

# VISUALIZING TECHNOLOGY TRENDS: STACK OVERFLOW DEVELOPER SURVEY-2019

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# OUTLINE

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

# EXECUTIVE SUMMARY

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- Current Technology Usage:
  - Top 10 Languages
  - Top 10 Databases
  - Platforms
  - Top 10 Web Frames
- Demographics:
  - Respondent classified by gender
  - Respondent count for countries
  - Respondent count by age
  - Respondent count by gender and classified by education level
- Future Technology Trends:
  - Top 10 Languages desired for the next year
  - Top 10 Databases desired for the next year
  - Desired platforms for the next year
  - Top 10 Web frames desired for the next year

# INTRODUCTION

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- Stack Overflow's Developer Survey is developers' most extensive annual survey worldwide.
- In 2019, nearly 90,000 developers contributed, providing a broad dataset.
- The survey highlights key trends in programming languages, tools, and technologies.
- It covers various topics, including technology preferences, career goals, and demographics.
- Offers a comprehensive view of developer profiles and regional differences.

# METHODOLOGY

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- **Survey Data Collection:**
  - Utilized Stack Overflow's 2019 Developer Survey data, which covered 88,883 developers from 179 countries.
- **Data Preparation:**
  - Collected data using web scraping techniques and APIs.
  - Cleaned and organized the data to handle missing values, outliers, and inconsistencies. (Data Wrangling)
- **Data Exploration and Analysis:**
  - Conducted initial analysis to understand data distribution, identify correlations, and examine patterns.
  - Applied methods to detect and manage outliers to maintain data quality and reliability.
- **Visualization and Reporting:**
  - **Data Visualization:** Utilized IBM Cognos Analytics to create visualizations.
  - **Dashboards:** Developed interactive dashboards to present insights on current and future technology trends.

# RESULTS

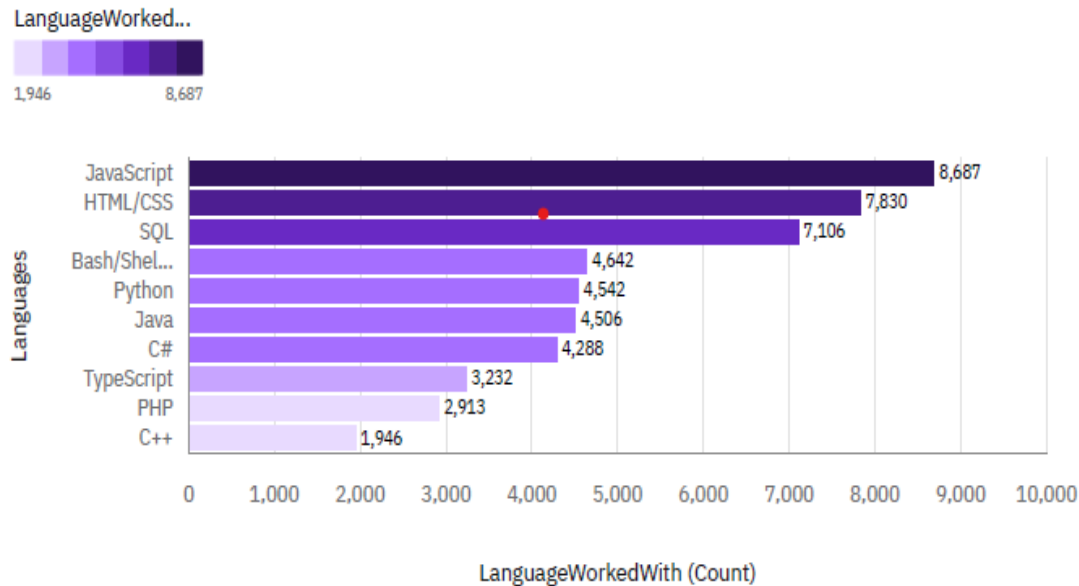
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- **Programming Languages:**
  - **Python:** Has risen to become the 5th most preferred language.
  - **JavaScript:** Continues to be the most used programming language globally.
- **Web Frameworks:**
  - **jQuery:** Remains the most widely used web framework.
  - **React.js:** Surpassed Angular.js in developer usage this year, reflecting a shift in web development trends.
- **Demographic Insights:**
  - **Gender Distribution:** Approximately 90% of respondents are men, with higher female representation among students compared to professional developers, particularly in the US, India, and the UK.
  - **Education:** About 75% of professional developers hold at least a bachelor's degree.
  - **Age:** Around 75% of professional developers are under 35 years old, highlighting a youthful workforce.

