



# STACK OVERFLOW DEVELOPER SURVEY 2019

OJAL JAIN

FEBRUARY 2023

# OUTLINE



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

# EXECUTIVE SUMMARY



- This presentation has been created to summarize the key findings from an analysis of data collected as part of the 2019 Stack Overflow Developer Survey.
- A subset of the survey data was considered which consists of 2 datasets i.e. data technologies and demographic to identify the present and future data technologies trends among people of different age groups all across the world.
  - Present technology trends were identified as JavaScript as popular language, MySQL as popular database, Linux as popular platform and jQuery as popular web frame.
  - Future technology that people wanted to learn were identified as JavaScript language, PostgreSQL database, Linux platform and React.js web frame.
  - Most of the respondents of the survey were male with a master's or bachelor's degree between the age group of 21 to 43 and most of the respondents reside in US.
- There is a huge interest among developers in JavaScript and web development languages.
- NoSQL databases also saw a tremendous growth in interest with databases such as MongoDB and Redis.

# INTRODUCTION



- This report is about collecting data from various sources and identifying technology trends for this year's report on emerging skills.
- This report is for current and aspiring developers, IT industry leaders, computer science students, HR professionals and educators.
- This report yields insights regarding the following:
  - Helps in identifying the current technology trends in the market.
  - Helps in identifying which technology will be more used in the future or the technology people will shift to in the future.
  - Helps in targeting prospective employees based on the demographic profile of the report.

# METHODOLOGY



- Data collection: the data used in this report has been collected from 3 different sources
  - subset of stack overflow developer survey 2019
  - Collected number of job postings using Jobs API
  - Collected annual average salary of programming languages using Webscraping
- Data wrangling: the subset data was wrangled in order to remove missing values, duplicates and normalizing data.
- Exploratory data analysis: after cleaning that data exploratory analysis was done to identify outliers, distribution of data and correlation between different columns.
- Data visualization: IBM Cognos was used to creates dashboard using the subset data of survey.

