

# IBM Data Analyst Capstone Project: Analysis on Emerging Technology Skills and Trends

## A Presentation by Nkosana Motau

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# OUTLINE

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

# EXECUTIVE SUMMARY



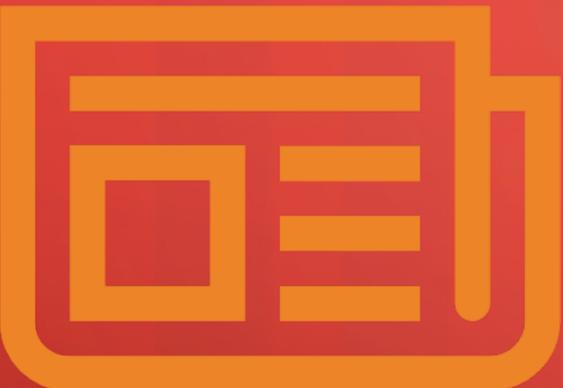
- To be competitive in the global IT sector, it's essential to keep up with the ever-changing technologies. This report uses data analytics to highlight current and projected trends in the need for skills related to programming languages, databases and other technologies. It also studies the demographics 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 python 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 PostgreSQL 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.

# INTRODUCTION



- This presentation report uses data analytics to highlight current and projected trends in the need for skills related to programming languages, databases, platforms and web frames.
- The following inquiries were investigated using the data:
- 1. Which programming languages are most in demand today?
- 2. What are the most in-demand database skills? 3. What popular IDEs or Web frames are there?
- The target audience for this research are IT professionals, HR managers, and anybody else with an interest in the IT sector who wants to learn about the top on-demand IT skills in their respective sectors that will also still be relevant in the future.

