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DISCUSSION PAPER SERIES

IZA DP No. 17257

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ABSTRACT

The Distribution of Social Capital across Individuals and its Relationship to Income

There have been several attempts to measure social capital—the value inhering in relationships—at an aggregate level, but researchers lack comprehensive individual-level social capital measures. Using a combination of direct linkage and imputation across several nationally representative datasets, we produce a comprehensive measure of social capital at the individual level. We validate our measure by aggregating it to the state level, finding strong correlations with existing state-level social capital measures. We document substantial social capital disparities between white Americans, on the one hand, and black and Hispanic Americans, on the other, as well as a strong educational gradient, which is comparatively weaker for Hispanics. We also provide new evidence on the relationship between income and social capital, using a comprehensive measure of income. We find that social capital increases with income but at a decreasing rate. The source of income matters, as an extra $10,000 in market income is associated with a 0.23 standard deviation increase in social capital for those with the lowest levels of market income, while an extra $10,000 in government transfer income is associated with a 0.08 standard deviation decrease.

JEL Classification: Z13, J12, D31
Keywords: social capital, comprehensive income, inequality

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I. Introduction

Over the past several decades, trends in economic and social life in the United States have diverged. Americans have experienced substantial gains in economic wellbeing, evidenced by declines in poverty (Meyer and Sullivan 2012; Burkhauser et al. 2023; Wimer et al. 2016; Winship 2016) and increases in real income (Congressional Budget Office 2022; Elwell, Corinth, and Burkhauser 2020; Strain 2020) and consumption (Sacerdote 2017). But at the same time, various aspects of social life have deteriorated, exhibited by falling marriage rates (Curtin and Sutton 2020), declining participation in social and community activities (Joint Economic Committee 2017; Kannan and Veazie 2023; Putnam 2001), rising drug overdoses (Case and Deaton 2015; Giles, Hungerman, and Oostrom 2023), and increases in depression, anxiety and suicides (Garnett, Curtin, and Stone 2022; Weinberger et al. 2018).

Some researchers have posited that these diverging trends are linked—as individuals grow more affluent, social connections become thinner and community institutions weaken. For example, people have less need to rely on others for support and thus detach from family and community networks and institutions (Joint Economic Committee 2017). This view sits in tension with the finding that the deterioration in social wellbeing has been worst among the socioeconomically disadvantaged, though the tension is reconcilable. For example, a more affluent society can afford a more generous safety net, and some researchers argue that income received from government sources displaces social connections, subverts bourgeois norms, and weakens social wellbeing (Murray 2012; Peterson 2015; Joint Economic Committee 2020). At the same time, higher income may afford access to valuable social networks, increasing social capital (Halpern-Meekin 2019; Rivera 2015).

Unfortunately, a lack of individual-level data on social wellbeing, linked to economic measures, has precluded researchers from evaluating these hypotheses. Researchers and government agencies have developed, through decades of intensive research, income measures that improve on the less complete and less accurate ones conventionally used.[1] However, we lack a

[1] For example, the Census Bureau produces an annual measure of median household pre-tax money income, which does not account for taxes, excludes in-kind transfers, and suffers from underreporting of income.

comprehensive measure of individual social wellbeing reflecting the strength and quality of relationships with people and institutions—of social capital.

Social capital has been studied extensively by social scientists over the past several decades, with much of the focus on developing theoretical frameworks and considering the specific factors that should be considered components of social capital (Claridge 2020). Most empirical measures of social capital have been created at aggregate levels such as states, counties or institutions (Chetty et al. 2022; Joint Economic Committee 2018; Rupasingha, Goetz, and Freshwater 2006).[2] Almost no research has comprehensively measured social capital at the individual level, even though social capital likely varies widely across individuals within a given area. One recent exception is Chetty et al. (2022), who create measures of individual connectedness to high- and low-income contacts based on Facebook data. But despite the unprecedented depth of the data from which it is built, "economic connectedness" may capture a relatively narrow aspect of social capital and is only publicly available at the county and ZIP code level.

In this paper, we create the most comprehensive individual-level measure of social capital to date and examine its association with a comprehensive measure of income. We do so by combining data from several nationally representative surveys with information on income and various dimensions of social capital—the Current Population Survey Annual Social and Economic Supplement (CPS ASEC), American Time Use Survey (ATUS), Current Population Survey Volunteering and Civic Life Supplement (CPS VCL), and the General Social Survey (GSS). We combine the datasets through direct linkages when possible (a subset of individuals are included in both the CPS ASEC and ATUS) and otherwise rely on sequential regression multivariate imputation to impute social capital variables for all adult respondents in the 2019 CPS ASEC. The resulting 22 social capital variables from these data sources cover six domains—community engagement, religious involvement, social connection, family strength, work, and social trust. We create an individual social capital index from these variables using principal component analysis, which we validate by comparing our individual index aggregated to the state level with existing state-level social capital measures. We also construct an individual-level comprehensive

[2] One of us, Scott Winship, was the primary author of the 2018 Joint Economic Committee report creating state- and county-level social capital measures. Two of us, Scott Winship (2017-2020) and later Kevin Corinth (2022-2023), directed the Joint Economic Committee's Social Capital Project.

measure of income, broken down by market and government sources, following Burkhauser et al. (2024).

With this novel dataset, we first present the distribution of social capital across individuals based on their demographic characteristics. Social capital is highest among individuals of prime working age, is highest among non-Hispanic white individuals and lowest for non-Hispanic black individuals, and is relatively similar for men and women. The college educated have higher social capital on average, though the education gradient is weaker for Hispanic than non-Hispanic individuals.

We then estimate relationships between social capital and income. Social capital rises with post-tax, post-transfer (full) income but at a diminishing rate. The association between social capital and income is strongest for black individuals and weakest for Hispanic individuals. We find that individuals who receive a greater share of their income from government sources tend to have lower levels of social capital. This holds even conditional on individuals' demographic characteristics. For those with the lowest levels of income, a $10,000 increase in market income is associated with a 0.23 standard deviation increase in social capital, while a $10,000 increase in government transfers is associated with a 0.08 standard deviation decrease in social capital.

These results have important implications for our understanding of social capital and its link to economic wellbeing. First, individuals with low incomes tend to be doubly disadvantaged, in that they also have low levels of social capital to go along with their material disadvantage. These deficits could contribute to low rates of economic mobility among historically disadvantaged groups such as black individuals, who as we report have lower stocks of valuable social capital. Second, we observe a positive relationship between economic wellbeing and social capital, even conditional on demographic factors. Thus, in general, higher incomes appear to be a complement for social capital rather than a substitute. Third, our finding that social capital is negatively related to dependence on government sources of income is consistent with the hypothesis that government transfers serve as a substitute for social capital. These results do not necessarily imply that government transfers cause social capital to fall among recipients—for example, unobserved individual characteristics likely play an important role in explaining both low levels of social capital and higher levels of reliance on government transfers. Our results do imply,

however, that helping disadvantaged individuals escape poverty and attain self-sufficiency is made more difficult due to their lower levels of social capital.

Our results build on a large social capital literature that has mostly focused on measuring social capital at various geographic levels of analysis.[3] In his book, *Bowling Alone*, Robert Putnam creates a state-level social capital index by grouping 14 variables into five categories: community organizational life, engagement in public affairs, community volunteerism, informal sociability, and social trust (Putnam 2001). Rupasingha et al. (2006) develop both state- and county-level indices of social capital based on the number of civic, religious, and sports organizations in a given county together with the number of residents who vote and participate in the decennial census. Congress' Joint Economic Committee (2018) creates state- and county-level indices accounting for factors that had been omitted from previous efforts, ultimately including measures of family unity, family interaction, social support, community health, institutional health, collective efficacy, and philanthropic health.

Several studies have analyzed social capital at the individual level, but data limitations have generally precluded development of a comprehensive measure of social capital that reflects all of its dimensions. For example, Glaeser et al. (2000) use experiments to determine the relationship between trust and trustworthiness—what they describe as "two key components of social capital." Later, Glaeser et al. (2002) use membership in group organizations as a proxy for individual-level social capital. Gil De Zúñiga et al. (2012) create an individual-level social capital measure, but exclusively use variables related to community engagement. Hyyppä et al. (2007) and Giordano et al. (2011) create individual measures based on relatively few dimensions of social capital (the former focuses only on residential stability, trust, and leisure activities, for example) and relatively few underlying variables. Most recently, Kannan and Veazie (2023) document trends in social isolation and engagement based solely on the amount of time individuals spend with others, but do not create a comprehensive measure of social capital.

Other studies have relied on large-scale individual-level Facebook data to measure the scope of individuals' social networks (Bailey et al. 2018; Chetty et al. 2022). This pioneering work allows

[3] There is a longstanding debate in the literature over whether social capital should be viewed as an attribute of the individual or the community (Bourdieu 1986; Putnam 2001). See Winship (2023) for a discussion of this debate and an elaboration of the case for an individual-level foundation.

for rich measures of cross-class friendships, network cohesiveness, and civic engagement based on billions of social media connections that cover the entirety of the United States. However, these online connections may be too narrow as indicators of access to valuable social capital.

One exception to research narrowly measuring only select dimensions of social capital is a series of studies that rely on the 2000 Social Capital Community Benchmark Survey to estimate the relationship between various dimensions of social capital and migration decisions (Hotchkiss and Rupasingha 2021), census response rates (Hotchkiss 2019), and selection into certain occupations (Hotchkiss and Rupasingha 2018). However, they do not document how social capital varies across demographic characteristics or with income, the focus of our paper. Further, the measure is dated.

This paper proceeds as follows: Section II discusses our data and methodology for creating an individual-level social capital index. Section III validates our individual social capital index against existing geographically aggregated measures of social capital. In Section IV we report results on the distribution of social capital across demographic groups. Section V reports the relationship between income and social capital. We provide a series of robustness checks in Section VI. Section VII discusses the implications of our findings and avenues for future research. Section VIII concludes.

II. Data and Methodology

This section first discusses the underlying datasets used for our social capital index and income measures. We then describe how we combine the datasets through direct linkages and imputations. Finally, we elaborate our process for creating a social capital index and sub-indices corresponding to broad dimensions of social capital.

Data

Despite the fact that several surveys measure certain components of social capital, no single dataset includes a comprehensive set of social capital variables. To develop an individual-level measure of social capital, we combine data across four nationally representative surveys, including the 2019 Current Population Survey Annual Social and Economic Supplement, the

2019 Current Population Survey Volunteer and Civic Life Supplement, the 2019 American Time Use Survey, and the 2018 General Social Survey.[4]

The 2019 CPS ASEC is our base dataset, an annual supplement to the CPS that includes detailed demographic and income information for 132,868 adult respondents. The CPS ASEC's wide array of demographic, household composition, and income information, along with its large sample, makes it an ideal base dataset for creating an individual social capital index. Many of the CPS ASEC's demographic and household composition variables are relevant for determining individual-level social capital, such as those related to marital status and number of children. Moreover, the CPS ASEC includes a detailed accounting of most sources of income. We use the income measure created by Burkhauser et al. (2024), which calculates federal income tax, state income tax, and payroll tax liability using TAXSIM 35 (Feenberg and Coutts 1993), and imputes the ex-ante market value of health insurance for those with employer coverage, Medicaid, or Medicare. Other cash and in-kind government transfers are captured in the CPS ASEC. This allows us to explore the relationship at the individual level between social capital, on the one hand, and a comprehensive measure of income, on the other.

The GSS is a public opinion survey conducted by the National Opinion Research Center at the University of Chicago. The GSS has been conducted either every year or every other year since 1972, and it is one of the most widely used sources for measuring American public opinion. In addition to asking respondents about their opinions on myriad social and political questions, the GSS also asks respondents a variety of questions related to their trust in others and in institutions, their religious attendance, and their social lives. The 2018 GSS, which we use, contains a nationally representative sample of 2,348 respondents.

The CPS VCL is a supplement to the CPS fielded in September every other year. Developed out of an earlier supplement that asked about volunteering activities, the CPS VCL has included, since 2017, questions about respondents' engagement in local public affairs and civic life. The 2019 CPS VCL, which we use, contains 56,130 observations, asking respondents about the frequency of their engagement in local politics, involvement with community organizations, and interactions with neighbors, among other questions related to social capital.

[4] The General Social Survey was not conducted in 2019.

The ATUS is another annual supplement to the CPS fielded throughout the year since 2003. We use the 2019 survey. The ATUS is comprised of two parts. The first part is a typical survey questionnaire that collects demographic information for each respondent. The second part asks respondents to maintain a detailed time diary for a randomly selected day. Each respondent records the duration and location of each of their daily activities and the individuals involved. Survey administrators from the Bureau of Labor Statistics (BLS) then code each entry into one of 381 activities, in addition to storing where and with whom an activity is done.

We create social capital variables from the ATUS by first classifying each of the 381 activities as either inherently social or ambiguous. We classify 129 activities as inherently social (e.g., caring for household members) and group them into five major categories—caring for and helping household members, caring for and helping non-household members, socializing/relaxing/leisure, religious and spiritual activities, and volunteering.[5] We consolidate the remaining 252 activities with ambiguous classifications into four variables termed "time spent doing ambiguous activities," based on the individuals with whom each respondent engaged in these activities—friends, family, co-workers, or community members. Ambiguous activities done alone are ignored.

