

Sept 30, 2024



STACK OVERFLOW DEVELOPER SURVEY 2019

OUTLINE

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EXECUTIVE SUMMARY

- **Project Purpose:** Analyze the 2019 Stack Overflow Developer Survey to uncover trends in technology usage and demographics among developers.
- **Datasets Used:** Modified subsets from the 2019 survey, focusing on demographics and technology preferences.
- **Methodology:** Created three dashboards in Cognos Analytics to visualize current technology usage, future trends, and demographic insights.
- **Key Findings:** Identified top programming languages, databases, and frameworks in use and forecasted upcoming technology trends.
- **Stakeholder Implications:** Insights are valuable for developers, employers, educators, and policymakers in navigating the tech landscape.

INTRODUCTION

- The 2019 Stack Overflow Developer Survey is the largest and most comprehensive survey of developers worldwide, with nearly 90,000 participants.
- This analysis aims to explore the data collected to uncover key insights into current technology usage, anticipated future technologies, and demographic characteristics of the developer community.
- By focusing on these areas, the findings will help identify trends and provide valuable information for various stakeholders in the tech industry.

METHODOLOGY

- **Data Source:** The analysis utilized a modified subset of the 2019 Stack Overflow Developer Survey. [Link to the full dataset.](#)
- **Data Analysis and Visualization:** The data analysis and visualizations were conducted using various Python libraries, alongside IBM Cognos Analytics for creating interactive dashboards.

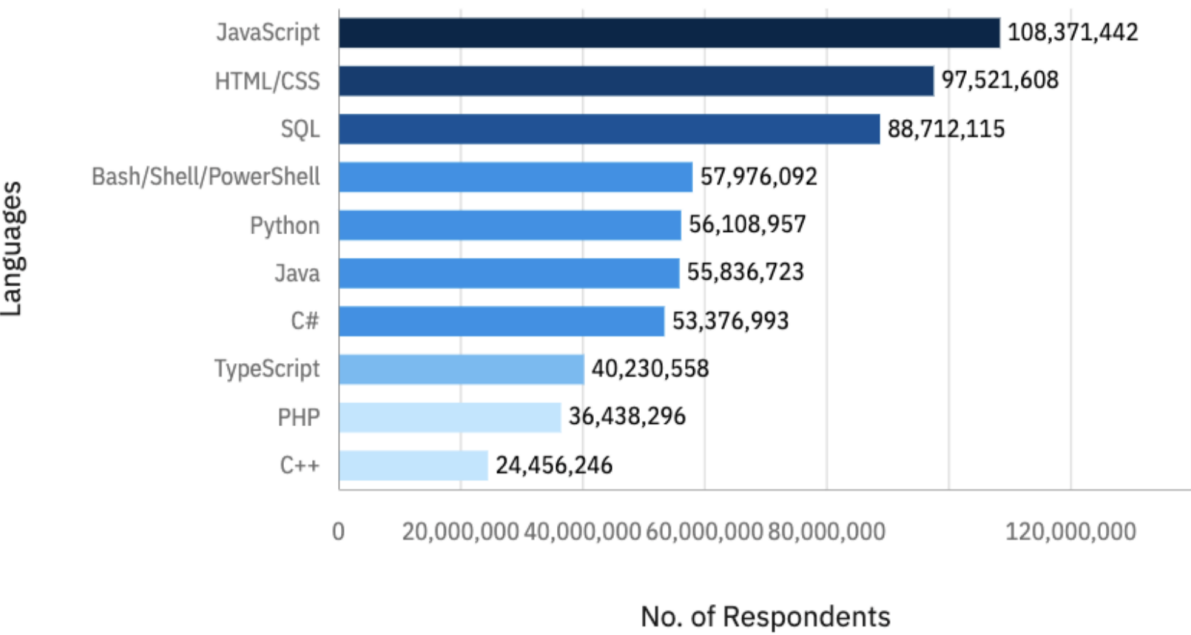
RESULTS

- **Popular Languages:** JavaScript and HTML were identified as the most widely used programming languages among developers, with a strong outlook for future usage.
- **Database Preferences:** SQL relational databases remain the preferred choice, while NoSQL databases, such as MongoDB and Elasticsearch, are rapidly gaining traction.
- **Demographic Insights:** The survey revealed that the majority of developers are middle-aged men from the United States, highlighting demographic trends within the industry.
- **Web Development Demand:** The findings indicate that web developers are among the most sought-after professionals in the tech field, driven by the ongoing demand for web applications.
- **Future Skills:** The results suggest that data professionals should focus on acquiring skills in both SQL and NoSQL databases to remain competitive in a changing job market.
- **Trends in Gender and Diversity:** The analysis points to a potential decrease in the gender and country gap as technology becomes more mainstream, emphasizing the need for continued efforts toward equal opportunity.

