User & Developer Survey 2020

Viral Shah & Andrew Claster

Methodology

We conducted 2,565 interviews online among Julia users and developers June 4-29, 2020

* This represents an increase from 1,844 interviews in 2019

Margin of error is +/- 1.9 percentage points

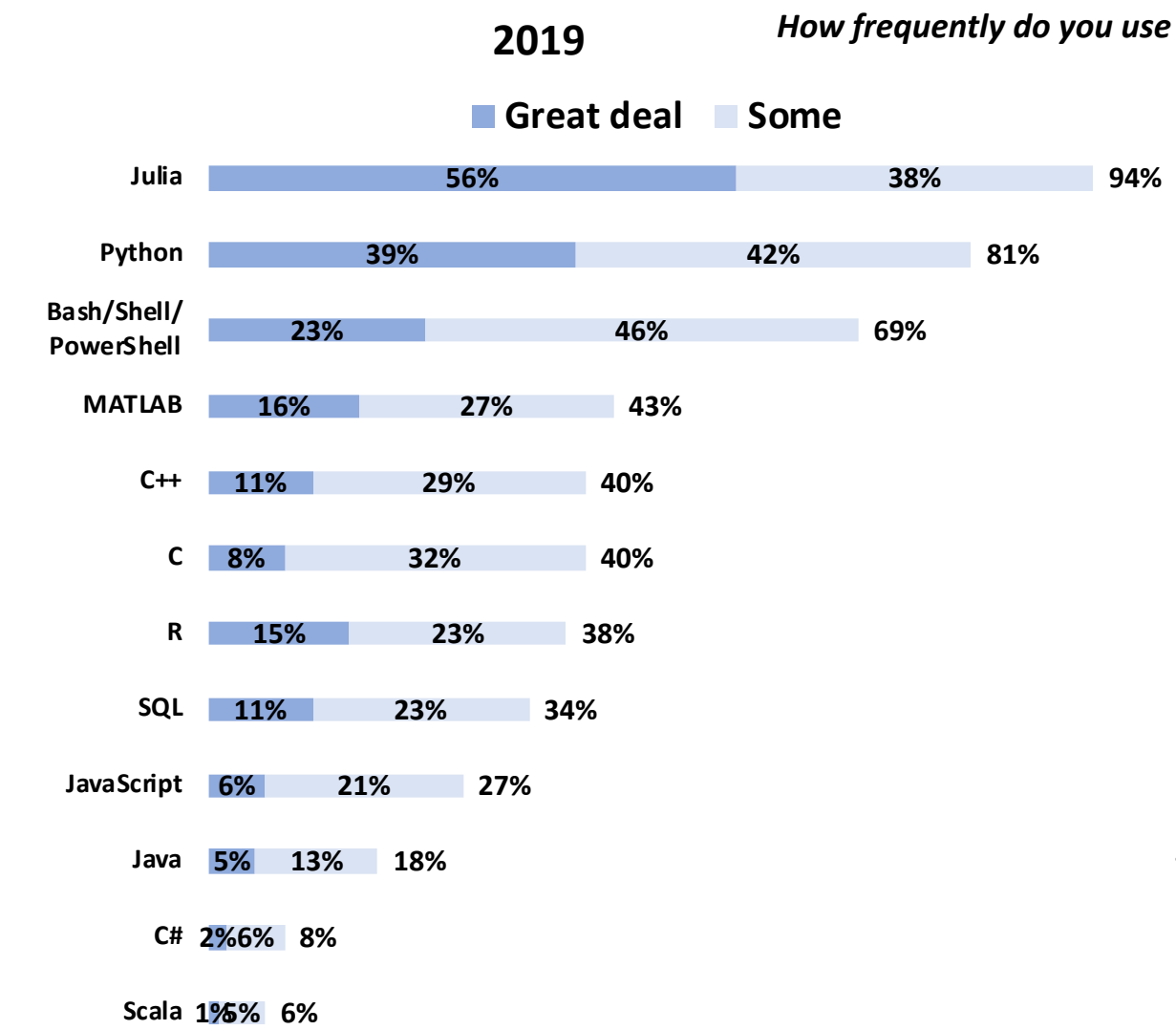
We recruited respondents online using Slack, Discourse, Twitter, LinkedIn, Facebook, email, JuliaLang.org and JuliaComputing.com

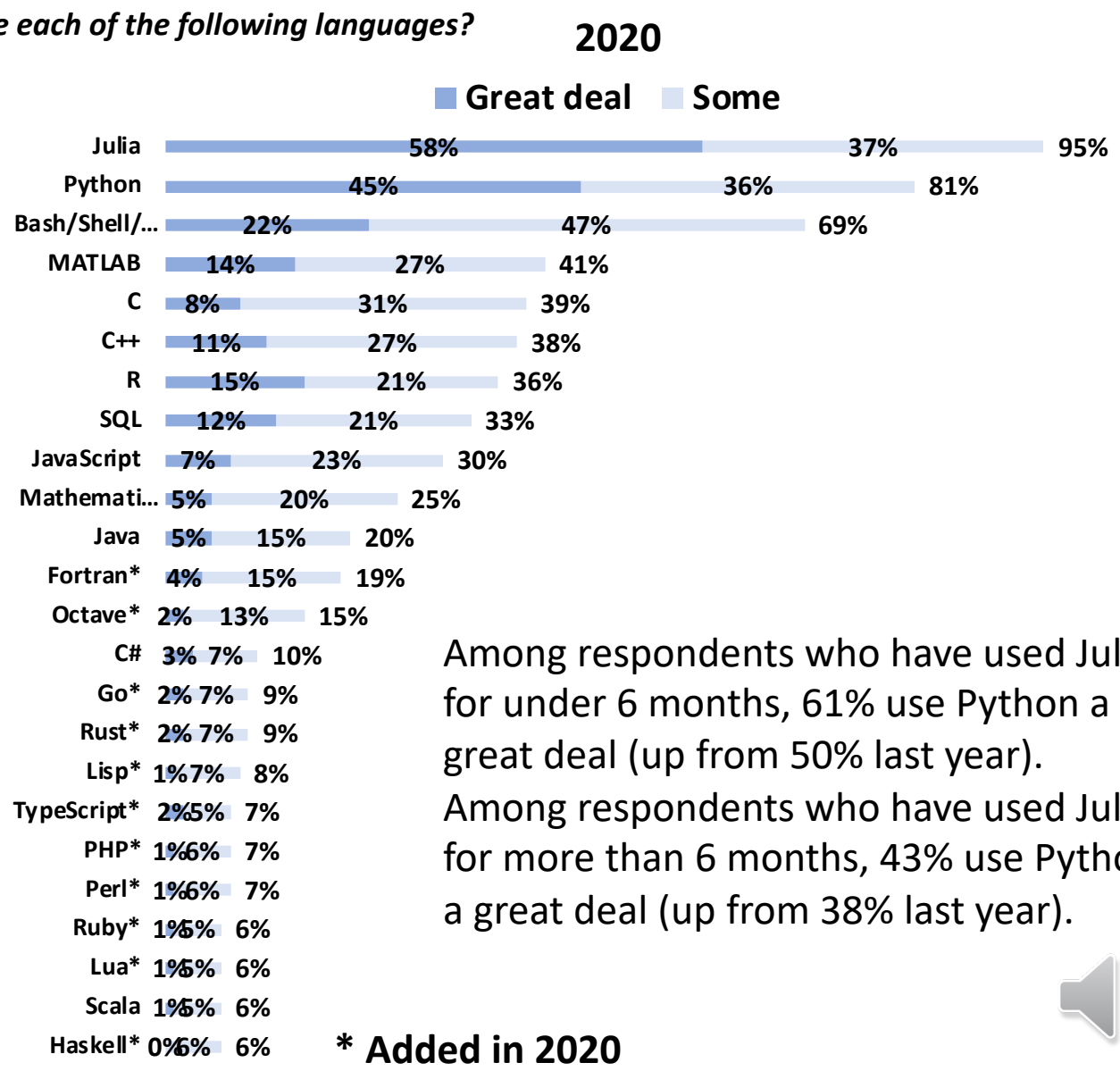
The survey was administered in 4 languages: English, Chinese, Spanish and German

* In 2019, the survey was offered only in English

58% Say They Use Julia A ‘Great Deal’

How frequently do you use each of the following languages?





Among respondents who have used Julia for under 6 months, 61% use Python a great deal (up from 50% last year).
Among respondents who have used Julia for more than 6 months, 43% use Python a great deal (up from 38% last year).

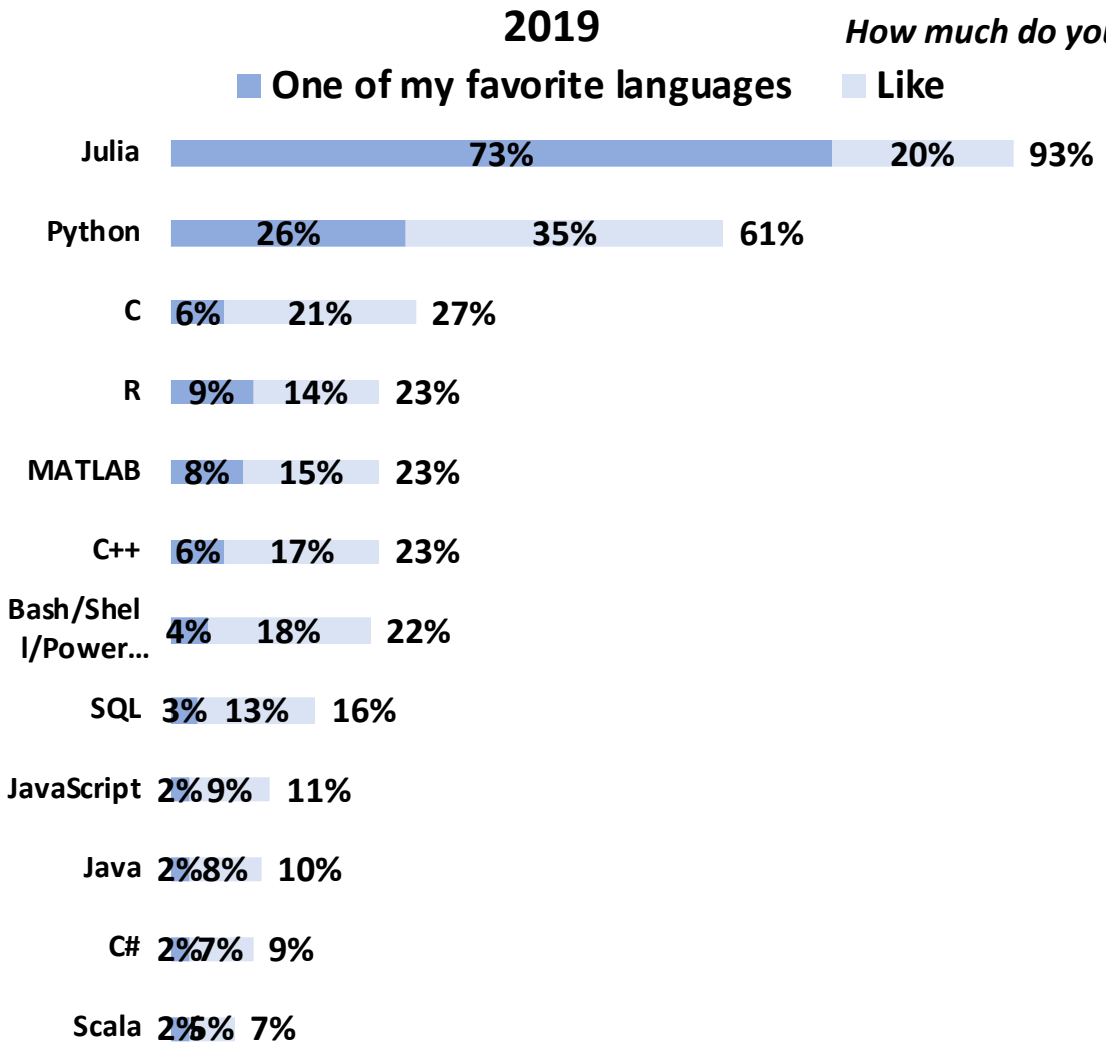
*** Added in 2020**

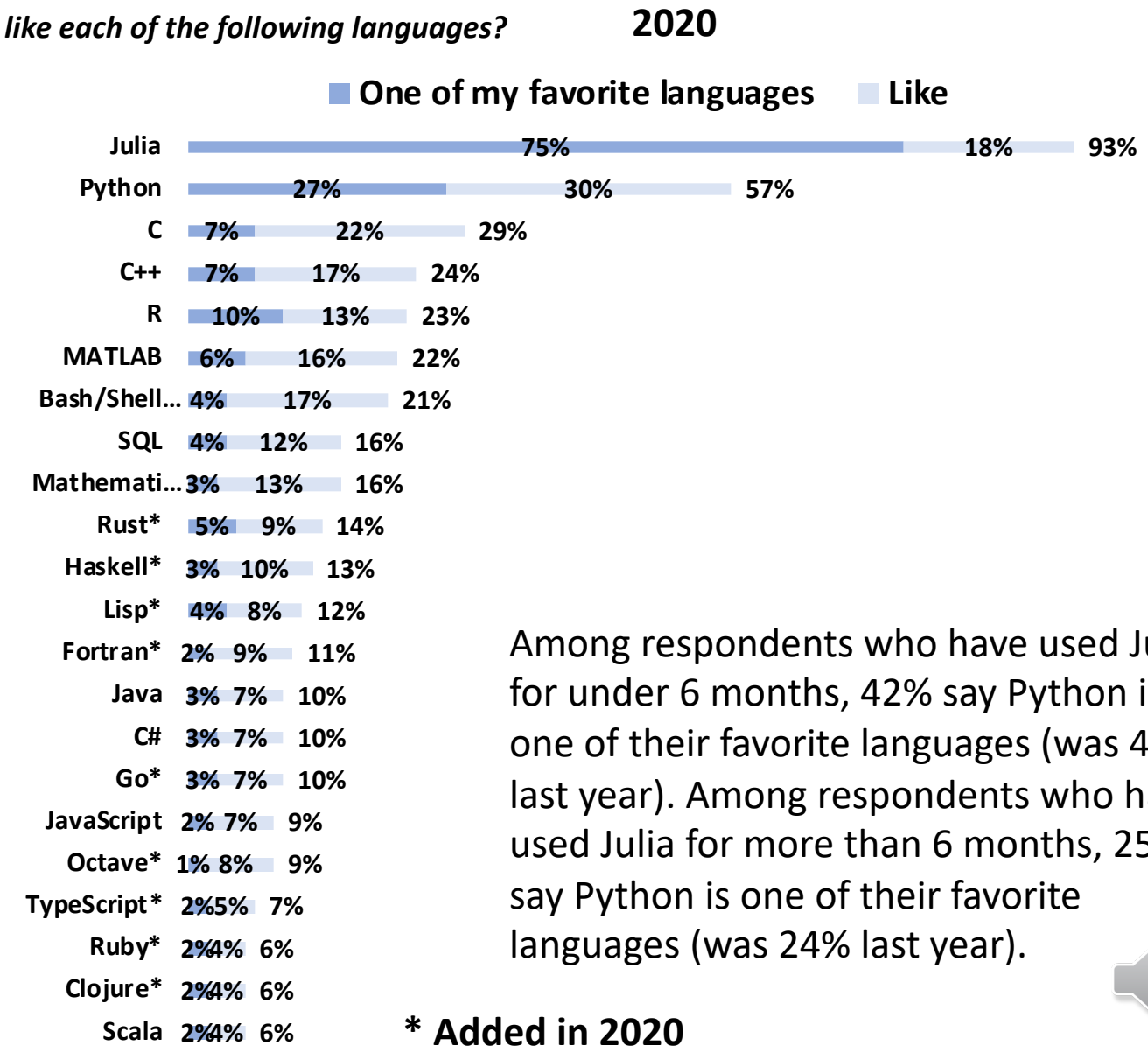
Julia computing

93% of Respondents Like Julia or Say Julia Is One of Their Favorite Languages

Python Is Down Slightly Since Last Year

How much do you like each of the following languages?





