Social Capital Manifestations in Illinois Counties: An Empirical Assessment

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Abstract

Social capital refers to acts of cooperation between two or more individuals or groups. While cultural capital is embodied in persons, social capital exists in relations among persons. The economic benefit of social capital is its ability to reduce transaction costs associated with formal coordination mechanisms such as contracts. This paper shows that communities in which people find it easier to co-operate will have higher levels of social capital than communities where collaboration is more difficult. Steps that counties can take to enhance social capital in their region are outlined, but policymakers should recognize that social capital is often a byproduct of religion and other factors that are beyond their control. A software is provided for sustainability researchers and practitioners to estimate community capital for each of the 102 Illinois counties.

Keywords: Illinois, Social Capital, Software, Sustainability.

1.0. Introduction

This paper highlights how Illinois residents collaborate with others outside their households to expand capabilities for wellbeing. The focus is on collaboration in the third sector[2], the civil society[3] (World Bank, 1998). An extensional definition[4] of civil society is voluntary associations. Persons support these associations by donating time and money to pursue certain interests and shared values (Corry, 2010). Figure 1 shows how large the third sector's volunteer population (volunteer land) is compared to the nations of the world.

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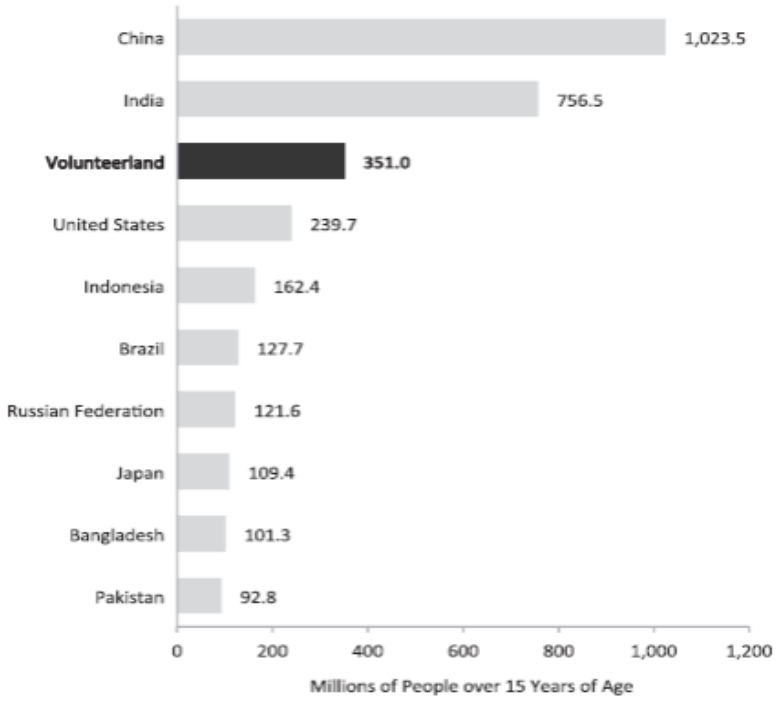
[2] It comes after government and commerce, hence the label 'third sector'.

[3] Civil society refers to a wide array of organizations: community groups, non-governmental organizations (NGOs), labor unions, indigenous groups, charitable organizations, faith-based organizations, professional associations, and foundations.

[4] Extensional definition "points out" the object of a set.

Figure 1: Volunteer Population versus Adult Population of Selected Countries[5]



Social capital refers to acts of cooperation between two or more individuals (OECD, 2001[6]). Volunteering is a consequence of social capital[7] hence the title of this paper "Manifestations of Social Capital …".

The origins of social capital can be seen in the writings of Alexis de Tocqueville in *Democracy in America* (https://en.wikipedia.org/wiki/Democracy_in_America). According to Tocqueville, modern democracy promotes excessive individualism, people tend to focus only on their private life. People combat this tendency by forming voluntary associations to engage in public affairs.

