



Analysis Report on The 2019 Stack Overflow Developer Survey

Guanqiao Li

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OUTLINE



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EXECUTIVE SUMMARY



- The demand of web development is still on a surge, leads to current and future popularity of HTML and JavaScript
- Future trend is, likely, not favorable for non-opensource databases
 - All databases in the top five most popular databases except for Microsoft SQL server are open source
 - All databases in the top five most popular databases to learn next year are open source
- Machine learning and big data is trending, though not enough to match demand of web development
- Programmers are aware of market demand and adoptive to new tools and technologies, possibly due to its young and highly-educated community

INTRODUCTION



- Stack overflow is one of the largest online programmers' community
- By performing analyzation on the users of this community, valuable information can be extracted
- With such information, technological trend in the developer's field can be observed, together with the demographic feature of such community
- With those information, references can be provided on fields which :
 - Focuses on the trend of near-future demand related to the field of programming
 - Focuses on members of developers' community

METHODOLOGY



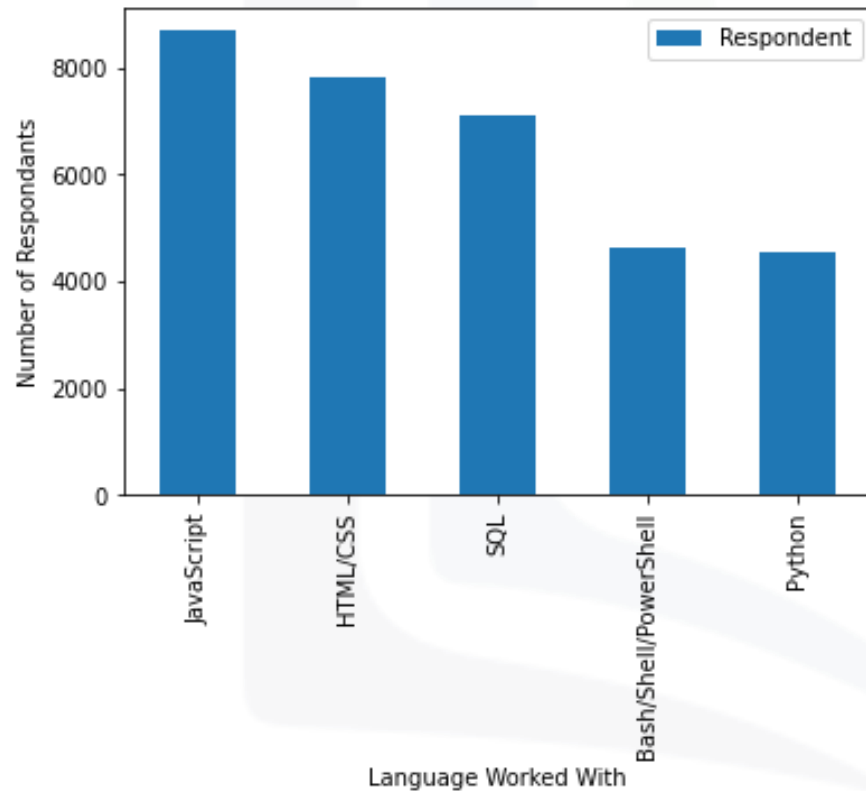
- The data source of this report is the survey performed by Stack overflow in 2019, data is extracted from SQL database of survey data.
- For programming languages and databases, currently most popular ones will be listed together with the ones which developers most desired to learn next year
- Analyzation on current situation and future trend were performed based on such information.
- Dashboard on technological trend and demographics was created
 - Technological trend of programming language, database, web frame and platform
 - Geographic location, education level, gender and age of respondents

