FUTURE TRENDS IN IT AND THEIR IMPLICATIONS

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IBM Developer

SKILLS NETWORK

OUTLINE

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

EXECUTIVE SUMMARY

- A large collection of data was analyzed in order to identify trends for emerging technologies.
- The main data sources used were:
  - Job postings;
  - Training portals;
  - Surveys.
- The main IT skills investigated were:
  - Programming Languages;
  - Database skills.
- The results of the analysis are meant to anticipate future skills needed in this line of work.

INTRODUCTION

- The goal of this report is to analyze the dynamic of programming languages, databases, platforms and web frameworks, and to identify trends in the IT domain.
- The report is meant to help the company remain competitive.
- For an IT and business consulting services company it is very important to keep up the pace with changing technologies, therefore it is vital to know future skill requirements.
- The report contains findings about the top programming skills that are most in demand.

METHODOLOGY

- The analyzed data was collected from various sources:
  - Job postings;
  - Blog postings;
  - Surveys.
- The job postings data was obtained using GitHub Jobs API.
- The information about the most popular languages were obtained from Kaggle, using web scraping.
- The surveys were made available by Stack Overflow .
- The data was prepared for analysis using wrangling techniques.

RESULTS

In order to produce accurate and useful results, most of the analysis was performed on the set of data coming from the surveys conducted by Stack Overflow.

The initial analysis was based mainly on data distribution and correlation, such as the distribution curve of salary and age, and the correlation between age and income.

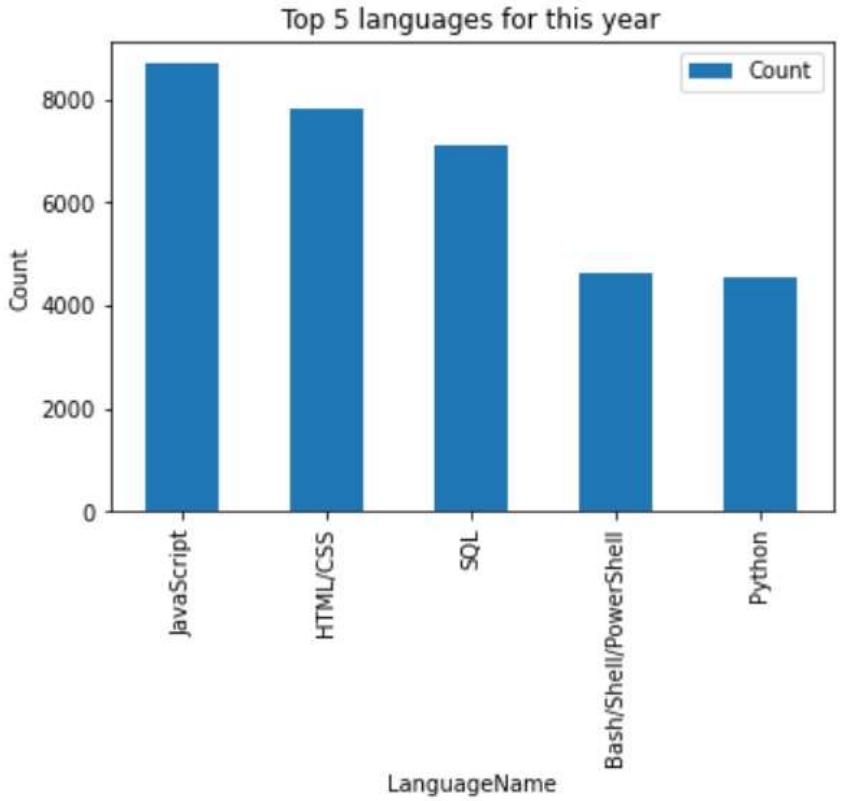
A deeper analysis was performed using graphic instruments in order to:

- visualize the distribution of data;
- visualize the relationship between two features;
- visualize the composition of data;
- visualize the comparison of data.

