# STACK OVERFLOW SURVEY ANALYSIS


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# OUTLINE

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

# EXECUTIVE SUMMARY

- The following slides summarize key findings from an analysis of data collected as part of the Stack Overflow Developer Survey.
- The analysis yielded insights regarding the following:
  - Most popular languages, databases, and other technologies (at the time of data collection)
  - Attitudes reflecting which technologies will become most popular in the future
  - Demographics (e.g., the gender gap among developers)
- These findings are relevant particularly to current and aspiring developers, recruiters, educators, and policy makers.
- Visual Representation to provide meaningful insights

# INTRODUCTION

Every year, Stack Overflow conducts the **largest developer survey** to understand the preferences, challenges, and trends shaping the software industry. This survey provides insights into **developer demographics, technology choices, career aspirations, and industry shifts**, helping businesses and professionals stay informed about the evolving landscape.

**Why It Matters**

1. **Industry Insights:** Developers across different experience levels and industries share their perspectives.
2. **Tech Trends:** The survey highlights the most-used programming languages, frameworks, and tools.
3. **Work Preferences:** Understanding workplace trends, including remote work and job satisfaction.
4. **Career Growth:** Developers' learning habits, compensation expectations, and future aspirations.

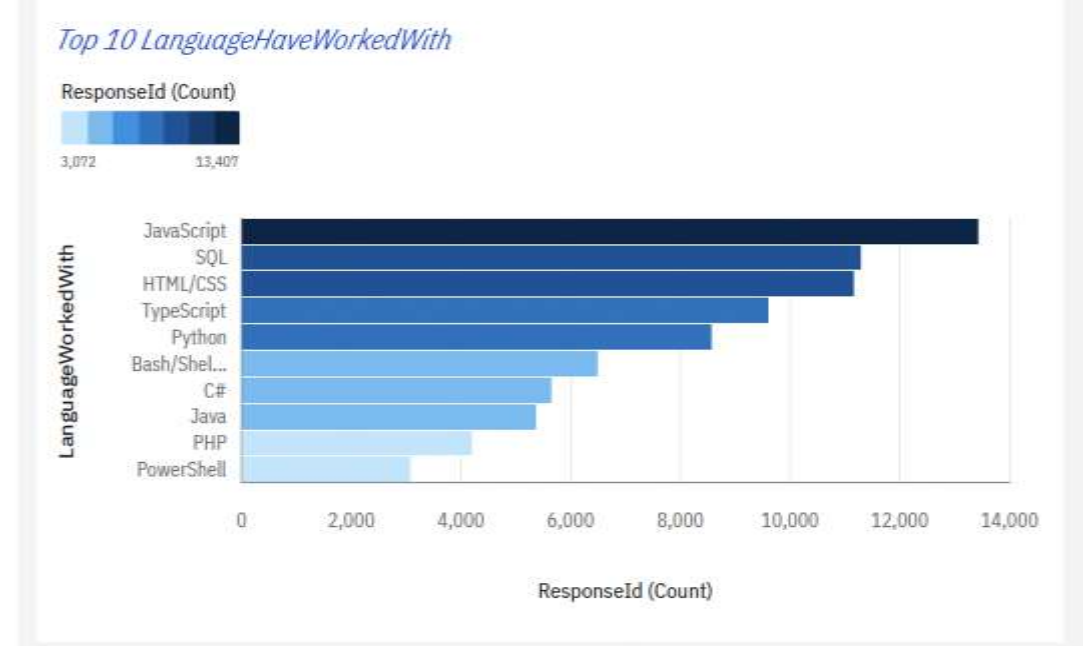
With thousands of participants worldwide, this survey serves as a **valuable resource for developers,**

