ActiveState®

Developer Survey
Open Source Runtime Pains
2018

Introduction

This year ActiveState ran a developer survey to better understand open source runtime pains.

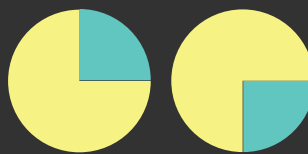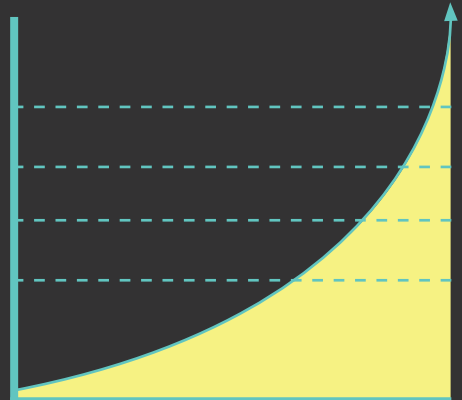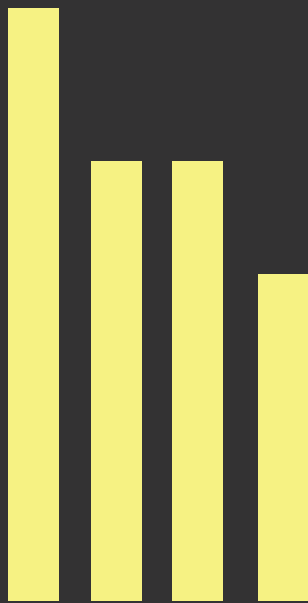We sought responses from developers around the globe and garnered a total of 1,407 responses from 92 countries.

The survey results set the baseline for understanding the challenges faced by coders (developers, engineers, data scientists, Q&A, etc.) when working with open source runtimes. And the resulting survey data is an invaluable tool to measure and track progress towards solving open source runtime pains that developers are experiencing.

ActiveState has been working in open source for over 20 years and we are passionate about making open source easy for enterprises and inspiring coder passion with elegant solutions.

What follows are the results of ActiveState's 2018 Developer Survey, Open Source Runtime Pains.

1. On a typical day, how many hours do you spend programming?

14%	37%	31%	19%
1 hour	2-4 hours	5-7 hours	8+ hours

Out of 1,407 responses, the majority of developers surveyed spend 2-4 hours a day programming. Of those surveyed, Developer/Programmers and ML Engineers spend the most time coding with 30.1% and 33.3% respectively programming more than 8 hours a day.

2. Which of the following best describes your job role?

Role	Percentage
Developer/Programmer	**44%**
Other	14%
Architect	8%
Team Lead	6%
Manager/Executive	5%
Technical Support	5%
Data Scientist	3%
Development Manager	3%
QA Engineer	2%
System Analyst	2%
Data Analyst	2%
Data Engineer	1%
DBA	1%
Business Analyst	1%
Product Manager	1%
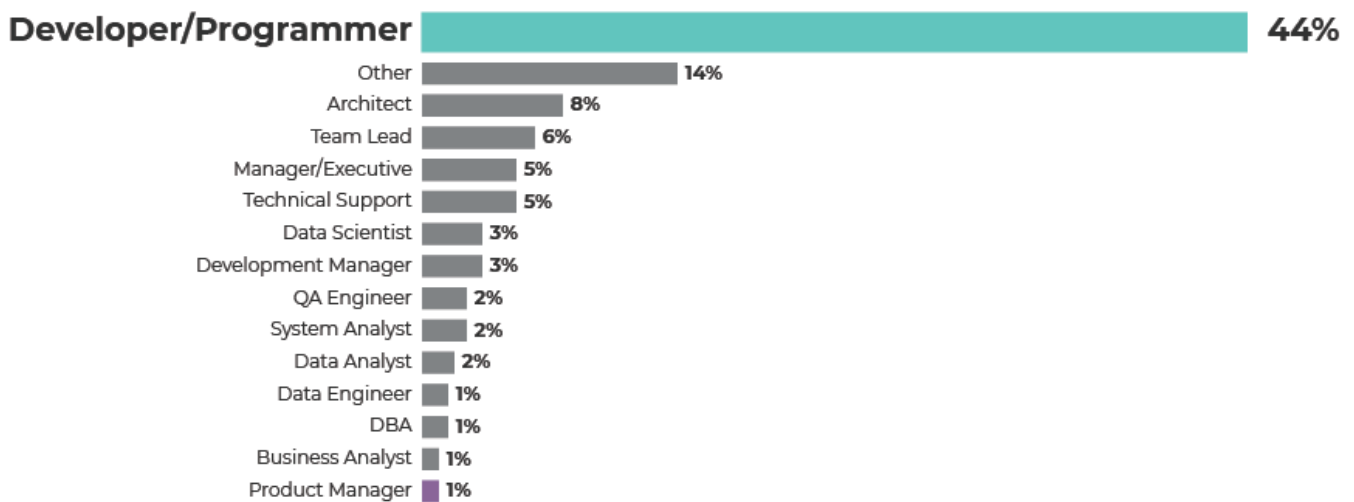
Out of 1,407 responses close to half, 44%, identify as a developer or programmer.

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3. How many years have you been working in a technical role?

