IBM DATA ANALYST CAPSTONE PROJECT: ANALYSIS ON EMERGING TECHNOLOGY SKILLS AND TRENDS

- BY SYED AHSAN ,

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OUTLINE

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- -Introduction
- -Methodology
- -Results ,
- Visualization, Charts and Dashboard
- -Discussion
- Findings and Implications
- -Conclusion
- -Appendix

EXECUTIVE SUMMARY

- For the purposes of the study, this part has the ambition of putting into perspective the information previously collected.
- We began by explaining our methodology – this consisted of describing the different processes of collecting appropriate data, their analysis, and graphical representation.
- We presented our findings in a logical manner backed by numerous diagrams which demonstrate the trends apparent in our data.
- Further, we have offered a reasoned argument on the meaning of these results, outlining the significance and the relevance to the overall research question.
- In conclusion, we have provided the conclusions of the research together with the reasons for the most important messages and the results that are achieved during the course of the study.

INTRODUCTION

Each and every year, Stack Overflow runs a detailed global survey of developers making this one of the most robust polls of coding professionals around the world.

Valuable as the data may be, it's worth mentioning that such data does not represent the whole quill of the development population.

This year's survey recorded the participation of almost 90000 developers who provided insights on the current and future trends of the developer community.

The survey enhances the global picture of the developer's ecosystem detailing important features and regional variations.

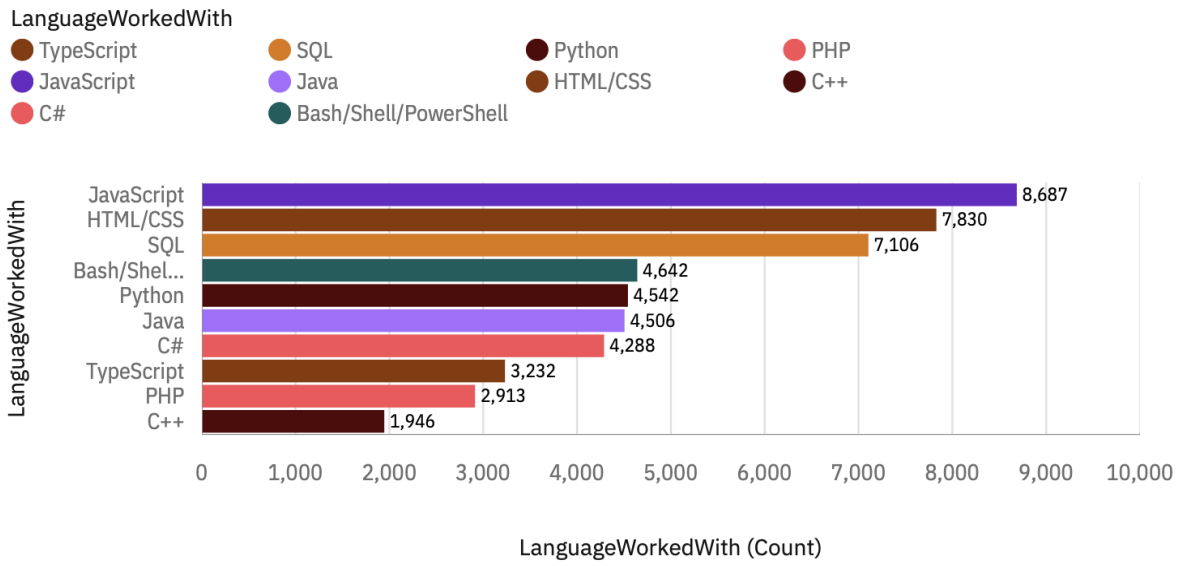
METHODOLGY

- To Collect and Analyze Survey Data
- It was planned that the collection of survey data would comprise the first phase, together with an in depth analysis of the content of the survey. This involved methods such as web scraping, use of APIs, and use of libraries like Requests.
- Once all of the comments were collected, the next step was preprocessing the collected comments in preparation for analysis.
- In this phase, we ran exploratory data analysis focused on checking the structure of the data, the presence of extreme values, or outliers, and the presence of any correlations.
- We also prepared data to be presented by data literate persons; thus the data presented included distributions, relationships, composition and comparison across categories.
- Finally, we made use of the interactive dashboards to present our findings for all aspects of the data to take on easy access to the data.

