Stack Overflow survey data

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OUTLINE

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

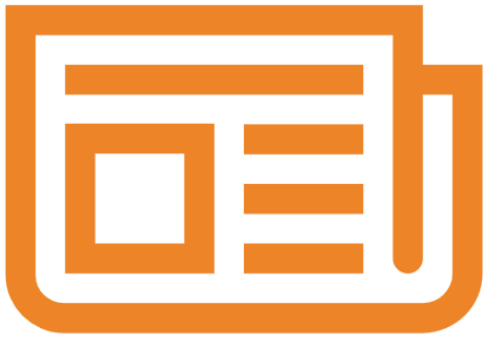
EXECUTIVE SUMMARY

- **Framing the Data and Defining Analysis Objectives**
- **Methodology Overview:**
  - Data collection techniques
  - Analytical approach
  - Visualization strategies.
- **Presentation of Results with Supporting Graphs and Trends**
- **Discussion of Key Findings and Their Implications**
- **Final Conclusions of the Research Conducted**

INTRODUCTION

- The Stack Overflow Developer Survey captures insights from developers worldwide and provides a comprehensive view of the technologies currently being used and the tools and technologies developers aspire to adopt in the future.
- The project aims to analyze global trends in the developer ecosystem, identify key patterns in technology preferences, and uncover potential correlations between developer demographics and their tool choices.
- The dataset used has been filtered and pre-processed to ensure consistency and reliability..
- The project combines data wrangling, exploratory analysis, and visualization techniques. to present actionable insights about the current and future state of technology adoption in the developer community.

