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The Multi-Engagement Model: Understanding Diverse Pathways to Student Success at Research Universities

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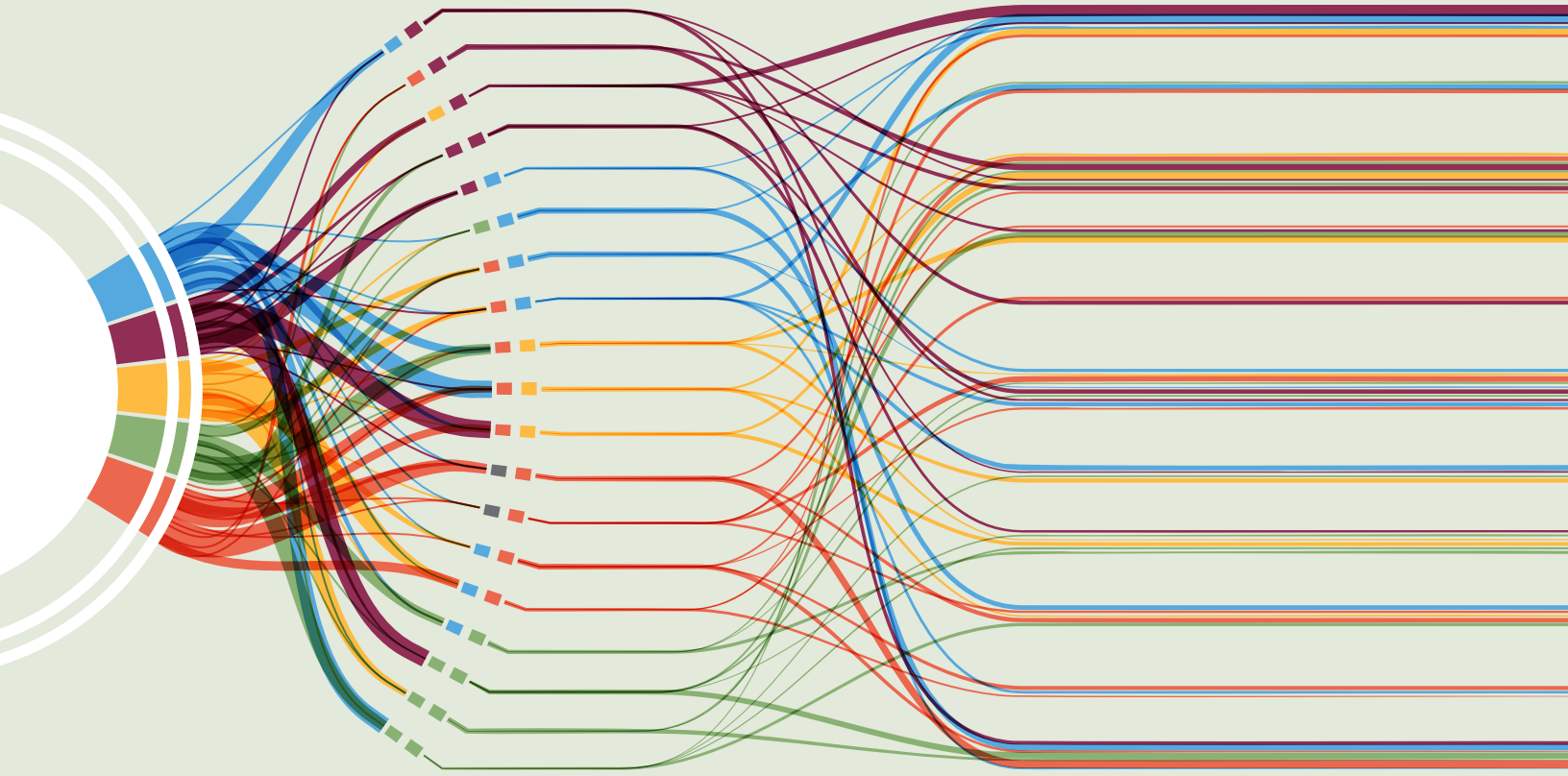

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A Report of the Student Experience in the Research University (SERU) Project
Center for Studies in Higher Education
UC Berkeley

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About the SERU Consortium:
Based at UC Berkeley, the SERU Consortium is a community of research-intensive universities collaborating on generating longitudinal, benchmarking data on the student experience. Member universities administer SERU undergraduate (ugSERU) and graduate student (gradSERU) surveys that are focused on the student experience and outcomes in research universities; they collaborate in survey design, data sharing, and disseminating best practices. The Consortium is also a vehicle for promoting scholarly and policy-relevant collaboration beyond institutional and national borders. Membership in the SERU Consortium is open to research-intensive universities (having R1 designation and equivalent international campuses) by invitation and for a multi-year term.

Contents

Executive Summary

American higher education is under increasing pressure to demonstrate its effectiveness in enhancing student success and employability. Traditional metrics used by researchers and policymakers—such as time to degree completion, postgraduate employment, and income—have predominantly overlooked the diversity of student pathways during and after college. This narrow focus has prompted calls for a more comprehensive framework that emphasizes a broader spectrum of pathways to student engagement and success.

This study introduces a Multi-Engagement Model as an analytical framework, offering a holistic perspective for understanding the undergraduate student experience at large research-intensive universities in the United States.

Multi-engagement highlights the significance and interconnectedness of various college experiences—ranging from academic engagement in classroom settings and research opportunities to involvement in extracurricular, civic, and career development activities—arguing that these lead to distinct and diverse pathways to student success. Although abundant research has been conducted on individual forms of engagement, the study offers a novel perspective on how these forms collectively shape the student experience and link with student plans and learning outcomes.

A starting point is the concept that research universities offer a multitude of experiences and pathways for student learning and development. We use the metaphor that large research-intensive universities are like large cities—an image that Clark Kerr offered in his famous 1963 treatise on the "multi-university." These institutions are characterized by large enrollment, a wide range of academic programs and degrees, and significant research portfolios, offering students a variety of opportunities for academic and social interaction.


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The challenge is to help students find and navigate the opportunities best suited to them and to recognize the vast array of student backgrounds, interests, and experiences in order to enhance their personal development and ultimately help make them productive citizens. In our view, students are not just passive recipients of knowledge, but active participants in the larger university ecosystem of learning, research, and public service.

To help build a more informed understanding of the effectiveness of research universities' efforts in undergraduate education, the Multi-Engagement Model focuses on the interplay between five forms of student engagement: academic, research, extracurricular, civic, and career.

This report provides an exploratory empirical analysis of multi-engagement trends in major U.S. public research universities, leveraging over 10 years of survey and institutional data collected by the Student Experience in the Research University (SERU)

Consortium. The SERU Consortium is a community of research-intensive universities collaborating on administering student surveys and sharing data for institutional self-improvement.


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Based at the Center for Studies in Higher Education at UC Berkeley and working in partnership with the University of Minnesota, Etio, and member universities, SERU has accumulated over 1.5 million student survey responses from over 40 major research universities throughout the world. Since its first survey administration in 2002 as a collaboration between higher education scholars and institutional researchers, a version of the Multi-Engagement Model has shaped the design and content of the SERU surveys.

Our empirical analysis consists of two parts. The first part explores the scope of multi-engagement and its relationship to learning outcomes and student plans, based on a subset of the SERU data from four pre-pandemic years (2016-2019), encompassing over 263,000 responses. We specifically focus on the pre-pandemic period to understand the "baseline" of student multi-engagement before the disruption caused by the pandemic and campus closures.

The second part analyzes the changes in student engagement over time across the five areas of multi-engagement—academic, research, extracurricular, civic, and career. The analysis compares the level of student engagement before, during, and after that pandemic, using over 806,000 SERU survey responses collected between 2012 and 2023 from 22 U.S. public research universities.

The SERU dataset reflects the experiences of students at predominantly residential universities, where most live on-campus or nearby. These institutions are also distinguished by high retention and graduation rates, typically ranging from 82% to 94%, which provides a strong foundation for examining patterns of student engagement and success.

Our major findings include:

1. **The Multi-Engagement Model applied to U.S. public universities demonstrates that two thirds of undergraduates are highly engaged (belonging in the top 25% of the distribution) in at least one of the defined areas: academic, extracurricular, civic, research, and career. Among seniors, this figure rises to over 85%, indicating increased engagement as students progress through their studies.**

   The Multi-Engagement Model challenges the notion of a singular success pathway, illustrating a broad spectrum of active participation across various opportunities in modern research universities. Despite 35% of students not being highly engaged in any area, nearly all exhibit medium or high engagement in at least one area, pushing the total engagement rate to over 99% when considering both medium and high engagement levels. The findings also indicate that engagement areas are largely independent of each other, highlighting the diverse and compartmentalized nature of student engagement.

2. **Patterns of engagement among students at U.S. public universities show notable disparities linked to gender, race/ethnicity, and socioeconomic background.**

   Female students generally engage more in civic, research, and career-advancing experiences compared to male students. Racial and ethnic disparities present a complex picture: African American students demonstrate higher engagement in all nonacademic areas compared to White peers, with similar levels of academic engagement, whereas Asian and Hispanic students show lower academic engagement but higher civic engagement than their White counterparts.

   Socioeconomic status also plays a significant role: Low-income students show higher engagement in civic and career activities compared to their middle-class peers, while students from wealthy families display much higher engagement across all areas except career, reflecting persistence of equity gaps in multi-engagement.

3. Engagement patterns vary significantly across disciplines, shaping how students select their majors.

Students in STEM fields show comparatively lower engagement in extracurricular and career activities but higher research engagement, reflecting a strong focus on scientific inquiry and innovation. Social science students prioritize civic and research engagement, while business students place a higher emphasis on extracurricular and career engagement.

Factors that students prioritize when selecting their majors align closely with their engagement profiles: Academically engaged students choose majors primarily based on intellectual curiosity, while those active in extracurriculars often seek prestige, civic and research-engaged students opt for fields that can better prepare them for graduate studies, and students with high career engagement select majors based on the promise of a fulfilling career.

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4. A strong association exists between forms of engagement and learning outcomes measured by GPA and self-reported skill proficiency levels and gains, supporting the Multi-Engagement Model assumption that different forms of engagement provide distinct positive outcomes.

Academic and research engagement are associated with higher grades, whereas high involvement in extracurricular activities is associated with slightly lower GPAs, indicating that certain forms of nonacademic engagement may have a trade-off with academic performance.

Each form of engagement is linked to a unique set of skill levels and gains. High academic engagement is associated with substantial enhancements in a range of skills, including analytical and critical thinking, writing, oral communication, read-

ing comprehension, understanding of the field of study, and quantitative skills. Research engagement is linked to improved abilities in conducting research, developing library research skills, and enhancing reading skills; civic engagement is associated with better leadership and interpersonal skills; career engagement is associated with stronger oral communication and presentation skills; and extracurricular engagement is related to developing leadership and presentation skills.

5. Different forms of engagement are strongly associated with students' career preferences and aspirations, guiding them toward diverse postgraduation pathways.

Students involved in academic and research activities are more likely to pursue further education and show an inclination toward fields that value rigorous scholarly engagement, such as law or health sciences. Those engaged in civic and extracurricular activities often show preferences for roles involving significant community interaction and leadership, such as in education and public administration, and they are also more likely to pursue volunteering opportunities and work abroad. Career engagement is notably associated with plans for immediate full-time employment and a strong entrepreneurial spirit, indicating that students highly engaged in career activities are prepared to enter the workforce directly or pursue self-employment opportunities.

6. Despite these positive findings, the overall landscape of multi-engagement declined across all areas since the onset of the COVID-19 pandemic, without a full recovery to pre-pandemic levels, thus far.

While certain aspects of academic engagement, such as participation in class activities and level of student effort, have shown resilience, overall study time both in and outside of class continues to decline, with key relationships involving faculty having failed to fully rebound. Notably, data from 2022-23 show a decline in research engagement, with a significant drop in students assisting faculty with research. Similarly, career engagement declined, especially in the number of students holding on-campus jobs, highlighting the enduring challenges in sustaining a robust multi-engagement environment.

Our analysis serves as an initial exploration of the Multi-Engagement Model using the extensive SERU dataset. We acknowledge the inherent limitations of relying on a self-selected survey sample, which might exclude the least engaged students and thus potentially bias the results. Although the SERU data are broadly representative across major student characteristics, the underrepresentation of lower engagement levels in survey responses could present an overly optimistic picture of student experience. If that is the case, and the levels of student engagement are in fact lower and declines in engagement even more severe than reported, universities must further intensify their efforts to engage all students, ensuring that engagement initiatives are robust and inclusive enough to reach those who are most disengaged. Furthermore, while our findings are based on multiyear data, they are currently limited to SERU survey data collected in 2022-23. An upcoming analysis of the pending 2024 data will be crucial to determine whether pre-pandemic patterns of engagement are returning or if troubling disjunctors remain.

Based on our analysis and findings, we suggest the following policy implications:

Strategically revitalizing engagement

Considering the effects of the pandemic shown in our analysis, universities should proactively develop initiatives that extend student engagement beyond the classroom to regain pre-pandemic levels of involvement. This includes expanding opportunities for research, fostering connections with local communities, supporting student organizations, and enhancing career development programs. Each initiative should be customized to the specific needs of different disciplines, ensuring relevance and maximizing impact.

Closing equity gaps

It is critical for universities to address the engagement gaps among different student demographics, specifically addressing engagement of those from low-income and working-class backgrounds. Initiatives must be designed to be financially accessible and accommodating to students who may have significant external commitments or limited awareness of available opportunities.

Promoting campus self-reflection and communicating value of undergraduate education

The Multi-Engagement Model and results presented in this report should encourage universities to initiate a conversation within the institutions, and with their external stakeholders, regarding the value, realities, and diversity of the student experience at large public research universities, and to seek opportunities for improvement. The findings discussed in this report show generally positive outcomes for students pursuing multiple experiences and pathways; examining the nature of these pathways could lead to a more realistic and nuanced understanding of the value of the baccalaureate and help build trust in higher education institutions.

Calibrating faculty hiring and advancement criteria

We point to the compatibility of our Multi-Engagement Model with the mission and values of our leading research universities, and the teaching, research, and public service role of faculty. We encourage a faculty hiring and advancement process that rewards faculty for offering students greater opportunities for research experiences, community engagement, and career preparation. Recognizing and incentivizing faculty engagement in these areas supports the broader institutional mission of nurturing holistic student development.

Enhancing data infrastructure

Using the Multi-Engagement Model requires an advanced data infrastructure capable of capturing and analyzing detailed information on various forms of student engagement. Universities should invest in technologies that integrate data from diverse sources, such as the SERU surveys, to provide a comprehensive view of student experiences and outcomes. This robust data infrastructure will not only allow for a deeper understanding of how different engagements affect student success but also challenge and refine the metrics used to define and measure that success.

There is more work to be done. We plan to further explore more recent SERU data to dig deeper into socioeconomic as well as demographic variables that should provide insights into, for example, the experience of students who belong to specific racial and ethnic groups or have recent immigrant backgrounds, the educational background and family income of students, international student populations, campus comparisons, and the relationship of our five types of engagement with outcomes such as postgraduation occupations and salaries.

More recent SERU data collected in 2024 and onward can provide a more complete picture of the impact of, or recovery from, the global pandemic. And while the research-intensive public universities included in this study have relatively high persistence and graduation rates, it is important that these campuses seek a greater understanding of those who drop out of our institutions.

Photo by Elena Zhukova/UC Berkeley

About the Authors

Igor Chirikov is the Director of the SERU Consortium and Senior Researcher at the Center for Studies in Higher Education (CSHE), Goldman School of Public Policy at the University of California, Berkeley. Throughout his career, he has successfully balanced research, teaching, and senior leadership roles in higher education. He has experience in designing and implementing large-scale international research projects in higher education, including randomized controlled trials. His research has largely focused on the student experience and learning outcomes and the use of technology in universities and international comparative higher education. His research has been published in *Science Advances, Nature Human Behaviour, PNAS, Studies in Higher Education, Educational Researcher* and other journals.

John Aubrey Douglass is Senior Research Fellow—Public Policy and Higher Education at CSHE, Goldman School of Public Policy at the University of California, Berkeley. He is the founding Principal Investigator of the SERU Consortium and lead author of the 2021 book *Neo-Nationalism and Universities* (Johns Hopkins University Press). His current research is focused on comparative international higher education, including the influence of globalization, the role of universities in economic development, science policy as a component of national and multinational economic policy, strategic issues related to developing mass higher education, and studies related to the SERU Consortium survey data that assess the student experience at major research universities.

Gregg Thomson is Principal Researcher in the SERU Consortium and affiliated researcher at CSHE, and led the initial design of the SERU undergraduate survey. His research focuses on minority and diversity issues in higher education, the development and use of student surveys, and using SERU data to understand the undergraduate student experience. Thomson is a retired Executive Director at the Office of Student Research and Campus Surveys at UC Berkeley, and served as Director of Institutional Research at Saint Mary's College in California.

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We also extend our thanks to the SERU colleagues at member universities, whose inventive and inspirational use of SERU data reflects their dedication to institutional self-evaluation and data-driven self-improvement.

The Scope of This Study. Exploring Multiple Dimensions of Student Engagement

Universities in the United States are increasingly challenged to enhance student success and employability while finding efficiencies in their teaching methods and administrative processes. This task is compounded by the intense competition for funding, declining public trust, and pressing need to demonstrate tangible returns on public investments, particularly in terms of measurable student learning outcomes and employability.

These challenges come at a time when many critiques of American higher education revolve around claims that students do not learn enough during college, the curriculum lacks rigor, graduation rates are too low, economic returns of college are declining, and social and other activities of students distract from their learning (Arum & Roksa, 2011; Babcock & Marks, 2011; Lee & Shapiro, 2023; Tough, 2023). Often, these critiques are based on a limited metric used to evaluate the student experience—time in the classroom, narrowly defined academic skills, or time to degree—without regard for the variety of institutional types in the United States and their varied missions and student populations.

Past research that served as the basis of this criticism often overlooked the multifaceted nature of the student experience at research universities, failing to capture the richness and diversity of activities that shape students' development. Might there be a different story, based on data and a more holistic model of analysis?

Photo courtesy of UC Regents

A growing consensus exists, reflected in the recent Boyer 2030 Commission Report, that universities should prepare students for a "world readiness," offering a curriculum that promotes academic knowledge but also equips them with the broad skills needed for life, citizenship, and work in a global context (Boyer 2030 Commission, 2022). The report also argues that universities need to go beyond traditional outcome measures to assess their success, or lack thereof, in fulfilling these goals.

Recent research on student progression through college emphasizes the importance of recognizing diverse pathways through which students navigate higher education and exploring how these varied pathways reflect the complex, individualized routes that students take, driven by personal choice and institutional opportunities (Kizilcec et al., 2023).

Research-intensive universities are unique environments that provide undergraduates with opportunities for multiple forms of engagement and learning. Clark Kerr, Chancellor of the University of California Berkeley campus and, later, President of the University of California system (1952 through 1967), explained that the modern university—what he called the "Multiversity"—offers students a vast and growing range of learning opportunities and environments for social interaction and maturation. Kerr characterized the Multiversity as an expansive, dynamic ecosystem akin to «a city of infinite variety,» presenting both immense opportunities for intellectual and professional growth and the potential for disorientation amidst the multitude of choices.

Students today indeed face myriad competing priorities, each demanding time and attention beyond those required for traditional academic studies. Many are compelled to gain practical work or research experience alongside their studies, in response to the growing demand from employers for skills developed outside the classroom.

Students also spearhead their own projects or initiatives on campus, providing a valuable avenue to further improve their leadership and organizational skills. Many students actively participate in community service and social initiatives, driven by a desire to contribute to society and interact with peers and those outside of campus. These diverse commitments collectively illustrate the complex landscape of modern student life, where balancing academic, research, career, extracurricular, and civic activities is the everyday challenge.

Research universities are tasked with guiding students through this maze, offering support tailored to their varied backgrounds, interests, and goals, thereby enabling them to harness the full potential of the Multiversity setting for their development. How are they doing?

We have adopted the metaphor of the Multiversity to introduce the model of *multi-engagement* to explore the diverse pathways through which students navigate higher education. Multi-engagement emphasizes a holistic approach to conceptualizing college student experience beyond classroom learning, including research, civic, social, career, personal development, and other types of experiences.

A key feature of this model is its emphasis on the interplay between various types of student engagement, highlighting how they can complement or conflict with each other. This perspective recognizes that student experiences are not isolated; rather, they are interconnected and can significantly influence one another. For instance, research activities may enhance academic learning, while extracurricular or civic engagements could either support or detract from academic performance.

Student engagement also varies considerably across disciplines and sociodemographic groups. For example, students in arts and humanities might engage more in cultural activities, while those in science and technology may lean towards research and engineering projects. Similarly, engagement patterns can differ based on students' backgrounds, including factors such as race, ethnicity, gender, social class, parental education, and immigrant or international status.

We believe that the Multi-Engagement Model offers a data-driven understanding of the diverse ways in which students learn and engage with their university, and that this forms a basis for greater institutional self-awareness and self-improvement. It also provides a robust framework to document and demonstrate universities' contributions to student success, crucial in an era where institutions face heightened pressure to justify public investment and prove student learning outcomes. By adopting a multi-engagement approach, universities can present a more comprehensive and nuanced picture of how they contribute to student development beyond conventional academic metrics.

We construct and apply the Multi-Engagement Model using over 10 years of survey and institutional data collected by the SERU Consortium. SERU is a community of research-intensive universities working together on administering student surveys and sharing data for institutional self-improvement.

Since its first survey administration in 2002 as a collaboration between higher education scholars and institutional researchers, a version of the Multi-Engagement Model has shaped the design and content of the SERU surveys, now administered in over 40 major research universities in the United States and throughout the world.

The data for this study include a subset of over 800,000 student responses collected between 2012 and 2023 in the United States, out of 1.5 million student responses collected by the SERU Consortium in the United States and internationally.


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In this study, we explore the interplay among various forms of student engagement over time, focusing on the following questions:

1. To what extent are various forms of engagement mutually exclusive, independent, or correlated?
2. How does multi-engagement vary across disciplines and student characteristics?
3. How are various forms of engagement associated with student GPA, learning outcomes, satisfaction and belonging, and postgraduation plans?
4. What are the trends in student experience when various modes of engagement (academic, research, career, extracurricular, and civic) are examined? What are the impacts of COVID-19 on student engagement?

We hope the model and initial analysis stimulate a discussion about a new mapping of the educational experience of undergraduates—one that can help universities prepare students to successfully live and work in the 21st century.

The following narrative first discusses past critiques of undergraduate education in American research universities, reform efforts by major public universities, the need for data-driven analysis, and the inspiration we found in the Multiversity concept to seek a multi-engagement conceptual framework. It then more fully discusses the Multi-Engagement Model and research on student engagement, followed by a description of the research methodology and data we used, a summary of our major findings, and concluding comments on opportunities for further research.

By adopting a multi-engagement approach, universities can present a more comprehensive and nuanced picture of how they contribute to student development beyond conventional academic metrics.

Photo by Elena Zhukova/UC Berkeley

01

The Multiversity and the Student Experience

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1. The Multiversity and the Student Experience

Colleges and universities in the United States have the goal of preparing undergraduates to understand and deal intelligently with modern life. Different types of institutions, however, have their own specific missions. Community colleges, for example, are committed to occupational education and preparation for transfer to 4-year institutions; liberal arts colleges impart a broad general knowledge and focus on the arts, humanities, natural sciences, and social sciences; elite private universities usually have a smaller selection of majors but may offer more specialized academic programs.

The modern public research university, the focus of this study, has a special and impactful place in the pantheon of American higher education. These universities are important for their scale, commitment to socioeconomic mobility, outsized contribution to knowledge production, commitment to civic engagement, their ability to meet skilled and professional labor force needs, generate economic and civic leaders, and push innovation and societal self-reflection.

There is at least one public research university in every state, providing a geographic breadth and access to degree programs that have profoundly shaped American life. These vital engines produce 41% of all baccalaureate degrees in the nation and 60% of

all doctoral degrees and conduct two-thirds of all university-based research (American Academy of Arts and Sciences, 2015).

Within their broad mission of teaching, research, and public service, they provide students with an education that is engaging, that promotes creativity and scholarship, and that results in high-order skills that are useful in the labor market, for entry to a graduate degree, for good citizenship, and for a fulfilling life.

How have public research universities fared in their mission to support the student experience and provide students with these skills?

1.1. The Multiversity as Inspiration

As noted previously, both recent and older critiques of American universities revolve around claims that students do not learn enough during their university or college careers, that the curriculum is not rigorous enough, and that faculty and university administrators do not pay enough attention to undergraduate education and fail to mentor and support their students. These observations do, in some measure, reflect real problems within our universities. But we also know that much of the criticism is based on research grounded in narrow assumptions about the student experience and their patterns of engagement.

Nonacademic engagements of all types have been dismissed as largely a waste of time, and not a significant component of student maturation and self-awareness. There is also little regard for the variety of institutional types in the United States or their varied missions and their student populations. The popular press has often reiterated the theme that students are not learning much, adding to a narrative that America's network of colleges and universities does not provide value for money.

In conducting and exploring the survey and institutional data of SERU member campuses (all major public research universities), we wanted to investigate not only the validity of such critiques, but how we could better understand the extent to which universities are fulfilling their missions of educating and mentoring students, in what areas they need to improve, and how they might gauge the impact of programmatic and other reforms in undergraduate education.

In an era of intensified competition for talent and public funding, and increased concerns about higher education as the key to socioeconomic mobility and economic innovation and growth, we also saw a need to better document and explain the value of public investment in research universities to the public.

How can we use data to model the variety of student experiences?

We found inspiration in the multifaceted framing of the SERU undergraduate survey, which, since it first administration in 2002, has always sought robust data on the many forms of student engagement, and in the concept of the Multiversity first outlined by Clark Kerr in his 1963 Godkin lectures at Harvard.

As noted previously, Kerr suggested that the Multiversity offers students a vast and growing range of opportunities for academic learning, as well as social interaction and maturation. Within the context of rapid enrollment growth and new sources of federal funding for academic research in the early 1960s, Kerr characterized major research universities such as Berkeley as "cities," as opposed to villages or towns that resembled universities of the past. The Multiversity, he explained,

> *is a city of infinite variety. Some get lost in the city; some rise to the top within it; most fashion their lives within one of its many subcultures. There is less sense of community than in the village but also less sense of confinement. There is less sense of purpose than within the town but there are more ways to excel. There are also more refuges of anonymity—both for the creative person and the drifter.* (Kerr, 2001, p. 31)

As the title implies, Multiversities serve multiple groups and purposes. They are centers for academic research, professional training, and social and political engagement. At their core, observed Kerr in the post-Sputnik era, they had become prominent centers for research and innovation, pivotal in driving scientific and scholarly inquiry, contributing new knowledge across various disciplines, and creating unique environments for educating students. But the Multiversity was not without problems.

For one, students, as he observed in 1963, can get "lost" or fail to find a path even with the vast array of opportunities afforded to them: "In this range of choices [a student] encounters the opportunities and the dilemmas of freedom. The casualty rate is high. The walking wounded are many. *Lernfreiheit*—the freedom of the student to pick and choose to stay or to move on—is triumphant" (Kerr, 2001, p. 32).

Second, Kerr lamented a "cruel paradox" of the successful research university where a "superior faculty results in an inferior concern for undergraduate instruction." A relatively new era had emerged in which research productivity came to dominate the academic culture of faculty and university administrators, as well as faculty hiring and advancement. He believed universities were at a "point of no return" and saw no solution, though he hoped that at some point one would be found.

American universities did subsequently attempt to create greater coherency and navigation services to students in the midst of rapid enrollment growth, including by expanding academic advising. However, the "cruel paradox" remained the focus of two influential reports by the Carnegie Foundation for the Advancement of Teaching, led by its president Ernest Boyer.

In *Scholarship Reconsidered: Priorities of the Professoriate* (Boyer, 1990) and *Reinventing Undergraduate Education: A Blueprint for America's Research Universities* (Boyer, 1998), Boyer and his colleagues called for an academic scholarship reformation. The so-called "Boyer Reports" reiterated the concern that faculty at research universities, and more generally the mindset of American universities, were not focused enough on undergraduate education. At the heart of the argument was the concept that student engagement—academic, social, experiential—was essential for their development and success.

Among the recommendations of the two reports: Make research-based learning the standard, remove barriers to interdisciplinary studies, link communications skills and course work, construct an inquiry-based freshman year and a capstone experience for graduating students, better educate graduate students as apprentice teachers, and change the faculty reward system to better integrate teaching quality and mentorship.

1.2. **Undergraduate Education Reforms and Challenges**

Over the last several decades, public universities have indeed pursued reforms and innovations bolstered by renewed commitment to undergraduate education, spurred in part by the Boyer Reports, but also informed by a greater understanding and appreciation of the socioeconomic background and aspirations of students—many of whom are the first in their family to attend higher education.

One relatively new concept was that students were not simply recipients of knowledge in the classroom, but participants in teaching and learning, new knowledge production, and the civic engagement mission of universities. Recent reform efforts have included:

- *reforming and reconceptualizing the curriculum and general education requirements*, including developing service-learning courses and interdisciplinary programs.

- *funding and significantly expanding undergraduate research opportunities* that research shows influence the learning and postgraduate plans and careers of students.
- *bolstering and reimaging academic advising*, including peer-to-peer programmatic approaches to learning. More recently, this includes online platforms including AI to help students navigate their university lives and find opportunities that fit their interests and ambitions.
- *improving pedagogy and platforms for classroom teaching,* including developing Teaching and Learning Centers (CTLs) and offering funding and recognition of innovative curricula and teaching practices.
- *expanding the role of career centers and departmental support services* to find better linkages and networks for internship, career preparation, and on-campus work opportunities that align with the student's interests.
- *organizing and funding programs intended to expand the civic engagement experience of students*, including developing service-learning courses as well as faculty-supervised projects based on local community needs to extend the learning environment beyond the campus.

- *supporting the expansion of student-run organizations* that help students gain management and leadership skills and build a sense of belonging within the larger university community.
- *generating data*, including student experience surveys such as SERU, that facilitate analysis of the student experience and offer evidence for institutional self-improvement, program review, accreditation, and similar quality assurance efforts.

The major public universities, including members of the SERU Consortium, continue to pursue curricular and other programmatic innovations to bring greater coherency to the student experience. University leaders are looking for ways to enhance learning and to give students a greater sense of belonging and engagement, which research shows contribute to their personal and academic development. SERU campuses also seek to generate survey and institutional data as an important source to evaluate and inform academic leaders on the student experience, areas of strength and weakness, the impact of curricular and other reforms, and quality assurance.

Yet even with these concerted efforts, students today are faced with the daunting task of navigating through a multitude of academic and extracurricular options. They find themselves in a vibrant landscape where the challenge lies not just in academic achievement, but also in carving out a personal identity and sense of belonging within the institution.

Other modern-day challenges include classes that are larger on average than ever before, with fewer opportunities to interact with faculty. A larger proportion of students now bear the financial burden of their studies, often accruing significant debt. This economic reality, along with the presence of a more racially and ethnically diverse student body, including many students from immigrant family backgrounds, are factors steering many students towards a career-oriented pathway. As our research shows, this means that students not only seek majors linked to certain professions, such as engineering; they also pursue extracurricular activities, part-time jobs, internships, and research that they believe will enhance their employability.


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The Multi-Engagement Model

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2. The Multi-Engagement Model

Since its inception over two decades ago, the SERU survey instrument has been constructed around the idea of multiple forms of student engagement and the concept that students may take different pathways to achieve their goals and aspirations.

To fully explore the student experience, we need broad data that provide insight into students' socioeconomic background, the discipline they are pursuing, their civic engagement, their career aspirations, and other variables. At the outset, SERU surveys—first used by the University of California system, then opened to AAU and other research-intensive universities—were designed as census and online instruments.

These features make the longitudinal SERU survey data set, linked with other institutional data, a powerful tool for institutional self-analysis that is further enhanced by the ability to analyze benchmark data from other SERU peer campus members.

The following section discusses past research related to student engagement theory, reviewing existing literature and noting what is missing in the scholarship of the student experience. We then introduce the Multi-Engagement Model, which provides a holistic approach and forms the conceptual framework for our subsequent analysis.

2.1. **Student Engagement Theory and Research**

Student engagement has long been a vital concept in higher education research. Its origins can be traced back to Alexander Astin's seminal work *Student Involvement: A Developmental Theory for Higher Education* (1984), which conceptualized engagement as the physical and psychological energy a student invests in their academic experience. He argued that engagement spans behaviors such as studying, participating in student organizations and campus life, and interacting with faculty, predicting that higher involvement leads to increased learning and personal development.

Astin's perspective has significantly influenced subsequent theoretical developments and data collection efforts in higher education, shaping our understanding of the student experience.

Engagement has since been theorized to include three distinct dimensions: behavioral, emotional, and cognitive (Fredricks et al., 2004). Behavioral engagement involves participation in academic and extracurricular activities, emotional engagement involves students' affective reactions such as interest and enjoyment, and cognitive engagement involves the intellectual effort students devote to their studies. These dimensions underscore the complexity of engagement, indicating that it is not merely about being physically present but also involves a deep, meaningful investment in the learning process.

Another important component of student engagement is the role of institutional environment (Astin, 1993; Kuh, 2008). Institutions are pivotal in nurturing engagement, with strategies encompassing the development of high-impact educational practices that facilitate meaningful learning experiences. However, the responsibility for engagement is also placed on students, who are tasked with actively contributing to their learning to maximize their educational outcomes (Hu & Kuh, 2002; Pascarella & Terenzini, 2005).

