



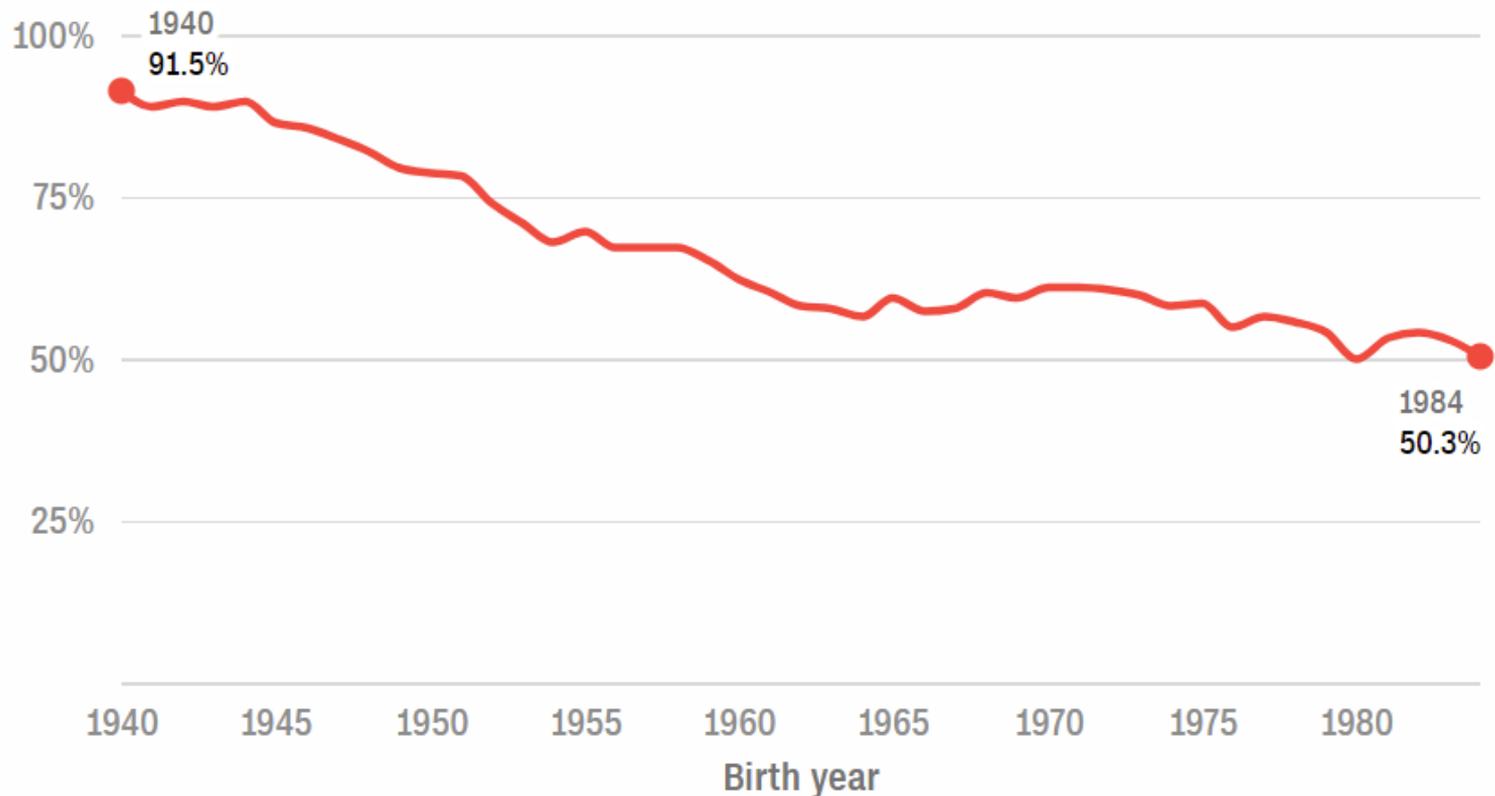
# Preparing for The Future of Learning

*What New Data And Emerging Trends Mean For Educators*

Matt Sigelman, President  
The Burning Glass Institute  
February 2025

# What Happens to an American Dream Deferred?

Economic mobility has fallen precipitously

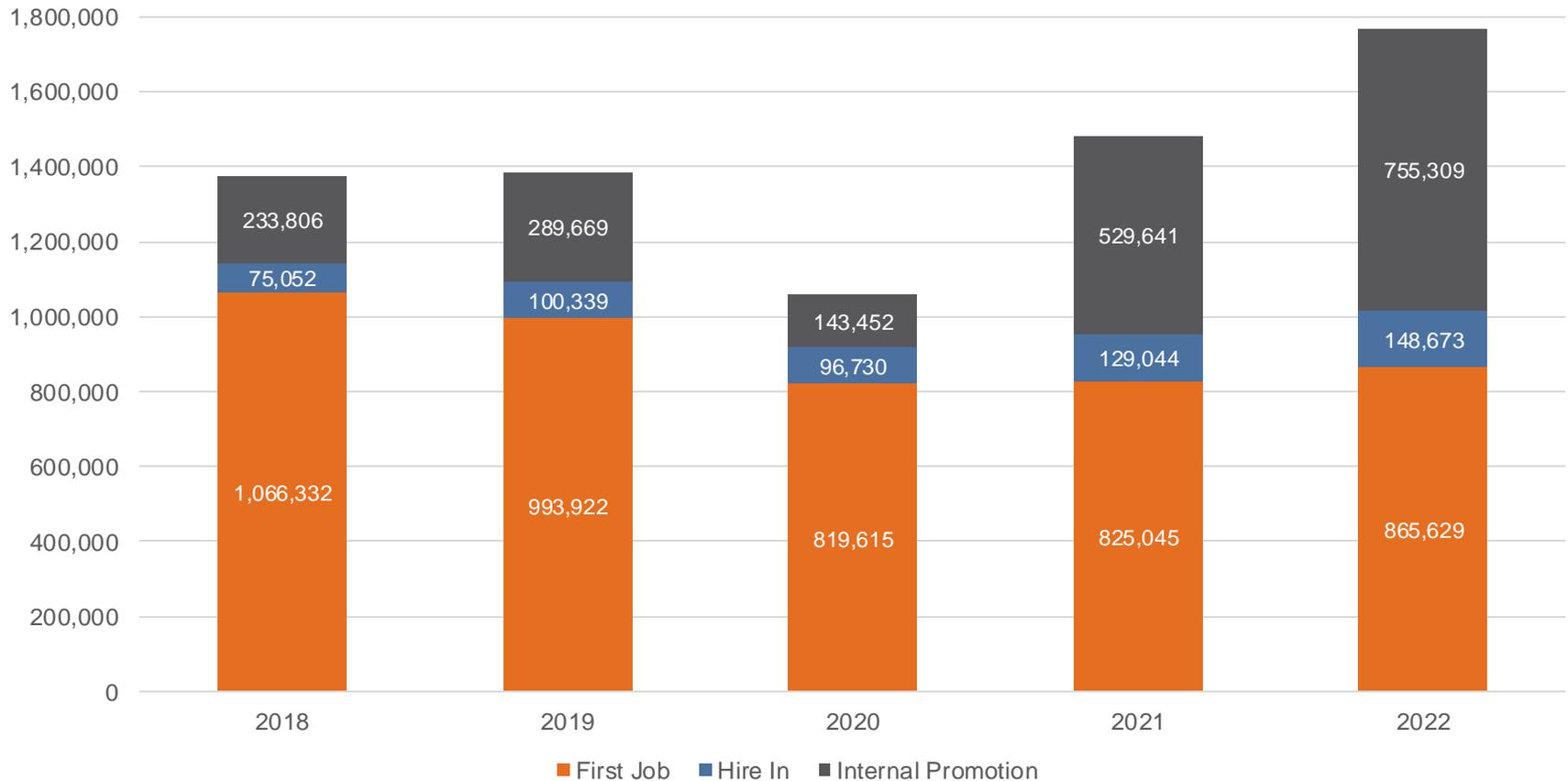


*At 30 years old, what share of Americans earned more than their parents did at the same age? (inflation adjusted)*

