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The impact of mandatory academic service-learning on university graduates' continual civic engagement: evidence from a curriculum reform

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ABSTRACT

There is growing interest among higher education institutions in employing service-learning to nurture students' civic-mindedness and sense of citizenship. However, it remains unclear whether the civic outcomes observed in short-term studies are sustained, particularly when service-learning is a compulsory requirement. This study leverages a curriculum reform in a large public research university in Hong Kong to examine the impact of mandatory academic service-learning on students' longer-term civic engagement, measured approximately two years after graduation. Utilizing survey results from 2,081 alumni, we analyze how service-learning influenced their post-graduation civic engagement through multiple logistic regression. Our findings indicate that service-learning alumni demonstrated higher levels of civic engagement, suggesting that mandatory participation did not diminish desired outcomes. Notably, the most significant impact was observed among those who were not predisposed to service. These results imply that mandatory academic service-learning could serve as an effective civic educator to cultivate engagement that persists beyond graduation.

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Introduction

Service-learning is increasingly recognized as a powerful vehicle to nurture civic-minded graduates among higher education institutions (Bringle et al., 2019; Geier & Hasager, 2020; Saltmarsh et al., 2015). It lets students apply knowledge and skills taught in the classroom to serve the community through mutually identified service activities, and uses critical reflection for students to gain further understanding of course content, and an enhanced sense of personal values and civic responsibility (Bringle & Clayton, 2012; Bringle & Hatcher, 1996). The recent push for its institutionalization (e.g., Compare et al., 2024; Furco & Kent, 2019; Ti et al., 2021) further underscores advocates'

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belief in service-learning as a transformative pedagogy. However, while a substantial body of research confirms the benefits of service-learning on students' civic outcomes, much of it examines settings where students voluntarily participated in these activities (Hatcher et al., 2016; Hébert & Hauf, 2015). In contrast, mandatory service-learning remains a contested phenomenon in higher education (Dienhart et al., 2016; Henderson et al., 2019). Whether mandatory service-learning holds promise as an academic experience that enhances students' civic engagement and whether the effects persist beyond graduation remain to be explored further.

Skeptics of mandatory service-learning argue that it constitutes a form of 'involuntary servitude' and caution that mandatory service may compromise students' sincerity in serving the community and reduce their willingness to engage in future service (Marks & Jones, 2004; Miller, 1997; Stukas et al., 1999; Warburton & Smith, 2003). Furthermore, when students feel compelled to participate, their performance in service may suffer, negatively impacting not only their own learning but also the experiences of their peers and those receiving the service, especially if the program is not organized and structured well (Dienhart et al., 2016). On the other hand, proponents emphasize that students who are inclined to serve will do so, regardless of a mandate. However, a mandate ensures that those who might otherwise choose not to participate – yet could benefit the most – will have the opportunity to engage (Karasik, 2005). Furthermore, if students could be propelled into service, then it is more likely that they will develop enduring attitudes and patterns of engagement (e.g., Hart et al., 2007; Metz & Youniss, 2003; Planty et al., 2006).

Empirically, there is evidence that supports the different views, and three key features of these studies may explain the conflicting findings. First, selection bias is evident when comparing service-learning participants with groups that are not directly comparable. As a result, the impact in these studies is often weakened once confounding factors such as participants' volunteering history, socioeconomic background, and personal values are taken into consideration (e.g., Bowman et al., 2010; Misa et al., 2005). Secondly, service-learning program qualities differ within and across studies. This variation raises concerns about whether the observed positive, negative or null results stemmed from service-learning as a whole or from the differing program qualities assessed (Fenzel & Peyrot, 2005; Winston, 2015). Lastly, the timing of the impact measurement plays a crucial role. Studies with well-controlled comparison groups typically examine outcomes in the short-run, i.e., immediately after the service-learning experience. Therefore, these studies could only assess attitudinal and intended behavioral changes. However, these changes may fizzle out and may not translate into actual actions over time.

