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# EXPLORATION OF THE GLOBAL DEVELOPER LANDSCAPE:A STACK OVERFLOW SURVEY

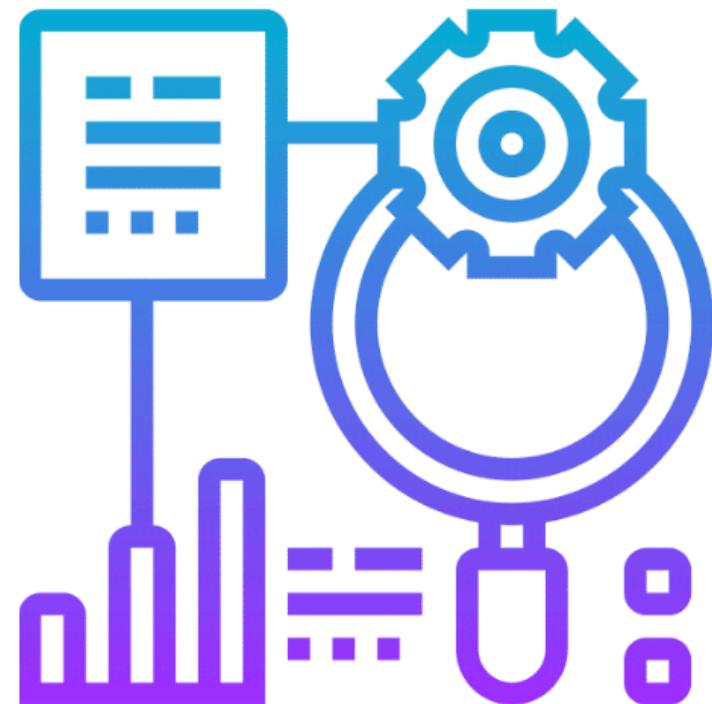
DANIELLE INSLEY

9/7/2025

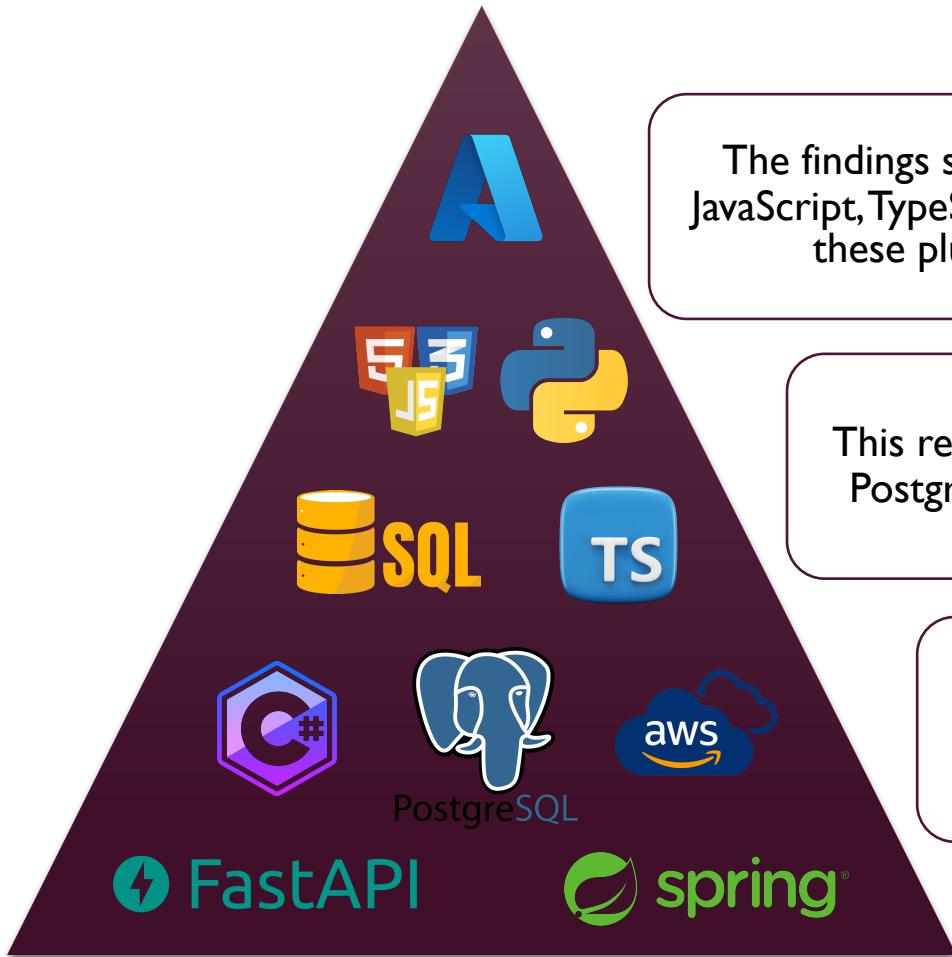


# OUTLINE

- Executive Summary
- Introduction
- Methodology
- Results
- Discussion
- Conclusion
- Future Research



# EXECUTIVE SUMMARY



The findings show that developers heavily use established technologies like HTML/CSS, JavaScript, TypeScript, PostgreSQL, AWS, and Spring Boot, and their future interest includes these plus C#, SQL, Python, Azure, and modern frameworks such as FastAPI.

This reflects a shift toward open-source, cloud-flexible, and data-driven tools, with PostgreSQL strengthening its lead and Azure gaining momentum alongside AWS.

With a workforce that is young, highly educated, and globally distributed, organizations must balance support for current systems with strategic adoption of emerging technologies to stay competitive.

# INTRODUCTION

## Purpose

To summarize key insights from the Stack Overflow Developer Survey, focusing on developers' current technology usage, future preferences, and demographics.

## Target

Executives, technology leaders, and workforce planners who need to understand where developer skills and interests are heading.

## Value

Comparing current adoption with future intent highlights which languages, databases, platforms, and frameworks are gaining or losing momentum, offering a clear view of the technology landscape.

## Outcome

These insights help organizations make informed decisions about technology investments, workforce development, and long-term innovation strategies.

