Identifying In-Demand Tech Skills and Demographics

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EXECUTIVE SUMMARY

- **JavaScript** remains the most used and most desired language.
- **Python** and **TypeScript** show strong future interest despite lower current usage.
- **PostgreSQL** leads in both current and future database preferences.
- **Redis** is rapidly gaining popularity for real-time data needs.
- **React and Node.js** dominate web framework interest.
- **AWS, Azure, and Google Cloud** are the top platforms developers want to work with
- Most developers hold a **bachelor's or master's degree**, though alternative learning paths are notable.

INTRODUCTION

Role:

Hired as a Data Analyst at a leading global IT and business consulting firm.

Objective:

Analyze emerging tech skill trends to help the organization stay competitive in a rapidly evolving industry.

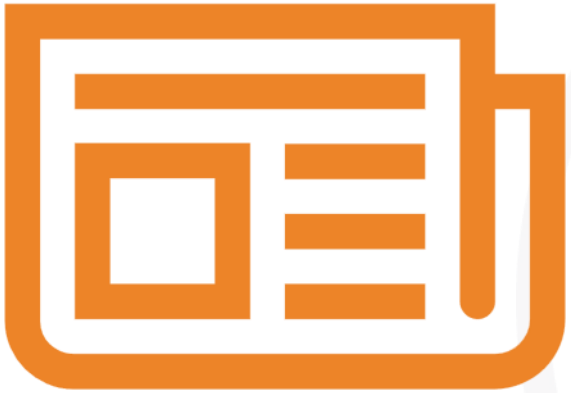
Key Responsibilities:

- Collect data from multiple sources:
  - Job postings
  - Training platforms
  - Developer surveys (Stack Overflow)
- Analyze data to identify trends in:
  - Most in-demand programming languages
  - Popular database technologies
  - Preferred IDEs (Integrated Development Environments)

Outcome:

Provide actionable insights for the company's 2024 skills report.

METHODOLOGY



Data Collection:

Retrieved Stack Overflow developer survey data, covering tech usage, preferences, and demographics.

Web Scraping & APIs:

Used public APIs and the requests library to collect real-time job data for various technologies.

Data Wrangling:

Cleaned and transformed data by handling missing values, splitting multi-select fields, and standardizing formats.

Exploratory Data Analysis (EDA):

Explored distributions, identified outliers, and examined correlations between variables like salary, experience, and tools.

Visualization:

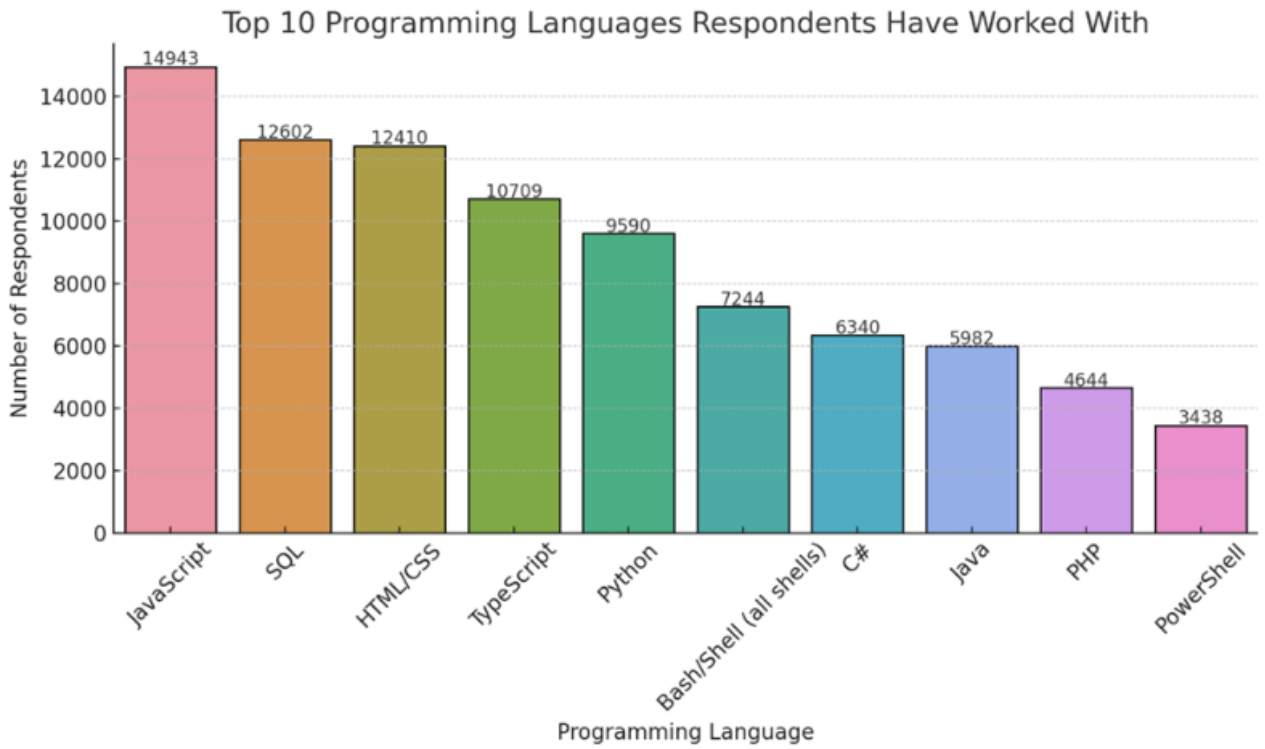
Created charts (bar, pie, bubble, treemap) to highlight trends, relationships, and distributions.

