

# IBM DATA ANALYST CAPSTONE PROJECT

By:

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# OUTLINE

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

# EXECUTIVE SUMMARY

- ▶ This project comprises of three different tabs which include:
  - ▶ The first tab is about current technology usage : This tab analyses the current languages, databases, platforms and webframe programmers worked with
  - ▶ The second tab is about future technology trend: This tab analyses the languages, databases, platforms and webframe programmers desire to work with next year
  - ▶ The last tab is about demographics: This tab analyses the total respondent by gender, respondent by age group, respondent by country and respondent classified by education level

# INTRODUCTION

This report is final project for IBM data analyst professional certificate and it aims to delve into current technology usage, the future technology trend and the demographics of programmers across countries.

**Current technology:** What programmers currently worked with

- i. Top 10 languages
- ii. Top 10 databases,
- iii. Platforms
- iv. Top 10 webframes.

**Future technology trend:** What programmers desire to work with next year

- i. Top 10 languages
- ii. Top 10 databases
- iii. Platforms
- iv. Top 10 webframes.

**Demographics:** Programmers demographics

- i. Respondent by gender
- ii. Respondent by countries
- iii. Respondent by age
- iv. Respondent by gender classified by educational level

# METHODOLOGY

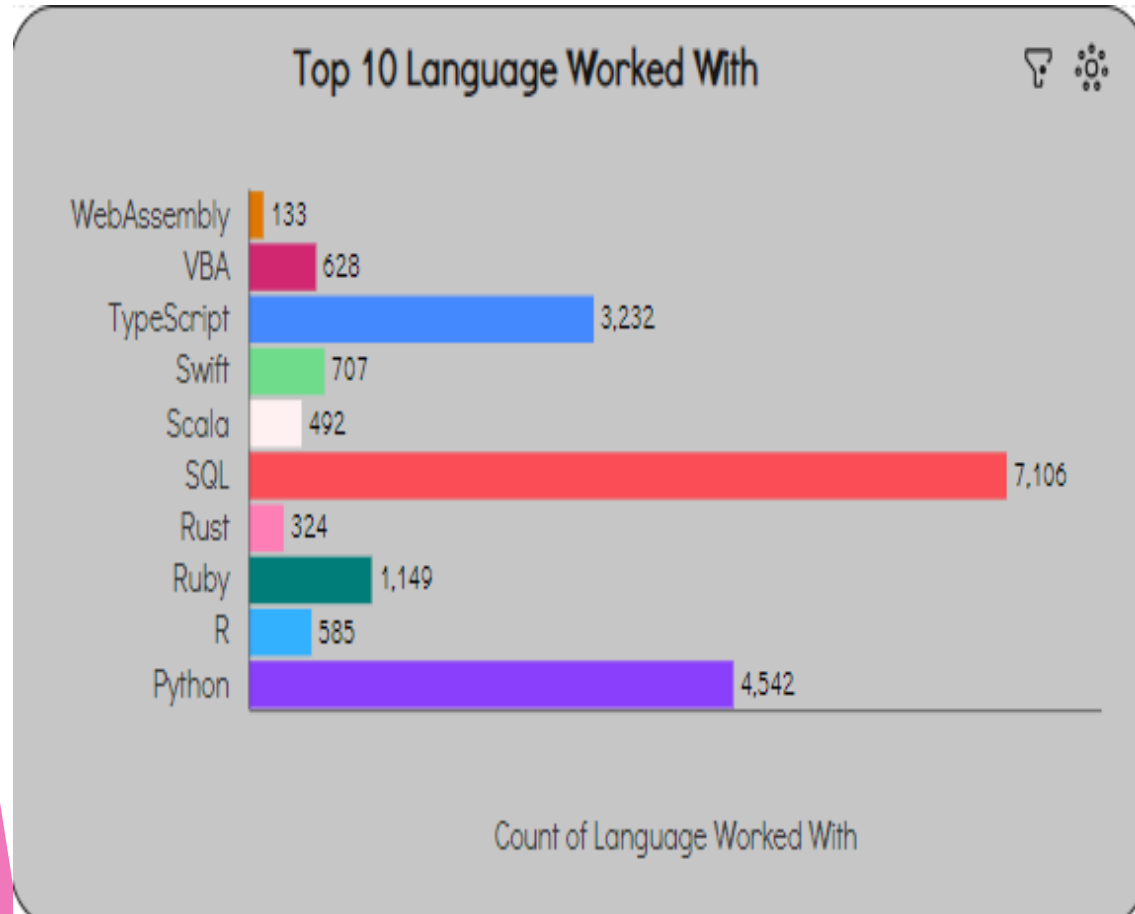
- ▶ The data source for this analysis is a secondary data and comes from: <https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey-results-are-in/>
  - ▶ [https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m5\\_survey\\_data\\_demographics.csv](https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m5_survey_data_demographics.csv)
  - ▶ [https://cf-coursesdata.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321ENSkillsNetwork/LargeData/m5\\_survey\\_data\\_technologies\\_normalised.csv](https://cf-coursesdata.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321ENSkillsNetwork/LargeData/m5_survey_data_technologies_normalised.csv)
- ▶ Data cleaning and analysing was done through python while visualization was done using IBM cognos analytics

