edX IBM: Data Analytics & Visualization Capstone Project

Stack Overflow Developers' Choice Analysis in 2019

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July 30th, 2024

IBM Developer

SKILLS NETWORK

OUTLINE

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- Results
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- Discussion
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EXECUTIVE SUMMARY

- This report provides an analysis of technology usage trends from various demographics derived from Stack Overflow Developers' Survey in 2019.
- During the analysis, IBM Cognos Analytics is being used.
- Current Technologies Dashboard Overview
  - JavaScript was the most popular language while MySQL was the most popular database
  - Linux and Windows were the preferred platforms to work with and jQuery being the preferred web frame
- Future Technology Overview
  - JavaScript was still the most desired language while PostgreSQL was the most popular database to learn
  - Linux was the preferred platforms to work with React.js being the preferred web frame
- Demographics Overview
  - >90% of respondents were males residing in USA and India aged 21 to 43 years old
  - Majority of the developers had a master's and or Bachelor's degree

INTRODUCTION

- The analysis aims to explore current technology usage patterns, anticipate future trends, and understand the demographic composition of survey respondents.
- Stack Overflow's 2019 Annual Developer Survey, with nearly 90,000 developers participating, serves as a key resource.
- The study examines popular programming languages, databases, platforms, frameworks, and demographic distributions based on gender, country, age, and education level, as gathered in the 2019 survey.

METHODOLOGY

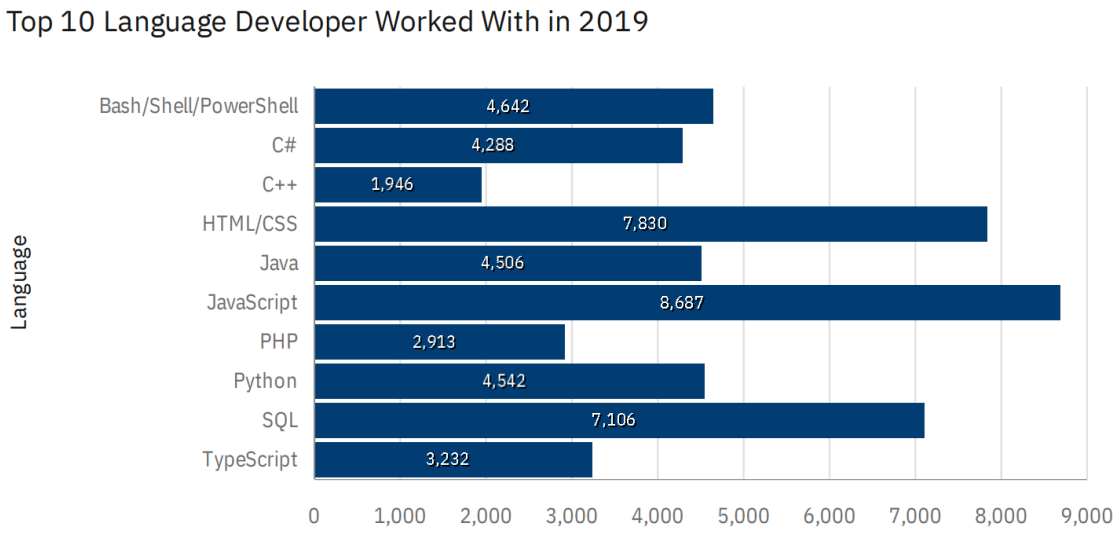
- Collect survey data and explore its content
  - Web scraping
  - APIs
  - Request Library
- Data Wrangling
- Exploratory Data Analysis
  - Analyzing data distribution
  - Handling Outliers
  - Correlations
- Data Visualization
  - Highlight distribution of data relationships the composition and comparison of data
- Dashboard using IBM Cognos Analytics