PROGRAMMING LANGUAGE TREND

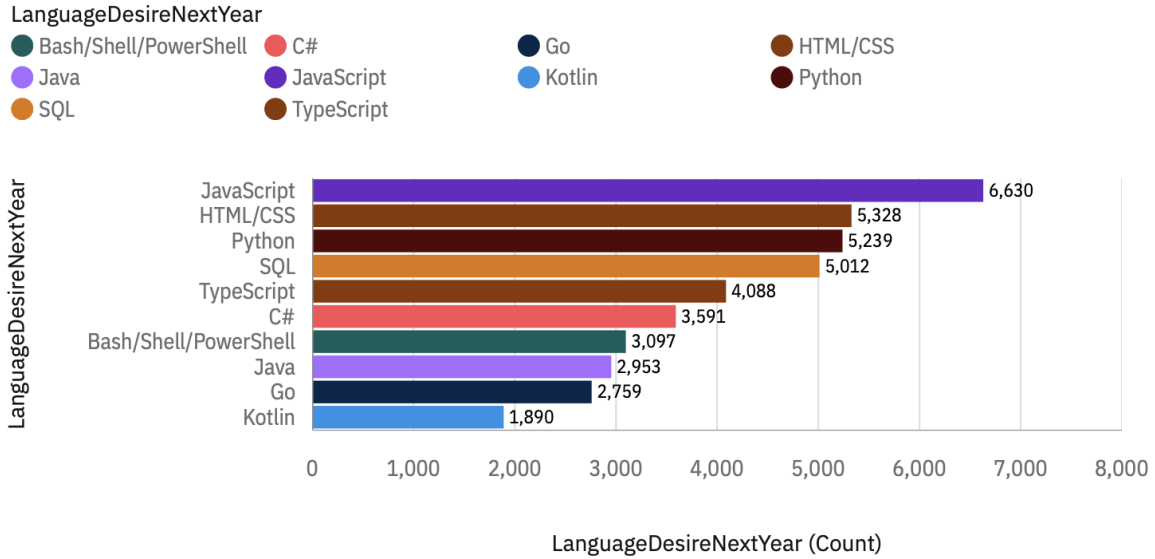
Current Technology Usage

Top 10 LanguageWorkedWith.



Future Technology Trend

Top 10 LanguageDesireNextYear.



PROGRAMMING LANGUAGE TRENDS AND FINDINGS

Findings

Presently, the most used technologies are JavaScript and HTML/CSS along with SQL but Python is seeing clear signs of growth.

For the next year, JavaScript and python [.;.

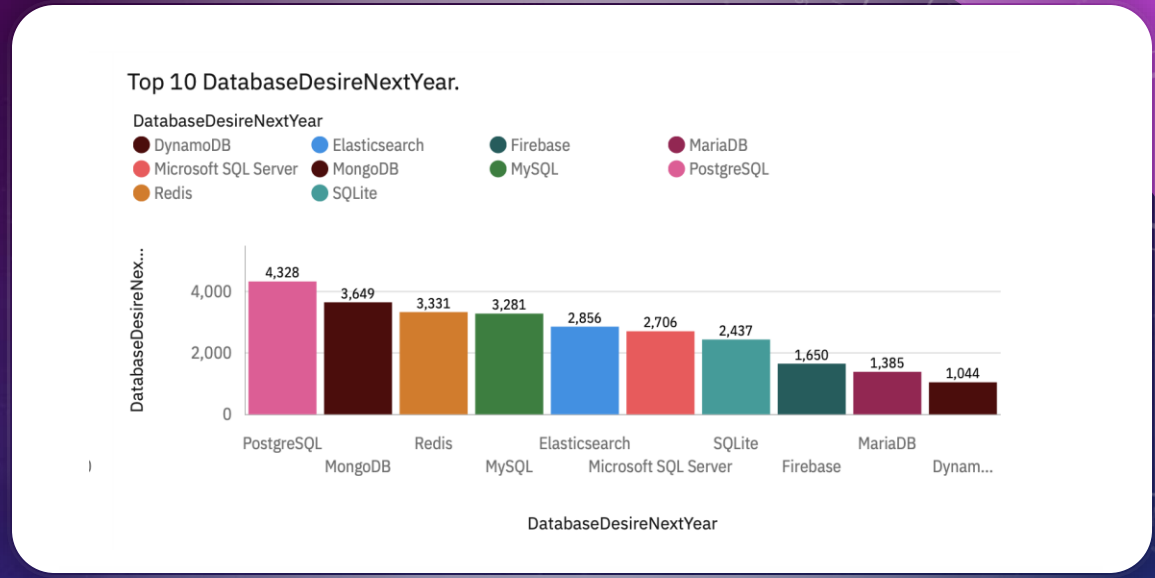
Over the horizon, possibly in the near future we can expect growth from target languages like Go and Kotlin.