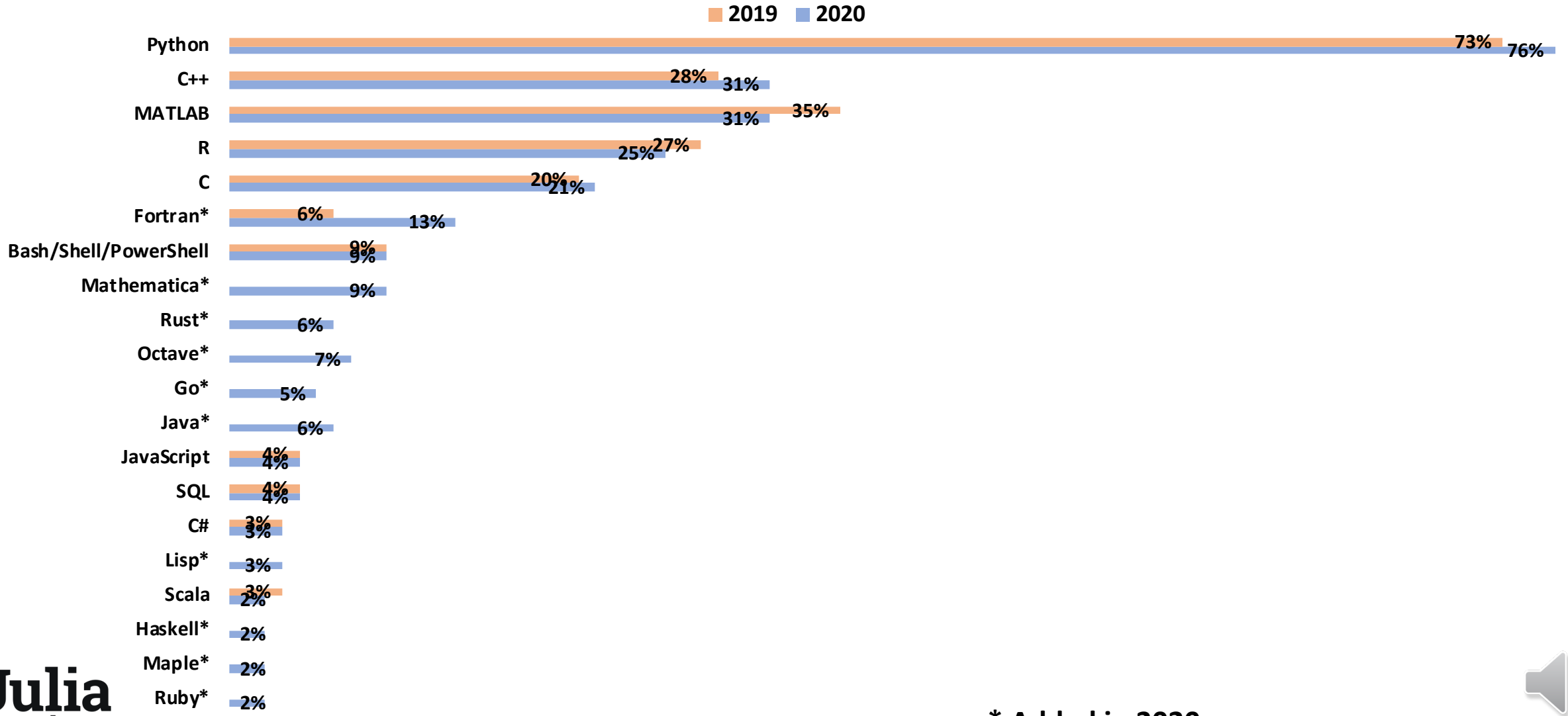
Among respondents who have used Julia for under 6 months, 42% say Python is one of their favorite languages (was 41% last year). Among respondents who have used Julia for more than 6 months, 25% say Python is one of their favorite languages (was 24% last year).

*** Added in 2020**

Julia computing

If Not for Julia, Most Would Be Using Python, Followed by C++
MATLAB Has Declined Since Last Year

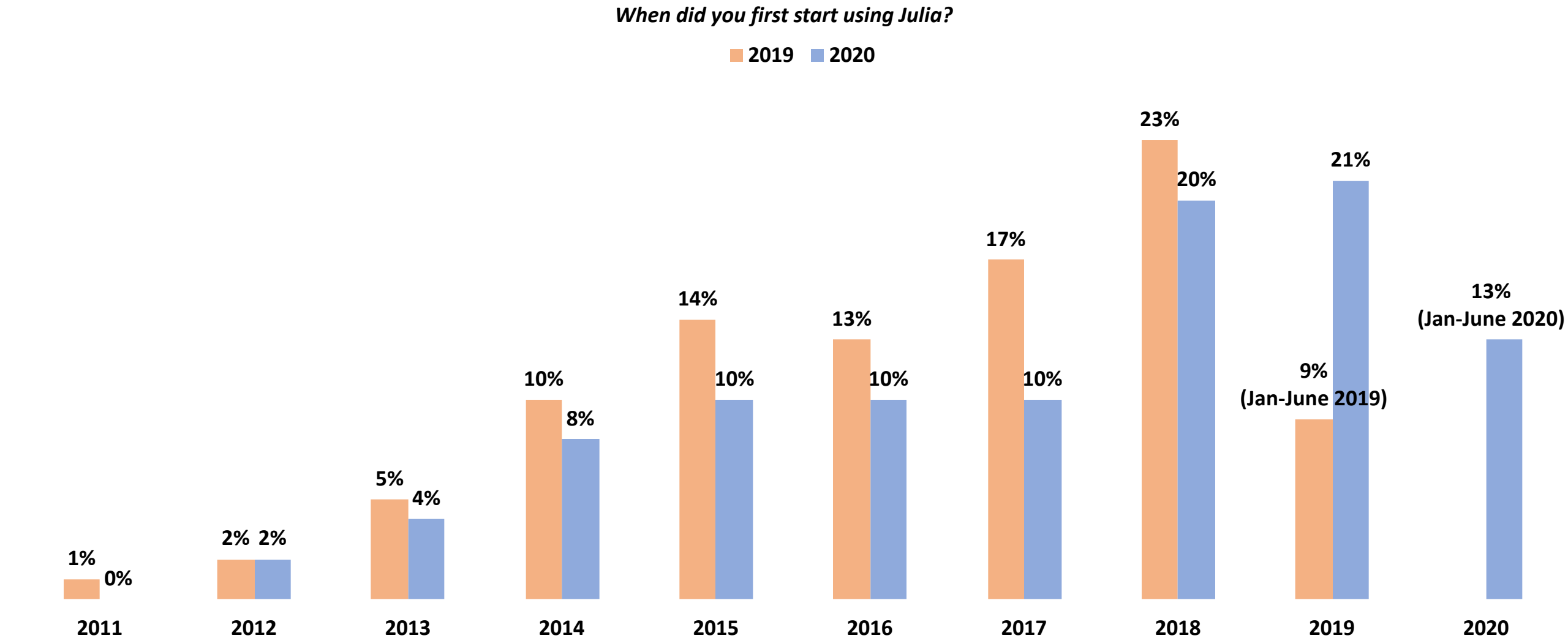
Thinking about the tasks for which you use Julia, if you weren't using Julia for these tasks, what programming language would you be using?



Julia computing

* Added in 2020

Most Started Using Julia in the Last 2-3 Years



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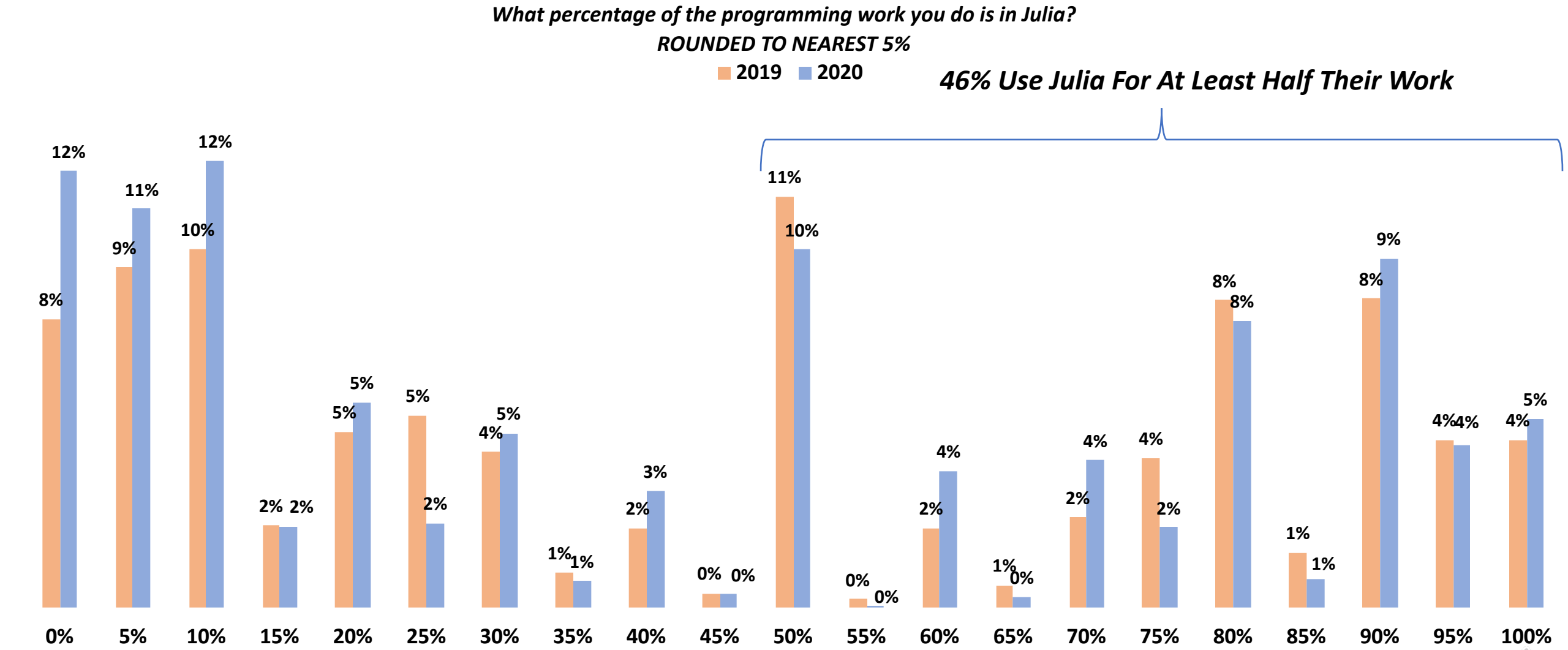
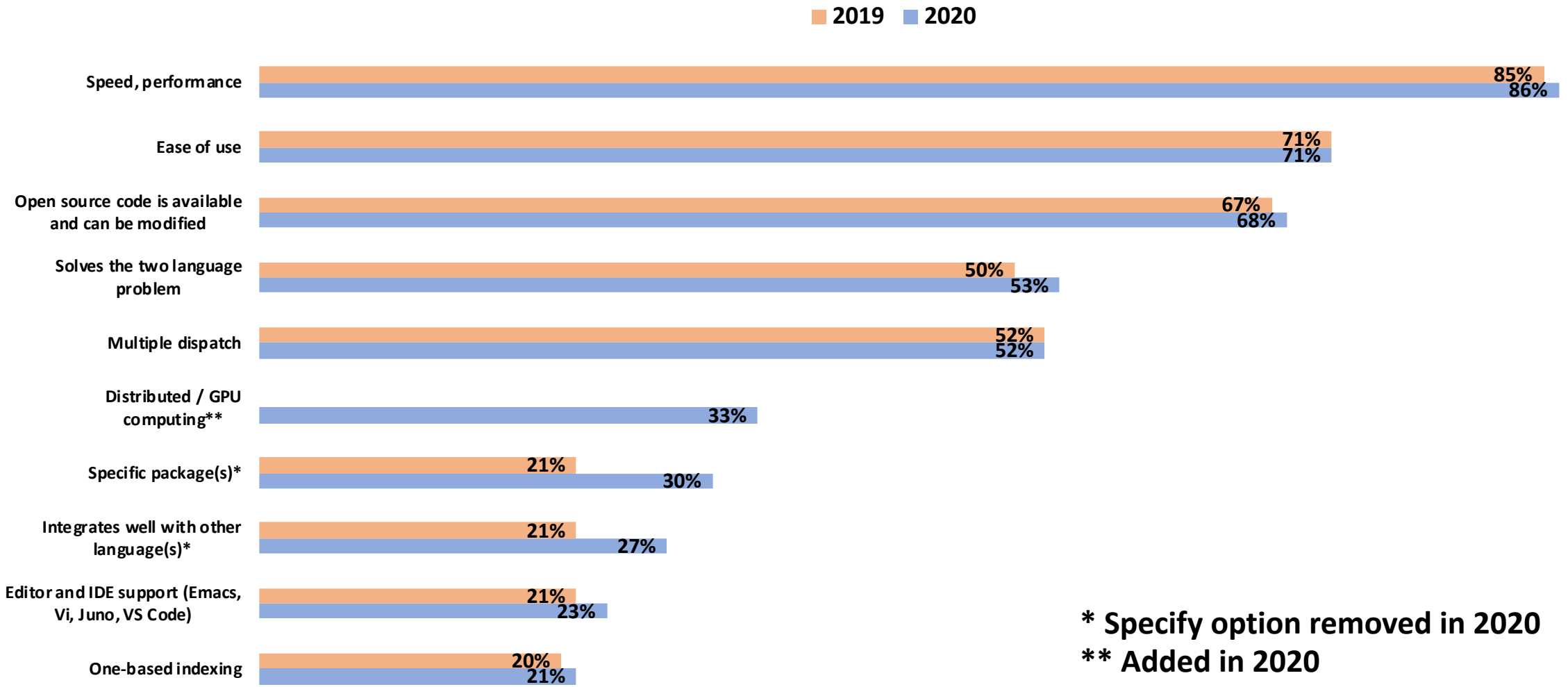
Nearly Half Do At Least Half Their Programming in Julia



Julia computing

The MOST Popular TECHNICAL Features of Julia Are Speed/Performance, Ease of Use, Open Source, Solving the Two Language Problem and Multiple Dispatch

Thinking only about the TECHNICAL aspects or features of Julia, what are the TECHNICAL aspects or features you like MOST about Julia?

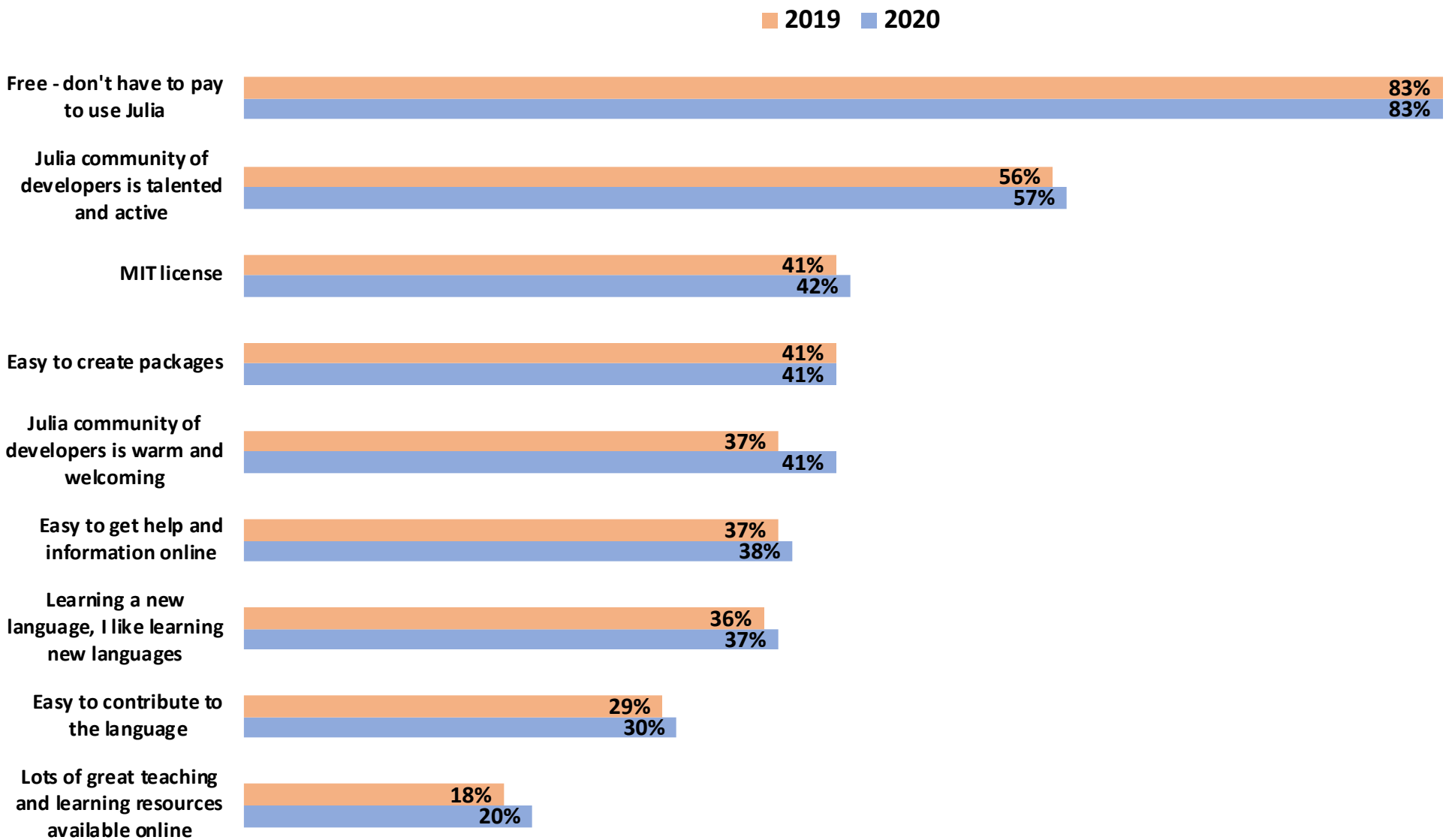


* Specify option removed in 2020
** Added in 2020

Julia computing

The MOST Popular NON-TECHNICAL Features of Julia Are Free (Don't Have to Pay) and Active and Talented Community of Julia Developers

Thinking only about the NON-TECHNICAL aspects or features of Julia, what are the NON-TECHNICAL aspects or features you like MOST about Julia?