RESULTS

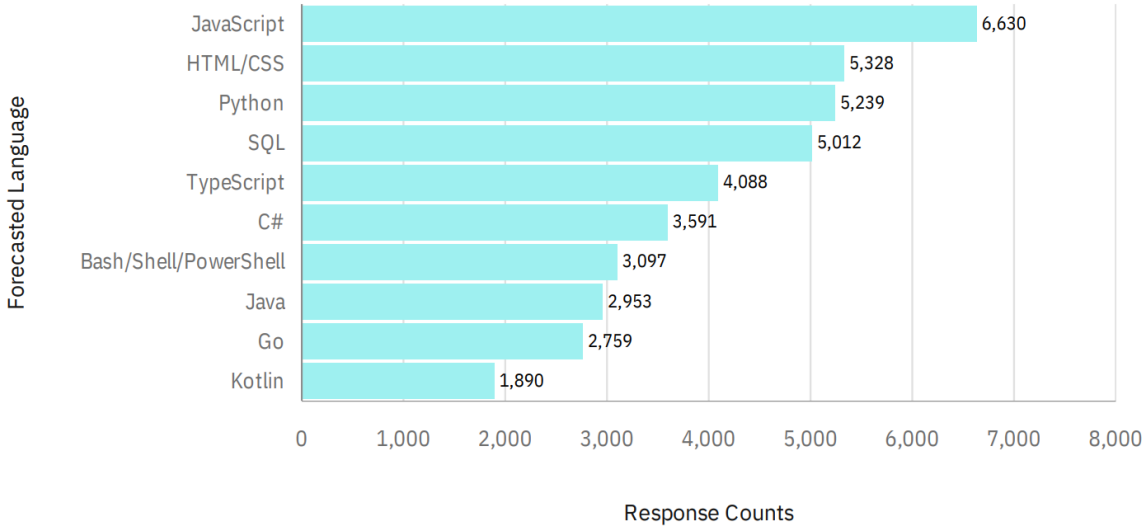
- JavaScript, HTML/CSS, and SQL are the most commonly used programming languages, comprising 47.5% of total usage.
- MySQL is the dominant database, with a usage rate of 18.7%.
- Linux and Windows are the primary platforms used, accounting for 29% of total usage.
- React.js is the most used web framework, with a usage rate exceeding 20%.
- In future trends, JavaScript remains the most desired language, while PostgreSQL is the top desired database.
- The gender distribution skews towards men, with a significant portion of respondents holding Bachelor's or Master's degrees.

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

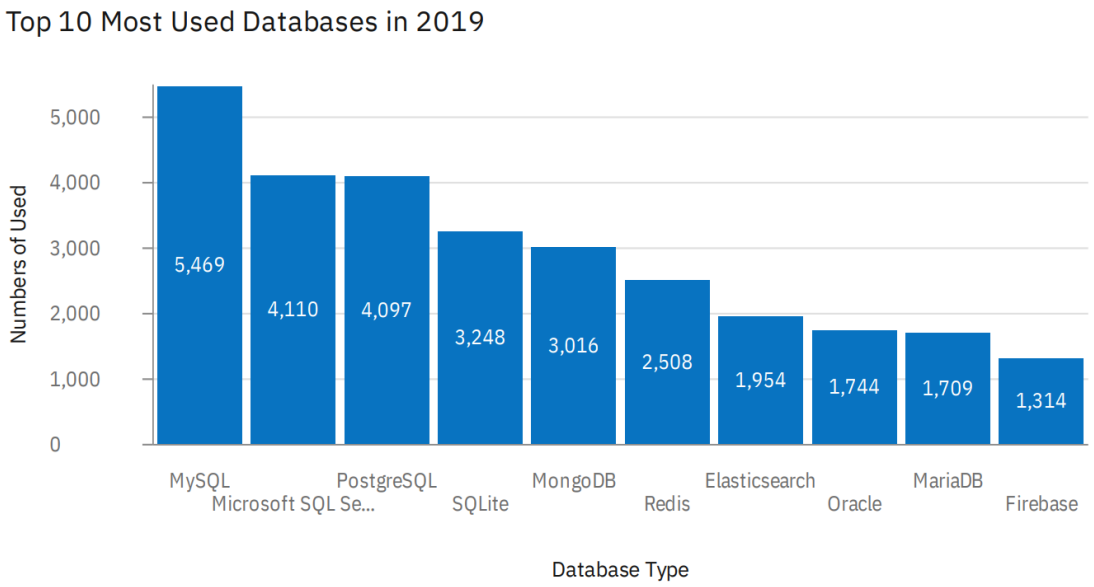
- JavaScript and HTML/CSS were the most preferred languages followed by SQL, PowerShell, and Python
- Python kept gain popularity in the 2019-2020
- There will likely be a shift in the language trend

