DEVELOPER SURVEY

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IBM Data Analyst Capstone Project
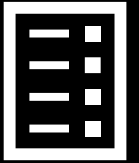
EXECUTIVE SUMMARY

- Contextualizing the data and defining the analysis objectives.

- Describing the methodology used for the research.

- Presenting results with supporting graphs and identified trends.

- Discussing the key findings and their implications based on the results.

- Providing final conclusions derived from the research conducted.

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- **Executive Summary**
- **Introduction**
- **Methodology**
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INTRODUCTION

- Stack Overflow's annual Developer Survey is the largest and most in-depth survey of coders worldwide.

- The results may not fully represent all segments of the developer community equally.

- Close to 90,000 developers participated in the survey.

- Identifies trends that help predict future directions in the developer community.

- Provides a global profile and insights into the characteristics of developers.

METHODOLOGY

- **Collect survey data and explore its contents.**

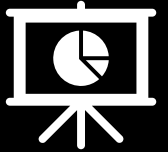[Web scraping, APIs, Request library]

- **Perform data wrangling.**

- **Conduct exploratory data analysis.**

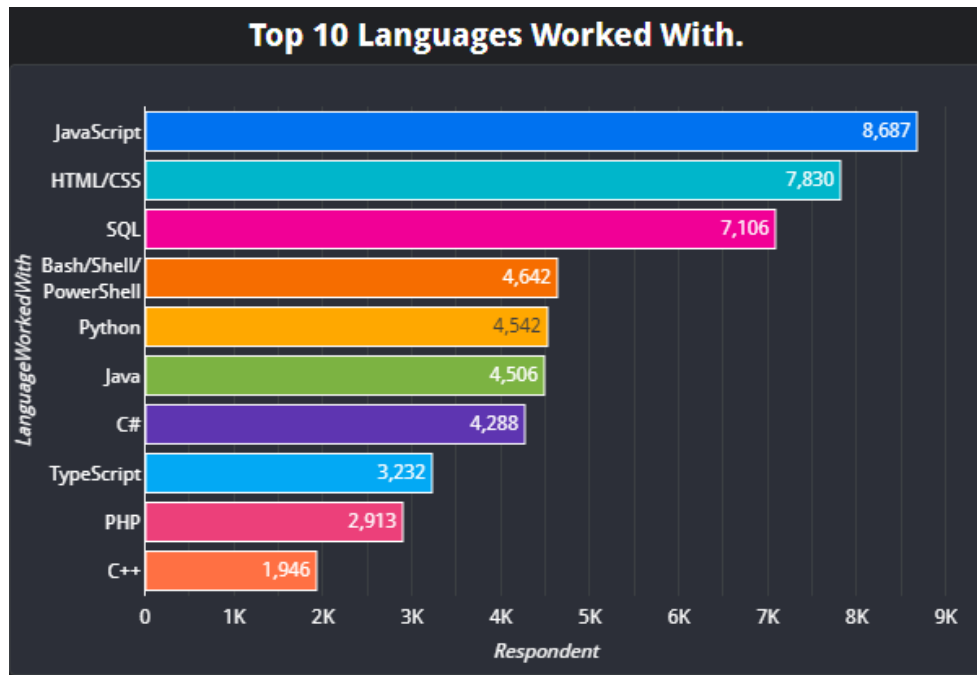[Analyse data distribution, manage outliers, examine correlations]

- **Create data visualizations.**
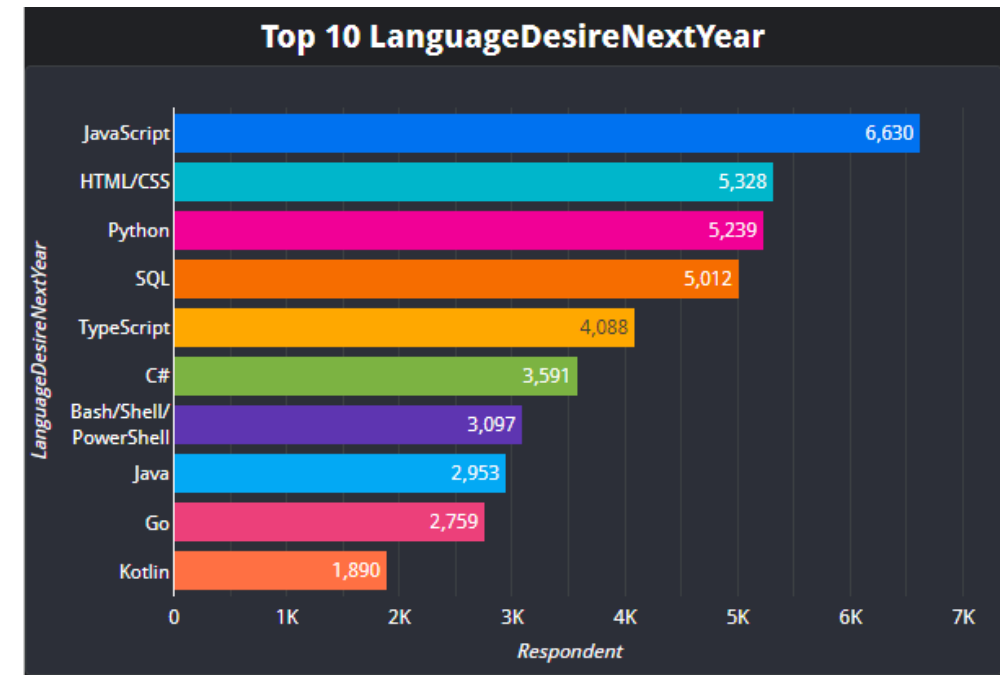
- **Develop interactive dashboards.**

RESULTS
PROGRAMMING LANGUAGE TRENDS

CURRENT TRENDS

Top 10 Languages Worked With.