The vast majority of survey respondents, 77%, have spent 6 or more years in a technical role; with the most significant portion of total respondents, 63%, have spent 10 or more years in a technical role.

5%
18%
63%
14%

Less than 1 year
1-5 years
6-10 years
10+ years
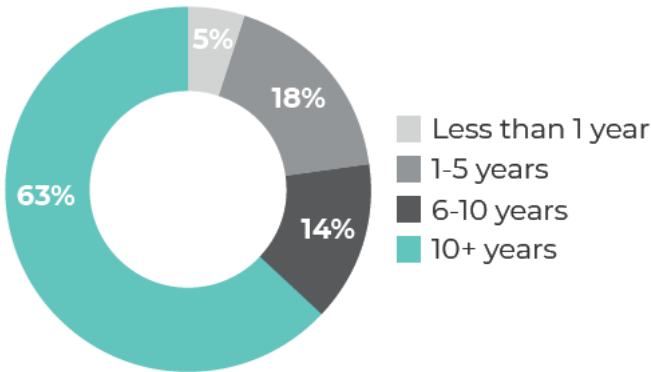
4. Which of the following best describes the principal industry of your organization?

Industry	Percentage
Software	25%
Information Services & Data Processing	11%
Other Industry	7%
Finance and Insurance	7%
Computer & Electronics Manufac.	7%
College, University, AdultEd	5%
Scientific or Technical Services	5%
Health Care and Socical Assistance	4%
Gov. & Public Admin.	4%
Telecomunications	4%
Other Manufacturing	3%
Other Information Industry	3%
Retail	2%
Arts, Entertainment, and Recreation	2%
Transportation and Warehousing	2%
Primary/Secondary (K-12) Education	2%
Utilities	1%
Military	1%
Agriculture, Forestry, Fishing & Hunting	1%
Other Education Industry	1%
Construction	1%
Publishing	1%
Real Estate, Rental and Leasing	1%

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5. Please indicate the size of your organization by number of full-time employees

19%

23%

12%

46%

- Fewer than 100 employees
- 100-1,000 employes
- Greater than 5,000 employees
- 1,001-5,000 employees
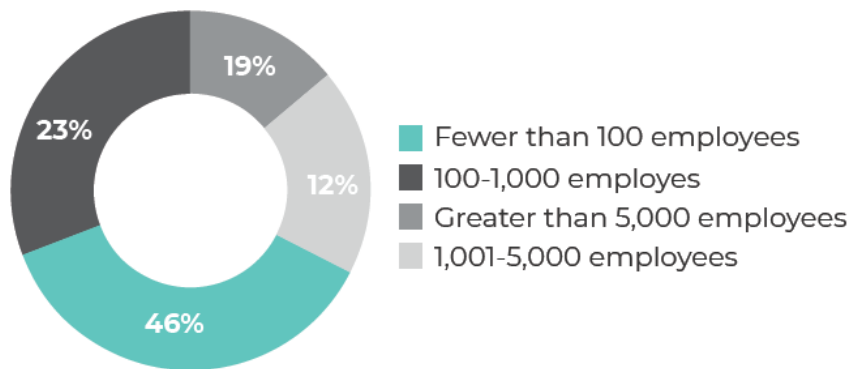
A little over half of respondents, 54%, were spread across organizations of 100+ employees. And close to to half of respondents, 46%, were in organizations of less than 100 employees.

6. In which country do you live?

Russia

Canada

United States

China

India

Brazil

Australia

1,407 individuals in 92 countries responded to the survey.

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7. What is your age range?

