

Stack Overflow Developer Survey Analysis

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OUTLINE



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- Discussion
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- Conclusion
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EXECUTIVE SUMMARY



- Analyzed Stack Overflow Developer Survey data to identify technology trends and developer job insights.
- Applied a structured analytics process to clean, explore, and visualize the dataset.
 - Performed data preprocessing.
 - Conducted exploratory analysis.
 - Built interactive dashboards in Cognos.
- JavaScript, Python, and SQL emerged as the most widely used technologies.
- Experience level and cloud skills showed strong impact on salary growth.



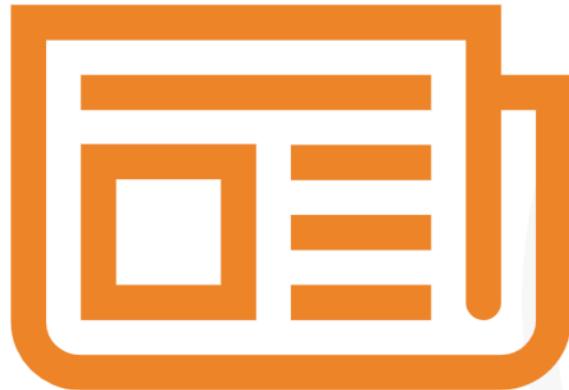
INTRODUCTION



- This project analyzes the Stack Overflow Developer Survey to study technology usage and career trends.
- The dataset includes information on programming languages, databases, platforms, salary, and experience.
- The objective is to convert raw survey data into meaningful and actionable insights.
- A structured data analysis workflow was applied to ensure reliable results.
 - Data was cleaned and explored using Python, SQL, and Excel tools.
 - Visualizations and dashboards were created to present insights clearly.



METHODOLOGY



- The project followed a systematic data analytics workflow from data collection to insight generation.
- Raw survey data was cleaned to remove duplicates, handle missing values, and standardize formats.
- Exploratory data analysis was performed using Python, SQL queries, and Excel techniques.
- Visualizations and dashboards were developed to present trends and comparisons.
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 - An interactive Cognos dashboard was built for filtering and decision support.