Language	Respondent
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542
Java	4,506
C#	4,288
TypeScript	3,232
PHP	2,913
C++	1,946

FUTURE TRENDS

Top 10 LanguageDesireNextYear

Language	Respondent
JavaScript	6,630
HTML/CSS	5,328
Python	5,239
SQL	5,012
TypeScript	4,088
C#	3,591
Bash/Shell/PowerShell	3,097
Java	2,953
Go	2,759
Kotlin	1,890

# PROGRAMMING LANGUAGE TRENDS - FINDINGS AND IMPLICATIONS

Findings:

- **JavaScript Dominance:** JavaScript is both the most used and most desired language, indicating its continued relevance in web development and software engineering.

- **Consistent Demand for HTML/CSS and Python:** These languages are popular now and will continue to be in demand, reflecting their importance in web development (HTML/CSS) and data science (Python).

- **Shift in Preferences:** PHP and C++ are widely used but less desired for future work, while Go and Kotlin are gaining popularity, suggesting a move toward more modern languages.

- **SQL's Steady Importance:** SQL remains crucial for database management, with consistent usage and future demand.
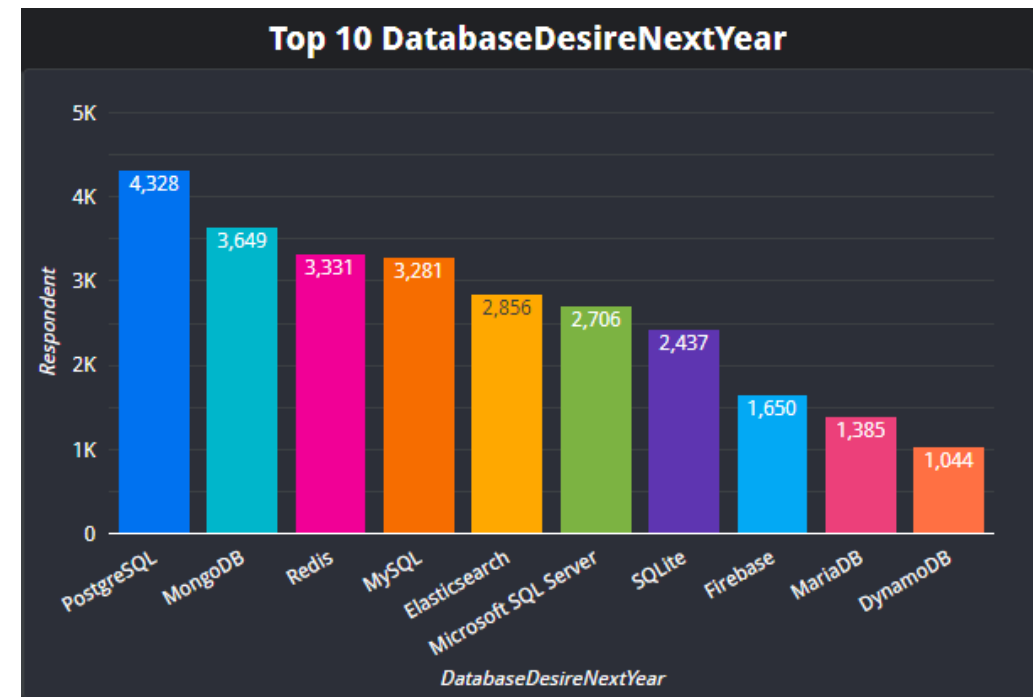
Implications:

- JavaScript's dominance shows its ongoing relevance.

- Rising interest in Python and modern languages like Go and Kotlin suggests developers are moving toward newer technologies.

- SQL's consistent demand highlights its importance in data-related fields.

- There's a clear trend towards adopting newer languages for future projects, indicating evolving industry needs and preferences.

DATABASE TRENDS

CURRENT TRENDS

Top 10 Databases Worked With.

FUTURE TRENDS

Top 10 DatabaseDesireNextYear
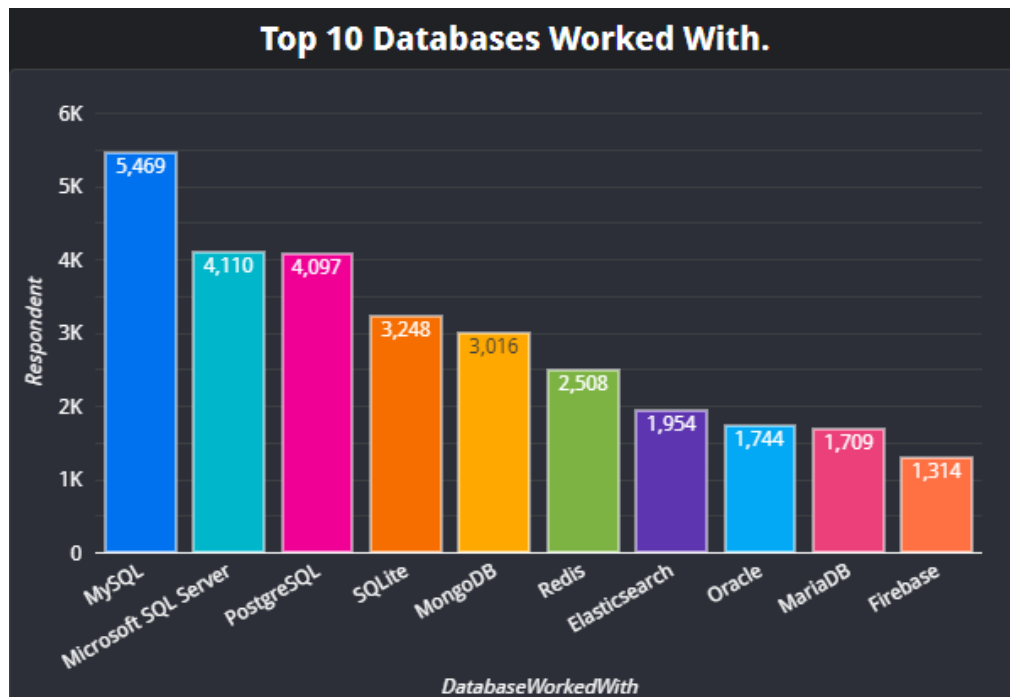
DATABASE TRENDS - FINDINGS AND IMPLICATIONS

Key Findings:

- **SQL vs. NoSQL:** SQL databases (MySQL, PostgreSQL) remain popular, but NoSQL (MongoDB, Redis) are gaining ground for modern applications.