# METHODOLOGY

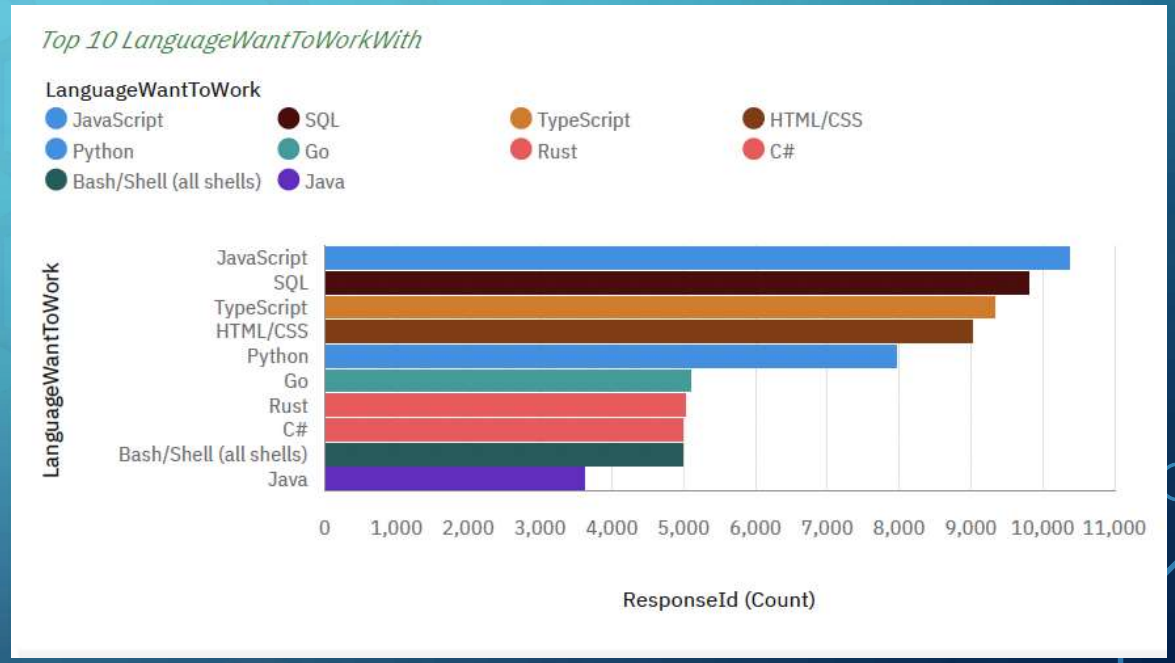
- Data Collection : Various data formats, including job availability across diverse locations for different technologies, were procured using Python's GitHub Jobs API. This involved meticulous data collection via APIs and employed web scraping methodologies to supplement the dataset with pertinent information.
- Data Wrangling: Data wrangling methods will be employed to accomplish the following tasks: identifying and removing duplicate rows, assessing missing values, obtaining employment column value counts, and normalizing data using two existing columns, all through Python.
- Exploratory Data Analysis: Done to identify column medians and outliers , compute the interquartile range, establish upper and lower bounds, and investigate correlations among numerical columns
- Data Visualization: Survey dataset was used to craft different charts like bar chart, column chart, box plot and so on.
- Dashboard: IBM Cognos was used to develop three dashboards to represent the findings.

