

# Insights In Motion: Journey through IBM's Data Analytics Capstone



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# OUTLINE

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



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# EXECUTIVE SUMMARY

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- ▶ To be competitive in the global IT sector, it's essential to keep up with the ever-changing technologies. This report uses data analytics to highlight current and projected trends in the need for skills related to programming languages, databases and other technologies. It also studies the demographics of professionals in the technology sector.
- ▶ Data was gathered from a Stack overflow survey, IBM site, and Github job postings. It was collected, cleaned, subjected to exploratory analysis, and visualized on dashboards.
- ▶ The findings showed that Javascript is currently the most popular programming language and is anticipated to be so in the future. MySQL has the highest database usage at the moment but Postgre SQL is projected to have more demand in the future.
- ▶ Furthermore, majority of the survey respondents are males, are from the USA and are 28 years of age.



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# INTRODUCTION

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- ▶ Stack Overflow's annual Developer Survey is the largest and most comprehensive survey of people who code around the world.
- ▶ Results don't represent everyone in the developer community evenly.
- ▶ Nearly 90,000 developers.
- ▶ Trends to predict where the developers are going.
- ▶ Characterization of developers around the globe.



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# METHODOLOGY

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- ▶ Collect survey data & explore its content
  - ▶ Web Scraping
  - ▶ APIs
  - ▶ Request library
- ▶ Data Wrangling
- ▶ Exploratory data analysis
  - ▶ Analysing data distribution
  - ▶ Handling outliers
  - ▶ Correlations
- ▶ Data Visualization
  - ▶ Highlight distribution of data, relationship, the composition and comparison of data
- ▶ Dashboards



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# Results



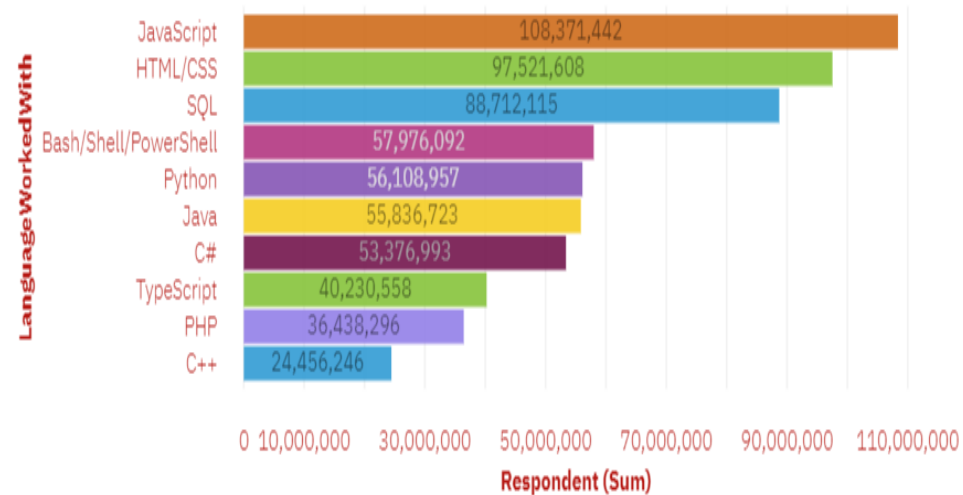
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# PROGRAMMING LANGUAGE TRENDS

