave
- The changes in the demographic structure at the county level may have consequences on the access to health care but also on the neighborhood social capital
- Various theories have been proposed to explain small-area effects on health, in particular those concerning social capital

Motivation

- Evidence from the US shows that moving within the same economic/labor context has no effect on health and thus it makes sense to consider overall changes within such area
- Perception of neighborhood social cohesion is an individual level indicator which should moderate demographic changes at a finer scale than the economic/labor context

Research questions:

Are demographic changes at county level related to health?

Does the perception of social cohesion play a moderating role in this association?

Empirical Method

- **Explorative** longitudinal analyses
- Included are individuals with a 6-year continuous exposure to the same county
  ▸ Construction of a cohort
- Multilevel structure:

  Individual measure of health *in* survey participant *in* household *in* county
- Multilevel linear regression model with:

  Measure of health regressed on

  measure of health 6 year before + share of age group 6 year before + measure of demographic change*perception of social cohesion + controls (e.g. gender, household income on county level, age, education)

INKAR

INKAR

INKAR offers regional information on topics such as education, demographics, the labor market, the economy, housing, transport and the environment.

- Aggregated data at county (also municipality) level
- Historical data
- Objective small-area data

Zoom In INKAR: Age structure (on the county level) as independent variable

- Population divided into age groups: we are interested in young people (18-24 years) and seniors ($>$ 65 years)
- Proportion of each age group relative to whole population in the county
- Yearly, biennial and 5-year changes in each age group Change (in % of the whole population) in age structure
  $\rightarrow$ 5-year changes shows enough variability to be included in the analysis
- Operationalisation: categorization at quartiles by considering the distribution over all counties over all the survey years in the analysis rather than all observations included in the analysis

SOEP

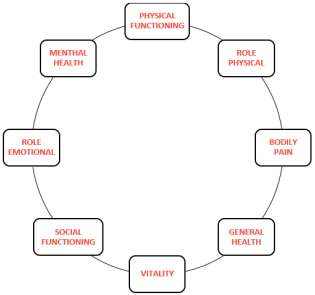
SOEP

The SOEP is a wide-ranging representative panel survey conducted in Germany by the German Institute for Economic Research (DIW). Every year, approximately 30,000 people in 15,000 households are interviewed for the SOEP.

- Summary Scale Measure for mental and physical health (on individual level)
- Control variables: Gender, age, education (categories: less than A-Level degree, A-Level degree or equivalent, unspecified)
- Moderating variables: Social Cohesion

Zoom In SOEP: Mental and physical health as dependent variable

- Variables MCS and PCS are available since 2002 and are provided every second year
  ▸ Data structure of MCS and PCS
- Based on the Short Form 12, which is a self-reported outcome measure assessing the impact of health on an individual's everyday life
- The Short Form 12 is measuring eight domains:



Zoom In SOEP: Social cohesion as moderator

Definition "Social Cohesion"

Social cohesion is a sociological concept, which encompasses social bonds among inhabitants of a neighborhood or even county.

- In the literature, social cohesion is usually operationalized, as perceived individual-level factors, which are subjective in nature and not as an objective small-area aggregated characteristic which would provide a measure common to those sharing a neighborhood or county.

Zoom In SOEP: Social cohesion as moderator

Examples:

- Personal perception of neighborhood (e.g. satisfaction with dwelling/area you live in)
- Security in neighborhood (e.g. frequency of leaving the door unlocked, worried about crime)
- Relationship with neighbors
- Frequency of neighbor visits

Descriptive Statistics

- We included a total of 20,626 SOEP participants
- Each for an average of 3 times
- Ranging from 1 to 6 times
- In 399 counties

Note, that...

... higher MCS and PCS scores indicate better health status.

Results: Mental Health - model without interaction

- An increase of 1% point of the baseline share of young adults is associated with a reduction of 0.22 points in MCS (95% CI [-0.32, -0.11])
- On average those exposed to **large increases in the share of seniors** have 35 MCS points more than those exposed to small reductions (= reference category) (95% CI [0.10, 0.59])
- On average those exposed to **large increases in the share of young adults** have 0.59 MCS points less than those exposed to small reductions (95% CI [-0.81, -0.37])
- On average those exposed to **large reductions in the share of young adults** have 0.27 MCS points less than those exposed to small reductions (95% CI [-0.51, -0.02])

