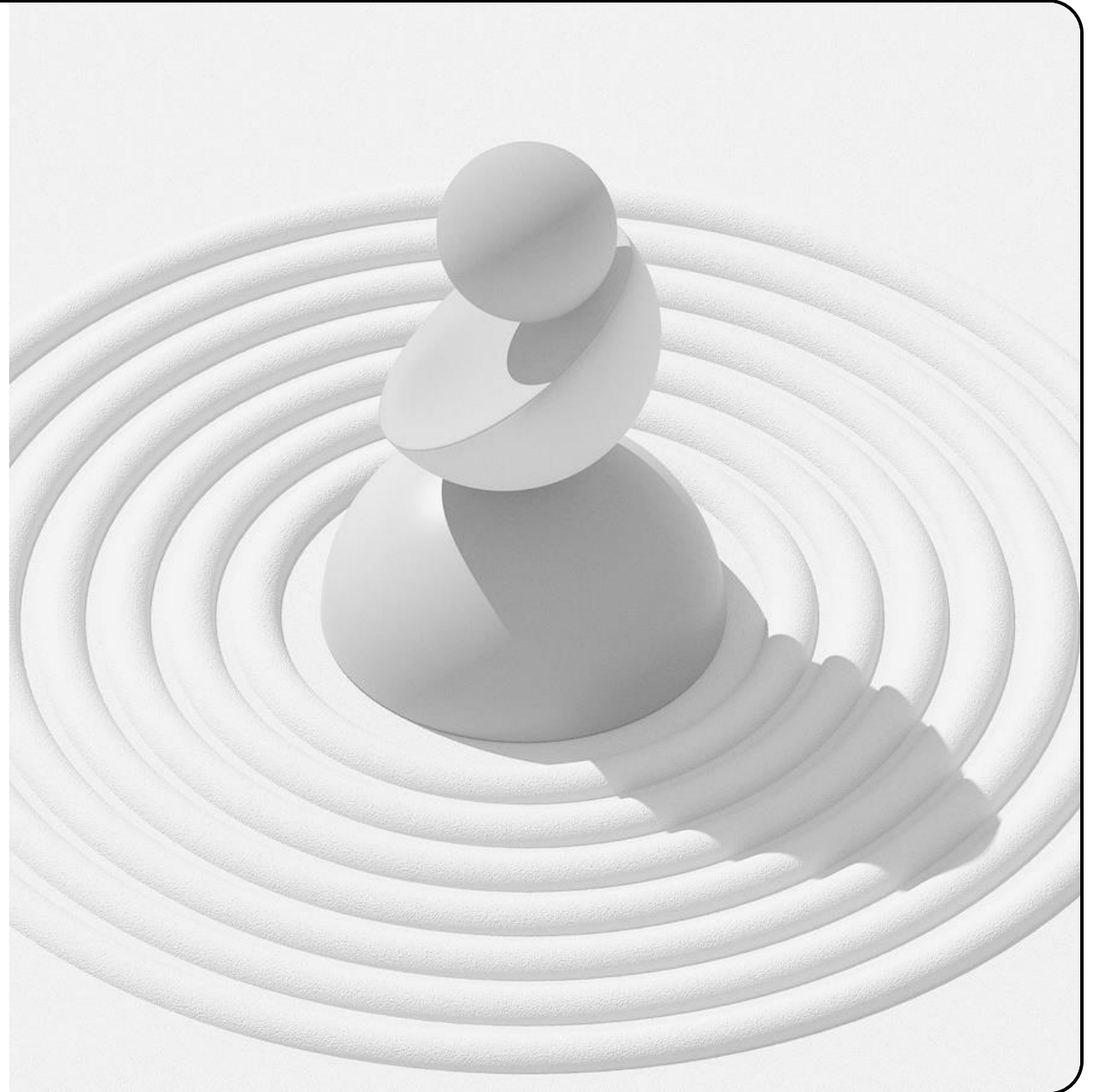


Presented by Kok Thong Ong

# **STACK OVERFLOW DEVELOPER SURVEY 2024: TECHNOLOGY TRENDS DASHBOARD**

# OUTLINE

1. Executive Summary
2. Introduction
3. Methodology
4. Programming Languages Trends
5. Database Trends
6. Dashboard: Current Technology Usage
7. Dashboard: Future Technology Trends
8. Dashboard: Demographics
9. Insights from Dashboards
10. Overall Findings and Implications
11. Conclusion
12. Appendix



# COMPREHENDING MARKET TRENDS

- This project analyzes the 2024 Stack Overflow Developer Survey to uncover trends in programming languages, databases, platforms, and web frameworks among global developers.
- Using Google Looker Studio, interactive dashboards were created to visualize current technology usage, anticipated trends for next year, and respondent demographics.
- Key findings include the dominance of languages such as Python and JavaScript, the continued popularity of PostgreSQL and MySQL, and an increasing interest in cloud-based platforms and modern web frameworks.
- The insights inform developers, educators, and employers about shifts in technology preferences and workforce demographics

# INTRODUCTION

## PURPOSE

To analyze the 2024 Stack Overflow Developer Survey data and identify significant technology usage trends among developers.

