



Exploring Current and Future Technology Trends. M5 Data Survey.

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OUTLINE

EXECUTIVE SUMMARY

- This report analyzes Data from the 2019 Stack Overflow Developer Survey Results. The dataset includes information about the technology usage, preferences, and demographics of thousands of developers from around the world.
- The analysis focuses on three dashboards created using Cognos, namely: The Current Technology Usage, the Future Technology Trend, and the Demographics.
 - The Current Technology Usage shows the Top 10 Languages worked with, the Top 10 Databases worked with, the Platforms worked with and the Web Frame worked with.
 - The Future Technology Trend dashboard offers predictions about the Top 10 language desire the coming year, the Top 10 databases desire for the coming year, platform desire , and Top 10 web frame desire for the upcoming year.
 - The Demographics dashboard examines the gender, age, location, and education level of the survey respondents.
- In the Current Technology Usage dashboard, JavaScript and HTML/CSS are the most frequently occurring categories of Language Worked With.
- MySQL is the most frequently occurring category of Database Worked With.
- Windows and Linux are the most frequently occurring categories of Platform Worked With.
- jQuery is the most frequently occurring category of Web Frame Worked With.



INTRODUCTION



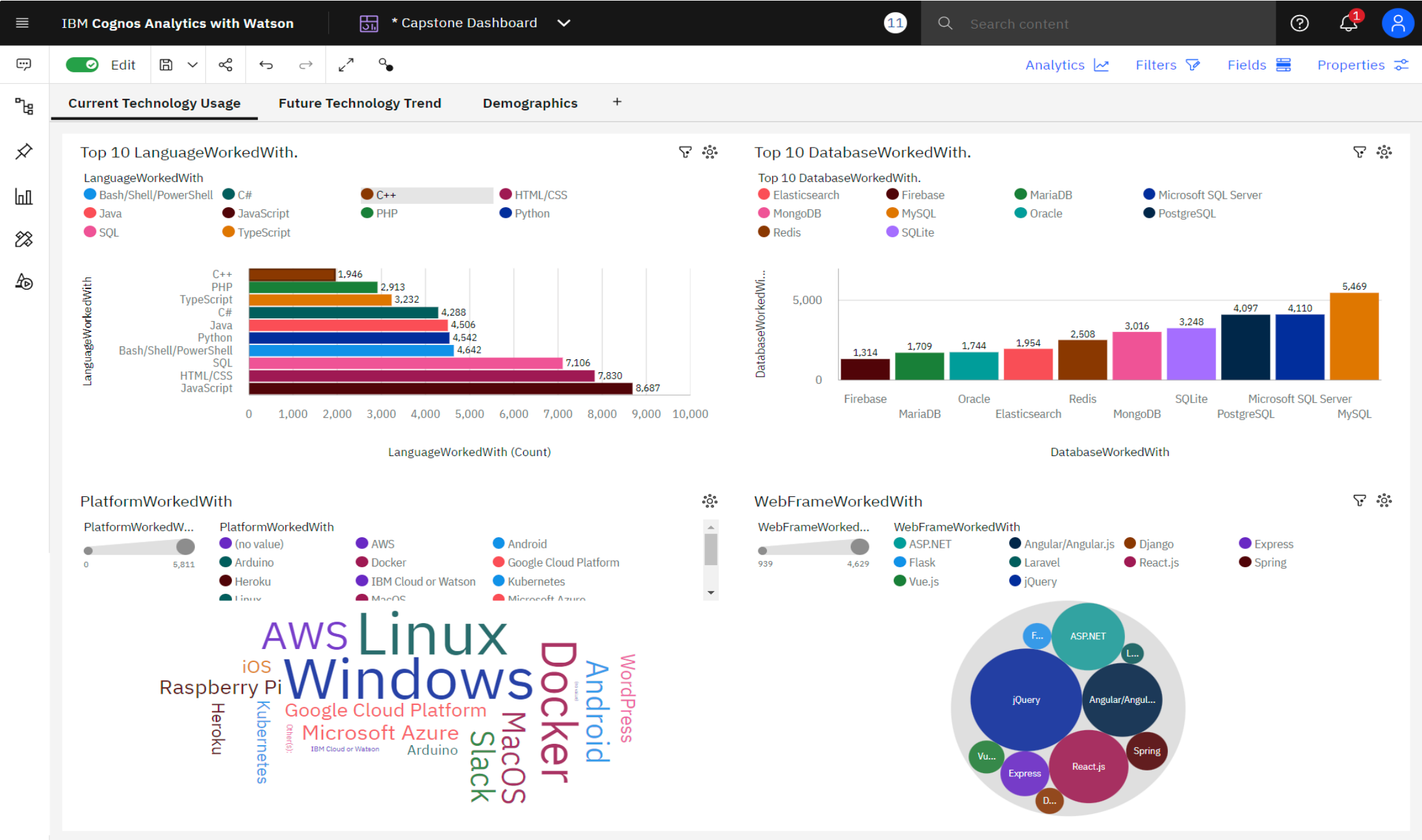
- In this report, i present the findings of my analysis of the Stack Overflow Developer Survey 2019 dataset. The dataset contains responses from thousands of developers across the globe, providing a comprehensive view of the current trends and patterns in the industry.
- Using IBM Cognos, i have created three dashboards to visualize the data and gain insights into the current and future technology trends, as well as the demographics of the respondents. The Current Technology Usage dashboard provides a snapshot of the most popular programming languages, databases, platforms, and web frameworks being used by developers at the time. The Future Technology Trend dashboard gives us an idea of the technologies that developers are most interested in learning or working with in the coming year. Finally, the Demographics dashboard provides insights into the gender, age, country, and education level of the respondents.
- In the methodology section, i will provide an explanation of the methods and tools we used to conduct the analysis. This will include a description of the dataset, and the visualization techniques used to present the findings.
- The results section will show the key findings of this analysis, including the top 10 programming languages, databases, web frameworks, and platforms used by developers worldwide. We will also explore the future technology trends and the languages, databases, web frameworks, and platforms that developers plan to learn in the coming years. Additionally, i will provide insights into the demographics of the survey respondents, including their gender, age, education level, and country of origin.
- The target audience for this analysis is anyone interested in gaining insights into the current technology landscape and trends in the software development industry. This report can be particularly useful for technology companies, software developers, recruiters, policymakers, educators, and anyone interested in the future direction of Technology.

METHODOLOGY



- I used IBM Cognos Analytics to create three dashboards: Current Technology Usage, Future Technology Trend, and Demographics. Each dashboard has four panels that focus on different aspects of the data.
- In the Current Technology Usage dashboard, i analyzed the current technology usage of developers. I captured the top 10 programming languages worked with, databases worked with, platforms worked with, and web frameworks worked with. I visualized this data in a bar chart, column chart, word cloud chart, and hierarchy bubble chart, respectively.
- In the Future Technology Trend dashboard, the first panel captured the top 10 programming languages desired next year and visualized the data as a bar chart. The second panel captured the top 10 databases desired next year and visualized the data as a column chart. The third panel captured the platforms desired next year and visualized the data as a tree map chart. The fourth panel captured the top 10 web frameworks desired next year and visualized the data as a hierarchy bubble chart.
- In the Demographics dashboard, I analyzed the demographics of developers. I captured the gender distribution, country distribution, age distribution, and formal education level distribution. I visualized this data in a pie chart, map chart, line chart, and stacked bar chart, respectively.
- The results of the analysis are presented in the chats below.

RESULTS: Current Technology Usage.



Analysis of the 2019 Stack Overflow Developer Survey dataset revealed several interesting insights. Here are some of the key findings:

Current Technology Usage Dashboard.

JavaScript (17.5 %), HTML/CSS (15.8 %), and SQL (14.3 %) are the most frequently occurring categories of LanguageWorkedWith with a combined count of 23,623 items with LanguageWorkedWith values (47.5 % of the total).

SQL, Bash Shell and Python come after the first two.

The total number of results for LanguageWorkedWith, across all LanguageWorkedWith, is over 4500.

