



TECHNOLOGY TREND ANALYSIS REPORT: STACK OVERFLOW DEVELOPER SURVEY 2019

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OUTLINE



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- Discussion
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EXECUTIVE SUMMARY



The following slides summarize key findings from an analysis of data collected as part of the 2019 Stack Overflow Developer Survey.

This report gives insights regarding:

1. **Most popular Developer technologies (Webframe, Platforms, Languages and Databases) trending**
2. **Which Developer technologies will become most popular in the future.**
3. **Demographical analysis of Developers based on Age, Country, Gender and Education level**
4. **Average annual salary by technology**

INTRODUCTION



- The online programming knowledge sharing platform, Stack Overflow, has been conducting the Annual Developer Survey to empower Developer Technologies development
- Purpose of this Analysis
 - Identify the top programming languages, database, platform and web frame skills in demand
 - Identify skill requirements for future
 - Identify human resource gap in the industry
- Size of subset : **N= 11,398**
- Audience for this Presentation
 - Programmers
 - IT industry leaders
 - Computer science students

METHODOLOGY



- **Data Collection (Sources)**
 - [Stack overflow developer 2019 survey csv files](#)
 - [GitHub job postings](#)
 - [Programming languages annual salary](#)
- **Data Wrangling:**

A portion of the dataset (provided by IBM) was loaded and cleaned using SQL and Python's pandas library.
- **Data Cleaning procedure:**

Duplicates removal, data imputation, data normalization
- **Data Exploration & Data Visualization**

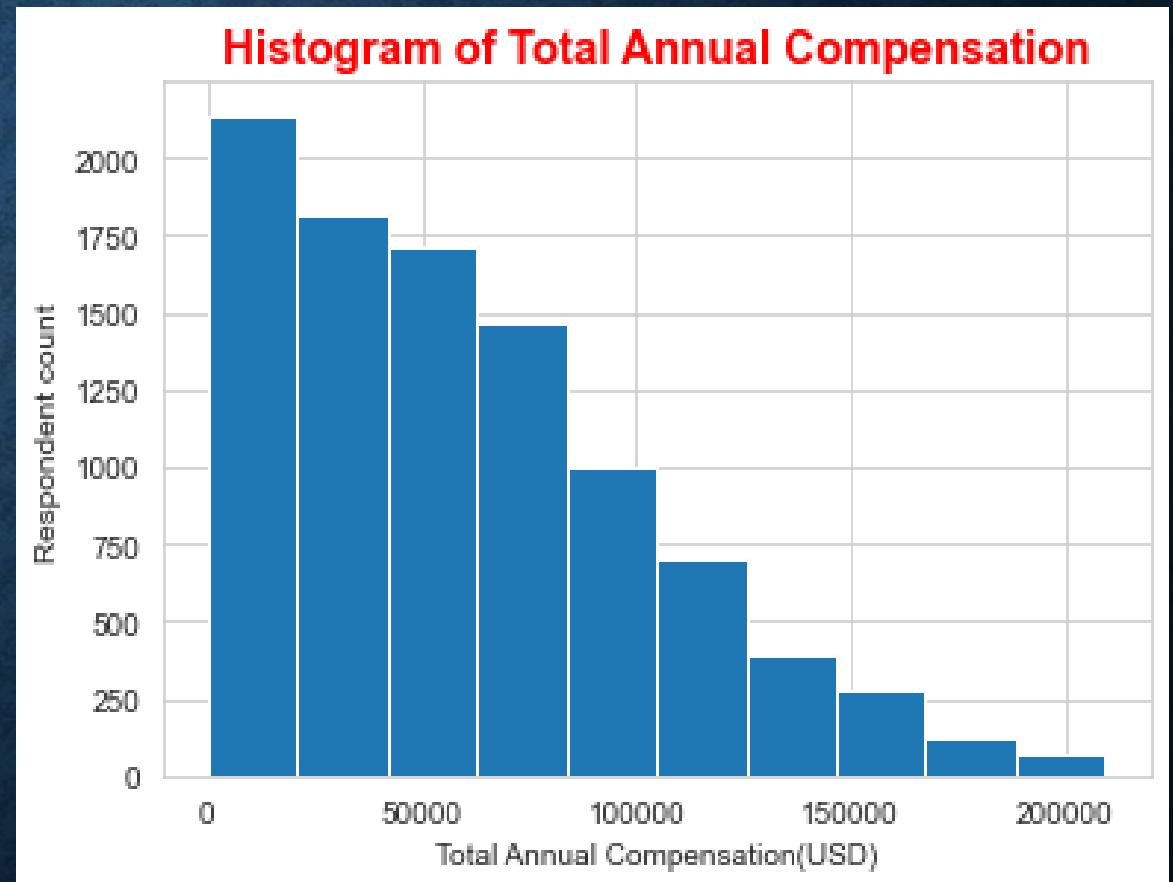
EDA and data visualization were conducted using various Python libraries and csv files loaded to Cognos to examine:

