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# Does Liberal Education Produce Engaged Citizens? The Relationship Between Curricular Breadth, Depth, and Democratic Outcomes

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# Does Liberal Education Produce Engaged Citizens?
# The Relationship Between Curricular Breadth, Depth, and Democratic Outcomes

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## ABSTRACT

Liberal education is often touted as an ideal format for preparing students for civic engagement, yet this claim is seldom empirically tested. In this study, we quantify the relationship between college students' liberal education, measured by the breadth and depth of their curriculum, and markers of civic engagement in four domains: participating in civic life, acting politically, being informed, and possessing democratic virtues. We use transcript data from over 200,000 students at seven postsecondary systems merged with career history data and, for a subsample of graduates, survey data collected a decade after graduation. We find that students whose curriculum includes a broader array of liberal arts subjects are more likely to enter public service after graduation, which is an important indicator of graduates' commitment to the public good. This is particularly true for students who take additional subjects in or major in the natural sciences. Those with a broader curriculum are also more likely to report interacting with people from different backgrounds. There is no association between curricular breadth and all other measures of civic engagement. We also find a small but negative relationship between depth of study and pluralistic orientation, suggesting that breadth and depth can work at cross-purposes in engendering liberal learning outcomes. However, both breadth and depth are eclipsed by the impact of students' major on civic outcomes.

Keywords: liberal education; college curriculum; democratic engagement; civic engagement; public service

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Email: aflaster@umich.edu (corresponding author), bradyj@umich.edu, wcbyrd@umich.edu, rancourt@umich.edu, kstange@umich.edu, and yyang46@nd.edu. This work uses career history data provided by, and in collaboration with, the Burning Glass Institute. We are extremely grateful for the Institute's partnership in this work. We also received helpful comments and suggestions from participants at numerous conferences and seminars. Financial support was provided by the Spencer Foundation (#202300276). The views expressed are our own and do not necessarily reflect the views of the Spencer Foundation or the Burning Glass Institute. These analyses rely on restricted-access administrative, survey, and transcript data from the College and Beyond II (CBII) study, available to qualified researchers through ICPSR under a restricted data use agreement. Information about how to access the data is available here: https://www.icpsr.umich.edu/sites/icpsr/view/collections/1900. The study also uses career history resume data under a data use agreement with the Burning Glass Institute. Researchers should contact the Burning Glass Institute for access.

## I. Introduction

Civic and social organization involvement is declining, trust in institutions is eroding, and political polarization is on the rise. These trends have prompted new calls for colleges and universities to recommit to their mission of educating students for citizenship (Daniels et al., 2021; Hoffman et al., 2018; Reich, 2019). In the U.S., liberal education has historically been viewed as an ideal format for preparing students for life in a democratic society, making the production of "wise citizens" *the* overarching aim of liberal education (King et al., 2007; Rothblatt, 2003). In the face of rising authoritarianism both domestically and abroad, some even claim that liberal education may be key to the *preservation of democracy itself*. For example, the president of the American Association of Colleges and Universities (AAC&U), Lynn Pasquerella, argues that "a liberal education offers the best means of ensuring the sustained engagement of a free people who are united in their quest to preserve the democratic principles of justice, liberty, human dignity, and the equality of all people" (2020, para 2). That is a strong claim. But even those with more temperate takes have argued that the state of American civic discourse would be improved if more people received a liberal education (Marks, 2021).

The term "liberal education" derives from the classical idea that an education marked by critical inquiry and the pursuit of knowledge for knowledge's sake *liberates the mind* from narrow thinking, unexamined prejudices, and ignorance (Hoerner, 1970). In its modern implementation, liberal education is also intended to develop learners' ability to appreciate and make connections across various domains (e.g., the arts, science, literature) and with other people, particularly those from different cultural backgrounds and perspectives (AAC&U, 2011; Roth, 2014).

Despite liberal education's stated importance for developing engaged and thoughtful citizens, however, relatively little empirical evidence exists about the relationship between the scope of undergraduates' exposure to liberal education and their levels of civic engagement after graduation. In this paper, we provide much-needed empirical evidence about the relationship between an important facet of a liberal education—students' breadth and depth of study—and their levels of civic engagement during adulthood. To do so we use large-scale transcript data and connect it to multiple measures of students' civic engagement years after they leave college. We take advantage of the richness of administrative and survey data from the College and Beyond II study, merged with career history data from the Burning Glass Institute (BGI).

Using this rich, longitudinal data from a diverse set of public institutions in the U.S., we find mixed support for the assertion that a liberal education marked by breadth and depth of study is uniquely suited to producing civically engaged graduates. Students who take a broader curriculum across liberal arts subjects are more likely to work in public service after graduation, a marker of civic and societal contribution. However, as we detail below, curricular breadth and depth's association with other measures of civic engagement is underwhelming and inconsistent. Ultimately, we find that a student's chosen major is a stronger predictor of their long-term civic engagement than their curricular breadth or depth, contributing to the growing body of research that points to the (de)politicizing nature of certain fields of study (Cech & Sherick, 2015; Goldstein & Kolerman-Shemer, 2025).

## II. Framework

### A. Defining Liberal Education

Any attempt to measure the impact of a liberal education immediately faces a challenging question: How do we know if a student has received one? Numerous books have been written about the idea of liberal education, its contested nature, and how it has transformed over time and place, making it difficult to point to a singular definition and measurement strategy.[1] We draw from a definition of liberal education that is promoted by AAC&U, which, as a membership of colleges and universities devoted to the advancement of liberal education, has put a great deal of effort into characterizing how liberal education should be practiced. They describe liberal education as:

> an approach to college learning that seeks to empower individuals and prepare them to deal with complexity, diversity, and change. This approach emphasizes *broad knowledge of the wider world* (e.g., science, culture, and society) as well as *in-depth achievement in at least one specific field of study* (AAC&U, 2011, p. 3, emphasis added)

In particular, breadth of study across the humanities, physical sciences, and social sciences (i.e., the liberal arts) is widely viewed as a fundamental characteristic of liberal education, one that differentiates it from more utilitarian and vocationally-oriented courses of study (Detweiler, 2021; Godwin, 2015; Gutmann, 2015; Jones & Hearn, 2018; Zemsky, 1989). Other qualities of liberal education that have been proposed include engagement with big questions, an integrative

[1] See, for example, Kimball (1986) and Orrill (1997).

approach that connects classroom study with the larger world, the cultivation of a sense of social responsibility and global citizenship, and being part of a learning community (AAC&U, 2011; Detweiler, 2021; Gutmann, 2015).

Although the modern concept of an ideal liberal education may include all of the aforementioned qualities, in reality, most students' exposure to a liberal education in the U.S. is more limited in scope. Brady et al. (2026) note that the majority of bachelors seeking students in the U.S. attend large public universities, where, for various historical and structural reasons, breadth of study largely occurs through meeting distribution requirements that induce students to take a variety of introductory courses across liberal arts disciplines. This approach is motivated by the assumption that taking discrete courses across disciplines is "significantly formative in and of itself and that the distribution requirement will provide the associated gains desired in students" (Bourke et al., 2009, p.220). Depth of learning largely occurs by meeting major requirements and pursuing advanced coursework in a focal area of study. Other components of an ideal liberal education such as being part of a learning community, engaging in integrative learning experiences, and practicing global citizenship are available at large public institutions, but they are unevenly accessible and often viewed as optional. As a result, Brady et al. conclude that "[c]urricular breadth and depth, which are required of all students, often become the only components of liberal education that students are guaranteed to receive" (2026, p. 5).

### B. Defining Civic Engagement

As with liberal education, civic engagement has no one universally applied definition. When educational leaders and thinkers talk about the ways civil society is strengthened from a liberal education, they discuss educational outcomes such as a sense of social responsibility (AAC&U, 2011), the ability to collaborate on and debate about public issues (Lewis, 2018), and respect for others who are different (Nussbaum, 2024). This suggests that civic engagement cannot be reflected in one single action, such as voting; rather, it is a multi-faceted construct that includes a range of values, beliefs, and actions that span both political and non-political spheres. Helpfully, an expert working group from the Carnegie Corporation and the Center for Information and Research on Civic Learning and Engagement (CIRCLE) (2003) has grouped these multiple values, beliefs, and actions into four broad qualities: participating in civic life, acting politically, being informed about issues, and possessing democratic virtues. Below we describe each facet of engagement, provide examples of how they are practiced, and connect

each of them to particular ideas about how liberal education develops students into "wise citizens." This framework is summarized in Table 1 and structures our empirical work.

*Participating in civic life* means being part of groups that serve the public good and that collaborate on solving social challenges (Carnegie Corporation & CIRCLE, 2003). These groups can represent a range of cultural, social, political, and religious interests, from volunteer associations like the local parent-teacher association (PTA) to religious organizations (Putnam, 2000). Being part of groups that serve the public good can also include working in service roles and sectors (e.g., health, education, and social work), which attract individuals motivated by a sense of civic duty and compassion (Perry et al., 2010). Liberal education is hypothesized to educate students for social responsibility by exposing them to real-world challenges and a broad range of perspectives and subjects, thereby expanding their worldviews and sense of altruism (AAC&U, 2020; Carnevale et al., 2020; Detweiler, 2021).

People who *act politically* work through the political system to accomplish public aims, a critical feature of representative democracy (Carnegie Corporation & CIRCLE, 2003). Relevant activities include voting, canvassing, protesting, public speaking, and petitioning. Liberal education is hypothesized to educate students for political participation by providing them with knowledge of how the political system works and the skills needed to work within it (Astin, 1997). While some argue that this knowledge is best conveyed through courses in political science or civics (Hillygus, 2005), others argue that educational experiences that teach people how to be a member of a polity—to persuade and engage in civil debate with peers—lead to effective democratic participation (Glaeser et al., 2007). If this is so, then a range of courses in the liberal arts, but especially the humanities, would be excellent preparation for political participation.

Civic engagement also requires *being informed*, which is awareness and understanding of public issues, with the capacity to think critically and resist simplistic answers (Carnegie Corporation & CIRCLE, 2003). Activities that contribute to being informed include keeping up to date on current events, learning about public affairs, and following and discussing politics (Galston, 2001). However, it is not enough to simply acquire information to be a truly informed citizen—one must evaluate this information critically and be open to perspectives that disconfirm existing beliefs. A truly liberal education will educate for critical thinking by instilling an ability

to seek out new knowledge, reason through it, and come to one's own conclusions (AAC&U, 2020; Roth, 2014).

Finally, *democratic virtues* are those principles that, when widely held, serve as the bedrock of a healthy democracy. These include concern for others' rights, tolerance of differences, and respect for democratic institutions and processes (Carnegie Corporation & CIRCLE, 2003). One of the key ways liberal education is believed to develop graduates' democratic virtues is by educating them to be active participants in a diverse democracy through exposure to intercultural knowledge and global perspectives (AAC&U, 2020).

Having established the qualities of a civically engaged person, we now turn to reviewing existing evidence on liberal education's role in producing college graduates who participate in civic life, act politically, are informed, and possess democratic virtues well after leaving college.

## III. Relevant Literature

Political scientists have long sought to understand what makes some people more civically engaged than others. One of the most consistent findings in this research is that people who attend college have higher levels of engagement than people who do not (Flanagan et al., 2009). Quasi-experimental studies strongly suggest that the relationship between education and civic engagement is at least partly causal. For instance, using proximity to community colleges and changes in child labor laws as instrumental variables, Dee (2004) estimates that each year of additional formal education causes voter turnout to increase almost 7 percentage points and also has positive, direct effects on individuals' support for free speech.

More recently, scholars have turned their attention to understanding differences in civic engagement among the college-educated. Institutional differences in infrastructure could be one reason for this variation, with residential colleges providing more extensive civic engagement opportunities through programming and resources than commuter colleges (Evans et al., 2019). Bell et al. (2024) find substantive differences in voting rates across students who attended U.S. colleges and universities using national data: graduates of selective institutions, liberal arts colleges, research universities, and colleges with higher Black enrollments vote at the highest rates, suggesting institutional climates or peer effects may influence students' civic orientations.

Data from the *National Study of Learning, Voting, and Engagement* shows that there are meaningful differences in voting rates by major as well: education, library sciences, and social sciences have the highest voting rates, and business, engineering, and technical fields the lowest

(Thomas et al., 2021). Whether such differences in political behavior are due to the influence of the major itself or due to the type of people who select into majors was considered by Goldstein and Kolerman-Shemer (2025). Using longitudinal data, they find that choosing to major in the humanities, social sciences, or the arts *increases* the likelihood a student will identify as a liberal or support liberal policies, in comparison to choosing to major in business or economics. Similarly, work by Cech (2013, 2014) and Cech and Sherick (2015) suggests that engineering programs have a *depoliticizing* effect on students, meaning that as students progress through the engineering programs, they increasingly view social and political issues as outside the scope of their concern. Both of these studies suggest majors can affect students' political or civic orientation, either through the socializing effects of peers and faculty or the nature of the field's content and epistemic stance. Exploiting random variation in when instructors teach courses, Baum, Endara, and Paulson (2026) conclude that socialization is not the main driver of change in students' political leanings; they find faculty members' political orientation has no impact on students' identification and the impact of peers is present, but small. Whether these results apply to civic engagement, rather than political ideology, is unclear.

Research on curricula suggests that the nature of students' courses can shape their civic behaviors and attitudes. However, this work has looked at very specific types of curricular content rather than liberal education more broadly. For instance, Hillygus (2005) and Perrin and Gillis (2019) conclude that taking coursework in the social sciences and arts and humanities is positively associated with voting and other political behaviors shortly after graduation. Meanwhile, several studies find a negative relationship between taking courses in math and engineering and students' openness to diversity during college (Loes et al., 2018; Pascarella et al., 1996; Whitt et al., 2001).

Other evidence suggests that college curricula alter students' attitudes about policy issues, democracy, and life goals more broadly. Fernandez (2025) finds a positive relationship between the number of science courses an individual takes in college and their level of concern and knowledge about climate science. Similar effects are observed at the secondary level. For instance, evidence suggests that the roll-out of a high school political science curriculum reform in China led students to be more skeptical about free markets and view their political institutions as being more democratic (Cantoni et al., 2017); this curriculum reform also increased the

likelihood of joining the Communist Party and working in a state-sector job after college graduation (Li et al., 2025).

Another set of studies have looked at experiences that are adjacent to liberal education or that measure liberal education in indirect ways. A substantial body of work on high-impact practices (e.g., service learning, study abroad), exposure to good teaching (e.g., challenging assignments, plentiful interactions with faculty), and diversity experiences (e.g., diversity-related courses and workshops) indicates that participation in these activities is related to gains in students' civic attitudes and behaviors (Bowman, 2011; Bowman et al., 2023; Howe & Fosnacht, 2017; Myers et al., 2019). Related to democratic virtues, Carnevale et al. (2020) conducted a cross-national study on citizens' support for authoritarianism and found a negative relationship between support for authoritarianism and receiving a college education. The negative relationship was strongest in the U.S., which Carnevale et al. attribute to the uniquely American practice of requiring undergraduates to take general education courses across liberal arts subjects.

We are aware of two studies that have directly examined the relationship between liberal education and civic engagement. Using College and Beyond II survey data, Mou and Mitic (2026) conceptualized liberal education as a holistic educational model and operationalized it using various indicators of high impact practices and the educational environment. Among these various factors, they find that only students' sense of belonging during college (retrospectively measured) and participation in student government, service learning, diversity experiences, and study abroad predict students' political engagement 10 years after college. However, they did not examine the curricular aspects of students' experiences.

Detweiler (2021) is the only study we are aware of that specifically set out to measure the relationship between the curricular component of liberal education and civic engagement. He concluded that the content of students' liberal arts educations, as characterized retrospectively by college graduates, is not associated with their likelihood of voting or volunteering. However, he measured the content of a liberal education by asking interviewees who were up to 65 years old to recall rather abstract features of their college education (one example: "*Did you take many courses in the humanities?*"), making the validity of his measures uncertain.

In sum, existing literature strongly suggests that there is variation among college graduates in their levels of civic engagement, and that what students experience during college through exposure to their major, coursework, and extramural experiences is at least partly

responsible for causing this variation. However, as noted by Bowman et al. (2023), efforts to measure the long-term impact of college experiences on outcomes related to the public good remain distressingly rare. Specifically, no one has yet examined the connection between breadth and depth of coursetaking—a key component of liberal education as practiced in almost all U.S. universities—and college graduates' democratic outcomes. To help address this gap, we take a comprehensive look at civic engagement outcomes across the dimensions of participating in civic life, acting politically, being informed, and possessing democratic virtues for college graduates when they are well into adulthood. We focus our analysis on breadth and depth of study by examining student coursetaking across their entire degree pathway using high-quality transcript data. This approach has been adopted previously to quantify exposure to liberal education at diverse public institutions in the U.S. (Brady et al., 2026).

## IV. Data Sources, Samples, and Measures

Our analysis is based on merged administrative, transcript, and job history data on a large number of college graduates from seven diverse public postsecondary systems. Students are matched to job history data that is scraped, standardized, and deduplicated from various online platforms by the Burning Glass Institute. Rich survey data on a broader set of outcomes were collected for a subsample of these graduates approximately 11 years after graduation, permitting us to measure democratic outcomes well into adulthood. We describe each of these data sources and their corresponding measures in detail below.

### A. Administrative Sample and Measures

Our target population is the 725,297 students who graduated from 21 four-year institutions in seven postsecondary systems between 2004 and 2021, collected as part of the College and Beyond II study (Courant et al., 2021).[2] The study's administrative data includes students' admissions information, demographics, major, degree, and course-taking records. Column A of Table 2 summarizes the full CBII sample. Given the range of institution types (size, geography, selectivity), the full CBII sample is roughly representative of four-year college graduates from public institutions nationally, albeit with a slightly higher share of students that

[2] The institutions include Georgia College and State University, Indiana University, Truman State University, University of California at Irvine, University of Houston, University of Michigan (Ann Arbor), and all the four-year institutions in the City University of New York (CUNY) system.

are underrepresented minority students and in business and other professional majors than seen in 2007-2008 from the Baccalaureate and Beyond (B&B) study (Bell et al. 2022).