RESULTS



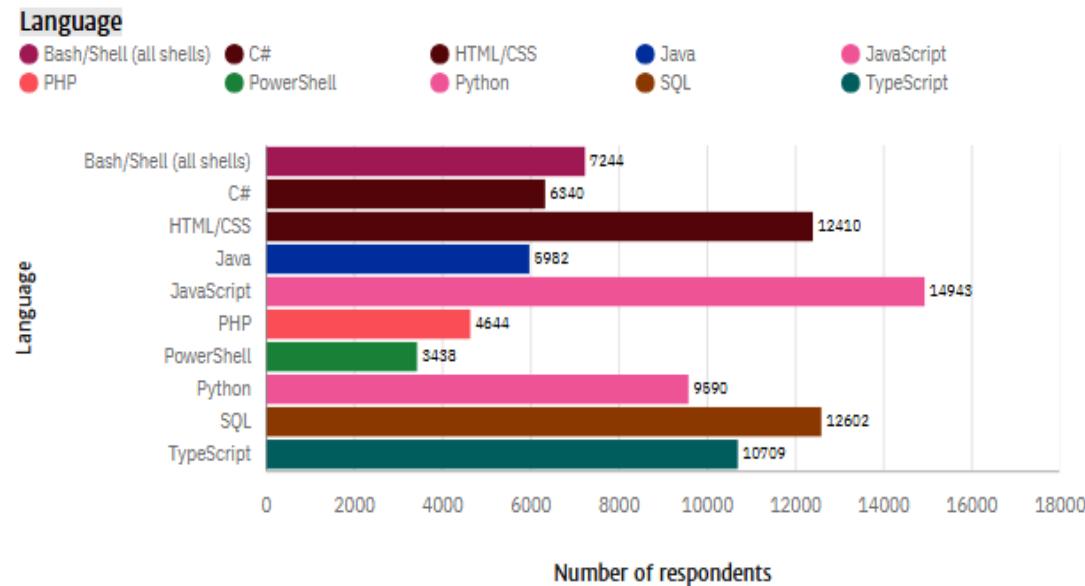
Skills Network



PROGRAMMING LANGUAGE TRENDS

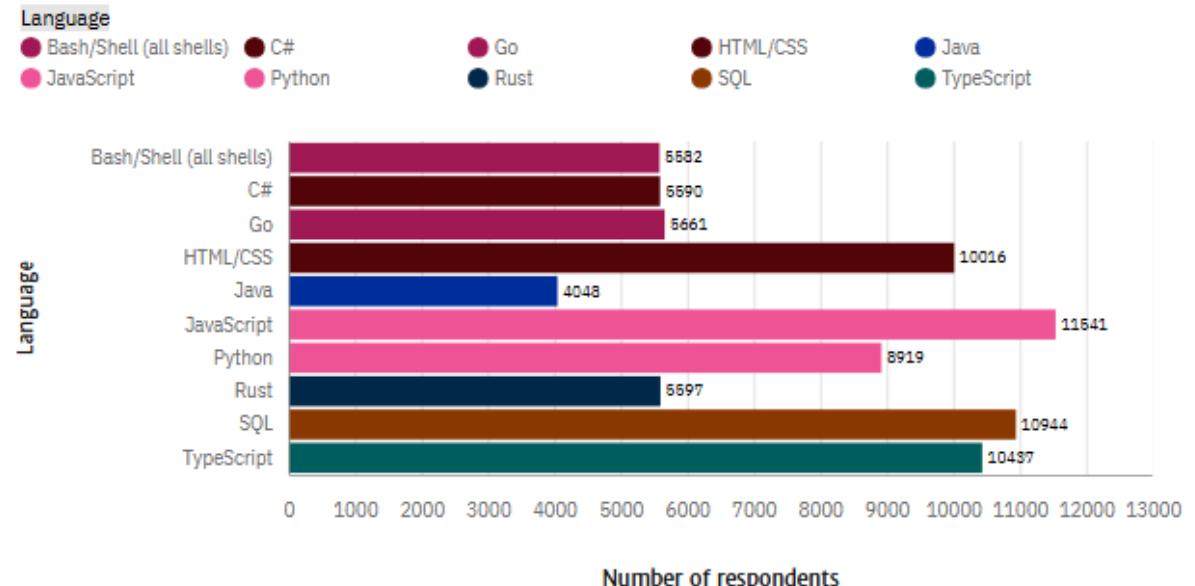
Current Year

Top 10 Language Worked With



Next Year

Top 10 Languages Desired to Work With



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript, Python, and SQL are the most widely used programming languages among developers.
- Python shows strong growth due to demand in data science, AI, and automation roles.
- Traditional languages like Java and C remain important in enterprise development.

Implications

- New learners should prioritize JavaScript and Python to improve employability.
- Organizations should invest in Python and data-focused skill development.
- Organizations should invest in Python and data-focused skill development.



DATABASE TRENDS

Current Year

Top 10 Database worked with

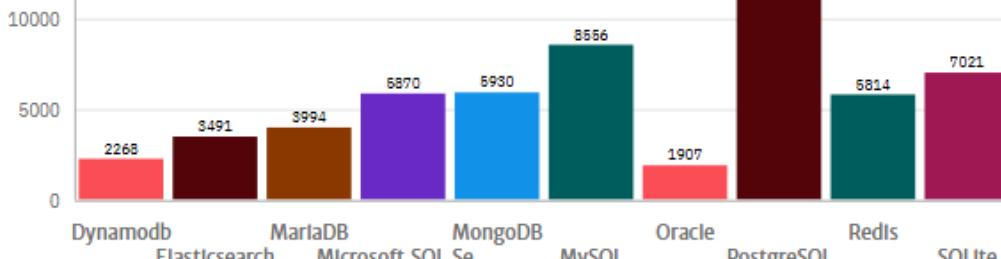
Database
Dynamodb
MongoDB
Redis

Elasticsearch
MySQL
SQLite

MariaDB
Oracle

Microsoft SQL Server
PostgreSQL

Number of respondents...



