RESKILLING
THE FEDERAL IT WORKFORCE

Federal agencies, the White House and OPM have all identified the need to hire, retain and reskill the IT workforce as a critical management challenge.

In the first of a series of reports, WorkScoop and Fedscoop explore which IT skills are in greatest demand and how agencies are trying to close the skills gaps.

EXECUTIVE SUMMARY

In early 2018, the Executive Office of the President released the President's Management Agenda which laid out a vision for modernizing the federal government.

Explicit in that vision is the need to develop a 21st Century workforce and to modernize the government's information technology for the digital age.

Implicit in those objectives is the need for qualified, well-trained IT talent — and for strategies to address chronic challenges in hiring, retaining and retraining information technology and data management workers.

The Office of Personnel Management, OMB, the Federal CIO Council and the Federal CHCO Council — together with federal agencies — have launched numerous efforts over the past decade, such as direct hiring authorities, to address critical shortages in IT specialists.

However, the rapid evolution of cloud-based computing services, APIs, mobile technologies and artificial intelligence — and citizens' expectations for digital services — have created significant demands for new and evolving IT skills in government.

EXECUTIVE SUMMARY

In an effort to better understand the types of technical and interpersonal skills agencies anticipate needing over the next two years, WorkScoop and FedScoop asked 236 CIOs and IT leaders in the federal IT community about the government's IT talent needs — and the steps they're taking to acquire them.

The survey questions were developed in consultation with top leaders of the Federal CIO Council and the Federal CHCO Council.

In this first in a series of surveys planned by WorkScoop and FedScoop, we sought to explore:
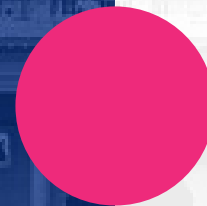
The **types of skills** agencies are looking for in their technology teams.

The **degree of impact** IT skills shortages are having on agencies and their ability to deliver on their mission.

Ways in which agencies are **attempting to bridge** the skills gaps.

Obstacles and constraints to acquiring and developing necessary skills.

Top-Line Findings
Confronting the IT skills gap in government

1 **7 in 10** government IT leaders view ongoing IT skills gaps as having a **high or medium impact** on the ability to deliver on agency mission.

2 The greatest demand for IT skills in government over the next two years will be for workers skilled in **cloud technologies, AI, data analysis and enterprise engineering**. But agencies anticipate significant demand for a wide range of other more traditional IT skills.

3 Additionally, agencies are looking for more than technical talent. They also need candidates who possess **collaborative interpersonal skills** and **broader interdisciplinary backgrounds**.

4 While half of government IT managers surveyed have analyzed and appraised leadership about anticipated IT skills gaps in the next two years — **only 16% have estimated the direct and hidden costs** associated with those gaps.
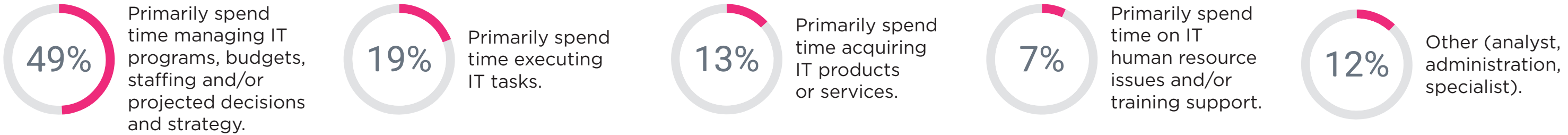
5 In trying to bridge agency IT skills gaps, **upskilling (51%)** and **reskilling (44%)** have proven to be the most successful methods, along with **outsourcing work to contractors (53%)** and **partnering with vendors (42%)**.

6 The biggest constraints to acquiring new skills, respondents said, are a **lack of budget resources (53%)** and **time to take training courses (50%)**.

WHO WE SURVEYED

WorkScoop and FedScoop conducted an online survey of **236 prequalified IT decision makers** from both federal government and industry. The survey was conducted from August – September 2019.

RESPONDENT BREAKOUT BY JOB TITLE

49% Primarily spend time managing IT programs, budgets, staffing and/or projected decisions and strategy.

19% Primarily spend time executing IT tasks.

13% Primarily spend time acquiring IT products or services.

7% Primarily spend time on IT human resource issues and/or training support.

12% Other (analyst, administration, specialist).

