FINAL PRESENTATION

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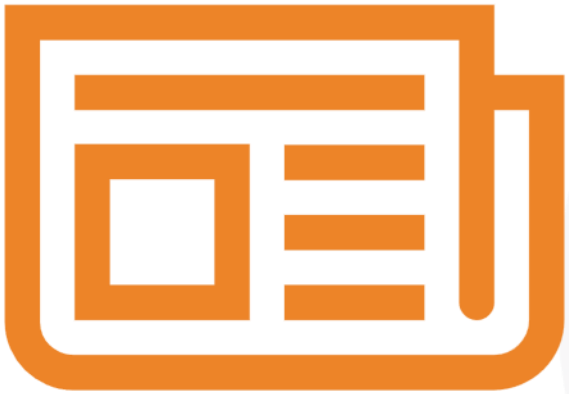
EXECUTIVE SUMMARY

- In order to determine trends in databases and programming languages for the upcoming and present year, this research examines survey data.
- Important discoveries show changes in technology use that affect businesses and developers.
- In both years, JavaScript continues to be the most widely used programming language.
- Python surpasses SQL, demonstrating its increasing significance in machine learning and data research.
- PostgreSQL and Redis are becoming more common,whereas MySQL usage is decreasing.
- These results imply that proficiency with Python, Javascript, and scalable databases like PostgreSQL should be given top priority by developers.

INTRODUCTION

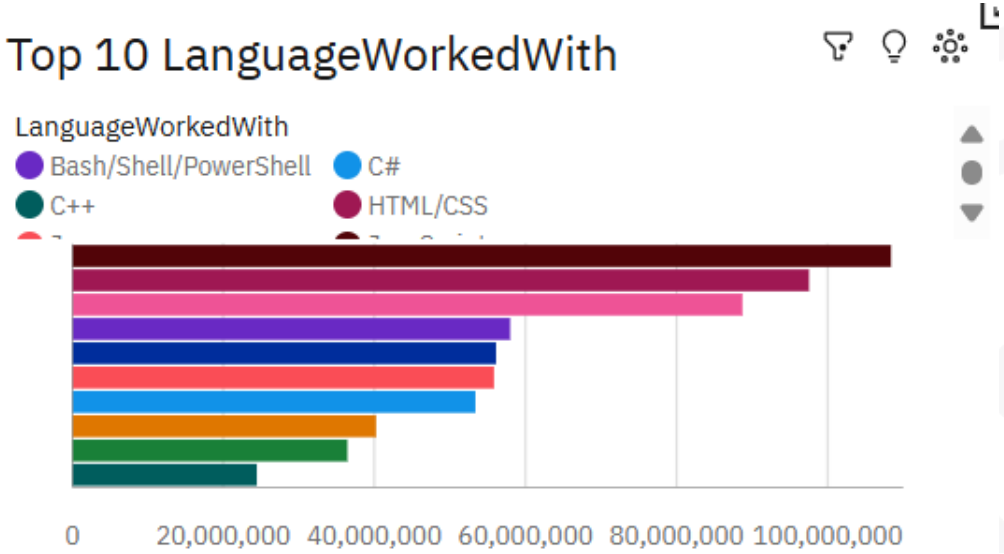
- The purpose of this project is to examine survey datasets in order to identify trends in databases and programming languages, pinpoint significant shifts from one year to the next, and assess the industry's ramifications.
- Innovations and shifting consumer tastes are driving a continuous evolution in the technology landscape. Developers and organizations need to adjust to these changes by acquiring the necessary tools and competencies in order to remain competitive.
- Knowing these patterns enables people and businesses to make wise choices about technology investment, recruiting, and skill development.
- Datasets that record responses from thousands of individuals regarding their use of technology are the main focus of the analysis. The primary areas of interest include:
    - Popular database technologies and their usage patterns;
    - Top programming languages and adoption trends