This paper aims to address the gaps identified in the literature. Due to a degree structure and curriculum reform, a large public research university in Hong Kong implemented a mandatory academic service-learning requirement for undergraduates, aimed at developing their sense of social responsibility and citizenship. The reform also produced a 'double-cohort' of students entering university and provided us with a unique opportunity to examine the impact of mandatory service-learning on these students' continual civic engagement in the longer-term, measured using alumni surveys approximately two years after graduation. Since our survey approximates a quasi-experimental design where the intervention was not under the control of either the participants or the researchers, biases from confounding factors or differences in program design are mitigated in this paper compared to those based solely on observational

data. However, differential effects of service-learning may still exist, particularly between those who were inclined to service and those who were unlikely to get involved without a mandate. Given this context, the following research questions guided the study:

- (1) How does mandatory service-learning affect alumni's civic engagement activities approximately two years after graduation, such as giving donations to charities, participating in voluntary/community service, or engaging in other activities for the betterment of the local or global community?
- (2) Is the impact of service-learning on continual civic engagement different for those who were inclined to serve, measured by voluntary/community service participation during college, compared to those who were not?

Literature review: mandatory service-learning and civic outcomes

The ample literature that investigates the impact of optional service-learning on students' civic knowledge, skills, attitudes, and behaviors paints an overall positive picture (Celio et al., 2011; Conway et al., 2009; Warren, 2012; Yorio & Ye, 2012). However, the scant empirical evidence on mandatory service-learning is rather inconclusive. Some studies have found that while students could be initially resistant to service-learning under a mandate, they were pleased to have had the experience in hindsight (Chan et al., 2020; Jones et al., 2008; Rodin, 1998). And for those who were 'less-inclined' measured via previous service experience or self-reported motivation, they learned as much as those who were 'more-inclined'. Furthermore, what contributed most significantly to their learning depends on the quality of their learning experience (Chan et al., 2019a, 2019b). Diaz et al. (2019) found that while mandatory service-learning students scored statistically higher in political awareness and social justice attitudes, they were not different from the control group in intended plans to be civically engaged in the future. However, it is possible that the results in their paper may be partially driven by differences in the two groups' characteristics in the study.

While some studies found positive short-term impact of mandatory service-learning for learning and civic outcomes, especially in positive attitudinal changes towards social justice and responsibility (Ellerton et al., 2016; Markus et al., 1993; Ryan, 2017), others found negative or non-positive results – especially if the arrangement echoes more mandatory volunteering than service-learning (Dienhart et al., 2016; Henderson et al., 2007; Planty et al., 2006). However, volunteering is different from service-learning. Volunteering or community service is often more free-form and focuses on the benefit to the community rather than the learning of the student. Academic service-learning, on the other hand, is initiated and structured by the school or instructors to facilitate experiential learning that also serves the community. Service and learning receive equal weight, and students are guided to reflect on the connection between the two and how it relates to their academic, personal, professional, and civic development. Therefore, the negative or non-positive findings from mandatory volunteering should not be taken as suggestive evidence that mandatory service-learning may yield similar results as the two are distinct from each other. Similar to the argument put forth in optional service-learning, how mandatory service-learning is structured plays a critical role in its success (Chan et al., 2019a; Harfitt & Chow, 2018; Lai & Hui, 2021).

