Emerging Trends in Technology: Insights from Programming, Databases, and Workforce Analytics

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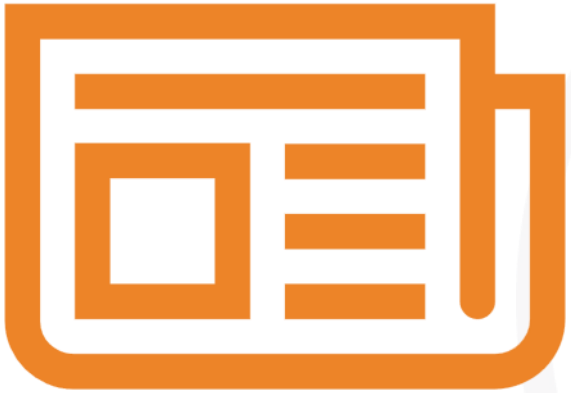
EXECUTIVE SUMMARY

- Objective:
  - This project investigates current and future trends in programming languages, database technologies, and workforce analytics using survey data and dashboards.
- Key Insights:
  - Programming Languages: JavaScript, HTML/CSS and SQL dominate the landscape, with growing interest in Go and Rust.
  - Database Technologies: Relational databases remain popular, while demand for NoSQL databases like MongoDB is increasing.
  - Job Market Analysis: High correlation observed between specific skills and job posting volumes.
- Methodology:
  - Leveraged IBM Cognos to create interactive dashboards, analyze trends, and visualize datadriven insights.

INTRODUCTION

- Purpose:
  - The goal of this project is to analyze the current and future trends in programming languages, databases, and job market demands using survey data.
- Target Audience:
  - Tech professionals seeking career growth
  - Educators and curriculum developers looking to align academic programs with industry needs
  - Employers seeking insights to guide recruitment strategies
- Value:
  - Provides actionable insights into evolving technology trends
  - Helps professionals make informed decisions about skill development and job readiness
  - Aids organizations in aligning resources with industry demands for competitive advantage

