



Analyzing Technology Trends & Demographics

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OUTLINE



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EXECUTIVE SUMMARY



- The goal of this analysis is to identify technology trends and demographics amongst developers around the globe
- Data was gathered using various sources:
 - Job postings
 - Training portals
 - Surveys
- After scraping internet sites, data was cleaned and prepared for the next step
- Data was then ready for analysis using data wrangling techniques
- Lastly, statistical techniques were used to identify trends and visualized in IBM Cognos Analytics

INTRODUCTION



- This project aims to identify emerging technologies and skill trends in the developer community to help organizations stay competitive.
- The three big questions to answer:
 - What are the top programming languages in demand?
 - What are the top database skills in demand?
 - What are the popular IDEs?
- Once we are able to determine answers to these questions, the insights gathered will help organizations:
 - Remain competitive by staying ahead of technological advancements
 - Enhance hiring strategies by hiring developers with in-demand skills
 - Align training programs with industry needs

METHODOLOGY



- After collecting data from various sources, I got started on data wrangling techniques to clean the data, identify duplicate rows, finding missing values, and normalize data.
- Once the data was cleaned, I moved on to the data analysis phase where I began to analyze the dataset to find the distribution of data, the presence of outliers, and correlation between different columns
- I used statistical methods to analyze trends in the collected data to answer the three primary questions
- Created dashboards using IBM Cognos Analytics to visualize insights on:
 - Current technology usage
 - Future technology trends
 - Developer demographics

RESULTS

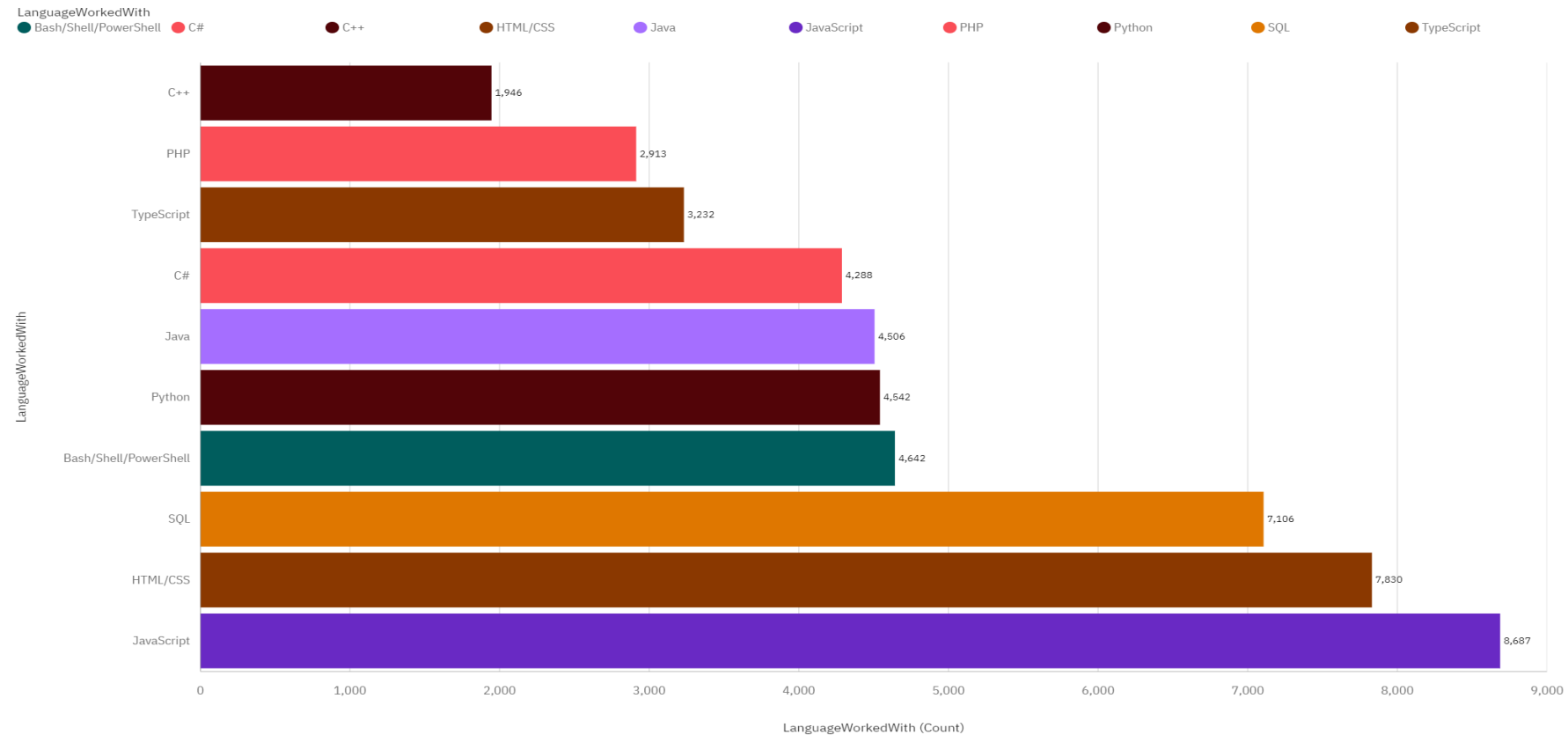
Key Findings from the Analysis:

- Current Technology Usage:
 - Top programming languages in demand include JavaScript, HTML/CSS, SQL, Bash/Shell/PowerShell, and Python
 - MySQL emerged as the most powerful database technology
- Future Technology Trends:
 - Developers expressed interest in learning newer technologies such as Kotlin and Go, and other developers expressed wanting to learn more established technologies such as JavaScript, HTML/CSS, and Python
 - Trends indicate an increasing focus on cloud-based platforms and modern frameworks
- Demographics:
 - Majority of the respondents identified as men, with a growing representation of women
 - Age distributions shows most developers fall within the 25-34 age group

PROGRAMMING LANGUAGE TRENDS

Current Year

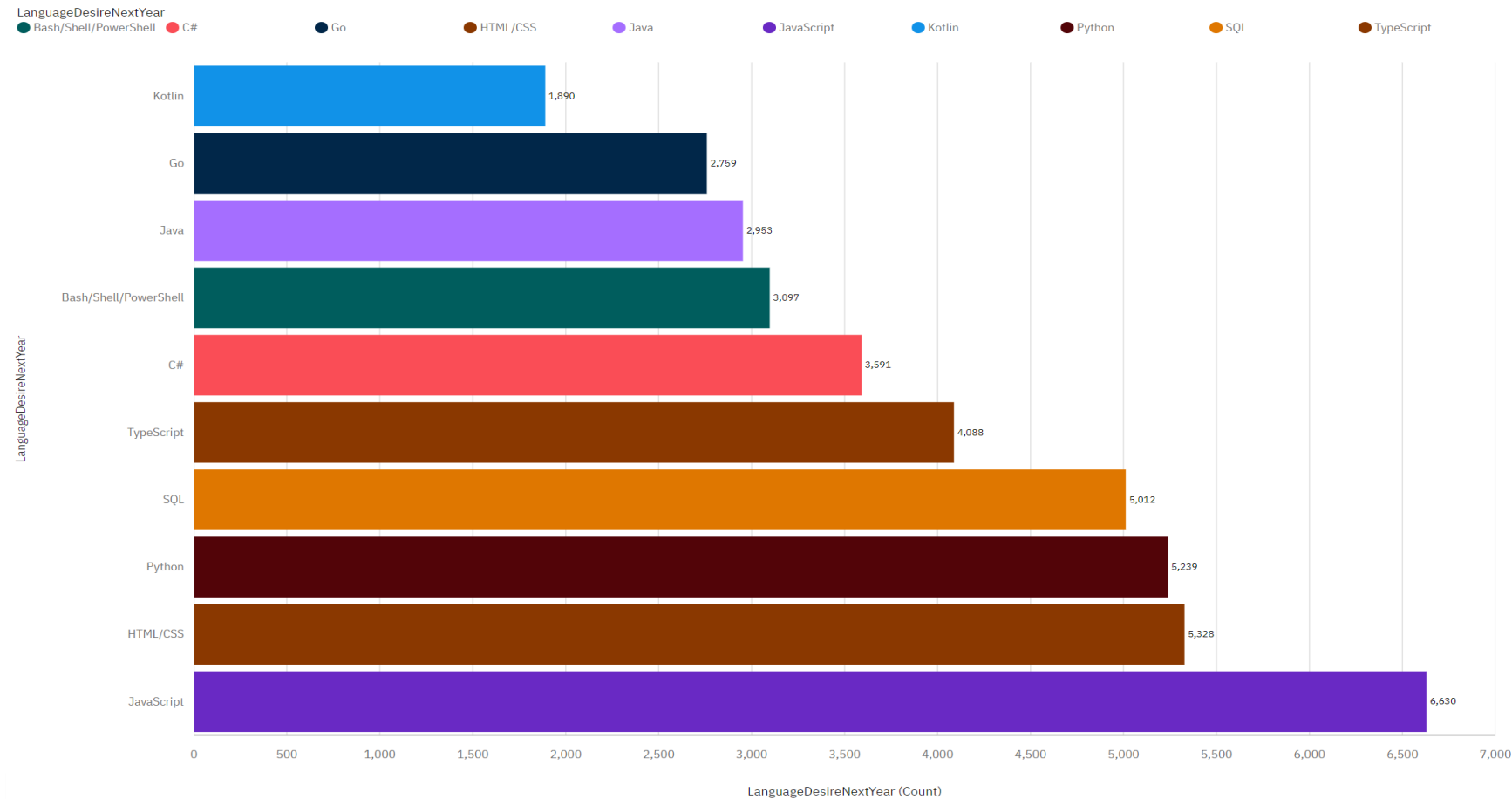
Top 10 Programming Languages Worked With



PROGRAMMING LANGUAGE TRENDS

Next Year

Top 10 Languages Desired Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript is the language most used by respondents, with 8,687 actively using it, and 6,630 who want to learn it next year
- SQL & Python are also highly ranked in both bar charts, showing how it will continue to be in significant demand
- Newer languages such as Kotlin and Go show a trend in a desire to learn next year, even though no respondents currently use it

