

# Bowling Leagues and Facebook Friends: Rethinking Social Capital in the Digital Age

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# 1 Background & Motivation

## 2 Data & Methods

## 3 Results

## 4 Discussion & Conclusion



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# Social Capital: Competing Perspectives

## Putnam, 2000

"...a variety of social, economic, and technological changes have **rendered obsolete a significant stock of America's social capital**. Television, two-career families, suburban sprawl, generational changes in values – these and other changes in American society have meant that fewer and fewer of us find that... even a Sunday picnic with friends fits the way we have come to live."

## Rupasingha & Goetz, 2006

"A shortcoming of the social capital concept has been the **lack of consensus on how it can be measured**, largely due to the complexity of the concept."

## Chetty et al., 2022

"...a **lack of large-scale data** on social networks has limited the ability of researchers to understand what types of social capital matter for such outcomes and how we can increase effective forms of social capital."

## Halstead & Deller, 2022

"Social capital has become a cornerstone to community development. Unfortunately, its scope of research, particularly on policy, **creates more smoke than light**."

## Blair & Carroll, 2009

"...social relationships and networks **shape local economies**."

# Why Rethink Social Capital?

- Evolving patterns of interaction require updated frameworks to capture both in-person and online ties
- **Traditional** measures (e.g., civic groups, voter turnout) are intuitive but may not reflect modern social life
- **Digital** networks (e.g., Facebook friendships) offer new ways to quantify connectedness
- Relying on a single metric risks overlooking critical forms of community connectedness; inclusive community development relies on understanding both forms to address economic and social disparities



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# Research Questions

- How does traditional social capital differ over time and across regional and rural-urban boundaries? How do *digital* measures of social capital vary geographically?
- To what extent are social capital measures based on institutional and organizational data statistically correlated with those derived from online social network data?
- Which measure of social capital (i.e., traditional vs. digital) better explains regional economic outcomes such as population growth, income changes, and employment trends?



# So what?!? Why should we care?

- U.S. social capital is evolving—are our measures keeping up?
- To our knowledge, no one has checked to see whether **digital** measures of social capital align with (i.e., substitute for) **traditional** measures of social capital.
- If they are different from one another, it's important to know *how*: which economic outcomes/behaviors are they correlated with?
- Policy and development strategies depend on accurate measurement. If we measure social connectedness incorrectly, then we will formulate improper community development solutions/remedies.



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# Two Indices: Traditional Social Capital

Dimension	Description (from <a href="#">Rupasingha et al., 2006</a> )	Source	
		<i>Rupasingha Study</i>	<i>This Study</i>
Associational Density	Number of civic, religious, business, political, professional, labor, and recreational establishments per capita	County Business Patterns	NETS ( <a href="#">Walls, 2022</a> )
Electoral Participation	Voter turnout in presidential elections (percentage of eligible voters)	Leip's Atlas of U.S. Presidential Elections	<a href="#">MIT Election Data and Science Lab (2018)</a>
Civic Engagement	County-level response rates to the U.S. Census (percentage responding)	U.S. Census	U.S. Census (compiled by <a href="#">Kiper, 2020</a> )
Nonprofit Capacity	Density of tax-exempt organizations excluding those with international scope	National Center for Charitable Statistics	<a href="#">Urban Institute (2025)</a> NCCS Data Catalog



# Two Indices: Digital Social Capital

Dimension	Description (from <a href="#">Chetty et al., 2022b</a> )
Economic Connectedness	How often people from different income levels are friends with each other on Facebook (essentially whether rich and poor residents know each other personally)
Social Cohesiveness	How tightly knit local social networks are, based on whether friends also know each other and whether people's friendships stay within the county rather than spanning long distances
Civic Engagement	How actively residents participate in community groups and causes online, measured through Facebook volunteering groups and local civic organization pages



# Research Design & Approach

- **Exploratory Analysis:**

- *Temporal trends:* Track changes in TSC from 2002, 2012, and 2022 to identify national and regional shifts over time.
- *Spatial patterns:* Map the geographic distribution of TSC (all years) and DSC (2022) to reveal regional, urban-rural, and division-level differences.

- **Correlation Analysis:**

- *Scatterplot & basic correlation:* Calculate Pearson's  $r$  between TSC and DSC for 2022; visualize with scatterplots to assess the strength and direction of association.
- *Spatial autocorrelation:* Use Moran's  $I$  and Getis-Ord  $G_i^*$  statistics to detect clustering and spatial dependence in both TSC and DSC measures.

- **Regression Analysis:**

- *OLS:* Estimate models linking TSC and DSC to county-level population, income, and employment growth, controlling for demographics and region.
- *Spatial regression:* Apply spatial autoregressive combined (SAC) models to account for spatial dependence and validate robustness of OLS findings.

