TECHNOLOGY TREND ANALYSIS

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EXECUTIVE SUMMARY

The following slides provide a summary of key findings from the 2019 Stack Overflow Developer Survey. This data has been analyzed to gain valuable insights into the current state of the tech industry and its future trends. The findings cover the most popular programming languages, databases, and technologies in use at the time of data collection, as well as the attitudes and perceptions of developers regarding the future popularity of various technologies. Additionally, this analysis sheds light on the demographic profile of the developer community, including the gender gap among developers.

The insights derived from this analysis are highly relevant to a range of stakeholders, including current and aspiring developers, recruiters, educators, and policymakers. By understanding the trends and attitudes of the developer community, these stakeholders can make informed decisions and take proactive measures to shape the future of the tech industry.

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INTRODUCTION

- The Stack Overflow Developer Survey has been a crucial source of information about technology usage and trends among developers since its inception in 2011. The annual survey is conducted by Stack Overflow, the world's largest online platform for sharing programming knowledge.

- This analysis focuses on a subset of the data collected in the 2019 survey, with a sample size of 11,398 participants. The original dataset includes responses from approximately 90,000 developers, making it one of the largest and most comprehensive studies of the developer community.

- From technology trends to demographic insights, this analysis provides valuable information that can be used to make informed decisions and drive positive change in the tech industry.

- Intended audience: Current or aspiring developers, HR professionals, educators, policymakers

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METHODOLOGY

- Data Collection (Sources)
  - Stack overflow developer 2019 survey
  - GitHub job postings
  - Programming languages annual salary

