

Stack Overflow Developer Survey: Analysis and Insights

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OUTLINE



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



EXECUTIVE SUMMARY



- Developers are primarily using three groups of tools: JavaScript, SQL and HTML/CSS.
 - The most widely used languages are JavaScript/Typescript, SQL, HTML/CSS and Python.
- Scalable, AI and machine learning databases are gaining traction:
 - PostgreSQL is the most popular database for both current and future use. While traditional RDBMS systems remain popular, there is a desire to use more NoSQL/vector database systems, such as Redis and MongoDB.
- Framework choices reflect the move towards full-stack web-centric development
 - Node.js and React.js are the dominant web frameworks for both current and future use.
- The workforce is largely mid-career and highly educated.
 - The vast majority of respondents (68%) were between 25 and 44 years old and likely to hold a minimum of a bachelor's degree.



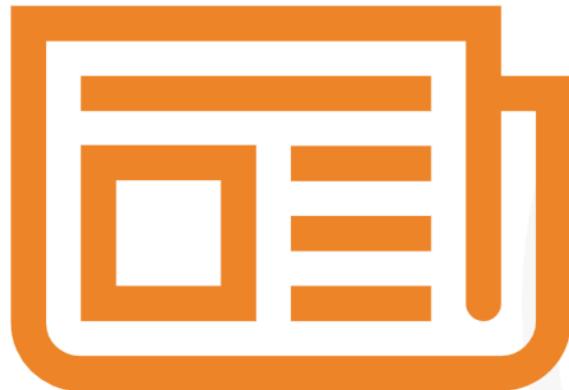
INTRODUCTION



- This project analyses global trends from the annual Stack Overflow Developer Survey¹ and job postings.
- The primary aim is to identify the languages, databases and web frameworks which are most popular and those that respondents hope to use in the future.
- The analysis focuses on four areas:
 - Programming languages
 - Databases
 - Platforms
 - Web frameworks
- Insights from the analysis will help to identify current trends in the data landscape as well as the likely direction of skills and technologies in the near future.

1 <https://survey.stackoverflow.co/>

METHODOLOGY



Data Collection:

- The primary source was the annual Stack Overflow Developer Survey¹, with additional information on job postings collected through APIs and web scraping.

Data Wrangling and Preparation:

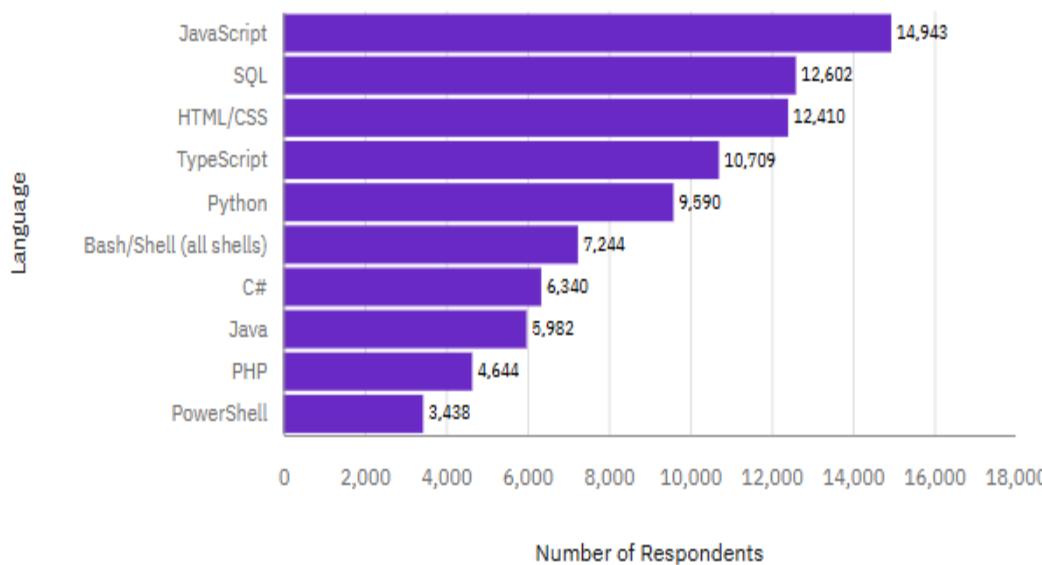
- Data Cleansing: Incomplete responses excluded
- Data Splitting: Separated fields where multiple responses were contained within a single cell.
- Standardisation: Normalisation of fields where appropriate.
- Aggregation: Calculation of median salaries, counts and identification of top 10 technologies.
- Filtering: Restricted analysis to key fields
- Visualisation: Creation of various forms of visualisation (bar charts, word clouds, bubble charts, maps and line charts)