# PROGRAMMING LANGUAGE TRENDS

## Current Year




## Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## Findings

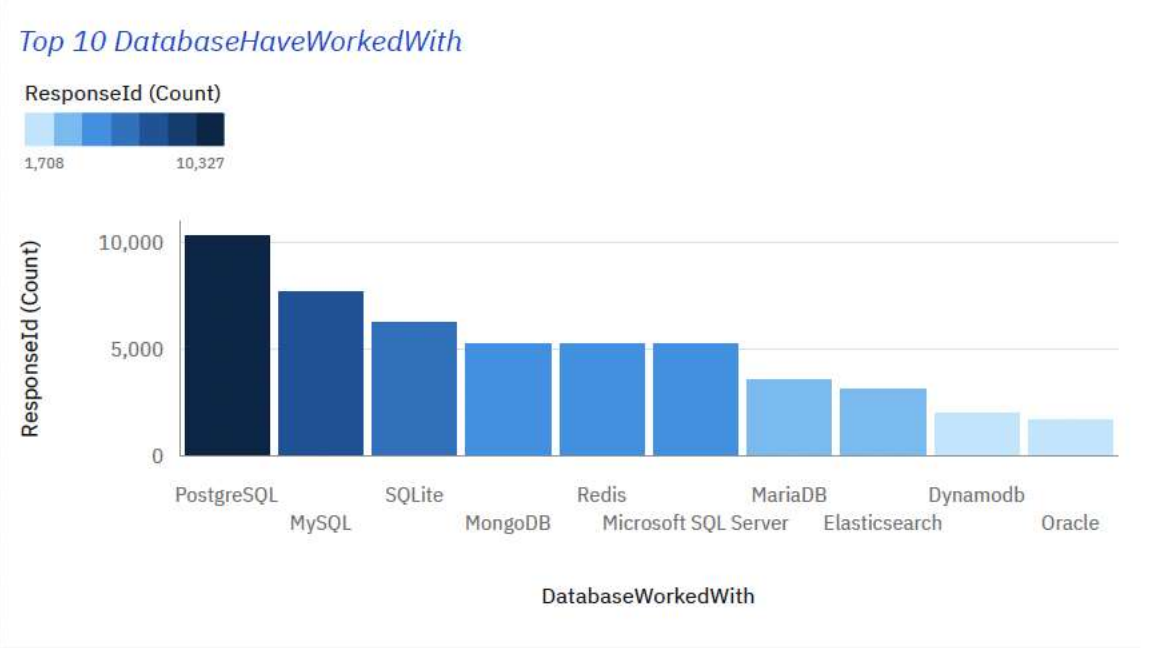
- JavaScript remains the most widely used language, highlighting its dominance in web development.
- Python continues to grow, especially in **data science and AI applications**.
- Emerging languages like **Rust and Go** are gaining traction due to their performance and reliability.

