Developer Survey 2019 from Stack Overflow

Salient Findings

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EXECUTIVE SUMMARY

The important conclusions from an examination of the data gathered as part of the **2019 Stack Overflow Developer Survey** are summarised in the following slides.

The analysis provided information on the following:

▶ The most widely used databases, languages, and other technologies (at the time of data collection)

▶ Beliefs about the technologies that will be most in demand in the future

▶ Demographic Statistics (e.g., the gender gap among developers)

These results are especially important for current and aspiring Educators, policymakers, developers, and recruiters.

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INTRODUCTION

- Stack Overflow, an online community for exchanging programming skills, has hosted the Stack Overflow Annual Developer Survey.

- The annual surveys' main goal is to compile information on technology usage and trends among developers.

- A portion of the 2019 dataset (current dataset: N = 11,398; original dataset: N 90,000) was examined in this analysis.

- Audience: Policymakers, educators, professionals in HR, and current and aspiring developers

METHODOLOGY

2019 Stack Overflow Developer Survey, data source:
- ▶ Stack Overflow's annual survey data and results (https://rb.gy/4mfa5j)

Data Wrangling: A subset of the dataset (supplied by IBM) was loaded and cleaned using SQL and Python's pandas module.
- ▶ Steps:
  - ▶ Removing Duplicates
  - ▶ Imputing Data
  - ▶ Normalizing Data
- ▶ Data-set provided by IBM (https://rb.gy/cahwoo)

Analysis & Visualization: IBM Cognos and various Python libraries were used for EDA and data visualization. The following metrics were specifically looked at:
- ▶ Technologies used in 2019 (i.e., languages, databases, platforms, and web frames)
- ▶ The most desired technologies for the upcoming year
- ▶ Statistics (i.e., gender, country, age, and education)

RESULTS
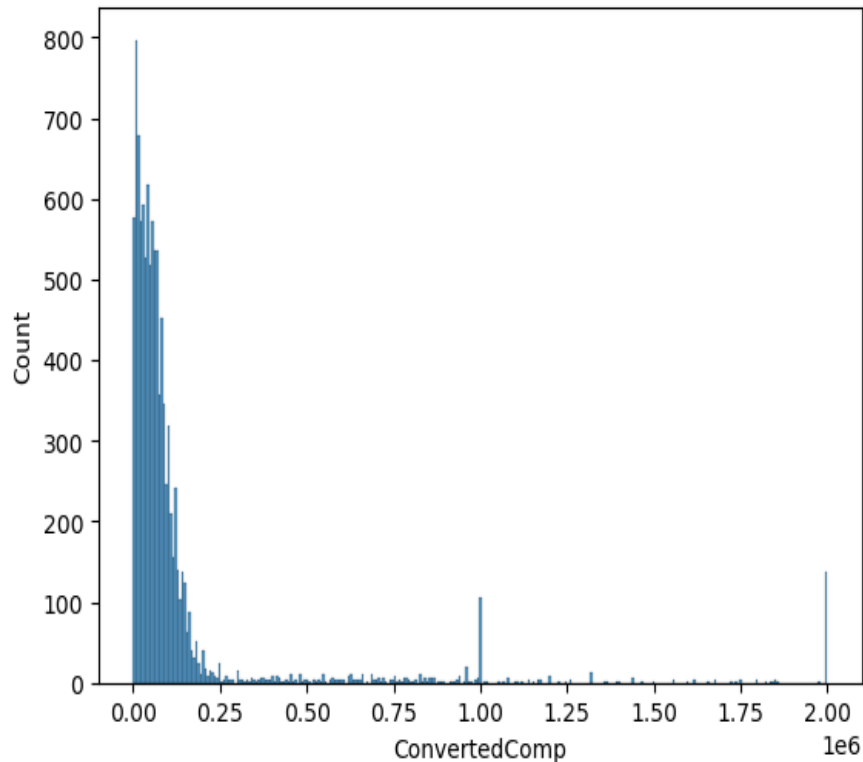
Descriptive statistics regarding demographics and total annual compensation were generated

► Sample size after removing compensatory outliers: N = 10,519 (vs. N = 11,398 before removal)