¹ <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/n01PQ9pSmiRX6520flujwQ/survey-data.csv>

PROGRAMMING LANGUAGE TRENDS

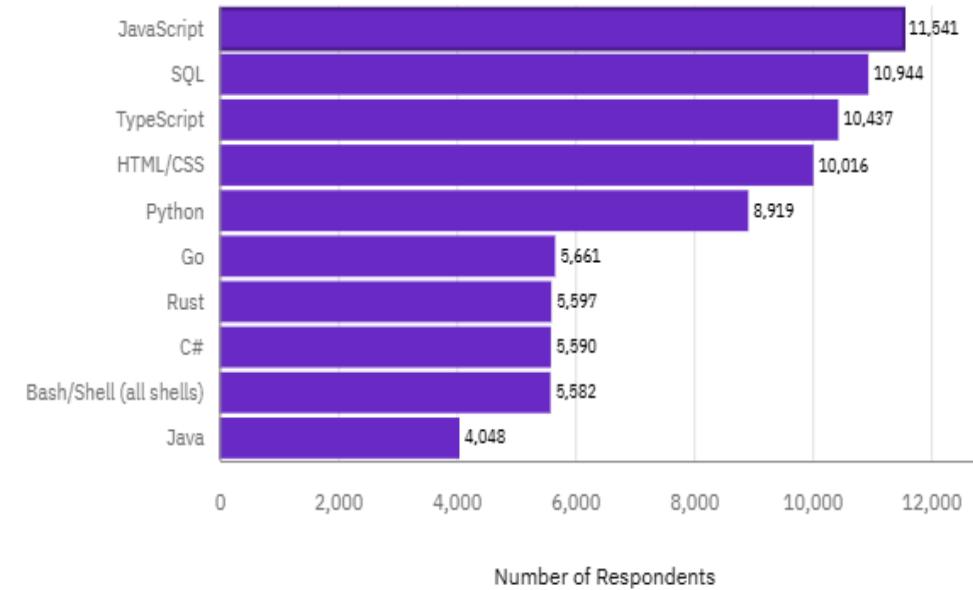
Current Year

Top 10 Languages Respondents Have Worked With



Next Year

Top 10 Languages Respondents Want to Work With



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Javascript and SQL are the most popular languages currently and are expected to maintain this position in the future.
- Go and Rust are emerging as languages challenging the status quo.