Research has consistently shown that engagement in educationally purposeful activities is linked to various positive student outcomes, including cognitive and intellectual skill development, college adjustment, sense of belonging, and persistence (Anaya, 1996; Cabrera et al., 1999; Kuh et al., 2003; Mayhew et al., 2016; Tinto, 2000). Furthermore, engagement is crucial for moral and ethical development, the accumulation of social capital, and psychosocial development, indicating a broad spectrum of benefits extending beyond academic achievement (Evans, 1987; Harper, 2008; Rest et al., 1997).

While engagement yields overall positive effects for all students, research also indicates that the magnitude and nature of these benefits vary across different disciplines and student subpopulations (Pascarella & Terenzini, 2005; Quaye & Harper, 2015). For students who are low-income, first-generation, or members of underrepresented racial

groups, the relationship between level of engagement and positive outcomes can be more nuanced. This variation may be attributed to systemic barriers, differing institutional supports, and the unique challenges these students face.

Effective engagement strategies thus require a deep understanding of these dynamics to ensure that all students, particularly those from marginalized groups, can fully benefit from engagement opportunities.

The extensive literature on student engagement often lacks explicit definitions of engagement, assuming a universal understanding of the term (Trowler, 2010). This gap has led to the creation of diverse proxies for engagement, from specific learning processes to broad educational activities designed to improve learning outcomes and retention, and address equity and social justice concerns (Mayhew et al., 2016).

The understanding of student engagement as a broad spectrum of student activities on campus, from classroom involvement to extracurricular participation and interactions with faculty, often fails to critically address the relationships and interplay between different forms of engagement and the competing priorities students navigate.


Photo by Irene Yi/UC Berkeley


Photo by Elena Zhukova/UC Berkeley


Photo by Elena Zhukova/UC Berkeley

This gap in research highlights the need for exploration into how various engagement forms influence each other and their overall effect on student success and development. Switching focus from student *engagement* to multiple student *engagements* allows us to explore the dynamic relationships among different engagement forms and the balancing act students perform among multiple activities on and off campus.

2.2. **Forms of Engagement**

Most empirical research on student engagement tends to adopt either a highly focused approach, concentrating specifically on aspects of classroom engagement (such as time allocated to study and classroom activities), or a perspective that does not differentiate between various forms of engagement, including any on-campus activities. Only a handful of studies have investigated the dynamic interaction between at least two forms of engagement, with a primary emphasis on examining the correlation between academic engagement within classroom settings and only one other form of engagement, such as extracurricular activities, research, or civic involvement.

At the same time, research across diverse academic disciplines consistently reveals a positive correlation between various forms of academic engagement and involvement in extracurricular activities. These studies, spanning from classroom engagement to broader educational outcomes, indicate that not all extracurricular activities influence academic progress equally, with some having a more significant effect than others.

Wilson et al. (2014) and Brint and Cantwell (2010) explore how extracurricular activities, particularly those that enhance academic self-efficacy, contribute to higher academic engagement. Their findings suggest that while direct relationships between co-curricular participation and academic achievement may not always be significant, the interaction effects are positively correlated with increased academic engagement.

Similarly, Allendoerfer et al. (2012) and Wilson et al. (2014) highlight the mediated relationship between nonacademic extracurricular activities and academic engagement, emphasizing the role of belonging and emotional support in enhancing academic outcomes.

Studies by Cooper et al. (1994) and Jones et al. (2014) also underline the positive impact of involvement in student organizations and clubs on educational involvement and overall GPA. Fredrikson (2015) examines the nuanced effects of collaborative versus individual writing projects on student engagement, suggesting that while certain ex-

tracurricular activities can enhance academic engagement, the impact varies across different types of engagement.

Learning communities, as investigated by Zhao and Kuh (2004), Shapiro and Levine (1999), and Pike (1999), among others, are consistently associated with increased academic effort, integration, and active learning. These communities not only foster closer interactions with faculty and peers, but also encourage higher-order thinking and collaborative learning. Tinto and Russo (1994) and Pike, Schroeder, and Berry (1997) document the benefits of learning communities in creating supportive peer networks and enhancing involvement in educationally purposeful activities. This effect is corroborated by findings from Pike, Kuh, and McCormick (2011) and Everett and Flynn (2013), who note the significant positive impact of learning community participation on academic effort and peer study engagement.


Photo by Elena Zhukova/UC Berkeley

However, research on Greek life presents a more mixed picture. While studies by Pike (2003) and Astin (1977, 1993) indicate a weak positive relationship between Greek affiliation and academic engagement, findings from Pike and Askew (1990) and Student Life Studies (1997) suggest a more robust positive relationship between high levels of academic and social involvement among Greek members compared to their non-Greek peers. However, some research, including Pike (2000), shows no significant difference in academic involvement between Greek life and non-Greek life students, highlighting variability in the impact of different extracurricular activities on academic engagement.

Research engagement has been examined in relation to its impact on academic engagement, with findings generally indicating a neutral or positive association. Studies such as those conducted by Miller, Rycek, and Fritson (2010; 2011) delve into the effects of undergraduate research and internships on student engagement. Their research suggests that while specific increases in participation engagement were not identified, activities such as undergraduate research generally provided a more engaging experience than service-learning or learning communities. This pattern points to the potential of research engagement to foster deeper academic involvement, suggesting that en-

gaging in research activities may bolster students' connection to their academic disciplines and enhance their educational experience.

The findings on the relationship between academic and civic engagement are more mixed and nuanced. Several studies, including those by Miller, Rycek, and Fritson (2010), and Howe and Fosnacht (2015), have explored the relationship between civic engagement and academic engagement, often finding little to no direct correlation between increased civic activities and higher academic involvement. For instance, students participating in civic activities were not necessarily more engaged in their curricular work. Additionally, Howe and Fosnacht's (2017) investigation revealed a slightly higher level of democratic participation among students achieving B grades over those earning A's, suggesting that the link between academic success and civic engagement is not straightforward.

Further research into service-learning's effect on academic and civic engagement presents a complex picture. Studies by Sessa, Grabowski, and Shashidhar (2013) and Sessa, London, and Hopkins (2010) indicate that service-learning courses do not automatically lead to higher levels of academic engagement. However, these activities have been associated with positive changes in students' attitudes towards both academic and civic involvement. The distinction between behavioral engagement (actions) and

Photo by Peg Skorpinski/UC Berkeley

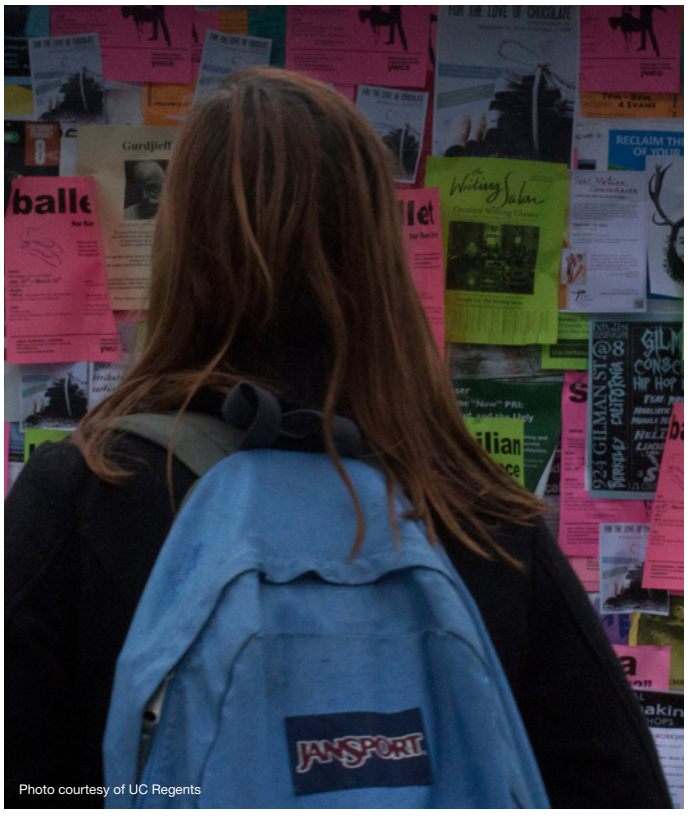


Photo courtesy of UC Regents

attitudinal engagement (beliefs) becomes crucial here, as active participation in service-learning courses appears to influence attitudinal changes towards engagement, even if it does not translate into a significant shift in academic behaviors.

Finally, the relationship between extracurricular engagement and civic engagement is underscored by a body of literature suggesting that participation in extracurricular activities fosters an increase in civic involvement. Studies by Krishan et al. (2016), Howe and Fosnacht (2015), and Bowman (2011) have collectively highlighted the positive correlation between various forms of extracurricular engagement, such as study-abroad programs, learning communities, and Greek life, and the enhancement of civic engagement among students.

Specifically, Krishan et al. (2016) noted a significant rise in community engagement following study-abroad programs, indicating that such high-impact practices can have a substantial effect on civic engagement levels. Similarly, Bowman (2011) linked diversity and global learning experiences, often integral components of extracurricular activities, to increased civic engagement, further reinforcing the connection between extracurricular involvement and broader societal participation.

Moreover, Howe and Fosnacht (2015) extended this analysis by comparing the effects of learning communities to those of service-learning on democratic engagement, finding that both types of extracurricular engagement were comparably effective in promoting aspects of civic involvement. Their comprehensive analysis, using data from the National Survey of Student Engagement (NSSE) and employing multilevel modeling, showed that high-impact practices, including Greek life and learning communities, are among the strongest predictors of democratic participation among college students.

This research suggests that while service-learning has a significant relationship with civic engagement, involvement in learning communities and other high-impact extracurricular activities can yield equivalent or even greater benefits in terms of fostering students' democratic participation. This evidence points to the broad potential of extracurricular engagement as a catalyst for civic involvement, highlighting the importance of encouraging student participation in a variety of extracurricular activities to enhance their civic engagement and, by extension, their contribution to society.

In summary, exploration of the interplay between various forms of student engagement highlights that different types of engagement tend to be positively correlated with one another, although not uniformly across all domains. The literature reveals mechanisms through which these forms of engagement are interconnected, such as the enhancement of academic self-efficacy through extracurricular activities, the fostering of a sense of belonging and emotional support from nonacademic engagements, and the cultiva-

tion of civic attitudes and behaviors from participation in community and service-oriented activities.

These findings underscore the multidimensional nature of engagement, where academic, extracurricular, civic, and research activities mutually reinforce each other, contributing to a holistic educational experience.

However, and as noted previously, most of the existing research is limited by its focus on the relationship between only two forms of engagement at a time, often overlooking the complex and dynamic interplay among multiple forms of engagement that students navigate.

Moreover, engagement patterns can change over time and may vary significantly across different academic disciplines and among various student subpopulations, suggesting that the impact of engagement is not static but evolves with students' progression through their academic and personal development.

This variability points to the critical need for further conceptualization of engagement as a multifaceted construct and calls for empirical research that captures the intricate relationships among different forms of engagement. Such research is essential for understanding how these various forms of engagement influence each other and contribute to overall student development, success, and well-being.

2.3. **Expanding the Perspective: Student Multi-Engagement**

The model of multi-engagement emerges from the recognition of the diverse landscape of large research universities, where students navigate a complex array of academic and nonacademic pursuits.

This model seeks to address the multifaceted nature of student experience, acknowledging that a student's educational journey is influenced by a complex blend of research, civic, social, career, and personal development activities that extend beyond classroom walls.

This comprehensive approach underscores the importance of understanding how various forms of engagement interact, either complementing or conflicting with each other, to shape the overall educational outcome.

Multi-engagement emphasizes the importance and interconnectedness of various college experiences, suggesting that the impact of one form of engagement can influence others. For instance, research engagement can deepen a student's understanding of academic material, while participation in social activities may foster skills valuable in both personal and professional realms.

This model acknowledges diversity within the student body, advocating for educational practices that are inclusive and adaptable to various interests and backgrounds. It builds upon foundational research within the SERU Project by Thomson (2011), Douglass, Thomson, and Zhao (2012), and Brint (2015).

These studies collectively underscore the multidimensional nature of the student experience, emphasizing the diverse and relevant learning experiences that extend beyond the traditional classroom setting. They highlight how these experiences significantly vary across different sociodemographic groups, illustrating the complexity and richness of student engagement in the context of modern higher education.

Steven Brint's SPACES model (2015) offers a valuable theoretical perspective for understanding and enhancing undergraduate education at research universities. Brint conceptualizes the undergraduate experience as serving multiple purposes, including fostering intellectual and cognitive growth, supporting personal and social development, preparing students for professional careers, and encouraging civic participation. Central to this framework is the role of institutional settings, which Brint argues should not only challenge students intellectually but also provide an environment that is inclusive and supportive. Together, these dimensions capture the diverse and interconnected goals of undergraduate education.

Drawing upon Brint's work, multi-engagement can be categorized into several distinct yet interconnected forms:

- academic engagement within classroom settings
- engagement through research activities
- involvement in extracurricular activities
- civic engagement
- engagement in career development

However, the scope of multi-engagement extends beyond these specified areas. Subject to contextual variables and available data, it may also encompass forms of engagement that are social, cultural, global, or aimed at personal development.

The Multi-Engagement Model assumes that students are provided with opportunities to engage in several domains of engagement, although not necessarily all of them at

once. From a student perspective, multi-engagement can have several benefits, directly aligning with the demands of a rapidly changing economy and society. By engaging in a variety of experiences, students can better prepare for their careers, as employers increasingly value versatility and the ability to navigate complex, interdisciplinary challenges.

For example, civic engagement fosters a sense of social responsibility and community involvement, essential for the development of informed and engaged citizens.

Research engagement cultivates critical thinking and analytical skills, preparing students for advanced studies or careers in research-intensive fields.

Leadership experiences, gained through involvement in student organizations, build essential skills for effective management and teamwork.

Multi-engagement has risks and challenges for students, too. The pressure to excel across multiple domains can lead to anxiety and stress, potentially compromising students' academic performance and well-being. Balancing the demands of various engagements requires careful time management and prioritization, skills that are often developed through trial and error. Moreover, excessive involvement in nonacademic activities may detract from the primary educational objectives, necessitating a thoughtful approach to student engagement that values depth over breadth.

From an institutional perspective, multi-engagement highlights diverse pathways to student success at large research universities. Adopting the multi-engagement approach allows institutions to enhance the educational landscape by integrating academic achievements with extracurricular, research, civic, and career development activities.

This holistic approach to student development highlights the university's commitment to producing well-rounded graduates equipped to meet global challenges. Additionally, adopting a multi-engagement framework allows institutions to showcase their comprehensive educational offerings, reinforcing their value in a competitive higher education environment and demonstrating their role in preparing students for professional and civic life.

However, implementing a multi-engagement approach presents notable challenges, particularly in tracking and supporting the myriad ways students engage beyond traditional academic settings. Many universities face limitations in collecting and analyzing data on student involvement in nonacademic activities, making it difficult to fully understand the effect of these experiences on student success.

Furthermore, limited resources constrain institutions' ability to expand their engagement offerings. Balancing the goal of providing a rich array of engagement opportunities with

the realities of finite institutional budgets requires strategic prioritization. These challenges underscore the need for innovative solutions to support comprehensive engagement strategies that can accommodate students' diverse needs while ensuring the sustainability of the institution's educational mission.

In conclusion, the Multi-Engagement Model offers a robust framework for understanding and enhancing the student experience in contemporary research universities. By acknowledging diverse forms of student engagement, universities can create more inclusive, dynamic, and supportive learning environments that cater to the needs and aspirations of their student populations.

It is important to navigate the potential pitfalls of multi-engagement by fostering a culture that values the quality of engagement over quantity, ensuring that students achieve a balanced and fulfilling educational experience.

03

Exploring Multi-Engagement With SERU Survey Data

SERU
CONSORTIUM

3. Exploring Multi-Engagement With SERU Survey Data

This section provides an initial exploration of the SERU Consortium survey and institutional data collected from 2010 to 2023 using a Multi-Engagement Model that focuses on five areas of student engagement: academic, research, civic, extracurricular, and career.

As noted previously, the SERU Consortium is a community of research-intensive universities collaborating on administering student surveys and sharing data for institutional self-improvement. Based at the Center for Studies in Higher Education at UC Berkeley, the Consortium is a member-run, not-for-profit research consortium designed to reduce complexities and costs of collecting, managing, and reporting data and to promote data-driven self-improvement.

Membership in the SERU Consortium is open to research-intensive universities (having R1 designation and equivalent international campuses).

SERU member universities collaborate by:

- administering undergraduate and graduate SERU surveys about the research university experience
- sharing SERU benchmark data and best practices
- seeking paths for institutional self-improvement

Photo by Allison Shultz/UC Berkeley

The SERU survey data offer a unique opportunity to explore the Multi-Engagement Model due to the survey's comprehensive scope and longitudinal design. Over a decade of data have now been collected from research-intensive universities; these can be used to capture nuanced insights into diverse student experiences across academic, research, civic, extracurricular, and career domains. Its integration of survey responses with institutional data enables in-depth analysis of engagement patterns, outcomes, and disparities across disciplines and student demographics.

3.1. **SERU Survey Data**

Between 2010 and 2023, the SERU Consortium collected data from over 1.1 million students. Our analysis of the trends in student engagement is based on the subset of those data collected at the 22 public universities shown below that administered the SERU survey three or more times between 2012 and 2023.

Purdue University	University of Florida
Rutgers University	University of Iowa
UC Berkeley	University of Michigan
UC Davis	University of Minnesota
UC Irvine	University of North Carolina at Chapel Hill
UC Los Angeles	University of Oregon
UC Merced	University of Pittsburgh
UC Riverside	University of Texas at Austin
UC San Diego	Texas A&M University
UC Santa Barbara	University of Virginia
UC Santa Cruz	University of Washington

SERU campuses are distinct in their student populations and institutional characteristics. These universities are highly selective in admissions and predominantly residential, with full-time students, most of whom live on campus or nearby. They have relatively low tuition and low rates of student debt. And they are also characterized by high retention and graduation rates, which typically range from 82% to 94%. Such characteristics underscore the robust academic environment and student success at these institutions.

Since some universities administered the survey bi-annually, we constructed six time periods for longitudinal analysis: 2012-13, 2014-15, 2016-17, 2018-19, 2020-21, and 2022-23. Each period includes data from one survey administration if the university administered the survey during that period. If a university administered two surveys (e.g., one in 2014 and another in 2015), data from the earliest survey administration were included in that period.

Table X: Longitudinal Sample

Period	Number of Universities	Sample	Median Response Rate
2012-13	21	158,971	32%
2014-15	21	153,233	31%
2016-17	21	135,137	28%
2018-19	21	128,453	28%
2020-21	18	122,935	27%
2022-23	18	107,788	26%
Total:	**21**	**806,517**	**29%**

The SERU survey is an online census survey that was administered to all undergraduate students during the spring term. It is a comprehensive survey that asks questions about student engagement, campus climate, academic and personal development, major evaluation, cost of attendance, plans and aspirations, well-being, and other topics. Survey data are combined with administrative records at the student level to increase accuracy of demographic information.

The median response rate during the study period ranged from 26% to 32%. The response rates during and following the pandemic years are marginally lower than those observed in pre-pandemic years. The composition of the respondent pool presents a broadly representative sample in terms of student academic level, field of study, race/ethnicity, and residency status.

However, it is worth noting that women are slightly overrepresented, especially during the pandemic years. This imbalance in gender representation should be considered when interpreting the results.

Another limitation of the SERU survey data is the self-selection bias inherent in its collection process, a common issue with census surveys. Since participation is voluntary, it is possible that students with lower levels of engagement or those who are underperforming academically may be underrepresented in the survey responses. This absence could skew the data, presenting a more optimistic picture of campus engagement than reality might warrant. Despite this, the data remain broadly representative of the student population, but careful interpretation is needed to ensure it reflects the full range of student experiences.

3.2. Methods and Multi-Engagement Variables

Our analysis consists of two parts. In the first part, we explore data from four pre-pandemic years (2016-2019) to analyze student multi-engagement across five engagement areas—academic, research, extracurricular, civic, and career.

In the second part, we analyze trends in student engagement to understand change over time and, in particular, during the pandemic.

Measures of multi-engagement (part 1)

We constructed five indices of engagement based on Principal Component Analysis.

High engagement is defined as belonging to the top 25% of the distribution in the specific area of engagement.

Variables included:

Academic (6 items):

1. Time spent studying and other academic activities outside of class (hours per week)
2. How often: contributed to a class discussion (measured from 1 to 6, from “Never” to “Very often”)
3. How often: Found your courses so interesting that you did more work than was required (measured from 1 to 6, from “Never” to “Very often”)
4. How often: Made a class presentation (measured from 1 to 6, from “Never” to “Very often”)
5. How often: Helped a classmate better understand the course material (measured from 1 to 6, from “Never” to “Very often”)
6. How frequently: Chosen challenging courses (measured from 1 to 4, from “Never” to “Three or more times”)

Research (6 items)

1. Assisted faculty in conducting research (yes/no)
2. Completed a research project or research paper as part of your coursework (yes/no)
3. Conducted own research or creative project outside of your regular coursework (yes/no)
4. Attended at least one independent study course (yes/no)
5. Attended at least one research methods course (yes/no)
6. How often: Taken a small research-oriented seminar with faculty (measured from 1 to 4, from "Never" to "Three or more times")

Extracurricular (11 items)

1. Time spent participating in student clubs or organizations (hours per week)
2. Served as an officer of a student organization (yes/no)
3. How often: Chaired a meeting (measured from 1 to 4, from "Never" to "More than 5 times")
4. How often: Planned an event (measured from 1 to 4, from "Never" to "More than 5 times")
5. How often: Promoted or marketed an event (measured from 1 to 4, from "Never" to "More than 5 times")
6. How often: Led or facilitated a discussion (measured from 1 to 4, from "Never" to "More than 5 times")
7. How often: Recruited new members for the organization/club (measured from 1 to 4, from "Never" to "More than 5 times")
8. How often: Mediated a dispute (measured from 1 to 4, from "Never" to "More than 5 times")
9. How often: Partnered with a community organization or organized community outreach (measured from 1 to 4, from "Never" to "More than 5 times")
10. How often: Developed a budget (measured from 1 to 4, from "Never" to "More than 5 times")
11. How often: Delegated tasks to others (measured from 1 to 4, from "Never" to "More than 5 times")

Civic (3 items)

1. Time spent performing community service or volunteer activities (hours per week)
2. Completed academic service-learning or community-based learning experience (yes/no)
3. How often outside the classroom: Interacted with someone with views that were different from their own (measured from 1 to 6, from "Never" to "Very often")

Career (5 items)

1. Time spent on paid employment on campus, including internships
   (hours per week)
2. Time spent on paid employment off campus, including internships
   (hours per week)
3. Percentage of paid employment related to academic interests
   (from 0% to 100%)
4. Completed an internship, practicum, or field experience
   (y/n)
5. Completed an entrepreneurial program
   (y/n)

Measures of engagement for the longitudinal analysis (part 2):

1. Academic

- Time spent attending classes, discussion sections, and labs
  (hours per week)
- Time spent studying and other academic activities outside of class
  (hours per week)
- How often: contributed to a class discussion
  (measured from 1 to 6, from "Never" to "Very often")
- How often: Made a class presentation
  (measured from 1 to 6, from "Never" to "Very often")
- How often: Found your courses so interesting that you did more work than was required
  (measured from 1 to 6, from "Never" to "Very often")
- How often: Helped a classmate better understand the course material
  (measured from 1 to 6, from "Never" to "Very often")
- How often: Studied with a group of classmates outside of class
  (measured from 1 to 6, from "Never" to "Very often")
- How often: Had a class in which the professor knew or learned your name
  (measured from 1 to 6, from "Never" to "Very often")
- How many professors do students know well enough to ask for a letter of recommendation in support of an application for a job or for graduate or professional school
  (from 0 to "4 or more")

2. Research

- Assisted faculty in conducting research
  (yes/no)
- Completed a research project or research paper as part of your coursework
  (yes/no)
- Attended at least one research methods course
  (yes/no)
- Attended at least one independent study course
  (yes/no)

3. Extracurricular

- Time spent participating in student clubs or organizations
  (hours per week)
- Participated in a student organization
  (yes/no)
- Served as an officer of a student organization
  (yes/no)

4. Civic

- Time spent performing community service or volunteer activities
  (hours per week)
- Participated in academic service-learning or community-based learning experience
  (yes/no)
- How often outside the classroom: Interacted with someone with views that were different from your own
  (measured from 1 to 6, from "Never" to "Very often")

5. Career

- Paid employment on campus
  (employment status (y/n) and hours per week worked)
- Paid employment off campus
  (employment status (y/n) and hours per week worked)
- Proportion of time spent on paid employment related to academic interests
  (from 0 to 1)
- Completed an internship, practicum, or field experience
  (y/n)
- Completed an entrepreneurial program
  (y/n)

Demographic variables (covariates)

- Gender
  (male, female), administrative records
- Race and ethnicity
  (African American, American Indian, Asian, Hispanic, multiracial, Pacific Islander, White), administrative records
- Social class
  (low-income/poor, working class, middle class, upper-middle class, wealthy), self-reported survey question
- Student level
  (freshman, sophomore, junior, senior), administrative records
- Field of study
  (STEM, social sciences, business, arts and humanities, "other disciplines"), administrative records.

In part 1, we analyze the scope of student multi-engagement, the differences across student demographics and disciplines, and associations with outcomes using linear and logistic regression models with university-level fixed effects.

Some questions in the multi-engagement indices belong to topical sections that were randomly administered to a subpopulation of students—either 25% or 50%, depending on the university and year. This random sampling method ensures representative data despite some indices, especially the extracurricular one, being based on responses from a subpopulation of students.

In part 2, we employ a series of linear and logistic regression models with university-level fixed effects to assess the effect of the COVID-19 pandemic on student engagement. These models compare student engagement in 2018-19 (reference period) with the 2020-21 and 2022-23 periods during and after the pandemic. This approach enables us to isolate the pandemic's effects on student engagement, adjusting for university-specific characteristics and student demographics.

3.3. **Exploring Multi-Engagement**

3.3.1. Scope of Engagement

3.3.1.1. Portraits of highly engaged students

To analyze the scope and patterns of multi-engagement among students, we constructed five distinct indices corresponding to specific areas of engagement (see section 3.2 for methodological details).

As illustrated in Figure 1, the academic engagement index follows an approximately normal distribution. This indicates that most students have a moderate level of involvement in academic activities, centered around an average value, with relatively few students showing very low or very high levels of engagement.

In contrast, the indices for career, civic, extracurricular, and research engagement show right-skewed distributions, signifying that most students have lower levels of engagement in these areas, with a smaller proportion achieving higher levels of involvement. This pattern highlights the challenges in achieving deep and broad engagement across these nonacademic dimensions.

Figure 1: Distribution of Engagement Indices

To estimate how many students are engaged when all five areas of engagement are considered, we have categorized each index into three levels: high engagement (top 25% of the distribution), medium engagement (middle 50%), and low engagement (bottom 25%). Tables 1.1-1.5 present portraits of highly engaged students in each area, showing average time or response option or percentage involved in a particular activity.

Highly engaged students in academic activities dedicate an average of 19 hours per week to studying and other academic endeavors outside of class. They frequently contribute to class discussions, find their courses so interesting that they do more work than required, and make class presentations. Additionally, they often help classmates understand course material and frequently choose challenging courses, demonstrating a deep commitment to their academic pursuits.

Table 1.1: Academic Engagement

Index variables:	**High**	**Medium**	**Low**
Time spent studying and other academic activities outside of class (hours per week)	19	14	10
How often: Contributed to a class discussion	Very often	Somewhat often	Occasionally
How often: Found your courses so interesting that you did more work than was required	Often	Occasionally	Rarely
How often: Made a class presentation	Often	Occasionally	Rarely
How often: Helped a classmate better understand the course material	Often	Somewhat often	Occasionally
How frequently: Chosen challenging courses	Three or more times	Two times	Two times

Students who are highly engaged in extracurricular activities spend about 10 hours per week participating in student clubs or organizations. They are very active in leadership roles, with 92% having served as an officer of a student organization. These students often chair meetings, plan and promote events, lead discussions, recruit new members, mediate disputes, and engage in community outreach. They are also involved in developing budgets and delegating tasks, showcasing their leadership and organizational skills.

Table 1.2: Extracurricular Engagement

Index variables:	High	Medium	Low
Time spent participating in student clubs or organizations (hours per week)	10	6	3
Served as an officer of a student organization (% yes)	92%	42%	4%
How often: Chaired a meeting	3-5 times	Never	Never
How often: Planned an event	More than 5 times	1-2 times	Never
How often: Promoted or marketed an event	More than 5 times	1-2 times	Never
How often: Led or facilitated a discussion	More than 5 times	1-2 times	Never
How often: Recruited new members for the organization/club	More than 5 times	1-2 times	Never
How often: Mediated a dispute	3-5 times	Never	Never
How often: Partnered with a community organization or organized community outreach	3-5 times	1-2 times	Never
How often: Developed a budget	3-5 times	Never	Never
How often: Delegated tasks to others	More than 5 times	1-2 times	Never

Students who demonstrate high civic engagement dedicate 8 hours per week on average to community service or volunteer activities. Nearly 80% of these students have completed academic service-learning or community-based learning experiences. They frequently interact with individuals who hold different views, reflecting their commitment to civic responsibility and community involvement.

Table 1.3: Civic Engagement

Index variables:	High	Medium	Low
Time spent performing community service or volunteer activities (hours per week)	8	2	1
Completed academic service-learning or community-based learning experience (% yes)	78%	13%	0%
How often outside the classroom: Interacted with someone with views that were different from their own	Often	Somewhat often	Somewhat often

Highly engaged students in research activities are actively involved in academic research, with 73% assisting faculty in conducting research and 59% having attended at least one independent study course. They are also highly likely to have taken research methods courses (78%) and completed research projects or papers as part of their coursework (94%).

These students are more likely to take small research-oriented seminars with faculty and conduct their own research or creative projects outside regular coursework, underscoring their dedication to the research mission of the university.

Table 1.4: Research Engagement

Index variables:	High	Medium	Low
Assisted faculty in conducting research (% yes)	73%	9%	0%
Attended at least one independent study course (% yes)	59%	11%	0%
Attended at least one research methods course (% yes)	78%	44%	0%
Completed a research project or research paper as part of your coursework (% yes)	94%	82%	0%
How often: Taken a small research-oriented seminar with faculty	One time	Never	Never
Conducted own research or creative project outside of your regular coursework (% yes)	77%	21%	0%

In terms of career engagement, highly engaged students have a strong presence in the workforce, with 96% having paid employment on or off campus. They spend around 14 hours per week on on-campus jobs and 17 hours per week on off-campus employment, including internships. A significant portion of their employment is related to their academic interests (65%). These students often complete entrepreneurial programs and internships, practicums, or field experiences (57%), indicating their proactive approach to gaining practical experience and preparing for their future careers.

Table 1.5: Career Engagement

Index variables:	**High**	**Medium**	**Low**
Had paid employment on or off campus (% yes)	96%	76%	2%
Had paid employment on campus (% yes)	63%	44%	0%
Time spent on paid employment on campus, including internships (hours per week for employed)	14	11	1
Had paid employment off campus (% yes)	52%	39%	1%
Time spent on paid employment off campus, including internships (hours per week for employed)	17	15	2
Percentage of paid employment related to academic interests	65%	4%	0%
Completed an entrepreneurial program	13%	4%	0%
Completed an internship, practicum, or field experience	57%	28%	0%

Overall, the key distinctions between students with high and low engagement lie in the amount of time dedicated to their activities, the assumption of leadership roles, the pursuit of opportunities for personal and professional development, and the frequency of collaborative and interactive engagements.

Highly engaged students demonstrate a proactive approach to their academic, extracurricular, civic, research, and career pursuits.

3.3.1.2. Intersections between areas of engagement

We first consider correlations between different areas of engagement—academic, extracurricular, civic, research, and career. As Table 2 suggests, no strong correlations exist among these areas, indicating that they are largely independent of each other.

Academic engagement shows a moderate correlation with civic engagement (0.31) and weaker correlations with research (0.28), extracurricular (0.21), and career engagement (0.16). This suggests that while there is some overlap, academic activities largely stand-alone from other forms of engagement.

Extracurricular engagement shows low to moderate correlation with civic (0.28), research (0.23), and career engagement (0.23). The modest strength of these relationships suggests that participation in extracurricular activities does not strongly predict involvement in other areas.

Civic engagement shows moderate correlation with academic engagement (0.31) and extracurricular engagement (0.28), but the relationship with research (0.28) is also moderate, and the correlation with career engagement (0.22) is relatively weak. This indicates that civic activities are loosely intertwined with academic and extracurricular activities, but still largely independent.

Research engagement shows moderate correlation with civic (0.28), career (0.34), and academic engagement (0.28), while its correlation with extracurricular activities (0.23) is weaker. This implies that students involved in research tend to be somewhat involved in civic and career activities, but these areas remain largely independent.

Career engagement has the strongest correlation with research engagement (0.34), yet this is still a moderate relationship. The correlations with academic (0.16), extracurricular (0.23), and civic engagement (0.22) are all relatively low, indicating that career activities are not strongly connected to other engagement areas.

Overall, the lack of strong correlations suggests that these areas of engagement are mostly independent of each other. While there are weak positive associations between forms of engagement, students' involvement in one area does not fully predict their involvement in another, highlighting the diverse and compartmentalized nature of student engagement patterns, potentially reflecting a diversity of interests, time management strategies, and personal priorities.