# RESULTS

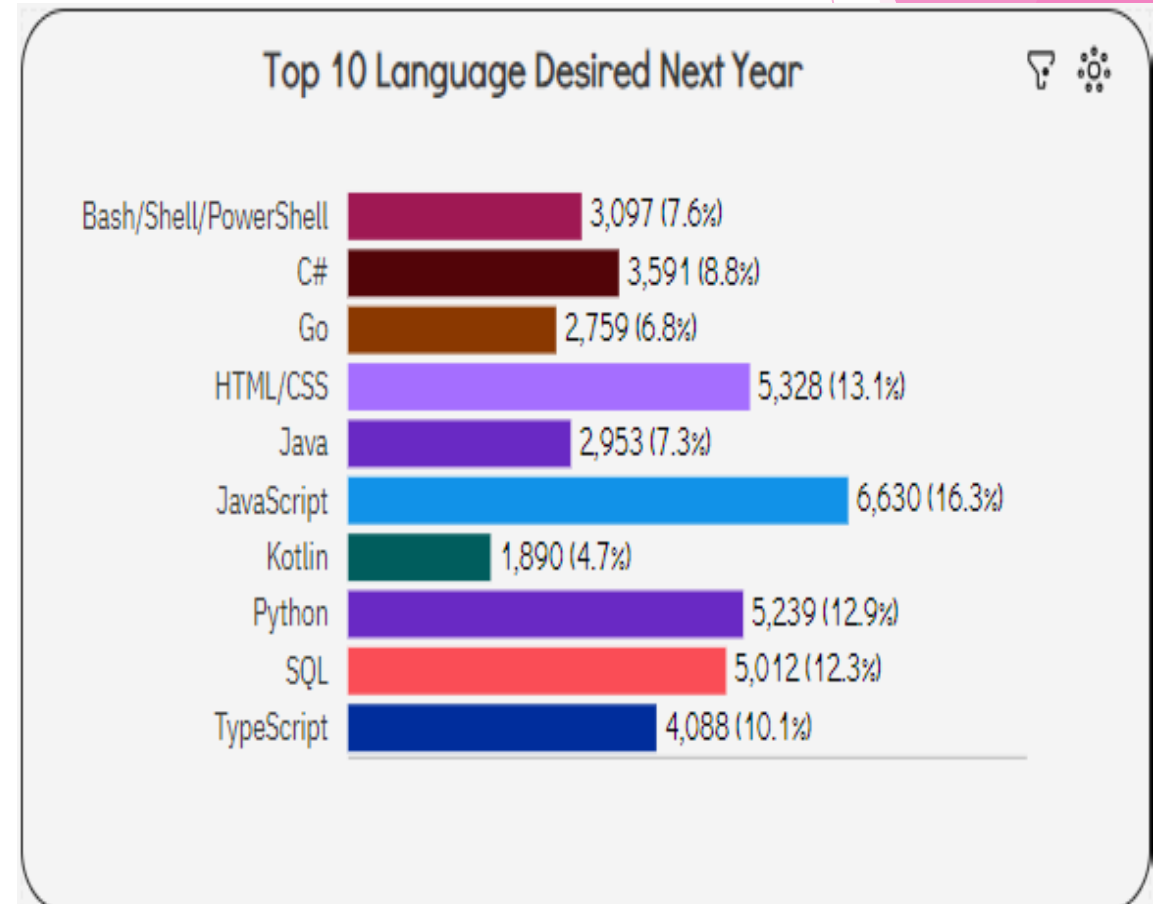
1. Programing language trend
2. Database language trend

# PROGRAMMING LANGUAGE TRENDS

## Current Year



## Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- ▶ SQL is the highest number of language programmers work with followed by python
- ▶ Rust and WebAssembly are the least language programmers are currently working with
- ▶ JavaScript is the highest number of language programmers desire to work with next year followed by HTML/CSS
- ▶ GO and Kotlin are the least language programmers desire to work with next year working with