- Data wrangling and cleaning using Python and SQL

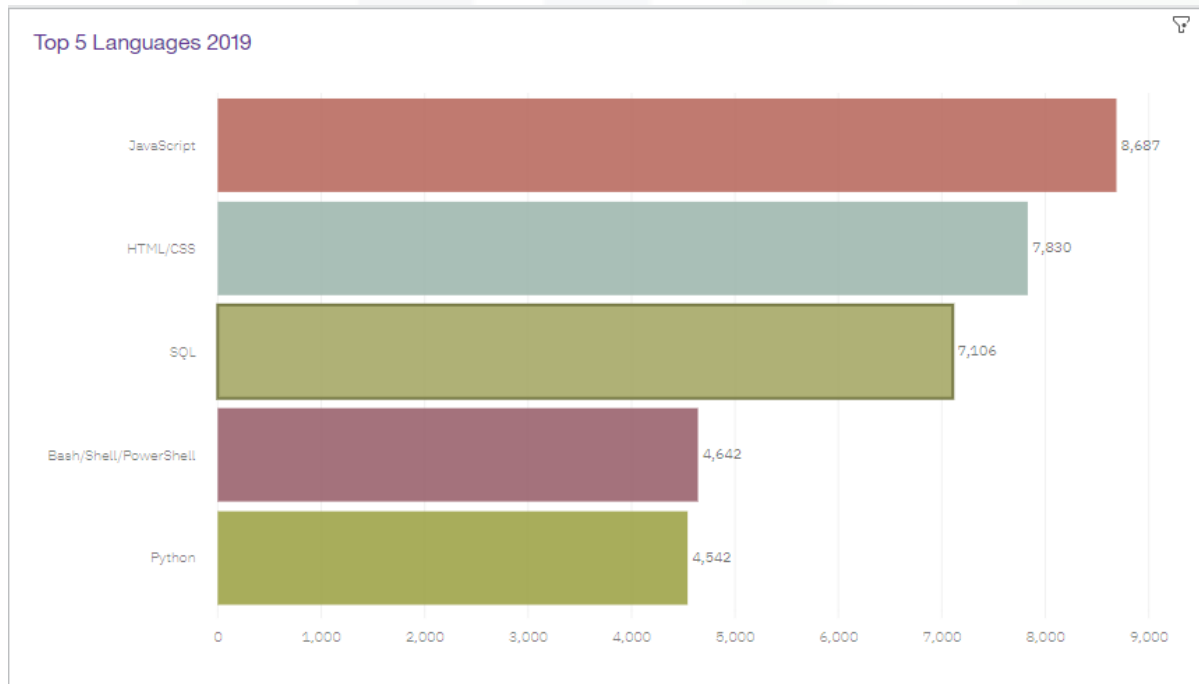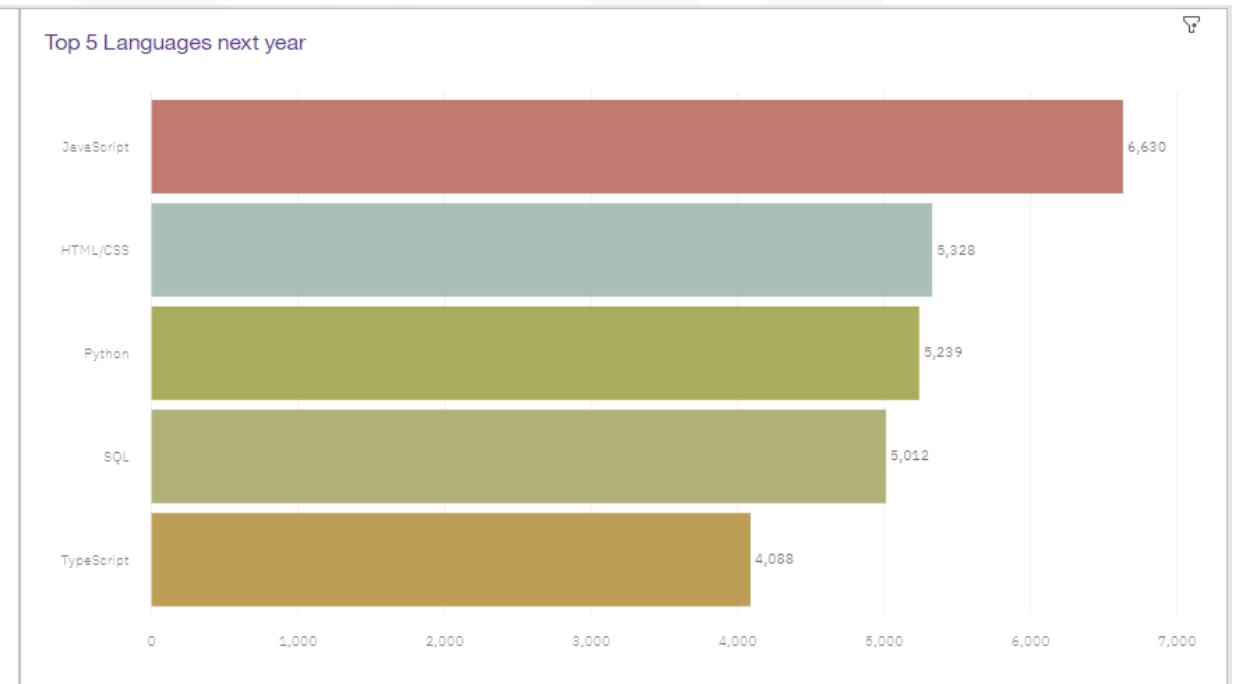- Data Visualization using Matplotlit and Seaborn with Python, and IBM Cognos Dashboard

RESULTS

PROGRAMMING LANGUAGE TRENDS

Current Year

Next Year

Top 5 Languages 2019

Language	Value
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542

Top 5 Languages next year

Language	Value
JavaScript	6,630
HTML/CSS	5,328
Python	5,239
SQL	5,012
TypeScript	4,088

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PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript is the most widely used programming language, with nearly 70% of survey participants indicating they use it.

- Python is the second most popular language, with close to 60% of developers indicating they use it.

- SQL is the third most popular language, used by nearly 50% of participants.

