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Exploring the Complexities of Social Engagement Among Young Adults

استكشاف تعقيدات المشاركة الاجتماعية بين الشباب البالغين

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Abstract:

This study aims to enhance understanding of young adults' social outcome. The existence of large multinational Program for the International Assessment of Adult Competencies (PIAAC) data provides the opportunity to explore the relationship between young adults' propensity to volunteer and various background data in several countries. The focus of this study was on investigating the relationship between young adults volunteering and their educational attainment, social trust, gender, participation in lifelong learning, and cognitive skills in numeracy. The findings suggest that while significant characteristic differences exist among millennials who engage in volunteering activities, only a few of these characteristics such as their numeracy skills, participation in lifelong learning, and social trust influenced their propensity to engage in civic activities. These findings contribute to our understanding of the factors that influence millennials' participation in civic activities.

Keywords: civic engagement; millennial; volunteering; numeracy skills; educational attainment.

المخلص:

تهدف هذه الدراسة إلى تعزيز فهم النتائج الاجتماعية للشباب. يوفر وجود بيانات كبيرة متعددة الجنسيات للبرنامج للتقييم الدولي لكفاءات البالغين الفرصة لاستكشاف العلاقة بين ميل الشباب إلى التطوع (PIAAC) ومختلف البيانات الأساسية في العديد من البلدان. كان تركيز هذه الدراسة على التحقيق في العلاقة بين تطوع الشباب وتحقيقهم التعليمي وثقتهم الاجتماعية والجنس والمشاركة في التعلم مدى الحياة والمهارات المعرفية في الحساب تشير النتائج إلى أنه على الرغم من وجود اختلافات مميزة كبيرة بين جيل الألفية الذين يشاركون في الأنشطة التطوعية، إلا أن عددًا قليلًا فقط من هذه الخصائص مثل مهاراتهم الحسابية ومشاركتهم في التعلم مدى الحياة والثقة الاجتماعية أثرت على ميلهم إلى المشاركة في الأنشطة المدنية. تساهم هذه النتائج في فهمنا للعوامل التي تؤثر على مشاركة جيل الألفية في الأنشطة المدنية.

الكلمات المفتاحية: المشاركة المدنية؛ الألفية؛ التطوع؛ مهارات الحساب؛ التحصيل العلمي.

Introduction:

Volunteering has long been recognized as an effective means of bringing about educational reform. Studies have shown that volunteering can improve academic achievement, increase student engagement and contribute to the development of civic responsibility in students (Scales & Roehlkepartain, 2003). Additionally, volunteer work provides opportunities for students to interact with individuals from diverse backgrounds, which can broaden their perspectives and increase their understanding of social issues (Musick & Wilson, 2003). Overall, volunteering can be a powerful tool for promoting educational reform and fostering positive outcomes for students.

The relationship between cognitive skills and civic engagement is a complex one. According to the US Bureau of Labor Statistics (BLS) approximately 25 percent of Americans take the time to volunteer, and the number varies based on demographics (Bureau of Labor Statistics, 2016). Khuzwayo (2018) discussed the importance of occupying young adults' mind with mathematics to encourage their participation in social issues such as opposing land occupation in Palestine and preservation of Aboriginal culture in Australia. Aligned with the Organisation for Economic Co-operation and Development (OECD, 2013), Reder (2017) showed that numeracy skills have the potential to be a contributor to a number of social outcomes such as volunteerism and political efficacy.

Additionally, there is a growing body of literature that has shown a positive association between lifelong learning and volunteering. Specifically, individuals who engage in formal and non-formal learning opportunities tend to have higher levels of community engagement and active citizenship (Cervantes, Salinas, & García-San Pedro, 2016; Rübke & Janmaat, 2021; Weert, Kirschner, & Veenman, 2019). Considering the existing studies on the potential influencing various factors on volunteering and its importance in promoting civic participation, we have utilized rich data provided by PIAAC to investigate potential factors that influence young adults propensity to engage in volunteering activities.

Other factors such as education have shown to influence subjective wellbeing and social engagement. However, it is not clear whether this relationship continues to exist if other factors such as social trust, gender, and participation in lifelong learning are controlled. Additionally, while the influence of education on economic returns has been widely studied (Hanushek, Schwerdt, Wiederhold & Woessmann, 2015), non-market outcomes such as civic participation, volunteering, and how individuals choose to spend their leisure time has gained less attention. PIAAC offers an exceptional opportunity to assess the broad social benefits of factors such as lifelong learning, education and cognitive skills on social engagement, social connectedness and trust (Borgonovi, 2017). The millennial personality has been widely influenced by important social powers such as the Internet. As a result, millennials exhibit unique characteristics that are different from previous generations (Lloyd-Jones & Worley, 2018). Despite this important social issue and the critical generational changes occurring, few recent studies have explored millennial volunteering patterns and their relationship with cognitive skills (Sherrod, Torney-Purta & Flanagan, 2010). To address the gap in the literature, this study focuses on young adults between the ages of 20 and 39.