# PROGRAMMING LANGUAGE TRENDS

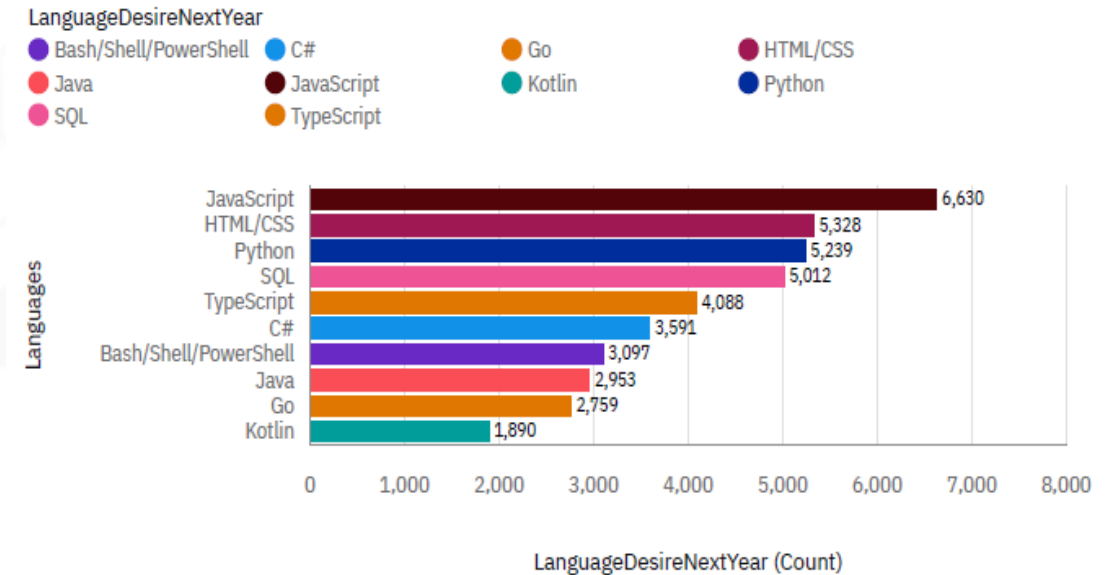
Current Year

Top 10 Language Worked With



Next Year

Top 10 Language Desire Next Year



# PROGRAMMING LANGUAGE TRENDS

## FINDINGS & IMPLICATIONS

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### Findings

- **JavaScript** and **HTML/CSS** emerge as the most used programming languages among all respondents.
- **SQL** also maintains a significant presence.
- **Python** just edged out **Java** in the overall ranking.

### Implications

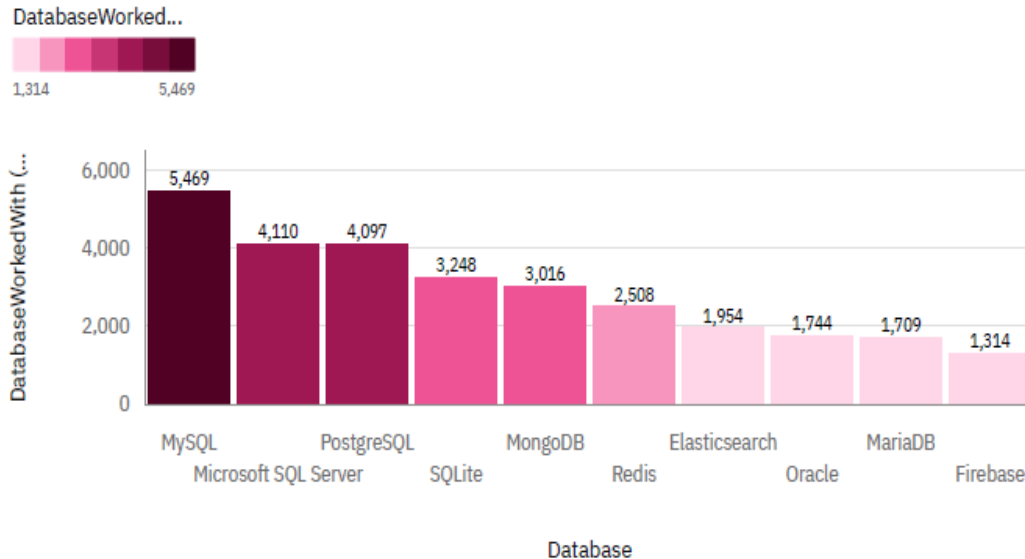
- The dominance of **JavaScript** and **HTML/CSS** underscores their indispensability in modern web development, highlighting the importance of mastering them for developers.
- The high usage of **SQL** emphasizes the critical role of data management and querying in modern software applications, across both web and non-web environments.
- The rise of **Python** might also reflect its versatility and ease of use, attracting developers across various domains from data science to software development.