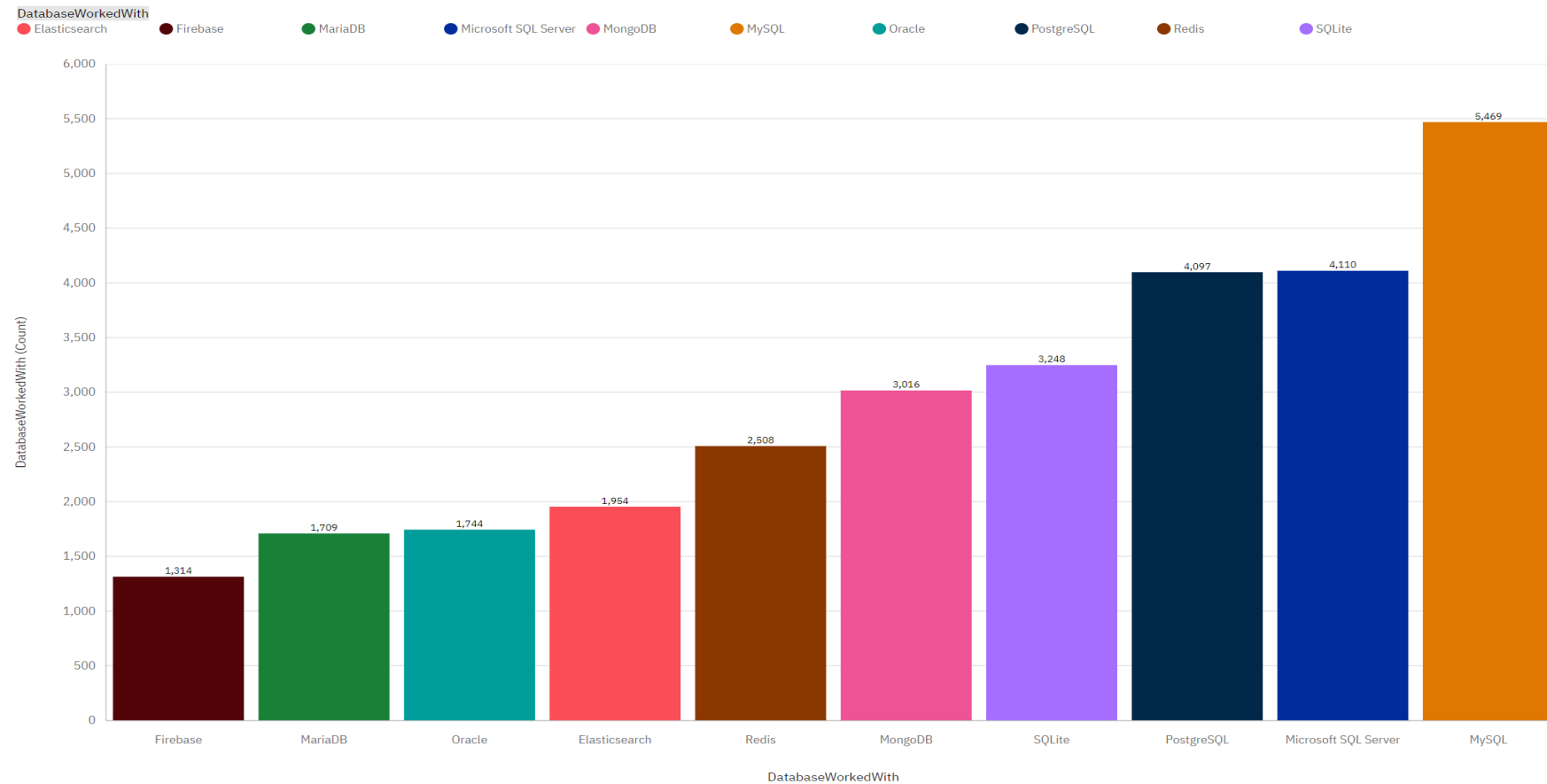
Implications

- JavaScript will continue to be a dominant language. Organizations should prioritize JavaScript when it comes to hiring new developers & training current developers
- There is a growing demand for Python and SQL, companies who are data-centric, should continue focusing on these technologies
- The growing interest in newer languages suggest a need for developers skilled in modern languages