Dashboard Development:

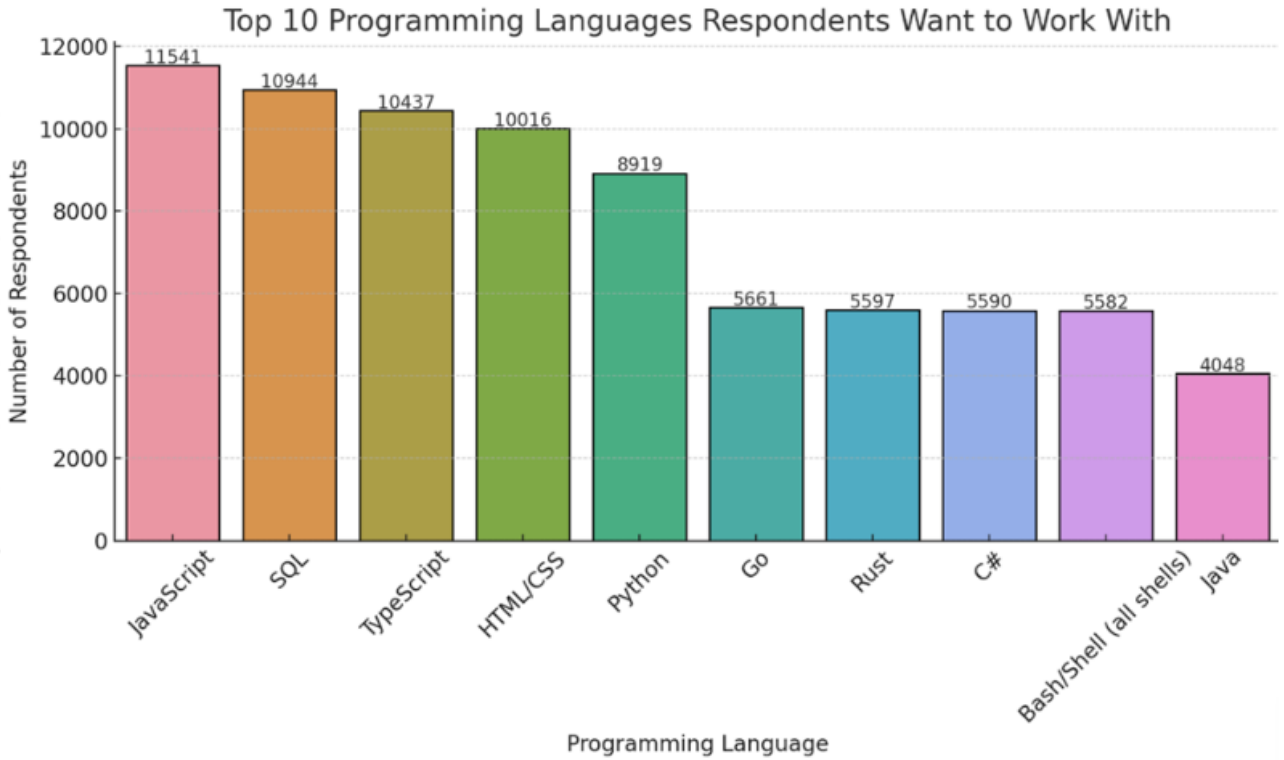
Built interactive dashboards summarizing key insights in languages, platforms, frameworks, and user demographics