PROGRAMMING LANGUAGE TRENDS

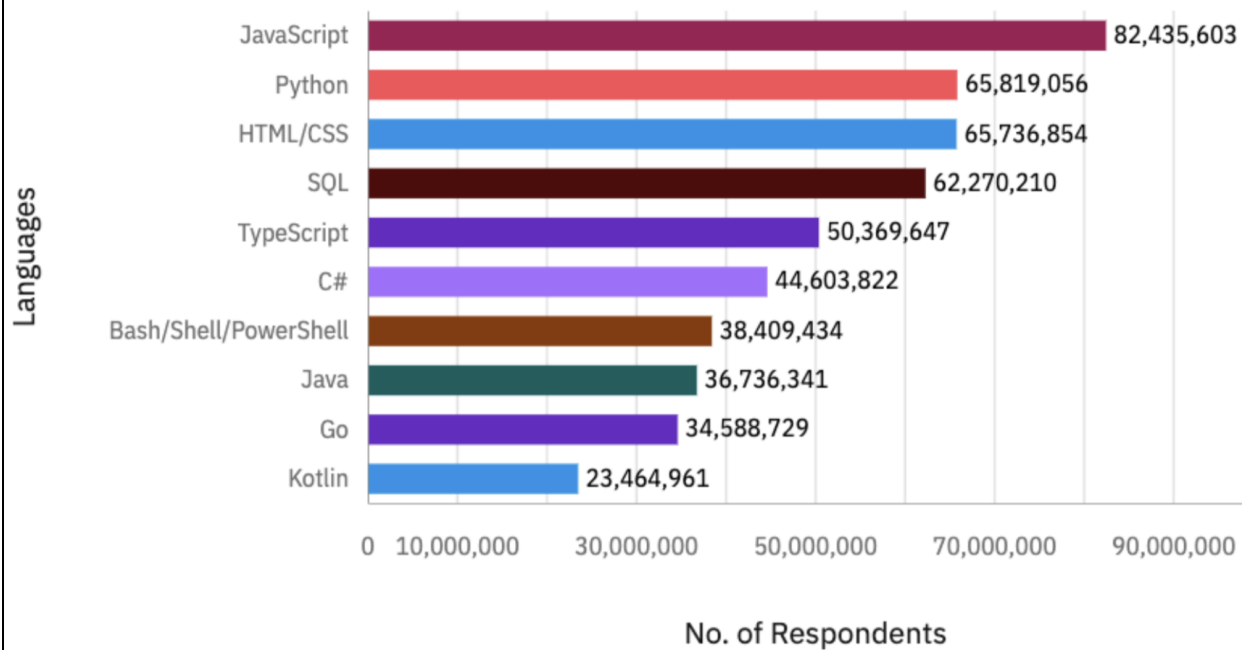
Current Year

Top 10 Programming Languages Used



Next Year

Top 10 Programming Languages Desired Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