- Java and C# are in the fourth and fifth positions, used by approximately 45% and 35% of developers, respectively.
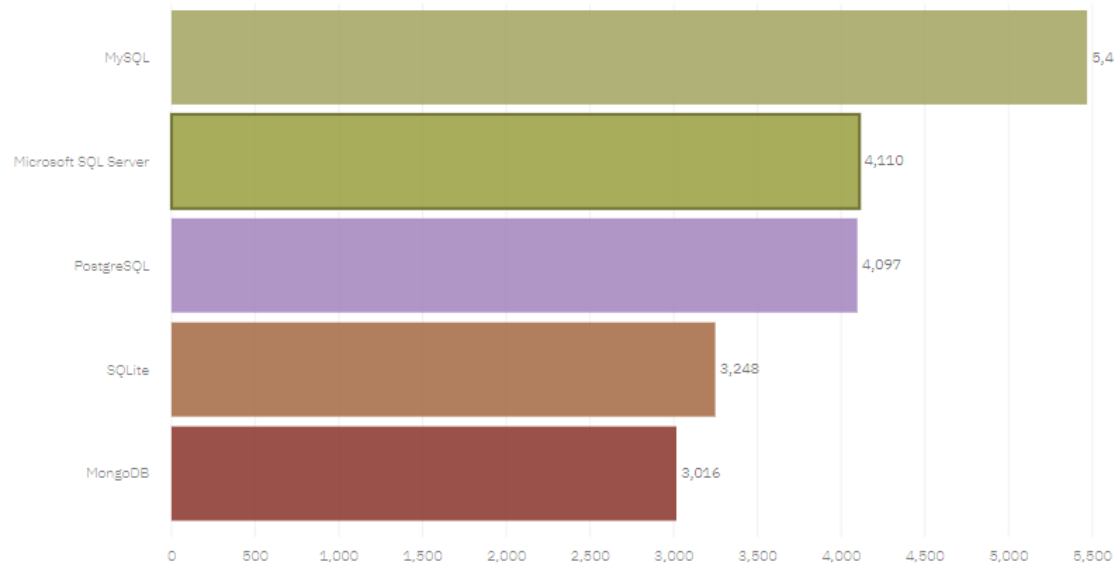
Implications

- The dominance of JavaScript, Python, and SQL suggests that these languages will continue to be in high demand in the industry.

- Java and C#, with their broad usage in enterprise and web applications, are expected to maintain their importance in the development landscape.

- Developers who are proficient in these top five languages are well-positioned to remain competitive in the industry.

- The growing interest in Python and the emergence of new languages indicate the need for developers to keep up with the latest technological advancements and continually learn new programming languages.

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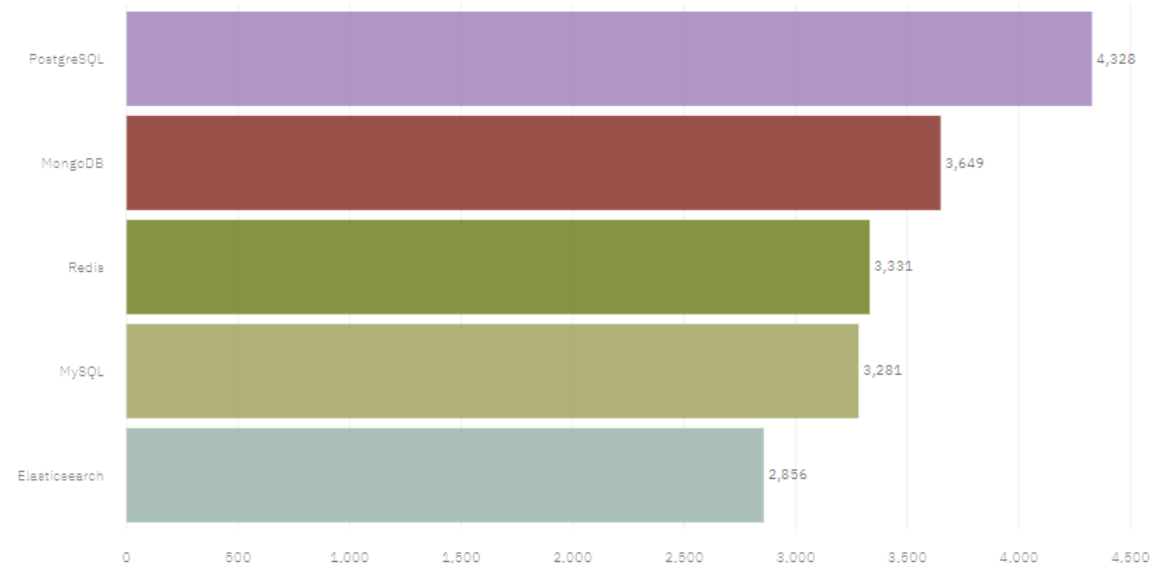SKILLS NETWORK

DATABASE TRENDS

Current Year

Next Year

Top 5 Databases 2019

Database	Value
MySQL	5,469
Microsoft SQL Server	4,110
PostgreSQL	4,097
SQLite	3,248
MongoDB	3,016

Top 5 Databases next year

Database	Value
PostgreSQL	4,328
MongoDB	3,649
Redis	3,331
MySQL	3,281
Elasticsearch	2,856

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DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- SQL is the most widely used database, with over 70% of survey participants indicating they use it.