# Yet Millions Continue to Enter the Middle Class

Industry is lifting a growing number of workers across the middle class income threshold through strong wage growth and promotion

Movements Into Middle Class at Large Employers



# How Do You Measure Outcomes?

We need an array of lenses to define & assess how far people travel

## 2024 AMERICAN OPPORTUNITY INDEX METRICS

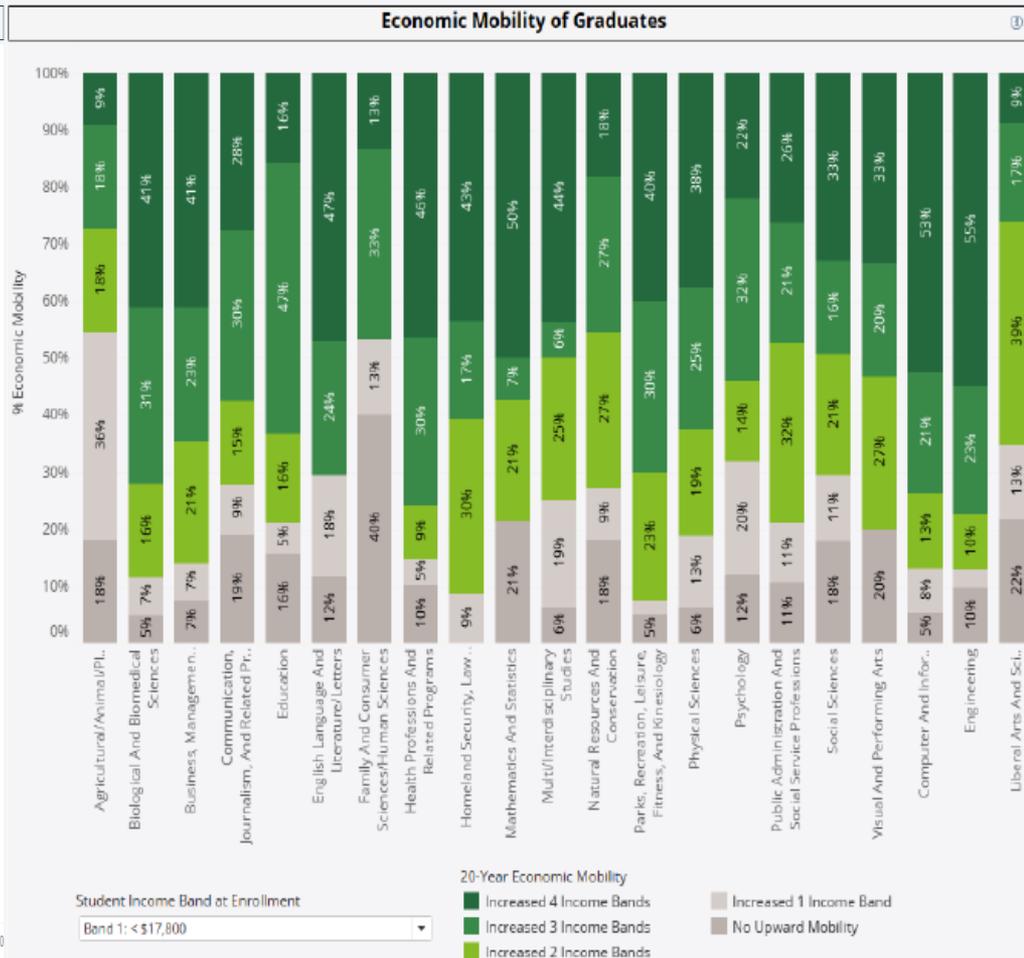
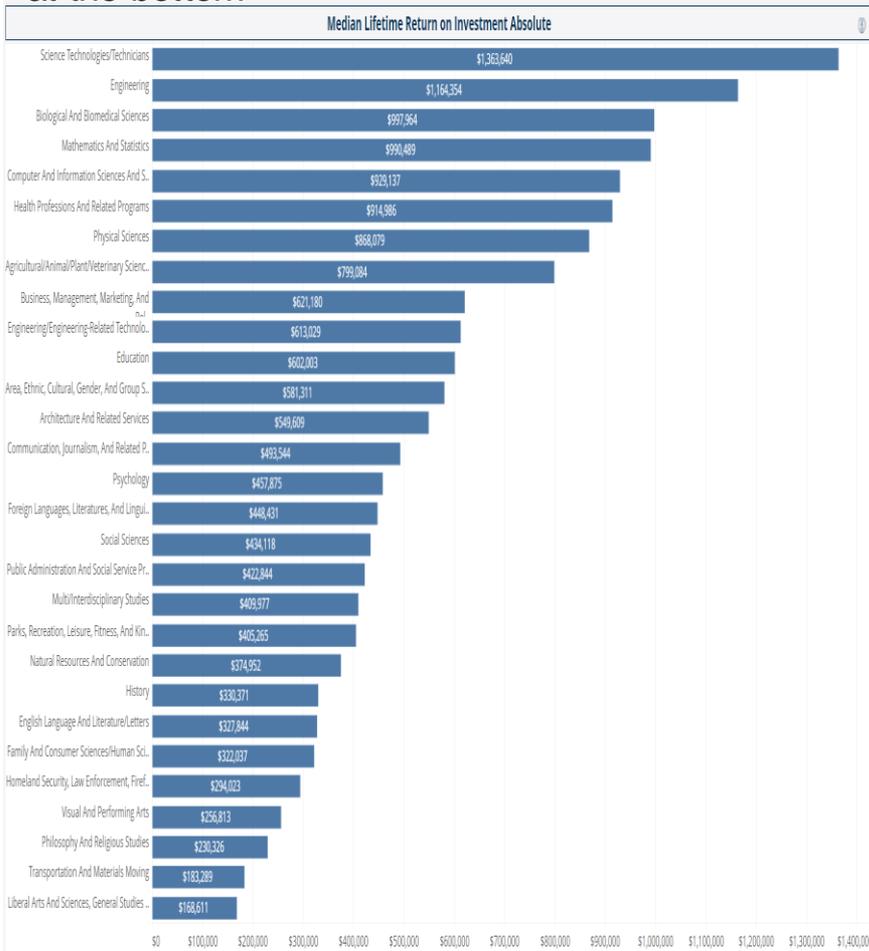
<h3>Hiring</h3> <p>How well do companies hire people without degrees and those with little experience?</p> <p><b>Hiring is comprised of:</b></p> <ul style="list-style-type: none"> <li>o <b>First jobs</b>, which assesses the percentage of starting jobs at a company with less than three years of prior experience.</li> <li>o <b>Degree barriers</b>, which measures the percentage of people starting a job within a given occupation at a company who do not have a bachelor's degree.</li> </ul>	<h3>Pay</h3> <p>How well do companies pay their employees and increase their compensation over time?</p> <p><b>Pay is comprised of:</b></p> <ul style="list-style-type: none"> <li>o <b>Wage</b>, which measures how well workers in the same occupation are paid at different employers.</li> <li>o <b>Wage growth</b>, which evaluates the degree of wage growth for workers who stayed at a given employer for three or more years.</li> </ul>	<h3>Promotion</h3> <p>How well do companies move people up and prepare them for better jobs elsewhere?</p> <p><b>Promotion is comprised of:</b></p> <ul style="list-style-type: none"> <li>o <b>Advancement within</b>, which measures the likelihood for workers to be promoted, how many further promotions can they expect over time, and how large of a raise they can expect with each promotion.</li> <li>o <b>Advancement beyond</b>, which measures how likely workers are to</li> </ul>	<h3>Parity</h3> <p>How well do companies move all people up equally, regardless of race or gender?</p> <p><b>Parity is comprised of:</b></p> <ul style="list-style-type: none"> <li>o <b>Gender parity</b>, which measures the consistency in the promotion rates of male employees and female employees.</li> <li>o <b>Racial parity</b>, which measures the consistency in the promotion rates of Black and Hispanic employees and all other employees.</li> </ul>	<h3>Culture</h3> <p>How well do companies retain their employees and build their careers?</p> <p><b>Culture is comprised of:</b></p> <ul style="list-style-type: none"> <li>o <b>Retention</b>, which measures how long employees stay with an employer.</li> <li>o <b>Leaders from within</b>, which measures the share of leadership-level employees who have climbed the ranks internally within the company.</li> </ul>
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# Schools Play a Big Role in Economic Mobility