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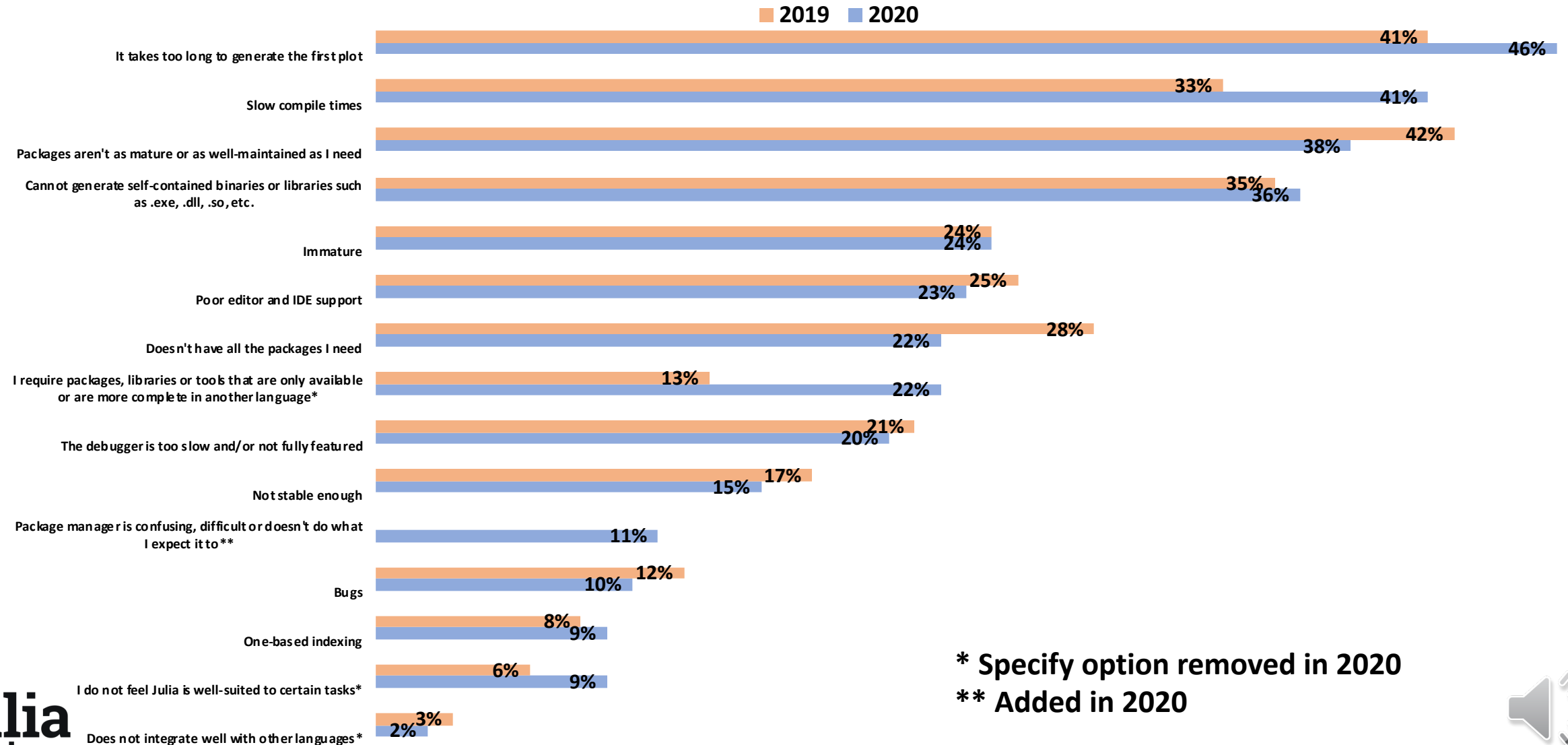
The Biggest TECHNICAL PROBLEMS with Julia Are Too Long to Generate the First Plot and Slow Compile Times; Fewer Complaints About Packages This Year

Thinking only about the TECHNICAL aspects or features of Julia, what are the TECHNICAL aspects or features you like LEAST about Julia?

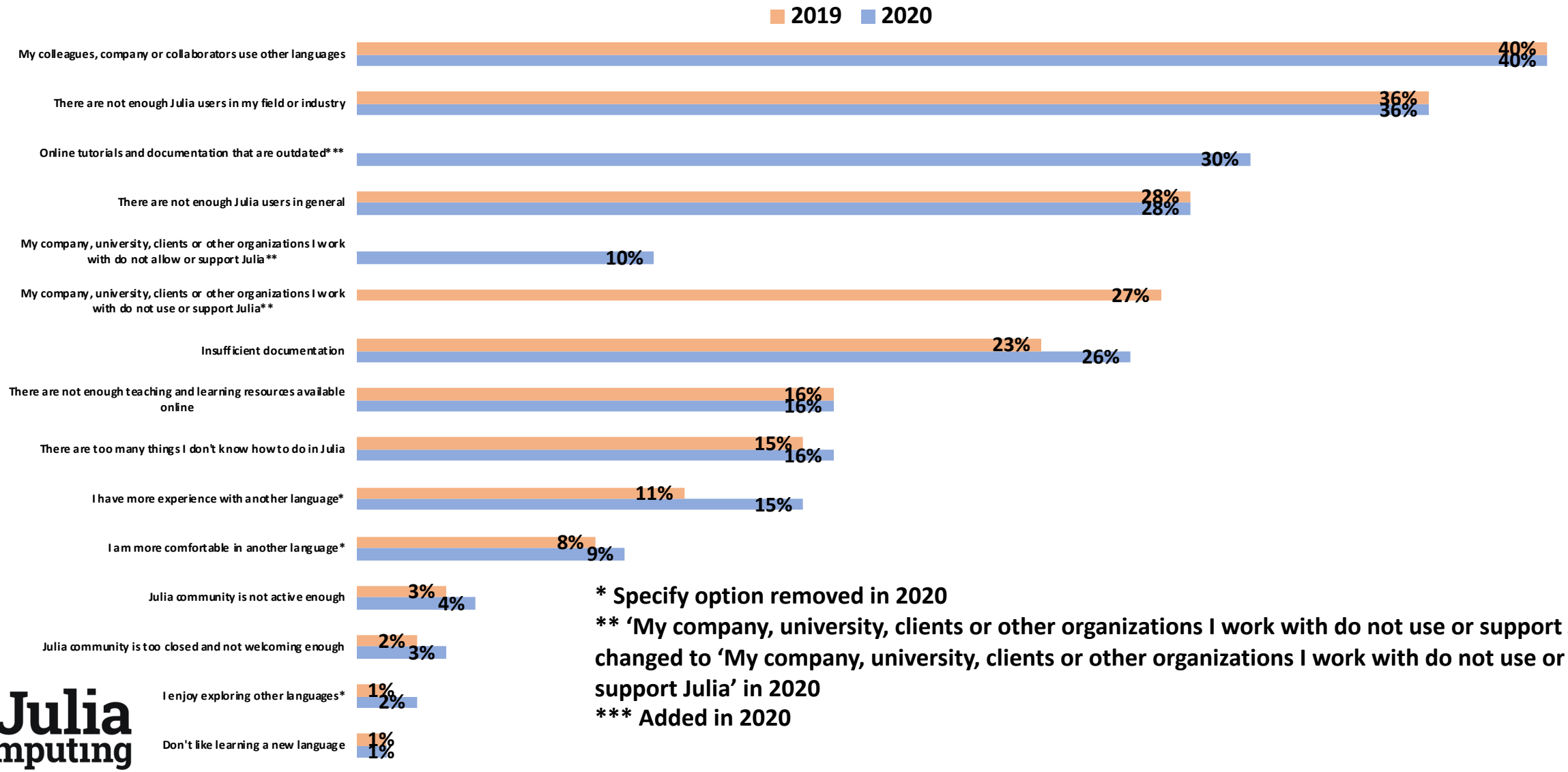


* Specify option removed in 2020

** Added in 2020

The Biggest NON-TECHNICAL PROBLEMS with Julia Are Related to Adoption: Too Many Colleagues, Collaborators and Others Don't Use Julia

Thinking only about the NON-TECHNICAL aspects or features of Julia, what are the NON-TECHNICAL aspects or features you like LEAST about Julia?



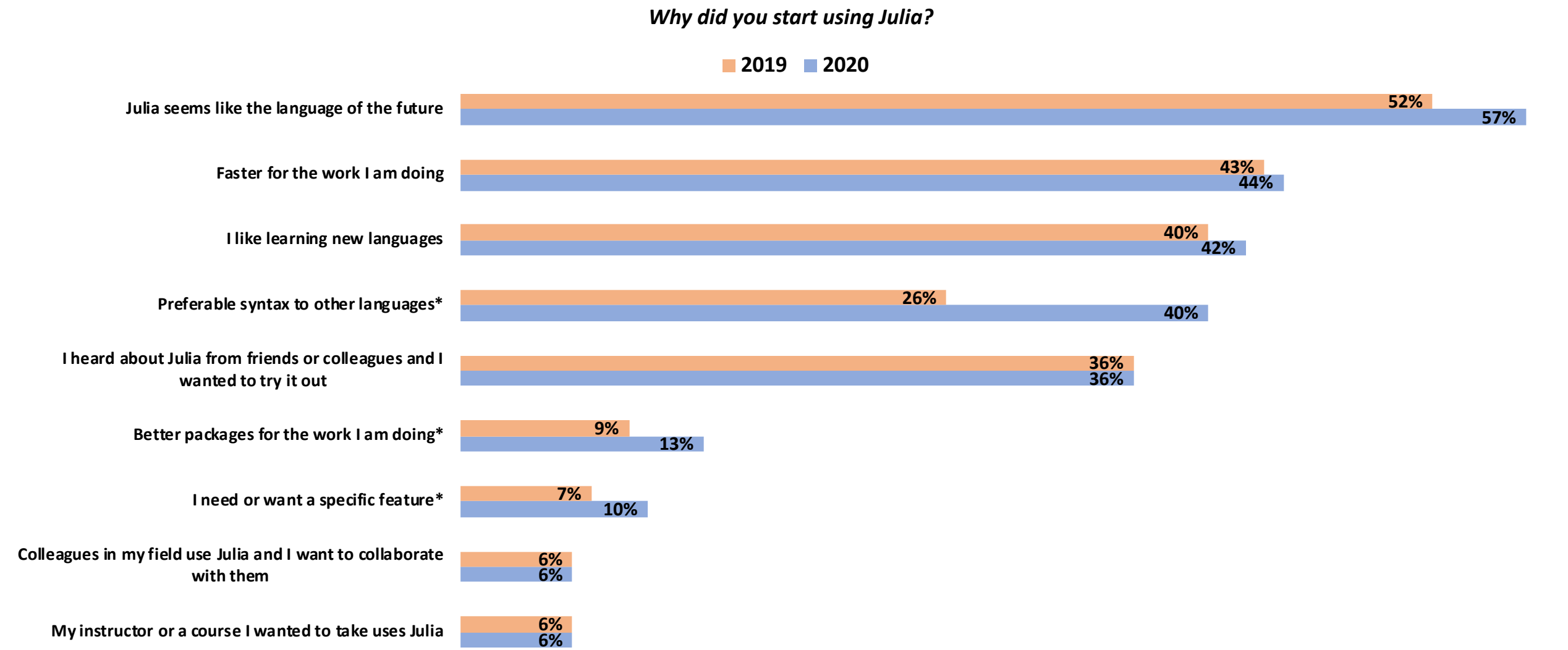
* Specify option removed in 2020

** 'My company, university, clients or other organizations I work with do not use or support Julia' changed to 'My company, university, clients or other organizations I work with do not use or support Julia' in 2020

*** Added in 2020

Julia computing

More Say They Chose Julia Because It 'Seems Like the Language of the Future', Is Faster, 'Like Learning New Languages', Has Preferable Syntax or Heard About It From Friends or Colleagues



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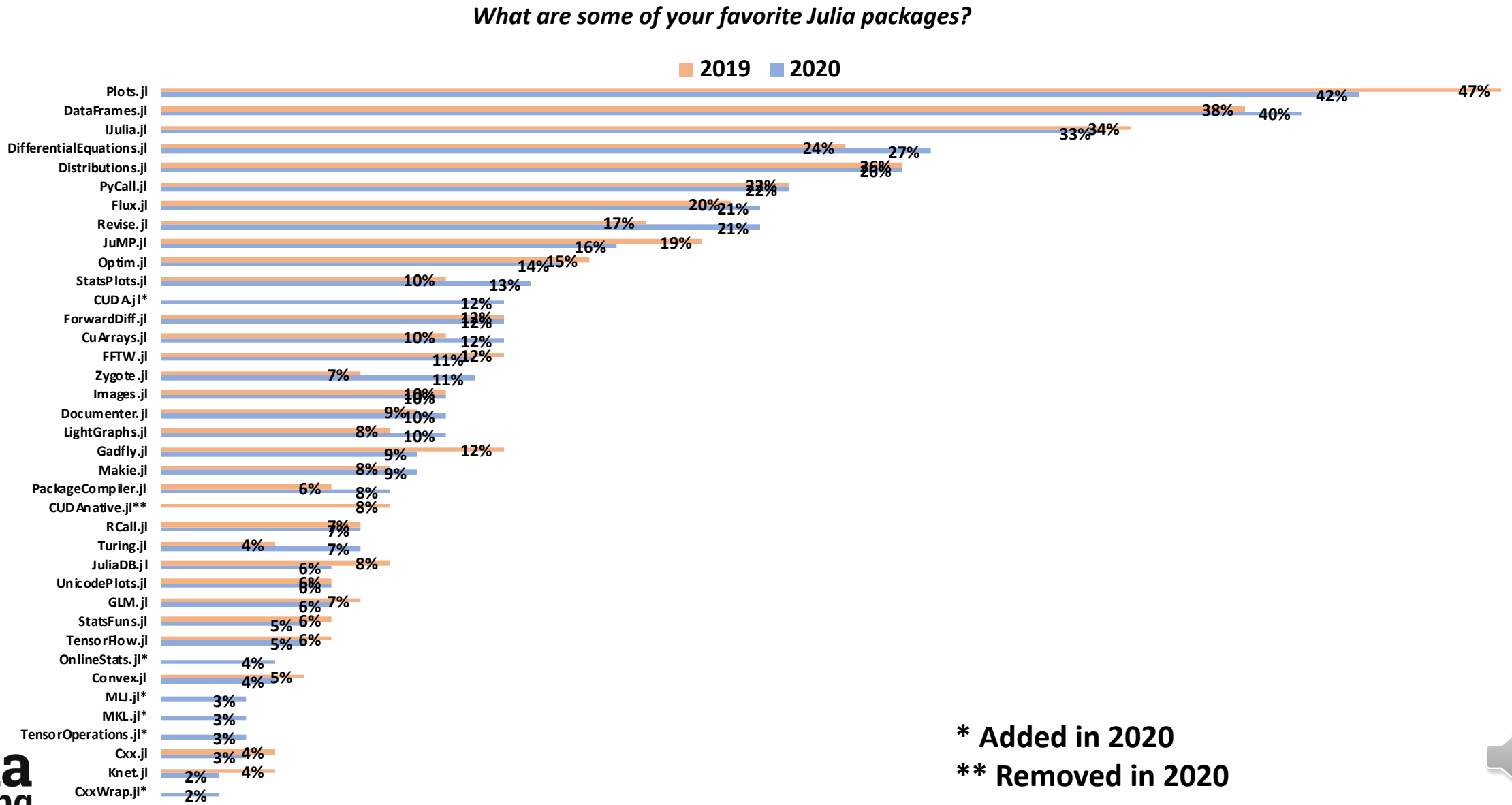
* Specify option removed in 2020

Zygote.jl Has Grown in Popularity While Plots.jl and Gadfly.jl Have Become Less Popular

