



Analysis of Future Trends of the Tech-Industry

Lukas Czibulinski

31.12.2022

OUTLINE



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

EXECUTIVE SUMMARY



- Stack Overflow developer survey from 2019:
 - Current mostly used Technology
 - Database: MySQL
 - Programming language: JavaScript
 - Web-Frame: jQuery
 - Platform: Windows
 - Future mostly desired Technology
 - Database: PostgreSQL
 - Programming language: JavaScript
 - Web-Frame: React.js
 - Platform: Linux
- Most of the Respondents are Men with a Bachelor's Degree from the United States at the Age of 30

INTRODUCTION



- **Purpose**
 - Analyze the current trends of the technology industry and forecast possible changes regarding the tools
- **Questions**
 - What are the current most relevant technologies?
 - What could be the relevant technologies in the future?
 - What is the demographic situation of the participants?

METHODOLOGY



- **Data Source**

- 2019 Stack Overflow Developer Survey
 - Formats: csv file, SQLite file

- **How the Data was used**

- Performed exploratory and statistical analysis
- Created several visualization using Python
- Created a Dashboard using IBM Cognos to visualize trends of the industry

Technologies Used

- Programming and Querying Languages:
 - Python
 - SQLTools and
- Other Tools and Software
 - Jupyter Notebook
 - IBM Cognos
 - Microsoft Excel
- Python Libraries
 - Pandas
 - Seaborn
 - Matplotlib
 - Sqlite3
 - Requests
 - Openpyxl
 - Flask

RESULTS

Data Organization

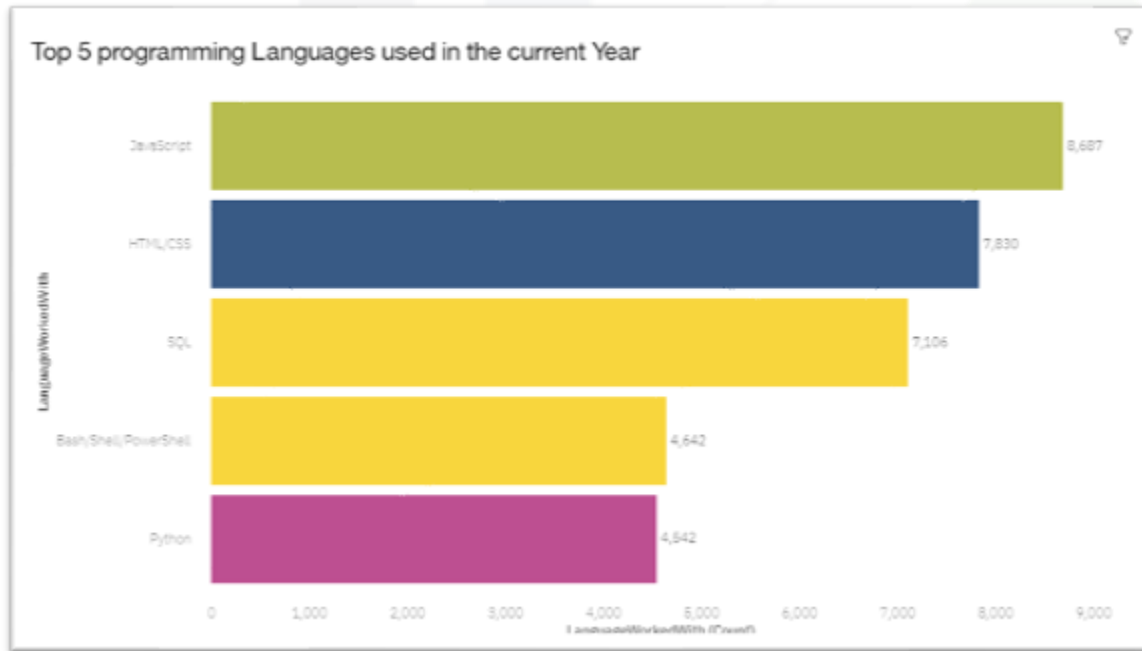
- Exploratory data analysis was performed on a csv file using Python with the use of the previously named libraries
- An SQLite file was read in as a Pandas dataframe using a DB-API connection
- A csv File was imported into IBM Cognos to create a Dashboard

