OUTLINE

- Executive Summary

- Introduction

- Methodology

- Results
  - Visualization – Charts
  - Dashboard

- Discussion
  - Findings & Implications

- Conclusion

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EXECUTIVE SUMMARY

- Most in-demand programming languages:
  - **JavaScript, HTML/CSS, SQL, Bash/Shell/PowerShell, Python**
- Most in-demand databases:
  - **MySQL, Microsoft SQL Server, PostgreSQl, SQLite, MongoDB**
- Popular Platforms:
  - **Windows, Linux, Docker, AWS, MacOS**
- Popular Web Frames:
  - **jQuery, Angular/Angular.js, React.js, ASP.NET, Express**
- Future Technology Trends:
  - **Python** gains popularity, reaching the top three programming languages used.
  - **MongoDB**, **Redis**, and **Elasticsearch** have increase usage when it comes to database management systems.

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INTRODUCTION

- Various key trends have presented itself over the last decade in the programming and technology landscape.

- These trends provide insights into the evolving environment of programming languages, frameworks, and demographics of developers.

- **Stack Overflow** conducts a thorough survey amongst professional developers worldwide.

- Almost 90,000 developers participated in this survey in 2019.

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METHODOLOGY

- Data is gathered from a survey conducted by **Stack Overflow** from **January 23 to February 14 in 2019** and involved **88,883 software developers** from **179 countries**.

- This research was conducted through completing labs provided by **IBM** via **Coursera**, with a wide variety of tools utilized such as **Data Exploration, Data Wrangling, Exploratory Data Analysis, and Data Visualization**.

- Included data analysis and visualization was performed on **IBM Cognos Analytics**.
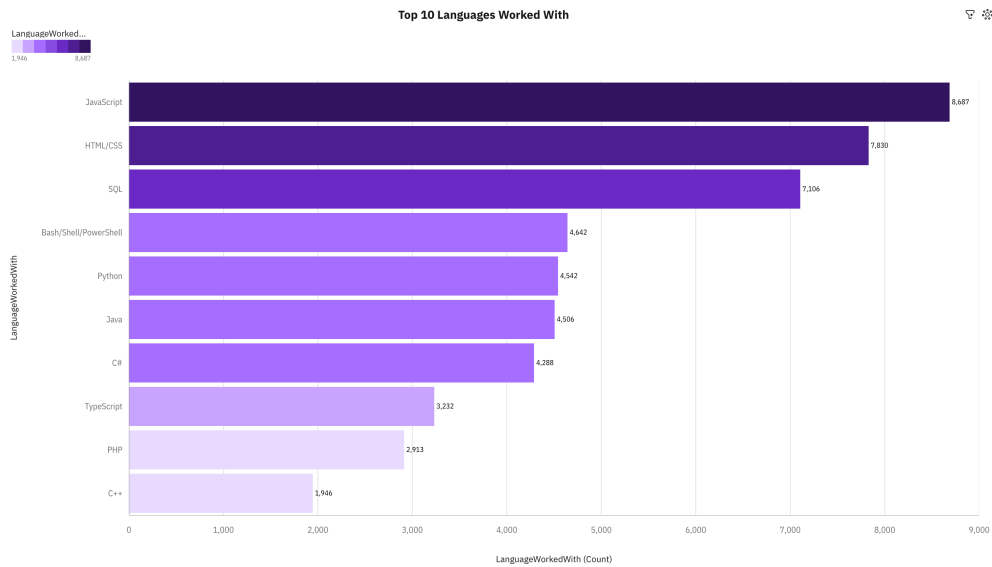
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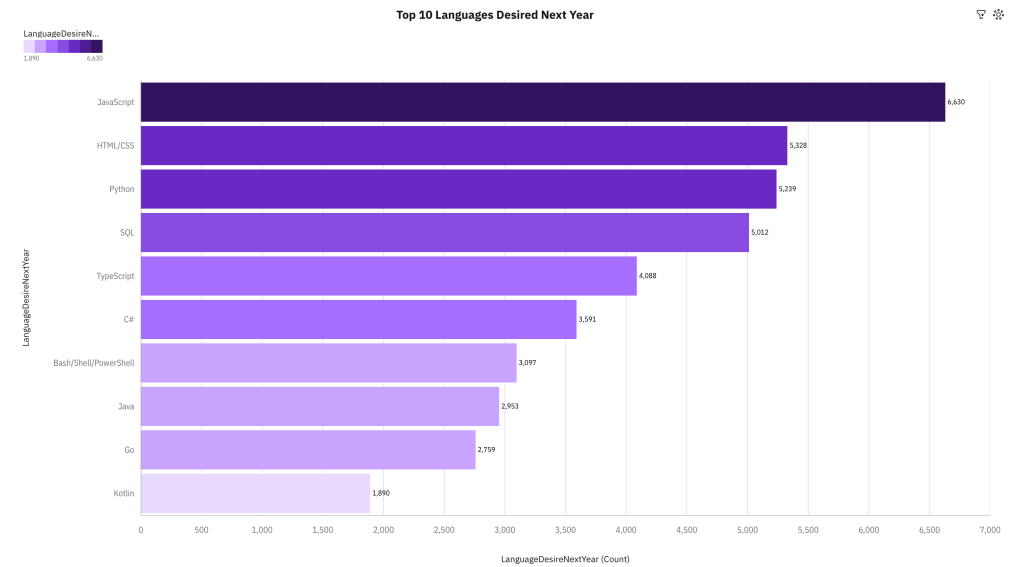SKILLS NETWORK