*Curricular Breadth*. Breadth of learning across the arts and sciences is one of liberal education's most heralded components, and also what differentiates it from a strictly professional or specialized education (Gutmann, 2015; Jones & Hearn, 2018; Rothblatt, 2003; Zemsky, 1989). We measure students' *curricular breadth* by counting the number of distinct subjects students take in the humanities, social sciences, and natural sciences (the liberal arts) across their entire undergraduate transcript, and then removing any duplicate subjects while retaining the first occurrence on their transcript. Courses in professional (non-liberal arts) fields such as engineering and business do not count towards this measure. That means a student whose transcript contained one biology, two philosophy, one economics, one business, and three sociology courses would have a breadth measure of four. This method aligns with the convention of Zemsky (1989) and Pitt et al. (2017) and is discussed more fully in Brady et al. (2026).

We use 4-digit College Course Map (CCM) codes to measure course subjects, which roughly correspond to academic disciplines (e.g., Chemistry, Economics).[3] A nice feature of CCM codes is that they are assigned based on course titles, rather than the department offering the course, so they reflect course content rather than institutional structure. One CBII system is missing CCM information, so for its graduates we instead impute CCM codes using Classification of Instructional Programs (CIP) codes at the four-digit level. Results are very similar if we exclude this one system from our analysis.

For robustness, we also calculate measures of domain-specific breadth, i.e., each student's number of unique 4-digit CCM codes taken within each domain (natural sciences, social sciences, and humanities). These three measures allow us to better understand if broad exposure to subjects in a particular domain is especially responsible for any effect on civic engagement outcomes, as similar effects have been found by previous authors (Hillygus, 2005; Loes et al., 2018; Pascarella et al., 1996; Perrin & Gillis, 2019; Whitt et al., 2001).

[3] CCM and CIP codes are used by the U.S. Department of Education to characterize the content of college courses and the programs that offer them, respectively, in a way that is standardized across institutions and over time. They are hierarchical 6-digit codes that follow a similar pattern: the first two digits define a broad discipline (e.g., 14, Engineering), the third and fourth digits define a subject within that discipline (e.g., 14.08, Civil Engineering), and the fifth and sixth digits define a topic within that subject (e.g., 14.0803, Structural Engineering). Given that the CCM taxonomy shares the same structural framework as the CIP (Bryan & Simone, 2012), this alignment ensures consistency when we utilize CIP to impute missing CCM codes.

*Curricular Depth*. As noted previously, contemporary models of liberal education require in-depth achievement in at least one field of study, although not necessarily in a liberal arts field (AAC&U, 2011). At large public universities, this depth of study largely comes through advanced coursetaking in majors or other areas of topical specialization. Therefore, we measure *curricular depth* as the maximum number of upper-division courses a student takes within the same focal area using 2-digit CIP codes. We classify a course as upper-division if junior and senior students comprise more than 50% of its total enrollment, calculate the number of upper-division courses a student has taken under each 2-digit CIP code that appears in their transcript, and take the maximum. This measure is similar in spirit to prior work that has measured depth of study as the number of courses in the major or related majors (Orona et al., 2023; Seah et al., 2020); those with prerequisites (Zemsky, 1989); or by some notion of content similarity (Paulson, 2022; Goldhaber et al., 2015), but better reflects students' actual academic concentration, as many pursue substantial depth in disciplines related to but not formally declared as their major.

*Field of study.* The CBII data includes the CIP code for the field of study in which students were awarded a bachelor's degree. Using this CIP code, we aggregate students' majors into nine fields of study following the American Academy of Arts and Sciences' categorization: Business & Management, Education, Engineering, Fine and Performing Arts, Health, Humanities, Natural Sciences, Social Sciences, and Others. Appendix Table A1 reports the mapping between 4-digit CIP codes and these aggregate major categories. By merging the CBII student data file and term data file, we also extract each student's declared major(s) at the end of each term and construct a dummy variable to indicate whether students declared more than one major during undergraduate studies. In robustness checks, we replace the aggregate field-of-study controls with the 2-digit or 4-digit CIP code of the bachelor's degree field to introduce a more fine-grained measure of students' majors.

*Background*. We categorize race and ethnicity into Asian; Hispanic; Black; American Indian, Alaskan, Hawaiian, and Pacific Islander; multi-racial and unknown; White; and Nonresident. We recognize that these categories are not as nuanced as is ideal. They largely reflect the way race and ethnicity were measured by the institutions that provided data to the CBII study. Additionally, in the CBII data, sex is a categorical variable that only takes two values: male or female. Based on students' zip code when they enter college, we include a large

number of neighborhood characteristics, including racial diversity, racial composition, education level (three categories), income level (four categories), and population density.[4]

*Pre-college preparation.* While the CBII data contains admissions information, there is a substantial amount of missing data. We impute the missing values of SAT verbal and math scores, ACT English and math scores, accepted transferred credits, and high school GPA with their global means, and all regression models include indicators for whether these variables were imputed.

Panel A of Table 3 reports our breadth and depth measures overall and across broad majors. On average, students take courses in around 12 different unique subjects (breadth) and take 13 upper-level courses in their major field (depth). There are large differences in breadth and depth across majors: natural science, social science, health, and humanities have the greatest breadth, while engineering, fine arts, business, and health have the greatest depth. There are also differences in the three components of breadth—natural sciences, social sciences, and humanities—across fields. These patterns are documented and explored more thoroughly in Brady et al. (2026).

**B. Career History Sample and Measures**

Choosing a career in public service occupations and sectors (e.g., health, education, and social work) is a key way that college graduates can serve the public good. To obtain data on career histories, we matched career data obtained from the Burning Glass Institute to the CBII population. This data was scraped, standardized, and deduplicated from various online platforms by the Burning Glass Institute. The data includes occupation, job title, start and end date, and employer information (industry, sector, size, location) for every job spell listed in a profile. Records were merged based on name (cleaned first and last), college, year of graduation, and sex. Major codes were used for ties. Overall, we matched 238,000 (33%) of CBII bachelors degree holders to career profiles using both exact (21.6%) and fuzzy (11.2%) procedures. Match rates are higher for some systems, more recent cohorts, men, and certain fields (engineering,

[4] We match students' permanent zip code during college with the ZIP Code Tabulation Area in the National Neighborhood Data Archive (NaNDA) dataset (Melendez et al., 2020). NaNDA contains data derived from the U.S. Census on the average proportion of people in each ZIP Code with income in the past 12 months below the poverty level from 2008 to 2012 and from 2013 to 2017. Because the CBII data spans 2000 to 2021, we take the average of these two periods.

business, computer science). Panel B of Table 2 summarizes the matched career history sample. The matched sample is very similar to the full sample of all CBII graduates.[5]

Our primary outcome for the Career History sample is whether the student worked in public service five and ten years after graduation. We measure public service in two ways: first, as indicated by working for a non-profit, governmental, or educational agency, and second, by working in a public service occupation (teacher, health provider, public safety professional, etc).[6] We also examine whether a job fulfills both of these requirements. We construct these measures for each year following graduation, beginning with the first full calendar year after graduation. We also construct indicators for whether the person had any job spells that included each year after graduation. Not reporting a job spell during a year may or may not reflect a period of non-employment. In most analyses, we report public service employment conditional on having any job in the career history data in a given year.[7] Measured either way, this share hovers around 20% for the first ten years post graduation, before declining gradually.

Panel B of Table 3 reports these job outcome measures overall and across broad majors. There are large (mostly expected) differences in public sector employment across majors: health and education majors have the highest rates, while business majors have the lowest. Notably, public service employment is not exclusive to nor uniform in certain majors. For brevity we focus on public service sector employment measured ten years after graduation—aligning with the requirement for the Federal Public Service Loan Forgiveness (PSLF) program. Results for other public service outcomes measured at different time periods are similar and reported for robustness.[8]

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[5] See Leasor and Stange (2025) for more details on the matching process. Appendix Table A2 provides formal tests of differences in characteristics between the overall and matched career history samples. We report the coefficient on a dummy for being included in the Career History sample in a regression of the characteristics on the dummy with system-cohort fixed effects, clustered at the system-cohort level. While most differences are statistically significant, they are small substantively. Statistical significance mostly reflects the very large sample size.

[6] Specifically, we include Standard Occupational Classification (SOC) codes 21-0000 (Community and Social Service Occupations), 25-0000 (Educational Instruction and Library Occupations), 29-0000 (Healthcare Practitioners and Technical Occupations), 31-0000 (Healthcare Support Occupations), 33-0000 (Protective Service Occupations), and 39-9010 (Childcare Workers)

[7] Figure A1 shows the share of the career history sample that reports a job in each year since graduation. The share declines from around 80% immediately after graduation to about half by the end of the sample. Figure A2 reports the share working in public service, among those reporting any job.

[8] Note that ten-year outcomes are only available for cohorts that graduated prior to 2015; sample size is reduced accordingly.

### C. Survey Sample and Measures

For a random sample of around 2,800 respondents who graduated during the 2009-2010 academic year from seven CBII institutions, a rich set of outcomes was collected in 2021 (approximately 11 years post graduation). Surveys were sent to a sample of 15,000 CBII graduates, and valid responses were received from 2,801, representing a 19% response rate (Courant et al., 2021). We use the subsample of 2,751 survey respondents who also merge with the administrative data. The survey measures outcomes in many domains: health and well-being, economic success and labor market participation, civic engagement, and beliefs about diversity. The survey also asks retrospective information about respondents' background and experiences before and during college. The survey generally included indices, scales, and questions that were used and validated in prior work in many fields to facilitate comparability.

For the survey sample, we derive several measures related to democratic and civic engagement. We also use retrospective information on family background (self-identified family social class and highest parental education), high school grades and course-taking, and college course-taking and GPA as controls. Following the framework we propose in Table 1, we operationalize civic engagement into the following components using variables in the survey. The exact survey questions and the details of the outcome variables are reported in Appendix B.

*Participate in Civic Life*. In addition to public service employment, participation in civic life includes voluntary activities aimed at helping others, promoting the public good, or solving community problems (Zukin et al., 2006). Following this tradition, we construct a community engagement index by averaging respondents' reported participation in contributing to the community with others, volunteering in an organization, and donating to non-political groups during the past 12 months. The index ranges from 0 to 1, with higher values indicating greater community engagement.

*Act Politically*. We define four outcome variables capturing political engagement to influence public officials' decisions, indicating political affiliation and interest in engaging in political affairs, following Zukin et al. (2006) and Brady, Verba, and Schlozman (1995). The first three outcomes express political donations, public opinion, and voter turnout; these outcomes are measured using a binary indicator equal to 1 if the respondent engaged in the corresponding activity during the previous 12 months. The fourth outcome, campaign involvement, is an index constructed as the average of three binary indicators of whether the respondent worked as a

canvasser, displayed a campaign sign, or participated in a demonstration; this index ranges from 0 to 1, with higher values indicating greater campaign-related participation.

*Be Informed*. Paying attention to issues and seeking to understand people who hold different perspectives is an important dimension of civic engagement (Barrett & Brunton-Smith, 2014). We construct an information-seeking index by averaging respondents' reported frequency of discussing politics with friends, family, and people they (dis)agree with, and a reverse-coded measure of political disengagement during the past month; this index ranges from 1 to 5, with higher values indicating more frequent information seeking.

*Possess Democratic Virtues*. Living in a diverse democracy requires citizens to be tolerant of differences. We first measure democratic virtues as respondents' pluralistic orientation, a willingness to engage in experiences and to consider ideas that challenge one's current beliefs and assumptions (Bowman, 2014); in other words, "[one's] ability to work effectively with others of diverse backgrounds, being open to new ideas and different perspectives, and being empathetic with other perspectives" (Denson & Ing, 2014, p. 511). The pluralistic orientation index is adapted from the Pluralistic Orientation Scale of Engberg and Hurtado (2011). It is constructed as the average of respondents' self-ratings on five items on a five-point scale, capturing respondents' self-assessed ability to see multiple perspectives, work cooperatively with diverse people, discuss controversial issues, and be open to challenges and different beliefs. Second, we include a behavioral measure of engagement across groups, with an indeed for the frequency with which respondents have spoken with people from different backgrounds in the past 12 months (seven point scale). Finally, we measure whether the respondent moved to a racially diverse community after graduation, both in absolute level and relative to their area prior to college.[9] We see it as one indicator of post-college residential sorting into more integrated neighborhoods, while recognizing that such moves may be driven by other spatial and social factors, such as labor-market opportunities and housing constraints (Crowder et al., 2012).

[9] We measure whether respondents moved to a more racially diverse neighborhood after graduation by comparing the racial/ethnic diversity of their permanent ZIP code during college with that of their current ZIP code using data from the National Neighborhood Data Archive (NaNDA) Socioeconomic Status and Demographic Characteristics, 2008-2012 and 2013-2017 (Melendez et al., 2020), provided as part of the CBII study. We calculated ZIP code racial/ethnic diversity using the generalized variance (GV) index, defined as one minus the sum of squared population shares across four racial/ethnic groups (Hispanic, non-Hispanic White, non-Hispanic Black, and Other) (Budescu & Budescu, 2012). Higher GV index values indicate greater diversity in the ZIP code.

Panel C of Table 2 summarizes the characteristics of the survey sample. The survey sample is very similar to the full sample of all CBII graduates, albeit with more humanities and natural science majors, fewer business majors, and no international students (by design).[10] Panel C of Table 3 reports these survey outcome measures overall and across broad majors. There are only small differences in these outcomes across majors: natural science majors tend to have low levels of civic participation, but are average in other survey measures.

## V. Methods

Our selection-on-observables approach compares students who graduated from the same major and college and who shared similar demographic and academic background characteristics, yet had different levels of curricular breadth and depth. Specifically, we estimate multiple regression models of the form:

$$Y_{ijtm} = \beta_0 + \beta_1 Breadth_{ijtm} + \beta_2 Depth_{ijtm} + \beta_x X_i + \theta_m + \delta_{jt} + \varepsilon_{ijtm} \quad (1)$$

where $Y_{ijtm}$ is the outcome for individual $i$ who graduated from system $j$ in cohort $t$ with major $m$. We include a rich set of student background, demographic, and academic characteristics ($X_i$) to control for selection into more or less course breadth and depth. This control vector differs between our two samples. For the larger career history sample, we include controls derived from the CBII administrative data, including sex, race and ethnicity, total number of courses taken, cumulative GPA, an indicator for double-major, number of transfer credits received, SAT and ACT scores, and high school GPA. We also include a large vector of characteristics of students' permanent zip code, including educational attainment, income, poverty rate, population density, and racial composition and diversity. Admissions information and zip code are missing for a number of these students (including for some entire systems), so we also include indicators for missing this information.

For the smaller survey sample, we additionally have background information solicited on the alumni survey. When looking at survey outcomes, we thus also include controls for students'

[10] Appendix Table A2 provides formal tests of differences in characteristics between the overall and survey samples. We report the coefficient on a dummy for being included in the survey sample in a regression of the characteristics on the dummy with system fixed effects, clustered at the system level. Few differences are statistically or substantively significant.

self-identified social class while growing up (lower, working, middle, upper-middle, wealthy), parents' highest education, high school grades, and number of years studying math, history/government, foreign language, art/music, and science during high school. These latter variables try to capture, imperfectly, students' interest in a wide variety of subjects prior to college course-taking.

In all models, we include system-cohort fixed effects ($\delta_{jt}$) or just system fixed effects (for the single-cohort survey sample). We present results with and without indicators for the broad major field ($\theta_m$) to isolate the role of the major in mediating any association between exposure to a liberal education and our outcomes. In the larger career sample, we show additional models controlling more richly for college majors at the two- and four-digit CIP code level. Finally, to understand how the role of breadth and depth may differ across students' majors, in some models we interact these measures with the nine major categories.

Our main parameters of interest are $\beta_1$ and $\beta_2$, which quantify the association between curricular breadth and depth and civic engagement outcomes. The conditional independence assumption we rely on for a causal interpretation of this association is that these variables are unrelated to the error term ($\varepsilon_{ijtm}$), which captures unmodeled determinants of civic outcomes. This assumption may be violated, for example, if students with an unobserved desire for public service take courses in a wide variety of subjects in preparation for this career or if students who are innately curious about many topics are also more open to diversity in their adult lives. While we cannot rule out these interpretations of the patterns we find, the robustness of our estimates to a large number of important controls does suggest that they are not entirely driven by these selection and omitted variable explanations.

**Limitations**

Before presenting the results, there are several limitations we wish to highlight. First, as discussed in literature above, there are other qualities of liberal education beyond breadth and depth that could be related to civic engagement, such as the way course subjects are taught and the context in which learning occurs (Detweiler, 2021; Bowman et al., 2023; Mou and Mitic, 2026). We were unable to measure these qualities for all students in the sample using the College and Beyond II administrative data. Furthermore, our dataset underrepresents small, residential liberal arts colleges, where students are most likely to receive an "ideal type" of liberal education

characterized by engagement with big questions and integrative learning experiences (Astin, 1999; Pascarella et al., 2013). That said, our results offer valuable insights into the type of liberal education received by the majority of students in the U.S.: the education provided by large public institutions that relies heavily on curricular distribution and major requirements to ensure students have depth and breadth of learning (Brady et al., 2026).

Second, the CBII survey includes many rich measures of civic engagement, but its sample size is small relative to the BGI administrative data. Thus estimates may be underpowered to detect small associations between survey outcomes and curricular breadth and depth. Finally, as with any observational study, we cannot definitively make causal claims about the relationships we document. Though our empirical strategy incorporates a rich set of demographic and academic background characteristics, any associations we document could reflect selection into a more broad or deep curriculum by students who are predisposed to civic engagement. For that reason, we are careful to frame our results as correlational.

## VI. Results

### A. Participate in Civic Life

Our first measure of participation in civic life is whether an individual enters a career in public service. Since we condition our public service outcomes on having a job spell in the year of study, it is important to first show that curricular breadth and depth have minimal association with the likelihood of reporting a job spell 5 and 10 years after graduation. Relative to a base likelihood of having a job spell of 75% (after 5 years) and 65% (after 10 years), there is only a small association with curricular depth and breadth.[11] In other words, any observed associations between curricular breadth and depth and public service employment are likely to be driven by shifts in career choice, rather than differences in overall employment rates.