RESULTS

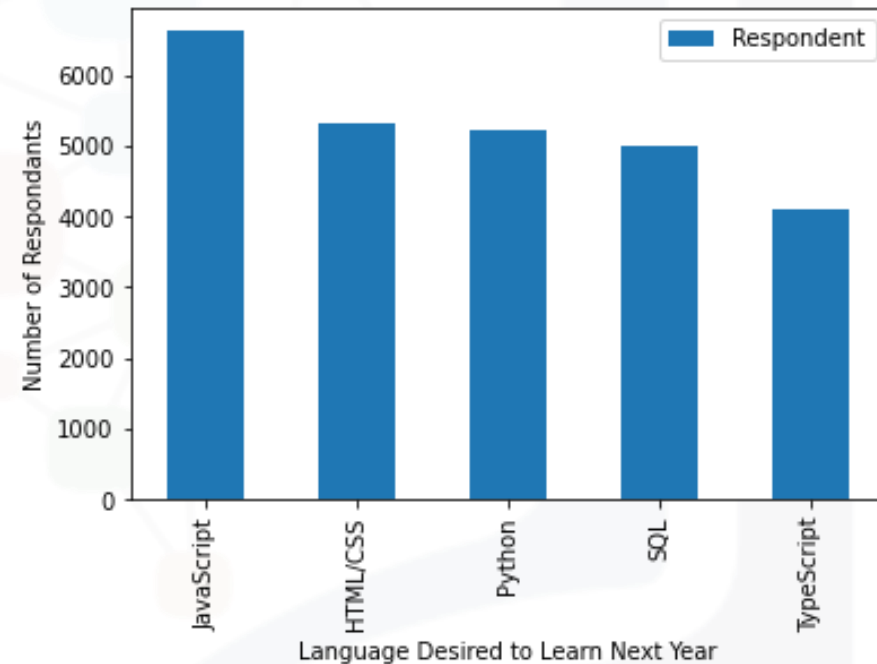


PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

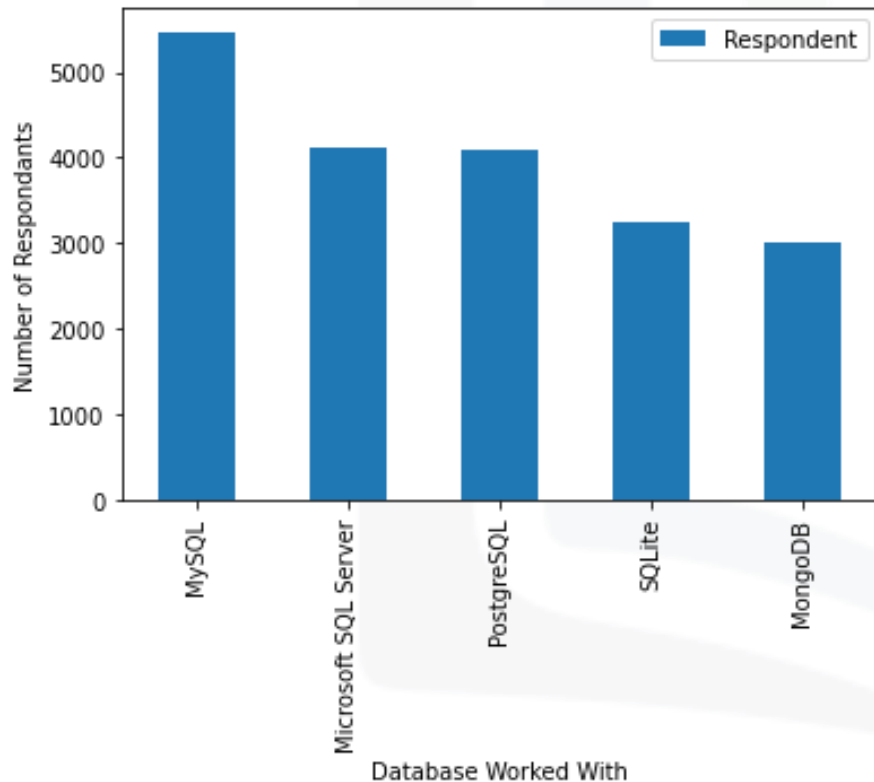
- JavaScript and HTML are currently the most popular languages with a trend of gaining even more popularity
- Python which is the fifth most popular language is still gaining popularity
- As the third most popular language, the popularity of SQL is likely to remain

