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Building Impact

Perspectives and Recommendations on the Current State and Future of Architecture

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About This Report

This report offers guidance to students, faculty, and practicing professionals of the architectural field who are committed to working together to improve the relationship between education and practice, including the pathways to education and to the architectural workforce. Our recommendations are based on a mixed-methods study that leveraged surveys and interviews with students, faculty, and practicing professionals across the nation.

RAND Education and Labor

Acknowledgments

Summary

Building Impact in Architecture Education and Practice

Building on findings from the 1996 report *Building Community: A New Future for Architecture Education and Practice* (commonly called the Boyer Report), a seminal research publication on the field of architecture that laid out seven essential goals for the field, the American Institute of Architects (AIA) and National Council of Architectural Registration Boards (NCARB) commissioned a study of the current state and future of architecture. The purpose of the study was to envision a new future that increases the impact and relevance of architectural education and the architecture profession by exploring the intersection and integration between architectural education and practice of architecture, with a focus on readiness for the future.

The present study takes place amidst a sea of social and technological change. The profession is undergoing profound changes to demand, expectations to incorporate new technology, and little change to the diversity of the talent pipeline. Construction spending and architecture billing have been down for two consecutive years, yet the U.S. Bureau of Labor Statistics projects demand for architects will grow faster than average from 2023 to 2033.[1] At the same time, architecture professionals are saddled with student debt burden that shapes their personal and professional decisions, informing which jobs individuals seek and accept and the timing of family formation and major personal purchases. The field remains homogeneous in terms of race, ethnicity, and gender—62 percent of licensed architects are White men—in spite of efforts to diversify the training pipeline and workforce to reflect and serve the increasingly diverse American and global community.[2] While architects are increasingly leveraging artificial intelligence (AI) in their workflow, there are mixed feelings among practicing professionals with regard to this development. Architects are also navigating pressure to design and build in new ways to mitigate the impacts of climate change and promote human wellness while minimizing the cost of these innovations to clients. Changes to the education and training pipeline could help new architects navigate these social changes and demands and have potential to make the field more resilient in the long run.

Our Approach

The current study leverages surveys and interviews with three key stakeholder groups—architecture students, faculty, and practicing professionals—to answer a series of research questions related to architectural education, architectural practice, innovation in architecture, the role of architecture in addressing social change issues, and collaboration between academia and architecture firms. We collaborated with three architecture associations—AIA, NCARB, and the Association of Collegiate Schools of Architecture—to inform our instruments, protocols, and sample, and to support the interpretation of findings. The project was also informed by the American Institute of Architecture Students, as well as by stakeholder groups that included subject-matter experts from the National Architectural Accrediting Board (NAAB) and the National Organization of Minority Architects.

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[1] AIA, "ABI August 2024: Architecture Firm Billings Continue to Decline," webpage, September 18, 2024b; U.S. Bureau of Labor Statistics, "Occupational Outlook Handbook: Architects," webpage, August 29, 2024.

[2] NCARB, *NCARB by the Numbers: 2024 Edition*, 2024a. This report does, however, note diversity gains in the population of new architects, 34 percent of whom identify as a person of color and 43 percent of whom identify as women.

Key Findings

Our analysis of our survey and interview data yielded insights about the intersection and integration of architectural education and practice from the perspectives of the key informant groups. In the survey and interviews, respondents and participants shared details about their development of interest in architecture, pursuit of architecture education, barriers to architecture education and career, alignment between their architecture education curriculum and the knowledge and skills used in the workforce, the role of innovation and technology in their experiences in the field, the licensure process, and the role of architecture in social change.

We organize our findings into four chapters by topic, as delineated in the bullets below. We summarize key findings by chapter in the sub-bullets; these findings are described and contextualized further in the report.

- **Pathways to Architecture**
  - Design and the creative process were key sources of interest for students and faculty.
  - Media related to architecture has been a primary source of exposure to the field for future architects to learn about and cultivate an interest in the field.
  - Traveling and creative pursuits, like the arts, are other popular sources of early exposure and interest.
  - Many participants were motivated to pursue an education and career in architecture because of early experiences visiting buildings or being exposed to the construction of buildings.
  - Limited knowledge about architecture program requirements and affordability are key barriers to entry into architecture education.
- **Architecture Education, Practice, and Innovation**
  - Students and practicing professionals expressed a gap between what is taught in programs and what is needed in professional practice, including technical skills and experience using new technology systems. Incorporating applied work experiences into architecture education was one significant suggestion on addressing this gap and improving students' transition to the workforce.
  - Participants agreed on the importance of AI and other emerging models of practice (e.g., digital twin, building information modeling) to the future of architectural practice but required additional support and resources to utilize it in their work, especially faculty seeking to incorporate AI into their curriculum.
  - Barriers to professional practice that were cited by participants range from structural (compensation, requirements of the licensure process, lack of job opportunities, and lack of hands-on experiences prior to program graduation) to cultural (culture of overwork and lack of belongingness, especially cited among people of color).
- **Social Change**
  - Social change topics—specifically, sustainability, human health, and climate change—are perceived as important for the architecture profession to address, though we observed some differences in the perceived importance of addressing these topics by our key informant groups.
  - Leadership support and financial resources are leading factors that pose barriers to addressing social change topics in the curriculum and practice.
- **Collaboration Between Academia and Architecture Firms**
  - Faculty and practicing professionals would embrace greater opportunities for collaboration that go beyond career preparation experiences for students.
  - Funding and time are key resources that are necessary to facilitate the development and maintenance of collaboration between schools of architecture and practicing professionals and their firms.

Recommendations

We offer five recommendations for academic, firm, and association leaders in the field of architecture. We also pair these recommendations with specific suggestions on how stakeholders may act on them.

- **Increase opportunities for students in K–12 schools to explore the field of architecture.** Many individuals in our study discovered architecture in college, while others may have cultivated their interests in architecture earlier in life through social media, art classes, visits to museums, or travel. Additionally, we found that current approaches to engaging younger generations are often short-term—happening in summers or for one-day programming or office visits. To broadly increase interest in architecture among younger students, the field will need more systematic and sensitive approaches to engaging students in general and from underresourced communities, where information about summer and enrichment opportunities may be limited.
  - Provide concrete opportunities (e.g., internships, externships, field trips) for youth and students, especially those from limited means, to learn about and explore the field of and careers in architecture.
  - Harness the power of social media by partnering with current architecture students with a large media presence to curate clips and posts that demonstrate the impact of architecture on society and share information on architecture programs and their admission processes.
- **Improve access to and affordability of architecture education by revisiting the admissions process and considering alternative pathways to minimize cost to students.** Students in our study noted that program admission processes, particularly portfolio requirements, academic preparation, and program affordability as consistent barriers to entering architecture education programs. Expanding access to the pathway to architecture may require revising program admission practices. Moreover, addressing the affordability of programs may encourage more students to consider architecture for their future, although this may not be sufficient to overcome student debt aversion given the moderate average salary for early career professionals in architecture.
  - Streamline and standardize admissions processes for NAAB-accredited schools of architecture to minimize costs and burden to students by, for instance, reconsidering the portfolio requirement and implementing more accessible and affordable options.
  - Conduct analysis of admission requirements at NAAB-accredited schools of architecture and program affordability and student debt of graduates given length of degree programs and required supplies.
- **Strengthen collaboration among universities, professional firms and associations to bolster curriculum and advance innovation in architectural programs.** Our findings demonstrate tension between students, faculty, and practicing professionals on what should be taught formally in architecture programs and what should be learned on the job in firm settings. Collaborative efforts among academia, practice, and field associations should inform student-centered changes to programs or pathways to the architecture workforce.
  - Strengthen the relationship between curriculum and professional practice by incorporating field-based learning into academic programs to ease students' transition to the workforce.
  - Incorporate an internship requirement for architecture programs by building out partnerships with industry, alumni, and research collaboratives.
  - Foster collaboration on research projects between architecture program faculty and practicing professionals.
  - Consider developing two tracks within NAAB-accredited programs, one track for those pursuing licensure upon graduation and one track for those who are unsure about pursuing licensure or may be interested in pursuing alternative career paths.

- **Eliminate barriers to entering and succeeding in professional practice by providing structured, transitional support for early career professionals and improving a sense of belongingness among people of color.** Graduates and practicing professionals encounter several barriers in the workforce; these barriers are often tied to financial, social, and cultural norms of architectural practice. Addressing these barriers can improve practicing professionals' experiences and encourage them to stay in the field.
  - Be upfront about the expected compensation in architecture practice.
  - Institutionalize a "residency" model (similar to the medical field), or a training pathway, for early-career professionals.
  - Mitigate the effects of a culture of overwork.
  - Learn from organizations (e.g., Southern Education Foundation, Hispanic-serving institutions) that have been successful at cultivating community and belongingness for people of color.
- **Unlearn what you know and invest in organizational culture and learning.** Broadly, participants are committed to advancing social change and believe that the field of architecture has a key role in improving the social and environmental wellness of society. They encounter several barriers that make it challenging to act on this commitment, including the complexity of social change topics, the lack of experience discussing and facilitating conversations on these topics, and the lack of resources to build capacities in social change topics. Academic programs and firms will have to be courageous in their commitment to social change and "unlearn" what they know by investing in experiences (e.g., activities, workshops) for their faculty and staff that challenge individual and organizational assumptions about social life, build individual and organizational literacy on social change topics, and interrogate individual and organizational practices that hinder diversity in the field.
  - Provide faculty and practicing professionals with support and resources to incorporate social topics in their curriculum and work.
  - Academic and firm leaders should prioritize building their organizations' learning on social change topics.
  - Continue to elevate and address the lack of diversity in the field of architecture and its implications on architectural practice and social change.

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Introduction

> We found, in short, a profession struggling both to fit in, and if possible, to lead, within a social and economic context that in a number of crucial respects has been dramatically altered. We also found a profession whose faith in its own future has been shaken. What seems missing, we believe, is a sense of common purpose connecting the practice of architecture to the most consequential issues of society—and that same sense of unease permeates architecture education as well.
>
> —Ernest L. Boyer and Lee D. Mitgang, *Building Community*, p. 13

The field of architecture is at an inflection point. Construction spending and architecture billing have been down for two consecutive years, yet the U.S. Bureau of Labor Statistics projects demand for architects will grow faster than average from 2023 to 2033.[1] Architecture professionals are saddled with debt burden that shapes their personal and professional decisions. In spite of race, ethnicity, and gender diversity gains in the training pipeline and in the population of newly licensed architects, the population of licensed architects remains largely White and male (62 percent).[2] Increasingly, architects are experimenting with artificial intelligence (AI), but there are mixed feelings among practicing professionals with regard to this development, but many see opportunities to streamline processes by automating some tasks.[3]

In 1996, Ernest L. Boyer and Lee D. Mitgang published *Building Community: A New Future for Architecture Education and Practice*, which laid out a framework to guide how architecture education and practice can work together to ensure that future architects are provided the education and experiences necessary to succeed in the field of architecture and strengthen our society.[4] The Boyer Report, as it has come to be known, set out guiding principles for the field of architecture going forward, and has been influential in the work of professional organizations, firms, schools of architecture, and practicing professionals over the past nearly three decades.

The Boyer Report framework was organized by seven essential goals, each of them distinct but also interconnected:

1. An enriched mission, which encourages education and practice to tie their objectives "to the changing social context" in which "the value of beauty in our society . . . human needs and happiness" are recognized and achieved.
2. Diversity with dignity, which speaks to celebrating all architecture schools' different and wide-ranging goals and objectives and valuing the diverse talents, backgrounds, and contributions (e.g., teaching, application of knowledge, research) of faculty.

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[1] U.S. Bureau of Labor Statistics, "Occupational Outlook Handbook: Architects," webpage, August 29, 2024.

[2] National Council of Architectural Registration Boards (NCARB), *Workforce Readiness Report*, August 2024b.

[3] Deltek, "Shaping the Future: Six Key Benefits of AI in Specifications," AIA, webpage, October 4, 2024; AIA, "The Architect's Journey to Specifications," webpage, January 29, 2024a.

[4] Ernest L. Boyer and Lee D. Mitgang, *Building Community: A New Future for Architecture Education and Practice*, Carnegie Foundation, 1996.

3. Standards without standardization, which supports the "rich diversity among architecture programs" but advocates for a set of expectations that can be shared among schools to better prepare students for the workforce and encourage alignment between student and faculty scholarship.
4. A connected curriculum, which "would encourage the integration, application, and discovery of knowledge" across architecture and other fields, as well as reflect the "changing needs of the profession, clients, communities, and society."
5. Climate for learning, which pushes for "a school environment that is open, just, communicative, celebrative, and caring."
6. A more unified profession, which calls for more collaboration between educators and practitioners that focuses on "strengthening the educational experience of students."
7. Service to the nation, which encourages schools to be stewards of new knowledge that informs how architects build spaces "to enrich communities" and how they communicate their contributions to society, while maintaining the highest ethical standards.

At the time they were published, these seven goals provided a new vision for architecture education and practice.

Since the publication of the Boyer Report, the social and education context of our society has changed dramatically. Demographically, the United States has seen tremendous population growth, continuing racial and ethnic diversification, birth rate declines alongside the aging of the baby boomer generation, and rapid growth in income inequality. According to the latest projections and data from the U.S. Census Bureau, the United States is projected to see a minority majority by 2045, and between 2010 and 2020, the nation saw the multiracial population grow by 276 percent.[5] Racial inequality and social injustices, across social domains such as health care and housing, continue to persist, and have been compounded by the growing impact of climate change.[6]

The world of work and the education and training needs of workers have evolved rapidly as well. New technologies have been developed and influence how we communicate, learn, and work. Automation and the rise of the internet and accompanying technologies, such as smartphones, social media, and the growing integration of AI across digital platforms, are reshaping how and how rapidly people work.[7] Likewise, the United States has seen a shift in work culture, with an increasing emphasis on diversity, equity, and inclusion (DEI), and greater acknowledgment of the importance of mental health and work-life balance.

Across colleges and universities, the student body is increasingly diverse, with more first-generation college students and students of color entering U.S. higher education. Diverse institutional types—regional universities, community colleges, and minority-serving institutions (MSIs)—are providing greater access and multiple pathways for students to achieve their goals. Institutions have also become responsive to national movements calling for more graduates of STEAM (science, technology, engineering, arts, and mathematics) fields and stronger alignment between educational programs and workforce needs. Affordability and student

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[5] Nicholas Jones, Rachel Marks, Roberto Ramirez, and Merarys Ríos-Vargas, "2020 Census Illuminates Racial and Ethnic Composition of the Country," U.S. Census Bureau, webpage, August 21, 2021; William H. Frey, "The US Will Become 'Minority White' in 2045, Census Projects," Brookings Institution, March 14, 2018.

[6] World Meteorological Organization, *The Global Climate 2011–2020: A Decade of Accelerating Climate Change*, 2023; Danyelle Solomon, Connor Maxwell, and Abril Castro, "Systemic Inequality: Displacement, Exclusion, and Segregation," Center for American Progress, August 7, 2019; David C. Radley, Arnav Shah, Sara R. Collins, Neil R. Powe, and Laurie C. Zephyrin, *Advancing Racial Equity in U.S. Health Care: The Commonwealth Fund 2024 State Health Disparities Report*, Commonwealth Fund, April 18, 2024.

[7] World Economic Forum and Deloitte, *Global Technology Governance Report 2021: Harnessing Fourth Industrial Revolution Technologies in a COVID-19 World*, December 2020.

debt, however, remain a significant concern for students' longer-term outcomes. Since these forces shape how future architects are trained and how they understand their contributions to society, we believe it is time to revisit the Boyer Report's vision for education and practice. This report presents findings from a study that builds on the Boyer Report but takes into consideration the present social landscape to understand the current relationship between architecture education and practice.

The current study, while similar in purpose to the Boyer Report, took a more expansive approach to collecting and analyzing insights from key stakeholders. The Boyer Report was based on a national study that included 15 accredited schools of architecture, and during their visits the researchers administered surveys and conducted interviews and focus groups with students, faculty members, academic leaders, and alumni. Surveys were also administered to deans, department heads, and chairs of 103 accredited architecture programs. The researchers also visited two dozen architectural firms. The current study surveyed and conducted interviews with members of the American Institute of Architects (AIA), American Institute of Architecture Students (AIAS), National Council of Architectural Registration Boards (NCARB), and the Association of Collegiate Schools of Architecture (ACSA). In total, we surveyed 377 students, 598 faculty, and 2,792 practicing professionals and conducted 107 interviews across these three groups in spring 2024. We were mindful of including students, faculty, and practicing professionals from diverse backgrounds and experiences, as well as institutions of varying missions and National Architectural Accrediting Board (NAAB)-accreditation statuses (see Appendixes A and B for full detail on our sample and methods).

Limitations of the Research

Our findings and the implications that we draw are limited by the constraints of the data and the study. Survey response rates were quite low (just above or below 10 percent for each population). Consequently, in spite of our intentions to have our analysis be as representative as possible of each population (through random sampling), we are mindful that our ability to draw conclusions across each population is substantially limited by response bias, or the omission of the perspectives of those individuals who chose not to participate in the survey. Rather than making statements about our findings broadly for a given population, we use the population name in combination with "survey respondents" to remind readers of this limitation throughout the report.

Our qualitative interviews were designed to provide breadth in perspectives across architecture students and faculty in different program pathways and institutional types of interest as well as practicing professionals early in their career. However, the interview data are limited in providing depth within student, faculty, and professional subgroups to fully capture the unique experiences shared both within and across these categories of interest. For example, we could not capture perspectives by race or gender among architecture students in interviews due to data limitations in the provided rosters. Among faculty, we intentionally sampled mainly from faculty teaching in NAAB-accredited four-year programs, who may have a distinct experience compared with faculty in community colleges or teaching in non-NAAB-accredited programs. While we aimed to build our faculty sample to be diverse, we cannot make broader claims about distinct qualitative experiences of faculty by race, gender, or other identities. Likewise, our data on practicing professionals primarily reflect perspectives from early career practicing professionals. While we have some interviews from firm leaders or midcareer professionals, it is important to note that our qualitative data can speak more to early experiences transitioning into practice rather than to organizational or system-wide perspectives about architectural practice, or how perspectives might vary by firm size, geography, or other relevant individual and community characteristics. Finally, as interviews were semistructured, some questions were a higher priority to ask than others. Interviewers had discretion on when to skip a question or dive deeper into a response, influencing the depth of information we may have for each topic and relevant research questions.

Guiding Research Questions and Report Organization

We designed this work to answer several research questions provided by AIA, NCARB, and ACSA. Our answers to these questions are organized under four chapters (see Table 1.1). We introduce each section by contextualizing the topics and identifying the relevant questions. We then dive into the survey findings, which are followed by, when applicable, insights from our interviews. We end each findings chapter with a brief overview of the main points. The report concludes with five core recommendations:

1. Deepen and strengthen partnerships with kindergarten through grade 12 (K–12) schools to increase opportunities for students to explore the field of architecture.
2. Improve access to and affordability of architecture education.
3. Leverage collaborative efforts among universities, professional firms, and associations to strengthen curriculum and advance innovation in architectural programs.
4. Eliminate barriers to entering and succeeding in practice.
5. Unlearn what you know and invest in organizational culture and learning.

TABLE 1.1

Report Chapters and Research Questions

Chapter	Research Questions
2. Pathway to Architecture Education	• What motivates/motivated people to pursue architecture? How are the academy and practice engaging younger generations?[a] • What are the economic and social factors that shape students' pathways through degree and after graduation? • What career paths are being pursued by students, faculty, and practicing professionals affiliated with architecture?
3. Architecture Education, Practice, and Innovation	• How do the components of architectural education contribute to students' development and areas of professional interest and practice? • What is influencing emerging and new models for pedagogy and professional practice? How are education and professional firms adapting to emerging models of practice, including an increasing focus on AI, generative design? • How do students, faculty, and practicing professionals perceive the transferability of an architectural education to other professions? • What are the barriers to entering practice after graduation? How do the profession and the academy address these barriers? • What does the transition from academia to practice entail for emerging architects? How do students and practicing professionals perceive the transition? How can firms support individuals' transitions from academia to practice? • Do current professional development and continuing education opportunities reflect emerging practice models? • Are current professional development and continuing education opportunities reflective of the needs and interests of the diversity of the architecture profession?
4. Social Change	• How are firms and schools of architecture meeting the challenges of climate action, human health, equity, and justice? • How are firms and schools of architecture incorporating climate action, human health, equity, and justice in their work and policies? • What collaborations, partnerships, and skill sets will support future architectural professionals in addressing climate action, human health, equity, and justice?
5. Collaboration Between Academia and Architecture Firms	• What is the current state of collaboration between academia and practice? What are the connection points? How are these connections contributing to the future of the field?

[a]Interview participants did not provide sufficient insights to answer the following question: "Of those programming efforts, what is working well?" As a result, this question is not addressed in this report.

Pathways to Architecture

The development of architecture professionals is critical for the future of the built environment and society. Research on youth career development and particular professional pipelines has established that awareness, interest, and mindsets are shaped by exposure and outreach activities, and that movement from awareness to interest development to choosing to pursue education in a field can happen over a short time frame.[1] Prior research on factors influencing college and career readiness for underserved youth also consistently documents the importance of early career exploration opportunities, such as field trips or internships, and the presence of trusted adults and mentors in shaping the post–high school trajectories of students with inequitable access to college and career preparation activities.[2]

AIA, ACSA, and NCARB have all compiled guides and resources in recent years to provide examples and opportunities to further engage K–12 students and educators in learning about design and architecture pathways.[3] These resources highlight national and local programs of interest, questions to consider in developing stronger K–12 partnerships, and recommended classes and pathways that high school students should take to prepare for a career in architecture.

In this chapter, we discuss how respondents perceive their pathways into architecture education programs and their transition to practice by answering the following research questions:

- What motivates/motivated people to pursue architecture? How are the academy and practice engaging younger generations?
- What are the economic and social factors that shape students' pathways through degree and after graduation?
- What career paths are being pursued by students, faculty, and practicing professionals affiliated with architecture?

We summarize findings across two core areas: (1) activities and experiences promoting interest in architecture, and (2) factors influencing the enrollment in architecture programs and transition to professional practice.

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[1] Ralph C. Tillinghast and Mo Mansouri, "Identifying Key Development Stages of the STEM Career Pipeline," *IEEE Transactions on Technology and Society*, Vol. 3, No. 1, March 2022.

[2] Regina Deil-Amen and Stefanie DeLuca, "The Underserved Third: How Our Educational Structures Populate an Educational Underclass," *Journal of Education for Students Placed at Risk*, Vol. 15, Nos. 1–2, 2010; Julia C. Duncheon, "'You Have to Be Able to Adjust Your Own Self': Latinx Students' Transitions into College from a Low-Performing Urban High School," *Journal of Latinos and Education*, Vol. 17, No. 4, 2018; Lauren Lindstrom, John Lind, Carolynne Beno, Kevin A. Gee, and Kara Hirano, "Career and College Readiness for Underserved Youth: Educator and Youth Perspectives," *Youth & Society*, Vol. 54, No. 2, 2022.

[3] AIA, "AIA K–12 Pathway Initiatives," webpage, November 30, 2023c; ACSA, *Framework for Expanding K–12 Engagement*, 2024; AIA, *Your Guide to Helping Students Consider a Career in Architecture*, 2021.

Cultivating an Interest in Architecture

Ongoing examination of the experiences that shape students' and emerging professionals' entry to the field is critical for ongoing adjustments to outreach strategies. Our survey and focus group efforts identified individuals' interests and experiences that led them to architecture.

Interest in Architecture Was Traced to Media, Building Visits, and Personal Connections, Rather Than Formal Programs

Social Media Exposure and Early Travel Experiences Were Influential Forces
for Cultivating Early Awareness of the Built Environment

Survey respondents cited exposure to a range of building types (e.g., skyscrapers, local churches, homes) and the building process as inspiring them to pursue the architecture field (Table 2.1). The channels by which respondents were exposed to diverse building types varied across our three study populations. Seventy percent of students reported the role of media inspiring their initial interest in architecture, compared with

TABLE 2.1

Sources of Inspiration for Entering Architecture, Proportion of Survey Respondents by Population

	Student	Faculty	Practicing Professionals
After-school programs	8%	3%***	6%*
Media	51%	25%***	31%***
Field trips	20%	16%*	15%**
Career counseling	13%	9%	13%
Elementary school event	5%	3%	4%
Family in industry	18%	23%	23%*
Friend in industry	8%	9%	8%
High school event	28%	15%***	19%***
Internship	14%	5%***	8%***
Middle school event	5%	3%	5%
K–12 school curriculum	14%	10%**	9%***
Social media	19%	0%***	2%***
Summer program	9%	3%***	5%***
Social justice/Representation	1%	2%	2%
Construction site visit or work	14%	16%	16%
Historic building visit/Building exposure	31%	32%	24%***
Architecture school visit	17%	10%***	10%***
Other	2%	11%***	4%*

NOTE: Proportion of respondents by population reported. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for each other group is statistically distinguishable from the proportion for student respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

25 percent of faculty and 33 percent of practicing professionals. Students, however, were more likely to cite social media (e.g., YouTube, Instagram) as the primary way they initially explored their interests in the architecture field compared with faculty and practicing professionals, who were more likely to cite traditional forms of media (e.g., television). According to an undergraduate student from a non-NAAB program at a public institution, "It was like an [Instagram] thing, to see Zaha Hadid's architecture. . . . Then I started doing more and more research into it, I kind of got more and more interested in doing [architecture] as a career."

While less prevalent than the role of media, travel was cited by survey respondents as an influential factor in their pursuit of the architecture field. A similar proportion of architecture students (31 percent) and faculty (32 percent) reported a visit to a historical building as inspiring their interests in architecture; practicing professionals (24 percent) were significantly less likely to cite a historical building visit as inspiration to enter the field. In our focus groups, a handful of students and practicing professionals described traveling to cities with large and historic buildings as igniting their interest in the field.

Students and Faculty Were Drawn to Architecture Based on Their Initial Interest in Design and the Creative Process

An appreciation for design, art, and the creative process was a point of entry for the majority of student (78 percent) and faculty (62 percent) interview participants, which motivated them to enroll in an architectural education program. Some students and faculty described how their interest in art emerged from art classes (e.g., drawing and painting) in elementary and secondary schools and trips to museums, while others mentioned childhood toys (e.g., Legos) or observing local construction as nurturing their appreciation for design and creativity. A little less than half of those student interview participants also described how their path to architecture emerged from a desire to pursue a field that blended their desire for creativity and talents in math and science. According to a community college student,

> I went back to school for computer science. I dropped out, didn't know what I was going to do. And I kind of started looking around in like construction stuff . . . and there was like architecture. And the more I thought about it, you know, architecture's very much like the middle ground where math and art kind of meet and that really intrigued me. Because I'm pretty good at math but I really like doing art and I wanted to be able to like do something creative, but actually make money. So, you know, that kind of interested me and so I applied to my community college.

Students also discussed the importance of pursuing a field of study that would lead to "a stable career, stable job." College students today are grappling with rising tuition and expenses, forcing many students and their guardians to take on significant debt in spite of dim workforce prospects. These conditions have motivated college students to pursue areas of study that are clearly aligned with the needs of industries and to more highly value directly transferable, technical skills.[4] While some students pursued architecture because of their appreciation for art and creativity, architecture also represented for others an opportunity to address both their interests and practical needs.

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[4] Shimeng Liu, Weizeng Sun, and John V. Winters, "Up in STEM, down in Business: Changing College Major Decisions with the Great Recession," *Contemporary Economic Policy*, Vol. 37, No. 3, 2019; Mark C. Long, Dan Goldhaber, and Nick Huntington-Klein, "Do Completed College Majors Respond to Changes in Wages?," *Economics of Education Review*, Vol. 49, 2015; Matthew Wiswall and Basit Zafar, "How Do College Students Respond to Public Information About Earnings?," *Journal of Human Capital*, Vol. 9, No. 2, 2015.

Family and Friend Connections to Architecture and Related Fields
Also Drove Interest in Pursuing Studies in Architecture

A history of family members working in the field of architecture or related fields (e.g., construction) inspired some survey completing students (18 percent), faculty (23 percent), and practicing professionals (23 percent) to pursue their current paths in the field (Table 2.1). Latinx (18 percent) and multiracial respondents (16 percent) were less likely to report being inspired by family in the industry than White respondents (23 percent), and male respondents (16 percent) were also less likely than female respondents (23 percent; see Tables B.4–B.6 for breakdowns by race, ethnicity, and gender by survey population).

Survey respondents were roughly equally likely to report that they had been motivated by family in the industry across all parental education levels: high school or less (20 percent), some college (19 percent), associate's degree (20 percent), baccalaureate degree (23 percent), and graduate education (22 percent; see Table B.5). Research on the relationship between student achievement and level of parental education suggests that students with parents who have earned a baccalaureate degree or greater are more likely to benefit from their parents' social and cultural capital, leveraging parents' higher education and professional knowledge, as well as connections developed through their education and professional networks.[5] In this case, this may be less true for those in the field of architecture, in which access may be more democratized. For example, an undergraduate student enrolled in a NAAB program at a public institution shared:

> My grandfather had brought [architecture] up as a profession that you could be in, so I was about eight. Yeah, he's a contractor. He does a lot of remodels, cabin remodels, sunrooms, that sort of thing, and cabinets. He's always done it. My dad was also a contractor. I come from a family of people in the building construction industry.

However, student and faculty interview participants at NAAB-accredited institutions were more likely to share that they were inspired by family history, which may suggest that those with families in the industry (or related industries) are more knowledgeable about the differences between NAAB-accredited and non-NAAB-accredited architectural education programs. Additionally, those with familial connections to the industry may have a better understanding of the value in attending NAAB-accredited institutions for transitioning into practice.

Summer Camps, One-Day Programs, or Guest Speaking Engagements
Were Other Avenues Faculty and Practicing Professionals Typically
Take to Engage Younger Generations in Architecture

Among faculty and practicing professionals who discussed efforts to engage younger generations in architecture in interviews, more than half described temporary summer or one-day programming they or their firm engaged in to cultivate architecture interest in school-age students. Several faculty and practicing professionals noted taking part in Project Pipeline, an initiative of the National Organization of Minority Architects (NOMA) that runs multicity summer camps for 6th- through 12th-grade students of color, or AIA-sponsored events as guest speakers or hosts. Some faculty members also spoke about institutionally sponsored architecture summer camps that they help coordinate. Practicing professionals also spoke of engagements with their local colleges and universities (e.g., the Hip Hop Architecture program of the University of Nevada,

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5 Laura Walter Perna and Marvin A. Titus, "The Relationship Between Parental Involvement as Social Capital and College Enrollment: An Examination of Racial/Ethnic Group Differences," *Journal of Higher Education*, Vol. 76, No. 5, 2005; Thai-Huy Nguyen and Bach Mai Dolly Nguyen, "Is the 'First-Generation Student' Term Useful for Understanding Inequality? The Role of Intersectionality in Illuminating the Implications of an Accepted—Yet Unchallenged—Term," *Review of Research in Education*, Vol. 42, No. 1, 2018.

Las Vegas), or hosting "lunch and learns" or office visit days for middle school and high schoolers to share insights about the profession with young students.

Longer-term partnerships or strategies were less frequently mentioned by interview participants. In one case, a faculty member described being in the midst of designing a K–12 program to slowly introduce architecture to even younger ages. A White female firm leader described a more cohesive set of efforts in their youth outreach approaches as well:

> So one is for a long time, the firm, and me personally, have been involved with [city chapter of Boys and Girls Club]. And through their clubs, we've actually designed a couple of buildings for them. But every time we've done a project with them, whether it's an actual ground up building or whether it's a volunteer effort, there has been a series of workshops that we hold to engage with the kids because the members of Boys and Girls Clubs are up to age 18. And so we'll hold different workshops just to try and present some exposure to communities who may not have as much exposure to understanding what opportunities exist in the design field as far as careers go.

And while several practicing professionals discussed willingness to volunteer their time or get some paid time off from their firm to participate in such outreach activities, they also acknowledged there was not always a structured strategy to participate in this work in their firms. As a male Asian licensed practicing professional explained, "It's hard to kind of quantify how much effort they [staff who volunteer] really put into it, it's just really kind of spontaneous. And it's whoever is interested in doing it, whoever is interested in going to a school and reaching out to do these programs. It's up to the individual."

Barriers to Entering Architectural Education Programs

Access to postsecondary education and training has been widely studied over the past half century. Changes in policy and practice in college admissions, financial aid, and outreach to underrepresented student populations have opened up higher education to a broader student population.[6] However, many majors and professional training fields remain stubbornly homogeneous and comprised largely of individuals from highly educated and affluent families.[7]

While the Boyer Report provided extensive suggestions for addressing dilemmas on the role and purpose of architecture education programs and curriculum and a more "unified profession," the findings do not explicitly address pathways and potential barriers to entering and succeeding in the array of architectural programs and pathways.[8] Prior to and since the Boyer Report, the options to pursue architecture education and training have expanded but still are guided by the standards and regulatory framework established by the NAAB to safeguard the traditional professional degree programs in architecture—the Bachelor of Architecture (B.Arch) and Master of Architecture (M.Arch). Outside of the profession, the distinctions and differences between these paths and those associated with non-NAAB-accredited programs in four-year (e.g., Bachelor of Science in Architectural Studies) and two-year institutions may not be clear to the average adult learner or incoming graduating high school senior. NCARB and others have put out resources to help make these distinct degree pathways clearer, but, in an increasingly crowded field of education and training options

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[6] David F. Labaree, *A Perfect Mess: The Unlikely Ascendancy of American Higher Education*, University of Chicago Press, 2020.

[7] Julie R. Posselt and Eric Grodsky, "Graduate Education and Social Stratification," *Annual Review of Sociology*, Vol. 43, No. 1, 2017.

[8] Boyer and Mitgang, 1996, p. 27.

for students, making an informed decision to begin a path toward a professional degree in architecture and eventual license is more complicated than ever.

Limited Knowledge of Program Requirements and Issues of Affordability Are Core Barriers to Enrolling in Architecture Programs

Program Admission Requirements Like the Portfolio, as Well as Academic Preparation, Were Common Concerns for Students

Applying to college can be a daunting process for many students, made even more difficult by programs that require elements beyond application forms, essays, and financial need documentation. Most student survey respondents (68 percent) reported that architectural program admissions were a moderate or extreme barrier to their entry to the field. In our interviews, student participants discussed this barrier in greater detail, sharing that, as applicants, they did not have sufficient information about the admissions process, including the application and portfolio requirement. In fact, nearly half of student interview participants highlighted portfolios as a major barrier to applying to architecture programs. Students described not having sufficient materials to submit, lack of clarity regarding what to include in a portfolio, and their frustrations that different programs had vastly different portfolio requirements. According to a student at a non-NAAB-accredited four-year MSI, "Coming from high school, we didn't really have work that you could put into a portfolio, so I ended up applying to only schools that didn't need a portfolio to apply." Program admission requirements can have a differential impact on a student's choice, depending on their circumstances and available resources.[9]

Academic preparation was reported as a barrier by most student survey respondents (59 percent), particularly among students at non-NAAB-accredited institutions (52 percent) and female students (63 percent). A little less than half of all student survey respondents (47 percent) also reported a lack of information on schools as a barrier to enrollment; this was especially true among community college students (60 percent). Some student interview participants also mentioned being unaware of the differences between NAAB and non-NAAB programs and the implications for training.