Table 2: Correlation Matrix Between Various Forms of Engagement

	Academic	Extracurricular	Civic	Research	Career
Academic	1	0.21	0.31	0.28	0.16
Extracurricular	0.21	1	0.28	0.23	0.23
Civic	0.31	0.28	1	0.28	0.22
Research	0.28	0.23	0.28	1	0.34
Career	0.16	0.23	0.22	0.34	1

One striking observation is that a large proportion of students are highly engaged if we consider all five areas of engagement. Figure 2 shows that a significant majority, 64.7%, of students are highly engaged in at least one of the five areas—academic, extracurricular, civic, research, and career. This finding suggests a robust level of individual engagement across a spectrum of activities, affirming that students are actively participating in the diverse opportunities offered by modern research universities.

Among those highly engaged, 28% are highly engaged in only one area, while 18.9% are highly engaged in two areas. A smaller proportion, 11%, are highly engaged in three areas, 5.2% in four areas, and only 1.6% in all five areas. This distribution highlights the challenge of balancing multiple high-engagement commitments.

Conversely, 35.3% of students are not highly engaged in any of the five areas. Nearly all of them maintain medium engagement in various activities: If medium and high engagement are considered, then 99.1% of students have at least one area in which they are engaged.

Figure 2: Scope of High Engagement

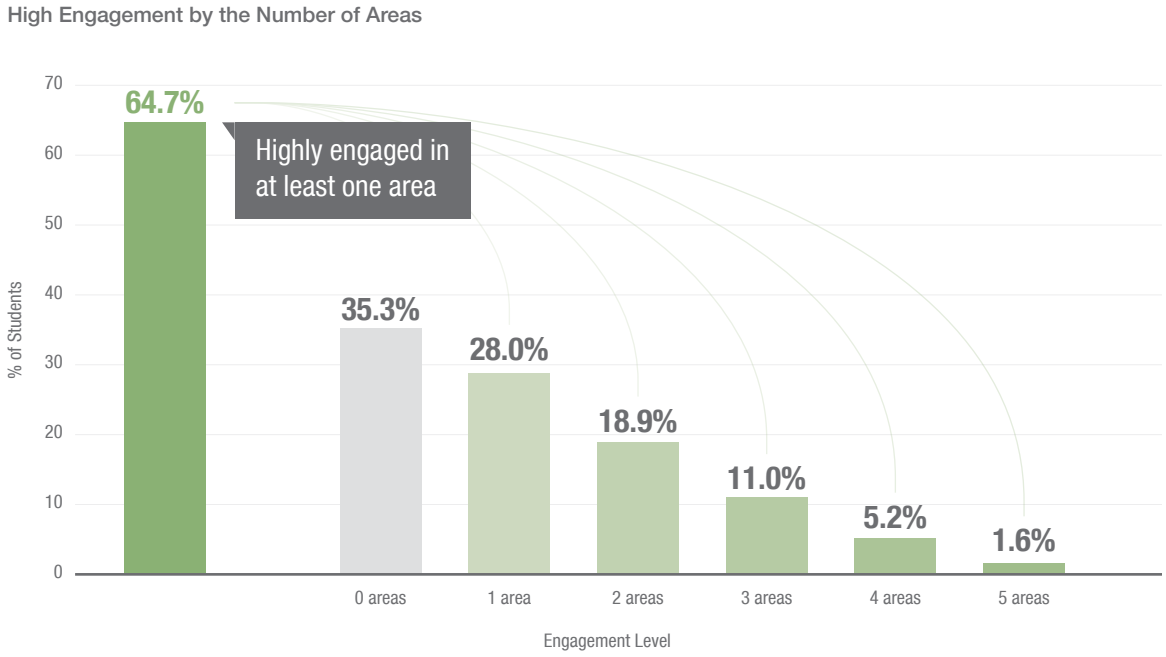


Figure 3 illustrates the intersections between areas of high engagement among students, functioning like a Venn diagram for the five areas: academic, extracurricular, civic, research, and career engagement. It shows how many students are highly engaged in one or more of these areas, providing insights into how these engagements overlap.

If a student is highly engaged in only one area, it is most likely to be academic, career, or extracurricular (each at 6%), closely followed by research (5%) and civic engagement (4%). The most common intersections of high engagement are between academic and civic (3%), research and career (3%), and career and extracurricular (2%). We also found the following patterns:

Academic and civic engagement: Students who are highly engaged in both academic and civic activities tend to integrate their academic knowledge with community service or volunteer work. This combination may allow them to apply what they learn in the classroom to real-world situations, fostering a deeper understanding of societal issues and enhancing their civic responsibility.

Research and career engagement: This combination suggests that students are integrating their academic interests with practical work experiences, perhaps through internships or part-time jobs related to their field of study. Engaging in both research

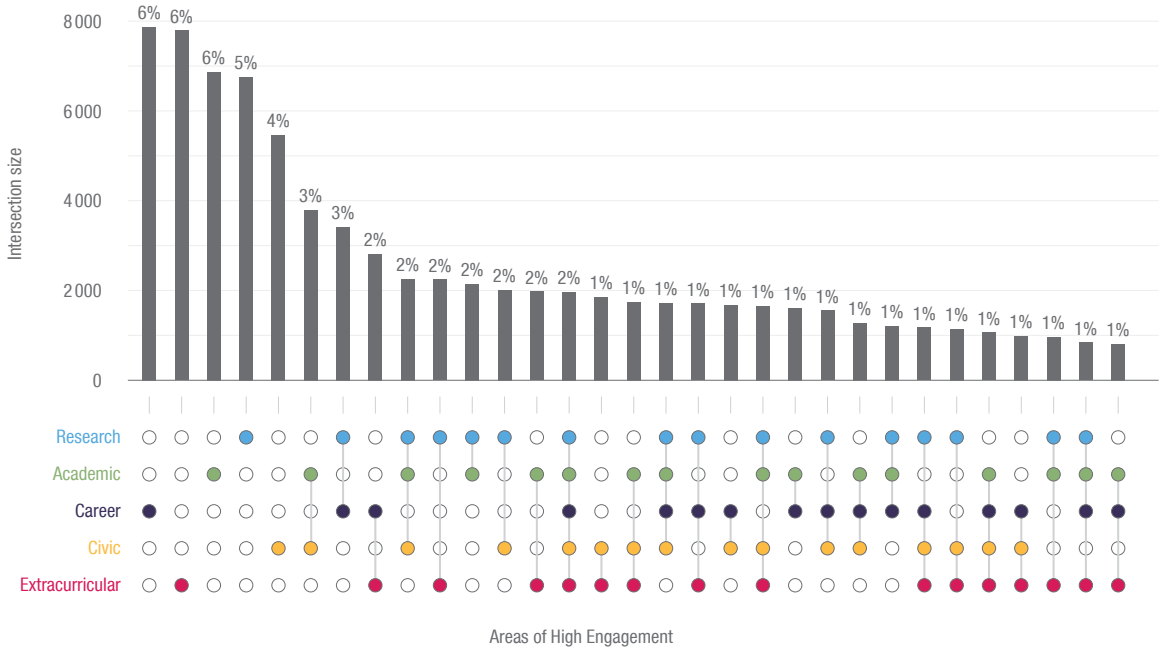

Photo by Irene Y./UC Berkeley

Students who are highly engaged in both academic and civic activities tend to integrate their academic knowledge with community service or volunteer work. This combination may allow them to apply what they learn in the classroom to real-world situations, fostering a deeper understanding of societal issues and enhancing their civic responsibility.

and career-related activities can enhance students' understanding of their field, apply theoretical knowledge in practical settings, and improve their employability.

Career and extracurricular engagement: Students highly engaged in both career and extracurricular activities often develop strong leadership and organizational skills. Participation in student clubs or organizations complements their career pursuits, providing opportunities to network, build a diverse skill set, and gain experience that is valuable in the job market.

Figure 3: Intersections Between Areas of High Engagement



3.3.2. Differences Across Student Characteristics and Disciplines

3.3.2.1. Differences by student characteristics

The analysis identified substantial disparities in student engagement linked to gender, race/ethnicity, and socioeconomic background (Table 3).

Gender

Regarding gender, the regression results show that no significant difference exists between males and females in academic or extracurricular engagement. However, female students are significantly more engaged in civic (0.144 SD), research (0.061 SD), and career activities (0.131 SD) than male students.

Race/ethnicity

When we examine race and ethnicity, significant differences emerge. African American students show significantly higher engagement in extracurricular (0.148 SD), civic (0.253 SD), research (0.086 SD), and career activities (0.086 SD) than White students. Asian students are significantly less engaged in academic (-0.167 SD) and career activities (-0.110 SD) but more engaged in extracurricular (0.116 SD) and civic activities (0.108 SD). Hispanic students exhibit lower academic engagement (-0.067 SD) but higher civic engagement (0.081 SD).

Multiracial students have significantly lower academic engagement (-0.074 SD) but slightly higher extracurricular (0.038 SD) and civic engagement (0.033 SD). Pacific Islander students are notably more engaged in extracurricular (0.235 SD) and civic activities (0.278 SD), with some increased research engagement (0.087 SD).

Social class

Social class also plays a significant role in student engagement. Low-income students show higher engagement in academic (0.029 SD), extracurricular (0.055 SD), civic (0.147 SD), research (0.029 SD), and career activities (0.109 SD) than middle-class students. Working-class students have higher career (0.056 SD) and civic engagement (0.040 SD) but slightly lower research engagement (-0.026 SD). Upper-middle-class students are more engaged in academic (0.077 SD), extracurricular (0.085 SD), and research activities (0.054 SD) but less in career activities (-0.040 SD). Wealthy students exhibit significantly higher engagement in academic (0.165 SD), extracurricular (0.236

SD), civic (0.099 SD), and research activities (0.116 SD) compared to their middle-class peers.

Academic level

Student engagement differs by academic year. Sophomores, juniors, and seniors all show progressively higher engagement in all areas compared to freshmen. Sophomores are more engaged in academic (0.073 SD), extracurricular (0.228 SD), civic (0.040 SD), research (0.075 SD), and career activities (0.191 SD) compared to freshmen.

Juniors show even higher engagement in these areas, particularly in extracurricular (0.525 SD), research (0.302 SD), and career activities (0.513 SD). Seniors exhibit the highest levels of engagement across all areas, with particularly large differences in extracurricular (0.844 SD), research (0.760 SD), and career activities (0.947 SD).

Figure 4 below illustrates the differences in student engagement with progression through college.

Figure 4: Engagement by Academic Level

Field of study

Field of study is also correlated with engagement. Students in STEM fields show lower academic (-0.108 SD), extracurricular (-0.268 SD), and career engagement (-0.098 SD) but higher research engagement (0.264 SD). Social science students have significantly lower academic (-0.184 SD) and extracurricular engagement (-0.146 SD) but higher research engagement (0.399 SD).

Arts and humanities students are less engaged in extracurricular activities (-0.196 SD) but more engaged in research (0.235 SD). Students in other disciplines show lower academic (-0.103 SD) and extracurricular engagement (-0.192 SD) but higher civic (0.112 SD) and research engagement (0.233 SD). These results underscore the close relationship between field of study and different types of student engagement.

Table 3: Fields of Study and Engagement

Term	Academic (SD)	Extracurricular (SD)	Civic (SD)	Research (SD)	Career (SD)
(Intercept)	-0.067 (0.043)	-0.440 (0.037) * * *	-0.395 (0.026) * * *	-0.856 (0.041) * * *	-0.555 (0.042) * * *
GENDER (REF. MALE)					
Female	-0.016 (0.012)	-0.018 (0.011)	0.144 (0.011) * * *	0.061 (0.010) * * *	0.131 (0.013) * * *
RACE/ETHNICITY (REF. WHITE)					
African American	0.024 (0.019)	0.148 (0.026) * * *	0.253 (0.023) * * *	0.086 (0.018) * * *	0.086 (0.023) * * *
Asian	-0.167 (0.020) * * *	0.116 (0.015) * * *	0.108 (0.014) * * *	0.042 (0.029)	-0.110 (0.013) * * *
Hispanic	-0.067 (0.020) * * *	0.019 (0.015)	0.081 (0.015) * * *	0.016 (0.016)	0.007 (0.011)
Multiracial	-0.074 (0.023) * *	0.038 (0.014) * *	0.033 (0.015) *	-0.011 (0.014)	-0.019 (0.014)
American Indian	0.019 (0.053)	0.083 (0.070)	0.220 (0.062) * * *	0.033 (0.046)	0.063 (0.046)
Pacific Islander	-0.065 (0.039)	0.235 (0.069) * * *	0.278 (0.072) * * *	0.087 (0.035) *	0.029 (0.057)
SOCIAL CLASS (REF. MIDDLE CLASS)					
Low-income or poor	0.029 (0.013) *	0.055 (0.012) * * *	0.147 (0.022) * * *	0.029 (0.009) * *	0.109 (0.012) * * *
Working class	-0.017 (0.009)	-0.009 (0.009)	0.040 (0.012) * * *	-0.026 (0.010) *	0.056 (0.011) * * *
Upper-middle class	0.077 (0.009) * * *	0.085 (0.007) * * *	0.001 (0.012)	0.054 (0.010) * * *	-0.040 (0.011) * * *
Wealthy	0.165 (0.024) * * *	0.236 (0.025) * * *	0.099 (0.021) * * *	0.116 (0.025) * * *	-0.046 (0.030)

Term	Academic (SD)	Extracurricular (SD)	Civic (SD)	Research (SD)	Career (SD)
LEVEL (REF. FRESHMEN)					
Sophomore	0.073 (0.014) * * *	0.228 (0.048) * * *	0.040 (0.018) *	0.075 (0.031) *	0.191 (0.027) * * *
Junior	0.151 (0.019) * * *	0.525 (0.045) * * *	0.120 (0.015) * * *	0.302 (0.032) * * *	0.513 (0.028) * * *
Senior	0.297 (0.024) * * *	0.844 (0.040) * * *	0.271 (0.020) * * *	0.760 (0.038) * * *	0.947 (0.032) * * *
FIELD OF STUDY (REF. BUSINESS)					
STEM	-0.108 (0.041) * *	-0.268 (0.025) * * *	-0.043 (0.020) *	0.264 (0.026) * * *	-0.098 (0.029) * * *
Social Sciences	-0.184 (0.043) * * *	-0.146 (0.028) * * *	0.088 (0.029) * *	0.399 (0.029) * * *	-0.039 (0.028)
Arts and Humanities	-0.035 (0.048)	-0.196 (0.025) * * *	0.006 (0.020)	0.235 (0.028) * * *	-0.064 (0.029) *
Other Disciplines	-0.103 (0.042) *	-0.192 (0.031) * * *	0.112 (0.037) * *	0.233 (0.037) * * *	0.057 (0.044)
R-squared	0.033	0.104	0.032	0.117	0.138
Number of Observations	198,158	129,849	199,064	190,724	187,396

Notes: *p < .05, **p < .01, ***p < .001. Robust standard errors clustered by university are in parentheses.

3.3.2.2. Differences by discipline

The heatmap (Figure 5) illustrates the relative engagement levels of students within selected majors and their disciplines across five areas: academic, extracurricular, civic, research, and career. Dark green areas indicate higher engagement within that specific area for the discipline, while white areas indicate lower engagement. This visualization allows us to see which areas of engagement are prioritized by students within each discipline.

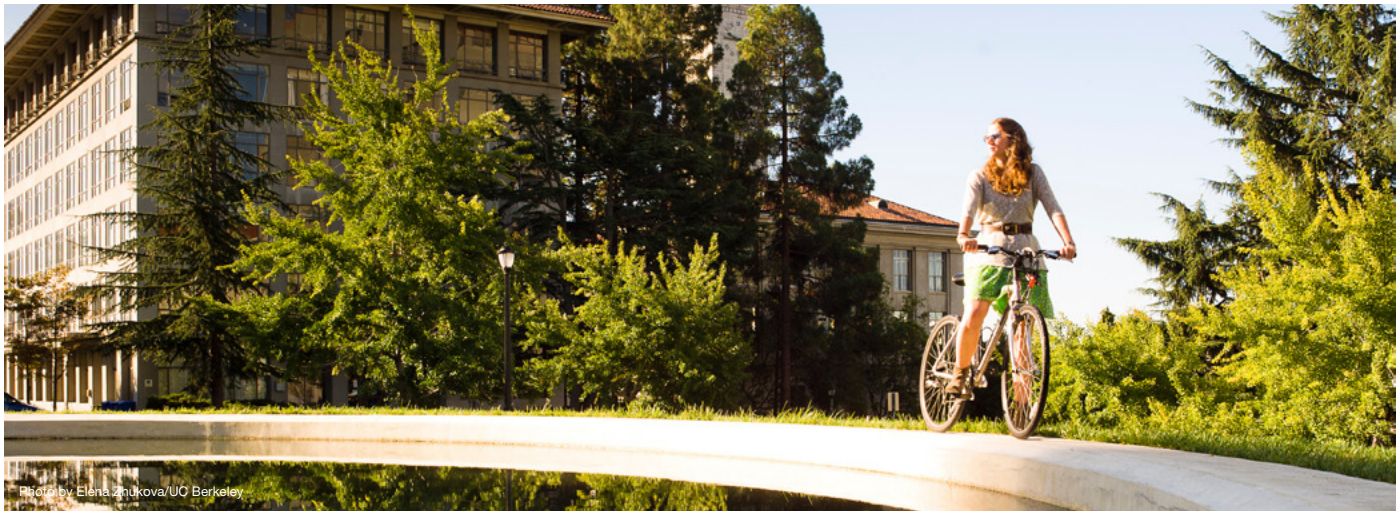
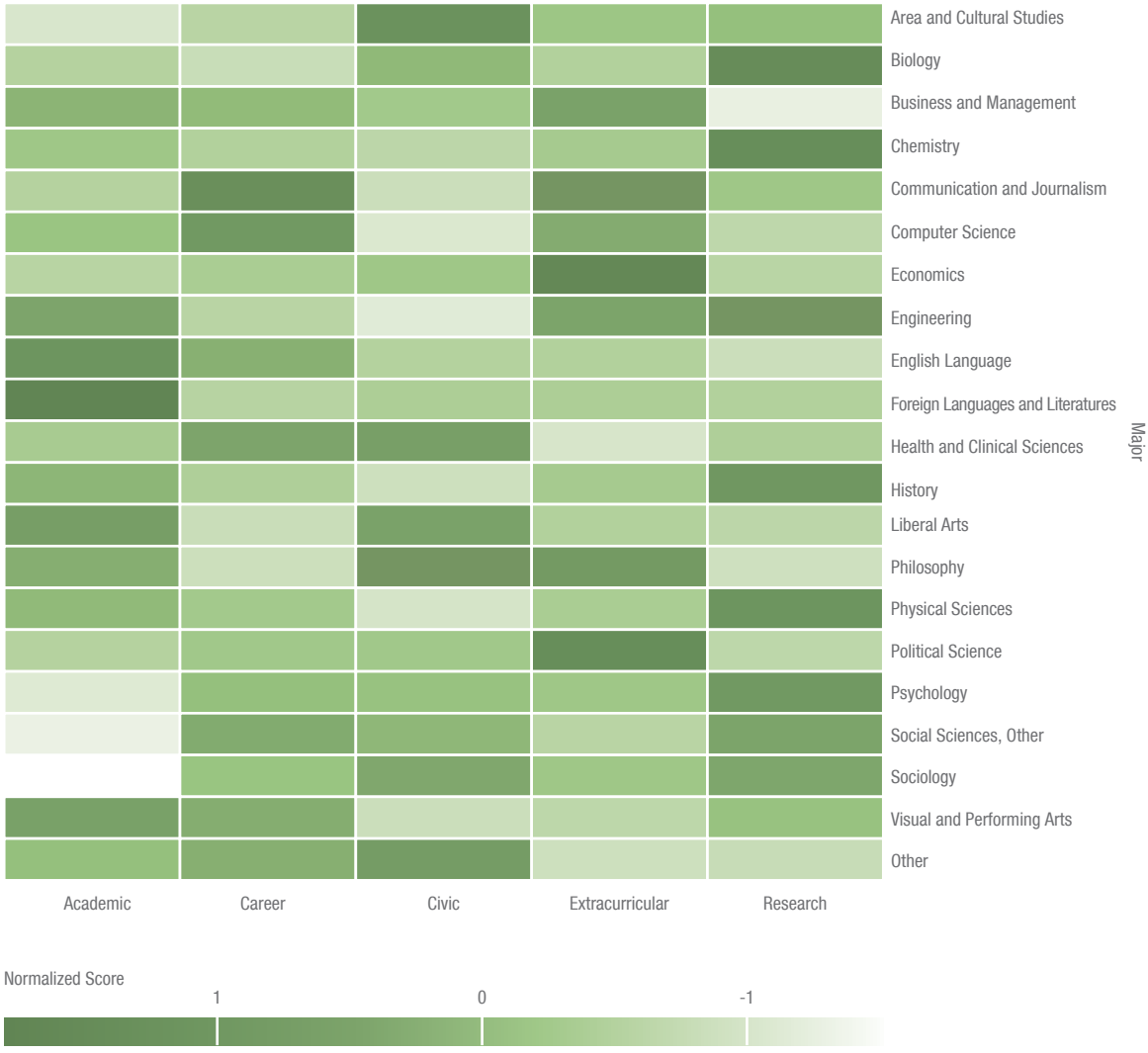


Photo by Elena Zhukova/UC Berkeley

Figure 5: Relative Engagement Levels by Major



Academic Engagement

Students in foreign languages and literatures, engineering, English literature, visual and performing arts, and liberal arts exhibit a strong focus on academic activities compared to other areas of engagement within their disciplines.

In contrast, students in sociology, social sciences, psychology, and area and cultural studies show relatively lower academic engagement, suggesting they may prioritize other types of activities over purely academic work.

Extracurricular Engagement

Disciplines such as economics, political science, business and management, philosophy, and engineering have students who are highly engaged in extracurricular activities. Economics students, for example, are notably active in student clubs and organizations compared to their engagement in other areas.

On the other hand, students in health and clinical sciences, foreign languages and literatures, chemistry, and visual and performing arts tend to have lower extracurricular involvement, indicating a focus on different types of engagement or academic commitments.

Civic Engagement

Civic engagement is particularly prominent within disciplines such as area and cultural studies, health and clinical sciences, sociology, and liberal arts. Area and cultural studies students show a strong commitment to community service and civic responsibilities.

Conversely, students in engineering, computer science, physical sciences, and communication and journalism exhibit relatively lower civic engagement, indicating less emphasis on community-related activities compared to other areas of engagement.

Research engagement

Research engagement is especially high among students in disciplines such as chemistry, biology, history, psychology, and physical sciences. Chemistry students, for example, are highly involved in research activities, highlighting a strong focus on scholarly work within this field.

In contrast, students in business and management, communication and journalism, political science, and visual and performing arts show lower levels of research engagement, suggesting that research may not be as central to their academic experience as other forms of engagement.

Career engagement

For career engagement, students in computer science, communication and journalism, health and clinical sciences, visual and performing arts, and “other fields” demonstrate higher levels of involvement. Computer science students show a strong focus on career-related activities such as internships and employment within their discipline.

On the lower end, students in biology, liberal arts, English language, and engineering show relatively lower career engagement, indicating that career activities might be less emphasized compared to other engagement areas within these disciplines.

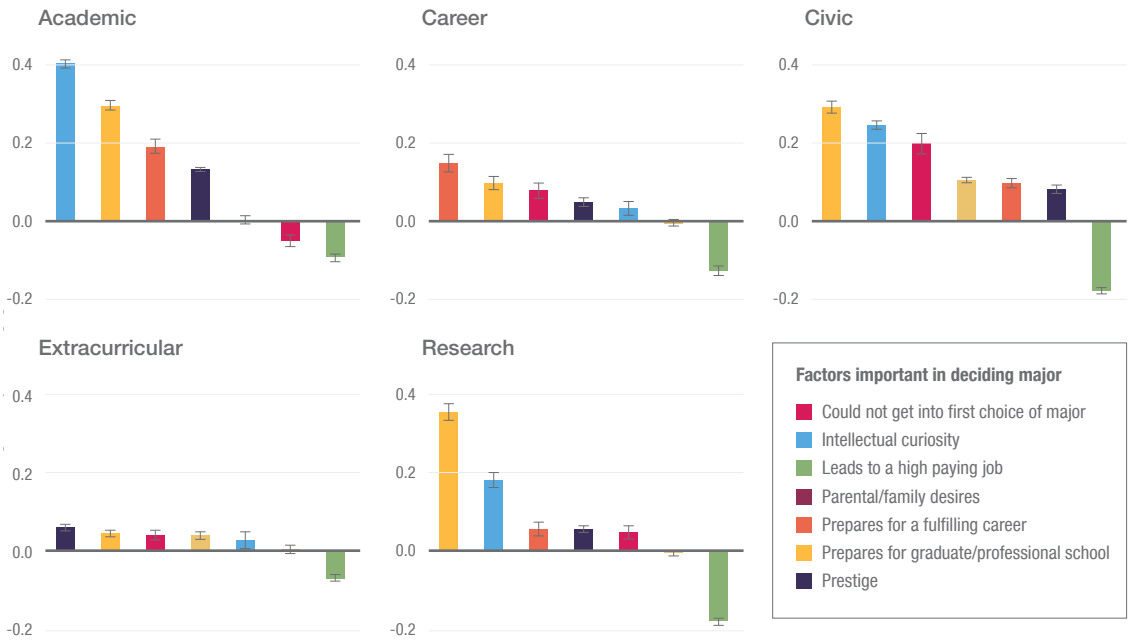
When we examine the heatmap, it becomes evident that each discipline has unique engagement patterns.

3.3.2.3. Reasons students choose their major

The process of choosing a major is influenced substantially by the areas in which students are most engaged. High engagement in a particular area shapes students' priorities and motivations, leading them to select majors that align with their interests, strengths, and future aspirations.

This section explores how high engagement in specific areas—academic, extracurricular, civic, research, and career—affects the factors that students consider important when choosing their major. Each area of engagement highlights factors that are particularly important to the students involved in that area (see Figure 6 below).

Figure 6: Factors Important in Choosing Major, Based on Area of Engagement



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. Error bars show 95% confidence intervals.

Academic engagement

For students who are highly engaged academically, the primary reason for choosing their major is **intellectual curiosity**. This indicates a strong desire to delve deeper into subjects that intrigue them. Additionally, these students value how their chosen major prepares them for graduate or professional school, highlighting their long-term academic aspirations. Preparation for a fulfilling career and prestige also play a role, albeit to a lesser extent, indicating that academic excellence and recognition are important. Interestingly, high-paying job prospects are less significant for these students.

Extracurricular engagement

Students highly engaged in extracurricular activities tend to choose their major based on **prestige**. This suggests that involvement in prestigious organizations and activities may influence their academic choices.

Civic engagement

For students who are civically engaged, the top reason for choosing their major is **preparing for graduate or professional school**. However, this group also shows a notable tendency to select their major because they could not get into their first choice or due to parental or family desires. This indicates a mix of personal aspirations and external influences.

Research engagement

Students focused on research prioritize **preparing for graduate or professional school** when choosing their major, reflecting their commitment to advanced academic and professional pathways. Intellectual curiosity is also a significant factor, showing their drive to explore and contribute to their field of study. High-paying job prospects are least important in their decision-making process.

Career engagement

Students who are career-oriented tend to choose their major based on how well **it prepares them for a fulfilling career**, indicating a practical and forward-looking approach to their education. Prestige and preparation for graduate or professional school are also important factors, although to a lesser degree. These students are less influenced by high-paying job prospects and parental desires when making their decision.

Overall, the plot underscores that students' engagement in specific areas is linked to valuing different aspects of their major choice: Academic engagement is driven by intellectual curiosity, research engagement by graduate school preparation, extracurricular engagement by prestige, career engagement by career fulfillment, and civic engagement by a mix of personal and external factors. This diversity in motivations highlights the varied and multifaceted nature of student engagement and major selection.

3.3.3. Multi-Engagement and Student Plans and Outcomes

3.3.3.1. GPA and learning outcomes

The analysis below examines the relationship between high engagement in specific areas—academic, extracurricular, civic, research, and career—and GPA, self-reported learning levels, and self-reported learning gains. The regression estimates reveal how engagement in these areas is related to students' academic performance and perceived learning outcomes (Figure 7).

GPA

For GPA, students highly engaged in academic activities and research show the highest positive correlation, indicating that their dedication to academic pursuits and research is closely connected to their academic performance. Civic and career engagement are also positively correlated with GPA, though to a lesser extent, while extracurricular engagement has a slight negative relationship with GPA.

Self-reported current learning levels

In terms of self-reported learning levels at the time the survey was completed, high academic engagement has the strongest positive correlation with a wide range of skills, including analytical and critical thinking, writing, reading comprehension, understanding of specific fields, quantitative skills, understanding international perspectives, library research skills, interpersonal skills, oral communication, and presentation skills. This suggests that students who are highly engaged academically perceive high skill levels across various competencies.

Similarly, high research engagement is also positively correlated with learning levels, particularly in analytical and critical thinking, reading comprehension, understanding specific fields, and the ability to conduct research. This finding underscores the ties between research activities and students' academic and intellectual capabilities.

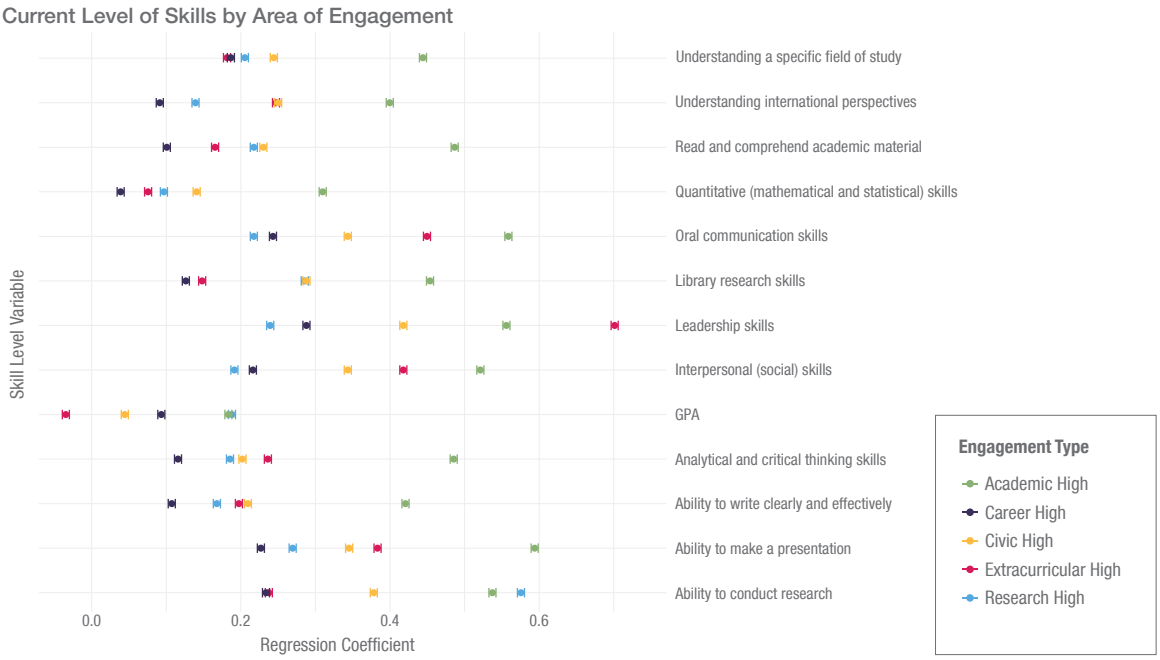
Career engagement is positively correlated with skills related to career readiness, such as interpersonal skills, leadership, oral communication, and presentation skills. However, the relationship is generally less pronounced compared to academic and research engagement.

Civic engagement is positively correlated with a wide range of skills, notably interpersonal skills, leadership, and understanding international perspectives, indicating that community involvement is closely tied to social and global awareness.

Extracurricular engagement is positively correlated with skills such as leadership, oral communication, and presentation skills, possibly reflecting the development of these abilities through participation in student organizations and activities.

Figure 7 below shows a visualization of these results.

Figure 7: Self-Assessed Learning Levels by Area of Engagement, SD



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. Error bars show 95% confidence intervals.

Self-reported learning gains

The analysis of self-reported learning gains further highlights the benefits of high engagement in different areas.

High academic engagement is correlated strongly with self-reported gains in analytical and critical thinking, writing, reading comprehension, understanding of specific fields, and quantitative skills. This indicates a potential strong role for academic engagement in intellectual development.

Research engagement is correlated with notable gains in similar areas, particularly in conducting research, analytical and critical thinking, and reading comprehension. These gains likely reflect the depth of learning and skill acquisition that come with active involvement in research activities.

Career engagement is correlated with self-reported gains in leadership and interpersonal skills, possibly indicating practical benefits of career-oriented activities.