Poortinga (2012) contends that there are three forms of social capital: *bonding social capital* brings together homogenous groups (for example, ethnicity); *bridging social capital* supports collaboration among different groups; and *linking social capital* makes it easier for groups (people) to connect with the region's powerbase such as federal,

[5] Adopted from various BLS reports on volunteers.
[6] The definition of social capital is: networks together with shared norms, values and understandings that facilitate cooperation within or among groups (OECD, 2001, p. 41).
[7] It is differentiated from cultural capital, cultural capital is embodied in persons whereas social capital exists in relations among persons.

state, and local lawmakers. Note that a community may have a strong bonding social capital, but weak bridging social capital. Furthermore, some groups of citizens can be disadvantaged in interactions with the region's education, health, and justice systems (linking social capital). How does social capital benefit people economically and thus enhance their wellbeing?

One of the salient economic benefits of social capital is to reduce the transaction costs associated with formal coordination mechanisms such as contracts. There is evidence that high-tech R&D is often dependent on the informal exchanges of intellectual property rights, formal exchange would slow down the speed of transfer (see for example, Athiyaman and Parkan, 2008; Saxenian, 1994)[8]. This type of reasoning gives rise to the proposition:

> Communities in which people find it easier to co-operate will have higher levels of social capital than communities where collaboration is more difficult (Woolcock, 1998).

In the following pages we test this proposition using Illinois counties as the unit of analysis. The next section reviews common operational definitions of social capital and suggests two new metrics[9], one based on the American Time Use Survey (ATUS) data and another based on social media data.

2.0. Measuring Social Capital

Most measures of social capital involve a census of groups (for example, the American Association of the Retired People (AARP), Buddhists) and group membership (for example, AARP has 38 million members and there are 75 Buddhists temples in Illinois). Putnam (2005) is an example of this approach, his research is a census of sports clubs, bowling leagues, etc. A major criticism of this approach is that it doesn't account for the internal cohesiveness of the groups. For example, AARP members contribute yearly dues and receive a newsletter, but have little or no reason to cooperate with another member on any issue[10].

To overcome the deficiency(s) in the census measures of social capital, surveys have been used to gather information on residents' civic engagement and propensities to cooperate with others (Figure 2). The problem with the survey approach is the absence of consistent data for many geographical areas including metro and non-metro counties.

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[8] Social capital also contains negative externalities (see for example, Dasgupta, 2005). An example would be the Mafia, the members trust and cooperate with each other often at the expense of the larger society in which they are embedded. This does not disqualify social capital as a form of "capital"; note that physical capital can also take negative forms such as weapons of mass destruction.

[9] As far as the author is aware, little or no published research has made use of these approaches to measure social capital.

[10] The members may cooperate on issues like pensions, but they may not play an active role in co-operating with other members on most issues; AARP is just a 'membership' organization.

Figure 2: Example of Survey Measures of Social Capital

Q22D: Worked with others to change community

Question: Have you, yourself, done any of the following in the last 12 months? Have you worked with other residents to make change in the local community?

Value	Label	Unweighted Frequency	%
1	Yes	6413	31.6 %
2	No	8940	44.1 %
	Missing Data		
-2	Blank	4918	24.3 %
8	Don't know	0	0.0 %
9	Refused	0	0.0 %
	Total	20,271	100%

Based upon 15,353 valid cases out of 20,271 total cases.

Source: Gallup International, Inc. Soul of the Community [in 26 Knight Foundation Communities in the United States], 2008-2010. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2016-05-26. https://doi.org/10.3886/ICPSR35532.v2

A third possible way for measuring social capital in counties is to use tweets to calibrate a Twitter Social-Capital Index (TSCI). For each Illinois' state legislature with a Twitter[11] address, we can compute the index as follows:

$$TCSI = ln\frac{1+\|SC_t\|}{1+\|T_t\|},$$

where SC_t is the number of tweets related to social capital topics such as volunteer and charity at time t; T_t is the total number of tweets by the congressman at time t. For congressmen without a Twitter account: 20% of Illinois State legislators do not have a publicly listed Twitter address, we can use polarity or sentiment scores for the conjoined keywords 'county name and volunteer'.