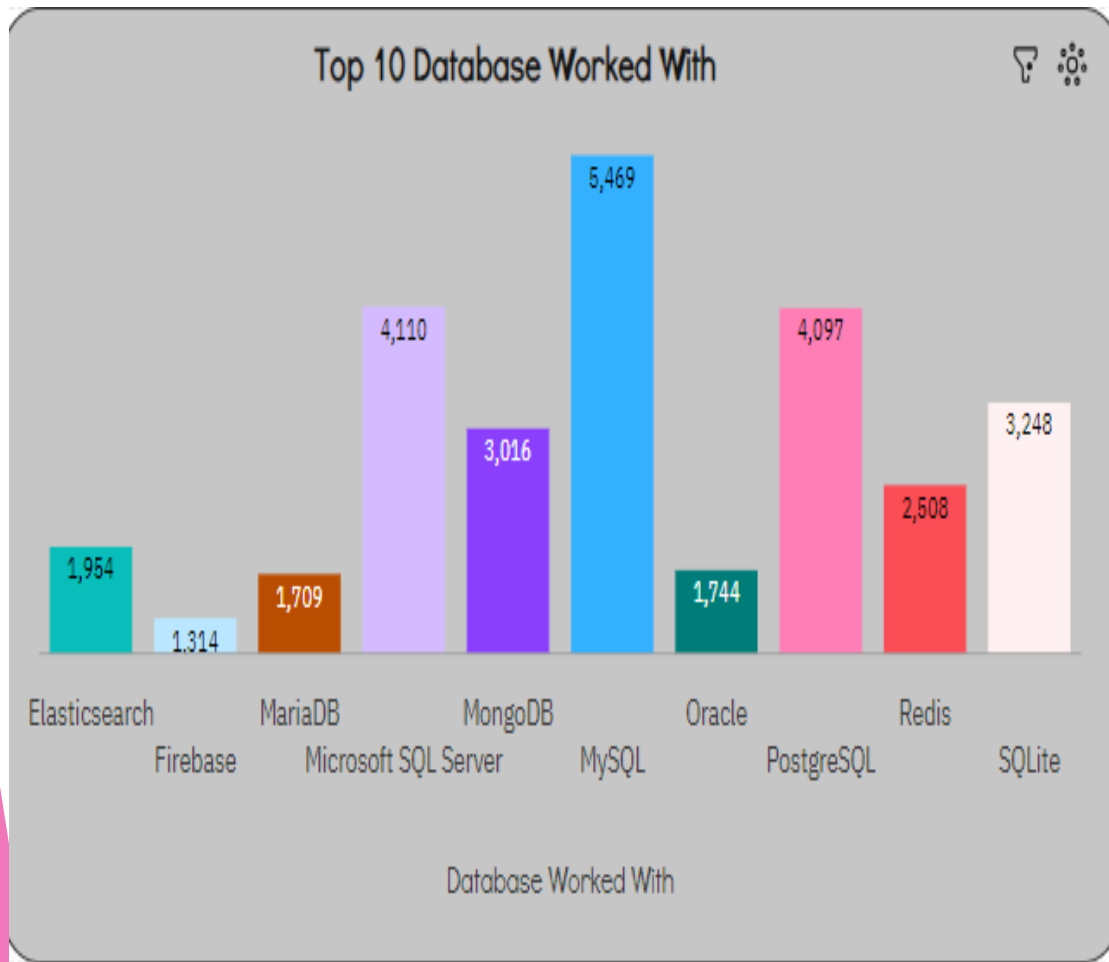
## Implications

- ▶ The change in preferred programming languages reflects evolving industry trends and demands.
- ▶ The shift towards languages like Python, SQL, and TypeScript in both years highlights their continued relevance and strong demand across various domains.
- ▶ The shift in programming language preferences reflects a dynamic industry where developers continually evaluate and adjust their skillsets to meet evolving d