## TARGET AUDIENCE

Developers, tech managers, educators, recruiters, and anyone interested in technology adoption.

## Value

Provides up-to-date insights on programming language and tool popularity, helping inform hiring, learning, and technology adoption decisions.



# METHODOLOGY

- **Data Source:**  
Stack Overflow Developer Survey 2024 (subset provided for the IBM Capstone).
- **Collection Method:**  
Self-reported responses collected via online survey.
- **Data Wrangling:**
  - Cleaned data for nulls and blank values.
  - Converted multi-select fields into analyzable formats.
  - Sampled data to meet visualization tool size requirements.
  - Uploaded to Google Looker Studio for interactive dashboard creation.

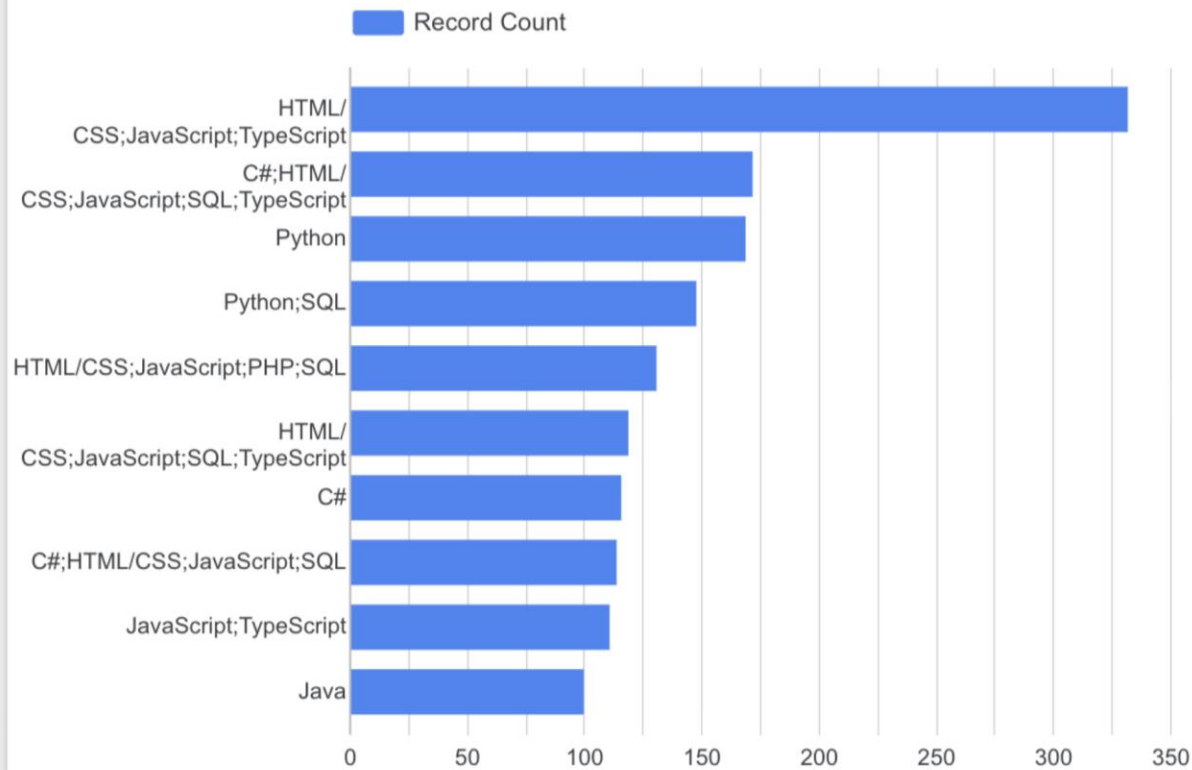
INNOVATION IS THE  
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# PROGRAMMING LANGUAGES TRENDS

Top 10 Languages Used (2024 Survey)



