DATA SCIENCE

IS FOR EVERYONE

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THE NEW LANDSCAPE FOR DATA SCIENCE SKILLS AND A NATIONAL IMPERATIVE FOR INVESTING IN THE NATION'S WORKFORCE

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I. EXECUTIVE SUMMARY

Talk of 'data science' naturally enough evokes thoughts of data scientists – a hot job no doubt but one that is perceived as the rarified domain of a clique of experts with hyper-specialized skills. Yet, in the real-world landscape of career opportunity, data science is no longer a narrow set of skills for a narrow set of occupations. Rather, data science has expanded to include core competencies key to many jobs, industries, and education levels. American industry runs on data and so more and more workers need to be able to collect, analyze, visualize, interpret, and leverage data.

Against this backdrop, the message to everyone – from policy makers in state capitals to workers on Main Street – is clear: data science skills are increasingly critical to good jobs. Further, any state that prioritizes economic growth and opportunity will need to invest in building a workforce that can leverage those skills for a new generation of jobs and tasks in everything from information and management to healthcare, entertainment, and other industries not typically considered to be "data driven."

More specifically, research by the Burning Glass Institute shows that:

1. **Nationwide, nearly a quarter of US job postings require data science skills.** In 2023, fully 22 percent of job postings across the country sought workers with at least one skill related to getting, exploring, or analyzing data, including about a third of listings in the District of Columbia, and 25 percent of those in Iowa, California, Virginia, and Arkansas. Even in states with lower rates, these positions are a meaningful portion of the workforce, including roughly 15 percent of job postings in Vermont, Mississippi, and North Dakota.

2. **Data science is the backbone of the highest-paying jobs.** Many employers offer higher wages to workers who possess certain data science skills – not only in data science jobs but also in a much wider array of occupations that increasingly involve data. The most substantial of these wage premiums are for the most technically sophisticated skills, including Data Strategy and Machine Learning (14 percent) and Artificial Intelligence, Data Architecture, and Big Data (12 percent). Yet, even basic, broad-based data science skills, such as Data Visualization, Data Processing, and Data Cleaning offer meaningful bumps in pay, reflecting the importance of these skills to unlocking high-value opportunities.

3. **Many occupations that are less data intensive still ask for data science skills.** As technology has become an increasingly crucial part of nearly all business operations, a growing range of occupations now require at least some data science skills, including many outside the traditional domain of Science, Technology, Engineering, and Math (STEM). For example, about 1 in ten 2023 job postings for both healthcare practitioners and production clerks included at least one data skill on the list of more common data qualifications, such as data collection, forecasting, and business metrics.

4. **Data science skills are in demand in jobs that don't require a college degree.** Employer demand for basic data science skills is increasing among jobs that do not necessarily require college degrees, most notably for data analysis, forecasting, data collection, and business metrics – including 5 percent of bookkeeping clerk jobs and 8 percent of medical specialist job postings.

This report aims to offer new insights into the growing demand for data science skills across the American workforce and to raise awareness of the importance of building these skills into the K-12 curriculum. It is only by ensuring that everyone graduates high school with at least basic fluency in data science that we can create a future in which workers have access to good jobs that offer economic stability and mobility, in which states can attract and retain the most innovative and industrious employers, and in which the nation can preserve its standing as a global economic powerhouse.

II. INTRODUCTION

The ubiquity of data in the modern world is perhaps no more obvious than in our own pockets. More than 85 percent of Americans now own a smartphone.[1] Our devices allow us to check our bank balances, read restaurant reviews, and decide whether to pack for inclement weather. In other words, we gather the information we need to make informed decisions. In drawing insights from data, all of us, in one way or another, act like data scientists.[2]

It's entirely understandable why most people probably wouldn't consider themselves data scientists. Terms like "data scientist" are relatively new and usually reserved for the sliver of the workforce with degrees and/or careers in quantitative or technological fields.[3] But in the same way that few of us would have ever thought we would carry a miniature computer at all times to handle so many aspects of our daily lives, so too many are increasingly, even if unknowingly, learning and applying data science skills.

That's because data science is more than coding and statistical regressions. Arguably dozens of disparate skills fall under the larger umbrella of data science. These include skills for identifying what information you need to answer a question or solve a problem, skills for understanding how to contextualize the information you are taking in, as well as skills for effectively communicating what you have learned to others.

Given this wide range of skills and the increasing role of technology in business operations, it is unsurprising that employer demand is swiftly growing for data science skills. Between 2011 and 2021, there has been more than a four-fold increase in the number of occupations where a substantial number of job postings require data science skills.[4] And while the bulk of these are still mostly in STEM jobs, that demand is increasingly spreading to positions most of us would not traditionally associate with data science.

This rise of data science skills in more common jobs is not only increasingly pervasive but also startlingly commonplace. Take for example the $28 an hour "Sales and Marketing Event Coordinator" position that requires no more than a high school diploma or GED, whose job ad directly asks that successful candidates have proficiency with "collecting and analyzing data." Or consider the exceptionally common administrative assistant job posting that only requires a high school degree but asks that candidates "develop and maintain statistical data" and suggests that knowledge of Power BI, a common data visualization platform, is a plus.

The growing importance of data science skills both nationally and globally has meaningful consequences for state governments, too. Highly sought after industries like advanced manufacturing, biosciences, and information technology all require workforces skilled in data science. In a 21st century knowledge economy, jobs follow talent. That makes investing in these skills an imperative for any state wanting to prioritize economic growth, business attraction, and social mobility. These are the skills that both unlock good jobs and draw high-value employers.

That investment is more likely to yield a better pay off if it happens as early and as broadly as possible. The logic is simple: as data science skills become more essential for work, they become an essential mandate for education – and our K-12 system is what we look to for building the skills that are most transversal. The growing importance of data science to nearly all jobs, those that often pay the most and are in the highest demand in particular, makes a strong case for ensuring prosperity by ensuring opportunity.

Today, data science skill development is still largely concentrated in college computer science degree programs. That presents an enormous investment challenge in a nation where, even today, 62 percent of adults ages 25 and older do not have a bachelor's degree.[5] While it is true that many data science skills have their foundation in more advanced mathematics and statistics, others – like data collection, management, visualization, and even programming languages – do not. For the millions of Americans whose job prospects will depend on knowledge of more common or basic data science capabilities, centering data science skill investment at the postsecondary level rather than in K-12 level translates into lost access to many of the good jobs and opportunities associated with data science. That not only limits individuals' career mobility but also the nation's overall economic growth potential.

III. MAPPING DATA SCIENCE SKILLS

Even as there is widening recognition of the importance of data science skills, they have not been widely researched or mapped. As such there is no definitive list, or even agreed-upon definition, of which skills comprise data science.

To create structure for the analysis, the Burning Glass Institute researched different approaches for how data science can be integrated into K-12 curricula. We worked with industry experts to validate a comprehensive data science skill taxonomy (see Appendix A). Institute researchers then mined an extensive dataset of hundreds of millions of job postings and tens of thousands of distinct skills[6] to find out in which occupations, sectors, and geographies different data science skills are in greatest demand by employers.

These skills were then grouped based on their similarity to one another and categorized into three general themes: 1) Getting Data, 2) Exploring and Analyzing Data, and 3) Communicating Data. Within these three large data science skill groupings, the research team again drew on patterns borne out in job postings and we relied on expert review to identify the skill subgroups shown in Figure 1.