MySQL is the most frequently occurring category of DatabaseWorkedWith with a count of 5469 items with DatabaseWorkedWith values (18.7 % of the total). This is followed by Microsoft SQLServer, Postgres SQL, SQLite and Mongo DB.

The total number of results for DatabaseWorkedWith, across all DatabaseWorkedWith, is over 29 thousand.

Linux (14.8 %) and Windows (14.2 %) are the most frequently occurring categories of PlatformWorkedWith with a combined count of 11,374 items with PlatformWorkedWith values (29 % of the total).

These are followed by Docker , AWS, Slack and Android.

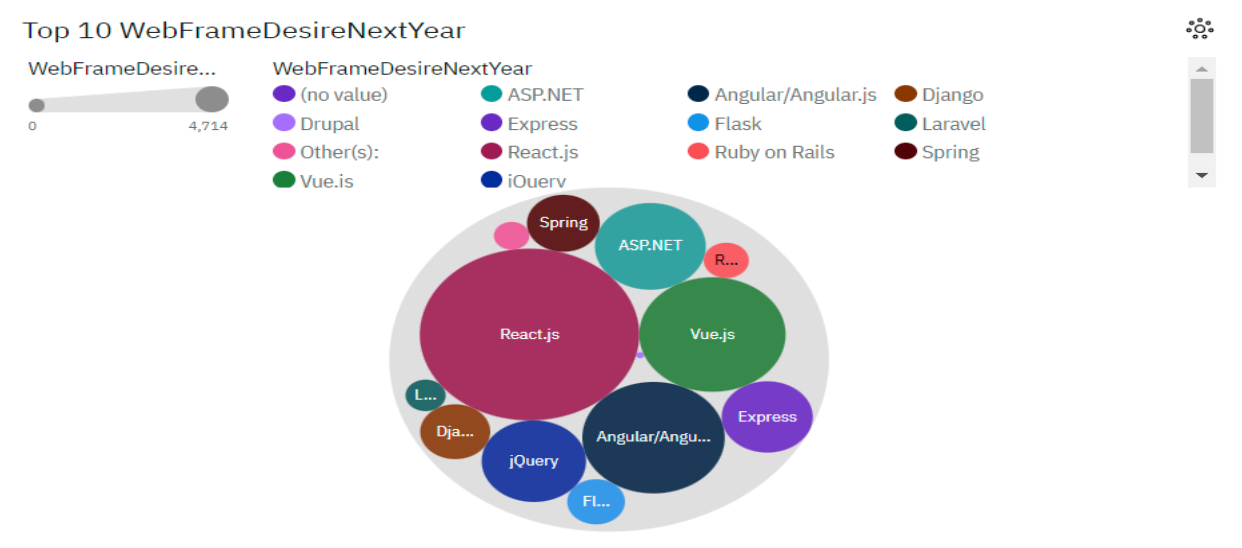
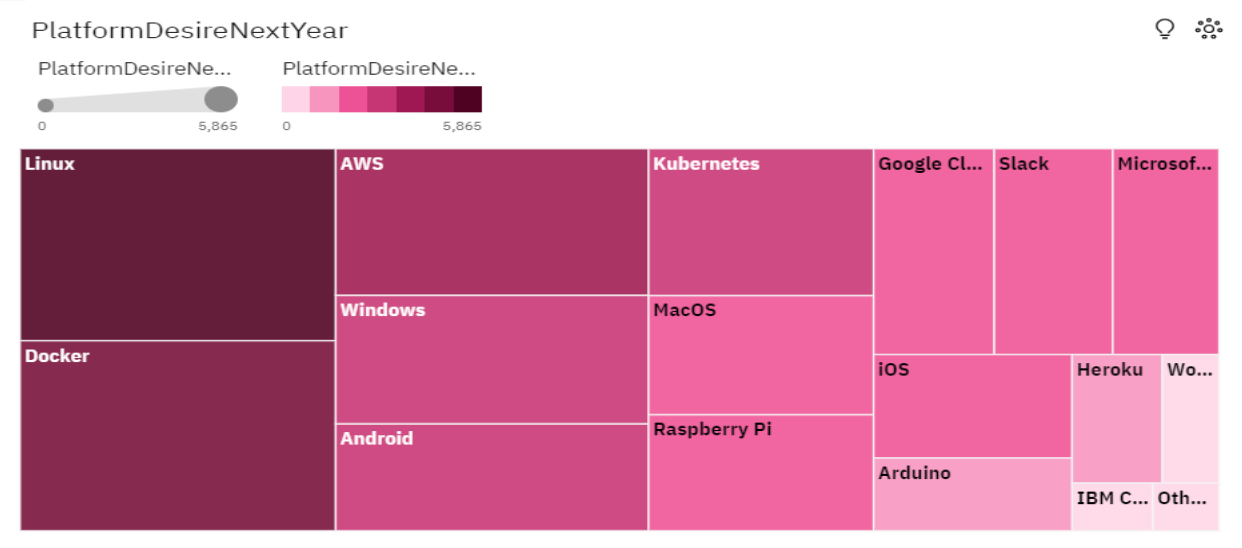
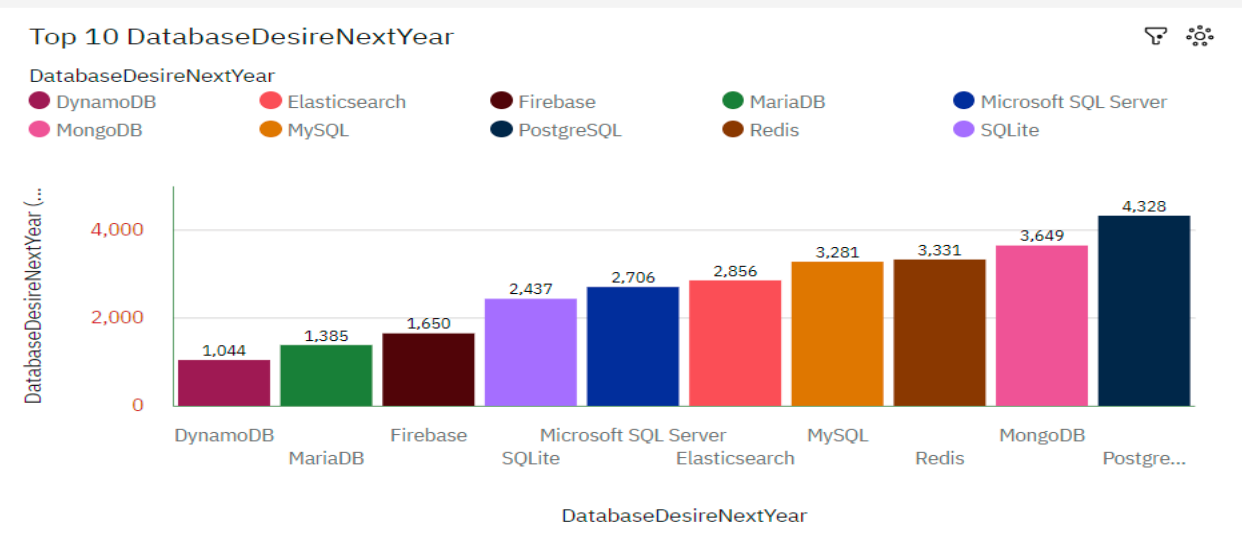
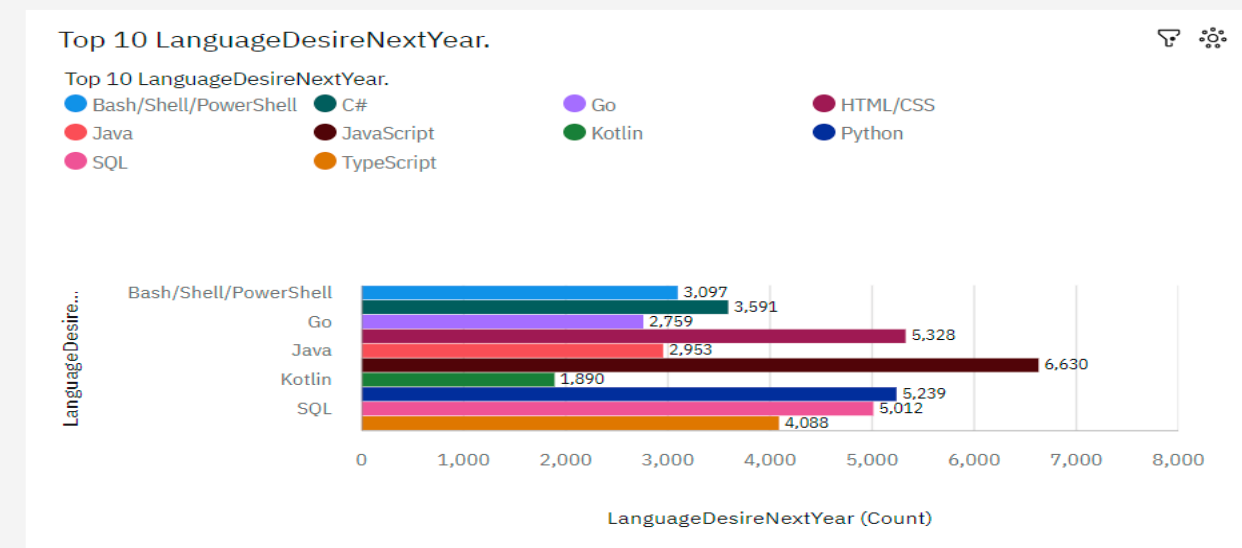
The total number of results for PlatformWorkedWith, across all PlatformWorkedWith, is over 39 thousand.