Altogether, we create nine total social capital variables from the ATUS, each of which is a continuous measure of minutes of time spent in an activity category. We collapse each of these nine time-use variables into ordinal variables depending on the share of respondents who report spending zero minutes doing each activity. We do so to allow non-linearity in the importance of time spent in each category of activities for social capital, and to maintain consistency with the other social capital variables from the ASEC, VCL and GSS, which are ordinal, given our ultimate aim to combine all variables into a single index.[6]

[5] Not all of the activities within these five major categories are categorized as inherently social. For instance, the major category "Socializing/Relaxing/Leisure" includes activities such as "internet use for leisure." Only the time spent doing activities that we categorize as social are included. The remaining ambiguous activities within these five major categories are included in the "time spent doing ambiguous activities" variables.

[6] To collapse the time-use variables, we first attempt to divide each into quintiles. However, in many cases, the share of respondents reporting zero minutes on a given activity far exceeds 20 percent of the sample, in which case it is impossible to divide the sample into five roughly equal-sized groups. In these cases, we separate the time-use variable into fewer than five categories. If more than 80 percent of respondents report zero minutes on a given activity, we create a binary variable. If 60-80 percent report zero minutes, we create a three-category variable. If 40-60 percent report zero minutes, we create a four-category variable. And if less than 40 percent report zero minutes,

Table A1 lists all of the social capital variables from each survey, including the CPS ASEC, the ATUS, CPS VCL, and the GSS.

Combining datasets

In order to combine the datasets discussed above, we rely on the CPS ASEC as our base dataset, and either directly link or impute social capital variables from the three other surveys. When we are unable to link respondents between datasets, we impute each social capital variable using sequential regression multivariate imputation (SRMI).[7] Compared with traditional imputation methods, SRMI more accurately preserves the correlation between imputed variables. Hokayem et al. (2022) find that SRMI leads to more accurate imputation of missing data in the CPS ASEC in particular.

We begin our imputation process by linking a subset of individual respondents from the ATUS to the CPS ASEC. Because the ATUS is a supplement of the CPS, its sample is drawn from the pool of all CPS respondents. CPS respondents are eligible to participate in the ATUS two to five months after their eighth and final month of participation in the CPS. Because the CPS ASEC is fielded in February, March and April, a subset of 2019 CPS ASEC respondents also completed the ATUS later in the year. We identify and link 2,830 individuals that completed both the 2019 ATUS and 2019 CPS ASEC. For those linked respondents, we directly observe their responses for all CPS ASEC variables and the nine ATUS social capital variables.

For the remaining CPS ASEC respondents, we impute values for these nine social capital variables using SRMI. This process imputes each social capital variable sequentially, including previously imputed social capital variables as predictor variables in later imputations.[8] We conduct all imputations the same way. We use logistic regression in the donor dataset (ordered logistic regression when a variable to be imputed can have multiple values) to obtain parameter estimates for the associations between predictor variables and the variable to be imputed. We

we create a five-category variable. In these cases, the non-zero categories are assigned an equal number of (weighted) respondents.

[7] Our SRMI process differs from the approach detailed in Hokayem et al. (2022) in some ways. First, Hokayem et al. (2022) use SRMI when variables contain different amounts of missing information. They first impute information for variables missing the least amount of information, and sequentially impute variables containing less information. Second, Hokayem et al. (2022) impute based only on information within a single data source, whereas we impute variables across data sources.

[8] We only impute social capital variables for adults age 18 and over because two of our datasets (VCL and GSS) only ask survey questions of adults.

apply the resulting regression coefficients to the observed (or previously imputed) predictor variables in the CPS ASEC. This process generates individual-level predicted probabilities for each outcome of each variable. From the resulting predicted probabilities, we randomly assign each respondent a realized value of the social capital variable being imputed. This imputed variable is then included as a predictor variable in subsequent imputations.

The first variable in the ATUS for which we impute values is the bivariate ordinal variable "time spent caring for household members." We conduct a logistic regression in ATUS, in which our dependent variable is equal to one if the individual spends any time caring for household members, and zero if the individual spends no time caring for household members. Because it is the first variable for which we impute values, we use only demographic variables that are available in both the CPS ASEC and ATUS, for the imputation.[9] We then apply the parameter estimates from the logistic regression to all individuals in the CPS ASEC not linked to the ATUS, generating a variable equal to the predicted probability of spending "one or more minutes" rather than "zero minutes" caring for household members. Based on these predicted probabilities, we randomly determine whether the individual spends time caring for household members (generating a binary variable equal to one if true, and zero if not).

When imputing the other eight social capital variables that we draw from the ATUS, we follow the same method, except we include the previously imputed ATUS social capital variable(s) as predictor variables. Then we apply the resulting coefficients to predict outcomes for CPS ASEC respondents, using their observed demographic variables and their imputed (or linked) social capital variables as predictors. We repeat this process until we impute all ATUS social capital variables.

Next, we impute nine variables from the CPS VCL into the CPS ASEC. The CPS VCL is also a supplement of the CPS, but because it is fielded in September, we do not observe any individuals who participated in both the CPS VCL and the CPS ASEC in 2019.[10] Therefore, we rely exclusively on the SRMI method to impute variables for all CPS ASEC respondents. The CPS VCL includes nearly identical demographic variables to the CPS ASEC, so we again proceed by

[9] A full list of our demographic variables used for imputations can be found in Table A2.
[10] CPS respondents are interviewed in four consecutive months, then again in the same four months one year later. No one interviewed in February, March, or April will have a September interview later in the year, and no one interviewed in September will be interviewed the subsequent February, March, or April.

first obtaining parameter estimates of the relationship between demographics and our first social capital variable of interest in the CPS VCL. We then use parameter estimates from the CPS VCL to predict values for the first social capital variable in the CPS ASEC. We impute the other eight social capital variables sequentially, and use imputed social capital variables as predictors in later imputations.[11]

Finally, we impute seven variables from the 2018 GSS into the CPS ASEC. The GSS is not a supplement of the CPS, so again we rely exclusively on SRMI to impute variables for all CPS ASEC respondents, relying on demographic information available in both surveys. Unlike the other surveys, the GSS has missing social capital variables for many respondents because not every respondent is asked every survey question and because the GSS does not impute values due to non-response. Therefore, we first use SRMI to impute missing social capital variables within the GSS.[12] Consistent with Hokayem et al. (2022), we begin by imputing variables that are missing the least amount of information, sequentially imputing variables containing more missing information. In the last step, we use SRMI to impute the social capital variables in the GSS to our base dataset, applying the same process used for the CPS VCL.[13]

Following our direct linkages and imputations, we produce a dataset that contains observed or imputed values for 30 social capital variables (only 22 of which are included in our final social capital index). The full list of imputed social capital variables is shown in Table A1. Table A3 verifies that the distribution of each social capital variable in our final dataset approximates the distribution in the source dataset.

[11] When imputing social capital variables from the CPS VCL, we use the respondents' state as a predictor variable instead of using their region. This allows us to capture state-level variation in these social capital variables that would otherwise be undetected. Note that we only use state variables as predictors for the CPS VCL due to data constraints in the ATUS and GSS.

[12] In addition to imputing missing social capital variables, we also impute family income for respondents who did not provide their income information.

[13] Prior to this last step, we transform demographic variables in both the GSS and CPS ASEC to make them consistent. Although the GSS collects the same demographic information as the CPS ASEC, the questions and available responses are not exactly the same across the two surveys. For example, the GSS and CPS ASEC offer slightly different response options for respondents to describe their current employment status (though both surveys offer eight total responses). In this case, we collapse the eight original responses into four categories: (i) employed, (ii) unemployed, (iii) not in the labor force for reasons other than retirement, and (iv) not in the labor force due to retirement.

Index Creation

Next, we combine the social capital variables into sub-indices that represent distinct underlying dimensions of social capital, which in turn are combined to create a single comprehensive measure of social capital. This involves a four-step process: (1) grouping our full set of social capital variables into meaningful sub-indices, (2) determining which variables best capture their assigned sub-index's underlying dimension of social capital, (3) weighting each variable to reflect its importance in driving the social capital captured in each sub-index, and (4) weighting each sub-index to create a comprehensive index.

We begin by relying on the social capital literature to group each of our 30 social capital variables into six distinct subsets: community engagement (11 variables), social connection (7 variables), religious involvement (3 variables), family strength (6 variables), work (2 variables), and social trust (1 variable), as reported in Table A1. Though sociologists dispute which components of social capital are most important, the literature is largely in agreement that each of these dimensions are integral components of social capital.[14]

We next verify whether these groupings of variables relate to the same underlying component of social capital. To do so, we rely on Cronbach's alpha coefficients. The formula for Cronbach's alpha is as follows:

$$\alpha = \frac{k\bar{c}}{\bar{v} + (k-1)\bar{c}} \tag{1}$$

where α is Cronbach's alpha, k is the number of variables, $\bar{c}$ is the mean covariance between all variables, and $\bar{v}$ is the mean variance over all variables. Cronbach's alpha coefficients range from zero to one, with higher coefficients indicating that the included variables are more highly correlated with each other. Though higher Cronbach's alpha coefficients do not demonstrate the *validity* of our social capital sub-indices (higher coefficients, for example, do not indicate that that variables included in our family strength sub-index capture family strength *per se*), the

[14] For a discussion of community engagement in social capital, see Portes (1998) and Perkins et al. (2002). On social connection, see Putnam (2001). On the importance of religious involvement, see Coleman (1988) and Park and Bowman (2015). For a discussion of work, see Orrell et al. (2022). Fukuyama (1995) and Knack and Keefer (1997) elaborate the importance of social trust. And for a discussion of family strength, see Joint Economic Committee (2018).

statistic is frequently used to demonstrate the degree to which the included variables relate to the same underlying concept. A Cronbach's alpha coefficient of 0.7 is often used to ensure that multiple variables are sufficiently interrelated to be grouped together (Bujang et al. 2018; Cortina 1993).

We use Cronbach's alpha coefficients to measure the extent to which the variables within each sub-index vary together. For each of our six sub-indices, we first calculate Cronbach's alpha for all variables that we initially grouped together.[15] We then progressively eliminate individual variables from each sub-index—beginning with the variables that are most weakly correlated with the others. We continue to eliminate variables one at a time until the Cronbach's alpha coefficient cannot be made higher by further eliminating variables. After eliminating weakly correlated variables from each sub-index, all of our sub-indices had Cronbach's alphas of approximately 0.9. For a complete discussion of our process for eliminating variables, see Appendix B. Because the resulting groups of variables are highly correlated with each other, we posit that they adequately capture their sub-index's underlying aspect of social capital.[16]

Our final sub-indices contain a total of 22 variables: community engagement (8 variables), social connection (6 variables), religious involvement (2 variables), family strength (4 variables), work (1 variable), and social trust (1 variable). A final list of variables included in our six sub-indices can be found in Table A4.

We next assign a weight to each variable in each sub-index in accordance with the degree to which it varies with the underlying aspect of social capital. To do so, we use principal component analysis (PCA). PCA is a statistical technique that collapses a set of variables into linear combinations of those variables. These linear combinations are called principal components. The first principal component explains the maximum amount of variance in the data that a linear combination of the variables can explain. PCA generates additional principal components (as many as there are variables) until all of the variance in the data is accounted for, each of which explains the maximum amount of variance left after accounting for the prior

[15] Before calculating the Cronbach's alpha for the group of variables within each sub-index, when necessary we reverse the polarity of variables to ensure that low values are indicative of low social capital and high values of are indicative of high social capital. We also standardize each social capital variable to ensure that they are on equivalent scales.

[16] Note that this relies on the assumption that the unobserved underlying dimension of social capital is best captured by the extent to which a group of highly-related variables vary together.

principal components. The goal is to capture most of the variation common to the variables with a smaller number of variables, using only the necessary principal components produced, starting with the first. PCA is commonly used in the social capital literature to create indices from many variables (Joint Economic Committee 2018; Putnam 2001; Rupasingha, Goetz, and Freshwater 2006).

We conduct PCA on each set of standardized variables in each sub-index, and we use the first principal component for the weights. That is, each person receives a sub-index score by applying their standardized values on the relevant social capital variables to the linear equation that explains the maximum variance in the data. Their sub-index score is their score on the first principal component of the PCA. Each sub-index is therefore a weighted sum of the underlying standardized social capital variables, with the weights being those produced by the PCA.

PCA is intended to be used on continuous variables, so when estimating the first principal component, instead of using the realized imputed values of the social capital variables, we use the (standardized) predicted probabilities that were used to assign the realized values.[17] However, we apply the weights themselves to the (standardized) realized or observed values to calculate the sub-index value for each individual.[18] For example, our religious involvement sub-index contains two variables, one with eight possible values and one with nine. To generate each individual's sub-index value, we first conduct a PCA on the standardized predicted probabilities of each outcome of each variable (a total of 17 variables entered into the PCA). Each of the 17 variables gets a factor loading (weight) on the first principal component.[19] For each individual, we then multiply those 17 factor loadings by 17 standardized dummy variables corresponding with each individual's realized value for each variable.[20]

[17] For the CPS ASEC and ATUS variables that are observed, we use standardized dummy variables corresponding with each outcome of each variable rather than the predicted probabilities of such variables.
[18] We multiply the weights by the imputed or observed social capital variable of interest—rather than the predicted probability included in the PCA—because we do not generate predicted probabilities for observed variables, and because the predicted probabilities would not capture natural variation in social capital across individuals.
[19] For each sub-index, values corresponding with the lowest levels of social capital always have negative weights, and values corresponding with high levels of social capital always have positive weights.
[20] When imputing social capital variables, we rely on random number seeding to determine which value to assign to a given individual based on their predicted probability of each outcome of each variable. That is, if the predicted probability of an outcome is 0.42, the random number seeding draws a number between 0 and 1 that we then compare against 0.42 to assign a realized value. Therefore, changes to the random number seed can marginally affect our imputations, which can then marginally influence the results of successive imputations and our PCA results. We tested 15 random number seeds to see if our results differed substantially from our reported estimates.

