

△ PROLEGO

How to Win the War for Data Science Talent

THE PROLEGO DATA SCIENCE CAREER STUDY



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INTRODUCTION

The War for Data Science Talent

Competition for AI talent has been increasing for the past five years. Just as the worst of the pandemic began to ease, the market data for scientists went completely bonkers. Desperate hiring managers started calling us for advice:

We finally found an awesome data scientist, but she took a job at Spotify; they offered her more than my boss makes. How can I compete with these tech companies?

I finally got my HR department to agree to hire remote data scientists, but I still can't find anyone! Competitors offer remote work and pay top-of-market salaries. Should we start offering four-day workweeks?

I asked my data scientist to focus on solving our business problems. He told me he prefers to do experiments, and he quit on the spot. How do we attract and retain the data scientists we need?

Our top project is stalled because our best data scientists resigned in Q1. We were shocked to learn that all of our data scientists are unhappy; our IT team likes our work. How can we create an environment where data scientists want to work?

With these questions in mind, we commissioned a study to help you understand how the most successful AI leaders are winning the war for data science talent.

We started by surveying more than 100 data scientists about what they want from their careers. We did qualitative interviews with many other data scientists and compared our findings to what we learned from the companies that are becoming talent magnets. This report compiles those results and provides recommendations to help you apply the strategies for success in your own company.

The Vanguard Strategy

Winning methods begin with the understanding that data scientists are a unique workforce, and they have unique employment goals. AI leaders attract and retain the data scientists they need by:



Creating an environment where data scientists can do their best work.



Updating recruiting practices to attract the ideal candidates for their culture and mission.



Reorganizing their teams.



Hiring the right leaders.



Investing in technology that's optimized for data science efficiency.

SUMMARY

Top 10 Recommendations

Our study reveals data scientists' attitude toward their work, their ideal employment environment, and how you can recruit them. Based on our findings, we recommend these top 10 strategies.



- 01** Ensure your data scientists are doing data science, not making dashboards, cleaning data, or doing IT work.
- 02** Create an environment where learning is prioritized, celebrated, and evangelized.
- 03** Centralize your team under a strong data science leader, and matrix data scientists into projects.
- 04** Integrate your data scientists into your AI ethics program. Ask them to evaluate the potential ethical issues and risks associated with their work.
- 05** Communicate how the work can impact your company and the world.
- 06** Invest in the data and infrastructure your data scientists need to succeed.
- 07** Pay competitively and optimize your environment for candidates who can further your mission and learn new skills.
- 08** Write job descriptions that convey the experience and understanding of your hiring manager.
- 09** Optimize your recruiting process for candidates who are curious and are good communicators. Evaluate hard skills based on past work.
- 10** Create a non-management career path for your data scientists. Advertise it in your job descriptions.

About the data science career study

The survey that this report references was conducted by Concept Bureau on behalf of Prolego from November 30 to December 28, 2021.

METHODOLOGY

The sample included 109 highly qualified US data science professionals. The study also included qualitative interviews with 15 data science professionals. Participants were selected across a range of professional seniority levels and industries.

DEFINITIONS

Throughout this report, “data scientists” refers to professionals between the ages of 18 and 64 who are actively employed in the field of machine learning and/or data science. It doesn’t include disciplines such as business analytics, data reporting, data analysis, academic research, or data engineering.

DATA SCIENCE CAREER STUDY PART 1:

Understand what data scientists do

Data science is a new career field. But most employers are trying to build up their data science teams by using traditional recruiting and retention methods.

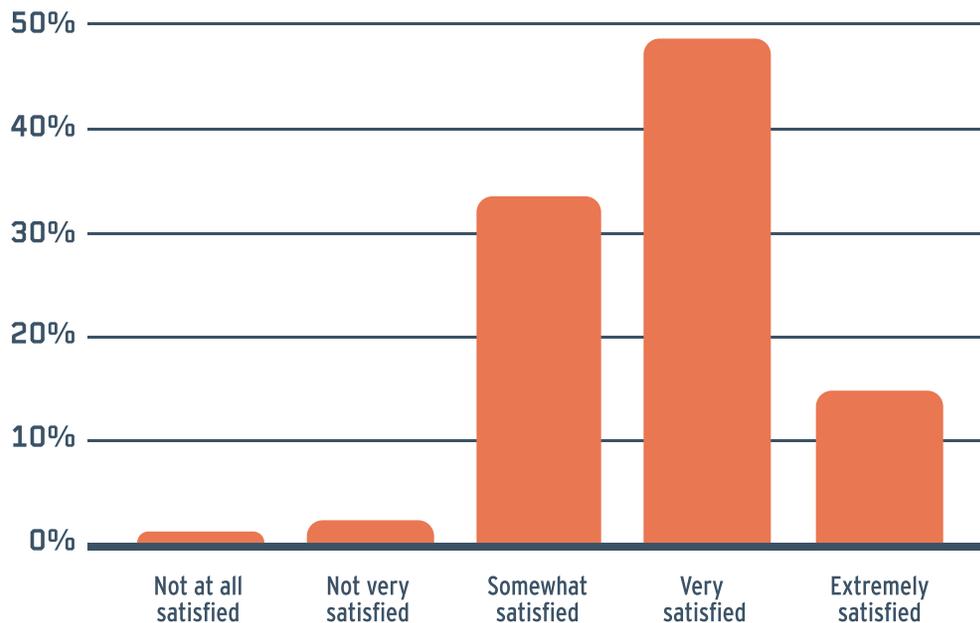
Many companies fail because they don't understand what data scientists actually do. Others don't realize the difference between a candidate whose only credential is an online certificate and a candidate whose skills can launch the company ahead of the competition.

So let's talk about data scientists and what makes them tick.



Data scientists *love* their work. So let them do it.

In general, how satisfied are you with having a career in data science/AI?



Source: Prolego data science career study.

“ To be happy in a day-to-day sense, I really like not having too much stress—constantly having to work under deadline is something I don't personally like very much. I [like to] have a lot of autonomy in my job to be able to explore different things, to be able to take the time to explore some of these creative, interesting ideas. I think that's really important.”

Eric Hilton

Senior Data Scientist, Cityblock Health

Data scientists are attracted to the field because they love discovering new ways to solve hard problems. They love the scientific method and embrace the challenges that come with creating something new. This isn't a career; it's a calling.