- **Cloud-Native Databases:** Cloud-based solutions (Firebase, DynamoDB) are becoming more desirable.

- **Database Diversity:** The choice of database depends on specific project needs.

Implications:

- **PostgreSQL's Rise:** PostgreSQL is a strong choice for various applications.

- **NoSQL's Growth:** NoSQL is suitable for modern, scalable workloads.

- **Cloud Adoption:** Cloud-native databases offer benefits like scalability and ease of use.

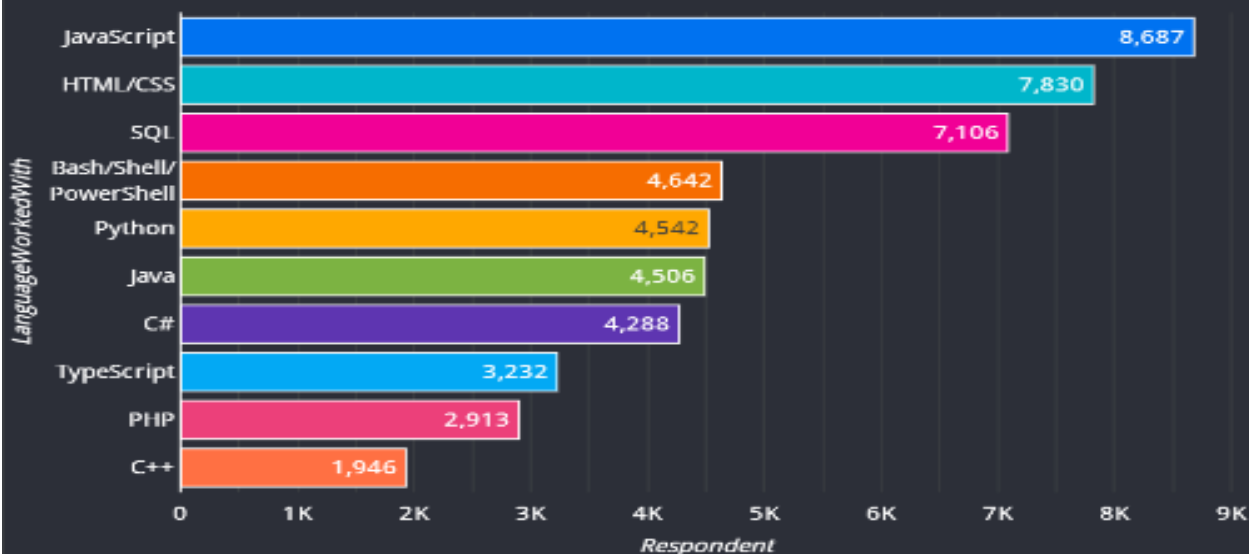- **Careful Selection:** Choose databases based on project requirements.

DASHBOARD

Current Technology Usage

Top 10 Languages Worked With.

Language	Respondent
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542
Java	4,506
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TypeScript	3,232
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C++	1,946

Top 10 Databases Worked With.