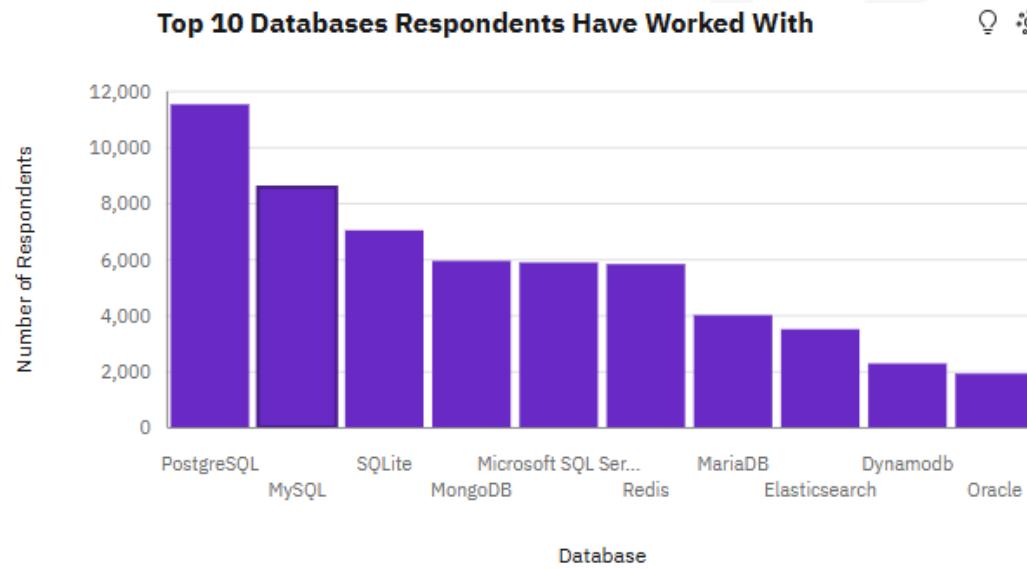
Implications

- Traditional languages (Javascript/Typescript, SQL, HTML and Python) will continue to dominate the skills developers require.
- The emergence of Rust reflects the need for developers to embrace AI/ML.

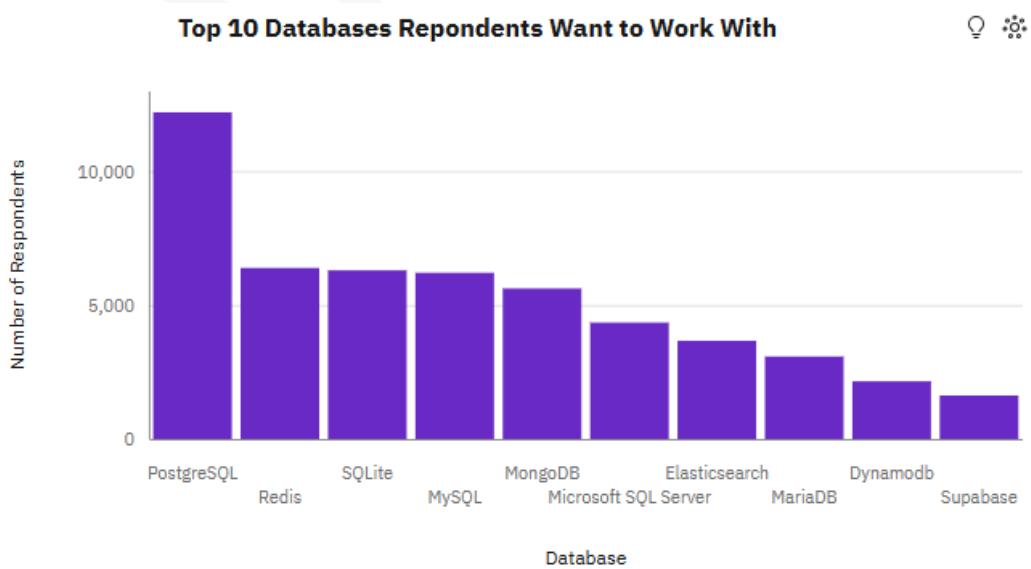


DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL is the most widely used database and will maintain this position.
- RDBMS systems are still widely used despite the proliferation of NoSQL databases.
- Developers are moving towards open-source, flexible databases that can be more easily integrated.