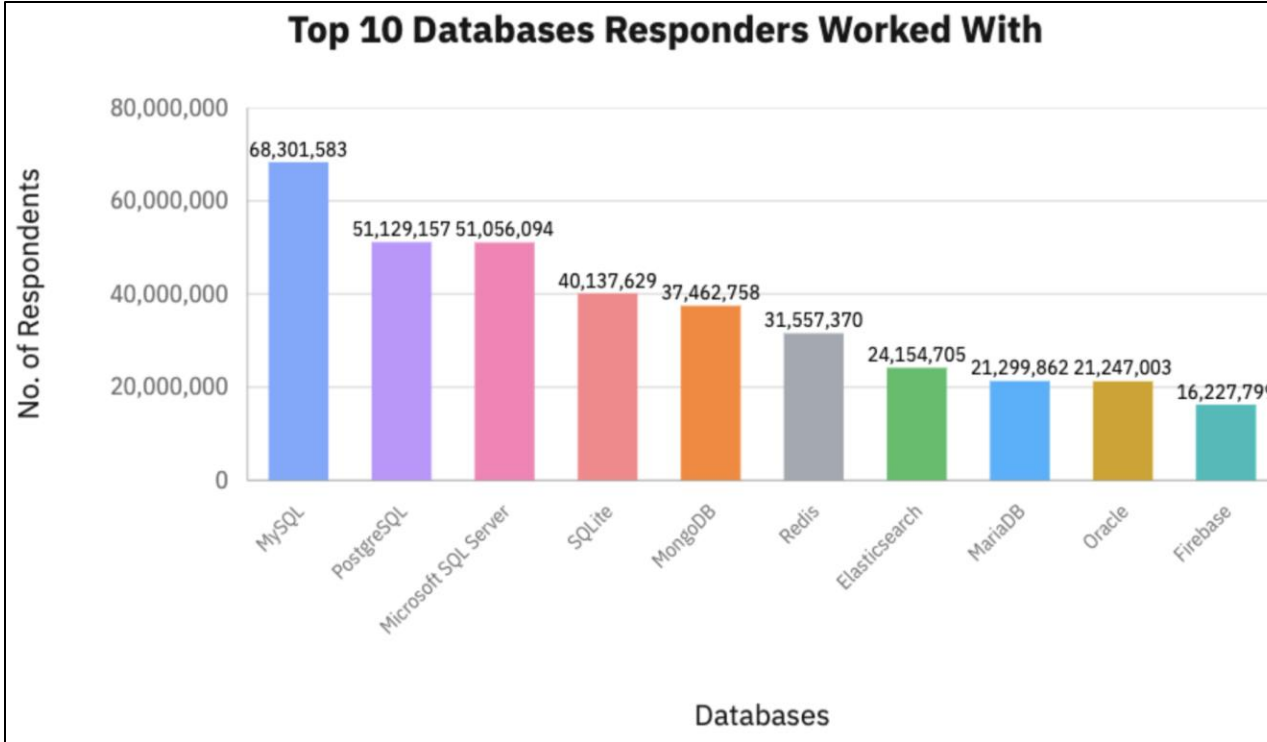
- JavaScript and HTML/CSS are the most popular programming Languages and are likely to stay that way.
- SQL is a very prominent language and will remain so.
- Python and TypeScript are trending upwards whereas Bash is losing popularity.

Implications

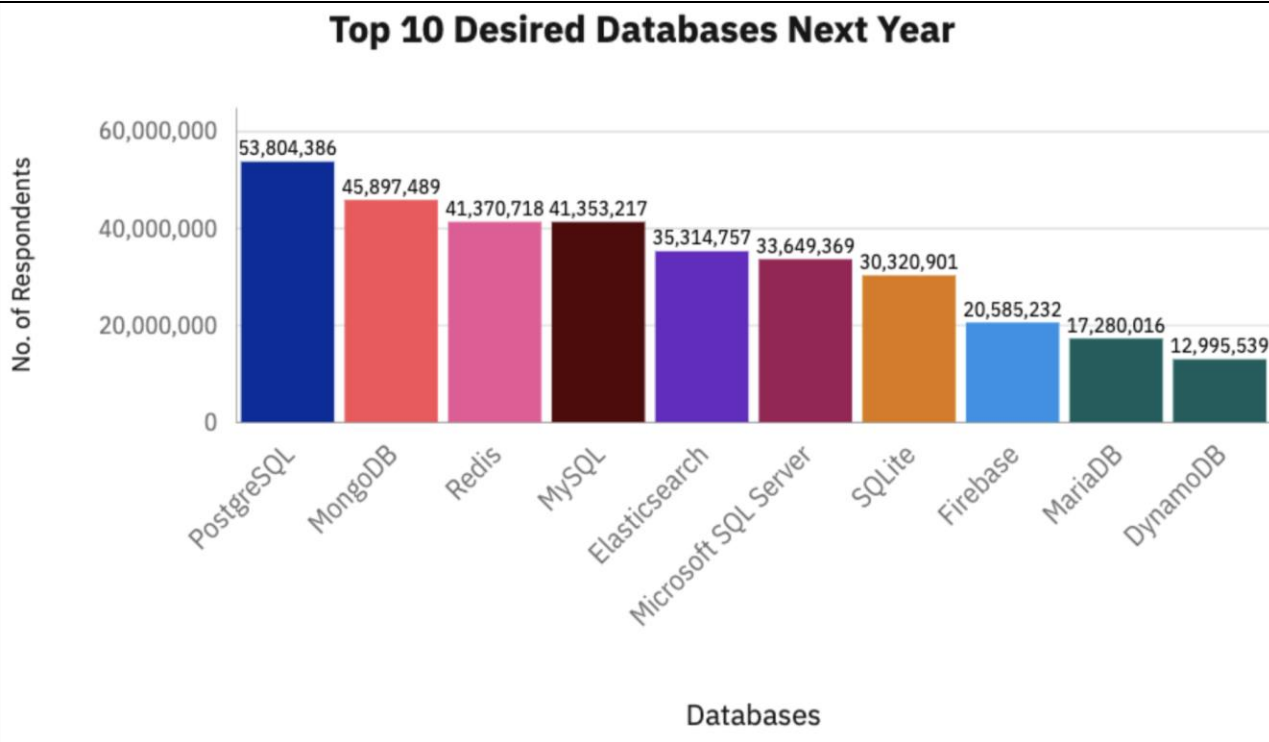
- Web development is experiencing high demand, with JavaScript and HTML leading the field.
- SQL remains the most popular choice for big data and querying tasks.
- With the growing focus on AI and machine learning, Python is expected to continue its upward trajectory.
- TypeScript's increasing popularity may challenge the dominance of traditional languages in the near future.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **Dominance of SQL RDBMS:** SQL relational databases remain the most popular choice among developers in 2019.
- **PostgreSQL Growth:** PostgreSQL is experiencing an upward trend, positioning itself as a leading SQL database.
- **Rise of NoSQL:** MongoDB and Elasticsearch are gaining popularity, reflecting a shift towards NoSQL solutions.