## Implications

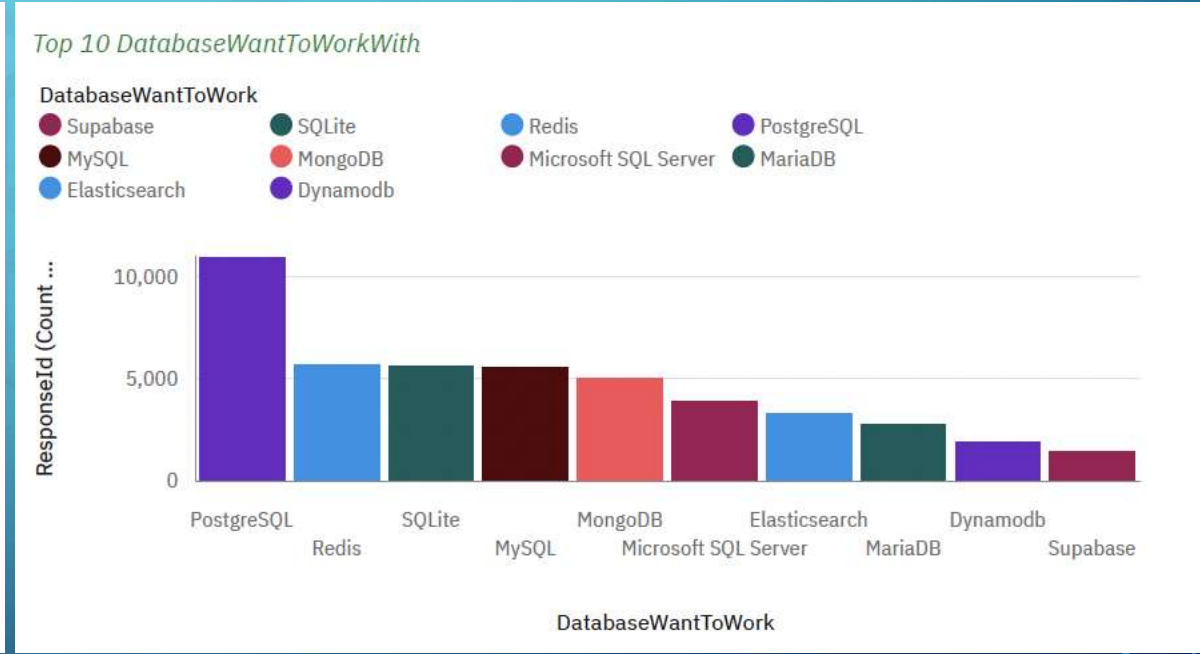
- Companies investing in web development **must prioritize JavaScript frameworks** and supporting technologies.
- Python's increasing popularity suggests rising demand for **AI and data-related roles.**
- Rust and Go's growth implies a shift toward **efficient, low-latency systems programming.**