Implications

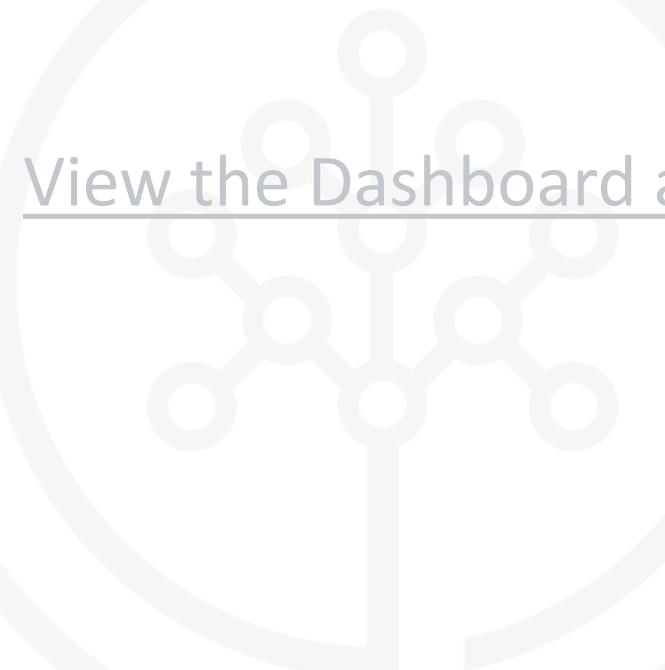
- Developers are increasingly using open-source high-performance systems with flexible architectures.
- Developers can no longer rely on a single system as data requirements diverge.
- A core database ecosystem including PostgreSQL, MySQL, Redis and MongoDB is emerging.