Database

Next Year

Top 10 Databases Desired to Work With

Database
Dynamodb
MySQL

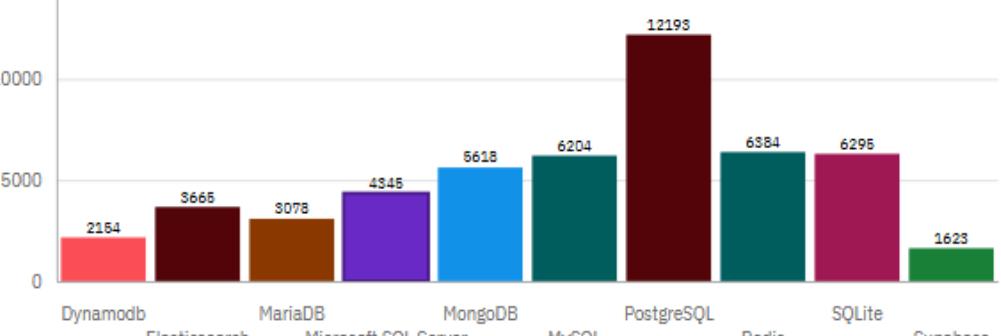
Elasticsearch
PostgreSQL

MariaDB
Redis

Microsoft SQL Server
SQLite

MongoDB
Supabase

Number of respondents...



Database



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL and MySQL are the most commonly used databases among developers.
- NoSQL databases like MongoDB are gaining popularity for modern applications.
- Relational databases remain dominant for enterprise and transactional systems.

Implications

- Professionals should build strong SQL skills for better job opportunities.
- Organizations should adopt a mix of relational and NoSQL databases.
- Database selection should be based on scalability and application needs.

DASHBOARD



[https://ap1.ca.analytics.ibm.com/bi/?perspective=dashboar...&nav_filter=true](https://ap1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FIBM_data%2Banalyt_capstone&action=view&mode=dashboard&subView=model0000019c418020d7_00000000&nav_filter=true)

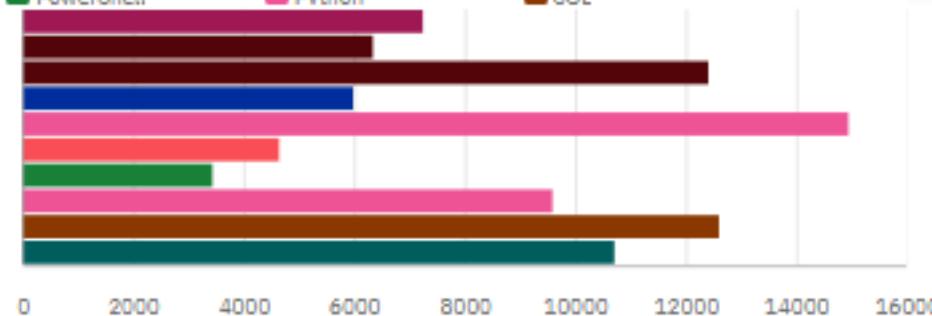


DASHBOARD TAB 1

Top 10 Language Worked With

Language

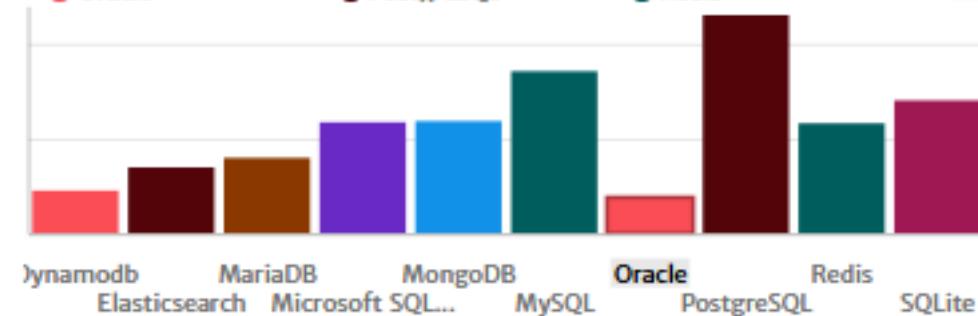
- Bash/Shell (all shells)
- C#
- Java
- PowerShell
- JavaScript
- Python
- HTML/CSS
- PHP
- SOL



