ACEC RESEARCH INSTITUTE

FIRM OF THE FUTURE

THE WORKFORCE OF THE FUTURE

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Acknowledgements

The engineering profession stands at a pivotal moment. Demographic shifts, a shrinking early-career pipeline, and evolving expectations around work are reshaping how firms attract, develop, and retain talent. **The Workforce of the Future** draws on national data, in-depth interviews, and workforce surveys to illuminate the forces redefining the profession's future. Produced by the ACEC Research Institute as part of its *Firm of the Future* initiative, the report offers executives an integrated view of talent supply and workplace experience—revealing where pressure points lie and where forward-looking firms are already adapting. The findings outline strategies to strengthen pipelines, modernize culture, and position engineering firms to thrive in 2035 and beyond.

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Overview

This study represents the second project in the *Firm of the Future* series, building on the ACEC Research Institute's commitment to provide foresight and actionable insights into the business of engineering. While the first report examined how artificial intelligence is shaping engineering firms today, this study turns to the workforce of 2035—the demographics, motivations, skills, and organizational readiness that will define the next decade.

By integrating three complementary research components, this report provides a comprehensive understanding of the current and future engineering workforce. The first component is a data-driven analysis of population, education, and immigration trends shaping the long-term supply of engineering talent. The second draws on in-depth, one-on-one interviews with approximately 40 individuals—including students, engineers, and non-engineers—spanning all career stages from young professionals to senior executives. The third incorporates survey-based insights from firm staff and students preparing to enter the profession. Collectively, these components illuminate who is entering the pipeline, how people experience work across their careers, and where key challenges and opportunities lie for leaders striving to build resilient, thriving firms.

***Young Professional:* "I got into engineering to build things that matter, not just to have a job. That hasn't changed—but the runway to get people in the door and keep them growing feels shorter every year."**

Trends Shaping the Engineering Talent Pipeline

Between 2013 and 2022, the U.S. population increased by 5.7 percent—from approximately 316 million to 334 million. Headline growth, however, masks crucial generational shifts. Millennials are the largest cohort at 23 percent of the population, with Generation Z close behind at 21 percent. Baby Boomers comprise 21 percent and are retiring at scale, while Generation X—20 percent of the population—will enter retirement ages in increasing numbers over the next decade. Most important for the higher-education pipeline, the college-age population (18–24) shrank by 3.3 percent between 2013 and 2022.

Enrollment patterns partially offset demographic decline. Total enrollment in 4-year institutions (including graduate programs) rose 3.7 percent, from 13,477,066 in 2013 to 13,975,146 in 2022. Gains came from higher enrollment rates among 18–24-year-olds, increased participation among adults aged 25 and older, and a significant influx of international students. International student enrollment rose 20.6 percent in the decade, growing from 688,221 in 2013 to 830,126 in 2022, with graduate enrollment expanding by 30.2 percent versus 11.7 percent at the 4-year (undergraduate) level. Subsequent data show continued growth to 957,025 in academic year 2023–2024.

Degree completions rose even faster than enrollments. Across all fields, U.S. institutions awarded 3,099,128 degrees in 2022, up 13.9 percent from 2,721,205 in 2013. Engineering outpaced the aggregate, growing 23.3 percent to 203,004 total engineering graduates in 2022. Within civil, mechanical, and electrical engineering—the three disciplines that together approximate the core recruiting pool for many ACEC member firms—graduates increased by 26.9 percent to 92,770. Yet the trajectory has shifted: engineering totals peaked around 2019 (approximately 214,000) and have since declined by more than 10,000, and civil/mechanical/electrical graduates have fallen by more than 5,000 since 2019. If the post-2019 downshift persists, competition for entry-level talent will intensify.

International graduates are a critical part of the engineering pipeline, especially at the master's and doctoral levels. However, the step from graduation to durable work authorization remains the system's bottleneck. In 2022, 40,606 international students earned engineering degrees (up 8.1 percent versus 2013), but, using USCIS characteristics of H-1B approvals as a guide, we estimate only about 3,825 H-1B visas were issued to recent engineering graduates that year—roughly nine percent. The imbalance is similar in civil, mechanical, and electrical engineering: of 17,670 international graduates in 2022, approximately 1,664 obtained an H-1B. Optional Practical Training (OPT) offers temporary relief—USCIS reported 126,941 post-graduation OPT authorizations in FY 2022 across all fields—but it does not guarantee a long-term workforce solution for firms that need multi-year continuity.

Executive: ***"We're hiring into a headwind—fewer grads, more retirements, and international talent we train but can't always keep."***

Student: ***"My intern cohort was half international; only one of them won the visa lottery. That's talent walking out the door."***

When inflows and outflows are compared directly, the net picture is challenging. Benchmark retirement and separation rates imply that about 184,175 engineers exited the workforce in 2022, including 85,175 across civil, mechanical, and electrical engineering roles. After accounting for domestic graduates and the limited set of international graduates with H-1B visas, the resulting gap is approximately 18,000 engineers overall and more than 8,400 in the core disciplines. Employment counts in 2023 show some cyclical rebound, which may reflect postponed retirements and returners, but the structural fundamentals—smaller youth cohorts, a recent decline in engineering completions, and a hard visa cap—suggest continued tightness without policy and practice changes.

Who Makes Up Today's Engineering Workforce

The survey provides an internal snapshot of who currently staffs engineering firms. Women account for 36 percent of Staff respondents, while 43 percent of Student respondents identify as female. The difference points to an encouraging trend in the academic pipeline that has not yet fully translated into practice, particularly in leadership and core technical roles. Functional allocation shows ongoing imbalance: men are more likely than women to hold executive management positions (13 percent versus 6 percent) or work in engineering roles (65 percent versus 47 percent), while women are nearly twice as likely to work in non-engineering roles (46 percent versus 23 percent). These patterns underscore the importance of retention and advancement strategies for women as early-career cohorts transition into and through firms.

Executive: ***"The future of our staff looks more diverse than our leadership—if we can keep people through the first five years."***

Young Professional: ***"I was the only woman on my team for two years. I stayed because a senior mentor made it clear I belonged here."***

Racial and ethnic composition shows a similar pipeline-to-practice divergence. Among current Staff, 81 percent identify as white, whereas the Student group is more diverse, with 65 percent identifying as white. Diversity varies by firm size as well: Staff at small firms (1–50 FTEs) are less likely to identify as white (70 percent) than Staff at medium and large firms (83 percent), suggesting regional and market-mix effects that interact with recruitment practices. The implication is that the incoming talent pool is more diverse than the incumbent workforce, but realized diversity in practice will hinge on inclusive environments that sustain belonging, provide mentoring, and reduce attrition at key transition points.

Experience levels confirm how much knowledge transfer and structured coaching matter. Twenty-eight percent of Staff respondents report fewer than five years of experience, and another 14 percent report fewer than 10 years—meaning more than 40 percent of the workforce is at an early-career stage. Women, on average, have less tenure than men—38 percent of women report fewer than five years versus 22 percent of men—which reflects both cohort effects and retention dynamics. For leaders, these data argue for systematic approaches to apprenticeship, capability building, and succession planning rather than ad-hoc handoffs.

What Drives Engineers to Enter and Stay

Motivations to enter and remain in engineering differ by role and career stage but follow clear patterns. Among Staff overall, 56 percent cite enjoyment of STEM classes as a core motivator, 44 percent point to strong job security and compensation, and 39 percent reference a childhood passion for building or creating things. Students express similar themes with greater intensity: 72 percent cite enjoyment of STEM, and 59 percent name a childhood passion for building. They also report a stronger interest in technology and computers—26 percent—compared with only two percent among practicing Engineers measured on the same item. The enthusiasm among Students is tempered by experience gaps: only five percent report meaningful exposure to practice through internships or early jobs at the time of the survey, signaling an on-ramp that remains too narrow.

Engineer: ***"I love driving past a site and saying, 'we built that.' That tangible impact is why I chose this field."***

Student: ***"As a student, the hook was creativity with consequences—real problems, real clients, real communities."***

Differences by role inside firms are equally instructive. Engineers lean toward STEM enjoyment (69 percent), job security (48 percent), and building/creating (48 percent), which align with the problem-solving character of technical work. Non-Engineers emphasize advancement pathways and culture, reflecting the importance of organizational scaffolding that enables cross-functional careers. By career stage, Young Professionals elevate purpose and visibility—findings echoed by 34 percent seeking purpose-driven work and 49 percent citing industry pride—while Older Professionals more often emphasize stability and opportunities to mentor. These patterns suggest that one-size-fits-all engagement approaches will underperform; targeted opportunities that connect to each group's motivations will be more effective.

Pressures and Pain Points in Practice

Across audiences, the most consistent through-line is not a lack of meaning in the work but the intensity with which it must often be done. Long schedules tied to client deadlines, the weight of technical accountability, and the cadence of billable hours can, when not managed deliberately, normalize crisis tempo. Students articulate a different vantage point: only 34 percent report feeling well-prepared to enter practice, and 42 percent are uncertain about how quickly artificial intelligence will reshape entry-level work. Young Professionals acknowledge similar uncertainties while foregrounding job stability and the speed of technological change; Older Professionals, by contrast, worry about the depth of the leadership bench and the extent to which the public understands the constraints and value of engineering. Non-Engineers register a distinct concern: 44 percent report that their contributions are undervalued relative to billable technical roles, which can sap engagement in functions that are nonetheless essential to firm performance. For many Engineers, the billable-hour model itself is a source of friction; when incentives over-reward volume and speed, learning and quality can be pressured in ways that exhaust teams over time.

Older Professional: ***"The work is meaningful; the pace can be punishing. Peaks have a way of becoming the new normal."***

Young Professional: ***"I'm not afraid of AI—I'm afraid of not having time to learn it while keeping up with deadlines."***

How the Profession Sees Itself—and Is Seen

Stepping back, respondents describe an industry with strong bones and recognizable tradeoffs. Stability stands out: job security receives positive ratings from a wide majority, and long-term opportunity and visible community impact are repeatedly cited as differentiators relative to other white-collar paths. Yet the narrative is not uniform. Executives are focused on esteem and external awareness of the profession, with 64 percent emphasizing the need to strengthen the profession's image to students and the public. Students highlight representation and preparedness, with only 29 percent perceiving leadership as reflective of classroom diversity and many citing a steep learning curve at first entry. Older Professionals see sustained workload pressure and name succession depth as a risk area, while Non-Engineers again underline internal recognition gaps. The lesson for leaders is two-fold: double down on the strengths that attract people to the field, and address the friction points transparently so that employee expectations and firm realities do not drift apart.

Older Professional: ***"Civil engineering is respected, but the public rarely sees the invisible systems until something fails."***

Executive: ***"We're great at solving problems and modest about telling our story—that's a branding gap we can fix."***

Engineering's Competitive Position

Relative positioning matters because Students and lateral candidates compare across sectors. On a net-rating basis, engineering performs strongly on job stability (+76), purpose-driven work (+69), and professional growth (+62). The profession's comparative weak spots are work-life balance (–23), diversity, equity, and inclusion (–12), adaptability (–11), and public understanding (–11). The adaptability gap is particularly salient: 58 percent of Students rate the industry positively on adaptability, compared with 29 percent of Executives—an expectations gap that can harden into disillusionment if new hires perceive a mismatch between the promise of innovation and the practice of change. Closing that gap requires both substance (clearly resourced roadmaps for technology adoption) and translation (explaining where external constraints limit speed and where internal habits can be redesigned).

Engineer: ***"If you want purpose and stability, this beats most industries. If you want work-life balance, we still have work to do."***

Student: ***"Students expect fast-moving innovation; our reality is innovation inside guardrails."***

Core Competencies for the Future Workforce

Skill priorities reveal more consensus than conflict. Across respondents, critical thinking, adaptability, collaboration, and accountability cluster at the top of the distribution. Young Professionals emphasize capacities that help them enter and endure—learning through iteration, managing multiple priorities amid ambiguity, aligning work with values, and building cultural competence to collaborate across teams and generations. Older Professionals elevate the commercial and client-facing bundle: relationship management, strategic communication, and financial literacy relevant to all roles. Executives consistently scan for initiative—the propensity to take ownership without waiting for perfect instructions—while Students ask for structured support that translates classroom knowledge into practice (mentoring, exposure to permitting and standards, orientation to firm tools and workflows, and early opportunities to apply theory to real projects).

Executive: ***"The hardest skills to teach aren't in the spec—initiative, listening, and knowing when to pick up the phone."***

Engineer: ***"Give me a curious problem-solver with solid writing skills; we can teach the software."***

Preparedness measures illustrate where on-ramps most need attention. Only 34 percent of Students report feeling well-prepared with the skills most important to succeed in their chosen profession. Among Young Professionals, the share who feel prepared rises substantially—to 61 percent in comparable survey items—reflecting how even a year or two of applied experience turns theoretical knowledge into practical capability. Mid-career and Older Professionals, however, estimate that only 14 percent of young colleagues are well-prepared with respect to the most important skills needed to succeed, revealing a communication gap that can be closed only with clarity about expectations, protected time for learning, and deliberate practice on client-facing and commercial skills.

What Defines a Great Place to Work

When respondents describe the employer they most want to join or remain with, three essentials recur with notable consistency: strong managers, fair pay, and trusted leadership. These are the foundations of engagement and should be treated as non-negotiable. Beyond the essentials, preferences diverge by stage and role. Students and Young Professionals place higher weight on flexibility, respect for boundaries, manageable workloads, and the connection between daily work and broader purpose—items that in Student scoring showed double-digit net positives such as reasonable workload and expectations around working hours (+19) and respect for boundaries and personal time (+14). They also cite visible community impact and sustainability as markers of fit. Older Professionals emphasize team cohesion and stability as defining features of an ideal employer. Executives emphasize organizational health—cohesion, clear strategy, mentoring systems, and ownership models that bind employees to the long-term success of the enterprise. The policy implication is straightforward: deliver the basics at a high and consistent level, then flex a portfolio of additional supports that can be dialed up or down by career stage without fragmenting culture.

Non-Engineer: ***"Strong managers, fair pay, and leaders I can trust—that's the foundation. Flexibility and mentoring keep me here."***

Young Professional: ***"Show me a path to grow that doesn't require burning out to prove I'm committed."***

Preparing Firms for the Next Generation of Talent

The integrated evidence base argues for a dual-track strategy that addresses both supply and experience. On the supply side, arithmetic is destiny: a 3.3 percent decline in the 18–24 population, a recent multi-year decline in engineering graduates from a 2019 peak near 214,000 to 203,004 in 2022, and a visa system that enables less than one in 10 international engineering graduates to remain create a predictable tightness in entry-level markets. Firms cannot change demography, but they can widen on-ramps: formalize co-ops and internships with clear conversion pathways, recruit from a broader range of institutions and adjacent disciplines and participate in coalitions that advocate for pragmatic visa reforms to retain U.S.-educated graduates in high-need fields.

On the experience side, modernization is both cultural and operational. The billable-hour model will persist, but leaders can rebalance incentives and rituals so that learning and quality are not unintentionally crowded out by volume metrics. This means planning work with realistic peaks and troughs; staffing for mentoring as an explicit part of project delivery; setting utilization goals that incorporate protected time for development; and updating recognition systems so non-engineering roles are viewed as partners in value creation rather than overhead. Bridging the expectations gap requires visible commitments: publish technology adoption roadmaps; create sandboxes for pilots in areas like AI-enabled drafting, resource planning, and QA/QC; and narrate what is changing and why, including where external constraints (codes, permitting, liability) drive pace and where internal habits are ripe for redesign.

Succession must be treated as a system, not a transaction. With more than 40 percent of staff in early-career bands and retirement-eligible cohorts growing, firms should codify methods and decision frameworks, pair senior leaders with rising talent on high-stakes pursuits, and ensure leadership pathways are transparent and inclusive. Because the incoming pipeline is more diverse than the incumbent workforce—women: 43 percent among Students vs. 36 percent among Staff; white: 65 percent among Students vs. 81 percent among Staff—retention and advancement strategies must be designed to convert diversity in the pipeline into representation in practice and leadership. Doing so is not only an equity imperative but also a resilience strategy in a tight labor market.

Executive: ***"Treat succession like a system, not a handshake—pair people with people they're expected to become."***

Non-Engineer: ***"Recognition shouldn't stop at billable roles; the firm only works when everyone's work counts."***

The Workforce of the Future

The engineering workforce of the future will be shaped by arithmetic and design. The arithmetic—demographics, education outputs, visa policy, retirement behavior—defines the size of the talent pool. The design—how firms organize work, mentor people, recognize contributions, and adopt new tools—determines whether that talent thrives. The data presented here point to clear actions. Expand and diversify the pipeline through partnerships, wider recruiting, and advocacy that retains U.S.-educated international graduates. Professionalize the student-to-staff on-ramp with structured apprenticeships and deliberate practice on client and commercial skills. Modernize operating models so that utilization, learning, and quality reinforce one another, not compete. Invest in inclusive cultures that translate the diversity of the pipeline into representation in leadership. If leaders carry forward the profession's strongest traditions while updating how firms work day to day, engineering will remain a magnet for people who want to build things that last—and the industry will be prepared to deliver the infrastructure, buildings, and systems that communities depend on.

***Older Professional:* "We can honor the craft and still change the way we work—the future demands both."**

Methodology

This study integrates findings from three complementary research components, each designed to capture a different dimension of the engineering workforce of the future.

Workforce Population Analysis

The first component was a quantitative analysis of demographic, educational, and immigration trends shaping the U.S. engineering labor force.

Drawing on U.S. Census Bureau data, the National Center for Education Statistics (NCES), U.S. Citizenship and Immigration Services (USCIS), and State Department visa records, the study examined:

- Population shifts by age cohort and generation, including the impact of Baby Boomer retirements and the decline in the traditional college-age population.
- College enrollment and graduation trends, with particular focus on civil, mechanical, and electrical engineering degrees.
- International student enrollment and graduation, pathways for Optional Practical Training (OPT), and constraints imposed by the H-1B visa system.
- Net workforce flows, including estimates of annual retirements and separations versus new entrants to the labor market.

This analysis provided a macro-level view of the engineering talent pipeline and quantified the supply-demand pressures facing the profession.

Insights on Motivations, Perceptions, Skills, and Expectations of Engineering's Workforce

The second component was an in-depth qualitative study conducted between June 25 and July 18, 2025.

- **Sample:** 38 one-on-one interviews with a broad spectrum of participants, including engineering students, young professionals, mid-career staff, older professionals, executives, and non-engineering professionals in human resources, finance, marketing, IT, and business development.
- **Approach:** Each interview was conducted virtually, lasted 45–55 minutes, and was coded thematically to identify patterns and differences across generations, roles, and disciplines.
- **Focus:** Motivations for pursuing engineering careers, perceptions of the industry and its value proposition, workforce skills, and expectations for workplace culture and leadership.

The qualitative phase provided narrative depth, capturing lived experiences and verbatim perspectives that contextualize the survey and population findings.

The Future Workforce: Findings from the National Workforce Survey

The third component was a large-scale survey conducted by the Institute for Association and Nonprofit Research (IFANR) on behalf of the ACEC Research Institute.

- **Fielding period:** August 12 – September 7, 2025.
- **Respondents:** 2,097 total, including 195 engineering students.
- **Sample sources:** Invitations were distributed through ACEC member firms to their employees, and also extended to students at Virginia Tech, University of Colorado – Boulder, University of Texas – Dallas, and applicants to ACEC Research Institute's scholarship program.
- **Analysis:** Results were cross-tabulated across subgroups such as Students, Staff, Engineers, Non-Engineers, Young Professionals (those with less than 5 years of professional experience), Older Professionals (those with 30 years or more professional experience), and Executives. Statistical significance was tested at the 95 percent confidence level using ANOVA, Chi-square, and Z-tests.

The survey captured workforce demographics, motivations, perceptions, concerns, skills, and ideal employer attributes, enabling robust comparisons by role, age, and career stage.

