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An Examination of Social Capital among U.S. Adults: Patterns that Facilitate Social Well-being as Measured by PIAAC

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Abstract. Communities thrive when individuals work together to share knowledge and resources. This phenomenon, *social capital,* is widely understood as the access and proficiency individuals have to knowledge and networks that facilitate acquisition of economic resources and social well-being (Putnam, 2000). This paper presents findings from data collected in the Programme for the International Assessment of Adult Competencies (PIAAC) related to three elements of social capital. Community involvement, political efficacy, and social trust were explored as they relate to age, educational attainment, and time of residence in the United States. Key results include low levels of all social capital variables and differences by age and educational attainment. Findings add to the understanding of the ways in which sub-groups of U.S. communities engage with their social networks.

Keywords: social capital; community involvement; political efficacy; social trust.

1. Introduction

To many, the United States appears to grow more divided every day. However, these observations of a lost sense of unity are not a new phenomenon. Sociologists have been examining the varying levels of people's trust in their governments and fellow citizens for decades. Since the publication of Putnam's (2000) work "Bowling Alone: The Collapse and Revival of American Community," there has been a growing examination of these changes which has supported the development of social capital theory. Its focus on examining the bonds people feel toward each other and their governments has laid the

groundwork for much of our understanding of why and when individuals interact and cooperate with each other.

Communities thrive when individuals work together to share knowledge and resources. Thus, a community's well-being is dependent on the ability of individual members to be proficient at life-skills and employment tasks, as well as being willing to share that expertise with fellow community members. This phenomenon, *social capital,* is widely understood as the access and proficiency individuals have to knowledge and networks that facilitate acquisition of economic resources and social well-being (Putnam, 2000). This sociological framework arose from human capital theory and focuses on the relationships or networks that facilitate development, not solely on the economic benefits individuals experience (Portes, 1998). Higher levels of social capital are strongly related to both economic and social well-being for individuals and communities (Westell, 2005). Therefore, international development agencies such as the Organisation for Economic Co-operation and Development (OECD) have identified the need to understand the varying levels of social capital on a global scale as well as leveraging this information to support economic development (OECD, 2013).

A strong, positive relationship between lifelong learning and social capital has been firmly established (Balatti, Black, & Falk, 2006; Bynner & Hammond, 2004; Westell, 2005). Individuals with higher levels of social capital engage in learning that reinforces and increases their economic and social well-being. Conversely, individuals with low levels of social capital engage less frequently in learning opportunities, which perpetuates continued low levels of social capital (OECD, 2013). Social capital acquisition affects individuals in various facets of life such as social inclusion, physical and mental health, as well as the larger communities in terms of better government and economic well-being (OECD, 2013).

Due to the breadth and multi-disciplinary nature of the framework, measuring social capital varies widely. One area of discussion is the unit of analysis. Some researchers focus on the larger macro unit of the community, while others examine the micro unit of the individual. The Programme for the International Assessment of Adult Competencies (PIAAC) data set collected information on both the micro- and combined (micro- and meso-) level with items about individuals' volunteering habits, political efficacy, and social trust. While studies of solely the individual unit do not yield a deep understanding of networks and communities, they do offer a description of widely-held beliefs and patterns of behavior.

2. Purpose

The purpose of this paper is to describe the patterns of community involvement, political efficacy, and social trust among sub-groups of the U.S. population and to examine the relationships among these factors and the demographic characteristics of age, educational attainment, and time of residence in the U.S. The following research questions guide this study:

1. Do the demographic characteristics of age, educational attainment, or time of residence predict community involvement, political efficacy, or social trust as measured by the PIAAC?
2. Do patterns of community involvement, political efficacy, or social trust differ significantly by demographic sub-groups?

3. Methods

This research involved secondary analysis of PIAAC-USA data files. The public-use files contain Background Questionnaire items and assessments of literacy, numeracy, and problem-solving in technology-rich environments (PSTRE). Descriptive and inferential analyses were conducted to describe patterns of social capital among various sub-groups.

3.1 Study Population

All data for this study were obtained from the 2012 PIAAC data set using the U.S. background questionnaire and literacy, numeracy, and PSTRE proficiency levels of 7022 adults between the ages of 16 and 66 and older.