► The respondents' median age was 29, and 93.5% of them were men compared to 6.5% of women

► Median compensation was found to be $52,704 USD per year

► Compensation and Age were positively correlated with r = .40

► Women received a higher median salary ($54,956) than men ($52,339)

PROGRAMMING LANGUAGE TRENDS

Top 5 programming languages for the current year
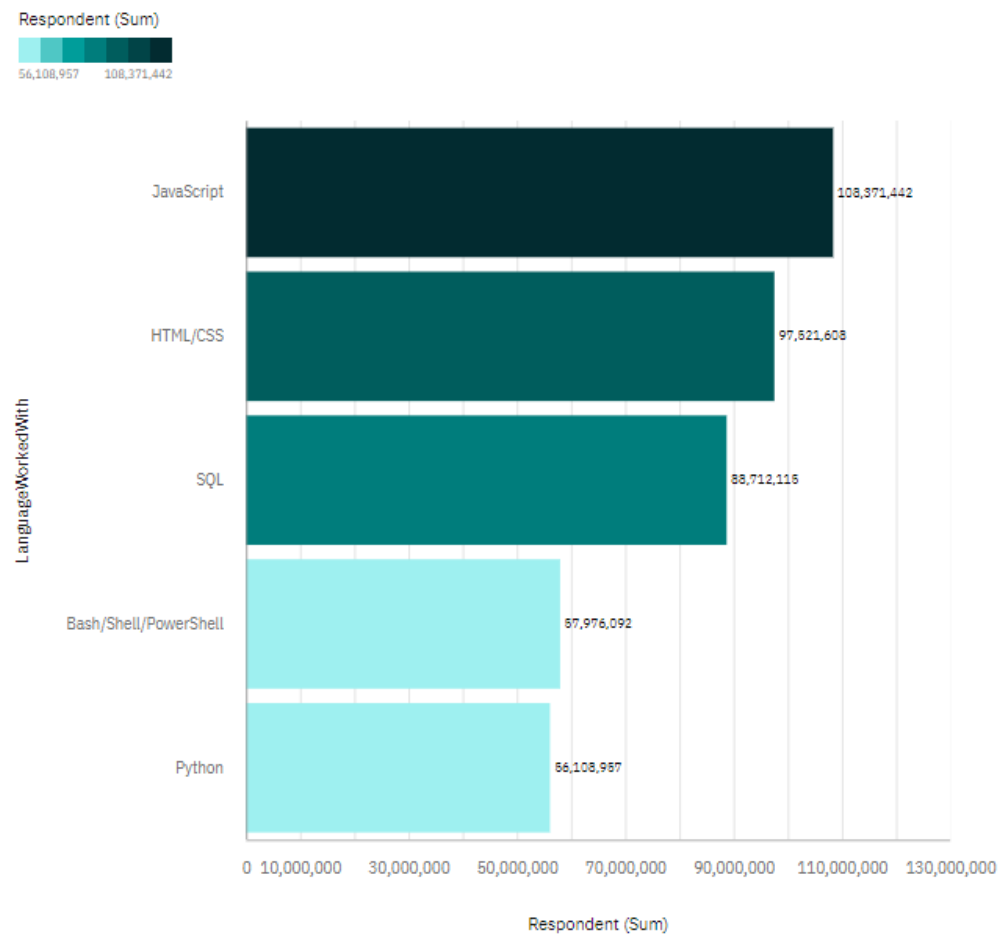
Top 5 programming languages for the next year

