AN ANALYSIS OF THE FUTURE TRENDS FOR ASPIRING TECHNOLOGY USERS

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OUTLINE

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

EXECUTIVE SUMMARY

- As the world continues to evolve digitally, it has become more important than ever for someone aspiring to enter an IT-related career to develop essential technological skills, such as programming, database management, and web frame usage.
- However, given the vastly dynamic environment in this field, it becomes increasingly difficult to determine which skills are more important than others, or which skills a person of a certain demographic should prioritize.
  - Currently, there are around 700 programming languages, each with their own strengths and weaknesses.
  - This number is projected to increase over the next years, as technology continues to develop and become more accessible all over the world.
  - As such, people who wish to enter a career with high demand must be equipped with the necessary knowledge and skills to stand out.
- This study aims to give aspiring technology users an overview of the current and future trends of different technologies used by people who are highly proficient in the field.
- The study will be based on a conducted survey with over 11,000 respondents, and will mainly utilize data containing the demographics of the respondents as well as their preferences in different technology-related skills, such as programming languages and database management systems.
- Results show the top 10 technologies being used this year and the top 10 projected technologies to be used next year for the following: programming languages, databases, web frames, and platforms for the usage of these technologies.
- To make the study more specific, the demographics of the respondents were also taken into consideration, such as their gender, education level, and country of residence.

INTRODUCTION

- As most of the high-demand careers in the modern world require certain technological skills, it is important to develop proficiency in these skills.
- It has become increasingly difficult to determine which of these skills should be prioritized, given the numerous skills readily available and the continuously increasing amount of skills that technology continues to develop.
- This study aims to give people wishing to pursue a career in IT an overview of the trends of current technological skills to equip them with the necessary information needed to stand out in a highly dynamic environment.

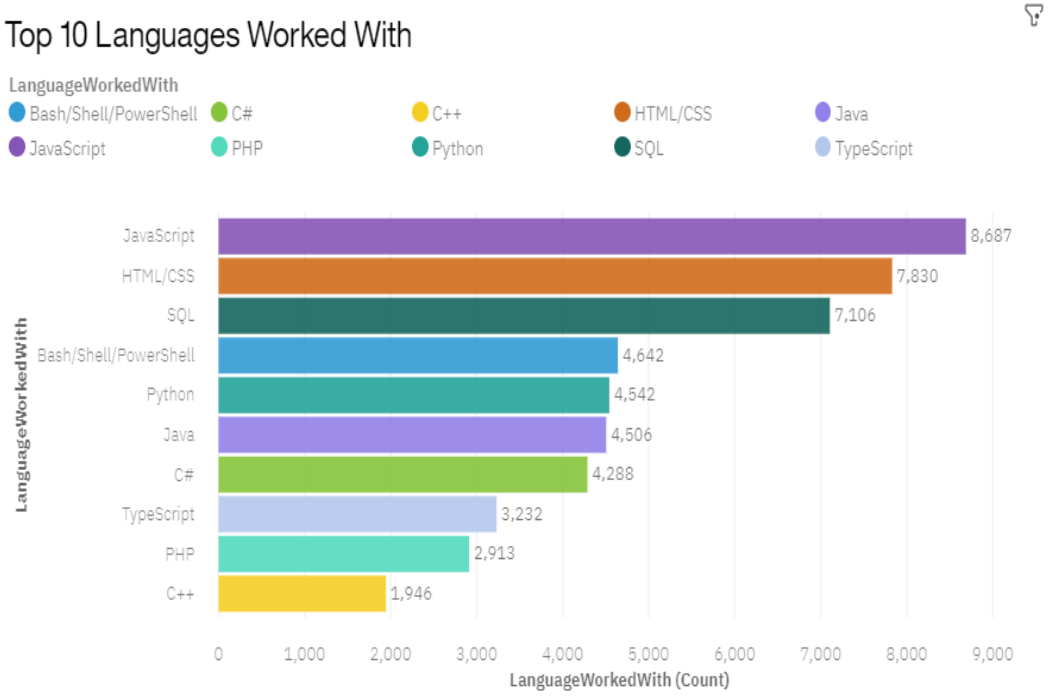
METHODOLOGY

- Survey data was collected, with over 11,000 respondents.
- The data was then cleaned. To see this through, duplicate responses were first removed. Then, missing values for features such as respondent age and annual income were replaced by the mean of these respective features for all the respondents.
- Outliers for numerical features were then located by use of boxplots and exploratory data analysis. This step and the above step were done for better accuracy and to avoid errors when determining our results.
- Dashboards for better data visualization were then created by use of IBM Cognos Analytics.
  - Trends in technological skills for the current year were used, such as top 10 programming languages, databases, web frames, and platforms.
  - This process was then repeated but for the next year, showing the future trends for technological skills to determine which are most in demand.
  - Visualizations for respondent demographics were also created to show how different respondents varied in terms of gender, education level, and country of residence.