# DATABASE TRENDS

## Current Year




## Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

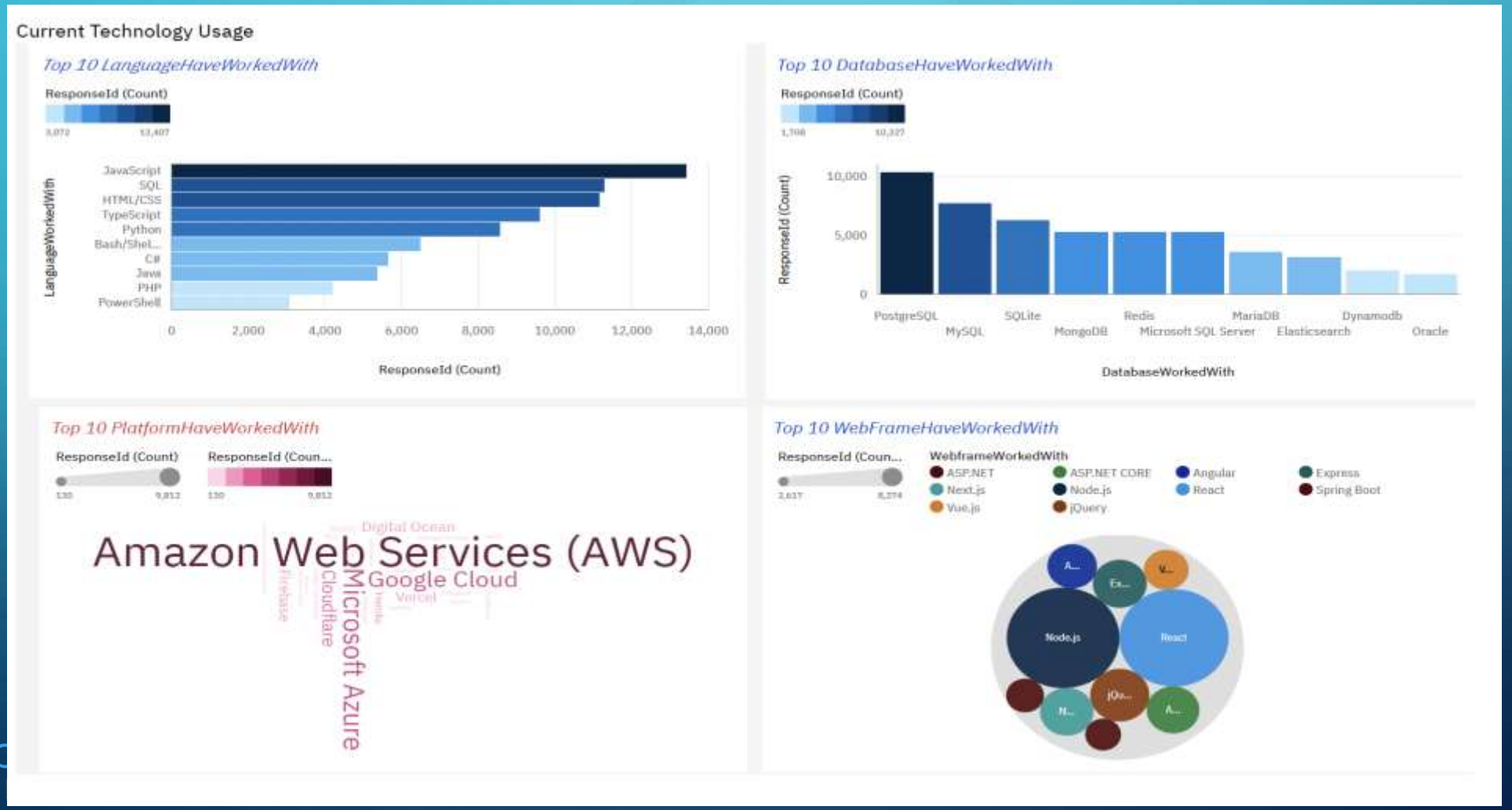
## Findings

- **Most-used databases:** PostgreSQL, MySQL, SQLite, and MongoDB dominate, showcasing a mix of **structured (SQL) and flexible (NoSQL) data storage solutions.**
- **Most-wanted databases:** PostgreSQL continues to be the most desired, followed by **Redis and emerging serverless solutions** like Supabase, indicating a demand for **high-performance and scalable systems.**
- **Enterprise vs. Open Source:** Traditional databases like **Microsoft SQL Server and Oracle** remain widely used, but open-source alternatives **PostgreSQL and MariaDB** are increasingly preferred.
- **Cloud & NoSQL Adoption:** DynamoDB and Elasticsearch highlight growing interest in **cloud-native, real-time analytics, and flexible data modeling.**

