

# NAVIGATING SOCIAL CAPITAL SCHOLARSHIP



A META-REVIEW OF 9164 WEB OF SCIENCE  
SOURCES ON SOCIAL CAPITAL

MILTON FRIESEN JANUARY 2018

CARDUS



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**MILTON FRIESEN**

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## PROJECT LEAD

**MILTON FRIESEN DIRECTS THE SOCIAL CITIES PROGRAM AT CARDUS.** He has served as a municipal councillor and is completing a Ph.D. at the University of Waterloo School of Planning, focused on new ways to measure the social fabric of neighbourhoods. Milton serves on the steering committee of the Thriving Cities Project at the Institute for Advanced Studies in Culture (University of Virginia), and is a member of the Computational Social Sciences Society of the Americas as well as the Congress for the New Urbanism.

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## EXECUTIVE SUMMARY

Current academic interest in social capital is robust and extensive, ranging across dozens of disciplines from economics to geography to medicine.<sup>1</sup> The Web of Science Core Collection (WoS) contains fifty-seven million academic papers, books, conference proceedings, and citations across the social and natural sciences. Within that repository, social capital is well-represented, with more than 9,164 records as searched on November 1, 2014. Navigating this body of research will support scholars, policy-makers, and community leaders who blend research and practice to understand more clearly what social capital is and how it works. The approach is not exhaustive but is substantially illustrative of how widely the social capital concept is invoked. A current review of the Web of Science sources reflects more than 14,000 sources from the repository of 100 million items. Interest in social capital is significant and growing.

It is clear that the civic landscape is highly complex. Social capital across dozens of disciplines, scholars, countries, institutions, and timescales reflects this complexity. While the intricate nature of these phenomena may be daunting, pursuit of insight can yield important gains and provide a degree of humility in our various pursuits.

This whitepaper provides a large-data-set overview of the extensive landscape of published academic work on social capital. The growing body of research on this topic is complex and of interest to many disciplines, and in what follows I will thematically review the breadth of that research.

A demonstration of the finer-grained approaches within this wide literature is undertaken by examining four important categories of social capital: trust, measurement, spatial dynamics, and social isolation. The paper concludes with five observations about social capital scholarship: (1) sociology and business/economics are core social capital disciplines; (2) the most prolific social capital authors work primarily in health sciences; (3) the United States is a central player in social capital research; (4) academic articles rather than books are the dominant forum for exchange with methodological studies being an important sub-class; and (5) academic publishing in social capital has grown significantly in the last ten years despite uneven adoption at policy levels.

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**1.** This whitepaper constitutes chapter 3 of Milton J. Friesen, “Social Imaging: Social Capital and Spatial Use Patterns with Potential Correlations” (PhD diss., School of Planning, University of Waterloo).

## ABOUT SOCIAL CITIES

The Social Cities program is animated by these questions: **WHAT MAKES A GOOD CITY?** and **HOW DO WE GET THERE?** Our urban lives are a significant context for the demise or generation of civil society. The nature of human relationships, ranging from the individual to the largest social structures of contemporary culture, constitutes the life of our cities. Social Cities reports, projects, pilots, case studies, and events are all intended to support ongoing investment in the common good.

## ABOUT CARDUS

**CARDUS IS A THINK TANK DEDICATED TO THE RENEWAL OF NORTH AMERICAN SOCIAL ARCHITECTURE.** Headquartered in Hamilton, ON, Cardus has a track record of delivering original research, quality events, and thoughtful publications which explore the complex and complementary relationships between virtues, social structures, education, markets, and a strong society. Cardus is a registered charity.



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# NAVIGATING SOCIAL CAPITAL SCHOLARSHIP

## A META-REVIEW OF 9,164 WEB OF SCIENCE SOURCES ON SOCIAL CAPITAL

AREAS OF CONSIDERABLE SCHOLARLY activity that involve dozens of disciplines require more than cursory or narrowly focused reviews of select literature. When thousands of sources are involved, they form a primary data source in their own right, including the possibility of analyzing authorship, citations, abstract content, dates, countries, and institutional patterns. Social capital remains an exploratory social theme with no single disciplinary home. Exploratory work within and between these multiple disciplines is critical to ongoing fruitful inquiry. Textual, citation, and thematic analysis presented here can provide supporting orientation for practical and theoretical research development.

### EARLY YEARS OF SOCIAL CAPITAL SCHOLARSHIP

Prior to 1993, it is possible to trace a paper-to-paper linkage of key works on social capital and to consider their various themes and ideas. This identified range (table 1) (Ostrom and Ahn 2003) represents a 153-year span of time from the early use of social capital found in *Democracy in America* (Tocqueville 2001) through to *Making Democracy Work* (Putnam, Leonardi, and Nanetti 1994). The following is not a comprehensive review of all uses or related uses of social capital but is instead a review of significant growth in social capital interest. Durkheim

**PRIOR TO 1993**, it is possible to trace a paper-to-paper linkage of key works on social capital and to consider their various themes and ideas.

is an example of a late nineteenth-century use of social capital in a discussion of the conditions of suicide (Chen et al. 2009). In the second half of the twentieth century there was an increase in the number of academic works on social capital, but it was a pivotal paper on human and social capital in the late 1980s helped to accelerate scholarly interest (Coleman 1988). (See **TABLE 1.**)

A few observations about this traced pathway will provide illumination of the point. L. J. Hanifan (1916) published a paper just after World War I describing how a local school could function as a community centre and in so doing contribute to the overall social resources, the “social capital” of the community in which it resided. The idea that a common pool resource in the form of a collective social good could be generated through the functions of a community institution was

**TABLE 1:** Selected social capital scholarship highlights spanning 153 years.

YEAR	NAME	TITLE
1840	de Tocqueville	<i>Democracy in America</i>
1916	L. J. Hanifan	“Social Capital—Its Development and Use”
1961	Jane Jacobs	<i>The Death and Life of Great American Cities</i>
1961	Shultz	“Investment in Human Capital”
1962, 1964	Becker	“Investment in Human Capital: A Theoretical Analysis” and <i>Human Capital</i>
1973	Granovetter	“The Strength of Weak Ties”
1977	Loury	“A Dynamic Theory of Racial Income Differences”
1986	Bourdieu	“Forms of Capital”
1988	James Coleman	“Social Capital in the Creation of Human Capital”
1992	Ronald Burt	<i>Structural Holes: The Social Structure of Competition</i>
1992	Ostrom	<i>Crafting Institutions for Self-Governing Irrigation Systems</i>
1993	Putnam	<i>Making Democracy Work</i>



not new, but describing it as a form of capital, as social capital, was distinctive. However, prior to 1993, scholars simply did not cite Hanifan, but now the paper is a clear example of a “sleeping beauty” that suddenly wakes up (Ke et al. 2015; Raan 2004). By 2000 there were two citations, but just five years later, the citation curve had increased to 22.

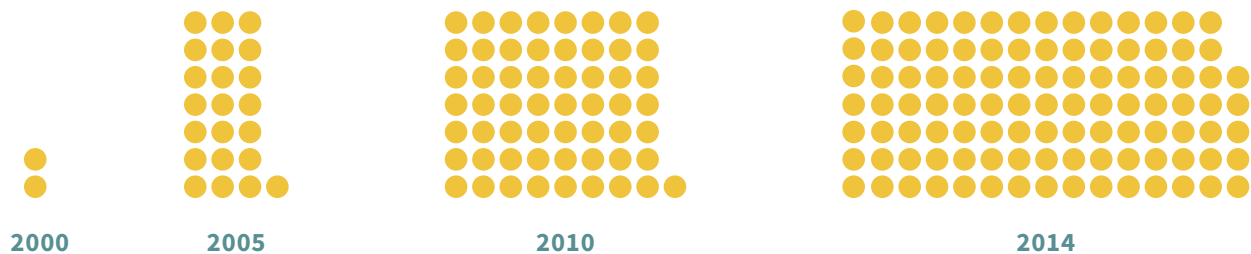
By 2010 the number of records that cite Hanifan was 57, nearly three times the number in 2000. And by 2014 there were 103 records citing Hanifan (FIGURE 1).

This brief case study of an obscure scholarly paper being picked up by contemporary researchers is indicative of growing scholarly interest in social capital research. There are other facets to be considered in this early period, including the work of urbanists and planners. Jane Jacobs has been identified as a key social capital contributor despite being better known for her work in urbanism

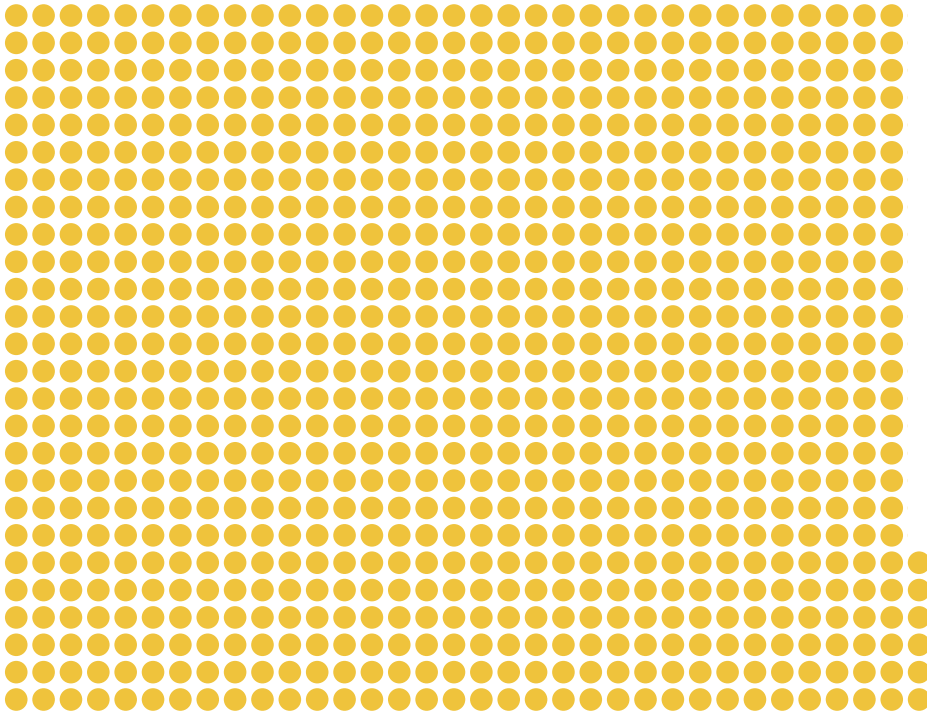
**THE IDEA THAT A COMMON POOL RESOURCE** in the form of a collective social good could be generated through the functions of a community institution was not new, but describing it as a form of capital, as social capital, was distinctive.

(Ostrom and Ahn 2003). Jacobs was not a social capital scholar but was instead an observer of the effects of collective action (or lack thereof) in urban settings and remains one of the most-read sources for planners and urbanists (Filion, Shipley, and Zeralynne 2007) along with economists and political scientists (Sancton 2000). She is, however, scarcely represented in the WoS database. *The Life and Death of Great American Cities* is not listed, and since Jacobs was not a formal scholar who published in the academic literature, her footprint in the space is minimal. Despite this, she has had an extraordinarily wide influence in planning and urban development, including the social capital facets of city building and design in her work. However, when “Jacobs, Jane” is searched for as a subject, the results show a stronger signal, with 106 records returned. The earliest record in this list is a J. Mixon article that examines how Jacobs’s ideas would look from a zoning vantage point (Mixon 1967), but Mixon does not pick up the social capital theme, which is a reminder of that not all contributions to social capital scholarship are included in something like a phrase search even where the number of returns is significant.

Theodore Schultz’s work on human capital in 1961 was published as an academic article in a prominent journal (*American Economic Review*). Given that prominence, along with the “Matthew Effect” (the rich get richer, the cited get more cited), which occurs with prominence and time, it has a significant number of citation records (864) (FIGURE 2).



**FIGURE 1:** The number of times scholars cited L. J. Hanifan’s 1916 paper on social capital has grown significantly since 2000. This is indicative of the growing scholarly interest in social capital research.

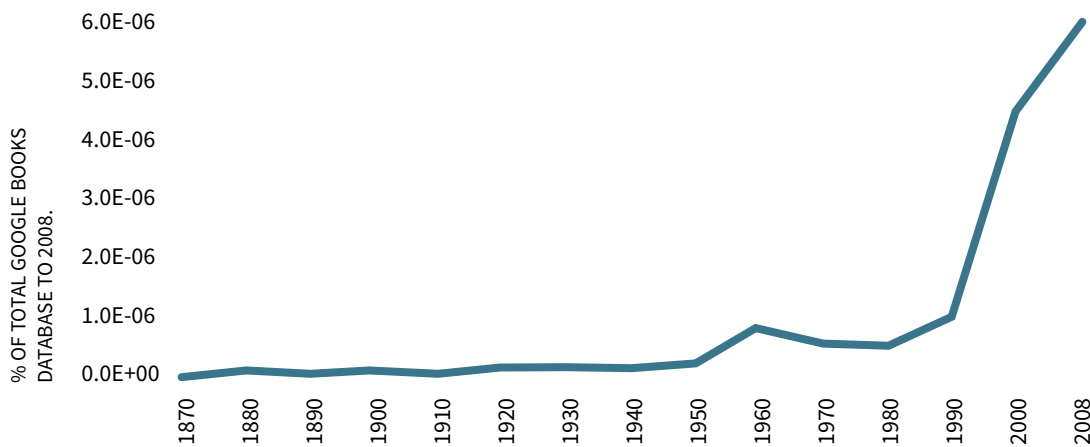


**FIGURE 2:** Theodore Schultz’s 1961 article has been cited at least 864 times.

Glenn Loury’s contribution to social capital (1977) appeared as a chapter in a book, not as an academic journal article, so it does not appear in the WoS citation records and represents an obscure (or sleeping) source that is more contemporary than Hanifan.