# DATABASE TRENDS

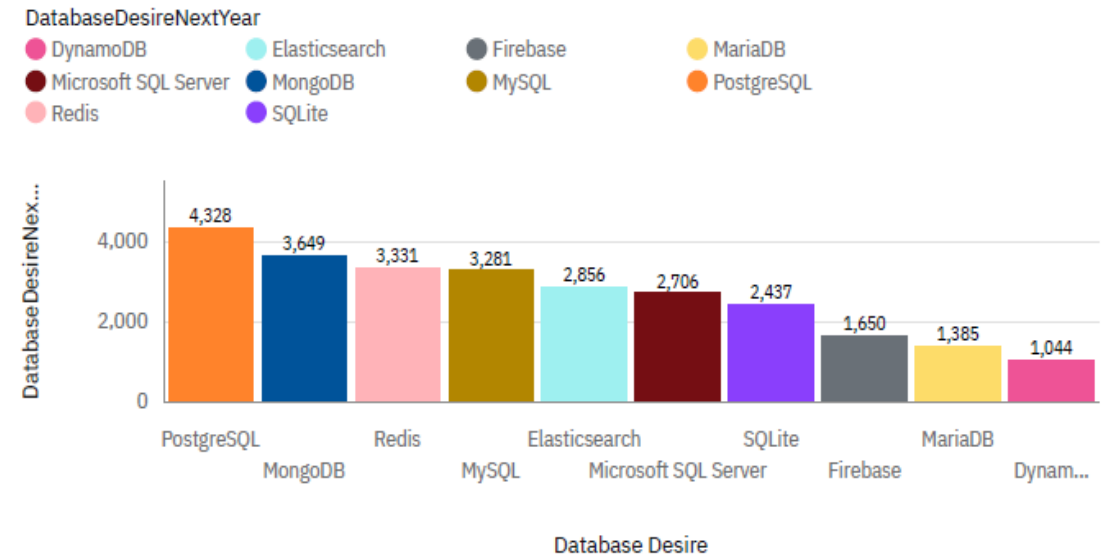
Current Year

Top 10 Database Worked With



Next Year

Top 10 Database Desire Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- **MySQL** leads as the most used DBMS among all respondents.
- **PostgreSQL** and **Microsoft SQL Server** follow closely behind **MySQL**.
- **MongoDB** ranks as the top **NoSQL** database.

## Implications

- The popularity of **MySQL**, **PostgreSQL**, and **Microsoft SQL Server** highlights the crucial role of relational databases across different applications.
- The variety of database systems employed by developers underscores the necessity of choosing the appropriate tool based on factors like data structure, scalability, and performance needs.
- The increased adoption of **MongoDB** signals a rising preference for **NoSQL** databases, driven by the demand for adaptable data models and scalability in contemporary web and mobile applications.

