



Capstone Project – Tech Trend Analysis

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OUTLINE



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EXECUTIVE SUMMARY



- Javascript maintains its top position in both the surveys followed by rise of Python to second position as desired language . Go and Kotlin takes the bottom 2 position replacing PHP and C++ as desired languages.
- MySQL, PostgreSQL and MS SQL Server dominates the current top positions however the desired databases data show interest in PostgreSQL, MongoDB and Redis as highly desired.
- JQuery the most used webframe currently might observe big shift downwards with the increasing popularity of React.js, View.js and Angular being part of Javascript.
- The aggregated data says that out of 100% Respondents 93.5% were male and 6.5% Woman which explains there will be challenges in maintaining diversity in the development teams.

INTRODUCTION



- We have 2 datasets from Stack Overflow Developer Survey 2019 which I will use to visualize and analyse the current usage, future trends of technologies and demographics patterns using various types of charts.
- The Cognos Analytics Dashboard has 3 tabs - Current Technology Usage, Future Technology trend and Demographics.
 - Current Technology Trend tab shows the current usage of top 10 Languages, Databases, Platforms and Webframes used by respondents.
 - Future Technology trends tab visualizes the desired languages, databses, platforms and webframes.
 - Demographics tab has visuals of Gender, Countries, Age and Education level of the respondents.

METHODOLOGY



- I have used survey data **m5_survey_data_technologies_normalised.csv** dataset to compare the data of Technology trends. This dataset contains the number of Respondents, LanguagesWorkedwith, LanguagesDesiredNextyear, DatabaseWorkedwith, DatabaseDesiredNextYear, PlatformWorkedWith, PlatformDesiredNextYear, WebframeWorkedWith, WebFrameDesiredNextYear.
- To analyze the demographics of the respondents I have used another dataset **m5_survey_data_demographics.csv**. It contains details like Age, Gender, Country and EducationLevel.
- There are more tables which can be used but as per to the project requirement I have limited my dashboards to only needed chats and visualizations.
- The data is clean and ready for the use.