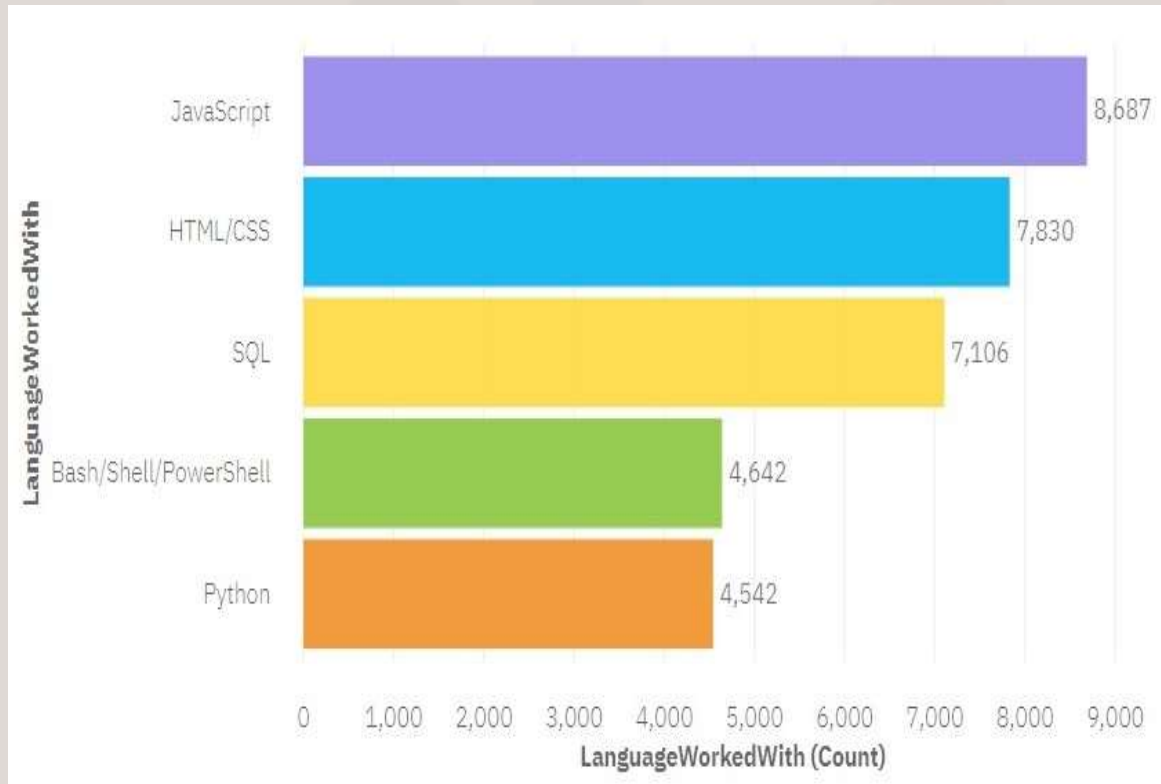


# RESULTS

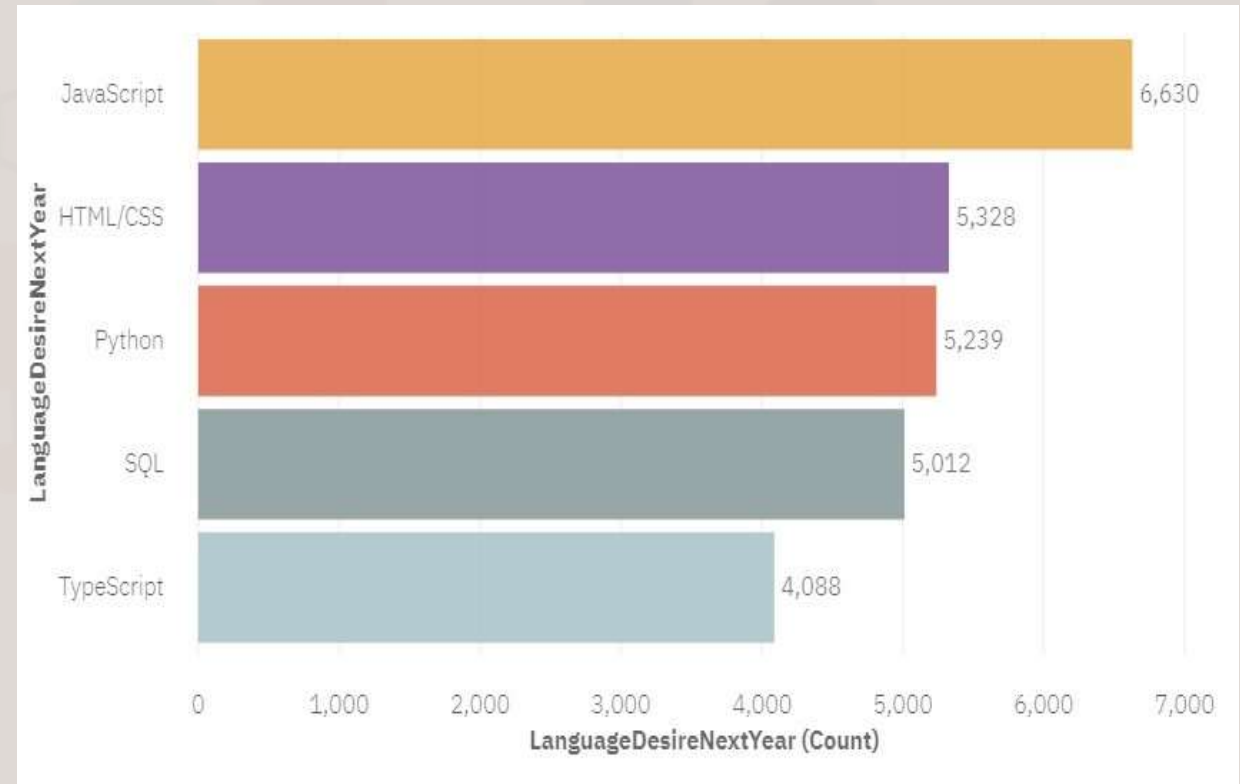


# PROGRAMMING LANGUAGE TRENDS

## Top 5 languages in 2019



## Top 5 desired languages for next year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- JavaScript and HTML/CSS are the popular languages among developers and will remain in future as well.
- There is an increased interest in developers to learn python and TypeScript next year.
- SQL is an important language among developers and will likely remain next year as well.
- Bash/Shell/PowerShell has seen a decrease in interest for next year.

