



# Programming Trend Analysis

Ayisha Abdul Razak

11/23/2023

# OUTLINE

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



# EXECUTIVE SUMMARY



- Working with the Stack Overflow Developer Survey 2019 data to create a dashboard.
- 
- Dashboard contains three tabs
    - **Current Technology Usage**
    - **Future Technology Trends**
    - **Demographics**
  - Creating Dashboards using Cognos Dashboard Embedded
  - Permanent read-only view CDE link has been created to share dashboards
  - Required number of visualizations for each tab has been created in dashboard



# INTRODUCTION



Current Technology Usage: Visualizations include:

- Top 10 LanguageWorkedWith (Bar chart).
- Top 10 DatabaseWorkedWith (Column chart).
- PlatformWorkedWith (Word cloud chart).
- Top 10 WebFrameWorkedWith (Hierarchy bubble chart).

Future Technology Trend: Visualizations include:

- Top 10 LanguageDesireNextYear (Bar chart).
- Top 10 DatabaseDesireNextYear (Column chart)
- PlatformDesireNextYear (Tree map chart).
- Top 10 WebFrameDesireNextYear (Hierarchy bubble chart).

Demographics: Visualizations include:

- Respondent Gender distribution (Pie chart).
- Respondent Count by Countries (Map chart).
- Respondent Count by Age (Line chart).
- Respondent Count by Gender, classified by Formal Education Level (Stacked bar chart)

# METHODOLOGY

## 1: Data Collection

- Collecting Data Using APIs, Webscraping, Exploring Data

## 2: Data Wrangling

- Finding Missing Values, Determine Missing Values, Finding Duplicates, Removing Duplicates, Normalizing Data

## 3: Exploratory Data Analysis

- Distribution, Outliers, Correlation

## 4: Data Visualization

- Visualizing Distribution of Data, Relationship, Composition, Comparison

## 5: Dashboard

- Creation, Dashboards 6: Presentation of Findings • Final Presentation





# RESULTS

---

HTML/CSS is the language and MySQL is the Database that is used by most respondents in current year.

