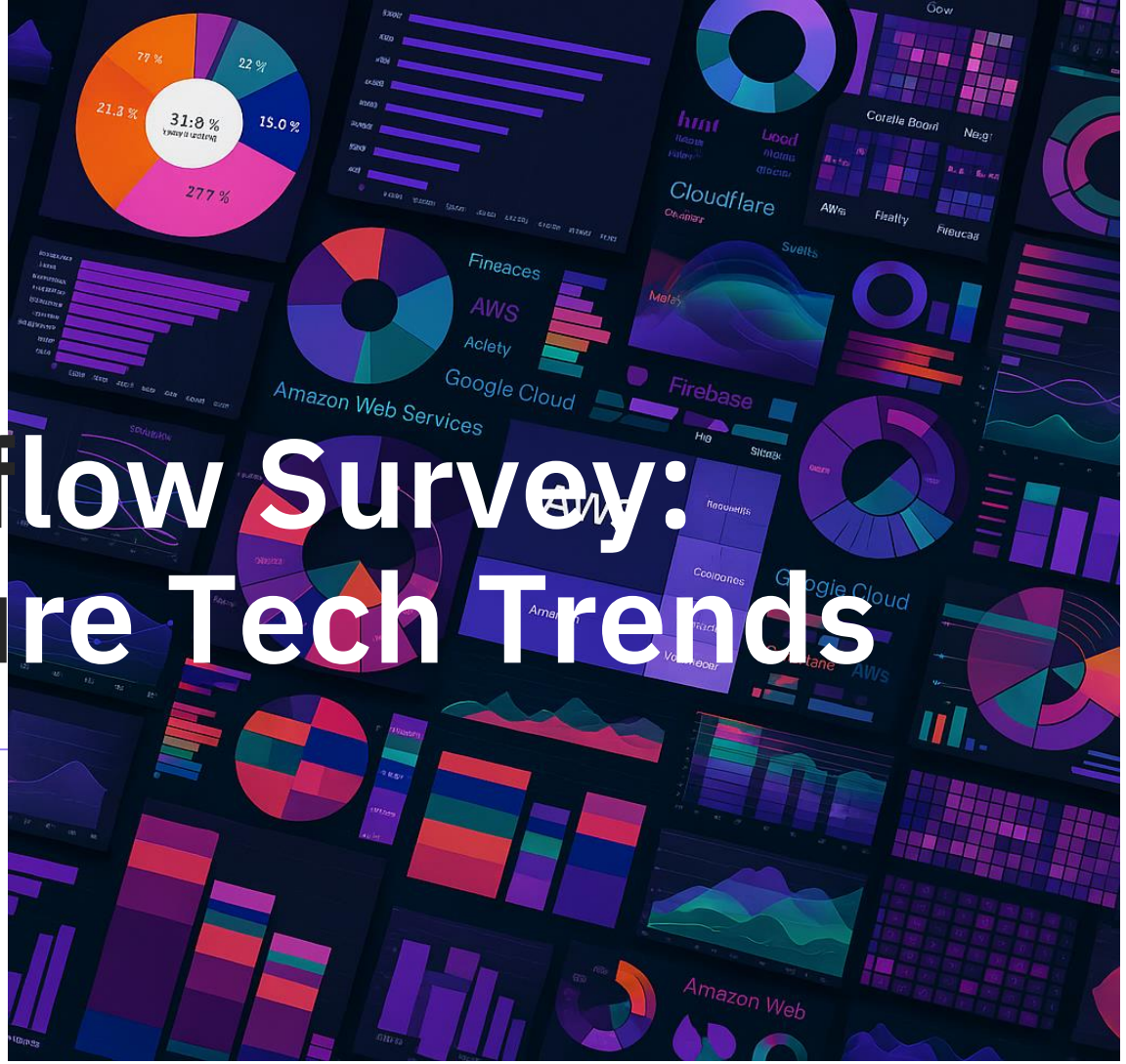
Stack Overflow Survey: Current & Future Tech Trends



Skills Network

Phillip Knutzen - 7th Nov. 2025

IBM

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EXECUTIVE SUMMARY

- This project analyzes the Stack Overflow Developer Survey 2024 to identify current and emerging technology trends among developers worldwide
- Survey data was visualized to compare the most used and most desired programming languages, databases, and platforms.
- This presentation provides a concise overview of developer preferences and future skill demand
- Key Findings:
  - **JavaScript, Python, and SQL** remain foundational languages across industries.
  - **TypeScript and Rust** continue to gain traction among professional developers.
  - **PostgreSQL** has overtaken **MySQL** as the leading database.
  - **AWS and React** dominate their respective categories, reflecting the ongoing influence of the JavaScript ecosystem and cloud-first development

Thank you, please enjoy the presentation!