Google Ngram (Lin et al. 2012) searches of broad published data show a comparable level of word use activity for “social capital” as a word pair (**FIGURE 3**). Google Ngram data can be downloaded as well for additional analysis with statistical software, but this cursory analysis is sufficient to note general trending of the phrase. The occurrence of “social capital” from 1980 to 1990 represents a four-fold increase, while the increase from 1980 to 2008 is eightfold.

After 1993, however, a surge of interest begins to develop that soon makes individual paper listing impractical (with James Coleman’s 1988 paper as an important trigger). The building volume of scholarly work on and related to social capital forms a vast stream in which identification of themes, subject areas, and categories becomes essential as a strategy for reviewing the literature. Based on the sheer numbers, the top twenty themes in WoS provide new sub-paths that can be examined in their own right to identify the primary avenues of research and writing on social capital.



**FIGURE 3:** Google Ngram of “social capital” accessed on November 15, 2014; reflects word use as contained in the 500 billion words from scanned books in the Google database (search returns from Google only make use of words occurring more than forty times).

## MATERIALS AND METHODS

**FIGURE 4** (found on page 12) is a representative summary of the elements used in this meta-review of the social-capital-scholarship landscape. There are many complex pathways that analysis can take in approaching such a large number of source papers and data elements. Choices for analyses are open at each juncture, and the lower half shows the sub-search categories that are examined in this paper: isolation, measurement, social isolation, spatial dynamics. These four themes are identified as most relevant in order to provide a pathway into more detailed analyses approaches. In some cases, the file formats of the data are noted as are the software tools used to review, analyze, and display the data.

Data analysis may be usefully classified into six types (Leek 2013) that are useful for orienting the meta-review being conducted (**TABLE 2**). The analysis in this paper will consist primarily of the first three categories—description, exploration, and inference—leading to key conclusions about the current state of global, English-language academic research on social capital.

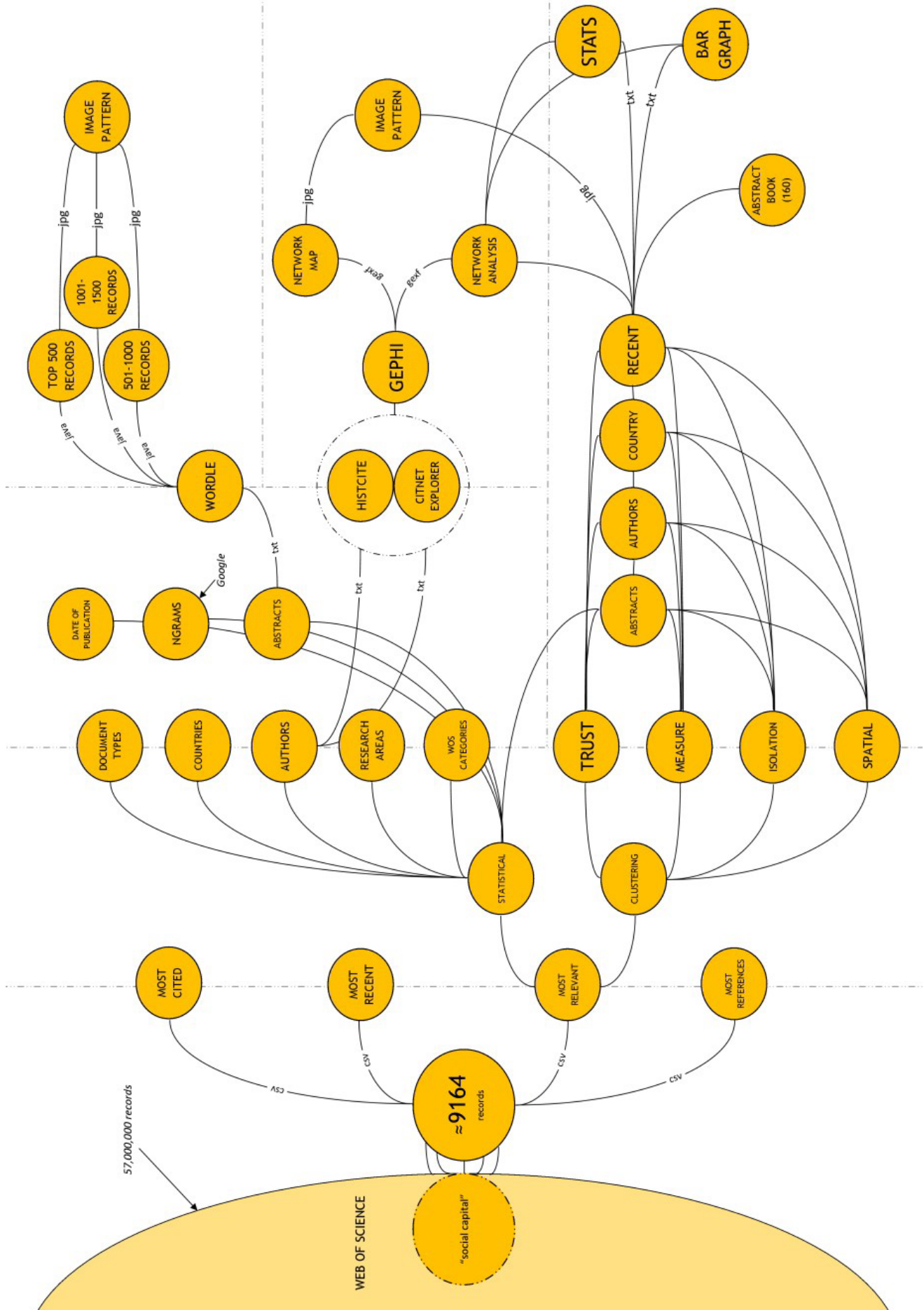
**TABLE 2:** Data type and analytic approach by degree of difficulty in obtaining

DATA TYPE	ANALYSIS SUMMARY	DEGREE OF DIFFICULTY
<i>Descriptive</i>	This happens this many times	Easiest
<i>Exploratory</i>	This is related to that	
<i>Inferential</i>	This little says something about that much	
<i>Predictive</i>	Data on some object predicts data on some other object	
<i>Causal</i>	Changing this causes that	
<i>Mechanistic</i>	Exact changes in this causes exact changes in that	Most Difficult



Social ties are built throughout our lives, starting with one's family and community.





**FIGURE 4:** Social capital Web of Science research flow; original inspiration comes from a MédiaLab (<http://www.sciencespo.fr/>) project by Paulo that is no longer available online.



## WEB OF SCIENCE CATEGORIES

The WoS “categories” function as disciplinary divisions and are administered by WoS. Social capital records include 162 out of 256 WoS categories with two or more records (see complete list <http://ip-science.thomsonreuters.com/mjl/scope/>). The top twenty categories cover 68 percent of the total. Within the top twenty categories, there are some that are more relevant than others for various research interests. For example, the Social Imaging Project (<http://www.socialimaging.org>), which examines the relationship between spatial patterns and social capital, can serve as an example of how the large paper database can be subcategorized for further analysis. Using four search terms (trust, measurement, isolation, and spatial) as segmented subsets of social capital, I will examine a variety of themes and trends that improve our understanding of social capital scholarship. These subsets can also be compared with the research areas that WoS uses and can be further refined by paper authors. There is not significant variance between the two, and given that WoS categories are more consistently administered and include two additional areas of relevance, it would seem to be the best choice for analysis (**TABLE 3**). The primary breakdown for research areas include the following: life sciences and biomedicine; physical sciences; technology; arts and humanities; social sciences. Details about more detailed sub-areas can be found here: [http://images.webofknowledge.com/WOKRS57B4/help/WOS/hp\\_research\\_areas\\_easca.html](http://images.webofknowledge.com/WOKRS57B4/help/WOS/hp_research_areas_easca.html).

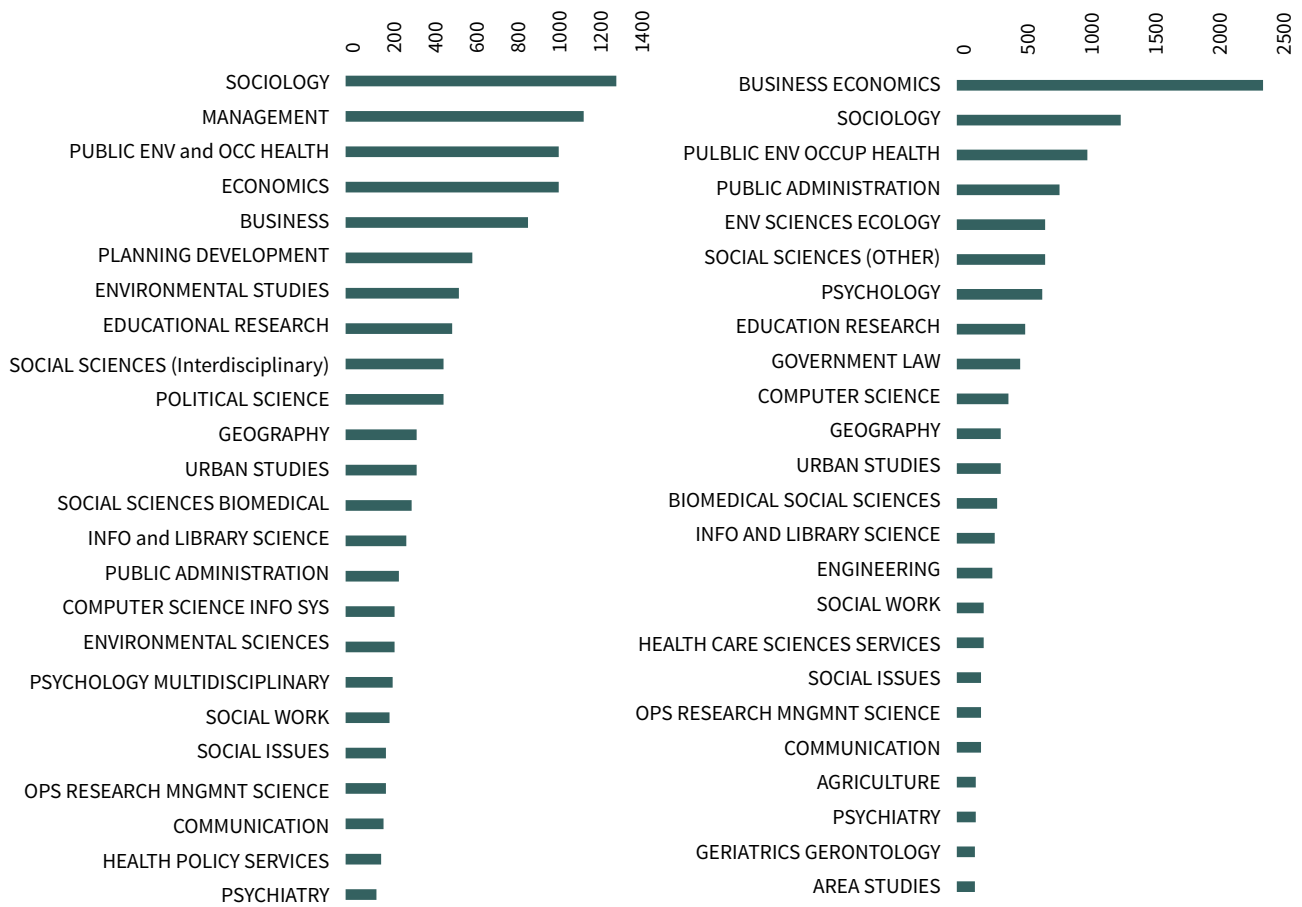
**TABLE 3:** Web of Science research categories and areas within the original 9,164 “social capital” sources

WoS CATEGORIES	WoS RESEARCH AREAS	RECORDS [WoS RESEARCH AREAS]
Sociology	Sociology	1,251
Planning Development		586
Social Sciences (interdisciplinary)	Social Sciences Other Topics	465 [671]
Political Science		448
Geography	Geography	333
Urban Studies	Urban Studies	330
Pub. Env. Occup. Health	Pub. Env. Occup. Health	993
Social Work	Social Work	201
Social Issues	Social Issues	181

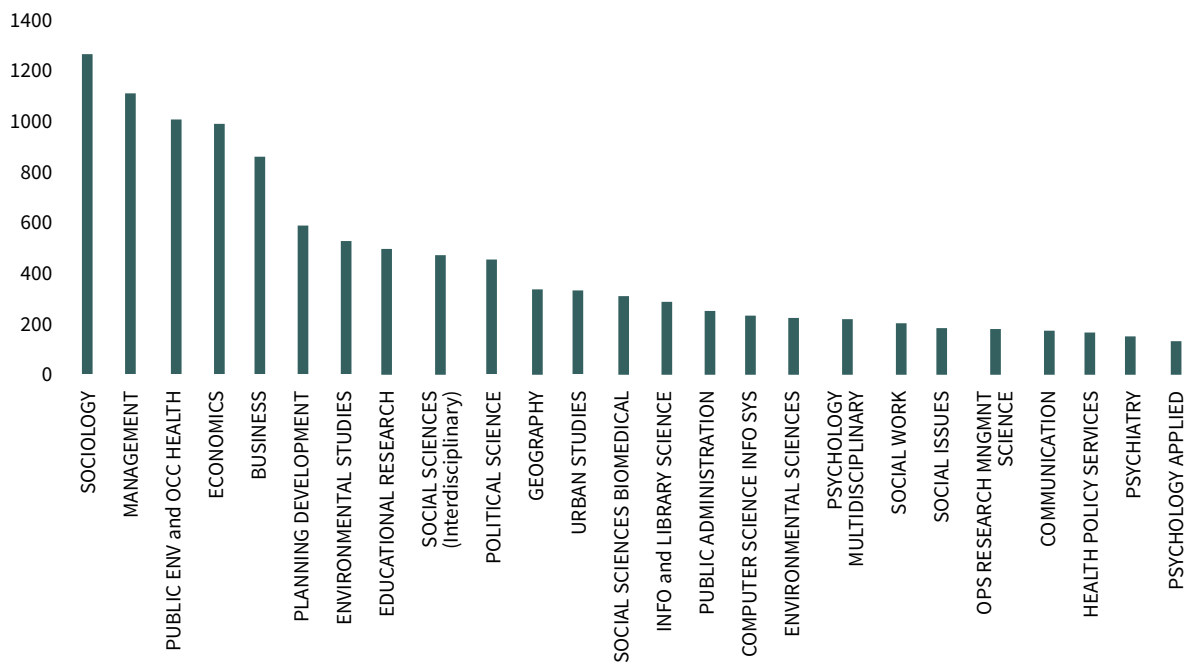
Another way of comparing “categories” and “research areas” is to examine how a specific group compares, in this case the top twenty-four “categories” and “research areas” within the WoS “social capital” search return (**FIGURE 5**).