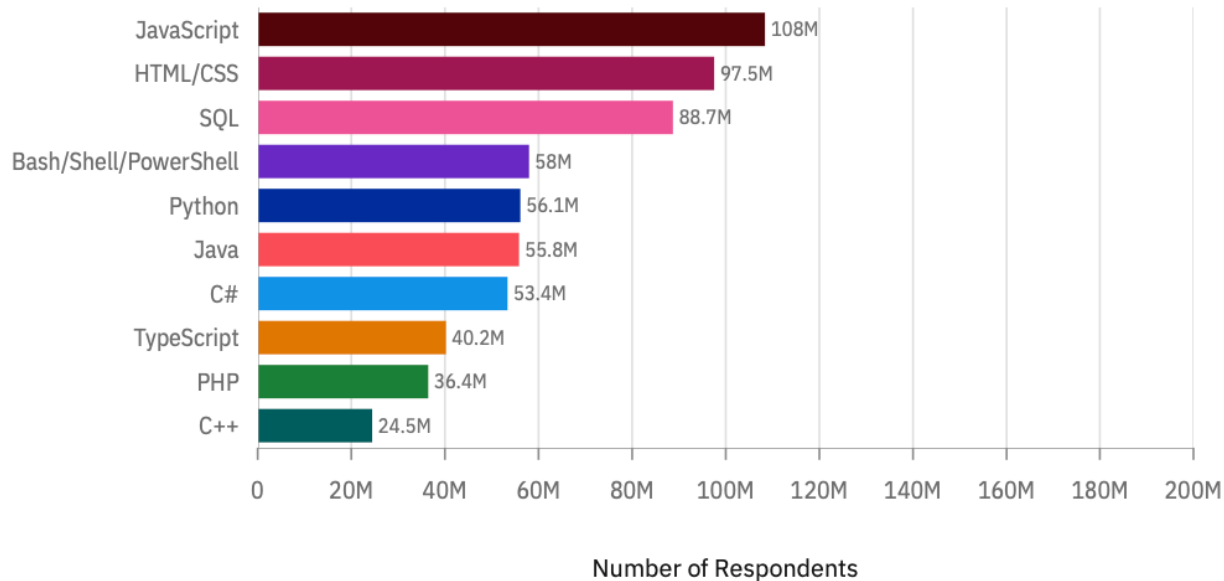
RESULTS

- Top 10 Languages – To compare the top 10 Languages currently used and desired I have used Bar Graph using count of respondents and name of the languages with different colors assigned to each language.
- Top 10 Databases - To compare the top 10 Databases used and desired I have used Column Bar chart with Number of respondents on Y axis and Name of the language on X Axis, bars are colored as per to the language.
- To depict and show relationships between webframes and respondents I have used Word Map and Tree Map with addition of marker size as a dimension to allow for the size comparison.
- To depict the demographics, I have used Pie chart for Gender distribution, Map chart for location of respondents, Line chart for age groups and stack bar chart to see the distribution of education levels in Men and woman.

PROGRAMMING LANGUAGE TRENDS

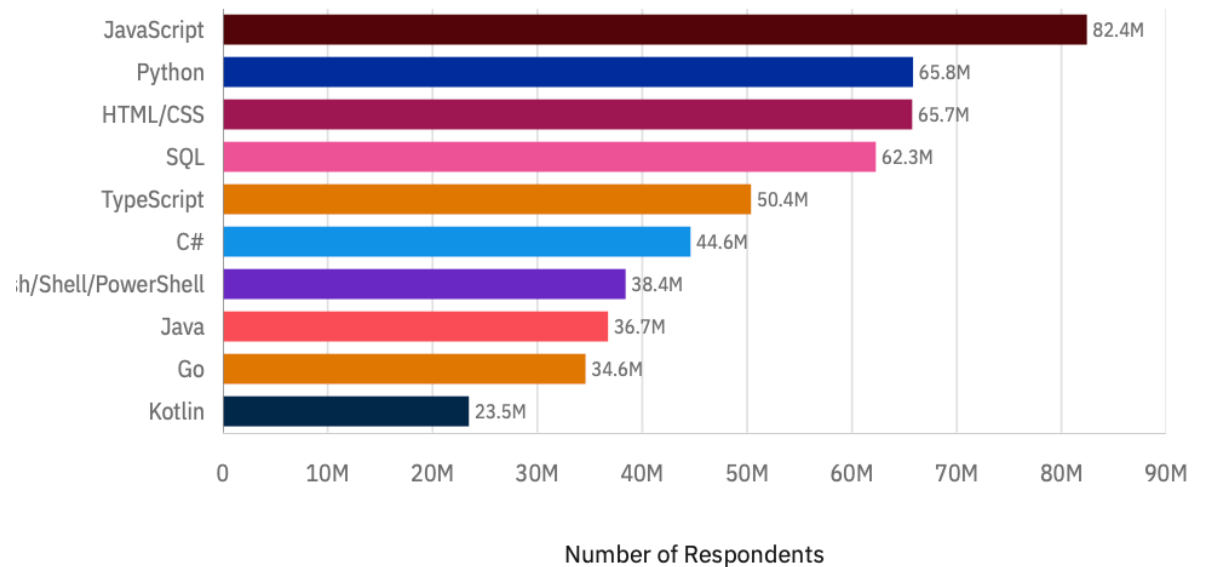
Current Year

Top 10 Languages Respondents Worked With



Next Year

10 Languages Desired next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Javascript maintains the top position in both current usage and desired language.
- Python which in current usage is on the 5th position is the second most desired language as observed in the Next Year chart.
- PHP and C++ are the least used languages and are being replaced by Kotlin and Go as desired languages.