METHODOLOGY

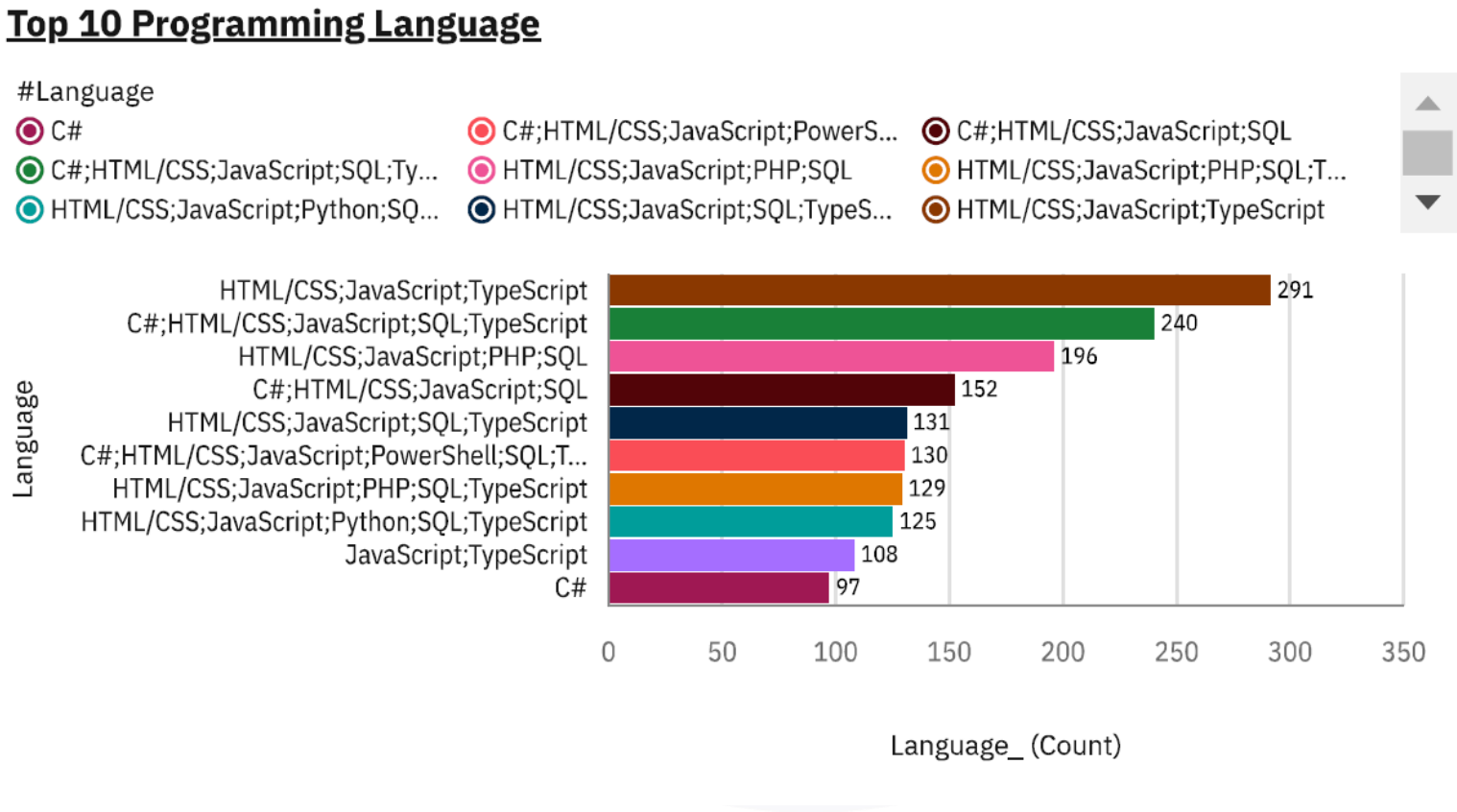


- **Data collection methods:**
  - Using API access
  - Web Scraping techniques
- **Data Wrangling**
  - Handling duplicates
  - Identifying and addressing missing values
  - Normalizing data
- **Exploratory data analysis (EDA)**
  - Plotting data distribution
  - Detecting outliers
  - Exploring Correlations
- **Data Visualization**
  - Creating data visualization such as: Histograms, Scatter plots, Pie charts and bar charts.
- **Dashboard**

RESULTS

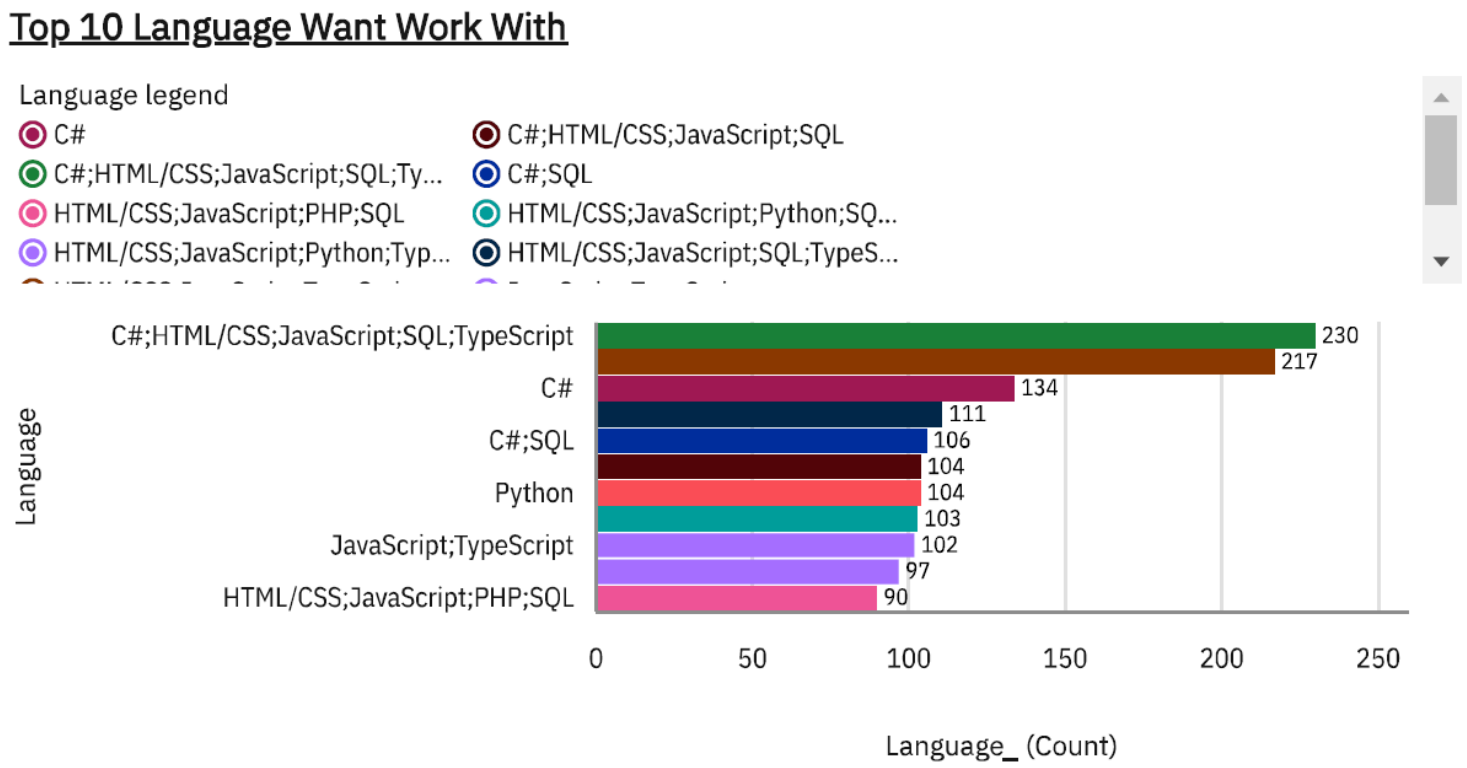
PROGRAMMING LANGUAGE TRENDS

Current Year



PROGRAMMING LANGUAGE TRENDS

Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript, HTML/CSS, and TypeScript remain dominant in both figures.
- C# rises significantly in preference, indicating increased interest among developers for next year.
- SQL and Python showing stable demand.