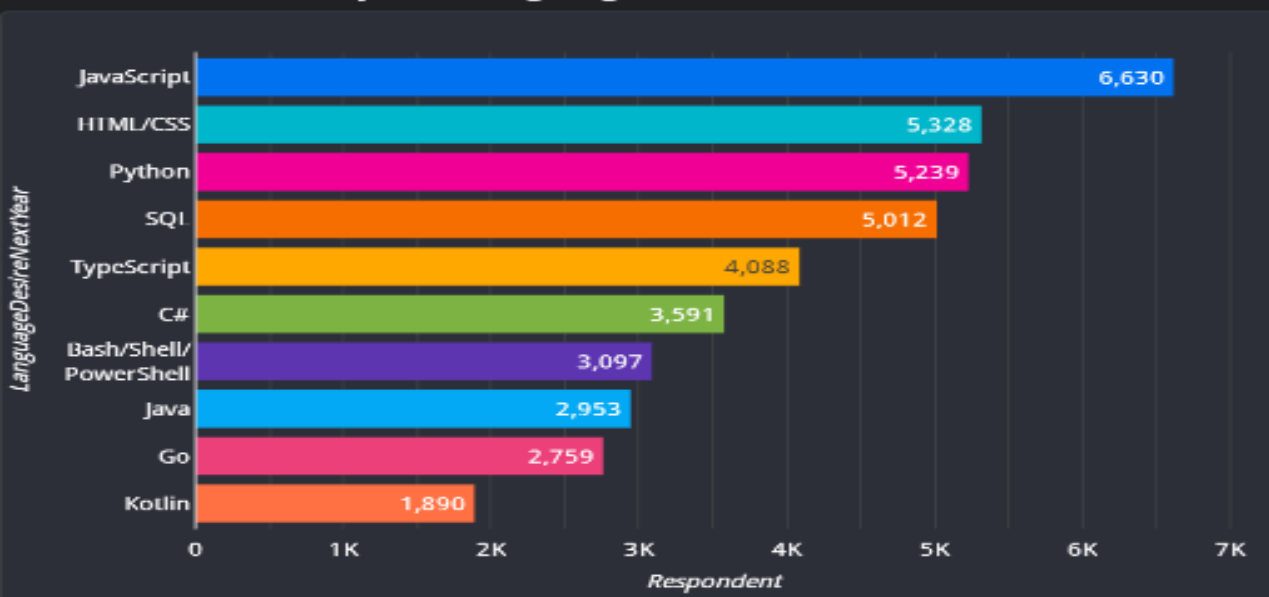| Database	Respondent
MySQL	5,469
Microsoft SQL Server	4,110
PostgreSQL	4,097
SQLite	3,248
MongoDB	3,016
Redis	2,508
Elasticsearch	1,954
Oracle	1,744
MariaDB	1,709
Firebase	1,314
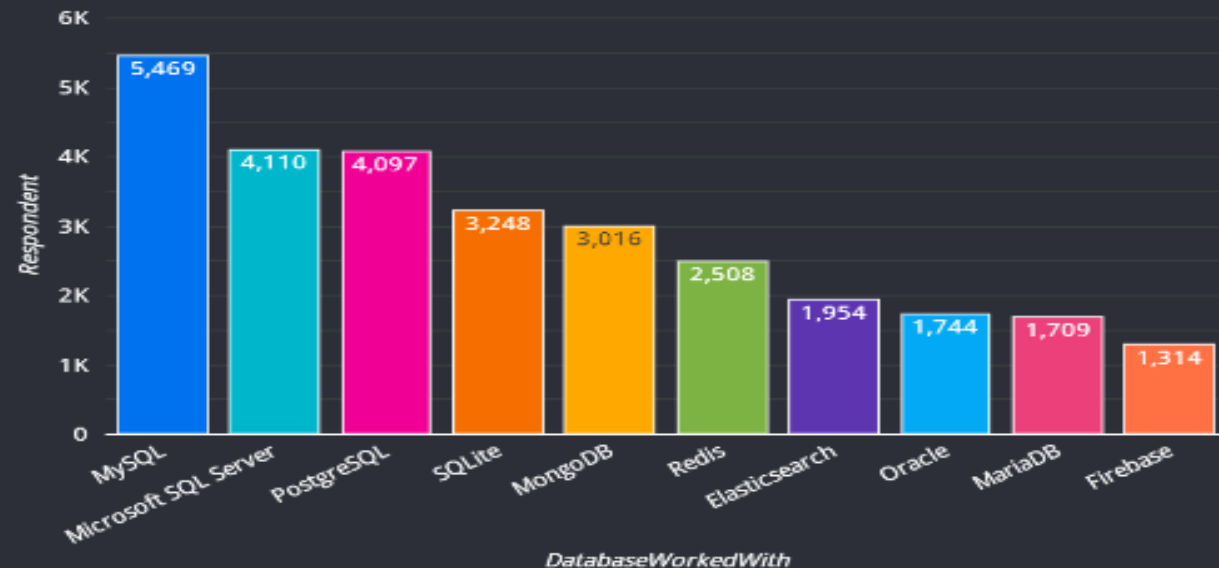
PlatformWorkedWith

Top 10 WebFrameWorkedWith
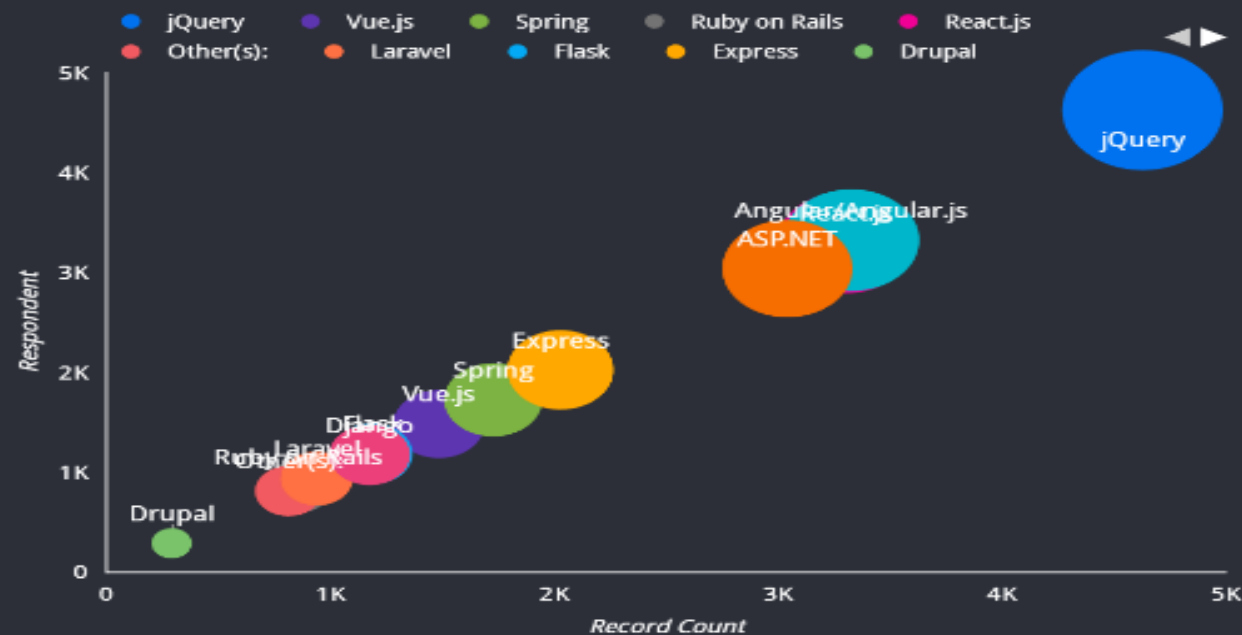
Future Technology Trend