# DASHBOARD

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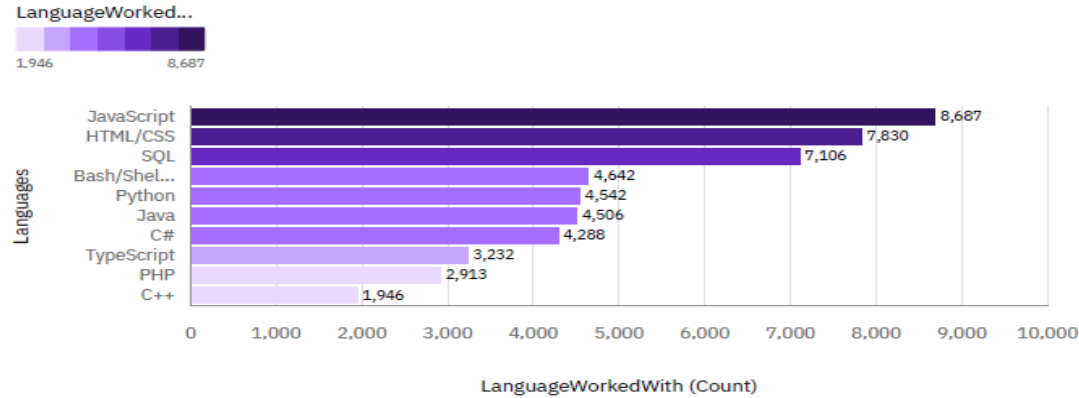
You can find the dashboard link below:

<https://github.com/Mina-Rahmanian/Build-a-dashboard-IBM-Cognos-Analytics/blob/main/Building%20a%20dashboard%20with%20IBM.pdf>