## ► Current Year

### Top 10 Languages Worked With

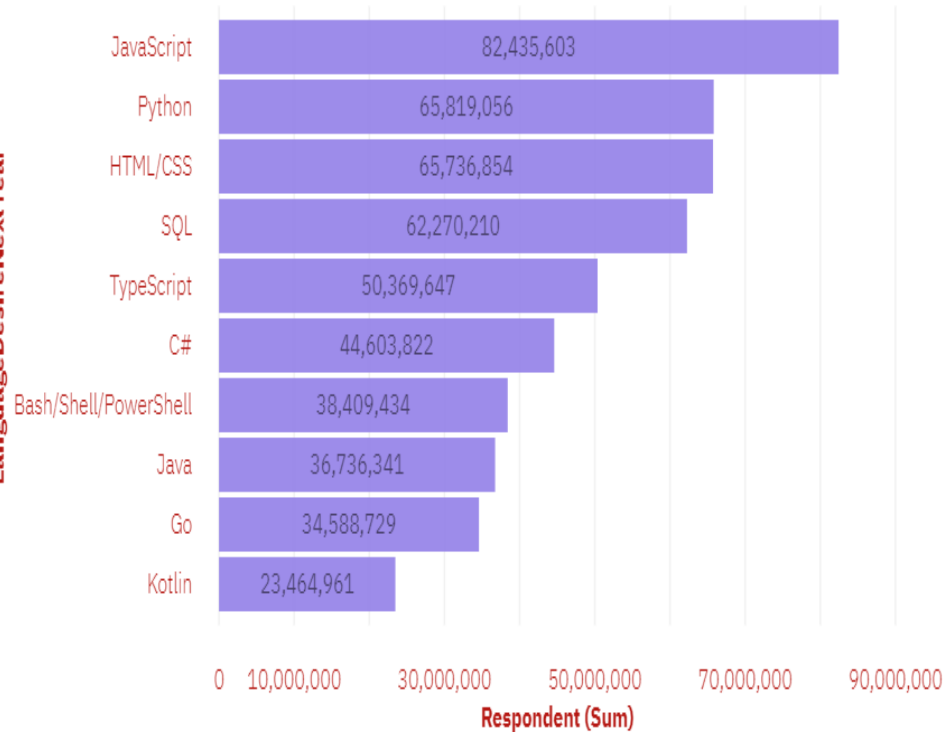
LanguageWorkedWith



## ► Next Year

### Top 10 Languages Desire Next Year

LanguageDesireNextYear



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# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## ► Findings:

- Javascript, HTML/CSS, SQL, Shell languages and Python are the most used languages currently.
- Javascript, HTML/CSS, Python, SQL, and Typescript will be the most used languages next year and future years.
- Python will have more demand than SQL next year.

## ► Implications:

- Implications
- Javascript and HTML are used for web development which means that web development as a tech skill has the highest demand, especially as Typescript is getting viral.
- Python is gaining more and more traction due to the increase in demand for AI and ML skills.
- SQL is still the most relevant language for data professionals. It is important for aspiring data analysts, scientists, business analysts etc to have SQL skills.



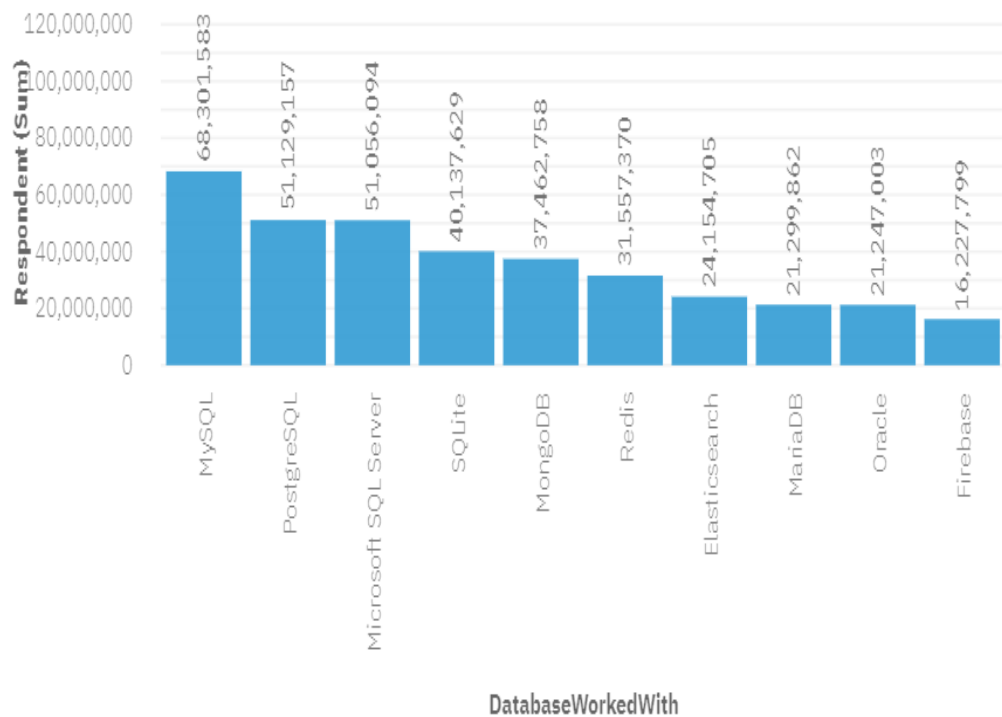
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# DATABASE TRENDS

