



Survey of SHARE Membership

Closing the IT Skills Gap

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Agenda

- Who is SHARE?
- Survey Methodology
- Survey Outcomes
 - Skills Shortfalls and Educational Challenges
 - Hiring Trends
 - Programmers and Developers
 - Systems Programmers and Analysts
 - Database Professionals
 - Application Professionals
 - Analysts and Architects
 - Demographics

Quick word about presentation

- There are 101 slides to this presentation
- This is a 30 minute presentation
- That's 1 slide every 17.8 seconds
- We're behind schedule

Report of Survey Results

- 1-page Executive Summary freely available on SHARE web site, www.share.org
- 45-page full report available by asking from SHARE headquarters.
- This presentation fully covers all material from the full report.

SHARE, Inc.



- Since 1955, SHARE is an independent, volunteer run User Group of nearly 2,000 member organizations spanning many industry sectors exploiting enterprise scale computing
- Two opportunities per year to meet face-to-face and discuss top-of-mind issues with industry thought leaders
 - Broad spectrum of topics spanning systems, networks, architecture, languages, middleware, service management
- Year round community
 - Engage with colleagues throughout the year
 - Online library of recorded content

SHARE, Inc.



- SHARE initiatives in support of young people entering the world of Enterprise IT
 - zNextGen
 - Serves as a gateway for students embarking on careers in enterprise IT and experienced IT professionals who are expanding their skills in support of mainframe systems
 - Currently over 700 members in 27 countries
 - Academic Award for Excellence
 - SHARE recognizes the importance of the next generation of enterprise technology professionals by showcasing and rewarding academic work that is relevant to the future of enterprise computing

SHARE's Interest in the IT Skills Survey

- Enterprise IT, which includes mainframe, is a key concern of SHARE members
- SHARE member installations have critical business needs that depend on the mainframe

IT Skills Survey

- Jointly designed by SHARE and Unisphere Research with input from Northern Illinois University
- Sponsored by IBM and conducted by Unisphere Research
- Participant pool included SHARE members and Unisphere subscribers
- Assess industry requirements
 - For new entrants in the workforce
 - As input to universities in the creation of their programs
 - Not trying to dictate curriculum, simply skills needs of industry

Summary Survey Results

- 376 companies responded
- Majority report they depend on higher ed to provide graduates with
 - IT skills
 - Enterprise programming languages
 - Mainframe administration
 - Business skills
 - Problem-solving
 - Communications ability

Summary Survey Results

- Close to four out of 10 report that their IT hires are not sufficiently prepared to perform jobs within their companies
- Only 8% would rate their IT hires as “well-trained, ready to go.”
- Half of respondents are very likely to hire or already hiring
- While technical skill is important, employers also want well-rounded, business-savvy employees

Survey Construction

- Divided into disciplines
 - Programmers and Developers
 - Systems Programmers and Administrators
 - Database Professionals
 - Application Managers
 - Analysts and Architects

Skills Shortfalls

Educational Challenges

- Technical skills
 - 1 out of 4 concerned
 - 28% readiness is insufficient or “severely deficient”
 - Only 11% rate their IT hires “well-trained, ready to go”
- Business skills
 - 4 out of 10 concerned
 - Additional 4 out of 10 notable gap in skills
 - Only 8% rate their IT hires “well-trained, ready to go”
 - 8 out of 10 look for good problem-solving skills
 - 70% say critical thinking is a top skill
 - Majority want effective written communication

Skills Shortfalls

Educational Challenges

- Employers overwhelmingly agree that colleges and universities need to provide the essential skills required to run IT departments.
- Look to educational institutions to provide
 - 77% look for programming skills
 - 82% look for database skills
 - 76% look for analysis and architectural skills.
 - 8 out of 10 look for problem-solving and technical skills.
- >50% rate colleges & universities “satisfactory” in providing skills

Skills Shortfalls

Educational Challenges

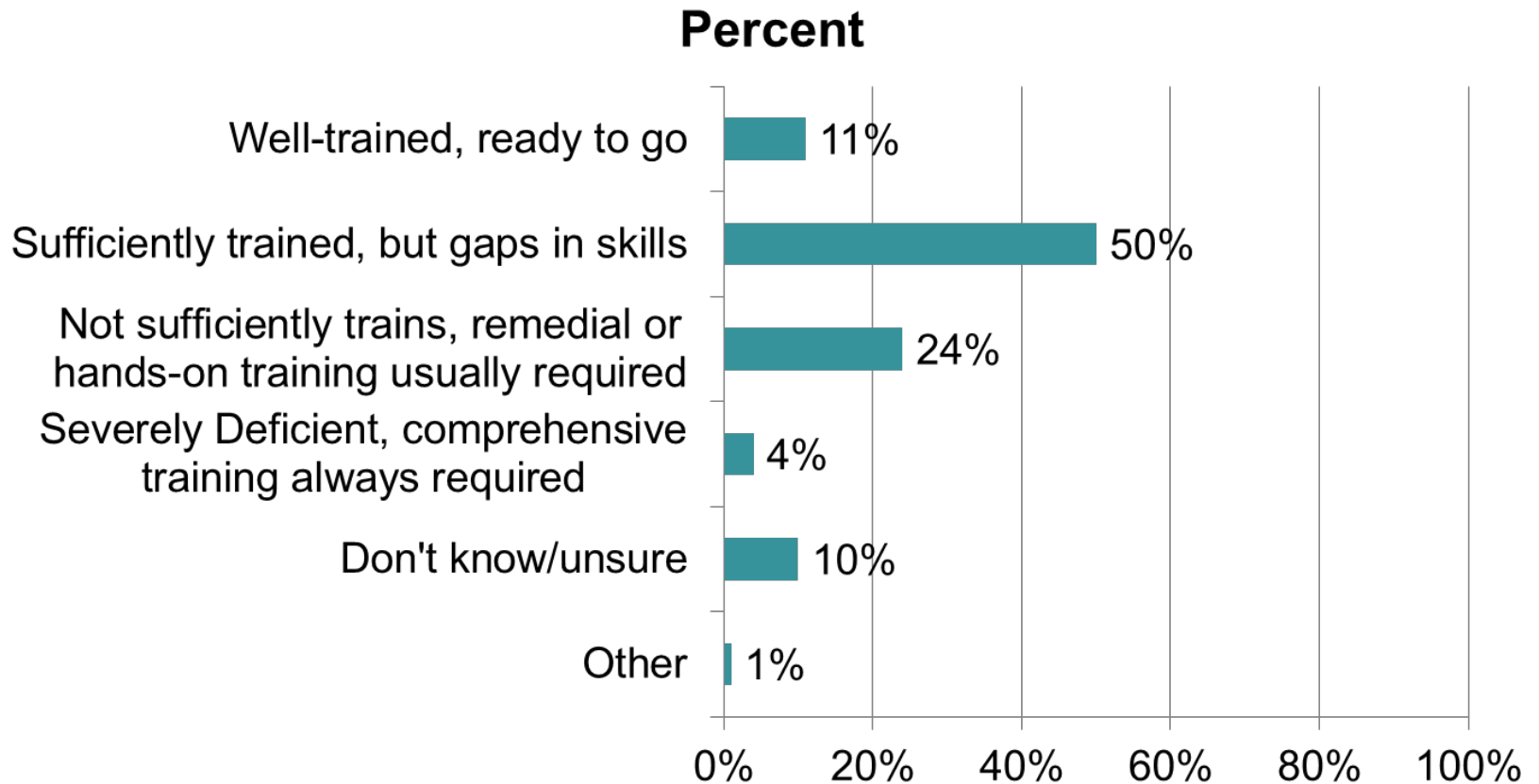
- 33% rate business/systems interface skills “unsatisfactory”
- 32% not satisfied with “pure” business skills

Skills Shortfalls

Educational Challenges

- Quotes:
 - “Most programs are programming-specific and completely ignore how the future candidate will integrate in a complex organization”
 - “many folks have some technical skills, but not enough skills to deal with political interests, poor architecture or kingdom builders.”
 - “each environment is hardly ever a cookie cutter type and will always require hands-on training to get acquainted.”
 - “Rarely can they fold immediately into a project with many moving parts as their total educational experience was that of a lone coder or they ventured too deeply in the theory.”
 - “Many graduates are bright and ready to go, but only have the academic understanding. They need a six-month-to-a-year training process before they are truly effective.”

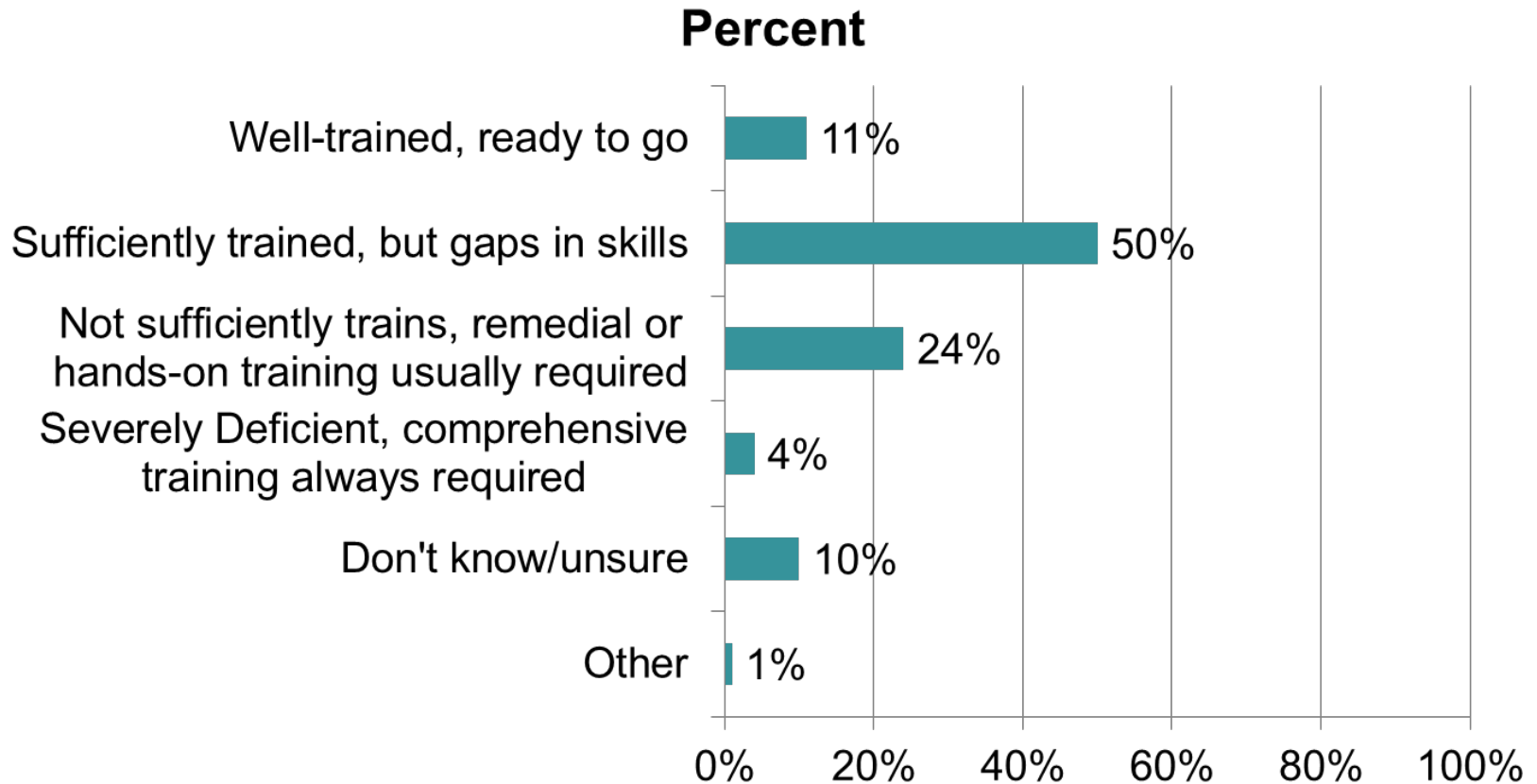
Technical Proficiency of New IT Hires



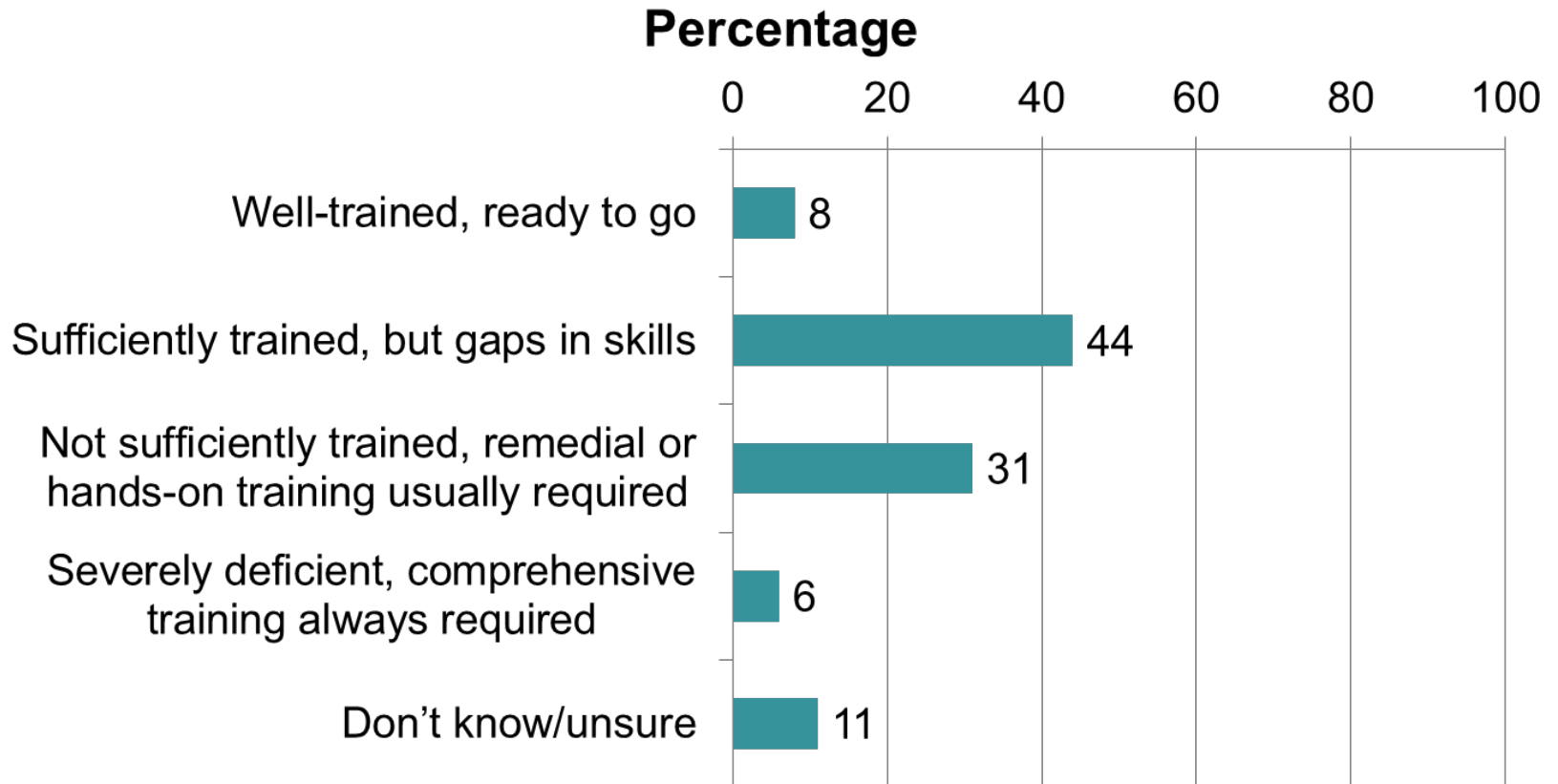
SHARE Mission and Vision

- **Our Mission**
 - To enable people in Information Technology environments to achieve business results.
- **Our Vision**
 - We will be an indispensable partner with our members and IBM - the community where users and technology meet to shape the future of Information Technology.

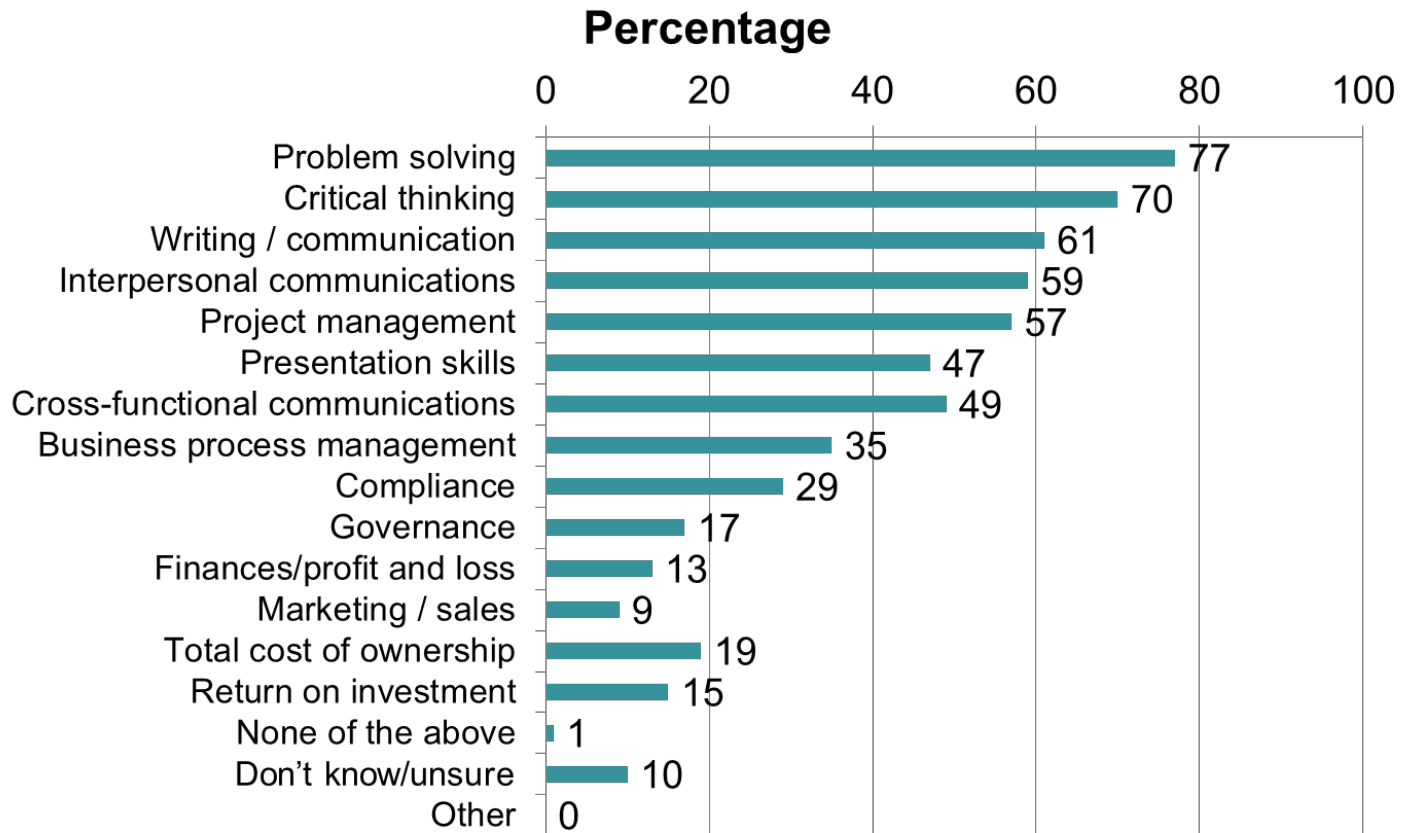
Technical Proficiency of New IT Hires



Business Proficiency of New IT Hires



“Pure” Business Skills Needed

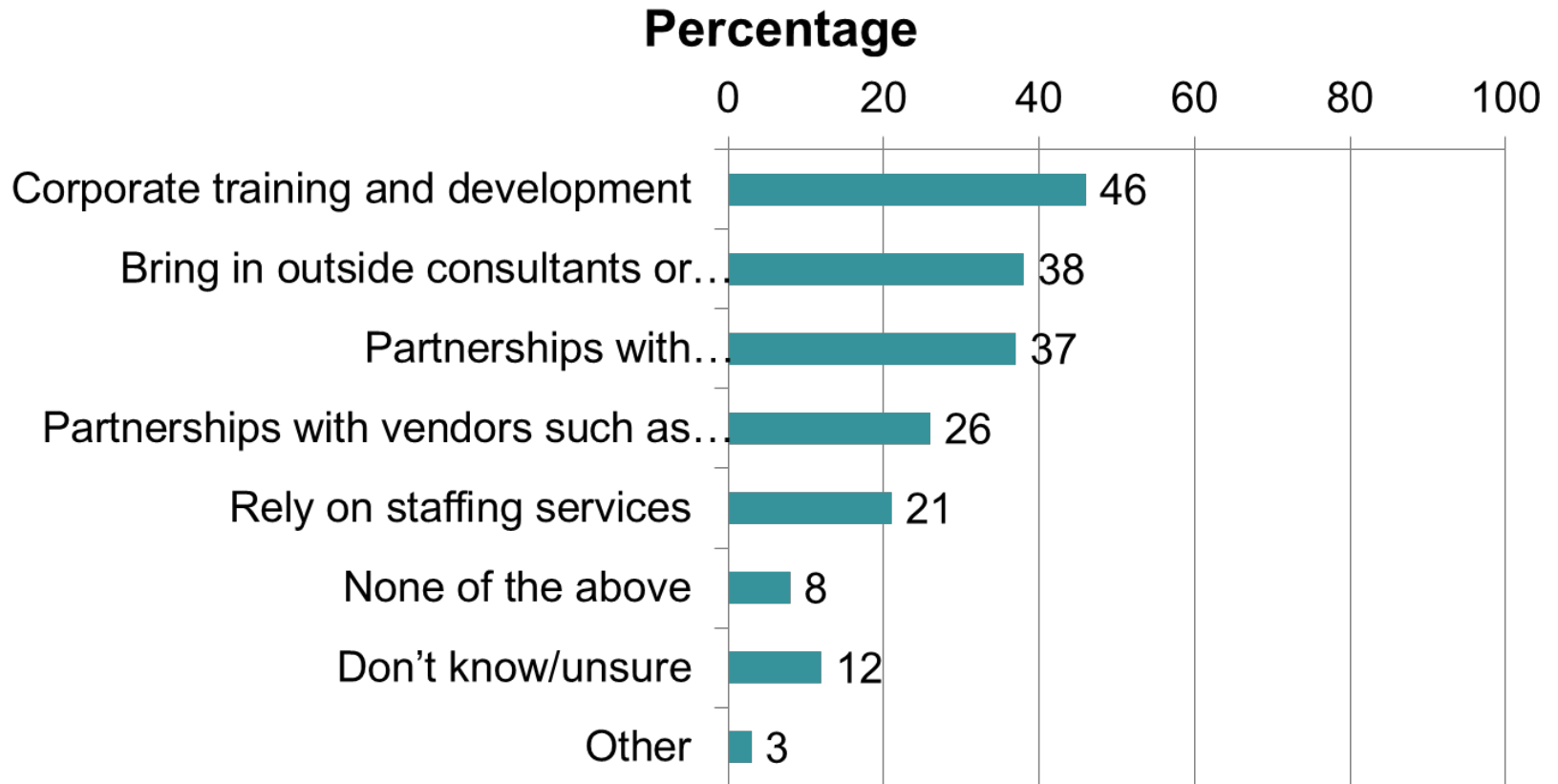


Satisfaction Levels with IT Skills from Colleges and Universities

By Professional Category

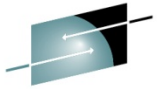
	Unsatisfactory	Satisfactory	Excellent
Programming/development skills	26	56	19
Database skills	28	54	5
Administration skills	28	53	6
Business/systems interface skills	33	50	5
Pure business skills (for IT depts.)	32	48	6

Strategies Employed to Develop IT Talent



Hiring Trends

- General Trends
- Specific by Job Discipline
 - Programmers and Developers - create, integrate and test code to build or upgrade enterprise applications
 - Systems Programmers and Administrators - oversee the administration, security and availability of applications, operating systems and middleware.
 - Database Professionals - overseeing database administration, security and availability. They often specialize in a particular vendor brand of database.
 - Application Managers - oversee the selection, installation, and ongoing administration of specific enterprise application packages.
 - Analysts and Architects - serve as the bridge between business and IT, translating business requirements into IT capabilities, and vice versa.