In polarity classification, tweets are analyzed for positive, neutral, and negative sentiments (Pak., and Paroubek, 2010). The Tweepy Python library can be used to access the Tweets[12]. The TextBlob implementation of sentiment analysis can be used, a Python library for processing textual data[13]. The Lexicon-based technique works on

[11] Twitter is a social network and microblogging service launched in 2006 which accepts users' posts (Tweets) of up to 280 characters. Registered users of the service can post Tweets. In the last quarter of 2018 Twitter averaged 321 million monthly active users[11]. Research suggests that majority of tweets are informational (Barrelet, Kuzulugil, and Bener, 2016; Sadadi et al 2018).

[12] http://docs.tweepy.org/en/3.7.0/

[13] https://textblob.readthedocs.io/en/dev/

the assumption that sentiment expressed by a tweet can be identified by the polarities of the lexical units that compose it.

Each word in the lexicon has scores for:

- ⇨ Polarity: negative versus positive (minus 1.0 => plus 1.0);
- ⇨ Subjectivity: objective versus subjective (plus 0.0 => plus 1.0)
- ⇨ Intensity: modifies next word (assign a weight of 0.5 => weight of 2.0).

To illustrate, for a single word "great" the polarity is 0.8 (positive sentiment) and subjectivity is 0.75 (mostly opinion and not factual). For a string of words the algorithm averages the polarity scores and returns it as a sentiment score in the range of 0% to 100%.

Yet another approach to measuring social capital is to use residents' time-use choice data from the ATUS (2017). Specifically, ATUS measures of time spent on socializing and communicating with others (category code 120101[14]), serving at voluntary events (category code 150402), and civic obligations and participations (category code 100201) can be used to indicate social capital.

We start our assessment of social capital at the county level using the ATUS data. Then, we use Twitter data to explore the proposition that 'communities in which people find it easier to co-operate will have higher levels of social capital than communities where collaboration is more difficult'[15].

3.0. Results and Discussion

Of the 4.8mil households in the State, the majority (76%) are white. However, only the minorities spend more time fulfilling civic duties or obligations and socializing and communicating with others. The monetary value of civic duties performed by the black households is estimated at $20.7 million or $31 per household, per day[16] (Table 1).

[14] These are the ATUS 2003-2017 coding lexicon.

[15] The sentiments of tweets related to volunteering activities in the region are used as measures of 'people finding it easier to cooperate': if people are not enthused about civil society activities then the number and the sentiment of the tweets would reflect this unwillingness or difficulty in cooperating. The ATUS categories (100201, 120101, and 150402) are measures of social capital. The proposition will be tested using cross-tabulations and χ^2tests for independence between social capital and the ease of cooperation measures.

[16] The Illinois State minimum wage rate of $8.25 per hour was used to derive monetary values.

Table 1: Social Capital of the State of Illinois: 2012 and 2017

Ethnic Characteristics of Households	Number of Households (millions)	Per Capita Time Use for all Households (Hours per Day)		
		Civic Duties	Socializing & Communicating With Others	Serving at Voluntary Events
White				
⇨ 2017	3.658	0.63	1.63	3.67
⇨ 2012	3.659	1.08	1.83	2.68
Black				
⇨ 2017	0.665	3.78	1.80	2.25
⇨ 2012	0.661	0.27	1.98	1.98
All other races				
⇨ 2017	0.495	NA	1.90	1.97
⇨ 2012	0.453		1.72	1.08
ACGR[17], 2012-2017				
⇨ White HHs	-0.01%	-11%	-2%	6%
⇨ Black HHs	0.10%	53%	-2%	3%
⇨ Other HHs	1.78%	NA	2%	12%
Monetary Value				
2017		$5.23	$13.47	$30.25
⇨ White HHs		$31.21	$14.85	$18.56
⇨ Black HHs		NA	$15.67	$16.22
⇨ Other HHs				

To address the question whether communities in which people find it easier to co-operate will have higher levels of social capital than communities where collaboration is more difficult, we cross-classified county data on social capital with indicators of community cooperation[18]. Table 2 shows the cross-classification. If there is independence in the attributes level of social capital and community cooperation, then a χ^2 test for 1 degree of freedom at 1 percent value should be less than or equal to 6.63.