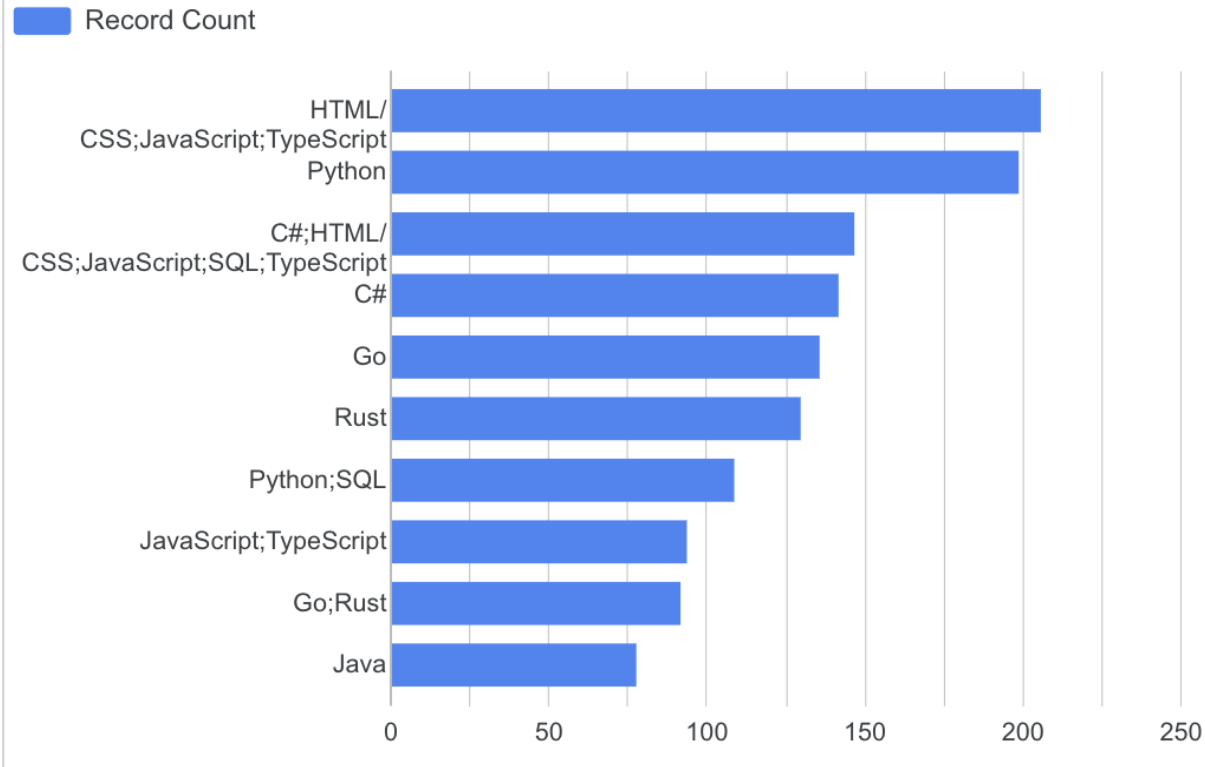
## Findings & Implications

- **HTML/CSS, JavaScript, and TypeScript** are the most widely used languages among respondents.
- **Python** is very popular, especially when paired with SQL.
- Most developers use **multiple languages**, highlighting the need for versatile skills.
- **Implication:**
  - Focusing on web technologies and Python+SQL offers strong job prospects.



# PROGRAMMING LANGUAGES TRENDS

Top 10 Languages Desired Next Year (Stacked Bar)