3.2 The Programme for the International Assessment of Adult Competencies

The PIAAC assesses the proficiency of adults in three areas deemed vital to success in the modern home and work environments: literacy, numeracy, and problem solving in technology-rich environments (PSTRE). The PIAAC is part of a ten-year cyclical assessment of adult skills and was administered in two rounds in 2012 and 2015 in 23 OECD-member countries to adults ranging from 16 to 65 years of age. The United States also administered assessments to incarcerated individuals and those older than 65 years old. All cognitive skills items are congruent with the PIAAC framework which defines key competencies as those outcomes which are necessary for successful social and civic interactions, lifelong learning, and gainful employment (OECD, 2013). In addition to the cognitive skills assessments, the PIAAC included a background questionnaire of items related to basic demographics, educational background, employment, social capital, and literacy and numeracy patterns of use designed to deepen understanding of the relationship between proficiency in the key competencies and economic and social outcomes (OECD, 2013).

3.3 Social Capital Variables

Based on a review of the literature, the social capital variables selected for this study were community involvement, political efficacy, and social trust. These single-item variables were deemed relevant to the conceptual framework and describe varying aspects of individuals' beliefs about and patterns of behavior of interacting with their community. The three demographic variables used in this study were also reflective of the literature and included age, educational attainment, and time of residence in the U.S.

3.3.1 Community involvement. Community involvement is composed of a broad range of activities representative of community group membership, volunteering, or community project organization. Research suggests that age and socio-economic status play significant roles in the type and

level of community engagement (Flanagan & Levine, 2010; Jennings & Stoker, 2004). One survey question assessed community involvement in the PIAAC Background Questionnaire. This item (Q_05F) asked individuals to describe how often they volunteered at non-profit organizations such as a charity or political group. Options included: *never, less than once a month, less than once a week but at least once a month, at least once a week,* and *every day.*

3.3.2 Political efficacy. Political efficacy describes how capable an individual feels about participating in the political process and the perceived value of that participation. This background questionnaire item (Q_06a) asked individuals the extent to which they agreed with the statement "People like me don't have any say about what the government does." Options included five levels of: *strongly agree, agree, neither agree nor disagree, disagree,* and *strongly disagree.*

3.3.3 Social trust. The final social capital variable, social trust, illustrates the trust an individual feels toward surrounding community members. Two background questionnaire items asked the extent to which participants agree with the statements: "There are only a few people you can trust completely" and "If you are not careful, other people will take advantage of you".

3.4 Demographic variables

Three demographic variables from the PIAAC Background Questionnaire were included in this study: age, educational attainment, and time of residence in the U.S. While age and educational attainment have been found to be indicators of social capital (Balatti, Black & Falk, 2006; Flanagan & Levine, 2010; Jennings & Stoker, 2004), there have been limited studies of how time of residence in the U.S. is related to social capital.

The variables of age, educational attainment, and time of residence in the U.S. were utilized to analyze patterns and relationships among demographic groups and sub-groups. Age groups included the following levels: 24 or younger, 25 to 34, 35 to 44, 45 to 54, 55 to 65, and 66 and older. The three educational attainment groups were: less than a high school diploma, high school diploma and/or some college, and college degree and higher. The variable describing length of time living in the U.S. was comprised of three levels: in the U.S. 5 years or fewer, in the U.S. more than 5 years, and non-immigrants to denote individuals who were native-born and assumed to have lived in the U.S. all their lives.

4. Data Analysis

Analysis of data included use of the IDB Analyzer software and SPSS. Statistical significance was assumed at $p \leq 0.05$ for all analyses. The variables selected were curated to remove all non-response categories. The final data set consisted of 7022 data points for all variables except Cultural Engagement which had 7019. Analysis is ongoing but to date we have examined: descriptive statistics, correlation analyses, cross-tab statistics, ANOVAs with both contrasts and post-hoc methods as appropriate.

5. Findings

Our findings include patterns of the general population and descriptions of significant patterns of demographic sub-groups. Among the social capital

variables, political efficacy had the highest mean (M = 2.98; SD = 1.27), followed by cultural engagement (M = 2.04; SD = 1.14) and trust in others (M = 2.28; SD = 1.20/ M = 2.03; SD = 1.00). In other words, the average American has ambivalent feelings about his or her importance to the political system as noted by neither agreeing or disagreeing with their importance to the political system. Similarly, means of community engagement through volunteering and social trust are low with the average individual volunteering less than once a month, agreeing that they trusted only a few people, and believing that people take advantage of others.