Implications

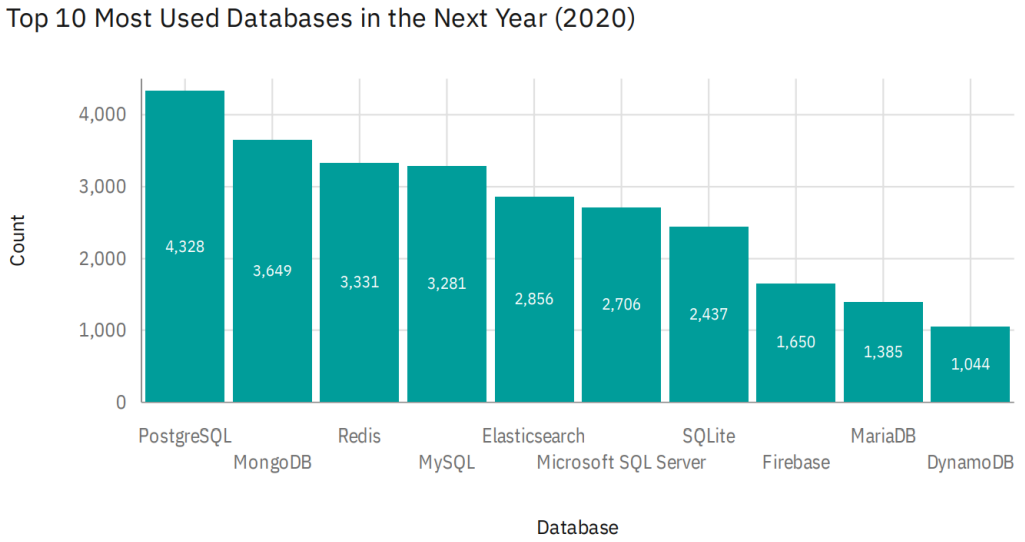
- There will be a higher demand for Python and SQL developers
- Even so, JavaScript and HTML/CSS are still considered one of the most used language

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL was the most used database back in the 2019
- There is a shift in 1st preference from MySQL to PostgreSQL
- Redis and MongoDB also become more preferred than MySQL

Implications

- PostgreSQL and MongoDB seemed to be implemented in many companies leading to its popularity
- MySQL seemed to be outdated and there will be a need on learning using other databases

DASHBOARD

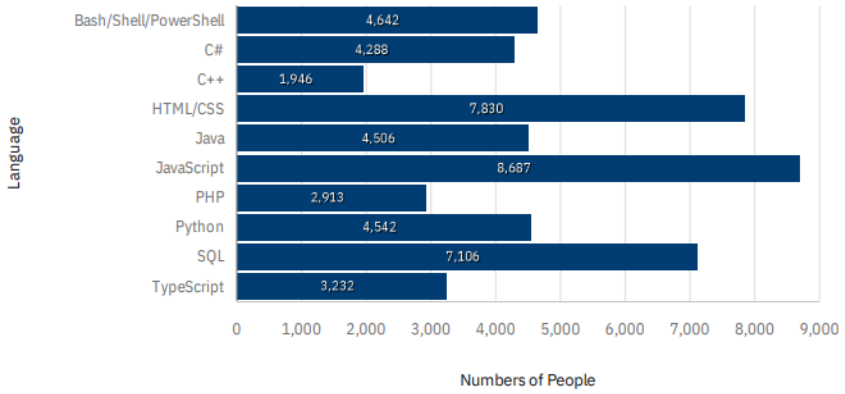
https://github.com/rcnayu/ibm-dataanalytics/blob/main/Developers'%20Choice%20Dashboard%20in%202019.pdf

https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FCustomer%2BLoyalty%2BProgram%2BDashboard&action=view&mode=dashboard

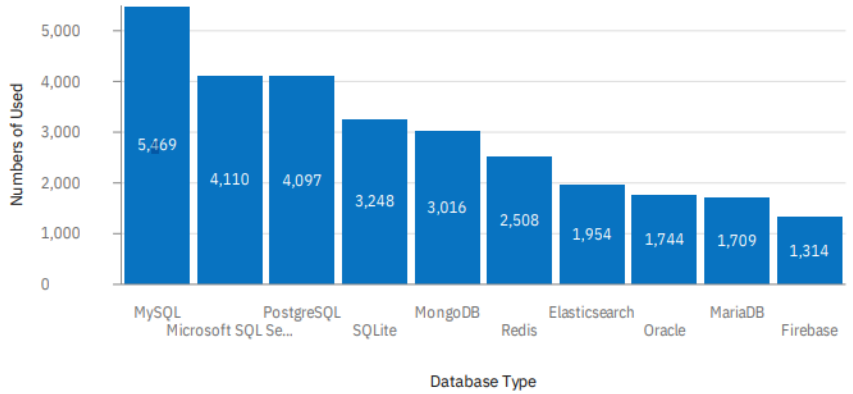
DASHBOARD TAB 1 – Current Technologies Usage