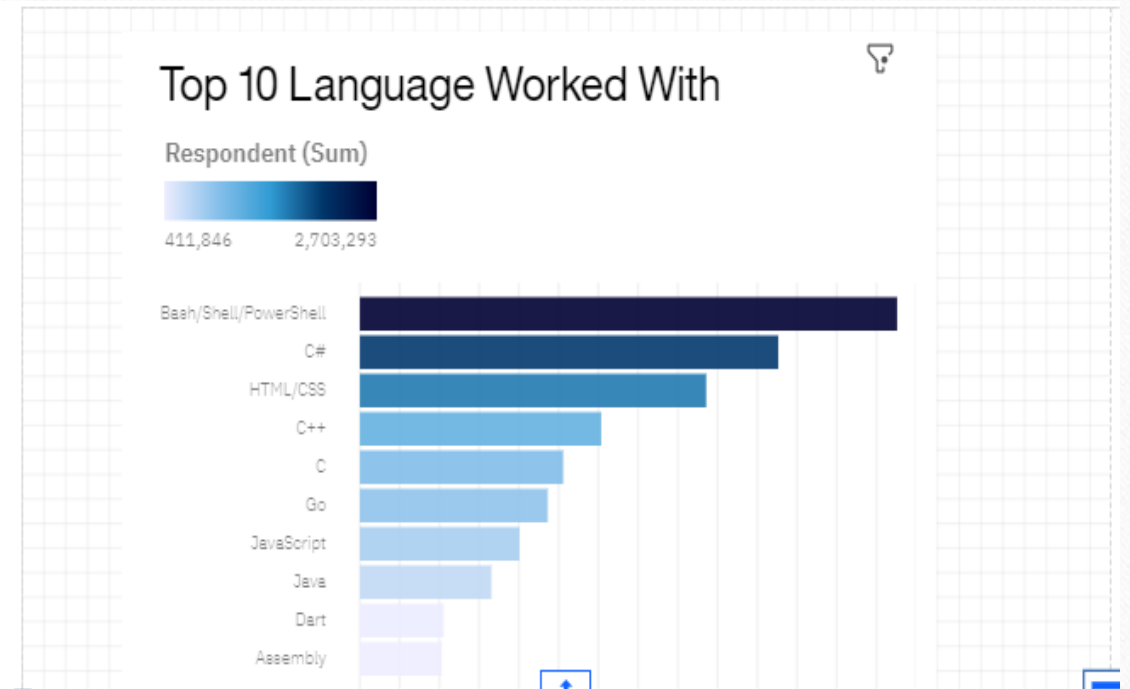
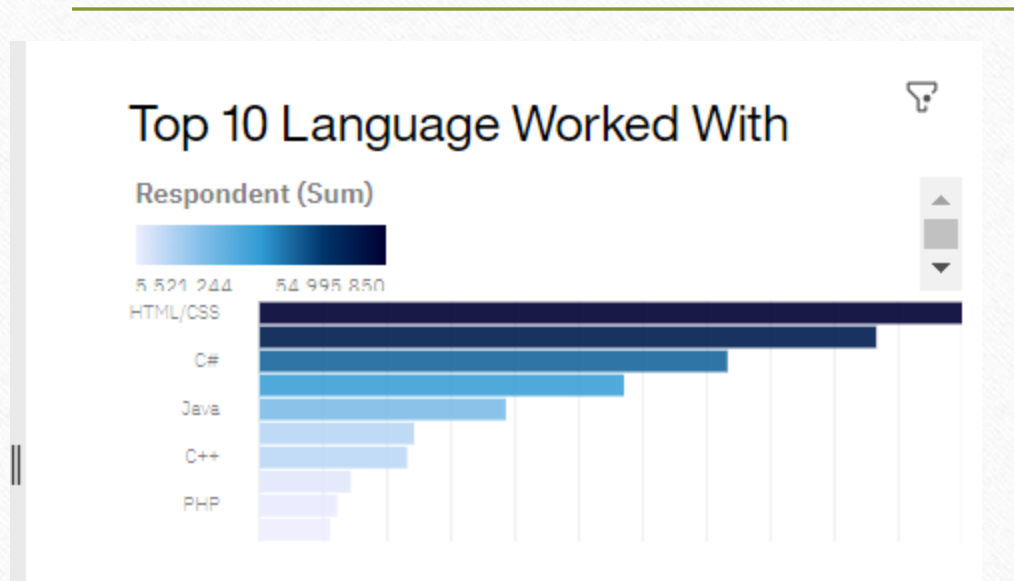
Bash/Shell/Powershell is the language and MongoDB is the Database that is used by most respondents for the future trend Analysis.

Demographics Analyses with woman and man and technology usage of man is 98.3% and United States respondents with the age between 24 and 28 use the technology the most.

# PROGRAMMING LANGUAGE TRENDS

Current Year

Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## Findings

---

- HTML/CSS degrades with the growing years
- Powershell/Bash/Shell usage increases with future
- C# shows clear rise in the trends