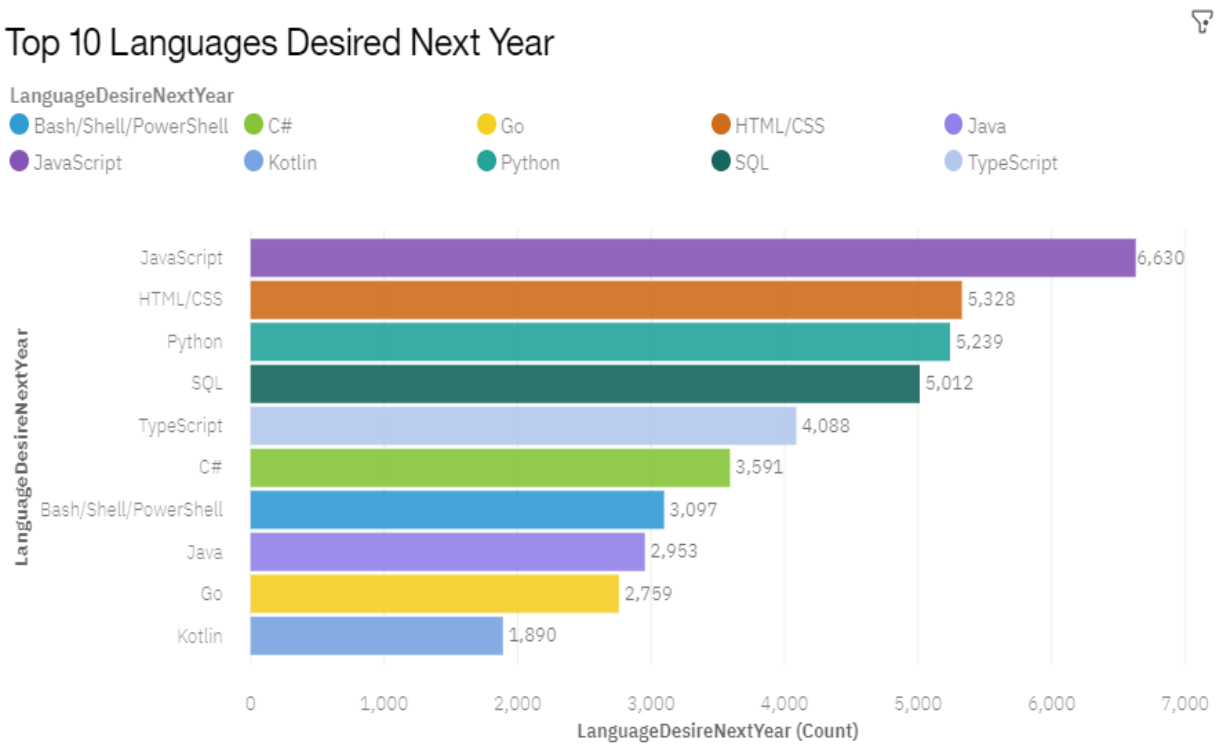
RESULTS

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

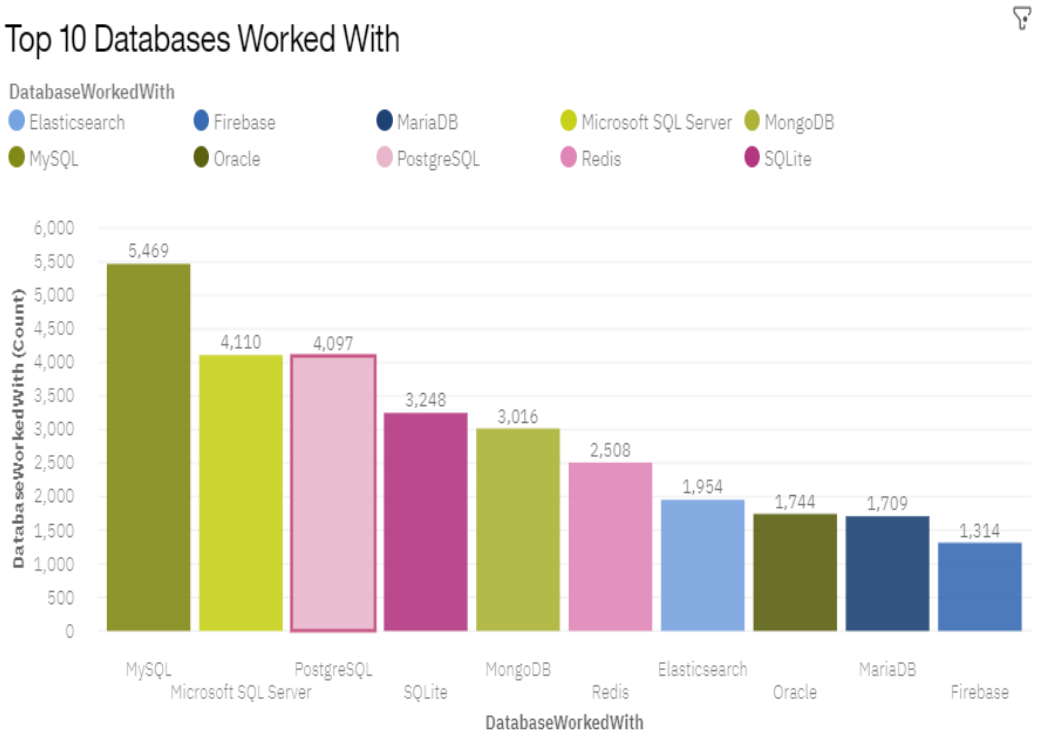
- JavaScript and HTML/CSS remain as the top two programming languages both for this year and the coming year.
- Programming languages such as Python and TypeScript have seen a rise in demand for the coming year.
- Programming languages such as PHP, C++, and Bash/Shell/PowerShell have seen a drop in demand for the coming year.

Implications

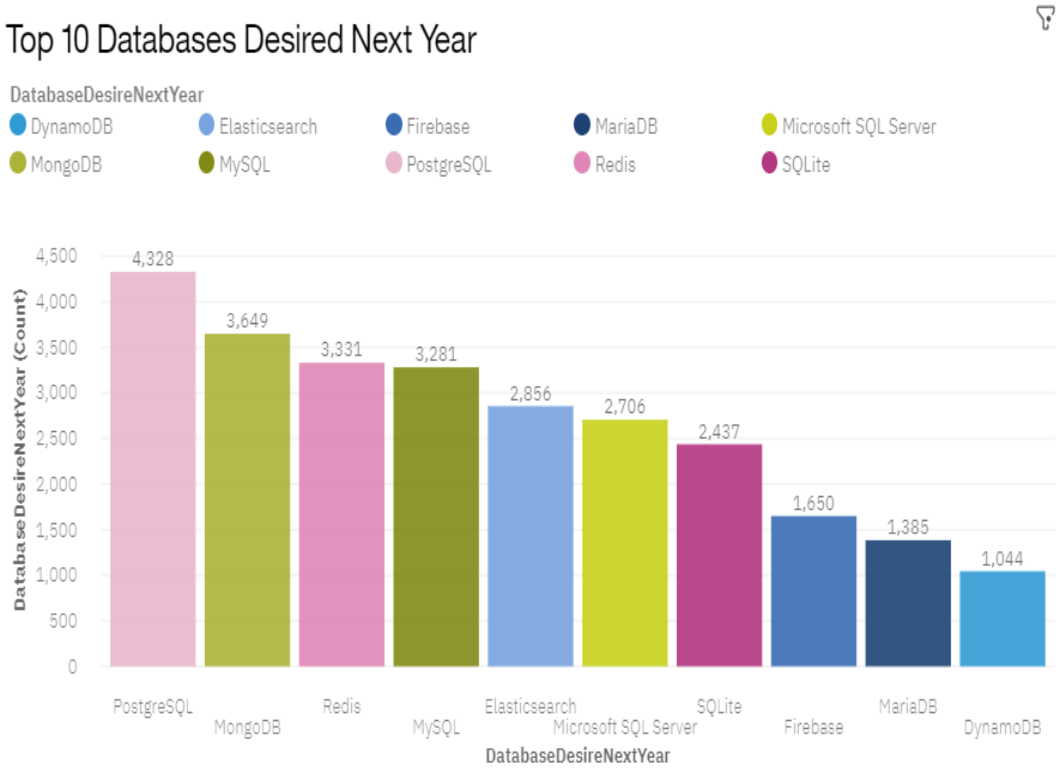
- Programming languages such as JavaScript, HTML/CSS, Python, and TypeScript have increased in demand due to their adaptability and versatility to address the needs of the modern technological world.
- As such, aspiring IT students should consider equipping themselves with the necessary knowledge and skills in these languages.
- Over the next few years, it might no longer be necessary to develop skills and knowledge in PHP, C++, and Bash/Shell/PowerShell.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MongoDB, PostgreSQL, Elasticsearch, and Redis have seen a significant rise as desired databases to work with in the coming year.
- MySQL, SQLite, and Microsoft SQL Server have become less desired in the coming year.
- DynamoDB has replaced Oracle as one of the top 10 databases desired to work with in the coming year.