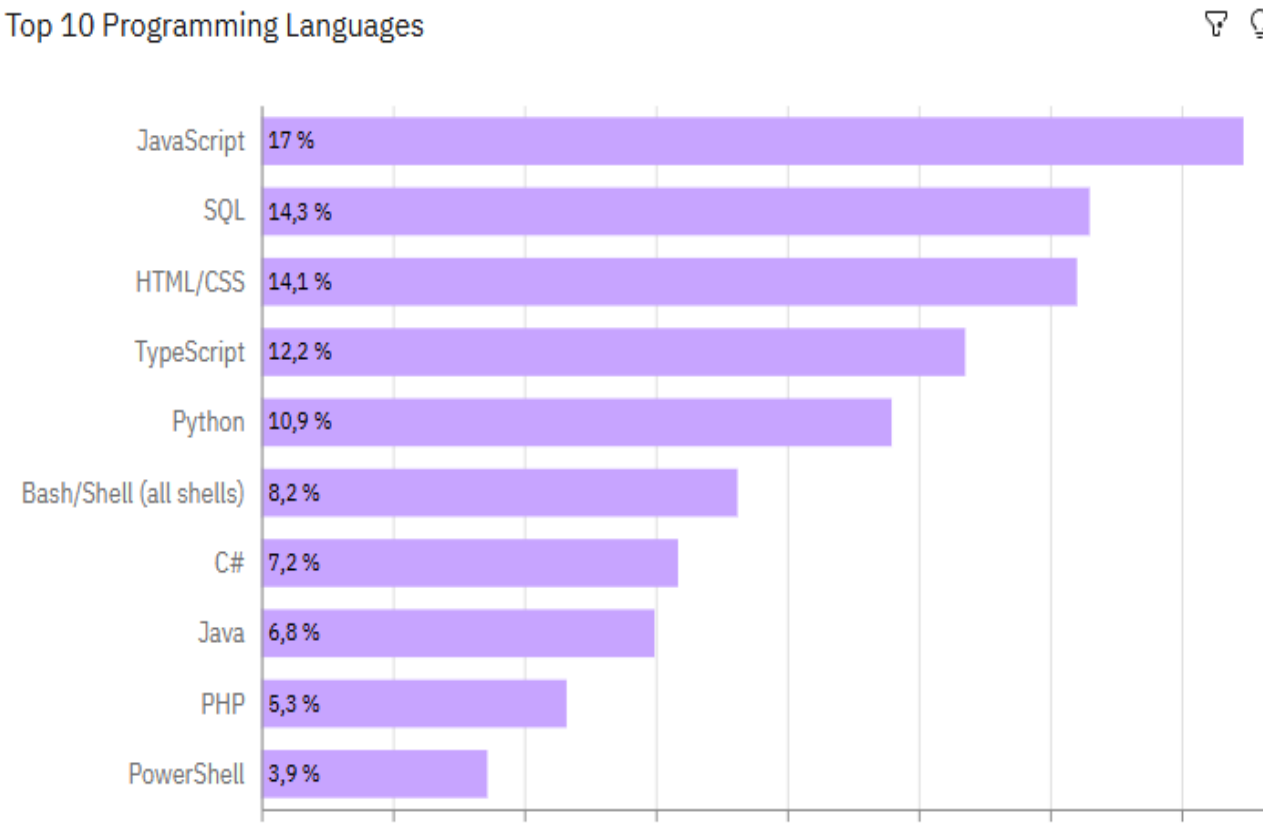
INTRODUCTION

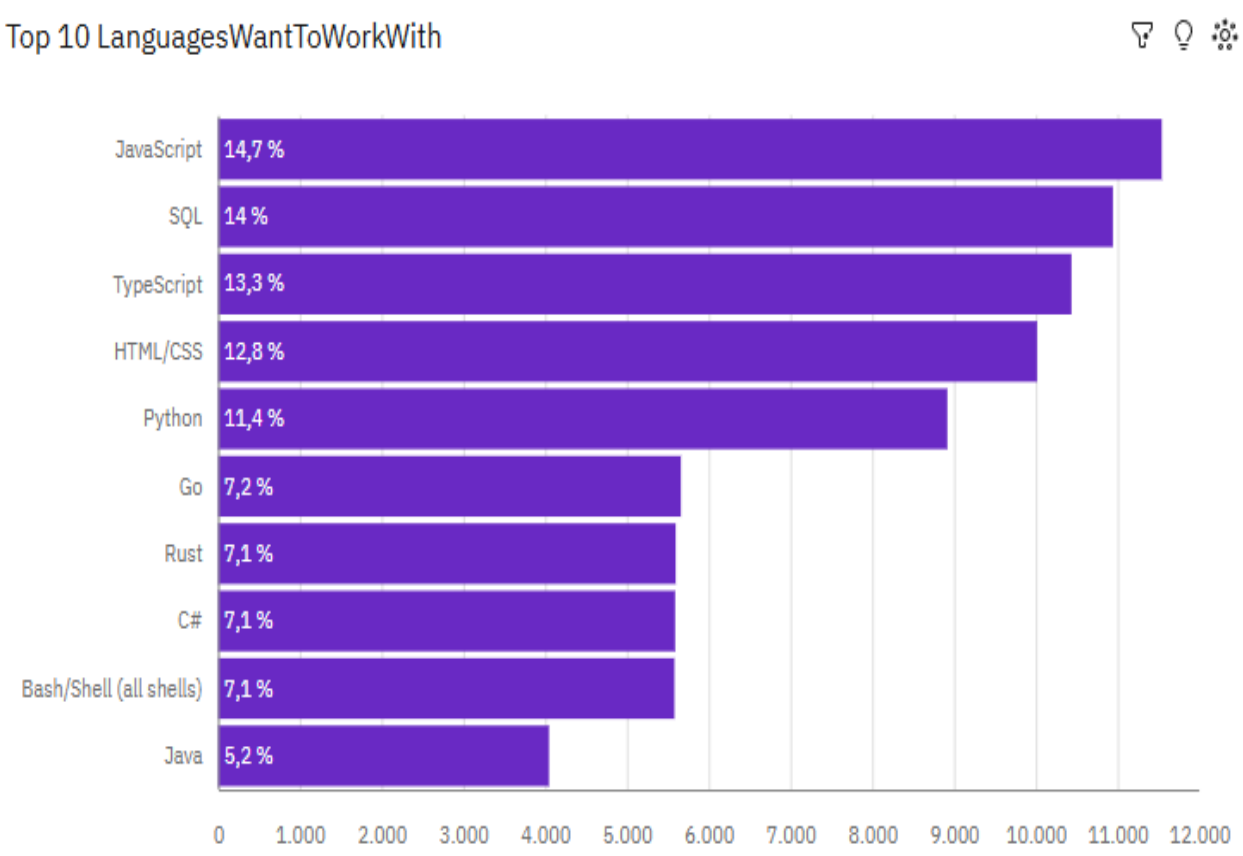
- Purpose of this Analysis:
  - examine developer technology adoption patterns and predict short-term shifts in usage and interest
- Relevance:
  - by comparing current usage with technologies developers plan to learn next, this analysis reveals where future investment and skill development should focus
- Scope:
  - covers programming languages, databases, frameworks, and cloud platforms, along with demographic factors influencing technology choice.

