



Emerging Skills Analysis

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OUTLINE



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- Introduction
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 - Dashboard
- Discussion
 - Findings & Implications
- Conclusion
- Appendix

EXECUTIVE SUMMARY



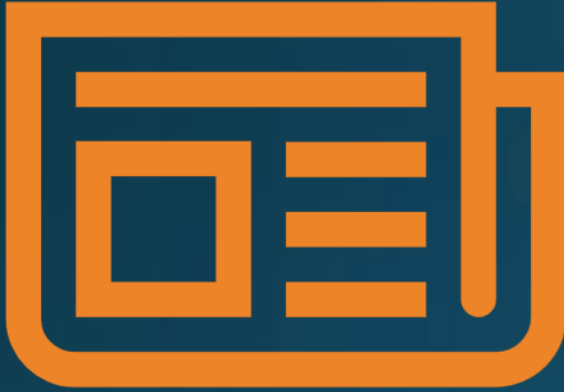
- Relevant skills required in the field of IT and business consulting are ever-changing and evolving.
- It is important to identify future skill requirements and trends to keep pace with changing technologies and remain competitive.
- This presentation will show current and future trends in Programming Languages, Databases, Platforms and WebFrames.
- Overall, the aim in identifying future skill requirements and trends is to help the firm make more informed data-driven hiring and budgetary decisions.

INTRODUCTION



- This presentation has been created for stakeholders and business decision makers within the global IT and business consulting services firm.
- The presentation will help identify future skill requirements in the global IT sector necessary for the firm to keep pace with changing technologies and remain competitive.
- Recommendations will be stated based on the analysis.

METHODOLOGY



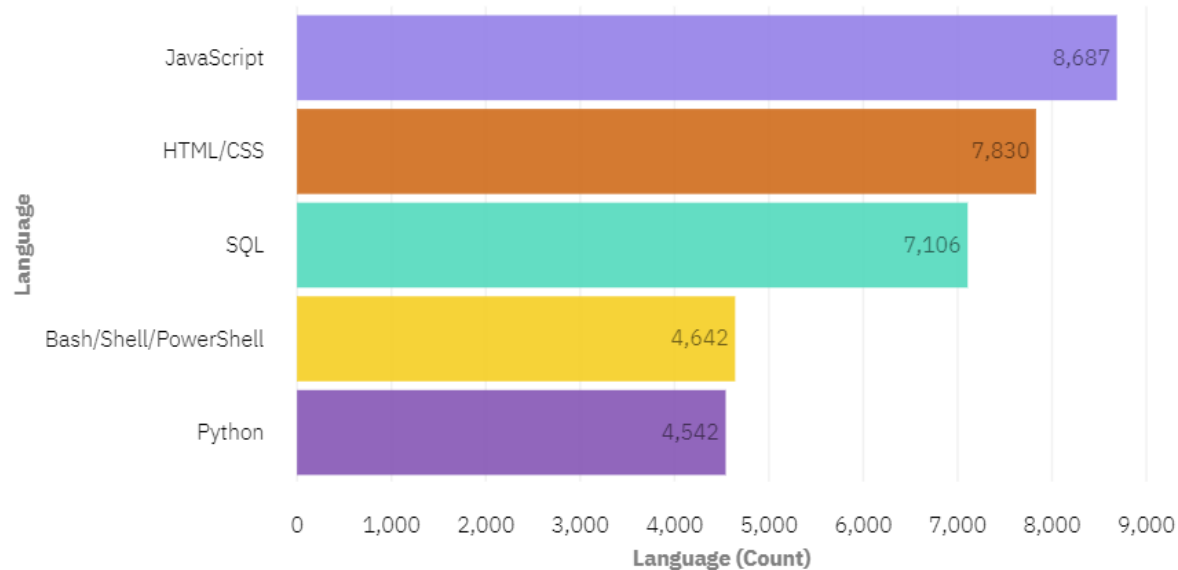
- Using a modified subset of the Stack Overflow dataset¹, the data was wrangled in order to remove duplicates, impute missing values and normalize data.
- Next, the data underwent exploratory analysis in order to find the distribution of data, presence of outliers and determine the correlation between different columns in the dataset.
- The data was then used to visualize the distribution, the relationship between two features and the composition and comparison of data.
- Finally, after downloading two files², which are also a modified subset of the Stack Overflow dataset, Cognos Dashboard Embedded (CDE) was used to create the “Programming Language Trends”, “Database Trends”, “Current Technology Usage”, “Future Technology Trends” and “Demographics” slides.
- Appendix
 - To obtain the number of GitHub job openings the GitHub Jobs API³ was used, and the collected data was stored in an excel spreadsheet⁴.
 - To obtain average annual salaries web scraping was used to extract information from a website⁵ then saved to a csv file⁶.