Searching within the original 9,164 “social capital” records, the planning development and political science categories add 1,034 more records to the analysis. “Social science other topics” used in research areas appears to be broader, including 206 more records than the “social sciences interdisciplinary” used in the WoS categories. These represent the variances between the two disciplinary breakdowns. The wider list of WoS categories reflects a significant diminishment in the number of records per discipline (**FIGURE 6**).

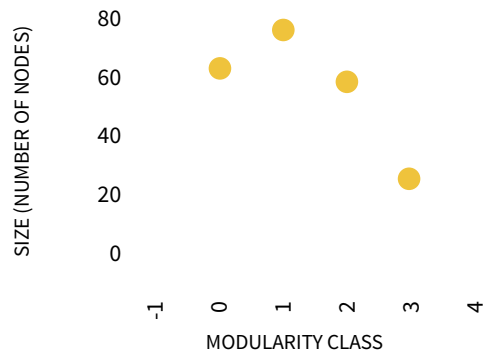
Networks can be analyzed for communities or areas where connections between nodes are higher than others. This “lumpiness” indicates a higher degree of commonality and is often referred to as “modularity” in network science. For example, the modularity of WoS “social capital” citation network reveals four general communities within the single component, directed network represented by the citation connections. Applying Gephi’s modularity analytics shows that there are four distinct groups, with memberships in each group ranging



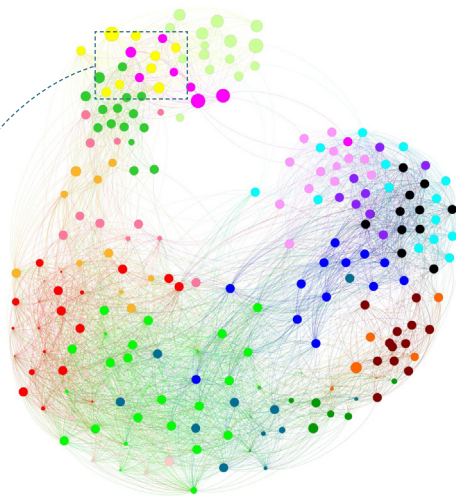
**FIGURE 5:** Comparative graph of WoS “categories” (left) and “research areas” (right) by number of sources within 9,164 database—top 24 for each.



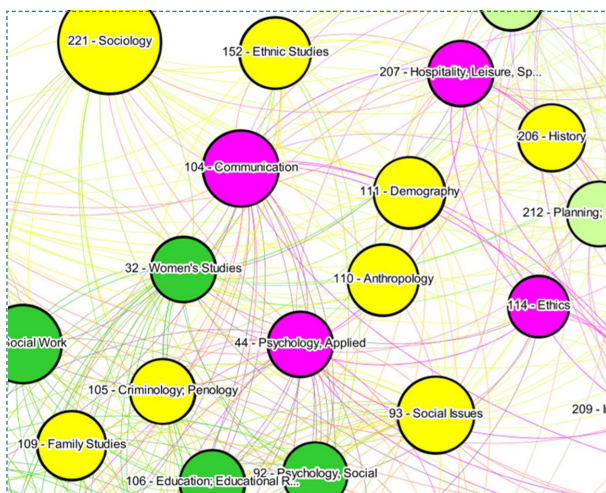
**FIGURE 6:** Top 25 WoS “categories” by number of records.



**FIGURE 7:** Modularity (clustering by groups) of “social capital” papers on WoS showing four distinct groups ranging from 30 to 75 nodes in each.



**FIGURE 8:** WoS “social capital” coloured citation graph by categories.



**FIGURE 9:** Magnification of a selection of the WoS “social capital” coloured citation graph by categories.

from 30 to 75 (**FIGURE 7**). Gephi analytics uses fast unfolding networks (Blondel et al. 2008) and modular structures (Lambiotte, Delvenne, and Barahona 2008) analysis to calculate groupings based on citation and category overlaps.

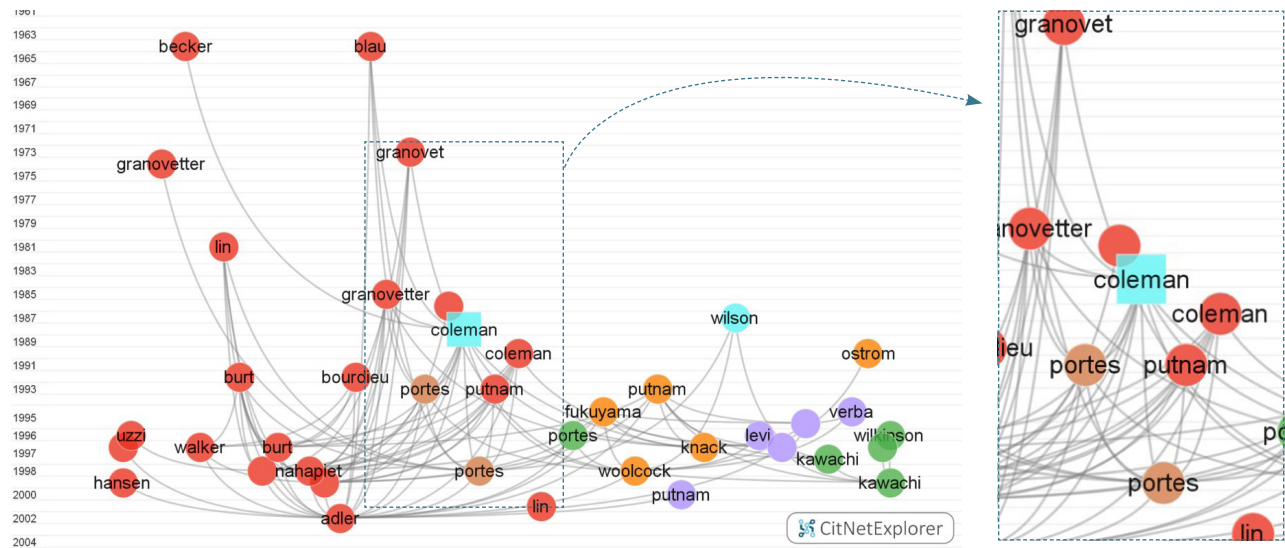
If the citation links of WoS categories represented by the “social capital” search are mapped, areas of more and less significant interaction occur, including significant interconnectivity across disciplines (**FIGURE 8**). The upper left include sociology, geography, and political science, while the blue/black region includes the physical sciences. The brown region is primarily related to engineering and some environmental sciences. The brighter green is biology related and the red is medical sciences. The size of the circles (nodes) indicates the relative number of records and the connections are the number of citations. Citation data was extracted from WoS, converted to *.gexf* format using an Excel macro, and then imported into Gephi for visualization and analysis.

With the WoS categories colourized, including the citation links that connect them, the wider patterns noted above reveal important detail when zoomed in further (**FIGURE 9**) and provide useful context for more specific, focused research depending on

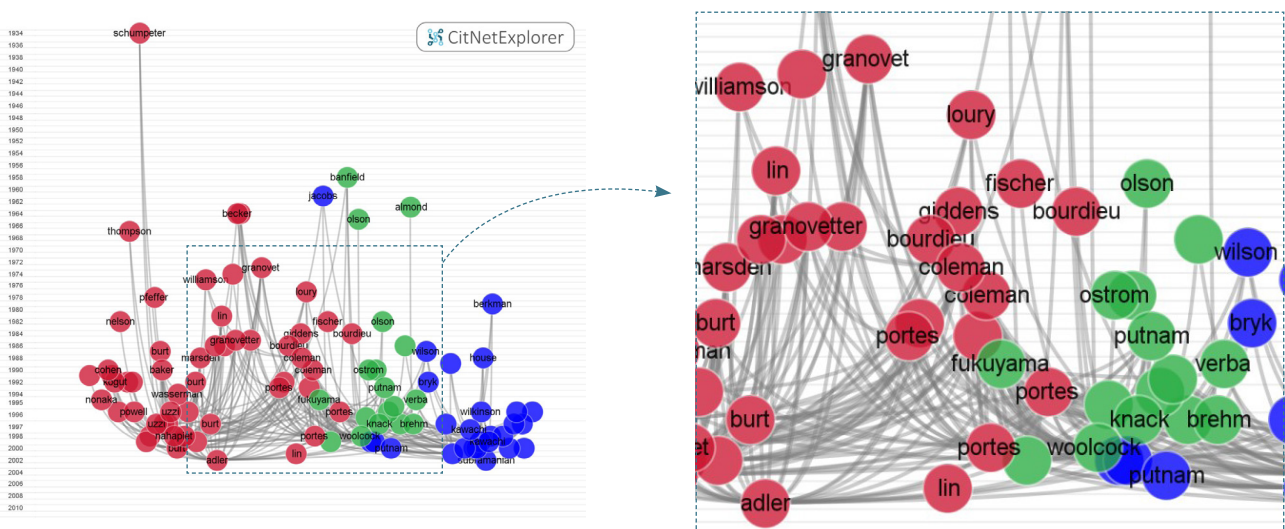
As noted above, the WoS research areas reflect some variance from the WoS categories but in substance appear to follow that pattern in significant ways so that analysis of “categories” provides reliable guidance into social capital disciplinary and thematic research areas.

## CITNETEXPLORER

Visualizing the top 500 most cited sources by author with the CitNetExplorer software provides a view of the works cited (links that go up) and works that cite the given source (links that go down). For the purpose of visual clarity and processing speed, the CitNetExplorer limits the visualization to 100 sources, but the analysis is based on 3,778 “social capital” publications from WoS, with 14,126 citation links. Coleman (1988) is highlighted with a square node (**FIGURE 10**). Given that this is a key social capital paper, we should see greater downward links (scholars citing Coleman) and fewer upward links (Coleman citing predecessors). This is what we do see.



**FIGURE 10:** CitNetExplorer with James Coleman identified by a square node in center of image (shown magnified on the right).

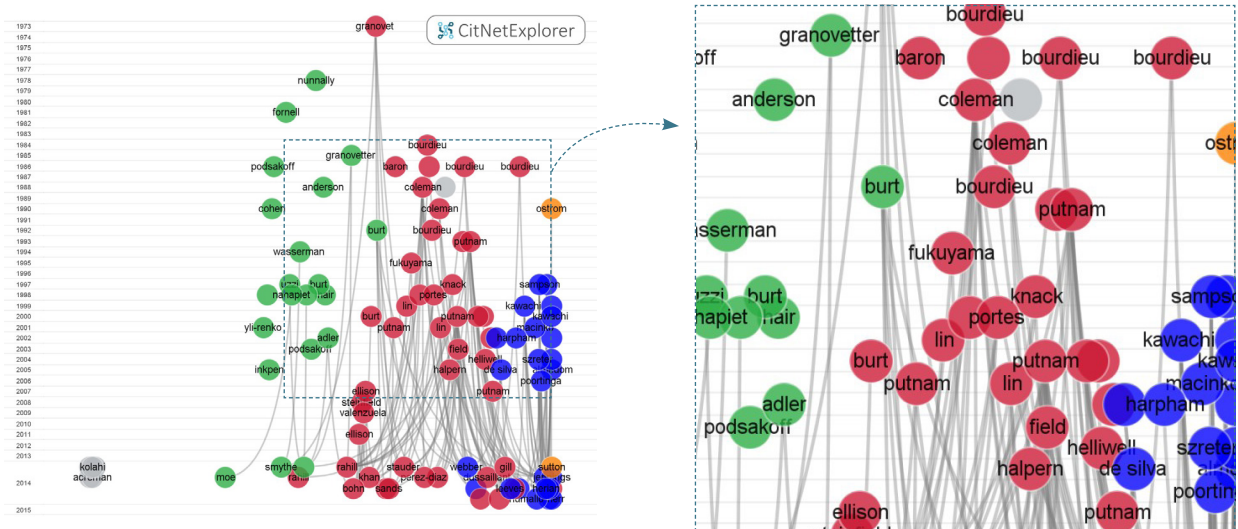


**FIGURE 11:** Range by time and tie (shown magnified on the right).



An additional feature of the CitNetExplorer visualization is colouring clusters based on bibliographic coupling—the more they cite sources in common, the more centralized they become (FIGURE 11). In network theory this modularity is reflective of groups or communities within the data (Newman, 2010).

As the number of sources is increased, an interesting node of disconnected scholarship emerges as a grey cluster in the lower left side of the diagram (FIGURE 12).



**FIGURE 12:** Bibliographic coupling of “social capital” papers showing disconnected cluster to the left in grey (shown magnified on the right).



The relational ties of social capital may be invisible from an observational standpoint, but they are very powerful.