We then standardize all six of our sub-indices to ensure that they are on equivalent scales. Therefore, each individual receives a score for each of the six sub-indices that is equal to the weighted sum of their realized or observed values of the social capital variables within each given sub-index. High sub-index scores indicate greater social capital and lower scores indicate less social capital.

In the same sense that certain variables warrant different weights in each sub-index, so too do each of our sub-indices vary in the extent to which they reflect a given individual's overall stock of social capital. Therefore, we generate weights for each sub-index according to same process detailed above. We conduct one final PCA on all of the sub-indices, and again use the factor loadings on the first principal component as the weights for the overall index. Social capital scores are equal to the score on the first principal component. The weight of each sub-index in the overall measure can be found in Table A4. Community engagement, family strength, and social trust are the sub-indices with the greatest weights, while social connection has the lowest weight. We once again standardize our final score so that the sample has a mean social capital score of zero and a standard deviation of one. Our final social capital index ranges from -2.39 to 3.38, meaning that the lowest social capital score is 2.39 standard deviations below the mean, and the highest social capital score is 3.38 standard deviations above the mean.

III. Validation

In order to validate our individual-level measure of social capital, we aggregate it to the state-level and compare it to existing state-level measures. Previously published comprehensive measures of social capital at the state level rely on different data sources and different years. Nonetheless, the most widely cited social capital measures are highly correlated with each other. This suggests that the geographic distribution of social capital has not changed dramatically since around 2000 when the most cited social capital measures were first produced, and that each measure captures a similar concept (Winship and O'Rourke 2023). This suggests that our individual social capital measure, when aggregated to the state-level, should also strongly correlate with existing social capital measures.

Although certain sub-index weights changed, the estimates do not exhibit a significant amount of variation across seeds. Our index remains strongly correlated with other social capital measures, as discussed in the section on validation below.

We calculate our mean social capital index at the state-level, and calculate the correlation between our state-level means and existing social capital indices. We present the correlation matrix in Table 1.

Table 1. Correlations between State-Level Social Capital Indices

	Social Capital Index	Putnam (2001)	JEC (2018)	Chetty et al. (2022)
Social Capital Index	1			
Putnam (2001)	0.78	1		
JEC (2018)	0.87	0.81	1	
Chetty et al. (2022)	0.75	0.78	0.78	1

Notes: The Joint Economic Committee (JEC), Putnam, and Chetty et al. social capital indices are publicly available on their respective websites. Because the Chetty et al.'s social capital measure is not available at the state level, we aggregated county-level economic connectedness scores to the state level by calculating each state's weighted average of economic connectedness, weighting by county population.
Sources: Putnam (2001), Chetty et al. (2022), Joint Economic Committee (2018), and authors' calculations.

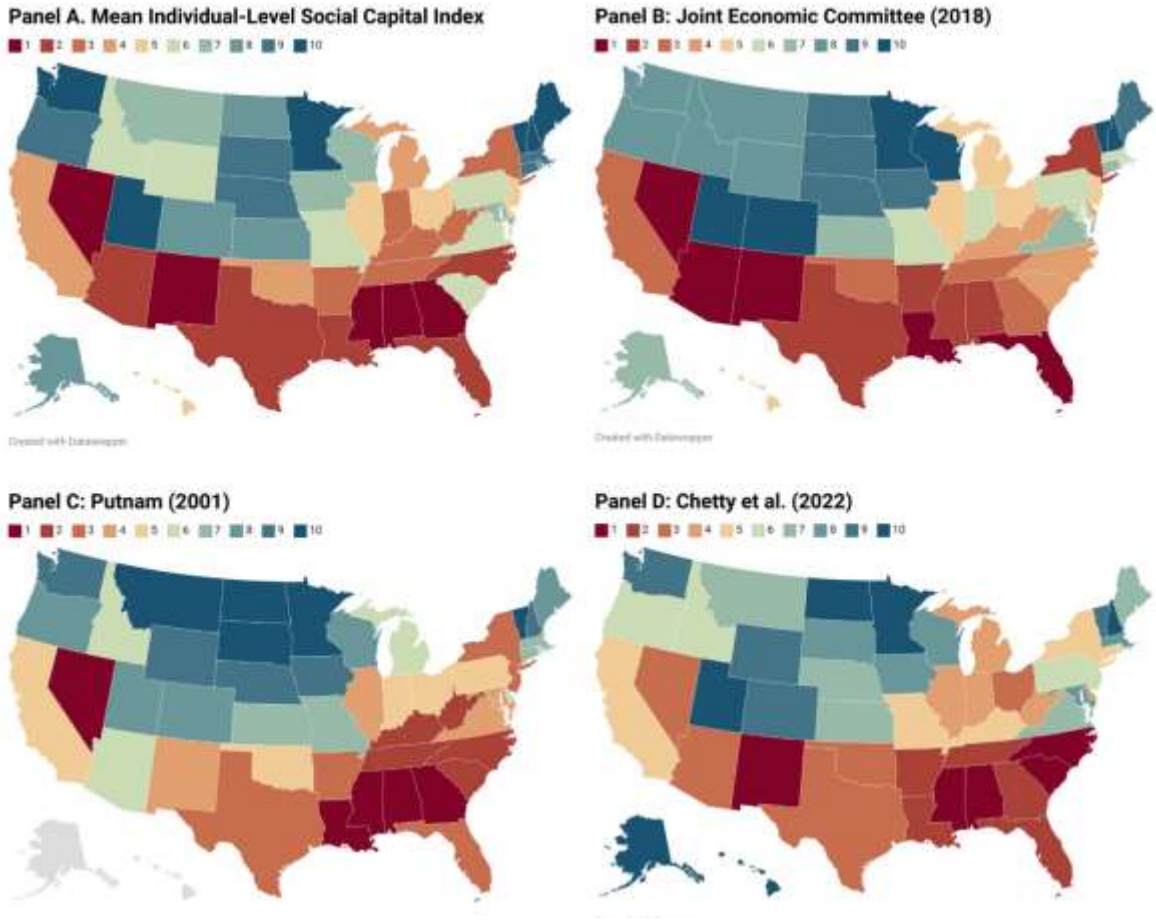
Our social capital index has a correlation coefficient of 0.87 with the Joint Economic Committee (2018) state index, 0.78 with the Putnam (2001) state index, and 0.75 with the Chetty et al. (2022) measure of state-level economic connectedness.[21] For comparison, the correlation coefficient between the Joint Economic Committee and Putnam measures is 0.81, while the correlation coefficient between the Joint Economic Committee and Chetty measures is 0.78.[22]

Figure 1 presents the mean social capital score by state according to our measure and the three pre-existing measures, grouped by decile. Across all four measures, the southeastern and southwestern United States tend to have the lowest social capital scores on average, spanning from California to the Carolinas. The states in the lowest decile of social capital according to our measure—New Mexico, Nevada, Mississippi, Alabama, and Georgia—also are among the lowest social capital states according to the other measures. The states with the highest social capital according to our measure are concentrated in the Northeast (including Vermont, New

[21] We do not weight these correlations by state population. When we do weight by population, the correlation with Joint Economic Committee (2018) remains at 0.87, the correlation with Putnam (2001) increases to 0.79, and the correlation with Chetty et al. (2022) increases to 0.82.
[22] Although the Joint Economic Committee (2018) and Chetty (2022) social capital indices are also available on the county level, we are not able to aggregate our index to the county level because the public-use version of the CPS ASEC does not identify all individuals' counties.

Hampshire, Maine, and Massachusetts) and a group of states in the Mountain West (Utah, and Colorado) and Upper Midwest (Minnesota, North Dakota, and South Dakota). Each of the five states in the top decile of our measure—Vermont, Utah, New Hampshire, Minnesota, and Maine—are among the highest-ranking states according to the other measures. Like other measures, we find that West Virginia is among the lowest social capital states, despite being bordered by several high social capital states. The same is true of New York, which has below-average social capital in each of the indices despite being surrounded by relatively high social capital states. The complete set of state level rankings for all four social capital measures can be found in Table A5.

Figure 1. State-Level Distribution of Social Capital According to Four Social Capital Measures



Notes: The Joint Economic Committee, Putnam, and Chetty et al. social capital indices are publicly available on their respective websites. Because the Chetty et al.'s social capital measure is not available at the state level, we

aggregated county-level economic connectedness scores to the state level by calculating each state's weighted average of economic connectedness, weighting by county population.
Sources: Putnam (2001), Chetty et al. (2022), Joint Economic Committee (2018), and authors' calculations

Though our social capital index is highly correlated with each of the other indices, our index is most conceptually similar to the index developed by the Joint Economic Committee (2018). The Joint Economic Committee measure is also comprised of various sub-indices, including family unity, family interaction, social support, institutional health, community health, collective efficacy and philanthropic health. On specific sub-indices purporting to capture the same underlying dimension of social capital, our index is relatively strongly correlated with theirs, as reported in Table A6. For example, the correlation coefficient between our family strength sub-index and the Joint Economic Committee's family unity sub-index is 0.74 and the correlation coefficient between our community engagement sub-index and the Joint Economic Committee's community health and social support sub-indices are 0.67 and 0.80 respectively.

Despite the fact that our index differs from the Putnam (2001) and Chetty et al. (2022) measures in key conceptual ways, our index is highly correlated with both. The Chetty et al. (2022) measure is not a comprehensive social capital measure, but rather measures the likelihood of friendships between those from different socioeconomic backgrounds. The Putnam (2001) measure, though more similar to our measure than is Chetty et al. (2022), contains only 14 variables predominantly drawn from surveys throughout the late 1980s. Moreover, compared to our measure, Putnam's measure includes a disproportionate share of variables related to local community involvement and civic participation. Despite these conceptual differences, the correlation coefficients between our measure and each of these measures are high—indicating that each of the included measures provide consistent measures of state-level variation in social capital.

IV. Social Capital by Demographic Characteristics

One of the main advantages of our individual-level social capital measure, relative to those aggregated to state or institutional levels, is that we can determine how social capital varies between and within demographic groups. In this section, we show how individual-level social capital varies by age, sex, educational attainment, race and ethnicity, and some of their interactions.

Table 2 reports the mean social capital and sub-index scores for these demographic groups. Recall that our social capital and sub-index scores are standardized, meaning that the overall sample has a mean social capital score of zero and a standard deviation of one. Therefore, mean social capital scores should be interpreted in terms of how much each group, on average, varies from the average-social-capital individual. In theory, the scores are measured on an interval scale, where a difference of 1.0 between groups, for example, connotes the same difference in social capital regardless of where it occurs in the social capital distribution.[23] The scores are not measured on a ratio scale, where a mean of two implies "twice as much social capital" as a mean of one, since there is no true zero indicating the absence of social capital.

Mean social capital scores and their standard deviations are virtually indistinguishable between men and women. However, men and women exhibit substantial heterogeneity in sub-indices of social capital. Men have higher work and social trust scores, while women have higher community engagement and family strength scores.[24] Still, these differences are fairly modest—never larger than around 0.3 standard deviations.

Social capital varies more across race and ethnicity.[25] Mean social capital for non-Hispanic white individuals is 0.82 standard deviations greater than that for non-Hispanic black individuals, and 0.65 standard deviations greater than that for Hispanic individuals. The largest differences among sub-indices between non-Hispanic white and black individuals are social trust (difference of 1.18 standard deviations), family strength (difference of 0.38 standard deviations), and community engagement (difference of 0.36 standard deviations). Hispanic individuals face similar disparities in social trust and community engagement, but they have higher levels of family strength and work than non-Hispanic white individuals. Meanwhile, non-Hispanic black individuals have higher levels of social connection than both other groups.

[23] For example, if Group A has a social capital score of 1 and Group B has a social capital score of 0, the difference in average social capital between the two groups would be the same if Group A had an average score of -2 and Group B had an average score of -3.

[24] The work score, in isolation, is less of a "pure" indicator of social capital than the other sub-index scores, as it is based on a single labor supply measure. None of our sub-index scores are purely measures of social capital, though sub-indices with multiple component variables may be "purer" than any of the underlying variables in isolation, to the extent that they better capture an underlying dimension of social capital that is reflected by variation in observed variables.

[25] Small sample sizes—combined with inconsistent identification across surveys—prevent us from being able to generate social capital indices for certain racial-ethnic minority groups such as Asian Americans and Native Americans.