Accessing Affordable Programs with Manageable Debt in Architecture Also Shaped Student Program and Architecture Pathway Choices

Affordability remains a barrier to entering architectural education programs. A prior study commissioned by AIA found that 87 percent of AIA members took out federal loans to pay for college and that first-generation college students were more likely to borrow than students with college-educated parents (78 percent vs. 71 percent).[10] The rising cost of higher education in the recent decades has given many students pause on how best to pursue their aspirations while minimizing costs.[11] We found striking differences in perceptions of affordability as a barrier by population. While only a third of student survey respondents (28 percent) reported affordability as a barrier to entering an architecture program, 60 percent of students reported taking on debt to fund their education (56 percent of B.Arch students and 72 percent of M.Arch student respondents). Roughly 20 percent of student survey respondents who have borrowed for their architecture education

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[9] Michael N. Bastedo and Nicholas A. Bowman, "Improving Admission of Low-SES Students at Selective Colleges: Results from an Experimental Simulation," *Educational Researcher*, Vol. 46, No. 2, 2017; Michael N. Bastedo, Mark Umbricht, Emma Bausch, Bo-Kyung Byun, and Yiping Bai, "Contextualized High School Performance: Evidence to Inform Equitable Holistic, Test-Optional, and Test-Free Admissions Policies," *AERA Open*, Vol. 9, 2023.

[10] AIA, "AIA Study Examines Impact of Student Debt on Profession," webpage, December 6, 2022.

[11] Sara Goldrick-Rab, *Paying the Price: College Costs, Financial Aid, and the Betrayal of the American Dream*, University of Chicago Press, 2016.

reported having over $60,000 in debt, much higher than the average median debt of $26,489 for students (in bachelor's programs in architecture) derived from federal institutional data.[12]

Debt burden is accrued unequally by race, institutional type, and degree pathway. Black student survey respondents (80 percent), especially Black women (88 percent), are disproportionately likely to borrow and have higher debt burdens compared with all other racial groups. These disparities are consistent with the broader student financial aid literature examining how student loan debt burdens disproportionately affect Black students and communities and contribute to the racial wealth gap.[13] Among our architecture student survey respondents, the borrowers with the highest debt burdens are concentrated among students who attend private schools; 22 percent of students at private institutions hold more than $100,000 in debt compared with 5 percent of students at public institutions. Moreover, graduate students (72 percent) are more likely to take on debt as compared with their undergraduate (56 percent) counterparts, and students in M.Arch programs (50 percent) are more likely to have over $60,000 in debt compared with students in B.Arch programs (23 percent). This difference in debt magnitude by degree level may be due to graduate students adding debt on top of their undergraduate debt balances or to the trend of cost of attendance and debt burden rising faster for master's degrees than for bachelor's degrees.[14]

While fully analyzing the debt burden associated with obtaining an architectural degree is beyond the scope of this study, related analyses have demonstrated that whether such debt levels are manageable for program graduates can be highly variable based on one's institution and program of study and geographic differences in cost of living. According to AIA's 2023 Compensation and Benefits Report, the median salary for a recent college graduate (nonlicensed) is approximately $60,990 ($5,083/month).[15] Federal education data indicate lower median starting salaries, starting at $46,119 ($3,843/month) for architecture program completers at the bachelor's level one year after program completion.[16] However, median salaries for bachelor's

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[12] This figure is calculated from the most recent data file for College Scorecard, a national dataset provided by the U.S. Department of Education that reports debt and earnings by program level for all Title IV eligible institutions. We used the variable DEBT_ALL_STGP_ANY_MDN (field of study median total debt for all federal loans) and calculated an average median debt for Classification of Instructional Programs (CIP) code 4.02 (Architecture) at the bachelor's degree level (not weighted by enrollment). When including CIP codes for other architecture-related fields (e.g., Architecture and Related Services, Architectural Engineering, Architectural Engineering Technologies/Technicians, Architectural Sciences and Technologies, and Architectural History and Criticism), overall median debt at the bachelor's level is $26,223. All information on master's degree architecture programs for this variable were privacy-suppressed in the public-use data file due to small sample sizes, and so figures do not represent potential student loan debt from graduate programs. Figures represent pooled amounts from cohorts in academic year (AY) 2018–2019 and AY 2019–2020, originally sourced from the National Student Loan Data System. College Scorecard data can be retrieved from the College Scorecard website.

[13] Jalil B. Mustaffa and Caleb Dawson, "Racial Capitalism and the Black Student Loan Debt Crisis," *Teachers College Record*, Vol. 123, No. 6, 2021; Jessica Welburn Paige, *Examining the Loss of Wealth and Downward Mobility of African Americans: A Review of Challenges for the Black Middle Class*, RAND Corporation, RR-A1259-3, 2022; Judith Scott-Clayton and Jing Li, "Black-White Disparity in Student Loan Debt More Than Triples After Graduation," Brookings Institute, October 20, 2016.

[14] Jason Delisle and Jason Cohn, *Master's Degree Debt and Earnings: New Federal Data Expose Risks for Students and the Government*, Research Report, Urban Institute, December 2022.

[15] See AIA, *AIA Compensation and Benefits Report*, November 29, 2023b. You can also access underlying data at AIA, "Compensation Survey Salary Calculator," webpage, January 1, 2023a. We opted to select the median salary for recent unlicensed college graduates as the best comparison with federal education data that report on median salaries for bachelor's level students one year after program completion, but variations exist likely due to whether students hold a B.Arch or M.Arch and other experiential factors. Recent college graduates from the 2023 *AIA Compensation and Benefits Report* were defined as those that have a professional degree in architecture, are working full-time as entry-level professionals performing basic architectural assignments including standard architectural techniques for small projects or selected segments of a larger project.

[16] Median earnings are derived from the variable EARN_MDN_1YR in the most recent available College Scorecard data, representing pooled earnings for cohorts in AY 2014–2015 and AY 2015–2016, with follow-up data in calendar year 2020 and 2021. All dollars are inflation-adjusted to 2022 dollars. The figure cited is only for CIP code 4.02 (Architecture) at bachelor's

level completers can range anywhere from $1,592/month (Universidad Politécnica de Puerto Rico) to $4,417/ month (Boston Architectural College).[17] Factoring in average median student loan payments per month, architecture program completers at the bachelor's level may take home approximately $1,336/month to $3,903/month (or $16,032–$46,836/year) as earnings net of debt, a preferred metric of student loan burden.[18] Further financial strains may be likely for recent college graduates based on their cost of living as well. On average, recent unlicensed college graduates may expect to pay 34 percent of their starting income to rent in their local area, but that burden can range up to 55 percent in higher-cost cities (e.g., New York City) to a low of 23 percent (San Antonio), dramatically affecting take-home pay.[19] These institutional and geographic variations affecting student finances demonstrate the wide range of potentially burdensome debt for architecture program graduates at the bachelor's level based on program attended.[20]

At the master's level, program-level data on federal median debt are more limited. However, in a recent analysis of graduate education and debt burdens, graduate student borrowing has increased over time as costs associated with earning a graduate degree have grown. The median debt for individual borrowers in graduate school grew from $44,000 in 2000 to $50,000 in 2020, with students in health care programs contributing most to the high levels of borrowing.[21] Based on available data among master's level programs, one study found that 14 percent of master's programs would fail an "in-field earnings premium test" (testing whether program graduates have median earnings at least 5 percent above the median earnings of younger workers, ages 25–34, who hold bachelor's degrees in the same state and same field of study) and 41 percent would fail a debt-to-earnings test (testing whether median graduate federal loan payments exceed 10 percent of median earnings equivalent to a living wage). Based on these tests, at least 31 architecture programs fail an in-field earnings premium test and ten architecture programs fail the debt-to-earnings test at master's level.[22] (See AIA's study examining the impact of student debt on the architecture profession for further research.[23])

Student debt can have long-term consequences for students, faculty, and practicing professionals, which may contribute to issues related to attrition and lack of diversity in the field. Faculty and practicing professionals who graduated in the past 15 years carry the most debt (57 percent) compared with their counterparts who graduated earlier and who may have taken on less debt or who have paid it off in the intervening years.

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and master's levels. When factoring in all related architecture categories (e.g., Architecture, Architecture and Related Services, Architectural Engineering, Architectural Engineering Technologies/Technicians, Architectural Sciences and Technologies, and Architectural History and Criticism), median earnings for bachelor's and master's level graduates one year after program completion are $50,126 and $59,477, respectively. Figures represent institutions with program-level information available that were not privacy-suppressed due to small *n* sizes.

[17] Anthony P. Carnevale, Ban Cheah, Martin Van Der Werf, and Artem Gulish, *Buyer Beware: First-Year Earnings and Debt for 37,000 College Majors at 4,400 Institutions*, Center on Education and Workforce, Georgetown University, 2020.

[18] For more on earnings net of debt and other plausible metrics, see The Institute for College Access & Success, *A Policymaker's Guide to Using New Student Debt Metrics to Strengthen Higher Education Accountability*, 2020.

[19] AIA, 2023b.

[20] To calculate these earnings net of debt, we used the monthly student loan payments reported for Universidad de Politécnica de Puerto Rico and Boston Architectural College—the lowest and highest ranges available for architecture bachelor's degree students, ranging from $256 to $514 per month as reported by Carnevale et al. (2020). Based on the most recent College Scorecard data, average median monthly student loan payments in bachelor's level architecture programs is $281/month.

[21] Artem Gulish, Catherine Morris, Ban Cheah, and Jeff Strohl, *Graduate Degrees: Risky and Unequal Paths to the Top*, Center on Education and the Workforce, Georgetown University, 2024.

[22] Find more information on specific graduate programs and an interactive data tool, see Center on Education and the Workforce, "Explore Graduate Programs," webpage, undated.

[23] AIA, 2022.

Forty-four percent who graduated between 2000 and 2009 have debt, whereas 26 percent who graduated prior to 1999 still have debt.

Beyond taking on debt, students drew on other sources to fund their education. Sixty-four percent of students reported relying on their family and friends, although this was less likely for first-generation college students. Seventy percent of students whose parents have a graduate degree rely on family or friends to fund their education compared with 54 percent of students whose parents have a high school degree or less. Students whose parents have some college education (75 percent) and students whose parents have an associate's degree (80 percent) are also the most likely to be working to fund their education; and, among students who have a job, they work for 26.5 hours a week on average. Most students (55 percent) received grants from their institutions, and about a fourth (24 percent) of students were also Pell Grant recipients.[24]

The costs for higher education also influenced the programs students considered. For almost half of all student interview participants, their financial concerns limited their choice and comparing the cost of tuition—either in-state vs. out-of-state tuition and/or public vs. private institution tuition—was a significant factor in where they applied. In some states, the options for NAAB-accredited programs are limited, which can pose a barrier for students from working- and middle-class backgrounds seeking to take advantage of in-state tuition; having to move far or out-of-state to pursue a degree in architecture can increase the cost of attendance.[25]

The challenge of affordability also encompasses the cost to students during their time in their programs. Almost a third of student interview participants discussed the costs of architectural supplies and software as an unexpected financial barrier that influenced their capacity to complete their program. A student at a public NAAB-accredited institution described her experience:

> Your first year of architecture school, you need to get expensive drafting boards, and pencils, and paper, and all these different drawing tools, and that's really expensive, and modeling supplies. Your professors expect you to model, be like, okay, have a model by tomorrow and you have to go dumpster diving for cardboard to make your model. It was more a barrier after getting into the program, trying to keep up with all those costs and software.

Faculty and practicing professionals (81 percent) overwhelmingly identified affordability as a major barrier to entering and progressing on the pathway to a degree.

Chapter Summary

- Exposure to architecture commonly stems from social media use and travel.
- Creative outlets—such as design—are strong entry points individuals interested in cultivating their interests in architecture.
- Admissions process and requirements are perceived barriers, with the portfolio requirement being especially challenging for students without the available resources and experiences (e.g., art classes).
- Program costs and debt burden weigh heavily on students and their future choices.

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[24] Pell Grant recipients are undergraduate students in the United States who demonstrate significant financial need. The Federal Pell Grant program, administered by the U.S. Department of Education, provides these grants to help students pay for college. See Federal Student Aid, "Federal Pell Grants," webpage, undated.

[25] Ruth N. López Turley, "College Proximity: Mapping Access to Opportunity," *Sociology of Education*, Vol. 82, No. 2, 2009.

Architecture Education, Practice, and Innovation

Across the field of higher education, there is a long-standing debate as to the extent to which postsecondary education is intended to prepare students for success in a career or to equip them to develop the skills and knowledge to be lifelong learners.[1] This debate has become more urgent with the rapid pace of technological development and the evolution of the United States' knowledge economy toward increasing specialization and technical needs in the workplace. Such discussions may be especially acute in the case of professional education environments, where preprofessionals are seeking the knowledge and skills they will need to successfully obtain their credentials and enter the profession.

The field of architecture is no stranger to these current debates. Many of the recommendations in the Boyer Report focused on the evolution of architecture education. Specifically, the report recommended "a connected curriculum" to bolster professional competence in students and increase flexibility for students to accomplish their learning and career goals; "a climate for learning" that was more "open, just, communicative, celebratory, and caring"; and an improvement of academia-practice collaboration to improve students' educational and internship experiences.[2]

In this chapter, we discuss the intersections of how respondents perceive the transition between architecture education programs to becoming practicing professionals in architecture by answering the following research questions:

- How do the components of architectural education contribute to students' development and areas of professional interest and practice? What is influencing emerging and new models for pedagogy and professional practice? How are education and professional firms adapting to emerging models of practice, including an increasing focus on AI and generative design?
- How do students, faculty, and practicing professionals perceive the transferability of an architectural education to other professions?
- What are the barriers to entering practice after graduation? How do the profession and the academy address these barriers?
- What does the transition from academia to practice entail for emerging architects? How do students and practicing professionals perceive the transition? How can firms support individuals' transitions from academia to practice?
- Do current professional development and continuing education opportunities reflect emerging practice models?
- Are current professional development and continuing education opportunities reflective of the needs and interests of the diversity of the architecture profession?

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[1] David F. Labaree, *How to Succeed in School Without Really Learning: The Credentials Race in American Education*, Yale University Press, 1997.

[2] Boyer and Mitgang, 1996, p.

We summarize findings across several core areas: (1) perceptions of the transition between academia to practice among current students preparing to make that transition and among early career architects who have made that transition, (2) barriers to entry into the profession and how to address those barriers, and (3) innovations and influences on emerging models of pedagogy and practice. We examine how all stakeholders view those trends in preparing future generations of architecture and design professionals.

Key Components of Architectural Education in Preparation for Practice

In a recent NCARB and ACSA report on professional practice, professional survey respondents were asked about the strengths and weaknesses of recent graduates.[3] The weaknesses of recent graduates were largely related to drafting, client and consultant relations, and codes and zoning criteria. Strengths centered on using technology to build models and renderings, creating presentation materials, and creating conceptual plans. To build on what is already known from this and other professional association reports, in our surveys and interviews we endeavored to explore the ways in which future, emerging, and current practicing professionals viewed their preparation for professional practice.

Students and Practitioners Wanted More Emphasis on Technical Skills and Hands-On Experiences in Architectural Education Programs to Align with Demands of Professional Practice

Students and Early Career Practicing Professionals Viewed Architecture Education Curriculum as Misaligned with Industry Trends and Demands, More So Than Faculty

Students and early career practicing professionals in architecture recognized many beneficial features of their architecture education that improved their understanding of the field and the role of architecture in society, including the ability to think conceptually about complex design problems and understand architectural theory and history, and how design decisions can address broader social challenges now and in the future. However, students perceived a misalignment in how their curriculum addresses the latest industry trends, especially compared with faculty. In our survey, 51 percent of faculty felt the curriculum at their institution was well aligned to industry trends compared with just 19 percent of students. Moreover, 37 percent of student survey respondents felt the curriculum was poorly or very poorly aligned with addressing the latest industry trends, while 17 percent of faculty believed this to be true. A White female faculty interview participant from a M.Arch program captured the dilemma in recognizing the inherent conflict between teaching to "land a job" and teaching for "service of society": "I would much rather teach those students while they're there at the service of society and just leave it to my colleagues to train them to land a job. And I have to admit that the agendas are increasingly less overlapping and more and more conflicting."

Views of curricular alignment among students may be somewhat related to the types of institutions students attended. Student survey respondents who attended NAAB-accredited institutions were twice as likely to believe their curriculum aligned with industry trends than students attending non-NAAB-accredited institutions (20 percent vs. 10 percent), and students who attended private institutions were more likely to report curricular alignment than those attending public institutions (41 percent vs. 35 percent). Patterns at NAAB-accredited institutions make some sense given that these programs are designed to put students on a path to licensure but, even so, most students at NAAB-accredited institutions feel that their programs are not aligned to industry demands.

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[3] NCARB and ACSA, *Professional Practice Data Collection*, August 2019.

In interviews, just under half of student interview participants discussed the nature of this mismatch, pointing out the need for understanding how to practically execute designs in the real world. As one student attending a non-NAAB-accredited institution explained:

> From hearing the people who I work with, they're getting all these students coming out of fourth year just graduating and they really don't know anything about architecture practice. They can't contribute on day one because they've been living in this bubble of academia. The stuff they're doing in school, they're really not going to do unless they're really talented designers, because all they teach us in school is design. The truth is that's a very small percentage of people in the firm are actually designing these big pie-in-the-sky drawings and stuff. I wish there was a little more emphasis on the real world and what the students will actually be doing so they can be prepared more. A little more practicality. It's very theoretical in my school. A little more practicality, in terms of design, how do we lay out a building, not just how do we make it look cool.

Student perception of a mismatch between academic curriculum and workforce demands is not unique to the field of architecture.[4] The consistencies in this view among students and early career practicing professionals demonstrate a desire for taking applied learning in architecture seriously to help students see the connections between what they are studying and how they can use that knowledge in practice one day.

Practicing Professionals Believed Students Need More Technical Skills to Transition to Practice Successfully—the Same Skills That Students Desire

Determining what skills are most important in the eyes of practicing professionals and faculty further illuminates the misalignment between academia and practice regarding what should be fundamental architectural learning. In our survey, faculty and practicing professionals both widely agreed that communication and presentation skills are the most important skills to their careers (93 percent of faculty surveyed, 88 percent of practicing professionals surveyed; documented in Table 3.2 with greater discussion in the section below). Faculty also identified design studios (91 percent), art and drawing (79 percent), and architecture history and theory (77 percent) as the next most useful skills to their careers. Practicing professionals in our survey noted that technical skills and documentation (86 percent) and understanding building technology systems (83 percent) were the second and third most important skills in their work, after communication and presentation skills, reflecting the different goals and nature of work between faculty and practitioners.

Student survey respondents perceived that their education programs were preparing them well on the communication and presentation skills seen as important across the profession: 80 percent of student survey respondents stated their education program is preparing them well in communication and presentation skills and in digital design (72 percent), architecture history and theory (70 percent), and art and drawing (61 percent). However, only roughly half of students surveyed felt well-prepared in technical skills and documentation (53 percent) and building technology systems (51 percent), those skills noted as very important by practicing professionals.

Students, faculty, and practicing professionals were not well aligned in their identification of areas for adjusting curricular focus. With regard to skills they wished their education programs placed more emphasis on, 89 percent of students, 84 percent of faculty, and 58 percent of practicing professional survey respondents identified understanding building technology systems, followed closely by technical skills and documentation (87 percent of students vs. 67 percent of faculty vs. 57 percent of practicing professionals) (Table 3.1). About 34 percent of students surveyed desired less focus on architecture history, contrasting with faculty survey respondents (26 percent) and practicing professionals (89 percent).

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4   Matthew T. Hora, *Beyond the Skills Gap: Preparing College Students for Life and Work*, Harvard Education Press, 2016.

TABLE 3.1

Proportion of Faculty and Student Survey Respondents Who Would Place a Greater Emphasis on Curricular Areas in Architecture

	Faculty	Students		Practicing Professionals
Applied research	76%	68%**	Applied research	20%
Arch. history	74%	66%**	Arch. history	11%
Art/Drawing	73%	74%	Art/Drawing	14%
Building technology systems	84%	89%*	Building performance models	40%
Communication	88%	80%***	Building technology systems	58%
Cultural contexts	79%	75%	CAD software	29%
Design studios	71%	77%	Climate change	25%
Digital design	61%	84%***	Communication	35%
Digital fabrication	56%	76%***	Computational design	18%
Sustainability	88%	83%*	Cultural context	17%
Guest lectures	68%	79%***	Digital design	25%
Interdisciplinary studies	72%	67%	Digital fabrication	15%
Technical skills and documentation	67%	87%***	Sustainability	31%
Professional practice and ethics	68%	82%***	Interdisciplinary	23%
Study abroad	79%	81%	Material selection	37%
Urban design	67%	77%***	Ethics	46%
Building performance models	56%	85%***	Technical skills and documentation	57%
CAD software	40%	82%***	Urban design and planning	20%
Computational design	42%	79%***		
Climate change	84%	78%**		
Material selection	74%	85%***		
Observations	*469*	*304*		*2,099*

NOTE: Proportion of respondents by population reported. Practicing professionals were asked about a more condensed list of curricular topics than their faculty and student counterparts. Asterisks show whether the proportion for students is statistically distinguishable from the proportion for faculty. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Arch. = Architecture.

These differences may underlie why about one-quarter of practicing professionals surveyed (24 percent) identified a lack of academic preparation as a barrier to entering professional practice. And, relatedly, about half of students and faculty surveyed reported that use of advanced software and digital tools is a focus in their program's curriculum, demonstrating that widespread adoption of technology tools is varied.

A majority of practicing professional interview participants believed that students lacked the technical skills to succeed in the field and that extensive on-the-job training would be necessary to help students move

beyond conceptual designs. As an unlicensed White male practicing professional explained, "I've seen so many educational portfolios that the students—it's good theoretical design, but it's . . . no more developed than what the working professionals would call a schematic design or that early preliminary design. And it's like—that's good, but now we got to put in all this additional work to make it work."

Almost three-quarters of students interviewed discussed the relevant skills they wished their programs focused more on to prepare them for entry into the workforce. These included surveying and measuring a site and translating that to drawings, visiting a construction site to preview collaborations between architects and contractors in "figuring out how a building comes together," utilizing building code standards in the design process vs. creating abstract designs, and learning about the later stages of the design and building process. According to an undergraduate student at a public, non-NAAB-accredited institution, "[Learning about] the later stages of an architecture project would be really helpful, because our program teaches us just the designing bits. But that's 10 percent of the process, and the rest of it has to do with coordinating with your engineers, making documents readable by contractors. We didn't learn any of that." A multiracial male who was an early career licensed practicing professional shared a similar sentiment, in reflecting on their own schooling and the lack of immediately applicable knowledge in transitioning into practice: "It sort of feels like they're preparing us to be a good design principal 30 years from now rather than the in-between where we work up to that point."

Faculty Believe Developing Courses and Curricular Experiences
That Promote Critical Thinking and Real-World Applications
Are an Important Component of Architectural Education

Despite the areas of mismatch between architecture education curriculum and desired skills identified by students and practicing professionals, architecture faculty interview participants spoke more broadly about teaching students critical thinking skills while preparing them for practice as a core component of their education. For example, a White female faculty member teaching in a program offering preprofessional undergraduate degrees and a M.Arch degree path noted different goals for and obligations to undergraduates and graduate students. Because a majority of undergraduates may not attend architecture graduate school, they said, the program is meant to be more "design and ideas-focused" to address critical thinking skills. Their graduate program was "more technically focused" to fulfill NAAB accreditation standards but "its core is still conceptual design and ideas because, again, we are teaching for the next 50 years, not the next five years." This long-term view and approach to teaching students was also described by an Asian male faculty member in a B.Arch/M.Arch program. They felt it important for students to have "the constant ability to learn and then being able to have a critical sort of understanding of things, how things are going outside the profession and also the industry to allow them to practice in a meaningful way."

As another example, an academic leader at a private four-year MSI discussed other course and seminar design choices they have tried to incorporate to enhance their curriculum. They discussed a trans-institutional seminar they designed with faculty at another institution in which students learned together from practicing professionals in the field, including hosting visiting scholars to discuss ideas and issues that were missing from their current curriculum.

Other pedagogical approaches faculty interview participants mentioned were designing projects with real clients in their communities to facilitate real-world learning or create assignments in which students had to learn client and firm relationships through proposal writing processes. A Latinx female faculty member in an M.Arch program elaborated that in their final capstone project for a thesis course, they encourage students to explore the city around them outside their studios, "not just to know the theory or how things are drawn, but how also the things are built and how the people really use spaces."

Design Software Skills, Communication Skills, Critical Thinking Skills, and Collaboration Skills Were Seen as Most Transferable from Education Programs to Other Fields and to Practice

Generally speaking, nearly two-thirds of surveyed faculty (64 percent) and slightly over half of surveyed practicing professionals (54 percent) had experience working outside of the field of architecture in adjacent fields such as interior design, graphic design, urban planning, construction, and engineering. Additionally, a great majority of faculty survey respondents (97 percent) had prior experience in professional practice, and almost two-thirds surveyed were licensed architects (64 percent). This background suggests that these participants have an informed view of what skills are most transferable to other fields and to professional practice (Table 3.2).

In interviews, when asked to reflect on skills learned from studying architecture that are transferable to other fields, interviewees' most common responses across related to design software skills, communication and presentation skills, critical thinking skills, and the ability to collaborate. Many student interview participants struggled to articulate how the skills they were learning in architecture education might be applicable

TABLE 3.2

Usefulness of Knowledge and Skills in Practice, Proportion of Faculty and Practicing Professional Survey Respondents

	All	Practicing Professionals	Faculty
Applied research	38%	31%	73%***
Architecture history	48%	41%	77%***
Art/Drawing	65%	62%	79%***
Building performance models	60%	63%	47%***
Building technology systems	82%	84%	75%***
CAD Software	79%	81%	67%***
Communication/Presentation	89%	88%	93%***
Computational design	54%	57%	42%***
Cultural contexts	60%	56%	77%***
Design studios	73%	69%	92%***
Digital design	72%	74%	66%***
Digital fabrication	42%	42%	43%
Sustainability	63%	61%	76%***
Interdisciplinary studies	56%	52%	75%***
Technical skills and documentation	84%	86%	75%***
Ethics	71%	72%	68%*
Study abroad	53%	47%	77%***
Urban design	54%	50%	68%***
Observations	*2,589*	*2,112*	*481*

NOTE: Proportion of respondents reporting skill is moderately or entirely useful. Asterisks show whether the proportion for faculty is statistically distinguishable from the proportion for practicing professionals. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

to other fields outside of architecture when asked, likely due to lack of experience in the workplace in both architecture and other fields.

When reflecting on skills that transfer from academia to professional practice, similar skills were also mentioned across all interview groups. Skills in using design software, such as Revit or Adobe products, were referenced by a significant number of interviewees across academia and professional practice, but especially among architecture students.[5] Student interview participants felt that being tech savvy and well versed in different design software makes them competitive applicants for future jobs in architecture or related fields. For example, one student felt very confident that their design software skills would carry over to other types of work, stating, "The main thing we do is like the design and concept work. . . . But all the software we learn and all the technology that we're using is very applicable in other circumstances. So, I've heard of architects becoming like graphic designers or illustrators or even just something completely unrelated to design."

Roughly half of student and practicing professional interview participants also appreciated the development of communication and presentation skills that they credited to their architecture education. A female early career licensed practicing professional described how these skills are "a nice tool that I learned really in school. And then it was reinforced in my professional life, but like, really in school, how to present an idea." A student at a non-NAAB-accredited MSI supported this point by expressing their improvement in communication skills: "I would say I've gotten better at—like, I had presentations for other classes and I'm less stressed about it. I feel like I don't have to plan out every single word I'm saying. I just know how to speak about things in front of people easier."

Some practicing professionals and student interview participants discussed how their education also built up their abstract/critical thinking skills to be able to tackle complex issues related to both a given job and the broader profession. As a White male licensed practicing professional explained, "A lot of it's like how to approach problems where you don't know all the answers. And so you have to lead a bunch of other people that also might not know the answer to like figure out what's a pretty complicated problem. . . . As simple as it sounds, like how do you creatively approach problems that everyone's been working on for a long time?"

All Participants Widely Agreed That Internships Are a Critical Component of Architectural Education for Learning Transferable Skills and Transitioning into Practice

Faculty and practicing professionals across our survey and interviews agreed that internships are an important component of architectural education to prepare students for transitioning into the workforce. These findings support a growing body of literature documenting the value of internship opportunities and their links to improved career preparation outcomes for students.[6] Internships provide a unique applied learning experience that can help students gain confidence in their career choices; enter the job market; earn more in their early career, particularly if majoring in STEM or business fields; and build social capital through networking with peers and mentors.[7]

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[5] The software programs cited by student interviewees as important to their future in professional practice—Revit, Auto-CAD, and SketchUp—are consistent with the software reported to be most commonly used at firms by professional survey respondents in NCARB and ACSA (2019).

[6] Cindy A. Kilgo, Jessica K. Ezell Sheets, and Ernest T. Pascarella, "The Link Between High-Impact Practices and Student Learning: Some Longitudinal Evidence," *Higher Education*, Vol. 69, 2015; George D. Kuh, "High-Impact Educational Practices," *Peer Review*, Vol. 10, No. 4, 2008.

[7] Angie L. Miller, Louis M. Rocconi, and Amber D. Dumford, "Focus on the Finish Line: Does High-Impact Practice Participation Influence Career Plans and Early Job Attainment?," *Higher Education*, Vol. 75, 2018; Nichole Torpey-Saboe, Elaine W. Leigh, and Dave Clayton, *The Power of Work-Based Learning*, Strada Education Network, June 2022; Gregory C. Wolniak and Mark E. Engberg, "Do High-Impact College Experiences Affect Early Career Outcomes?," *Review of Higher Education*, Vol. 42, No. 3, 2019; Matthew T. Hora, Zi Chen, Emily Parrott, and Pa Her, "Problematizing College Internships: Exploring Issues with

Corresponding to prior research, a strong majority of our interview participants—across faculty and practicing professionals—identified internships as critical for students' preparation for practice and their smooth transition into practice, over and above other helpful resources named by faculty and practitioners, such as faculty mentorship, professional mentors, or portfolio reviews. Similarly, faculty and practicing professional survey respondents overwhelmingly shared that internships were helpful in their transition to professional practice after graduation. Seventy-eight percent of faculty and 71 percent of practicing professionals considered their internship experiences to be helpful or very helpful to their professional transition.

Students in architectural programs also highly valued the role of internships in their academic and professional development. Fourteen percent of student survey respondents reported that an internship was among the experiences that first inspired them to pursue a career in architecture. Student survey respondents cited internships as sparking an interest in the profession at a significantly higher rate than among practicing professionals (8 percent) and faculty (5 percent). This may indicate greater accessibility or quality of early internships at present than for prior generations of aspiring architecture professionals.

Internship experiences, according to interview participants, help impart knowledge about how architecture firms work and how ideas translate into practice. One White male faculty member at a four-year non-NAAB-accredited institution, who was also a firm leader, noted, "I think these internship programs are very important because they help the students at least understand how the size of those firms and their philosophies fit in their sort of view of what architecture should be." A Black female professor in a NAAB-accredited program emphasized the importance of practical hands-on experience: "I think if you read it, you learn one way. But if you like physically do something, it helps you remember it a little bit more. And then maybe by working with actual people, you understand how the decisions you make really connect with a person."

Student interview participants echoed these beliefs about internships helping them apply theoretical skills to real-world practice and developing skills necessary for the workforce. For instance, one student studying at a NAAB-accredited non-MSI institution said, "I really find my biggest gaining skills, to help my personal work get better, comes from actually working in internships, being in the professional field." Students felt their internship experiences provided the context not only to learn and develop the skills they would need in practice but also to consider the types of practice and professional environments they would want to work in after graduating.

Early career practitioners also reflected on the value of the internships they had, describing them as critical to their future learning and networking in the field. A female licensed architect explained, "I learned a bunch from doing that. And then, I also made professional connections that way and career connections that got me jobs later in life." Practicing professionals see internships as a meaningful part of architectural education and an important opportunity for students to prepare for the profession.

Access, Program Design, and Developmental Outcomes in Three US Colleges," WCER Working Paper No. 2019-1, Wisconsin Center for Education Research, University of Wisconsin–Madison, 2019; Matthew T. Hora, Matthew Wolfgram, and Samantha Thompson, "What Do We Know About the Impact of Internships on Student Outcomes? Results from a Preliminary Review of the Scholarly and Practitioner Literatures," Research Brief No. 2, Center for Research on College-Workforce Transitions, University of Wisconsin–Madison, 2017; Fangjing Tu, "What Can We Learn from Longitudinal Studies on the Impacts of College Internships?," Center for Research on College-Workforce Transitions, University of Wisconsin–Madison, January, 2022.

Barriers to Entering Professional Practice

Compensation, Lack of Job Opportunities, and Lack of Hands-On Experiences Were the Biggest Barriers to Entering Professional Practice

Concerns About Future Salary and Compensation Was the Most Named Barrier to Entering Professional Practice

A large majority of surveyed faculty (86 percent), practicing professionals (79 percent), and students (61 percent) believed that compensation is a slight or main barrier to entering professional practice (Table 3.3). Although the proportion reporting compensation as a barrier was high for both groups, faculty and practicing professional survey respondents whose parents were less educated (high school degree or less) were less likely to consider compensation to be a barrier to entering the architecture profession (79 percent) than were their peers with college-educated parents (84 percent; see Table B.5). We also observed some differences by race among our faculty and practicing professional survey respondents (Table 3.4): Indigenous (90 percent) faculty and practicing professional survey respondents were the most likely to report compensation as a barrier to entering the profession.[8]

Among student survey respondents, those attending non-NAAB-accredited institutions were 10 percentage points more likely to say compensation would be a barrier (63 percent) than their peers attending NAAB-accredited institutions (53 percent). Students of color, particularly Latinx and Asian survey respondents, were also more likely to say compensation was a barrier compared with White students. Besides

TABLE 3.3

Proportion of Faculty and Practicing Professional Survey Respondents Reporting Barriers to Entering Professional Practice

	All	Practicing Professional	Faculty
Compensation	80%	79%	86%***
Culture of profession	66%	65%	70%*
Interest in arch. field	16%	16%	16%
Interest in different field	30%	30%	28%
Job opps. in arch. field	54%	56%	48%***
Practice experience	50%	51%	44%**
Peers in field	20%	22%	15%***
Mentor in Field	20%	21%	14%***
Preparation in arch education	30%	33%	15%***
Obtaining License	48%	52%	34%***
Personal Circumstances	49%	50%	47%
Observations	*2504*	*2050*	*454*

NOTE: Proportion of respondents reporting factor is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100%. Asterisks show whether the proportion for faculty is statistically distinguishable from the proportion for practicing professionals. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; arch. = architecture; opps. = opportunities.

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[8] We further discuss barriers to entering professional practice in subsequent sections and tables, including by intersections of race and gender among practicing professionals (Table 3.9).

TABLE 3.4

Proportion of Faculty and Practicing Professional Survey Respondents Reporting Barriers to Entering Professional Practice, by Race, Ethnicity, and Gender

	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA[a]	Multiracial
Compensation	81%	80%	82%	84%	84%	90%**	77%***	83%	82%
Culture of profession	72%	60%***	68%	64%	64%	72%	63%**	58%	70%
Interest in arch. field	13%	18%***	13%	11%	11%	21%*	16%**	12%	13%
Interest in different field	29%	30%	28%	29%	29%	36%	30%	28%	29%
Job opps. in arch. field	56%	52%**	51%	56%*	56%*	62%**	58%***	58%	64%***
Practice experience	51%	50%	49%	47%	47%	68%***	52%	56%	59%***
Peers in field	21%	19%	15%	18%	18%	25%**	21%***	31%**	20%*
Mentor in field	20%	19%	16%	18%	18%	26%**	20%**	24%	23%**
Preparation in arch. education	31%	28%	26%	30%*	30%*	44%***	31%***	33%	35%***
Obtaining license	51%	46%**	40%	45%	45%	50%*	54%***	54%**	50%***
Personal circumstances	55%	44%***	49%	45%	45%	50%	50%	50%	53%
Observations	*1122*	*1051*	*868*	*233*	*304*	*80*	*657*	*72*	*223*

NOTE: Proportion of respondents reporting issue is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportions for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. Due to small sample sizes, we are unable to report results separately for the other gender category. We combine the Female/Other to compare outcomes for gender groups that are historically underrepresented in architecture to those for males, who have been historically overrepresented. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; opps. = opportunities; arch. = architecture.