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

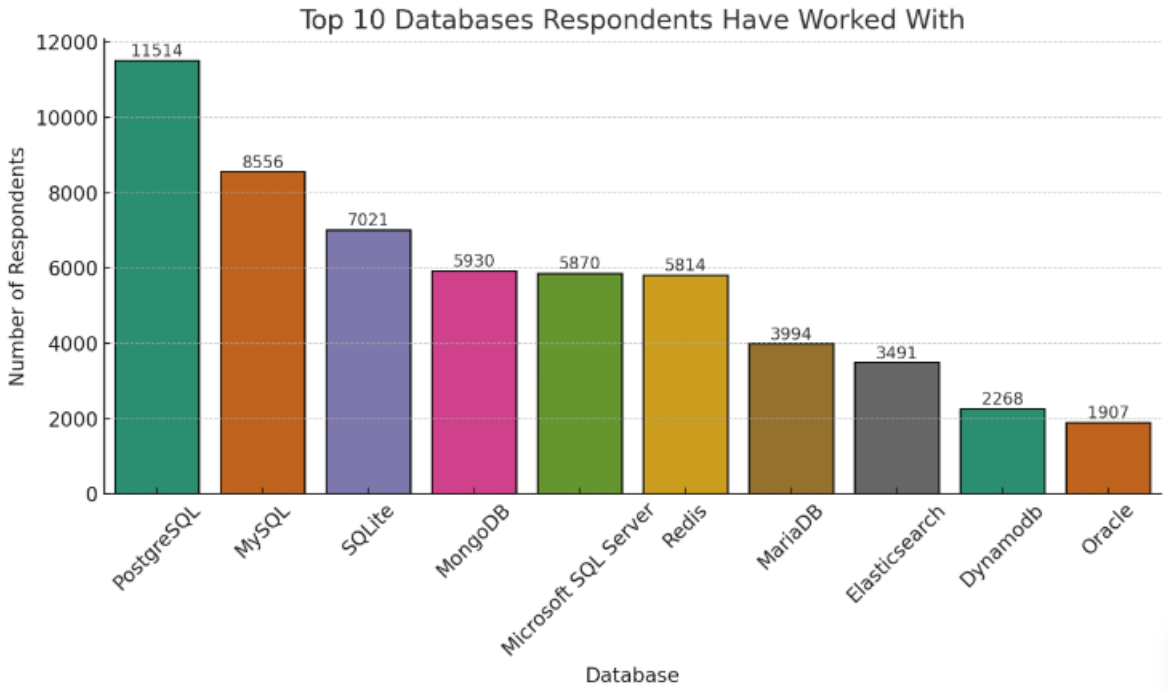
- **Finding 1**: While Python ranks 5th in current experience (9,590), it ranks 5th in future interest (8,919) as well, showing consistently high demand.
- **Finding 2**: JavaScript has the highest number of respondents for both "have worked with" (14,943) and "want to work with" (11,541).
- **Finding 3**: TypeScript ranks 4th in both charts (used: 10,709; interest: 10,437), while Rust appears in the top 10 for "want to work with" but not in the current year's usage.