METHODOLOGY

- Data Source
  - Stack Overflow Developer Survey 2024, featuring responses from over 18,000 developers worldwide.
  - Key variables: language, database, platform, framework usage, and demographics.
- Data Preparation
  - Cleaned and standardized categorical variables.
  - Separated multi-value responses by commas to isolate individual technologies for accurate frequency analysis
  - Filtered incomplete entries and normalized percentage distributions.
  - Combined “currently used” and “desired to learn” data to compare present and future trends
- Tools and Process
  - Python (Pandas, NumPy) for data analysis
  - IBM Cognos Analytics for interactive dashboard visualization.
  - PowerPoint (IBM Skills Network template) for structured reporting
- Analytical Focus
  - Rank top 10 technologies by current and projected popularity
  - Examine relationships between technology adoption and demographic factors
  - Highlight actionable insights for workforce development and future strategies

PROG LANGUAGE TRENDS (now & future)





PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

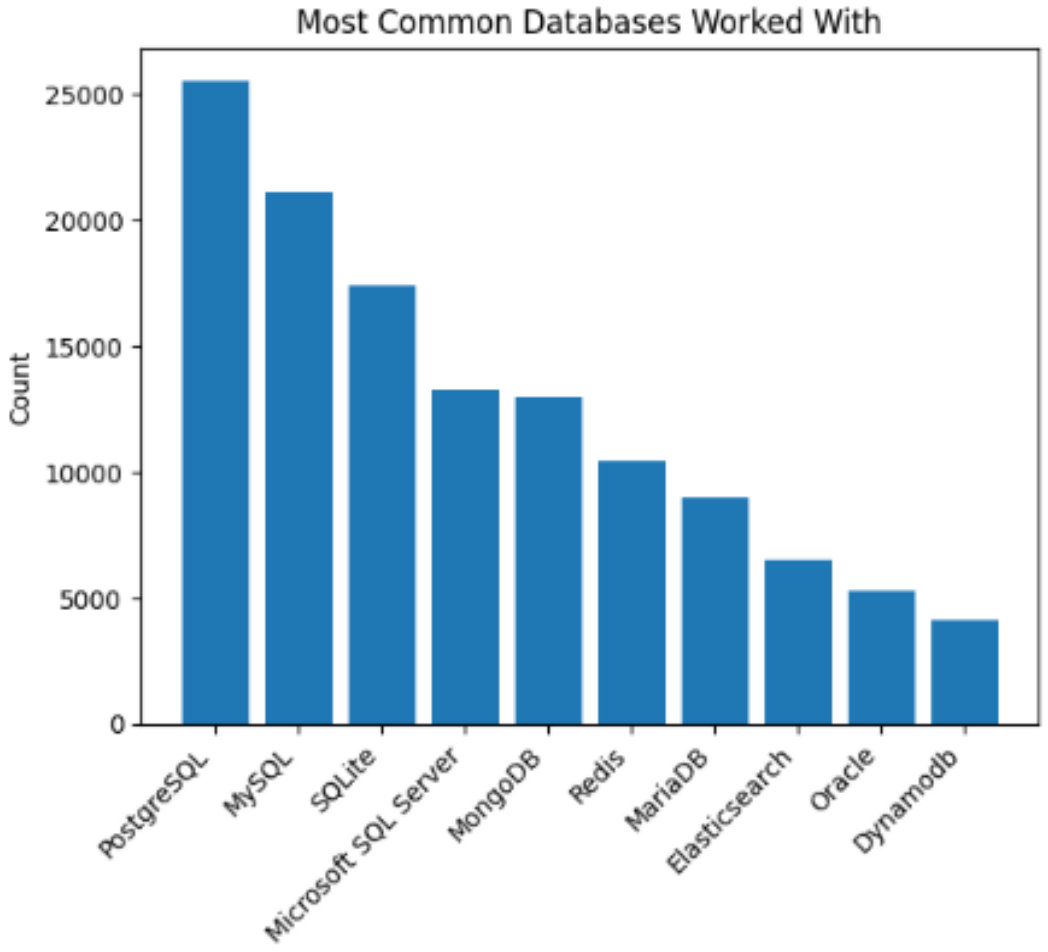
Findings

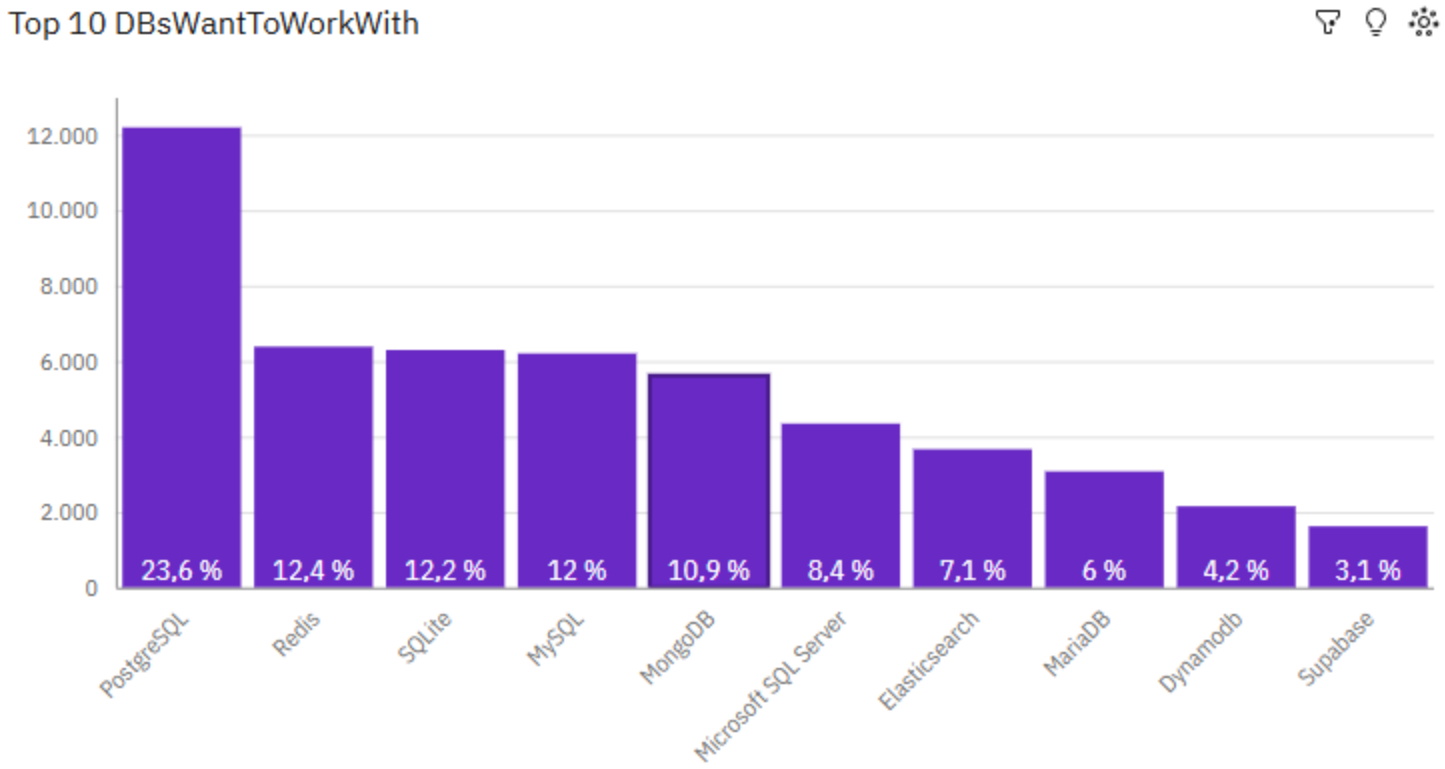
- JavaScript, Python, and SQL remain the three most commonly used languages, forming the foundation of both web and data-driven development
- TypeScript shows a strong upward trend, reflecting the demand for type safety and scalability in large JavaScript-based projects
- Rust and Go are gaining adoption, indicating growing interest in performance-oriented and memory-safe solutions

Implications

- Core skills remain highly relevant
  The continued popularity of JavaScript, Python, and SQL shows that learning these languages is still essential for most development roles.
- Continuous learning is the norm
  The mix of old and new languages in demand suggests that developers must keep updating their skills to stay competitive.
- Accessibility drives adoption
  Python's continued strength suggests that approachable, easy to learn languages help bring new developers into the field and support a wide range of applications

DATABASE TRENDS (now & future)





DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL has overtaken MySQL as the most widely used database
- SQLite remains popular for lightweight and embedded applications
- Microsoft SQL Server and Oracle remain staples in enterprise environments

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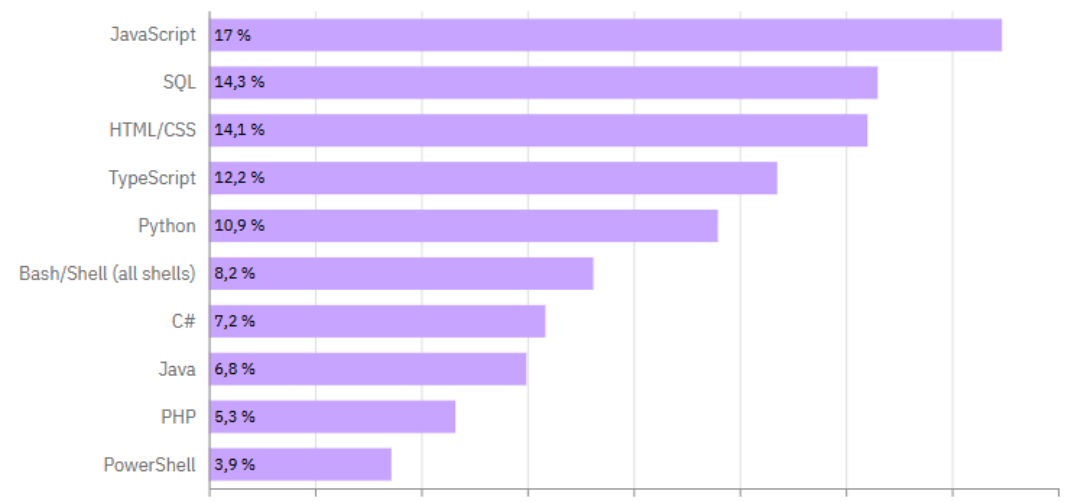
Implications