The few longer-term studies on mandatory service-learning programs found that students of such programs continued to engage in volunteering after graduation. Since these studies surveyed alumni well after their service-learning experience, they could measure the impact on actual civic behavior compared with attitudinal changes examined in shorter-term studies. However, previous longer-term studies on mandatory service-learning often lack a comparison group, as the service-learning requirement applied to all students. Instead, the research focused on program characteristics and designs that were associated with post-graduate civic engagement. For example, one of the first in the field, Moely and Ilustre (2013, 2016, 2019), employed a longitudinal design that involved repeated observations of the same individual over time to find strong and positive impact of mandatory service-learning on the students both in the short-run and the long-run. Specifically, the alumni in their study had to complete a two-part public service requirement to graduate: the first part is a service-learning course, and the second part can be an advanced-level service-learning course, a public service internship, or a community-based research project. The authors found that those who chose internships or community-based research projects to fulfill the second component of the requirement were engaged in more public service after graduation. Tomkovick et al. (2008) investigated which elements of the alumni's mandatory service-learning experiences played a significant role in post-graduate volunteerism and found the following three components to matter: the amount of personal development experienced during the SL project; the perceived value of the service-learning project to the community organization; and the level of volunteerism prior to participation in a service-learning project.

Research method and results

Context of the study

Starting in 2012, all universities supported by government funding in Hong Kong changed from a 3-year undergraduate degree structure to a 4-year one. The additional year created was expected to be used for general education regardless of the specialization or career aspirations of the students and to nurture the attributes of ideal graduates that are suitable under the general shift from the manufacturing economy to the service economy in the global context (Shek, 2019). While the structure change was common to all public universities in Hong Kong, each institution had the freedom to reform the curriculum according to its vision and mission. Along with other distributional requirements designed to be academically rigorous for expanding students' intellectual, personal, developmental, and language capacities under the new curriculum, the university of interest in this study created a civic learning requirement in the form of an academic service-learning component to not only enhance students' sense of civic responsibility and engagement but also benefit the community at large.

Specifically, the service-learning component requires all full-time undergraduates in the University to complete a service-learning course that is letter-graded like any other academic course. To date, there are almost 83 such subjects offered in 25 departments/schools in the University. Most of these courses are open to all students regardless of their majors. At the same time, some are restricted to students with certain disciplinary backgrounds, and a few are only for students from specific departments. To ensure its

rigor and quality, before a service-learning course can be offered at the University, it must go through an extensive review process for approval in the Senate, the highest authority on all academic-related matters within the University. While the approved courses and the embedded service project types are diverse in discipline and nature, they are common in that each is deemed to contain rigorous academic content, a service project that tangibly benefits the target community or NGO accompanied by at least 40 hours of direct interactions with service recipients, and structured reflections to enrich students' learning experience to achieve a set of common and course-specific learning outcomes.

The academic structure and curriculum change, along with the implementation of a mandatory service-learning requirement, provided this study with a unique opportunity to investigate post-graduation civic engagement activities between two cohorts of alumni: the last cohort of students who graduated in 2015 under the previous 3-year degree structure, and the first cohort of students who graduated in 2016 under the new 4-year degree structure. However, due to the concern that there may not be enough service-learning subjects approved to be offered during the first year of the curriculum change implementation, the first cohort of students under the new curriculum could take a free elective to fulfill their service-learning requirement instead. This caveat in the first year of the reform means that one will need to examine the service-learning and non-service-learning alumni separately for the 2016 Cohort as well. Incidentally, such comparison offers an advantage because it enables an investigation into whether other general education requirements played a role in the difference in civic engagement between service-learning and non-service-learning alumni within the 2016 Cohort, since these two sub-groups differed primarily in terms of their service-learning experience.

Participants and survey procedure

Table 1 summarizes the key statistics on survey administration. The Alumni Survey for the 2015 Cohort under the old degree structure and curriculum was conducted in 2017 by mail via hardcopy to 5,275 full-time degree-level alumni. The response rate was 22.2%, where a total of 1,171 individuals completed and returned the entire survey using the self-addressed stamped envelope provided. The Alumni Survey for the 2016 Cohort under the new degree structure and curriculum was administered by mail in 2018 to the 3,080 full-time degree-level alumni, but survey recipients could choose to respond either via hardcopy and return using the self-addressed stamped envelope or electronically using a unique token. A total of 951 valid returns were received from this cohort, corresponding to a response rate of 30.9%. The timing of survey administration means that the

Table 1. Survey year, participants, and response rate.

| Survey Year | Target Participants | Valid Return | Valid Response rate |
|-------------|--|--------------|---------------------|
| 2017 | 2015 Cohort of graduates under the old 3-year degree structure and curriculum N = 5,275 | 1,172 | 22.2% |
| 2018 | 2016 Cohort of graduates under the new 4-year degree structure and curriculum N = 3,080 | 951 | 30.9% |

outcomes for these two cohorts were measured approximately two years after they graduated from the University.

