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Did Federal Policy on Postsecondary Service-Learning Support Community Social Capital?

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Abstract

Community social capital is an important mechanism for collective efficacy and civic engagement to address problems of public concern. Using panel data from four periods spanning nearly 20 years, this study investigated the effects of a federal policy supporting service-learning in higher education on community social capital as measured by an index adapted from multiple indicators. Membership in Campus Compact, a national organization of college and university presidents who have committed their institutions to public and community service, served as a proxy for grantees of the service-learning policy and for comparing variation related to institutional members of Campus Compact and other postsecondary institutions in these communities. Results point to positive contributions of the engaged institutions consistent with a policy feedback mechanism followed by a modest decline in community social capital related to the elimination of federal funding for service-learning through Learn and Serve America Higher Education in 2011.

Keywords: community impact, service-learning, social capital, higher education

Public programs are rarely terminated (Daniels, 2015). In the wake of the Simpson-Bowles Commission, the 112th Congress took steps to reduce the federal deficit by making large spending cuts across numerous government agencies (Kogan, 2012; Washington Post Editors, 2011). One program that was eliminated from the budget that year was a relatively small domestic program that funded K-12 and higher education service-learning programs: the Corporation for National and Community Service's Learn and Serve America program.

Service-learning, as implemented in higher education over the last several decades, demonstrates small but positive effects on student participants (Astin & Sax, 1998; Celio et al., 2011; Eyler & Giles, 1999). Far less is known about how service-learning impacts the communities where programs take place (Cruz & Giles, 2000; Stoecker et al., 2010). In this article I attempt to address the gap in the service-learning literature by investigating changes in social capital over time in communities that host institutional members of Campus Compact, a national organization that supports service-learning and civic engagement in higher education. This organization and its members received most of the funding provided by the federal service-learning policy, and the membership offers a meaningful proxy for the policy's grantees.[1]

Campus Compact was founded in 1985 by the university presidents of Georgetown, Brown, and Stanford and has since catalyzed a movement in higher education for service-learning and civic engagement (Battistoni, 1997; Hartley, 2011; Hollander & Hartley, 2000; Saltmarsh & Hartley, 2011). The organization grew rapidly with the implementation of the Learn and Serve America Higher Education (LSAHE) program in 1994, from fewer than 200 members in

1989 to nearly 700 in 2000 (Heffernan, 2001; Morton & Troppe, 1996). Hartley (2011) stated that "the very fact of governmental support lent credibility to the [service-learning] effort on campuses" (p. 36). By the year 2009 when the Edward M. Kennedy Serve America Act passed and reauthorized the LSAHE program, more than 1,000 institutions were members of Campus Compact. In 2011, a mere 2 years after the authorizing legislation for the LSAHE program was renewed under the Edward M. Kennedy Serve America Act, LSAHE was permanently defunded. As a result, Campus Compact saw a small decline in institutional members domestically by 2014. Campus Compact membership includes central offices for state systems of higher education, international institutions, and members that exclusively serve graduate students. This study was intentionally confined to those Title IV postsecondary institutions that offer undergraduate degrees.

Using a fixed effects analysis of the variation in the number of institutions per capita in commuting zones and the exogenous break in the time series when funding was retrenched, I have produced plausibly causal estimates of the effects of postsecondary service-learning on community social capital. In this study, I define "social capital" as a community-level characteristic that reflects norms of reciprocity and trust, making it an important mechanism for collective action. I operationalize the concept using an index composed of multiple factors associated with this definition (J. S. Coleman, 1988; Putnam, 1995; Rupasingha et al., 2006).

I pose the following questions: Did federal policies supporting higher education service-learning contribute to community social capital through the density of higher education institutions in communities? Did elimination of the LSAHE funding affect community social capital through the density of colleges in a given community? Were these effects related to the density of a subset of institutions that made commitments to public and community service or the density of any other institutions of higher education?

Results point to positive effects followed by a modest decline in social capital in communities hosting Campus Compact institutions following this federal program's elimination, consistent with a policy feedback mechanism (Mettler, 2002, 2005; Mettler & SoRelle, 2014; Mettler & Soss, 2004). The variation in other colleges and universities in these same communities does not produce the same effect either before or after retrenchment, suggesting that the policy or its elimination did not influence communities through these institutions in the same way. This study adds to our understanding of the impact of federal policy changes, demonstrates the contribution of institutions of higher education to their communities, and combines disparate data sources in ways that may aid future investigations of the impact of service-learning.

This article is laid out as follows: It explores the theoretical antecedents that explain how federal policies can contribute to civic engagement, discusses social capital as a kind of civic engagement outcome, and draws service-learning into that discussion as a potential contributor to that outcome. This theoretical discussion is followed by an outline of the methods used to answer my research questions. I present results demonstrating the structural break related to the policy termination and conclude with a discussion of the relevance of these findings from a policy feedback perspective and propose directions for new research to further enhance our understanding of the effects of service-learning on community social capital.