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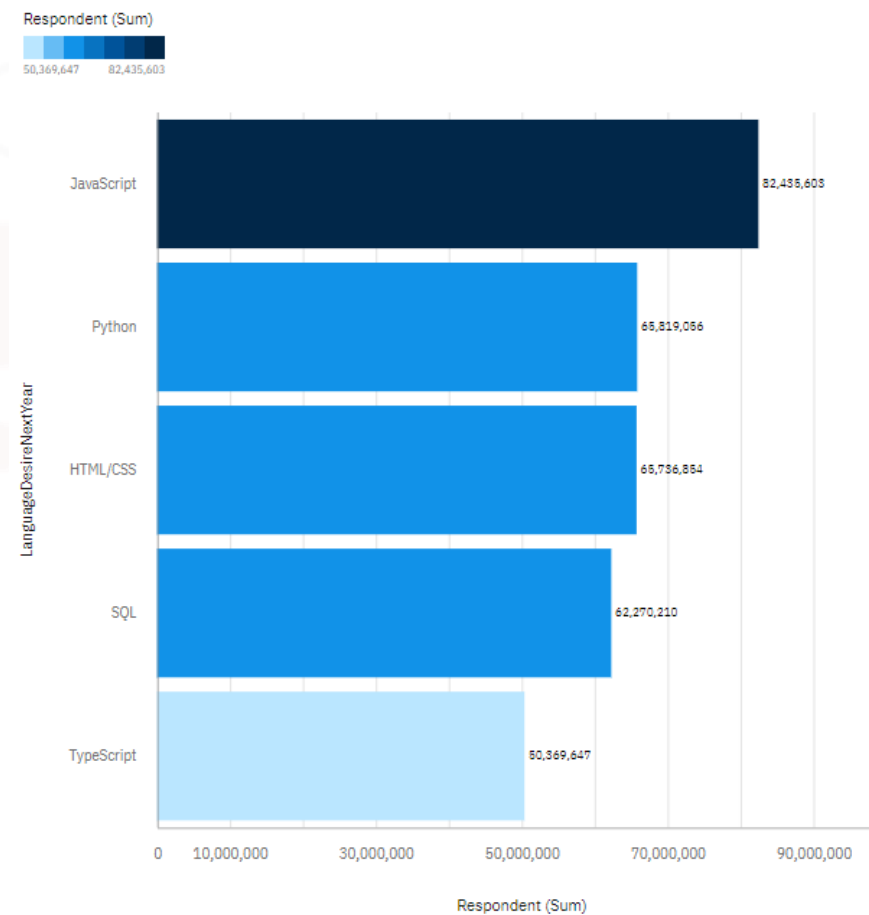
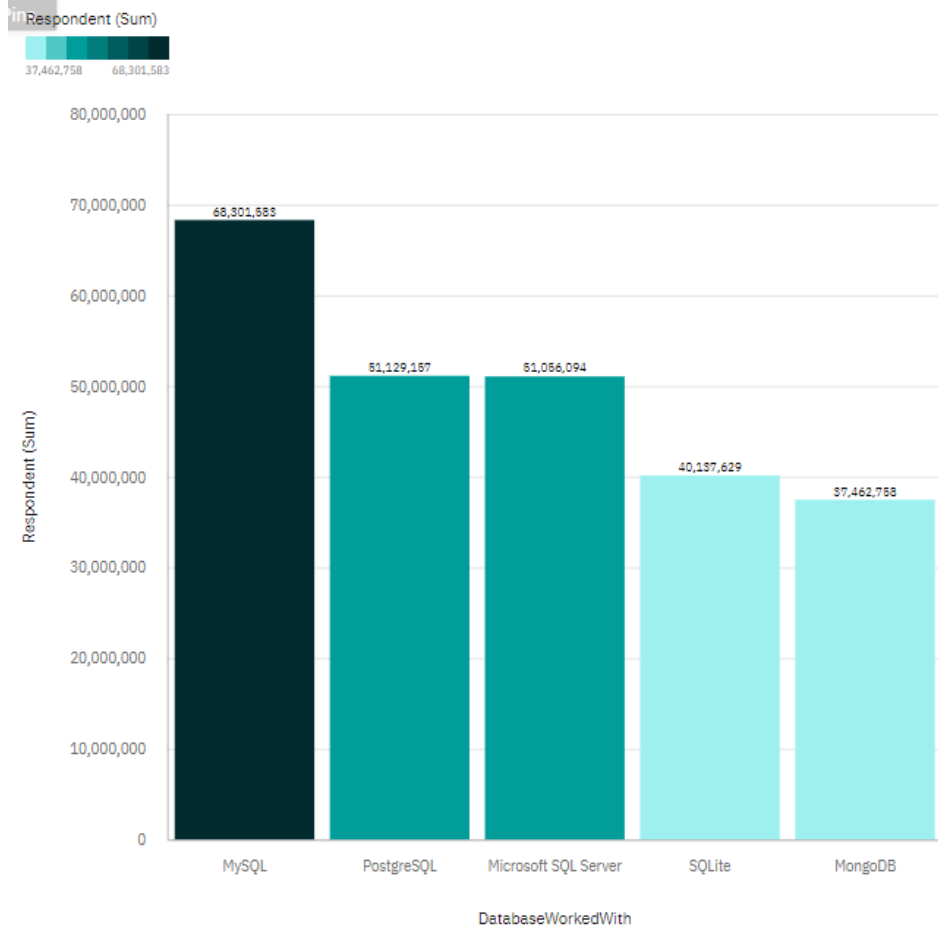# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- The most popular languages in 2019 were JavaScript and HTML/CSS, and they will probably continue to be so in 2020.