RESULTS

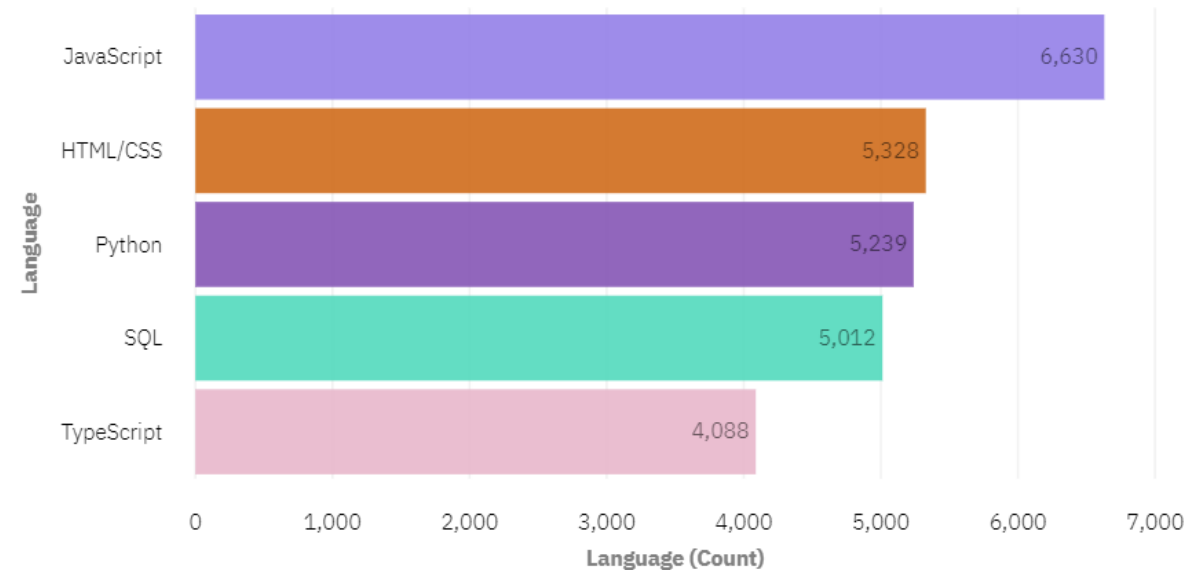


PROGRAMMING LANGUAGE TRENDS

Top 5 Programming Languages for Current Year



Top 5 Programming Languages for Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings



JavaScript and HTML/CSS continue to be the top two most popular programming languages for this year and next.



Python and TypeScript have gained more interest for next year.



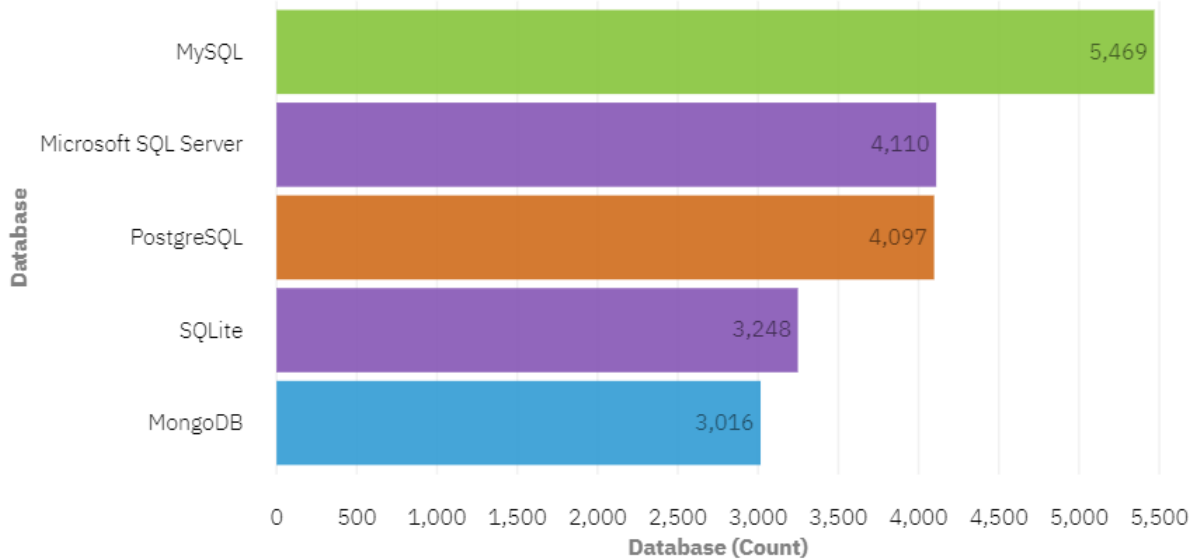
Whereas interest in SQL and Bash/Shell/PowerShell has decreased.