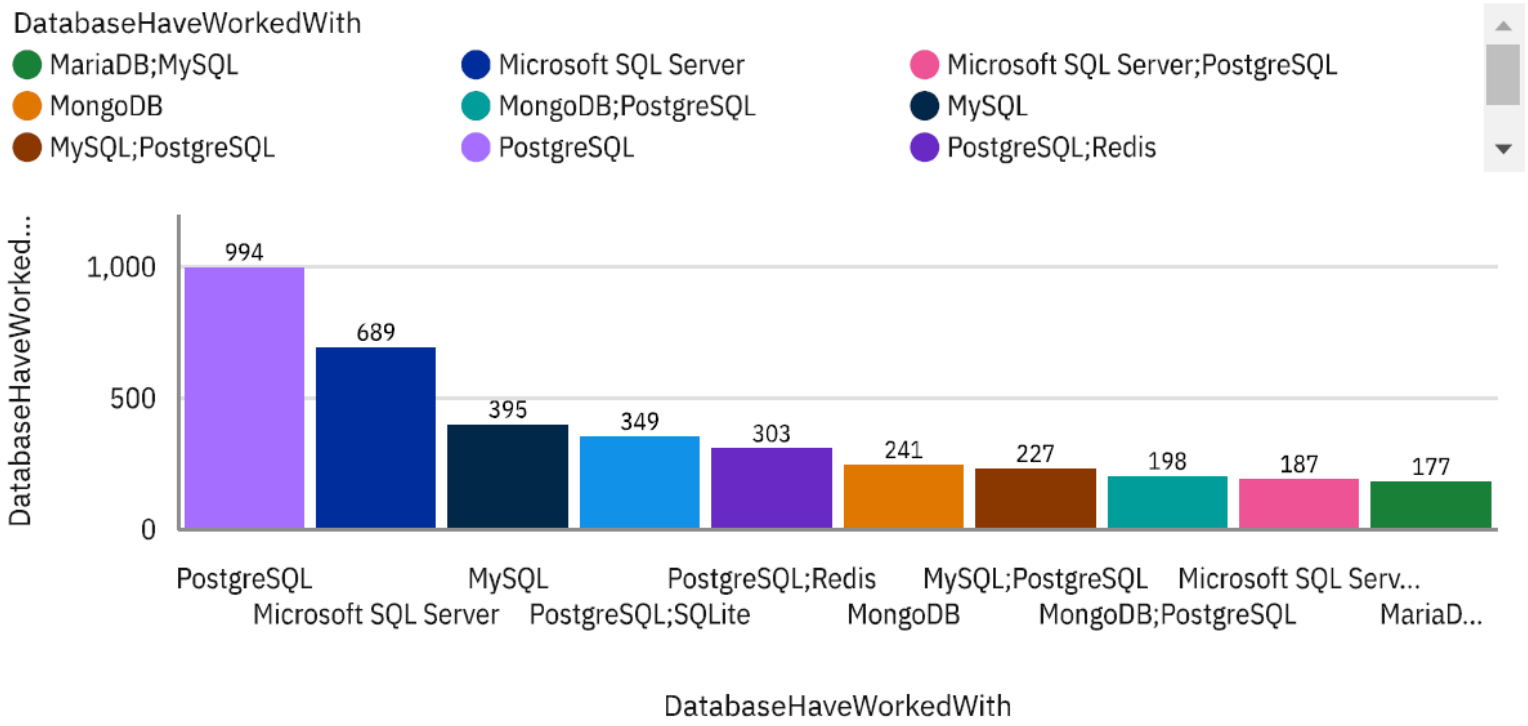
Implications

- The current-year shows developers working with multiple languages (e.g., "HTML/CSS; JavaScript; TypeScript"). The next-year figure has more standalone languages, meaning developers want to focus on fewer, more impactful technologies.
- Developers & Students → Upskill in C# and SQL for better career prospects.