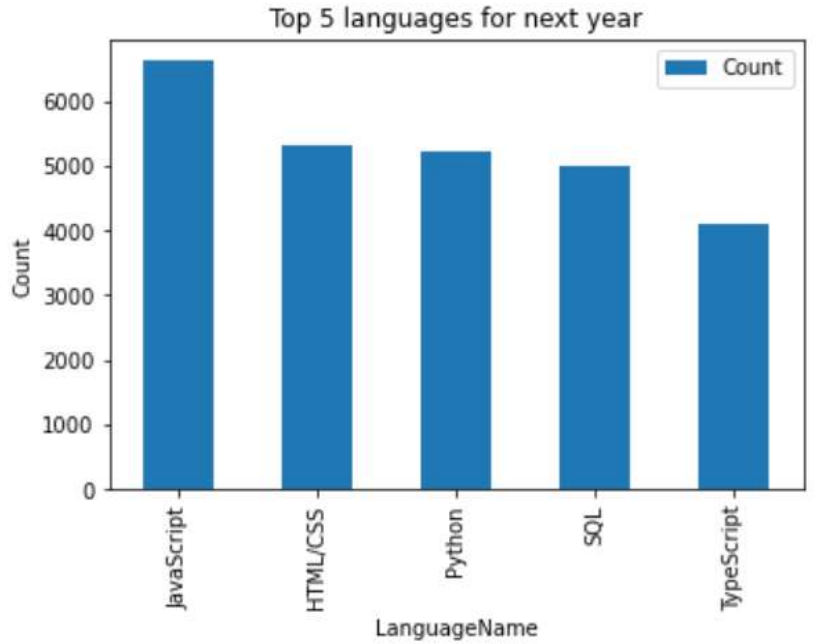
Special attention was put into comparing the popularity of the programming languages and databases, both for present and the future.

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

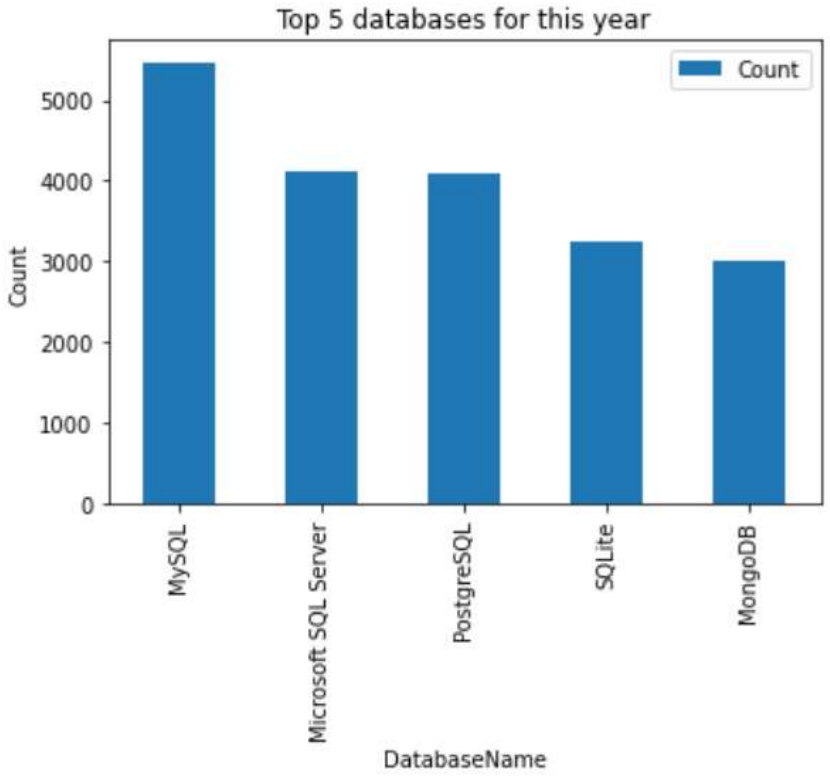
- As we can see from the charts, for both this and next year, the most popular languages are JavaScript and HTML/CSS.
- We can remark an increasing interest in Python and TypeScript for the next year and a loss of interest for Bash/Shell/PowerShell.
- We can also see that the popularity of SQL is somehow constant.