SHARE

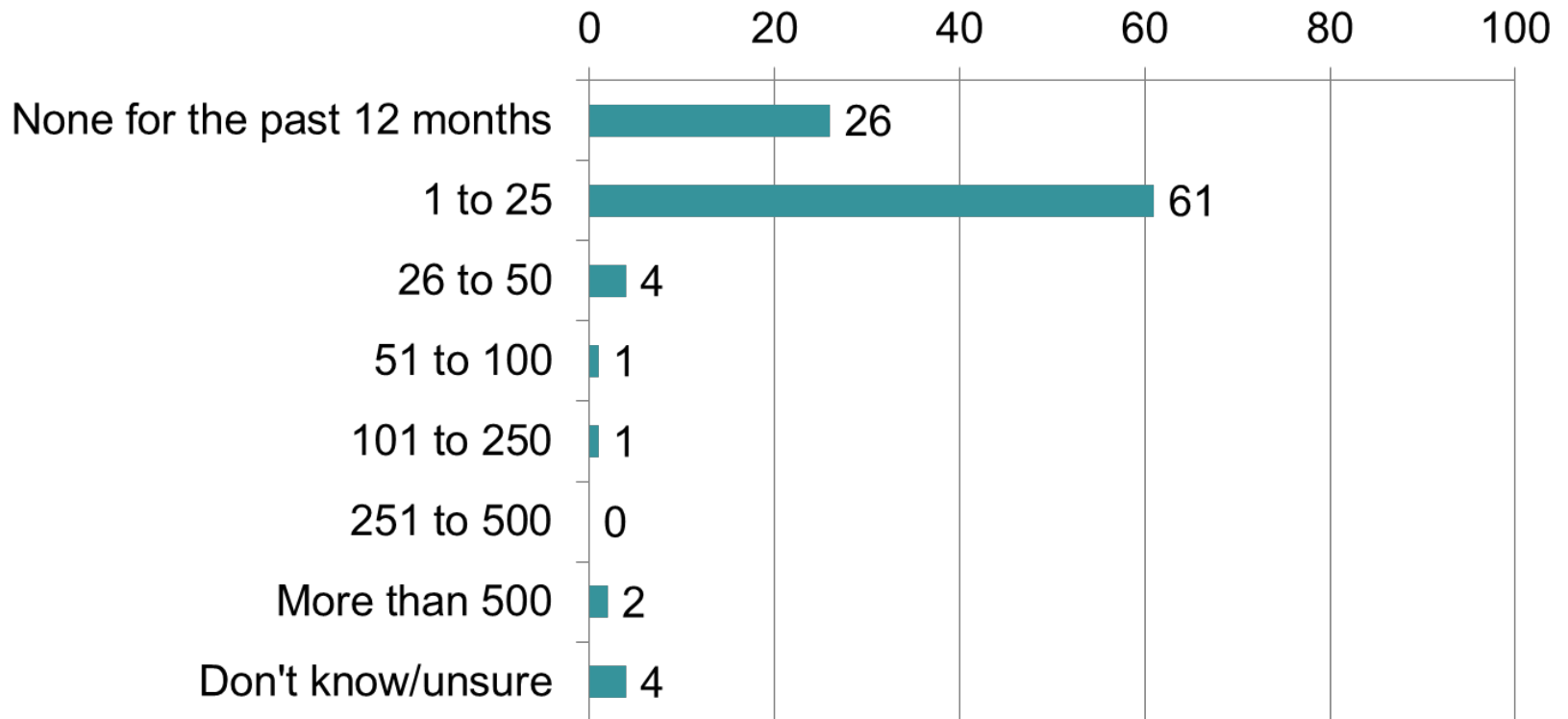
Technology • Connections • Results

Hiring Trends

Average IT Professionals Hired Annually

Within Respondents' Departments

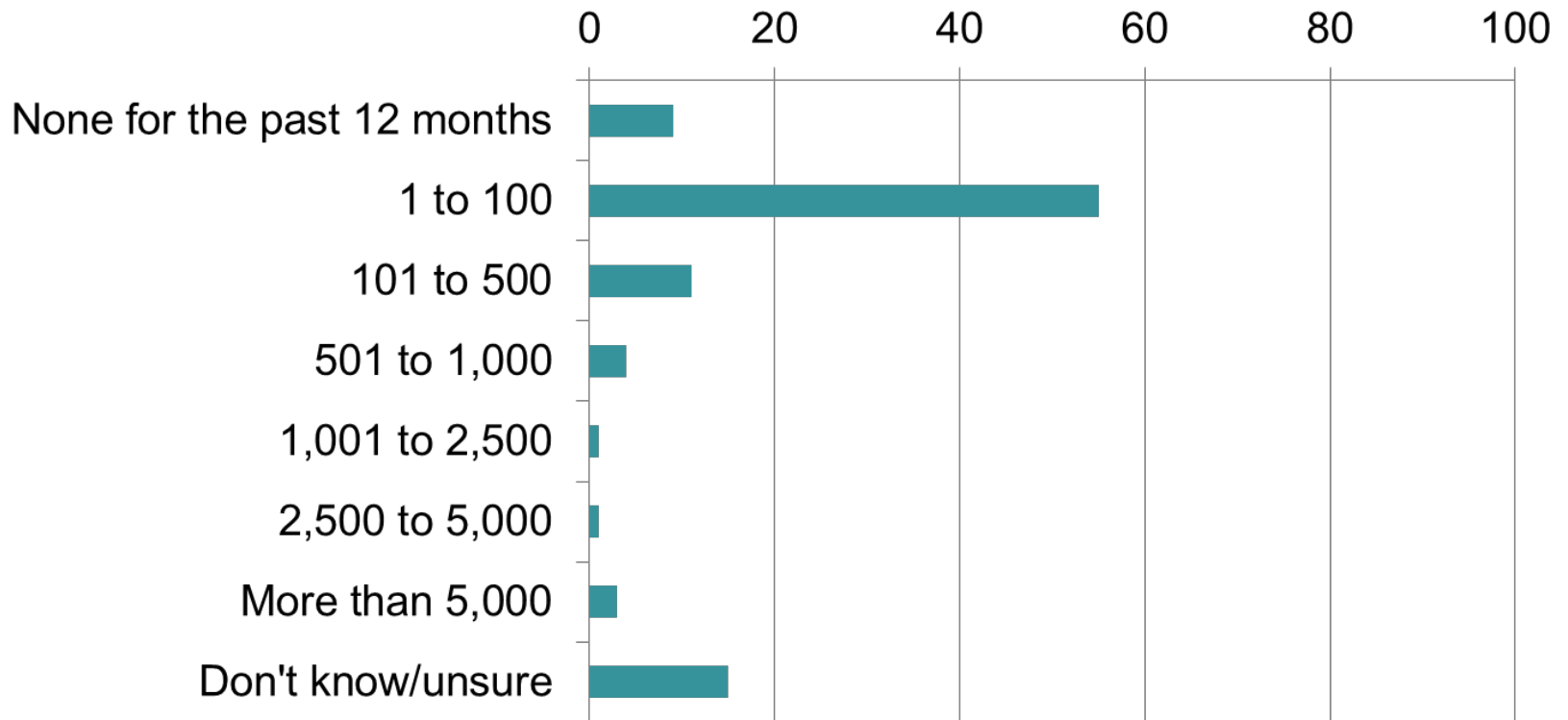
Percentage



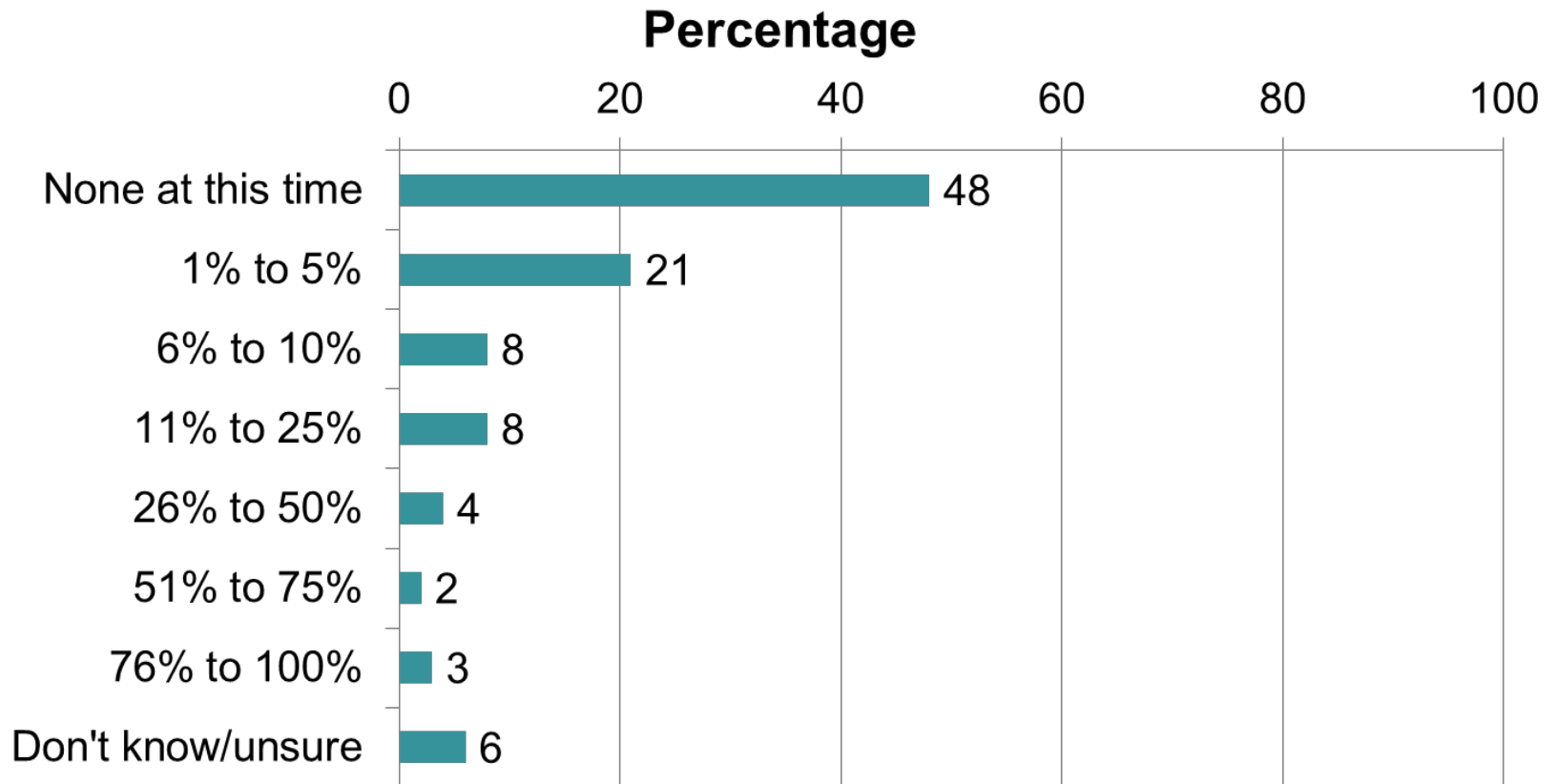
Average IT Professionals Hired Annually

Across Respondents' Entire Companies

Percentage



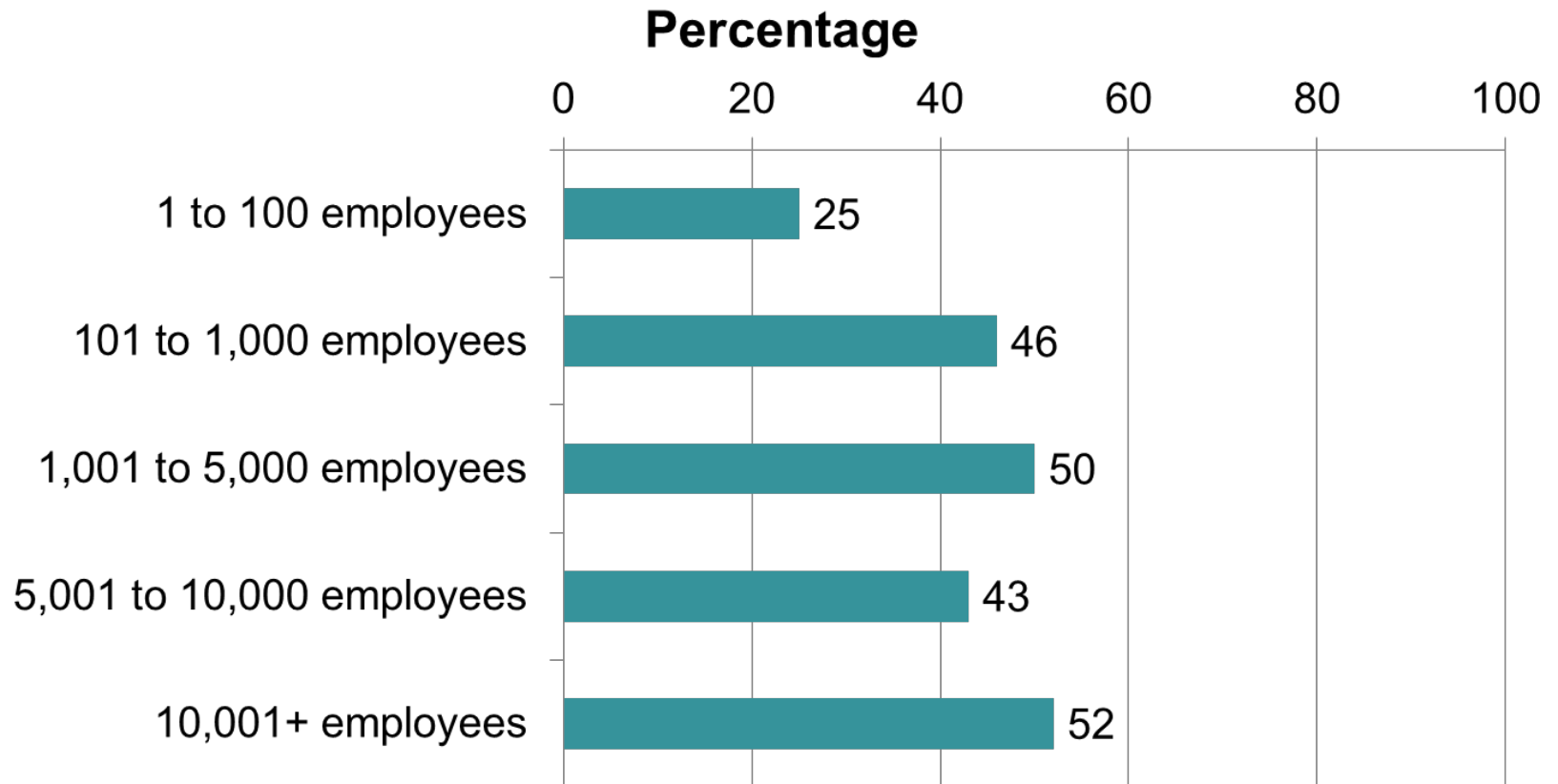
Percentage of New IT Hires Little or No Actual working Experience



