



# Degrees at Work

Examining the serendipitous outcomes  
of diverse degrees







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We compared six different degrees with varying levels of perceived labor market applicability in order to clarify the real-world relationship between education and work.

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## **Authors**

Clare Coffey, Rob Sentz, Dr. Yustina Saleh

**Published August 2019**

## **Acknowledgements**

This report is the fruit of a long, vigorous, and exciting collaborative effort. Special thanks to: Daniel Botkin, Dave Beauchamp, Gwen Burrow, Joshua Clemans, Paul Linares, and Remie Verougstraete, without whose hard work this analysis would not have been possible.

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## Key findings

- **Education isn't as deterministic of our work as we might believe**

According to a 2018 study by the Federal Reserve Bank of New York, only 27% of college graduates work in a field related to their major.<sup>1</sup> Our analysis finds that while the few top careers for each program type are usually linear (IT → software development, etc.), the majority of graduates' outcomes are dispersed widely among many different careers.

- **Sales, marketing, management, and business and financial analysis were careers common to every major, typically appearing as a top-10 outcome**

These common areas contradict the idea of drastically different outcomes for different degrees. In fact, humanities graduates and business graduates go into many of the same fields in large numbers—and a significant segment of STEM majors go into these fields as well.

- **54% of all outcomes fall under the umbrella of major business functions, which include strategic & tactical communication and operational or interpersonal oversight**

This umbrella includes our common outcomes: sales can be seen as tactical, interpersonal, and persuasive communication, while marketing is more strategic, descriptive, and analytical. Management is the interpersonal side of oversight, while business and financial analysis focuses more on systems and operation.

- **The fact that graduates from all degree types are finding their way into critical business roles indicates that even roundabout individual pathways can produce positive economic outcomes**

These key business roles constitute an enormous middle part of the economy that incorporates both liberal/technical skills. People can and should act like humans—multifaceted, complicated, changing—and they play vital roles in the labor market.



# Introduction

How exactly is your education connected to your role in the labor market? For some degrees, the answer is obvious. Engineering majors become engineers, and graduates of computer science programs become software developers. For other degrees, the connection is more nebulous—at least in the [popular imagination](#).<sup>2</sup>

Even though we generally can agree that post-secondary education leads to [better labor market outcomes](#),<sup>3</sup> we don't quite know how to answer the question “which education?” very well. As a result, the value and actual role of different forms of postsecondary education are still contested.

Liberal arts and social science majors have often lacked the security of seeing predictable, well-paying outcomes with a [direct relationship to their studies](#).<sup>4</sup>

While defenses of the liberal arts abound, they tend to argue either that labor market relevance is the wrong framework for [assessing their value](#),<sup>5</sup> or that humanities graduates are so universally equipped that it's pointless to try to pin them down to a predictable set of outcomes.<sup>6</sup>

Whatever their merits otherwise, both of these defenses probably prove cold comfort for students graduating into the workforce. This may be why many students feel that their degrees lack value—a poll by the American Public Media Research Lab found roughly 40% of graduates between the ages of 18 and 34 feel that their degree [was not worth the cost](#).<sup>7</sup> And according to the [Strada-Gallup Alumni Survey](#), many students feel that they receive less value from humanities and soft sciences than they do from STEM degrees.<sup>8</sup>

The lack of clarity may also be why so many parents, students, teachers, policy-makers, politicians, and your uncle Joe have adopted a

“STEM vs. everything else” framework. The thinking goes like this: a computer science major will get you a high-paying tech job in the city and company of your choice. An electrical engineering degree wins you a solid salary and job security almost anywhere. An English degree, on the other hand, [dooms you](#) to a life in your parents' basement, struggling to pay off thousands of dollars in loans on a bartender's tips.<sup>9</sup>

Amidst all of these anecdotes and perceptions, we wanted to conduct a data-driven reality check. Is this framework really accurate? We decided to take stock of the real-world outcomes that college graduates are experiencing.

In [Robot Ready](#),<sup>10</sup> we looked at the relevance of liberal arts in the labor market and found that human skills like creativity, mental flexibility, ethics, and compassion are both in high demand and are remarkably resistant to automation—especially when paired with a complementary technical skill set. This time, we're broadening our lens to a sampling of six popular majors to gain a more complete picture of the current workforce. By comparing their labor market outcomes across first, second, and third jobs, we uncover the real—and often surprising—link between education and work for each degree.

Much of the current discourse is based on the premise of the perfectly rational market actor, who from high school onwards makes choices geared towards a specific, predetermined, economic future. This ideal market actor just needs to be guided towards the correct choice—i.e., the highest-paying options. But based on the evidence of our own lives, this almost never reflects reality. We end up in a major, a job, and a career based on a complex web of factors (our interests, where we live, our personal relationships, the state of the economy, the limits of our abilities, who offers us employment, and more).





Much like currents in a river, the often serendipitous collision and interplay of these events creates and shapes our lives—especially our working lives—and many of our choices are made without reference to highly rational thinking, in-depth strategic planning, or long-term career prospects.

Instead of perfectly rational market actors pursuing a single, linear pathway, we find people moving through the labor market like children in a crowded pool on a hot day—that is to say, without a ton of planned direction. But given that we can now observe thousands and even millions of labor market actions we can begin to see some common themes of work emerge, as graduates from disparate programs fill many of the same critical roles within businesses. With many observations in hand, we find all of these non-rational actors nevertheless acting rationally, showing similar patterns over time. Without their really knowing it,

people are flocking to specific areas of work and it does appear that their education has laid some sort of foundation for their working lives, though not completely determining its shape.

We have found ourselves at some sort of middle ground. Education isn't as deterministic of our work as we might think. Nor is it entirely irrelevant. So what can we do?

In this analysis, we believe we have some new clarity on the relationship between education and work, especially for those hard-to-determine degrees. This clarity can help provide models built around real humans, not theoretical rational actors. Our goal is to help institutions, policy makers, businesses, community-based organizations, and individuals develop a more realistic vision of the relationship between education and work, starting with the six degrees analyzed in this report.

# Methodology

Here, we used our extensive database of over 100 million professional profiles to isolate the work outcomes for graduates from the languages and philosophy, the social sciences, business, communications, engineering, and IT.

The essence of analysis is comparison, and our goal is to present career outcomes for very different degree areas side by side so we can gain a real picture and see what can be learned via the similarities and differences of each degree. To that end, we surveyed the first, second, and third jobs of students from the following areas:

## 1. Philosophy / language (the core of the liberal arts) and social sciences

Two degrees that aren't career-specific or as tied to the world of work (and are therefore the ones that get a vast bulk of the criticism).

## 2. Business and communications

Two degree areas that are still somewhat general, but are more geared toward the labor market, and what we think of as more solid, secure labor market outcomes.

## 3. Engineering and information technology

Two that are highly career-specific.

We also performed cluster analysis on the skills embedded in the profiles of graduates from the six different program types, in order to better understand the kinds of work they actually do once they enter the labor market. We grouped skills that were strongly related to each other into clusters and identified themes of work for each cluster based on the skills involved. Then we matched program types with the clusters most strongly correlated with their graduates.



## Outcomes + skills: a more complete picture

For these graduates, we set out to measure their first job outcomes (do they start in good jobs?), their change over time (do they move to better jobs?), and the key skills they use in their work (how do the skills gained in these degrees manifest in the labor market?).

We established career categories in order to group graduates working in related fields together. Each career category in this analysis is a large bucket encompassing several different jobs. For example, “journalism, writing, and communications” includes reporters, social media managers, and editors, as well as the communications teams that serve corporations. Business and financial analysis includes financial analysts, consultants, and investment strategists, etc.

We also included skills in our analysis because, while career outcomes provide valuable insights, the nature of work emerges most clearly from the skills utilized. Skills data allows us to accurately characterize the type of work (or the theme of work) people are actually engaged in—a better measure of their outcomes than career category alone.

Skills are also vital because jobs with exactly the same name can in fact involve extremely different day-to-day activities. For example, marketing tends to pick up a solid share of both business and communications graduates. But does it follow that their paths within marketing converge? Does a marketing specialist do the same thing at a digital startup and a long-established non-profit?

Essentially, skills data allows us to see the specific work activities that people are engaged in so we can relate those activities to their major area of study. In many cases, students aren't able to identify the clear linkage between their studies and their career outcome. For example, English majors might not believe that their coursework is particularly relevant to their paid work. But what these hypothetical graduates miss is how they gained the foundation for their strategic written communication skills while honing English papers, or how success in public relations and marketing roles follows from practicing rhetoric and style in their assignments and discussions with their classmates. We can begin to have new and better conversations about the application of “hard-to-apply” coursework when we look at it through a skills lens.

It's important to bear a few caveats in mind when viewing this data. First, because we are relying on a broad collection of profile and resume data from a wide variety of sources, our analysis captures only those sections of the labor force that use profiles and resumes. Second, we considered just graduates who have held at least three jobs, so that we gain insight into career transitions. Thus, this analysis will not include workers who are only reporting one or two jobs after graduation.

# Language and philosophy

## Outcomes

Language and philosophy graduates go into a broad array of jobs. The top five first jobs are in the fields of education (17% of language and philosophy grads go into education jobs), journalism/writing (10%), sales (10%), marketing (7%), and service-oriented non-profits (6%). The most notable changes across the next two jobs are the drop in journalism's popularity, and the steady climb of marketing to second most popular job. Legal and regulatory services also climbs from tenth place to sixth—as they gain experience in the workforce, humanities graduates increasingly find their way into legal and paralegal careers. Business and financial analysis, human resources, and management all hold a place in the top 10 across the first three jobs.

