



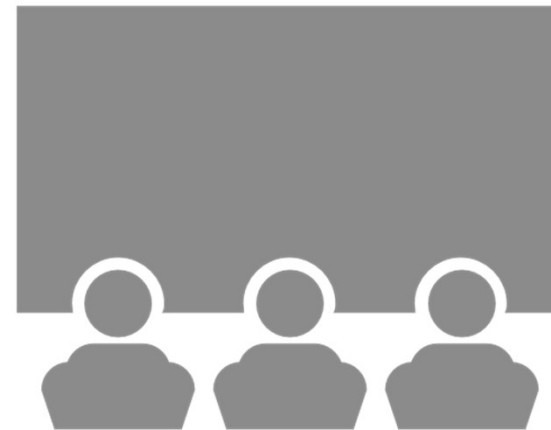
"Technology Usage & Trends Analysis Project"

JASHWANTH REDDY

MAY 2025

OUTLINE:

- Executive Summary
- Introduction
- Methodology
- Programming Language Trends
- Database Trends
- Dashboards
- Insights from Dashboards
- Overall Findings & Implications
- Conclusion
- Appendix





EXECUTIVE SUMMARY:

Current Technology Usage

- This analysis highlights the **most widely used programming languages, databases, and platforms** in today's technology landscape.
- Key technologies such as **Python, JavaScript, PostgreSQL, and MySQL** dominate due to their versatility and ecosystem support.
- Adoption patterns vary across industries, with **open-source tools** leading in startups and **relational databases** remaining central in enterprise environments.

Future Technology Trends

- This section explores the **emerging technologies** expected to gain traction over the next year.
- Languages like **Rust, TypeScript**, and platforms such as **Firebase** and **Snowflake** are forecasted to see increased adoption.
- The shift toward **cloud-native** and **real-time data solutions** indicates a growing need for scalable and flexible architectures.

Demographic Insights

- The demographic analysis provides a global view of tech professionals' **age groups, educational backgrounds, and geographic distribution**.
- Younger developers (ages 18–29) are more likely to adopt newer languages like **Rust** and **TypeScript**.
- A strong correlation exists between **higher education levels** and **proficiency in emerging technologies**, especially in North America and Europe.

INTRODUCTION:

Purpose of the Report:

This report analyzes current and emerging technology trends using industry and survey data. It highlights the most widely used and in-demand programming languages, platforms, and tools, while also profiling the demographics of technology professionals.

Target Audience:

- **Technology Professionals:** Align skills with market demand.
- **Employers & Recruiters:** Identify top tech competencies.
- **Educators & Institutions:** Adjust curricula to reflect industry needs

Value of the Report:

- Supports career planning and skill development
- Informs strategic hiring and workforce planning
- Guides curriculum design and technical training programs



METHODOLOGY:

- **Data Overview**

- Analysis is based on responses from the **survey_data_updated.csv** dataset, collected via an online developer survey.
- **Survey covered:**
 - Current technology usage
 - Preferred future technologies
 - Demographic details (age, country, education, etc.)

- **Analysis Approach**

- Focused on languages, databases, platforms, and web frameworks.
- Visualized trends and insights using:
 - Stacked bar/column charts
 - Word clouds
 - Scatter bubble charts
 - Treemaps
 - Geographical map charts



METHODOLOGY:

- **Data Wrangling**

- Cleaned null values, standardized category labels
- Converted formats (e.g., multiple-choice to binary flags)
- Grouped variables for interpretability (e.g., age ranges, region clusters)
- **Evaluated demographics with:**
 - Pie charts
 - Stacked bars
 - Line/bar combos
 - Geo-mapped distributions