Table 4 reports detailed results for our main public service outcome: working in the public service sector 10 years after college graduation.[12] We initially focus on rates after 10 years to assess long-term consequences and for brevity, but also report five-year outcomes, for which our student sample is much larger. Column 1 shows that when accounting for cohort-system

[11] Results are reported in Table A3. A change of one standard deviation in breadth (4.9) is associated with less than a percentage point increase in the likelihood of reporting a job spell at 5 years and even less at 10 years. Depth is also only minimally related to the likelihood of reporting a job spell at 5 years and none at 10 years.

[12] While we report models with curricular breadth and depth entered simultaneously, point estimates are very similar if each measure is included by itself.

differences but no other factors, public service entry is positively related to curricular breadth and negatively, though minimally, related to depth. For each additional liberal arts subject a student takes a course in, they are 1.1 percentage points more likely to work in public service ( $\beta = 0.0112,\ p < 0.001$). This pattern is possibly driven by factors that cause students to both enter public service and take a breadth of coursework. However, column 2 shows that controlling for individual-level demographic and academic factors—such as sex, race/ethnicity, college and high school grades, neighborhood characteristics, and admissions test scores—has no impact on this relationship ($\beta = 0.0109,\ p < 0.001$). Individual-level demographic and academic factors *do* predict public service entry: women, students with higher college and high school grades, and racial minority students all enter public service at higher rates, but do not have substantively different levels of curricular breadth and depth than their peers. Though these coefficients are not reported in the table, the increased R-squared value does suggest they are important predictors of public service entry.

The third column includes broad college major field as a control. Relative to humanities majors (the omitted category), education, health, and natural science majors are more likely to enter public service, while business and engineering majors are less likely. The broad major field explains a little more than half of the relationship between breadth and public service. Nonetheless, even within a broad field of study and with rich controls, curricular breadth is still positively related to public service entry, while depth is not. Ten years after graduation, a one-standard deviation increase in breadth (taking courses in 4.9 additional unique liberal arts subjects) is associated with a 2.3 percentage point increase in the likelihood of working in a public service sector ($\beta = 0.0046,\ p < 0.001$). This increase is large relative to the mean rate of 20% of employed alumni working in a public sector job after 10 years. The fourth and fifth columns replace the broad field of study dummies with detailed major codes at a 2- and 4-digit CIP code level. Controlling for detailed major attenuates the coefficients, but the association between breadth and public service remains economically significant. Even in our most stringent specification (Column 5), where the coefficient is marginally significant, the results suggest that 10 years after graduation, a one-standard deviation increase in breadth (4.9 additional subjects) is associated with a 0.59 percentage point increase in the likelihood of working in a public service sector ($\beta = 0.0012,\ p < 0.10$). There is no association between curricular depth and any of the public service outcomes we examine once the field of study is controlled for.

Figure 1 reports the breadth coefficients graphically, using several measures of public service employment 5 or 10 years after college graduation; it demonstrates the robustness across different outcomes measures and the attenuation from including richer controls for college major. These patterns are also robust to various sample restrictions (shown in Table A4), using a five-year outcome window (shown in Table A5) and estimated on the survey sample (Table A6), though the latter are noisy. Effects tend to be slightly larger in magnitude, though more precise, when measured five years after graduation due to the much larger sample size.

Figure 2 demonstrates how the marginal effect of additional breadth on entering public service varies by major. The graph plots the predicted likelihood of working in public service 10 years after graduation by major, separately for those with the minimum vs. maximum amount of curricular breadth in our sample and setting all other covariates at their sample average. These come from a regression model that includes the full controls along with an interaction between breadth and major field. Three patterns are apparent. First, for the majors with the highest baseline level of public service—health and education—additional breadth is not associated with a higher likelihood of public service. Second, students in most other majors—especially natural science, social science, and engineering—enter public service at greater levels if they have experienced greater curricular breadth. Finally, business majors stand out as having a low probability of entering public service, regardless of their levels of curricular breadth. This is not mechanical; students graduating with a business degree could easily put those skills to use in the public or non-profit sectors.

Table 5 disaggregates breadth into its three domain-specific components. Like in Table 4, we mainly focus on our main outcome of working in the public service sector 10 years after graduation, but also report five-year outcomes and outcomes related to occupation. Interestingly, these results suggest that the positive relationship between breadth and working in the public service sector is heavily driven by exposure to natural science subjects (e.g., physics, biology, earth science) and to a much smaller extent, the humanities. Each additional natural science subject a student takes is associated with a 1.1 percentage point increase in the likelihood of working in the public service sector long-term ($\beta = 0.0107,\ p < 0.001$).

In addition to our job-related measure of civic engagement, we also examine self-reported measures of graduates' participation in civic life 10 years after college completion. Figures 3 and 4 show the coefficients for models that regress graduates' self-reported levels of

civic engagement on their levels of curricular breadth and depth, respectively, with and without the inclusion of major fixed effects. The top panels show the results for participating in civic life.[13] It includes both the index we created from survey responses to three questions about working with others to improve the neighborhood or community, volunteering, and donating to non-political organizations and the individual items that comprise the index. Breadth and depth have a statistically insignificant and substantively small association with any of these measures of participation in civic life.

Table 6 reports the regression coefficients on the college major indicators from these same regressions for our index of civic engagement in Column 1. Subsequent columns address political involvement, being informed, and pluralistic orientation, which we discuss in different subsections below. Though there are some differences in civic engagement by major—education majors are more likely to be civically engaged, engineering and natural science majors less likely—these differences are not statistically significant.

**B. Act Politically**

The second panels of Figures 3 and 4 report results for the relationship between breadth (Fig. 3) and depth (Fig. 4) and the survey-based measures of acting politically, measured approximately ten years after graduation.[14] In addition to the three individual measures of political action—voting, contacting public officials, and donating to a campaign—we also construct an index of campaign involvement based on working as a canvasser, wearing a campaign button, and participating in a protest. We present models with and without controls for major field. For both curricular breadth and depth, we find no statistically significant associations with our measures of political activity. The only observable pattern is that nearly all coefficients are negative. Column 2 in Table 6 reports the coefficients on the majors for the index of campaign involvement. We see patterns consistent with prior work (Goldstein & Kolerman-Shemer, 2025; Thomas et al., 2021) that finds that graduates in science, engineering, and business demonstrate lower levels of political involvement than other majors (especially compared to humanities majors, the omitted category).

**C. Be Informed**

We examine survey-based measures of being informed about political and social issues, reporting the coefficients on breadth in the third panel of Figure 3 and depth in the third panel of

[13] Full regression results are reported in Table A7.
[14] Full regression results are reported in Table A8.

Figure 4.[15] With or without major controls, there is very little residual association between curricular breadth or depth and these measures of being informed. This lack of association with breadth and depth is not because there is no variation in these outcomes. Nevertheless, as Column 3 in Table 6 shows, relative to humanities and social science majors, students in business, engineering, health, natural sciences, and education have much lower rates of reading about and discussing politics and social issues.

**D. Possess Democratic Virtues**

Finally, we examine measures of possessing democratic virtues in the bottom panel of Figure 3, including an index of pluralistic orientation, the frequency with which the respondent had talked with or spent time with people from a different racial, ethnic, or cultural background in the past 12 months (on a seven-point scale), a measure of the racial diversity of the neighborhood they currently live in, and a measure of the change in racial diversity from their permanent address prior to college to their current neighborhood.[16] There is no association between curricular breadth and pluralistic orientation once background and academic controls are included, but there is a positive association between breadth and interacting with people from a different racial, ethnic, or cultural background in the past 12 months ($\beta = 0.0256, p < 0.05$). In contrast, greater depth is associated with lower levels of pluralistic orientation ($\beta = -0.0079, p < 0.05$). This pattern is unaffected by controls or the inclusion of major field controls. There is no measurable association between breadth or depth and neighborhood diversity post-college, nor are there substantial differences across major fields. Note that all models control for the racial diversity of respondents' permanent zip code prior to college. Coefficients on major reported for pluralistic orientation in Table 6 and Table A10 suggest—as with most other outcomes—that the biggest difference between students is found across majors, with lower levels of pluralistic orientation among graduates in most fields relative to humanities and social science majors, though some of these differences are insignificant.

## VII. Discussion

Liberal education is assumed to be an ideal format for preparing students for civic engagement, yet this assumption has seldom been empirically tested, much less on a large scale. In this paper, we examined the connection between college students' experience with a liberal

[15] Full regression results are reported in Table A9.
[16] Full regression results are reported in Table A10.

education—measured by students' breadth and depth of course taking—and their overall civic engagement. Below we discuss the evidence our study provides for and against the proposition that an education marked by broad learning across the liberal arts and deep engagement with a topic of study is uniquely suited to developing graduates who are civically engaged. We highlight three overarching conclusions while outlining how our findings relate to previous empirical work.

**There Is a Connection Between Breadth and Public Service**

First, we find that students who take a broader curriculum across liberal arts subjects are more likely to work in public service after graduation, a marker of civic and societal contribution. While major mediates some of this association, the connection remains even within major and after controlling for rich background and academic characteristics. There are two possible, non-mutually exclusive explanations for this association. First, it is possible that a broader curriculum equips students with transferable skills such as critical thinking, complex reasoning, and written communication that are highly valued in public sector employment (Kinsella & Waite, 2021). Second, exposing students to diverse fields may directly enhance students' motivation to enter public service. Public service motivation can be driven by a sense of civic duty, social justice, compassion, and a commitment to the public interest and public policy making (Perry, 1996), any of which breadth of learning might enhance. However, research on educational experiences' impact on public service motivation is inconclusive (Korac et al., 2019), so this is only conjecture.

We also find that breadth's impact on public service appears to work differently for different majors. Naturally, some majors lend themselves more easily to public service, and others less so.[17] On one end of the spectrum, we expect that education majors have such strong pathways to public service that curricular breadth will not drastically affect their sector of employment. On the other end, business graduates may have fewer established pathways to enter public service such that increased curricular breadth does not substantially move the needle on public service rates either. However, the relationship between breadth and natural science

[17] The opportunity structure for entering the public sector is highly unequal across majors. For example, in the U.S., 75% of those with a bachelor's degree in education work in the non-profit, education, or government sectors compared to 23% of those with a bachelor's in management and 3% with a bachelor's in engineering (authors' calculations using data from National Center for Science and Engineering Statistics, 2025, Tables 1-4). Given that almost all engineers end up working in the private sector, it is surprising that we see a positive relationship between breadth and majoring in engineering in Figure 2.

majors' pursuit of public service is notable, especially given the generally lower civic engagement of this group compared to other majors. It is possible that the array of positions available in the natural sciences readily facilitates graduates' choice to enter public service. This finding is further supported by the results in Table 5, which show that increased coursetaking across the natural sciences, regardless of major, is more consistently associated with higher rates of working in public service occupations and sectors than increased coursetaking across the social sciences or humanities. As Fernandez (2025) found a positive relationship between the number of science courses students take in college and their later-life levels of concern and knowledge about climate science—an issue entrenched in collective action and rhetoric that spotlights the democratic virtues we cite—our results similarly suggest that broader exposure to natural science content is related to enhanced interest in the public good.

As social commentators lament the increasing self-interest and materialistic orientation of US society, ways to increase public service are sought as an antidote to these trends (Reich, 2019). Our results suggest that college curricular structures could be one such tool. Outside of the Public Service Loan Forgiveness (PSLF) program and student loan programs for health care workers and teachers, there has not been much focus on public service as an important educational outcome. Loan programs targeted to health care and education majors encourage students to enter fields that are defined by public service, but our research suggests that curricular breadth could encourage students to enter public service regardless of major field.

**Connections between Breadth, Depth, and Other Engagement Outcomes Are More Elusive**

A second key finding is that curricular breadth and depth's association with measures of civic engagement other than public service can best be described as underwhelming and inconsistent. As Figures 3 and 4 indicate—with a few exceptions—the models' regression coefficients for breadth are centered near zero and the coefficients for depth are quite small. Results also suggest that breadth and depth relate to civic engagement in different ways. Specifically, breadth and depth may work at cross-purposes, with curricular breadth *positively* linked to interacting with people from different backgrounds and curricular depth *negatively* linked to perspective-taking, tolerance, and openness to different beliefs (i.e., pluralistic orientation).

One reason why the relationships we measured with survey data are often insignificant is that the survey sample is small, at least compared to the sample for the career outcomes data,

leading to larger standard errors. However, it is worth noting that if receiving a broad and deep education has the transformative and long-term impact on civic outcomes that many claim it does (AAC&U, 2011), we would expect to see mainly large, positive coefficients across the four dimensions of engagement. But that is not the case. Therefore, when our results are considered alongside those of Mou and Mitic (2026) and Detweiler (2021), we conclude that if liberal education at public colleges and universities is uniquely able to develop engaged and thoughtful citizens, it operates through mechanisms other than taking a breadth of courses across the liberal arts and many advanced courses in a focal area. This conclusion is supported by studies that find students who experience good teaching, high-impact practices, and extra- or co-curricular activities related to diversity and service are more likely to participate in civic life (Myers et al., 2019), take political action (Howe & Fosnacht, 2017; Morgan et al., 2021), be informed about issues (Denson et al., 2017; Howe & Fosnacht, 2017; Morgan et al., 2021), and support democratic virtues such as pluralism (Engberg, 2007). Thus, to the degree that a liberal education is characterized by the aforementioned practices and activities, the bulk of the evidence thus far suggests it can indeed facilitate civic engagement.

**Majors Have a Stronger Relationship with Civic Engagement than Breadth and Depth**

Our third key finding is that a student's major is more related to their level of civic engagement than curricular breadth or depth. Though we do find a positive relationship between breadth and public service, students' majors are still public service's strongest predictor, with increasing explanatory power as more granular measures of major are entered into the analysis. Majors are also dominant in predicting some of the civic outcomes we measure with survey data. The differences we observe in engagement across majors parallel other studies' findings, with humanities and social science majors tending to have the highest levels of engagement, and business, engineering, and health majors tending to have the lowest (Bowman et al., 2023; Goldstein & Kolerman-Shemer, 2025; Hillygus, 2005; Morgan et al., 2021; Mou & Mitic, 2026; Perrin & Gillis, 2019; Thomas et al., 2021).

What about a student's college major affects the way in which they engage civically? In selecting a major, students attempt to balance their values, interests, and financial expectations with a major's perceived ability to advance those priorities (Quadlin, 2020; Wiswall & Zafar, 2015). Certainly, majors channel students with some pre-existing dispositions into aligned occupational destinations. High school students who value helping others are more likely to

major in fields that lead to helping professions once they get to college (Quadlin, 2020), and research on public service motivation does point to students' early desire to serve the common good as an influence on their choice of major (Holt, 2018). However, the rate of public service uptake cannot be solely predicted by early beliefs, suggesting it is shaped by what students experience during college as well (Holt, 2018).

College students are exposed to a number of major-specific stimuli that may influence civic engagement. For instance, Binder, Davis, and Bloom (2016) highlight how students are socialized to identify "prestigious jobs," mostly located in finance, consulting, and technology sectors, and what majors lead to such jobs through on-campus recruitment and reification of such perspectives through peer networks. The end result is to push them away from majors connected to public service careers. As mentioned previously, work by Cech (2013, 2014) and Cech and Sherick (2015) suggests that engineering programs can "depoliticize" students by decreasing their concern for social issues, presumably by the curriculum's intense focus on technical matters. If students can be depoliticized via the curriculum to which they are exposed, then the opposite is likely to be possible: majors that focus on the human experience, as represented by the study of cultures, values, and behaviors, can "politicize" students towards caring about social issues.

## VIII. Implications and Conclusion

There are several implications of our work that are particularly important to highlight. First, our results have implications for how people speak about the benefits of liberal education. "Breadth and depth" are often discussed as a singular beneficial component, implying that the two work in tandem to produce valued outcomes. However, our results suggest that, at times, it is breadth alone that facilitates civic benefits, such as the case with entering public service. At other times, depth and breadth appear to be at cross-purposes, such as the case with pluralistic orientation and interacting with others from a different background. This supports the argument that disciplinary specialization can detract from broad learning in ways that undermine the aims of liberal education (Pitt et al., 2017). Researchers and social commentators alike have pointed to the dangers of hyper-specialization in a world that requires cognitive flexibility and adaptability (Deming, 2019; Epstein, 2019), a warning not heeded by institutions that have recently implemented highly vocational 3-year bachelors degree programs and cuts to liberal arts

departments (Dutt-Ballerstadt, 2019; Hartocollis, 2023; Marcus, 2026). Given these trends and the likelihood that depth of coursetaking in a focal area (save the social sciences and humanities) does not appear to produce civic benefits, proponents of liberal education may want to focus their advocacy even more on the particular value that broad-based learning provides to individuals and society.

Second, one might conclude from our results that claims about liberal education's ability to produce uniquely thoughtful and engaged citizens are overrated. However, as we noted in the introduction, the idea of liberal education is multifaceted and contested, and has transformed over time and place. Therefore, when studying the impact of liberal education, it is important to be clear about which elements of liberal education one is measuring and in which contexts (Brighouse & McPherson, in press). The model of liberal education we measure is based on the assumption that providing students at large public colleges and universities with a wide introduction across the disciplines and deep study in one will produce desired liberal learning outcomes (Brady et al., 2026). Our findings do indicate that there is weak and inconsistent support for this particular assumption when it comes to civic engagement.

The distributive general education approach to ensuring students receive a liberal education has numerous detractors. They argue that instead of being designed to produce a transformative educational experience for undergraduates, this model is largely designed to benefit disciplinary specialists, (i.e., university faculty) who are not incentivized to engage in the interdisciplinary work needed to design a cohesive curriculum (Astin, 1999; McMurtie, 2026; Newton, 2000).[18] Our results suggest this criticism may have validity, and that other curricular models would be needed to consistently turn undergraduate learners into engaged citizens.