jQuery is the most frequently occurring category of WebFrameWorkedWith with a count of 4629 items with WebFrameWorkedWith values (20.3 % of the total)

This is followed by Angular/Angular.JS. React.JS, ASP.NET, and Express.

The total number of results for WebFrameWorkedWith, across all WebFrameWorkedWith, is almost 23 thousand.

RESULTS: Future Technology Trend.



Future Technology Trend Dashboard.

JavaScript is the most frequently occurring category of LanguageDesireNextYear with a count of 6630 items with LanguageDesireNextYear values (16.3 % of the total)

This is followed by HTMS, Python, SQL and Typescript.

The total number of results for LanguageDesireNextYear, across all LanguageDesireNextYear, is nearly 41 thousand.

PostgreSQL is the most frequently occurring category of DatabaseDesireNextYear with a count of 4328 items with DatabaseDesireNextYear values (16.2 % of the total).

This is followed by MongoDB, Redis, MySQL, and Elastic Search

The total number of results for DatabaseDesireNextYear, across all DatabaseDesireNextYear, is almost 27 thousand.

Linux (13.2 %) and Docker (13.1 %) are the most frequently occurring categories of PlatformDesireNextYear with a combined count of 11,669 items with PlatformDesireNextYear values (26.3 % of the total).

This is followed by Docker, AWS, Windows and then Android

The total number of results for PlatformDesireNextYear, across all PlatformDesireNextYear, is over 44 thousand.

React.js is the most frequently occurring category of WebFrameDesireNextYear with a count of 4714 items with WebFrameDesireNextYear values (19.2 % of the total). This is followed by Vue.js, Angular.js, ASP.NET, jQuery

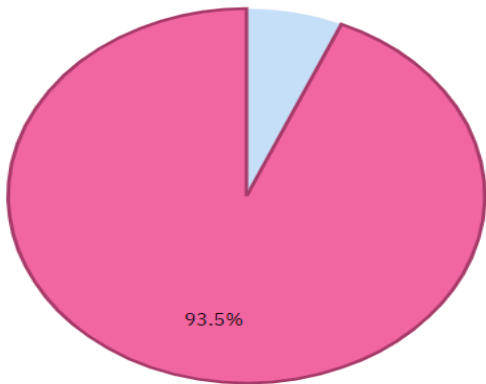
The total number of results for WebFrameDesireNextYear, across all WebFrameDesireNextYear, is almost 25 thousand.

RESULTS: Demographics Dashboard.

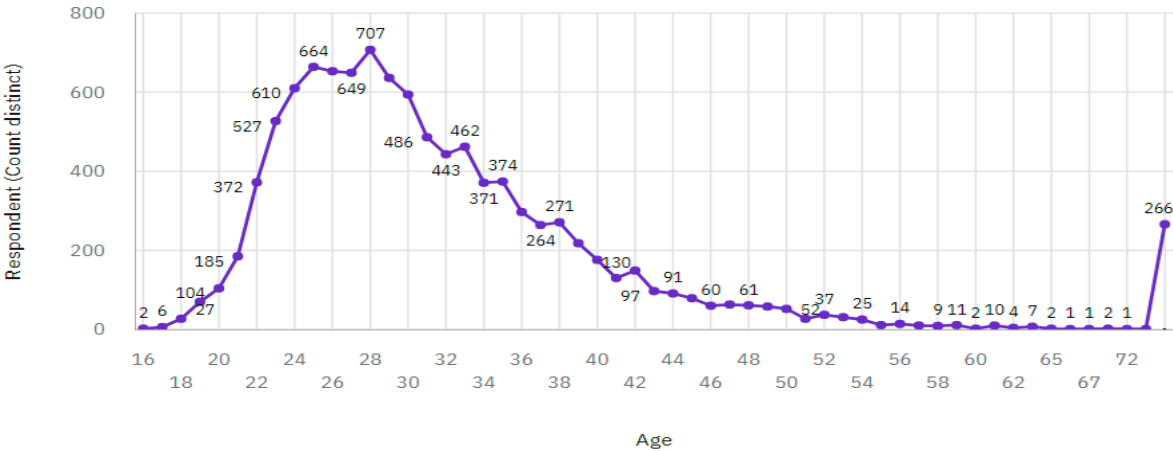
Current Technology Usage Future Technology Trend **Demographics**