Together, these three components—macro demographic analysis, survey research at scale, and qualitative in-depth interviews—form a comprehensive evidence base. The integrated methodology ensures that the findings reflect both statistical rigor and the voices of those directly shaping the engineering workforce of 2035.

Workforce Population Analysis

Overview

Firm of the Future: Workforce Population Statistics

This section examines demographic, educational, and immigration trends shaping the future engineering workforce, with a particular focus on civil, mechanical, and electrical engineers—the core disciplines of ACEC member firms.

Population and Demographics

- The U.S. population grew 5.7 percent between 2013 and 2022, yet age distribution shifts are reshaping the labor pool.
- Baby Boomers, 21 percent of the population, are retiring in large numbers, while Millennials (23%) and Gen Z (21%) represent the largest emerging cohorts.
- The 18–24 college-age population declined by 3.3 percent over the decade, shrinking the pipeline of traditional students.

Enrollment and Graduation Trends

- College enrollments rose 3.7 percent from 2013–2022, despite fewer college-age individuals, driven by higher enrollment rates, adult learners, and international students.
- Total graduates increased 13.9 percent to 3.1M annually; engineering graduates rose faster, up 23.3 percent.
- Civil, mechanical, and electrical engineering graduates increased 26.9 percent, though since 2019 totals have declined, signaling a troubling reversal.

International Students and H-1B Constraints

- International student enrollment grew 20.6 percent (2013–2022), but most cannot stay in the U.S. to work.
- Of 40,606 international engineering graduates in 2022, only an estimated 3,825 received H-1B visas—leaving 91 percent without long-term work options.
- For civil, mechanical, and electrical engineering, only about 1,664 international graduates (out of 17,670) secured an H-1B visa.

Workforce Exits and Net Impact

- In 2022, an estimated 184,000 engineers retired or left the profession, including 85,000 in civil, mechanical, and electrical fields.
- New domestic and visa-holding international graduates (166,000 total) fell short of offsetting these losses, leaving a net shortage of ~18,000 engineers overall and ~8,400 in civil, mechanical, or electrical engineering disciplines.
- Temporary relief comes from the 126,000 international graduates on Optical Practical Training (OPT), approximately 7.5 percent of whom possess a civil, mechanical or electrical engineering degree, though this is not a permanent solution.

Outlook

The engineering labor force faces mounting pressures: shrinking U.S. graduate numbers, rising retirements, and immigration constraints that block access to tens of thousands of qualified international graduates. Without policy changes or industry adaptation, these trends point to a continued shortage of engineers essential to the U.S. economy and infrastructure.

U.S. Population

The chart below shows the ages of the various generations as of 2023. This is important as we analyze the population trends that follow. Of particular note is the relatively larger size of Millennials (23%) compared to other generations. Even though the difference is a few percentage points, this translates into millions of more individuals.

Generation	Birth Years	Age Range in 2023	Percentage of Population in 2023
Silent Generation	1928-1945	78 - 95 years old	5%
Baby Boomers	1946-1964	59 - 77 years old	21%
Generation X	1965-1980	43 - 58 years old	20%
Millennials	1981-1996	27 - 42 years old	23%
Generation Z	1997-2012	11 - 26 years old	21%
Generation Alpha	2013 onward	0 - 10 years old	10%

According to the U.S. Census Bureau, the population in the United States grew 5.7 percent in the 10-year period between 2013 and 2022 from about 316 million to 334 million individuals.

However, when looking at specific age cohorts, notably those in their college-age years and those who are older and nearing retirement, not all age groups saw increases in the population. In fact, some saw increases while others saw decreases.

As Baby Boomers aged over the past 10 years, the percentage of individuals between 55 and 64 grew by 7.8 percent. Conversely, the number of individuals between the ages of 45 and 54 shrank, as the smaller Gen Z group moved into those years. Likewise, as the relatively larger group of Millennials moved out of their college-age years and into the workforce, the percentage of college-age students (18 to 24 years old) shrank by 3.3 percent.

U.S. Population	2013	2022	Change
18 to 24 years old	31,488,416	30,456,842	-3.3%
45 to 54 years old	43,749,928	40,587,060	-7.2%
55 to 64 years old	39,277,803	42,344,458	7.8%

If you project these figures into the next 10 years, Baby Boomers will all move into their retirement years (ages 65+) while the smaller Gen X cohort begins to hit retirement age. Clearly, a large number of individuals are, and will be, retiring and leaving the workforce over the next 10 years.

What impact will this have on the total available workforce? We will address this later in the report, but first, let's look at what has happened to the college-age population and the number of students graduating overall, as well as with engineering degrees.

College and University Enrollment Trends

Although the number of students enrolled in a 4-year degree institution, including graduate students, fluctuates from year to year, according to the National Center for Education Statistics (NCES), the total increased by 3.7 percent between 2013 and 2022. This is despite a decrease in the total college-age population over that time (noted previously).

Enrolled in 4-year Degree Institutions, Including Graduate Students	2013	2022	Change
Total	13,477,066	13,975,146	**3.7%**
Ages 24 or younger (est.)	9,164,405	9,503,099	**3.7%**
Ages 25 or older (est.)	4,312,661	4,472,047	**3.7%**

The increase is due to three factors: higher enrollment rates among the college-age population (ages 18 to 24), increases in enrollment among those ages 25 and older (seen in the above chart), and an increase in the number of international students.

In the first instance, the percentage of college-age students who enrolled in a 4-year degree institution increased from 29.1 percent in 2013 to 31.2 percent in 2022. This increase in the enrollment rate, counter-balanced the decrease in the total number of college-age students. In addition, there was a similar increase in the number of students ages 25 or older who enrolled in a 4-year degree institution.

As a side note, the increase in enrollments was much higher for graduate students (10.4%) than for those seeking a 4-year degree (1.9%).

The third reason for the increase in enrollments is international students. Between 2013 and 2022, international student enrollment increased by 20.6 percent, representing an increase of more than 140,000 students. As the chart below shows, the increase was more pronounced among graduate students (30.2%) than 4-year degree students (11.7%).

International Student Enrollment	2013	2022	Change
Total	688,221	830,126	**20.6%**
4-year Degree	355,449	396,939	**11.7%**
Graduate Degree	332,772	433,187	**30.2%**

The most recent data available for international student enrollments shows a continued increase in the subsequent two years. Enrollment in the 2023-2024 school year stood at 957,025, nearly matching the increase in the number of students over the prior 10 years.

The good news is that 4-year degree institutions, including graduate students, continue to see increases in college enrollments despite a demographic decline in the number of U.S. college-age students. This is positive news overall for the workforce. However, there are other trends working in the opposite direction (more to come later).

College and University Graduation Trends

Another positive trend evident from data between 2013 and 2022 is a dramatic increase in the number of students graduating. According to the NCES, the number of students graduating with a Bachelor's degree, Masters's degree, or a PhD increased by nearly 14 percent from 2,721,205 to 3,099,128. The reason that the increase in the percentage of those graduating grew faster than the percentage enrolled is that a higher percentage of students are completing their degree than previously.

All Students Graduating	2013	2022	Change
Total	2,721,205	3,099,128	**13.9%**
Bachelor's Degree	1,796,073	2,015,035	**12.2%**
Master's Degree	755,462	880,249	**16.5%**
PhD	169,670	203,844	**20.1%**

The increase in the percentage of students graduating with a post-graduate degree is even higher than those graduating with a Bachelor's degree.

At first glance, the news appears even better for the engineering industry. The number of students graduating with any engineering degree increased at a much higher rate than all student graduates. Students graduating in any engineering discipline increased by 23.3 percent from 2013 to 2022. Rates are even higher for Bachelor's degrees (32.6%) and PhDs (34.2%).

Engineering Student Graduates	2013	2022	Change
Total	164,648	203,004	**23.3%**
Bachelor's Degree	106,661	141,422	**32.6%**
Master's Degree	48,862	49,339	**1.0%**
PhD	9,124	12,243	**34.2%**

Unfortunately, upon closer examination, the number of students graduating with an engineering degree has actually been declining in recent years, even starting before the COVID-19 Pandemic. In 2019, there were nearly 214,000 engineering graduates, about 11,000 more than in 2022. This does not portend good news if this downward trend continues.

The specific engineering disciplines that are most important to the members of the American Council of Engineering Companies (ACEC) are civil, mechanical, and electrical engineering. These disciplines make up about 45 percent of the total graduates with an engineering degree. This report uses those three disciplines as an approximation of the new graduates who are entering the labor force relevant to ACEC member companies.

The same trend as for all engineering graduates is evident with the number of students graduating with a civil, mechanical, or electrical engineering degree. There was an increase of nearly 27 percent between 2013 and 2022, as well as large increases in those earning a Bachelor's degree (38.3%) or a PhD (19.0%). However, since 2019, the number has decreased by more than 5,000 indicating a new downward trend.

Student Graduates with Civil, Mechanical, or Electrical Engineering Degree	2013	2022	Change
Total	73,104	92,770	**26.9%**
Bachelor's Degree	48,087	66,492	**38.3%**
Master's Degree	20,710	20,867	**0.8%**
PhD	4,307	5,124	**19.0%**

When looking at international students graduating with a Bachelor's degree, Master's degree, or a PhD, we see the same trends as already discussed, but with an interesting caveat.

The total number of international student graduates increased dramatically between 2013 and 2022, even more so on a percentage basis than for all graduates. The percentage of international students graduating increased by 31.3 percent compared to 13.9 percent for all students.

All International Student Graduates	2013	2022	Change
Total	179,651	235,949	**31.3%**
Bachelor's Degree	64,874	94,391	**45.5%**
Master's Degree	94,449	116,221	**23.1%**
PhD	20,328	25,337	**24.6%**

However, the percentage increase of those graduating with any engineering degree, and those with a civil, mechanical, or electrical engineering degree have not increased as much. International students with any engineering degree increased by 8.1 percent compared to 23.3 percent for all graduates.

International Engineering Student Graduates	2013	2022	Change
Total	37,575	40,606	**8.1%**
Bachelor's Degree	10,666	11,314	**6.1%**
Master's Degree	20,522	20,722	**1.0%**
PhD	6,387	8,570	**34.2%**

The percentage of international students graduating with a civil, mechanical, or electrical engineering degree increased by 7.0 percent compared to 26.9 percent for all graduates.

International Student Graduates with Civil, Mechanical, or Electrical Engineering Degree	2013	2022	Change
Total	16,522	17,670	**7.0%**
Bachelor's Degree	4,809	5,319	**10.6%**
Master's Degree	8,698	8,764	**0.8%**
PhD	3,015	3,587	**19.0%**

In recent years, there have been declines in all areas. For example, the number of all international students graduating in the U.S. has fallen by nearly 30,000 between 2019 and 2022. The number graduating with any engineering degree has decreased by more than 5,000 and the number graduating with a civil, mechanical, or electrical engineering degree has fallen by about 3,000. Again, the long-term trend has been positive, but the recent trend is going in the wrong direction.

H-1B Visa Impacts on International Students

Before we look at the net impact on the engineering labor force of graduates, retirements, and those leaving the industry for other reasons (known as “separations”), it is necessary to understand how H-1B visas are affecting the number of international students who graduate and stay in the U.S. for work.

We have already analyzed the trends for international students graduating with engineering degrees. For those students to remain in the U.S. as workers, they have a few options.

1. Apply for Optical Practical Training (OPT), which allows students to remain in the U.S. and work for between 12 and 36 months. Students must work in a job that is related to their field of study. Students must apply for this work authorization, although most applications are granted.

2. Find a firm willing to sponsor the recent graduate through the H-1B visa program.

3. Pursue other less common pathways, such as marry a U.S. citizen, apply for a resident visa through other family ties, or utilize a variety of less common and very limited visas.

For this report, we are mostly concerned with the H-1B visa program as this allows non-U.S. citizens an opportunity to work in the U.S. for up to six years. After the H-1B visa expires, employers may then choose to sponsor these workers as applicants for permanent resident green cards, although this is a multi-year process.

There are a set number of new H-1B visas available in the U.S. each year and those who apply for one are entered into a lottery, so even if a prospective employer is willing to sponsor an individual, there is no guarantee the person will be granted an H-1B visa. The cap for H-1B visas is currently set at 65,000 annually plus an additional 20,000 for individuals with an advanced degree.

Certain employers can sponsor H-1Bs outside of that 85,000 limit, including:

- Universities and affiliated nonprofits
- Nonprofit research organizations
- Government research organizations

That means total new H-1B issuances in a given year can be much higher than 85,000, since these petitions don't count against the cap. Indeed, according to the U.S. State Department, there were 206,002 new H-1B visas issued in 2022. Unfortunately, ACEC member firms do not fall into the above categories and, therefore, fall into the lottery for one of the 85,000 visas.

Recall the total number of international students who graduated with ANY degree in 2022…almost 236,000. And keep in mind that H-1B visas are not exclusively reserved for international students who have recently graduated. They are for ALL individuals who are not already authorized to work in the U.S.

Because the U.S. State Department does not track whether H-1B visas are issued to recent graduates, we must make a few assumptions to understand the effect on international students who wish to work in the U.S. Fortunately, the U.S. Citizenship and Immigration Services (USCIS), the entity that processes U.S. visas for foreign nationals, does track some characteristics of the visas it issues.

USCIS publishes an annual "Characteristics of H-1B Specialty Occupation Workers" report. The report includes breakdowns by education level, age, occupation, country of origin, and whether the petition was "initial" or "continuing." In FY 2021, about 51 percent of initial approvals were for individuals who earned their highest degree in the United States—a very close proxy for "recent graduates."

Given this information, one can assume that in 2022, 32,500 H-1B visas were issued to international students recently graduating with a Bachelor's degree and another 10,000 were issued to international students graduating with a Master's degree or a PhD.

In total, it was noted previously that there were nearly 236,000 international students who graduated in 2022 with any degree, and we estimate that only 42,500 H-1B visas were subsequently issued to these students. At this aggregate level, there is a shortage of 193,500 H-1B visas for international students who must then leave the country, unless they can find an employer willing to hire them while they are on OPT, which is a less than ideal option since the likelihood those individuals will be able to remain in the U.S. long-term is highly uncertain. Again, there are a few other options, such as marrying a U.S. citizen, but we will continue to focus on the most relevant path, H-1B visas.

We can drill down even further to international students graduating with engineering degrees. According to a Pew Research study in 2025, approximately nine percent of new H-1B visas are issued to engineers. Using our figure of 42,500 H-1B visas issued to students in 2022, that results in only 3,825 H-1B visas issued to international students graduating with any engineering degree, compared to 40,606 who actually graduated. In 2022, that left about 36,800 international students with an engineering degree without an H-1B work option, or 91 percent.

We can also look at those international students who graduated with a civil, mechanical, or electrical engineering degree in 2022. Based on our analysis, of the 17,670 international students who graduated with one of those degrees, we estimate that only 1,664 received an H-1B visa to work in the United States.

The U.S. is educating a large number of international students only to leave more than 90 percent of them without an H-1B work option. With the current shortage of workers in the engineering discipline, these students represent a lifeline to American firms and in a larger sense, the U.S. economy. All that is needed to immediately make this pool of individuals available to U.S. employers is to expand the H-1B visa program.

Retirements and Separations

The last step before we sum up the net impact on the engineering workforce is to look at the number of workers who are retiring each year and the number who leave the profession for any reason (i.e., changing careers, temporarily leaving the workforce, etc.) referred to as "separations."

In 2022, the U.S. Bureau of Labor Statistics (BLS) estimated through its Occupational Employment and Wage Statistics report, that there were 147.9 million workers in the labor force. Of this total, 1,659,230 were employed as any type of engineer, and drilling down further, 767,340 were employed as a civil, mechanical, or electrical engineer.

Through one of the flagship surveys conducted by the BLS—the Current Population Survey (CPS), the BLS estimates that each year, 4.7 percent of the workforce retires and another 6.4 percent leave their field or "separate" from it. Although these figures are for all professions, we can use this as a guide for estimates in the engineering and design services profession.

The result is that in 2022, we estimate that 184,175 engineers retired or left the field, and among those working as a civil, mechanical, or electrical engineer, 85,175 retired or left the field.

Net Impact on the Engineering Workforce

Having worked through all the math and trends above, we can now summarize the net impact on the engineering workforce in 2022 and discuss possible trends in the future.

First let's look at engineering as a whole. In 2022, 203,004 students graduated with a degree in any engineering discipline. However, 40,606 of these students were international and only 3,825 received an H-1B visa to work in the U.S.

Thus, excluding students obtaining OPT, the total number of NEW engineering graduates available for work was 166,223 (total students – international + H-1B visa holders). However, according to our estimates, 184,175 engineers retired or left the field resulting in a net gap of about 18,000 engineers.

Performing the same calculations for civil, mechanical, or electrical engineers, in 2022 we had 76,764 new available engineers in the workforce and 85,175 who retired or left the field for a net gap of 8,411 workers.

These figures paint a bleak picture for the engineering industry and specifically for ACEC member firms.

To be fair, the Occupational Employment and Wage Statistics report in 2023 showed an INCREASE of nearly 44,500 individuals employed as engineers. It is very possible this discrepancy is due to engineers NOT retiring or separating at the same rate as the overall labor force. It is also possible that engineers who left the field previously came back (i.e., individuals who take years off to raise children).

In addition, we are not counting students who obtained OPT and could have stayed in the U.S. for 12 to 36 months (depending upon their degree). We should note that according to USCIS, in FY 2022, 126,941 international students received OPT following graduation, equating to roughly half of international graduates, which would certainly have temporarily added to the available workforce (possibly around 9,500 international students with a degree in civil, mechanical, or electrical engineering).

Nonetheless, the outlook is uncertain for the engineering labor force as we are now seeing a decrease in the number of U.S. residents graduating with an engineering degree AND we are faced with an increase in the number of retirees due to the last Baby Boomers retiring. One fact is certain, there are tens of thousands of international students who are graduating with engineering degrees and do not receive an H-1B visa after graduation. This is a pool of workers that are immediately available and would go a long way to expanding the engineering labor force.

There are many other uncertainties that make it difficult to predict what will happen to the future engineering workforce. These include:

- The number of college-age individuals in the U.S.
- The percentage of college-age individuals who enroll in a 4-year institution
- The number of international students enrolling in a U.S. 4-year institution
- The number and percentage of students who enroll in a 4-year institution that pursue and graduate with a degree in engineering
- The number and percentage of older workers who retire versus extending their working years

All of the above could increase or decrease, affecting the available labor force. In addition, there is no way to predict the impact artificial intelligence will have on the need for labor, nor how the health of the U.S. economy might impact the demand for labor. But, one thing is clear, we have a shortage of labor in the engineering industry and recent trends are not moving in the right direction.

Insights on Motivations, Perceptions, Skills, and Expectations of Engineering's Workforce

Overview

This section presents detailed findings from the qualitative phase of the research investigating how engineering and non-engineering professionals at all career stages perceive their work, their employers, and the industry.

Insights are drawn from 38 one-on-one qualitative interviews and are organized into four major themes.

Career Motivations

Perceptions of the Industry and Value Proposition

Workforce Skills

Workforce Expectations and Values

Each theme highlights both generational differences (Young Professionals vs. Older Professionals) and role differences (Engineers vs Non-Engineers) to help inform recruitment, retention, and workforce development strategies for the future of the profession.

Career Motivations

Similarities Across All Respondents

Regardless of generation or role, participants widely described their work as meaningful and rooted in a desire to make a difference. Across the board, individuals expressed excitement about solving problems, collaborating in teams, and seeing their work come to life in the real world. Many referenced a sense of pride in contributing to infrastructure that improves communities, enhances public safety, and supports societal well-being. There was a shared appreciation for the variety of challenges the industry offers and a common thread of wanting to work alongside talented, mission-driven colleagues.