 - Technologies trending
 - Technologies most desired for the next year
 - Demographics
- **Presentation**

RESULTS:

Descriptive analysis :

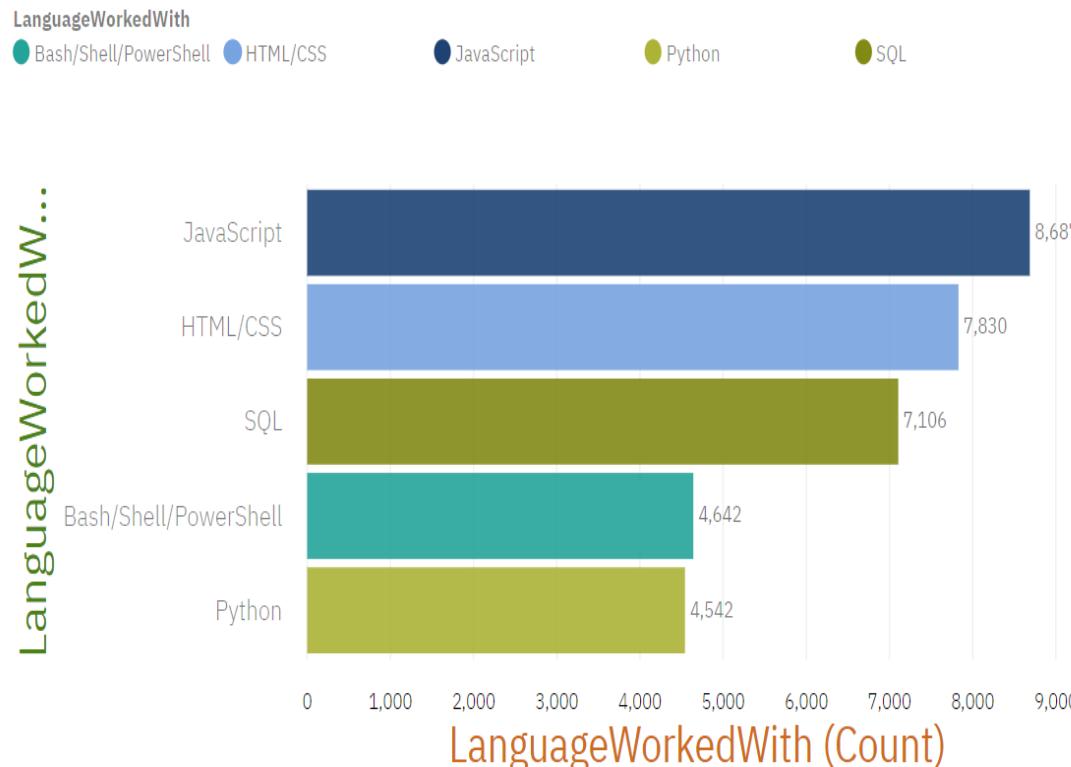
- Sample size after compensation outlier removal: **N = 10,519**
(before removal: N = 11,398, Number of outliers = 879).
- The respondents median age = **29**,
Male percentage = **93.5 %**
Female percentage = **6.5 %**
- Median compensation: **\$52,704 USD per year.**
 - Compensation and Age were positively correlated: $r = 0.40$.
 - Median compensation was higher for women: **\$54,956** than men: **\$52,339**



PROGRAMMING LANGUAGE TRENDS:

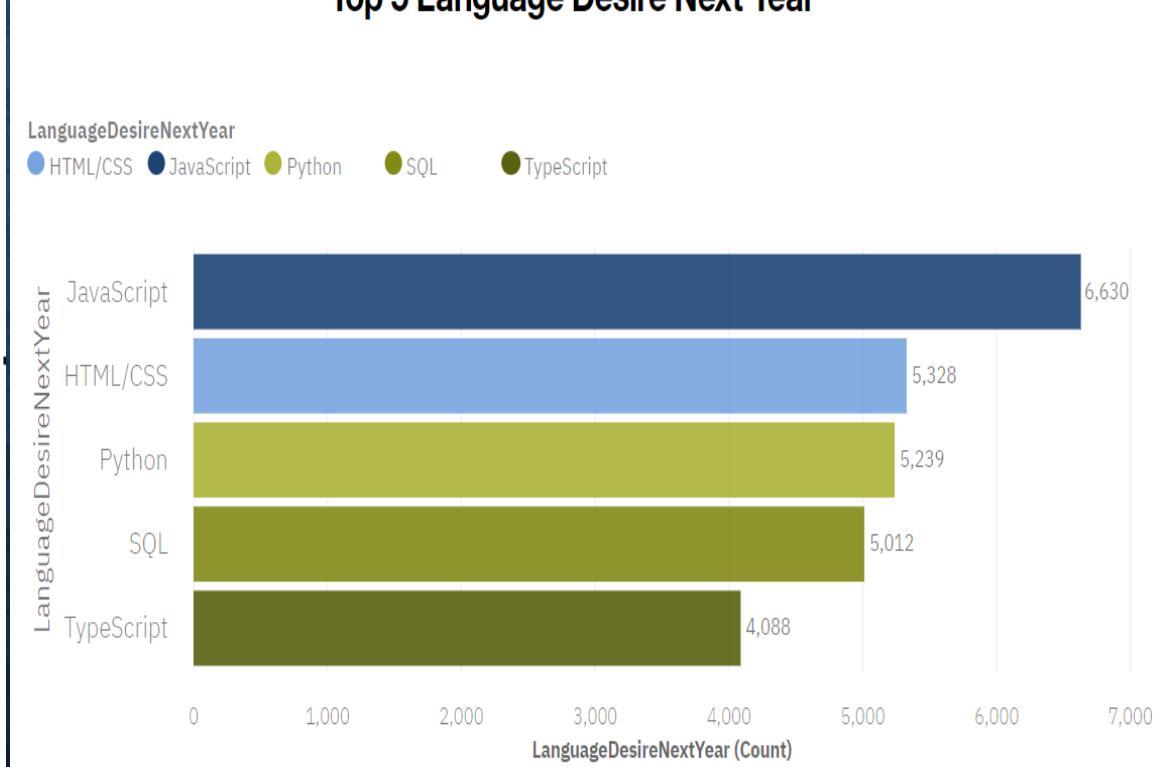
Current Year

Top 5 languages worked with



Next Year

Top 5 Language Desire Next Year



PROGRAMMING LANGUAGE TRENDS: INSIGHTS

Findings

- Javascript & HTML/CSS were the most popular in 2019 and also most desired in following year
- SQL was popular in 2019 and will likely remain so.
- There is significantly increasing interest in python and typescript.
- Interest in PowerShell/Bash is decreasing.