# METHODOLOGY

## Data Collection

- Data was collected from the Stack Overflow Developer Survey as well as scraped from online job postings

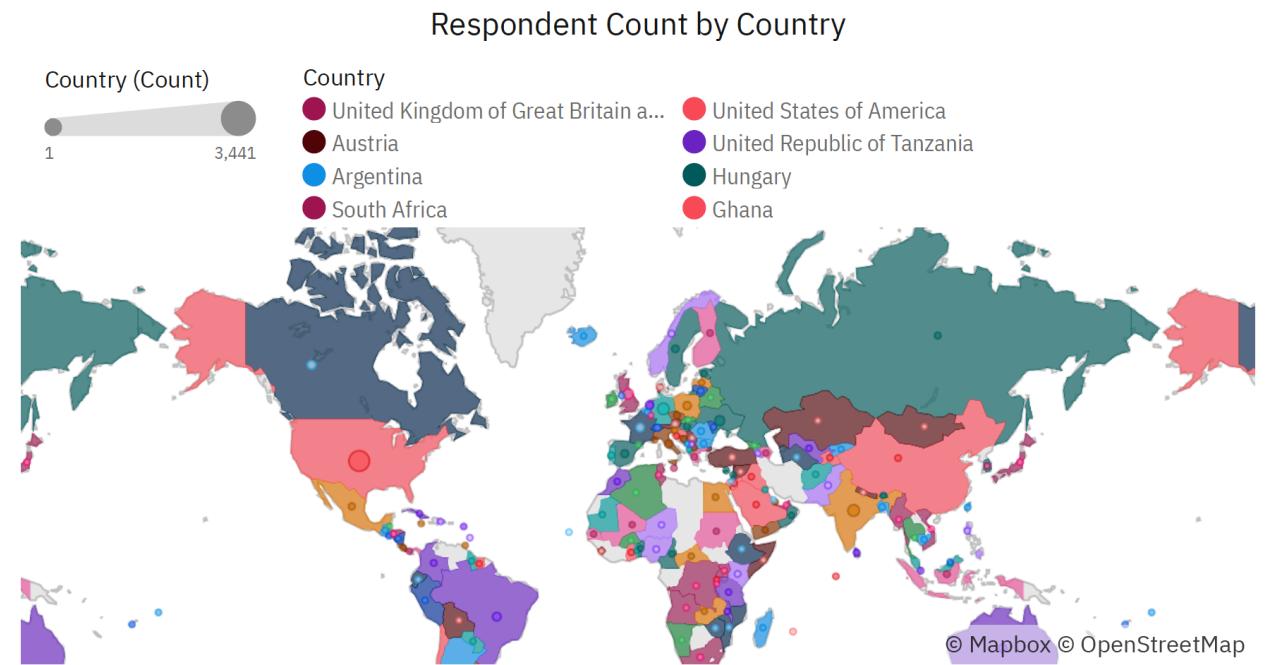
## Data Wrangling

- Data was cleaned for analysis by removing duplicates, handling missing values (imputing and dropping), and normalizing data types

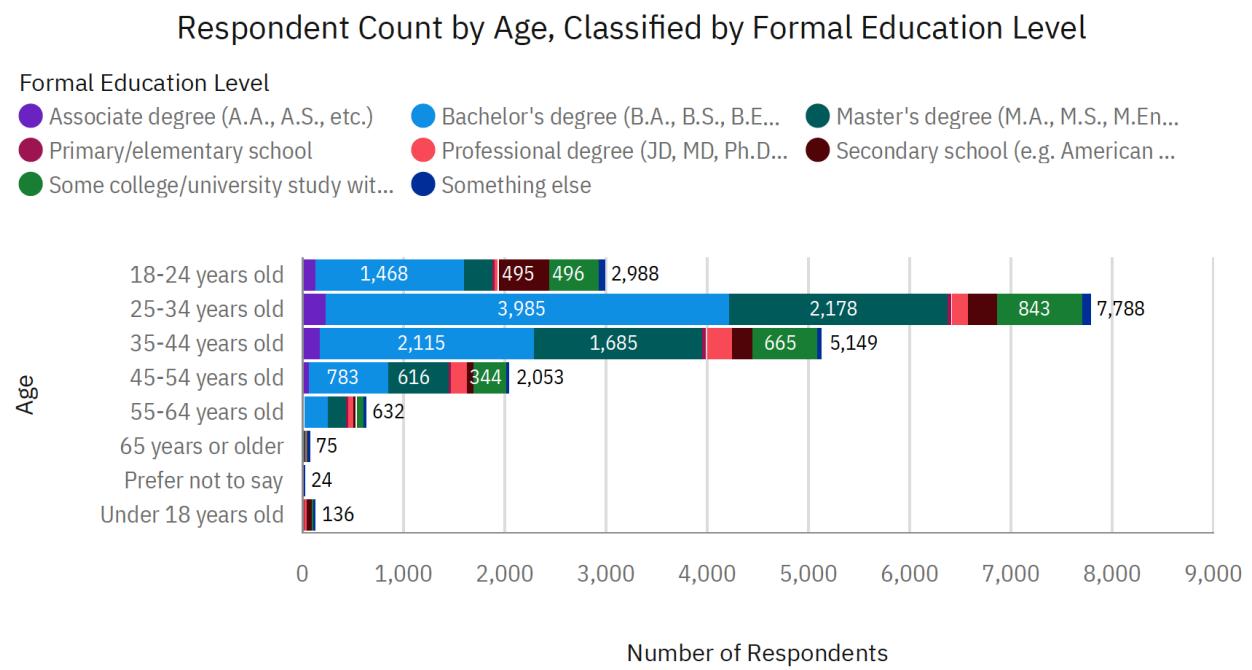
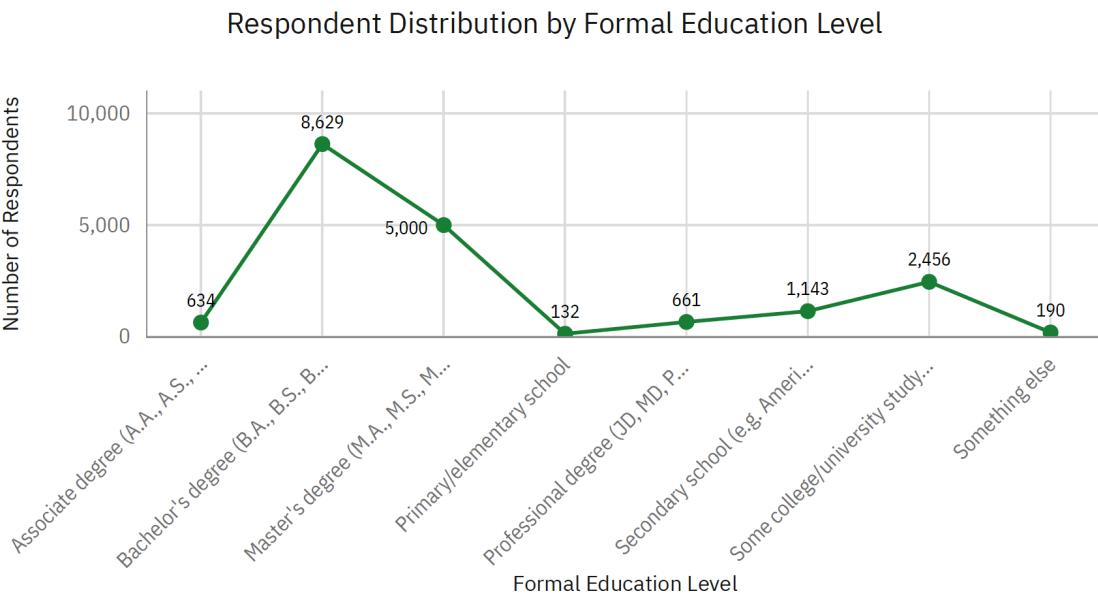
## Analysis