FIG. 1 **How to read the outcomes charts**

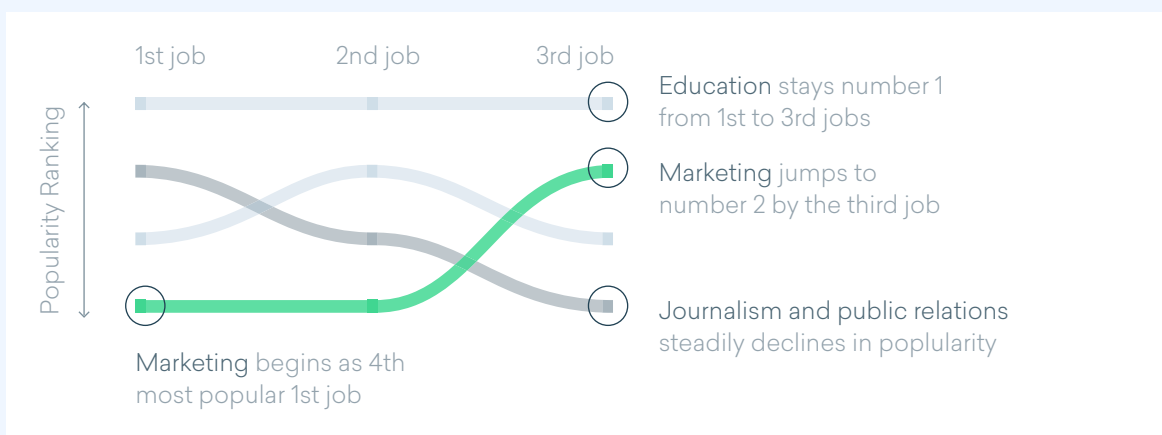


FIG.2 Outcomes for language and philosophy graduates

SOURCE: Emsi profile analytics, 2019



# Skills

The skills of language and philosophy graduates center on four major themes: educational product design, public relations, digital marketing, and non-profit administration.

## Educational product design

When language and philosophy majors enter the field of education, the skills are similarly high-level. The most prominent skills in this cluster are instructional design, learning management systems, and adult education, with graphic design, educational technologies, and HTML appearing as well. Although the English-major-as-elementary-school-teacher is a familiar picture, they actually seem more involved in designing educational products and curricula, what we might call educational product design.

## Public relations

As we saw from outcomes, 10% of language and philosophy graduates go into the world of journalism, public relations, and writing for their first job. But the skills they use within this world do not line up with traditional journalism: interviews, public relations, writing, etc. Rather, public relations is the theme of their work, with marketing, communications, press releases, and branding playing an important role as well. If we think of journalism as a two-way street between businesses that want promotion and news writers that want stories, then language and philosophy grads are coming down firmly on the PR side.

## Digital marketing

Marketing looks highly digital for language and philosophy graduates. The strongest skill is analytics, followed by social media, search engine optimization, digital marketing, and Google analytics. CSS, a programming language, and web development also appears. As we noted in [Robot Ready](#),<sup>11</sup> combinations of verbal and technical skills will only become more common in the future.

## Non-profit administration

In service-oriented non-profits, the top skill by far that language and philosophy graduates use is writing. Besides writing, most of the strong skills involved organizational steering: public administration, strategic planning, budgeting, and fundraising. Language-oriented majors are using their verbal skills to communicate and raise funds on behalf of non-profits, but notably, these organizations are also offering language and philosophy grads the chance to gain leadership experience.

FIG 3 Skills for language and philosophy graduates

SOURCE: Emsi profile analytics, 2019



# Social sciences

## Outcomes

Social science graduates also go into a broad array of jobs—but they tend to move out of them less often than language and philosophy graduates. The top five first jobs for social science graduates are sales (12%), service-oriented non-profits (11%), education (9%), marketing (8%), and business and financial analysis (7%). The first, second, fifth, and sixth place careers all hold their rank across all three jobs. The exception is education, which starts out in third place but falls to fourth as marketing climbs in the second job. There is slightly more mobility the lower in the rankings we get: management (4%) climbs from eighth to seventh place, while counseling (3%) moves from tenth to seventh.

To some degree, social science's outcomes are probably a function of the variability captured therein—from history to economics to sociology and beyond, social science comprises vibrant and distinct disciplines that create unique patterns.



FIG 4 **Outcomes for social science graduates**

SOURCE: Emsi profile analytics, 2019



# Skills

The top themes for social science graduates in the workforce are sales, social services, digital marketing, and business and financial analysis.

## Sales

Many social science grads end up in sales jobs, and many of the skills they employ post-graduation allow them to excel in the financial products and services sector. The top skills here are insurance sales, life insurance sales, and insurance policies. Thus, it appears that the social science graduates who go into sales are largely selling insurance, especially life insurance. Other skills in the cluster include familiarity with annuities, Medicare (likely for health insurance sales), and mortgage loans. This emphasis on financial products indicates that social science graduates tend to go into the professional, higher-level side of the sales spectrum. With a median hourly wage of \$23.90, insurance sales is certainly not the widely touted barista job—but neither is it close to the median \$41.29 per hour an industrial engineer makes. This is perhaps the most relevant characteristic of humanities outcomes: the floor is generally much higher than people fear, but the path to the top is much less structured and more open-ended than it is in STEM. STEM grads tend to receive much more explicit preparation for career and clarity about what skills their education equips them with.

On the other hand, those with a strong aptitude for sales often make significantly more than the median. The fact that we see social science graduates not only entering, but remaining in sales may indicate that they're doing well there. This may be part of sales' cross-program popularity. With comparatively low barriers to entry and big rewards for talent, it holds appeal for a wide variety of people.

## Social services

Like language and philosophy graduates, many social science majors go on to work in service oriented non-profits, such as [Habitat for Humanity](#), the [American Red Cross](#), and [World Vision](#) (to give just a few high-profile examples). But their role in these organizations looks different from that of their peers. While language and philosophy majors do high-level organizational steering, social science majors seem to gravitate towards directly therapeutic work. Mental health, behavioral health, and psychiatry are the top skills, while trauma, substance abuse treatment, family therapy, and crisis intervention appear as well.

## Digital marketing

Marketing looks more or less the same for social sciences as it does for language and philosophy. Analytics takes top place, followed by social media and search engine optimization.

## Business and financial analysis

The top skills for business and financial analysis are forecasting, financial statements, and budgeting. Various types of financial analysis also appear. The remainder of the skills—accounting, auditing, general ledger—involve accounting. Thus, the business and financial analysis theme of work involves two related tracks: general business and financial strategy, and a more narrow, credential-based expertise in accounting. The prevalence of business and financial skills most likely stems from social science's economics cohort.

FIG 5 **Skills for social science graduates**

SOURCE: Emsi profile analytics, 2019



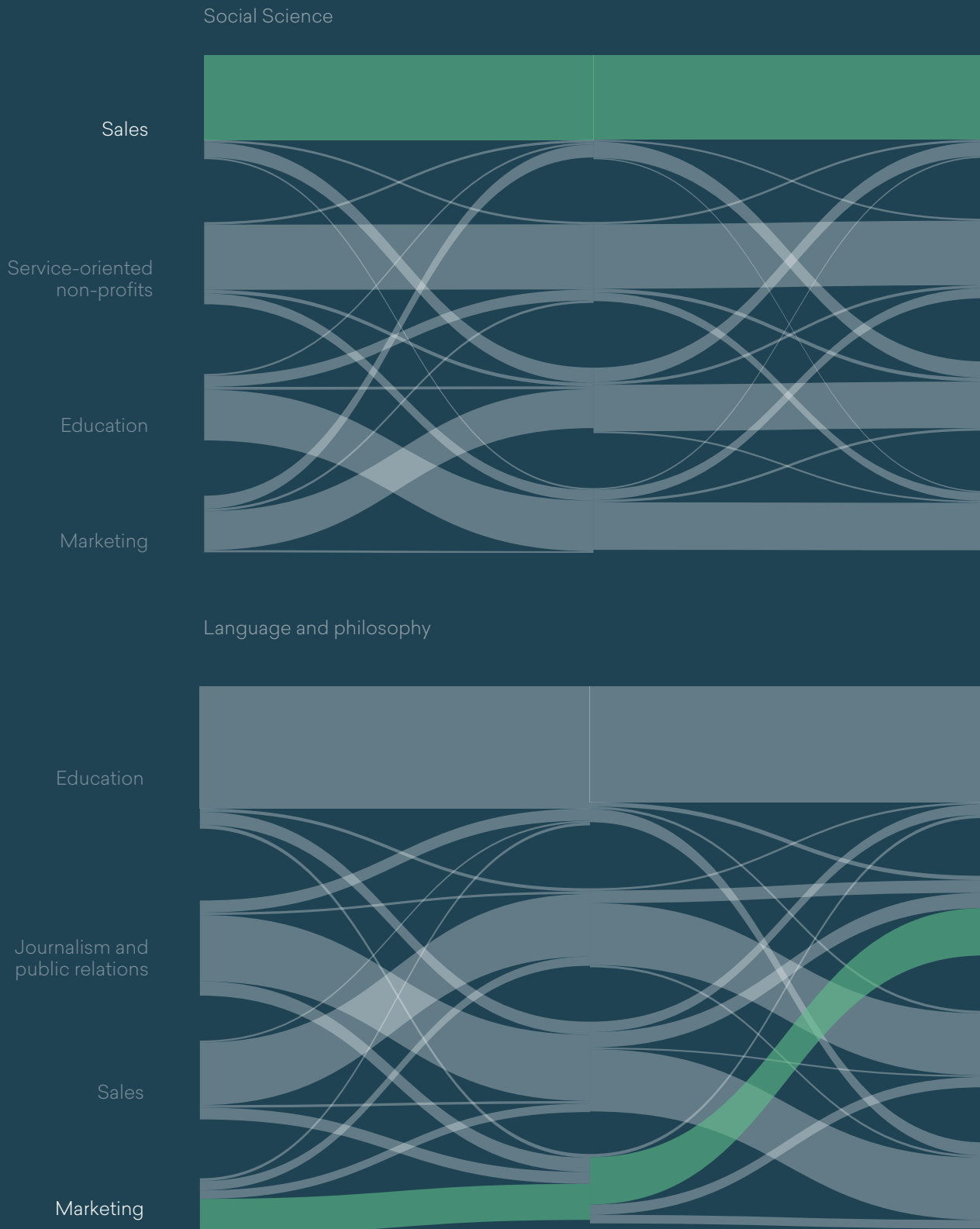
## Some takeaways for the program type

Language and philosophy and social science graduates have a few surprises up their sleeve. Language and philosophy graduates do much higher-level work than we might expect in service-oriented non-profits and education.