Implications

- **Preference for Open-Source:** Open-source databases are the most favored choice among developers.
- **Rapid Growth of NoSQL:** NoSQL databases are quickly gaining popularity, indicating a shift in development practices.
- **Skills for Future Developers:** Future developers will likely need proficiency in both SQL and NoSQL databases to meet evolving industry demands.

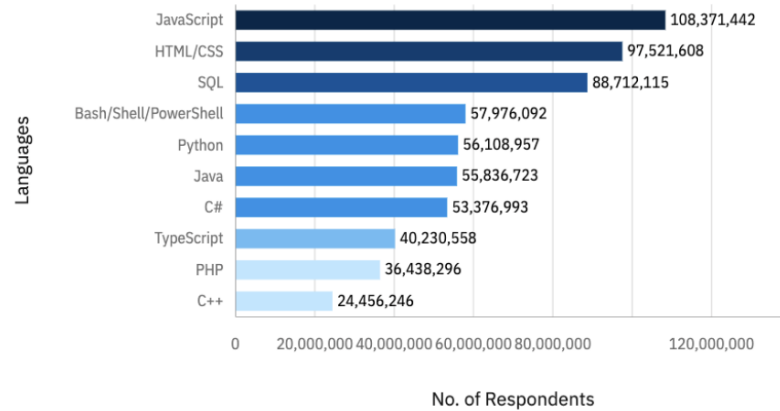
DASHBOARD



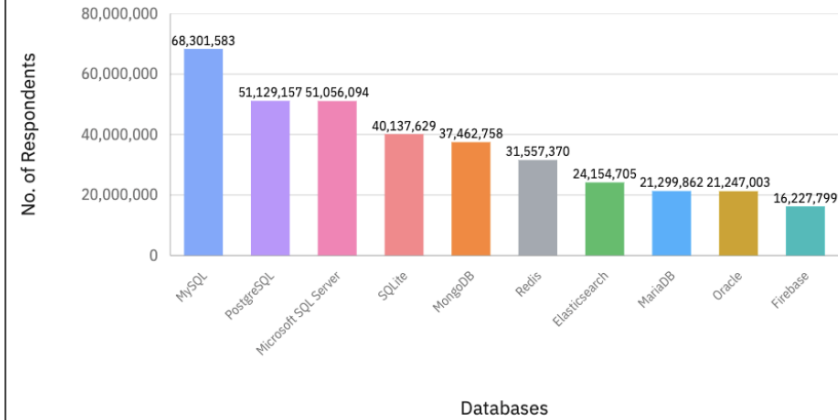
<https://github.com/ChristopherQ111R/IBMREPOFINAL.git>