Getting Data, for example, goes beyond simply collecting information. Rather, data from different sources often needs to be integrated before analysis and also managed in such a way as to protect sensitive information. The need for an expansive definition also applied for the Exploring and Analyzing Data category, which includes activities as diverse as developing operations metrics or visualizing complex data to statistical analysis and coding.

Grouping and clustering data science skills in this way revealed other patterns that proved useful for the analysis. For example, we determined that data science skills could be grouped by the level of data-intensity of the jobs demanding them.[7] We also determined that certain data science skills were specialized in the sense that they tended to be sought by a relatively small number of math and science-intensive jobs. By contrast, we classified as "common" data science skills those that were demanded transversally across occupations.

As part of the research, the Burning Glass Institute analyzed job postings data by occupation categories (e.g. business, engineering, education, law) as well as industries like healthcare, utilities, manufacturing and scientific research (Appendix B). We also looked for other patterns among postings seeking data science skills, such as whether they require college credentials.

FIGURE 1 – Data science skill analysis framework. *Source: Burning Glass Institute*

Getting the Data

Data Collection
- Data Quality
- Data Ethics
- Data Recording
- Data Acquisition
- Data Collection

Data integration
- Data validation
- Data structures
- Data processing
- Data architecture
- Data cleaning
- Data manipulation

Data management
- Data privacy
- Data security
- Data governance
- Data migration
- Data integrity
- Data warehousing

Communicating Results
- Data presenting
- Data writing
- Interpersonal communication

Exploring and Analyzing the Data

Business data strategy
- Business intelligence
- Business metrics
- Data strategy
- Data literacy

Statistics and mathematics
- Mathematics
- Statistical analysis
- Statistical modeling
- Statistical reporting
- Statistical methods

Analyzing trends and prediction
- Analytics
- Data science
- Data analysis
- Quantitative research
- Forecasting
- Big data
- Artificial intelligence
- Algorithms
- Machine learning
- Data visualization

Data software
- Programming language
- Statistical software
- Business intelligence tools

IV. FINDINGS

Finding #1 – Employers already have significant demand for data science skills

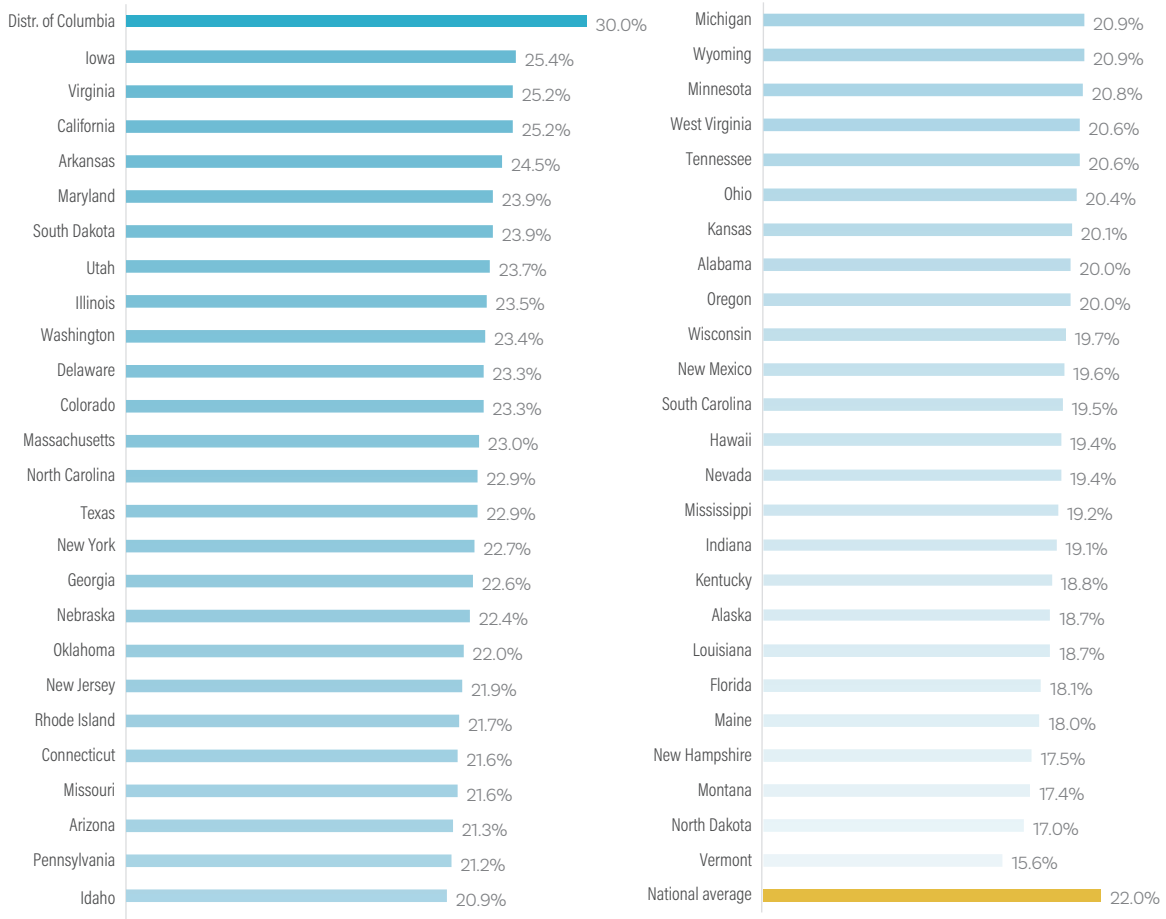
Data science skills are already deeply embedded in the fabric of career opportunity. Nationwide, about one in four job postings includes at least one data science skill among its requirements and many of the fastest growing occupations rely on data science skills. Additionally, employers increasingly offer wage premiums to workers with certain data science skills, reflecting the growing importance of data science to today's businesses.

(a) Nationwide, nearly a quarter of US job postings require data science skills.

In the same way that data has become integral to daily life in modern America, data science skills are increasingly important to industry as well. In 2023, 22 percent of job postings nationwide called for at least one skill that involved collecting, exploring or analyzing data.