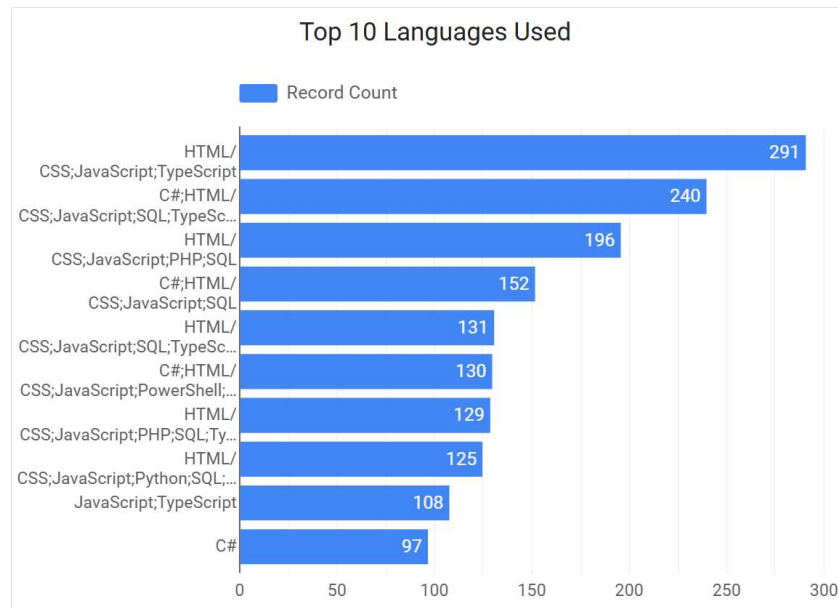
- **Outcome**

- Enabled the identification of **popular tools, rising technologies**, and **correlations between tech usage and demographic traits**.

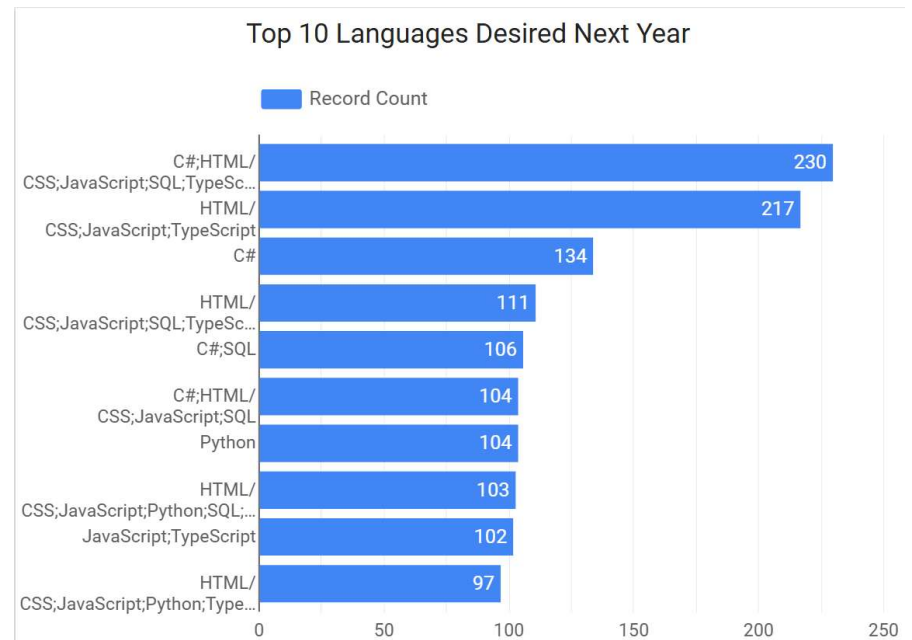


PROGRAMMING LANGUAGE TRENDS:

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS:

Findings

- **Shift Toward Full-Stack Language Combinations**
Developers are increasingly blending front-end and back-end languages (e.g., JavaScript + Python or Node.js + SQL).
- **Decline in Single-Language Dominance**
Pure front-end stacks or single-language usage (e.g., only JavaScript or only PHP) are decreasing in popularity.
- **Rising Interest in Python**
Python continues its ascent across domains—AI, data science, web development—making it a core skill across industries.