Social science graduates, on the other hand, are pursuing the kind of directly therapeutic work we typically associate with a more specialized degree. They're also entering sales (tactical communication) in large numbers, and most likely doing well there. Language and philosophy grads, on the other hand, gravitate more towards marketing (strategic communication).

FIG. 6 Highest-ranking outcomes for social science and language and philosophy graduates

SOURCE: Emsi profile analytics, 2019



# Business

## **Outcomes**

A large portion of business graduates are concentrated in sales (18%), business and financial analysis (15%), accounting (14%), marketing (9%), and human resources (6%). It's also worth noting that (with the exception of communications) business graduates go into management more frequently than grads from most other degrees—it's the fifth most popular career path by the third job.

# FIG 7 Outcomes for business graduates

SOURCE: Emsi profile analytics, 2019



## Skills

The major themes for business graduates are sales, business and financial analysis, accounting, and digital marketing.

Three of the four themes of work which business majors tend to congregate are identical to social science graduates. This is a major finding. Much education rhetoric pits these two program types against each other: business is often the quintessential “practical” major, while social sciences represents useless erudition. But in fact, business and social science majors learn and use many of the exact same skills in their day-to-day work activities.

### Accounting

However, in a departure from either language and philosophy or social sciences, accounting is a major theme for business graduates. The top accounting skills are general ledger and accounts receivable, while bank reconciliations, accounts payable, billing, and collections also make a strong showing.

Thus, the constellation of skills around accounting and bookkeeping seems the most distinct benefit conferred by a business degree specifically (although of course intangible benefits like business-school networking are difficult to measure).



FIG 8 Skills for business graduates

SOURCE: Emsi profile analytics, 2019



# Communications

## Outcomes

Tying for first, journalism and public relations, sales, and marketing each get 18% of communication majors. From there, the numbers drop off sharply, with the next most popular job, human resources, garnering only 5% of all graduates. However, journalism does not maintain its top spot beyond the first job. By the second job, it falls to third (10%), while marketing (20%) becomes the most popular career path.

In terms of rankings, management does just as well among communications majors as it does among business grads, climbing to fifth place by the second job. But a slightly higher percentage of business graduates go into management—6% vs. 4%.

FIG 9 **Outcomes for communication graduates**

SOURCE: Emsi profile analytics, 2019

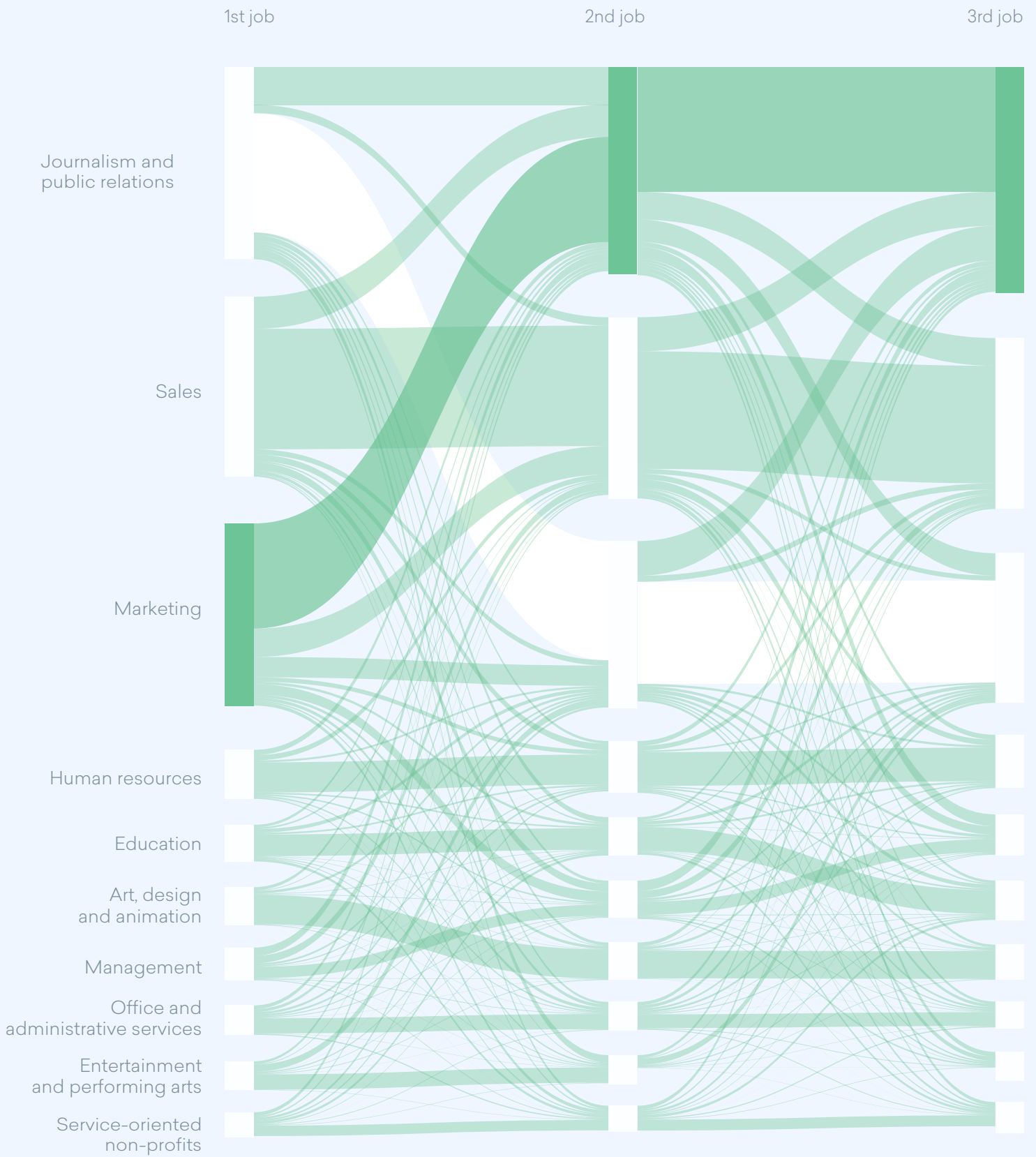


FIG 10 **Skills for communication graduates**

SOURCE: Emsi profile analytics, 2019



## Skills

The major themes for communications are public relations, sales, marketing systems, and digital marketing.

### Public relations

As with language and philosophy graduates, communications majors who end up in journalism, writing, and communications careers are concentrated heavily in public relations.

### Sales

Sales—with a focus on the sale of financial products like insurance—is the only notable non-marketing theme of work for communications graduates. Interestingly, from a skills standpoint, communications is one of our more linear degrees. All of the major themes of work involve either strategic communication (marketing) or tactical communication (sales).

## Marketing systems

Communications majors go into marketing in the highest numbers of any degree we surveyed, so it makes sense that their work in marketing has more than one theme. The top skills for marketing systems are marketing automation and lead generation, but familiarity with various marketing software systems (Salesforce, Eloqua, Marketo) also appear. Communications majors are engaging both in the analytics and digital communications that drive marketing strategy, and the systems management needed to implement that strategy.

## Digital marketing

Communications graduates who go into digital marketing are doing the same type of work as their peers from other degrees, with an emphasis on analytics and SEO.

## Some takeaways for the program type

Business and communications graduates both go into management at higher rates than graduates from other programs do. Management and, for business graduates, accounting, are the two careers where business-applied programs have an edge. Otherwise, their outcomes look remarkably similar to those from less “applied” programs.