- **Traditional Social Capital (TSC):** 2002, 2012, 2022
- **Digital Social Capital (DSC):** 2022 only
- **Economic outcomes:** annualized growth rates (2017–2022) for population, employment, and per-capita income
- **Controls:** population density, education, unemployment, industry diversity, region
- **Geographic unit:** everything is at the county level



# Empirical Model

$$Y_i = \alpha + \beta_1 \text{TSC}_i + \delta \mathbf{X}_i + \epsilon_i \quad (1)$$

$$Y_i = \alpha + \beta_2 \text{DSC}_i + \delta \mathbf{X}_i + \epsilon_i \quad (2)$$

$$Y_i = \alpha + \beta_1 \text{TSC}_i + \beta_2 \text{DSC}_i + \delta \mathbf{X}_i + \epsilon_i \quad (3)$$

- $Y_i$ : economic outcome for county  $i$
- $\text{TSC}_i$ : traditional social capital index
- $\text{DSC}_i$ : digital social capital index
- $\mathbf{X}_i$ : controls (demographics, region, economic diversity, etc.)





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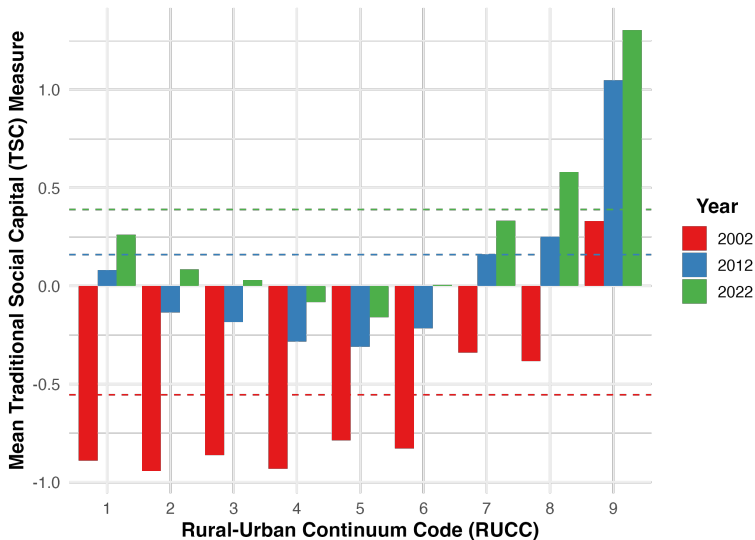


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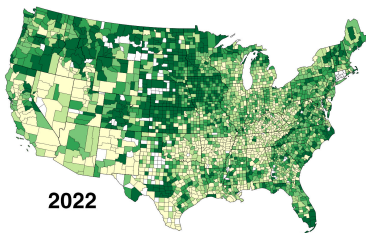
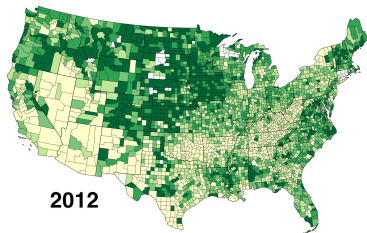
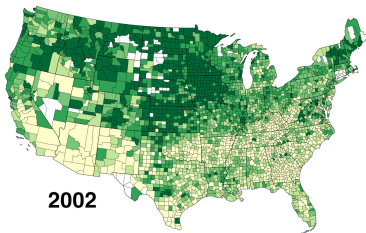
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# Temporal Trends

TSC increased nationwide from 2002–2022; highest in rural areas.



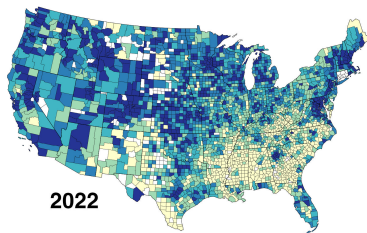
# Geographic Patterns: Distinct Spatial Distributions