RESULTS

- Preference for **Python** increases causing it to become the 5th most preferred language, ahead of **Java**.

- **JavaScript** remains as the most used programming language.

- **jQuery** is the most popular web frame in 2019. However, the top spot is taken over by **React.js** in the following year.

- **MySQL** is the most used database. In the following year, **PostgreSQL** climbs 2 spots to become the top contender and pushes **MySQL** down to the 3rd most used database.

- **Men** make up almost **94%** of the respondents in the survey overall. Female representation is maximized in the **Bachelor's degree** category under Formal Education, but men still dominate the category.

PROGRAMMING LANGUAGE TRENDS

Current Year

Top 10 Languages Worked With

LanguageWorked...
1,946 — 8,687

Language	Count
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542
Java	4,506
C#	4,288
TypeScript	3,232
PHP	2,913
C++	1,946

LanguageWorkedWith (Count)

Next Year

Top 10 Languages Desired Next Year

LanguageDesireN...
1,890 — 6,630

Language	Count
JavaScript	6,630
HTML/CSS	5,328
Python	5,239
SQL	5,012
TypeScript	4,088
C#	3,591
Bash/Shell/PowerShell	3,097
Java	2,953
Go	2,759
Kotlin	1,890

LanguageDesireNextYear (Count)

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PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **JavaScript** and **HTML/CSS** are the most used programming languages among all respondents.

- **SQL** is a stronger contender for being a preferred programming language.

- **Python** and **Java** are close competitors, with **Python** being slightly more popular.

Implications

- **JavaScript** and **HTML/CSS** are foundational languages that are key for modern web development.

- Increasing popularity in **SQL** highlights the role of data management and querying in modern software and data analysis applications.