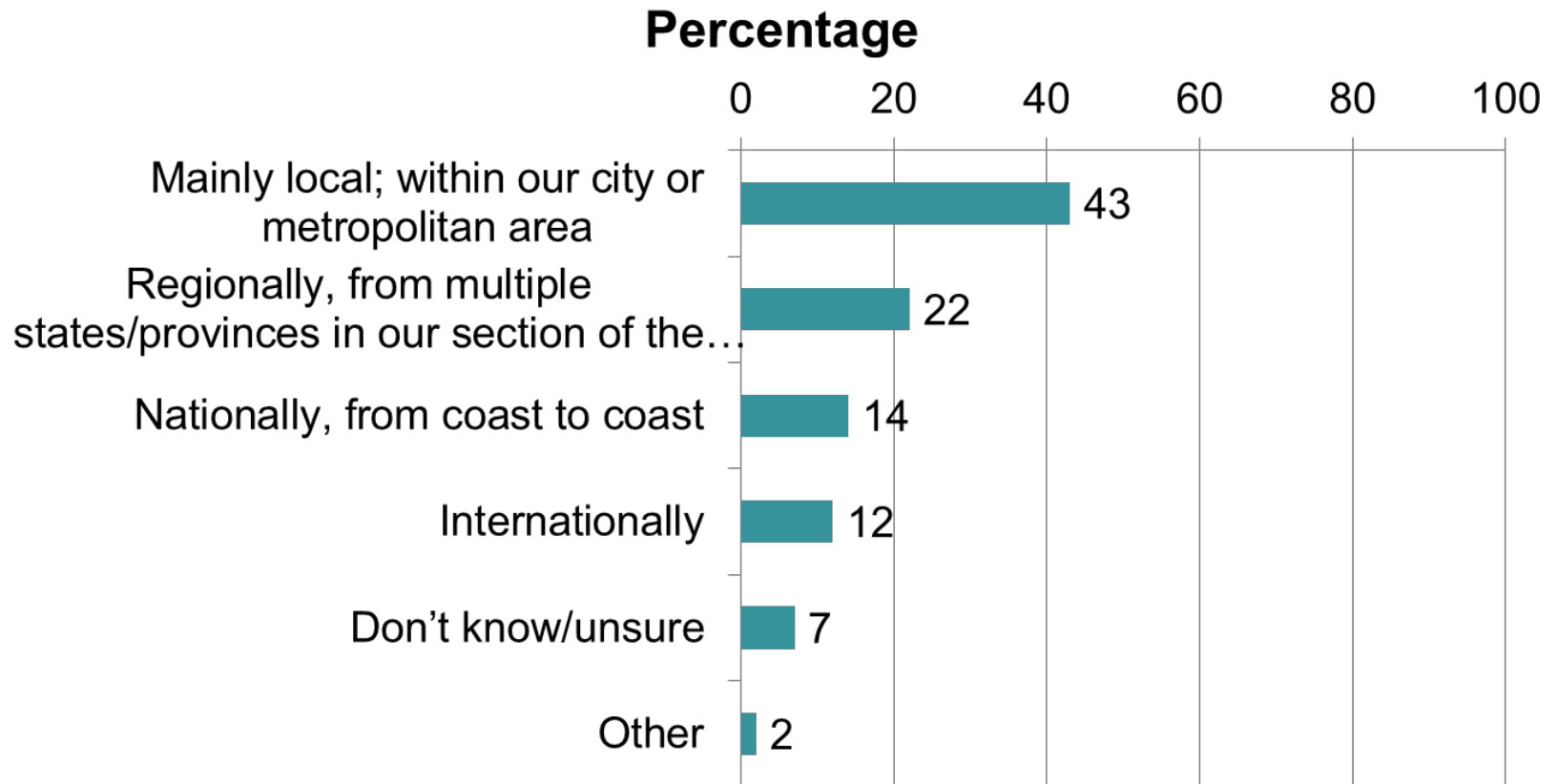
Companies Hiring IT Employees

Little or No Actual working Experience

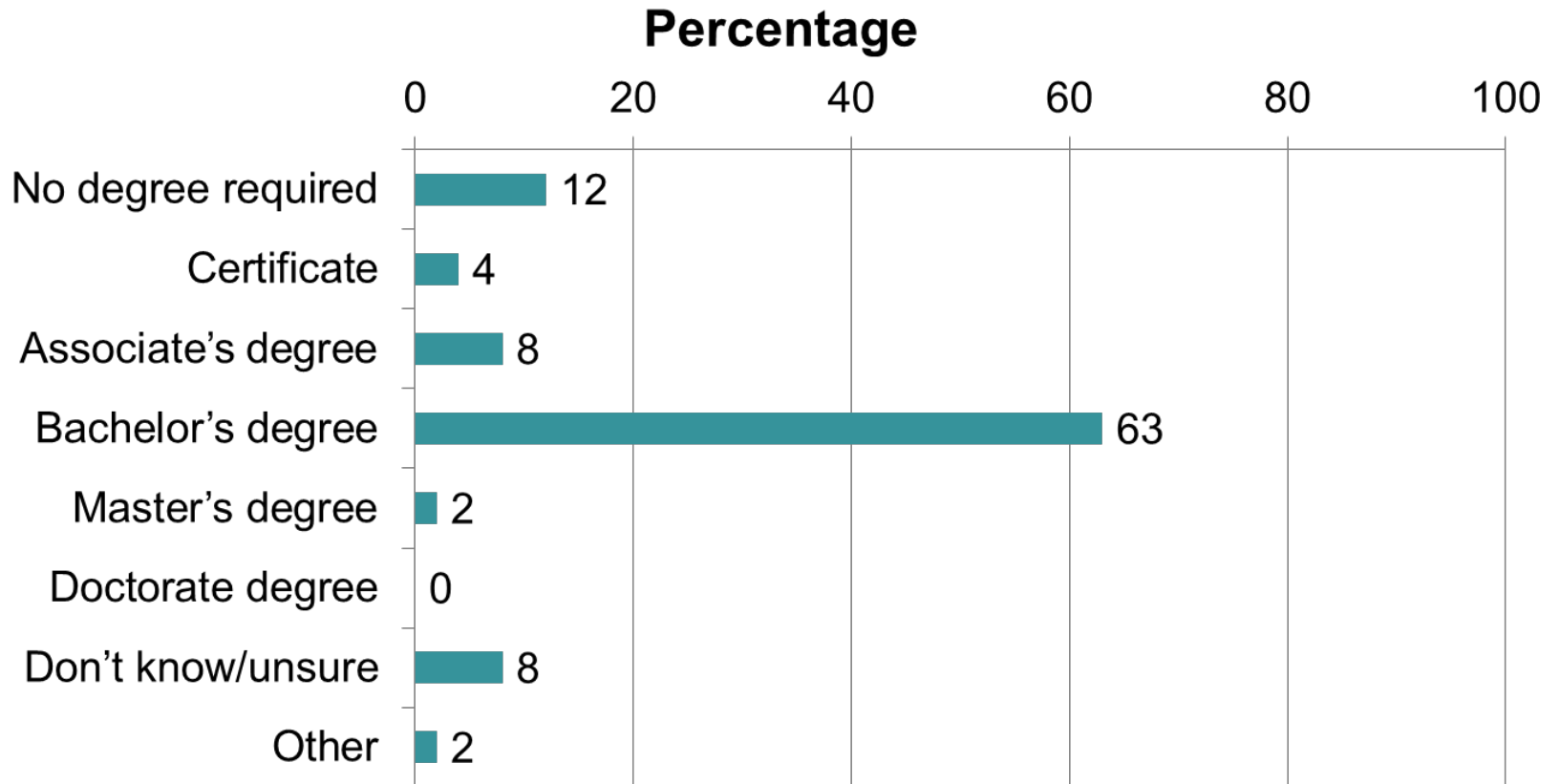
By Number of Employees



Geographic Reach of IT Hiring

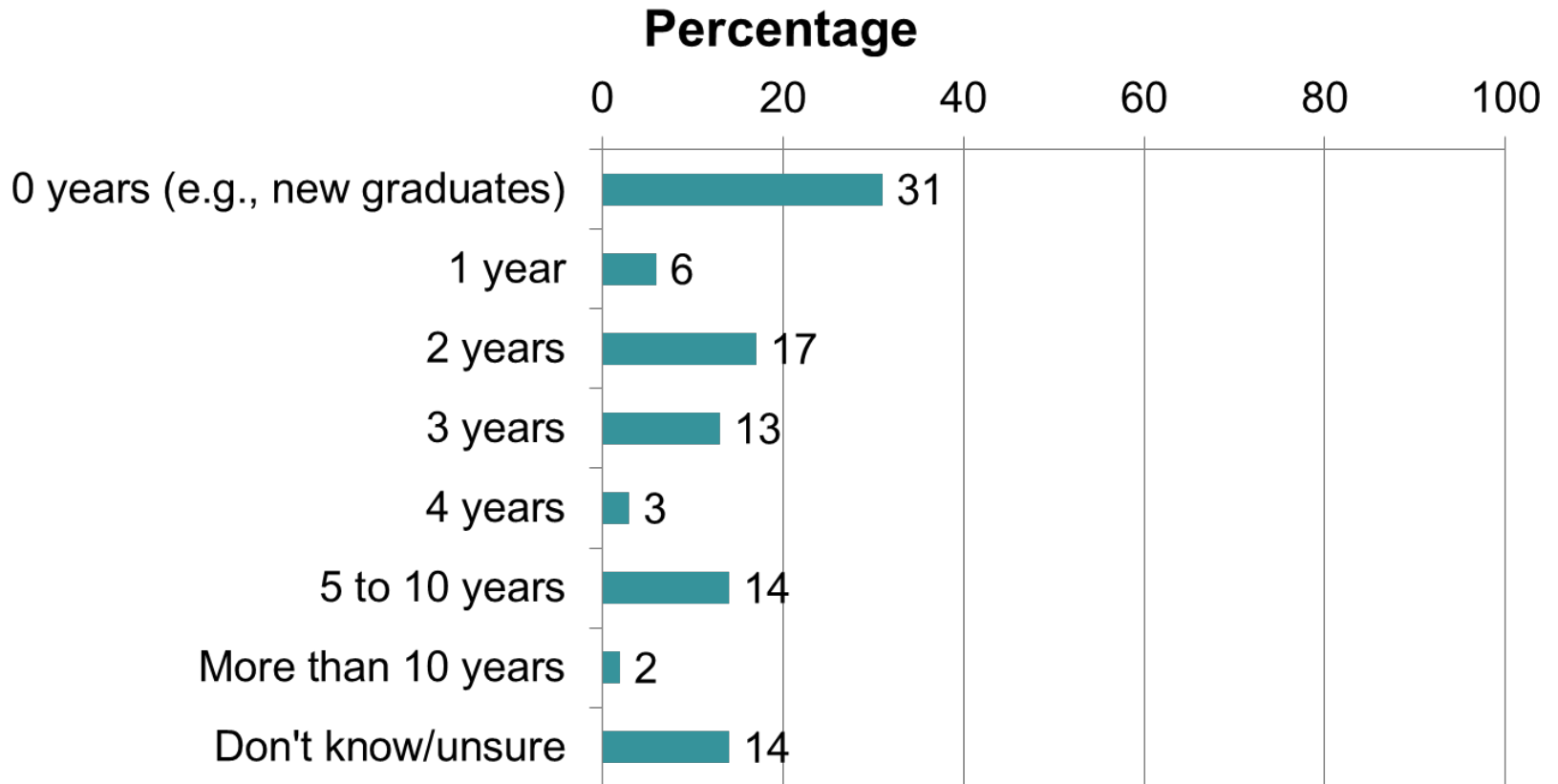


Minimum Educational Requirement Most IT Openings

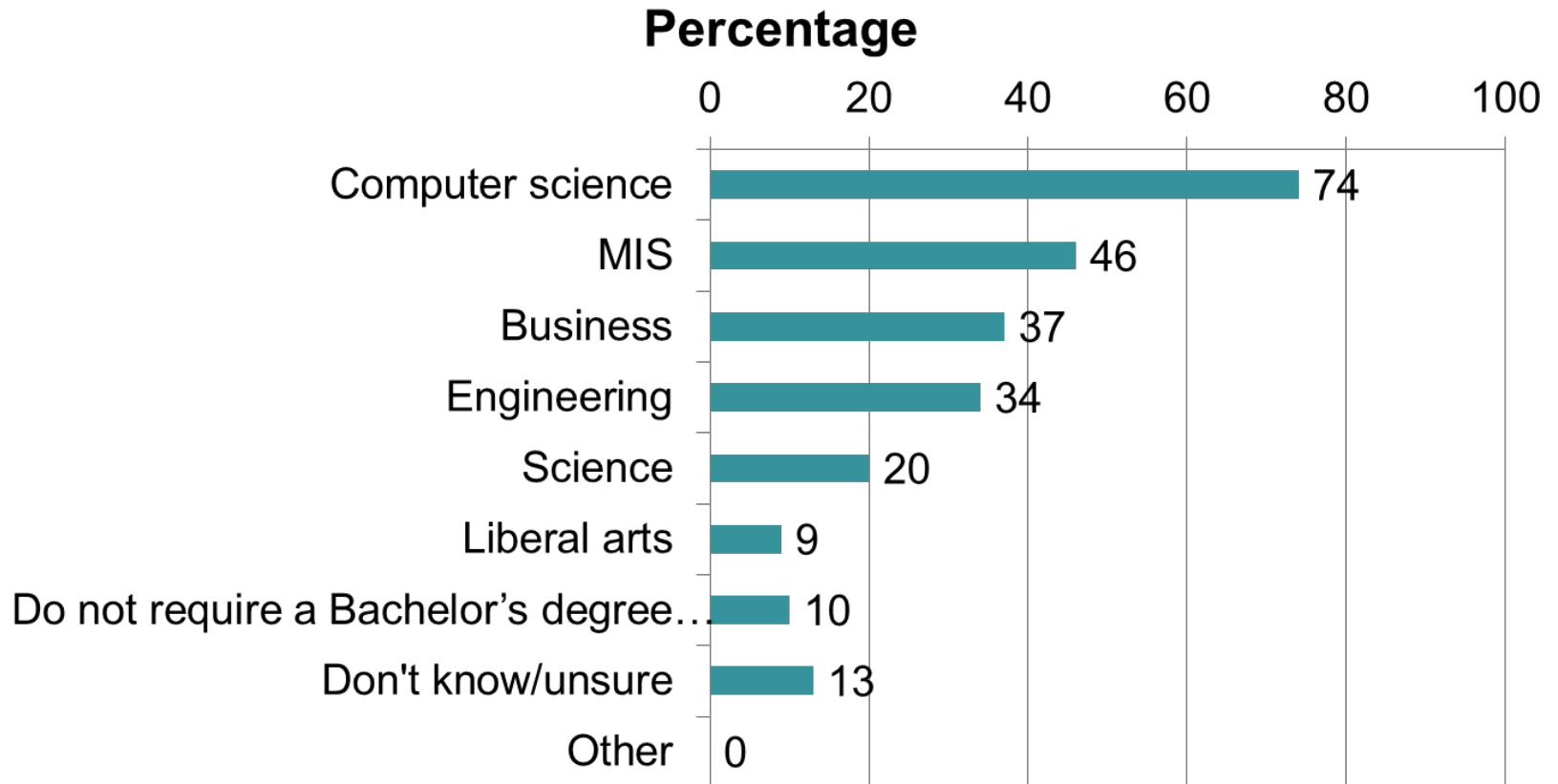


Years of Working Experience Required

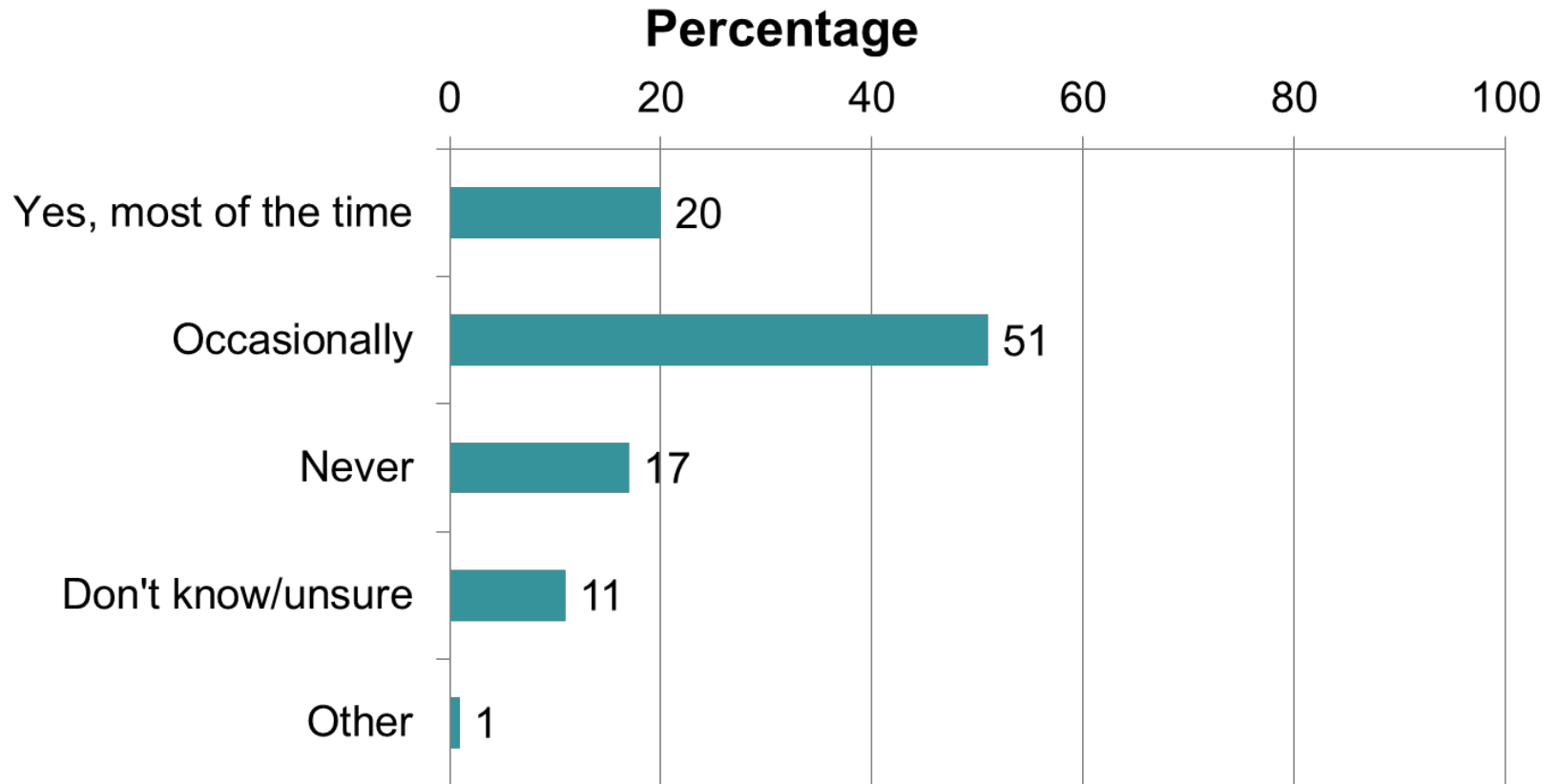
Most IT Candidates



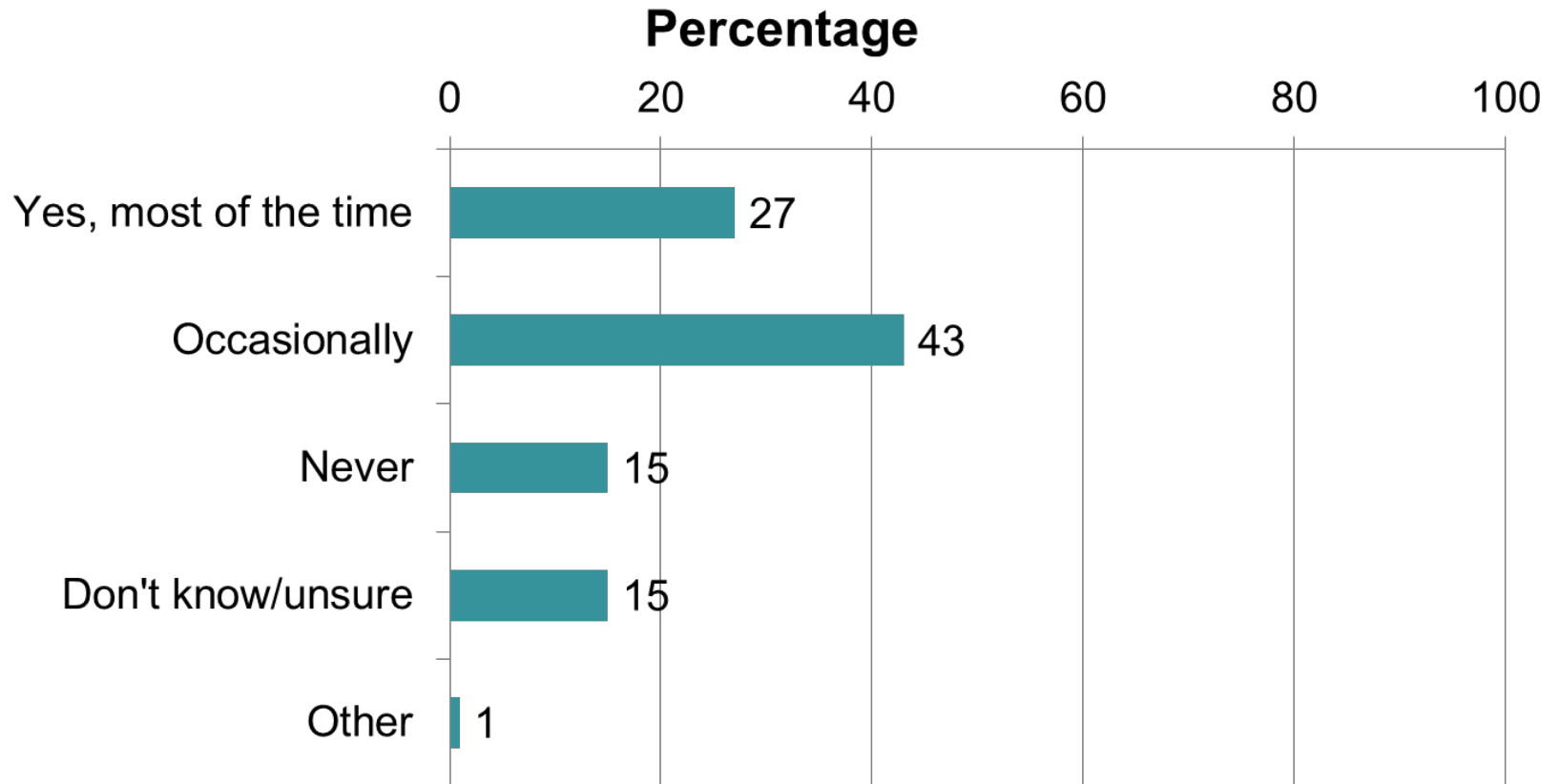
Bachelor Degree Programs Recruited



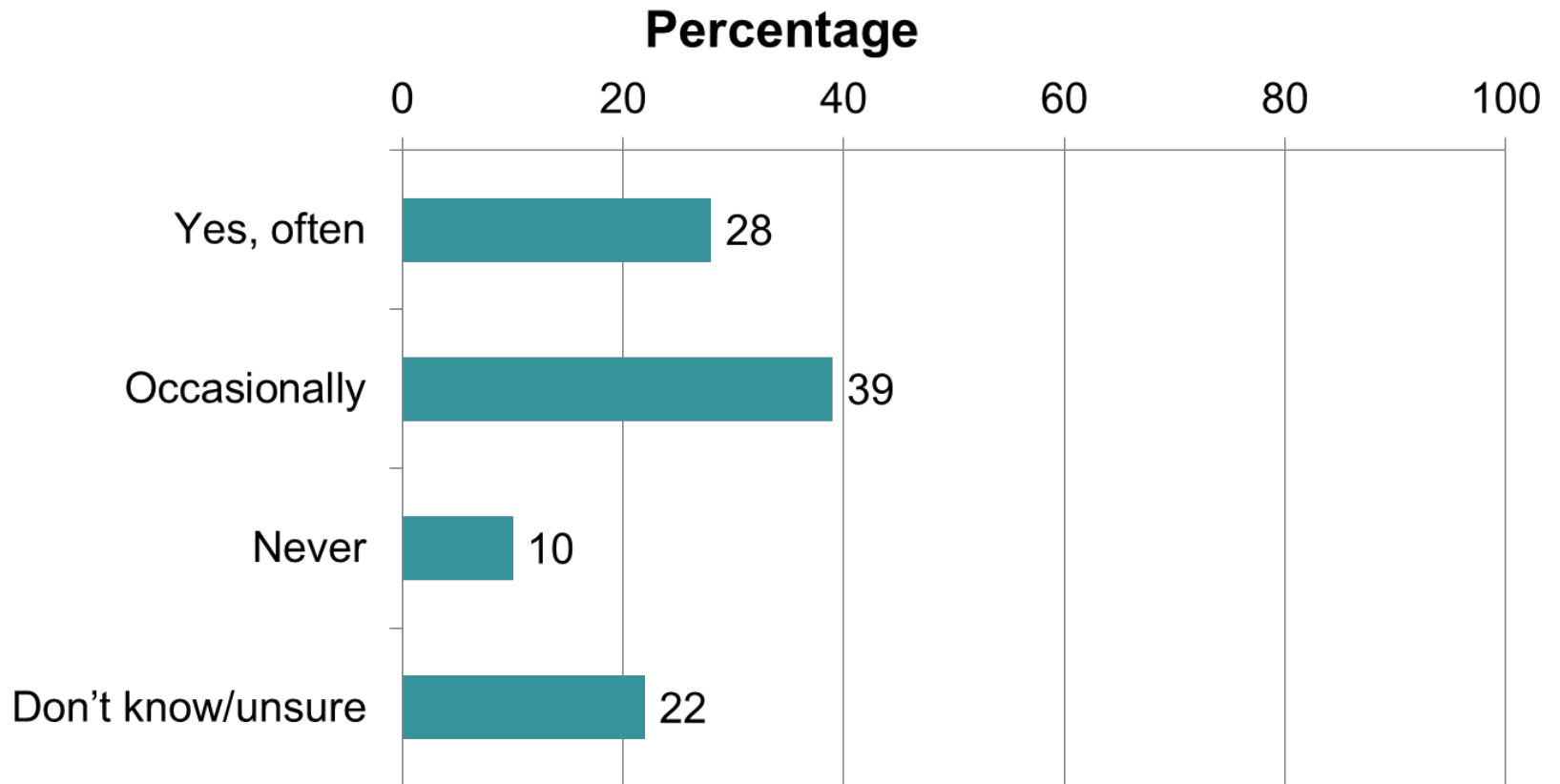
College Interns Working Within IT ?



Hire Full-Time IT Employees from Internship Programs?



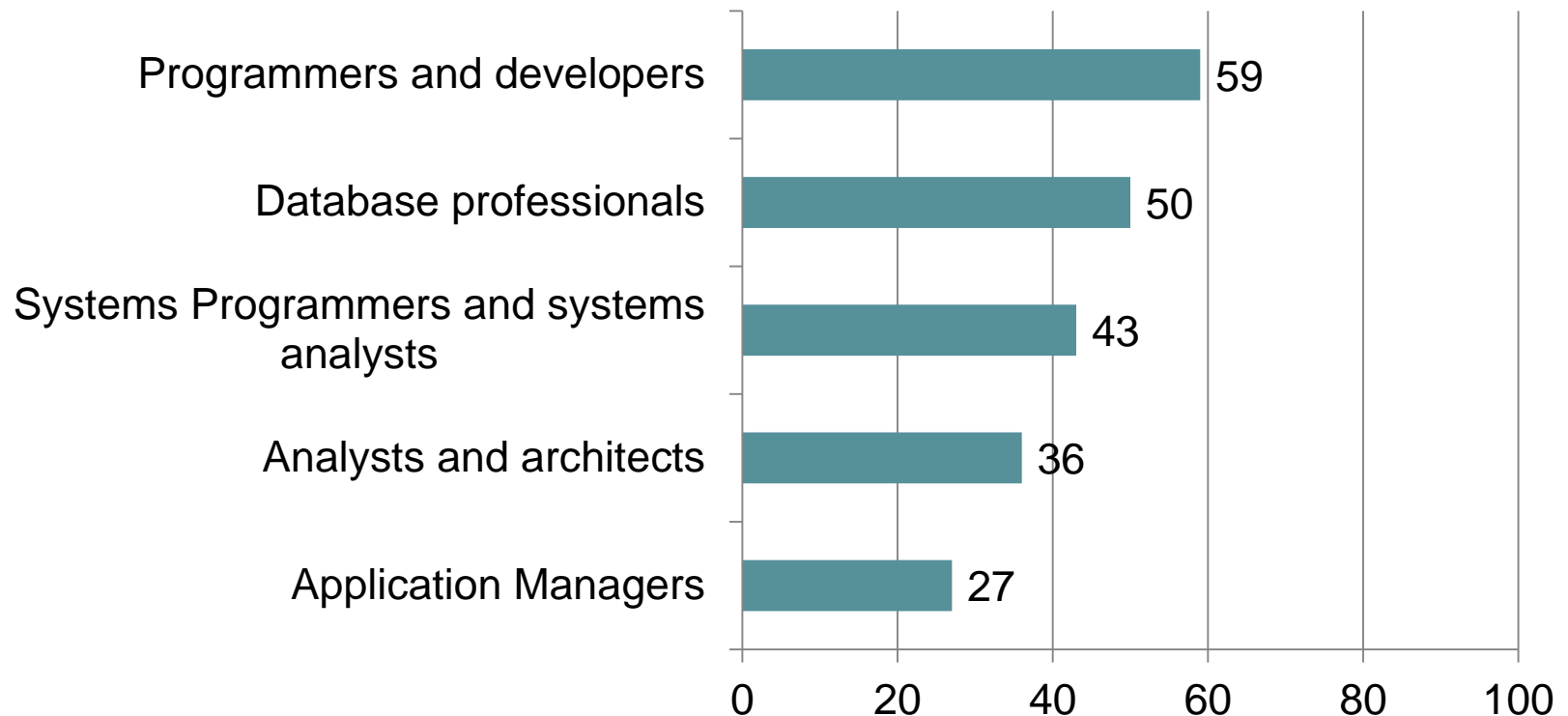
Prefer Internship Experience New IT Hires?



Hiring Plans By Type of IT Professional

(among respondents already hiring, planning to hire to very likely to hire)

Percent



Programmers and Developers

- Create, integrate and test code to build or upgrade enterprise applications.
- Over next 1 to 3 years, 6 out of 10
 - already hiring
 - planning to hire
 - very like to hire
- 77% look to college or university programs to provide all, or at least the foundation for, preparation and training in programming and development skills to incoming new hires.

Programmers and Developers

- 40% looking for Microsoft's .NET Framework
- Another 40% seek professionals
 - z/OS internals (e.g., system error codes, ECB)
 - z/OS, assembler
 - compiler development knowledge
 - software testing
 - BI/complex statistical analysis
 - z/OS sysprog
 - z/VM sysprog
 - Linux on z sysprog.

Programmers and Developers

- Database languages and Java rank as the leading sets of computer languages in demand among employers, cited by 56% of respondents.
- Other languages with strong bases in enterprises include C/C++, Java Platform (including Java Enterprise Edition and Java Standard Edition), and the various markup languages (such as XML and HTML).
- COBOL, still required by 37% of companies.
- Some commented that a combination of formal education and in-house-developed skills is needed.

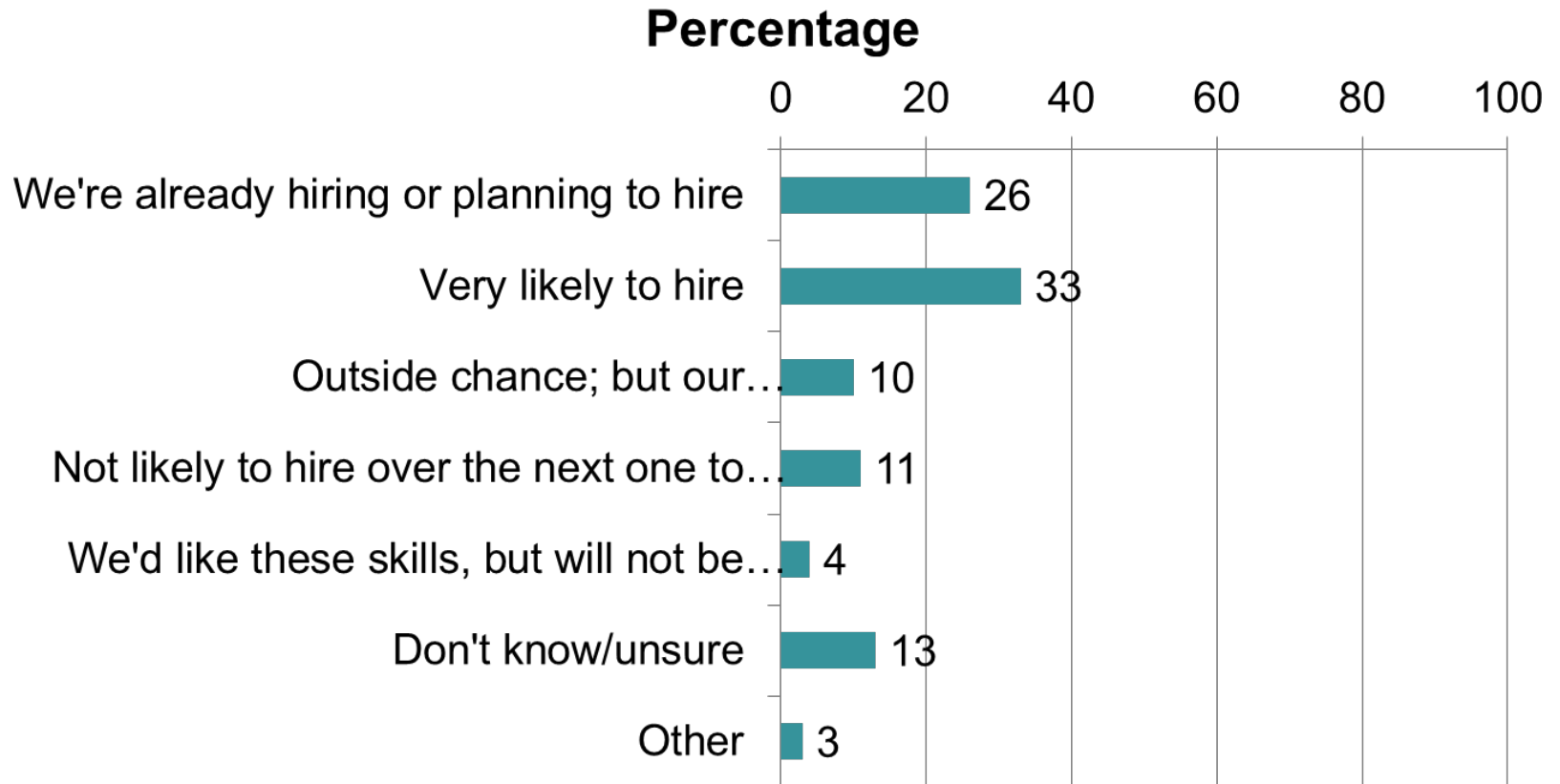
Programmers and Developers

- Quotes:
 - “We have a one-year program to train new hires since college and university graduates lack the required skills”
 - “Local colleges and universities do not provide the education we require”
 - “Kids today don’t find mainframes sexy enough”
 - “Call the mainframe educational programs something else, and let them know there’s a direct pipeline to a job with solid mainframe skills. Bring in mainframe employers on a regular basis to pitch mainframes and do seminars or teach classes.”

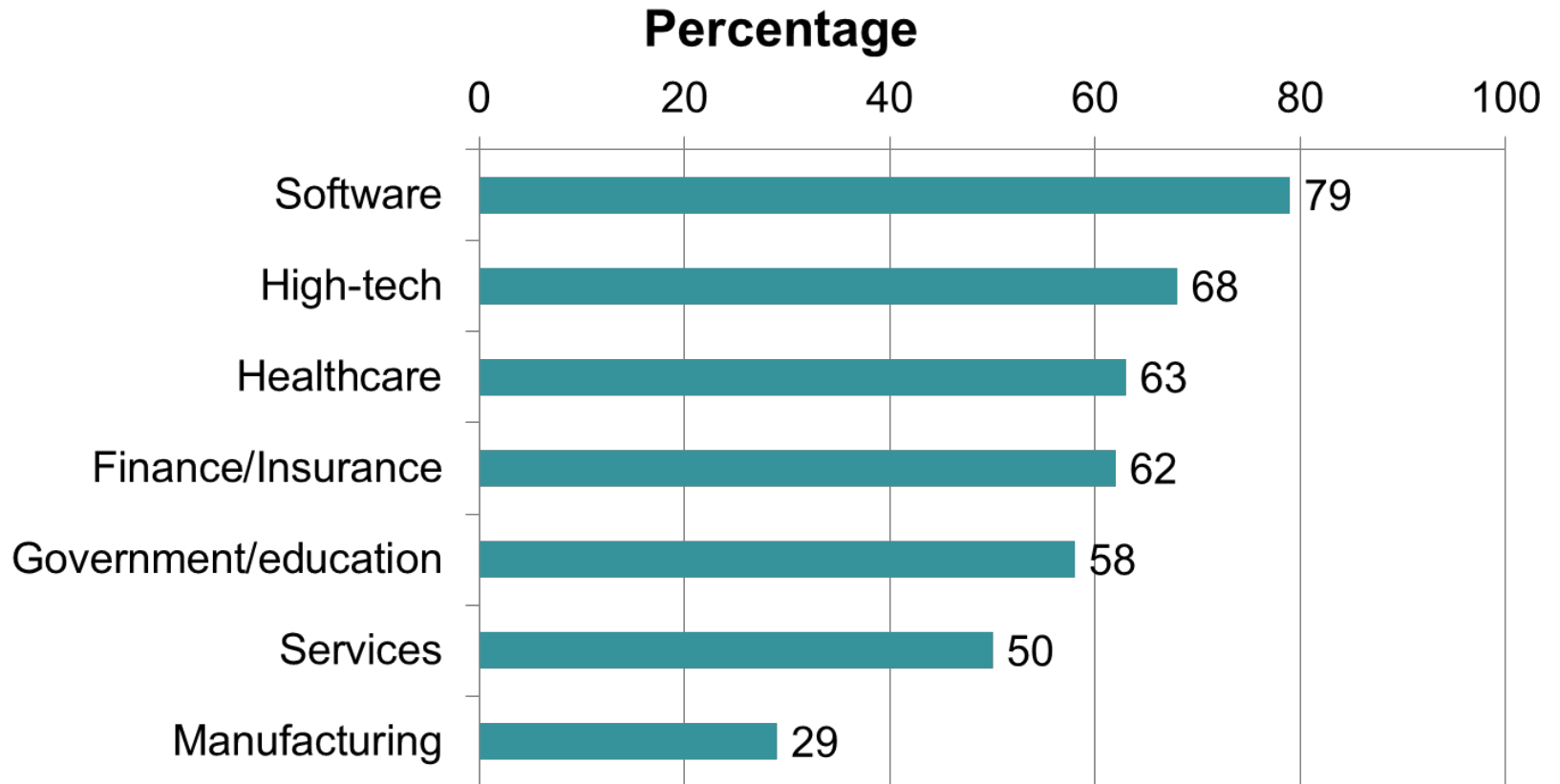
Programmers and Developers

- Quotes:
- “Understanding of large systems is almost totally lacking in colleges these days. That should be rectified. There should be far less emphasis on Java—it encourages sloppy programming—and far less emphasis on object-oriented programming, which is often not maintainable. Also, there is nowhere near enough instruction on high-level computer architectures and assembly language. Students that are proficient in these areas design and write better programs.”
- “How to create efficient applications, not just slap something together. They need to know the cost of each instruction and step. They need to know how to use different types of databases. They need to understand the difference between a sequential read and a serial read. They need to understand how their applications impact users and systems.”