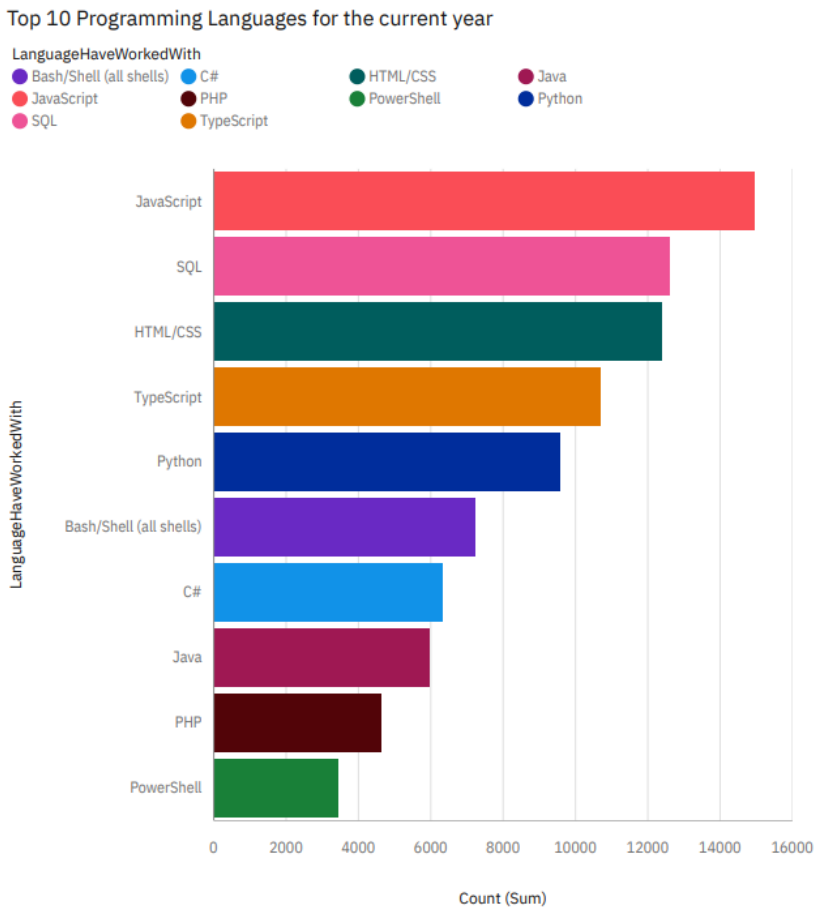
METHODOLOGY



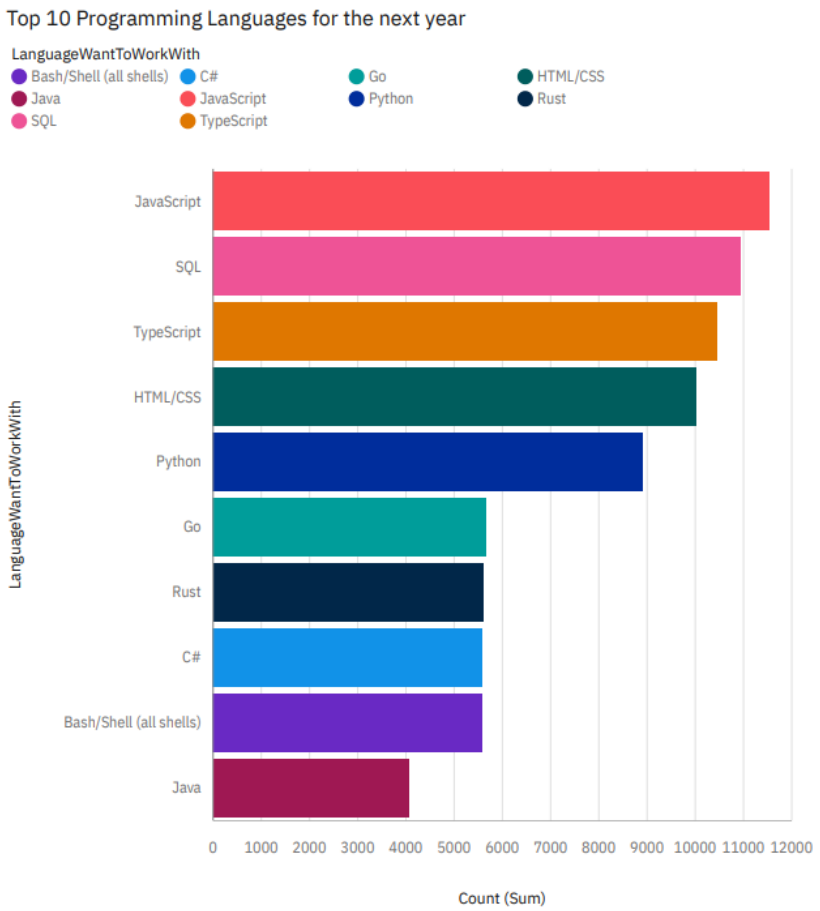
- Data Sources:
  - Survey Data
  - Job Postings Dataset: Obtained from job-postings.xlsx to understand job market demands and trends
- Data Collection Methods:
  - Distributed surveys targeting tech professionals to gather insights on programming languages, databases, and job preferences.
  - Extracted data from job-posting databases to analyze current job market trends.
- Key Data Wrangling Steps:
  - Cleaning & Preprocessing: Removed incomplete or irrelevant responses.
  - Aggregation: Aggregated top programming languages, databases, and skills.
  - Visualization: Created bar charts and dashboards to showcase key findings

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



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PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

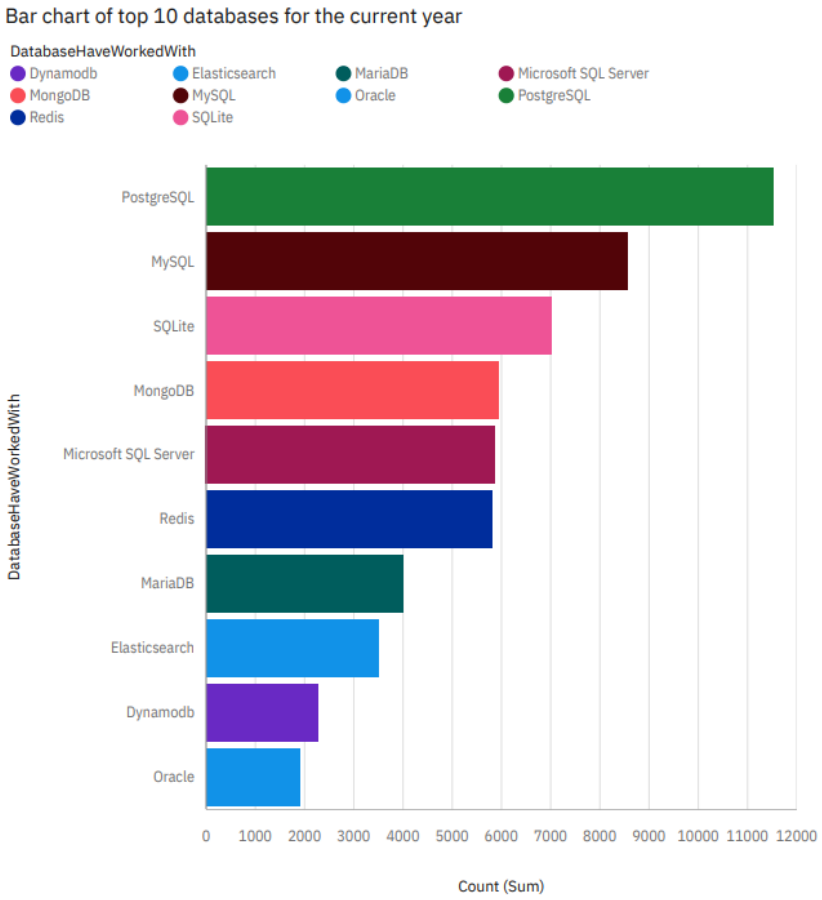
- JavaScript, SQL, and HTML/CSS are the most-used languages this year, with JavaScript leading.
- Rust and Go are gaining interest for the next year but are not in the current top 10.
- TypeScript and Python are consistently popular for both current use and future interest.