Item responses revealed further details about these social capital variables. While cultural engagement had the highest mean of the social capital variables, it is interesting to note that the data show almost half (43.7%) of the sample not volunteering at all and roughly one-quarter (25.9%) of the population volunteering less than once a month. Broadly translated, this means that most Americans do not engage in helping others for no economic gain or do so very rarely.

Responses to the political efficacy item revealed a wide and more evenly dispersed range of opinions. The combined percentages of people who agreed, including strongly agreeing, was almost even to the percentages of people who strongly or simply disagreed. Furthermore, people who could be described as feeling ambivalent comprised roughly a fifth of the total group. In contrast, responses to both items of social trust were strongly skewed to a lack of trust in fellow community members, with a combined 69% agreeing that they could trust only a few people and a combined 77% believing that people take advantage of others. A complete distribution of the item responses by scale value of political efficacy and social trust can be found in Table 1.

Table 1: Percentage Distribution of responses to political efficacy and social trust by scale value

Item	*Strongly Agree*	*Agree*	*Neither Agree nor Disagree*	*Disagree*	*Strongly Disagree*
Political Efficacy	16.4 %	21.8 %	19.9 %	31 %	10.9 %
Social Trust (#1)	29.5 %	39.5 %	9.5 %	16.1 %	5.4 %
Social Trust (#1)	33.2 %	43.9 %	12.4 %	7.9 %	2.6 %

Note. N = 7022

5.1 Research Question 1

Initial analyses revealed no strong correlations between the demographic and social capital variables. Pearson correlations ranged from .009 (Cultural Engagement x Residence in the U.S.) to .188 (Political Efficacy x Education). Despite lack of evidence for a high degree of direct overall correspondence between variables, visual examination of labeled bivariate plots suggested that interesting subgroup patterning might be present within the data.

Table 2: Correlations between social capital variables and demographic variables

	Cultural Engagement	Political Efficacy	Social Trust #1	Social Trust #2
Time in U.S.	.086	.009	.037	-.013
Education	.136	.188	.185	.187
Age	.035	.038	.093	.122
Gender	.052	.046	.015	.035

5.2 Research Question 2

To explore differences among sub-groups of the demographic variables, Duncan post-hoc test results were examined. These revealed significant differences among sub-groups and present relevant descriptions of differing patterns of behavior and beliefs. These will be examined in the following section by age, time of residence in the U.S., and educational attainment.

5.2.1 Age. Age demonstrated interesting findings in all social capital variables. In general terms, data revealed that young people have the least amount of social capital with levels increasing consistently with age. In other words, younger people are less involved in their community, feel less impactful on the political system, and are less trusting of others. An examination of the mean values revealed a consistent, upward trend of increasing social capital with advancing age. For example, the lowest means of political efficacy and social trust were among the 16-24 age group. In contrast, the highest means of those variables were in the two oldest age groups, either 55-65 or 65 and older. Community involvement showed a slightly different pattern, with the second youngest group of 25-34-year-olds volunteering only once a month or never, while the 55-65-year-olds did so monthly or weekly. Table 3 includes a listing of the mean values by age group.

Table 3: Mean values of social capital variables by age group

Social Capital Item	24 or less	25-34	35-44	45-54	55-65	65 and older
Community Involvement	2.09	1.89*	2.09	2.01	2.17	2.95**
Political Efficacy	2.90*	2.96	3.00	3.05	3.08**	2.95
Social Trust #1	2.15*	2.23	2.26	2.34	2.48	2.51**
Social Trust #2	1.93*	1.94	1.98	2.10	2.22	2.35**

Note - * lowest value; ** highest value

The Duncan post-hoc test results supported this pattern in community involvement, with the 25-34-year-old group significantly different from all other groups with the lowest mean of 1.89. In comparison, as demonstrated below in Table 4, all other age groups were statistically related to at least three other categories.

