

Factors Related to Health Civic Engagement: Results from the 2018 National Survey of Health Attitudes to Understand Progress towards a Culture of Health

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Abstract

Objectives Civic engagement, including voting, volunteering, and participating in civic organizations, is associated with better psychological, physical and behavioral health and well-being. In addition, civic engagement is increasingly viewed (e.g., in Robert Wood Johnson Foundation's Culture of Health framework) as an important driver for raising awareness of and addressing unhealthy conditions in communities. As such, it is important to understand the factors that may promote civic engagement, with a particular focus on the less-understood, health civic engagement, or civic engagement in health-related and health-specific activities. Using data from a nationally representative sample of adults in the United States, we examined whether the extent to which individuals feel they belong in their community (i.e., perceived sense of community) and the value they placed on investing in community health were associated with individuals' health civic engagement.

Methods Using data collected on 7187 nationally representative respondents from the 2018 National Survey of Health Attitudes, we examined associations between sense of community, valued investment in community health, and perceived barriers to taking action to invest in community health, with health civic engagement. We constructed scales for each of these constructs and employed multiple linear regressions adjusting for multiple covariates.

Results Participants who endorsed (i.e., responded with mostly or completely) all 16 sense of community scale items endorsed an average of 22.8% (95%CI: 19.8 - 25.7%) more of the health civic engagement scale items compared with respondents who did not endorse any of the sense of community items. Those who endorsed (responded that it was an important or top priority) for all items capturing valued investment in community health endorsed 14.0% (95%CI: 11.2 – 16.8%) more of the health civic engagement items than those who did not endorse any valued investment in community health items.

Conclusions Health civic engagement, including voting and volunteering to ultimately influence government decisions about health issues, may help improve conditions that influence health and well-being for all. Focusing on individuals' sense of community and highlighting investments in community health may concurrently increase health civic engagement and improve community and population health.

Background

Evidence on the role of socioeconomic and environmental determinants in shaping individual and community health has been building for many years (2-4), and it is increasingly understood that addressing the structural drivers of health outcomes requires broad-based efforts that reach beyond the traditional health care and public health systems. This includes significant reallocations or realignment of resources (5), and changes in laws, policies, and regulations (6). In democratic systems, civic engagement – through formal voting, advocacy, and involvement in civic organizations – is one way in which people ensure that governmental and nongovernmental actors work to change laws and policies or take other actions that promote healthy communities. In addition to providing a potential avenue for system change, civic engagement has been shown to be positively associated with physical health (7-11), health behaviors (12, 13), mental health (9, 13, 14), and well-being (15, 16). The specific impact may vary across specific health conditions (17, 18). Nonetheless, these associations hold across various forms of civic engagement, including voting, membership in community organizations, and direct community service (19).

The role of civic engagement in both systems-level and individual health is reflected, among other places, in the Culture of Health action framework advanced by the Robert Wood Johnson Foundation (20, 21), which is founded on a vision in which “everyone in our diverse society leads healthier lives now and for generations to come” and is premised that accelerating health improvement requires broader collective action and cultural and social mobilization. The Culture of Health action framework (20) identifies civic engagement as a key driver needed to *make a health a shared value*, which is one of the framework's four action areas. Civic engagement is viewed as a critical process through which “people develop and use knowledge, skills and voice to cultivate positive change,” and translate the value they place on community health into action. According to the framework, civic engagement is linked to two additional drivers that help support and conduct civic engagement (Nelson, Sloan & Chandra 2019).

One of those drivers is *mindset and expectations*, or the way in which individuals and communities frame the importance of health and well-being, the factors that influence it, and the shared role of individuals and organizations in actively promoting

health and well-being (22). Indeed, previous research in political science suggests that individuals are more willing to engage civically to promote public goods that they place a high value on (23, 24). Moreover, other research suggests that how individuals understand and frame the causes of and degree of personal responsibility for health conditions such as diabetes (e.g., as the result of individual behavior vs. environmental conditions) is linked to their willingness to support investments in community health (17, 25, 26). The importance of mindset and expectations in health is also supported by research and practice evidence from social network theory, community resilience, narrative theory, well-being science, and asset-based community development, each field articulating pathways by which individual and community sentiment about an issue is formed and addressed (22, 27, 28).

The other driver is *sense of community*. This driver captures an individual's sense that he or she has a personal connection to the community (membership), that the community matters to him or her (belonging), and he/she has shared experiences with others (events, memories) in the community. Sense of community is positively associated with personal well-being and is framed as another key driver of *making health a shared value*.²⁷ Sense of community has been shown to be significantly and positively associated with community and civic participation in adults (29-32).

To date, the literature linking civic engagement, mindset and expectations, and sense of community remains somewhat limited, and there has not been much examination of the link between these two drivers and civic engagement specifically related to health activities. There has also been limited work around the relationship of health civic engagement to other factors including perceived barriers to taking action to invest in community health, and perception of how external organizations and agencies may have an impact on community health. Given that the Culture of Health action framework also builds on the idea that both individual and community action is needed to improve health, well-being, and health equity, understanding the public's perceptions about readiness to engage individually and collectively is key. To illuminate those relationships, our team used the 2018 National Survey of Health Attitudes fielded by Robert Wood Johnson Foundation (RWJF) and RAND to address two aims: first, to describe patterns in health civic engagement in the U.S. population and, second, to explore the relationship between health civic engagement, sense of community, valued investment in community health, perceived barriers to taking action to invest in community health, and the perception of the role of external organizations and agencies in community health, net of other social and demographic factors known (via previous literature) to be related to civic engagement and potentially to health civic engagement.