The purpose of this study is to examine the relationship between numeracy skills, participation in lifelong learning, social trust, and volunteerism behavior among young adults. This will be achieved by utilizing data from the Programme for the International Assessment of Adult Competencies (PIAAC). PIAAC defines volunteerism as work that "involves doing work without pay for charities, political parties, trade unions or other nonprofit organisations." (OECD, 2011, p.46).

Literature Review:

Millennials:

Parsons and Bynner (2005) suggested that numeracy skills influence social and economic well-being more than individuals' skills in literacy. Billington and Foldnes (2021) recognized the importance of numeracy skills in individuals' social well-being/standing. For example, numeracy skills are often valued in the labor market as a form of human capital that is separate from other skills such as education and personal characteristics (OECD, 2013). Higher income is often correlated with higher degree of happiness (Ma & Zhang, 2014), health and general community participation. Additionally, numeracy skills could provide individuals with the necessary tools to critically evaluate and assess the truth of the everyday headlines and make informed decisions about their community such as voting in a certain way, volunteering for a specific organization and protesting for a specific cause.

The positive social returns that result from continuing education and cognitive skill improvement during adulthood have been a focus in many European Union countries (OECD, 2001). Education and skills have been shown to be the most significant factors in individuals' economic advantage (OECD, 2011; Olaniyan & Okemakinde, 2008). Education increases knowledge and skills that are related to healthy behavior and social engagement (OECD, 2011). Also, education can influence individuals' social well-being as measured by social connectedness, social capital and civic participation (Borgonovi, 2017). OECD (2013) and Grotlüschen et al. (2016) noted a positive association between numeracy skills and volunteerism. A rich body of research has found a positive correlation between an individuals' economic advantage and their subjective well-being, suggesting that persons with more

education—and typically more money—also tend to report higher levels of life satisfaction and higher level of social engagement (Diener, 1984; Persell & Wenglinisky, 2004). However, the extent and scope of this association has become the subject of much debate (Desjardins & Schuller, 2006; OECD, 2001).

Sands and Goodman (2018) suggest that the relationship between skills and social capital may vary depending on the specific context and the type of skill being considered. Nevertheless, research has shown that education plays an important role in fostering social participation and promoting civic engagement (OECD, 2011; Desjardins & Schuller, 2006). This highlights the importance of investing in education and providing young adults with the knowledge and skills needed to become active and engaged citizens in their communities. As the next generation of leaders and community members, it is critical that millennials are equipped with the tools necessary to create positive change in society.

Millennials and Social Engagement:

There are conflicting views on millennials beliefs and behavior in social engagement. Millennials have come of age in a time characterized as the “information age”. Empowered by an explosion of information, they have confronted several major crises including domestic terrorism, the Great Recession and climate change. However, they are characteristically different in their views of civic responsibility. For example, CIRCLE (Kiesa et al., 2007) reported that unlike older generations, young adults are more likely to engage in civic life through non-traditional means such as online and peer networks and are more likely to support causes that they feel they reflect their values and interests. A survey conducted by the Pew Research Center in 2014 found that millennials were more likely to be described as self-absorbed, wasteful and greedy compared to other generations. Similarly, a study by Twenge et al. (2014) found that millennials scored higher on measures of narcissism compared to previous generations.

The reality of the matter is that millennial volunteering identity and characteristics are still in development and heavily influenced by social media. For example, West (2018) suggested that millennials tend to prefer careers that contribute to the greater good. Some millennials are more active in changing their world by using social media as a platform for change and demanding that the corporate world be socially responsible (Hendricks & Frye, 2013).

Such studies suggest an increasing need in studying factors that influence millennials view on social engagement. Also relevant is adult pursuit of lifelong learning to identify means to provide ongoing training on the importance of civic engagement. Learning neither starts with formal schooling, nor does it stop after individuals complete initial formal education. While prior knowledge is important, continuing education could also enhance their view of the community one lives in.