In some places, the demand is even higher **(Figure 2)**. In the District of Columbia close to a third of job postings mentioned at least one of these skills, followed closely by Iowa, Virginia , California, and Arkansas (all at 25 percent). Even in the states where the share of job postings is lower than the national average – Vermont, Mississippi, and North Dakota are roughly 15 percent each – it is still a meaningful portion of the workforce. In general, state-by-state variation can be explained by such factors as population, industry and occupation mix, and level of economic growth.[8]

FIGURE 2 – Share of job postings listing at least one data science skill as a share of all job ads in the state, 2023
Source: Burning Glass institute analysis of Lightcast posting data

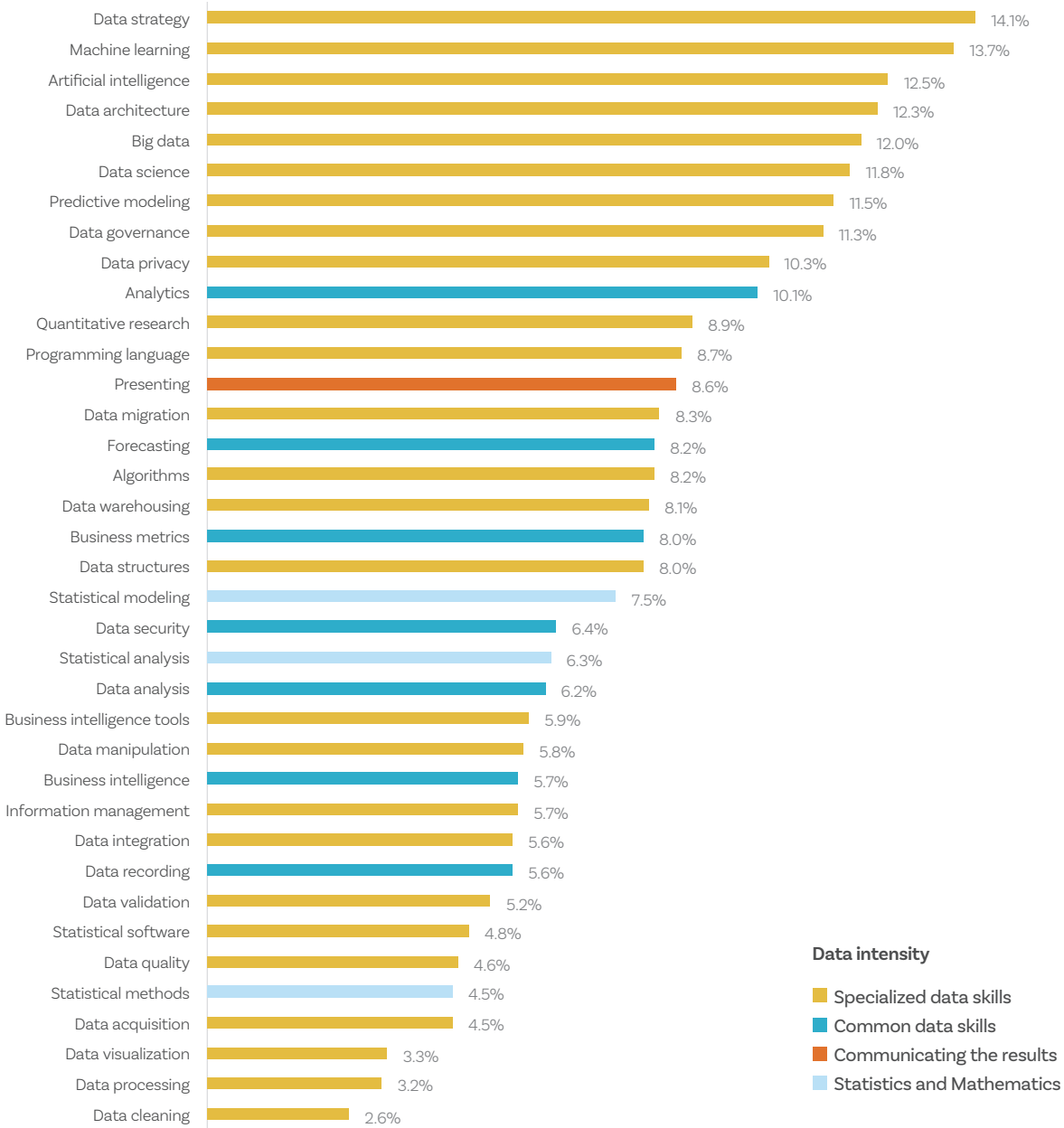


(b) Data science is the backbone of the highest-paying careers.

Employers are willing to offer substantial wage premiums to those who possess certain data science skills **(Figure 3)**. Perhaps not surprisingly, the largest wage premiums are for the most technically sophisticated skills, including those grounded in math or statistics. For example, in any given job, employers are willing to pay about 14 percent more for Data Strategy and Machine Learning skills, and roughly 12 percent more for Artificial Intelligence, Data Architecture, and Big Data science skills. Part of the premium is explained by the fact that these skills are particularly important to the best paying employers in any given sector. But premiums for these skills also bear out more broadly across the market.

As the skills become less rooted in math and more related to competencies with mainstream data software and practices, the wage premium shrinks. While the wage premium for some less specialized data science skills may be lower – such as for Analytics (10 percent), Data Analysis (6 percent), and Data Recording (6 percent) – these still translate into meaningfully higher salaries for workers and more opportunities for both better jobs and career advancement. What is more, many workers tend to have more than just a single data science skill.

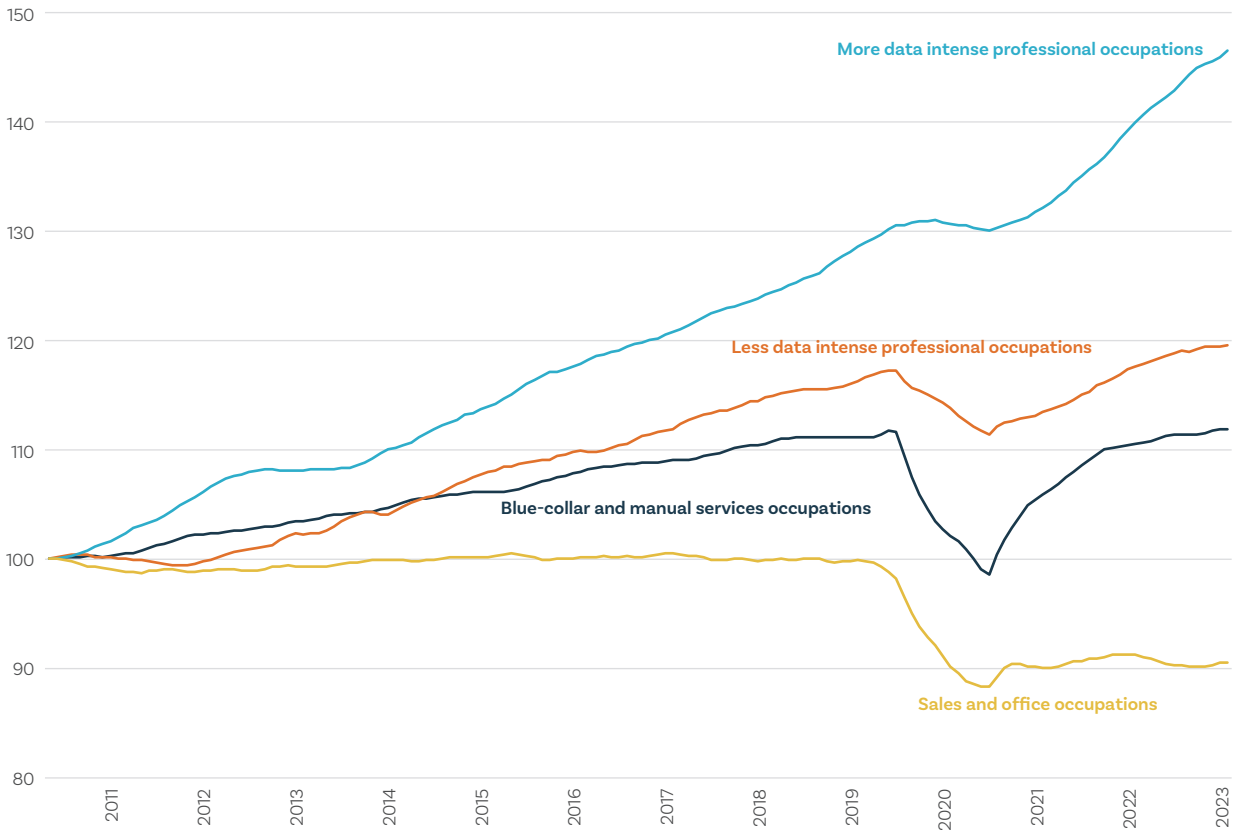
FIGURE 3 – Wage premium estimates for select data science skills[9]
Source: Burning Glass institute analysis of Lightcast posting data