## WEB OF SCIENCE CORE COLLECTION ANALYSIS—“SOCIAL CAPITAL”

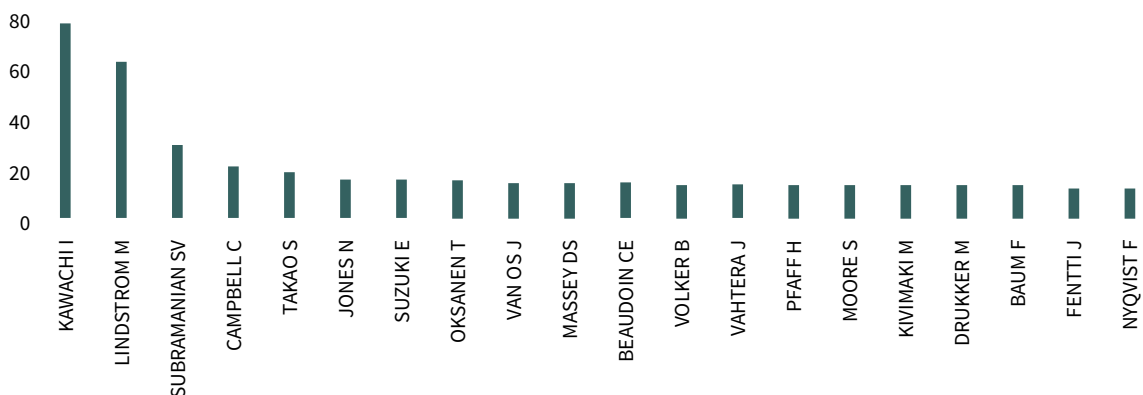
Within the full collection of more than 57,000,000 records that constitute WoS (2014) more than 9,164 records are returned by a “social capital” search. The relative sizes and key counts for the textual database are summarized in **TABLE 4**. The following section demonstrates how analyses can be undertaken by themes such as authors, countries, and document types.

**TABLE 4:** Summary of WoS “social capital” textual data with subsets and graphing of number of abstracts; a visual context for this analysis framework is provided by the figure 7 research flow diagram

DATA FILE	NUMBER OF ABSTRACTS	UNIQUE WORDS	UNIQUE WORDS POST-PROCESSING	WORDS RETAINED FOR ANALYSIS	FREQUENCY OF WORDS FOR GRAPHING
“social capital”	9,164	32,865	16,384	50%	3,000
“trust”	1,842	13,720	8,676	63%	600
“measurement”	243	4,851	3,110	64%	80
“spatial”	187	4,738	3,146	66%	60
“isolation”	93	3,387	2,303	68%	40

### Distribution by Authors

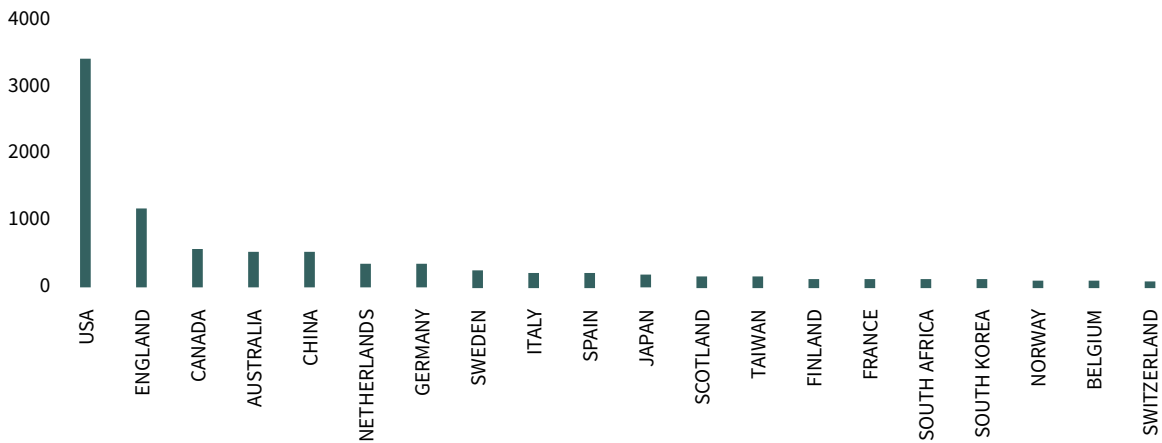
A significant number of unique authors constitute the social capital scholarly landscape. Although there is a small handful of unusually prolific authors among the top 20 (**FIGURE 13**), it is also significant that there are 3,017 individual authors listed who have 2 entries or more but who are outside of the top 20 most prolific author list. This long tail of social capital scholarship viewed from an authorship vantage point is consistent with the significantly cross-connected citation network noted earlier.



**FIGURE 13:** Twenty most prolific authors within 9,164 WoS social capital sources.

## Distribution by Countries

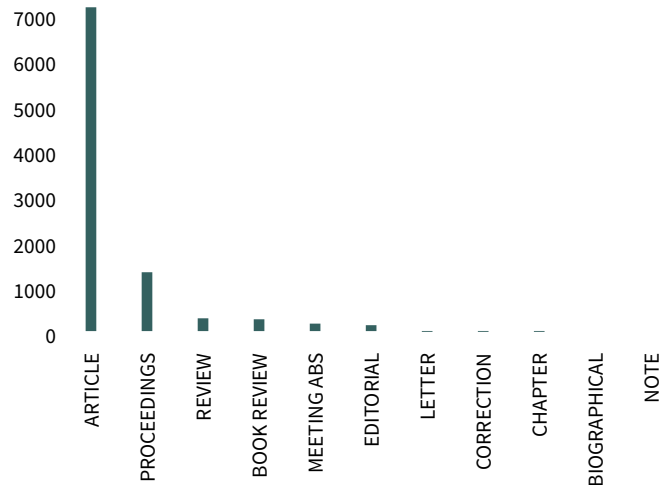
The top 20 countries shows the very significant US trend in social capital related publications (**FIGURE 14**). The top 5 countries constitute 6,244/9,164 entries (68 percent). There are 103 countries that had two or more social capital entries in the literature. The WoS “social capital” search is English-language only and is a limit in terms of a full global analysis of sources.



**FIGURE 14:** Twenty most prolific countries within 9164 WoS social capital sources.

## Distribution by Document Types

Journal articles are by far the most popular format for scholarly engagement on social capital themes (**FIGURE 15**). If conference proceedings are considered, the two types encompass 8,565/9,164 of the entries (93 percent). The implication is that the field is still relatively new, is of interest across many disciplines, and has not yet reached a mature phase of scholarly inquiry.



**FIGURE 15:** Document types on WoS social capital within 9,164 WoS social capital sources.

**JOURNAL ARTICLES** are by far the most popular format for scholarly engagement on social capital themes.

## Distribution by Publication Years

Prior to 1991 the number of publications demarcated by “social capital” was fewer than 2 (FIGURE 16). Steady increase in interest continues to the present with a doubling of records from 1997 to 1998, another doubling by 2002, and again by 2007.

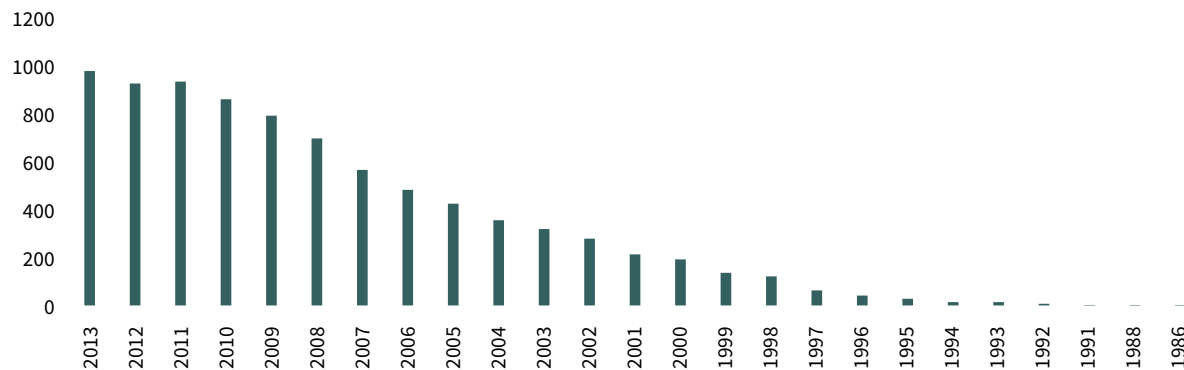


FIGURE 16: Year of publication within 9,164 WoS social capital sources.

## Distribution by Conference Titles

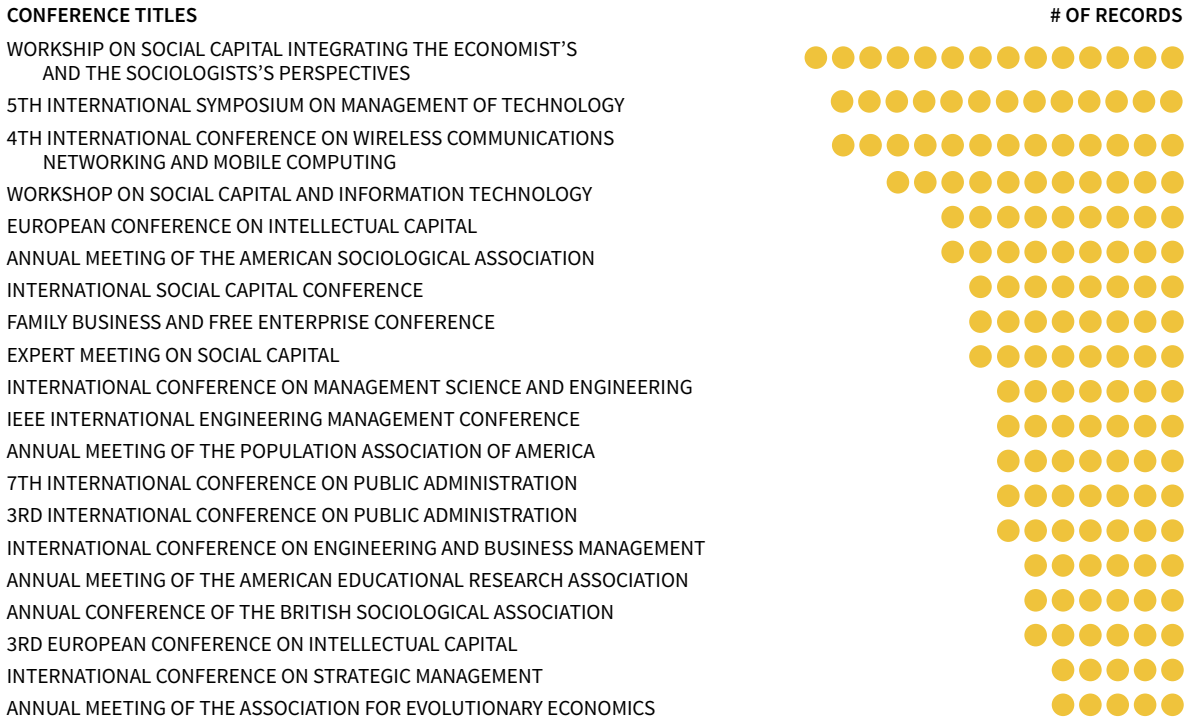
The distribution of conference titles related to social capital themes has a much flatter, longer tail (FIGURE 17). There are 207 individual conference titles listed with two or more records, with the most prolific conference yielding 14 records and many more titles with fewer than 2 entries. This does not appear to be an efficient way of narrowing the social capital field. Given that there is a natural movement from conferences and proceedings to academic papers, it can be reasonably inferred that content from these gatherings finds its way into the articles records list. There may be more recent gatherings where material has not yet been published or where new ideas or themes are emerging. The most recent conferences search could provide leads for further research through direct contact with conference organizers or participating scholars.

## Distribution by Institutions

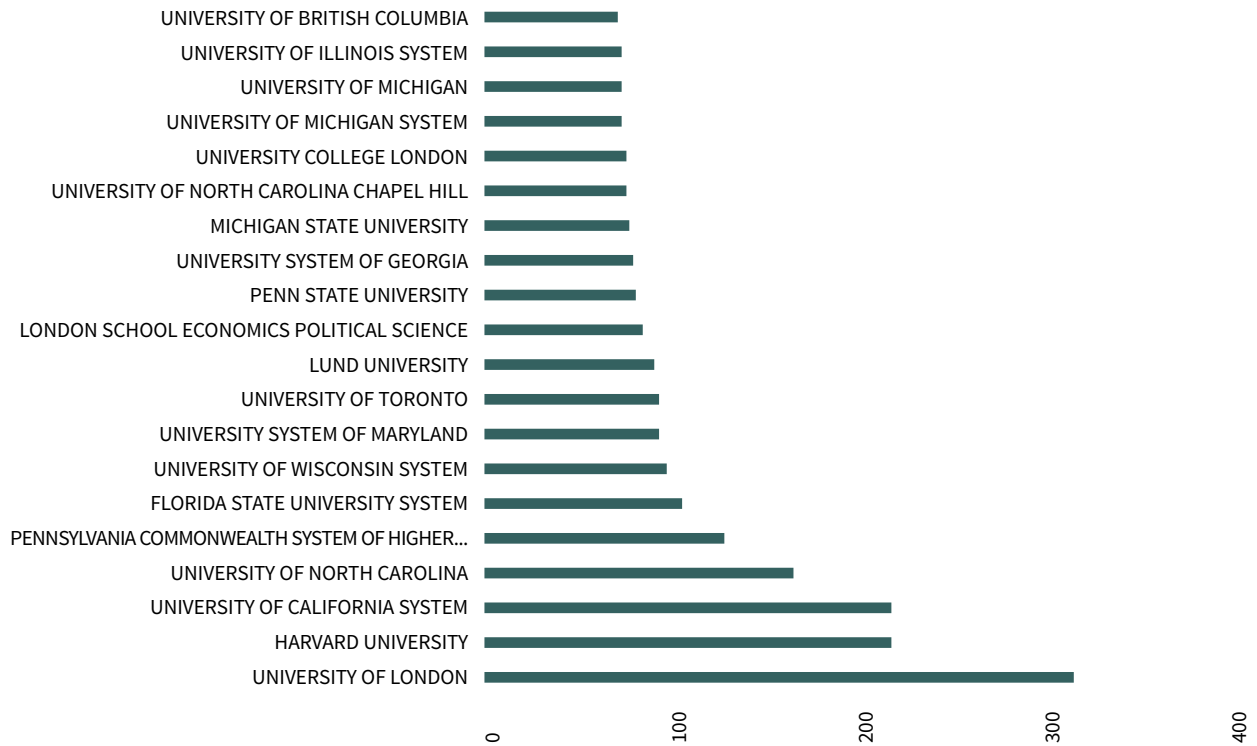
The top 20 universities publishing work on social capital represent just slightly less than 20 percent of the total active institutions—(2,251/11,638). American universities are, as is expected based on earlier country data, significant, though the university with the most major contributions to the field is in England (FIGURE 18). In Canada, the University of Toronto is a major contributor along with the University of British Columbia.