Research has shown that engaging in civic activities can have a positive impact on the well-being and happiness of young adults. A recent study conducted by Birger Sagiv, Goldner and Carmel (2022) found that participating in civic activities was associated with higher levels of subjective well-being among young adults. This finding is consistent with previous research that has linked civic engagement to increased social connectedness, a sense of purpose and improved mental health outcomes (Prilleltensky & Prilleltensky, 2021). Given the numerous benefits of civic engagement, it is important to encourage young adults to participate in social activities and become active members of their communities.

Research Questions:

The overarching research questions guiding this study are:

- How does the interaction between young adults' gender, educational attainment, employment status, status of their lifelong learning and social trust influence their volunteering activities?
- How do numeracy skills, participation in lifelong learning and social trust impact young adults' engagement in volunteering activities?

Method:

The data used for this study are from PIAAC, a survey organized by OECD and conducted by a diverse group of participating countries. PIAAC provides information on a range of skills including numeracy. The United States collected data in three rounds. The U.S. participated in Round 1 of the international survey in 2011-2012, and a national supplemental survey was later completed in 2014, focusing on younger workers, older workers and unemployed adults. Round 3 was collected in 2017.

Survey participants were sampled using a complex sampling technique requiring an extensive system of weights and replications. The first round collected data from 5,010 adults and the supplemental survey collected data from 3,660 adults for a total of 8,670 adults whose ages are from 16 to 74 (Rampey et al., 2016). The third round in 2017 survey collected data from 3,660 individuals whose ages are from 16 to 74, which provided a second point in time for comparison to 2012/2014 data. The combined data from 2012/2014 with 2017 provides a better estimate of state and country estimates of the population than individual data analysis (Rampey, Xie & Provasnik, 2019). The second author employed a restricted-use PIAAC: 2012/214/2017 datafile, which permitted expansion of the power of analyses and ensured that accurate sample weights for all three years were employed in analyses.

For this study, the second author analyzed data on young adults between the ages of 20 and 39 from PIAAC participants (n= 5,140), which consisted of 26.5% between the ages of 20 and 24, 24.3% between the ages of 25

and 29, 24.7% between the ages of 30 and 34, and 24.5% between the ages of 35 and 39. This analysis included young adults who were beyond compulsory education yet tended to continue education or training. Analyses were carried out using SPSS 26 and IDB Analyzer 9 while incorporating sampling weights and plausible values with replicate weights.

Dependent Variable:

PIAAC's rich background questionnaire contains items related to individuals' social engagement. In this study, we used the data provided on volunteering of the participants as a measure of social engagement. Volunteerism was constructed as an ordinal variable with a 5-level response option. Participants were asked: "In the last 12 months, how often, if at all, did you do voluntary work, including unpaid work for a charity, political party, trade union or other non-profit organization?" The respondents were able to choose one of the five designated response options (Never=0; Less than once a month=1; Less than once a week but at least once a month=2; At least once a week but not every day=3; Every day=4). For the purpose of this study, we dichotomized the variable into those who volunteer and those who do not (i.e., never) volunteer.

Control Variables:

Gender (GENDER_R) was coded as a dichotomous dummy variable (1 = female, 0 = male). A current employment variable (C_Q07) was recoded so that those reporting full-time or part-time employment were coded as "employed" and all others as "not employed". Social trust was used as one of the control variables as well. PIAAC includes two items for social trust (I_Q07a and I_Q07b); these items were summed to create a single variable. The two questions asked respondents how much they agree with the statement: "There are only a few people you can trust completely" and "if you are not careful, other people will take advantage of you." Response options for the summed variable ranged from strongly agree (2) to strongly disagree (10).

To measure educational attainment, we relied on the PIAAC measure (B_Q01a_T) that reports the individual's level of education in three levels (EDCAT3): less than high school education (<HS), high school education (HS), and postsecondary education (>HS). Lastly, measures of adult lifelong learning – participation in formal or non-formal education – were included as a measure of human capital. For lifelong learning, we merged the two derived variables identifying those who attended formal education or non-formal education (FE12 and NFE12) within the past 12 months preceding the administration of PIAAC with a dichotomized response (did not attend formal or non-formal education = 0, attended formal education, non-formal education, or both = 1).

Predictor Variable:

PIAAC provides an opportunity to extend the human capital measure to a direct measure of cognitive skills rather than having to rely exclusively on formal educational attainment. For proficiency in numeracy skills, we followed the OECD reporting convention. Numeracy proficiency levels are defined at Below Level 1 (scores of 0-175), Level 1 (176-225), Level 2 (226-275), Level 3 (276 – 325), Level 4 (326 – 375) and Level 5 (376 – 500) (for detailed description see OECD, 2011).