DATABASE TRENDS

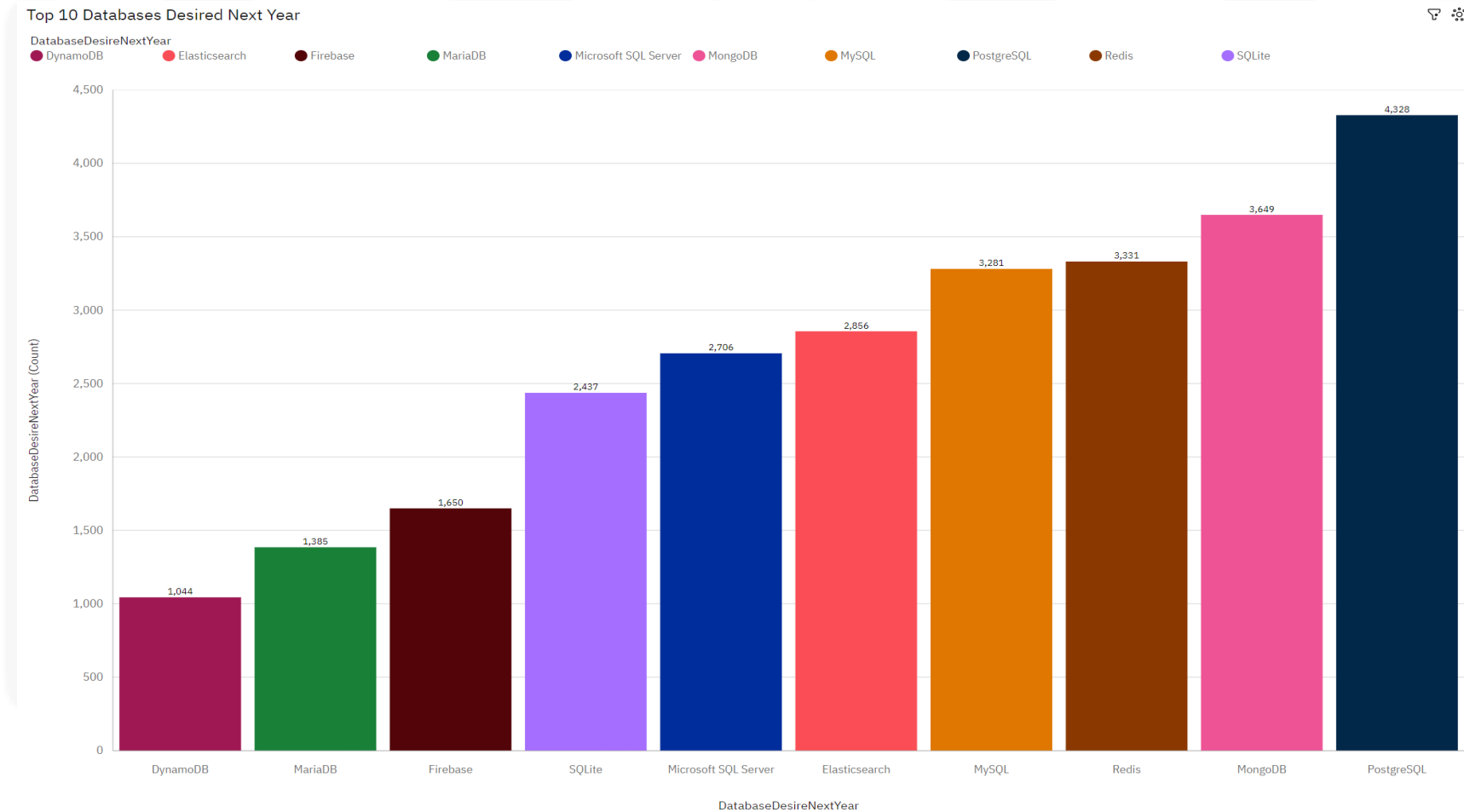
Current Year

Top 10 Databases Worked With



DATABASE TRENDS

Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL is the most desired database to learn next year, with 4,328 respondents wanting to learn/use it, followed by MySQL with 3,281 respondents
- The most worked with database is MySQL with 5,469 respondents
- MongoDB shows great interest amongst respondents with 3,649 who desire to adopt it.

