

Outside of the Academic Garden: Lifelong Learning for Engineers



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Why?

“It sure would be nice if we actually were preparing students with skills and habits that served them after graduation rather than teaching them arcane processes before we usher them through the gates of our walled gardens, waving cheering before we lock the doors behind them.”

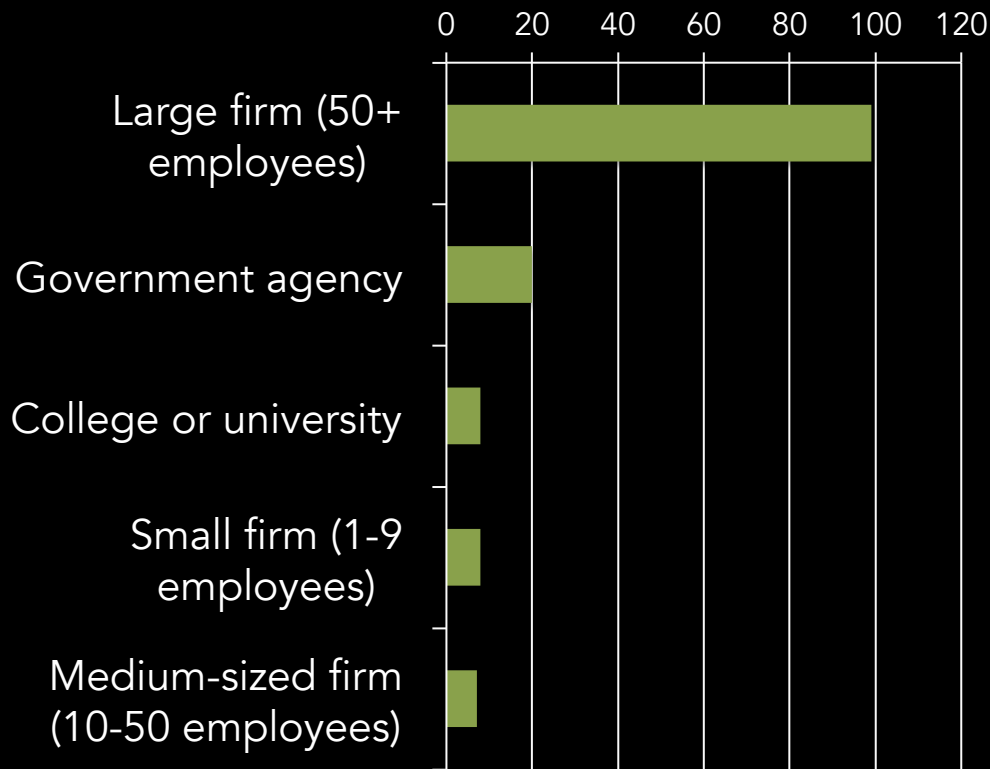
Barbara Fister, “The Illogical Complexity of the Walled-Garden Library”
“<https://www.insidehighered.com/blogs/library-babel-fish/illogical-complexity-walled-garden-library>”

Methods

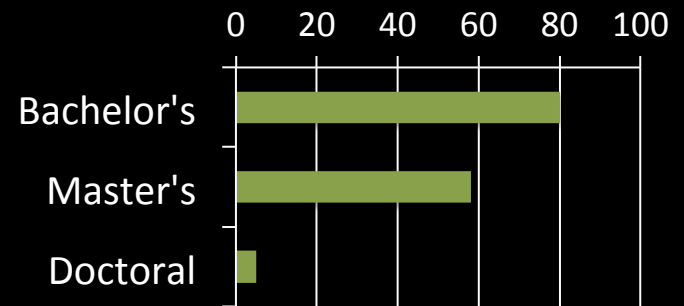
- Survey: descriptive data to generate questions for interviews and focus groups.
- Interviews: richer descriptions of what engineers do and why.