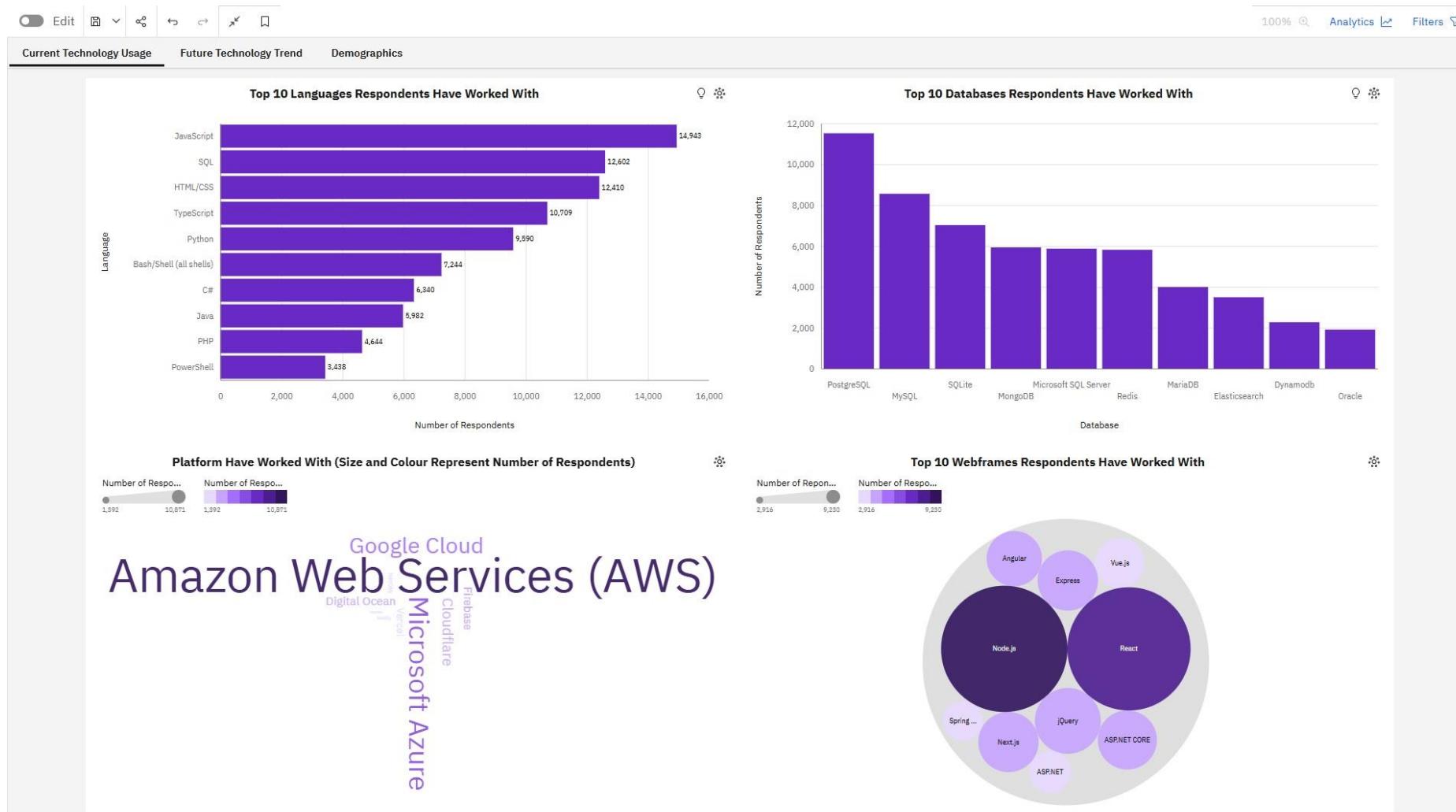
DASHBOARD



[View the Dashboard at GitHub](#)