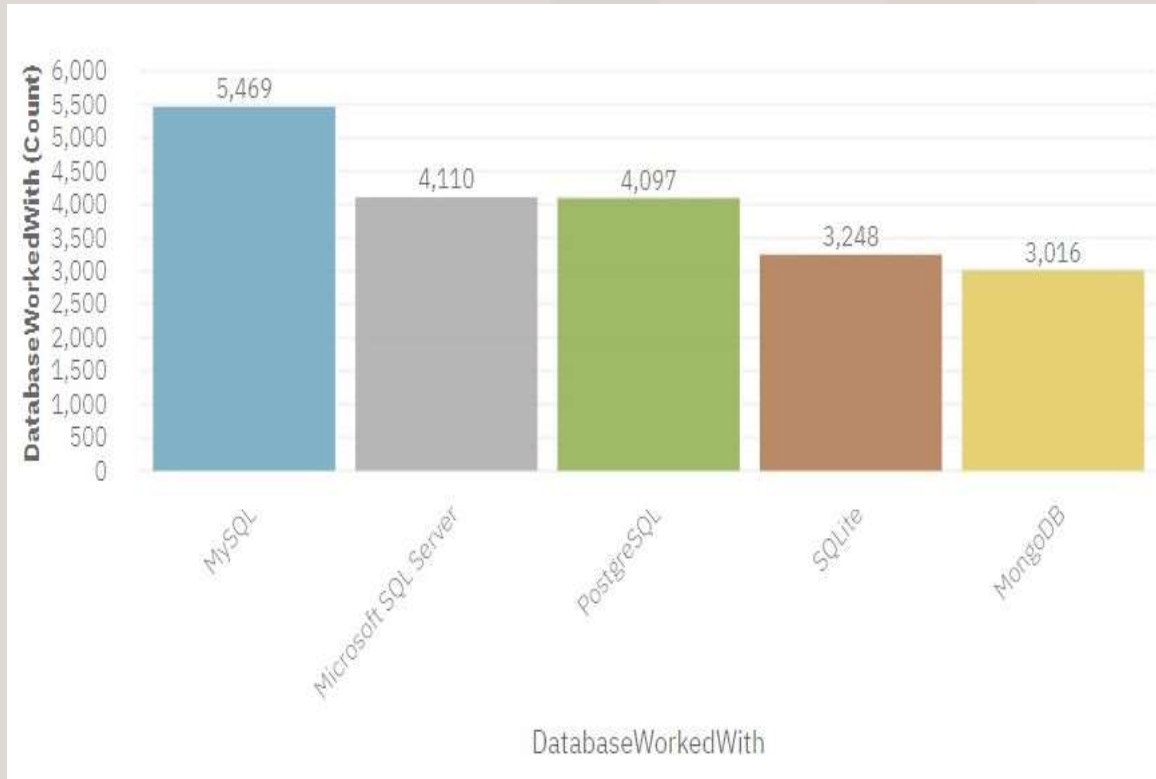
## Implications

- Web development jobs will continue to remain in high demand in the future as there is an increased interest in TypeScript as well along with JavaScript and HTML/CSS
- SQL will remain the preferred language for big data storage and querying.
- Python is useful in AI and machine learning, and an increased interest will help create more job opportunities.