- The cleaned dataset was then analyzed using exploratory data analysis to glean insights from the findings

# RESULTS: DEMOGRAPHICS



# RESULTS: DEMOGRAPHICS (CONT.)



# DEMOGRAPHIC INSIGHTS

## Age

Largest group is 25–34 years old (41%), followed by 18–24 (27%)

## Education

Most hold a Bachelor's degree (8,629) or Master's degree (5,000)

## Geography

Respondents come from a wide global distribution, with the United States (3,441) and United Kingdom (1,053) having the highest counts

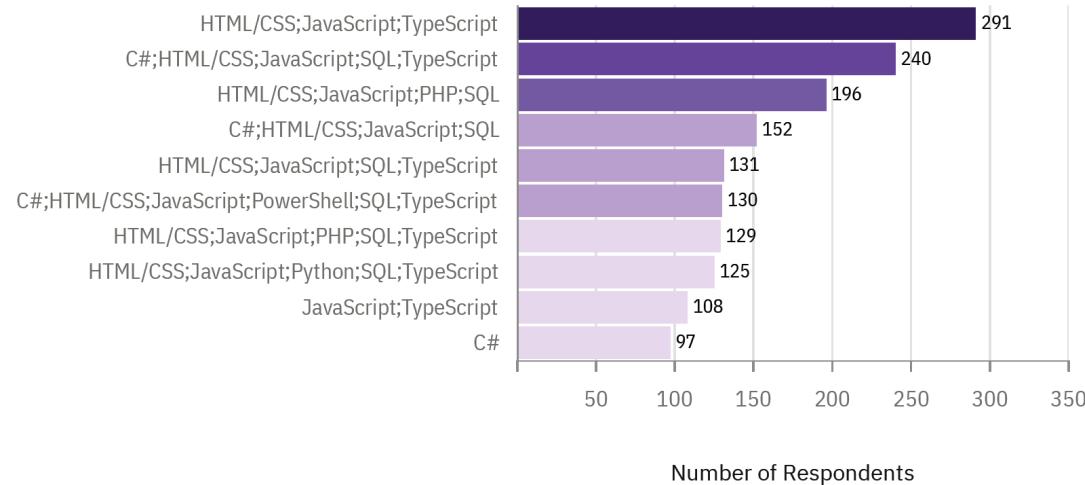
## Education By Age

Younger respondents are concentrated in undergraduate and early postgraduate studies, while older groups more often hold advanced degrees

# RESULTS: PROGRAMMING LANGUAGE TRENDS

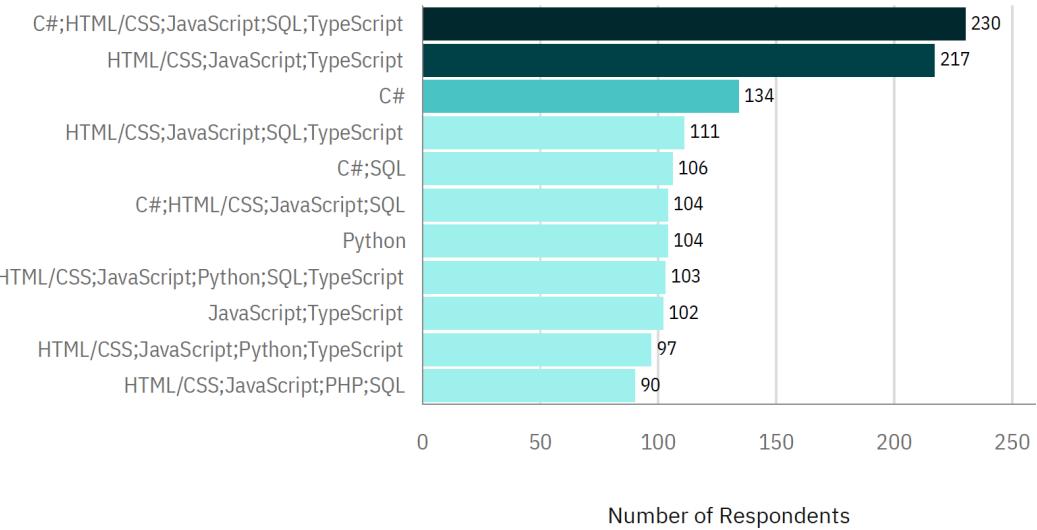
## Current Trend

Top 10 Programming Languages Respondents Have Worked With



## Future Trend

Top 10 Programming Languages Respondents Want To Work With



# PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS



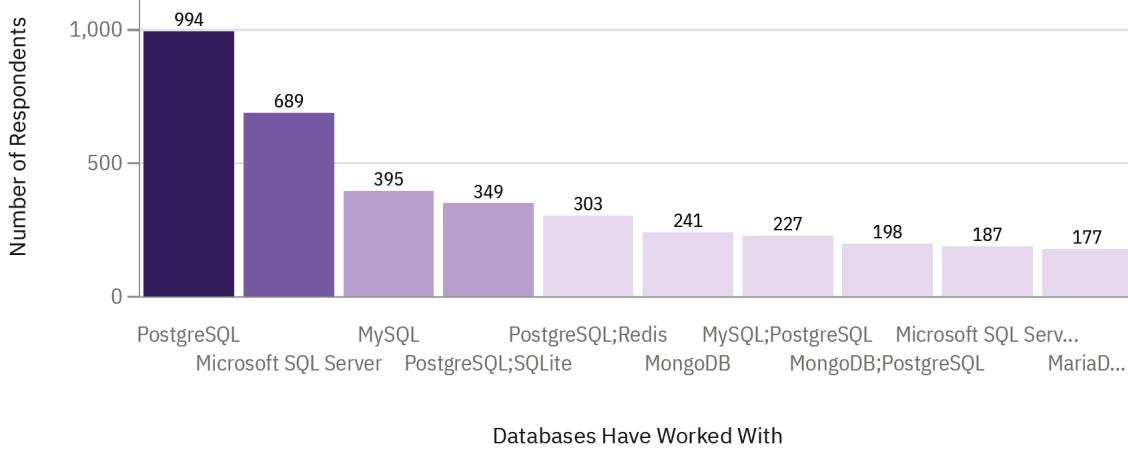
## Implications

Organizations should maintain strong support for JavaScript and SQL-based ecosystems while preparing for increased Python demand.