- MongoDB is the second most popular database, used by approximately 25% of developers.

- PostgreSQL is in the third position, used by nearly 20% of participants.

- MySQL is in fourth place, used by approximately 15% of developers.

- Microsoft SQL Server rounds out the top five, used by approximately 10% of participants.

Implications

- SQL's widespread use demonstrates its versatility and importance in managing data for a wide range of applications.

- MongoDB's popularity in the NoSQL space highlights the increasing demand for flexible and scalable databases for modern applications.

- The use of PostgreSQL, MySQL, and Microsoft SQL Server indicate a continued reliance on traditional relational databases for many organizations.

- Developers who are proficient in these top five databases are well-positioned to meet the needs of various organizations and industries.

- Keeping up with the latest advancements in databases will be important for developers to remain competitive in the industry.
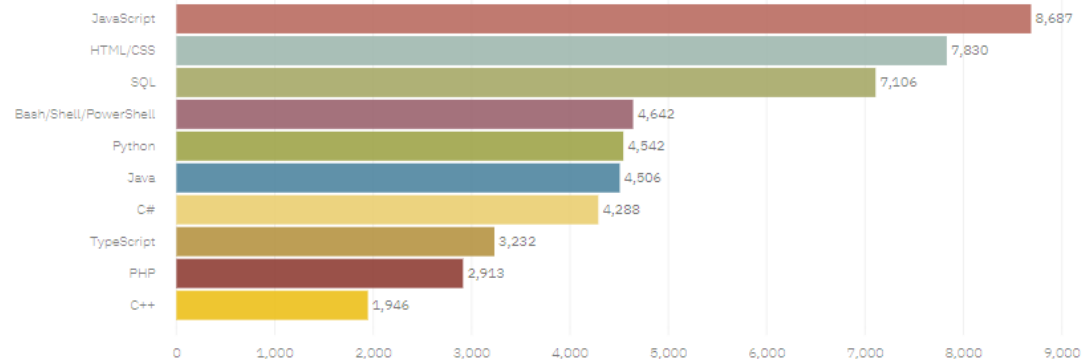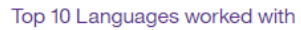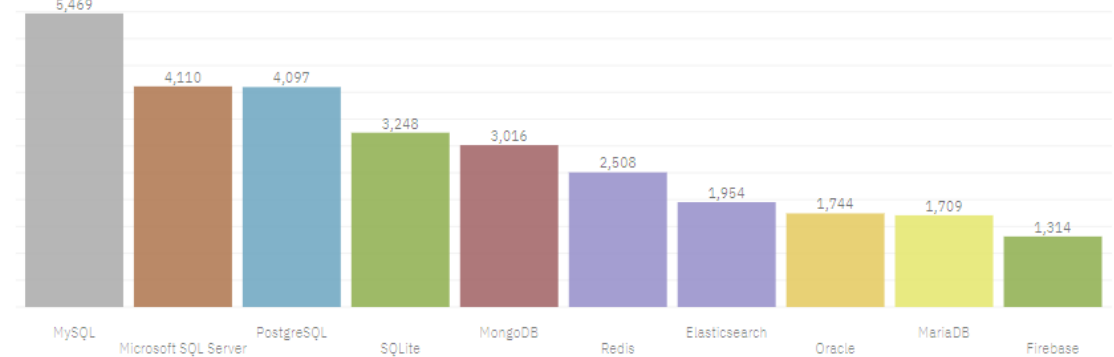
DASHBOARD

IBM Cognos Dashboard:

https://eu-de.dataplatform.cloud.ibm.com/dashboards/5fa5f28b-47d9-41b0-842f-4511946ca0a7/view/0e64e01d3daa23cc73e9b5e407cd25027962705de6bb8051d48c7b495e317197a93b15c2c87d1e09d2185762fbe947089f

