Analyzing Emerging Technology and Skills Trend

Janhavi Tarase

20 November 2024

IBM Developer

SKILLS NETWORK

OUTLINE

- Executive Summary
- Introduction
- Methodology
- Results
  - Visualization – Charts
  - Dashboard
- Discussion
  - Findings & Implications
- Conclusion
- Appendix

EXECUTIVE SUMMARY

- This report explores **current and future trends in technology usage** based on global survey data.
- It focuses on the usage and desirability of **programming languages, databases, platforms, and web frameworks**.
- **Demographic insights** reveal diversity in gender, age, and educational backgrounds among respondents.
- Key findings highlight the dominance of **JavaScript, Python, and SQL** as top programming languages.
- **MySQL and PostgreSQL** emerge as leading databases, with significant roles in tech adoption.
- The report offers valuable insights for understanding **technology trends and demographic influences** within the global tech landscape.

INTRODUCTION

What is this report about?

- This report delves into the technology trends and preferences among developers and tech professionals, focusing on programming languages, databases, platforms, and web frameworks.
- It also covers demographic insights to provide context to the technical trends observed.

Who is the report for?

- This report is intended for technology strategists, educators, industry leaders, and developers aiming to align with current trends or anticipate future needs.
- It is also valuable for companies looking to understand tech trends to align their tools and platforms with user preferences.

What will a reader gain by reading this report?

- A comprehensive understanding of the most-used and most-desired technologies in the developer community.
- Insights into demographic diversity within the tech industry, including gender, age, and educational qualifications.
- Data-driven guidance to make informed decisions on adopting or promoting specific technologies.

METHODOLOGY

Data Collection:

- Gathered survey and website data through web scraping and APIs using the Request library in Python.

Data Wrangling:

- Exploratory data Analysis:
- Performed data wrangling tasks such as remove unnecessary separators, handling missing values either by removing them or using other criterions.
- Analyzed data distribution, handling outliers, and identifying correlations.

Data Visualization:

- Visualized the collected data to highlight distribution, relationships, composition, and comparisons using various visualization techniques.

Dashboards :

- Developed interactive dashboards to present the analyzed data in a user-friendly and insightful manner

RESULTS

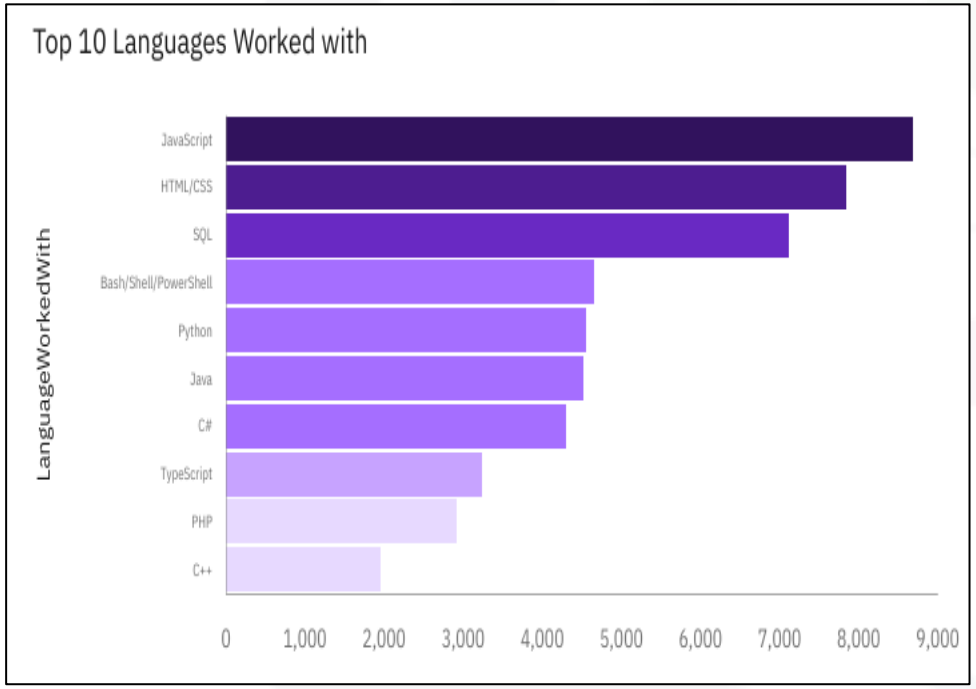
- The data was collected from a survey on a Stack Overflow blog under the OBDl: Open Database License.
- It consisted of two data sets:

1. Survey data technologies normalized consisted of approximately 75,000 respondents querying them about the present and future technology interests.