[a]MENA = Middle Eastern and North African.

compensation, about 69 percent of students surveyed also named lack of job opportunities as a barrier to entry into practice, though interview participants rarely brought up this concern.[9]

These concerns about compensation can potentially be tied to concerns about paying off student debt, as discussed in Chapter 2. In interviews with student and practicing professionals, interview participants expressed concerns about compensation in the field and identified a mismatch between compensation and the cost of an architectural degree. A little over a third of practicing professionals interviewed discussed salary and pay when asked about the barriers to entering the profession. A White male unlicensed practicing professional who was dismayed by the mismatch stated, "You invest all of this time and heartache and blood and sweat and tears into [your architectural education], and you get into the field and you're not making as much as you think you might get compensated." Students—both undergraduate and graduate—expressed similar concerns, conflicted by the cost of their degree in relation to what they expected to make after graduation.

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[9] In our discussion of licensure below, we include a table showing student survey respondents' reported barriers to professional practice by race and ethnicity (Table 3.6).

Students, in Particular, Were Concerned About Their Lack of Applied Experiences in Preparing for Entry into the Workforce

In interviews, students discussed several different components that have supported their learning, especially due to the mentorship they have received from faculty and peers as well as in how studios can be designed around real-world topics and challenges. As a student in a non-NAAB-accredited MSI expressed, "One of the most helpful things for us students . . . is they let us experiment with a lot of freedom and then for some projects, they give us these exact real-world boundaries. And it gives us an introduction to how it's done in the real world—how a real site is chosen and with these different designs and these different parameters."

This hunger for real-world applications fueled concerns that students reported in their uneven preparation for practice. Some students in our survey (12 percent) shared that the design software they are being taught to use in school is not the same software they are expected to use in the field, which they described as a barrier to entering professional practice. In interviews, experience with modern design software tools, particularly Revit, is perceived to be commonplace and essential knowledge for landing a job in the field. For example, an undergraduate student at a non-NAAB-accredited MSI said, "They're not teaching you what you need to know for actual practice. And I have no idea how to use Revit, I haven't been exposed to that at all. . . . I'll probably leave here with the theoretical knowledge of how to do things and some technical skill set, but even like applying to internships, they're like do you have Revit experience." But the concerns about preparation for the workforce go beyond learning software.

Almost half of students interviewed discussed other barriers to gaining skills relevant to the workplace, particularly moving from abstract designs to knowing how to build a structure or coordinate with contractors. Irrespective of attending NAAB-accredited programs, most students interviewed desired to know more about the technical production aspects of their designs. Those who felt ready or knew what to expect in transitions into the workforce described internships or other work experiences that provided them the practical knowledge. Learning these skills in architecture programs, however, was not a given. A student at a non-NAAB-accredited four-year institution summarized this concern:

> We learn how to draw sites but it's all abstract. You couldn't take it and use it for any renovations or anything. I think that in my experience I've done a lot of renovation work. So, you go out and you measure up the building, every single nook and cranny, and you draw it and then you learn how to draw it on your computer. Those kinds of skills I think are the most simple places that someone can start in the field, after they graduate. I think knowing how to do that before you graduate is kind of necessary. I work with a couple people who are fourth-year architects and they don't know what they're doing, because this is their first job. I mean obviously no shame to them, they haven't been taught. But, I think that being taught early on would set people off for much better success after they graduate.

Accessing Internships, Particularly Among Students, in Systematic and Equitable Ways Also Remains a Challenge for Gaining Exposure to Practice

Survey and interview participants across faculty, student, and practicing professionals saw the value of internships as a fundamental component of the architectural education experience. Internships were the most common form of practice experiences reported by our student survey respondents, reported by 51 percent of student survey completers. However, access to internships was not distributed equitably across our student survey sample, a finding that mirrors other studies on access to paid internships, primarily at the undergraduate level.[10] Latinx student survey respondents were less likely to complete an internship (42 percent) than

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[10] Torpey-Saboe, Leigh, and Clayton, 2022.

their peers from other racial and ethnic backgrounds. For instance, White (54 percent), Asian (59 percent), Black (50 percent), Indigenous (70 percent), MENA (59 percent), and multiracial (54 percent) students all completed internships at higher rates (Table 3.5).[11]

Practicing professional interview participants who discussed the value of internships tended to agree with students that schools and firms need to do more to help students access internship opportunities. For example, one male, multiracial, early career licensed practicing professional said, "I think the schools aren't helping people get internships. They're sort of teaching you design and then casting you out to the world, good luck. The firms that I see are not putting a lot of focus or importance on finding interns that know nothing. It seems that all the interns we have, we want them to have prior experience."

While most student interview participants felt internships were an important component of their education, they confirmed barriers mentioned by practicing professionals while discussing several others, including (1) not having the resources to participate in an unpaid or low-paying internship, (2) firms requiring previous experience to be hired for an internship, (3) not having enough internship opportunities to apply for, and (4) firms being focused on recruiting and hiring students in their third year or above and not opening opportunities to first- or second-year students.

Most students who mentioned challenges in finding internships in our interviews highlighted that the lack of structures or support from their programs hindered their ability to find internships. For example, a student at a public MSI that is not NAAB-accredited said their school "is not really helping at all with finding internship or shadowing or anything like that. It has to be like your own [initiative]." Students mentioned they would benefit from program requirements to complete an internship, résumé preparation workshops, or co-op programs that provided built-in opportunities during the school year to work with architectural firms.

TABLE 3.5

Proportion of Student Survey Participants Reporting Various Architecture Practice Experiences, by Race and Gender

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Externship	17%	18%	13%	19%	13%	6%*	30%	12%	18%	14%
Internship	51%	51%	54%	54%	59%	50%	70%	42%*	59%	54%
Design workshop	47%	44%	54%	44%	43%	44%	60%	60%**	53%	49%
Summer program	26%	23%	32%	22%	33%	12%	60%*	29%	47%*	26%
Part-time architecture work	23%	24%	21%	24%	30%	12%	30%	20%	41%	29%
Full-time architecture work	15%	12%	21%*	15%	22%	12%	10%	14%	24%	23%
Observations	313	215	97	194	46	16	10	65	17	35

NOTE: Proportion of student survey respondents reporting architecture practice experiences is shown. Asterisks show whether the proportion for Female/Other is statistically distinguishable from the proportion for males and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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[11] Latinx student survey respondents' access to practice experiences were almost universally lower than their peers from other racial and ethnic backgrounds, with the exception of their participation in design workshops (60 percent), which was substantially higher than their White, Black, and Asian peers (43 percent, 44 percent, and 44 percent, respectively) and on par with Indigenous students (60 percent).

A particular promising program model that a practicing professional mentioned as helpful to gaining practical experiences was having their program require a full year of interning for graduation, between the fourth and fifth years of their B.Arch degree program. As they explained, this model "helped me kind of situate myself in kind of the working environment and helped me anticipate the environment that I was going into."

While Nearly All Students Intended to Pursue a Career in Architecture, Completing the Licensure Process Is a Substantial Barrier to Entering Practice for Current Students and Unlicensed Practitioners

Whether Licensure Is Perceived as a Barrier or Not Is Related to Affiliation with NAAB-Accredited Programs and Varies by Race/Ethnicity

Many survey respondents, particularly unlicensed practicing professionals (60 percent vs. 39 percent licensed practicing professionals) and students (42 percent vs. 33 percent faculty) identified the process to obtain licensure as a major barrier to entering practice.

Non-NAAB students face a steeper pathway to licensure in most states. In all but 17 jurisdictions, individuals need to earn a degree from a NAAB-accredited institution to get licensure.[12] This requirement seemed to influence how students and faculty perceive licensure barriers in this study. Student survey respondents, particularly at non-NAAB-accredited institutions, were 11 percentage points more likely to feel that the licensure process was a barrier to entering architecture practice compared with those at NAAB-accredited institutions (44 percent non-NAAB program students vs. 33 percent NAAB program students). Faculty similarly acknowledged this hurdle: faculty survey respondents at non-NAAB institutions were 32 percentage points more likely to say licensure is a barrier to entering practice than faculty at NAAB-accredited institutions (63 percent vs. 31 percent; see Table B.13).

Student survey respondents' perspectives on the degree to which obtaining an architecture license would be a barrier to their entering professional practice varied by race and ethnicity. Indigenous student survey respondents were the least likely (20 percent) to report licensure as a barrier to professional practice, and Latinx students (45 percent) were the most likely to report licensure as a barrier to entering processional practice (Table 3.6).

When looking by race and gender, Asian female students were more likely to say obtaining a license is a barrier to entering the profession (64 percent) than students of other racial and gender identities. Differential concern about licensure for respondents of color is substantiated by additional evidence showing people of color are more likely to stop out during the licensure process. NCARB reports that 37 percent of people stop pursuing licensure over ten years and that people of color are more likely to stop out: 45 percent of Asians, 43 percent of Black, 41 percent of Latinx, and 33 percent of White architects stop out of the licensure process within ten years.[13]

There Were Mixed Views on Whether the Architectural Experience Program Is Helpful During the Licensure Process

A plurality of practicing professionals surveyed (43 percent) believed the Architectural Experience Program (AXP), which involves documenting real-world experience on the path to licensure, is helpful during the transition to professional practice, compared with 19 percent of faculty. Non-NAAB faculty survey respondents were more likely to see the AXP as unhelpful (27 percent) compared with NAAB-accredited faculty

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[12] NCARB, "Education Alternatives," webpage, undated.

[13] NCARB, 2024a.

TABLE 3.6

Proportion of Student Survey Respondents Reporting Barriers to Entering Professional Practice, by Race, Ethnicity, and Gender

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Job opps. in arch. field	69%	70%	66%	66%	80%**	75%	60%	76%	57%	72%
Compensation	61%	63%	57%	61%	65%	44%	60%	66%	50%	56%
Student loans	57%	56%	60%	54%	57%	63%	70%	66%*	36%	50%
Interest in other field	24%	24%	25%	25%	22%	13%	10%	30%	7%**	22%
Interest in arch. field	7%	7%	7%	5%	13%	13%	20%	8%	7%	3%
Preparation for arch. education	19%	17%	23%	20%	13%	13%	10%	17%	21%	13%
Practice experience	24%	26%	21%	21%	24%	44%*	10%	36%**	36%	34%
Sense of belonging in arch. field	19%	20%	17%	19%	20%	44%*	10%	21%	0%	19%
Mentor in field	14%	15%	12%	14%	7%**	31%	10%	17%	14%	16%
Peers in field	9%	9%	10%	8%	7%	19%	0%	13%	14%	13%
Culture in arch. profession	30%	30%	30%	30%	35%	31%	10%*	15%***	43%	19%
Personal circumstances	29%	29%	28%	25%	30%	38%	50%	34%	43%	31%
Obtaining arch. license	42%	43%	40%	43%	39%	50%	20%	45%	36%	50%
Job quality in arch. field	64%	65%	60%	62%	74%*	63%	70%	66%	50%	56%
Observations	*286*	*196*	*89*	*182*	*46*	*16*	*10*	*53*	*14*	*32*

NOTE: Proportion of respondents reporting factor is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; opps. = opportunities; arch. = architecture.

(17 percent). Among student survey respondents, registration for the AXP was related to whether they believed the licensure process was a barrier to entering professional practice. Those students who did not intend to register for the AXP (47 percent) reported feeling that licensure was more of a barrier, compared with 35 percent of those who had registered; AXP registration is likely correlated with students' commitment to obtaining licensure in general. Among people of color, Black survey respondents (30 percent) and Latinx survey respondents (28 percent) were more likely than other racial/ethnic groups to believe the AXP as unhelpful.

During interviews, faculty and practicing professional participants' comments about AXP were generally neutral as they described the required components of the licensure process. They saw the value of the process in getting licensed to demonstrate a "kind of validity" in the architecture world and recognized that the purpose is to show you are knowledgeable about the dimensions of being an architect, especially to promote public safety.

Committing Years of Effort and Paying Exam Costs Were Other Common Barriers to Successfully Moving Through the Licensure Process

Several student and practicing professional interview participants discussed the time commitment, number of exams, and paying for exams as barriers to obtaining licensure. Many considered the exams costs prohibi-

tive and mentioned different policies among firms, which may cover all or none of the fees.[14] Students often felt they weren't prepped sufficiently at the beginning of the program to understand the steps that licensure entails, especially the multiyear commitment. For instance, when asked about the pathway to licensure, one graduate student at an NAAB-accredited public institution shared: "[Students were] blindsided by the fact that there are going to be tests, through NCARB, when they finally graduate. There are going to be continual education hours that they have to have as architects. There are going to be fees and licensure issues that they might encounter and they're not going to be licensed in every state, most likely."

Several practicing professionals, especially those who have practiced in architecture settings for years but are still unlicensed, also noted that sometimes studying the exam content felt irrelevant or misaligned to their professional needs or how they would execute a project with a current client or contract. Finally, practicing professionals in interviews discussed the pressure and stress of trying to move toward licensure, especially in the early stages of a career when it may make more sense to do so. As this White female licensed practicing professional explained:

> I think it's the mental barrier. Because there's this like worry that you're going to fail the test, but also understanding that you're probably going to fail the test and it's okay. For somebody who is just out of school dealing with a lot of student loan debt and trying to scrape by, $250, that was a lot. And I only got reimbursed if I passed. And that was only half the cost of the test. So there's this huge like mental barrier of like I have to pass. Otherwise, I'm not going to get any reward from this. . . . And once you have that momentum going, it's a lot easier to keep going. It's just initially starting is really scary.

Overall, interview participants believed the licensure process was important, but they could understand reasons to opt out of the process given the time commitment and expenses involved, especially when juggling multiple work or family obligations.

Culture of the Profession and Finding Work-Life Balance Was Another Key Barrier for Entering Practice

A majority of surveyed faculty (70 percent) and practicing professionals (65 percent) believed that the culture of the architecture profession is another key barrier for entering practice (Tables 3.7 and 3.8), while only 30 percent of students perceived this to be true.

One dimension of the culture of the profession is the respect and space afforded to practicing professionals to balance their personal and professional lives. While only 30 percent of student survey completers reported concerns about the culture of the profession as a barrier to entering practice, the discussion of work-life balance concerns was much more prevalent among interviewees. Roughly half of students in interviews discussed that one of their concerns about transitioning into practice is finding work-life balance. Given their experiences in schools and firms through internships, students consistently discussed the culture of overworking. As a M.Arch student at a western public institution summarized:

> There's a mentality, often within older generations of faculty, that's "I worked this hard, so you need to suffer, too, to work this hard. And that's the only way you'll be successful." And I think it's slowly shifting now with the recognition of work-life balance not only as a student but also in the professional field. And

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[14] According to AIA (2023b), these perceptions are likely shaped by experiences in different firm settings. Larger firms (with 50 or more employees) tend to provide the most substantial support for licensing and exam costs compared with smaller firms (fewer than ten employees). For example, 82 percent of large firms cover Architect Registration Examination costs in full compared with 45 percent of small firms, and 78 percent of large firms cover licensure fees in full compared with 62 percent of smaller firms. Fewer than two-thirds of firms of any size pay NCARB fees in full.

TABLE 3.7

Proportion of Faculty Survey Respondents Reporting Barriers to Entering Professional Practice, by Race, Ethnicity, and Gender

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Compensation	86%	84%	87%	86%	100%	76%	75%	85%	63%	64%
Culture of profession	70%	74%	68%	72%	70%	86%*	50%	46%**	50%	27%**
Interest in arch. field	16%	13%	15%	15%	7%	19%	0%	12%	25%	9%
Interest in different field	28%	27%	26%	25%	30%	48%*	25%	15%	75%**	27%
Job opps. in arch. field	48%	43%	50%	44%	64%**	57%	25%	62%*	63%	64%
Practice experience	44%	45%	43%	42%	39%	48%	50%	42%	75%*	36%
Peers in field	15%	16%	12%	11%	25%	29%	0%	19%	13%	0%
Mentor in field	14%	17%	10%*	10%	29%**	43%***	25%	15%	13%	9%
Preparation in arch. education	15%	12%	14%	12%	11%	29%	0%	12%	25%	9%
Obtaining license	34%	34%	32%	30%	29%	43%	50%	46%	63%	46%
Personal circumstances	47%	53%	45%	49%	39%	52%	50%	46%	50%	46%
Observations	*454*	*143*	*232*	*279*	*28*	*21*	*<10*	*26*	*<10*	*11*

NOTE: Proportion of respondents reporting factor is barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. Due to small sample sizes, we are unable to report separately for the other gender category. We compare Female/Other with male. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; opps. = opportunities; arch. = architecture.

so, I think it's really important for students to advocate for themselves and speak up for themselves because there is such a thing as too much, and when that happens, it's hard to stand alone. But even standing with your peers, I think lines do get crossed sometimes. And it's getting better but it still does happen. And so, just advocating yourselves and knowing your self-worth, even though you're a student, you have so much worth and you need to prioritize both your mental well-being, as well as your school, and finding that balance between the two is really important.

Student interview participants explained that finding the appropriate work-life balance was a priority and wanted to combat a pressure to work constantly amid other life obligations and to protect their mental health and well-being. A few students discussed how their institutions were attempting to address mental wellness specifically among architecture and design students or were advocating for more mental health supports in their program. As a student at a non-NAAB-accredited MSI explained about the need for more counseling due to workload issues, "What's really been helpful is our entire college's care services, you know, it's like any kind of student well-being and mental health, they actually partnered with our College of Environmental Design. And the way I tell my friends this is, 'So many kids in my major are so depressed that we have our own personal therapist,' which is obviously not the nice way to put it."

Among practicing professionals, women and people of color disproportionately reported that the culture of the profession was a barrier to practice (Table 3.9). For instance, surveyed female practicing professionals were 14 percentage points more likely than males to say culture of the profession is a barrier (71 percent vs.

TABLE 3.8

Proportion of Practicing Professional Survey Respondents Reporting Barriers to Entering Professional Practice, by Race, Ethnicity, and Gender

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Compensation	79%	81%	78%	80%	82%	79%	91%***	77%**	86%	83%
Culture of profession	65%	71%	57%***	66%	64%	73%***	74%	64%	59%	72%*
Interest in arch. field	16%	13%	19%***	12%	11%	22%***	22%**	17%***	11%	13%
Interest in different field	30%	30%	31%	29%	29%	34%	37%	30%	22%	29%
Job opps. in arch. field	56%	58%	52%**	54%	55%	61%**	65%*	57%*	58%	64%***
Practice experience	51%	52%	52%	52%	48%*	64%***	68%***	52%	53%	60%**
Peers in field	22%	22%	21%	17%	17%	33%***	26%*	21%***	33%***	21%
Mentor in field	21%	20%	21%	18%	18%	31%***	26%	20%	25%	24%**
Preparation in arch. education	33%	33%	32%	33%	32%	37%	46%**	32%	34%	36%
Obtaining license	52%	53%	50%	46%	46%	60%***	50%	54%***	53%	51%
Personal circumstances	50%	55%	44%***	48%	46%	61%***	50%	50%	50%	53%
Observations	*2,050*	*981*	*821*	*587*	*343*	*283*	*76*	*632*	*64*	*212*

NOTE: Proportion of respondents reporting factor is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; opps. = opportunities; arch. = architecture.

57 percent), and surveyed female faculty were 6 percentage points more likely than their male counterparts (74 percent to 68 percent) to identify the culture of the profession as a barrier. Additionally, Black female practicing professional survey respondents were 14 percentage points more likely to say culture of the profession was a barrier than the average across racial groups by gender and overall (80 percent Black female faculty vs. 74 percent female faculty vs. 65 percent all faculty), following a similar pattern as Black female faculty, who were 10 percentage points more likely to name the culture of the profession as a barrier (80 percent) than faculty overall (70 percent). Indigenous female faculty (87 percent), multiracial female faculty (86 percent), Asian female faculty (72 percent) and White female faculty (75 percent) were also more likely to say culture of the profession is a barrier than faculty overall.[15]

While there are likely other components besides work-life balance that encapsulate barriers within the culture of the profession, work-life balance issues were consistently selected among most survey respondents regardless of role and mentioned across almost a third of interview participants overall. This suggests some awareness across students, faculty, and practicing professionals about the trade-offs involved in pursuing an architecture career.

[15] For the proportions of practicing professional survey respondents reporting barriers to entering professional practice, by size of firm and other professional characteristics, see Table B.14.

TABLE 3.9

Proportion of Practicing Professional Survey Respondents Reporting Barriers to Entering Professional Practice, by Intersections of Race and Gender

	White Male	White Female	Asian Male	Asian Female	Black Male	Black Female	Indigenous Male	Indigenous Female	Latinx Male	Latinx Female	MENA Male	MENA Female	Multiracial Male	Multiracial Female
Compensation	79%	81%***	79%	84%***	81%	78%***	83%	97%***	74%*	79%***	78%	90%***	78%	86%***
Culture of profession	54%	75%***	54%	72%***	67%***	80%***	58%	87%***	58%	68%***	48%	66%	61%	78%***
Interest in arch. field	16%	9%***	14%	10%**	23%**	22%*	28%	18%	20%*	13%	13%	10%	17%	10%*
Interest in different field	30%	29%	23%*	35%	34%	34%	47%*	28%	33%	28%	26%	20%	30%	29%
Job opps. in arch. field	51%	56%*	49%	60%**	57%	66%***	50%	77%***	56%	59%***	52%	61%	58%	67%***
Practice experience	52%	52%	43%**	52%	64%***	63%**	67%*	69%**	51%	53%	57%	51%	59%	61%**
Peers in field	12%	20%***	17%	17%*	32%***	34%***	22%	28%**	23%***	20%***	17%	41%***	17%	23%***
Mentor in field	18%	18%	17%	18%	33%***	29%***	31%	21%	22%*	19%	17%	29%	25%	23%
Preparation in arch. education	31%	34%	34%	29%	36%	38%*	50%**	41%	32%	32%	30%	37%	37%	36%
Obtaining license	44%	46%	42%	49%	55%**	64%***	44%	54%	54%***	54%***	52%	54%	47%	52%*
Personal circumstances	42%	53%***	35%*	54%***	57%***	65%***	39%	62%**	44%	55%***	48%	51%	45%	59%***
Observations	*244*	*341*	*151*	*188*	*139*	*143*	*36*	*39*	*280*	*346*	*23*	*41*	*76*	*135*

NOTE: Proportion of respondents reporting factor is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportions for each group are statistically distinguishable from the proportion for White males. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; arch. = architecture.

People of Color, and Especially Women of Color, Were Less Likely to Report a Sense of Belonging in the Architectural Profession, Posing a Barrier to Entering and Staying in the Profession

About a third of all survey respondents felt that they completely belonged in architecture. Nearly two-thirds said that they belonged completely or quite a bit. However, there is variation in level of belonging by background. Males reported a higher sense of belonging than females across all survey respondents (48 percent vs. 34 percent). By race/ethnicity, White survey respondents reported a higher sense of belonging than respondents of color. For instance, 45 percent of White survey respondents felt they completely belonged in architecture compared with 34 percent of Asian respondents, 40 percent of Black, 40 percent of Indigenous, 40 percent of Latinx, 44 percent of MENA, and 37 percent of multiracial survey respondents. Generally speaking, White males were most likely to say they completely belonged (53 percent), while Asian and Black females were the least likely to say they completely belonged (25 percent and 33 percent, respectively).

Beyond demographic characteristics, feelings of belonging in the profession are also driven by preparation pathways and licensure status. Faculty survey respondents at NAAB-accredited institutions, for instance, were more than twice as likely as faculty at non-NAAB institutions to feel that they completely belonged in the profession (47 percent vs. 20 percent). Licensed practicing professional survey respondents were more likely to report they completely belong (50 percent) than unlicensed practicing professionals (32 percent). These patterns suggest that traditional professional pathways toward licensure shape feelings of belongingness. Veering from that path can change whether and how people connect into the profession.

Our survey evidence also suggested that feelings of belonging translated to perceiving barriers to entering practice. Women and people of color were more likely to identify sense of belonging as a barrier. For example, female student survey respondents were 4 percentage points more likely to say sense of belonging is a barrier than male students (16 percent vs. 20 percent). Additionally, Black female students were 36 percentage points (55 percent more likely to say sense of belonging is a barrier and Latinx females were 10 percentage points (29 percent) more likely to believe sense of belonging as a barrier compared with the average response (19 percent; inclusive of Black and Latinx females).

In interviews, practicing professionals also discussed how their sense of belonging at their firm was driven by how leadership and mentorship was cultivated inside the firm. For instance, a White female early career unlicensed professional discussed the role of firm principals, saying, "I have some phenomenal principals I work with that are constantly like how can we support you . . . and they're very, very concerned and very, I would say, kind of ahead of the line when it comes to making a culture of equality and inclusion across the board." A White female early career licensed professional also shared the differences in her sense of belonging between three different firms. They described differences from working in smaller, more informal environments—from a sole practitioner's home office in which their "identity was an unavoidable part of the dynamic" in the blurring of home and work life and also felt "very accommodating"—to a co-op model where there were "processes meant to engage everyone running the firm." In contrast, they described their current firm as a more "businesslike" setting where "nobody thinks about anyone else." Reflecting on the leadership at these firms, this participant explained, "The first few places were both women-owned, women-led, and this firm, the leadership is mostly male. So, I think that's a part of it too. It's just a different interpersonal dynamic."

Students and faculty interview participants also spoke to how diversity and inclusion issues were handled in their programs. Some students felt their program valued DEI, particularly because they appreciated the diverse student body in their programs and the benefits of learning from others with different backgrounds. Other students noted experiences with sexism or lack of inclusion, especially in their internship experiences at firms or in generally feeling excluded in the classroom due to lack of representation, resistance from faculty in acknowledging the importance of inclusion, and difficulties advancing in the field for women and people of color.

To address these barriers to sense of belonging and lack of diversity in the field, faculty and practicing professionals interviewed pointed to several mechanisms. Most faculty discussed broader university resources aimed at providing inclusive spaces for students, such as student organizations and affinity groups. Faculty also described efforts to increase diversity and inclusion, such as inviting a speaker of color to classes, but noted that efforts to increase diversity are a struggle. Specifically, faculty discussed difficulties in making systemic changes needed to either recruit diverse faculty candidates or address student concerns with diversity and equity in meaningful and systemic ways within the institutional culture. A female faculty member in an M.Arch program explained the labor costs and difficulties faced at her institution, particularly after their NOMA chapter attended a faculty meeting with a list of demands:

> And then, we just had people get offended, right? And then a small group of people wrote a statement, put it on the website that was never introduced to our faculty, and it was never discussed among our faculty. We have a DEI committee, but last year it was full of assistant professors, so they couldn't really say anything. And then we had a workshop on microaggressions. But the people who need to be there listening to it, who are microaggressing, aren't listening to it, right? And so what happens is students find allies. And then you know, some professors get swamped because they're the ones that are listening or they are finding support among themselves and then we don't—because we just don't have the infrastructure to do that.

Among practicing professionals interviewed, a White male firm leader described the lack of diversity in the field as an ongoing struggle as well, particularly "to try to attract and retain and promote individuals who represent the communities that architects serve and look like the communities who architects serve." Another Latinx female midcareer practitioner emphasized that the struggles with retaining diverse professionals aren't due to students "in the pipeline." Instead, "the problem is in the bottleneck and pinch points we have once you're in the profession. They leave. . . . We have a lot more diversity in the schools but they don't stay in the profession. . . . I think for a lot of architects of color that I know they face discrimination in the workplace and they don't feel like they have opportunities for moving up." Overall, the lack of representation contributes to decrease sense of belonging among aspiring architects of color and women.

Addressing Barriers to Entering the Profession

Membership or Professional Associations in Architecture, Like NOMA, Are Important Support Systems, Especially for Students and Emerging Architects to Develop a Sense of Belonging in the Field

We generally found that students have consistent but infrequent engagement with architecture professional associations and firms (Table 3.10). About one-third of surveyed students (35 percent) said they engage with firms at least 1–4 times a month, while 40 percent of students engage with architecture associations at the same frequency. Student survey respondents at NAAB-accredited schools were more likely to engage with associations than non-NAAB-accredited students (40 percent vs. 33 percent). Female students and underclassmen engage less frequently with architecture associations than their male and upperclassmen counterparts. Students with any prior architecture practice experience were more likely to engage with firms and professional associations than their peers with no prior experience (see Table B.15).

The majority of students not engaging with firms or associations as frequently may be a potential challenge given that, in interviews, students discussed deriving various benefits from engagement with firms and professional associations: mentorship and career development, sharing of resources, and lower burden

TABLE 3.10

Proportion of Student Survey Respondents Reporting at Least Monthly Engagement with Architecture Firms and Associations, Overall and by Dimensions of Identity and Experience

	Firms	Professional Associations
All	35%	40%
Female/Other	32%	38%
Male	40%	44%
White	38%	40%
Asian	35%	50%
Black	31%	44%
Indigenous	50%	60%
Latinx	29%	38%
MENA	20%	40%
Multiracial	26%	44%
NAAB-accredited	36%	40%
Non-NAAB-accredited	24%	33%
Attends private institution	39%	39%
Attends public institution	34%	38%
Observations	*290*	*290*

NOTE: Proportion of respondents reporting they engage with the organization type at least monthly. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents, the proportion for students at NAAB-accredited institutions is statistically distinguishable from non-NAAB, and proportion for students at private institutions is distinguishable from public. N sizes reported under proportion for each group. $* p < 0.1$, $** p < 0.05$, $*** p < 0.01$.

on supply expenses. Student interview participants consistently referenced membership chapters for AIAS and NOMA as important support systems for their financial, social, and professional support. Mentorship and networking resources received from these organizations were invaluable. As one student attending a NAAB-accredited program at an MSI said about NOMA, "It helped a lot because I have been to the events, so they do a lot of . . . you feel included in those type of things and you feel heard."

Student chapters were also important for helping meet student financial needs—from basic needs to common technology and supplies. One student in a non-NAAB-accredited program and MSI shared, "We have student organizations that have started kind of like a clothing closet for modeling materials or like those kinds of things. I'm a part of an organization here that teaches softwares and gives free alternatives to the bigger-name softwares that don't work quite as well but so that people have an option."

AIAS and NOMA chapters were also recognized as important spaces for career preparation. Students spoke of receiving helpful mentorship opportunities and building relationships and their network to later find jobs or interesting projects. Given the positive benefits of these opportunities, there is potential to increase student engagement within professional associations and firms.

Finding Mentorship from Faculty, Especially Those with Practice Backgrounds, or Other Firm Colleagues Was Another Important Way to Improve Early Transitions into the Profession

Students, faculty, and practicing professionals all mentioned the importance of mentorship and valuing those that mentored them in some capacity to learn about and transition into the architecture profession. Student interview participants spoke of relying on faculty (and sometimes peers farther along in their program) as important for being an open resource outside of class to discuss questions related to work transitions, like how the licensure process works, or more complex questions about the applications of architecture in a changing world. They appreciated the individualized attention and support from faculty who would review application materials, guide them through competitions, and generally be a listening ear for their needs. Some students also spoke of mentorship matching programs they have benefited from, especially being paired with faculty who were or are practicing architects and who are willing to share their experiences and perspectives about the industry.

Faculty interview participants also spoke to their role in building relationships with students and willingness to fulfill mentorship roles. As a Black female faculty member in a B.Arch/M.Arch program elaborated:

> Remember that we're mentors and understanding that when we do stuff, we are mentors to the students. We're their educators. We're their teachers. We're here to impart knowledge on them, but we're also their mentors. We're teaching them how they should behave in the profession, what they should care about in the profession. So, for me, it's important to bring that deeper level of understanding that the students have the skills that they need to be a practicing architect, but also have an awareness that with those skills, they're doing something that's going to impact society and people.

Other faculty described the "aggressive mentoring" and advising they try to do with students to ensure they understand program paths and to provide encouragement and make them feel heard.

Early career practicing professionals also acknowledged the important role that often informal mentors have taken to help them adjust to the profession. These mentors provided helpful advice about navigating the profession, especially if they were from an underrepresented background, or the culture of the work. Practicing professionals also discussed how they appreciated more formal structures for mentorship through mentor programs or processes where new hires are matched with a mentor within the organization to help answer any questions while learning about the company and work. Practicing professionals also identified programming to help staff learn business skills and get "up to speed so they can actually produce and add billable hours" as a worthy way to mentor and smooth the transition into the workforce. An Asian female early career unlicensed practicing professional captured how mentorship from a colleague helped improve their skills and adapt to their role:

> In my second job and my first job, I was really lucky—I was really open to be mentored by someone who's probably junior to me in terms of education, not in terms of experience. And I was master's, but the guy who was teaching me was a bachelor's in architecture. But he was more into the practice. . . . He was able to guide me much, much more than I would have thought. So I would say first is, yes, there's more responsibility in terms of people who are in practice teaching. When they start teaching you, there's more responsibility on them. And if you are open enough, you will find the resources. But I would say there should be more programs and more government funded organizations or initiatives where people could be helped through this transition.

Innovations and Influences on Changing Models of Pedagogy and Practice

New Technologies and Tools Related to AI Are Beginning to Change What Is Taught in Architecture Education Programs and How Architecture Is Practiced

Participants Believed the Implications of AI for Architecture Are Important to Understand, but Did Not See AI as Massively Disrupting the Industry

A large majority of students, faculty, and practicing professionals discussed emerging models of practice as an important area influencing the study and practice of architecture (Tables 3.11–3.13). With regard to AI, only 43 percent of student survey respondents reported that AI was included in their program's curriculum. Interviewees' perceptions of the advent of AI varied, but generally fell into three areas: (1) minor concern for the prospects of AI, (2) major concern for prospects of AI, and (3) optimism for AI's impacts to the design process. Students, particularly, but also faculty and practicing professionals, did not express concern with AI taking over the role of humans in the design process. Most participants expressing minor concern believed that architecture would not be severely threatened due to the need to use human interpretation to communicate design issues and problems. As one student at a non-NAAB-accredited institution indicated,

> I think that the trends to AI taking the role of architects is more so like AI probably doing like the technical work of just like doing the drawings, but the architect like understanding the environment, having the ability to like drive social change through their designs, just like connecting with people on a level and then using understanding of people to design buildings, I really don't think AI will be able to replicate that.

Faculty interview participants also recognized the human interpretation and skill needed in the discipline, which AI will have difficulty replicating. A White female community college faculty member captured this sentiment: "There's a personal touch in architecture that no artificial intelligence is ever going to equate to."

Many practicing professionals, faculty, and student interview participants also highlighted the need for people to view AI as something that is a helpful companion tool more than something to replace architects. They suggested that AI is an impactful tool to reduce the more mundane work in the field, or even to help jump-start the creative process. Most of them did not see AI as something to be fearful of in relation to their own jobs. For example, a Latinx male midcareer practicing professional mentioned how AI could be immediately helpful in the drafting process, "Buildings that design themselves. . . . You give a few parameters and the design comes into happening."

