Stack Overflow Developer Survey-2019 Data Analysis

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April 2023

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EXECUTIVE SUMMARY

- The slides presented here provide a comprehensive summary of my analysis of data collected as part of the 2019 Stack Overflow Developer Survey. Through this analysis, I gained valuable insights into the most popular technologies used by developers, as well as their attitudes regarding which technologies are likely to become more popular in the future. Additionally, I examined demographic data to identify differences in technology usage among various groups.
- These findings have important implications for a variety of stakeholders in the tech industry, including current and aspiring developers seeking to stay up to date on emerging technologies, recruiters and employers looking to attract and retain top talent, educators who want to provide the most relevant training and skills to their students, and policy makers seeking to address diversity and gender gaps in the industry.
- Overall, my analysis provides valuable insights into the state of the tech industry in 2019 and beyond, and highlights the importance of ongoing research and analysis to stay up to date on emerging trends and technologies.

INTRODUCTION

- The Stack Overflow Annual Developer Survey has been conducted annually since 2011 by the online community for exchanging programming knowledge, Stack Overflow.
- A portion of the 2019 dataset (current dataset: N = 11, 398; original dataset: N 90,000) was analyzed in this investigation.
- The annual surveys' main goal is to compile information on technology usage and trends among developers.
- Audience: Policymakers, educators, experts in HR, and present and prospective developers
- The ethical and legal implications of current and future technology use, such as data privacy, security, and algorithmic bias, needed to be addressed proactively and collaboratively.

