Social Connectedness Index
Introduction

- **Data challenge:** Measuring social connectedness at scale
- **Our Agenda:** Use data from online social networks such as Facebook
- **Remaining Challenge:** Connect data from online social networks with information on social or economic activity
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  - **Approach 1:** Combine with other data at individual level
    - Bailey, Cao, Kuchler, Stroebel (2018, JPE): Housing Markets
    - Bailey, Davila, Kuchler, Stroebel (2019, REStud): Mortgage Choice
    - Bailey, Johnston, Kuchler, Stroebel, Wong (2019): Cell-phone adoption
    - With Chetty, Hendren, Jackson: Social mobility
    - BUT: Limited outcome variables, not scalable.
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• **Approach 2:** Aggregate networks to a geographic level where we can measure economic activity and socio-economic outcomes.
Introducing the “Social Connectedness Index” (SCI)

- Underlying data: Anonymized Facebook social graph
  - Facebook a platform to maintain a profile and communicate with friends.
  - 2.4 billion active users globally; 243 million in U.S. & Canada
  - Friendship links require approval of both sides
  - In U.S., mainly real-world friends; 90% of Facebook friends have met more than once in real life (Jones et al., 2013).
Definition: Social Connectedness Index

- Normalized number of friendship links between U.S. counties:
  \[
  \text{Social Connectedness}_{i,j} = \frac{\text{Friendship Links}_{i,j}}{\text{FB Users}_i \times \text{FB Users}_j}.
  \]

- Captures relative probability of friendship between Facebook users in location \(i\) and \(j\)

- Independent of differences in population or users in each location
“Social Connectedness Index” (SCI)

- SCI available at various levels of geographic aggregation:
  - U.S. Counties
  - US Zip codes
  - Countries
  - Subnational regions: NUTS2, NUTS3 in EU, GADM1 internationally

- Data available at:
  - https://dataforgood.fb.com/tools/social-connectedness-index/
Social Connectedness of U.S. Counties
San Francisco County, CA

Data Source: Bailey, Cao, Kuchler, Stroebel, and Wong (2018, JEP)
Kern County, CA (Bakersfield)

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Data Source: Bailey, Cao, Kuchler, Stroebel, and Wong (2018, JEP)
Cook County, IL (Chicago)

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Data Source: Bailey, Cao, Kuchler, Stroebel, and Wong (2018, JEP)
Menominee County, WI

Data Source: Bailey, Cao, Kuchler, Stroebel, and Wong (2018, JEP)
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Data Source: Bailey, Cao, Kuchler, Stroebel, and Wong (2018, JEP)
Erie County, NY (Buffalo)

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Geographic dispersion of social networks
International Social Connectedness
International Social Connectedness

- Social Connectedness of US counties/ ZIP codes to international countries
- Country to country connections
- Social Connectedness of international regions (NUTS2, NUTS3, GADM)
Social Connectedness to Mexico

Data Source: Bailey, Cao, Kuchler, Stroebel, and Wong (2018, JEP)
Social Connectedness to Norway

Data Source: Bailey, Cao, Kuchler, Stroebel, and Wong (2018, JEP)
International Social Connectedness
Portugal
International Social Connectedness
Italy - Bolzano
International Social Connectedness

Italy - Trento
Determinants of Social Connecteness

- Geography

- Homophily: More similar → more connected
  - Demographics (income, education, political orientation, religion, ethnicity)
  - Language

- History
  - Migration
  - Colonial history
  - Historical borders
Research Using Social Connectedness Index
• Paper defines and introduces the SCI

• Explores patterns at the U.S. County Level

• Documents that social connectedness is correlated with
  • County-County Migration Flows
  • Patent citations
  • State-level trade flows

• Explores geographic concentration of networks vs. socio-economic outcomes
Bailey, Farrell, Kuchler, Stroebel, 2020, JUE
Social Connectedness in Urban Areas

• Explores patterns of social connectedness across NYC zip codes

• Documents that social connectedness varies substantially more with public transit infrastructure than with geographic distance
  • Social interactions central to agglomeration externalities
  • Highlights important value of public transit infrastructure
  • Public transit particularly important to provide social connections between areas of different incomes.

• Social connectedness also correlated with economic flows such as commuting
  • Suggestive that social networks can help with finding jobs
• Explores patterns of social connectedness in Europe

• Long-lasting effects of politial unions
  • Regions that were part of Austro-Hungarian Empire still more connected today, conditional on today’s borders and other controls

• Social connectedness to other European Counties associated with decline in Euroscepticism
• Explores patterns of social connectedness across the world

• Documents that trade flows strongly declining in social connectedness
  • Substantially reduces the importance of geographic distance
  • More important for countries with weak rule of law (social connections = substitute for formal contract enforcement)
  • More important for more sophisticated products (social connections = source of information)
  • Does not seem to be result of reverse causality

• Asset flows also increasing in social connectedness, in particular for information sensitive equity
Investors are more likely to invest in firms from regions that are socially connected to the location of the fund.

- Social connectedness matters more for smaller + informationally opaque firms.

Equilibrium asset market outcomes:
- Social Proximity to Capital: Social connections to high-AUM regions
- $\uparrow\text{SPC} \rightarrow \uparrow\text{Firm Valuation, } \uparrow\text{Firm liquidity}$

Performance of institutional investors is unaffected (not info-based).
Other research papers

- **Wilson (2020):** Studies how adoptions of EITC claiming behavior spreads through social networks
- **Ratnadiwakara (2020):** Shows how exposure to regions hit by Hurricanes purchase more flood insurance
- **Kuchler et al (2020):** Shows that COVID-19 spreads along social networks as measured by Facebook
- **Rehbein and Rother (2020):** Bank lending increasing in social connectedness
- Many other papers and works in progress
https://dataforgood.fb.com/tools/social-connectedness-index/