Table 2. Social Capital Index and Sub-index Summary Statistics by Demographic Groups

	Social Capital Index	Community Engagement	Social Connection	Family Strength	Work	Social Trust
Sex						
Male	-0.01	-0.04	0.00	-0.08	0.14	0.05
	1.02	*1.00*	*1.02*	*0.99*	*0.98*	*1.02*
Female	0.01	0.03	0.00	0.07	-0.17	-0.05
	0.98	*1.00*	*0.98*	*1.01*	*1.01*	*0.98*
Race/Ethnicity						
Non-Hispanic white	0.23	0.14	0.00	0.03	-0.04	0.38
	0.98	*1.02*	*1.00*	*0.99*	*1.01*	*0.93*
Non-Hispanic black	-0.59	-0.22	0.10	-0.35	-0.04	-0.80
	0.85	*0.92*	*0.97*	*0.91*	*1.02*	*0.62*
Hispanic	-0.42	-0.27	-0.18	0.06	0.05	-0.78
	0.84	*0.89*	*1.01*	*1.04*	*0.99*	*0.66*
Other	-0.12	-0.22	0.18	0.11	-0.01	-0.19
	0.98	*0.95*	*0.95*	*1.05*	*1.01*	*0.86*
Educational Attainment						
Less than High School	-0.86	-0.33	-0.32	-0.12	-0.46	-1.20
	0.72	*0.82*	*1.02*	*0.99*	*1.01*	*0.31*
High School	-0.38	-0.19	-0.09	-0.10	-0.13	-0.46
	0.81	*0.90*	*1.00*	*0.95*	*1.03*	*0.72*
Some college	-0.09	-0.01	0.04	-0.08	-0.02	-0.10
	0.88	*0.98*	*0.98*	*0.98*	*0.99*	*0.80*
College or more	0.67	0.27	0.15	0.19	0.22	0.85
	0.91	*1.07*	*0.97*	*1.03*	*0.93*	*0.79*
Age						
18-24	-0.79	-0.52	0.63	-0.67	-0.17	-0.48
	0.71	*0.77*	*0.83*	*0.69*	*0.93*	*0.79*
25-34	-0.06	-0.31	0.35	0.01	0.37	0.01
	0.94	*0.81*	*0.90*	*1.12*	*0.84*	*0.97*
35-44	0.29	0.09	0.08	0.47	0.38	-0.07
	1.03	*1.01*	*0.96*	*1.08*	*0.84*	*0.98*
46-54	0.29	0.18	-0.01	0.25	0.36	0.02
	1.04	*1.05*	*0.95*	*1.00*	*0.86*	*1.00*
55-64	0.13	0.17	-0.27	-0.01	0.04	0.07
	0.97	*1.01*	*0.95*	*0.87*	*1.00*	*1.00*
65-74	0.02	0.26	-0.38	-0.12	-0.76	0.25
	0.92	*1.01*	*0.97*	*0.80*	*0.88*	*1.03*
75+	-0.18	0.13	-0.63	-0.29	-1.16	0.22
	0.88	*0.95*	*0.93*	*0.78*	*0.54*	*1.06*

Notes: Social capital and sub-index scores are standardized, meaning that the scores above reflect the extent to which average social capital for each group differs from the sample mean. Standard deviations are italicized. Those

with "some college" include those with an associate's degree and those whose who began but did not complete a four-year college degree.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

The largest disparities in social capital occur across educational lines. College-educated Americans have social capital scores 1.05 standard deviations higher than those with only a high school education and 1.53 standard deviations higher than those with less than a high school education. Across all sub-indices, college-educated individuals have higher social capital than those with less education. The gap is particularly large for social trust, where individuals with a college degree have an average social capital score that is 2.05 standard deviations higher than individuals without a high school degree.

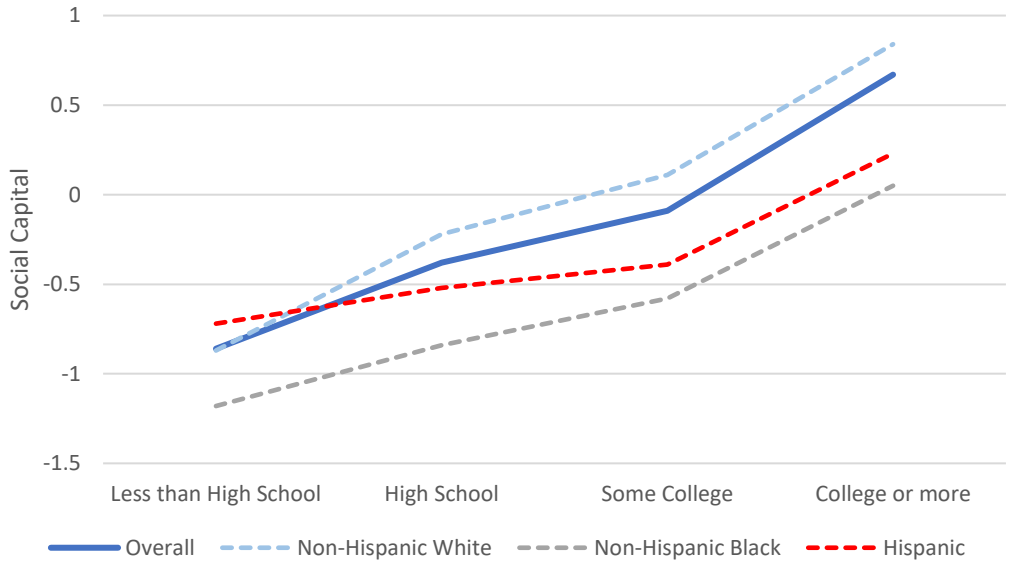
Social capital also varies substantially by age. On average, social capital is the lowest for those aged 18-24 and 75 and older, and tends to peak in middle age. However, different sub-indices drive the relatively low scores for the youngest and oldest age groups. The oldest Americans have the lowest sub-index scores for work—since most of them are retired—and social connection, but among the highest scores for social trust. Conversely, the youngest Americans have especially low scores for community engagement and family strength, but the highest scores for social connection.[26]

To examine social capital disparities across race, ethnicity and educational attainment simultaneously, Figure 2 presents the mean social capital scores for each combination of our four racial and ethnic groups and our four educational groups. At every educational attainment level except less than a high school education, non-Hispanic white individuals have the highest mean level of social capital. Among those with a bachelor's degree or more, non-Hispanic white individuals have social capital scores 0.79 standard deviations greater than non-Hispanic black individuals, and 0.61 standard deviations greater than Hispanic individuals. However, among individuals with less than a high school degree, Hispanics have the highest level of social capital.

[26] We note that age is structurally related to certain components of our social capital index; for example, the elderly have lower scores for work and family strength because they are more likely to be retired and in smaller families. However, these components can in principle be balanced out by high scores for other dimensions.

There is a strong education premium for both non-Hispanic white and non-Hispanic black individuals. For these groups, obtaining a high school degree is associated with a 0.65 (white) or 0.34 (black) increase in social capital, and further obtaining a college degree is associated with an additional 1.06 (white) or 0.89 (black) increase in social capital. The education premium is smaller for Hispanic individuals, 0.20 for a high school degree and 0.75 for a college degree. Thus, the relationship between education and social capital is weaker for Hispanics than non-Hispanics.

Figure 2. Mean Social Capital Scores by Race, Ethnicity and Educational Attainment



Notes: Those with "some college" include those with an associate's degree and those who began but did not complete a four-year college degree.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

These findings suggest that social capital varies widely between different demographic groups. College educated, non-Hispanic white, middle-aged individuals tend to have the highest levels of social capital, whereas minority groups, those with less than a high school education, and those at the tails of the age distribution tend to have the lowest levels of social capital. At the same time, there is also substantial variation in social capital within groups (given the standard deviations reported in Table 2), and so even the wide gaps between demographic groups do not preclude substantial overlap among them.

V. Social Capital and Income

Social scientists have long debated whether income and social capital are substitutes or complements, and whether this relationship varies by income source (Case and Deaton 2023; Kearney 2023; Murray 2012; Saegert, Thompson, and Warren 2001). In this section, we document how social capital varies with a comprehensive measure of income as well as specific sources of income.

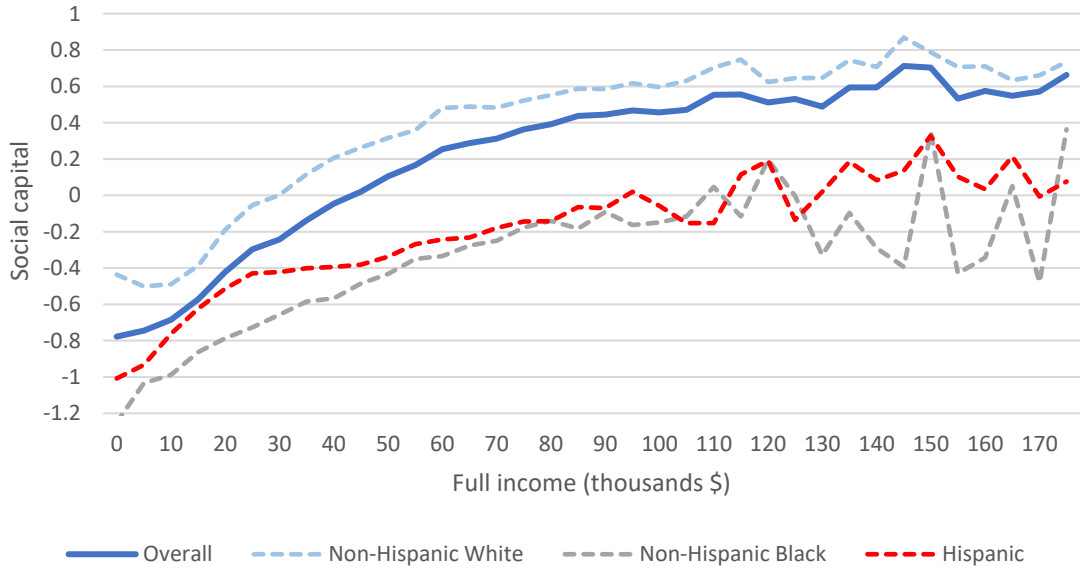
Social Capital and Full Income

Leveraging the income information contained in the CPS ASEC and following the methods of Burkhauser et al. (2024), we calculate several different measures of income, including market income, transfer income, and post-tax post-transfer (full) income. In each case, we focus on the income received by all household members in which an individual lives, thus accounting for income received by spouses, cohabiters, children, and other household members. We adjust for the number of household members by adopting a square root equivalence scale that reflects economies of scale.[27] The focus on household level income follows Burkhauser et al. (2024) and other academic research, household income estimates produced by the Census Bureau and Congressional Budget Office, as well as a recent National Academy of Sciences report on improving poverty measurement (National Academies of Sciences, Engineering, and Medicine 2023). Our full income definition includes both market income and transfers, and it adjusts for federal income taxes, refundable tax credits, federal payroll taxes, and state income taxes. Market income includes wages and salaries, business and farm income, pensions and other retirement income from employers, survivors' benefits, interest and dividends, annuities, rental income, child support, alimony, transfers from relatives and friends, employer-paid health insurance premiums, and income from other non-governmental sources. Transfer income includes Social Security retirement and disability income, veterans' benefits, educational assistance, unemployment and workers' compensation, cash welfare, and in-kind transfers including nutrition assistance, rental housing assistance, and public health insurance including Medicaid and Medicare. We use the market value of Medicaid and Medicare, calculated as the risk-adjusted average cost by state (see Burkhauser et al. 2024).

[27] For example, a 4-person household is assumed to require only twice as many resources as a 1-person household to maintain the same standard of living.

We begin by identifying the relationship between a measure of full income and social capital scores. Specifically, we use our measure of full income, and calculate the average social capital score for each $5,000 income interval—first for the entire sample and then for each racial and ethnic group. Figure 3 plots the mean social capital score for each $5,000 income bin, restricting our sample to the working-age population.

Figure 3. Mean Social Capital by Income and Race and Ethnicity, Age 18-64



Notes: Income is separated into $5,000 intervals. We calculate the mean social capital for each income interval, both for the entire sample and each racial-ethnic group separately. Those with household incomes greater than or equal to $175,000 are treated as a one group. Mean social capital scores for non-Hispanic black and Hispanic individuals exhibit significant variation at the top of the income distribution due to relatively small sample sizes. The x-axis reflects the lower bound of each $5,000 income interval.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

Social capital increases with income. But social capital rises much more quickly at the bottom of the income distribution compared to the top. For every $10,000 increase in income, social capital increases by 0.18 standard deviations for individuals with income below $30,000, 0.17 standard deviations for income between $30,000 and $60,000, 0.06 standard deviations for income between $60,000 and $90,000, and 0.03 standard deviations for income between $90,000 and

$175,000.[28] The income-social capital gradient is similar for non-Hispanic white and non-Hispanic black individuals, although the level of social capital is substantially lower for non-Hispanic black individuals at any given income level. Compared to non-Hispanic white individuals, social capital is also lower for Hispanics at any given level of income. But while the gradient for Hispanics is steep for the first $30,000 of income, it largely flattens out thereafter. This mirrors their similarly flat gradient with regard to educational attainment.