Implications

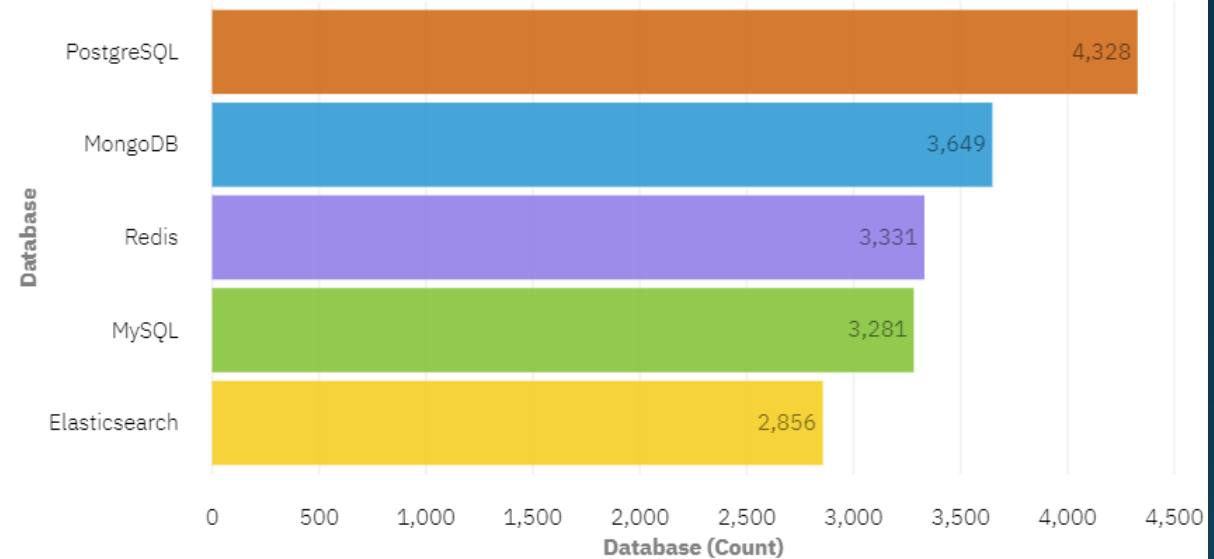
- Continue to employ a similar number of people skilled in JavaScript and HTML/CSS.
- Employ more people skilled in Python and TypeScript.
- Employ less people skilled in SQL and Bash/Shell/PowerShell.

DATABASE TRENDS

Top 5 Databases for Current Year



Top 5 Databases for Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings



Interest in MySQL, Microsoft SQL Server and SQLite has decreased for next year.



Interest in PostgreSQL and MongoDB have increased compared to the current year.



There is gained interest in Redis and Elasticsearch for next year.

Implications

- Employ less people skilled in MySQL, Microsoft SQL Server and SQLite.
- Employ more people skilled in PostgreSQL and MongoDB.
- Employ more people skilled in Redis and Elasticsearch.

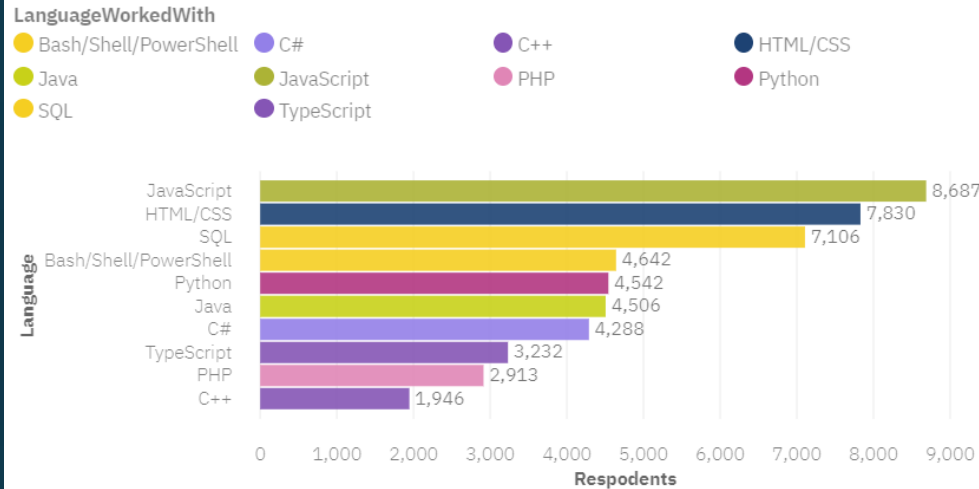
DASHBOARD



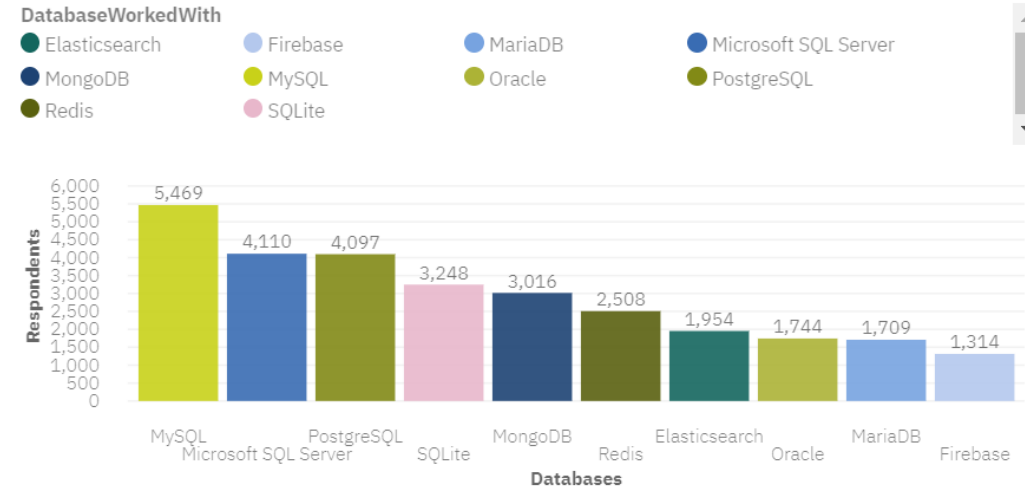
Click [here](#) to view the
Cognos dashboard