Too many employers build a data science team and then assign them to create dashboards, do IT integration work, clean data or . . . anything but data science.

Are your data scientists doing data science? Are you sure?

INSIGHT

Before you hire data scientists, make sure you need them.

After you hire them, let them do what they love most: their work.



Make learning a foundational part of the job

“Quarter after quarter, there’s new tech that could do your job much quicker than you did it in the past. And if you don’t keep up with that, you’re just going to be outpaced and beat by people using those tools. You really have to stay on top of what’s available.”

Dominick Rocco

Chief Architect of Data Science & Machine Learning, phData

In a typical week, how many hours do you spend on AI/data science-specific learning?

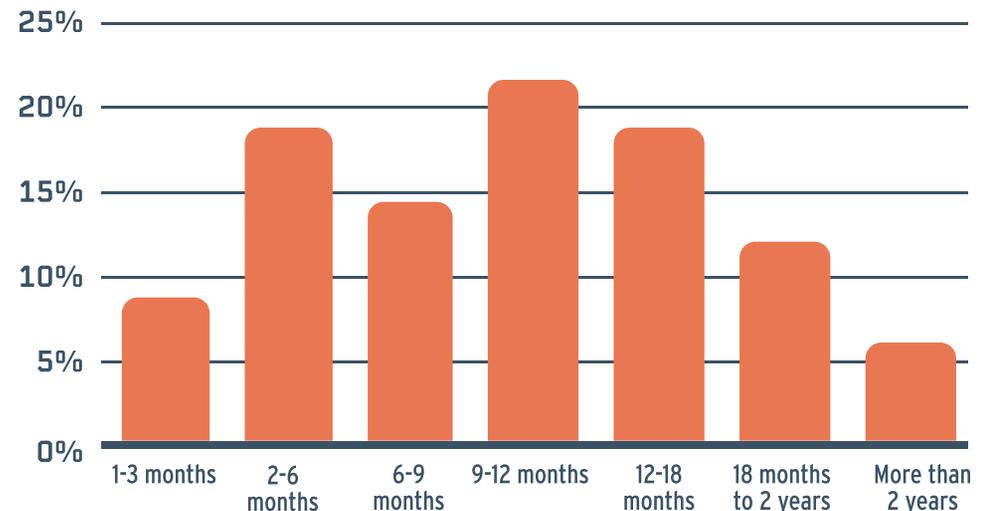
AVERAGE:

10 hours per week

MEDIAN:

8 hours per week

If you stopped investing time in learning, how long would it take you to fall behind to the degree that there would be a substantive impact on your ability to do your job effectively?



Continuous learning is critical in every technical career, but the rate of change for data science is significantly faster than in traditional software engineering or IT.

A good software engineer can learn foundational skills in about 10 years. They can use this knowledge to adapt quickly to new languages, tools, and design patterns. Rarely does a software engineer need to learn a completely new way to solve problems. But imagine if a new paradigm like object-oriented programming were released every month. That's the magnitude of challenge that data scientists face, and it's why *learning is the job*.

In data science, foundational knowledge changes continuously. The data scientists we surveyed reported that they spent an average of 10 hours per week learning their craft. It isn't a matter of learning how to use a new machine learning model. It's learning a new way to think about problems and how to solve them.

Most data scientists believe their skills would atrophy in less than a year if they weren't constantly learning. Because many AI projects take multiple years to complete, your data scientist might need to work on the same problem while the technology's possibilities are bounding forward. This situation increases the risk of turnover in your team, and you need to be on guard for it.

INSIGHT

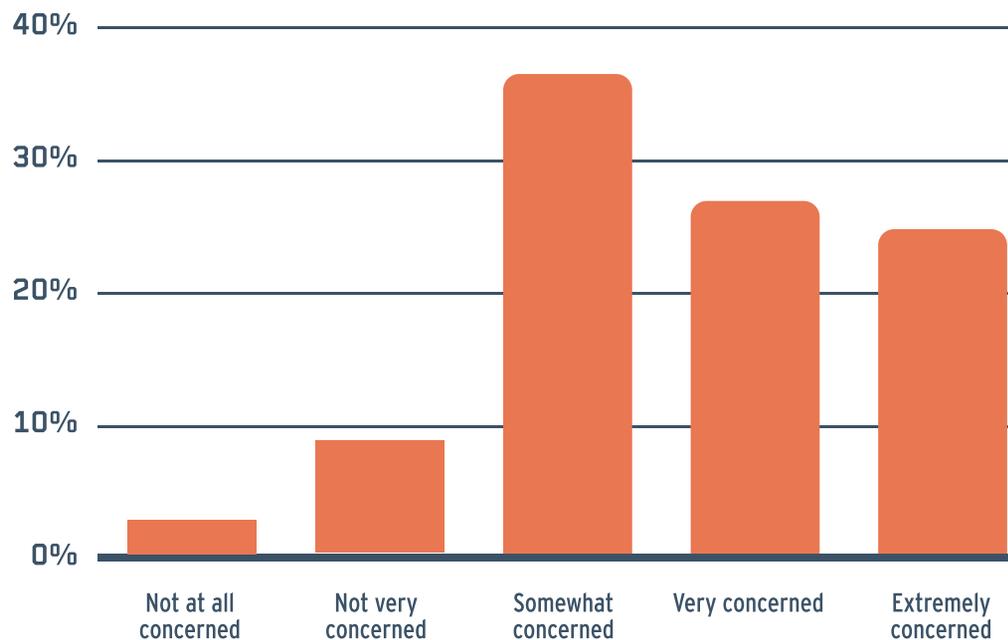
Few employers understand why a data scientist's job is to learn. Be different. Rotate data scientists between projects. Provide time to learn new skills or explore a novel approach to a current problem. Attend their presentations and ask questions. Give them opportunities to try new techniques. Celebrate the results.

These investments will more than pay for themselves if they improve your retention rate.



Ask your data scientists for input on ethical implications of their work

In general, how concerned are you about the ethical implications of data science?



“ I think generally the data scientists I’ve worked with throughout my career do understand the responsibility that comes with being a decision-maker or at least supplying the insights to the decision-makers, and that kind of goes back to the immaturity of the field. There is no code of ethics or a regulation equivalent to the Hippocratic oath for [AI].”