Recent efforts to reform general education have emphasized the importance of developing students' *competencies*, rather than simply exposing them to different disciplines (McMurtie, 2023). While these efforts are often justified as a way to produce workforce-ready graduates (Levine, 2025), the competencies they aim to develop—such as quantitative reasoning, information literacy, and intercultural communication skills—are also, conveniently, believed to support civic engagement qualities like those listed in Table 1 (National Task Force on Civic

[18] As evidence, see Astin's (1999) dismissive description of general education at universities. He says the distributive approach is "[t]he belief that an 'undergraduate liberal arts education' could be defined simply in terms of course credits; take such and such an array of courses in these fields, pass them, and *ipso facto* you've been 'liberally educated'" (p. 95).

Learning and Democratic Engagement, 2012). One way these competencies could be developed is through a curriculum that is based in disciplinary learning but explicitly designed with the outcome of effective citizenship in mind (National Task Force on Civic Learning and Democratic Engagement, 2012; Newton, 2000). Another way is through a core curriculum that requires all students to grapple with big ideas related to citizenship through interdisciplinary courses designed by faculty (McMurtie, 2026). Our results imply general education approaches like these should be considered if large public institutions aim to use curricular design to promote effective citizenship.

Finally, our study has implications for the future study of liberal education, and particularly how its many mechanisms might be interrelated, measured, and linked to long-term outcomes. The conceptualization and practice of liberal education includes many distinct but overlapping elements: not only the content of a deep and wide curriculum, but also the immediate and broader contexts in which students encounter it, from the classroom outward to the institution itself (AAC&U, 2011; Detweiler, 2021; Gutmann, 2015). Many of these elements are difficult to capture and study individually, much less in concert. Our study rightly positions the content of the curriculum as an important mechanism of liberal education, using thoughtful and informed definitions of breadth and depth and a rich data set to capture these important curricular elements. In doing so, we emphasize that a more fine-grained study of the content of curriculum, beyond completing a major and fulfilling general education requirements, is one important component of studying the practice and the outcomes of liberal education, even if that study should ideally include a wider range of components. We aim to point the way for future studies that work across the mechanisms of liberal education, including its curriculum, in robust and data-informed ways.

## References


AAC&U. (2011). *The LEAP vision for learning: Outcomes, practices, impact, and employers' views*. American Association Colleges and Universities.

AAC&U. (2020). *What liberal education looks like*. Retrieved from https://www.aacu.org/publication/what-liberal-education-looks-like- what-it-is-who-its-for-and-where-it-happens

Astin, A. (1997). Liberal education and democracy: The case for pragmatism. In R. Orrill (Ed.), *Education and democracy: Re-imagining liberal learning in America*. (pp. 207-224). College Board.

Astin, A. (1999). How the liberal arts college affects students. *Daedalus*, *128*(1), 77–100.

Barrett, M., & Brunton-Smith, I. (2014). Political and civic participation: Towards an integrative perspective. *Journal of Civil Society, 10*(1), 5–28. https://doi.org/10.1080/17448689.2013.871911

Baum, M., Endara, J., & Paulson, A. (2026). *Do faculty affect student partisanship?* EdWorkingPapers. Retrieved from https://doi.org/10.26300/8ejx-2r75

Budescu, D. V., & Budescu, M. (2012). How to measure diversity when you must. *Psychological methods, 17*(2), 215.

Bell, D., Byrd, W.C., Flaster, A., Koester, B., Leonard, S., Manley, K., Nishimura, R., Paulson, A., & Stange, K.M. (2022). College and Beyond II Series User Guide. https://cms.icpsr.umich.edu/sites/default/files/College_and_Beyond_II_User_Guide.pdf

Bell, D., Holbein, J. B., Imlay, S., & Smith, J. (2024). *Which colleges increase voting rates?* EdWorkingPapers. from https://doi.org/10.26300/XHK7-DG17

Binder, A. J., Davis, D. B., & Bloom, N. (2016). Career funneling: How elite students learn to define and desire ‘‘prestigious’’ jobs. *Sociology of Education*, *89*(1), 20–39.

Bourke, B., Bray, N. J., & Horton, C. C. (2009). Approaches to the core curriculum: An exploratory analysis of top liberal arts and doctoral-granting institutions. *The Journal of General Education*, *58*(4), 219–240.

Bowman, N. A. (2011). Promoting participation in a diverse democracy: A meta-analysis of college diversity experiences and civic engagement. *Review of Educational Research*, *81*(1), 29–68. https://doi.org/10.3102/0034654310383047

Bowman, N. A. (2014). Conceptualizing openness to diversity and challenge: Its relation to college experiences, achievement, and retention. *Innovative Higher Education*, *39*(4), 277–291. https://doi.org/10.1007/s10755-014-9281-8

Bowman, N. A., Wolniak, G. C., Seifert, T. A., Wise, K., & Blaich, C. (2023). The long-term role of undergraduate experiences: Predicting intellectual and civic outcomes. *Research in Higher Education*. https://doi.org/10.1007/s11162-022-09708-5

Brady, H. E., Verba, S., & Schlozman, K. L. (1995). Beyond SES: A resource model of political participation. *American Political Science Review, 89*(2), 271–294.

Brady, J., Byrd, W.C., Flaster, A., Stange, K., & Yang, Y. (2026). *Who receives a liberal education? Measuring breadth and depth of study at U.S. colleges*. Deep Blue Documents. Retrieved from https://dx.doi.org/10.7302/dspace/30046

Brighouse H. & McPherson, M. (in press). Measuring the effects of a liberal arts education: Conceptual and normative issues. In R. Arum, P. Courant, & A. Flaster (Eds.), *The liberal arts advantage: Measuring the deeper value of a college education.* University of Chicago Press.

Bryan, M. & Simone, S. (2012). 2010 College course map. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC. https://nces.ed.gov/pubs2012/2012162rev.pdf

Cantoni, D., Chen, Y., Yang, D., Yuchtman, N., & Zhang, J.Y. (2017). Curriculum and ideology. *Journal of Political Economy, 125*(2), 338–392. https://doi.org/10.1086/690951

Carnevale, A. P., Smith, N., Dražanová, L., Gulish, A., & Campbell, K. P. (2020). The role of education in taming authoritarian attitudes. Georgetown University Center on Education and the Workforce. http://files.eric.ed.gov/fulltext/ED609008.pdf

Carnegie Corporation & and CIRCLE (Center for Information and Research on Civic Learning and Engagement). (2003). *The civic mission of schools.* https://www.carnegie.org/publications/the-civic-mission-of-schools/

Cech, E. A. (2013). The (mis)framing of social justice: Why ideologies of depoliticization and meritocracy hinder engineers' ability to think about social injustices. In J. Lucena (Ed.), *Engineering Education for Social Justice*. *Philosophy of Engineering and Technology, vol 10.* (pp. 67-84). Springer Netherlands. https://doi.org/10.1007/978-94-007-6350-0_4

Cech, E. A. (2014). Culture of disengagement in engineering education? *Science, Technology & Human Values*, *39*(1), 42–72. https://doi.org/10.1177/0162243913504305

Cech, E. A., & Sherick, H. M. (2015). Depoliticization and the structure of engineering education. In S. H. Christensen, C. Didier, A. Jamison, M. Meganck, C. Mitcham, & B. Newberry (Eds.), *International Perspectives on Engineering Education: Engineering Education and Practice in Context, Volume 1* (pp. 203-216). Springer International Publishing. https://doi.org/10.1007/978-3-319-16169-3_10

Courant, P. N., Flaster, A., Jekielek, S., Levenstein, M., McKay, T. A., and Stange, K. M. College and Beyond II (CBII) Administrative Data, [United States], 2000-2020. Inter-university Consortium for Political and Social Research [distributor], 2022-08-18. https://doi.org/10.3886/ICPSR38488

Courant, Paul N., Flaster, Allyson, Jekielek, Susan, Levenstein, Margaret, McKay, Timothy A., and Stange, Kevin M. College and Beyond II (CBII) Alumni Survey, [United States], 2021. Inter-university Consortium for Political and Social Research [distributor], 2022-12-12. https://doi.org/10.3886/ICPSR38299.v2

Crowder, K., Pais, J., & South, S. J. (2012). Neighborhood diversity, metropolitan constraints, and household migration. *American Sociological Review, 77*(3), 325-353.

Daniels, R. J., Shreve, G., & Spector, P. (2021). *What universities owe democracy.* Johns Hopkins University Press. https://doi.org/10.1353/book.97330

Dee, T. S. (2004). Are there civic returns to education? *Journal of Public Economics 88*(9):1697–1720.

Denson, N., & Ing, M. (2014). Latent class analysis in higher education: An illustrative example of pluralistic orientation. *Research in Higher Education*, 55(5), 508-526.

Denson, N., Bowman, N. A., & Park, J. J. (2017). Preparing students for a diverse, deliberative democracy: College diversity experiences and informed citizenship after college. *Teachers College Record (1970)*, *119*(8), 1–41. https://doi.org/10.1177/016146811711900805

Deming, D. (2019, September 20). In the salary race, engineers sprint but English majors endure. *New York Times*.

Detweiler, R. (2021). *The evidence liberal arts needs: Lives of consequence, inquiry, and accomplishment*. MIT Press: Cambridge.

Dutt-Ballerstadt, R. (2019, February 28). Shrinking liberal arts programs raise alarm bells among faculty. *Inside Higher Ed.* https://www.insidehighered.com/advice/2019/03/01/shrinking-liberal-arts-programs-raise-alarm-bells-among-faculty

Engberg, M. E. (2007). Educating the workforce for the 21st century: A cross-disciplinary analysis of the impact of the undergraduate experience on students' development of a pluralistic orientation. *Research in Higher Education*, *48*(3), 283–317. https://doi.org/10.1007/s11162-006-9027-2

Engberg, M. E., & Hurtado, S. (2011). Developing pluralistic skills and dispositions in college: Examining racial/ethnic group differences. *The Journal of Higher Education, 82*(4), 416-443.

Epstein, D. (2019). *Range: Why generalists triumph in a specialized world.* Penguin Random House.

Evans, B. J., C. R. Marsicano, & C. J. Lennartz. (2019). Cracks in the bedrock of American democracy: Differences in civic engagement across institutions of higher education. *Educational Researcher*, *48*(1), 31–44

Fernandez, F. (2025). The science of voting: Coursetaking, literacy, and behavior. *Educational Researcher, 54*(9), 557–559. https://doi.org/10.3102/0013189x251347515

Flanagan, C., Levine, P., & Settersten, R. (2009). Civic engagement and the changing transition to adulthood. *CIRCLE*. https://circle.tufts.edu/sites/default/files/202002/civic_engagement_changing_transition_adulthood.pdf

Galston, W. A. (2001). Political knowledge, political engagement, and civic education. *Annual Review of Political Science*, *4*(1), 217–234.

Glaeser, E. L., Ponzetto, G. A. M., & Shleifer, A. (2007). Why does democracy need education? *Journal of Economic Growth*, *12*(2), 77–99. https://doi.org/10.1007/s10887-007-9015-1

Godwin, K. A. (2015). The counter narrative: Critical analysis of liberal education in global context. *New Global Studies*, *9*(3), 223–243. https://doi.org/10.1515/ngs-2015-0033

Goldhaber, D., Cowan, J., Long, M., & Huntington-Klein, N. (2015). College curricular dispersion: More well-rounded or less well trained? *Center for Analysis of Longitudinal Data in Education Research.*

Goldstein, Y. & Kolerman-Shemer, M. (2025). Changing minds: How academic fields shape political attitudes. https://dx.doi.org/10.2139/ssrn.5196889

Gutmann, A. (2015). What makes a university education worthwhile. In H. Brighouse & M. McPherson (Eds.), *The aims of higher education: Problems of morality and justice* (pp. 7-25). University of Chicago Press.

Hartocollis, A. (2023, November 3). Can humanities survive the budget cuts? *The New York Times*. https://www.nytimes.com/2023/11/03/us/liberal-arts-college-degree-humanities.html

Hillygus, S. D. (2005). The missing link: Exploring the relationship between higher education and political engagement. *Political Behavior*, *27*(1), 25–47. https://doi.org/10.1007/s11109-005-3075-8

Hoerner, J. (1970). An historical review of liberal education. http://files.eric.ed.gov/fulltext/ED050677.pdf

Hoffman, D., Domagal-Goldman, J., King, S., & Robinson, V. (2018). Higher education's role in enacting a thriving democracy: Civic learning and democratic engagement theory of change. https://compact.org/sites/default/files/CLDE-Theory-of-Change.pdf

Holt, S. B. (2018). For those who care: The effect of public service motivation on sector selection. *Public Administration Review*, *78*(3), 457–471. https://doi.org/10.1111/puar.12906

Howe, E. C., & Fosnacht, K. (2017). Promoting democratic engagement during college: Looking beyond service-learning. *Journal of College and Character*, *18*(3), 155–170. https://doi.org/10.1080/2194587X.2017.1338581

Jones, N. B., & Hearn, J. C. (2018). Under siege: The future of the liberal arts at State U. In J. Blanchard (Ed.), *Controversies on campus: Debating the issues confronting American universities in the 21st century* (pp. 162-175). Praeger.

Kimball, B. A. (1986). *Orators and philosophers: A history of the idea of liberal education.* Teachers College Press.

King, P. M., Brown, M. K., Lindsay, N. K., & Vanhecke, J. R. (2007). Liberal arts student learning outcomes: An integrated approach. *About Campus*, *12*(4), 2–9. https://doi.org/10.1002/abc.222

Korac, S., Saliterer, I., & Weigand, B. (2019). Factors affecting the preference for public sector employment at the pre-entry level: A systematic review. *International Public Management Journal*, *22*(5), 797–840. https://doi.org/10.1080/10967494.2018.1430086

Kinsella, C., & Waite, B. (2021). Identifying and developing desirable soft skills for public service. *Teaching Public Administration, 39*(3), 337–350.

Pasquerella, L. (2020). Liberal education and threats to democracy: Fostering independent thought and dialogue across differences is how we counter authoritarianism. *Liberal Education, 106*(3). https://www.aacu.org/liberaleducation/articles/liberal-education-and-threats-to-democracy

Leasor, L. & Stange, K. (2025). CBII-BGI data merge: Matching update. https://www.lindsayleasor.com/research

Levine, A. (2025, September 10). Higher education has been under attack. Here's a new way to fight back and help today's students. *The Hechinger Report.* https://hechingerreport.org/opinion-higher-education-has-been-under-attack-heres-a-new-way-to-fight-back-and-help-todays-students/

Lewis, P. (2018). Globalizing the liberal arts: Twenty-first-century education. In *Higher Education in the Era of the Fourth Industrial Revolution* (pp. 15-38). Springer Singapore. https://doi.org/10.1007/978-981-13-0194-0_2

Li, H., Luo, S., & Wang, Y. (2025). Curriculum, political participation, and career choice. *The Review of Economics and Statistics,* 1–49. https://doi.org/10.1162/rest.a.285

Loes, C. N., Culver, K. C., & Trolian, T. L. (2018). How collaborative learning enhances students' openness to diversity. *The Journal of Higher Education*, *89*(6), 935–960.

Marcus, J. (2026, March 11). Faster, thinner: Colleges are swiftly trimming a B.A. degree to three years. *The Hechinger Report.* https://hechingerreport.org/faster-thinner-colleges-bachelors-degree-three-years/

Marks, J. (2021). *Let's be reasonable: A conservative case for liberal education*. Princeton University Press.

McMurtrie, B. (2023, May 17). Repairing gen ed: Colleges struggle to help students answer the question, 'Why am I taking this class?'. *The Chronicle of Higher Education*. https://www.chronicle.com/article/repairing-gen-ed

McMurtrie, B. (2026, June 26). Have colleges gotten general education all wrong? *The Chronicle of Higher Education*. https://www.chronicle.com/article/have-colleges-gotten-general-education-all-wrong

Melendez, R., Clarke, P., Khan, A., Gomez-Lopez, I., Li, M., & Chenoweth, M. (2020). National Neighborhood Data Archive (NaNDA): Socioeconomic status and demographic characteristics of ZIP Code Tabulation Areas, United States, 2008-2017: Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor]. https://doi.org/10.3886/E120462V1-130760

Mou, L., & Mitic, R. R. (2026). The value of higher education in cultivating engaged citizens: Longitudinal evidence from the liberal arts model. *Innovative Higher Education*. https://doi.org/10.1007/s10755-026-09912-6

Morgan, D. L., Zilvinskis, J., & Dugan, B. (2021). Opening the activism and postsecondary education black box: Relating high-impact practices and student identity with activist behaviors. *Journal of Political Science Education*, *17*(1), 55–78. https://doi.org/10.1080/15512169.2019.1612248

Myers, C. B., Myers, S. M., & Peters, M. (2019). The longitudinal connections between undergraduate high impact curriculum practices and civic engagement in adulthood. *Research in Higher Education, 60*, 83–110.

National Center for Science and Engineering Statistics. (2025). National Survey of College Graduates: 2023 (NSF 25-322). *National Science Foundation.* https://ncses.nsf.gov/pubs/nsf25322

National Task Force on Civic Learning and Democratic Engagement (2012). *A crucible moment: College learning and democracy's future.* Association of American Colleges and Universities.

Newton, R. R. (2000). Tensions and models in general education planning. *The Journal of General Education*, *49*(3), 165–181.

Nussbaum, M. (2024). *Not for profit: Why democracy needs the humanities*. Princeton University Press.

Orrill, R. (1997). Editor's prologue. In R. Orrill (Ed). *Education and democracy: re-imagining liberal learning in America.* (pp.xii-xxv). The College Board.

Orona, G. A., Eccles, J. S., Zitzmann, S., Fischer, C., & Arum, R. (2023). Cognitive development in undergraduate emerging adults: How course-taking breadth supports skill formation. *Contemporary Educational Psychology*, *74*. https://doi.org/10.1016/j.cedpsych.2023.102206

Paulson, A. (2022, April 21). *Measuring breadth and depth of study using neural embeddings*. Paper presented at the American Educational Research Association annual conference, San Diego, CA.