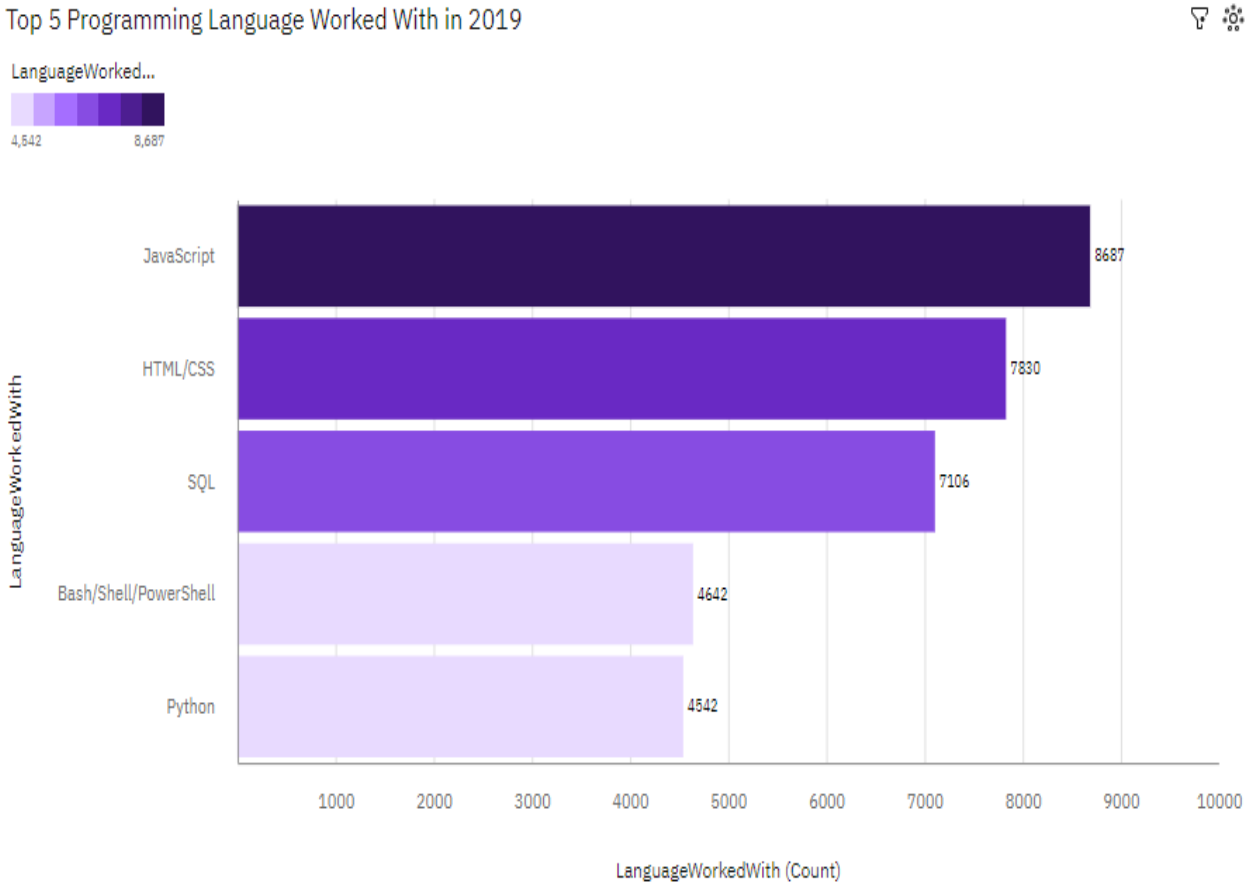
METHODOLOGY

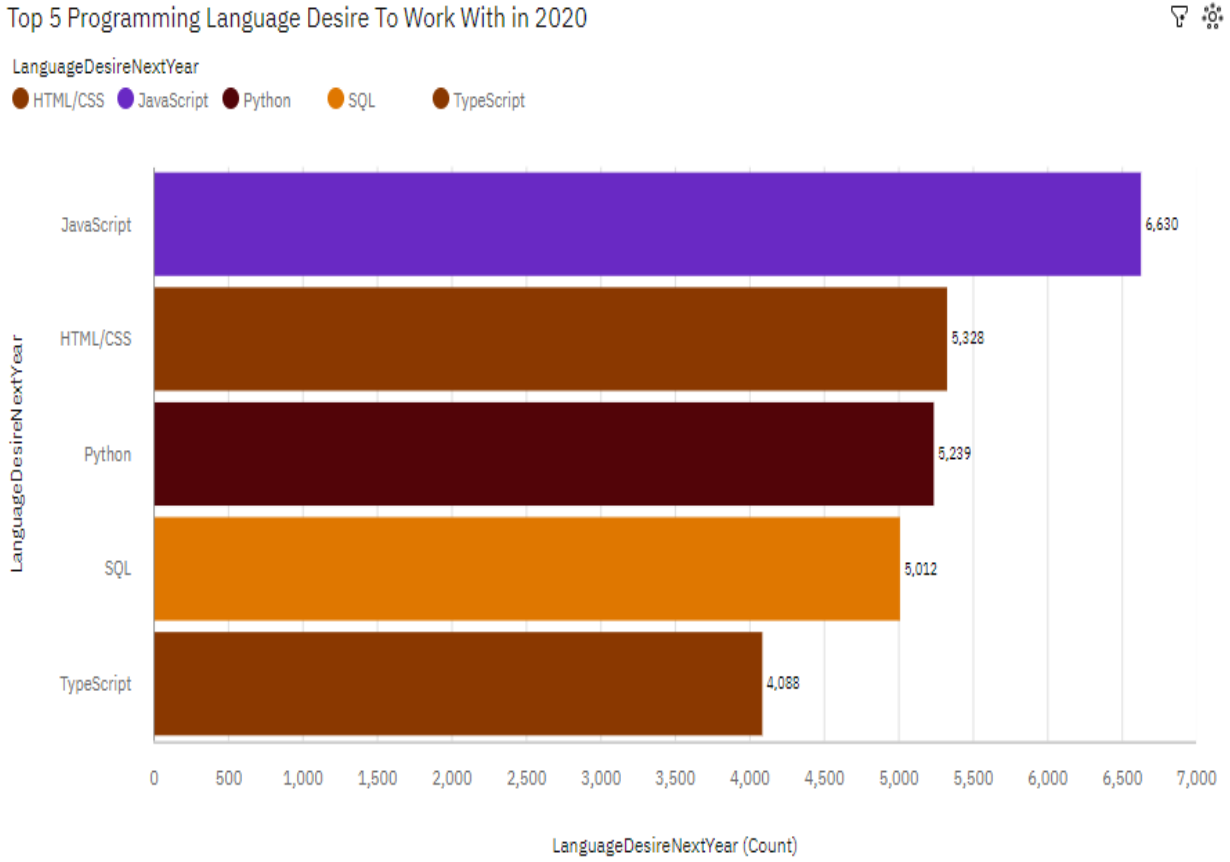
- The findings presented in this report are based on an analysis of data collected as part of the 2019 Stack Overflow Developer Survey. The survey was conducted online and targeted developers from around the world, with questions about their technology use, skills, preferences, and demographics.
- **Stack Overflow Survey Data Sources**
- Data wrangling was performed on a subset of the dataset obtained from IBM, using a combination of SQL and Python's pandas library. The data cleaning process involved several steps, such as removing duplicates, imputing missing data, and normalizing the data. These steps were essential in preparing the dataset for further analysis and ensuring the accuracy and consistency of the data. By cleaning the data, I was able to reduce errors and biases that could have affected the validity of the analysis and the insights derived from it. Overall, data wrangling played a crucial role in ensuring the quality and integrity of the data used in this project.
- I conducted data analysis and visualization using Python libraries and IBM Cognos Analytics. I examined the technologies used in 2019, the most desired technologies for the next year, and the demographics of the survey respondents. The combination of these tools allowed us to gain deeper insights into the data and present my findings in a clear and compelling manner.

RESULTS

- My analysis of the data revealed several key findings related to the technologies used by developers, as well as the demographics of the survey respondents. Here are some of the main results:
- JavaScript and HTML/CSS were the most popular programming languages in 2019, and are likely to remain so in the coming years. Python was also among the top languages and is expected to continue to gain in popularity due to its applications in artificial intelligence and machine learning.
- Among the databases, MySQL was the most widely used in 2019, and SQL language databases in general were popular. However, Microsoft SQL Server lost interest in subsequent years and dropped off the list.
- Redis and Elasticsearch are expected to become more popular in the coming years.
- There was a significant gender gap in the survey, with male respondents outnumbering female respondents by a large margin. Additionally, there were notable differences in the types of technologies used by developers in different regions and age groups.
- Finally, my analysis identified several potential implications for developers, businesses, educators, and policy makers, including the need to stay up to date on emerging technologies, address gender and diversity issues in the tech industry, and prioritize the development of skills in high-demand areas.
- Overall, my analysis provides valuable insights into the current state of the tech industry and the technologies and skills that will be most important for developers in the coming years.