Implications

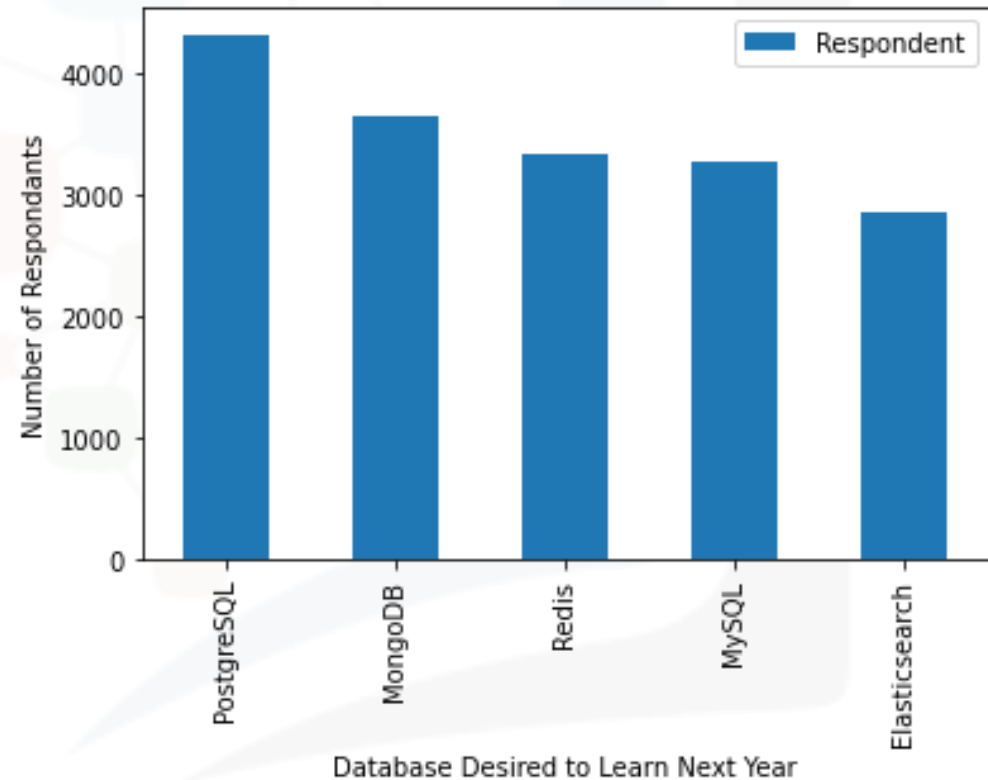
- Consider the usage of JavaScript and HTML, its popularity might imply that the demand of web development is still on a surge.
- Popularity of SQL and Python suggests that big data and machine learning are gaining more attention
- The trend of TypeScript gaining popularity probably indicates that later languages are also being accepted by the programmer community and the industry

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is currently the most popular database
- PostgreSQL which is the third most popular database is gaining popularity in highest speed.
- All databases in the top five most popular databases except for Microsoft SQL server are open source
- All databases in the top five most popular databases to learn next year are open source

