Trending Technologies: Analysis of Stack Overflow Developer Survey 2019

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OUTLINE

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

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EXECUTIVE SUMMARY

- Analysis Goal: Aims to understand the developer ecosystem

- Methodology
  - Data Gathering & Analysis
  - Data Visualizations

- Key Findings
  - Top Programming Languages & Databases in Demand
  - Popular Platforms and Web Frameworks
  - Future Technology Trends

- Discussion and Implications

- Conclusion

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INTRODUCTION

- Stack Overflow's annual Developer Survey is the most extensive and detailed survey of programmers

- 2019 marks the 9th consecutive year of publication, with nearly 90,000 developers participating, *sharing how they learn and level up, which tools they're using, and what they want*

- The survey provides insights into the evolving landscape of programming languages, web frameworks, and developer demographics

- It covers a wide array of topics, from preferred technologies to career aspirations
  - The results help predict trends and characterize developers globally
  - While the results do not represent everyone in the developer community evenly, they offer valuable insights into key trends in programming and technology

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METHODOLOGY

- Data Gathering
  - Developer Surveys conducted by 2019 Stack Overflow
  - Involved nearly 90.000 software developers from different countries

- Data Analysis
  - Became proficient with the dataset through completion of IBM labs on Coursera, covering Web Scraping, Dataset Exploration, Data Wrangling and Exploratory Data Analysis

- Data Visualization
  - Utilized IBM Cognos Analytics & Google Looker Studio for data visualization

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RESULTS

- **Programming Languages:** JavaScript remains the most used (70%), with Python (42%) surpassing Java. Python continues to grow rapidly

- **Web Frameworks:** jQuery is the most used web framework (50%). React.js has overtaken Angular in popularity this year

- **Databases:** MySQL is the most used database (54%), followed by PostgreSQL (34%), which edged out Microsoft SQL Server

- **Platforms:** Linux and Windows are the top development platforms. Docker is the third most used platform, newly included this year

- **Technology Preferences:** Rust is the most loved language, with Python close behind. VBA and Objective-C are the most dreaded. Python is the most wanted language for the third year
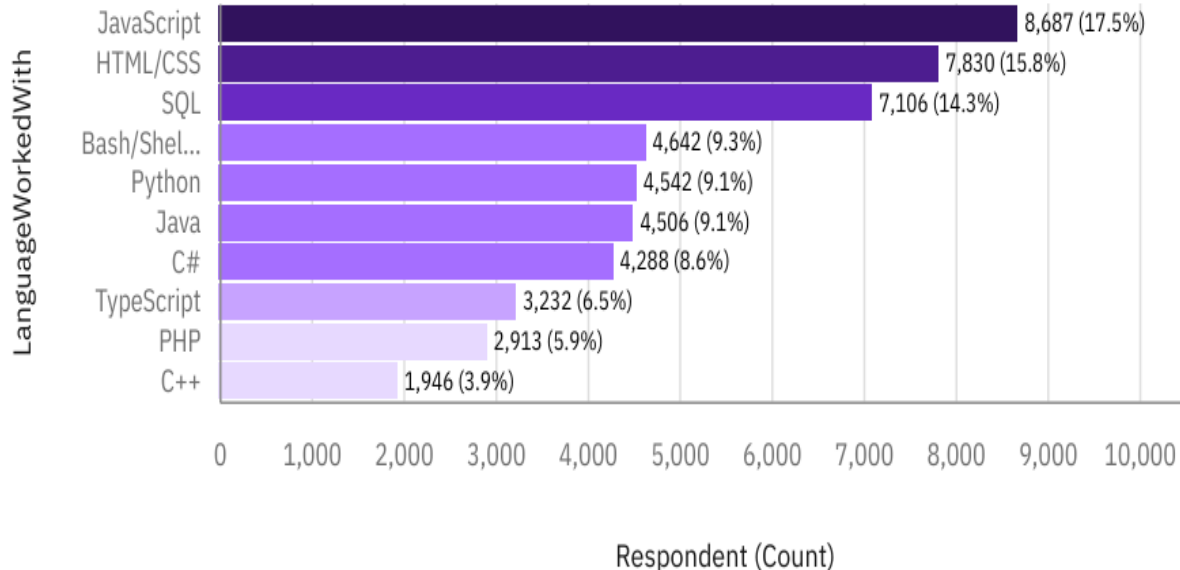
PROGRAMMING LANGUAGE TRENDS