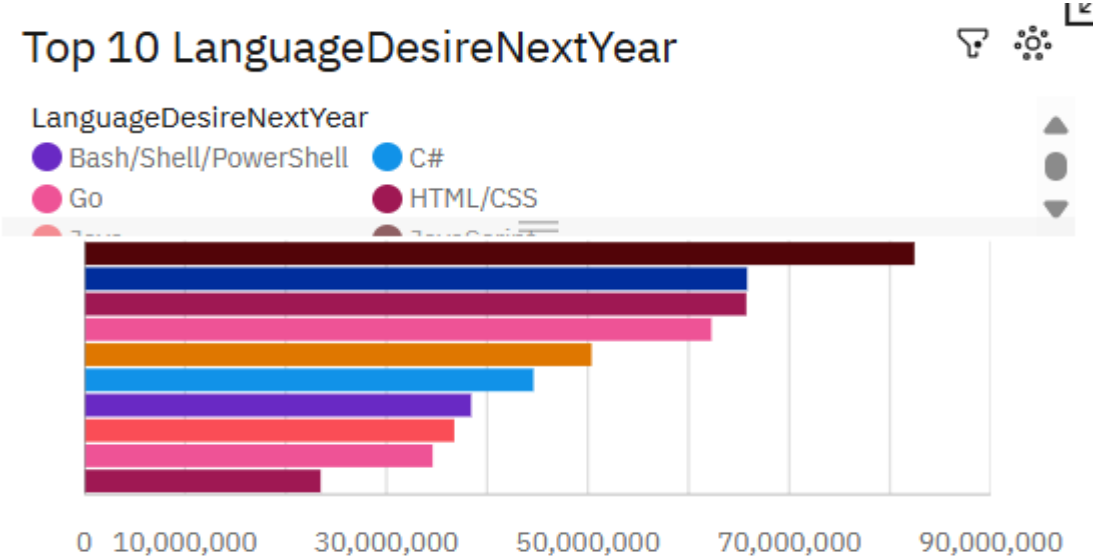
METHODOLOGY

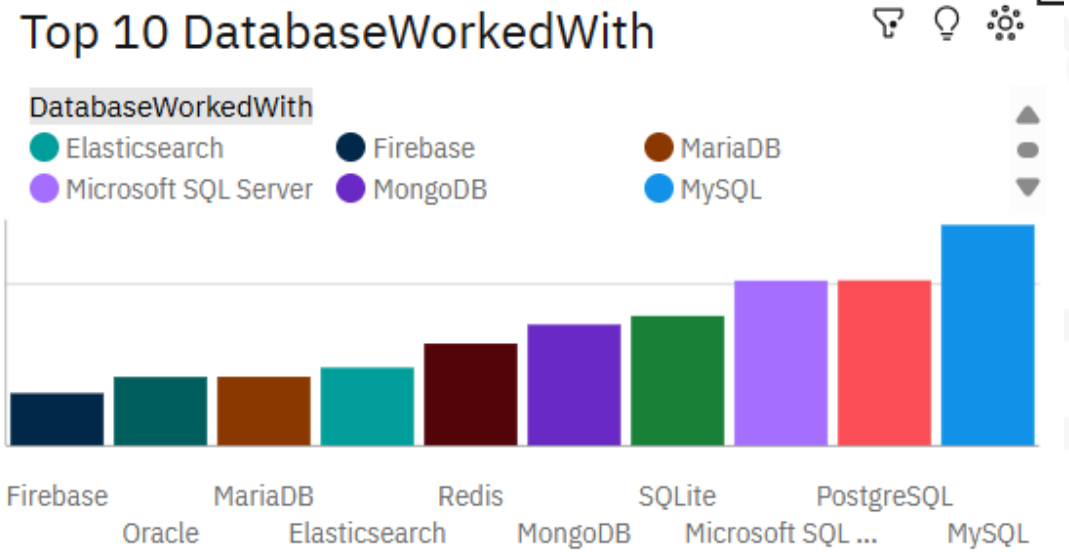


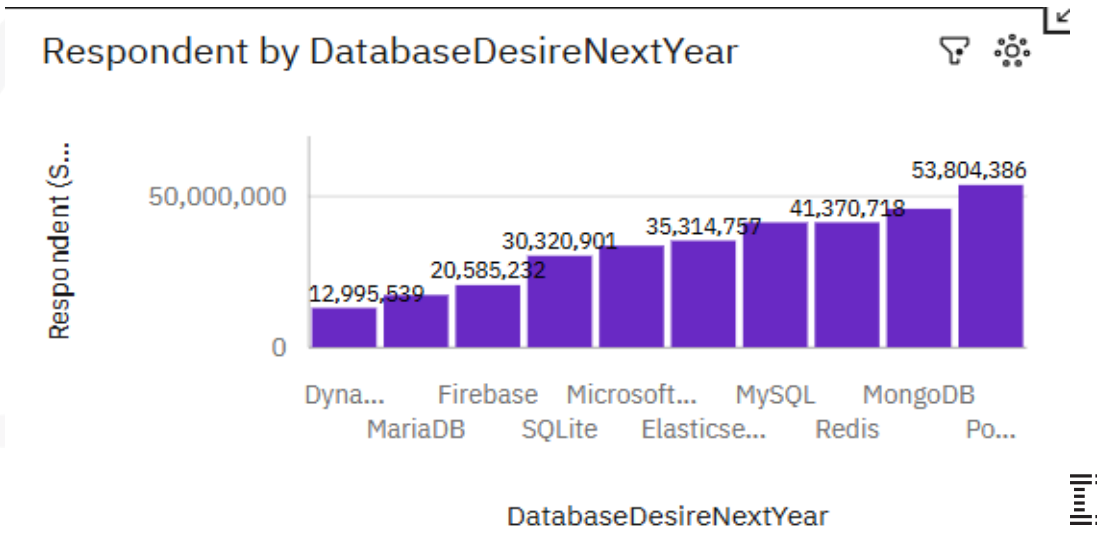
- Trends in technology use for the present and upcoming year were gathered from survey datasets.
- Responses from 6,000 participants are included in the dataset for this year, and 5,000 participants are included in the dataset for the following year.
- In order to increase reliability, data cleaning included managing missing values, guaranteeing uniformity, and eliminating outliers.
- Matplotlib was used for visualizations, IBM Cognos for dashboards, and Python for data wrangling in the analysis.
- To compare database and programming language trends over time, bar charts were made.
- Dashboards provide information about demographics, upcoming trends, and existing technology use.