Age Range	Percentage
56+ yrs old	**23.0%**
36-40 yrs old	12.7%
41-45 yrs old	12.5%
31-35 yrs old	11.3%
26-30 yrs old	11.0%
51-55 yrs old	10.9%
46-50 yrs old	9.6%
Under 25	8.9%
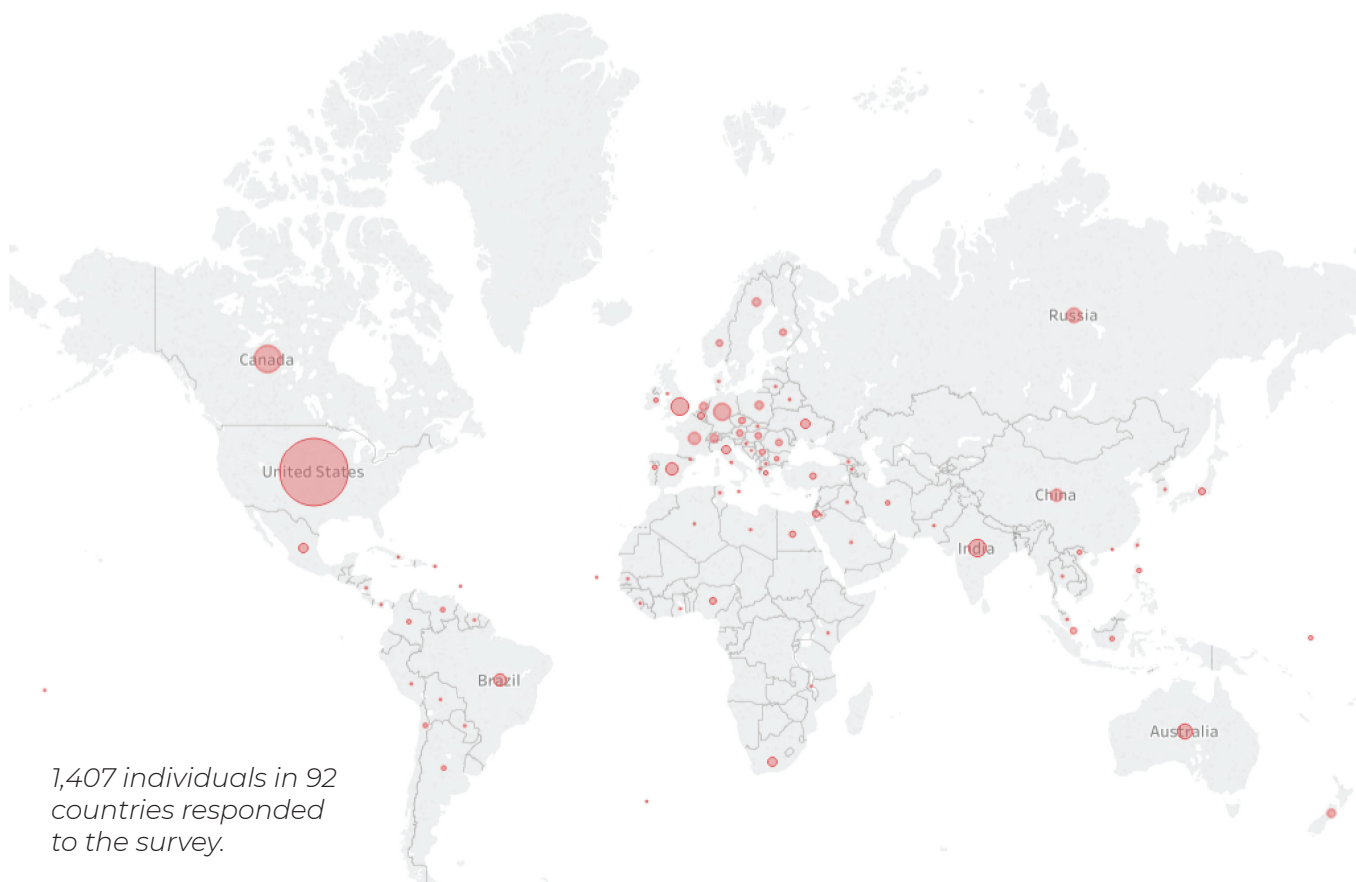
The greatest contingent of respondents, 23%, were 56+ years old. The remainder of respondents were nearly equally spread across the 7 other age categories, ranging from under 25 years old to 55 years old.
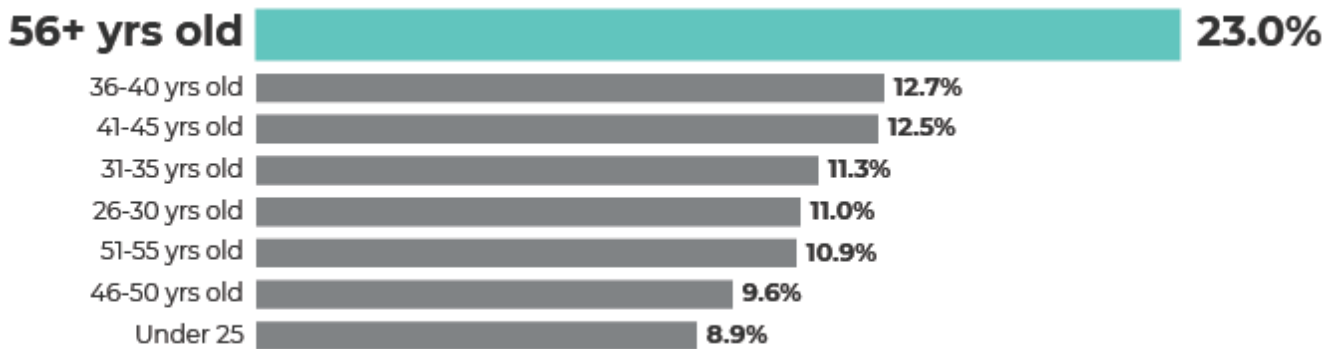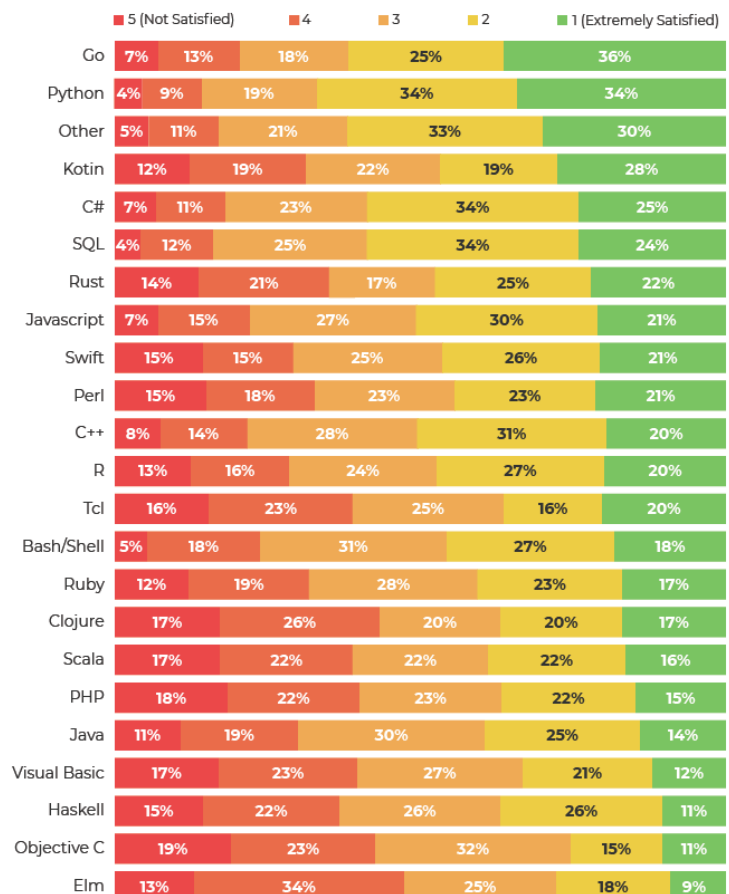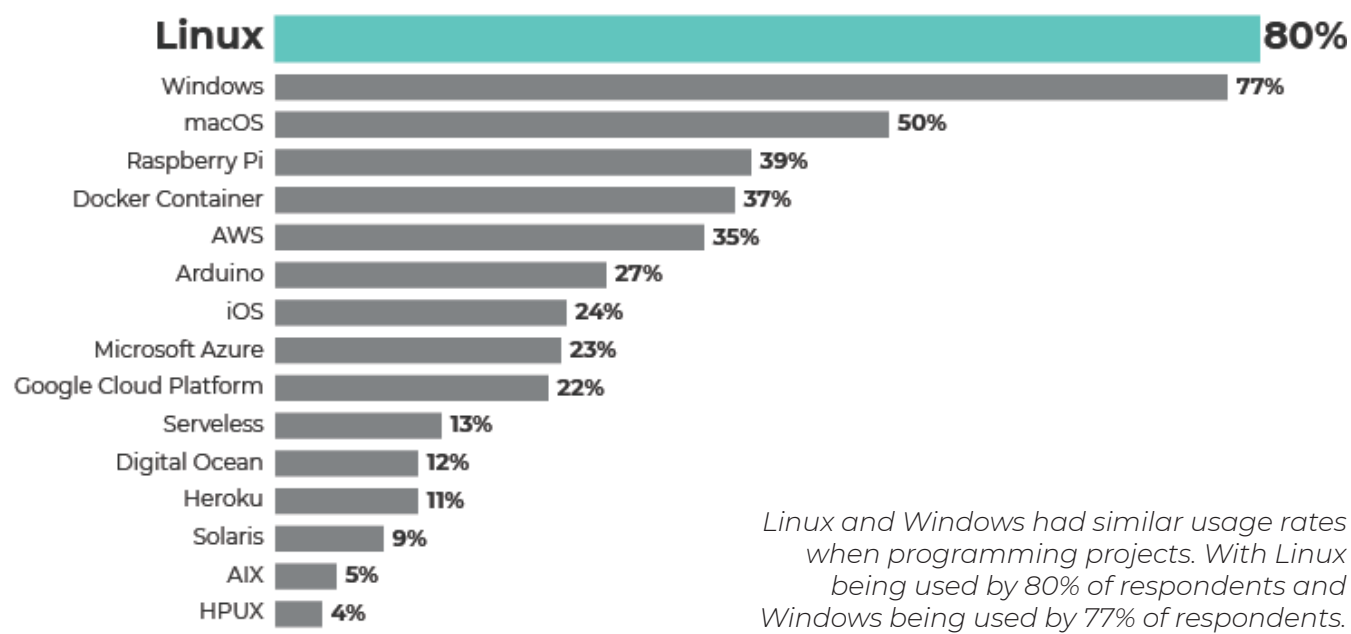