# RESULTS: DATABASE TRENDS

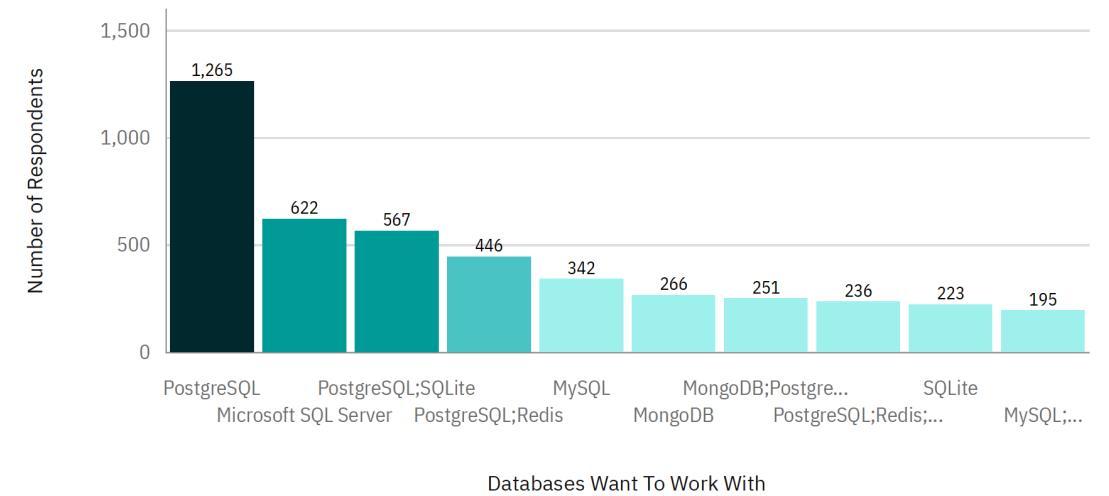
## Current Trend

Top 10 Databases Respondents Have Worked With

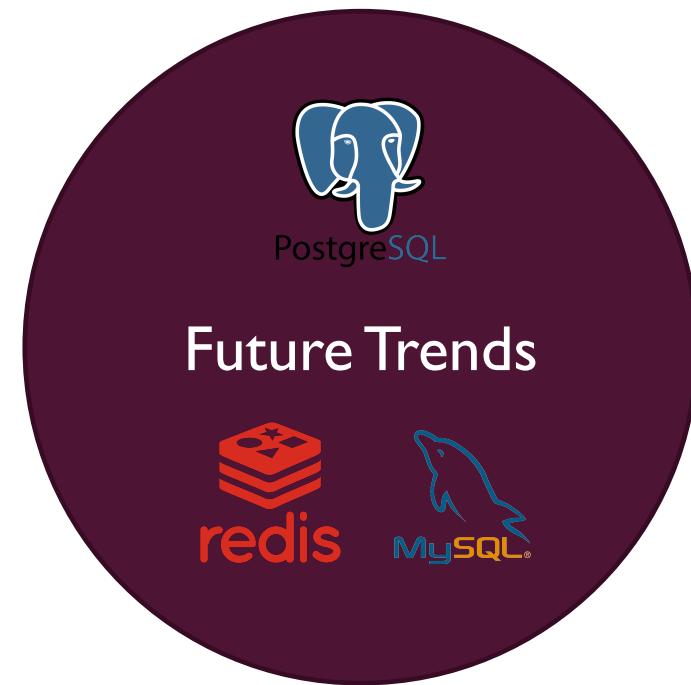
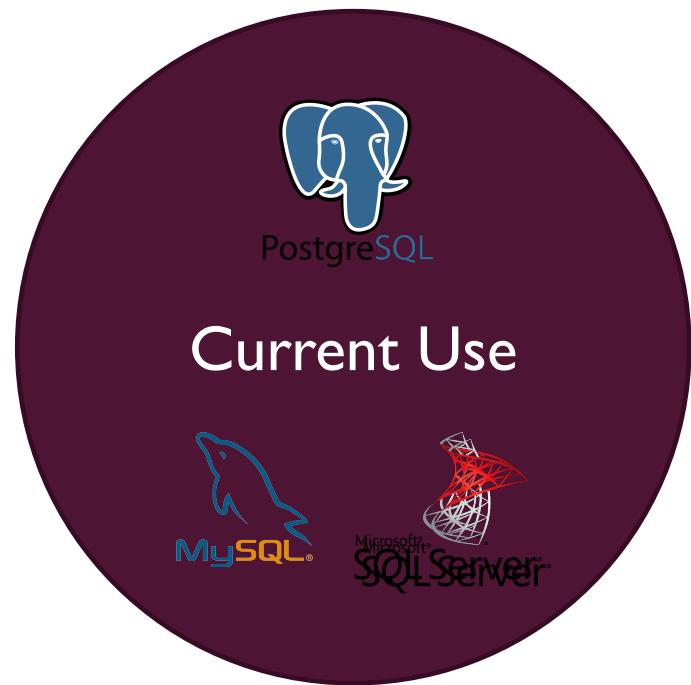


## Future Trend

Top 10 Databases Respondents Want To Work With



# DATABASE TRENDS – FINDINGS & IMPLICATIONS



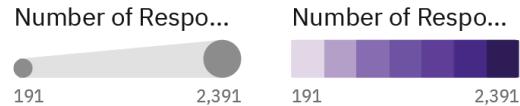
## Implications

PostgreSQL's dominance suggests organizations should prioritize it for new projects due to its scalability, open-source model, and growing developer preference. SQL Server remains important in enterprises, but open-source solutions are eroding its edge. Redis interest signals demand for high-performance, in-memory solutions—critical for real-time apps.