Implications

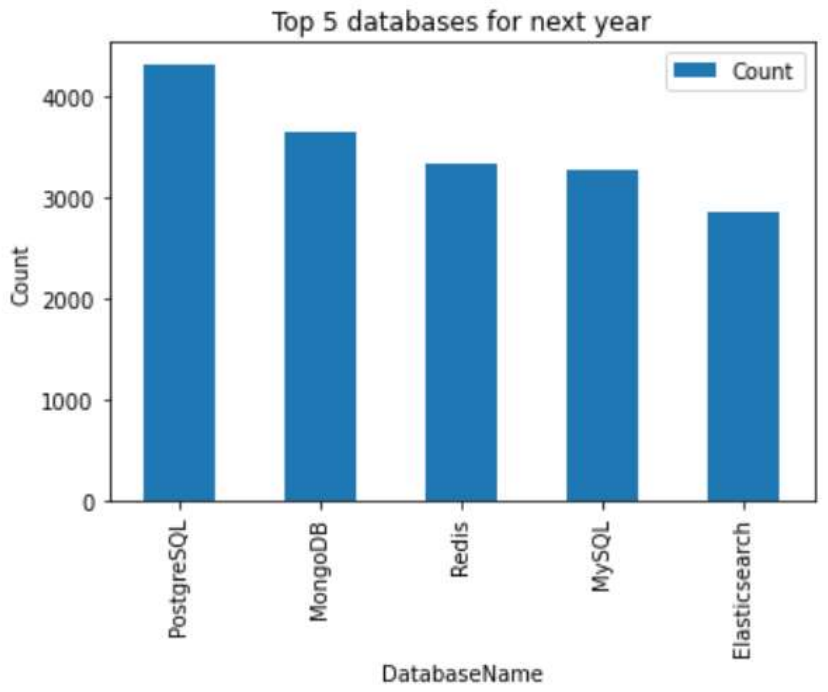
- This year, as well as next year, it will probably be easier to find people to hire that know JavaScript and HTML/CSS.
- It would make sense to start migrating from programming languages that are losing ground to Python or TypeScript, since they are becoming more popular.
- SQL remains a strong interest in the world of data analysis, and it should remain a top choice.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- It is clear from the chart that MySQL, although the most popular right now, is losing terrain. This is also true for Microsoft SQL Server.
- It looks like PostgreSQL, MongoDB and Redis are the most popular choices for the next year.
- The interest in Elasticsearch is also increasing.

Implications

- It might be a good idea to start migrating towards what the people are more willing to learn or start learning in order to anticipate the trend of the market.
- The grow of Elasticsearch might make it a good database language to study in the long-term.
- PostgreSQL's steady numbers make it especially relevant for the time being.