Implications

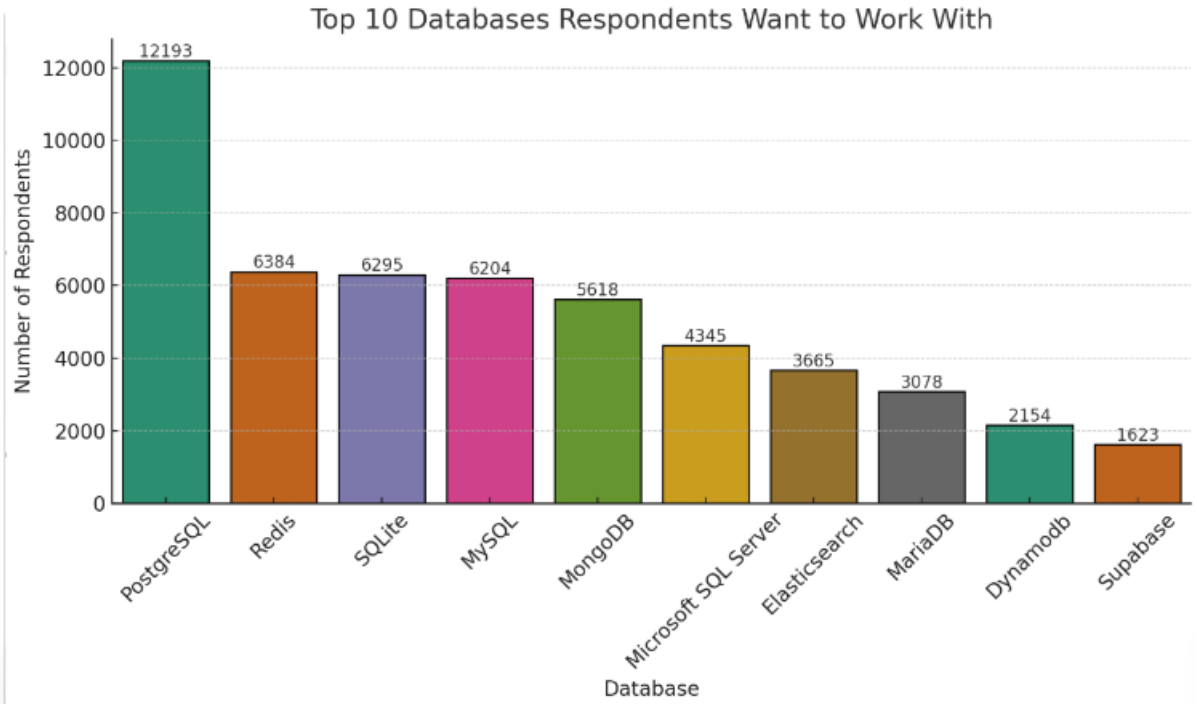
- **Implication 1**: Python's steady presence in both charts—despite not being the most used—indicates growing momentum and relevance, especially in data science, automation, and education. Upskilling in Python could yield long-term benefits.
- **Implication 2**: JavaScript remains a cornerstone of the programming landscape. Developers are not only experienced with it but also interested in continuing to use it, making it a safe and strategic language to invest in for employers, educators, and tech teams.
- **Implication 3**: TypeScript is becoming a mainstream frontend/backend development tool, and Rust is gaining traction as a modern, safe systems language. These trends suggest future talent and tooling shifts, urging teams to explore and possibly adopt them.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **Finding 1**: PostgreSQL is the most used database currently (11,514 respondents) and also the most desired for future work (12,193 respondents).
- **Finding 2**: Redis ranks 6th in current use (5,814) but jumps to 2nd in future interest (6,384).
- **Finding 3**: Oracle appears in the top 10 of current usage (1,907) but is absent from the top 10 list for future interest.