DATABASE TRENDS

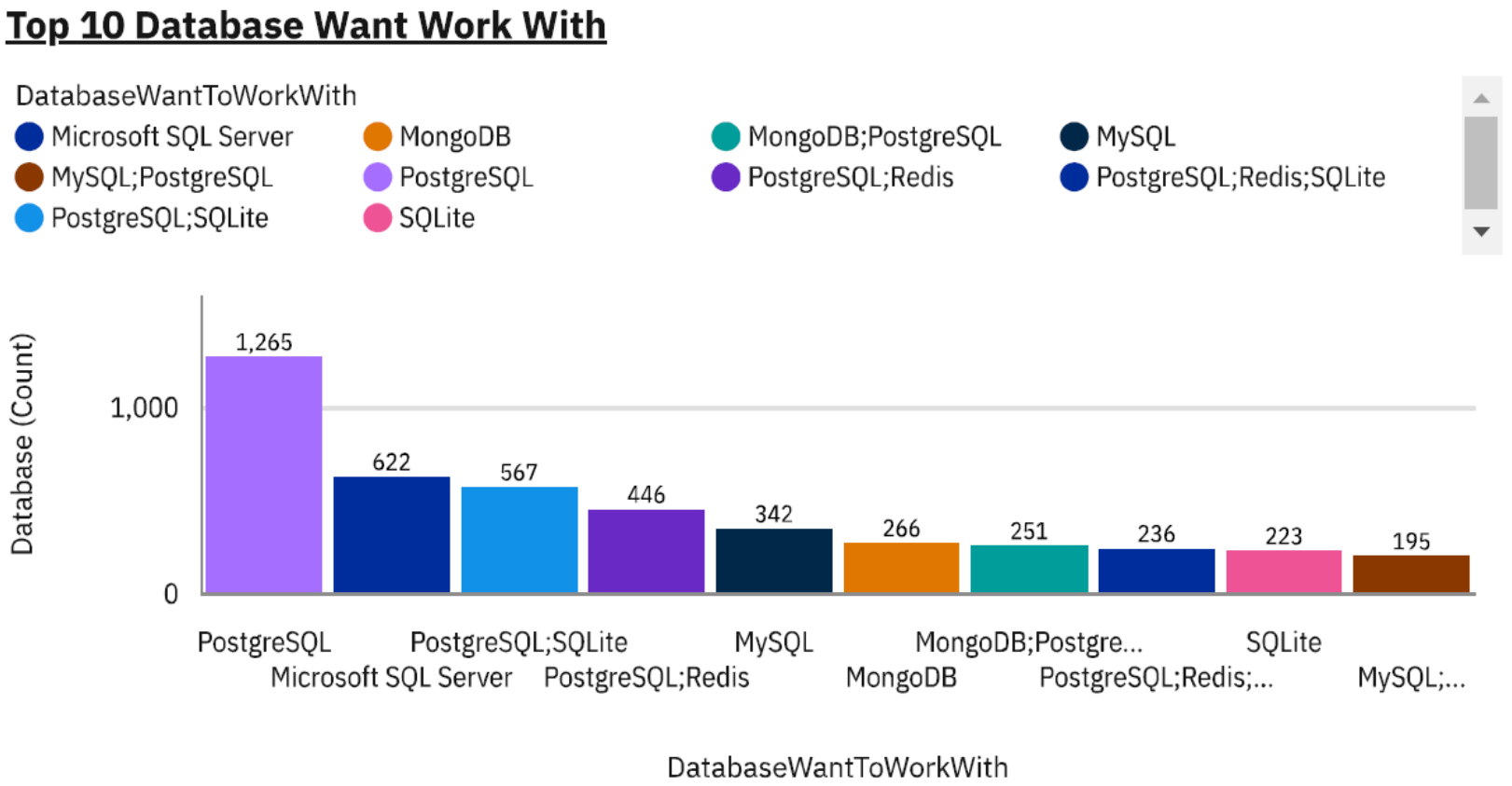
Current Year

Top 10 Database Worked With



DATABASE TRENDS

Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL dominance grows → showing rising developer preference.
- Microsoft SQL Server remains strong but sees only slight growth.
- SQLite gains interest → Moves into the top 3 for next year (567), indicating demand for lightweight, embedded databases.
- MongoDB and NoSQL databases (PostgreSQL + Redis) are gaining traction.