- SQL was well-liked in 2019 and probably will be in 2020.

- Python and TypeScript are becoming more popular.

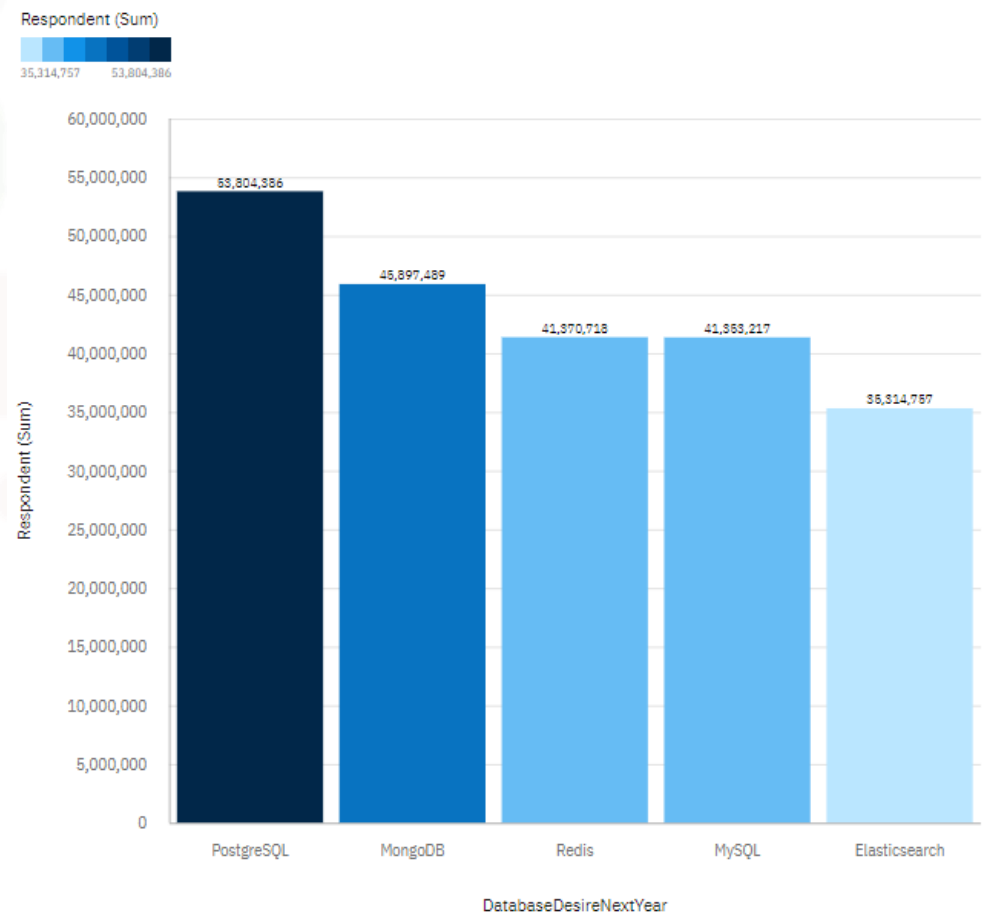- Declining enthusiasm for Bash, Shell, and PowerShell.

Implications

- JavaScript and HTML/CSS continue to be the most popular languages for web development, however TypeScript might swiftly catch-up with them in the future.

- SQL is still the go-to language for storing and querying big-data, and it isn't going anywhere anytime soon.