2019

Top 10 Language Worked With

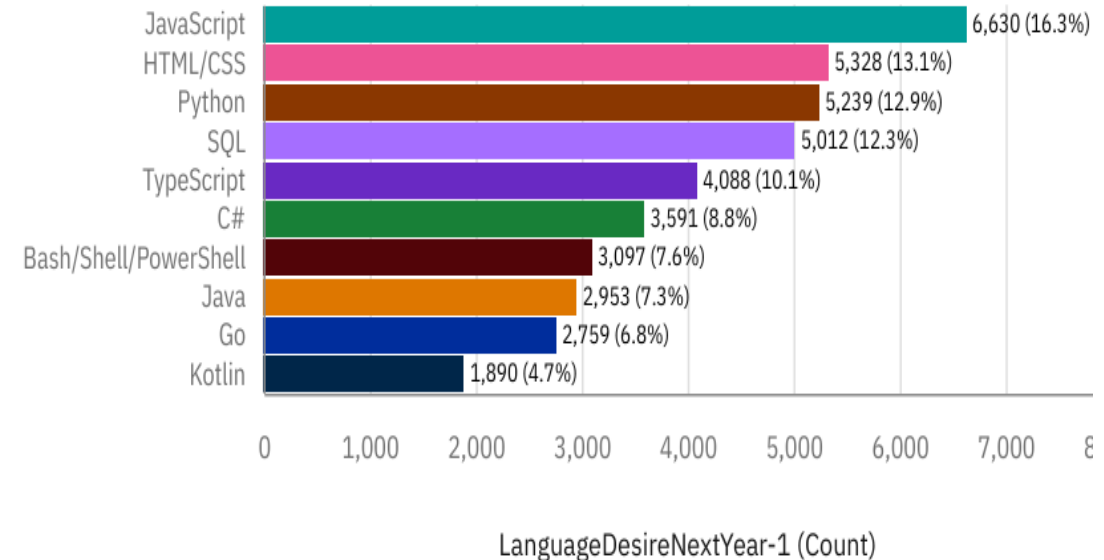Respondent (Count)

1,946   8,687

Language	Count
JavaScript	8,687 (17.5%)
HTML/CSS	7,830 (15.8%)
SQL	7,106 (14.3%)
Bash/Shel...	4,642 (9.3%)
Python	4,542 (9.1%)
Java	4,506 (9.1%)
C#	4,288 (8.6%)
TypeScript	3,232 (6.5%)
PHP	2,913 (5.9%)
C++	1,946 (3.9%)

LanguageWorkedWith

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000

Respondent (Count)

Next Year

Top 10 Language Desire Next Year

LanguageDesireNextYear
- Bash/Shell/PowerShell
- C#
- Go
- HTML/CSS
- Java
- JavaScript
- Kotlin
- Python
- SQL
- TypeScript

Language	Count
JavaScript	6,630 (16.3%)
HTML/CSS	5,328 (13.1%)
Python	5,239 (12.9%)
SQL	5,012 (12.3%)
TypeScript	4,088 (10.1%)
C#	3,591 (8.8%)
Bash/Shell/PowerShell	3,097 (7.6%)
Java	2,953 (7.3%)
Go	2,759 (6.8%)
Kotlin	1,890 (4.7%)

LanguageDesireNextYear

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8

LanguageDesireNextYear-1 (Count)

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

Despite the dominance of JavaScript, HTML, and SQL, Bash and Python are poised to lead future trends

JavaScript, HTML/CSS, and SQL are the most widely used languages, highlighting their continued importance in development