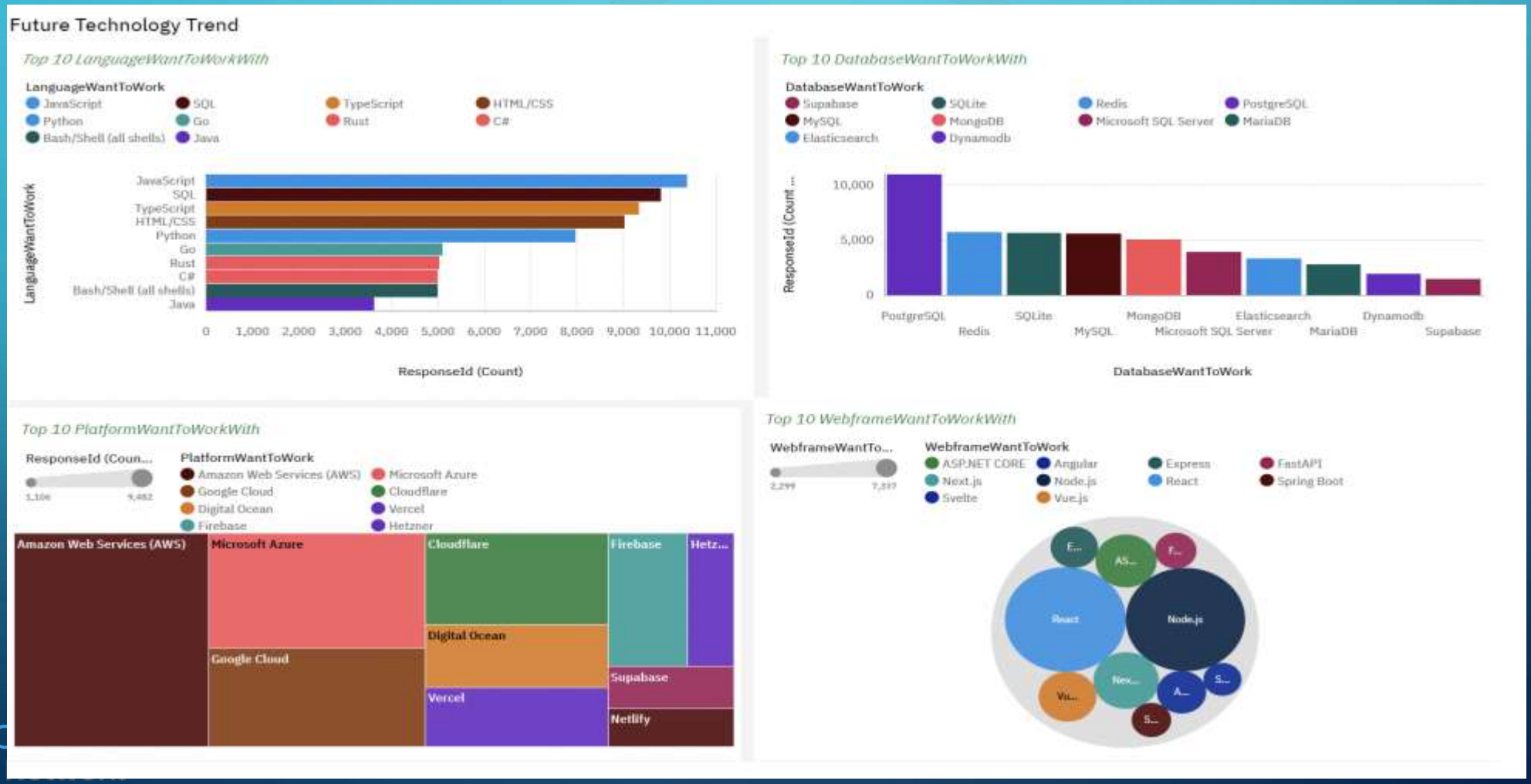
## Implications

- **Businesses & Developers:** Organizations should **prioritize PostgreSQL expertise** due to its increasing adoption across industries.
- **NoSQL & Real-Time Data:** The popularity of **MongoDB, Redis, and Elasticsearch** signals a shift toward **high-speed, scalable databases for modern applications.**
- **Enterprise IT Strategy:** Companies using **Microsoft SQL Server and Oracle** must evaluate whether **open-source alternatives** can provide cost-effective solutions.
- **Cloud & Serverless Growth:** Emerging interest in **Supabase and DynamoDB** suggests a **rising demand for serverless databases,** making cloud-native development essential for scalability.