8. Please rate your level of satisfaction with all of the languages you use.
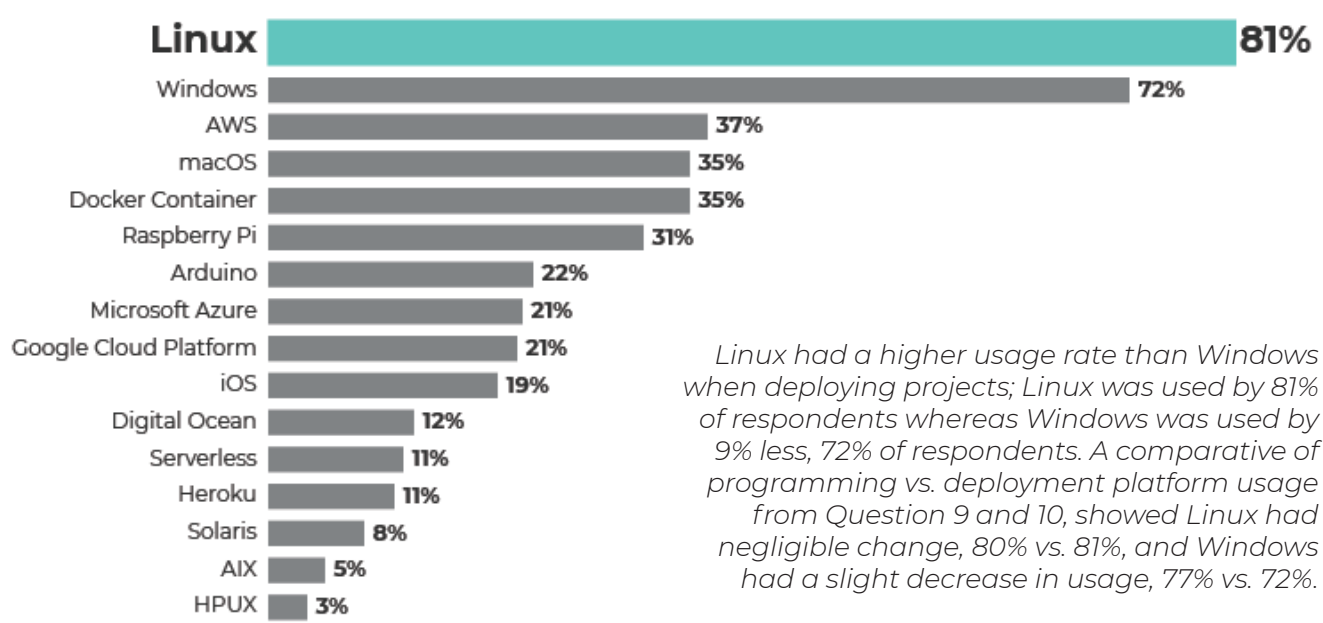
Python achieved the greatest number of respondents, 68%, with a satisfaction level as very satisfied or greater. Go was a close second with 61% of respondents ranking satisfaction level of very satisfied or greater. Conversely, Objective C had the fewest number of respondents, only 26%, with a satisfaction level of very satisfied or greater. Note Elm had only 27% of respondents with a satisfaction level of very satisfied or greater.