# RESULTS: PLATFORM TRENDS

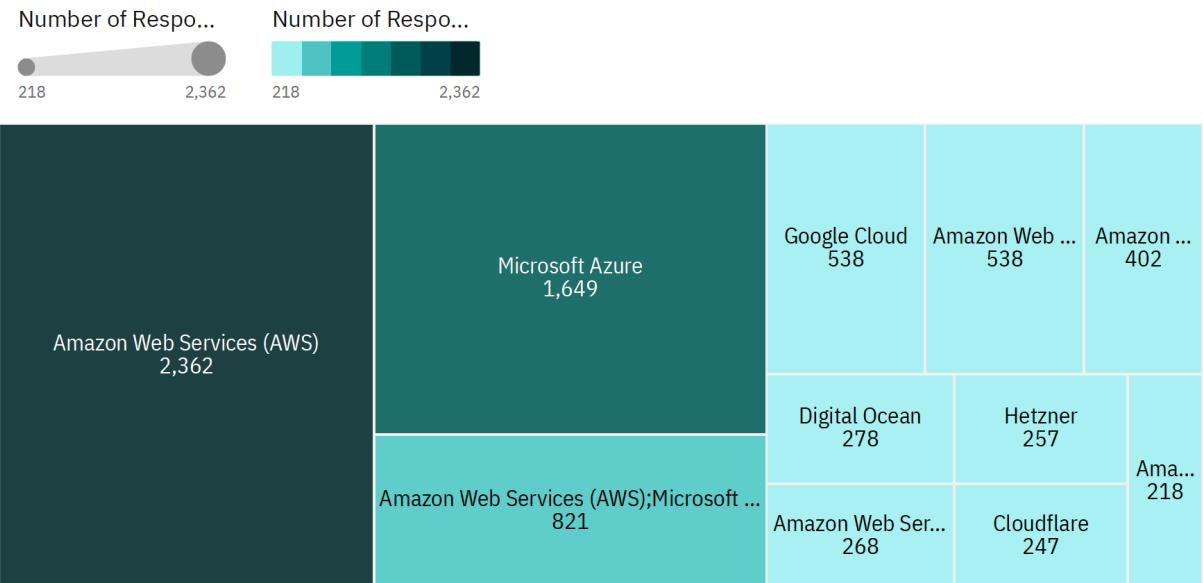
## Current Trend

Top 10 Platforms Respondents Have Worked With



## Future Trend

Top 10 Platforms Respondents Want To Work With



# PLATFORM TRENDS – FINDINGS & IMPLICATIONS



Current Use

## Implications



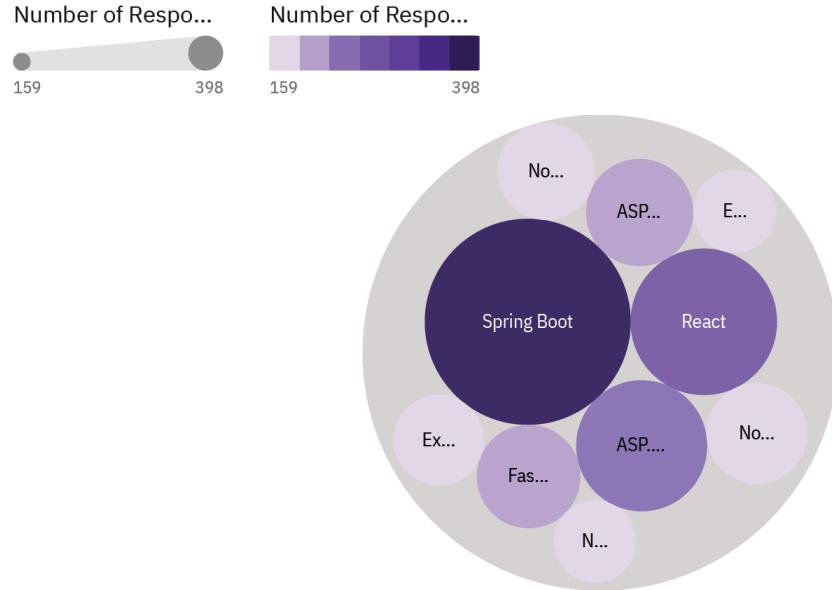
Future Trends

Multi-cloud strategies will become more common as developers explore beyond AWS. Azure's momentum suggests enterprises may increasingly standardize on Microsoft's ecosystem. Google Cloud & niche providers may gain market share in specialized workloads.