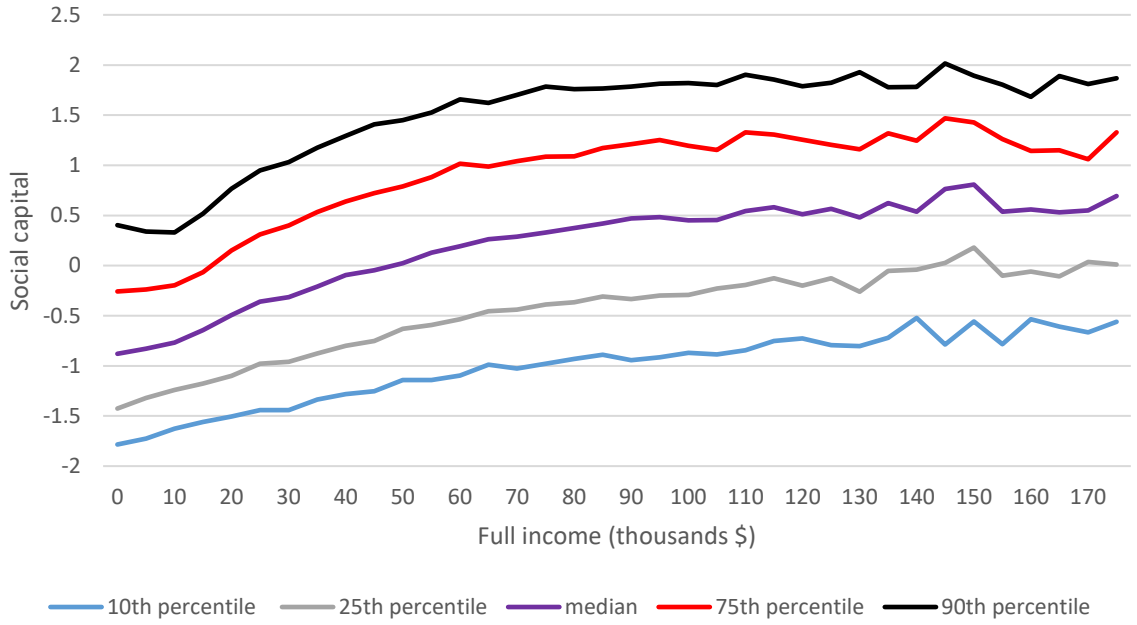
Although social capital increases with income, there is a substantial amount of variation in social capital scores at any given level of income. Figure 4 shows the 10th, 25th, 50th, 75th, and 90th percentile social capital score for each $5,000 income group.[29] There is substantial variation in social capital scores throughout the income distribution. The 90th and 10th percentiles of social capital are separated by 2.19 standard deviations for individuals with full incomes below $5,000, and by 2.43 standard deviations for individuals with full incomes greater than $175,000. High-income individuals do not uniformly have more social capital than low-income individuals. For example, the individual at the 90th percentile of the social capital distribution among those with income between $20,000 and $25,000 has more social capital than the median social-capital-individual with income of $175,000 or more.

Social Capital and Source of Income

The previous analyses do not distinguish between different sources of income. Previous research has shown that earned income and transfer income may have different effects on various domains of social capital. For example, although individuals with the highest incomes tend to have the highest levels of civic participation (Verba, Schlozman, and Brady 1995), social involvement (Perkins, Hughey, and Speer 2002), and family stability (Kearney 2023), transfer income can depress religious attendance (Gill and Lundsgaarde 2004), volunteerism (Stadelmann-Steffen 2011), and family formation (Peterson 2015). Similarly, the association between social capital and income may depend on the source of income.

[28] The relationship between post-tax post-transfer income and social capital is not sensitive to including or excluding the value of health insurance.
[29] In appendix Table A7, we present the share of the working-age population in each $5,000 income interval.

Figure 4. Selected Percentiles of the Social Capital Distribution by Income, Age 18-64



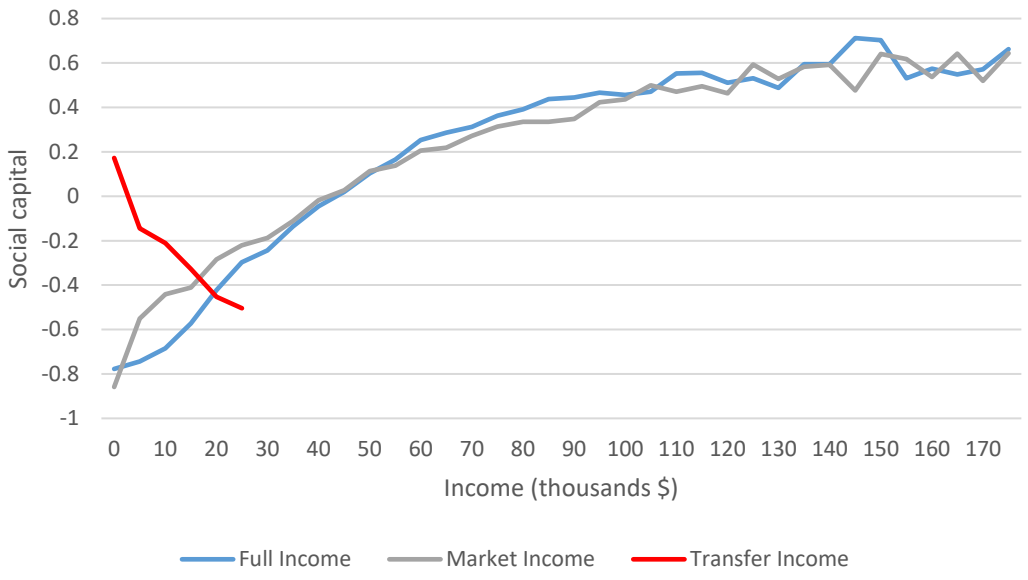
Notes: Income is separated into $5,000 income intervals. We calculate the 10th, 25th, 50th, 75th, and 90th percentiles of social capital for each income bin. Those with household incomes greater than or equal to $175,000 are treated as a one group. The x-axis reflects the lower bound of each $5,000 income interval.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

In Figure 5, we report for the working age population the mean social capital index for each $5,000 income interval according to market income and transfer income, while including full income for comparison. As noted previously, transfer income includes cash and in-kind transfers, including the market value of public health insurance, and it does not account for taxes (which means it does not include as income refundable tax credits that go to families with earnings).

Our measures of market income and full income show the same pattern; social capital increases with income but at a declining rate. The relationship is particularly strong at low levels of market income. Social capital increases by 0.21 standard deviations for each additional $10,000 of market income up to $30,000. In contrast, social capital exhibits a negative relationship with

transfer income. Social capital decreases by 0.23 standard deviations for each additional $10,000 of transfer income up to $30,000.[30]

Figure 5. Mean Social Capital Score by Full Income and Income Source, Age 18-64



Notes: Income is separated into $5,000 income bins. We calculate the mean social capital index for each bin, for full income, market income, and transfer income. Those with household incomes (full or market income) greater than or equal to $175,000 are treated as one group. Due to small sample sizes, we exclude from the transfer income line the 4.6 percent of weighted observations with transfer income of $30,000 or more. However, grouping them into a single "$30,000+" category indicates a mean social capital score of -0.61. The x-axis reflects the lower bound of each $5,000 income interval.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

Results are similar for each race and ethnicity, though the strength of the relationship between income source and social capital varies. The negative relationship between social capital and transfer income is strongest for non-Hispanic white individuals and weakest for Hispanic individuals. Each additional $10,000 of transfer income corresponds with a social capital decrease of 0.23 standard deviations for non-Hispanic white individuals, compared with a 0.14 standard deviation decrease for Hispanic individuals. The positive relationship between market income and social capital is strongest for non-Hispanic black individuals and weakest for

[30] When we omit the work sub-index, the relationship between transfer income and social capital becomes modestly less negative but is qualitatively the same, falling from 0.06 to -0.41 over the $0 to $30,000 range.

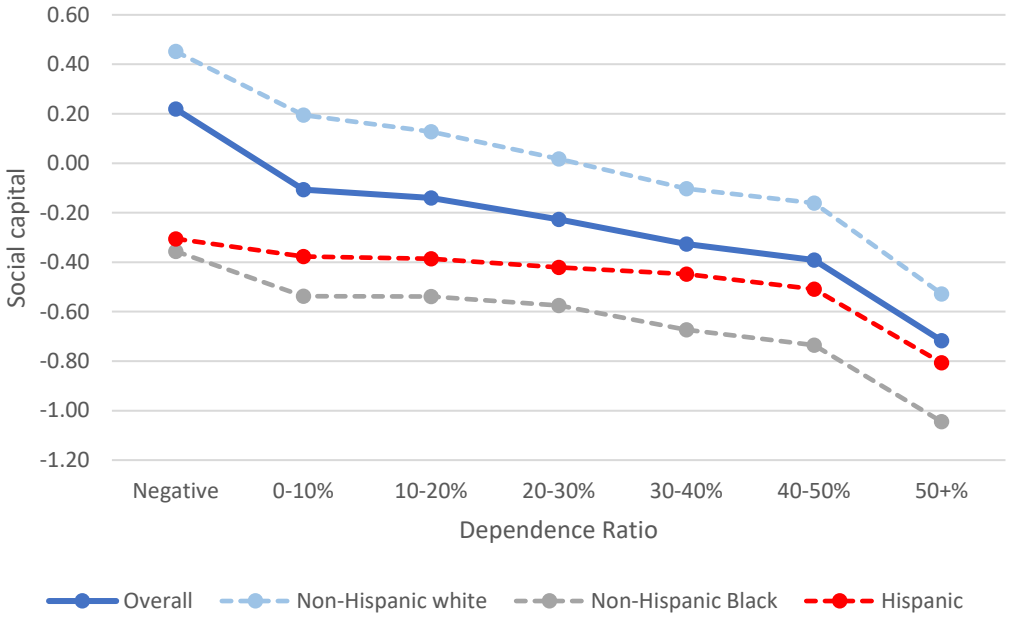
Hispanic individuals. A $10,000 increase in market income is associated with a 0.09 standard deviation increase in social capital for non-Hispanic white individuals, compared with a 0.06 standard deviation increase for Hispanic individuals. Figure A1 displays the relationship between social capital and income source by race and ethnicity.

Next, we estimate the relationship between social capital and dependence on government transfers—defined as the share of an individuals' full (post-tax, post transfer) income that is not from market sources.[31] If market income equals post-tax, post-transfer income, such that any taxes paid exactly offset any transfers received, then the dependency ratio is zero. If market income exceeds post-tax, post-transfer income, then the dependency ratio is negative. If market income is less than post-tax, post-transfer income, then the dependency ratio is positive, and equal to one if market income is zero. We divide our sample into seven groups based on the percentage of each respondents' post-tax post-transfer income that is attributable to taxes and transfers. The groups range from those who pay more in taxes than they receive in transfers (titled "Negative" in Figure 6) to those who receive 50 percent or more of their full income from taxes and transfers. We then calculate the mean social capital for each group, first for the full sample and then for each race and ethnicity, and present our results in Figure 6.

Social capital is highest for those who pay more in taxes than they receive in transfers. Compared to those who have a negative dependence ratio, social capital is 0.33 standard deviations lower for those who receive 0-10 percent of their full income from government sources, another 0.28 standard deviations lower for those who receive 40-50 percent of their income from government sources, and another 0.33 standard deviations lower for those who receive more than half of their income from government sources. The negative relationship between dependency and social capital is less stark for Hispanic and non-Hispanic black individuals. The difference in social capital between those with a negative dependence ratio and those with a dependency ratio of 40-50 percent is 0.61 for non-Hispanic white individuals, compared to 0.38 for non-Hispanic Black individuals and 0.20 standard deviations for Hispanic individuals.

[31] Specifically, we calculate this by taking one less the share of post-tax post-transfer income that comes from market sources.

Figure 6. Mean Social Capital Scores by Dependence Ratio, Age 18-64



Notes: Dependence ratio is calculated by taking one less market income divided by post-tax post-transfer income. Households with a negative dependence ratio pay more in taxes than they receive in transfers. We separate individuals into seven groups according to the share of their total income that comes from taxes and transfers.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

These analyses do not account for demographic characteristics that are correlated with income sources; nor do they adjust for the lower income levels of individuals with higher levels of dependency. Thus, we next estimate the relationship between social capital and each source of income, while controlling for demographic characteristics of individuals. This allows us to determine the relationship between social capital and each of market income and transfer income at the margin, after adjusting for demographics. We estimate linear regression models of the following form:

$$S_i = \alpha_0 + D_i\beta + M_i\delta_0 + G_i\delta_1 + \epsilon_i \qquad (2)$$

where S_i is our social capital index, D_i is a vector of demographic variables including age, sex, race and ethnicity, and educational attainment, M_i is market income, and G_i is government transfers (without netting out taxes), for individual i. In some specifications, we replace the

single market income variable with a set of dummy variables corresponding to $25,000 market income intervals, which we further interact with market income allowing the slope to vary over broad intervals of market income. This allows for a non-linear relationship between market income and social capital, as seen previously in Figure 5.[32]

Table 3 reports the results of three specifications. Specification 1, which contains linear income variables and no demographic controls, implies that every additional $10,000 of market income corresponds to a 0.06 standard deviation increase in social capital, whereas each additional $10,000 of transfer income corresponds to a 0.13 standard deviation decrease in social capital. Specification 2, which adds demographic controls, implies that each additional $10,000 of market income corresponds with a 0.02 standard deviation increase in social capital, and each additional $10,000 of transfer income corresponds with a 0.13 standard deviation decrease in social capital. Specification 3, which includes demographic controls, a categorical market income variable, and an interaction between market income and categorical market income, indicates that the strength of the relationship between social capital and income varies at different points of the income distribution, and it is strongest at the bottom. For individuals with market income below $25,000, an additional $10,000 in market income corresponds with a 0.23 standard deviation increase in social capital, over four times as large as the association for individuals with market income above $25,000. In this specification, a $10,000 increase in government income is associated with a 0.08 standard deviation decrease in social capital.

[32] We do not specify a logarithmic relationship between our income variables and social capital because doing so would restrict our sample to those who have strictly positive government transfers and strictly positive market income. Additionally, we restrict our sample to those whose post-tax post-transfer incomes are less than or equal to $200,000 to mitigate the effect of outliers given our linear functional form.