Top 10 LanguageDesireNextYear

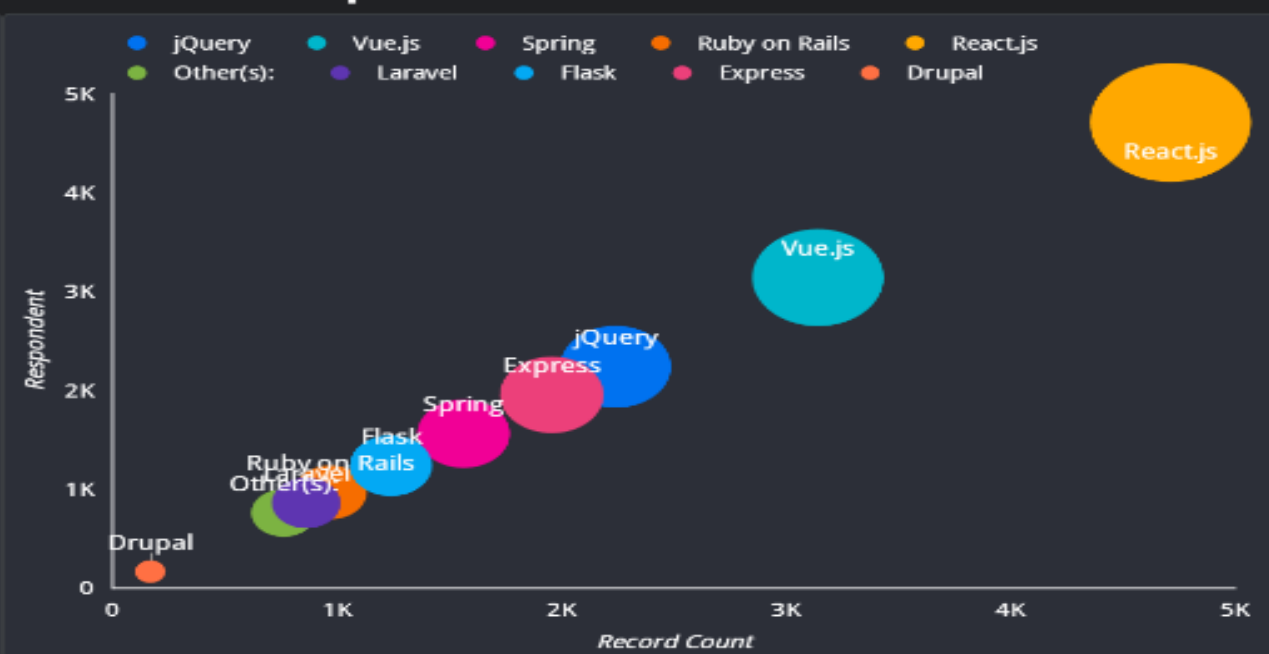| LanguageDesireNextYear	Respondent
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Java	2,953
Go	2,759
Kotlin	1,890

Top 10 DatabaseDesireNextYear

DatabaseDesireNextYear	Respondent
PostgreSQL	4,328
MongoDB	3,649
Redis	3,331
MySQL	3,281
Elasticsearch	2,856
Microsoft SQL Server	2,706
SQLite	2,437
Firebase	1,650
MariaDB	1,385
DynamoDB	1,044
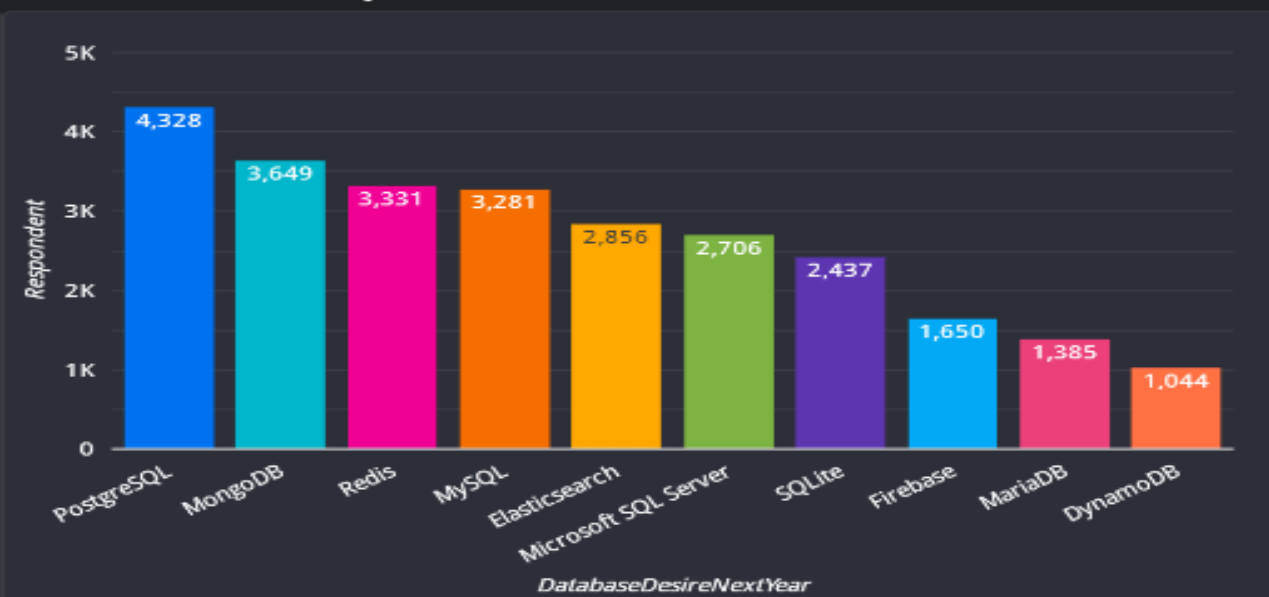
PlatformDesireNextYear