Theoretical Framework

This section reviews relevant literature to present the theoretical framework for understanding how service-learning in higher education produces social capital in communities but also why changes in federal policy may have influenced the effectiveness of the practice to promote that outcome. First, I introduce policy feedback theory, which explains how federal policies promoting service-learning may affect civic engagement and social capital. I present information about social capital theory, including how civic engagement and social capital are related, as well as how service-learning may influence civic engagement and social capital. I conclude the section with a discussion of how social capital is operationalized in the literature.

Policy Feedback Theory

Policy feedback theory has a long theoretical and empirical history in the field of political science (Campbell, 2012). This theory sug-

gests that past policy has effects on future policy decisions. Classic studies such as Pierson (1993) point to Social Security as an example of a social policy whose historical design had implications for how political groups and actors would participate in the policy process over time.

Mettler and SoRelle (2014) pointed to four streams of inquiry within policy feedback theory: the meaning of citizenship, form of governance, the power of groups, and the political agenda and definition of policy problems. The power of groups in political processes explains how policies are preserved: Citizens served by public policies will act in their interests to maintain or expand the benefits accrued. In cases where benefits are diffuse, policies may be terminated because no group coalesces around their maintenance, although this outcome is exceedingly rare (Bardach, 1976; Daniels, 2015).

Mettler and SoRelle (2014) also delineated the kinds of effects that policy feedback mechanisms may have on mass politics as resource effects and interpretive effects. Resource effects influence civic capacity and civic dispositions, whereas interpretive effects may influence only civic predispositions. Resource effects may be seen through a lagged policy effect as in Mettler (2005) or as a driver of civic action for the self-interested (Campbell, 2002). Interpretive effects, such as the increased educational attainment resulting from policy feedback from the G.I. Bill uncovered by Mettler (2002), can promote civic engagement by providing policy beneficiaries the required civic disposition to participate in civic life. As a policy example, LSAHE may exhibit both resource and interpretive effects: as a resource for institutions to enact service-learning programs and partnerships and as interpretive effects for preparing students for future civic participation.

Most political scientists employing this theory are historical institutionalists relying primarily on case study methods (Campbell, 2012; Mettler & SoRelle, 2014). Mettler and SoRelle (2014) recommended improved methods that address critics of the research and its perceived endogeneity problems. They also recommended increased attention to the following question: "What impact does policy have on collective action?" (Mettler & SoRelle, 2014, p. 175). If policies have potential effects on collective action, the retrenchment of policy is expected to have deleterious effects. Policies like LSAHE are often designed with civic engagement outcomes in mind, and we might expect changes in the social capital and civic engagement in places be affected by changes in policy through mechanisms like the institutions funded by the LSAHE policy.

Civic Engagement and Social Capital

The concept of social capital emerged with Bourdieu (1986), who described it as a network of institutionalized relationships, or group memberships, providing members with what he termed the credential of access to collective capital. J. S. Coleman (1988) presented a different take on the theory, suggesting that social capital is a resource characterized by relations among individuals for the purpose of collective action. These relations are marked by the mutual trust between actors and the norm of reciprocity. He observed these kinds of relations within voluntary associations.

Identifying the decline in civic engagement among Americans, Putnam (1995, 2001) pointed to declines of participation in voluntary associations as a primary driver. Putnam drew from his earlier work (Putnam et al., 1993) in Italy, where he noticed strong traditions of associationalism correlated with better economic and social conditions. Examining this idea in the United States, he characterized Americans today as "bowling alone" rather than in bowling leagues. The decline of social capital is reflected in a decline in participation in organizations ranging from mutual help organizations to athletic clubs. Using the predecessor to the North American Industrial Classification System (NAICS) code, Putnam examined patterns in civic engagement with the density of voluntary associations in communities across the country as a proxy for participation in these organizations. He linked these declines in participation to erosion of generalized trust. His primary recommendation for further research was to investigate the types of organizations and networks that most effectively generate social capital "in the sense of mutual reciprocity, the resolution of dilemmas of collective action, and the broadening of social identities" (Putnam, 1995, p. 76). In the policy arena, he pointed to ways in which policy may affect the production of social capital, arguing for investments in civics education.

Sampson (1999) argued that communities

high in social capital are "better able to realize common values and maintain effective social controls" (p. 333) primarily because of their collective efficacy (Sampson et al., 1997). DeFilippis (2001, 2004) critiqued social capital and referred to this pattern as part of the communitarian trend in neoliberal community development. Acknowledging that collective action is embedded in the neoliberal replacement of state provision of goods and services with those by voluntary means, Saegert (2006) pointed to social capital as an important resource in community development because it builds the collective action necessary to address problems that may be associated with retrenchment of welfare and state service provision. Although service-learning is viewed as one mechanism to promote collective action to address public problems, grant programs like Learn and Serve America provided vital resources for institutions of higher education to implement service-learning programs in response to the elimination of direct government service provision (Crenson & Ginsberg, 2006).

Social Capital and Service-Learning

Morton (1995) theorized that service-learning is based on the "continuums of service" and its aim is to "bring about change, quite often assessed as the redistribution of resources or social capital" (p. 20). Marullo and Edwards (2000) also discussed the potential for higher education to build social capital through partnerships with communities but cautioned that service-learning programs and their partnerships must be oriented toward social justice. Seifer (2010) warned that service-learning is an effective strategy for social capital production only if work is long-term and sustained.