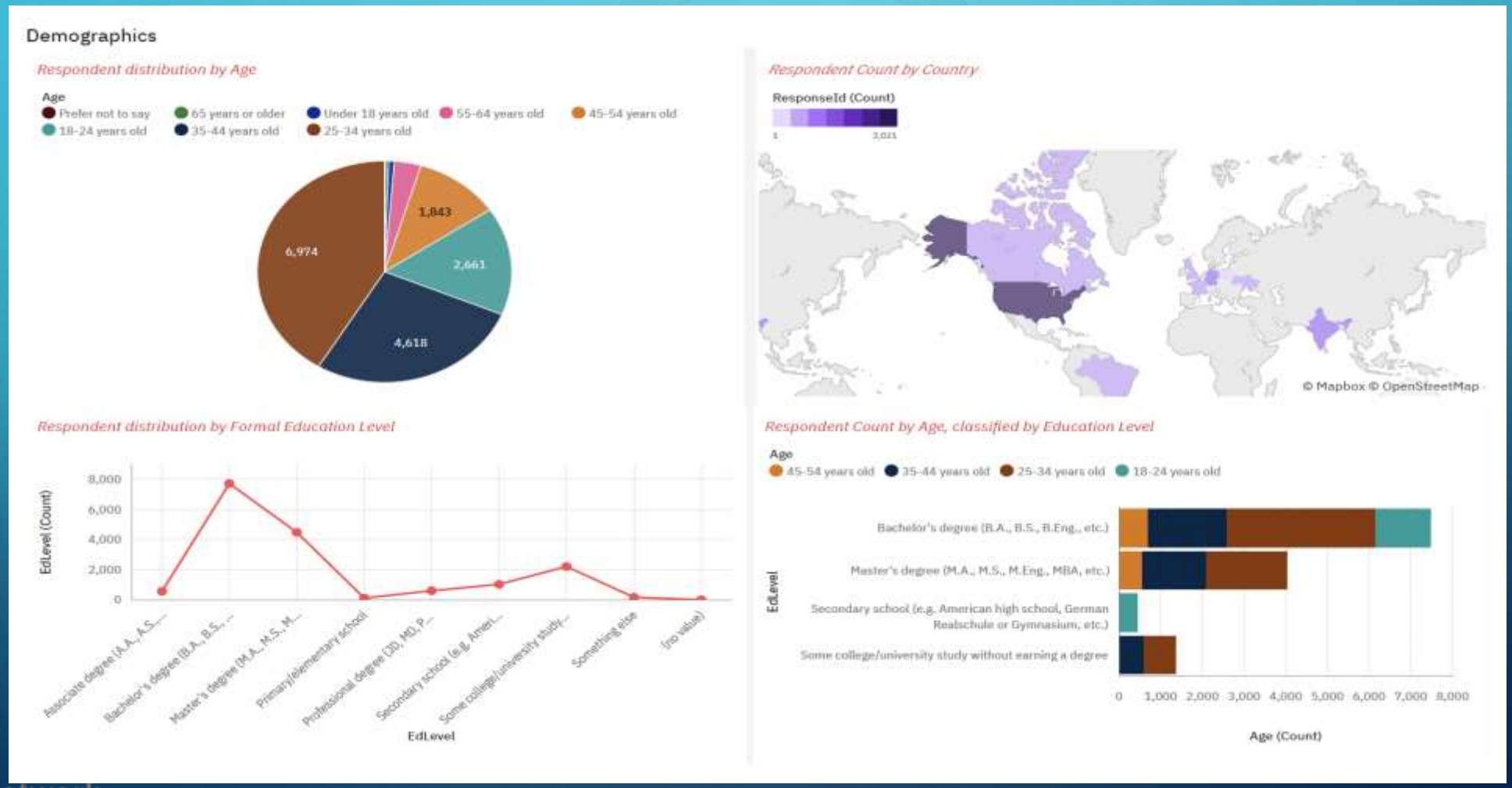
# CURRENT TECHNOLOGY TREND



# FUTURE TECHNOLOGY TREND



# DEMOGRAPHICS



# GITHUB LINK

https://github.com/Shruthisumanth17/Stack-overflow

# OVERALL FINDINGS & IMPLICATIONS

## Findings

- **Programming Language Trends**: JavaScript, Python, and SQL remain dominant, while **Rust and Go** are rapidly gaining interest.
- **Database Adoption**: **PostgreSQL** leads as the most-used database, followed by **MySQL, MongoDB, and SQLite**, showing a mix of structured and flexible data storage solutions.
- **Work Arrangements**: **Remote and hybrid work models** remain highly preferred, emphasizing a shift in developer expectations for flexibility.
- **Compensation & Satisfaction**: Developers specializing in **AI, ML, cybersecurity, and cloud computing** tend to earn higher salaries, aligning with industry demand for these skills.