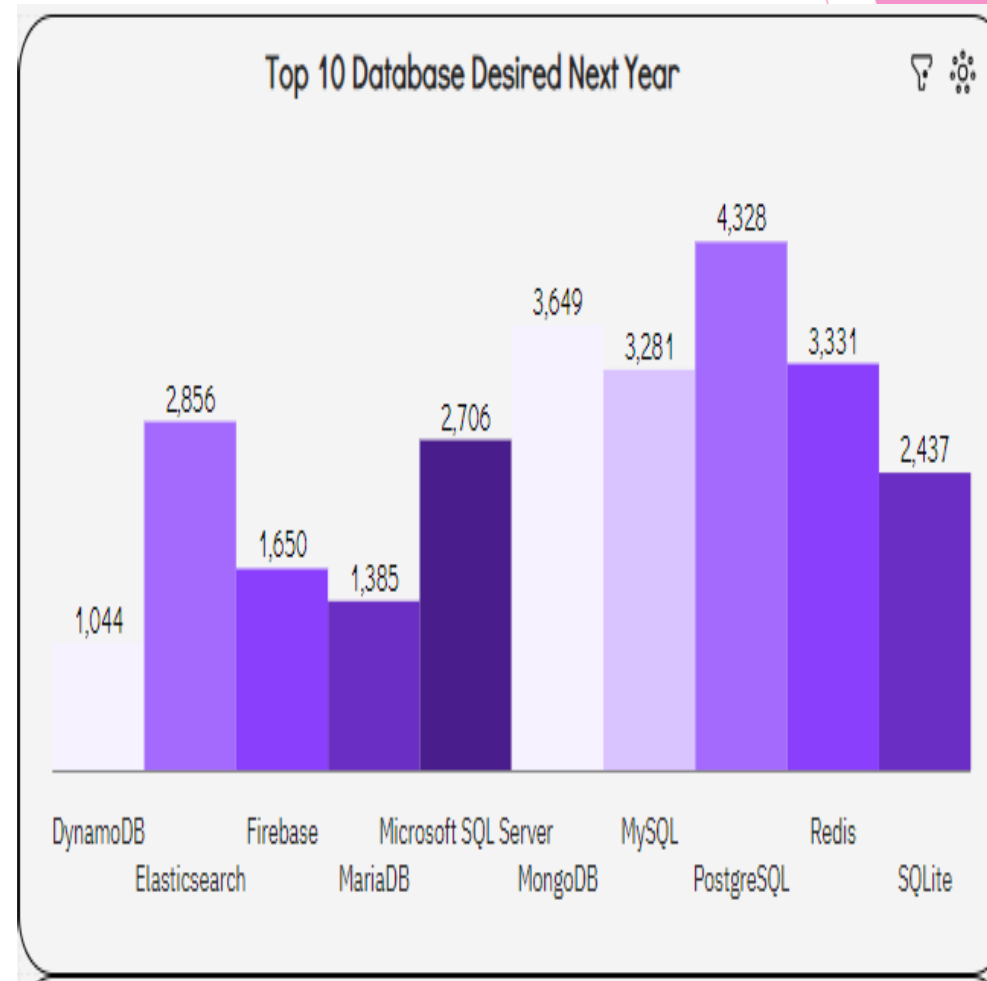


# DATABASE TRENDS

## Current Year



## Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- ▶ The top 3 database programmers are working with include mySQL, microsoft SQL and postgresSQL
- ▶ The top 3 database programmers desired to work with next year include postgresSQL, mongoDB and Redis
- ▶ Least database currently working with are mariaDB and firebase
- ▶ Least database desire next year are mariaDB and dynamoDB

## Implications

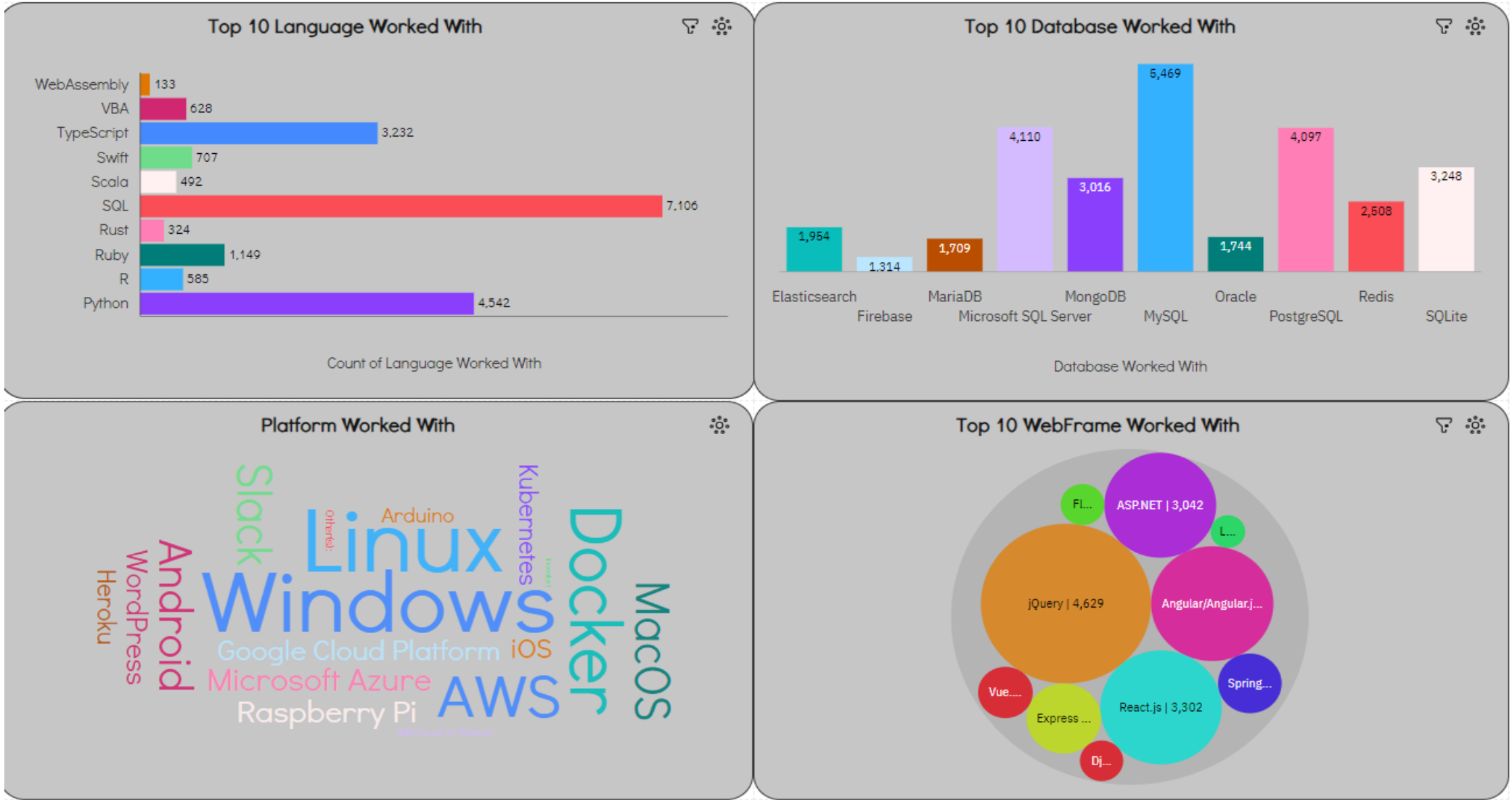
- ▶ The preference for a diverse range of databases, including both relational (e.g., PostgreSQL, MySQL) and NoSQL (e.g., MongoDB, Redis) solutions, highlights the importance of choosing databases that best fit the specific requirements of each project
- ▶ The shift in database preferences reflects the dynamic nature of the database ecosystem, with developers continually evaluating and selecting the most suitable solutions to meet the evolving needs of modern applications and businesses