Plans for Hiring Programmers/Developers

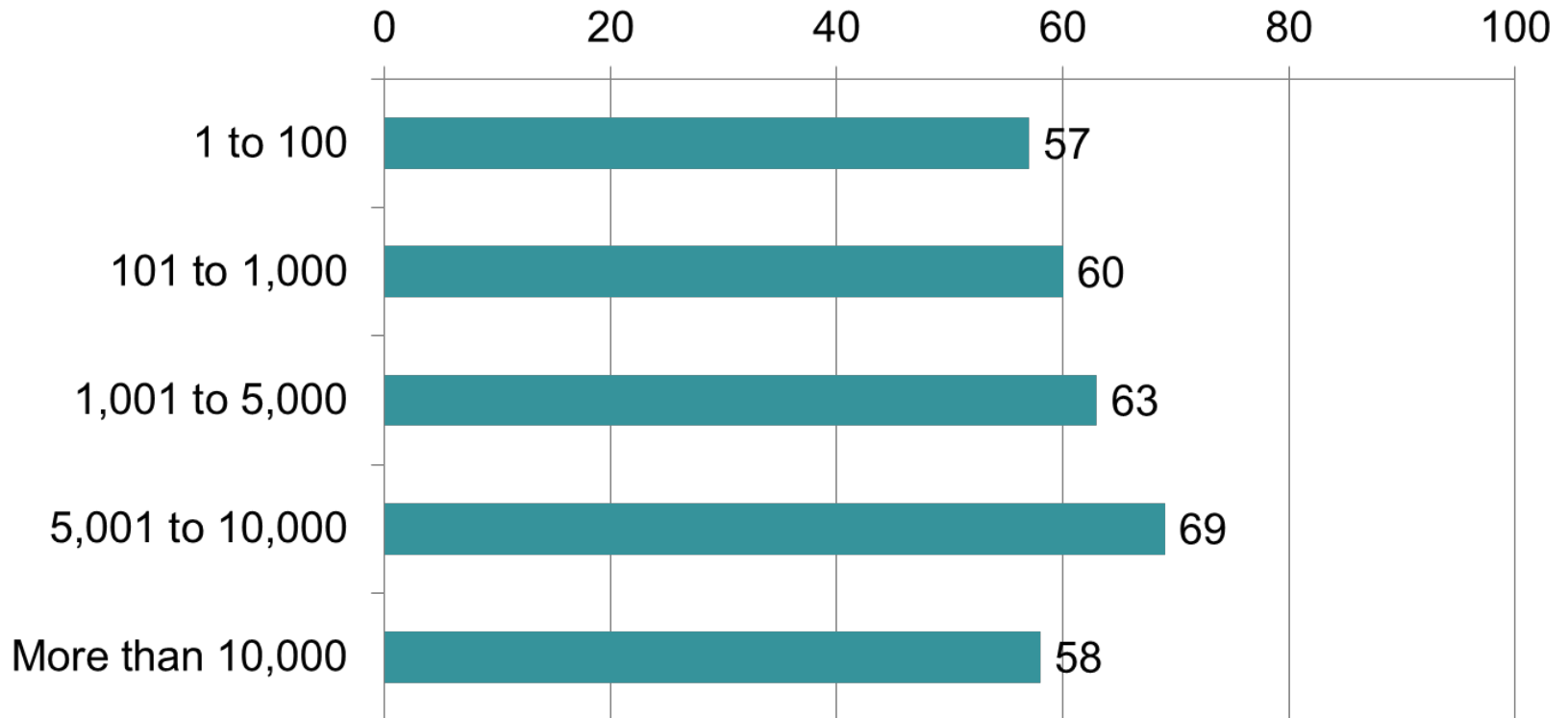


Already Hiring/Very Likely to Hire Programmers/Developers By Industry

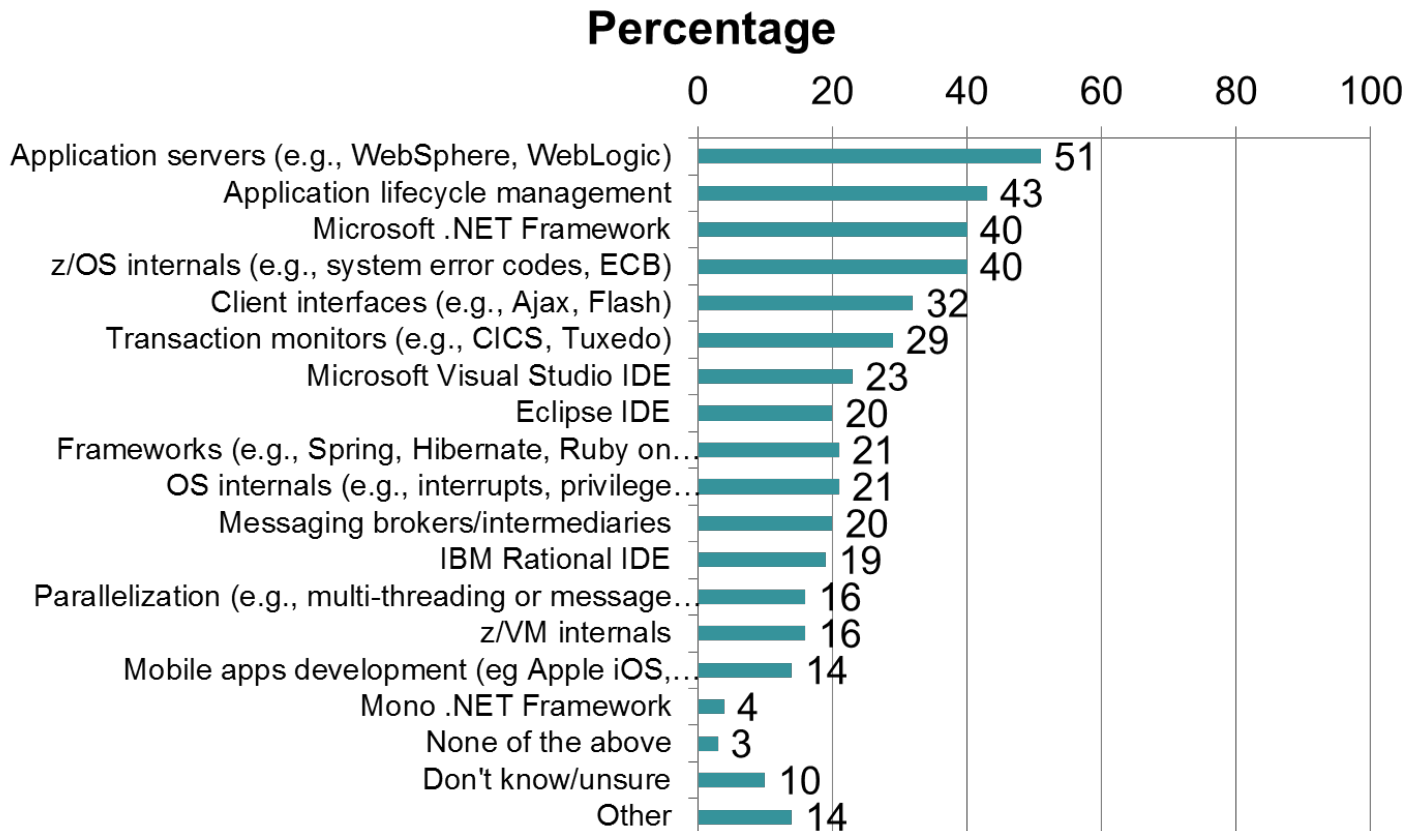


Already Hiring/Very Likely to Hire Programmers/Developers By Number of Company Employees

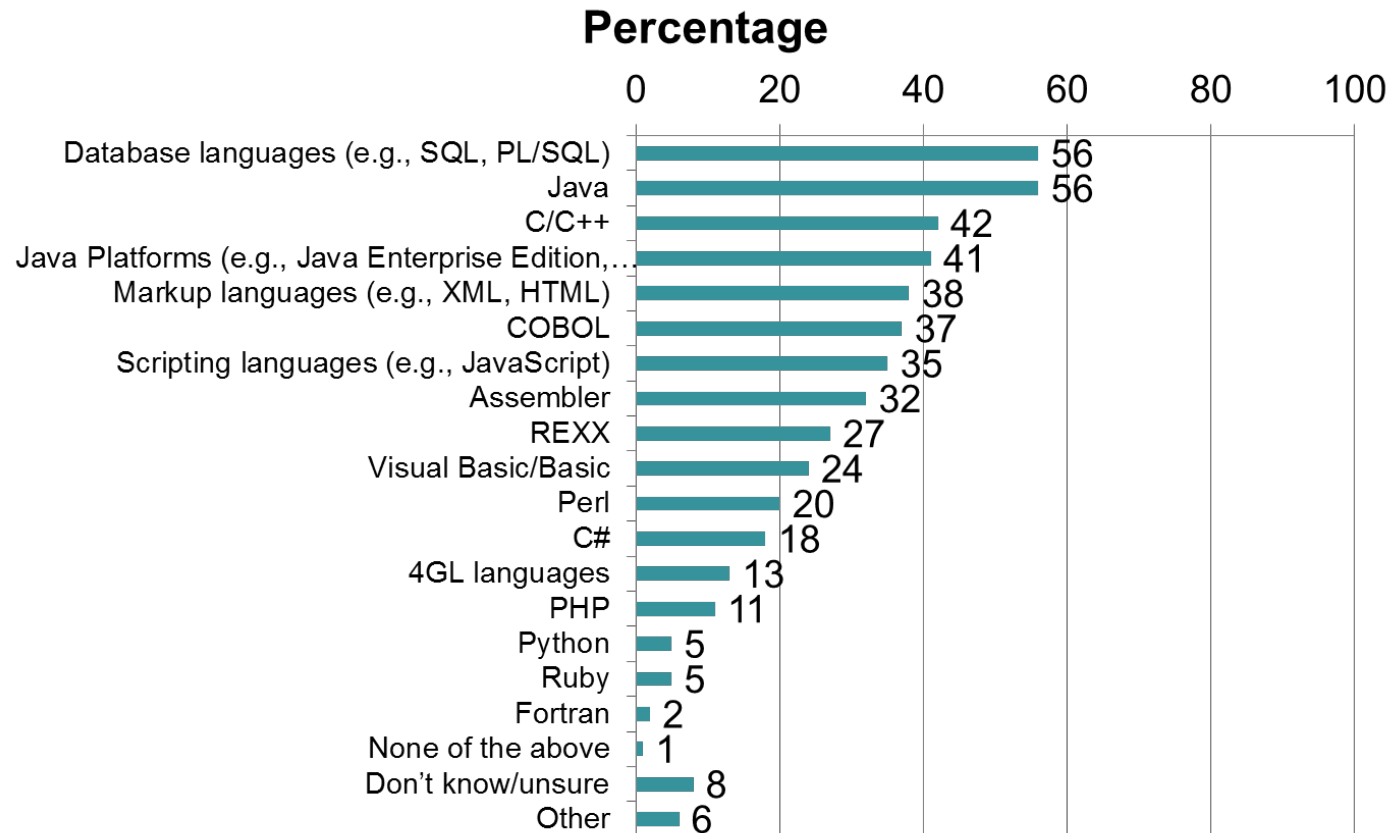
Percentage



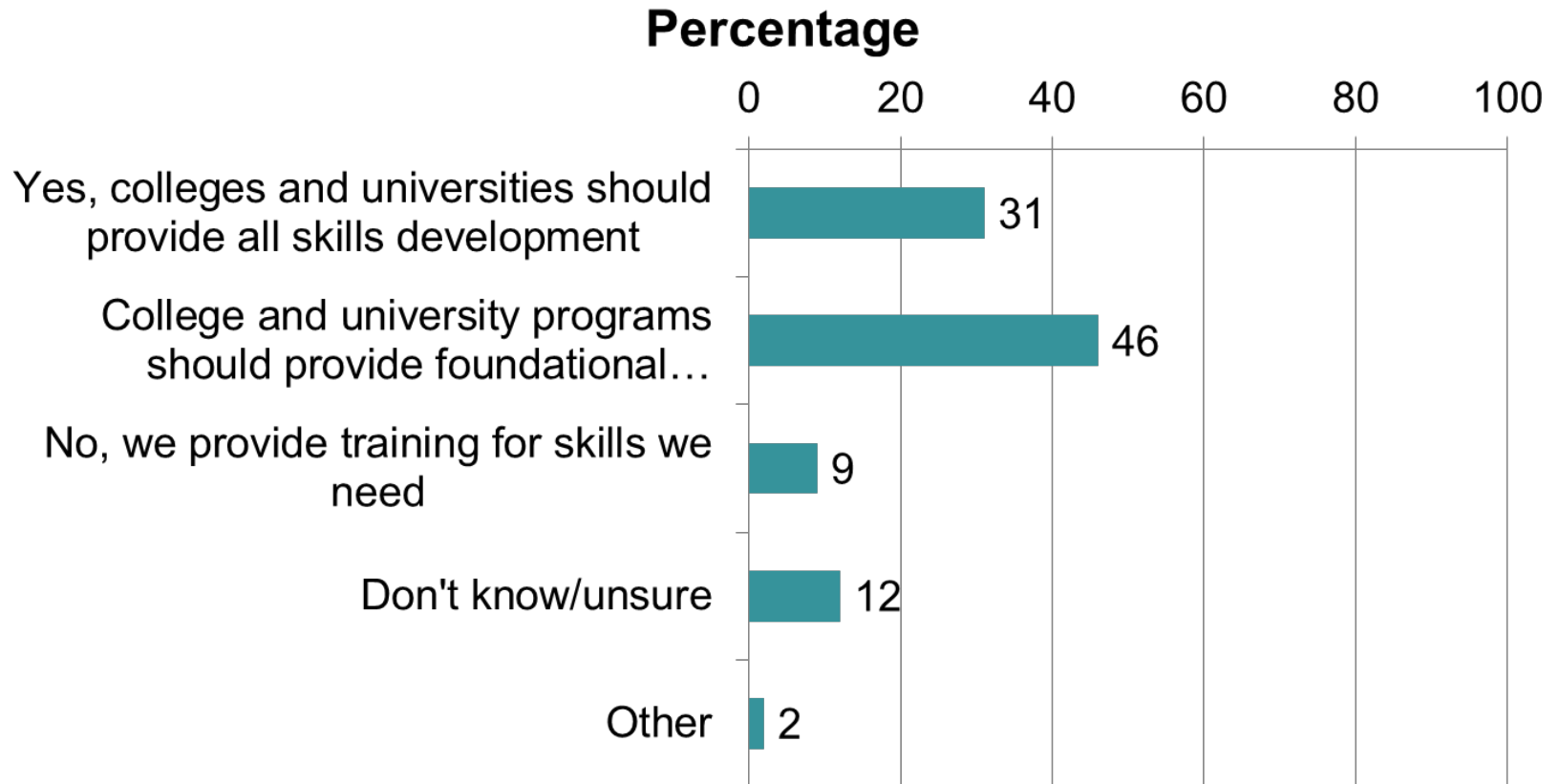
Programming Environments, Methodologies or Tools Skills Needed



Specific Programming Language Skills



Look to College/University Programs Programming/Developer Skills



Systems Programmers/Administrators

- Oversee the administration, security and availability of applications, operating systems and middleware.
- Over the next 1 to 3 years, 4 out of 10
 - are already hiring
 - planning to hire
 - very likely to hire
- 79% look to college or university programs to provide all, or at least the foundation for, preparation and training in systems programming and administration skills to incoming new hires.

Systems Programmers/Administrators

- Non-platform-specific systems programming and administration skills:
 - Knowledge about backup and recovery (66%)
 - Storage administration (62%)
 - Disaster recovery (59%)
 - Security (59%)
 - Performance analysis (58%)

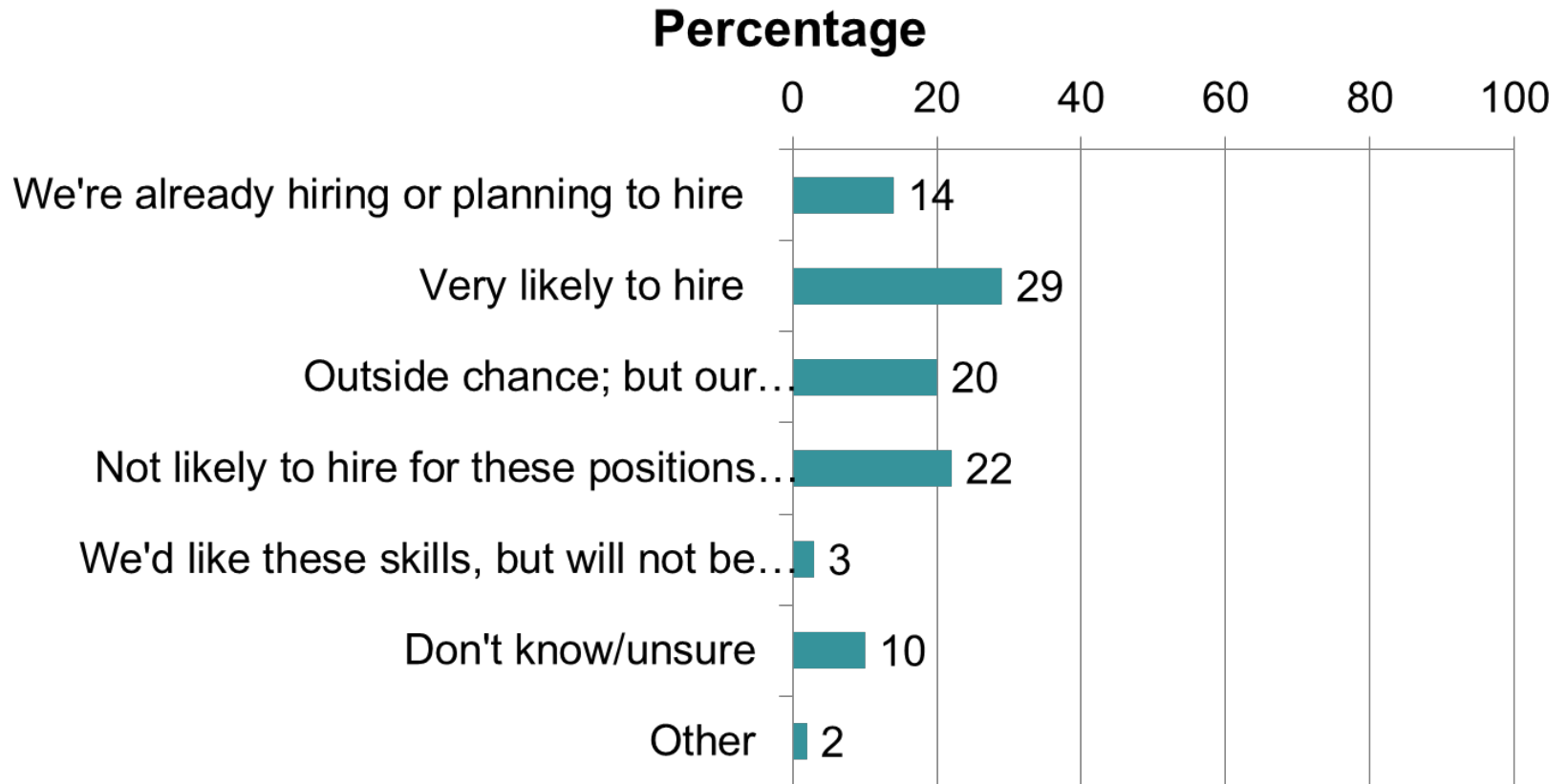
Systems Programmers/Administrators

- Platform-specific skills:
 - In running two types of environments—database administration and mainframe administration.
- Specific mainframe administration skill areas
 - 55% seek mainframe administrative skills
 - 50% skills involving JCL, or Job Control Language.

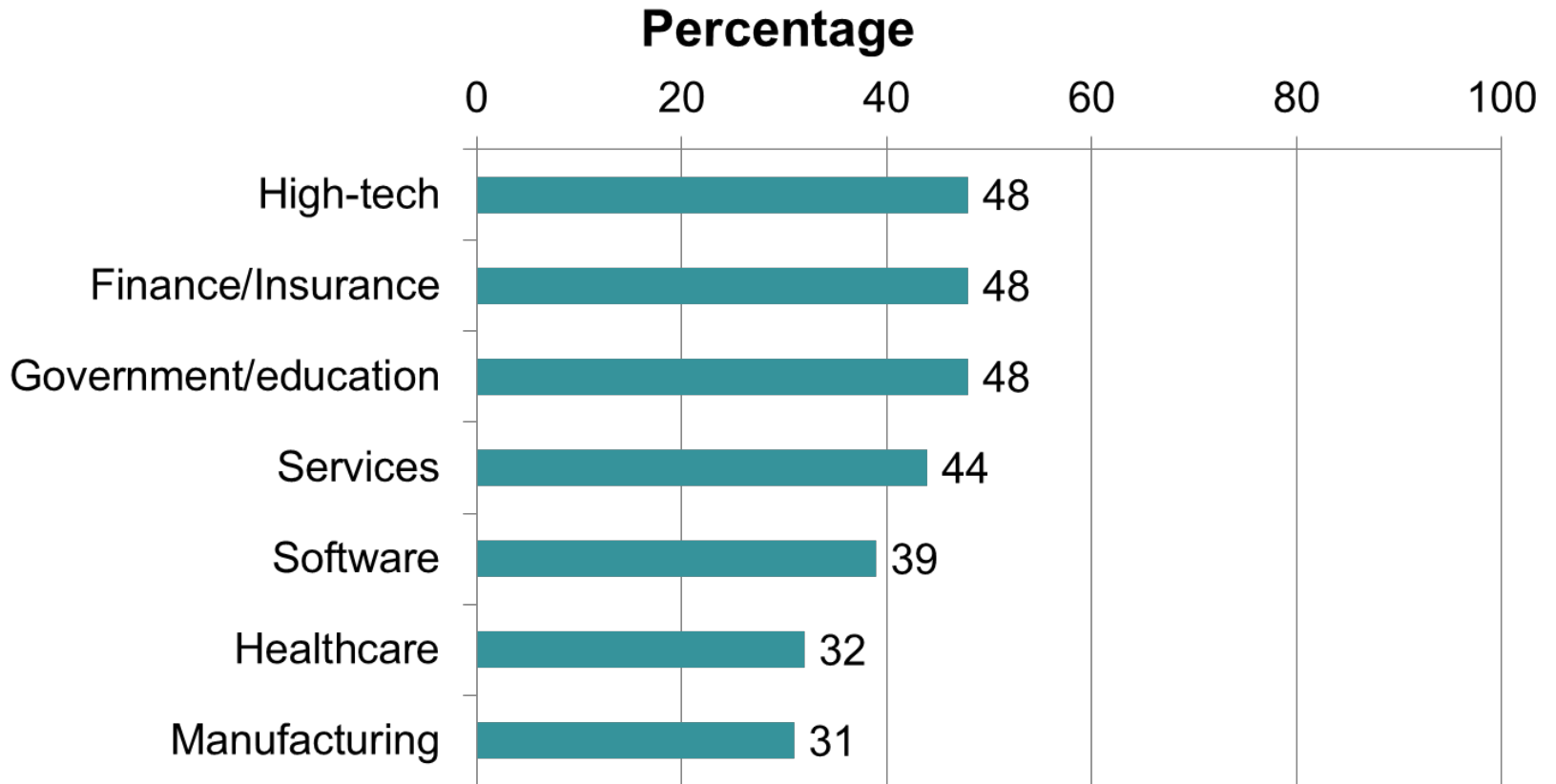
Systems Programmers/Administrators

- Quotes:
- “Mainframe skills are sorely needed. We need entry-level people who understand what a mainframe is, have a basic understanding of z/OS and z/VM, an ability to log on to TSO and utilize ISPF, and code JCL”
- “Many mainframe personnel will be retiring in the next 10–20 years, and there will be a lack of mainframe professionals. We train them on our own now, but it would be great to have them come in with some knowledge.”