RESPONDENT BREAKOUT BY AGE

3% 29 years or

12% 30 – 39 years

27% 40 – 49 years

34% 50 – 59 years

19% 60 years or

4% Prefer not to

RESPONDENT BREAKOUT BY INDUSTRY

56% Government Agency

43% Industry

RESPONDENT BREAKOUT BY GENDER

32%   **58%**   **10%**
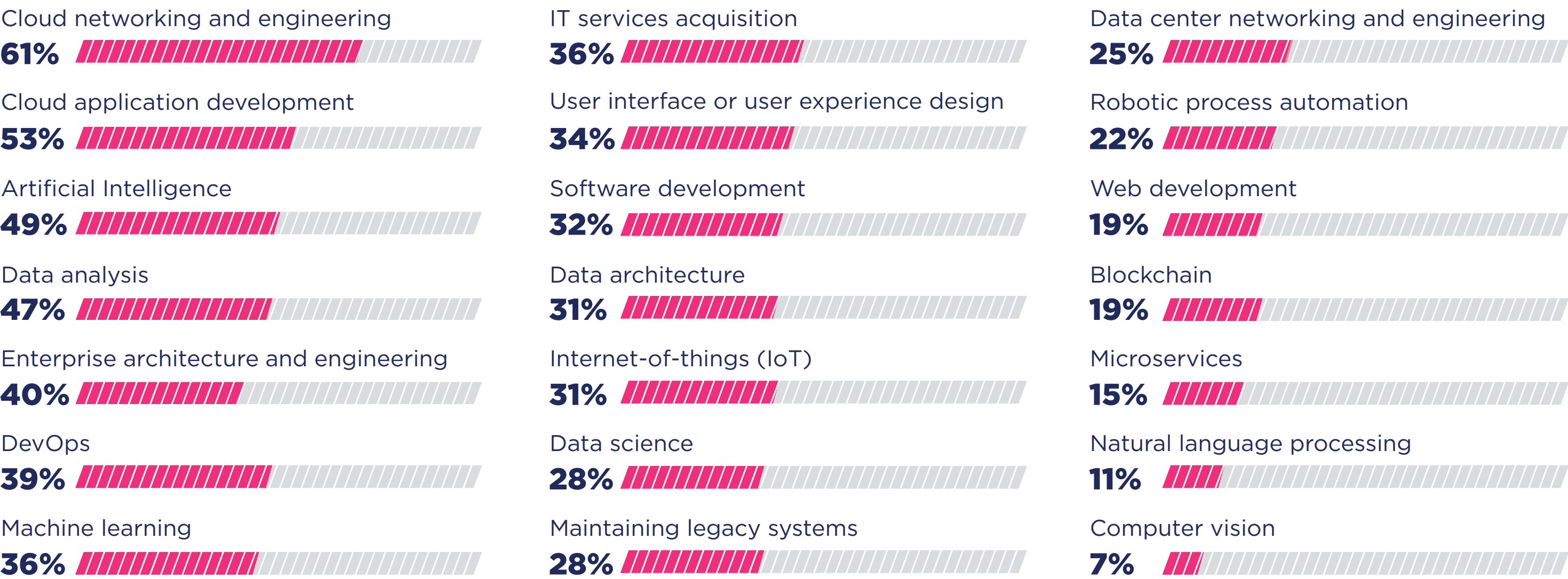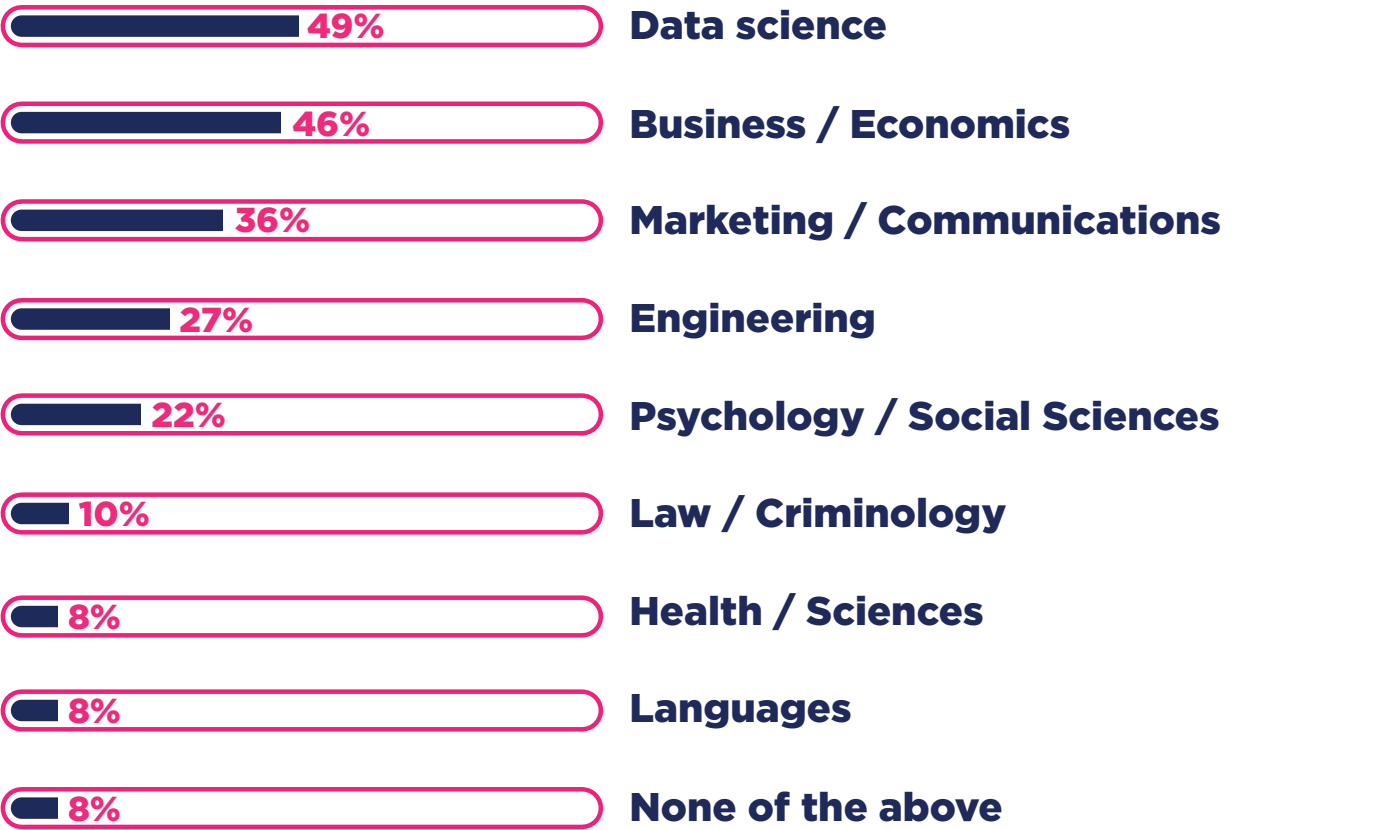
EMERGING DEMANDS FOR FEDERAL IT SKILLS

Government sector IT leaders foresee the greatest demands over the next 2-3 years for workers skilled in **cloud technologies, AI, data analysis, enterprise engineering and DevOps.** But they also anticipate significant demand for those who can support **UX design, software development, legacy systems, IoT and data center networking.**