Implications

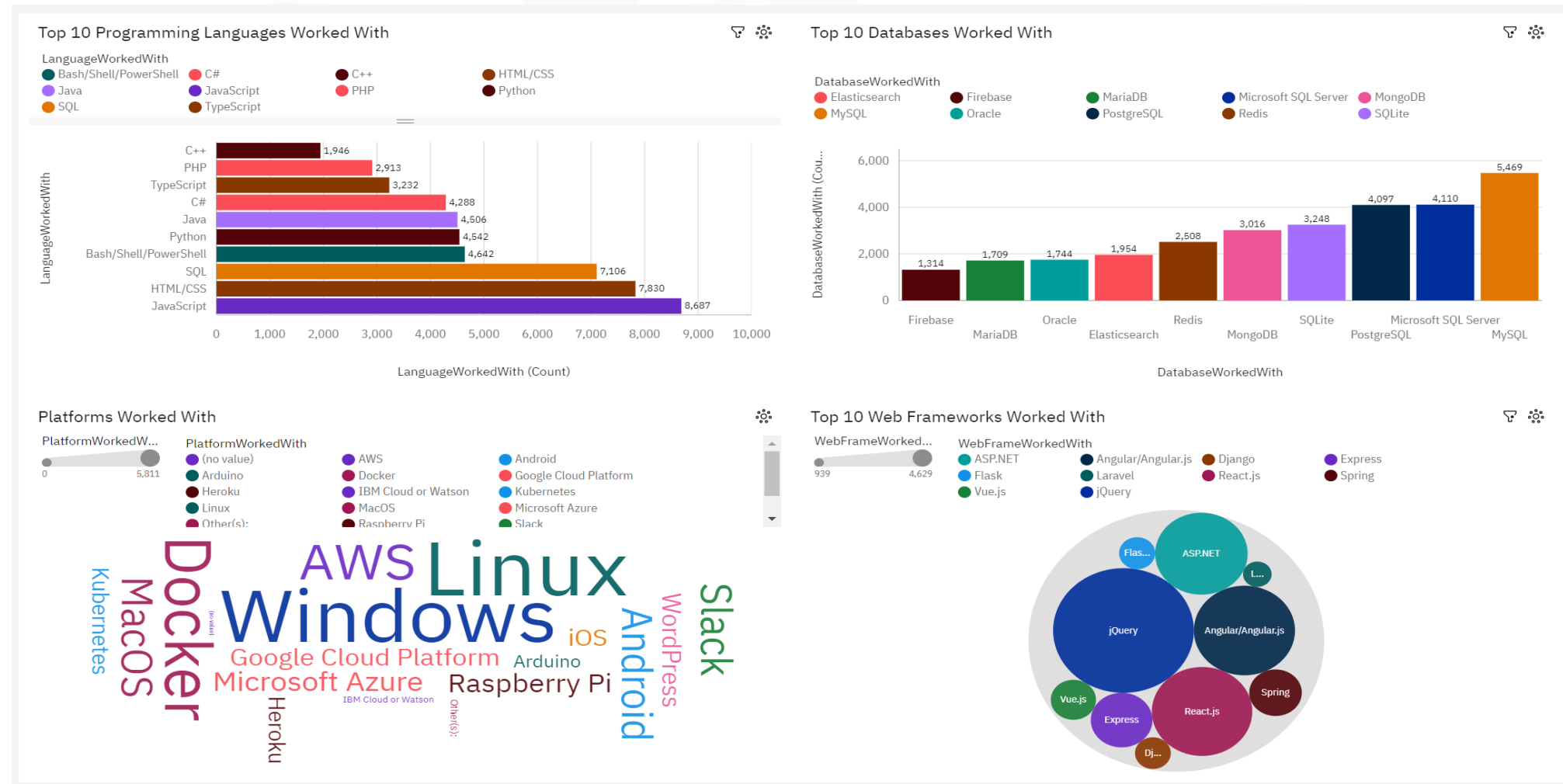
- The databases that will likely remain dominant in the upcoming year are MySQL and PostgreSQL, so companies should continue to invest in expertise for these open-source databases
- MySQL will continue to be a key database in the industry and organizations should maintain or expand their investments in MySQL resources
- The rising interest in NoSQL databases such as MongoDB indicates a shift towards more flexible data solutions