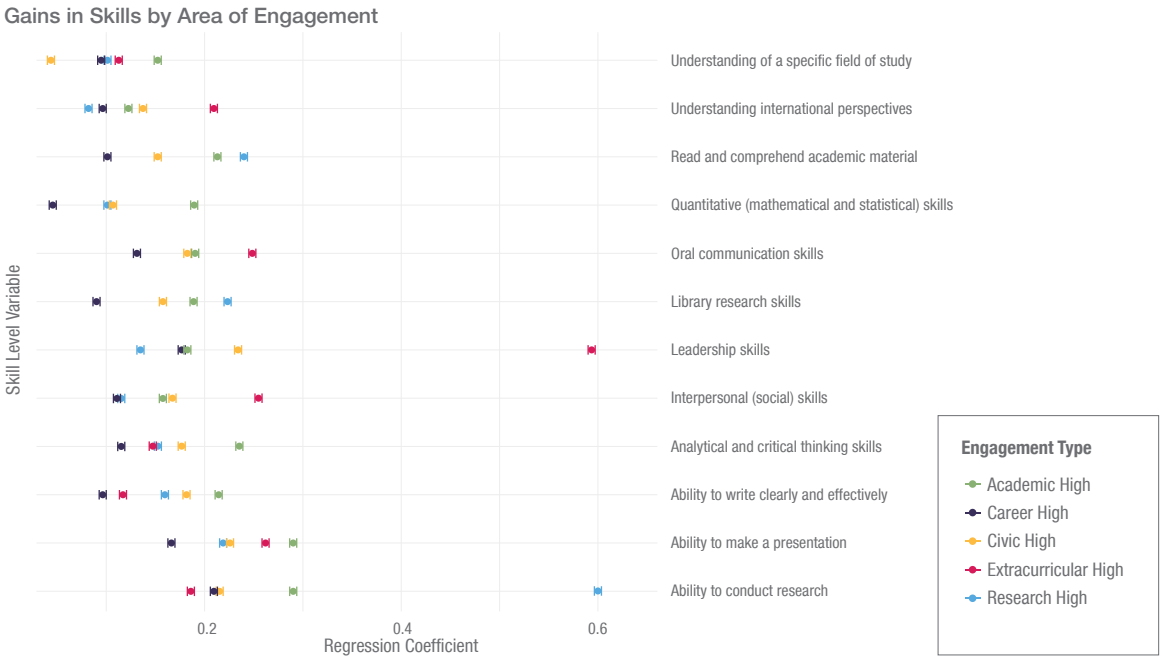
Photo by Steve McConnell/UC Berkeley

Civic engagement is correlated with perceived gains in social and leadership skills, possibly indicating the personal growth and development that come from community involvement.

Extracurricular engagement is correlated to perceived gains in leadership and communication skills, underscoring a possible role of student activities in developing these competencies.

Figure 8 below summarizes these results.

Figure 8: Self-Assessed Learning Gains by Area of Engagement, SD



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. Error bars show 95% confidence intervals.

Overall, the analysis demonstrates that high engagement in specific areas is strongly associated with students' GPA, learning levels, and self-reported learning gains. Each area of engagement has a unique relationship to students' academic and personal development, emphasizing the importance of fostering diverse forms of student involvement to enhance educational outcomes.

3.3.3.2. Satisfaction and belonging

Engagement in various areas of student life can significantly enhance overall satisfaction and sense of belonging on campus. In general, any form of engagement positively influences these outcomes, but the impact varies depending on the type of engagement.

Sense of belonging

All forms of engagement positively correlate to students' sense of belonging on campus. However, academic engagement has the strongest link, suggesting that students deeply involved in academic activities feel more integrated with and connected to the campus community.

Civic engagement also is substantially linked to belonging, indicating that community service and civic activities foster a strong sense of inclusion. Extracurricular engagement, research engagement, and career engagement are also positively linked, though to a lesser extent, reflecting the benefits of diverse involvement in campus life.

Feeling valued as an individual on campus

Feeling valued as an individual on campus is most strongly linked to academic engagement, emphasizing the possible role of academic involvement in fostering a sense of personal recognition and appreciation.

Civic engagement also has a substantial positive link, highlighting a possible role of community-oriented activities in making students feel valued. Research engagement and career engagement show a less prominent positive relationship. Extracurricular engagement has the weakest relationship in this category, suggesting that while it is beneficial, other forms of engagement may be more effective in making students feel personally valued.

Re-enrollment

When considering whether they would choose to enroll at the university again, students highly engaged in academic activities are most likely to reaffirm their decision. Civic engagement and research engagement are also positively correlated with this sentiment, suggesting that involvement in these areas may enhance students' overall university experience. Alternately, students who feel positive about their university may be more motivated to engage in these activities.

Extracurricular and career engagement have the weakest correlation, indicating that these forms of engagement, while beneficial, may not strongly influence re-enrollment decisions.

Overall academic experience

Satisfaction with the overall academic experience is most positively linked to academic engagement, highlighting the direct correlation between academic involvement and academic satisfaction. Civic engagement and research engagement are also significantly tied to academic satisfaction, reflecting a potentially important role of these activities in enriching the academic experience.

Career engagement has a moderate positive correlation, while extracurricular engagement has the weakest, suggesting that purely social or extracurricular activities are less influential in shaping academic satisfaction.

Overall social experience

Overall social experience on campus is significantly correlated with academic engagement and extracurricular engagement, indicating that involvement in academic and social activities play a significant role in a fulfilling social life on campus. Civic engagement also shows a positive link, possibly reflecting the role of community service in fostering social connections.

Research engagement and career engagement have a weaker link, suggesting that while beneficial, these activities are less central to the social experience compared to academic and extracurricular involvement.

GPA satisfaction

Students' satisfaction with their GPA is most positively influenced by academic engagement, reinforcing the link between academic involvement and academic performance. Civic engagement and research engagement also enhance GPA satisfaction, indicating that these activities may support academic success.

Career engagement has a moderate positive correlation, while extracurricular engagement has a slight negative correlation, suggesting that heavy involvement in social activities might detract from academic performance.

Value for the price

Perceived value of education for the price paid is most positively linked to academic engagement, underscoring the importance of academic activities in justifying the cost of education. Civic engagement and research engagement also contribute positively to this perception, suggesting that these activities enhance the perceived return on investment of education.

Career engagement has a weaker correlation, while that of extracurricular engagement is weaker still, indicating that these forms of engagement are not highly influential in shaping students' perceptions of educational value.

In conclusion, while all forms of engagement are strongly linked to students' satisfaction and sense of belonging, academic engagement consistently shows the strongest link across various metrics. Civic and research engagements show a significant relationship, while extracurricular and career engagements, though potentially beneficial, generally have a weaker link.

Figure 9 below summarizes these results.

Figure 9: Satisfaction and Value of Education and Area of Engagement

Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. Error bars show 95% confidence intervals.

3.3.3.3 Plans after graduation

This section examines the relationship between high engagement in different areas—academic, extracurricular, civic, research, and career—and students' plans after graduation. The regression estimates highlight how engagement in these areas is linked to various postgraduation pathways.

Enrolling in graduate or professional school

High engagement in academic and research activities has the most significant positive impact on students' plans to enroll in graduate or professional school. Students with high academic engagement and research engagement are particularly likely to pursue further education, reflecting their strong commitment to academic and professional advancement.

Civic engagement also positively influences this decision, albeit to a lesser extent, indicating that students involved in community activities also value further education.

Extracurricular and career engagement have minimal relationship with this decision, suggesting that students with high engagement in these areas may prioritize other post-graduation pathways.

Working full-time

The decision to work full-time after graduation is linked to differing extents with various engagement areas. Career and extracurricular engagement positively correlate with likelihood of working full-time, indicating that students involved in career-related and extracurricular activities are more inclined to enter the workforce directly.

In contrast, high academic engagement, civic engagement, and research engagement negatively correlate with this decision, suggesting that students engaged in these areas may prefer further education or other opportunities over immediate full-time employment.

Working part-time

High civic and research engagement are positively correlated with students' plans to work part-time after graduation, indicating that these students may seek to balance work with other commitments or further studies. Academic engagement is negatively correlated with this decision, suggesting that academically engaged students are less likely to pursue part-time work, possibly due to their focus on further education. Extracurricular and career engagement have a less pronounced relationship with part-time work plans.

Self-employment

Career engagement significantly increases the likelihood of students planning to be self-employed after graduation, highlighting the entrepreneurial spirit among career-oriented students.

Civic and research engagement also positively correlate with this intention, suggesting that students involved in these areas may seek to leverage their skills and experiences in entrepreneurial ventures. Academic engagement has a negligible relationship with self-employment plans.

Other plans

Paid internships: High engagement in civic and research activities positively correlates with students' plans to do paid internships, suggesting that these students value practical experiences that complement their academic and community involvement. Interestingly, career engagement negatively correlates with the likelihood of pursuing paid internships. This could be because highly career-engaged students are likely already past the stage of seeking internships and are aiming for full-time employment or more advanced career opportunities directly after graduation.

Unpaid internships/volunteering: Civic engagement significantly correlates with likelihood of students choosing unpaid internships or volunteer opportunities, reflecting their commitment to community service and gaining valuable experience.

Joining armed forces: Extracurricular engagement has a notable positive correlation with students' plans to join the armed forces. This could indicate that involvement in extracurricular activities fosters a sense of discipline and service, or that students who plan to join the armed forces are more likely to have interests beyond traditional academic subjects.

Taking a year off: Research engagement positively correlates with the decision to take a year off, suggesting that students deeply involved in research may seek a break to gain different experiences or further explore their interests.

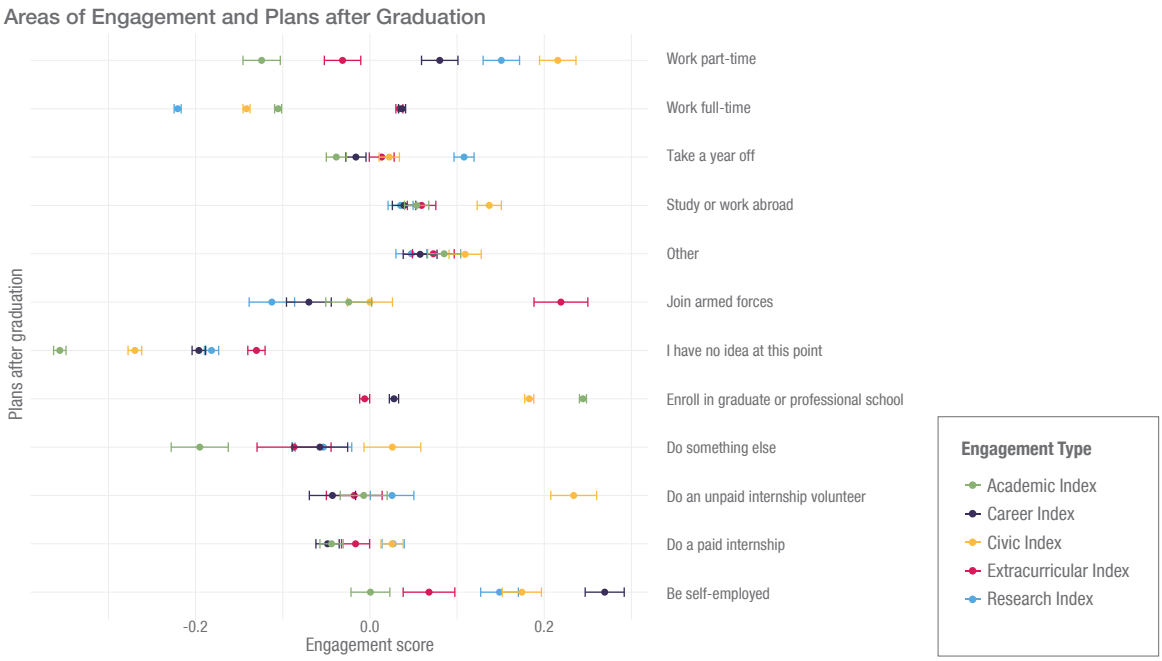
Studying or working abroad: Civic and extracurricular engagement positively correlate with students' plans to study or work abroad, indicating that these students value international perspectives and experiences.

No clear plans: High engagement in any area generally decreases the likelihood of students being uncertain about their plans after graduation. Academic, civic, research, and career engagement all negatively correlate with the likelihood of having no clear postgraduation plans, indicating that engaged students are more decisive about their future paths.

Overall, the analysis reveals that high engagement in specific areas is a strong predictor of students' postgraduation plans. Academic and research engagements are strongly linked to further education, career engagement is linked to entrepreneurial and full-time work aspirations, civic engagement to community service and part-time work, and

extracurricular engagement to a diverse range of plans, including full-time work, joining the armed forces, and studying abroad.

Figure 10: Areas of Engagement and Plans After Graduation



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. Error bars show 95% confidence intervals.

3.3.3.4 Preferred career after graduation

Engagement in different areas of student life is substantially linked to career preferences and aspirations. Students who immerse themselves in academic, extracurricular, civic, research, or career-oriented activities often show distinct inclinations toward specific career paths.

Academic engagement

Students highly engaged in academic activities tend to prefer careers in architecture, law, health science, and government/public administration. Conversely, these students are less likely to be undecided about their career paths, as indicated by the strong negative correlation with the “I have no idea whatsoever” category.

Extracurricular engagement

Students who are highly engaged in extracurricular activities show a preference for careers in business management and administration, law, and government/public administration. These preferences highlight their interest in leadership roles and public service.

Additionally, these students are inclined towards careers in marketing, sales, and service, as well as military service, possibly reflecting the development of skills such as discipline, leadership, and public engagement through their extracurricular activities. They are also less likely to be undecided about their careers, suggesting a clear sense of direction influenced by their extracurricular involvement.

Civic engagement

Civic engagement significantly correlates with students' preferences for careers in education and training, health science, and government/public administration. These career choices reflect a strong commitment to community service, public health, and educational roles, aligning with their engagement in civic activities.

Careers in hospitality and tourism, agriculture, food, natural resources, and human services are positively correlated with civic engagement, showcasing a diverse range of interests that emphasize social and community-oriented professions. Civically engaged students are less likely to be undecided about their career paths, indicating that their community involvement may help clarify their professional goals.

Research engagement

Students highly engaged in research activities show a strong preference for careers in health science, agriculture, food, natural resources, and education and training. These preferences highlight the importance of research skills and knowledge in these fields. Careers in arts, audio/visual technology, and communications, as well as human services, are positively correlated, reflecting the broad applicability of research skills across various domains.

Research engagement is also linked with lower likelihood of being undecided about career choices, indicating that involvement in research may help students develop clear career aspirations.

Career engagement

Career engagement significantly correlates with students' preferences for careers in education and training, agriculture, food, natural resources, and hospitality and tourism. These career choices suggest a practical and forward-looking approach to education, with a focus on roles that offer stability and growth opportunities.

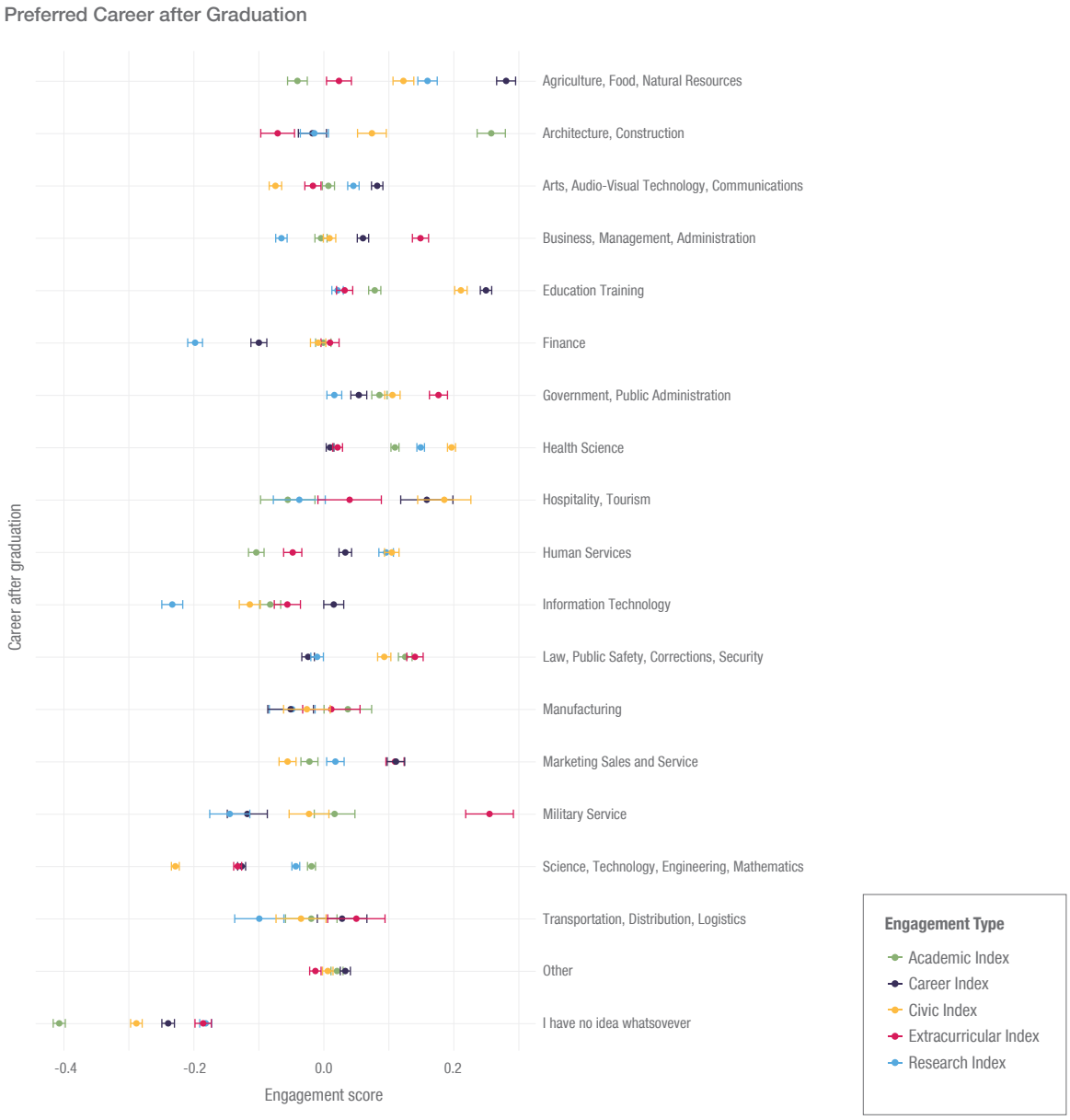
Careers in business management and administration, marketing, sales, service, arts, audio/visual technology, and communications are also positively linked, showcasing the diverse career interests of career-engaged students. These students are less likely to be undecided about their careers, indicating that their career-oriented activities may provide a clear sense of direction.

Overall, the analysis reveals that high engagement in specific areas is strongly linked to students' preferred careers after graduation. Academic engagement correlates with preferences for law, health science, and public administration careers, while extracurricular engagement correlates with interest in business, law, and public service roles. Civic engagement is linked to interest in careers in education, health, and government, while research engagement is linked to interest in health science, agriculture, and education careers. Career engagement supports a wide range of practical and growth-oriented professions.

Photo by Kevin Ho Nguyen/UC Berkeley

Photo courtesy of UC Regents

Figure 11: Postgraduation Career Plans and Area of Engagement



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. Error bars show 95% confidence intervals.

3.4. Longitudinal Trends in Student Engagement at Research Universities, 2012-2023

3.4.1. Academic Engagement

We examine longitudinal trends in student academic engagement by analyzing nine SERU survey indicators in four distinct areas: time spent studying (in class or outside class), engagement in class activities, academic relations with peers, and academic relations with faculty.

The analysis reveals that these four dimensions have followed different trajectories over the years, especially with the onset of the pandemic: While some aspects of engagement have returned to pre-pandemic levels, others continue to lag.

1. Time spent studying (indicators 1-2). Both time in class and time spent studying outside of class have shown a decline over the years, with no strong rebound postpandemic. The decline in classroom time became more pronounced after 2018-19, while the time dedicated to studying outside of class saw a significant reduction only by 2022-23. This finding suggests a persistent shift in how students allocate time for academic activities, possibly influenced by changes in course-taking patterns or student absenteeism.

2. Engagement in class activities (indicators 3-5). Despite the overall decline in study time, class engagement indicators such as participation in discussions, increasing effort beyond required, and making class presentations initially dropped during the pandemic but showed a strong rebound by 2022-23. This V-shaped trend indicates a recovery in how actively students participate in course-required activities, potentially reflecting a return of interactive teaching methods postpandemic.

3. Academic relations with peers (indicators 6-7). Relations with peers, as observed through activities such as helping classmates and studying in groups, also declined slightly but did not decrease sharply during the pandemic. This finding suggests that while overall engagement decreased, the shift to online and hybrid formats did not drastically alter students' collaborative habits, possibly due to the adoption of virtual study groups and other forms of online peer interaction.

4. Academic relations with faculty (indicators 8-9). The connections students have with faculty, crucial for rich learning experiences, have declined. Indicators such as the frequency of professors knowing students' names and the number of professors stu-

dents know well enough to ask for recommendations both dropped during the pandemic, with no substantial rebound. This might indicate more profound challenges in restoring the quality of faculty-student interactions, which are essential for academic guidance and support.

We observe substantial differences in academic engagement across student characteristics and disciplines:

Gender

Female students tend to be more engaged than male students across various academic activities. They generally spend more time in class and studying outside of class. In class, they are more active in making presentations, although their frequency of participation in discussions does not significantly differ from that of their male peers. Female students also exhibit stronger collaborative study habits, as they are more likely to engage in group studies outside of class. However, student relationships with faculty show no significant gender disparities, suggesting an equitable interaction with professors across genders.

Race and ethnicity

African American students are more involved in making presentations than their White peers, and also have robust group study habits and strong relationships with faculty, knowing more professors from whom they can comfortably request recommendations compared to any other group except American Indians. Asian American students spend more time in class but are less engaged in class discussions, presentations, and faculty interactions; they also report fewer relationships strong enough to seek recommendations. Hispanic students, similar to Asian American students, participate less in class discussions and have fewer strong faculty relationships but are active in group study sessions.

Social class

Students from wealthy families spend less time attending classes but are more active in class discussions and group study, likely due to better access to resources that facilitate such engagement. They also tend to have stronger relationships with faculty, which can be crucial for networking and career advancement.

In contrast, low-income and working-class students face challenges that may restrict their study time and limit their participation in group studies and faculty interactions, affecting their ability to engage fully with the academic community.

Academic level

As students progress from freshmen to seniors, their engagement patterns shift. Juniors and seniors tend to spend less time attending classes but participate more actively in discussions and presentations. Their involvement in group studies decreases, reflecting a shift towards more individualized learning modalities. Moreover, they report higher levels of familiarity with faculty, which enhances their ability to secure academic recommendations, a key aspect of advancing to graduate studies or entering the job market.

Field of study

Students in STEM fields typically spend more time in class than others due to the demanding nature of their curriculum, but are less likely to engage in making presentations and have fewer strong faculty relationships. Arts and humanities students, on the other hand, not only actively participate in class discussions but also frequently exceed course requirements, reflecting higher intrinsic motivation.

Their engagement in group studies is less frequent, but they maintain close relationships with faculty, which supports their academic and professional growth.

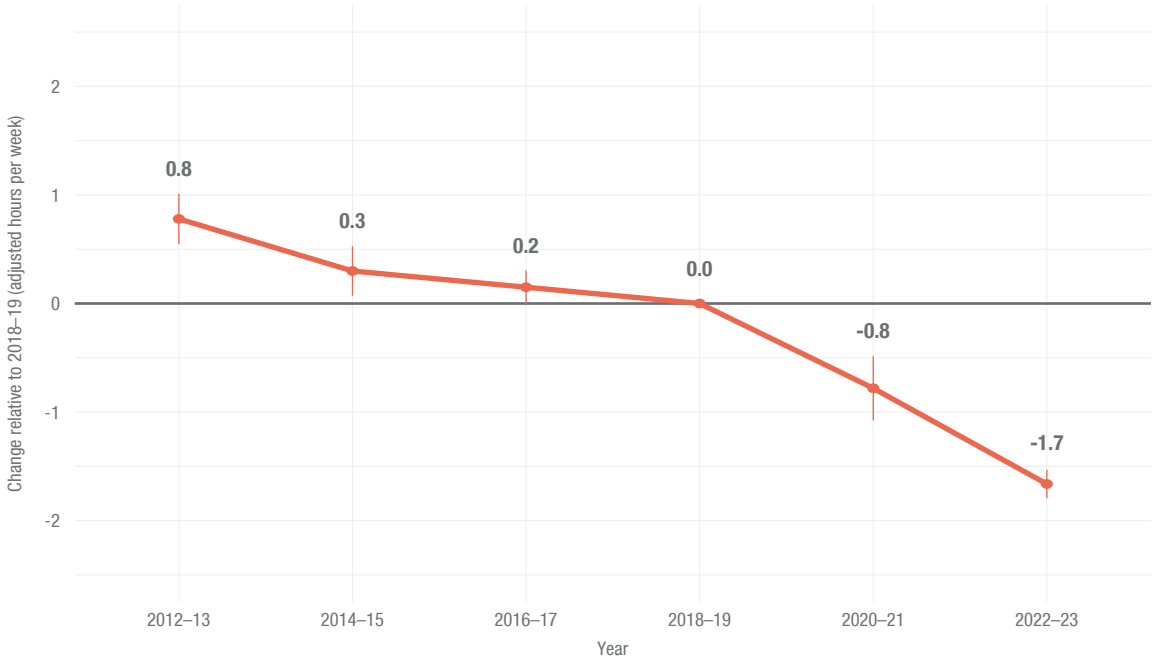
3.4.1.1. Time spent attending classes, discussion sections, and labs

Over the years, the amount of time students spend in classes, labs, and discussion sections has notably decreased (Figure 12). In 2018-19, students spent 15.2 hours per week in class, 0.8 hours less compared to 2012-13. This downward trend becomes more pronounced post-2018-19, coinciding with the disruptions caused by the pandemic. In 2022-23, students spent 1.7 fewer hours per week in class compared to 2018-19. This finding suggests a significant shift in student class attendance that shows no signs of reversing by 2022-23.

When we look at different groups of students, some interesting patterns emerge. Female students, for example, tended to spend more time in class compared to male students. In terms of race and ethnicity, Asian students are spending more time in class compared to White students, while there are no differences seen when comparing White students to other racial groups. Students' economic backgrounds had no clear influence on their class attendance, except for those from wealthy families, who attended less.

As students progressed from their freshman to senior years, they generally spent less time in classes and labs. Lastly, STEM students spent more time in class than students of other majors.

Figure 12: Time Spent Attending Classes, Discussion Sections, and Labs



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.1.2. Time spent studying and on other academic activities outside of class

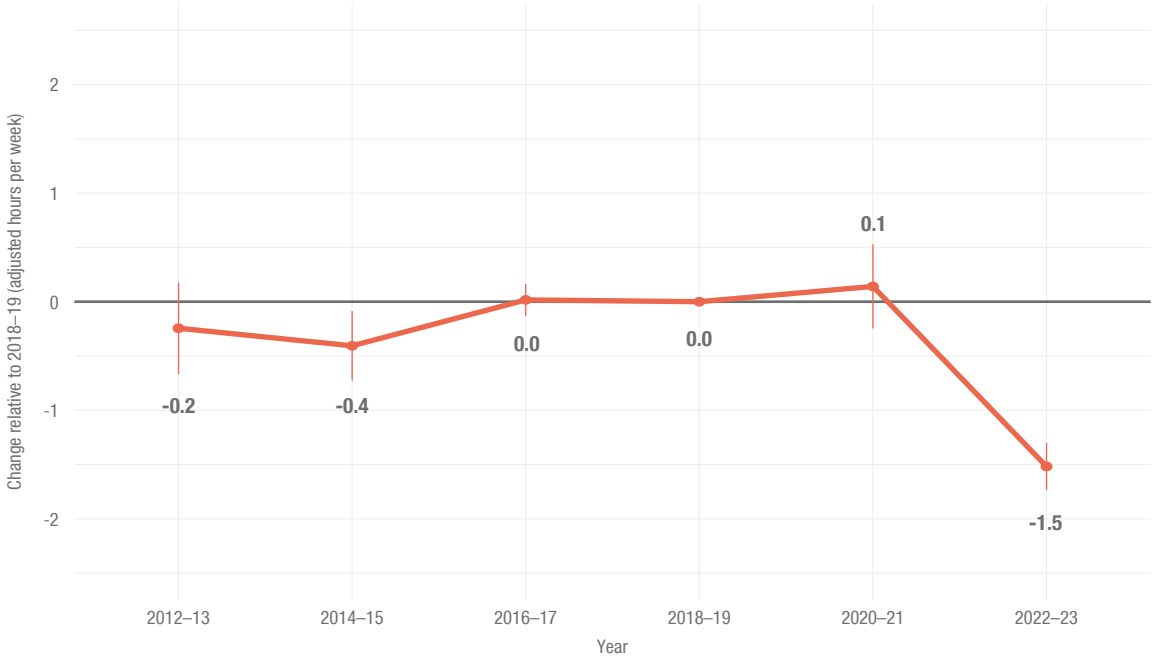
The number of hours students dedicate to studying and other academic activities outside of class has also declined, but in a different way (Figure 13). Before the pandemic, during the 2018-19 reference period, students spent approximately 14.3 hours per week studying outside of class. This did not change substantially during the pandemic. However, by 2022-23, a significant decrease of 1.7 hours per week occurred, indicating a marked shift in student engagement with academic material outside of class after the pandemic.

Female students spent more time on out-of-class activities compared to male students, indicating gender-based differences in study hours. Racial and ethnic disparities are slightly more pronounced in this area compared to time in class, with African American

and multiracial students dedicating less time to studying compared to their White counterparts.

Differences in study time are also apparent across disciplines, with STEM majors showing substantially higher engagement in study activities outside of class.

Figure 13: Time Spent Studying Outside of Class



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.1.3. Participating in class discussions

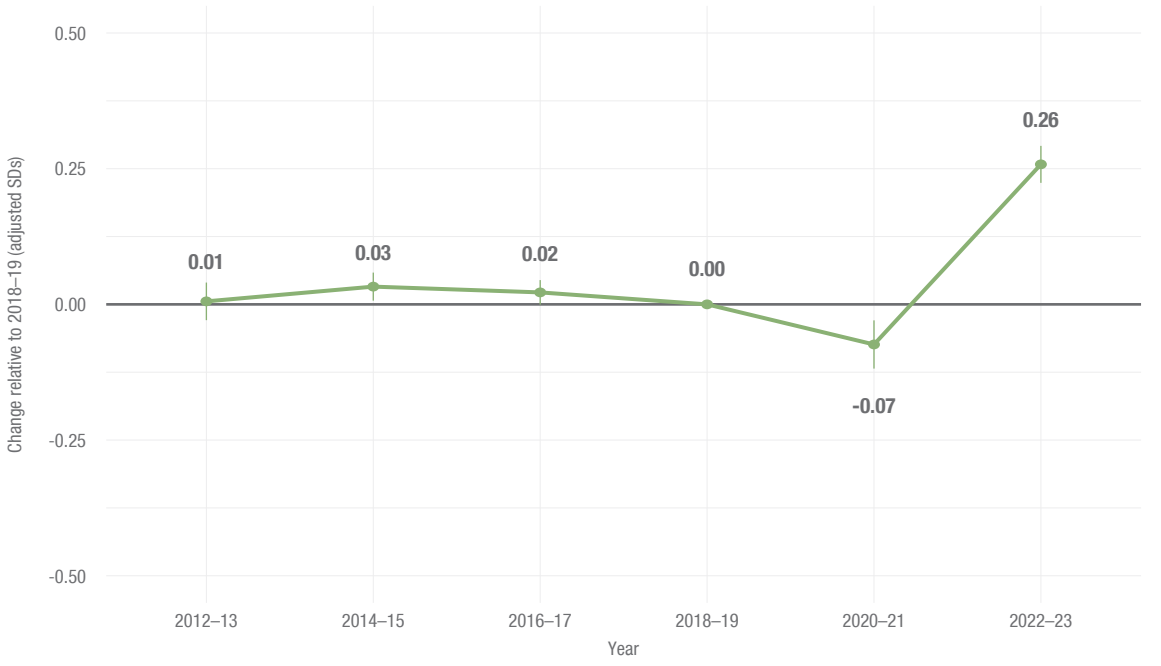
The data on how often students participated in class discussions over the years reveal a V-shaped trend (Figure 14). While student engagement with class discussions was stable from 2012 to 2019, a notable decline occurred in 2020-21, which could be attributed to the challenges of the pandemic affecting interactive aspects of learning.

However, by 2022-23, there was a strong rebound of 0.3 standard deviation, indicating an increase in engagement in class discussions to even higher than during the pre-pandemic era.

Examining participation across different student demographics uncovers some distinct patterns. While there is no difference between male and female students, racial and ethnic differences are apparent. Asian and Hispanic students, as well as those identifying as multiracial or Pacific Islander, participated less frequently than White students. As for socioeconomic status, students from upper-middle-class and wealthy backgrounds participate in class discussions more often than those from lower-income or middle-class backgrounds.

Class participation depends on how many years students have spent in school, with seniors being more engaged in discussions than freshmen. Field of study also influenced participation; students in STEM fields were less likely to engage often in discussions, while those in arts and humanities were more active, suggesting that disciplinary cultures and types of classes may affect how students engage in class conversations.