# DASHBOARD

Follow link below to access the dashboard:

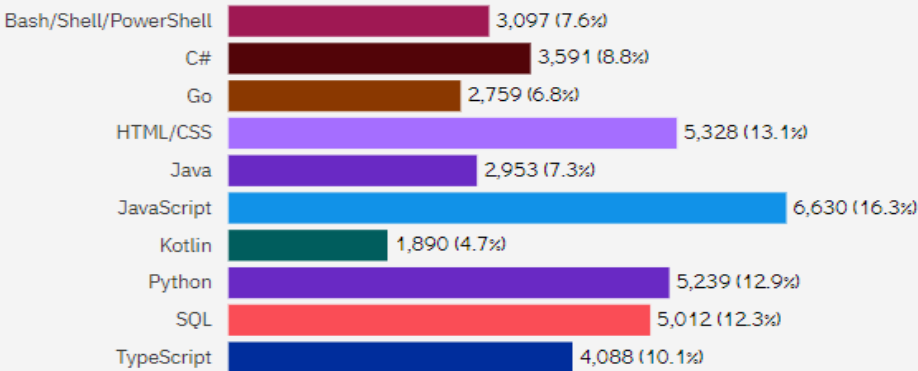
<https://github.com/Temitopeadep/Building-A-Dashboard-With-IBM-CognosAnalytics/blob/main/Assignment%20Part%20A%20cognos.pdf>