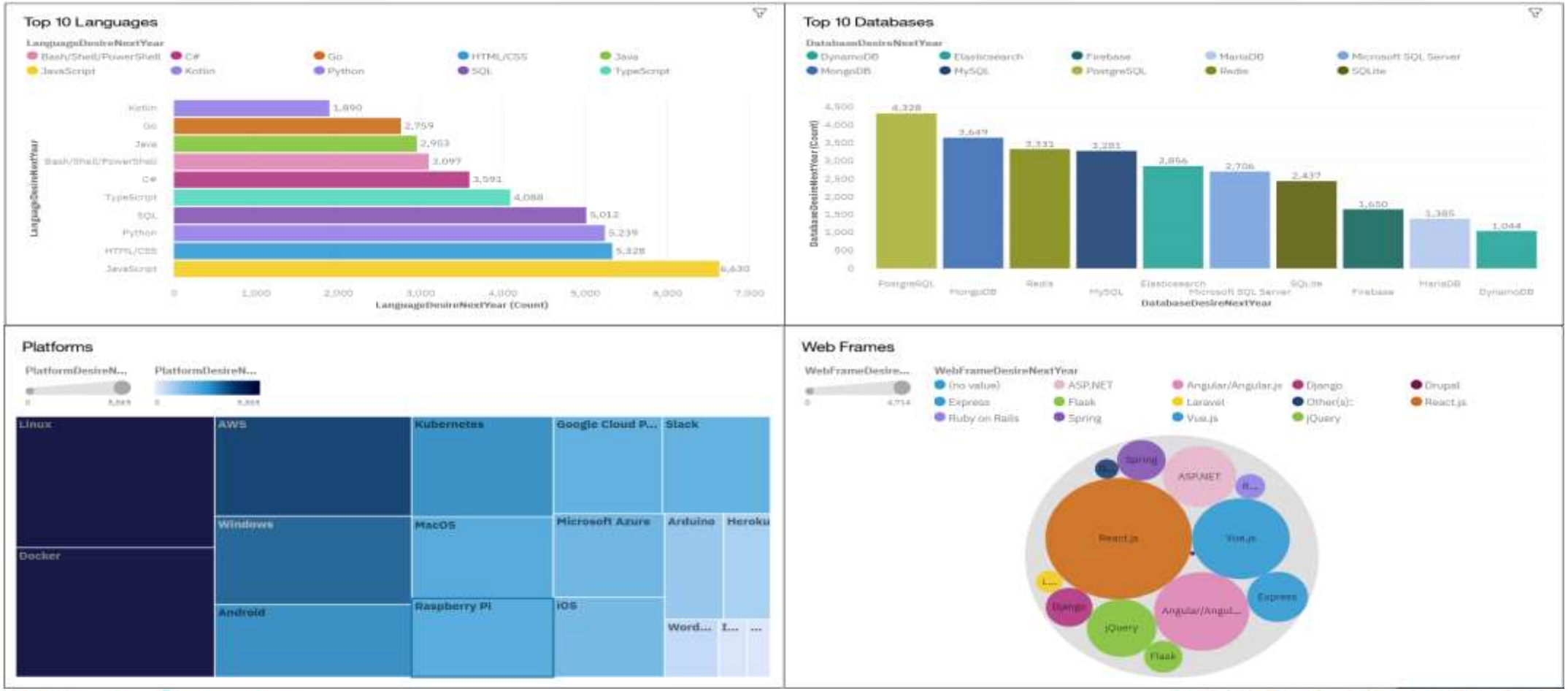
DASHBOARD

The dashboard can be visualized by accessing the following link:

https://eu-de.dataplatform.cloud.ibm.com/dashboards/20728d5d-ae72-45f2-8cc3-7b0b1e5613f/view/6c33d47f0fae2de369dccce407cd2f03746120 5ce0bb845780827b495d327497f06045c2c8284d52df16053 1a7ee405ac9

DASHBOARD TAB 1

DASHBOARD TAB 2



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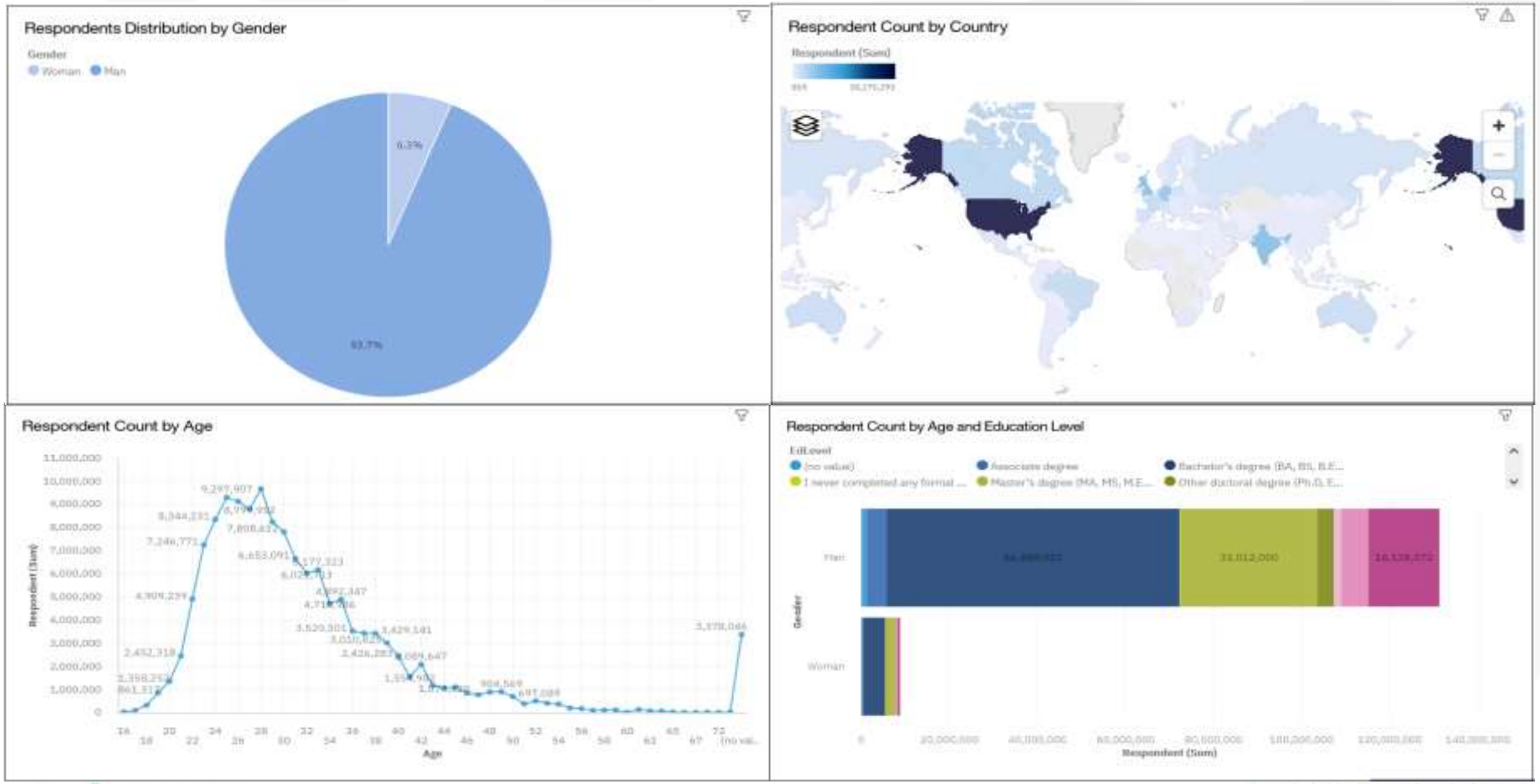
DASHBOARD TAB 3