Brent Ferrier

Principal Data Scientist,
Oshkosh Corporation

Which of your teams best understands your data?
Your models? AI's underlying risks to your business
and society?

Your data scientists, of course. They might also be
more aware of AI ethics than anyone else in your
company.

Few companies take advantage of the knowledge
and passion of their data scientists as they develop
their model governance and ethical AI programs.
Instead, managers and lawyers create new policy
documents and model-review processes, drawing
only limited input from the people who are actually
doing the work.

INSIGHT

Integrate your data
scientists into your AI
ethics program. Ask them
to evaluate the ethical
issues and risks
associated with their
work.

You'll increase both your
insights and your data
scientists' job
satisfaction.



DATA SCIENCE CAREER STUDY PART 2:

Become an employer of choice

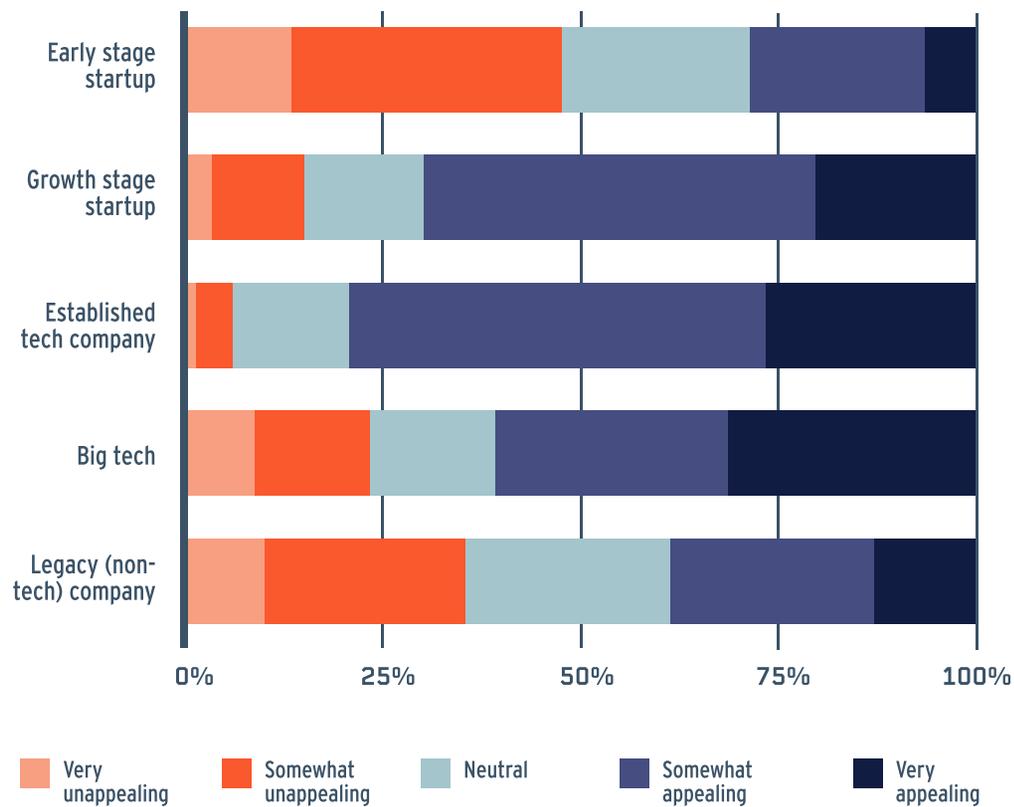
Even low-profile companies can offer exciting data science work.

Data scientists want to feel that leaders respect their work as a core business function. They want to know how their work will affect the business and customers. They want to be challenged with ambitious, cutting-edge projects and know that they have the resources and support they need to tackle them.

Let's talk about how you can become an employer of choice. >

Don't blame tech companies for your talent shortfall

How appealing to you is working for each of the following types of companies?



“ I prefer interesting projects [over interesting companies]. An interesting project could mean something more because it could have more impact. I prefer the interesting projects because I'm going to feel satisfied.”

Wenbo Dong

Lead AI Scientist, Target

Every day, executives at traditional companies complain that they can't compete for data science talent with Google, Meta, Apple, and Amazon.

Our response: nonsense! You can compete and win.

Nearly 40% of data scientists we surveyed described working for a legacy (non-tech) company as "very or somewhat appealing." Lots of people don't want to work at a big tech companies. The reasons they cite include ethics, cultural mismatch, or lifestyle.

INSIGHT

Data scientists want to work on interesting projects in a supportive environment.

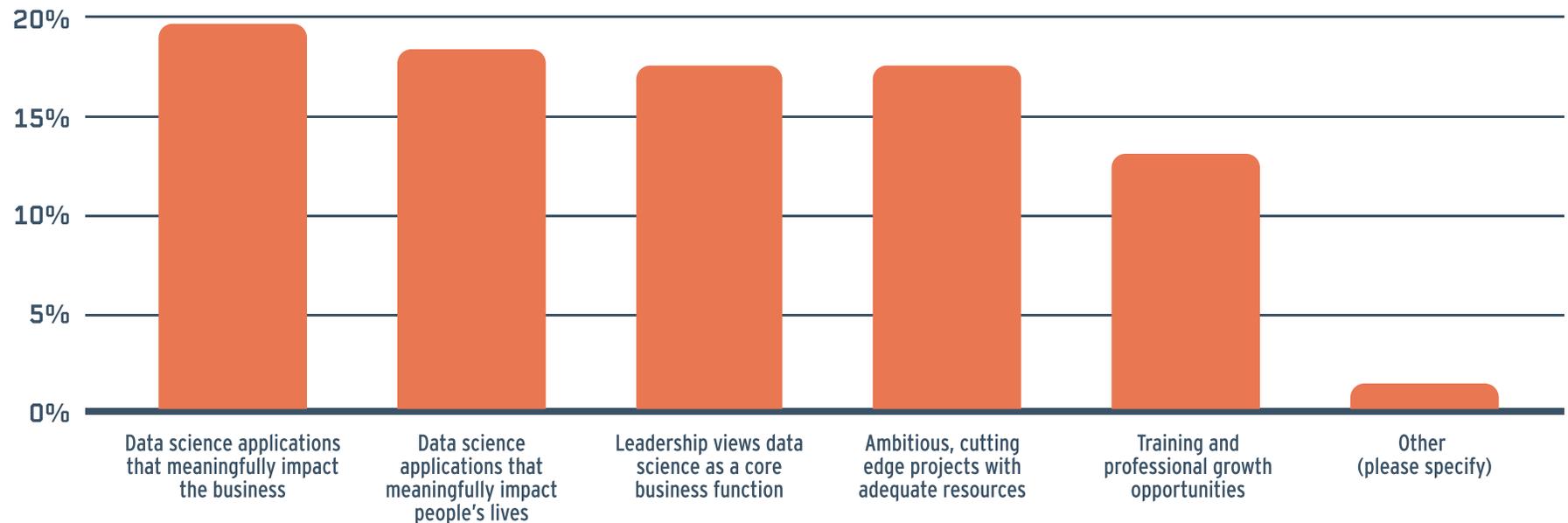
Tech and growth companies win because they make themselves an employer of choice. You can do the same.