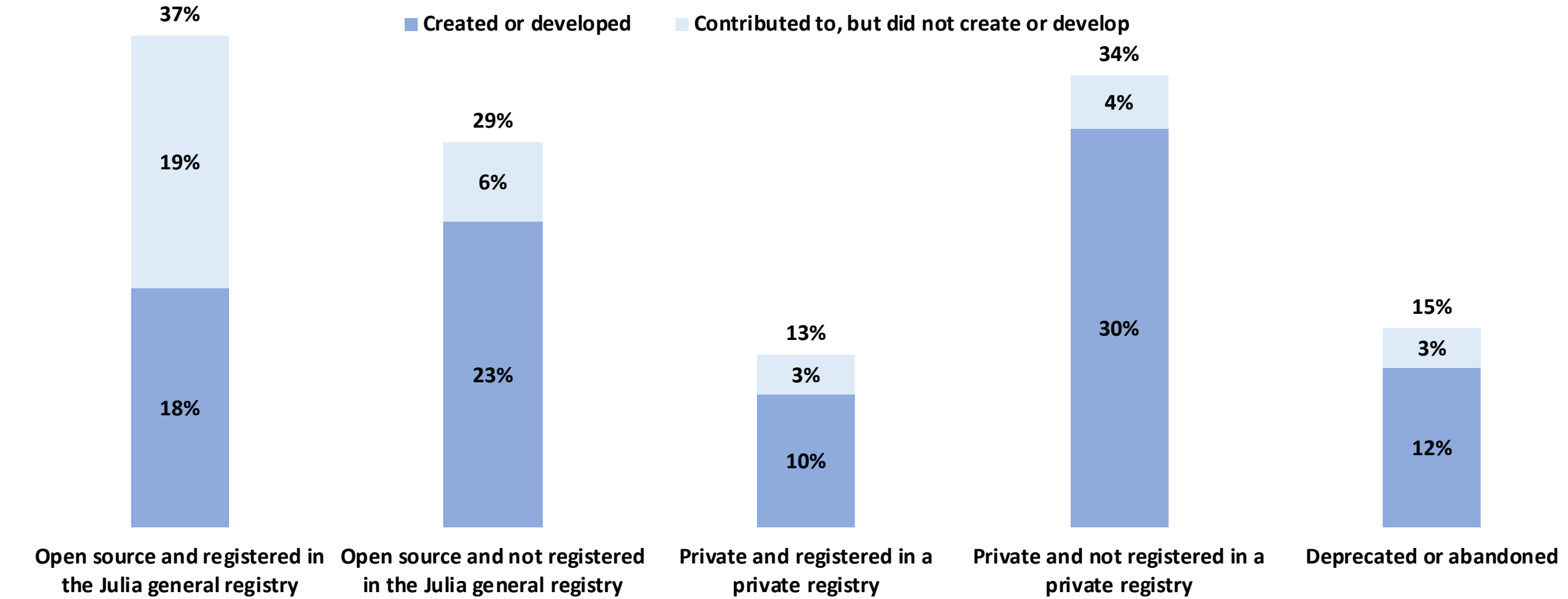


* Added in 2020

** Removed in 2020

37% Have Created, Developed or Contributed to an Open Source Package in the Julia General Registry

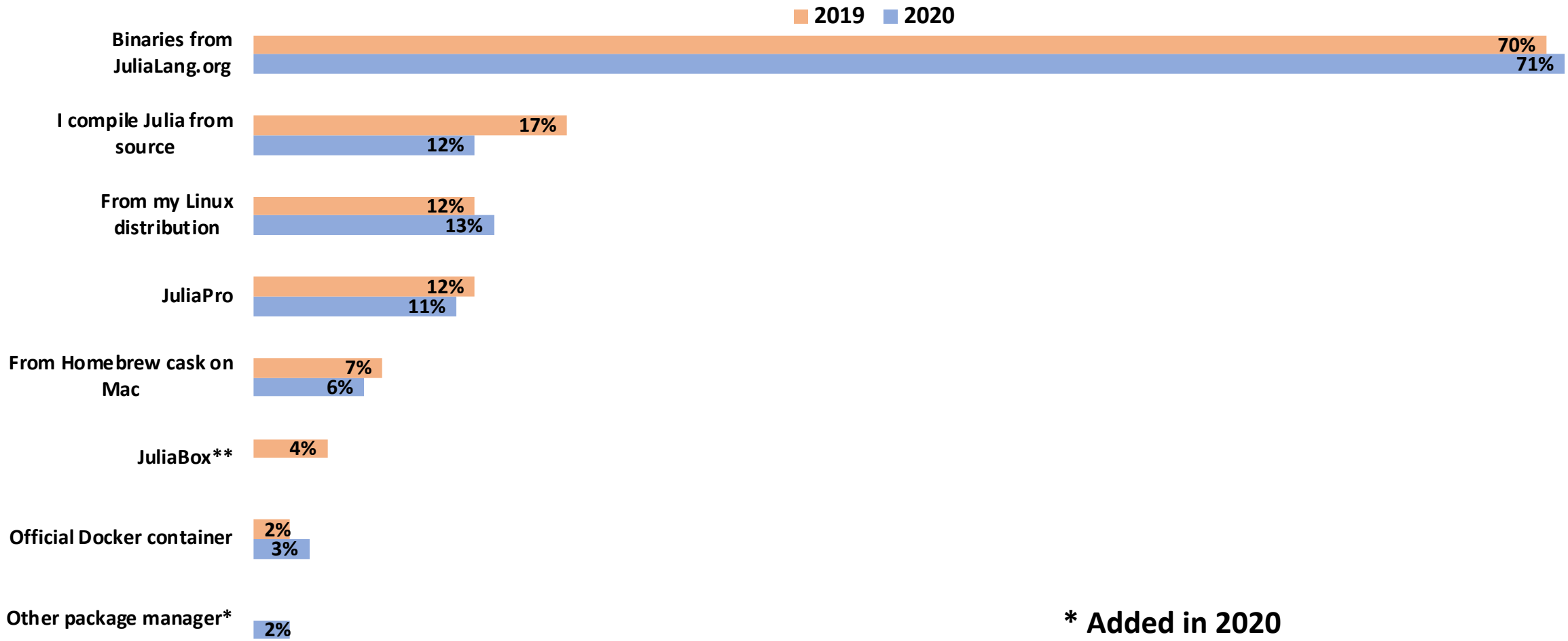
Which of the following types of Julia packages have you created or developed, or contributed to, but did not create or develop?



Added in 2020

Most Downloaded or Installed Binaries from JuliaLang.org
Fewer Users Compiled Julia from Source

How did you download or install the Julia version you use most frequently?

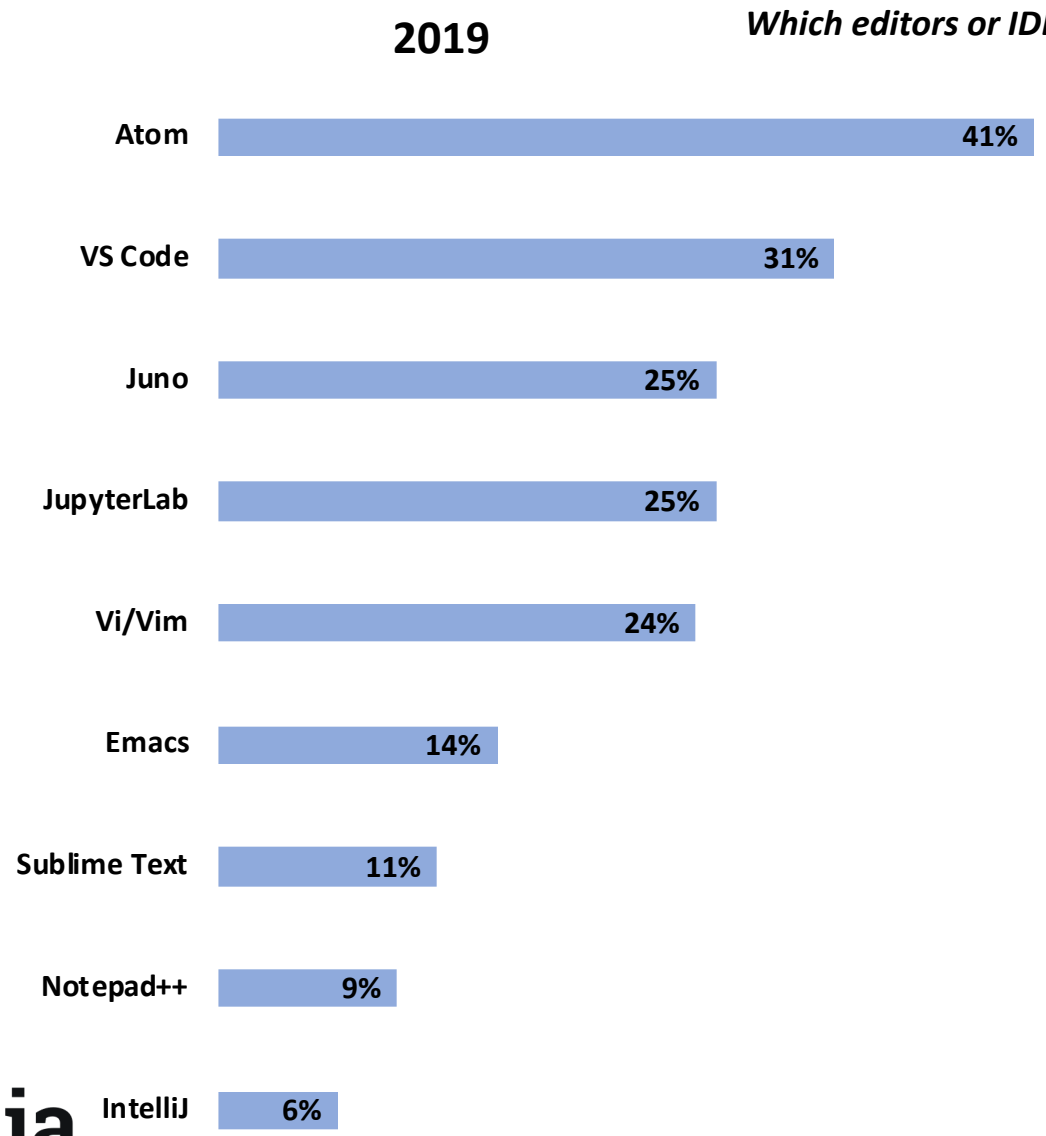


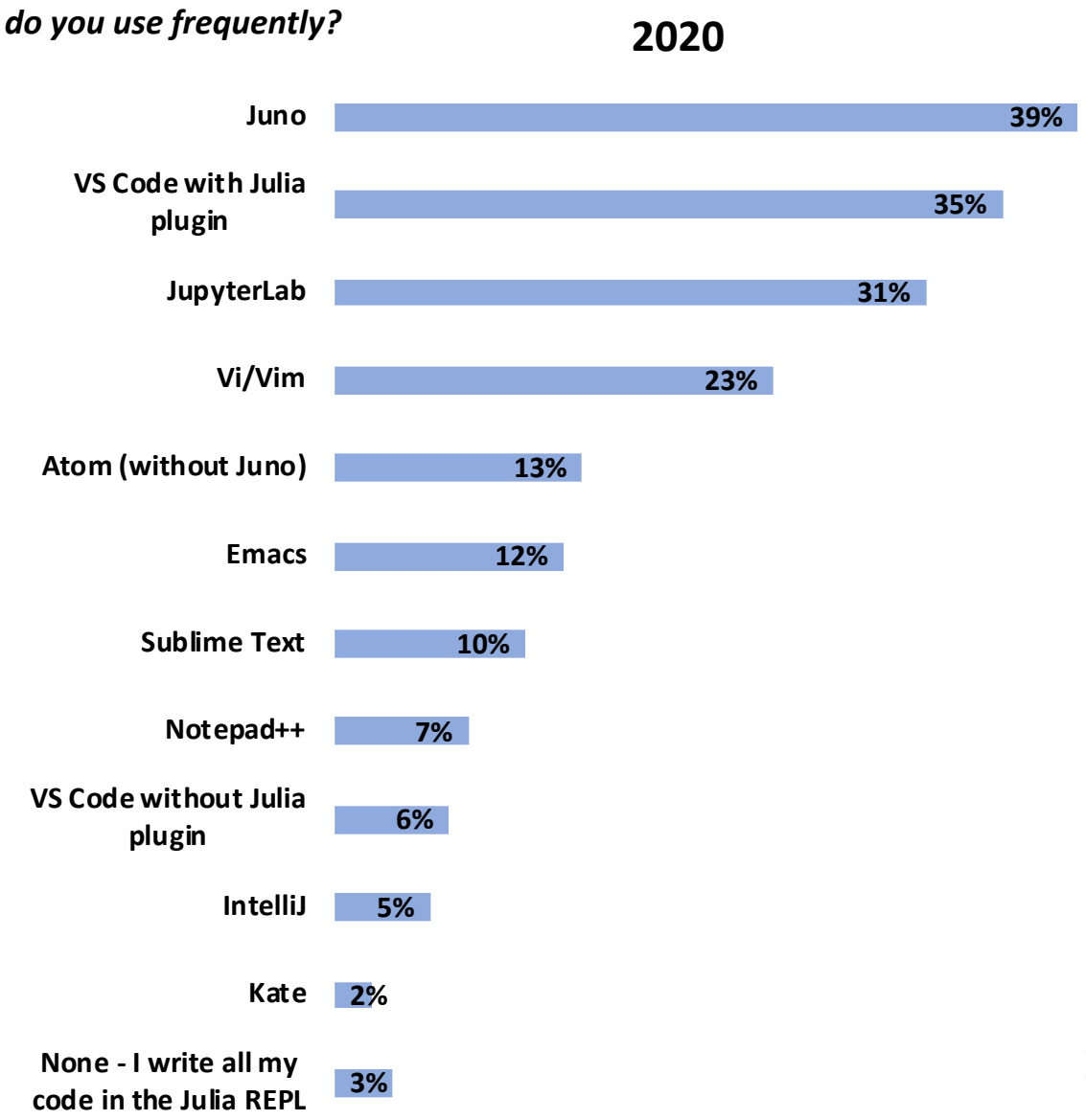
* Added in 2020
** Removed in 2020

Julia computing

Juno and VS Code Are the Most Popular Editors or IDEs

Which editors or IDEs do you use frequently?





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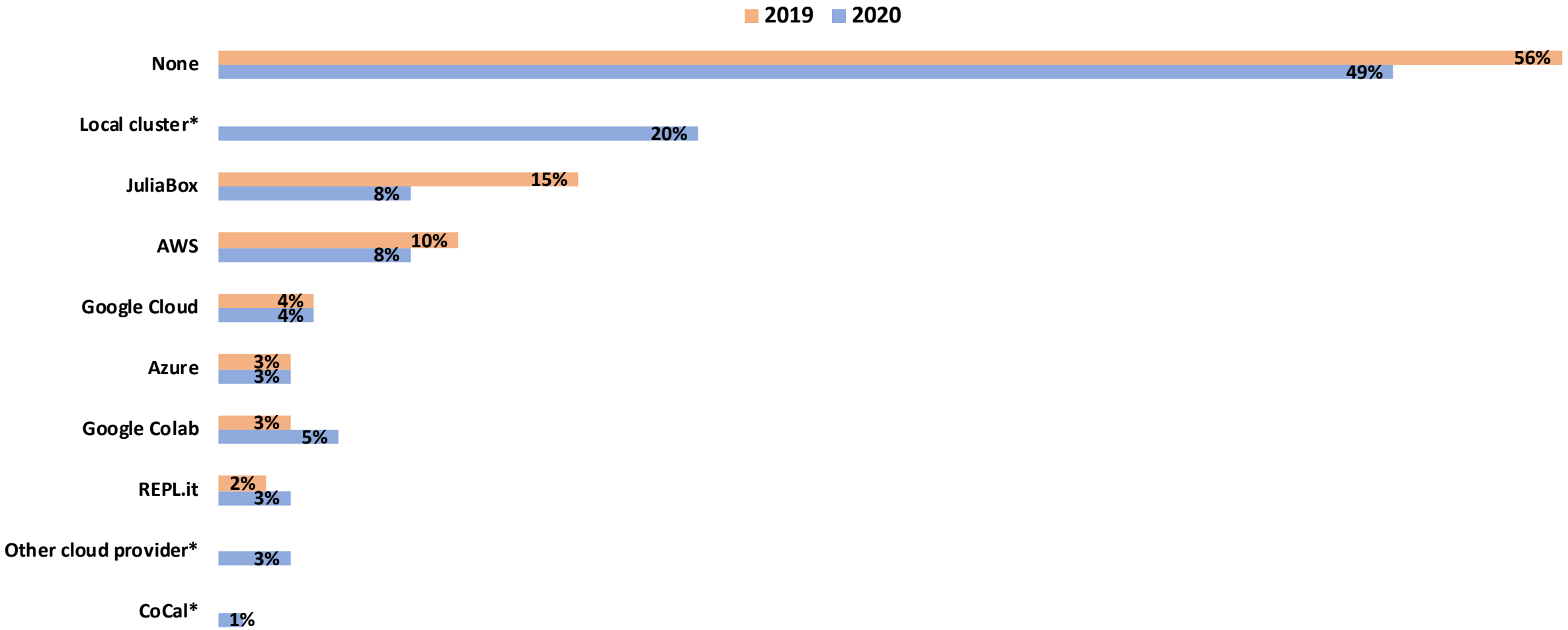
Most Use a Local Cluster or No Cloud Solution

Which cloud solutions, if any, do you use together with Julia?