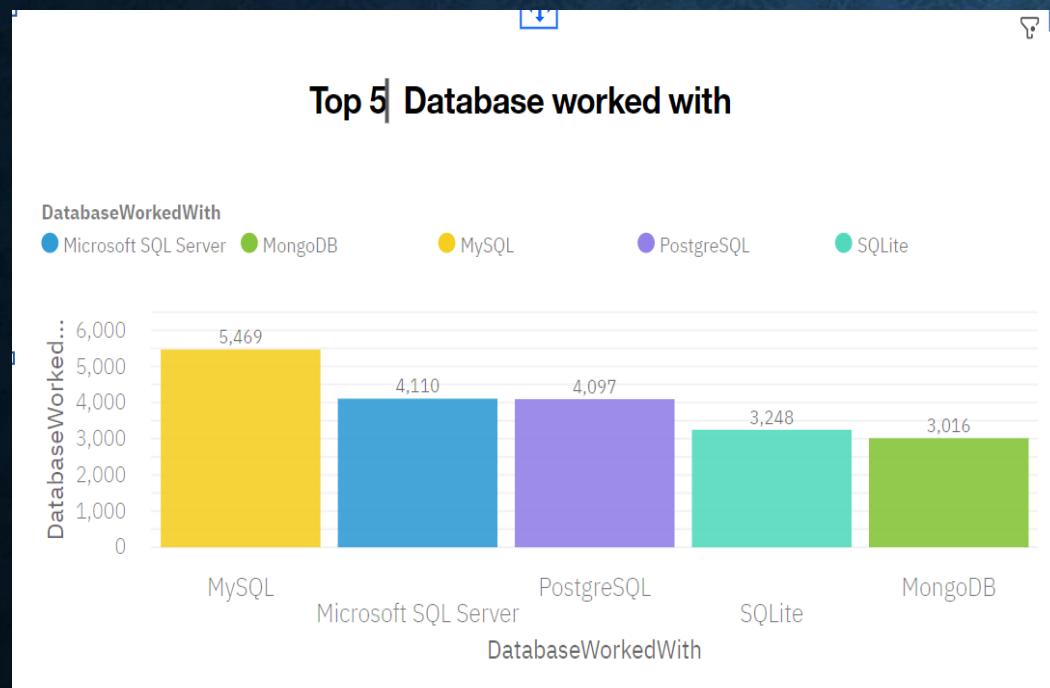
Implication

Implications

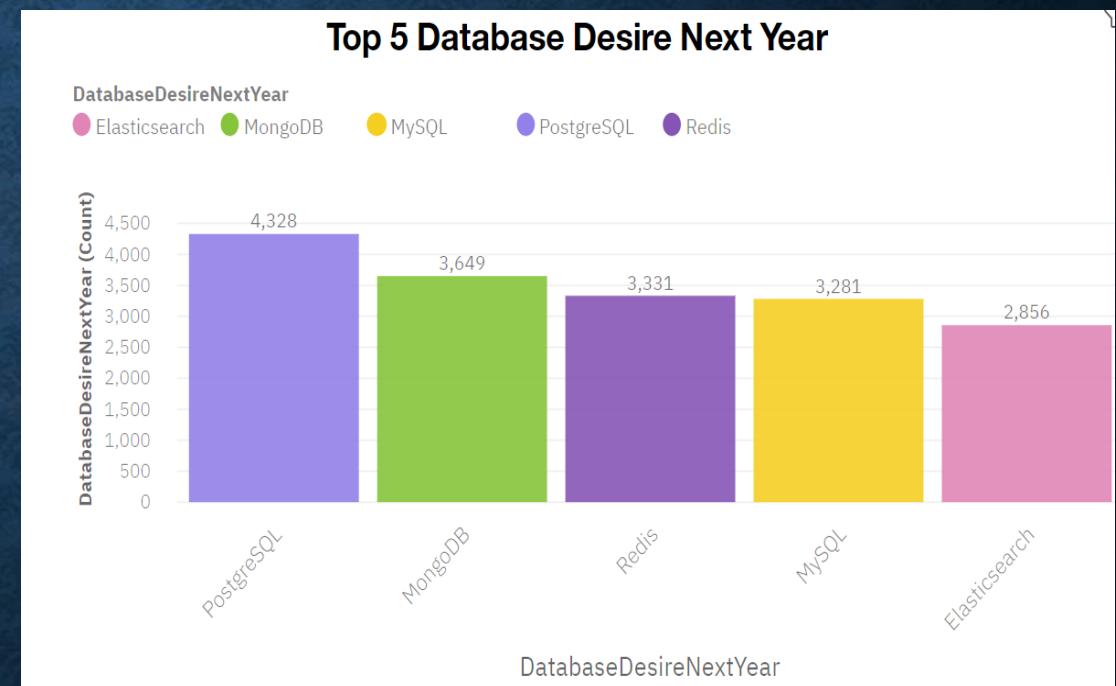
- With Javascript and HTML/CSS keep being dominant languages Web development is still in high demand. However, TypeScript is ascending higher & may catch up in the future.
- SQL remains the preferred language for big data storage and querying.
- Python's rising popularity likely reflects the growth of AI and ML work.