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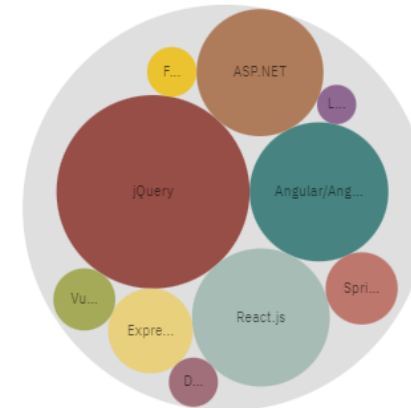
CURRENT TECHNOLOGY USE

Top 10 Languages worked with

Language	Value
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

Top 10 Databases worked with

Database	Value
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

Platforms worked with

Top 10 Web Frames worked with

FUTURE TECHNOLOGY TREND
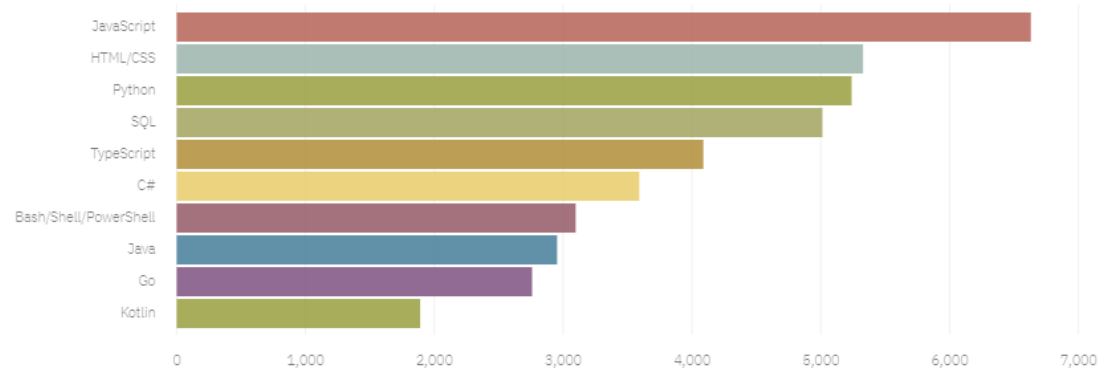
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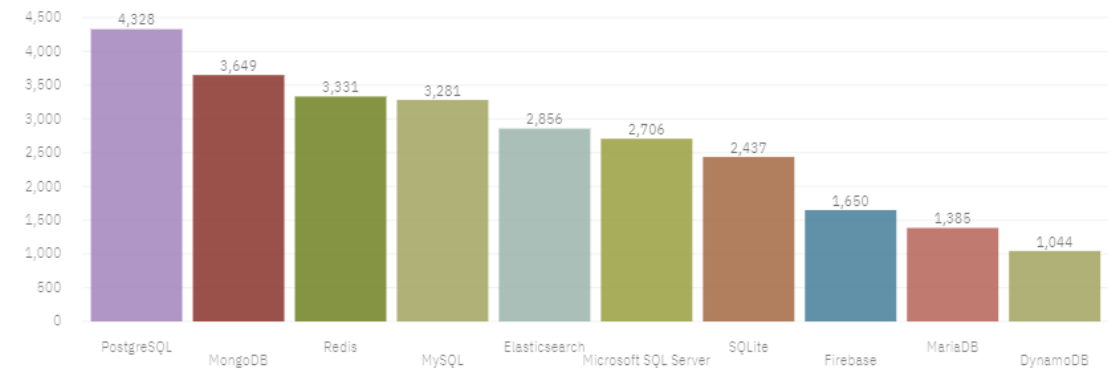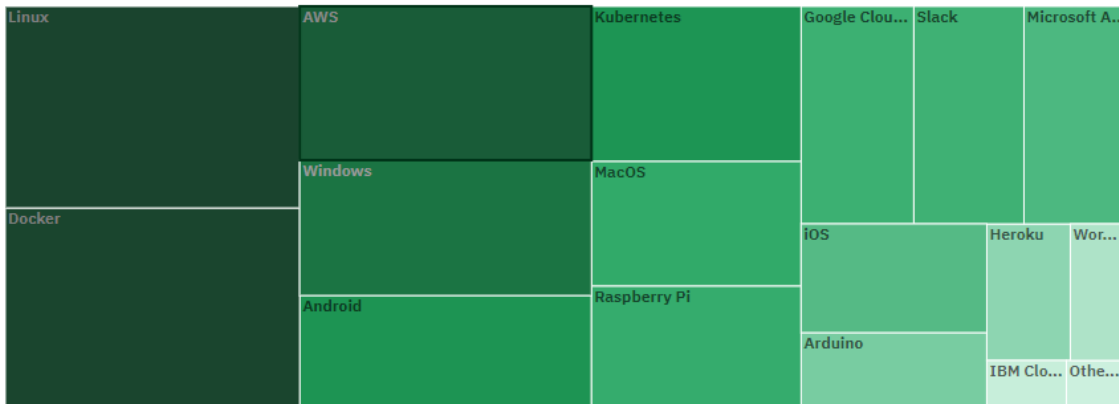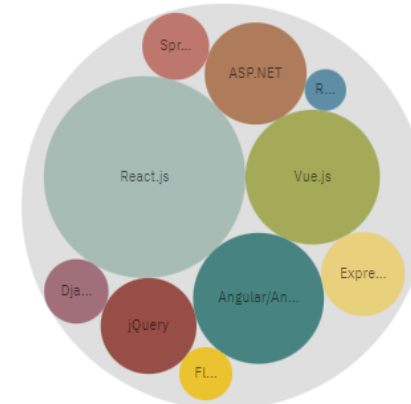
DEVELOPER DEMOGRAPHICS