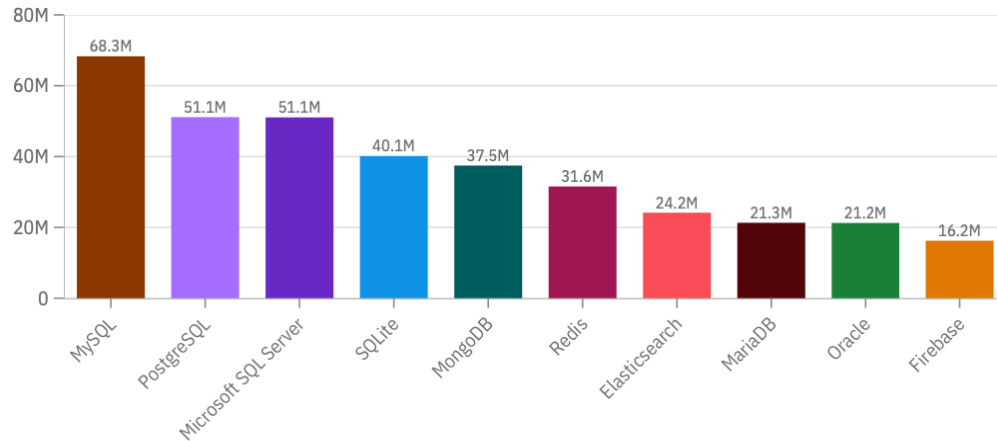
Implications

- Projects based on Javascript will continue growing next year. There will be a strong demand of Developers who are proficient in Javascript which can lead to higher salary demands.
- Python's simple programming syntax makes it one of the strongly desired languages, we can expect surge projects which have Python in their stack and larger pool of people with such skills.
- With the decline in PHP and C++ we can expect difficulty in finding people interested in work on such projects using these languages.

DATABASE TRENDS

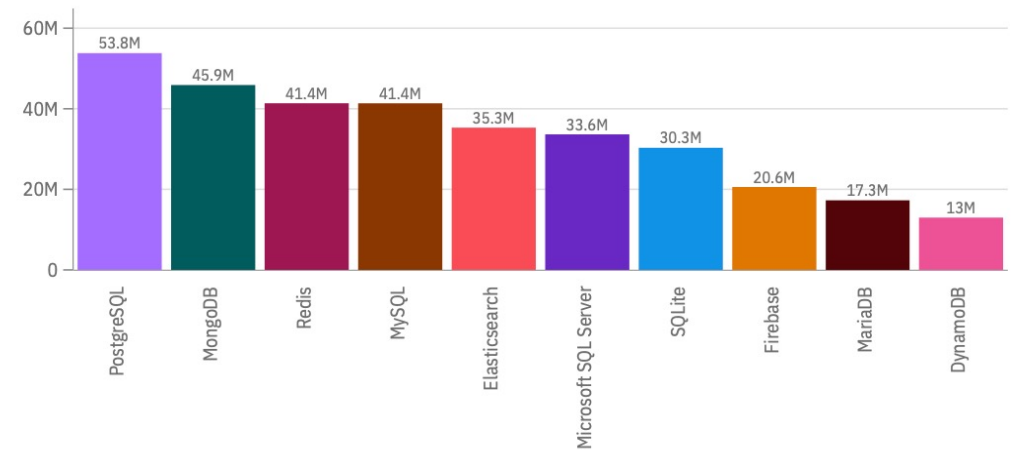
Current Year

Top 10 Database Respondents Worked With



Next Year

Top 10 Databases desired next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is the most used database currently however it slips to the 4th position in the desired database chart.
- PostgreSQL is the 2nd most used language and is the most desired database.
- Following Postgres, MongoDB and Redis replaces the 2nd and third spot

Implications

- MySQL slipping from 1st to 4th position is alarming as it shows that respondents are losing interest in the database which can impact hiring.
- PostgreSQL is rising desire implies that more and more companies are using it and there are better tools and technologies available for integration with this database.
- Similar is the case with MongoDB and Redis. As more and more integration is available, the cost of the database will also fall making them more accessible for the smaller companies.