We need to track career outcomes, analyze what's working, & align to demand

**ROI:** In our evaluation of the UNC System, lifetime earnings in top programs were 10x those at the bottom

**Mobility:** Some majors are 6x more likely to deliver students from bottom to top income quintiles



# Companies Play a Big Role Too

The American Opportunity Index tracked millions of workers to see how much it matters where you work. From hiring to promotion, we found big differences between firms – with major impacts for careers

*Compared to Bottom-Quartile Firms, Top-Quartile Firms Are .....*

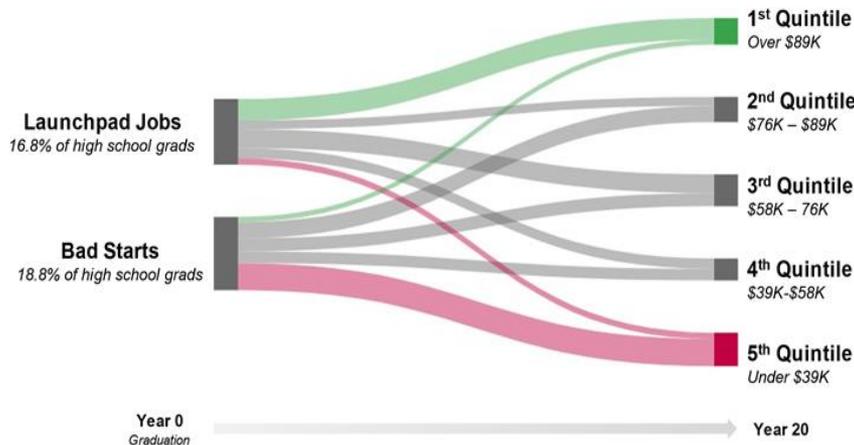


# How You Start Matters

The road to success isn't random. 20% of those going straight to work after HS outearn the median college grad. Much depends on your first job.

The top 20% of those going straight to work after HS outearn the median college grad but 263,000 grads last year will wind up in poverty by the time they're 40. **Much depends on how you start.**

Compared to Bad Starts, **Launchpad starters earn 28% more after 10 yrs.**, are **promoted 10% more often**, and have **20% lower risk of unemployment**



Launchpad Job Title	Score
Power Plant Operators	86
Command and Control Center Specialists	81
Power Distributors and Dispatchers	80
Infantry	79
Aerospace Engineering Technicians	78
Chemical Plant and System Operators	78
Petroleum Pump System Operators	78
Plant and System Operators	78
Electrical Engineering Technicians	77
Firefighters	77
Military Enlisted Tactical Operations Specialists	77
Calibration Technologists and Technicians	76
Nuclear Technicians	76
Electrical Power-Line Installers and Repairers	76
Signal and Track Switch Repairers	75

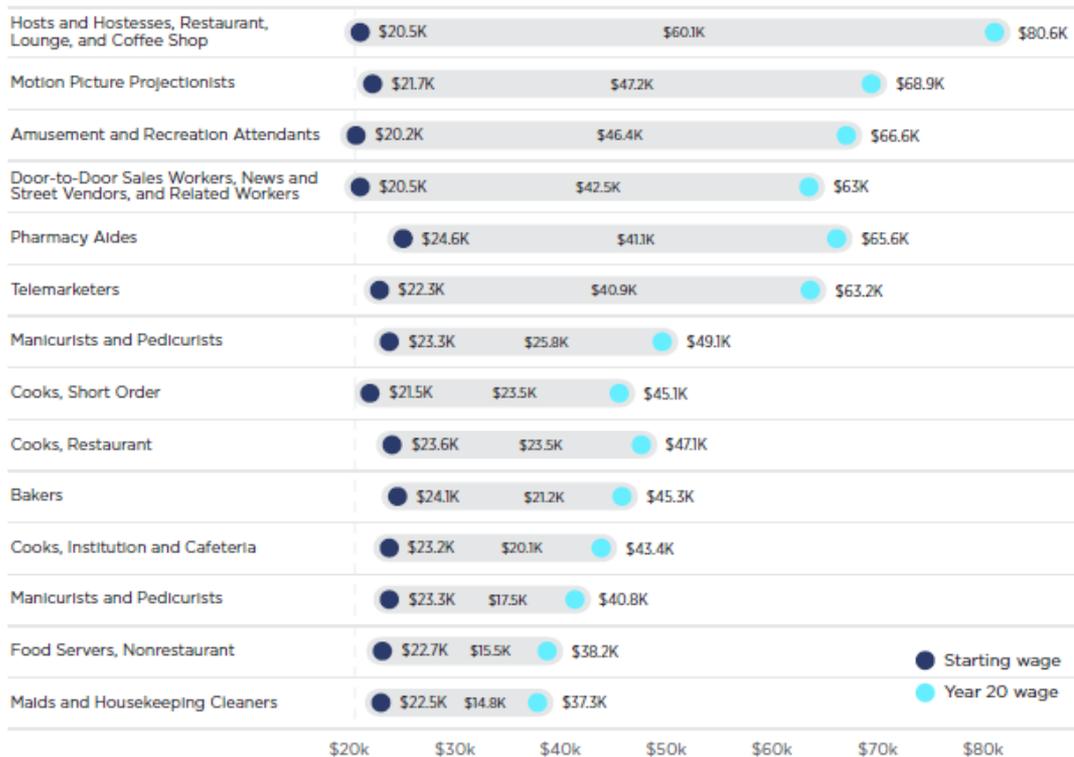
# Guidance is Needed for Careers

The career landscape is increasingly confusing, and resources to navigate are limited – especially for those going directly to work.

Despite similar pay, **some starting jobs lead to far better incomes over the long haul** for those going straight to work after HS – **but students have no way of knowing which is which**

**Students lack visibility** into which jobs will propel their careers – not only a cost to them but also to the economy as good jobs remain unfilled

Median wages 20 years after starting in a low-wage job



Despite

**1.9M**

Entry-level openings for Launchpad jobs in 2023...

Fewer than

**1 in 10**

Eighteen-year-olds is employed in one of them

# Credentials Work, But You Need the Right Ones

CTE and non-degree workforce programs have an alignment problem

Our 50-state analysis found that, overall, **only 19% of the credentials earned in CTE programs are in demand** with employers while many certifications that hold the keys to good careers go undersupplied.

Burning Glass's EQOS framework **measures wage growth & other outcomes actually experienced by workers** vs. what they would have gotten otherwise.