Generational Differences

Young Professionals were consistently driven by values-based motivators. Engineering students and early-career staff emphasized making a tangible impact, serving communities, solving real-world problems, and contributing to climate resilience. Many sought careers aligned with their personal values and desired flexibility, purpose, and team collaboration. A strong sense of civic duty emerged, with Young Professionals expressing pride in knowing their work helps people.

Older Professionals, including firm leaders, often emphasized intellectual challenge, problem-solving, and career longevity. For many, engineering was a natural fit due to early strengths in math and science, with career choices often influenced by family, mentors, or internships. They were more likely to cite the satisfaction of seeing complex projects through to completion and the long-term impact of their work.

Role Differences

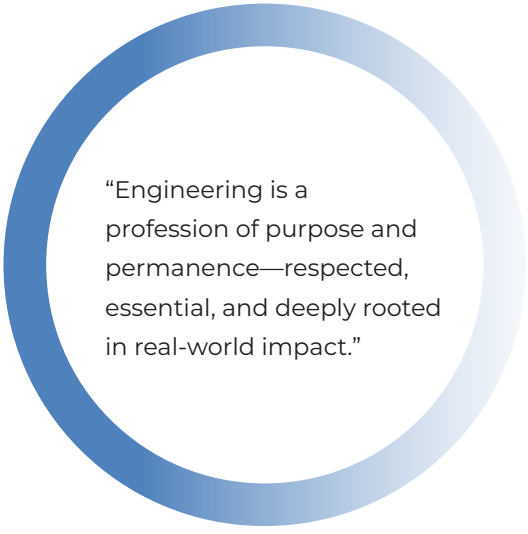
Engineers were commonly drawn to the field by a love of building, design, and systems thinking. Across all ages, Engineers described a strong intrinsic motivation for seeing ideas turned into reality. They value the ability to solve complex challenges in team-based environments.

Non-Engineers, including human resources, finance, business development, marketing, and IT professionals, often entered the industry incidentally but stayed for the dynamic and collaborative culture. Many found themselves energized by their firm’s mission and the opportunity to contribute to meaningful projects indirectly. For them, supporting teams, improving operations, and telling the story of engineering became core drivers of motivation.

Perceptions of the Industry and Value Proposition

Similarities Across All Respondents

All groups—regardless of age or role—recognized the critical importance of engineering to society and viewed the profession as one with purpose and long-term relevance. Participants consistently described the work as intellectually engaging, team-oriented, and grounded in real-world impact. There was broad agreement that the engineering industry struggles with visibility and public awareness, and that it must do more to attract new talent by communicating its value and role in solving modern challenges. While participants saw room for improvement in adaptability, they maintained deep respect for the profession's contributions and values.



Generational Differences

Young Professionals respect the industry's importance but criticize its slow pace of change, lack of diversity, and limited visibility. Many had limited knowledge of engineering before joining a firm or starting school. They expressed concern that the industry lags behind others in innovation, marketing, and embracing workforce flexibility. However, they also viewed civil engineering as a powerful vehicle for social good and sustainability.

Older Professionals held a more established view, highlighting engineering as a respected, essential, and intellectually fulfilling profession. While some acknowledged the need for change, they were more focused on the industry's proud traditions and long-term contributions to society.

Role Differences

Engineers saw their value in technical precision, infrastructure development, and public safety. Many emphasized the sense of responsibility that comes with licensure.

Non-Engineers initially struggled to articulate the industry's value but came to appreciate the broader impact of engineering work over time. Still, many felt that the industry undersells itself to potential talent pools, particularly for roles beyond design and project delivery.

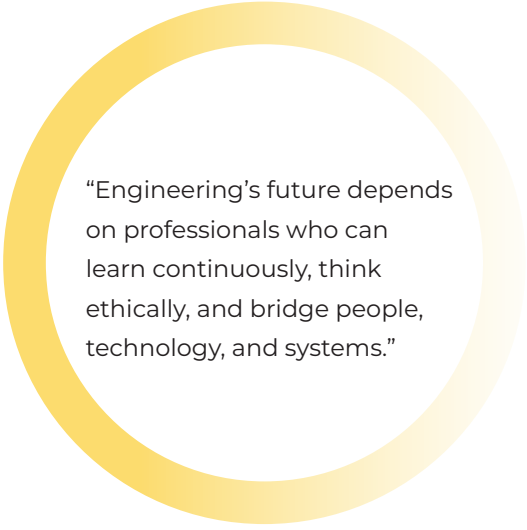
Themes across both groups included:

- A perceived need for better industry branding and storytelling
- Strong pride in the tangible outcomes of engineering
- Frustration with the slow adoption of new technology, flexible work models, and DEI progress

Workforce Skills

Similarities Across All Respondents

Across generations and roles, there was consensus that soft skills—particularly communication, adaptability, and collaboration—are increasingly vital for success in the industry. Respondents noted that while technical or technological skills can be taught, the ability to work effectively with others, manage time, and navigate complex interpersonal dynamics is more difficult to develop and more critical over time. There was also a shared recognition that continuous learning, ethical standards, and the ability to lead or contribute to teams are core competencies needed to thrive in the evolving engineering workplace.



Generational Differences

Young Professionals were most focused on developing adaptable, cross-functional skillsets. They recognized the increasing role of AI and digital tools and emphasized the importance of communication, collaboration, and emotional intelligence. They acknowledged their own weaknesses in executive functioning, risk-taking, and real-world experience, and many expressed a desire for more hands-on, team-based learning in college.

Older Professionals maintained a strong focus on technical depth and project management. They believed soft skills were essential but viewed them as complementary to, not replacements for, engineering rigor. Many were concerned that younger generations were over-reliant on technology and underexposed to critical thinking under pressure.

Role Differences

Engineers emphasized lifelong learning, ethics, systems thinking, and licensure, but recognized the growing need for software fluency, AI literacy, and business acumen.

Non-Engineers identified leadership, communication, and change management as key future skills. For example, HR professionals cited the ability to navigate generational divides and support mental health; IT leaders emphasized communication and implementation over pure coding.

Common future-ready skills across both groups included:

- Adaptability to tech disruption and client demands
- Communication across roles and disciplines
- Ethical awareness and systems thinking
- Project management, time management, and presentation skills

Workforce Expectations and Values

Similarities Across All Respondents

Participants across all demographics and departments consistently emphasized the importance of a supportive work culture. Everyone valued strong teams, meaningful relationships, and working for firms that invest in their people. Transparency, respect, and recognition were common expectations, along with a desire for leadership that listens and communicates openly. While priorities may differ in emphasis, the desire for purposeful work, opportunity to grow, and a balanced, healthy work environment were echoed universally.

Generational Differences

Young Professionals expect hybrid work, clear career pathways, transparency, and inclusive cultures. Many highlighted the importance of feeling seen and valued, and described a shift in priorities from "career at all costs" to "career that aligns with life." While they are highly dedicated, they expect boundaries to be respected.

Older Professionals value organizational loyalty, in-person mentorship, and professional growth over time. While many are open to flexible work, they place more emphasis on trust, in-person culture, and steady leadership. They often see the younger generation as needing more resilience and proactive communication.

Role Differences

Engineers value challenging, meaningful project work, and professional recognition. Many are drawn to firms with strong reputations and collaborative technical teams.

Non-Engineers prioritize workplace respect, integration into firm strategy, and role clarity. Some expressed concern about being perceived as "overhead" or having their contributions undervalued.

Key expectations from the future workforce include:

- Purposeful work and visible impact
- Healthy, flexible work environments
- Career mobility and skill development
- Opportunities for mentorship and cross-training
- Access to leadership and decision-making

The Future Workforce: Findings from the National Workforce Survey

Overview

This national survey provides an in-depth look at the people who power the engineering profession, the motivations that brought them into the field, the pressures they face, and the qualities they expect from their employers. It paints a portrait of an industry with strong foundations—stability, purpose, and visible impact—but one also confronting cultural, generational, and structural shifts that leaders can no longer ignore.

The demographics of today's workforce reveal both continuity and change. The profession remains predominantly male, particularly among Engineers but less so among Non-Engineers, but the student pipeline tells a different story: more women, more racial and ethnic diversity, and a younger generation entering the field with high expectations for balance, inclusion, and growth. Despite workforce constraints this report helps firms understand what they can do to hold onto talent once acquired.

Engineering remains meaningful, resilient, and respected—but its future depends on how it responds to the lived experience of its people.

Motivations for joining the profession vary by role and career stage. Engineers often cite their enjoyment of STEM studies and the essential, resilient nature of the work. Non-Engineers, who play vital roles inside firms, are driven more by opportunities for advancement, culture, and the chance to help others succeed. Students brim with enthusiasm across multiple motivators but have limited exposure to practice, underscoring the need for internships and practical experience. Young Professionals lean into pride in being part of a respected industry and the visibility of their work, while Older Professionals increasingly value stewardship, taking responsibility, and mentoring the next generation. What excites each group reflects where they are in their journey: learning and purpose for those just starting out, stability and legacy for those nearing the top.

Concerns, too, carry the imprint of vantage point. Students worry whether their education truly prepares them and whether artificial intelligence may change the nature of entry-level work. Young Professionals share those anxieties while struggling to establish a stable footing. Older Professionals, by contrast, focus outward, worried about public misunderstanding of engineering and whether the next generation is ready to lead. Engineers feel the acute pressure of billable-hour models, while Non-Engineers worry about being undervalued in a culture that often prizes technical contributions above all else. Stress, burnout, and long hours are the common thread, but what those pressures mean differs by group.

When asked how they perceive the industry, respondents converge on its strengths—meaningful work, stability, and societal impact—but diverge on emphasis. Executives focus on professional esteem and external storytelling, urging the industry to do a better job marketing itself to Students and the public. Non-Engineers focus on internal recognition and inclusion. Students and Young Professionals emphasize representation and the steep learning curve of early practice. Older Professionals bring esteem alongside realism, acknowledging persistent workload pressures and mid-career talent gaps. The shared story is one of pride in the profession, but each group views it through its own lens.

The benefits of working in engineering are clear: solving complex problems, creating lasting projects, and making a visible difference in people's lives. Yet those benefits carry costs. Stress, burnout, and the demands of the billable-hour model loom large. Each group surfaces its own pain points—flexibility for Students and younger Staff, recognition for Non-Engineers, visibility for older Staff, and client expectation management for Executives. The industry offers purpose, but at times it exacts a heavy price.

Compared to other sectors, engineering shines in stability, durability, and purpose, but lags in adaptability, inclusion, and everyday human experience. Students idealize the profession as innovative and change-ready; Executives, living with client

and regulatory realities, see much slower adoption of technology and change. This gap between expectations and lived experience signals a risk: if the promise of innovation is not matched by practice, the next generation may become disillusioned.

The profession's foundation is solid; the question is whether firms will adapt their culture and practices to support the workforce of the future.

On the skills needed to succeed, there is agreement that critical thinking, adaptability, collaboration, and accountability are paramount. But differences emerge in what comes next. Older Professionals stress client management, financial literacy, and strategic thinking. Younger Staff emphasize adaptability, learning through trial and error, and cultural competence. Executives look for initiative, while Students want structured support to bridge classroom and practice. Preparedness gaps remain stark: only a third of Students feel ready on the skills that matter most. The message is not that potential is missing—it is that support is essential to unlock it.

Finally, when asked about the characteristics of an ideal employer, all groups agree on the basics: trusted leadership, strong managers, and fair pay. Beyond that, preferences diverge. Students and Young Professionals call for balance, flexibility, and meaningful work; Older Professionals highlight team cohesion and stability; Executives emphasize organizational alignment, mentoring, and ownership models. The universal essentials are clear, but the "second tier" of expectations is shaped by stage of career and role within the firm.

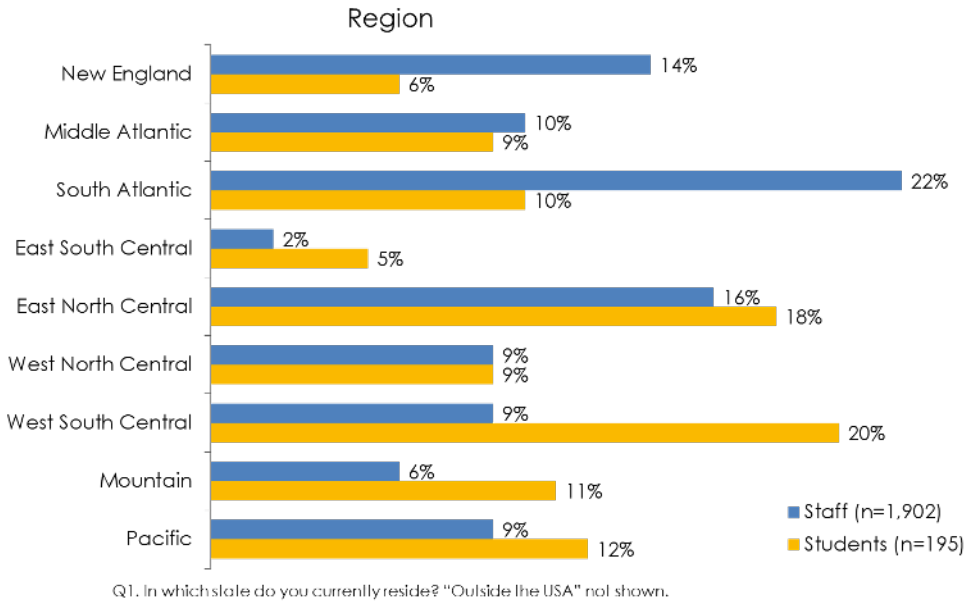
The story that emerges is one of an industry with strong bones but new pressures. Engineering remains meaningful, resilient, and respected, but its future depends on how it responds to the lived experience of its people. To attract and retain talent, firms must not only provide the essentials but also tailor their practices: structured on-ramps for Students, recognition for Non-Engineers, career stability and flexibility for young Staff, succession planning for Older Professionals, and visible adaptability to change. The engineering profession's foundation is solid—the question is whether leaders will adapt its culture and practices to ensure that foundation supports the workforce of the future.

Survey Demographics

Understanding the demographic profile of survey respondents provides important context for interpreting the study results. The survey reached both Staff of ACEC member firms and engineering students, enabling comparisons across roles, career stages, and disciplines. Respondents represent a broad cross-section of the profession in terms of geography, firm size, position level, functional role, years of experience, academic focus, gender, and race/ethnicity.

Geographic Distribution

Respondents are widely dispersed across the United States, reflecting a national cross-section of both Students and Staff from ACEC member firms. This broad participation ensures that the findings capture diverse regional perspectives rather than being concentrated in one part of the country.

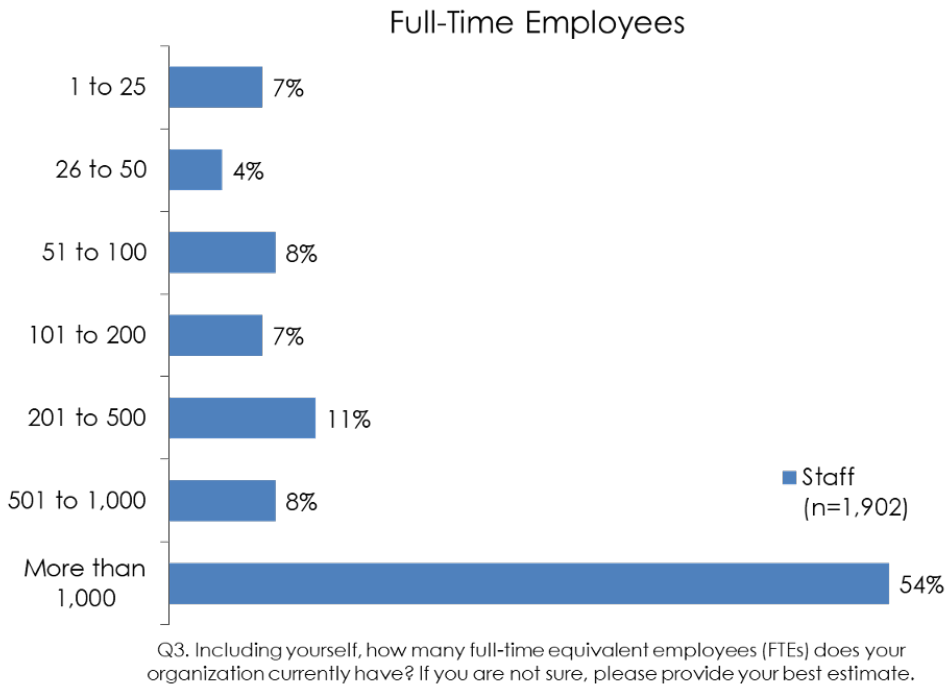


Q1. In which state do you currently reside? "Outside the USA" not shown.

Firm Size

Most respondents work at firms with more than 1,000 full-time equivalent employees (FTEs). This finding highlights the strong participation of employees from larger firms. However, it also means that employees at smaller firms are somewhat underrepresented relative to the industry overall. For example, according to external benchmarks (e.g., Statista 2023), 44 percent of private sector employees work at companies with one to 249 employees. In this study, only about 30 percent of respondents work for firms of that size.

This skew should be considered when interpreting the results: employees at larger firms may face different challenges and opportunities than those at smaller organizations, particularly in areas such as career advancement, training, and exposure to diverse projects.

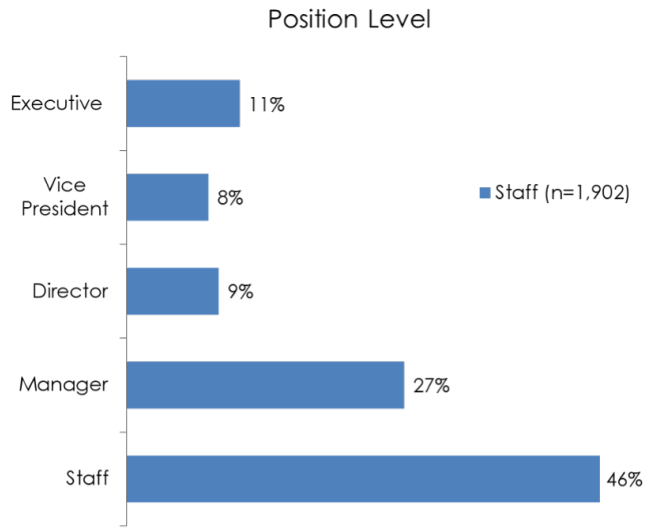


Q3. Including yourself, how many full-time equivalent employees (FTEs) does your organization currently have? If you are not sure, please provide your best estimate.

Position Level

Nearly half of all respondents (46%) are at the Staff level within their firms, while 27 percent serve as managers and about 10 percent hold executive positions. Firm size significantly influences these results. At small firms (1 to 50 FTEs), 43 percent of respondents report being in executive positions, compared to much smaller proportions at larger firms.

Gender also plays a role. Men are more likely than women to hold executive or vice president–level positions (22% vs. 12%), reflecting ongoing challenges in gender equity at leadership levels. This underscores the importance of leadership development, mentorship, and retention strategies for women in engineering.

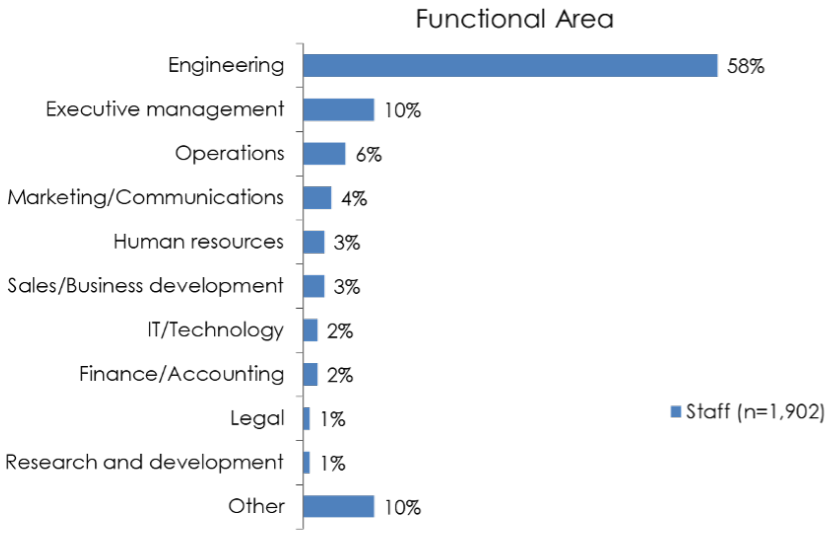


Q5: Which of the following best describes your current position level?