RESULTS


Top 10 LanguageWorkedWith
LanguageWorkedWith
Bash/Shell/PowerShell
C#
C++
HTML/CSS
0
20,000,000
40,000,000
60,000,000
80,000,000
100,000,000

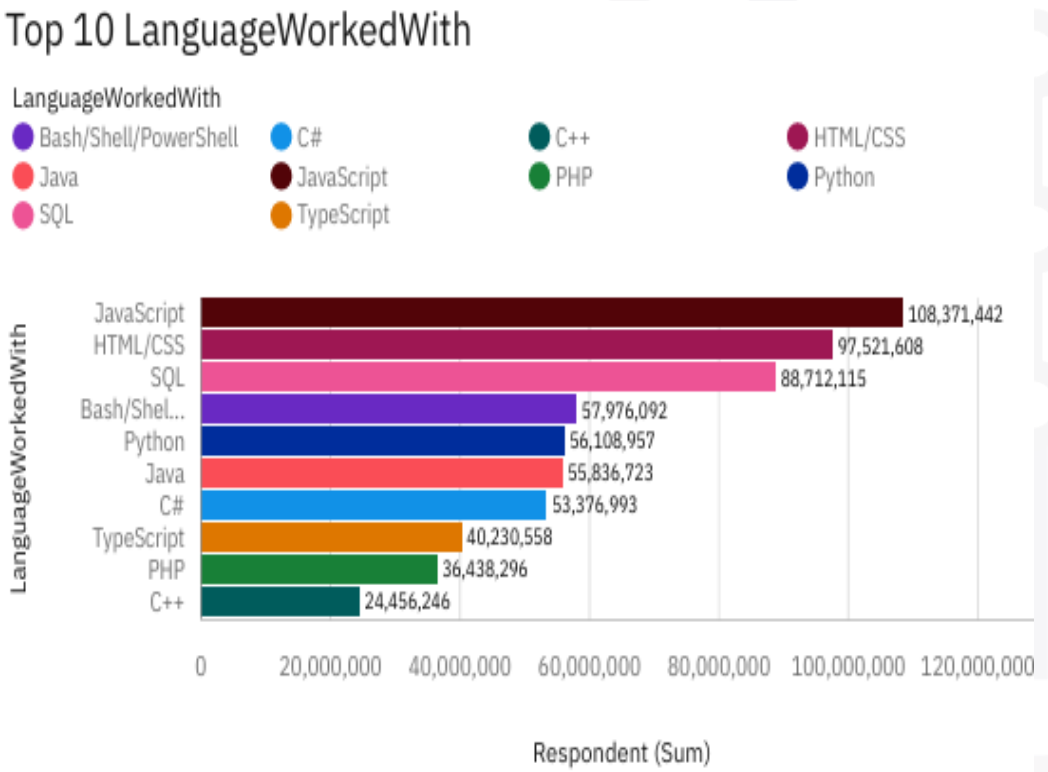

Top 10 LanguageDesireNextYear
LanguageDesireNextYear
Bash/Shell/PowerShell
C#
Go
HTML/CSS
0
10,000,000
30,000,000
50,000,000
70,000,000
90,000,000


Top 10 DatabaseWorkedWith
DatabaseWorkedWith
Elasticsearch
Firebase
MariaDB
Microsoft SQL Server
MongoDB
MySQL
Firebase
MariaDB
Redis
SQLite
PostgreSQL
Oracle
Elasticsearch
MongoDB
Microsoft SQL ...
MySQL

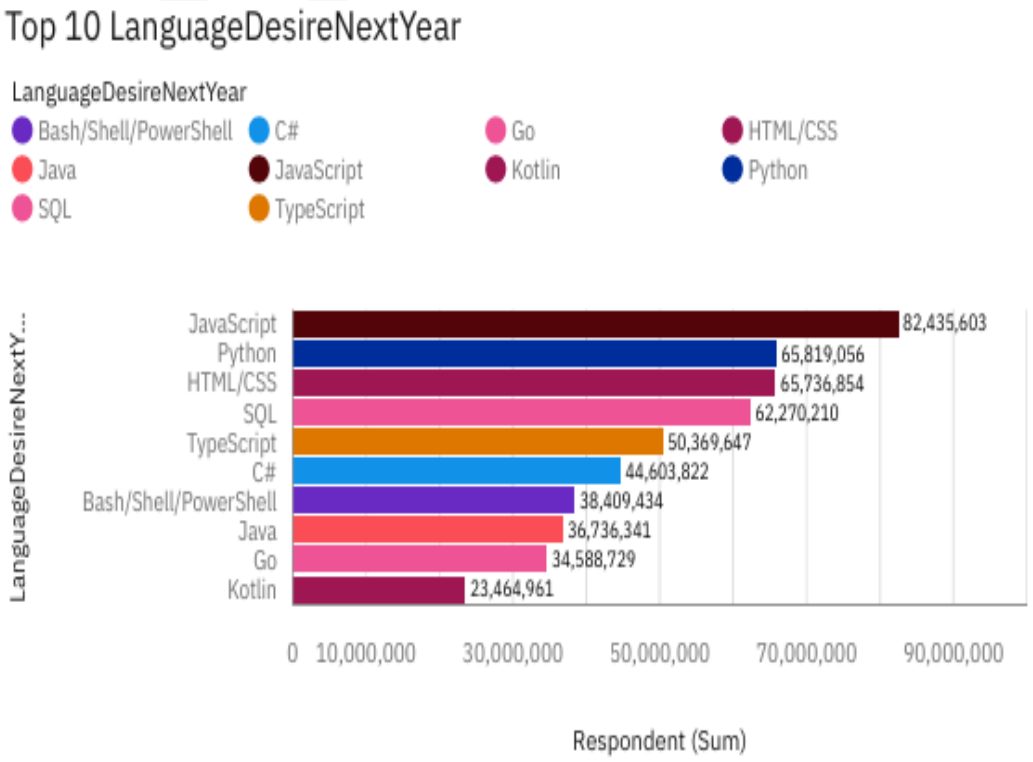

Respondent by DatabaseDesireNextYear
Respondent (S...
50,000,000
0
12,995,539
20,585,232
30,320,901
35,314,757
41,370,718
53,804,386
Dyna...
MariaDB
Firebase
SQLite
Microsoft...
Elasticse...
MySQL
Redis
MongoDB
Po...
DatabaseDesireNextYear