PROGRAMMING LANGUAGE TRENDS





IBM Developer

SKILLS NETWORK

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

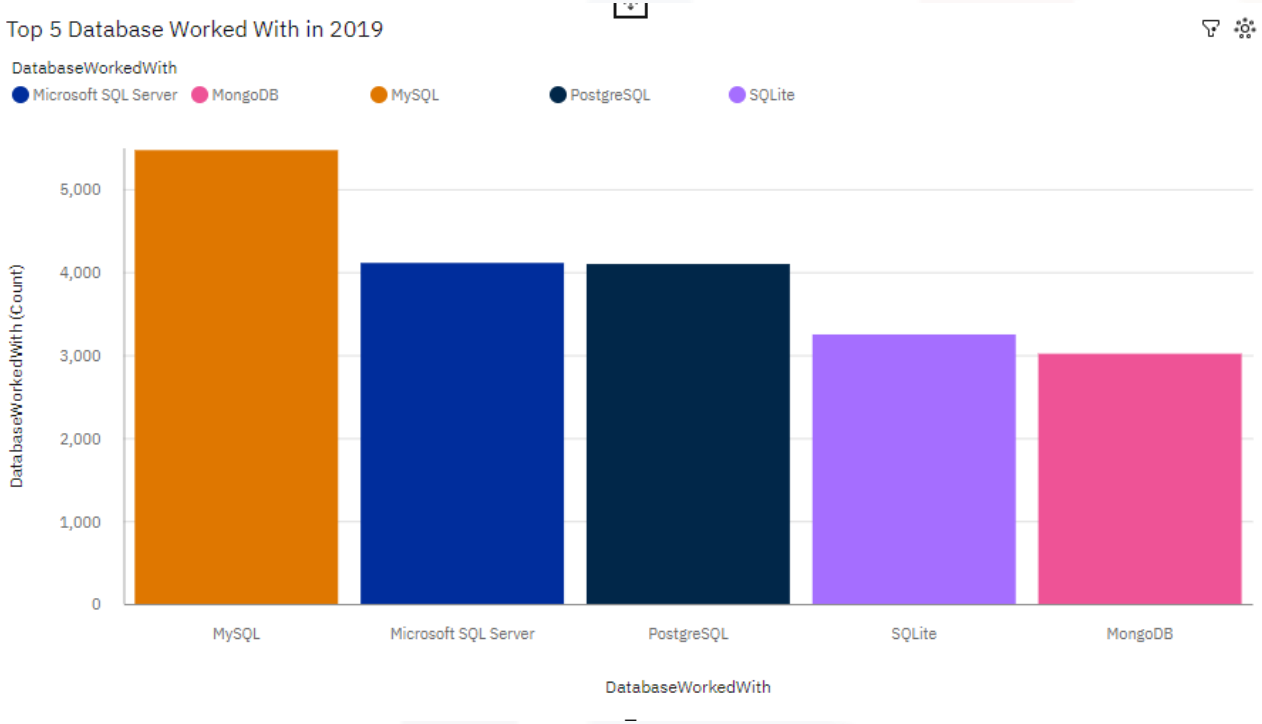
Findings

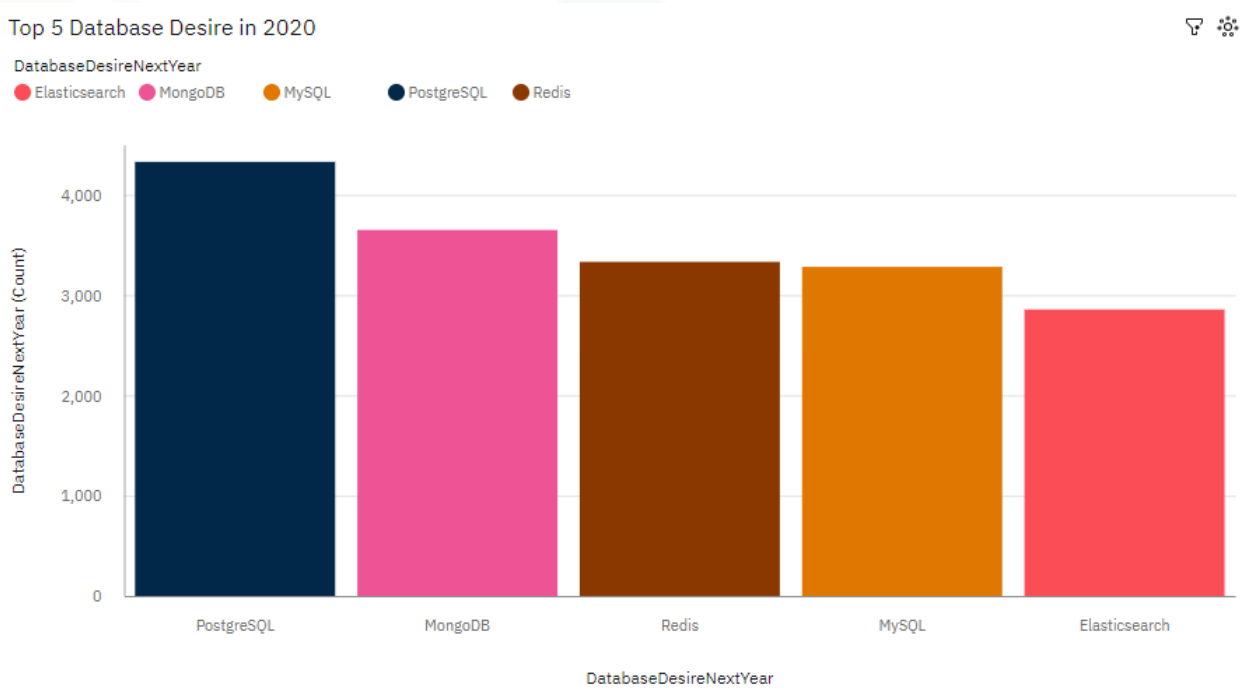
- The most popular languages in 2019 were JavaScript and HTML/CSS, and they will continue to be so in 2020.
- Another popular language in 2019 was SQL, which will likely rank in the top 5 in the coming years.
- The programming language Python was on the list in 2019, and interest in it is expected to grow in the coming years.
- The languages Bash, Shell, and Powershell were on the list in 2019, but as interest in these languages decreased they were removed from the top 5 list.