A handful of works substantiate the claims that are posed in Morton (1995). Investigating community outcomes from rural service-learning, Miller (1997) identified social capital production as a primary outcome of university–community engagement. Miller presented vignettes about service-learning experiences in three rural communities to describe how following a multistep process focused on community development led to social capital production. Gelmon et al. (1998) presented ways in which collaborations between health care providers and universities produced "serendipitous opportunity to network with other community organizations," pointing to the university as convener.

Ferman (2006) discussed the role of her own service-learning project for youth in Philadelphia and argued that the university plays an important role of broker in social networks and sponsor of the youth participants' entry into networks. She wrote, "As a sponsor, the university can span age, class, cultural, and racial divides that all too often operate as barriers" (p. 88) to low-income student success. In contrast, Patterson (2006) shared the critical stance of James DeFilippis (2001) on the limits of social capital to produce community development. She discussed the role of the West Philadelphia Improvement Corps, an early service-learning initiative of the University of Pennsylvania that aimed to create community schools with the assistance of the university faculty and students, concluding that those initiatives are laudable but cannot overcome structural barriers to improvement of distressed neighborhoods.

More recently, D'Agostino (2010) explored social capital as an individual outcome for student participants in service-learning and found small correlations with the outcome among student participants. Through a case study of a forestry resource management program, K. Coleman and Danks (2016) presented evidence for service-learning as a mechanism to produce durable social capital ties between the university and community partners.

Current Study

The purpose of this study is to examine social capital as an outcome from service-learning in higher education. In particular, I hypothesize that in the presence of federal policy funding for service-learning in higher education, positive effects on social capital will be present in communities hosting more of those institutions relative to that community's population. Further, I hypothesize that the retrenchment of the policy and its funding will influence the magnitude of the potential effect of this mechanism. To explore these theories, I pose the following questions:

1. Did federal policies supporting higher education service-learning contribute to community social capital through the density of higher education institutions in communities?
2. Did elimination of the LSAHE funding

affect community social capital through the density of colleges in a given community?

3. Were these effects related to the density of a subset of institutions that made commitments to public and community service or the density of any other institutions of higher education?

Methods

This section presents the current study's methodology, including the discussion of the data sources used as well as the research design that enabled the fixed effects estimation of the impact of service-learning institutions on the community.

Data

The unit of analysis for this study is the commuting zone: areas developed by the USDA Economic Research Service using contiguous counties tied to an economic core via commuting patterns measured in the U.S. Census (Tolbert & Sizer, 1996). Definitions of these areas for this study are from the 2000 census. I selected this unit to represent the community because it can be thought of as a hierarchical structure, with individual towns and neighborhoods nested within counties nested within commuting zones. This strategy is often employed in urban and regional econometrics to overcome spillover effects (Baum-Snow & Ferreira, 2015). Commuting zones include densely populated urban areas and expansive rural areas, making them an ideal unit to examine service-learning practices that occur in both urban centers and rural areas (Stoecker & Schmidt, 2017).

The estimation sample uses an unbalanced panel of 320 commuting zones measured in roughly three occasions each, for a total sample size of 950. The sample is limited to communities hosting a Campus Compact institution during one or more of the four periods under investigation (see subsequent discussion of the independent variables). Descriptive statistics for the estimation sample are presented in Table 1. Statistical power analyses conducted in advance of this study suggested a minimum detectable effect of Cohen's $f^2 = .014$ for a joint test of significance of the addition of Campus Compact–related variables for the proposed models at an alpha level of $p = 0.05$ and 80% power (Cohen, 1988). Therefore, this study has sufficient statistical power to detect even a trivial effect, should one be present.

Dependent Variable

In this study, the dependent variable is an index constructed to represent the stocks of social capital in communities developed via principal components analysis, reducing multiple, correlated variables into a single component score representing the greatest shared variation (Rupasingha et al., 2006). The variables in the original index include (1) the associational density of organizations whose NAICS code indicate the organization is voluntary in nature, including civic and religious organizations, athletic clubs (such as bowling centers and golf clubs), political and labor organizations, and business and professional associations (Putnam, 1995); (2) the number of nonprofit agencies per 10,000 population (National Center for Charitable Statistics, n.d.); (3) the voter turnout rate in the most recent presidential election (Alesina & La Ferrara, 2000); and (4) the response rate to the nearest decennial census (Knack, 2002). Rupasingha and his colleagues provided data available in the years 1997, 2005, 2009, and 2014. For this study, I exclude the census return rate from my calculation because data is reused across the structural break I intend to test.

The first principal component extracted from each time period is the social capital index used in this study. This component explains between 54% and 63% of the total variance across the three variables. Each of these variables is measured at the county level, so a population-weighted mean of the index and the individual components is calculated at the commuting zone level, giving greater weight to more populous areas in the commuting zone when determining the area's mean (Baum-Snow & Ferreira, 2015).