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

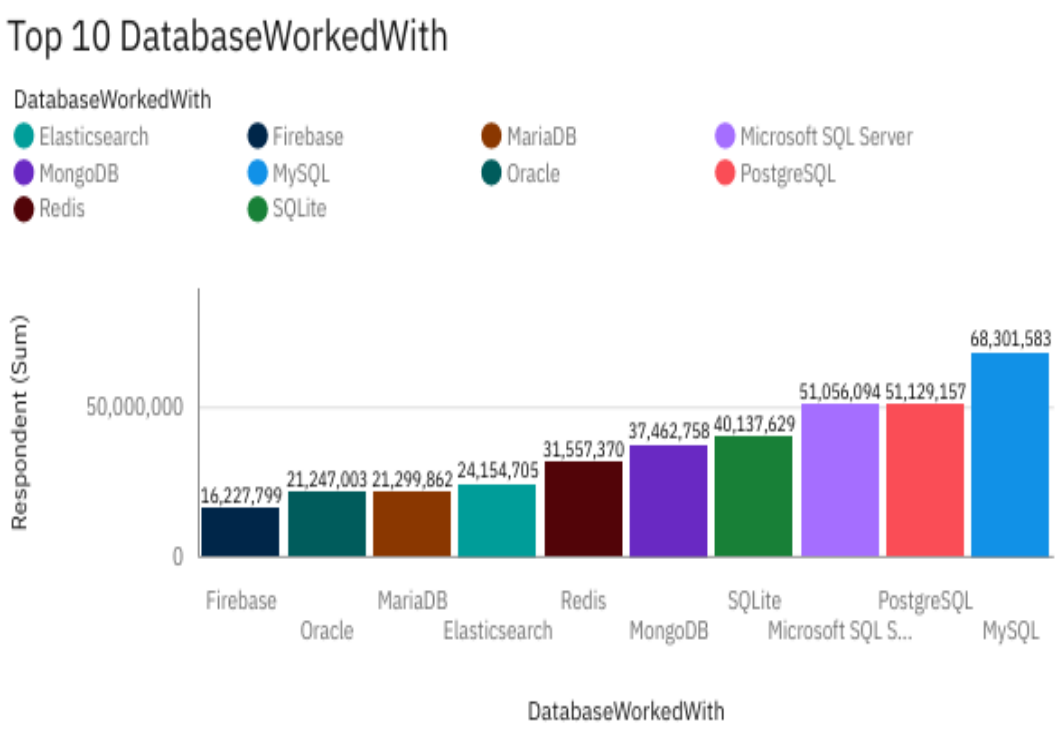
- Based on the bar graph the current year,it appears that JavaScript was the most widely used language.
- Along with HTML/CSS, JavaScript was once again the most common language for the bar graph for the following year.But acc. to the bar graph for the next year, Python is surpassing SQL in popularity.
- C++ and Kotlin are the least popular languagesfor the bar graph for this year and next year(perhaps because they are hard to learn).

Implications

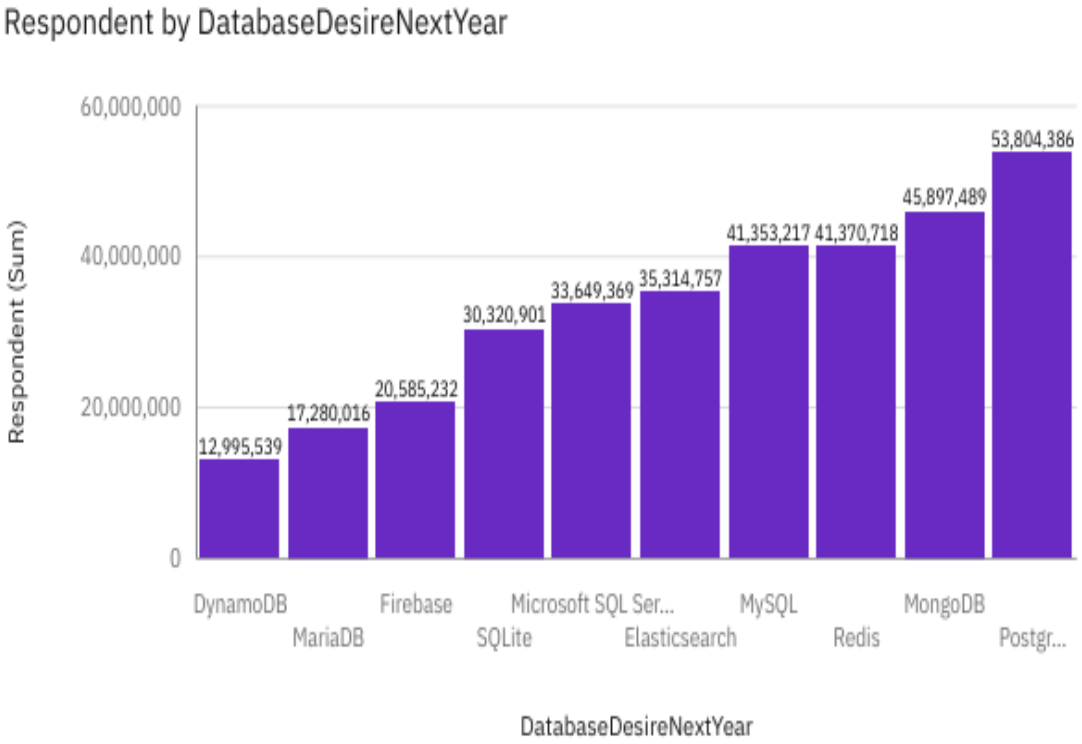
- Since GO and Kotlin have replaced PHP and C++ respectively, the dataset no longer includes C++.This also calls into question our comparison of the two charts.
- Due to the fewer number of responders than in our existing bar chart dataset,both comparisons will be inaccurately represented.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- According to Current year of Databases worked with, MYSQL appears to be the topcoding language with a total of 5,469 out of 6,000 respondents.
- For both the Current & Next Year databases, MongoDB remained relatively the same, hovering within 3,000 – 3,700 respondents. Several noticeable differences is MYSQL, where respondents decreased during the Next Year & PostgreSQL, Redis surpassing MYSQL.
- MariaDB, Firebase & Oracle all appear to have a relatively low # of respondents for both years. Indicating that these databases were amongst the least favorable.