Python has overtaken Java and is the fastest-growing language, with rising interest in TypeScript
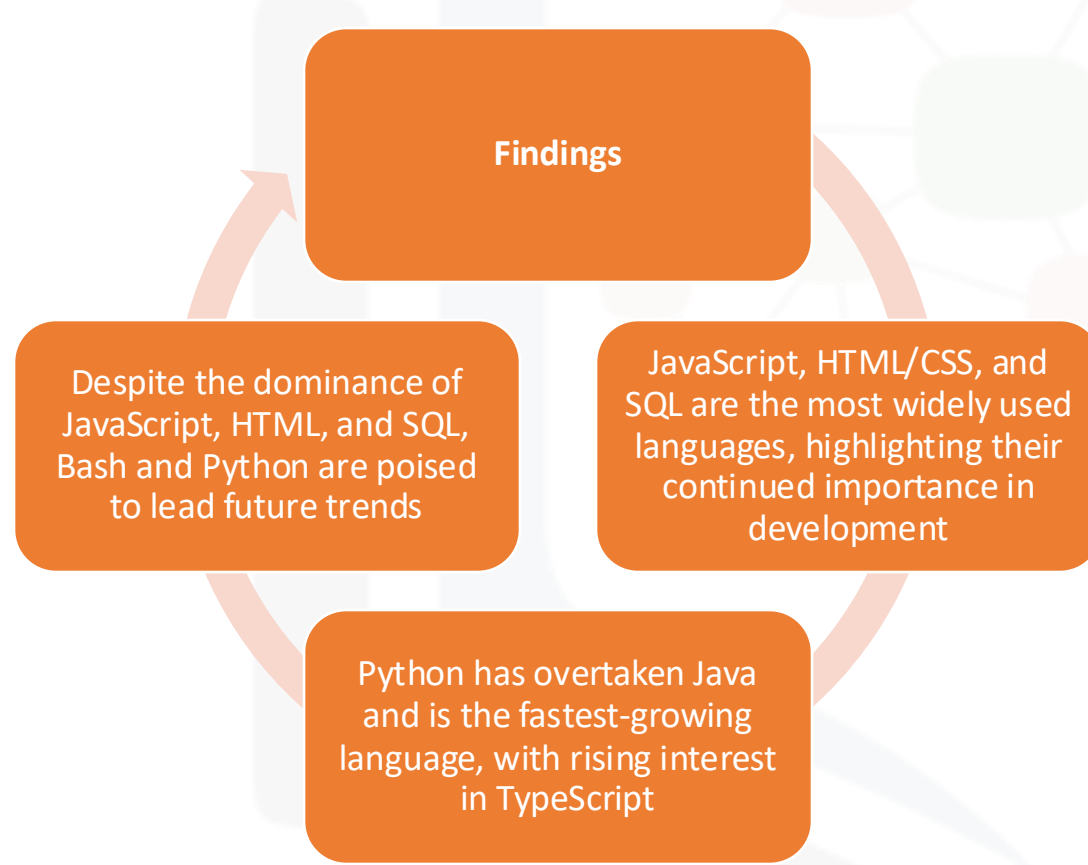
Implications

- Developers should prioritize JavaScript, HTML/CSS, and SQL to align with current industry demands

- Learning Python is crucial due to its rapid growth and increasing popularity in various fields

- Keeping an eye on emerging languages like TypeScript and Bash can provide a competitive edge in future developments

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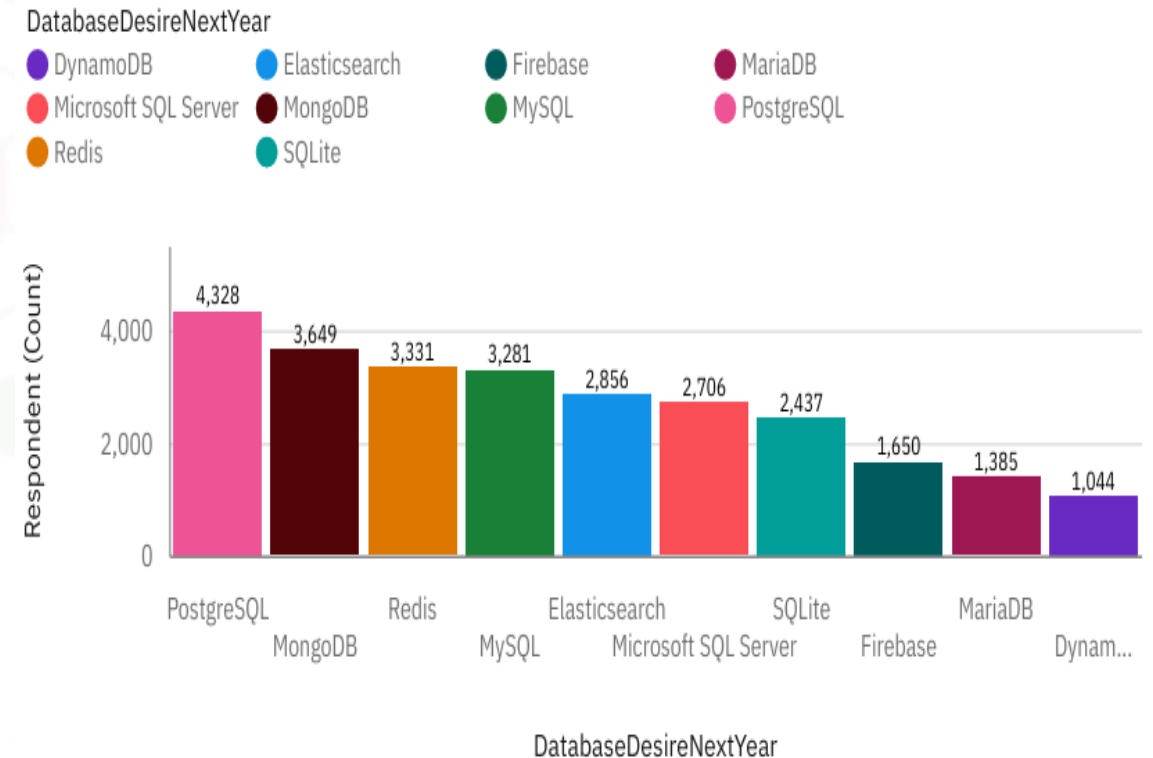
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DATABASE TRENDS