Concerns about AI—generally brought up by faculty and practicing professionals in interviews—related to potentially limiting the development of critical thinking in students and foundational design skills, making them skeptical about its role in architecture education. A faculty member at a NAAB-accredited B.Arch/M.Arch program and public MSI summed this up by explaining, "Not everybody is seeing it in the same way. . . . There are other people . . . much more cynical and skeptical of it. . . . I'm a bit more in this camp. It's like you take the agency away, and students aren't that sophisticated . . . so if something looks very slick and rendered, they think it's good and you want to pick that apart and say, 'Garbage in, garbage out.'"

Practicing professionals at firms seemed more hopeful or open to the prospects of AI helping them test ideas and find efficiencies in their work. Those interviewed spoke of seeing AI as a tool to enhance creativity, especially in the design phase of projects. For example, an Asian female unlicensed practicing professional explained that "with AI, I would say a lot is changing. . . . AI can give you options and it can facilitate your thinking process but it cannot think for you. . . . You see AI more as a friend and not as an enemy . . . see it more like a tool." A Latinx male firm leader elaborated on experimenting with AI to enhance design

TABLE 3.11

Proportion of Students Reporting Emerging Models of Practice in Architecture Programs, Overall and by Dimensions of Identity and Experience

	All	Non-NAAB	NAAB	Private	Public	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Design in Metaverse	6%	8%	6%	10%	5%	5%	7%	4%	7%	6%	10%	9%	25%*	12%
Robotics	9%	0%	10%	9%	9%	7%	13%*	10%	9%	0%	20%	9%	6%	9%
AI	43%	46%	41%	45%	41%	39%	49%	43%	39%	50%	40%	35%	50%	38%
Space design	7%	8%	6%	6%	6%	5%	10%	5%	2%	19%	20%	14%*	6%	9%
Performance modeling	41%	25%	43%*	37%	43%	37%	50%**	44%	39%	31%	20%	43%	38%	44%
Digital twins	5%	0%	6%	8%	3%	5%	3%	3%	4%	6%	20%	5%	13%	0%
Integrate data in models	21%	21%	22%	28%	18%*	19%	26%	23%	26%	25%	20%	22%	6%**	29%
Advances in BIM[a]	33%	54%	31%**	48%	26%***	31%	38%	30%	35%	44%	20%	29%	50%	32%
Generative design	39%	50%	38%	41%	38%	38%	41%	43%	33%	44%	60%	45%	31%	53%
Observations	*296*	*24*	*263*	*91*	*185*	*203*	*92*	*185*	*46*	*16*	*10*	*58*	*16*	*34*

NOTE: Proportion of respondents reporting model is addressed in architecture program. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for students attending NAAB-accredited is statistically distinguishable from non-NAAB, private is distinguishable from public, the proportion for males is statistically distinguishable from the proportion for Female/Other, and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

[a]BIM = building information modeling.

TABLE 3.12

Proportion of Faculty Reporting Emerging Models of Practice in Architecture Programs, Overall and by Dimensions of Identity and Experience

	All	Non-NAAB	NAAB	Private	Public	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Design in Metaverse	11%	0%	12%	15%	10%	13%	9%	10%	7%	9%	0%	15%	11%	0%
Robotics	35%	0%	37%**	41%	35%	36%	34%	35%	35%	35%	0%	23%	33%	9%**
AI	49%	50%	50%	52%	50%	50%	47%	50%	48%	44%	75%	39%	33%	36%
Space design	40%	50%	41%	48%	37%**	41%	42%	41%	41%	48%	50%	46%	11%**	36%
Performance modeling	72%	20%	74%***	73%	73%	68%	75%	72%	72%	61%	75%	65%	78%	73%
Digital twins	15%	0%	16%	18%	14%	14%	15%	16%	14%	9%	75%	8%	0%	18%
Integrate data in models	35%	30%	36%	39%	34%	36%	36%	38%	21%**	35%	75%	27%	33%	46%
Advances in BIM	55%	80%	54%	54%	56%	52%	59%	59%	45%	39%*	75%	50%	78%	73%
Generative design	47%	30%	47%	51%	45%	48%	46%	47%	41%	44%	75%	39%	22%	46%
Observations	*449*	*10*	*400*	*142*	*256*	*149*	*241*	*291*	*29*	*23*	*<10*	*26*	*<10*	*11*

NOTE: Proportion of respondents reporting topic is addressed in architecture programs. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for male is statistically distinguishable from the proportion for Female/Other, each racial/ethnic group is distinguishable from the proportion for White, the proportion for attends a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attends a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE 3.13

Proportion of Practicing Professionals Reporting Emerging Models of Practice in Architecture Programs, Overall and by Dimensions of Identity and Experience

	All	Small Firm	Large Firm (50+)	Female/ Other	Male	White	Asian	Indigenous	Latinx	MENA	Multiracial
Design in Metaverse	4%	3%	6%***	4%	4%**	3%	3%	3%	4%	6%	4%
Robotics	3%	1%	5%***	3%	3%**	2%	4%*	3%	3%	2%	3%
AI	33%	25%	44%***	35%	35%	36%	34%	30%	31%**	36%	37%
Space design	28%	26%	30%**	25%	25%	28%	30%	28%	27%	33%	27%
Performance modeling	37%	29%	49%***	36%	36%	39%	41%	34%	33%***	34%	34%*
Digital twins	7%	4%	12%***	6%	6%*	7%	8%	8%	7%	6%	6%
Integrate data in models	25%	19%	34%***	25%	25%	28%	27%	26%	23%***	27%	28%
Advances in BIM	65%	59%	74%***	66%	66%	62%	70%***	61%	66%**	58%	65%
Generative design	18%	15%	24%***	16%	16%	17%	26%***	17%	17%	25%	18%
Observations	*1,972*	*1,145*	*825*	*982*	*821*	*881*	*76*	*283*	*632*	*64*	*212*

NOTE: Proportion of respondents reporting topic is addressed in architecture programs. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for male is statistically distinguishable from the proportion for Female/Other, each racial/ethnic group is distinguishable from the proportion for White, the proportion for attends a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attends a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

capabilities for their small firm: "I don't think that's going to reduce or cut employment for everyone. The thing that they say is that it will increase the productivity and I think we agree with that."

There Is Limited Curricular Focus on Emerging Technologies, in Particular AI, in Architecture Education

Most faculty and student survey respondents reported that their programs did not have a strong emphasis on using emerging technologies like virtual reality (VR) and AI. Practicing professionals were more likely to report that their firms emphasize these technologies. While the potential innovation and disruption of AI was widely acknowledged, only about a quarter of faculty survey respondents and 15 percent of student survey respondents said that using emerging technologies like VR and AI was a focus of their program's curriculum. Given the relatively recent emergence of AI, this makes sense. Education programs do seem to be starting to include AI in their curriculum—at least 43 percent of students surveyed and 49 percent of faculty survey respondents said that AI was included in their curriculum. Other emerging technologies being incorporated into curriculum included, according to our survey, were performance modeling (41 percent students, 72 percent faculty), generative design (39 percent students, 47 percent faculty), and BIM (33 percent students, 55 percent faculty).

Conversely, 33 percent of practicing professionals surveyed said they used AI. Those at larger firms were more likely to use AI (49 percent of firms with more than 500 employees and 47 percent of those with 100–499 employees). And, generally speaking, 39 percent of practicing professionals said their employer placed strong emphasis on use of emerging technologies, with the greatest share saying advances in BIM (65 percent) were adopted at their firms.

In preparing to transition into practice, nearly half of student survey respondents reported having some exposure to emerging technologies in their curriculum, including AI, performance modeling, generative design, and

BIM. But few student survey respondents reported getting substantial exposure ("high or essential focus in curriculum") even though about 40 percent of firms placed a "strong emphasis" on this technology, particularly at larger firms, highlighting the concern about obtaining relevant skills for practice that students identified above.

To adapt to the new innovations brought on by AI and other new technologies, multiple faculty members in interviews highlighted how their programs have attempted to weave new technologies into their curricula to ensure that students are prepared to engage with the technology in useful ways for their future practice. Student interview participants also suggested that exposure to the technology in school could help prepare them to use it or interact with it productively in the real world. When discussing how their institution was adapting to the prevalence of AI, a male faculty member in a B.Arch program at a southern public institution stated, "Well, with technology, we're, again, trying to integrate as much of these innovative technologies into our course as we can whether its robotics, augmented reality, virtual reality. Definitely digital fabrication . . . how do we effectively integrate it into our courses . . . to make the technology available? But then to figure out how do we effectively integrate it into our courses . . . to actually put it to good use pedagogically."

Some professors in interviews also mentioned examples of in-class exercises they have designed to help students look at AI critically for its benefits and limitations. A female professor elaborated in a M.Arch program at a Midwestern public institution explained that AI is "asking students to think critically about the tool and the subject at the same time. One of my colleagues has AI make images of buildings and then has the students try to make them into buildings. . . . What's the floor plan like? What's the conception like?"

Given that the technology is still in its early phases, many practicing professionals, students, and faculty alike in interviews implied that they are waiting to see what tangible uses AI will have in the field. Most have not begun to adapt in earnest but are keeping watch, given the sense of mystery around how AI will truly affect the profession.

Students and Faculty Suggest Design Studios Could Be a Place for Programs to Incorporate More Instruction Around Technical Skills and the Latest Trends

When asked about how the profession and, in particular, architecture education programs should respond to emerging trends, students suggested a variety of ideas to incorporate more instruction about these topics. Student survey respondents reported that building technical systems (89 percent), technical skills and documentation (87 percent), building performance models (85 percent), and material selection (85 percent) were their highest priorities for additional curricular emphasis, and design studios (74 percent) emerged as a preferred forum for incorporating applied skills.

In interviews, the most consistent recommendation offered by students centered on ensuring design studios created further opportunities for students to address emerging social issues, such as sustainable or accessible designs. An undergraduate student at a private non-MSI and non-NAAB-accredited institution said, "I think maybe focused studios could be an interesting thing where this semester you're choosing to look at AI design or you're choosing to look at climate design and maybe starting to focus studios around those emerging concepts, that could be really interesting."

Student interview participants also offered other curricular changes they believed would be useful to address emerging trends, including mandating courses related to emerging trends (rather than offer only as an elective), implementing projects that are oriented to real-world design and where students are required to think about using sustainable materials or designing with particular social issues in mind, offering workshops or professional development opportunities to learn more about specific topics, and focusing on the technical skills needed to address emerging topics.

Consistent with students, faculty interview participants also identified design studios as a valuable component of architectural education where they could respond to emerging topics. One male faculty member in

a NAAB-accredited B.Arch program said, "Many of our studio instructors have [climate change] as the core of their design studios, which is probably the best thing, the best approach." Other faculty discussed using studio projects to focus students' attention on the contextual needs of a particular community or to design with a particular environmental issue in mind. Students also discussed how faculty developed projects or offered extracurricular courses that fold in applications, such as using AI to generate and critique ideas, in order to teach about emerging trends.

While most student interview participants agreed that adding required courses would be beneficial to engage with emerging topics, faculty interviewees disagreed about whether such courses on emerging topics should be required or be elective courses. For instance, when asked about how the curriculum is evolving, an academic leader of a public NAAB-accredited institution shared, "We have at least two, maybe three faculty who offer electives focusing on issues of health in the built environment. I think we also have a couple of electives that deal with issues of equity and social justice." And while this academic leader felt electives provided an adequate opportunity for students to engage with emerging topics, a Black administrator at a private NAAB-accredited institution suggested electives are not enough to authentically address these topics:

> There's not enough diverse courses. The courses are not traditional courses. [Faculty] have to implement the courses. Say, for instance, they have a seminar that's called "Race and Gender in African American Women Issues" or "Women in Architecture"—those classes are taught by faculty that want to teach them as an add-on to the curriculum. And so that's what's going on, but it's not within the curriculum.

Faculty and Practicing Professionals Desired More Professional Learning Opportunities Focused on Technology, Soft Skills, and Business Development

In interviews, faculty and practicing professionals noted that professional learning topics of most interest to them focused on technology, soft skills (e.g., client communication, teamwork, handling conflict), and business development skills. Among the eight faculty and practicing professionals who shared about professional development, six discussed the need to learn about new technology, such as new design software, AI, and VR. In addition to these topics, two faculty members mentioned that they would appreciate more training about conducting research.

Some faculty and practicing professional interview participants also shared about learning opportunities that are focused on soft skills and business management skills. A firm leader offered her insight on professional development training sessions: "Sometimes they are very tactical focused on sort of our day-to-day delivery of work and practicing. And other times they are based on more soft skills when it comes to interaction with peers, coaching clients, difficult conversations, generational gaps. So, it kind of runs the gamut."

Faculty and Practicing Professionals Used Networking and Mentorship to Improve Their Skills; Practicing Professionals Also Sought Continuing Education Courses

While topics of interest for professional learning overlap among faculty and practicing professionals, avenues to gain new skills differ between each group. In our survey, faculty most commonly identified authoring publications and presenting in their knowledge area as their methods for improving skills and knowledge in topics of interest (84 percent compared with 38 percent of practicing professionals; Table 3.14). Practicing professionals, on the other hand, more so utilized continuing education courses to improve their skills. Sixty-seven percent of practicing professionals reported seeking these courses (compared with 58 percent of faculty). Faculty at non-NAAB-accredited institutions were less likely to report writing and presenting to improve skills (70 percent), as were faculty at private institutions (74 percent), compared with 89 percent for public institutions.

TABLE 3.14

Opportunities for Skill Development, Proportion of Faculty and Practicing Professional Survey Respondents

	Faculty	Practicing Professionals
Writing/Presenting	84%	38%***
Continuing ed. courses in arch.	58%	67%***
Continuing ed. courses in other field	36%	31%*
Professional credential	29%	53%***
Competitions	28%	15%***
Reading literature	66%	52%***
Networking	75%	60%***
Mentoring	74%	57%***
Other	12%	5%***
Observations	*452*	*2,002*

NOTE: Proportion of respondents who actively seek each opportunity by population reported. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for practicing professionals is statistically distinguishable from the proportion for faculty.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; ed. = education; arch. = architecture.

In the survey, both groups also identified networking and mentorship as the main ways they try to improve their professional skills. Three-quarters of faculty surveyed (75 percent) and almost two-thirds of practicing professionals (60 percent) noted that networking is important to improving their skills. Similar shares of faculty and practicing professionals also noted that seeking mentorship was a way to help improve their skills. Faculty at non-NAAB-accredited institutions were more likely to report that they use networking (80 percent) and mentorship (90 percent) to improve their skills than faculty at NAAB-accredited institutions. They are also more likely to earn a professional credential for this purpose (60 percent vs. 28 percent of NAAB faculty; see Tables B.16 and B.17).

Based on our interviews, while faculty and practicing professionals identified a variety of topics in professional development they have received, interview participants also noted that the opportunity for and availability of professional development and continuing education can vary. Discussing professional learning opportunities throughout their careers, a few practicing professionals highlighted differences in opportunities between small and large firms. A White male firm leader stated that "it tends to be larger firms that can afford to do [professional development programs] because they have the resources to do that. The industry is made up dominantly of firms that are ten people or less. So, predominantly, most of the education comes from mentoring inside the firm." Faculty and practicing professional interviewees who discussed their professional development also said that having further learning opportunities was dependent on having a mentor in the field or an individual in their firm who supported their development. Like students, faculty and practicing professionals desired stronger mentorship opportunities.

Practicing Professionals Sought Additional Support from Their Firms in Developing Key Technical and Professional Skills

As Table 3.15 shows, roughly one-third of practicing professionals survey respondents wished their firms provided more support for growth and success in building technical systems (33 percent), professional practice

TABLE 3.15

Proportion of Practicing Professionals Reporting Wanting More Firm Support for Skills Development, Overall and by Dimensions of Identity and Experience

	All	Small Firm	Large Firm (50+)	Unlicensed	Licensed	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Applied research	20%	19%	21%	20%	20%	20%	21%	19%	20%	21%	22%	20%	19%	19%
Arch. history	10%	11%	9%*	12%	8%***	8%	13%***	10%	11%	7%*	12%	11%	9%	10%
Art/Drawing	12%	12%	11%***	13%	10%**	12%	12%	12%	13%	9%**	11%	13%	19%	12%
Building performance models	29%	29%	29%	30%	27%	27%	31%*	27%	36%***	27%	26%	30%	27%	31%
Building technology systems	33%	35%	31%*	35%	31%**	32%	34%	29%	41%***	31%	30%	33%**	22%	29%
CAD software	18%	20%	16%***	18%	17%	14%	22%***	15%	22%***	18%	20%	18%*	19%	17%
Communication	23%	22%	25%	24%	23%	26%	21%**	24%	25%	17%***	25%	24%	33%	26%
Computational design	23%	21%	26%	24%	22%	23%	23%	21%	29%***	18%	22%	23%	14%	19%
Cultural contexts	15%	15%	16%	17%	13%**	14%	17%	12%	23%***	15%*	22%**	15%**	19%	15%
Design studios	17%	15%	20%*	18%	16%	20%	16%**	17%	17%	19%	21%	18%	17%	18%
Digital design	20%	20%	20%	22%	17%***	20%	19%	18%	22%**	24%**	21%	19%	23%	22%
Digital fabrication	15%	14%	17%	18%	11%***	15%	14%	13%	18%**	14%	13%	16%**	22%*	18%*
Sustainability	29%	29%	29%	31%	27%*	31%	28%	30%	34%*	25%*	34%	31%	30%	34%
Interdisciplinary studies	18%	17%	20%	20%	16%**	19%	17%	16%	20%*	21%*	16%	19%*	14%	19%
Technical skills and documentation	25%	26%	23%*	26%	23%*	24%	26%	22%	28%**	24%	33%*	26%**	19%	24%
Ethics	33%	34%	32%*	35%	30%**	31%	36%**	30%	38%***	31%	36%	37%***	13%***	35%
Study abroad	33%	33%	33%	36%	30%***	31%	36%**	30%	41%***	30%	36%	33%	31%	32%
Urban design	17%	16%	18%	18%	14%**	15%	19%**	14%	15%	16%	24%**	20%***	17%	20%**
Total	2,083	1210	871	1261	820	982	821	590	343	283	76	632	64	212

NOTE: Proportion of respondents reporting they want more support from firm in developing skill. Asterisks show whether the proportion for male is statistically distinguishable from Female/Other, each racial/ethnic group is distinguishable from White, small firm proportion is distinguishable from large, and licensed proportion is distinguishable from unlicensed. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; arch. = architecture.

and ethics (33 percent), building performance models (29 percent), and sustainability (29 percent). Only 10 percent wanted more support in architectural history and theory, and 12 percent wanted more support in art and drawing. Unlicensed professionals generally reported a desire for additional firm support at slightly greater rates than licensed professionals, particularly in building technical systems (35 percent unlicensed vs. 31 percent licensed), ethics (35 percent unlicensed vs. 30 percent licensed), digital design (22 percent unlicensed vs. 17 percent licensed), digital fabrication (18 percent unlicensed vs. 11 percent licensed), cultural contexts (17 percent unlicensed vs. 13 percent licensed), art and drawing (13 percent unlicensed vs. 10 percent licensed), and architectural history (12 percent unlicensed vs. 8 percent licensed).

In participant interviews, practicing professionals discussed the need for additional development in project and business management, especially if they did not learn these skills in their architectural education programs. A White male early career unlicensed professional said, "There's a lack of business training. I think there's a lack of communication training. And I think that the professional practice aspect really needs to be focused on."

In addition to project and business management skills, more than two-thirds of practicing professionals interviewed discussed needing additional development in soft skills, such as communication and collaboration. A female early career licensed practicing professional described the lack of training about communication, saying, "I think that communication skills are super important. And I think that it's something that you aren't really taught and that some people just have naturally like better communication skills."

Opportunities to grow and develop in the field were highly firm-dependent, based on firm size, leadership, culture, and values. Having had bad experiences in the past, a White male firm leader described the positive culture their firm created to promote learning and development in their organization:

> I think a lot of it has to do with a mentality, a mindset that firm leaders need to have. It's the same kind of mindset we love to see about incoming interns. Do they have a passion? Do they want to work? Do they want to learn? Do they want to learn new things? Do they want to finish tasks? Do they want to do more than just the work at hand? Do they want to volunteer or do they want to be engaged in the community? And then as a principal or lead a firm later, do you want to be an advocate or you just want to do what your clients ask you to do and do a great job of it? For us, we want to be advocates. And that's frankly why we started the firm because with the several firms that we had worked with over the years—those firms were not advocating for the kinds of things that we believed in.

Chapter Summary

- Students and practicing professionals perceived a gap between education and practice that can be addressed with a greater emphasis on technical skills, use of building technology systems, and documentation.
- Design studios and other curricular enhancements by faculty are viewed as important ways to adapt architecture education, make meaningful connections to practice, and engage with emerging topics.
- An internship is a critical component for students' education as it can ease the transition to the workforce by exposing students to a firm's organizational culture and helping students identify professional mentors.
- Students face inequities in securing a paid internship as a result of poor structural support from schools and the limited requirements set by firms.
- The licensure process triggers administrative and financial barriers for students, especially from non-NAAB-accredited programs and unlicensed practicing professionals juggling multiple obligations.

- The culture of the architecture profession is especially challenging for women of color, many of whom indicate a lack of belongingness in the field; membership associations can be helpful spaces to address this challenge.
- AI is perceived as a helpful tool in the profession, but practicing professionals and faculty recognize the limitations of this technology on student learning and development.

Social Change

American society is grappling with discussions and upheaval related to societal structures and their implications for historically marginalized communities and humanity's role in slowing and counteracting climate change. Throughout its history, the discipline of architecture has been charged with crafting a built environment that suits the needs of individuals and society, promotes well-being, and respects natural resources. The Boyer Report underscored the importance of enhancing architecture practice and education via an "enriched mission" and "service to the nation."[1]

Our study endeavors to investigate the perceptions of individuals entering, serving, and leading the field at present to ascertain the degree to which DEI and sustainability are values of individuals and the field on the whole. In this chapter, we discuss stakeholders' perceptions of social change and the extent to which social change topics should be a focus for the field of architecture by answering the following research questions:

- How are firms and schools of architecture meeting the challenges of climate action, human health, equity, and justice?
- How are firms and schools of architecture incorporating climate action, human health, equity, and justice in their work and policies?

We also summarize the barriers that students, faculty, and practicing professionals face in advancing social change in their work, as well as the skills that are necessary to address global challenges.

Participants Believed That the Field of Architecture Has a Role in Addressing Sustainability and Climate Change

Faculty, practicing professionals, and students all identified sustainability, human health, and climate change as the three top social change topics that the architecture industry has a role in addressing (Table 4.1).[2]

Student survey respondents considered sustainability the most important social topic for the architecture field to promote (87 percent); faculty (41 percent) and practicing professionals (54 percent) agreed. Student interview participants shared a desire for their programs to incorporate the topic of sustainability throughout the curriculum, including strategies to achieve net zero emissions and utilize renewable energy sources. Students were entering their programs with a strong sense of responsibility on the issue, with one student sharing, "I feel like architecture has to consider everything when it comes to, you know, climate change. I think architect has the capacity to do those things." While sustainability was a less important issue for faculty

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[1] Boyer and Mitgang, 1996, p. 26–28.

[2] Student survey respondents were asked the degree to which the field of architecture has a role in promoting social change topics; faculty and practicing professionals were asked which area of social change is most impacted by architecture. The topics were common on all three surveys: diversity, social equity, social justice, inclusion, human rights, climate change, sustainable design, human health and well-being, or other topics.

TABLE 4.1

Architecture's Role in Promoting Sustainability and Addressing Climate Change, Proportion of Survey Respondents by Population

	Practicing Professionals	Faculty
Diversity	27%	16%***
Social equity	29%	28%
Social justice	12%	26%***
Inclusion	21%	12%***
Human rights	13%	9%**
Climate change	55%	74%***
Sustainability	54%	41%***
Health	64%	58%**
Observations	*1893*	*434*

NOTE: Proportion of respondents identifying topic as among the three most important by population reported. Asterisks show whether the proportion for faculty is statistically distinguishable from the proportion for practicing professionals. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

interview participants compared with students, they acknowledged that sustainable material use is a popular topic of interest for students, as well as one that is generally important for the field to consider given how much architecture contributes to the issue when practiced unsustainably.

Climate change was also regarded by students as a social change topic in which architecture has an important role (79 percent). Though selected by a smaller proportion of respondents in each group, both faculty (74 percent) and practicing professional survey respondents (55 percent) reported that climate change was the most important topic for the field of architecture to address. When we inquired about climate change in interviews, it was a pivotal topic for nearly all faculty interview participants. Faculty expressed that architects and the field of architecture have a direct hand in contributing to climate change, causing many faculty to believe that they had a role in in addressing it as well. Faculty interview participants noted a significant interest from students who want to become architects who remedy or mitigate issues related to climate change. While practicing professional interview participants often discussed climate change within the context of protecting the environment, partially because of role buildings play in consuming mass amounts of energy, they also expressed the challenges to addressing climate change such as costs and logistics. As one early career licensed professional stated, "I think it's [climate change] something that schools touch on and firms in the U.S. are starting to pick up. . . . Firms are going about business as usual without any real desire to make the clients do sustainable stuff."

Human health and well-being were considered the second most important social change topic for students (82 percent), and the most important social change topic for faculty (58 percent) and practicing professionals (64 percent) who completed the survey. However, few interviewees discussed this topic at length, especially compared with those that emphasized other issues of climate change, housing affordability, and accessibility.

The Next Generation of Architectural Professionals Believed That the Field of Architecture Has a Role in Achieving Social Justice and Equity

Compared to social change topics related to sustainability, climate change, and human health and well-being, a smaller but substantial share of survey respondents believed that architecture has a role in addressing

equity. In this study, we define equity to include matters related to advancing human rights, diversity, and social justice. Fifty-one percent of student survey respondents reported that the architecture industry has an important role in addressing human rights; slightly smaller shares of students reported the importance of the field in addressing diversity (43 percent) and social justice (43 percent). Female student survey respondents were more likely than male students to identify diversity (47 percent vs. 32 percent) and inclusion (60 percent vs. 44 percent) as important areas for architecture to address.

Students in interviews discussed these three distinct but interrelated concepts in two major ways. First, they brought up the importance of building structures that were universally accessible and reflected the criteria of the Americans with Disabilities Act (ADA). Second, students, especially graduate students, also emphasized the need for the field of architecture to center nondominant perspectives and frameworks. Take, for instance, this comment by a M.Arch student enrolled in a NAAB-accredited program at an MSI: "All the theory really has made me a bit more committed to researching methods from Indigenous typologies and thinking about how we approach code as—well, ADA code."

Faculty survey respondents identified social equity as an important issue for architecture to address (28 percent of respondents); social justice (26 percent) and diversity (16 percent) were rated as less important, on average. A similar proportion of practicing professionals (29 percent) identified social equity as an important issue, though their ratings of diversity (27 percent) and social justice (12 percent) differed significantly from those of faculty. Looking at both faculty and practicing professionals' responses, there were significant differences in the ratings of female and male respondents: female respondents were significantly more likely to rate social equity (34 percent vs. 24 percent) and social justice (17 percent vs. 11 percent) as important for architecture to address.

Faculty interview participants believed that it was important for them to discuss equity in class to help students understand broader social issues and their place in the world as future architects. Faculty also saw equity as a framework that helped them anchor their efforts to improve students' sense of belongingness in the classroom, especially among students of color, and having discussions that encouraged students to center community needs in architecture.

For many faculty and practicing professionals in interviews, a focus on equity meant remedying the lack of diversity that they see in the field. Several faculty shared that diversifying the field and learning more about architects of color is essential, with some alluding to curriculum adjustments they made in order to incorporate more diverse perspectives. These same faculty also raised concerns that not enough is being done to provide courses with these diverse perspectives, which may lead students to leave the field. Practicing professionals highlighted the need for the field to diversify and embrace underrepresented voices at all levels in architecture because it has long been considered a field dominated by White men. Several practicing professionals elaborated on the exclusive and inaccessible nature of architecture, with a White female licensed practicing professional noting, "It's still not very diverse, gender diverse or racially diverse. . . . Entry into the field is not the most like friendly process."

Affordable housing was another key issue that predominantly practicing professionals and students raised as important for the architecture field and profession to address in interviews. About half of the practicing professional interview participants referred to the housing crisis and affordable housing during their interviews. Many practicing professionals felt like they should have some influence in combating this issue, even though they felt they struggled with being able to tackle it in their current roles. One White male unlicensed practicing professional said, "We're right in the middle of this housing crisis where we have a lot of people that want to buy homes. . . . These developers that are buying up all the houses . . . and turning them into rentals. . . . I am playing a role in this system that I've really come to loathe. . . . We should not ignore the role we're playing." Students also expressed similar conflicts and the desire to address the lack of affordable housing.

There Were Inconsistent Perceptions of How Architecture Curricula Address Social Change Topics

Most surveyed faculty perceived diversity, equity, climate change, and sustainability-related issues as important topics in the curriculum. However, fewer student survey respondents said that these topics were a central focus of their curriculum.[3] For instance, 79 percent of faculty said diversity was an important topic in the curriculum while only 42 percent of students reported that diversity was a central focus of the curriculum (Tables 4.2 and 4.3). Likewise, 78 percent of faculty reported that social equity was an important topic in the curriculum compared with 47 percent of students reporting it as a central focus of the curriculum. Eighty-one percent of faculty said inclusion was an important topic in the curriculum compared with 53 percent of students saying it was a central focus of the curriculum.

TABLE 4.2

Level of Focus on Social Change Topics in the Architecture Curriculum, Proportion of Faculty Respondents by Dimensions of Identity and Experience

	All	Female/ Other Multiracial	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Diversity	79%	82%	80%	83%	69%	78%	100%	77%	78%	82%
Social equity	78%	81%	78%	82%	59%**	65%	100%	69%	89%	73%
Inclusion	81%	85%	81%	86%	62%**	78%	100%	73%	78%	82%
Social justice	75%	80%	73%	78%	62%	74%	100%	73%	78%	82%
Human rights	64%	67%	62%	65%	45%**	57%	100%	69%	67%	73%
Access to resources	69%	72%	68%	70%	62%	61%	100%	73%	78%	82%
Community	74%	80%	73%	77%	62%	78%	100%	73%	89%	91%
Biodiversity	57%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Passive design	65%	60%	58%	58%	52%	57%	100%	54%	67%	64%
Resource conservation	60%	68%	63%	64%	62%	61%	75%	77%	89%*	82%
Reductionism	26%	62%	60%	61%	45%*	57%	75%	54%	63%	55%
Energy-efficient systems	72%	32%	22%**	25%	26%	30%	25%	32%	11%	40%
Eco-friendly materials	68%	75%	70%	72%	76%	70%	75%	65%	89%	82%
Material impact and waste	61%	71%	65%	68%	55%	74%	75%	62%	100%	82%
Occupant health	63%	66%	57%*	61%	55%	65%	50%	42%*	78%	55%
Community quality of life	70%	66%	64%	65%	62%	65%	75%	62%	78%	82%
Adaptability	69%	76%	67%*	72%	59%	57%	75%	65%	78%	91%*
Sustainability	69%	76%	66%**	70%	76%	61%	75%	69%	89%	91%**
Observations	*437*	*148*	*240*	*289*	*29*	*23*	*<10*	*26*	*<10*	*11*

NOTE: Proportion of respondents identifying topic as moderately or extremely important focus in architecture program. Asterisks show whether the proportion for faculty is statistically distinguishable from the proportion for practicing professionals. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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[3]   The faculty survey questions asked about the level of focus on particular topics in their architecture program and their teaching. The student survey question asked about the level of focus on a similar list of topics in their architecture program.

TABLE 4.3

Level of Focus on Social Change Topics in the Architecture Curriculum, Proportion of Student Survey Respondents by Dimensions of Identity and Experience

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial	Non- NAAB	NAAB	Private	Public
Diversity	42%	39%	50%*	41%	54%*	50%	50%	44%	33%	47%	38%	42%	43%	40%
Social equity	47%	43%	57%**	44%	59%*	56%	60%	46%	40%	41%	57%	46%	44%	46%
Inclusion	53%	54%	52%	54%	59%	38%	60%	54%	47%	53%	48%	54%	54%	52%
Social justice	39%	37%	44%	37%	37%	38%	60%	46%	47%	35%	43%	39%	39%	37%
Human rights	40%	39%	43%	37%	41%	44%	70%*	49%*	47%	41%	52%	39%	42%	37%
Access to resources	46%	43%	52%	42%	48%	56%	50%	51%	40%	41%	52%	45%	47%	43%
Community	55%	55%	56%	55%	57%	62%	40%	60%	47%	62%	57%	55%	57%	52%
Biodiversity	33%	27%	47%***	33%	24%	25%	30%	39%	33%	26%	48%	32%	34%	31%
Passive design	42%	40%	48%	42%	39%	50%	30%	47%	47%	47%	48%	42%	47%	38%
Resource conservation	33%	29%	41%*	33%	26%	38%	30%	44%	20%	32%	33%	33%	31%	32%
Reductionism	15%	12%	20%*	13%	11%	12%	22%	23%*	13%	12%	14%	15%	16%	13%
Energy-efficient systems	47%	45%	51%	48%	50%	62%	30%	49%	40%	59%	52%	46%	49%	45%
Eco-friendly materials	44%	40%	53%**	44%	37%	50%	50%	44%	40%	38%	62%	42%*	46%	42%
Material impact and waste	35%	33%	39%	34%	26%	31%	60%	39%	27%	24%	52%	32%*	39%	31%
Occupant health	54%	53%	57%	56%	54%	44%	60%	54%	53%	59%	62%	53%	59%	50%
Community quality of life	57%	60%	51%	58%	63%	50%	60%	54%	47%	62%	67%	56%	68%	50%**
Adaptability	51%	48%	56%	51%	54%	50%	70%	47%	47%	50%	62%	49%	52%	48%
Sustainability	60%	55%	70%**	60%	52%	88%**	80%	61%	53%	68%	67%	58%	63%	55%
Observations	*292*	*201*	*90*	*185*	*46*	*16*	*10*	*57*	*15*	*34*	*21*	*262*	*90*	*182*

NOTE: Proportion of respondents reporting high or central focus on topic in the curriculum. Asterisks show whether the proportion for males is statistically distinguishable from females, and each racial/ethnic group is distinguishable from White, the proportion for attends a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attends a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

With regard to climate change and conservation, we asked both students and faculty about the level of focus of the curriculum on related topics, including biodiversity, passive design, resource conservation, reductionism, energy-efficient systems, eco-friendly materials, material impact and waste, and sustainability. On average across these categories, roughly 39 percent of student survey respondents reported that climate change and conservation-related topics were a central or high focus of their architecture curriculum, ranging from sustainability (60 percent), energy-efficient systems (47 percent), and eco-friendly materials (44 percent) on the high end to reductionism (15 percent) and resource conservation (33 percent) on the low end. Students across demographic groups and dimensions of background generally agreed on the relative focus of their curricula on these topics, with the exception of some differences between female and male students with regard to the focus on sustainability (55 percent female students vs. 70 percent male students), biodiversity (27 percent female students vs. 47 percent male students), resource conservation (29 percent female students vs. 41 percent male students), reductionism (12 percent female students vs. 20 percent male students), and eco-friendly materials (40 percent female students vs. 53 percent male students). Across all these categories, female students were less likely to report these topics as a high or central focus of the curriculum than their male peers.

Faculty were overall more likely to report that climate change and conservation topics were a central or high focus of the curriculum, outpacing students by roughly 20 percentage points. For instance, 60 percent of faculty said resource conservation was a high or central focus in the curriculum compared with 33 percent of students saying this topic was a high or central focus. Similarly, 72 percent of faculty said energy-efficient systems was an important topic in the curriculum compared with 47 percent of students saying this was a central focus.

