# Tech skills and technologies

Coursera – IBM data analyst Capstone

David W

02/26/2022

# Table of Contents

IBM Developer

SKILLS NETWORK

# Executive Summary

- This presentation will present the analysis report that investigates the emerging skill set and technologies of the IT industry.

- The primary aim of the analysis is to identify the emerging trends in the IT industry pertaining to -
    - Programming languages
    - Databases
    - Software platforms (IDEs)
    - Web frames

- The current trends are also analyzed for comparison with expected future trends.

# Introduction

- The main purpose of this analysis is to keep up with the changing tools used in the IT industry.

- This practice is necessary to identify and hire future employees and train current employees in these tools to keep them up to date.

- The required data is collected from various sources -
    - Job postings
    - Training portals
    - Surveys

# Methodology

- The required data for analysis is collected from GitHub jobs, IBM website and Stack Overflow

- The information on the number of job postings for software tools was extracted by accessing GitHub Job APIs

- The information on the annual salaries of professionals working with certain software tools was accessed by web scrapping the IBM website.

- The required data set for this analysis comes from a survey conducted by Stack Overflow which they have open sourced.

**IBM Developer**

**SKILLS NETWORK**

# Methodology

- Once the data is collected, data wrangling is performed to -
  - Find missing values
  - Find duplicate values
  - Remove duplicates
  - Determine the missing values
  - Normalize the data

- After the data set is cleaned, an exploratory analysis is conducted to identify distribution of data, outliers in any fields and correlations between different fields.

- The data is visualized to view the distribution of data, relationship between different fields, comparison and composition of data.

- Finally dashboards are created to identify trends.
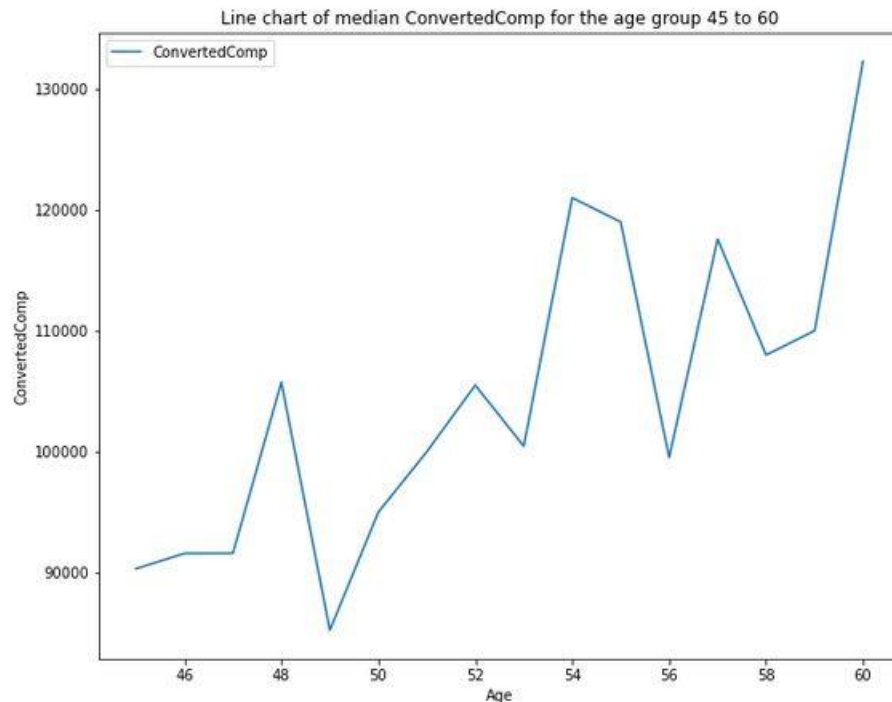
# Result