CURRENT TECHNOLOGIES USAGE

Top 10 Programming Languages Used



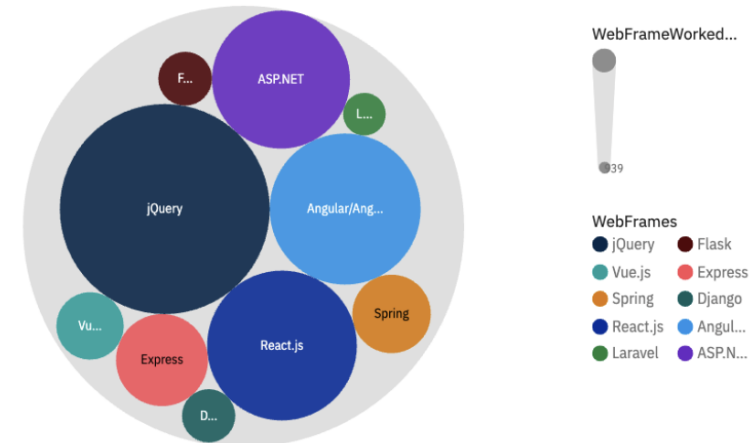
Top 10 Databases Responders Worked With



Different Platforms Worked With

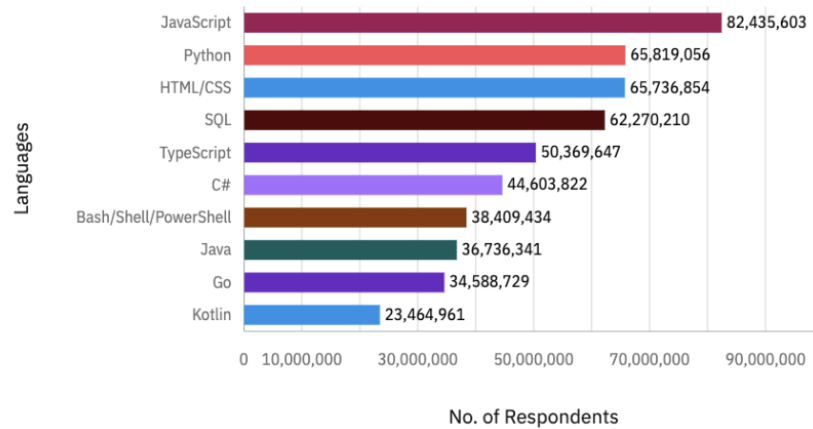


Different WebFrames Worked With

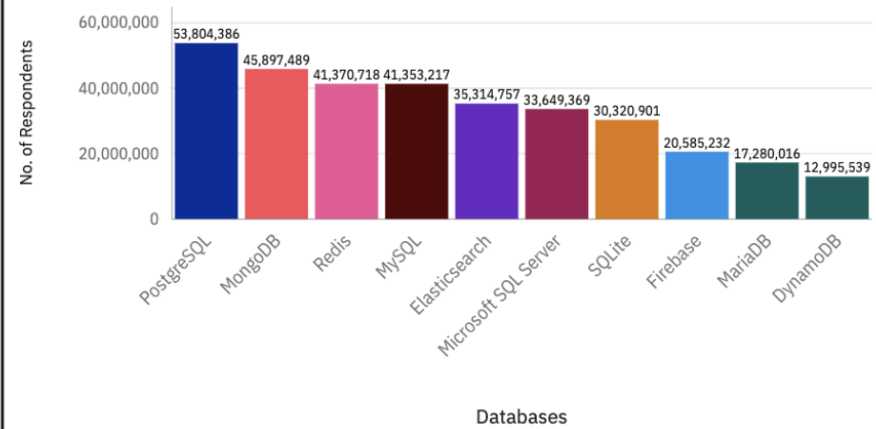


FUTURE TECHNOLOGY TREND

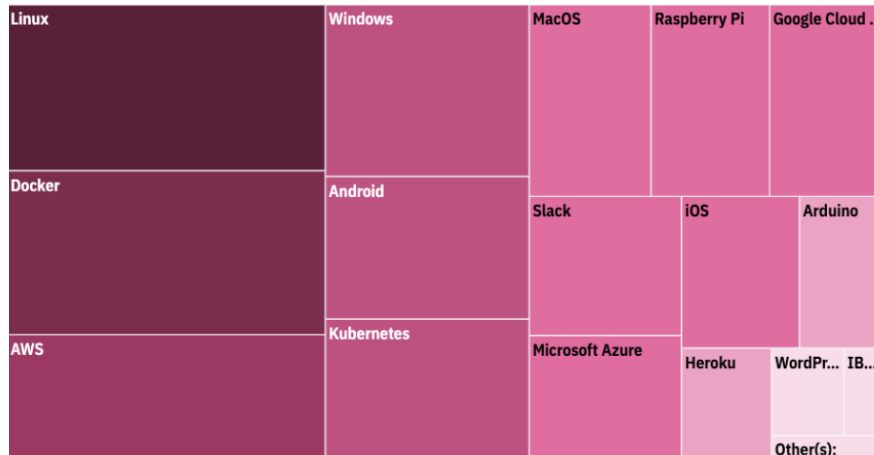
Top 10 Programming Languages Desired Next Year