2019

Top 10 Database Worked With
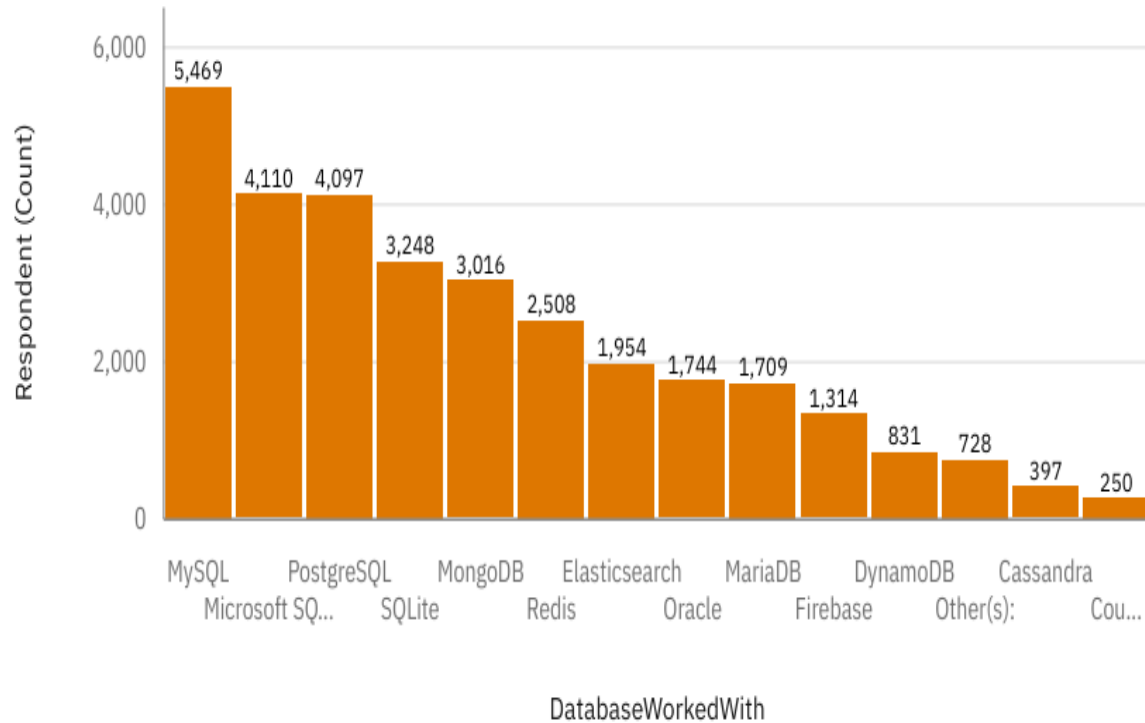
Next Year

Top 10 DatabaseDesireNextYear

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Implications

Findings

MySQL remains the most widely used database management system among respondents

Microsoft SQL Server and SQLite are experiencing a decline in interest, suggesting a shift in preferences.

Interest in PostgreSQL and MongoDB is on the rise, indicating their growing popularity
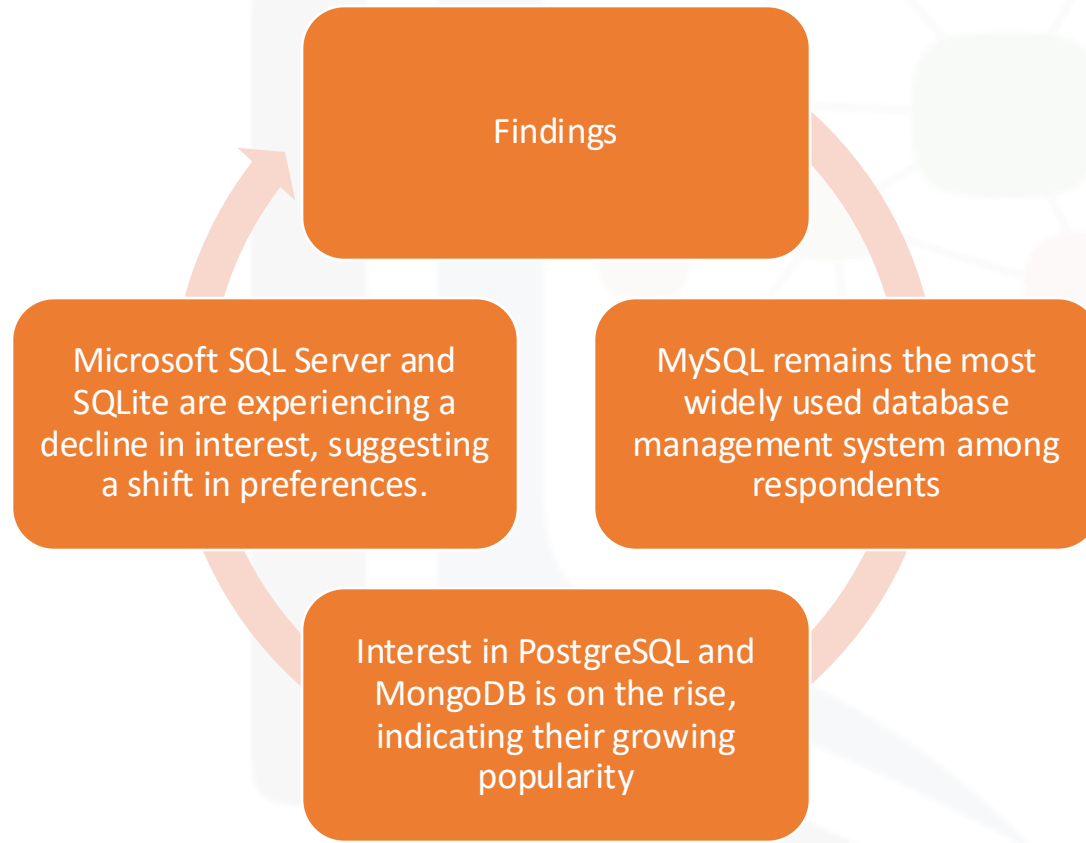
- The declining interest in Microsoft SQL Server and SQLite signals a shift in market dynamics, favoring alternative database solutions