Functional Area

Most respondents (nearly six in 10) report working in engineering roles, while about 10 percent are in executive management and the remainder serve in non-engineering functions such as human resources, finance, administration, marketing, environmental services, or project management.

Gender disparities are particularly noteworthy here. Men are significantly more likely than women to work in executive management (13% vs. 6%) or engineering roles (65% vs. 47%). Women, meanwhile, are nearly twice as likely as men to work in non-engineering roles (46% vs. 23%). This suggests that although women are entering the industry in greater numbers, they may not yet be equally represented in core technical or executive positions.



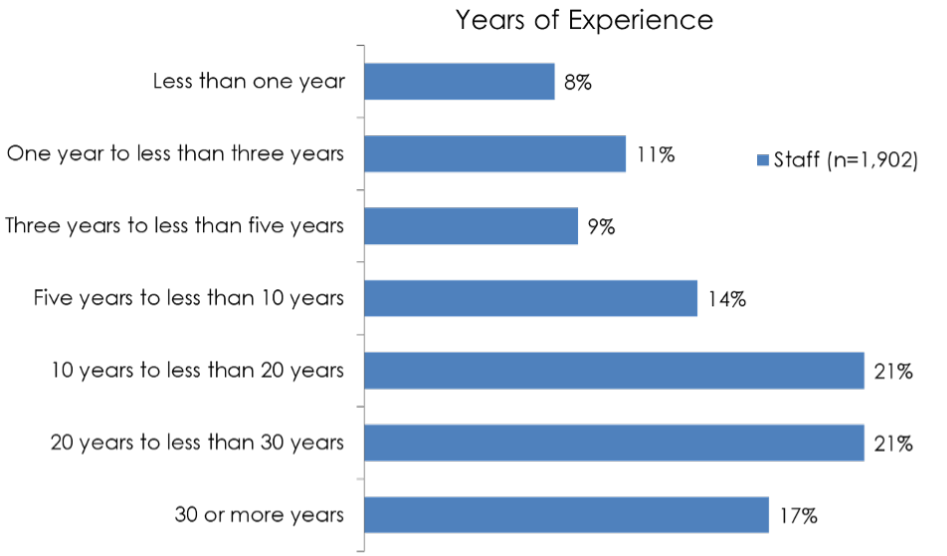
Q6: In which functional area of your firm do you primarily work?

Years of Experience

The data reveal a relatively young workforce: 28 percent of Staff respondents have fewer than five years of experience, while another 14 percent have fewer than 10 years. This means that over 40 percent of Staff are still in the early stages of their careers.

Women, on average, have less experience than men. Thirty-eight percent of women report fewer than five years of experience, compared to 22 percent of men. This gap suggests that while women are entering the profession at higher rates today, they still represent a smaller share of those with long-standing tenure in the industry.

This generational dynamic will have important implications for succession planning, knowledge transfer, and leadership development within firms.

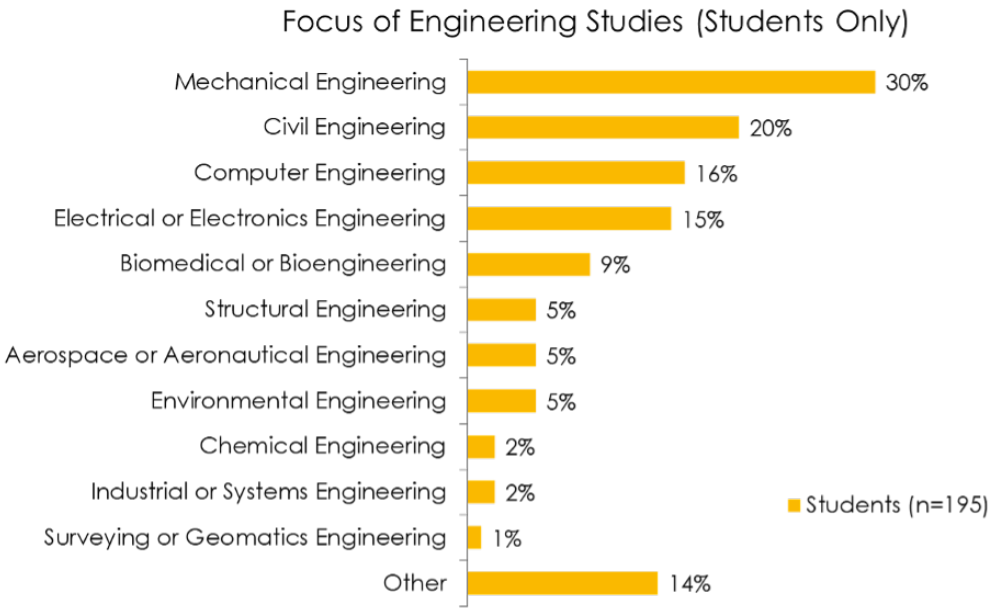


Q4: For how many years have you been employed in the engineering and design services profession?

Engineering Studies (Students Only)

Among Students, nearly two-thirds are pursuing degrees in mechanical (30%), civil (20%), or electrical engineering (15%). These three disciplines remain the backbone of engineering education and continue to dominate the academic pipeline.

Male Students are slightly more likely than female Students to major in these core areas (71% vs. 60%), though the gender gap is narrower among Students than among current Staff. This indicates that future cohorts may show more balance in terms of representation within these high-demand fields.

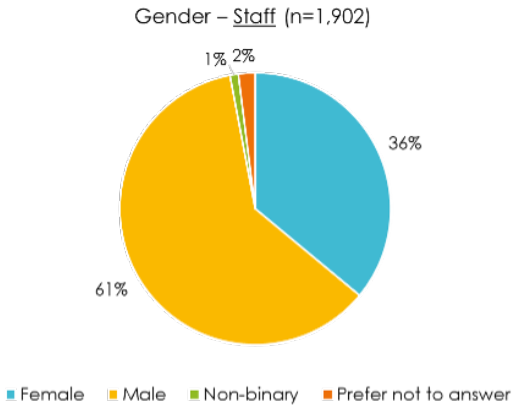


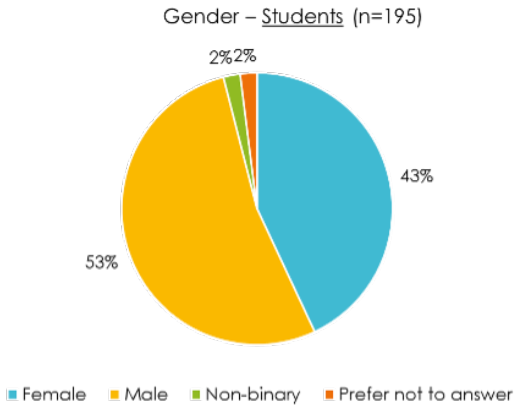
Q7: Which engineering degree(s) are you currently pursuing or do you currently hold?

Gender

Gender representation varies across career stage. Among Staff respondents, 36 percent identify as female. Among Students, the proportion is higher, at 43 percent. This suggests that progress is being made in attracting women into engineering education, though the lower proportion among practicing Staff highlights ongoing challenges with retention and advancement.

The higher proportion of women among Students may signal a gradual shift toward greater gender parity in the profession over time, provided firms can successfully retain female graduates as they transition into careers.





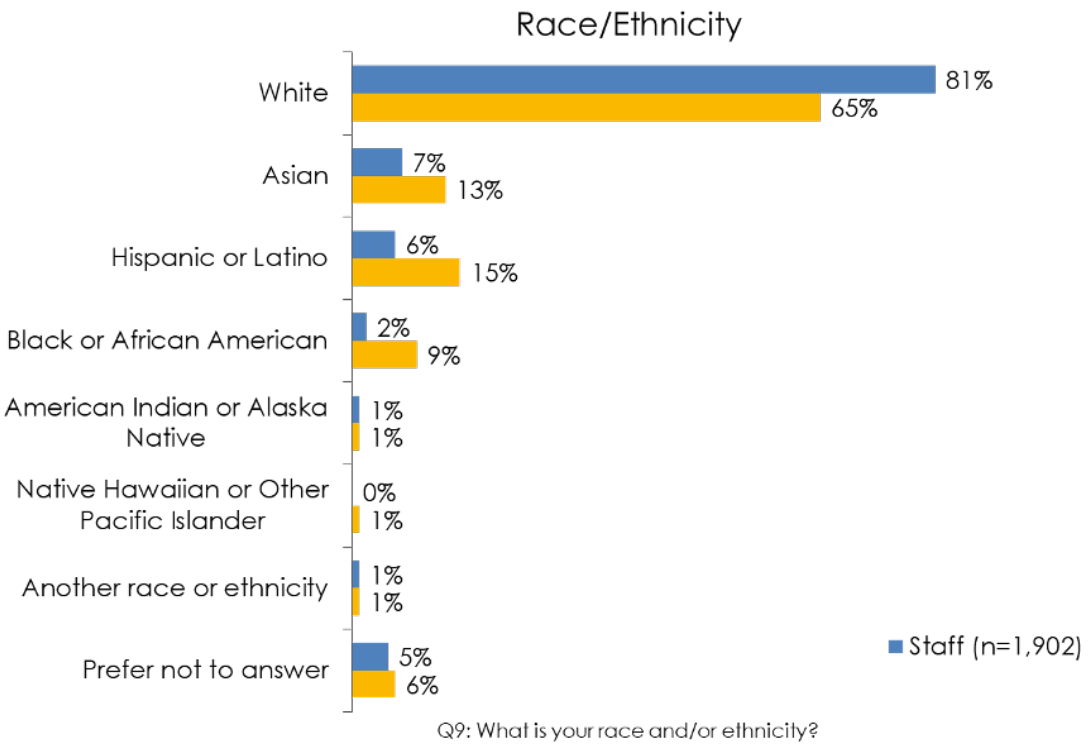
Q8: Do you identify as...?

Race and Ethnicity

The profession remains predominantly white among current Staff (81%), while student respondents reflect more diversity, with 65 percent identifying as white. This difference underscores a generational shift: the pipeline of future Engineers entering the profession is more racially diverse than the existing workforce.

Firm size also appears to influence racial diversity. Staff at small firms (1–50 FTEs) are less likely to identify as white (70%) compared to Staff at medium or large firms (83%). This could reflect regional differences in firm composition or recruitment practices.

These results highlight both the progress being made in diversifying the engineering student population and the ongoing need for firms to strengthen efforts in attracting and retaining diverse talent into practice. It should be noted that few, if any, international students participated in this survey.



Summary of Demographics

The demographic profile of survey respondents paints a nuanced picture of the engineering workforce. Larger firms are slightly overrepresented, meaning the results may reflect some of the unique challenges faced by these organizations. Gender gaps remain significant, particularly at leadership levels and in engineering functions, but the higher proportion of women among Students is an encouraging sign for the future. Similarly, while the current workforce remains predominantly white, the student population is more racially diverse, suggesting that firms will need to focus on building inclusive environments that retain and advance diverse talent.

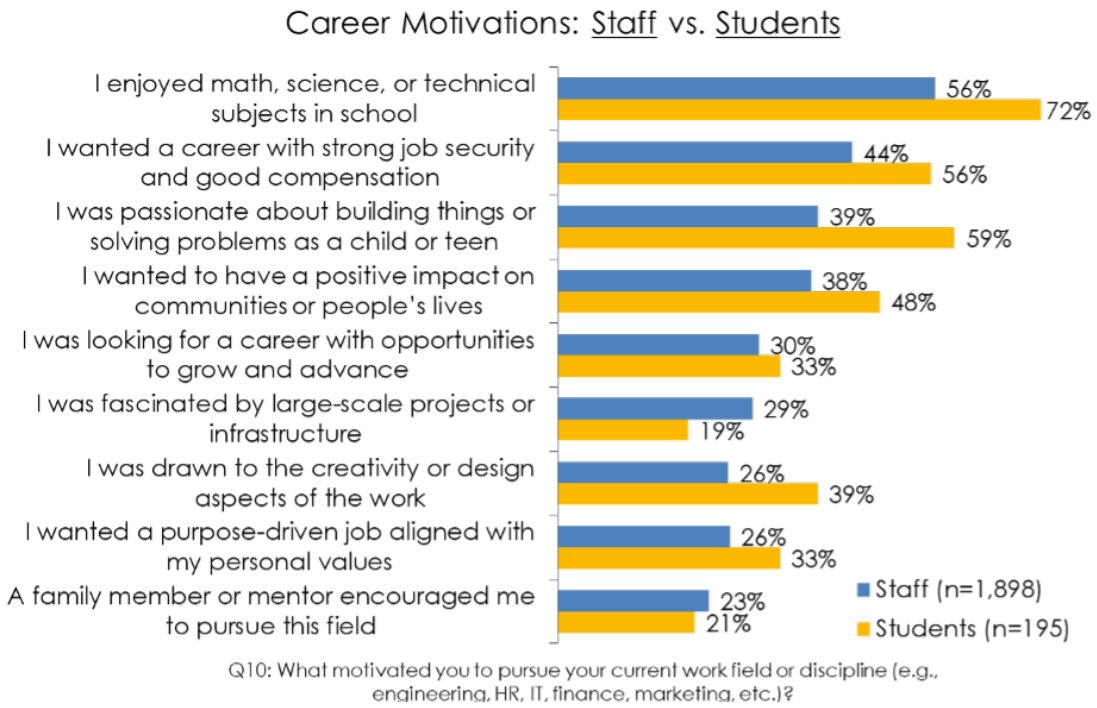
Collectively, these demographic insights provide the foundation for understanding the motivations, perceptions, and expectations of the workforce explored in subsequent sections of this report.

Career Motivations

Understanding what motivates individuals to pursue careers in engineering and related fields provides valuable insight into how the industry can attract, inspire, and retain talent. This section explores the top reasons respondents chose their career paths and highlights important differences between Students, Staff, Engineers, Non-Engineers, Young Professionals, and Older Professionals.

Overall Motivations

Among all Staff respondents, the top motivator was having enjoyed STEM classes in school (56%). Other common drivers included seeking strong job security and good compensation (44%) and having been passionate about building or creating things as a child (39%). These findings underscore the importance of early exposure to STEM education and the role of financial stability in career decisions.



Q10: What motivated you to pursue your current work field or discipline (e.g., engineering, HR, IT, finance, marketing, etc.)?

Students vs. Staff

Students reported many of the same motivations as Staff but expressed them with greater intensity. Nearly three-quarters of Students (72%) cited enjoyment of STEM classes, compared to 56 percent of Staff. A childhood passion for building or creating things was reported by 59 percent of Students versus a smaller share of Staff (39%). Students also stood out for citing an interest in technology and computers—26 percent versus just two percent of practicing Engineers (not shown in graph).

Students were also more likely than Staff to cite nearly every motivator tested, suggesting that they hold broad enthusiasm and multiple reasons for pursuing engineering-related careers. However, Students were much less likely to report having been exposed to the profession through internships or early job experiences (only 5%), pointing to a gap in experiential learning opportunities before graduation (not shown in graph).

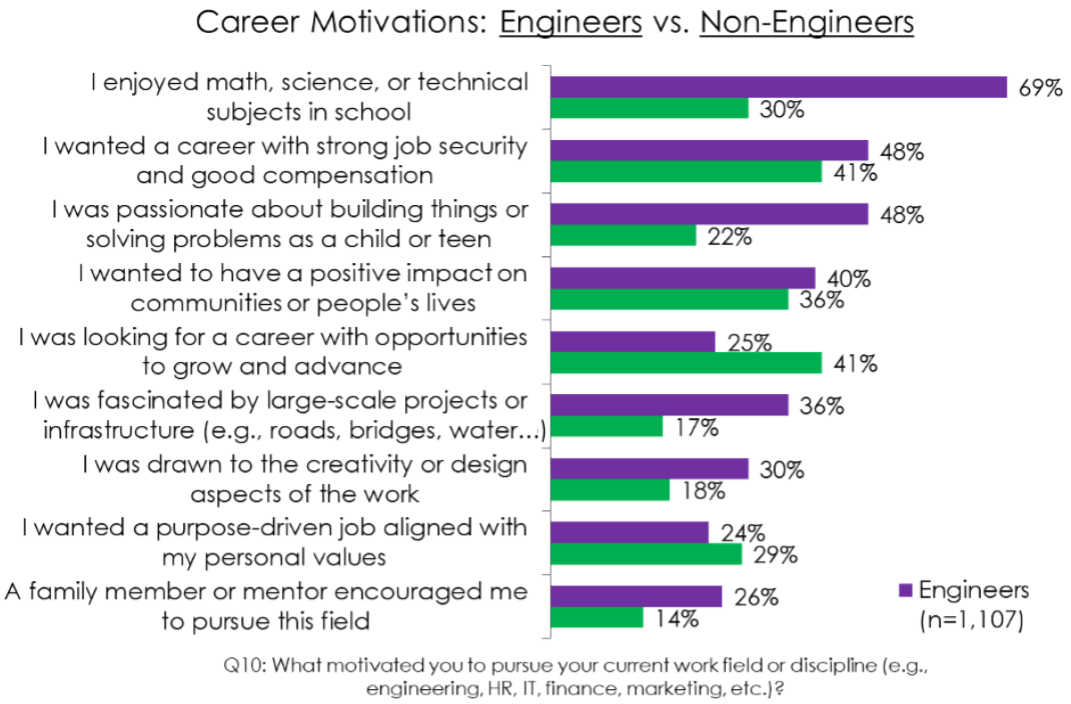
This comparison reveals both opportunity and risk: while Students' enthusiasm is high, the lack of practical exposure may hinder the transition from academic to professional careers.

Engineers vs. Non-Engineers

When comparing staff roles, clear differences emerged between Engineers and Non-Engineers working in engineering firms. Engineers were most motivated by enjoying STEM classes (69%), seeking strong job security and good compensation (48%), and being passionate about building things (48%). These motivations align closely with the technical and problem-solving nature of engineering work.

Non-Engineers, by contrast, were more motivated by interpersonal and advancement-oriented factors. The most common motivators were job security and compensation (41%), opportunities to grow and advance (41%), and having a positive impact on communities or people's lives (36%).

Additional motivators for Non-Engineers included working in a collaborative team environment (26%) and helping others (24%). This suggests that Non-Engineers may be more driven by interpersonal, community, and career-advancement factors than by purely technical or STEM-based interests.