Analysis

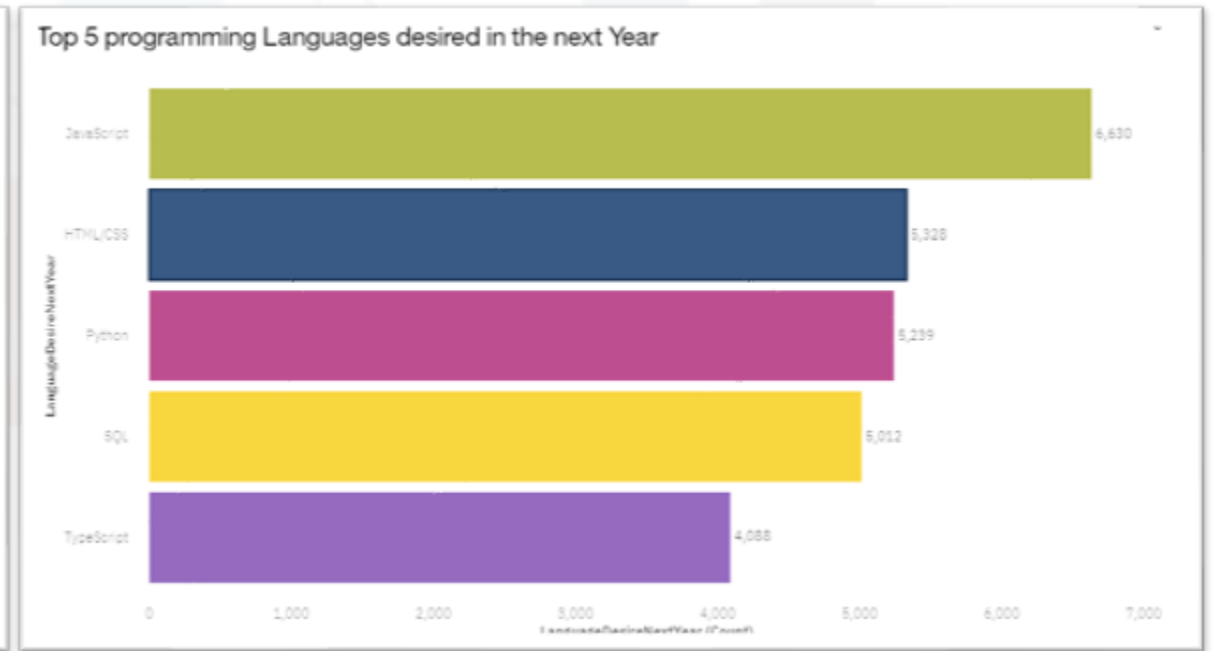
- **Exploratory data analysis**
 - the Python library Pandas including dataframes were used
- **Data visualization**
 - Python's libraries Matplotlib and Seaborn were used as well as the Pandas dataframes
- **Creating Dashboards**
 - IBM Cognos was used for the current and future trends as well as the demographics

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

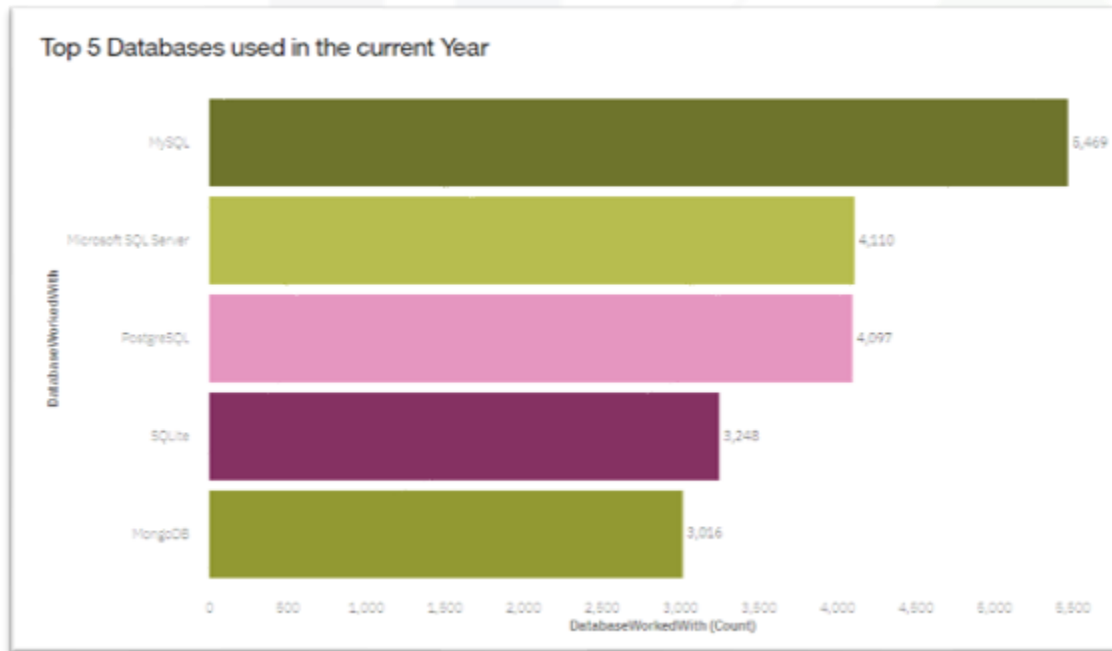
- JavaScript is most popular programming language
- JavaScript is the language that developers desire the most to learn
- Python is the 5th place of currently most popular languages
 - It is the 3rd most desired language to learn
- Generally the numbers for desired languages in the next year are lower