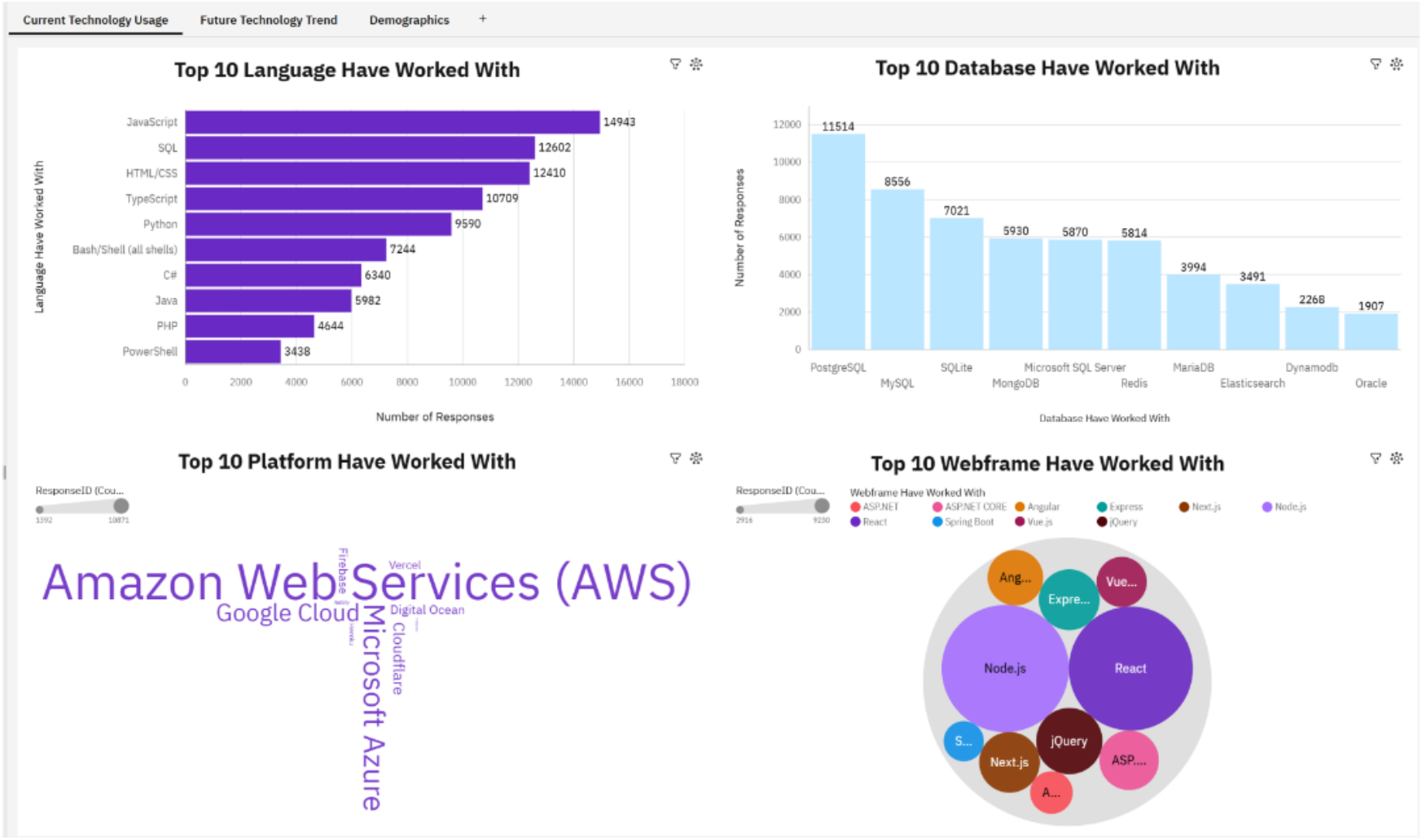
Implications

- **Implication 1**: PostgreSQL continues to be a dominant force in the database world, indicating widespread trust and satisfaction. This suggests that teams and developers should continue investing in PostgreSQL for scalable, open-source relational database solutions.
- **Implication 2**: Redis is becoming increasingly attractive for its performance and caching capabilities. This growth points to a rising demand for high-speed, in-memory data stores, signaling developers and companies to consider Redis for real-time or performance-critical applications.
- **Implication 3**: Developers are moving away from legacy enterprise systems like Oracle, likely due to licensing costs, complexity, or lack of flexibility. Organizations relying heavily on Oracle may face talent shortages or increasing costs over time and should consider more open and developer-friendly alternatives