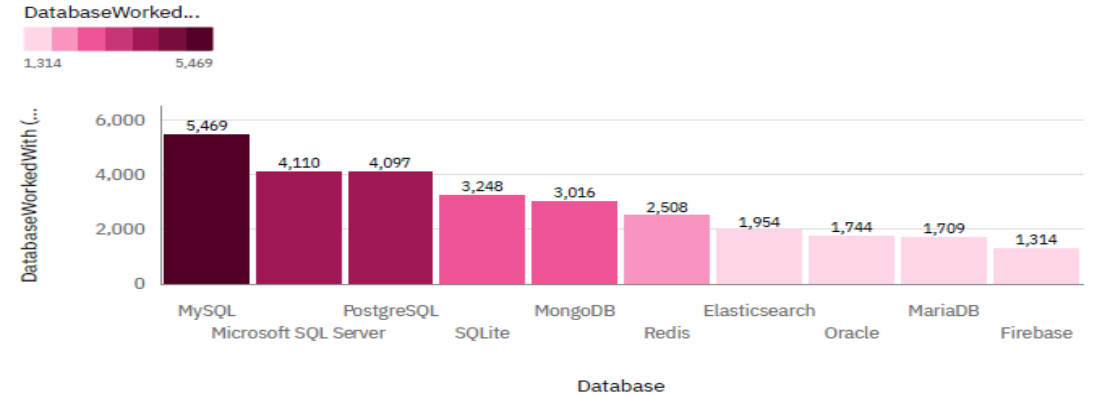
# DASHBOARD TAB 1

## Current Technology Usage

Top 10 Language Worked With



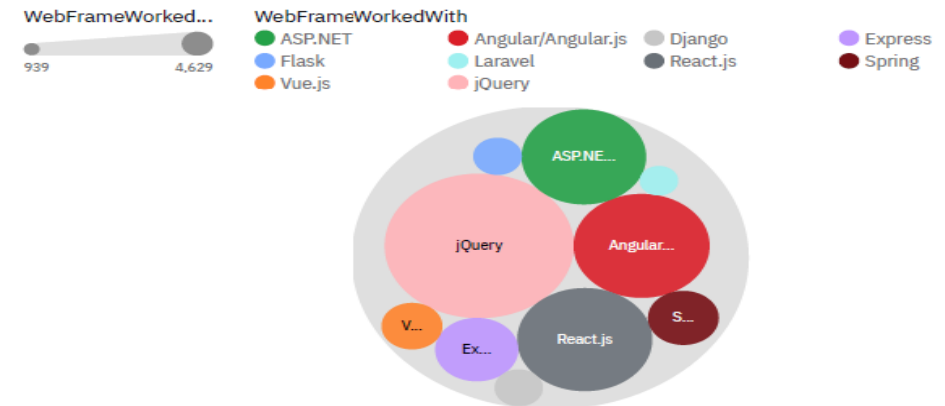
Top 10 Database Worked With



Platform Worked With



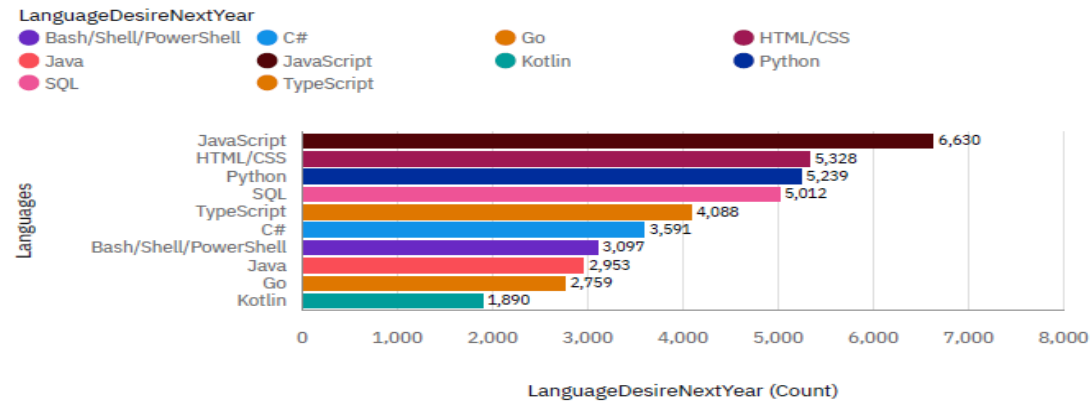
Top 10 WebFrame Worked With



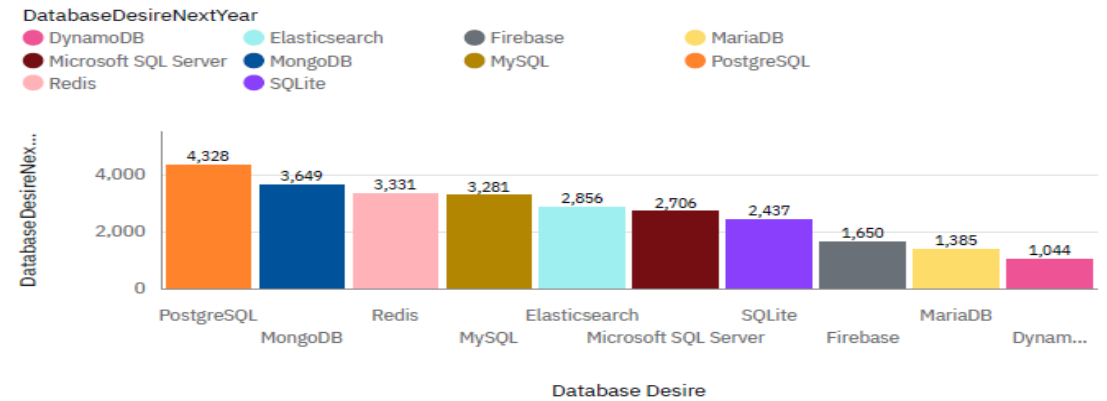
# DASHBOARD TAB 2

## Future Technology Trend

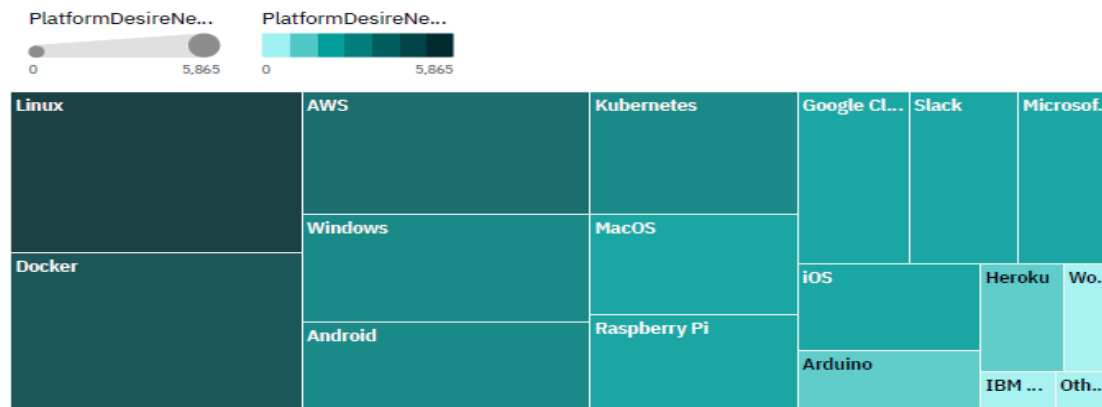
### Top 10 Language Desire Next Year



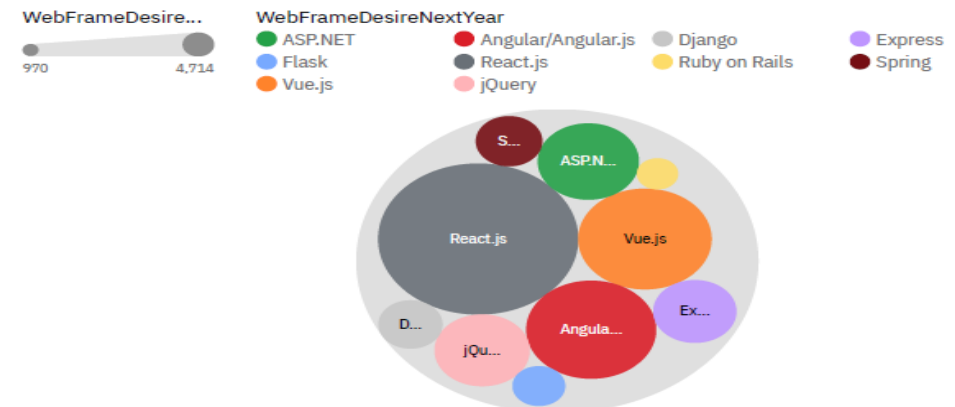
### Top 10 Database Desire Next Year



### Platform Desire Next Year



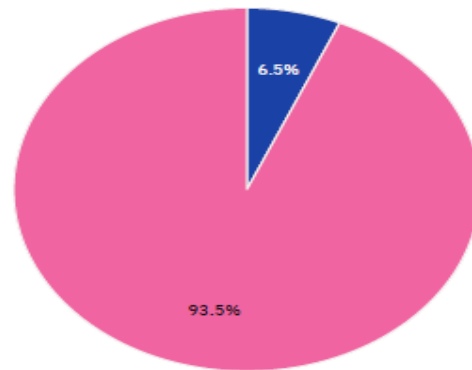
### Top 10 Web Frame Desire Next Year



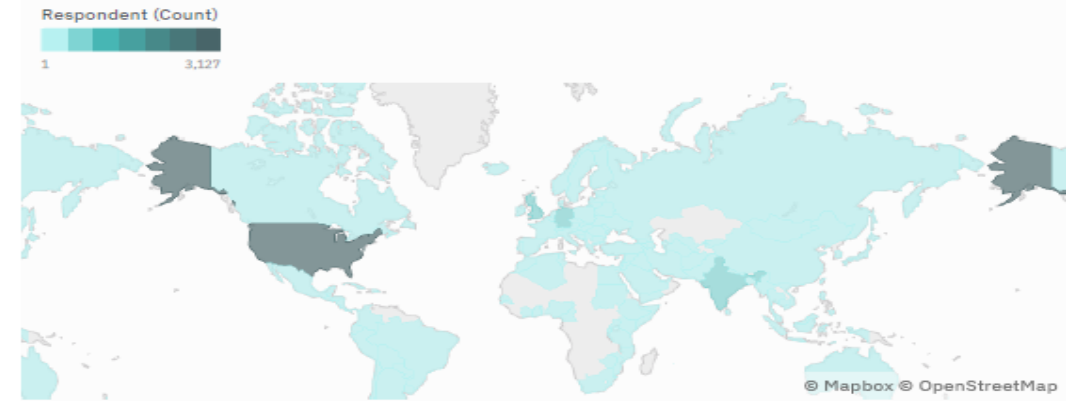
# DASHBOARD TAB 3

## Demographics

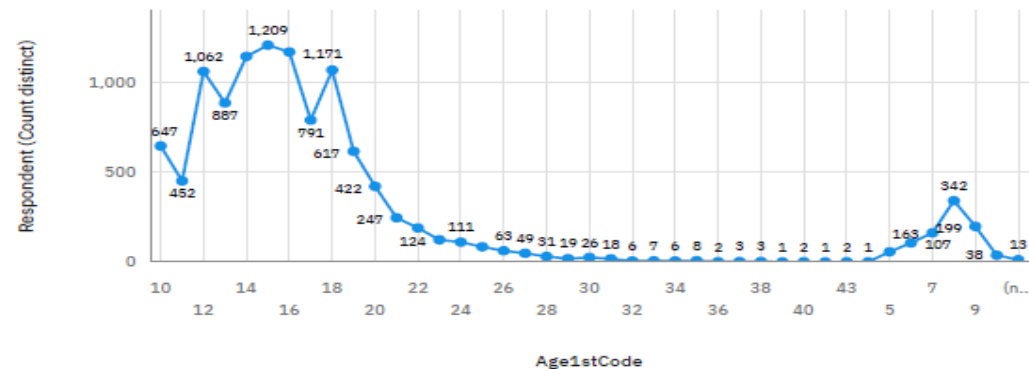
Respondent Classified by Gender



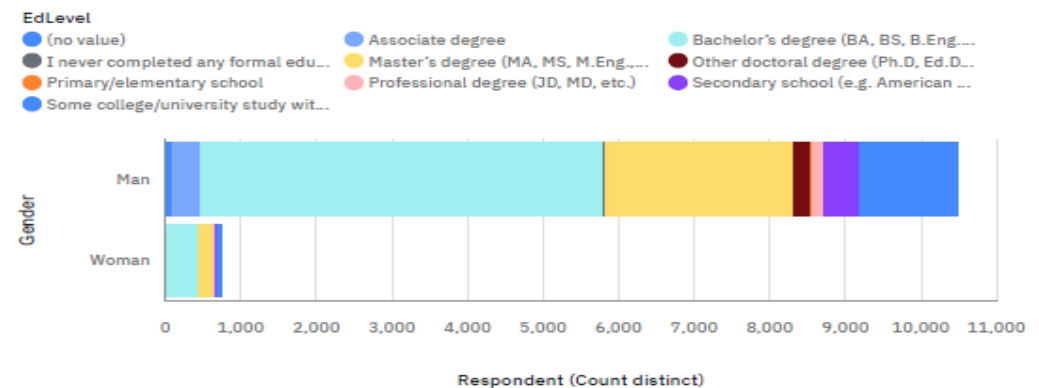
Respondent Count for Country regions