CURRENT TECHNOLOGY USAGE

Top 10 Languages Respondents Worked with in 2019



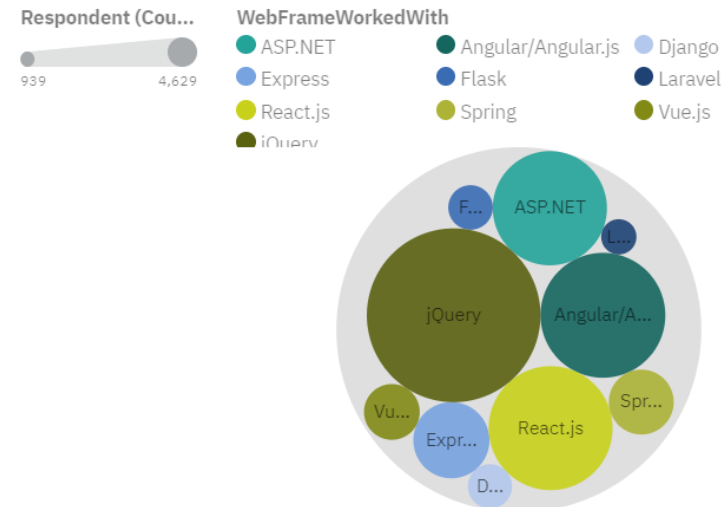
Top 10 Databases Respondents Worked with in 2019