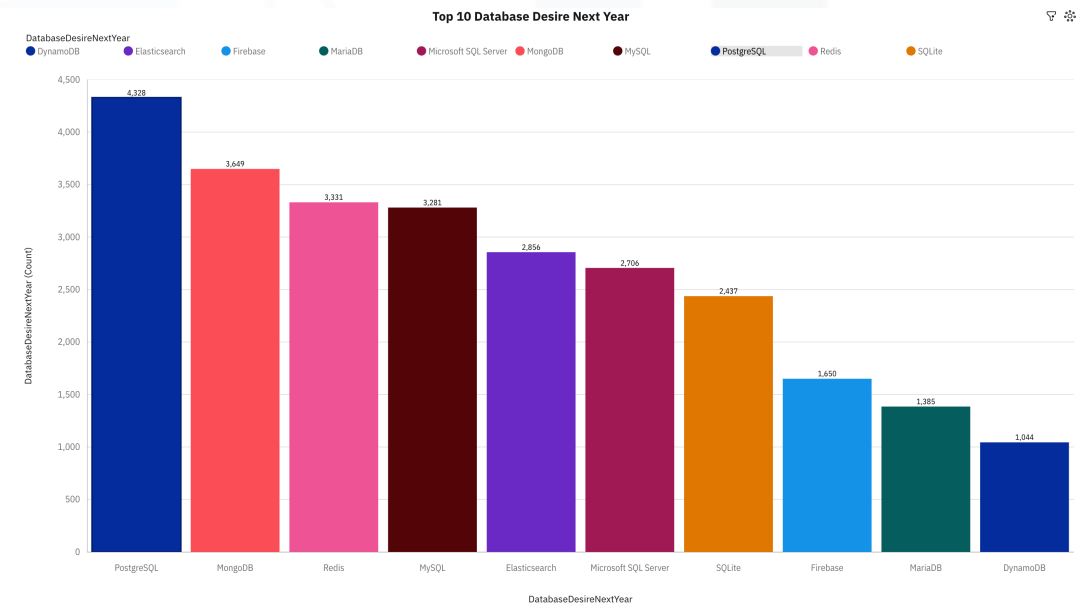- The rising popularity of **Python** could imply ease of use and flexibility, which attracts new developers.

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DATABASE TRENDS

Current Year
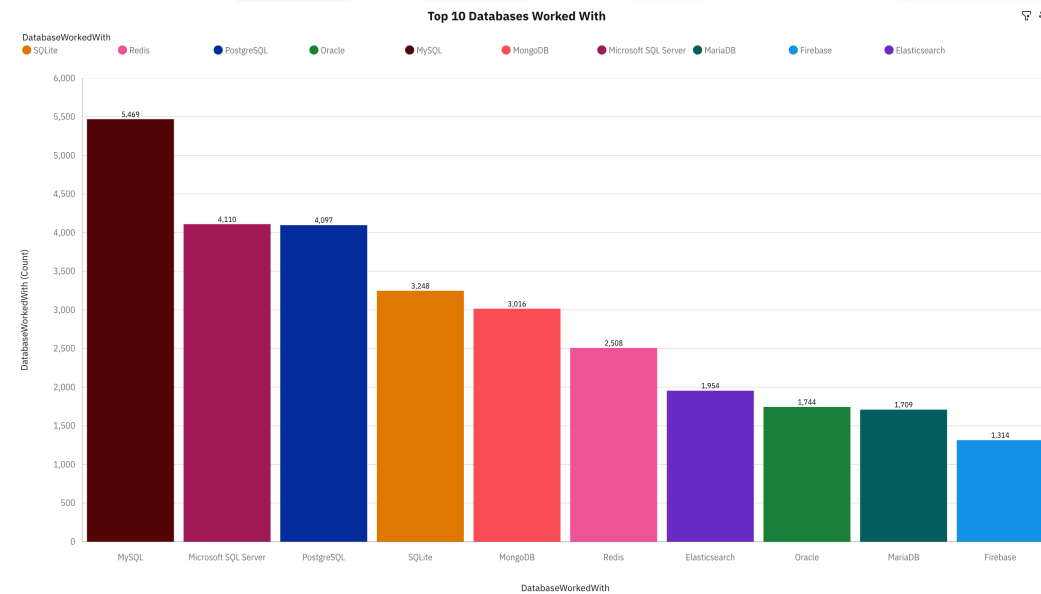
Next Year

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **MySQL** is the leading database management system.
- **Microsoft SQL Server** and **PostgreSQL** closely follow behind.
- **MongoDB** is the top NoSQL database.