Cloud networking and engineering **61%**	IT services acquisition **36%**	Data center networking and engineering **25%**
Cloud application development **53%**	User interface or user experience design **34%**	Robotic process automation **22%**
Artificial Intelligence **49%**	Software development **32%**	Web development **19%**
Data analysis **47%**	Data architecture **31%**	Blockchain **19%**
Enterprise architecture and engineering **40%**	Internet-of-things (IoT) **31%**	Microservices **15%**
DevOps **39%**	Data science **28%**	Natural language processing **11%**
Machine learning **36%**	Maintaining legacy systems **28%**	Computer vision **7%**

Q: Thinking of your agency's IT projects in the next 2 – 3 years, which skills do you believe will be in greatest demand? (Select no more than 10)

THE NEED FOR MORE THAN JUST TECHNICAL SKILLS

Agencies are seeking candidates who not only have the right technical skills, but also possess a combination of collaborative interpersonal skills and broader interdisciplinary backgrounds.
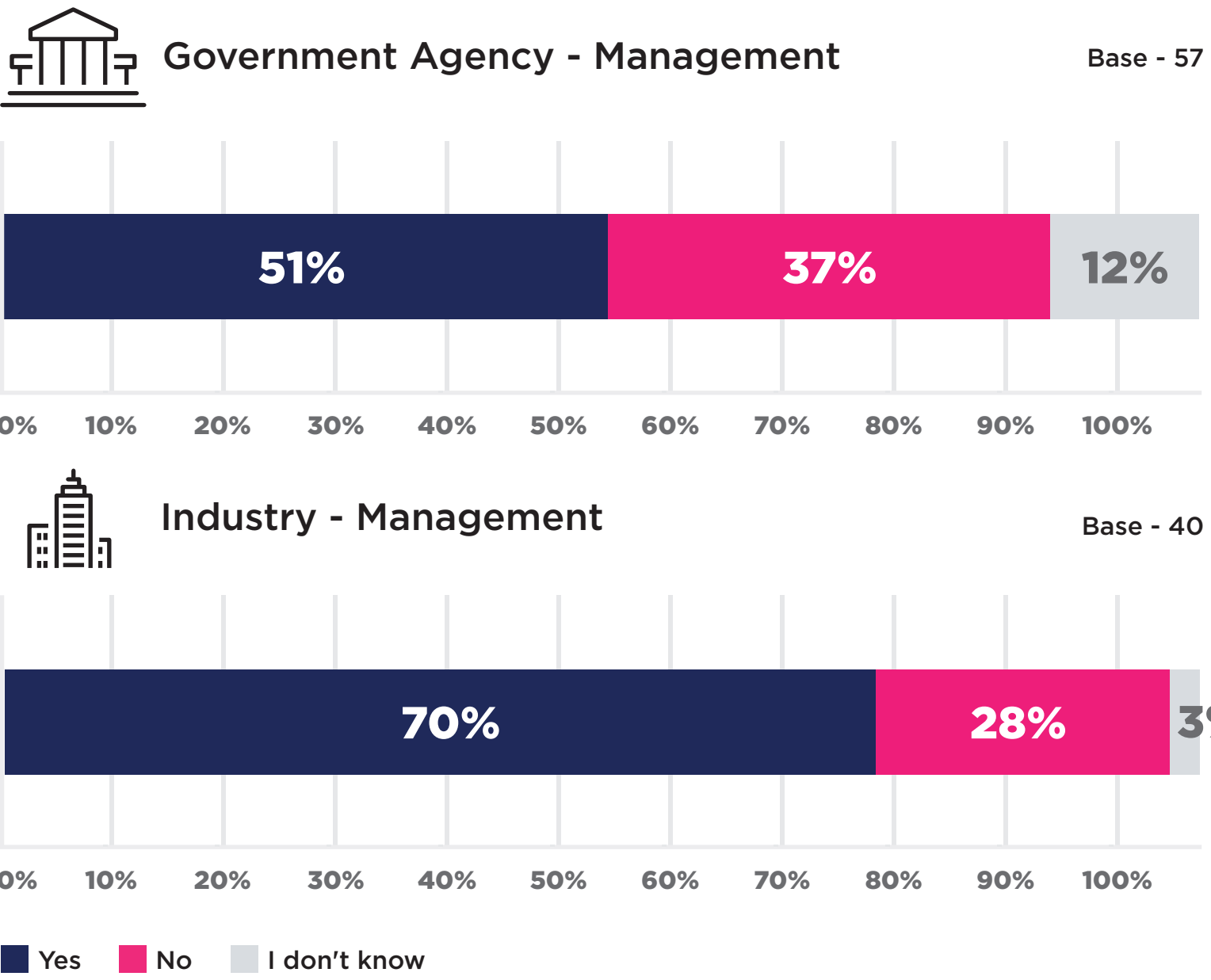
Soft Skills		Disciplinary Skillsets	
Communication	58%	Data science	49%
Critical thinking / Cognitive flexibility	56%	Business / Economics	46%
People management	41%	Marketing / Communications	36%
Complex problem solving	40%	Engineering	27%
Emotional intelligence	40%	Psychology / Social Sciences	22%
Collaborative / Team oriented	38%	Law / Criminology	10%
Judgement and decision-making	36%	Health / Sciences	8%
Creativity	29%	Languages	8%
Program and/or project management	29%	None of the above	8%
Mission oriented	19%		
Negotiation	12%		

Q: Which of the following soft skills are the most challenging to find among individuals who otherwise have requisite technical skills? (Select up to 5)

Q: If you could employ an IT specialist with an additional disciplinary skillset, which of the following would be most beneficial to your agency? (Select up to 3)

CLOSING SKILLS GAPS BEGINS WITH NEEDS ANALYSIS

Only about **half of government IT managers** surveyed have analyzed and reported to senior leaders what IT skills needs they anticipate in the next two years **— fewer than was the case with industry managers**.