Pascarella, E. T., Edison, M., Nora, A., Hagedorn, L. S., & Terenzini, P. T. (1996). Influences on students' openness to diversity and challenge in the first year of college. *The Journal of Higher Education*, *67*(2), 174–195. https://doi.org/10.1080/00221546.1996.11780255

Pascarella, E. T., Wang, J.-S., Trolian, T. L., & Blaich, C. (2013). How the instructional and learning environments of liberal arts colleges enhance cognitive development. *Higher Education*, *66*(5), 569–583. https://doi.org/10.1007/s10734-013-9622-z

Perrin, A. J., & Gillis, A. (2019). How college makes citizens: Higher education experiences and political engagement. *Socius: Sociological Research for a Dynamic World*, *5*. https://doi.org/10.1177/2378023119859708

Perry, J. L. (1996). Measuring public service motivation: An assessment of construct reliability and validity. *Journal of Public Administration Research and Theory, 6*, 5–22.

Perry, J. L., Hondeghem, A., & Wise, L. R. (2010). Revisiting the motivational bases of public service: Twenty years of research and an agenda for the future. *Public Administration Review*, *70*(5), 681–690. https://doi.org/10.1111/j.1540-6210.2010.02196.x

Pitt, R., Pirtle, W. N. L., & Metzger, A. N. (2017). Academic specialization, double majoring, and the threat to breadth in academic knowledge. *The Journal of General Education*, *66*(3–4), 166–191. https://doi.org/10.5325/jgeneeduc.66.3-4.0166

Putnam, R. D. (2000). *Bowling alone: the collapse and revival of American community*. Simon & Schuster.

Quadlin, N. (2020). From major preferences to major choices: Gender and logics of major choice. *Sociology of Education*, *93*(2), 91–109. https://doi.org/10.1177/0038040719887971

Reich, R.B. (2019). *The common good.* Penguin Random House.

Roth, M. S. (2014). *Beyond the university: Why liberal education matters*. Yale University Press.

Rothblatt, S. (2003). *The living arts: Comparative and historical reflections on liberal education.* Association of American Colleges and Universities.

Seah, K. K. C., Pan, J., & Tan, P. L. (2020). Breadth of university curriculum and labor market outcomes. *Labour Economics, 65*.

Thomas, N., Gismondi, A., Gautam, P., & Brinker, D. (2021). Democracy counts 2020: Record-breaking turnout and student resiliency. *The National Study of Learning, Voting and Engagement at Tufts University.*

Whitt, E. J., Edison, M. I., Pascarella, E. T., Terenzini, P. T., & Nora, A. (2001). Influences on Students' Openness to Diversity and Challenge in the Second and Third Years of College. *The Journal of Higher Education*, *72*(2), 172–204. https://doi.org/10.1080/00221546.2001.11778877

Wiswall, M., & Zafar, B. (2015). Determinants of college major choice: Identification using an information experiment. *The Review of Economic Studies*, *82*(2), 791–824.

Zemsky, R. (1989). *Structure and coherence: Measuring the undergraduate curriculum. Curriculum Data Base Series.* Association of American Colleges.

Zukin, C., Keeter, S., Andolina, M., Jenkins, K., & Carpini, M. X. D. (2006). *A new engagement?: Political participation, civic life, and the changing American citizen.* Oxford University Press.

## Tables and Figures

**Table 1.** Four Qualities of Civic Engagement

| Quality | Description | Examples | How Liberal Education Develops It |
|---|---|---|---|
| Participate in civic life | Being part of groups that serve the public good and collaborate on solving challenges | Volunteering for a non-profit; parental involvement in school; pursuing public service | Educating for social responsibility |
| Act politically | Using one's voice to influence the political sphere | Public speaking, petitioning, protesting, voting | Educating for political participation |
| Be informed | Seeking to understand, with the capacity to think critically and resist simplistic answers | Following current events, engaging in dialogue with people holding different perspectives | Educating for critical thinking |
| Possess democratic virtues | Subscribing to principles that serve as the bedrock of a healthy democracy | Tolerance, respecting others' rights and differences of opinion, supporting democratic institutions | Educating for a diverse democracy |

*Note:* Qualities adapted from Carnegie Corporation and CIRCLE (2003).

**Table 2.** Sample Descriptive Statistics

| | A. Full Sample (N = 725,297) | | B. Career History Sample (N = 238,335) | | C. Survey Sample (N = 2,751) | |
|---|---|---|---|---|---|---|
| | Mean/Prop. | SD | Mean/Prop. | SD | Mean/Prop. | SD |
| **LAE measures** | | | | | | |
| Breadth: Number of unique liberal arts subjects | 11.93 | 4.85 | 11.72 | 4.78 | 11.64 | 4.85 |
| Depth: Number of upper-level courses in major | 13.16 | 6.73 | 13.74 | 6.89 | 13.78 | 7.07 |
| **Demographics** | | | | | | |
| Race/Ethnicity | | | | | | |
| White | .43 | .50 | .43 | .50 | .52 | .50 |
| Asian | .18 | .39 | .20 | .40 | .12 | .32 |
| Hispanic | .16 | .36 | .16 | .37 | .09 | .28 |
| Black/African Amer. | .10 | .30 | .10 | .30 | .07 | .25 |
| Native & Indig. | .00 | .05 | .00 | .05 | .01 | .08 |
| Multi & Missing | .05 | .21 | .05 | .21 | .20 | .40 |
| Female | .57 | .50 | .51 | .50 | .55 | .50 |
| From high-poverty ZIP code | .22 | .41 | .21 | .41 | .23 | .42 |
| Nonresident | .07 | .26 | .06 | .23 | .00 | .00 |
| **Pre-college characteristics** | | | | | | |
| High School GPA standardized | 3.69 | .39 | 3.69 | .39 | 3.60 | .40 |
| Transfer credits (if positive) | 33.08 | 33.16 | 32.77 | 32.77 | 26.76 | 26.02 |
| Maximum SAT I Math score standardized | 613.43 | 96.99 | 617.12 | 95.52 | 608.67 | 89.67 |
| Maximum SAT I Verbal score standardized | 577.79 | 96.42 | 578.38 | 95.74 | 588.71 | 88.57 |
| Maximum ACT English score standardized | 27.46 | 5.28 | 27.42 | 5.22 | 27.43 | 4.76 |
| Maximum ACT Math score standardized | 27.49 | 4.76 | 27.74 | 4.71 | 26.77 | 4.43 |
| **Post-secondary education features** | | | | | | |
| Field of study | | | | | | |
| Business&Management | .19 | .40 | .22 | .41 | .13 | .34 |
| Education | .04 | .20 | .03 | .17 | .04 | .20 |
| Engineering | .10 | .30 | .14 | .35 | .09 | .29 |
| Fine Arts | .04 | .19 | .03 | .17 | .05 | .23 |
| Health/Medicine | .06 | .24 | .05 | .22 | .05 | .22 |
| Humanities | .12 | .32 | .10 | .30 | .16 | .36 |
| Natural Science | .11 | .32 | .11 | .32 | .14 | .35 |
| Social/Behavior Science | .24 | .43 | .22 | .42 | .24 | .43 |
| Other | .10 | .29 | .09 | .29 | .08 | .28 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Number of non-repetitive courses taken in fields | | | | | | |
| Humanities courses | 9.70 | 7.29 | 9.26 | 7.11 | 10.18 | 8.22 |
| Social science courses | 8.58 | 8.41 | 8.34 | 8.43 | 8.69 | 8.56 |
| Natural science courses | 9.93 | 12.09 | 10.36 | 12.41 | 9.99 | 11.25 |
| Business and management courses | 4.86 | 8.09 | 5.30 | 8.34 | 3.63 | 7.08 |
| Education courses | 1.61 | 4.02 | 1.30 | 3.45 | 1.86 | 4.22 |
| Engineering courses | 3.14 | 8.77 | 4.32 | 10.39 | 2.81 | 8.11 |
| Fine arts courses | 3.24 | 7.20 | 2.93 | 6.30 | 3.78 | 9.00 |
| Medicine and health courses | 1.39 | 5.29 | 1.18 | 4.78 | 1.73 | 5.84 |
| Other and unknown courses | 3.70 | 4.40 | 3.72 | 4.49 | 3.84 | 4.65 |
| Total number of non-repetitive courses taken | 46.21 | 16.87 | 46.78 | 17.03 | 46.54 | 15.04 |
| GPA, cumulative | 3.20 | .47 | 3.18 | .46 | 3.23 | .44 |
| Double major | .08 | .27 | .07 | .26 | .14 | .35 |

**Table 3.** Breadth, Depth, and Outcomes, by Major

| | All Fields | Business | Edu. | Engin. | Fine Arts | Health | Hum. | Nat. Sci. | Soc. Sci. | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| **A. Curriculum Measures** | | | | | | | | | | |
| Breadth: Number of unique liberal arts subjects | 11.93 | 10.26 | 12.11 | 9.04 | 8.30 | 12.33 | 12.62 | 14.23 | 13.54 | 11.86 |
| Depth: Number of upper-level courses in major | 13.16 | 14.26 | 13.76 | 20.03 | 15.33 | 14.05 | 10.62 | 13.24 | 10.83 | 10.93 |
| **B. Career history sample outcomes** | | | | | | | | | | |
| Max observations | 200419 | 43402 | 5799 | 26281 | 6181 | 9566 | 21158 | 22839 | 45170 | 19174 |
| Report job 5 years post-graduation | .75 | .77 | .69 | .77 | .71 | .67 | .75 | .72 | .76 | .73 |
| Report job 10 years post-graduation | .64 | .66 | .55 | .69 | .62 | .52 | .66 | .65 | .65 | .62 |
| In public service occupation 5 year post-graduation | .16 | .04 | .34 | .04 | .15 | .42 | .19 | .28 | .20 | .14 |
| In public service occupation 10 year post-graduation | .12 | .03 | .21 | .04 | .12 | .28 | .15 | .26 | .14 | .10 |
| In public service sector 5 year post-graduation | .16 | .08 | .21 | .08 | .14 | .29 | .19 | .21 | .22 | .16 |
| In public service sector 10 year post-graduation | .13 | .07 | .14 | .07 | .12 | .21 | .16 | .19 | .17 | .13 |
| In public service occupation & sector 5 year post-graduation | .08 | .02 | .15 | .02 | .06 | .21 | .09 | .12 | .10 | .07 |
| In public service occupation & sector 10 year post-graduation | .06 | .01 | .08 | .02 | .05 | .14 | .07 | .12 | .07 | .05 |
| **C. Survey sample outcomes** | | | | | | | | | | |
| Max observations | 2751 | 363 | 119 | 254 | 148 | 145 | 431 | 394 | 666 | 231 |
| Participate in civic life (last 12 months) | | | | | | | | | | |
| Index of civic participation | .47 | .48 | .52 | .42 | .47 | .45 | .49 | .42 | .49 | .48 |
| Did something positive for neighborhood or community with people | .30 | .30 | .41 | .22 | .28 | .28 | .31 | .29 | .31 | .30 |
| Spent time volunteering for an organization | .37 | .37 | .44 | .28 | .40 | .37 | .37 | .32 | .40 | .43 |
| Gave money or possessions to a non-political organization | .75 | .76 | .75 | .75 | .74 | .73 | .78 | .69 | .76 | .71 |
| Act politically (last 12 months) | | | | | | | | | | |
| Contact a public official to express opinions | .24 | .16 | .27 | .16 | .36 | .19 | .32 | .21 | .29 | .21 |
| Whether voted in local election | .71 | .63 | .68 | .71 | .73 | .73 | .78 | .65 | .73 | .72 |
| Whether gave money to candidate, etc. | .27 | .20 | .19 | .21 | .31 | .17 | .38 | .20 | .33 | .22 |
| Index for campaign involvement | .13 | .09 | .09 | .07 | .21 | .08 | .18 | .10 | .17 | .11 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Whether worked as a canvasser | .04 | .04 | .03 | .01 | .05 | .01 | .07 | .02 | .07 | .04 |
| Whether wore a campaign button | .18 | .13 | .16 | .08 | .24 | .13 | .26 | .14 | .21 | .15 |
| Whether taken part in a protest | .17 | .09 | .09 | .11 | .34 | .10 | .23 | .12 | .21 | .14 |
| Be informed (last month) | | | | | | | | | | |
| Index of being informed | 3.50 | 3.41 | 3.38 | 3.36 | 3.56 | 3.26 | 3.63 | 3.43 | 3.60 | 3.49 |
| Read about state/national/global political and social issues | 4.21 | 4.00 | 4.05 | 4.22 | 4.33 | 3.87 | 4.44 | 4.08 | 4.33 | 4.17 |
| Discussed politics with people who disagree with you | 2.88 | 2.94 | 2.81 | 2.70 | 2.82 | 2.80 | 2.89 | 2.81 | 2.94 | 2.97 |
| Avoided discussing politics with someone due to disagreement | 2.93 | 2.96 | 2.83 | 3.00 | 2.94 | 2.55 | 2.88 | 3.04 | 2.98 | 2.86 |
| Discussed politics with friends and family | 3.68 | 3.55 | 3.54 | 3.39 | 3.78 | 3.44 | 3.94 | 3.54 | 3.82 | 3.69 |
| Discussed politics with people who agree with you | 3.79 | 3.61 | 3.66 | 3.51 | 3.97 | 3.62 | 4.02 | 3.66 | 3.93 | 3.76 |
| Possess democratic virtues | | | | | | | | | | |
| Index of pluralistic orientation | 4.12 | 4.07 | 3.98 | 4.04 | 4.13 | 3.96 | 4.17 | 4.12 | 4.19 | 4.16 |
| Racial diversity of current neighborhood | .46 | .49 | .39 | .48 | .48 | .42 | .44 | .45 | .48 | .47 |
| Change in racial diversity of neighborhood | .04 | .02 | .02 | .07 | .04 | .03 | .06 | .04 | .04 | .03 |
| Talked or spent time with people from diff. cultural backgrounds (last 12 months) | 3.69 | 3.61 | 3.55 | 3.72 | 3.69 | 3.68 | 3.66 | 3.78 | 3.74 | 3.58 |

*Note:* Index of civic participation is the average of the scores of the following three questions: 1) “Did something positive for neighborhood or community with people” 2) “Spent time volunteering for an organization”, and 3) “Gave money or possessions to a non-political organization”. The index for campaign involvement is the average of "whether worked as a canvasser", "whether wore campaign button", and "whether taken part in a protest." Index of being informed is the average of the following questions: "read about state/national/global political and social issues", "discussed politics with people who disagree with you", "avoided discussing politics with someone due to disagreement" (reverse-coded), "discussed politics with friends and family", and "discussed politics with people who agree with you". The index of pluralistic orientation is an average of self-evaluation on frequency in the following items: "ability to see multiple perspectives on an issue", "ability to work cooperatively with diverse people", "ability to discuss and negotiate controversial issues", "openness to having one's views challenged", and "tolerance of others with different beliefs". Item "avoided discussing politics with someone because you disagree" is reverse-coded.

**Table 4.** Association between Breadth, Depth, and Working in Public Service Sector 10 Years After Graduation

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Breadth | 0.0112*** | 0.0109*** | 0.0046*** | 0.0019** | 0.0012~ |
| | (0.0007) | (0.0007) | (0.0007) | (0.0007) | (0.0007) |
| Depth | -0.0026*** | -0.0023*** | -0.0004 | 0.0003 | 0.0002 |
| | (0.0004) | (0.0004) | (0.0004) | (0.0004) | (0.0003) |
| Business&Management | | | -0.1084*** | | |
| | | | (0.0059) | | |
| Education | | | 0.0395** | | |
| | | | (0.0120) | | |
| Engineering | | | -0.0732*** | | |
| | | | (0.0070) | | |
| Fine Arts | | | -0.0217* | | |
| | | | (0.0085) | | |
| Health/Medicine | | | 0.1617*** | | |
| | | | (0.0141) | | |
| Natural Science | | | 0.0804*** | | |
| | | | (0.0093) | | |
| Social/Behavior Science | | | 0.0305*** | | |
| | | | (0.0080) | | |
| Other | | | -0.0028 | | |
| | | | (0.0103) | | |
| Controls | None | Full | Full | Full | Full |
| Sample | Full | Full | Full | Full | Full |
| Observations | 68,936 | 68,534 | 68,272 | 68,272 | 68,272 |
| R-squared | 0.0323 | 0.0523 | 0.0753 | 0.0832 | 0.0954 |
| Major FEs | None | None | 9-category | CIP2 | CIP4 |

*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system-cohort. All specifications include cohort-system fixed effects. Full controls include sex, race and ethnicity, total number of courses taken, cumulative GPA, an indicator for double-major, number of transfer credits received, neighborhood characteristics (income, education, racial diversity and composition, population density) based on zip code prior to college, SAT and ACT scores, and high school GPA. Admissions information and zip code are missing for a number of these students (including for some entire systems), so we also include indicators for missing this information. We impose several stricter sample restrictions: dropping system G or only including observations in cohorts after 2010. As shown in Table A4, the coefficients do not change qualitatively and quantitatively from the results reported in this table.