Implications

- Popularity of **MySQL**, **Microsoft SQL Server**, and **PostgreSQL** highlights the need for relational databases across various software development applications.
- The high presence of MongoDB illustrates a trend towards NoSQL methods caused by the need of flexible data models.
- The variety of databases present in the Top 10 depict how specific tools are required for different applications depending on the requirements and analyses to be performed.
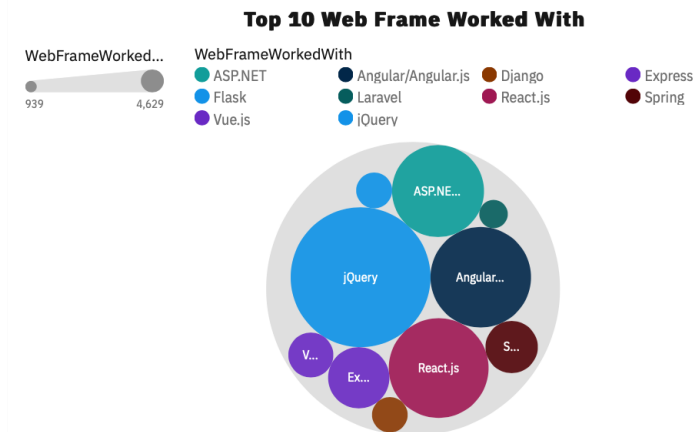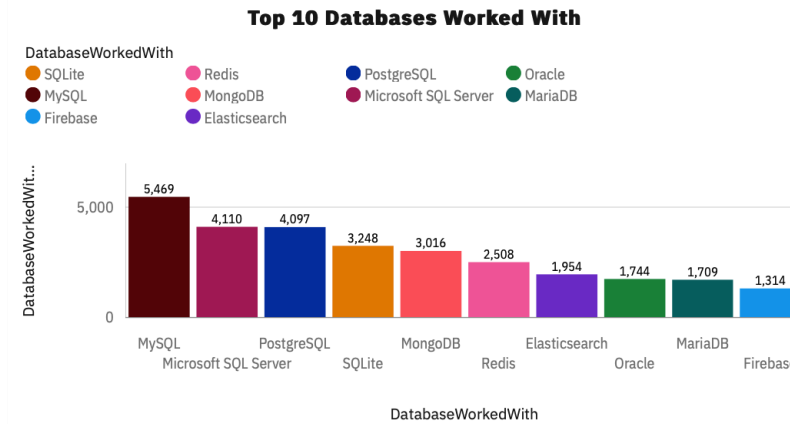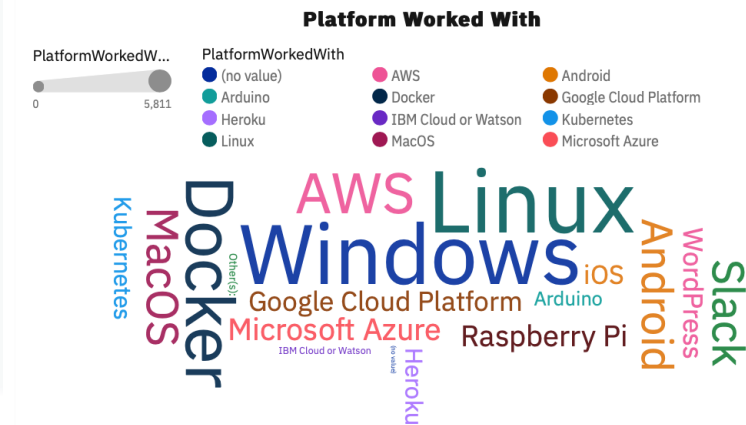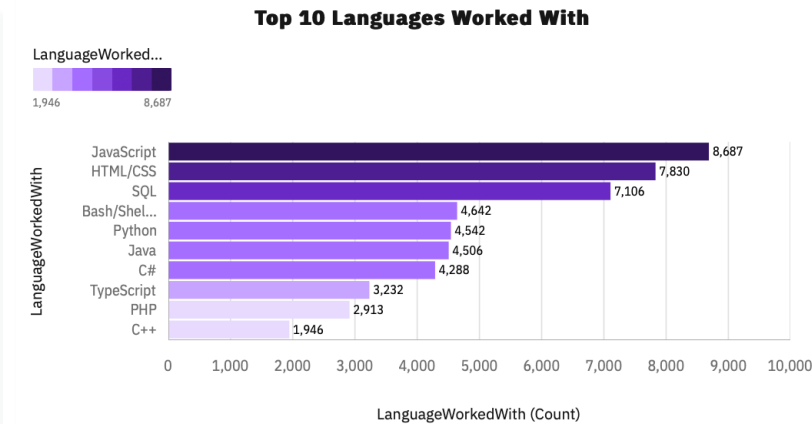
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DASHBOARD