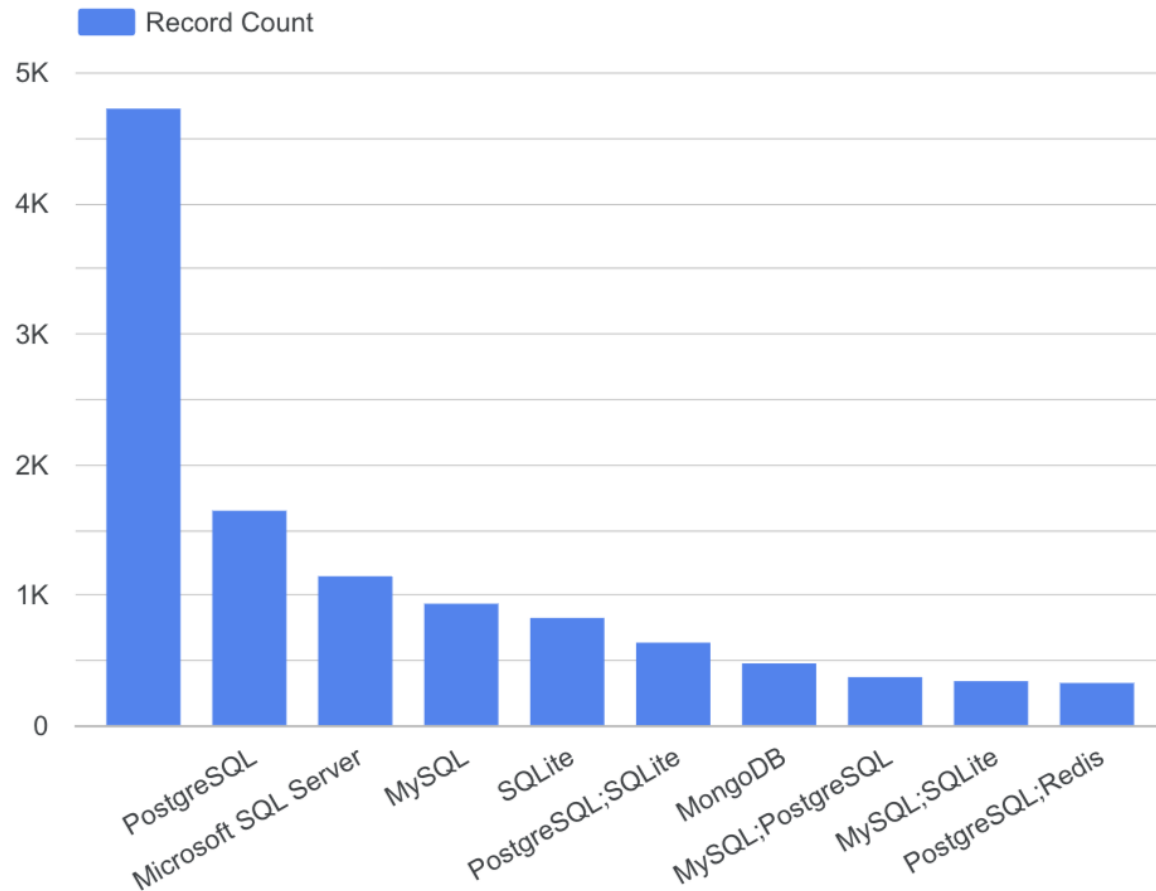


## Findings & Implications

- **HTML/CSS, JavaScript, TypeScript, and Python** remain the most desired languages for next year.
- **Go** and **Rust** are gaining popularity, showing growing interest in modern languages.
- **Implication:**
  - Developers are interested in both established web languages and newer, high-performance options like Go and Rust.

# DATABASE TRENDS

Top 10 Databases Used (2024 Survey)