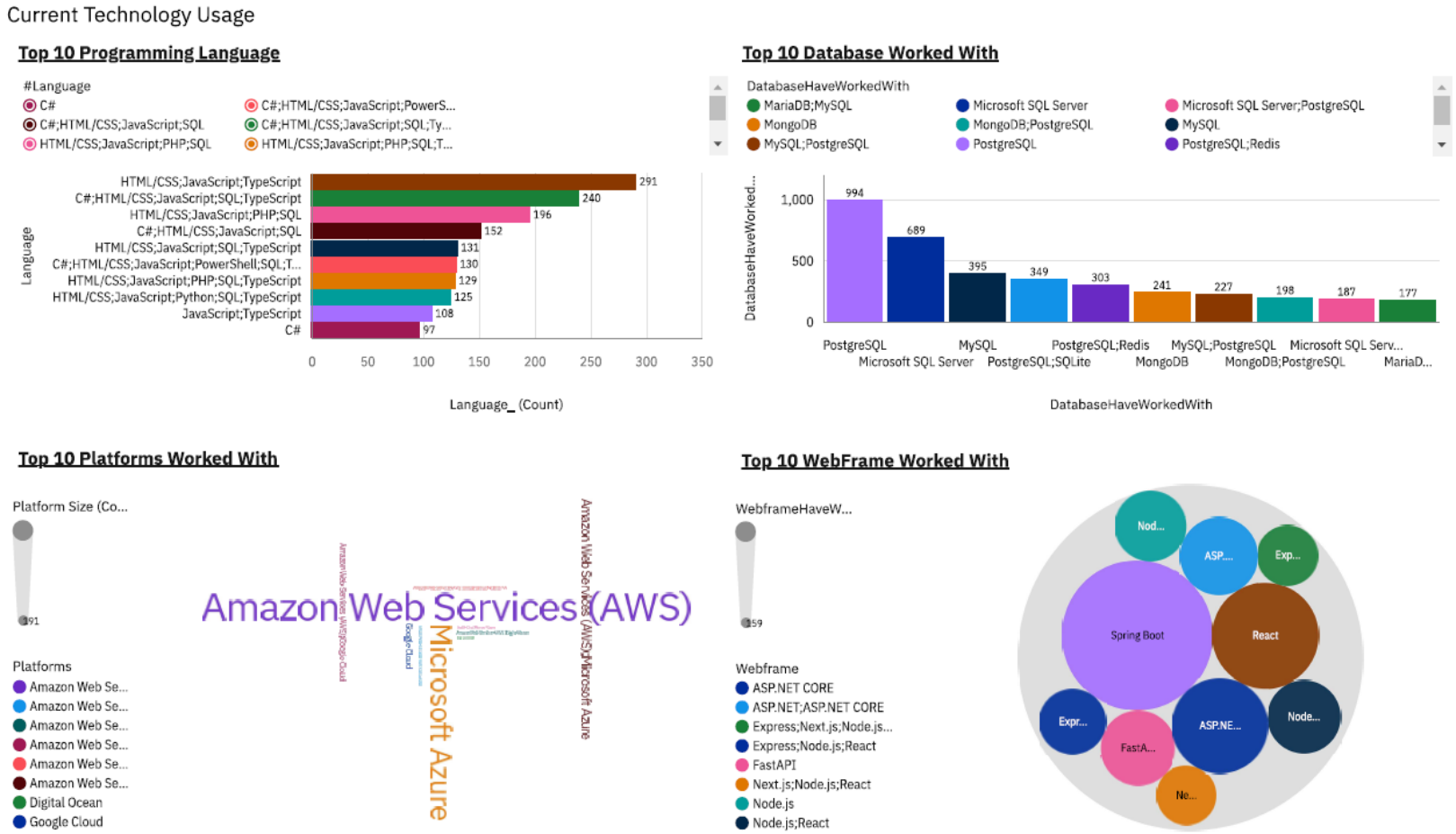
Implications

- MongoDB and NoSQL databases (PostgreSQL + Redis) are gaining traction.
- Growing interest in SQLite → Suggests more mobile & lightweight database solutions.
- More developers moving toward NoSQL & hybrid databases → Expect MongoDB & Redis integrations in modern applications.