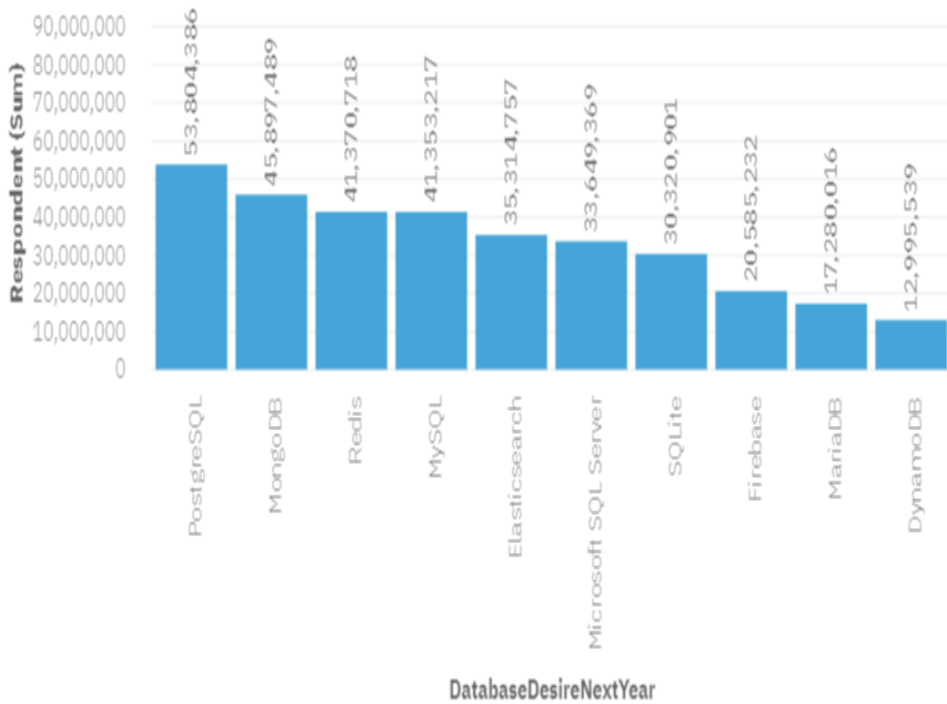
## ► Current Year

Top 10 Database Worked With



## ► Next Year

Top 10 Database Desire Next Year



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# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## ► Findings:

- MySQL, Microsoft SQL server, Postgre SQL, SQLite and MongoDB are the top 5 most used databases at the moment.
- However, Postgre SQL, MongoDB, Redis, MySQL and Elasticsearch are projected to become more popular in the future.
- Redis and Elasticsearch are relatively new tools and are set to gain more traction in the IT space.

## ► Implications:

- SQL is still a top tool to watch out for in data specialists.
- Companies still prefer Open source databases.
- Oracle SQL was not among the top 5. It is losing relevance as time passes.



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# DASHBOARD

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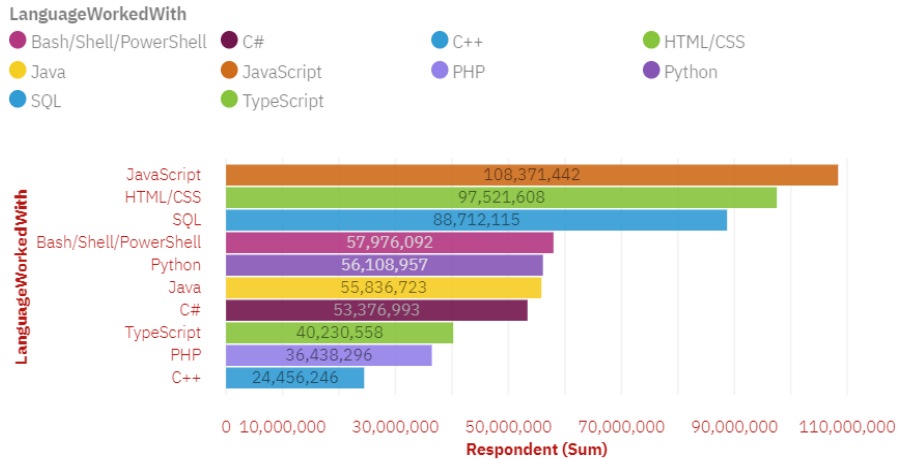
- The permanent link of the Cognos dashboard:

<https://dataplatform.cloud.ibm.com/dashboards/df2fa0be-19fc-40f4-91f7-1ab859af97e4/view/6037f97603893bf160b6eae4079a240e2f3e205db5bb875785d37b4906367497f33a47c3c82d485288160237f3b91059c9>

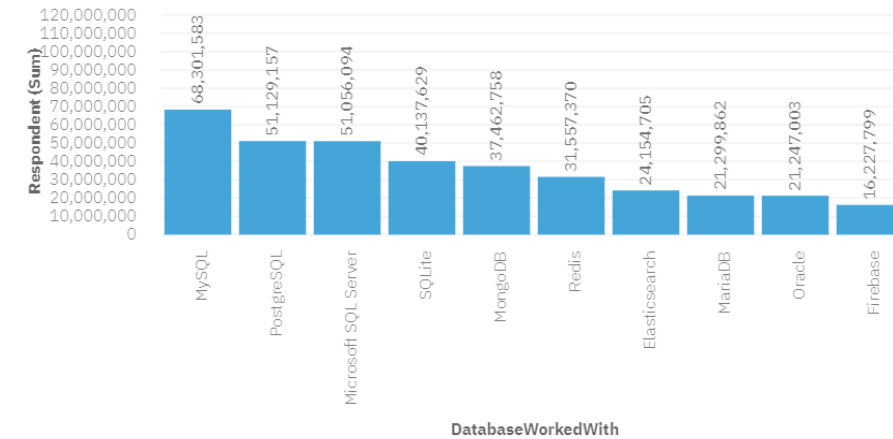


# Dashboard: Tab1- Current Technology Usage

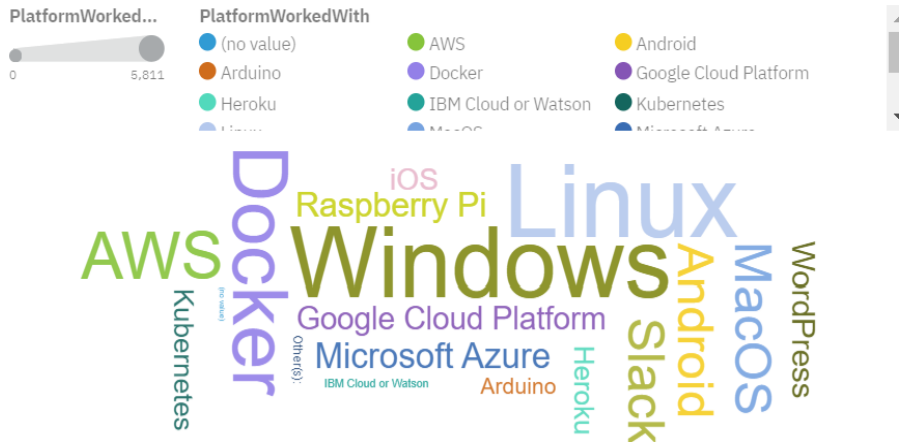