Methods

We build upon a new and innovative data set on health attitudes in the United States to explore factors that account for variations in health civic engagement. As part of a larger effort to track progress in building a Culture of Health (19, 20), RAND worked with RWJF to design and field the National Survey of Health Attitudes, aimed to provide insight on how people in the United States think about, value, and prioritize health and consider issues of health and health equity. The survey was initially fielded in 2015, and an updated version was fielded in 2018. The later version serves as the focus of this study with more detail provided elsewhere (33, 34). Both versions were administered online and survey data for 2018 was collected from 7,187 respondents via the RAND American Life Panel (ALP) and the Ipsos KnowledgePanel. The sample is based on nationally representative internet panels whose members are recruited via probability-based sampling methods. A central goal of the survey is to measure the aspects within the action area, *making health a shared value*, within the Culture of Health action framework. value of investing in community health, the perceived sense of community, and reports on health civic engagement. The survey also contained other items including measurement of barriers to taking action to invest in community health as well as perceptions of what has an impact on community health.

In the survey, health civic engagement was measured by a set of questions that asked about activities which individuals are involved that might influence government and civil society actions about health, including two questions about voting for a candidate based on his/her position, and questions about contribution of time or money to organizations working to pass health laws or policies, lobbying for a health-related causes, and attending meetings or working with neighbors to fix community problems (See Table 1 for a description of the items). Sense of community, in turn, was measured via a set of 16 items (Full Sense of Community Scale) including those from the Sense of Community Index (SCI) (1), which consists of two subscales –

membership (four items) and emotional connection (four items), and four additional items that were specifically designed for this survey to capture health-related sense of community and community capacity to improve health (See Table 1 for each subscale and the Full Scale). Valued investment in community health was captured with five questions about how individuals prioritize the importance of health opportunity and access via greater investment in improving access to healthy and affordable food, safe spaces for outdoor activities, safe housing, and different modes of transportation. (See Table 1). Because individuals may be less likely to engage civically when they perceive significant barriers to doing so (24, 35, 36), we also examined barriers to taking action to invest in community health. This included items eliciting perceptions about whether individuals know how to get involved, whether that involvement will make a difference, and whether they think that meaningful influence over community health is only limited to certain community groups. We also included questions that elicit perceptions of diverse groups' impact on community health, asking respondents to rank to what extent they believed different actors influenced community health, such as community members, law enforcement, businesses, and other community-based organizations (33, 37).

Other variables we considered included self-rated health (Quesnel-Vallee, 2007), financial problems because of or experience with a chronic health condition, and burden of caring for others (U.S.. Years living in the community provided a proxy for the rootedness in a community. Several decades of research suggest that willingness to vote or undertake other forms of civic engagement is more common among those with high socio-economic status (37, 38), thus we included measures of employment status, educational attainment, marital status, race/ethnicity and city size of residence. Finally, age and gender were included as covariates given prior work showing the influence of both age and gender to civic engagement. (39). The main measures used in our analysis are listed Table 1.

Table 1: Operationalization of Measures

Concept	Measure Items
Health civic engagement	<p>There are many activities that a person could do to influence government decisions about health issues. During the past year have you . . .</p> <p>A. Voted for or against a candidate for public office because of his/her position on a health problem or issue</p> <p>B. Voted for or against a candidate for public office because of his/her position on other issues such as education, public safety, or community funding</p> <p>C. Contributed time or money to an organization working to pass a health law or policy at the local, state or national level</p> <p>D. Lobbied or advocated for a health-related cause in your community. (This may include signing a petition, calling a public official, disseminating information via social media, participating in demonstrations)</p> <p>E. Attended a civic meeting or worked with neighbors to fix community problems</p> <p><i>SOURCES: America's Health Agenda: Priorities and Performance Rating Survey (40) (revised), and CPS Civic Engagement Supplement (41); adapted by RAND and RWJF.</i></p>
Sense of Community	<p>The following statements about community refer to your neighborhood. How well do each of the following statements represent how you feel about this community?—not at all, somewhat, mostly, or completely</p>
Membership	<p>A. I can trust people in this community</p> <p>B. I can recognize most of the members of this community</p> <p>C. Most community members know me</p> <p>D. This community has symbols and expressions of membership such as clothes, signs, art, architecture, logos, landmarks, and flags that people can recognize</p> <p>E. I put a lot of time and effort into being part of this community</p> <p>F. Being a member of this community is part of my identity</p> <p>G. It is very important to me to be a part of this community</p> <p>H. I am with other community members a lot and enjoy being with them</p> <p>I. I expect to be a part of this community for a long time</p> <p>J. Members of this community have shared important events together, such as holidays, celebrations, or disasters</p>
Emotional	<p>K. I feel hopeful about the future of this community</p> <p>L. Members of this community care about each other</p> <p><i>SOURCE: Sense of Community Index (1)</i></p> <p>M. My community can work together to improve its health</p> <p>N. My community has the resources to improve its health</p> <p>O. My community works together to make positive change for health</p> <p>P. I know my neighbors will help me stay healthy</p>
Health-related	<p><i>SOURCE: RAND</i></p>
Valued Investment in Community Health	<p>Should the following be a top priority, important but not a top priority, or not a priority at all for communities for the following:</p> <p>A. making sure that the disadvantaged have an equal opportunity to be healthy;</p>