# METHODOLOGY

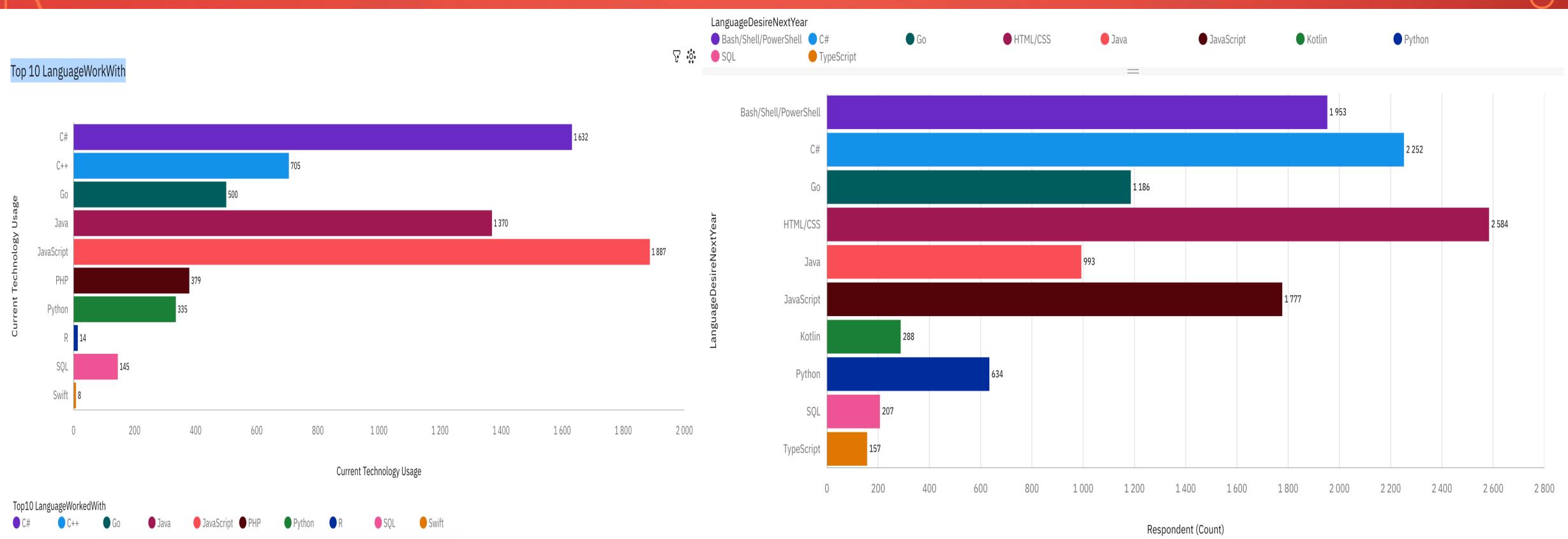


- Data in several formats, such as the number of jobs currently available for different technologies and for different places, were gathered using the Github jobs API on python.
- To obtain the names of the programming languages and their yearly wages, the IBM website was scraped. The dataset from a 2019 Stack Overflow developer survey was downloaded and saved.
- Python was used to clean and analyze the data. To assess the distribution of data, the presence of outliers, and the correlation between various columns in the dataset, an exploratory data analysis was carried out.
- Charts, graphs, and dashboards were created using Python and Cognos analytics to visualize the data. All the python analyses were carried out on Jupyter notebook through visual studio.

# RESULT

- PYTHON HAS SURPASSED JAVA, EMERGING AS THE 5TH MOST FAVORED LANGUAGE WITH REMARKABLE GROWTH, SOLIDIFYING ITS POSITION AS THE FASTEST-GROWING MAJOR PROGRAMMING LANGUAGE.
- JAVASCRIPT MAINTAINS ITS STATUS AS THE MOST UTILIZED PROGRAMMING LANGUAGE.
- JQUERY RETAINS ITS DOMINANCE AMONG WEB FRAMEWORKS, WHILE REACT.JS HAS SURPASSED ANGULAR IN DEVELOPER USAGE THIS YEAR.
- INTERNATIONALLY, MEN CONSTITUTE ROUGHLY 90% OF RESPONDENTS, WITH HIGHER FEMALE REPRESENTATION AMONG STUDENTS COMPARED TO PROFESSIONAL DEVELOPERS, ESPECIALLY IN REGIONS SUCH AS THE US, INDIA, AND THE UK.
- APPROXIMATELY THREE-QUARTERS OF PROFESSIONAL DEVELOPERS GLOBALLY POSSESS AT LEAST A BACHELOR'S DEGREE, CONSISTENT WITH PREVIOUS FINDINGS.
- THREE-QUARTERS OF SURVEY PARTICIPANTS IN PROFESSIONAL DEVELOPER ROLES ARE UNDER THE AGE OF 35.

# PROGRAMMING LANGUAGE TRENDS



# 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

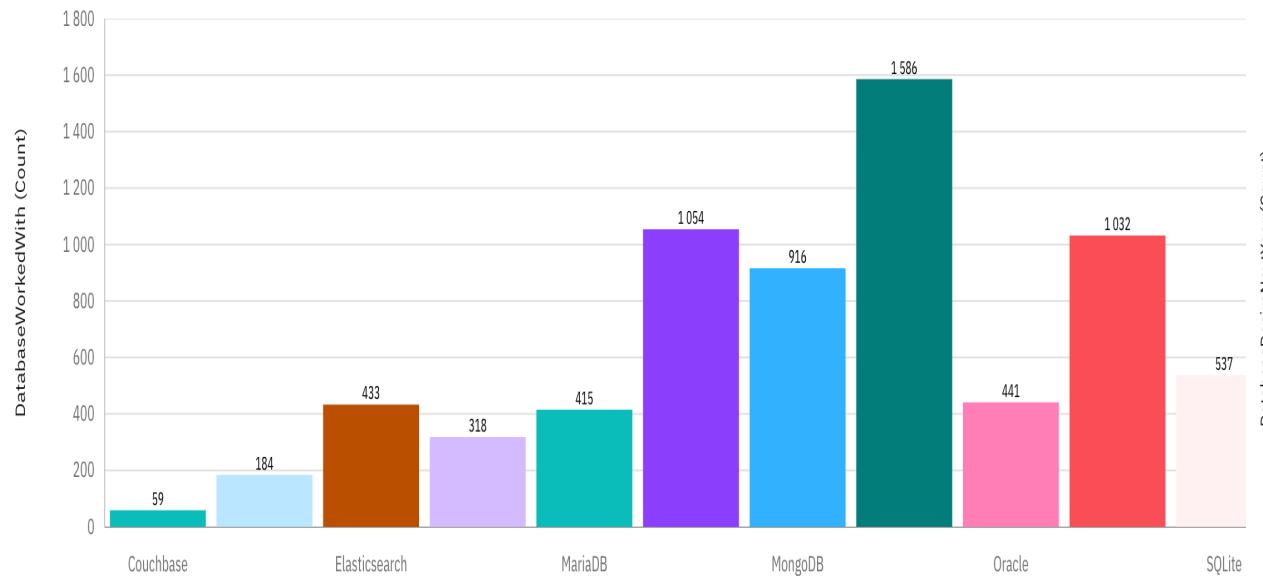
- Javascript and HTML are used for web development which means that web development as a tech skill has the highest demand, especially as Typescript is getting viral.
- Python is gaining more and more traction due to the increase in demand for AI and ML skills.
- SQL is still the most relevant language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