Variables

Table 2 lists the variables in this study and their corresponding survey instruments. Both surveys asked alumni about their participation in community service during their study at the University, as well as their civic engagement since graduation. For the 2016 Cohort under the 4-year degree structure with mandatory service-learning, the survey additionally asked whether the respondent took a service-learning subject or not instead of assuming them all to be service-learning alumni due to the reasons explained in the context of the study. Specifically, *SL* indicates whether the respondent is a service-learning alumni or not, i.e., whether he/she has taken a service-learning subject during their study at the University. *VCS_during*, or alumni's participation in voluntary/community

Table 2. Variable name and definition.

| Name | Definition |
|---|---|
| <i>SL</i> | <p><i>SL</i> refers to the graduate's participation in service-learning during college: 1 (SL) or 0 (No SL).</p> <p>It takes the value 0 (no SL) for the 2015 Cohort.</p> <p>It takes the value 1 (SL) if graduates from the 2016 Cohort responded that he/she has taken a credit-bearing service-learning subject at the University, and 0 (No) otherwise.</p> |
| <i>VCS_during</i> | <p><i>VCS_during</i> refers to the graduate's participation in voluntary/community service during college: Yes (1) or No (0).</p> <p>It takes the value 1 (Yes) if the graduate responded to have participated in any of the following voluntary/community service options during college, and 0 (No) if he/she responded to have participated in none. Options for the 2015 Cohort:</p> <ul style="list-style-type: none"> • Community service activities organized by the University (e.g., your department, hall of residence, Student Affairs Office, etc.) • Other community services at the University (e.g., students social service club) • Voluntary/community services outside the University • None of the above <p>Options for the 2016 Cohort:</p> <ul style="list-style-type: none"> • Serving as a student leader or helper in a service-learning subject at the University • Student-initiated service project supported by the Office of Service-Learning • Other community services at the University (e.g., students social service club) • Voluntary/community services outside the University • None of the above |
| <i>Civic Engagement: CE, donate, VCS_after, other</i> | <p><i>CE</i> refers to the graduate's post-graduation civic engagement involvement in any form: 1 (Yes) or 0 (No).</p> <p>It takes the value 1 (Yes) if the graduate reported having done any one of the activities since graduation from the University, and 0 (No) if he/she responded to have participated in none of the activities:</p> <ul style="list-style-type: none"> • Gave donations to charities • Participated in voluntary/community service for people in need • Other engagements for the betterment of the local or global community (please elaborate) • None of the above <p>Additionally, the indicator variables <i>donate</i>, <i>VCS_after</i> and <i>other</i> refer to alumni's Yes/No responses in each of the three activities listed above.</p> |

service during college, is a variable that indicates whether the respondent participated in any form of voluntary/community service activity during their undergraduate study. CE, or alumni's post-graduation civic engagement involvement, is measured using respondents' Yes/No responses to the question that asks them about whether they gave donations to charities, participated in voluntary/community service for people in need or other engagements for the betterment of the local or global community since graduation from the University.

Descriptive statistics

Table 3 shows the distribution of survey respondents according to their cohort (2015 or 2016, i.e., 3-year or 4-year structure), service-learning status (SL or No SL), and civic engagement post-graduation (CE, *donate*, *VCS_after*, *other*) in three panels. Panel A looks at the entire sample, Panels B and C separate the samples into those who participated in voluntary/community service during college and those who did not (*VCS_during*). The comparison allows one to see any *prima facie* evidence of the overall and differential impacts of service-learning based on the alumni's inclination or predisposition to serve, as proxied by their service history.