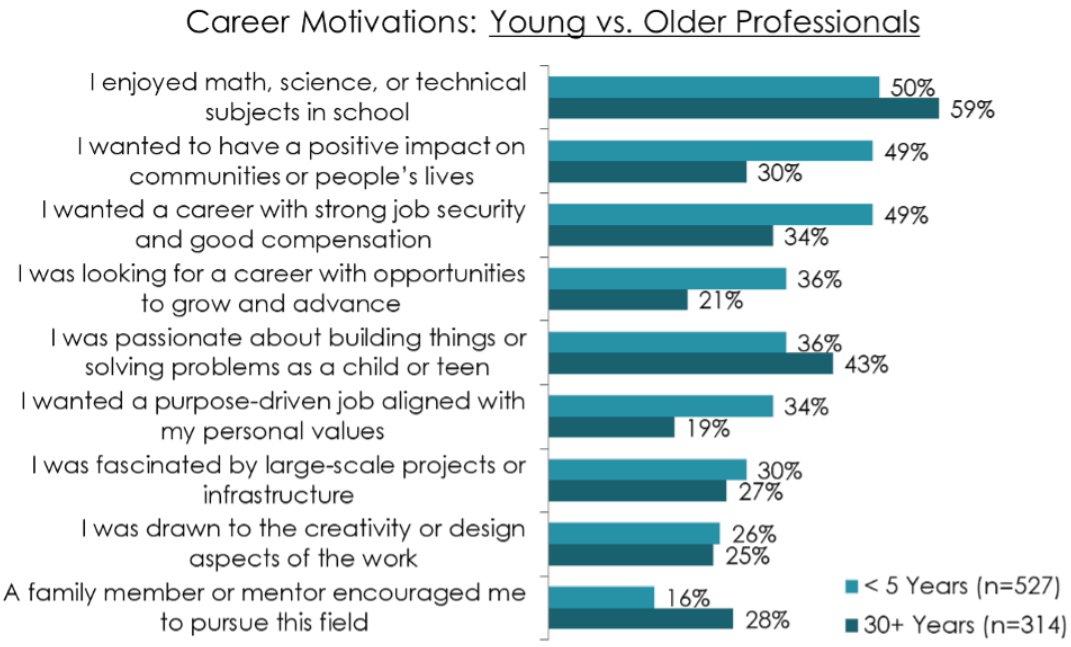
Q10: What motivated you to pursue your current work field or discipline (e.g., engineering, HR, IT, finance, marketing, etc.)?

Young vs. Older Professionals

Career motivations also varied significantly by career stage. Older Professionals were more likely to cite traditional motivators such as enjoyment of STEM classes (59% vs. 50% of Young Professionals), being passionate about building things (43% vs. 36%), and encouragement from family or mentors (28% vs. 16%).

Young Professionals, on the other hand, placed stronger emphasis on impact and purpose. Nearly half (49%) cited having a positive impact on communities and people's lives, compared to 30 percent of Older Professionals. The same share (49%) pointed to strong job security and good compensation, compared to 34 percent of Older Professionals. Young Professionals were also nearly twice as likely to cite having a purpose-driven job (34% vs. 19%).

These results show a generational shift. Young Professionals seek meaning and purpose in their careers at higher rates, while Older Professionals reflect a more traditional pathway into engineering, emphasizing STEM education and personal encouragement. This suggests that firms must balance messages about purpose and community impact with those about stability and compensation when recruiting younger cohorts.



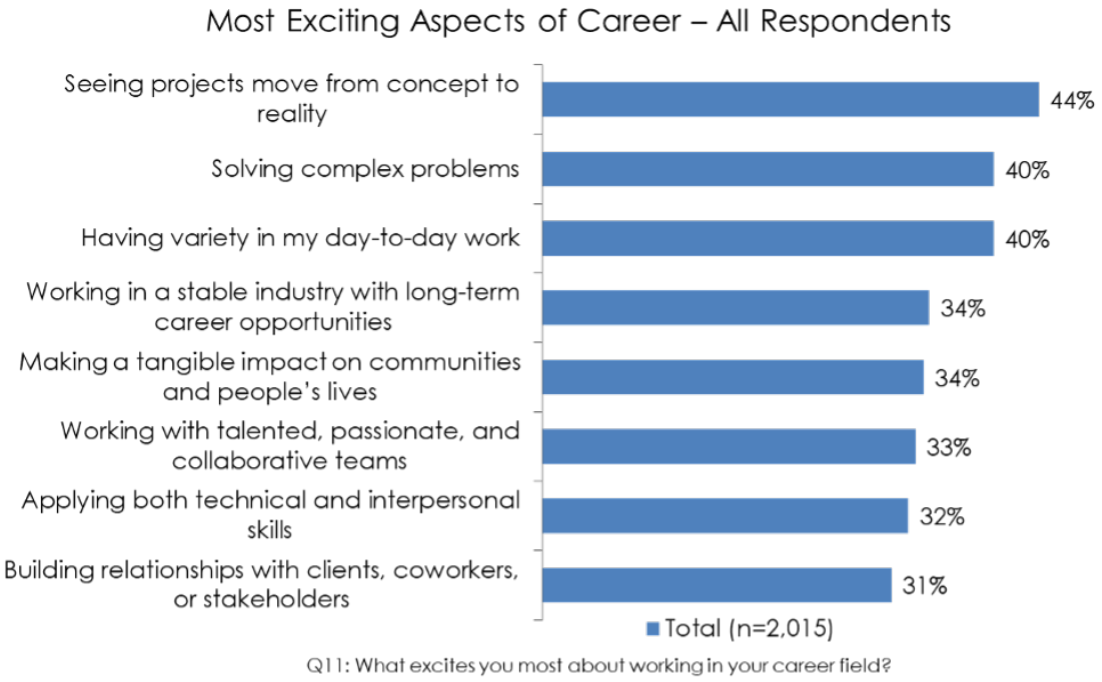
Q10: What motivated you to pursue your current work field or discipline (e.g., engineering, HR, IT, finance, marketing, etc.)?

Engineers vs. Non-Engineers

Beyond the initial motivations, respondents were also asked what excites them most about their work. Across all groups, the top three responses (out of 25 items tested) were:

- Seeing projects move from concept to reality (44%)
- Solving complex problems (40%)
- Experiencing variety day-to-day (40%)

These aspects reflect the unique nature of engineering careers: the ability to make tangible contributions, engage intellectually with challenging problems, and enjoy a dynamic work environment.



Q11: What excites you most about working in your career field?

But beneath this shared foundation, different groups reveal unique perspectives about what excites them most.

Students place the greatest emphasis on learning, creativity, and purpose. Their top eight include:

- Learning and applying new skills or technologies (49%)
- Making a difference through purpose-driven work (45%)
- The ability to be creative and think outside the box (39%)

Notably, Students exclude relationship-oriented items from their top eight, including:

- Working with talented, passionate, and collaborative teams (25%)
- Applying both technical and interpersonal skills (25%)
- Building relationships with clients, coworkers, or stakeholders (11%)

The remaining five items mentioned in the top eight overall are also in the top eight for Students.

Students elevate aspects consistent with their current environment — academic learning, project-based creativity, and purpose. By contrast, relationship-building and applied interpersonal skills are less salient, likely reflecting limited real-world exposure to clients and professional collaboration at this stage.

Young Professionals highlight industry pride and visibility. Their unique top eight items include:

- Being part of an industry that is essential and resilient (35%)
- Feeling proud to share my work with friends and family (32%)

They do not include:

- Applying both technical and interpersonal skills (27%)
- Building relationships with clients, coworkers, or stakeholders (22%)

At this career stage, excitement is tied to pride in being part of a respected industry and to the social value of sharing accomplishments with peers and family. Interpersonal and hybrid skill application may not yet feel central, as they are still in development.

Older Professionals emphasize responsibility and mentorship. Their unique top eight items are:

- The challenge and responsibility that comes with the work (40%)
- Helping others succeed or grow in their careers (40%)

They do not include:

- Making a tangible impact on communities and people's lives (33%)
- Working in a stable industry with long-term career opportunities (24%)

With experience comes a shift toward stewardship. Older Professionals are excited by opportunities to take on consequential responsibilities and to mentor others. Broader notions of stability and community impact likely feel assumed at this stage, rather than defining sources of excitement.

Engineers, compared to Non-Engineers, highlight the profession's essential and resilient role. Their unique top eight item is:

- Being part of an industry that is essential and resilient (33%)

By contrast, they do not include:

- Building relationships with clients, coworkers, or stakeholders (29%)

Engineers are energized by contributing to an industry that underpins society's infrastructure and resilience. They find excitement in the macro mission of engineering, rather than in day-to-day interpersonal dynamics.

Non-Engineers focus on responsibility, culture, and supporting others. Their unique top eight include:

- The challenge and responsibility that comes with the work (32%)
- Helping others succeed or grow in their careers (31%)
- Working in a values-driven culture or employee-owned company (30%)

They do not elevate technical or complexity-oriented items, such as:

- Applying both technical and interpersonal skills (28%)
- Making a tangible impact on communities and people's lives (28%)
- Solving complex problems (27%)

Non-Engineers are excited by organizational culture and people-development pathways. They are less motivated by technical problem-solving, instead finding energy in ownership models, responsibility, and helping colleagues grow.

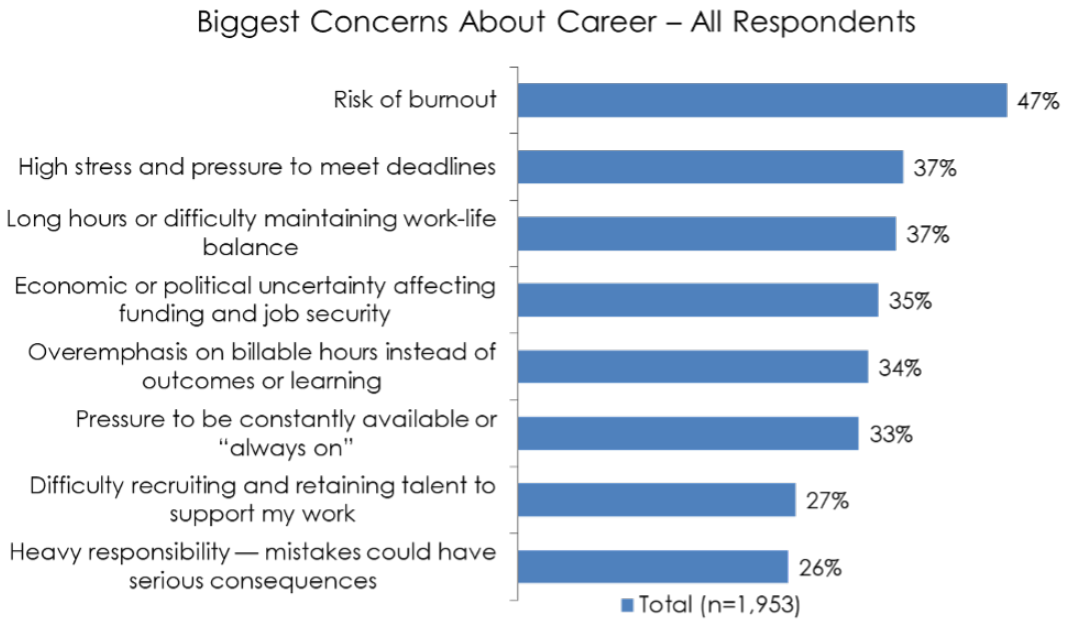
Taken together, these findings reveal that excitement in engineering careers is not one-size-fits-all. Students and Young Professionals are inspired by learning, creativity, and industry pride; Older Professionals find fulfillment in responsibility and mentorship; Engineers look to the resilience of the profession; and Non-Engineers take energy from culture and people. For firms, this means engagement strategies should adapt to career stage and role—from emphasizing growth and purpose for Students, to pride and belonging for early-career staff, to stewardship and mentorship opportunities for experienced professionals. Recognizing and reinforcing what excites each group is essential to building a workforce that remains inspired at every stage of the journey.

Biggest Concerns About Careers

Respondents also shared their top concerns, which highlight potential barriers to sustaining engagement in the profession. The three most frequently cited concerns were:

- Risk of burnout (47%).
- High stress and pressure to meet deadlines (37%).
- Long hours and challenges with work-life balance (37%).

These results reinforce the need for firms to invest in employee well-being, flexible work arrangements, and realistic project timelines in order to sustain a healthy workforce.



For Students, concerns are anchored less in day-to-day professional realities and more in the transition from education to practice. Nearly half worry about a disconnect between college preparation and real-world job demands (45%), and about one in three are anxious that artificial intelligence could reduce or replace parts of their job (31%). These findings show that Students are not only apprehensive about whether their education will adequately prepare them for practice, but also about whether the very nature of engineering work is shifting under their feet. More traditional workforce concerns—such as billable hours or talent recruitment—rank low for this group, since most have not yet entered firm life.

For Young Professionals, the themes look different but still reflect early-career uncertainty. Like Students, they carry concerns about AI's potential to reduce or reshape their work (23%), though at somewhat lower levels. This anxiety highlights how disruptive technologies are coloring perceptions of career stability at the very start of professional life. In contrast, broader systemic concerns—such as difficulty recruiting or retaining talent (12%)—feel less immediate, as younger Staff are still focused primarily on their own development and growth.

By comparison, Older Professionals view the industry's challenges through the lens of legacy and succession. Their top concerns are not personal burnout or balance but rather the public misunderstanding and undervaluing of what engineers do (36%) and the limited pipeline of mid-career talent (33%). These concerns reflect both outward-facing frustrations—that society may not fully grasp or reward the industry's contributions—and inward-facing anxieties about who will carry the mantle forward as they prepare to step back. Issues like long hours or heavy responsibility remain present, but they no longer dominate the top tier of concern for this group.

Non-Engineers working in firms tell another story altogether. Their most distinctive concern is feeling undervalued or seen as "overhead" (31%), reflecting the persistent divide between technical and non-technical roles in engineering organizations. Unlike Engineers, who emphasize billable-hour and utilization pressures, Non-Engineers are less concerned about technical responsibility or error but more concerned with recognition, visibility, and inclusion in firm culture. Their perspective highlights the risk that firms may underappreciate essential contributors in finance, HR, marketing, and administration.

Finally, Engineers share the same top concerns as the overall results underscoring how deeply the financial model of professional services drives their sense of stress and potential burnout.

All in all, these subgroup perspectives show that while the entire profession grapples with long hours and stress, the meaning of concern shifts with context. Students worry about preparedness and the future of work. Young Professionals focus on technology disruptions and establishing stable footing. Older Professionals stress over public perceptions and leadership gaps. Non-Engineers seek recognition in a technical culture. Engineers wrestle with utilization demands baked into the business model.

For firm leaders, the lesson is clear: addressing burnout and workload requires different strategies for different groups. Early-career Staff need support in skill-building and reassurance about career stability. Mid- and late-career Staff need succession planning and external advocacy. Non-Engineers need validation of their role in firm success. Engineers need relief from the relentless pressure of billable hours. Only by tailoring responses can firms meaningfully address the full spectrum of workforce concerns.

Summary of Career Motivations

Collectively, the findings on career motivations reveal both continuity and change across generations and roles:

- STEM education remains a central motivator for Engineers, underscoring the importance of strengthening the K-12 and university pipeline.
- Students are broadly motivated but lack early exposure to professional experiences.
- Non-Engineers are more driven by opportunities for growth and interpersonal impact than by technical motivations.
- Young Professionals increasingly seek purpose, impact, and balance, while Older Professionals reflect traditional pathways into the profession.

For firms, this means that recruitment, retention, and professional development strategies must be tailored to highlight different value propositions. Young Professionals, in particular, may respond best to messaging that emphasizes purpose, growth opportunities, and work-life balance, while traditional motivations such as compensation and stability remain important across all groups.

Industry Perceptions

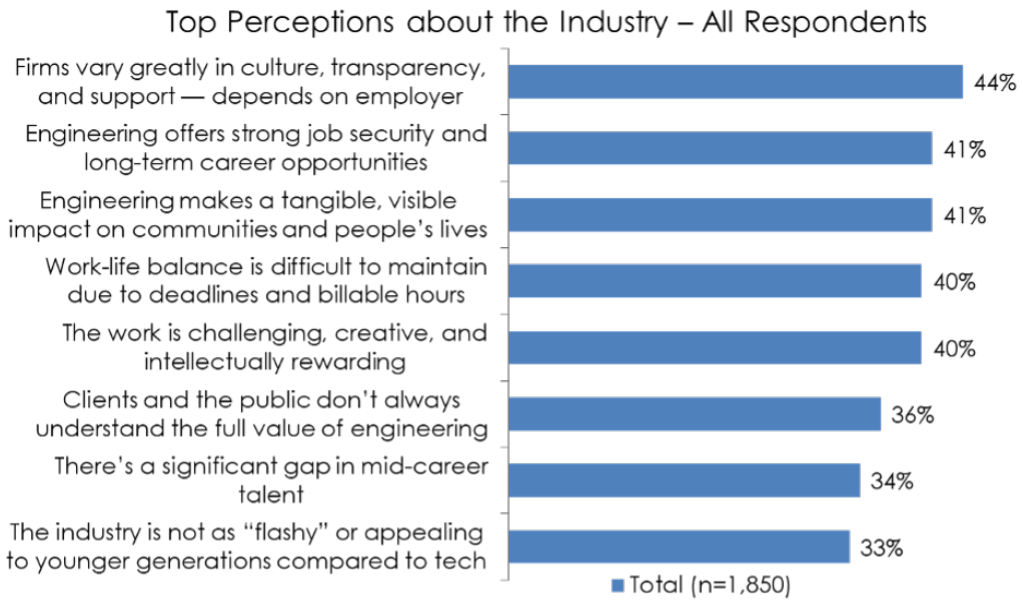
Overview

When thinking about the engineering industry as a whole, respondents express a mix of pride, realism, and concern. On the positive side, many see engineering as offering job security and long-term opportunity, and as a field that makes a tangible impact on communities and people's lives. At the same time, perceptions vary by role, career stage, and background. Engineers, Non-Engineers, Students, and professionals of different ages often emphasize different strengths or challenges, revealing how lived experience shapes one's view of the industry.

Top Perceptions About the Industry

Across all respondents, the most widely held perceptions are:

- Firms vary greatly from each other (44%)
- Engineering offers strong job security and long-term career opportunities (41%)
- Engineering makes real impacts on communities and people's lives (41%).



Q17: Overall, when you think about engineering firms, employers, and the industry, what are your perceptions?

These three perceptions anchor a broader sense that engineering is both meaningful and durable. Notably, Engineers mirror the overall top eight perceptions exactly, so their distinct callouts do not appear on the subgroup analysis below.

At the entry point to the profession, Students balance admiration with realism. They bring into their top eight the view that the industry is still largely white and male, especially in senior roles (38%), that Young Professionals often face a steep learning curve and lack real-world preparation (38%), and that Engineers embody high professional standards (33%). Meanwhile, items that do not make their top eight include mid-career gaps (22%), public misunderstanding of engineering's value (21%), and comparisons to flashier tech sectors (15%). The signal here is clear: Students expect a challenging ramp-up and notice representation issues, yet they're less focused on mid-career structure or external validation than on what their own early journey will look like.

Early-career Staff echo much of this. Young Professionals also push the representation and preparedness realities into their top perceptions—industry still largely white and male (38%) and steep learning curve/lack of real-world preparation (30%)—while not elevating not as flashy as tech (26%) or public doesn't understand our value (25%) into their top eight. Their lens, like Students', is centered on belonging and the transition into practice, rather than on the industry's broader PR challenges.

With tenure, the frame widens. Older Professionals bring forward both professional esteem—engineers are highly intelligent, ethical, and disciplined (41%)—and a nuanced read of reputation—the profession is respected but often misunderstood by the public (36%). Two issues sit tied at the eighth spot for this group: work-life balance is difficult due to deadlines and billable hours (36%) and there's a significant gap in mid-career talent (36%). Unlike Executives (who don't elevate those two), Older Professionals place them right on the threshold, suggesting a front-line awareness of both sustained workload pressure and succession depth as defining characteristics of the industry today.

Inside firms, Non-Engineers experience the culture differently. They push into their top set concerns that firms can undervalue soft skills, creativity, and non-engineering contributions (36%), that the industry is still largely white and male, especially in senior roles (35%), and that non-technical Staff can feel seen as overhead rather than strategic partners (33%). By contrast, they do not place in their top eight items like mid-career talent gaps (30%), public misunderstanding of engineering's value (28%), or the industry being less "flashy" than tech (26%). This pattern underscores that Non-Engineers' perceptions are shaped foremost by internal recognition and inclusion dynamics, more than by external image or macro labor-market structure.