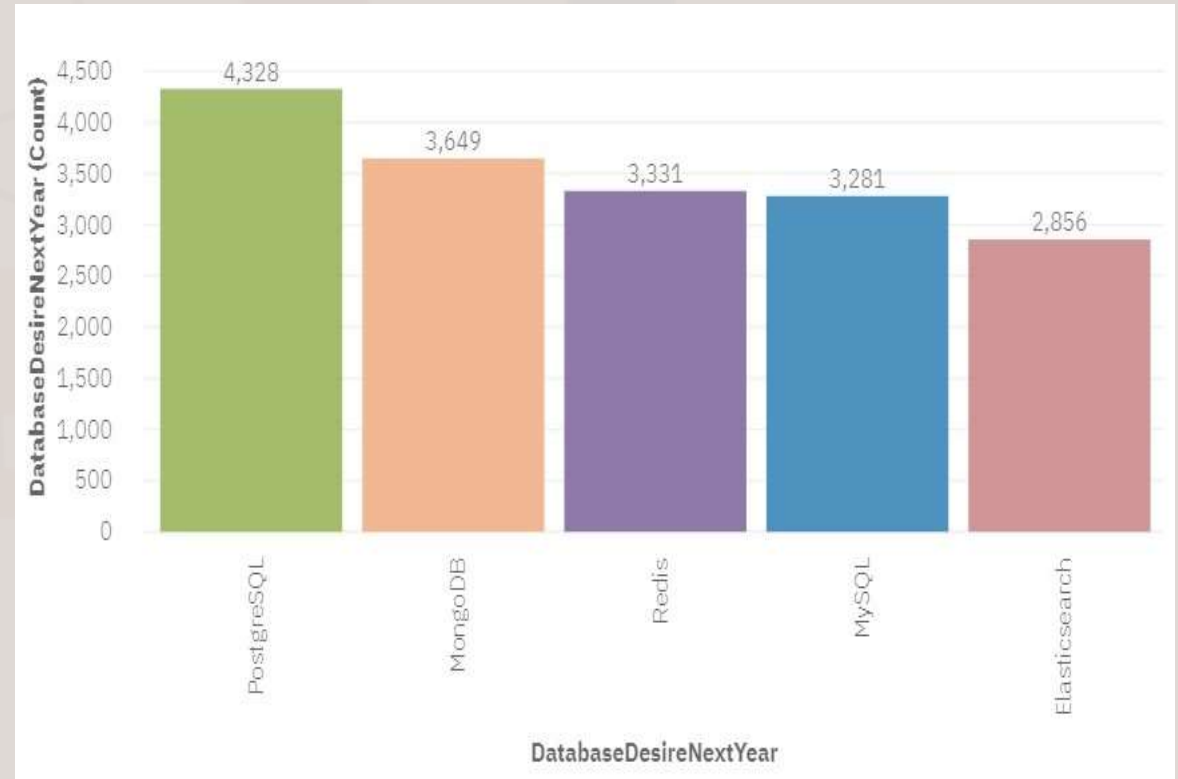


# DATABASE TRENDS

## Top 5 databases in 2019



## Top 5 databases desired for next



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- SQL database programs were the most popular in 2019, with MySQL in lead and followed by Microsoft SQL Server.
- But, for next year PostgreSQL has gained a lot of popularity as compared to all SQL databases.
- There is a tremendous interest in MongoDB and Redis among developers.
- Elasticsearch has also gained a lot of interest in developers to learn.

## Implications

- Due to PostgreSQL ability to smoothly tackle voluminous databases and complex queries it has gained interest among developers.
- With increased usage of social media, NoSQL database is also gaining popularity as data cannot always be stored in a table to query.
- Current developers need to learn NoSQL database with relational database to keep up with the trend.
- Aspiring developers need to focus both on relational database as well as non-relational.

# DASHBOARD

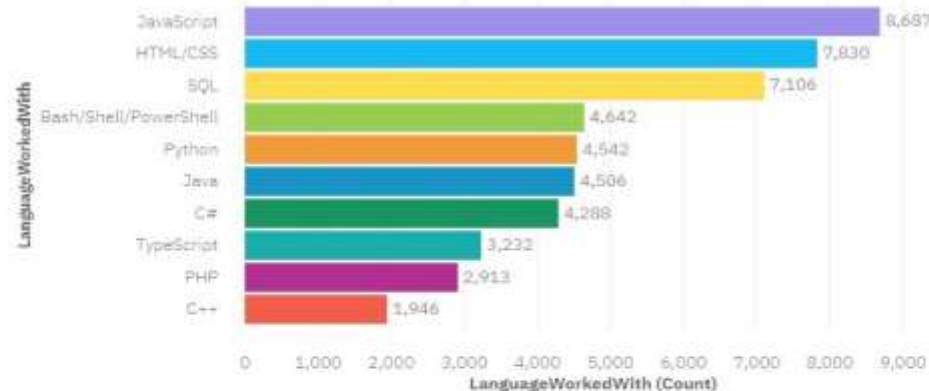


The following link contains the interactive Cognos dashboard summarizing a) current technology usage b) future technology trend c) demographics