These dashboards can be accessed using the link below;

https://github.com/rani-misra/coursera/blob/main/IBM%20Data%20Analyst%20Capstone%20Project/IBM%20Data%20Analyst%20Capstone%20Project%20Dasboards%20Updated.pdf
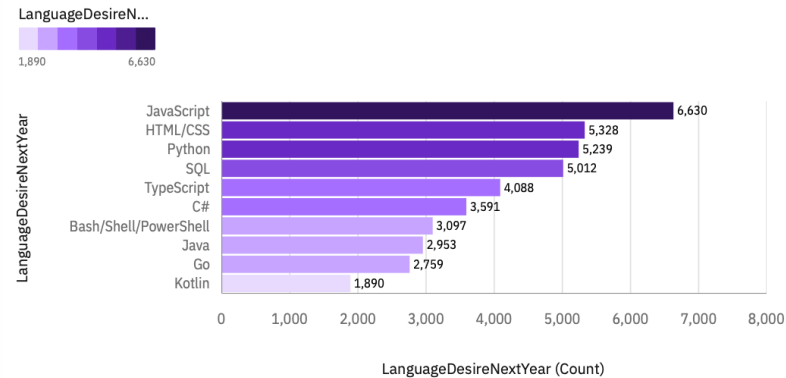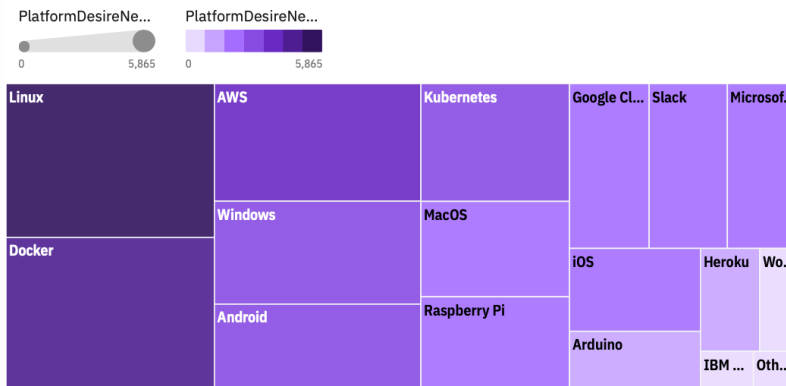
CURRENT TECHNOLOGY USAGE

Current Technology Usage

Top 10 Languages Worked With

LanguageWorked...
1,946 — 8,687

Language	Count
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shel...	4,642
Python	4,542
Java	4,506
C#	4,288
TypeScript	3,232
PHP	2,913
C++	1,946

LanguageWorkedWith (Count)

Top 10 Databases Worked With

DatabaseWorkedWith
- SQLite
- MySQL
- Firebase
- Redis
- MongoDB
- Elasticsearch
- PostgreSQL
- Microsoft SQL Server
- Oracle
- MariaDB

Database	Count
MySQL	5,469
Microsoft SQL Server	4,110
PostgreSQL	4,097
SQLite	3,248
MongoDB	3,016
Redis	2,508
Elasticsearch	1,954
Oracle	1,744
MariaDB	1,709
Firebase	1,314

DatabaseWorkedWith

Platform Worked With

PlatformWorkedW...
0 — 5,811

PlatformWorkedWith
- (no value)
- Arduino
- Heroku
- Linux
- AWS
- Docker
- IBM Cloud or Watson
- MacOS
- Android
- Google Cloud Platform
- Kubernetes
- Microsoft Azure

Top 10 Web Frame Worked With

WebFrameWorked...
939 — 4,629

WebFrameWorkedWith
- ASP.NET
- Flask
- Vue.js
- Angular/Angular.js
- Laravel
- jQuery
- Django
- React.js
- Express
- Spring

FUTURE TECHNOLOGY TREND

Future Technology Trend

Top 10 Languages Desired Next Year

LanguageDesireN...