Language	5 (Not Satisfied)	4	3	2	1 (Extremely Satisfied)
Go	7%	13%	18%	25%	36%
Python	4%	9%	19%	34%	34%
Other	5%	11%	21%	33%	30%
Kotin	12%	19%	22%	19%	28%
C#	7%	11%	23%	34%	25%
SQL	4%	12%	25%	34%	24%
Rust	14%	21%	17%	25%	22%
Javascript	7%	15%	27%	30%	21%
Swift	15%	15%	25%	26%	21%
Perl	15%	18%	23%	23%	21%
C++	8%	14%	28%	31%	20%
R	13%	16%	24%	27%	20%
Tcl	16%	23%	25%	16%	20%
Bash/Shell	5%	18%	31%	27%	18%
Ruby	12%	19%	28%	23%	17%
Clojure	17%	26%	20%	20%	17%
Scala	17%	22%	22%	22%	16%
PHP	18%	22%	23%	22%	15%
Java	11%	19%	30%	25%	14%
Visual Basic	17%	23%	27%	21%	12%
Haskell	15%	22%	26%	26%	11%
Objective C	19%	23%	32%	15%	11%
Elm	13%	34%	25%	18%	9%

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9. Please select all of the platforms you use when programming your projects

Platform	Percentage
Linux	80%
Windows	77%
macOS	50%
Raspberry Pi	39%
Docker Container	37%
AWS	35%
Arduino	27%
iOS	24%
Microsoft Azure	23%
Google Cloud Platform	22%
Serveless	13%
Digital Ocean	12%
Heroku	11%
Solaris	9%
AIX	5%
HPUX	4%

Linux and Windows had similar usage rates when programming projects. With Linux being used by 80% of respondents and Windows being used by 77% of respondents.

10. Please select all of the platforms you use when deploying your projects

Platform	Percentage
Linux	81%
Windows	72%
AWS	37%
macOS	35%
Docker Container	35%
Raspberry Pi	31%
Arduino	22%
Microsoft Azure	21%
Google Cloud Platform	21%
iOS	19%
Digital Ocean	12%
Serverless	11%
Heroku	11%
Solaris	8%
AIX	5%
HPUX	3%

Linux had a higher usage rate than Windows when deploying projects; Linux was used by 81% of respondents whereas Windows was used by 9% less, 72% of respondents. A comparative of programming vs. deployment platform usage from Question 9 and 10, showed Linux had negligible change, 80% vs. 81%, and Windows had a slight decrease in usage, 77% vs. 72%.

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11. How often do you start a new software project?

| Frequency	Percentage
Quarterly	26%
Monthly	23%
Rarely	17%
Twice a Year	14%
Weekly	12%
Annually	7%
Daily	1%
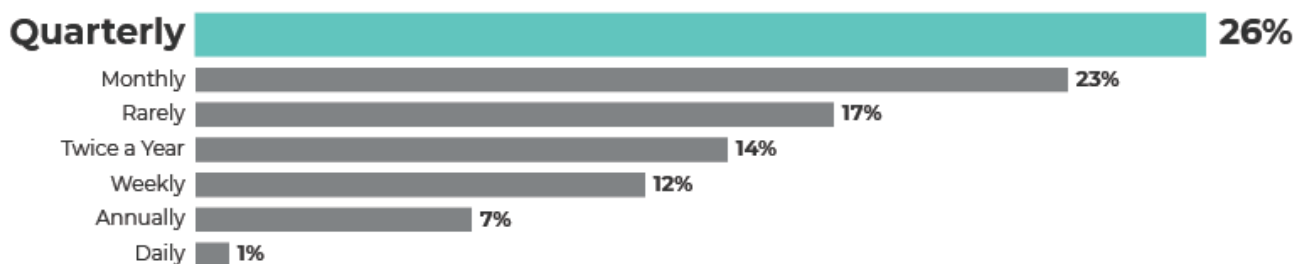
In aggregate, 61% of respondents start a new project at least once a quarter. 12% of respondents start projects once a week, 23% start projects once a month, and 26% start projects once a quarter.