Demographics

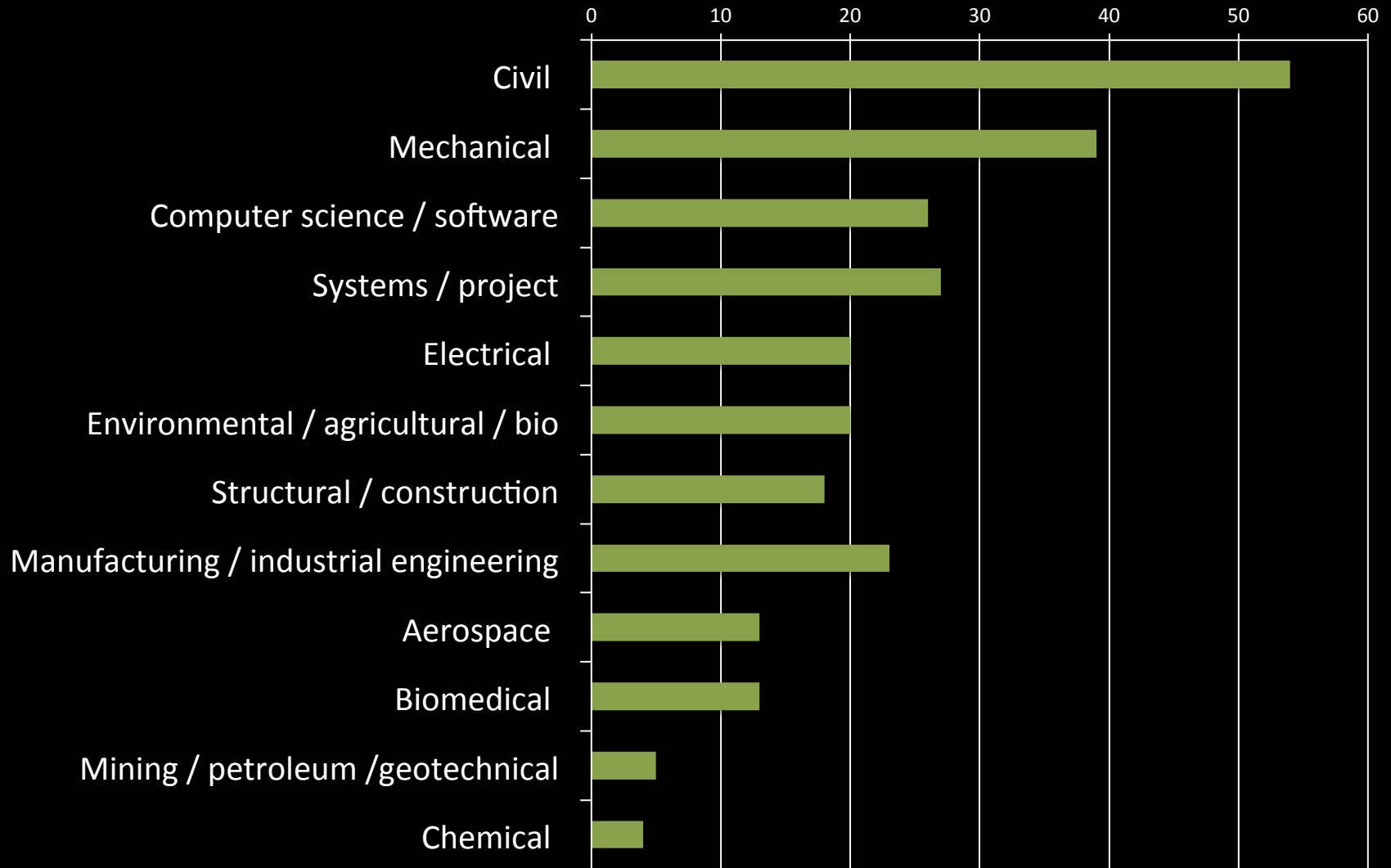
Type of employer



Highest degree attained



Type of engineering

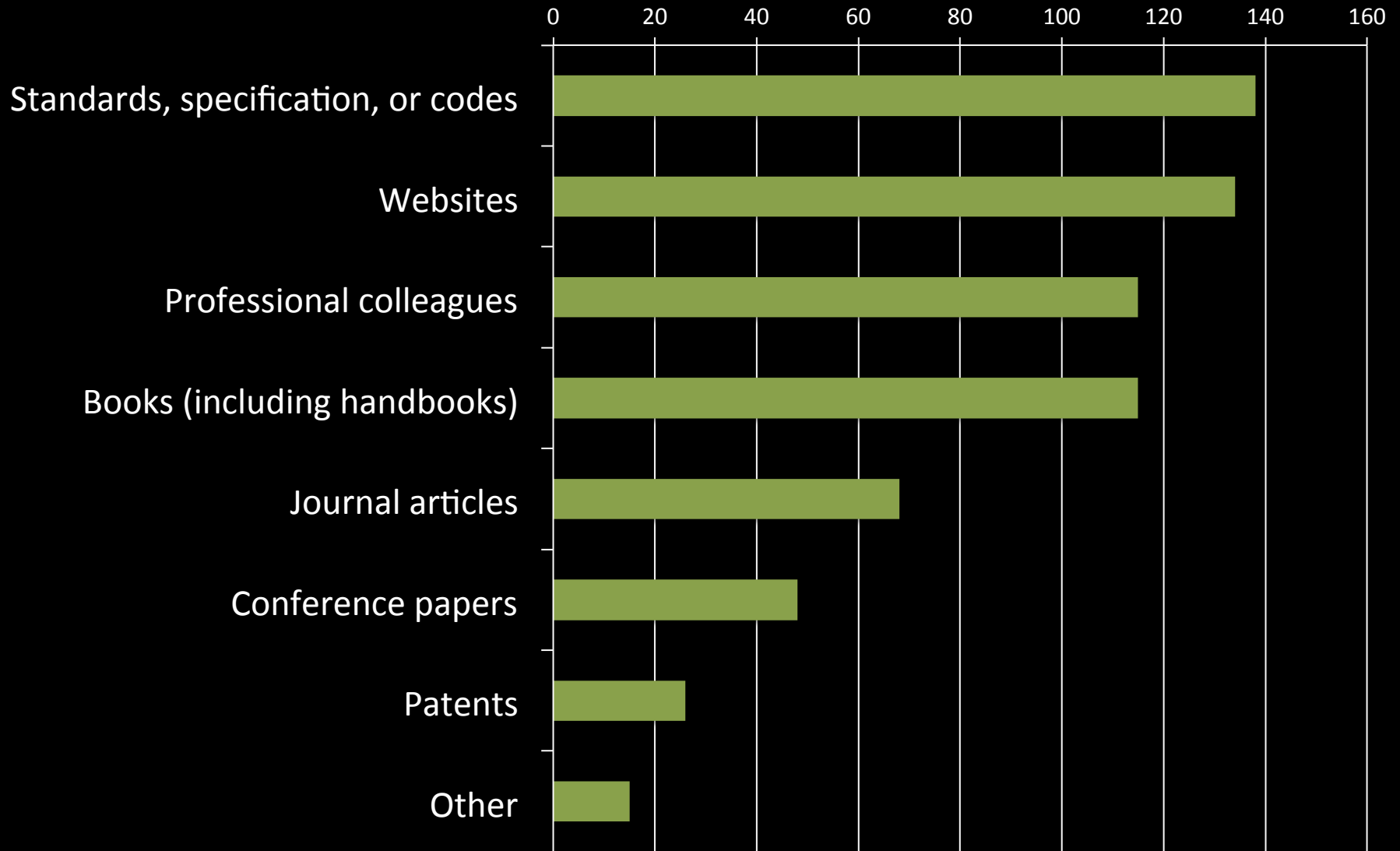




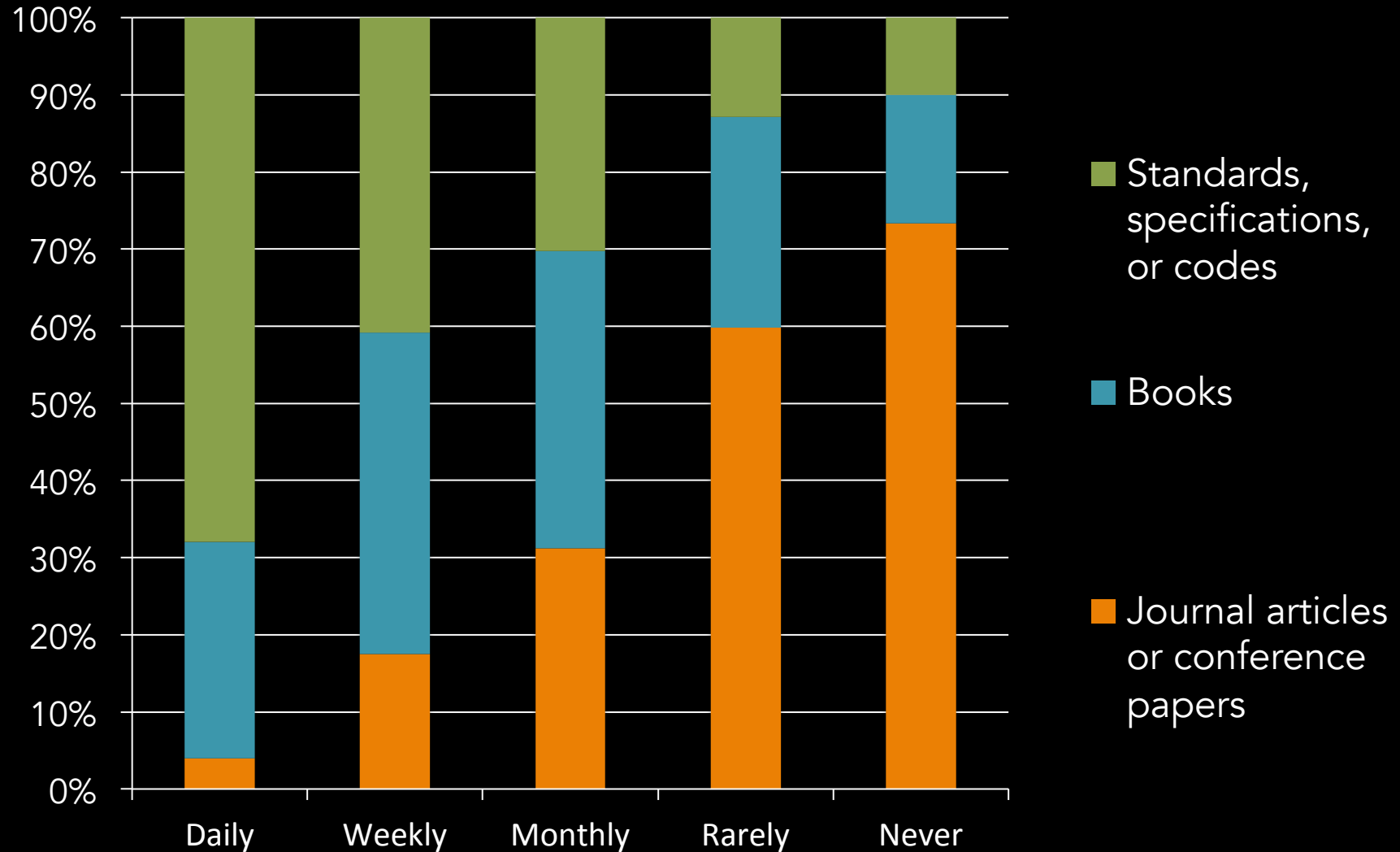
Interview Participants

- Software engineer, small firm, bachelor's degree
- Mechanical engineer, large firm, master's degree
- Software/process engineer, large firm, doctorate
- New product development, large firm, doctorate
- Systems engineer, large firm, master's
- Chemical engineer, large firm, doctorate / now faculty
- Mechanical, self-employed, master's