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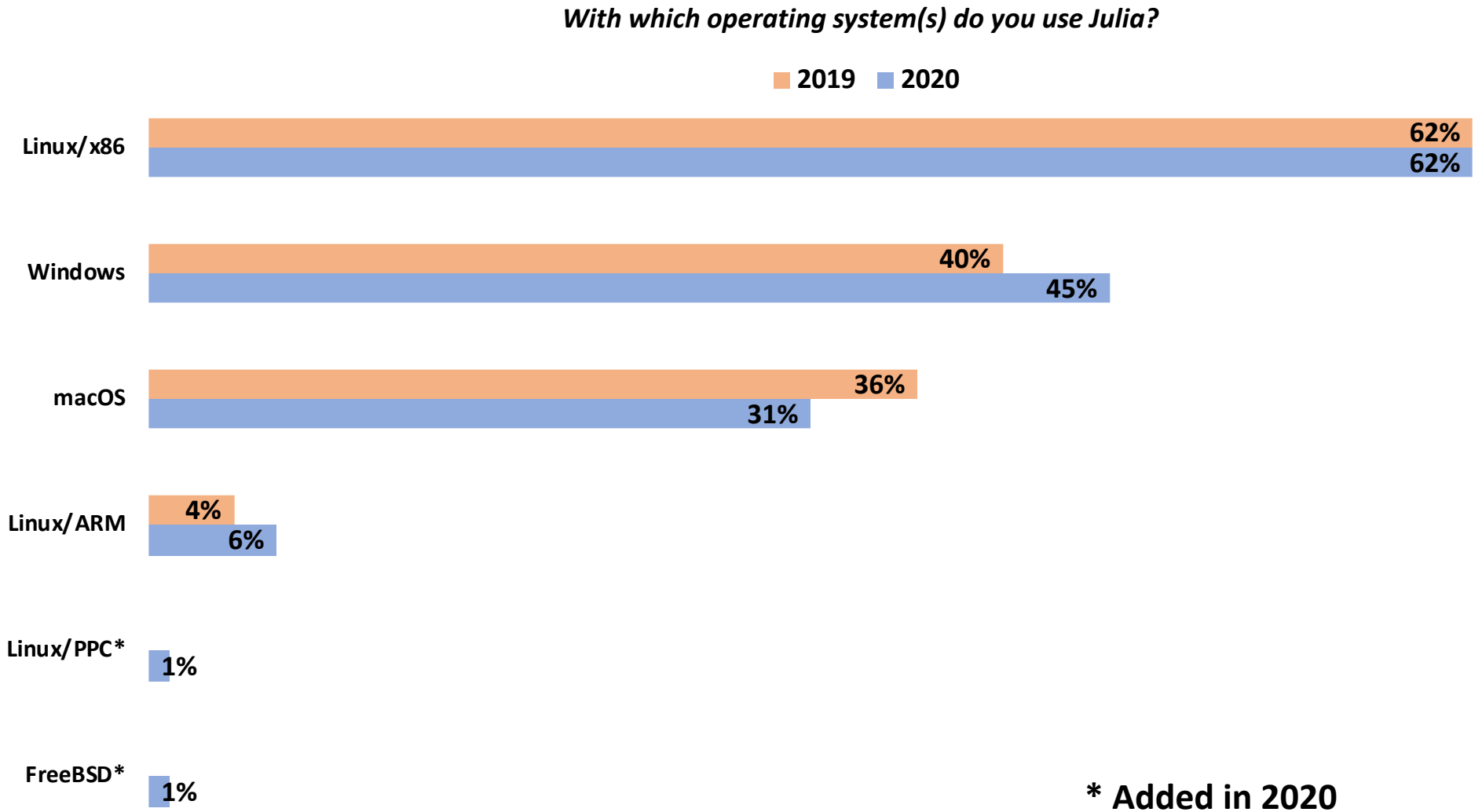
* Added in 2020

Most Use Julia with Linux/x86
Windows Has Climbed While macOS Has Declined



* Added in 2020

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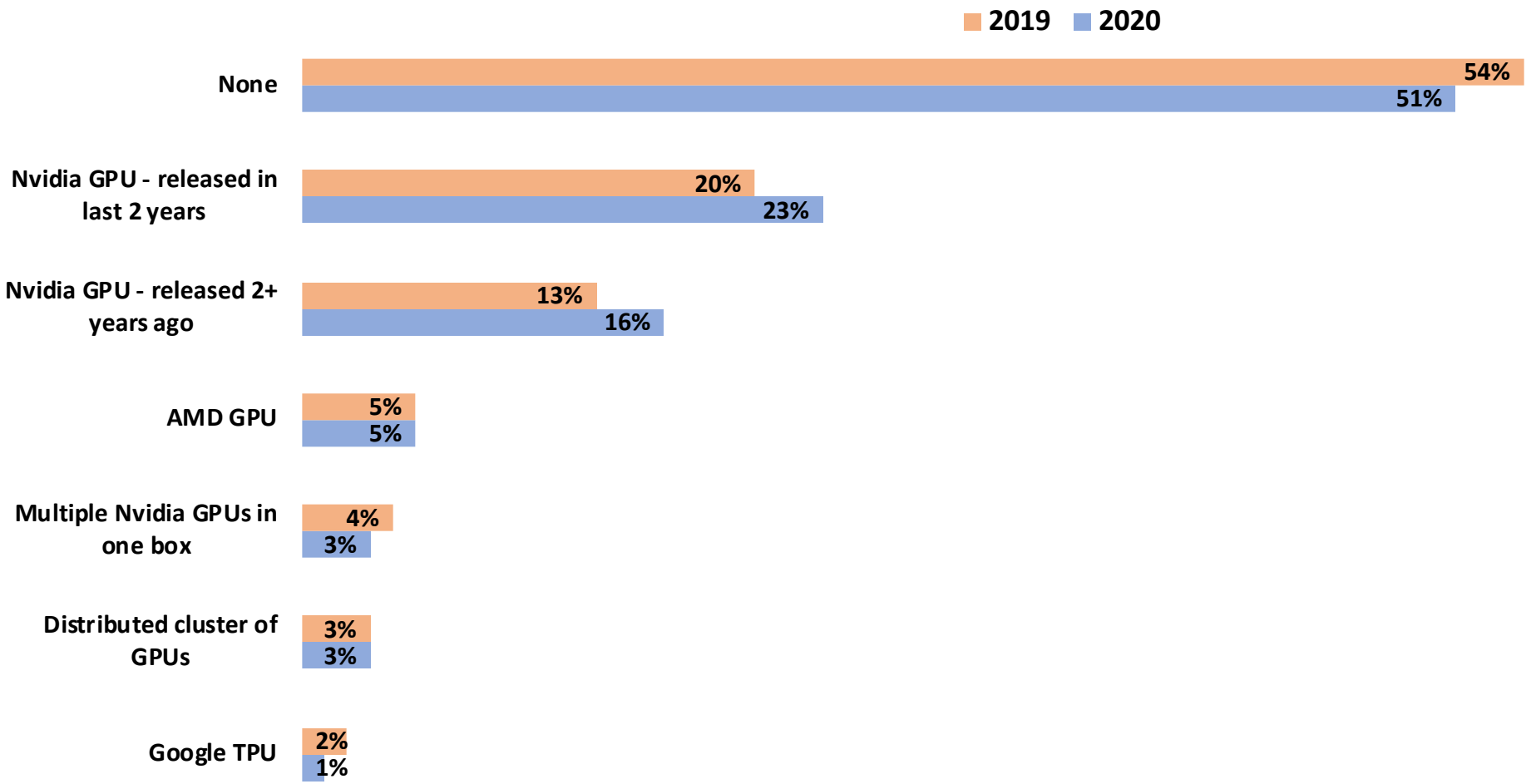
Use of Nvidia GPUs Has Increased Since Last Year

Which hardware accelerators, if any, do you use together with Julia?



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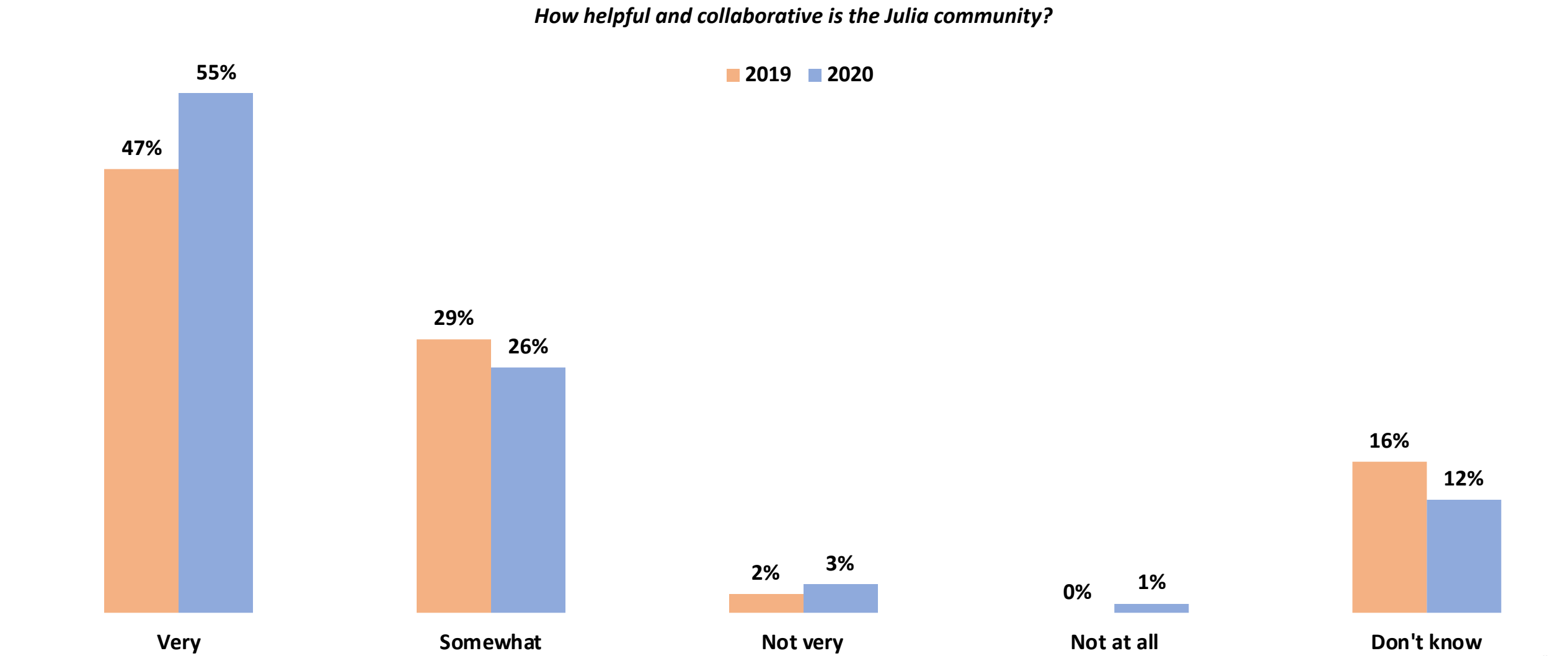
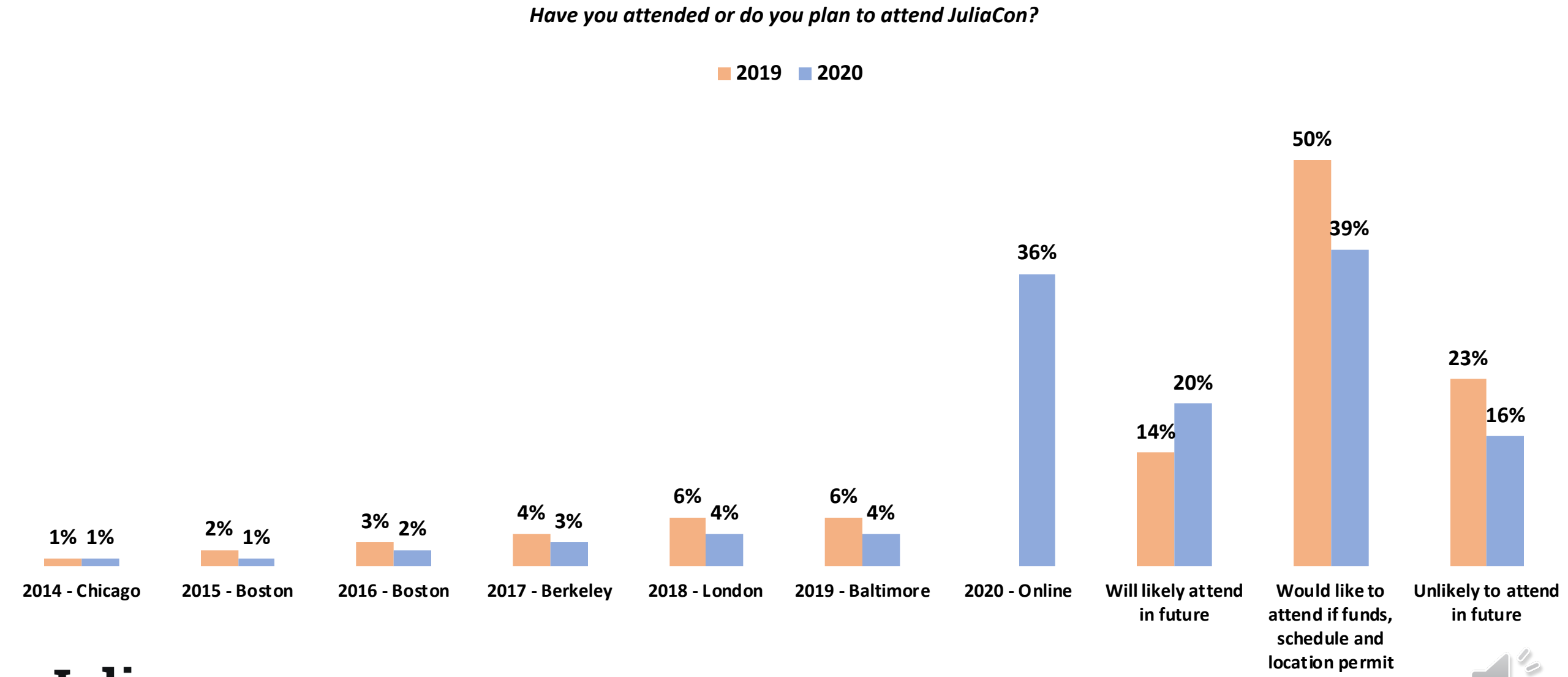
Even More Respondents This Year Say the Julia Community Is Very Helpful and Collaborative



By Moving Online, JuliaCon 2020 Is Accessible and Available to More Julia Users than Any Previous JuliaCon



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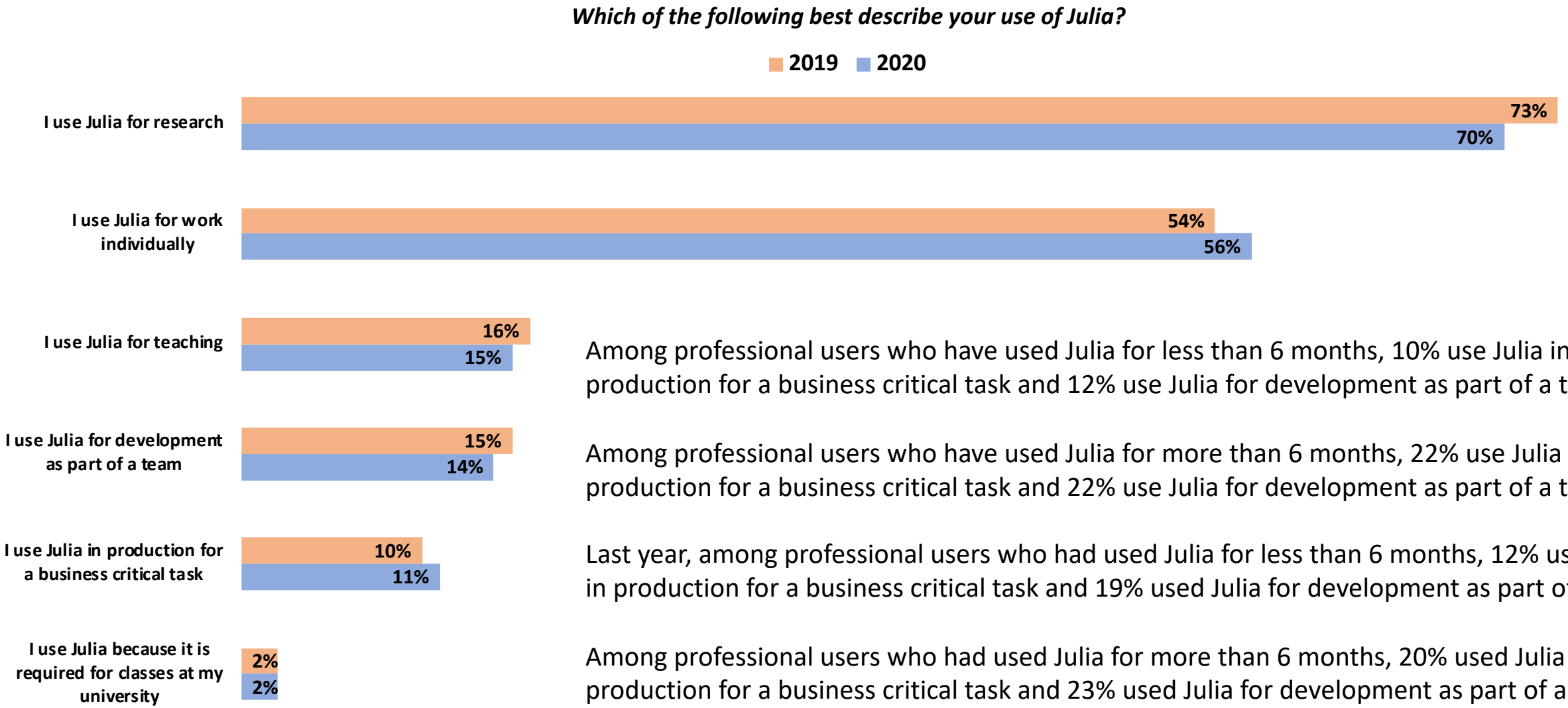
Most Use Julia for Research and Individual Work



Among professional users who have used Julia for less than 6 months, 10% use Julia in production for a business critical task and 12% use Julia for development as part of a team.