[17] Annual compound growth rate (ACGR) was computed using the log-growth function.

[18] Sentiment analysis of tweets about the county and civil society activities were used as measures; the former to indicate 'difficulty of cooperation' and the latter as a measure of 'social capital'; also see footnote 14.

However, the calculated χ^2 for Table 2 is 101.99. Hence we reject the hypothesis of independence between the two variables. Put differently, we contend that communities in which people find it easier to co-operate will have higher levels of social capital.

Table 2: Test of Proposition about Cooperation among People and Social Capital

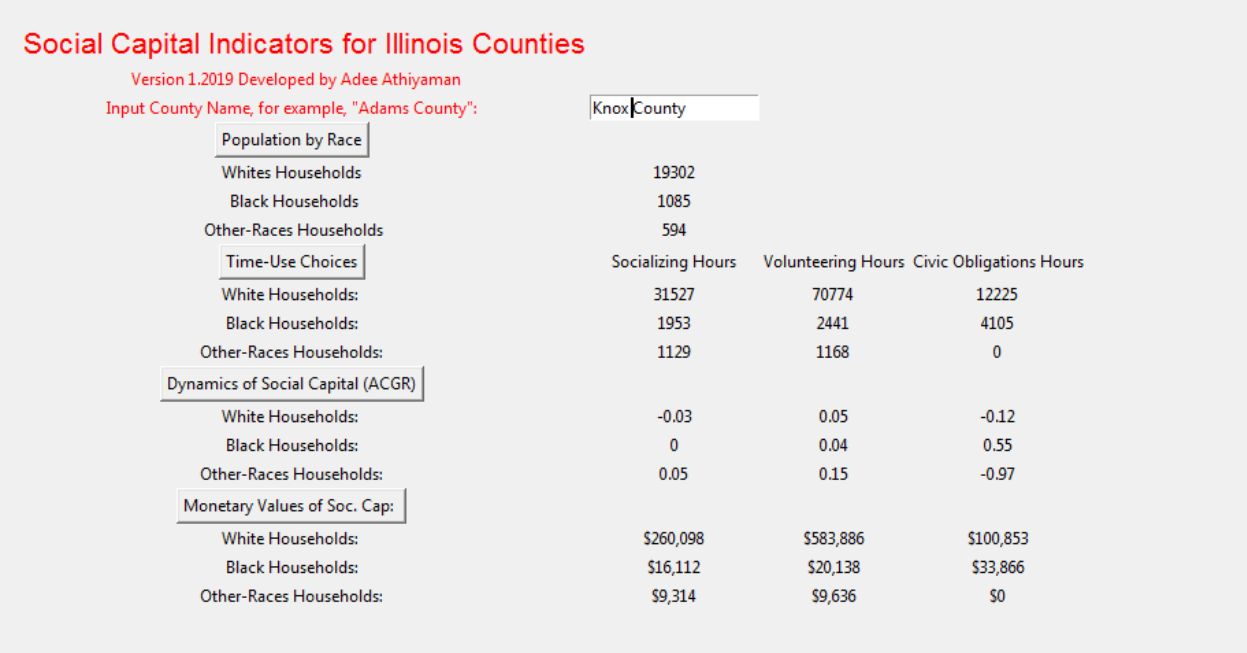
Social Capital	Level of Cooperation	
	Low	**High**
High	9	43
Low	39	11

Note: Figures are number of counties; n = 102 Illinois counties.

To help counties assess their social capital, we have programmed an interactive computer application. The software labeled **SocCap** was compiled to operate with any Windows operating system.