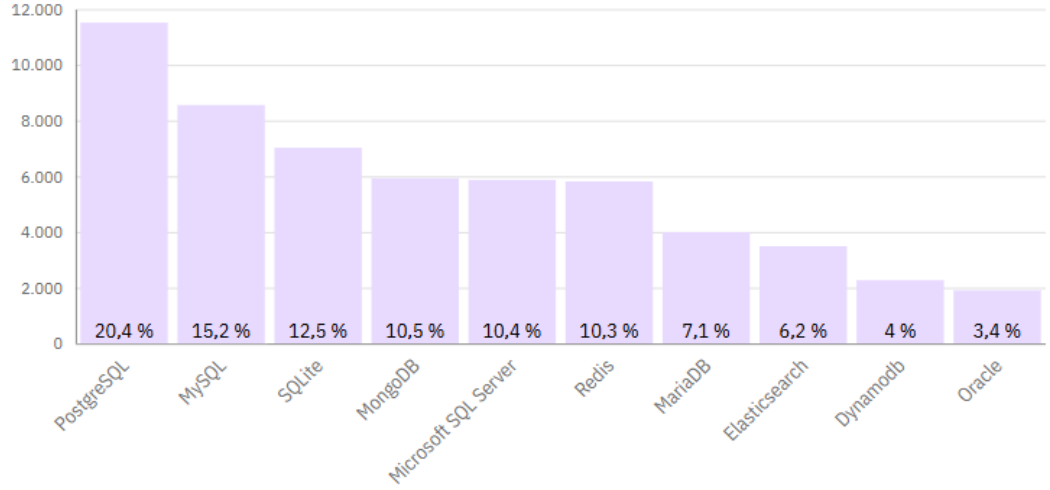
- Open-source adoption is growing PostgreSQL's rise shows developers and organizations increasingly prefer free, community-driven tools over proprietary systems.
- Traditional databases will persist Systems like MySQL and SQL Server remain vital for legacy support and structured data, even as newer tools gain ground.