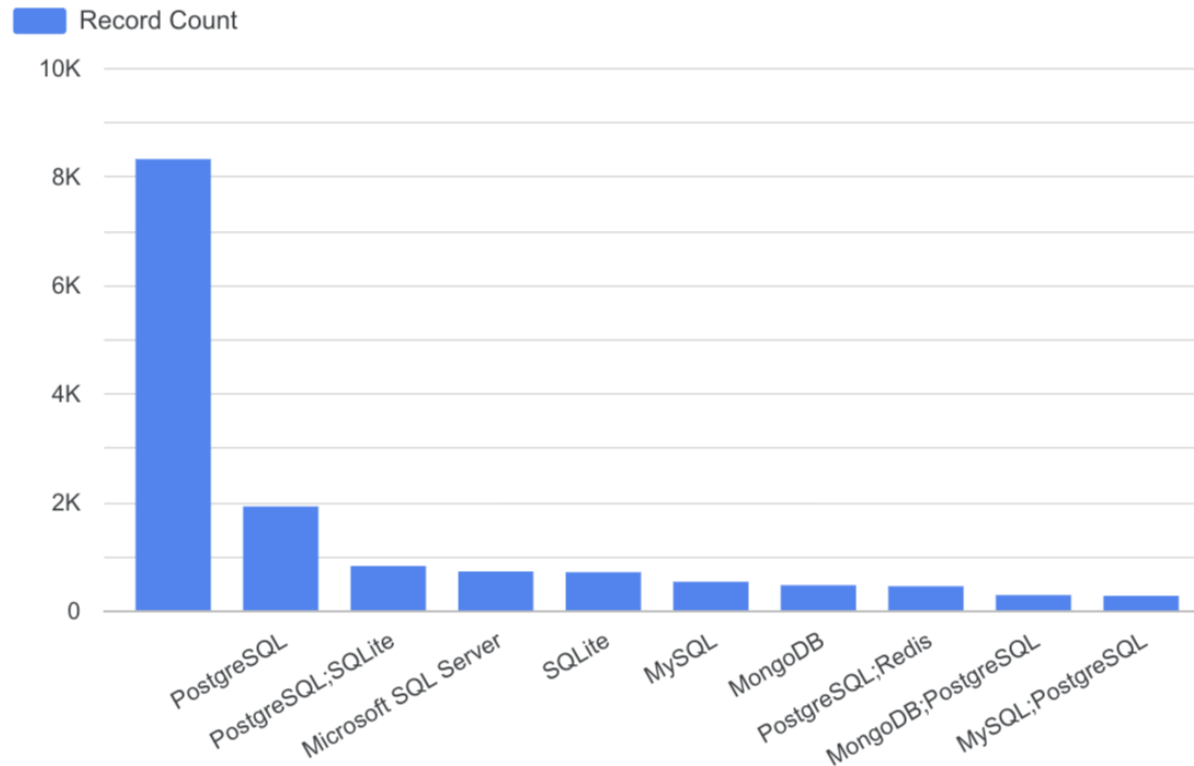


## Findings & Implications

- PostgreSQL is the most widely used database by a large margin.
- Microsoft SQL Server and MySQL are also very popular.
- Implication:
  - Knowledge of PostgreSQL, SQL Server, and MySQL remains valuable for developers and companies.

# DATABASE TRENDS

Top 10 Databases Desired Next Year (Stacked Column)

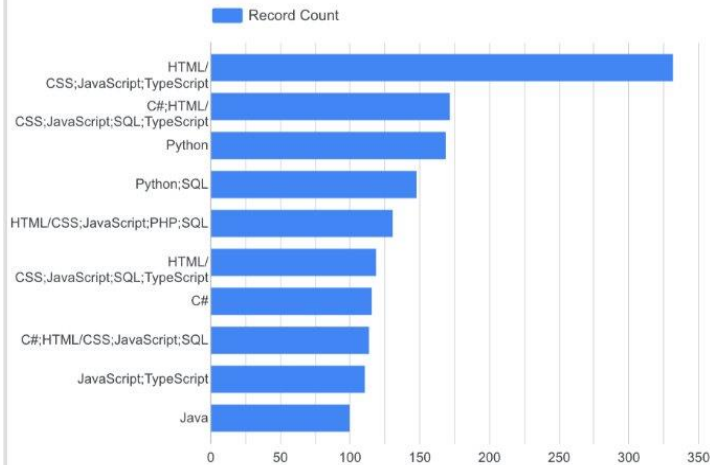


## Findings & Implications

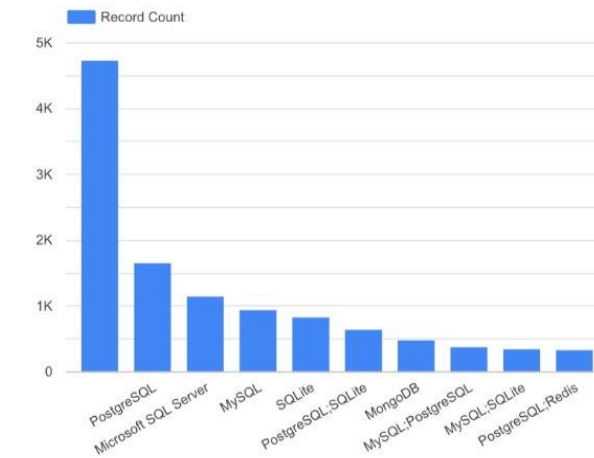
- PostgreSQL is by far the most desired database for next year.
- SQLite and Microsoft SQL Server also show strong future interest.
- Implication:
  - Developers are prioritizing open-source and flexible databases, with PostgreSQL leading the way for future adoption.

# DASHBOARD: CURRENT TECHNOLOGY USAGE

Top 10 Languages Used (2024 Survey)



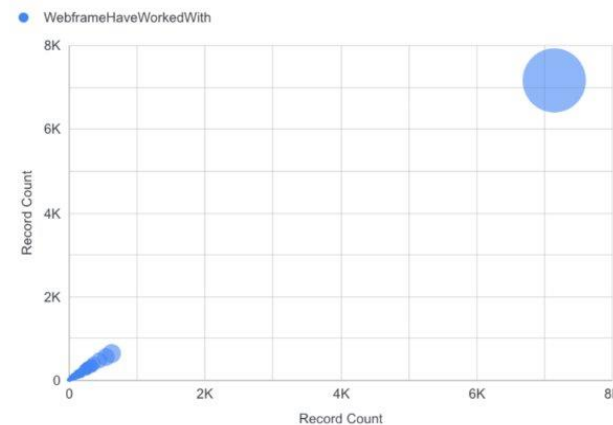
Top 10 Databases Used (2024 Survey)