# CURRENT TECHNOLOGY USAGE DASHBOARD

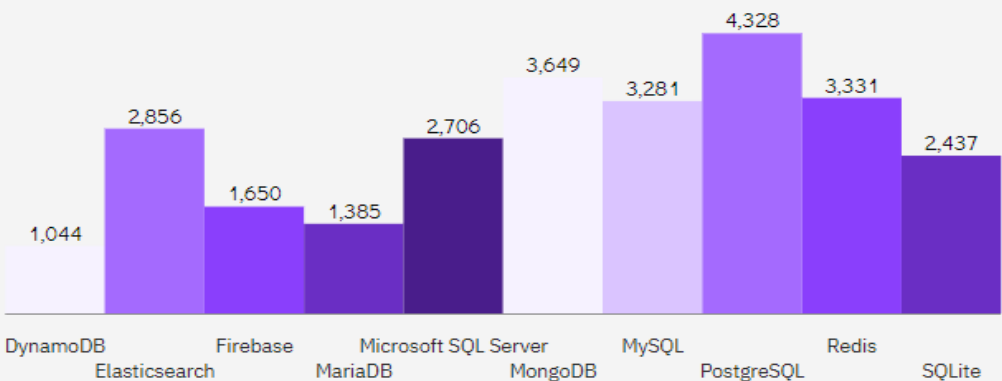


# FUTURE TECHNOLOGY TREND DASHBOARD

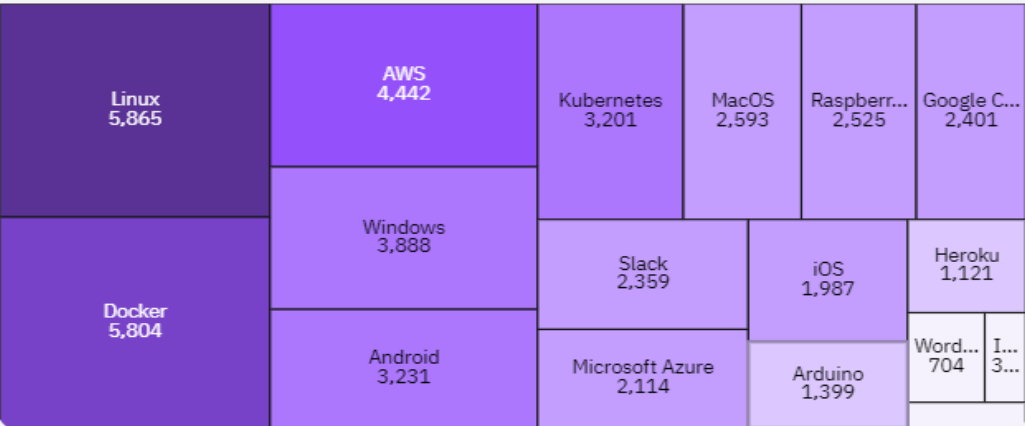
Top 10 Language Desired Next Year



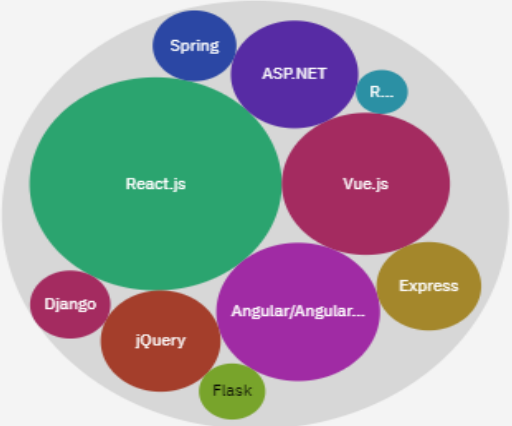
Top 10 Database Desired Next Year



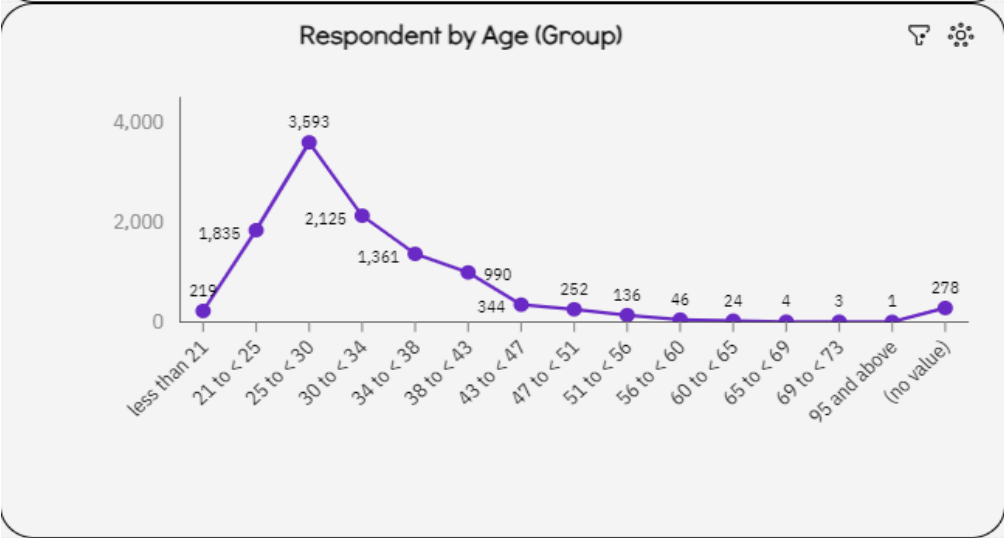
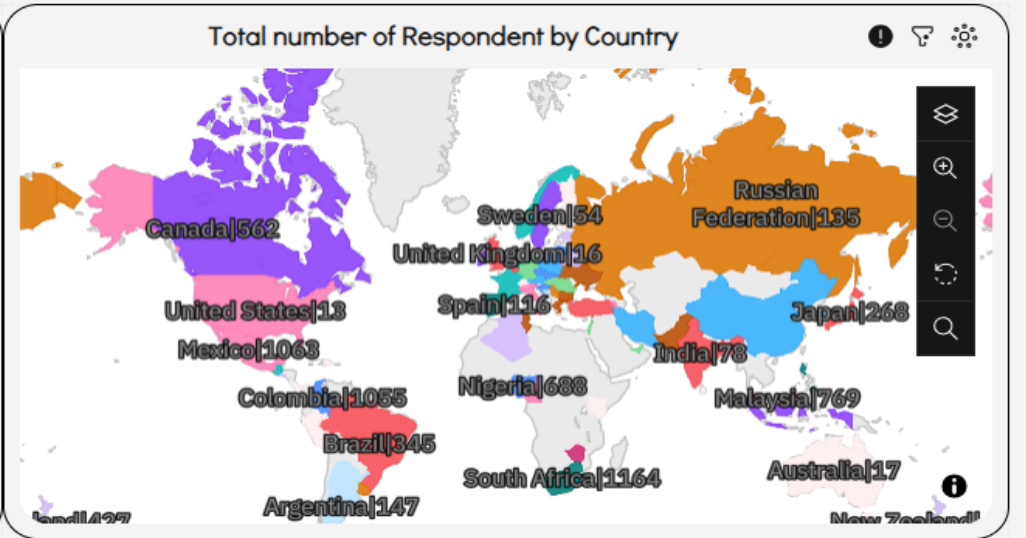
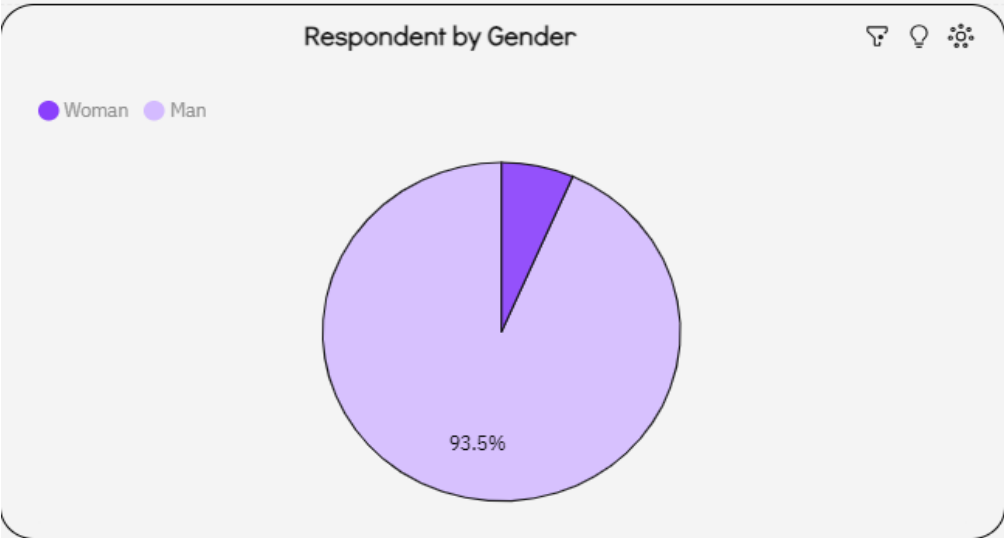
Platform Desire Next Year



Web Frame Desire Next Year (Top 10)



# DEMOGRAPHICS DASHBOARD



# DISCUSSION

- ▶ Total respondent count 74.6K
- ▶ Number of language worked with and desire to work with next year 28
- ▶ Database worked with and desire to work with next year 14
- ▶ Platform worked with and desire to work with next year 17
- ▶ Webframe worked with and desire to work with next year 13
- ▶ Number of country 135
- ▶ Education level is 7
- ▶ Average age of respondent 30.78

# OVERALL FINDINGS & IMPLICATIONS

## Findings

- ▶ 93.5% of the respondent are males
- ▶ Age group of less than 21 to 43 are the major respondent
- ▶ Major respondent have Bachelor degree

## Implications

- ▶ The implication of having 93.5% male respondents underscores the importance of promoting gender diversity and inclusivity in survey research to ensure representative and actionable insights that reflect the perspectives and experiences of all individuals within a given population
- ▶ The concentration of respondents within a specific age range provides insights into the attitudes, behaviors, and preferences of particular generations, such as Millennials and Generation Z. Understanding the perspectives of these demographic cohorts can inform decision-making processes, marketing strategies, and policy initiatives tailored to their needs and preferences.
- ▶ The educational profile of respondents suggests that the survey findings may be particularly relevant to topics related to higher education, career development, professional aspirations, and workforce participation. Organizations, institutions, and businesses can tailor their products, services, and messaging to resonate with individuals who have bachelor's degrees and may have specific preferences, needs, and priorities shaped by their educational experiences