- Python's increased popularity is most likely a result of the expansion of AI and ML research.

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DATABASE TRENDS

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- The most widely used SQL database programmes in 2019 were MySQL.

- In comparison to other SQL database applications, PostgreSQL is growing in popularity and was voted as the most wanted database for the upcoming year.

- 2019 saw an increase in popularity and interest for MongoDB.

- Elasticsearch is attracting more attention.

Implications

- Developer preference for open-source database programmes looks to be rising.

- The popularity of NoSQL database programmes is probably due to the increased necessity to manage non-relational and unstructured data.

- Data analysts should become proficient in NoSQL as well as SQL database management systems.

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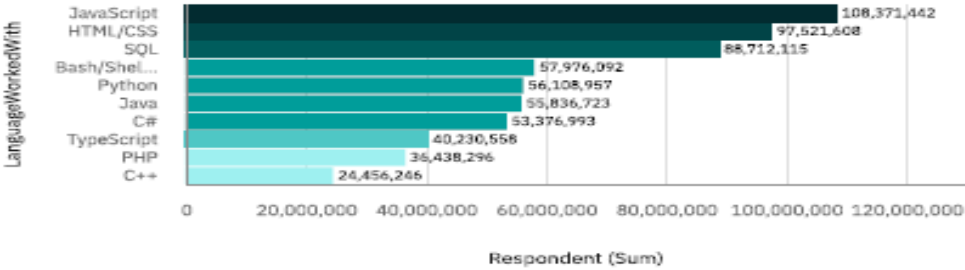**SKILLS NETWORK**