## Implications

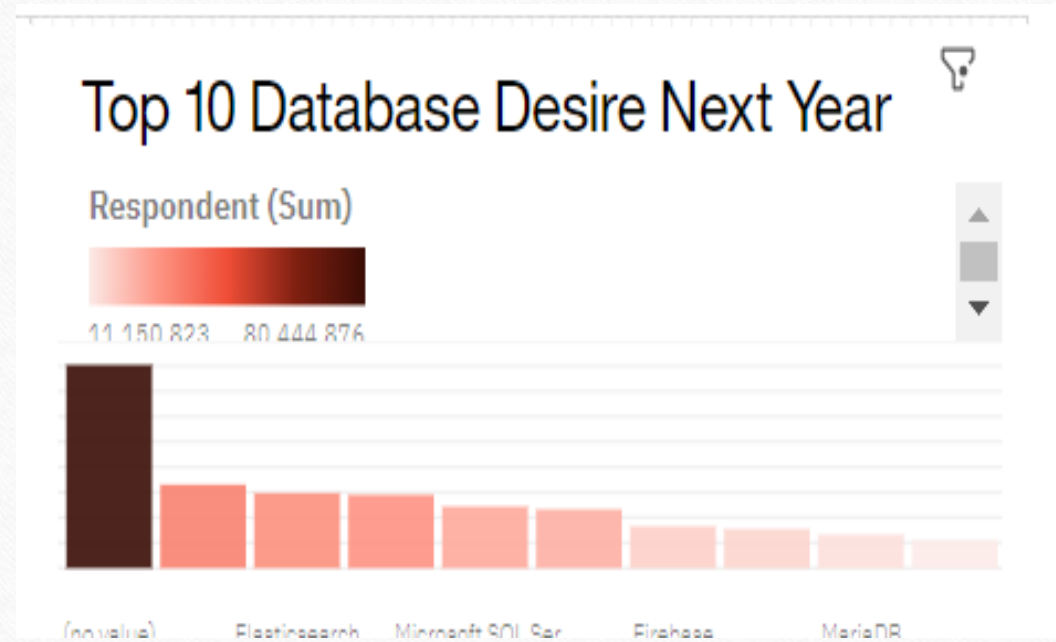
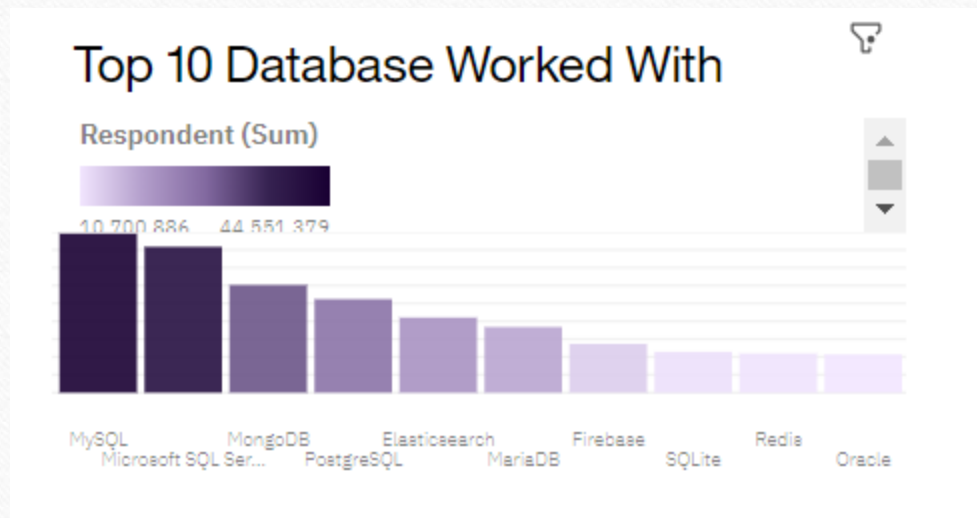
- The Respondents are interested to use powershell for their future Analysis
- The popularity of Html reduces while analysing the trends
- C# shows the considerable growth in future years



# DATABASE TRENDS

Current Year

Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## Findings

---

- MySQL is the Database that is used by most respondents .
- Second popular Database is the Microsoft SQL
- Next popular database comes MongoDB

## Implications

- The popularity of MySQL degrades to sixth place and Respondents are not that interested in future analysis
- MongoDB had a visible growth in the chart which clearly depicts that users are more interested in using.
- Microsoft Sql also degrades to seventh place in future trends

# DASHBOARD

---



<https://dataplatform.cloud.ibm.com/dashboards/9f2a4519-a52b-4feb-9644-00e5c1029a63/view/6f34f23f79b732eb5ff4f6e4079824542c352055b0bb8451d2d47b495b642597f0681294c82a1a5ddb40536aa7bf110d98>