All: Linux, Windows, Android, Docker, AWS, Kubernetes, Raspberry Pi, MacOS, Google Cloud..., Slack
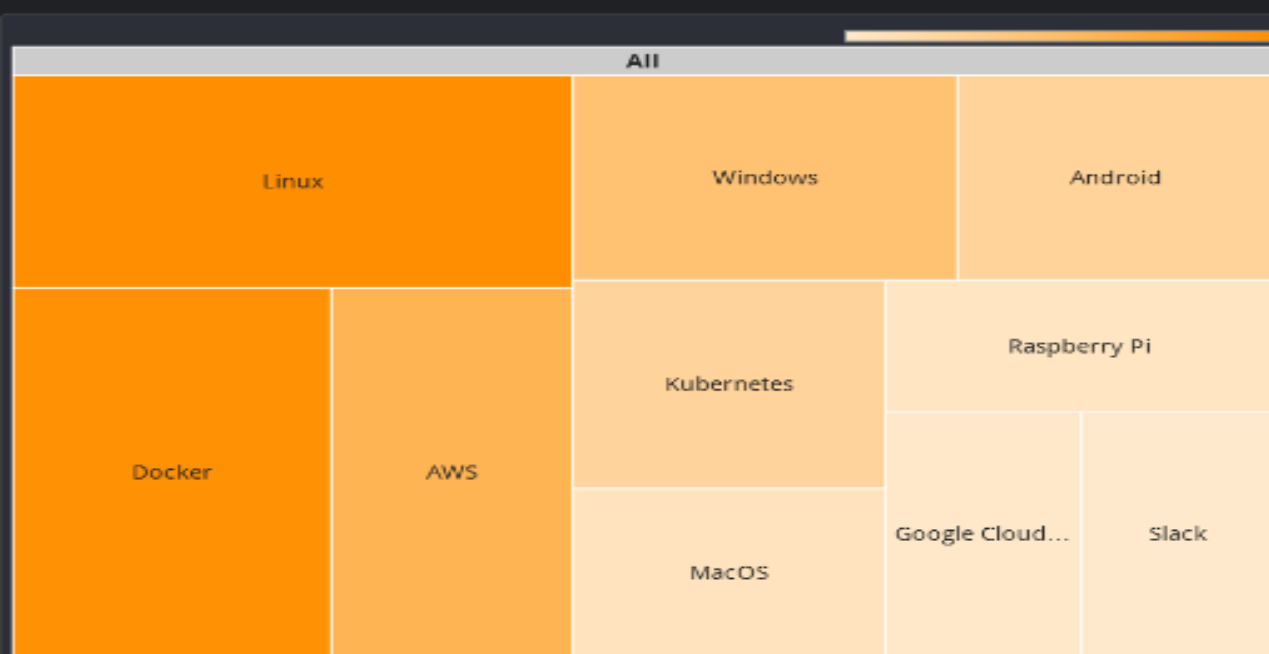
Top 10 WebFrameDesireNextYear

Legend: jQuery, Vue.js, Spring, Ruby on Rails, React.js, Other(s):, Laravel, Flask, Express, Drupal

Demographics

Respondent classified by Gender

- Man
- Woman
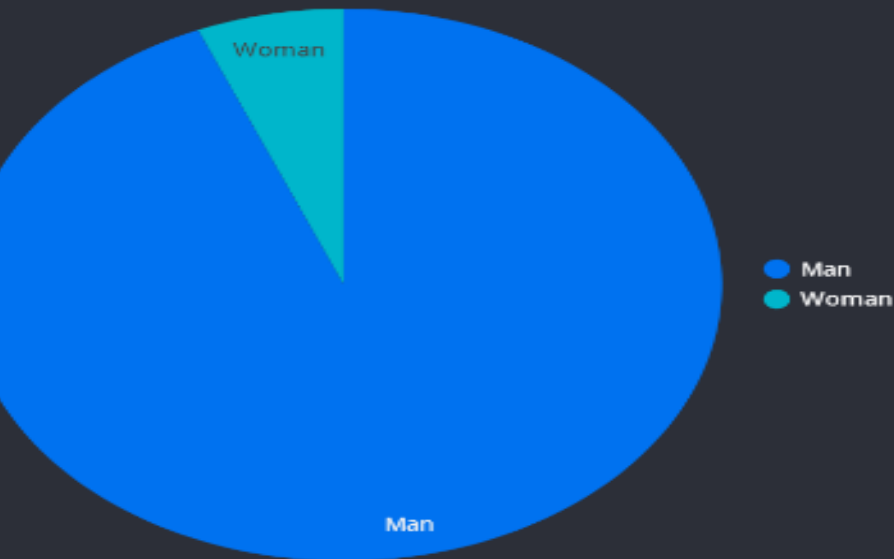
Respondent Count for Countries