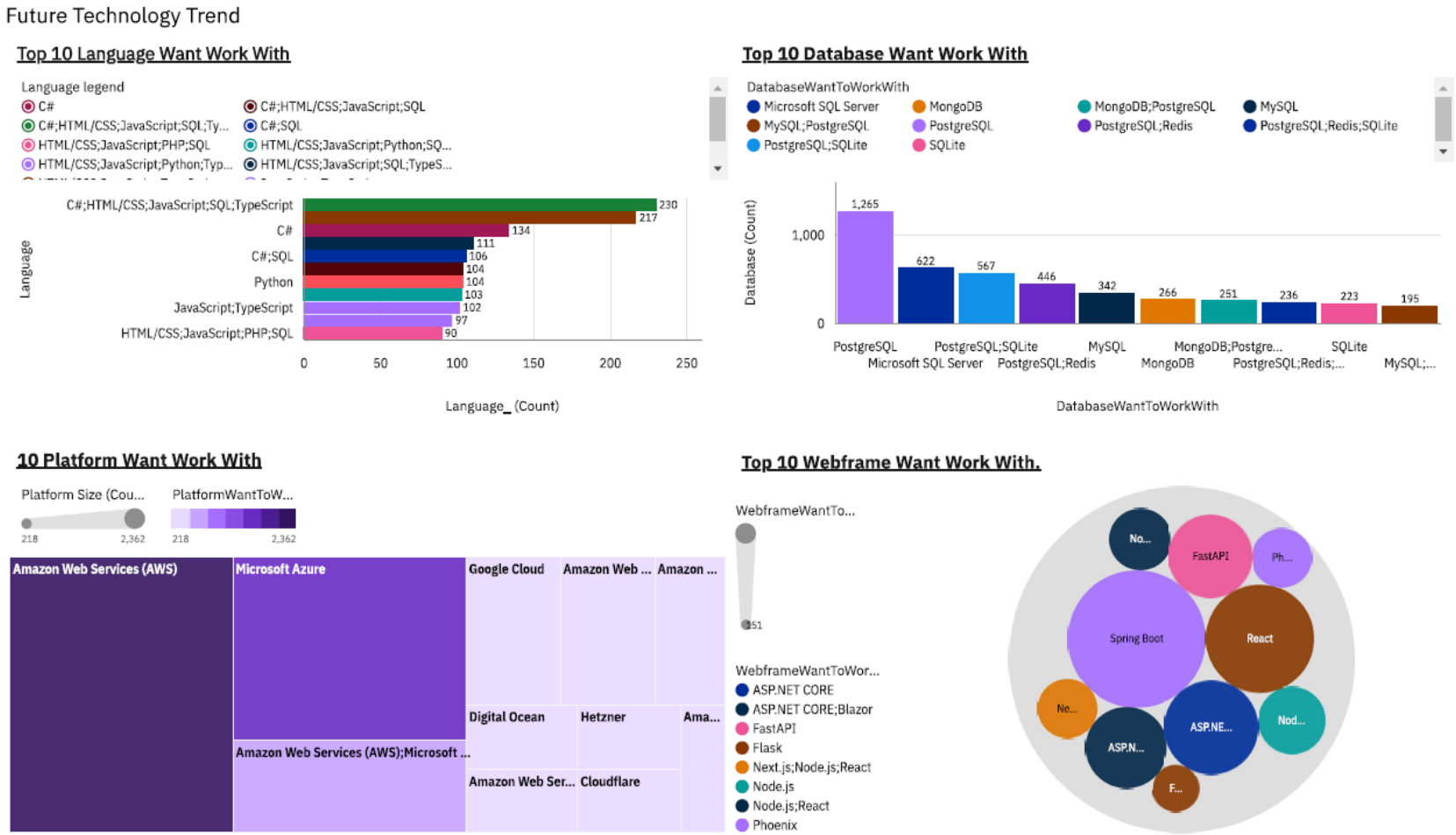
DASHBOARD

https://eu1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FIBM%2BProject&action=view&mode=dashboard&subView=model00000194ac8f6eab_00000000