Covariates

I controlled for a set of theoretically relevant variables that have been shown to be related to social capital in previous research (Putnam, 2001; Rupasingha et al., 2006). For percentage of bachelor's degrees, percentage African American, median age, and percentage in the same residence, I linearly interpolated or extrapolated the data to generate the time series observations for 1997 and 2005, consistent with other research (Weden et al., 2015). These inter/extrapolations use the 2000 census, along with the 2005–2009 and the 2010–2014

Table 1. Estimation Sample Characteristics					
Variable	Mean	SD (within)	*N*	Min	Max
Dependent Variables					
Census response	.438	.689 (.240)	950	-2.331	2.270
Associational density	-.373	.606 (.082)	950	-2.362	2.319
Nonprofits per 10,000 population	-.349	.546 (.091)	950	-1.545	3.275
Voter turnout rate	.599	.085 (.055)	950	.274	.858
Revised social capital index	-.299	.743 (.173)	950	-.882	.362
Independent Variables					
% with bachelor's degree or higher	23.340	6.714 (1.710)	950	9.682	49.447
% African American	9.617	10.924 (.475)	950	.046	67.512
Median age	36.921	3.945 (1.040)	950	23.2	53.5
% in same residence	73.437	15.057 (13.398)	950	28.232	91.175
% in poverty	14.839	4.399 (1.436)	950	6.516	40.694
% unemployed	6.556	2.486 (1.907)	950	2.120	15.585
Compact institutions per capita	.0067	.0062 (.0021)	950	.0003	.0774
Non-Compact institutions per capita	.0112	.0066 (.0024)	950	.0006	.0774
% of CZ with Compact institutions	59.287	49.139 (25.198)	2832	0	100

Note. Unit of observation is commuting zone. The Compact and non-Compact variables are log-transformed for analysis. The census response rate, associational density, and nonprofits per capita variables were standardized for the entire sample (n = 709, t = 4) with means of 0 and unit standard deviations for each time period. % bachelor's, % African American, median age, % same residence are inter/extrapolated from the data source using 2000, 2009, and 2014 data. The values for institutions per capita are the original untransformed values.

American Community Survey estimates. Estimates for poverty and unemployment came from the Department of Labor's local area unemployment statistics and the small area income and poverty estimates, which are available yearly. Each variable was observed at the county level and aggregated to the commuting zone using a population-weighted mean.

Independent Variables

Campus Compact represents a meaningful indicator of the presence of service-learning and of schools receiving LSAHE funding (Heffernan, 2001; Morton & Troppe, 1996). Over time, the increases in membership have corresponded with funding rounds from the LSAHE program. The 1997 membership list was published in the Compact's annual *Service Counts* monograph of their survey of members (Kobrin, 1997). For the periods 2005, 2009, and 2014, information about Campus Compact membership was gleaned from the Internet Archive (https://archive.org) snapshots of the Compact's website. The lists of members were matched by hand to the IPEDS and Carnegie Classification records for the corresponding year for characteristics of the members.

The Campus Compact membership consists of a range of institutional types (roughly 23% community colleges, 31% public 4-year institutions, 44% private 4-year institutions, 2% other) and sizes (undergraduate enrollment interquartile range spans 1,802 to 9,264). Roughly half of the private institutions in Campus Compact are religiously affiliated, and most are selective or more selective (Indiana University Center for Postsecondary Research, n.d.). More than half of the institutions are public, and most are open access or selective. Roughly 27% achieved the Carnegie Classification for Community Engagement by 2015.

Using this information, I calculated the in-

stitutions per thousand population (based on the 2000 census) in each commuting zone. For context, in commuting zones with Compact institutions in 2009, there were an average of 3.5 institutions per place, with the Los Angeles commuting zone containing the maximum at 46 institutions. I present the geographic dispersion of Campus Compact members per capita in Figure 1, representing the change in the members per capita between 2009 and 2014. Although nearly half of commuting zones did not have a Compact institution in either time period, those with compact institutions are home to 80% of the population of the United States. Roughly 70% of places with Compact institutions saw declines in Campus Compact members per capita between 2009 and 2014, even as the total membership of the Campus Compact only declined by about 100 institutions.

To rule out alternative explanations for the outcomes observed in these communities and address my research questions, I also tested a variable capturing all other colleges per capita (referred to as non-Compacts) to see if the same effects were present. It is plausible that having any college locally generates some variation in the social capital variable observed in this study. Campus Compact members and non-Compacts share many characteristics as institutions of higher education, with one primary difference: Compact members make explicit public commitments to community service and service-learning activities. To attribute changes in the outcome to these institutional commitments to service-learning, I expect that no effect will be present over the exogenous break in the time series for colleges that were not part of Campus Compact, as it is reasonable to expect they were not impacted by the policy change.