When asked particularly about the level of focus on climate change (66 percent high or central focus) and sustainability (68 percent high or central focus) topics in their own teaching, faculty reported roughly equal levels of focus as they did for the curriculum overall.[4] Student survey respondents were slightly more likely to report that health and well-being topics were a central or high focus in the curriculum than were climate change and conservation topics, on average. We asked particularly about occupant health (54 percent) and community quality of life (57 percent). When we compared responses by student background, we found that students generally agreed about the place of health and well-being in the curriculum. The only significant difference was that student survey respondents at private institutions (68 percent) were much more likely than students at public institutions (50 percent) to report that community quality of life was a central or high focus in the curriculum.

As Table 4.4 shows, faculty survey respondents were substantially more likely to report that occupant health (86 percent) and community quality of life (84 percent) were a central or high focus of their program curriculum than were students. Faculty were less likely to report that health (72 percent) was a high or central focus of their own teaching than that it was a focus of the overall program.

Observed gaps between faculty's perception of important topics in the curriculum and students' perception of the degree to which the same topics were central in their curriculum could reflect a range of mechanisms. First, faculty are more familiar with the curriculum, course offerings, and intended learning goals and thus may be more aware of efforts to incorporate these topics into the curriculum. In contrast, students often have a more partial view of the curriculum and may not be fully aware of how their faculty will address those topics. Additionally, faculty may be encountering barriers that make it difficult for them to incorporate these topics effectively for students to experience.

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[4]   Please note that the answer choices were distinct for the curriculum question and the teaching focus question. In the question about the level of focus in the curriculum, survey respondents were asked about biodiversity, passive design, resource conservation, reductionism, energy-efficient systems, eco-friendly materials, material impact and waste, and sustainability. In the question about the level of focus in their own teaching, the categories were collapsed into climate change and sustainability.

TABLE 4.4

Level of Focus on Social Change Topics in Faculty's Own Instruction, Proportion of Faculty Respondents by Dimensions of Identity and Experience

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Diversity	57%	69%	51%***	55%	62%	62%	100%	81%***	56%	73%
Social equity	66%	72%	63%*	64%	66%	66%	100%	92%***	67%	91%**
Social justice	58%	66%	55%**	57%	55%	55%	100%	88%***	56%	73%
Inclusion	63%	71%	60%**	62%	69%	69%	100%	81%**	56%	64%
Human rights	50%	53%	46%	47%	34%	34%	100%	77%***	44%	55%
Climate change	66%	67%	66%	67%	62%	62%	100%	77%	78%	91%**
Sustainability	68%	70%	69%	69%	59%	59%	75%	81%	89%	91%**
Health	72%	74%	71%	71%	72%	72%	75%	92%***	89%	91%*
Observations	*389*	*149*	*240*	*287*	*29*	*23*	*<10*	*26*	*<10*	*11*

NOTE: Proportion of respondents identifying topic as moderately or extremely important focus in their own teaching. Asterisks show whether the proportion for faculty is statistically distinguishable from the proportion for practicing professionals. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

In addition to asking about the prevalence of social change topics in the curriculum and teaching, we asked faculty about potential impediments to addressing these topics in architecture education. Faculty survey respondents identified issue complexity (68 percent), strategy formulation (40 percent), and time (35 percent) as the top barriers to incorporating social justice, climate change, and health topics into the curriculum (Table 4.5). For social justice–related topics, faculty identified issue complexity (61 percent), problem definition (44 percent), and faculty interest (33 percent) as key barriers to incorporating these topics into the curriculum. Faculty of color were more likely to cite lack of faculty interest and leadership support as barriers to integrating social justice into the curriculum. Seventy-four percent of Black faculty said faculty interest was a barrier compared with 33 percent of all faculty. (33 percent and 31 percent of Asian and Latinx faculty said the same, on par with average.) Thirty-five percent of Black faculty, 50 percent of Latinx faculty, and 31 percent of Asian faculty said lack of leadership support was a barrier, compared with 26 percent overall.

With regard to climate change–related topics, faculty identified issue complexity as the top barrier to integrating climate change in the curriculum (68 percent). Faculty survey respondents were less likely to cite lack of faculty interest (26 percent for climate vs. 33 percent social justice) or leadership support (17 percent vs. 26 percent) as a barrier for integrating climate change into the curriculum than social justice topics.

When asked about impediments to integrating health-related topics into the curriculum, faculty survey respondents also identified issue complexity (54 percent), followed by problem definition (50 percent) and faculty interest (35 percent). Faculty were less likely to cite lack of leadership support as a barrier to integrating health topics in the curriculum than for social justice (17 percent vs. 26 percent for social justice). Faculty at non-NAAB institutions were much more likely to report time constraints as an impediment to the integration of health topics into the curriculum than were their faculty peers at NAAB-accredited institutions (69 percent for non-NAAB faculty vs. 31 percent for NAAB faculty). Private institution faculty respondents (27 percent) were more likely to report financial resources as an impediment to integrating health topics than were public institution faculty (19 percent).

We were able to explore curricular focus in greater depth in our interviews. Faculty interview participants discussed trying to tackle these larger social issues by tailoring their design studio classes to address real-world problems affecting society. Faculty encouraged students to learn from community members and

TABLE 4.5

Impediments to Teaching Social Change Topics in the Architecture Curriculum, Proportion of Faculty Survey Respondents

	Social Justice	Climate Change	Health
Leadership support	26%	17%	17%
Faculty interest	33%	26%	35%
Student interest	18%	12%	23%
Financial resources	21%	29%	22%
Time	26%	35%	31%
Issue complexity	61%	68%	54%
Problem definition	44%	36%	50%
Strategy formulation	31%	40%	34%
Other	2%	1%	0%
Observations	*433*	*433*	*432*

NOTE: Proportion of respondents reporting factor one of the top three biggest barriers to integrating social change topics into the curriculum.

how they utilize space and apply what they've learned to the most pressing issues (e.g., affordable housing) for those community members. One faculty member's comment about "working with people, real clients with real problems" exemplified how many faculty tried to incorporate topics of social justice, climate change, and health. One student attending a non-NAAB-accredited public Midwestern institution described how faculty managed to incorporate these topics:

> At the beginning of every semester, we are presented with four professors and each professor gives a presentation on what they are going to be doing for that semester. . . . One of the studios would talk about creating a mass of low-income housing [and] one would talk about locally finding materials and only building a structure off of stuff that was sourced within 100 feet of the build site. . . . It's a design problem that is being presented in a way that the individual student can . . . have the opportunity to choose how they want to go about their experience. Not every question needs to be answered by every student, but every student answers a question.

While many faculty cited lack of leadership support and faculty interest as a barrier to incorporating these topics into their curriculum, these barriers were more likely to be mentioned by faculty of color. In U.S. postsecondary education, faculty of color—especially among elite professional fields—are broadly underrepresented and underserved by their institutions and programs.[5] Faculty of color in their departments are often perceived as the faculty member who will manage and deal with all matters related to DEI, an expectation that places undue and unequal burden on the faculty member and reduces them to their identity.[6] Moreover,

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[5] Marybeth Gasman, *Doing the Right Thing: How Colleges and Universities Can Undo Systemic Racism in Faculty Hiring*, Princeton University Press, 2022.

[6] KerryAnn O'Meara, Alexandra Kuvaeva, and Gudrun Nyunt, "Constrained Choices: A View of Campus Service Inequality from Annual Faculty Reports," *Journal of Higher Education*, Vol. 88, No. 5, 2017.

they are expected to meet these assumed obligations with little resources to administer their support.[7] Given recent legislation across multiple states to eliminate all activities related to DEI, it is likely that the barriers they face in incorporating these topics into their curriculum will grow.[8]

Practicing professional survey respondents identified similar barriers to integrating social change into their practice of architecture (Table 4.6). With regard to social justice, practicing professionals cited lack of leadership support (50 percent), issue complexity (57 percent), and financial resources (46 percent) as the biggest barriers to incorporating social justice in their work. Black practicing professionals (61 percent) and Asian practicing professionals (56 percent) were more likely to cite leadership support as a barrier to integrating social justice into architectural practice than professionals on average (50 percent overall). Practicing professionals cited financial resources (67 percent) and issue complexity (50 percent) as the largest barriers to integrating climate change and sustainability considerations in their work. With regard to integrating health and well-being considerations, financial resources (56 percent) and issue complexity (44 percent) were again the largest impediments cited by practicing professionals.

The competing priorities of a firm can make it challenging for practicing professionals to find the time and necessary resources to dedicate their work to social change issues. These resources can often include funds to support their time on nonbillable projects or to pursue professional development. A few practicing professional interview participants also discussed feeling limited to address social change issues due to client

TABLE 4.6

Impediments to Integrating Social Change Topics into Architecture Practice, Proportion of Practicing Professional Survey Respondents

	Social Justice	Climate Change	Health
Leadership support	50%	35%	35%
Faculty interest	12%	7%	8%
Student interest	6%	3%	4%
Financial resources	46%	67%	56%
Time	29%	34%	34%
Issue complexity	47%	50%	44%
Problem definition	36%	26%	41%
Strategy formulation	31%	38%	40%
Client interest	2%	5%	2%
Other	2%	1%	1%
Observations	*1890*	*1882*	*1879*

NOTE: Proportion of respondents reporting factor one of the top three biggest barriers to integrating social change topics into the curriculum.

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[7] Carmen R. Domingo, Nancy Counts Gerber, Diane Harris, Laura Mamo, Sally G. Pasion, R. David Rebanal, and Sue V. Rosser, "More Service or More Advancement: Institutional Barriers to Academic Success for Women and Women of Color Faculty at a Large Public Comprehensive Minority-Serving State University," *Journal of Diversity in Higher Education*, Vol. 15, No. 3, 2022.

[8] Stephen Kotok and Katherine Reed, "The Impact of State Legislation on Diversity, Equity, and Inclusion Efforts in Education," *Educational Policy Analysis Archives*, Vol. 31, No. 12, 2023.

demands and preferences. As one male early career unlicensed practitioner explained, "A lot of the altruistic goals that I had and idealistic goals that I had have gotten a lot duller. Because what you realize when you start working is you can only do so much, but really, it's the client who's driving this bus."

For social justice specifically, practicing professional interviewees—especially Black and Asian practicing professionals—identified lack of leadership support as a barrier to integrating social justice in practice. Social justice can be difficult to discuss, explore, and implement in the day-to-day workings of an architectural firm. Many firms are in the business to make a profit and are unlikely to advance values that would threaten their financial goals.

Faculty, Practicing Professionals, and Students Had Different Perspectives on What Skills Are Necessary to Address Global Challenges

These differences in perspectives are understandable given that students, faculty, and practicing professionals will have varied understanding of potential global challenges and what skills may be needed. Most student interview participants believed they needed technical skills and clear experience designing practical, feasible projects to address major global challenges, including climate change and human health. Some practicing professional interview participants listed knowledge of building processes, design software, and project management as important skills to have, but both faculty and practicing professionals in interviews, unlike students, largely emphasized the importance of soft skills instead as key to addressing global challenges. Soft skills included effective listening, critical thinking, clear communication to diverse sets of constituents, and effective collaboration. According to one early career professional, "Developing those relationships [with clients and contractors] requires a huge skill and understanding how to speak, how to listen, and respond without creating a volatile experience or adding to something that is already volatile." And, as a White male unlicensed early career professional explained, skills like effective communication matter for addressing global challenges, through helping clients make appropriate and ethical decisions:

> People skills. That's one thing they don't teach in school. And that goes to convincing a client to do something that is aesthetically right. It goes into convincing your client to do something that's ethically right. And it goes into convincing your client to do something that's environmentally right. Knowing how to interact with people, knowing how to have hard conversations, knowing how to move the needle of a project in any one of those aspects or just getting the thing done—it all really involves communication skills and how you interact with people and how you can get on their level and get something done.

There Is Limited Evidence That Firms or Schools of Architecture Are Incorporating New Policies to Address Emerging Social and Global Challenges

Of the few faculty and professional interview participants who discussed work or policies to address social challenges facing architecture, most indicated there were some emerging discussions of what their staffing needs are, but concrete strategic planning has yet to take place. A faculty member reflected that their program's limitations were related to hiring practices being focused on the technological and scientific applications related to architecture:

> Well, we still have this divide between designers and technology, right? And so, I think people in hiring positions don't understand that this needs to be a technical position, and people don't want too many technical positions. But it's a science, right? . . . Like you have to have some sort of expertise in that. And we just hired like nine faculty members and not one of them has this expertise.

Another faculty member reiterated the difficulty in finding qualified individuals to fill the gaps in their program—in this case, running a maker space/lab with the technology they have—including someone adept at using the tools and software for energy modeling and energy analysis. This has implications for training the current and future workforce in architecture. Several firm leaders affirmed the importance of advancing software skills to meet the new demands for digital information for staff at all levels. For example, a White male firm leader stated:

> Now as we move into this greater need for efficient and accurate digital information, not all firm leaders understand what that means or what that looks like, or understand how to create it, or what staff needs they have in order to create it. So younger graduate architects are coming into firms with skillsets that they're developing in college that are based upon a new set of digital tools. Like we still don't necessarily understand how to use those tools to put a building together. Senior architects who understand how to put a building together need to be able to understand the digital tools so they can communicate and actually build effectively with the people who have the skillsets to create the necessary information. . . . So it's not only just young architects coming into firms that need new skillsets, it's actually old architects who also need these skillsets.

One White female firm leader candidly stated that while they desired to do so, they have not changed their hiring approaches or strategy to address major social issues. Discussions, however, were happening in "big thinking sessions about who might be or what is the kind of role or what are the kinds of skill sets that we might need to help continue to differentiate our firm from others." This leader explained the particular need to address how "not to lose market share," explaining that there was now a "crowding of our services" in which real estate firms, furniture dealers, or other operations are offering services similar to typical architecture and design companies:

> I think some of the things we've talked about in terms of how that translates to hiring is, well, do we need to encroach on some of those fields? Like do we need a real estate professional? Do we need just nontraditional design professionals just so that we can make sure we're staying consistent in all the different arenas of where we see people trying to take market share from what we do?

Firms and Schools of Architecture Are Seen as Committed to Advancing Racial and Gender Diversity, but Barriers Persist

About half of surveyed faculty and 40 percent of surveyed practicing professionals saw their organizations as committed to diversity to a great extent (Table 4.7), although females, and women of color specifically, reported less commitment to diversity. Fifty-two percent of faculty perceived that their institution is committed to training a diverse pool of emerging practicing professionals to a great extent, although 7 percent of faculty reported that their institution has no commitment to training a diverse pool of emerging practicing professionals. Black (48 percent) and Asian (36 percent) faculty survey respondents were less likely to perceive a great extent of commitment to this goal, while Latinx faculty were more likely (74 percent). Female faculty survey respondents were less likely (49 percent) than males (57 percent) to perceive a high level of commitment to this goal. When considering their firm's commitment to training diverse professionals, 42 percent of practicing professionals said their firm has a high level of commitment to training diverse professionals, and 16 percent reported that their firm has no commitment. As with faculty, female professional survey respondents were less likely (39 percent) than males (44 percent) to perceive a high level of commitment to this goal. Among practicing professionals, Black women (39 percent), Asian women (38 percent), and Latinx women (48 percent) all perceived less commitment to diversity at their firm than males within their racial category

TABLE 4.7

Perceptions of Commitment of Architecture Organizations to Social Change, Proportion of Survey Respondents by Population

	Practicing Professionals	Faculty
Diversity	40%	53%***
Social equity	33%	54%***
Social justice	27%	50%***
Inclusion	39%	54%***
Human rights	30%	37%**
Climate change	32%	55%***
Sustainable design	39%	62%***
Health	49%	45%
Observations	*1,910*	*445*

NOTE: Proportion of respondents reporting a great extent of engagement by institution or firm in addressing the topic. Asterisks show whether the proportion for faculty is statistically distinguishable from the proportion for practicing professionals. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

and practicing professionals overall, regardless of race and ethnicity. However, White male practicing professionals reported the lowest commitment to diversity (31 percent) at their firms.

Relatedly, 67 percent of faculty and 42 percent of practicing professionals reported that their organization has an equitable hiring policy. Faculty at non-NAAB-accredited institutions reported that their institution had an equitable hiring policy at a higher rate (80 percent vs. 67 percent of NAAB-accredited); we also observed differences between reports of equitable hiring policies among faculty at public institutions (70 percent vs. 62 percent private institution faculty). Among practicing professional survey respondents, those at large firms (50+ employees) were more likely to report an equitable hiring policy (55 percent vs. 34 percent of small firms [less than 50 employees]).

Survey respondents identified lack of leadership support and financial resources as barriers to equitable hiring (Tables 4.8 and 4.9). Faculty saw issue complexity (22 percent), lack of leadership and faculty support (17 percent), and lack of financial resources (17 percent) as the biggest barriers to equitable hiring. Women faculty (21 percent vs. 14 percent of male faculty) and respondents of color were more likely to identify lack of leadership and faculty support as a barrier. Twenty-five percent of Asian, 28 percent of Black, 26 percent of Latinx, and 14 percent of White faculty survey respondents reported lack of leadership support as a barrier to equitable hiring. Practicing professionals also identified lack of leadership support (29 percent) and financial resources (17 percent) as the biggest barriers to equitable hiring. Black females (40 percent), Black males (41 percent), and MENA females (46 percent) were more likely than average to see lack of leadership support as a barrier to equitable hiring. In contrast, 23 percent of White females and 19 percent of White males saw lack of leadership support as a barrier.[9]

Overall, survey and interview responses demonstrated that architecture students, faculty, and practicing professionals have a strong sense of responsibility to advance social change. This is consistent with mission statements and guiding principles of colleges, firms, and associations whether related to climate change,

[9] For research on how bias in the profession affects the workplace, including hiring practices, see Joan C. Williams, Rachel M. Korn, and Rachel Maas, *The Elephant in the (Well-Designed) Room*, AIA, 2021.

TABLE 4.8

Barriers to Equitable Hiring, Proportion of Faculty Survey Respondents by Dimensions of Identity and Experience

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multi	Public	Private	Non- NAAB	NAAB
Leadership/Faculty support	17%	22%	13%**	14%	24%	39%**	50%	19%	0%	0%	15%	20%	30%	16%
Interest	13%	10%	15%	13%	10%	13%	0%	19%	0%	9%	11%	17%*	10%	14%
Financial resources	17%	16%	18%	17%	21%	9%	0%	27%	22%	27%	17%	15%	0%	17%
Time	2%	1%	3%	2%	0%	0%	0%	4%	0%	0%	1%	1%	0%	1%
Issue complexity	22%	21%	24%	23%	24%	17%	25%	12%*	56%	27%	27%	18%*	30%	23%
Strategy formulation	9%	7%	11%	9%	17%	4%	0%	8%	11%	9%	7%	13%**	10%	9%
Lack of qualified candidates*	12%	14%	10%	13%	3%**	4%*	0%	4%**	0%	0%	14%	11%	10%	13%
Local politics*	3%	3%	2%	3%	0%	0%	25%	0%	0%	0%	5%	0%**	0%	3%
Other	4%	4%	3%	3%	0%	9%	0%	0%	11%	0%	4%	2%	10%	3%
None*	2%	2%	1%	1%	0%	4%	0%	8%	0%	27%*	1%	2%	0%	2%
Observations	428	148	237	287	29	23	<10	26	<10	11	244	137	10	383

NOTE: Proportion of respondents selecting each factor as the single biggest barrier to equitable hiring. Asterisks show whether the proportion for male is statistically distinguishable from the proportion for Female/Other, each racial/ethnic group is distinguishable from the proportion for White, the proportion for attends a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attends a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Asterisk next to a category denotes that it was not included as a response on the original survey and was given as a write-in response by at least 1 percent of respondents.

TABLE 4.9

Barriers to Equitable Hiring, Proportion of Practicing Professional Survey Respondents by Dimensions of Identity and Experience

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multi	Unlicensed	Licensed	Small Firm	Large Firm
Leadership/Faculty support	29%	30%	28%	23%	28%**	39%***	23%	29%***	36%**	26%	31%	26%**	26%	33%***
Interest	21%	22%	21%	26%	17%***	26%	17%*	21%***	9%***	23%	20%	24%**	22%	21%
Financial resources	17%	18%	16%	15%	22%***	9%***	23%	19%***	27%**	16%	20%	12%***	18%	15%**
Time	4%	3%	5%**	4%	4%	3%	5%	4%	2%*	3%	4%	4%	5%	3%**
Issue complexity	13%	12%	15%	16%	14%	10%***	12%	12%***	13%	14%	11%	17%***	13%	14%
Strategy formulation	6%	6%	6%	5%	8%**	6%	3%	8%***	6%	8%*	6%	6%	5%	7%
Lack of qualified candidates*	1%	1%	1%	1%	0%	1%	1%	1%	0%	1%	1%	2%**	7%	6%
Local politics*	1%	2%	1%*	2%	1%***	0%***	1%	1%**	0%	1%	1%	2%	0%	0%
Other	7%	6%	8%	8%	7%	6%*	15%	5%***	8%	8%	6%	8%	1%	1%
None*	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%
Observations	*1,890*	*973*	*805*	*572*	*342*	*281*	*75*	*625*	*64*	*208*	*1,143*	*746*	*1,090*	*798*

NOTE: Proportion of respondents selecting each factor as the single biggest barrier to equitable hiring. Asterisks show whether the proportion for male is statistically distinguishable from the proportion for Female/Other, each racial/ethnic group is distinguishable from the proportion for White, the proportion for attends a licensed is distinguishable from the proportion for unlicensed, and the proportion for small firm is distinguishable from the proportion for large firm (50+ employees). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Asterisk next to a category denotes that it was not included as a response on the original survey and was given as a write-in response by at least 1 percent of respondents.

sustainability, or human health and well-being. The current, emerging, and future practicing professionals in the field remain steadfast in their belief that the profession can play a consequential role in those areas.

Chapter Summary

- Social change—sustainability, human health, and climate change—are perceived by students, faculty, and practicing professionals as important topics for the architecture profession to address.
- Social justice and equity are more heavily perceived by students as important for the architecture profession to address.
- Barriers to incorporating social change and social justice topics include a lack of interest, leadership support, financial resources, and the complexity of the topics.
- Barriers to increasing diversity in architecture include leadership support and financial resources.

Collaboration Between Academia and Architecture Firms

The importance of collaboration between industry and academia has been recognized across industries for decades.[1] Across professional fields, there is now a general understanding that cooperation between academia and individuals practicing in the field presents opportunities to gain greater perspective on the environments and considerations on both sides and, ultimately, better prepare students for the work and culture of practice. Connections to networks of practitioners and firms as future employers; applied, contextualized work; and feedback from practicing professionals are valuable for developing students' experience and self-efficacy, and may ease the transition from college to employment.[2]

Collaboration among professional associations, colleges of architecture, and firms is written into the guiding principles of the leading organizations in the field. The Boyer Report emphasized the importance of collaboration between the academy and practice for "a more unified profession."[3] In this chapter we discuss the views of students, faculty, and practicing professionals on the current state of collaboration between academia and practice by answering the following research questions:

- What is the current state of collaboration between academia and practice? What are the connection points? How are these connections contributing to the future of the field?
- What does the transition from academia to practice entail for emerging architects? How do students and practicing professionals perceive the transition? How can firms support individuals' transitions from academia to practice?

We also focus on participants' perceptions on how well these entities work together to address systemic issues and concerns related to social change.

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[1]   Deborah S. Bosley, "Collaborative Partnerships: Academia and Industry Working Together," *Technical Communication*, Vol. 42, No. 4, 1995; Ladislav Cerych and Brian Frost-Smith, "Collaboration Between Higher Education and Industry: An Overview," *European Journal of Education*, Vol. 20, No. 1, 1985.

[2]   Hoda Baytiyeh and Mohamad Naja, "Identifying the Challenging Factors in the Transition from Colleges of Engineering to Employment," *European Journal of Engineering Education*, Vol. 37, No. 1, 2012.

[3]   Boyer and Mitgang, 1996.

Engagement with Architecture Associations and Firms

Large Shares of Respondents Perceived No Collaboration Between Institutions, Architecture Firms, and Architecture Associations Around Social Change

In reflecting on the state of collaboration within academia and practice, the most common survey response among students, faculty, and practicing professionals was that there is little perceived collaboration between architecture *firms* and institutions of higher education and between architecture *associations* (e.g., AIA, NCARB) and institutions of higher education to address social change topics. About 36 percent of students, 29 percent of faculty, and 58 percent of practicing professionals perceived no collaboration between architecture firms and institutions of higher education around social change. These results are even more magnified among faculty survey respondents at non-NAAB-accredited institutions. About 60 percent of faculty at non-NAAB-accredited institutions reported no collaboration between their institution and architecture firms around social change compared with 28 percent at NAAB-accredited institutions, highlighting a core difference in exposure to opportunities and partnerships with firms at non-NAAB-accredited institutions.

Among collaboration between architecture professional associations and institutions of higher education, student survey respondents were most likely to say they perceived collaborations with professional associations around social change; however, still about 1 in 5 perceived no collaboration (18 percent). Slightly more than a quarter of faculty (28 percent) also perceived no collaboration between professional associations and institutions of higher education around social change.

Practicing professionals in our survey perceived an even wider gap in collaboration between architecture associations and collaboration with firms. About 46 percent of practicing professionals stated there was little collaboration between the two. Practicing professionals at larger firms (500+) were slightly more likely to report collaboration with professional associations or higher education institutions around social change.

Several professional and faculty interview participants shared that they did not experience deeper forms of collaboration to address social change topics between academia and firms. Some practicing professionals discussed having more roundtables and series that bring academia and practice together or supporting curriculum committees. Faculty acknowledged the importance of building throughlines of communication with practice but noted that they also have to impart broader critical thinking skills to students. A White male firm leader summarized the dilemma facing academic and practice collaborations, believing that schools of architecture do not necessarily need to create students who understand how to build a building: "That is the role of practice, not the institution." But they also pointed out where there could be stronger partnership to ensure practical skills are being taught:

> I think the profession would be better served if there was more interaction between the firms and academic institutions on building a more robust business education, architectural business education, into the core curriculum of the institutions. And I think architects in the practice could serve a role in teaching that, conveying to the institution that knowledge and the understanding of working with real clients, dealing with negotiations and fees, dealing with disputes that happen because somebody didn't build something right, or expectations weren't met.

Forms of Collaboration That Exist Among Firms and Higher Education Institutions Were Typically Temporary and Provide Career Preparation Experiences for Students

In our survey, practicing professionals were less likely to believe that industry feedback is incorporated into architecture curriculum than faculty. The majority of practicing professionals (54 percent) reported that

industry feedback is not at all incorporated into the development and modification of the architecture curriculum, whereas one-tenth of faculty (10 percent) reported that industry feedback is fully incorporated into the curriculum, and 58 percent of faculty reported that such feedback is incorporated to some extent. Faculty at non-NAAB-accredited institutions were more likely to report that feedback from industry is fully incorporated into the curriculum (50 percent) than faculty at NAAB-accredited institutions (8 percent).

In interviews, faculty and practicing professionals spoke more about the types of collaborations they tend to participate in together, which are not focused on social change issues but rather provide career exposure and preparation experiences for students. More than half of faculty and three-quarters of practicing professionals in interviews mentioned some form of temporary academic consultation or cooperation that they participate in together.

Overall, faculty and practicing professional interview participants mentioned similar forms of consultation that take place. For instance, numerous practitioners discussed how they or their colleagues participated in career fairs, served as a guest lecturer, served on juries or part of critiques sessions, or volunteered at workshops or panels to introduce the field to students. Describing the nature of this engagement, an early career licensed professional described frequent contributions by firm members on a case-by-case basis to architecture education, saying, "My first office . . . I guess through a lot of the personal connections they had occasional, you know, desk crits, you know, like going to the student studios and maybe like offer critique on their work just in the context of you know, in the real world, you know, that things are maybe a little bit different and then they can talk through how the students work might be considered in the real world."

A few faculty interview participants also mentioned prior research collaborations with firms and a desire to engage with firms in this role. As a faculty member in a B.Arch program at a southern public institution explained, "I think another type of collaboration that I used to do in different universities is actually engage with firms in research activities . . . so developing research projects . . . between faculty and architectural firms, I think, is a very effective way of strengthening these ties."

There Was Openness and Desire to Collaborate Among Faculty and Practitioners—Each Saw a Role for the Other to Influence Education and Practice

Faculty and practicing professionals interviewed seem aligned on what future collaboration could look like to enhance architectural education experiences. Practitioners understood they have some influence on architectural education because they are in the positions students want to be in, and they have firsthand insight into the needs of the profession. Many interviewees also mentioned how building more formal partnerships could guarantee internships, which would be valuable to students. Practicing professionals discussed more sustainable or longer-lasting partnerships as well, where you could "see more schools have portfolio review departments and have partnerships with nearby firms to place students for internships." Practicing professionals described more involvement as helpful to ensure students were more prepared when transitioning into practice.

Faculty interview participants agreed with the idea that architecture firms can play an important role in architectural education, to better link education and practice so that students are better prepared to work in the field. A faculty member in a M.Arch program at a public Midwestern institution emphasized the significant role that architecture firms already play in shaping how they teach students and how they ensure firms' voices are heard, stating, "We have hundreds of firms that work with us. So we do firm roundtables every few years where we bring in leaders from those firms to talk to us about that very question. We have them evaluating our students' performance. And as part of that evaluation, we ask them what we could do more [of] and then often the response is totally practical."

Other faculty described the need to have a strong dialogue across the roles of academics and practitioners through roundtables or other forums. These faculty expressed a true willingness to collaborate with practitioners but also desired acknowledgment that firms understand their mission is not only to develop a trained workforce. There are other aspects of design thinking and innovation that faculty pointed out would be important for firms to be engaged in. Speaking to building more well-rounded students, a community college faculty member at a southern MSI elaborated:

> And, when they leave here, we can only do so much in education, the education continues with practice. And they get a lot of it but academia cannot punt the rest of architectural education onto the practitioner. We need to cover it. It needs to be a seamless transition of skill and knowledge. And so, we want to prepare them to a point where the practitioner can take them and go, "Okay, we have this expectation, let's take it further." And then you have, a more well-rounded, someone who truly has been educated in all the required aspects of practicing architecture. Because, at the end of the day, that's what we're doing, is we're training architects, not glorified artists. So we want them to become licensed, we want them to become practitioners.

Faculty and Practitioners Both Felt That Lack of Time and Resources to Sustain Deeper, More Productive Partnerships Is a Barrier to Effective Collaboration

Faculty interview participants especially saw a role for partnering with practicing professionals and firms on research projects or longer-term efforts to tackle local problems of practice. Both groups were in agreement that collaborating on projects or research with practitioners in the field would be of substantial benefit to both. However, faculty acknowledged the need for more institutional support in order to maintain the relationships needed to do community-based projects they desire. As one example, a Black faculty member in a M.Arch program described a collaboration with the District of Columbia in which they used to have "what we called the architectural research institute where we actually had students working on real projects for the city of DC. . . . It was almost like a mini firm inside the Department of Architecture on [a public four-year institution's] campus." The partnership could not be sustained after the faculty leader left the institution, however. Another White female faculty member at a public Midwestern institution discussed recent meetings about the need for "a real backbone" to "keep up relationships in the community so that we don't have to start them over every semester."

Faculty also discussed difficulty in being able to sustain relationships with practicing professionals given their time commitments and that client interests are their ultimate priority. Describing their struggles getting professionals to attend a school career fair, a White female faculty member in the Midwest lamented, "We have a very large career fair where we get 82 firms that come down. But there have been multiple occasions where I've reached out to practitioners and then had them cancel at the last minute because practice is more important, right? . . . I've been a practitioner, but it does mean that practitioners are not reliable partners."

Practicing professionals echoed some of these sentiments, feeling there are few institutionalized policies in place to support them doing work that connects them with schools. They have limited time to step away from their work, especially when not compensated for it. As a male early career licensed professional explained, "You'd have to take a pay cut for all the hours you're not in the office and then hopefully your other job compensates for that."

Practicing professionals and a few faculty recommended that one way to bridge the divide between academia and practice is through strategic faculty hiring, creating adjunct positions for practitioners as well as increased utilization of advisory boards on curricular content. Some faculty described policies in which they

try to have at least one practicing licensed architect on staff to "bring in that real-work experience" and build a reciprocal relationship between practice and academia.

Chapter Summary

- Social change does not appear to be an area for collaboration between academia, firms, and associations, especially among faculty from non-NAAB-accredited programs.
- Faculty and practicing professionals embrace collaboration that is beyond career preparation experiences for students.
- Resources—funding and time—are necessary for faculty and practicing professionals to develop and sustain partnerships.

Recommendations

Five core recommendations emerged from the analytic findings. We propose these recommendations to fortify the relationship between education and practice to ensure that students are prepared and successful in entering the field of architecture. While these recommendations build on the Boyer Report, they capture present-day issues and more squarely focus on matters of access, opportunity, collaboration, and inclusion. To be clear, our recommendations do not directly align with those in the Boyer Report because our scope and approach for this study were different, but there is some overlap with some of the essential goals, including a connected curriculum, a unified profession, and service to the nation. Moreover, the current recommendations speak to the structural pathways and experiences of students and practicing professionals, which is why recommendations are aimed at academic, association, and firm leaders, those responsible for improving and shaping the future of architecture education and practice. Under each recommendation, specific activities are suggested. These activities are meant to benefit all students and practicing professionals and encourage greater inclusion of those from underrepresented and underserved communities. To act on these recommendations, intentional and continuous partnership between academia and firms is crucial. We end this chapter with two additional recommendations that are not directly derived from the reported findings but are inspired by them and supported by extant education research literature.

Increase Opportunities for Students to Explore the Field of Architecture

Our survey and interviews indicated that many individuals discover architecture in college, while others may have cultivated their interests in architecture through social media, art classes in high school, visits to museums, or travel. Additionally, we found that current approaches to engaging younger generations, while worthy efforts, are often short-term—happening in summers or for one-day programming or office visits. To broadly increase interest in architecture among younger students, the field will need more *systematic* and *sensitive* approaches to engaging students, including those from underresourced communities where information about summer and enrichment opportunities may be limited, where curricular opportunities limit the availability of art or design classes, and where travel, program costs, and time are barriers. The field will need to move from depending on highly engaged individuals in colleges or in firms to coordinate and commit to youth outreach to considering accountability or incentive measures that will ensure wider structural support for youth programs within schools, in out-of-school programs, and through experiential learning.

Provide Concrete Opportunities for Students to Experience the Architecture Industry

Individuals from well-connected families benefit from their family's knowledge of the industry and relationships with established professionals, who can offer advice and opportunities. Consider collaborating

with K–12 schools and community-based organizations focused on youth to develop internship or externship opportunities so that individuals—specifically those without connections to industry or resources and experiences that would expose them to architecture and key professional relationships (e.g., students who would be the first to attend college in their family)—are given a fair chance to explore the field of architecture.[1] Through these opportunities, students and youth may gain a clearer understanding of the pathway to becoming an architect and identify mentors that could support them along the way. Consider leveraging ACSA's *Framework for Expanding K–12 Engagement* for guidance and see AIA's K–12 Pathway Initiatives for examples of various opportunities and activities.[2]

Harness the Power of Social Media

Social media platforms like TikTok and YouTube have become common tools for youth to learn and explore their interests.[3] Consider working with architectural students in college with a large following and collaborate on a series of curated clips and posts that demonstrate the impact of the architecture profession on society, including its contributions to addressing social and environmental barriers. Work with K–12 schools to codevelop this social media content and to ensure that students without access to the appropriate technologies can still engage in this content.