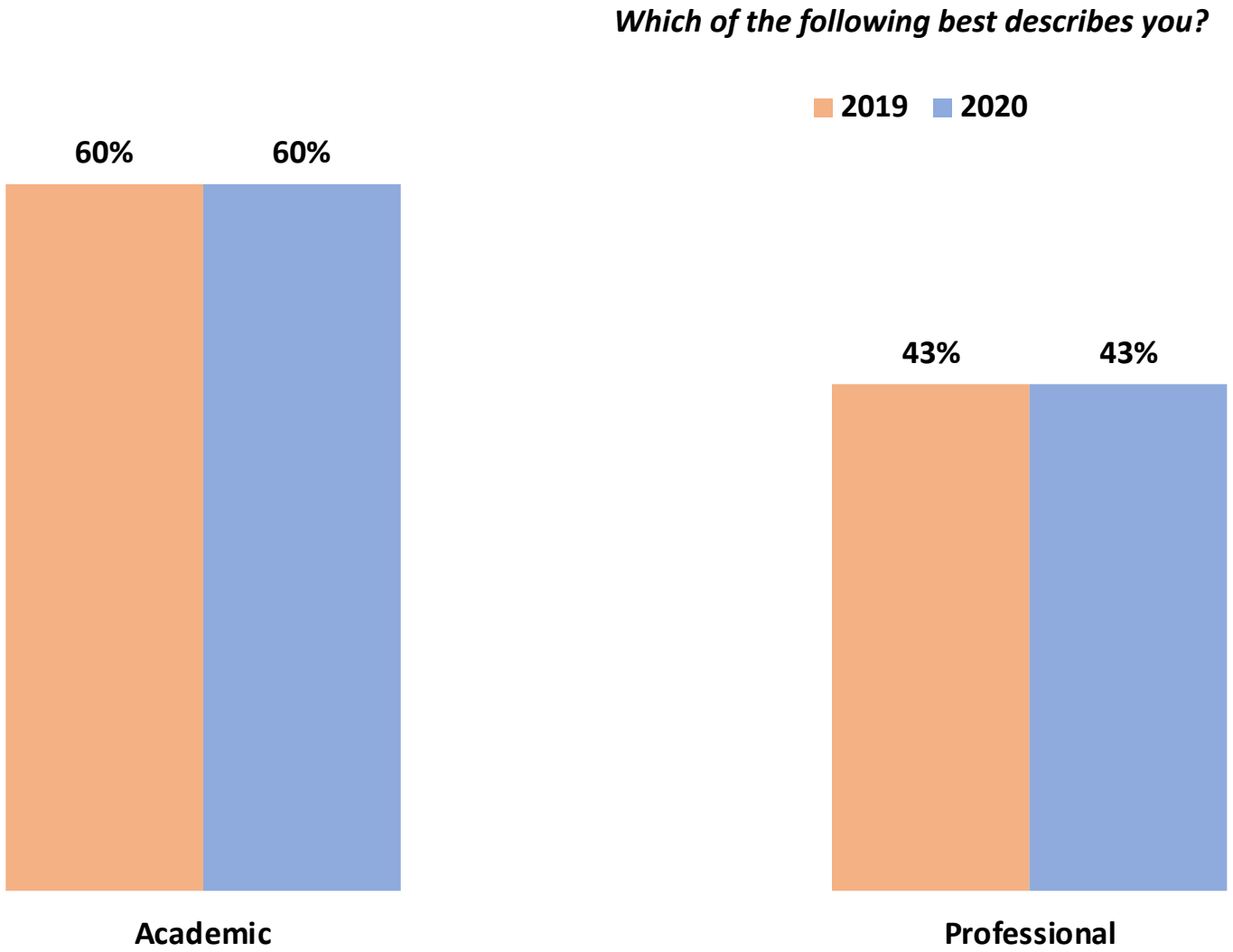
Among professional users who have used Julia for more than 6 months, 22% use Julia in production for a business critical task and 22% use Julia for development as part of a team.

Last year, among professional users who had used Julia for less than 6 months, 12% used Julia in production for a business critical task and 19% used Julia for development as part of a team.

Among professional users who had used Julia for more than 6 months, 20% used Julia in production for a business critical task and 23% used Julia for development as part of a team.

Julia computing

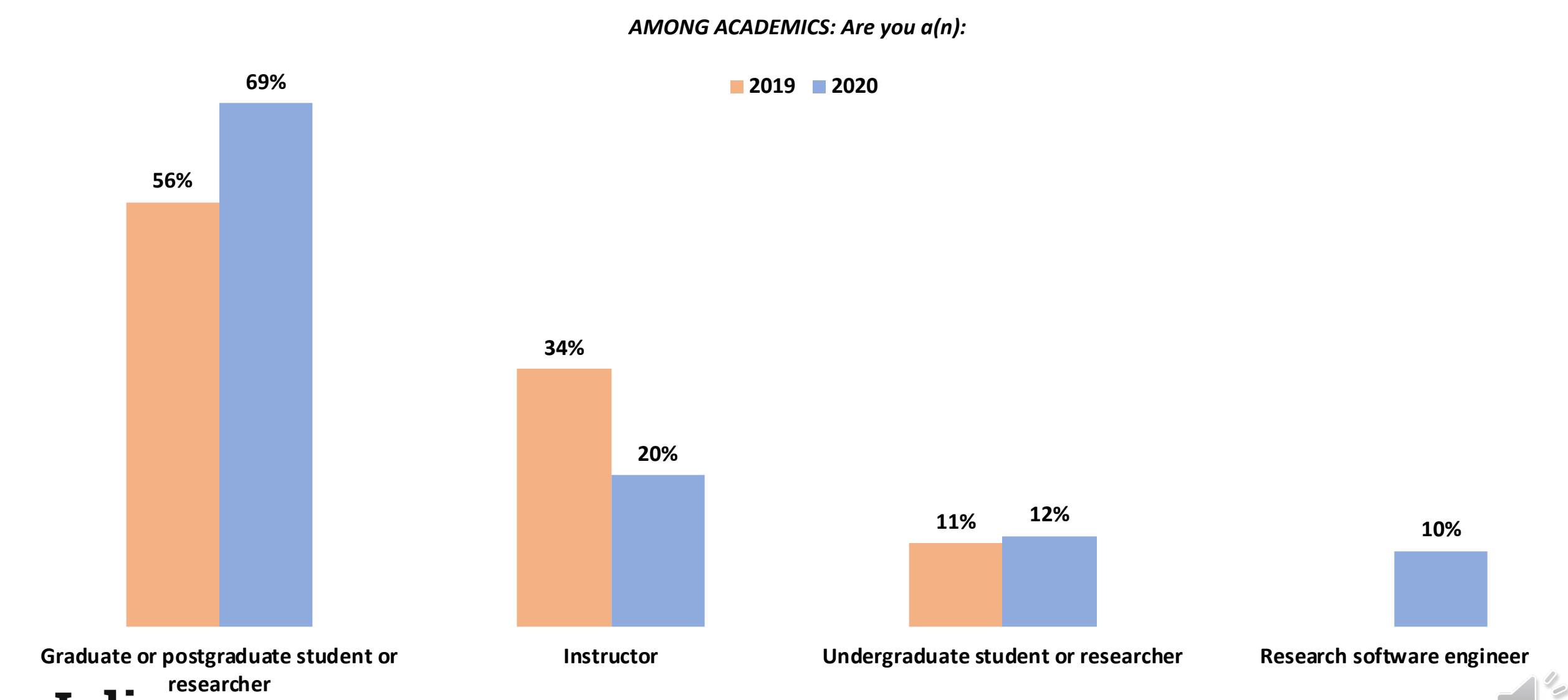
Most Respondents Are Academics (60%)



Among respondents who have used Julia less than 6 months, 56% are academic and 50% are professional. Among respondents who have used Julia more than 6 months, 61% are academic and 42% are professional.

Last year, among respondents who had used Julia less than 6 months, 57% were academic and 46% were professional. Among respondents who had used Julia more than 6 months, 60% were academic and 43% were professional.

Among Academics, Most Respondents Are Graduate or Postgraduate Students or Researchers



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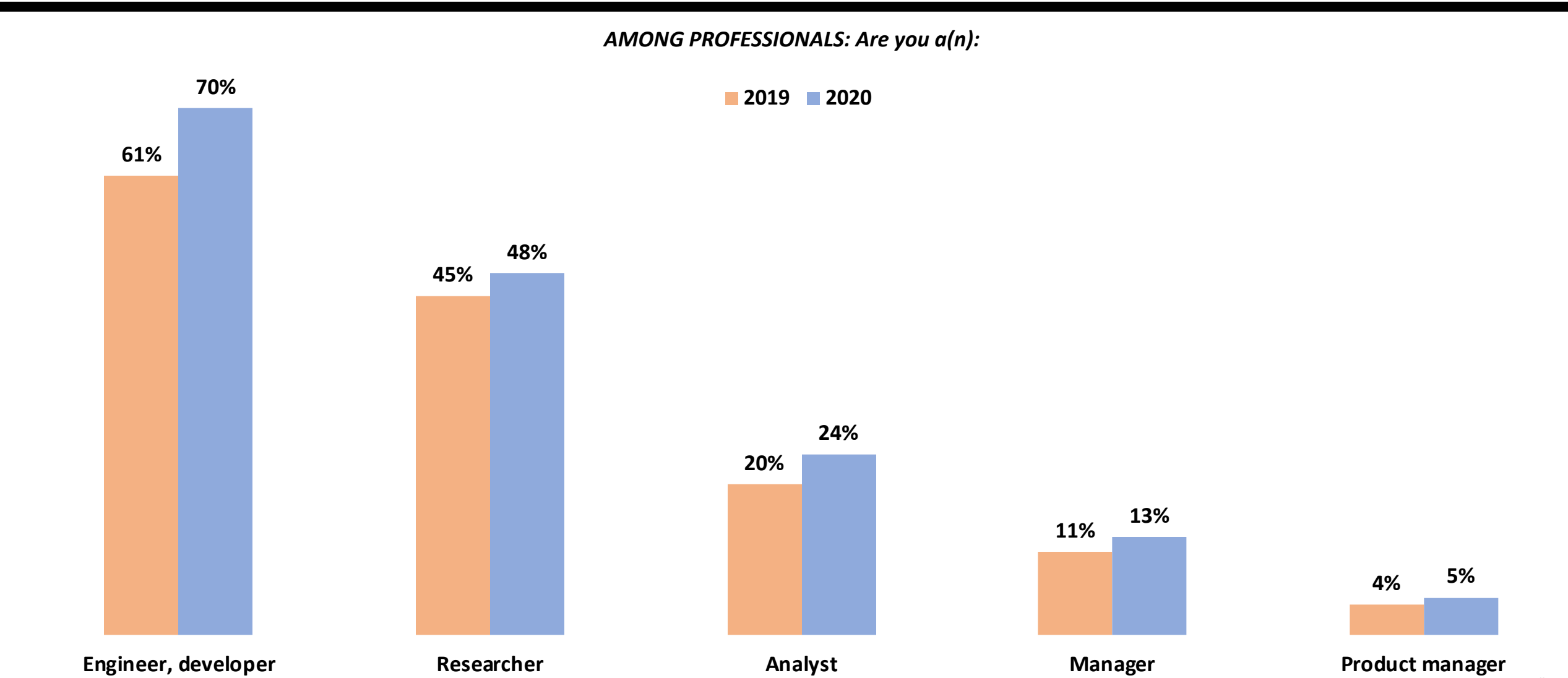
Among Professionals, Most Respondents Are Engineers or Developers



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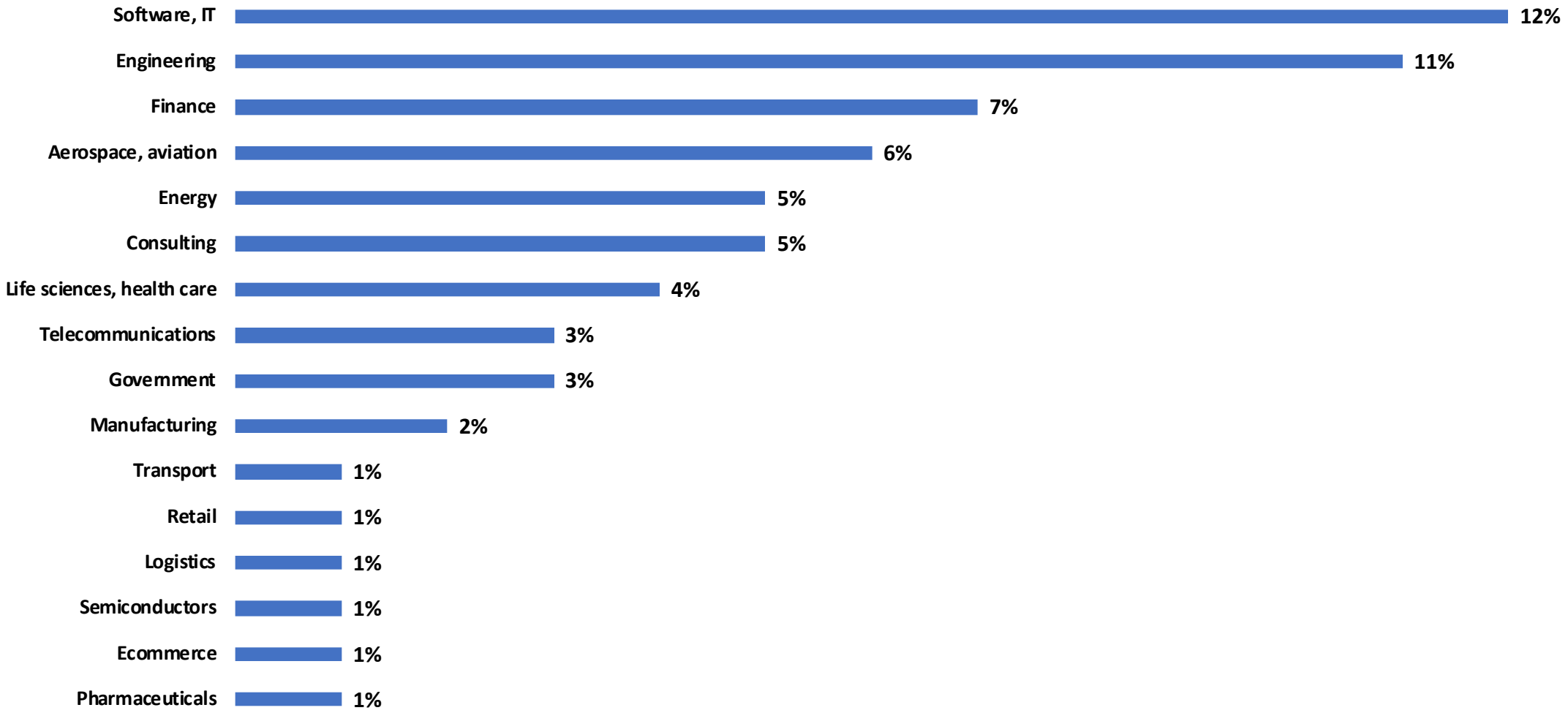
Among Professionals, the Most Common Industries Include Software, IT and Engineering

AMONG PROFESSIONALS: What is the primary industry in which you work?