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table 5.** Within-domain Breadth and Career History Outcomes

| | #unique 4-digit CCM codes within natural science | | #unique 4-digit CCM codes within social science | | #unique 4-digit CCM codes within humanities | |
|---|---|---|---|---|---|---|
| | Coeff. | Std. Error | Coeff. | Std. Error | Coeff. | Std. Error |
| In public service occupation 5 year post-graduation | 0.0197*** | (0.0008) | 0.0047*** | (0.0013) | -0.0034*** | (0.0008) |
| In public service occupation 10 year post-graduation | 0.0232*** | (0.0017) | -0.0018 | (0.0012) | -0.0036*** | (0.0008) |
| In public service sector 5 year post-graduation | 0.0104*** | (0.0007) | 0.0040*** | (0.0009) | 0.0014* | (0.0006) |
| In public service sector 10 year post-graduation | 0.0107*** | (0.0014) | 0.0008 | (0.0010) | 0.0018~ | (0.0010) |
| In public service occupation & sector 5 year post-graduation | 0.0112*** | (0.0006) | 0.0031*** | (0.0009) | -0.0009 | (0.0006) |
| In public service occupation & sector 10 year post-graduation | 0.0130*** | (0.0012) | -0.0013 | (0.0008) | -0.0010~ | (0.0006) |

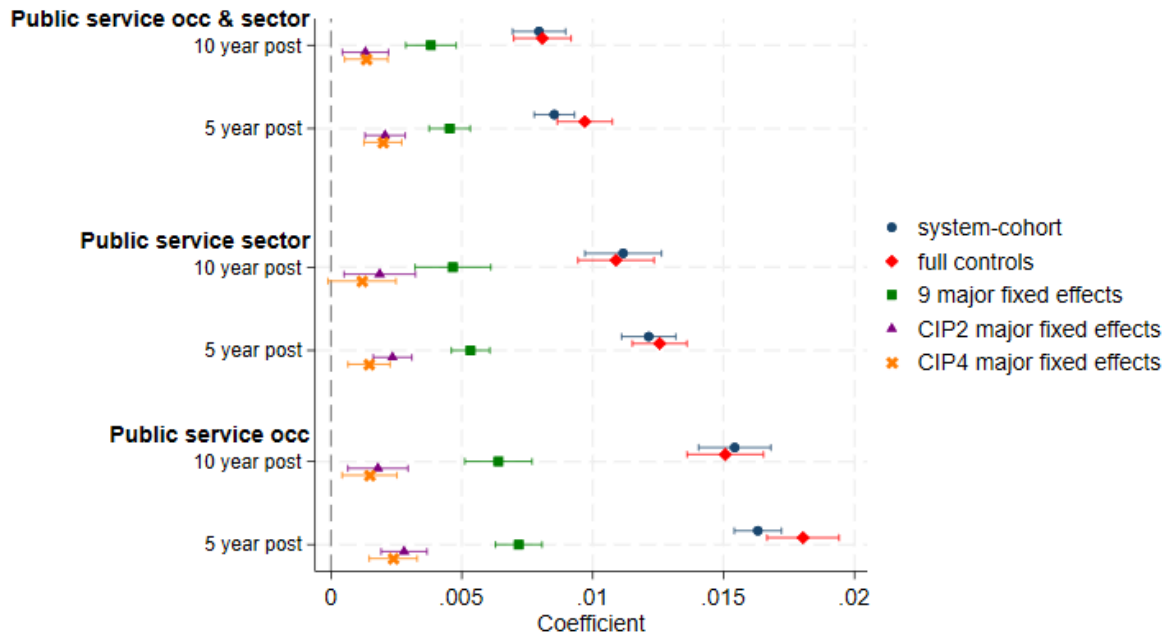
*Note:* Domain-specific breadth is measured by the number of unique liberal arts subjects in the given domain: natural sciences, social sciences, and humanities. Robust standard errors in parentheses, clustered by system. All specifications include system fixed effects. Controls include field of study (9 categories), sex, race and ethnicity, total number of courses taken, cumulative GPA, an indicator for double-major, number of transfer credits received, an indicator for being from a low-income zip code prior to college, SAT and ACT scores, and high school GPA. Admissions information and zip code are missing for a number of these students (including for some entire systems), so we include indicators for missing this information.
*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table 6. Association between Majors and Indices (Conditional on Breadth and Depth)**

| | Civic Participation Index (last 12 months) | Campaign Involvement Index (last 12 months) | Being Informed Index | Pluralistic Orientation Index (5 point scale) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Business & Management | 0.0161 | -0.0615** | -0.1353** | -0.0774 |
| | (0.0333) | (0.0125) | (0.0315) | (0.0512) |
| Educ | 0.0352 | -0.0572** | -0.1430~ | -0.0985* |
| | (0.0331) | (0.0123) | (0.0606) | (0.0381) |
| Engin | -0.0328 | -0.0798*** | -0.2094** | -0.0908 |
| | (0.0319) | (0.0061) | (0.0443) | (0.0544) |
| Fine Arts | -0.0272 | 0.0214 | -0.0572 | -0.0624 |
| | (0.0424) | (0.0406) | (0.0995) | (0.0472) |
| Health/Medicine | -0.0298 | -0.0669** | -0.2525* | -0.1392* |
| | (0.0437) | (0.0144) | (0.0999) | (0.0451) |
| Natural Sci | -0.0409 | -0.0497** | -0.1051~ | -0.0064 |
| | (0.0539) | (0.0095) | (0.0530) | (0.0412) |
| Social/Behavior Scie | 0.0266 | -0.0029 | -0.0046 | 0.0231 |
| | (0.0216) | (0.0147) | (0.0311) | (0.0189) |
| Other | -0.0017 | -0.0510** | -0.0783 | -0.0267 |
| | (0.0203) | (0.0115) | (0.0590) | (0.0385) |
| Background controls | Yes | Yes | Yes | Yes |
| Academic controls | Yes | Yes | Yes | Yes |
| Observations | 2,464 | 2,676 | 2,665 | 2,675 |
| R-squared | 0.0876 | 0.1047 | 0.1193 | 0.0915 |
| mean | 0.470 | 0.131 | 3.497 | 4.117 |

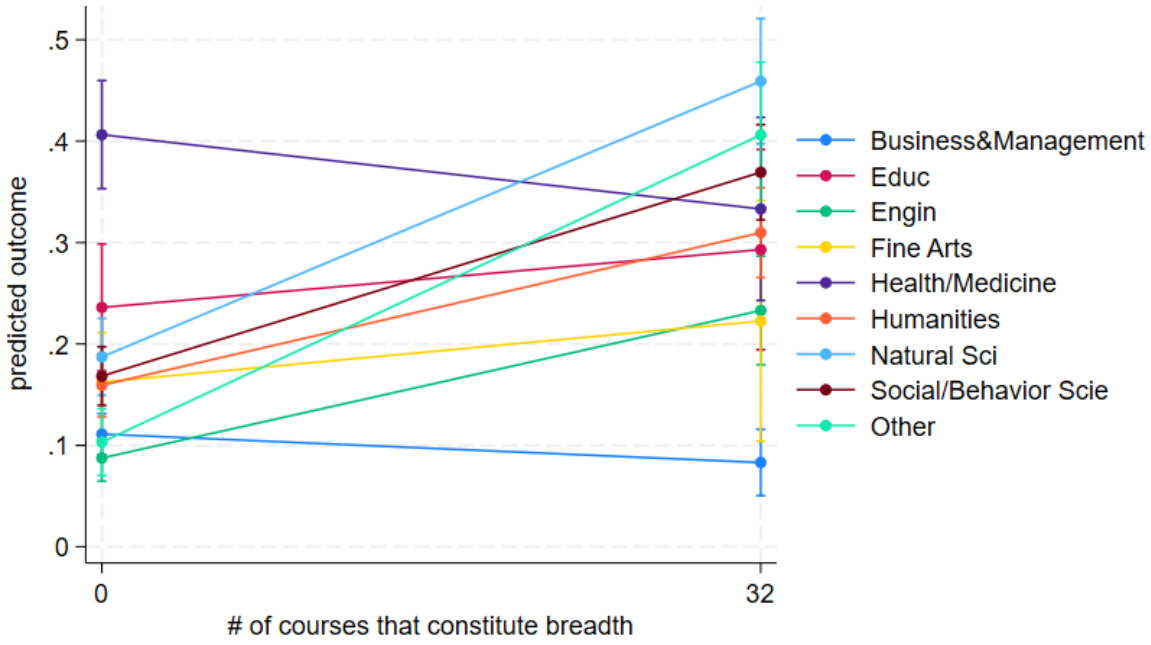
*Note:* All regressions control for curriculum breadth and depth. Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system. All specifications include system fixed effects. Background controls include sex, race and ethnicity, social class growing up, and parents' education. Academic controls include total number of courses taken, cumulative GPA, neighborhood characteristics (income, education, racial diversity and composition, population density) based on zip code prior to college, SAT and ACT scores, high school GPA, and number of years studying math, history/government, foreign language, art/music, and science during high school. Admissions information and zip code are missing for a number of these students (including for some entire systems), so we include indicators for missing this information.
*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Figure 1.** Association between Curriculum Breadth and Public Service, Conditional on Having Listed Job



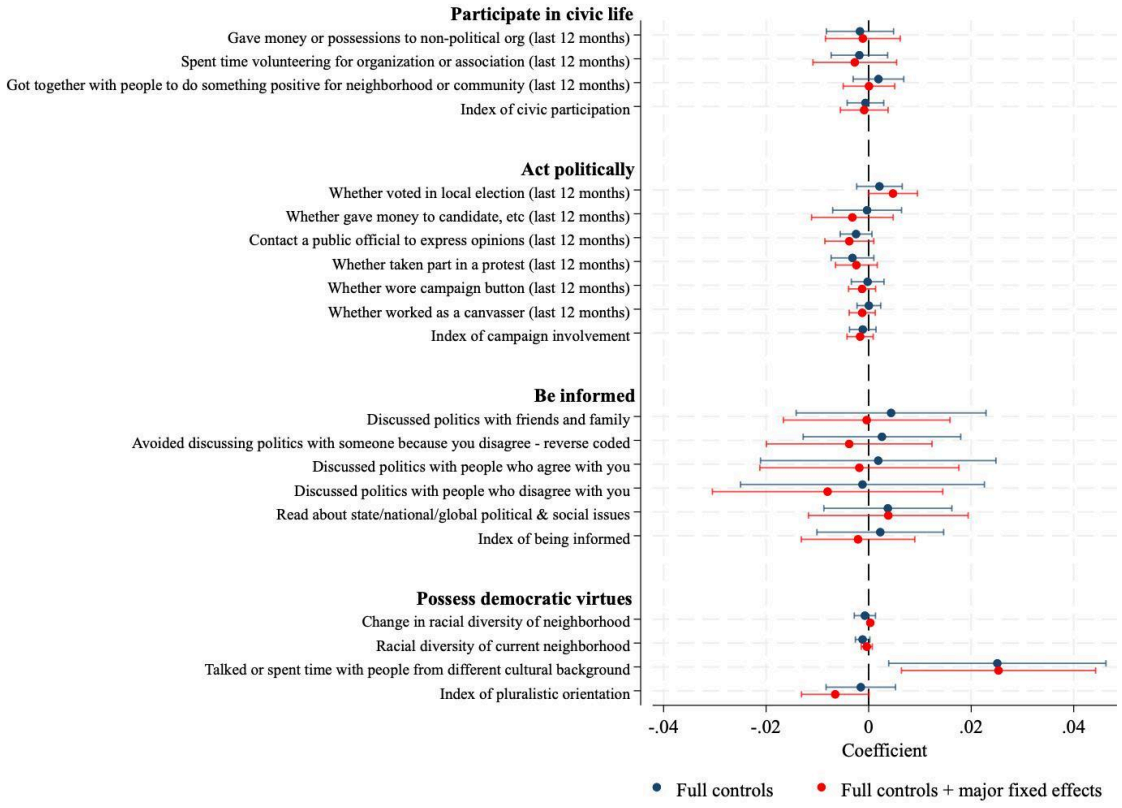

*Note:* Figure reports the regression coefficient on curriculum breadth with different measures of public service employment as the outcome. The samples are restricted to those that have any job spell during the given outcome year. All the included students are graduates from CBII institutions from 2004 to 2021, matched to career profile data provided by Burning Glass Institute. The legend on the right indicates the specification of the model. The "system-cohort" includes only system-cohort fixed effects; "full controls" accounts for students' demographics, pre-college preparation, transfer credits received, and double-major; the three major fixed effects specifications each further add major fixed effects, defined using 9-category fields of study, CIP2, or CIP4. The sample sizes for the 5-year outcomes are 149,334 for the system-cohort specification, 148,580 for the full-control specification, and 148,042 for the major fixed effects specifications. The sample sizes for the 10-year outcomes are 68,936 for the system-cohort specification, 68,534 for the full-control specification, and 68,272 for the major fixed effects specifications. All models include system-cohort fixed effects. Coefficients correspond to five models with different sets of controls and fixed effects for college major. 95% confidence intervals reflect standard errors clustered by system-cohort.

**Figure 2.** Association between Curriculum Breadth and Predicted Employment in the Public Service Sector 10 Years After Graduation, by Major Field



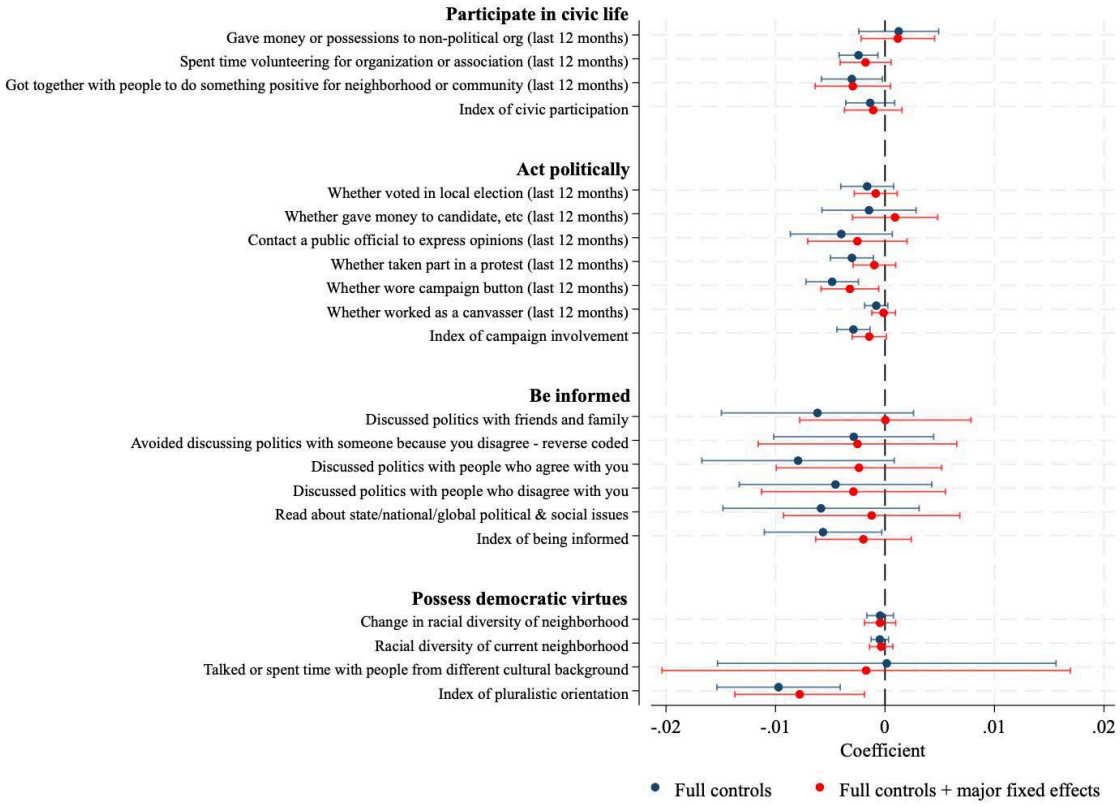

*Note:* Figure reports the predicted likelihood of working in a public sector job ten years after graduation by major at the minimum and maximum values of breadth in our analysis sample. Sample is restricted to those who have any job spell during the given outcome year. The sample includes 68,272 graduates from CBII institutions 2004–2021 matched to career profile data provided by Burning Glass Institute. Models include system-cohort fixed effects, all controls accounting for students' demographics, pre-college preparation, transfer credits received, and double-major, and interactions between breadth and major field. 95% confidence intervals reflect standard errors clustered by system-cohort.

**Figure 3.** Association between Curriculum Breadth and Survey Measures of Civic Engagement




*Note:* The figure reports the regression coefficient on curriculum breadth with different measures of civic engagement as the outcome. The model also includes curriculum depth, whose coefficient is reported in Figure 4. The samples are restricted to graduates from CBII institutions during the 2009-2010 academic year who completed a CBII alumni survey. The legend on the right indicates the specification of the model. The "full controls" accounts for students' demographics, pre-college preparation, transfer credits received, and double majors; the "full control+major fixed effects" adds major fixed effects defined using 9-category fields of study. The sample sizes vary slightly across outcomes, ranging from 2,464 to 2,681 due to non-response to items in the survey. Exact sample sizes are reported in Table A7-10. Coefficients correspond to models with and without fixed effects for 9 categories of college major. 95% confidence intervals reflect standard errors clustered by system.

**Figure 4.** Association between Curriculum Depth and Survey Measures of Civic Engagement




*Note:* The figure reports the regression coefficient on curriculum depth with different measures of civic engagement as the outcome. The model also includes curriculum breadth, whose coefficient is reported in Figure 3. The samples are restricted to graduates from CBII institutions during the 2009-2010 academic year who completed a CBII alumni survey. The legend indicates the specification of the model. The "full controls" accounts for students' demographics, pre-college preparation, transfer credits received, and double-major; the "full control+major fixed effects" adds major fixed effects defined using 9-category fields of study. The sample sizes vary slightly across outcomes, ranging from 2,464 to 2,681 due to non-response to items in the survey. Exact sample sizes are reported in Table A7-10. Coefficients correspond to models with and without fixed effects for 9 categories of college major. 95% confidence intervals reflect standard errors clustered by system.

## Appendix A. Tables and Figures

**Table A1.** Classification of Major Fields

| Major Field | Primary 2-digit CIP codes included |
|---|---|
| Business & Management | 52 Business and Management |
| Educ | 13 Education, 31 Parks, Recreation, Leisure (partial) |
| Engin | 11 Computer Science, 14 Engineering |
| Fine Arts | 50 Visual and Performing Arts |
| Health/Medicine | 51 Health Professions |
| Humanities | 5 Area, Ethnic, Gender Studies, 9 Communication (partial), 16 Foreign Language, 23 English, 24 Liberal Arts, 38 Philosophy, 54 History |
| Natural Sci | 26 Biology, 27 Mathematics, 30 Interdisciplinary Studies (partial), 31 Parks, Recreation, Leisure (partial), 40 Physical Sciences |
| Social/Behavior Sci | 30 Interdisciplinary Studies (partial), 42 Psychology, 44 Public Administration, 45 Social Sciences |
| Other | 3 Natural Resources, 4 Architecture, 9 Communications (partial), 15 Engineering Technology, 19 Family and Consumer, 22 Legal, 30 Interdisciplinary (partial), 31 Parks, Recreation, Leisure (partial), 43 Protective Services, 45 Social Sciences (partial) |

*Note:* Major fields are assigned based on 4-digit CIP code, so some very small categories may not be reflected in table. Classification is from AAAS.