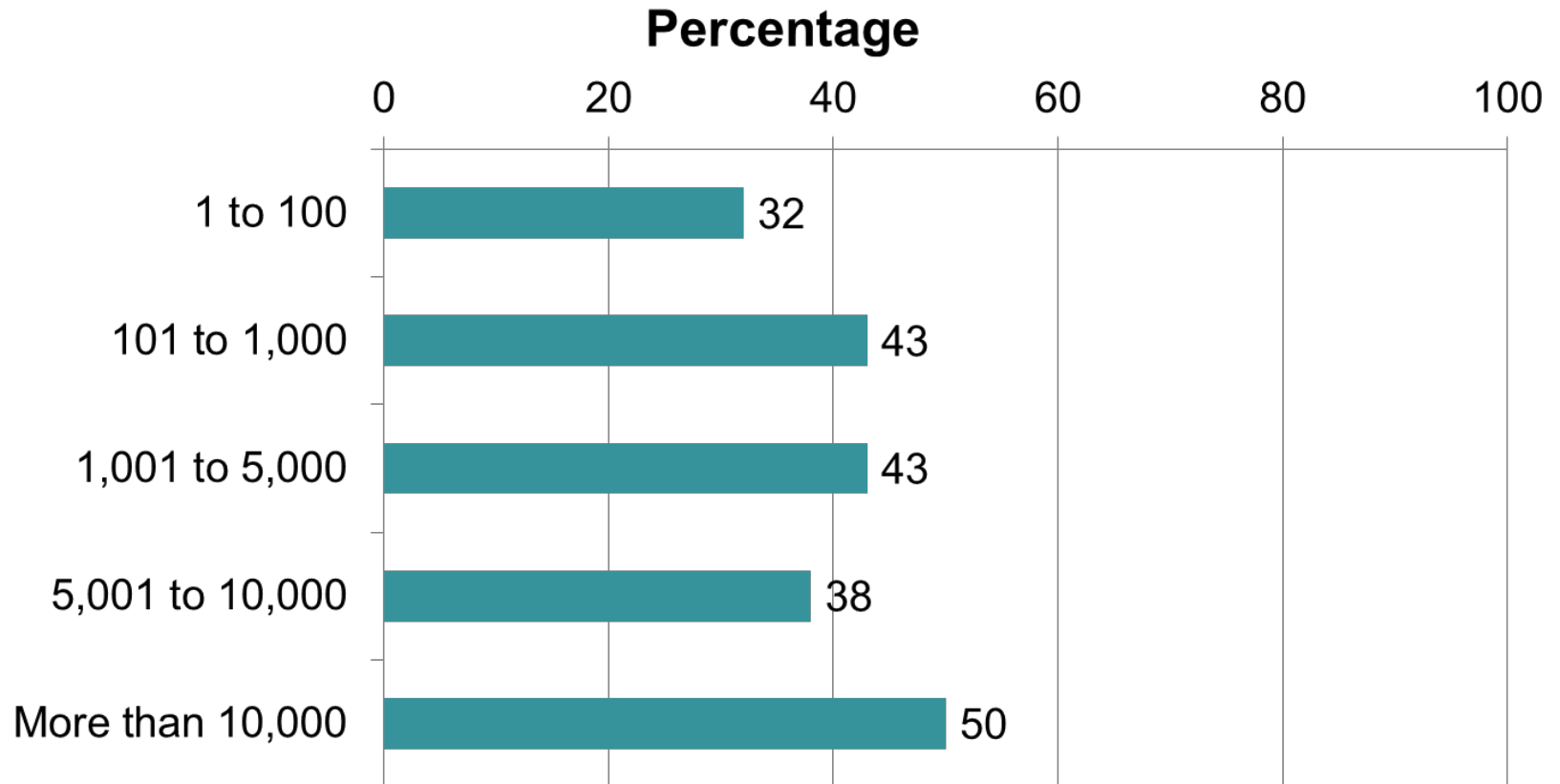
Plans for Hiring Systems Programmers/Administrators



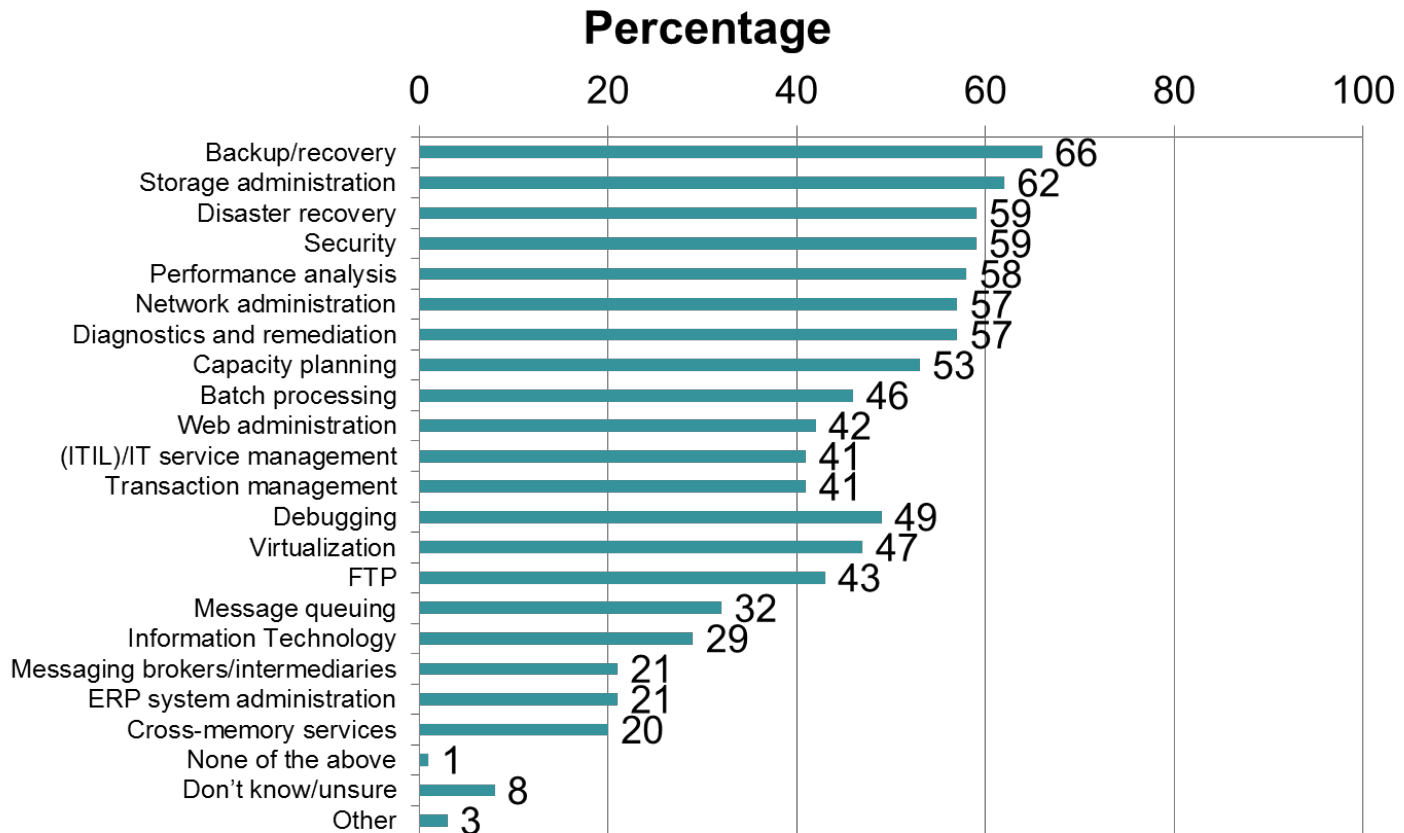
Already Hiring/Very Likely to Hire Systems Programmers/Administrators By Industry



Already Hiring/Very Likely to Hire Systems Programmers/Administrators By Number of Company Employees

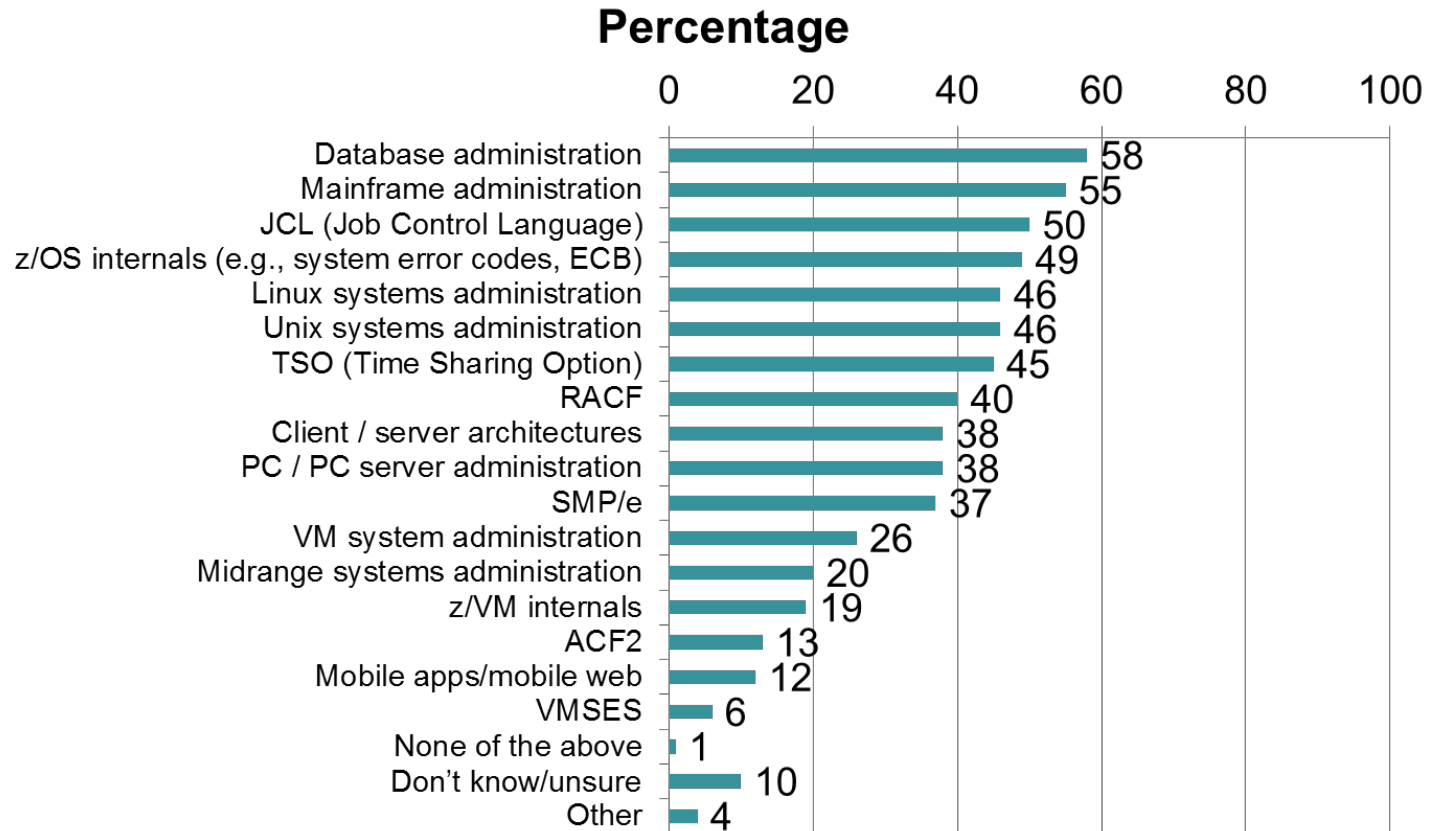


Overall Systems Programming and Administration Skills Needed

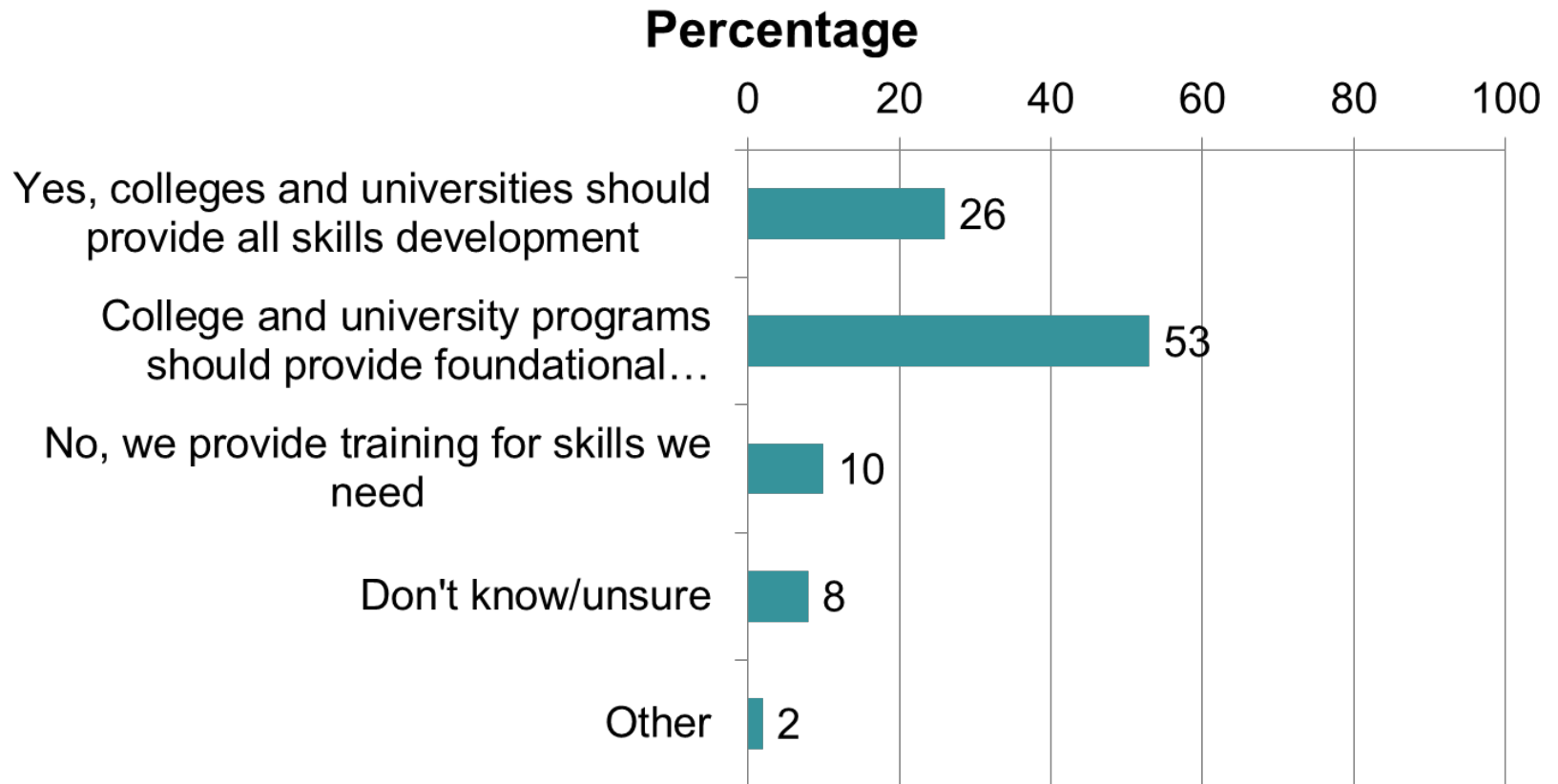


Platform-Specific Skills Needed

Systems Programming/Administration



Look to College/University Programs Systems Programmers/Administrators



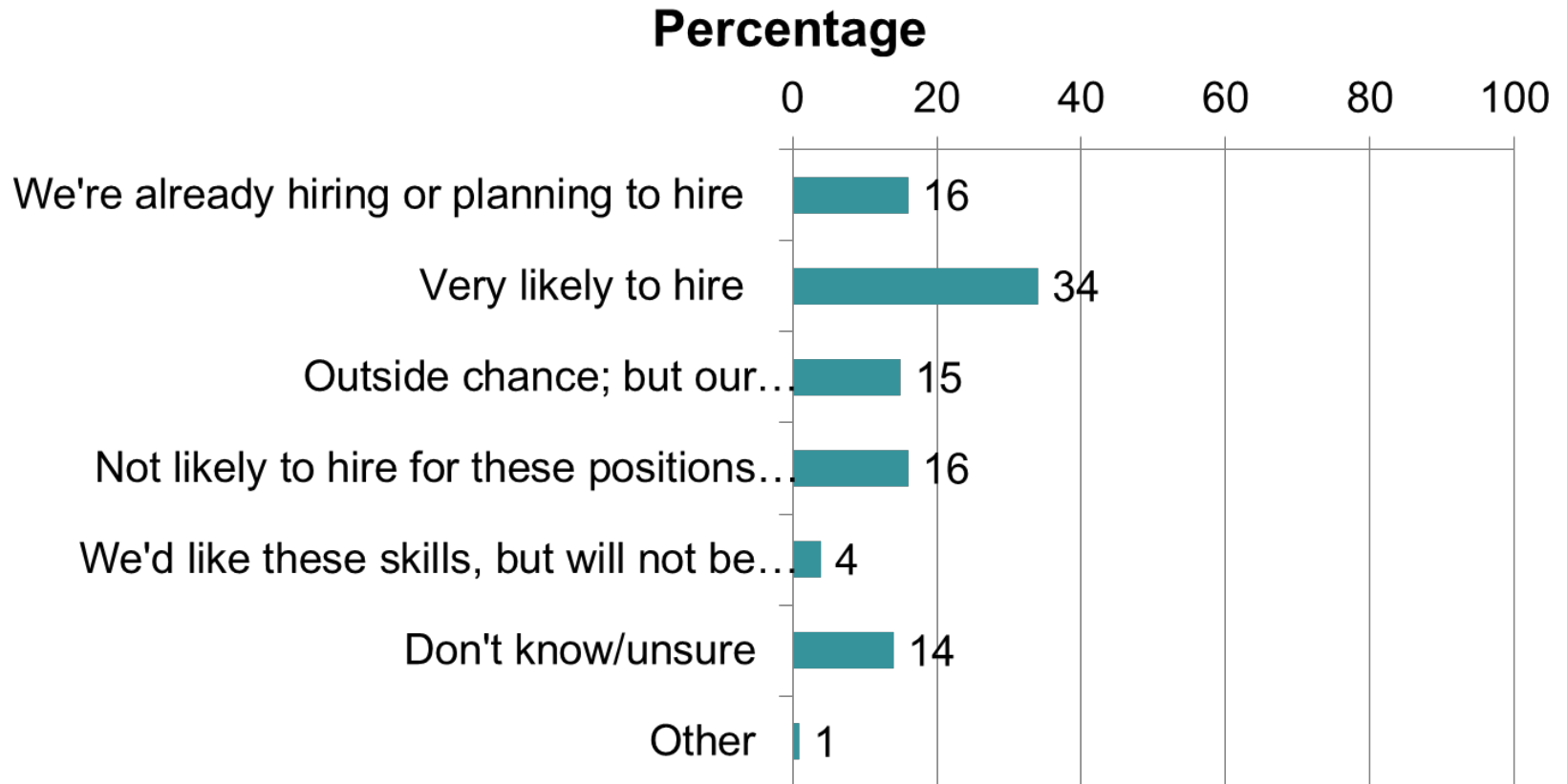
Database Professional

- Oversee database administration, security and availability. Often specialize in a particular vendor brand of database.
- Over the next 1 to 3 years, 1 out of 2:
 - already hiring
 - planning to hire
 - very likely to hire
- 82% look to college or university programs to provide all, or at least the foundation for, preparation and training in database professional skills to incoming new hires.

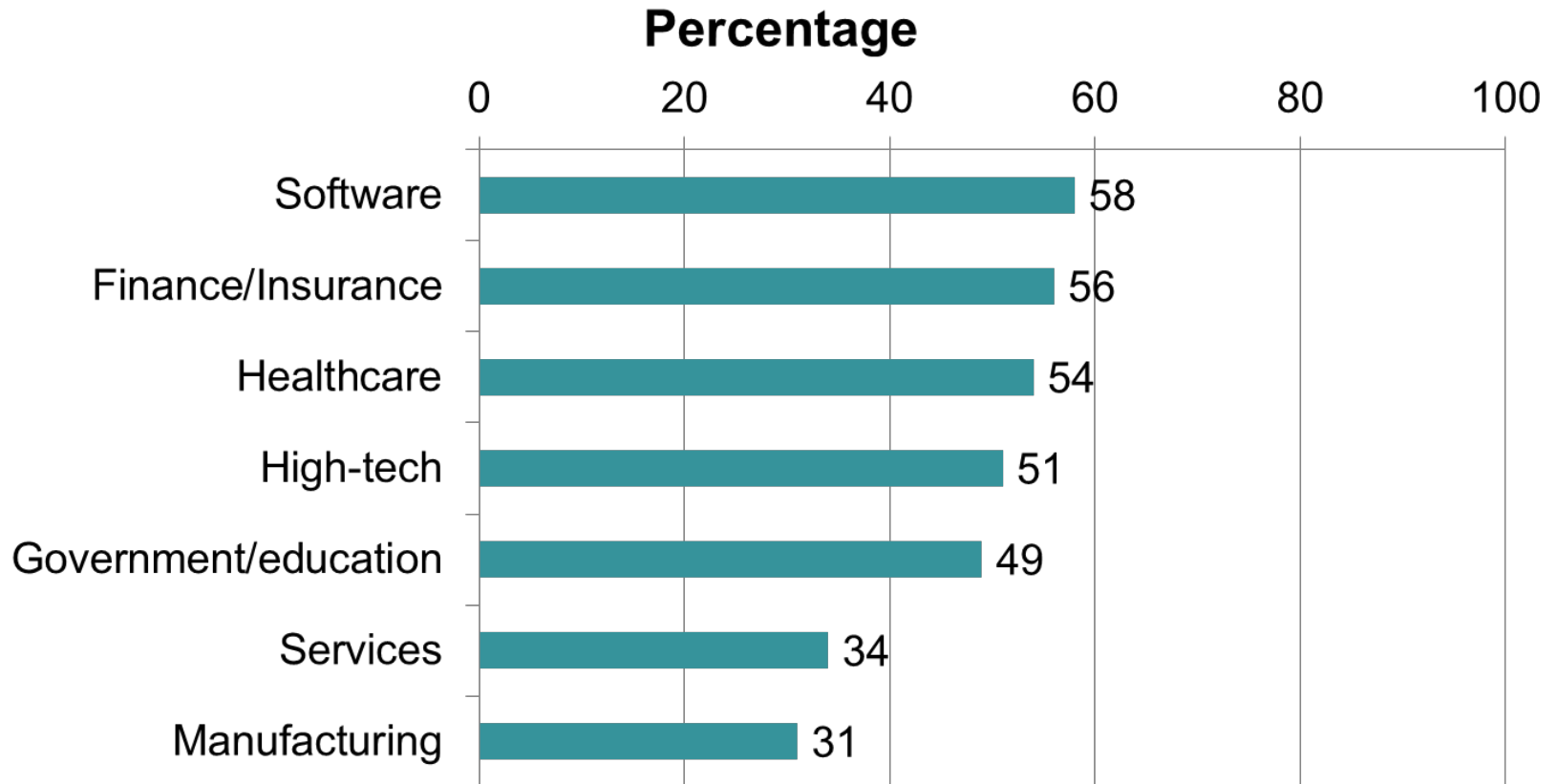
Database Professional

- 6 out of 10 seek knowledge of database development languages (such as SQL and Oracle's PL/SQL)
- A similar percentage also actively seek Oracle database skills
- >50% need IBM DB2 professionals.
- Other database skills mentioned include CA Datacom, IMS, Netezza, and SAS.