On opening the software, the system seeks the name of the county and gives the user the option to see the region's social capital in terms of residents' time spent on three different civil sector activities, or the monetary values of these activities. In addition, the user can see gains or losses to social capital in the county. Figure 3 shows the implementation of the software for Knox County. Note the poor growth numbers for the 'households socializing and communicating' facet of the social capital.

Figure 3: SocCap Implementation for Knox County



Social Capital Indicators for Illinois Counties

Version 1.2019 Developed by Adee Athiyaman

Input County Name, for example, "Adams County": Knox County

Population by Race			
Whites Households	19302		
Black Households	1085		
Other-Races Households	594		
Time-Use Choices	**Socializing Hours**	**Volunteering Hours**	**Civic Obligations Hours**
White Households:	31527	70774	12225
Black Households:	1953	2441	4105
Other-Races Households:	1129	1168	0
Dynamics of Social Capital (ACGR)			
White Households:	-0.03	0.05	-0.12
Black Households:	0	0.04	0.55
Other-Races Households:	0.05	0.15	-0.97
Monetary Values of Soc. Cap:			
White Households:	$260,098	$583,886	$100,853
Black Households:	$16,112	$20,138	$33,866
Other-Races Households:	$9,314	$9,636	$0

Appendix 1 ranks the counties based on their social capital wealth. Most of the metro counties such as Cook and Lake enjoy the highest value. Brown County has the least social capital.

4.0. Conclusion

There are some steps that counties can take to enhance social capital in their region, but policymakers should recognize that social capital is often a byproduct of religion, tradition, and other factors that are beyond their control. Education is one area where governments have the greatest ability to generate social capital. As aptly observed by Bailey et al (2013) educational institutions not only transmit human capital, they also pass on social capital in the form of rules and norms.

Governments can also ensure that citizens are not disadvantaged in their equitable access to services from the county's capital stocks because of ethnicity or other personal characteristics[19]. One way to accomplish this would be through 'inter-culturalism', a concept which relates to efforts by public, private, and civil society institutions to facilitate interaction and dialogue among different cultural traditions (Meer et al 2016). As far as the author is aware little or no research has explored the concept at county level.

[19] Research shows that access to private and public resources in a community is much easier for people who belong to the community's dominant social group (cf. Bourdieu, 1983).

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Appendix 1: Social Capital of Illinois Counties

Geography	Monetary Value of Social Capital	Rank
Adams County, Illinois	$ 1,349,910.00	22
Alexander County, Illinois	$ 132,952.00	92
Bond County, Illinois	$ 301,824.00	72
Boone County, Illinois	$ 898,954.00	32
Brown County, Illinois	$ 100,934.00	95
Bureau County, Illinois	$ 668,603.00	41
Calhoun County, Illinois	$ 91,415.00	94
Carroll County, Illinois	$ 320,990.00	66
Cass County, Illinois	$ 251,631.00	77
Champaign County, Illinois	$ 3,971,841.00	11
Christian County, Illinois	$ 677,894.00	39
Clark County, Illinois	$ 331,903.00	58
Clay County, Illinois	$ 273,897.00	72
Clinton County, Illinois	$ 692,108.00	36
Coles County, Illinois	$ 1,028,657.00	25
Cook County, Illinois	$ 97,963,030.00	1
Crawford County, Illinois	$ 372,988.00	50
Cumberland County, Illinois	$ 208,516.00	73
DeKalb County, Illinois	$ 1,839,737.00	18
De Witt County, Illinois	$ 317,391.00	58
Douglas County, Illinois	$ 368,370.00	50
DuPage County, Illinois	$ 16,167,536.00	1
Edgar County, Illinois	$ 374,048.00	47
Edwards County, Illinois	$ 137,003.00	72
Effingham County, Illinois	$ 657,083.00	34
Fayette County, Illinois	$ 372,753.00	46
Ford County, Illinois	$ 276,874.00	60
Franklin County, Illinois	$ 797,032.00	27
Fulton County, Illinois	$ 686,883.00	31
Gallatin County, Illinois	$ 110,932.00	70
Greene County, Illinois	$ 248,186.00	59
Grundy County, Illinois	$ 928,368.00	25
Hamilton County, Illinois	$ 167,002.00	62
Hancock County, Illinois	$ 366,734.00	43
Hardin County, Illinois	$ 70,733.00	68
Henderson County, Illinois	$ 147,375.00	61
Henry County, Illinois	$ 973,006.00	24
Iroquois County, Illinois	$ 573,766.00	33