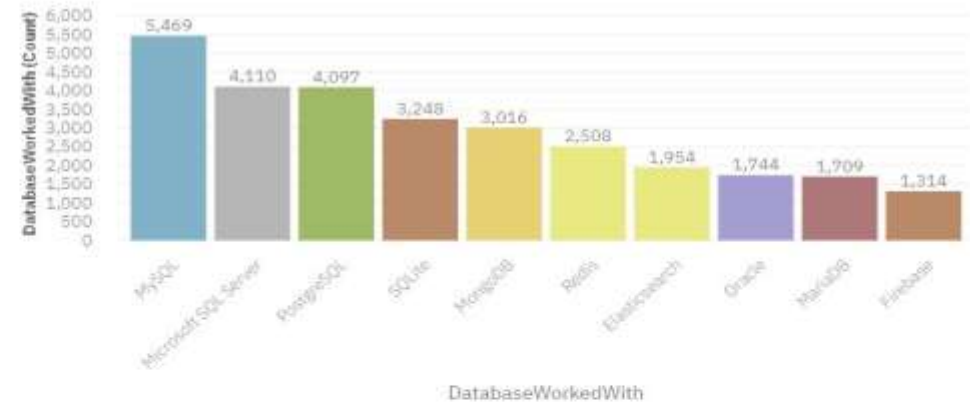
[click here to open the dashboard](#)