Analyses:

We opted to conduct descriptive analyses (i.e., frequencies and interactions among subgroups) to characterize millennials who volunteered in contrast with those who did not volunteer. Next, we constructed two logistic regression models: the first with study covariates and the second with assessed numeracy skills scores, determined from 10 plausible values, added to these control variables. Logistic regression was appropriately given the dichotomous dependent variable (volunteered vs. never volunteered). Neither analysis was causal, yet each offers information about millennial volunteering patterns that has not been shared previously and makes a first attempt to identify characteristics and assessed skills that predict volunteerism among millennials.

Results:

Before addressing the research questions, we conducted a series of descriptive statistics (Table 1). The descriptive analysis revealed that this population included slightly more female individuals than males, approximately 50.5% females compared to 49.5% males. The percentage of young adults with postsecondary education was the same as those without a postsecondary education. However, a small percentage of young adults reported that they did not finish high school (7.8%). This number was lower than the general population of adults between the age of 16 to 65 (14% for 2012/2014 survey and 12% for 2017 survey). A descriptive analysis of employment status for young adults revealed that approximately 71.3% of young adults reported that they were employed. Additionally, 72.3% of the young adults stated that they attended a form of lifelong learning during the year prior to the survey. To measure young adults' general attitude on social trust, we aggregated the two items on PIAAC background survey into one item as social-trust. When young adults were asked the two questions regarding social trust ("there are only a few people you can trust completely" and "other people take advantage of you"), young

adults rated their social trust a median of 4 on a scale of 2 to 10. This is lower than the average indicating that young adults tend to have trust issues.

Table (1): Descriptive Statistics for Volunteering Tendency for the Sample

Demographic Factors	Percentage
Education	
Less than high school	7.8
High school	42.5
Postsecondary	49.7
Other Background	
Employed	71.3
Attended formal or non-formal education last year (lifelong learning)	72.3
Social trust	4 (median, range 2 to 10)
Demographic	
Gender-Female	50.5

Note: Unweighted N is 4,990.

Source: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), 2012/2014/2017.

Influence of Demographics on Volunteering:

The first research question aimed to answer the following question: “how does the interaction between young adults’ gender, educational attainment, employment status, status of their lifelong learning and social trust influence their volunteering activities?” To answer this question, the second author conducted a series of interaction analyses among the independent variables in the study. A subgroup comparison and the results in odds ratio (OR) is summarized in Table 2. It illustrates young adults’ volunteering patterns relevant to their gender, education level, employment status, social trust and attendance in formal or non-formal education during the past year prior to the administration of the survey. Significant differences occur among all independent variables. As young adults’ educational attainment increases, they tend to volunteer more; those finishing less than high school volunteer at a rate of 31.6% whereas 63.2% of those attaining postsecondary education volunteer ($OR = 0.2, p < .001$; see Table 2). Gender was another significant indicator of propensity to volunteer. The results suggest that young women volunteer at a slightly higher rate than young men. Employment was a significant indicator of tendency to volunteer; employed young adults stated that they volunteered at a significantly higher rate than those who were unemployed. Young adults attending formal or non-formal education a year prior to the survey stated that they volunteered at much higher rates than their counterparts who did not attend any form of educational training ($OR = 2.8, p < .001$). Though the difference is small, young adults with lower levels of social trust volunteer at significantly lower rates than those with higher levels of social trust ($\eta^2 = 0.1, p < .001$).

Table (2): The Relationship of Independent Variables with Young Adults’ Volunteering

Factors	Never Volunteers (%)	Volunteers (%)	Odds Ratio (p)
Gender			
1.1 (< .001)			
Male	47.1	52.9	
Female	44.9	55.1	
Education attainment			
0.2 (< .001)			
Less than high school	68.4	31.6	
High school	52.6	47.4	
Postsecondary	36.8	63.2	
Employment			
1.1 (< .001)			
Not employed	47.6	52.4	
Employed	45.3	54.7	
Social trust			
Attended formal or non-formal education last year			
2.8 (< .001)			
Did not attend	64.5	35.5	
Attended	38.9	61.1	

Note: Unweighted N is 4,990.

Source: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), 2012/2014/2017.

Relationship between Numeracy Skills and Volunteering:

To answer the second research question: “how numeracy skills correlate with young adults’ volunteering patterns,” two logistic regression models were carried out. The first model included social trust, gender, education attainment, employment status, and attendance in formal or non-formal education last year. The analysis of the model fit revealed that model has a R^2 of 10% (Nagelkerke R^2) in volunteering patterns. The analysis of the model fit showed that the model can significantly explain the variation in volunteering pattern of the participants.