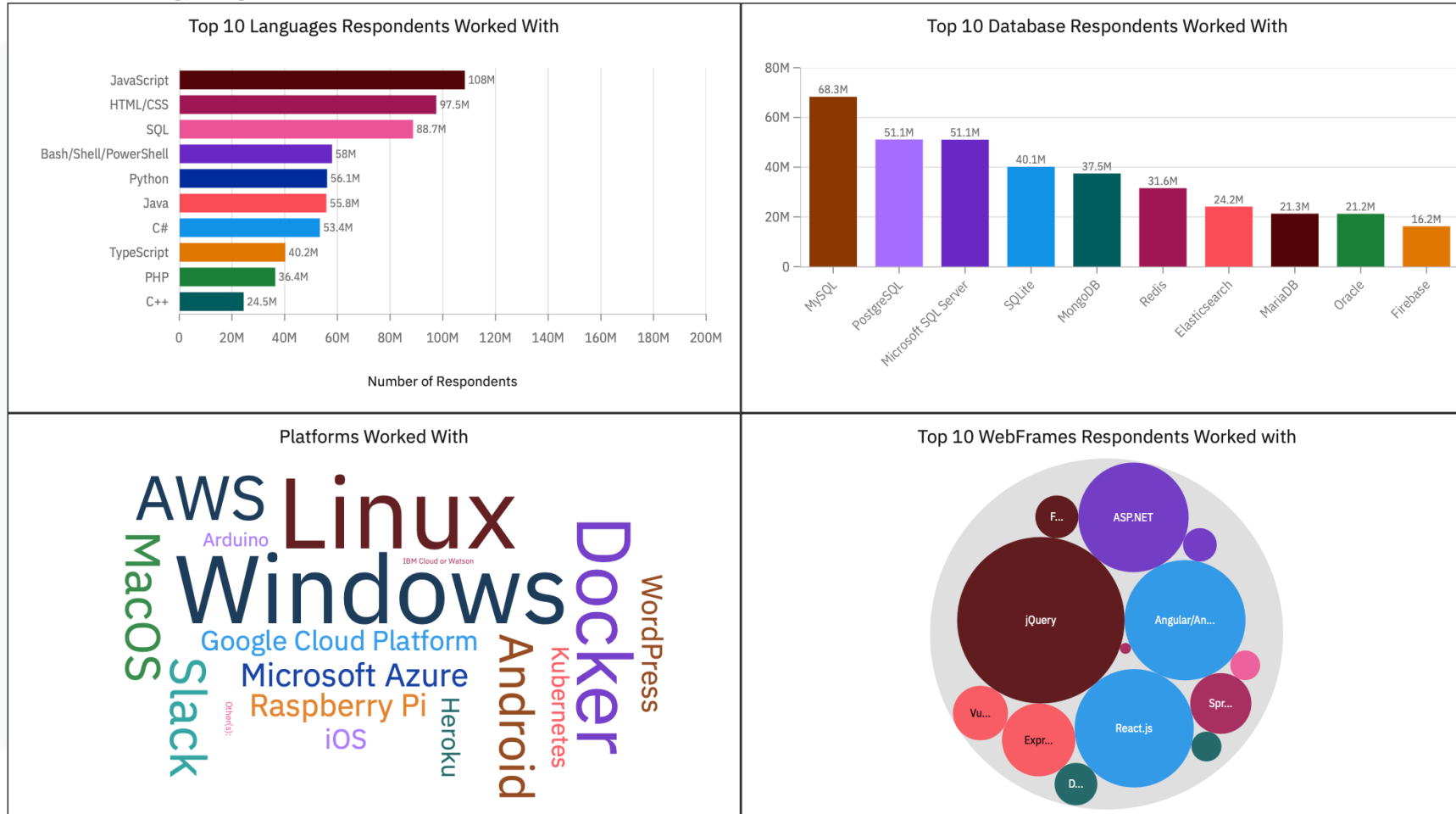
DASHBOARD



https://github.com/CharanjeetI2D/IBM_Capstone_Project/blob/main/IBMDashboardAssignment.pdf