# DASHBOARD A: CURRENT TECHNOLOGY USAGE

Top 10 popular languages in 2019



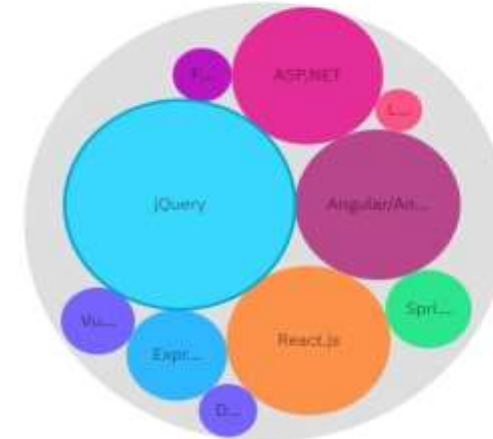
Top 10 popular databases in 2019



Top platforms used in 2019

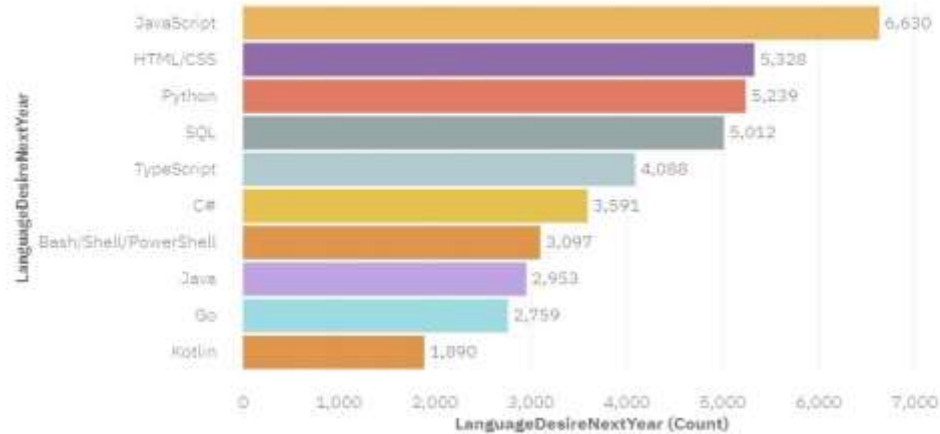


Top 10 Web Frame Worked With in 2019

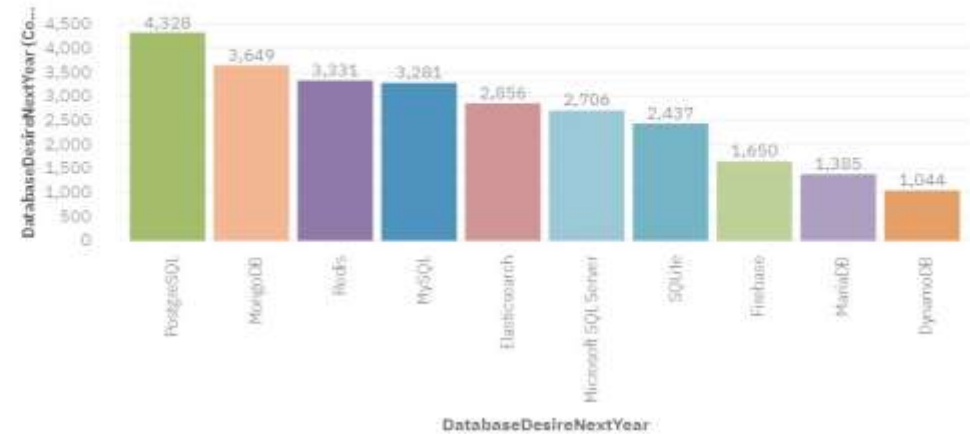


# DASHBOARD B: FUTURE TECHNOLOGY TREND

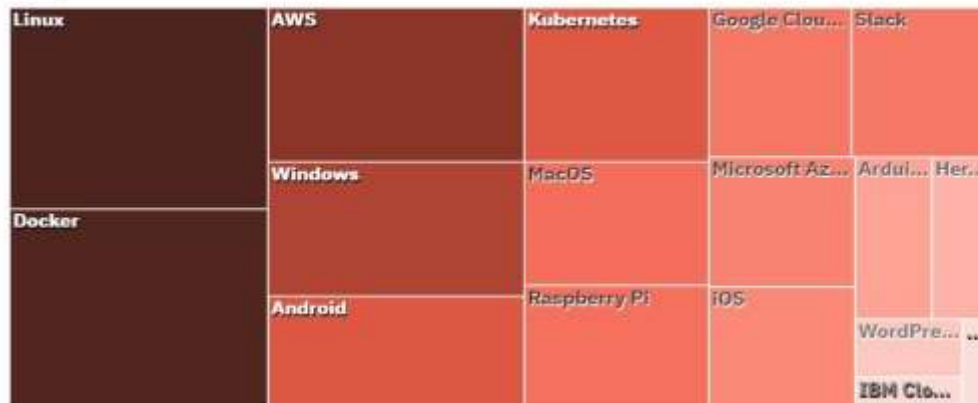
Top 10 Languages Desired to learn next year



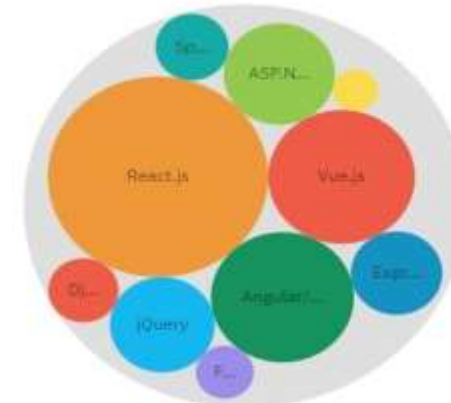
Top 10 Database Desired to Learn Next Year



Top Platform Desired to Learn Next Year



Top 10 Web Frames Desired to Learn Next Year.