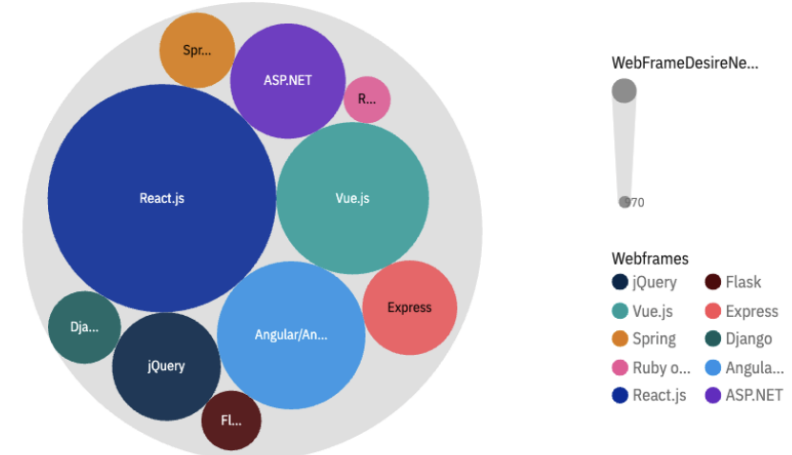
Top 10 Desired Databases Next Year



Platforms Desired Next Year

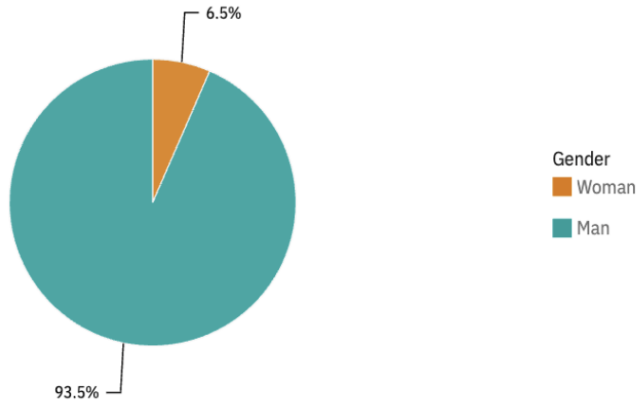


Top 10 WebFrames Desired Next Year

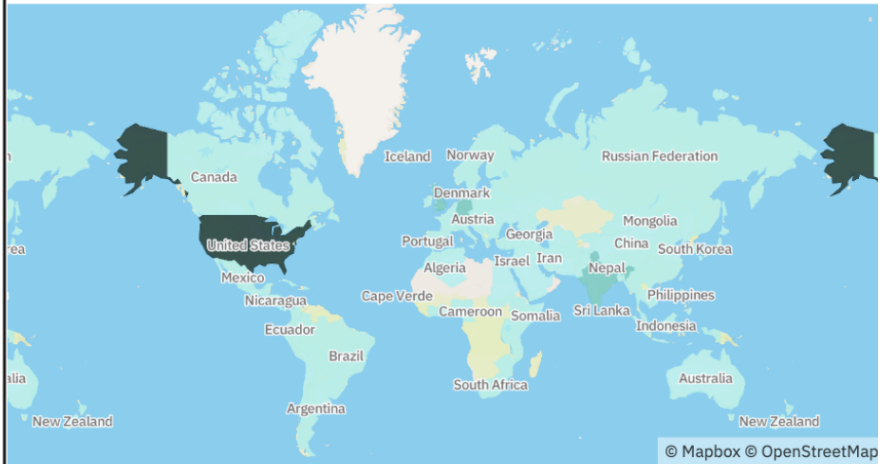


DEMOGRAPHICS

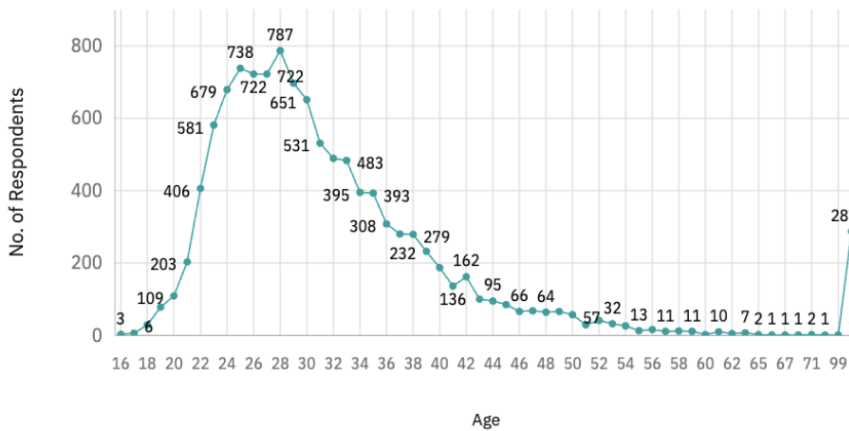
Respondent classified by Gender



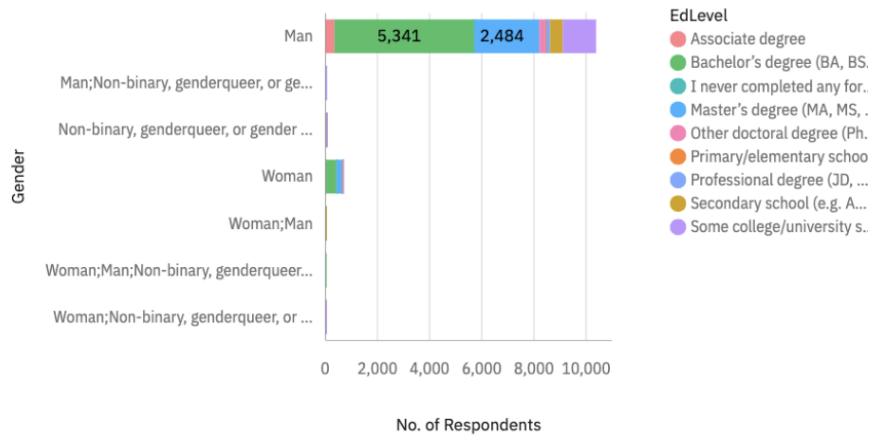
Number of Respondents By Country Location



Respondent by Age



Formal Education Level by Gender



DISCUSSION

- With all the data presented we can deduct which technologies are the most prominent and which direction data professionals will be going in the future.
- We can also deduce that most developers are 30 year old males from the United States of America and there may be some biases in the survey

OVERALL FINDINGS & IMPLICATIONS

Findings