Implications

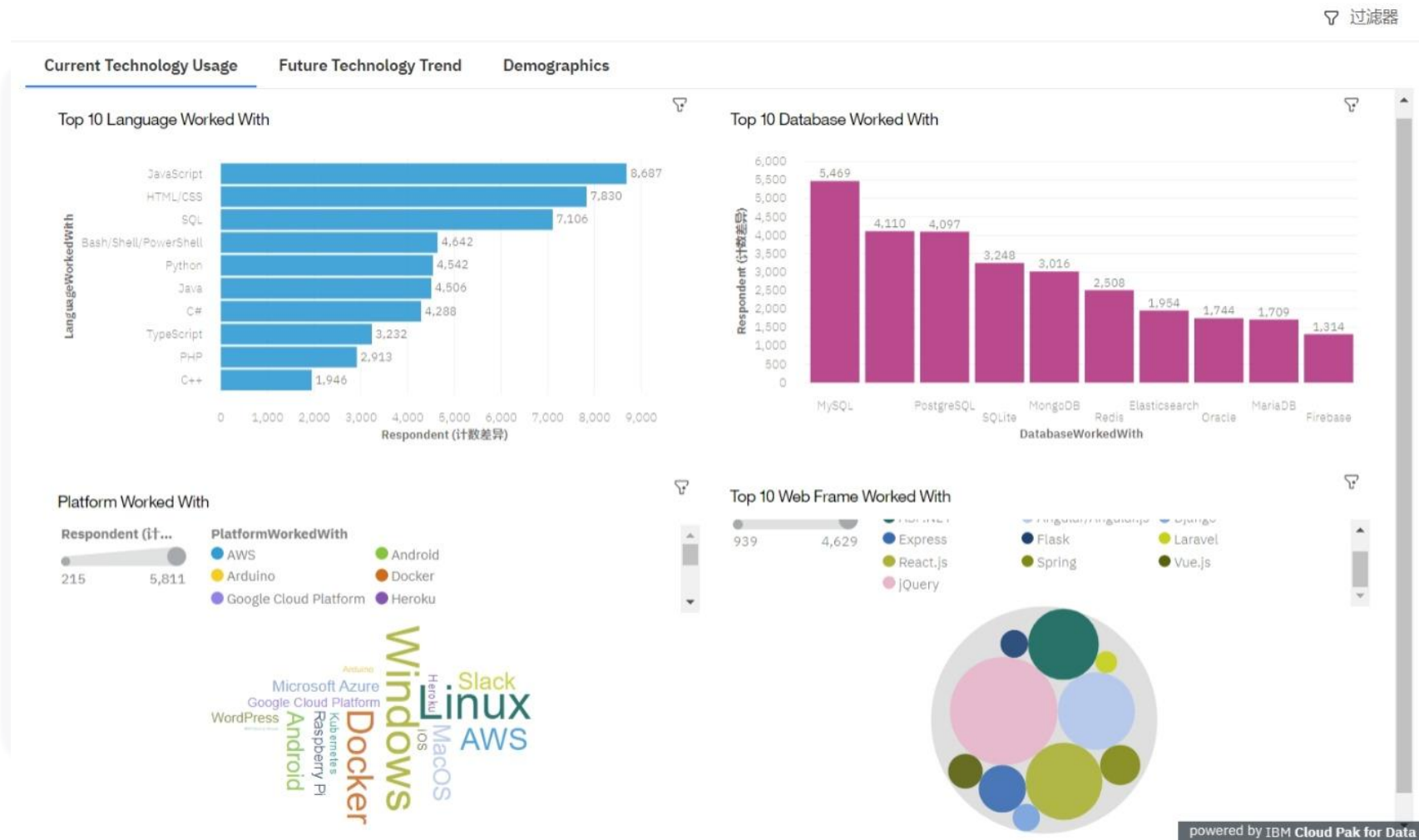
- Opensource databases is the most popular choice among programmers, and will likely remain its popularity in near future
- MySQL and PostgreSQL's popularity are still increasing, but newer databases are also gaining popularity
- It probably implies that for majority of users, the advantage of non-opensource databases can't overweight the convenience of opensource databases.