- Implications

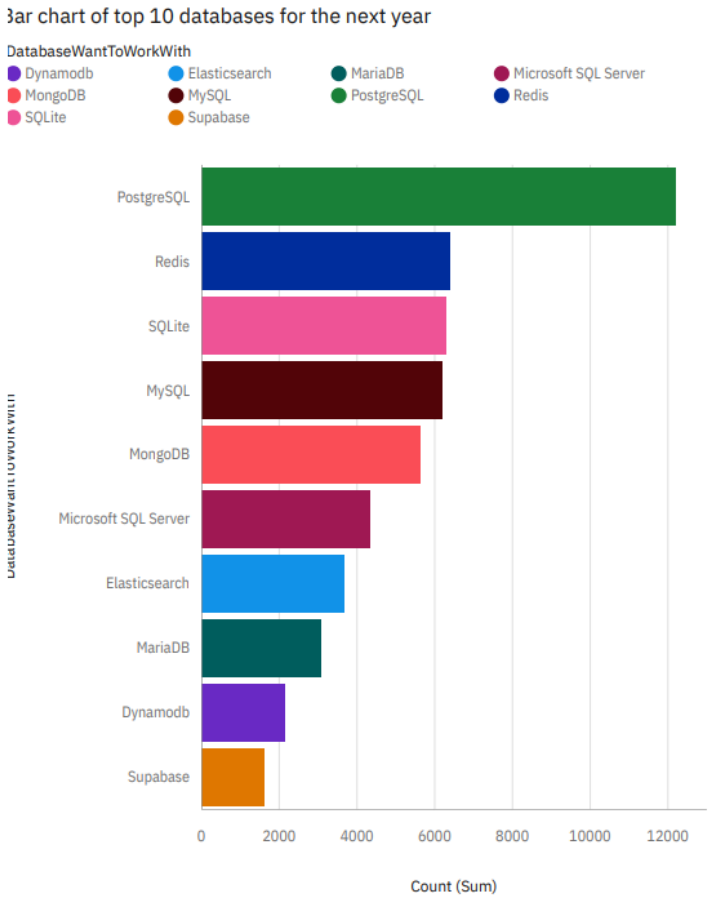
- Developers should focus on JavaScript, SQL, and TypeScript to stay market-relevant.
- Companies should prepare for increased adoption of Go and Rust in the near future.
- Web development skills will remain in high demand, driven by JavaScript and related technologies

DATABASE TRENDS

Current Year



Next Year



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DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL is the most-used database currently and is also the most desired for future work.
- Redis and SQLite are gaining interest for the next year, surpassing MySQL and MongoDB in the rankings for future preferences.
- Supabase is emerging as a desired database option for the next year, although it is not in the top 10 for current usage.

Implications

- Developers should focus on PostgreSQL expertise, as it remains the leader in both usage and interest.
- Companies may need to consider integrating Redis and SQLite into their technology stack to align with developer preferences.
- Emerging databases like Supabase indicate a trend towards modern, developer-friendly solutions, highlighting a need for staying updated with new tools.

DASHBOARD

Current Technology Usage Dashboard

- Bar Chart: Top 10 languages developers have worked with (Panel 1).
- Column Chart: Top 10 databases developers have worked with (Panel 2).
- Word Cloud: Top 10 platforms developers have worked with (Panel 3).
- Hierarchy Bubble Chart: Top 10 web frameworks developers have worked with (Panel 4).