Platforms Respondents Worked with Most in 2019

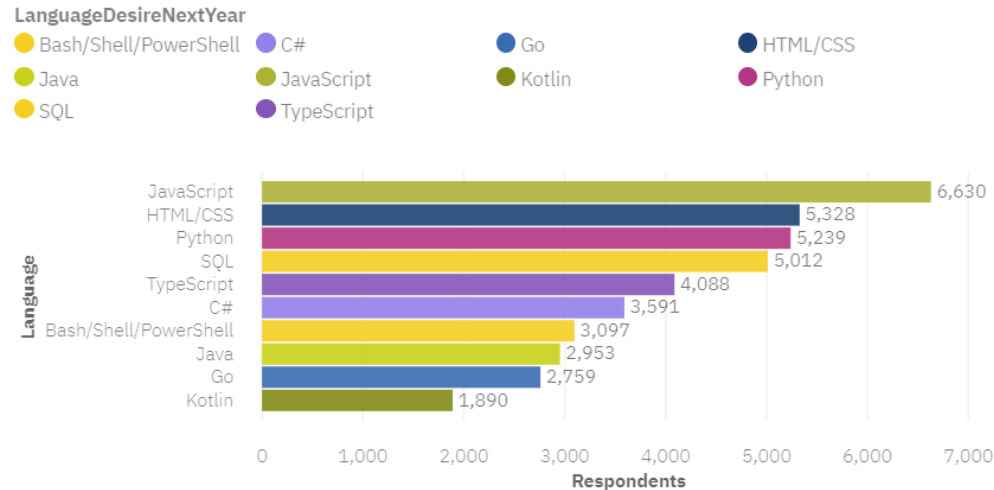


Top 10 WebFrames Respondents Worked with in 2019

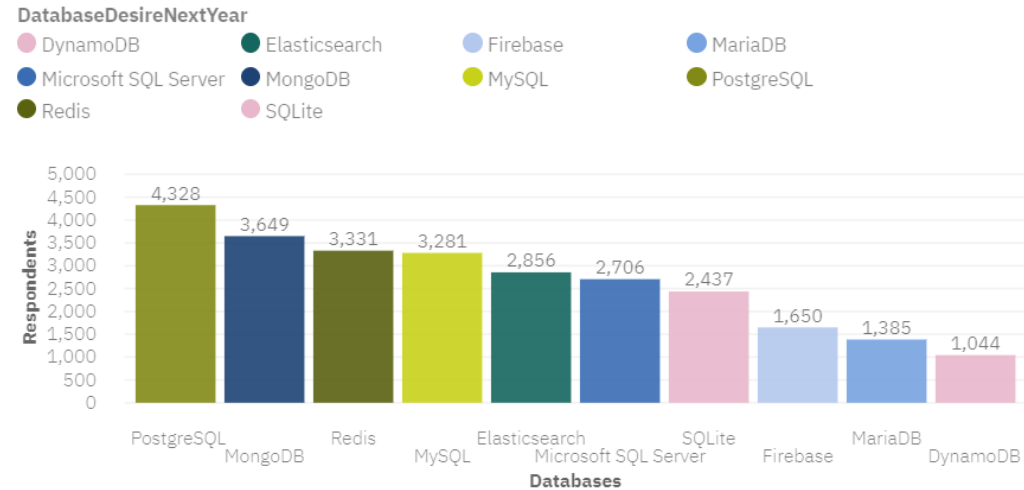


FUTURE TECHNOLOGY TRENDS

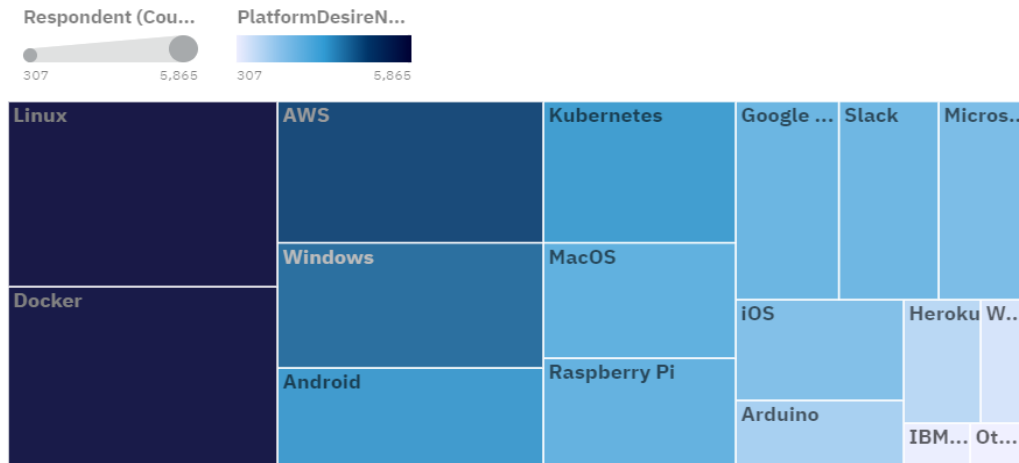
Top 10 Languages Respondents Desire to Learn Next Year



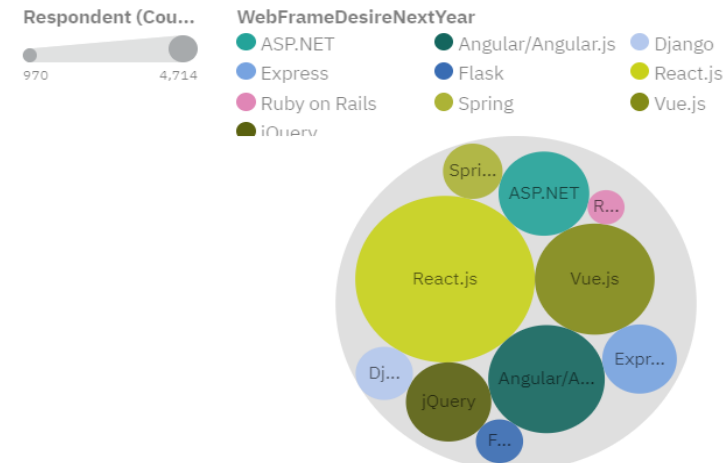
Top 10 Databases Respondents Desire to Learn Next Year



Platforms Respondents Most Desire to Learn Next Year



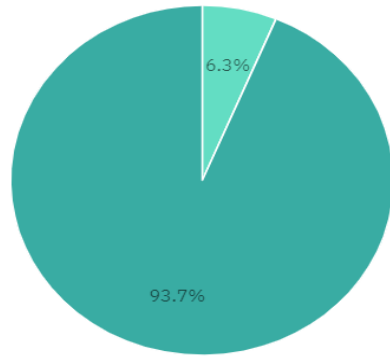
Top 10 WebFrames Respondents Desire to Learn Next Year