# DATABASE TRENDS

DatabaseWorkedWith

Top 10 DatabaseWorkedWith

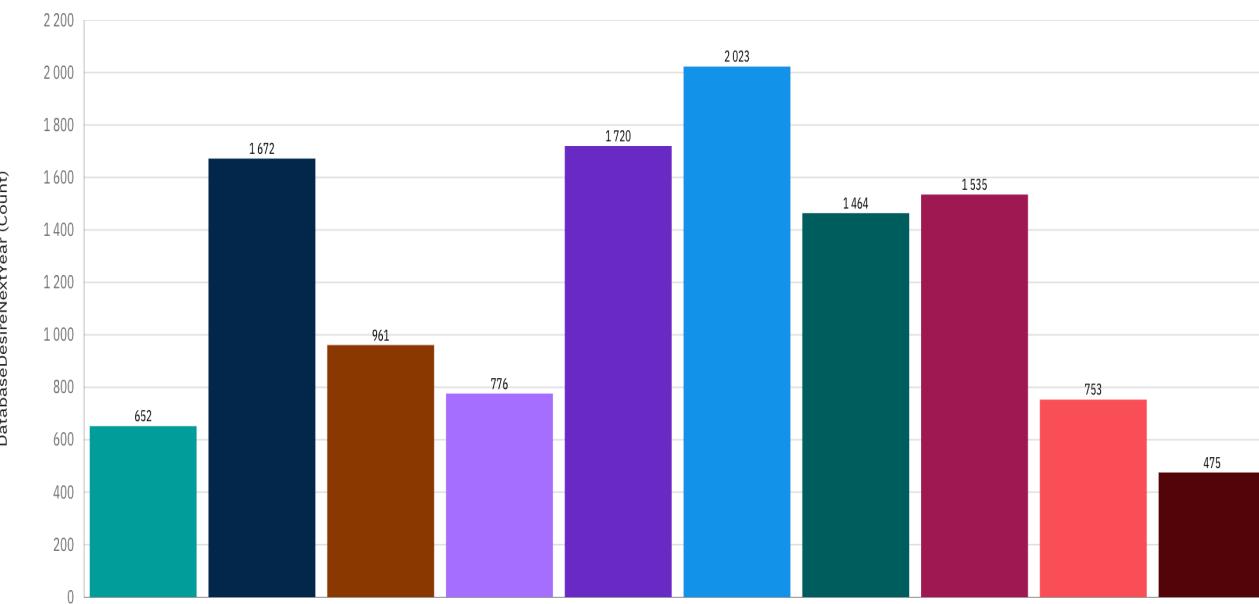
Couchbase (Cyan)  
DynamoDB (Light Blue)  
Elasticsearch (Orange)  
Firebase (Purple)  
MariaDB (Teal)  
Microsoft SQL Server (Dark Purple)  
MongoDB (Blue)  
MySQL (Dark Teal)  
Oracle (Pink)  
PostgreSQL (Red)  
SQLite (Light Pink)



Top 10 DatabaseDesireNextYear

DatabaseDesireNextYear

DynamoDB (Cyan)  
Elasticsearch (Dark Blue)  
Firebase (Orange)  
MariaDB (Purple)  
Microsoft SQL Server (Dark Purple)  
MongoDB (Blue)  
MySQL (Dark Teal)  
PostgreSQL (Maroon)  
Redis (Red)  
SQLite (Dark Maroon)



- Findings
  - More than 90 percent of those surveyed are men. • The average age of the respondents is 30.
  - Typescript is gaining significant interest and Python continues to grow as well.
  - Redis, Elasticsearch, PostgreSQL and MongoDB are gaining more interest.
- Interest Slack and Windows is dropping significantly.
- Vue.js is gaining substantial interest and React.js continues to grow as well.