Future Technology Trend Dashboard

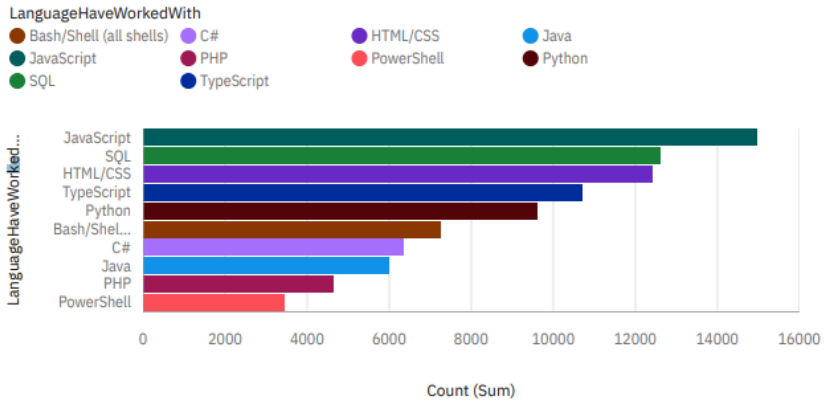
- Bar Chart: Top 10 languages developers want to work with (Panel 1).
- Column Chart: Top 10 databases developers want to work with (Panel 2).
- Tree Map Chart: Top 10 platforms developers want to work with (Panel 3).
- Hierarchy Bubble Chart: Top 10 web frameworks developers want to work with (Panel 4).

Demographics Dashboard

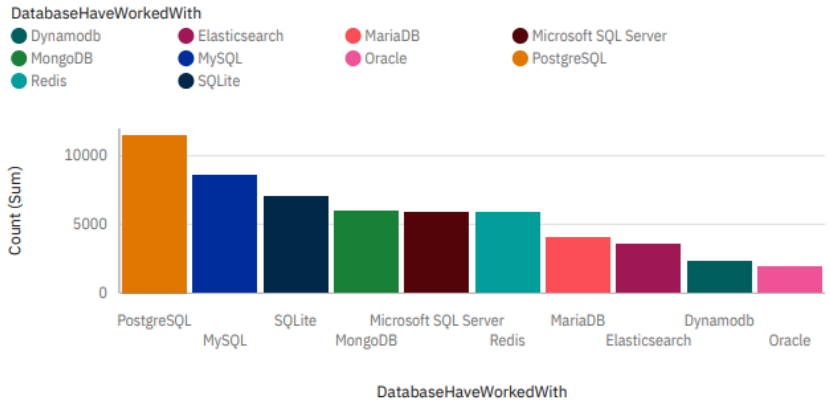
- Pie Chart: Respondent age distribution (Panel 1).
- Map Chart: Respondent count by country (Panel 2).
- Line Chart: Respondent count by education level (Panel 3).
- Stacked Bar Chart: Respondent count by age and education level (Panel 4).