(c) Over the past decade, the fastest-growing careers have been the most data-intensive

Demand for data scientists and other more data intense occupations has skyrocketed over the past 10 years – in fact, so much so, that this growth almost entirely offset the overall increase in unemployment seen during the COVID-19 pandemic **(Figure 4)**. Likewise, demand for less data intense positions has also increased swiftly, albeit less dramatically. In all cases, jobs that require at least some data science skills have outpaced the slower rate of growth in blue-collar and manual services occupations and the decline in employment in sales and manual services occupations. This is strong evidence of the continued labor market shift towards data science.

FIGURE 4 – Change in employment by broad occupation type, 2011-2023
Source: Bureau of Labor Statistics



Finding #2 - Data science skills aren't just for data scientists anymore

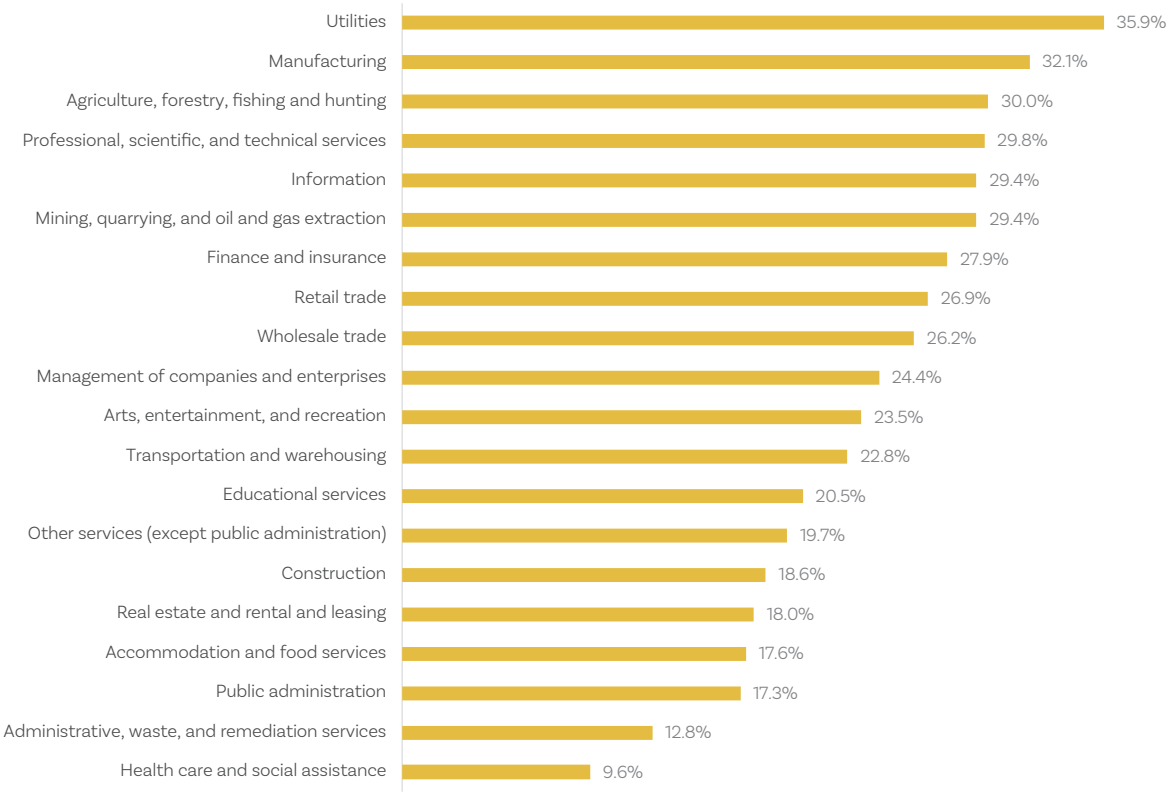
As technology has become crucial to all business operations, organizations have needed to develop the capacity to handle large volumes of information. That has driven employer demand for at least some level of data science skills in a much broader swath of sectors and occupations.

(a) You don't have to work in STEM to need data science skills.

Historically, employers seeking workers with data science skills were largely operating in a small collection of industries and sectors mostly focused on science, technology, engineering, and math (STEM). Over the past decade, however, that has changed. Today, to varying degrees, data science touches every American industry **(Figure 5)**. Between a quarter and a third of job postings in manufacturing, trade, oil and gas, agriculture, and transportation seek workers with different data science skills – sectors far outside the scope of tech.

Of course, the size of the demand is linked to whether or not that sector has a high concentration of data intense occupations. Sectors that are more focused on STEM will have a higher share of job postings for data science skills than those that aren't. Still, the increasing overall demand for data science skills from employers outside STEM-focused industries signals the growing importance of these skills across the larger labor market.

FIGURE 5 – Share of job postings listing at least one data science skill as a share of all job ads in the industry, 2023
Source: Burning Glass Institute analysis of Lightcast posting data



(b) In fact, many occupations that are less data intense require data science skills.

As the demand for data science skills has expanded beyond the domain of STEM-focused industries, a growing range of occupations now require at least some data science skills, including many that are less data intensive, including some that are much less **(Figure 6)**. Today, job postings for medical record specialists, nurse practitioners, and healthcare diagnosticians all increasingly require some degree of data collection skills. Similarly, bookkeepers and auditors, as well as many sales-related jobs require that workers have proficiency with business metrics and forecasting skills, while people working in public relations, reporting, and editing must be able to communicate data findings to colleagues.

FIGURE 6 – Share of ads mentioning at least one skill classified as a "common" data skill, as share of total jobs ads in less data-intense occupations, 2023.

Source: Burning Glass institute analysis of Lightcast posting data

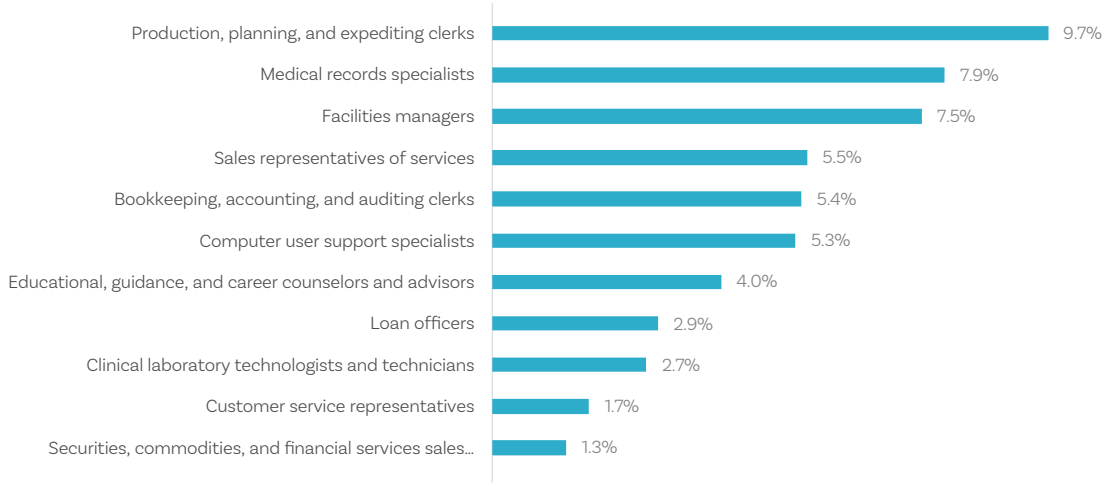
(c) Data science skills are in demand in jobs that don't require a college degree.