Figure 14: Frequency of Contributing to Class Discussion



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. The outcome variable is presented in standard deviations. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.1.4. Increasing effort beyond what is required

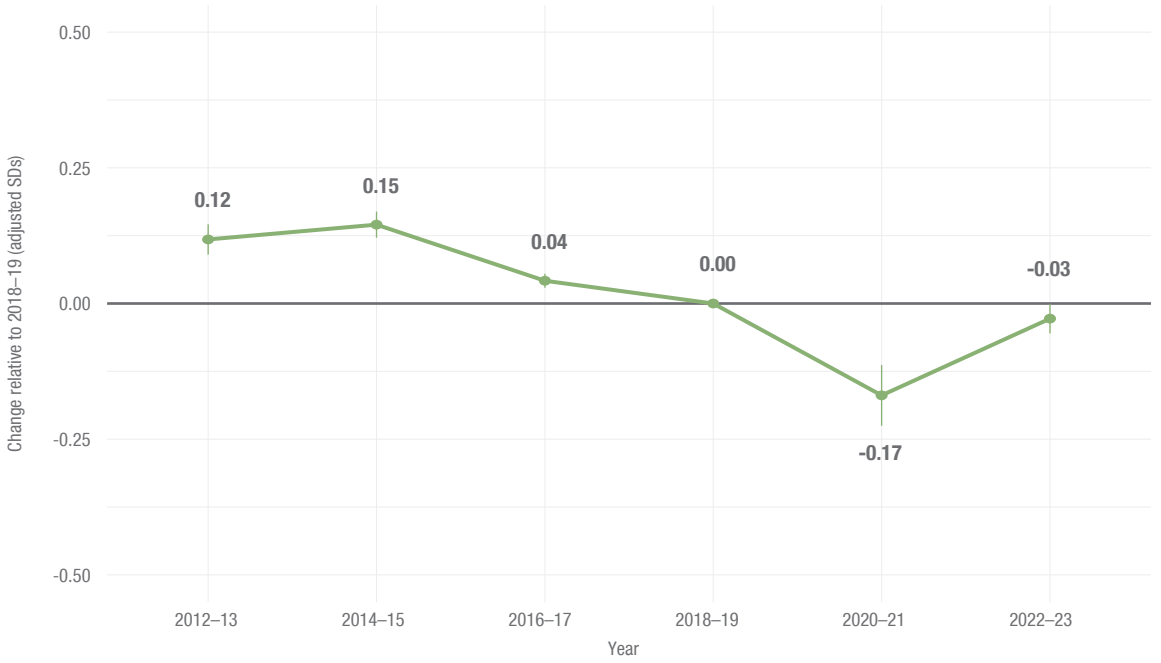
Another area where we observe a V-shaped rebound trend is how often students found their course so interesting that they did more work than was required (Figure 15). From 2012 to 2019, a gradual decrease occurred in students going beyond course requirements. This downward trend accelerated during the pandemic, with 2020-21 marking a significant low.

By 2022-23 we observe almost full recovery from the pandemic's impact. The level of additional effort has almost returned to the pre-pandemic level, although it remained slightly lower (almost 0.2 SD) than in 2012-13 and 2014-15.

When we look at how different groups of students approached their coursework, several trends stand out. Female students were less likely than male students to put in extra effort beyond what was required. With regard to race and ethnicity, American Indian students were more likely to engage deeply with their courses. Socioeconomic background played a role too, with middle-class students being less likely to go above and beyond in their coursework compared to all other students.

As students progressed in their academic journey, their likelihood of investing extra effort increased, with seniors showing more engagement than freshmen. Field of study also influenced this aspect of academic behavior; students in arts and humanities were particularly likely to exceed course requirements, highlighting the potential for increased intrinsic motivation or engagement within these disciplines.

Figure 15: Frequency of Doing More Work in a Course Than Required



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. The outcome variable is presented in standard deviations. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

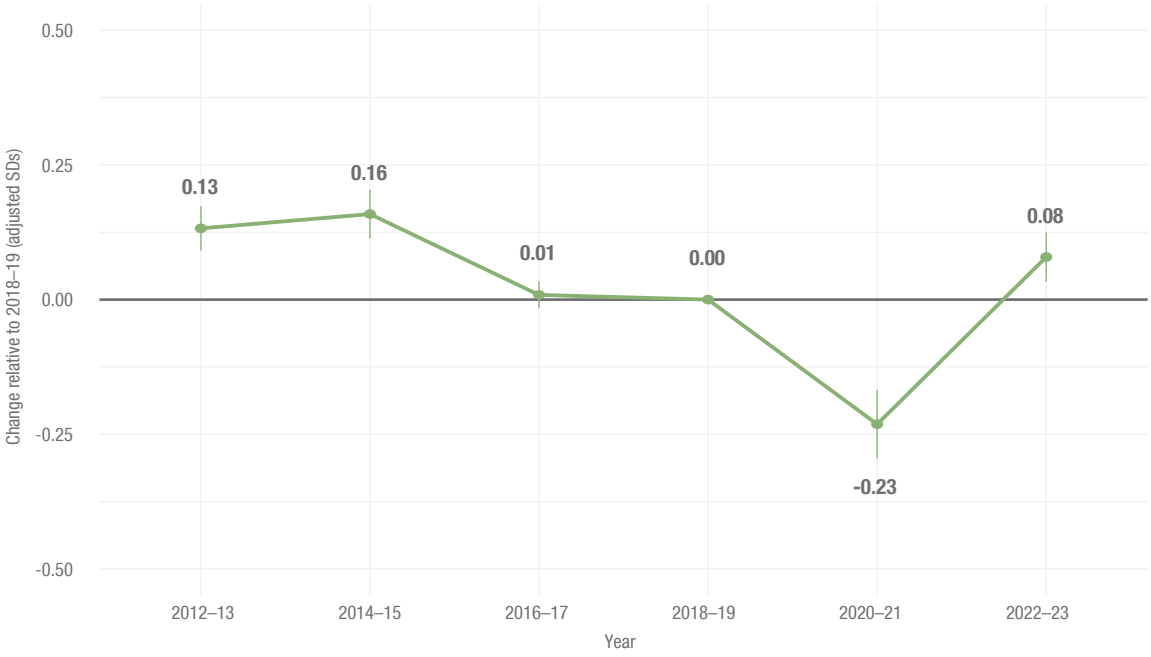
3.4.1.5. Making a class presentation

The frequency of making class presentations follows the same V-shaped trend that we observed with other class-related activities (Figure 16). From 2012 to 2015, students reported higher presentation frequency; the trend then stabilized between 2016 and 2019. The first 2 years of the pandemic led to a significant decline, reflecting the challenges of adapting to virtual learning modalities. By 2022-23, presentation frequency rebounded, rising to levels slightly higher than those seen before the pandemic.

Presentation frequency varies notably by student characteristics. Female students are more frequently involved in making presentations compared to male students. African American students participate in presentations more often than their peers, whereas Asian students engage less frequently. Economic background also influences presentation frequency; students from wealthy and low-income backgrounds engage more in presentations compared to students from middle-class backgrounds.

Seniors show the highest frequency of presentations, reflecting curriculum requirements in upper-level courses. Differences across fields of study reveal that business students are more likely to make presentations compared to all other disciplines, also consistent with a curriculum that often requires them.

Figure 16: Frequency of Making Class Presentations



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. The outcome variable is presented in standard deviations. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

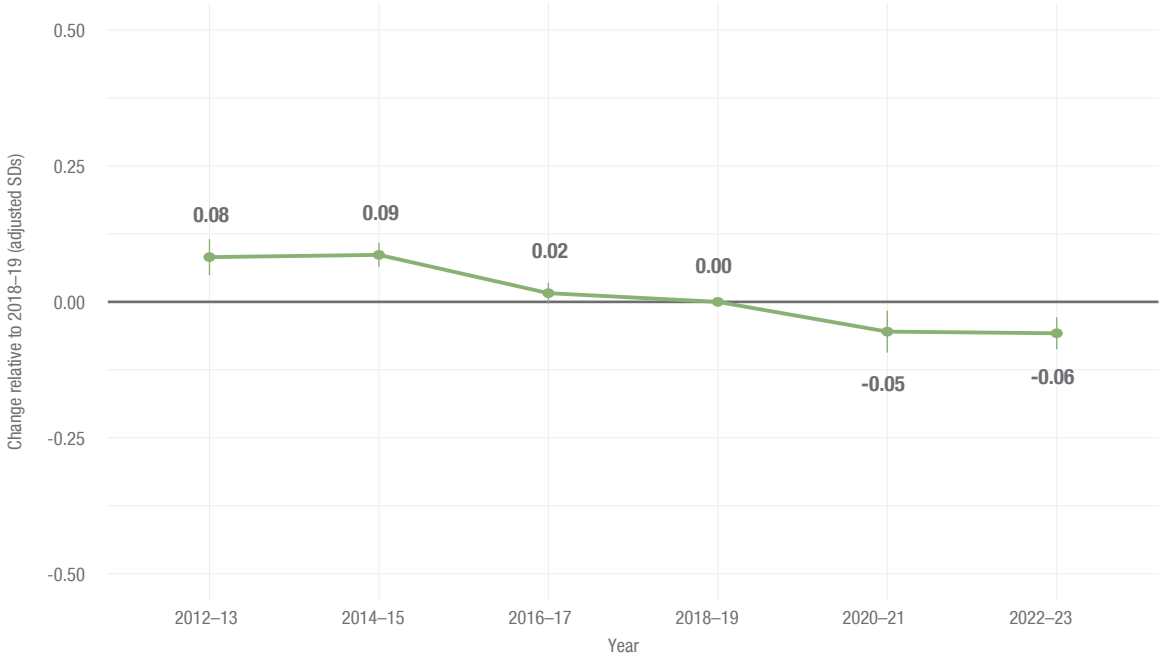
3.4.1.6. Helping a classmate better understand the course material

Frequency of students helping their classmates understand course material has declined slightly but steadily over the years, with no sharp decrease during the pandemic, indicating a consistent pattern in student collaboration behaviors (Figure 17). From 2014-15 onwards, there was a gradual decline, which continued through the pandemic years of 2020-21 and 2022-23, albeit without a significant drop-off.

Differences in how frequently students help their classmates are influenced by various demographic factors. Students from low-income and working-class backgrounds engage less frequently in helping behaviors, which could be attributed to greater personal academic pressures or limited time availability.

Conversely, students from upper-middle-class and wealthy backgrounds are significantly more likely to engage in peer support, potentially due to better access to educational resources. Among academic disciplines, substantial differences are noted; social sciences, arts and humanities, and "other disciplines" students are less likely to help their classmates compared to those in business or STEM fields, highlighting varying degrees of collaboration encouraged by different disciplines and the nature of their coursework.

Figure 17: Frequency of Helping Classmates



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. The outcome variable is presented in standard deviations. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.1.7. Studying with a group of classmates outside of class

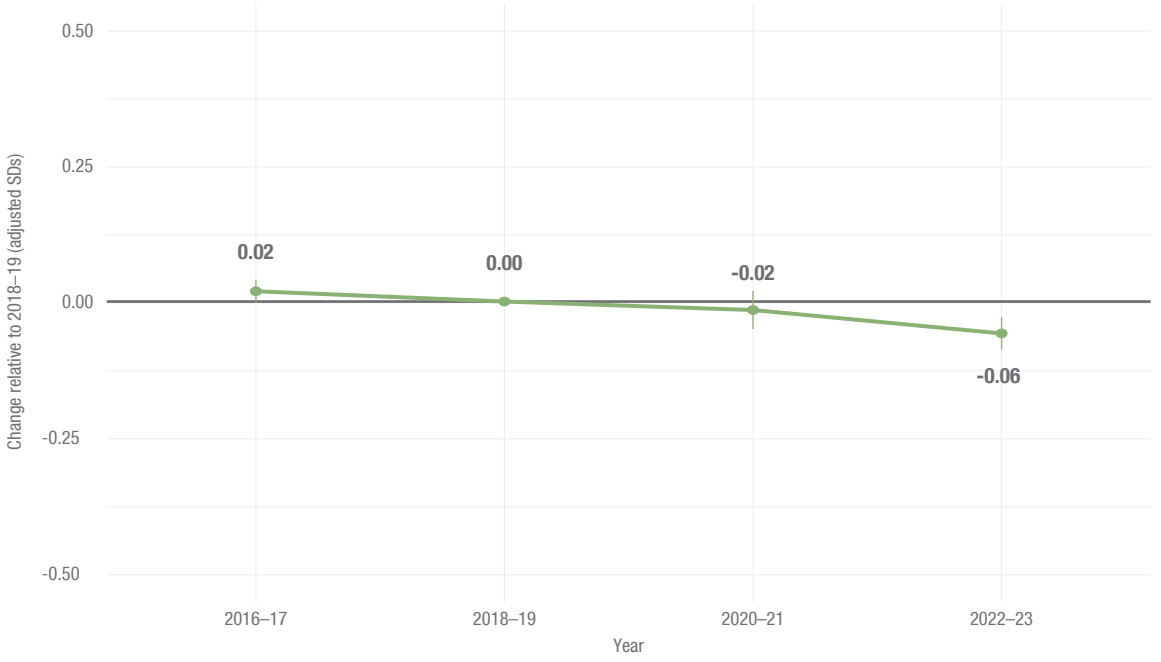
The trend in how often students study with a group of classmates outside of class shows a similar trend of gradual decline over the years (Figure 18). The trend did not

show a significant disruption despite the pandemic, indicating that students maintained a similar level of group study through virtual or limited in-person sessions. By 2022-23, the frequency of group study further declined and remained lower than it was pre-pandemic.

When we examine how often students engage in group studying by demographic and academic characteristics, several aspects stand out. Female students, as well as those identifying as African American, Asian, and Hispanic, are significantly more likely to study with classmates outside of class, pointing towards stronger group study habits among these groups. In contrast, students from low-income and working-class backgrounds participate less frequently in group studies, possibly due to constraints such as working hours or lack of suitable study environments.

Year in school affects group study frequency as well, with juniors and seniors notably less involved, a finding that may reflect a shift towards more independent study approaches. Notably, students in social sciences, arts and humanities, and "other disciplines" engaged in group studying significantly less than those in STEM and Business, possibly due to the nature of their coursework.

Figure 18: Frequency of Group Study Outside of Class



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. The outcome variable is presented in standard deviations. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.1.8. Having a class in which the professor knew or learned student's name

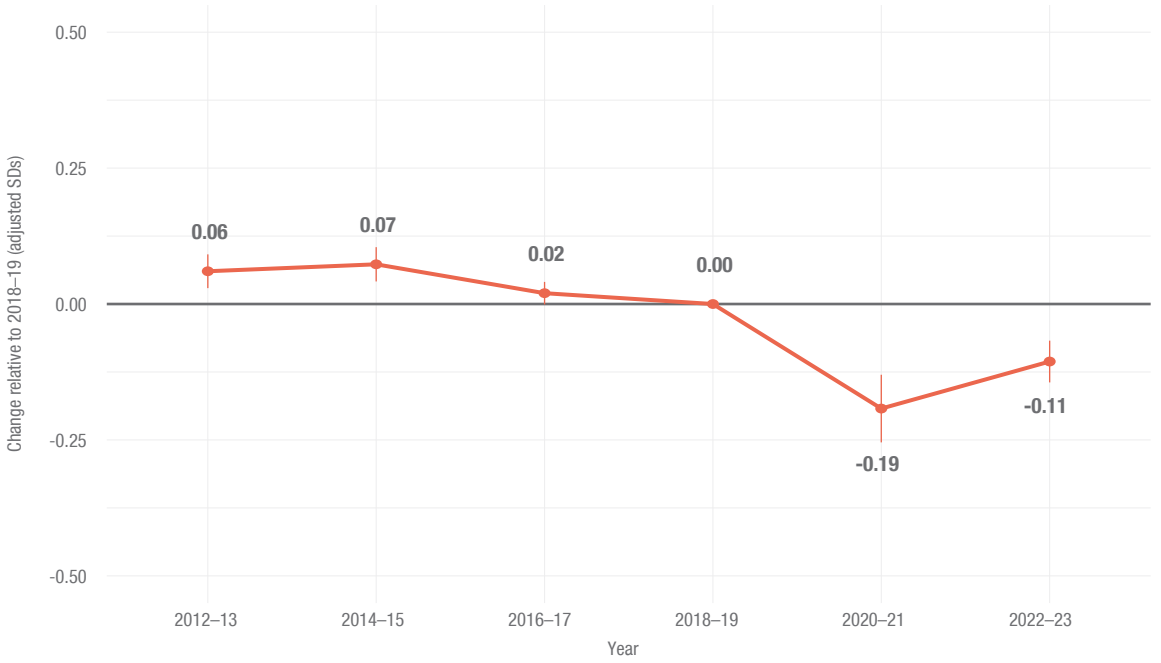
The trend in the frequency of classes where the professor knows or learns a student's name was relatively stable before the pandemic, then declined sharply, with only a slight rebound thereafter (Figure 19). By 2022-23, a slight improvement occurred, but the frequency did not return to pre-pandemic levels, indicating ongoing challenges in re-establishing previous levels of personal interaction between students and professors.

Significant differences in this trend are evident across various demographic factors. Racial and ethnic differences are particularly notable; African American students are more likely to be in classes where the professor knows their name, whereas Asian, Hispanic, multiracial and Pacific Islander students experience this less frequently.

With regard to economic background, students from wealthy backgrounds are more likely to be recognized by name, as are those from upper-middle-class families, albeit to a lesser extent. Notably, students in their junior and senior years experience significantly higher instances of being known by name, which may be due to smaller, more specialized classes as they progress in college.

In terms of field of study, students in arts and humanities report a much higher frequency of professors knowing their names compared to those in STEM fields, likely due to the nature of their coursework, which may foster more discussion and personal engagement.

Figure 19: Frequency of Professor Knowing Student's Name



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. The outcome variable is presented in standard deviations. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.1.9. Knowing a professor well enough to ask for a letter of recommendation in support of an application for a job or for graduate or professional school

The trend in how many professors students know well enough to ask for a letter of recommendation—indicating the extent to which students and faculty can form meaningful academic or professional relationships—shows a pattern similar to the frequency of being known by name by professors (Figure 20).

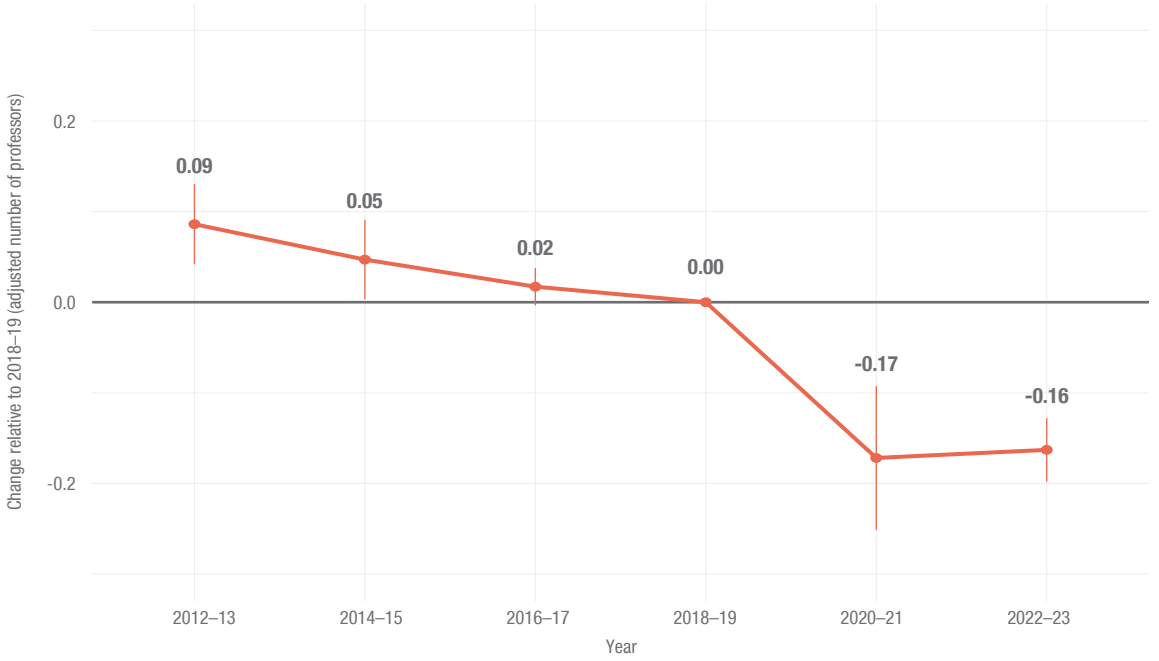
Before the pandemic, a slight decline occurred in the reported average number of professors students feel comfortable asking for a letter of recommendation. In 2020-21, the average number decreased markedly, likely due to the decreased opportunities for personal interaction in virtual or hybrid learning modalities. By 2022-23, the numbers remained low, indicating that levels of faculty–student interaction did not return to baseline even as institutions began to return to more normal operations.

The frequency with which students form strong relations with faculty varies significantly depending on student characteristics. While there is no difference by student gender,

racial and ethnic backgrounds play a substantial role: African American and American Indians students report higher number of professors they can ask for recommendations, whereas Asian, Hispanic, and multiracial students report lower numbers compared to White students.

Students from wealthy and upper-middle-class backgrounds are more likely to know professors well enough to ask for recommendations, perhaps reflecting greater access to networking opportunities. Juniors and especially seniors reported much higher levels of familiarity with faculty, likely due to spending more time at the university and having more opportunities to develop relationships. Differences also appear based on discipline: Students in arts and humanities are more connected with their professors compared to those in other fields, which may reflect the more personal and discussion-based nature of their studies.

Figure 20: How Many Professors Students Know Well Enough to Ask for a Letter of Recommendation



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.2. Research Engagement

3.4.2.1. Assisted faculty in conducting research

The involvement of undergraduate students in assisting faculty with research has shown a slight but sustained decline since the onset of the pandemic, without signs of recovery (Figure 21). The levels of undergraduate research participation did not change from 2016-17 to 2018-19 but decreased during 2020-21, and this lower level of involvement persisted into 2022-23.

In absolute terms, in 2018-19, 24% of undergraduates reported that they assisted faculty with research, compared to 20% in 2022-23. For seniors, the percentage declined similarly, from 35% in 2018-19 to 32% in 2022-23. This finding suggests lasting effects of pandemic disruptions on opportunities for undergraduate research.

In terms of variation by student characteristics, female students report higher involvement in assisting faculty with research than male students. Asian students show the highest engagement among racial groups. Most striking are sharp socioeconomic disparities in undergraduate research experience: Wealthy students have more than 50% higher odds of assisting in faculty research than low-income students. Research participation also increases with students' academic progression and is notably higher among students in STEM and social sciences, reflecting the more research-centric nature of these fields.

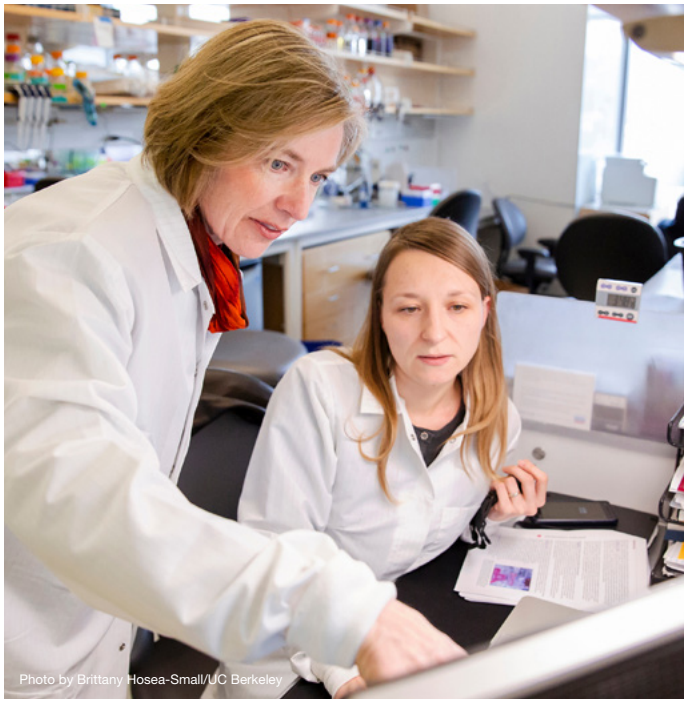


Photo by Brittany Hosea-Small/UC Berkeley

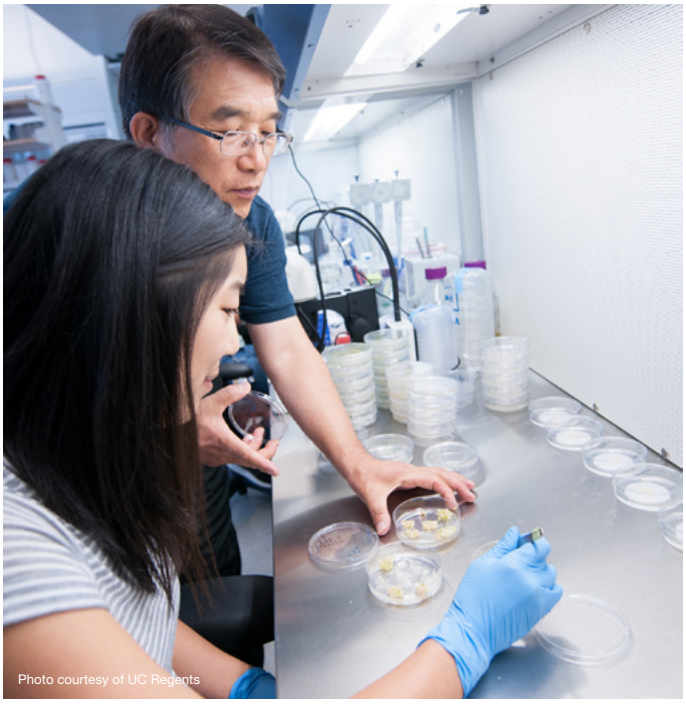
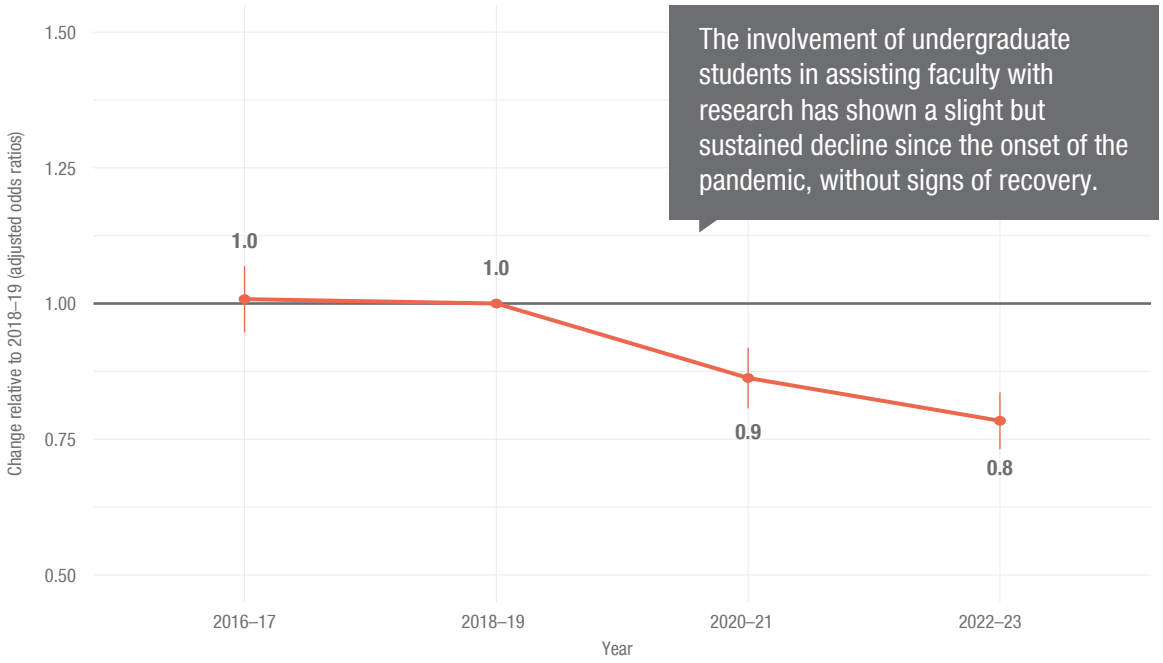


Photo courtesy of UC Regents

Figure 21: Assisted Faculty in Conducting Research



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.2.2. Completed a research project or research paper as part of the coursework

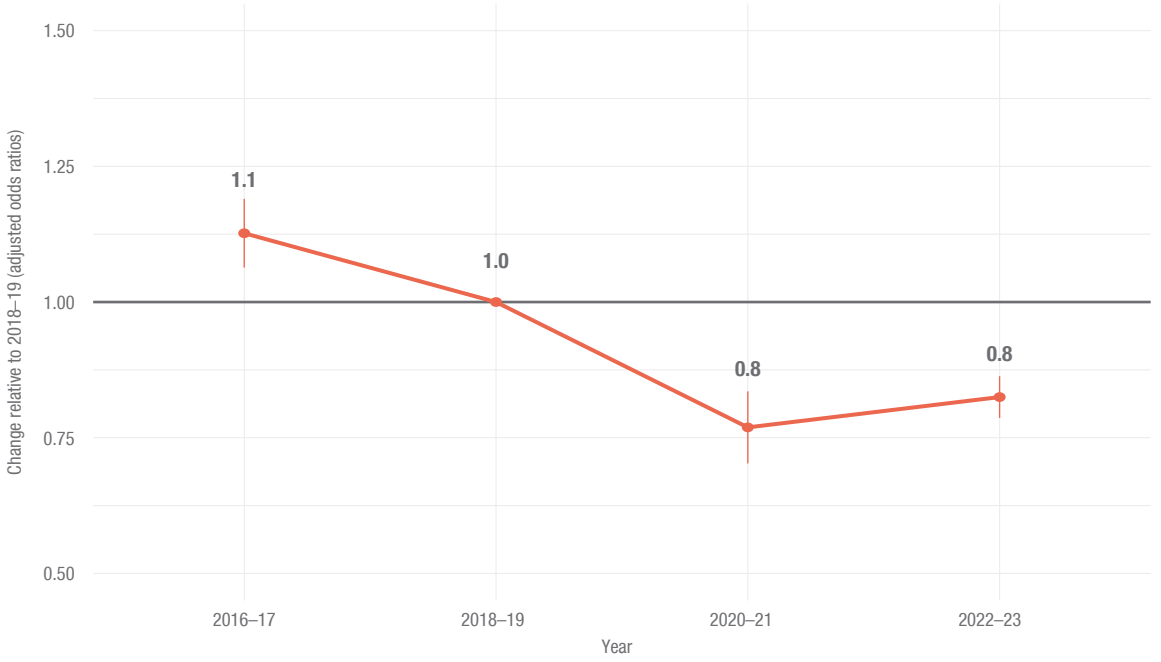
The trend in undergraduate students completing research projects or papers as part of their coursework is very similar to the one with assisting faculty research (Figure 22). Student involvement was significantly more robust in 2016-17. The onset of the pandemic in 2020-21 brought about a noticeable decrease, and this lower level of student participation continued into 2022-23.

Female students demonstrate a higher rate of completing coursework that includes research projects or papers. Among racial groups, White students report the highest participation in course-based research. Socioeconomic status also plays a role, with wealthy students more likely to complete such assignments than their low-income peers.

Academic progression strongly influences this activity, with seniors and juniors showing significantly more involvement than freshmen. Additionally, students in the social

sciences and arts and humanities are particularly active, likely due to the curriculum's emphasis on research and analysis.

Figure 22: Completed a research project or research paper as part of the coursework



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

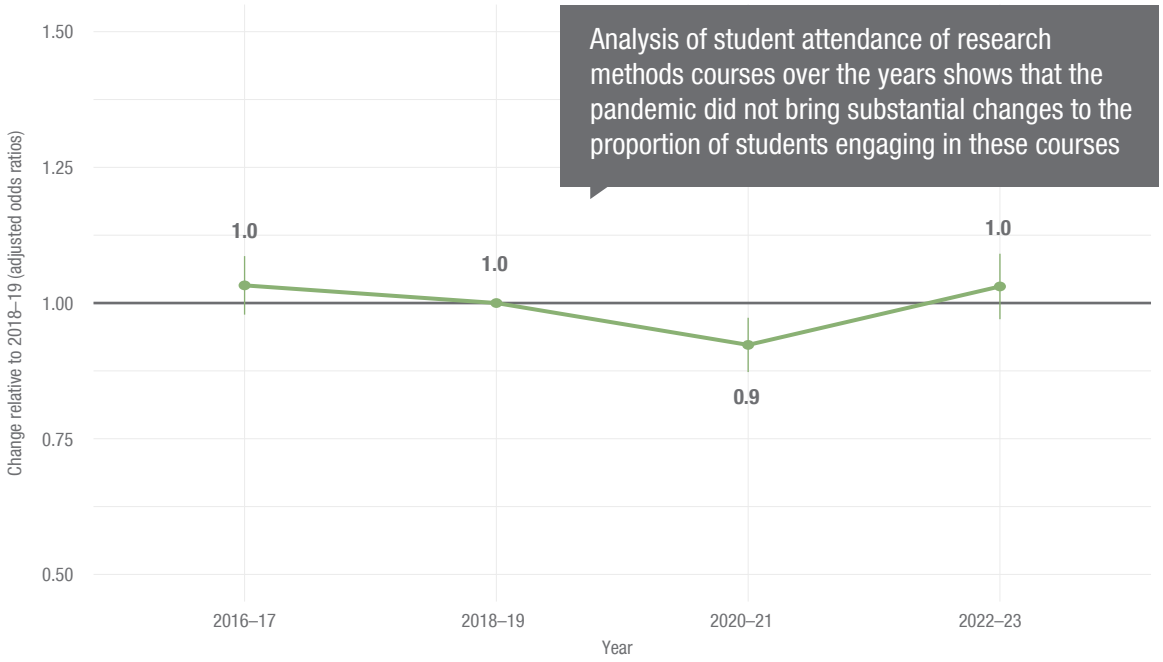
3.4.2.3. Attended at least one research methods course

Analysis of student attendance of research methods courses over the years shows that the pandemic did not bring substantial changes to the proportion of students engaging in these courses (Figure 23). The years during and following the pandemic (2020-21 and 2022-23) saw only slight variations in attendance rates, suggesting that these courses have maintained a consistent level of participation despite the broader disruptions caused by the pandemic.