**IN CANADA,** the University of Toronto is a major contributor along with the University of British Columbia.





**FIGURE 17:** Top 20 conference titles within 9,164 WoS social capital sources.

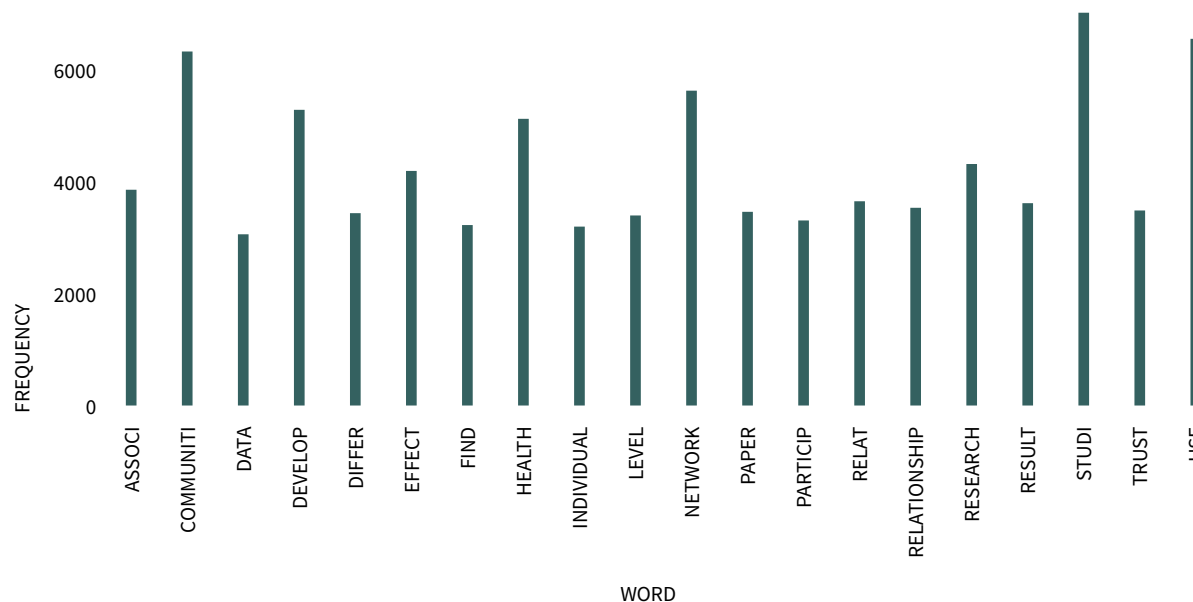


**FIGURE 18:** Top 20 universities publishing work on social capital.



## FOCUS ON FOUR THEMES WITHIN WoS DATA

The significant scope of WoS sources related to social capital requires analysis beyond the previous counting and statistical exploration. The nature and focus of the Social Imaging Research example project makes use of areas identified earlier. For the purposes of this paper, these more specific research areas demonstrate how analysis could be conducted within the larger data set generated by the WoS “social capital” search returns. Other options within the “social capital” database can be detected by text mining the data (FIGURE 21).

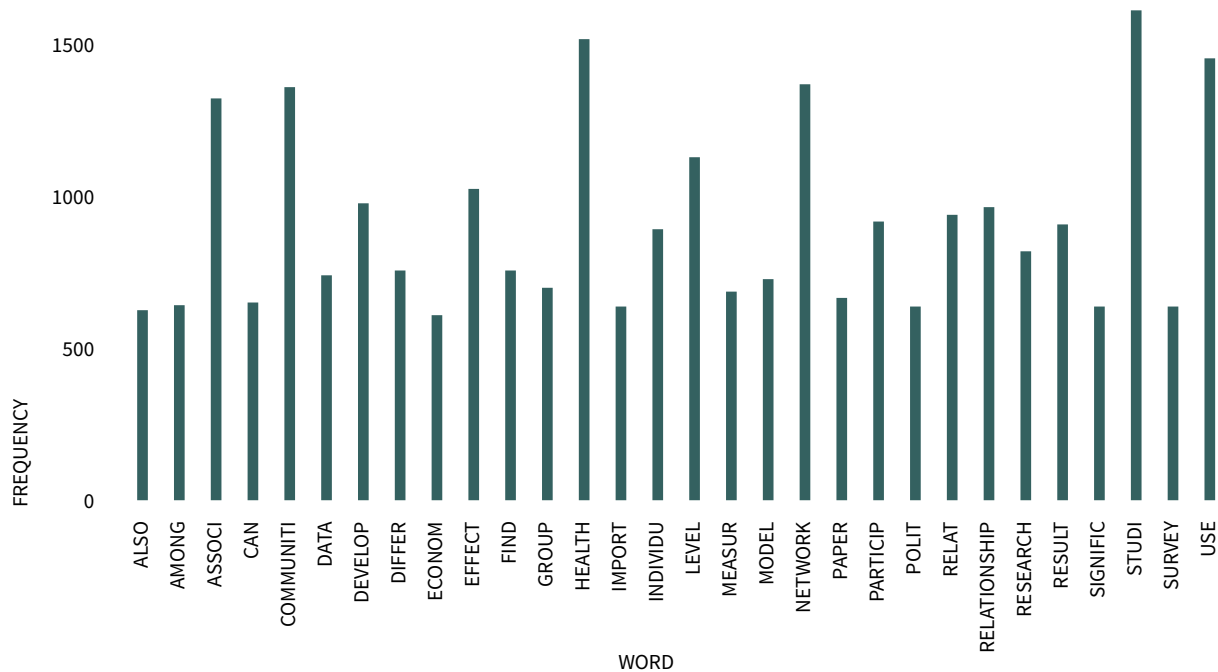


**FIGURE 21:** Web of Science “social capital” abstracts with words occurring more than 3,000 times arranged alphabetically [Raw text was processed in the following way: punctuation removed, numbers removed, converted to lower case, stopwords removed using “English” stopwords from R (n = 174), words were stemmed [e.g., remove “ing,” “es,” “s”), removed definition words (“social,” “capital”), whitespace removed, and frequency matrix generated for analysis].

The four key terms used for the sub-search noted earlier are: “trust,” “measurement,” “spatial,” and “isolation.” All of these are important, though not complete, aspects of the phenomena of social capital, and each will be considered below to extend the meta-review approach proposed in this paper. In each of the four sub-search categories, 20 of the most recent records and 20 of the most cited records are analyzed—160 papers in total. These papers in turn were given primary analysis at abstract, author, year, and country level to better understand if themes aligned with what was seen in the total database abstract analysis. This process could be used to sort a significant body of papers into orders of relevance as a means of managing the substantial volume of work.

## TRUST AND SOCIAL CAPITAL

Within the “social capital” search return, 1,842 records were returned from the “trust” search. Analysis of these data provided indications of the academic and thematic contexts where trust and social capital converged. In particular, exploratory analysis of the abstracts from the academic papers revealed a strong emphasis on health, community, knowledge, networks, and participation (**FIGURE 22**). The abstracts were cleaned, removing various given words (“social capital,” small words, “conclusion,” “objectives,” and so on) and then analyzed using text cleaning and mining procedures in R to generate bar graphs of word frequency organized alphabetically.

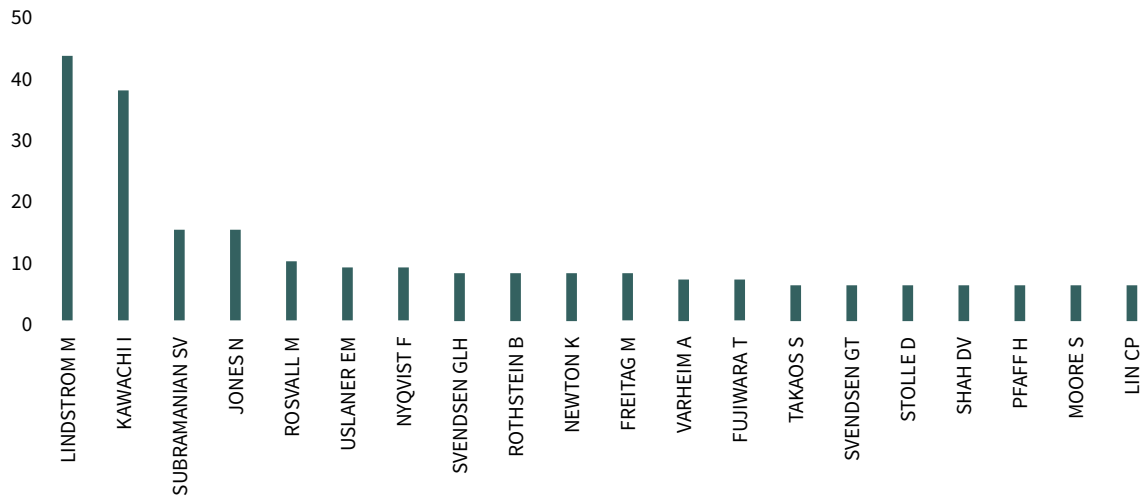


**FIGURE 22:** Analysis of 1,842 social capital abstracts that include “trust” as a term with words occurring more than 600 times showing arranged alphabetically [Raw text was processed in the following way: punctuation removed, numbers removed, converted to lowercase, stopwords removed using “English” stopwords from R (n = 174), words were stemmed (e.g., remove “ing,” “es,” “s”), removed definition words (“social,” “capital,” “trust”), whitespace removed, and frequency matrix generated for analysis].

The conclusion of this analysis showed that trust is a very significant aspect of social capital research across a wide range of disciplines. Trust is very well represented in the most cited papers, which, by nature, have earlier publishing dates (**FIGURE 23**). Health studies that explore early mortality and mental health, for example, reflect significant interest in trust (Kawachi, Kennedy, and Glass 1999; Kawachi et al. 1997), as do organizational management studies aimed at understanding firm performance, knowledge exchange, and innovation (Inkpen and Tsang 2005; Knack and Keefer 1997; Leana and Van Buren 1999; Tsai and Ghoshal 1998). The linkage between trust and geography, adaptation, environmental engagement, online use, and change were clearly represented (Adger 2003; Folke et al. 2005; Pretty and Ward 2001). It was also interesting to note how existing data sets such as the General Social Survey were utilized in

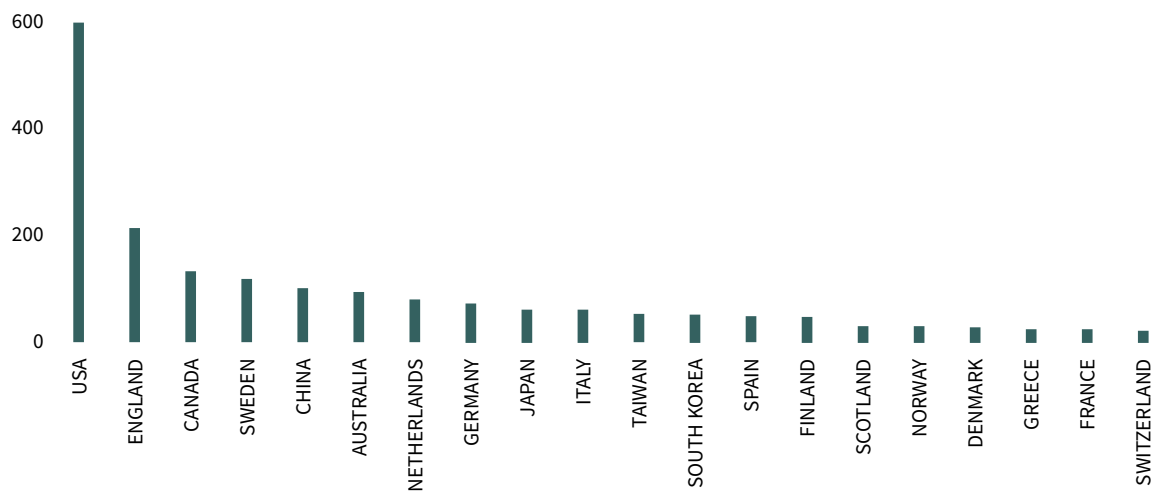
**THE CONCLUSION** of this analysis showed that trust is a very significant aspect of social capital research across a wide range of disciplines.

top-cited papers to explore the linkage between trust and social capital (Brehm and Rahn 1997; Kawachi et al. 1997). In one recent paper, social capital and trust levels were utilized to explore how their relative and dynamic levels could be used as predictors of conditions that, along with other political and ethnic considerations, predispose an area to genocidal risk (McDoom 2014).



**FIGURE 23:** Top 20 most cited papers by first author—social capital + trust.

The geographic distribution by country pattern noted in the complete data set was much the same for the trust subset (FIGURE 24). North America and England were significantly represented. Germany and the Netherlands dropped in rank, though, to be replaced by Sweden and China. Further analysis of the American data could be conducted to determine by institution which universities were most active in linking these two terms.



**FIGURE 24:** Top 20 countries with the “trust” subset.



WoS categories for “trust” were likewise very similar to the full data set and don’t show any significant departure (FIGURE 25).