# RESULTS:WEB FRAMEWORK TRENDS

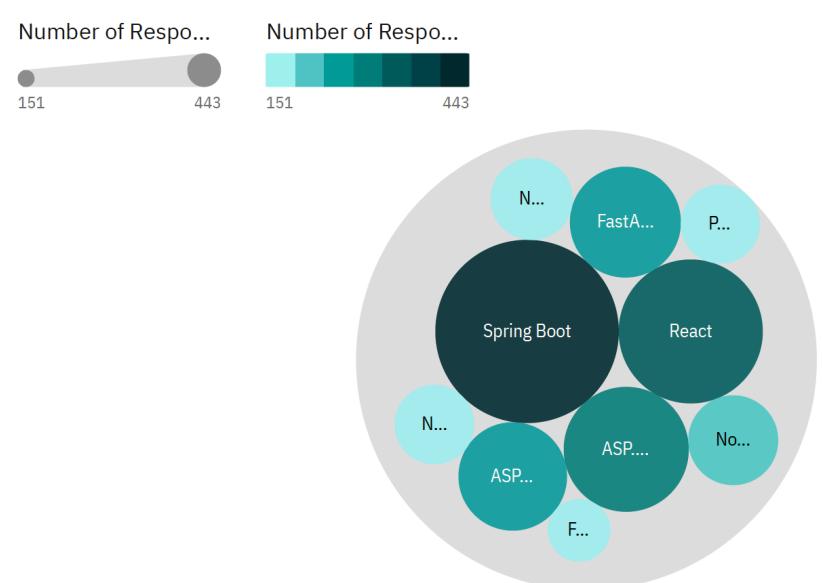
## Current Trend

Top 10 Web Frames Respondents Have Worked With

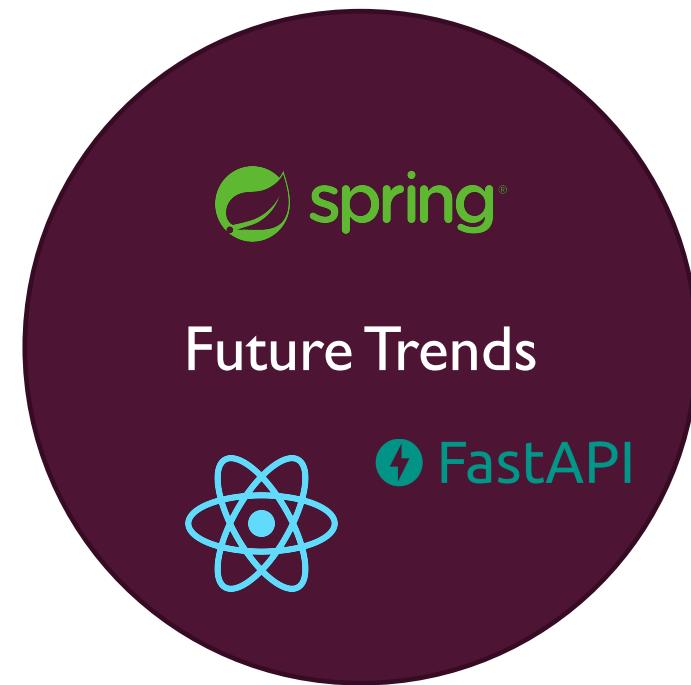
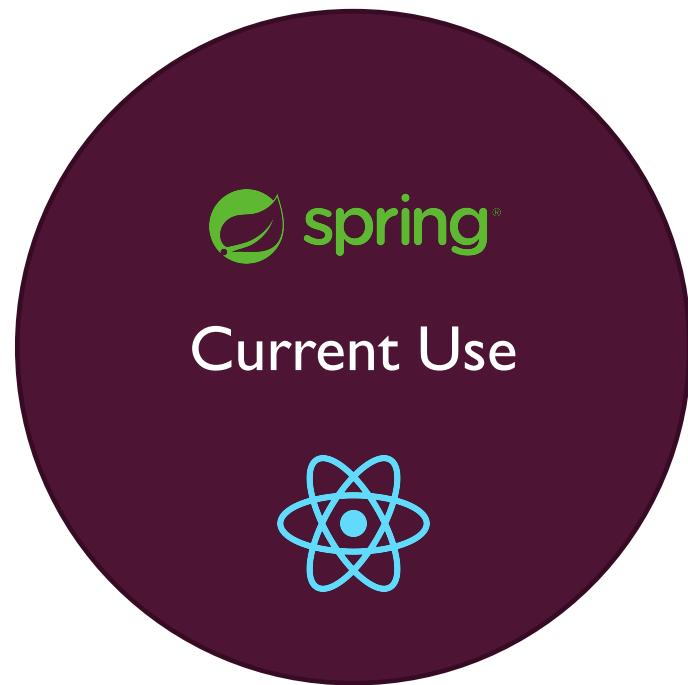


## Future Trend

Top 10 Web Frames Respondents Want To Work With



# WEB FRAMEWORK TRENDS – FINDINGS & IMPLICATIONS

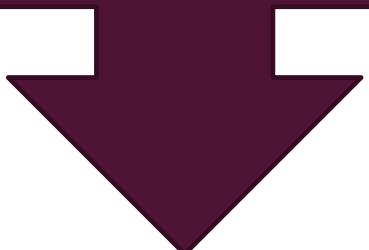


## Implications

Spring Boot and React remain safe bets for enterprise-grade and frontend-heavy projects. Emerging frameworks like FastAPI highlight demand for faster, modern, and developer-friendly tools.

# DASHBOARD

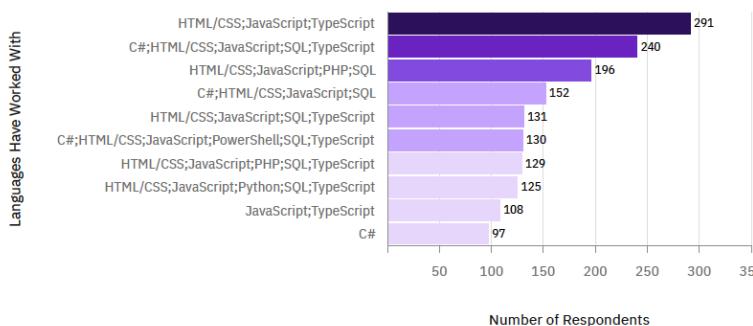
A dashboard was created via IBM Cognos Analytics for interactive analysis of the findings.



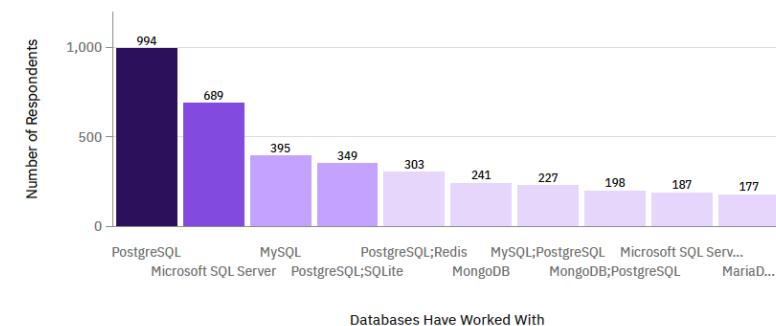
# DASHBOARD: CURRENT TECHNOLOGY USAGE

## Current Technology Usage

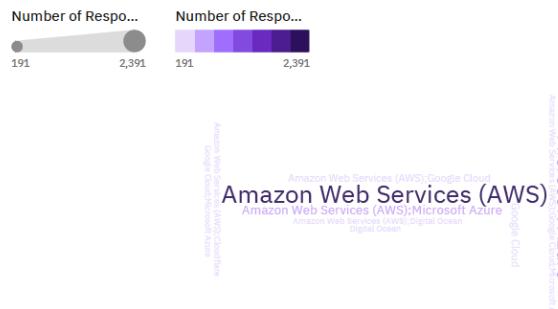
Top 10 Programming Languages Respondents Have Worked With



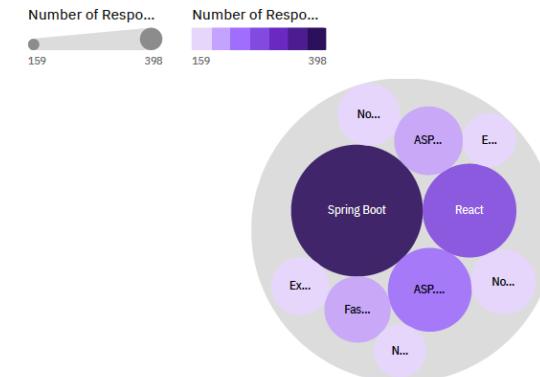
Top 10 Databases Respondents Have Worked With



