Analysis of Stack Overflow Developers Online Survey 2019

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11th Feb 2023

Presentation Outline

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Executive Summary

In the following slides, I will present you some **informative summarised findings from the analysis of Stack Overflow Developer Survey 2019 dataset**.

The analysis yielded insights :

- The most popular programming languages, databases & web frames that target audiences worked with
- The desirable technologies that target audiences keen to work with in the future
- Target audience demographics segmentations

Introduction

In 2019, Stack Overflow, a popular website for developers, had conducted an online survey of software professionals across the world.

About the Dataset

- The survey dataset is taken from Stack Overflow's open source here, under a ODbL: Open Database License.
- The actual data set has around 90,000 responses.
- However, in this analysis, the subset contains around 9000 of the original data set.
- Target audiences in the online survey campaign are developers.

Methodology

Data Source

- Stack Overflow Developer Survey 2019

Data Wrangling & Data Preparation

Dataset that provided by IBM was loaded through Rest API and used SQL/Python Pandas library to do data cleaning.

- Duplicates Removal, Data Imputation, Data Normalisation & Data Validation

Exploratory Data Analysis

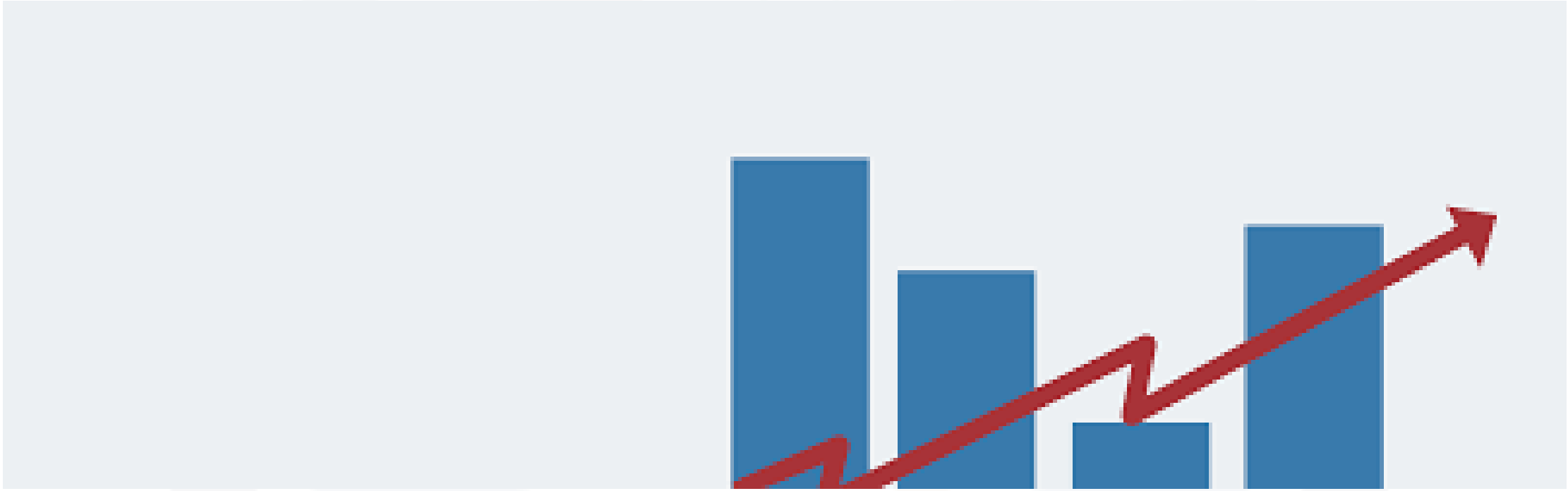
- Statistical Analysis & Data Mining

Data Visualisation & Interactive Dashboard Creation

Data visualisation were conducted through SQL query ,various Python libraries (Pandas, Matplotlib & Seaborn) and IBM Cognos Dashboards for the following measurement:

- Technologies survey data
- Technologies respondent demographic survey data

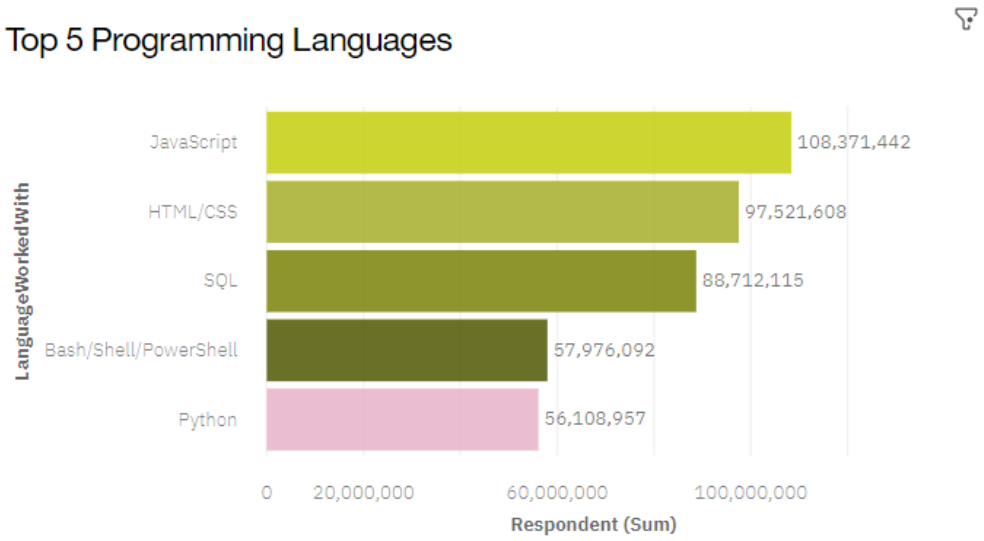
Results



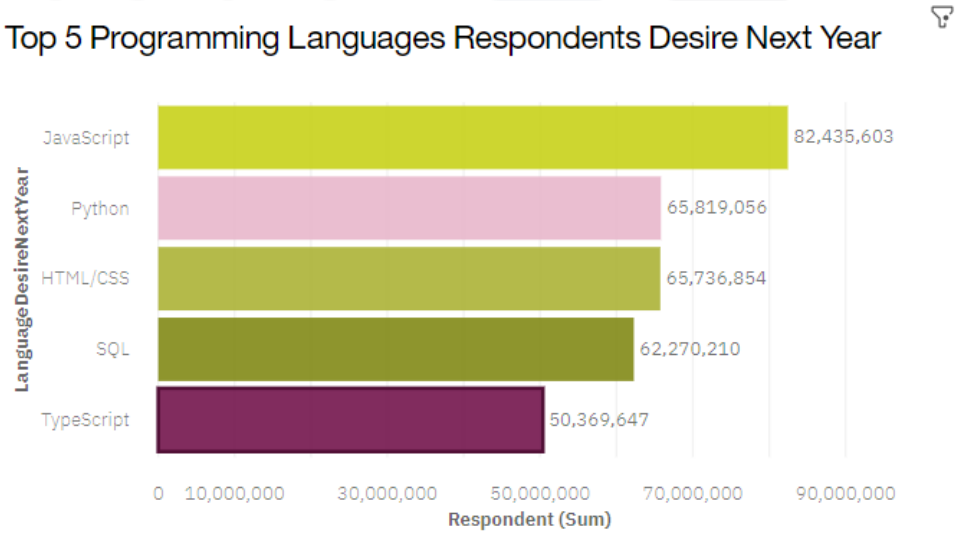
Result:

Programming Languages Trend

Current Year



Next Year



Programming Language Trends: Findings & Implications

Findings

- JavaScript is the top-rated programming language, for now and the future.
- The appeal for Python has surged 85% in the upcoming year.
- Both HTML/CSS and SQL demand had dropped accordingly.
- Bash/Shell/PowerShell had fallen down from the top five, worked with language and replaced by TypeScript in the future.

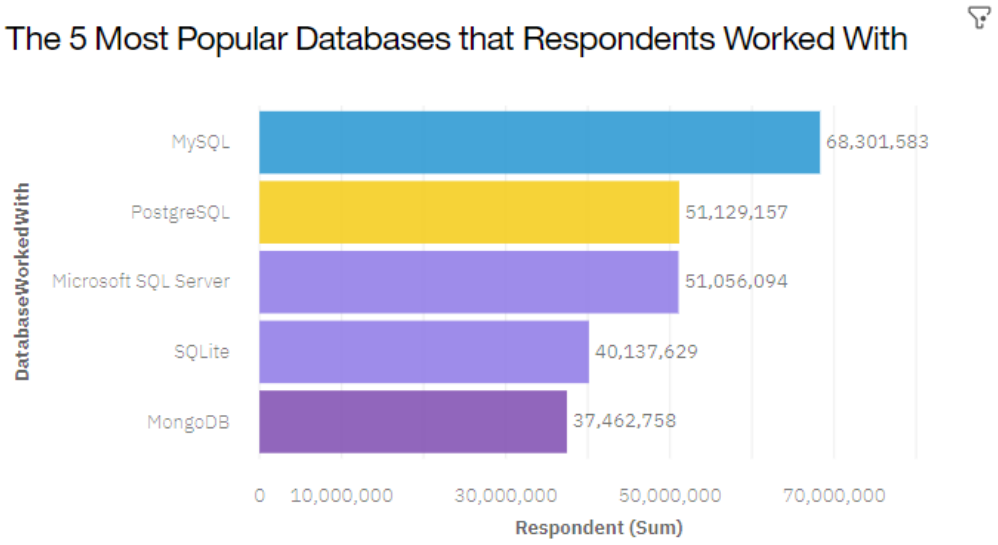
Implications

- **JavaScipt is a programming language remain top one language since the web** development still in high demand**.**
- **As Machine Learning & AI is getting popular ,the requirement for Python language had increased dramatically.**
- **Data professionals and programmers are adapting additional language to enhance their career path.**
- **HTML/CSS and SQL remain popular as these are the basic languages for data professionals and programmers.**