Table 4: Duncan post-hoc results: Age and community involvement

Age in 10-year bands	N	Subset 1	Subset 2	Subset 3
25-34	1902	1.89		
45-54	1110		2.01	
35-44	1100		2.09	2.09
24 or less	1563		2.09	2.09
66 plus	375		2.12	2.12
55-65	969			2.17

There were fewer significant differences in political efficacy among groups, as each age category was similar in mean to at least three other age groups. This can be interpreted as membership in a specific age group not providing many differences to individuals' sense of political efficacy. Social trust demonstrated varying levels of differences in the two items. The first item presented three sub-sets of similar means, while the second item produced four sub-sets. However, while the three youngest age groups were consistently similar in both items, the three oldest age groups of the second item were found to be unique with significant differences in mean from all other groups. These results can be found in Table 5 below.

Table 5: Duncan post-hoc results: Age and social trust item 2

Age in 10-year bands	N	Subset 1	Subset 2	Subset 3	Subset 4
24 or less	1563	1.93			
25-34	1903	1.94			
35-44	1101	1.98			
45-54	1110		2.10		
55-65	969			2.22	
66 plus	376				2.35

5.2.2. Educational Attainment. Examinations of educational attainment level and social capital variables revealed a consistent and clear pattern of increases in educational attainment resulting in higher levels of community involvement, political efficacy, and social trust. Individuals without a high school degree were much less likely to volunteer than those with a college degree and believed more strongly that they did not play an important role in the political system. Furthermore, they were more likely to trust only a few people and believed more strongly that people take advantage of others. This illustrates how having less education plays a restrictive role and limits interactions with the potential to enhance their social capital. A complete list of the mean values by education is found in Table 6.

Table 6: Mean values of social capital variables by educational attainment group

Variable	Less than high school	High school/ Some college no degree	College degree or higher
Community Involvement	1.87*	1.93	2.26**
Political Efficacy	2.60*	2.87	3.29**
Social Trust #1	2.00*	2.15	2.59**
Social Trust #2	1.80*	1.90	2.30**

Note - * lowest value; ** highest value

Duncan post-hoc test results suggest that each educational attainment sub-group was unique and different from the others in all social capital variables, with the exception of community engagement. In this case, the means of those with and without a high school degree but no college degree were similar. However, differences were found among all three levels in political efficacy and social trust. Those groups can be found in Tables 7 and 8.

Table 7: Duncan post-hoc results: Educational attainment and community engagement

Educational Attainment	N	Subset 1	Subset 2
Less than high school	909	1.87	
High School/Some college, no degree	3633	1.93	
College degree or higher	2477		2.22

Table 8: Duncan post-hoc results: Educational attainment and political efficacy

Educational Attainment	N	Subset 1	Subset 2	Subset 3
Less than high school	909	2.60		
High School/Some college, no degree	3633		2.87	
College degree or higher	2477			3.29

5.2.3. Time of Residence in U.S. The time of residence in the U.S. reveals a surprising similarity across sub-groups, as well as an irregular pattern that contradicts social capital theory in some areas. In theory, it is likely that native-born individuals will have more social capital than non-native born, having had more time and cultural understanding of existing social networks. In addition, when examining differences in non-native born sub-groups, it is likely that non-native-born individuals who have lived in the U.S. for a shorter time will have lower amounts of social capital due to a decreased time to develop connections and networks in their community, among other factors. However, an examination of the mean values by time of residence revealed slightly contradictory patterns. The non-native born with more than five years of living in the U.S. had the lowest levels of both political efficacy and social trust of the three sub-groups. While the native-born had the highest means of community involvement, political efficacy, and one item of social trust, the non-native born with fewer than five years in the U.S. also demonstrated the highest levels of political efficacy and social trust (item #2). In fact, only community involvement revealed the lowest means for the non-native born with fewer than five years in the U.S. The contrast between the two non-native groups provides a challenge to social capital theory and bears further examination. A complete list of the mean values by time of residence in the U.S. can be found below in Table 9.

Table 9: Mean values of social capital variables by time in U.S.