CURRENT TECHNOLOGY USAGE

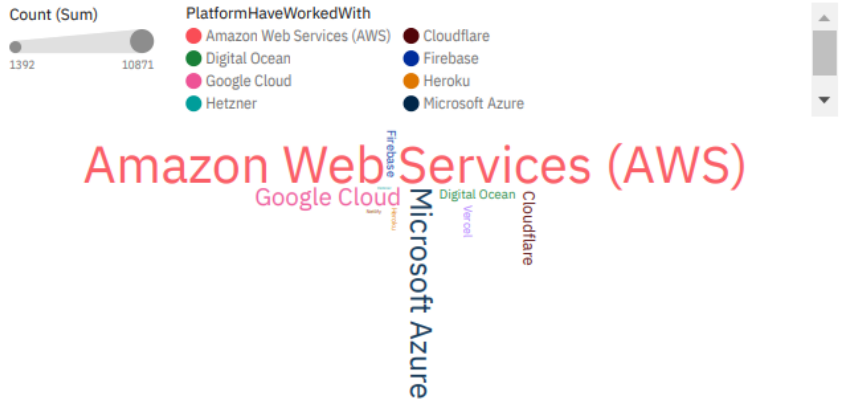
Top 10 LanguageHaveWorkedWith



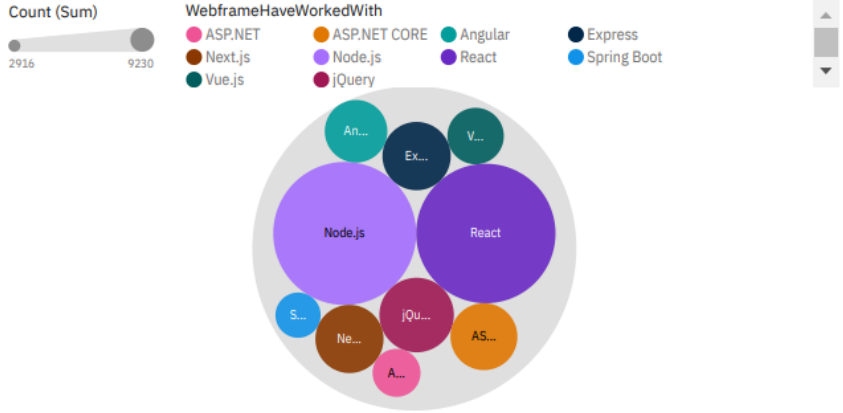
Top 10 DatabaseHaveWorkedWith



Top 10 PlatformHaveWorkedWith



Top 10 WebFrameHaveWorkedWith



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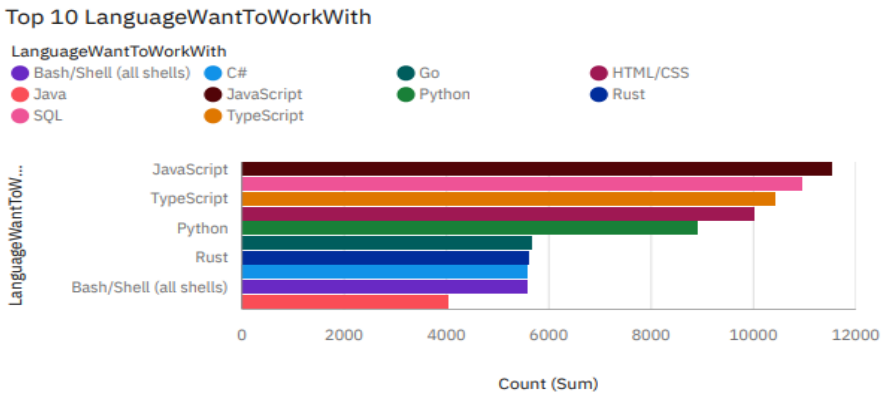
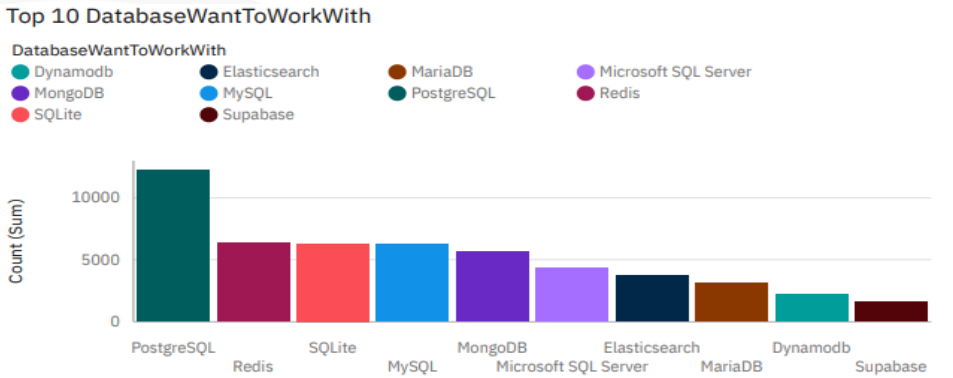
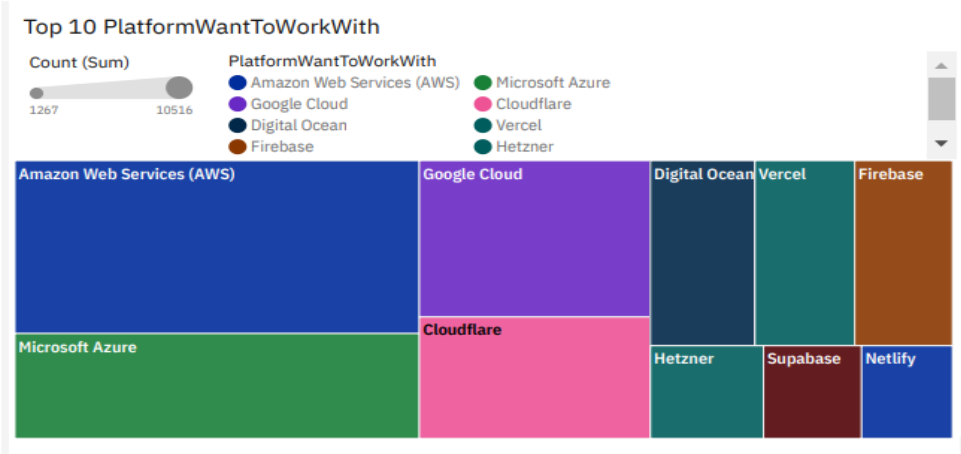
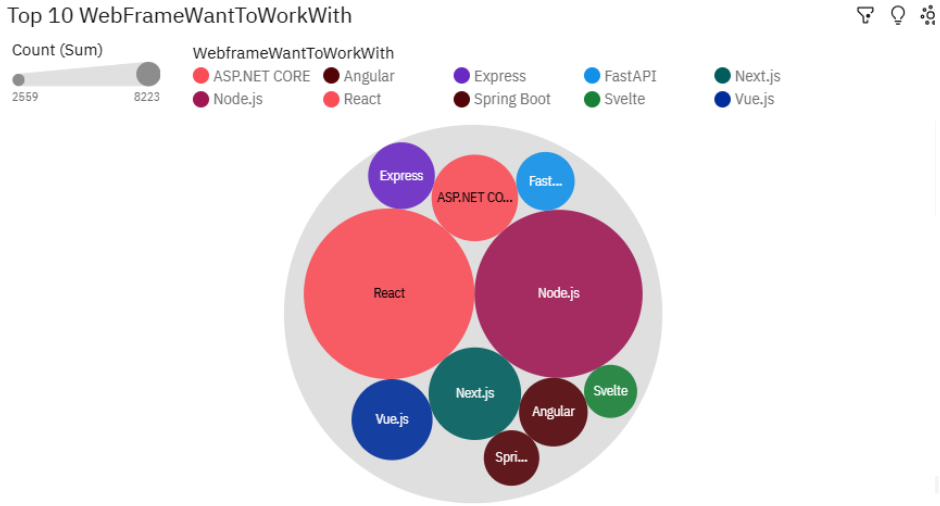
FUTURE TECHNOLOGY TREND