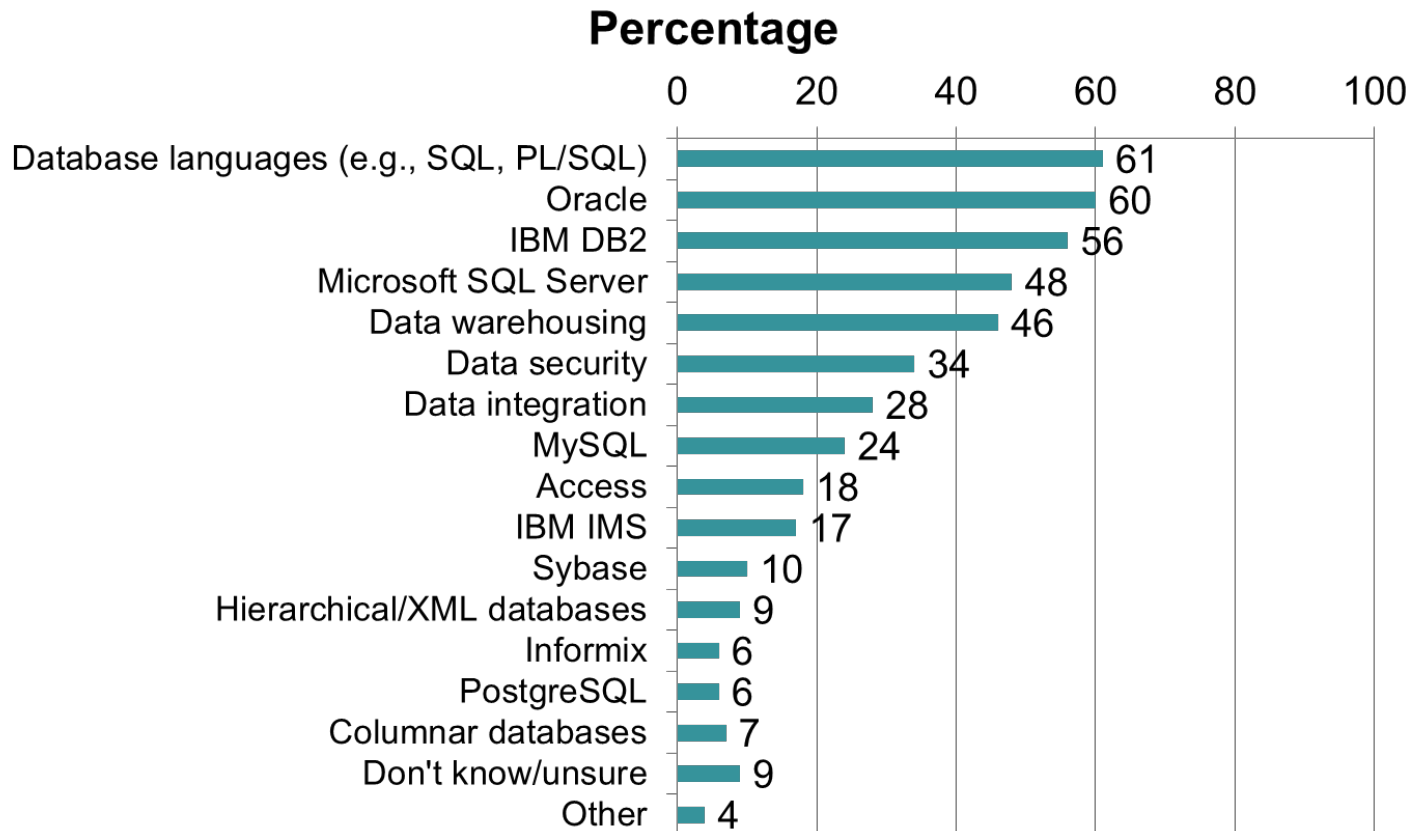
Plans for Hiring Database Professionals



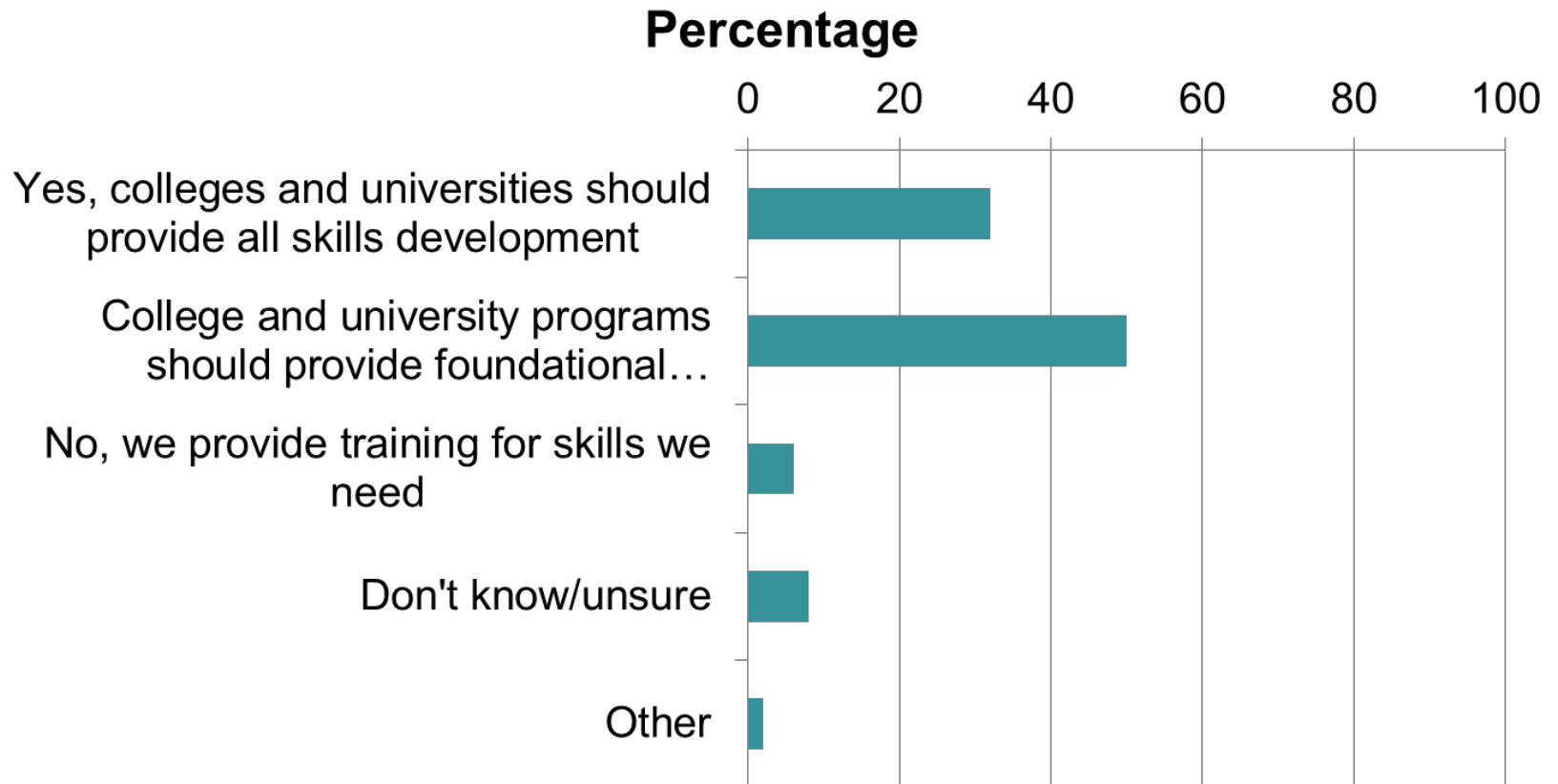
Already Hiring/Very Likely to Hire Database Professionals By Industry



Platform-Specific Skills Needed Database Professionals



Look to College or University Programs Database Professionals



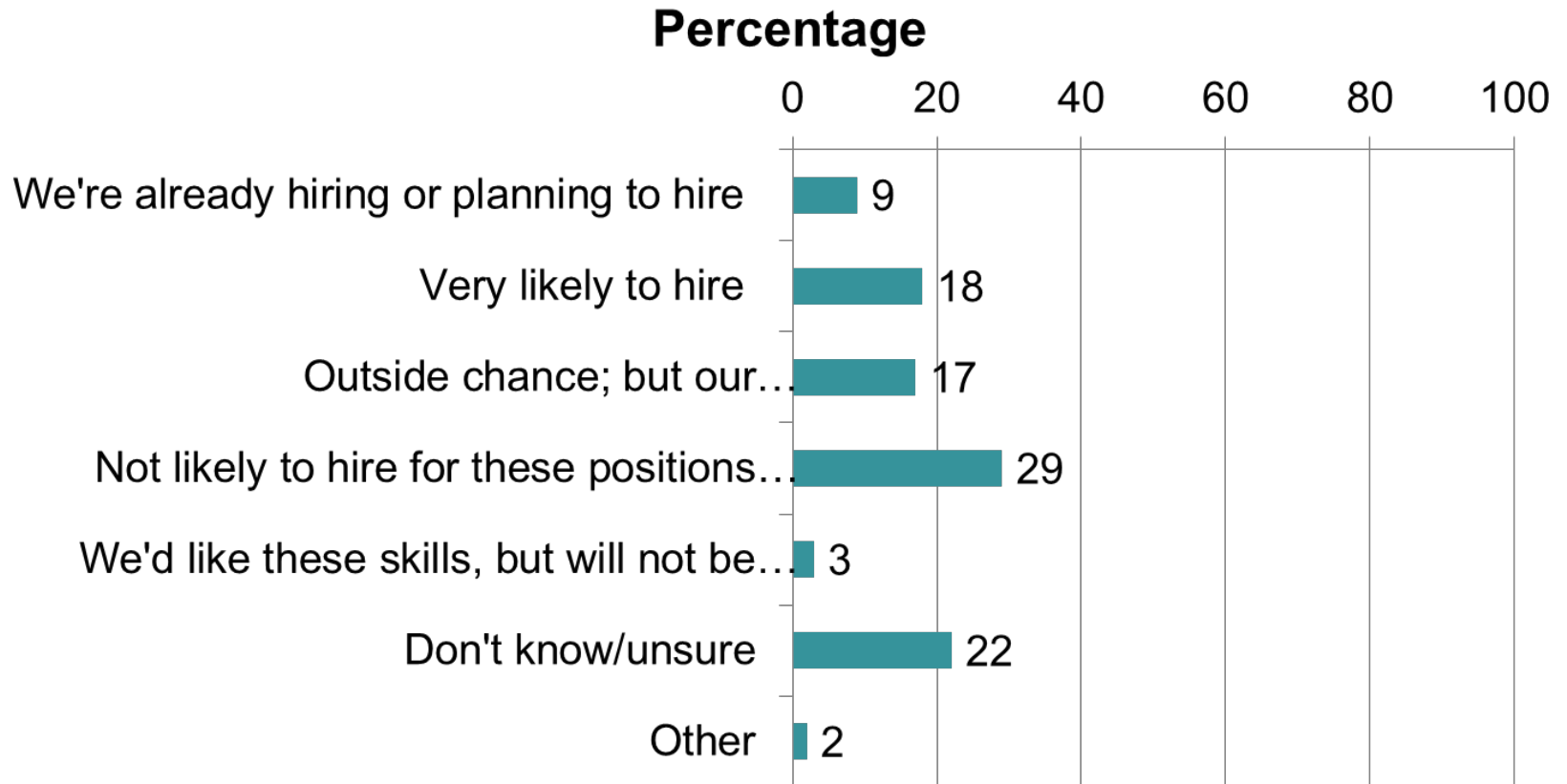
Application Managers

- Oversee the selection, installation, and ongoing administration of specific enterprise application packages.
- Over the next 1 to 3 years, 1 out of 4
 - already hiring
 - planning to hire
 - very likely to hire
- 61% look to college or university programs to provide all, or at least the foundation for, preparation and training in application management skills to incoming new hires.

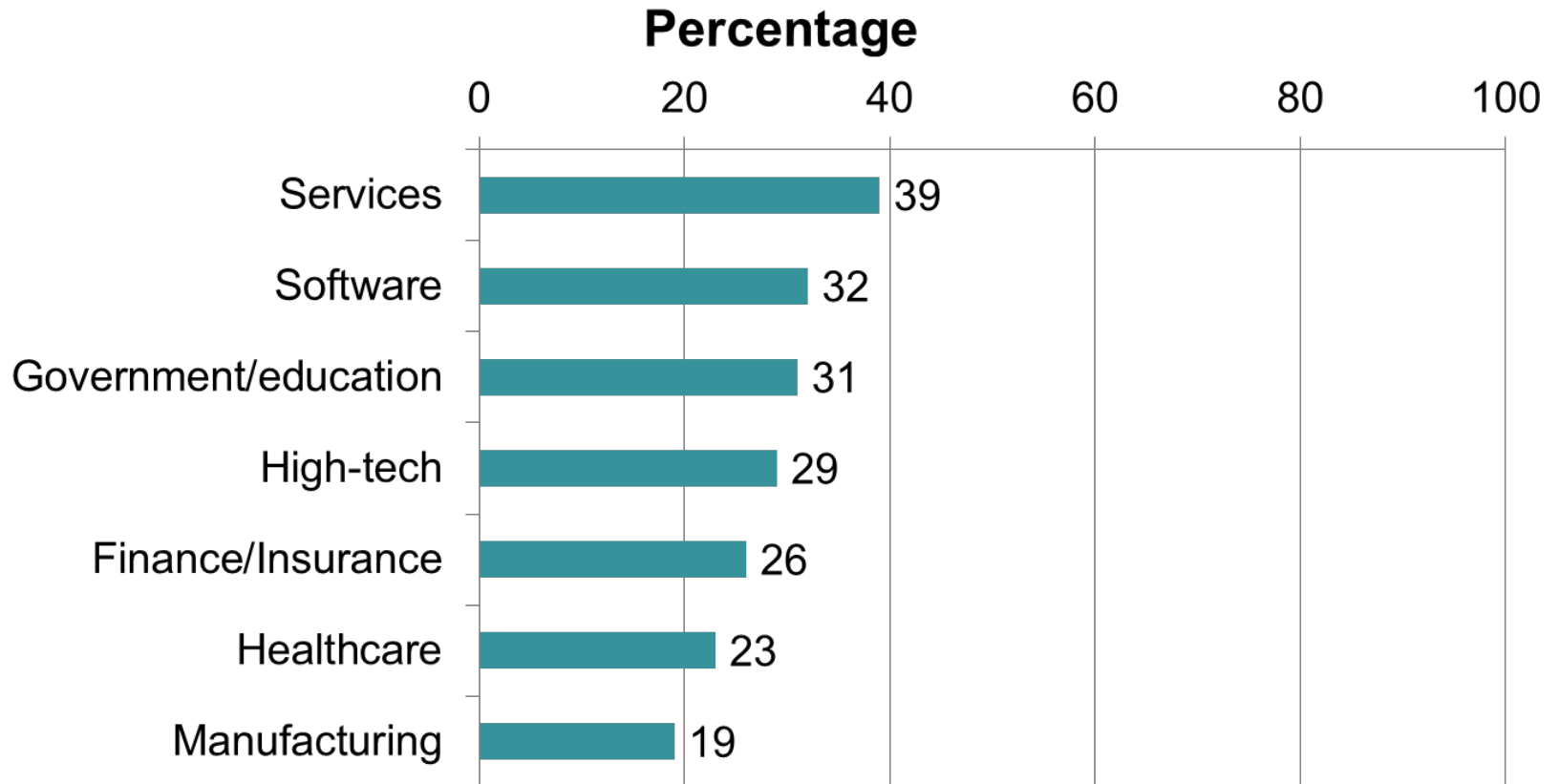
Application Managers

- For many companies, the need is in hiring professionals to work with their own in-house customized systems.
- Also dominant on the list is a need for people to work with PeopleSoft systems—part of the Oracle constellation of platforms—which provide a range of functions from human resources to finance. SAP skills are also in demand among more than one out of five companies.

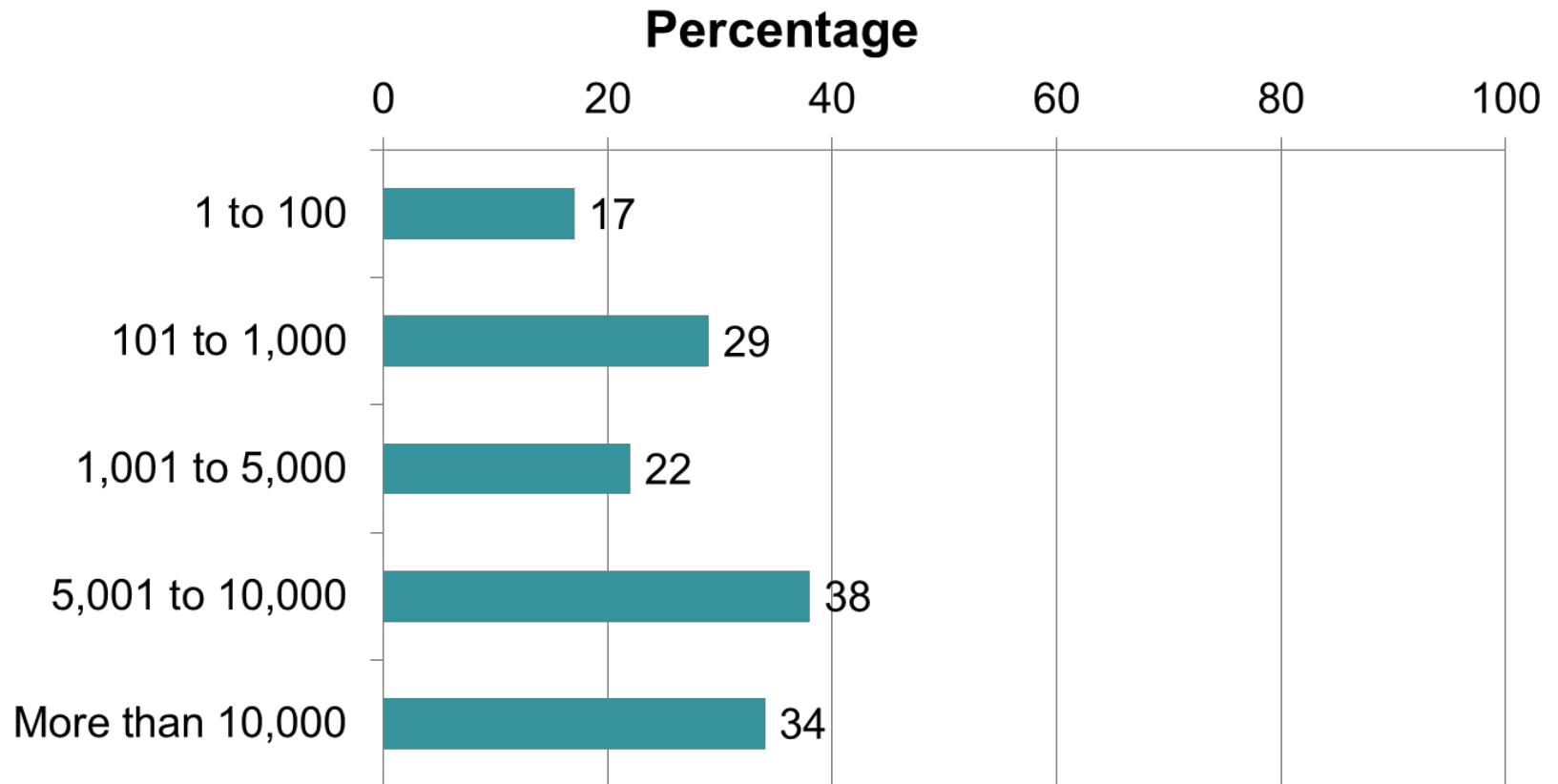
Plans for Hiring Application Managers



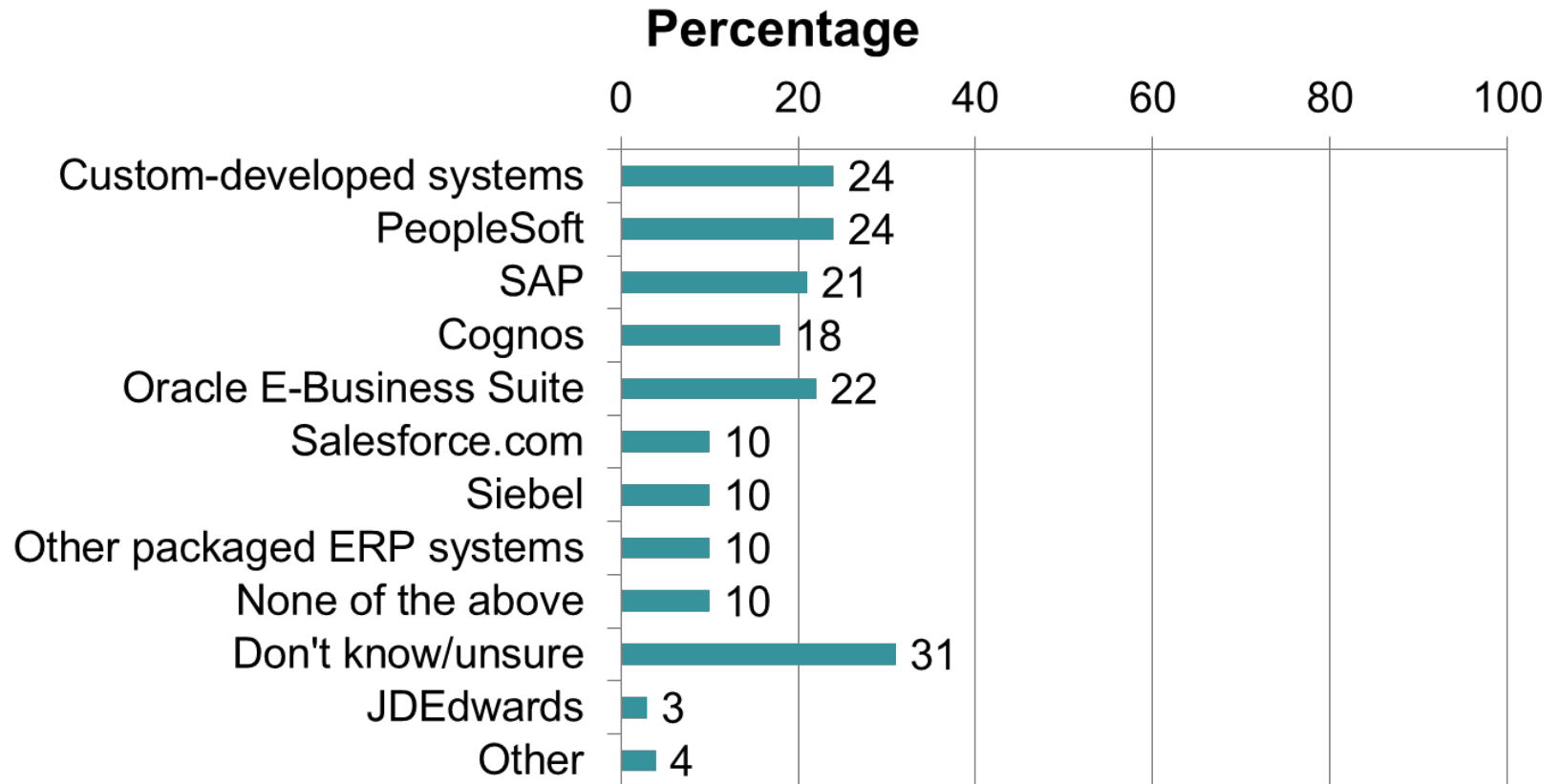
Already Hiring/Very Likely to Hire Application Managers By Industry



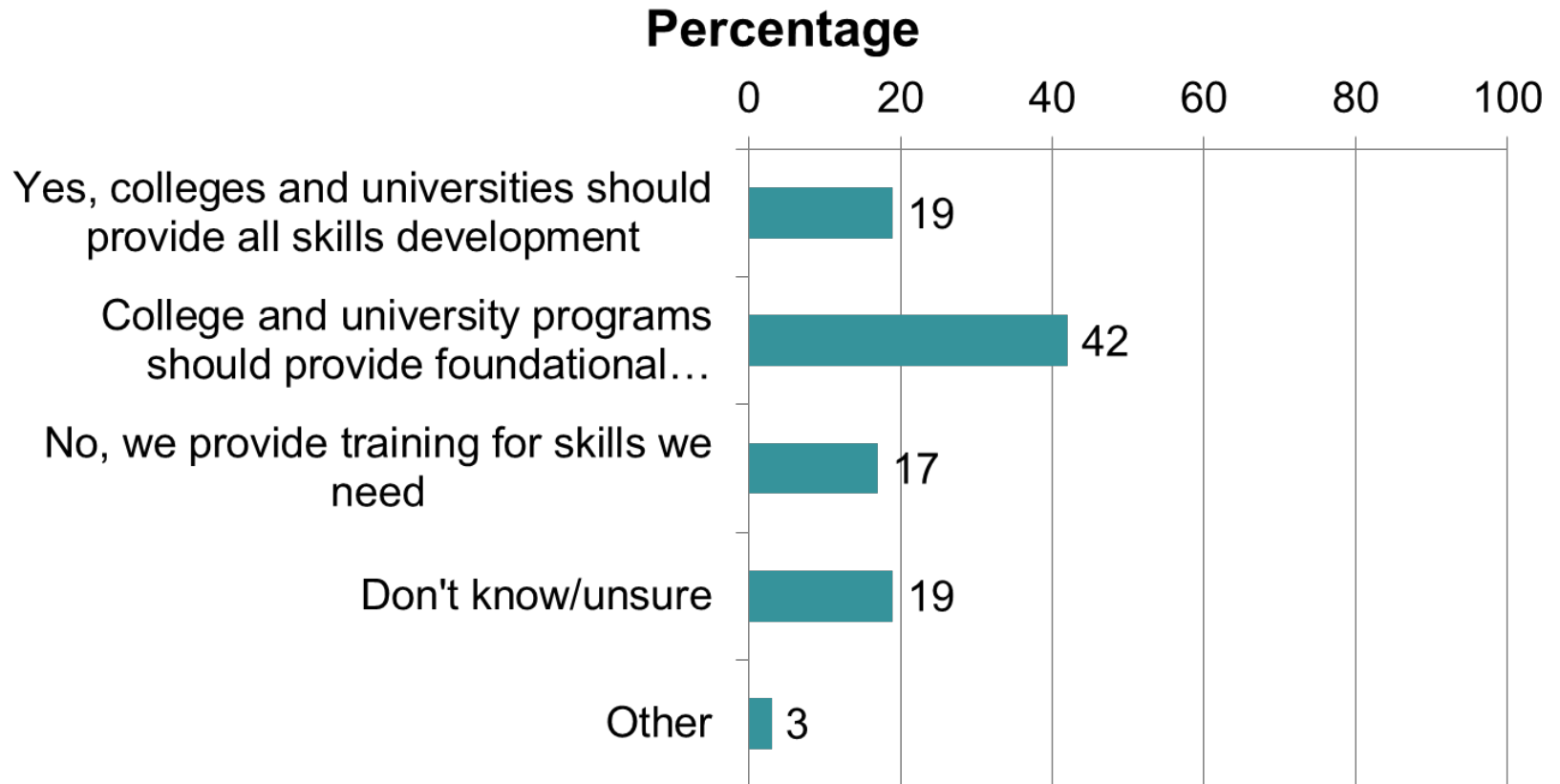
Already Hiring/Very Likely to Hire Applications Managers By Number of Company Employees



Platform-Specific Skills Needed Application Managers



Look to College/University Programs Application Management



Analysts and Architects

- Serve as the bridge between business and IT, translating business requirements into IT capabilities, and vice versa.
- Over the next 1 to 3 years, 1 out of 3
 - already hiring
 - planning to hire
 - very likely to hire
- 76% look to college or university programs to provide all, or at least the foundation for, preparation and training in analysis and architecture skills to incoming new hires.