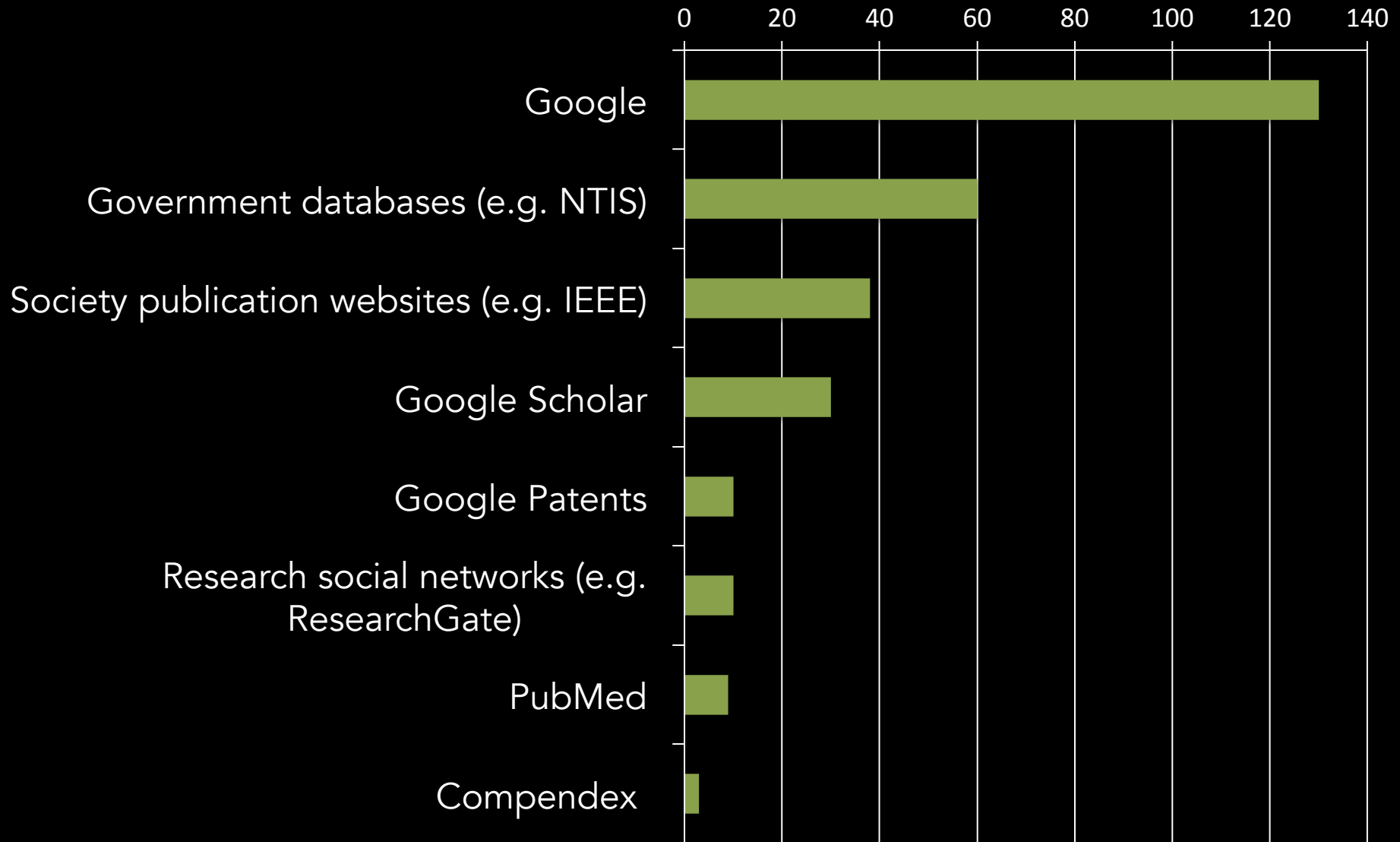
What kinds of information sources do you consult for your work?