DASHBOARD TAB 1

Top 10 Programming Languages

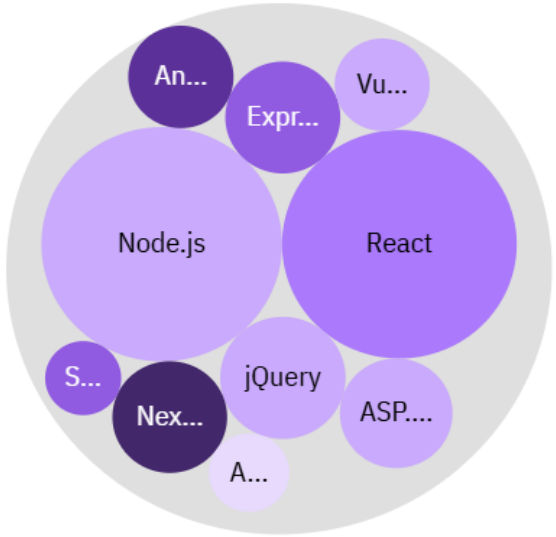


Top 10 Data Bases



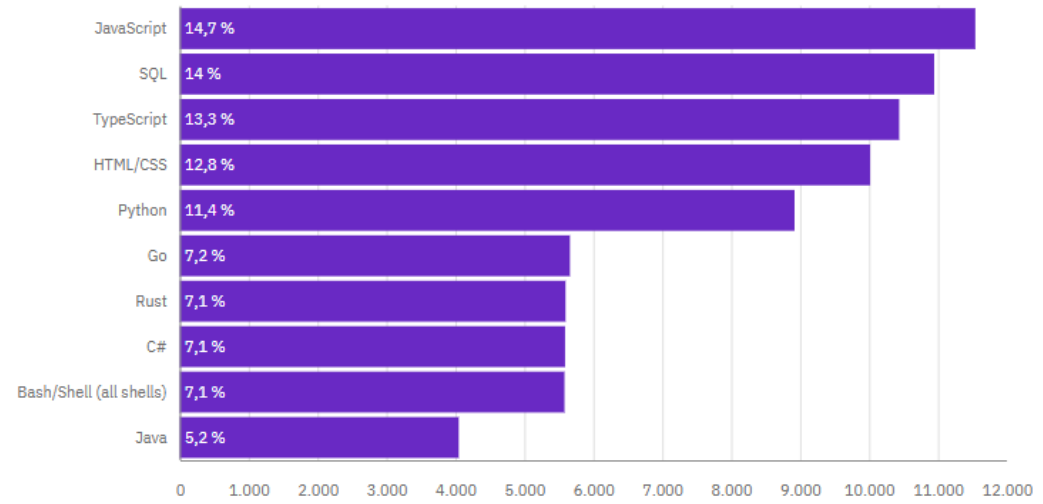
Wordcloud Top Services

Bubble Top Webframes

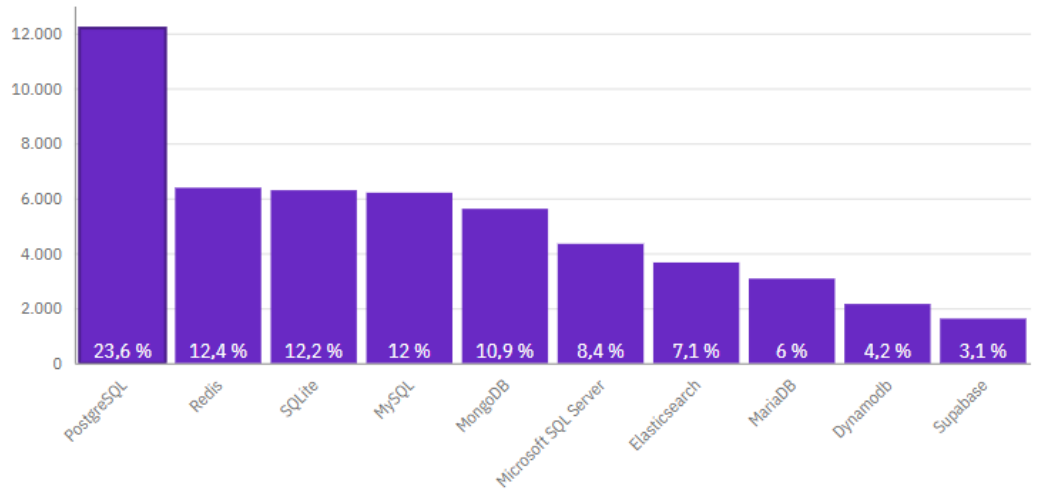


DASHBOARD TAB 2

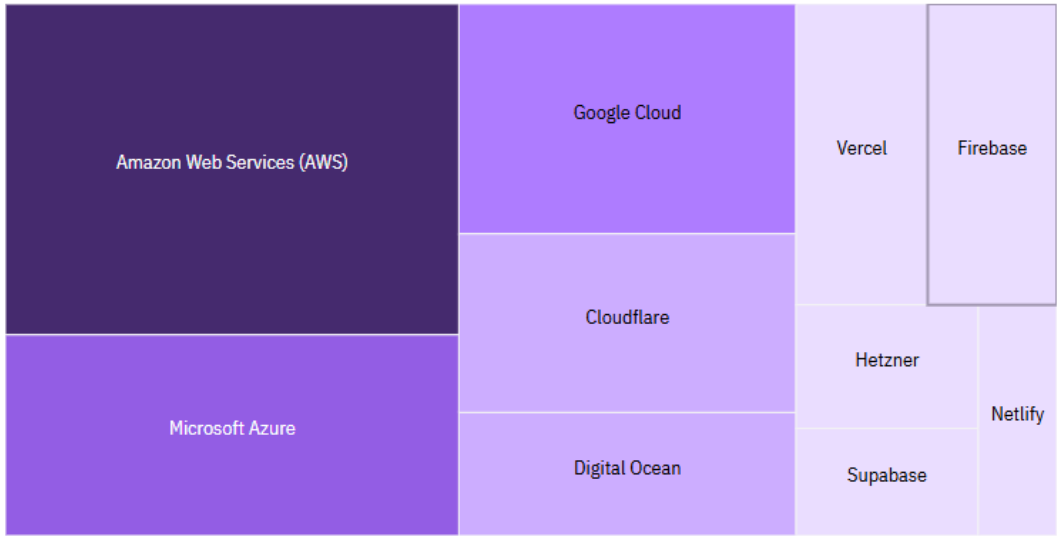
Top 10 LanguagesWantToWorkWith



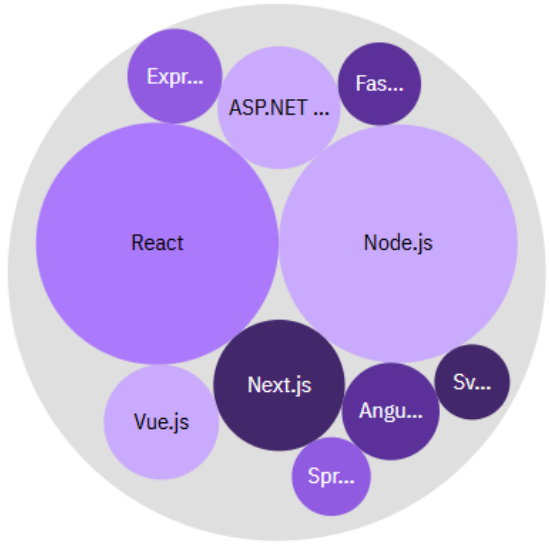
Top 10 DBsWantToWorkWith



Top 10 PlatformWantToWorkWith



Top 10 WebFrameWantToWorkWith