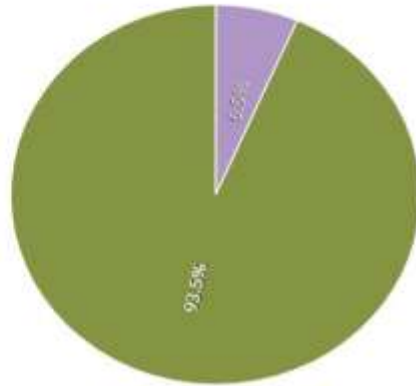




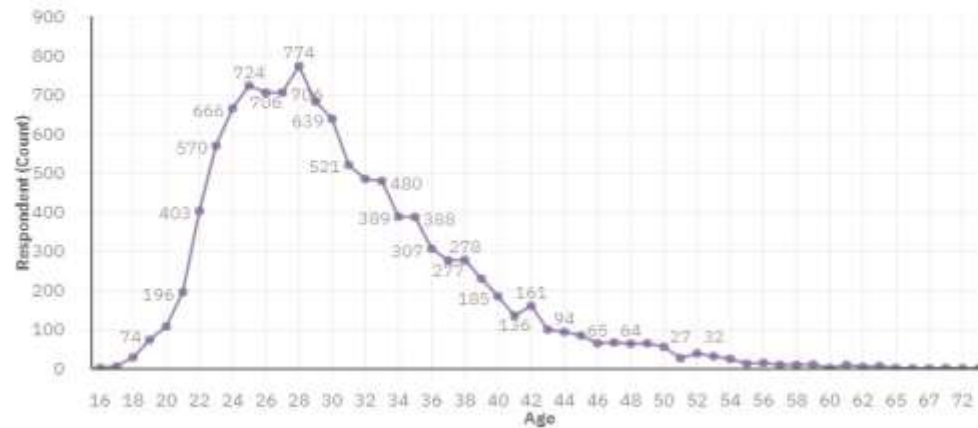
# DASHBOARD C: DEMOGRAPHICS

## Respondents classified by Gender

Gender  
Woman Man



## Respondent Count by Age



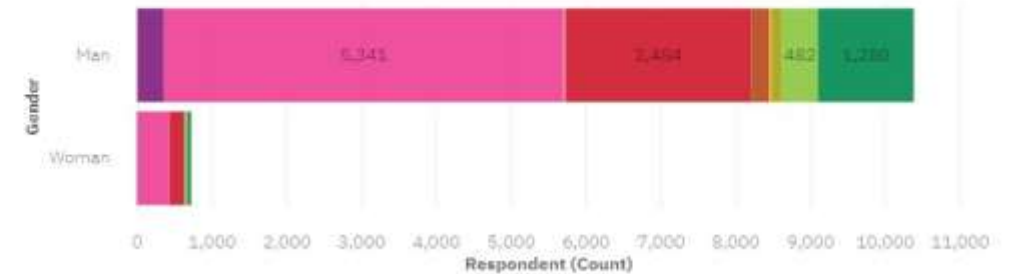
## Respondents Countries Wise



## Education level of respondents classified by gender

EdLevel

Associate degree  
Bachelor's degree (BA, BS, B.E...  
Master's degree (MA, MS, M.E...  
Other doctoral degree (Ph.D, E...  
Professional degree (JD, MD, e...  
Secondary school (e.g. Americ...  
I never completed any formal ...  
Primary/elementary school  
Some college/university study ...



# DISCUSSION



- Why is there such a huge demand for web developers.
- Which technologies should perspective developers and data professionals be learning?
- Why is the popularity of MySQL declining so drastically?
- Will NoSQL completely overtake relational databases.
- Is there a correlation between language and annual compensation?
- Why is there such a huge gap in gender, age and education in IT industry?

# OVERALL FINDINGS & IMPLICATIONS

## Findings

- Technology trends change every year but JavaScript and HTML/CSS are the most used and popular languages among developers and will continue to remain next year as well with increased interest in Typescript as well.
- SQL and python languages were the most used in 2019 and for the next year as well they were the most desired language among developers to learn.
- MySQL was the most used database in 2019 but developers are showing more interest in PostgreSQL database to be used next year and NoSQL databases also will be more used in the coming years.
- Linux is the most used platform and will continue to be next year also.
- There are extreme age and gender discrimination in IT industry.