Top 10 Platforms Used (Word Cloud)



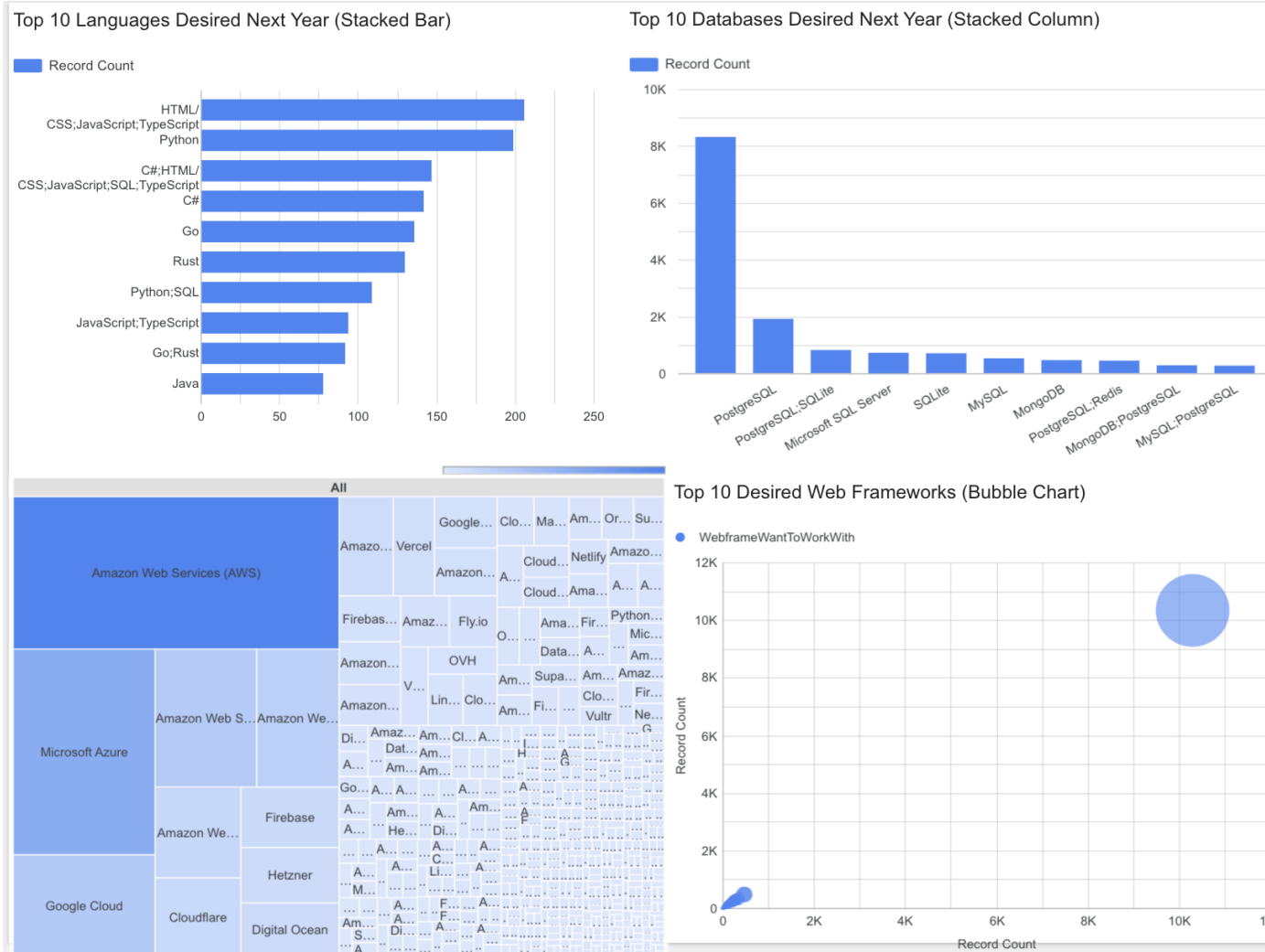
Top 10 Web Frameworks Used



## Key Insights

- **Web technologies** like HTML/CSS, JavaScript, and TypeScript are most commonly used among developers.
- **PostgreSQL** stands out as the top database, with Microsoft SQL Server and MySQL also widely adopted.
- **Cloud platforms** such as AWS and Microsoft Azure dominate the platforms landscape.
- **Modern web frameworks** are heavily used, reflecting the demand for up-to-date web development skills.