Current Technology Usage

Top 10 Language Developer Worked With in 2019

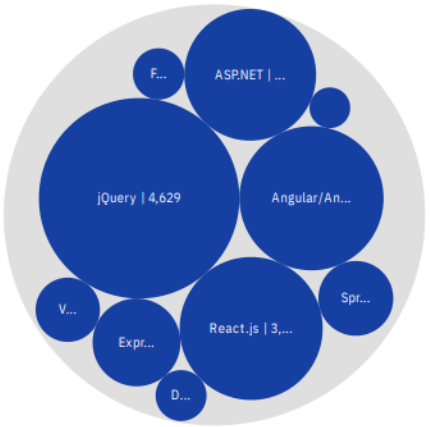


Top 10 Most Used Databases in 2019



Developer's Most Favorite Platform in 2019

Top 10 Web Frames Used Within 2019



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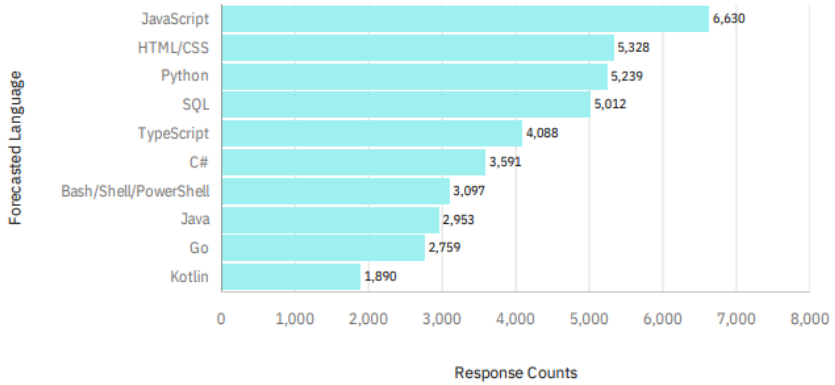
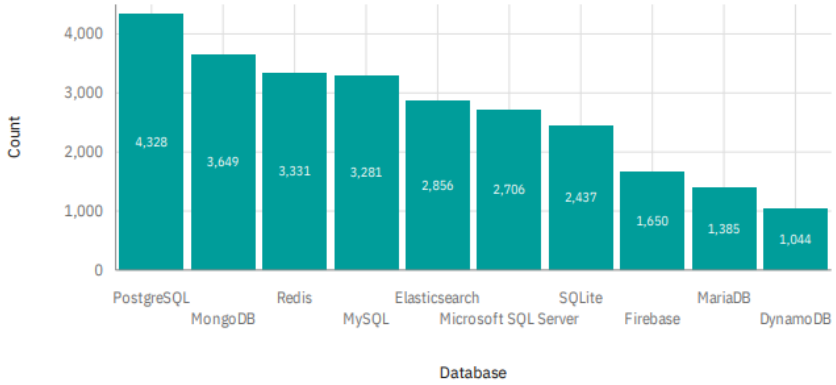
DASHBOARD TAB 2 – Future Technologies Trends

Future Technology Trend

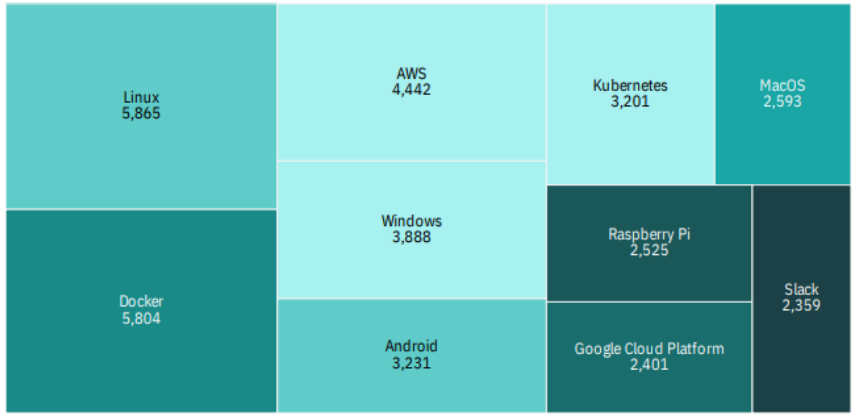
Top 10 Desired Languages in the Future (2020)