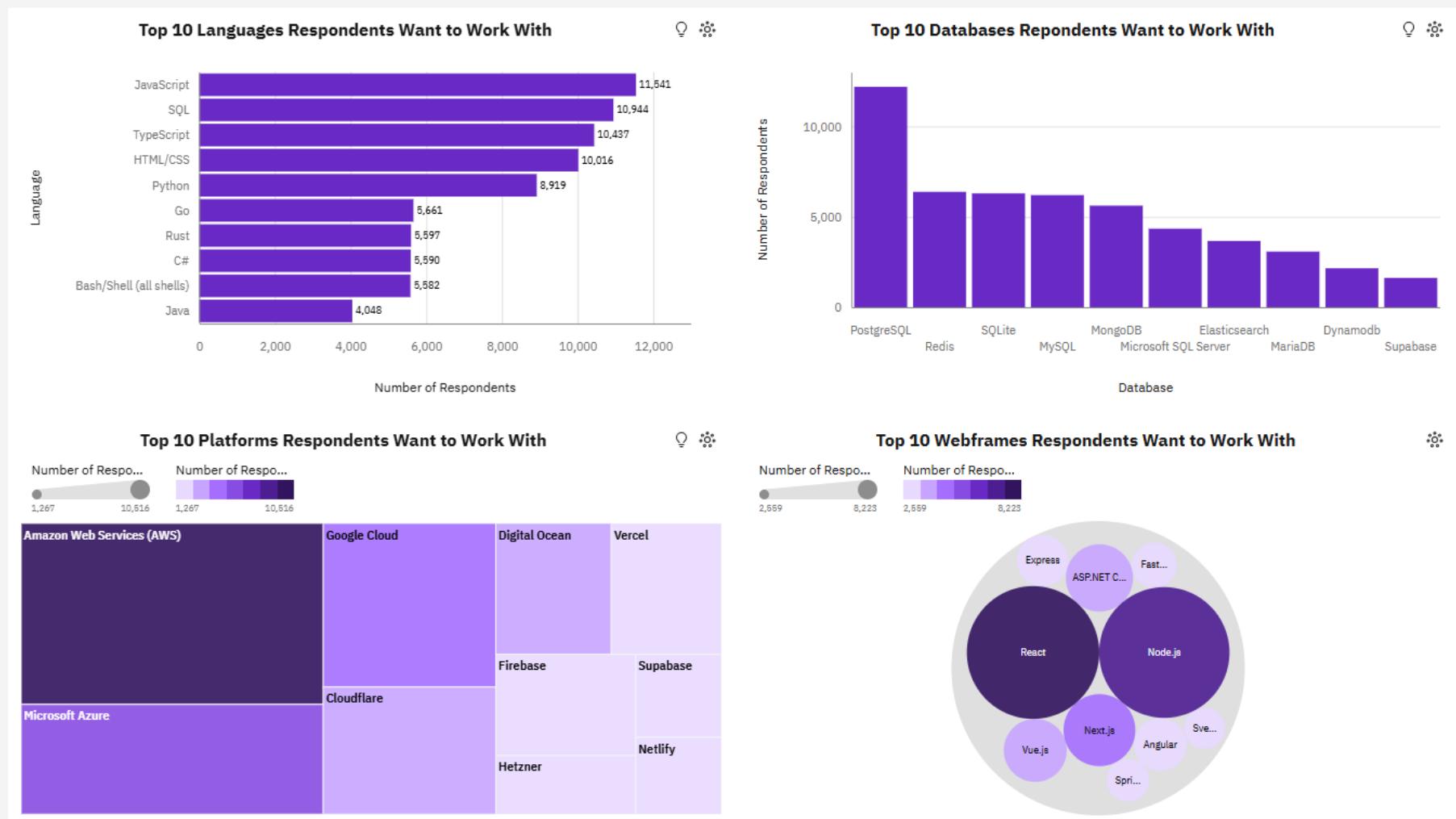


DASHBOARD TAB 1

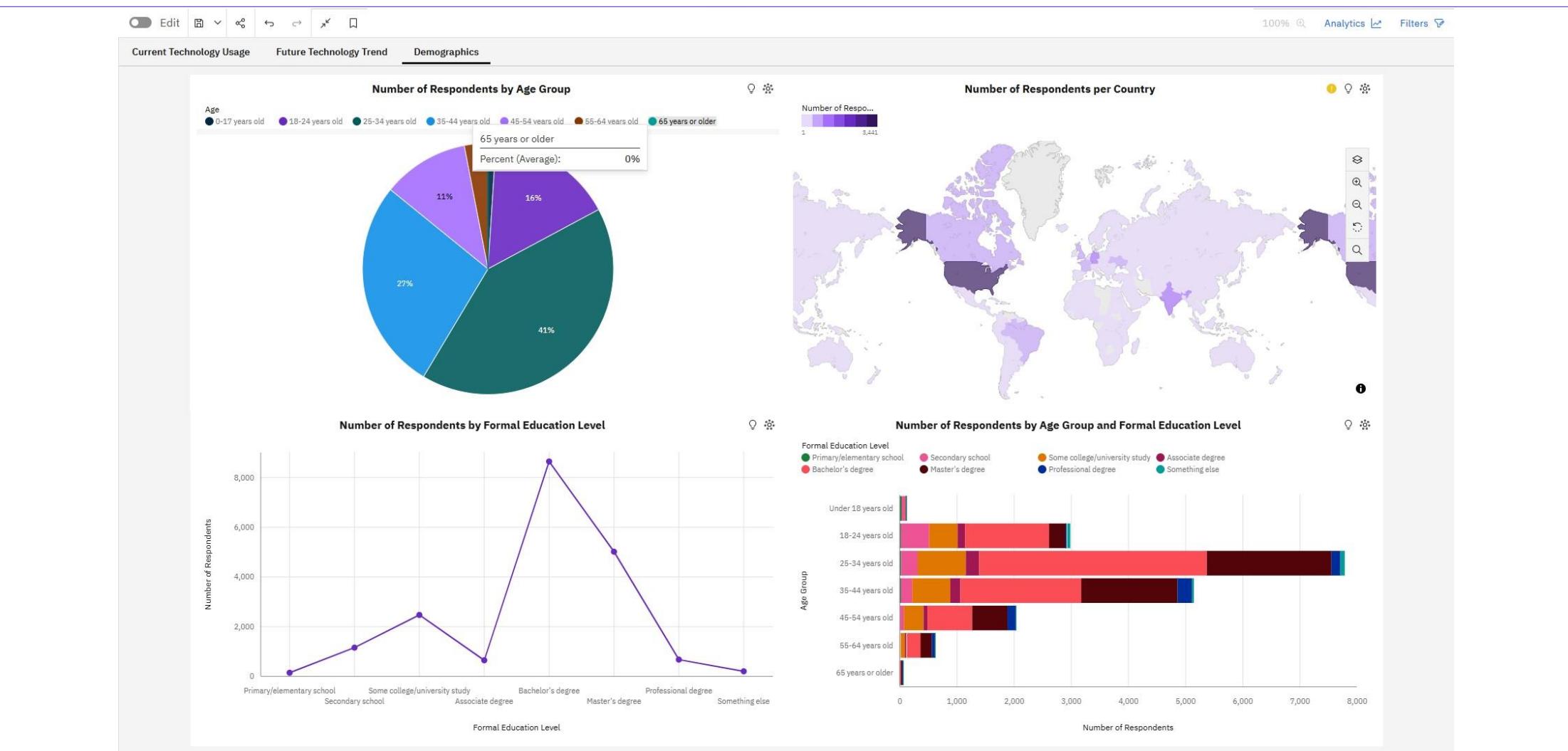


Edit 100% Analytics Filters

Current Technology Usage Future Technology Trend Demographics



DASHBOARD TAB 3



DISCUSSION



- There is strong consistency between current and future needs indicating the emergence of a new set of core languages and technologies.
- Javascript and PostgreSQL are maintaining their dominance as the basis for scalable applications.
- Growing technologies such as Typescript and Redis reflect the need for larger, more complex systems while maintaining performance.
- Cloud-based platforms are showing strong growth as organisations increasingly adopt big data strategies.
- Future software development will require a balance between scalability, reliability and real-time data.



OVERALL FINDINGS & IMPLICATIONS

Findings

- Full-stack development dominates the developer landscape with Javascript/TypeScript, SQL, HTML/CSS and Python being core languages.
- The dominance of PostgreSQL and the emergence of Rust and Go suggests a shift from the traditional big players.
- Developers are focusing on performance, reliability and access to real-time data.

Implications

- Modern developers need to be cognizant in both front- and back-end development.
- Cloud technologies are becoming increasingly important for maintaining performance as the scale of databases increases.
- AI and scalability will become the key for future growth with increasing demand for real-time data.