DASHBOARD TAB 1



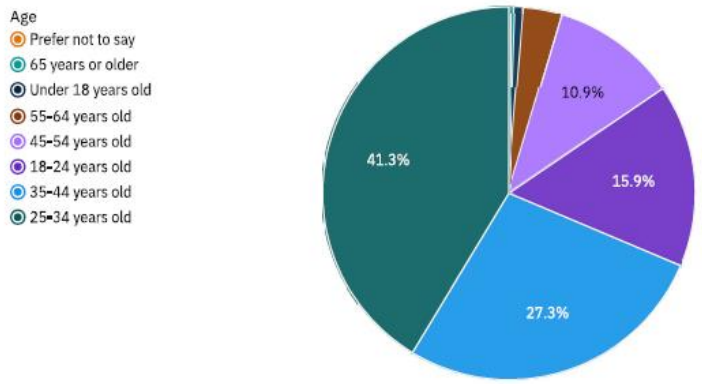
DASHBOARD TAB 2



DASHBOARD TAB 3

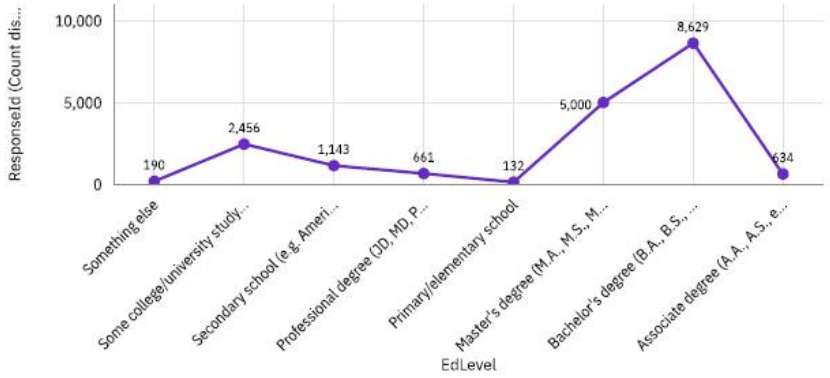
Demographics

Respondent distribution by Age

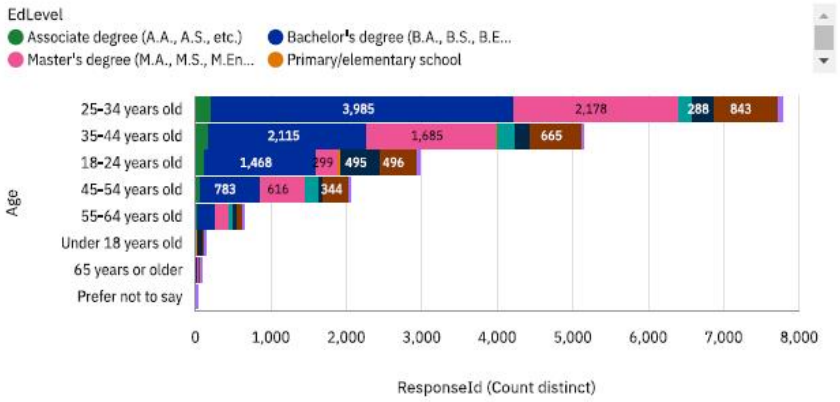


Respondent Count by Country

Respondent distribution by Formal Education Level



Respondent Count by Age, classified by Education Level



DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

- PostgreSQL is becoming the dominant database, with usage increasing significantly, while SQLite is also gaining traction for lightweight applications.
- C# and SQL are growing in demand, while JavaScript remains strong but shows a slight decline in preference.
- Cloud adoption is expanding beyond AWS, with Google Cloud and Digital Ocean gaining traction, although AWS remains the leader.
- React, Spring Boot, and FastAPI are the most desired web frameworks, with FastAPI showing a surge in interest, indicating the rise of Python-based API development.

Implications

- Developers should focus on PostgreSQL, C#, and Python to align with market demand.
- Businesses should invest in multi-cloud strategies (AWS, Azure, Google Cloud) to attract talent and stay competitive.
- Companies shifting toward API-driven architectures should consider Python & FastAPI, as they are becoming essential in modern development.

CONCLUSION

- PostgreSQL is the clear leader in database trends, with significant growth, while SQLite is emerging as a key player for lightweight applications.
- C# and SQL are gaining momentum, indicating a shift towards backend and enterprise development, while JavaScript remains widely used but slightly declining.
- Cloud adoption is diversifying, with Google Cloud and Digital Ocean gaining popularity, although AWS remains the dominant platform.
- React, Spring Boot, and FastAPI are shaping the future of web frameworks, with FastAPI showing strong adoption, signaling the rise of Python-driven API development.