## Top 10 Languages Worked With



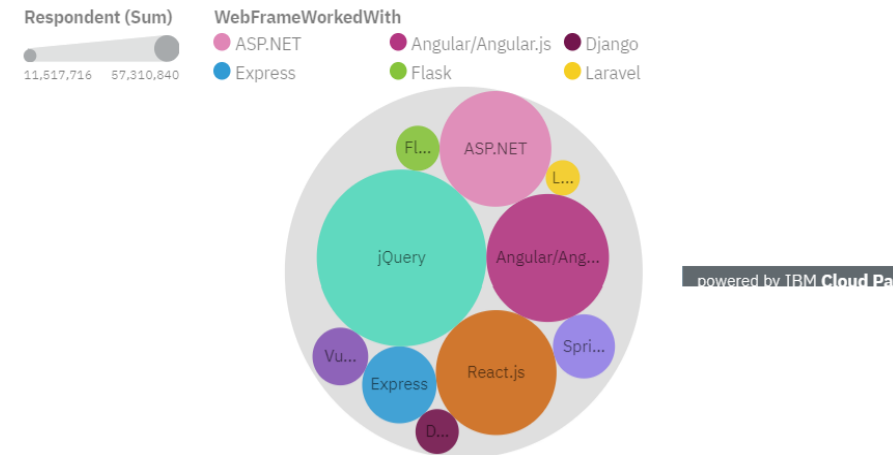
## Top 10 Database Worked With



Platform Worked With



## Top 10 Web Frame Work With

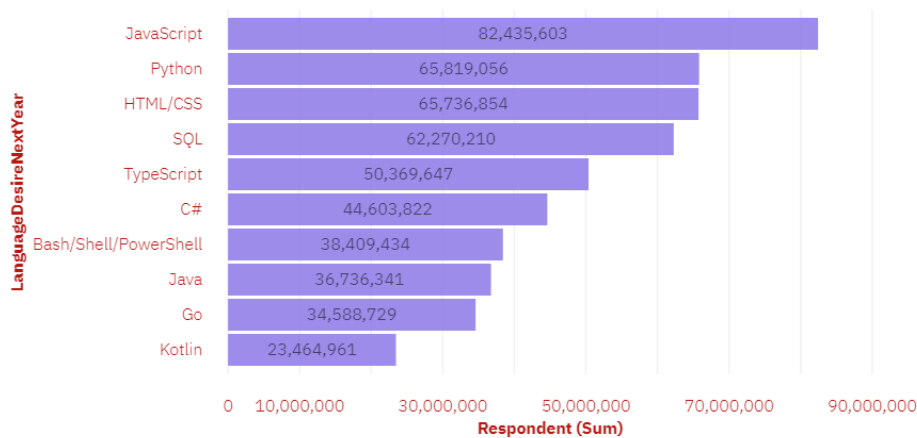


powered by TBM Cloud Pak for

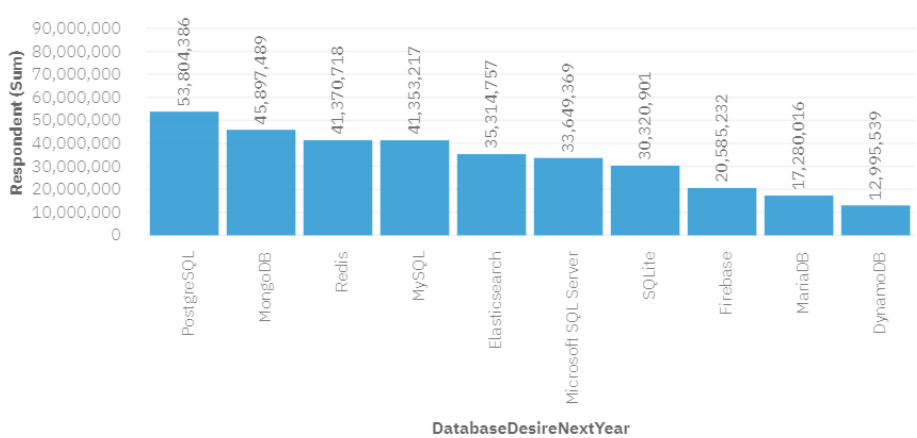
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# Dashboard: Tab2- Future Technology Trend