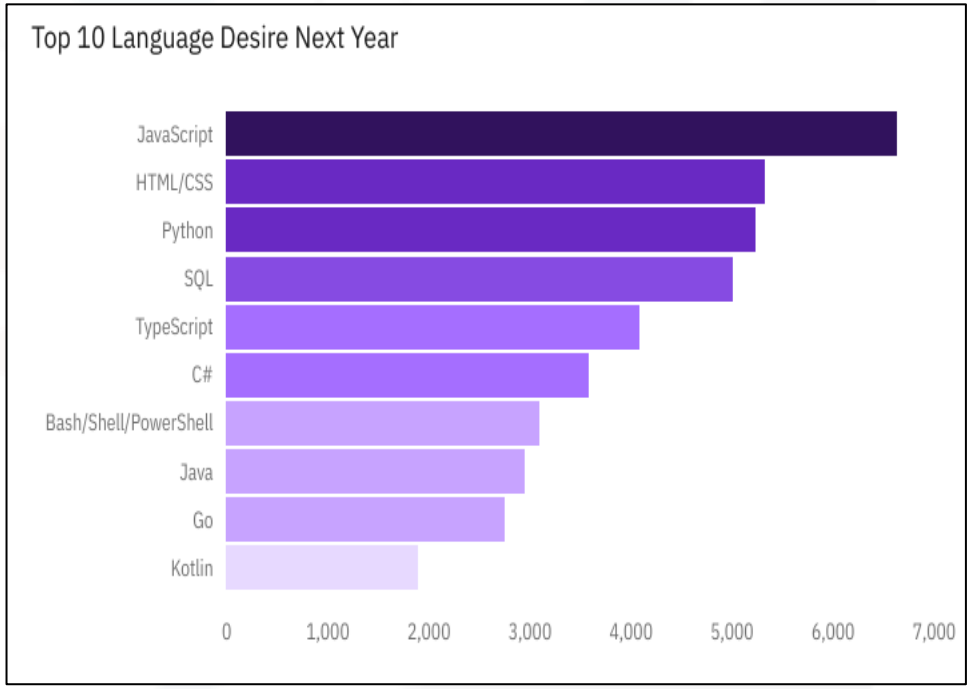
2. Survey data demographics was a more clustered dataset involving around 11,000 respondents answering questions about various demographics such as country, age, education level, ethnicity, gender, etc

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

1. Top 10 Languages Worked With (Current)

- **JavaScript, HTML/CSS, and SQL** dominate as the most-used languages, showcasing their widespread application in web development, data management, and scripting.
- **Python and Java** are key players, reflecting their versatility across fields like data science, software development, and automation.

2. Top 10 Languages Desired Next Year

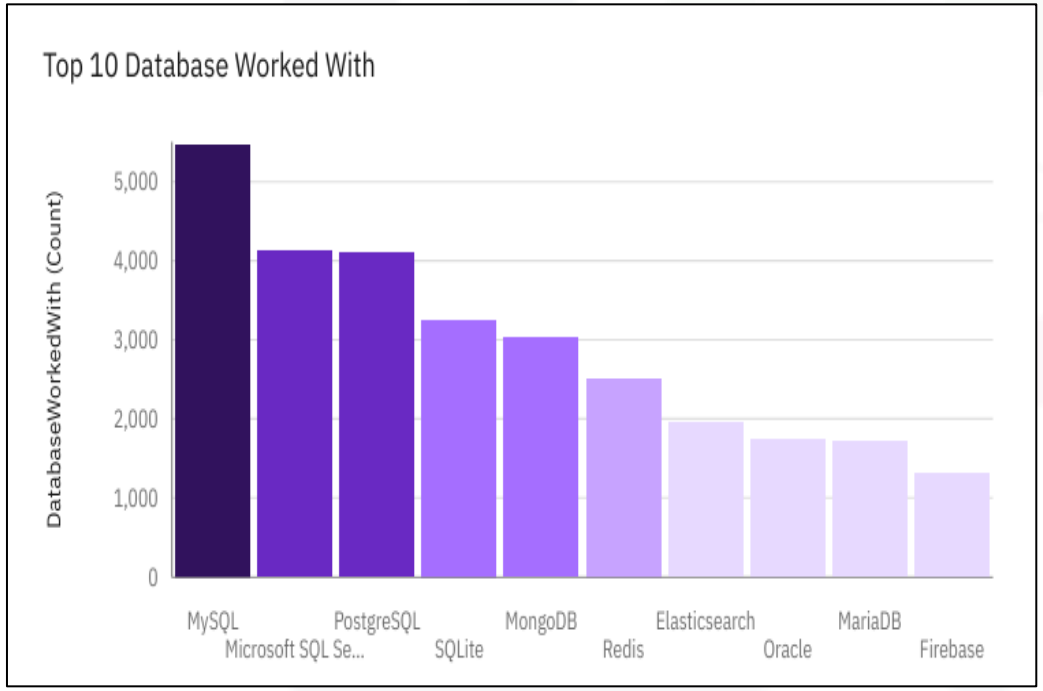
- **JavaScript, Python, and SQL** continue to lead in desirability, reaffirming their importance in modern tech stacks.
- **Emerging languages like Kotlin and Go** signify a shift toward modern, performance-oriented solutions for mobile and cloud-native applications.