So stop making excuses for your talent shortfall, and start creating your strategy to become a talent magnet.



Highlight opportunities to make an impact

What might make an otherwise uninteresting company exciting to work for as a data scientist? Select all that apply.



“ I knew I wanted to work in a meaningful situation, something that really had a positive impact on people's lives, which is why I really like working in healthcare.”

Stacey Brandsma

Data Scientist, Amgen

In the era before AI, you were in control. You were buying a job, and the talent was selling labor. Supply outstripped demand, and you had choices. Your new strategy must start by accepting that the talent is now in control.

In this new situation, you'll need to sell your company's unique AI opportunities. Emphasize how potential hires can positively affect society. Industries like healthcare, insurance, banking, and manufacturing all make people's lives better.

Also sell the opportunity to transform your company. For example, imagine a prospective hire who's considering an opportunity with either your company or Facebook. Here's what you could say:

Our business hasn't changed much in the last 50 years, but we're on a mission to transform our industry by using AI. So do you want to lead this industry into the future with your data science talent? Or would you rather spend your time working on ways to improve advertising clicks by 0.02%?

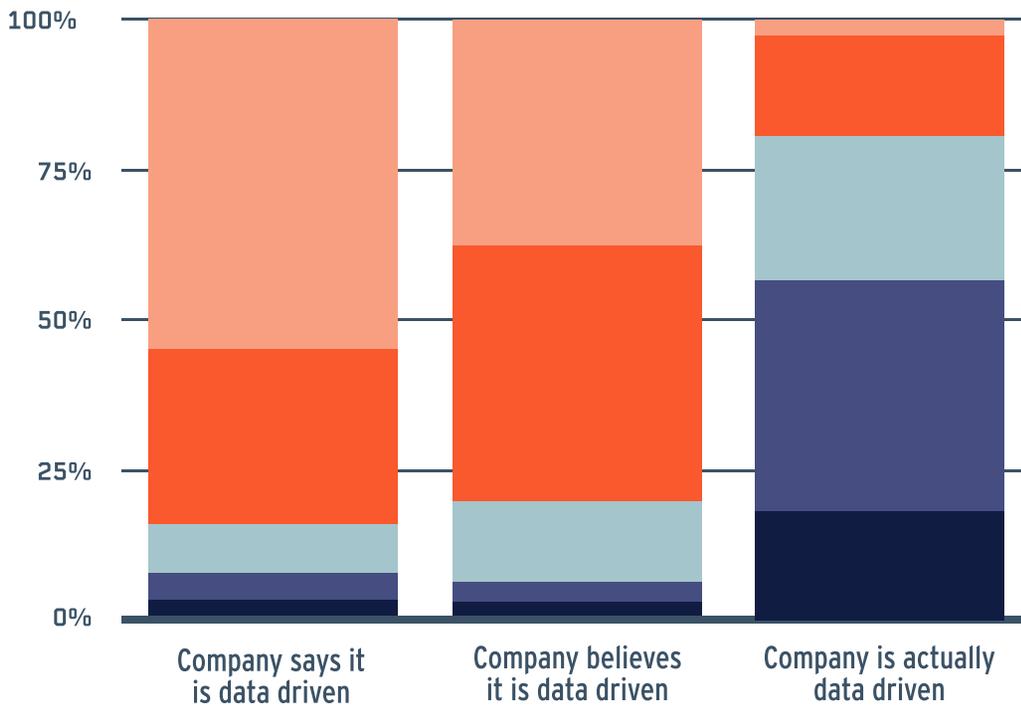
INSIGHT

The data science talent pool has choices. Sell your company's opportunity to make a difference in the world.



Show your commitment by investing in data and tools

How common would you say each of the following is among companies you have worked for or considered working for?