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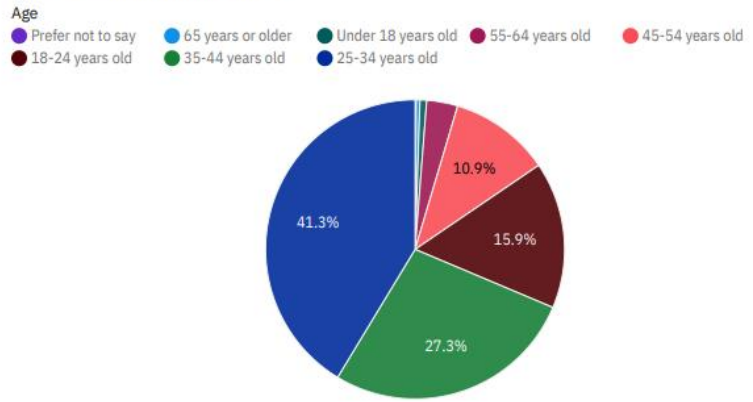
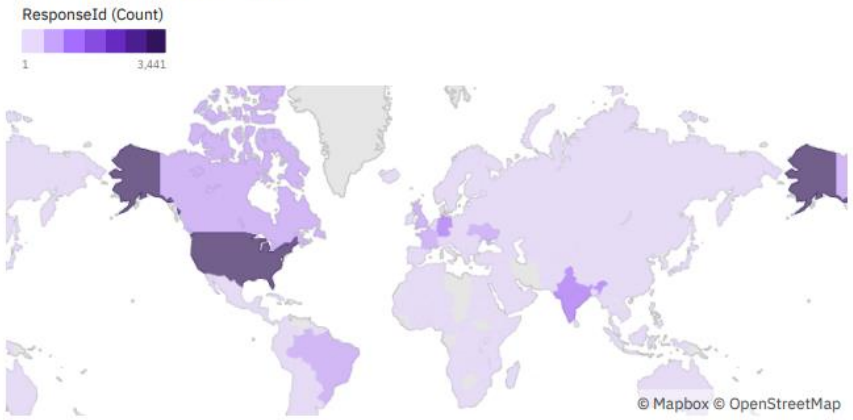
DEMOGRAPHICS