Top 10 Most Used Databases in the Next Year (2020)



Top Favorite Platform Next Year (2020)

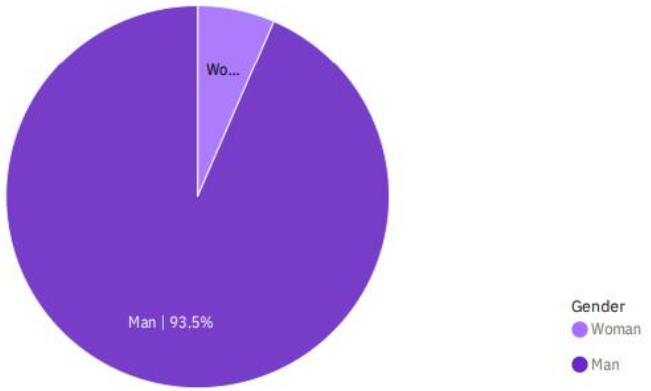


Top 10 Favorite Web Frames Next Year (2020)

DASHBOARD TAB 3 - Demographics

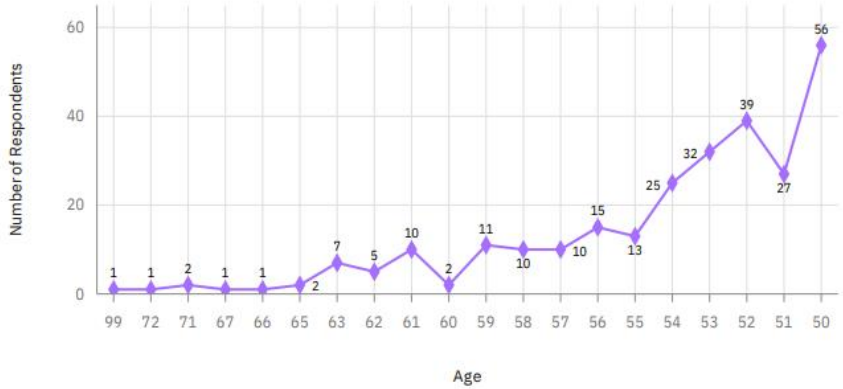
Demographics

Respondents Gender Proportion

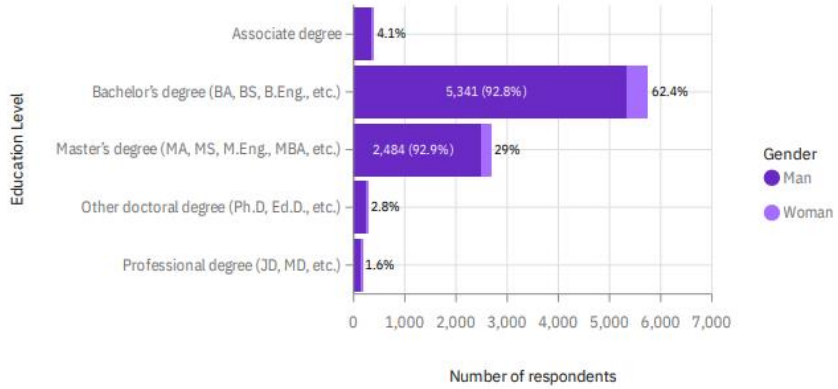


Respondents' Countries

Respondents' Age Count



Respondents' Education Level Divided By Gender



DISCUSSION

- Languages:
  - Will SQL and Python usage trends' replaceable with others as the time flies?
- Databases:
  - Will MongoDB and PostgreSQL replace MySQL as the preferred database to work with?
  - Why is the MySQL's popularity declining drastically?

OVERALL FINDINGS & IMPLICATIONS

Findings

- The technologies are mainly used by individuals from the USA and India, predominantly aged between 21 and 43.
- Students specializing in data technology, especially those with Bachelor's or Master's degrees, show a strong preference for these technologies.