Respondent by Gender

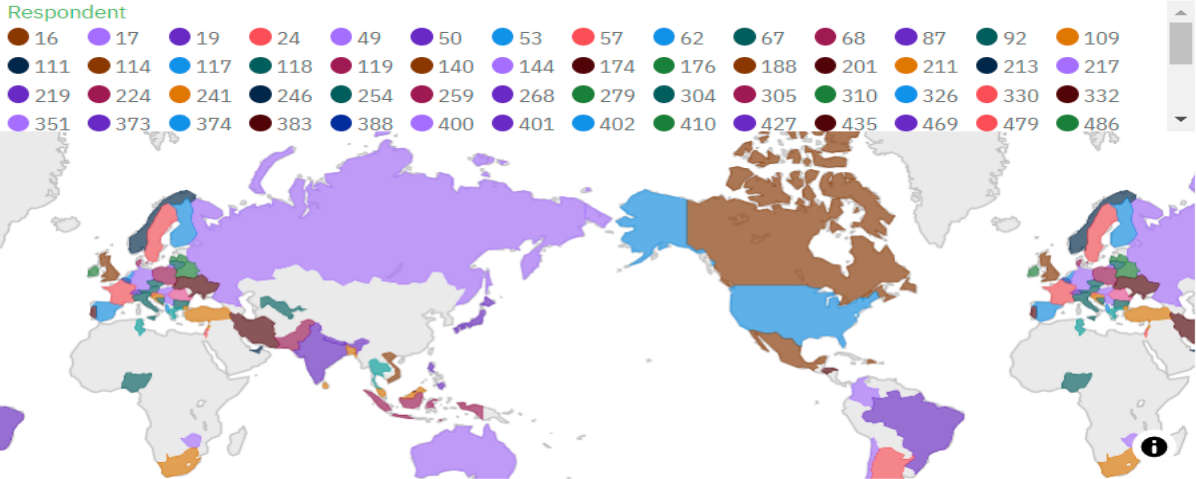
Gender
Woman Man



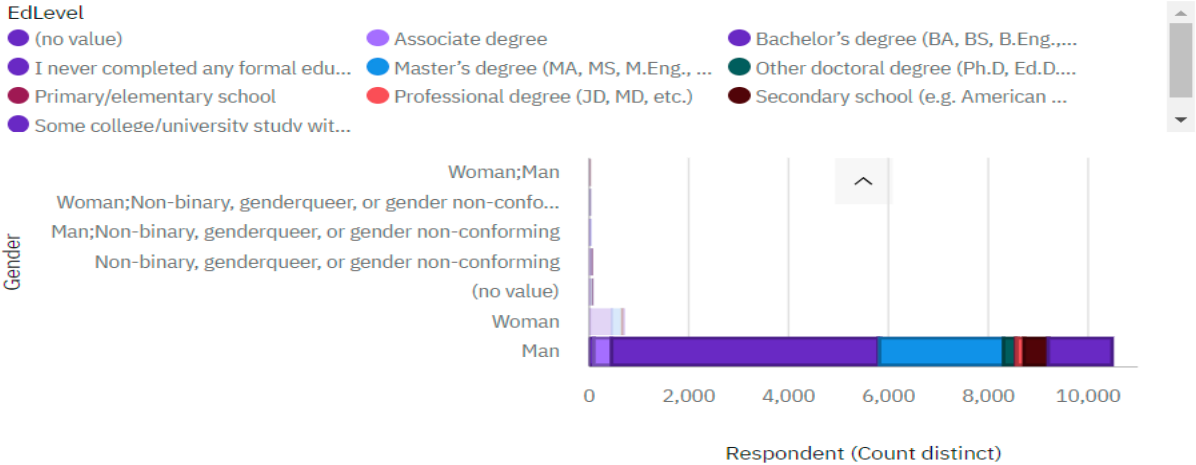
Respondent count by Age



Respondent count for Country



Respondent by Gender colored by EdLevel



Demographics Dashboard.

Man is the most frequently occurring category of Gender with a count of 10,480 items with Respondent values (93.5 % of the total). 6.5% is the Gender represented by Females

United States Country has the highest Respondent at over three thousand, out of which Man contributed the most at nearly three thousand.

The total number of results for Respondent, across all genders, is over eleven thousand

The age of 28 is the most frequently occurring category of Age with a count of 707 items with Respondent values (6.7 % of the total).

This is followed by Age 25, 26, 27 and 24.

Brazil has the highest average Age with 17370 respondents.

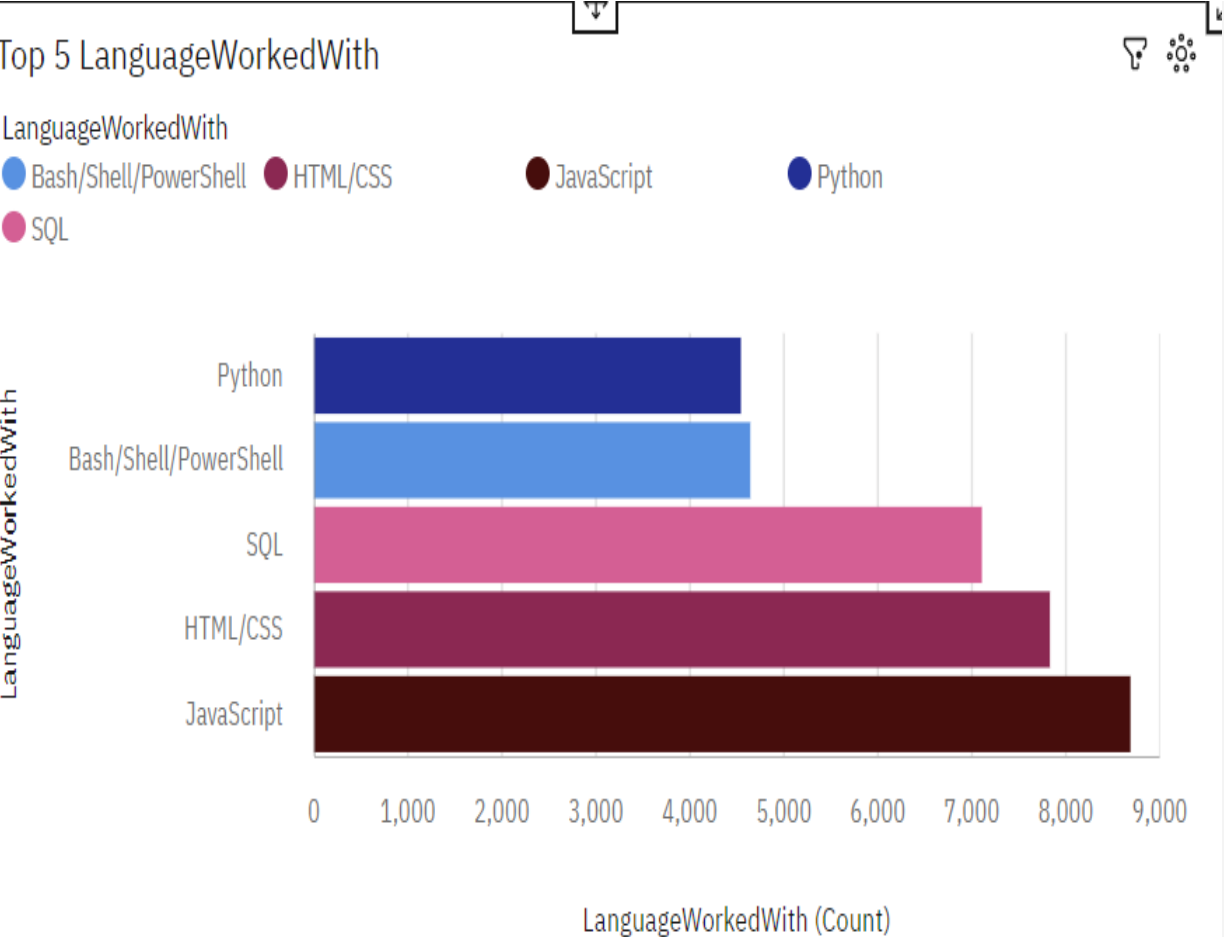
The total number of results for Respondent, across all countries, is over eleven thousand.

Bachelor's degree (BA, BS, B.Eng., etc.) Respondent from Country United States are nearly two thousand, whereas Master's degree (MA, MS, M.Eng., MBA, etc.) is only 531.

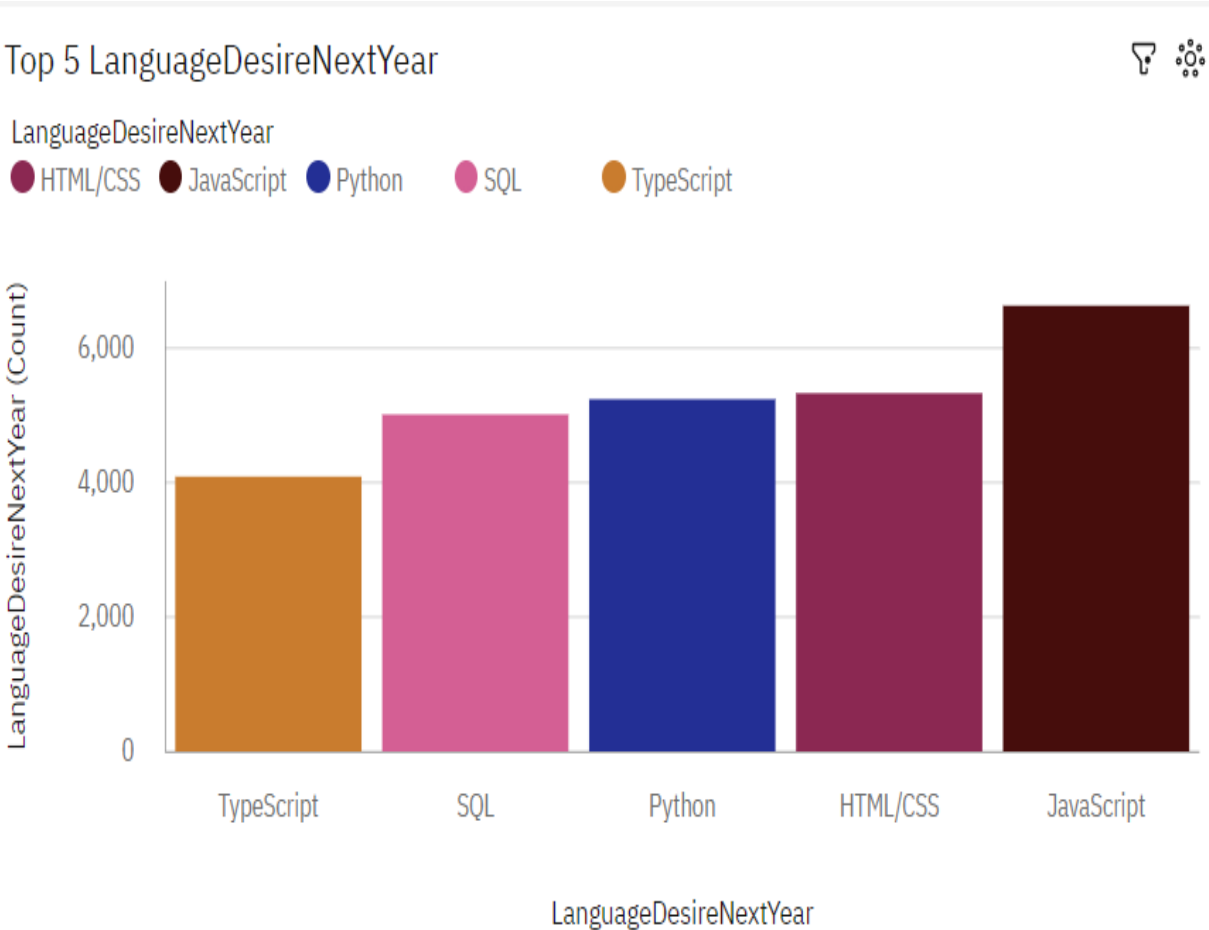
Man is the most frequently occurring category of Gender with a count of 10,480 with Respondent values (91.9 % of the total).