DISCUSSION

- Studying the trend charts, it is obvious that there are significant differences between the programming skills that are being used now and the ones that are in demand for the next year.
- I think it would be helpful to ask ourselves whether it is better to find new employees that possess these new skills or to encourage and train our employees to learn them.
- I would like to hear your opinion about this.

OVERALL FINDINGS & IMPLICATIONS

Findings

- According to the analysis, the future trend in programming languages leans towards JavaScript, HTML/CSS, Python and SQL.
- In terms of databases, it looks like PostgreSQL, MongoDB, Redis and MySQL will be the most popular next year.
- Regarding the web frameworks, we can see that while currently jQuery is the most popular, for the next year the trend is clearly to learn React.js, Angular.js and Vue.js.
- A striking observation is the very small proportion of women working in the IT domain.

Implications

- It is very important to maintain our company's expertise in technologies that are now largely used, like JavaScript, HTML, SQL, Python, MySQL.
- In order to remain competitive, our company must also pay attention to "rising stars" like PostgreSQL, Mongo DB and React.js.
- As an organization, we should try to increase the women's presence in this domain, by offering support and encouragement for young girls who want to study Computer Science.

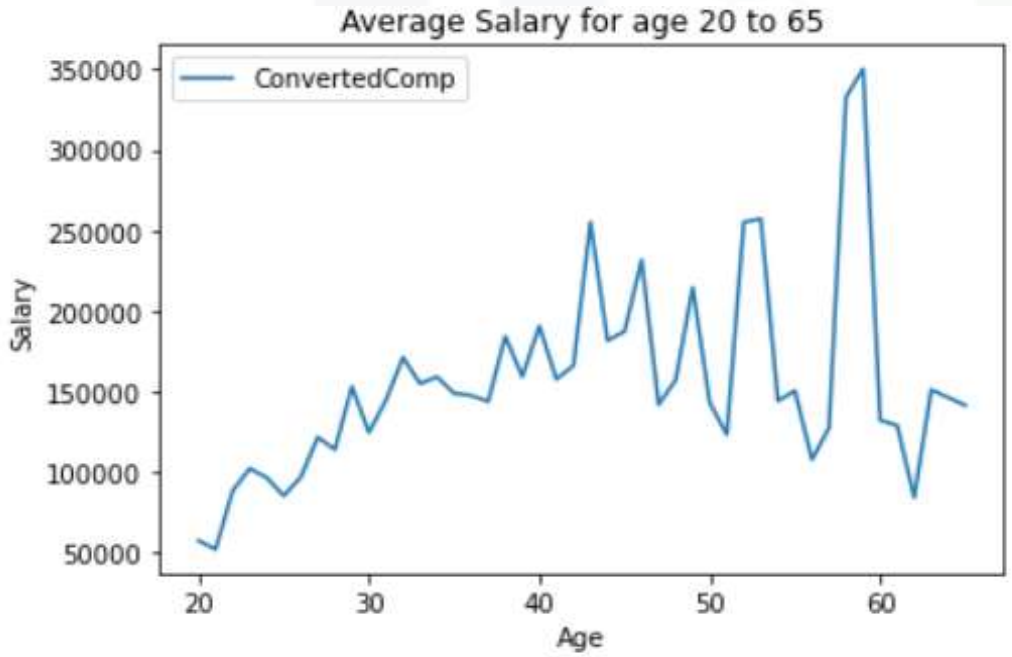
CONCLUSION

- The IT field is a very dynamic one, where things can significantly change from one year to another.
- Although the two most popular programming languages remain JavaScript and HTML/CSS, there are many changes in top10, with increasing interest for Python, Go and Kotlin.
- The changes are more dramatic in databases, with PostgreSQL and Mongo DB becoming number one and two in top 10.
- Regarding the platforms, it looks like Docker is gaining popularity over Windows.
- As for the Web Frames, it seems that jQuery is becoming less popular, while React.js, Angular and Vue.js are on top.