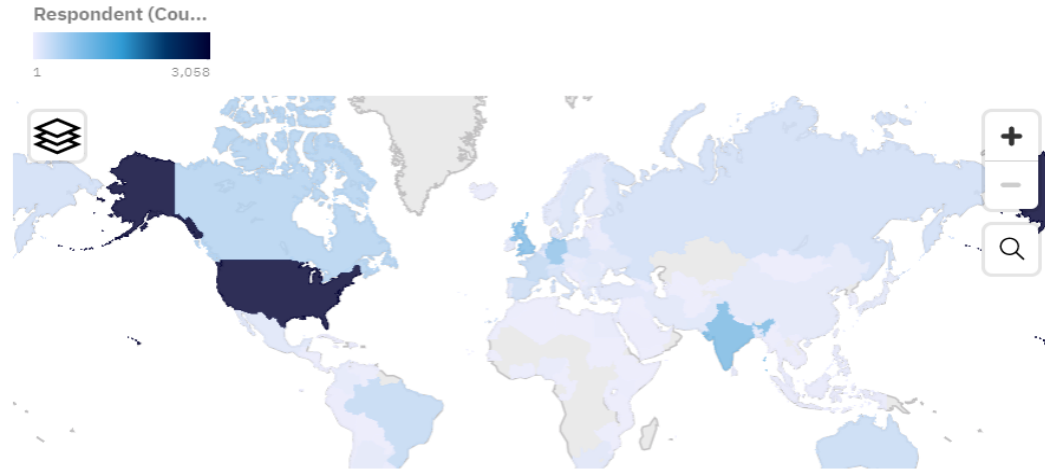
DEMOGRAPHICS

Respondents Based on Gender

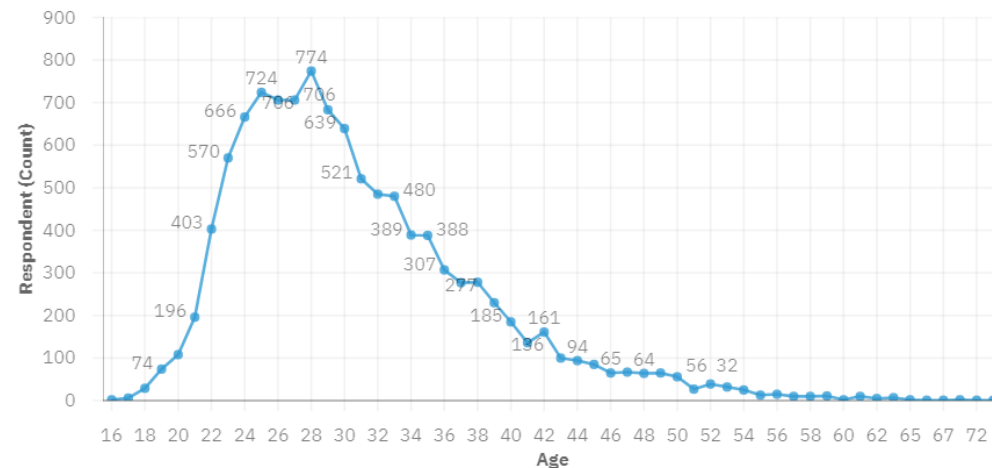
Gender
● Woman ● Man



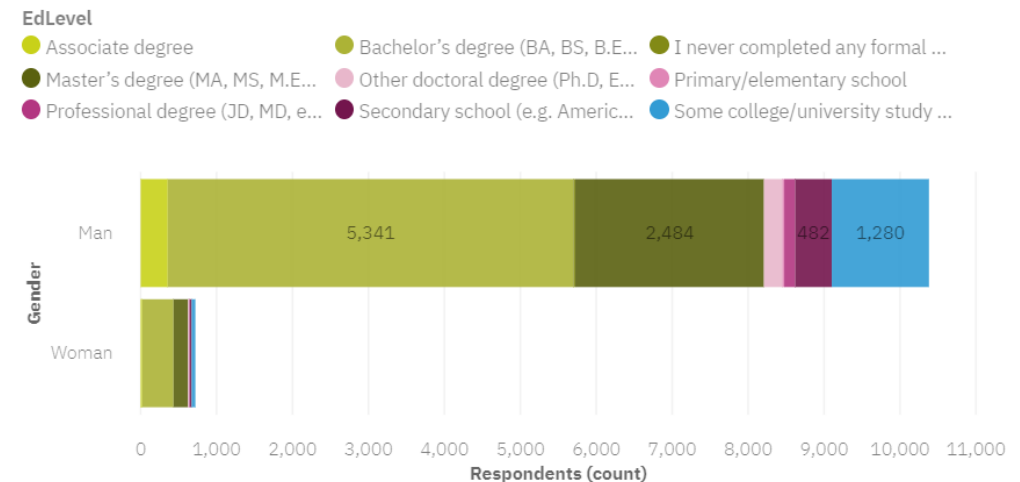
Respondent (Count) Based on Country



Respondent (Count) Based on Age



Respondent (Count) Based on Gender, Classified by Formal Education Level



PLATFORM TRENDS - FINDINGS & IMPLICATIONS

Findings



Linux continues to be the top platform for this year and next.



Docker, AWS and Android have gained slightly more interest for next year.



Interest in Windows has dropped slightly.



Interest in Slack has dropped significantly.

Implications

- Continue to employ a similar number of people skilled in Linux.
- Employ more people skilled in Docker, AWS and Android.
- Employ less people skilled in Windows.
- Employ less people skilled in Slack.

WEBFRAME TRENDS - FINDINGS & IMPLICATIONS

Findings



Interest in jQuery, Express and Angular/Angular.js has decreased for next year.



Interest in React.js and Vue.js has increased compared to the current year.



Interest in ASP.NET has stayed the same.

Implications

- Employ less jQuery, Express and Angular/Angular.js
- Employ more React.js and Vue.js
- Continue to employ a similar number of people skilled in ASP.NET.

DISCUSSION



OVERALL FINDINGS & IMPLICATIONS

Findings

- Programming Languages - TypeScript is gaining significant interest and Python continues to grow as well.
- Databases - Redis, Elasticsearch, PostgreSQL and MongoDB are gaining more interest.
- Platforms - Interest Slack is dropping significantly.
- WebFrames - Vue.js is gaining substantial interest and React.js continues to grow as well.

Implications

- Continue to staff enough JavaScript and HTML/CSS but employ more people skilled in TypeScript and Python.
- Employ more people skilled in Redis, Elasticsearch, PostgreSQL and MongoDB.
- Continue to staff enough Linux, employ more people skilled in Docker, AWS and Android, but make reductions to Slack and Windows.
- Continue to staff enough ASP.NET but employ more people skilled in Vue.js and React.js.