PROGRAMMING LANGUAGE TRENDS

Current Year: top 5 Programming Languages



Top 5 Language DesireNextYear



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript (17.5 %), HTML/CSS (15.8 %), and SQL (14.3 %) are the most frequently occurring categories of LanguageWorkedWith with a combined count of 23,623 items with LanguageWorkedWith values (47.5 % of the total).
- JavaScript is the most frequently occurring category of LanguageDesireNextYear with a count of 6630 items with LanguageDesireNextYear values (16.3 % of the total)
- This is followed by HTMS, Python, SQL and Typescript.
- The total number of results for LanguageDesireNextYear, across all LanguageDesireNextYear, is nearly 41 thousand.

Implications

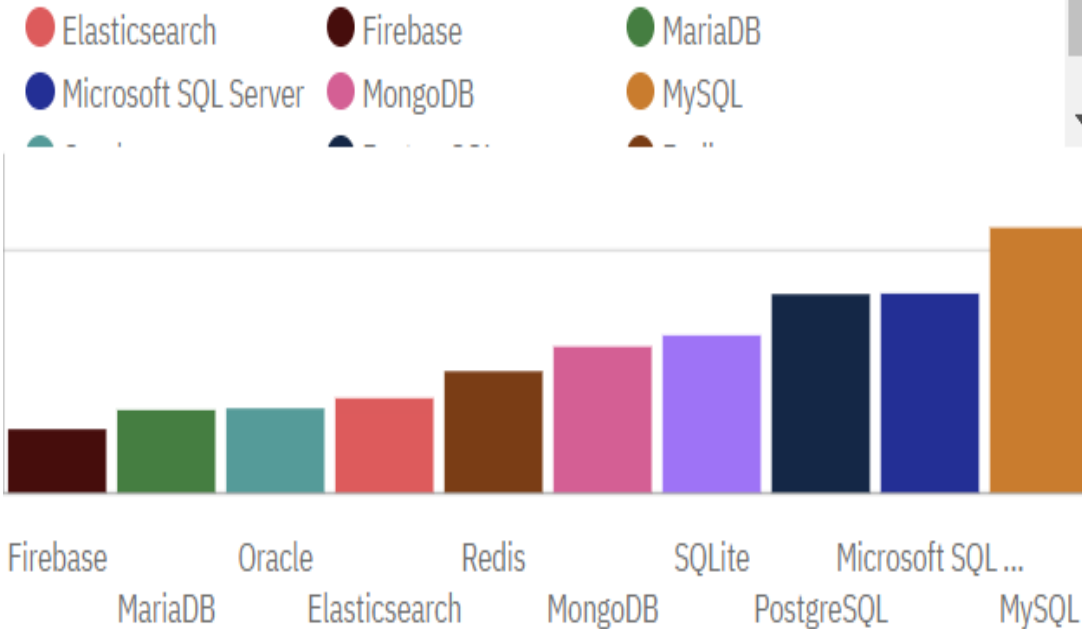
- Organizations may need to adjust their hiring and training strategies to ensure they have sufficient resources and expertise in JavaScript development.
- The high demand for JavaScript may also impact the availability and cost of JavaScript developers, which organizations should consider in their budget and resource planning.
- The diversity of programming languages of interest among data analysts and developers suggests that organizations may need to adopt a multi-language approach to development to meet their needs and stay competitive.

DATABASE TRENDS

Current Year: Top 5 Database worked with.

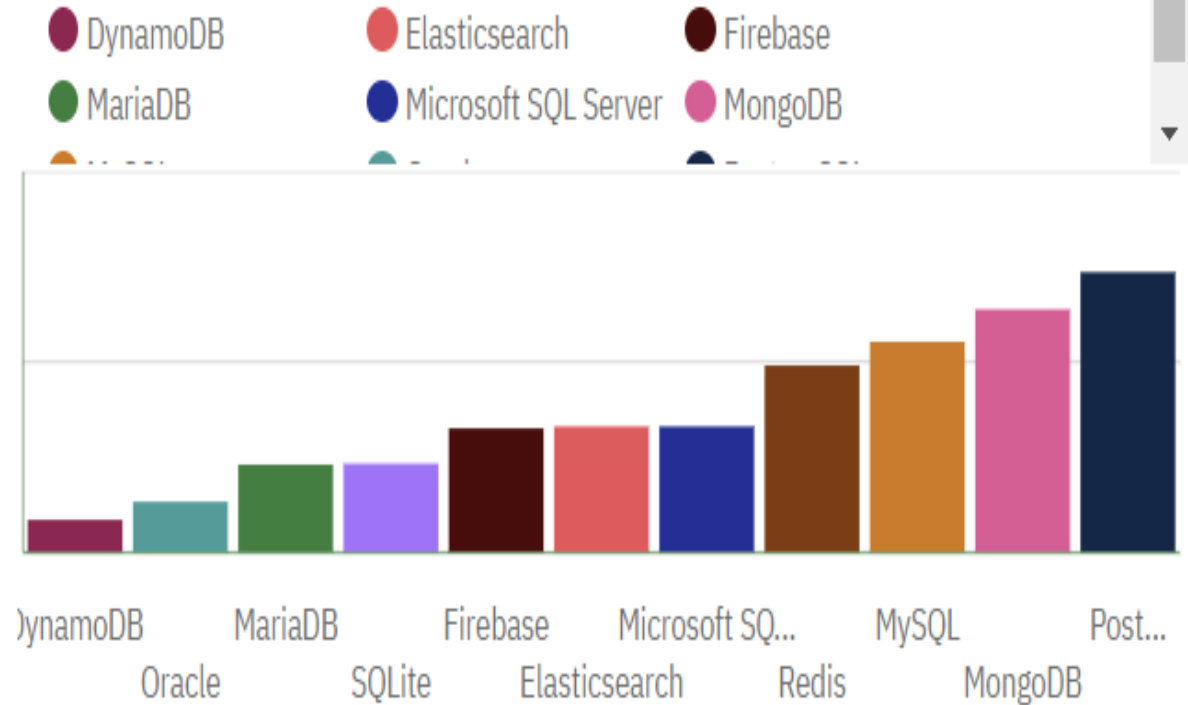
Top 10 DatabaseWorkedWith.