DASHBOARD

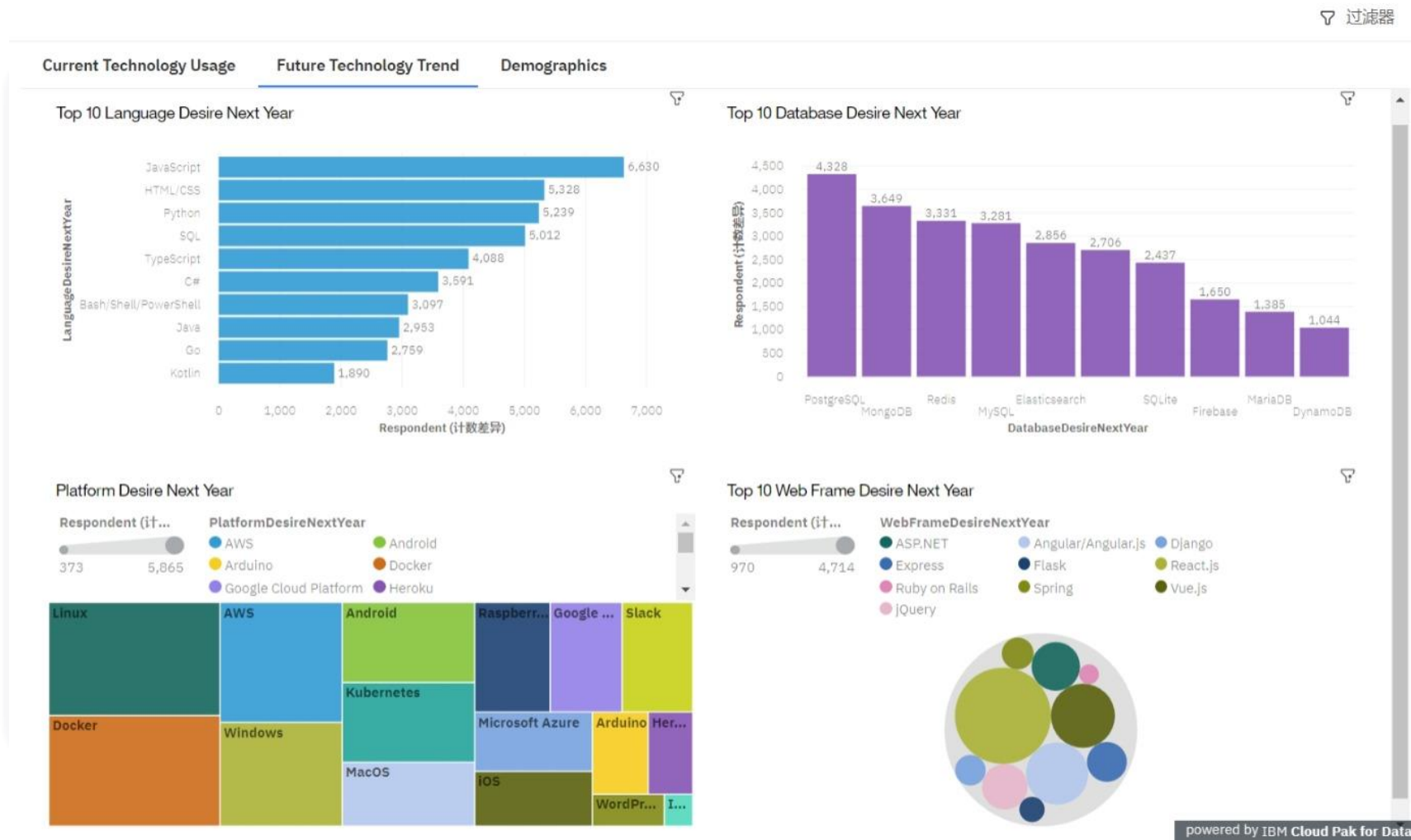


IBM Cloud Pak for Data

DASHBOARD TAB 1



DASHBOARD TAB 2



DASHBOARD TAB 3

过滤器

Current Technology Usage

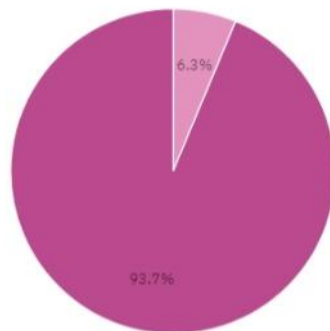
Future Technology Trend

Demographics

Respondent classified by Gender

Gender

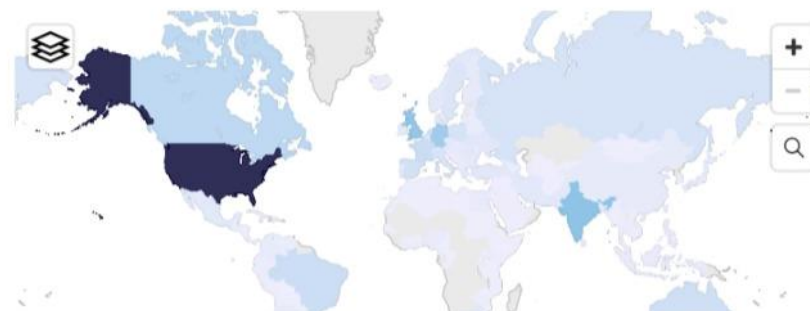
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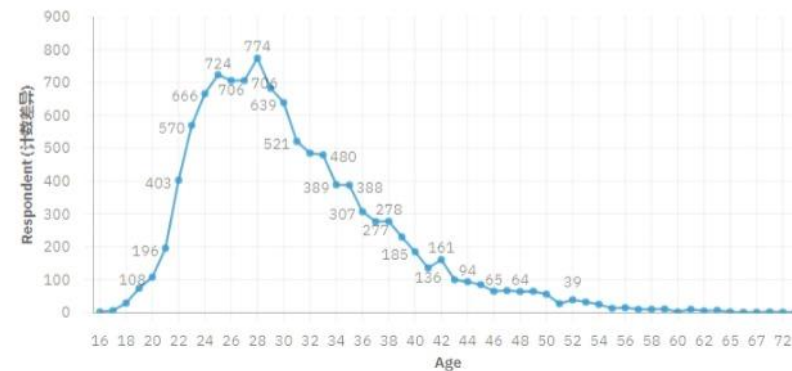
Respondent Count for Countries

Respondent (计...

1 3,058



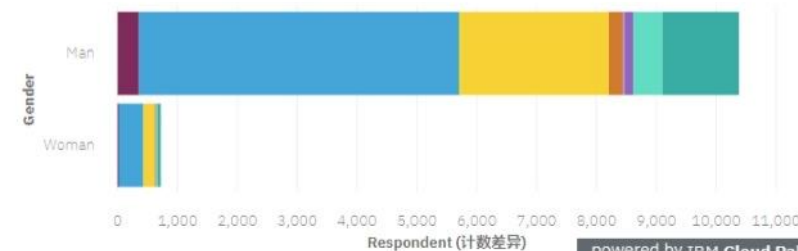
Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level

EdLevel

Associate degree Bachelor's degree (BA, BS, B.E...
I never completed any formal ... Master's degree (MA, MS, M.En...
Other doctoral degree (Ph.D, E... Primary/elementary school



DISCUSSION



- Notable that till now, the programmer community still mainly consists of males.
- A large portion of the user community of Stack overflow is from the United States, understandable due to the main language used in Stack overflow, however, still could lead to bias.
- The peak of respondent age is at 24-28, which is typically 2-6 years after finishing undergraduate education, possibly indicates that a large portion of programmers switched to programming from other professions.

OVERALL FINDINGS & IMPLICATIONS

Findings

- Languages such as C++ and PHP which used to be mainstream languages are losing its popularity, but the popularity of JavaScript and HTML remain, with the largest growing trend, together with Python and SQL.
- Popularity of android platform is growing, but can not yet match Linux, Windows and Docker; jQuery, which is currently the most popular web frame, is likely losing its popularity, and React.js is gaining popularity in highest speed. Notable that in this list, every product besides Windows are opensource.
- Most respondents has received higher education, with an age of less then 40yo, The age of the respondents suggests a heavy-tail distribution.

Implications

- Surging web development demand has not yet led to replacement of old languages, possibly due to current internet infrastructure, but old tools like jQuery are being replaced.
- In other fields, old languages and tools are replaced by new ones based on changing demand over time.
- Generally speaking, developers prefer open-source product over non-opensource
- The heavy-tail distribution is possibly due to the increasing of demand over time and the growth curve of programmers.