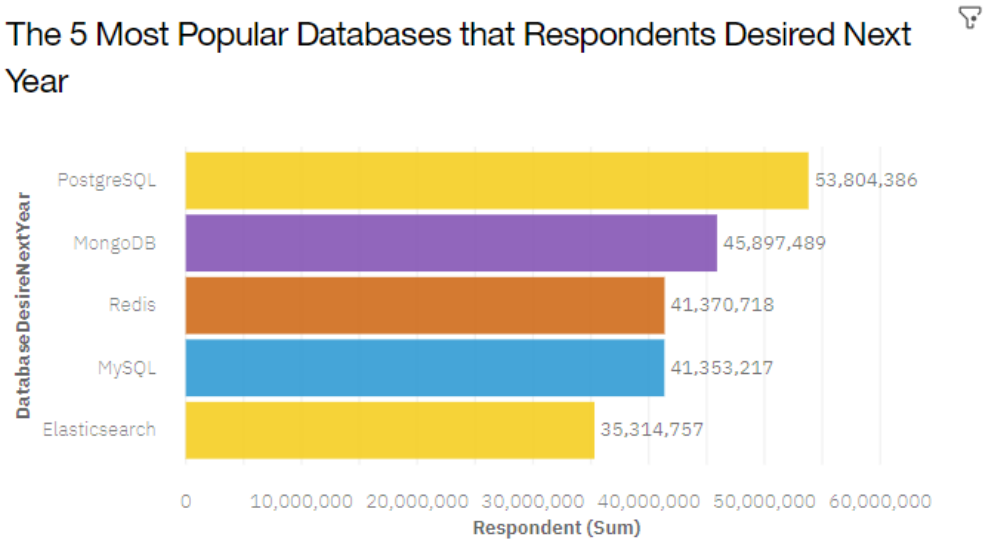
Result:

Databases Trend

Current Year



Next Year



Database Trends: Findings & Implications

Findings

- At current year, **MySQL** database is the most wanted. However it plunged the next year.
- PostgreSQL **overtook MySQL**, to be the most desirable database in future time.
- **MongoBD** became the second preferred database to work with in the future.
- Microsoft SQL Server & SQ Lite demand had dropped below the top 5 desirable databases in future time.

Implications

- We recommend learning MySQL as it is the basic database knowledge to enter the programming/data fields.
- PostgreSQL and MangoDB are highly recommended for programmers to learn, as they will be the new trend of databases in the future time.
- Learning an extra database (either Redis or Elasticsearch) will help programmers to enhance their resumes/qualifications.