After data wrangling

- Most respondents earned salaries within 250,000 USD

- Most respondents were from 20 to 45 years of age
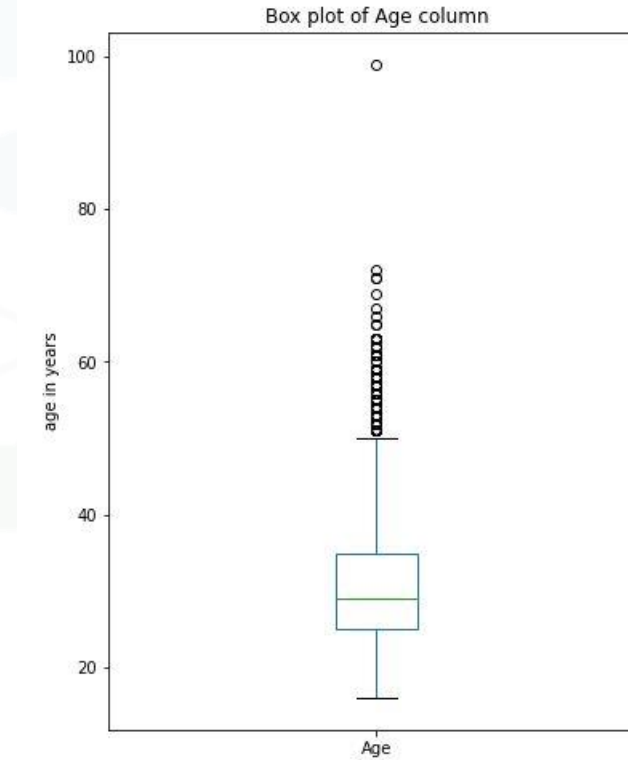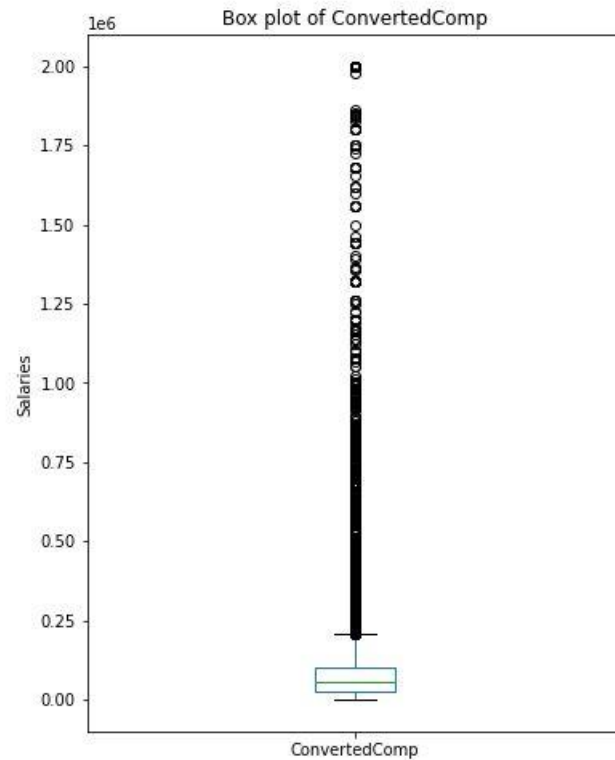
# Result