Implications

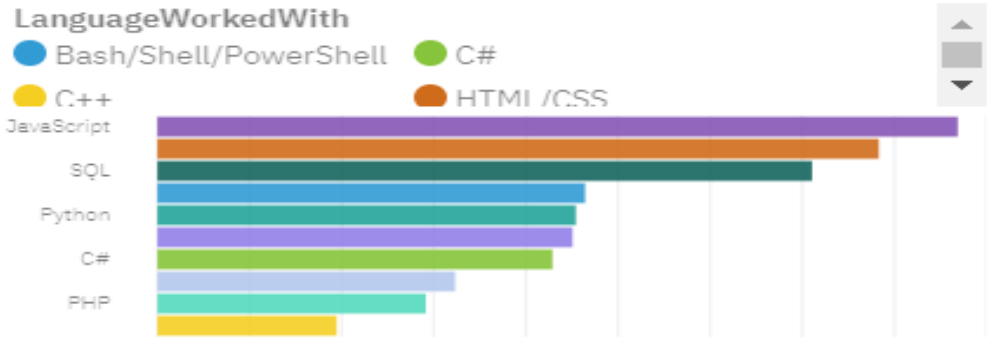
- Aspiring IT students should develop an understanding of MongoDB, PostgreSQL, Elasticsearch, and Redis, since these can be seen as databases that are appropriate to work with.
- While databases such as MySQL, SQLite, and Microsoft SQL Server might still be important to learn, especially if certain companies demand it, it might not be as important as the ones mentioned above.
- IT students should also start considering DynamoDB as it has seen a rise in demand over the past year.

DASHBOARD

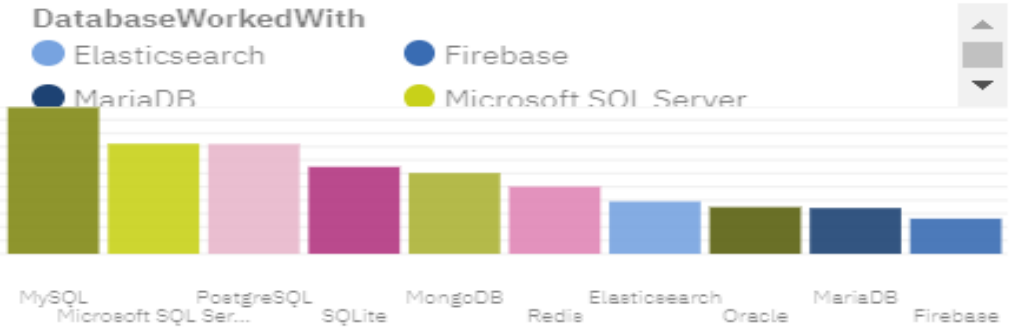
https://dataplatform.cloud.ibm.com/dashboards/add519dc-1606-45ab-8581-48adbc593b83/view/771ae61507b51fe97ef7e2e4079b79037d32200fb1bbd00a89877b4908612597f36b13c5c82d4f5f8c110462f3e5120d9d