DASHBOARD TAB 3

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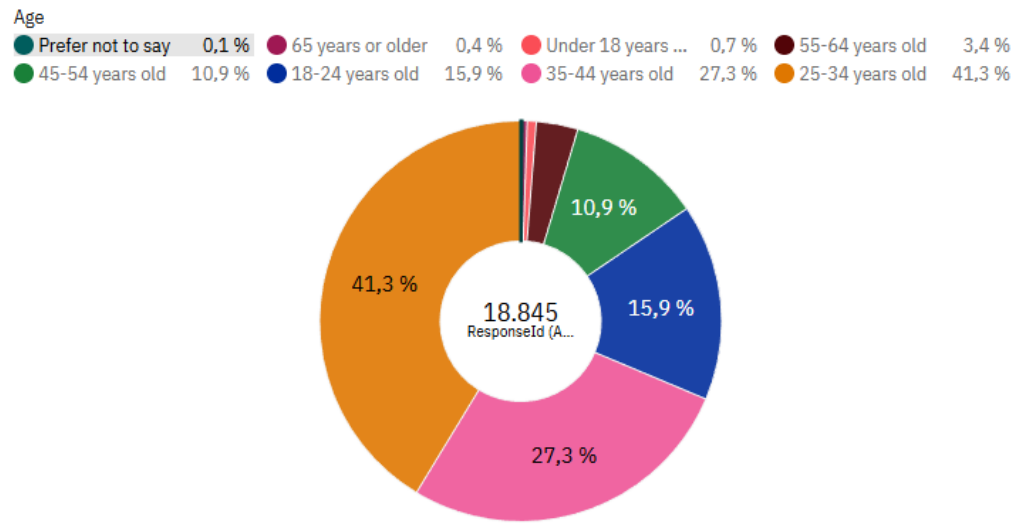
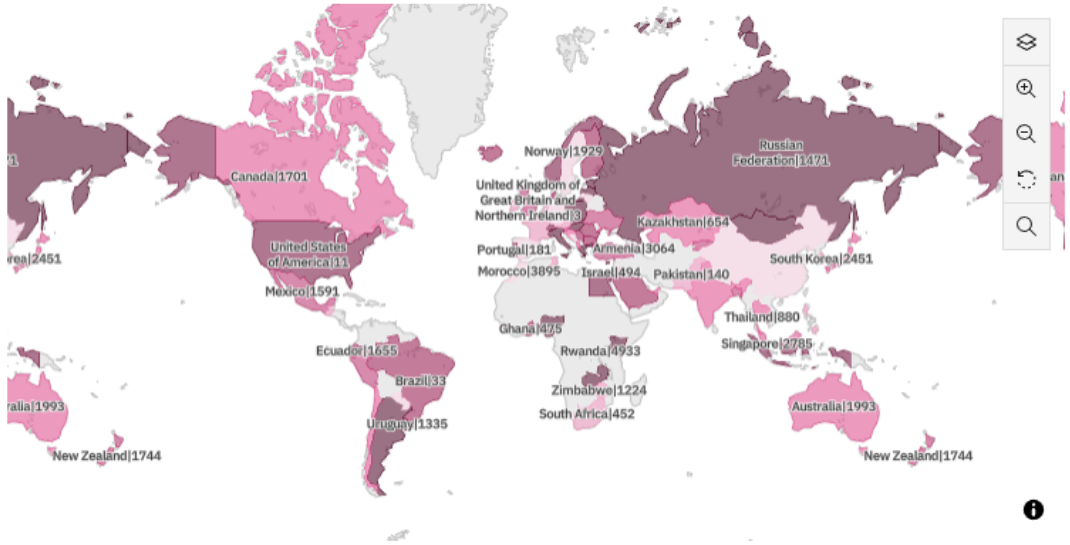
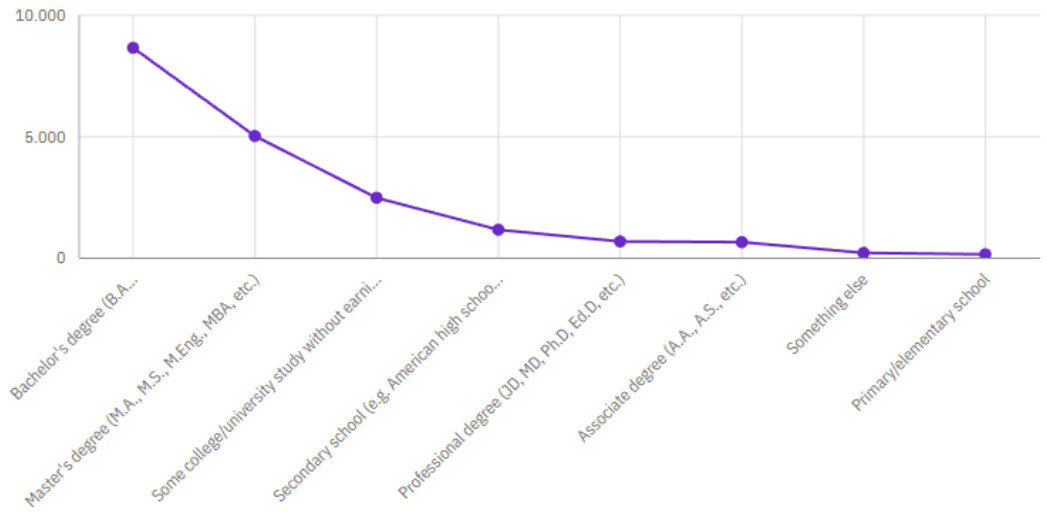
Respondent Destribution by Age



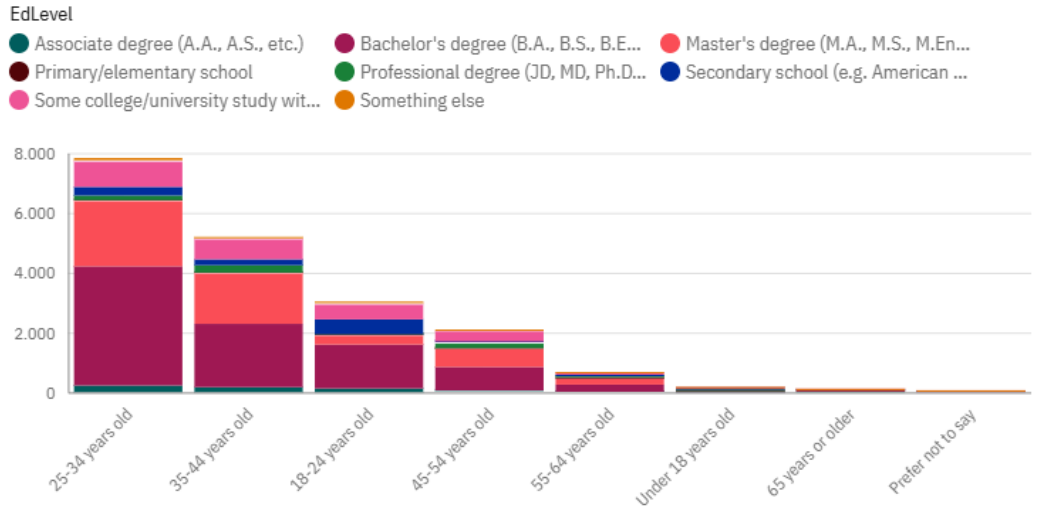
Respondents by Country



Respondents by EducationLevel



Respondents by Age and EdLevel



OVERALL FINDINGS & IMPLICATIONS

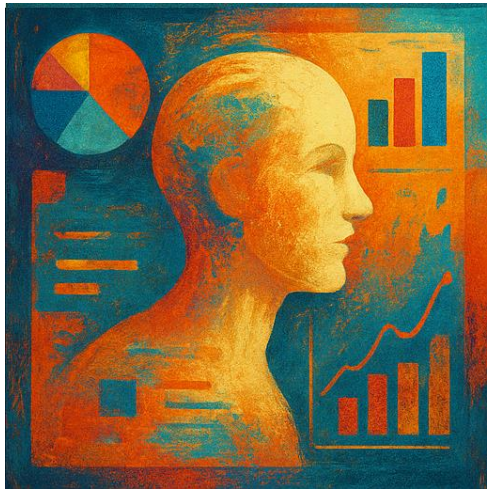
Findings

- Developers continue to rely on core technologies
  - JavaScript, Python, and SQL dominate across all levels of experience
- PostgreSQL has become the preferred database,
  - signaling the rise of powerful open-source solutions.
- TypeScript, Rust and Go show increasing adoption,
  - reflecting a shift toward performance, safety, and maintainability
- Cloud platforms like AWS, Azure and Google Cloud remain essential,
  - but lightweight services (Firebase, Supabase) are gaining traction