APPENDIX

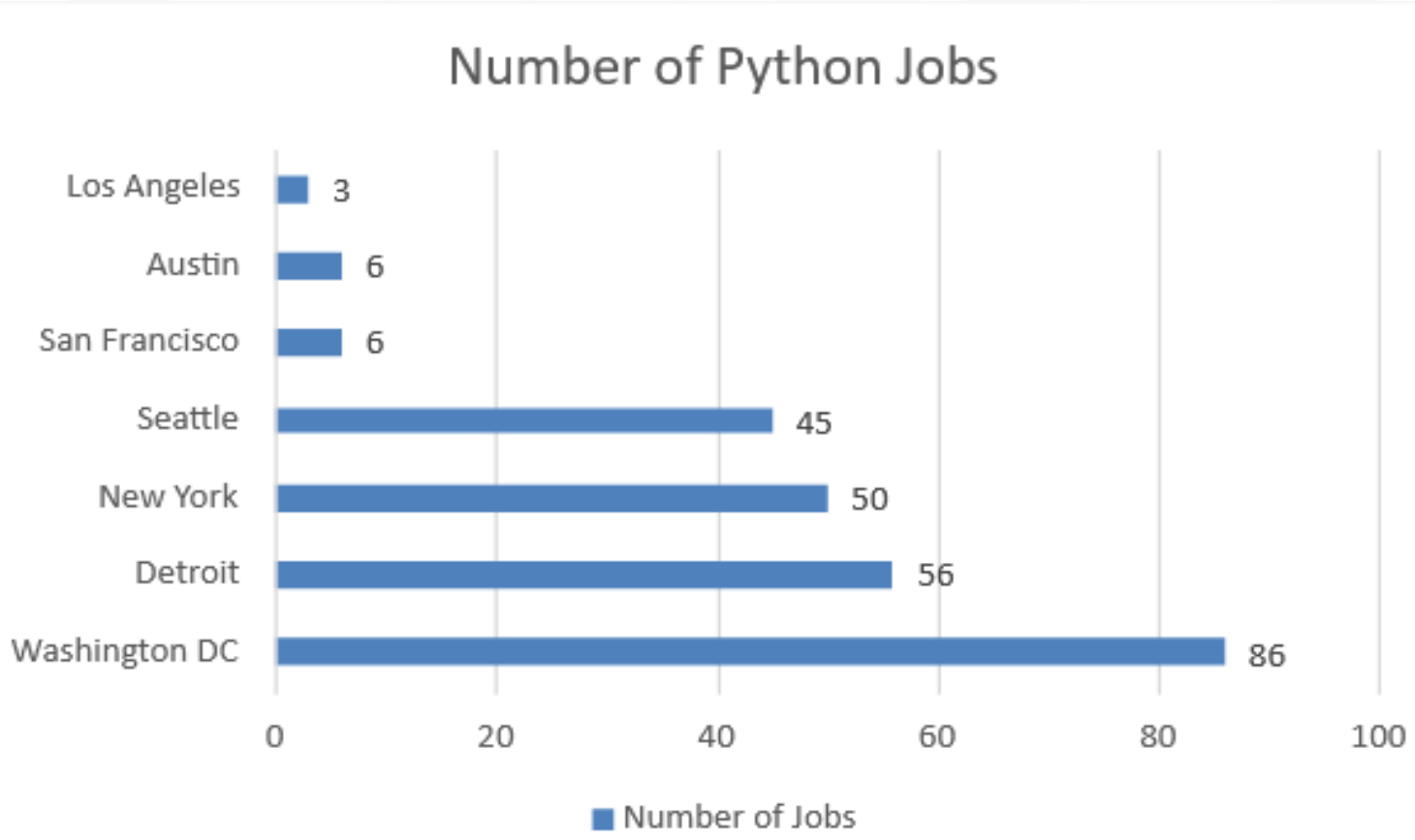
- The data was collected using the following links:
  - https://jobs.github.com/positions.json
  - https://www.kaggle.com/promptcloud/jobs-on-naukricom
  - https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey- results-are-in.

APPENDIX



- This is a chart that shows the correlation between average salary and age. The good news for young programmers is that the correlation is not linear.
- This suggests that financial compensation for this kind of work is more dependent on performance than on age.

GITHUB JOB POSTINGS



POPULAR LANGUAGES