After data wrangling

- There is a positive correlation between the salary and age of the respondent.
- This makes sense as the respondent is older in age, the more experienced he/she is, hence a higher pay cheque.
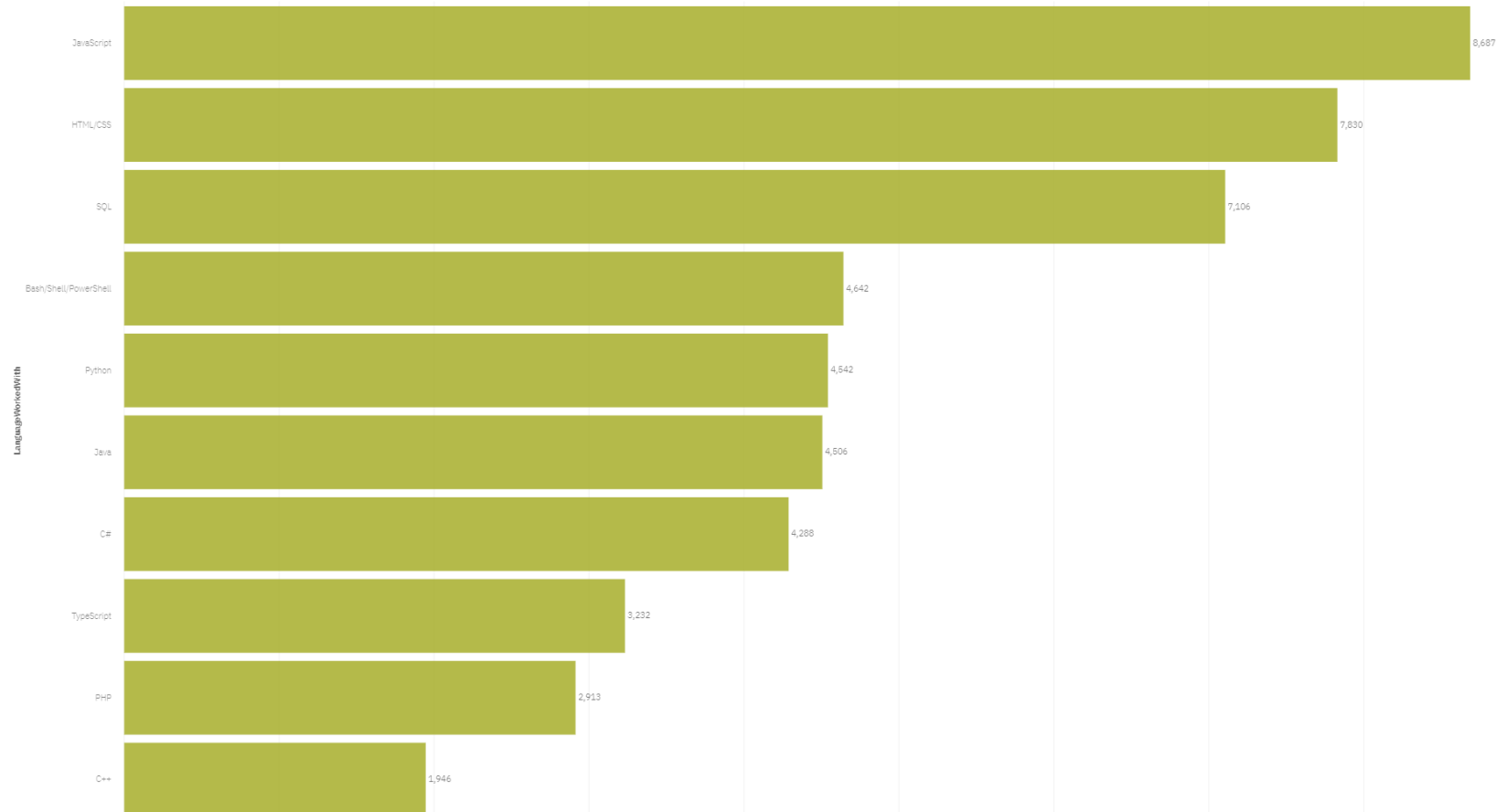
- The below table gives the correlation between different fields from the data set.
- And once again we see that Age has the strongest correlation with salary

Line chart of median ConvertedComp for the age group 45 to 60



|  | Respondent | CompTotal | ConvertedComp | WorkWeekHrs | CodeRevHrs | Age |
|---|---|---|---|---|---|---|
| **Respondent** | 1.000000 | -0.019354 | 0.010878 | -0.016221 | 0.005293 | 0.002180 |
| **CompTotal** | -0.019354 | 1.000000 | -0.063561 | 0.004910 | 0.017007 | 0.006337 |
| **ConvertedComp** | 0.010878 | -0.063561 | 1.000000 | 0.034351 | -0.088934 | 0.401821 |
| **WorkWeekHrs** | -0.016221 | 0.004910 | 0.034351 | 1.000000 | 0.038935 | 0.032032 |
| **CodeRevHrs** | 0.005293 | 0.017007 | -0.088934 | 0.038935 | 1.000000 | -0.012878 |
| **Age** | 0.002180 | 0.006337 | 0.401821 | 0.032032 | -0.012878 | 1.000000 |

# Programming language trends

Top 10 Language



| | |
|---|---|
| JavaScript | 8,687 |
| HTML/CSS | 7,830 |
| SQL | 7,106 |
| Bash/Shell/PowerShell | 4,642 |
| Python | 4,542 |
| Java | 4,506 |
| C# | 4,288 |
| TypeScript | 3,232 |
| PHP | 2,913 |
| C++ | 1,946 |