Implications

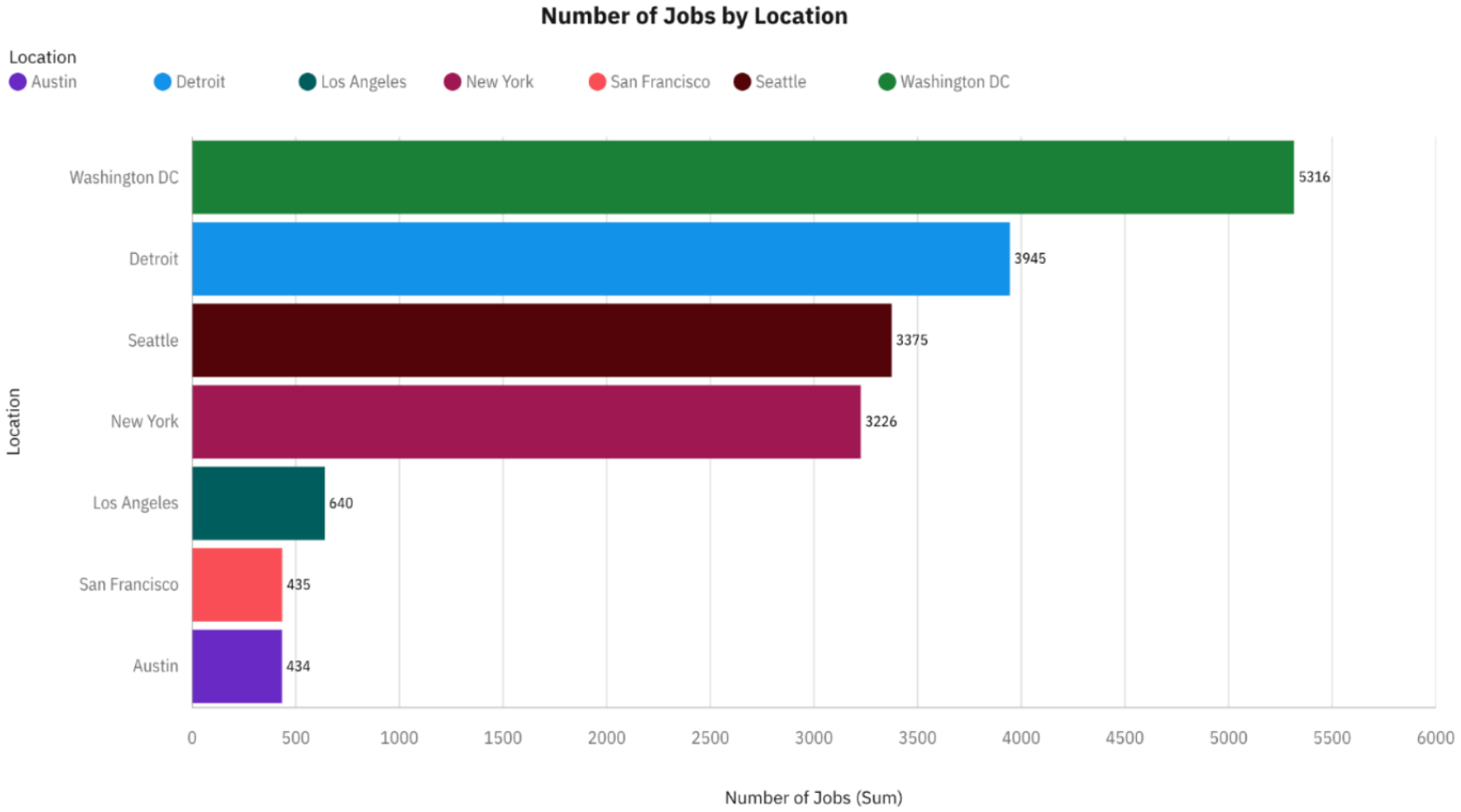
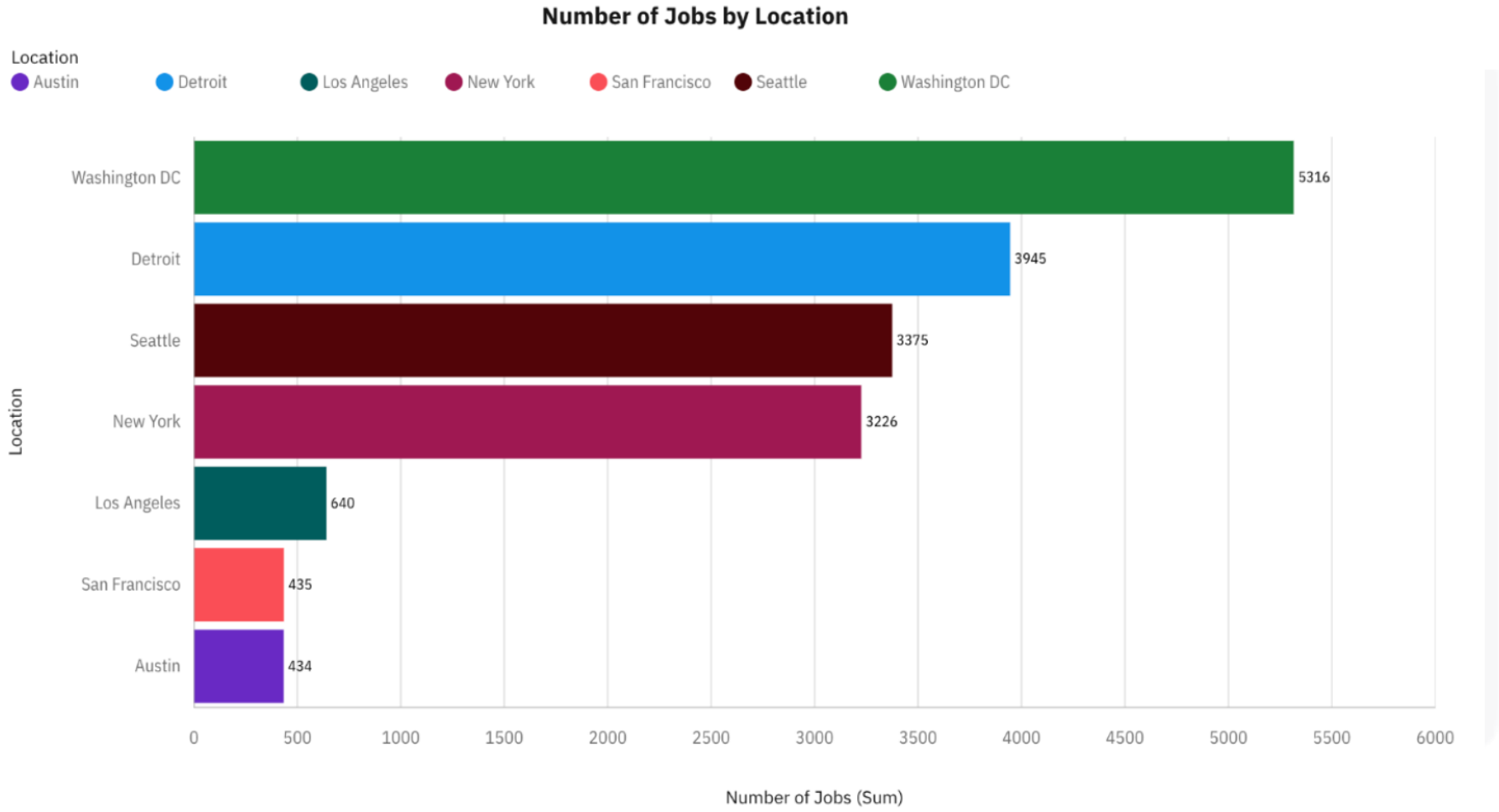
- The demand for skills sets necessitates more specialized bootcamps and courses.
- Companies may increasingly adopt JavaScript and PostgreSQL
- Other countries may follow the USA and India in adopting these technologies
- There is a need for programs encouraging more women to pursue careers in technology to balance the gender disparity.

CONCLUSION

- The analysis aimed to identify current and future technology trends, considering respondent demographics.
- Technology trends are mainly favored by individuals aged 21 to 43.
- HTML and JavaScript are the most popular programming languages and will remain so in the future. MySQL's popularity may decrease, with PostgreSQL, MongoDB, and Redis becoming more favored.
- There is an increasing global adoption of these technologies, especially in multinational corporations.
- The gender distribution is skewed towards men, with many respondents holding Bachelor's or Master's degrees.
- These findings imply a need for more specialized educational programs, industry adoption of trending technologies, global diversification, gender diversity initiatives, and updates to academic curricula.

APPENDIX

Appendix A - JOB POSTINGS



Appendix B - POPULAR LANGUAGES