**Example:** Measurement of Placement & Wages for OSHA30 Certification Across Providers

Rank	Credential	Credential Type	Credentials Earned	Percent Oversupplied	Supply/Demand Category	State Count
1	Microsoft Office Specialist		129,895	--		19
2	WISE Financial Literacy Certification		67,208	100%		7
3	NCCER - Core Curriculum		60,350	100%		12
4	Adobe Certified Associate		52,189	78%		19
5	Virginia Workplace Readiness Skills for the Commonwealth		42,313	100%		1
6	Basic First Aid		36,102	100%		11
7	NCCER - Carpentry		33,392	100%		14
8	IC3 Certification		22,840	100%		13
9	Automotive Service Excellence Certification		22,726	16%		24
10	ServSafe Certification (Manager/Head Cook)		21,634	47%		20

Source: Burning Glass Technologies

	Provider A	Provider B	Provider C	Provider D	Provider E
In a new job by one year	67%	68%	70%	40%	58%
Moved into an aligned occupation by one year	18%	18%	19%	12%	22%
Wages after one year	\$63,000	\$65,000	\$61,000	\$46,000	\$40,000
Percent change in wages after one year	10%	9%	13%	3%	8%
Absolute wage changes after one year	\$4,000	\$3,100	\$4,500	\$2,300	\$4,300
Percent of workers with wage increases after one year	44%	45%	46%	41%	44%
Percent change in wages after three years	13%	14%	16%	-6%	17%
Percent change in wages after five years	15%	13%	19%	0%	28%
<b>Employment Outcomes Grade</b>	<b>B</b>	<b>B</b>	<b>A-</b>	<b>F</b>	<b>C+</b>

# College Degrees are Still Worth It

Degree holders earn a 25% premium that persists, driven by greater upward mobility – but returns vary widely

## The Bachelor's Degree Allows for Worker Mobility

At five years of experience, those with bachelor's degrees who started in degree-optional jobs are twice as likely to move to jobs with more college graduates.



Source: Burning Glass Institute analysis of Lightcast career history data

Note: "Degree optional" includes occupations where 50-80 percent of workers have a B.A.; "jobs with more college graduates" includes occupations with a greater share of workers holding a B.A.

# Degrees Still Matter to Employers

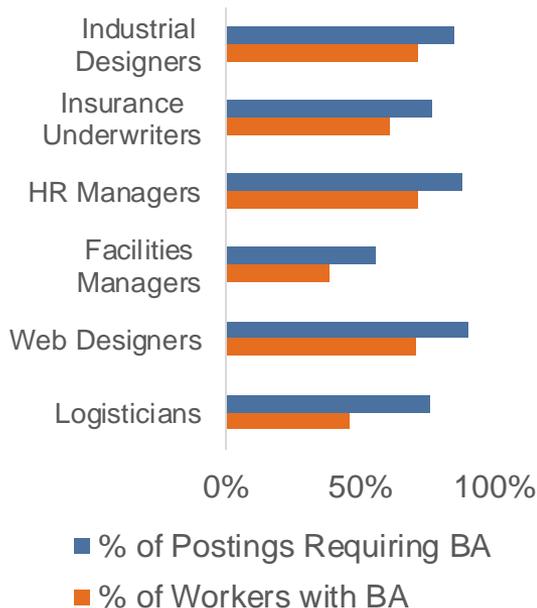
Skills-based hiring promises to open opportunity for the 60% of workers without degree and to give companies access to more talent. But few firms are changing how they actually hire.

In many occupations, we see **big gaps** between the share of workers with a degree and the share of jobs that require one.

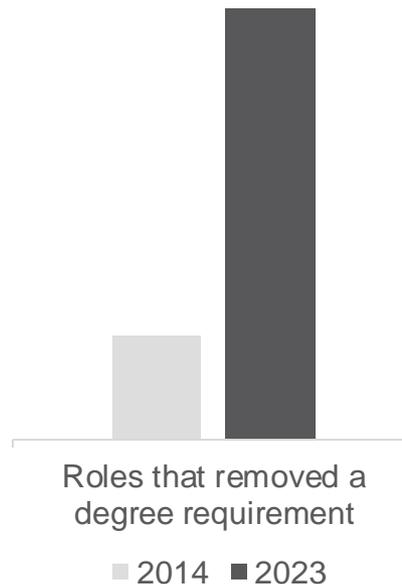
Since 2014, we have seen a **4x increase in the number of roles that have eliminated degree requirements.**

For every 100 jobs that drop a degree requirement, only 3.5 add'l non-degreed hires are made – or **only 1 in 700 across the market**

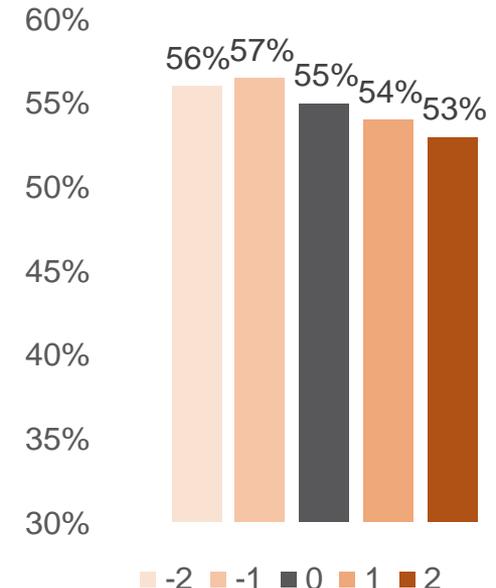
Postings requiring a degree v. workers with a degree, by occupation



# of Roles That Removed a Degree Requirement



Share of New Hires with a BA 2 years before and 2 years after a degree requirement was dropped



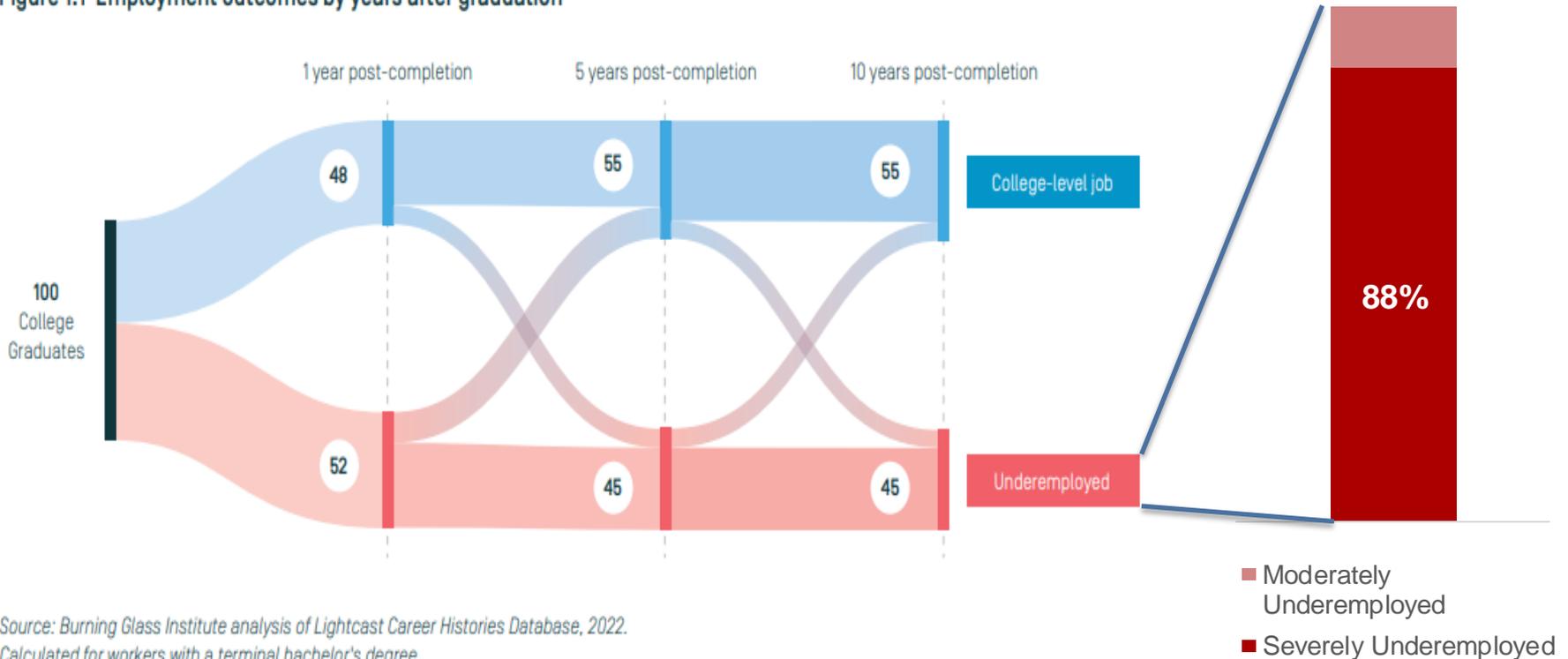
# Degrees Aren't a Guarantee

Half of grads land into jobs they didn't need to go to college to get – and few of them recover. Underemployment is rampant, sticky, and severe.