LanguageWorkedWith

# Programming language trends

Top 10 Language Desired Next Year



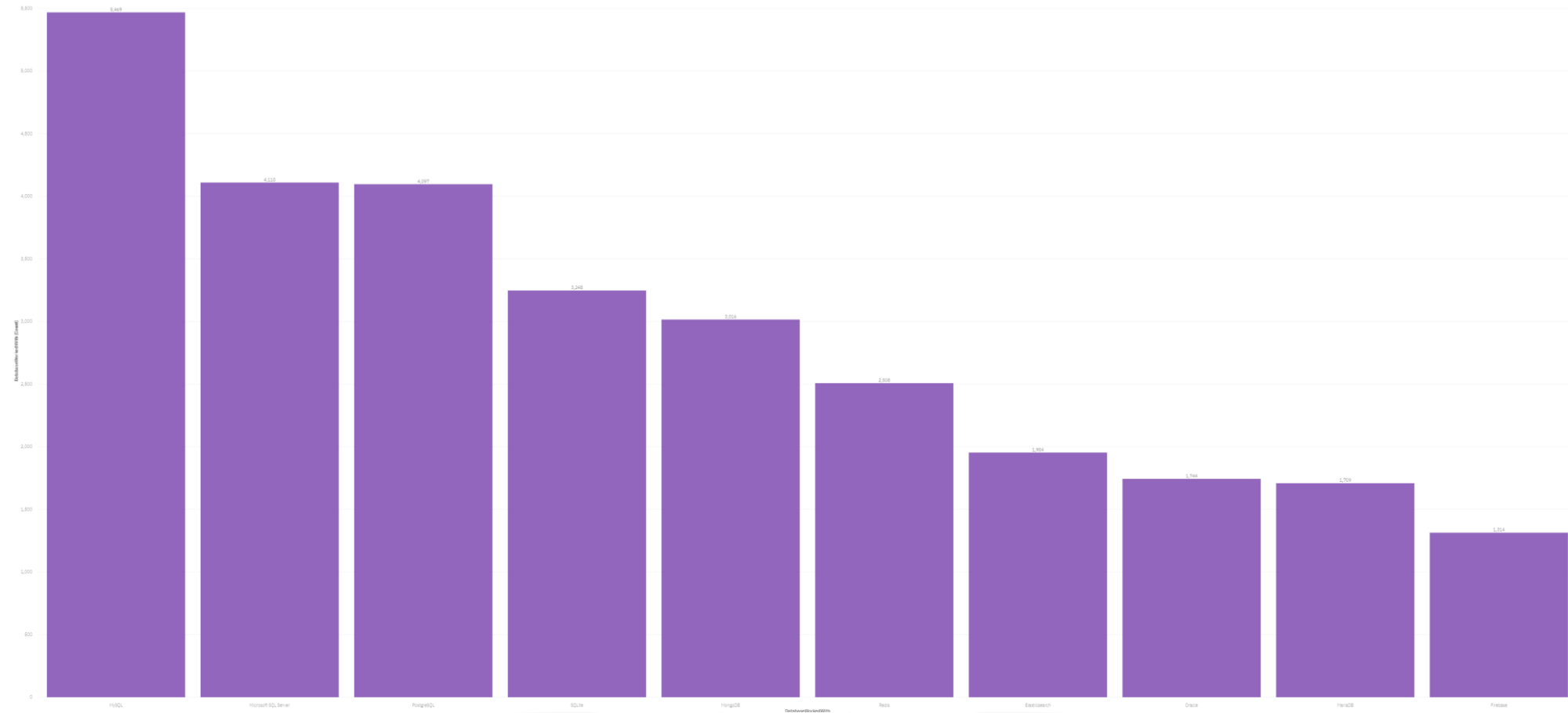| Language | Value |
|---|---|
| JavaScript | 6,630 |
| HTML/CSS | 6,328 |