### Implications

- The software space continues to be male-dominated.
- It still seems difficult to find highly experienced personnel in the field of development.
- You can continue to staff enough Javascript and HTML/CSS but employ more people skilled in Python and Typescript.
- You can employ more people skilled in PostgreSQL, MongoDB, Elasticsearch, and Redis.
- You can continue to staff enough ASP.NET but employ more people skilled in Vue.js and React.js. • You can continue to staff enough Linux, employ more people skilled in Docker, AWS and Android, but make reductions to Slack and Windows.

# DATABASE TRENDS - FINDINGS & IMPLICATIONS

# DASHBOARD

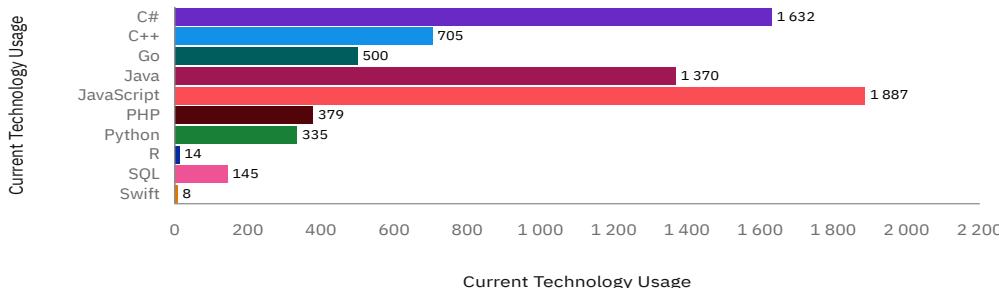


<<https://github.com/Dev-Dad83/dashboards>

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Tab 1

### Top 10 LanguageWorkWith



### Top10 LanguageWorkWith



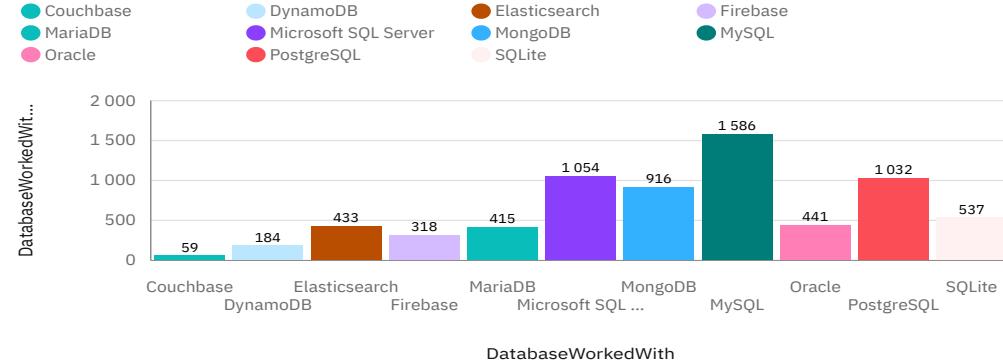
### PlatformWorkedWith



current technology

### DatabaseWorkedWith

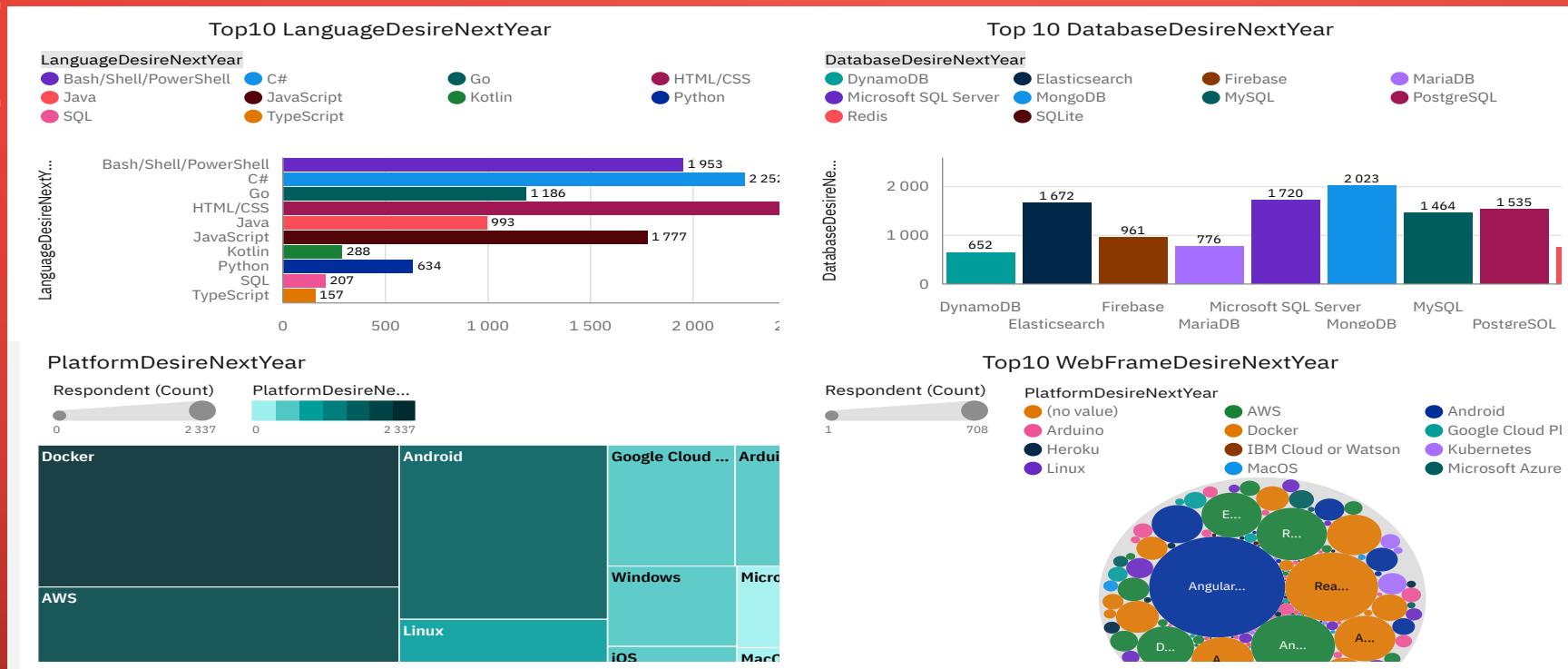
#### Top 10 DatabaseWorkedWith



### Top10 WebFrameWorkedWith



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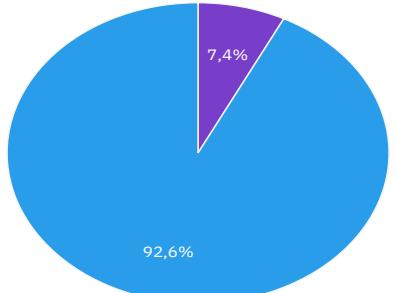


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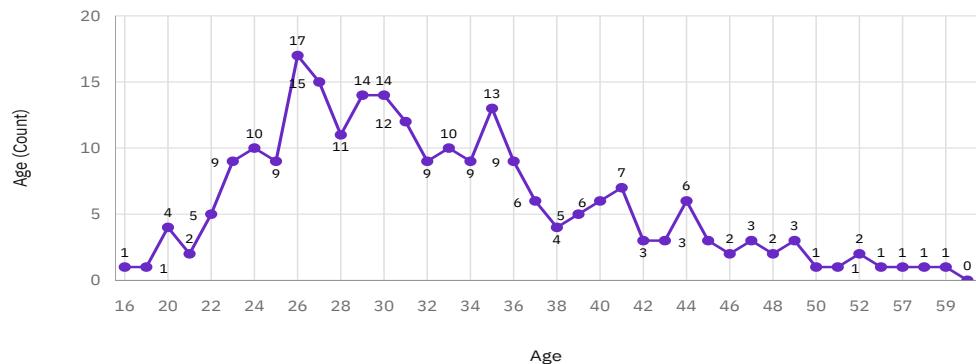
## Tab 1