Table 3 reveals the difference in overall civic engagement since graduation is notable between mandatory service-learning and non-service-learning alumni in Column (1), but the magnitude is moderated by whether the alumni participated in any voluntary community service during their undergraduate years. For the entire sample (Panel A), SL alumni had the highest level of civic engagement at 67.8%. Looking at the breakdown by service history more carefully, Panel B indicates a larger difference exists if the alumni did not have voluntary/community service experience during their undergraduate study. Specially, for those without academic service-learning experiences, 45.6% and 49.4% of the corresponding 2015 and 2016 no-SL Cohort reported civic engagement activities, whereas the proportion is much higher at 63.4% for the 2016 SL Cohort. For alumni who were active in community service during college as shown in Panel C, service-learning did not seem to affect post-graduation civic engagement in general; it is a comparable 75.2% for the 2016 SL Cohort and 76.6% for the 2015 Cohort.

Table 3. Descriptive statistics.

| Cohort and SL Status | | % of Graduates who Reported ... | | | | N |
|---------------------------------------|-------|---------------------------------|----------------------|-------------------------|---------------------|------|
| | | (1) <i>CE</i> | (2) <i>donate</i> | (3) <i>VCS_after</i> | (4) <i>other</i> | |
| Panel A: Full Sample | | | | | | |
| 2015 | No SL | 60.7% | 43.8% | 31.1% | 3.1% | 1169 |
| 2016 | No SL | 61.0% | 41.5% | 29.9% | 3.5% | 318 |
| | SL | 67.8% | 49.2% | 40.6% | 3.0% | 594 |
| Panel B: <i>VCS_during</i> = 0 | | | | | | |
| 2015 | No SL | 45.6% | 38.6% | 12.1% | 1.3% | 601 |
| 2016 | No SL | 49.4% | 38.8% | 17.4% | 3.4% | 178 |
| | SL | 63.4% | 44.2% | 35.5% | 2.4% | 380 |
| Panel C: <i>VCS_during</i> = 1 | | | | | | |
| 2015 | No SL | 76.6% | 49.3% | 51.1% | 4.9% | 568 |
| 2016 | No SL | 75.7% | 45.0% | 45.7% | 3.6% | 140 |
| | SL | 75.2% | 57.9% | 49.5% | 4.2% | 214 |

Note: Refer to Table 2 for variable definitions.

Examining each civic engagement category in detail across Columns (2) – (4) reveals that the largest difference comes from voluntary/community service activities since graduation (*VCS_after*). Among alumni who did not report any community service during their study at the University shown in Panel B, they were between twice and three times more likely to have volunteered for people in need if they took a service-learning subject (35.5% compared with 17.4% and 12.1%). From Panel C of [Table 3](#), one can see that among those who were predisposed to service, i.e., graduates who voluntarily participated in community service during their undergraduate studies, their level of civic engagement post-graduation is 49.5% for the 2016 SL Cohort, again similar to 51.1% for the 2015 Cohort.

Empirical strategy

To further examine whether service-learning experience has a statistically significant impact on graduates' likelihood to be civically engaged post-graduation, this study employs a binomial logistic regression model with the following specification:

$$\Pr(\text{Civic Engagement}_i = 1 | \cdot) = p_i, \quad (1)$$

$$\ln\left(\frac{p_i}{1 - p_i}\right) = a + bSL_i + c_1 VCS_during_i + c_2 2016_cohort_i + e_i, \quad i = 1, \dots, N. \quad (2)$$

The dependent variable, *Civic Engagement*, is defined in [Table 2](#). It can refer to a variety of activities, such as whether the individual in the period after graduation gave donations to charities (*donate*), participated in voluntary/community service (*VCS_after*), engaged in other activities for the betterment of the local or global community (*other*), or did any one of the three activities (*CE*). *SL* is the key variable of interest, and its coefficient *b* measures the impact of service-learning after controlling for *VCS_during* and *2016_Cohort*.