CONCLUSION

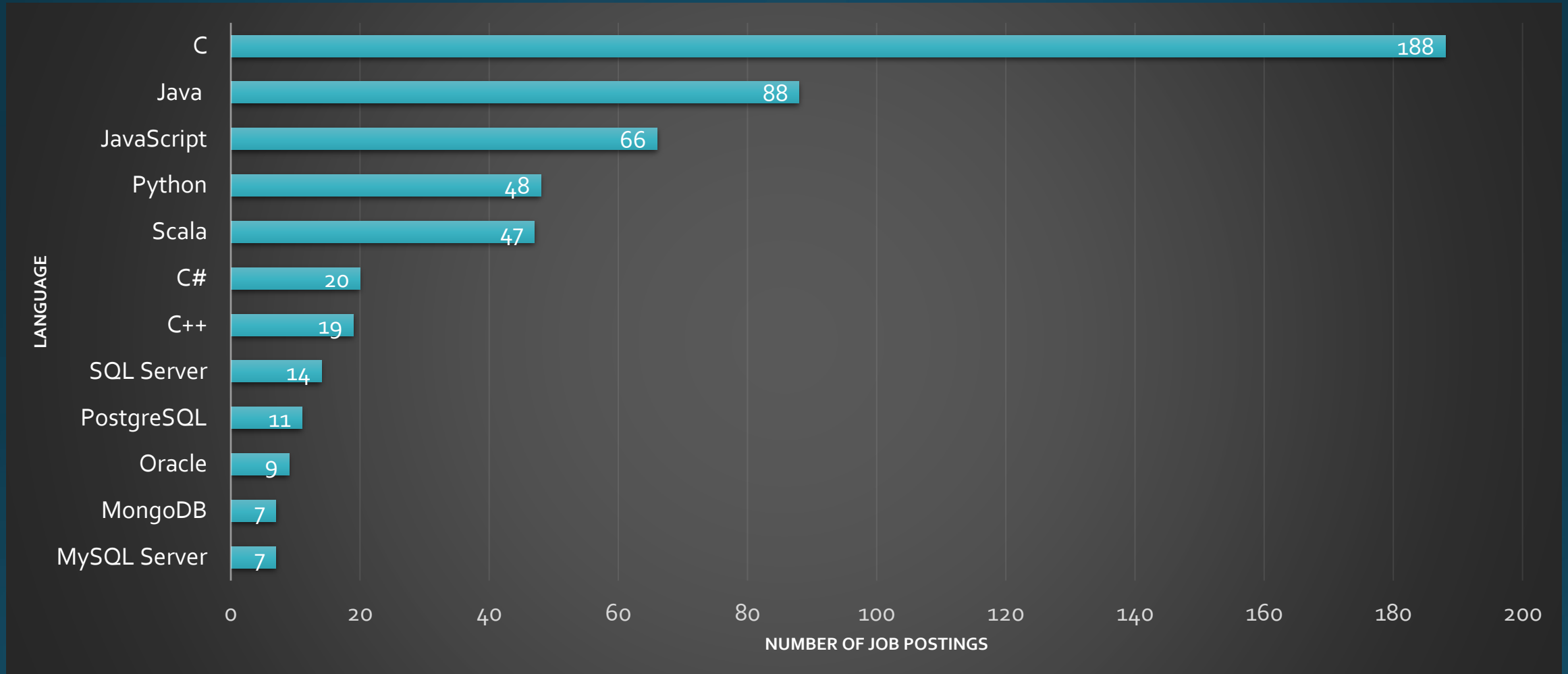


- Carve out budget in order to hire additional staff with skills needed to fill any gaps.
- Set aside budget or put a program in place to upskill those already employed.
- Make adjustments in staff for those skills no longer in demand.