Government Agency - Management

Base - 57

| 51% | 37% | 12% |

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Industry - Management

Base - 40

| 70% | 28% | 3% |

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

■ Yes ■ No ■ I don't know

Q: Have you or your leaders conducted a formal skills-needs analysis of your IT department for senior management regarding the anticipated needs in 2 – 3 years?
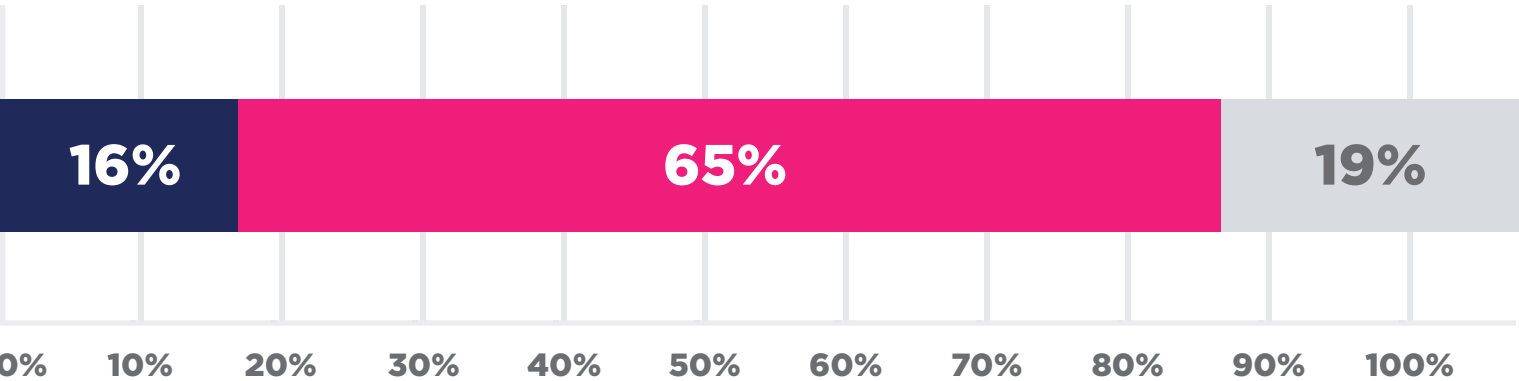
WorkScoop Sidenote
GAO in an October 2019 **report** gave 24 top agencies a mixed scorecard for their progress in implementing IT workforce planning activities. The report, however, offers federal agencies a framework to consider in their workforce planning.

COSTS OF IT SKILLS GAPS STILL NOT WELL KNOWN

Only **16% of government managers — and a quarter of industry managers —** said their IT team leaders have estimated the costs (e.g. from project delays) associated with ongoing vacancies and skills gaps.
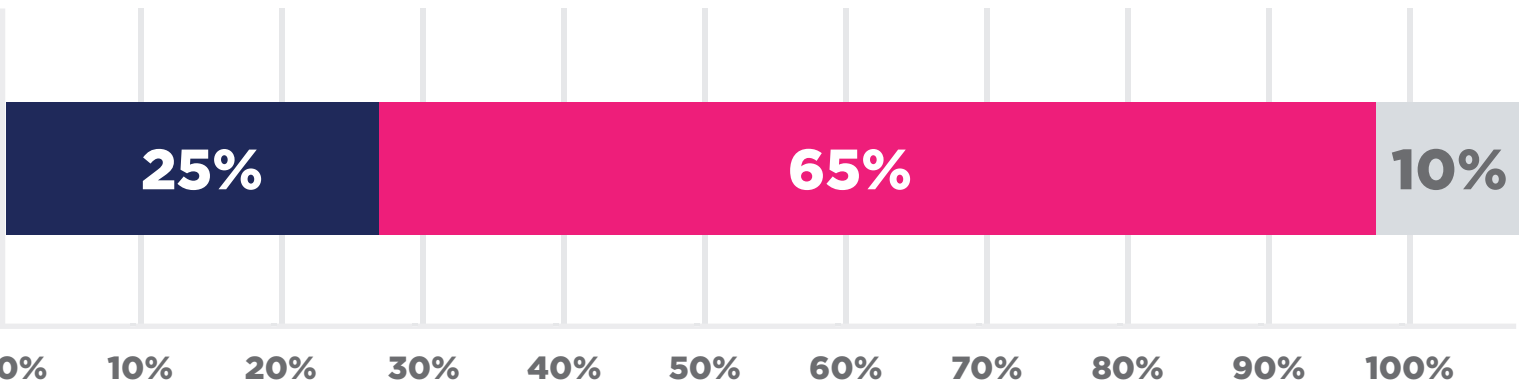
Government Agency - Management