Implications

- The # of respondents are not equal(5,000 for current & 6,000 for Next), suggesting that a comparison between both years would provide insufficient data as the # of respondents should be equal in order to provide a fair comparison.
- To further elaborate on implication 1, as you can see on both charts, the number of respondents is relatively lower during Next Year Database compared to the Current.
- Also, the databases appeared to have changed towards the current year as DynamoDB & Oracle have seemed to disappear. One can speculate that these databases were removed due to each respondents disinterest, however if that were the case then surely the same can be applied to Redis as this database grew in interest by respondents towards Next Year. This would indicate some inconsistences within the data which wouldn't really allow for a fair comparison either.

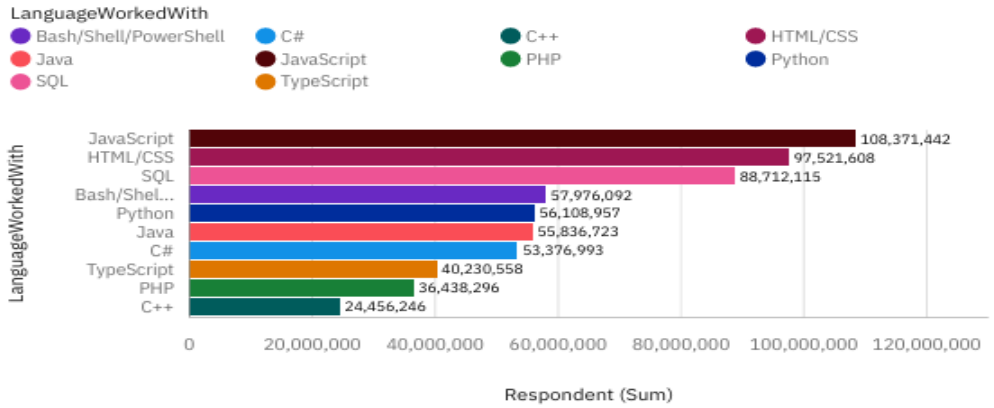
DASHBOARD

https://github.com/VIN-EET-TEC/IBM-Data-Analyst-Capstone-Project/blob/2f2b173dfddbea661c1c6c64bddf20ece0bd6d65/Building%20%20Dashboard%20With%20IBM%20Cognos%20Analytics.pdf