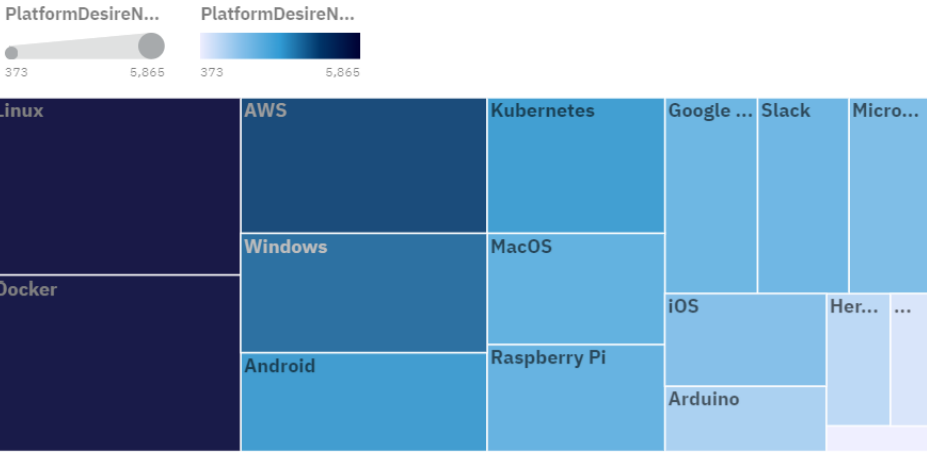
Top 10 Languages Desire Next Year



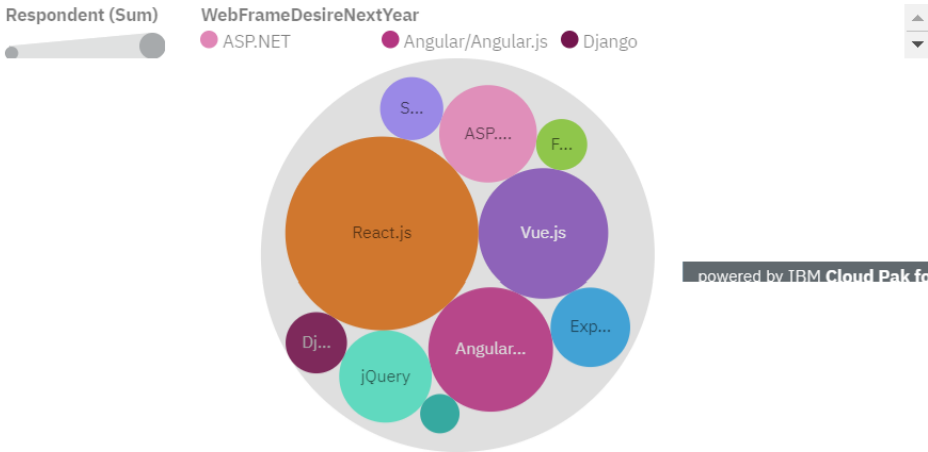
Top 10 Database Desire Next Year



Platform Desire Next Year



Top 10 Web Frame Desire Next Year

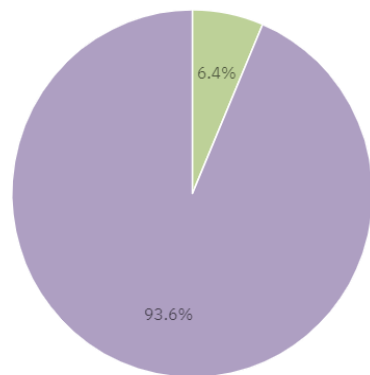


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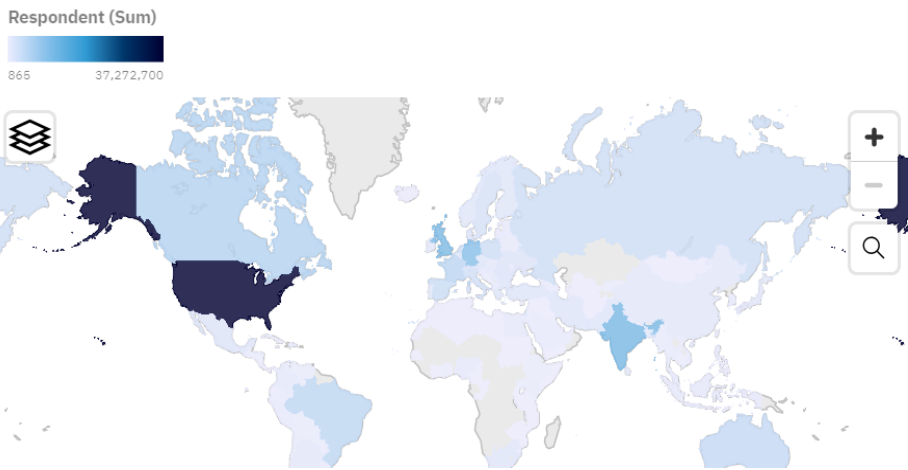
# Dashboard: Tab3- Demographics