Base - 57

| 16% | 65% | 19% |

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Industry - Management

Base - 40

| 25% | 65% | 10% |

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
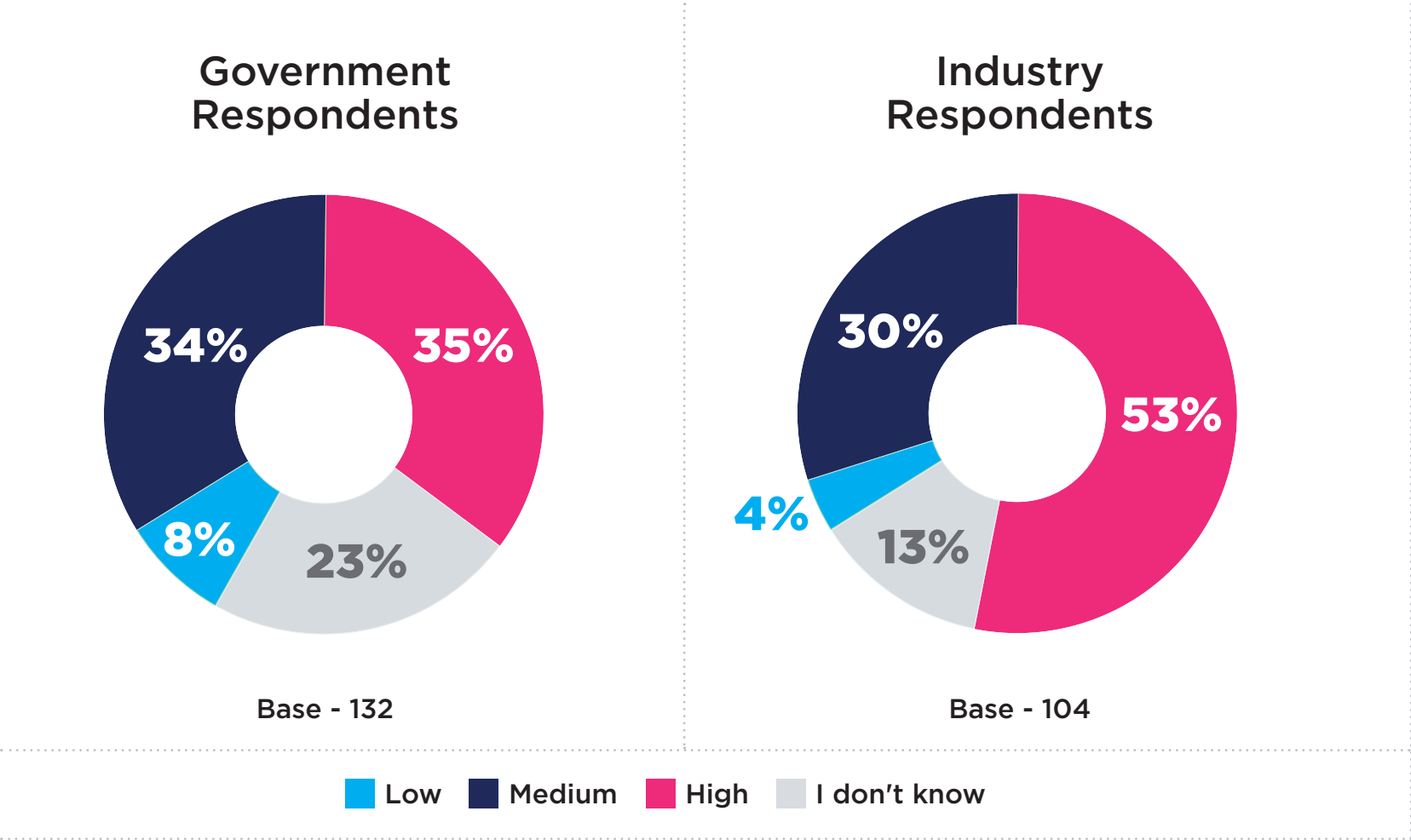
■ Yes ■ No ■ I don't know

Q: Has your agency's IT management team estimated the cost associated with the gap in IT skills?

WorkScoop Sidenote
Even if agencies haven't estimated the associated costs of IT vacancies, they know it is crucial to reduce hiring cycles. The Department of Defense has cut the time it takes to hire cybersecurity specialists at its U.S. Cyber Command unit from 111 days to 44, with a new initiative aimed at addressing open positions.

IMPACT OF IT SKILLS GAPS REMAINS SIGNIFICANT

Even without an internal impact analysis, **69% of government respondents — and 83% of industry respondents —** view ongoing IT skills gaps as having a high or medium impact on the ability to deliver on agency mission.

Government Respondents

35% High
23% I don't know
8% Low
34% Medium

Base - 132

Industry Respondents

53% High
13% I don't know
4% Low
30% Medium

Base - 104

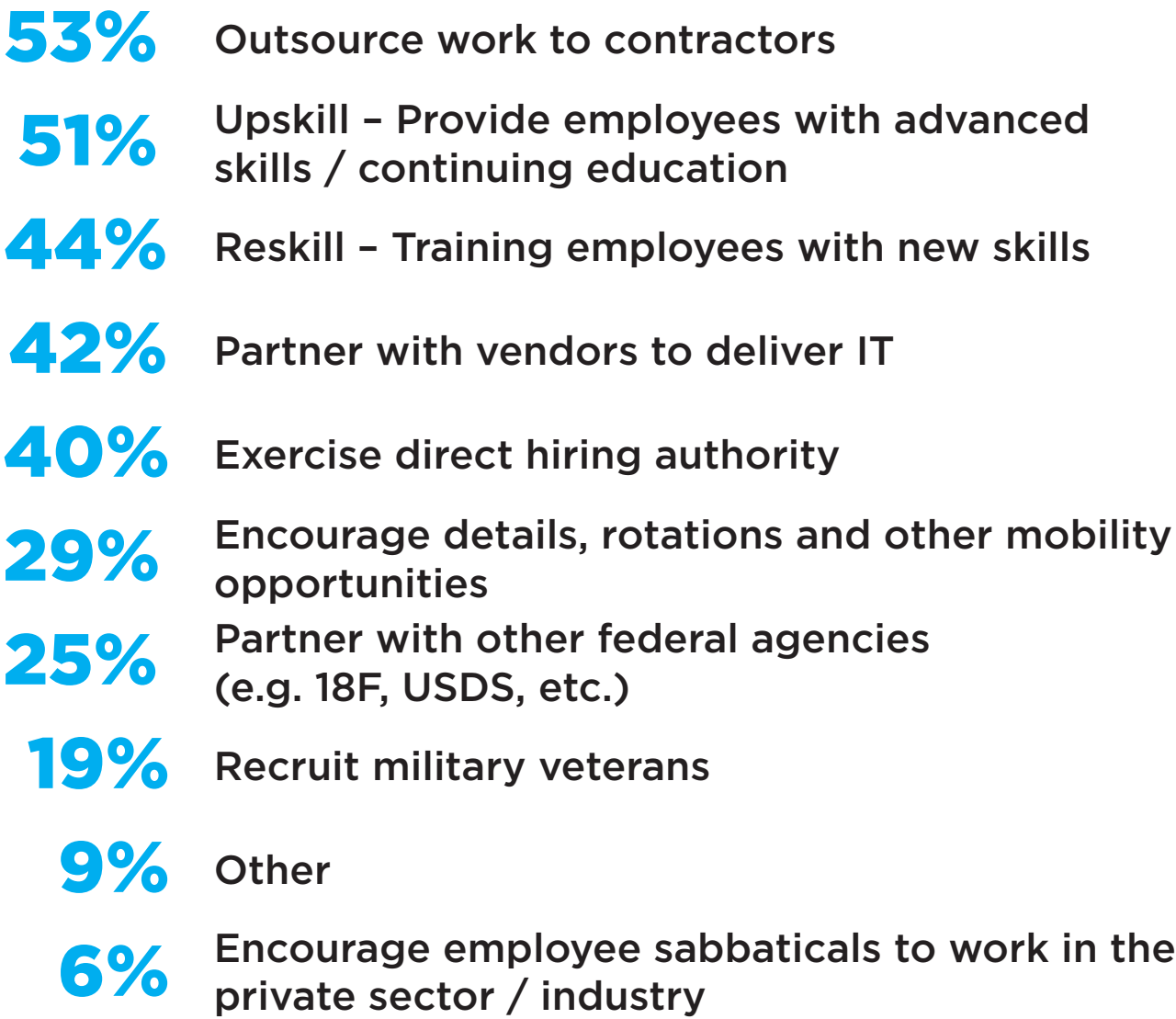**Low** **Medium** **High** **I don't know**