DASHBOARD

Following link contains the IBM Cognos dashboard prepared with 3 tabs (a) current technology usage, (b) future technology trend, and (c) demographics of the survey respondents:
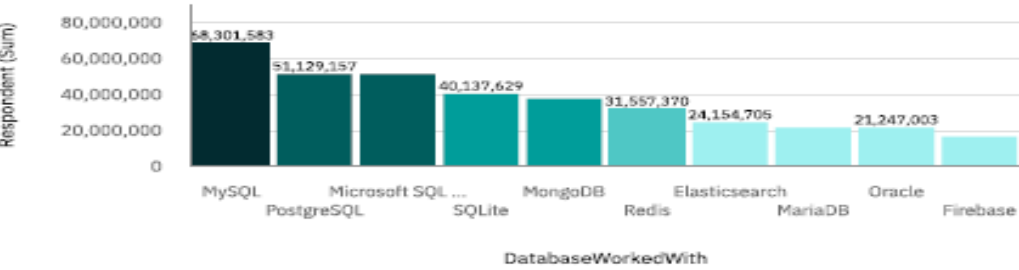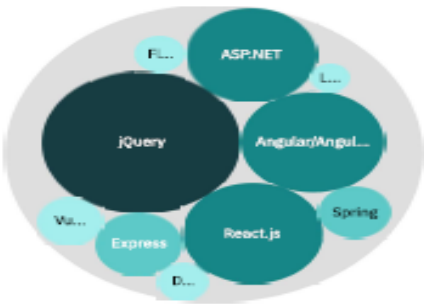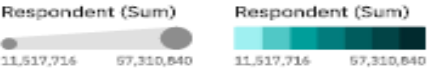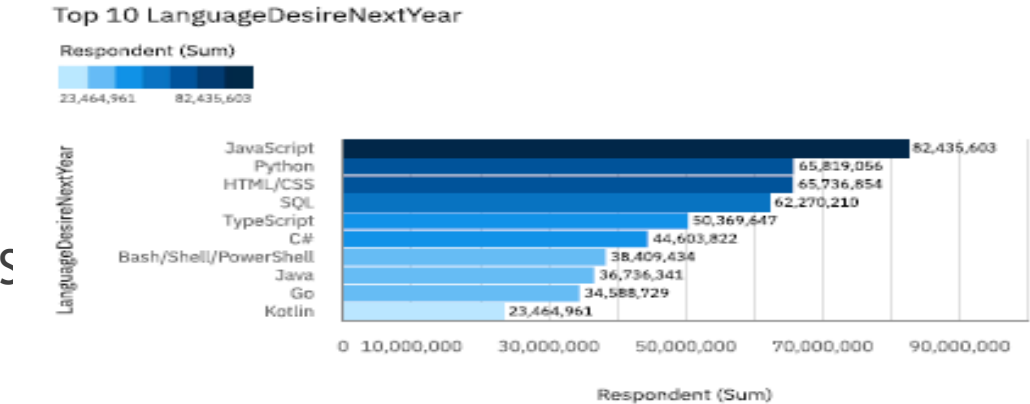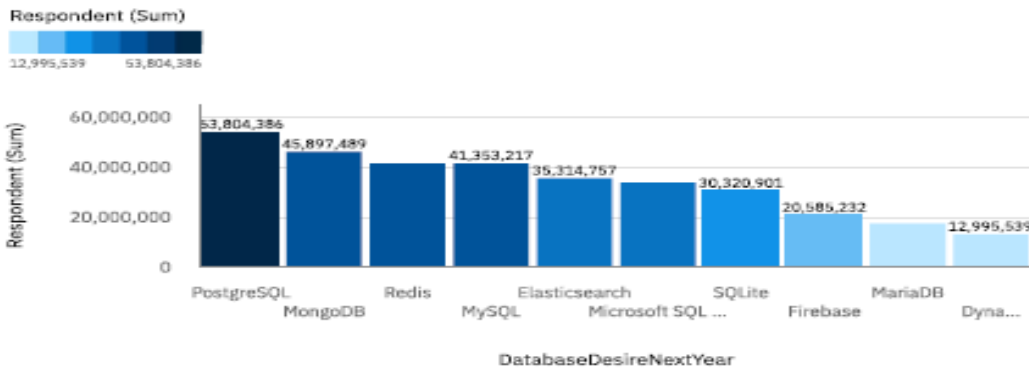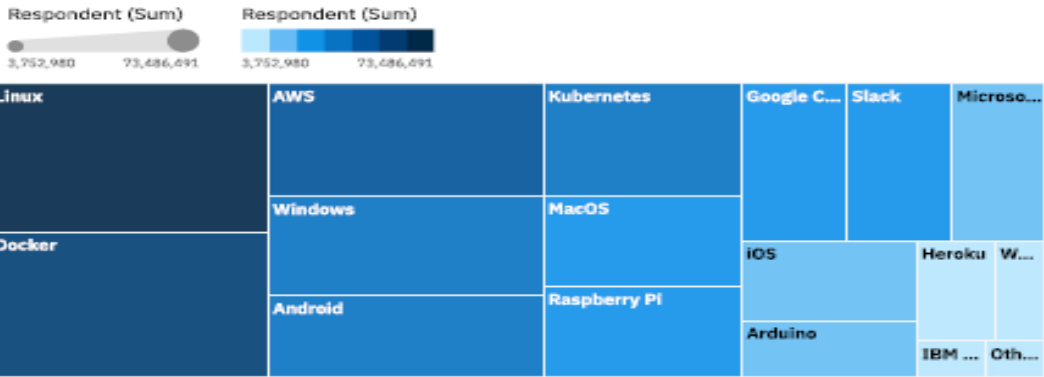
- https://rb.gy/9k23ld

- Cognos link (https://rb.gy/ko4ksn)
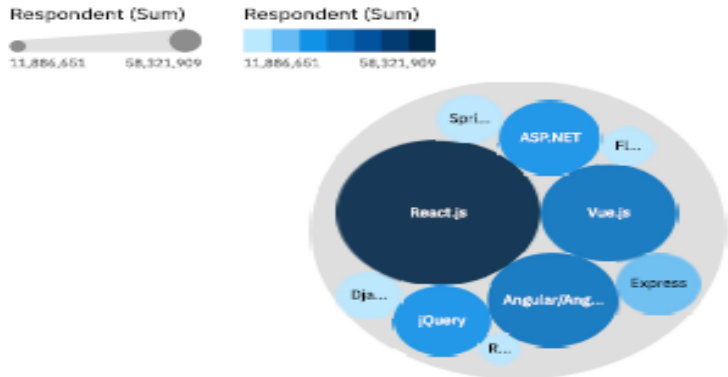
DASHBOARD TAB 1