| Python | 6,239 |
| SQL | 5,012 |
| TypeScript | 4,088 |
| C# | 3,591 |
| Bash/Shell/PowerShell | 3,097 |
| Java | 2,953 |
| Go | 2,769 |
| Kotlin | 1,890 |
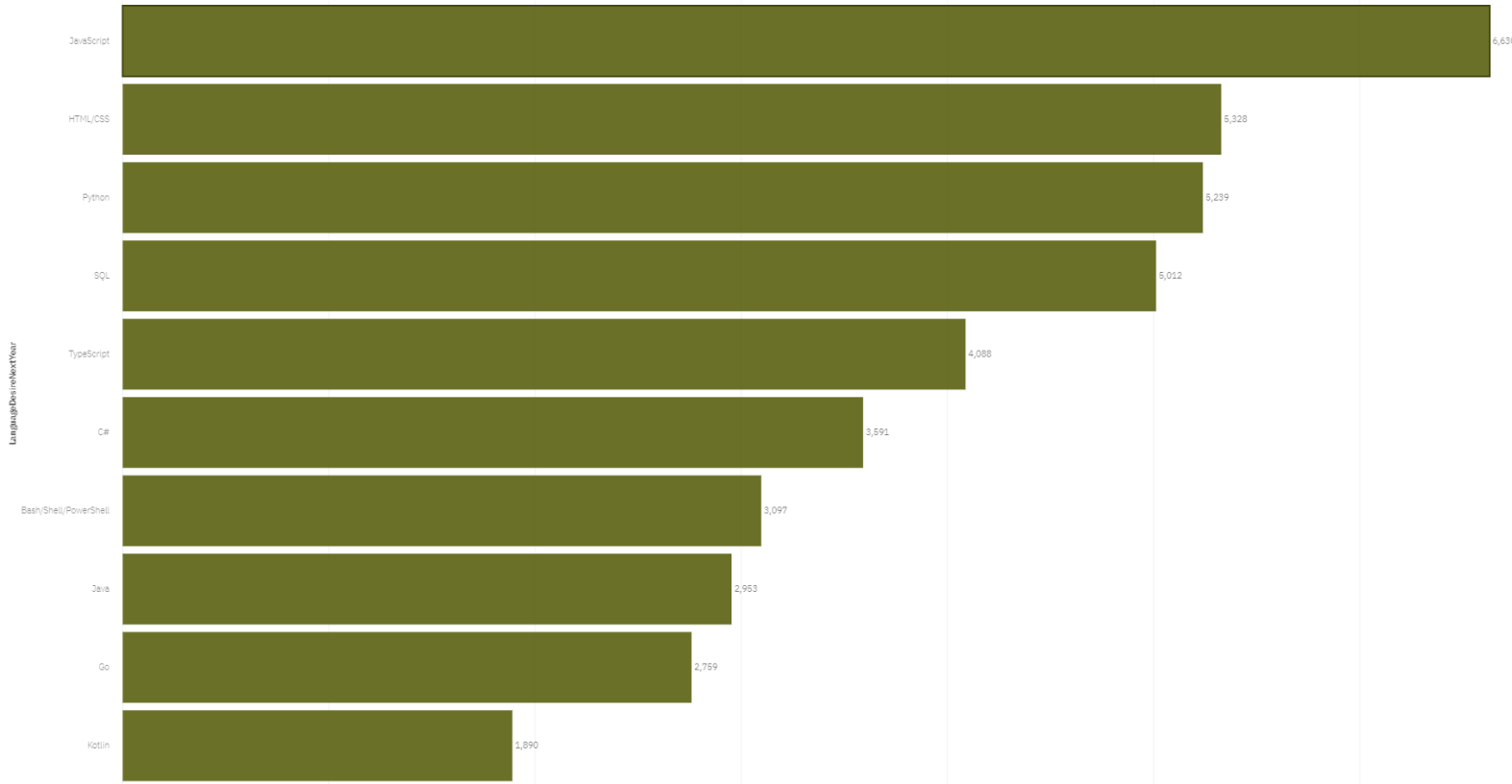
Findings