Results: Mental Health - model with interaction

- There is an interaction effect between being exposed to a large increase in the share of seniors and perception of social cohesion relative to being exposed to a small reduction of the share
- There are no significant interactions between exposition to changes in the share of young adults and perceived social cohesion on mental health

Results: Physical Health - model without interactions

- An increase of 1% point of the baseline share of seniors is associated with a reduction of 0.06 points in PCS (95% CI [-0.12, -0.00])
- An increase of 1% point of the baseline share of young adults is associated with a reduction of 0.18 points in PCS (95% CI [-0.27, -0.08])
- No exposures to changes in the share of seniors shows a significant difference to the association with small reductions
- On average those exposed to **large reductions in the share of young adults** have 0.22 PCS points less than those exposed to small reductions (95% CI [-0.42, -0.01])

Results: Physical Health - model with interactions

- Those with an exposure to a large reduction in the share of seniors and a low perception of social cohesion have 1.5 MCS points more than those exposed to small reductions (95% CI [0.41,2.61])
  This association is significantly different for those with a high perception of social cohesion with a reduction of 0.7 MCS points compared to those exposed to small reduction

- Those exposed to a large reduction in the share of young adults and a low perception of social cohesion have 2.27 PCS points less than those exposed to small reduction
  Those exposed to a small increase have 1.65 point less and those exposed to a high increase have 1.18 points less

- Increasing social cohesion to the highest level will reduce significantly all these differences

Discussion

- First investigation of the relationship between health and exposure to demographic changes on those staying in same county and the modifying effect of perceived neighborhood social cohesion

  $\rightarrow$ It strengthens the hypothesis that perceived social cohesion is a strong determinant when considering small-area effects on health

- Perceived neighborhood social cohesion does modify the relationship between demographic changes and mental/physical health

- Demographic changes in the share of younger adults have shown the highest differentiation in these associations

Discussion

Strength: Large longitudinal sample

Limitations: Scale is too large + choice of operationalisation of variables

Future Research:

- We could look at age changes at commune level (smaller scale) but this is not relevant for large cities which are not separated into smaller units for which we need other data sources for smaller scales
- Ideally, we would like to compare county-stayers with those who moved, but the SOEP does not contain enough movers
- Need to investigate the predictors of perceived social cohesion (both individual and neighborhood level) to better understand possible causal directions

Construction of a cohort

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Optimum

Survey Year	*Person*	*County*
2002	Peter	Bielefeld
2003	Peter	Bielefeld
2004	Peter	Bielefeld
2005	Peter	Bielefeld
2006	Peter	Bielefeld
2007	Peter	Bielefeld
2008	Peter	Bielefeld

Reality

Survey Year	*Person*	*County*
2002	Peter	Bielefeld
2003	Peter	X
2004	Peter	X
2005	Peter	X
2006	Peter	Bielefeld
2007	Peter	X
2008	Peter	Bielefeld

Change (in % of the whole population) in age structure

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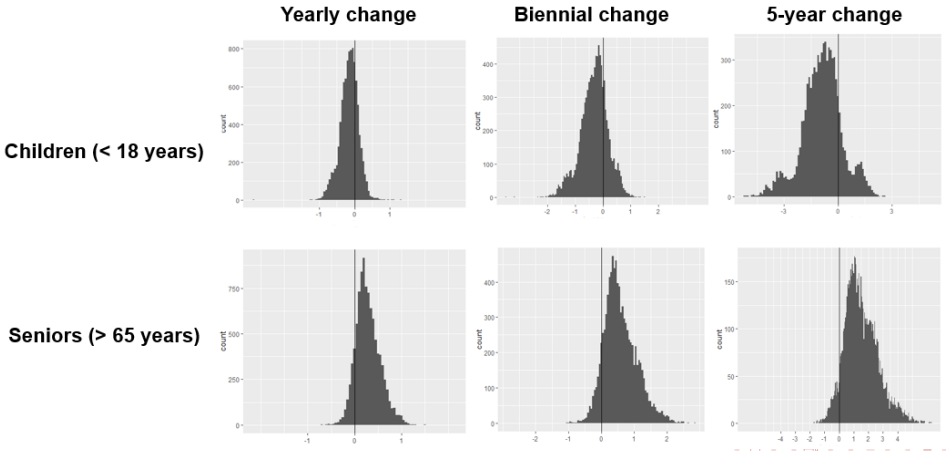

Data structure of MCS and PCS

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