Top 10 DatabaseWorkedWith.



To 5 Database Desire Next Year.

DatabaseDesireNextYear



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is the most commonly used database management system among the respondents, with 18.7% of the total count of DatabaseWorkedWith values. This suggests that MySQL is a widely adopted and trusted database technology among developers and organizations.
- PostgreSQL is the most frequently occurring category of DatabaseDesireNextYear with a count of 4328 items with DatabaseDesireNextYear values (16.2 % of the total).
- This is followed by MongoDB, Redis, MySQL, and Elastic Search
- The total number of results for DatabaseDesireNextYear, across all DatabaseDesireNextYear, is almost 27 thousand.

Implications

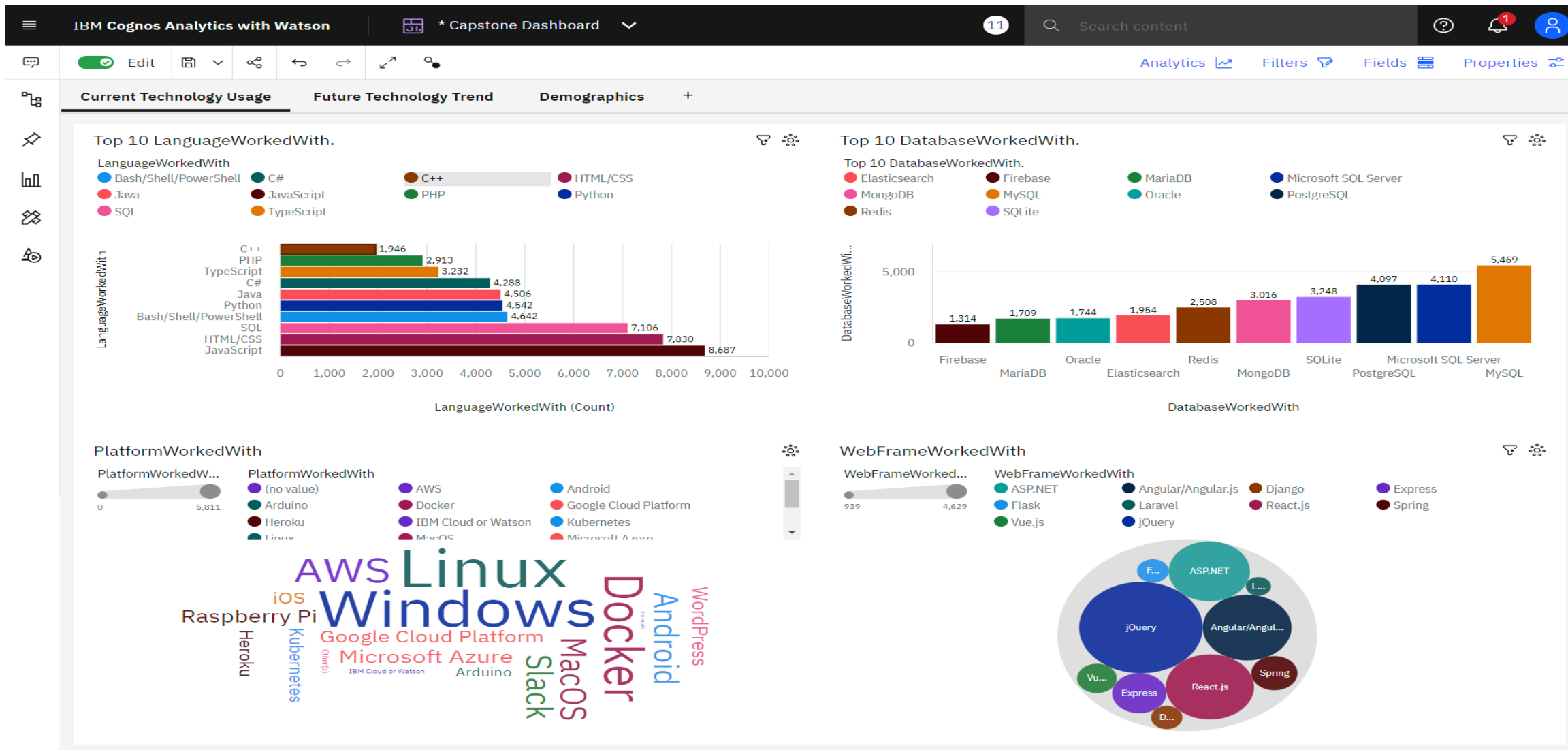
- The fact that PostgreSQL, MongoDB, MySQL, and Redis are the most frequently occurring categories of DatabaseDesireNextYear with a combined count of 59.2% of the total, implies that these database technologies are likely to be in high demand in the near future.
- The diversity of database technologies used and desired by respondents suggests that there is no one-size-fits-all approach to database management. Organizations should consider adopting a multi-database approach to meet their specific needs and requirements.
- Organizations may need to consider the compatibility and interoperability of different database technologies as respondents have indicated a desire to work with different database technologies in the future.