Top 10 Platforms Respondents Have Worked With



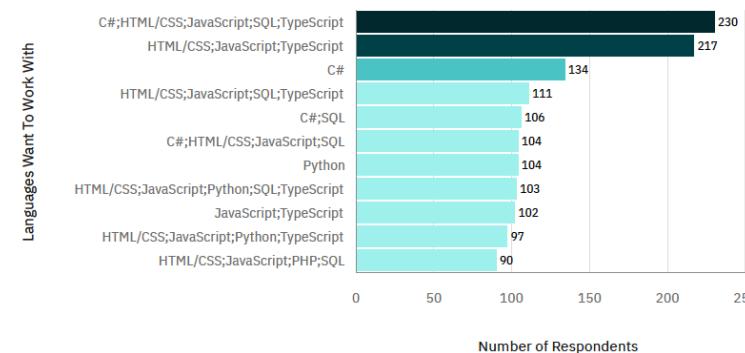
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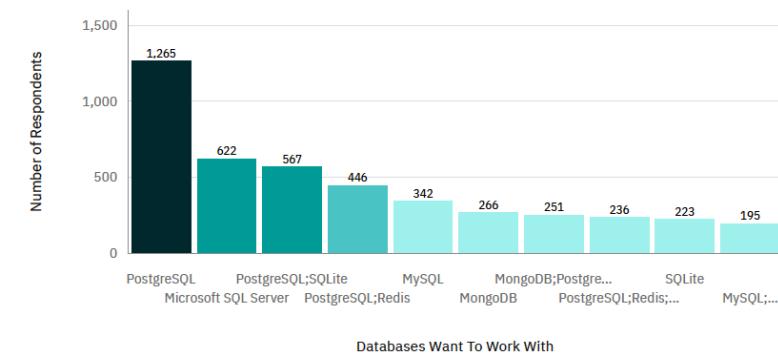
# DASHBOARD: FUTURE TECHNOLOGY TRENDS

Future Technology Trend

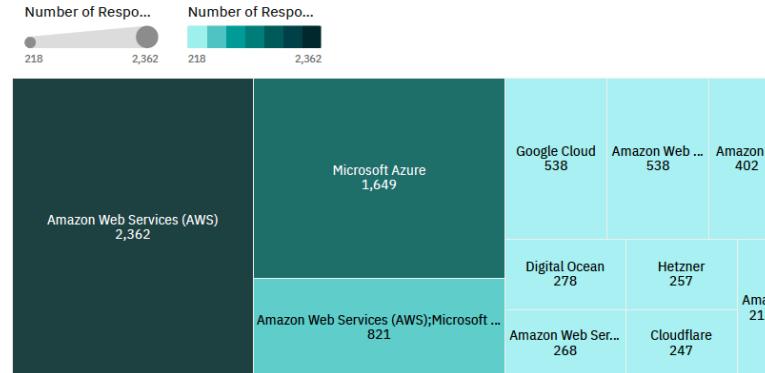
Top 10 Programming Languages Respondents Want To Work With



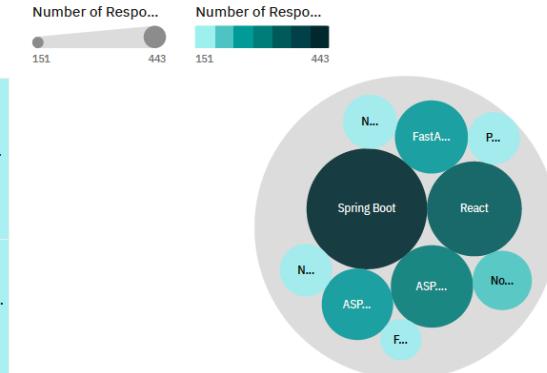
Top 10 Databases Respondents Want To Work With



Top 10 Platforms Respondents Want To Work With



Top 10 Web Frames Respondents Want To Work With

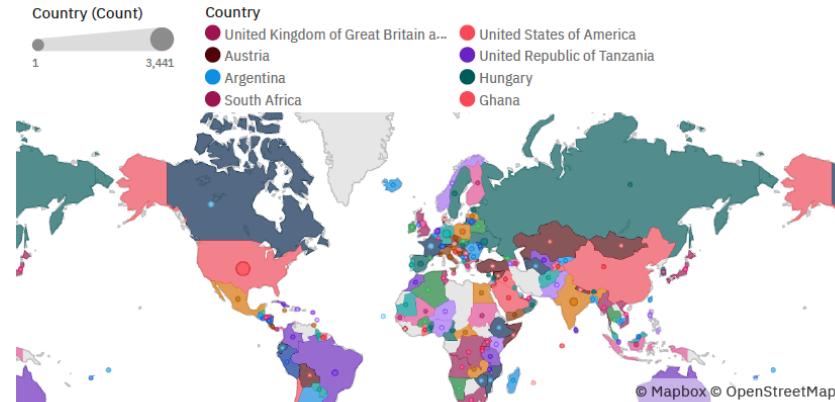


# DASHBOARD: DEMOGRAPHICS

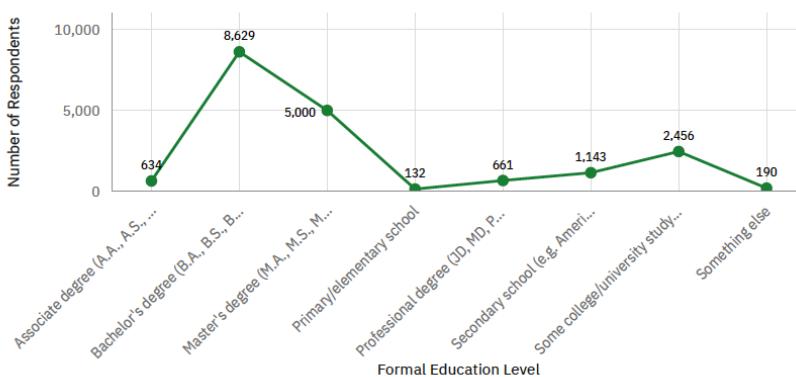
## Demographics



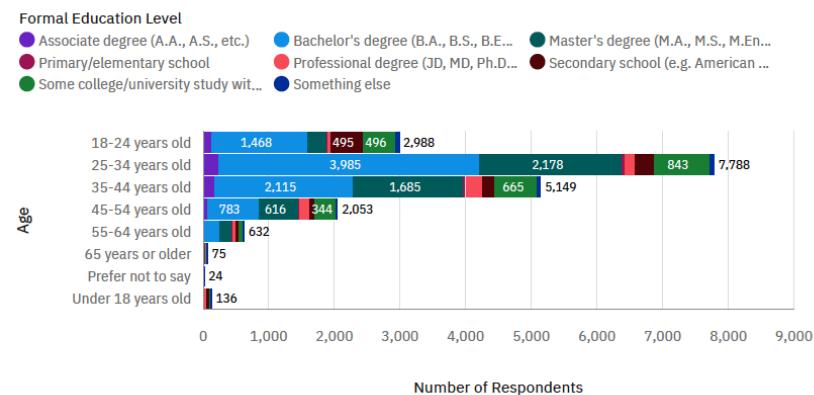
## Respondent Count by Country



## Respondent Distribution by Formal Education Level



## Respondent Count by Age, Classified by Formal Education Level



# DASHBOARD INSIGHTS

The dashboard suggests:

- Businesses must keep supporting core, stable technologies while actively planning transitions to modern, open-source, and cloud-flexible tools.
- The strongest shifts are toward Python, PostgreSQL, Azure, Redis, and modern frameworks - all of which align with trends in cloud-native development, AI, and scalability.