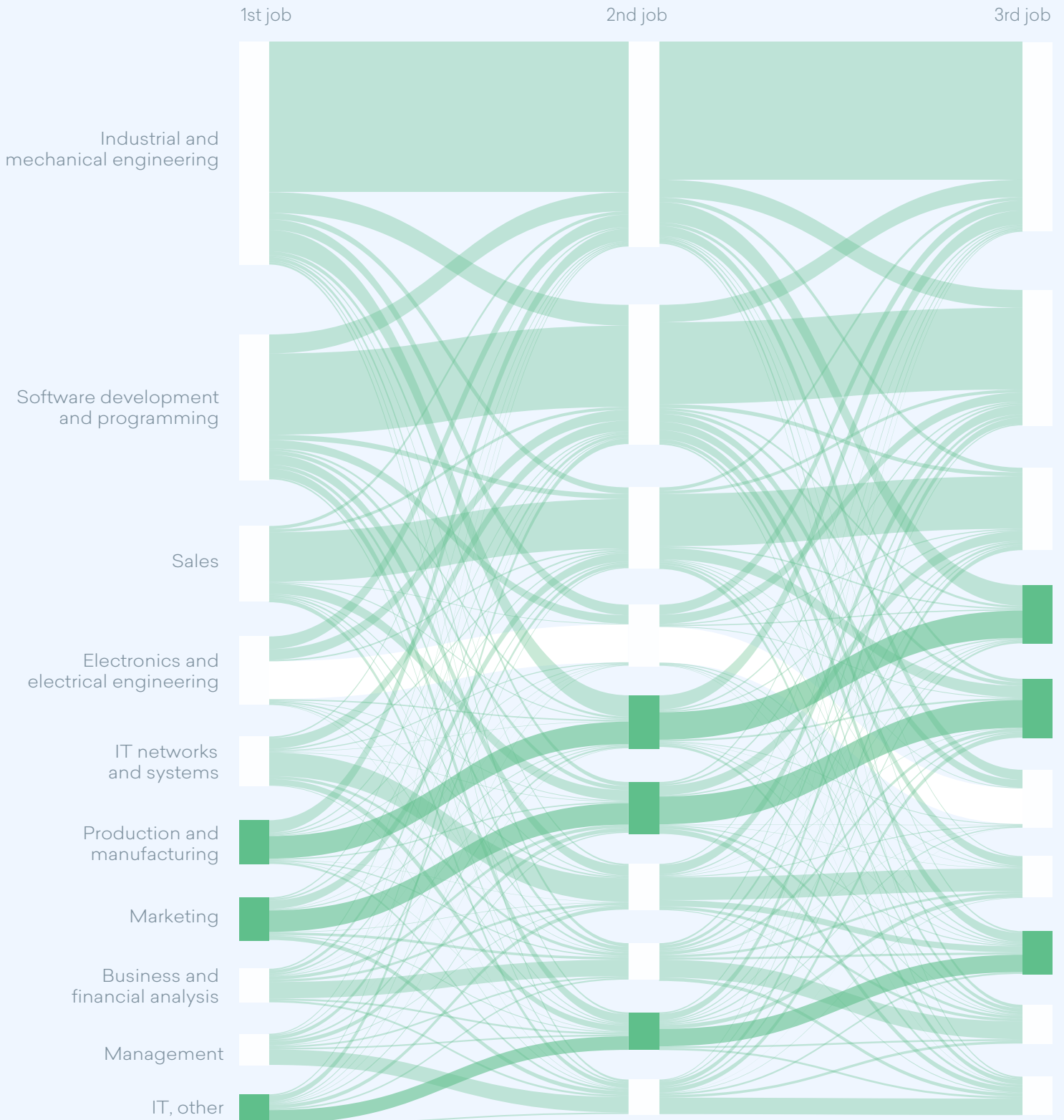
# Engineering

## Outcomes

Industrial and mechanical engineering is the leader across all three jobs, with 20% of graduates in the first job. Software development (13%) comes next, followed by sales (7%). Sales is notable for being the only non-STEM career to make it into the top five first jobs. IT jobs are relatively popular among engineering majors: together, software development and programming, IT networks and systems, and other IT comprise 21% of all engineering grads. Marketing also gains in popularity over time, climbing from seventh place to fifth between the first and third job, and finishing with 5% of all graduates.

FIG 11 **Outcomes for engineering graduates**

SOURCE: Emsi profile analytics, 2019



# Skills

The major themes for engineering graduates are product design, quality management, product development, back-end development, and management.

## Product design

The most important skill is computer-aided design, followed by SolidWorks (a type of CAD machining), molding, fabrication, 3D modeling, and AutoCAD. These engineers are working with various computer programs and physical machinery to design and build prototypes.

## Quality management

Auditing (in a more general sense than its accounting use) is the top skill for quality management. Familiarity with quality management systems, product quality assurance, corrective and preventative actions, software quality assurance, statistical process, and Six Sigma methodology follow next. Engineers in quality management are using a wide variety of methods to ensure that manufacturing processes result in products free of defects.

## Product development

This theme centers around new product development, with project management, process engineering, and familiarity with manufacturing processes as the major auxiliary skills. Engineers who work in product development are overseeing a new product at every step of its journey to the market, from initial design onward.

## Back-end development

C++ is the top skill for engineering majors who go into software development and programming, with C and embedded systems appearing as well. Engineers who move into IT are developing back-end operating systems rather than becoming IT support specialists or systems administrators.

## Construction

The final theme for engineering graduates is construction. Within construction, project management, subcontracting, and businesses logistics are the major skills. Engineers who work in construction tend to run projects and businesses, rather than lending their engineering-specific skills as tradesmen. This may also mean that when we see engineers move into management, they are in fact managing construction businesses rather than white-collar companies.



FIG 12 **Skills for engineering graduates**

SOURCE: Emsi profile analytics, 2019



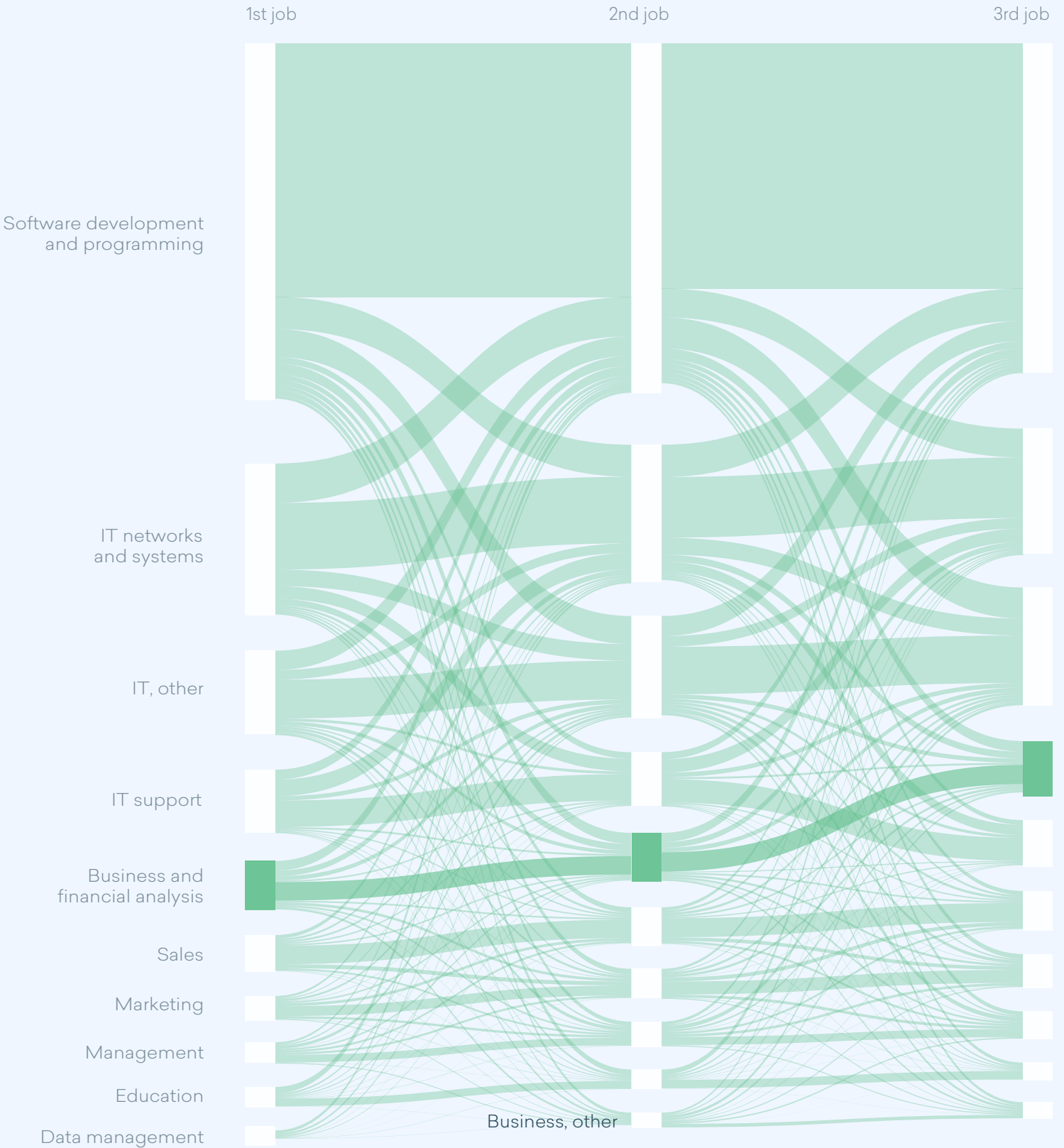
# IT

## Outcomes

IT has by far the most narrowly concentrated outcomes, with 35% of all graduates going into software development for their first job. Over the next two jobs, software development only loses a net 3% of graduates, while careers lower in the rankings see much more movement. IT network and systems (14%) and other IT (9%) are the second and third most popular careers across all three jobs. IT support, on the other hand, starts out in fourth place (6%), but cedes its spot to business and financial analysis (5%) by the third job. And sales (4%), marketing (3%), and management (2%) are in sixth, seventh, and eighth place respectively. While IT has a small but significant non-STEM contingent in the top 10 careers, it has no engineering jobs. This is probably because the barriers to entry are higher for engineering than IT, meaning that the engineering to IT pipeline only flows one way.

FIG 13 **Outcomes for IT graduates**

SOURCE: Emsi profile analytics, 2019



## Skills

In keeping with IT's highly concentrated and degree-related job outcomes, the skills of IT graduates featured the fewest surprises. Back-end development, web development, systems administration, and application development are the major themes.

### Back-end development

Back-end systems development looks the same whether graduates are coming from engineering or IT programs. The cluster centers on C++, and also includes embedded software, C, and electronic engineering.

### Web development

CSS, Javascript, and HTML are the core skills for work in web development—a more front-end, user-facing affair.

### Systems administration

The major skills for system administration are active directory, Windows servers, and group policy. Systems administrators are an integral part of many business operations, managing the tools that make all computer and web-based work possible.

### Application development

Application developers often do both back-end and front-end work, both programming the underlying operating systems and the user interface. The dominant skill for application development track is .NET, along with C# and SQL.

## Some takeaways for the program type

The most directly applied, STEM-focused programs did in fact have the most linear outcomes. But more surprisingly, the same non-STEM business careers that dominate the “soft” programs did much better here than might be expected.

FIG 14 **Skills for IT graduates**

SOURCE: Emsi profile analytics, 2019



## High-frequency skills

In the course of our analysis, we tracked what skills turned up the most frequently across all profiles. Because these skills tend to show up to some degree across all graduates rather than being strongly associated with a specific program, we call them “high-frequency skills.” As might be expected, many high-frequency skills are the same ones that rank highly for language, philosophy, and social science graduates. Thus, skills data offers another way to visualize our claim that humanities majors are specialists in areas where most people have a more basic and general knowledge.

The top high-frequency skills we found in the sample survey relate to management, marketing/communication, and sales/business administration.