- The increasing adoption of PostgreSQL and MongoDB reflects their growing stature and acceptance within the developer community

- Keeping abreast of emerging trends is crucial for developers seeking employment opportunities in the evolving technology landscape

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DASHBOARD

<https://github.com/ErdemErden/Data-Analyst-Projects.git>

Current Technology Usage Dashboard
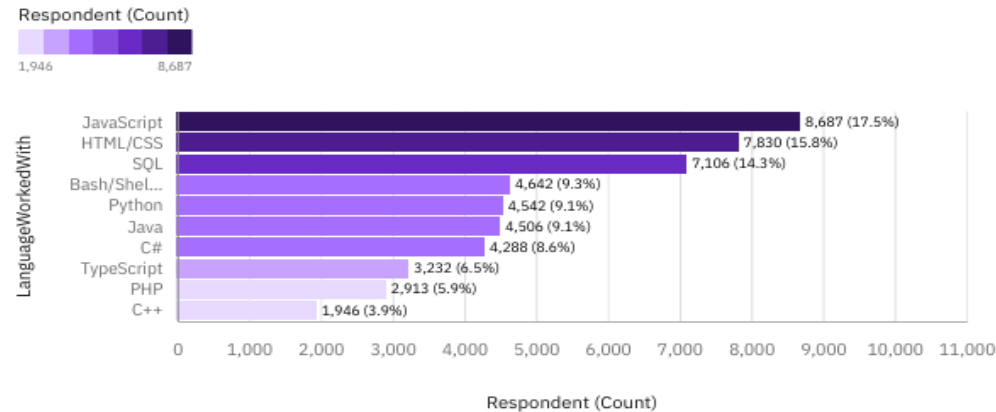
Future Technology Trend Dashboard

Future Technology Trend
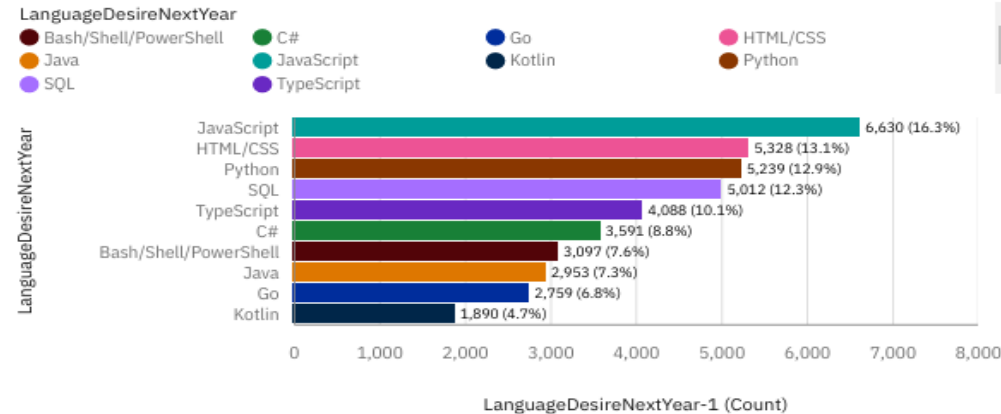

Top 10 Language Desire Next Year

LanguageDesireNextYear
- Bash/Shell/PowerShell
- C#
- Go
- HTML/CSS
- Java
- JavaScript
- Kotlin
- Python
- SQL
- TypeScript