In this study, I use the natural log transformation of both institutions per capita variables to represent the density of these institutions in a given community. Natural log transformation achieves three goals: (1) it produces a more symmetrical distribution and makes the relationship between the dependent and independent variables homoscedastic; (2) it permits discussion

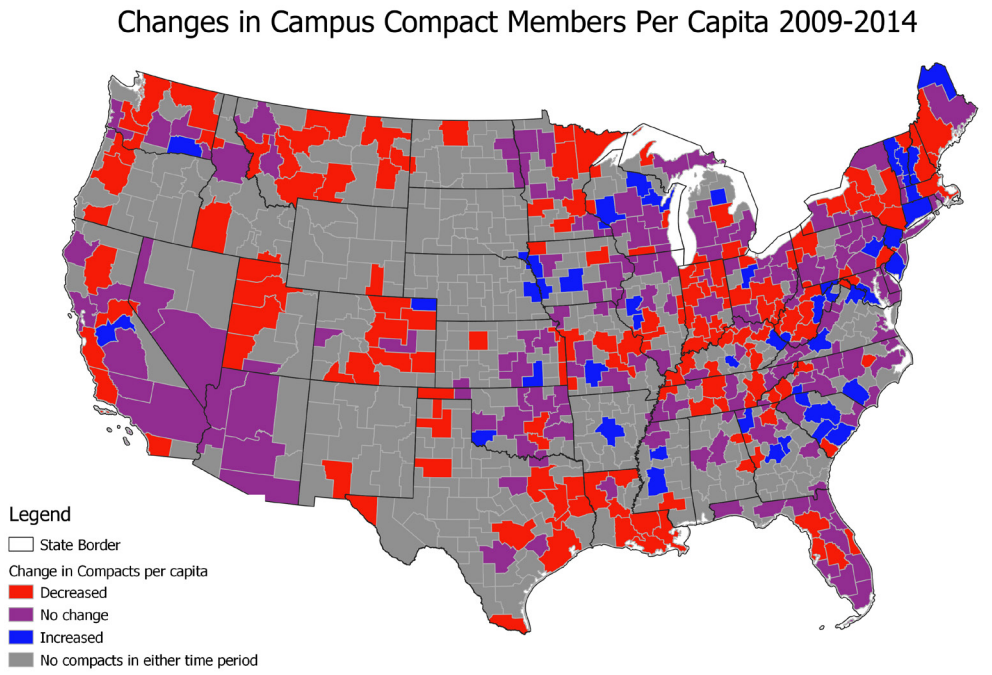

Figure 1. Changes in Campus Compact Members per Capita, 2009–2014

of results in relative terms, because a unit increase for the untransformed per capita variables is deceptive (ln(*x*) in this study is negative, calculated from fractions between 0 and 1); and (3) the derivative of *y* with respect to *x* is ß / *x*, so for a 1% change in the untransformed *x* (an extremely small change; at the mean of *x*, a percentage change is roughly .00004), we can interpret the effect as ß / 100 (Wooldridge, 2010). However, in cases where there are no Campus Compact institutions in the commuting zone (see Table 1), the log of the variable is undefined, and therefore we cannot estimate an effect of the Compact institutions. Given the centrality of this characteristic to this study, commuting zones that did not host any Compact institutions during any given period are not analyzed in this study.

Analytic Procedures

This study provides an unbiased estimate of the effects for the density of institutions on communities hosting Campus Compact members. Using fixed effect estimation, I control for unobserved heterogeneity and present the causal estimate of my variable of interest on the outcome of community social capital. This study uses the *within transformation* to analyze the data in this study, removing the unobserved heterogeneity within places to produce an unbiased estimate of the effect of my variables of interest (Allison, 2009; Wooldridge, 2010). In addition, I tested a dummy indicating the period for 2014 along with an interaction term for the institutions per capita variables, consistent with the hypothesis that the retrenchment of funding from the LSAHE program affected community social capital through higher education institutions. This structural break was tested via a Wald test, demonstrating that the pooling of all observations of the variable of interest across time does not fit the data as well as a comparison of the funding regime against the unfunded regime (Gujarati & Porter, 2009). I present graphical interpretations of the average partial effect using the derivative ($\partial y/\partial x$), comparing the reference category (i.e., the LSAHE funding regime) against the postretrenchment regime. This contrast produces an interpretable statistic (with a confidence interval) comparing the effect across the theorized structural break that summarizes the differences of the average instantaneous rates of change across all levels of the logged compact variable. To adjust the predictions for spatial autocorrelation and provide improved inference, all estimates' standard errors are clustered at the state level. This clustering is also theoretically justified because some states are supported by state-level Compact offices and others are not, so some states received different levels of support, resulting in what econometricians call heterogeneity of the treatment effects (Abadie et al., 2017). By clustering the effects at the state level, the standard errors are inflated to a degree, thus increasing confidence against Type I errors. I also implemented falsification tests to ensure temporal order by testing the lead of the variables of interest by one period, as future values of the Compact or non-Compact variable should have no effect on the dependent variable (Mills & Patterson, 2009).

Results

This section reviews the results of the empirical testing of the covariates against the revised social capital index discussed above and the results of the contrasted average marginal effects for both versions of the Compact variables.