Implications

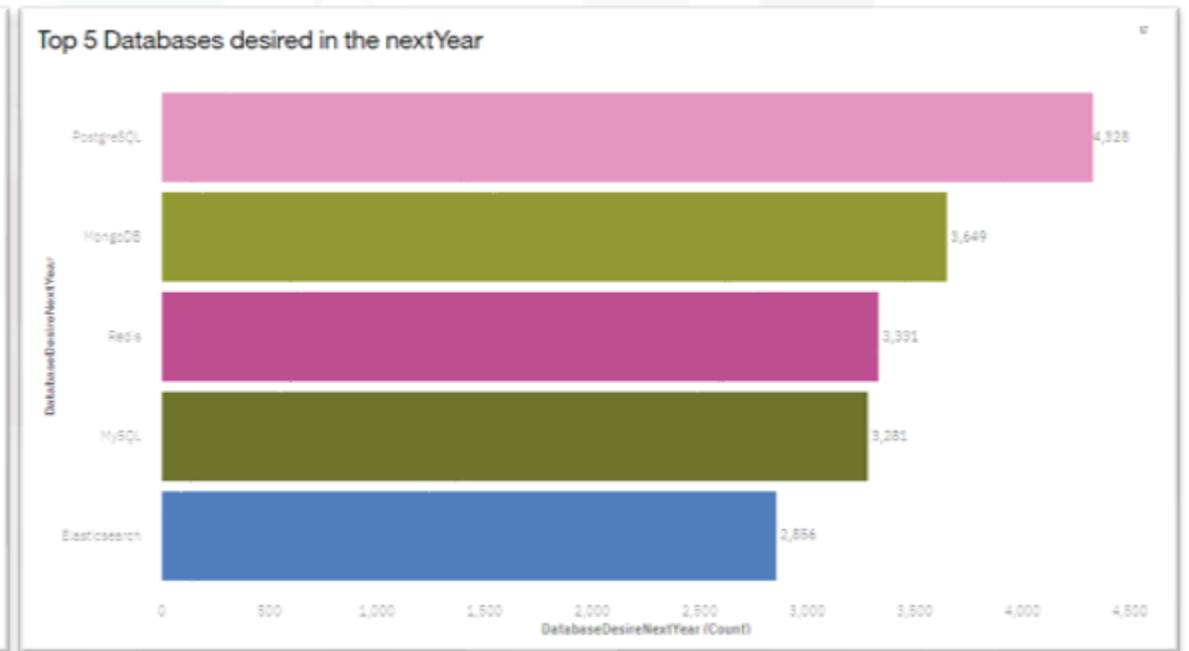
- It is possible that most of the participants are Front-End-Developers since the top 5 languages are JavaScript and HTML/CSS
- The relevance of Python is increasing looking at the discrepancy of the first and the second graph
- Not all the developers that are currently using programming languages want to increase their skills

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is currently the mostly used database
- PostgreSQL is the mostly desired database developers want to learn
- MongoDB is the third place in the most desired languages
- NoSQL databases like Redis are not currently under the top 5 but are desired for the future