Implications

- JavaScript and HTML/CSS are expected to remain the top languages in 2020 due to their versatility and widespread use in web development.
- SQL is expected to remain a popular language and rank in the top 5 in the coming years due to the increasing importance of data management and analytics in various industries.
- Python is expected to gain even more popularity in the coming years due to its versatility and the increasing awareness of its applications in artificial intelligence, machine learning, data science, and automation.
- Bash, Shell, and Powershell have decreased in popularity and were removed from the top 5 list due to the increasing use of other scripting and automation languages, such as Python.

DATABASE TRENDS





DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Within the SQL databases, MySQL is the most widely used database in 2019.
- SQL language databases are popular.
- Microsoft SQL Server dropped off the list after losing interest in the ensuing years.
- Redis and Elasticsearch will become more popular during the coming years.

Implications

- MySQL is the most widely used SQL database in 2019 due to its open-source nature, ease of use, and compatibility with various operating systems.
- SQL language databases are popular due to their flexibility, scalability, and ability to manage large amounts of structured and unstructured data.
- Microsoft SQL Server dropped off the list due to the increasing popularity of other SQL databases, such as MySQL, PostgreSQL, and Oracle, and the availability of open-source alternatives.
- Redis and Elasticsearch are expected to become more popular in the coming years due to their ability to handle real-time data processing, caching, and search operations, which are becoming increasingly important in modern web applications and data-driven businesses.

DASHBOARD

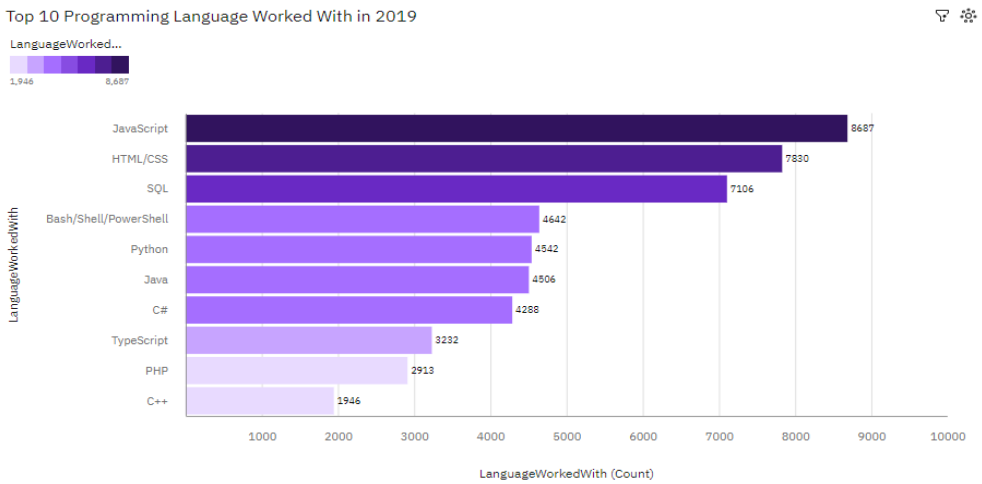
The linked webpage provides an interactive Cognos dashboard that summarizes the results of a survey on technology use and trends, as well as the demographics of the survey respondents.

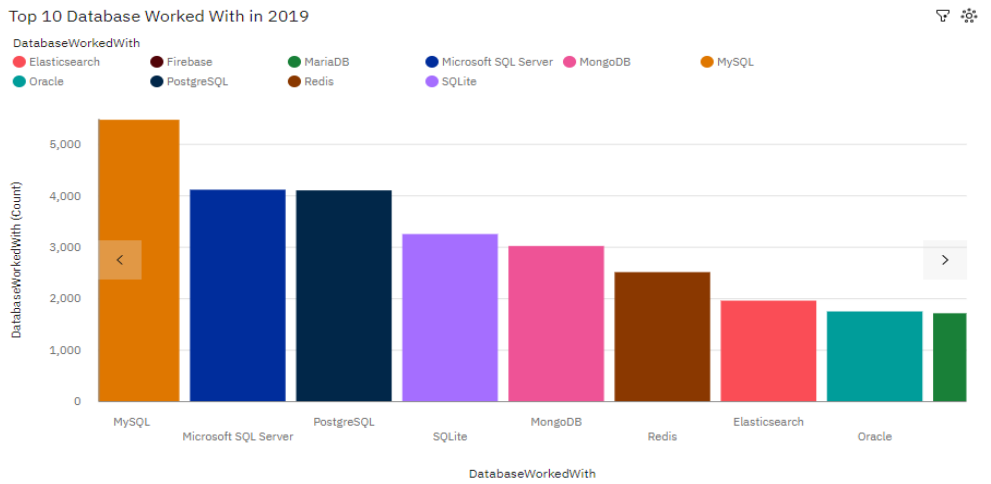
The dashboard allows users to explore the data and visualize the findings through various charts, tables, and filters. The dashboard is divided into three sections: (a) current technology use, which shows the prevalence of various technologies among the respondents; (b) future technology trends, which highlights the emerging technologies and their potential impact; and (c) demographics, which provides insights into the background and characteristics of the survey respondents.