# DISCUSSION: OVERALL FINDINGS & IMPLICATIONS

Stability +  
Transition

- Established tools (JavaScript, PostgreSQL, AWS, Spring Boot) remain core, but future interest leans toward Python, Azure, Redis, and FastAPI.
- Companies must balance legacy support with adoption of modern tools.

Open-  
Source  
Momentum

- Growing preference for PostgreSQL, Redis, and FastAPI shows developers value flexible, cost-efficient, open-source solutions.

## DISCUSSION: OVERALL FINDINGS & IMPLICATIONS (CONT.)

Shift to  
Multi-  
Cloud

- AWS leads today, but Azure and Google Cloud are gaining traction.
- Organizations should expect greater emphasis on multi-cloud and hybrid strategies.

Data-  
Centric  
Growth

- Rising demand for Python and modern databases reflects the growing importance of AI, data science, and real-time applications.

# CONCLUSION

The developer talent pool is young, highly educated, and globally distributed, signaling both stability in core technologies and openness to emerging tools.

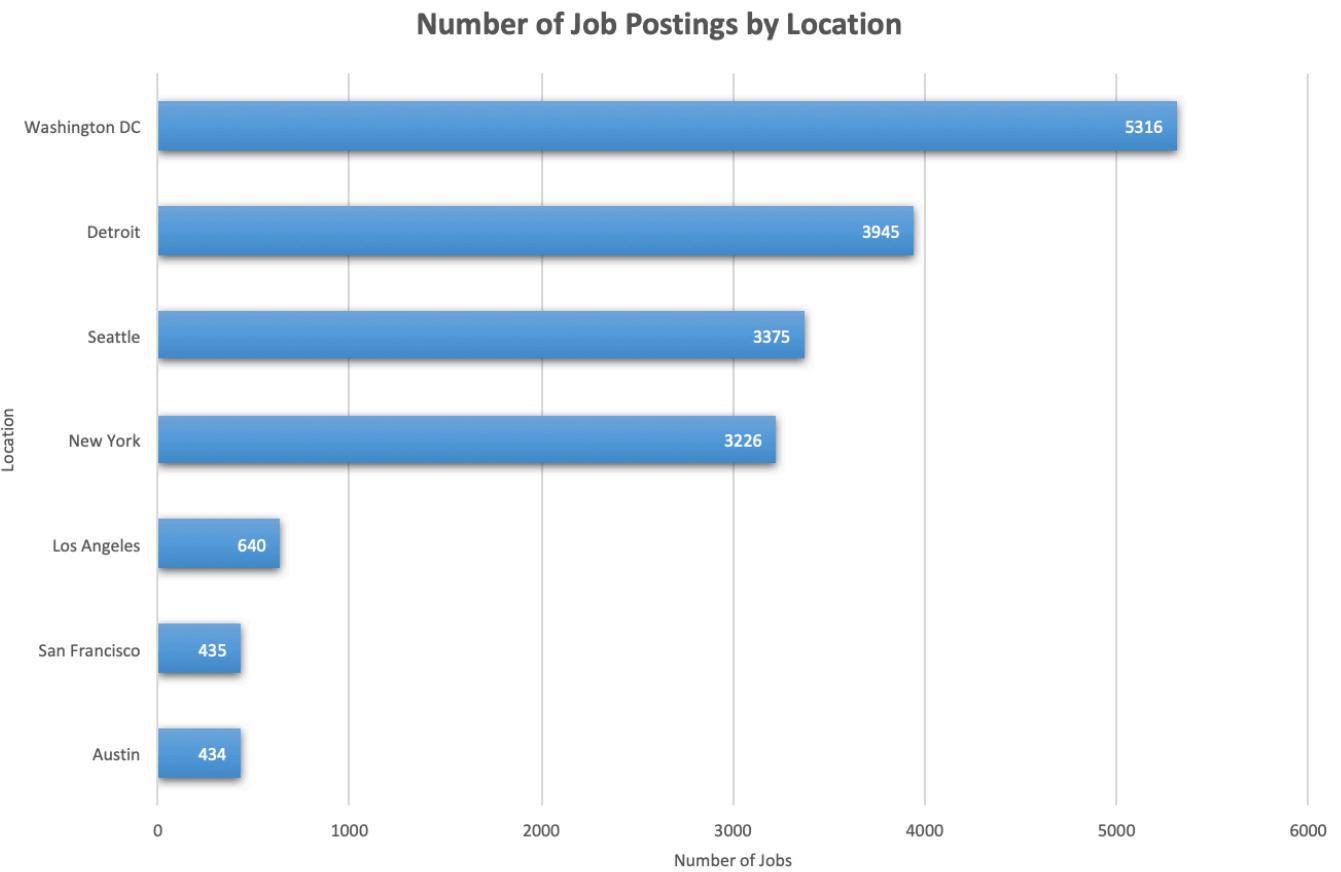
Respondents show strong reliance on established tools (AWS, PostgreSQL, JavaScript ecosystems) but also clear aspirations toward cloud expansion (Azure, Google Cloud) and modern frameworks (React, FastAPI).

Ultimately, the tech landscape is moving toward open-source, cloud-flexible, and data-driven tools. Companies should maintain current systems but strategically invest in emerging technologies to stay competitive.

# FUTURE RESEARCH: DEVELOPER JOB POSTINGS BY LOCATION

Brief exploratory analysis of the number of job postings for developers by location show the most job postings were found for Washington DC.

Future research can expand on this analysis to better understand the relationships between location and developer job availability.



# FUTURE RESEARCH: POPULAR PROGRAMMING LANGUAGES BY AVERAGE ANNUAL SALARY

Brief exploratory analysis of popular programming languages by developers' annual average salary show the highest paying language is Swift at an average salary of \$130,801.

Future research can expand on this analysis to better understand the relationships between programming language and developer earning potential.