While in the previous section the analysis of the individual variables showed to be significantly associated with young adults volunteering behavior, when they were included in the regression model together, only two of the predictors, participation in lifelong learning and social trust, showed to be significantly related to the volunteering behavior. Such results are common in multiple regression models. The change in significance does not imply the lack of importance of any of these variables, and there could be various reasons for such a result.

The most common cause is the multicollinearity among the predictor variables; when the included variables are highly correlated with each other, it becomes difficult to determine the unique contribution of each variable to the outcome. In such cases, only one of the variables may show a significant relationship with the outcome variable while the other becomes non-significant. Sample size is another common contributor to non-significant results in regression models. Small sample sizes may not provide enough statistical power to detect small but meaningful effects, leading to some variables becoming non-significant (Gelman & Hill, 2007). In the present study, we focused on young adults, which led to a significant reduction in our sample size to accommodate our research aims.

The result of the regression analysis indicated that the odds of young adults participating in volunteering activities were significantly higher for those who participated in lifelong learning (OR = 0.42, SE = 0.04; with regression coefficient of 0.87, SE = 0.09, $p < .001$). Similarly, the odds of engaging in volunteering activities were significantly higher for young adults with higher rate of social trust (OR = 1.09, SE = 0.02; with regression coefficient of 0.08, SE = 0.02, $p < .05$). Educational attainment was another significant variable in this model. The odds of engaging in volunteering activities were significantly higher for young adults with higher educational background (OR = 1.60, SE = 0.09; with regression coefficient of 0.47, SE = 0.05, $p < .001$).

The measure of model fit for the full model, including adult numeracy scores, revealed a Nagelkerke R^2 of 12%. Numeracy skills contributed a positive effect to volunteering patterns. The result indicated that the odds of young adults participating in volunteering activities were significantly higher for those with higher numeracy skills (OR = 1.01, SE = 0.00; with regression coefficient of 0.01, SE = 0.00, $p < .001$). In other words, for each unit of increase in numeracy score, an adult’s chances of volunteering would be expected to increase by 1%. Gender, education attainment and employment status were not significantly associated with volunteering behavior. Similar to model one, attending formal or non-formal education, educational attainment and social trust were significantly associated with volunteering behavior (see Table 3).

The odds of young adults participating in volunteering activities were significantly higher for those who engaged in lifelong learning (OR = 1.46, SE = 0.04; regression coefficient = 0.77, SE = 0.10, $p < .001$). Similarly, the odds of volunteering were significantly higher for young adults with higher levels of social trust (OR = 1.09, SE = 0.02; regression coefficient = 0.07, SE = 0.02, $p < .001$) and educational attainment (OR = 1.35, SE = 0.09; regression coefficient = 0.30, SE = 0.07, $p < .001$). Gender also played a significant role with female young adults more likely to participate in volunteering activities than their male counterparts with similar skills and social trust (OR = 0.87, SE = 0.06; regression coefficient = 0.14, SE = 0.07, $p < .05$). In other words, young males with lower levels of education, numeracy skills, and social trust, as well as those not engaged in any formal or nonformal education, were less likely to volunteer.

Table (3): Logistic Regression Results for Two Models of Volunteering

Variable	B (SE)	P	Odds Ratio (SE)
Model 1 DV = Volunteering (I-Q05f-R) [R² = .10]			
Gender	.06 (.07)	>.05	.94 (.06)
Employed (C_Q07_R)	.07 (.10)	>.05	1.07 (.10)
Education attainment (EDCAT3)	.47 (.05)	<.001	1.60 (.09)
Attended formal or non-formal education in last year (PSE)	.87 (.09)	<.001	.42 (.04)
Social trust	.08 (.02)	<.001	1.09 (.02)
Model 2 DV = I.Q05f.Recode [R² = .12]			
Numeracy Score (PVNUM)	.01 (.00)	<.001	1.01 (.00)
Gender	-.14 (.07)	<.05	.87 (.06)
Employed (C_Q07_R)	.07 (.10)	>.05	1.07 (.10)
Education Attainment (EDCAT3)	.30 (.07)	<.001	1.35 (.09)
Attended formal or non-formal education in last year (PSE)	.77 (.10)	<.001	.46 (.04)
Social trust	.07 (.02)	<.001	1.07 (.02)

Source: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), 2012/2014/2017.