	Non-Native Born Less than 5 years	Non-Native Born More than 5 years	Native Born
Community Involvement	1.61*	1.80	2.07**
Political Efficacy	2.99**	2.94*	2.99**
Social Trust #1	2.23	2.14*	2.30**
Social Trust #2	2.31**	2.01*	2.03

Note. * = lowest value; ** = highest value

Notwithstanding the differences noted above, findings from the Duncan post-hoc tests revealed no significant differences among sub-groups in political

efficacy and both items of social trust. Community involvement mean values were grouped into both non-native groups together and the non-native group on its own.

6. Discussion

Findings in the present study indicated low levels of social capital across the three social capital variables examined: community involvement, political efficacy, and social trust. Based on the PIAAC data, it appears that Putnam's hypothesis of diminishing interaction and community cooperation on a large scale may be accurate. This study aimed to better understand this phenomenon by examining and describing the relationship between social capital and age, educational attainment, and time of residence in the U.S.

6.1 Community involvement

In the PIAAC Background Questionnaire, community involvement was measured by how often people volunteer in a variety of community organizations. Findings in this study aligned with previous conclusions of the positive correlation between age and volunteering (Flanagan & Levine, 2010; Jennings & Stoker, 2004). In general, older individuals volunteer more frequently than younger individuals, with individuals 65 and over doing so at least once a month, while 25-34-year-olds averaged less than once a month. However, this trend was not uniform, with 16–24-year-olds volunteering more frequently than the next oldest age group, 25-34-year-olds, who were the least likely to volunteer of all age groups. Educational attainment was also found to play a role in understanding community involvement, as college-educated individuals were significantly more likely to volunteer at significantly higher rates than those with and without high school degrees. Finally, our findings suggest that time of residence in the U.S. plays a minor role in describing differences in community involvement, with differing patterns of behaviors between native-born and non-native born individuals.

6.2 Political Efficacy

In the PIAAC Background Questionnaire, political efficacy was measured by asking respondents how important they felt to the political system. The foundation of effective democratic government is voter participation, which is strongly tied to this aspect of social capital. Individuals who believe their vote counts will be more likely to vote. Therefore, it is important to understand any underlying factors that may influence political efficacy. According to our findings, there is a pattern of increased political efficacy with advances in age and educational attainment. These data do not reflect longitudinal data; therefore, while previous studies have examined this phenomenon from a developmental framework, that is not applicable to this study. The role of educational attainment, however, remains clear. Each of the three categories revealed significantly different characteristics from one another and with increased education, individuals feel more empowered about their role in the larger political system.

The role of time of residence in the U.S. revealed no significant differences among short-term, non-native born, long-term, native-born, and native-born individuals. However, there are areas that would benefit from more in-depth research. The non-native born levels include a variety of immigration statuses. Asking naturalized citizens about their role in the political system will be perceived differently from asking permanent residents, for example due to the differences in voting rights. Do short-term, non-native born residents feel more political efficacy due to a limited understanding of the political system? Are there factors related to legal status that are influential? Further studies that allow for the complexity of this category would enable a deeper and more nuanced understanding of this variable.

6.3 Social Trust

Social trust was measured by two items in the PIAAC Background Questionnaire. Both items examined the extent to which respondents felt they could trust only a select group of people and the belief that others would take advantage when given the opportunity. The findings were varied across demographic categories and presented few patterns to describe these beliefs. Educational attainment was somewhat valuable in explaining this social capital factor with each group presenting unique characteristics. However, neither age nor time of residence in the U.S. offered clear descriptions to inform understanding of social trust. Further examinations of social trust and other demographic variables may yield more revealing findings.

7. Conclusions

This study aimed to deepen understanding of the extent to which individuals connect with others in their communities. Findings linking higher age and educational attainment with greater amounts of connections through volunteering, political efficacy, and social trust aligned with existing literature, while time of residence demonstrated a less predictable and more complex relationship (Balatti, Black & Falk, 2006; Flanagan & Levine, 2010; Jennings & Stoker, 2004). These findings do not provide an answer to Putnam's assertion of overall decreasing social capital in the U.S. However, they support the pivotal role that education plays in enhancing individuals' access to and skills in working within community networks. Therefore, to enhance the economic and social well-being throughout all levels of society, continued investment in lifelong learning opportunities offered through formal educational institutions, workplace professional development, and community-based literacy classes is needed. That, coupled with further research into the complex nature of social capital, will propel us toward understanding if Americans are more united than divided.

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