Respondent Count by Age



Respondent Count by Gender by Education Level



# DISCUSSION

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- The dominance of **JavaScript** and **HTML/CSS** and the adoption of **MySQL** as the leading position among database management systems.
- Highlights the importance of client-side scripting and styling, current trends in web development frameworks, and the continuous evolution of web technologies.

# OVERALL FINDINGS & IMPLICATIONS

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## Findings

- **Technology Trends:** The prominence of JavaScript and HTML/CSS highlights the need to stay current with web development trends.
- **Data Management:** The widespread use of MySQL, PostgreSQL, and Microsoft SQL Server emphasizes the crucial role of effective data management in software development.
- **Diverse Tools:** The variety of programming languages and database systems employed by developers underscores the necessity of understanding the advantages and limitations of different tools.

## Implications

- **Web Dominance:** The extensive use of JavaScript and HTML/CSS reflects the central role of web development in the programming landscape, emphasizing the growing significance of online platforms and digital experiences.
- **Database Flexibility:** The range of database management systems in use highlights the need for flexibility and adaptability in data storage solutions. Organizations should evaluate factors such as data structure, scalability, and performance when choosing a database system.
- **Industry Standardization:** The widespread adoption of technologies like JavaScript and MySQL indicates a trend towards industry standardization, where certain tools gain popularity due to their proven reliability and effectiveness.