Dashboard

Click the link below for the interactive summarised dashboards

a) Current Technology Usage

b) Future Technology Trend

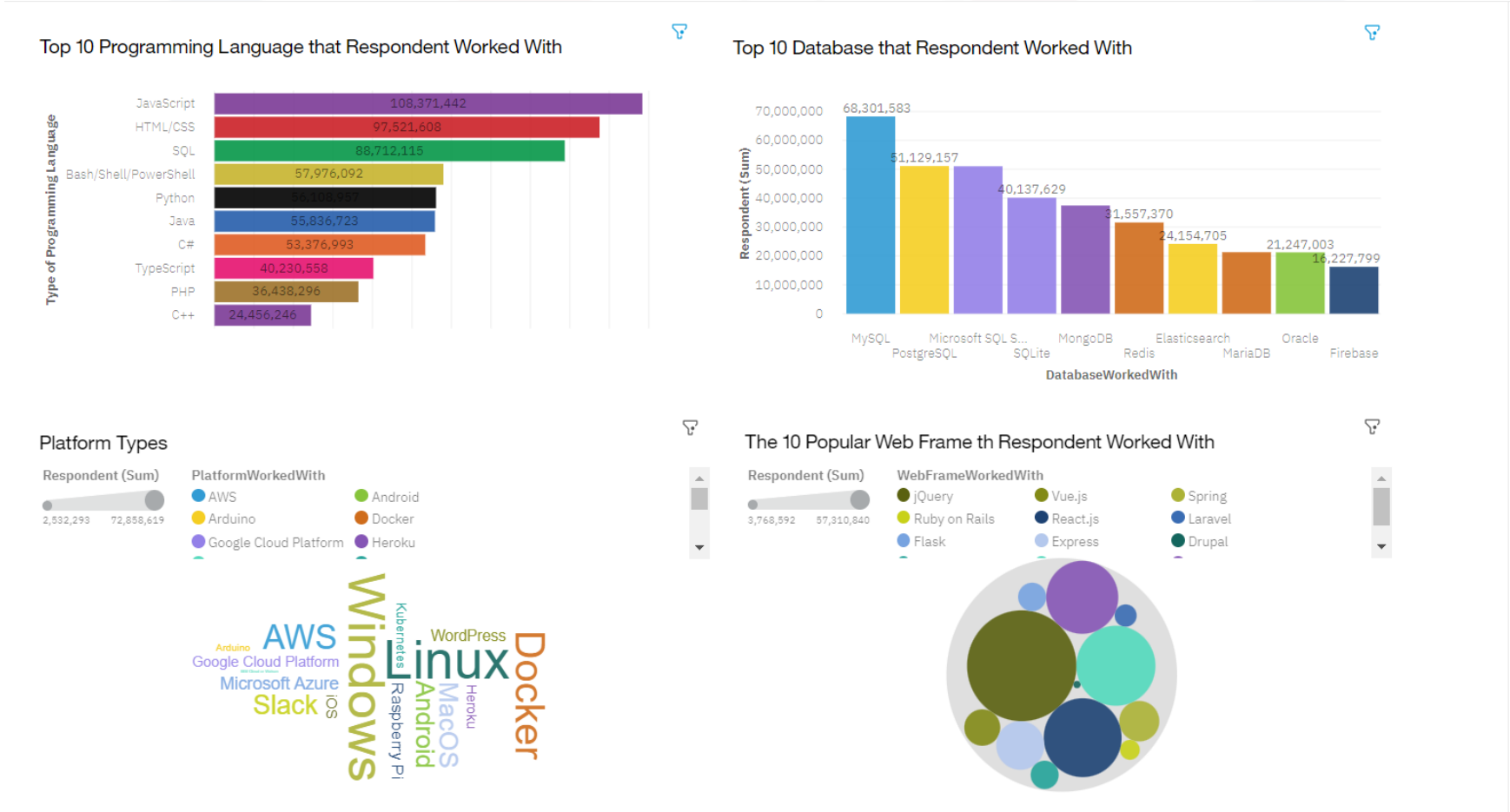
c) Demographics

IBM Cognos Dashboards

For the upcoming slides, I have attached 3 screenshots for the dashboards for further references.

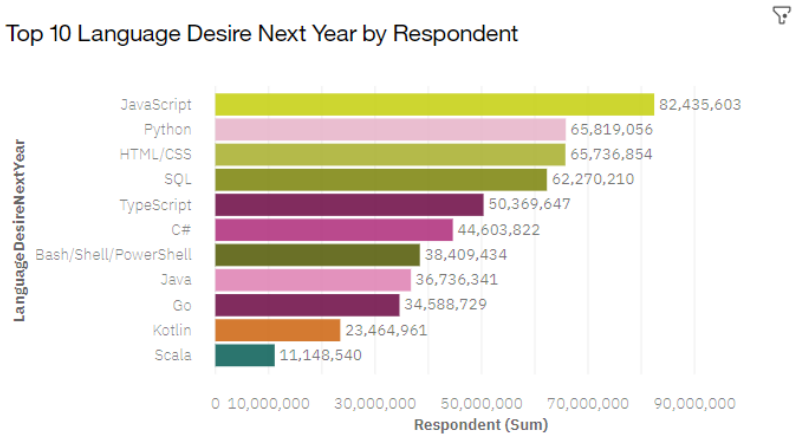
Dashboard 1:

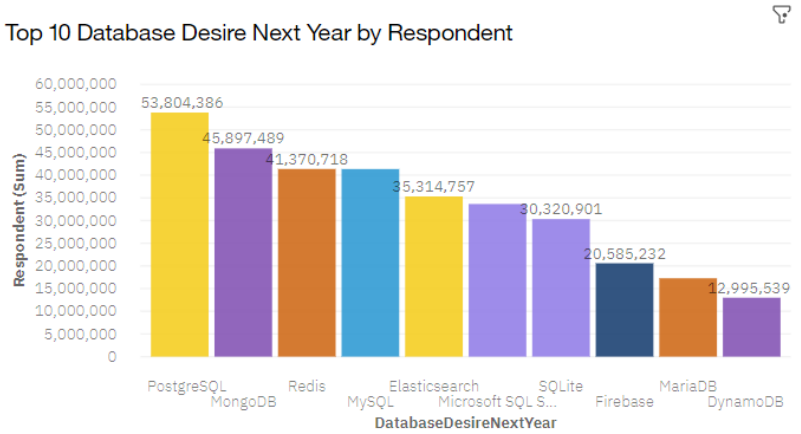
Current Technology Usage

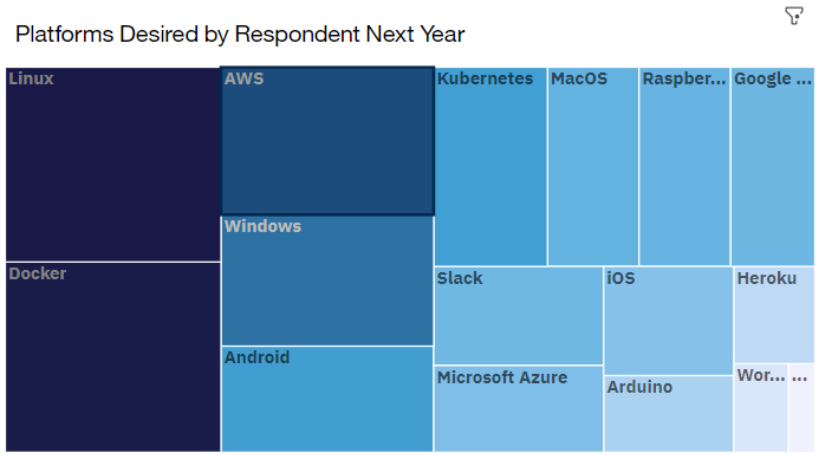


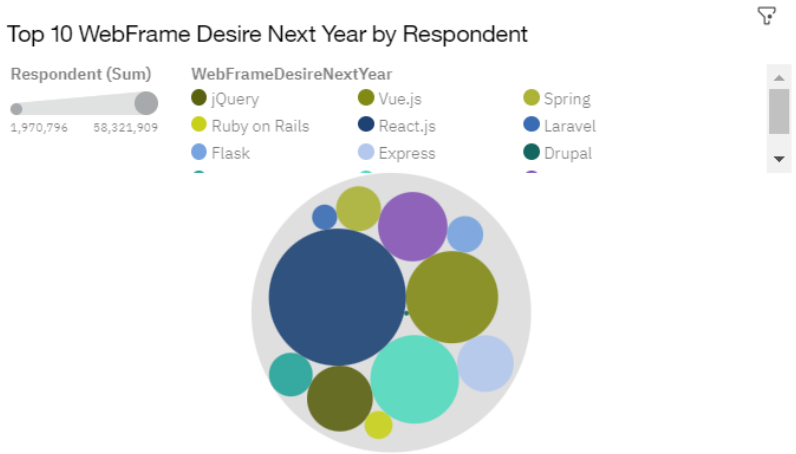
Dashboard 2:

Future Technology Trend



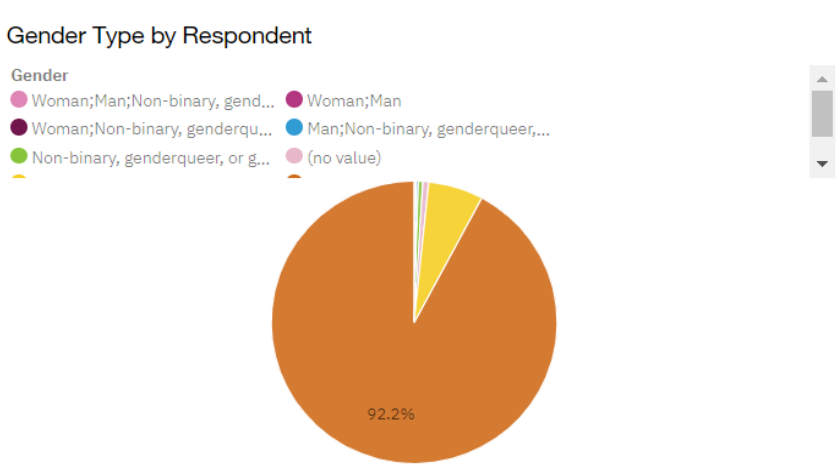


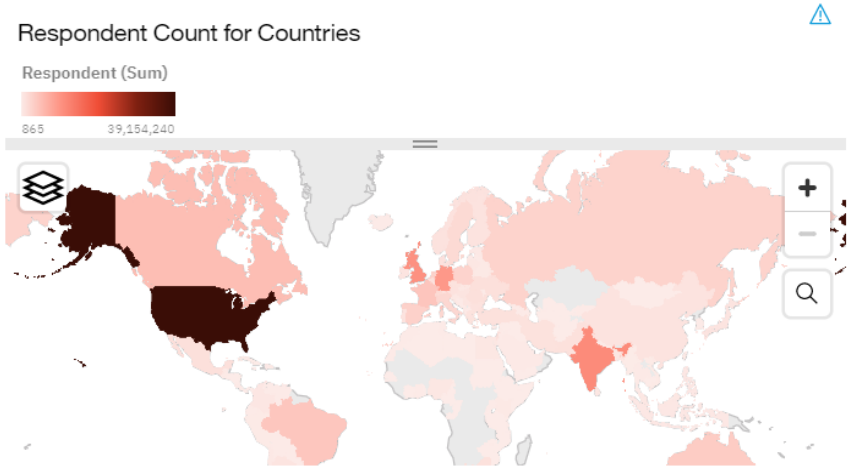


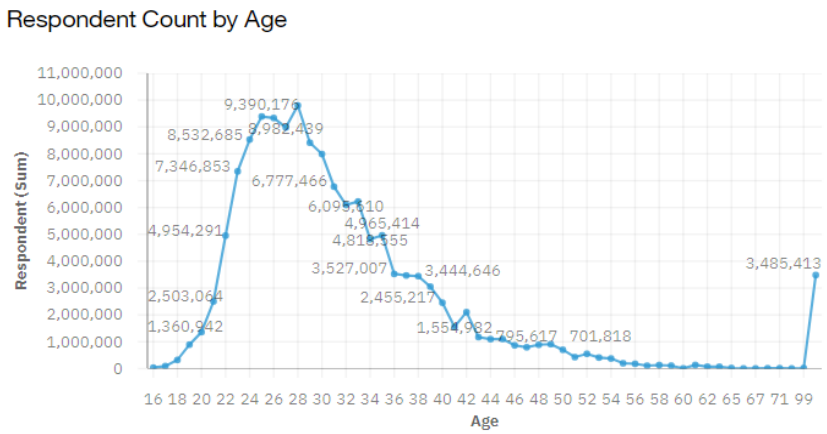


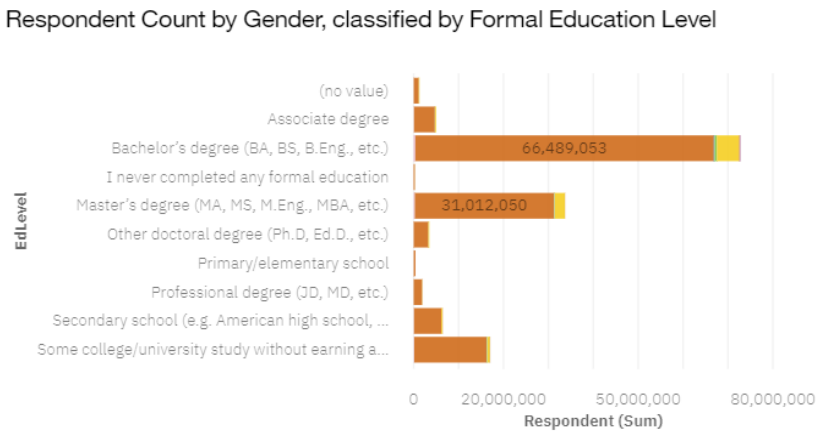
Dashboard 3:

Demographics









Discussion

- What kind of programming languages are most demanding?
- What technologies, languages and databases should programmers adapt in upcoming times?
- Types of technologies that programmers should learn to keep up to tend.
- Types of technology education material should educators prepare beforehand.
- What is the highest education most programmers received?
- What does the annual compensation look like for developers?
- The demographics of the developers.

Overall Findings & Implications

Findings

- JavaScript ,Python will be the upcoming language trend.
- PostgreSQL, MongoDB & MySQL are the more desired databases in the future.
- HTML/CSS remain important.
- React.js & Ruby on Rails web frames are highly recommended to learn.
- Future trendy platform (Linux, Docker, AWS or Windows).
- There are more men pursuing developer career than women do.

Implications

- Programmers and data specialists should not forget HTML/CSS and MySQL, as these are the basics to enter the IT job market.
- The data shows the languages and databases from the findings for programmers to learn in order to keep up with the technologies trend.
- With additional knowledge of learning/experience, the suggested web frames & platforms will help developers to increase their competitive value in the job market.
- Policy makers, education academies and companies should put more effort to encourage to minimising the gender gap to pursue a career as a programmer.

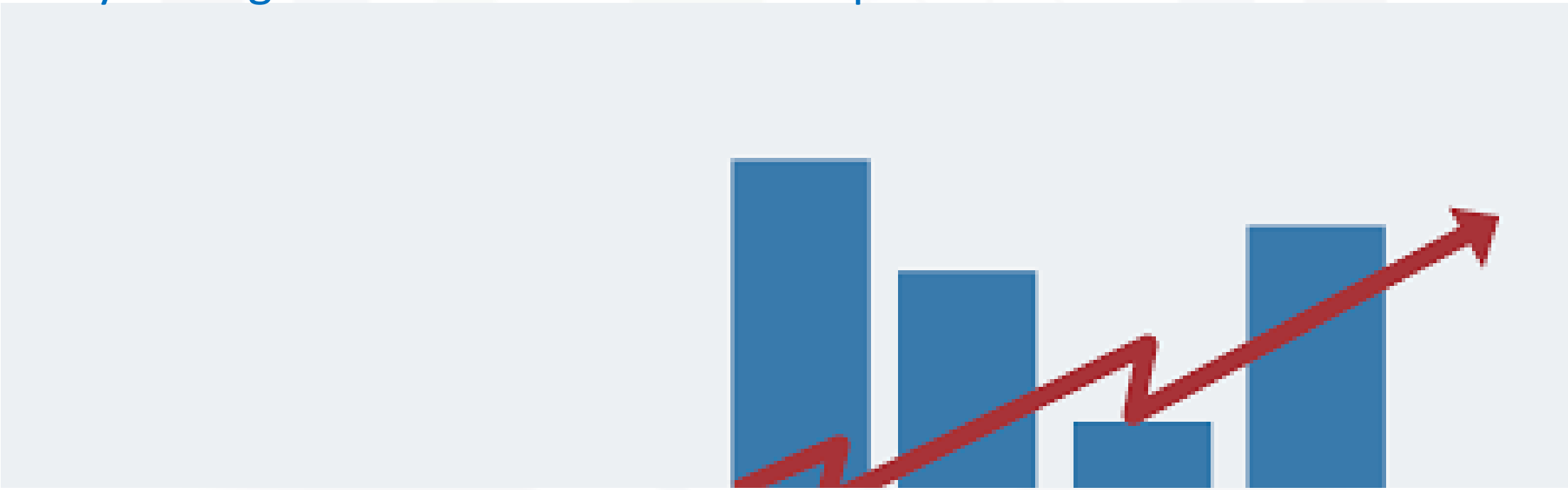
Conclusion

The subset of Stack Overflow's Developers' Online Survey Data 2019 that I had analysed, and conclusion have been made:

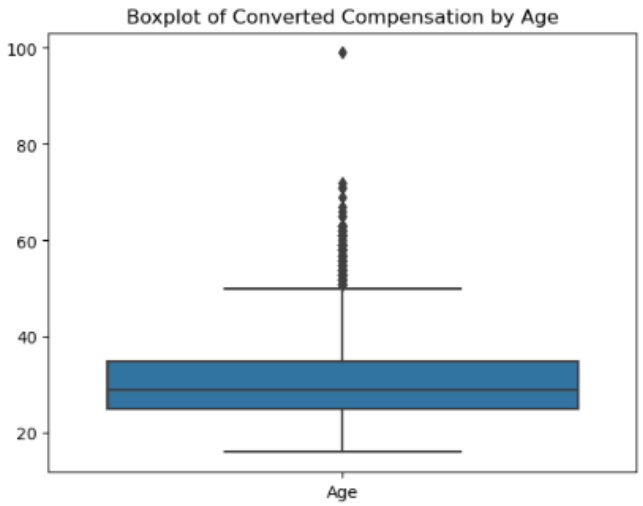
1. The results & insights obtained should be relevant for developers & data professionals that aim to upskill their career; business & educators that aim to adapt the latest technologies as well as, making the economic and gender more sustainable.
2. Recommendation technologies:
   React, Vue, ASP.net, Linux, Docker, AWS & Windows
3. Recommendation for Programmers & Data Professionals:
   JavaScript, Python, HTML/CSS,SQL, PostgreSQL, MongoDB, MySQL

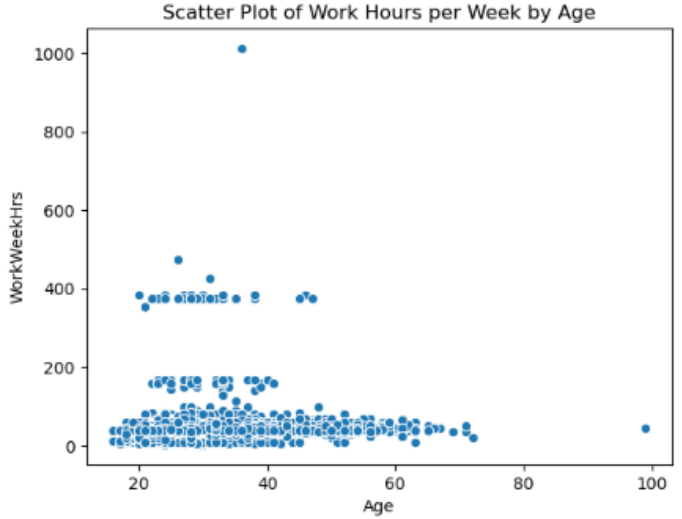
Appendix

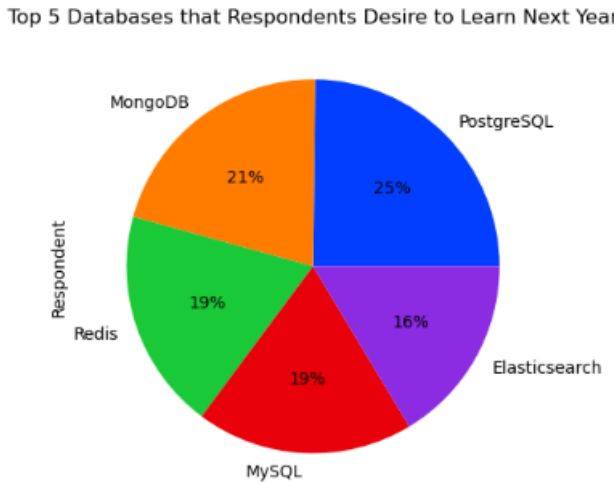
Relevant extra charts that I have analysed & produced during the analysis stage have affixed in the subsequent slides.

