Spatially concentrated social capital of urban residents
Ádám József Kovács, Sándor Juhász, Eszter Bokányi, Balázs Lengyel
Social capital and social networks

Social Capital in the Creation of Human Capital

James S. Coleman
University of Chicago

In this paper, the concept of social capital is introduced and illustrated, its forms are described, the social structural conditions under which it arises are examined, and it is used in an analysis of dropouts from high school. Use of the concept of social capital is part of a general theoretical strategy discussed in the paper: taking rational action as a starting point but rejecting the extreme individualistic premises that often accompany it. The conception of social capital as a resource for action is one way of introducing social structure into the rational action paradigm. Three forms of social capital are examined: obligations and expectations, information channels, and social norms. The role of closure in the social structure in facilitating the first and third of these forms of social capital is described. An analysis of the effect of the lack of social capital available to high school sophomores on dropping out of school before graduation is carried out. The effect of social capital within the family and in the community outside the family is examined.

There are two broad intellectual streams in the description and explanation of social action. One, characteristic of the work of most sociologists, sees the actor as socialized and action as governed by social norms, rules, and obligations. The principal virtues of this intellectual stream lie in its ability to describe action in social context and to explain the way action is shaped, constrained, and redirected by the social context.

The other intellectual stream, characteristic of the work of most economists, sees the actor as having goals independently arrived at, as acting independently, and as wholly self-interested. Its principal virtue lies in
Social capital and social networks

Geographic constraints
Social capital and social networks

Geographic constraints

Socio-economic dimension

Bailey et al. (2020) JUE
Micro-geography of individual social capital in cities correlate with the income of residence?
Can we explain how relatedness of technologies evolves over time? Our new paper in Papers in Regional Science with @TBroekel and @rboschma identifies the drivers behind the widely used concept of relatedness rsaiconnect.onlinelibrary.wiley.com/doi/full/10.11...

Quick thread 1/3

Explaining the dynamics of relatedness: The role of co-lo...
Relatedness has become a key concept for studying the diversification of firms, regions and countries. However, ...

rsaiconnect.onlinelibrary.wiley.com
Data

1% of all tweets and at least 200 tweet of selected users daily

Focus on users with frequent geolocated tweets

Overall more than 80,000 observations from the top 50 metros in the US
Key measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Full graph</th>
<th>Income &lt; median</th>
<th>Income &gt; median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree in 10 km</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Share of ties in 1 km</td>
<td>0.125</td>
<td>0.25</td>
<td>0</td>
</tr>
<tr>
<td>Share of ties in 5 km</td>
<td>0.375</td>
<td>0.25</td>
<td>0.5</td>
</tr>
<tr>
<td>Share of ties in 10 km</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Clustering in 1 km</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clustering in 5 km</td>
<td>0.333</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Clustering in 10 km</td>
<td>0.143</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Support in 1 km</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Support in 5 km</td>
<td>0.667</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Support in 10 km</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

\[
S_{of,r} = \frac{d_r}{D}
\]

\[
c_{r} = \frac{2L_i}{k_i(k_i-1)}
\]

\[
Sup_{r} = \frac{\left| \{ j \in N_i(g) : [g^2]_{ij} > 0 \} \right|}{d_r}
\]
Spatial concentration of social ties

- **Graph a**: Cumulative share of friends as a function of distance from home (km) for two income groups: Home income < median (gray) and Home income > median (blue).
- **Graph b**: Share of friends at different distances from home (km) for the same income groups.
- **Graph c**: Spatial density (friends/km²) at different distances from home (km) for the same income groups.
Social capital related measures within 10 km

- **Graph a**: AVG Share of friends
- **Graph b**: AVG Clustering
- **Graph c**: AVG Tie support

- **Legend**:
  - Grey: Home income < median
  - Blue: Home income > median

**Distance from home**
- 1 km
- 5 km
- 10 km
Social capital concentration in the top 50 US metro areas

Share of friends
Clustering
Supported ties
Generalisation to continuous income

<table>
<thead>
<tr>
<th></th>
<th>In 10 km from home location</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Share of friends (1)</td>
<td>Clustering (2)</td>
<td>Tie support (3)</td>
<td></td>
</tr>
<tr>
<td>Home income (log)</td>
<td>−0.106***</td>
<td>−0.031***</td>
<td>−0.075***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.003)</td>
<td>(0.006)</td>
<td></td>
</tr>
<tr>
<td>Home population (log)</td>
<td>−0.057***</td>
<td>0.013***</td>
<td>0.061***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.003)</td>
<td>(0.006)</td>
<td></td>
</tr>
<tr>
<td>Degree</td>
<td>−0.001***</td>
<td>−0.001***</td>
<td>0.002***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0001)</td>
<td>(0.00004)</td>
<td>(0.0001)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.042***</td>
<td>0.242***</td>
<td>0.638***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.024)</td>
<td>(0.017)</td>
<td>(0.033)</td>
<td></td>
</tr>
<tr>
<td>Metro FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>86,177</td>
<td>74,900</td>
<td>74,900</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.055</td>
<td>0.039</td>
<td>0.027</td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.054</td>
<td>0.038</td>
<td>0.026</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* *p<0.1; **p<0.05; ***p<0.01
Homophily in social capital related measures

a) AVG Share of friends

b) AVG Clustering

c) AVG Tie support

- **Income < Median**
  - Friends < Median: 27%, Friends > Median: 13%
  - EGO < Median: 9%, EGO > Median: 24%

- **Income > Median**
  - Friends < Median: 59%, Friends > Median: 41%
  - EGO < Median: 29%, EGO > Median: 59%
Discussion

We map social capital in urban space through online social media data

Individual level social network features related to social capital show high spatial concentration inside cities

This pattern is stronger for people from lower income neighborhoods

This may foster feedback loops of segregation and income inequality in cities encoded in the social networks
Discussion

We map social capital in urban space through online social media data.

**Individual level social network features related to social capital show high spatial concentration inside cities.**

This pattern is stronger for people from lower income neighborhoods.

This may foster feedback loops of segregation and income inequality in cities encoded in the social networks.
Discussion

We map social capital in urban space through online social media data.

Individual level social network features related to social capital show high spatial concentration inside cities.

This pattern is stronger for people from lower income neighborhoods.

This may foster feedback loops of segregation and income inequality in cities encoded in the social networks.
Discussion

We map social capital in urban space through online social media data.

Individual level social network features related to social capital show high spatial concentration inside cities.

This pattern is stronger for people from lower income neighborhoods.

This may foster feedback loops of segregation and income inequality in cities encoded in the social networks.
Thank you for your attention!

Co-authors:

Twitter: @kovaad99
@sandor_juhasz
@bokanyie
@blengyelb

Arxiv: https://arxiv.org/abs/2107.13474
Github: https://github.com/sandorjuhasz/ties-around-home
ANET Lab: https://anet.krtk.mta.hu/ or @anetilabs