Respondent   865 ▭ 39,154,240
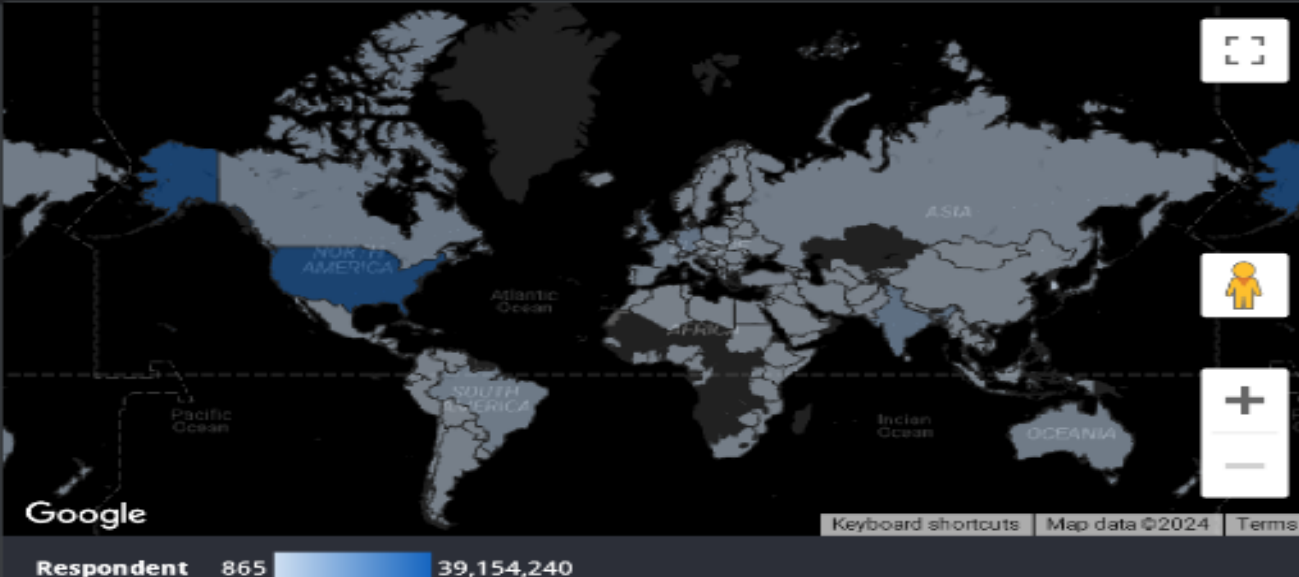
Respondent Count by Age
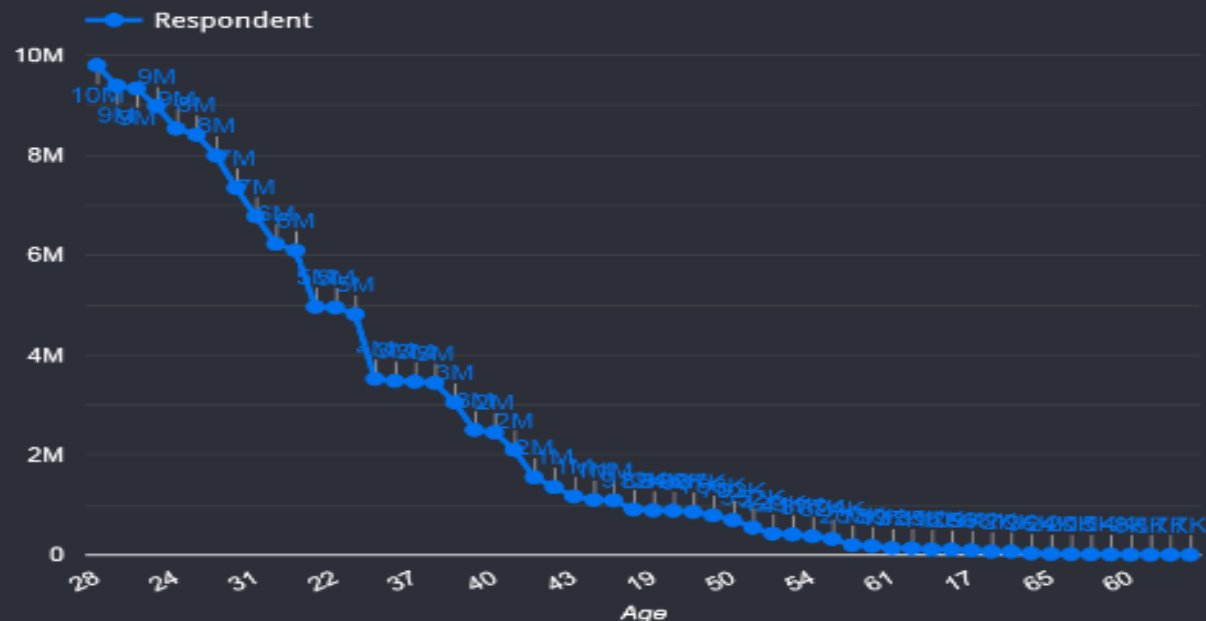
Respondent Count by Gender and Education Level

Legend:
- Bachelor's degree...
- Master's degree (...
- Some college/univ...
- Secondary school (e...
- Associate degree
- Other doctoral degr...
- Professional degr...
- Primary/elementa...
- I never completed...

Man: 66.5M | 31M | 16.1M | 2.14M 1.5K
Woman: 296.4K
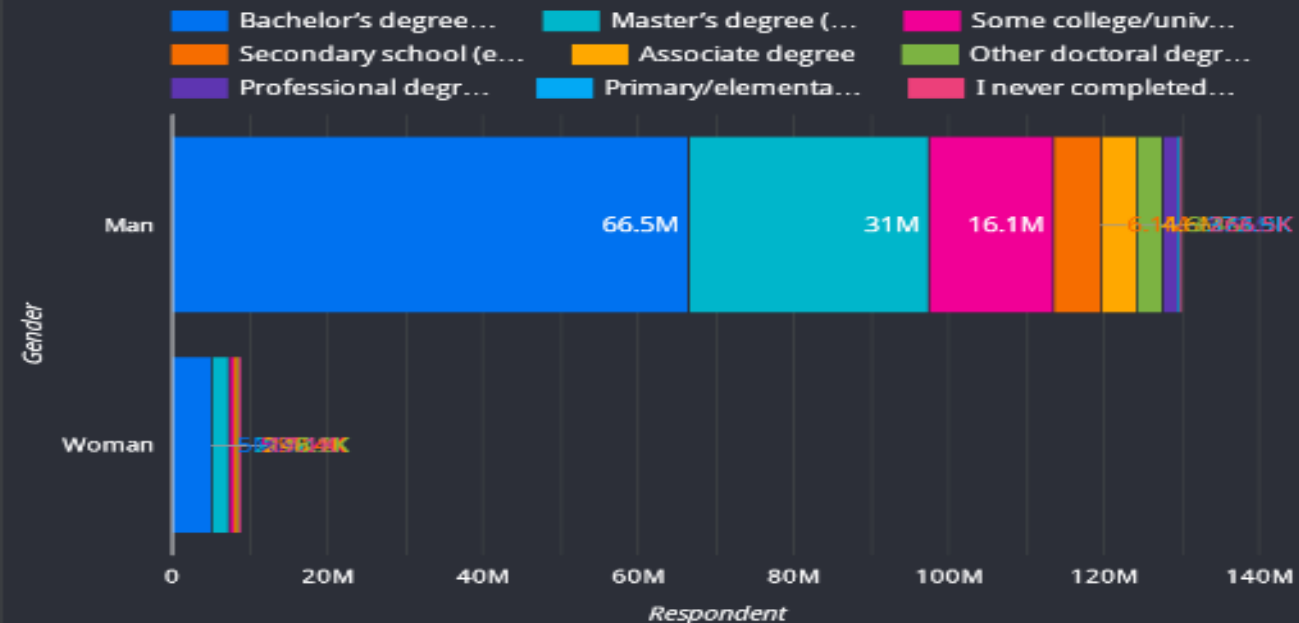
OVERALL FINDINGS AND IMPLICATIONS

Findings:

- **Technology Trends:** JavaScript, Python, and web frameworks remain popular, while cloud platforms and DevOps tools continue to gain traction. Databases like PostgreSQL, MongoDB, and MySQL are widely used.