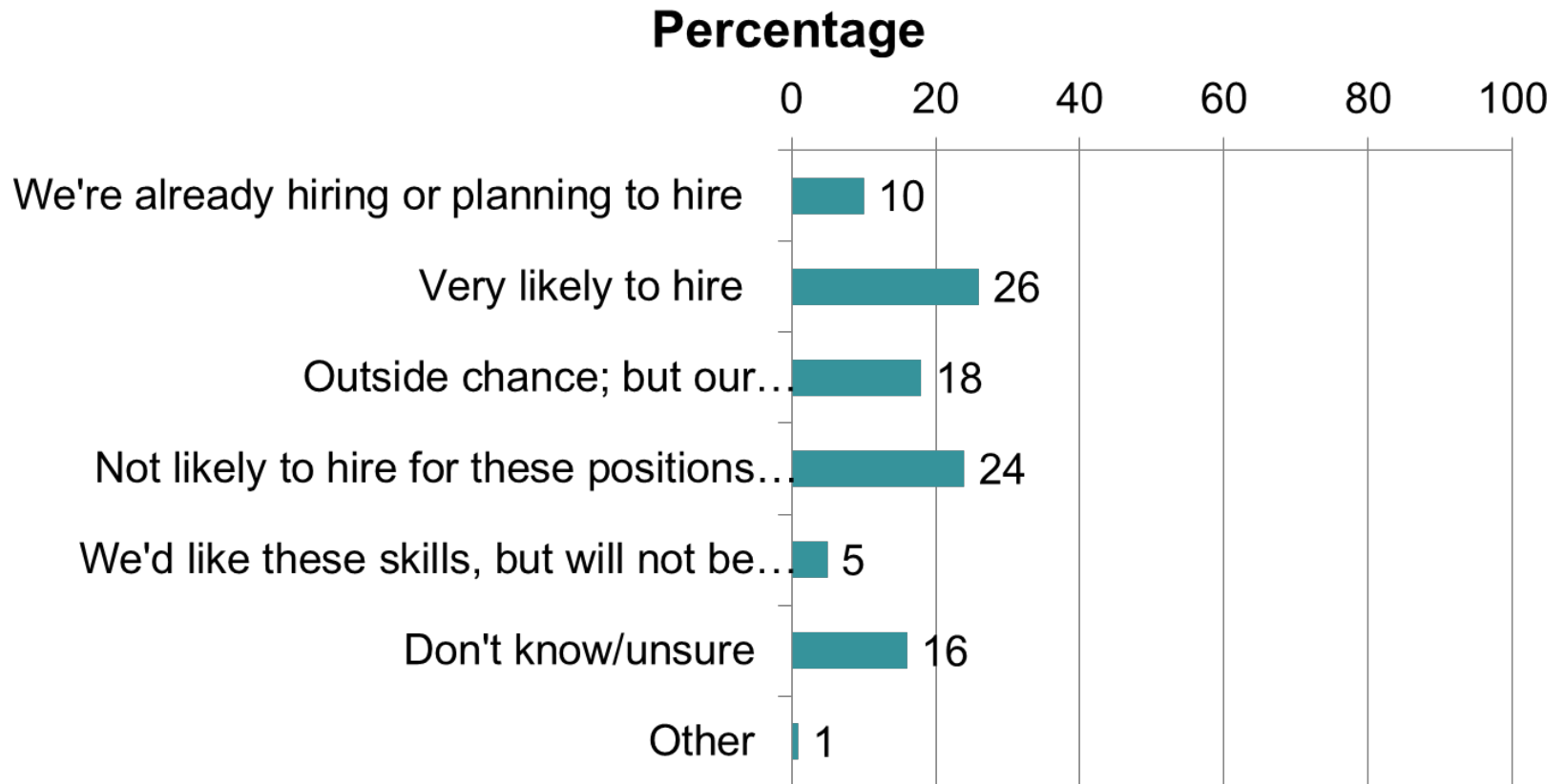
Analysts and Architects

- In terms of business-related analysis and architectural skills, most businesses seek project management skills.
- More than half of survey respondents cite analytics and business intelligence knowledge as important to their operations, as well as enterprise architecture.
- Half are looking for business analysis skills.
- Smaller portions also seek professionals versed in other relatively new approaches to IT management, such as service-oriented architecture and Web 2.0 or social media.

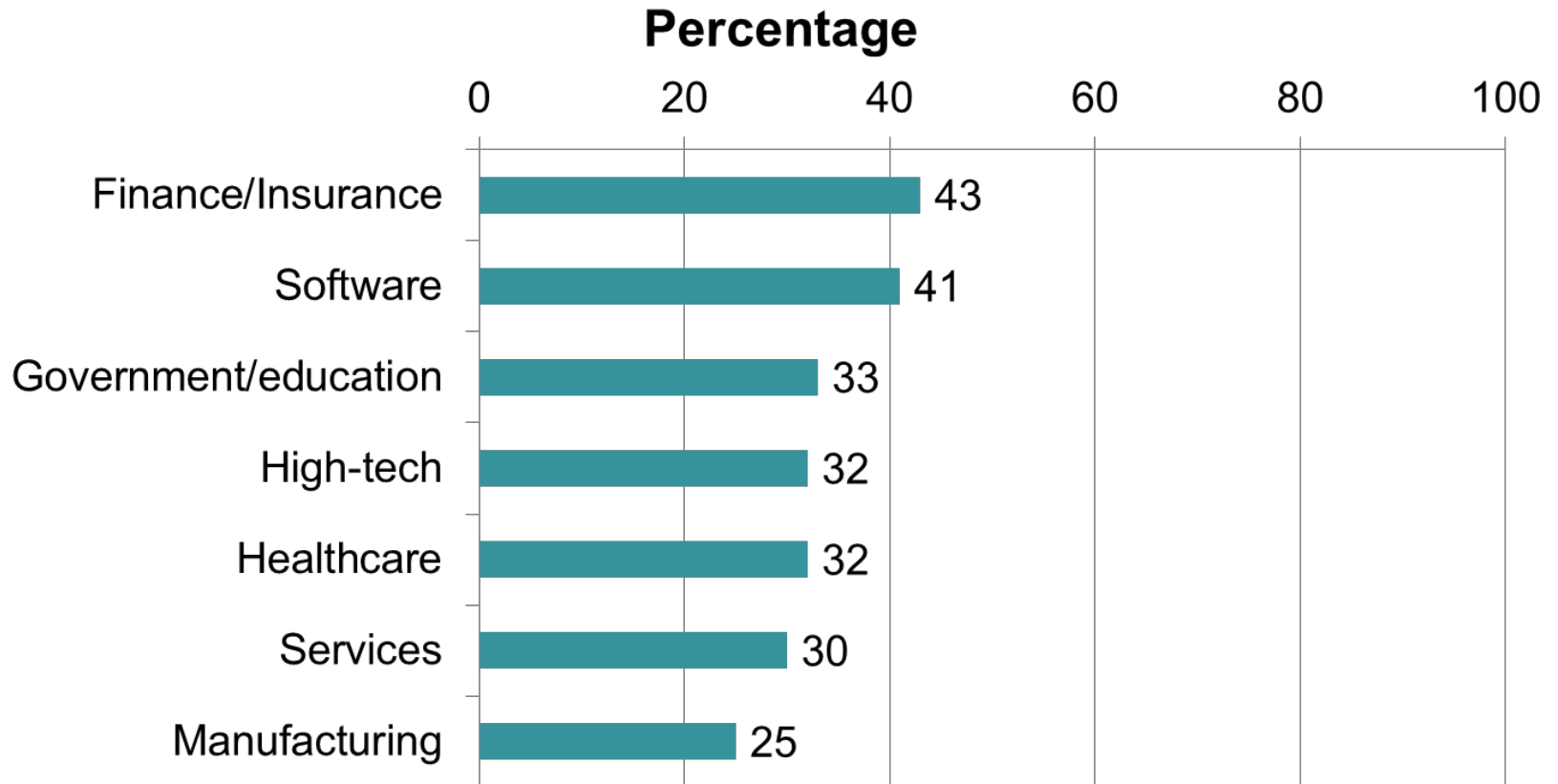
Analysts and Architects

- 50% need Client/server technical skills.
- 48%, seek knowledge of security architectures.
- 46% seek systems analysis abilities.

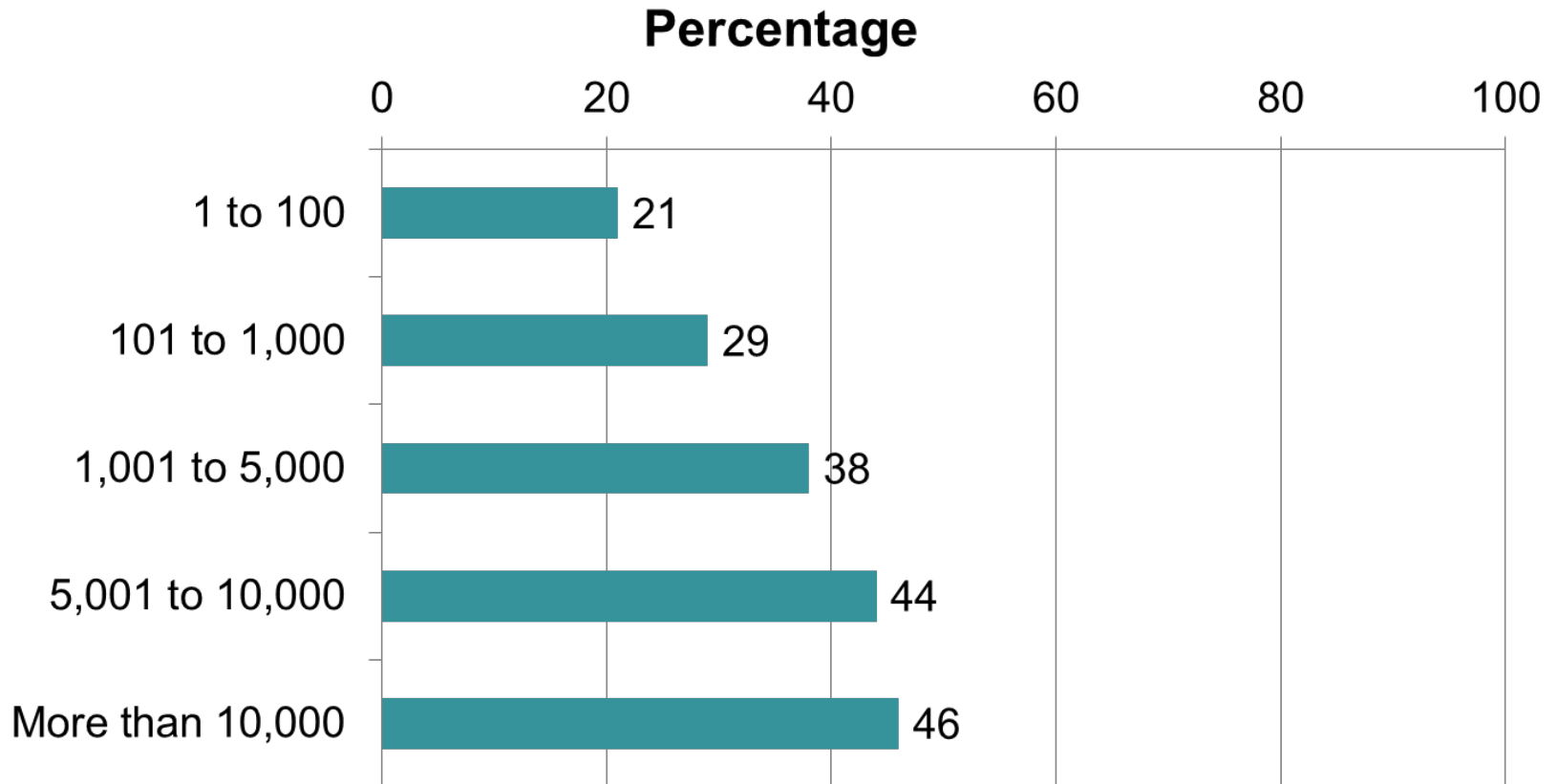
Plans for Hiring Analysts and Architects



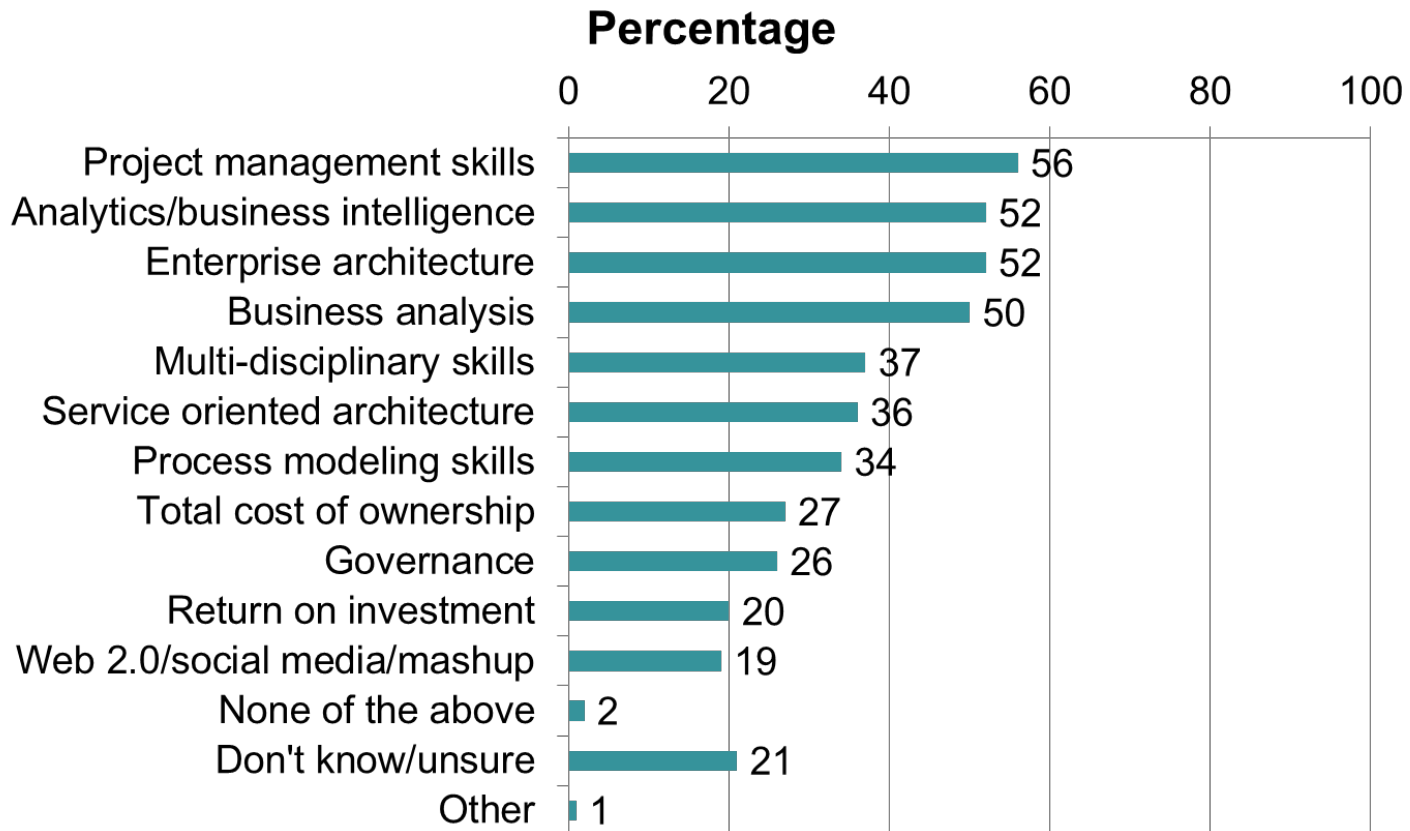
Already Hiring/Very Likely to Hire Analysts and Architects By Industry



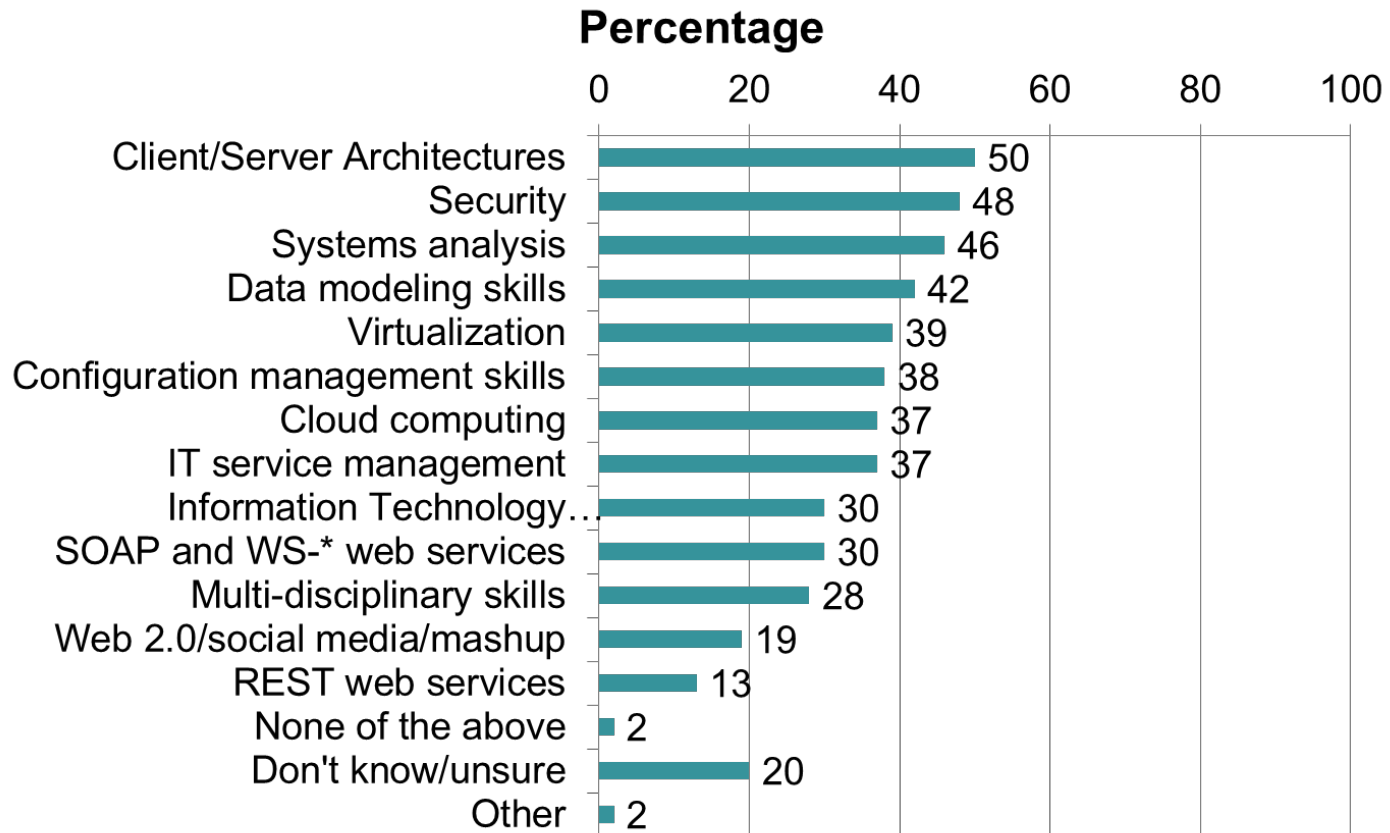
Already Hiring/Very Likely to Hire Analysts and Architects By Number of Company Employees



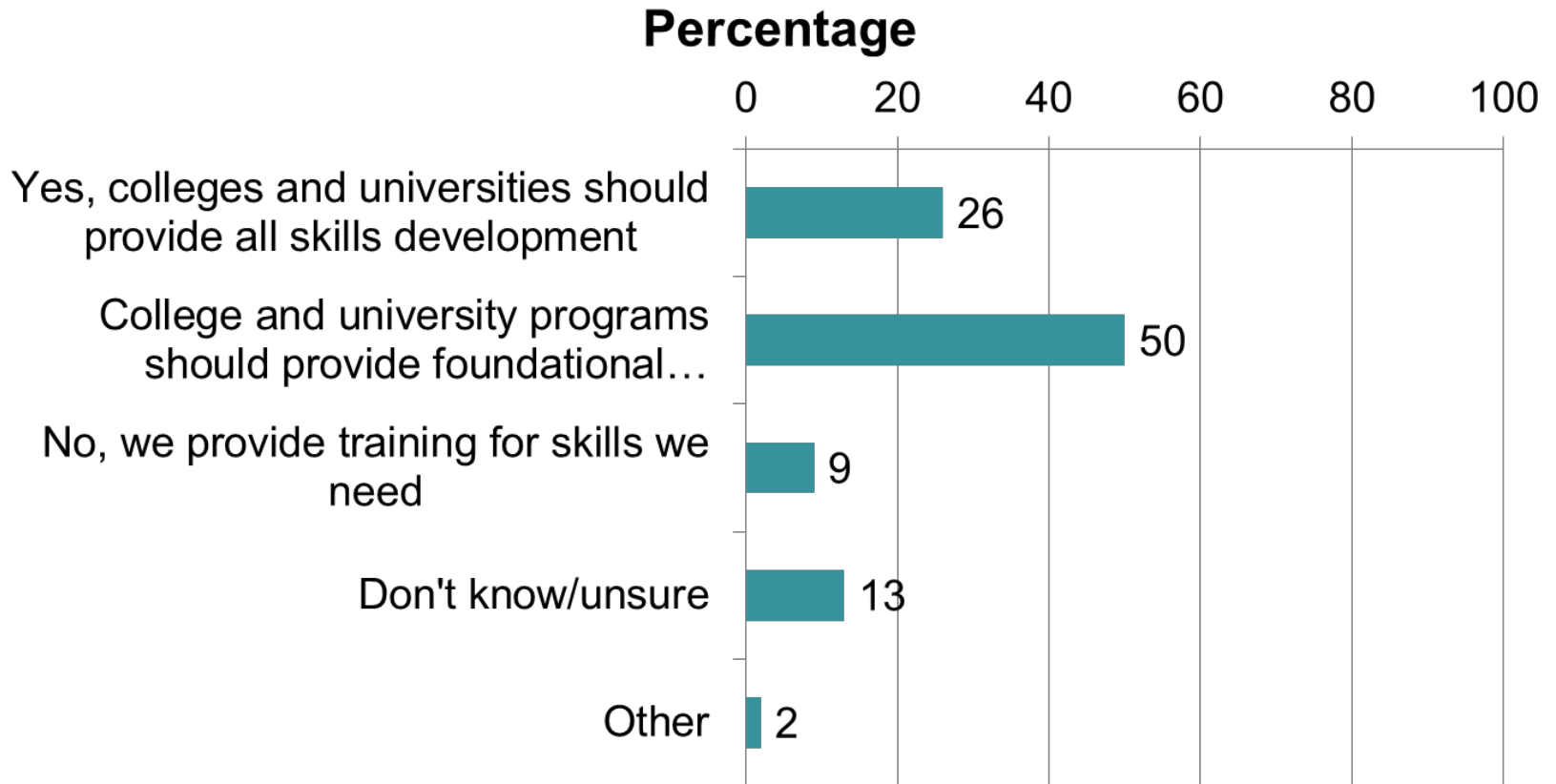
Business Analysis and Architectural Skills Analysts and Architects