DASHBOARD TAB 1

Top 10 Languages Worked With

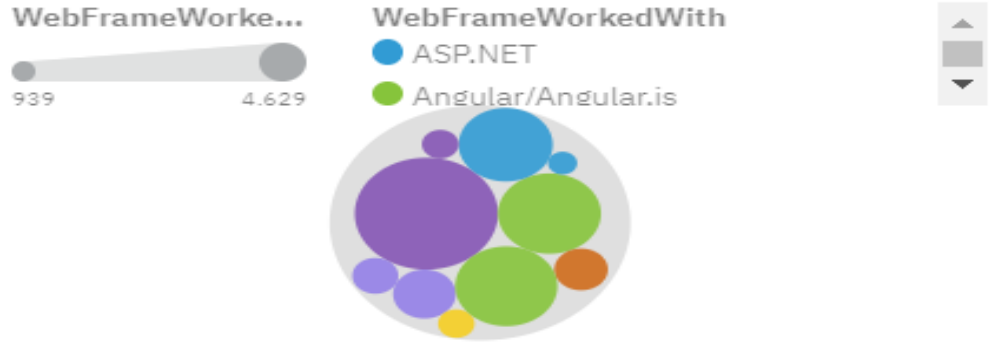


Top 10 Databases Worked With

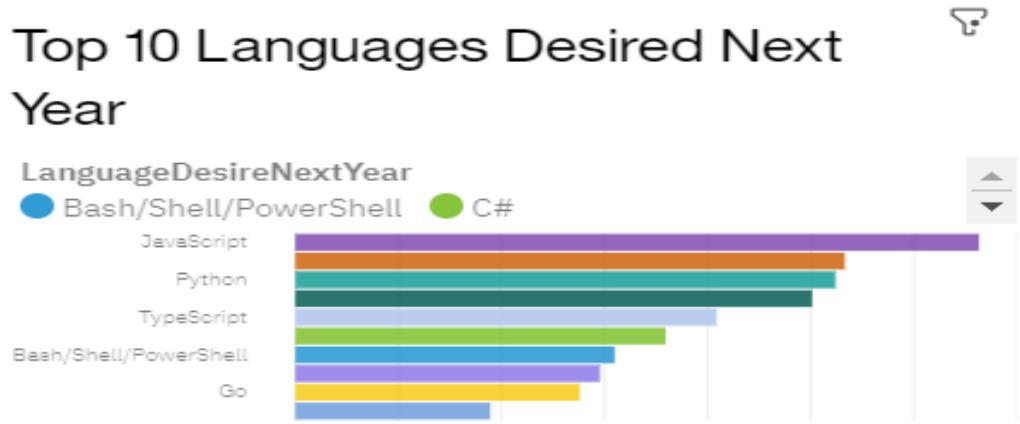


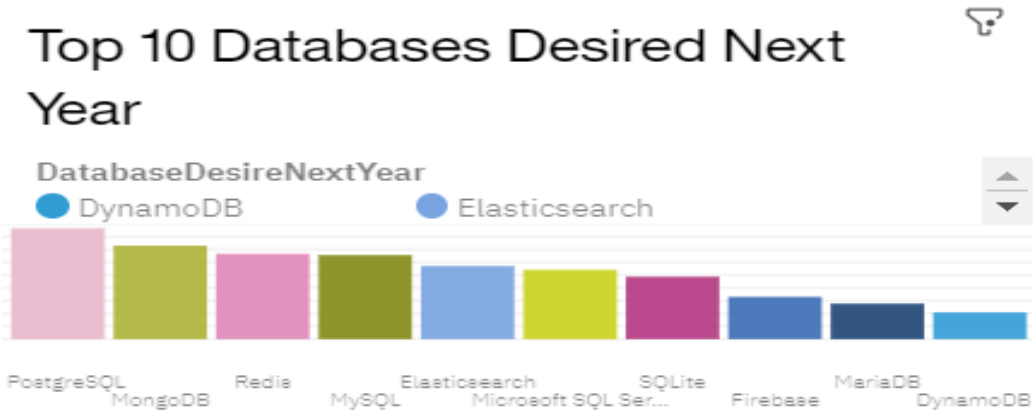
Most Platforms Worked With

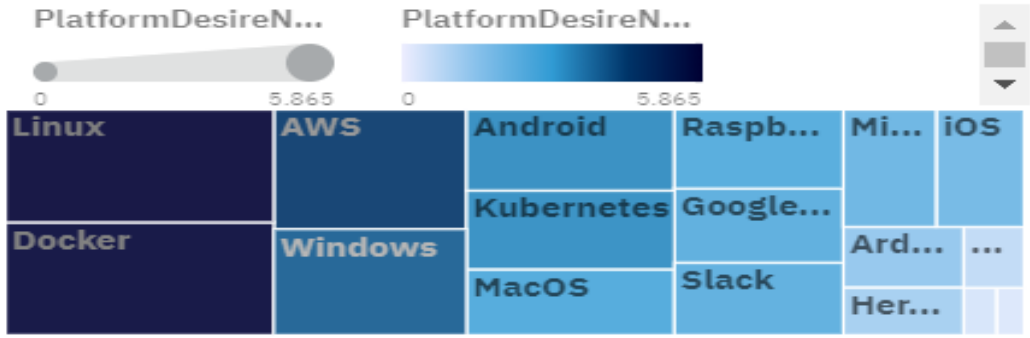
Top 10 Web Frames Worked With

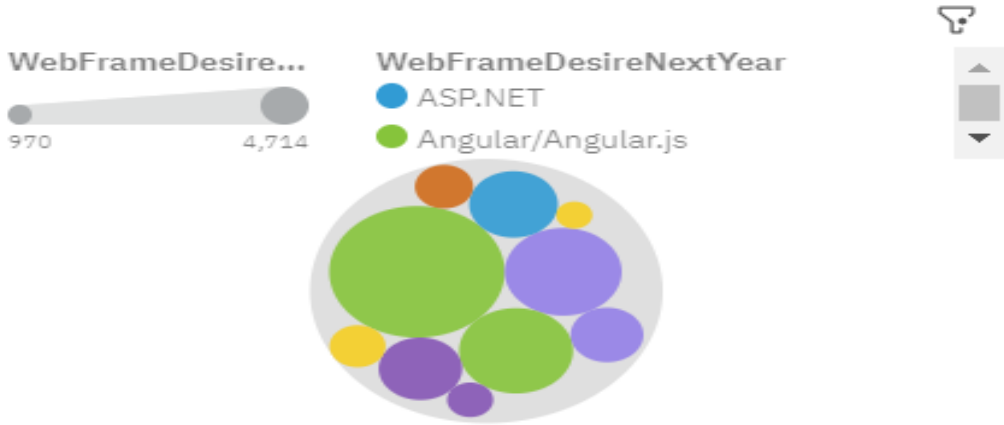


DASHBOARD TAB 2

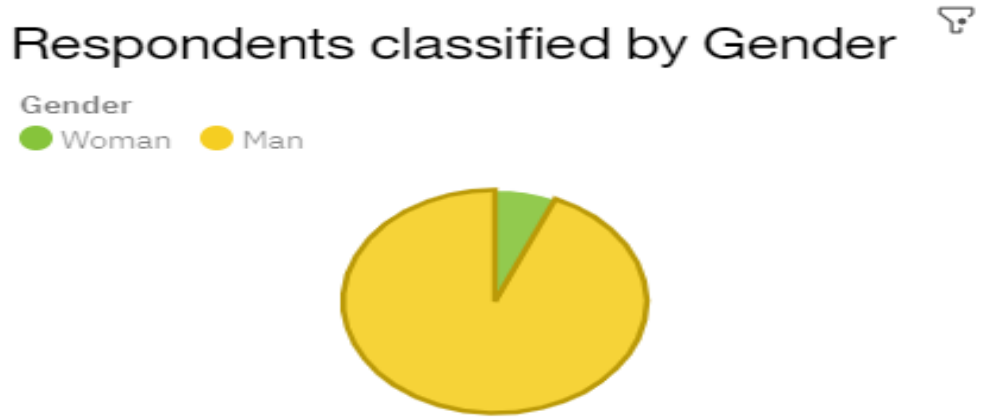


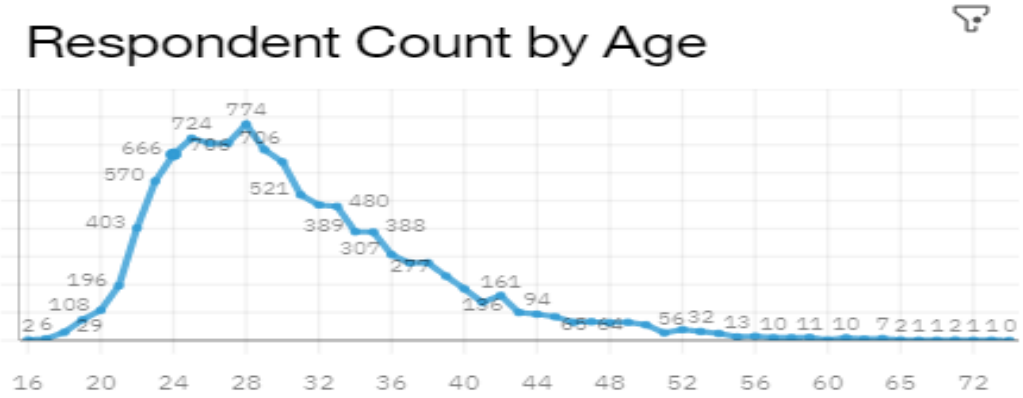


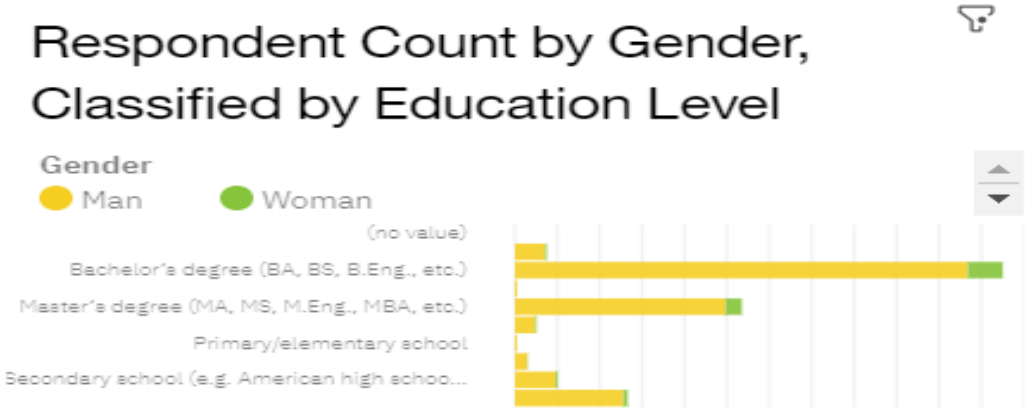




DASHBOARD TAB 3







DISCUSSION

- This section will discuss the findings of the report and the implications of these findings that are relevant to the problem.

OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript and HTML/CSS remain on top as desired programming languages.
- Linux remains as the top desired platform while React.js has become the most desired web frame for the next year.
- Most of the respondents fall in the age group of 24-32.

Implications

- For aspiring IT professionals, learning JavaScript and HTML/CSS would come in very handy in trying to stand out in a highly competitive career environment.
- People looking to start a career in IT any time next year should consider gaining knowledge and understanding on Linux and React.js.
- The report is roughly accurate for aspiring IT professionals since most of the respondents fall in the ideal age group for people entering the professional world.

CONCLUSION

- In general, there have been a lot of changes in terms of the desired technological skills that aspiring IT professionals should consider pursuing.
- However, some remain as in-demand as ever, such as JavaScript programming language and Linux as a platform.
- As these technological platforms continue to develop, aspiring IT professionals must continue to adapt in this kind of environment, since these platforms are continuously changing in terms of demand.