Top 10 Database worked with

Database

- Dynamodb
- Microsoft SQL Server
- Oracle
- Elasticsearch
- MongoDB
- PostgreSQL

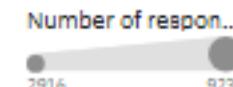


Top 10 Platforms Worked With



Top 10 Web Frameworks Have Worked With

Number of responses



2916

9230

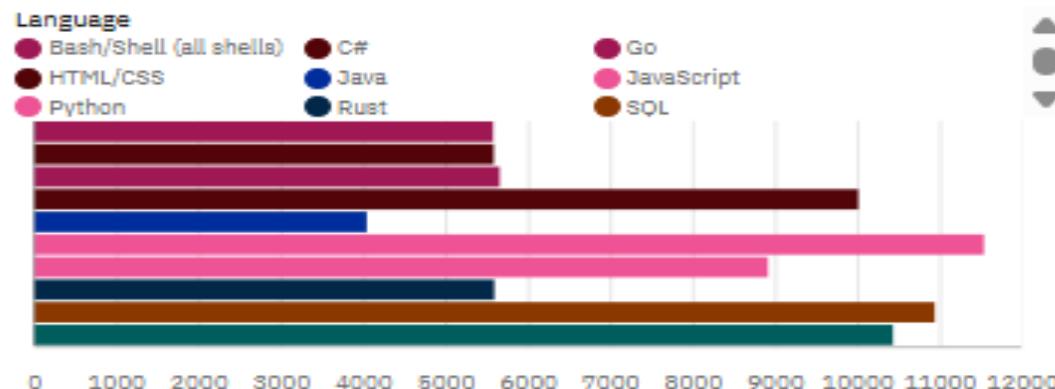
Web Frameworks

- ASP.NET
- Express
- React
- ASP.NET CORE
- Next.js
- Spring Boot
- Angular
- Node.js
- Vue.js