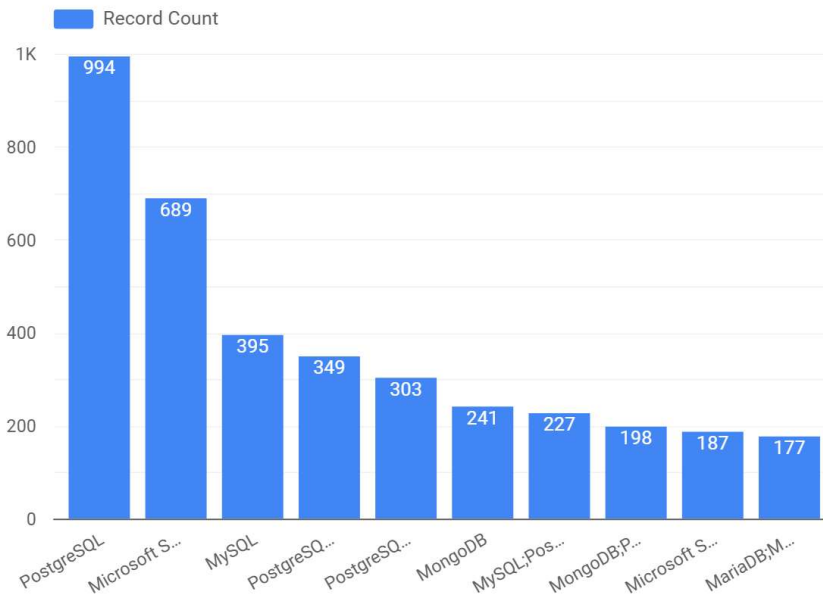
Implications

- **Focus Training on Full-Stack Skills**
Tech teams and L&D departments should emphasize full-stack development in upskilling programs.
- **Revamp Curricula for Relevance**
Bootcamps and academic programs should integrate combined-stack learning (e.g., MERN + Python backend).
- **Align Tech Strategy with Backend Growth**
Strategic IT planning must anticipate higher demands for backend scalability, API development, and server-side performance.