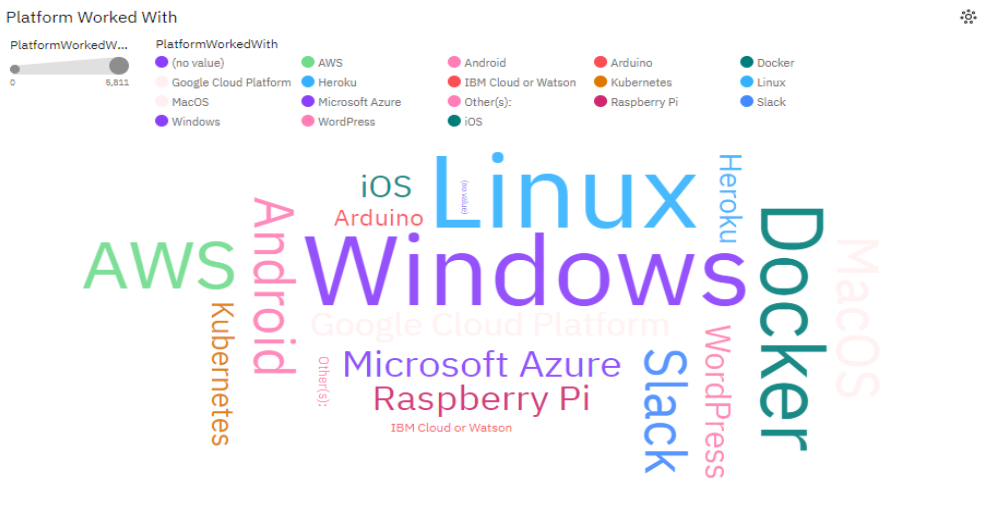
Click to open the Cognos Dashboard (Ctrl+Click)

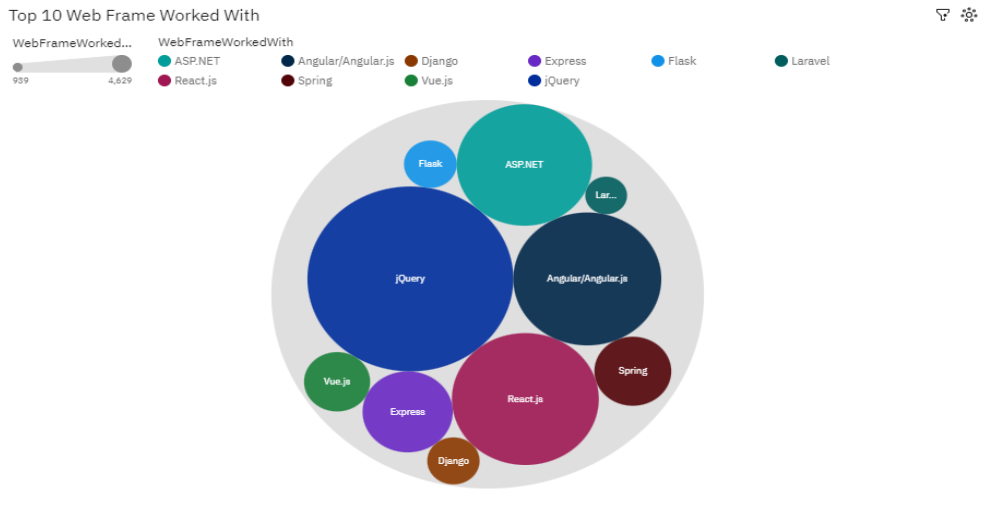
The dashboard provides a comprehensive view of the current state and future direction of technology use and trends, which can be useful for businesses, researchers, and policy-makers.