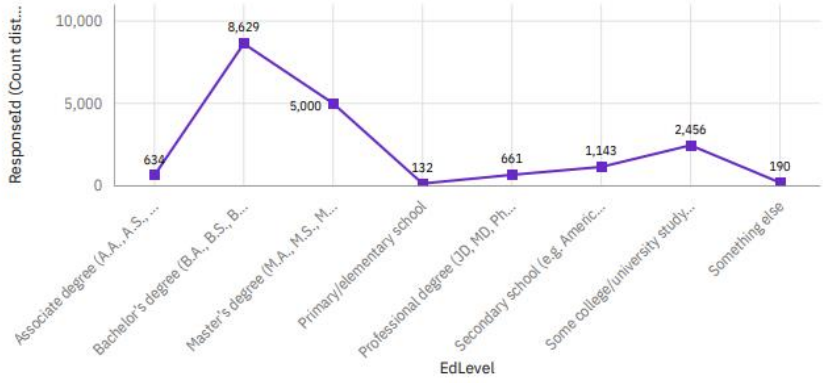
Respondent distribution by Age



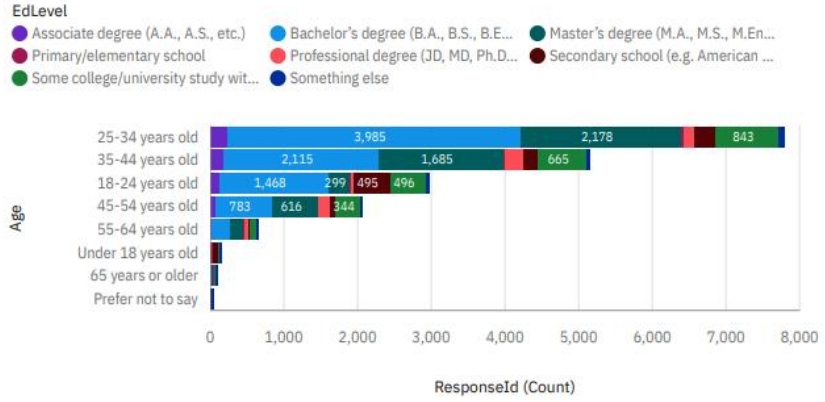
Respondent Count by Country



Respondent distribution by Formal Education Level



Respondent Count by Age, classified by Education Level



DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript, Python, and SQL are the most desired and widely used programming languages, reflecting their dominance in both preferences and practice.
- PostgreSQL and MySQL are consistently leading databases, with widespread adoption and high desirability.
- Cloud platforms like AWS, Microsoft Azure, and Google Cloud are the top choices for developers, showcasing their importance in modern technology trends.

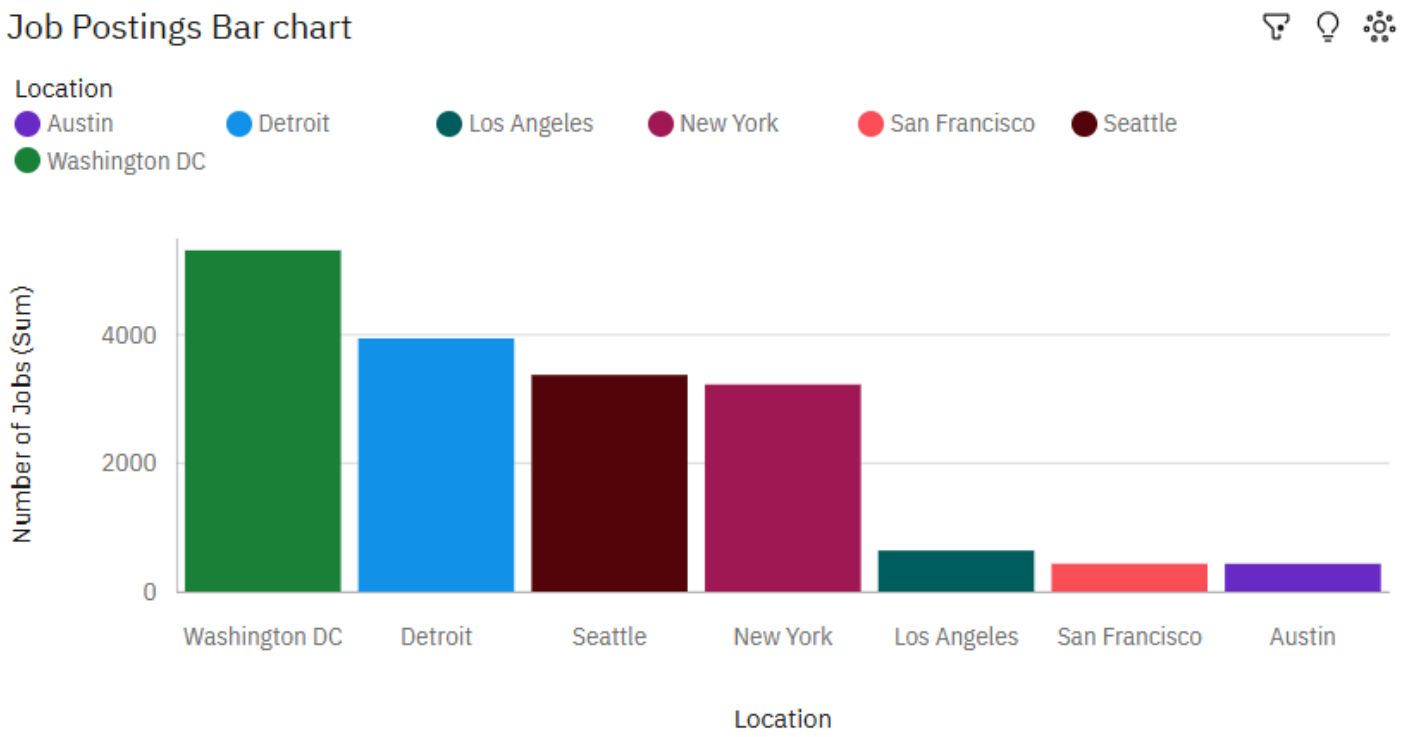
Implications

- Focus training and tool development on dominant programming languages to cater to both current usage and future demand.
- Invest in database solutions and features tailored to PostgreSQL and MySQL to align with industry standards.
- Build and optimize tools and integrations for leading cloud platforms to meet developers' needs in scalable and flexible environments.