### **Management**

- Strategic planning
- Project management

### **Marketing/communication**

- Writing
- Marketing strategies

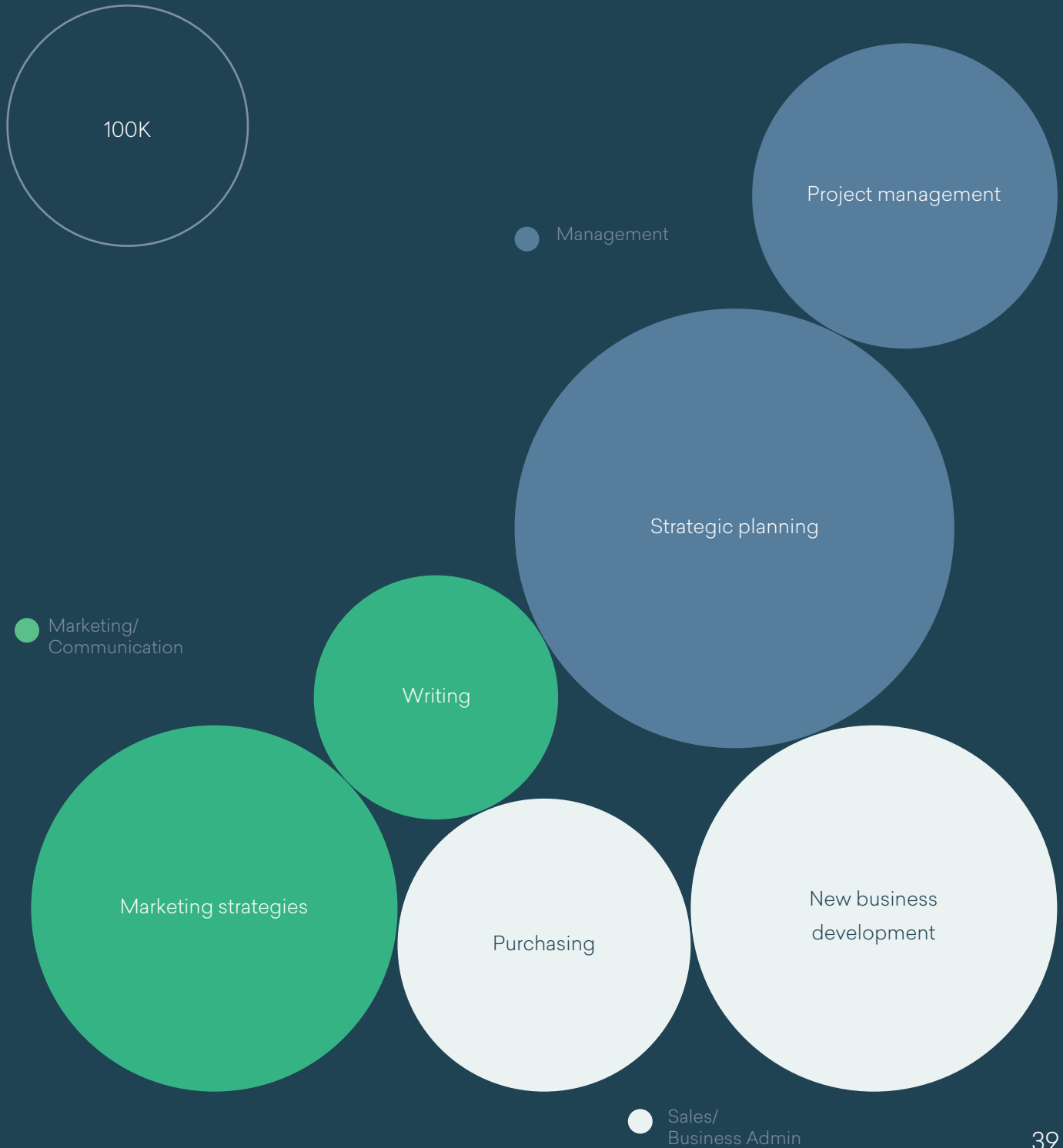
### **Sales/business administration**

- New business development
- Purchasing

# FIG 15 High-frequency skills

SOURCE: Emsi profile analytics, 2019

Appearances of skill in profiles



# Common outcomes

As we mentioned in the introduction, we found some surprising commonalities in the outcomes across all degrees. Sales, marketing, management, and business and financial analysis repeatedly appear high in the rankings across first, second, and third jobs. But what's most notable about these careers is not their rankings per se, but how often they occur across all types of programs: STEM-focused, business-focused, and humanities-focused alike. To put it another way, these outcomes were predictable across applied, somewhat applied, and non-applied degrees alike.

These careers center around the core functions that make a business run smoothly: tactical and interpersonal communication, strategic and descriptive communication, operational and systemic oversight, and managerial and interpersonal oversight. These are likely under-reported and under-discussed facets of the labor market. In many ways these areas lack pure program-to-career alignment, and graduates from a wide array of degrees organically find their way into these in-demand career areas.

In our analysis we have found that beyond the IT/math fields—those often tasked with building the services and products of companies—there is a massive world in strategic and tactical communication (marketing and sales) as well as business operations and management (accounting, business analytics, human resources and so on) that

are in-demand and are natural homes for the skill sets of people from non-STEM programs.

If a company or organization (you could even place colleges, community-based non profits, and foundations in this category) builds valued and in-demand products or services, it stands to reason that they also will need to communicate and distribute that value out to potential clients and consumers and organize a business that supports the consistent delivery of said product or service. Graduates from the broad collective of business, communication, humanities, and social sciences are natural candidates for this kind of work. At issue here is the fact that even though these are very likely outcomes for these grads, many see their career paths as haphazard and their education as orthogonal to the work they do.

In order to help these graduates—especially those from the social sciences and humanities areas—chart intentional, effective career paths for themselves, we need to help them better understand where their educational background has taken them, and boost their confidence in the value of their labor-market foundation. Graduates from these programs need to see themselves as acquiring skills—directly related to the world of work—just like IT and engineering grads. This clarity will help them communicate their own value, find areas where they are likely to succeed faster, and pursue skills that enhance and complement what they acquired in college.



We took the top outcomes for graduates in our sample and aggregated them into three categories: STEM (including software development, engineering, systems administration, etc) , major business functions (sales, marketing, management, human resources, accounting, and business and financial analysis), and creative or interpersonal jobs (such as education, journalism, and graphic design). These categories are inevitably somewhat subjective, but they capture a high-level view of a real and important trend. Across degrees, 54% of outcomes were in major business functions, compared to 25% for STEM and 21% for creative/interpersonal.

Note: because here we mapped the top 10 outcomes specifically, this should not be taken as a complete picture of every graduate. For instance, some language and philosophy graduates do in fact go into STEM jobs—just not in large enough numbers to make it a top outcome.