Base Model

The first model presented in Table 2 is a base model that includes only the theoretically relevant covariates. The covariate model does not find that any of the relevant controls are statistically significant. A possible reason that the theoretically relevant covariates do not appear to have significant contribution to the social capital index is the lack of variation within the commuting zones across time (see Table 1). To that end, the parameter estimates produced for these variables are somewhat imprecise (Wooldridge, 2010). These variables are statistically significant contributors in the random effects framework, as found in previous work using that method (Rupasingha et al., 2006). However, diagnostic tests (omitted for space considerations) reject the random effects models, suggesting their coefficients may be systematically biased, whereas the fixed effects models produce consistent estimation with an associated loss of efficiency (Wooldridge, 2010). Furthermore, because I am primarily interested in the within-unit variation for the outcome and its relationship to the higher education variables, the covariates are included to adjust the estimation to avoid

Table 2. Fixed Effects Estimates for Revised Social Capital Index and Compact Institutions per Capita

	(1) Model 1: Covariates	(2) Model 2: compactpc	(3) Model 3: After LSA	(4) Model 4: Interaction	(5) Model 5: Full
% Bach. deg.	0.003				-0.004
	(0.017)				(0.020)
% Black	0.027				0.016
	(0.035)				(0.030)
Median age	-0.004				0.002
	(0.016)				(0.019)
% Same res.	-0.001				-0.002
	(0.002)				(0.003)
% Poverty	0.004				-0.000
	(0.014)				(0.012)
% Unemployed	0.008				0.012
	(0.007)				(0.007)
Compact institutions per capita		0.062	0.063	0.076*	0.100*
		(0.040)	(0.039)	(0.035)	(0.039)
Non-Compact institutions per capita		0.051	0.051	0.040	0.059
		(0.050)	(0.050)	(0.046)	(0.045)
LSAHE defunded			-0.002	-0.996**	-0.971**
			(0.044)	(0.312)	(0.312)
LSAHE defunded # Compact inst. per capita				-0.142***	-0.145***
				(0.036)	(0.040)
LSAHE defunded # non-Compact inst. per capita				-0.052	-0.052
				(0.058)	(0.057)
Constant	-0.511	0.272	0.273	0.294	0.449
	(0.544)	(0.389)	(0.385)	(0.339)	(0.809)
CZ fixed effects?	Yes	Yes	Yes	Yes	Yes
N	950.000	950.000	950.000	950.000	950.000
N_clust	51.000	51.000	51.000	51.000	51.000
r2	0.011	0.012	0.012	0.094	0.107
F	0.527	1.225	0.875	6.433	4.957

*Note. *p < 0.05, **p < 0.01, ***p < 0.001. Cluster-robust standard errors reported in parentheses are based on standard errors clustered at the state level. R^2 reported is the within variation explained by the model's parameters.*

confounding and as a check on the robustness of any findings that do not control for these covariates (Allison, 2009).

Institutions per Capita

A model that tested the two logged institutions per capita variables found that these variables were not significant for either the Compact variable or non-Compact institutions across the four periods. This model explains only 1.2% of the total variance. Introducing the 2014 period indicator does not substantially improve the variance explained, and none of these variables achieved statistical significance. A model interacting the 2014 indicator for the post-funding regime with the Compact and non-Compact variables produced theoretically relevant differences; see Table 2.

These differences persist in the full model that reintroduces the covariates. In the full model, a Wald test for the structural break for the Compact institutions is statistically significant ($F(3,50) = 7.11$, $p = 0.0005$); however, a test comparing the Compact and non-Compact coefficients fails to reject that the coefficients are systematically different from each other ($F(1,50) = 0.87$, $p = .357$). Compared to the base covariates model, the full model improves the overall fit of the model substantially ($LRX^2(5) = 96.84$, $p < 0.001$) and the effect size of this model is $f^2 = 0.107$, indicating a small to moderate improvement (Cohen, 1988).

On average, the size of the difference is about -0.145 across all levels of the Compacts per capita variable (see Figure 2), which is small by conventional standards (Cohen, 1988). However, as stressed by Mummolo and Peterson (2018), analysts should compare the relative variation within units to better interpret their results. This change is substantial in terms of the overall observed variation in the outcome within communities because the standard deviation within units in the outcome is 0.173 (see Table 1), so an average change of -0.14 is roughly 84% of a standard deviation within the unit, and this effect size is slightly larger than the moderate change in the model's Cohen's f^2. The same pattern is not present for the non-Compact institutions, suggesting these institutions are not affected by the structural break in the same way.

These findings reject the null hypotheses undergirding two of the three research questions and partially reject the third: (1) during the funding regime, Campus