Gender of respondents

- Woman
- Man

6.5%

93.5%

Respondents by country

1   3,127

Age of Respondents

Respondents by Gender & Education

- Man
- Woman

	Man	Woman
Associate degree	357	
Bachelor's degree (BA, BS, B.Eng., etc.)	5,341	412
I never completed any formal education		
Master's degree (MA, MS, M.Eng., MBA, etc.)	2,484	
Other doctoral degree (Ph.D, Ed.D., etc.)		
Primary/elementary school		
Professional degree (JD, MD, etc.)		
Secondary school (e.g. American high school, German Realschule or Gymnasium, etc.)	482	
Some college/university study without earning a degree	1,280	

DISCUSSION

- What are the most popular programming languages and databases among developers and how do they compare to the future trends predicted by the survey participants?

- What can be done to bridge the gender gap in the tech industry, and how can organizations create more inclusive work environments that support diversity and professional growth for all developers?

- How can educators and policymakers respond to the rapid pace of technological change and ensure that the next generation of developers is equipped with the skills they need to succeed in the future?

- How can HR professionals and recruiters better understand the motivations and needs of developers, and what steps can they take to attract and retain top talent?

- What are the key demographic trends among developers, and how can organizations ensure that they are reaching a diverse and geographically dispersed audience?

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OVERALL FINDINGS & IMPLICATIONS

Findings

- An overwhelming majority of over 80% of respondents identify as male

- The majority of survey participants were between the ages of 25 and 34, making up over 40% of the total. While the age group 35-44 made up nearly 30% of participants

- Most survey participants were located in North America and Europe, with over 60% and 30% of the total, respectively.

Implications

- **Diversity and Inclusion in the Tech Industry**: The disparity in gender representation highlights a need for greater diversity and inclusion in the tech industry. Organizations should strive to create an inclusive work environment to attract and retain a wider range of talent.

- **Continuous Learning and Skill Development:** The concentration of younger participants highlights the importance of continuous learning and skill development in the tech industry. The industry should provide opportunities for workers of all ages to learn and grow in their careers.