52% of college students find themselves underemployed a year after graduating – with **45% still underemployed after 10 years**

**88% of underemployment is classified as “severe”<sup>1</sup>**

Figure 1.1 Employment outcomes by years after graduation



Source: Burning Glass Institute analysis of Lightcast Career Histories Database, 2022.  
 Calculated for workers with a terminal bachelor's degree.

1. Severe underemployment is defined as college graduates working in jobs that require a high school education or less

# Majors Matter More Than Selectivity

Majors matter. In fact, programs from inclusive colleges outperform grads of any other major at selective schools

While STEM majors generally have lower risk than others, the **humanities offer better outcomes than many “practical” programs**

Health, education, and engineering grads from inclusive publics **outperform grads of any other major at selective publics**

Figure 2.1 Occupational employment outcomes by degree field

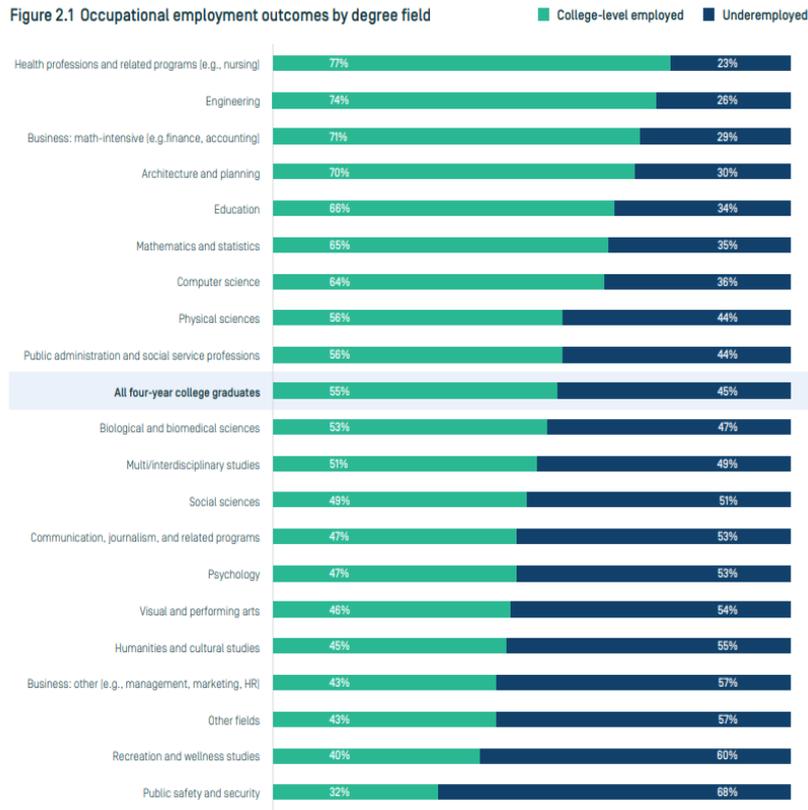
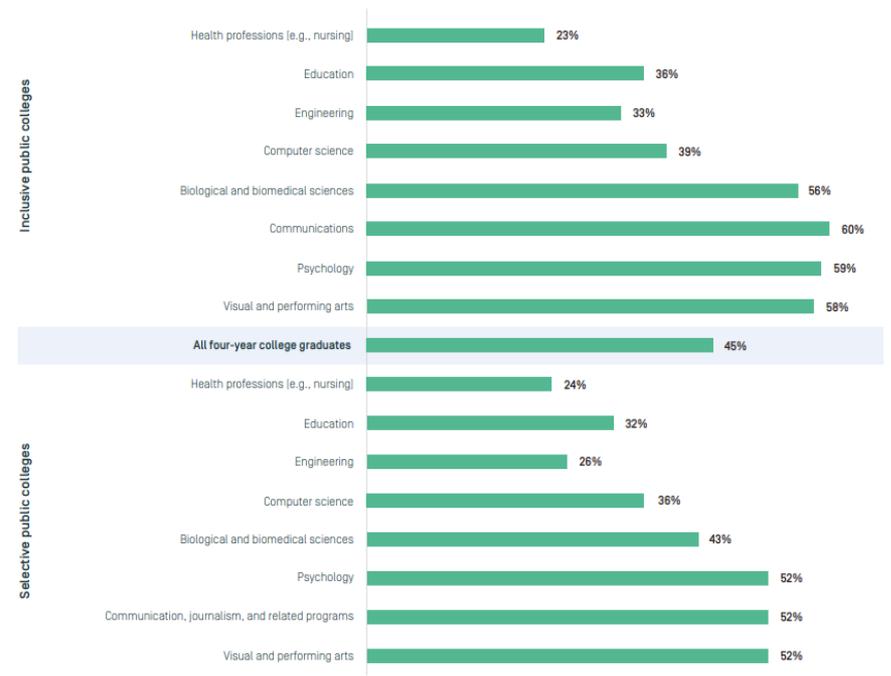


Figure 2.5 Underemployment by degree field and institutional selectivity for public four-year colleges and universities



Source: Burning Glass Institute analysis of Lightcast Career Histories Database, 2022. Calculated for workers with a terminal bachelor's degree five years after graduation.

# What Works? Work!

Work-based learning is the largest driver of decreased underemployment risk. What would it take to make sure every student had an internship?

**Predictors of Underemployment Regression Analysis:** The bars represent how the probability of being underemployed one year after graduation differs for the explanatory variables built into the logistic regression model when compared to baseline or reference values.

CATEGORY	VARIABLE	COMPARATIVE PERCENTAGE ODDS OF UNDEREMPLOYMENT
<b>Gender</b> <i>Compared to male</i>	Female	-7.5%
	Male	0%
<b>Race/ethnicity</b> <i>Compared to non-Hispanic white</i>	Asian	-21.1%
	Black	21.6%
	Hispanic	8.3%
<b>Internship</b> <i>Compared to no internship</i>	Internship during college	-48.5%
<b>HBCU</b> <i>Compared to non-HBCU</i>	HBCU	-15.3%
<b>HSI</b> <i>Compared to non-HSI</i>	HSI	-3.5%
<b>Selectivity</b> <i>Compared to inclusive</i>	More selective	-31.5%
	Selective	-4.3%
<b>Pell recipient category</b> <i>Compared to moderate (25-40%)</i>	High Pell: 40-60%	5.2%
	Low Pell: less than 25%	-1.3%
	Very high Pell: 60+%	13.8%
<b>School type</b> <i>Compared to public</i>	Private for-profit	11.0%
	Private not-for-profit	-23.3%

## Preparing Students To Succeed

*The world of work is changing fast – and in unexpected ways. What does it mean for how we ready students for fruitful careers?*

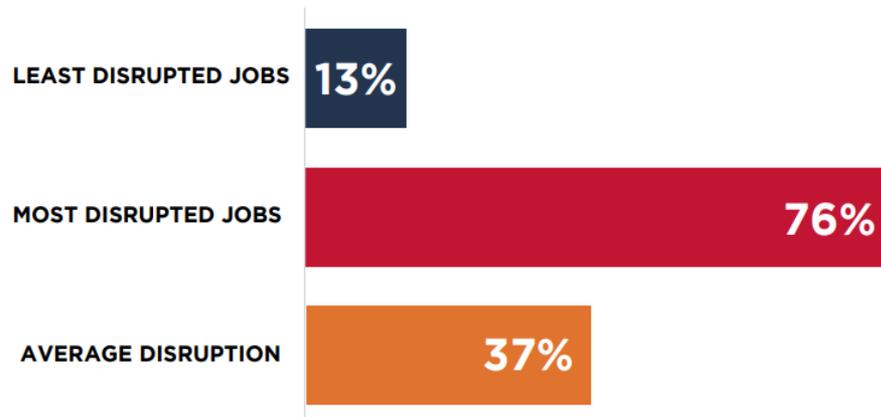
# The Skills, They Are A-Changin’

Even before GenAI, 37% of the skills of the average job had been replaced in just five years. What does it take to keep up?