12. Over a typical week how much time do you estimate you spend managing dependencies and development tools?

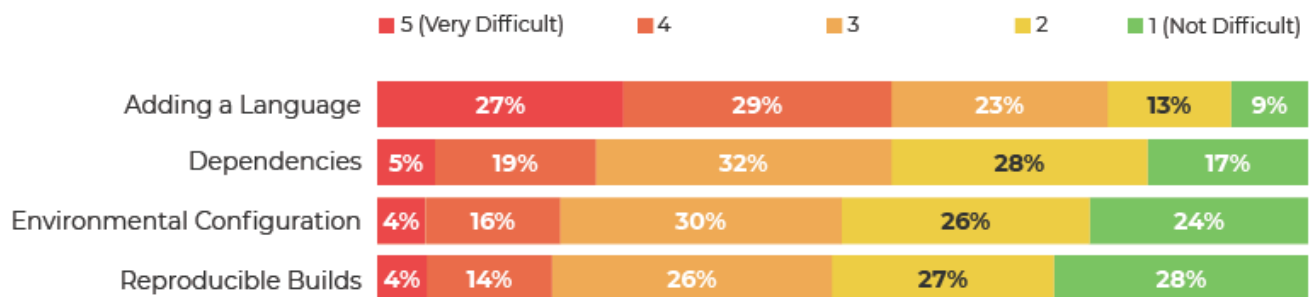| 2%	7%	67%	25%
All the time	Most of the time	Part of the time	Almost never
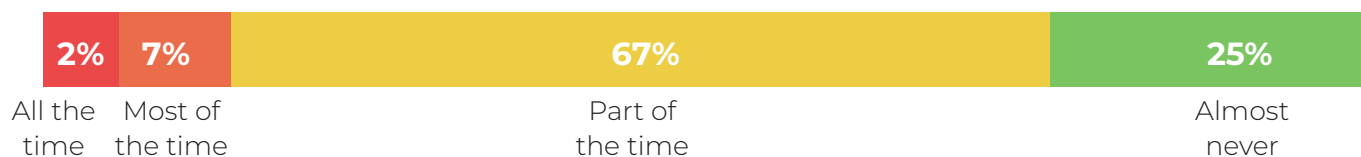
73% of respondents spend part or most of their time managing dependencies or dev tools, and only 25% of respondents rarely spend time managing dependencies or dev tools.

13. How often do you encounter issues when building a library or package?

2%	15%	54%	29%
All the time	Most of the time	Part of the time	Almost never
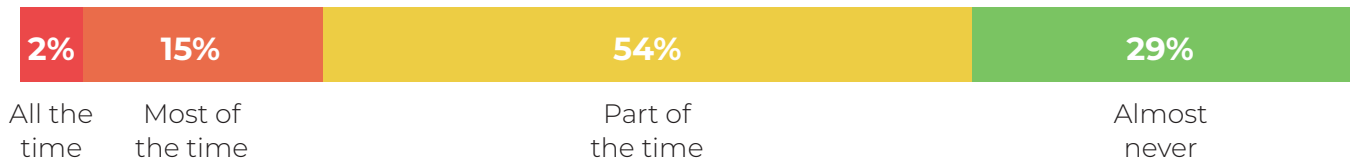
69% of respondents encounter issues part of the time or most of the time when building a library or package. Whereas only 29% of respondents rarely encounter issues when building a library or package.

14. Please rank the following challenges

Legend: ■ 5 (Very Difficult) ■ 4 ■ 3 ■ 2 ■ 1 (Not Difficult)