- Javascript and HTML/CSS remain the most in demand programming language

- People wants to learn python and type script

Implications

- Hiring and training professionals in Java and HTML will remain a top priority

- Hiring and training professionals in python can help the company keep up with market trends
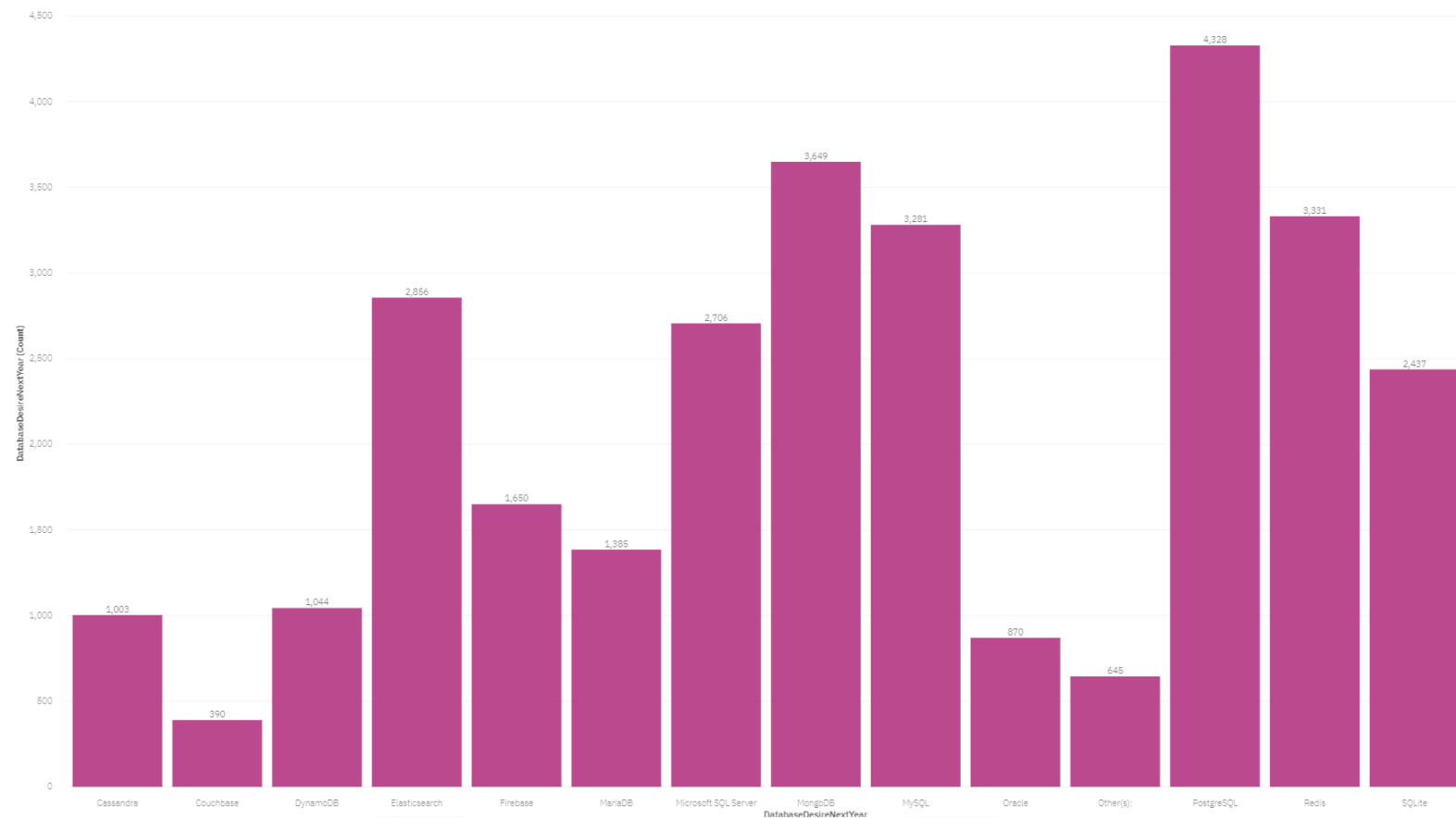
# Database trends

# Database trends



Top 10 Database Desired Next Year
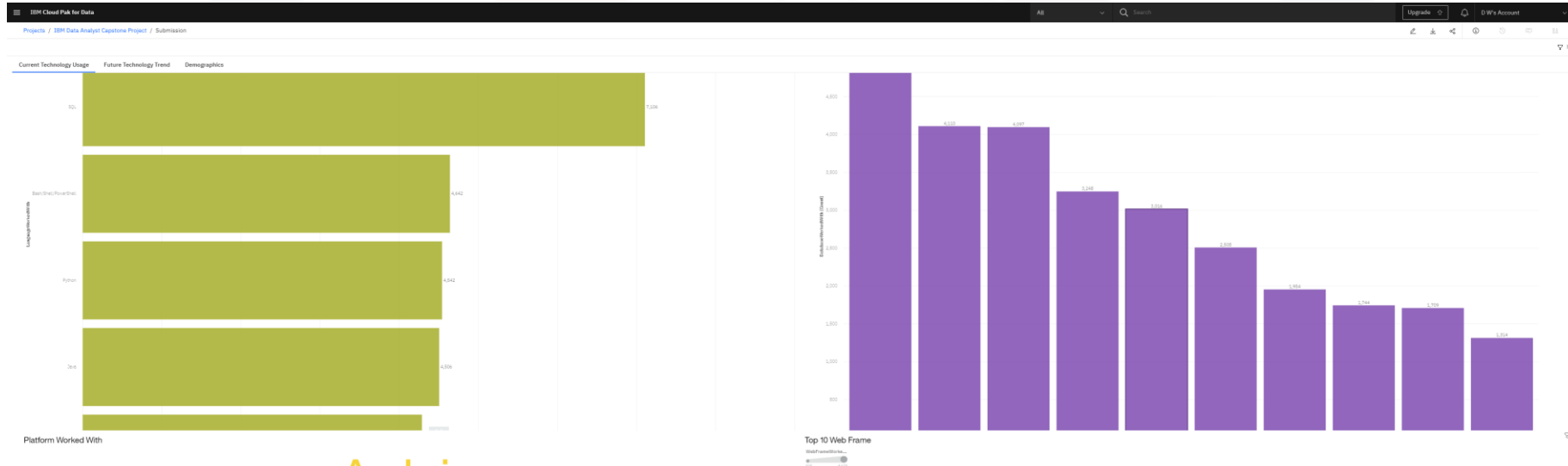
# Database trends – Findings & implications