JavaScript — 6,630 (16.3%)
HTML/CSS — 5,328 (13.1%)
Python — 5,239 (12.9%)
SQL — 5,012 (12.3%)
TypeScript — 4,088 (10.1%)
C# — 3,591 (8.8%)
Bash/Shell/PowerShell — 3,097 (7.6%)
Java — 2,953 (7.3%)
Go — 2,759 (6.8%)
Kotlin — 1,890 (4.7%)

LanguageDesireNextYear-1 (Count)

Top 10 DatabaseDesireNextYear

DatabaseDesireNextYear
- DynamoDB
- Elasticsearch
- Firebase
- MariaDB
- Microsoft SQL Server
- MongoDB
- MySQL
- PostgreSQL
- Redis
- SQLite

PostgreSQL — 4,328
MongoDB — 3,649
Redis — 3,331
MySQL — 3,281
Elasticsearch — 2,856
Microsoft SQL Server — 2,706
SQLite — 2,437
Firebase — 1,650
MariaDB — 1,385
Dynam... — 1,044

Respondent (Count)

DatabaseDesireNextYear

Platform Desire Next Year

Respondent (Count) 307 — 5,865
PlatformDesireNe... 307 — 5,865

Linux
Docker
AWS
Windows
Android
Kubernetes
MacOS
Raspberry Pi
Google Cl...
iOS
Arduino
Slack
Heroku
IBM ...
Microsof...
Wo...
Oth...
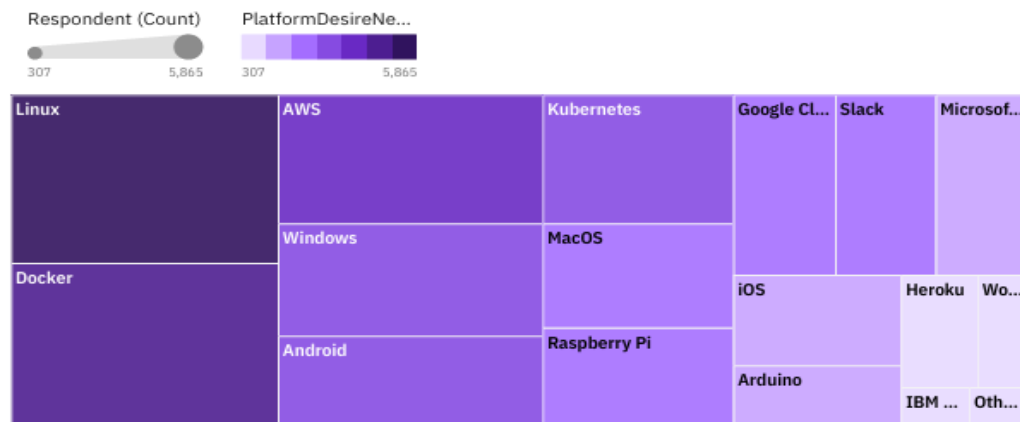
Top 10 WebFrame Desire Next Year

Respondent (Count) 970 — 4,714

WebFrameDesireNextYear
- ASP.NET
- Angular/Angular.js
- Django
- Express
- Flask
- React.js
- Ruby on Rails
- Spring
- Vue.js
- jQuery