As data science skills become more mainstream across sectors and occupations, they are more frequently required in positions that do not necessarily require a college degree. In 2023, for example, one in ten production clerk jobs and one in twelve medical record specialists asked for some kind of skills related to analyzing trends and predictions **(Figure 7)**.

While overall demand for data science skills amongst non-college jobs is still relatively low, these occupations still tend to value the same kinds of data science skills that are increasingly important to college-level jobs. These include skills like data analysis, forecasting, programming language, or data collection, as well as business operations-related data science skills like business metrics, information management, business intelligence tools, and data recording.

FIGURE 7 – Share of ads mentioning analyzing trends and predictions as a share of all job ads for occupations that generally do not require a college degree, 2023[10]

Source: Burning Glass Institute analysis of Lightcast posting data



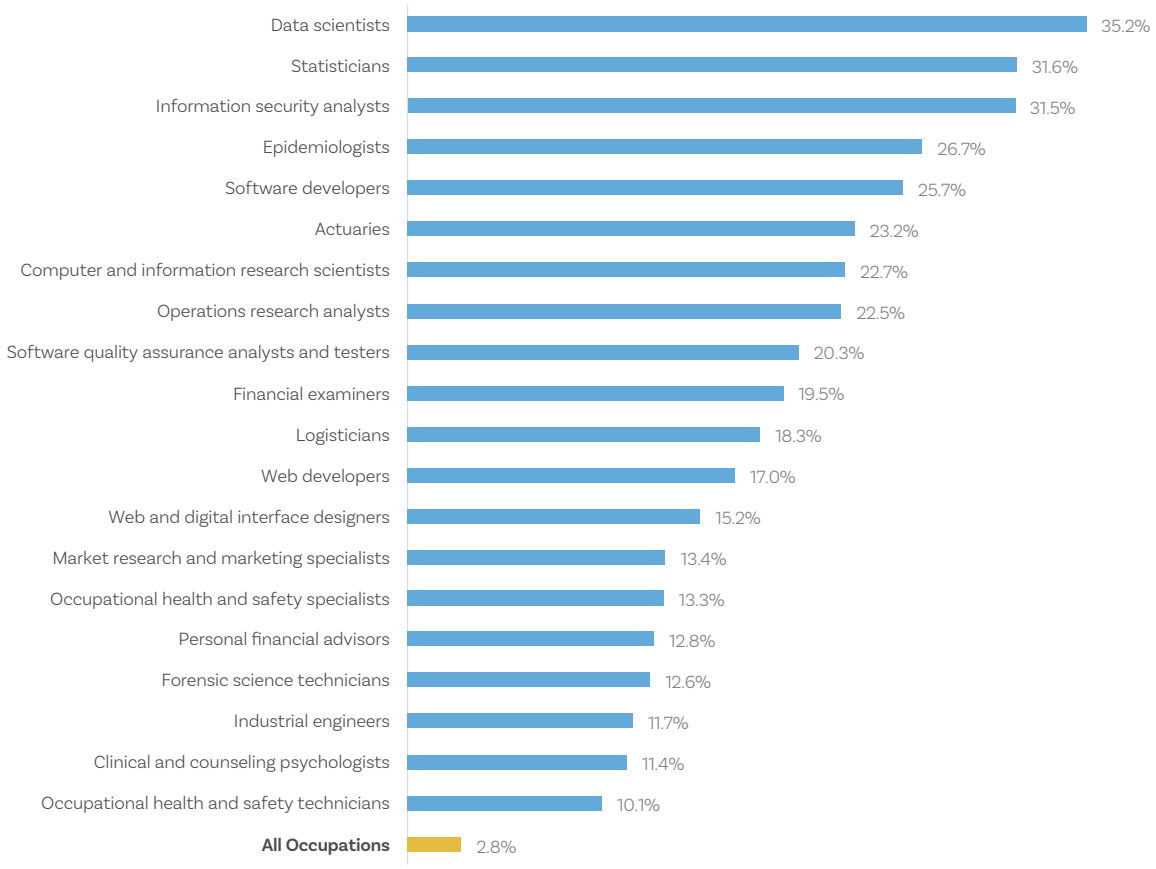
Finding #3 – Employer demand for data science skills will grow even faster over the next decade

Employer demand for jobs that rely on data science skills shows no signs of slowing. Instead, demand for these occupations is projected to grow considerably in the coming years, and much faster than overall job growth. Over the next ten years, the US labor market is projected to add another 4.7 million new jobs,[11] half of which are more data intense. That is more workers than there are total residents in the states of Kentucky, Louisiana, Oregon, or 23 others.

(a) Many of the fastest-growing occupations are more data intense.

The Bureau of Labor Statistics forecasts the number of Data Scientist, Information Security Analyst, and Statistician positions to grow between 31 and 35 percent by 2032, as compared to an expected 2.8 percent for national job growth during the same period **(Figure 8)**. Notably, these, and other positions with the highest projected growth rates, are uniformly grounded in math or statistics. They also are the jobs that most frequently seek the skills with the highest wage premiums. However, even amongst the jobs at the bottom of Figure 8, the growth rate is still remarkably strong. Jobs like Actuaries, Market Research Analysts, and Marketing Specialists which are all projected to grow between 18% and 20% percent in the next decade, all routinely seek not just forecasting and analysis skills, but experience with business intelligence tools and data visualization as well.