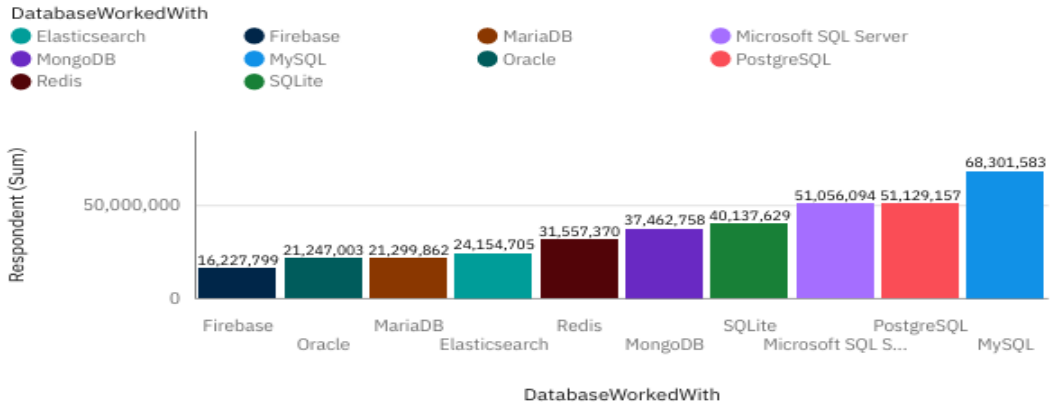
DASHBOARD TAB 1

Current Technology Usage

Top 10 LanguageWorkedWith

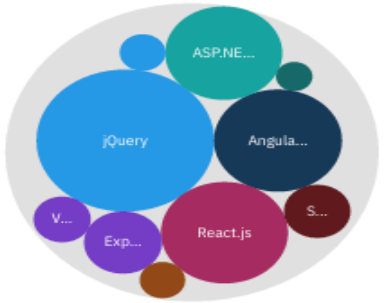


Top 10 DatabaseWorkedWith



PlatformWorkedWith

Top 10 WebFrameWorkedWith



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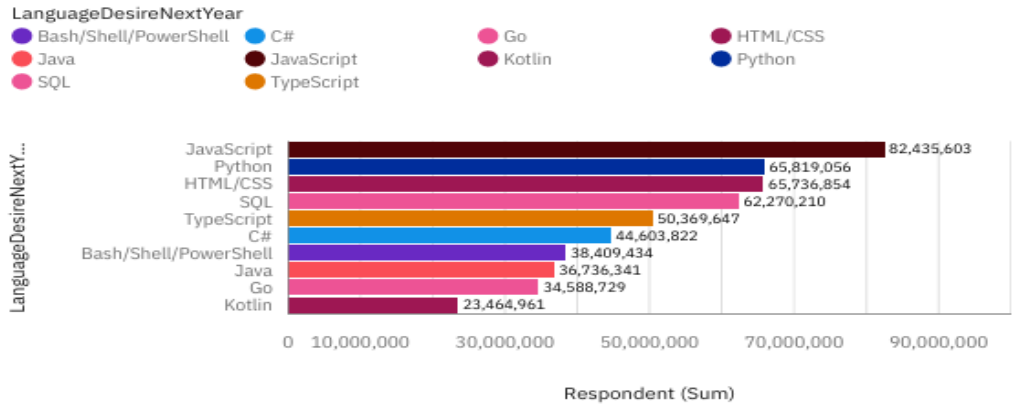
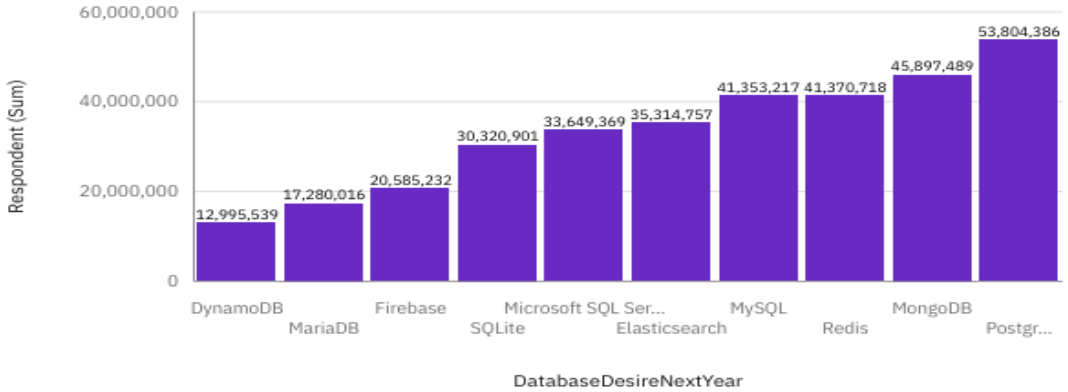
DASHBOARD TAB 2