- B. making sure that healthy foods are for sale at affordable prices in communities where they are not;
- C. making sure that there are safe, outdoor places to walk and be physically active in communities where there are not any;
- D. making sure that there is decent housing available for everyone who needs it;

SOURCE: American Health Values Segmentation Study (42)

E. making sure that there are bike lanes, sidewalks for walking, and public transportation available so that people do not have to always rely on cars. *Or* making sure that there is public transportation, sidewalks or walking, and bike lanes available so that people do not have to always rely on cars.[1]

SOURCE: RAND

F. Do you agree or disagree with the following statement? "It is the obligation of the government to ensure that everyone has access to health care as a fundamental right."

SOURCE: RAND & RWJF

Barriers to taking action to invest in community health

Whether or not you have taken action to improve health in your community, many people face barriers to getting involved. Thinking about the following statements, please rate the extent to which you think this has been a barrier for people in your community.

- A. People don't know how to get involved or where to start
- B. People don't think their involvement will really make a difference in changing the health of the community
- C. People offer suggestions but only those coming from certain groups or individuals are addressed
- D. There are other issues people care more about

SOURCES: RAND and RWJF

Statistical Analysis

We used data from 7,187 survey respondents to examine civic engagement, sense of community, and valued investment in community health. We first identified the groups of survey items that comprised each of these constructs, and assessed scale reliability for each set using Cronbach's alpha; the alpha statistic was 0.93 for the full sense of community items, and 0.83, 0.85, and 0.78 for the membership, emotional connection, and health subscale items respectively. The alpha was 0.74 for our full set of health civic engagement items, 0.67 for valued investment in community health, and 0.77 for barriers to taking action to invest in community health. We conducted exploratory factor analyses to generate continuous factors for each construct. However, for ease of interpretation, we generated a simple summary value for each construct. This was calculated by the proportion of items in the domain with which a respondent either mostly or completely agreed, or in the case of the priority questions, rated as important or a top priority. This resulted in a summary proportion between 0 and 1. Maintaining the scale between 0 and 1 allows simple interpretation of change, where a 1 unit increase represents a change from endorsing no items to endorsing all items in the domain.

To estimate the extent to which sense of community and investment in community health was associated with civic engagement, we fit linear regression models of the civic engagement outcome, with sense of community and investment in community health as predictors of interest, with responses weighted to account for the survey sampling design. We fit models first for unadjusted estimates, and then adjusted for age, race/ethnicity, sex, marital status, geographic region (Northeast, Midwest, South, West), education, family income, household size, employment, length of time in the community, and rurality. We also included an age-squared term to allow for a potential non-linear relationship between age and health civic engagement.

We additionally explored the inclusion of interaction terms in the models that would allow us to assess whether relationships between sense of community and health civic engagement may differ by race/ethnicity or geographic region. All data

management, factor analyses, and regression modeling were conducted using Stata software, version 15.

[1] Respondents were randomly assigned to receive either the first or second wording of this question. Respondents were 3 percentage points more likely to endorse this statement as a top priority when public transportation was listed first than when bike lanes were listed first.

Results

Respondent Characteristics

Table 2 shows respondent characteristics of the National Survey of Health Attitudes. We observe a fairly even age distribution, with most respondents between 18 and 69. Approximately 13% of respondents were 70 or older. Respondents were 52% female, 61% were married, and household income was fairly evenly distributed between respondents who reported a household income of less than \$30,000 per year to those who reported an income of \$100,000 per year or higher. Forty percent of respondents had up to a high school education; 28% completed some college, and 32% had completed college or higher. Approximately 70% of respondents had between two and five people living in the household. Respondents were from across the United States, from the northeast, Midwest, South and West, with the highest percentage of respondents (37%) from the South. Sixty percent of respondents were employed and 38% of respondents had spent 20 or more years living in their community. Fifty-four percent of respondents lived in a large city (of 500,000+ residents) and 84% rated their health as good, very good, or excellent. About 38% of respondents reported that poor health of another affected their life and 36% reported that they suffered from a chronic health condition. Approximately 25% reported a financial problem due to health. Nearly 50% of respondents reported that they cared for others at least once per week who were.