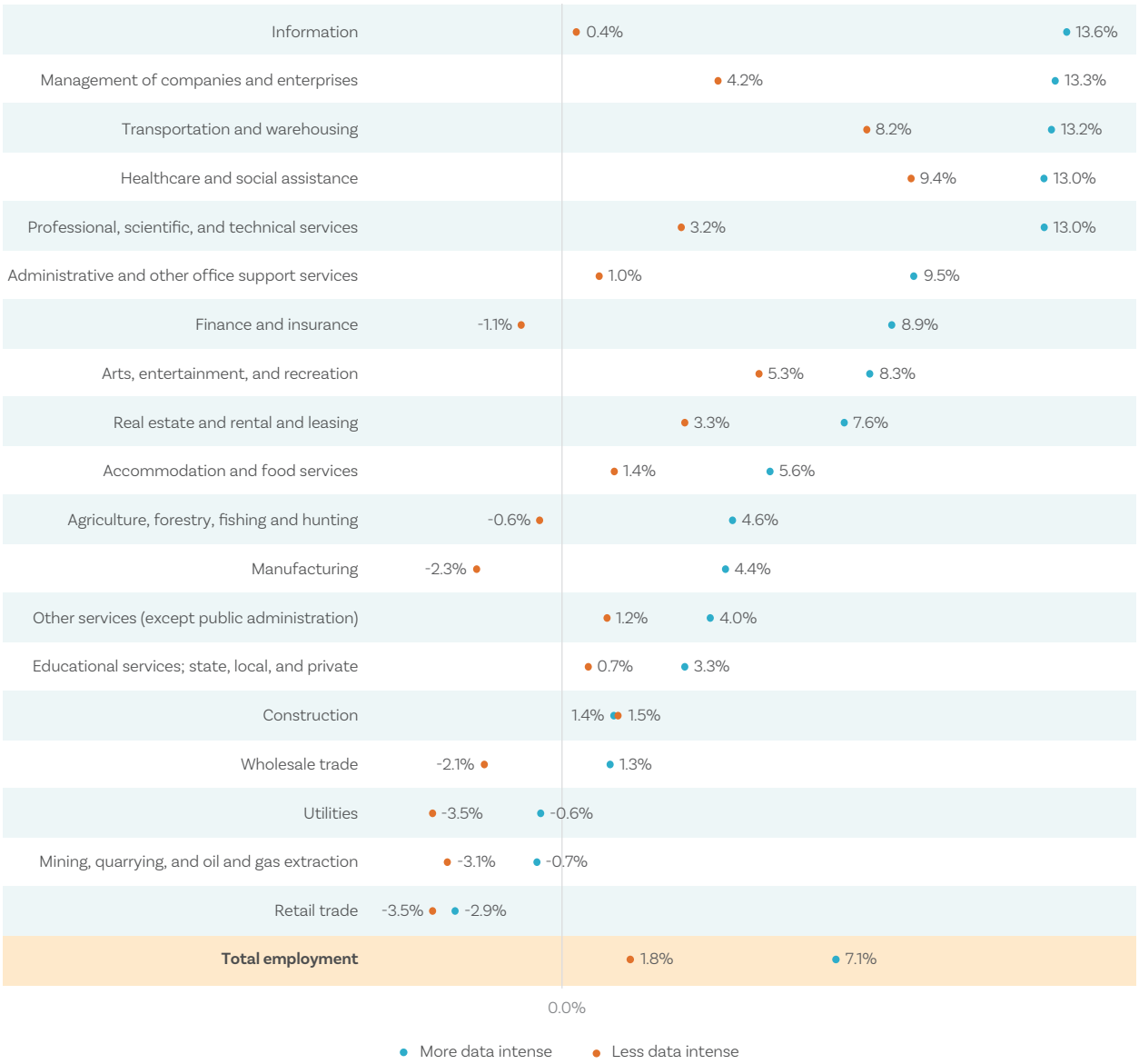
FIGURE 8 – Top 20 jobs projected to grow the fastest in business, computer engineering, and science occupations, 2022-2032 *Source: Bureau of Labor Statistics Projections*



(b) The employer demand for data science skills is projected to increase across a wide range of sectors.

Over the past decade, data science has become increasingly important to a growing array of industries. Looking forward, that trend is projected to strengthen further **(Figure 9)**. While the largest growth is expected to be in industries with significant shares of data science jobs, like Information (14%), Management (13%), and Professional Services (13%), a surprising amount of growth is expected in less technology-oriented industries like Transportation and Warehousing (13%), Healthcare and Social Assistance (13%), and Administrative/Office Support (10%).

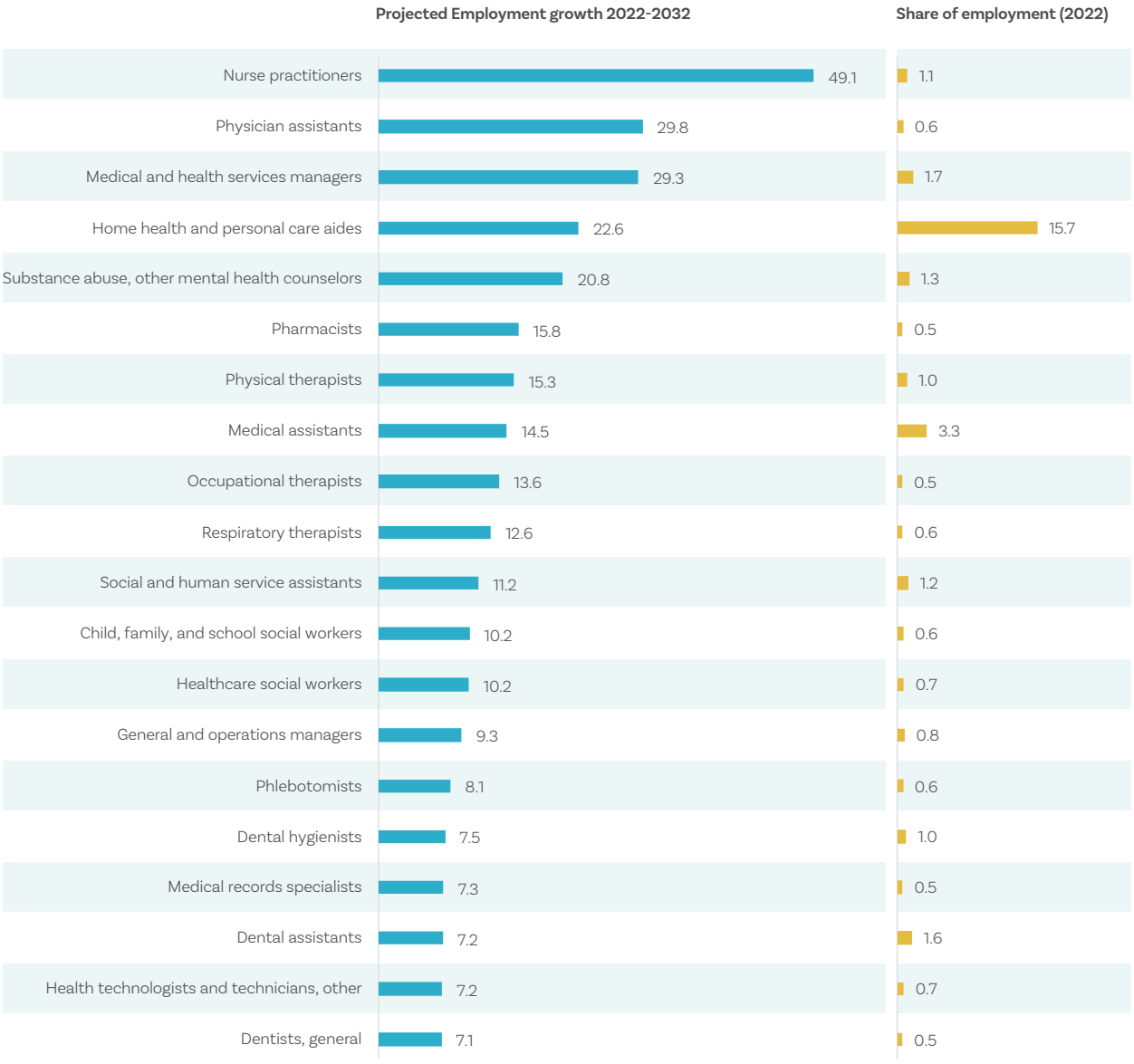
FIGURE 9 – Projected employment growth by data science skill intensity and industry, 2022-2032
Source: Bureau of Labor Statistics Projections



Scale matters. Take, for example, the Healthcare and Social Assistance sector. The 13% projected growth of more data intensive jobs over the next decade are largely in medical, health services and operations manager positions that today only account for about three percent of all the jobs in that industry **(Figure 10)**. At the same time, jobs with some – albeit less intensive – data science skill demand are expected to grow 9%, driven by dramatic increases in demand for home health and personal care aides, registered nurses, and medical and nursing assistants. Together these account for around one in four of the new jobs projected in the healthcare industry.