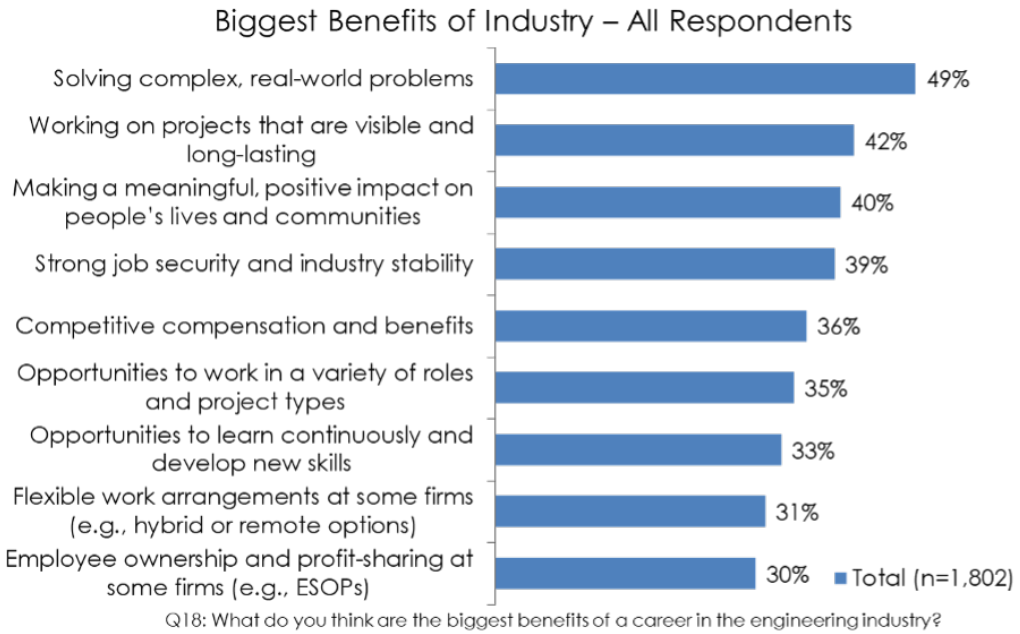
Leaders see the industry through a reputational and market-facing lens. Executives elevate confidence in the profession's standards—engineers are highly intelligent, ethical, and disciplined professionals (42%)—but also flag a storytelling gap: the profession doesn't do enough to promote or market itself to Students and the public (39%). What drops out of their top eight is telling: mid-career talent gaps (34%) and work-life balance challenges (27%) land below their personal cut line. In other words, Executives are comparatively more focused on external perception and pipeline attraction than on mid-career depth or day-to-day balance as defining perceptions of the industry.

Everyone agrees that the industry is meaningful, stable, and diverse across firms, but perceptions split by vantage point. Executives focus on professional esteem and external marketing, Non-Engineers on recognition and inclusion, Students and Young Professionals on representation and the rigor of the ramp-up, and Older Professionals on professional esteem plus the twin pressure points of balance and mid-career depth. Those differences don't contradict the shared story; they complete it—revealing where leaders should target messaging, culture, and talent strategies to meet people where they actually are.

Biggest Benefits of the Industry

The biggest benefits of the industry among all respondents are that it:

- Solves complex, real-world problems (49%)
- Works on projects that are visible and long-lasting (42%)
- Makes a meaningful, positive impact on people's lives (40%)



Across respondents, the benefits of an engineering career cluster into a common "top nine" that hold steady across most groups. In fact, Engineers, Non-Engineers, and Young Professionals cite the exact same top nine benefits, indicating broad agreement on what the industry does best. The more interesting nuances appear where a few groups elevate different benefits into their personal top set—or exclude items that others value—revealing how vantage point shapes what feels most advantageous.

Among Students, the appeal of engineering is foremost about versatility and breadth. They pull transferable skills that apply across sectors (34%) and a wide range of career options, including technical and non-technical paths (33%) into their top benefits. In contrast, they do not rank flexible work arrangements (14%) or employee ownership/profit-sharing (14%) among their top nine. Students prize portable capabilities and open doorways—benefits that matter when choosing a path—while ownership structures or flexibility perks register as secondary before they've entered firm life.

For Older Professionals, the center of gravity shifts toward professional esteem. They elevate pride in being part of an essential and trusted profession (35%) into their top benefits, while flexible work arrangements (23%) do not make their top nine. This signals that, with tenure, the standing and trust attached to the profession loom larger than schedule flexibility when defining the upside of a long engineering career.

Executives emphasize resilience—a system-level benefit. They bring a profession resilient to economic and political changes (29%) into their top set, but flexible work arrangements (17%) fall below their threshold. The leadership lens is pragmatic: as stewards of firms, Executives value the industry's durability through cycles more than flexibility perks when naming the most important advantages.

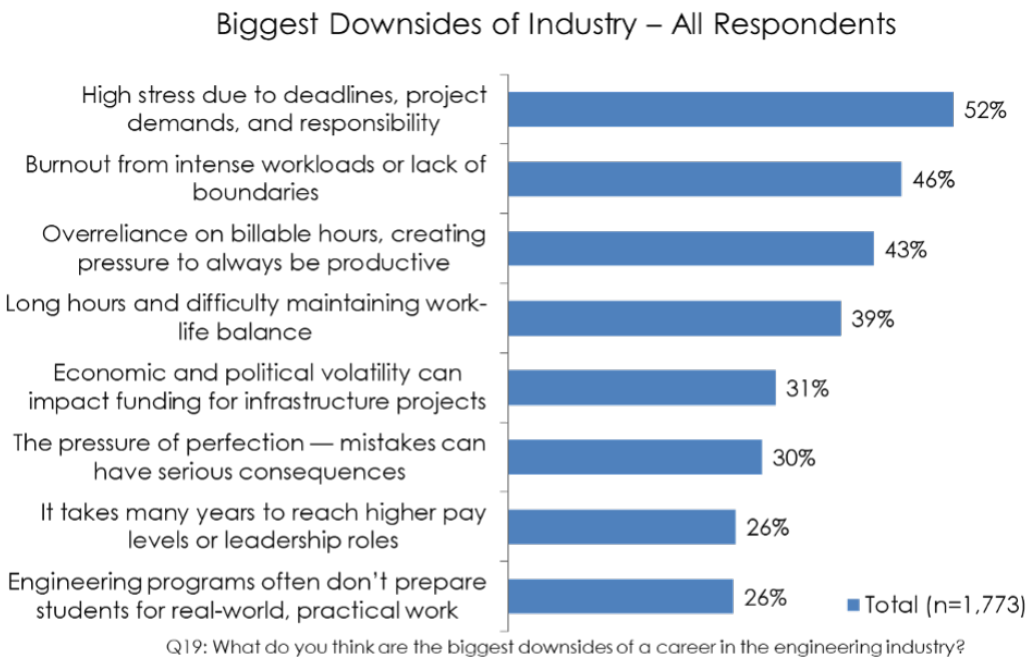
The core advantages of engineering are widely shared, but what rises to the top depends on where you stand. Students prioritize portable skills and pathways; Older Professionals, professional trust and identity; Executives, macro-resilience. Meanwhile, the fact that Engineers, Non-Engineers, and Young Professionals match the overall top nine underscores just how consistent the industry's value proposition is for most of the workforce.

Biggest Downsides of the Industry

Across the industry, respondents are candid about the tradeoffs that come with meaningful work. Out of 20 items tested, the most widely cited downsides are:

- High stress due to deadlines, project demands and responsibility (52%)
- Burnout from intense workloads or lack of boundaries (46%)
- Overreliance on billable hours creating pressure to always be productive (43%)
- Long hours that strain work–life balance (39%)

In short, project intensity and the business model itself create persistent pressure. (Note: Engineers' top eight match the overall and are therefore not broken out separately in this section.)



Beneath those shared pressures, each subgroup elevates a different mix of drawbacks—revealing where culture, expectations, and career stage shape how the industry "feels" on the inside.

Looking upstream in the talent pipeline, Students perceive the industry's cultural and flexibility gaps more than its workload realities (which they have not yet experienced). They lift a white, male-dominated culture that can feel unwelcoming (31%) and not all firms support flexible work (e.g., hybrid/remote) (27%) into their top set. By contrast, overreliance on billable hours (24%) and exposure to economic/political volatility via infrastructure funding (24%) do not make their top eight. The signal is clear: before entering the workforce, Students are scanning for belonging and modern flexibility, not billable-hour pressure.

Generational differences are pronounced among Staff. Young Professionals elevate not all firms support flexible work (29%) into their top eight—flagging that workplace flexibility is a concrete, immediate friction point early in a career. At the same time, insufficient real-world preparation from academic programs (23%) does not make their top eight, suggesting that, once on the job, the flexibility contract matters more than retrospective critiques of schooling.

With tenure, the frame widens again. Older Professionals bring two reputation items into their top set—low visibility/perceived value compared to flashier industries (38%) and public and client misunderstanding of what engineers actually do (37%)—placing them at or near the top of their downside list. For seasoned practitioners, the distinctive downsides are external visibility and understanding.

Inside firms, Non-Engineers surface a different structural problem: recognition. They elevate non-engineering staff sometimes being undervalued (39%), and also point to a white, male-dominated culture that can feel unwelcoming to underrepresented groups (26%) as well as client expectations that are misaligned with modern workflows (23%). Meanwhile, they do not put in their top eight slow progression to higher pay/leadership (22%), the pressure of perfection (19%), or insufficient real-world preparation from academic programs (18%). This pattern underscores that the most distinctive pain point for Non-Engineers is feeling devalued in a technical-centric culture, more than advancement pace or academic prep.

From the leadership vantage point, Executives zero in on reputation and expectations in the market, not just hours. They bring into their top set public and client misunderstanding of what engineers actually do (42%) and low visibility or perceived value compared to “flashier” industries (40%), alongside client expectations that may be outdated or misaligned with modern workflows (40%). What drops below their cut line is telling: long hours/work–life balance (29%), insufficient real-world preparation from academic programs (29%), and how long it takes to reach higher pay levels or leadership roles (18%). In other words, Executives’ downside profile is weighted toward external image and client-side friction, rather than the day-to-day strain staff feel most.

While everyone feels the heat from stress, burnout, billable hours, and long days, what’s uniquely painful depends on where you sit. Executives struggle with public/client understanding and legacy client expectations; Non-Engineers with recognition and inclusion; Students with representation and flexibility; Young Professionals with flexibility in practice; and Older Professionals with visibility of the profession. Addressing the industry’s downsides therefore requires more than workload fixes—it calls for reputation work, inclusive cultures, modern flexibility, and clearer client alignment, tailored to each group’s lived reality.

Summary of Industry Perceptions

When considered together, the findings on industry perceptions show both shared agreement and distinct vantage points. Across the workforce, the engineering profession is viewed as meaningful, stable, and rewarding—anchored by job security, long-term opportunities, and a tangible impact on society. But subgroup perspectives reveal where emphasis diverges:

- Executives highlight professional esteem and reputation, focusing on external storytelling and confidence in the profession's standards, while paying less attention to day-to-day balance or mid-career pipeline challenges.
- Non-Engineers emphasize issues of recognition and inclusion, elevating concerns about undervaluing soft skills, creativity, and non-technical contributions.
- Students and Young Professionals center their views on representation and preparedness, pointing to the steep learning curve of early practice and the lack of diversity at senior levels.
- Older Professionals combine professional esteem with recognition of persistent stressors, elevating both work–life balance and mid-career talent gaps alongside respect for the profession.

The bottom line is clear: the industry's positive foundation is widely acknowledged, but the lens shifts with experience and role. Leaders seeking to strengthen the profession's appeal must balance external storytelling, inclusive recognition, early-career support, and mid-career depth. Addressing these dimensions will ensure the industry's reputation aligns with the lived realities of all its contributors.

Engineering Industry vs. Other Industries

Overview

When stacked against other fields, engineering is viewed as both distinctly strong in core fundamentals and behind the curve in several people- and change-related dimensions. Respondents credit the industry with exceptional stability and purpose, but they also see notable gaps in adaptability, visibility, and everyday human experience (balance, soft skills, belonging). Students and executives diverge sharply: Students picture an innovative, change-ready industry, while Executives see those same areas as lagging.

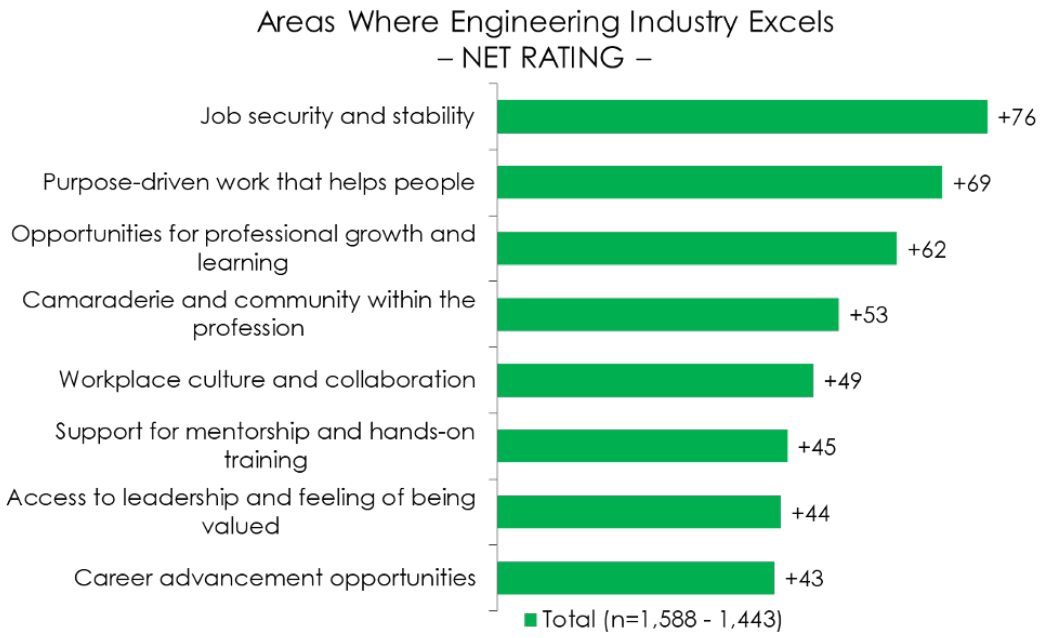
READER's NOTE: In this section we use a Net Rating System to help in understanding how the industry is perceived versus other industries. To determine the Net Rating, we subtract the percentage of respondents who hold a negative perception from the percentage of respondents who hold a positive perception. Thus, the Net Rating can be as high as +100 and as low as -100. Anything above 0 is positive for the industry and anything below 100 is negative for the industry.

Where Engineering Excels

Against other industries, engineering's clearest advantages are:

- Job security and stability (Net Rating +76)
- Purpose-driven work that helps people (+69)
- Opportunities for professional growth and learning (+62)

Together, these signal a profession anchored in reliable demand, meaningful impact, and skill development. This trio is the backbone of engineering's talent value proposition: durable careers with real public benefit and ongoing learning.



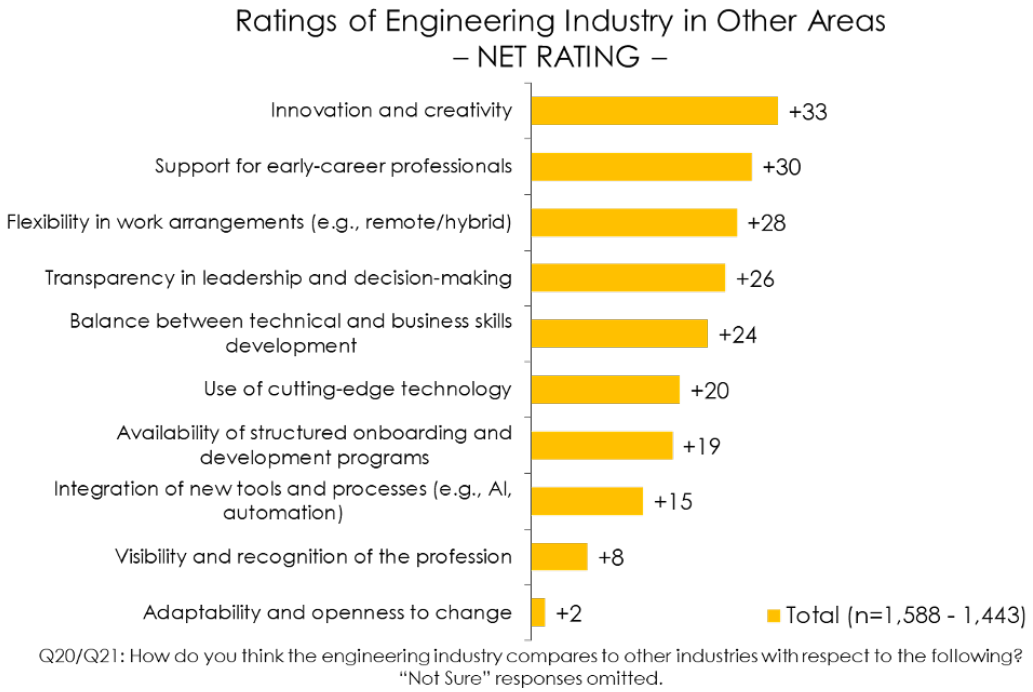
Q20/Q21: How do you think the engineering industry compares to other industries with respect to the following? "Not Sure" responses omitted.

Solid but Underpowered Strengths (Room to Improve)

In several comparisons, engineering is still rated better than other industries—but only modestly so:

- Adaptability to change (+2)
- Visibility and recognition of the profession (+8)
- Use of new tools like AI (+15)
- Use of cutting-edge technology (+20)

These positive but thin margins suggest untapped upside. The industry is not losing here, but it's not separating itself either. Leaders can turn these into signature advantages by accelerating adoption (AI/cutting-edge tools), building external presence (visibility/recognition), and operationalizing change (adaptability).

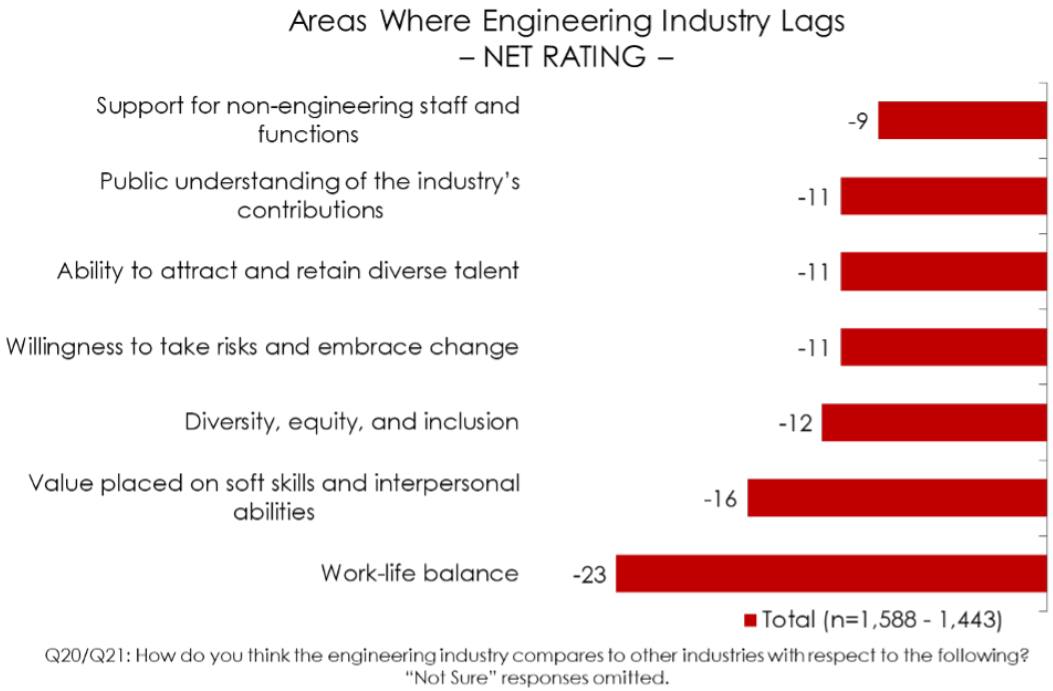


Where Engineering Lags

Respondents see consistent deficits relative to other industries in:

- Work-life balance (–23)
- Value placed on soft skills/interpersonal abilities (–16)
- Diversity, equity, and inclusion (–12)
- Taking risks/embracing change (–11)
- Attracting and retaining diverse talent (–11)
- Public understanding of the industry's value (–11)
- Support for non-engineering staff (–9)

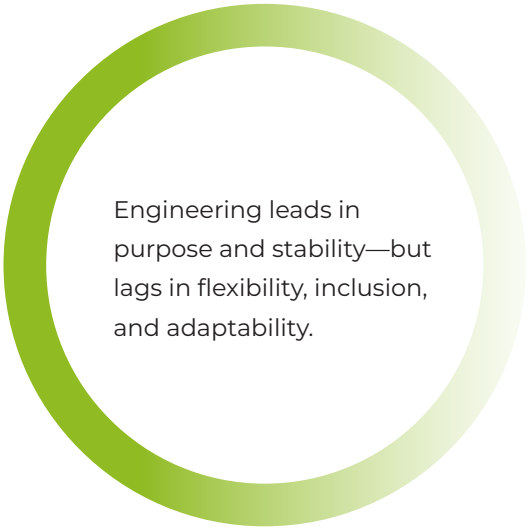
These gaps cluster around human experience and cultural agility. The takeway is clear: the profession's strongest foundations (stability, purpose) are being offset by everyday frictions (balance, soft-skills esteem, inclusion) and a conservative posture toward risk and change.