Health Civic Engagement, Sense of Community, Valued Investment in Community Health, and Barriers to Action

Our first aim was to describe key patterns in health civic engagement. Table 3 shows the breakdown of respondent answers specific to each item that comprised health civic engagement, sense of community, valued investment in community health and participants report of barriers to acting to improve community health as listed in Table 1. Within health civic engagement, it is notable that 51% of participants reported that they voted for or against a candidate for public office because of his/her position on issues such as education, public safety or community funding, which are upstream drivers of health but not directly health specific. On the other hand, 18% reported contributing time or money to an organization working to pass a health law or policy, and about 21% reported lobbying or advocating for a health-specific cause in their community. About 22% reported engagement through attendance at a civic meeting or working with neighbors to fix community problems.

Items within sense of community were broken into three subscales: membership, emotional connection and health. Within the membership subscale, 45% of respondents said they felt they could trust people in their community, 29% reported being able to recognize most of the members of their community, and about 27% reported that being a member of their community was part of their identity. Respondents' emotional connection varied: 38% reported that it was very important to be part of their community and 52% said they expected to be part of the community for a long time. Nearly 50% felt hopeful about the future of their community and 41% said members of their community cared about each other. Health subscale questions asked about the community working together and having resources to improve its health. Thirty-eight percent reported that their community can work together to improve its health and only 19% said that they knew their neighbors would help them stay healthy. This is particularly notable given that Culture of Health Framework is partially premised on advancing community action to improve health.

Finally, as far as valued investment in community health, 45% of respondents reported that making sure that the disadvantaged have equal opportunity to be healthy, decent housing was available for all who needed it, and that healthy foods were available at affordable prices in communities where they are not were top priorities. Just 23% of respondents thought there should be bike lanes, sidewalks for walking and public transportation so people did not need to rely on cars. Respondents thought that barriers to

taking action to invest in community health included people not thinking their involvement will really make a difference in changing the health of the community (23%) and that there are other issues (not specified) that people care more about (19%).

Predictors of Health Civic Engagement

Our second aim was to explore the relationship between health civic engagement and individuals' reports on sense of community, valued investment in community health, and perceived barriers to engagement, net of other factors known via previous literature to be related to health-specific civic engagement. Results of this analysis are shown in the regression analyses in Table 4. Model 1 shows the full set of items related to sense of community, and Models 2, 3 and 4 show the sense of community subscales of membership, emotional connection and health. Each of the models show qualitatively similar results, independent of which sense of community subscale (or full scale) was used. We observed that even after adjusting for all other covariates, sense of community, regardless of whether it is conceptualized as the full set of questions, or as one of the three subscales (membership, emotional connection and health), has a strong statistically significant ($p < .0001$) positive association with health civic engagement. As sense of community increased, so did health civic engagement. Specifically, respondents who endorsed all items on the full sense of community scale endorsed an average of 22.8% (95% CI: 19.8 - 25.7%) more of the health civic engagement items than those who did not endorse any sense of community items. Those who endorsed all the items in the sense of community membership subscale endorsed an average of 21.1% (95% CI: 18.3, 23.8%) more of the health civic engagement items than those not endorsing any of the membership items. The analogous difference in health civic engagement endorsement for the emotional connection subscale was 17.5% (95% CI: 15.1, 20.0%) and 15.8% (95% CI: 13.3, 18.4%) for the health subscale.

Similarly, respondents who valued investment in community health were also more likely to participate civically. Those who endorsed all items around valuing investment in community health endorsed 14% (95% CI: 11.2, 16.8%) more of the health civic engagement items than those who did not endorse valuing investment in community health. This too was a strong, statistically significant ($p < .0001$) positive relationship. Endorsement of items related to barriers to action to improve community health, including whether respondents think that external groups (community members, businesses, government) can influence community health, or whether respondents believe that there are barriers to taking action to invest in community health, showed any statistically significant relationship with health civic engagement. We note that these results are qualitatively similar, in both direction and statistical significance, to those we generated using exploratory factor analyses to derive the construct scales (data not shown).

Covariates that were positively associated with health civic engagement include rating one's health as excellent (compared with 'good'), responding that the poor health of another has impacted one's life, those who have financial problems due to health, and having helped (or helping) others who are ailing. We observed relationships with educational attainment, race/ethnicity, and city size of residence as well. As Table 4 indicates, specifically, compared with non-Hispanic whites, we found non-Hispanic blacks have a significant positive association with health civic engagement. Non-Hispanic Asians were less likely to engage civically. Compared with living in the South, living in the West is strongly positively associated with health civic engagement. Higher education is positively associated with higher levels of health civic engagement.

In Figure 1, we visually present the fully adjusted associations of our main outcomes of health civic engagement with our main variables of interest: each of the sense of community subscales, value invested in community health, the impact of external groups on community health, and barriers to taking action to invest in community health. In sum, one's sense of community to a large extent, and the value invested in community health to a lesser extent, are positively and significantly associated with health civic engagement. One's perception of barriers to action to improve community health is not significantly associated with health civic engagement.

Discussion And Public Health Implications

This analysis set out to explore patterns in health civic engagement, and especially the relationship with sense of community and mindset and expectations (identified as key drivers of *making health a shared value* in the Culture of Health Action Framework), net of other factors known to be related health civic engagement.