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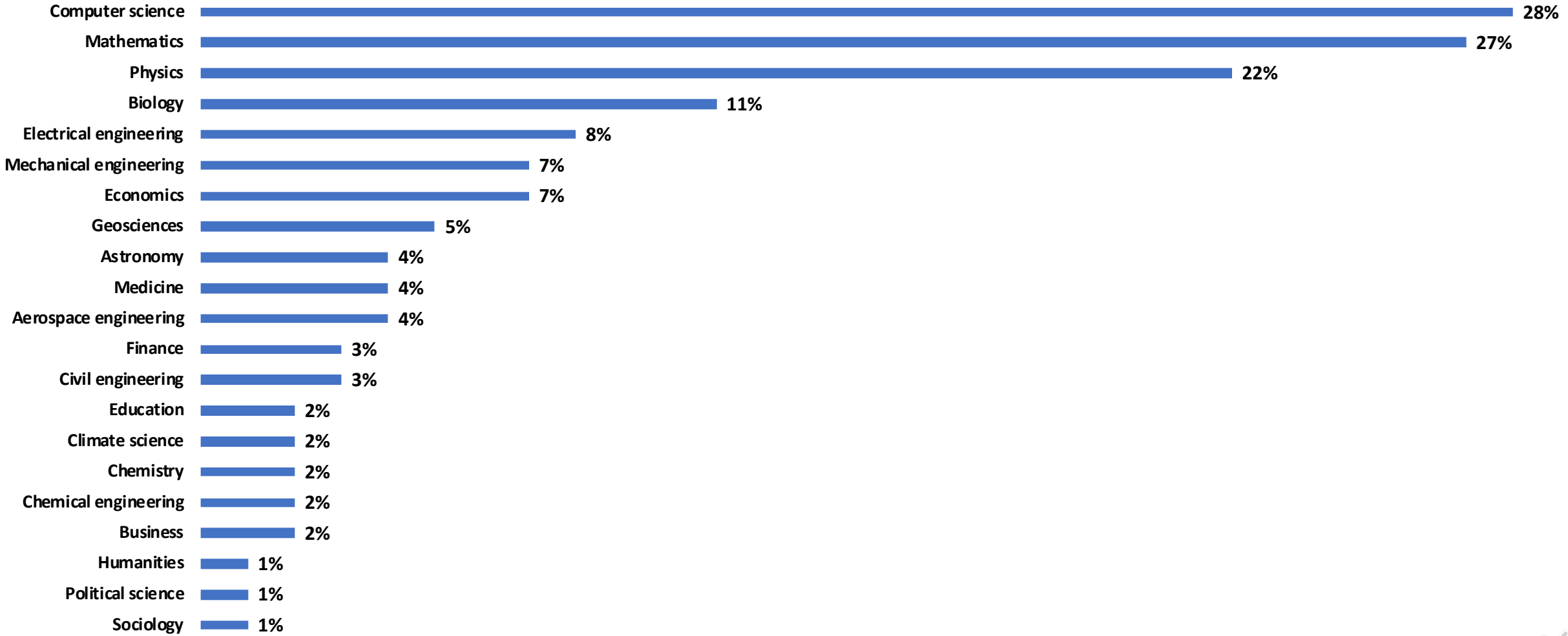
Among Academics, the Most Common Fields Are Computer Science, Mathematics, Physics and Biology

AMONG ACADEMICS: What is your primary field of study or research?



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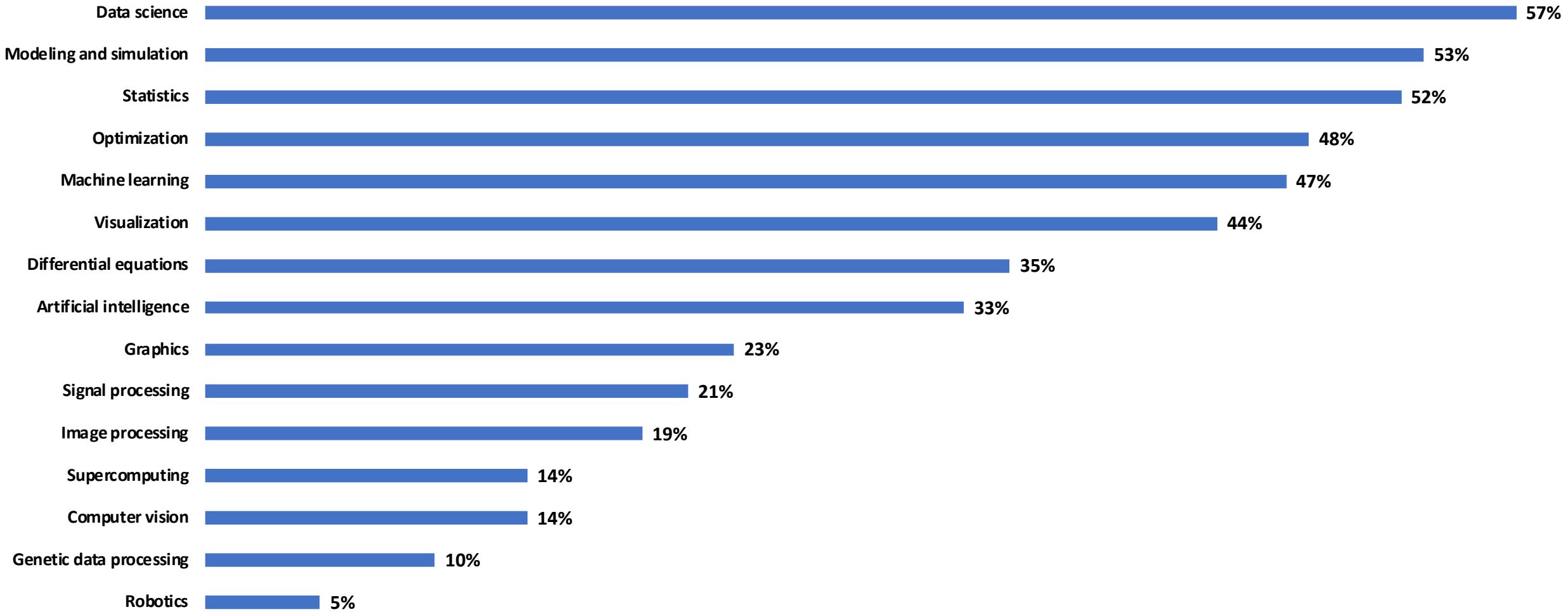
Most Respondents Use Data Science, Modeling, Simulation and Statistics as Part of their Work

Optimization, Machine Learning, Visualization, Differential Equations and Artificial Intelligence Are Also Used by Many

Which of the following do you use as part of your work?



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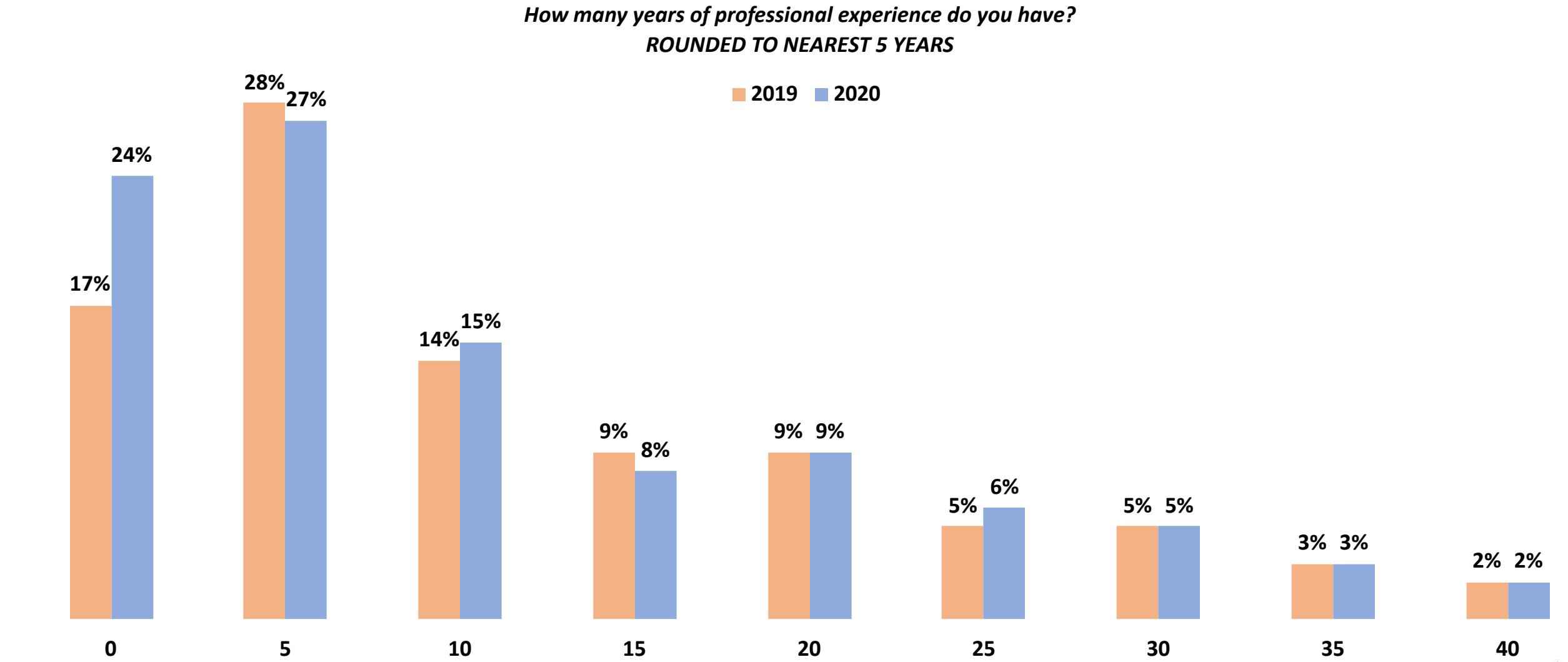
Most Respondents Have 10 Years Professional Experience or Less



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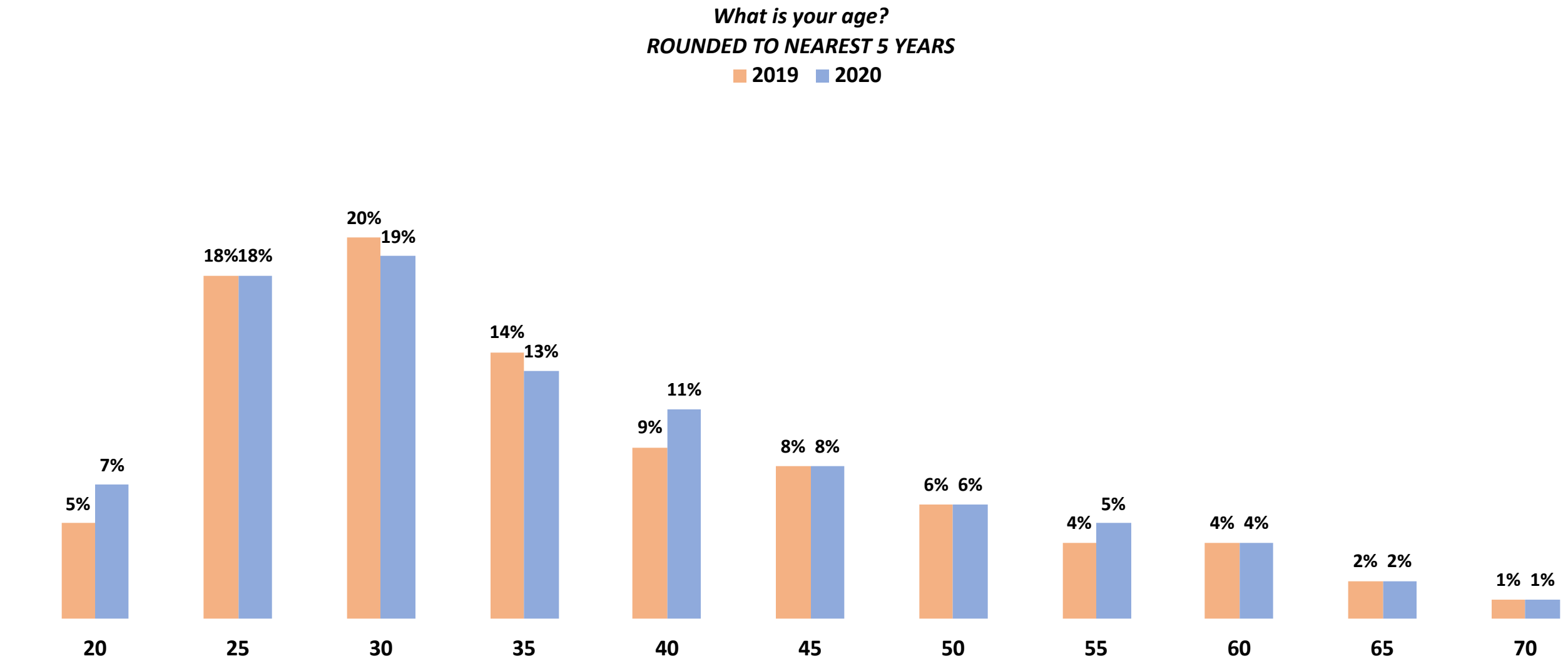
Age Distribution Is Becoming Wider: Fewer Respondents Age 25-35 and More Under 25 and Over 35



Julia computing

Respondents Live or Work in 89 Countries and Regions

What is the country or region where you current live or work?

Respondents also live or work in: Chile, Ukraine, Israel, Taiwan, Ireland, Hungary, Greece, Finland, South Korea, Singapore, Argentina, Philippines, Hong Kong, Indonesia, Iran, Croatia, Malaysia, Romania, Thailand, United Arab Emirates, Saudi Arabia, Bolivia, Egypt, Slovenia, Lithuania, Bangladesh, Nigeria, Pakistan, Peru, Kenya, Iraq, Sri Lanka, Latvia, Costa Rica, Malta, Bulgaria, Oman, Vietnam, Slovakia, Uganda, Iceland, Guatemala, Senegal, Ecuador, Serbia, Kazakhstan, Jordan, Qatar, Belarus, Morocco, Panama, Bosnia & Herzegovina, Macao, Estonia, Armenia, Cyprus, Maldives, Puerto Rico, Bahamas, Algeria, Kuwait

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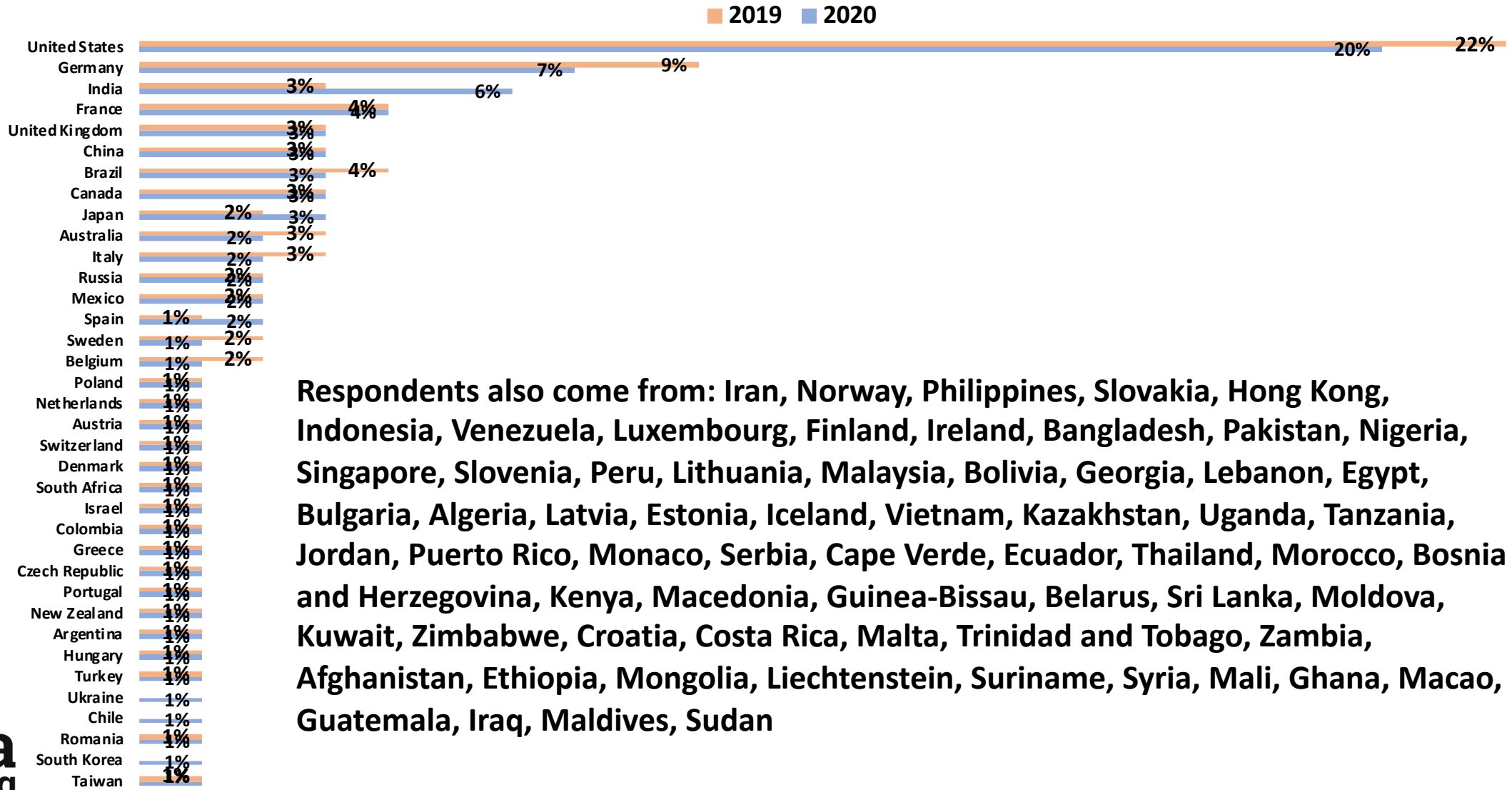
Respondents Come from 102 Countries and Regions

What is the country or region where you are originally from?