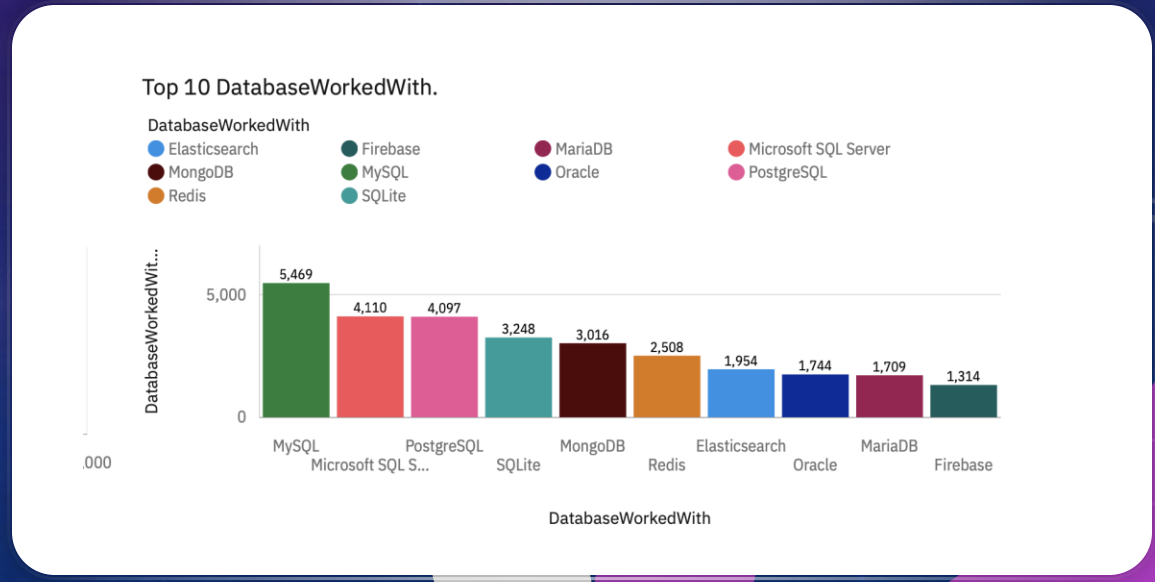
Implications

Development organizations should keep their eye on the JavaScript and Python ball to stay relevant and capable of adopting new technologies.

Go & Kotlin may be trending, and it might make sense to use them in some cases, like if you wanted to build out microservices or write mobile apps lambda lets see how our insight stacks.