FIG 16 **54% of top outcomes are in major business functions**

SOURCE: Emsi profile analytics, 2019

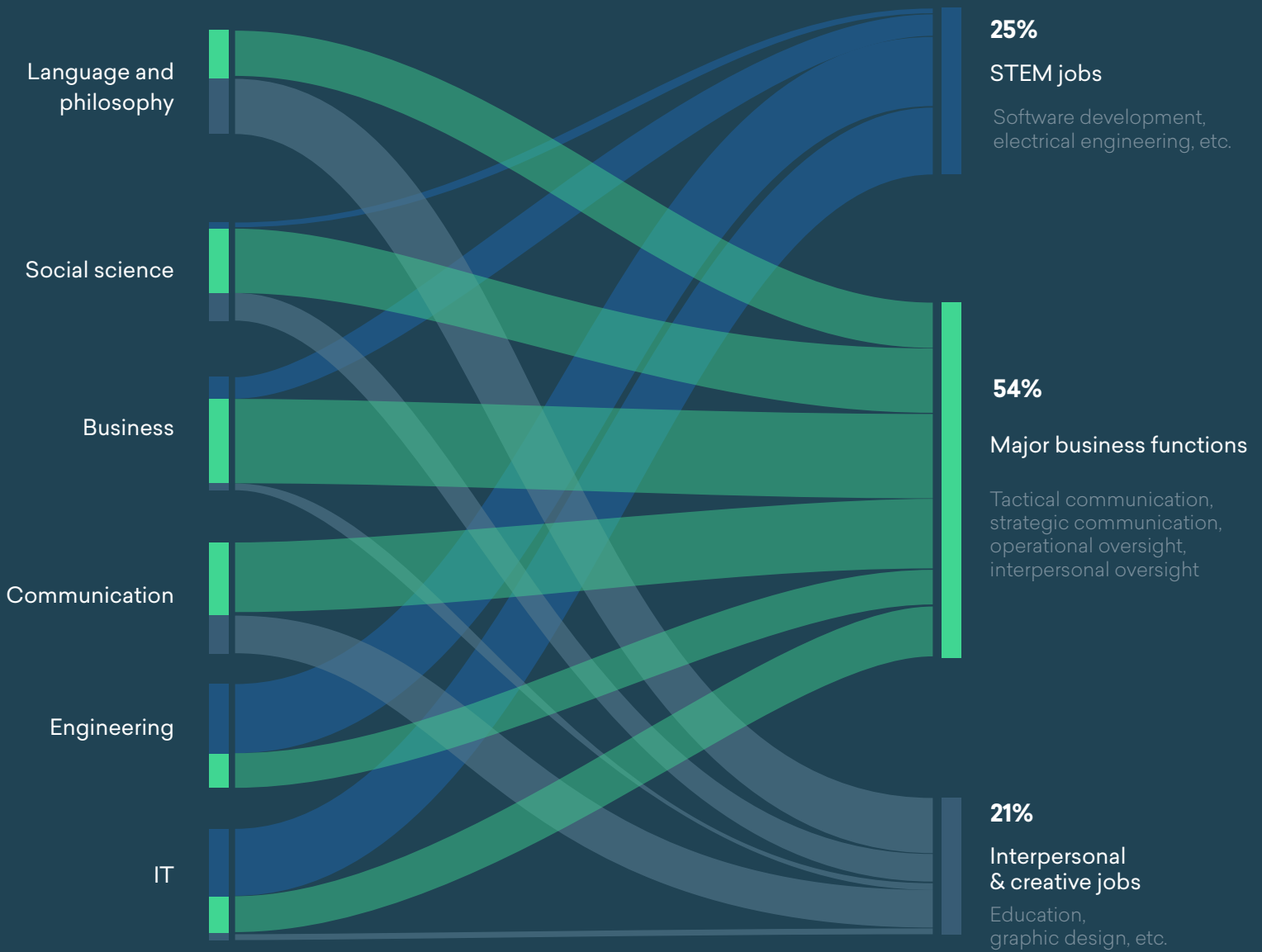
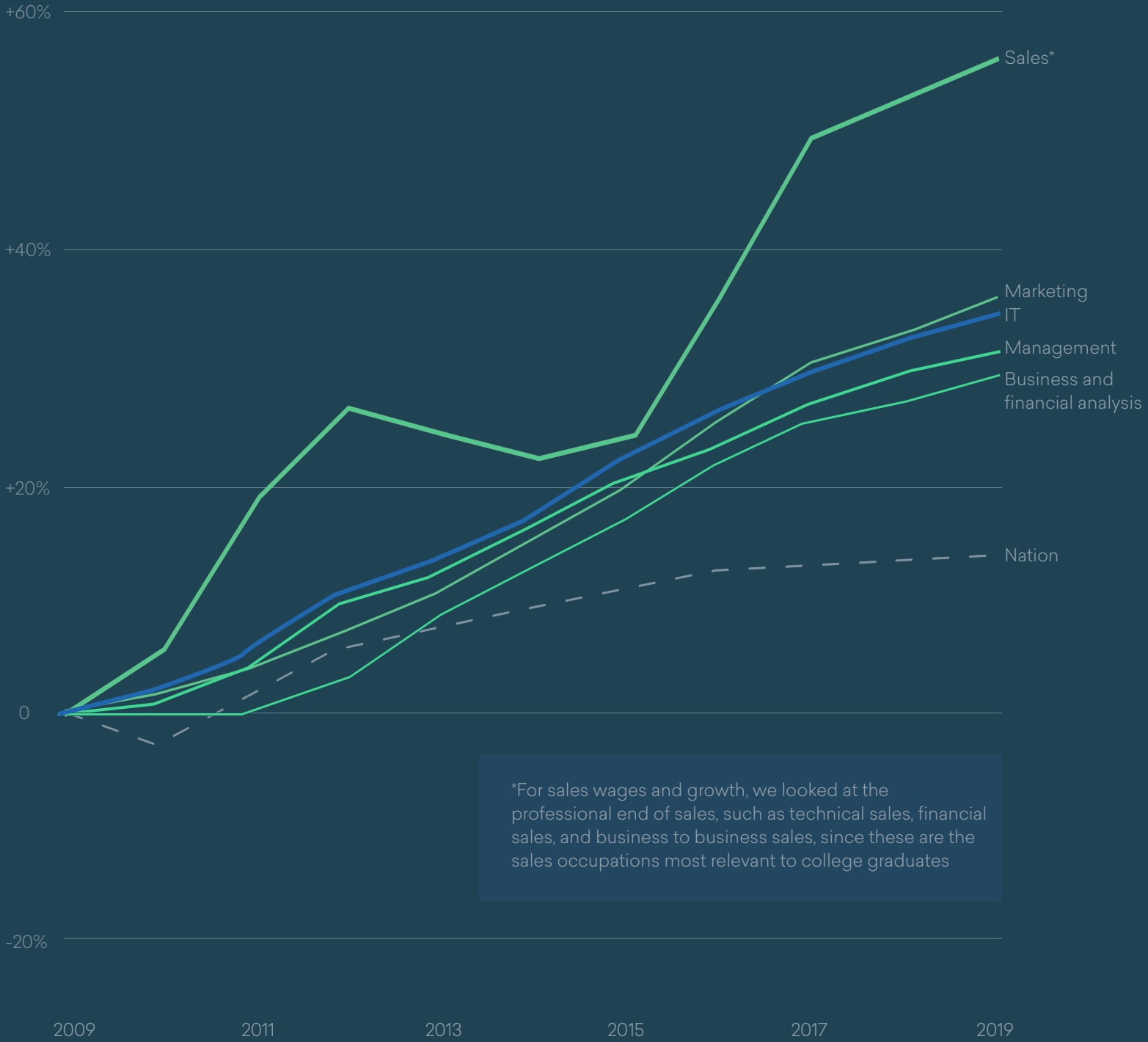


FIG. 17 Percentage growth of business function jobs, 2009-2019

SOURCE: Emsi occupation data, 2019



\*For sales wages and growth, we looked at the professional end of sales, such as technical sales, financial sales, and business to business sales, since these are the sales occupations most relevant to college graduates