To ensure the accuracy of the results, PIAAC household 2012/2014 and 2017 full population weight and plausible values with all replicate weights were used. Reported R^2 represents Nagelkerke R^2 . Signs of beta

coefficients for categorical variables reflect reference groups as determined by SPSS regression variable entry procedures.

Volunteering has been positively associated with social well-being in many studies. For example, Wilson and Musick (1997) examined the existing relationship between volunteering and social well-being and found that volunteering is positively associated with social well-being. In addition, a study by the What Works Centre for Wellbeing found that volunteering is associated with enhanced well-being, including improved life satisfaction, increased happiness and decreases in symptoms of depression (What Works Wellbeing, 2020).

The results of the logistic regression models conducted in this study suggest that several factors are significantly associated with young adults' volunteering patterns. The first model included social trust, gender, education attainment, employment status and attendance in formal or non-formal education last year. The results showed that only participation in lifelong learning and social trust had a significant relationship with volunteering behavior. Similarly, the odds of engaging in volunteering activities were significantly higher for young adults with higher educational background. These findings are consistent with previous research that has shown that education and social trust are important predictors of civic engagement (Dekker & Halman, 2003; Wilson & Musick, 1997; Wilson & Musick, 1999).

The second model included adult numeracy scores, and the results revealed that numeracy skills contributed a positive effect to volunteering patterns. This finding suggests that young adults with higher numeracy skills are more likely to engage in volunteering activities. This result is consistent with previous research that has shown that cognitive abilities, such as numeracy skills, are positively associated with civic engagement and positive behavior (Briggs, 2018; Canaan & Goldberg-Glen, 1991; Musick & Wilson, 2003; Hovermill & Beaudrie, 2020).

The findings suggest a significant correlation between social trust and young adults' willingness to participate in volunteering activities. This is consistent with previous research that has found a positive relationship between civic engagement and trust (Cardinali, 2019). While most existing research has focused on social wellbeing as a general term, this study specifically focused on volunteering in adults and its relationship with numeracy, social trust and other demographics. Studies have often related social wellbeing with the act of volunteering. Wilson, J., & Musick, M. (1997)'s examination of existing relationship between volunteering and social well-being showed that volunteering is positively associated with social well-being.

Conclusions:

These findings are significant because social trust has the potential to increase individuals' engagement in their community and activism to promote social justice and equity. To promote civic engagement at a younger age, it is crucial to investigate the factors that influence it. The results of this study suggest that factors such as social trust, numeracy, and lifelong learning could have an impact on volunteer activities, all of which could be taught and practiced in public schools in the United States.

From a policy perspective, these findings suggest that policymakers should consider increasing the availability of volunteering opportunities for young adults. This could include providing funding for organizations that offer volunteer programs or creating incentives for businesses to encourage their employees to volunteer. By doing so, policymakers can help support young adults in developing their numeracy skills while also promoting social engagement and trust.

Additionally, from a policy perspective, gaining further insight into the relationship between skills and social returns is crucial. Since numeracy receives less explicit attention in policy than literacy, policymakers may need to increase the availability of numeracy opportunities with the aim of supporting volunteering and learner involvement in leadership roles. Numerical skills are essential for a vast number of careers and for leadership positions as they enable leaders to comprehend and utilize data effectively. For organizational leaders, numeracy provides confidence in making decisions based on numbers and quantities. To better serve young adult populations, educational systems need to continuously examine the type and extent of learning opportunities in numeracy and provide leadership opportunities for young adults. In the future, the researchers plan to use PIAAC data to conduct a cross-cultural analysis of young adults in various countries. Additionally, in the future, it would be beneficial to explore the potential differences in various age group's tendency to volunteer.

Recommendations:

- Provide opportunities for young children in public school to experience volunteering as a form of civic engagement.
- Promote opportunities for young adults to lead volunteering activities in their community.
- Teach numeracy skills through real life problem solving using data related to social justice such as number of prisoners based on ethnicity to promote social engagement and social trust.
- Develop mass media campaign promoting volunteering at a young age.