DATABASE TRENDS

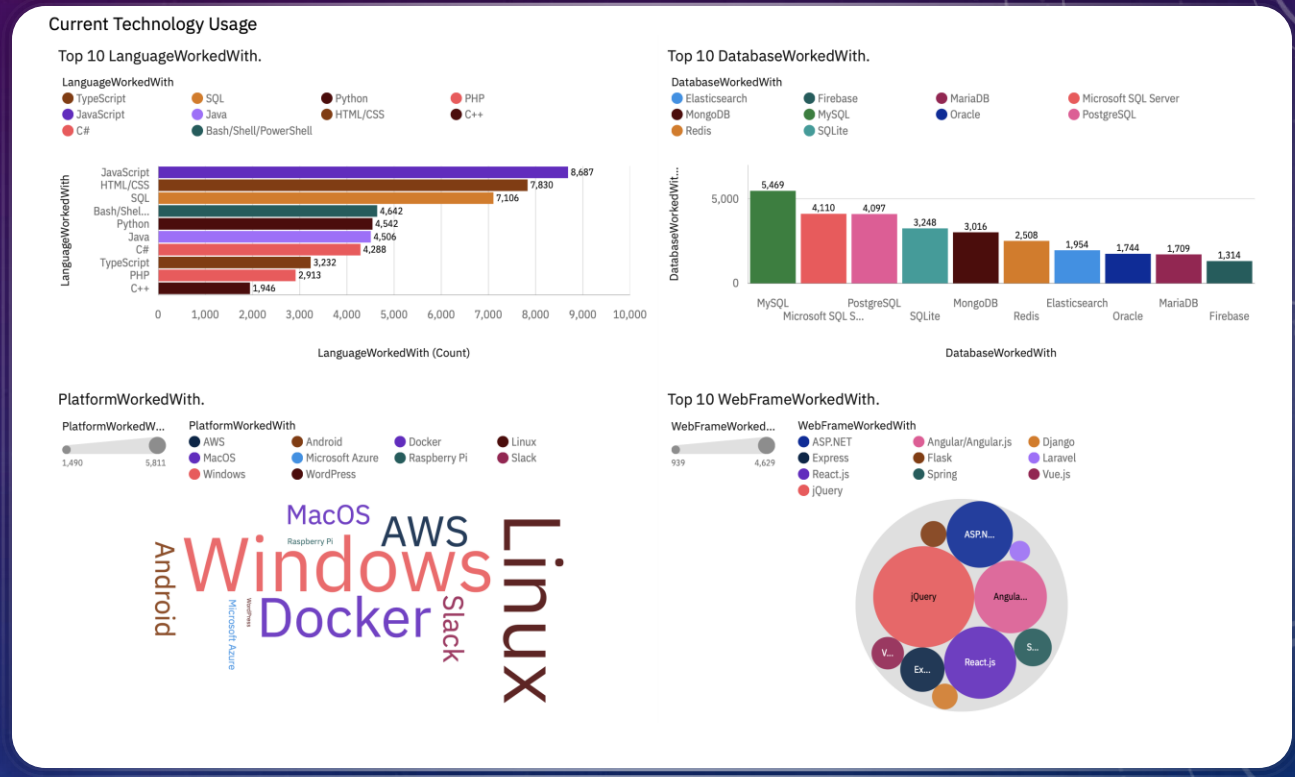




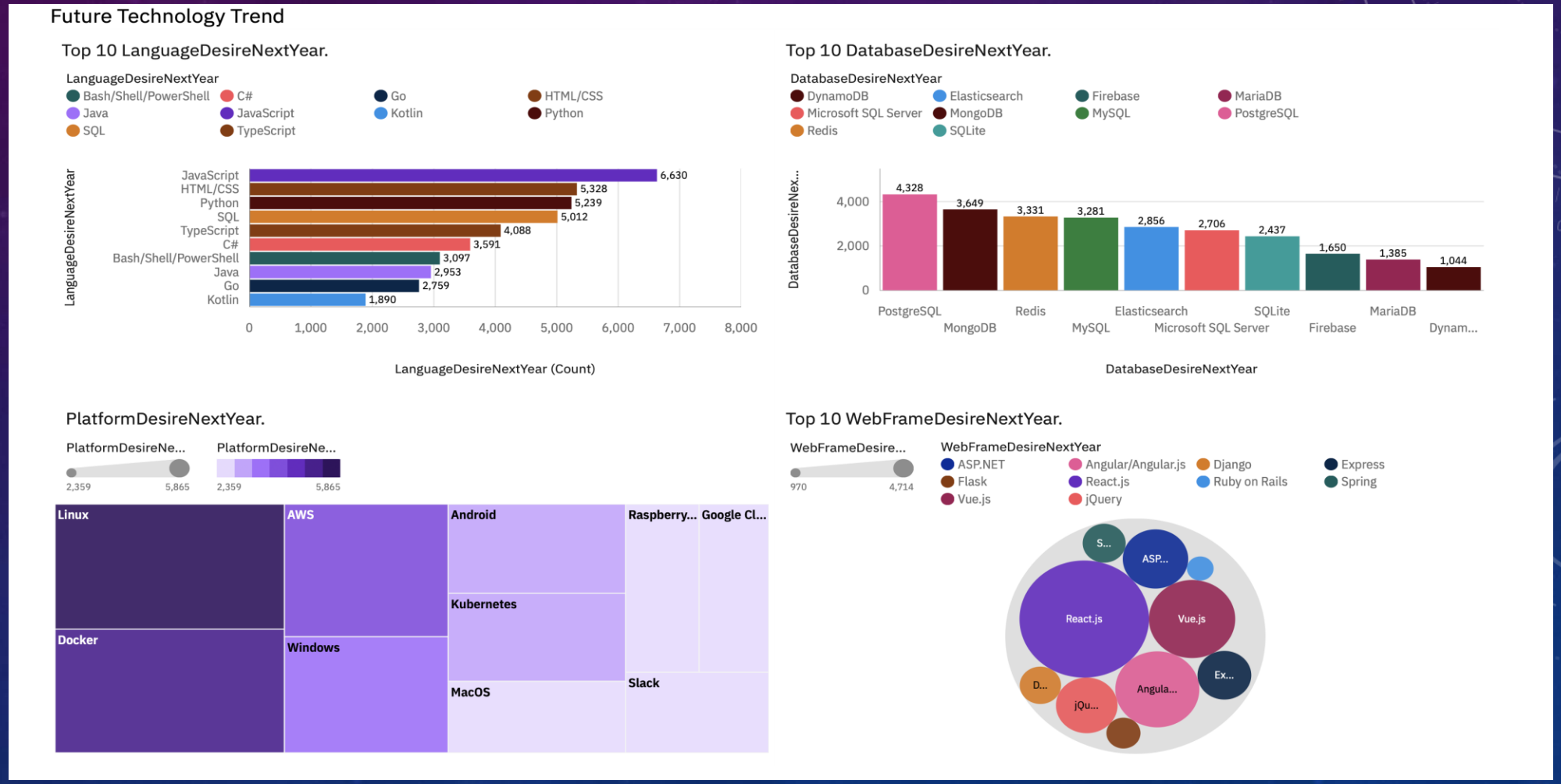
DATABASE TRENDS- FINDINGS AND IMPLICATIONS

- Findings
- **PostgreSQL** is both the most desired database for the next year and one of the top databases currently in use, indicating its strong position in the database landscape.
- **MongoDB**, **Redis**, and **MySQL** are also highly sought after for the future, and they feature prominently among databases currently in use.
- **MySQL** is the most commonly used database at present, followed by **PostgreSQL** and **Microsoft SQL Server**.
- Other databases like **Elasticsearch**, **SQLite**, and **MariaDB** show consistent usage, but they are less desired for future work, suggesting a possible shift in trends.
- Implications
- Organizations should consider prioritizing **PostgreSQL** and **MongoDB** expertise, as they are not only widely used but also highly desired in the near future.
- **Redis** and **Elasticsearch** show growing demand, which may indicate their increased use in specific applications like caching, search engines, or real-time analytics.
- Companies heavily relying on **MySQL** and **Microsoft SQL Server** may need to adapt to newer technologies or offer a diverse range of database skills to attract top developer talent.
- With emerging technologies continuing to rise in popularity, businesses should be prepared to integrate these databases into their infrastructure to stay competitive and meet developer preferences.