VCS_during is an indicator variable that takes the value 1 if the respondent participated in voluntary/community service during their undergraduate study, and 0 otherwise. It serves as a proxy for one's inclination or predisposition to serve as previous studies consistently find that volunteering during college correlates with post-graduation volunteering. Additionally, we incorporate cohort as another control variable to account for any systematic variations or trends that may occur across different cohort years. Specifically, *2016_Cohort* is also an indicator variable that takes the value 1 if the respondent is from the 2016 Cohort and 0 otherwise. Lastly, e_i is the idiosyncratic error term.

Results

[Table 4](#) presents the regression results using different forms of civic engagement as the dependent variable for the three samples as in [Table 3](#). Panel A looks at the full sample and Column (1) indicates that when using the catch-all definition of civic engagement (*CE*), service-learning experience has a statistically significant impact. The marginal effect is 0.094, meaning that on average, service-learning alumni are 9.4% more likely than non-service-learning alumni to be civically engaged after graduation, after controlling for factors such as voluntary/community service experience during college

Table 4. Binomial logistic regression results.

| Independent Variables & Statistics | Dependent Variable | | | |
|--|---------------------|----------------------|-------------------------|---------------------|
| | (1) <i>CE</i> | (2) <i>donate</i> | (3) <i>VCS_after</i> | (4) <i>other</i> |
| Panel A: Full Sample | | | | |
| <i>Service-Learning Experience (SL)</i> | 0.094*** (0.035) | 0.086*** (0.035) | 0.142*** (0.034) | −0.002 (0.011) |
| <i>Voluntary/Community Service Participation during College (VCS_during)</i> | 0.261*** (0.022) | 0.109*** (0.022) | 0.313*** (0.021) | 0.024*** (0.007) |
| <i>2016_Cohort</i> | 0.016 (0.031) | −0.018 (0.032) | 0.002 (0.032) | 0.004 (0.010) |
| Pseudo R-sq | 0.055 | 0.011 | 0.090 | 0.020 |
| Prob > chi2 | 0.000 | 0.000 | 0.000 | 0.001 |
| <i>N</i> | 2081 | | | |
| Panel B: VCS_during = 0 | | | | |
| <i>Service-Learning Experience (SL)</i> | 0.146*** (0.046) | 0.054 (0.045) | 0.146*** (0.034) | −0.007 (0.010) |
| <i>2016_Cohort</i> | 0.039 (0.043) | 0.002 (0.042) | 0.067* (0.035) | 0.017* (0.009) |
| Pseudo R-sq | 0.020 | 0.002 | 0.066 | 0.200 |
| Prob > chi2 | 0.000 | 0.194 | 0.000 | 0.014 |
| <i>N</i> | 1159 | | | |
| Panel C: VCS_during = 1 | | | | |
| <i>Service-Learning Experience (SL)</i> | −0.005 (0.046) | 0.130** (0.055) | 0.038 (0.054) | 0.007 (0.025) |
| <i>2016_Cohort</i> | −0.009 (0.040) | −0.043 (0.047) | −0.055 (0.047) | −0.015 (0.021) |
| Pseudo R-sq | 0.000 | 0.005 | 0.001 | 0.002 |
| Prob > chi2 | 0.918 | 0.034 | 0.498 | 0.750 |
| <i>N</i> | 922 | | | |

Note: The coefficients are marginal effects with significance levels * $p < 0.10$; ** $p < 0.05$, and *** $p < 0.01$. Standard errors are in parentheses.

Refer to Table 2 for variable definitions. Additionally, '2016_Cohort' is an indicator variable that takes the value 1 if the respondent is from the 2016 Cohort and 0 otherwise.