As expected, respondents reporting a strong sense of community and those who prioritize community investments in health more frequently reported engaging civically around health, controlling for variations in measures of socioeconomic status, perceived barriers, and a host of other variables. This is consistent with the view, embodied in the Culture of Health framework and grounded in the literature, that individuals who view health as an issue requiring collective or community investment and who identify strongly with their communities are more likely to engage civically specifically to address health issues.

Our findings also confirm that, on a population level, overall health-related sense of community and health civic engagement are generally limited. Given that building a Culture of Health in America requires some amount of community action, the fact that less than forty percent of respondents felt their community could work together to improve health suggests room for further work and action. In addition, with one exception (voting on an issue related to education, public safety or another community issue), the health civic engagement items did not exceed half of the respondents, and the case of advocating specifically for “health policy” was reported positively by just one-fifth of the respondents. This may suggest that an entry point to activate health-specific action is through these *health-related* activities on upstream drivers such as education or public safety.

The findings also have potentially interesting implications for how we understand the barriers to health civic engagement. We did not find clear evidence that those perceiving barriers to act to improve community health (e.g., not knowing how to get involved, not believing that involvement makes a difference) were less likely to engage civically around health, suggesting that addressing these attitudinal barriers may not be enough to activate health civic engagement. The limited literature in this space to support or contradict our finding highlights the question of how to inspire and motivate civic engagement. We did find evidence that one’s own poor health, was associated with lower levels of civic engagement around health. This aligns with a number of earlier findings (reviewed in Nelson, Sloan, Chandra 2019) from the U.S. and elsewhere suggesting that those in poor health or with disabilities are less likely to vote or engage civically in other ways. In one study, people with disabilities were 20 percentage points less likely to vote than people without disabilities of similar demographics (Schur 2002). In another longitudinal study in Ireland and Britain, individuals with poor self-rated health were significantly less likely to report voting in past General Elections (Denny and Doyle, 2007). While the direction of the causality is not always clear, it might point to the need to broaden access to mail-in ballots and other measures to lower the burdens of political participation. It also suggests that activities to expand health civic engagement may need to address the unique challenges faced by those with chronic health conditions. Respondents who reported that poor health of a friend or family member impacts their life, those who reported financial problems due to health, and those who reported helping others who were ailing were all more likely to be civically engaged in health-related activity. This suggests that some degree of experiencing a health-related challenge or barrier may motivate individuals to take action. Without being able to assess the direction of causality, this does suggest the possibility that the burdens of caring for others may be a catalyst for civic engagement, or perhaps that those who help others in need are also more inclined towards involvement in the community.

Finally, consistent with many other studies of civic engagement and political participation, we found that those with higher levels of education and higher income were more likely to engage civically around health. In light of previous research cited above linking civic engagement with individual health benefits, these findings are an important reminder that the health and well-being benefits of civic engagement do not accrue equitably to all. First, as efforts are underway to advance health equity, these findings further underscore the challenges in engaging Americans in health civic engagement (Braveman, 2017; CDC). Second, the health benefits of civic engagement are also not experienced equally. We did observe a notable finding worthy of further investigation: African American/black respondents were more likely to engage on health issues civically than white Americans, while Asian respondents were less likely than all other groups, adjusting for all other factors. There are many potential explanations for this finding, given that in the broader survey (not in the table), we also observe these same racial/ethnic differences in willingness to invest in community health (only 17% of African Americans/blacks would not invest in any community health priorities vs. 33% of white Americans). It could be that African American/blacks believe there is a greater need to engage civically for health, or there may be a stronger view that this approach to health improvement will be more effective.

This study offers important new insights about health civic engagement and the role of community health attitudes and sense of community. Still, the findings are subject to a few limitations. First, the cross-sectional nature of the data used in this analysis means we cannot assume the observed relationships between civic engagement, sense of community and value placed in

community health investments are causal. Similarly, while previous literature suggests that civic engagement can have individual health benefits, measuring those benefits was beyond the scope of this study. Perhaps more importantly, though, the study was unable to assess the extent to which civic engagement is an effective instrument in addressing unhealthy conditions in communities. This reflects a broader gap in the literature on health and civic engagement, which with some exceptions (e.g., 43, 44) focuses primarily on individual-level health impacts (19).

Conclusion

Civic engagement is a potential avenue through which individuals can take actions to make their communities more conducive to health, and also is linked to improvements in the health of civically engaged individuals. This paper presented a unique analysis of health civic engagement. To date, there has been little research on whether individual levels of civic engagement are linked to improvements in community health and whether there are differences related to health civic engagement. Our analysis of a nationally representative survey suggests that civically engaged individuals are more likely to have a strong sense of community and to view community health as a priority. This is consistent with the Culture of Health framework, which outlines civic engagement, sense of community, and mindset and expectations around community health as key drivers in *making health a shared value*. While preliminary in nature, this research points to the potential importance of civic engagement as a means for improving community health. Future research should seek to use longitudinal data to better understand the life-trajectories and contextual factors that lead to high levels of health civic engagement, and to better understand the direction of causality – i.e., whether civic engagement promotes better health, health promotes civic engagement, or perhaps both.