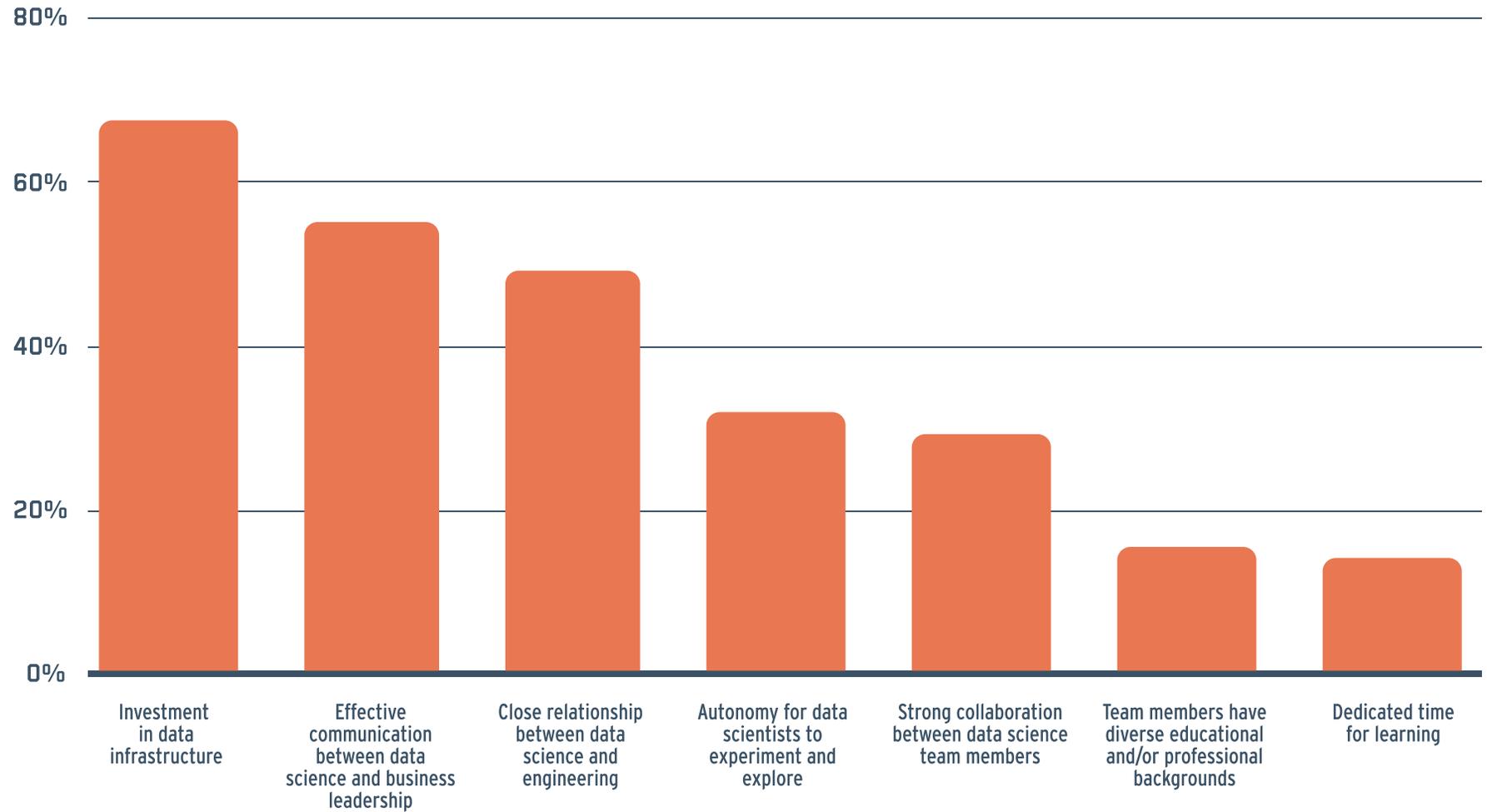


“ I’m just saying the S&P 500, 10 to 15 years from now, yes, it would be important to have a great digital experience with machine learning and personalization evolves. But the leadership probably isn’t there. . . . The leadership doesn’t realize how critical [infrastructure investment] is to being successful four or five years from now.”

Lee Cohn

Senior Data Scientist, Nike

How important is each of the following in building a successful data science/AI practice within an organization?



Percentage of surveyed data scientists who describe each as "Absolutely critical to have."

Skip the bravado. Every company claims to be data-driven. But very few are. Even the tech giants have stovepipe systems, disconnected data, and a suboptimal development environment. However, these companies attract talent because they recognize the challenge and invest to make their data scientists successful. Investment signals how well an employer values data science.

You can follow the same pattern. If your competitors make unrealistic claims about their current capabilities, distinguish yourself by speaking the truth.

INSIGHT

Describe the data infrastructure you need and the steps—however small—you're taking to get there. Acknowledge the difficulty and importance of your AI ambitions, and you will become a more attractive employer.

Better still, accelerate your investment in data infrastructure. You'll need it.



DATA SCIENCE CAREER STUDY PART 3:

Optimize your recruiting and retention tactics

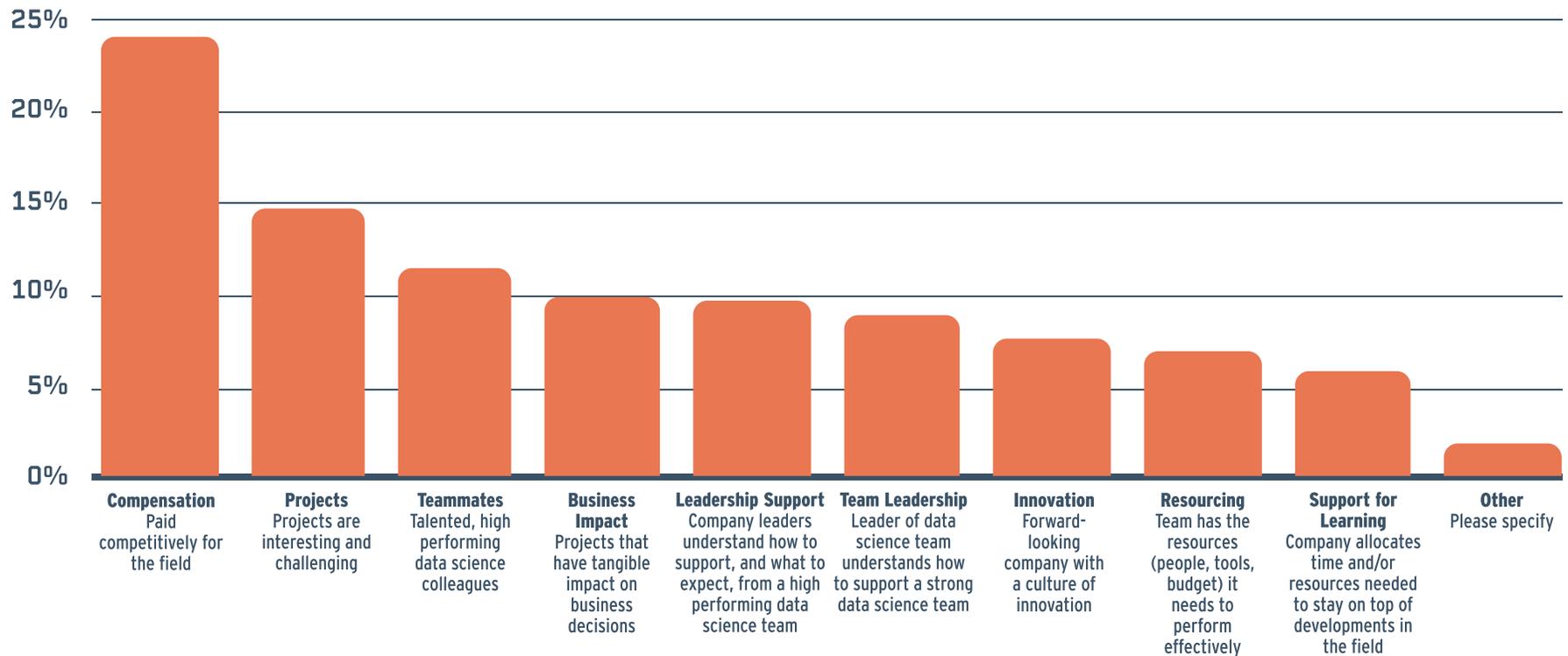
As you search for candidates to build your AI team, think of the process like dating: they're in high demand, and you'll have to work to attract the right match. You'll also have to contend with big players like Google, who snap up data scientists as soon as they step out into the sunlight.