Respondent Classified by Gender

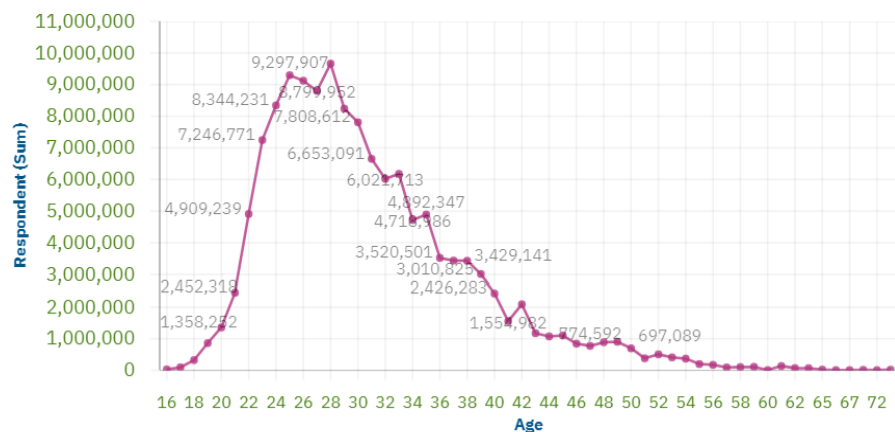
Gender  
● Woman ● Man



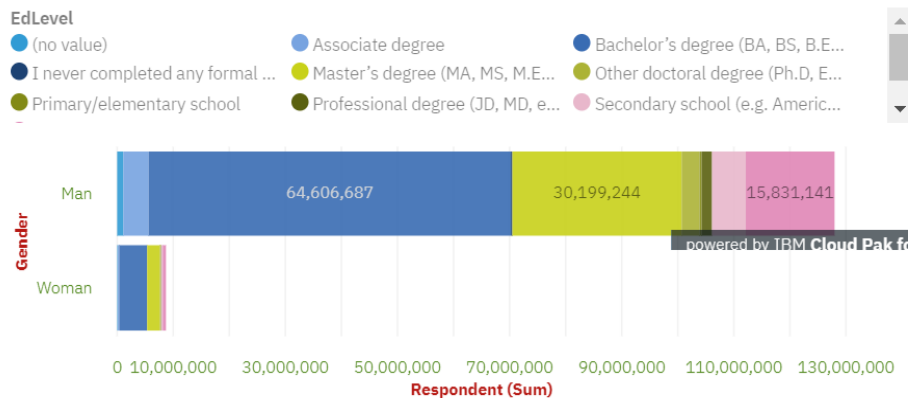
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level.



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# DISCUSSION

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- ▶ 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?



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# 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



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# CONCLUSION

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- ▶ 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.