DATABASE TRENDS

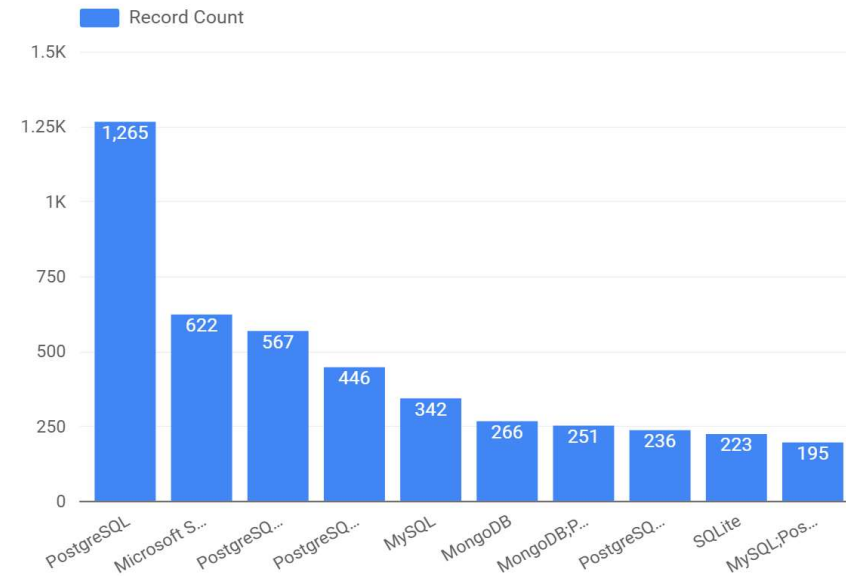
Current Year

Top 10 Databases Used



Next Year

Top 10 Databases Desired Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

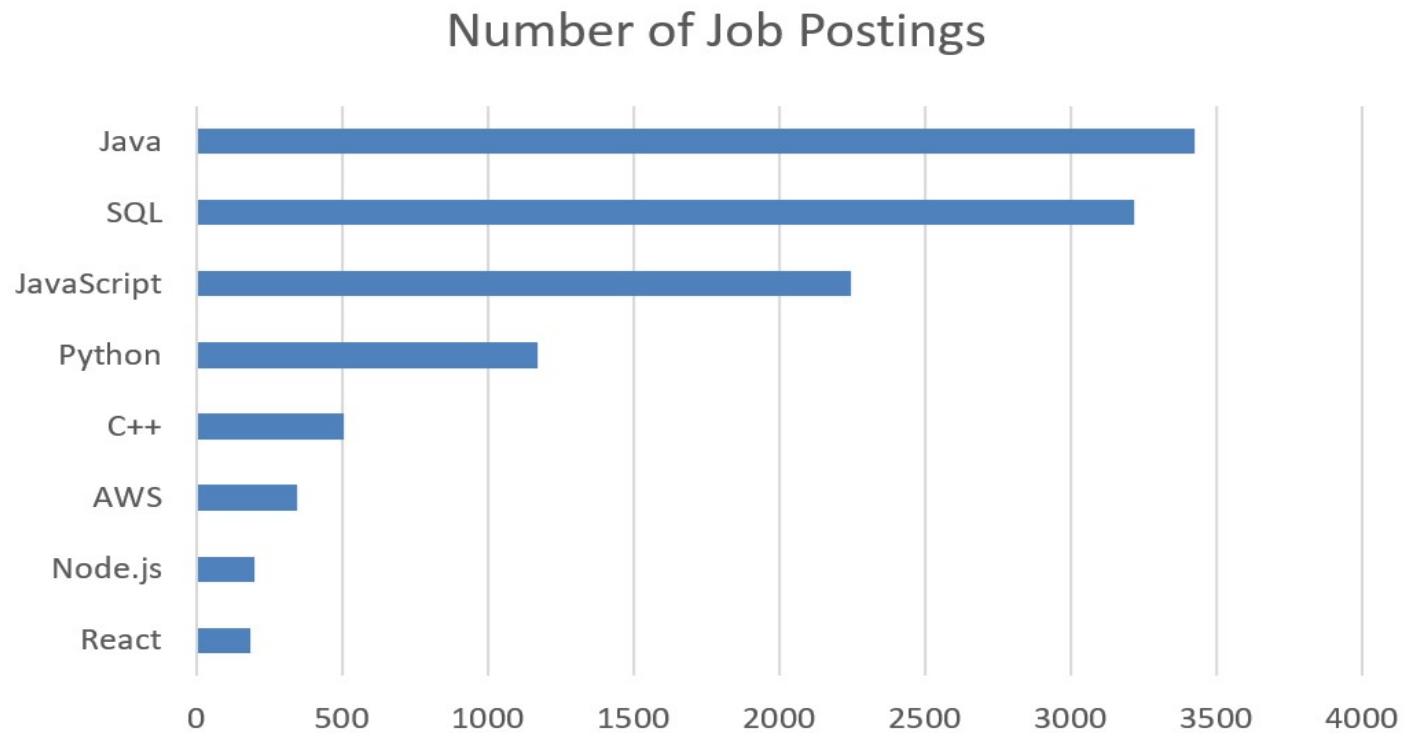
Findings

- **PostgreSQL Dominance is Growing**
Increasingly adopted across industries for its robustness, scalability, and open-source nature.
- **Microsoft SQL Server Faces a Slight Dip**
A modest decline in usage, likely due to cloud-native and open-source alternatives gaining traction.
- **Rise in Popularity of Diverse Databases**
Broader adoption of NoSQL, document, and real-time databases (e.g., MongoDB, Redis, Firebase) to meet specific use cases.