React.js
Vue.js
Angula...
ASP.N...
Express
jQu...
S...
D...
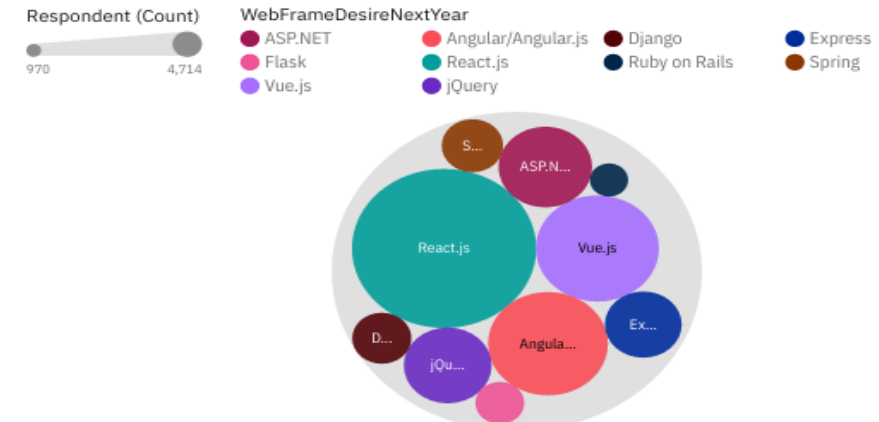
Demographics Dashboard
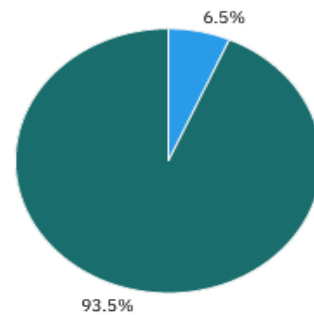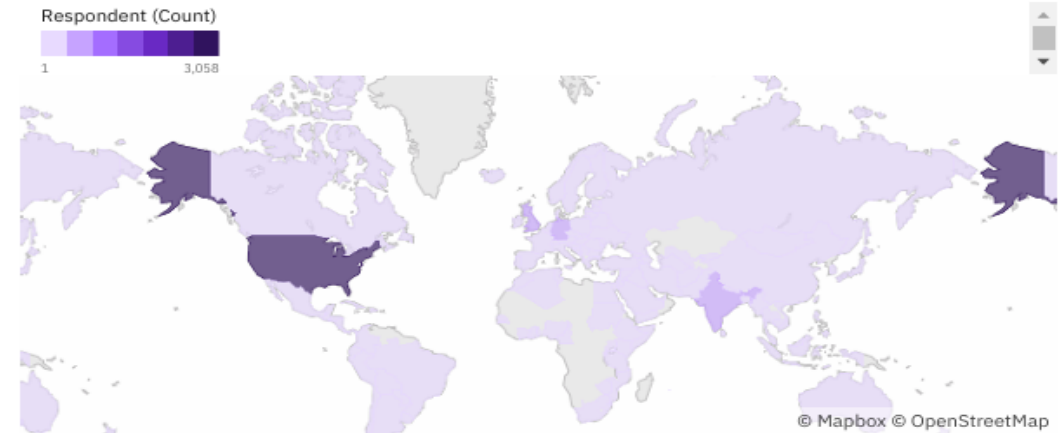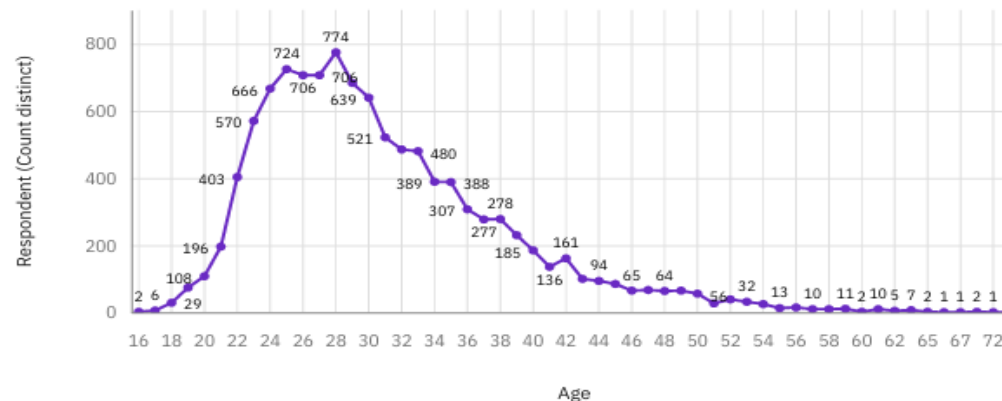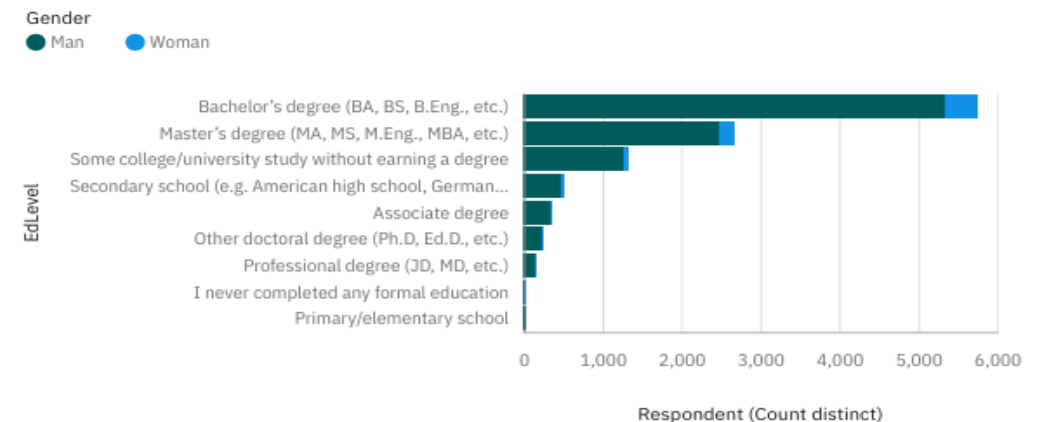
DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