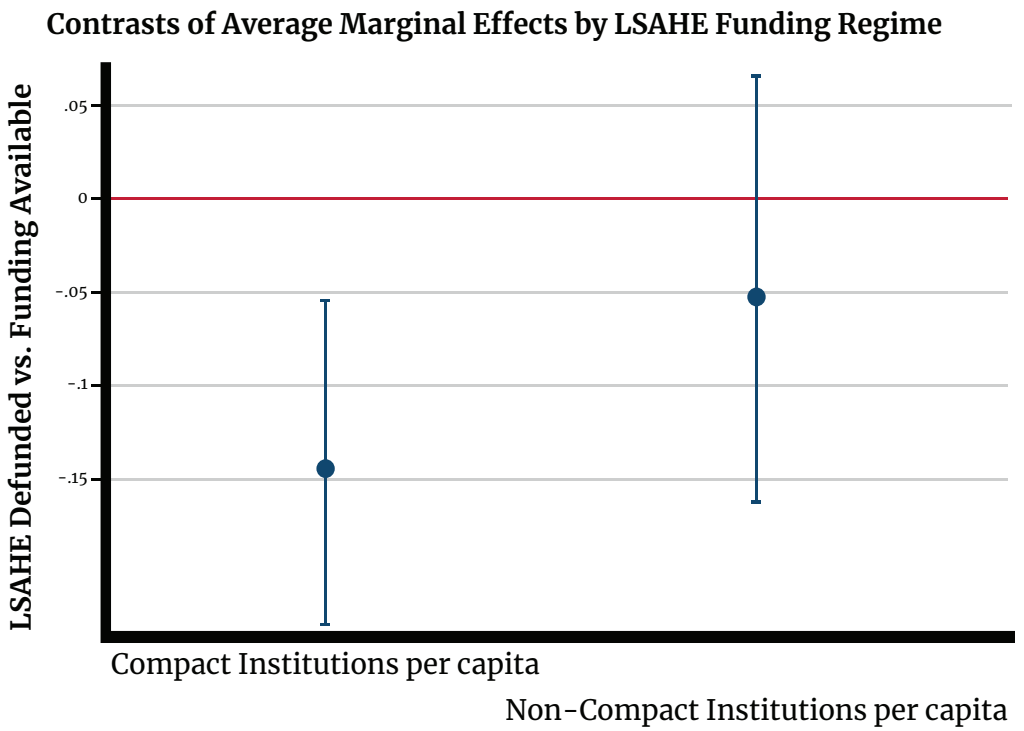

Figure 2. Contrasts of Average Marginal Effects by LSAHE Funding

Compact institutions are positively contributing to their communities; (2) the structural break associated with defunding the program reverses the effects for Compact institutions; (3) there is not a statistically significant difference between Compact and non-Compact institutions; however, I cannot reject the hypothesis that non-Compacts systematically contribute to their community's social capital in the same ways that Campus Compact institutions do.

Discussion

This article offers one of the first nationally representative empirical estimates of the impact of higher education service-learning on community social capital. Furthermore, it examines the impact of national policy on service-learning and offers evidence that federal support for service-learning promotes community social capital and the absence of federal support results in a decline of that outcome.

Community social capital is an important mediator of community well-being (Sampson, 1999; Sampson et al., 2002). It has also been shown to be an important contributor to lower rates of poverty in communities (Rupasingha & Goetz, 2007) and a positive contributor to rates of per capita income growth (Rupasingha et al., 2000). Previous research has examined education as an important contributor to community social capital (J. S. Coleman, 1988; Putnam, 1995, 2001; Rupasingha et al., 2006), but the role of institutions of higher education is absent from that conversation. Additionally, literature in the service-learning field has discussed social capital as a potential outcome (K. Coleman & Danks, 2016; Ferman, 2006; Gelmon et al., 1998; Morton, 1995; Patterson, 2006; Seifer, 2010), but it lacks quantitative evidence supporting these claims. The primary reason we might expect service-learning and community engagement to affect community social capital is that the focus of these activities is relational and reciprocal, thus promoting networks of social cohesion.

This study demonstrates contributions of service-learning to community social capital during the periods the federal government offered support for the practice, especially in areas where the density of Campus Compact institutions was higher. This study finds a structural break resulting from the retrenchment in LSAHE in 2011, resulting in shifts in both the intercept for the 2014 period and changes in slope when the variable is interacted. These effects are not present when the main effect of the period is not interacted, suggesting that this relationship is associated with the policy change and not independent of it. The decline resulting from the structural break masks the positive effects prior to the break, which only emerge through the fully interacted model. The model itself performs moderately well in explaining the overall variance, suggesting the policy change had important implications for community social capital.

The variation in social capital was not strongly associated with the other colleges in these same communities, so it can be concluded that effects of the federal policy occurred primarily through Campus Compact membership. As suggested by the previous literature (Hartley, 2011; Hartley & Saltmarsh, 2016; Hollander & Hartley, 2000), membership in Campus Compact may have been a signal to the grantmakers that the university was committed to service-learning. It is also reasonable that national and state Compact offices would subgrant only to members, providing additional incentives for joining the organization when funding was available. A major funding strategy discussed in the LSAHE evaluation was to leverage both matching and in-kind funds from grantees and subgrantees (Gray et al., 1999), which also helps explain why a relatively small grant program can have such a seemingly outsize impact on social capital.

This pattern is consistent with a policy feedback mechanism described by Mettler and SoRelle (2014), with the presence of the policy having resource and interpretive effects in promoting civic participation. Mettler and SoRelle (2014) stated that "[policy feedback theory] brings political considerations to bear on policy analysis, assessing how policies affect crucial aspects of governance, such as whether they promote civic engagement or deter it" (p. 152). The original purposes of the LSAHE program included "engage students in meeting the unmet needs of communities" and "enhance students' academic learning, their sense of social responsibility, and their civic skills through service-learning" (Gray et al., 1999, p. 7). This study finds that during the period when funding was available, members of Campus Compact ful-

filled that policy goal. Similar to the policy feedback framework described by Mettler in her study of the G.I. Bill's effects on beneficiaries' belief in their own contributions to the polity, the social construction of service-learners as capable of meeting unmet needs and building civic skills translates into greater civic engagement in their communities (Mettler, 2002, 2005; Mettler & Soss, 2004).