Improve Access to and Affordability of Architecture Education

Students in our study noted that program admission processes, particularly portfolio requirements, academic preparation, and program affordability, were barriers to entering architecture education programs. These findings support a large foundation of research documenting that college admissions process is littered with practices that make it harder for students from underrepresented communities and backgrounds to pursue postsecondary education, including architecture programs of their choosing.[4] Some students come from high schools that do not offer many college-preparatory classes and do not have the resources to prepare for standardized exams.[5] Some students do not have the right teachers to provide letters of recommendation.[6] Some students do not have the time and means to submit additional, and often unique to a program, items.[7] Expanding access to the pathway to architecture will require revising program admission practices.

College tuition fees have also risen, often outpacing inflation and wage growth and making it harder for working- and middle-class families to send their child to college. While, on average, total education borrowing (e.g., nonfederal loans, federal loans) has been declining since 2010, student debt is a significant problem—high monthly payments can strain personal finances and delay life milestones (e.g., buying a home,

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1 Martha Ross, Richard Kazis, Nicole Bateman, and Laura Stateler, "Work-Based Learning Can Advance Equity and Opportunity for America's Young People," Brookings Institution, November 20, 2020.

2 ACSA, 2024; AIA, 2023b.

3 Emily A. Vogels, Risa Gelles-Watnick, and Navid Massarat, *Teens, Social Media and Technology 2022*, Pew Research Center, August 10, 2022.

4 Renee Cheng, "Barriers to Entry: Challenges Faced by Underrepresented Students in Architecture Education," *Journal of Architectural Education*, Vol. 73, No. 2, 2019.

5 Hugh Mehan, *In the Front Door: Creating A College-Going Culture of Learning*, Routledge, 2015.

6 Melissa Roderick, Vanessa Coca, and Jenny Nagaoka, "Potholes on the Road to College: High School Effects in Shaping Urban Students' Participation in College Application, Four-Year College Enrollment, and College Match," *Sociology of Education*, Vol. 84, No. 3, 2011.

7 Perna and Titus, 2005.

family planning)—that disproportionately affects low-income students and students of color.[8] Addressing the affordability of programs can encourage more students to consider architecture for their future. Efforts to improve program affordability, however, may not be sufficient to overcome student debt aversion, given the moderate average salary for early career professionals in architecture,

Streamline and Standardize Admissions Processes for NAAB-Accredited Programs to Minimize Costs and Burden to Students

The main application process for undergraduate education is often dictated by a program or school's university. The additional materials, however, such as supplemental essays or a portfolio of past work, are often at the discretion of the program or school. Drawing on resources from the National Association for College Admission Counseling could inform possible revisions. Consider using the same supplemental essay prompts in order to minimize burden to students who may not have the support of parents or professionals to help them with their essays. Consider also whether a portfolio is necessary for admission, and if there are more accessible options for students, especially those from underresourced schools and backgrounds.

Conduct Analysis of NAAB-Accredited Program Admission Processes, Affordability, and Student Debt of Graduates by State and Institutional Type to Understand Students' Access to Programs

Before making changes to admissions processes or revising programs, it is important to gather fundamental data to clarify the inconsistences and inequities that may exist between and within programs.[9] Among NAAB-accredited programs, a survey can be sent to program administrators to solicit information and supporting materials about their admissions process, while federal and state-level administrative data may allow for more nuanced analyses on affordability and access.

Strengthen Collaboration Among Universities, Professional Firms, and Associations to Bolster Curriculum and Advance Innovation in Architectural Programs

Across Chapters 2 and 3, our data surfaced the ongoing tension between students, faculty, and practicing professionals on what should be taught formally in architecture programs and what should be learned on the job in firm settings. Students, in particular, spoke to a mismatch in having to learn the technical skills they need to find jobs *and* the equally important skills around thinking critically and deeply about the intersections of architecture with art, design, urbanism, and science and technology. Faculty and practicing professionals see opportunities to develop courses, seminars, or engagement opportunities that will better equip students to be thoughtful practitioners. And, as Chapter 5 emphasized, while deeper forms of collaboration are hard to find, architecture faculty and practicing professionals seek out ways to engage each other for the benefit of students' educational experiences. What we argue across these findings is that changes to programs or pathways to the architecture workforce should center students' concerns. The descriptions of a mismatch are understandable—students have a lot to balance as they make choices for their future. They are reflecting

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[8]   Fenaba R. Addo, Jason N. Houle, and Daniel Simon, "Young, Black, and (Still) in the Red: Parental Wealth, Race, and Student Loan Debt," *Race and Social Problems*, Vol. 8, No. 1, 2016.

[9]   Don Hossler and Bob Bontrager, *Handbook of Strategic Enrollment Management*, John Wiley and Sons, 2014.

on their passions and interests, the contributions they want to make, or the ability of their future career to address their financial priorities. Students are also navigating a challenging job market in which industries are seeking individuals with specific key and technical skills.

Strengthen the Relationship Between Curriculum and Professional Practice

Students will feel more prepared to enter professional practice, be better able to adapt to changing industry demands and technological advancements, and maximize the return on their financial and temporal investment if the relationship between the curriculum and professional practice is strong. Consider incorporating field-based learning into academic programs to ease students' transition to professional practice and help them learn key soft skills and new industry technologies. Assist students with identifying professional mentors and provide practicing professionals with support and resources so that they can be strong mentors for students.[10] There is precedent for these practices—in 1979, AIA and NCARB introduced the Intern Development Program, which is now known as the AXP. If field-based learning is not possible, consider capstone projects that require students to solve real-world problems; they can be guided by a committee made up of faculty and practicing professionals. Leverage studios as a collaborative space between faculty and practicing professionals to help students learn emerging and applied technologies, including AI. In collaboration with industry partners, offer robust career counseling and workshops that connect academic learning with potential career paths.

Incorporate an Internship Requirement for Architecture Programs

Participation in an internship can help ease students' transition to practice. Students will gain new knowledge and experiences to inform their decisionmaking and prepare them for their professional future.[11] The success of this requirement, however, will be contingent on institutions maintaining collaborative partnerships with firms. Some promising practices to build out these partnerships include having a position or office dedicated to building and maintaining relationships with industry, leveraging alumni networks, and developing research collaboratives that involve students.[12] However, it is crucial to point out that internships should be paid as to not amplify inequities, especially for students of color and first-generation college students.[13]

Provide Faculty with Time and Resources to Learn About and Incorporate New Tools and Technology into the Curriculum

Informed, responsible curricular integration of new concepts and tools requires time for faculty to learn about these tools and concepts and authentically incorporate them into the curriculum. Faculty benefit from resources that carve out dedicated time to stay up-to-date on industry tools and trends. These resources

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[10] David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development*, FT Press, 2014.

[11] Patrícia Silva, Betina Lopes, Marco Costa, Ana I. Melo, Gonçalo Paiva Dias, Elisabeth Brito, and Dina Seabra, "The Million-Dollar Question: Can Internships Boost Employment?," *Studies in Higher Education*, Vol. 43, No. 1, 2018.

[12] See, Lars Frølund, Fiona Murray, and Max Riedel, "Developing Successful Strategic Partnerships with Universities," *MIT Sloan Management Review*, Vol. 59, No. 2, 2018; and Robert G. Bringle and Julie A. Hatcher, "Campus-Community Partnerships: The Terms of Engagement," *Journal of Social Issues*, Vol. 58, No. 3, 2002.

[13] John Zilvinskis, Jennifer Gillis, and Kelli K. Smith, "Unpaid Versus Paid Internships: Group Membership Makes the Difference," *Journal of College Student Development*, Vol. 61, No. 4, 2020.

include course buyouts, sabbaticals, and fellowships that can be funded through industry partners.[14] During their time away from their main responsibilities, faculty can participate in knowledge exchanges with practicing professionals, participate in professional development (e.g., workshops, trainings, online resources) or join a research-practice partnership to address local issues.

Foster Collaboration on Research Projects Between Architecture Program Faculty and Practicing Professionals

Academic institutions and firms should consider cultivating research partnerships in which faculty and practicing professionals coidentify a practice-oriented topic or concern and faculty build out a research agenda for those areas.[15] This arrangement advances a mutually beneficial relationship between education and practice by facilitating faculty access to industry resources and networks and encouraging practicing professionals to leverage faculty expertise to inform their decisionmaking. These research collaboratives may also provide opportunities for students to participate and build meaningful connections with practicing professionals.

Consider Developing Two Tracks Within NAAB-Accredited Programs: One for Those Pursuing Licensure upon Graduation and One for Those Who Are Unsure About Pursuing Licensure

To become an architect, individuals must be licensed. The licensure process can be a financial and temporal barrier for recent graduates, especially first-generation college students and students of color, as they navigate new norms in the workplace. If a portion of the licensure process were embedded in their program, students could prepare for exams sooner, thereby potentially minimizing costs and burden to early career practicing professionals. NAAB-accredited programs, for instance, could leverage the Integrated Path to Architectural Licensure option provided by NCARB.[16] Faculty could also ensure the curriculum covers topics relevant to the licensure exams and incorporate cocurricular activities that help familiarize students with the licensure process.

Eliminate Barriers to Entering and Succeeding in Professional Practice

Our findings revealed that new graduates and practicing professionals encounter several barriers in the workforce; these barriers are often tied to financial, social, and cultural norms of architectural practice. Compensation weighs heavily on individuals, especially those managing student debt and balancing major life choices (e.g., family planning, buying a home, caring for a dependent). The licensure process is long and costly; some practicing professionals expressed not having the time and resources to navigate this process efficiently. Some participants also expressed concern over a culture of overwork that affects practicing professionals' mental wellness and capacity to balance work and life responsibilities. Moreover, the weak sense of belongingness experienced by people of color, especially women of color, persists; this is amplified by the

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[14] Hsing-Fen Lee and Marcela Miozzo, "How Does Working on University–Industry Collaborative Projects Affect Science and Engineering Doctorates' Careers? Evidence from a UK Research-Based University," *Journal of Technology Transfer*, Vol. 40, 2015.

[15] Jenna W. Kramer and John M. Braxton, "Contributions to Types of Professional Knowledge by Higher Education Journals," *New Directions for Higher Education*, Vol. 2017, No. 178, 2017.

[16] Larry Speck, "Integrating Practice and Education: The IPAL Initiative," *Architectural Record*, Vol. 205, No. 10, 2017.

continued lack of racial diversity in the field (in both academia and practice). Addressing these barriers could improve practicing professionals' experiences and retention efforts in the field.

Be Upfront About the Expected Compensation in Architecture Practice

Faculty and career services should collaborate on a series of workshops, for instance, to help students, including those graduating soon, understand the expected salaries in architecture across a range of positions and specialties. AIA's Compensation Survey Salary Calculator can be a helpful resource to share with students.[17] Equipping students with this information will allow them to make an informed decision—given their personal priorities—and negotiate with their future employer, which can help address the compensation inequities by gender and race.[18]

Institutionalize a "Residency" Model for Early Career Professionals

Similar to the medical field, consider implementing early career pathways that allow practicing professionals a period of transition in which they can learn from senior practicing professionals and gain key knowledge and skills, receive continuous feedback, and study for their licensure exams.[19] Depending on the employer, this approach can be more or less structured and focus on comprehensive or specialized skills. Early career practicing professionals will be able to gain hands-on and supervised experience; identify a mentor for guidance, feedback, and support; and build a professional network for ongoing support. Other professions that use a similar approach include law (e.g., clerkships), education (e.g., teacher candidates), and psychology (e.g., clinical psychology interns).

Mitigate the Effects of a Culture of Overwork

While many "best practices" suggest strategies (e.g., time management) that place the onus on individuals, it is important for firms to take the lead to identify and advance organizational changes to their work culture.[20] Consider implementing an after-hours communication policy that encourages staff to disconnect from work during nonwork hours, offering flexible work options to accommodate diverse priorities, and monitoring workloads by using data to identify patterns of overwork and address root causes.

Learn from Organizations That Have Been Successful at Cultivating Community and Belongingness for People of Color

Consider looking to organizations (e.g., NOMA, Southern Education Foundation, Kresge Foundation) that have a long and successful history of cultivating community and belongingness for those from underrepresented and underresourced communities. For instance, many historically White colleges and universities have struggled to improve STEAM academic outcomes for students of color, and many of these institutions now look to partner with MSIs, such as Historically Black colleges and universities and Hispanic-serving

[17] AIA, 2023a.

[18] Linda Babcock and Sara Laschever, *Women Don't Ask: Negotiation and the Gender Divide*, Princeton University Press, 2004.

[19] Kenneth M. Ludmerer, *Let Me Heal: The Opportunity to Preserve Excellence in American Medicine*, Oxford University Press, 2014.

[20] Ellen Ernst Kossek and Rebecca J. Thompson, "Workplace Flexibility: Integrating Employer and Employee Perspectives to Close the Research–Practice Implementation Gap," in Tammy D. Allen and Lillian T. Eby, eds., *The Oxford Handbook of Work and Family*, Oxford University Press, 2016.

institutions, that have a strong record of helping students of color succeed in STEAM and achieve their professional goals.[21]

Unlearn What You Know and Invest in Organizational Culture and Learning

While it is one thing to support and publicly commit to advancing social change, it is quite another to determine a path forward for actualizing these commitments. Survey respondents and interview participants across the board understood the important role that the field of architecture plays in addressing climate change and sustainability. There were, however, inconsistencies in whether and how architecture plays a role in matters of equity and social justice. Students prioritized addressing equity more so than faculty and practicing professionals, and views were divided on whether firms and schools of architecture largely committed to equitable hiring practices or not. Addressing these issues is understandably complex. Individuals, for instance, may have a hard time discussing these topics because they may not know enough about them and/or they make them uncomfortable. Discussing social change topics, such as race and inequality, is difficult, and some individuals do not want to say the "wrong things" for fear of offending others. Some individuals and organizations have competing priorities that make it challenging to devote attention and resources to social change topics. Academia and firms will have to be courageous in their commitment to social change and "unlearn" what they know by investing in faculty and staff experiences (e.g., workshops) that challenge individual and organizational assumptions about social life and build individual and organizational literacy on social change topics; this can help interrogate and address individual and organizational practices that hinder diversity in the field.

Provide Faculty and Practicing Professionals with Support and Resources to Incorporate Social Change Topics (e.g., Sustainability, Climate Change, Social Justice) in Their Curriculum and Work

Faculty and practicing professionals can benefit from professional development (e.g., workshops led by subject-matter experts from local universities or community-based organizations) that improves their literacy around social change topics. These activities can help them understand the origins and contemporary issues of these topics, learn the proper vocabulary to discuss these topics, expose them to different perspectives, explore how the topics are applicable to their work, and facilitate meaningful and civil discussion.[22] Ensure that faculty and practicing professionals are properly compensated to explore and build their capacities around social change topics.

Academic and Professional Leaders Should Take the Lead in Improving Their Learning on Social Change Topics

Less-senior faculty and practicing professionals may not pursue opportunities to advance their capacity for social change work, but seeing their leaders participate in this work may address some of their hesitancies and encourage them to join. Leaders often set the tone, signaling the importance of this work, and they can

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[21] Marybeth Gasman and Nguyen Thai-Huy, *Making Black Scientists: A Call to Action*, Harvard University Press, 2019.

[22] Glenn E. Singleton, *Courageous Conversations About Race: A Field Guide for Achieving Equity in Schools*, Corwin Press, 2014.

influence their staff's attitudes and behavior around this work as well.[23] Leaders are also in a better position to understand the available resources, and their participation in this work can give them clearer insights on the resources needed for their organization to benefit from improving their knowledge of social change topics.

Continue to Elevate and Address the Lack of Diversity in the Field of Architecture and Its Implications on Architectural Practice and Social Change

Improving diversity—by race, gender, social class and other social categories—has several significant implications for practice. Diversity encourages innovation and creativity because organizations are recruiting talent from a broader pool, and it allows firms to understand and serve diverse communities and clients.[24] Diversity also increases employee engagement and retention, especially among people of color.[25] Firms and universities should consider implementing diverse hiring panels and standardizing interview questions, establishing mentorship opportunities that can support career advancement and retention, and creating diversity task forces that can hold leaders accountable for achieving diversity outcomes and driving change. Review AIA's Guides for Equitable Practice for additional insights and best practices.[26]

Additional Recommendations

We offer two additional recommendations that were not directly derived from, but inspired by, the findings shared in this report. These recommendations are backed by education research, and we encourage stakeholders in the field of architecture to consider them in their efforts to improve the pathways to architecture.

Leverage the National Momentum on Improving Educational Experiences and Outcomes in STEAM

Federal and local governments, universities, industries, and foundations have invested a great deal in shoring up the nation's STEAM-trained workforce.[27] In 2019, the Strengthening Career and Technical Education for the 21st Century Act was passed, which codified architecture as a STEAM discipline, allowing for federal funds to be available for architecture education.[28] These investments have supported interventions to expand access and achievement in STEAM among women, first-generation college students, and students of color across the K–16 pipeline. Examples would be collaborating with national associations of STEAM fields, such as the National Science Teaching Association, to develop new curriculum that teaches the fundamentals of

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[23] Lisa H. Nishii and Robert E. Rich, "Creating Inclusive Climates in Diverse Organizations," in Bernardo M. Ferdman and Barbara R. Deane, eds., *Diversity at Work: The Practice of Inclusion*, John Wiley and Sons, 2013.

[24] Scott Page, *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies*, new ed., Princeton University Press, 2008.

[25] Derek R. Avery, Patrick F. McKay, and David C. Wilson, "Engaging the Aging Workforce: The Relationship Between Perceived Age Similarity, Satisfaction with Coworkers, and Employee Engagement," *Journal of Applied Psychology*, Vol. 92, No. 6, 2007.

[26] See AIA, "Guides for Equitable Practice," webpage, November 30, 2023d.

[27] National Research Council, *Successful K–12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering, and Mathematics*, National Academy of Science, 2011.

[28] Public Law 115-224, Strengthening Career and Technical Education for the 21st Century Act, July 31, 2018.

science and mathematics through architecture; and providing teachers with workshops on how to teach the new materials effectively.

Promote Dual Enrollment to Encourage High School Students to Take College Courses for Credit at Their Local Community College, Thereby Reducing Time and Cost to Degree Completion

Dual enrollment allows high school students to get a head start on their college education at a local community college.[29] Students often tackle general education requirements (e.g., English, mathematics), allowing them, once enrolled, to spend more time in their major program. These dual enrollment programs are often tuition-free, which can ease the financial burden on students and families. Students in dual enrollment programs often have better postsecondary outcomes than those who are not enrolled, especially in improving chances that students will enroll in and complete college.[30]

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[29] Brian P. An, "The Impact of Dual Enrollment on College Degree Attainment: Do Low-SES Students Benefit?," *Educational Evaluation and Policy Analysis*, Vol. 35, No. 1, 2013.

[30] Tatiana Velasco, John Fink, Mariel Bedoya, and Davis Jenkins, *The Postsecondary Outcomes of High School Dual Enrollment Students: A National and State-by-State Analysis*, Community College Research Center, Teachers College, Columbia University, 2024.

Closing Reflections

Building Impact

Throughout this research, our team has been struck by the investment of the architecture community in introspection, lively discussion of the future, and seeking opportunities for collaboration to chart the course for the future. We have become familiar with the myriad efforts undertaken by professional associations, schools of architecture, and firms to address the issues that surfaced in our survey and interviews. These groups are all interrogating issues as they arise and, in many cases, working on initiatives aligned with the recommendations discussed in the prior chapter. We hope that the research in this report and our recommendations provide further opportunities for discussion, engagement, collaboration, and progress in the field. The existential questions being raised by individuals and organizations in the field are reflective of broader societal trends and the growing pains that fields of study and work, institutions of higher education, and professional associations are experiencing in the United States and other countries around the world. Consequently, we have endeavored to make connections to related literature and fields in this report and encourage the field to do the same.

While the findings and issues surfaced in this report are not unique to architecture, they can be uniquely addressed by the talents, structures, and infrastructure in the field to solve them in a way that is unique to and representative of the values of the field. For example, there has been a push toward explicit alignment between the curricula of degree programs and the knowledge and competencies that individuals will need to apply in the world of work. Responding to this shift in recent decades has been particularly difficult for interdisciplinary fields such as architecture that are steeped in a long history of higher education tradition.

Of course, the field of architecture can also be limited by these same structures and infrastructure. The institutions that uphold and govern the profession can either facilitate or inhibit its progress. We encourage discussion about the findings to consider the ways in which stakeholders, especially between education and practice, can leverage architecture's structures and infrastructure to push forward collaboration and address these perennial challenges, as this will ultimately be in the best interest of the future of the field. According to the Brookings Institution, "The current system that relies on one dominant path, college for all, simply cannot keep up with the pace of the U.S. economy with classroom education alone, and this system is not set up to have strong collaboration with employers as partners in co-producing a skilled workforce."[1] Both faculty and practicing professionals must come together to reimagine a new system of collaboration that empowers students and early career professionals to navigate the occupational structure effectively *and* equitably. Faculty, for instance, may want to consider how the top nine KSAs (knowledge, skills, and abilities) rated by practicing professionals could inform updates to their curriculum or program requirements,[2] while firm leaders may consider how the expertise and perspectives of faculty on student educational needs and

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[1] Annelies Goger, Katie Caves, and Hollis Salway, "How US Employers and Educators Can Build a More Nimble Education System with Multiple Paths to Success," Brookings Institution, May 16, 2024.

[2] NCARB, 2024b.

cultural expectations, including their understanding and expectations for inclusion and fairness,[3] inspire changes to current organizational practices that maintain the status quo. Coming to consensus and having clear recognition of these topics and issues among stakeholders, and continuing to collaborate on and seek new solutions will be essential to addressing these challenges in the coming decades as the profession, country, and world continue to evolve.

We hope that this report provides opportunities for reflection and discussion. To that end, we include the following questions relating to the issues raised this report.

Questions for Reflection and Discussion

- How have the report findings influenced your perspectives on architectural education and practice?
- What findings in this report speak to you, given your role and responsibilities? Do those findings align with your experiences? Why or why not?
- How will you apply these findings in your current role?
- What findings in this report prompt further questions for you?
- What questions do you still have after reading this report?
- What changes should NAAB-accredited programs make in order to improve their affordability?
- How can NAAB-accredited programs address and balance the call for greater alignment with industry trends and needs without impinging on their educational mission and philosophies?

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[3] Renee Cheng, Nancy Alexander, Cozy Hannula, Laura Osburn, and Karen Williams, *Equity in Architectural Education*, AIA, 2022.

Qualitative Methods

Our research team worked closely with AIA, ACSA, and NCARB to develop an initial sampling strategy to recruit interview and focus group participants based on a number of different characteristics, including NAAB accreditation status, B.Arch and M.Arch program enrollment, MSI status, years of experience, and licensure status. Initially, we planned to conduct focus groups with students and early career practicing professionals and interviews with faculty and senior career practitioners. However, due to encountering difficulties early in our recruitment process with aligning schedules across participants, we made all data collection between students, faculty, and practicing professionals to be interviews lasting 45–60 minutes.

We conducted 107 interviews between April 15 and July 26, 2024, among three samples of participants: students, faculty, and practicing professionals. To recruit students, we relied on membership rosters provided by AIAS. We developed our sample by focusing on students attending institutions in the United States. Then we split students up by whether they attended NAAB-accredited institutions or non-NAAB-accredited two- and four-year institutions and whether they attended MSIs or not. We also segmented students attending NAAB-accredited institutions into those pursuing a B.Arch degree and those pursuing an M.Arch degree. To ensure representation across these categories, we then selected students at random within seven different sampling groups (e.g., NAAB-accredited, MSI, M.Arch), emailed invitations to participate in an interview with two follow-ups, and offered a $25 Amazon gift card upon completion. In total, we sampled 1,102 students and completed 50 interviews.

To recruit faculty, we relied on a membership roster provided by ACSA, which we further split out into faculty teaching in NAAB-accredited institutions, non-NAAB-accredited two- and four-year institutions, and based on type of program when at NAAB-accredited institutions (B.Arch only, M.Arch only, Combo B. Arch/M.Arch programs). We sampled faculty within each institution and program type, selecting faculty randomly while also ensuring general racial and gender diversity in our overall sample. We sampled a total of 166 faculty through an email invitation and two follow-ups and completed 21 interviews. We did not offer interview incentives for faculty.

To recruit practicing professionals, we relied on membership rosters from both AIA and NCARB to identify professionals at early career stages (defined as 0–5 years of experience in the field by NCARB), mid-career (defined as 10–15 years of experience by NCARB), and firm leaders (as designated by AIA). We also used NCARB data to identify early career practicing professionals who were licensed and unlicensed. We then drew random samples of practicing professionals who were early career–unlicensed, early career–licensed, midcareer, and who were designated firm leaders, with a goal of recruiting primarily early career practicing professionals. We included select firm leaders using both a suggested pool and random selection from a list provided by AIA. In total, we sampled 3,820 practicing professionals with email invitations and two follow-up notices and completed 36 interviews. We did not offer interview incentives for practicing professionals.

All interviews were conducted either over Zoom or Microsoft Teams, recorded, and transcribed by a transcription service. We used interviewer notes rather than a transcript to analyze one interview where audio recording capabilities malfunctioned. Transcripts were uploaded to Dedoose for further qualitative analysis. Three research team members developed and piloted a codebook primarily made up of inductive codes that

TABLE A.1
Interview Participants

Sample Characteristics	Students	Faculty	Practicing Professionals	Total
Total sample	50 (100%)	21 (100%)	36 (100%)	107 (100%)
NAAB-accreditation status				
NAAB-accredited	23 (46%)	17 (81%)	N/A	40
B.Arch	8	4	N/A	12
M.Arch	15	7	N/A	22
Both B.Arch and M.Arch	N/A	6	N/A	6
Non-NAAB 4-year	21 (42%)	2 (10%)	N/A	23
Community college	6 (12%)	2 (10%)	N/A	8
MSI status				
MSI	21 (42%)	7 (33%)	N/A	28
Non-MSI	29 (58%)	14 (67%)	N/A	43
Licensure				
Early career—unlicensed	N/A	N/A	15 (42%)	15
Early career—licensed	N/A	N/A	15 (42%)	15
Midcareer	N/A	N/A	2 (6%)	2
Firm leader	N/A	N/A	4 (11%)	4
Gender				
Male	N/A	9 (43%)	21 (58%)	30
Female	N/A	11 (52%)	15 (42%)	26
Nonbinary	N/A	N/A	N/A	N/A
Unknown	N/A	1 (5%)	N/A	1
Race/Ethnicity	N/A			
Black	N/A	4 (19%)	1 (3%)	5
Latinx	N/A	1 (5%)	3 (8%)	4
Asian	N/A	3 (14%)	7 (19%)	10
MENA	N/A	1 (5%)	N/A	1
White	N/A	10 (48%)	19 (53%)	29
Two or more races	N/A	1 (5%)	4 (11%)	5
Unknown	N/A	1 (5%)	2 (6%)	3

NOTE: Student rosters from AIAS did not include race/ethnicity or gender information. Therefore, we could not use these characteristics in our sampling strategy.

TABLE A.2

Examples and Definitions of Selected Qualitative Codes

Key Topic	Parent—Child Code	Definition	Example Excerpt
Barriers to Entry	Motivations—Teachers/classes	References learning about design/architecture classes taken (in high school or college) or specific teachers	It was literally through, I think it was either middle school or high school when I was in my magnet class, and then we were just doing research about what we wanted to do and since like doing this kind of drawings, where you do two point perspective and you relate that to a building. That's how, I was like, 'Oh, okay, it's a field.' (Student)
	Motivations—Design/art appreciation/creative process	References engaging/learning about design/architecture based on interests in art and design, drawing, or engaging in other creative processes	First thing was that I loved to draw. As a young person I always nurtured that passion, and I also had the opportunity to have good professors in high school for drawing. And I thought that architecture would accompany that passion with the depth that comes from the discipline because you add knowledge of history, of society, of living together, which are very urgent as well. So it's nice to give depth to your original passion. (Professional)
	Economic factors shaping student pathways into/through degree—Tuition/debt	Discusses economic factors affecting enrollment into or completion of program with reference to program cost, student debt accrued, or other factors related to paying for college	For the graduate students, a big barrier is just cost, obviously, even though we're the lowest-cost option. So we do get some students who wouldn't go to architecture school at all if they didn't come to us. So they just, there's no feasible way that they could go to one of the private schools. (Faculty)
	Economic factors shaping student pathways—Supplies	Discusses economic factors affecting enrollment into or completion of program with reference to experiences with printing and other supplies and technology needed to engage in architectural program	But I think one of the biggest barriers was after getting into the program, getting all the supplies, getting a new laptop, there's so many software and hardware requirements that are not supplemented by the school at all. Your first year of architecture school, you need to get expensive drafting boards, and pencils, and paper, and all these different drawing tools, and that's really expensive. (Student)
	Institutional factors shaping student pathways—Understanding future career paths	References future career paths and considerations in architecture or what future goals should be with the degree	I think it's really difficult because every firm practices differently. Again, architecture is just so broad because you could be a project architecture firm or a design architecture firm, which operate completely differently. They don't even tell you what that is in college, at least in my school. I didn't know what that was until I started working. (Student)
	Institutional factors shaping student pathways—Courses taught	References discussions about courses and course experiences as well as barriers based on course choices, course options available	We definitely do learn a lot with history, but to take so many classes when I think the time could be used with learning how to maybe design better using different software. . . . But I wish I could kind of learn those skills because I feel like as an architecture student, you kind of have to be Jack of all trades and know a lot about different mediums of design, since it still is kind of a creative kind of field. (Student)

(continued)

TABLE A.2 —Continued

Key Topic	Parent—Child Code	Definition	Example Excerpt
	Academic/ social factors shaping student pathways—Sense of belonging	References ways that program does or does not honor student DEI or feelings of belonging in program	But I think I mostly just do the work by myself to, like, try to affirm my identity. I don't think this school does that or the program does that in any way. And like some conversations I've had with other classes, too, I think they're involved with other things outside of the program that help to affirm their identity and then they like already come into the program or are working on those things while being a part of the program that helps to reinforce like the confidence they have in like their design and things that they do. But I don't think there's, like, a specific thing that the program does that helps to do that. (Student)
Architecture education & practice	Architectural education features— Mentorship by faculty/practicing professionals	Discusses influence of mentorship by faculty and/ or practicing professionals in enhancing/limiting learning, development, shaping experiences in program	And talking to people who are working in the field, going on like externship programs, having a job, like all of those things made me like see how the things I'm learning at school actually relate to the real world and kind of vice versa. And I feel like it made me a stronger student to go work and learn about those things. And it also made me like a better worker to have like really good like software skills and whatever that I learned in school, then I can bring it there and be like a beneficial employee. (Student)
	Architectural education features— Membership organizations	Discusses influence of student or other membership organizations on enhancing/ limiting learning, development, student experience (e.g., AIAS chapter, NOMA, etc.)	The NOMA organization . . . helped a lot because I have been to the events, so they do a lot of . . . . You feel inclusive in those type of things and you feel heard. (Student)
	Architectural education features— Studio/studio topics	Discusses influence of studio or studio culture on learning, development, shaping experiences	I think the studio last semester was really grounded in the real world. I think, because we had, it was a site studio so we really had a, it was a very contextual-based approach to design. So we try to understand, decide why people live there, what kind of people live there, the disparities that residents face. And I think that semester, the instructors really wanted us to use that research to propel our design, use it as a design driver. (Student)
	Architectural education features— Work-based learning	Discusses influence of work-based learning (e.g., internships, externships, apprenticeships) as enhancing/limiting learning, development, shaping experiences in program	If I was in an internship, I would be able to see if anything that I have learned thus far would have helped or hindered me, as far as real-life work in an actual firm. I don't know if I could answer that right now, because I would think that in order for me to know what's actually going on in the field, I will probably have to be either in the field working for a firm, or at least an intern. (Student)
	Career paths— Factors influencing career paths	Discusses factors/ motivations/interests related to career choices, including, but not limited to, desires to give back to community, engage in social advocacy, wanting to change or improve programs and experiences	So I had originally been like okay, four years is a long time, so I'll just get through these four years and like I don't enjoy being a broke college student, so I would like to go work and get some experience. And I've shared that with different professors and they're like, that's great and you can do that, but I would really encourage you to go to grad school and if you need to take one year off, that's fine, but if you don't go now, you might never go. And so there's a big push definitely to go straight into grad school. (Student)

TABLE A.2 —Continued

Key Topic	Parent—Child Code	Definition	Example Excerpt
	Entering practice/ workforce—Learning about licensure process	Discusses perceptions, training, knowledge acquisition around licensure process	To be able to go through those exams and learn from the materials you're studying, there is definitely a quality of knowledge that is gained and totally respectable. And also, just the time and effort to be able to dedicate to that is something to be said in the industry. That being said, my career has been built on experience and performance. And there's a line where, you know, there should be a level of respect regardless. But there's also really that ceiling without it. And part of me understands that and part of me wants to break that cycle. (Professional)
	Entering practice/ workforce— Learning/training mismatch	Discusses areas of overlap and/or mismatch between what students learn and what they need to know	All of the design thinking skills that [institution] taught me I think are critically useful. You know, did they teach me how to coordinate with mechanical engineers or structural engineers? No, not really at all. But for laying out space and for thinking about the quality of space and how we use the spaces, [institution], all of that is entirely useful. I don't think they taught me anything about how to detail of wood ceiling or how to work through building codes to make something pretty even if there's restrictions on it. So I think school again was really great at the design thinking and design skills, but other than that, lacks pretty heavily. (Student)
	Transferable skills—Design software skills	Mentions ability to use Adobe Illustrator, InDesign, Revit, Rhino, and other related design software packages	There have been so many useful skills I've learned. Truly just to be able to do any of these kind of conceptual designs on Illustrator, Photoshop, InDesign, using that is so applicable. And I think that is what's really cool about this field is that I have all of these skills now in any kind of design, 3-D design, and also just kind of a foundation of any construction skills and stuff like that. (Student)
	Transferable skills— Communication/ presentation skills	Discusses learning to communicate and present to peers/public speaking	But in terms of skills, I think communication is a skill that I think tangibly can help this situation. If you're talking to a client, the client is always driven by the bottom—well, not always, but most of the cases, they're driven by the bottom line. But if you can present the facts and the impact and frame the issue correctly, you can kind of help them make the right decision to maybe spend a little bit more, but make things a little bit more long-lasting, sustainable, better for the environment, that kind of thing. So communication is definitely a skill to have. (Professional)
	Early career transitions to practice—DEI/ belonging	Discusses issues related to social and cultural belonging at firm based on identity characteristics	I left corporate practice to start my own practice, because I wanted to be working in communities where I was represented. And the place I was working, we were working in communities where I was represented, but the leadership of the firm was not representative. And that was a big problem for me. And I think that I have been on a journey to figure out sort of what and how this looks like, because the work I want to do, a lot of these large firms are doing it pro bono with their interns. Right? Like it's not the same type of level of service. So it's hard to finance the work that I want to do. But I do a lot of collective work with Black and Brown architects, landscape architects and designers, we have a few collectives where we've been organizing to see how to better support each other. (Professional)

(continued)

TABLE A.2 —Continued

Key Topic	Parent—Child Code	Definition	Example Excerpt
Innovation and social change	Trends/topics affecting teaching and learning—AI, technology change	Discusses issues around AI and technological change that should be studied/taught/considered	Well, I believe that artificial intelligence now is something that we need to look at because it's definitely changing and it's going to change the way we teach and the way we see things. All the professors should take a look at that and see how to use the tool. (Faculty)
	Trends/topics affecting teaching and learning— Sustainable material use	Discusses material use and sustainability as important topic to study/teach/consider	I think another challenge that we don't always have solutions for are how we retrofit buildings because buildings have regions that are warmer, and the buildings were designed for a different climate and the temperature has changed. But we're in some buildings that were designed for a different temperature. And it doesn't mean we tear it down because that's not sustainable. But how do you retrofit buildings for today's thermal environment when they were built 100 years ago when temperatures were different? (Faculty)
	Responses to emerging trends—Curricular adaptations, new courses	Discusses ways that programs are adding or changing courses, or amending learning activities in courses to respond to trends	I think they're really trying. This semester we had a speaker series where people came and talked about different ways we're building, like they're building and a few of those lectures were about sustainable design and mass timber. We actually had somebody who worked to get the codes passed for mass timber construction there and she talked about that process. And convincing, you know, firefighters that a wooden building wouldn't burn down like they think it would and that these are safe. So that was interesting. And so while we're not having necessarily classes on mass timber construction, we are still learning about it. (Faculty)
	Responses to emerging trends—Challenges to addressing trends	Discusses factors or considerations to address changes to practice/learning addressing global/social challenges/innovations	I would say a lot depends on the client in the practical world because even if like, say, I personally like being a passive house designer, but if my client who's funding the project is not in support of that, eventually I'm making it for the client. So I do have to keep his requirement in mind. And this is not to be like I want to please him or people pleaser, but it's more like what is it that his preference goes towards? So more than architects, I think it is the responsibility of collective whole to be more responsible. You cannot put it on an architect's shoulder and be like, okay, you need to be, but you also need to receive that kind of feedback from people, by and large, who really want to build things. (Professional)
	Skills needed to respond to emerging trends	Details on skill sets needed/ desired to improve response to challenges to architecture	Well, first and foremost is critical thinking and problem-solving. I put those two skills together, right? Being able to critically think through a process and know that every problem has a solution, you just have to be willing to be patient to find the right solution and you have to be willing to fail because fail is okay, failure is fine. That's not being really properly taught to young people, right? They think that the only way that they—only success is the only option, right? So we have to fail to learn. So critical thinking, problem-solving, empathy is a huge one, and empathy is the ability to listen. (Faculty)

TABLE A.2 —Continued

Key Topic	Parent—Child Code	Definition	Example Excerpt
	Professional learning opportunities	Describes professional development/professional learning offered by or acquired through firm-sponsored events	We can't just use AutoCAD for five, six, seven, eight years and fall behind in the standard. And it's not just our personal growth. It's the firm's growth too. We now have clients asking do we do Revit, we prefer Revit. So that being said, no, I don't think there's any opportunity at my current place of employment for learning about parametric design and Grasshopper and algorithmic design. (Professional)
Collaboration	Status of academic/practice collaboration—Issues with productive collaboration	Discusses desires or evolving initiatives that engage academic and firm practitioners together	So one of our partners does teach part-time at [private institution] as a kind of adjunct. And then one of our associates did the same thing, but she went to a different office. It's difficult to do because you're obviously not in the office a lot. What you'd have to do, you'd have to take a pay cut for all the hours you're not in the office, and then hopefully your other job compensates for that, which it almost definitely doesn't because universities don't pay very much. But also it makes projects difficult because projects run on the basis that you're working 40 hours a week. So it's difficult, but people do it. (Professional)
	Status of academic/practice collaboration—Role of firms in arch. education	Discusses role that firms could/should play to shape architecture education	I think it's to create, like a design oriented critical thinker rather than just preparing you for, like, taking all the technical exams or for drawing details or that kind of thing. But I think it's important to have some kind of dialog. So I think like a good level of involvement is the internship program and having people sit on juries, in panels for reviews, that kind of thing. Maybe instead of just having, you know, four people come in for three months, could have kind of a more varied internship program. (Professional)
	Status of academic/practice collaboration—Temporary academic consultation	Discusses practicing professionals involved in seminars, juries, critiques, or career days/fairs	We have an annual career fair that is really well attended. We have career panels where we bring in people from the city. Our studio reviews regularly include practitioners from the city. Like we have adjuncts who are practitioners in the city . . . and we make those connections. (Faculty)

NOTE: This table is not an exhaustive list of all qualitative codes used in this project. Parent-child codes were selected based on being most frequently used within each broad category or to demonstrate the range and specificity of different concepts captured in the coding scheme. Quotes have been lightly edited for clarity; arch. = architecture.

aligned with research questions and concepts of interest. The research team then revised or added codes after piloting the codebook on three transcripts. Two research team members applied the finalized codebook to all remaining transcripts in one cycle of inductive coding.[1] In a second round of analysis, research team members developed short written memos to begin categorizing the data into high-level themes across student, faculty, and practicing professionals and among subgroups of interest. Preliminary themes were reviewed and refined across the research team in combination with reviewing emerging survey themes to generate both confirming and potentially disconfirming pieces of evidence for the final written narrative. Quotes included in the report have been lightly edited for clarity (e.g., removing "uhhs" and "um" and other filler terms). In some cases, we do not report faculty race or gender in describing results to ensure participants are not identifiable.