# DASHBOARD: FUTURE TECHNOLOGY USAGE

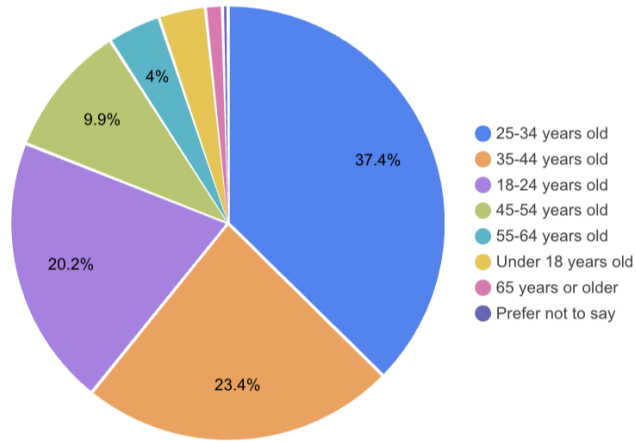


## Key Insights

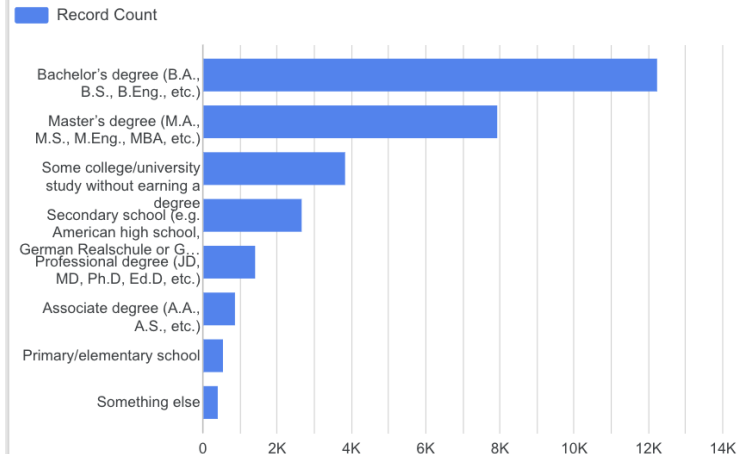
- HTML/CSS, JavaScript, TypeScript, and Python remain the most desired languages, but **Go** and **Rust** are emerging as in-demand skills.
- PostgreSQL** is expected to stay the top database, while **SQLite** and cloud-friendly databases are gaining interest.
- Amazon Web Services (AWS)** and **Microsoft Azure** are the platforms most developers want to work with next year.
- Developers are increasingly interested in **modern web frameworks**, signaling a continued shift toward newer technologies and cloud-native tools.

# DASHBOARD: DEMOGRAPHICS

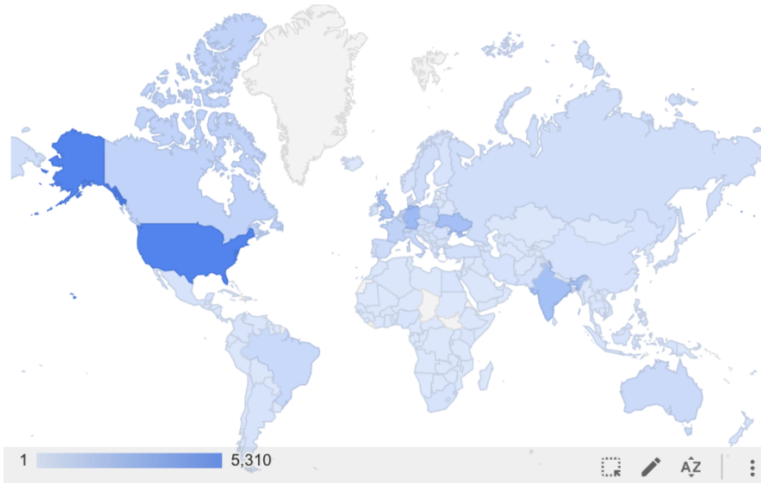
Respondent Count by Country (Map Chart)



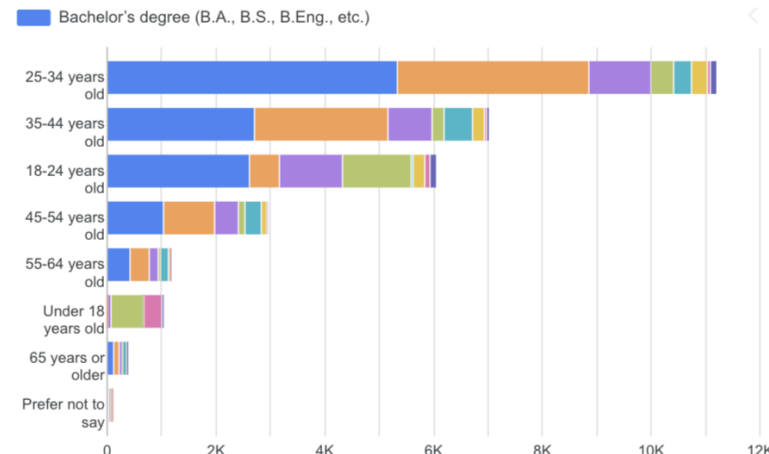
Respondent Distribution by Education Level (Bar Chart)