Q20/Q21: How do you think the engineering industry compares to other industries with respect to the following? "Not Sure" responses omitted.

Students perceive engineering as more innovative and creative (+84), more likely to use cutting-edge technology and tools including AI (+80), and more adaptive and open to change (+45) than those working in the industry report. At the same time, Students are less likely to feel the industry provides support for early-career professionals (+12) or delivers on belonging (+39). In short, they idealize the tech/innovation arc but doubt early-career support and a sense of community.

Executives invert the student pattern. The very areas Students rate as strengths are precisely where Executives see the industry lagging: use of cutting-edge technology (-2) and integration of new tools and AI (-8), and adaptability and openness to change (-21). This reflects the implementation reality leaders face: adopting new tools, changing processes, and accepting risk within client- and compliance-constrained business models.



Summary of Engineering Industry vs. Other Industries

Compared to other sectors, engineering is consistently viewed as a field with durable strengths and meaningful purpose. Its reputation for stability, impact, and professional growth anchors the industry's value proposition and differentiates it from many other career paths.

At the same time, the profession's challenges are equally clear. Respondents identify gaps in adaptability, inclusivity, visibility, and everyday human experience. Where the industry excels in long-term security, it often lags in creating environments that are flexible, diverse, and responsive to change.

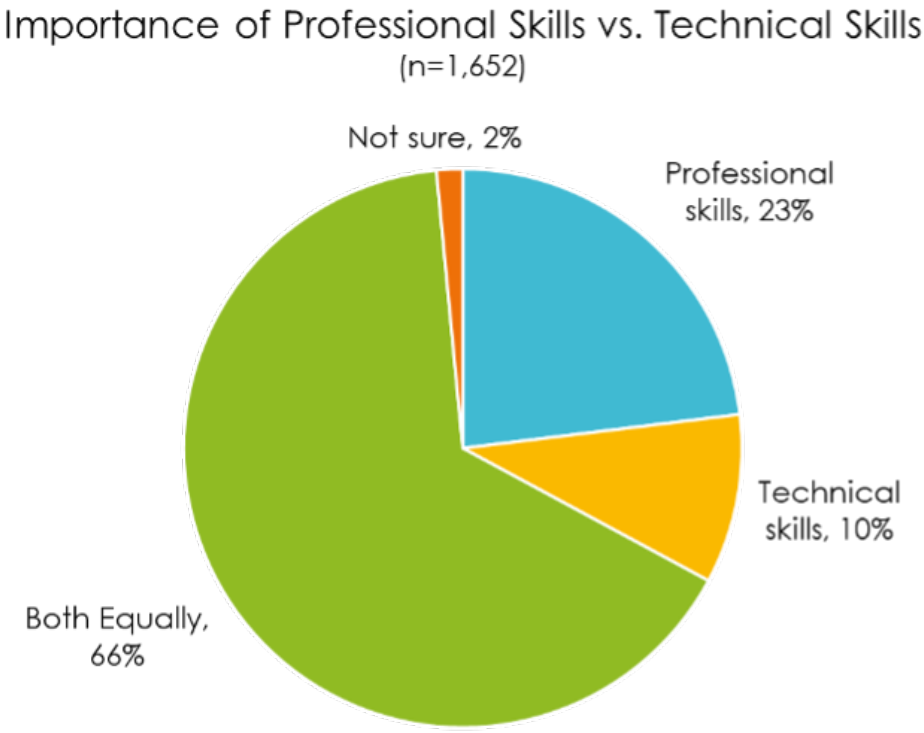
Generational and role-based contrasts add further texture. Students idealize the industry as innovative and change-ready, while Executives—closer to the realities of implementation—see technology adoption and adaptability as persistent weaknesses. This gap highlights the distance between expectations at the point of entry and the lived realities of leadership.

Together, these findings illustrate a profession that outpaces others in durability and purpose, but risks trailing in adaptability, inclusion, and everyday human experience. To sustain its advantages, the industry must marry its strong foundation with greater cultural agility, visibility, and innovation, while bridging the gap between student expectations and executive realities.

Skills Needed to Succeed

Overview

Respondents are clear that success in engineering requires both technical and professional (non-technical) abilities. In fact, two-thirds say professional and technical skills are equally important for younger individuals' future success in the industry. Among those who pick one over the other, professional skills are chosen more often (23%) than technical skills (10%). Notably, there are no statistically significant differences among subgroups on this question—an important baseline. The industry broadly agrees that success is a blend, not a trade-off.



Q22: Which is more important to the future success of younger individuals in the engineering industry, regardless of their specific role in the firm?

What Categories of Skills Matter Most

When the 53 specific skills are grouped into eight categories, the top three (by average category importance) are:

- Critical Thinking and Problem Solving (92%)
- Adaptability and Self-Management (88%)
- Communication and Collaboration (88%)

Q23. How important do you think each of the following skills will be to the future success of younger individuals in their chosen career field within the engineering industry? "Not Sure" responses omitted.

This framing underscores that even in a technical profession, the engine of success is the ability to analyze, solve, adapt, and work with others. There are two important clarifications:

- Non-Engineers tend to rate all categories relatively higher than other groups.
- The rank order is the same across groups, and differences are not significant—so the industry is aligned on which skill families matter most.

Most Important Specific Skills

At the individual skill level, three rise to the very top:

- Analytical and critical thinking (95%)
- Confidence to ask questions and engage with others (95%)
- Self-motivation / personal accountability (94%)

These results connect directly to the top categories: successful early-career professionals aren't only good at the math—they speak up, engage, and own their progress.

Q23. How important do you think each of the following skills will be to the future success of younger individuals in their chosen career field within the engineering industry? "Not Sure" responses omitted.

Least Important Specific Skills

The companion view highlights the least important specific skills.

- The ability to apply classroom knowledge to real-world problems (65%)
- Cultural competence and sensitivity to diverse perspectives (68%)
- Presentation and public speaking (68%).

Here too, the relative differences vary little between groups. In other words, consensus is strongest at both ends: what's most and least important is broadly shared.

While groups generally agree on the most important skills, there are statistically significant differences in a variety of less important (but still consequential) skills that tend to fall in the middle of all skills of importance. Those divergences reveal how vantage point and career stage shape what people believe helps someone actually thrive on the job. The numbers cited below are the gaps between Young and Older Professionals on the items noted.

Young vs. Older Professionals

- Older Professionals emphasize the client–commercial–strategic side of practice and the polished communication that carries it. Compared with younger peers, they place more importance on:
- Comfort using AI and emerging technologies (+17)—not as a novelty, but as a practical capability to integrate new tools into real workflows.
- Client relationship building and stakeholder engagement (+10) and understanding how to work with clients/external stakeholders (+8)—the relational muscle that sustains projects and firms.
- Understanding how firms make money (billable hours, value of time) (+8) and financial literacy (relevant for all roles, not just accounting) (+6)—commercial fluency that aligns decisions with margins, pricing, and utilization.
- Presentation and public speaking (+7) and strategic thinking/alignment with business goals (+6)—communicating clearly upward and outward, and tying work to firm-level direction.
- Emotional intelligence and empathy (+6) and facility with digital communication tools (Teams/Slack/PM platforms) (+5)—the interpersonal and tooling finesse that keeps complex, multi-party work moving.

This profile reads like the operating system of senior practice: protect clients, protect margins, and connect day-to-day work to strategy—then communicate it well. For Older Professionals, these skills are the grease and the flywheel: they keep relationships healthy, the business solvent, and teams aligned.

Compared with older cohorts, Young Professionals place greater emphasis on a set of skills that help them learn quickly, align their work with values, and adapt to dynamic environments. Specifically, they highlight:

- Comfort with learning through trial and error (+11)—a bias for iterative learning in ambiguous settings.
- Awareness of the social and environmental impact of one's work (+7) and recognizing the business and societal value of their work (+5)—anchoring daily tasks to broader purpose.
- Learning how to work across generations and personality types (+7) and cultural competence/sensitivity to diverse perspectives (+5)—reading the room and fitting into multi-generational teams.
- Understanding of permitting, compliance, or standards (+6)—the rules of the road that govern real projects.
- Multitasking and managing multiple priorities (+6), adaptability/flexibility in changing environments (+5), and resilience/confidence in navigating ambiguity or failure (+5)—practical stamina for complex, shifting workloads.

Young Professionals are optimizing for entry, fit, and endurance: "How do I learn fast, align with values, juggle competing demands, and keep going when things change?" It's a survival-and-growth toolkit that complements—but does not yet center—the commercial/strategic lens their older colleagues prize.

What the split really says: The two lists aren't opposing; they're sequential. Young Professionals focus on getting in and staying afloat; Older Professionals focus on steering and sustaining. The gap is the bridge to mid-career: turning adaptability and purpose into client fluency, commercial literacy, and strategic communication.

Executives vs. Students

Here surfaces a smaller, pointed set of differences that speak to readiness signals vs. on-ramp supports.

Executives place more importance on a single, sharp indicator:

- Willingness to take initiative and ownership of tasks (+16)

Leaders are scanning for agency. Initiative and ownership are shorthand for reliability under incomplete information—someone who advances work without waiting for perfect instructions.

Students place more importance on a set of translation and support skills:

- Ability to apply classroom knowledge to real-world problems (+12)—"help me bridge theory to practice."
- Understanding of permitting, compliance, or standards (+8)—"show me the actual rules."
- Awareness of the social and environmental impact of one's work (+7)—"connect my tasks to consequences."
- Understanding the importance of mentoring and being mentored (+6)—"I need guided growth, and I know it matters."
- Understanding and adapting to firm-specific tools and workflows (+6)—"teach me how this place actually works."

Students are asking for a structured runway: translate my education, orient me to constraints and tools, connect me to mentors, and situate my work within social/environmental impact. Executives, meanwhile, are signaling that: initiative is the non-negotiable.

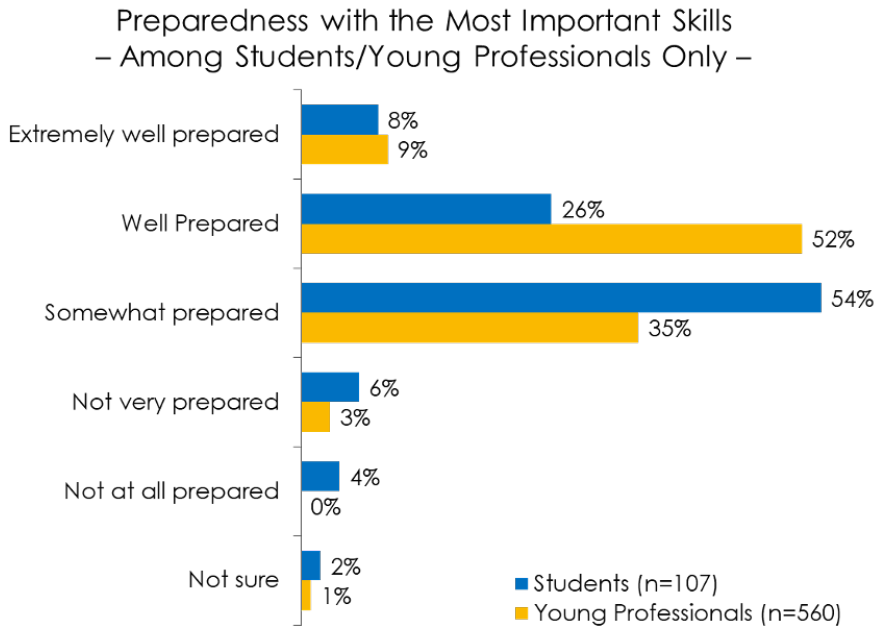
What the split really says: The two sides align if firms stage the on-ramp: give Students clear pathways (application, standards, tools, mentoring) and set explicit expectations that ownership is the bar. Students' list describes the inputs that enable the executive's output (initiative) to actually appear.

Self-Assessed Preparedness: Students and Young Professionals

When asked how well-prepared Students and Young Professionals feel they are with respect to the most important skills needed to succeed, their self-described readiness diverges sharply:

- One-third of Students (34%) feel extremely or well prepared with respect to the most important skills needed for their future success

- Among Young Professionals, 61 percent feel extremely or well prepared
- And within Young Professionals, Non-Engineers feel more prepared than Engineers (70% vs. 56%)

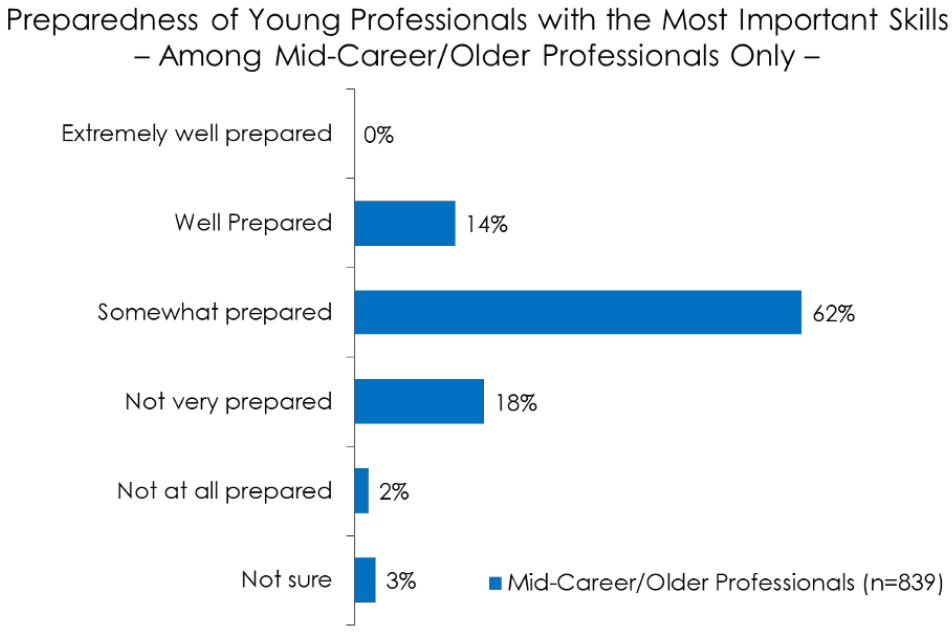


Q30: Overall, how well prepared are you with respect to the most important skills needed for future success in your career field?

This is a sizeable confidence and readiness gap between school and work—and even within the workforce by role. It suggests that early-career development and on-ramping are working better once people are in firms, but Students need clearer, earlier preparation for the skills that matter most.

How Prepared Do Older Cohorts Think Young Professionals Are?

Mid-Career and Older Professionals offer an even starker perspective: only 14 percent believe Young Professionals are well prepared on the most important skills. Executives are a bit more forgiving, but not by much as 22 percent say Young Professionals are well prepared.



Q31: Overall, how well prepared are young professionals with respect to the most important skills needed for future success in your career field?

This is a perception divide: Young Professionals' self-ratings are notably higher than how more experienced colleagues perceive them. For firms, this flags two parallel needs: raise actual capability (so perceptions improve) and improve feedback/mentorship signals (so perceptions and reality converge). It also points to where training should focus: the high-importance skills everyone agrees matter most.

Summary of Skills Needed to Succeed

The industry overwhelmingly agrees on the skills that matter most: think critically, solve problems, adapt, collaborate, and communicate—with personal accountability as the throughline.

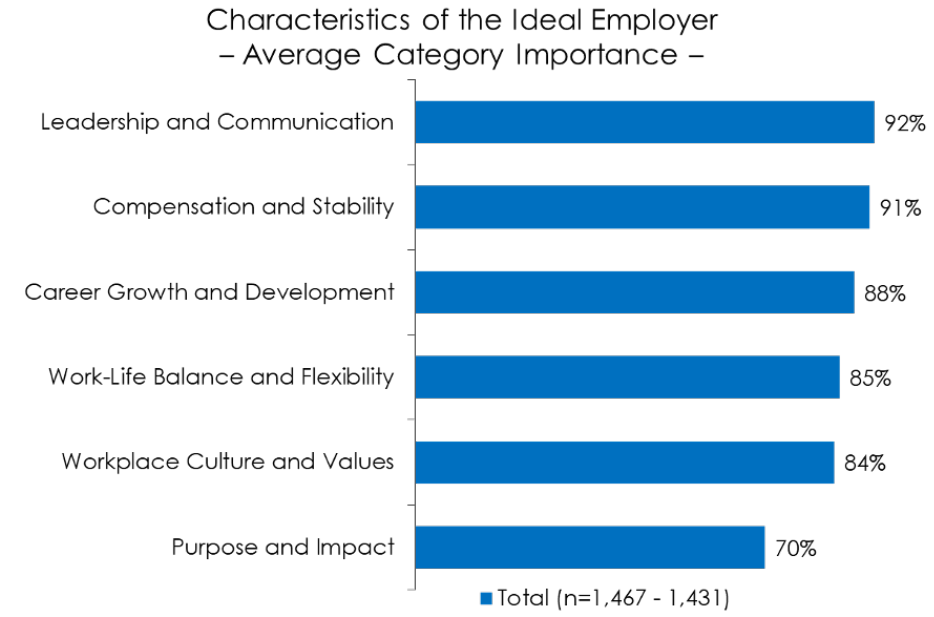
Consensus is strongest at the top and bottom of the skills list; differences emerge in the middle tier, particularly Young vs. Older Professionals and Executives vs. Students.

Preparedness gaps are real: Students feel least ready; Young Professionals feel more ready; older cohorts largely disagree about that readiness. Bridging this requires earlier exposure to the most important skills, deliberate mentorship, and targeted training that connects classroom learning to firm realities.

Characteristics of the Ideal Employer

Importance of Each Characteristic Category

Respondents rated 31 characteristics grouped into six categories. The overall pattern is clear: people want employers that set clear expectations, support performance, compensate fairly, and lead with integrity.



Q29: Overall, how important to you are each of the following characteristics of the ideal employer? "Not Sure" responses omitted.