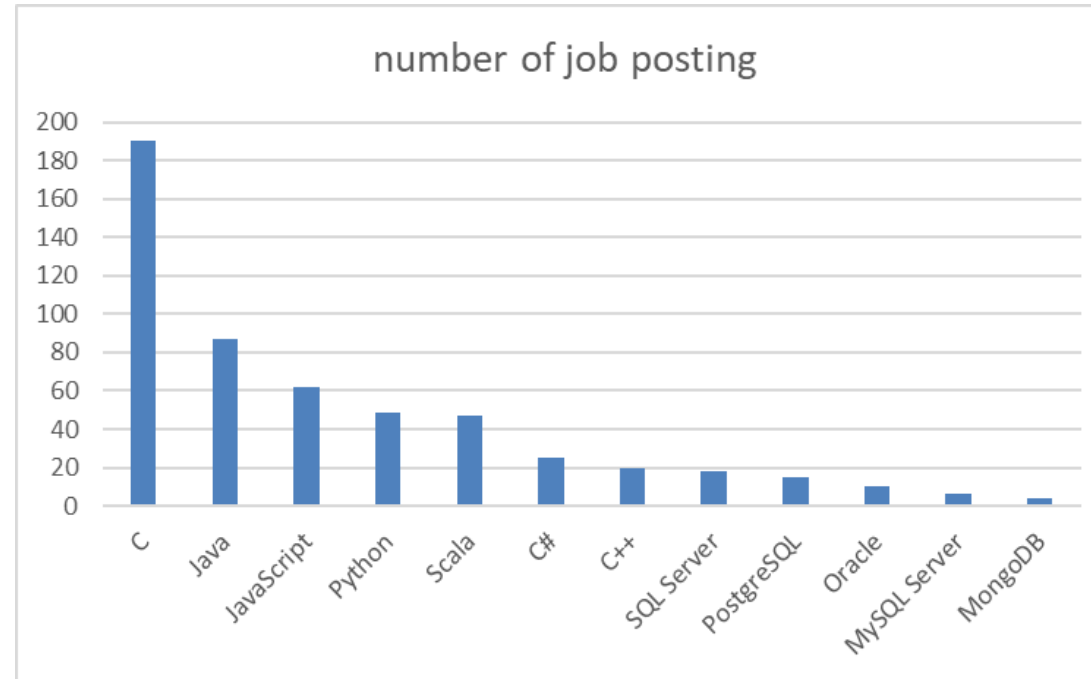


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# APPENDIX

## ► JOB POSTINGS:

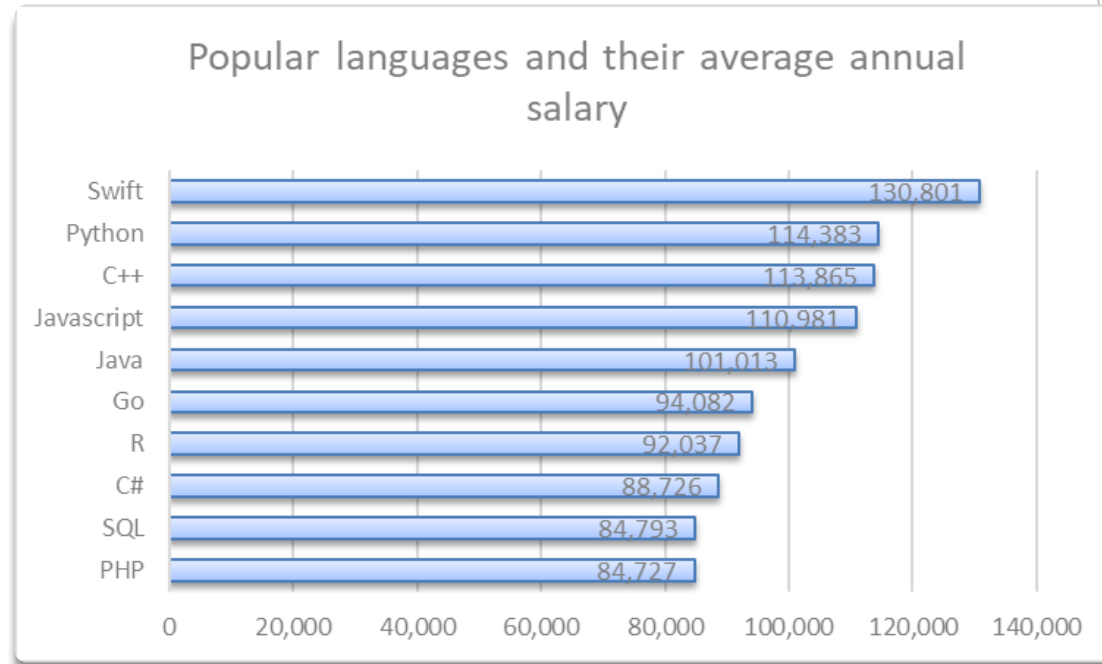
- Bar chart presenting the job posting data collected using Github Job API.



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## ► 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.



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