### Respondent Classified by Gender

Gender  
● Woman ● Man

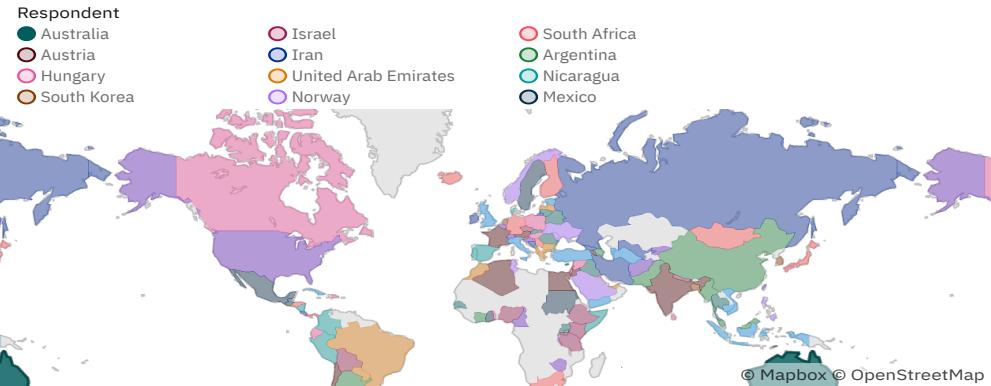


### Respondent Count by Age

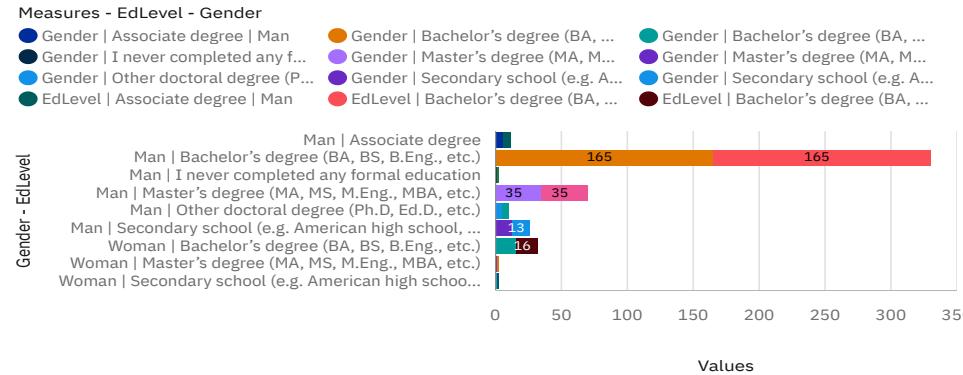


## Data Demographic

### Respondent Count for Countries



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



# DISCUSSION



# OVERALL FINDINGS & IMPLICATIONS

## Findings

- More than 90 percent of those surveyed are men.
- The average age of the respondents is 30.
- Typescript is gaining significant interest and Python continues to grow as well.
- Redis, Elasticsearch, PostgreSQL and MongoDB are gaining more interest.
- Interest Slack and Windows is dropping significantly.
- Vue.js is gaining substantial interest and React.js continues to grow as well.

## Implications

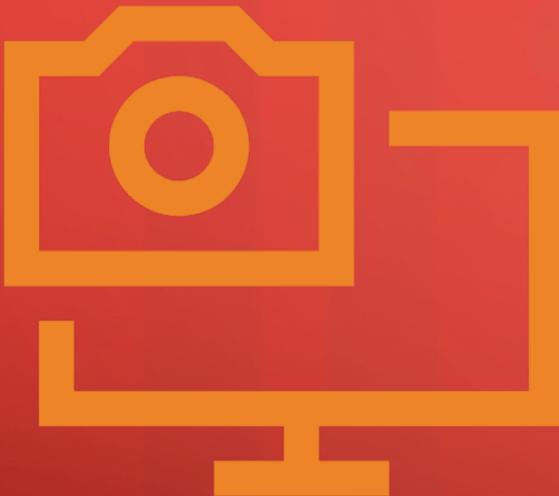
- You can continue to staff enough Javascript and HTML/CSS but employ more people skilled in Python and Typescript.
- You can employ more people skilled in PostgreSQL, MongoDB, Elasticsearch, and Redis.
- You can continue to staff enough ASP.NET but employ more people skilled in Vue.js and React.js.
- You can continue to staff enough Linux, employ more people skilled in Docker, AWS and Android, but make reductions to Slack and Windows.

# CONCLUSION

- You can set aside budget or put a program in place to upskill those already employed.
- You can keep training for new technologies and languages hence have to keep up with tech trends changes

# APPENDIX

- Include any relevant additional charts, or tables that you may have created during the analysis phase.



# JOB POSTINGS

In Module 1 you have collected the job posting data using Job API in a file named “job-postings.xlsx”. Present that data using a bar chart here. Order the bar chart in the descending order of the number of job postings.

# POPULAR LANGUAGES