Future Technology Trend

Top 10 LanguageDesireNextYear

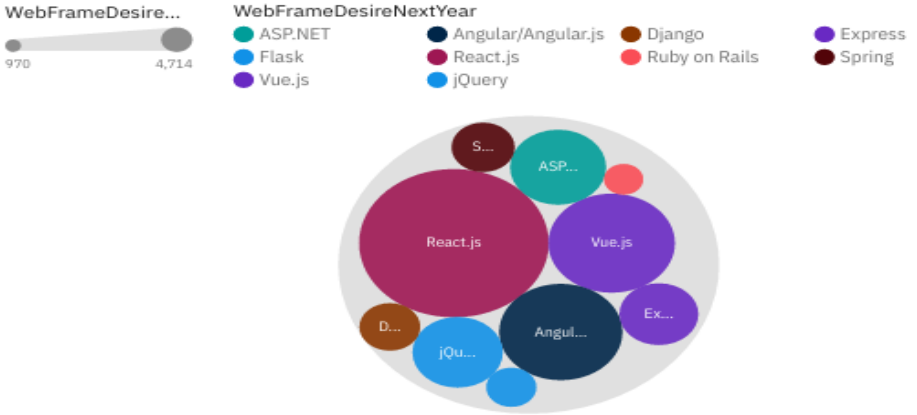


Respondent by DatabaseDesireNextYear



PlatformDesireNextYear

Top 10 WebFrameDesireNextYear



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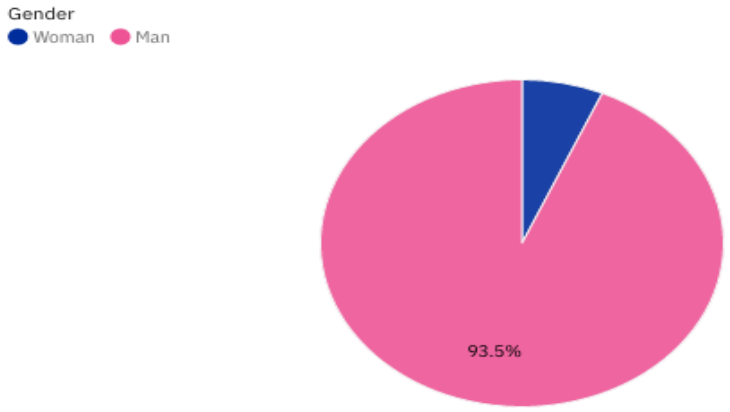
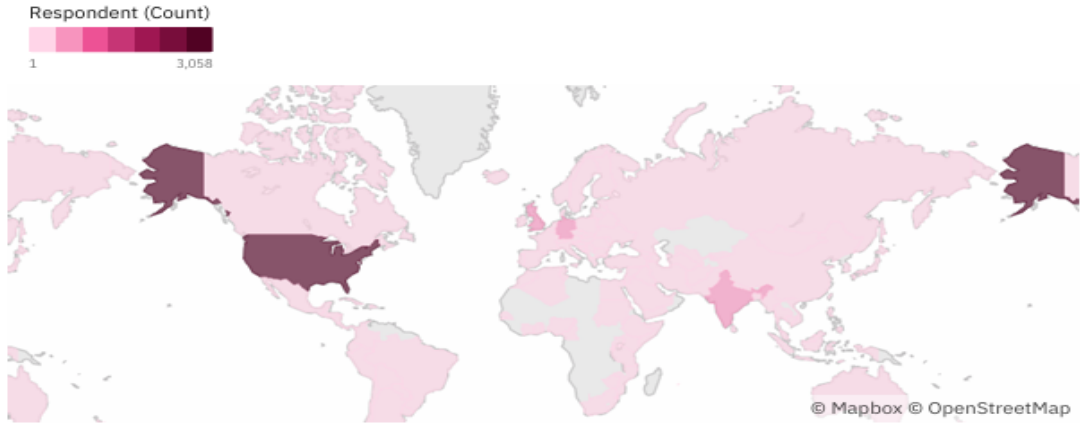
DASHBOARD TAB 3

Demographics

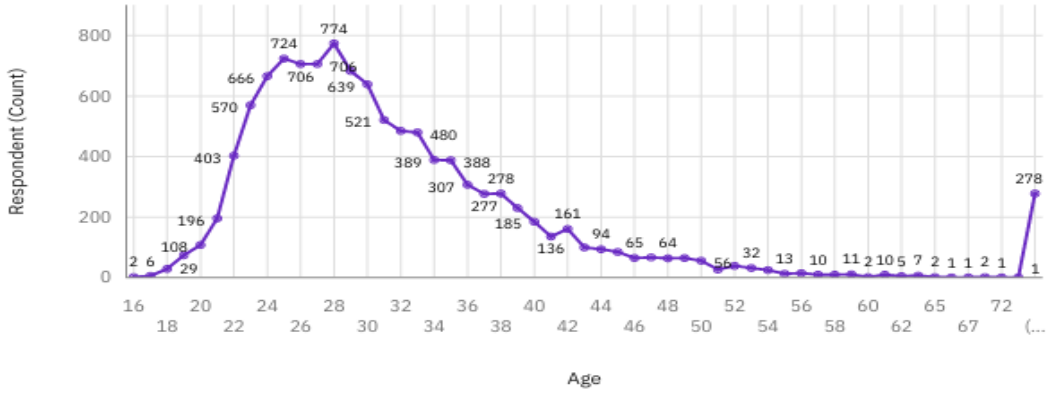
Respondent classified by Gender



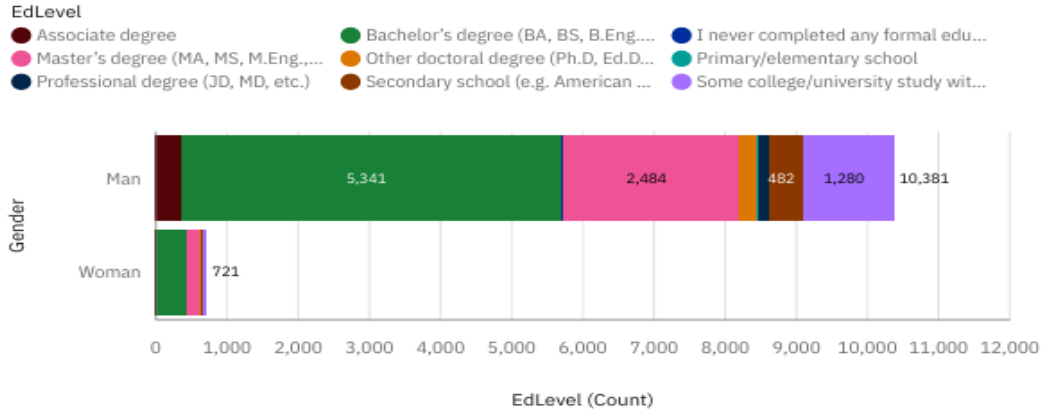
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



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DISCUSSION

- For our Database information we can see MySQL leads in the current year but loses ground to PostgreSQL and Redis, indicating a shift towards databases optimized for scalability and modern application needs. Also notice DynamoDB and Oracle disappearing from the next year dataset raises questions about evolving organizational priorities and preferences.
- For our Programing data we can see Python's rise reflects its versatility and increasing adoption in fields like data science and machine learning. We can also see C++ and Kotlin remain less popular, likely due to their complexity or niche use cases.
- Some Critical Observations: Data Inconsistencies. Unequal respondent counts between the years affect the reliability of comparisons. Future analyses should ensure consistent sample sizes.

OVERALL FINDINGS & IMPLICATIONS

Findings

- MySQL’s decline in usage contrasts with the rise of PostgreSQL and Redis, reflecting a growing preference for scalable, modern databases suited for cloud-based and distributed applications.
- Python shows substantial growth, surpassing SQL to become the second most popular language. This trend highlights Python's increasing relevance in fields like data analysis, artificial intelligence, and machine learning.
- JavaScript continues to dominate as the most widely used programming language across both years, underscoring its critical role in web development and front-end applications.