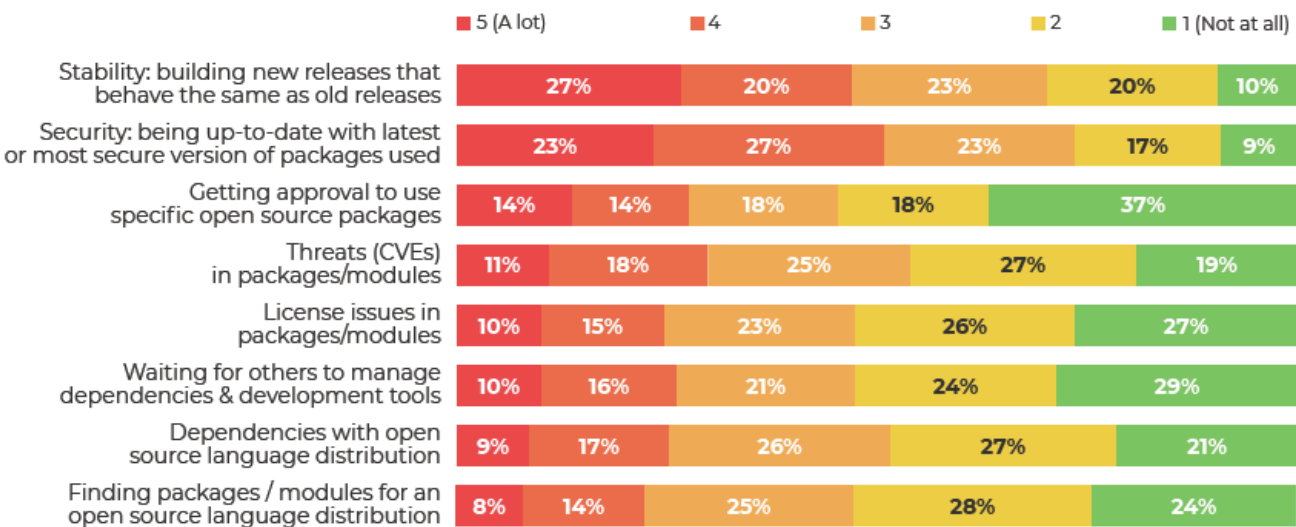|	5 (Very Difficult)	4	3	2	1 (Not Difficult)
Adding a Language	27%	29%	23%	13%	9%
Dependencies	5%	19%	32%	28%	17%
Environmental Configuration	4%	16%	30%	26%	24%
Reproducible Builds	4%	14%	26%	27%	28%

Adding or incorporating a language into an organization was rated the most difficult challenge, by a significant margin. 56% of all respondents rated this as very difficult or difficult. Comparatively, 18% of respondents rated reproducible builds as very difficult or difficult.

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15. Have you ever decided not to use the best tool for the job because it meant adding a new programming language; and the pain of adding the language would outweigh the advantages of using the tool in question?
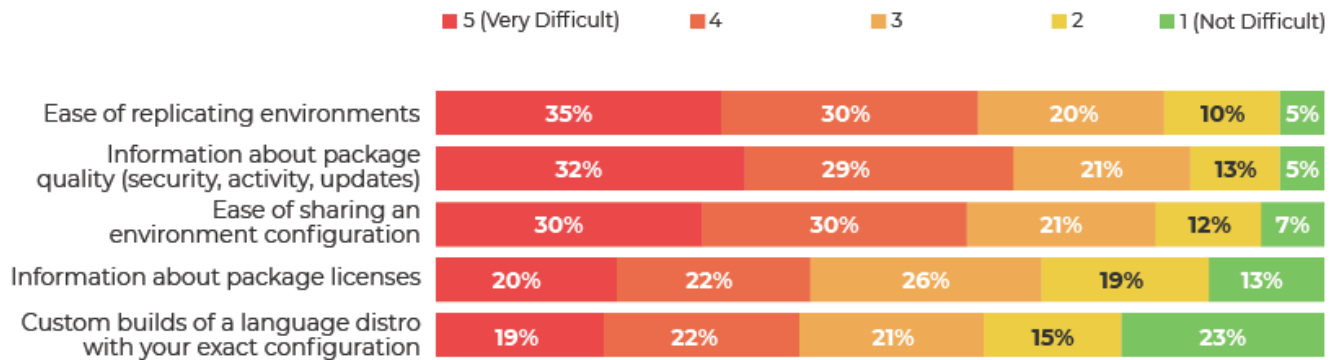
Wouldn't
67%

Would
33%

67% of respondents would choose not to add a new programming language when the pain of adding the language would outweigh the benefits of said language. This result aligns with Question 14, where adding a language was rated as the most difficult challenge.

16. Please rank how much the following cause problems / issues / concerns for you

	5 (A lot)	4	3	2	1 (Not at all)
Stability: building new releases that behave the same as old releases	27%	20%	23%	20%	10%
Security: being up-to-date with latest or most secure version of packages used	23%	27%	23%	17%	9%
Getting approval to use specific open source packages	14%	14%	18%	18%	37%
Threats (CVEs) in packages/modules	11%	18%	25%	27%	19%
License issues in packages/modules	10%	15%	23%	26%	27%
Waiting for others to manage dependencies & development tools	10%	16%	21%	24%	29%
Dependencies with open source language distribution	9%	17%	26%	27%	21%
Finding packages / modules for an open source language distribution	8%	14%	25%	28%	24%

The two items that caused the most pain points and challenges for respondents were security and stability, 50% and 47% respectively, experienced some or a lot of problems with these. Security was defined as being up-to-date with the latest or most secure version of packages used. And stability was defined as building new releases that behave the same as old releases. Finding packages or modules for an open source language distribution, had only 22% of respondents experiencing some or a lot of problems.