Implications

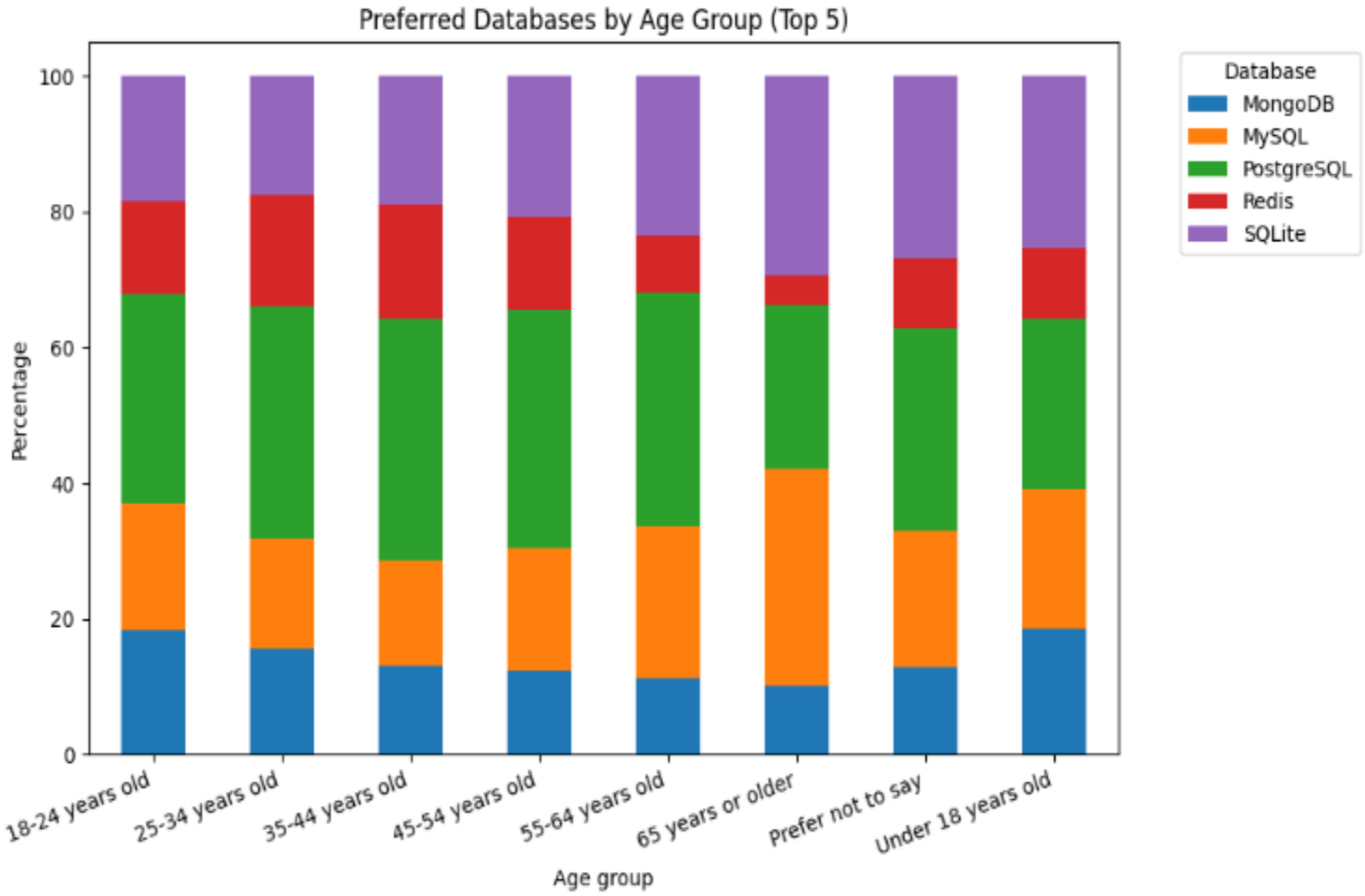
- Core skills remain a priority:
  - Learning JavaScript, Python, and SQL continues to offer the broadest career opportunities.
- Open-source and cloud adoption will accelerate, driven by accessibility and flexibility.
- Developer preferences evolve with experience
  - younger professionals experiment with emerging tools, while older experts favor proven stability.
- Continuous learning is essential
  - to adapt to fast-changing technologies and maintain competitiveness in the tech industry.

CONCLUSION



- The survey results show that developers rely on a few key languages and databases that have proven reliable and widely supported
- JavaScript, Python, and SQL continue to be the main tools used across most types of development work
- PostgreSQL stands out as the most trusted database, showing a general move toward open and flexible systems
- At the same time, newer tools like TypeScript, Rust, and Go are gaining attention as developers look for more efficient and modern options
- Overall, the data suggests a balanced industry one that values both stable, well-known technologies and careful exploration of newer ones

APPENDIX, extra, stacked chart



- The chart shows that database choices differ slightly by age group.
- Younger developers tend to favor newer and more flexible systems like MongoDB and Redis, while older developers prefer established SQL databases such as PostgreSQL and MySQL.

Thank you for your attention!