Implications

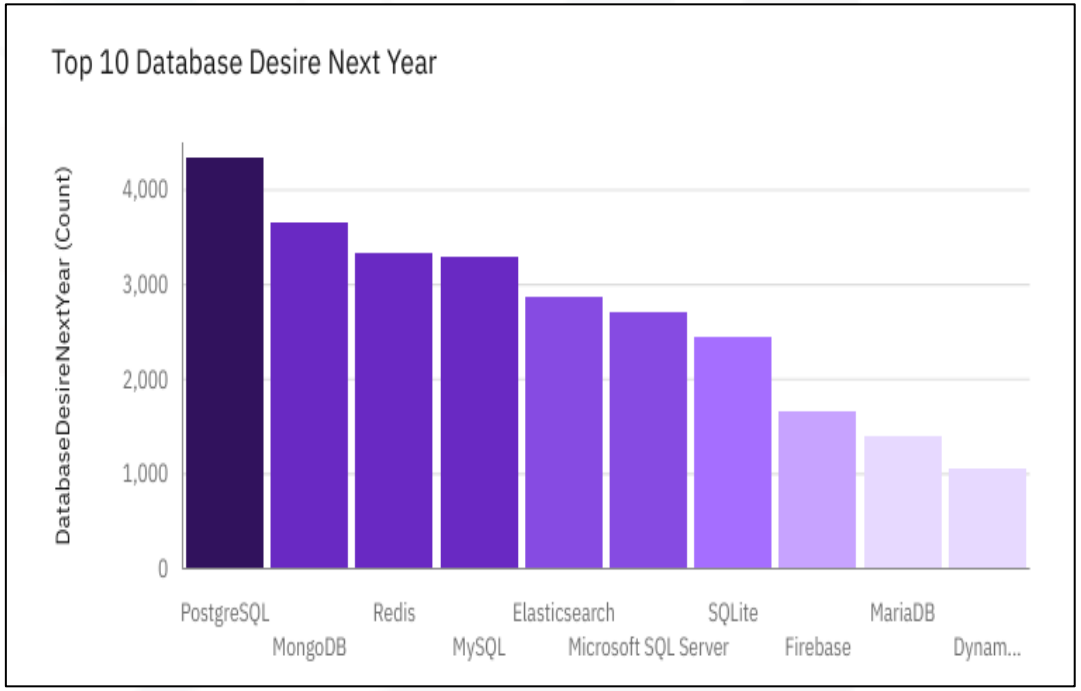
- Staying proficient in top-used languages like Python and JavaScript remains essential.
- Investing in emerging technologies like Kotlin and Go can open new opportunities in mobile development and microservices.
- Organizations should ensure support for popular technologies like JavaScript, Python, and SQL to attract and retain developer talent.
- Offering learning opportunities for trending languages such as Go and TypeScript can help future-proof technical teams.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

1. Top 10 Databases Worked With (Current Trends)

- **MySQL** and **Microsoft SQL Server** dominate as the most-used databases, reflecting their widespread adoption in enterprise and web applications.
- Other prominent databases include **PostgreSQL**, **SQLite**, and **MongoDB**, showcasing a mix of relational and NoSQL databases.

2. Top 10 Databases Desired Next Year (Future Trends)

- **PostgreSQL** is the most desired database, overtaking current leaders, emphasizing its growing reputation for scalability and flexibility.
- Interest in NoSQL databases such as **MongoDB** and **Redis** continues to rise, indicating a shift toward diverse database solutions.