WorkScoop Sidenote
According to OPM data from last year, only 3% of the federal IT workforce is under 30 years of age. While mission is a compelling selling point, agencies also need to make their workplaces more attractive to prospective college graduates.

Q: How would you characterize the impact of the skills gap in the ability to deliver on agency mission?

BRIDGING THE SKILLS GAPS IN IT DEPARTMENTS

Respondents indicate **upskilling (51%)** or **reskilling (44%)** employees are among the most successful methods to bridge the skills gap in their IT department. **Outsourcing work** to contractors **(53%)** and **partnering with vendors (42%)** have also helped address IT skills deficits.

53% Outsource work to contractors

51% Upskill – Provide employees with advanced skills / continuing education

44% Reskill – Training employees with new skills

42% Partner with vendors to deliver IT

40% Exercise direct hiring authority

29% Encourage details, rotations and other mobility opportunities

25% Partner with other federal agencies (e.g. 18F, USDS, etc.)

19% Recruit military veterans

9% Other

6% Encourage employee sabbaticals to work in the private sector / industry

WorkScoop Sidenote
Agencies are clearly taking a combination of approaches to meet the demand for newer skills. Among others they are trying:
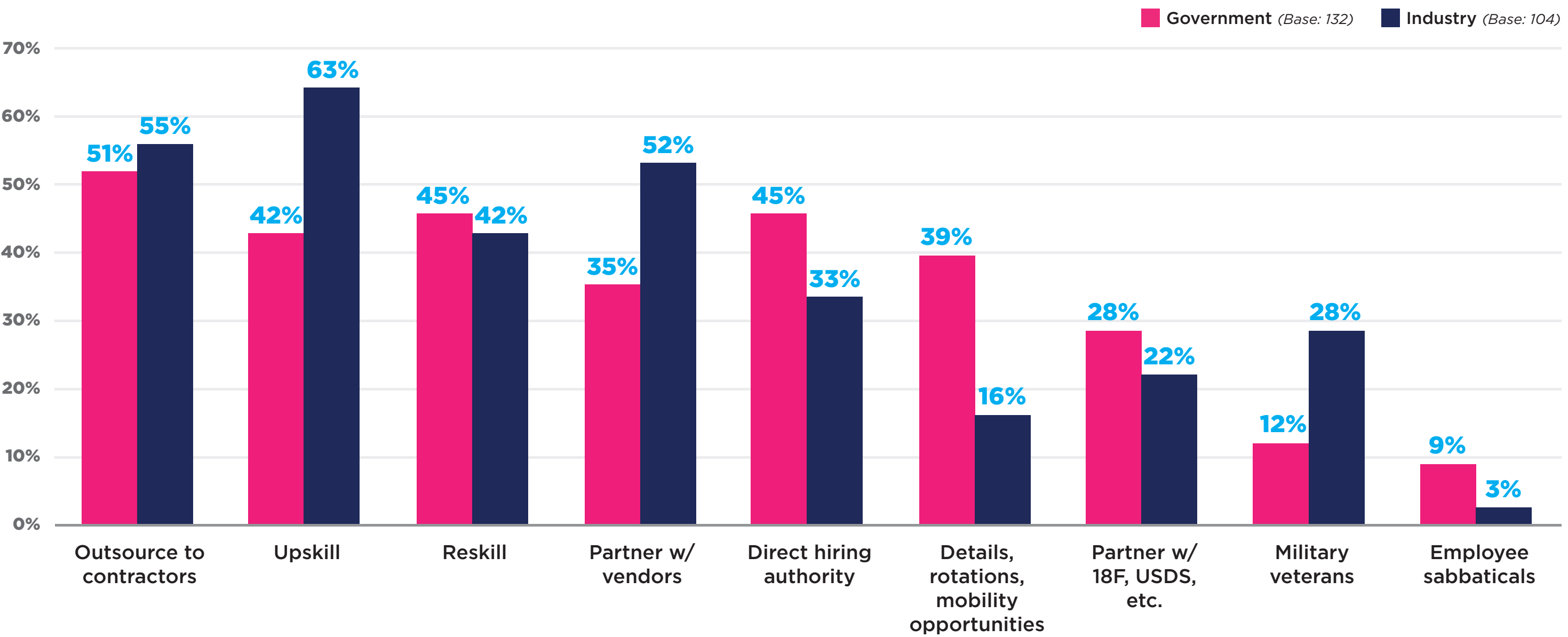
- Partnering with universities or engaging directly with students