Declarations

Data collection was approved by RAND's Human Subjects Protection Committee, which acts as RAND's Internal Review Board. Survey participants receive consent materials once per year consenting to participate in surveys from the ALP or the KnowledgePanel, and are given the right to skip any survey or question.

Consent for publication Not Applicable.

Availability of data and materials. Data is being deposited at the Inter-university Consortium for Political and Social Research (ICPSR).

Competing Interests The authors declare that they have no competing interests.

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Authors' contributions

TD, CN, SW, JS, CM and AC conceptualized this study. AB conducted all analyses. TD, CN, SW, JS, AB and AC analyzed and interpreted the data. All authors drafted and/or edited the manuscript. All authors read and approved the final version of the manuscript.

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Tables

Table 2: National Survey of Health Attitudes Participants

	Observed frequency (unweighted) N=7187	Survey weighted percent
Age		
18 to 29	657	20.0%
30 to 39	934	17.4%
40 to 49	1092	16.3%
50 to 59	1579	17.9%
60 to 69	1671	15.9%
70 to 79	976	9.7%
80 or older	278	2.8%
Sex		
Male	3317	48.2%
Female	3870	51.8%
Marital status		
Married or living with a partner	4605	61.1%
Sep., Div., or Wid.	1395	15.6%
Never married	1187	23.4%
Household income category		
Less than \$30K	1384	23.4%
\$30K to \$60K	1824	27.3%
\$60K to \$100K	1665	23.2%
\$100K or higher	2307	26.1%
Number living in household		
One person	1495	14.8%
Two people	2872	34.4%
Three or four	2034	35.8%
Five or more	786	15.1%
Geographic region		
Northeast	1317	17.9%
Midwest	1487	20.2%
South	2564	36.9%
West	1781	25.1%
Education category		
Up to High School	2019	40.1%
Some College	2225	28.4%
BA or higher	2943	31.5%
Employment		
Employed (working as a paid employee, or self-employed)	4147	60.1%
Retired	1885	19.1%
Unemployed (looking for work, on temporary layoff, disabled, or other)	1155	20.8%
Time living in the community		
Less than 5 years	1391	22.6%
5 to 9 years	972	15.1%
10 to 19 years	1713	24.0%
20 or more years	3027	38.3%
City size		
Not a Town	971	13.9%
Small Town (2.5-50K)	749	10.4%
Midsized City (50-500K)	1493	21.5%
Large City (500K+)	3945	54.2%
Self-rated health		
Excellent	740	10.4%
Very good	2796	37.3%
Good	2475	36.3%
Fair	874	12.9%
Poor	219	3.2%
Poor health of another affects life		
No	4127	61.6%
Yes	2965	38.4%
Chronic health condition		
No	4417	64.3%
Yes	2654	35.7%
Financial problems due to health		
No	5335	74.7%
Yes	1744	25.3%
How often care for ailing others		
More than once per week	1382	19.1%
Up to once a week	2364	30.7%

Never	3341	50.2%
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Source: RAND

Table 3: Main constructs

	Observed frequency (unweighted) N=7187	Survey Weighted Percentage
Health Civic Engagement		<i>Percent who have done activity to influence decisions about health issues during the past year</i>
A. Voted for or against a candidate for public office because of his/her position on a health problem or issue	3235	41.12%
B. Voted for or against a candidate for public office because of his/her position on other issues such as education, public safety, or community funding	4075	51.89%
C. Contributed time or money to an organization working to pass a health law or policy at the local, state or national level	1442	18.64%
D. Lobbied or advocated for a health-related cause in your community (may include signing a petition, calling a public official, disseminating information via social media, participating in demonstrations)	1617	21.15%
E. Attended a civic meeting or worked with neighbors to fix community problems	1792	21.72%
Sense of Community		<i>Percent who respond mostly or completely</i>
<i>Membership Subscale (A-F)</i>		
A. I can trust people in this community	3440	45.00%
B. I can recognize most of the members of this community	2020	28.76%
C. Most community members know me	1746	24.38%
D. This community has symbols and expressions of membership such as clothes, signs, art, architecture, logos, landmarks, and flags that people can recognize	1977	27.74%
E. I put a lot of time and effort into being part of this community	1673	22.64%
F. Being a member of this community is part of my identity	1950	26.94%
<i>Emotional Connection Subscale (G-L)</i>		
G. It is very important to me to be part of this community	2804	37.80%
H. I am with other community members a lot and enjoy being with them	1701	23.34%
I. I expect to be a part of this community for a long time	3912	51.58%
J. Members of this community have shared important events together, such as holidays, celebrations, or disasters	2618	35.63%
K. I feel hopeful about the future of this community	3817	49.81%
L. Members of this community care about each other	3063	41.08%
<i>Health Subscale (M-P)</i>		
M. My community can work together to improve its health	2742	38.17%
N. My community has the resources to improve its health	3102	41.57%
O. My community works together to make positive change for health	1843	25.76%
P. I know my neighbors will help me stay healthy	1316	19.08%
Valued Investment in Community Health		<i>Percent who think these things are a top priority for communities</i>