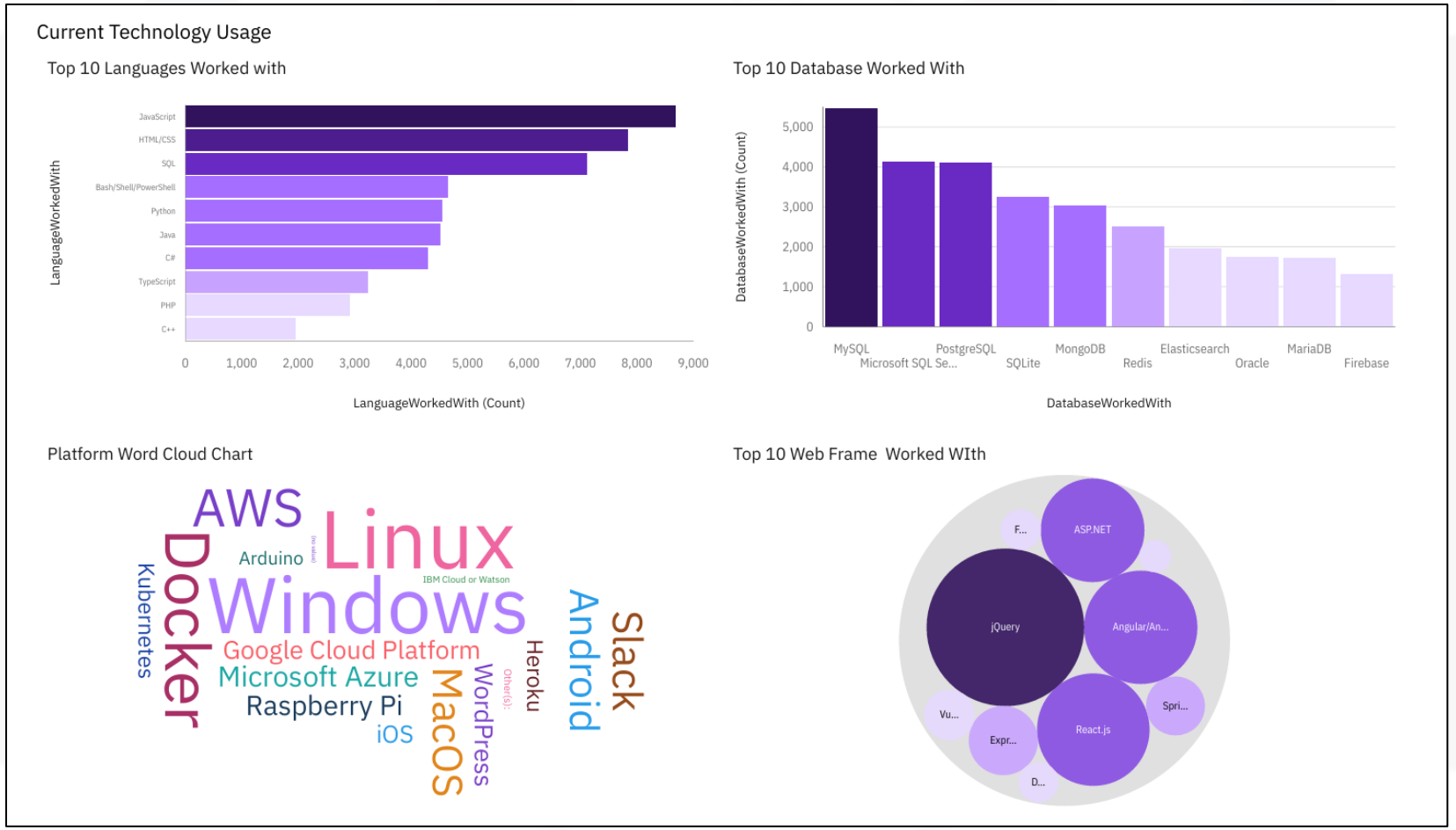
Implications

- The popularity of NoSQL databases like **MongoDB** signals a shift toward handling unstructured data, critical for modern applications.
- Relational databases like **MySQL** and **PostgreSQL** remain staples, highlighting the ongoing need for structured data solutions.
- Companies should monitor the rise of **PostgreSQL** as a preferred database for future projects, ensuring their teams are proficient in its advanced features.