References:

- Billington, M. G., & Foldnes, N. (2021). Exploring the association between occupational complexity and numeracy. *Large-scale Assessments in Education*, 9(19), 1-28. <https://doi.org/10.1186/s40536-021-00112-6>
- Briggs, W. (2018). Quantitative Literacy and Civic Virtue. *Numeracy*, 11(2), Article 7. <https://doi.org/10.5038/1936-4660.11.2.7>
- Birger Sagiv, I., Goldner, L., & Carmel, Y. (2022). Civic Engagement in Socially Excluded Young Adults Promotes Well-Being: The Mediation of Self-Efficacy, Meaning in Life, and Identity Exploration. *International journal of environmental research and public health*, 19(16), 9862. <https://doi.org/10.3390/ijerph19169862>
- Bureaus Labor of Statistics (2016). *Volunteering in the United States-2015*. New Release. Retrieved From <https://www.bls.gov/news.release/pdf/volun.pdf>
- Borgonovi, E. (April 2017). *Non-economic outcomes Francesca*. The International Conference on PIAAC and PIAAC-Longitudinal. https://www.gesis.org/fileadmin/upload/PIAAC_Konferenz/PIAAC_Conference_Booklet_2017.pdf
- Bynner, J. (2005). Rethinking the youth phase of the life-course: The case for emerging adulthood?. *Journal of youth studies*, 8(4), 367-384. <https://doi.org/10.1080/13676260500431628>
- Canaan, R. A., & Goldberg-Glen, R. S. (1991). Measuring motivations for volunteering: A factor-analytic approach. *Journal of Leisure Research*, 23(4), 341-356.
- Cardinali, D. (2019). Equity, Power-Sharing, and Renewal of Civil Society. *Stanford Social Innovation Review*. <https://doi.org/10.48558/G62X-MA45>
- Cervantes, L. F., Salinas, M. R., & García-San Pedro, M. J. (2016). Adult learning and volunteering: Factors influencing participation in formal and non-formal learning for active citizenship. *International Journal of Lifelong Education*, 35(4), 347-365. <https://doi.org/10.1080/02601370.2016.1194022>
- Cristea, M., Noja, G. G., Stefea, P., & Sala, A. L. (2020). The Impact of Population Aging and Public Health Support on EU Labor Markets. *International journal of environmental research and public health*, 17(4), 1439. <https://doi.org/10.3390/ijerph17041439>
- Desjardins, R., & Schuller, T. (2006). *Introduction: Understanding the social outcomes of learning. In Measuring the effects of education on health and civic engagement*. OECD. <http://www.oecd.org/education/innovation-education/measuringtheeffectsofeducationonhealthandcivicengagement.htm>
- Dekker, P., & Halman, L. (2003). *The value patterns of Europeans: A cross-cultural analysis*. European Value Study Group.
- Diener, E. (1984). Subjective well-being. *Psychological bulletin*, 95(3), 542.
- Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge University Press.
- Grotlüschen, A., Mallows, D., Reder, S., & Sabatini, J. (2016). Adults with low proficiency in literacy or numeracy. OECD Education Working Papers, No. 131. OECD Publishing. <https://doi.org/10.1787/5jm0v44bnmnn-en>
- Hanushek, E. A., Schwerdt, G., Wiederhold, S., & Woessmann, L. (2015). Returns to skills around the world: Evidence from PIAAC. *European Economic Review*, 73, 103-130. <https://doi.org/10.1016/j.euroecorev.2014.10.006>
- Hendricks, J., & Frye, J. (2013). Social media and the Millennial generation in the 2010 midterm election. *Social Media Usage and Impact*, 183-199.
- Hovermill, J., & Beaudrie, B. (2020). *Mathematics for citizenship*. In Proceedings of the 20th International Conference on Technology in Collegiate Mathematics (pp. 1-6). Pearson.
- Khuzwayo, H. (2018). *Occupation of our minds: A metaphor to explain mathematics education in South Africa in the apartheid era*. In K. Yasukawa, A. Rogers, K. Jackson, & B. V., Street, (Eds.), Numeracy as social practice (pp. 172-185). Global and local perspectives.
- Kiesa, A., Orlowski, A. P., Levine, P., Both, D., Kirby, E. H., Lopez, M. H., & Marcelo, K. B. (2007). *Millennials Talk Politics: A Study of College Student Political Engagement*. Center for Information and Research on Civic Learning and Engagement (CIRCLE).
- Lloyd-Jones, B., & Worley, J. A. (2018). *Intergenerational tensions in the workplace*. In M. Y. Byrd, & C. L. Scott (Eds.). Diversity in the workforce: Current issues and emerging trends (pp. 190-213). Routledge.
- Ma, Y. Z., & Zhang, Y. (2014). Resolution of the happiness-income Paradox. *Social Indicators Research*, 119(2), 705-721. <https://doi.org/10.1007/s11205-013-0502-9>
- Musick, M. A., & Wilson, J. (2003). Volunteering and depression: The role of psychological and social resources in different age groups. *Social Science & Medicine*, 56(2), 259-269. [https://doi.org/10.1016/s0277-9536\(02\)00025-4](https://doi.org/10.1016/s0277-9536(02)00025-4)
- OECD (2001). *The Well-being of Nations: The Role of Human and Social Capital*, OECD.
- OECD (2011). *PIAAC conceptual framework of the background questionnaire main survey*. [http://www.oecd.org/skills/piaac/PIAAC\(2011_11\)MS_BQ_ConceptualFramework_1%20Dec%202011.pdf](http://www.oecd.org/skills/piaac/PIAAC(2011_11)MS_BQ_ConceptualFramework_1%20Dec%202011.pdf)
- Organisation for Economic Co-operation and Development (OECD) (2013). OECD skills outlook 2013: First results from the Survey of Adult Skills. OECD Publishing. <http://dx.doi.org/10.1787/9789264204256-en>