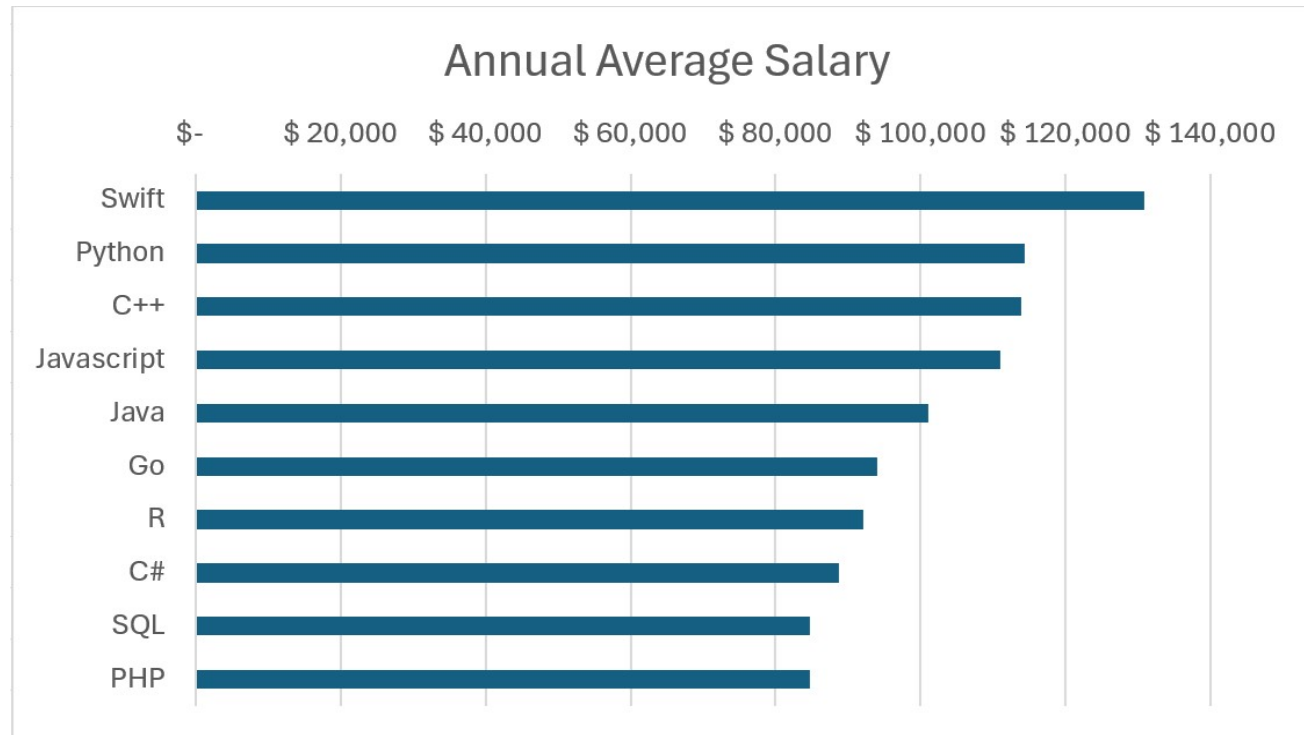
Implications

- **PostgreSQL Should Be a Strategic Focus**
Organizations should invest in PostgreSQL expertise and optimization for long-term flexibility and cost-effectiveness.
- **Modernize Legacy Microsoft SQL Systems**
Enterprises must evaluate modernization paths or hybrid setups to stay competitive and cloud-ready.
- **Broadened Tech Stack Support is Essential**
Teams need to accommodate multiple database types (SQL + NoSQL) for performance, scalability, and specialized workloads.

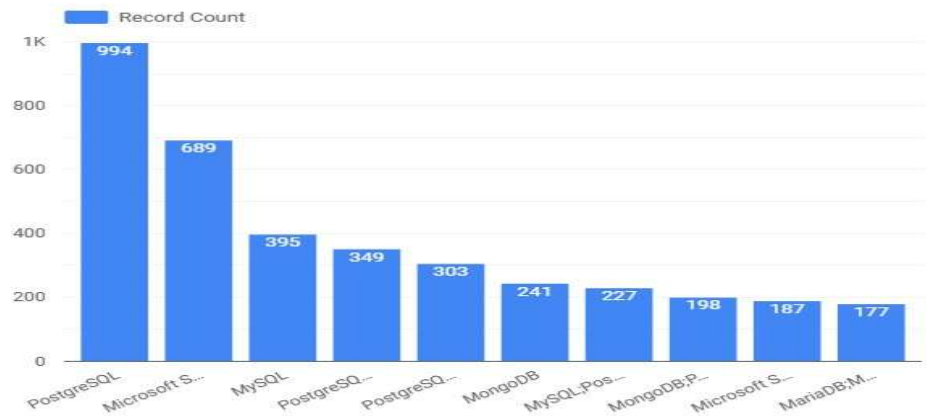
JOB POSTINGS:



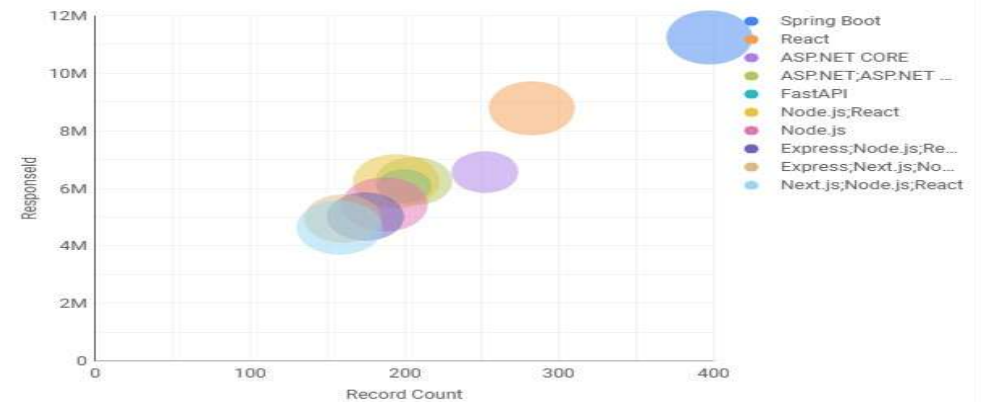
POPULAR LANGUAGES:



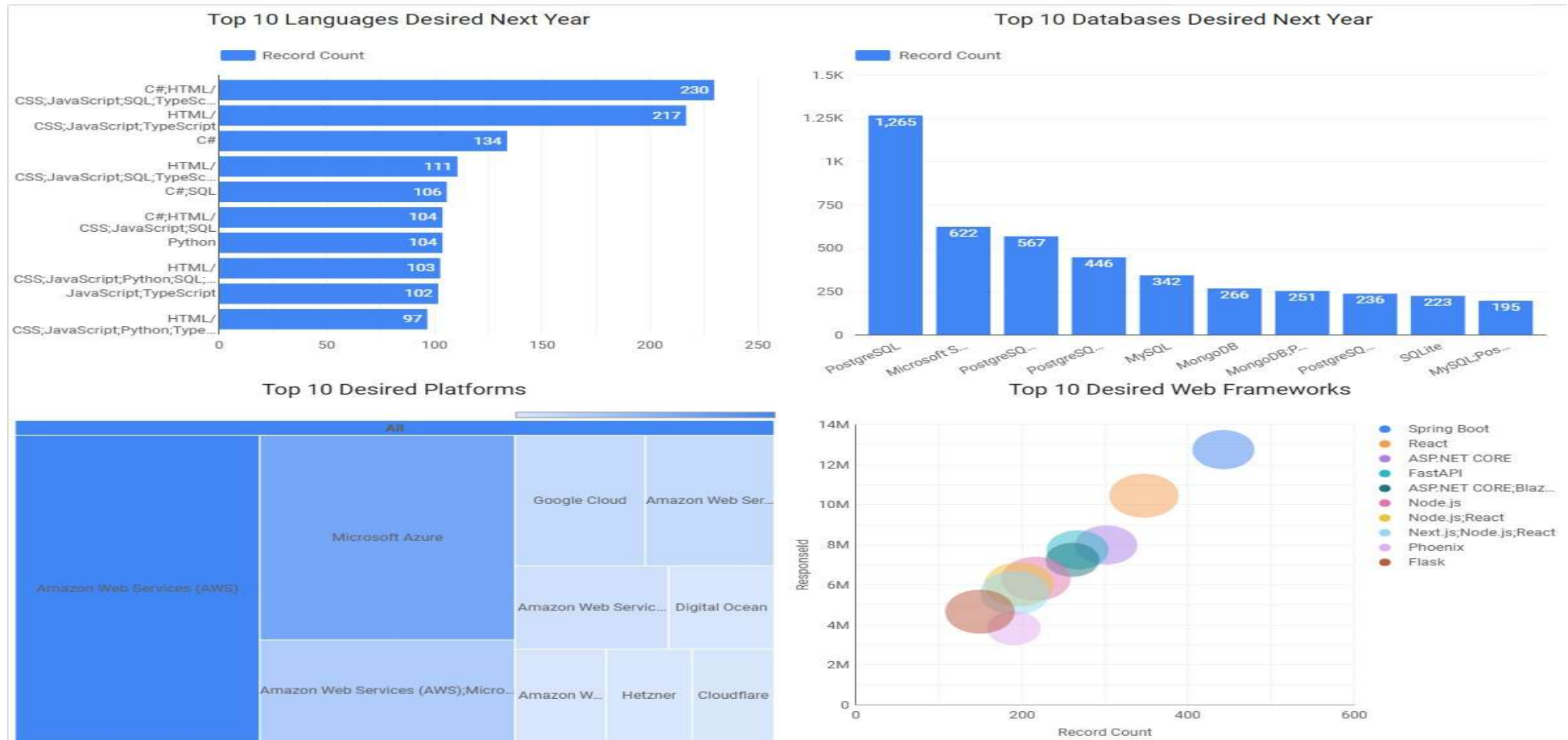
Top 10 Databases Used



Top 10 Web Frameworks Used



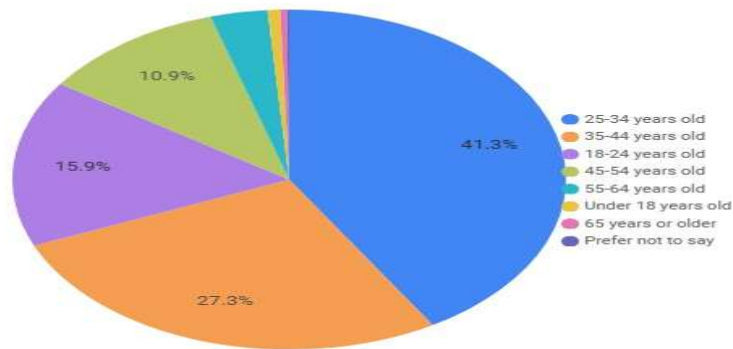
DASHBOARD TAB 2:



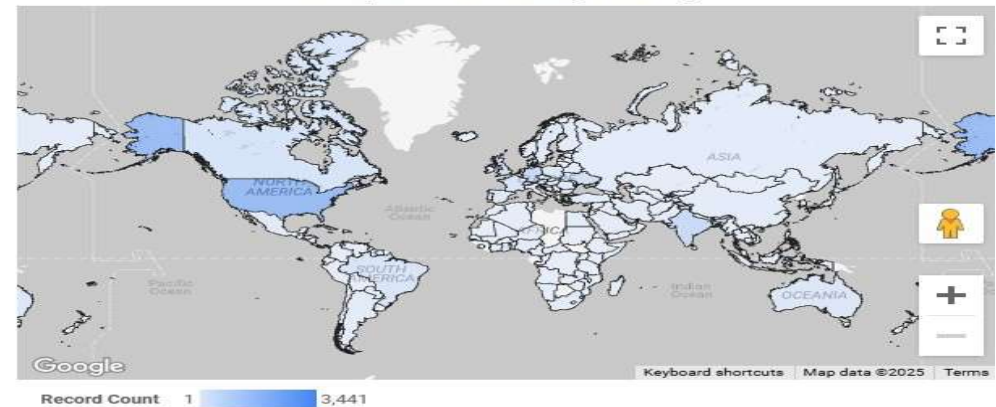
DASHBOARD TAB 3:



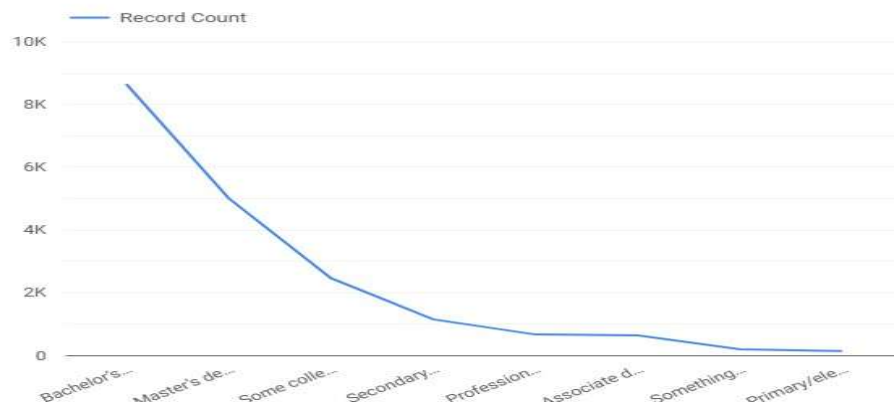
Respondents by Age



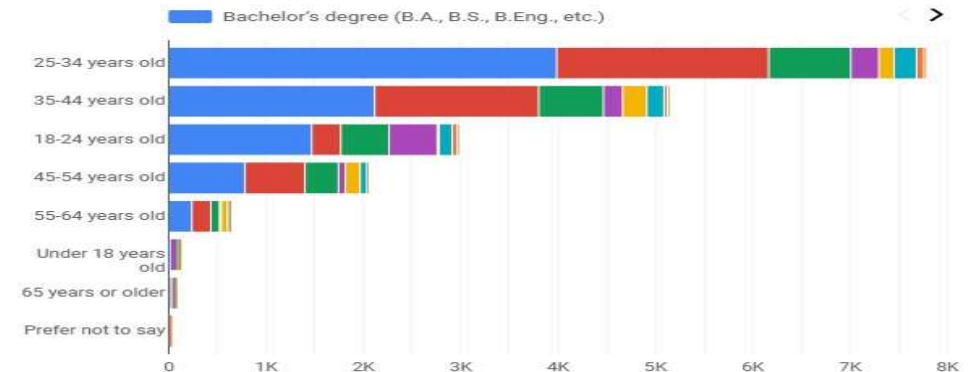
Respondent Count by Country



Respondent Distribution by Education Level



Respondent Count by Age, Classified by Education Level



DISCUSSION:

Current Technology Usage

- Developers often use HTML, CSS, JavaScript, and TypeScript together, showing strong full-stack trends.
- PostgreSQL is the most used database, followed by Microsoft SQL Server and MySQL.
- AWS is the leading cloud platform, with Google Cloud and Azure also widely used.
- Spring Boot, React, and Node.js are popular web frameworks.

Future Technology Trends

- Developers want to work with full-stack combinations like C#, JavaScript, SQL, and TypeScript.
- PostgreSQL remains the most preferred database for future use.
- AWS and Azure are the top choices for future cloud platforms.
- Spring Boot, React, ASP.NET Core, and FastAPI are in high demand.

Demographics

- Most developers are aged 25–34, followed by 35–44.
- A majority have at least a bachelor's degree.
- Respondents are mainly from North America, Europe, and Asia.



OVERALL FINDINGS & IMPLICATIONS:

Findings

- PostgreSQL and HTML/CSS/JavaScript are top technologies in current use.
- There's a clear shift toward **versatile, full-stack skill sets**.
- Growing demand for **open-source** and **scalable** technologies.

Implications

- **Training and upskilling** should focus on open-source tools and scalable platforms.
- Employers will prioritize candidates with **hybrid (front-end + back-end)** skills.
- **Legacy systems** must be evaluated for modernization and integration.

CONCLUSION:



- The industry is shifting toward open-source, cloud-ready technologies and versatile programming skill sets.
- PostgreSQL's rise reflects demand for scalable, cloud-native databases, aligning with digital transformation trends.
- Strong use of HTML, CSS, JavaScript, and TypeScript highlights the ongoing importance of full-stack and front-end development.
- There is growing demand for multi-database experience and hybrid developer roles, emphasizing the need for adaptability.
- Educators should train students for multidisciplinary roles.
- Employers must update job criteria to reflect evolving tech stacks.
- Embracing these trends is essential to stay competitive in a rapidly changing tech landscape.

APPENDIX:

Extra Charts & Visuals

- Language trends over time (Python, TypeScript, C#)
- Database usage by region
- Cloud platform vs. developer experience

Data Preparation

- Removed missing values
- Standardized category names
- Converted multi-choice answers
- Grouped demographics (age, education)

Files Used

- survey_data_updated.csv
- Python analysis scripts
- Dashboards from Cognos / Looker Studio

Additional Notes

- Combined current and future data for better insights
- Connected trends to demographics for deeper context