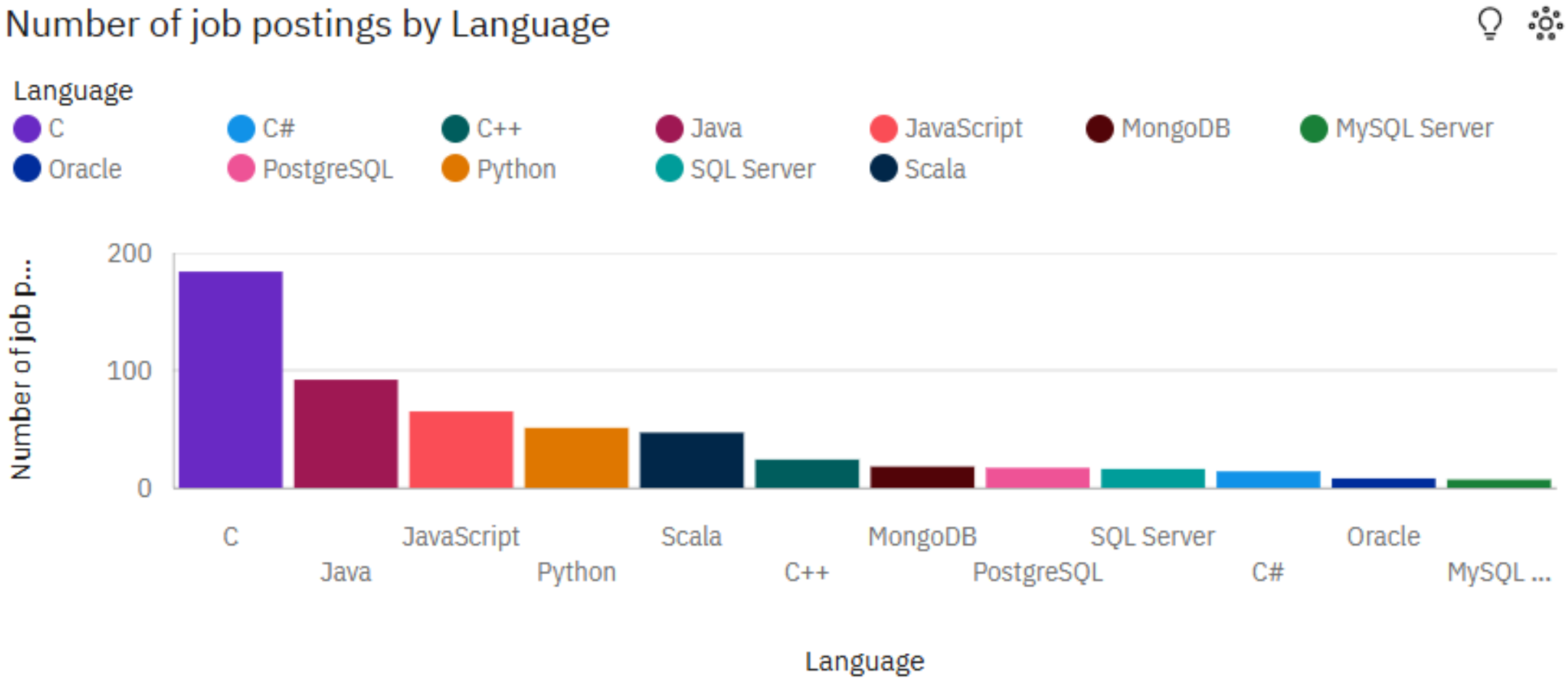
CONCLUSION

- The dominance of JavaScript, Python, and SQL highlights their critical role in modern development, suggesting they will remain essential skills for developers.
- PostgreSQL and MySQL continue to lead as preferred databases, emphasizing their reliability and relevance in diverse applications.
- The preference for AWS, Microsoft Azure, and Google Cloud underscores the growing importance of cloud computing in scalable and innovative solutions.
- Tailored strategies focusing on popular languages, databases, and cloud platforms can drive innovation and meet evolving developer and industry needs.

APPENDIX


Job Postings Bar chart
Location
Austin
Detroit
Los Angeles
New York
San Francisco
Seattle
Washington DC
Number of Jobs (Sum)
4000
2000
0
Washington DC
Detroit
Seattle
New York
Los Angeles
San Francisco
Austin
Location

JOB POSTINGS



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POPULAR LANGUAGES