DASHBOARD

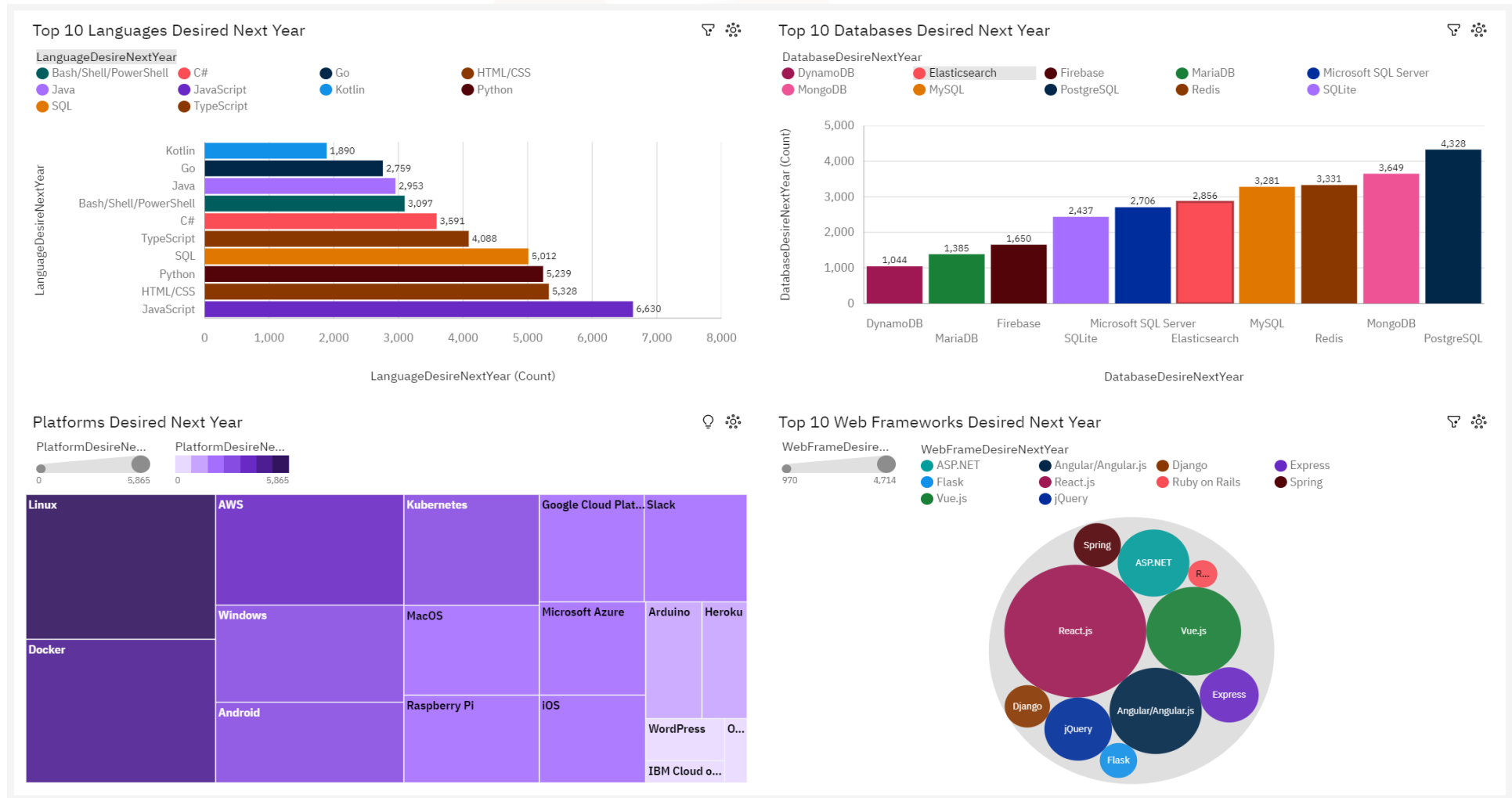


[GitHub Link to Dashboards](#)

DASHBOARD TAB 1



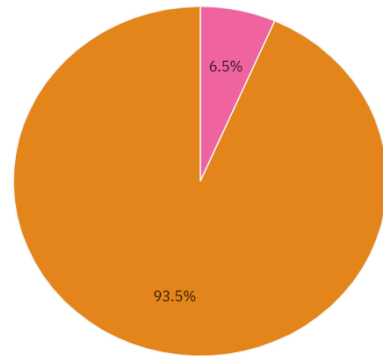
DASHBOARD TAB 2



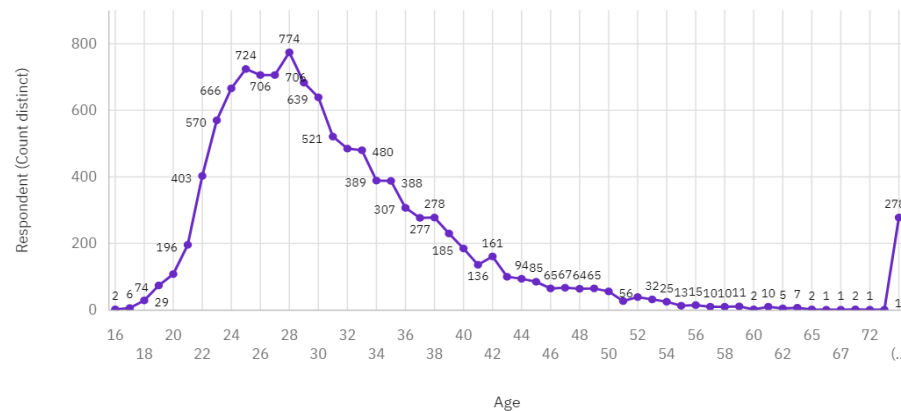
DASHBOARD TAB 3

Respondents Classified by Gender

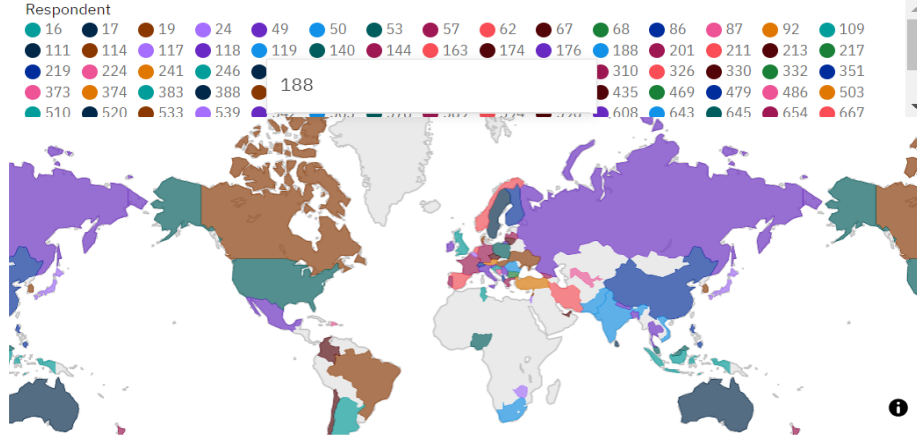
Gender
● Woman ● Man



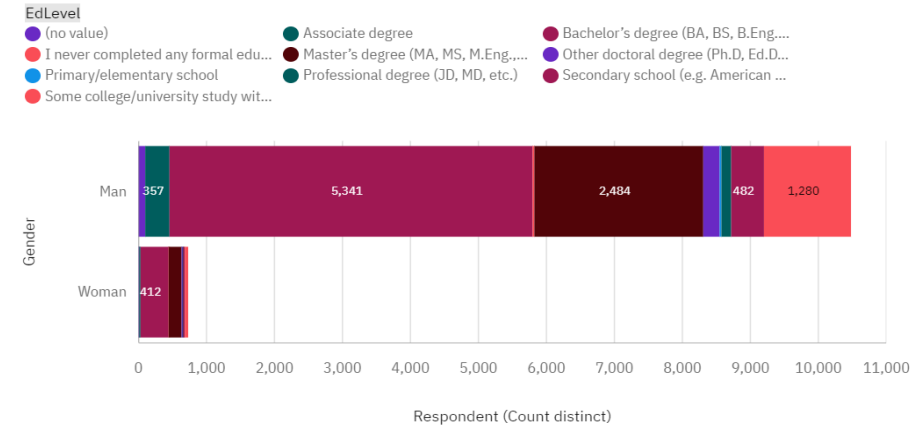
Respondent Count by Age



Respondent Count by Country



Respondent Count by Gender and Formal Education Level



DISCUSSION



Key Insights

- Current technology usage reflects industry demands with top languages like JavaScript and SQL.
- Emerging technologies such as Python and Kubernetes indicate future skill trends.