Respondents also come from: Iran, Norway, Philippines, Slovakia, Hong Kong, Indonesia, Venezuela, Luxembourg, Finland, Ireland, Bangladesh, Pakistan, Nigeria, Singapore, Slovenia, Peru, Lithuania, Malaysia, Bolivia, Georgia, Lebanon, Egypt, Bulgaria, Algeria, Latvia, Estonia, Iceland, Vietnam, Kazakhstan, Uganda, Tanzania, Jordan, Puerto Rico, Monaco, Serbia, Cape Verde, Ecuador, Thailand, Morocco, Bosnia and Herzegovina, Kenya, Macedonia, Guinea-Bissau, Belarus, Sri Lanka, Moldova, Kuwait, Zimbabwe, Croatia, Costa Rica, Malta, Trinidad and Tobago, Zambia, Afghanistan, Ethiopia, Mongolia, Liechtenstein, Suriname, Syria, Mali, Ghana, Macao, Guatemala, Iraq, Maldives, Sudan

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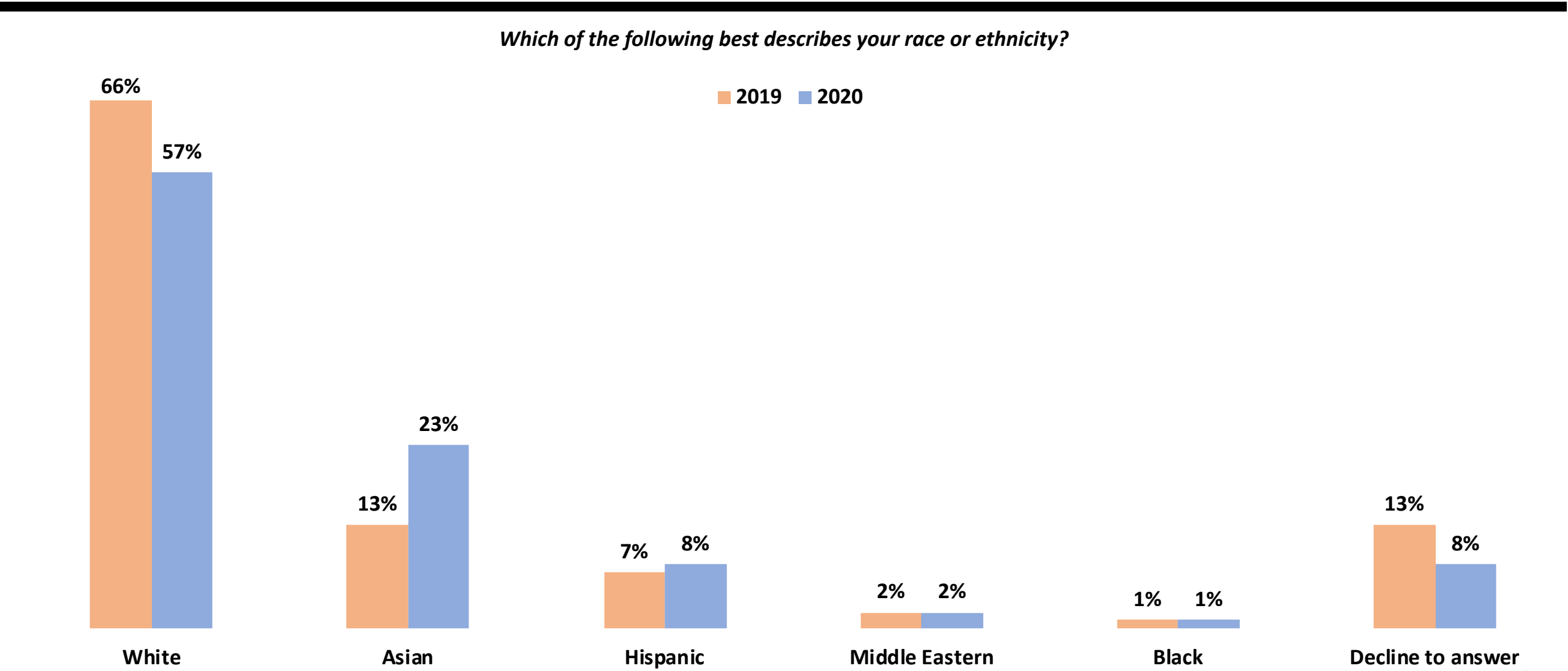
Respondents Are Fluent in 64 Languages

Respondents are also fluent in: Albanian, American Sign Language, Amharic, Bosnian, Bulgarian, Croatian, Estonian, Finnish, Georgian, Hausa, Icelandic, Indonesian, Kazakh, Lithuanian, Luxembourgish, Macedonian, Malay, Marathi, Malayalam, Mongolian, Oriya, Punjabi, Serbian, Shona, Slovakian, Slovenian, Swahili, Tagalog, Thai, Vietnamese, Yoruba, Zulu

Julia computing

Respondents Are More Diverse in 2020 than 2019



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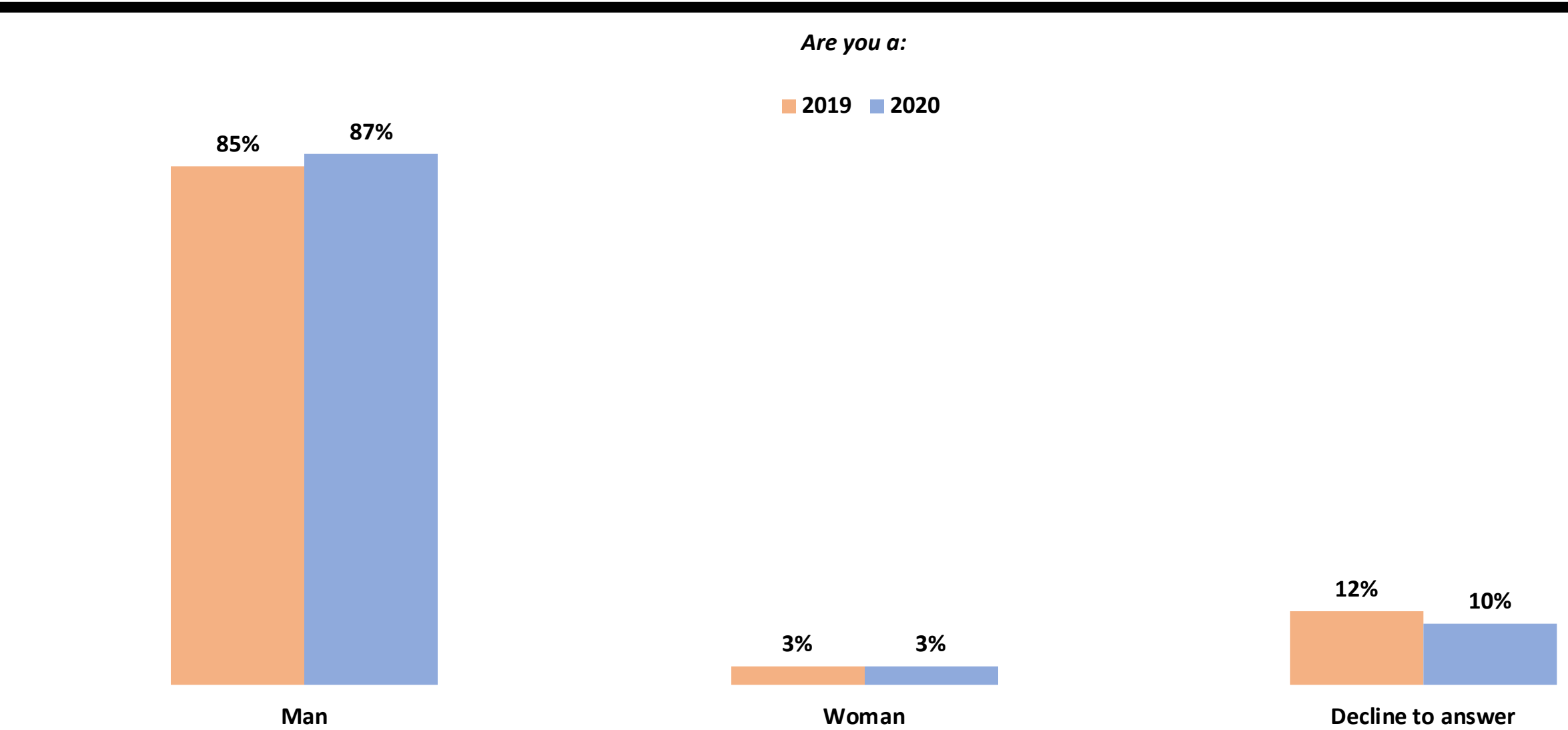
87% Identify as Men, 3% Identify as Women and 10% Decline to Answer



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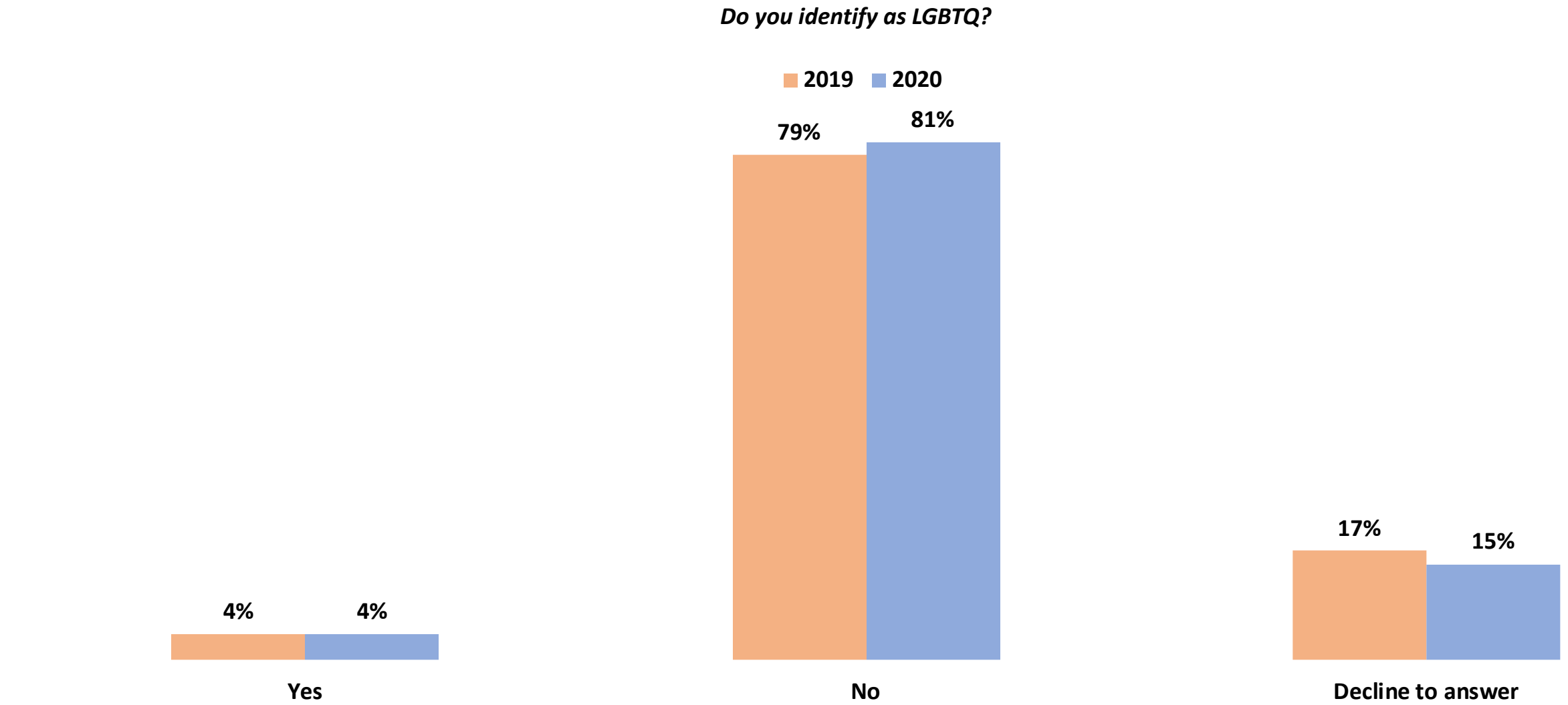
4% Identify as LGBTQ



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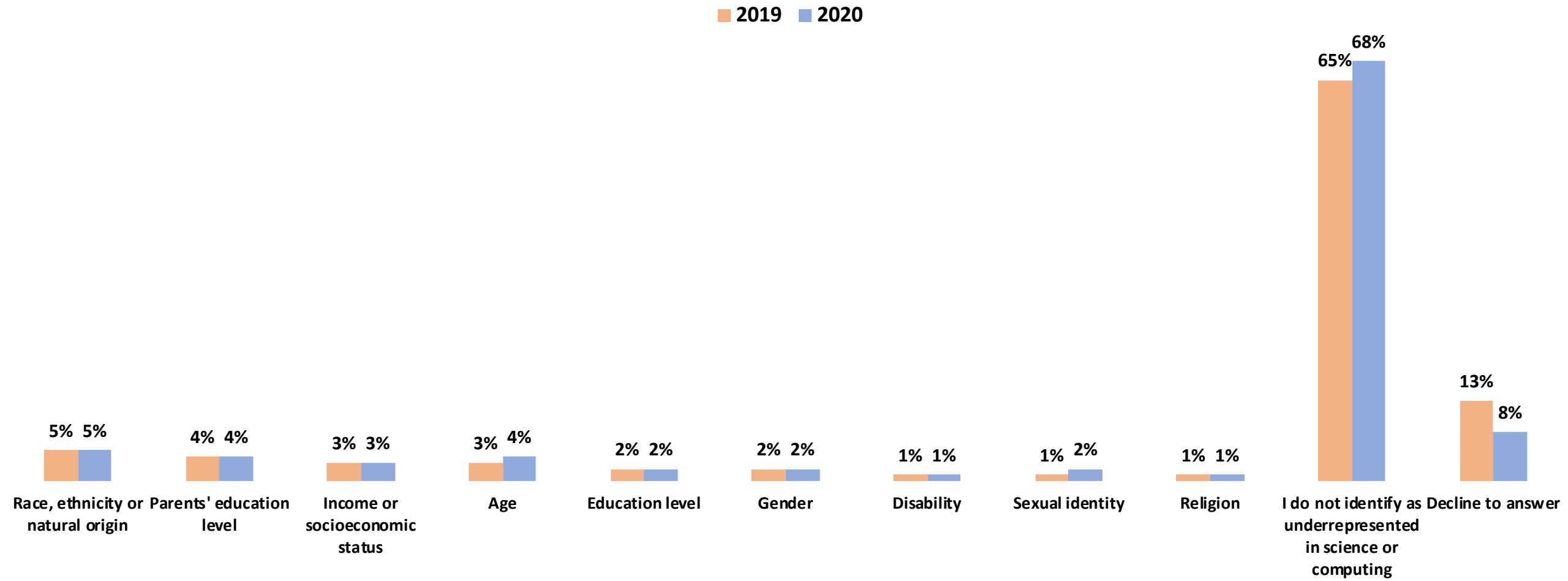
Among Those Who Answered this Question (92% of Respondents), 26% Identify as Underrepresented in Science or Computing

Do you identify as underrepresented in science or computing because of your:



Julia computing

Contact

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