FIG. 18 Raw growth of business function jobs, 2009-2019

SOURCE: Emsi occupation data, 2019

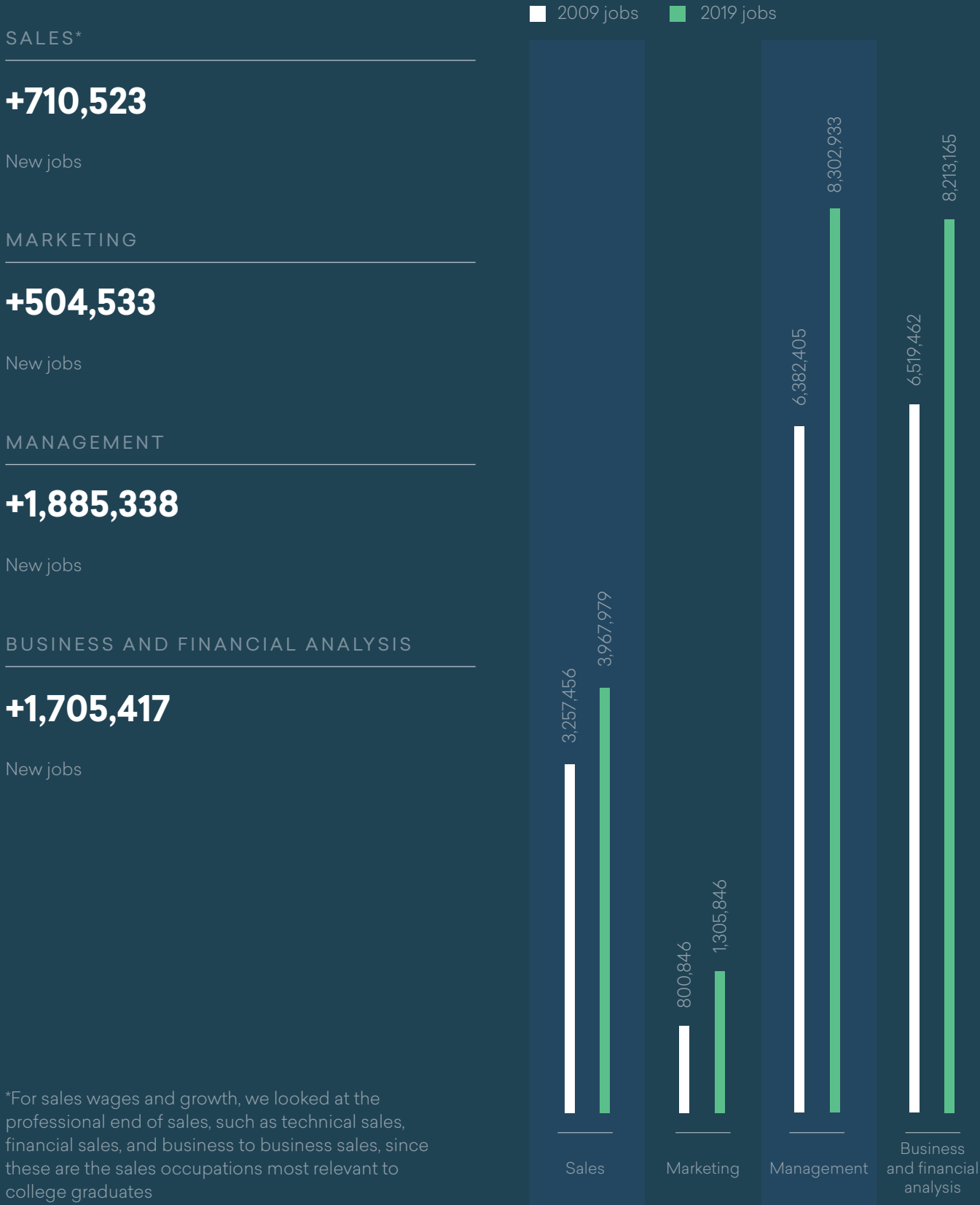


FIG. 19 Wages for business function jobs

SOURCE: Emsi occupation data, 2019

MANAGEMENT

**\$33.95/hr**

25th percentile earnings

**\$49.91/hr**

Median earnings

**\$72.33/hr**

75th percentile earnings

IT

**\$29.31/hr**

25th percentile earnings

**\$41.13/hr**

Median earnings

**\$55.20/hr**

75th percentile earnings

MARKETING

**\$25.10/hr**

25th percentile earnings

**\$35.81/hr**

Median earnings

**\$55.14/hr**

75th percentile earnings

BUSINESS AND FINANCIAL ANALYSIS

**\$24.43/hr**

25th percentile earnings

**\$32.92/hr**

Median earnings

**\$44.52/hr**

75th percentile earnings

SALES\*

**\$19.97/hr**

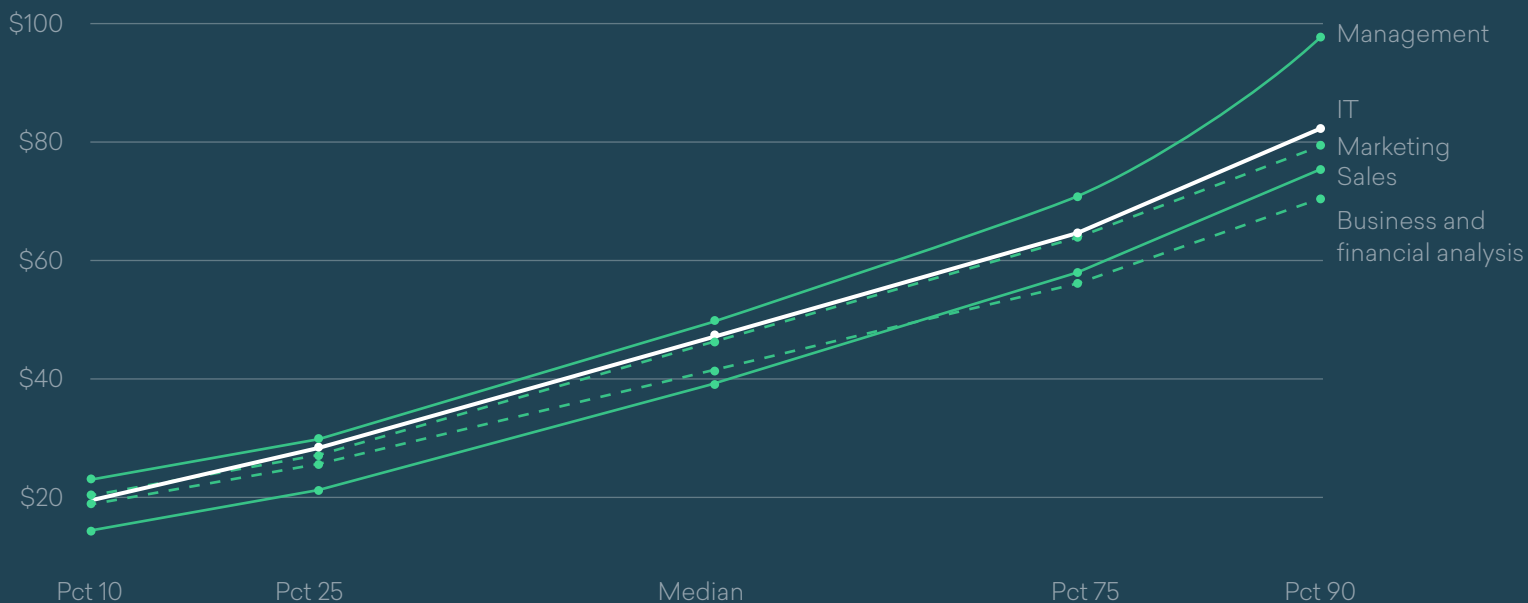
25th percentile earnings

**\$29.81/hr**

Median earnings

**\$46.22/hr**

75th percentile earnings



## Sales: tactical communication

Overall, sales was the most common career outcomes we surveyed. It's consistently in the top 10 career paths, and often in the top five for each degree. It even does well in areas where you might expect wholly technical professions to prevail. For instance, in engineering, sales ranks ahead of electrical engineering, production and manufacturing, and IT network support.

### Why sales?

Sales is an enormous category, with a place in nearly every firm in every sector of the economy. Many of these jobs are in business-to-business sales, financial sales, sales engineering, or the sale of highly technical products. Thus, many sales jobs are professional careers that both command decent wages, and require deeper subject matter expertise—the type more commonly associated with bachelor's and graduate degrees and associate with bachelor's degrees. Some (for example, technical sales) benefit from specialized training.

In fact, some of the most recession-proof sales occupations were the ones associated with both higher levels of education and higher wages. From 2008 to 2014 (when 10 out of 17 sales occupations at the 5 digit SOC level were losing jobs) securities, commodities, and financial services sales agents actually grew by an impressive 16%.

## Sales in the larger economy

There is tremendous labor market demand for sales positions. Lots of opportunity means lots of employers looking for people. Over 15 million people work in sales jobs, which is nearly 10% of the entire labor market. These jobs are also growing. Over the last 10 years, sales jobs have grown by 21.8%, adding nearly 800,000 new positions, which doesn't even begin to account for the huge amount of churn and job replacement that occurs in the 15 million positions. Essentially, it is a massive employment sector and is needed literally everywhere (urban, suburban, rural, and so on), and is also common to every industry sector (manufacturing, agriculture, technology, healthcare and so on). Many of these sales jobs are highly technical, highly skilled, and very well compensated, which again would explain why people with IT and engineering degrees are also ending up in these careers.

In the first quarter of 2019, there were nearly 1.5 million unique postings for sales jobs. The top industries posting for these jobs were retail trade, finance and insurance, professional services, manufacturing, and information.

# Marketing: strategic communication

Marketing does best in communications, but it's also very popular among business, social sciences, and language and philosophy graduates. Interestingly, marketing seems to become more popular with engineering majors as time passes, moving up in the rankings with each successive job.

## Why marketing?

Marketing is in some ways the ultimate “communicator” profession. It's not surprising that we see communications majors going into the profession in such large numbers. Nor is it surprising the career does well among social science and language and philosophy majors. Our skills analysis shows that marketing has an analytical component, a creative component, and a web development component (which may explain its popularity among engineers). Thus, it's a good fit for people with a diverse array of skills, who each emphasize slightly different aspects of the career in their day-to-day work.

## Marketing in the larger economy

Like sales, marketing roles also grew by 58% over the last 10 years. Currently, over a million people work in marketing. The median wage for those jobs is \$35.48 per hour.

According to Emsi's job posting analytics, there were almost 475,000 unique job postings for marketers in the first quarter of 2019, with about a fifth of those postings resulting in hires. It's important to note that not all job postings represent new jobs added to the total share of marketing in the economy—some of them just represent steady churn as people move in and out of marketing.

The most in-demand skills for marketing jobs are product management, marketing strategies, business development, analytics, and strategic planning.

## **Management: interpersonal oversight**

In all cases, management is ranked relatively low compared to sales and marketing, which is unsurprising. Common sense dictates that the portion of people managing others will always be smaller than the number of people being managed. The notable exceptions are business and communications, which send graduates into management at a higher rate than any other degree. With that said, it's important to note that even with comparatively lower rankings, management regularly appeared in the top 10 jobs.

### **Why management?**

Every degree we observed sends a portion of its people into management. Like sales, this is a very broad category, but the manifestation of management is different than what we saw with sales and marketing. The essence of management is people gaining experience in a particular subject matter and then becoming the person who helps lead others in that subject matter. It should therefore come as no surprise that people from every degree end up managing people in their various fields.

Whether you begin your career trajectory at a public relations firm or a nuclear power plant, there's a good chance that as you gain experience, the actual work you do will increasingly involve managing and training other people.

### **Management in the larger economy**

As of 2019, there are almost 6.5 million management jobs in the US economy, and management occupations have seen 23.7% growth since the beginning of the recession. Management jobs also pay well—a median \$49.10 per hour.

The top hard skills sought are strategic planning, business development, selling techniques, accounting, and restaurant operations. The fact that selling techniques are a sought after skill may indicate that sales to management is a viable pathway to higher wages for many college graduates.



# Business and financial analysis: operational oversight

As we might expect from the name, business and financial analysis does best among business graduates. Interestingly, it also does well among both IT and social science graduates, in fourth and fifth place respectively. This may be due to a strong statistical component to many social science disciplines (e.g. sociology, economics) that makes them competitive with IT grads for analysis-based careers.

## Why business and financial analysis?

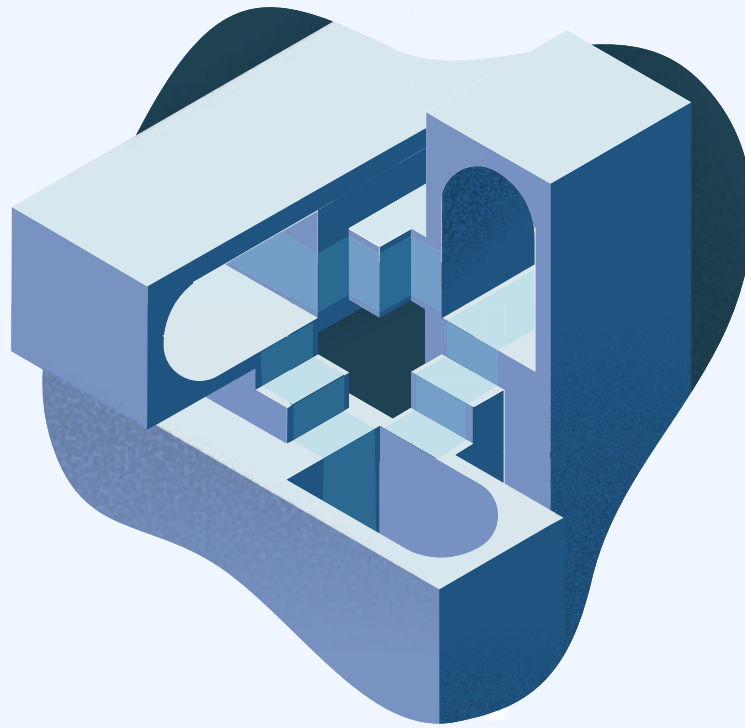
Business and financial analysis encompasses general business strategy and forecasting, as well as the narrower fields of accounting and finance. It attracts a large segment of graduates every year because its function deals with perhaps the most fundamental imperative in all business—to turn a profit (or in the case of non-profits, to manage resources wisely and remain solvent).

## Business and financial analysis in the larger economy

There are currently nearly 6.5 million business and financial analysis jobs in the US. The field has grown by 23% over the past 10 years, and is projected to continue its growth pattern over the next decade. The median wage is \$32.2 per hour.

In the first quarter of 2019, there were over 400,000 postings for jobs in business administration. Interestingly, STEM skills are making gains in business administration as well as marketing. SQL was the top hard skill sought, followed by accounting, Microsoft Access, business processes, and purchasing.