(*VCS_during*) and cohort effects (*2016_Cohort*). Further analysis of the different categories of civic engagement activities in Columns (2) – (4) of Panel A reveals that the significant impact primarily stems from donation and voluntary/community service. Specifically, service-learning alumni are statistically more likely to donate to charities (Column 2) and be involved in voluntary/community service to help those in need (Column 3) compared to non-service-learning alumni, at 8.6% and 14.2%, respectively. However, there is no statistically significant difference in their likelihood to be engaged in other activities for the betterment of the local and global community (Column 4).

Regardless of the type of civic engagement, the regression results in Panel A consistently show that service involvement during college (*VCS_during*) is a significant predictor of post-college engagement. Specifically, if the alumni were active in service during college, they are anywhere between 2.4% and 31.3% more likely to be civically active after college, while holding other variables constant. The cohort effect, on the other hand, is insignificant across the different specifications. This means that, after accounting for service-learning experience and voluntary/community service activities during college, those who graduated in 2016 under the new degree structure do not statistically differ from those who graduated in 2015 under the old degree structure in terms of their current civic engagement. Lastly, Table 4 separates alumni based on their college service history in Panel B and C. Among those without a history of volunteering (Panel B), service-learning alumni were 14.6% more likely than non-service-learning alumni to

be civically engaged after graduation, primarily in post-graduation voluntary/community service. In contrast, for those without prior volunteering experience (Panel C), the difference in engagement was insignificant overall, though there was some variation in donation rates.

Discussion

Generally, there is broad consensus that service-learning yields beneficial outcomes when implemented effectively. However, making service-learning a mandatory academic requirement is almost universally controversial (Chan et al., 2019a). The current discourse largely reflects two opposing views, and previous research findings remain inconclusive, leaving the debate unresolved. Furthermore, the mixed results are often masked by underlying limitations in existing studies, including challenges in identifying a comparable control group, examining participants from service-learning programs that may differ in quality and structure, and measuring students at various time points and hence obtaining different outcomes (Henderson et al., 2019). Further inquiry into this topic is needed, and the findings from this paper shed new light on the impact of mandatory service-learning on civic engagement in the longer-term.

Unlike most existing studies, this paper takes advantage of an educational reform – specifically, a curriculum change – that allows for a unique analysis across two comparable groups except that one group was subject to a service-learning requirement and the other not. This setting helps mitigate the effects of selection bias and confounding factors in our results. Additionally, the reform allows us to evaluate whether mandating service-learning could achieve one of its goals: increasing civic engagement among those who are unlikely to participate without such a requirement. Specifically, we used alumni participation in community service during college as a proxy for their inclination to engage in service, examining whether the outcomes of service-learning in civic engagement post-graduation differ between those who were inclined and those who were not. Lastly, we surveyed students two years after their graduation and therefore focused on their civic actions in terms of donating and volunteering rather than attitudinal changes.

Our findings challenge some of the results in existing papers (Jones & Hill, 2003; Stukas et al., 1999; Warburton & Smith, 2003), revealing that the strongest impact on civic engagement, particularly in terms of voluntary/community service activities, are observed among mandatory service-learning alumni who were not initially inclined to participate in community service during college. Furthermore, for those already predisposed to service, we found that on average they were more civically active, and their current civic engagement did not decrease as a result of the mandatory service-learning. The overall positive impact of service-learning is consistent with what previous long-term studies found (Moely & Ilustre, 2019; Tomkovick et al., 2008), albeit their research focus was on features of mandatory service-learning program that are conducive for success.

Additionally, the literature on the relationship between past volunteering and future volunteering suggests that prior experiences significantly influence individuals' likelihood to engage in future civic activities (Astin et al., 1999; Brudney & Gazley, 2006; Hart et al., 2007; Janoski et al., 1998; Perry & Katula, 2001). Our findings reaffirm this

notion, showing previous volunteering experiences as a consistent variable that predicts future engagement in civic activities. This is particularly encouraging, as it implies that if mandatory service-learning can successfully propel those who were not initially inclined to service, then it may lead to long-lasting commitments to civic engagement.