DASHBOARD TAB 2

DASHBOARD TAB 3
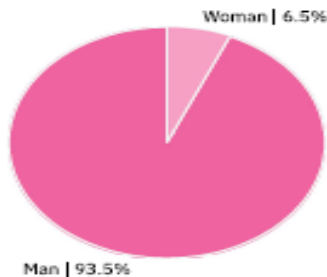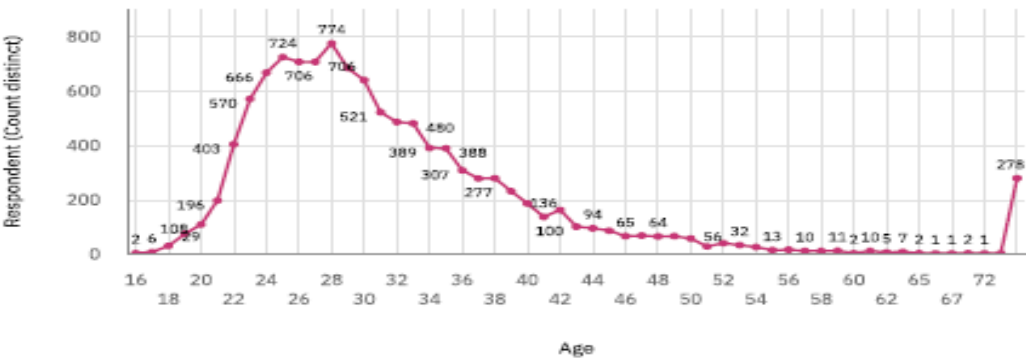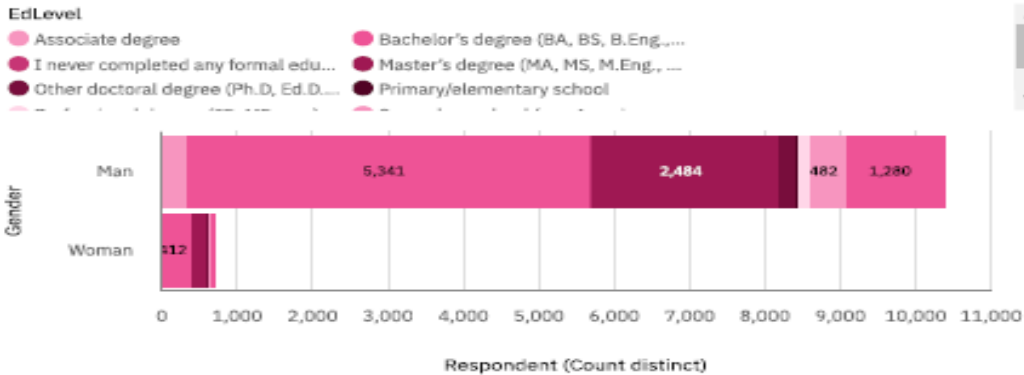
DISCUSSION

In light of the facts as a whole, it is possible to answer the following questions:

▶ Which developer technologies are most in demand?

▶ Which technologies ought aspiring programmers and data specialists should be learning?

▶ Which educational technology should educators focus on more in the next years?

▶ How is the annual distribution of developer remuneration structured?

▶ Who makes up the developer population? Is there a disparity in gender representation?

OVERALL FINDINGS & IMPLICATIONS

Findings

Implications

- HTML/CSS and JavaScript continue to see high usage and attention. Typescript is becoming more popular as well.

- Growing enthusiasm for Python.

- High interest and utilisation of SQL. Although PostgreSQL is gaining popularity and was the overall most requested database programme for the following year, MySQL had the most usage in 2019.

- NoSQL database software is becoming more popular, with MongoDB being the most popular in 2019 and sought for 2020.

- A significant gender pay disparity (in favour of men), despite women receiving slightly higher median salaries.

- Differences in technology between nations.