## Current Technology Usage

## Future Technology Trend

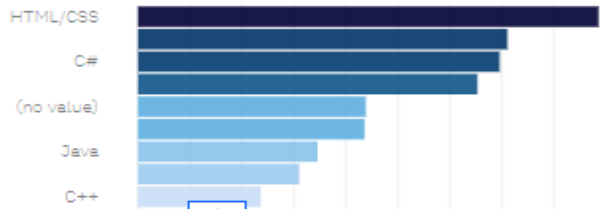
## Demographics



Respondent (Sum)



8,519,534 44,281,213

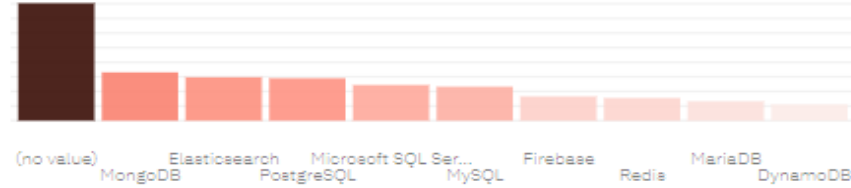


## Top 10 Database Desire Next Year

Respondent (Sum)



11,150,823 80,444,876



DatabaseDesireN...



12 14

PlatformDesireNextYear



AWS Android

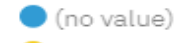


Respondent (Sum)



12,097,366 75,045,372

WebFrameDesireNextYear



(no value) ASP.NET



Current Technology Usage

Future Technology Trend

Demographic



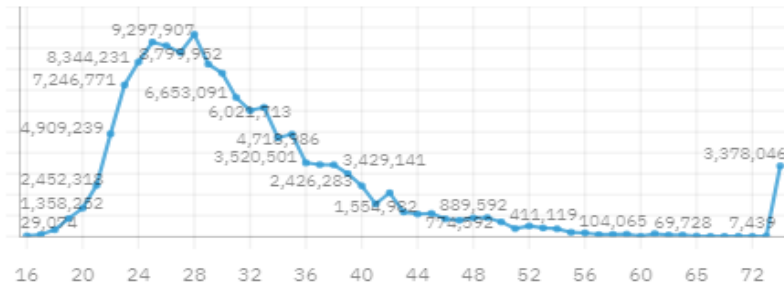
## Respondent classified by Gender

Gender

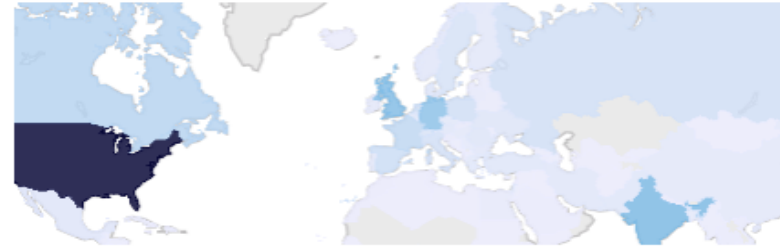
Woman Man



## Respondent Count by Age



## Respondent Count for Countries



## Respondent Count by Gender, classified by Formal Education Level





# DISCUSSION

---



Upskilling in the Technology sector.

- How do we close the wide gender gap in the Technology sector?
- Is completing a masters or doctorate degree really a requirement?
- The increasing demand for mobile development as Kotlin is getting popular.
- More tech education, access and development in less developed regions in South east Asia, South America, Africa and some parts of Europe.
- How relevant will Oracle SQL still be in the future?

# OVERALL FINDINGS & IMPLICATIONS

## Findings

---

- Most people in the IT field have a Bachelors' degree.
- Web development languages are the most popular and on-demand tools in the IT field currently.
- The Tech sector is filled with majorly young people under 40 years of age.
- Most respondents want to learn Postgre SQL and React JS next year

## Implications

- It is important for data professionals to develop proficiencies in NoSQL in addition to SQL databases.
- Web development is still a very lucrative skill.
- Less developed countries need more access to tech trainings and education