Most companies make the wrong moves in this workforce dating game. Think of the following suggestions as a guide to attracting your perfect date.

Let's make a few changes to upgrade the quality of your team 

Pay competitively & improve your work environment

If you were looking for a new job in data science today, which of these criteria would be most important to you? Select up to 3.

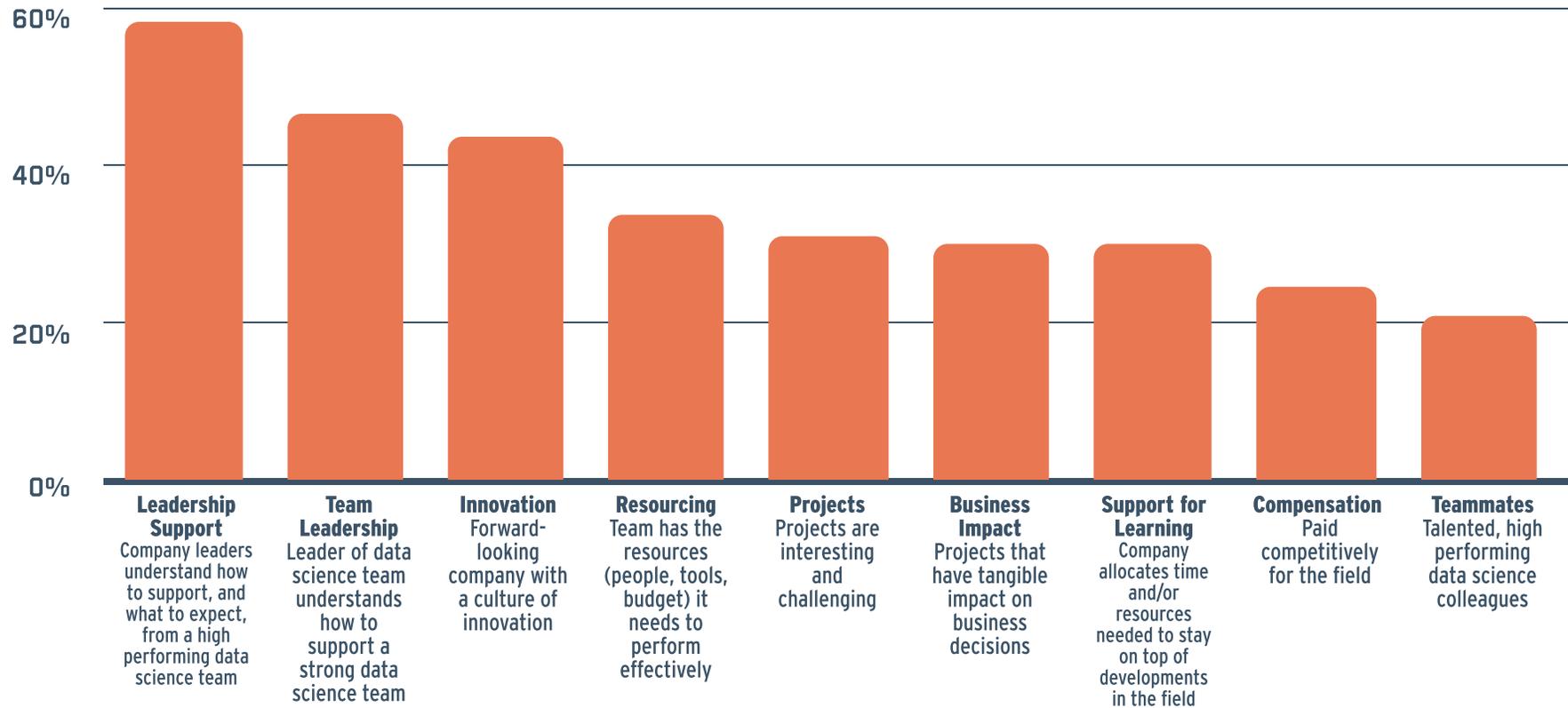


“ You should not try to skimp on the salary. This is a fast way to fail—don’t cheap out. If you’re going to invest, invest. If you don’t have what it takes to invest, then don’t engage with data science.”

Lee Cohn

Senior Data Scientist, Nike

If you were looking for a new job today, how easy or difficult would you expect it to be to find a job with a company that offers each of the following?



Percentage of surveyed data scientists who responded "Very difficult" or "Somewhat difficult" for each.

When an executive knows that all data scientists are just 'wicked smart,' you're already set up to fail. So, that's where I set business expectations—what [data scientists] can or cannot do. But if they walk in thinking that [I'm] going to walk on water, typically that's a red flag to me."

Bernard Ong

Principal Data Scientist, American Family Insurance Client Services

The average postdoc salary in the US is about \$60K per year. A few years ago it wasn't hard to convince someone who had a physics PhD to forgo the poor pay and academic headaches to be your data scientist for two or three times the salary. But those days are long gone. Data science salaries have been going bonkers for the last few years. A data scientist can often change jobs and increase their compensation by 30% or more. It's just supply and demand.

To build your data science team, you have three choices:

1. Pay under the market rate and hire unqualified people who have no other options.
2. Pay whatever it takes to get people to work in a suboptimal data science environment.
3. Pay competitively and create an environment where data scientists want to work.

We hope you'll be smart and choose the third option. Competitive compensation is table stakes; you don't have to beat all market salaries to build your team.