TSC Index Quintile



1 2 3 4 5

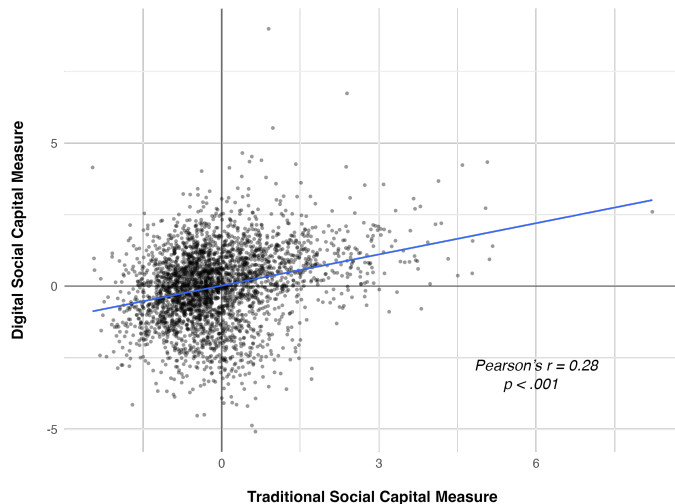


DSC Index Quintile



1 2 3 4 5

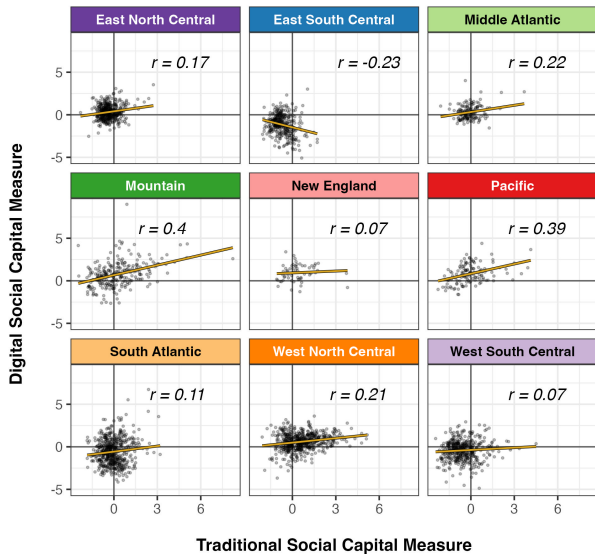
# Bivariate Correlation – Nationwide



- TSC and DSC are only weakly correlated ( $r = 0.28$  nationally).

# Bivariate Correlation – Regional

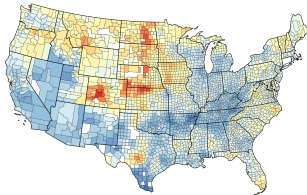
Varies widely, is negative in one census division



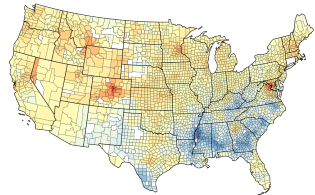
# Spatial Autocorrelation

Moran's I Statistic: TSC = 0.435, DSC = 0.598

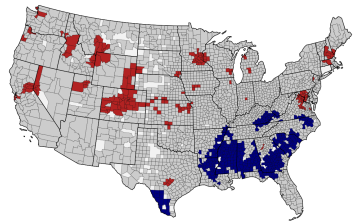
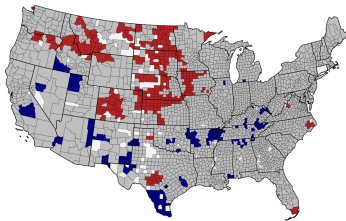
Traditional Social Capital Measure



Digital Social Capital Measure



Local Gi\* Statistic



Hotspot Type

● High cluster ● Low cluster ● Not significant

# Regression Results

	Employment	Population	Income
Traditional Social Capital	▼	▼	▲
Digital Social Capital	▲	▲	▼

▲: Statistically significant positive effect ( $p < 0.05$ )

▼: Statistically significant negative effect ( $p < 0.05$ )

- Used Spatial Autoregressive Combined (SAC) model to account for spatial dependence
- Despite some attenuation of effect sizes, core findings still hold



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# Findings

## What Did We Find?

- Traditional and digital social capital capture complementary, not substitutable, forms of connectedness.
- Contrary to Putnam, TSC increased from 2002–12 and 2012–22
- Each measure of social capital varies geographically and interacts in opposing directions with local economic outcomes

## How Might We Explain This?

- TSC and DSC are not mutually exclusive, but they reflect fundamentally different modes of connection. TSC is rooted in established, place-based institutions, while DSC is built on virtual ties and online platforms that transcend local boundaries.
- Rural areas retain strong institutional networks; urban areas excel in digital connectivity.
- Increases in TSC are perhaps due to societal challenges (e.g., recessions/pandemics) spurring a renewed sense of community and collective action, leading people to re-engage in traditional forms of civic life

# Implications for Policy & Practice

- Effective community development needs both traditional and digital social capital to capture the full spectrum of local social ties
- Rather than applying a one-size-fits-all approach, tailor policies & efforts to the “flavor” of social capital in each community:
  - **Retaining population/local business:** Strong TSC → use civic groups/events; strong DSC → use online platforms to mobilize and connect
  - **Crisis response:** High TSC → mobilize via local networks; high DSC → coordinate relief online
- Understanding which type of social capital is strong in a given place ensures that development strategies, funding, and interventions actually match local realities, maximizing impact & avoiding wasted resources



# Thank You!

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