1,890 — 6,630

Language	Count
JavaScript	6,630
HTML/CSS	5,328
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C#	3,591
Bash/Shell/PowerShell	3,097
Java	2,953
Go	2,759
Kotlin	1,890

LanguageDesireNextYear (Count)

Top 10 Database Desire Next Year

DatabaseDesireNextYear

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

Database	Count
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

DatabaseDesireNextYear

Platform Desire Next Year
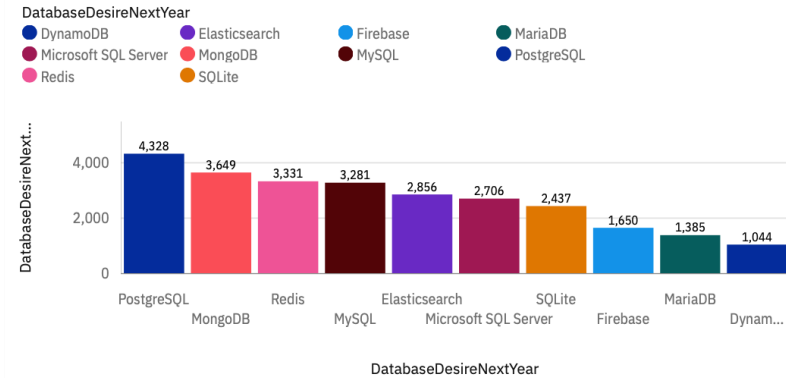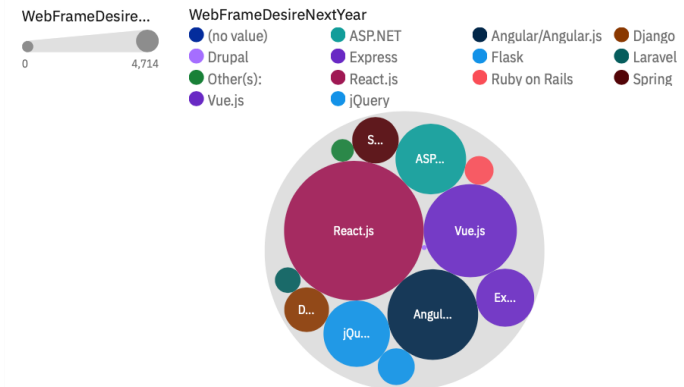
PlatformDesireNe...   PlatformDesireNe...

0 — 5,865   0 — 5,865

Linux, Docker, AWS, Windows, Android, Kubernetes, MacOS, Raspberry Pi, Google Cl..., Slack, iOS, Arduino, Microsof..., Heroku, Wo..., IBM ..., Oth...

Top 10 Web Frame Desire Next Year

WebFrameDesire...

0 — 4,714

WebFrameDesireNextYear

- (no value)
- ASP.NET
- Angular/Angular.js
- Django
- Drupal
- Express
- Flask
- Laravel
- Other(s):
- React.js
- Ruby on Rails
- Spring
- Vue.js
- jQuery

React.js, Vue.js, ASP..., Angul..., Ex..., jQu..., S..., D...