- **Demographics:** The data is skewed towards younger, male respondents with higher education levels, concentrated in certain regions.

- **Future Trends:** Respondents anticipate continued growth in the popularity of JavaScript, Python, cloud technologies, and web frameworks.

Implications:

- **Technology Landscape:** The continued dominance of JavaScript and Python, along with the growing adoption of cloud platforms and DevOps tools, suggests that organizations should invest in these technologies to remain competitive.

- **Demographic Bias:** The demographic biases in the data may limit the generalizability of the findings. It is important to consider the potential impact of these biases when interpreting the results.

- **Future Planning:** The anticipated trends in technology usage can help organizations plan for future development needs and investments.

- **Diversity and Inclusion:** The gender and education disparities highlight the need to address diversity and inclusion issues in the technology industry.

DISCUSSION
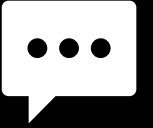
- **Technology Adoption:** The combination of current technology trends and future expectations suggests a strong focus on web development, cloud-native architectures, and data-driven applications.

- **Demographic Considerations:** The demographic biases in the data should be taken into account when making decisions based on the findings. Efforts should be made to collect more representative data to ensure that the results are applicable to a wider population.

- **Future-Proofing:** By staying informed about emerging technologies and trends, organizations can make informed decisions to position themselves for future success.
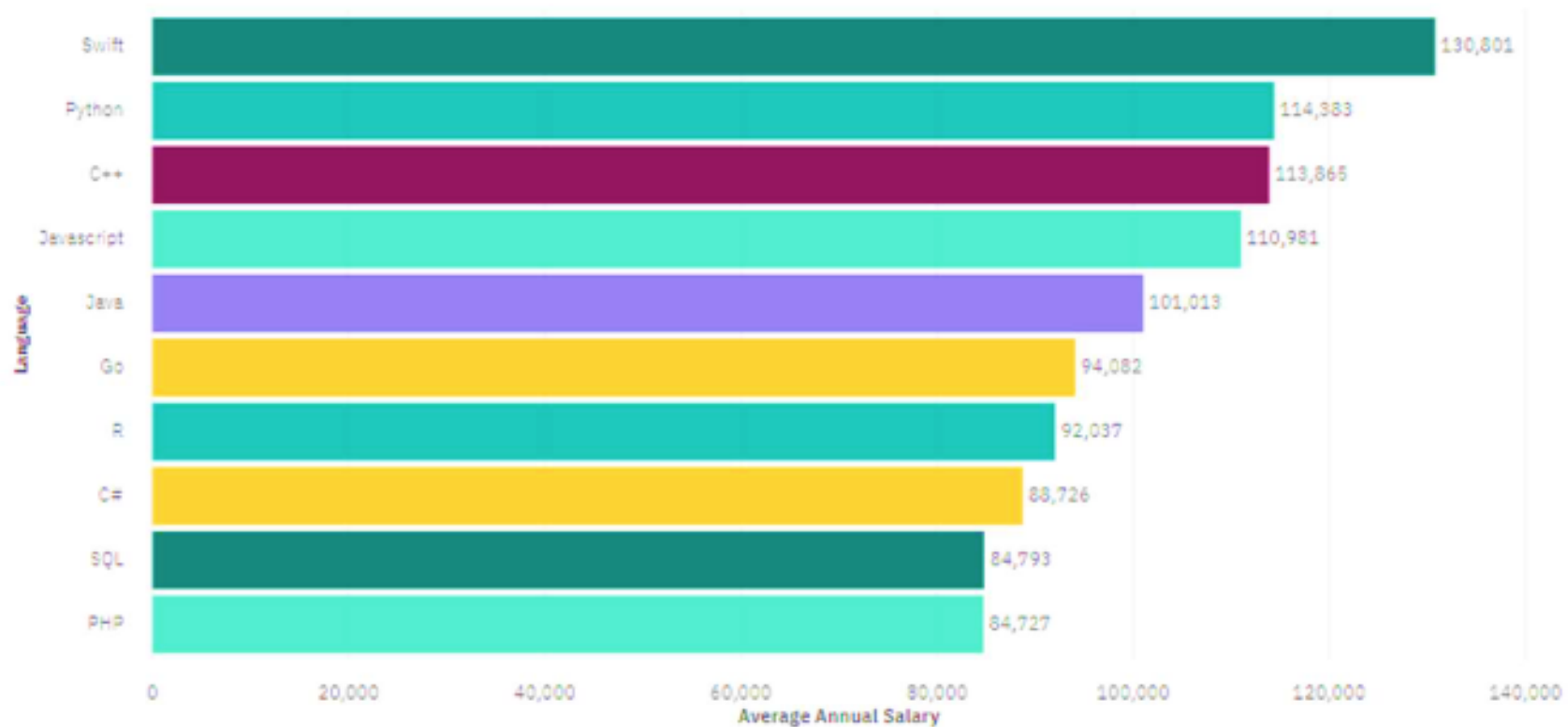
CONCLUSION

- **Invest in relevant technologies.**
- **Consider demographic biases.**
- **Plan for future trends.**
- **Address diversity and inclusion.**

APPENDIX

AVERAGE ANNUAL SALARY BASED ON LANGUAGE

Average Annual Salary based on Language

NUMBER OF JOB POSTINGS BASED ON TECHNOLOGY

Number of Job Postings for each Technology