In the top quartile of jobs, **three-quarters of the skill requirements have changed** over the past five years.

This isn’t just about tech changes but far more profound, **with skills mixing across domains, challenging traditional talent pipelines.**

**SINCE 2016, THE TOP 20 REQUESTED SKILLS FOR A GIVEN OCCUPATION HAVE CHANGED BY:**



Source: Burning Glass Institute & BCG

## Accountant

### ACCOUNTING

- Accounting
- Account Reconciliation
- General Ledger
- Financial Statements
- Generally Accepted Accounting Principles
- Financial Reporting
- Balance Sheets

### SOFT SKILLS

- Communication Skills
- Detail-oriented
- Excel



**+23%**  
Since 2013

## Data Scientist

### PROGRAMMING

- Python
- SQL
- Hadoop
- R

### DATA SKILLS

- Data Visualization
- Tableau
- Excel
- MapReduce

### BUSINESS SKILLS

- Predictive Models
- Business Process
- Economics
- Strategic Planning

### SOFT SKILLS

- Problem Solving
- Writing
- Teamwork



**+598%**  
Since 2013

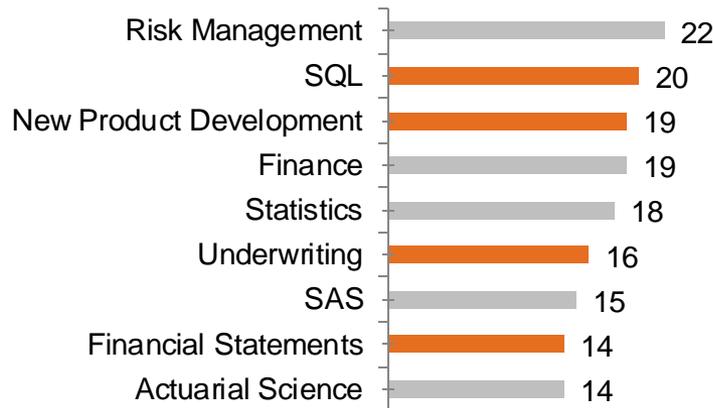
Source: Burning Glass Institute analysis

# Emerging Skills Aren't Just Cut and Paste

How technologies like GenAI disrupt roles more broadly

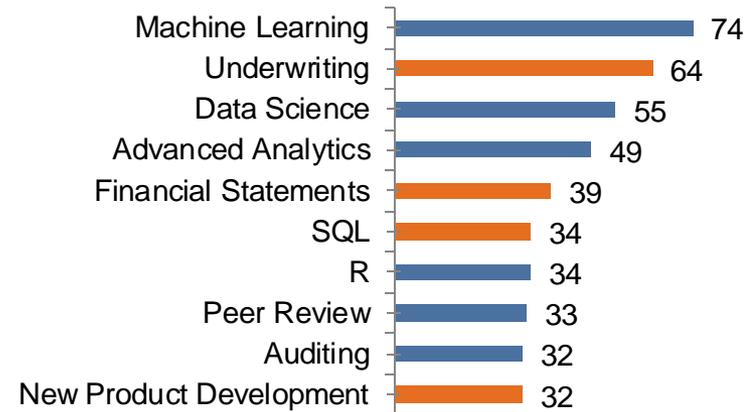
## ML skills transform the role of the actuary

**Skills for Actuaries (All)**



% of Job Postings Requesting Skill

**Skills for Actuaries with ML Skills**



% of Job Postings Requesting Skill

**Several skills traditionally needed by Actuaries** – risk management, finance, statistics, and actuarial science – **are no longer even sought from those with ML skills.**

**In their place are brand new skills** – data science, advanced analytics, advanced programming languages like R, and peer review – **that point to a transformation of the job itself for actuaries with ML skills**

# AI Will Reshape Key Skills For Each Career

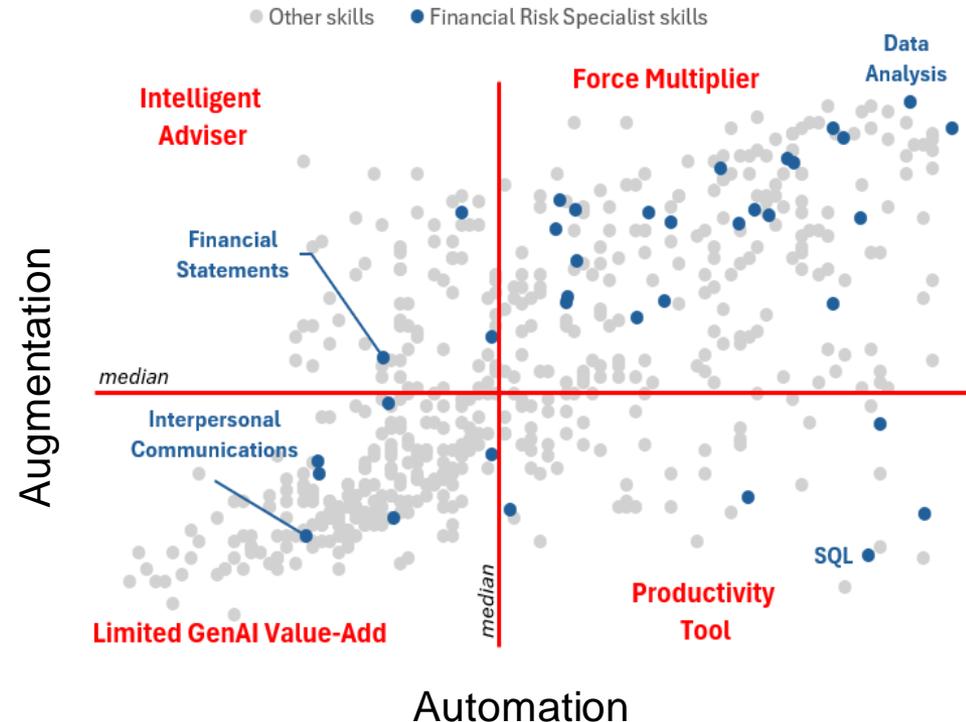
The result will be a new set of 21<sup>st</sup> century Power Skills

As AI augments some skills and automates others, **the nature of occupations will change radically.**

While some skills may simply be automated, others will gain in importance – offering both efficiency and effectiveness. **All workers will need these new Power Skills for the AI era.**

Technical Writer: Top 10 Skills Before GenAI	Technical Writer: Top 10 Skills After GenAI
Technical Writing	Technical Writing
Technical Documentation	Technical Documentation
Editing	Editing
Technical Communication	Technical Communication
Software Documentation	Project Management
Proofreading	Analytical Skills
Grammar	Coordinating
Content Creation	Critical Thinking
Writing	Problem Solving
Adobe Illustrator	Time Management

*Example: Technical Writer*



# Foundational Skills Will Endure

Despite a turbulent economic landscape, a core set of foundational skills will remain critical to career success

Foundational Skill Group	Foundational Skill Area	Total Openings in Entry-Level Postings in BA-plus SOCs: March 2019 - Feb 2020	Growth in Number of Postings: 2017-2019	Share of Openings Outside IT and Analysis Job Families	Average Salary Premium
Business Enablers	Business Process	370,883	29%	67%	12%
	Project Management	281,999	51%	69%	14%
	Digital Design	152,960	44%	64%	-
	Communicating Data	39,897	101%	34%	27%
Digital Building Blocks	Managing Data	292,817	49%	28%	34%
	Analyzing Data	217,623	48%	55%	21%
	Software Development	263,261	48%	17%	43%
	Computer Programming	203,328	56%	13%	45%
	Digital Security and Privacy	67,879	30%	29%	38%
Human Skills	Communication	1,264,535	48%	81%	-
	Collaboration	595,402	58%	79%	2%
	Critical Thinking	587,966	52%	66%	0%
	Analytical Skills	490,311	44%	76%	1%
	Creativity	276,003	60%	82%	-

Source: Burning Glass Technologies

# Coding & Data Science Don't Go Away

Skills currently the domain of specialists will become part of every job. How does this reshape what we consider foundational to education and work?

