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＜ Seminar ＞

Space and Health

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Introduction

Overview:

The health/wellbeing outcomes are well known to be affected by not only individual socioeconomic status, but also by the physical environment, and socioeconomic and political circumstances including “urbanization”.

This paper aims to offer an inventory of studies that have addressed the relationship between urban conditions and human health/wellbeing and to examine why the estimated effects of urbanization vary among countries or studies.

Urbanity:

The definition of urbanization varies across countries and during different periods reflecting their geographical and socio-economic differences.

Some studies follow a classification scheme from the National Census (e.g., UIC or RUCC in the U.S., ONS or ACORN in England).

Criteria of urban areas are often determined by population size, density or whether people are living in a core city or not.

Step1: Inventory

Overview of several papers addressing health inequality between urban and rural areas (99 papers):

- 29 papers: advantage of urban living for health
- 42 papers: advantage of rural living for health
- 13 papers: different results depending on health outcomes
- 5 papers: no significant differences in health outcomes between urban/rural living

6 contextual effects on health outcomes:

Housing conditions (direct/ indirect)

- Access to safe water and adequate sanitation facilities
- Structural housing characteristics (housing type, floor level, quality)

- Housing tenure (proxy of residential stability or spatial deprivation)

Environmental hazards

- The exposure to air pollution (whether living near a major road, highway, or noxious facilities)

Land use mix and spatial segregation

- Proximity to facilities (amenities, retail services, work place)
- Degree of urban sprawl (mixed land use, neighbourhood diversity, population density, automobile dependency, proximity to metropolitan area)
- The degree of walkability (residential density, street connectivity, extent of mixed land use, retail floor area ratio)
- The degree of social/racial segregation

Residential proximity to CBD

- Commuting distance, time (proximity to metropolitan area)
- Intra-area relationship (spatial autocorrelation)
- Degree of spatial (geographical)/socioeconomic isolation

Accessibility to and availability of medical services

- Time and distance from home to health care facilities [Accessibility]
- The number of physicians (GPs/specialists), health care facilities, and some related facilities (acute/chronic services, medical/nursing care services) [Availability]

Population density

- A proxy of living conditions (narrow houses, a lack of open/green spaces, traffic congestion, high exposure to pollution, lower transportation costs, accessibility to services and amenities, neighbourhood walkability, employment opportunities, and human capital accumulation)

Inconsistency in the urban/rural effects

- A series of studies have described the defects in urban/rural dichotomy (Higgs, 1999; McDade and Adair, 2001, Vlahov and Galea, 2002; Hall et al. 2006; Laditka et al., 2007; Berke et al., 2009; Peen et al., 2010)
- Inconsistency in findings may come from (1) a not-unified (inappropriate) classification scheme, and (2) an intra-regional heterogeneity.
- It is important to find a classification scheme that minimizes the heterogeneity within regions.
- Inconsistency in the results from different studies appears to be due the ambiguous definition of urbanity and an intra-regional heterogeneity (e.g., inner-city areas).

Various measures of heath status

Subjective health status

- SRH (self-rated health) scores
- LLTI (limiting long-term illness)

Objective health status

- ICD (International Classification Diseases)
- GHQ (General Health Questionnaire)
- mortality rate/life expectancy

Step 2: Meta Analysis

Study Characteristics

- We included research papers that take first 'self-rated' or 'self-reported' physical health and secondly include 'urban', 'rural', 'city residence' differences since 1999 into account.
- 12 studies that yielded altogether 221 point estimations.
- In this study, we focus on good-excellent physical health.
- Unadjusted vs adjusted estimations
- Journal impact factor as an identification factor for the quality
- The numerical attributes include the calculated standard error, OR for urban, semi-urban, semi-rural and rural, number of observation per regression, and t-values.
- The study characteristics are coded as dummy variables, and equals 1 in each regression that includes that particular attribute, 0 otherwise.
- The decision to code characteristics of each study is not an easy task
  - we coded the habits such as smoking, and alcohol consumption as one variable called "addiction"
  - social trust, social support and social capital under another dummy variable, called "social".

Meta-regression model

- We aim to investigate to what extent the variation in health outcomes between and within studies can be related to the study characteristics.
- If we assume that the true effect size varies from one study to the other, a random effect meta-regression model is applicable.

$$\hat{\alpha}_{1ij} = \mathbf{x}_{ij}\boldsymbol{\gamma}_{\alpha} + u_{\alpha ij} + \varepsilon_{\alpha ij}$$

- If we assume that there is no variation between the studies, then we use the FE meta-regression.
  - weighted least square (WLS) with the weights of variables equal1/(α_{ij}).
  - The standard errors of the regression are to be adjusted with the cluster of observations defined by 12 studies.

Research Conclusion:

- A meta-analysis approach is one of the effective methods for estimating the effect size across countries/studies.
- There is also ambiguity regarding the direction of the relationship.
- Further research on direction and statistical significance of empirical estimated of self-rated/reported health.

General Conclusions

- Human health/wellbeing is increasingly assuming a high position on the needs ladder of people. Following Maslow's hierarchical principle, safety, shelter, health and welfare are basic constituents of the satisfaction of

human beings. In real-world geographical space, these factors are of course intermingled, since the place where one lives may have specific environmental, social and economic conditions that shape the health outcomes of individuals or a community. It goes without saying that a thorough analysis of these complex relationships calls for a detailed individually-based and longitudinal health database, collected from different places.

- Clearly, the supply side of health care amenities may also be essential for the human health outcomes. This does not only concern the type and quality of such medical facilities, but also their location and accessibility (including opening hours). And last but not least, the interface between demand for and supply of health care systems is a major research challenge due to the multi-causal nature of these relationships.
- Our final conclusion is that for a thorough understanding of the urban aspects of human health much more conceptual and empirical work is necessary. For the sustainability research including tourism, the explicit inclusion of human health/wellbeing – as part of a broader package of welfare and sustainability constituents – will no doubt lead to a more mature tourism science.