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17. Please rank the ability to do the following

	5 (Very Difficult)	4	3	2	1 (Not Difficult)
Ease of replicating environments	35%	30%	20%	10%	5%
Information about package quality (security, activity, updates)	32%	29%	21%	13%	5%
Ease of sharing an environment configuration	30%	30%	21%	12%	7%
Information about package licenses	20%	22%	26%	19%	13%
Custom builds of a language distro with your exact configuration	19%	22%	21%	15%	23%

Results for three abilities (ease of replicating environments, information about package quality, ease of sharing an environment configuration) ranked fairly closely in importance by respondents. For example, ease of replicating environments was considered to be important or very important by 65% of respondents. And the information about package quality (its security, activity and updates) was considered to be important or very important by 61% of respondents. Similarly, the ease of sharing an environment configuration was considered to be important or very important by 60% of respondents.
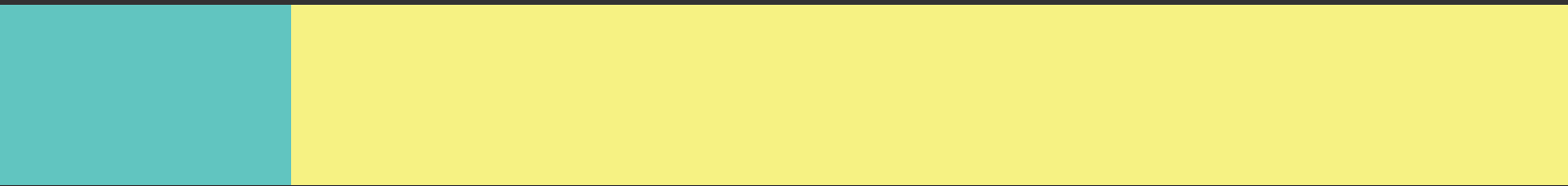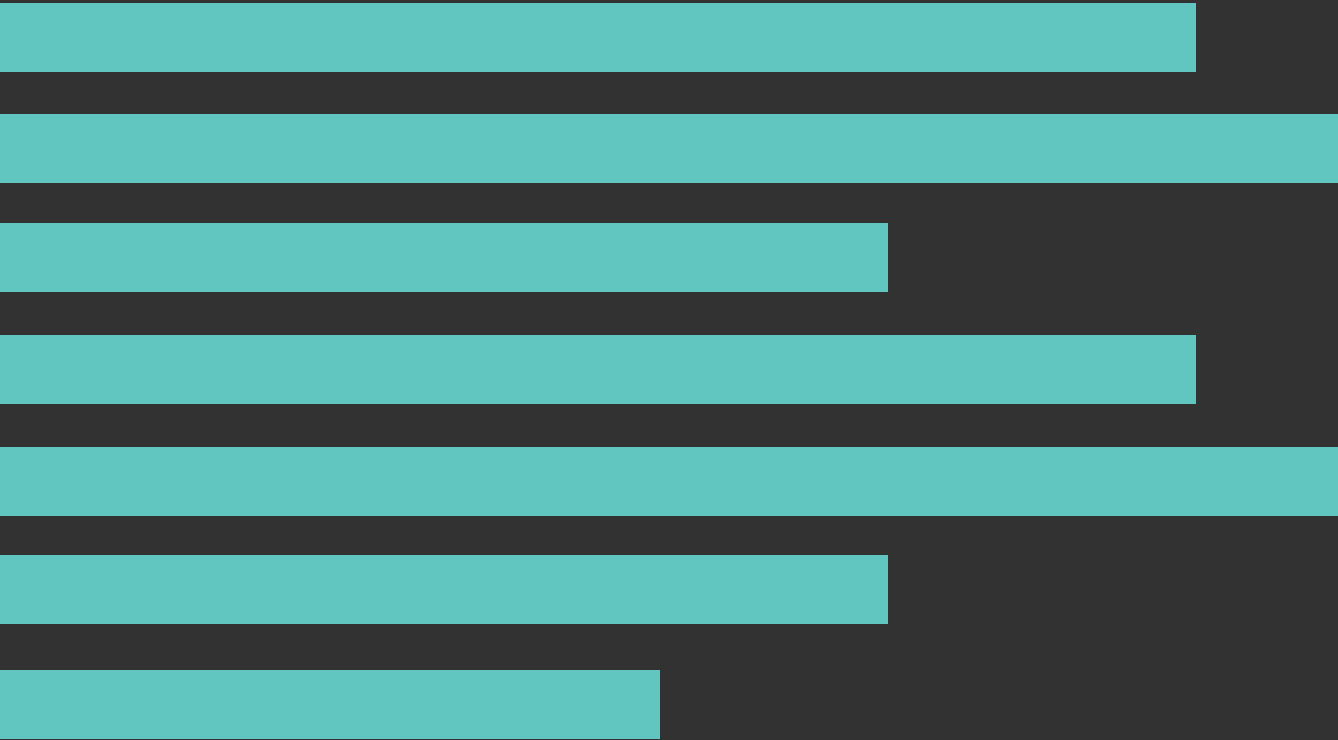
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Conclusion

We hope the results of this survey will help us better understand the runtime pains faced by developers, and that these insights will enable contributions to open source communities to address key pain points developers experience with open source runtimes.

ActiveState has been working in open source for over 20 years. We've been building languages like Python, Perl, Ruby, Go and Tcl. This year we announced our SaaS Platform for open source languages.

Interested in learning more? Want to check out what we're working on or be one of the first to be invited to see the Platform?

Drop us a line, **info@activestate.com!**

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ABOUT ACTIVESTATE

ActiveState is a leader in providing commercial level open source language distributions. It provides commercial versions of Python, Tcl, Perl, Ruby and Go.
More than two million developers and 97% of Fortune 1000 companies use ActiveState open source language builds
including CA, Cisco, Pepsi, Lockheed Martin and NASA. To learn more, visit activestate.com