INSIGHT

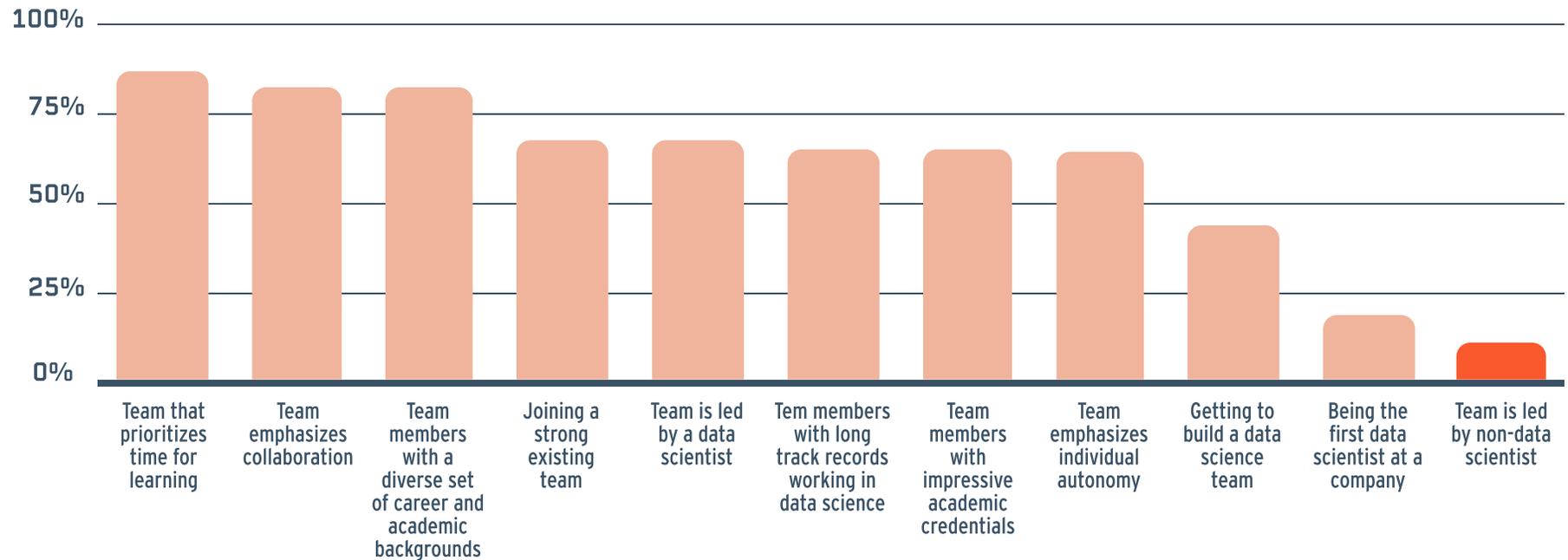
Don't settle for unqualified people or try to solve your talent shortfall by throwing money at the problem.

Only about 20% of the data scientists we surveyed felt that it would be hard to find a new job that paid competitively. But more than 60% felt it would be hard to find a company whose leadership understood them and how to support them. To stand out from the crowd, you should not only pay competitively but also invest in your data science work environment.



Centralize your data science team and hire a strong leader

When it comes to the types of team you'd prefer to be a part of, how appealing are each of the following?



Percentage of surveyed data scientists who responded "Very appealing" or "Somewhat appealing."

Data scientists want to work for leaders who have more experience than they do. This insight is critical for your organizational planning.

Many companies struggle to decide whether to centralize or distribute their data science talent. But realistically there's only one option: centralize your data scientists and let them matrix into project teams.

Too many companies begin their AI journey by hiring a data scientist into a traditional software team. After a few months of trying to explain why the data science experimental process doesn't align with the sprint release cycles, the data scientist quits. Unless you change your structure, you'll have difficulty recruiting and retaining data science talent.

To make your job descriptions more effective, highlight your hiring manager's understanding of the data science workforce and role. A rewritten job description can instantly lift the quality and quantity of candidates. For an example, see the "Resources" section at the end of this report.

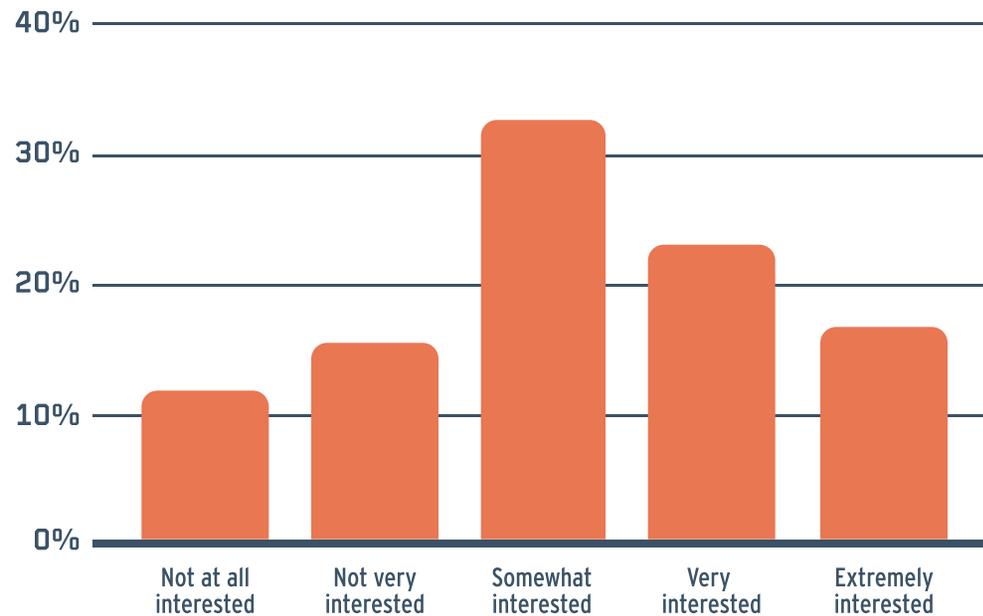
INSIGHT

Hire a strong data science leader, centralize your team, and use your team leader's credentials to attract talent. These steps will instantly make you a more attractive employer.