Challenges Faced

- Data cleaning was essential to address inconsistencies across datasets.
- Handling missing values and filtering relevant data required multiple iterations.

Recommendations for Further Analysis

- Investigate regional variations in technology adoption.
- Monitor evolving frameworks and platforms in future surveys

OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript, SQL, and AWS are the most widely used technologies today
- Python, PostgreSQL, and React.js are emerging as future trends
- The majority of respondents aged 25-34 have higher education degrees (Bachelor's or Master's)

Implications

- Organizations should focus on upskilling employees in Python and other modern frameworks
- Cloud platforms like AWS will remain critical, requiring investment in cloud infrastructure
- Promoting diversity is necessary to close the gender gap in the tech workforce

CONCLUSION

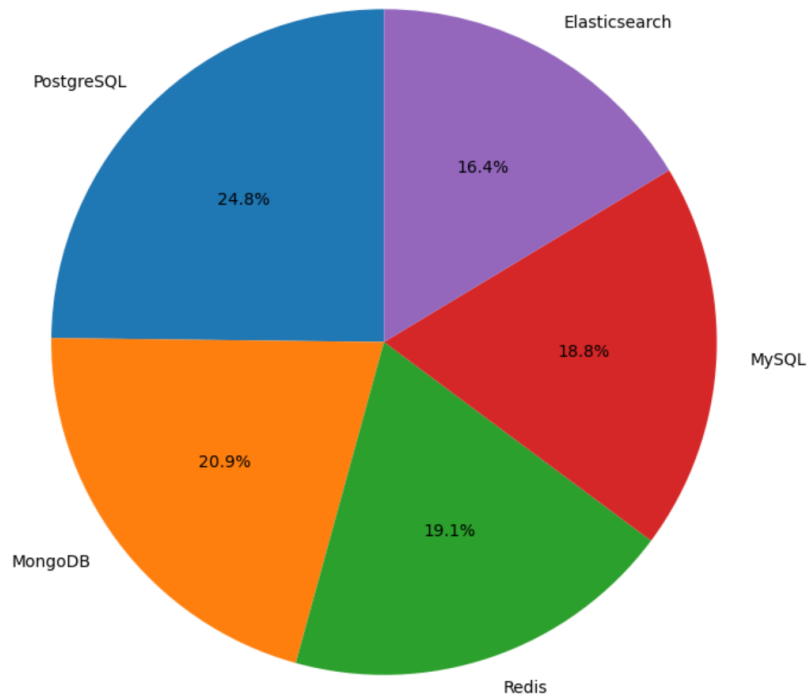


- **Comprehensive Insights Gained:** The analysis provided a clear understanding of current and future tech trends.
- **Data-Driven Recommendations:** The insights will help organizations align strategies with emerging technologies.
- **Continuous Learning Needed:** Developers should stay updated with in-demand skills to remain competitive.
- **Future Research Opportunities:** Ongoing analysis is crucial to track evolving trends and workforce changes.