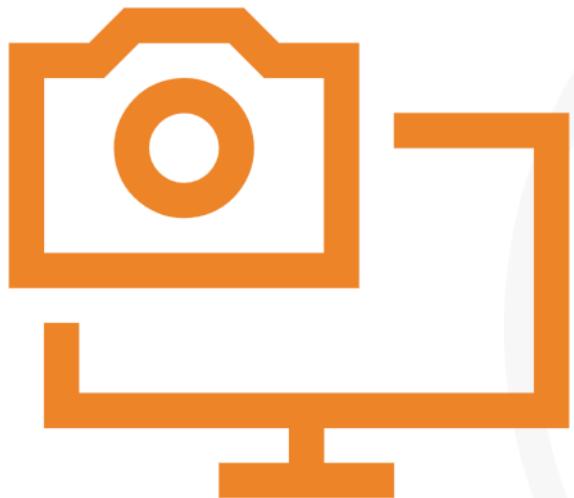


CONCLUSION



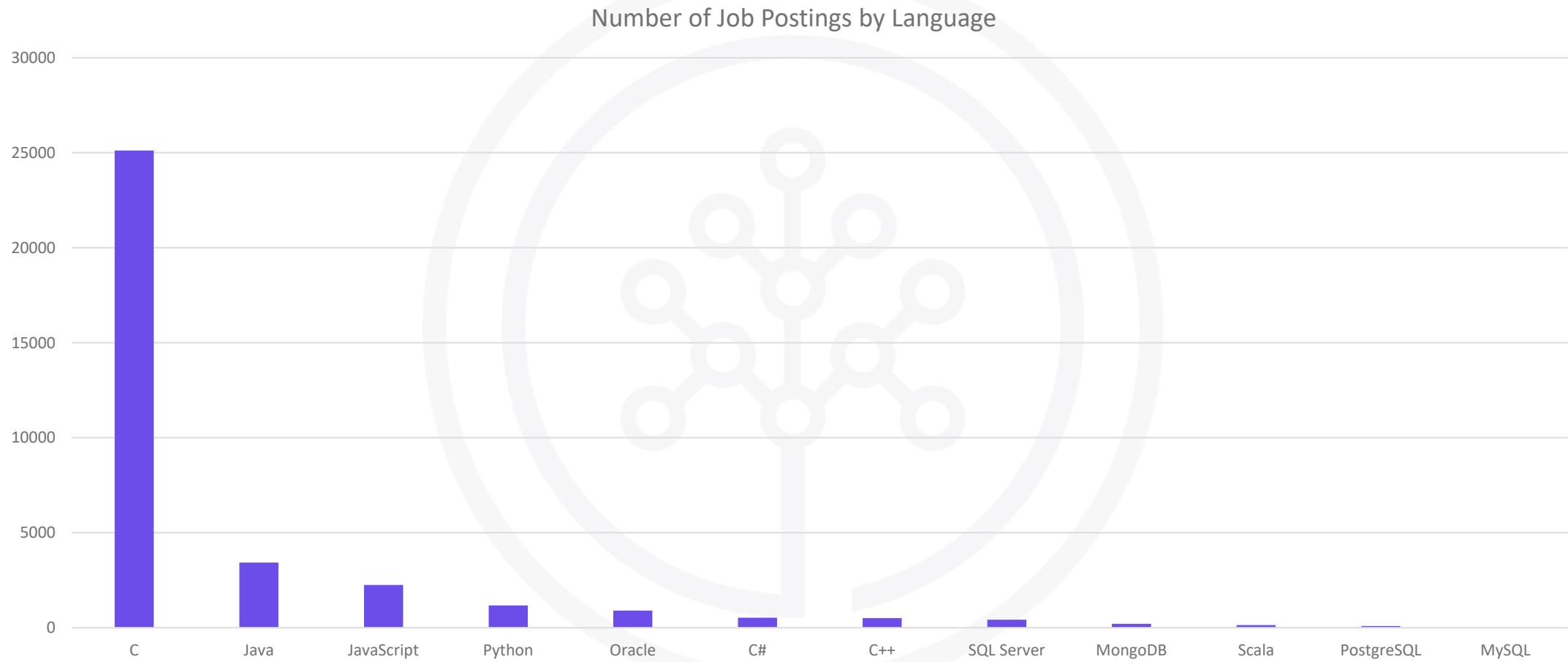
- Modern software development continues to be data-driven, cloud-based and built on full-stack technologies.
- JavaScript, PostgreSQL and Python will remain the core skills in the developer's armoury.
- The adoption of the cloud, modern web frameworks, and scalable databases reflects the appetite for increasing volumes of data.
- The influence of AI on developers will continue to grow as businesses seek marginal gains in a competitive marketplace.

APPENDIX



- Job posting data indicates there is a gap between the skills of developers and what employers are looking for.
- The recruitment space is dominated by a need for C with low demand for PostgreSQL and Python.
- Swift for Apple, Python and C++ are the highest remunerated skills reflecting the full-stack nature of modern software development.

JOB POSTINGS



POPULAR LANGUAGES

Average Annual Salary by Programming Language