# CONCLUSION

---

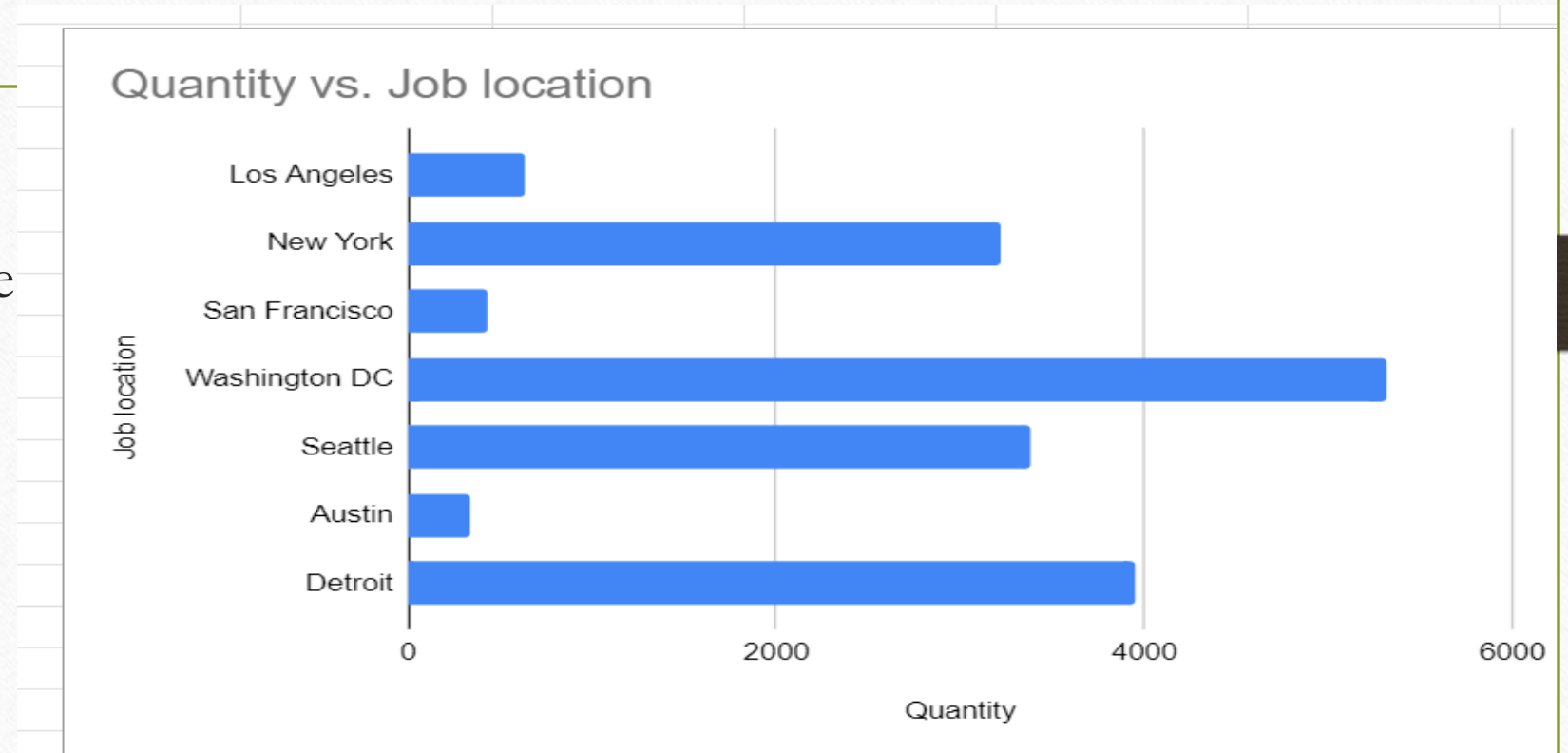


- Developers are people with very marked characteristics.
- • A good idea of popularity trends of different tools, platforms and languages can be obtained.
- • There is a job to be done to spread accessibility of this labor market to countries in development.



# JOB POSTINGS

Bar chart presenting the job posting data collected using Github Job API.



# POPULAR LANGUAGES

- Bar chart displaying popular languages and their average annual salary. The data was collected through web scraping the Github jobs data and saved in a csv file