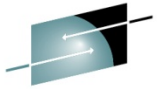


Technical Analysis and Architectural Skills Analysts and Architects



Look to College/University Programs Analysts and Architects



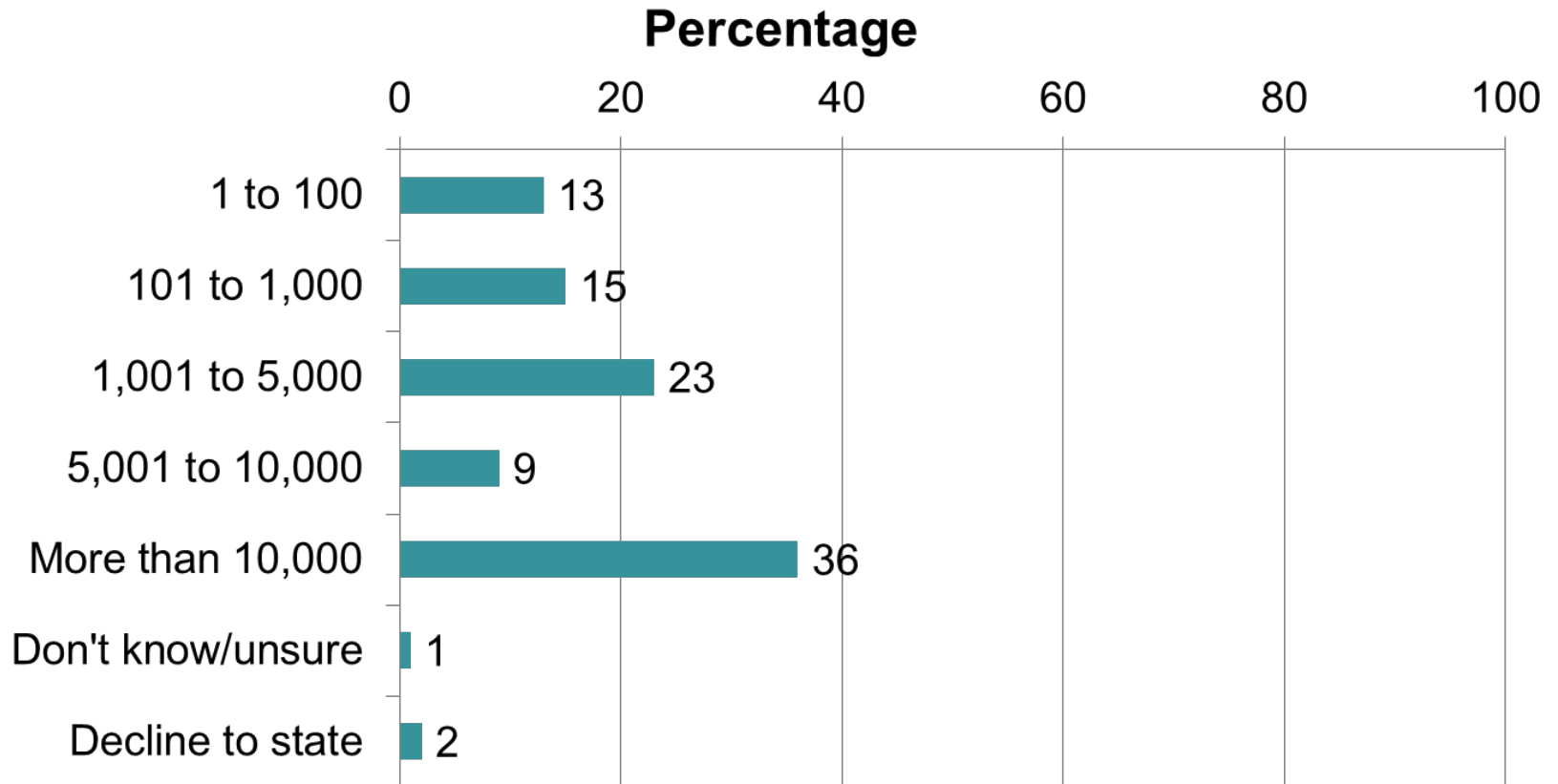


SHARE

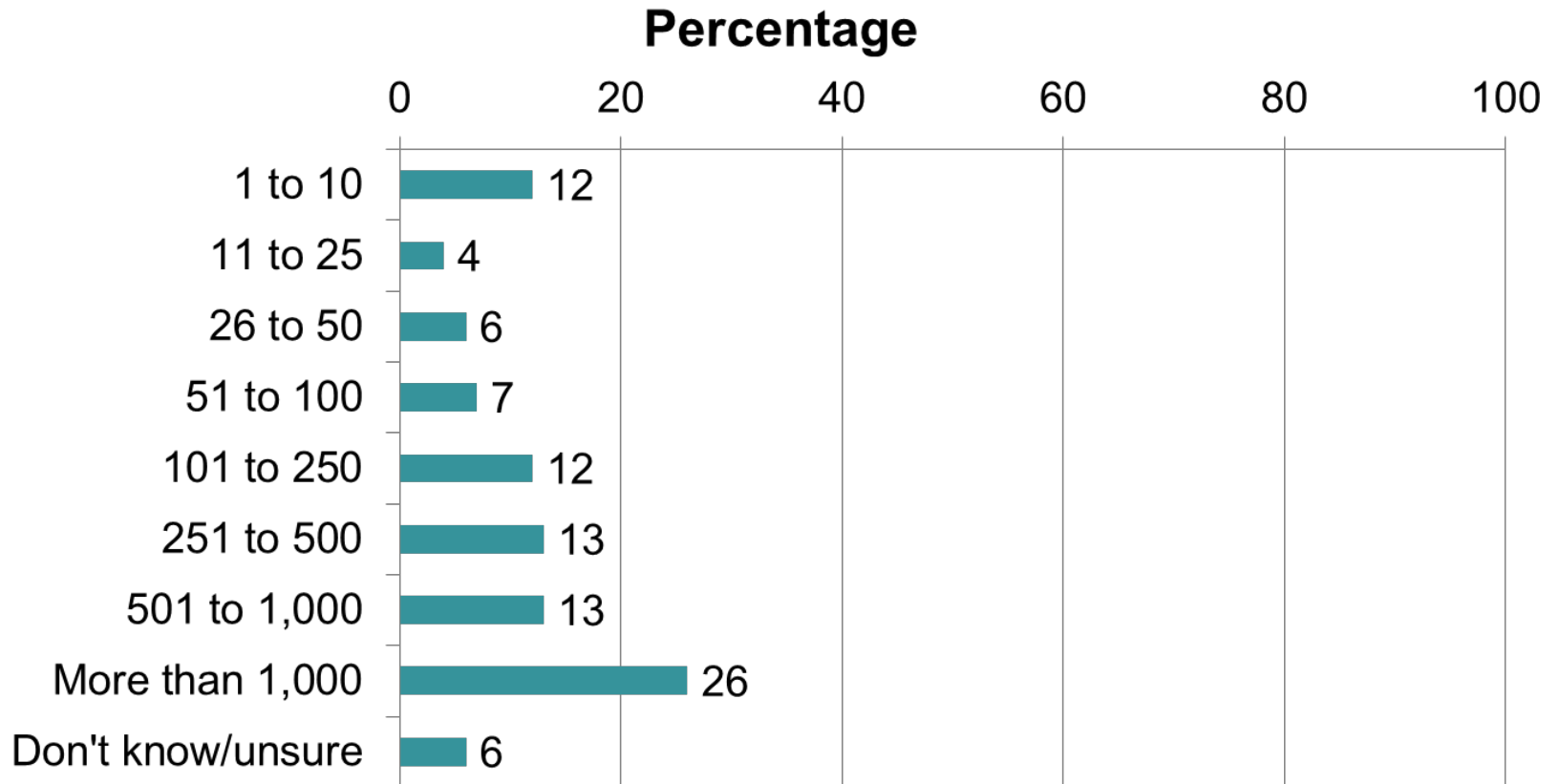
Technology • Connections • Results

Demographics

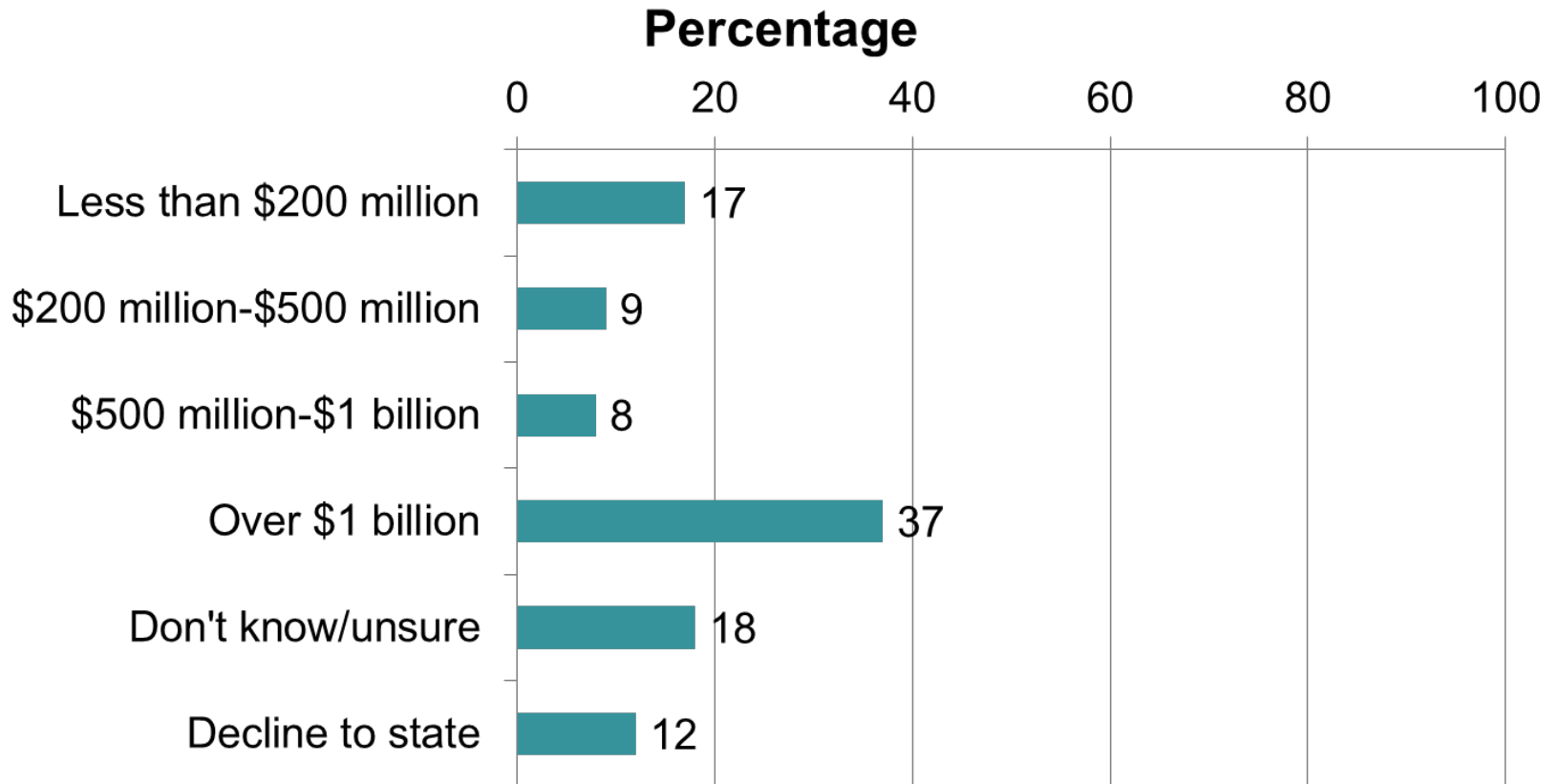
Respondents' Organizations By Total Number of Employees



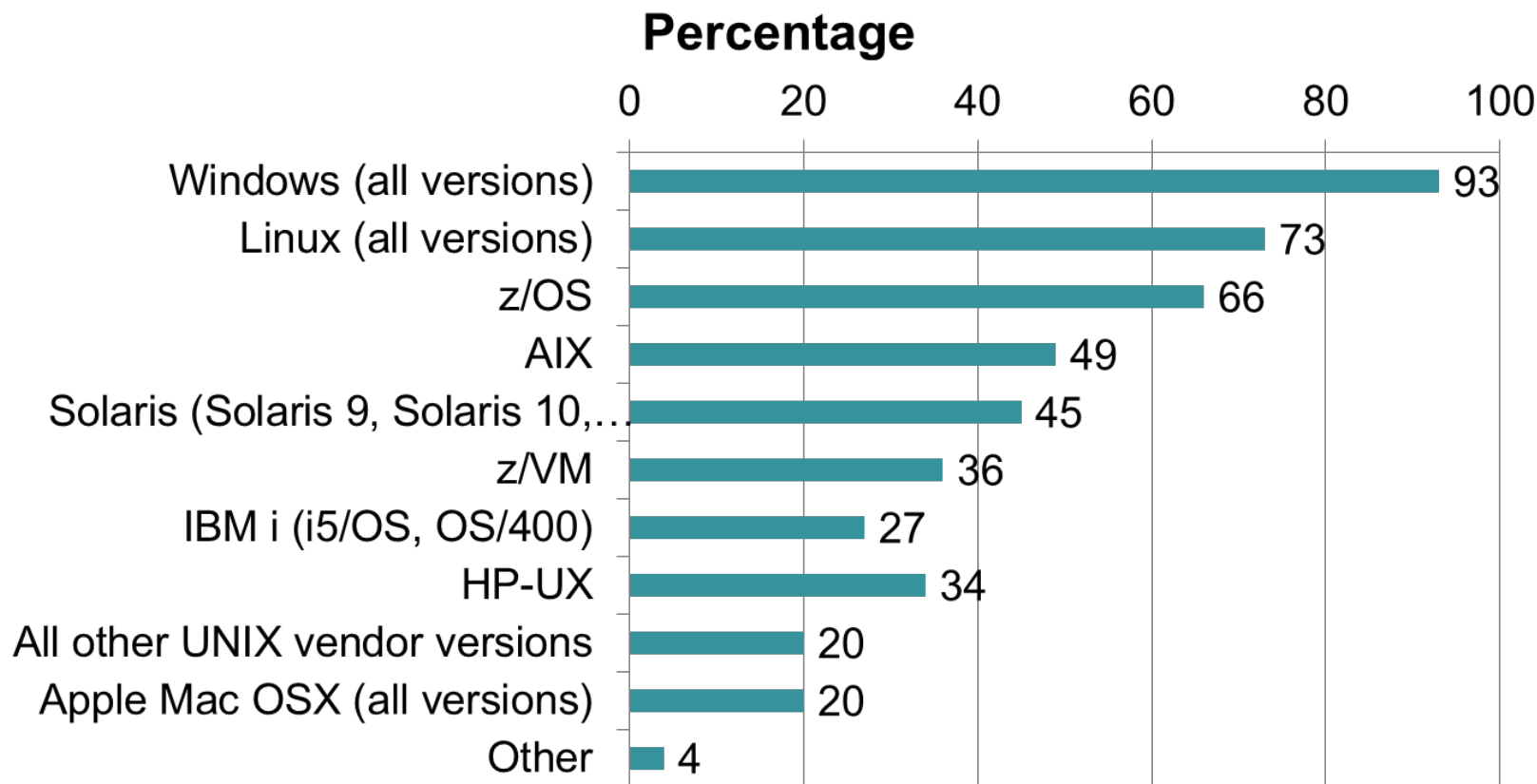
Respondents' Organizations By Number of IT Employees



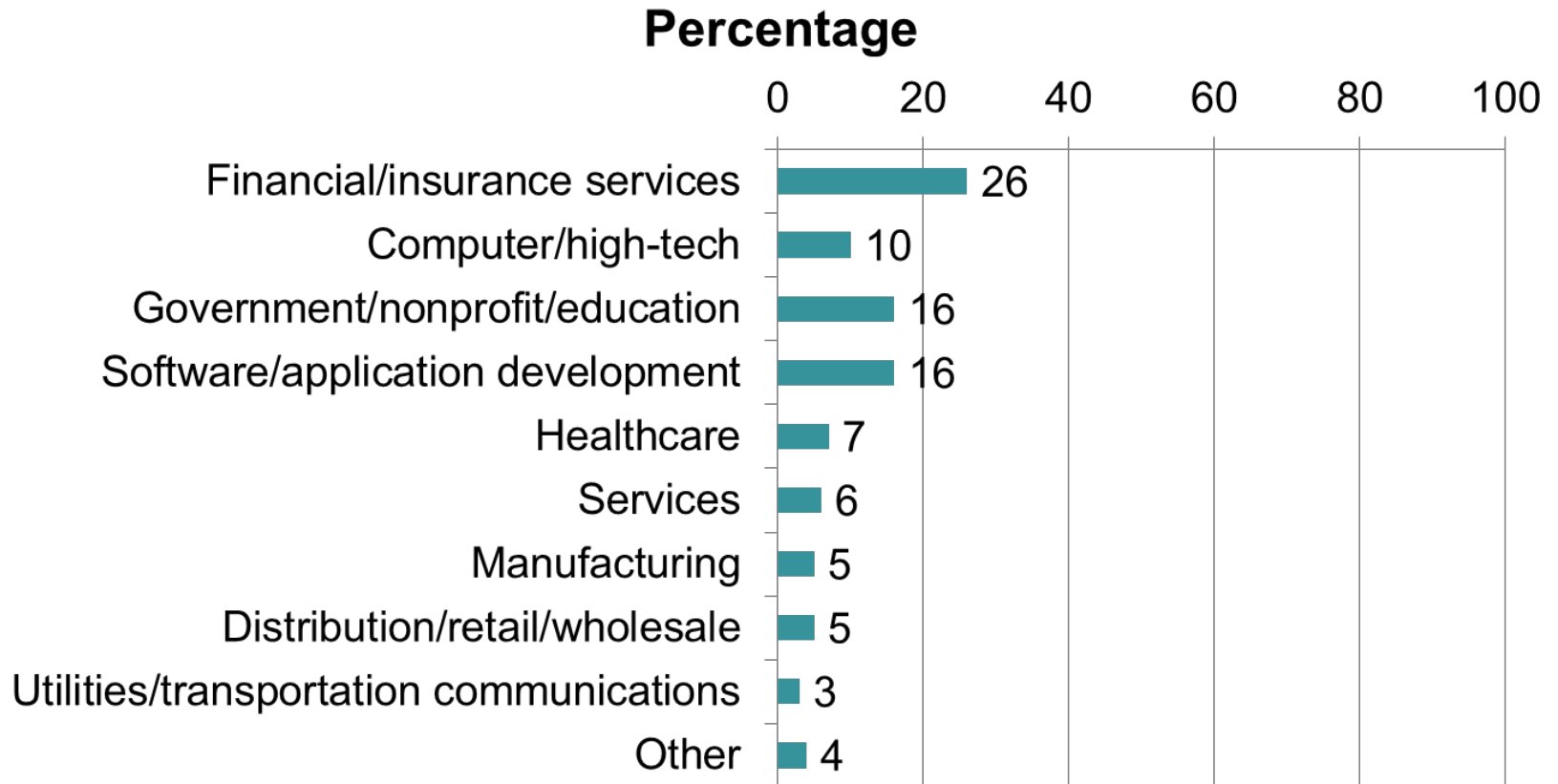
Respondents' Organizations By Annual Revenues



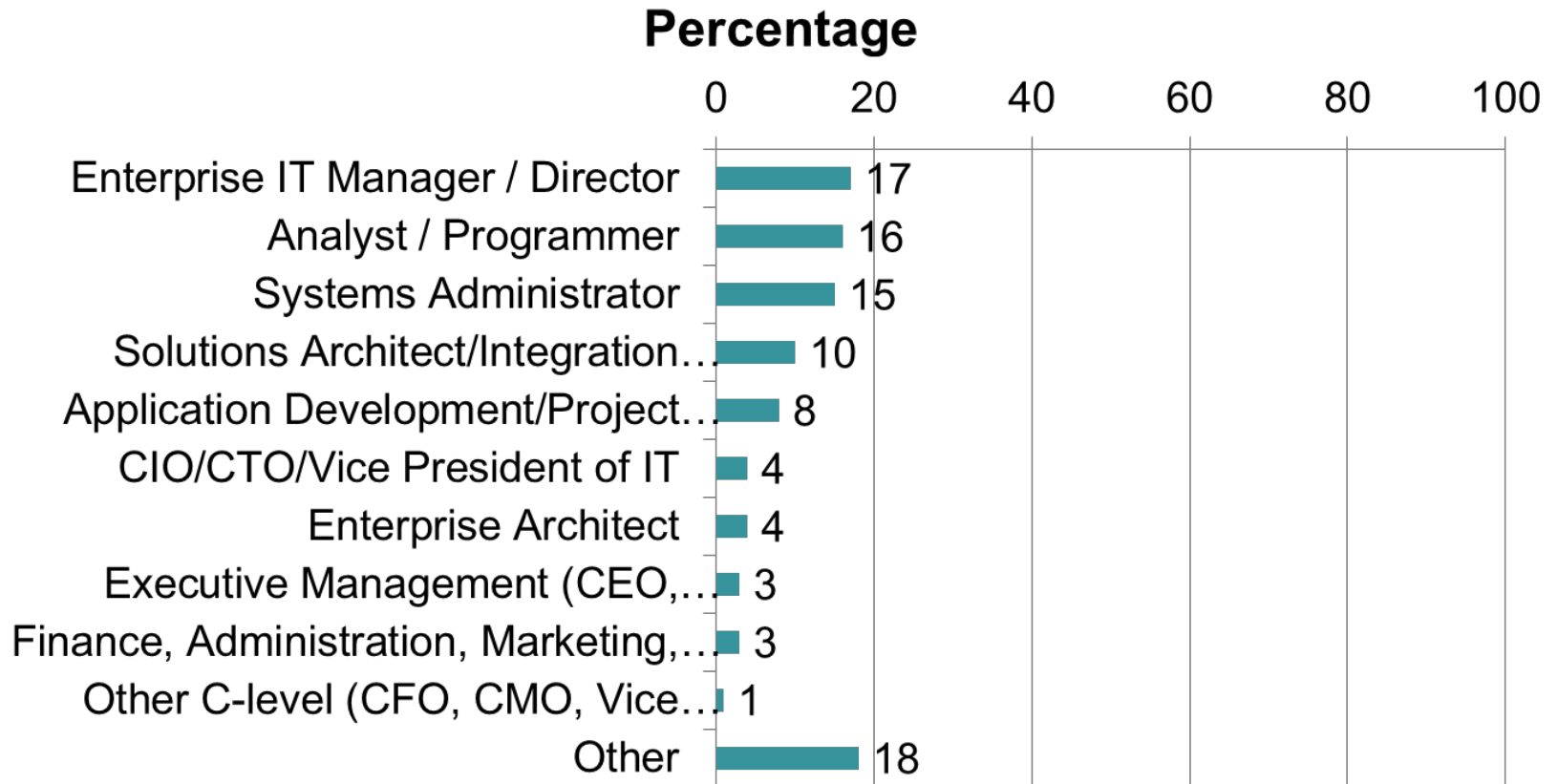
Respondents' Platforms



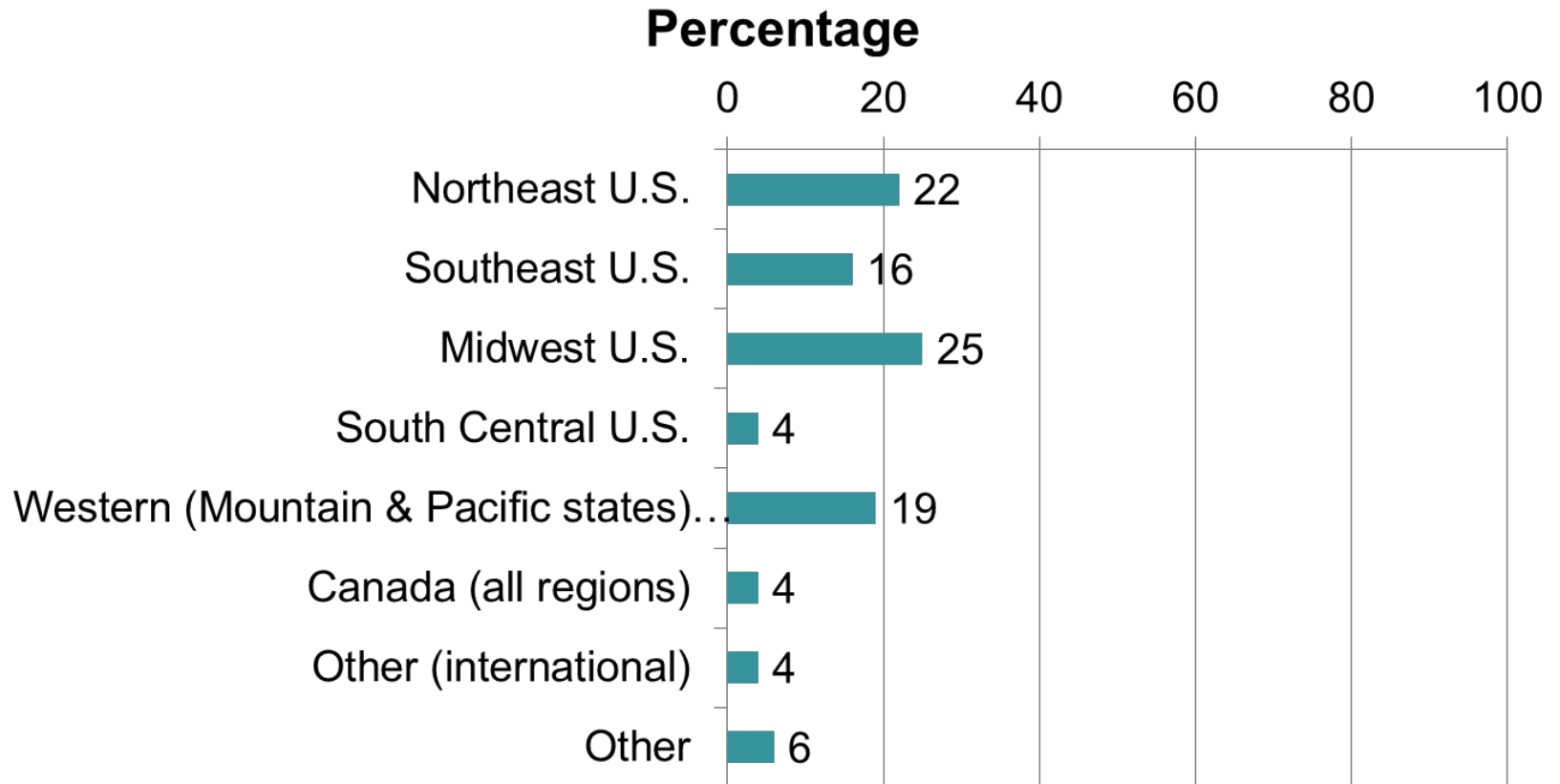
Respondents' Organizations By Industry



Respondents' Job Titles or Functions



Respondents' Regions



Summary

- Larger companies are more likely than smaller firms to hire more inexperienced IT staff
- Employers are concerned that today's IT college graduates are entering the workforce without the right sets of skills
- Over half of respondents believe that colleges and universities should provide foundational skills and that employers should supplement those skills

Summary of the Full Report

- “Employers are concerned that today’s IT college graduates are entering the workforce without the right sets of skills that companies now so critically need. For smaller companies, hiring graduates right out of college is not a viable option, as they typically require additional training for complex or legacy systems. Over, the survey of 376 employers finds that a majority report they depend on the educational sector—universities and colleges—to provide specific IT skills, such as enterprise programming languages, as well as business skills such as problem-solving and communications. However, few companies are entirely satisfied with the readiness of graduates coming out of campuses.”

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- **Questions?**

Extra Material

Acknowledgements

- Closing the IT Skills Gap: 2011 SHARE Survey for Guiding University and College Agendas was produced by Unisphere Research in conjunction with SHARE, and sponsored by IBM. Unisphere Research is a division of Information Today, Inc. publisher of Database Trends and Applications magazine, www.dbta.com and the 5 Minute Briefing email newsletters.
- For information about SHARE visit www.share.org.
- Data collection and analysis performed with SurveyMethods.

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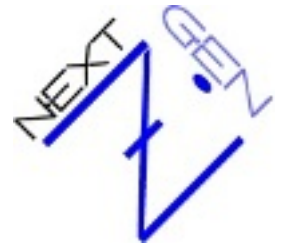
- **CLOSING THE IT SKILLS GAP:**
- By Joseph McKendrick, Research Analyst
- Conducted by Unisphere Research, a division of Information Today, Inc
- February 2011

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- Slides produced by
 - Janet Sun, SHARE, Inc. President
 - Raymond Sun, SHARE, Inc. Deputy Director of Marketing
 - A. Harry Williams, SHARE, Inc. Director of Community Enablement
 - Kristine Harper, SHARE, Inc. Director of Volunteer Services

zNextGen

- zNextGen is a user-driven community
 - over 700 members in 27 countries
 - for new and emerging System z professionals
 - Provide newcomers with a sense of community in the mainframe world
 - the resources to help expedite professional development skills.
- www.znextgen.org
- Launched in August 2005



zNextGen Today

- Over 700 members, including newcomers and mentors
- Monthly calls and volunteers have helped create a sense of community
- Collaborated with other projects to develop grid
- Forming sub-teams to foster participation
- Online communications using SHARE's electronic discussion forum

SHARE Academic Award for Excellence

- Recognizing the importance of the next generation of enterprise technology professionals.
- Showcase and reward academic work that is relevant to the future of enterprise computing
- Award Criteria and Requirements:
 - Applicable to students and recent graduates enrolled full-time in high school, undergraduate or graduate university program focused on Information Systems, Enterprise Computing, Computer Science, Information Technology or a related concentration.

SHARE Academic Award for Excellence

- Students should submit an academic-related enterprise information system project that adds value to an organization's overall IT goals and mission.
- Visit SHARE web site to view 2010 and 2011 winners
- Submissions must include:
 - Proof of student status or graduation in the last 12 months
 - Project abstract, Project write-up
 - Presentation: to be presented at the 2012 SHARE Winter Conference if selected as Grand Prize Winner
 - Optional: supplementary materials to demonstrate creativity (videos, photos, etc.)
 - Submission Deadline - February 2012

SHARE Academic Award for Excellence

- Award Levels and Prizes
- Three prize levels
- Grand Prize
 - \$500 gift certificate to Amazon or campus bookstore for educational supplies
 - \$500 gift certificate to Apple Store
 - 1 expense paid trip to 2012 SHARE Winter Conference (including airfare, lodging and meals; winner to present to SHARE attendees)
 - Submission featured on SHARE.org
 - Access to SHARE Online from 2012 winter conference recorded content