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[1] Matthew B. Miles, A. Michael Huberman, and Johnny Saldana, *Qualitative Data Analysis: A Methods Sourcebook*, 3rd ed., SAGE, 2020.

Survey Methods and Findings

Sampling and Survey

In order to understand the experiences of individuals throughout the architecture education, training, and practice pipeline, we conducted a survey of architecture students, faculty in architecture programs, and practicing professionals. We sent invitations for the web-based survey to students, faculty, and practicing professionals via their registered email with AIA, NCARB, or ACSA. The characteristics of the survey populations, samples, and respondents are shown in Table B.1.

TABLE B.1

Characteristics of Survey Populations, Samples, and Respondents

	Students	Faculty		Practicing Professionals	
	Sample	Sample	Population	Sample	Sampling Frame
Asian	14%	8%	7%	18%	16%
Black	7%	6%	7%	15%	15%
Indigenous	3%	1%	6%***	4%	1%***
Latinx	20%	5%	11%**	34%	17%***
Multiracial	11%	3%	4%	11%	21%***
MENA	6%	2%	2%	3%	1%***
White	61%	79%	72%***	32%	16%***
Female	68%	35%	34%	52%	47%***
Male	30%	57%	65%***	44%	53%***
Nonbinary or third gender	2%	0%	0%	1%	0%***
Other/Undisclosed	0%	8%	1%***	3%	0%***
Non-NAAB	10%	3%	2%	NA	NA
NAAB-accredited	90%	96%	1%*	NA	NA
Public	68%	53%	64%***	NA	NA
Private	32%	39%	36%	NA	NA
Total	*494*	*596*	*4,824*	*2,786*	*35,187*

NOTE: Proportion of individuals in each category reported. Racial/ethnic categories sum to more than 100 percent because respondents can be in multiple categories. Faculty respondents are compared with the sampling frame for faculty survey, which was the full population of 4,824. Professional respondents are compared with the sampling frame for professional, which oversampled some racial and ethnic categories to represent these perspectives. Note that demographic information was not available for the sampling frame or population of students. Asterisks show if the proportion for the sampling frame is statistically distinguishable from the proportion for the sample. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The student survey was sent to all registered members of AIAS, of which there are over 140 campus-based chapters. Survey completers were entered into a raffle to win $100 Amazon gift cards for their participation. Thirteen percent (*n* = 377) students opted into participating. The majority of our student sample was female (68 percent female; 30 percent male; 2 percent other gender) and White (61 percent White; 20 percent Latinx; 14 percent Asian; 11 percent multiracial; 7 percent Black). The overwhelming majority were enrolled at NAAB-accredited institutions (90 percent) and most were enrolled in a bachelor's degree program (54 percent B.Arch; 16 percent B.S., B.A., or B.F.A.; 26 percent graduate degree; 4 percent two-year degree). Table B.2 contains more detailed demographic information about the student sample.

The faculty survey was sent to all faculty at ACSA member institutions. Twelve percent (*n* = 598) of faculty contacted completed the survey. The majority of faculty respondents were White (68 percent White; 7 percent Asian; 6 percent Latinx; 5 percent Black) and male (56 percent male; 35 percent female; 8 percent undisclosed). On average, faculty respondents had 22 years of experience working in architecture and the overwhelming majority taught at NAAB-accredited institutions (96 percent). The majority of faculty respondents worked at public colleges or universities (58 percent public; 41 percent private; 99 percent college or university, 1 percent community college). Table B.3 contains more detailed demographic information about the faculty sample.

TABLE B.2
Student Survey Respondents' Descriptive Characteristics

Student Characteristics	Percentage
Individual demographic characteristics	
Asian	14%
Black	7%
Indigenous	3%
Latinx	20%
Multiracial	11%
MENA	6%
White	61%
Female	68%
Male	30%
Nonbinary or third gender	2%
Other/Undisclosed	0%
Parental education	
High school or less	16%
Some College	8%
Associate's/Trade school	6%
Bachelor's	34%
Graduate/Professional	36%
Institution characteristics	
Private	32%
Public	68%

TABLE B.2 —Continued

Student Characteristics	Percentage
Community college/2-year institution	1%
College or university/4-year institution	99%
NAAB-accredited	90%
Non-NAAB-accredited	10%
Degree enrolled in (simplified)	
2-year degree	4%
B.Arch degree	70%
Graduate degree	26%
Other	1%
Degree enrolled in	
A.S.	2%
A.A.	1%
B.S.	10%
B.A.	3%
B.F.A.	2%
B.Arch	54%
M.Arch (arch. undergrad +1)	13%
M.Arch (arch. undergrad +2)	8%
M.Arch (non-arch. undergrad +3)	4%
M.S.	1%
D.Arch	1%
Other	1%

NOTE: Proportion of individuals in each category reported. Racial/ethnic categories sum to more than 100 percent because respondents can be in multiple categories; arch. = architecture; non-arch. = nonarchitecture.

TABLE B.3

Faculty Survey Respondents' Descriptive Characteristics

Faculty Characteristics	Percentage
Individual demographic characteristics	
Asian	8%
Black	6%
Indigenous	1%
Latinx	7%
Multiracial	3%

(continued)

TABLE B.3 —Continued

Faculty Characteristics	Percentage
MENA	2%
White	79%
Female	35%
Male	57%
Nonbinary or third gender	0%
Other/Undisclosed	8%
Parental education	
High school or less	10%
Some college	4%
Associate's/Trade school	5%
Bachelor's	21%
Graduate/Professional	60%
Institution characteristics	
Private	36%
Public	64%
Community college/2-year institution	1%
College or university/4-year institution	99%
Non-NAAB	4%
NAAB-accredited	96%

NOTE: Proportion of individuals in each category reported. Racial/ethnic categories sum to more than 100 percent because respondents can be in multiple categories.

TABLE B.4
Practicing Professional Survey Respondents' Descriptive Characteristics

Practicing Professional Characteristics	Percentage
Individual demographic characteristics	
Asian	18%
Black	15%
Indigenous	4%
Latinx	34%
Multiracial	11%
MENA	3%
White	32%
Female	52%
Male	44%
Nonbinary or third gender	1%
Other/Undisclosed	3%

TABLE B.4 — Continued

Practicing Professional Characteristics	Percentage
Parental education	
High school or less	15%
Some college	6%
Associates/Trade school	7%
Bachelor's	29%
Graduate/Professional	43%
Organization characteristics	
Organization size	
Single-person firm	7%
Small firm (2–9)	24%
Midsized firm (10–49)	28%
Large firm (50+)	42%
Current role	
Management	25%
Architects/Designers/Emerging professionals	67%
Other design professionals	3%
Financial, administrative, and technical	1%
Other	3%

NOTE: Proportion of individuals in each category reported. Racial/ethnic categories sum to more than 100 percent because respondents can be in multiple categories.

Supplemental Findings Tables

TABLE B.5

Proportion of Faculty and Practicing Professional Survey Respondents Reporting Barriers to Entering Professional Practice, by Parental Education

	High School or Less	Some College	Associate's	Bachelor's	Graduate Degree
Compensation	79%	80%	74%	79%	84%*
Culture of profession	63%	71%	60%	62%	69%**
Interest in arch. Field	18%	15%	15%	16%	15%
Interest in different field	32%	31%	23%*	31%	29%
Job opps. in arch. field	51%	60%*	50%	55%	54%
Practice experience	54%	60%	42%**	49%	50%
Peers in field	26%	21%	18%*	19%**	19%**
Mentor in field	22%	23%	19%	18%	19%
Preparation in arch. education	31%	36%	29%	29%	28%
Obtaining license	52%	52%	48%	49%	46%*
Personal circumstances	47%	55%	50%	50%	49%
Observations	*321*	*121*	*149*	*618*	*1,034*

NOTE: Proportion of respondents reporting issue is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for each parental education level is distinguishable from the proportion for high school degree or lower as parents' highest education. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; opps. = opportunities; arch. = architecture.

TABLE B.6

Sources of Inspiration for Entering Architecture, Proportion of Faculty Survey Respondents by Race and Gender

	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
After-school programs	2%	2%	2%	0%	0%	0%	4%	0%	0%
Media	25%	31%	27%	48%**	26%	50%	27%	22%	18%
Field trips	13%	19%	19%	7%**	13%	0%	8%*	11%	9%
Career counseling	9%	10%	10%	0%	9%	0%	23%	0%	0%
Elementary school event	3%	4%	3%	7%	4%	25%	0%	0%	0%
Family in industry	23%	23%	23%	35%	17%	50%	27%	22%	55%*
Friend in industry	10%	11%	10%	10%	9%	0%	12%	33%	9%
High school event	16%	17%	17%	7%**	17%	0%	19%	0%	9%
Internship	7%	5%	7%	0%	0%	0%	4%	0%	0%
Middle school event	1%	6%**	4%	0%	4%	0%	0%	0%	0%
K–12 school curriculum	7%	13%*	11%	14%	17%	0%	4%*	11%	0%
Social media	1%	0%	0%	0%	0%	0%	0%	0%	0%
Summer program	3%	3%	4%	0%	4%	25%	0%	0%	0%
Social justice/Representation	5%	2%**	3%	3%	4%	25%	0%	0%	0%
Construction site visit or work	15%	21%	22%	17%	9%	25%	12%	0%	18%
Historic building visit/Building exposure	38%	31%	38%	14%***	13%**	0%	35%	11%**	18%
Arch. school visit	6%	11%*	9%	7%	17%***	0%	23%*	0%	9%
Other	7%	10%	7%	3%	9%	0%	15%	33%	0%
Observations	*149*	*241*	*291*	*29*	*23*	*<10*	*26*	*<10*	*11*

NOTE: Proportion of respondents by population reported. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Arch. = Architecture.

TABLE B.7

Sources of Inspiration for Entering Architecture, Proportion of Student Survey Respondents by Race and Gender

	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
After-school programs	6%	13%**	8%	6%	13%	10%	6%	5%	8%
Media	48%	58%*	53%	61%	39%	50%	49%	24%***	46%
Field trips	17%	28%**	21%	22%	22%	10%	19%	10%*	22%
Career counseling	15%	9%	14%	16%	9%	10%	9%	10%	5%**
Elementary school event	4%	9%*	5%	6%	0%	20%	9%	10%	14%
Family in industry	18%	18%	20%	18%	9%*	0%	21%	10%	19%
Friend in industry	8%	10%	9%	6%	4%	10%	9%	14%	11%

TABLE B.7 —Continued

	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
High school event	28%	29%	32%	20%*	17%*	40%	28%	24%	32%
Internship	13%	16%	15%	14%	17%	20%	8%**	5%**	14%
Middle school event	5%	4%	6%	2%*	4%	0%	2%***	5%	0%
K–12 school curriculum	14%	16%	15%	22%	17%	10%	9%*	10%	14%
Social media	19%	20%	19%	18%	9%	20%	18%	29%	19%
Summer program	8%	12%	11%	10%	4%	10%	5%***	10%	14%
Social justice/Representation	2%	0%	1%	0%	4%	0%	0%	5%	0%
Construction site visit or work	11%	21%**	16%	10%	13%	0%	10%	10%	8%
Historic building visit/Building exposure	28%	37%	35%	25%*	17%**	30%	31%	14%**	35%
Arch. school visit	15%	21%	18%	16%	13%	20%	16%	10%	22%
Other	3%	1%	2%	2%	0%	0%	0%	10%	0%
Observations	*240*	*101*	*209*	*49*	*23*	*10*	*67*	*21*	*37*

NOTE: Proportion of respondents by population reported. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for Female/Other is statistically distinguishable from the proportion for males and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Arch. = Architecture.

TABLE B.8

Sources of Inspiration for Entering Architecture, Proportion of Practicing Professional Survey Respondents by Race and Gender

	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
After-school programs	5%	6%	4%	7%**	8%***	3%	5%*	6%	4%
Media	31%	33%	30%	36%**	31%	29%	34%**	30%	35%
Field trips	16%	16%	14%	20%***	11%	16%	17%**	14%	18%*
Career counseling	14%	13%	14%	14%	13%	11%	14%	3%***	15%
Elementary school event	4%	4%	5%	3%	5%	5%	4%	8%	5%
Family in industry	22%	23%	21%	23%	19%	16%	25%**	27%	24%
Friend in industry	9%	8%	10%	10%	8%	8%	8%*	6%	10%
High school event	17%	24%***	20%	17%	22%	20%	22%	8%***	21%
Internship	10%	6%***	8%	8%	11%	7%	7%	5%	9%
Middle school event	4%	6%	6%	3%***	6%	7%	4%**	3%	2%***
K–12 school curriculum	9%	10%	11%	7%***	11%	11%	7%***	13%	8%**
Social media	2%	2%	1%	5%***	1%	3%	1%	6%*	2%
Summer program	7%	4%***	4%	5%	10%***	7%	6%	3%	6%
Social justice/Representation	3%	2%*	2%	4%	2%	1%	2%	5%	2%
Construction site visit or work	13%	21%***	16%	12%**	16%	11%*	18%	22%	16%

(*continued*)

TABLE B.8 —Continued

	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Historic building visit/Building exposure	25%	23%	27%	22%**	17%***	33%	27%	20%	27%
Arch. school visit	11%	11%	13%	14%	9%**	8%	10%**	11%	14%
Other	4%	4%	5%	3%**	5%	5%	3%***	13%*	4%
Observations	*982*	*821*	*590*	*343*	*283*	*76*	*632*	*64*	*212*

NOTE: Proportion of respondents by population reported. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * p < 0.1, ** p < 0.05, *** p < 0.01. Arch. = Architecture.

TABLE B.9

Respondents Reporting a Desire for More Emphasis on Curricular Topics in Architecture Education, Proportion of Faculty Survey Respondents by Race and Gender

	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Applied research	80%	77%	78%	73%	67%	70%	81%***	71%	82%**
Arch. history	77%	73%	78%	59%*	74%	50%	69%	59%	80%*
Art/Drawing	73%	73%	75%	48%**	79%	90%*	83%**	77%	83%*
Building technology systems	84%	84%	85%	71%	90%	80%	92%	82%	97%**
Communication	90%	88%	88%	89%	81%	90%	84%*	88%	82%
Cultural contexts	83%	80%	81%	86%	86%	80%	81%***	88%**	77%
Design studios	68%	70%	71%	56%	53%	80%	86%***	77%	74%
Digital design	58%	62%	61%	62%	63%	80%	86%	82%	77%
Digital fabrication	57%	54%	55%	65%	70%	90%	76%	88%*	74%
Sustainability	94%	85%**	91%	86%	85%	90%	86%	88%	91%*
Guest lectures	67%	68%	69%	67%	68%	100%	78%	88%	83%
Interdisciplinary studies	73%	71%	71%	75%	70%	80%	65%	71%	68%
Technical skills/ Documentation	63%	69%	67%	63%	75%	90%	83%	77%	91%
Professional practice and ethics	66%	69%	67%	70%	80%	100%	90%*	59%*	88%
Study abroad	84%	79%	82%	67%	80%	90%	84%	94%**	80%
Urban design	65%	65%	63%	71%	80%*	80%	86%***	88%*	83%
Building performance models	57%	59%	57%	56%	79%**	100%	91%	82%	85%
CAD software	44%	38%	40%	42%	60%*	80%	81%	77%	71%
Computational design	42%	42%	40%	62%**	70%***	80%	81%	77%	76%
Climate change	92%	82%**	88%	93%	80%	100%	87%***	82%	88%**
Material selection	70%	75%	72%	89%**	81%	90%	92%**	88%	94%**
Observations	*136*	*227*	*271*	*28*	*21*	*<10*	*26*	*<10*	*11*

NOTE: Proportion of respondents by population reported. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * *p* < 0.1, ** *p* < 0.05, *** *p* < 0.01. Arch. = Architecture.

TABLE B.10

Respondents Reporting a Desire for More Emphasis on Curricular Topics in Architecture Education, Proportion of Student Survey Respondents by Race and Gender

	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Applied research	67%	72%	66%	76%	67%	70%	81%***	71%	82%**
Arch. history	67%	65%	68%	67%	69%	50%	69%	59%	80%*
Art/Drawing	79%	65%***	71%	80%	81%	90%*	83%**	77%	83%*
Building technology systems	88%	93%	90%	91%	94%	80%	92%	82%	97%**
Communication	76%	87%**	75%	89%***	67%	90%	84%*	88%	82%
Cultural contexts	77%	71%	68%	89%***	88%**	80%	81%***	88%**	77%
Design studios	78%	74%	73%	76%	67%	80%	86%***	77%	74%
Digital design	84%	85%	80%	89%*	94%**	80%	86%	82%	77%
Digital fabrication	75%	81%	72%	80%	81%	90%	76%	88%*	74%
Sustainability	84%	82%	82%	89%	93%	90%	86%	88%	91%*
Guest lectures	79%	80%	76%	89%***	94%**	100%	78%	88%	83%
Interdisciplinary studies	66%	68%	62%	83%***	73%	80%	65%	71%	68%
Technical skills and documentation	86%	88%	88%	89%	100%	90%	83%	77%	91%
Professional practice and ethics	84%	80%	83%	78%	93%	100%	90%*	59%*	88%
Study abroad	82%	78%	77%	87%*	81%	90%	84%	94%**	80%
Urban design	76%	81%	73%	76%	81%	80%	86%***	88%*	83%
Building performance models	86%	84%	84%	83%	88%	100%	91%	82%	85%
CAD software	81%	84%	83%	70%*	81%	80%	81%	77%	71%
Computational design	79%	81%	78%	76%	87%	80%	81%	77%	76%
Climate change	80%	73%	76%	83%	87%	100%	87%***	82%	88%**
Material selection	85%	86%	85%	83%	81%	90%	92%**	88%	94%**
Observations	*211*	*95*	*188*	*46*	*16*	*10*	*64*	*17*	*35*

NOTE: Proportion of respondents by population reported. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Arch. = Architecture.

TABLE B.11

Respondents Reporting a Desire for More Emphasis on Curricular Topics in Architecture Education, Proportion of Practicing Professional Survey Respondents by Race and Gender

	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Applied research	19%	21%	18%	23%**	18%	22%	21%*	20%	21%
Arch. history	7%	15%***	9%	14%**	8%	9%	11%	8%	11%
Art/Drawing	12%	15%**	12%	15%	12%	14%	13%	12%	11%
Building performance models	43%	38%**	39%	45%**	42%	42%	39%	41%	37%
Building technology systems	60%	55%**	60%	65%*	50%***	59%	59%	53%	63%
CAD software	24%	35%***	30%	30%	30%	34%	29%	25%	31%
Climate change	30%	21%***	27%	26%	21%**	24%	27%	30%	27%
Communication	34%	34%	31%	42%***	29%	33%	34%	33%	33%
Computational design	17%	19%	13%	28%***	19%**	17%	17%***	31%***	18%**
Cultural context	17%	18%	14%	19%**	24%***	14%	17%*	17%	19%*
Digital design	26%	24%	20%	29%***	30%***	30%*	25%***	27%	24%
Digital fabrication	15%	16%	12%	19%***	14%	11%	16%**	19%	14%
Sustainability	34%	28%**	30%	38%**	29%	28%	31%	28%	31%
Interdisciplinary	22%	25%	23%	27%*	24%	33%*	22%	16%	26%
Material selection	39%	36%	38%	41%	31%**	36%	38%	45%	40%
Ethics	45%	49%*	45%	48%	46%	50%	49%*	34%*	46%
Technical skills and documentation	58%	56%	54%	56%	59%	61%	60%***	58%	54%
Urban design and planning	18%	22%*	17%	17%	27%***	26%*	20%**	23%	22%*
Observations	*982*	*821*	*590*	*343*	*283*	*76*	*632*	*64*	*212*

NOTE: Proportion of respondents by population reported. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Arch. = Architecture.

TABLE B.12

Usefulness of Knowledge and Skills in Practice, Proportion of Faculty and Practicing Professional Survey Respondents by Race and Gender

	All	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Applied research	38%	35%	42%***	44%	33%***	38%**	34%*	32%***	36%	34%***
Arch. history	48%	43%	52%***	56%	40%***	42%***	38%***	42%***	42%**	43%***
Art/Drawing	65%	62%	67%**	67%	59%***	63%	65%	64%*	56%*	56%***
Building performance models	60%	66%	55%***	54%	63%***	65%***	54%	66%***	61%	55%
Building technology systems	82%	86%	80%***	84%	82%	84%	78%	84%	77%	83%

TABLE B.12 —Continued

	All	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
CAD software	79%	81%	78%**	75%	82%***	84%***	74%	86%***	80%	83%***
Communication	89%	91%	87%**	90%	87%*	89%	78%**	88%	83%	84%**
Computational design	54%	58%	52%**	44%	57%***	61%***	45%	66%***	58%**	53%**
Cultural contexts	60%	63%	59%*	60%	60%	64%	57%	61%	49%*	56%
Design studios	73%	73%	74%	76%	72%*	69%**	61%**	71%***	68%	65%***
Digital design	72%	76%	71%**	69%	76%***	78%***	74%	77%***	78%*	75%**
Digital fabrication	42%	45%	40%**	36%	47%***	45%***	38%	47%***	56%***	42%
Sustainability	63%	69%	60%***	67%	65%	66%	66%	58%***	66%	57%***
Interdisciplinary studies	56%	57%	57%	59%	53%**	62%	60%	52%***	41%***	47%***
Technical skills and documentation	84%	86%	83%**	81%	86%***	91%***	88%*	86%***	72%*	81%
Ethics	71%	74%	69%**	73%	71%	73%	75%	73%	51%***	70%
Study abroad	53%	54%	51%	59%	46%***	43%***	46%**	52%***	52%	53%*
Urban design	54%	53%	54%	55%	44%***	54%	46%	56%	46%	50%
Observations	*477*	*143*	*229*	*278*	*27*	*21*	*<10*	*26*	*<10*	*11*

NOTE: Proportion of respondents reporting skill is moderately or entirely useful.Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Arch. = Architecture.

TABLE B.13

Proportion of Faculty Survey Respondents Reporting Barriers to Entering Professional Practice, by Institutional Affiliation

	Non-NAAB	NAAB	Private	Public
Compensation	73%	87%	88%	87%
Culture of profession	73%	72%	75%	69%
Interest in arch. field	0%	16%	18%	15%
Interest in different field	9%	27%	28%	25%
Job opps. in arch. field	73%	48%	57%	46%**
Practice experience	82%	44%**	50%	44%
Peers in field	18%	14%	16%	14%
Mentor in field	18%	14%	14%	14%
Preparation in arch. education	36%	14%**	16%	14%
Obtaining license	64%	32%**	34%	31%
Personal circumstances	64%	47%	48%	47%
Observations	*11*	*391*	*137*	*253*

NOTE: Proportion of respondents reporting factor is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for faculty working at NAAB-accredited institutions is statistically distinguishable from the proportion for non-NAAB-accredited and whether the proportion for public institutions is statistically distinguishable from the proportion for private institutions. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; arch. = architecture.

TABLE B.14

Proportion of Practicing Professional Survey Respondents Reporting Barriers to Entering Professional Practice, by Size of Firm and Other Professional Characteristics

	Single Person	Small (2–99)	Midsized (100–499)	Large (500+)	Unlicensed	Licensed
Compensation	80%	77%*	77%*	82%	79%	79%
Culture of profession	67%	63%	65%	68%	65%	65%
Interest in arch. field	16%	15%***	14%	17%	16%	15%
Interest in different field	24%	29%	28%**	33%***	29%	32%
Job opps. in arch. field	60%	54%	51%***	58%	57%	54%
Practice experience	50%	50%	49%	53%*	52%	50%
Peers in field	22%	21%**	20%	22%	24%	18%***
Mentor in field	24%	21%***	17%***	20%***	23%	19%**
Preparation in arch. education	33%	32%	31%	35%	35%	31%*
Obtaining license	51%	49%***	47%*	55%**	60%	39%***
Personal circumstances	53%	48%	48%**	52%	53%	46%***
Observations	143	476	575	855	*1,238*	*811*

NOTE: Proportion of respondents reporting factor is a barrier or slight barrier. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportions for other firm sizes are statistically distinguishable from the proportion for single person firms, and whether the proportion for licensed is distinguishable from the proportion for unlicensed. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; opps. = opportunities; arch. = architecture.

TABLE B.15

Proportion of Students Reporting at Least Monthly Engagement with Architecture Firms and Associations, by Prior Architecture Practice Experience

	Firms	Professional Associations
No experience	15%	30%
Externship	44%***	48%**
Internship	51%***	40%***
Design workshop	40%***	42%***
Summer program	45%***	42%**
Part-time architecture work	58%***	59%***
Full-time architecture work	65%***	61%***
Observations	*290*	*290*

NOTE: Proportion of respondents reporting they engage with the organization type at least monthly. Asterisks show whether the proportion for students with the experience is statistically distinguishable from the proportion for students with no prior architecture practice experience. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B.16

Proportion of Faculty Reporting Opportunities for Skill Development, Overall and by Dimensions of Identity and Experience

	All	Non-NAAB	NAAB	Private	Public	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Writing/Presenting	84%	70%	84%	74%	89%***	86%	82%	84%	86%	78%	100%	85%	89%	82%
Continuing ed. courses in arch.	58%	60%	58%	58%	58%	64%	59%	61%	52%	65%	50%	62%	44%	46%
Continuing ed. courses in other field	36%	40%	35%	30%	39%*	45%	30%***	32%	28%	57%**	0%	46%	33%	27%
Professional credentials	29%	60%	28%**	28%	30%	35%	26%*	28%	38%	44%	25%	12%**	0%	0%
Competitions	28%	20%	29%	22%	32%**	26%	30%	27%	35%	30%	0%	19%	22%	36%
Reading literature	66%	60%	67%	66%	68%	67%	67%	72%	48%**	57%	75%	39%***	44%	36%**
Networking	75%	80%	75%	73%	75%	76%	76%	76%	76%	61%	75%	73%	78%	73%
Mentoring	74%	90%	74%	73%	74%	79%	73%	74%	86%*	74%	75%	69%	67%	36%**
Other	12%	20%	11%	15%	9%*	13%	10%	11%	7%	17%	25%	12%	0%	18%
Observations	*345*	*<10*	*338*	*106*	*228*	*198*	*197*	*291*	*29*	*23*	*<10*	*26*	*<10*	*11*

NOTE: Proportion of respondents reporting that they actively seek opportunity for skill development. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportion for male is statistically distinguishable from the proportion for Female/Other, each racial/ethnic group is distinguishable from the proportion for White, the proportion for attends a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attends a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; ed. = education; arch. = architecture.

TABLE B.17

Proportion of Practicing Professionals Reporting Opportunities for Skill Development, Overall and by Dimensions of Identity and Experience

	All	Small Firm	Large Firm (50+)	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial
Writing/Presenting	38%	36%	41%**	37%	40%	1%	44%	36%	37%	35%**	39%	43%
Continuing ed. courses in arch.	67%	68%	66%	69%	67%	40%	62%***	73%	75%	66%***	58%**	67%
Continuing ed. courses in other field	31%	30%	33%	33%	30%	72%	33%	36%**	38%	31%	27%	33%
Professional credentials	53%	51%	56%**	57%	51%**	30%	54%	56%*	51%	57%***	61%	60%***
Competitions	15%	15%	14%	12%	18%***	51%	19%***	17%***	12%	16%***	27%***	16%**
Reading literature	52%	54%	50%*	51%	56%**	11%	48%***	53%*	61%	49%***	48%	54%
Networking	60%	59%	62%	64%	58%**	58%	60%	65%	65%	59%***	55%	63%
Mentoring	57%	53%	63%***	60%	55%**	64%	54%**	64%	55%	56%***	52%	62%
Other	5%	6%	4%*	4%	6%	61%	4%	6%	4%	4%	6%	5%
Observations	*2,002*	*1,163*	*837*	*982*	*821*	*590*	*343*	*283*	*76*	*632*	*64*	*212*

NOTE: Proportion of reporting that they actively seek opportunity for skill development. Asterisks show whether the proportion for male is statistically distinguishable from Female/Other, each racial/ethnic group is distinguishable from White, the proportion for small firm is distinguishable from the proportion for large firms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; ed. = education; arch. = architecture.

TABLE B.18

Architecture's Role in Promoting Sustainability and Addressing Climate Change, Proportion of Faculty Survey Respondents by Dimensions of Identity and Experience

	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial	Non-NAAB	NAAB	Private	Public
Diversity	16%	17%	15%	24%	35%*	0%	8%	33%	18%	0%	16%	18%	13%
Social equity	30%	27%	27%	31%	48%*	25%	35%	11%	18%	20%	30%	32%	28%
Social justice	33%	22%**	26%	21%	30%	50%	35%	33%	36%	30%	26%	29%	23%
Inclusion	11%	15%	11%	17%	35%**	0%	15%	0%	18%	30%	13%	11%	15%
Human rights	11%	8%	9%	3%	9%	25%	19%	0%	9%	20%	9%	10%	9%
Climate change	79%	71%*	76%	76%	57%*	75%	58%*	89%	46%*	70%	73%	73%	74%
Sustainable design	38%	43%	44%	41%	4%***	25%	35%	44%	46%	20%	41%	40%	41%
Human health and well-being	58%	57%	30%	59%	48%	0%	54%	67%	55%	70%	57%	50%	61%**
Observations	*149*	*241*	*291*	*29*	*23*	*<10*	*26*	*<10*	*11*	*10*	*387*	*137*	*248*

NOTE: Proportion of respondents identifying topic as among the three most important by population reported. Asterisks show whether the proportion for males is statistically distinguishable from females, and each racial/ethnic group is distinguishable from White, the proportion for works at a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for works at a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; opps. = opportunities; arch. = architecture.