Overall, this data seems to suggest that there are many pathways for a great preponderance of degrees. The outcomes for IT and engineering are probably not overly surprising. Perhaps most helpful is the demonstrated, compelling, labor market value of degrees in language/philosophy, social sciences, business and communications as they fill critical roles in strategic and tactical communication, as well as business operations and management.



# Conclusion

For the most part, the findings of this report do not depict the imagined rational actor who chooses a degree with a specific career in mind, and who not only enters that career field immediately after graduation, but stays in it throughout his working life. Instead, we see people behaving like real humans: complicated, variable, and often economically irrational.

But what is truly notable about these “irrational” actors is **how the confluence of their individual decisions produces an eminently rational result.** This is probably the most important and valuable conclusion of our analysis. Without much outside direction, or perhaps even much intention, people from disparate degrees are flocking to particular career paths and creating distinct patterns. These paths are not random or economically valueless.

They comprise an enormous and vital part of the economy, the critical communication and oversight roles that businesses desperately need in order to function in the economy. This report provides a starting point for thinking and communicating about this under-discussed segment of the workforce.

In the never-ending quest to better connect education to work, it may not be necessary to completely reassemble our models of education. Instead, a good first step will be to notice how people are actually employing their education in the market, make current and future students aware of these patterns, and help them launch their working lives with less friction and more intentionality. Not only will this help students better use their education—it will illuminate its true value.

## One final note

Our hope for this report is to introduce a new way of thinking about and discussing the real-world relationship between education and work. We want to be clear that we have by no means said everything that needs to be said, or done all of the analysis that could be done with this data. Rather, we hope this serves as a starting point and foundation for further research. We look forward to hearing feedback, commentary, and critique from our peers and others working to support student success and economic prosperity. Together, we can strive for a more transparent, data-driven approach to the important questions faced by policy makers and leaders in higher education, private industry, and workforce and economic development.

Also, while we conducted our analysis at the national level, you can also explore this data for states, regions, and individual companies and institutions. If you have questions, comments, or would like to learn more about the data, please let us know! We would love to hear from you and explore how our data can serve you better.

Contact: [Research@economicmodeling.com](mailto:Research@economicmodeling.com)

# What should I do with this data?

## Educators

### 1. Emphasize the critical business roles students from all degree types will fill

Students from both non-career-specific degrees and career-specific degrees are organically finding and filling critical areas of the economy related to communication, operations, and management. Institutions should be more proactive about communicating these outcomes to students in non-STEM and STEM programs alike. With so much emphasis on technology jobs, it is also vital to discuss the importance and role of strategic and tactical communications (marketing, sales, and service), business operations (accounting, business analytics), and management (human resources, people management).

Career and academic advisers can lead the way in making students more aware of these common outcomes and helping them be intentional about preparing to enter the workforce. In light of the above research, advisers should help students think both creatively and realistically about career prospects, and use those discussions to inform academic planning.

### 2. Help students bridge the gap between the classroom and the world of work

Beyond advising, higher education institutions should also design curriculum and internship

experiences that close the gap between the classroom and the workplace. By integrating more applied, industry-oriented coursework into existing curriculum (especially in the liberal arts), educators can help students begin to discover how their interests and classroom experiences apply in the world of work. For example, *Inside Higher Ed* [recently featured](#) the University of Texas at Arlington where students can supplement their music and art coursework with classes that are uniquely aligned to employer needs and opportunities in their regional economy.<sup>12</sup> Perhaps most valuable of all, colleges and universities can establish internships with local employers to give students first-hand experience applying their knowledge in the workplace.

### 3. Take a skills-oriented approach

As this report demonstrates, moving beyond occupations and even job titles to look at skills and skill clusters can provide valuable insight for stakeholders across the institution. For example, Western Governors University is working to [create a skills map](#) that translates between classroom learning outcomes and the skill-based language of the labor market.<sup>13</sup> This kind of approach can help institutions not only align their curriculum with the needs of industry, but also help students better understand and articulate their skills to employers.

Institutions can also encourage their students, especially incoming freshmen, to think of college more as a time to develop and acquire skills that allow for future lateral or upward movement, and less as a time to lock themselves into a particular career path. For example, faculty and advisers might encourage an English major to pick up a minor in public relations, or advise an engineering major to consider adding a few classes in corporate communications (or creative writing!). And finally, when it comes time to graduate, students can be encouraged to expand their horizons and look for job opportunities that utilize the skills they've acquired, rather than feeling limited by their major.

#### **4. In light of skill gaps and career transitions, support alumni's lifelong learning**

Institutions can offer continuing education classes (whether certificates, second bachelors, or graduate degrees) to address the needs of alumni at various stages of their career journey. Our data illustrates that it's not unusual for graduates from all program areas to change jobs and pivot to different kinds of work. Colleges and universities can play an important role in providing the training and resources to help their grads make successful transitions. Executing this strategy may require a better understanding of alumni career outcomes at the institution and even the program level—something universities like UC Davis are already demonstrating through their [use of alumni data](#) in conjunction with more traditional labor market information.<sup>14</sup>

#### **5. Encourage a both/and approach to technical vs. non-technical skills**

Help students understand their options and opportunities. Some majors are more strongly associated with specific career outcomes than others. While students from all disciplines wind up in certain core business functions, business majors are noticeably dominant in the accounting profession as are engineers in the various sub-disciplines of engineering. Incoming students should be made aware of the opportunities associated with learning these specialized skills.

At the same time, as previously noted, there are many management, operations, and communications roles in the economy that require a blend of specialized technical skills and more generalized soft skills. Workers may find themselves managing people one minute and an annual budget the next, collecting data today and writing a report on the findings tomorrow. In light of this, students should be aware of the importance of well-rounded, blended skill sets as well.

Liberal arts programs may be especially well-positioned to serve students in this regard. Rather than scrapping the liberal arts, colleges can help students understand the value of an education that cultivates a nimble mind and establishes intellectual habits conducive to life-long learning. The kinds of foundational, transferable skills that are emphasized in these programs can also help students through the likely transitions (both voluntary and involuntary) they will experience in their working lives.

# Regional development organizations

## 1. Develop talent according to accurate information

A workforce that is informed about how their interests, skills, and experience fits in the workplace is a stronger workforce. Regional development organizations can help break down misconceptions among youth about their potential education paths, starting at an early point in the education cycle. They can also identify both skills and skills gaps in order to connect the unemployed and under-employed with the right training, resume development, and ultimately, employers. A college education is often not the only credential that's needed, and regional development organizations can build a more holistic workforce development strategy by expanding their framework beyond degree alone.

## 2. Use a more complete picture of the workforce to foster business development and attraction

Regional development organizations can better articulate their available workforce to boost business retention, expansion, and attraction. Understanding relationship between skills, educational background, and unique career paths can paint a more in-depth and attractive picture for businesses.

## 3. Fill business demand by connecting them to candidates they might have otherwise overlooked

In such a tight labor market, regional development organizations can provide a valuable service to businesses by helping them understand who and how they should be recruiting to fill positions. Connecting them to a diverse range of skill sets and educational backgrounds unique to a community's available workforce is a key part of this service.

# Businesses

## **1. When forming your college recruiting strategy, don't get too locked into specific degrees**

For instance, if you are looking for new graduates for sales, don't look only at the schools with sales programs. In reality, great sales talent has been found across various degree programs. The same could be said for entry-level marketing and communications positions. By broadening your reach into non-business degree programs like the social sciences, you may find great talent in a less competitive environment. So look for great individuals with the core skills you need in *any* program.

## **2. For experienced talent, be very skeptical of requiring a specific degree or education level without solid evidence that it is needed**

Again, focus on the skills and aptitudes needed for a particular job without putting up artificial barriers that might keep great candidates away because they don't meet a specific educational requirement.

## **3. Focus on defining the positions in your company by core skill requirements vs. just experience and education**

By understanding the skills needed to do a specific job, you can create pathways to that position for employees from diverse educational and experiential backgrounds. This will enable far more robust internal career pathways for employees, and allow you to leverage the talent already inside your organization.

# Glossary

## Cluster analysis

In data science, a method of analysis that involves grouping data points such that underlying similarities become apparent.

## Common outcomes

Outcomes that consistently prove popular across all six degree types.

## Factor score

The measure of a skill's unique correlation to the cluster (or theme of work).

## High frequency skills

Skills that show up in a high number of profiles in our sample.

## Interpersonal oversight

Oversight geared towards managing teams of people (management, human resources, etc).

## Job title

The name assigned to a given role in a particular firm. Job titles are subjective and subject to change.

## Major business functions

The functions that enable the successful building, marketing, and delivery of a product. Here, we deal with four major business functions: strategic communication, tactical communication, interpersonal oversight, and operational oversight.

## Occupation

The name (and number) assigned to a given role in the economy by the Bureau of Labor Statistics in their Standard Occupational Classification taxonomy. These designations are not dependent on individual firms and less subject to change than job titles.

## Operational oversight

Oversight geared towards managing processes and systems in a firm (accountants, systems administrators, consulting, etc.).

## Outcomes

The broad career pathways in which graduates find themselves after completing their education.



### **Program type**

A group of majors and programs that correspond to an overarching subject, and which have a greater or lesser connection to the labor market in the public imagination.

### **Skills**

Competencies at specific tasks or familiarity with specific subjects acquired through education or experience.

### **Skills cluster**

A set of correlated skills that relate to a particular theme of work.

### **Skills data**

Information drawn from Emsi's database of over 100 million professional profiles on the skills possessed by graduates of various programs and the themes of work to which they are related.

### **Strategic communications**

Communicating to the market as a whole. Strategic communications is analytical and aimed at large groups of people with whom the communicator has no personal connection.

### **Themes of work**

The activities that most characterize the day-to-day work of a graduate of a given program type. Themes of work are a bridge between career or occupation (a role in the economy) and specific skills (characteristics of an individual). They describe what people are actually doing within their formal roles, and with the skills they have acquired.

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