Situating Time in Space



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Background

Disadvantages related to the availability of time ought to be considered in a spatio-temporal context, as these affect broader notions of individual and community well-being at the local level.

Detailed and systematic identification of distinct time use patterns across space is unavailable for researchers studying residential segregation.

Why spatial?

• Time scarcity is reflective of local factors, and is distributed spatially (e.g. commute time from and to work).

- Interplay between physical, social, and economic features of "extralocal" areas:
 - Physical: distance, topography, pollution, etc.
 - Social: crime, residential segregation.
 - Economic: commercial zones, urban infrastructure.

Research Questions

1. What does time scarcity look like in neighborhoods with diverse ethnic populations in different parts of the USA?

2. How does ethnic segregation, along with local economic and environmental conditions, affect the likelihood of experiencing time scarcity and poor health?

Data & Measures

- 1. American Time Use Survey (ATUS) 2006-2016.
- 2. 2010 US Census county & census tract TIGER shape files assembled by the National Historic Geographic Information System (NHGIS).

<u>Discretionary time (DT)</u> is defined here as the time spent on leisure, religious activities, sports and recreation.

Lack of discretionary time is one of many indicators of time scarcity.

Method

• Spatial analysis: project county-level rates of time scarcity to local neighborhoods.

• Non-spatial analysis: follow up with prediction of discretionary time availability using multivariate OLS regressions by metropolitan region, with sociodemographic and economic covariates.

Spatial distribution of discretionary time





Differences in spatial distribution of discretionary time by ethnicity

New York City



Fraction of day spent on discretionary activities

Miami

0.20

t-test: p < 0.000;

difference in min/day = 54

Hispanic

0.25

Non-Hispanic

0.30

New York City



2014 ACS census tract attributes[†]

Non-Hispanic: 56.7% 43.3%

Foreign-born: 26.2% Median age: 41.2 y.o

Median HH income: \$70,453 - ≈\$130,000 Median home value: \$1,000,001

Modal work commute time: 30 to 59 minutes

2014 ACS census tract attributes[†]

Non-Hispanic: 91.5% 8.5%

Foreign-born: 57.1%Median age: 42 y.o

Median HH income: \$50,433 Median home value: \$423,000

Modal work commute time: 30 to 59 minutes

Miami



OLS: New York City

- Asians maintain consistent discretionary time disadvantage of around 50 minutes per day.
- Net of the household structure and occupational effects, good health allows for longer working hours.
- Women tend have an hour less per day to spend on discretionary activities.

OLS: Miami

• The Hispanic population is significantly more time poor, relative to non-Hispanic white.

 Being in good health is predictive of less discretionary time, unless in comparable occupational categories.

Women are systematically disadvantaged, with 50 minutes less per day to spend on discretionary activities.

Conclusions

- The spatial distribution of relative time scarcity is quite unequal. This merits further investigation incorporating various measures of residential segregation.
- The difference in the availability of discretionary time between non-Hispanics and Hispanics across the 3 regions ranges from 25-55 minutes per day.
- However, Hispanic ethnicity does not always significantly predict discretionary time disadvantage. Spatially, Hispanics gain slight advantage over the non-Hispanic population in some higher income urban neighborhoods, generally where the former are present in higher ratio to the latter.

Directions for future work

• The method is scalable and adaptive to any country or locality with similar time use data and population attributes for small administrative divisions (e.g. counties or municipalities).

• Further test spatial output in line with conventional analyses for cross-validation.

Thank You!

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