Implications

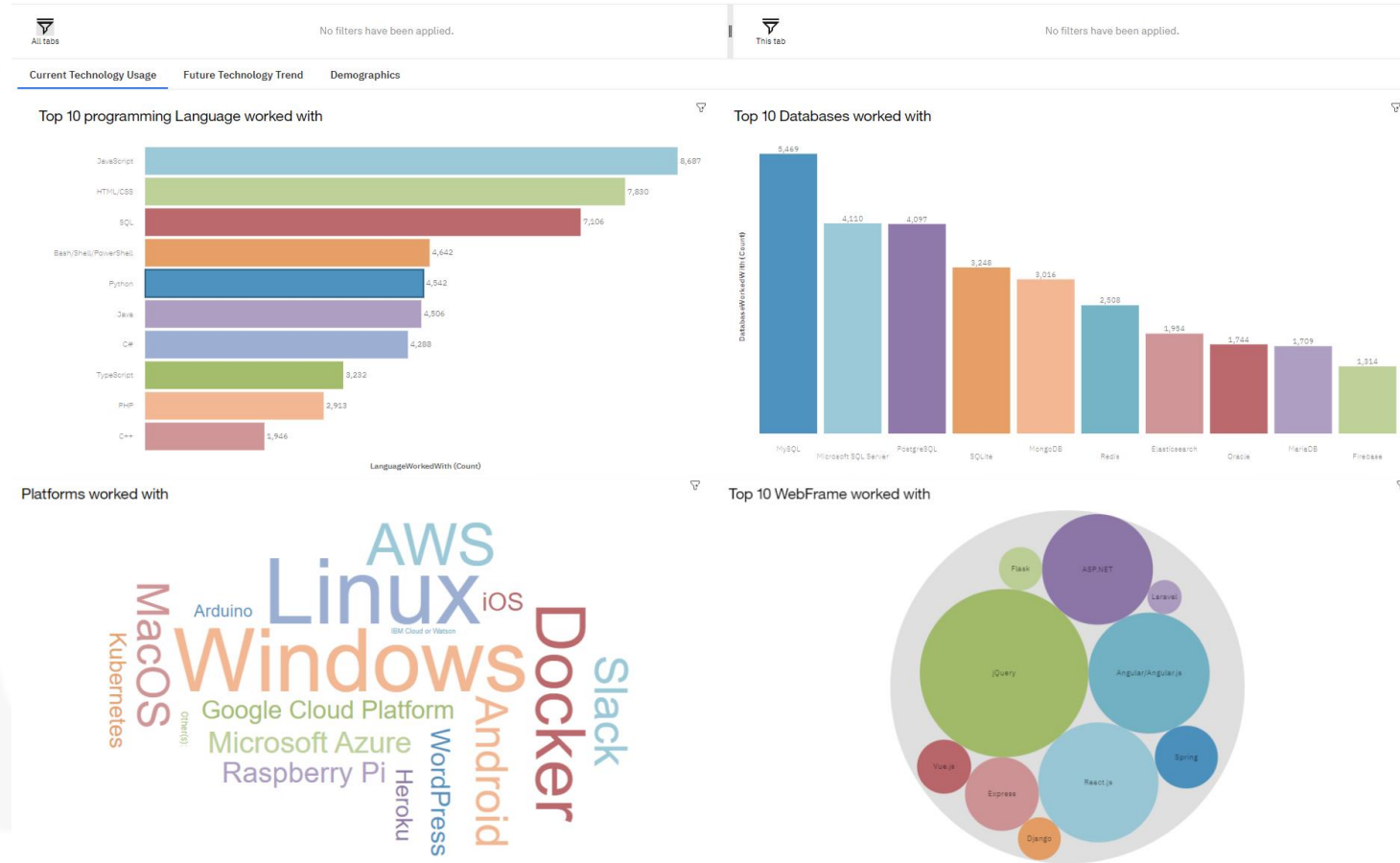
- PostgreSQL may become a more popular database in the future and could supersede MySQL
- MongoDB is gaining relevance in the future regarding the discrepancy of the placements (current: 5th and desired 2nd)
- NoSQL databases are becoming more relevant in the future