Table 3. Social Capital Regression Estimates, Age 18-64

	1	2	3	
Market Income *(tens of thousands $)*	0.0646*** (0.00066)	0.0183*** (0.00059)	-	-
Market Income Bin			Market Income Bin Dummy	Market Income Bin x Market Income *(tens of thousands $)*
$0-25,000	-	-	-1.497*** (0.015)	0.225*** (0.006)
$25,00-50,000	-	-	-1.143*** (.026)	0.033*** (0.009)
$50,000-75,000	-	-	-1.140*** (.046)	0.029*** (0.009)
$75,000-100,000	-	-	-0.840*** (.084)	0.011*** (0.011)
$100,000-125,000	-	-	-1.014*** (0.147)	0.01*** (0.015)
$125,000-150,000	-	-	-0.213*** (0.236)	-0.048*** (0.018)
$150,000-175,000	-	-	-0.378*** (0.357)	-0.032*** (0.023)
$175,000-200,000	-	-	-1.269 (0.533)	0.019*** (0.029)
Government Income *(tens of thousands $)*	-0.13*** (0.0003)	-0.128*** (0.0025)	-0.0846*** (0.003)	
Demographics	No	Yes	Yes	

Notes: Specification 1 regresses our social capital index on market income and government income. Specification 2 regresses social capital on market income and government income, and a vector of demographic variables including age, race and ethnicity, sex, and educational attainment. Specification 3 separates our continuous market income variable into $25,000 income bins, and interacts market income with each bin. Market income and government income are each adjusted for household size using a square root equivalence scale. Coefficients are scaled to reflect the effect of a $10,000 increase.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

VI. Robustness

There is no universally accepted definition of social capital or way to measure it at either the individual or geographic level (Bjørnskov 2006). This is in contrast to the literature on human capital, which despite its similarly broad and diffuse meaning is measured by convention via educational attainment or test scores. Though our approach in defining and measuring social

capital is based on the social capital literature, our results still depend on subjective decisions about which variables and sub-indices to include in our social capital index, and how to weight them. In this section, we test the robustness of our results—our validation with other state-level indices, demographic breakdowns, and our income analyses—to alternative specifications.

We test three alternative specifications, including (i) using equal weights for each sub-index, (ii) using sub-index weights that maximize the state-level correlation between our index and the Joint Economic Committee (2018) index, and (iii) removing the work sub-index from our social capital index, and re-weighting sub-indices by conducting a PCA on the remaining five sub-indices.

Specifications (i) and (ii) provide alternative approaches to PCA for selecting sub-index weights. Although PCA is the most widely used method for developing social capital indices because it allows researchers to reduce multidimensional data into a single dimension, while preserving as much information as possible, some researchers dispute whether social capital should be measured this way (Bjørnskov 2006).[33] Our first alternative approach simply weights all six sub-indices equally (while continuing to use PCA to obtain the weights that create the sub-indices themselves). We do so because one could reasonably argue that all sub-indices are equally important forms of social capital and that conducting a PCA on sub-indices does not adequately capture a single latent social capital variable. Our second alternative approach chooses the set of weights that maximizes the state-level correlation between our social capital index and the Joint Economic Committee (2018) index. The Joint Economic Committee (2018) social capital index is the most comprehensive geographic social capital measure to date, and has been found to be highly correlated with other geographic social capital measures (Winship and O'Rourke 2023). So, to the extent that existing geographic measures have been found to adequately measure social capital, one reasonable weighting system would be to choose the weights that maximize the relationship between existing indices and our index aggregated to the state level.[34]

[33] Bjørnskov (2006) objects to the notion of combining distinct, unrelated dimensions of social capital into a single dimension, though he does not object to the use of PCA generally. In fact, Bjørnskov uses PCA to identify three orthogonal dimensions of social capital.

[34] We find the correlation-maximizing weights by recalculating our social capital index using all possible combinations of weights, in which sub-index weights vary in increments of 0.05 and all add up to 1. For each possible set of weights, we calculate the state-level correlation between our index and the Joint Economic Committee Index. We then identify the set of weights that produce the highest correlation. Note that this approach takes as given the weights of the original variables in producing sub-index scores, so it does not technically

Our final alternative specification excludes the work sub-index. Because work is directly connected to earnings, its inclusion could lead to a mechanical correlation between income and social capital. While work may still belong in the social capital measure due to its importance for social capital, and while its inclusion matters for the measure only insofar as work is correlated with the other dimensions of social capital, it is useful to determine whether the strong relationship between income and social capital remains when focusing only on the non-work components of social capital.

We first test whether our alternative specifications, when aggregated to state-level means, are similarly correlated with existing state-level indices of social capital. As reported in Appendix Table A8, each specification is highly correlated with the existing state-level indices. The specification that assigns all sub-indices equal weight has the lowest correlation with the existing measures (e.g., 0.74 with Joint Economic Committee) and, by construction, the specification maximizing the correlation with the Joint Economic Committee index has a higher 0.91 correlation with that index, but that is only slightly higher than the 0.87 correlation using our preferred specification.

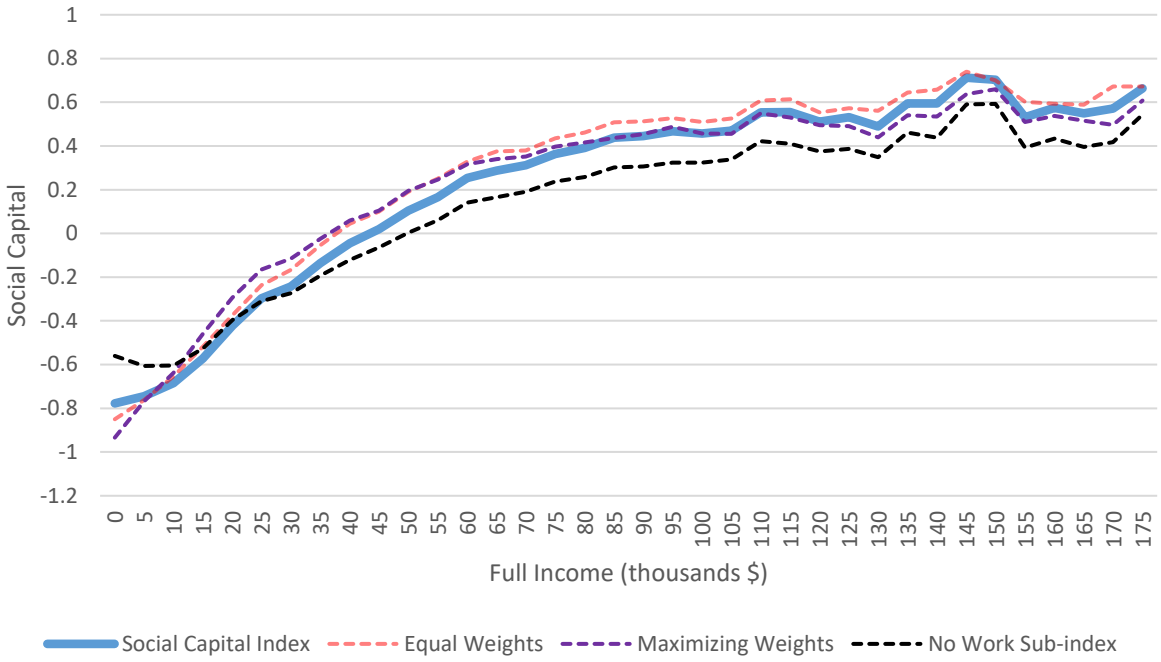
We further consider whether these alternate specifications change the distribution of social capital by age, sex, race and ethnicity, or educational attainment. We find virtually no substantial differences across the specifications in the demographic distributions of social capital (see Appendix Table A8). Across all of them, social capital peaks in middle age, is highest for those with relatively high levels of education, and is highest for non-Hispanic white individuals. Notably, however, the specification excluding work varies less by age than the other sub-indices—most likely because the oldest age groups are not penalized for working at lower rates than those in middle age.

Finally, we verify whether the relationship between social capital and income is robust across specifications. Figure 7 plots mean social capital for each $5,000 interval of full income. Each specification produces an association between social capital and income that is nearly identical to our main results. The one exception is for the lowest income levels for the specification that excludes the work sub-index, in which case social capital falls with the first $15,000 of full

maximize the correlation with the JEC index if the weights of variables within each sub-index were subject to change as well.

income. However, the positive relationship between income and social capital holds for higher income levels, despite the gradient being somewhat flatter.

Figure 7. Mean Social Capital Score by Income According to Three Alternative Specifications, Age 18-64



Notes: Income is separated into $5,000 income bins. We calculate the mean social capital index for each bin, for full income, market income, and transfer income. Those with household incomes greater than or equal to $175,000 are treated as a one group. "Social Capital Index" (solid line) represents our preferred social capital index, which contains all six sub-indices and weights them using PCA. "Equal Weights" reflects our social capital index in which all six sub-indices are weighted equally. "Maximizing Weights" reflects our social capital index with weights that maximize the relationship between our index (aggregated to the state level) and the Joint Economic Committee (2018) index. And "No Work Sub-Index" reflects our social capital index excluding the Work sub-index. The x-axis reflects the lower bound of each $5,000 income interval.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

In sum, our results are robust to reasonable alternative measures of social capital. Such measures remain highly correlated with other geographic indices, and exhibit a similar distribution across demographic groups and income.

VII. Discussion

Social scientists have long debated the relationship between social capital and income. Some suggest that social capital is a luxury good; individuals must have sufficient material resources before investing in their social relationships, therefore relatively affluent individuals tend to be the most connected to individuals and institutions that provide them value (Case and Deaton 2023; Kearney 2023; Murray 2012; Perkins, Hughey, and Speer 2002; Verba, Schlozman, and Brady 1995). Others contend that low-income individuals have relatively high social capital. Low-income individuals are more likely to rely on social connections for both material and social support, and therefore develop relatively strong networks of solidarity and trust (Saegert, Thompson, and Warren 2001). We find evidence of the former view. On average, social capital is much higher for high-income individuals compared to low-income individuals. However, social capital increases at a declining rate as income grows. This finding echoes other studies that have found subjective well-being increases until incomes reaches about $75,000, with no further progress beyond that point (Kahneman and Deaton 2010). This suggests that some of the same factors driving the relationship between income and social capital may also drive the relationship between income and other measures of subjective well-being.

We also shed light on the relationship between social capital and different sources of income. Social capital increases with market income, but decreases with transfer income, even after adjusting for demographic differences. Relatedly, individuals for whom a greater share of their income comes from government sources have lower social capital. This finding is consistent with observed patterns of individuals with greater reliance on government transfers exhibiting weaker connections to family, work and other social institutions (Murray 2012; Peterson 2015; Joint Economic Committee 2020).

While our results document an important relationship between income and a comprehensive measure of social capital at the individual level, we do not establish causal links. Whether or not income in general, and market income more specifically, causally increase social capital cannot be ascertained from our findings. Thus, it is not clear whether policies that lead to increases in market income would strengthen social capital, or whether policies that transfer resources in a way that increases dependence would weaken social capital. However, our results do imply that policies seeking to increase the economic well-being of the economically disadvantaged will

need to confront their lower average levels of social capital. This double disadvantage may hinder efforts to boost economic mobility, particularly in light of evidence that social capital and mobility are linked (Chetty et al. 2022).

We also provide new evidence on disparities in social capital across race and ethnicity, finding that, as with income and wealth, racial and ethnic minorities in the United States have weaker social capital, although for different reasons. For example, on average, non-Hispanic black individuals have relatively weaker family strength, but relatively stronger social connection. Hispanic individuals have relatively strong family strength and work scores but have lower scores for other components of social capital. We also find that while the college educated have more social capital on average than less educated groups, the education premium is much weaker for Hispanic than non-Hispanic individuals (both black and white). Thus, the importance of education for strengthening social capital could vary across individuals in ways that are associated with cultural and historical differences.

The results we present in this paper are just one application of an individual-level social capital index. Future research should explore other facets of social capital using an individual measure, such as how inequality in social capital varies across areas, how social capital is correlated with political attitudes, and the effect of public policies on social capital. We would also argue that, just as researchers focus on measuring trends and causes of economic measures of well-being, they should devote more attention to social measures of well-being. This is especially the case in light of indications that declining social capital may be contributing to growing deaths of despair, increased polarization, reduced trust in institutions, and other societal problems (Case and Deaton 2015; Lee 2022; Joint Economic Committee 2017). But the first step in answering these questions is a comprehensive social capital index at the individual level, which we provide in this paper. Future research could also improve on the social capital measure we develop, by extending it to other datasets, supplementing it with additional dimensions of social capital, and producing historical measures that allow for documenting changes in social capital over time.

VIII. Conclusion

We produce a comprehensive individual-level measure of social capital that combines multiple datasets through direct linkages and imputation. Our index is validated by a strong correlation with existing measures of social capital produced at the state level. Our individual social capital index sheds new light on disparities in social capital across demographic groups. We also provide an application of our newly developed measure by studying the relationship between income and social capital. We find that social capital increases with income, though at a declining rate. Source of income matters, with social capital increasing with market income but decreasing with government transfers. This suggests that policies seeking to improve the well-being of those with fewer economic resources must contend with lower levels of social capital among targeted populations. Future research should apply our individual level measure of social capital to new questions and improve upon and expand the measure itself.