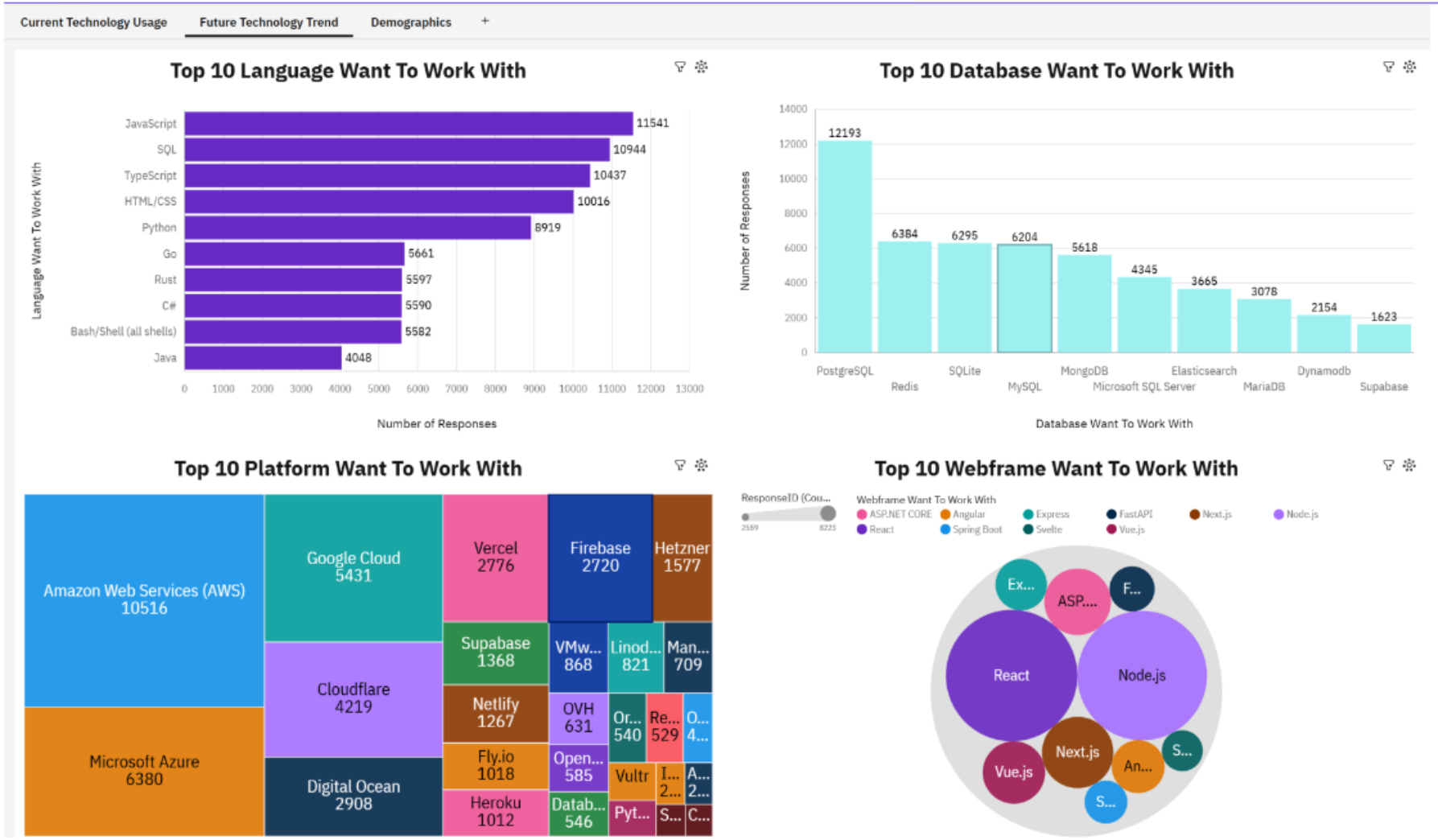
DASHBOARD

<Please present your dashboard in the following slides.>

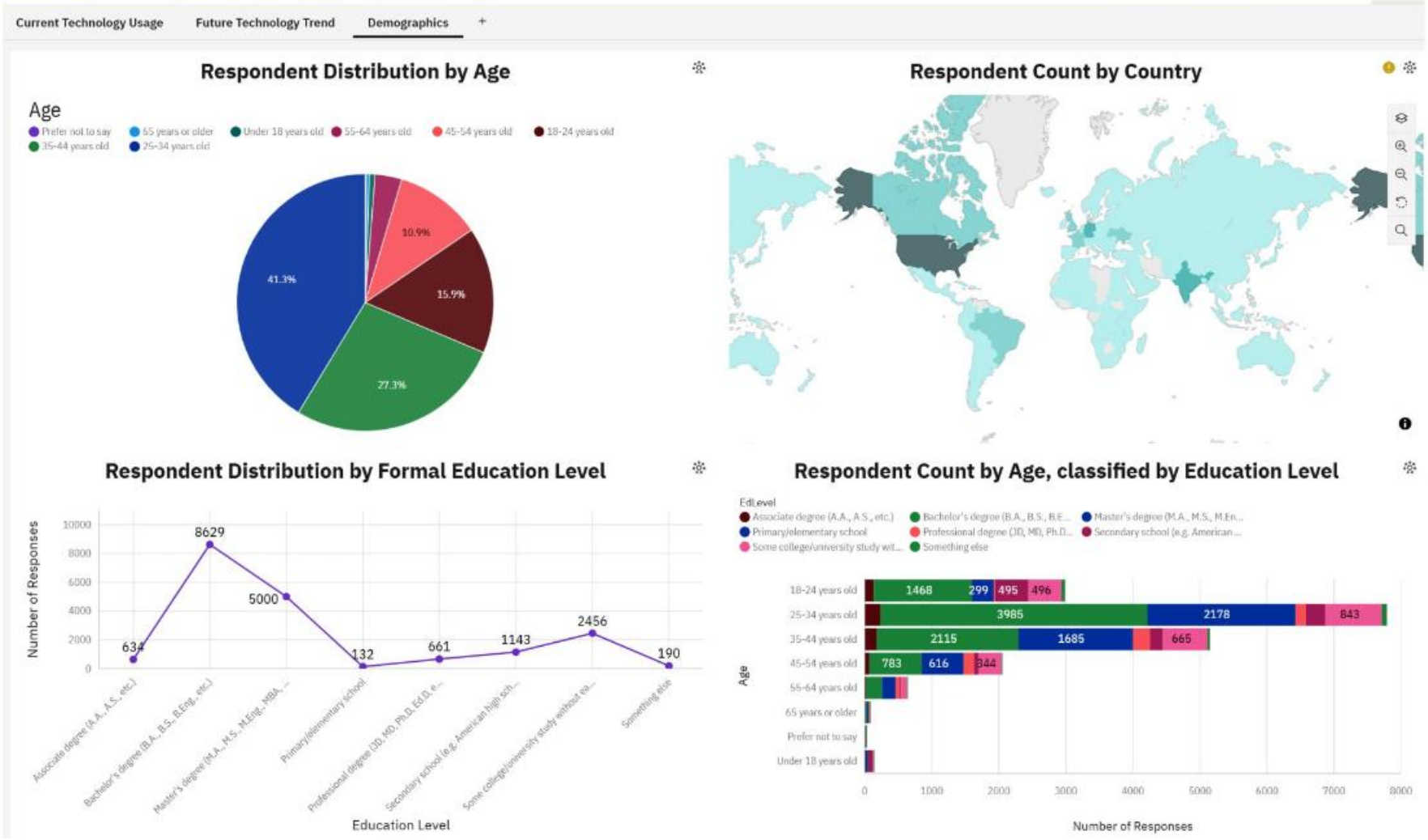
DASHBOARD TAB 1



DASHBOARD TAB 2



DASHBOARD TAB 3



DISCUSSION

Highest Respondent Countries:

• United States, India, Germany, and the United Kingdom appear in the darkest shades, indicating the largest number of developer respondents.

• These countries are major tech hubs with strong developer communities, reflecting their global influence in the software industry.

Underrepresented or Missing Regions:

• Large parts of Africa, Central Asia, and smaller island nations are shaded lightly or remain unshaded, indicating low to no response rates.

• This may reflect limited internet access, survey reach, or language/cultural barriers in those regions

OVERALL FINDINGS & IMPLICATIONS

Findings

Finding 1:

React and Node.js continue to dominate both current and future preferences in web frameworks, reflecting their widespread use in full-stack development. Their flexibility, active ecosystems, and JavaScript foundation make them a top choice for modern web applications.

Finding 2:

AWS, Azure, and Google Cloud are by far the most used and desired platforms, significantly outperforming other cloud providers in both developer experience and interest.

Finding 3:

The majority of developers fall within the 25–34 age range and hold a university degree. However, a notable portion of the workforce comprises self-taught developers or those without completed formal education.

Implications

Implication 1:

This confirms that full-stack JavaScript remains the most preferred development stack. Organizations building web applications should prioritize React and Node.js expertise when hiring or designing training programs.

Implication 2:

The strong preference for major cloud platforms highlights an industry-wide shift toward scalable, cloud-native infrastructure. Businesses should ensure their teams are proficient in these environments to remain competitive.

Implication 3:

While higher education remains the dominant background, the tech industry continues to value diverse learning paths. Companies should embrace non-traditional talent pipelines, such as bootcamps and self-directed learners, when recruiting.