- Using social media to reach out to qualified candidates

- Creating fellowship opportunities

Base - 236

Q: Which of the following have been most successful to bridge the skills gaps in your IT department? (Select up to 5)
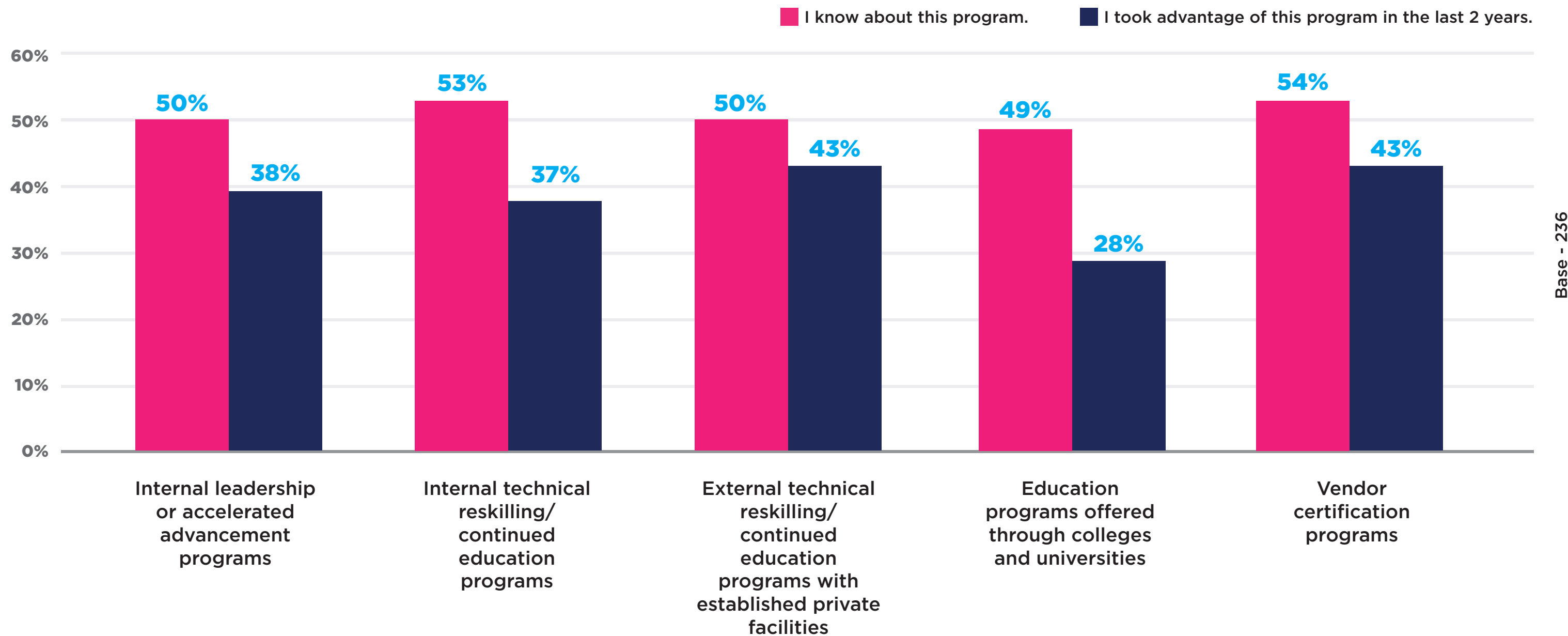
BRIDGING THE SKILLS GAPS IN IT DEPARTMENTS

Industry respondents tend to find **upskilling** and **partnering with vendors** more successful than their government counterparts. Government respondents reported that **direct hiring authority** and **detailing** have

Legend: ■ Government *(Base: 132)* ■ Industry *(Base: 104)*

Category	Government	Industry
Outsource to contractors	51%	55%
Upskill	42%	63%
Reskill	45%	42%
Partner w/ vendors	35%	52%
Direct hiring authority	45%	33%
Details, rotations, mobility opportunities	39%	16%
Partner w/ 18F, USDS, etc.	28%	22%
Military veterans	12%	28%
Employee sabbaticals	9%	3%

Q: Which of the following have been most successful to bridge the skills gaps in your IT department? (Select up to 5)