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DEMOGRAPHICS
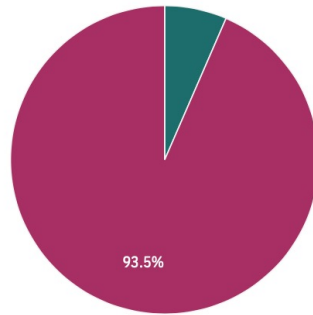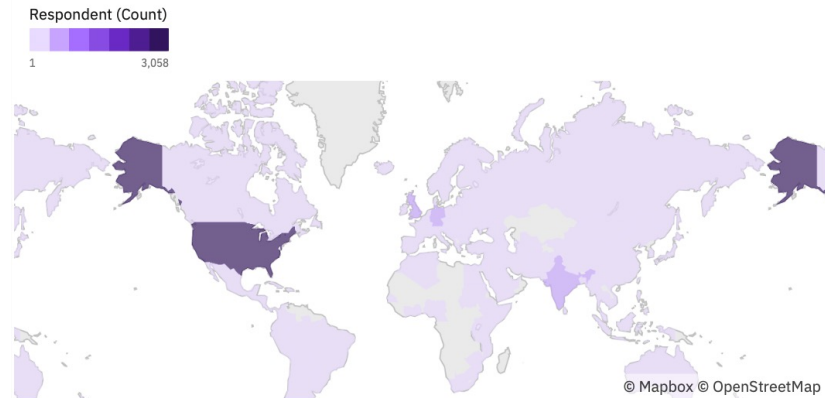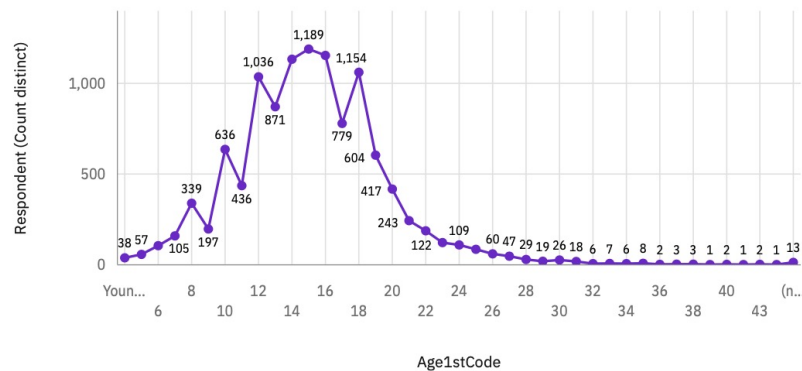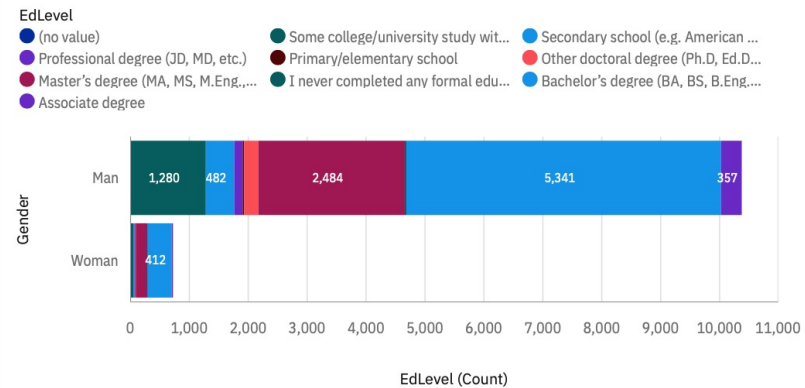
DISCUSSION

- The continued popularity of **JavaScript** and **HTML/CSS** are leading programming languages.

- The industry reliance on **MySQL** as a database management system.

- Evolving nature of web technologies that could lead to the introduction of new programming languages and databases.

OVERALL FINDINGS & IMPLICATIONS

Findings

- Trends in Technology: JavaScript and HTML/CSS dominating other programming languages illustrates the importance of its foundations in web development.

- Data Management: Use of SQL DBMSs such as MySQL, Microsoft SQL Server, and PostgreSQL highlights the critical role of effective data management in web development.

- Diverse Tools: The diversity in preferred languages and databases illustrates a variety of skills and tools provided by each for varied requirements in performance.