With the exception of registered nurses, these jobs do not typically require college training. All, however, ask that job candidates possess various data science skills. Amongst home health and personal care aides, that number is low – around 2 percent of postings and focused mostly on data recording, yet for nursing and medical assistants, between 6 and 8 percent of jobs ask for skills that include data management, general math and statistics, analyzing trends, and data collection.

FIGURE 10 – Projected employment growth and industry occupation shares for the healthcare and social assistance industry, 2022-2032 *Source: Bureau of Labor Statistics Projections*



V. CONCLUSION

Data science skills are becoming as critical to Americans' day-to-day and work lives as computers, cell phones, and the internet. It is clear that access to good jobs will increasingly require people to have data science skills. It is also clear that for states to attract thriving industries, then they must have workforces with the data science skills these sectors rely upon. The same is no less true of our nation. For America to maintain its standing as a global economic powerhouse in an increasingly competitive geopolitical landscape, we cannot fall behind in the crucial sphere of data science skills.

To date, we have left it to universities to develop these skills. However, the scope of jobs that will require these skills goes far beyond the rarified scope of higher education. Almost two-thirds of Americans do not have a college degree. We cannot achieve our economic growth goals by leaving two-thirds of our workforce on the bench. And we cannot assure economic mobility for all workers unless all workers have the skills to access the best paying and fastest growing careers. That sets an imperative to integrate data science education into the nation's K-12 curriculum.

Even for the kinds of mathematically intensive data science skills that are more typically associated with a college education, here too the evidence is clear that these skills are coming to be as important to Main Street industry as they have been to tech. To that end, the question is not whether data science should replace traditional mathematics in the K-12 curriculum as much as how data science can be integrated into traditional K-12 structures to prepare both the college-bound and the work-bound for productive, economically rewarding careers.

VI. APPENDICES

Appendix A – List of specialized and common data science skills

Specialized data skills	Common data skills	Statistics and mathematics	Communicating the results
Algorithms	Analytics	Mathematics	Interpersonal communication
Artificial intelligence	Business intelligence	Statistical analysis	Presenting
Big data	Business metrics	Statistical methods	Writing
Business intelligence tools	Data analysis	Statistical modeling	
Data acquisition	Data collection	Statistical reporting	
Data architecture	Data recording	Statistical software	
Data cleaning	Data security		
Data ethics	Forecasting		
Data governance			
Data integration			
Data integrity			
Data literacy			
Data manipulation			
Data migration			
Data privacy			
Data processing			
Data quality			
Data science			
Data strategy			
Data structures			
Data validation			
Data visualization			
Data warehousing			
Information management			
Machine learning			
Predictive modeling			
Programming language			
Quantitative research			

Appendix B – Relative shares of data science skills by SOC-2 groups

	Data macrocategory		Data subcategory							Data type	
	Getting, exploring, analyzing data	Commu-nicating results	Data collection	Data integration	Data mana-gement	Business data strategy	Analyzing trends and prediction	Data software	Statistics and mathematics	Common data skills	Specialized data skills
Computer and mathematical	53.9%	37.5%	7.1%	7.7%	13.6%	5.5%	26.2%	32.8%	11.3%	22.5%	44.0%
Business and financial operations	33.9%	46.6%	3.5%	1.6%	5.2%	2.9%	19.7%	7.9%	9.7%	21.5%	13.9%
Life, physical, and social science	32.7%	40.4%	8.8%	1.8%	5.5%	0.7%	15.6%	6.1%	10.9%	19.8%	13.7%
Architecture and engineering	32.3%	34.7%	5.4%	1.2%	2.3%	1.2%	11.6%	8.5%	14.2%	12.4%	13.8%
Production	29.2%	17.7%	2.1%	0.2%	0.7%	0.5%	1.8%	0.5%	25.4%	3.9%	1.7%
Management	27.3%	37.8%	2.6%	1.0%	3.7%	3.2%	15.4%	4.1%	7.0%	17.4%	9.3%
Sales and related	23.7%	32.6%	0.4%	0.1%	0.9%	1.2%	3.8%	0.8%	17.9%	4.9%	2.0%
Office and administrative support	20.4%	30.9%	1.5%	0.9%	1.7%	0.7%	3.3%	1.1%	13.7%	4.9%	3.7%
Transportation and material moving	20.1%	13.6%	0.8%	0.1%	0.4%	0.3%	0.8%	0.1%	18.2%	1.7%	0.7%
Legal	17.5%	54.2%	1.4%	1.9%	8.0%	0.6%	5.9%	1.1%	3.4%	6.9%	10.4%
Construction and extraction	17.1%	16.3%	1.0%	0.4%	0.4%	0.4%	2.1%	0.6%	13.8%	3.1%	1.6%
Farming, fishing, and forestry	16.2%	14.8%	1.4%	0.1%	0.7%	0.1%	1.8%	0.9%	12.3%	2.7%	2.1%
Educational instruction and library	15.3%	28.2%	2.1%	0.2%	1.0%	0.2%	3.6%	0.8%	10.0%	4.5%	2.8%
Food preparation and serving related	13.9%	13.7%	0.3%	0.0%	0.1%	0.2%	1.3%	0.2%	12.4%	1.6%	0.3%
Arts, entertainment, and media	13.6%	32.2%	0.8%	0.2%	1.4%	0.7%	5.9%	2.2%	4.6%	5.9%	4.7%
Installation, maintenance, and repair	13.5%	18.5%	1.2%	0.1%	0.7%	1.2%	2.4%	0.5%	8.6%	3.9%	2.0%
Personal care and service	12.7%	16.5%	0.7%	0.1%	0.3%	0.4%	0.9%	0.2%	10.6%	1.8%	0.6%
Healthcare practitioners and technical	9.5%	18.1%	2.8%	0.2%	1.2%	0.4%	1.5%	0.4%	4.1%	4.4%	1.7%
Community and social service	7.9%	26.7%	2.8%	0.2%	1.4%	0.4%	2.0%	0.4%	2.1%	4.6%	2.1%
Protective service	7.5%	25.5%	1.6%	0.3%	0.8%	0.3%	2.6%	1.4%	2.6%	3.7%	2.7%
Buliding cleaning and maintenance	7.1%	11.5%	0.3%	0.0%	0.2%	0.3%	0.7%	0.2%	5.7%	1.3%	0.4%
Healthcare support	6.3%	14.1%	2.4%	0.1%	1.0%	0.1%	0.4%	0.2%	2.6%	3.1%	0.9%