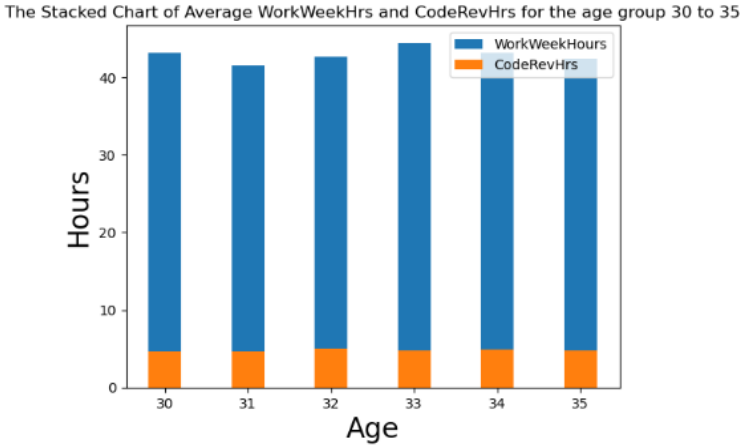


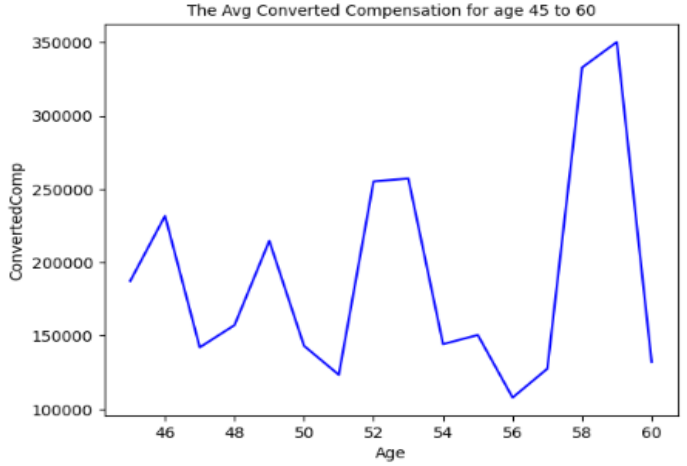
Appendix

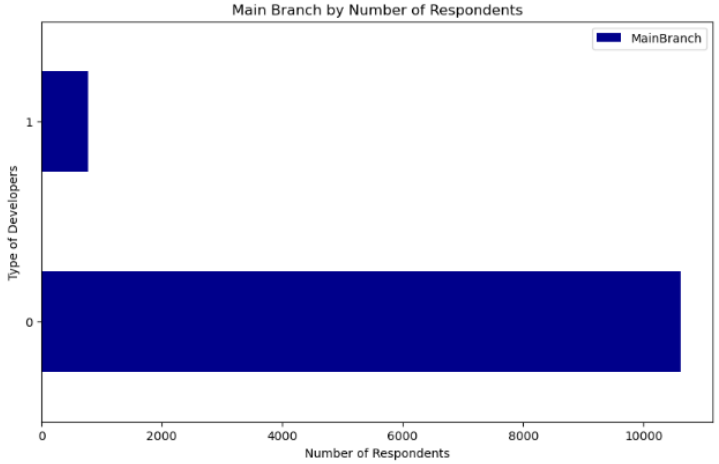








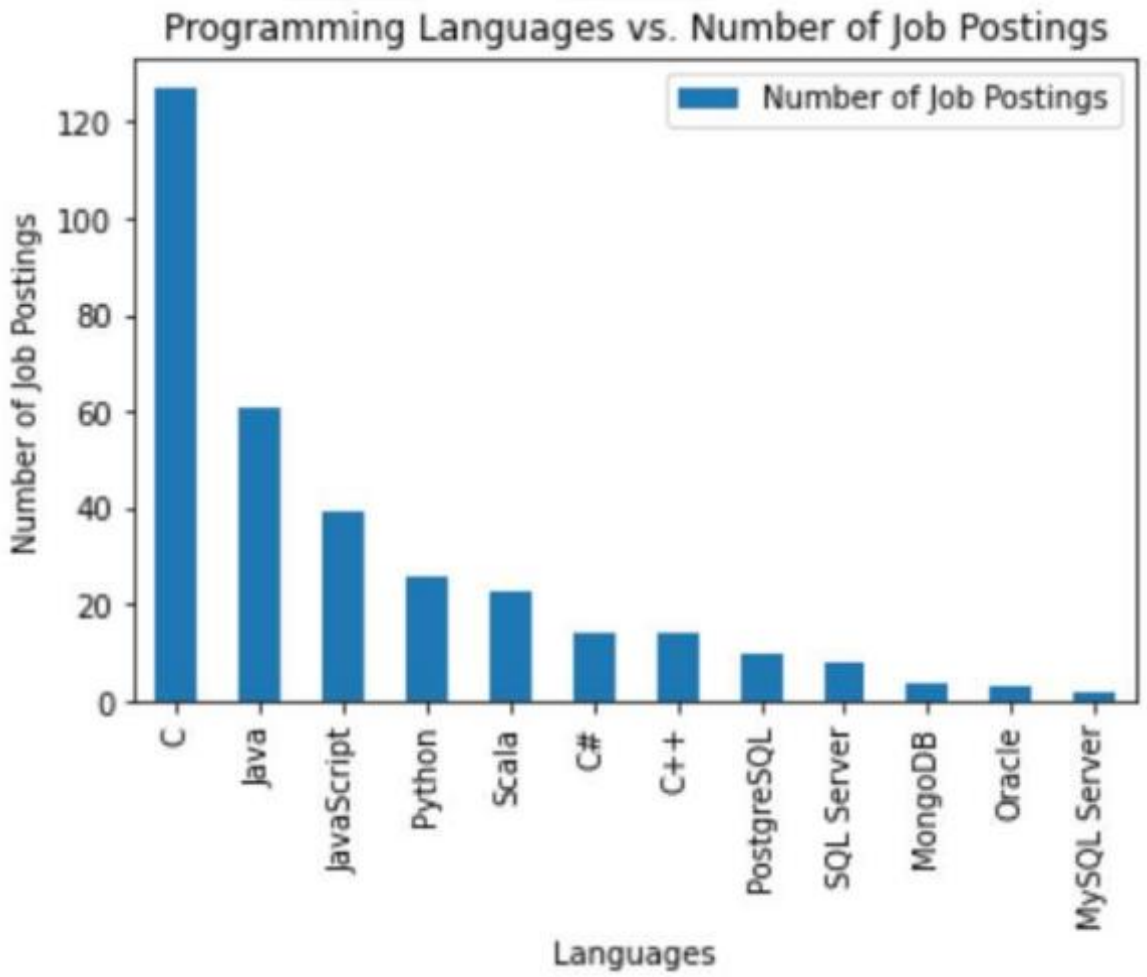




IBM Developer

SKILLS NETWORK

Programming Languages VS Number of Job Postings



Popular Languages by Average Annual Salary