- **Global and Diverse Talent:** The concentration of participants in North America and Europe highlights the need for organizations to stay ahead of technology trends and attract diverse talent globally. The tech industry should strive to reach a more diverse and global audience.
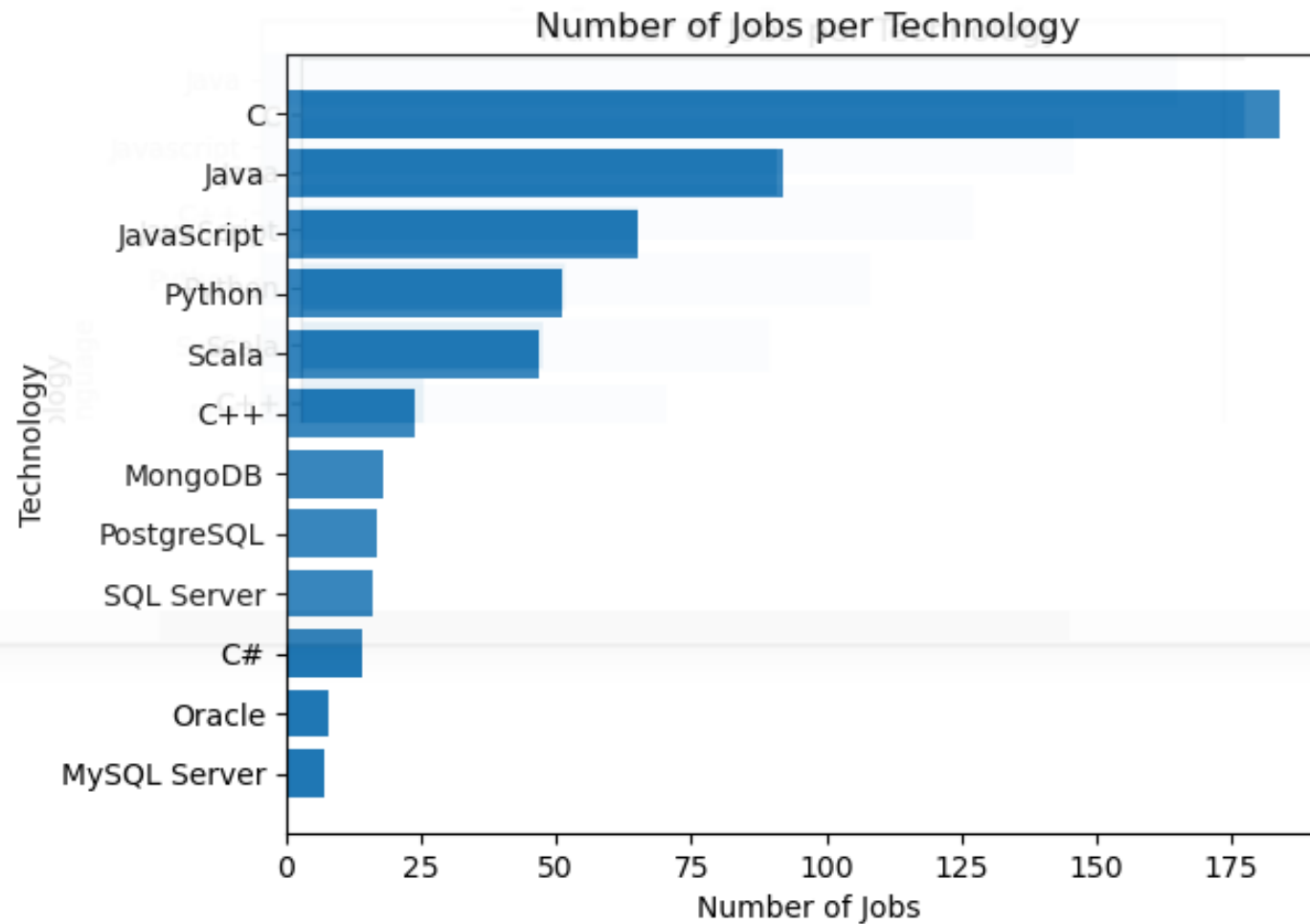
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CONCLUSION

- The Stack Overflow Developer Survey provides valuable insights into the current state of the tech industry, including the most popular programming languages and databases, demographic trends, and the need for greater diversity and inclusion.

- The survey highlights the importance of web development, data management, and analysis, and the continued growth and evolution of the tech industry.

- By understanding these trends and implications, organizations can better position themselves to attract and retain the best talent, stay ahead of the latest technology trends, and meet the needs of a global and diverse customer base.

APPENDIX A: JOB POSTINGS PER TECHNOLOGY

Number of Jobs per Technology

APPENDIX B: POPULAR LANGUAGES BY SALARY

Language vs Average Annual Salary