- **Dominance of JavaScript and HTML:** JavaScript and HTML are currently the most popular technologies and are expected to remain so in the future.
- **SQL vs. NoSQL:** SQL relational databases are the preferred choice, while NoSQL databases are gaining significant momentum.
- **Demographic Insights:** The majority of developers are middle-aged men from the United States.

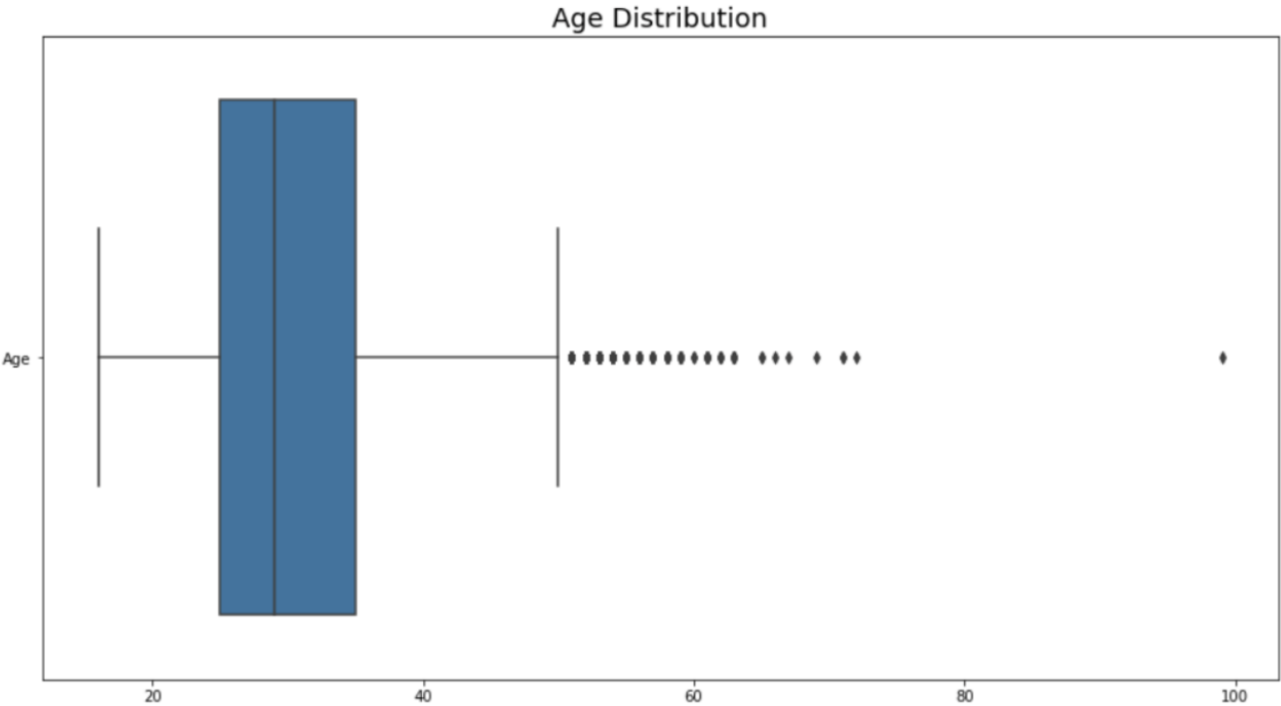
Implications

- **High Demand for Web Developers:** Web developers are among the most sought-after professionals in the IT field.
- **Need for Dual Database Skills:** Data professionals should acquire skills in both SQL and NoSQL databases to stay relevant.
- **Closing the Gender and Country Gap:** As technology becomes more mainstream, the gender and country gap may diminish; however, active efforts are needed to promote equal opportunity and inclusion in the industry.