Appendix C –
Top listed occupations for data science skill sub-clusters by share of ads mentioning at least one skill, 2023

	Data macrocategory
	Getting, exploring, and analyzing data
Statisticians	87.7%
Data scientists	87.0%
Automotive glass installers and repairers	81.3%
Actuaries	79.6%
Computer and information research scientists	78.3%
Database administrators	76.1%
Database architects	74.5%
Financial and investment analysts	65.6%
Software developers	64.5%
Financial specialists, all other	58.4%
Geoscientists, except hydrologists and geographers	55.7%
Software quality assurance analysts and testers	55.6%
Gambling dealers	53.2%
Operations research analysts	51.3%
Computer hardware engineers	50.9%
Biological scientists, all other	50.7%
Social scientists and related workers, all other	50.1%
Management analysts	49.8%
Computer and information systems managers	49.7%
Tutors	49.2%
Natural sciences managers	48.6%
Aerospace engineers	48.3%
Computer numerically controlled tool operators	48.0%
Logisticians	47.9%
Computer occupations, all other	47.5%

	Data category
	Getting data
Database administrators	60.1%
Database architects	56.7%
Data scientists	52.2%
Statisticians	49.0%
Geoscientists, except hydrologists and geographers	36.6%
Natural sciences managers	32.1%
Computer and information research scientists	27.4%
Computer and information systems managers	21.6%
Surveying and mapping technicians	21.5%
Software developers	20.3%
Social scientists and related workers, all other	19.9%
Operations research analysts	19.6%
Environmental scientists and specialists, including health	19.3%
Biological scientists, all other	19.0%
Financial specialists, all other	18.9%
Computer systems analysts	18.4%
Information security analysts	17.7%
Medical scientists, except epidemiologists	17.3%
Management analysts	17.2%
Network and computer systems administrators	16.2%
Financial risk specialists	15.8%
Computer occupations, all other	15.8%
Actuaries	15.6%
Surveyors	15.6%
Science technicians, all other	15.6%

	Data subcategory Business data strategy
Data scientists	25.7%
Database architects	17.5%
Database administrators	14.6%
Management analysts	7.4%
Computer and information systems managers	7.0%
Financial and investment analysts	6.9%
Marketing managers	6.5%
Surveying and mapping technicians	6.4%
Logisticians	5.5%
Market research and marketing specialists	5.5%
Transportation, storage, and distribution managers	5.5%
Financial specialists, all other	4.8%
Computer systems analysts	4.6%
Statisticians	4.5%
Pharmacists	4.4%
Bus and truck mechanics and diesel engine specialists	4.4%
Software developers	4.3%
General and operations managers	4.3%
Sales managers	4.1%
Architectural and engineering managers	4.1%
Industrial production managers	4.0%
Operations research analysts	3.9%
Managers, all other	3.7%
Industrial engineers	3.7%
Financial risk specialists	3.6%

	Data subcategory Analyzing trends and prediction
Data scientists	77.0%
Computer and information research scientists	63.4%
Statisticians	56.2%
Financial and investment analysts	53.2%
Database administrators	47.0%
Actuaries	46.2%
Database architects	43.9%
Financial specialists, all other	42.4%
Marketing managers	34.7%
Operations research analysts	34.2%
Biological scientists, all other	33.3%
Logisticians	32.3%
Social scientists and related workers, all other	32.2%
Management analysts	32.1%
Financial managers	31.4%
Software developers	28.0%
Geoscientists, except hydrologists and geographers	27.8%
Market research and marketing specialists	27.8%
Computer and information systems managers	27.3%
Financial risk specialists	27.2%
Detectives and criminal investigators	26.8%
Web developers	24.0%
Computer hardware engineers	22.4%
Chemists	22.1%
Biological technicians	22.1%

	Data subcategory
	Data software
Statisticians	65.4%
Data scientists	63.9%
Database administrators	54.9%
Computer and information research scientists	50.7%
Software developers	46.4%
Actuaries	45.8%
Database architects	44.0%
Financial specialists, all other	39.2%
Software quality assurance analysts and testers	36.9%
Computer hardware engineers	31.7%
Network and computer systems administrators	27.9%
Web developers	24.7%
Computer systems analysts	24.1%
Computer occupations, all other	23.3%
Computer programmers	22.3%
Social scientists and related workers, all other	22.2%
Financial and investment analysts	21.3%
Information security analysts	21.2%
Management analysts	21.1%
Electronics engineers, except computer	20.8%
Aerospace engineers	20.6%
Computer network architects	20.3%
Operations research analysts	19.2%
Engineers, all other	19.1%
Financial risk specialists	17.7%

	Data subcategory
	Statistics and mathematics
Statisticians	56.3%
Actuaries	54.1%
Gambling dealers	53.0%
Tutors	46.0%
Computer numerically controlled tool operators	45.7%
Machinists	45.3%
Butchers and meat cutters	45.2%
Pharmacy technicians	43.1%
Cutting and slicing machine setters, operators, and tenders	41.1%
Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	40.2%
Order clerks	39.5%
Mixing and blending machine setters, operators, and tenders	39.2%
Extruding and drawing machine setters, operators, and tenders, metal and plastic	38.5%
Packaging and filling machine operators and tenders	37.7%
Data scientists	37.4%
First-line supervisors of gambling services workers	35.8%
Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	35.6%
Tool and die makers	35.6%
Financial specialists, all other	34.7%
Opticians, dispensing	34.1%
Aircraft structure, surfaces, rigging, and systems assemblers	33.3%
Computer and information research scientists	31.0%
Food preparation workers	30.7%
Printing press operators	30.5%
Hotel, motel, and resort desk clerks	30.3%

ENDNOTES

[1] Source: https://www.pewresearch.org/internet/fact-sheet/mobile/

[2] Source: https://www.datascience4everyone.org/faqs

[3] Source: https://www.bhef.com/sites/default/files/bhef_2017_quant_crunch.pdf

[4] Source: https://www.alteryx.com/resources/whitepaper/building-data-talent-for-the-decade-ahead

[5] Source: https://www.pewresearch.org/short-reads/2022/04/12/10-facts-about-todays-college-graduates/

[6] Our analysis used as its starting point Lightcast's skill framework, which includes more than 30,000 distinctly listed skills. This project analyzed data science skills from job postings collected during 2023. Extremely low count skills were omitted. In addition, we focused our analysis on data-focused skills rather than on more general computer skills related to software development and system design that are sometimes required in data-centric jobs.

[7] In this analysis the Burning Glass Institute classifies occupations as either "more data intense" or "less data intense." Those that are more data intense are jobs typically classified as computing, finance, management, engineering and sciences related. Less data intense occupations include all other job categories, including blue collar work, healthcare, education, sales and administrative positions. The analysis also classifies data science skills as either "common," or "specialized." Common skills include those that were more likely to show up in job postings across wider ranges of job categories and include analytics, business intelligence, business metrics, data analysis, forecasting, data collection, data literacy, data recording and data security.

[8] See, for example: https://www.bls.gov/oes/current/oes152051.htm

[9] Wage premiums are calculated as percent differences in job ad salaries based on individual skills after controlling for occupation, required education level, required experience level and year.

[10] For top-listed occupations and excluding first-line supervisors.

[11] See the BLS Occupational Employment Projections 2022-2032, https://www.bls.gov/emp/