**Table A2.** Balance Tests: Full vs. Analytic Samples

| | Full Sample | Career History Sample | | | Survey Sample | | |
|---|---|---|---|---|---|---|---|
| | Mean | Mean | Cond. Diff | p-value | Mean | Cond. Diff | p-value |
| Business & Management | 0.19 | 0.22 | 0.04 | 0.00 | 0.13 | -0.04 | 0.00 |
| Educ | 0.04 | 0.03 | -0.02 | 0.00 | 0.04 | -0.01 | 0.10 |
| Engin | 0.10 | 0.14 | 0.06 | 0.00 | 0.09 | 0.01 | 0.43 |
| Fine Arts | 0.04 | 0.03 | -0.01 | 0.00 | 0.05 | 0.01 | 0.10 |
| Health/Medicine | 0.06 | 0.05 | -0.01 | 0.00 | 0.05 | 0.00 | 0.94 |
| Humanities | 0.12 | 0.10 | -0.02 | 0.00 | 0.16 | 0.01 | 0.11 |
| Natural Sci | 0.11 | 0.11 | -0.01 | 0.00 | 0.14 | 0.01 | 0.23 |
| Social/Behavior Scie | 0.24 | 0.22 | -0.02 | 0.00 | 0.24 | 0.02 | 0.11 |
| Other | 0.10 | 0.09 | 0.00 | 0.62 | 0.08 | -0.01 | 0.09 |
| White | 0.43 | 0.43 | 0.00 | 0.96 | 0.52 | -0.03 | 0.11 |
| Asian | 0.18 | 0.20 | 0.02 | 0.00 | 0.12 | -0.03 | 0.02 |
| Hispanic | 0.16 | 0.16 | 0.01 | 0.00 | 0.09 | 0.01 | 0.37 |
| Black/African Amer. | 0.10 | 0.10 | 0.00 | 0.00 | 0.07 | 0.01 | 0.26 |
| Native & Indig. | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.07 |
| Multi & Missing | 0.05 | 0.05 | 0.00 | 0.74 | 0.20 | 0.08 | 0.03 |
| Nonresident | 0.07 | 0.06 | -0.03 | 0.00 | 0.00 | -0.05 | 0.00 |
| From high-poverty ZIP code | 0.22 | 0.21 | -0.01 | 0.00 | 0.23 | 0.01 | 0.45 |
| Female | 0.57 | 0.51 | -0.08 | 0.00 | 0.55 | 0.00 | 0.85 |
| Total unique courses | 46.21 | 46.78 | 0.65 | 0.00 | 46.54 | 0.45 | 0.71 |
| GPA, cumulative | 3.20 | 3.18 | -0.03 | 0.00 | 3.23 | 0.05 | 0.15 |
| Double major | 0.08 | 0.07 | -0.01 | 0.00 | 0.14 | 0.00 | 0.66 |
| High School GPA standardized | 3.69 | 3.69 | -0.01 | 0.10 | 3.60 | 0.01 | 0.79 |
| Transfer credits (if positive) | 33.08 | 32.77 | 0.03 | 0.97 | 26.76 | -1.88 | 0.51 |
| Max SAT I Math score standardized | 613.43 | 617.12 | 5.57 | 0.00 | 608.67 | 1.44 | 0.79 |
| Max SAT I Verbal score standardized | 577.79 | 578.38 | 1.84 | 0.02 | 588.71 | 11.97 | 0.01 |
| Max ACT English score standardized | 27.46 | 27.42 | -0.03 | 0.55 | 27.43 | 0.15 | 0.59 |
| Max ACT Math score standardized | 27.49 | 27.74 | 0.37 | 0.00 | 26.77 | -0.09 | 0.74 |

*Notes:* Difference is the coefficient on a dummy for being included in the Career History (Survey) sample in a regression of the characteristics on the dummy with system X cohort (system) fixed effects, clustered at system X cohort (system) level.

**Table A3.** Likelihood of Observing a Job Spell in Career History

| | mean = 0.745 | | | | |
|---|---|---|---|---|---|
| **Panel A. 5 years post-graduation** | (1) | (2) | (3) | (4) | (5) |
| Breadth | -0.0017*** | -0.0005 | 0.0008~ | 0.0021*** | 0.0017*** |
| | (0.0003) | (0.0005) | (0.0004) | (0.0004) | (0.0004) |
| Depth | -0.0002 | 0.0012*** | 0.0009** | 0.0007* | 0.0014*** |
| | (0.0002) | (0.0003) | (0.0003) | (0.0003) | (0.0003) |
| Controls | None | Full | Full | Full | Full |
| Sample | Full | Full | Full | Full | Full |
| Observations | 200,416 | 199,299 | 198,457 | 198,513 | 198,513 |
| R-squared | 0.0151 | 0.0204 | 0.0246 | 0.0267 | 0.0307 |
| Major FEs | None | None | 9-category | CIP2 | CIP4 |
| **Panel B. 10 years post-graduation** | mean = 0.645 | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| Breadth | -0.0025*** | -0.0000 | 0.0003 | 0.0010~ | 0.0007 |
| | (0.0005) | (0.0005) | (0.0006) | (0.0006) | (0.0006) |
| Depth | -0.0013*** | 0.0002 | -0.0001 | -0.0004 | 0.0002 |
| | (0.0003) | (0.0003) | (0.0003) | (0.0004) | (0.0004) |
| Controls | None | Full | Full | Full | Full |
| Sample | Full | Full | Full | Full | Full |
| Observations | 106,941 | 106,304 | 105,798 | 105,836 | 105,836 |
| R-squared | 0.0343 | 0.0393 | 0.0432 | 0.0446 | 0.0484 |
| Major FEs | None | None | 9-category | CIP2 | CIP4 |

*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system-cohort. All specifications include cohort-system fixed effects. Full controls include sex, race and ethnicity, total number of courses taken, cumulative GPA, an indicator for double-major, number of transfer credits received, neighborhood characteristics (income, education, racial diversity and composition, population density) based on zip code prior to college, SAT and ACT scores, and high school GPA. Admissions information and zip code is missing for a number of these students (including for some entire systems), so we also include indicators for missing this information. The constants are not reported, because the high-dimensional fixed effects and covariates whose zero values do not correspond to a substantively meaningful baseline make the constants hard to interpret. We impose several stricter sample restrictions: dropping system G, or only including observations in cohorts after 2010. The coefficients do not change qualitatively and quantitatively from the results reported in this table.

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table A4.** Association between Breadth, Depth, and Working in Public Service Sector 10 Years after Graduation, Using Stricter Sample Restrictions

| | (1) | (2) | (3) |
|---|---|---|---|
| Breadth | 0.0046*** | 0.0045*** | 0.0055*** |
| | (0.0007) | (0.0008) | (0.0012) |
| Depth | -0.0004 | -0.0009* | -0.0011~ |
| | (0.0004) | (0.0004) | (0.0006) |
| Controls | Full | Full | Full |
| Sample | Full | drop sysG | After 2010 |
| Observations | 68,272 | 58,921 | 33,756 |
| R-squared | 0.0753 | 0.0811 | 0.0738 |
| Major FEs | 9-category | 9-category | 9-category |

*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system and cohort. All specifications include system fixed effects. Full controls include sex, race and ethnicity, total number of courses taken, cumulative GPA, an indicator for double-major, number of transfer credits received, an indicator for being from a low-income zip code prior to college, SAT and ACT scores, and high school GPA. Admissions information and zip code are missing for a number of these students (including for some entire systems), so we include indicators for missing this information.
*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table A5.** Association between Curriculum Breadth, Depth, and Working in Public Service Sector 5 Years after Graduation

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Breadth | 0.0121*** | 0.0126*** | 0.0053*** | 0.0023*** | 0.0015*** |
| | (0.0005) | (0.0005) | (0.0004) | (0.0004) | (0.0004) |
| Depth | -0.0030*** | -0.0019*** | -0.0004 | 0.0003 | -0.0000 |
| | (0.0003) | (0.0003) | (0.0003) | (0.0003) | (0.0003) |
| Controls | None | Full | Full | Full | Full |
| Sample | Full | Full | Full | Full | Full |
| Observations | 149,334 | 148,580 | 148,042 | 148,042 | 148,042 |
| R-squared | 0.0382 | 0.0589 | 0.0858 | 0.0959 | 0.1083 |
| Major FEs | None | None | 9-category | CIP2 | CIP4 |

*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system-cohort. All specifications include cohort-system fixed effects. Full controls include sex, race and ethnicity, total number of courses taken, cumulative GPA, an indicator for double-major, number of transfer credits received, neighborhood characteristics (income, education, racial diversity and composition, population density) based on zip code prior to college, SAT and ACT scores, and high school GPA. Admissions information and zip code is missing for a number of these students (including for some entire systems), so we also include indicators for missing this information. We impose several stricter sample restrictions: dropping system G or only including observations in cohorts after 2010. The coefficients do not change qualitatively and quantitatively from the results reported in this table.

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table A6.** Association between Curriculum Breadth, Depth, and Public Service Employment 5 or 10 Years after Graduation, Using the Survey Sample

| | Public Service Sector (preferred measure) | | Public Service Occupation | | Public Service Occ + Sector | |
|---|---|---|---|---|---|---|
| | 5 year | 10 year | 5 year | 10 year | 5 year | 10 year |
| Breadth | 0.0094~ | -0.0058 | 0.0062 | 0.0188** | 0.0106~ | 0.0057 |
| | (0.0053) | (0.0088) | (0.0075) | (0.0055) | (0.0055) | (0.0049) |
| Depth | 0.0031 | 0.0003 | -0.0019 | -0.0006 | 0.0057** | -0.0015 |
| | (0.0022) | (0.0025) | (0.0036) | (0.0043) | (0.0021) | (0.0025) |
| Business&Management | -0.0138 | -0.0447 | -0.1444** | -0.0425 | -0.0441 | 0.0125 |
| | (0.0627) | (0.0773) | (0.0497) | (0.0712) | (0.0485) | (0.0384) |
| Educ | -0.0159 | -0.0266 | 0.5391*** | 0.2348 | 0.0394 | 0.0090 |
| | (0.0702) | (0.1302) | (0.0854) | (0.1640) | (0.0723) | (0.0722) |
| Engin | -0.0857 | -0.0999 | -0.1175* | 0.0073 | -0.0893* | 0.0188 |
| | (0.0539) | (0.0922) | (0.0490) | (0.0921) | (0.0413) | (0.0510) |
| Fine Arts | -0.0679 | 0.0482 | -0.0641 | 0.0778 | -0.0556 | 0.0499 |
| | (0.0871) | (0.1029) | (0.0983) | (0.1066) | (0.0634) | (0.0737) |
| Health/Medicine | 0.2262** | 0.3219* | 0.4950*** | 0.4002* | 0.2225** | 0.3509* |
| | (0.0797) | (0.1455) | (0.1094) | (0.1771) | (0.0803) | (0.1531) |
| Natural Sci | 0.1274 | 0.1799* | 0.1711* | 0.2182** | 0.0547 | 0.1219* |
| | (0.0815) | (0.0825) | (0.0740) | (0.0774) | (0.0538) | (0.0557) |
| Social/Behavior Sci. | 0.0698 | 0.1341** | 0.0985 | 0.0712 | 0.0435 | 0.0323 |
| | (0.0458) | (0.0499) | (0.0588) | (0.0612) | (0.0326) | (0.0358) |
| Other | 0.0688 | -0.0051 | -0.0421 | 0.0452 | -0.0214 | -0.0062 |
| | (0.0915) | (0.0791) | (0.0841) | (0.0784) | (0.0805) | (0.0366) |
| Controls | Full | Full | Full | Full | Full | Full |
| Observations | 823 | 677 | 823 | 677 | 823 | 677 |
| R-squared | 0.2044 | 0.2202 | 0.2870 | 0.2348 | 0.1639 | 0.2000 |
| Major FEs | 9-category | 9-category | 9-category | 9-category | 9-category | 9-category |

*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system. All specifications include system fixed effects. Controls include sex, race and ethnicity, total number of courses taken, cumulative GPA, an indicator for double-major, number of transfer credits received, an indicator for being from a low income zip code prior to college, SAT and ACT scores, and high school GPA. Admissions information and zip code is missing for a number of these students (including for some entire systems), so we include indicators for missing this information.

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table A7.** Association between Breadth, Depth, and Measures of Civic Engagement

| | | In the past 12 months have you... | | |
|---|---|---|---|---|
| | Civic Participation Index (last 12 months) | Got together with people to do something positive for neighborhood or community | Spent time volunteering for organization or association | Gave money or possessions to non-political group or organization |
| | (1) | (2) | (3) | (4) |
| Breadth | -0.0012 | -0.0003 | -0.0032 | -0.0011 |
| | (0.0023) | (0.0025) | (0.0041) | (0.0037) |
| Depth | -0.0011 | -0.0030 | -0.0018 | 0.0012 |
| | (0.0013) | (0.0017) | (0.0012) | (0.0017) |
| Business & Management | 0.0161 | 0.0224 | 0.0277 | -0.0007 |
| | (0.0333) | (0.0489) | (0.0323) | (0.0467) |
| Educ | 0.0352 | 0.0922 | 0.0885 | -0.0476 |
| | (0.0331) | (0.0520) | (0.0708) | (0.0338) |
| Engin | -0.0328 | -0.0666 | -0.0612 | 0.0316 |
| | (0.0319) | (0.0436) | (0.0498) | (0.0373) |
| Fine Arts | -0.0272 | -0.0393 | -0.0001 | -0.0347 |
| | (0.0424) | (0.0667) | (0.0590) | (0.0440) |
| Health/Medicine | -0.0298 | -0.0176 | 0.0138 | -0.0628 |
| | (0.0437) | (0.0607) | (0.0646) | (0.0608) |
| Natural Sci | -0.0409 | -0.0055 | -0.0329 | -0.0446 |
| | (0.0539) | (0.0751) | (0.0670) | (0.0394) |
| Social/Behavior Scie | 0.0266 | 0.0109 | 0.0693~ | 0.0084 |
| | (0.0216) | (0.0344) | (0.0356) | (0.0224) |
| Other | -0.0017 | -0.0327 | 0.0588~ | -0.0417 |
| | (0.0203) | (0.0358) | (0.0259) | (0.0281) |
| Background controls | Yes | Yes | Yes | Yes |
| Academic controls | Yes | Yes | Yes | Yes |
| Observations | 2,464 | 2,536 | 2,597 | 2,607 |
| R-squared | 0.0876 | 0.0502 | 0.0545 | 0.1131 |
| mean | 0.470 | 0.300 | 0.372 | 0.747 |

*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system. All specifications include system fixed effects. Background controls include sex, race and ethnicity, social class growing up, and parents education. Academic controls include total number of courses taken, cumulative GPA, neighborhood characteristics (income, education, racial diversity and composition, population density) based on zip code prior to college, SAT and ACT scores, high school GPA, and number of years studying math, history/government, foreign language, art/music, and science during high school. Admissions information and zip code is missing for a number of these students (including for some entire systems), so we include indicators for missing this information. *** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table A8.** Association between Breadth, Depth, and Measures of Acting Politically

| | | | | | In the past 12 months have you... | | |
|---|---|---|---|---|---|---|---|
| | voted in local election (last 12 months) | contact a public official to express opinions (last 12 months) | Gave money to candidate (last 12 months) | Campaign Involvement Index (last 12 months) | worked as a canvasser | wore campaign button | taken part in a protest |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Breadth | 0.0046 | -0.0039 | -0.0033 | -0.0017 | -0.0012 | -0.0015 | -0.0024 |
| | (0.0026) | (0.0024) | (0.0040) | (0.0013) | (0.0013) | (0.0012) | (0.0021) |
| Depth | -0.0009 | -0.0025 | 0.0009 | -0.0014 | -0.0001 | -0.0032~ | -0.0010 |
| | (0.0010) | (0.0023) | (0.0020) | (0.0008) | (0.0005) | (0.0013) | (0.0010) |
| Business & Management | -0.0784 | -0.0955 | -0.1355** | -0.0615** | -0.0254 | -0.0769* | -0.0822** |
| | (0.0502) | (0.0508) | (0.0276) | (0.0125) | (0.0178) | (0.0299) | (0.0203) |
| Educ | -0.0765 | -0.0220 | -0.1249** | -0.0572** | -0.0231 | -0.0583* | -0.0901** |
| | (0.0707) | (0.0737) | (0.0223) | (0.0123) | (0.0225) | (0.0235) | (0.0191) |
| Engin | -0.0118 | -0.0709 | -0.1401~ | -0.0798*** | -0.0472* | -0.1097* | -0.0827* |
| | (0.0222) | (0.0376) | (0.0710) | (0.0061) | (0.0134) | (0.0318) | (0.0234) |
| Fine Arts | -0.0088 | 0.0108 | -0.0955~ | 0.0214 | -0.0311 | -0.0042 | 0.0999 |
| | (0.0467) | (0.0463) | (0.0473) | (0.0406) | (0.0176) | (0.0633) | (0.0565) |
| Health/Medicine | -0.0169 | -0.0787 | -0.1392* | -0.0669** | -0.0338~ | -0.0816* | -0.0850* |
| | (0.0279) | (0.0530) | (0.0540) | (0.0144) | (0.0173) | (0.0276) | (0.0341) |
| Natural Sci | -0.1150~ | -0.0541 | -0.1209* | -0.0497** | -0.0281 | -0.0660 | -0.0530* |
| | (0.0496) | (0.0442) | (0.0463) | (0.0095) | (0.0201) | (0.0396) | (0.0174) |
| Social/Behavior Sci | -0.0227 | 0.0040 | -0.0167 | -0.0029 | 0.0047 | -0.0157 | 0.0034 |
| | (0.0154) | (0.0487) | (0.0379) | (0.0147) | (0.0203) | (0.0264) | (0.0135) |
| Other | -0.0326 | -0.0728 | -0.1081* | -0.0510** | -0.0189 | -0.0916* | -0.0429* |
| | (0.0340) | (0.0521) | (0.0352) | (0.0115) | (0.0194) | (0.0365) | (0.0120) |
| Background controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Academic controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2,613 | 2,681 | 2,678 | 2,676 | 2,680 | 2,680 | 2,677 |
| R-squared | 0.0943 | 0.0985 | 0.1132 | 0.1047 | 0.0568 | 0.0716 | 0.0999 |
| mean | 0.711 | 0.245 | 0.269 | 0.131 | 0.0455 | 0.179 | 0.168 |