DASHBOARD TAB 1

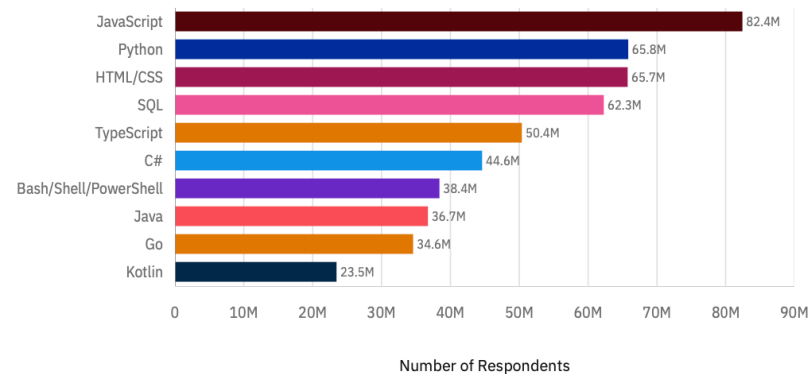
Current Technology Usage



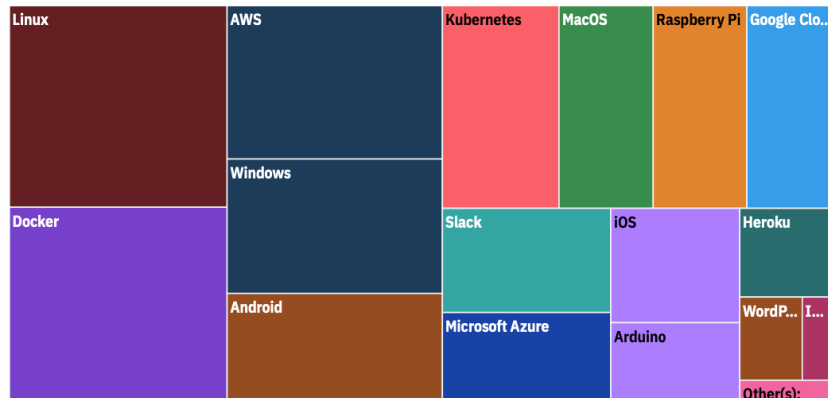
DASHBOARD TAB 2

Future Technology Trend

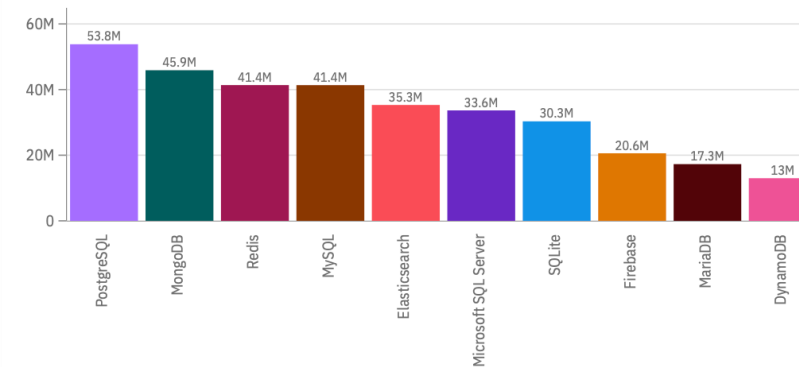
Top 10 Languages Desired next Year



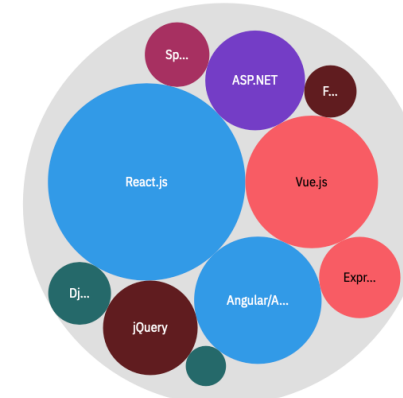
Platform Desired Next Year



Top 10 Databases desired next Year



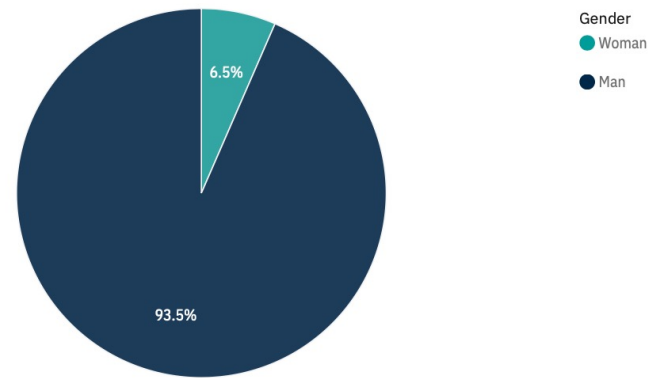
Top 10 WebFrame Desired Next Year



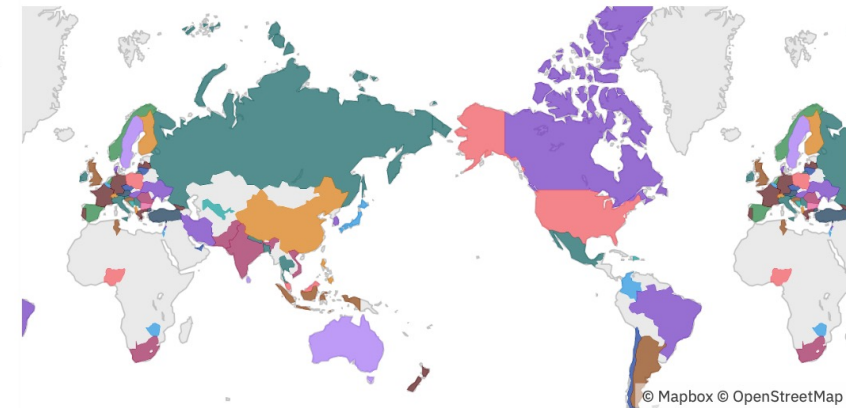
DASHBOARD TAB 3

Demographics

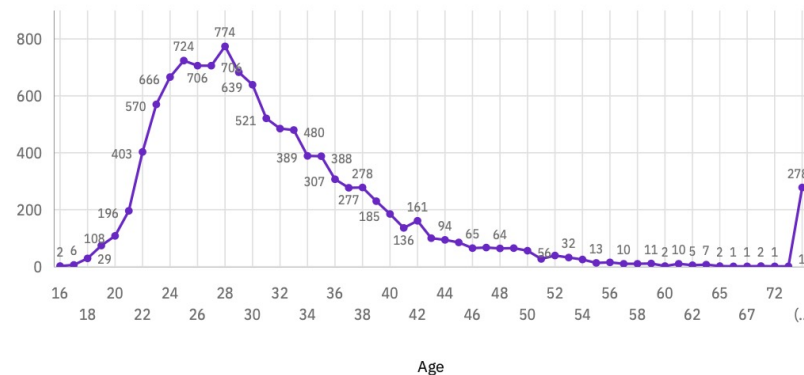
Respondents Classified by Gender