APPENDIX

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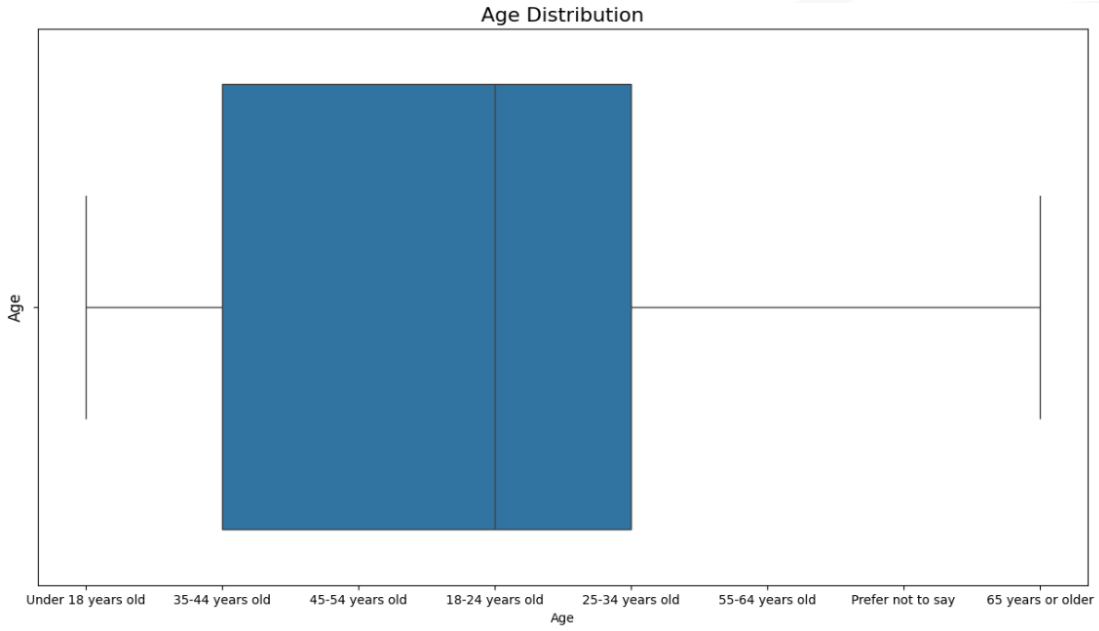
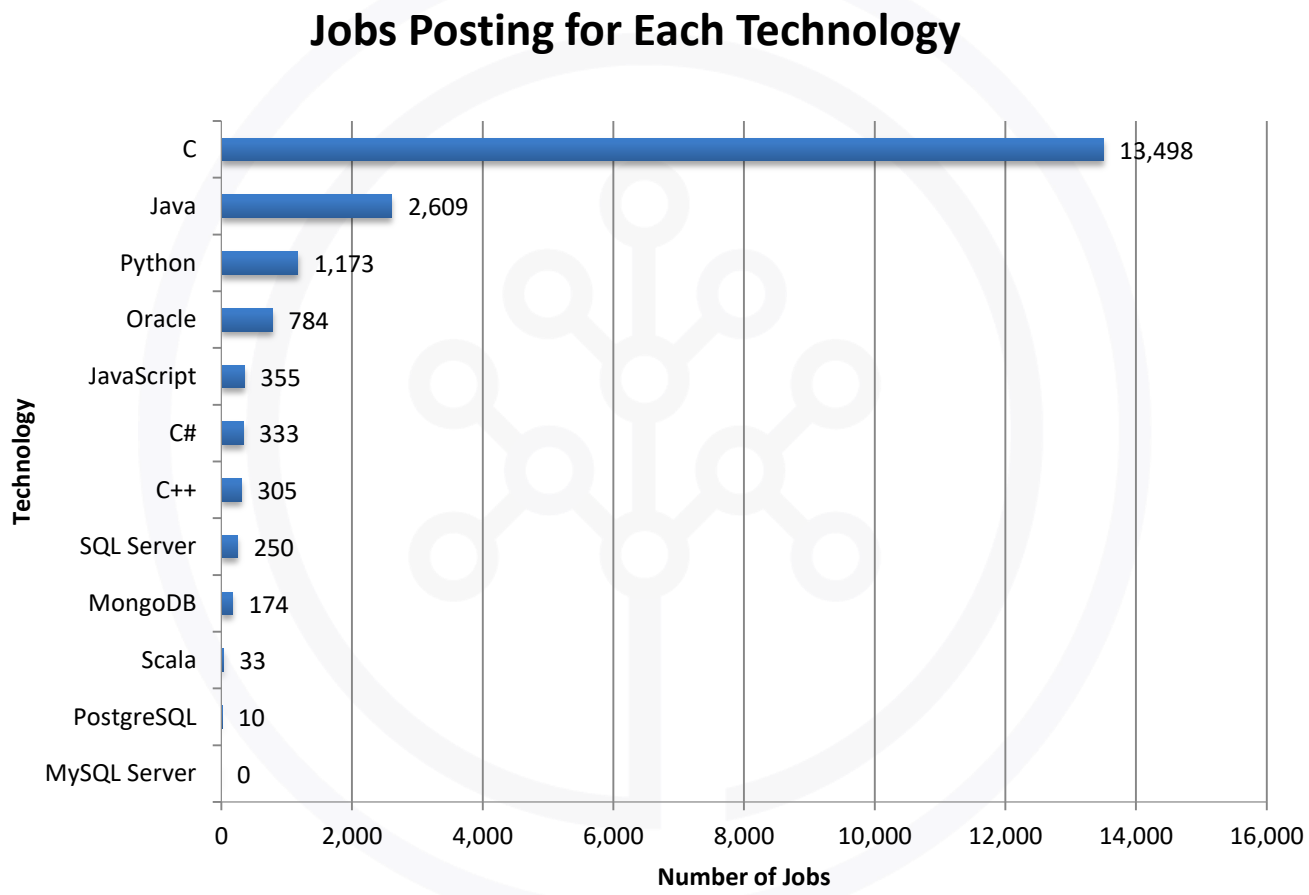

Age Distribution
Age
Under 18 years old
35-44 years old
45-54 years old
18-24 years old
25-34 years old
55-64 years old
Prefer not to say
65 years or older
Age


Top 5 Databases Respondents Want to Learn Next Year
Redis
MongoDB
15.2%
15.3%
17.1%
MySQL
33.5%
PostgreSQL
18.8%
SQLite

JOB POSTINGS



POPULAR LANGUAGES