- Olaniyan, D. A., & Okemakinde, T. (2008). Human capital theory: Implications for educational development. *Pakistan Journal of Social Sciences*, 5(5), 479-483.
- Parsons, S., & Bynner, J. (2005). Does numeracy matter more? National Research and Development Centre for Adult Literacy and Numeracy.
- Prilleltensky, I., & Prilleltensky, O. (2021). *How people matter: Why it affects health, happiness, love, work, and society*. Cambridge University Press.
- Persell, C. H., & Wenglinsky, H. (2004). For-profit post-secondary education and civic engagement. *Higher Education*, 47(3), 337-359. <https://doi.org/10.1023/b:high.0000016436.45792.00>
- Rampey, B. D., Finnegan, R., Goodman, M., Mohadjer, L., Krenzke, T., Hogan, J., & Provasnik, S. (2016). *Skills of US unemployed, young, and older adults in sharper focus: Results from the Program for the International Assessment of Adult Competencies (PIAAC) 2012/2014. NCES 2016-039*. National Center for Education Statistics.
- Rampey, B., Xie, H., & Provasnik, S. (2019). *Highlights of the 2017 U.S. PIAAC Results Web Report*. NCES 2020777.
- Reder, S. (2017). *Adults' engagement in reading, writing and numeracy practices. Applied Linguistics Faculty Publications and Presentations*, 22. https://pdxscholar.library.pdx.edu/ling_fac/22
- Rüber, I. E., & Janmaat, J. G. (2021). Does participation in adult education increase volunteering? An analysis of British longitudinal data. *Adult Education Quarterly*, 71(1), 55-72. <https://doi.org/10.1177/0741713620927348>
- Sands, A., & Goodman, M. (2018). *Too Big to Fail: Millennials on the Margins*. ETS Center for Research on Human Capital and Education. <https://www.ets.org/s/research/report/opportunity-too-big-to-fail.pdf>
- Scales, P. C., & Roehlkepartain, E. C. (2003). How adolescents develop socially: The implications of volunteering. *Journal of Adolescent Research*, 18(2), 188-216.
- Sherrod, L. R., Torney-Purta, J., & Flanagan, C. A. (2010). *Handbook of research on civic engagement in youth*. John Wiley & Sons.
- Twenge, J. M., Campbell, W. K., & Freeman, E. C. (2014). Generational differences in young adults' life goals, concern for others, and civic orientation, 1966-2009. *Journal of Personality and Social Psychology*, 107(2), 297-317. <https://doi.org/10.1037/a0037216>
- Weert, E. V., Kirschner, P. A., & Veenman, S. (2019). Exploring the relationship between lifelong learning and active citizenship. *International Journal of Lifelong Education*, 38(6), 614-630. <https://doi.org/10.1080/02601370.2019.1574306>
- West, D. M. (2018). *The future of work: robots, AI, and automation*. Brookings Institution Press.
- Wilson, J., & Musick, M. (1997). Who cares? Toward an integrated theory of volunteer work. *American Sociological Review*, 62(5), 694-713. <https://doi.org/10.2307/2657354>
- Wilson, J., & Musick, M. (1999). The effects of volunteering on the volunteer. *Law and Contemporary Problems*, 62(4), 141-168.
- What Works Wellbeing. (2020). *The relationship between volunteering and wellbeing: A systematic review*. https://whatworkswellbeing.org/wp-content/uploads/1920/10/volunteer-wellbeing-Oct-20_briefing.pdf
- Zeldin, S., Gauley, J., Krauss, S. E., Kornbluh, M., & Collura, J. (2017). Youth-adult partnership and positive youth development: A national study. *Journal of Youth Development*, 12(3), 1-17. <https://doi.org/10.5195/jyd.2017.495>