## Implications

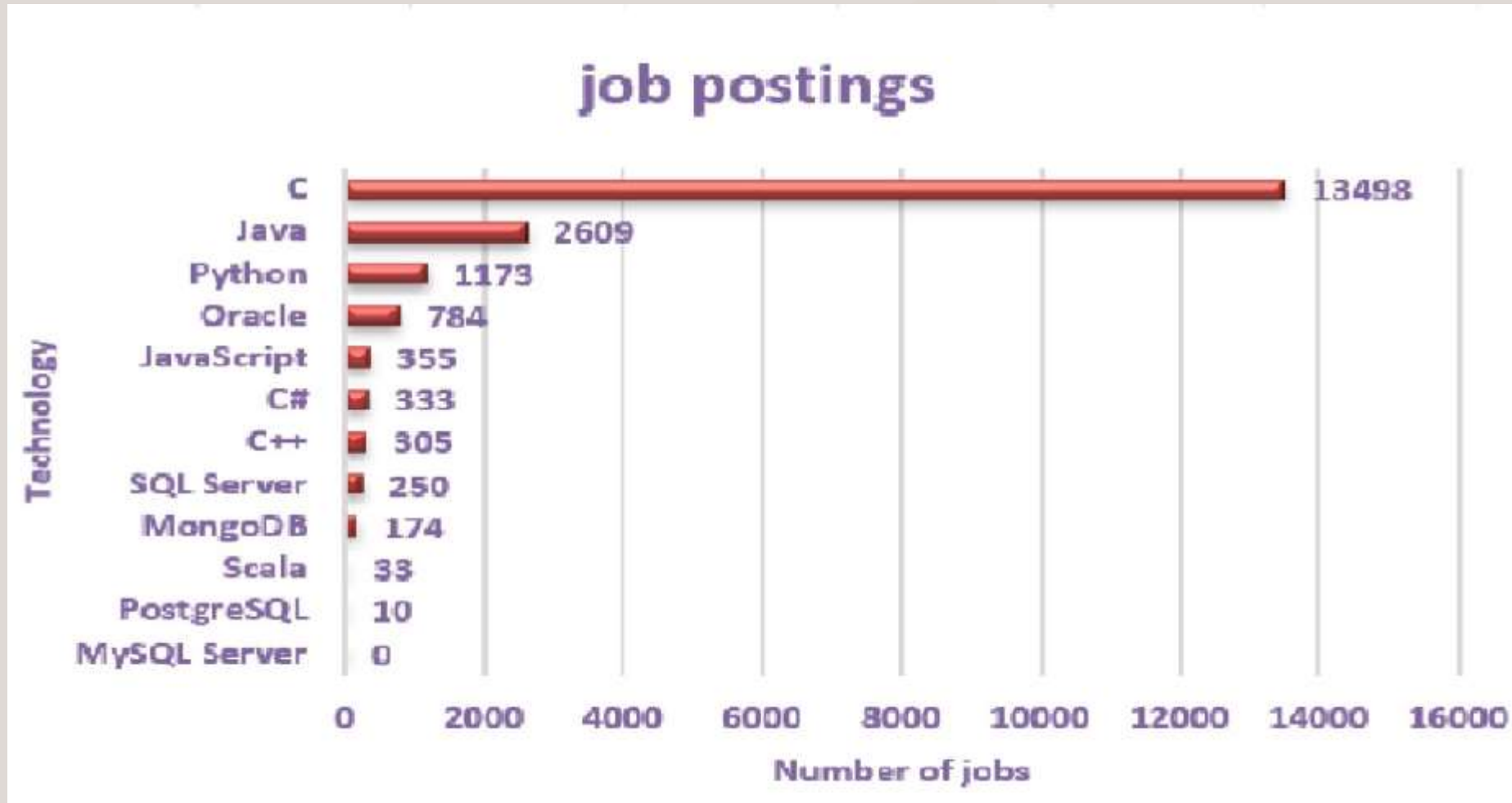
- Aspiring developers have a bright scope in the web development field as the languages used in web development have the highest job postings and are popular languages as well.
- Data professionals need to be competent with SQL as well as NoSQL databases to have a competitive edge in the market. They need to be good in python as well as its popularity is increasing.
- Data professional need to work on multiple platforms and Linux is most popular, so they should be able to easy handle the platform.
- The gender discrimination should be removed from the industry and business leaders and HR professionals can contribute to that.

# CONCLUSION

- The purpose of this report was successful in finding the emerging technology trends for 2019 and for the next year.
- This report will be helpful to many business in keeping pace with the emerging trends, learners in understanding which technology to focus on and educators to know what matter to develop according to the trend.
- Businesses can also make adjustment in the work force for those skills no longer in demand and can also help employees upskill with the emerging trends.
- An effort can also be made from businesses and industries to reduce the gender difference.



# JOB POSTINGS





# POPULAR LANGUAGES

## Average annual salary of popular languages