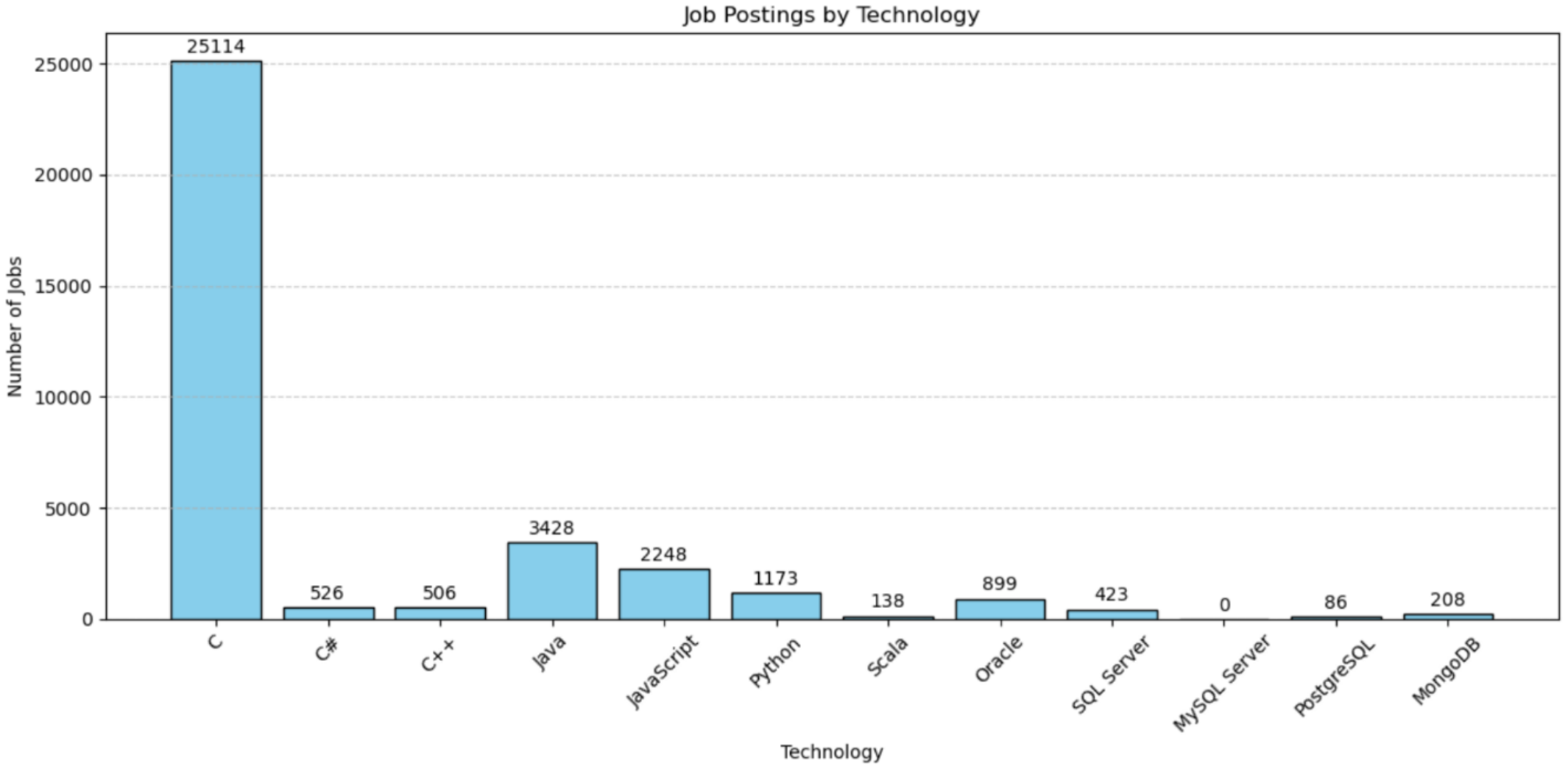
CONCLUSION

- The analysis successfully supports the company’s goal of identifying emerging tech skills in a competitive landscape.
- Data from developer surveys, job postings, and training platforms revealed clear trends in in-demand languages, tools, and platforms.
- These insights will enable the firm to align training, recruitment, and consulting strategies with current and future market needs.
- Regular data-driven analysis is essential to staying ahead in the rapidly evolving IT industry.

APPENDIX

- Include any relevant additional charts, or tables that you may have created during the analysis phase.

JOB POSTINGS



POPULAR LANGUAGES