DATABASE TRENDS:

Current Year



Next Year



DATABASE TRENDS :INSIGHTS

Findings

- SQL database programs were the most popular in 2019, with MySQL in the lead.
- MongoDB was popular in 2019 and ascending in popularity.
- The popularity of PostgreSQL is growing over other SQL database programs and it was the overall most desired database for the next year.
- Increasing interest in Elasticsearch making it in top 5 most desired

Implications

- The preference for open-source database programs appears to be increasing among developers.
- In addition to SQL database programs, current and aspiring data analysts should develop skills in NoSQL.
- NoSQL database programs are gaining popularity, which likely reflects a growing need to handle nonrelational and unstructured data.

DASHBOARD

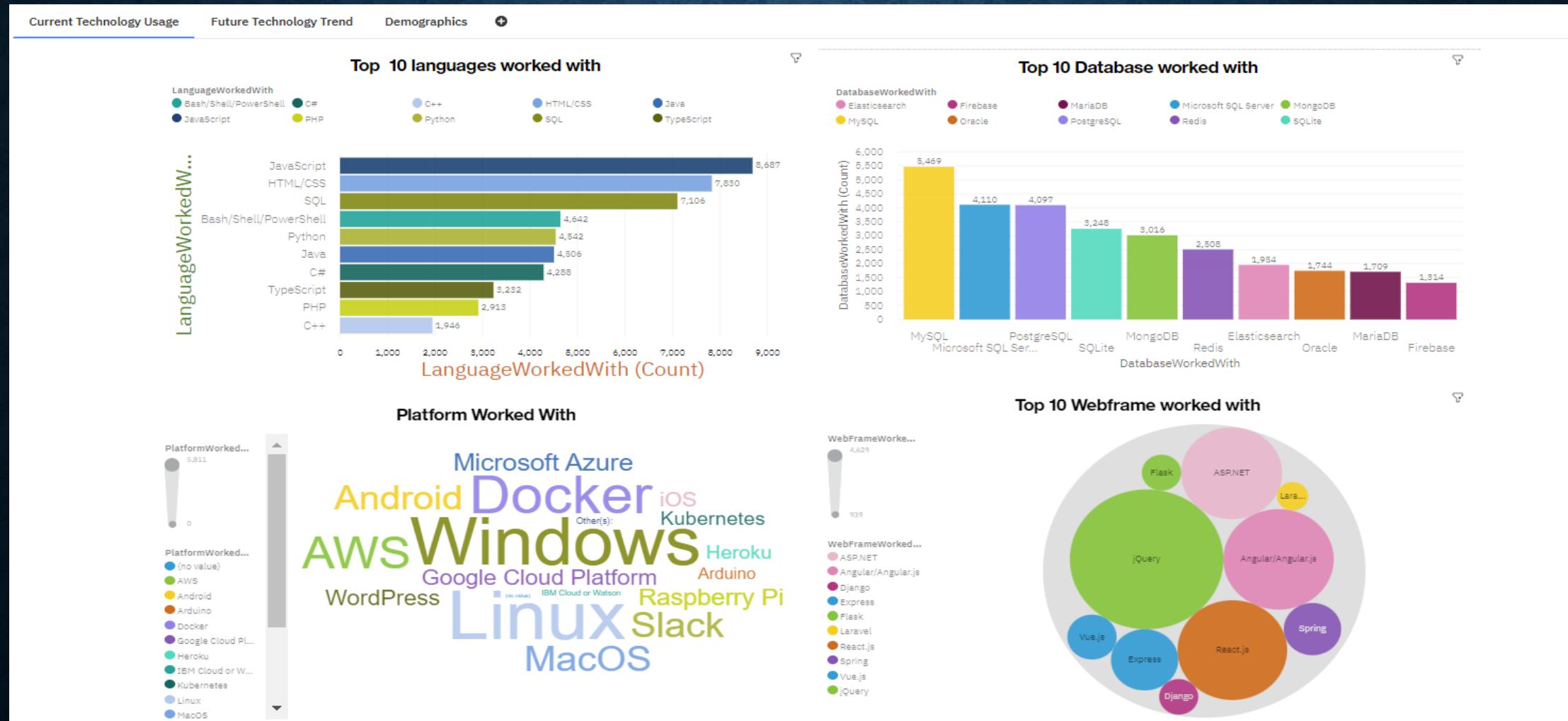
The following link contains the full, interactive Cognos dashboard summarizing