As with other areas of research engagement, female students are more likely to attend these courses than male students. Racial and ethnic participation varies, with African American and Hispanic students showing notably higher engagement compared to their peers.

Academic progression is a strong factor as well; seniors and juniors participate at much higher rates, likely due to the accumulation of prerequisites and the integration of research methods into upper-level coursework. Notably, students in social sciences show the highest involvement, indicating that the nature of the field significantly influences the value placed on research methodology training.

Figure 23: Taken at Least One Research Methods Course



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

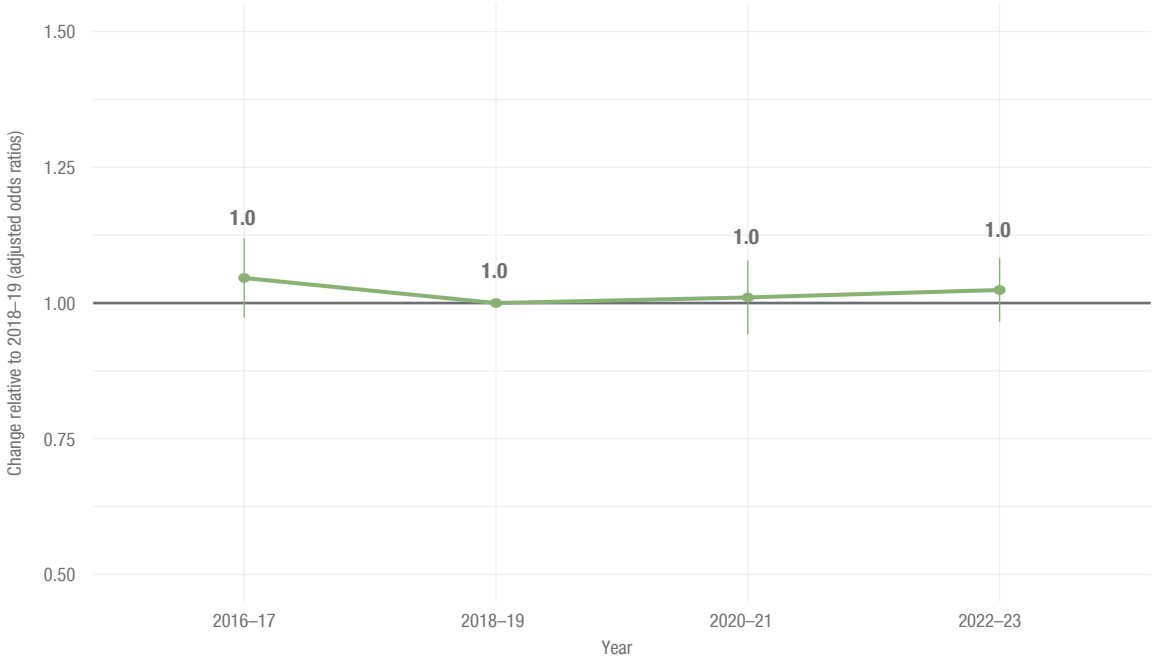
3.4.2.4. Attended at least one independent study course

The trend in undergraduate enrollment in independent study courses has remained consistent from 2016 to 2022-23, indicating that the pandemic did not significantly alter participation rates in these courses (Figure 24). Despite the substantial changes in academic environment during this period, participation in independent study courses remained stable, suggesting that these courses adapted effectively to remote and hybrid learning models, preserving their accessibility and relevance.

Asian, African American, and American Indian students have the highest rates of participation in independent study courses. Students from wealthier backgrounds enroll

in these courses more frequently than their less affluent peers. However, students from low-income backgrounds are also enrolling at increased rates. Enrollment trends show a clear increase with progression of academic level, with seniors and juniors much more likely to engage in independent studies compared to sophomores. The fields of social sciences, arts and humanities, and "other disciplines" see especially high engagement.

Figure 24: Taken at Least One Independent Study Course



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.3. Extracurricular Engagement

3.4.3.1. Participation in a student organization

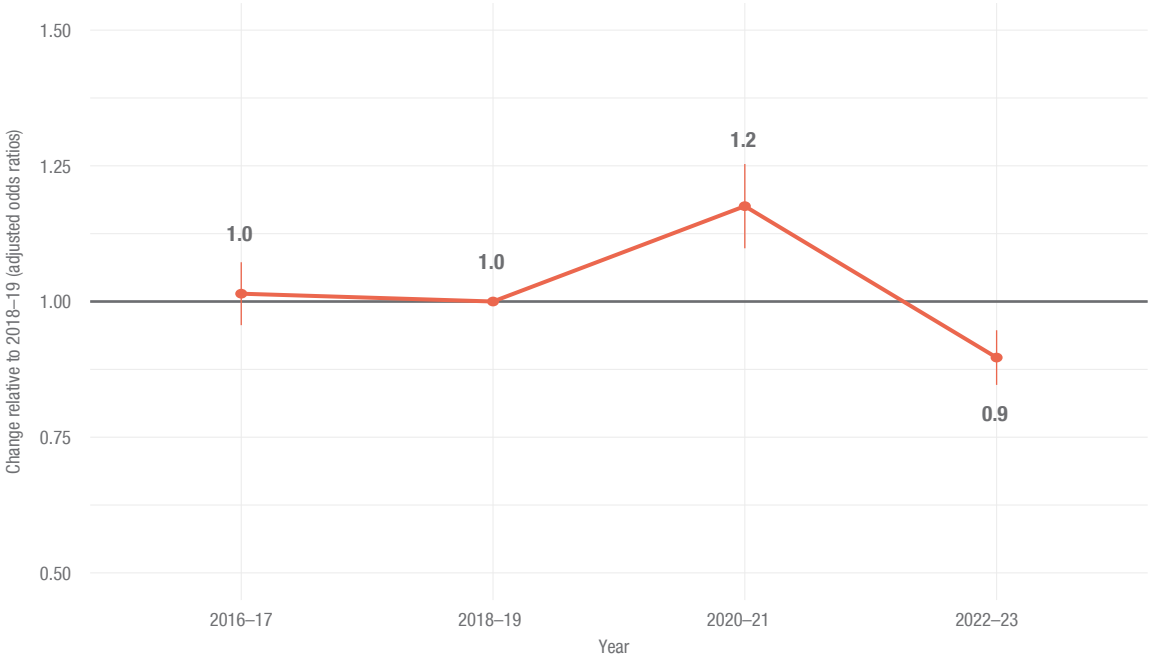
The trend in student involvement in organizations shows an interesting pattern around the pandemic period (Figure 25). In 2016-17 and 2018-19, involvement levels did not change substantially. With the onset of the pandemic in 2020-21, involvement increased slightly, possibly because students were seeking ways to connect and maintain a sense of community amid new social distancing measures.

However, by 2022-23, involvement had declined to levels below those seen before the pandemic. This reduction might reflect ongoing challenges such as pandemic fatigue, continued restrictions, or a shift in student priorities away from extracurricular engagement.

Female students were more likely to participate in student organizations, but spent fewer hours, compared to male students. Participation varied significantly by racial and ethnic group; African American, Asian, and Pacific Islander students are more likely to be involved than those in other groups, perhaps finding community and support in student organizations. Socioeconomic status also plays a critical role, with students from upper-middle-class and wealthy backgrounds more likely to participate, likely benefiting from greater resources and perhaps more encouragement to participate in extracurricular activities.

Year in college affects involvement too, with seniors and juniors showing the highest rates of participation, a trend that underscores increasing integration with and commitment to campus life as students advance through their college years. Disciplinary differences are also evident, with business students more likely to be involved than those in other disciplines.

Figure 25: Participated in a Student Organization



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.3.2. Time spent participating in student clubs or organizations

The trend in the time students spend participating in student clubs or organizations was stable from 2012-13 up to 2018-19 (on average, 4.6 to 4.7 hours per week), followed by a significant decline during the pandemic (Figure 26). This sharp drop reflects the impact of the pandemic on extracurricular life, likely due to restrictions on in-person gatherings and the broader shift to remote learning environments. The decrease observed in 2020-21 deepened even further: In 2022-23 students spent almost one hour per week less engaged with student organizations compared to 10 years ago.

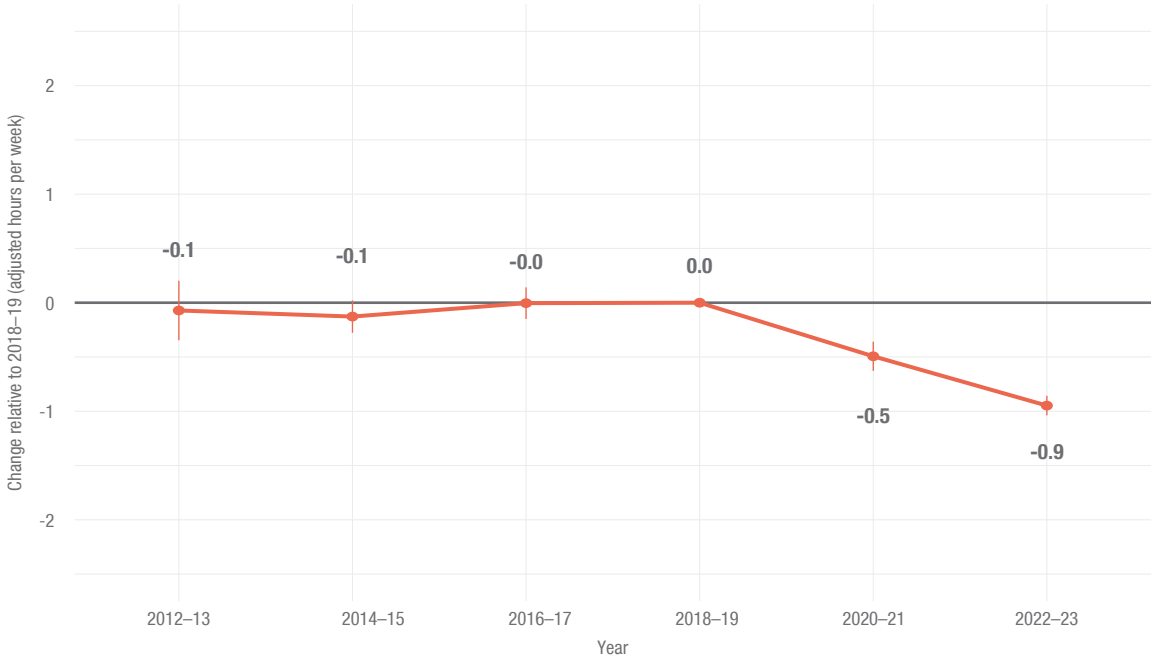
Female students spend less time on student organizations than male students, indicating a disparity in engagement levels. Racial and ethnic differences also show varied participation rates; Asian and Pacific Islander students are substantially more involved in terms of time spent than other groups, while African American and American Indian students also spend more time than White students.

Conversely, students from low-income and working-class backgrounds participate less, possibly due to having less free time or fewer resources to engage in extracurricular

activities. Students from wealthier backgrounds show much higher participation rates, perhaps reflecting greater access to opportunities and support for involvement in student life.

Year in college influences involvement too, with juniors, seniors, and sophomores showing increased participation compared to freshmen, likely because they become more integrated into the campus community. In terms of academic disciplines, students in STEM, social sciences, arts and humanities, and "other disciplines" are less likely to spend time in student organizations compared to business majors, possibly due to heavier coursework or different cultural emphases within these disciplines on academic versus extracurricular activities.

Figure 26: Time Spent Participating in Student Clubs or Organizations



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.3.3 Served as an officer of a student organization

The trend in students serving as officers in student organizations remained steady in the years before the pandemic, with no significant changes observed from 2016-17 to 2018-19 (Figure 27). However, during the pandemic in 2020-21, there was a notable

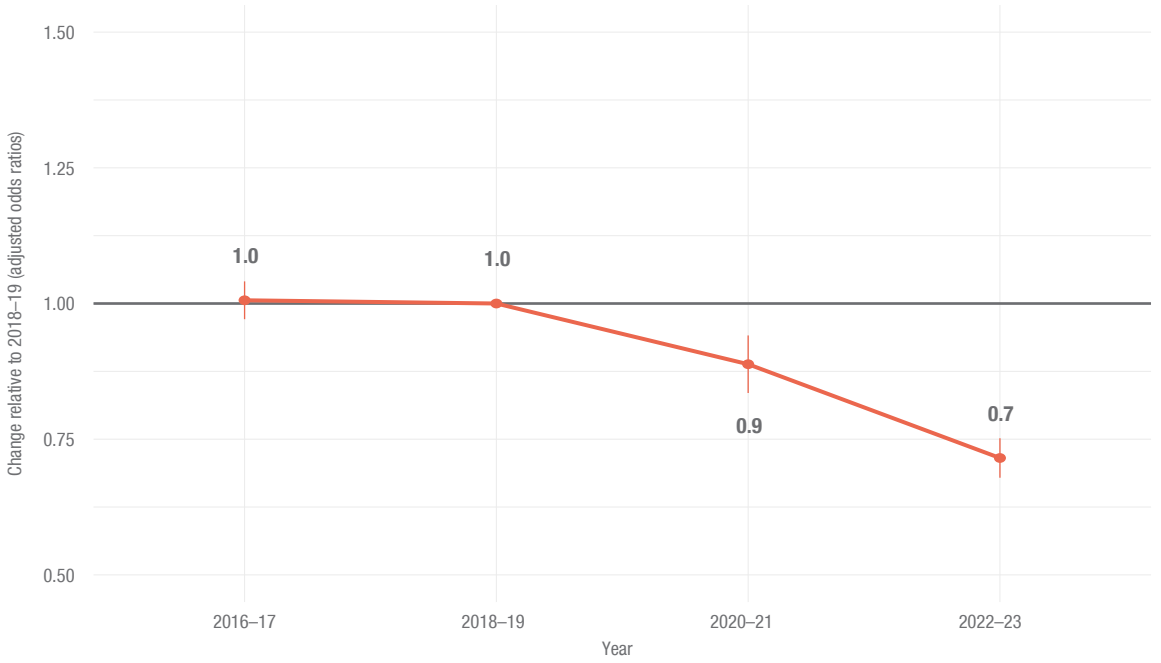
decline in students taking on leadership roles within these organizations, and this downturn continued into 2022-23.

The persistent decline suggests that the changes brought about by the pandemic have had a lasting impact on students' willingness or ability to commit to leadership roles in extracurricular activities.

Female students are slightly more likely to serve as officers than male students, indicating potentially greater leadership engagement or opportunities for women in student organizations. Among racial and ethnic groups, African American and Asian students are more likely to take on officer roles. Socioeconomic background also influences leadership roles, with wealthy students much more likely to serve as officers compared to their low-income and working-class peers.

Academic progression is a strong predictor of leadership involvement, with seniors and juniors far more likely to hold such positions. Business majors are more likely to serve as officers compared to students in other disciplines.

Figure 27: Served as an Officer of a Student Organization



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.4. Civic Engagement

3.4.4.1. Time spent performing community service or volunteer activities

The amount of time students spent on community service or volunteer activities was stable before the pandemic, with only slight fluctuations observed in the years leading up to 2018-19: 3.2-3.3 hours per week during these periods (Figure 28).

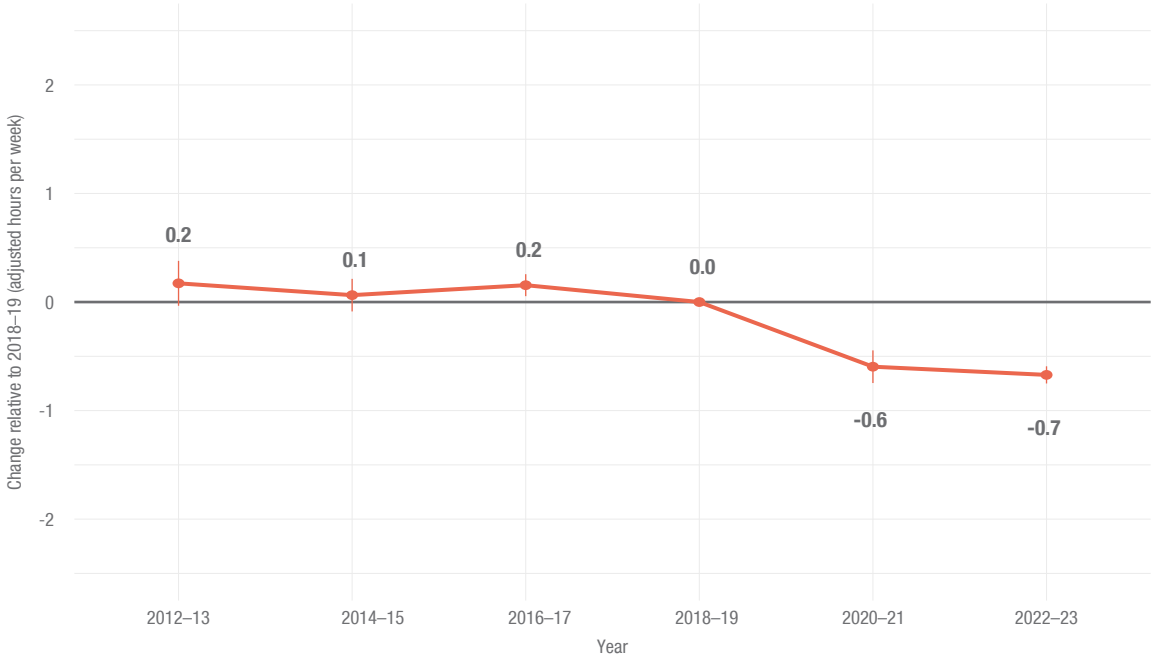
However, the onset of the pandemic in 2020-21 led to a notable decline in participation that continued into 2022-23. This downward trend, which persisted even as conditions began to normalize, suggests that the pandemic might have lasting effects on the ways students engage with community service, possibly due to ongoing restrictions, shifts in priorities, or changes in the opportunities available for volunteer work.

Female students engage more in community service than male students. African American, Asian, and Pacific Islander students demonstrate substantially higher participation rates than White students. Students from low-income and wealthy backgrounds both show elevated levels of community service participation, each possibly driven by different motivations.

Senior and junior students participate more than their younger peers, suggesting increased engagement with community service as students advance in their academic careers and become more integrated into broader community efforts.

Field of study is also linked to participation; students majoring in social sciences and "other disciplines" spend more time on community service and volunteering, aligning with the social issues-focused curricula of these fields, while students in STEM and arts and humanities are less involved, reflecting different academic demands and opportunities.

Figure 28: Time Spent Performing Community Service or Volunteer Activities



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.4.2. Participation in academic service-learning or community-based learning experience

Participation in academic service-learning or community-based learning experiences among undergraduate students declined substantially during and after the pandemic (Figure 29). Prior to the pandemic, in 2016-17, participation levels were notably higher, reflecting a strong engagement in these academically integrated community experiences.

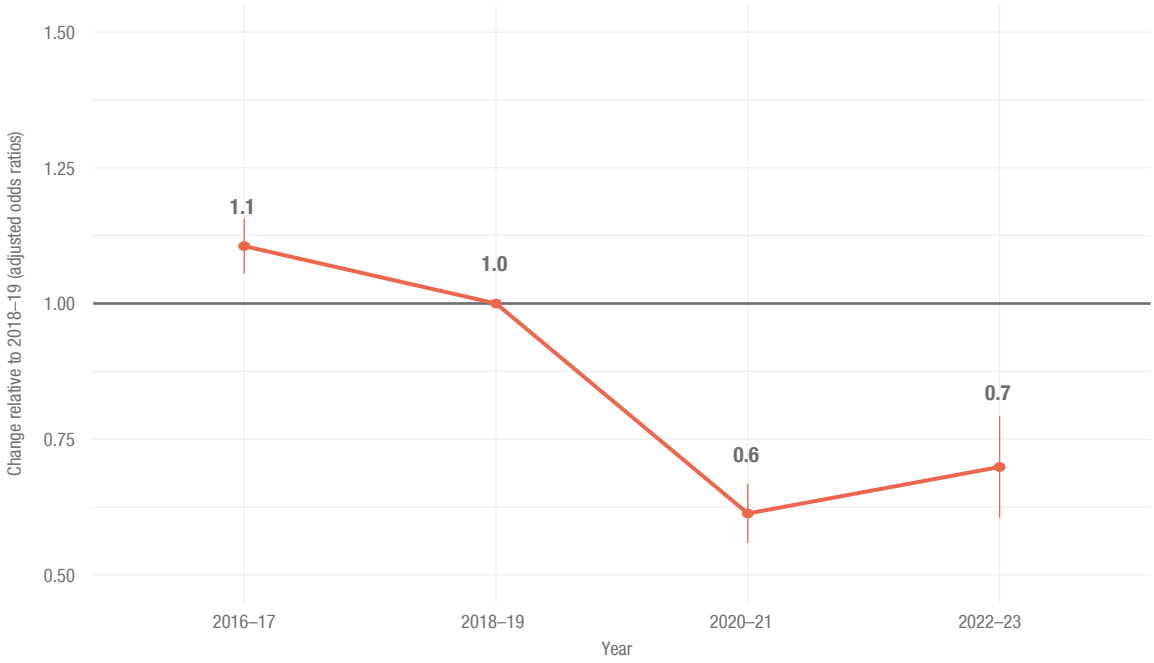
However, the onset of the pandemic in 2020-21 marked a significant drop in student involvement, which slightly improved in 2022-23 but remained considerably lower than pre-pandemic levels. This continued decline indicates that the disruptions caused by the pandemic have had a lasting effect on the integration of community-based learning within academic programs.

Female students are significantly more involved than male students, suggesting a higher propensity or greater encouragement for women to engage in community-integrated academic work. Race and ethnicity are also predictive of participation; African American and Pacific Islander students are particularly active, possibly reflecting a strong community orientation or a response to tailored program offerings that meet the needs or interests of these groups. Asian and Hispanic students also show higher engagement compared to White students.

Socioeconomic status influences participation as well; students from low-income and wealthy backgrounds are notably more engaged than middle-class students. Participation increases with academic progression, with seniors and juniors much more likely than sophomores and freshmen, likely due to the cumulative nature of their academic and experiential learning.

Field of study further differentiates participation rates; students in other disciplines show a higher propensity to engage in these learning experiences.

Figure 29: Participation in Academic Service-learning or Community-Based Learning Experience



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.4.3. Interaction with someone with views that were different from their own (outside of classroom)

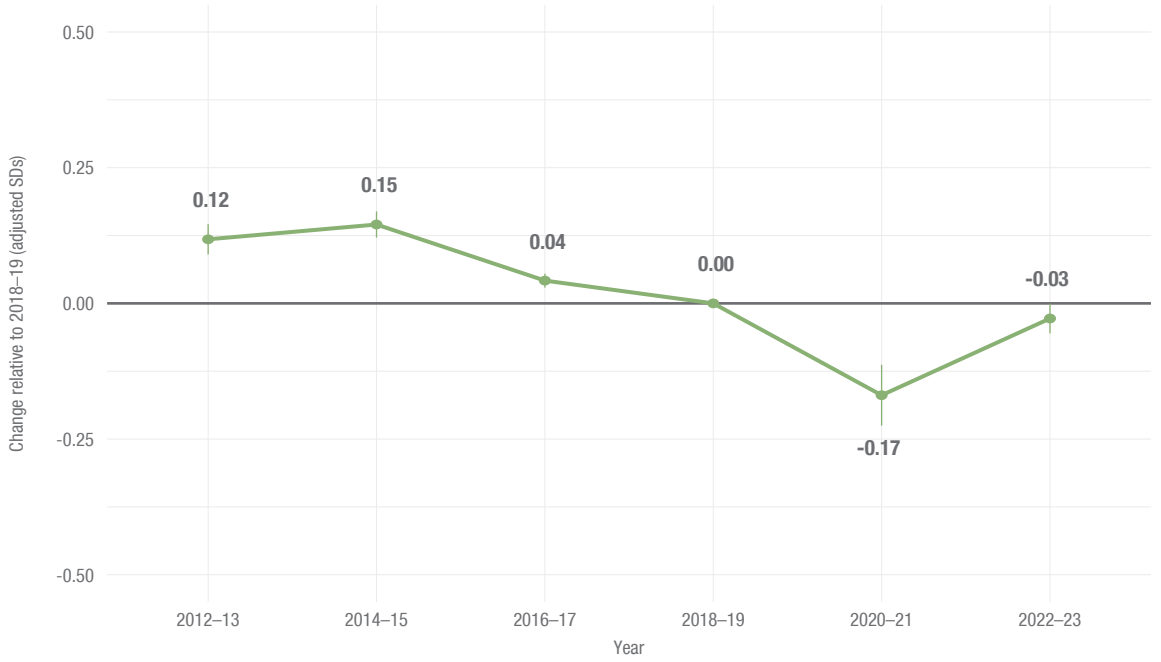
Interacting with someone who holds different views from one's own outside of the classroom is a crucial indicator of student civic engagement (Figure 30). It reflects the ability of educational institutions to foster environments where students are exposed to a variety of perspectives, which is essential for developing critical thinking and empathy. This kind of engagement had seen some fluctuations over the years leading up to the pandemic.

The onset of the pandemic in 2020-21 led to a significant drop in such interactions, likely due to reduced physical presence on campuses and fewer opportunities for spontaneous conversations. However, numbers improved significantly in 2022-23 and the frequency of these interactions increased to the levels observed in 2018-19.

The degree of engagement in discussions with diverse others varies significantly across student demographics. Female students are slightly less likely than male students to engage in such interactions, a finding that may suggest differing social dynamics or level of comfort in engaging in potentially contentious discussions. No significant difference was seen for African Americans, Asians, or Hispanics compared to White students, although American Indians show a slightly higher likelihood of engaging with diverse viewpoints.

Socioeconomic status also influences these interactions; wealthy and low-income students are more likely to engage with differing perspectives compared to their middle-class peers, possibly reflecting distinct environments or networks that encourage such exchanges.

Figure 30: Frequency of Engaging With Someone With Different Views



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

Academic level plays a role, with juniors and seniors engaging more frequently in these interactions than freshmen or sophomores, likely due to increased confidence and exposure to diverse settings over their college careers.

Additionally, students majoring in arts and humanities are more likely to interact with diverse viewpoints, reflecting the emphasis on discussion and debate typically found in these disciplines, compared to those in STEM and business fields.

3.4.5. Career Engagement

3.4.5.1. Paid employment on campus

On-campus employment and the number of hours students work on campus are important indicators of career engagement, reflecting how students integrate work experiences into their academic lives. These metrics also provide insights into the capacity of institutions to support student employment.

Before the pandemic, the rate of on-campus employment remained relatively stable, but during and after the pandemic, a notable decline occurred in both the proportion of students employed on campus (Figure 31A) and the number of hours they worked (Figure 31B).

Specifically, by 2022-23, not only were fewer students working on campus compared to the pre-pandemic period of 2018-19, but those who were employed worked more than 1 hour per week less. This decline may be attributed to various factors, including reduced campus operations, fewer on-campus activities, and possibly shifts towards remote learning environments that could affect the availability of on-campus jobs.

Female students are more likely to be employed on campus than male students, but they generally work fewer hours. This might suggest either a higher demand for the types of on-campus jobs typically filled by female students or different work-hour preferences or necessities. Racial and ethnic groups show diverse trends: African American students have significantly higher employment rates on campus than White students, and they also work more hours, indicating a greater reliance or preference for on-campus employment within this group. In contrast, Asian students, while employed at rates similar to White students, work fewer hours on average.

Socioeconomic status plays a critical role, with students from low-income and working-class backgrounds more likely to be employed and working more hours on campus, possibly reflecting financial needs. Conversely, wealthy students are less likely to work on campus and work fewer hours, likely due to lesser financial pressure to seek employment during their studies.

Academic progression also influences these metrics, with seniors and juniors not only more likely to work but also working more hours than freshmen and sophomores,

perhaps due to greater integration into campus life or nearing the completion of their degrees, a time when work experience becomes increasingly important. Field of study has an impact as well, with students in STEM fields less likely to work and working fewer hours compared to those in social sciences and arts and humanities, possibly due to the demanding nature of their academic workload.

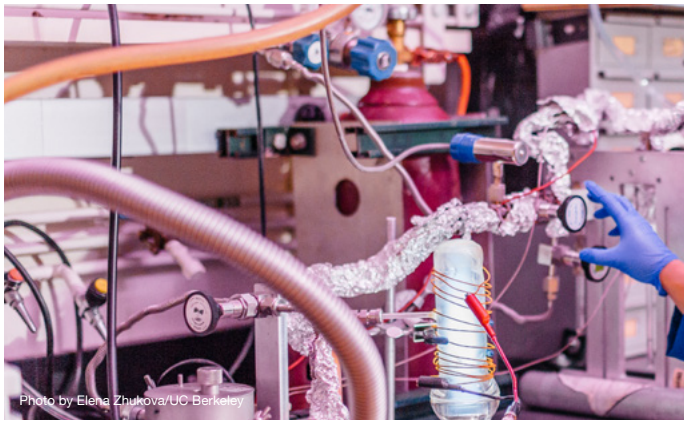
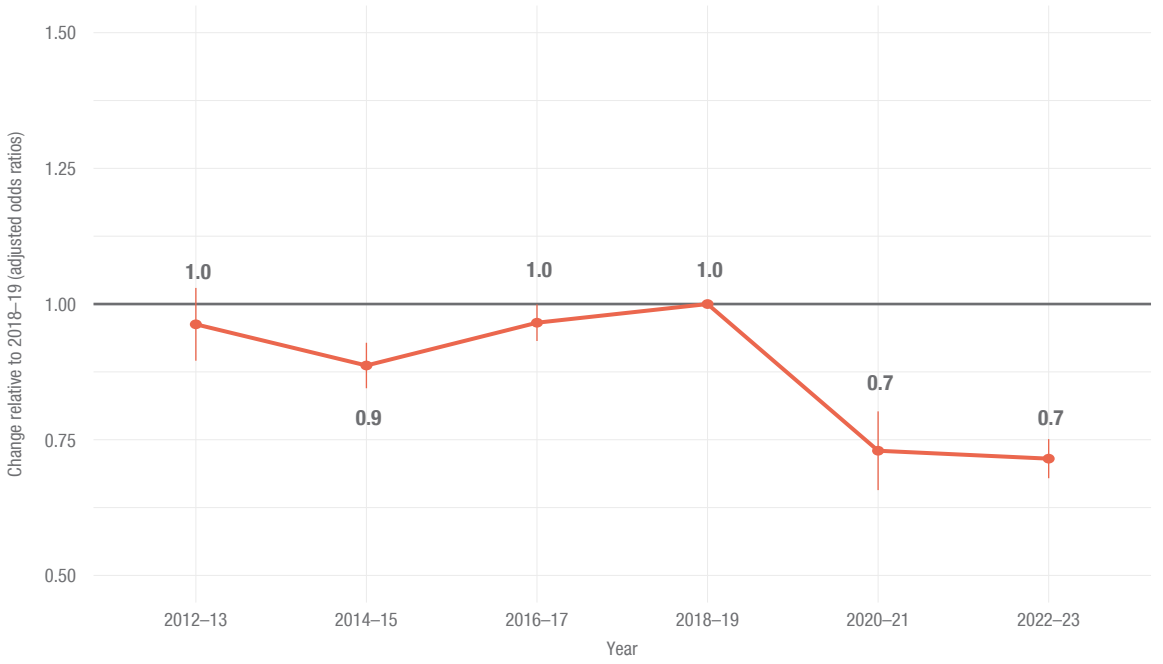
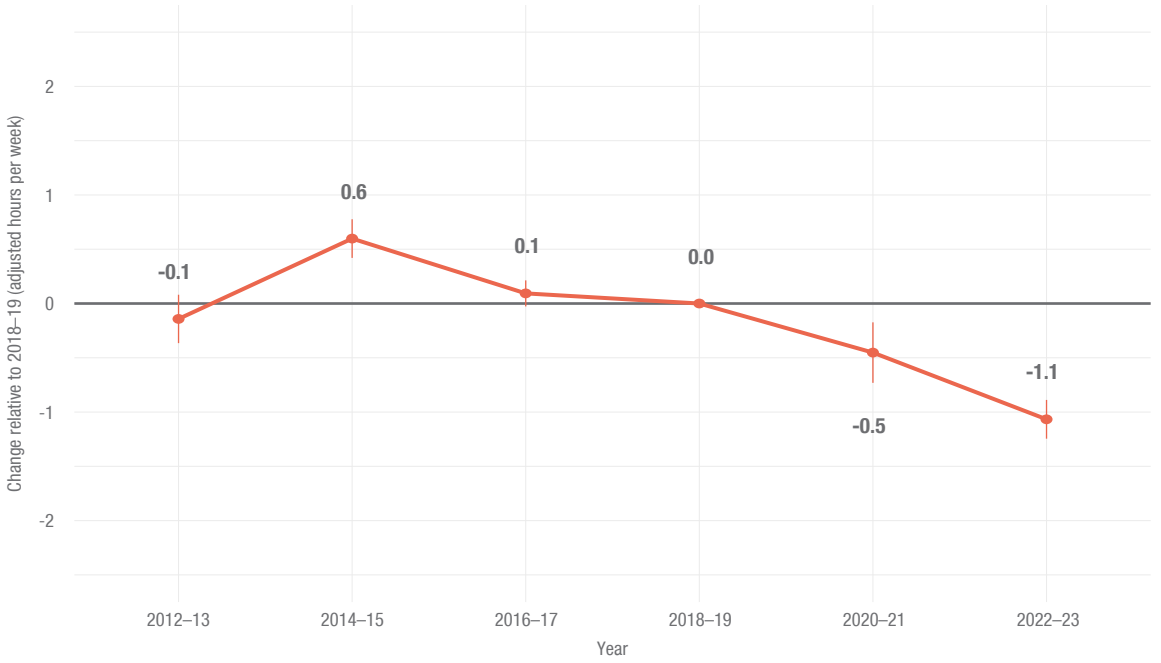


Figure 31A: Paid Work on Campus (Employment)



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

Figure 31B: Paid Work on Campus (Hours Per Week)



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.5.2. Paid employment off campus

Off-campus employment serves as a significant indicator of career engagement, reflecting how students balance work with their academic responsibilities and obtain essential financial support. Unlike on-campus employment, which declined during and after the pandemic, off-campus employment increased (Figures 32A and 32B).