DASHBOARD A: Current Technology Usage





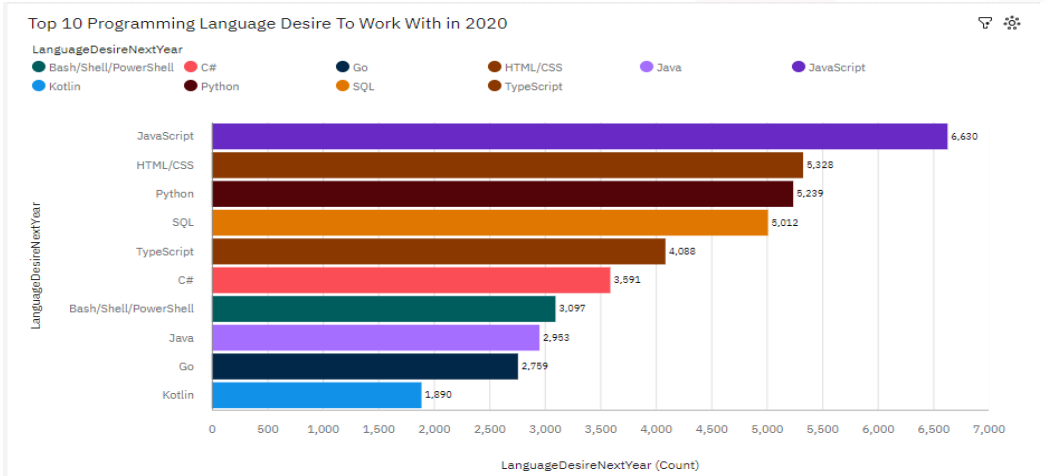


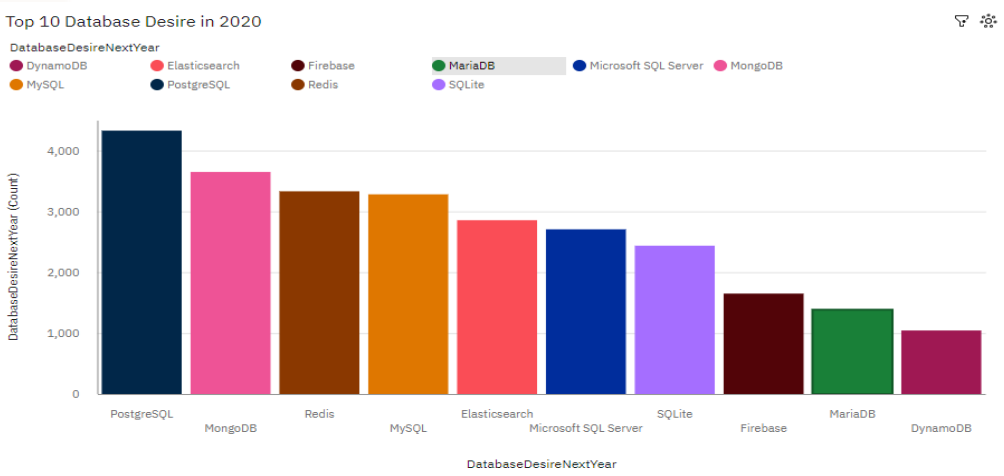


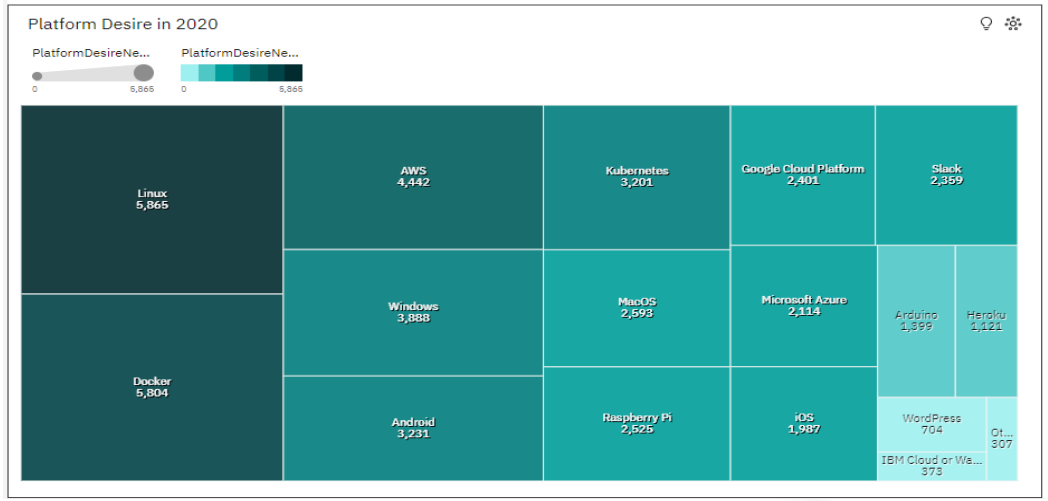
IBM Developer

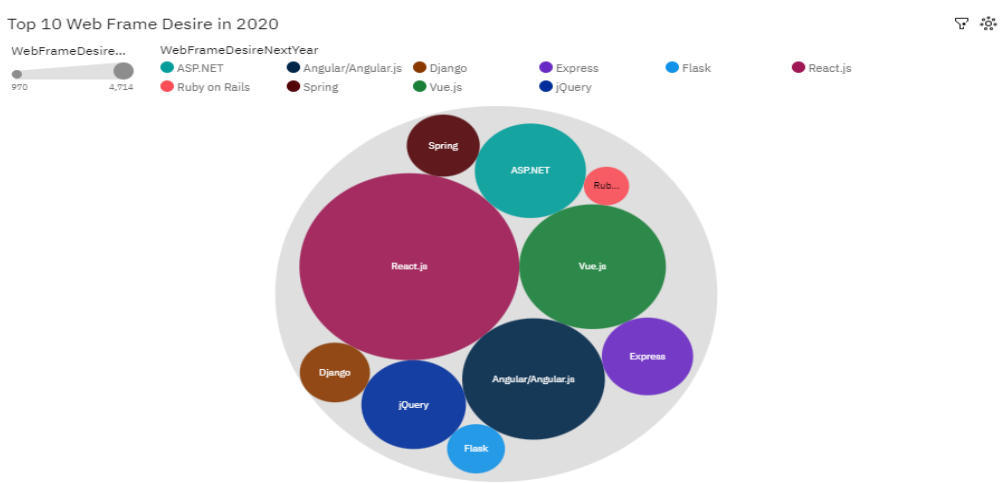
SKILLS NETWORK

DASHBOARD B: Future Technology Trend

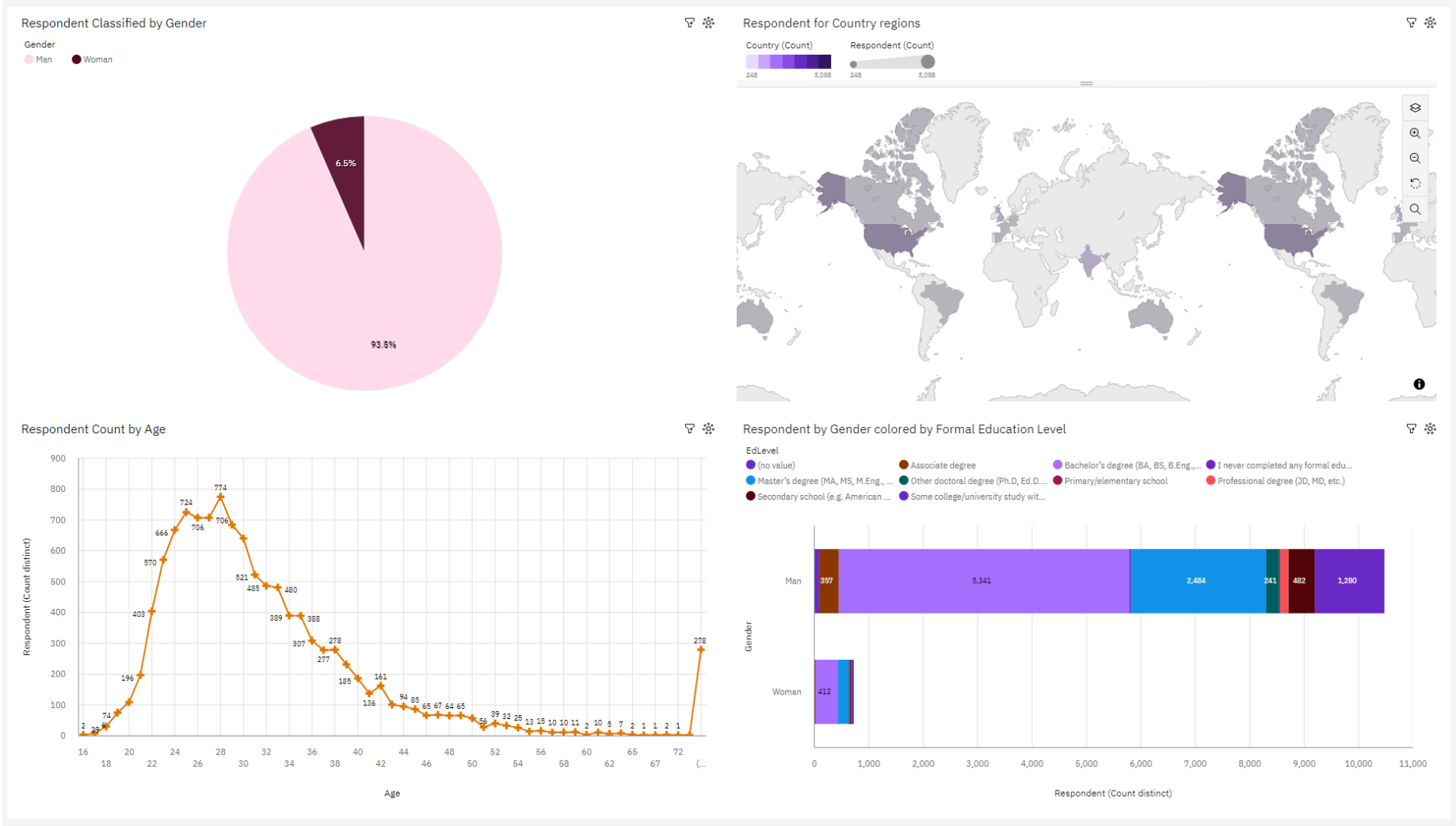








DASHBOARD C: Demographics



DISCUSSION

- What are some of the most surprising or unexpected findings from the Cognos dashboard, and how do they relate to your own experience or expectations?
- What are some of the key challenges and opportunities arising from the current technology use and future trends, and how can we address them effectively?
- What role can policy-makers, educators, and other stakeholders play in shaping the direction and impact of technology use, and how can we collaborate effectively to achieve positive outcomes?
- How can businesses and individuals balance the benefits and risks of technology use, and ensure responsible and ethical implementation?

OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript and HTML/CSS are the most popular programming languages in 2019, and Python is gaining popularity due to its applications in AI and ML.
- SQL databases, especially MySQL, are widely used and popular, with newer databases such as Redis and Elasticsearch emerging as important tools.
- Microsoft SQL Server has lost popularity over the years, possibly due to the availability of open-source alternatives and competition from other SQL databases.
- The demographic data of the survey respondents highlights the need for diversity and inclusivity in technology use and access.

Implications

- Businesses and individuals should prioritize learning and mastering these languages to stay competitive and leverage their benefits.
- Businesses should consider the pros and cons of different databases based on their needs and objectives, and stay updated on emerging technologies.
- Businesses should evaluate and compare different databases to choose the most suitable and cost-effective option.
- Businesses and policy-makers should prioritize diversity and inclusivity in their technology strategies and initiatives, and address potential biases and inequities.

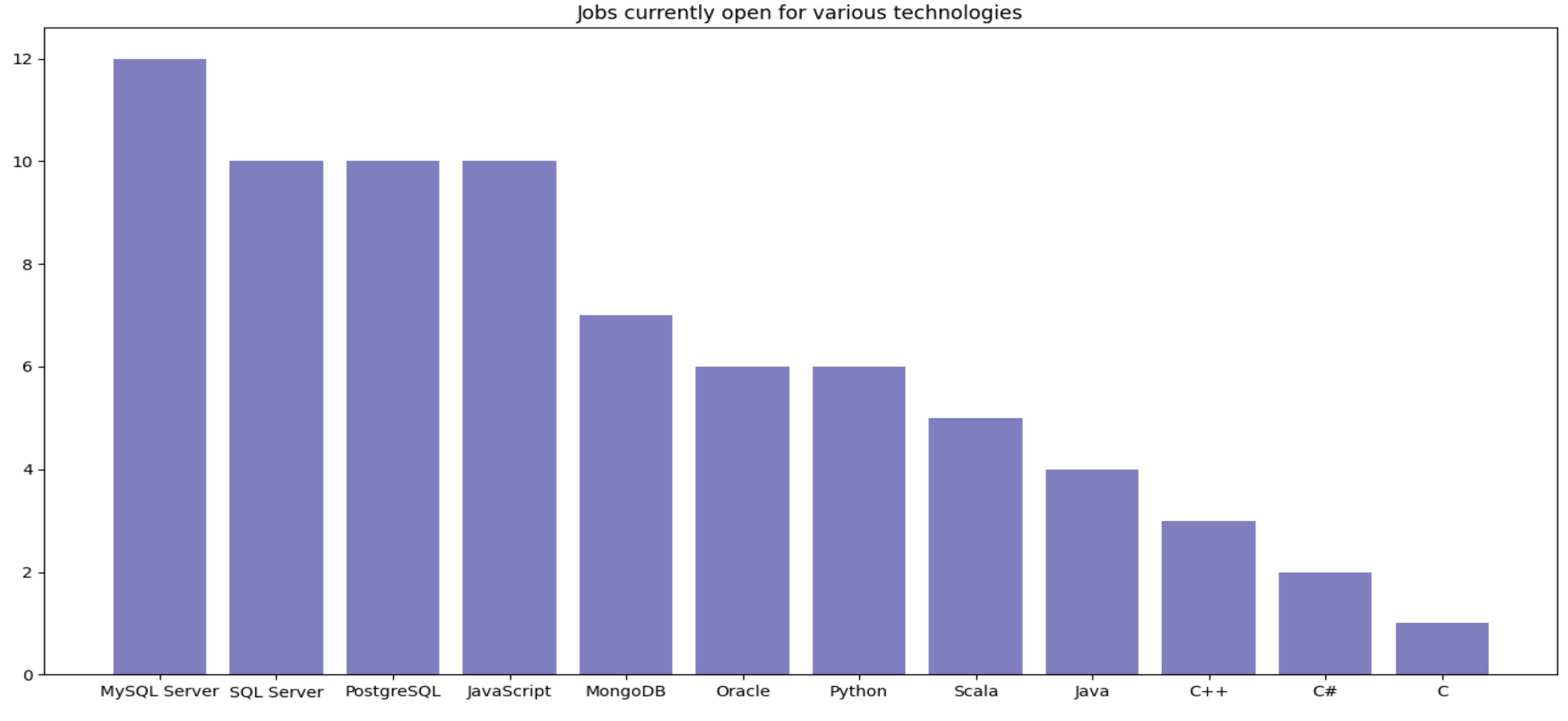
CONCLUSION

The interactive Cognos dashboard that examined the data of ***2019 Stack Overflow Developer Survey*** provided valuable insights into current technology use and future trends. The findings shed light on the most popular programming languages and databases, as well as emerging technologies and demographic data. These insights have important implications for various stakeholders, including:

- Current and aspiring developers who want to stay competitive and relevant in the job market
- Businesses that want to upskill their workforce and optimize their technology strategy
- Educators who want to prepare students for the rapidly evolving technology landscape
- Policy-makers who want to address diversity and inclusion issues in technology use and access

By leveraging these insights and staying informed about the latest developments in technology, stakeholders can make more informed decisions and seize opportunities for innovation and growth. In conclusion, the Cognos dashboard provides a valuable tool for navigating the dynamic and complex world of technology, and its findings offer valuable guidance for building a more inclusive, sustainable, and prosperous future.

APPENDIX A: JOB POSTINGS



APPENDIX B: POPULAR LANGUAGES