The period following the retrenchment has opposite effects, eliminating the contributions toward social capital. The defunding of LSAHE played a role in a decline in social capital in communities hosting Campus Compact institutions, presumably because efforts were no longer being made at the same intensity as when funding was available. The observed decline in Campus Compact membership and numbers of institutions reporting service-learning to Campus Compact between 2005 and 2014 signals that members no longer could sustain their programs in the absence of funding (Campus Compact, 2005, 2014), while others who remained in the network may have seen budgets shrink without external support (Ryan, 2012). Similar patterns of the decision to eliminate service-learning programs at universities is documented in Orphan's (2018) study of public regional comprehensive institutions. A clear recommendation from this work is for a renewed discussion of the role of our federal and state governments in supporting service-learning and civic engagement to promote community vitality and social capital stocks.

One possible explanation for the program's elimination were the relatively small positive effects prior to termination, which indicated that the policy's benefits were diffuse. In these situations, policies may lack a natural constituency. Other policy feedback research demonstrates that college students tend to lack the organizing capacity for policy changes that affect them and their education (Mettler, 2014). The LSAHE program lacked a powerful enough interest group to advocate for the policy to remain funded, consistent with policy feedback theory (Jordan & Matt, 2014; Mettler, 2014; Mettler & SoRelle, 2014) and discussions of policy termination (Daniels, 2015). The structure of the LSAHE program also expressly prohibited "partisan political" acts by its grantees, and it is possible that grantees (including Campus Compact) did not want to lobby for the policy and find themselves in violation of the law, consistent with how the nonprofit sector approaches political activity (Hartley, 2011; Taliaferro & Ruggiano, 2013).

Surprisingly little has been written about the landscape of postsecondary service-learning in the wake of the defunded LSAHE, but future research might examine how the retrenchment of federal funding influenced service-learning programming in various sectors of higher education. An additional line of inquiry might investigate whether community organizations observed declines in engagement from colleges and universities, particularly in areas where colleges and universities no longer participate in Campus Compact. The work associated with this article in identifying and coding the membership of Campus Compact over the last 2 decades can help facilitate these future investigations.

Limitations

Without direct measures of service-learning, the variable used in this study only approximates actual impacts of service-learning and unfortunately offers little in terms of implications for the practice of service-learning. Recent advancements such as the Carnegie Elective Classification for Community Engagement (Giles et al., 2010; Sandmann et al., 2009) and the new National Inventory of Institutional Infrastructure of Community Engagement (Brown University, 2018; Welch & Saltmarsh, 2013) may provide future longitudinal researchers with additional characteristics regarding the forms of service-learning and community engagement that are more effective in promoting social capital or other community outcomes.

Another limitation of this study is the choice of commuting zone as the unit of analysis. Previous authors (Bloomgarden, 2017; Cruz & Giles, 2000) argued for the community partnership rather than the broader community as the unit of analysis, given difficulties in defining "community" and the participatory nature of service-learning. This study's use of the commuting zone reflects how the outcome is measured; captures potential spillover effects that may be present in the larger labor market (Baum-Snow & Ferreira, 2015); and also permitted analysis of both urban and rural areas, addressing other critiques of the emphases of service-learning research on urban universities (Stoecker & Schmidt, 2017). This study's national scope provides baseline es-

timates for researchers to compare the possible measured effects of service-learning among their local community partners.

However, another limitation is that these results cannot be generalized to communities without Compact institutions and must be interpreted as changes observed in communities where these institutions were located. Although these places with Compact institutions are only 56% of the commuting zones, they contain roughly 80% of the population of the United States. Finally, although fixed effects regression methods are a workhorse for social sciences causal inference (Allison, 2009), I acknowledge that interpretation of these estimates as a causal assumes that any time-varying unobserved heterogeneity is not also correlated with the increases or decreases of the membership in Campus Compact. However, my inclusion of the non-Compacts in these regressions serves as a robustness check, because any of the endogenous variation that would be correlated with one class of colleges would likely also be present among the other class as well.

In conclusion, this work addresses a long-standing gap in empirical measurement of the impacts of service-learning on communities (Cruz & Giles, 2000; Stoecker et al., 2010) and addresses previous calls for research on the topic of social capital (Putnam, 1995). Furthermore, it tests relevant policy theories that explain the patterns observed (Mettler & SoRelle, 2014). These contributions build the theory base of how institutions influence social capital while connecting higher education service-learning to broader theoretical relevance. Although the proxies for service-learning used in this study do not enable direct measurement of the effect, these findings can guide future work on measuring impacts and serve as bases for other exploratory analysis of service-learning's impacts in communities. By using panel data to explore the outcome of social capital, this study presents credible findings pointing toward the effectiveness of service-learning to produce positive effects in communities as well as identifying a pattern of decline consistent with the retrenchment of federal funding for service-learning programs.

Note

[1] In January 2017, the author initiated a FOIA request of the Corporation for National and Community Service for grantee records from the Learn and Serve America program. The results from their database included only the direct grantees, with no information about subgrants. Nearly all of the grants were directed to national or state-affiliate Campus Compact offices or had a primary fiscal agent that was a Compact institution.

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