DASHBOARD

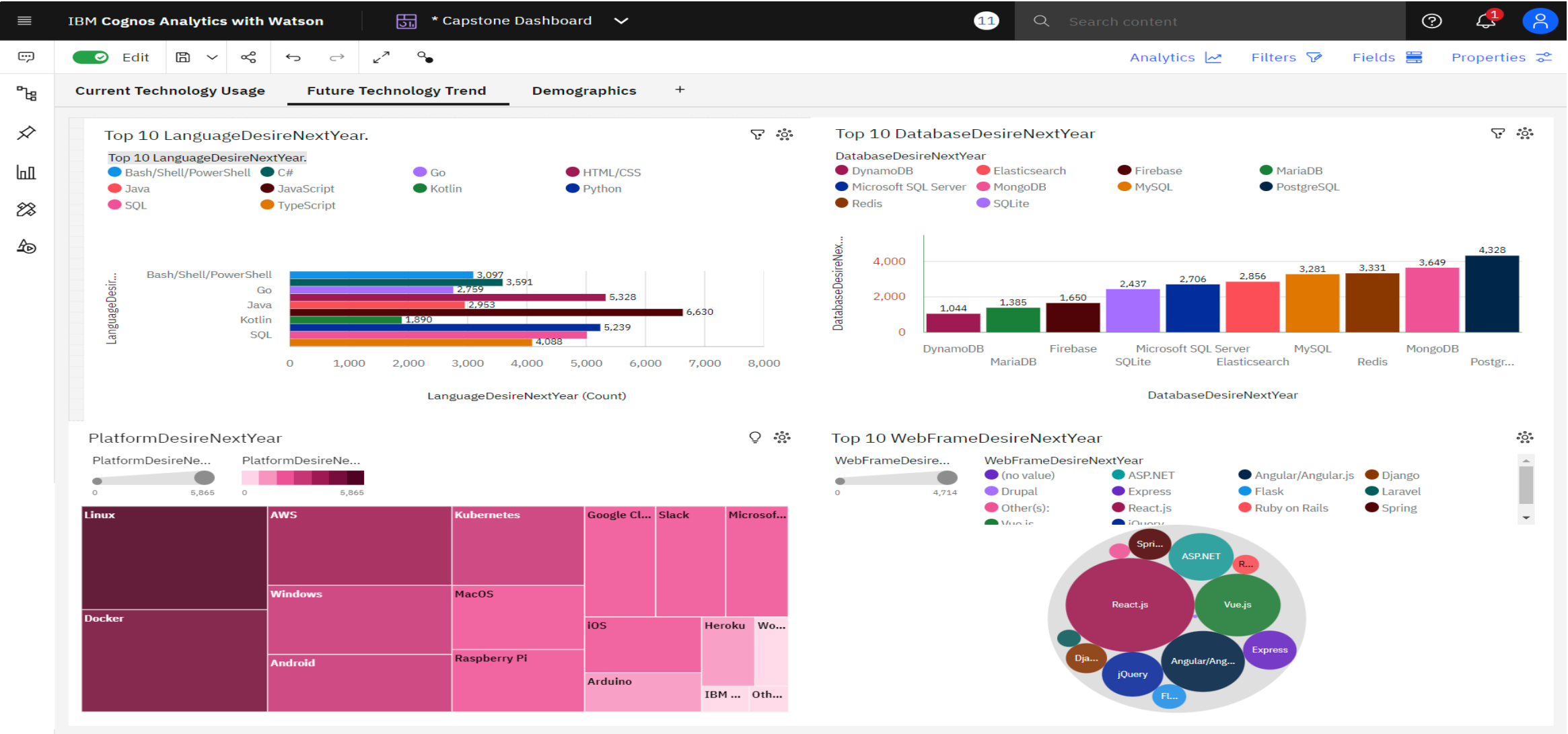


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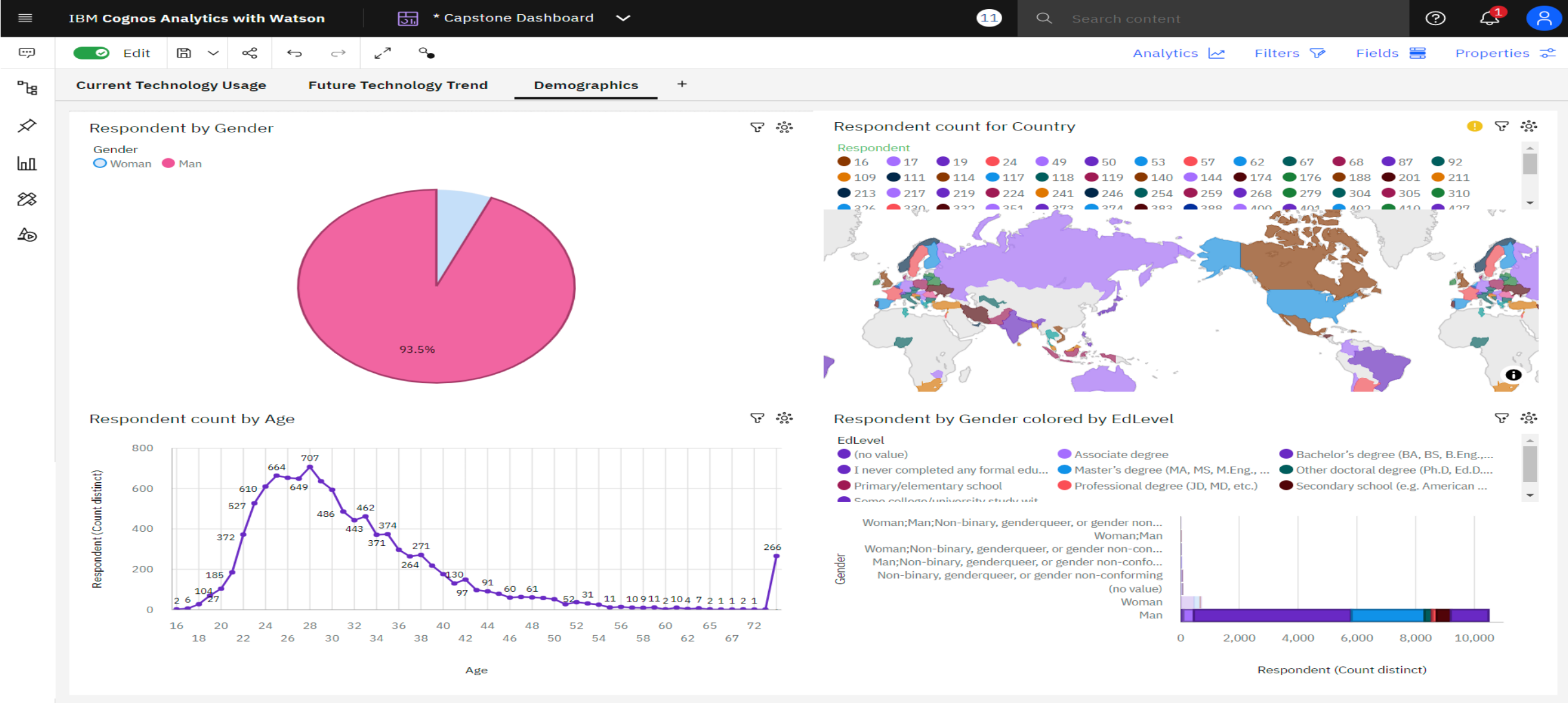
DASHBOARD TAB 1



DASHBOARD TAB 2



DASHBOARD TAB 3



DISCUSSION



- There are a few key takeaways that can be discussed. Firstly, in terms of programming languages, HTML/CSS and JavaScript are the most commonly used languages, with a combined count of 38.7% of the total. This suggests that these languages are still very much in demand and are likely to remain so in the near future.
- Secondly, MySQL is the most frequently occurring category of DatabaseWorkedWith, which shows that it is still a very popular choice for developers. This may be due to its ease of use and versatility, as well as the fact that it is an open-source database management system.
- Thirdly, Linux and Windows are the most frequently occurring categories of PlatformWorkedWith, which indicates that both operating systems are widely used among developers. This highlights the importance of ensuring that software and applications are compatible with both platforms to reach a wider audience.
- Finally, jQuery is the most frequently occurring category of WebFrameWorkedWith and WebFrameDesireNextYear, which shows that it is still a popular choice for front-end developers. However, it is important to note that other frameworks are gaining in popularity and should not be overlooked.
- Overall, these findings suggest that certain programming languages, databases, platforms, and frameworks are still very much in demand, while others are gaining popularity. This information can be used by organizations to make data-driven decisions when it comes to software development, hiring, and training.

OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript and HTML/CSS are the most commonly used programming languages, which suggests the importance of web development skills in the current job market.
- MySQL is the most commonly used database management system, highlighting the need for database skills in organizations.
- Linux and Windows are the most commonly used operating systems, indicating that developers should have experience with both platform
- The male gender comprised of 93% of respondents leaving the the rest of the genders less represented.
- jQuery is the most frequently occurring category.
- Youths at the age of 28 years were the majority respondents.

Implications

- Organizations should prioritize recruiting and training developers with HTML/CSS, JavaScript, and database management skills to ensure they have the necessary programming and database management capabilities to keep pace with industry standards.
- Developers who are proficient in both Linux and Windows operating systems are more likely to be marketable to organizations that use these platforms, indicating that they should develop expertise in both systems to expand their employment prospects.
- Given the popularity of jQuery as a web framework, organizations should consider investing in training developers in this technology to improve the efficiency and effectiveness of web development projects.