Create a non-management career path

How interested are you in pursuing career growth through a management path (e.g., managing a team of direct reports)?



“ In terms of seniority . . . I observed that the higher you are, the less hands-on work you do. I want to go to the next level, without management responsibilities, while still being able to actually do hands-on work.”

Carlos Oliveira

Staff Data Scientist, Intuit

Fewer than half of the data scientists we surveyed have a strong interest in becoming a manager. Most were only somewhat interested in pursuing career growth through a management path.

Unfortunately many companies don't offer an alternative to the management path. If management is the only available advancement option, many data scientists will leave so they can continue doing data science.

Offering promotion alternatives is a no-brainer. You can start doing it today.

INSIGHT

Ask your data science team to build a career path based on your organizational structure. Then update your job descriptions to reflect the career path.

For a copy of the Prolego data science career path, see the "Resources" section at the end of this report.



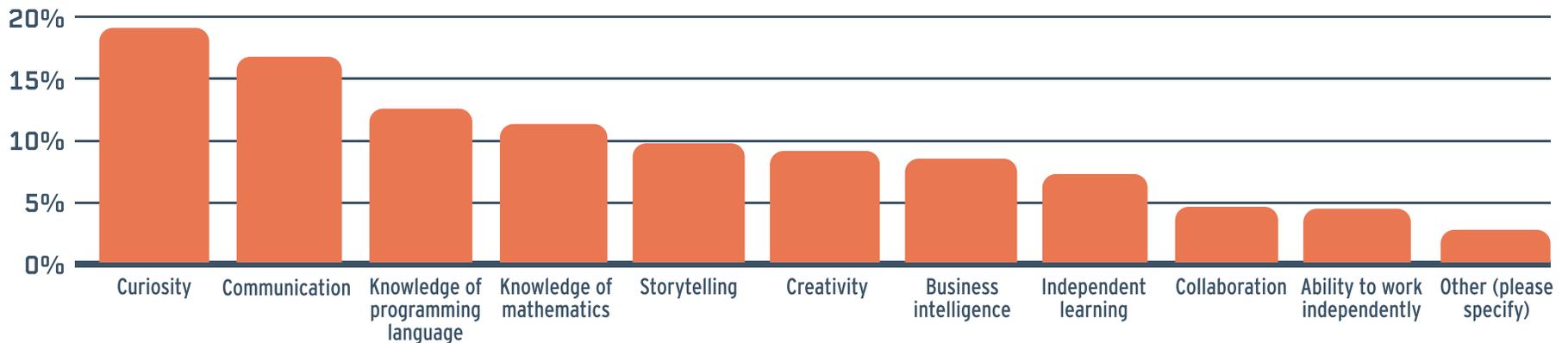
Recruit for curiosity and communication

“ The people who can communicate a lot better understand the world in the context of the narrative. If I combine the best of data science communicators with a customer experience person—powerful combination.”

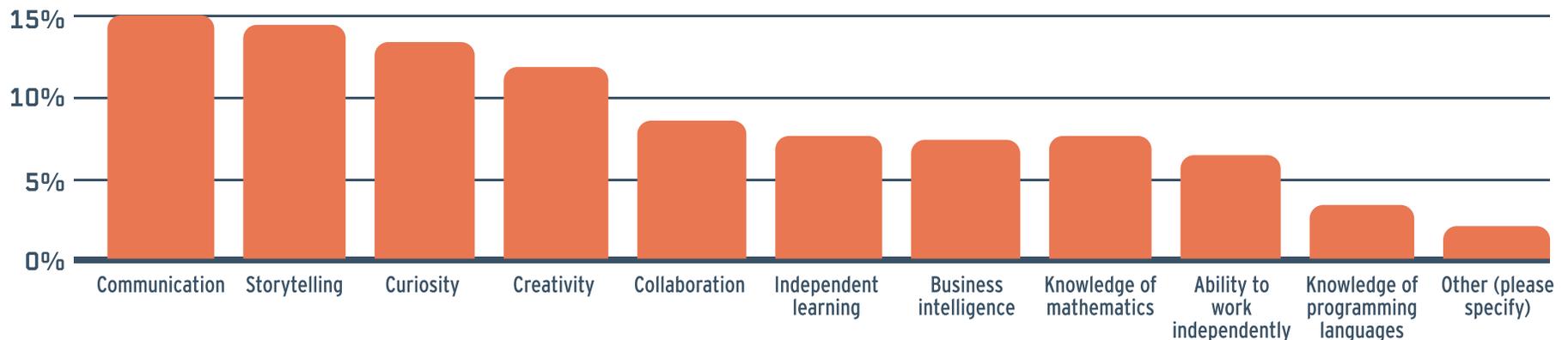
Bernard Ong

Principal Data Scientist, American Family Insurance Client Services

Which of the following traits are most important to being a successful data scientist? Select up to 3.



Which traits, if any, do companies commonly overlook when hiring data scientists? Select up to 3.



You've probably heard jokes about data scientists like this one:

What's the difference between an introverted data scientist and an extroverted one? The extrovert stares at YOUR shoes.

Unfortunately these caricatures of the profession reinforce a false assumption about who you should hire. The ideal hire is curious, will fearlessly attack your hardest problems, and can lead your company to opportunities you never imagined.

Of course hard skills matter. But becoming an AI-driven company requires foundational changes to how your business works. So you need people who know the language of data and can recognize and communicate a better future and the path to get there.

INSIGHT

Redesign your recruiting process to prioritize curiosity and communication skills. Reduce emphasis on coding tests and canned questions. Evaluate technical aptitude based on what candidates have done. Increase emphasis on soft skills.



Resources

Use the following Prolego resources as a pattern for your own job descriptions and career paths:

Optimized Data Scientist Job Description

We updated our job description based on the results of this report. The quality and quantity of our candidates instantly improved.

Data Science Career Paths

We created both management and individual contributor career paths for our team.

Get a copy of both resources at prolego.com/dstalent

Get a customized talent strategy in 90 days

You've just learned how you can beat companies like Amazon, Meta, and Google in the war for data science talent. But your company and its constraints are unique. Translating these insights into actions takes time and focus.

Prolego has already helped dozens of Fortune 1000 companies navigate this journey. We can help put you on the right track with our AI talent assessment.

For more information, see [Customize an AI talent strategy](#)