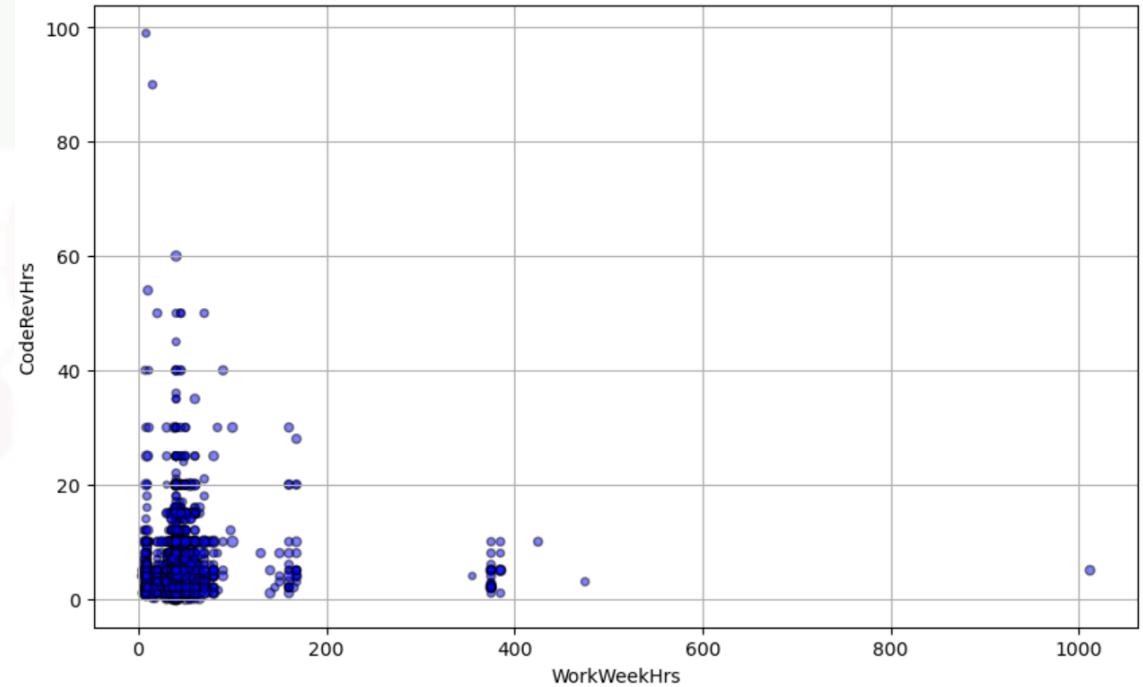
APPENDIX

Additional Insights & Visualizations

Top 5 Databases Respondents Wish to Learn Next Year

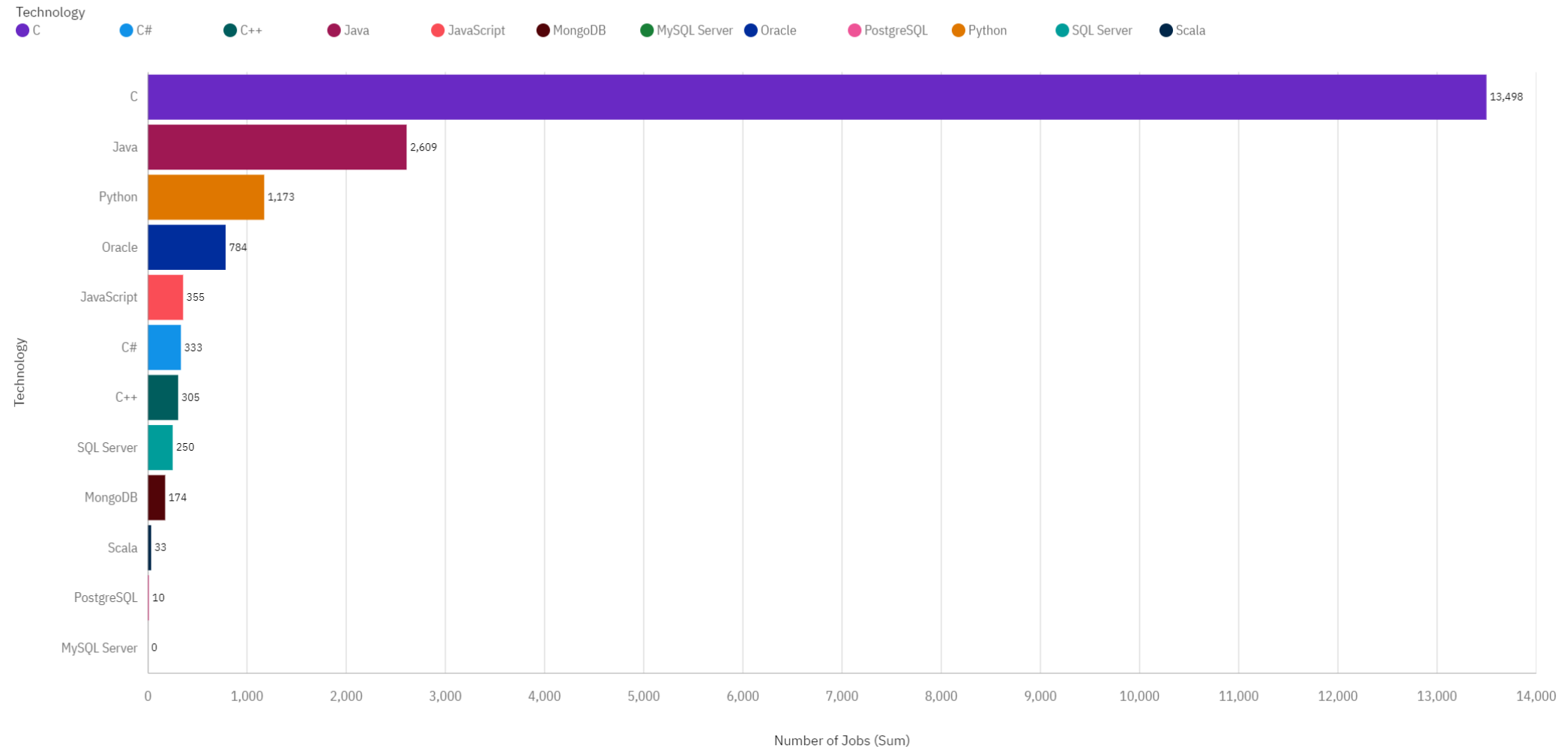


Bubble Plot of WorkWeekHrs vs CodeRevHrs (Bubble size: Age)



JOB POSTINGS

Number of Jobs Postings per Technology



POPULAR LANGUAGES

Average Annual Salary per Language