More students started working off campus during the pandemic than before, with this trend continuing postpandemic. The number of hours worked off-campus decreased slightly but not substantially, suggesting that while students shifted to off-campus jobs, the intensity of their work engagements remained relatively stable. This shift could be attributed to the contraction of on-campus job opportunities due to pandemic restrictions and perhaps the expansion of remote and flexible job opportunities in the broader economy.

As with on-campus employment, female students are more likely to be employed off-campus compared to male students, but they generally work fewer hours, possibly indicating a preference or need for part-time or flexible work arrangements.

Work patterns vary by race and ethnicity; Asian students are significantly less likely to work off-campus and work fewer hours, while African American and Hispanic students are also less likely to work off-campus than White students, but there is almost no difference in the number of hours worked compared to White students.

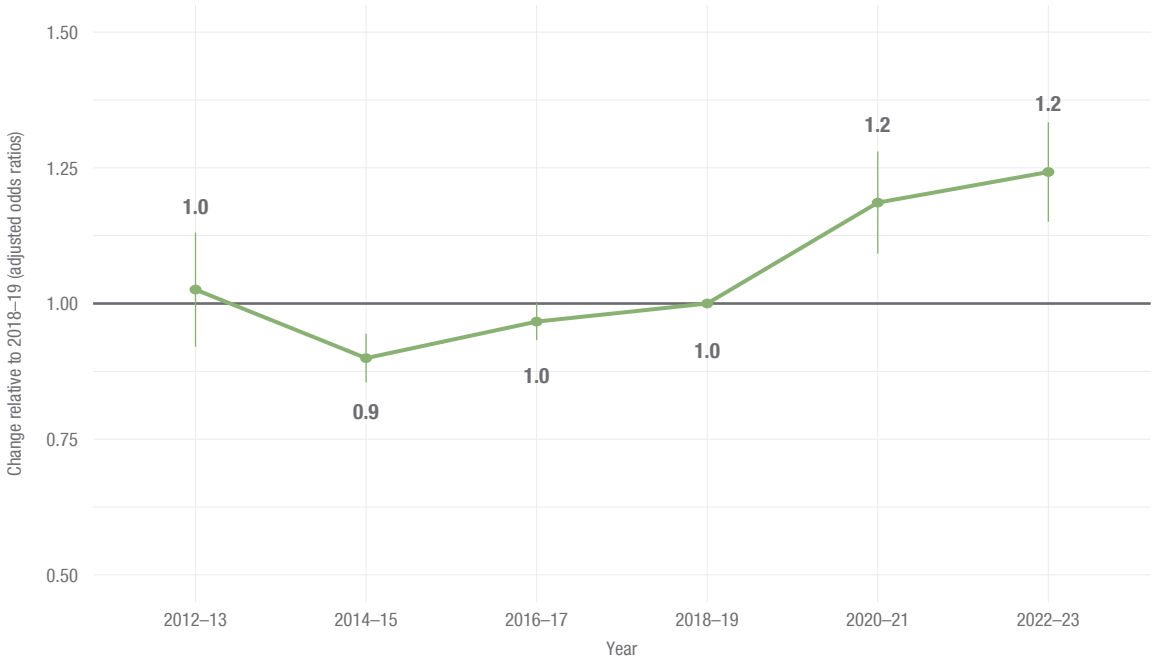
Socioeconomic status strongly influences off-campus employment; students from low-income and working-class backgrounds are much more likely to work off-campus and work for longer hours, likely reflecting financial necessities. In contrast, students from wealthier backgrounds work off-campus less frequently and for fewer hours, highlighting economic disparities in work necessity during studies.

Academic level also impacts these employment patterns; seniors and juniors not only work off-campus more frequently but also tend to work more hours than freshmen and sophomores, reflecting greater independence and financial needs as students progress through their college years.

Interestingly, students in STEM fields are less likely to engage in off-campus work, and when they do, they work fewer hours, potentially due to the demanding nature of their academic programs.

Photos courtesy of UC Regents

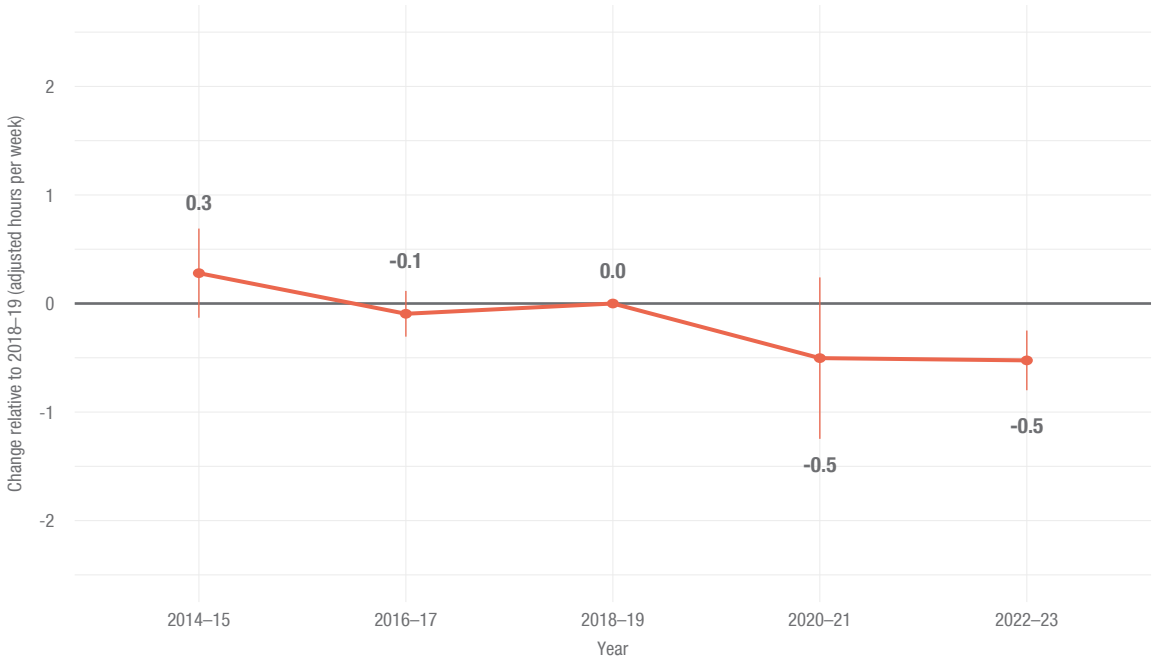
Figure 32A: Paid Work Off Campus (Employment)



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

Photos by Elena Zhukova/UC Berkeley

Figure 32B: Paid Work Off Campus (Hours Per Week)



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.5.3. Proportion of time spent on paid employment related to academic interests

Aligning work time with academic interests is a crucial indicator of career engagement, as it reflects the extent to which students can integrate their employment experiences with their educational goals, thereby enhancing practical learning and career preparation.

During the pandemic, a noticeable drop occurred in the proportion of work time that students reported as related to their academic interests, likely due to disruptions in both work and academic environments and the reduced availability of academically relevant job opportunities (Figure 33). However, by 2022-23, this proportion had recovered, indicating a return to or improvement in the alignment of work experiences with academic pursuits as conditions normalized and institutions possibly increased efforts to provide relevant work opportunities.

The extent to which students' work is related to their academic interests varies significantly across different groups. Female students report slightly less alignment compared

to male students, suggesting differences in the types of employment opportunities accessed by gender.

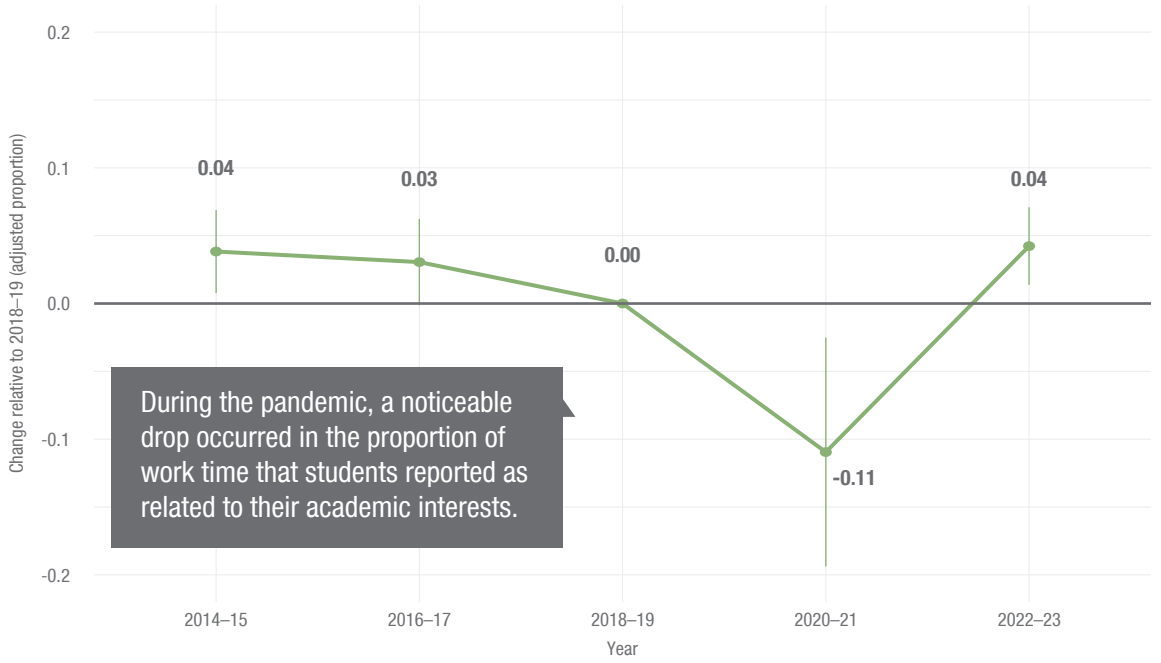
Racial and ethnic differences are also evident; Asian students report a higher proportion of their work time being related to their academic interests, possibly indicating greater selectivity or availability of relevant jobs. In contrast, African American and multiracial students see less of their work time as contributing to their academic growth. Socio-economic status plays a significant role, with wealthy and upper-middle-class students more likely to engage in work that aligns with their academic interests, reflecting disparities in access to high-quality, relevant work opportunities. Lower-income and working-class students report their work as less frequently connected to their academic goals, likely due to economic pressures that necessitate taking any available job rather than one specifically aligned with their studies.

The influence of academic level is substantial; seniors and juniors find their work more aligned with their academic interests than freshmen and sophomores, indicating that as students progress through their academic careers, they are better able to secure positions that complement their educational objectives.

Field of study also interacts with this alignment; students in STEM fields reported a higher proportion of academically related work, whereas those in social sciences, arts and humanities, and “other disciplines” often find less correlation, possibly due to the varied nature of practical work opportunities across these fields.

Photo by Elena Zhukova/UC Berkeley

Figure 33: Proportion of Work Hours Related to Academic Interests



Note: Estimates are from a university-level fixed effects regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.5.4. Completed an internship, practicum, or field experience

Completing an internship, practicum, or field experience is a crucial indicator of career engagement, as these experiences provide students with practical skills and professional exposure critical for their postgraduation success.

Before the pandemic, the completion rates for internships were relatively stable (Figure 34). However, in 2020-21, there was a substantial drop in the number of students completing internships. This decline reflects the disruptions caused by the pandemic, such as limited availability of placement opportunities and the challenges of adapting traditional hands-on experiences to virtual formats. Although there was a slight improvement in 2022-23, the number of students completing internships did not recover to pre-pandemic levels, indicating ongoing challenges in integrating these critical experiences into students' academic careers.

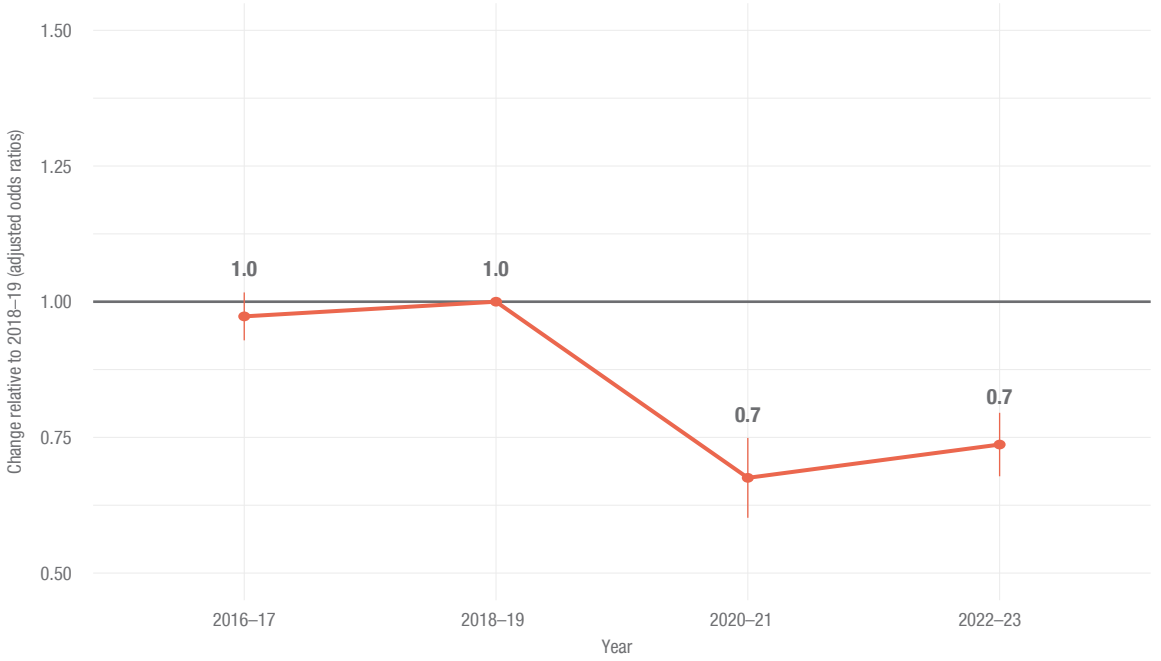
Likelihood of completing an internship varies significantly across different student characteristics. Female students are much more likely than male students to complete an internship, a disparity that might reflect differing opportunities or motivations between

genders in seeking out practical experience. Among racial and ethnic groups, African American, American Indian, and Pacific Islander students show a somewhat higher completion rate than White students.

Socioeconomic background also influences internship completion; wealthy and upper-middle-class students are more likely to complete an internship than their peers from lower socioeconomic backgrounds, highlighting the impact of resources and network availability on securing these opportunities.

Not surprisingly, academic progression strongly affects internship completion, with seniors and juniors significantly more likely to engage in these experiences than freshmen and sophomores, likely due to curriculum structures that integrate internships more frequently in later academic stages. Students in social sciences and "other disciplines" show higher rates of completion compared to those in STEM, a disparity that may reflect varying industry demands and the structured nature of internship opportunities across different academic disciplines.

Figure 34: Completed an Internship, Practicum, or Field Experience



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

3.4.5.5. Completed an entrepreneurial program

Completing an entrepreneurial program is an essential component of career engagement, particularly for students aspiring to start their own businesses or innovate within existing organizations. These programs equip students with critical thinking, problem-solving, and business management skills.

However, the percentage of students completing such programs declined significantly both during and after the pandemic, suggesting that the disruption caused by the pandemic significantly affected participation in and availability of entrepreneurial training and opportunities (Figure 35). The continued low levels of participation into 2022-23 indicate enduring challenges in integrating entrepreneurship education effectively in the altered educational landscape.

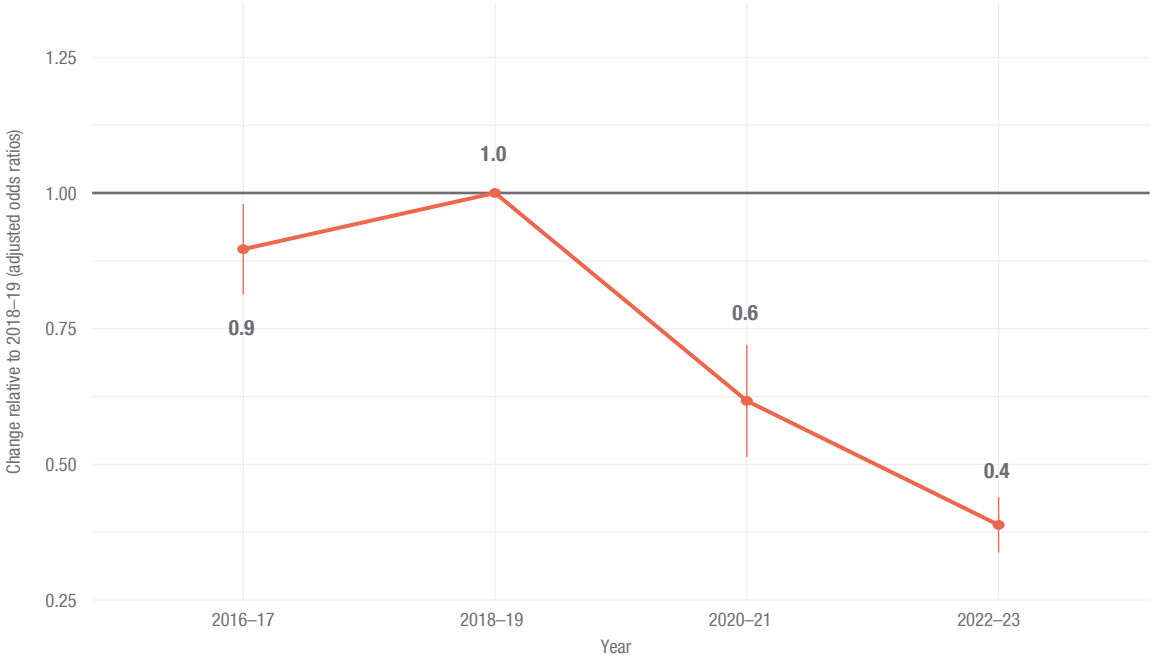
The likelihood of students completing entrepreneurial programs varies significantly across demographic groups. Female students are notably less likely to complete these programs than male students, possibly reflecting gender disparities in interest in or access to entrepreneurial education.

Race affects participation rates; African American, Asian and Pacific Islander students are particularly likely to engage in entrepreneurial programs.

Socioeconomic status also plays a role, with wealthy students significantly more likely to participate in these programs, suggesting that access to resources and networks could influence engagement in entrepreneurial education. The impact of academic level is evident, with seniors and juniors more engaged than freshmen and sophomores, likely due to increased awareness and availability of more advanced opportunities as students progress through their studies.

Students in STEM, social sciences, and arts and humanities are much less likely to complete these programs than their peers in business-related fields, reflecting curricular focus and perhaps differing career aspirations.

Figure 35: Completed an Entrepreneurial Program



Note: Estimates are from a university-level fixed effects binary logistic regression model, adjusting for gender, race/ethnicity, social class, study level, and field of study. Robust standard errors are clustered by university. The dashed line indicates the baseline pre-pandemic period (2018-19); error bars show 95% confidence intervals.

04

Summary of Findings

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4. Summary of Findings

In the years since the establishment of the SERU Consortium in 2008, with SERU surveys administered at the UC campuses since 2002, attention and research on the academic engagement of undergraduate students has dramatically increased. However, much less attention has been paid to their civic, research, extracurricular participation, and career development.

This study is the first to examine these five forms of engagement simultaneously and to explore the relationship of each of these with student development and outcomes.

Our findings include the following high-level insights:

1. Two thirds of undergraduates at the major public universities we studied are highly engaged (belonging in the top 25% of the distribution) in at least one of the defined areas: academic, extracurricular, civic, research, and career.
2. Among seniors, this figure rises to over 85%, indicating increased engagement as students progress through their studies.
3. Despite 35% of students not being highly engaged in any area, nearly all students exhibit medium or high engagement in at least one area, pushing the total engagement rate to over 99%.

Photo by Elena Zhukova/UC Berkeley

4. Patterns of engagement among students at U.S. public universities show notable disparities linked to gender, race/ethnicity, and socioeconomic background.
5. Engagement patterns vary significantly across disciplines, showing links to the ways students select their majors.
6. There is a strong association between forms of engagement and learning outcomes measured by GPA and self-reported skill proficiency levels and gains, supporting the Multi-Engagement Model assumption that different forms of engagement are linked to and may support distinct positive outcomes.
7. Different forms of engagement are strongly associated with students' career preferences and aspirations, guiding them toward diverse postgraduation pathways.
8. Despite these positive findings, the overall landscape of multi-engagement has declined across all areas since the onset of the COVID-19 pandemic, without a full recovery to pre-pandemic levels.

Our multi-engagement analysis counters the simplistic notion of a single pathway toward meaningful engagement and shows that the vast majority of students are not academically adrift or detrimentally disengaged at the public research universities in our study.

The following section provides a more detailed summary of the selected findings.

4.1. **Selected Findings**

Most students find a specific engagement pathway

A significant majority, 65%, of students are highly engaged in at least one area—academic, extracurricular, civic, research, or career. This suggests a robust level of individual engagement across a spectrum of activities, affirming that students are actively participating in the diverse opportunities offered by modern research universities.

Among those highly engaged, 28% are highly engaged in only one area, while 19% are highly engaged in two areas. A smaller proportion, 11%, are highly engaged in three areas, 5% in four areas, and only 2% in all five areas. This distribution underscores the rarity of involvement in four or more areas, highlighting the challenge of balancing multiple high-engagement commitments.

Conversely, 35% of students are not highly engaged in any of the five areas, yet nearly all of them maintain medium engagement in various activities. If medium and high

engagement are considered, then 99% of students have at least one area in which they are engaged.

The overall decline in engagement during and after the COVID pandemic, however, raises the question of what universities should be doing to create a more robust multi-engagement environment that allows students to thrive and build skills for their future careers or pathway to graduate education. In support of this goal, university leadership should seek data and analysis using our Multi-Engagement Model or a similar model to track change over time.

There are no significant overlaps between engagement pathways

There are no strong correlations among five areas engagement, indicating that they are largely independent of each other. Academic engagement shows a moderate correlation with civic engagement (0.31) and weaker correlations with research (0.28), extracurricular (0.21), and career engagement (0.16). This suggests that while some overlap exists, academic activities largely stand alone from other forms of engagement.

On average, student involvement in one area does not necessarily predict their involvement in another, highlighting the diverse and compartmentalized nature of student

engagement patterns, potentially reflecting a diversity of interests, time management strategies, and personal priorities.

If students are highly engaged in only one area, it is most likely to be academic, career, or extracurricular (each at 6%), closely followed by research (5%) and civic engagement (4%). The most common intersections of high engagement are between academic and civic (3%), research and career (3%), and career and extracurricular (2%).

Year in school and field of study matters

There are clear differences in engagement based on year at the university and field of study. Sophomores, juniors, and seniors all show progressively higher engagement in all areas compared to freshmen.

Sophomores are more engaged in academic, extracurricular, civic, research, and career activities compared to freshmen. Juniors show even higher engagement in these areas, particularly in extracurricular, research, and career activities. Seniors exhibit the highest levels of engagement across all areas, with particularly large differences in extracurricular, research, and career activities.

Field of study also correlates to engagement. Students in STEM fields show lower academic, extracurricular, and career engagement but higher research engagement. Social science students have significantly lower academic and extracurricular engagement but higher research engagement.

Arts and humanities students are less engaged in extracurricular activities but more engaged in research. Students in other disciplines show lower academic and extracurricular engagement but higher civic and research engagement. These results underscore the varying link between field of study and different types of student engagement.

Engagement is associated with distinct career preferences and academic outcomes

Engagement in different areas of student life correlates with career preferences and aspirations. Students who immerse themselves in academic, extracurricular, civic, research, or career-oriented activities often have distinct inclinations toward specific career paths.

High engagement in academic activities and research shows the strongest positive correlation with GPA, indicating that dedication to academic pursuits and research can significantly boost academic performance. Civic and career engagement also positively correlate with GPA, though to a lesser extent, while extracurricular engagement has a slight negative correlation with GPA.

In terms of self-reported learning outcomes, high academic engagement has the most substantial positive correlation with a wide range of skills, including analytical and critical thinking, writing, reading comprehension, understanding of specific fields, quantitative skills, understanding international perspectives, library research skills, interpersonal skills, leadership, oral communication, presentation skills, and the ability to conduct research. Students who are highly engaged academically perceive significant gains in multiple competencies.

Similarly, high research engagement is strongly linked to learning levels, particularly in analytical and critical thinking, reading comprehension, understanding specific fields, and the ability to conduct research. This finding underscores the importance of research activities in enhancing students' academic and intellectual capabilities.

Career engagement positively correlates to interpersonal skills, leadership, oral communication, and presentation skills. However, the link is generally less pronounced compared to academic and research engagement.

Civic engagement positively correlates to a wide range of skills, notably interpersonal skills, leadership, and understanding international perspectives, indicating that community involvement may enhance social and global awareness.

Extracurricular engagement positively correlates to skills such as leadership, oral communication, and presentation skills, possibly reflecting the development of these abilities through participation in student organizations and activities.

Engagement in various areas of student life can significantly enhance overall satisfaction and sense of belonging on campus. In general, any form of engagement positively correlates to these outcomes, but the strength of the link varies depending on the type of engagement.

All forms of engagement positively correlate to students' sense of belonging on campus. However, academic engagement has the strongest correlation, suggesting that students deeply involved in academic activities feel more integrated and connected to the campus community. Civic engagement also significantly links to belonging, indicating that community service and civic activities may foster a strong sense of inclusion. Extracurricular engagement, research engagement, and career engagement also show positive correlation, though to a lesser extent, reflecting the possible benefits of diverse involvement in campus life.

Trends in academic engagement

Both time in class and time spent studying outside of class have declined over the years, with no strong rebound postpandemic. The decline in classroom time became more pronounced after 2018-19, while time dedicated to studying outside of class saw a significant reduction only by 2022-23.

This finding suggests a persistent shift in how students allocate time for academic activities, possibly influenced by changes in course-taking patterns, student absenteeism, or both.

Female students tend to be more engaged than male students across various academic activities. They generally spend more time in class and studying outside of class. African American students show a higher level of engagement in class discussions and are more involved in making presentations than their peers. They also have robust group study habits and strong relationships with faculty, knowing more professors from whom to comfortably request recommendations.

Asian American students spend more time studying in class but less engaged in class discussions, making presentations, and faculty interactions, reporting fewer relationships strong enough to seek recommendations. Hispanic students, like Asian American students, participate less in class discussions and have fewer strong faculty relationships but are active in group study sessions.

Students from wealthy families often spend less time attending classes but are more active in class discussions and group studies, likely due to better access to resources that facilitate such engagement. They also tend to have stronger relationships with faculty, which can be crucial for networking and career advancement.

In contrast, low-income and working-class students face challenges that may restrict their study time and limit their participation in group studies and faculty interactions, affecting their ability to engage fully with the academic community.


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Trends in research engagement

The involvement of undergraduate students in assisting faculty with research has shown a slight but sustained decline since the onset of the pandemic, without signs of recovery. Levels of undergraduate research participation did not change from 2016-17 to 2018-19 but decreased during 2020-21, and this lower level of involvement persisted into 2022-23.

In absolute terms, in 2018-19, 24% of undergraduates reported that they assisted faculty in research compared to 20% in 2022-23. Seniors experienced a similar decline from 35% 2018-19 to 32% in 2022-23. This ongoing reduction suggests lasting impacts of pandemic disruptions on opportunities for undergraduate research.

In terms of variation by student characteristics, female students report higher involvement in assisting faculty with research than male students. Asian students show the highest engagement among racial groups. Particularly striking are sharp socioeconomic disparities in undergraduate research experience: Wealthy students have more than 50% higher odds of assisting in faculty research than low-income students.

Research participation increases with students' academic progression and is notably higher among students in STEM and social sciences, reflecting the more research-centric nature of these fields.

Trends in extracurricular engagement

The amount of time students spent participating in student clubs or organizations remained stable from 2012-13 up to 2018-19 (on average, 4.6-4.7 hours per week), followed by a significant decline during the pandemic.

This sharp drop reflects the impact of the pandemic on extracurricular life, likely due to restrictions on in-person gatherings and the broader shift to remote learning environments. A decrease observed in 2020-21 deepened even further: In 2022-23 students spent almost one hour per week less engaged with student organizations than 10 years ago.

Female students spend less time on student organizations than male students, indicating a disparity in engagement levels.

Racial and ethnic differences also show varied participation rates; Asian and Pacific Islander students are significantly more involved in terms of time spent than those in other groups, while African American and American Indian students also spend more time than White students.

Conversely, students from low-income and working-class backgrounds participate less, possibly due to having less free time or fewer resources to engage in extracurricular activities. Students from wealthier backgrounds show much higher participation rates, perhaps reflecting greater access to opportunities and support for involvement in student life.

Year in college influences involvement too, with juniors, seniors, and sophomores showing increased participation compared to freshmen, likely as they become more integrated into the campus community.

In terms of academic disciplines, students in STEM, social sciences, arts and humanities, and “other disciplines” are less likely to spend time in student organizations compared to business majors, possibly due to heavier coursework or different cultural emphases within these disciplines on academic versus extracurricular activities.

Trends in civic engagement

The amount of time students spent on community service or volunteer activities showed stability before the pandemic, with only slight fluctuations observed in the years leading up to 2018-19 (3.2-3.3 hours per week during these periods).

However, the onset of the pandemic in 2020-21 led to a notable decline in participation, which continued into 2022-23. This downward trend, which persisted even as conditions began to normalize, suggests that the pandemic might have lasting effects on the ways students engage with community service, possibly due to ongoing restrictions, shifts in priorities, or changes in the opportunities available for volunteer work.

We also observe that engagement in different areas of student life has a strong link to career preferences and aspirations. Students who immerse themselves in academic, extracurricular, civic, research, or career-oriented activities often develop distinct inclinations toward specific career paths.

Trends in career engagement

On-campus employment and the number of hours students work on campus are important indicators of career engagement, reflecting how students integrate work experiences into their academic lives. These metrics also provide insight into the capacity of institutions to support student employment. Before the pandemic, the rate of on-campus employment remained relatively stable, but during and after the pandemic, a notable decline occurred in both the proportion of students employed on campus and the number of hours they worked.

Aligning work time with academic interests is a crucial indicator of career engagement, as it reflects the extent to which students can integrate their employment experiences with their educational goals, thereby enhancing practical learning and career preparation.

During the pandemic, a noticeable drop occurred in the proportion of work time that students reported as related to their academic interests, likely due to disruptions in both

work and academic environments and the reduced availability of academically relevant job opportunities.

However, by 2022-23, this proportion had recovered, indicating a return to or improvement in the alignment of work experiences with academic pursuits as conditions normalized and institutions possibly increased efforts to provide relevant work opportunities. The extent to which students' work is related to their academic interests varies significantly across different groups.

Female students report slightly less alignment compared to male students, suggesting differences in the types of employment opportunities accessed by gender. Racial and ethnic differences are also evident; Asian students report a higher proportion of their work time as related to their academic interests, possibly indicating greater selectivity or availability of relevant jobs.

In contrast, African American and multiracial students see less of their work time as contributing to their academic growth. Socioeconomic status plays a significant role, with wealthy and upper-middle-class students more likely to engage in work that aligns with their academic interests, reflecting disparities in access to high-quality, relevant work opportunities.

Lower-income and working-class students report their work as less frequently connected to their academic goals, likely due to economic pressures that necessitate taking any available job rather than one specifically aligned with their studies.

The influence of academic level is substantial; seniors and juniors find their work more aligned with their academic interests than do freshmen and sophomores, indicating that as students progress through their academic careers, they are better able to secure positions that complement their educational objectives.

4.2. **Limitations, Caveats and Comments**

Our analysis serves as an initial exploration of the Multi-Engagement Model using the extensive SERU dataset. We acknowledge some limitations in the model and SERU data and here point to caveats and comments related to our analysis.

For one, our exploration of the five areas of engagement—academic, research, extracurricular, civic, and career—is not intended to deny that academic engagement (and perhaps research opportunities) forms the core purpose of the research-intensive universities in its teaching and mentoring mission. Our analysis may be criticized on

the grounds that extracurricular and other variables we use in our analysis are nice to have, but not core to the university's purpose in educating students.