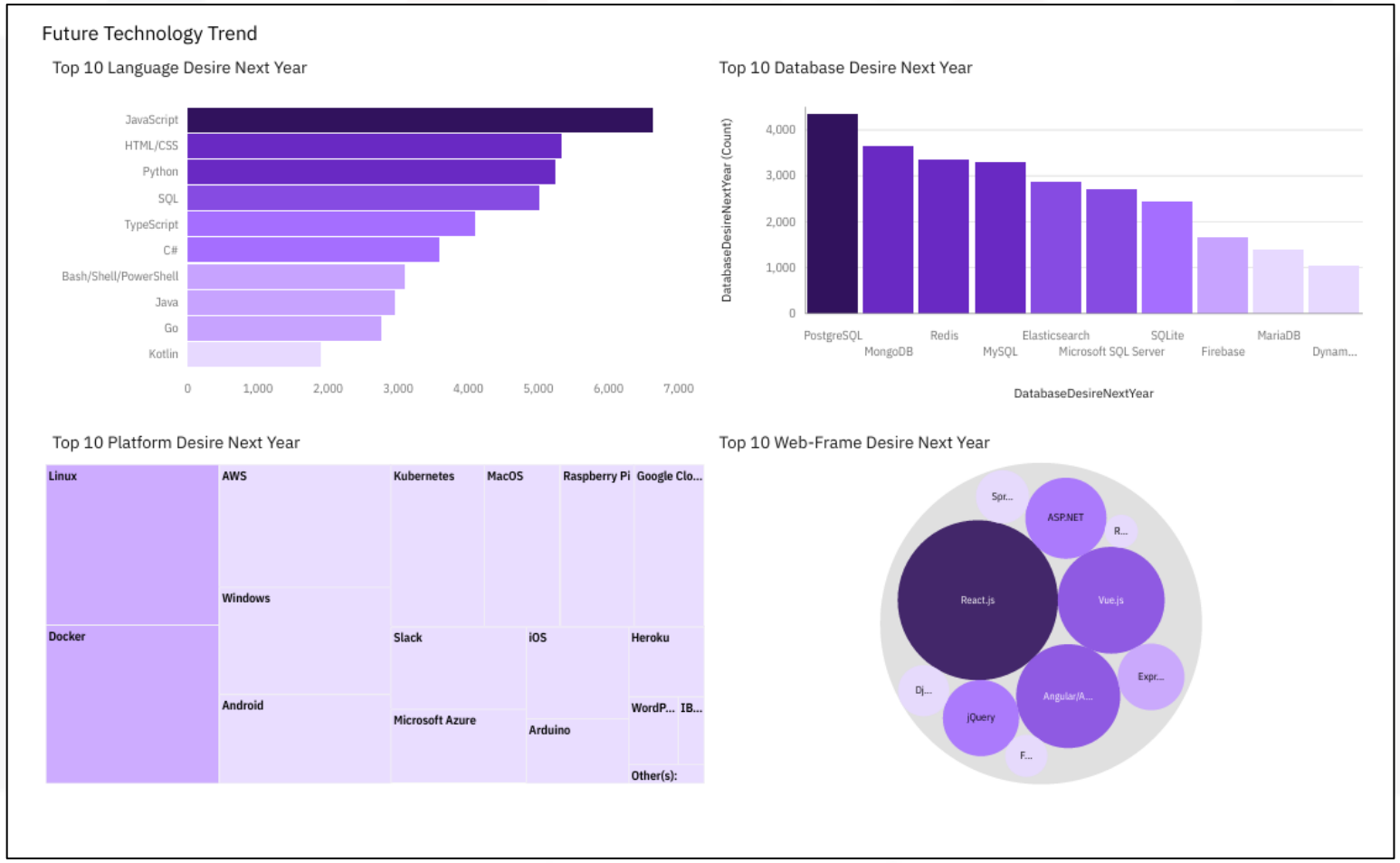
DASHBOARD

GitHub URL : IBM-Capstone-Project

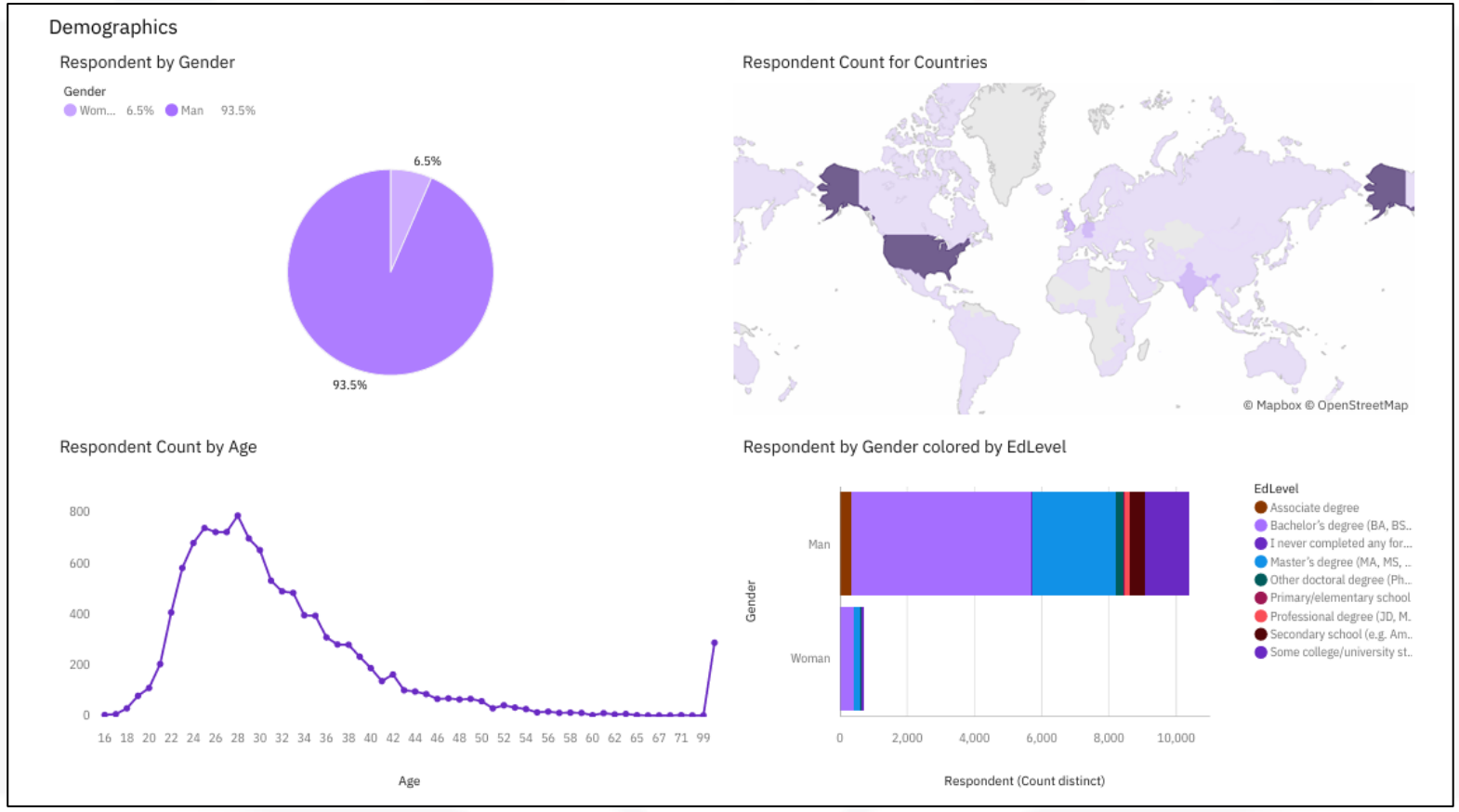
DASHBOARD TAB 1



DASHBOARD TAB 2



DASHBOARD TAB 3



DISCUSSION

- MySQL and PostgreSQL dominate, indicating strong demand for relational databases.
- Rising interest in NoSQL highlights shift toward flexible data handling solutions.
- PostgreSQL's future preference underscores its scalability and advanced features popularity.
- Emerging cloud-native databases emphasize adaptability to modern application needs.
- Organizations must diversify database expertise to align with evolving tech trends.

CONCLUSION

- Relational databases like MySQL and PostgreSQL remain essential in current and future tech environments.
- NoSQL databases, such as MongoDB and Redis, are gaining momentum for specific use cases.
- PostgreSQL's growing demand signals its rising importance in scalable, flexible data solutions.
- Cloud-native databases and platforms are becoming increasingly critical for modern application architectures.
- Tech professionals must adapt by learning emerging databases to stay competitive in the evolving landscape.

APPENDIX

- Data was scraped from a Stack Overflow survey under an OBDl: Open Database License.
- IBM Cognos was used for creating the Dashboards and various visualizations.
- BeatifulSoup library in Python was used to scrape GitHub job postings along with their average salaries.

JOB POSTINGS

POPULAR LANGUAGES