A few subgroup notes on category ratings stand out:

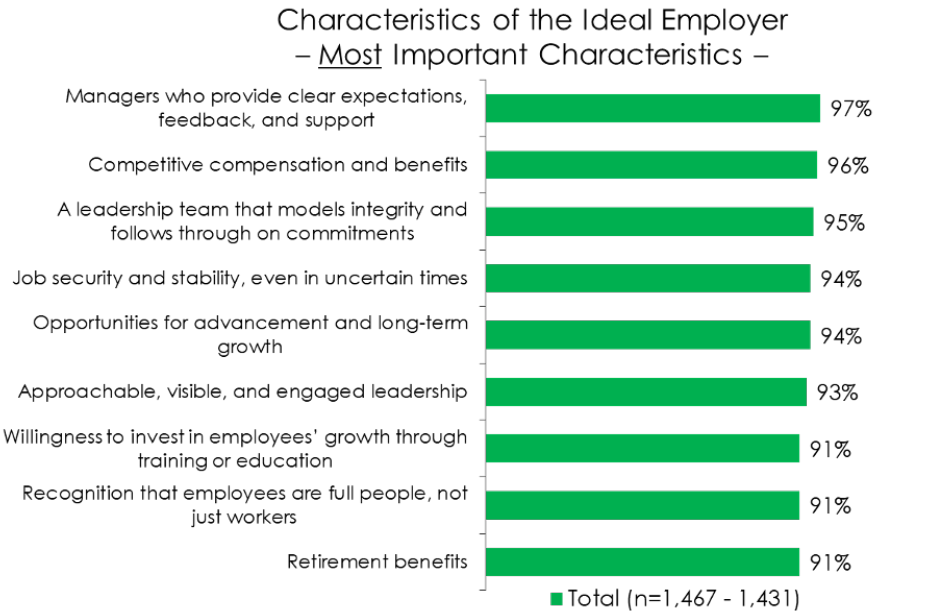
- Students and Young Professionals are more likely to rate Purpose & Impact as important (77%), yet that category still ranks last among the six overall.
- Executives rate Work-Life Balance lower than all other groups (75%), though it still sits ahead of Purpose & Impact (68%) for them.

Even among early-career respondents who value meaning, purpose trails other categories when choices are stacked. For Executives, work-life balance matters, but less than it does to Staff—signaling a perspective shaped by firm-level obligations.

Most Important Specific Characteristics

Across the 31 specific characteristics tested, three rise to the very top across all respondents:

- Managers who provide clear expectations, feedback, and support (97%)
- Competitive compensation and benefits (96%)
- Leadership that models integrity (95%)



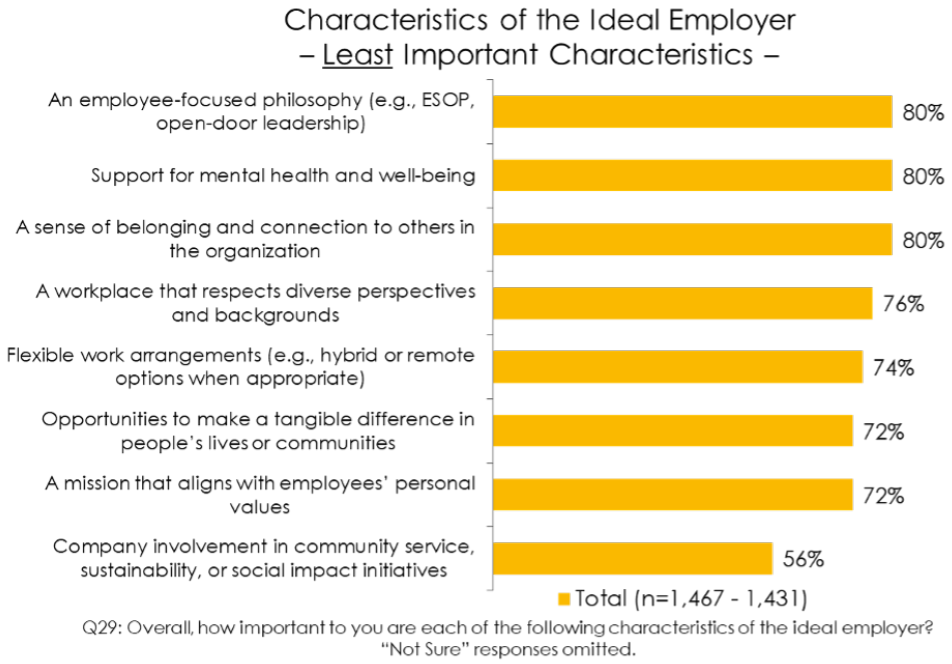
Q29: Overall, how important to you are each of the following characteristics of the ideal employer? "Not Sure" responses omitted.

The core employer value proposition is manager quality, fair pay, and trusted leadership. These are near-universal "must-haves," not differentiators

Least Important Specific Characteristics

At the lower end of the importance spectrum (still with majority support), respondents place:

- Company involvement in community service (56%)
- A mission that aligns with employees' personal values (72%)
- Opportunities to make a tangible difference in people's lives (72%)



Q29: Overall, how important to you are each of the following characteristics of the ideal employer? "Not Sure" responses omitted.

Even "least important" items enjoy substantial support, but when stacked against pay, leadership, and manager effectiveness, external community activities and personal mission alignment are secondary.

Older vs. Young Professionals

Although Older Professionals and Young Professionals align on the core essentials of the ideal employer—such as strong managers, competitive pay, and leadership integrity—there are significant gaps between the two on a long list of items.

- Older Professionals place slightly more emphasis on a collaborative, team-oriented environment (+4). This reflects their experience in valuing stability, cohesion, and effective teamwork as keys to long-term success.

- Young Professionals have significant gaps and view a wide array of cultural and personal supports as more important than Older Professionals:

    - Respect for diverse perspectives and backgrounds (+12)
    - Flexible work arrangements (+11)
    - Respect for personal boundaries and time (+9)
    - Reasonable workload and expectations (+9)
    - Job security and stability (+8)
    - A mission that aligns with personal values (+8)
    - Company involvement in community service or social impact (+7)
    - Support for mental health and well-being (+7)
    - Opportunities to make a tangible difference in communities (+7)
    - An employee-focused philosophy, such as ESOP or open-door leadership (+6)
    - Strong onboarding and early-career support (+6)

Older Professionals lean toward team cohesion and predictability, while younger Staff call for flexibility, inclusivity, and alignment with personal purpose. This generational divide highlights the importance of designing employer practices that balance stability with modern cultural expectations.

Executives vs. Students

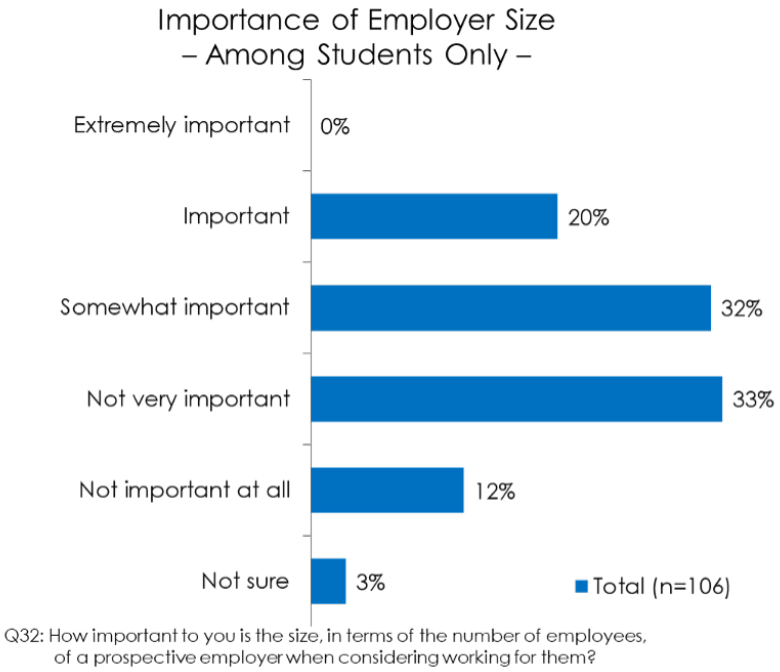
Executives and Students also agree on the most important employer characteristics, but their gaps highlight the tension between organizational priorities and early-career expectations.

- Executives place higher importance on:
    - A collaborative, team-oriented environment (+14)
    - Access to profit-sharing, bonuses, or ownership opportunities (+9)
    - Access to mentors and role models (+8)
    - An employee-focused philosophy, such as ESOP or open-door leadership (+8)
    - A sense of belonging and connection to others (+7)
    - Willingness to invest in employees' growth through training or education (+7)
    - Competitive compensation and benefits (+7)
- Students place higher importance on:
    - Reasonable workload and expectations around working hours (+19)
    - Respect for boundaries and personal time (+14)
    - Opportunities to make a tangible difference in communities (+11)
    - Company involvement in community service or sustainability (+9)
    - Retirement benefits (+9)
    - Work that is meaningful and purpose-driven (+8)

Executives tend to prize organizational cohesion, financial alignment, and structured professional development, while Students emphasize balance, purpose, and social impact. Students are signaling that they want engineering careers to be sustainable and meaningful, while Executives are focused on the systems that support long-term organizational health.

Importance of Employer Size — Students Only

Only one-fifth of Students (20%) say the size of the employer (by number of employees) is important to them. Among Students who do consider size at least somewhat important, there is no clear preference: they are just as likely to prefer small, mid-size, or large firms.



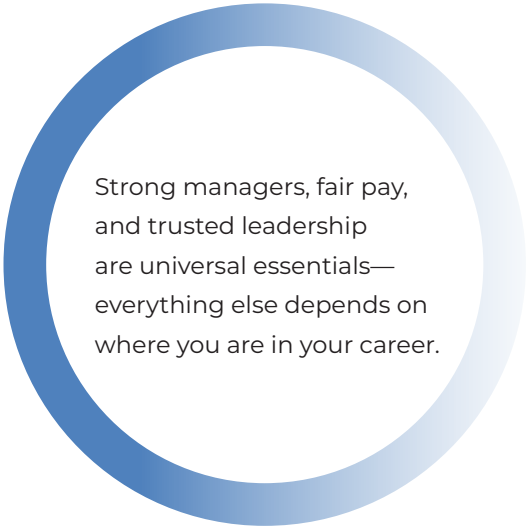
Q32: How important to you is the size, in terms of the number of employees, of a prospective employer when considering working for them?

Employer size is not a decisive factor for most Students. For those who care, preferences do not cluster—so compelling manager quality, leadership integrity, and fair compensation are far more likely to influence student choices than headcount.

Summary of Characteristics of the Ideal Employer

Across all audiences, the core essentials of an ideal employer remain consistent: strong and supportive managers, competitive pay and benefits, integrity in leadership, and a culture that enables people to do their best work. These are the foundations of trust and engagement.

Where perspectives diverge is in the relative importance of priorities, and those gaps reveal what each group feels are missing or most needed at their stage of the journey.



Young Professionals and Students emphasize culture and balance. They call for flexible work arrangements, respect for boundaries, manageable workloads, and meaningful purpose. Students in particular highlight retirement benefits, social impact, and sustainability as markers of employers they want to join. Their expectations reflect a desire for careers that are both sustainable and aligned with personal values.

Older Professionals elevate team cohesion and stability, emphasizing collaborative environments where experience and continuity matter most. Their priorities suggest that after decades of work, stability and mutual support are the clearest markers of an ideal firm.

Executives focus on organizational health and alignment from collaborative environments to profit-sharing, mentoring, and leadership philosophies that keep employees engaged and productive. Their perspective highlights the systems and structures that sustain firms over the long term.

Taken together, these findings suggest that the ideal employer must deliver on universal essentials while also flexing to meet the unique needs of different groups: providing balance and purpose for younger Staff, stability for seasoned professionals, and organizational cohesion for leaders. For firms, the challenge is to weave these perspectives together into one employee value proposition that resonates across the career span.

Appendix

The following are the complete list of response items asked in various questions summarized in this report.

Q10: What motivated you to pursue your current work field or discipline (e.g., engineering, HR, IT, finance, marketing, etc.)? Select All That Apply	Total
I enjoyed math, science, or technical subjects in school	58%
I wanted a career with strong job security and good compensation	45%
I was passionate about building things or solving problems as a child or teen	41%
I wanted to have a positive impact on communities or people's lives	39%
I was looking for a career with opportunities to grow and advance	31%
I was fascinated by large-scale projects or infrastructure (e.g., roads, bridges, water syste	28%
I was drawn to the creativity or design aspects of the work	27%
I wanted a purpose-driven job aligned with my personal values	27%
A family member or mentor encouraged me to pursue this field	22%
I wanted a mix of technical work and business/project management	18%
I was exposed to the profession through an internship or early job experience	17%
I wanted to work in a collaborative team environment	16%
I was inspired by a specific teacher, professor, or class	16%
I had a strong interest in technology or computers	13%
I value helping others and supporting their career growth	13%
I switched into this field after starting in another major or job and finding a better fit	12%
I was influenced by someone I met through a professional or student organization	9%
I was interested in storytelling, communications, or public relations	5%

Q11: What excites you most about working in your career field? Select All That Apply	Total
Seeing projects move from concept to reality	44%
Solving complex problems	40%
Having variety in my day-to-day work	40%
Working in a stable industry with long-term career opportunities	34%
Making a tangible impact on communities and people's lives	34%
Working with talented, passionate, and collaborative teams	33%
Applying both technical and interpersonal skills	32%
Building relationships with clients, coworkers, or stakeholders	31%
The challenge and responsibility that comes with the work	30%
Being part of an industry that is essential and resilient	29%
The ability to be creative and think outside the box	27%
Making a difference through purpose-driven work	27%
Opportunities for continuous learning and professional development	27%
Feeling proud to share my work with friends and family	26%
Helping others succeed or grow in their careers	26%
Learning and applying new skills or technologies	23%
Working in a values-driven culture or employee-owned company	23%
Having a role that allows for autonomy and ownership	22%
Getting to travel or visit different job sites	19%
Being trusted to make meaningful contributions early in my career	17%
Being part of a company that gives back to the community	17%
Being able to "nerd out" in a field that matches my personal interests	16%
Being part of an innovative team or using cutting-edge tools	13%
Working at the intersection of business and technical work	13%
Having access to strong mentorship and leadership	13%

Q12: What are your biggest concerns about working in your career field? Select All That Apply	Total
Risk of burnout	47%
High stress and pressure to meet deadlines	37%
Long hours or difficulty maintaining work-life balance	37%
Economic or political uncertainty affecting funding and job security	35%
Overemphasis on billable hours instead of outcomes or learning	34%
Pressure to be constantly available or “always on”	33%
Difficulty recruiting and retaining talent to support my work	27%
Heavy responsibility — mistakes could have serious consequences	26%
Public misunderstanding or undervaluing of what we do	25%
Industry or client expectations that are outdated or misaligned	21%
Limited pipeline of mid-career talent (concern about succession planning)	20%
Concerns that AI could reduce or replace parts of my job	19%
Disconnect between college preparation and real-world job demands	19%
Undervaluing of soft skills or non-technical contributions	17%
Concerns about career stagnation or unclear advancement paths	17%
Lack of diversity, especially in leadership roles	15%
Feeling undervalued or seen as “overhead” (for non-technical staff)	14%
Unclear expectations or inconsistent communication from leadership	14%
Difficulty navigating workplace politics or intergenerational dynamics	13%
Slow pace of change or innovation in the industry	12%
Resistance to adopting new technologies or tools	10%
Lack of support for early-career professionals	10%
Limited flexibility in work location or schedule	9%
Limited opportunities for mentorship or hands-on training	6%

Q17: Overall, when you think about engineering firms, employers, and the industry, what are your perceptions? Select All That Apply	Total
Firms vary greatly in culture, transparency, and support — your experience depends on the employer	44%
Engineering offers strong job security and long-term career opportunities	41%
Engineering makes a tangible, visible impact on communities and people's lives	41%
Work-life balance is difficult to maintain due to demanding deadlines and billable hours	40%
The work is challenging, creative, and intellectually rewarding	40%
Clients and the public don't always understand the full value of engineering work	36%
There's a significant gap in mid-career talent between young and senior engineers	34%
The industry is not as "flashy" or appealing to younger generations compared to tech	33%
The industry is still largely white and male, especially in senior roles	32%
Engineers are highly intelligent, ethical, and disciplined professionals	31%
Young professionals often face a steep learning curve and lack real-world preparation	28%
The profession is respected but often misunderstood by the public	27%
Firms can undervalue soft skills, creativity, and non-engineering contributions	24%
The profession doesn't do enough to promote or market itself to students and the public	23%
There is strong pride in building infrastructure that lasts	22%
Non-technical staff sometimes feel seen as overhead rather than as strategic partners	19%
It is a purpose-driven profession rooted in service and civic responsibility	16%
Many firms invest in mentorship, employee ownership, and continuous learning	13%
Firms are conservative and slow to adapt to new technologies and trends	13%
Firms tend to have collaborative, team-oriented cultures	13%
The profession attracts people who care deeply about doing the right thing	12%
There is a strong sense of loyalty, with people often returning to firms after leaving	11%
There's strong camaraderie within firms and across the industry	10%
Firms are committed to making a difference through community initiatives and sustainability	8%

Q18: What do you think are the biggest benefits of a career in the engineering industry? Select All That Apply	Total
Solving complex, real-world problems	49%
Working on projects that are visible and long-lasting	42%
Making a meaningful, positive impact on people's lives and communities	40%
Strong job security and industry stability	39%
Competitive compensation and benefits	36%
Opportunities to work in a variety of roles and project types	35%
Opportunities to learn continuously and develop new skills	33%
Flexible work arrangements at some firms (e.g., hybrid or remote options)	31%
Employee ownership and profit-sharing at some firms (e.g., ESOPs)	30%
Pride in being part of an essential and trusted profession	26%
A profession that is resilient to economic and political changes	24%
A wide range of career options, including technical and non-technical paths	24%
Opportunities to collaborate with smart, dedicated, and mission-driven teams	23%
Work that aligns with personal values and a sense of purpose	23%
Transferable skills that apply to many sectors and industries	20%
Clear career paths and opportunities for advancement	11%
Supportive workplace cultures with a sense of community	10%
Access to leadership and a sense of being valued	8%
Strong mentorship and support within many firms	7%
Slow pace of change or innovation in the industry	12%
Resistance to adopting new technologies or tools	10%
Lack of support for early-career professionals	10%
Limited flexibility in work location or schedule	9%
Limited opportunities for mentorship or hands-on training	6%

Q19: What do you think are the biggest downsides of a career in the engineering industry? Select All That Apply	Total
High stress due to deadlines, project demands, and responsibility	52%
Burnout from intense workloads or lack of boundaries	46%
Overreliance on billable hours, creating pressure to always be productive	43%
Long hours and difficulty maintaining work-life balance	39%
Economic and political volatility can impact funding for infrastructure projects	31%
The pressure of perfection — mistakes can have serious consequences	30%
It takes many years to reach higher pay levels or leadership roles	26%
Engineering programs often don't prepare students for real-world, practical work	26%
Client expectations may be outdated or misaligned with modern workflows	25%
Low visibility or perceived value of engineering work compared to flashier industries	24%
A white, male-dominated culture that can feel unwelcoming to underrepresented groups	22%
Not all firms support flexible work arrangements (e.g., hybrid or remote)	21%
Public and client misunderstanding of what engineers actually do	20%
Promotion is often based on tenure or experience, not always performance	20%
Non-engineering staff (e.g., HR, IT, finance) are sometimes undervalued	18%
Some firms lack mentorship or structured onboarding for early-career professionals	18%
Limited racial and ethnic diversity, especially in leadership roles	17%
Inconsistent support for career advancement	15%
A conservative, slow-to-change industry culture	14%
Resistance to new technologies or innovation within some firms	9%
Resistance to adopting new technologies or tools	10%
Lack of support for early-career professionals	10%
Limited flexibility in work location or schedule	9%
Limited opportunities for mentorship or hands-on training	6%

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