Lastly, it is important to keep in mind that service-learning is a double-edged sword (Jones et al., 2008) and the potential benefits of making it a requirement are contingent upon the quality of the student's experience, as many before us have cautioned (Dienhart et al., 2016; McLellan & Youniss, 2003). Furthermore, even with program designed with best practices and structured support, civic learning is not automatic (Lin et al., 2024). Educators who are interested in employing service-learning as a civic pedagogy must give careful consideration to how academic service-learning should be structured within their unique institutional context where civic learning itself manifests in different forms. However, despite the challenges in defining civic outcomes due to contextual factors (Schnaubelt et al., 2023), service-learning can be enhanced when those involved in teaching and learning establish clear civic goals as learning objectives, create pedagogical approaches that facilitate this learning, evaluate the degree to which these learning outcomes are met, and critically review and refine courses to ensure they align with the intended concepts of civic learning (Bringle & Clayton, 2021).

Limitations and delimitations

The current study is not without limitations. We are also subject to the critique faced by most existing studies on the topic that the analysis is based on self-reported data and that biases may exist that threaten the validity of our results, such as representativeness of the respondents of the intended population and whether the survey instruments are subject to social desirability bias. However, the surveys in this study were conducted on an entirely voluntary basis, and the alumni were invited to respond via paper form using self-addressed prepaid envelopes or electronically via a unique token with his or her anonymity kept in strict confidence. Furthermore, we believe that any systematic differences in the interpretation of the same set of questions between the two cohorts of alumni are quite unlikely in our context.

Some may also argue that this is a study conducted in just one university and therefore renders our findings limited in its generalizability. Nonetheless, we provide new evidence on the impact of mandatory service-learning. Furthermore, unlike multi-institutional studies comparing students from very different backgrounds and service-learning programs (e.g., Haski-Leventhal et al., 2010), the definition and requirements of mandatory service-learning are consistent across students in this study, which allows us to attribute the impact to service-learning itself rather than variations in how the program is structured. Additionally, even though these two cohorts of students were not randomly assigned to take a service-learning subject in our case, the comparison is still valid. First of all, the two groups of subjects came from similar socioeconomic backgrounds with comparable motivation and abilities as they were admitted to the same university. Secondly, they had comparable undergraduate experiences in the sense that they were taught by the same faculty under similar external environments. Lastly, we utilized information on the key confounding factor in our context to isolate the key self-selection variable that is known to correlate with future civic engagement.

Conclusion

This study examines the longer-term impact of mandatory academic service-learning on post-graduation civic engagement. By leveraging a curriculum reform, we address some limitations of existing studies and find that making service-learning mandatory did not reduce willingness to engage in future service among those who were already predisposed; in fact, the most significant impact was on those without a prior service history. As argued in Chan et al. (2019a), making service-learning compulsory can yield benefits for students who would not have voluntarily enrolled in such an experiential learning opportunity. Our findings further reinforce the potential of service-learning as a catalyst to promote civic outcomes among students who may otherwise miss out on this high-impact experience.

Future research on this topic could further explore several areas. For the measurement of civic engagement, having a more detailed list of civic actions and their intensity, rather than a coarse binary indicator, would provide a richer understanding of graduates' levels of civic involvement. More longitudinal studies are also needed to examine the life cycle of the program effects. Researchers should also investigate which pedagogical features of a service-learning program are most conducive for developing students' civic learning capacity and sustaining positive outcomes, since the literature is increasingly coming to a consensus that it is not whether or not the service-learning experience is mandated or not, but rather how it is structured and institutionalized (Hollis, 2002; Ngai et al., 2018; Ti et al., 2021).

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