Despite the central importance of academic activities, we did not weight them more heavily in our analysis because we hoped to simply provide a nuanced and exploratory picture of the varying pathways students find in their time at their university, and the range of their engagement patterns over time.

Second, we recognize the inherent limitations of relying on a self-selected survey sample, which might have lower participation rates among the least engaged students and thus potentially bias the results. Although the SERU data are broadly representative across major student characteristics, the underrepresentation of lower engagement levels in survey responses could present an overly optimistic picture of the student experience at our selected major universities.

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If that is the case, and, for example, the levels of student engagement are in fact lower and declines in engagement are even more severe than reported, universities must intensify their efforts even further to engage all students, ensuring that engagement initiatives are robust and inclusive enough to reach those who are most disengaged.

One question we have not explored in this initial study is the experience and pathway of students who are disengaged. With SERU data, we also can not observe the experiences of students who eventually drop out. The selection of public AAU institutions included in our study have relatively low attrition rates and high graduation rates. Yet the factors that lead to attrition can help institutions identify preventive measures, and more generally observe the totality of different student experiences and outcomes.

While our analysis noted the effect of the COVID pandemic, it is important to attend to other changes in the environment for students and factors that affect their opportunities for various forms of engagement. As noted previously, this includes the drift toward larger classes with more than 100 students, which lowers the opportunities to ask questions or give a presentation in a class.

Possible declines in opportunities outside of the classroom for various activities may alter the forms of engagement we explore here; these may be due to budget restraints, increasing reliance on online courses, and incorporating AI in areas such as student advising.

While our findings are based on multiyear data, they are currently limited to SERU survey data collected in 2022-23. An upcoming analysis of the pending 2024 data will be required to determine whether pre-pandemic patterns of engagement are returning or if troubling disjunctors remain.

When we embarked on this study, we expected to find a small proportion of students deeply engaged in all areas and others, often labeled «academically adrift,» disengaged in everything. This was not the case. Instead, we found that students tend to engage selectively, with their choices reflecting their background, interests, major, and stage in their academic career. Most students are deeply engaged in just one of the five areas we examined and moderately involved in another.

An important consideration is that engagement in various forms—academic, civic, research, extracurricular, or career-related—often includes a range of activities, and students may selectively participate in one or two within each category. For instance, a student might conduct research or volunteer extensively but engage minimally in other areas within those dimensions. As a result, they may not be classified as highly engaged overall, even though their involvement reflects a more strategic and individualized profile. This suggests that student engagement may be more nuanced and complex than our analysis captures, highlighting a potential limitation in how engagement is categorized and understood.

Indeed, while this multi-engagement study provides what we think is an important model with robust findings, there is much more to explore, including the circumstances and reasons for student choices and the interface of what opportunities our institutions provide for them, currently and in the future.

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05

Policy Implications and Future Research

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5. Policy Implications and Future Research

The following section outlines general policy implications we derive from our analysis, followed by a set of research areas for possible future research using the Multi-Engagement Model that include its use as an assessment tool for campuses, and for more fully exploring variables relates to student demographics, disciplines, and institutional characteristics.

5.1. SERU Policy Implications

Strategically revitalizing engagement

Considering the effects of the pandemic shown in our analysis, universities should proactively develop initiatives that extend student engagement beyond the classroom to regain pre-pandemic levels of involvement. Such initiatives include expanding opportunities for research, fostering connections with local communities, supporting student organizations, and enhancing career development programs.

Each initiative should be customized to the specific needs of different disciplines, ensuring relevance and maximizing impact.

For example, STEM fields might focus on intensive research and internships, while the humanities could benefit from increased community engagement. Furthermore, incorporating digital badges and micro-credentials into the curriculum might incentivize student engagement in one or more of the five areas in our study, helping students build a portfolio of verified skills and experiences that are attractive to potential employers.

Closing equity gaps

It is critical for universities to address the engagement gaps among different student demographics, particularly for those from low-income and working-class backgrounds. Initiatives must be designed to be financially accessible and accommodating to students who may have significant external commitments or limited awareness of available opportunities.

Strategies might include offering financial support for research positions, adapting program schedules to accommodate working students, and conducting targeted outreach that educates and engages students belonging to underrepresented groups. By making these opportunities more equitable, universities can ensure that all students can benefit from the full range of experiences that research universities have to offer.

Promoting campus self-reflection and communicating the value of undergraduate education

The Multi-Engagement Model and results presented in this report provide a framework to support a conversation within universities, and with their external stakeholders, regarding the value, realities and diversity of the student experience at SERU member institutions (all leading research universities), as well as opportunities for improvement.

Perhaps most importantly, the model challenges the notion of a narrow success pathway, illustrating a broad spectrum of active student participation across various opportunities in modern research universities that add value to a student's university journey and shape their postgraduation ambitions and plans.

University communities could focus on the validity, strengths, and possible weaknesses of our findings on their own campuses: Students are engaged rather than simply academically adrift; engagement domains (academic, research, extracurricular, civic, and career) are largely independent of each other, highlighting the diverse and compartmentalized nature of the student experience; the impact of COVID lingers and may lead to a "new normal" that needs further exploration; and finally, significant differences exist among students based on major, socioeconomic background, race, ethnicity, and gender.

We encourage SERU member campuses to pursue their own analysis using the Multi-Engagement Model to further self-reflection and strategic plans to inform and enhance undergraduate education.

Calibrating faculty hiring and advancement criteria

Our Multi-Engagement Model is compatible with the mission and values of the leading research universities, and the teaching, research and public service role of faculty. We encourage a faculty hiring and advancement process that rewards faculty for offering students greater opportunities for research experiences, community engagement, and career preparation.

Recognizing and incentivizing faculty engagement in these areas supports the broader institutional mission of supporting holistic student development.

Enhancing data infrastructure

At the same time, and as implied previously, using the Multi-Engagement Model requires an advanced data infrastructure capable of capturing and analyzing detailed information on various forms of student engagement.

Universities should invest in technologies that integrate data from diverse sources, such as the SERU surveys, to provide a comprehensive view of student experiences and outcomes. This robust data infrastructure will allow for a deeper understanding of how

different engagements affect student success as well as metrics useful for measuring that success.

We expect that leading research universities already have the data capacity (or could easily develop it) to coordinate and integrate data sources to document a robust multi-engagement profile of their undergraduate students.

Reforms in undergraduate and graduate education are ubiquitous, but few if any data-driven frameworks or significant efforts exist to gauge the actual impact and effectiveness of these reform efforts. We suggest that the Multi-Engagement Model presented in this study offers just such a mechanism, and can be modified and expanded in the cause of institutional self-reflection and improvement.

As noted previously, universities are pursuing reforms and new initiatives to improve the undergraduate experience, largely based on the concept of improving engagement in one or more of the five areas we use in the Multi-Engagement Model.

The Multi-Engagement Model provides SERU member campuses with a useful tool to gauge the impact of individual initiatives and see how they interrelate or add value.

While this report focuses on leading American research universities, the model and analysis could provide an analytical lens for leading universities in other parts of the globe to explore and improve the student experience within their own cultural and institutional environments.


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5.2. **A Future Research Agenda**

We view the analysis provided by this report as an initial exploration. The Multi-Engagement Model could be used to explore many areas that are relevant for our SERU member universities, and that could shape scholarly research on engagement at research-intensive universities.

There is more work to be done. We plan to further explore more recent SERU data to dig deeper into socioeconomic as well as demographic variables that provide insights into, for example, the experience of specific racial and ethnic groups, the educational background and family income of students, campus comparisons, and the relationship of our five types of engagement with outcomes such as occupation and salary.

SERU data collected in the fall of 2024 and onward can also provide a more complete picture of the impact of or recovery from, the global pandemic. And while the research-intensive public universities included in this study have relatively high persistence and graduation rates, leaders at these institutions must seek a greater understanding of those who drop out.

We also hope to collaborate with other researchers to explore measures of student success and outcomes such as persistence and graduation rates, postbaccalaureate enrollment and degree attainment, and career choice.

The following is a preliminary of a possible research agenda:

- Campus comparisons and seeking best practices.
- Further analysis of the added value of different forms of social engagement.
- Campus-focused research—e.g., using longitudinal data, what is the impact of specific campus reforms/initiatives?
- Subpopulations—socioeconomic background, international students, gender, race/ethnicity, etc.
- Discipline-focused research.
- Linkages with postgraduation paths including careers and graduate school.

We value the comments and critiques of fellow researchers interested in a better understanding of the student experience and links to outcomes.

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Appendix A. Regression Tables

Table A1: Longitudinal Trends in Academic Engagement - I

Term	1. Time in class	2. Time studying outside of class	3. How often: Participating in class discussions	4. How often: Increasing effort beyond what's required	5. Making a class presentation
(Intercept)	15.889 (0.319) * * *	13.059 (0.200) * * *	0.008 (0.028)	-0.199 (0.020) * * *	0.299 (0.054) * * *
PERIOD (REF. 2018-19)					
2012-13	0.780 (0.118) * * *	-0.244 (0.215)	0.006 (0.018)	0.118 (0.014) * * *	0.132 (0.021) * * *
2014-15	0.300 (0.116) *	-0.406 (0.163) *	0.033 (0.013) *	0.145 (0.012) * * *	0.159 (0.023) * * *
2016-17	0.150 (0.079)	0.017 (0.075)	0.022 (0.012)	0.042 (0.007) * * *	0.009 (0.013)
2020-21	-0.781 (0.151) * * *	0.141 (0.198)	-0.074 (0.023) * *	-0.169 (0.029) * * *	-0.231 (0.032) * * *
2022-23	-1.663 (0.067) * * *	-1.518 (0.111) * * *	0.258 (0.017) * * *	-0.028 (0.014) *	0.079 (0.023) * * *
GENDER (REF. MALE)					
Female	0.343 (0.065) * * *	0.395 (0.077) * * *	-0.014 (0.010)	-0.106 (0.007) * * *	0.065 (0.012) * * *
RACE/ETHNICITY (REF. WHITE)					
African American	-0.060 (0.093)	-0.579 (0.162) * * *	0.022 (0.013)	0.004 (0.022)	0.145 (0.009) * * *
Asian	0.371 (0.080) * * *	-0.097 (0.141)	-0.347 (0.017) * * *	-0.011 (0.024)	-0.034 (0.007) * * *
Hispanic	-0.008 (0.105)	-0.234 (0.129)	-0.170 (0.020) * * *	0.029 (0.016)	0.030 (0.010) * *
Multi-racial	0.038 (0.074)	-0.407 (0.110) * * *	-0.133 (0.022) * * *	-0.040 (0.018) *	-0.015 (0.011)
American Indian	-0.211 (0.194)	-0.099 (0.318)	0.038 (0.034)	0.107 (0.027) * * *	0.068 (0.031) *
Pacific Islander	-0.130 (0.212)	-0.162 (0.249)	-0.212 (0.033) * * *	0.020 (0.033)	0.052 (0.036)
SOCIAL CLASS (REF. MIDDLE CLASS)					
Low income or poor	-0.074 (0.064)	0.268 (0.094) * *	-0.005 (0.012)	0.070 (0.006) * * *	0.040 (0.008) * * *
Working class	-0.127 (0.051) *	-0.107 (0.068)	-0.002 (0.007)	0.027 (0.005) * * *	0.009 (0.007)
Upper-middle class	-0.070 (0.045)	0.281 (0.072) * * *	0.072 (0.007) * * *	0.019 (0.005) * * *	0.015 (0.007) *
Wealthy	-0.276 (0.064) * * *	0.372 (0.144) * *	0.156 (0.014) * * *	0.095 (0.017) * * *	0.068 (0.012) * * *
LEVEL (REF. FRESHMEN)					
Sophomore	-0.189 (0.071) * *	-0.002 (0.088)	0.030 (0.016)	0.022 (0.010) *	0.048 (0.020) *
Junior	-0.615 (0.068) * * *	0.152 (0.131)	0.058 (0.027) *	0.086 (0.010) * * *	0.172 (0.034) * * *
Senior	-1.483 (0.160) * * *	-0.477 (0.197) *	0.150 (0.037) * * *	0.162 (0.012) * * *	0.497 (0.039) * * *
FIELD OF STUDY (REF. BUSINESS)					
STEM	2.152 (0.268) * * *	2.513 (0.121) * * *	-0.172 (0.035) * * *	0.016 (0.017)	-0.477 (0.059) * * *
Social Sciences	0.304 (0.251)	-0.107 (0.092)	-0.004 (0.033)	0.070 (0.020) * * *	-0.414 (0.062) * * *
Arts and Humanities	1.036 (0.321) * *	0.294 (0.157)	0.165 (0.042) * * *	0.206 (0.024) * * *	-0.183 (0.075) *
Other Disciplines	0.958 (0.273) * * *	0.422 (0.185) *	0.033 (0.032)	0.073 (0.015) * * *	-0.271 (0.066) * * *
R-squared	0.045	0.032	0.072	0.022	0.115
Number of Observations	468,185	466,234	574,464	572,939	573,071

Notes: *p < .05, **p < .01, ***p < .001. Robust standard errors clustered by university are in parentheses.

Table A2: Longitudinal Trends in Academic Engagement - II

Term	6. Helping a classmate understand course material	7. Studying with classmates outside of class	8. Having a class in which the professor knew student's name	9. How many professors do students know well enough to ask for a letter of recommendation
(Intercept)	0.185 (0.033) * * *	0.218 (0.021) * * *	0.185 (0.046) * * *	0.974 (0.049) * * *
PERIOD (REF. 2018-19)				
2012-13	0.082 (0.017) * * *	-	0.060 (0.016) * * *	0.086 (0.023) * * *
2014-15	0.086 (0.011) * * *	-	0.073 (0.016) * * *	0.047 (0.022) *
2016-17	0.016 (0.010)	0.019 (0.011)	0.020 (0.011)	0.017 (0.011)
2020-21	-0.055 (0.020) * *	-0.016 (0.018)	-0.192 (0.032) * * *	-0.172 (0.040) * * *
2022-23	-0.058 (0.015) * * *	-0.059 (0.015) * * *	-0.106 (0.020) * * *	-0.163 (0.018) * * *
GENDER (REF. MALE)				
Female	-0.014 (0.007)	0.080 (0.008) * * *	-0.020 (0.015)	0.023 (0.018)
RACE/ETHNICITY (REF. WHITE)				
African American	0.027 (0.014)	0.063 (0.014) * * *	0.132 (0.013) * * *	0.130 (0.021) * * *
Asian	-0.009 (0.015)	0.047 (0.011) * * *	-0.263 (0.023) * * *	-0.251 (0.028) * * *
Hispanic	-0.005 (0.014)	0.043 (0.010) * * *	-0.106 (0.021) * * *	-0.081 (0.022) * * *
Multi-racial	0.008 (0.009)	0.012 (0.012)	-0.062 (0.021) * *	-0.081 (0.027) * *
American Indian	0.044 (0.026)	0.020 (0.049)	0.095 (0.027) * * *	0.128 (0.049) * *
Pacific Islander	0.050 (0.029)	0.104 (0.035) * *	-0.094 (0.036) * *	-0.096 (0.042) *
SOCIAL CLASS (REF. MIDDLE CLASS)				
Low income or poor	-0.061 (0.008) * * *	-0.093 (0.012) * * *	0.024 (0.010) *	-0.020 (0.009) *
Working class	-0.056 (0.007) * * *	-0.077 (0.011) * * *	0.006 (0.008)	-0.037 (0.007) * * *
Upper-middle class	0.090 (0.005) * * *	0.066 (0.006) * * *	0.025 (0.008) * *	0.077 (0.012) * * *
Wealthy	0.159 (0.014) * * *	0.121 (0.022) * * *	0.063 (0.016) * * *	0.139 (0.022) * * *
LEVEL (REF. FRESHMEN)				
Sophomore	0.003 (0.010)	-0.020 (0.012)	-0.016 (0.028)	0.099 (0.028) * * *
Junior	-0.040 (0.009) * * *	-0.076 (0.012) * * *	0.137 (0.038) * * *	0.382 (0.038) * * *
Senior	-0.042 (0.017) *	-0.102 (0.019) * * *	0.389 (0.038) * * *	0.976 (0.037) * * *
FIELD OF STUDY (REF. BUSINESS)				
STEM	0.016 (0.029)	-0.003 (0.023)	-0.232 (0.054) * * *	-0.041 (0.042)
Social Sciences	-0.245 (0.031) * * *	-0.260 (0.026) * * *	-0.083 (0.057)	-0.035 (0.049)
Arts and Humanities	-0.276 (0.035) * * *	-0.327 (0.028) * * *	0.287 (0.077) * * *	0.336 (0.056) * * *
Other Disciplines	-0.158 (0.030) * * *	-0.186 (0.026) * * *	0.003 (0.056)	0.092 (0.055)
R-squared	0.028	0.030	0.165	0.167
Number of Observations	574,703	341,284	574,651	581,866

Notes: *p < .05, **p < .01, ***p < .001. Robust standard errors clustered by university are in parentheses.

Table A3: Longitudinal Trends in Research Engagement

Term	1. Assisted faculty in conducting research	2. Completed a research project as part of the coursework	3. Attended at least one research methods course	4. Attended at least one independent study course
(Intercept)	0.034 (0.004) * * *	0.935 (0.083)	0.159 (0.011) * * *	0.110 (0.013) * * *
PERIOD (REF. 2018-19)				
2016-17	1.008 (0.031)	1.127 (0.032) * * *	1.033 (0.027)	1.046 (0.037)
2020-21	0.863 (0.029) * * *	0.769 (0.034) * * *	0.923 (0.026) * *	1.010 (0.035)
2022-23	0.784 (0.027) * * *	0.825 (0.020) * * *	1.031 (0.031)	1.024 (0.030)
GENDER (REF. MALE)				
Female	1.197 (0.022) * * *	1.466 (0.025) * * *	1.359 (0.020) * * *	1.015 (0.023)
RACE/ETHNICITY (REF. WHITE)				
African American	1.078 (0.042)	0.929 (0.020) * * *	1.216 (0.038) * * *	1.243 (0.076) * * *
Asian	1.144 (0.057) * *	0.683 (0.018) * * *	1.061 (0.039)	1.288 (0.097) * * *
Hispanic	0.954 (0.031)	0.893 (0.018) * * *	1.138 (0.026) * * *	1.081 (0.049)
Multi-racial	1.041 (0.038)	0.887 (0.021) * * *	0.973 (0.026)	1.011 (0.037)
American Indian	1.032 (0.097)	0.929 (0.090)	1.125 (0.120)	1.375 (0.150) * *
Pacific Islander	0.979 (0.112)	0.789 (0.067) * *	1.121 (0.048) * *	1.086 (0.079)
SOCIAL CLASS (REF. MIDDLE CLASS)				
Low income or poor	0.879 (0.024) * * *	0.966 (0.012) * *	1.116 (0.019) * * *	1.153 (0.029) * * *
Working class	0.863 (0.020) * * *	0.976 (0.011) *	1.069 (0.018) * * *	1.039 (0.021)
Upper-middle class	1.228 (0.032) * * *	1.074 (0.013) * * *	0.982 (0.012)	1.018 (0.014)
Wealthy	1.333 (0.069) * * *	1.064 (0.025) * *	1.090 (0.031) * *	1.204 (0.033) * * *
LEVEL (REF. FRESHMEN)				
Sophomore	1.317 (0.092) * * *	1.130 (0.069) *	1.204 (0.074) * *	0.889 (0.065)
Junior	2.332 (0.158) * * *	1.493 (0.092) * * *	1.985 (0.124) * * *	1.247 (0.120) *
Senior	5.082 (0.437) * * *	2.679 (0.172) * * *	3.775 (0.248) * * *	2.645 (0.282) * * *
FIELD OF STUDY (REF. BUSINESS)				
STEM	3.435 (0.203) * * *	0.872 (0.042) * *	1.150 (0.062) * *	1.149 (0.091)
Social Sciences	2.615 (0.143) * * *	1.513 (0.074) * * *	2.964 (0.149) * * *	1.335 (0.105) * * *
Arts and Humanities	1.458 (0.123) * * *	1.313 (0.084) * * *	1.212 (0.074) * *	1.255 (0.099) * *
Other Disciplines	2.029 (0.169) * * *	1.098 (0.057)	1.455 (0.096) * * *	1.271 (0.088) * * *
Number of Observations	370,343	373,214	372,570	371,985

Notes: *p < .05, **p < .01, ***p < .001. Robust standard errors clustered by university are in parentheses.

Table A4: Longitudinal Trends in Extra-curricular Engagement

Term	1. Participated in a student organization	2. Time spent participating in student clubs or organizations	3. Served as an officer of a student organization
(Intercept)	2.488 (0.211) * * *	5.922 (0.156) * * *	0.226 (0.024) * * *
PERIOD (REF. 2018-19)			
2012-13	-	-0.072 (0.140)	-
2014-15	-	-0.128 (0.076)	-
2016-17	1.014 (0.030)	-0.004 (0.074)	1.006 (0.018)
2020-21	1.176 (0.040) * * *	-0.494 (0.069) * * *	0.888 (0.027) * * *
2022-23	0.897 (0.026) * * *	-0.948 (0.046) * * *	0.715 (0.019) * * *
GENDER (REF. MALE)			
Female	1.396 (0.030) * * *	-0.614 (0.032) * * *	1.121 (0.023) * * *
RACE/ETHNICITY (REF. WHITE)			
African American	1.327 (0.075) * * *	0.785 (0.081) * * *	1.308 (0.052) * * *
Asian	1.304 (0.070) * * *	1.269 (0.090) * * *	1.304 (0.040) * * *
Hispanic	0.977 (0.036)	0.172 (0.081) *	0.981 (0.027)
Multi-racial	1.129 (0.043) * *	0.443 (0.084) * * *	1.067 (0.039)
American Indian	1.297 (0.194)	0.755 (0.214) * * *	1.403 (0.186) *
Pacific Islander	1.283 (0.147) *	1.295 (0.326) * * *	1.149 (0.116)
SOCIAL CLASS (REF. MIDDLE CLASS)			
Low income or poor	0.726 (0.027) * * *	-0.255 (0.076) * * *	0.950 (0.021) *
Working class	0.719 (0.018) * * *	-0.466 (0.050) * * *	0.934 (0.019) * * *
Upper-middle class	1.455 (0.031) * * *	0.614 (0.043) * * *	1.219 (0.012) * * *
Wealthy	1.442 (0.058) * * *	1.248 (0.129) * * *	1.462 (0.064) * * *
LEVEL (REF. FRESHMEN)			
Sophomore	1.529 (0.040) * * *	0.440 (0.050) * * *	2.052 (0.255) * * *
Junior	1.571 (0.083) * * *	0.422 (0.074) * * *	3.984 (0.421) * * *
Senior	1.917 (0.111) * * *	0.448 (0.100) * * *	7.689 (0.677) * * *
FIELD OF STUDY (REF. BUSINESS)			
STEM	0.739 (0.046) * * *	-1.209 (0.091) * * *	0.718 (0.036) * * *
Social Sciences	0.649 (0.054) * * *	-0.873 (0.115) * * *	0.746 (0.040) * * *
Arts and Humanities	0.606 (0.053) * * *	-0.944 (0.117) * * *	0.715 (0.033) * * *
Other Disciplines	0.668 (0.057) * * *	-0.976 (0.110) * * *	0.693 (0.043) * * *
R-squared	-	0.032	-
Number of Observations	**311,280**	**466,970**	**206,217**

Notes: *p < .05, **p < .01, ***p < .001. Robust standard errors clustered by university are in parentheses.

Table A5: Longitudinal Trends in Civic Engagement

Term	1. Time spent performing community service or volunteer activities	2. Participation in academic service-learning or community-based learning experience	3. Interaction with someone with views that were different from their own (outside of classroom)
(Intercept)	1.800 (0.105) * * *	0.212 (0.019) * * *	-0.199 (0.020) * * *
PERIOD (REF. 2018-19)			
2012-13	0.172 (0.106)	-	0.118 (0.014) * * *
2014-15	0.063 (0.077)	-	0.145 (0.012) * * *
2016-17	0.155 (0.052) * *	1.106 (0.026) * * *	0.042 (0.007) * * *
2020-21	-0.596 (0.077) * * *	0.613 (0.028) * * *	-0.169 (0.029) * * *
2022-23	-0.671 (0.040) * * *	0.699 (0.048) * * *	-0.028 (0.014) *
GENDER (REF. MALE)			
Female	0.191 (0.051) * * *	1.500 (0.038) * * *	-0.106 (0.007) * * *
RACE/ETHNICITY (REF. WHITE)			
African American	1.059 (0.105) * * *	1.612 (0.059) * * *	0.004 (0.022)
Asian	0.970 (0.041) * * *	1.391 (0.038) * * *	-0.011 (0.024)
Hispanic	0.402 (0.053) * * *	1.303 (0.035) * * *	0.029 (0.016)
Multi-racial	0.187 (0.039) * * *	1.102 (0.032) * * *	-0.040 (0.018) *
American Indian	0.648 (0.144) * * *	1.533 (0.165) * * *	0.107 (0.027) * * *
Pacific Islander	1.373 (0.169) * * *	1.791 (0.167) * * *	0.020 (0.033)
SOCIAL CLASS (REF. MIDDLE CLASS)			
Low income or poor	0.532 (0.098) * * *	1.318 (0.041) * * *	0.070 (0.006) * * *
Working class	0.055 (0.044)	1.096 (0.021) * * *	0.027 (0.005) * * *
Upper-middle class	0.041 (0.042)	0.987 (0.022)	0.019 (0.005) * * *
Wealthy	0.651 (0.083) * * *	1.114 (0.031) * * *	0.095 (0.017) * * *
LEVEL (REF. FRESHMEN)			
Sophomore	0.154 (0.060) *	1.123 (0.057) *	0.022 (0.010) *
Junior	0.359 (0.056) * * *	1.387 (0.075) * * *	0.086 (0.010) * * *
Senior	0.637 (0.094) * * *	2.143 (0.133) * * *	0.162 (0.012) * * *
FIELD OF STUDY (REF. BUSINESS)			
STEM	0.013 (0.059)	0.953 (0.051)	0.016 (0.017)
Social Sciences	0.407 (0.057) * * *	1.133 (0.092)	0.070 (0.020) * * *
Arts and Humanities	-0.025 (0.067)	0.982 (0.068)	0.206 (0.024) * * *
Other Disciplines	0.428 (0.066) * * *	1.229 (0.094) * *	0.073 (0.015) * * *
R-squared	0.022	-	0.022
Number of Observations	466,959	310,018	572,939

Notes: *p < .05, **p < .01, ***p < .001. Robust standard errors clustered by university are in parentheses.

Table A6: Longitudinal Trends in Career Engagement - I

Term	1. Employment status on campus	2. Hours per week worked on campus	3. Employment status off campus	4. Hours per week worked off campus	5. Proportion of work time related to academic interests
(Intercept)	0.235 (0.021) * * *	10.889 (0.236) * * *	0.127 (0.009) * * *	15.425 (0.428) * * *	0.251 (0.014) * * *
PERIOD (REF. 2018-19)					
2012-13	0.963 (0.034)	-0.142 (0.114)	1.026 (0.054)	-	-
2014-15	0.887 (0.021) * * *	0.598 (0.091) * * *	0.899 (0.023) * * *	0.280 (0.210)	0.038 (0.016) *
2016-17	0.966 (0.017) *	0.093 (0.061)	0.967 (0.017)	-0.095 (0.107)	0.031 (0.016)
2020-21	0.730 (0.037) * * *	-0.452 (0.142) * *	1.186 (0.048) * * *	-0.503 (0.379)	-0.109 (0.043) *
2022-23	0.715 (0.018) * * *	-1.067 (0.091) * * *	1.242 (0.047) * * *	-0.524 (0.140) * * *	0.042 (0.015) * *
GENDER (REF. MALE)					
Female	1.317 (0.040) * * *	-0.467 (0.052) * * *	1.299 (0.031) * * *	-0.855 (0.124) * * *	-0.012 (0.006) *
RACE/ETHNICITY (REF. WHITE)					
African American	1.695 (0.095) * * *	0.772 (0.142) * * *	0.797 (0.048) * * *	0.744 (0.304) *	-0.023 (0.005) * * *
Asian	0.965 (0.029)	-0.856 (0.070) * * *	0.541 (0.016) * * *	-2.030 (0.200) * * *	0.051 (0.007) * * *
Hispanic	1.205 (0.029) * * *	0.210 (0.086) *	0.825 (0.024) * * *	0.264 (0.192)	-0.007 (0.004)
Multi-racial	1.126 (0.040) * * *	-0.134 (0.115)	0.900 (0.024) * * *	-0.311 (0.214)	-0.024 (0.010) *
American Indian	0.959 (0.087)	0.679 (0.457)	0.980 (0.080)	2.088 (0.660) * *	0.001 (0.019)
Pacific Islander	1.101 (0.085)	0.227 (0.310)	0.768 (0.059) * * *	0.820 (0.830)	0.009 (0.022)
SOCIAL CLASS (REF. MIDDLE CLASS)					
Low income or poor	1.292 (0.066) * * *	1.180 (0.124) * * *	1.199 (0.048) * * *	2.360 (0.292) * * *	-0.023 (0.004) * * *
Working class	1.148 (0.039) * * *	0.915 (0.080) * * *	1.247 (0.040) * * *	1.992 (0.204) * * *	-0.036 (0.002) * * *
Upper-middle class	0.825 (0.026) * * *	-0.854 (0.056) * * *	0.804 (0.017) * * *	-1.494 (0.118) * * *	0.051 (0.004) * * *
Wealthy	0.624 (0.046) * * *	-0.951 (0.126) * * *	0.759 (0.023) * * *	-1.427 (0.285) * * *	0.092 (0.006) * * *
LEVEL (REF. FRESHMEN)					
Sophomore	1.531 (0.116) * * *	0.288 (0.123) *	1.422 (0.077) * * *	0.346 (0.254)	0.026 (0.006) * * *
Junior	2.147 (0.205) * * *	1.027 (0.166) * * *	2.548 (0.128) * * *	1.972 (0.304) * * *	0.082 (0.005) * * *
Senior	3.139 (0.331) * * *	1.710 (0.201) * * *	3.764 (0.208) * * *	2.566 (0.348) * * *	0.157 (0.007) * * *
FIELD OF STUDY (REF. BUSINESS)					
STEM	0.930 (0.034) *	-0.514 (0.145) * * *	0.670 (0.023) * * *	-1.643 (0.399) * * *	0.056 (0.007) * * *
Social Sciences	0.969 (0.027)	0.549 (0.169) * *	1.020 (0.038)	0.202 (0.439)	-0.051 (0.007) * * *
Arts and Humanities	0.996 (0.031)	0.399 (0.174) *	0.977 (0.039)	-0.282 (0.456)	-0.018 (0.007) *
Other Disciplines	0.944 (0.034)	0.508 (0.187) * *	0.981 (0.040)	-0.241 (0.503)	-0.001 (0.009)
R-squared	-	0.055	-	0.072	0.066
Number of Observations	590,004	180,132	506,323	136,497	227,469

Notes: *p < .05, **p < .01, ***p < .001. Robust standard errors clustered by university are in parentheses.

Table A7: Longitudinal Trends in Career Engagement - II

Term	6. Completed an internship, practicum, or field experience	7. Completed an entrepreneurial program
(Intercept)	0.055 (0.007) * * *	0.232 (0.027) * * *
PERIOD (REF. 2018-19)		
2016-17	0.973 (0.023)	0.896 (0.043) *
2020-21	0.675 (0.038) * * *	0.617 (0.053) * * *
2022-23	0.737 (0.030) * * *	0.388 (0.026) * * *
GENDER (REF. MALE)		
Female	1.463 (0.044) * * *	0.499 (0.019) * * *
RACE/ETHNICITY (REF. WHITE)		
African American	1.088 (0.042) *	1.836 (0.154) * * *
Asian	0.976 (0.026)	1.593 (0.069) * * *
Hispanic	0.972 (0.025)	1.001 (0.048)
Multi-racial	0.943 (0.031)	1.055 (0.070)
American Indian	1.253 (0.141) *	1.463 (0.359)
Pacific Islander	1.296 (0.142) *	1.699 (0.254) * * *
SOCIAL CLASS (REF. MIDDLE CLASS)		
Low income or poor	1.000 (0.022)	1.057 (0.043)
Working class	0.939 (0.014) * * *	0.934 (0.033)
Upper-middle class	1.111 (0.023) * * *	1.121 (0.033) * * *
Wealthy	1.216 (0.049) * * *	2.003 (0.109) * * *
LEVEL (REF. FRESHMEN)		
Sophomore	1.695 (0.154) * * *	1.144 (0.117)
Junior	3.537 (0.297) * * *	1.509 (0.131) * * *
Senior	8.319 (0.736) * * *	2.020 (0.175) * * *
FIELD OF STUDY (REF. BUSINESS)		
STEM	1.212 (0.108) *	0.312 (0.022) * * *
Social Sciences	1.306 (0.126) * *	0.393 (0.032) * * *
Arts and Humanities	1.119 (0.086)	0.396 (0.028) * * *
Other Disciplines	1.631 (0.170) * * *	0.393 (0.026) * * *
R-squared	-	-
Number of Observations	310,571	309,677

Notes: *p < .05, **p < .01, ***p < .001. Robust standard errors clustered by university are in parentheses.

The Student Experience in the Research University (SERU) Consortium based at the Center for Studies in Higher Education, University of California - Berkeley