DASHBOARD

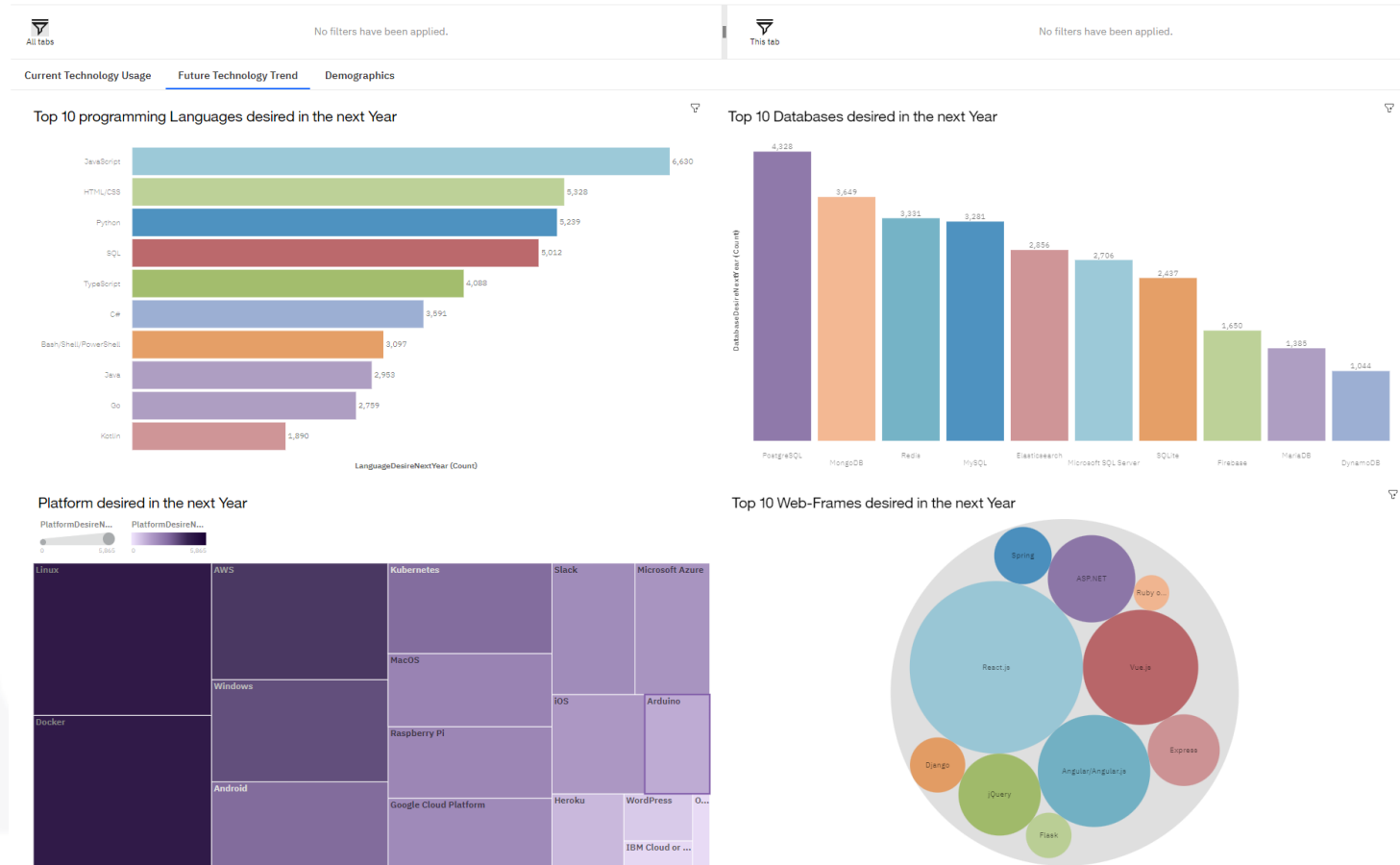


<https://eu-de.dataplatform.cloud.ibm.com/dashboards/43088a10-5ba2-4494-a9f5-c89bd818c73c/view/511cc3053c9208f74bdce6e407cd2f5378352d59e0bbd50286d17b495c622497a93f4095c8284e08df425031f6e9435dc1>