Findings

- MySQL is the most widely used databas

Implications

- Hiring and training employees in MySQL will remain as it is, since most employees already work with MySQL.
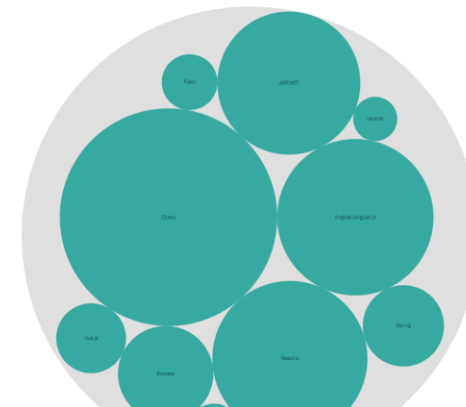- Hiring and training employees in PostgreSQL and MongoDB must be a priority henceforth.

# Dashboard – Current technology usage

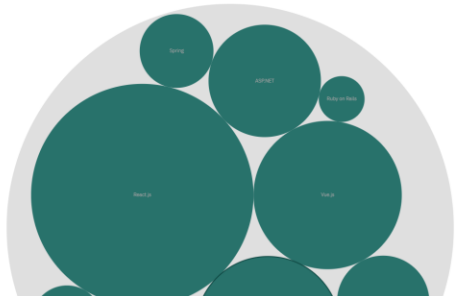This [link](#) will take you to the Dashboards in Cognos Analytics

# Dashboard – Future technology trend

This [link](#) will take you to the Dashboards in Cognos Analytics

# Dashboard – Demographics

This [link](#) will take you to the Dashboards in Cognos Analytics

# Conclusion – overall findings and implications

## Findings

- Java scrip, HTML/CSS and MySQL remain the most in demand tools

- Increasing number of professionals want to learn python, type script, PostgreSQL and MongoDB

## Implications

- Hiring and training professionals in Java, HTML and MySQL will remain a top priority

- Hiring and training professionals in python, PostgreSQL and MongoDB can help the company keep up with market trends

- Professionals used to Linux and windows, and proficient in React and JQuery are preferred

**IBM Developer**

**SKILLS NETWORK**

# Discussion

- What about the changing trends and the changing speed?

Learning and mastering a language has a cost. Would you learn a new language if it is not the dominant one in 10 years / 5 years / 2 years?

SKILLS NETWORK

# Appendix: In-Demand tech skills to learn in 2021

- List of tech skills to go beyond the data analyst skills

- Source: https://learntocodewith. me/posts/tech-skills-in-demand/

**Table of Contents**

- Top Tech Skill #1: Artificial Intelligence

- Top Tech Skill #2: Machine Learning

- Top Tech Skill #3: Data Science & Analytics

- Top Tech Skill #4: Data Engineering

- Top Tech Skill #5: Data Visualization

- Top Tech Skill #6: Network and Information Security (Cybersecurity)

- Top Tech Skill #7: Cloud Computing/AWS

- Top Tech Skill #8: Extended Reality (Virtual Reality and Augmented Reality)

- Top Tech Skill #9: Internet of Things (IoT)

- Top Tech Skill #10: UI/UX Design

**IBM Developer**

**SKILLS NETWORK**