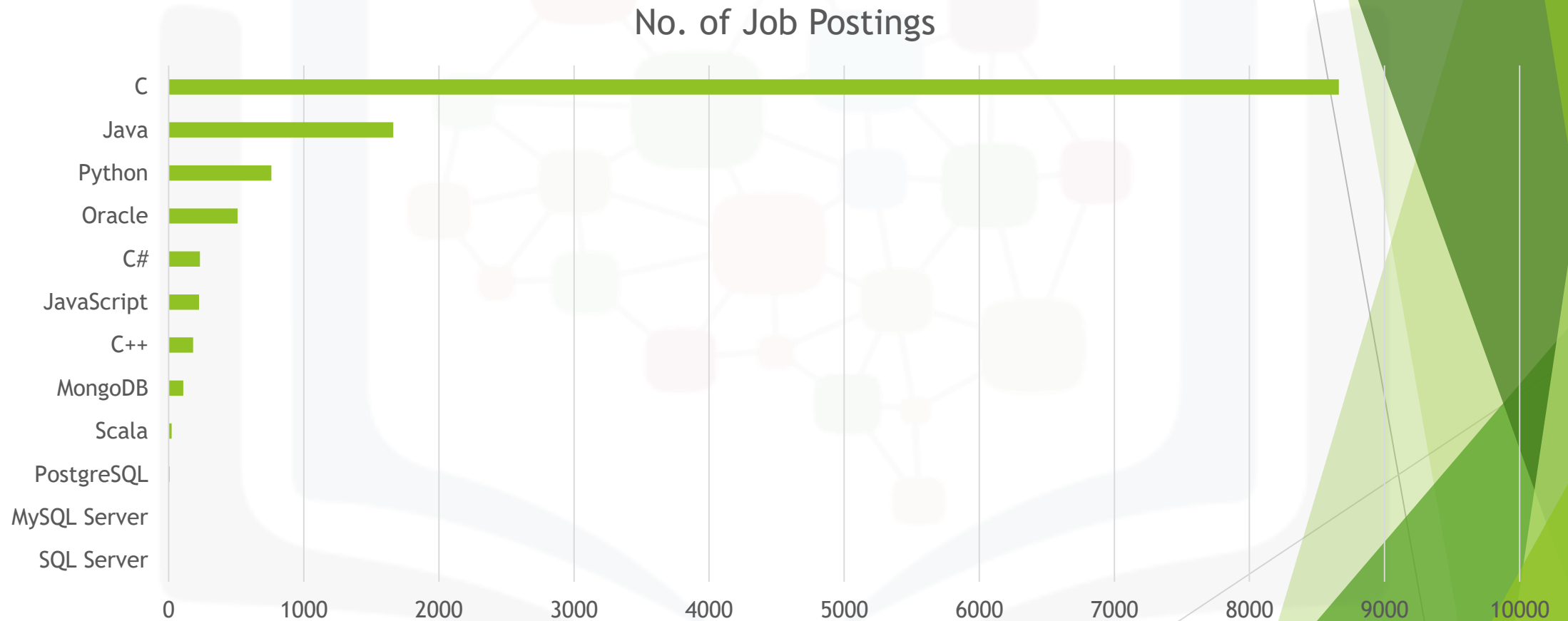- Demand for web development is still very high. In addition to JavaScript, HTML/CSS, and Typescript, developers may want to learn Typescript.

- Data workers should continue to improve their SQL skills but should also improve their proficiency with NoSQL database tools and Python due to the increased demand to handle huge data and undertake AI and ML work.

- Businesses must adjust to customers' shifting technology choices, particularly in terms of hiring and developing new talent.

- Along with the technological difference between nations, policymakers, schools, and organisations should aim to reduce the gender representation gap.

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CONCLUSION

▶ We analysed at a portion of the data gathered for the 2019 Stack Overflow Developer Survey.

▶ The results provided several insights into the developer population as well as the technologies that developers most frequently utilised and requested.

▶ These observations should be especially helpful to existing and aspiring developers who want to stay competitive, businesses who want to upskill their workforce, industry instructors, and policymakers who want to address gender and economic challenges.

APPENDIX: JOB POSTINGS

No. of Job Postings

Language	
C	
Java	
Python	
Oracle	
C#	
JavaScript	
C++	
MongoDB	
Scala	
PostgreSQL	
MySQL Server	
SQL Server	

0   1000   2000   3000   4000   5000   6000   7000   8000   9000   10000

APPENDIX: POPULAR LANGUAGES

Programming Languages by Average Annual Salary