A. Making sure that the disadvantaged have equal opportunity to be healthy	3200	44.94%
B. Making sure that healthy foods are for sale at affordable prices in communities where they are not	3054	44.75%
C. Making sure that there are safe, outdoor places to walk and be physically active in communities where there aren't any	2453	36.54%
D. Making sure that there is decent housing available for everyone who needs it	3094	44.40%
E. Making sure that there are bike lanes, sidewalks for walking and public transportation available so that people do not have to always rely on cars	1543	23.43%
F. It is the obligation of the government to ensure that everyone has access to health care as a fundamental right.	2261	32.25%
Barriers to Acting to Improve Community Health		<i>Percent who think these things are a major barrier to getting involved to improve health in their community</i>
A. People don't know how to get involved or where to start	1186	18.01%
B. People don't think their involvement will really make a difference in changing the health of the community	1555	23.30%
C. People offer suggestions but only those coming from certain groups or individuals are addressed	1039	15.43%
D. There are other issues people care more about	1304	19.27%

Table 4: Regression estimates of relationships between full health civic engagement scale and the full sense of community scale and its subscales

	Full Sense of Community Scale			Membership Subscale			Emotional Connection Subscale			Health Subscale		
	β	se	p-value	β	se	p-value	β	se	p-value	β	se	p-value
Sense of Community												
Full Set of Sense of Community Items	0.228	0.015	0.000									
Membership subscale				0.211	0.014	0.000						
Emotional connection subscale							0.175	0.013	0.000			
Health subscale										0.158	0.013	0.000
Value Invested in Community Health	0.140	0.014	0.000	0.146	0.014	0.000	0.143	0.014	0.000	0.143	0.014	0.000
Barriers to Acting to Improve Community Health	0.000	0.015	0.976	-0.003	0.015	0.866	-0.001	0.015	0.958	0.000	0.015	0.988
Age in years												
Linear term	0.003	0.001	0.021	0.003	0.001	0.029	0.003	0.001	0.043	0.003	0.001	0.023
Quadratic term	0.000	0.000	0.533	0.000	0.000	0.680	0.000	0.000	0.661	0.000	0.000	0.637
Race/Ethnicity			0.001			0.001			0.001			0.002
Non-Hispanic White (reference)	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-
Non-Hispanic Black	0.044	0.015	0.003	0.041	0.015	0.005	0.047	0.015	0.002	0.044	0.015	0.003
Hispanic	0.007	0.013	0.569	0.005	0.013	0.671	0.008	0.013	0.553	0.012	0.013	0.352
Non-Hispanic Asian or Pacific Islander	-0.050	0.024	0.035	-0.053	0.024	0.025	-0.045	0.024	0.058	-0.049	0.024	0.041
Non-Hispanic All other races	0.055	0.024	0.020	0.054	0.024	0.025	0.059	0.024	0.012	0.049	0.023	0.038
Female	-0.018	0.008	0.019	-0.017	0.008	0.036	-0.021	0.008	0.007	-0.018	0.008	0.023
Marital status			0.536			0.501			0.637			0.553
Married or living with partner	-0.011	0.013	0.370	-0.009	0.013	0.477	-0.010	0.013	0.414	-0.009	0.013	0.471
Sep., Div., or Wid.	-0.016	0.014	0.269	-0.017	0.014	0.244	-0.013	0.014	0.358	-0.016	0.015	0.277
Never married (reference)	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-
Region			0.000			0.000			0.000			0.000
Northeast	0.006	0.011	0.612	0.005	0.011	0.654	0.006	0.011	0.575	0.003	0.011	0.755
Midwest	-0.007	0.011	0.532	-0.002	0.011	0.845	-0.007	0.011	0.508	-0.008	0.011	0.438
South (reference)	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-
West	0.051	0.010	0.000	0.053	0.010	0.000	0.050	0.010	0.000	0.049	0.010	0.000
Education			0.000			0.000			0.000			0.000
Up to High school	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-