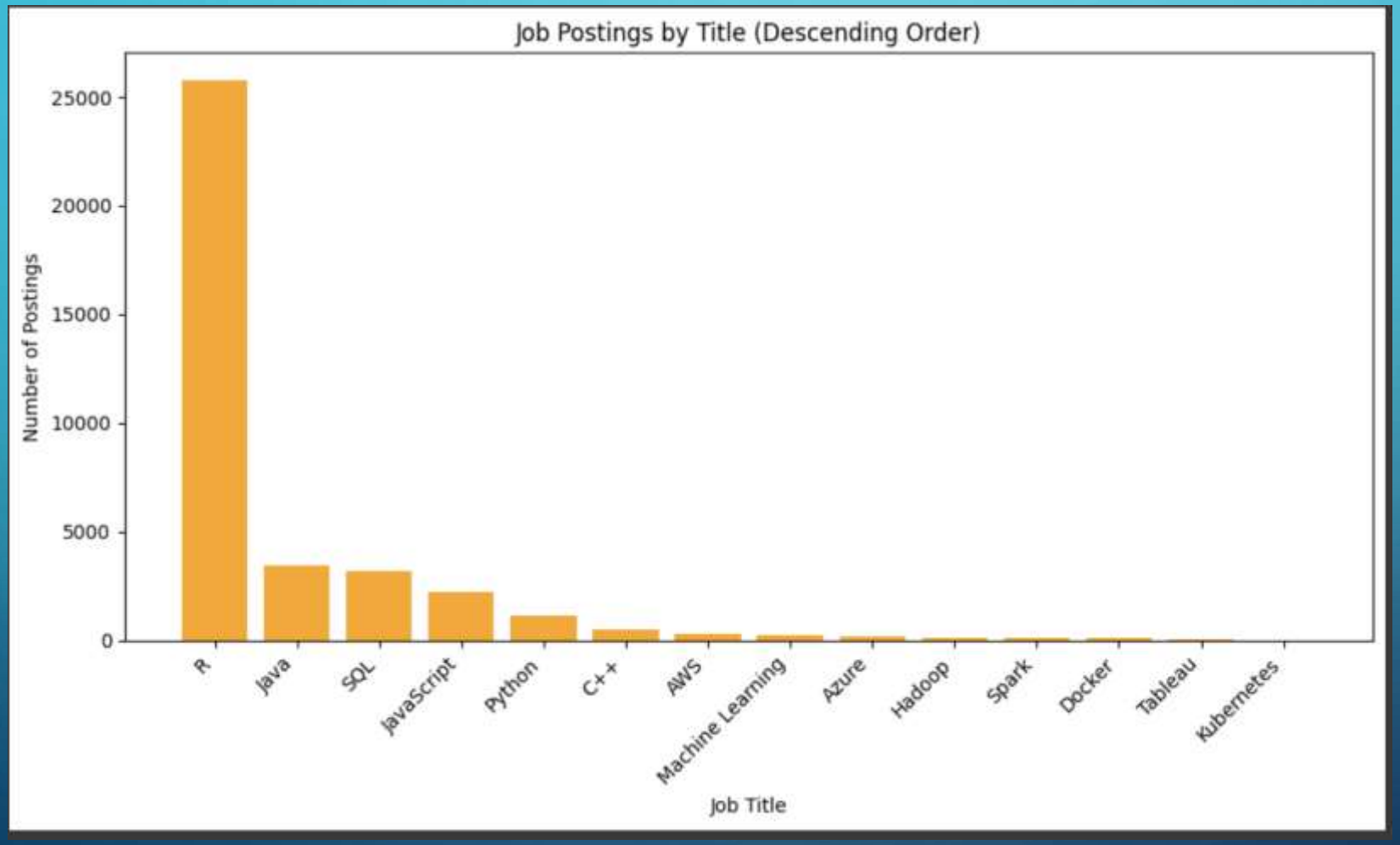
## Implications

- **Businesses & Employers**: To attract top talent, companies must **offer remote work options, competitive compensation, and invest in upskilling programs** for emerging technologies.
- **Developers**: Learning **AI, cloud computing, and modern databases** can lead to better career opportunities and higher earning potential.
- **Tech Industry Evolution**: Growth in **NoSQL databases, containerization, and automation tools** signals increased adoption of **cloud-native development.**
- **Education & Training**: Universities and coding bootcamps should **focus on high-demand skills** like AI, Rust, and DevOps to align with industry needs.

# CONCLUSION

- The **Stack Overflow Developer Survey** provides invaluable insights into **technology trends, developer preferences, and industry shifts**. This year's findings highlight:
- The **continued dominance of JavaScript, Python, and SQL**, while languages like **Rust and Go** gain traction.
- **PostgreSQL emerging as the most sought-after database**, reinforcing the industry's shift toward scalable, open-source solutions.
- The rise of **remote and hybrid work models**, emphasizing the growing need for flexibility in employment structures.
- Higher compensation and demand for specialists in **AI, cloud computing, and cybersecurity**, signaling key areas for career growth.

# JOB POSTINGS



# POPULAR LANGUAGES