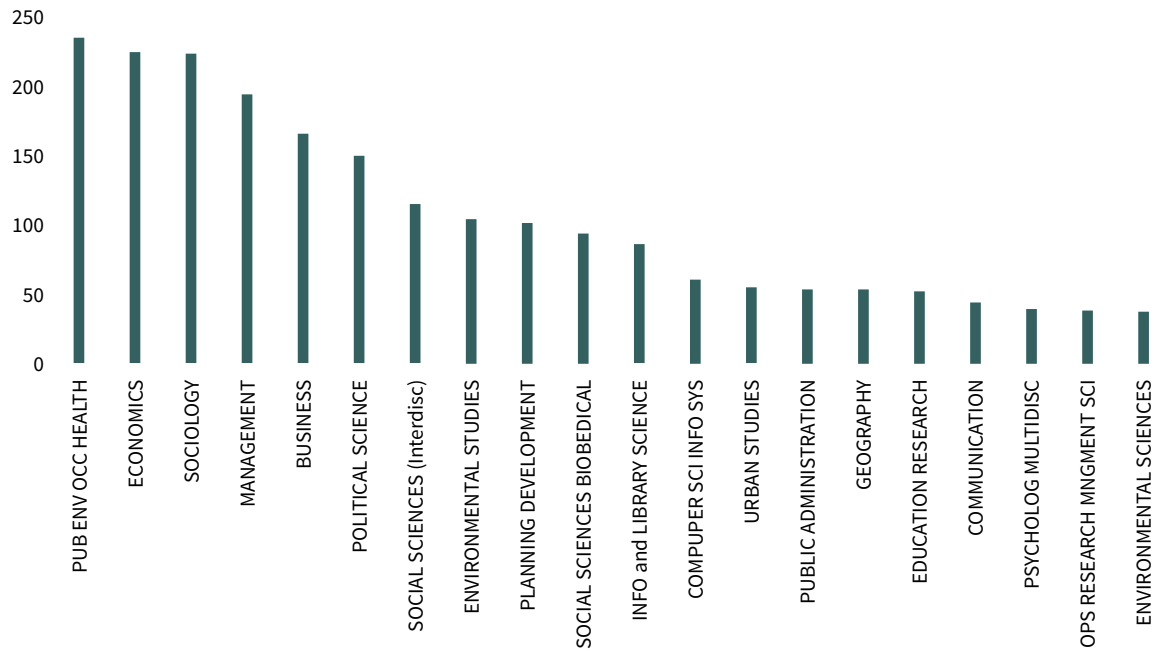


FIGURE 25: Top 20 categories represented by top 20 most recent papers for “trust”.



Density of people does not mean density of social ties or trust.

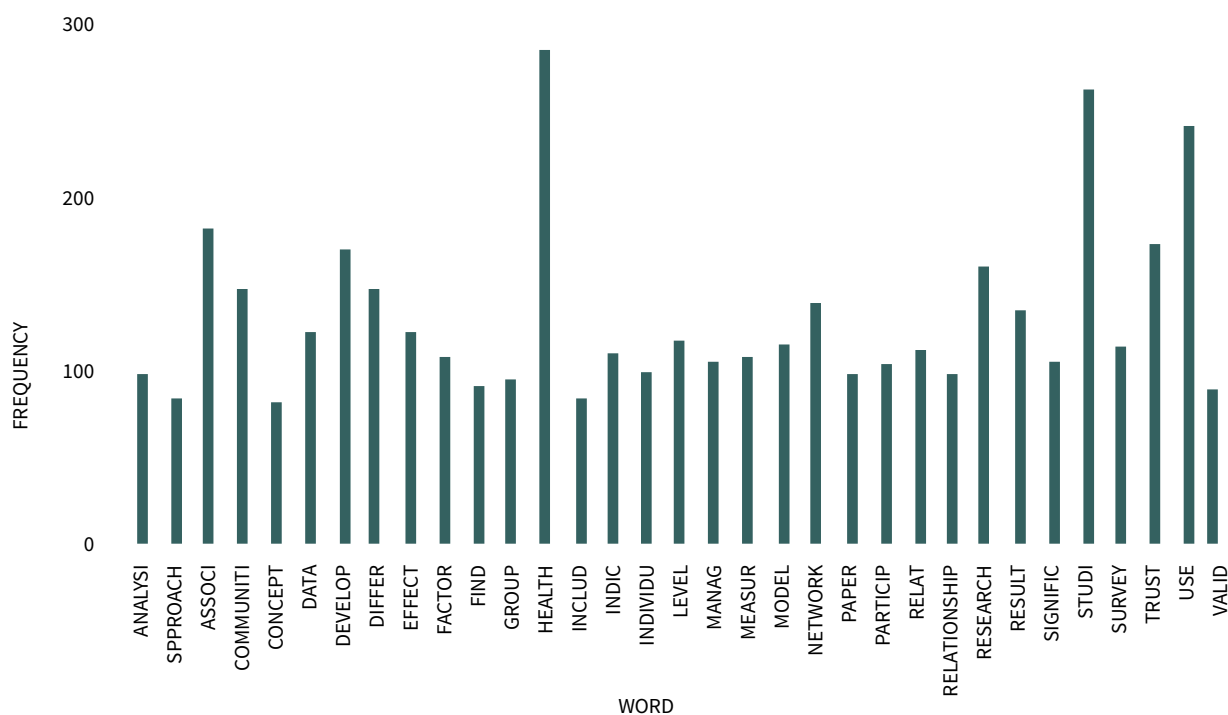


## MEASUREMENT AND SOCIAL CAPITAL

The emergence of social capital in the late 1980s as a topic of academic inquiry led to a direct and sustained interest concerning how it might be credibly and consistently measured. The complexity of the phenomena led to a wide range of approaches in quantifying its dynamics. The “measurement” subset within the social capital data set yielded 243 records, of which nearly all are academic journal articles.

There are some conclusions that can be drawn about this ongoing interest in measurement. First, trust was and continues to be a very significant factor in most approaches to measuring social capital as evidenced by the top 20 most cited papers within the measurement sub-search (Chow and Chan 2008; Lochner, Kawachi, and Kennedy 1999; Paldam 2000; Reeskens and Hooghe 2008) (FIGURE 26). Second, explanations of methods were also central to top papers concerned with measurement (van der Gaag, Snijdersy, and Flap 2004; van Oorschot and Arts 2005; Viner et al. 2006). This concern with method was far more notable in the measurement category than it was in any of the other three sub-search data sets. Contexts for measurement included online communities (Williams 2006), World Bank standardized approaches, and the role of ethnicity (Gesthuizen, van der Meer, and Scheepers 2009) in fostering social capital development.

The top twenty most recent measurement papers continue the trend on trust (Carpiano 2006; Fujiwara and Kawachi 2014) as well as the earlier concern with how online communities may or may not generate social capital (Appel et al. 2014). International themes ranging from Korea to Brazilian youth were also represented in recent work (Caro, Sandoval-Hernandez, and Luedtke 2014; Chung, Choi, and Lee 2014; Hall et al. 2014). Of



**FIGURE 26:** Analysis of 243 social capital abstracts that include “measurement” as a term with words occurring more than 80 times showing arranged alphabetically [Raw text was processed in the following way: punctuation removed, numbers removed, converted to lowercase, stopwords removed using “English” stopwords from R (n = 174), words were stemmed (e.g., remove “ing,” “es,” “s”), removed definition words (“social,” “capital,” “measurement,” “measure,” “measures”), whitespace removed, and frequency matrix generated for analysis].

particular note is a paper that challenges scholars to consider whether the various proxies for measuring social capital are looking at different facets of a core phenomenon or an interrelated collection of distinct phenomena (Paldam 2000).

The analysis of the abstracts of the 243 records was also informative. The textual analysis reveals that “health,” “trust,” “community,” and “analysis” are themes that could be explored further (FIGURE 27).

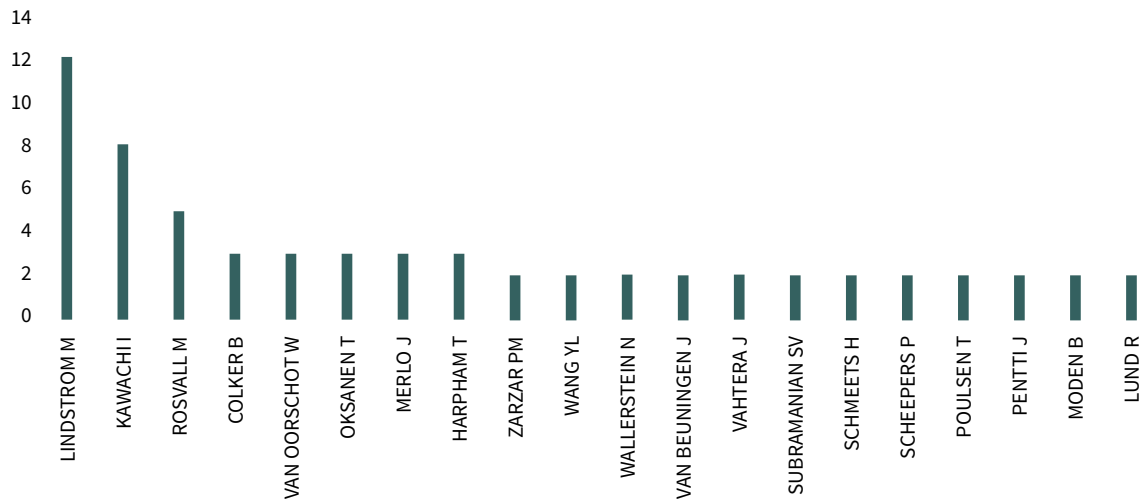


FIGURE 27: Top 20 most cited authors within the “measurement” abstract search.

It should be noted that the most cited papers (by author) focus significantly on health-related implications of varying levels of social capital and how those levels can be understood and measured.

Geographic interests in measurement follow the dominant North American theme already noted with the exception of the Netherlands, where interest in measurement is reflected by a number three rank (FIGURE 28).

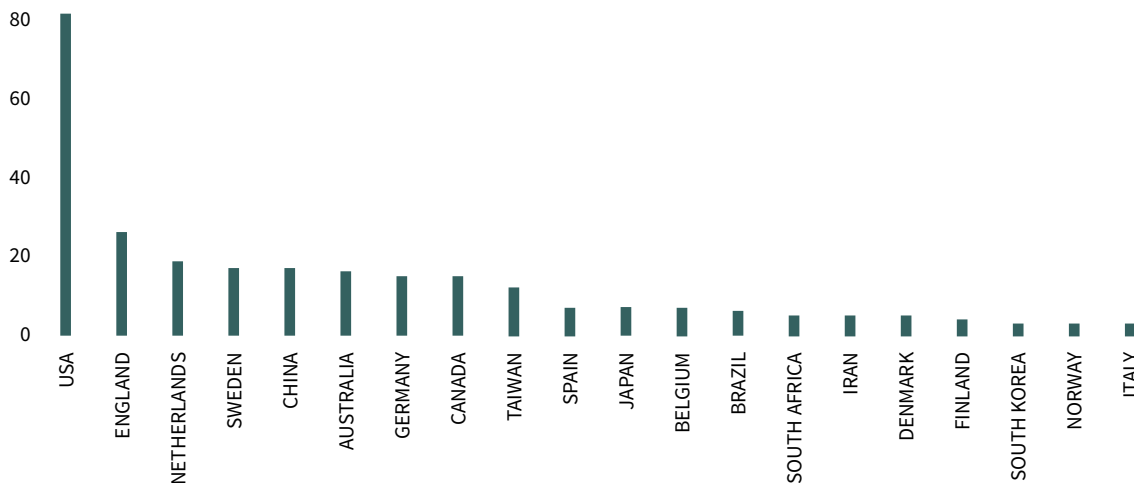


FIGURE 28: Top 20 countries within the “measurement” subset.

Across the top 20 WoS categories, the data within the “measurement” sub-search reflects a breakdown with public environmental occupational health (PEOH) as the most significant category (FIGURE 29). This is consistent with the overall trend, as seen earlier and the health theme in the measurement abstract analysis. What is distinctive is the degree of emphasis of PEOH when compared with sociology.

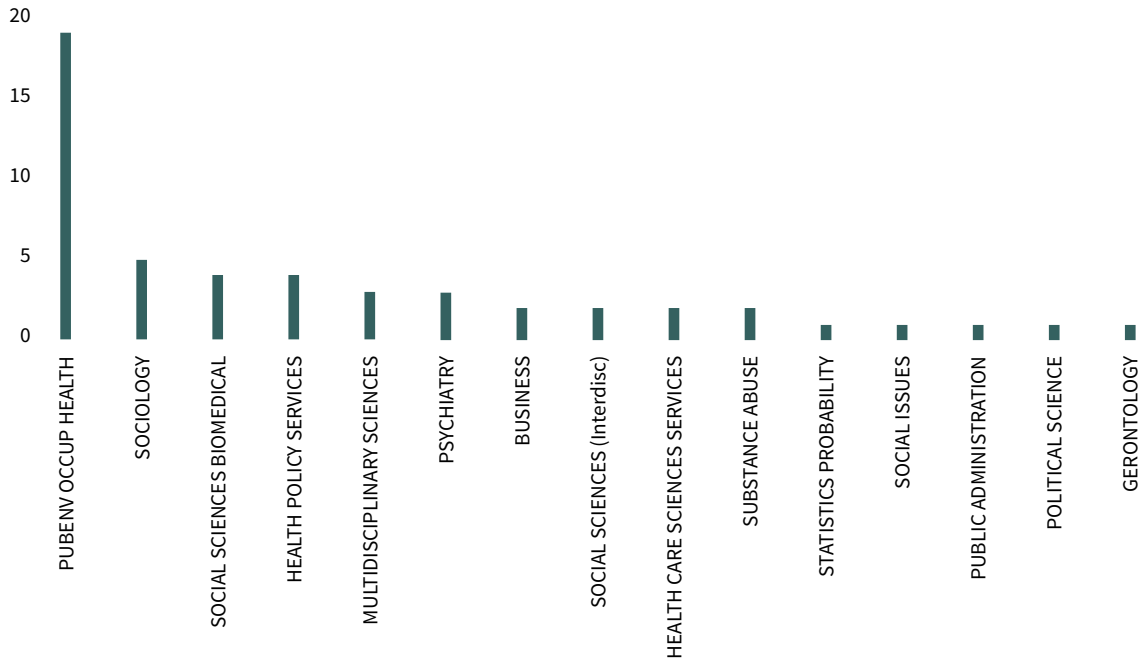


FIGURE 29: Top 15 categories within the top 20 most recent papers for “measurement.”