(reference)												
Some College	0.066	0.010	0.000	0.067	0.010	0.000	0.066	0.010	0.000	0.066	0.010	0.000
BA or higher	0.129	0.011	0.000	0.132	0.011	0.000	0.130	0.011	0.000	0.132	0.011	0.000
Family Income (in units of \$10K)	0.003	0.001	0.000	0.004	0.001	0.000	0.003	0.001	0.000	0.003	0.001	0.000
Household size (number of individuals)	-0.004	0.003	0.163	-0.004	0.003	0.180	-0.004	0.003	0.153	-0.004	0.003	0.181
Employed	0.010	0.009	0.285	0.010	0.009	0.279	0.010	0.009	0.270	0.010	0.009	0.307
Years living in community			0.002			0.004			0.001			0.000
Less than 5 years (reference)	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-
5 to 9 years	0.038	0.013	0.004	0.037	0.013	0.006	0.041	0.013	0.002	0.040	0.013	0.003
10 to 19 years	0.041	0.012	0.000	0.039	0.012	0.001	0.044	0.012	0.000	0.046	0.012	0.000
20 or more years	0.036	0.011	0.001	0.034	0.011	0.003	0.039	0.011	0.001	0.045	0.011	0.000
City size			0.030			0.029			0.026			0.066
Not a Town	-0.012	0.011	0.269	-0.017	0.011	0.134	-0.014	0.011	0.202	-0.001	0.011	0.945
Small Town (2.5 - 50K)	-0.034	0.013	0.008	-0.034	0.013	0.008	-0.036	0.013	0.006	-0.028	0.013	0.029
Midsized City (50 - 500K)	-0.020	0.010	0.046	-0.020	0.010	0.050	-0.019	0.010	0.057	-0.018	0.010	0.066
Large City (500K+) (reference)	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-
Self-rated health			0.005			0.001			0.002			0.001
Excellent	0.046	0.016	0.005	0.050	0.016	0.002	0.051	0.016	0.002	0.053	0.016	0.001
Very good	0.006	0.009	0.519	0.008	0.009	0.357	0.008	0.009	0.372	0.009	0.009	0.315
Good (reference)	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-
Fair	-0.023	0.012	0.064	-0.026	0.012	0.034	-0.022	0.012	0.072	-0.026	0.012	0.034
Poor	-0.032	0.022	0.144	-0.031	0.022	0.164	-0.034	0.022	0.129	-0.037	0.023	0.102
Poor health of another impacts life	0.053	0.009	0.000	0.053	0.009	0.000	0.052	0.009	0.000	0.054	0.009	0.000
Chronic health condition	0.009	0.009	0.316	0.010	0.009	0.265	0.009	0.009	0.322	0.009	0.009	0.307
Financial problems due to health	0.068	0.010	0.000	0.067	0.010	0.000	0.068	0.010	0.000	0.066	0.010	0.000
Helps others who are ailing			0.000			0.000			0.000			0.000
More than once per week	0.075	0.012	0.000	0.073	0.012	0.000	0.079	0.012	0.000	0.084	0.012	0.000
Up to once a week	0.073	0.009	0.000	0.073	0.009	0.000	0.078	0.009	0.000	0.080	0.009	0.000
Never (reference)	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-

Figures

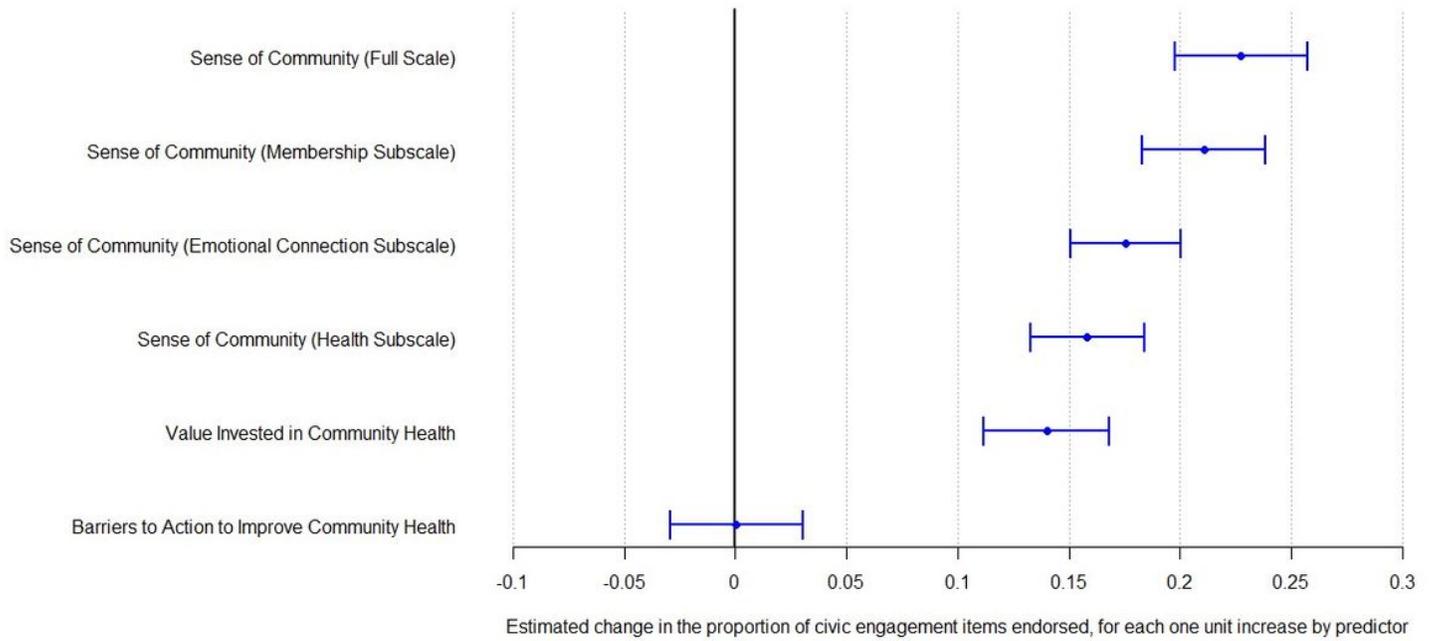


Figure 1

Sense of Community, Valued Investment in Community Health, and Barriers to Action to Improve Community Health as Predictors of Health Civic Engagement