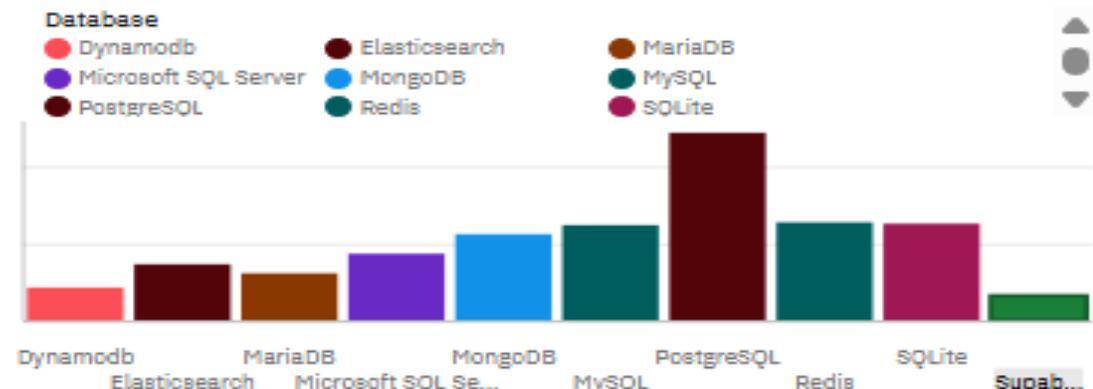


DASHBOARD TAB 2

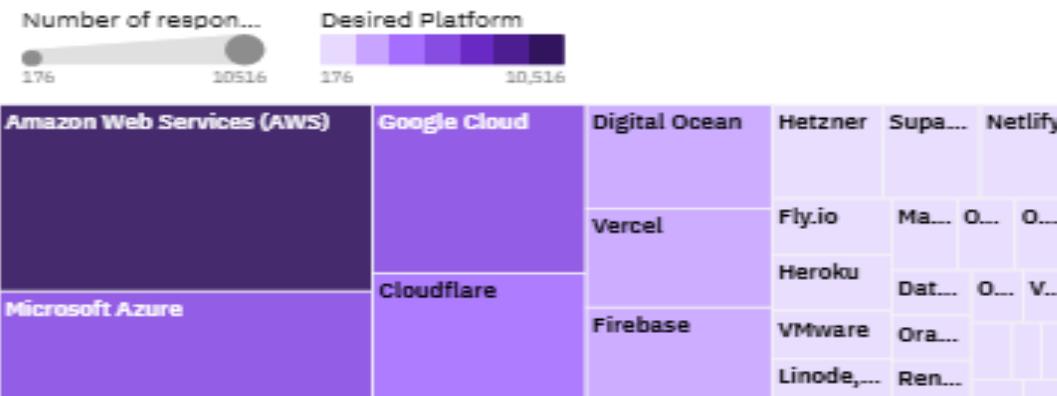
Top 10 Languages Desired to Work With



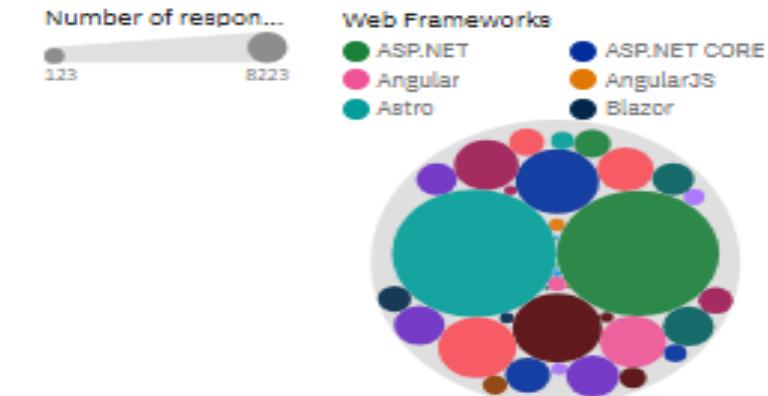
Top 10 Databases Desired to Work With



Top 10 Platforms Desired to Work With



Top 10 Web Frameworks Desired to Work With

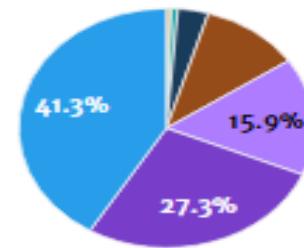


DASHBOARD TAB 3

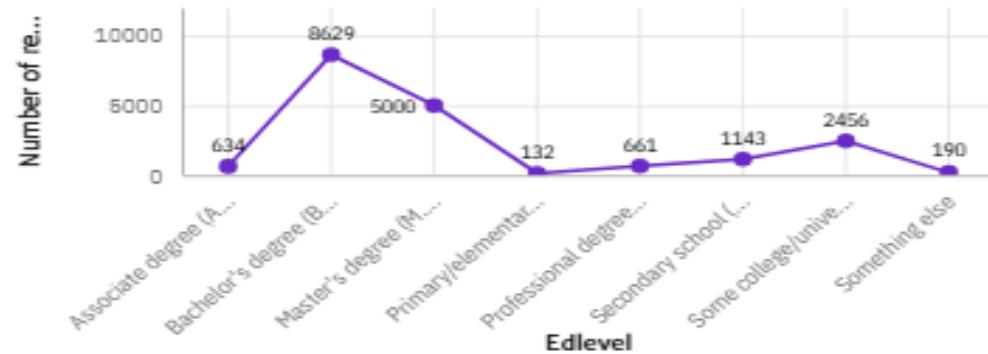
Respondent Distribution by Age

Age category

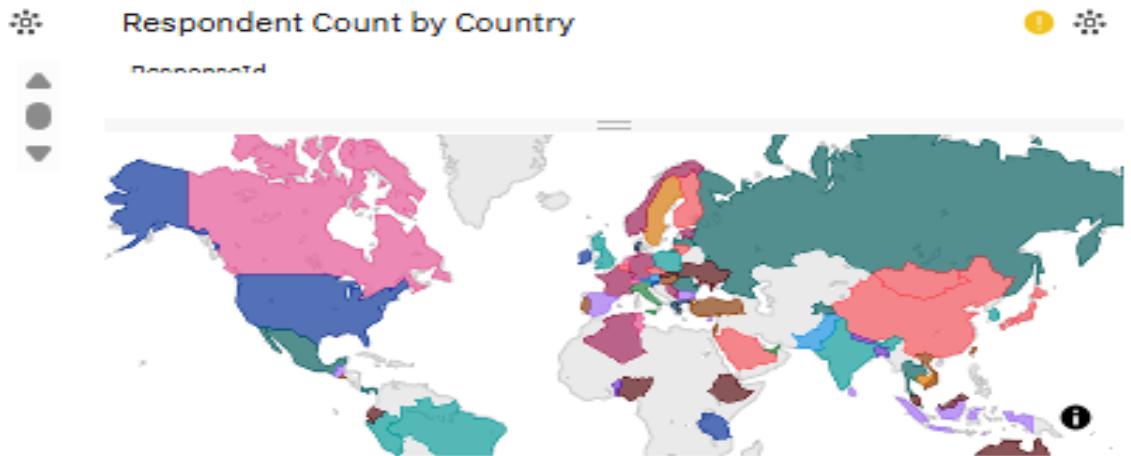
- Prefer not to say
- 65 years or older
- Under 18 years old
- 55-64 years old
- 45-54 years old
- 18-24 years old
- 35-44 years old
- 25-34 years old



Respondent Distribution by Education Level



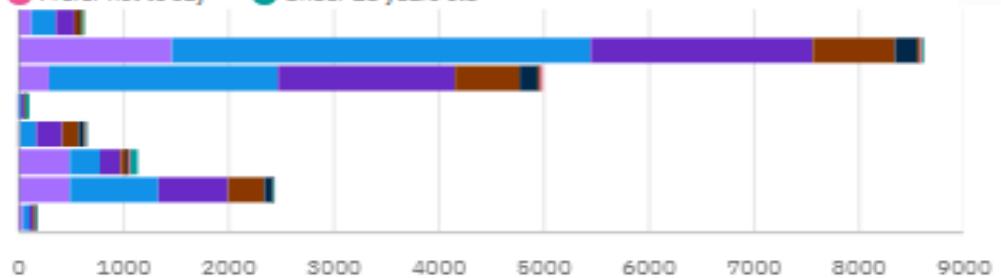
Respondent Count by Country



Respondent Count by Age Classified by Education Level

Age category

- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-64 years old
- 65-64 years old
- 65 years or older
- Under 18 years old
- Prefer not to say



DISCUSSION



Skills Network



OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript, Python, and SQL are the core technologies shaping the current developer market.
- Relational databases remain dominant while NoSQL adoption is steadily increasing.
- Experience level and cloud skills strongly influence salary and job opportunities.

Implications

- Job seekers should focus on Python, SQL, and cloud platforms to stay competitive.
- Organizations should invest in data-driven and cloud-based technology training.
- Continuous skill development is essential to adapt to evolving technology trends.