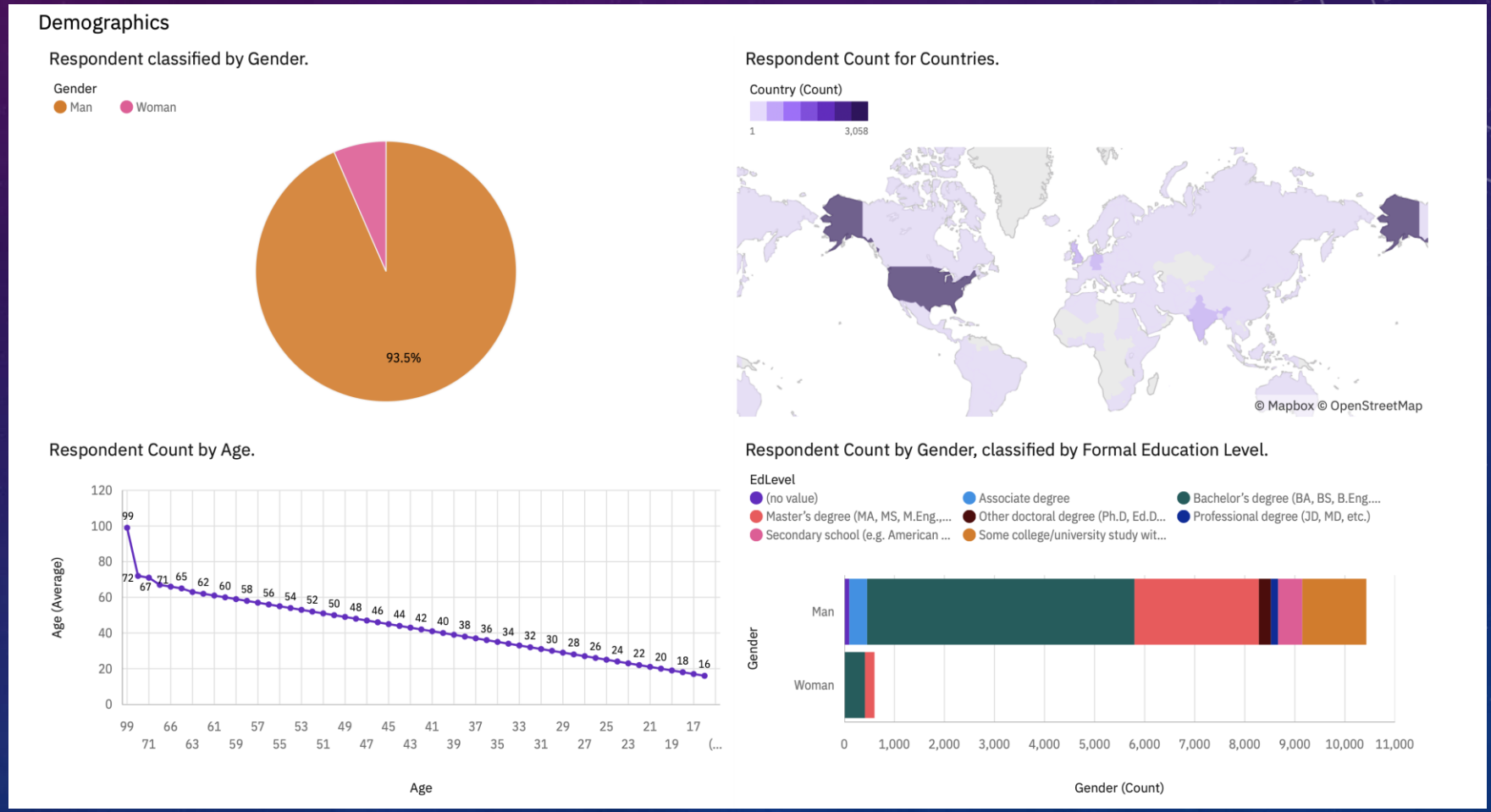
DASHBOARD TAB1



DASHBOARD TAB2



DASHBOARD TAB3



OVERALL FINDINGS AND IMPLICATIONS

Technology Trends:

- **JavaScript**, **HTML/CSS**, and **Python** are the top desired programming languages for the upcoming year, reflecting their strong role in web development and data analysis.
- **PostgreSQL**, **MongoDB**, and **Redis** are the most desired databases, while **MySQL** continues to be the most commonly used, indicating a mix of traditional and emerging databases in demand.
- Platforms like **Linux**, **AWS**, and **Docker** are highly favored, indicating the importance of cloud infrastructure and containerization technologies in modern development.
- In web frameworks, **React.js**, **Vue.js**, and **jQuery** are among the most desired frameworks, highlighting the ongoing focus on front-end development.