TABLE B.19

Architecture's Role in Promoting Sustainability and Addressing Climate Change, Proportion of Student Survey Respondents by Dimensions of Identity and Experience

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial	Non- NAAB	NAAB	Private	Public
Diversity	43%	47%	32%**	37%	52%*	50%	60%	49%*	53%	41%	67%	41%**	50%	38%*
Social equity	55%	57%	50%	52%	70%**	62%	70%	54%	60%	53%	62%	55%	59%	52%
Social justice	43%	46%	38%	40%	50%	50%	60%	46%	60%	44%	57%	42%	49%	39%
Inclusion	56%	60%	44%**	51%	70%**	69%	60%	60%	53%	59%	71%	54%	58%	54%
Human rights	51%	54%	44%	49%	63%*	62%	70%	51%	53%	56%	57%	51%	58%	48%
Climate change	79%	82%	71%**	77%	87%*	88%	100%	81%	93%**	85%	90%	78%	84%	76%
Sustainable design	87%	90%	81%**	88%	93%	94%	100%	86%	93%	94%	95%	87%	90%	86%
Human health and well-being	82%	83%	78%	82%	85%	88%	90%	82%	87%	88%	86%	82%	87%	80%
Observations	*291*	*200*	*90*	*184*	*46*	*16*	*10*	*47*	*15*	*34*	*21*	*261*	*90*	*181*

NOTE: Proportion of respondents reporting architecture has a very important role in promoting the issue. Asterisks show whether the proportion for males is statistically distinguishable from the proportion for Female/Other and whether the proportion for other racial/ethnic groups are statistically distinguishable from the proportion for White respondents, attends NAAB-accredited institution is distinguishable from non-NAAB, private is distinguishable from public. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B.20

Architecture's Role in Promoting Sustainability and Addressing Climate Change, Proportion of Practicing Professional Survey Respondents by Dimensions of Identity and Experience

	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial	Unlicensed	Licensed	Small Firm	Large Firm (50+)
Diversity	16%	27%	16%	27%***	46%***	25%*	27%***	30%**	26%***	30%	22%***	26%	28%
Social equity	116%	23%***	25%	30%**	41%***	28%	29%**	31%	31%*	32%	24%***	27%	31%*
Social justice	216%	8%***	9%	11%	16%***	13%	11%	22%**	12%	13%	9%**	11%	13%
Inclusion	316%	20%	20%	17%*	30%***	17%	22%	22%	22%	23%	19%**	21%	22%
Human rights	416%	13%	13%	13%	12%	13%	15%	19%	19%**	15%	10%***	14%	12%
Climate change	516%	54%	60%	62%	40%***	55%	55%**	42%***	54%*	50%	62%***	53%	58%**
Sustainable design	616%	59%***	60%	57%	36%***	53%	53%***	47%**	53%*	53%	55%	55%	52%
Human health and well-being	716%	64%	29%	63%*	55%***	66%	65%	63%	65%	62%	68%***	65%	63%
Observations	982	821		343	283	76	632	64	212	1144	747	1,096	795

NOTE: Proportion of respondents identifying topic as among the three most important by population reported. Asterisks show whether the proportion for males is statistically distinguishable from females, and each racial/ethnic group is distinguishable from White, the proportion for works at a large firm (50+ employees) is distinguishable from the proportion for small firm, and the proportion for licensed is distinguishable from the proportion for unlicensed. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Level of Focus on Social Change Topics in the Architecture Curriculum, Proportion of Student Survey Respondents by Dimensions of Identity and Experience

	All	Female/Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial	Non-NAAB	NAAB	Private	Public
Diversity	42%	39%	50%*	41%	54%*	50%	50%	44%	33%	47%	38%	42%	43%	40%
Social equity	47%	43%	57%**	44%	59%*	56%	60%	46%	40%	41%	57%	46%	44%	46%
Inclusion	53%	54%	52%	54%	59%	38%	60%	54%	47%	53%	48%	54%	54%	52%
Social justice	39%	37%	44%	37%	37%	38%	60%	46%	47%	35%	43%	39%	39%	37%
Human rights	40%	39%	43%	37%	41%	44%	70%*	49%*	47%	41%	52%	39%	42%	37%
Access to resources	46%	43%	52%	42%	48%	56%	50%	51%	40%	41%	52%	45%	47%	43%
Community	55%	55%	56%	55%	57%	62%	40%	60%	47%	62%	57%	55%	57%	52%
Biodiversity	33%	27%	47%***	33%	24%	25%	30%	39%	33%	26%	48%	32%	34%	31%
Passive design	42%	40%	48%	42%	39%	50%	30%	47%	47%	47%	48%	42%	47%	38%
Resource conservation	33%	29%	41%*	33%	26%	38%	30%	44%	20%	32%	33%	33%	31%	32%
Reductionism	15%	12%	20%*	13%	11%	12%	22%	23%*	13%	12%	14%	15%	16%	13%
Energy-efficient systems	47%	45%	51%	48%	50%	62%	30%	49%	40%	59%	52%	46%	49%	45%
Eco-friendly materials	44%	40%	53%**	44%	37%	50%	50%	44%	40%	38%	62%	42%*	46%	42%
Material impact and waste	35%	33%	39%	34%	26%	31%	60%	39%	27%	24%	52%	32%*	39%	31%
Occupant health	54%	53%	57%	56%	54%	44%	60%	54%	53%	59%	62%	53%	59%	50%
Community quality of life	57%	60%	51%	58%	63%	50%	60%	54%	47%	62%	67%	56%	68%	50%**
Adaptability	51%	48%	56%	51%	54%	50%	70%	47%	47%	50%	62%	49%	52%	48%
Sustainability	60%	55%	70%**	60%	52%	88%**	80%	61%	53%	68%	67%	58%	63%	55%
Observations	*292*	*201*	*90*	*185*	*46*	*16*	*10*	*57*	*15*	*34*	*21*	*262*	*90*	*182*

NOTE: Proportion of respondents reporting high or central focus on topic in the curriculum. Asterisks show whether the proportion for males is statistically distinguishable from females, and each racial/ethnic group is distinguishable from White, the proportion for attends a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attends a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B.22

Level of Focus on Social Change Topics in the Architecture Curriculum, Proportion of Practicing Professional Survey Respondents by Dimensions of Identity and Experience

	All	Female/ Other	Male	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial	Unlicensed	Licensed
Diversity	75%	80%	71%***	70%	79%***	87%***	63%	76%***	77%	76%*	76%	75%
Social equity	75%	80%	71%***	72%	77%*	86%***	62%*	75%	83%**	76%	76%	74%
Inclusion	76%	82%	70%***	73%	78%**	86%***	62%*	76%**	81%*	76%	77%	75%
Social justice	70%	76%	65%***	67%	73%**	81%***	55%*	70%**	77%*	72%	71%	70%
Human rights	77%	80%	75%**	73%	77%	85%***	67%	79%***	81%	79%**	77%	77%
Access to resources	85%	86%	85%	81%	85%*	90%***	78%	86%***	88%	84%	84%	85%
Community	81%	84%	80%**	79%	81%	87%***	74%	81%	88%**	78%	80%	84%**
Biodiversity	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Passive design	73%	77%	70%***	71%	71%	74%	67%	76%***	72%	71%	72%	75%
Resource conservation	78%	80%	76%*	75%	77%	78%	79%	80%***	83%	76%	77%	79%
Reductionism	80%	81%	79%	78%	80%	81%	76%	82%**	81%	78%	78%	84%***
Energy-efficient systems	53%	58%	49%***	47%	57%***	58%***	45%	54%***	59%*	47%	55%	49%**
Eco-friendly materials	89%	90%	89%	89%	89%	90%	89%	89%	88%	87%	87%	93%***
Material impact and waste	85%	87%	84%*	85%	85%	87%	79%	85%	81%	83%	83%	89%***
Occupant health	84%	86%	83%*	83%	83%	87%*	77%	83%	80%	80%	83%	86%**
Community quality of life	91%	91%	91%	91%	91%	92%	90%	91%	89%	90%	89%	94%***
Adaptability	88%	88%	89%	85%	89%*	93%***	84%	89%***	89%	88%	87%	90%*
Sustainability	87%	88%	87%	86%	86%	90%**	83%	88%**	86%	86%	85%	89%**
Observations	*1,929*	*979*	*819*	*586*	*343*	*283*	*76*	*632*	*64*	*212*	*1,160*	*764*

NOTE: Proportion of respondents reporting topic was moderately or extremely important in their architecture program. Asterisks show whether the proportion for males is statistically distinguishable from females, and each racial/ethnic group is distinguishable from White, the proportion for licensed is statistically distinguishable from unlicensed. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B.23

Organization Has an Equitable Hiring Policy, Proportion of Faculty and Professional Survey Respondents by Dimensions of Experience

	Percentage Reporting Equitable Hiring Policy
Faculty	**67%**
NAAB	67%
Non-NAAB	80%
Private	62%
Public	70%*
Observations	*436*
Professionals	**42%***
Licensed	46%
Unlicensed	40%**
Small firm	34%
Large firm (50+)	55%***
Observations	*1,061*

NOTE: Proportion of respondents reporting organization has an equitable hiring policy. Asterisks show whether the proportion for faculty is statistically distinguishable from the proportion for practicing professionals, the proportion for attending a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attending a public institution is distinguishable from the proportion for private, the proportion for licensed is statistically distinguishable from unlicensed, small firm is distinguishable from large firm. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B.24

Barriers to Equitable Hiring, Proportion of Survey Respondents by Population

	Practicing Professionals	Faculty
Leadership/Faculty support	29%	17%***
Interest	21%	13%***
Financial resources	17%	17%
Time	4%	2%**
Issue complexity	13%	22%***
Strategy formulation	6%	9%**
Other	7%	4%**
None*	0%	2%***
Lack of qualified candidates*	1%	12%***
Local politics*	1%	3%*
Observations	*1,890*	*428*

NOTE: Proportion of respondents reporting particular barriers to their organization's equitable hiring policy. Asterisks show whether the proportion for faculty is statistically distinguishable from the proportion for practicing professionals. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Asterisk next to a category denotes that it was not included as a response on the original survey and was given as a write-in response by at least 1 percent of respondents.

TABLE B.25

Perceived Degree of Collaboration between Architecture Colleges, Firms, and Associations, Proportion of Faculty Survey Respondents by Dimensions of Identity and Experience

	Firms	Associations
Non-NAAB	10%	20%
NAAB	20%	19%
Private	18%	18%
Public	20%	19%
Female/Other	17%	21%
Male	20%	16%
White	19%	15%
Asian	17%	24%
Black	26%	30%
Indigenous	50%	75%*
Latinx	15%	31%
MENA	44%	22%
Multiracial	27%	27%
Observations	*428*	*428*

NOTE: Proportion of respondents saying their organization collaborates with firms or associations around addressing social change to a great extent. Asterisks show whether the proportion for male is statistically distinguishable from the proportion for Female/Other, each racial/ethnic group is distinguishable from the proportion for White, the proportion for attends a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attends a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B.26

Degree to Which Industry Feedback Is Incorporated into the Architecture Curriculum, Proportion of Faculty Survey Respondents by Dimensions of Identity and Experience

	Male	Female	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial	Non-NAAB	NAAB	Public	Private
None	33%	31%	30%	45%	39%	0%	42%	33%	36%	10%	33%	29%	37%
Some extent	58%	60%	62%	45%*	48%	50%	54%	56%	71%	40%	60%	59%	58%
Fully incorporated	9%	9%	8%	10%	13%	50%	4%	11%	78%*	50%	8%***	12%	5%**
Observations	*149*	*240*	*290*	*29*	*23*	*4*	*26*	*9*	*11*	*10*	*380*	*243*	*135*

NOTE: Proportion of respondents by population reported. Asterisks show whether the proportion for male is statistically distinguishable from the proportion for Female/Other, each racial/ethnic group is distinguishable from the proportion for White, the proportion for attends a NAAB-accredited institution is distinguishable from the proportion for non-NAAB, and the proportion for attends a public institution is distinguishable from the proportion for private. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B.27

Degree to Which Industry Feedback Is Incorporated into the Architecture Curriculum, Proportion of Practicing Professional Survey Respondents by Dimensions of Identity and Experience

	Male	Female	White	Asian	Black	Indigenous	Latinx	MENA	Multiracial	Unlicensed	Licensed	Small Firm	Large Firm (50+)
None	56%	50%**	58%	52%**	50%***	62%	50%***	58%	52%*	51%	58%***	54%	53%
Some extent	41%	46%**	40%	45%*	47%**	38%	45%**	37%	63%	44%	40%*	43%	43%
Fully incorporated	3%	4%	2%	4%	4%	0%	5%***	5%	35%**	5%	1%***	3%	4%
Observations	*964*	*815*	*290*	*342*	*73*	*73*	*628*	*62*	*209*	*1,119*	*712*	*1,060*	*771*

NOTE: Proportion of respondents by population reported. Asterisks show whether the proportion for male is statistically distinguishable from the proportion for Female/Other, each racial/ethnic group is distinguishable from the proportion for White, the proportion for licensed is distinguishable from the proportion for unlicensed, and the proportion for small firm is distinguishable from the proportion for large firm. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B.28

Proportion of Faculty Respondents Reporting Barriers to Entering Professional Practice, by Intersections of Race and Gender

	White Male	White Female	Asian Male	Asian Female	Black Male	Black Female	Indigenous Male	Indigenous Female	Latinx Male	Latinx Female	MENA Male	MENA Female	Multiracial Male	Multiracial Female
Compensation	87%	85%***	100%	100%	^	75%	^	^	94%	67%	67%	^	^	^
Culture of profession	69%	76%*	59%	89%	^	75%	^	^	47%*	44%	67%	^	^	^
Interest in arch. field	16%	13%	6%*	0%	^	13%	^	^	12%	11%	33%	^	^	^
Interest in different field	26%	24%	18%	44%	^	75%**	^	^	12%*	22%	67%	^	^	^
Job opps in arch. field	47%	40%	67%*	56%	^	63%	^	^	65%	56%	83%*	^	^	^
Practice experience	41%	43%	39%	44%	^	63%	^	^	35%	56%	83%*	^	^	^
Peers in field	10%	14%	22%	22%	^	38%	^	^	18%	22%	17%	^	^	^
Mentor in field	9%	14%	22%	33%	^	75%***	^	^	12%	22%	17%	^	^	^
Preparation in arch. education	13%	10%	6%	22%	^	38%	^	^	6%	22%	33%	^	^	^
Obtaining license	28%	32%	39%	11%	^	63%*	^	^	53%*	33%	67%	^	^	^
Personal circumstances	46%	53%	39%	44%	^	75%	^	^	35%	67%	67%	^	^	^
Observations	*174*	*105*	*18*	*18*	*<10*	*12*	*<10*	*<10*	*17*	*9*	*6*	*<10*	*<10*	*<10*

NOTE: Proportion of respondents reporting factor is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed 100 percent. Asterisks show whether the proportions for each group are statistically distinguishable from the proportion for White males. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. ^ indicates that sample size is smaller than 10; results are not reported due to the difficulty of generalizing from a small sample size; opps. = opportunities; arch. = architecture.

Proportion of Student Respondents Reporting Barriers to Entering Professional Practice, by Intersections of Race and Gender

	White Male	White Female	Asian Male	Asian Female	Black Male	Black Female	Indigenous Male	Indigenous Female	Latinx Male	Latinx Female	MENA Male	MENA Female	Multiracial Male	Multiracial Female
Compensation	64%	67%***	81%	80%***	75%	^	50%	^	69%	78%***	^	58%*	67%	75%***
Culture of profession	52%	65%***	81%**	57%	50%	^	25%	^	69%	65%	^	50%	67%	50%
Interest in arch. field	54%	55%	63%	53%	50%	^	75%	^	88%***	57%	^	33%	67%	40%
Interest in different field	28%	24%	13%*	27%	0%	^	0%	^	31%	30%	^	8%**	17%	25%
Job opps. in arch. field	7%	4%	6%	17%	0%	^	0%	^	6%	8%	^	8%	0%	5%
Practice experience	26%	17%***	13%	13%*	0%	^	25%	^	25%	14%**	^	25%	17%	10%**
Peers in field	21%	21%	25%	23%	25%	^	0%	^	38%	35%*	^	42%	33%	35%
Mentor in field	20%	18%	19%	20%	25%	^	0%	^	13%	24%	^	0%	25%	15%
Preparation in arch. education	15%	14%	6%	7%*	75%*	^	0%	^	13%	19%	^	17%	25%	10%
Obtaining license	10%	7%	6%	7%	50%	^	0%	^	19%	11%	^	8%	25%	5%
Personal circumstances	31%	30%	38%	33%	0%	^	0%	^	13%**	16%**	^	33%	25%	15%*
Observations	*61*	*121*	*16*	*16*	*30*	*<10*	*12*	*<10*	*16*	*37*	*<10*	*12*	*12*	*20*

NOTE: Proportion of respondents reporting factor is a barrier or slight barrier to entering professional practice. Respondents were able to select more than one option, so proportions can exceed percent. Asterisks show whether the proportions for each group are statistically distinguishable from the proportion for White males. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. ^ indicates that sample size is smaller than 10; results are not reported due to the difficulty of generalizing from a small sample size; opps. = opportunities; arch. = architecture.

Abbreviations

ACSA	Association of Collegiate Schools of Architecture
AI	artificial intelligence
AIA	American Institute of Architects
AIAS	American Institute of Architecture Students
AXP	Architectural Experience Program
B.Arch	Bachelor of Architecture
BIM	building information modeling
DEI	diversity, equity, and inclusion
K–12	kindergarten through grade 12
M.Arch	Master of Architecture
MENA	Middle Eastern and North African
MSI	minority-serving institutions
NAAB	National Architectural Accrediting Board
NCARB	National Council of Architectural Registration Boards
NOMA	National Organization of Minority Architects
STEAM	science, technology, engineering, arts, and mathematics
VR	virtual reality

References

ACSA—*See* Association of Collegiate Schools of Architecture.

Addo, Fenaba R., Jason N. Houle, and Daniel Simon, "Young, Black, and (Still) in the Red: Parental Wealth, Race, and Student Loan Debt," *Race and Social Problems*, Vol. 8, No. 1, 2016, pp. 64–76.

AIA—*See* American Institute of Architects.

American Institute of Architects, *Your Guide to Helping Students Consider a Career in Architecture*, 2021.

American Institute of Architects, "AIA Study Examines Impact of Student Debt on Profession," webpage, December 6, 2022. As of December 9, 2024:
https://www.aia.org/about-aia/press/aia-study-examines-impact-student-debt-profession

American Institute of Architects, "Compensation Survey Salary Calculator," webpage, January 1, 2023a. As of December 9, 2024: https://salarycalculator.aia.org/salary.aspx

American Institute of Architects, *AIA Compensation & Benefits Report*, November 29, 2023b.

American Institute of Architects, "AIA K–12 Pathway Initiatives," webpage, November 30, 2023c. As of December 9, 2024: https://www.aia.org/resource-center/aia-k-12-pathway-initiatives

American Institute of Architects, "Guides for Equitable Practice," webpage, November 30, 2023d. As of December 9, 2024: https://www.aia.org/resource-center/guides-equitable-practice

American Institute of Architects, "The Architect's Journey to Specifications," webpage, January 29, 2024a. As of December 9, 2024: https://www.aia.org/resource-center/the-architects-journey-to-specification

American Institute of Architects, "ABI August 2024: Architecture Firm Billings Continue to Decline," webpage, September 18, 2024b. As of December 9, 2024:
https://www.aia.org/resource-center/abi-august-2024-architecture-firm-billings-continue-decline

An, Brian P., "The Impact of Dual Enrollment on College Degree Attainment: Do Low-SES Students Benefit?," *Educational Evaluation and Policy Analysis*, Vol. 35, No. 1, 2013, pp. 57–75.

Association of Collegiate Schools of Architecture, *Framework for Expanding K–12 Engagement*, 2024.

Avery, Derek R., Patrick F. McKay, and David C. Wilson, "Engaging the Aging Workforce: The Relationship Between Perceived Age Similarity, Satisfaction with Coworkers, and Employee Engagement," *Journal of Applied Psychology*, Vol. 92, No. 6, 2007, pp. 1542–1556.

Babcock, Linda, and Sara Laschever, *Women Don't Ask: Negotiation and the Gender Divide*, Princeton University Press, 2004.

Bastedo, Michael N., and Nicholas A. Bowman, "Improving Admission of Low-SES Students at Selective Colleges: Results from an Experimental Simulation," *Educational Researcher*, Vol. 46, No. 2, 2017, pp. 67–77.

Bastedo, Michael N., Mark Umbricht, Emma Bausch, Bo-Kyung Byun, and Yiping Bai, "Contextualized High School Performance: Evidence to Inform Equitable Holistic, Test-Optional, and Test-Free Admissions Policies," *AERA Open*, Vol. 9, 2023.

Baytiyeh, Hoda, and Mohamad Naja, "Identifying the Challenging Factors in the Transition from Colleges of Engineering to Employment," *European Journal of Engineering Education*, Vol. 37, No. 1, 2012, pp. 3–14.

Bosley, Deborah S., "Collaborative Partnerships: Academia and Industry Working Together," *Technical Communication*, Vol. 42, No. 4, 1995, pp. 611–619.

Boyer, Ernest L., and Lee D. Mitgang, *Building Community: A New Future for Architecture Education and Practice*, Carnegie Foundation, 1996.

Bringle, Robert G., and Julie A. Hatcher, "Campus–Community Partnerships: The Terms of Engagement," *Journal of Social Issues*, Vol. 58, No. 3, 2002, pp. 503–516.

Carnevale, Anthony P., Ban Cheah, Martin Van Der Werf, and Artem Gulish, *Buyer Beware: First-Year Earnings and Debt for 37,000 College Majors at 4,400 Institutions*, Center on Education and Workforce, Georgetown University, 2020.

Center on Education and the Workforce, "Explore Graduate Programs," webpage, undated. As of December 9, 2024:
https://cew.georgetown.edu/cew-reports/graduatedegrees/#data

Cerych, Ladislav, and Brian Frost-Smith, "Collaboration Between Higher Education and Industry: An Overview," *European Journal of Education*, Vol. 20, No. 1, 1985, pp. 7–18.

Cheng, Renee, "Barriers to Entry: Challenges Faced by Underrepresented Students in Architecture Education," *Journal of Architectural Education*, Vol. 73, No. 2, 2019, pp. 163–169.

Cheng, Renee, Nancy Alexander, Cozy Hannula, Laura Osburn, and Karen Williams, *Equity in Architectural Education*, AIA, 2022.

Deil-Amen, Regina, and Stefanie DeLuca, "The Underserved Third: How Our Educational Structures Populate an Educational Underclass," *Journal of Education for Students Placed at Risk*, Vol. 15, Nos. 1–2, 2010, pp. 27–50.

Delisle, Jason, and Jason Cohn, *Master's Degree Debt and Earnings: New Federal Data Expose Risks for Students and the Government*, Urban Institute, December 2022.

Deltek, "Shaping the Future: Six Key Benefits of AI in Specifications," AIA, webpage, October 4, 2024. As of December 9, 2024: https://www.aia.org/resource-center/shaping-future-six-key-benefits-ai-specifications

Domingo, Carmen R., Nancy Counts Gerber, Diane Harris, Laura Mamo, Sally G. Pasion, R. David Rebanal, and Sue V. Rosser, "More Service or More Advancement: Institutional Barriers to Academic Success for Women and Women of Color Faculty at a Large Public Comprehensive Minority-Serving State University," *Journal of Diversity in Higher Education*, Vol. 15, No. 3, 2022, pp. 365–379.

Duncheon, Julia C., "'You Have to Be Able to Adjust Your Own Self': Latinx Students' Transitions into College from a Low-Performing Urban High School," *Journal of Latinos and Education*, Vol. 17, No. 4, 2018, pp. 358–372.

Federal Student Aid, "Federal Pell Grants," webpage, undated. As of December 9, 2024: https://studentaid.gov/understand-aid/types/grants/pell#am-i-eligible

Frey, William H., "The US Will Become 'Minority White' in 2045, Census Projects," Brookings Institution, March 14, 2018.

Frølund, Lars, Fiona Murray, and Max Riedel, "Developing Successful Strategic Partnerships with Universities," *MIT Sloan Management Review*, Vol. 59, No. 2, 2018, pp. 71–79.

Gasman, Marybeth, *Doing the Right Thing: How Colleges and Universities Can Undo Systemic Racism in Faculty Hiring*, Princeton University Press, 2022.

Gasman, Marybeth, and Nguyen Thai-Huy, *Making Black Scientists: A Call to Action*, Harvard University Press, 2019.

Goger, Annelies, Katie Caves, and Hollis Salway, "How US Employers and Educators Can Build a More Nimble Education System with Multiple Paths to Success," Brookings Institution, May 16, 2024.

Goldrick-Rab, Sara, *Paying the Price: College Costs, Financial Aid, and the Betrayal of the American Dream*, University of Chicago Press, 2016.

Gulish, Artem, Catherine Morris, Ban Cheah, and Jeff Strohl, *Graduate Degrees: Risky and Unequal Paths to the Top*, Center on Education and the Workforce, Georgetown University, 2024.

Hora, Matthew T, *Beyond the Skills Gap: Preparing College Students for Life and Work*, Harvard Education Press, 2016.

Hora, Matthew T., Zi Chen, Emily Parrott, and Pa Her, "Problematizing College Internships: Exploring Issues with Access, Program Design, and Developmental Outcomes in Three US Colleges," WCER Working Paper No. 2019-1, Wisconsin Center for Education Research, University of Wisconsin–Madison, 2019.

Hora, Matthew T., Matthew Wolfgram, and Samantha Thompson, "What Do We Know About the Impact of Internships on Student Outcomes? Results from a Preliminary Review of the Scholarly and Practitioner Literatures," Research Brief No. 2, Center for Research on College-Workforce Transitions, University of Wisconsin–Madison, 2017.

Hossler, Don, and Bob Bontrager, *Handbook of Strategic Enrollment Management*, John Wiley and Sons, 2014.

Jones, Nicholas, Rachel Marks, Roberto Ramirez, and Merarys Rios-Vargas, "2020 Census Illuminates Racial and Ethnic Composition of the Country," U.S. Census Bureau, webpage, August 21, 2021. As of December 9, 2024:
https://www.census.gov/library/stories/2021/08/improved-race-ethnicity-measures-reveal-united-states-population-much-more-multiracial.html

Kilgo, Cindy A., Jessica K. Ezell Sheets, and Ernest T. Pascarella, "The Link Between High-Impact Practices and Student Learning: Some Longitudinal Evidence," *Higher Education*, Vol. 69, 2015, pp. 509–525.

Kolb, David A., *Experiential Learning: Experience as the Source of Learning and Development*, FT Press, 2014.

Kossek, Ellen Ernst, and Rebecca J. Thompson, "Workplace Flexibility: Integrating Employer and Employee Perspectives to Close the Research–Practice Implementation Gap," in Tammy D. Allen and Lillian T. Eby, eds., *The Oxford Handbook of Work and Family*, Oxford University Press, 2016.

Kotok, Stephen, and Katherine Reed, "The Impact of State Legislation on Diversity, Equity, and Inclusion Efforts in Education," *Educational Policy Analysis Archives*, Vol. 31, No. 12, 2023, pp. 1–25.

Kramer, Jenna W., and John M. Braxton, "Contributions to Types of Professional Knowledge by Higher Education Journals," *New Directions for Higher Education*, Vol. 2017, No. 178, 2017, pp. 9–20.

Kuh, George D., "High-Impact Educational Practices," *Peer Review*, Vol. 10, No. 4, 2008, pp. 30–31.

Labaree, David F., *How to Succeed in School Without Really Learning: The Credentials Race in American Education*, Yale University Press, 1997.

Labaree, David F., *A Perfect Mess: The Unlikely Ascendancy of American Higher Education*, University of Chicago Press, 2020.

Lee, Hsing-Fen, and Marcela Miozzo, "How Does Working on University–Industry Collaborative Projects Affect Science and Engineering Doctorates' Careers? Evidence from a UK Research-Based University," *Journal of Technology Transfer*, Vol. 40, 2015, pp. 293–317.

Lindstrom, Lauren, John Lind, Carolynne Beno, Kevin A. Gee, and Kara Hirano, "Career and College Readiness for Underserved Youth: Educator and Youth Perspectives," *Youth & Society*, Vol. 54, No. 2, 2022, pp. 221–239.

Liu, Shimeng, Weizeng Sun, and John V. Winters, "Up in STEM, down in Business: Changing College Major Decisions with the Great Recession," *Contemporary Economic Policy*, Vol. 37, No. 3, 2019, pp. 476–491.

Long, Mark C., Dan Goldhaber, and Nick Huntington-Klein, "Do Completed College Majors Respond to Changes in Wages?," *Economics of Education Review*, Vol. 49, 2015, pp. 1–14.

Ludmerer, Kenneth M., *Let Me Heal: The Opportunity to Preserve Excellence in American Medicine*, Oxford University Press, 2014.

Mehan, Hugh, *In the Front Door: Creating a College-Going Culture of Learning*, Routledge, 2015.

Miles, Matthew B., A. Michael Huberman, and Johnny Saldana, *Qualitative Data Analysis: A Methods Sourcebook*, 3rd ed., SAGE, 2020.

Miller, Angie L., Louis M. Rocconi, and Amber D. Dumford, "Focus on the Finish Line: Does High-Impact Practice Participation Influence Career Plans and Early Job Attainment?," *Higher Education*, Vol. 75, 2018, pp. 489–506.

Mustaffa, Jalil B., and Caleb Dawson, "Racial Capitalism and the Black Student Loan Debt Crisis," *Teachers College Record*, Vol. 123, No. 6, 2021, pp. 1–28.

National Council of Architectural Registration Boards, "Education Alternatives," webpage, undated. As of December 9, 2024:
https://www.ncarb.org/earn-a-degree/study-architecture/accredited-programs/education-alternatives

National Council of Architectural Registration Boards, *NCARB by the Numbers: 2024 Edition*, 2024a.

National Council of Architectural Registration Boards, *Workforce Readiness Report*, August 2024b.

National Council of Architectural Registration Boards and the Association of Collegiate Schools of Architecture, *Professional Practice Data Collection*, August 2019.

National Research Council, *Successful K–12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering, and Mathematics*, National Academy of Science, 2011.

NCARB—*See* National Council of Architectural Registration Boards.

Nguyen, Thai-Huy, and Bach Mai Dolly Nguyen, "Is the 'First-Generation Student' Term Useful for Understanding Inequality? The Role of Intersectionality in Illuminating the Implications of an Accepted—Yet Unchallenged—Term," *Review of Research in Education*, Vol. 42, No. 1, 2018, pp. 146–176.

Nishii, Lisa H., and Robert E. Rich, "Creating Inclusive Climates in Diverse Organizations," in Bernardo M. Ferdman and Barbara R. Deane, eds., *Diversity at Work: The Practice of Inclusion*, John Wiley and Sons, 2013.

O'Meara, KerryAnn, Alexandra Kuvaeva, and Gudrun Nyunt, "Constrained Choices: A View of Campus Service Inequality from Annual Faculty Reports," *Journal of Higher Education*, Vol. 88, No. 5, 2017, pp. 672–700.

Page, Scott, *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies*, new ed., Princeton University Press, 2008.

Paige, Jessica Welburn, *Examining the Loss of Wealth and Downward Mobility of African Americans: A Review of Challenges for the Black Middle Class*, RAND Corporation, RR-A1259-3, 2022. As of December 9. 2024: https://www.rand.org/pubs/research_reports/RRA1259-3.html

Perna, Laura Walter, and Marvin A. Titus, "The Relationship Between Parental Involvement as Social Capital and College Enrollment: An Examination of Racial/Ethnic Group Differences," *Journal of Higher Education*, Vol. 76, No. 5, 2005, pp. 485–518.

Posselt, Julie R., and Eric Grodsky, "Graduate Education and Social Stratification," *Annual Review of Sociology*, Vol. 43, No. 1, 2017, pp. 353–378.

Public Law 115-224, Strengthening Career and Technical Education for the 21st Century Act, July 31, 2018.

Radley, David C., Arnav Shah, Sara R. Collins, Neil R. Powe, and Laurie C. Zephyrin, *Advancing Racial Equity in U.S. Health Care: The Commonwealth Fund 2024 State Health Disparities Report*, Commonwealth Fund, April 18, 2024.

Roderick, Melissa, Vanessa Coca, and Jenny Nagaoka, "Potholes on the Road to College: High School Effects in Shaping Urban Students' Participation in College Application, Four-Year College Enrollment, and College Match," *Sociology of Education*, Vol. 84, No. 3, 2011, pp. 178–211.

Ross, Martha, Richard Kazis, Nicole Bateman, and Laura Stateler, "Work-Based Learning Can Advance Equity and Opportunity for America's Young People," Brookings Institute, November 20, 2020.

Scott-Clayton, Judith, and Jing Li, "Black-White Disparity in Student Loan Debt More Than Triples After Graduation," Brookings Institute, October 20, 2016.

Silva, Patrícia, Betina Lopes, Marco Costa, Ana I. Melo, Gonçalo Paiva Dias, Elisabeth Brito, and Dina Seabra, "The Million-Dollar Question: Can Internships Boost Employment?," *Studies in Higher Education*, Vol. 43, No. 1, 2018, pp. 2–21.

Singleton, Glenn E., *Courageous Conversations About Race: A Field Guide for Achieving Equity in Schools*, Corwin Press, 2014.

Solomon, Danyelle, Connor Maxwell, and Abril Castro, "Systemic Inequality: Displacement, Exclusion, and Segregation," Center for American Progress, August 7, 2019.

Speck, Larry, "Integrating Practice and Education: The IPAL Initiative," *Architectural Record*, Vol. 205, No. 10, 2017, pp. 32–34.

The Institute for College Access & Success, *A Policymaker's Guide to Using New Student Debt Metrics to Strengthen Higher Education Accountability*, 2020.

Tillinghast, Ralph C., and Mo Mansouri, "Identifying Key Development Stages of the STEM Career Pipeline," *IEEE Transactions on Technology and Society*, Vol. 3, No. 1, March 2022, pp. 58–66.

Torpey-Saboe, Nichole, Elaine W. Leigh, and Dave Clayton, *The Power of Work-Based Learning*, Strada Education Network, June 2022.

Tu, Fangjing, "What Can We Learn from Longitudinal Studies on the Impacts of College Internships?," Center for Research on College-Workforce Transitions, University of Wisconsin–Madison, January 2022.

Turley, Ruth N. López, "College Proximity: Mapping Access to Opportunity," *Sociology of Education*, Vol. 82, No. 2, 2009, pp. 126–146.

U.S. Bureau of Labor Statistics, "Occupational Outlook Handbook: Architects," webpage, August 29, 2024. As of December 9, 2024:
https://www.bls.gov/ooh/architecture-and-engineering/architects.htm

Velasco, Tatiana, John Fink, Mariel Bedoya, and Davis Jenkins, *The Postsecondary Outcomes of High School Dual Enrollment Students: A National and State-by-State Analysis*, Community College Research Center, Teachers College, Columbia University, 2024.

Vogels, Emily A., Risa Gelles-Watnick, and Navid Massarat, *Teens, Social Media and Technology 2022*, Pew Research Center, August 10, 2022.

Williams, Joan, Rachel Korn, and Rachel Maas, "The Elephant in the (Well-Designed) Room: An Investigation into Bias in the Architecture Profession," AIA, 2021. As of January 16, 2025:
https://content.aia.org/sites/default/files/2021-12/AIA_Bias_Interrupters_FINAL.pdf

Wiswall, Matthew, and Basit Zafar, "How Do College Students Respond to Public Information About Earnings?," *Journal of Human Capital*, Vol. 9, No. 2, 2015, pp. 117–169.

Wolniak, Gregory C., and Mark E. Engberg, "Do 'High-Impact' College Experiences Affect Early Career Outcomes?," *Review of Higher Education*, Vol. 42, No. 3, 2019, pp. 825–858.

World Economic Forum and Deloitte, *Global Technology Governance Report 2021: Harnessing Fourth Industrial Revolution Technologies in a COVID-19 World*, December 2020.

World Meteorological Organization, *The Global Climate 2011–2020: A Decade of Accelerating Climate Change*, 2023.

Zilvinskis, John, Jennifer Gillis, and Kelli K. Smith, "Unpaid Versus Paid Internships: Group Membership Makes the Difference," *Journal of College Student Development*, Vol. 61, No. 4, 2020, pp. 510–516.