CONCLUSION

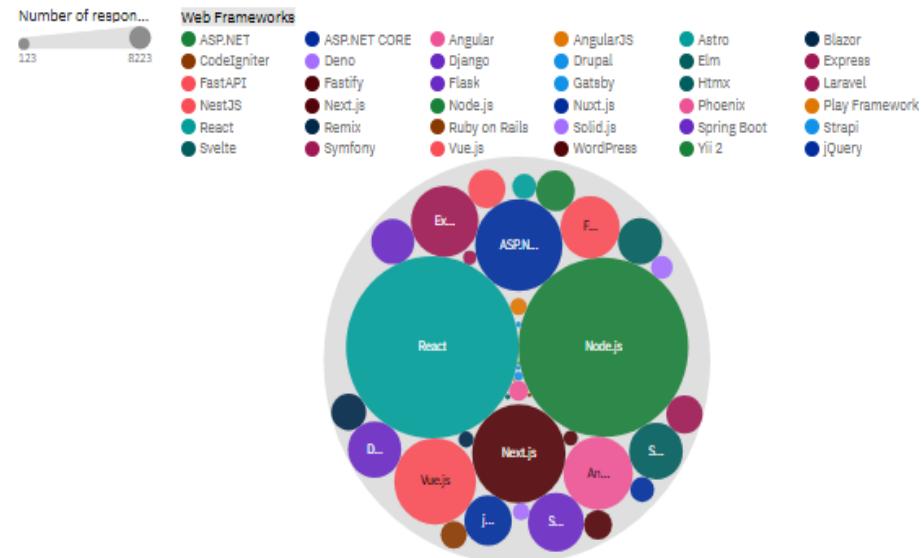


- The project successfully analyzed real-world survey data to identify key technology and career trends.
- Data cleaning, analysis, and visualization helped transform raw data into meaningful insights.
- Interactive dashboards enabled clear understanding of programming, database, and job patterns.
- The project demonstrated practical skills required for real-world data analyst roles.