Excel and similar tools made spreadsheet skills highly accessible to a wide audience



In much the same way, Generative AI will democratize creative work. A broader swath of workers will need to undertake creative functions



*AI-generated graphics and logos*

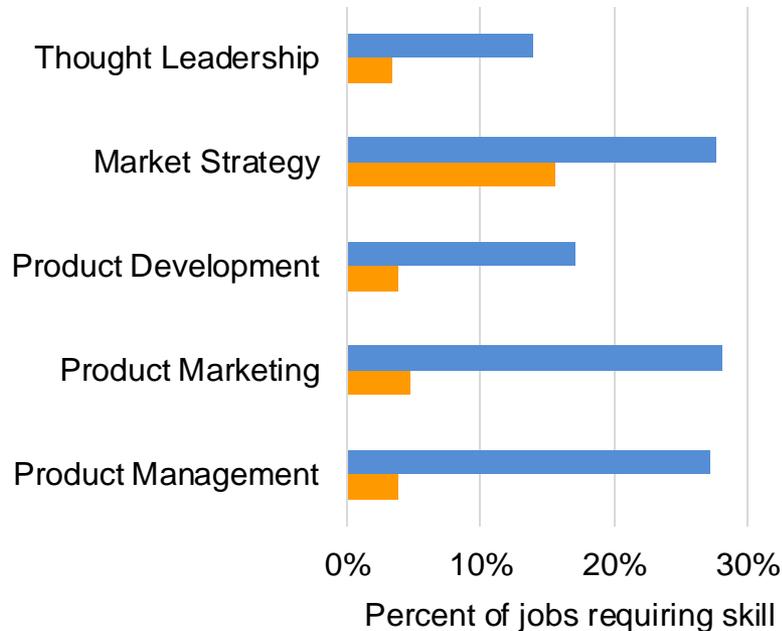
## **Skills Offer A Bulwark**

*Arming students with high-value skills and moving to models of continuous learning will help them adapt to a changing world*

# Skills Determine How You Start

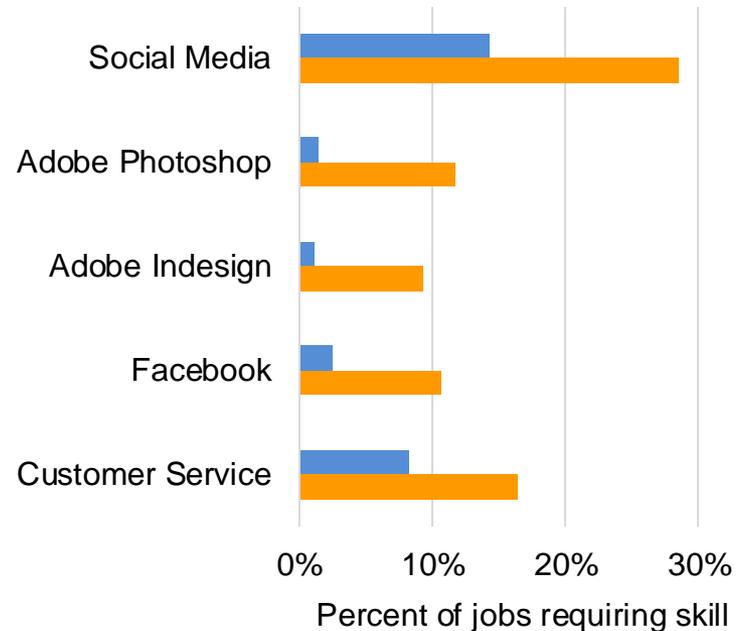
Teach the skills associated with better paying jobs & higher upward mobility

### High-Paying Skills for Marketing Managers



■ Top Salary Quartile ■ Bottom Salary Quartile

### Low-Paying Skills for Marketing Managers



■ Top Salary Quartile ■ Bottom Salary Quartile

# Skills Make Degrees More Valuable

The value of a degree isn't just about the university and major. Much of the value is in the skills students learn along the way.

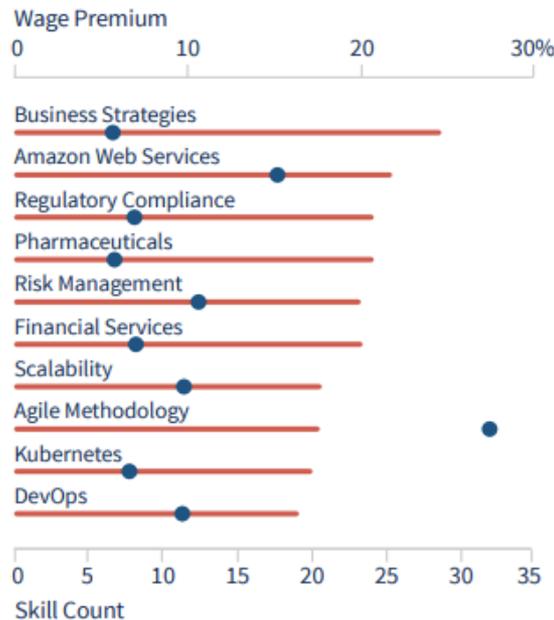
Highest-Earning Skills Commonly Used by...