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Appendix A. Additional Tables and Figures

Table A1. Complete List of Social Capital Variables

Current Population Survey Annual Social and Economic Supplement

Variable	Sub-index	Variable Type	Values
Marital Status	Family strength	Categorical	Not married, married – spouse absent, married – spouse present
Number of family members in household	Family strength	Categorical	1, 2-3, 4-6, 7+
Number of own children in the household	Family strength	Categorical	0, 1-2, 3+
Number of own siblings in the household	Family strength	Categorical	0, 1+
Employment status last year	Work	Categorical	Did not work, worked part-time, worked full-time

American Time Use Survey

Variable	Sub-index	Variable Type	Values
Time spent doing ambiguous activities with community members	Community engagement	Binary	0 minutes, 1+ minutes
Time spent doing volunteer activities	Community engagement	Binary	0 minutes, 1+ minutes
Time spent caring for and helping household members	Family strength	Ordinal; 3 categories	0 minutes, 1-15 minutes, 16+ minutes
Time spent doing ambiguous activities with family	Family strength	Ordinal; 5 categories	0 minutes, 1-85 minutes, 86-210 minutes, 211-390 minutes, 391+ minutes
Time spent caring for and helping non-household members	Community engagement	Binary	0 minutes, 1+ minutes
Time spent socializing	Social connection	Ordinal; 5 categories	0 minutes, 1-60 minutes, 61-143 minutes, 144-270 minutes, 271+ minutes
Time spent doing ambiguous activities with friends	Social connection	Binary	0 minutes, 1+ minutes
Time spent doing religious activities	Religious involvement	Binary	0 minutes, 1+ minutes
Time spent doing ambiguous activities with co-workers	Work	Binary	0 minutes, 1+ minutes

General Social Survey

Variable	Sub-index	Variable Type	Values
Frequency of religious attendance	Religious involvement	Ordinal; 9 categories	Never, less than once per year, about once or twice per year, several times a year, about once a month, 2-3 times a month, nearly every week, every week, several times a week
Generally speaking, would you say that most people can be trusted or that you can't be too careful?	Social trust	Binary	Can't be too careful, can trust
How often do you spend a social evening with a neighbor?	Social connection	Ordinal; 7 categories	Almost daily, several times a week, several times a month, once a month, several times a year, once a year, never
How often do you spend a social evening at a bar or tavern?	Social connection	Ordinal; 6 categories	Once a week or more, several times a month, about once a month, several times a year, about once a year, never
How often do you take part in the activities of a church or place of worship other than attending services?	Religious Involvement	Ordinal; 8 categories	Once a week or more, several times a month, about once a month, several times a year, about once a year, never
How often do you spend a social evening with relatives?	Social connection	Ordinal; 7 categories	Almost daily, several times a week, several times a month, once a month, several times a year, once a year, never
How often do you spend an evening with friends?	Social connection	Ordinal; 6 categories	Once a week or more, several times a month, about once a month, several times a year, about once a year, never

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Variable	Sub-index	Variable Type	Values
In the past year, how often did you have a conversation or spend time with your neighbor?	Community engagement	Ordinal; 6 categories	Basically every day, a few times a week, a few times a month, once a month, less than once a month, not at all
In the past year, how often did you and your neighbors do favors for each other such as house sitting, watching each other's children, lending tools and other things to help each other?	Community engagement	Ordinal; 6 categories	Basically every day, a few times a week, a few times a month, once a month, less than once a month, not at all

In the past year, did you get together with people from your neighborhood to do something positive for the community?	Community engagement	Binary	Yes, no
In the past year, did you vote in local elections?	Community engagement	Binary	Yes, no
In the past year, did you attend a public meeting, such as a zoning or school board meeting, to discuss a local issue?	Community engagement	Binary	Yes, no
In the past year, did you contact or visit a public official - at any level of government - to express your opinion?	Community engagement	Binary	Yes, no
In the past year, did you belong to any groups, organizations or associations?	Community engagement	Binary	Yes, no
Volunteer status	Community engagement	Binary	Volunteer, not a volunteer
In the past year, how often did you talk to or spend time with friends and family?	Social connection	Ordinal; 6 categories	Basically every day, a few times a week, a few times a month, once a month, less than once a month, not at all

Notes: "Variable" refers to the specific social capital variable imputed, linked, or observed. "Sub-index" refers to the particular group that to which we assigned the given social capital variable. "Values" lists the possible outcomes of each variable.
Sources: 2019 Current Population Survey Annual Social and Economic Supplement, 2018 General Social Survey, 2019 American Time Use Survey, 2019 Current Population Survey Volunteer and Civic Life Supplement.

Table A2. Demographic Variables Used for Social Capital Variable Imputation

Variable	Variable Type	Responses
Region	Categorical	Northeast; Midwest; South; West
State	Categorical	Indicator for each state
Metropolitan status	Binary	Metro area; non-metro area
Number of children	Dummy	Dummy variables for one, two, and three or more children
Children under 5 years old	Dummy	Yes/No
Age	Categorical	18-25; 26-35; 36-45; 46-55; 56-65; 66-75; 76+
Sex	Dummy	Male/Female
Race and Ethnicity	Categorical	Non-Hispanic white; non-Hispanic black; Hispanic; Other
Marital status	Categorical	Married, spouse present; married, spouse absent; separated; divorced; widowed; never married
Educational attainment	Categorical	Less than high school; high school; some college; college or more
Employment status	Categorical	Employed; unemployed; NILF; retired
Family income	Categorical	16 categories, 2.5k, 5k, and 10k intervals

Notes: "Variable" includes the demographic variable used for imputing social capital variables. "Variable type" details whether the demographic variable is binary or categorical. "Values" details the values associated with each demographic variable.
Sources: 2019 Current Population Survey Annual Social and Economic Supplement, 2018 General Social Survey, 2019 American Time Use Survey, 2019 Current Population Survey Volunteer and Civic Life Supplement.

Table A3. SRMI Imputation Results for Final List of Social Capital Variables

American Time Use Survey			
Variable	**Categories**	**Original share**	**Imputed share**
Time spent doing religious activities	No time	87.8	88.88
	1+ min	12.2	11.12
Time spent doing ambiguous activities with friends	No time	87.55	88.02
	1+ min	12.45	11.98
Time spent caring for household members	No time	79.8	79.11
	1-15 min	3.32	3.7
	16+ min	16.88	17.19
Time spent doing ambiguous activities with family	No time	33.09	31.03
	1-85 min	11.25	11.57
	86-210 min	15.85	16.01
	211-390 min	18.92	19.12
	391+ min	20.89	22.27
Current Population Survey Volunteer and Civic Life Supplement			
Variable	**Categories**	**Original share**	**Imputed share**
Spending time with neighbors	Not at all	29.57	27.2
	Less than once a month	12.91	12.41
	Once a month	9.81	9.79
	A few times a month	18.61	18.7
	A few times a week	20.64	22.08
	Basically everyday	8.45	9.81
Spending time with friends and family	Not at all	2.69	2.37
	Less than once a month	1.63	1.52
	Once a month	2.07	1.83
	A few times a month	9.15	8.37
	A few times a week	23.88	22.15
	Basically everyday	60.59	63.76
Frequency of doing favors for neighbors	Not at all	48.35	45.37
	Less than once a month	17.74	17.61
	Once a month	10.71	10.82
	A few times a month	13.23	14.39
	A few times a week	7.33	8.54
	Basically everyday	2.63	3.26
Voted in a local election last year	No	47.44	51.82
	Yes	52.56	48.18
Done something positive for the community in the past year	No	79.45	78.68
	Yes	20.55	21.32
Attended public meeting in past year	No	89.63	86.43
	Yes	10.37	13.57

Met or contacted public official in past year	No	90.15	91.61
	Yes	9.85	8.39
Belong to group or association	No	72.92	69.79
	Yes	27.08	30.21
Volunteered in the past year	No	69.98	67.36
	Yes	30.02	32.64
General Social Survey			
Variable	**Categories**	**Original share**	**Imputed share**
Frequency of religious attendance	Never	30.25	28.25
	Less than once a year	5.18	5.01
	About once or twice a year	12.66	12.57
	Several times a year	10.21	10.5
	About once a month	6.13	6.39
	2-3 times a month	7.97	8.31
	Nearly every week	4.25	4.3
	Every week	18.01	19
	Several times a week	5.35	5.67
Social evenings with neighbors	Never	31.43	32.49
	About once a year	9.66	9.58
	Several times a year	13.53	13.61
	About once a month	16.57	16.44
	Several times a month	11.16	10.76
	Once or twice a week	13	12.75
	Almost daily	4.65	4.37
Social evenings with relatives	Never	4.38	3.09
	About once a year	6.47	5.33
	Several times a year	16.37	14.21
	About once a month	15.72	14.41
	Several times a month	17.75	17.71
	Once or twice a week	22.59	24.84
	Almost daily	16.71	20.41
Social evenings at a bar or tavern	Never	43.13	45.55
	About once a year	14.02	13.64
	Several times a year	14.94	15.38
	About once a month	11.9	11.91
	Several times a month	9.47	7.95
	Once a week or more	6.54	5.56
Social evenings with friends	Never	10.14	9.27
	About once a year	7.83	7.87
	Several times a year	18.5	18.4
	About once a month	21.84	21.56
	Several times a month	21.84	21.27
	Once a week or more	19.85	21.63

Social trust	Can't be too careful	64.4	60.65
	Can trust	35.6	39.35

Notes: "Variable" refers to the specific variable from each dataset. "Original share" reports the percentage of respondents that respond affirmatively to a particular outcome of a particular variable in the donor dataset, while "imputed share" reports the percentage of respondents that respond affirmatively to a particular outcome according to our imputed social capital variable.

Sources: 2019 Current Population Survey Annual Social and Economic Supplement, 2018 General Social Survey, 2019 American Time Use Survey, 2019 Current Population Survey Volunteer and Civic Life Supplement.

Table A4. Social Capital Sub-indices and Variables

Variables	Alpha Score	Weight in index
Community Engagement	0.93	0.55
Frequency of doing favors for neighbors		
Done something positive for the community in past year		
Voted in local election in past year		
Frequency of spending time with neighbors		
Belong to any groups or associations		
Met with local public official in the past year		
Attended public meeting in the past year		
Volunteered in past year		
Religious Involvement	0.93	0.21
Frequency of religious attendance		
Time spent doing religious activities		
Social Connection	0.92	0.06
Frequency of spending a social evening with a neighbor		
Frequency of spending a social evening at a bar		
Frequency of spending a social evening with a relative		
Time spent doing ambiguous activities with friends		
Frequency of spending time with friends and family		
Frequency of spending a social evening with a friend		
Family Strength	0.89	0.52
Time spent doing ambiguous activities with family		
Marital status		
Time spent caring for household members		
Number of own children in the household		
Work	-	0.26
Employment status last year		
Social Trust	-	0.56
Social Trust		

Notes: "Variable" indicates the variable belonging to each sub-index. "Alpha score" indicates the final Cronbach's alpha coefficient for the given set of social capital variables. Cronbach's alpha scores range from zero to one. Coefficients near one indicate the given set of variables are highly correlated with each other. "Weight in index" lists each sub-indices weight in the overall social capital index.
Sources: Authors calculations from 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and the 2019 Current Population Survey Volunteer and Civic Life Supplement.

Table A5. State Rankings According to Each Social Capital Index

State	Social Capital Index	Joint Economic Committee (2018)	Putnam (2001)	Chetty et al (2022)
Vermont	1	5	3	8
Utah	2	1	14	3
New Hampshire	3	4	8	1
Minnesota	4	2	4	5
Maine	5	7	13	21
Washington	6	15	10	9
Massachusetts	7	21	18	15
Oregon	8	13	12	26
Connecticut	9	19	17	28
South Dakota	10	10	2	16
Nebraska	11	8	6	19
North Dakota	12	11	1	6
Alaska	13	20	-	4
Colorado	14	6	15	10
Kansas	15	18	16	18
Rhode Island	16	22	24	22
Iowa	17	9	7	12
Wisconsin	18	3	11	14
Maryland	19	26	31	13
Montana	20	14	5	20
Virginia	21	17	32	17
Idaho	22	16	20	23
South Carolina	23	36	42	49
Pennsylvania	24	24	29	24
Missouri	25	25	19	27
Wyoming	26	12	9	11
New Jersey	27	30	35	25
Ohio	28	29	27	37
Illinois	29	28	30	32
Delaware	30	34	23	36
Hawaii	31	31	-	2
Oklahoma	32	39	26	38
California	33	40	28	31
District of Columbia	34	37	-	7
Michigan	35	27	22	34
Indiana	36	23	25	35
Tennessee	37	38	43	44
West Virginia	38	32	41	33

Kentucky	39	35	39	29
Arkansas	40	46	37	42
New York	41	43	34	30
North Carolina	42	33	40	47
Arizona	43	47	21	41
Louisiana	44	51	44	43
Florida	45	48	36	45
Texas	46	44	38	40
Georgia	47	41	46	46
Alabama	48	42	45	51
Mississippi	49	45	47	48
Nevada	50	50	48	39
New Mexico	51	49	33	50

Notes: Social capital score rankings are generated by ranking each state according to each state-level social capital index. A rank of one corresponds with the highest levels of social capital, and a rank of 51 corresponds with the lowest levels of social capital.
Sources: 2019 Current Population Survey Annual Social and Economic Supplement, 2018 General Social Survey, 2019 American Time Use Survey, 2019 Current Population Survey Volunteer and Civic Life Supplement.