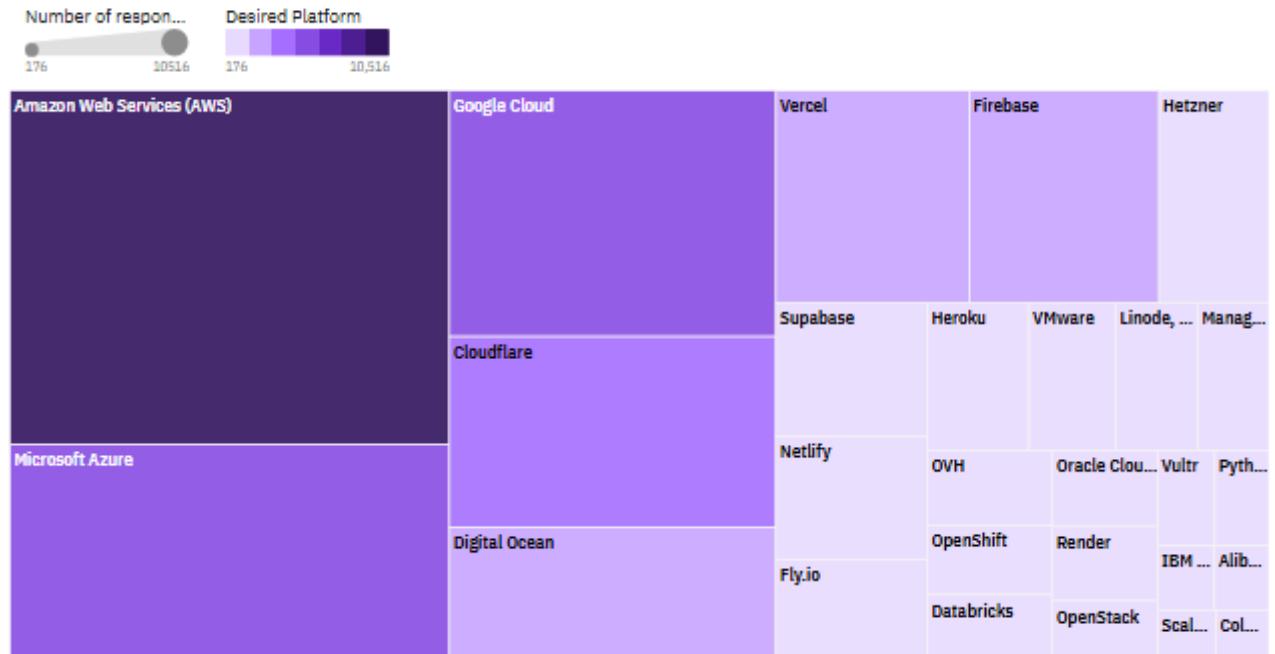


APPENDIX

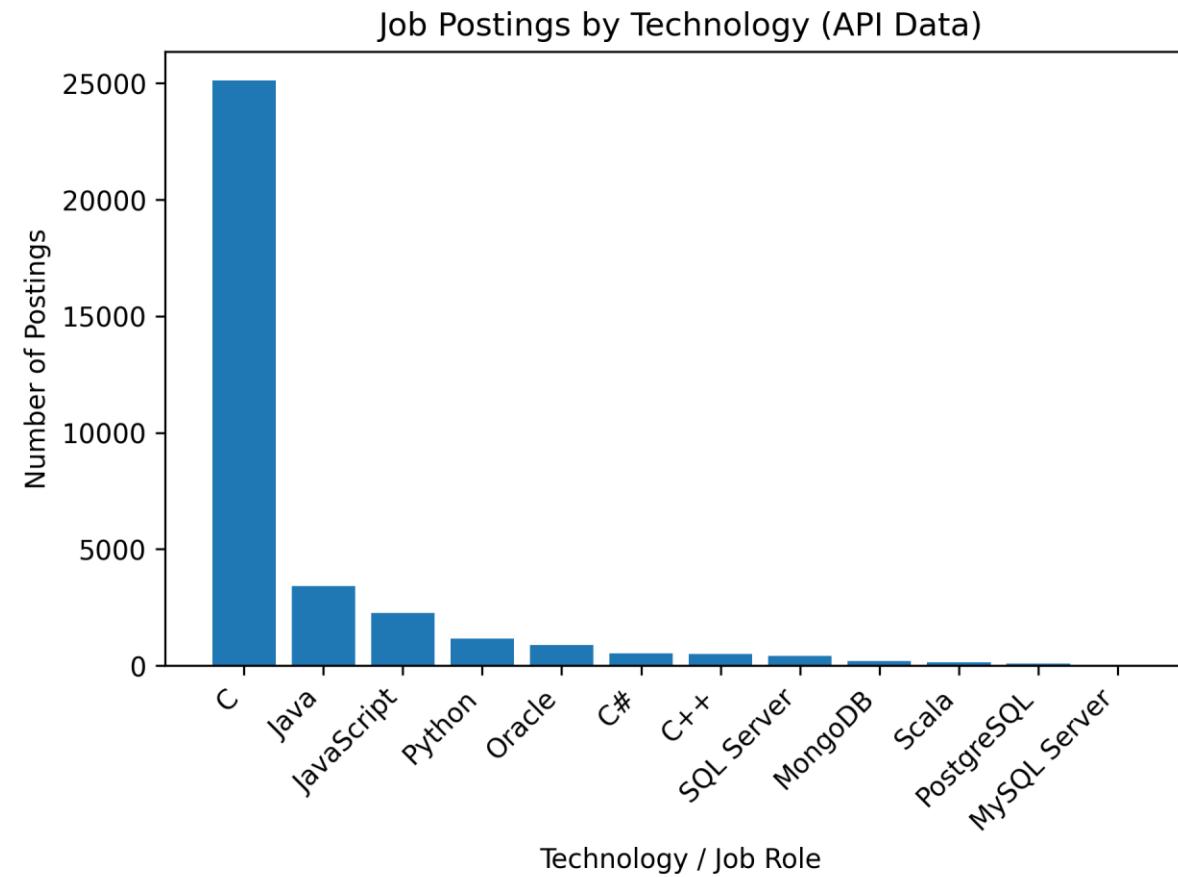
Top 10 Web Frameworks Desired to Work With



Top 10 Platforms Desired to Work With



JOB POSTINGS



POPULAR LANGUAGES