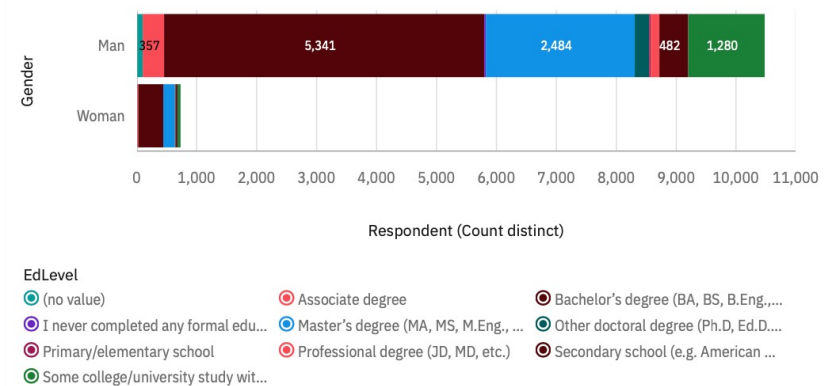
Respondents Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



DISCUSSION



- Python will see a strong rise as it has one of the highest jump from 56M to 65M respondents interested in it.
- PostgreSQL, MongoDB and Redis databases will become more accessible with reducing cost and increasing Integrations with other technologies and cloud.
- Webframes like React.js, Vue.js and angular are on the rise along with continued support to Javascript.
- There is a big difference in Men and Women respondents as per to the gender distribution pie chart.