— Wage Premium  
● Skill Count (in thousands) Per Million Postings

## Business, Communications, and Legal Studies Majors



## Math and Science Majors



## Liberal Arts Majors



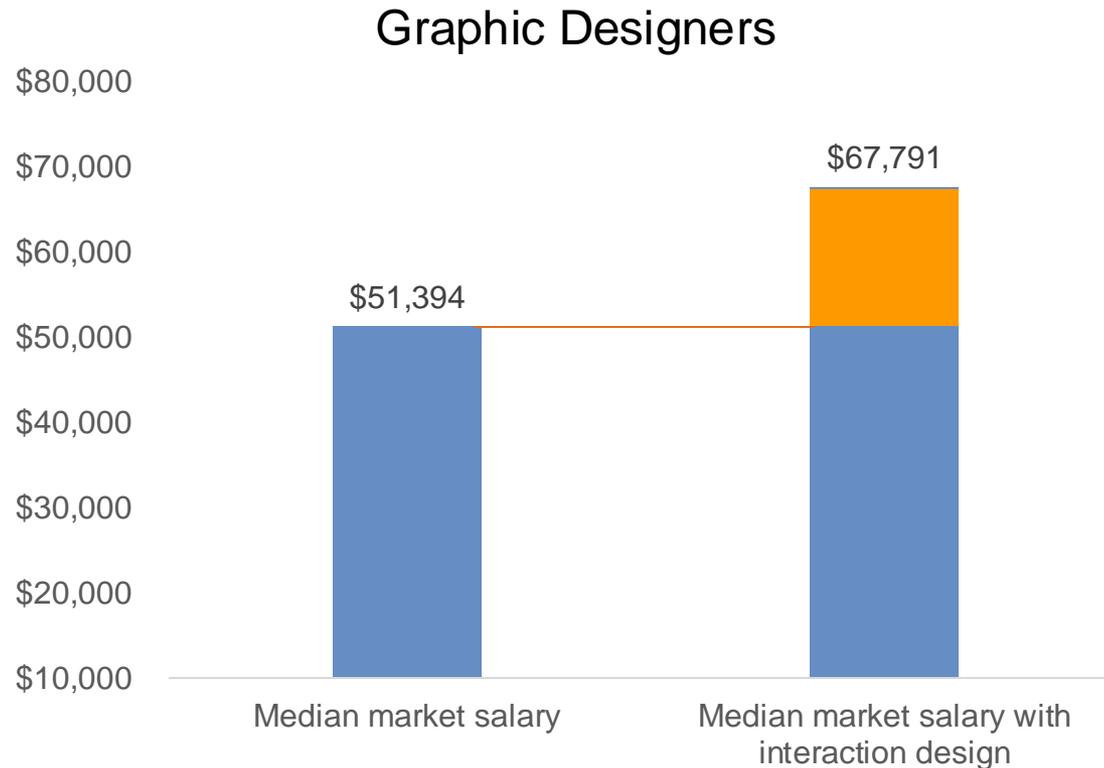
### Foundational Skills

These skills are common across majors, but still carry huge value



# Skills Arbitrage Careers

It doesn't cost \$16,000 to learn interaction design



Source: Burning Glass Institute analysis of Lightcast data

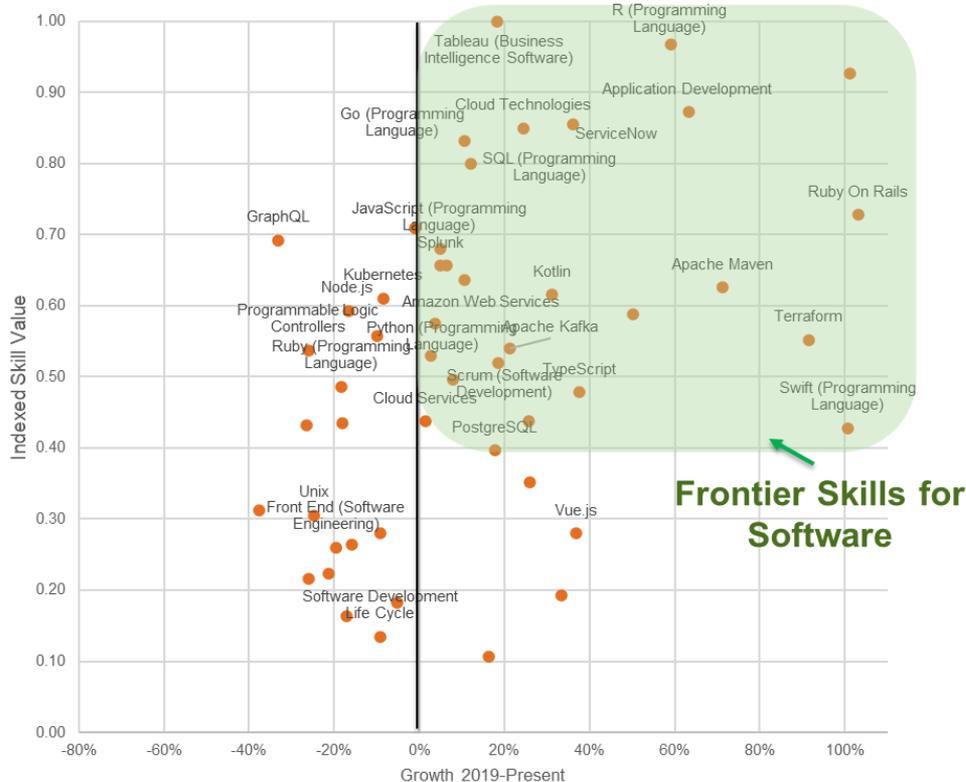
# Skills Determine the Future Readiness of Regions

Not all skills are created equal. “Frontier Skills” stand out for their value and growth. Competitiveness depends on your workforce having these skills

Out of all software skills, we identified 104 at the “frontier”- those that are **growing quickly and defining the future of the sector**

**Boston ranks #22 in the US for frontier skills**, lagging all other major software hubs despite having third highest # of software jobs

**Skill Growth vs Skill Value**



**Share of Jobs Requiring Frontier Skills**

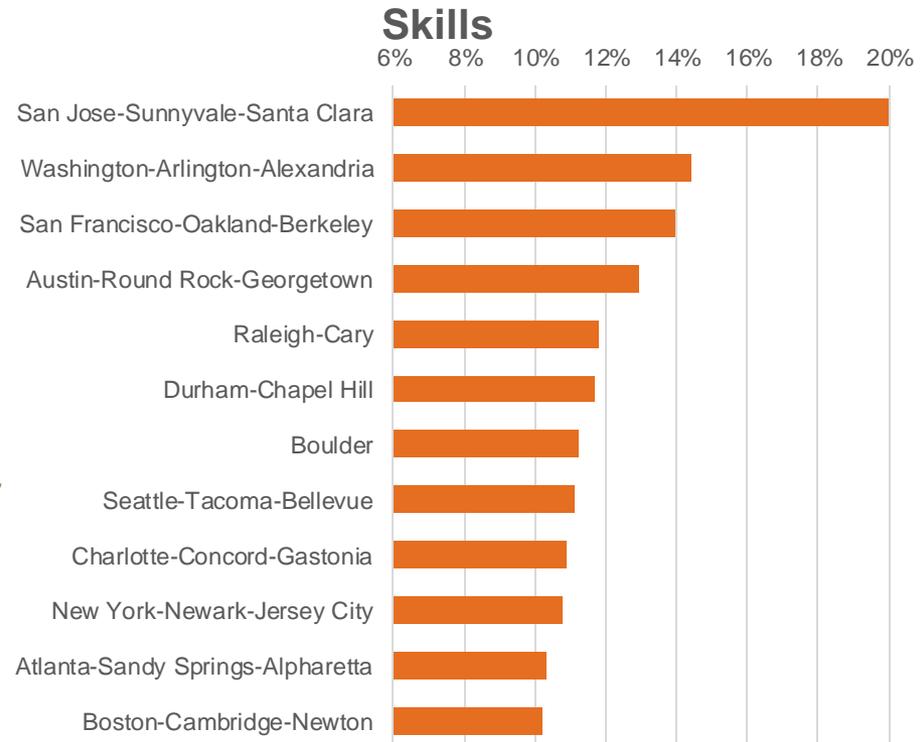


Chart shows subset of frontier skills, along with other specialized and software skills

# Too Much of Our Workforce is on the Bench

Many wind up stranded – whether because they made a bad start, stopped out of college, graduated bad programs, or become displaced. Helping them rebound is key to the competitiveness of the American workforce.

Stranded Talent (millions of US workers)



Source: Burning Glass Institute analysis of BLS, American Community Survey, National Student Clearinghouse & BGI data.

Note: Stalled BA+ reflects the bottom quartile of BA+ degree holders working in college-level jobs. It is likely an underestimate. However, some workers with Some Credit, No Degree may be working in High Churn, Low Wage jobs; as a result, some double counting is possible.

Source: Burning Glass Institute analysis

There Must Be 50 Ways To Leave Retail

# Help Learners Over Time, Not ‘Once & Done’

Career Area	% of Workers in Career Area after 5 Years	% of Workers in Occupations with Low to Moderate Probability of Automation	How much safer or at risk than the nation?
Core Retail (e.g. Retail Sales)	33.5%	35%	0.95
Administrative	15.7%	13%	0.35
Customer Service	12.3%	8%	0.22
Food	6.2%	0%	NA
General Sales	5.9%	95%	2.57
Finance	5.5%	18%	0.49
Health Care	4.2%	40%	1.08
Hospitality	3.7%	19%	0.51
Restaurant Management	3.4%	14%	0.38
Retail Operations: Logistics	3.0%	20%	0.54
<b>IT</b>	<b>2.4%</b>	<b>100%</b>	<b>2.70</b>
Call Center	1.1%	4%	0.11
Retail Operations: Merchandising	1.1%	100%	2.70
Real Estate	0.9%	0%	NA
Retail Operations: Buyers	0.6%	0%	NA
Hospitality Management	0.3%	100%	2.70
Auto	0.2%	0%	NA
Total	100%	38%	1.02

# A New Paradigm of Productivity

We need a new framework fit for the Human Economy

Historically, we have focused on driving down the cost of **inputs**



By investing in skills, we can grow productivity by making workers and their **outputs** worth more



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