MySQL leads as the most commonly used database, followed by PostgreSQL and MongoDB gaining traction in the market

JavaScript and HTML/CSS remain the most utilized programming languages among developers

Python has surpassed Java in popularity and continues to be the fastest-growing major language

Implications

- Developers should prioritize learning Python and TypeScript to align with current industry trends and job market demands

- Organizations should consider adopting PostgreSQL and MongoDB for future projects due to their increasing popularity and developer preference

- The decline in interest in Microsoft SQL Server and SQLite indicates a shift in technology adoption and developer preferences, prompting organizations to reassess their database strategy

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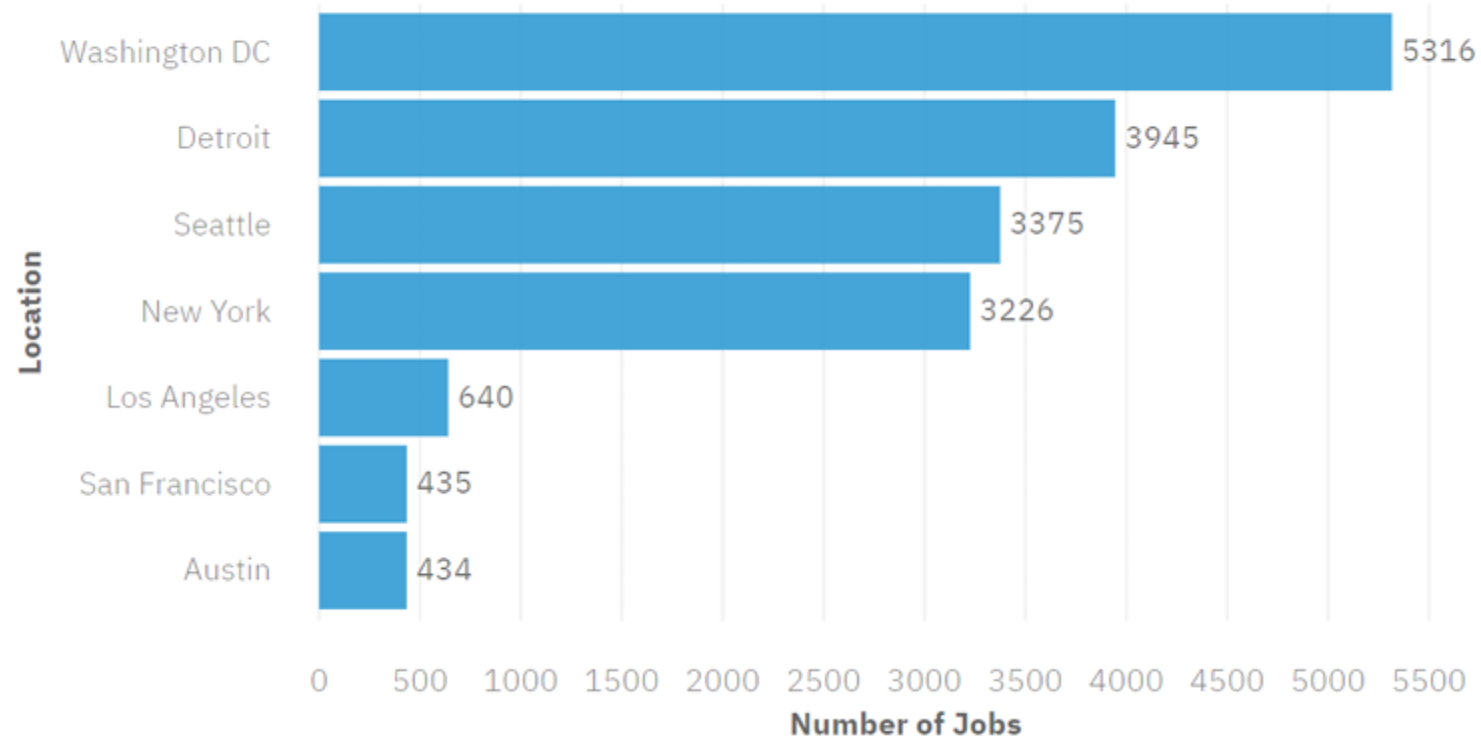
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CONCLUSION

- The survey shows how technology is constantly changing, which is important for driving new ideas in many industries

- Developers need to understand different programming languages and databases well to succeed in their software projects today

- The survey also highlights how popular different tools and technologies are, and suggests there's a need to make more opportunities available for developers worldwide

APPENDIX

- 1-Job Postings Chart
- 2- Popular Languages Chart

JOB POSTINGS

POPULAR LANGUAGES

Average Annual Salary