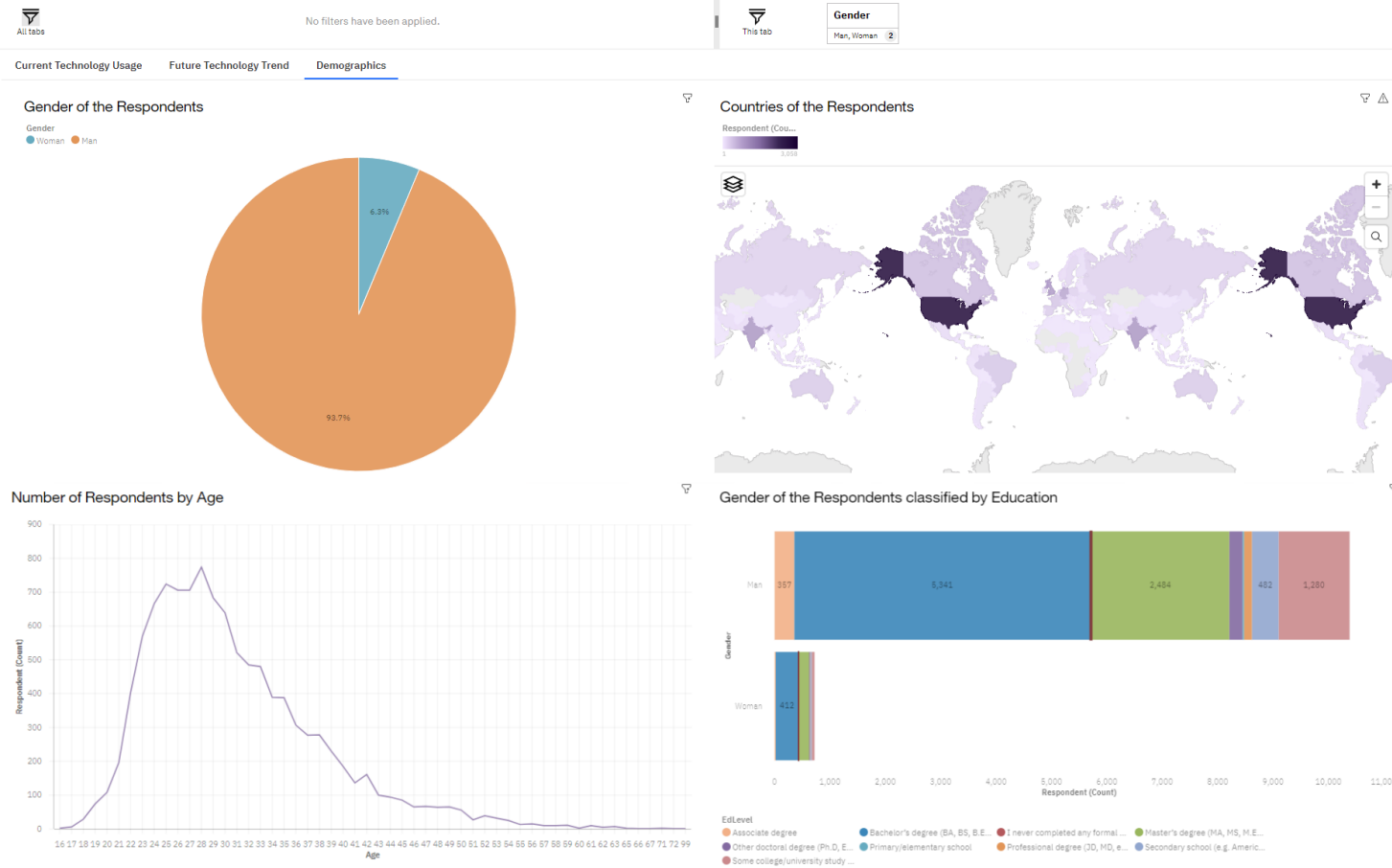
DASHBOARD TAB 1



DASHBOARD TAB 2



DASHBOARD TAB 3



DISCUSSION



- For developers it could become more and more important to learn the following technologies and programming languages:
 - JavaScript
 - PostgreSQL
 - Linux
 - React.js
 - Docker

OVERALL FINDINGS & IMPLICATIONS

Findings

- Currently mostly used technologies:
 - Language: JavaScript
 - Database: MySQL
 - Web Framework: jQuery
 - Platform: Windows
- Most desired technologies to learn by developers:
 - Language: JavaScript
 - Database: PostgreSQL
 - Web Framework: React.js
 - Platform: Linux, Docker
- Demographics
 - Respondents are mostly men in the United States with a Bachelor's or Master's degree

Implications

- JavaScript is the most popular programming language and it looks like it will continue this trend in the future
- Windows is the mostly used Platform but other platforms like Linux and Docker are becoming increasingly popular and could become a competitor
- MySQL is currently the most popular database but the trend leads to PostgreSQL becoming the new one
- Most of the employees in the tech industry are males and it is most common to at least have a bachelor's degree in order to work in this field

CONCLUSION



- JavaScript, React.js, PostgreSQL, Linux, and Docker technologies have a high potential to become more popular in the future
- JavaScript, jQuery, Windows, and MySQL are reliable technologies that are frequently used today
- The technology industry is dominated by a disproportionate number of males versus females