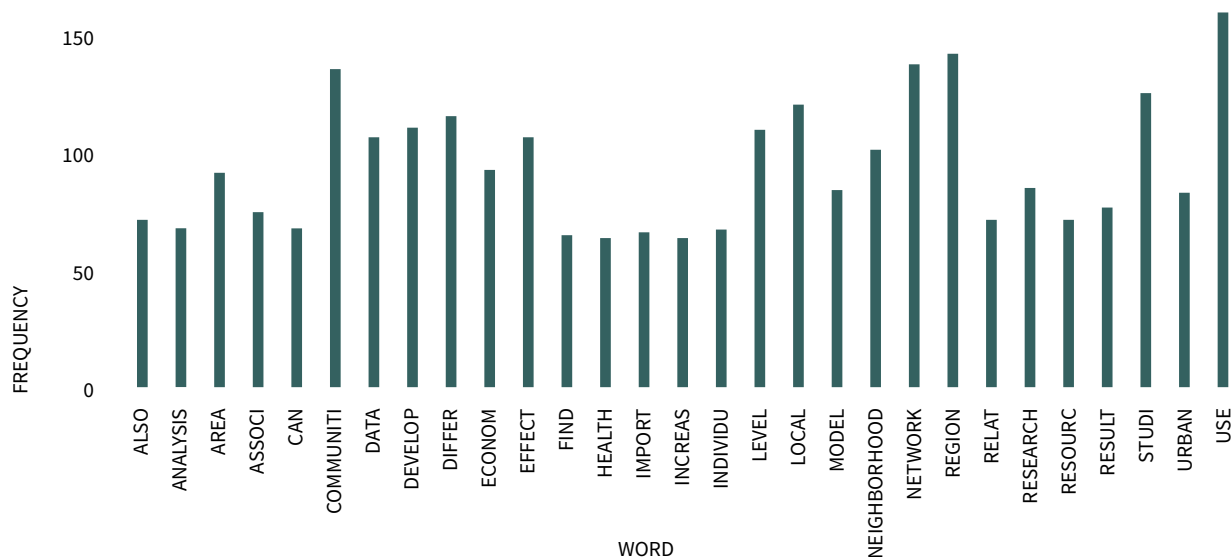
Technology allows and encourages our social ties to be spread further apart than ever before.

## SPATIAL DYNAMICS AND SOCIAL CAPITAL

One of the important but less developed areas of scholarship that intersects with social capital is the role that spatial use and proximity play in its development or enactment. Given the very specific nature of the term “spatial,” it was expected to return fewer results, which was verified with 187 records—fewer than “measurement” and significantly fewer than “trust” (FIGURE 30). There are typically two facets of spatial linkage that are of interest—geographically bounded areas of research (e.g., a neighbourhood) and the existence of social networks in time and space, making spatial considerations important. With the abstracts of the 187 returns cleaned (removing “social capital,” “spatial,” and other non-thematic common terms) the resulting cluster of themes reflects how spatial interest includes networks, data, community, economic, and local key words.

**THERE ARE TYPICALLY TWO FACETS** of spatial linkage that are of interest—geographically bounded areas of research (e.g., a neighbourhood) and the existence of social networks in time and space, making spatial considerations important.

The top twenty 20 most cited papers included two on methods related to space (Carpiano, 2006; Forbes and Wainwright, 2001), several related to health and socio-economics in specific areas (Browning, Feinberg, and Dietz, 2004; Mohan, Twigg, Barnard, and Jones, et al. 2005; Wen, Cagney, and Christakis, 2005), and a mix of others that explored education (Lorenzen, 2007; McNulty and Bellair, 2003), online communities (Kwan, 2007), and gangs (McCarthy, Hagan, and Martin, 2002) (FIGURE 31). New papers show even greater diversity, with susceptibility to genocide being one area of exploration (McDoom, 2014) and environmental concerns another (Lemenih, Kassa, Kassie, Abebaw, and Teka, et al. 2014). War and its impact on social capital has also emerged in recent work (Rohner, Thoenig, and Zilibotti, 2013).



**FIGURE 30:** Analysis of 187 social capital abstracts that include “spatial” as a term with words occurring more than 60 times showing arranged alphabetically. [Raw text was processed in the following way: punctuation removed, numbers removed, converted to lower case, stopwords removed using “English” stopwords from R (n = 174), words were stemmed (eg.e.g., remove “ing”, “es”, “s”), removed definition words (“social”, “capital”, “spatial”, “space”), whitespace removed, and frequency matrix generated for analysis].

It is not surprising that there is far less author dominance in top-cited papers in spatial than in other sub-search categories. This is likely owing to continued growth in the diversity of research themes that are being pursued in conjunction with social capital and spatial orienting ideas. The complexity of human spatial use, and determination of geographic boundaries in the context of an intricate phenomenon like social capital provides conditions for this diversity of approaches in current scholarship. Geographic distribution of scholarly activity follows the well-established North American trend here as well with the Netherlands, showing strong representation (comparatively) in spatial concerns much as they did in the measurement subcategory (FIGURE 32).

One comparative area where there was a notable variation are the WoS categories that the spatial sub-sample reflects. Geography and environmental studies ranks high along with urban studies and economics. Sociology and PEOH rank fifth and seventh respectively (FIGURE 33). This is logical given the geographic nature of spatial interests and suggests that further work could be done in exploring how social capital from a planning and city development side could complement related fields like urban studies.

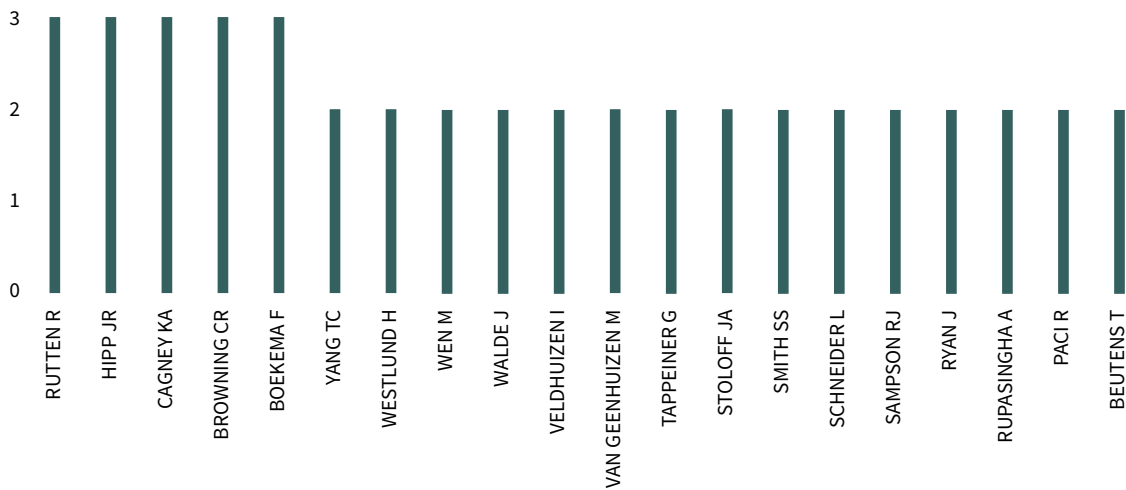


FIGURE 31: Top 20 authors within the “spatial” abstract search.

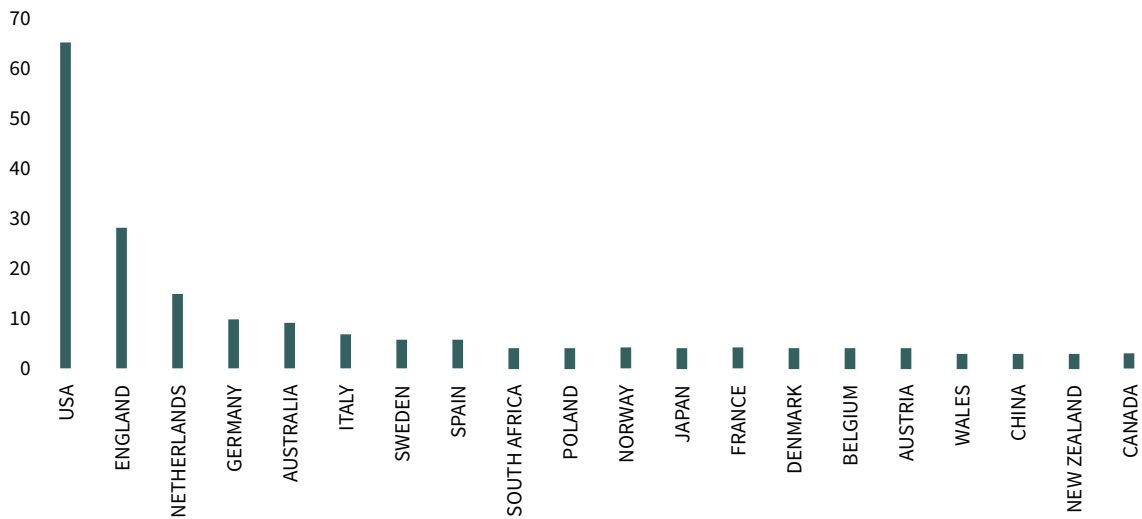
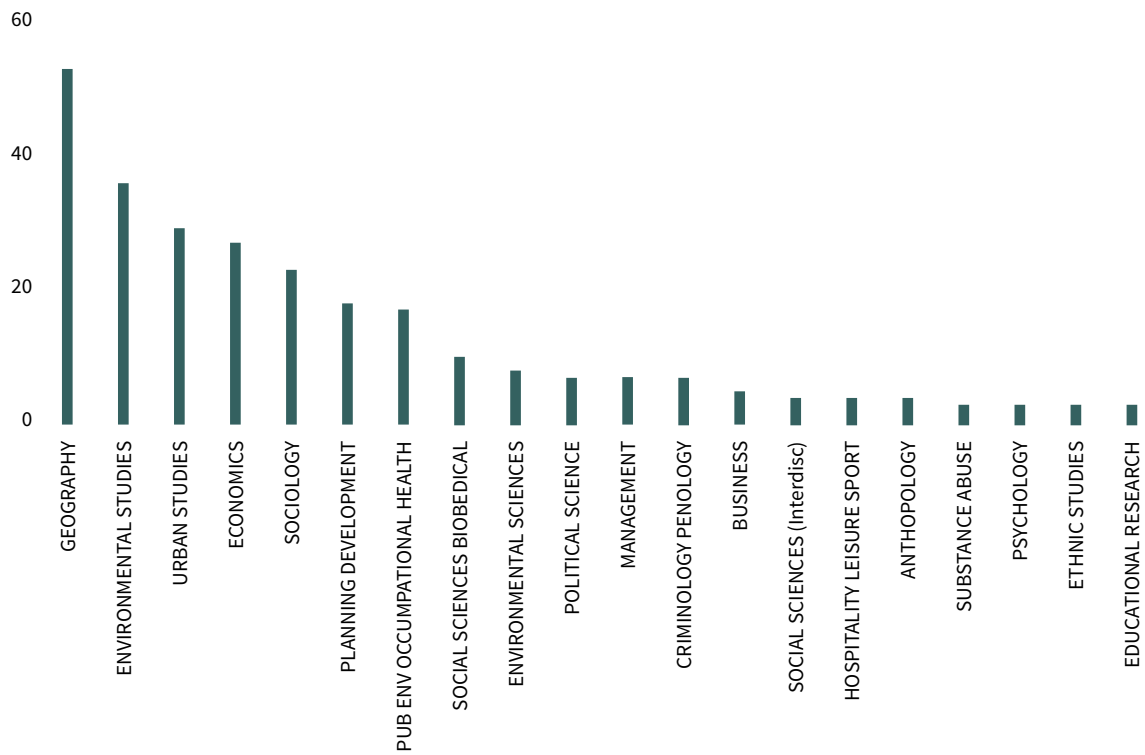


FIGURE 32: Top 20 countries within the “spatial” subset.





**FIGURE 33:** Top 20 categories within the “spatial” subset top 20 most recent papers for “spatial”.



Spaces increase in meaning as shared ties are formed and sustained in them.