Implications

- Continued Use: The consistent use of leading programming languages depicts the continued importance of web development in the programming space due to a growing reliance on online platforms and digital media.

- Database Characteristics: Organizations must take into account data structure and performance when selecting database to best suit their needs.

- Standardization With Variety: While leading programming languages are presented as the industry standard, certain varying languages are also used in accordance to the organization's needs.

CONCLUSION

- The results illustrate that the programming industry is innovative and always changing. Programmers must adapt to new tools introduced in the development landscape.

- Developers must
  - be willing to learn a diverse group of languages,
  - meet the demands of evolving applications through database management systems,
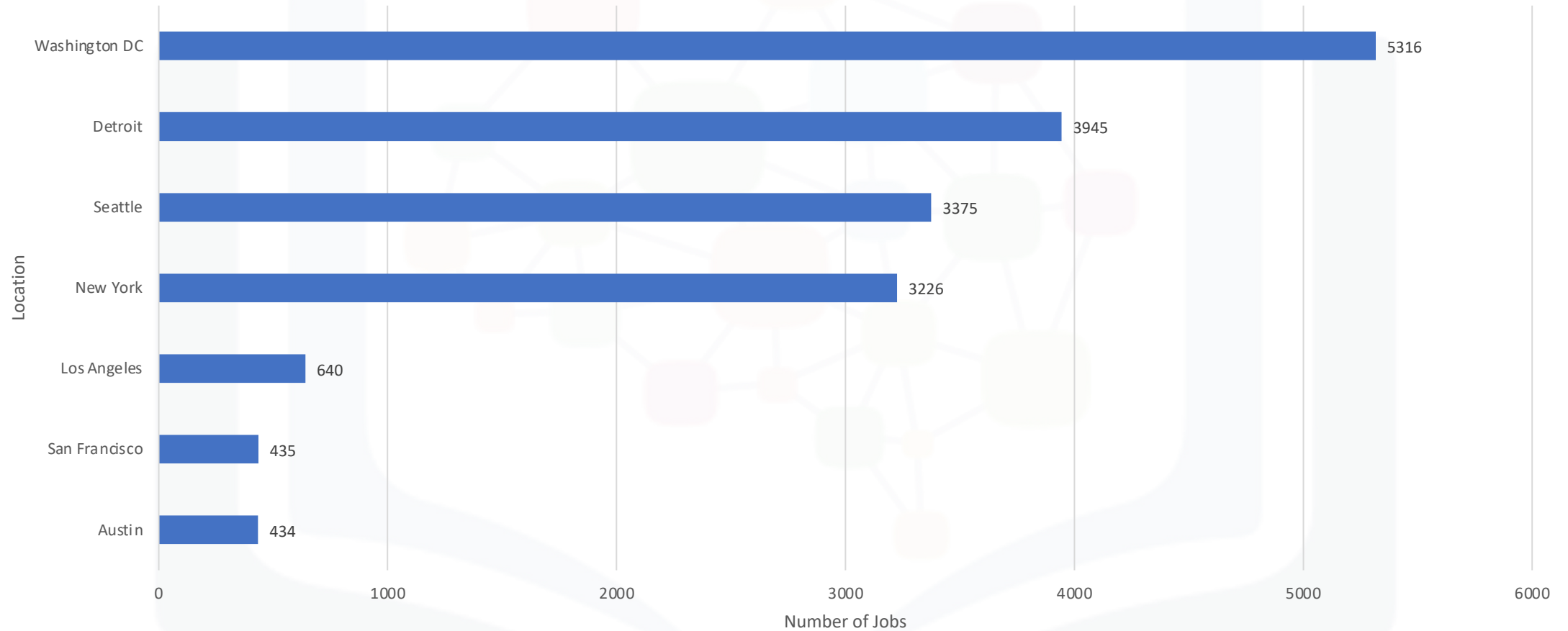 - and use the right tools for optimal performance in development.

APPENDIX

1. Highest Job Postings by Location

2. Highest Average Annual Salary by Language

POPULAR LANGUAGES