Table A6. Correlations between Social Capital Sub-index Measures

	Com. Eng.	Rel. Inv.	Soc. Con.	Fam. Str.	Work	Soc. Trust	Fam. Unity (JEC)	Fam. Int. (JEC)	Soc. Supp. (JEC)	Com. Hlth. (JEC)	Inst. Hlth. (JEC)	Coll. Eff. (JEC)	Phil. Hlth. (JEC)
Community Engagement	1												
Religious Involvement	-0.42	1											
Social Connection	0.37	-0.19	1										
Family Strength	0.21	0.07	-0.07	1									
Work	0.42	-0.20	0.64	0.07	1								
Social Trust	0.57	-0.79	0.39	-0.02	0.37	1							
Family Unity (JEC)	0.39	-0.42	0.14	0.74	0.36	0.46	1						
Family Interaction (JEC)	0.67	-0.66	0.32	-0.01	0.49	0.76	0.45	1					
Social Support (JEC)	0.80	-0.40	0.28	0.45	0.38	0.52	0.65	0.70	1				
Community Health (JEC)	0.67	-0.42	0.38	-0.20	0.54	0.56	0.17	0.74	0.58	1			
Institutional Health (JEC)	0.53	-0.21	0.49	0.30	0.63	0.47	0.46	0.47	0.53	0.37	1		
Collective Efficacy (JEC)	0.26	-0.35	-0.03	0.60	-0.05	0.41	0.67	0.32	0.51	-0.11	0.34	1	
Philanthropic Health (JEC)	0.59	-0.47	0.46	0.26	0.65	0.50	0.59	0.55	0.62	0.54	0.57	0.26	1

Notes: The table shows the bivariate correlation coefficients between the sub-indices comprising our social capital sub-index and the sub-indices comprising the Joint Economic Committee (2018) sub-index.
Sources: 2019 Current Population Survey Annual Social and Economic Supplement, 2018 General Social Survey, 2019 American Time Use Survey, 2019 Current Population Survey Volunteer and Civic Life Supplement.

Table A7. Share of Individuals by Income Group, Age 18-64

Income Interval	Full Income	Market Income	Transfer Income
0	1.2	7.6	67.9
5	1.1	3.0	10.2
10	2.0	3.9	6.5
15	4.1	4.5	4.8
20	6.4	5.3	3.5
25	7.9	5.1	2.6
30	8.3	5.2	1.7
35	8.1	5.4	1.1
40	7.6	5.4	0.7
45	7.3	5.0	0.4
50	6.8	4.8	0.3
55	5.7	4.3	0.2
60	5.1	4.3	0.1
65	4.3	3.8	
70	3.8	3.4	
75	2.9	3.2	
80	2.6	2.8	
85	2.1	2.5	
90	1.8	2.3	
95	1.4	1.8	
100	1.3	1.5	
105	1.0	1.5	
110	0.8	1.4	
115	0.7	1.2	
120	0.6	1.0	
125	0.6	0.9	
130	0.5	0.8	
135	0.5	0.8	
140	0.4	0.6	
145	0.3	0.6	
150	0.2	0.5	
155	0.2	0.4	
160	0.2	0.4	
165	0.2	0.4	
170	0.1	0.4	
175+	1.9	4.3	

Notes: "Income interval" refers to the lower bound of each $5,000 income interval. Full income is a measure of post-tax, post-transfer income. Market income is a measure of earnings, and transfer income is a measure of income from government sources.
Sources: 2019 Current Population Survey Annual Social and Economic Supplement, 2018 General Social Survey, 2019 American Time Use Survey, 2019 Current Population Survey Volunteer and Civic Life Supplement.

Table A8. Weights, Validation, and Demographic Variation of Social Capital, Three Alternative Measures

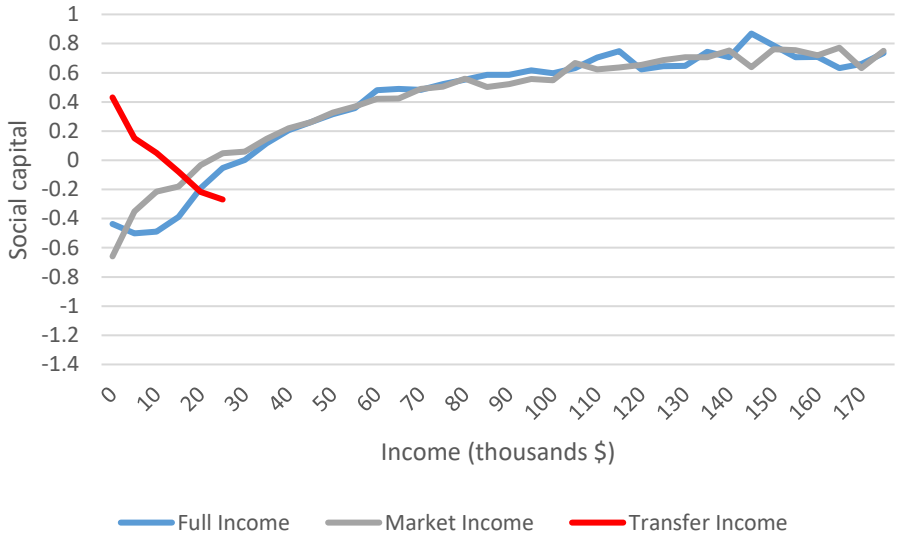
	Social Capital Index	Equal Weights	Maximizing Weights	No Work Sub-index
Weights				
Community engagement	0.55	0.16	0.25	0.58
Religious involvement	0.21	0.16	0	0.28
Social Connection	0.06	0.16	0	-0.04
Family Strength	0.52	0.16	0.35	0.53
Work	0.26	0.16	0.25	-
Trust	0.56	0.16	0.15	0.54
State-level correlation with other social capital indices				
Putnam (2001)	0.78	0.74	0.8	0.75
Joint Economic Committee (2018)	0.87	0.81	0.91	0.85
Chetty et al (2022)	0.75	0.73	0.77	0.7
Mean social capital by characteristic				
Age				
18-24	-0.79	-0.5	-0.78	-0.85
25-34	-0.06	0.09	0.04	-0.2
35-44	0.29	0.3	0.46	0.2
45-54	0.29	0.3	0.38	0.22
55-64	0.13	0.07	0.11	0.16
65-74	0.02	-0.21	-0.21	0.23
75+	-0.18	-0.46	-0.52	0.14
Sex				
Male	-0.01	0	0.02	-0.05
Female	0.01	0	-0.02	0.05
Educational Attainment				
Less than High School	-0.86	-0.83	-0.68	-0.73
High School	-0.38	-0.36	-0.3	-0.36
Some College	-0.09	-0.07	-0.08	-0.1
College or more	0.67	0.62	0.53	0.62
Race and Ethnicity				
Non-Hispanic White	0.23	0.16	0.16	0.23
Non-Hispanic Black	-0.59	-0.39	-0.5	-0.59
Hispanic	-0.42	-0.33	-0.23	-0.41
Other	-0.12	-0.04	-0.06	-0.15

Notes: "Equal Weights" refers to our alternative social capital index in which all sub-indices are given equal weights. "Maximizing Weights" refers to our index with the set of weights that maximize the relationship between our social capital index and the Joint Economic Committee (2018) index. "No Work Sub-Index" refers to our index in which we exclude the work sub-index.

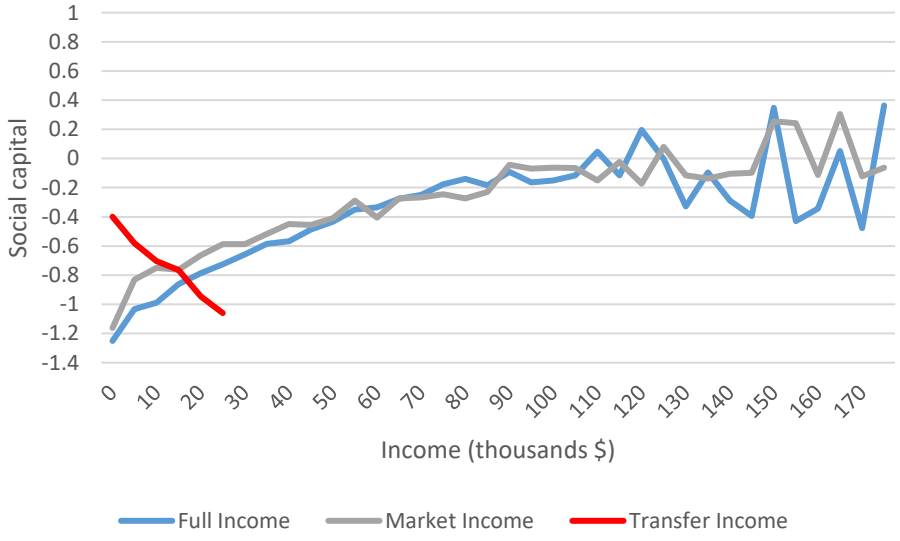
Sources: 2019 Current Population Survey Annual Social and Economic Supplement, 2018 General Social Survey, 2019 American Time Use Survey, 2019 Current Population Survey Volunteer and Civic Life Supplement.

Figure A1. Mean Social Capital Index by Race, Ethnicity and Income Type, Age 18-64.

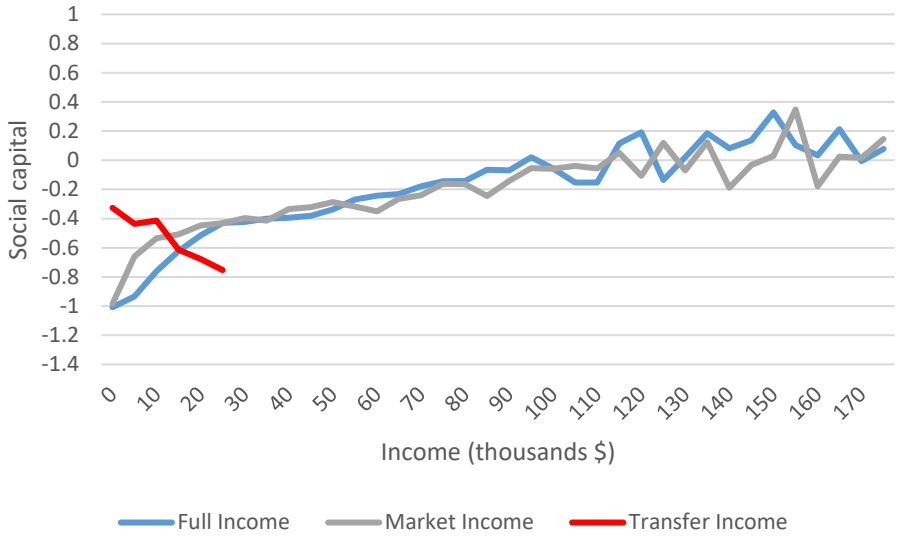
Panel A. Non-Hispanic White



Panel B. Non-Hispanic Black



Panel C. Hispanic



Notes: Income is separated into $5,000 income bins. We calculate the mean social capital index for each bin, for full income, market income, and transfer income. Those with household incomes (full or market income) greater than or equal to $175,000 are treated as one group. Due to small sample sizes, we exclude from the transfer income line the 4.6 percent of weighted observations with transfer income of $30,000 or more. However, grouping them into a single "$30,000+" category indicates a mean social capital score of -0.61. The x-axis reflects the lower bound of each $5,000 income interval.
Sources: Authors' calculations from the 2019 Current Population Survey Annual Social and Economic Supplement, 2019 American Time Use Survey, 2018 General Social Survey, and 2019 Current Population Survey Volunteer and Civic Life Supplement.

Appendix B. Social Capital Index Creation Process

After imputing all relevant variables from the ATUS, GSS, and CPS VCL, we group similar variables together in six sub-indices. Table A1 includes a column detailing each variable's assigned social capital sub-index.

We begin by creating our community engagement sub-index, which initially contained 11 variables with an alpha score of 0.9211. We drop time spent caring for non-household members, which raises the alpha to 0.9260. We then drop time spent doing ambiguous activities with community members raising the alpha to 0.9316. Lastly, we drop time spent doing volunteer activities, raising our alpha slightly to 0.9333. The resulting index contains eight variables: (1) frequency of spending time with neighbors, (2) frequency of doing favors for neighbors, (3) whether the respondent has done something positive for the community in the past year, (4) whether the respondent voted in a local election in the last year, (5) whether the respondent attended a public meeting in the past year, (6) whether the respondent contacted a public official in the past year, (7) whether the respondent belonged to any groups or associations in the past year, and (8) whether the respondent volunteered in the past year.

Next, we create our religious involvement sub-index beginning with three variables: frequency of religious attendance, frequency of taking part in religious activities other than services, and time spent doing religious activities. The initial alpha of these variables was 0.8970. By eliminating frequency of taking part in religious activities other than services, the alpha increases to 0.9283.

We then create our social connection sub-index beginning with seven variables: (1) frequency of spending a social evening with a relative, (2) frequency of spending a social evening with a friend, (3) frequency of spending a social evening at a bar, (4) frequency of spending a social evening with a neighbor, (5) time spent doing ambiguous activities with friends, (6) time spent socializing, and (7) the frequency of spending time with friends and family. The initial alpha for these seven variables was 0.9075. The only variable eliminated in the alpha testing process is time spent socializing, and the alpha increases to 0.9187.

Next, we create the family strength sub-index beginning with six variables: time spent caring for household members, time spent doing ambiguous activities with family members, marital status,

family size, number of children in the household, and number of siblings in the household. The initial alpha was 0.8672. We progressively eliminate family size and number of siblings. The final list of variables in the family strength sub-index are: (1) time spent caring for household members, (2) time spent doing ambiguous activities with family, (3) marital status, and (4) number of children. The resulting alpha is 0.8872.

Next, we create our work sub-index, which includes a single variable identifying whether the individual was jobless the last year, worked part time, or worked full time.

Finally, the social trust sub-index contains a single variable as well, indicating whether the respondent generally trusts others. Because both the work and social trust sub-indices are a single variable, they have no alpha scores.

Table A4 summarizes our results, detailing our six sub-indices, the variables comprising each, and the associated alpha scores. It also includes the weights for each sub-index in our overall social capital index.