APPENDIX

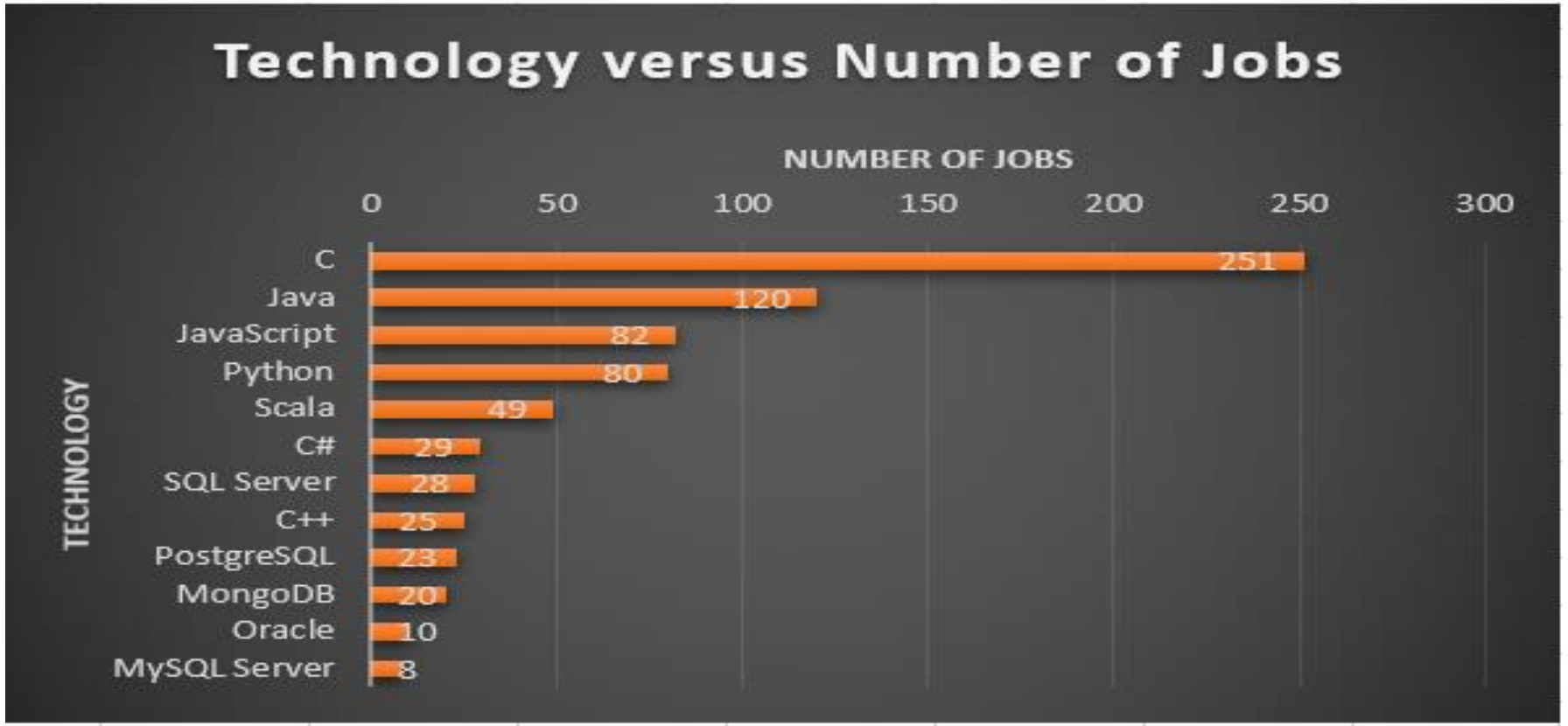
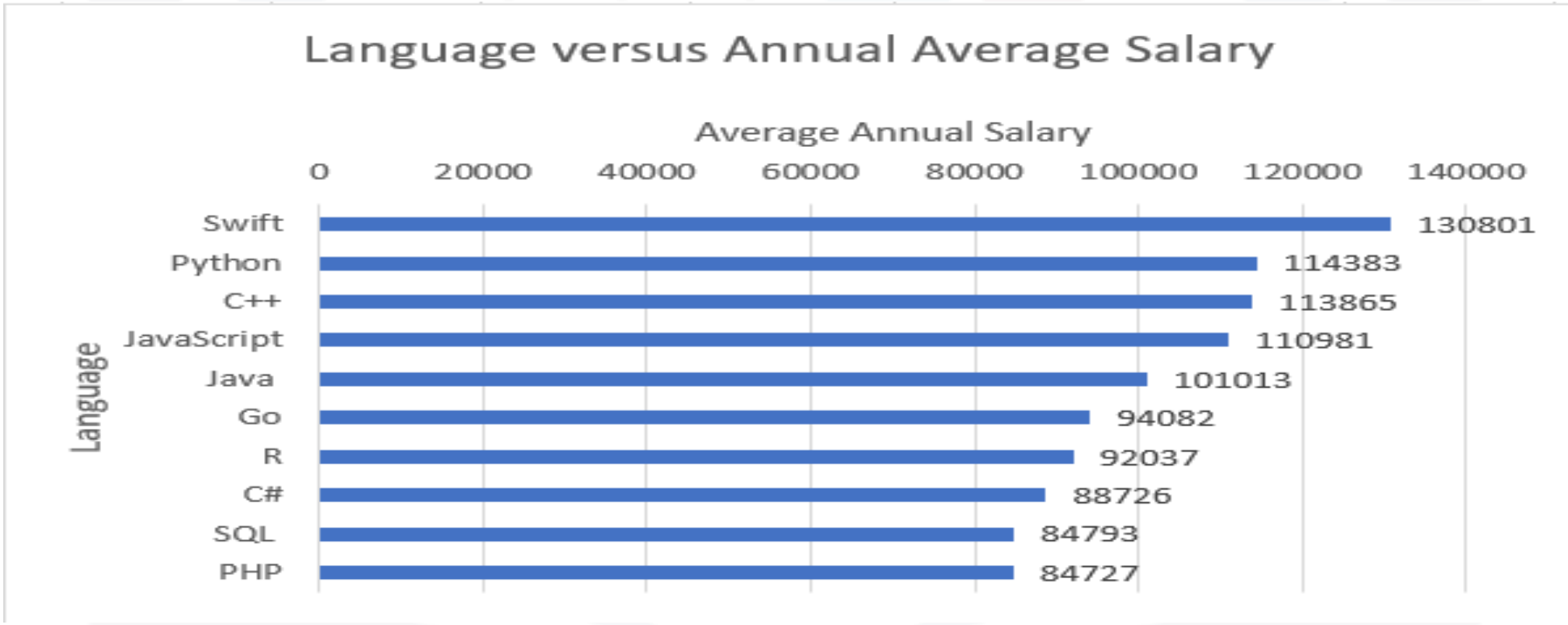
- The following database was used to determine survey responses for the technologies used in this year and the desired technologies for the next year:

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m5_survey_data_technologies_normalised.csv

- The following database was used to determine the demographics of the survey respondents:

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m5_survey_data_demographics.csv

GITHUB JOB POSTINGS



POPULAR LANGUAGES