APPENDIX



Additional Analysis

- **Data Sources**

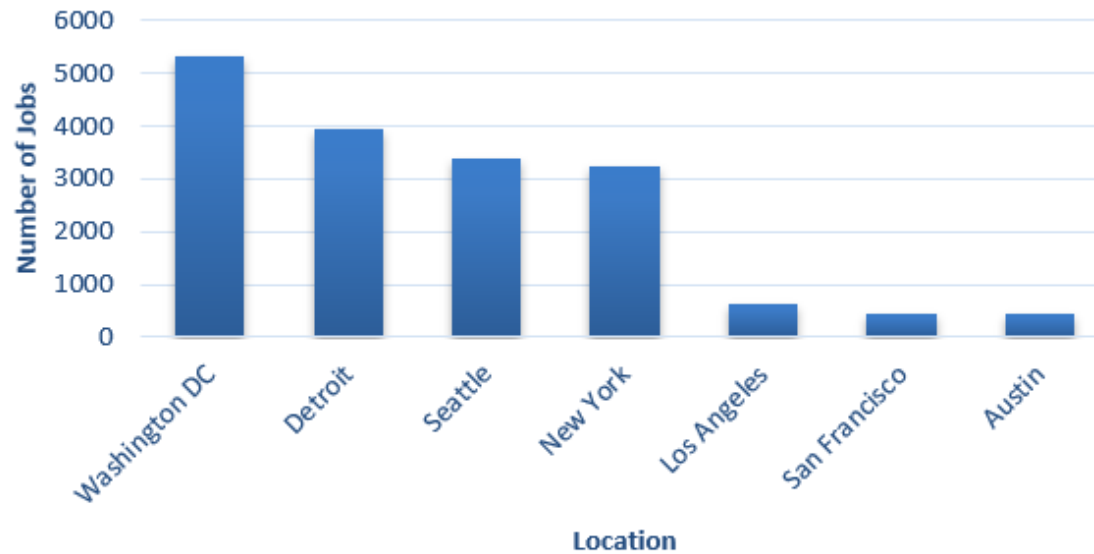
- Naukri.com Kaggle Jobs Dataset – json format
- IBM Webpage with Programming Language Data – HTML

- **How Data was Used**

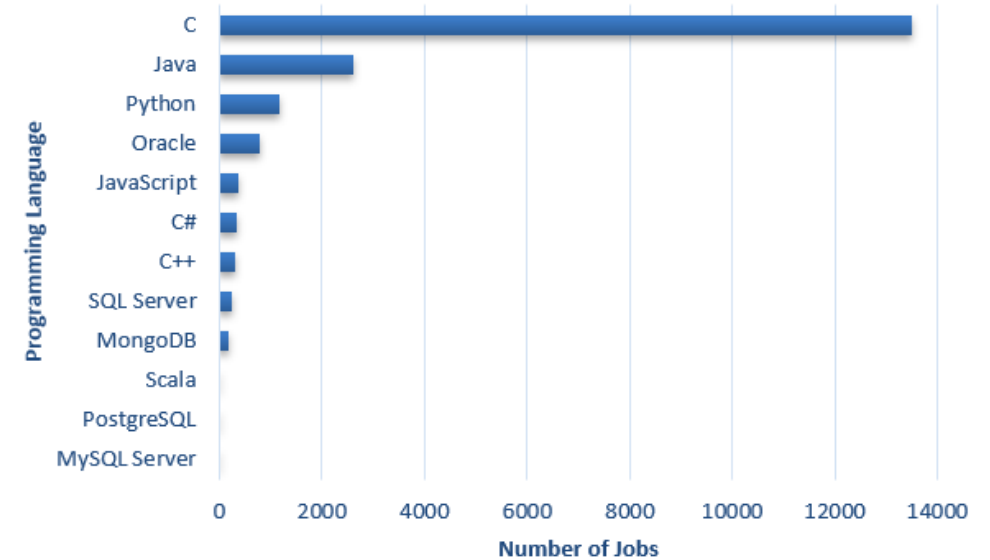
- Created an API and used API to store Kaggle data in an excel spreadsheet using Python
- Performed web scraping on IBM Webpage and store scraped data in csv file

JOB POSTINGS

Number of Jobs by Location



Number of Jobs by Programming Language



POPULAR LANGUAGES