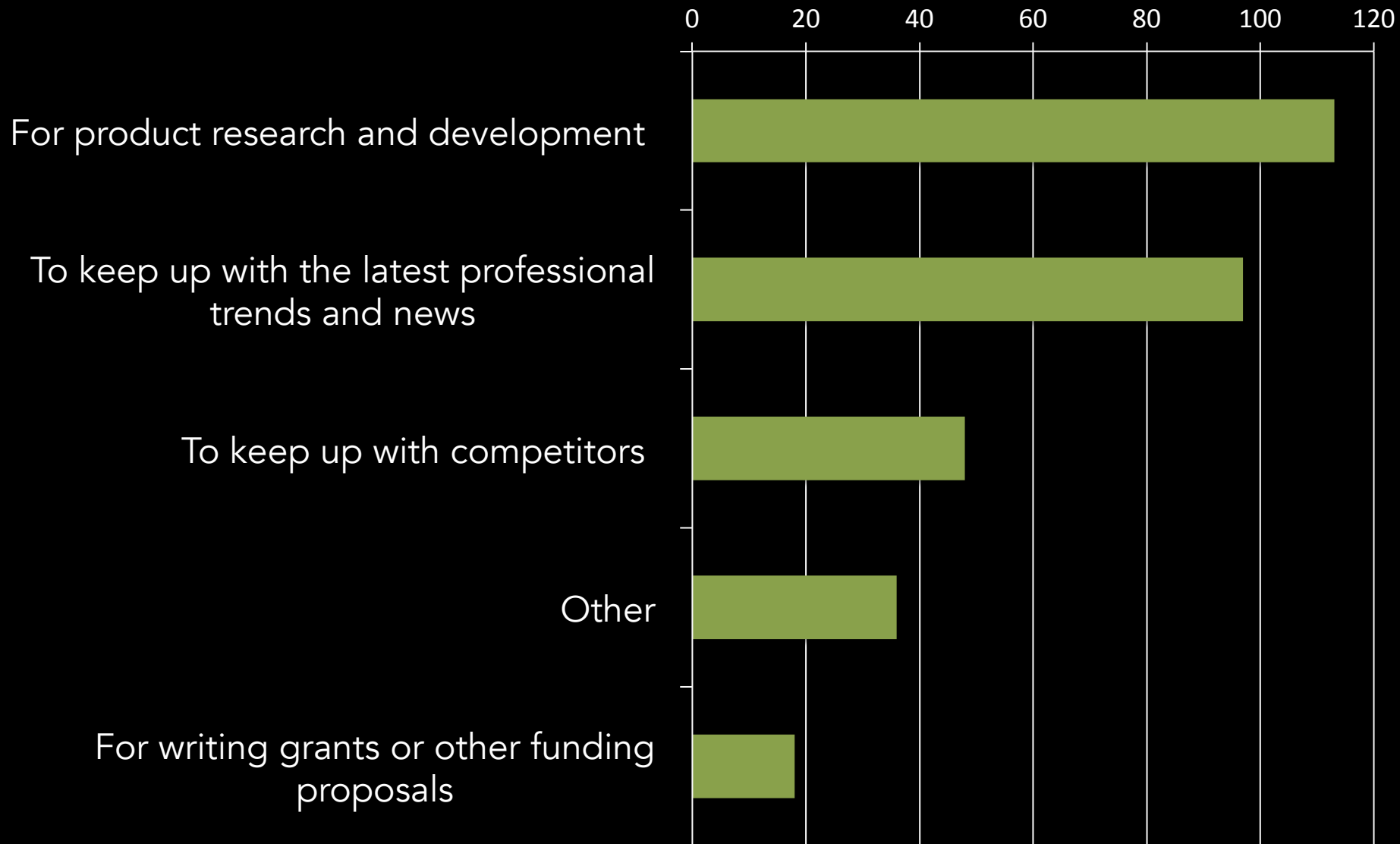
In your work, how often do you need to consult...



What search tools do you use to discover information sources that you need for your work?



How do you use information sources in the course of your work?



Standard Approaches

"In my field, if I am the only one doing something a certain way, that is a bad sign."

"There's no need to reinvent the wheel when designing something."

"The saying that good designers create and great designers steal is really true for my work."

"I take solutions that already exist and adapt them to a particular use case in my company."

Build an Argument

“Recently, in a discussion with a co-worker, I tried to give a more systematic argument about a design approach I had taken. It helped my argument to find the formal name of the approach and reference a source for it.”

Specific Answers

"I am often looking for answers to questions that are binary – there is a right or wrong answer and nothing more is needed."

"I need to consult specs and that's about it."

"I look for data sheets to get properties of materials."

"I consult manufacturer's information for parts I am using."