*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors are in parentheses, clustered by system. All specifications include system fixed effects. Background controls include sex, race and ethnicity, social class growing up, and parents' education. Academic controls include total number of courses taken, cumulative GPA, neighborhood characteristics (income, education, racial diversity and composition, population density) based on zip code prior to college, SAT and ACT scores, high school GPA, and number of years studying math, history/government, foreign language, art/music, and science during high school. Admissions information and zip code are missing for a number of these students (including for some entire systems), so we include indicators for missing this information.
*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table A9.** Association between Breadth, Depth, and Measures of Being Informed

| | | How frequently during the past month have you engaged in the activity? (1 =Never, 5 = Often) | | | | |
|---|---|---|---|---|---|---|
| | Being Informed Index | Read about state/national/ global political and social issues | Discussed politics with people who disagree with you | Discussed politics with people who agree with you | Did not avoid discussing politics with someone because you disagree | Discussed politics with friends and family |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Breadth | -0.0020 | 0.0040 | -0.0081 | -0.0017 | -0.0038 | 0.0000 |
| | (0.0057) | (0.0080) | (0.0115) | (0.0100) | (0.0083) | (0.0082) |
| Depth | -0.0021 | -0.0013 | -0.0031 | -0.0025 | -0.0026 | -0.0001 |
| | (0.0023) | (0.0042) | (0.0043) | (0.0039) | (0.0046) | (0.0040) |
| Business & Mgmt | -0.1353** | -0.3101*** | 0.0245 | -0.2479** | 0.1100 | -0.2316** |
| | (0.0315) | (0.0465) | (0.0972) | (0.0587) | (0.1396) | (0.0466) |
| Educ | -0.1430~ | -0.2314 | -0.0456 | -0.2420~ | 0.0727 | -0.2799~ |
| | (0.0606) | (0.1703) | (0.0779) | (0.1175) | (0.1673) | (0.1306) |
| Engin | -0.2094** | -0.1595 | -0.1401~ | -0.3131** | -0.0327 | -0.3950** |
| | (0.0443) | (0.0942) | (0.0631) | (0.0737) | (0.0905) | (0.0691) |
| Fine Arts | -0.0572 | -0.0496 | -0.1029 | -0.0124 | -0.0019 | -0.1068 |
| | (0.0995) | (0.1137) | (0.1332) | (0.1595) | (0.1228) | (0.1747) |
| Health/Medicine | -0.2525* | -0.3587** | -0.0484 | -0.2681~ | -0.2251 | -0.3613* |
| | (0.0999) | (0.0636) | (0.0529) | (0.1273) | (0.2353) | (0.1452) |
| Natural Sci | -0.1051~ | -0.2596* | 0.0126 | -0.1926 | 0.1511 | -0.2331~ |
| | (0.0530) | (0.0758) | (0.1239) | (0.1354) | (0.1728) | (0.1184) |
| Social/Behavior Scie | -0.0046 | -0.0625 | 0.0797 | -0.0299 | 0.0737 | -0.0654 |
| | (0.0311) | (0.0700) | (0.0550) | (0.0729) | (0.0710) | (0.0597) |
| Other | -0.0783 | -0.1390 | 0.0354 | -0.1376 | -0.0279 | -0.1202~ |
| | (0.0590) | (0.0909) | (0.0789) | (0.0736) | (0.1493) | (0.0607) |
| Background controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Academic controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2,665 | 2,677 | 2,673 | 2,675 | 2,668 | 2,676 |
| R-squared | 0.1193 | 0.1374 | 0.0833 | 0.1252 | 0.0847 | 0.1196 |
| mean | 3.497 | 4.211 | 2.875 | 3.790 | 2.928 | 3.681 |

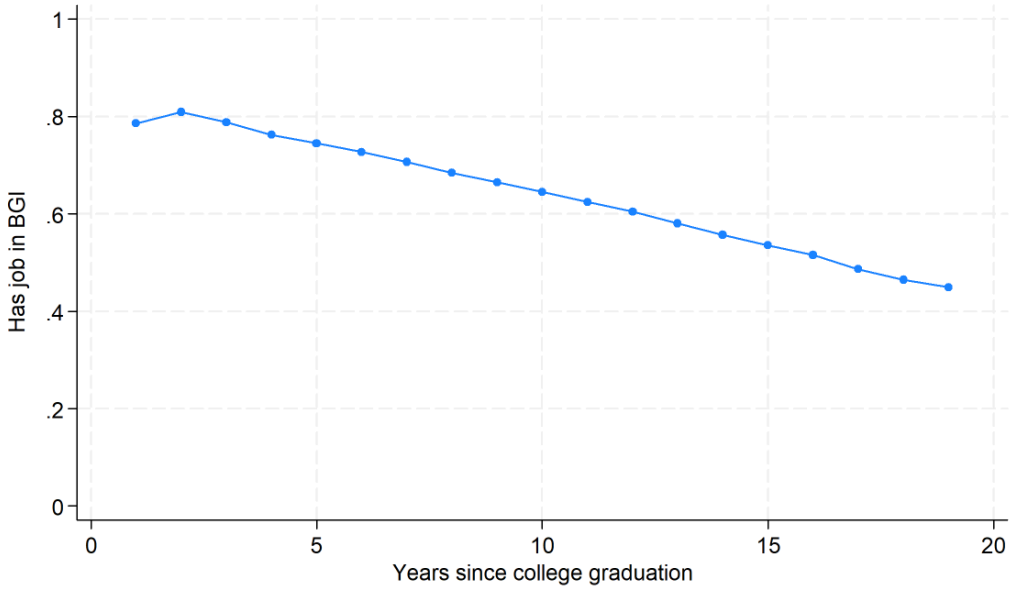
*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system. All specifications include system fixed effects. Background controls include sex, race and ethnicity, social class growing up, and parents' education. Academic controls include total number of courses taken, cumulative GPA, neighborhood characteristics (income, education, racial diversity and composition, population density) based on zip code prior to college, SAT and ACT scores, high school GPA, and number of years studying math, history/government, foreign language, art/music, and science during high school. Admissions information and zip code is missing for a number of these students (including for some entire systems), so we include indicators for missing this information.
*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Table A10.** Association between Breadth, Depth, and Measures of Possessing Democratic Virtues

| | Pluralistic Orientation Index (5 point scale) | Talked or spent time with people from diff background in past 12 months (1 = not at all, 7 = every day) | Neighborhood Racial and Ethnic Diversity Index (0 = no diversity, 0.75 = max diversity) |
|---|---|---|---|
| | (1) | (2) | (3) |
| Breadth | -0.0064 | 0.0256* | -0.0004 |
| | (0.0034) | (0.0099) | (0.0005) |
| Depth | -0.0079* | -0.0017 | -0.0003 |
| | (0.0031) | (0.0095) | (0.0006) |
| Business & Mgmt | -0.0774 | 0.0823 | 0.0005 |
| | (0.0512) | (0.1049) | (0.0103) |
| Educ | -0.0985* | 0.1184 | -0.0316~ |
| | (0.0381) | (0.1175) | (0.0148) |
| Engin | -0.0908 | 0.0954 | 0.0080 |
| | (0.0544) | (0.2699) | (0.0136) |
| Fine Arts | -0.0624 | 0.0545 | 0.0185 |
| | (0.0472) | (0.1235) | (0.0195) |
| Health/Medicine | -0.1392* | 0.1835~ | -0.0125 |
| | (0.0451) | (0.0884) | (0.0311) |
| Natural Sci | -0.0064 | 0.0769 | -0.0088 |
| | (0.0412) | (0.0959) | (0.0105) |
| Social/Behavior Scie | 0.0231 | 0.0465 | 0.0020 |
| | (0.0189) | (0.1562) | (0.0029) |
| Other | -0.0267 | 0.0202 | 0.0015 |
| | (0.0385) | (0.1004) | (0.0125) |
| Background controls | Yes | Yes | Yes |
| Academic controls | Yes | Yes | Yes |
| Observations | 2,675 | 2,613 | 2,602 |
| R-squared | 0.0915 | 0.0707 | 0.3100 |
| mean | 4.117 | 3.684 | 0.462 |

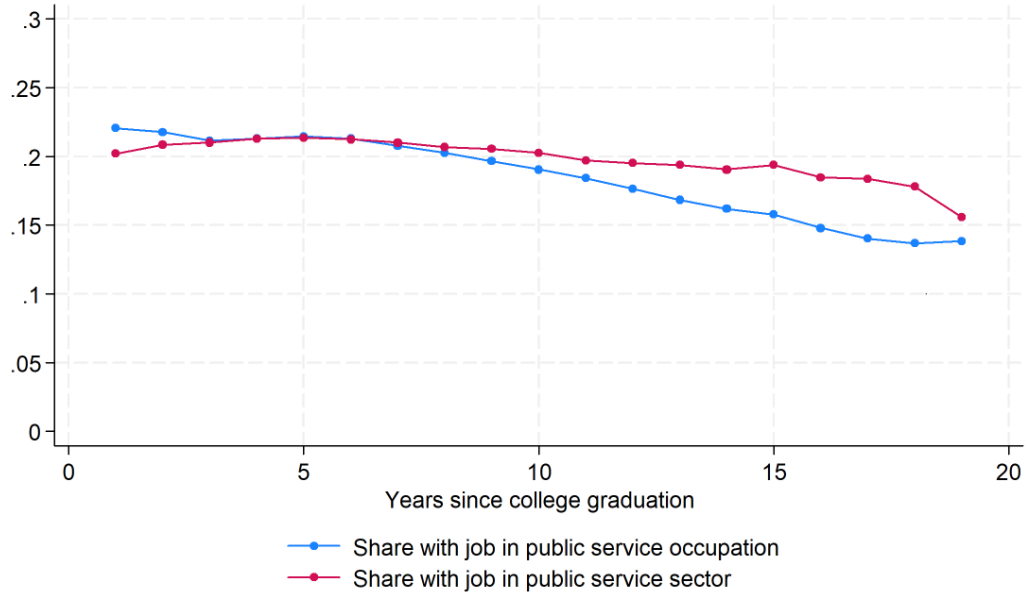
*Note:* Breadth is measured by the number of unique liberal arts subjects; depth is measured by the number of upper-level courses in a focal area. Robust standard errors in parentheses, clustered by system. All specifications include system fixed effects. Background controls include sex, race and ethnicity, social class growing up, and parents' education. Academic controls include total number of courses taken, cumulative GPA, neighborhood characteristics (income, education, racial diversity and composition, population density) based on zip code prior to college, SAT and ACT scores, high school GPA, and number of years studying math, history/government, foreign language, art/music, and science during high school. Admissions information and zip code is missing for a number of these students (including for some entire systems), so we include indicators for missing this information.
*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

**Figure A1.** Share of Observations with Job Spell by Years Since College Graduation



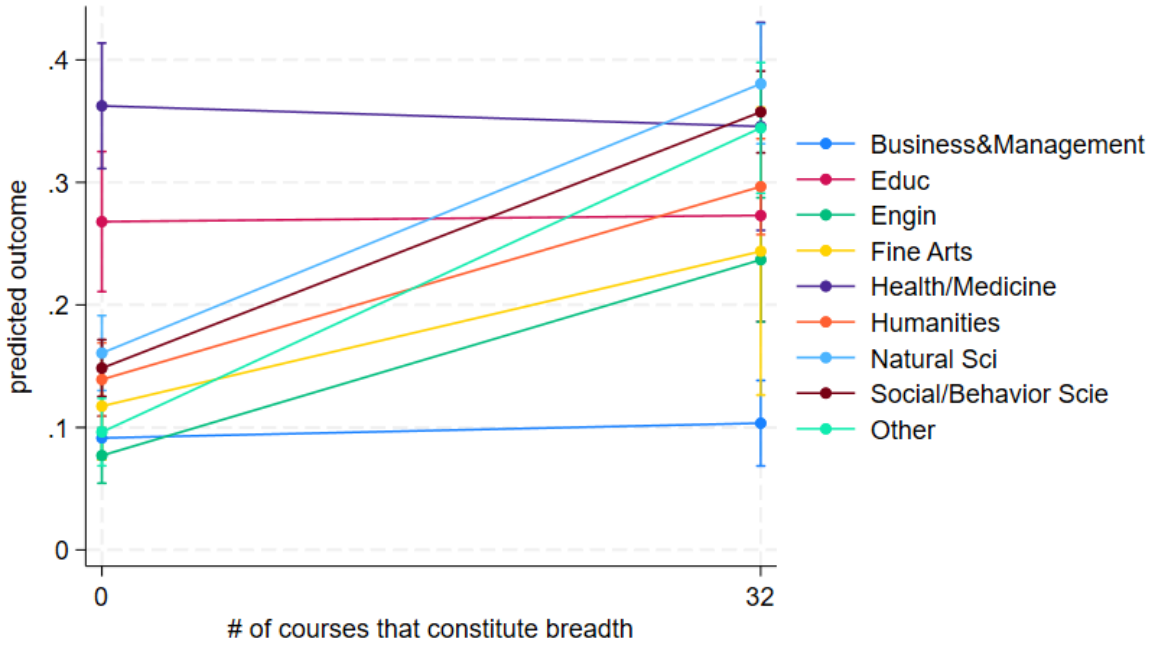

*Note:* Figure reports the share of individuals who have any job spell during the given year. Sample includes 238,000 graduates from CBII institutions 2004-2021, matched to career profile data provided by Burning Glass Institute.

**Figure A2.** Share Working in Public Service (Conditional on having listed job)




*Note:* Figure reports the share of individuals who have a job in public service in a given year, among those that have any job spell during the given year. Sample includes 238,000 graduates from CBII institutions 2004-2021 matched to career profile data provided by Burning Glass Institute.

**Figure A3.** Association between Curriculum Breadth and Predicted Employment in the Public Service Sector 5 Years After Graduation, by Major Field




*Note:* Figure reports the predicted likelihood of working in a public sector job by major and whether the student took the minimum or maximum amount of breadth in our analysis sample. Sample is restricted to those that have any job spell during the given outcome year. Maximum sample includes 238,000 graduates from CBII institutions 2004-2021 matched to career profile data provided by Burning Glass Institute. Models include system-cohort fixed effects, all controls, and interactions between breadth and major field.. 95% confidence intervals reflect standard errors clustered by system-cohort.

## Appendix B: Alumni Survey Text

**Table B1.** Alumni Survey Questions and Outcome Variables

| **Quality** | **Operationalization** |
|---|---|
| Participate in civic life | Community engagement<br>○ [civic_commun] In the past 12 months, did you get together with other people from your neighborhood to do something positive for your neighborhood or the community?<br>○ [civic_volunt] In the past 12 months, did you spend any time volunteering for any organization or association, including activities you do infrequently for children's schools or youth organizations?<br>○ [civic_give] In the past 12 months, did you give money or possessions to a non-political group or organization, such as a charity, school, or religious organization?<br>○ [index_civic_life] is the average of [civic_commun] [civic_volunt] [civic_give] |
| Act politically | ● Expressing opinions: [voice_contact_pub] Did you contact or visit a public official, at any level of government, to express your opinion?<br>● Election engagement: [vote_local] In the past 12 months, did you vote in a local election, such as for mayor or school board?<br>● Political donation: [voice_donate] Have you given money to a candidate, political party, or organization that supported candidates?<br>● Campaign involvement<br>○ [voice_canvass] Have you worked as a canvasser – having gone door to door for a political or social group or candidate?<br>○ [voice_button] Have you worn a campaign button, put a campaign sticker on your car, or placed a sign in your window or in front of your home?<br>○ [voice_protest] Have you taken part in a protest, march, or demonstration?<br>○ [index_camp] is the average of [voice_canvass] [voice_button] [voice_protest] |
| Be informed | ● Information seeking: for each activity listed below, please indicate how frequently during the past month you have engaged in the activity. Include activity inside and outside of social media. (1 = Never, 5 = Often)<br>○ Read about state/national/global political and social issues [civic_politic_read]<br>○ Discussed politics with people who disagree with you [civic_politic_disagree]<br>○ Avoided discussing politics with someone because you disagreed [civic_politic_avoid]<br>○ Discussed politics with friends and family [civic_politic_friends]<br>○ Discussed politics with people who agree with you [civic_politic_agree]<br>● Information seeking index: [index_informed] is the average of [civic_politic_read] [civic_politic_disagree] [civic_politic_avoid_r] [civic_politic_friends] [civic_politic_agree] |

| Quality | Operationalization |
| --- | --- |
| Possess democratic virtues | ● [civic_divers] In the past 12 months, how often did you talk to or spend time with people from a racial, ethnic, or cultural background that is different than yours? This may have been in person, over the phone, or through the internet or social media.<br>● Pluralistic orientation: Rate yourself on each of the following traits as compared with the average adult. Please provide an accurate assessment of how you see yourself.<br>○ Ability to see multiple perspectives on an issue [plural_multipl]<br>○ Ability to work cooperatively with diverse people [plural_cooper]<br>○ Ability to discuss and negotiate controversial issues [plural_negot]<br>○ Openness to having one's views challenged [plural_challen]<br>○ Tolerance of others with different beliefs [plural_tolleran]<br>○ Pluralistic orientation index [index_plura] is the average of [plural_multipl] [plural_cooper] [plural_negot] [plural_challen] [plural_tolleran] |