# CONCLUSION

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- **Evolving Landscape:** The findings highlight the rapidly changing nature of the programming field and the significant role technology plays in driving innovation across various industries.
- **Essential Understanding:** Developers must have a deep understanding of diverse programming languages and database systems to effectively meet the demands of modern applications and achieve successful software development outcomes.
- **Developer Characteristics:** Developers exhibit distinct traits that influence their choices and work environments.
- **Trend Awareness:** Gaining insights into the popularity of different tools, platforms, and languages helps in understanding current technology trends.
- **Global Accessibility:** There is a need to improve access to the technology job market in developing countries to promote a more inclusive and global workforce

# APPENDIX

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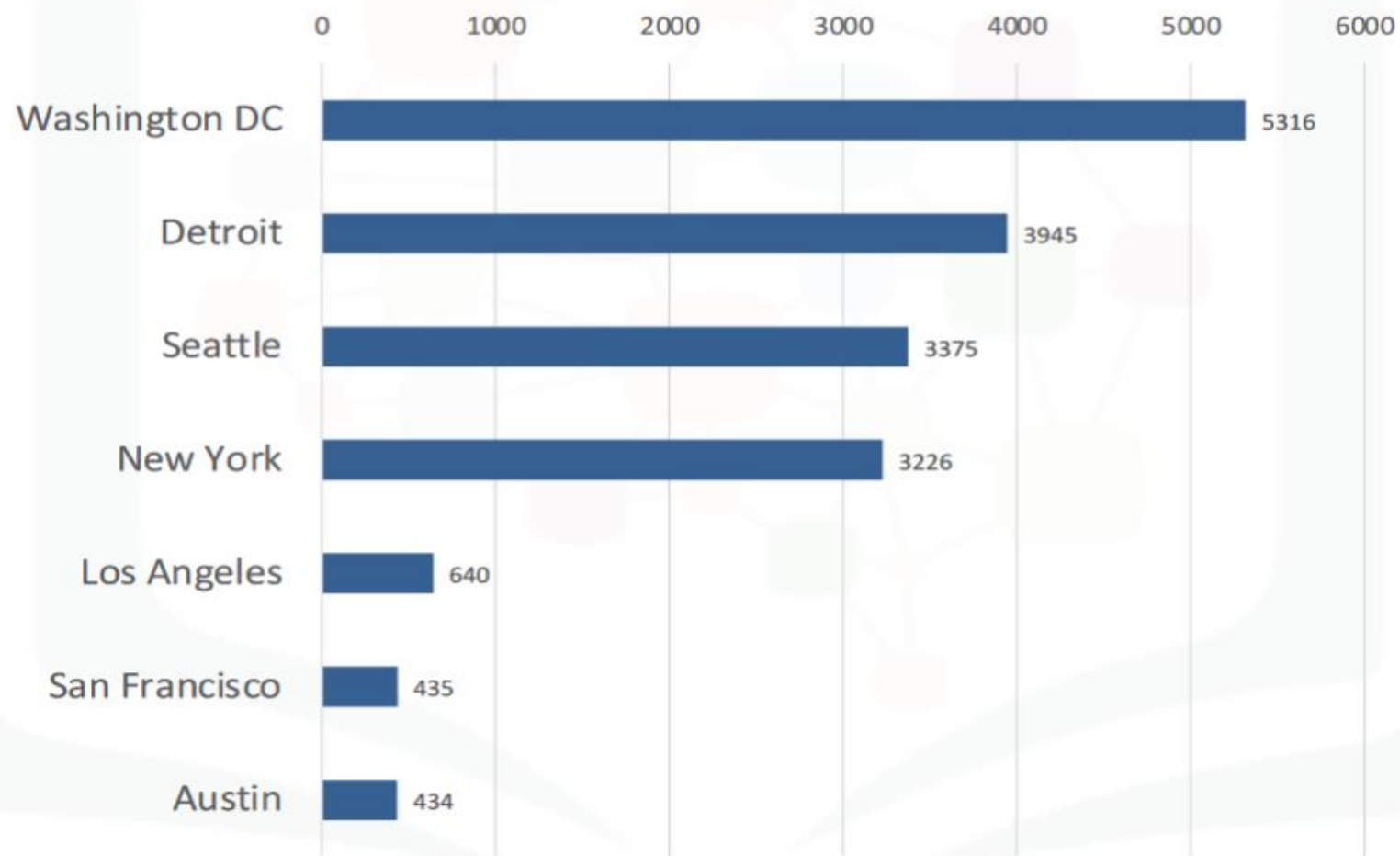


A. Job Postings Chart

B. Popular Languages Chart

# A. JOB POSTING CHART

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## B. POPULAR LANGUAGES CHART