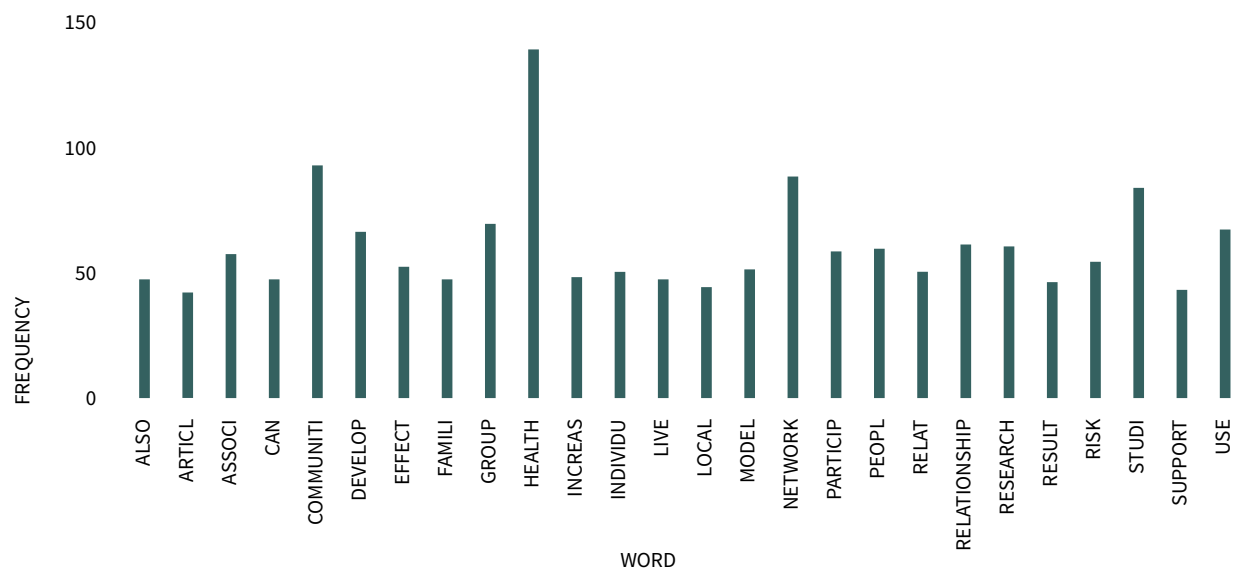
## SOCIAL ISOLATION AND SOCIAL CAPITAL

Isolation is an important area of research within the social capital core data set because it represents an antithesis to social cohesion. Social capital is a collective phenomenon and social isolation therefore represents scarcity of social resources. The top citations that link social capital and isolation are health related. The health concerns include geriatric health and social isolation (Boneham and Sixsmith 2006; Warburton and McLaughlin 2005), pregnancy and depression (Raymond 2009), and psychiatric impacts (Haynie, South, and Bose 2006; Kelly 2005). Overall, the quality and relevance of the search return on this subcategory is much lower than the other systematically selected papers and reflect an eclectic mix within and outside of the health-related themes. Current scholarship revealed a similar mixed data set. The data generated by isolation as a subset of social capital needs further attention, and it may be worth pursuing a search of “social isolation” within the full WoS

### THE TOP CITATIONS that link social capital and isolation are health related.

Core Collection and then exploring for social capital themes within that. Sources range from agriculture (Serra and Poli 2015), to heritage buildings (Gregory 2014), to disaster response (Gill 2014; Olcott and Oliver 2014), to methods (Wang et al. 2014), to economic history (Fourie and von Fintel 2014).

The subcategory search on isolation returned 93 records, nearly all of which are journal articles. This is the smallest subcategory data set. The abstracts of the records, cleaned of “social capital,” “spatial,” and other known themes, revealed strong health, community, risk, and people ideas (FIGURE 34). This was reflected in both the most cited papers and the most recent papers.



**FIGURE 34:** Analysis of 93 social capital abstracts that include “isolation” as a term with words occurring more than 40 times showing arranged alphabetically [Raw text was processed in the following way: punctuation removed, numbers removed, converted to lowercase, stopwords removed using “English” stopwords from R (n = 174), words were stemmed (e.g., remove “ing,” “es,” “s”), removed definition words (“social,” “capital,” “isolation,” “isolate”), whitespace removed, and frequency matrix generated for analysis].

Contributions by the most prolific authors showed a modest leading trend by McKee (health) but otherwise is reflective of the very mixed number of categories researched and the relatively small sample obtained from the data (FIGURE 35).

The only notable variance in terms of contributions from specific countries is the strong showing by England compared to the United States (FIGURE 36). The Netherlands is farther down the list than has been the case in other subcategory data sets.

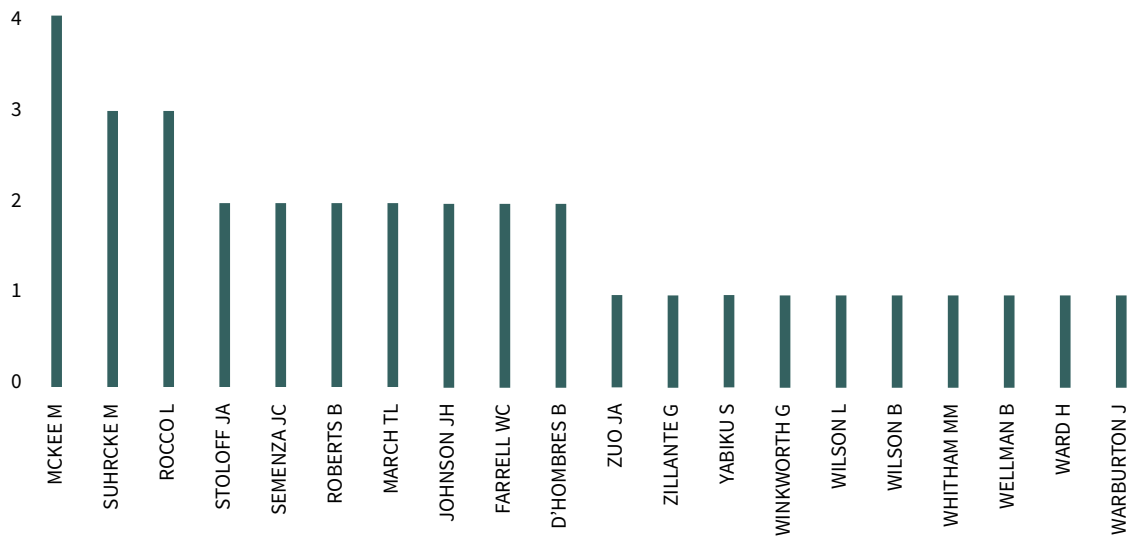


FIGURE 35: Top 20 authors within the “isolation” abstract search.

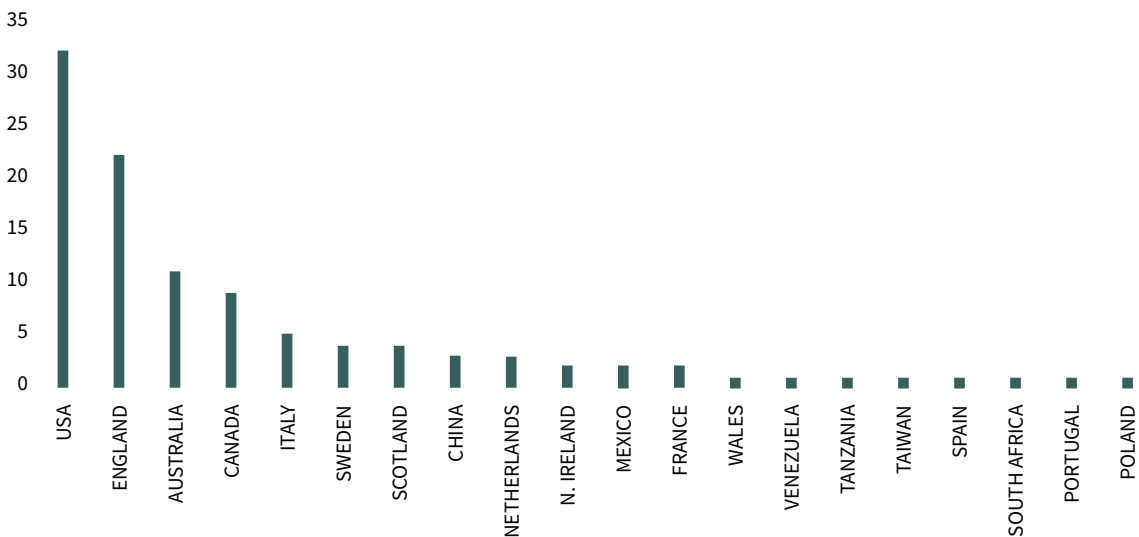


FIGURE 36: Top 20 countries within the “isolation” subset.

A review of the associated WoS categories revealed a return to a pattern more typical of the overall data set. The interesting exceptions, however, are “social sciences biomedical” and “psychiatry” (FIGURE 37).

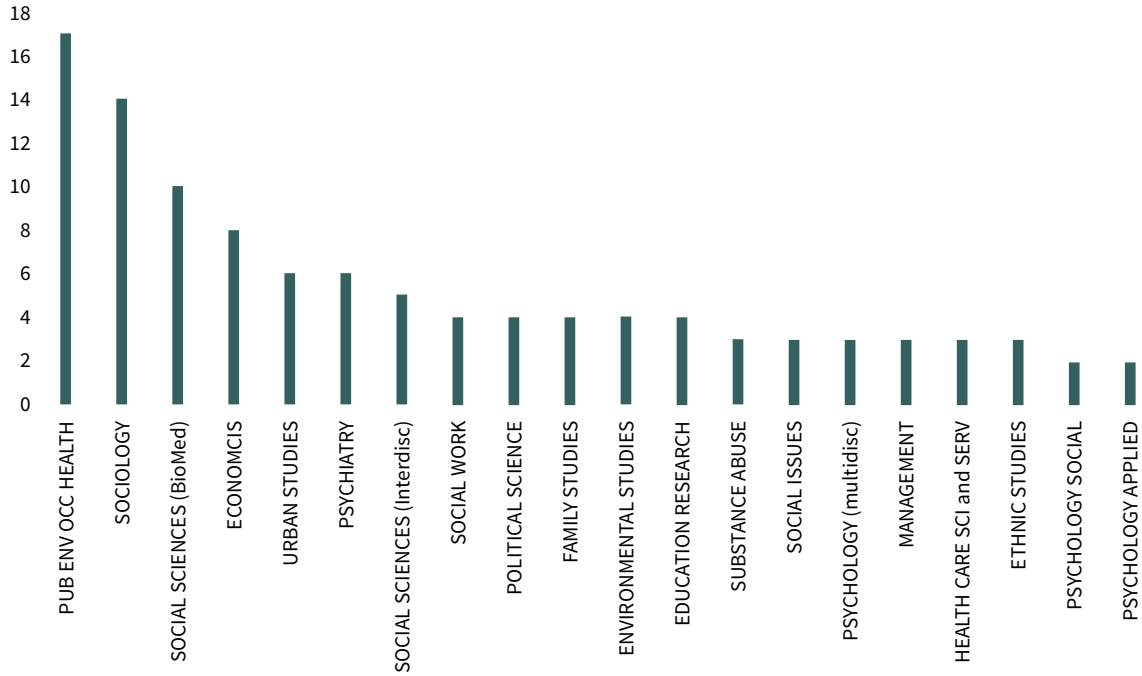


FIGURE 37: Top 20 categories within the top 20 most recent papers for “isolation”.

## DISCUSSION

The Web of Science online repository of academic citations represents a significant research pool of science and social science academic publications. For subject areas with large literature representation and diverse themes, it is essential to provide an overview of the scholarly landscape in addition to the more theme-specific literature reviews typically found in a given journal article (Khabisa et al. 2016). Social capital as a subject of research has proven to be complex, interlinked with many other interesting phenomena, and comparatively young in terms of academic study. This overview of the social-capital-scholarship landscape using citation and text analysis of abstracts orients this whitepaper within that landscape, showing the important linkages to trust, social networks, measurement, and isolation.

Based on the preceding analysis of social capital within the WoS Core Collection and the subcategories of trust, measurement, spatial dynamics, and social isolation, the following five observations are relevant to the current study:

**SOCIAL CAPITAL AS A SUBJECT OF RESEARCH** has proven to be complex, interlinked with many other interesting phenomena, and comparatively young in terms of academic study.

- 1. SOCIOLOGY AND BUSINESS/ECONOMICS ARE IMPORTANT DISCIPLINES WITHIN WHICH SOCIAL CAPITAL RESEARCH IS ACTIVE AND GROWING.** City planning themes do occur within the data, but they are much less frequent. Health remains a very significant field as well, particularly the role that social structures and social context play in human well-being.
- 2. THE FIELD OF SOCIAL CAPITAL IS MADE UP OF BOTH A SMALL BUT PROLIFIC GROUP OF AUTHORS (PRIMARILY IN THE HEALTH FIELD) AND A SIGNIFICANT NUMBER OF MUCH LESS PROLIFIC AUTHORS.** This represents a challenge that scholars reviewing the field will need to be aware of (e.g., health themes move into the heavily skewed left side of graph where there are fewer links to other fields that are also important). These “disciplinary distances” can represent lost opportunities for cross-pollination of ideas, research insights, and creative new approaches to social capital theory and practice.
- 3. THE UNITED STATES IS THE DOMINANT HOMETOWN OF ENGLISH-LANGUAGE SOCIAL CAPITAL RESEARCH WITH CANADA AND THE UNITED KINGDOM SUPPORTING THAT TREND.** China, Germany, and the Netherlands are also notably active along with a significant number of countries that are making more modest contributions. This pattern is similar to the authorship pattern, where very few authors have many citations and many authors have a few citations. This English-language analysis is a clear limit as work in French and other languages would increase the number of papers being published.
- 4. PUBLISHED ACADEMIC ARTICLES ARE THE FORMAT FOR EXCHANGE.** Though there are a number of books and book reviews, they are marginal by comparison with journal articles. This may indicate that the field is still emerging. It also suggests that translation of academically driven publishing in social capital to formats more useable to policy makers, government bureaucrats, and other decision-makers is work that remains to be done. It is probable that key methodological papers will emerge as citation and influence leaders in a way similar to James Coleman’s seminal role in the late 1980s. Looking for new measures, proxy measures, and approaches to data analysis will represent a significant amount of potential work for a global community of social capital scholars.



5. **BUILDING ON POINT 4 ABOVE, SUBSTANTIAL SOCIAL CAPITAL GROWTH HAS OCCURRED IN THE LAST DECADE IN THE ACADEMIC FIELD BUT HAS HAD MIXED UPTAKE AT POLICY LEVELS DEPENDING ON COUNTRY.** In Canada, for example, policy interest was very high up to 2006 (Franke 2005) but declined significantly after that despite the very active scholarly output. It is likely that academic research will continue and perhaps grow even more diversified as population growth, societal complexity, and institutional change continue to accelerate, driving our need to understand how our collective social resources grow, decline, or change their character over time. Significant effort will need to be invested to make that work available to those outside of academia.



Social isolation is a growing health and civil society risk. We will need the insights of social capital research to address that challenge.

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