CONCLUSION

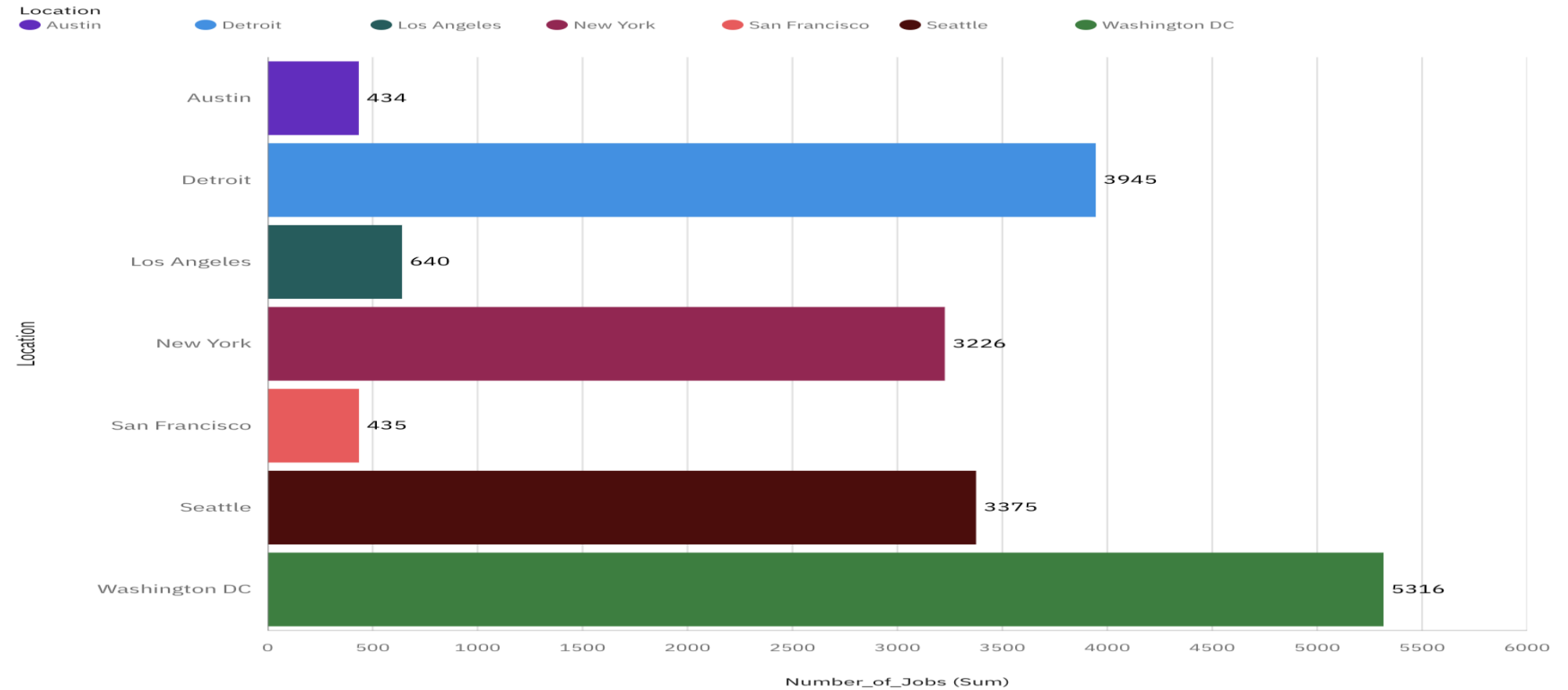
- After reviewing and analyzing the 2019 Stack Overflow Developer Survey subset, we conclude that the most rewarding programming languages, databases, platforms, and frameworks are those currently in use and expected to thrive in the near future.
- As technology continues to evolve, developers must enhance their skills in emerging technologies that are gaining popularity, as these will likely shape the landscape of the industry moving forward.

APPENDIX



JOB POSTINGS BY LOCATION

Job Postings by Location



POPULAR LANGUAGES BY SALARY

Average Annual Salary by Language