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BRIDGING THE SKILLS GAPS IN IT DEPARTMENTS – GOVERNMENT VS INDUSTRY

Half of respondents or more know about various skills / education programs available to them. However only **4 in 10, or fewer,** have taken advantage of those programs in the last 2 years — indicating more could be done to help employees take advantage of reskilling opportunities.
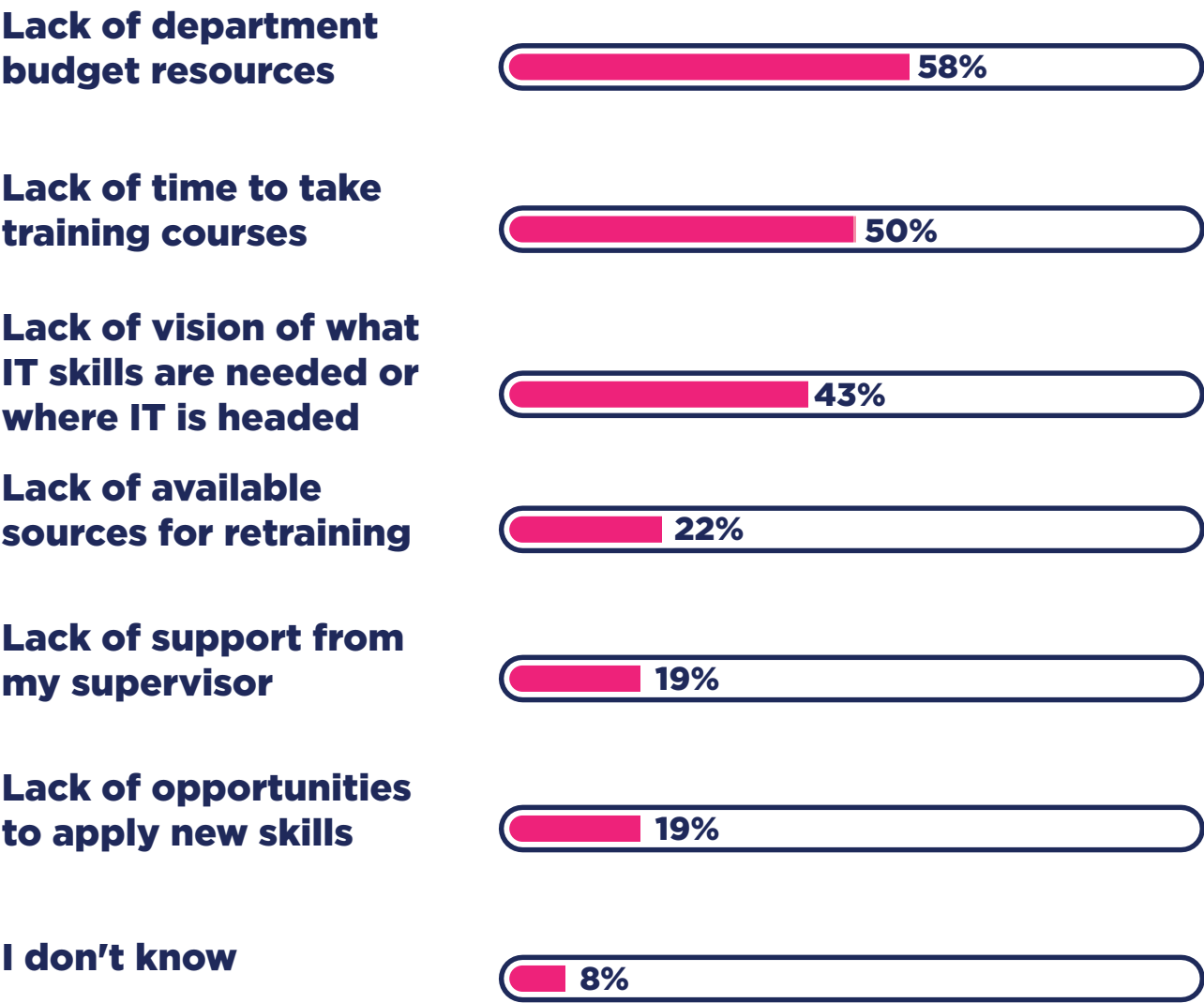
■ I know about this program. ■ I took advantage of this program in the last 2 years.

Base - 236

	Internal leadership or accelerated advancement programs	Internal technical reskilling/ continued education programs	External technical reskilling/ continued education programs with established private facilities	Education programs offered through colleges and universities	Vendor certification programs
I know about this program	50%	53%	50%	49%	54%
I took advantage	38%	37%	43%	28%	43%

Q: Which of the following types of reskilling / continuing education programs are offered at my agency?

Q: Which of the following types of reskilling / continuing education programs have I taken in the last 2 years?

CONSTRAINTS IT PROFESSIONALS FACE IN ACQUIRING NEW SKILLS

The biggest constraints to acquiring new skills, respondents said, are a **lack of budget resources (53%)** and **time to take training courses (50%)**. But **43%** said a **"lack of vision of what skills are needed"** is also a constraint. This suggests agency leaders could do more to communicate what skills will be in greater demand

Lack of department budget resources 58%

Lack of time to take training courses 50%

Lack of vision of what IT skills are needed or where IT is headed 43%

Lack of available sources for retraining 22%

Lack of support from my supervisor 19%

Lack of opportunities to apply new skills 19%

I don't know 8%

WorkScoop Sidenote
IT leaders tell us that many current government IT titles don't translate to private sector titles and make it difficult for people to know which positions to apply for. Agency leaders also could do more to communicate what skills will be in greater demand and how employees can attain and use those skills.

Q: Which of the following would you rate as the biggest constraints in acquiring new skills / continuing education at your agency? (Select up to 3)

CONCLUSIONS/
RECOMMENDATIONS

Federal agencies are facing an acute shortage of strategic IT skills to keep up with current mission needs as well as to meet the demands of the ever-changing digital economy.

Competition with the private sector for talent, internal resource constraints and the changing nature of technology itself will remain a fact of life for agencies now and in the future.

However, the sentiments of federal CIOs and IT personnel reflected in this study suggest there are actions agencies can take to improve their ability to find, retain and develop the IT talent they need, by taking steps to:

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Articulate the mission impact of IT talent shortages.
Agencies routinely assess their risks and resource requirements. But they need to do more to help leadership understand the hidden mission costs and lost operational savings arising from IT talent shortages.

Create a clearer vision for developing IT talent.
Agency leaders need to give current and prospective employees a clearer idea of the kinds of IT skills the agency plans to invest in — and more flexible career paths.

Hit the reset button on job titles and work benefits.
The IT job market is evolving as quickly as technology itself. Agencies need to align their job titles and requirements with marketplace descriptions that resonate with a younger generation of IT specialists — and give current employees a sense that there's room to grow their skills in government.

Give current employees time to upskill and reskill.
Current and prospective employees want to work where they can continually upgrade their skills. Agencies can appeal to that desire by giving them more time, resources and opportunities to upgrade or recast their skills.

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WorkScoop is positioned at the intersection of the government, tech industry and academia, covering the latest news and trends around the most critical topic in the public sector technology space: the workforce. WorkScoop engages top government and technology leaders to discuss ways to recruit, hire, retain, develop and reskill top talent for a more effective IT workforce, bridging the gap between the decision makers in search of top technologists today and the IT leaders of tomorrow.

fedscoop

FedScoop is the leading tech media brand in the federal government market. With more than 210,000 unique monthly visitors and 120,000 daily newsletter subscribers, FedScoop gathers top leaders from the White House, federal agencies, academia and the tech industry to discuss ways technology can improve government and identify ways to achieve common goals. With our website, newsletter and events, we've become the community's go-to platform for education and collaboration.

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