OVERALL FINDINGS & IMPLICATIONS

Findings

- Programming languages like Javascript, Python, HTML/CSS and SQL will continue to dominate the market with new features and updates, while languages like C++ and PHP continues to decline.
- With more affordability and integrations PostgreSQL, MongoDB and Redis can see a sharp increase in usage.
- With just 6% of women in respondents its safe to assume that there is a big difference between availability of Men and Women developers in the market.

Implications

- With JavaScript and Python rising there will be a larger talent pool available making it easier for companies to hire developers.
- Companies can move from one database based on the new features, cost, integration and efficiency of Databases.
- It will be difficult to maintain diversity in the teams in the current situation as there is a large difference in women and men developer as per to the survey.

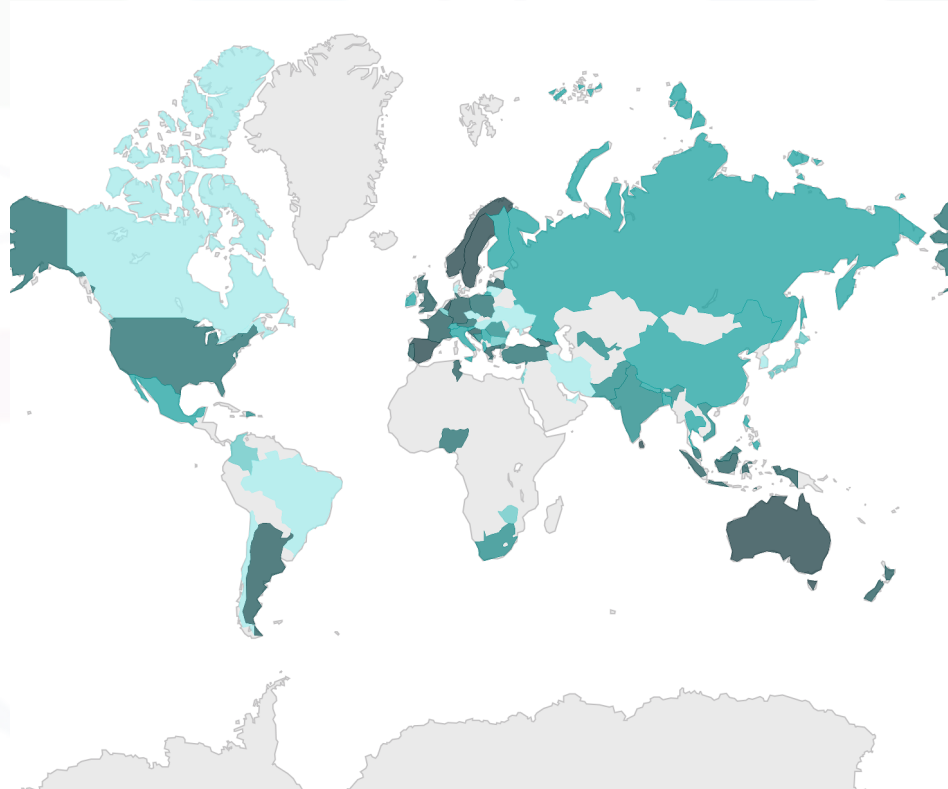
CONCLUSION



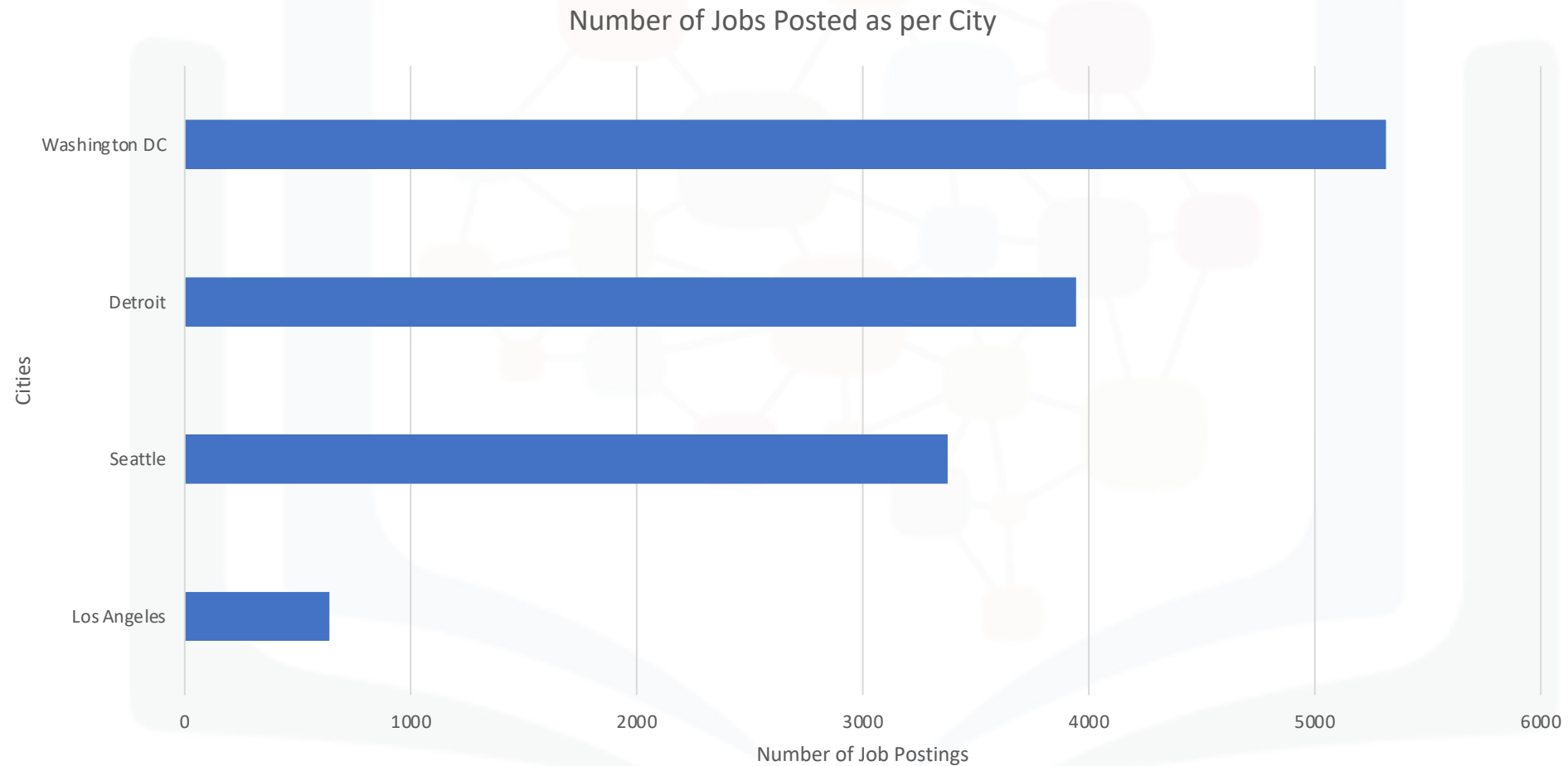
- Continue to expand teams on the Javascript projects and find more opportunities where Javascript can be leveraged along with the webframes like React, Vue and Angular.
- Explore new databases as they become more cost effective and efficient with new technological advancements.
- Due to less Women developers in the job market, avoid stricter criterias during evaluation and provide trainings for growth.

APPENDIX

- Respondents as per to the country



JOB POSTINGS



POPULAR LANGUAGES