Demographics:

- The survey is predominantly male-dominated, with 93.5% of respondents identifying as male.
- The majority of respondents are concentrated in the 25–34 age group, with a noticeable decline in respondents as age increases.
- Educationally, the majority hold bachelor's degrees, reflecting a well-educated developer community.
- Implications

Programming Languages:

- Companies should continue investing in **JavaScript** and **Python** as they remain critical for web development and data analysis. Knowledge of **HTML/CSS** is also essential for front-end roles.
- Considering the rising popularity of databases like **PostgreSQL** and **MongoDB**, businesses may want to expand their database expertise to include these technologies alongside traditional relational databases like **MySQL**.

Platforms:

- With cloud services like **AWS** and container platforms like **Docker** becoming more popular, organizations should focus on building cloud-native applications and containerized services for greater scalability and efficiency.
- The strong interest in **Linux** suggests that companies should continue leveraging open-source technologies and ensuring their teams are proficient in these platforms.

Web Frameworks:

- With **React.js** and **Vue.js** being highly desired, front-end development is clearly a priority. Businesses should focus on enhancing their teams' proficiency in these frameworks to build dynamic and responsive user interfaces.

Demographics:

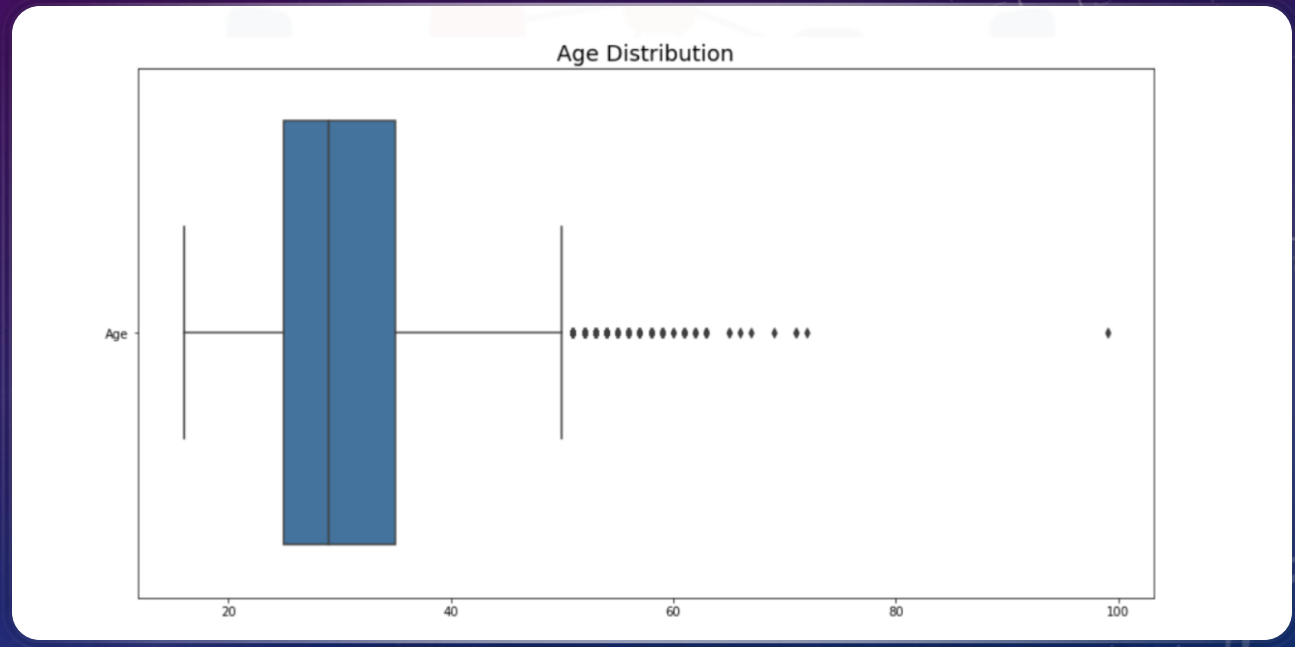
- The male-dominated survey results indicate an opportunity for increased diversity in the developer workforce. Initiatives to encourage gender diversity and inclusivity could help organizations attract a broader talent pool.
- With a significant number of respondents having a bachelor’s degree, companies should continue to prioritize higher education in their hiring processes, while also considering alternative education pathways like coding bootcamps to tap into diverse talent.