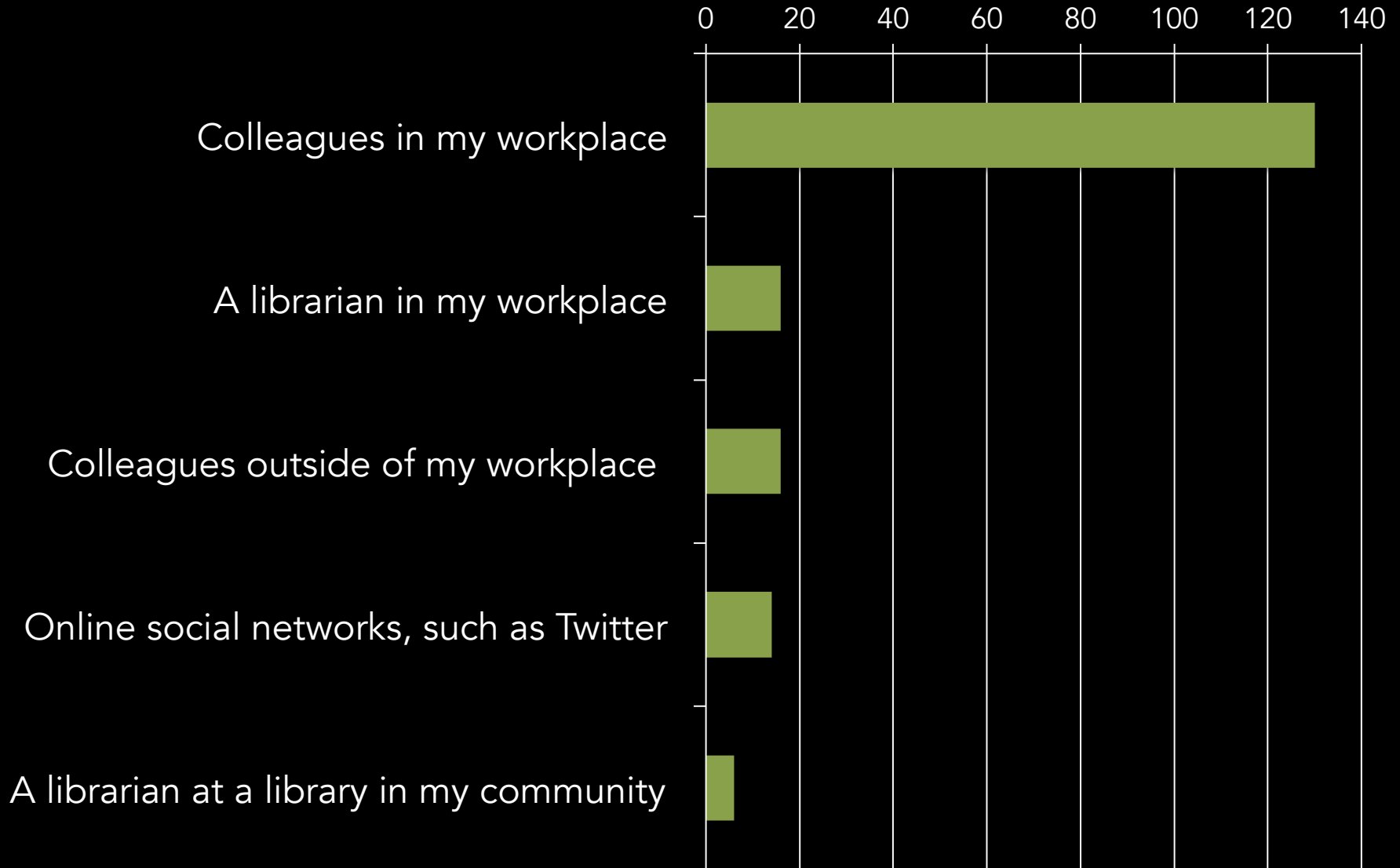
Staying Current

"I try to stay on top of current news and events to see what is trending in technology as this occasionally provides me with ideas for using new technologies in current products."

"Being able to understand current technologies and stay on top of trends is very important in the software industry."

"There are a handful of journals relevant to the work of my firm and physical copies are lying around so that I can peruse them and stay current."

If you get help searching (e.g. tips on specific search strategies, tools, or sources), where do you get that help?



Evaluation and Authority



Skills

- Citation chaining
- Patent searching
- Forming questions
- Finding patterns
- Building arguments
- Staying current
- Reading complex documents
- Managing and synthesizing information
- Learning new fields

Knowledge

- People are information sources
- Intellectual property
- Engineering knowledge
- Role and limits of types of knowledge

Attitudes/Awareness

- Comfort with trial and error
- Awareness of social factors

Let's pack our boxes...



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Entrance to Walled Garden at Farmleigh.

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