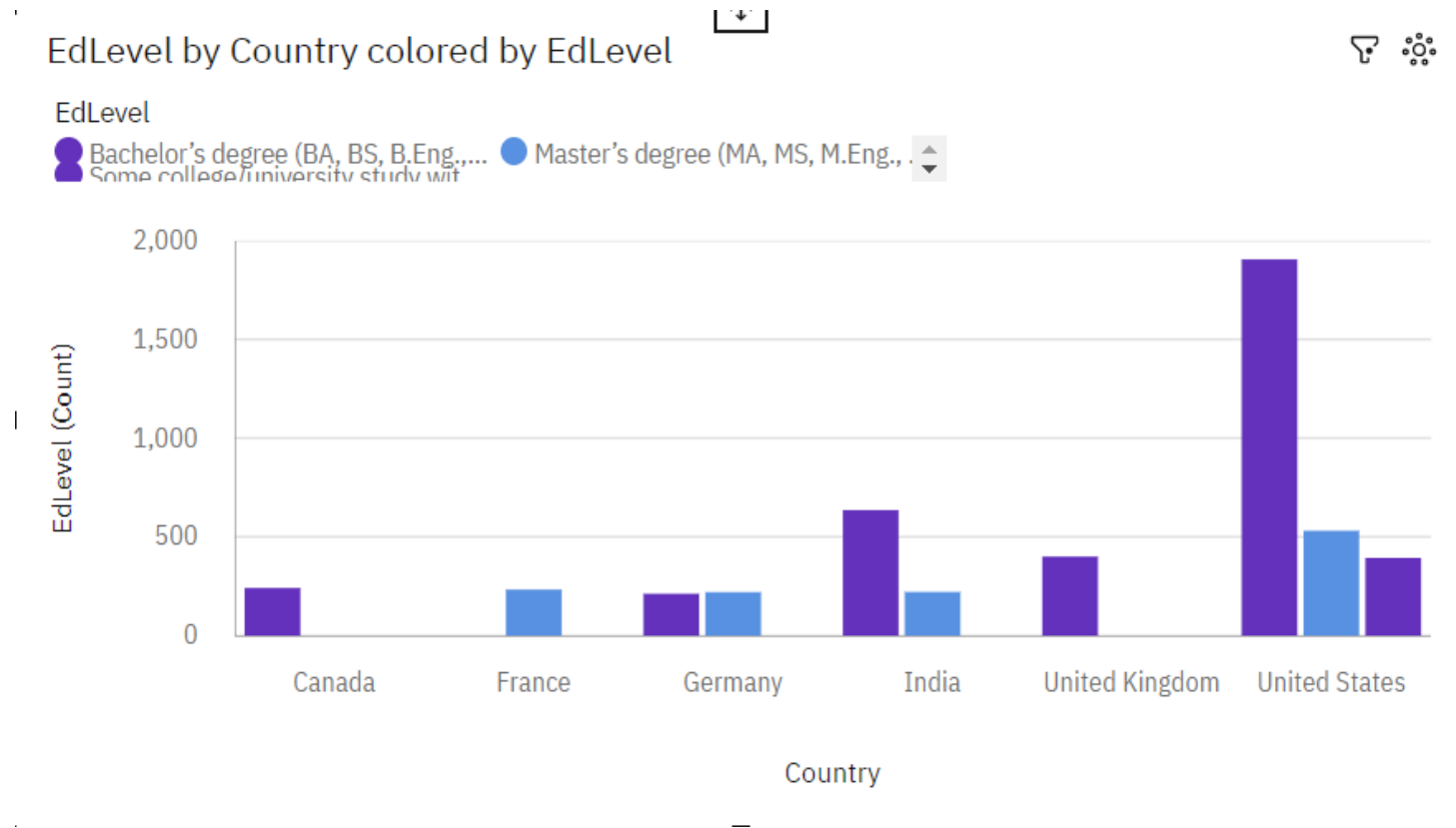
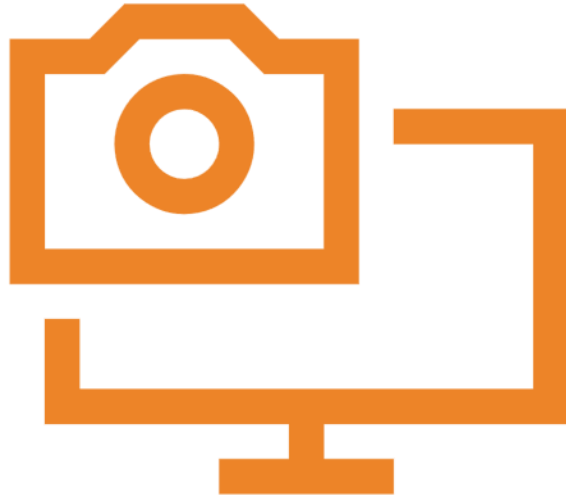
CONCLUSION



- The underrepresentation of women in the technology industry underscores the need for greater diversity and inclusion initiatives to help bridge this gap and ensure that all individuals have equal opportunities to contribute and succeed in this field.
- It appears that a significantly larger number of respondents from the United States hold a Bachelor's degree compared to a Master's degree. This may indicate that pursuing a Bachelor's degree is more common or accessible than a Master's degree in the US.
- Further analysis could be conducted to explore the reasons behind this disparity and its potential impact on the tech industry, such as the availability of job opportunities or the potential for higher salaries based on education level.

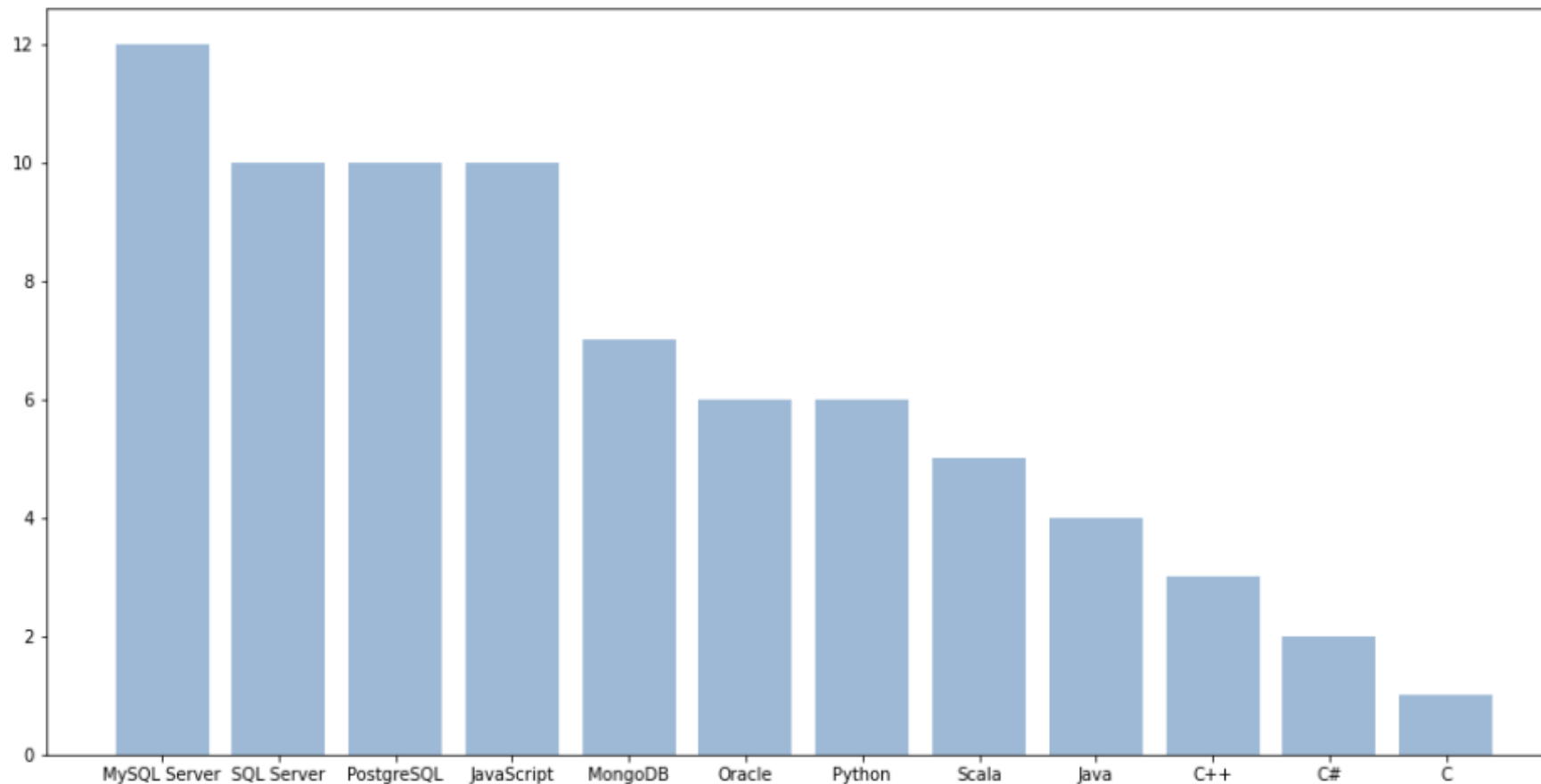
APPENDIX:

Bachelor's degree (BA, BS, B.Eng., etc.) is the most frequently occurring category of EdLevel with a count of 3393 items with EdLevel values (68 % of the total).



JOB POSTINGS

In Module 1 you have collected the job posting data using Job API in a file named “job-postings.xlsx”. Present that data using a bar chart here. Order the bar chart in the descending order of the number of job postings.



POPULAR LANGUAGES

Chart showing Popular languages