Jackson County, Illinois	$	1,194,368.00	19
Jasper County, Illinois	$	181,899.00	57
Jefferson County, Illinois	$	753,986.00	25
Jersey County, Illinois	$	432,033.00	37
Jo Daviess County, Illinois	$	476,949.00	35
Johnson County, Illinois	$	218,898.00	53
Kane County, Illinois	$	8,290,838.00	3
Kankakee County, Illinois	$	2,038,151.00	14
Kendall County, Illinois	$	1,932,582.00	14
Knox County, Illinois	$	1,033,903.00	17
Lake County, Illinois	$	11,768,544.00	1
LaSalle County, Illinois	$	2,163,710.00	12
Lawrence County, Illinois	$	303,578.00	38
Lee County, Illinois	$	654,034.00	22
Livingston County, Illinois	$	701,763.00	20
Logan County, Illinois	$	533,348.00	25
McDonough County, Illinois	$	560,882.00	23
McHenry County, Illinois	$	5,362,030.00	4
McLean County, Illinois	$	3,240,614.00	7
Macon County, Illinois	$	2,204,102.00	9
Macoupin County, Illinois	$	911,206.00	14
Madison County, Illinois	$	5,339,998.00	4
Marion County, Illinois	$	785,408.00	13
Marshall County, Illinois	$	238,598.00	35
Mason County, Illinois	$	294,450.00	30
Massac County, Illinois	$	301,326.00	28
Menard County, Illinois	$	254,669.00	31
Mercer County, Illinois	$	322,911.00	25
Monroe County, Illinois	$	646,473.00	15
Montgomery County, Illinois	$	548,642.00	16
Morgan County, Illinois	$	684,205.00	14
Moultrie County, Illinois	$	285,843.00	26
Ogle County, Illinois	$	1,012,515.00	11
Peoria County, Illinois	$	3,748,944.00	5
Perry County, Illinois	$	401,443.00	15
Piatt County, Illinois	$	322,732.00	19
Pike County, Illinois	$	324,102.00	18
Pope County, Illinois	$	80,141.00	27
Pulaski County, Illinois	$	120,726.00	23
Putnam County, Illinois	$	118,471.00	23
Randolph County, Illinois	$	591,133.00	12
Richland County, Illinois	$	314,362.00	17
Rock Island County, Illinois	$	2,966,066.00	5

St. Clair County, Illinois	$	5,464,588.00	3
Saline County, Illinois	$	486,825.00	10
Sangamon County, Illinois	$	4,203,922.00	3
Schuyler County, Illinois	$	139,962.00	16
Scott County, Illinois	$	102,845.00	17
Shelby County, Illinois	$	448,720.00	9
Stark County, Illinois	$	113,539.00	15
Stephenson County, Illinois	$	976,760.00	7
Tazewell County, Illinois	$	2,668,614.00	3
Union County, Illinois	$	325,117.00	9
Vermilion County, Illinois	$	1,583,481.00	3
Wabash County, Illinois	$	240,305.00	10
Warren County, Illinois	$	328,876.00	7
Washington County, Illinois	$	287,390.00	8
Wayne County, Illinois	$	347,591.00	6
White County, Illinois	$	299,684.00	6
Whiteside County, Illinois	$	1,141,353.00	4
Will County, Illinois	$	11,078,588.00	1
Williamson County, Illinois	$	1,320,171.00	2
Winnebago County, Illinois	$	5,693,888.00	1
Woodford County, Illinois	$	709,031.00	1