CONCLUSION

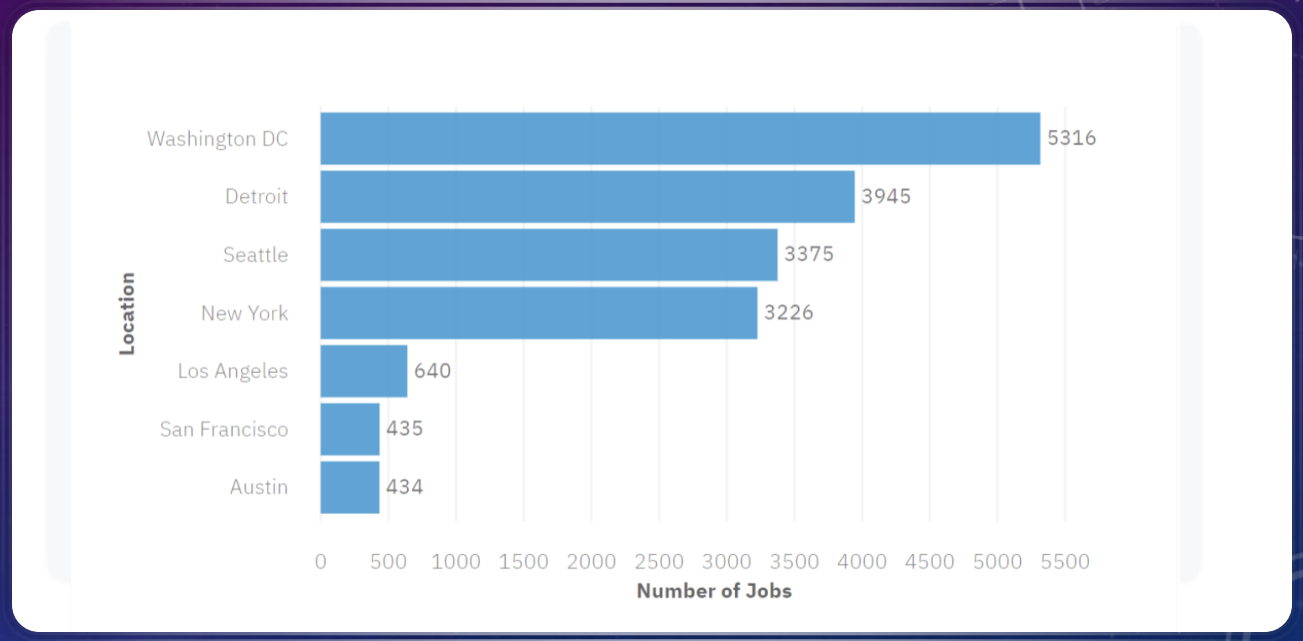
- The data reflects clear trends in technology, with **JavaScript**, **Python**, and **PostgreSQL** standing out as key tools for the future. As companies adapt to evolving demands, investments in cloud technologies like **AWS** and containerization through **Docker** will be essential for staying competitive. Prioritizing front-end frameworks such as **React.js** and **Vue.js** will further enhance web development capabilities. To attract and retain top talent, businesses should also focus on fostering diversity and expanding skill sets in both traditional and emerging technologies.

APPENDIX

AGE DISTRIBUTION BOX PLOT



JOB POSTINGS



POPULAR LANGUAGES