Country by Record Count



Respondent Count by Age, Classified by Education Level



## Key Insights

- Most respondents are aged **25-34** and **35-44**, making up the majority of the survey.
- The largest group of developers holds a **Bachelor's degree**, with Master's degree holders as the next biggest group.
- **Respondents are global**, but most are concentrated in the United States and other major tech hubs.
- Education levels are high across all age groups, showing a well-educated developer community.

# INSIGHTS FROM DASHBOARD

- **Web development skills** (HTML/CSS, JavaScript, TypeScript) are essential, with Python also highly valued for both current and future roles.
- **PostgreSQL** dominates database use and is the top choice for future adoption.
- **Cloud platforms** (AWS, Azure, Google Cloud) are at the center of future technology interest.
- **Most developers** are young, highly educated, and globally distributed, reflecting a diverse and competitive talent pool.

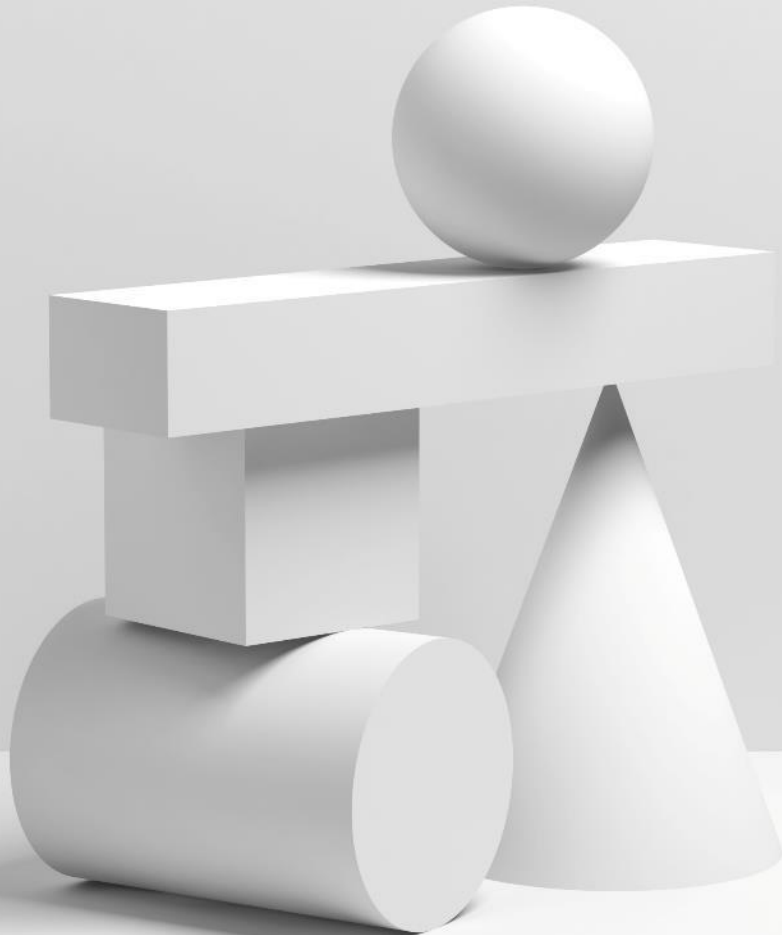


# OVERALL FINDINGS AND IMPLICATIONS

- Demand for web and cloud technologies is growing—skills in HTML/CSS, JavaScript, Python, and cloud platforms are key for career growth.
- Open-source databases like PostgreSQL are industry leaders and will continue to be in demand.
- Continuous learning is essential as new languages (Go, Rust) and frameworks gain popularity.
- Organizations and educators should align training and hiring with these technology trends to stay competitive.

# CONCLUSION

- The 2024 Stack Overflow survey highlights the importance of web, data, and cloud skills for developers.
- PostgreSQL and cloud platforms will remain central to tech stacks.
- Developers who adapt to emerging technologies and continue learning will have the strongest opportunities.
- These insights can guide tech training, hiring, and personal learning plans.



# THANK YOU!

Questions or feedback?

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<https://github.com/kokthong98>