Implications

- Adopting developer-friendly and scalable technologies like PostgreSQL and Redis can improve productivity and support modern application needs. These shifts also emphasize the need for continuous upskilling within teams.
- Mastering Python and JavaScript will be essential for staying competitive, especially in industries focused on data science, automation, and web development. Gaining familiarity with modern databases like PostgreSQL is equally important.
- Future analyses should address data inconsistencies, such as unequal respondent counts, to improve the accuracy of year-over-year comparisons. Expanding survey coverage to include emerging technologies will offer a more comprehensive view of industry trends.

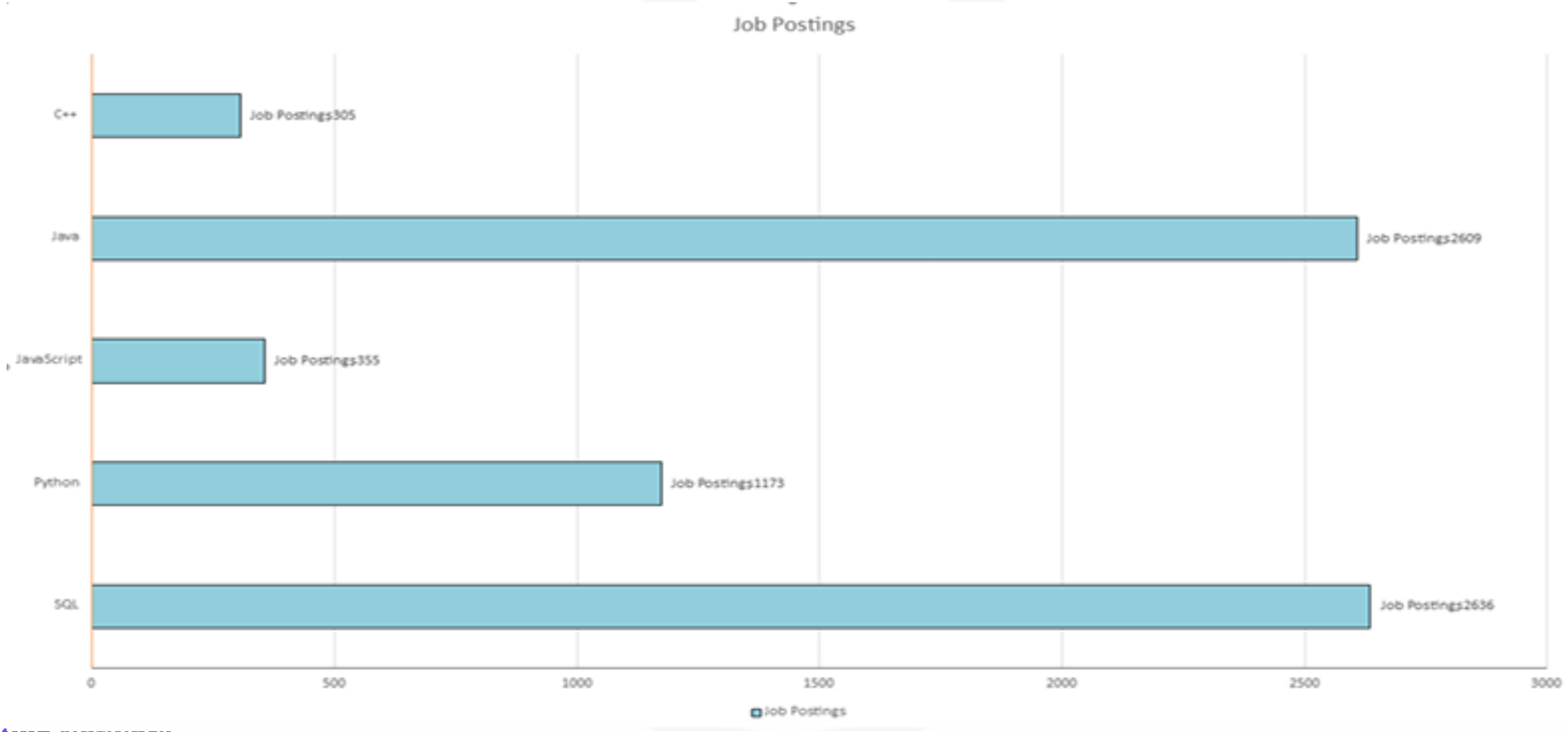
CONCLUSION

- The findings underscore the importance of staying informed about technology trends to remain competitive in an evolving industry. For developers, this means focusing on high-demand skills like Python and scalable database technologies. For organizations, it highlights the value of adopting tools that enhance efficiency, scalability, and adaptability.
- These actions can foster innovation, improve productivity, and position stakeholders for long-term success in the tech-driven economy.
- To build on this analysis, future research should ensure consistent sample sizes across datasets to enhance reliability. As the technology landscape continues to evolve, ongoing efforts to analyze and interpret trends will be critical to staying relevant and competitive.
- This project provided a comprehensive analysis of programming language and database trends based on survey data from the current and next year. Notable findings include Python's remarkable growth, overtaking SQL, the adaptation. sustained dominance of JavaScript in web development, and PostgreSQL's increasing adoption in the database landscape. These shifts illustrate the dynamic nature of the technology sector and the need for constant .

APPENDIX

- Include any relevant additional charts, or tables that you may have created during the analysis phase.

JOB POSTINGS



POPULAR LANGUAGES