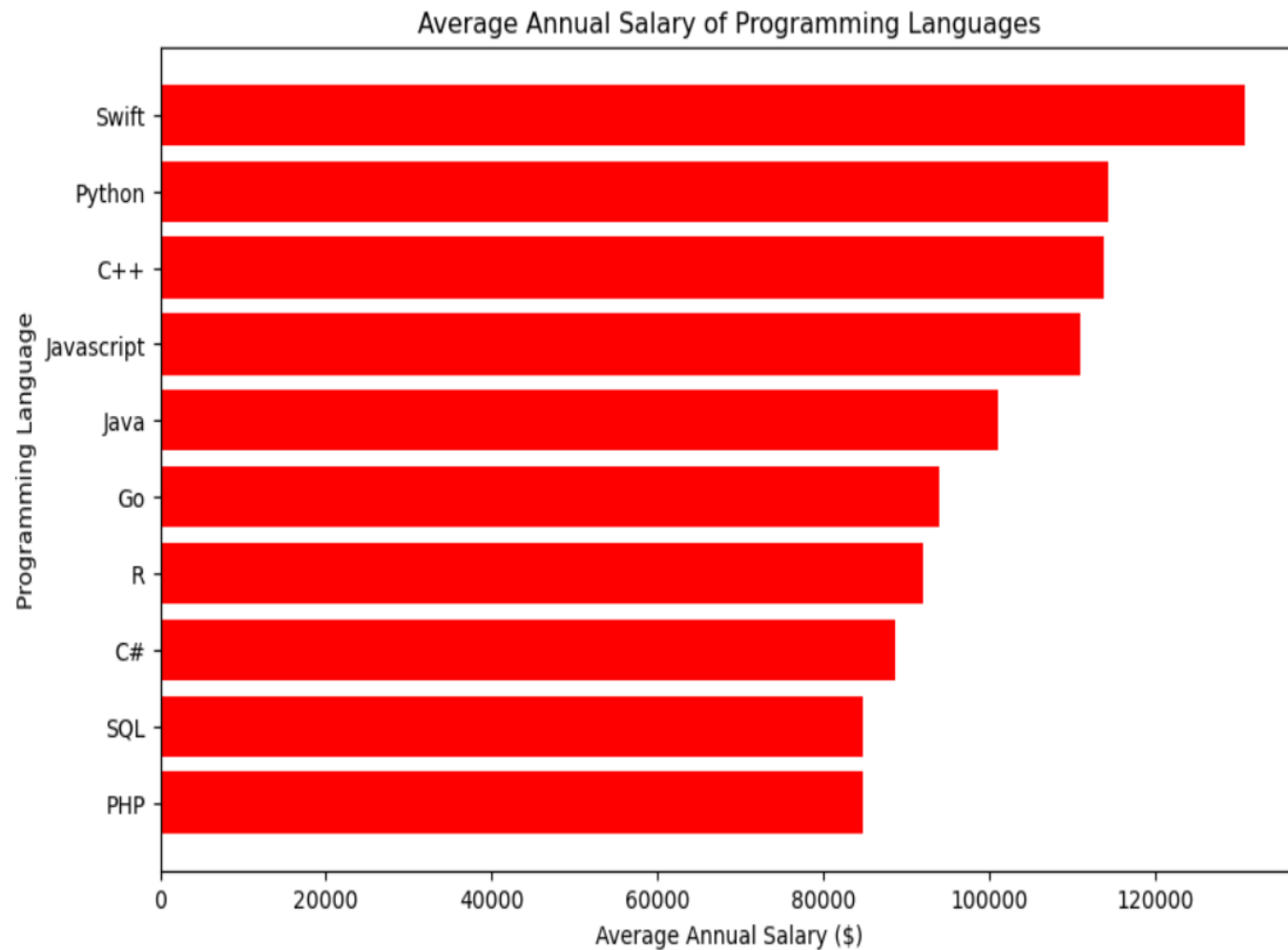
# CONCLUSION

- ▶ **Potential Biases in Methodology:** The gender imbalance in respondents may indicate biases in the survey methodology, recruitment strategies, or sample selection process. Addressing these biases is crucial for ensuring the validity and reliability of survey findings and promoting inclusivity in research practices.
- ▶ **Opportunity for Improvement:** Recognizing the gender imbalance in respondents presents an opportunity for researchers and survey organizers to take proactive steps to enhance diversity and inclusion in future survey efforts. This may involve implementing targeted outreach efforts, employing inclusive language and imagery, and fostering a supportive environment for diverse participation.

# APPENDIX

<div>Respondent Count</div> <div>74.6K</div> <div>Respondent</div>		<div>Total LanguageWorkedWith</div> <div>28</div> <div>LanguageWorkedWith</div>	
<div>DatabaseWorkedWith</div> <div>14</div> <div>DatabaseWorkedWith</div>	<div>PlatformWorkedWith</div> <div>17</div> <div>PlatformWorkedWith</div>	<div>WebFrameWorkedWith</div> <div>13</div> <div>WebFrameWorkedWith</div>	
<div>Country</div> <div>135</div> <div>Country</div>	<div>Education Level</div> <div>9</div> <div>EdLevel</div>	<div>Respondent Average Age</div> <div>30.78</div> <div>Age</div>	

# JOB POSTINGS



# POPULAR LANGUAGES