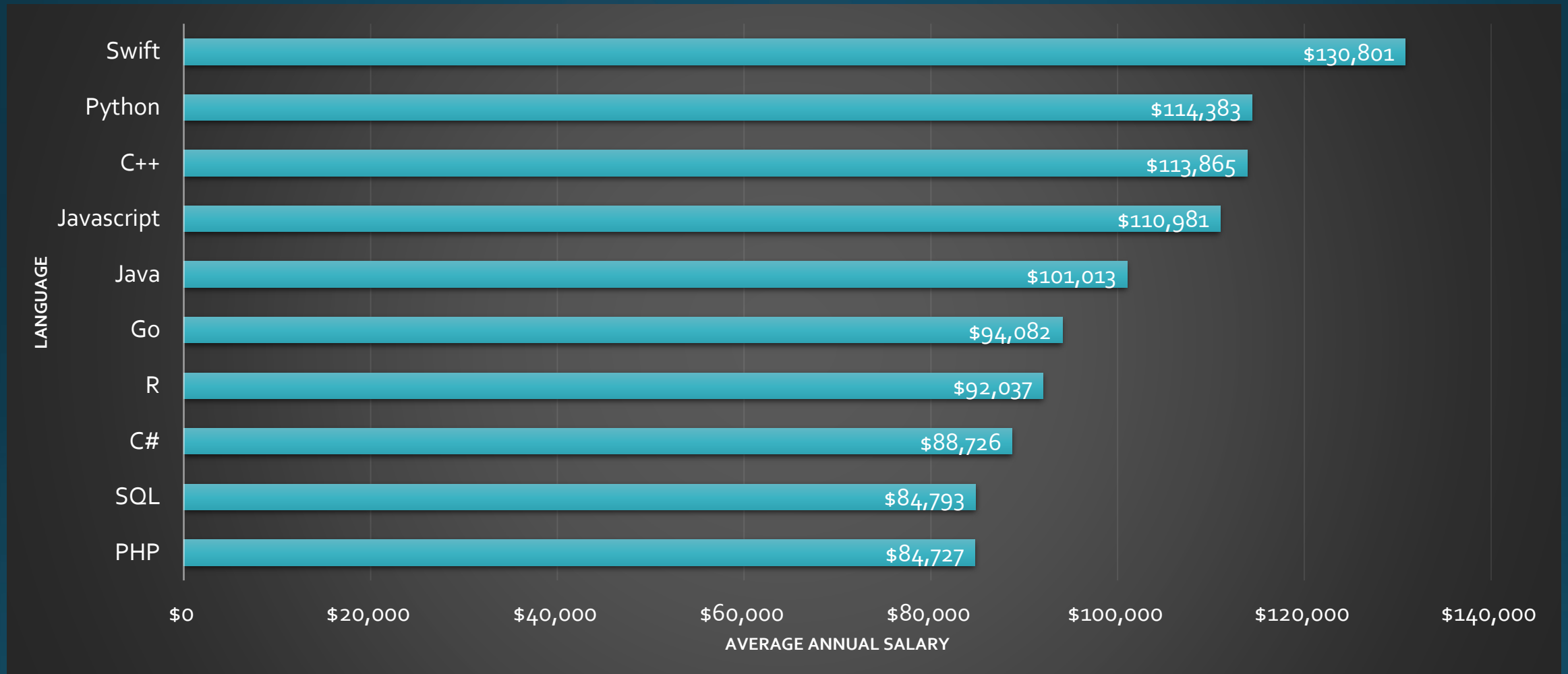
APPENDIX



GITHUB JOB POSTINGS BY LANGUAGE



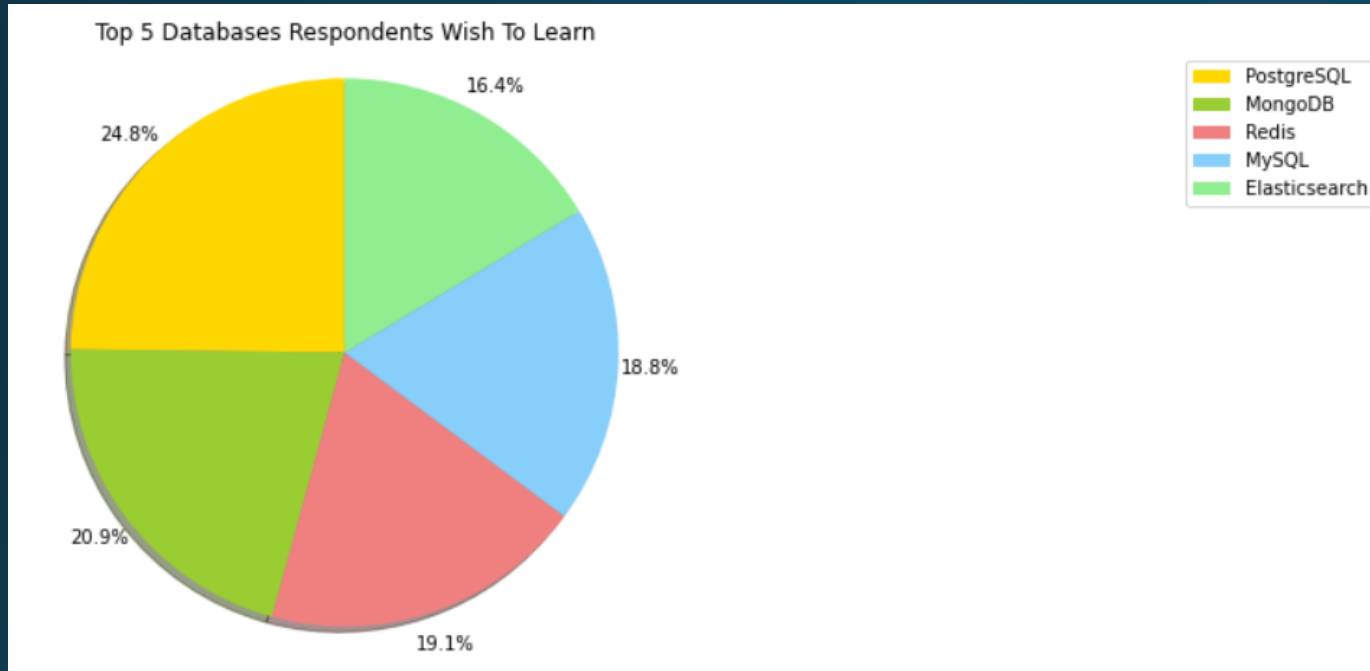
POPULAR LANGUAGES BY AVERAGE ANNUAL SALARY



RESOURCES

1. <https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey-results-are-in/>
2. [m5_survey_data_demographics.csv](#) and [m5_survey_data_technologies_normalised.csv](#)
3. <https://jobs.github.com/api>
4. [github-job-postings.xlsx](#)
5. https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/labs/datasets/Programming_Languages.html
6. [popular-languages.csv](#)

ADDITIONAL VISUALS



Box Plot of Age of Survey Respondents