CONCLUSION



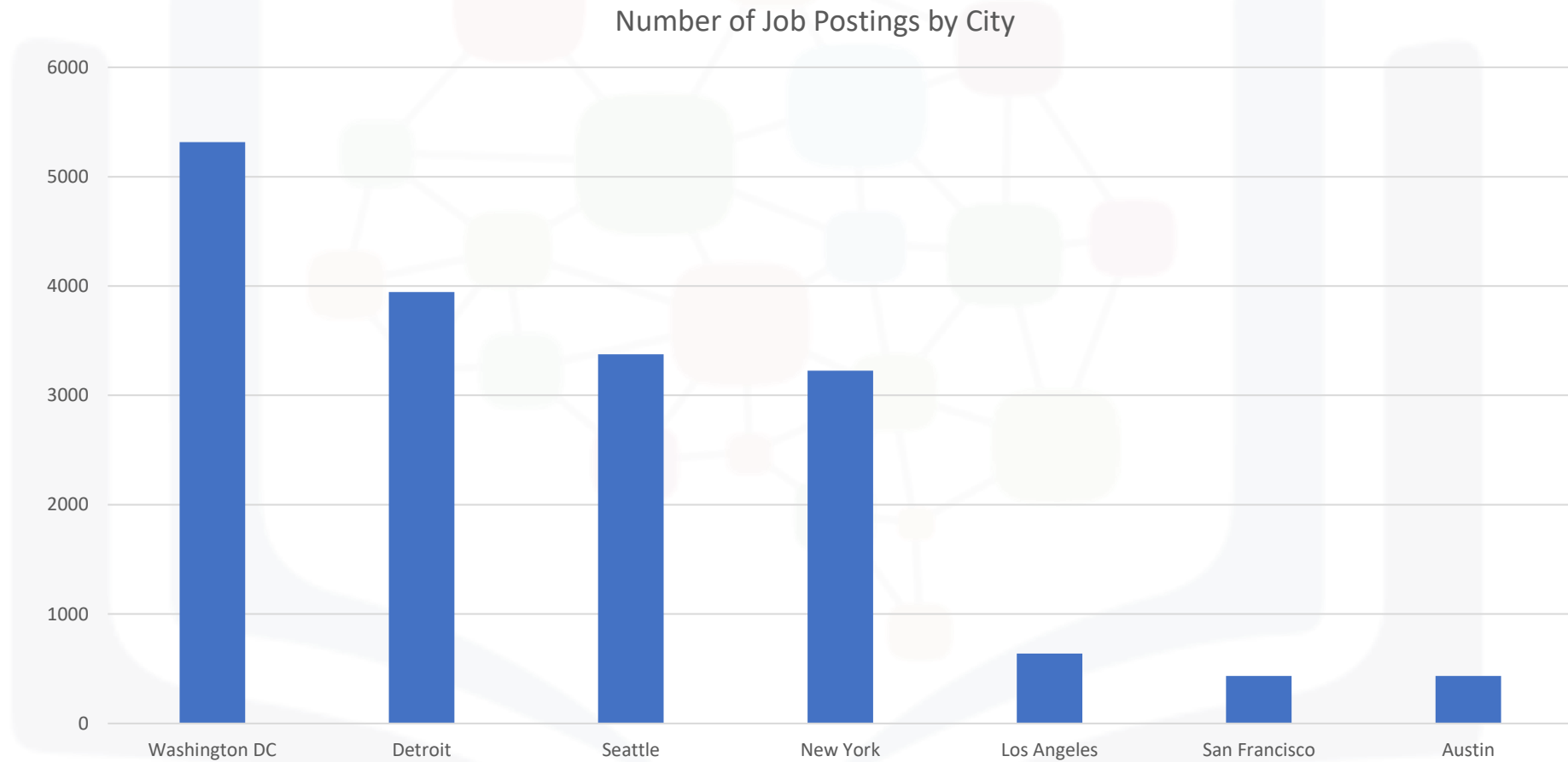
- With a young and highly-educated community, programmers are aware of market demand and adoptive to new tools and technologies
- Need for web development is still on surge, but possibly due to infrastructure status of internet, the languages used in development are still far from being replaced
- Future trend is likely to be favorable for machine learning and big data, which led to growth in Python and SQL users
- Developers are generally more in favor of open-source products, and the future trend is also in favor of those products

APPENDIX



- Include any relevant additional charts, or tables that you may have created during the analysis phase.

JOB POSTINGS



POPULAR LANGUAGES