- (a) Current technology use,
- (b) Future technology trend, and
- (c) Demographics of the survey respondents:

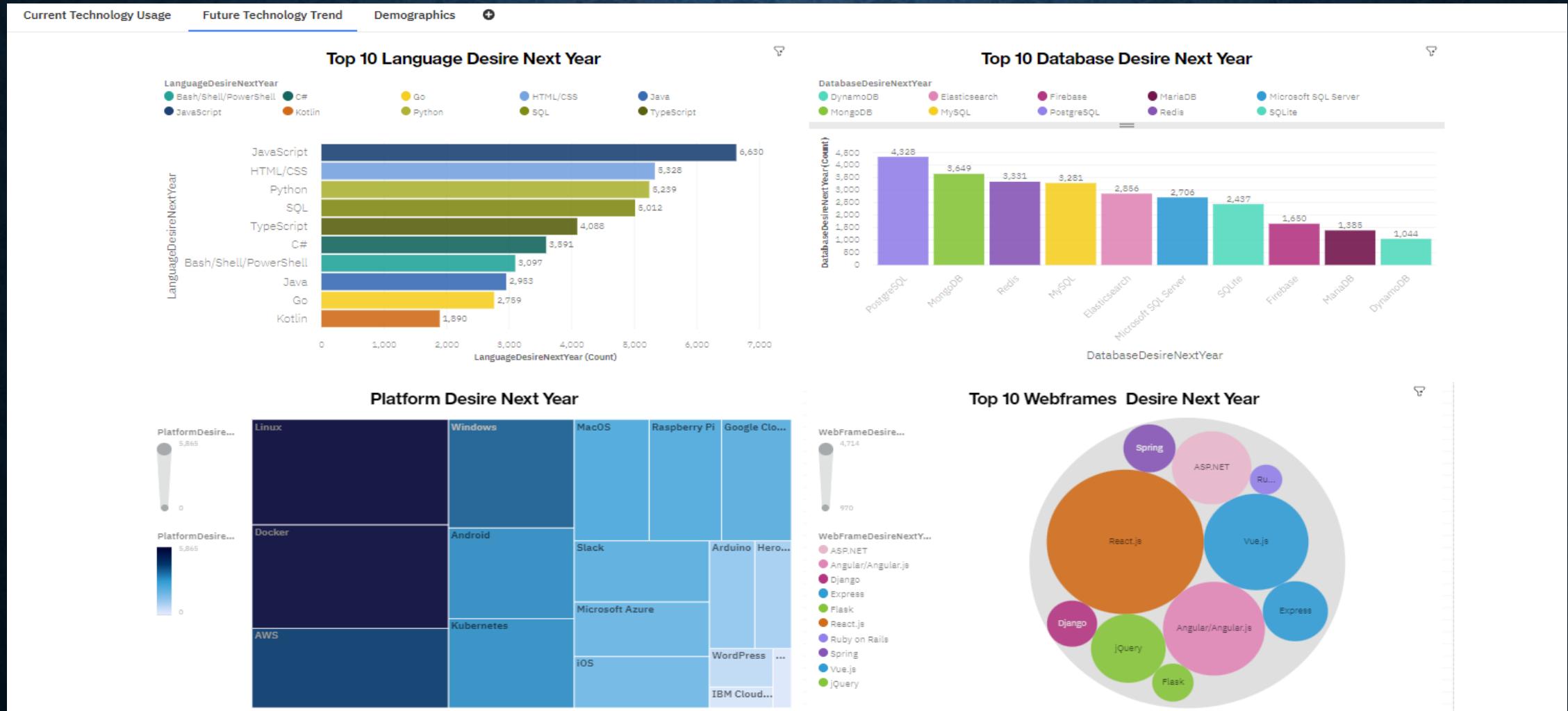


[Dashboard link](#)

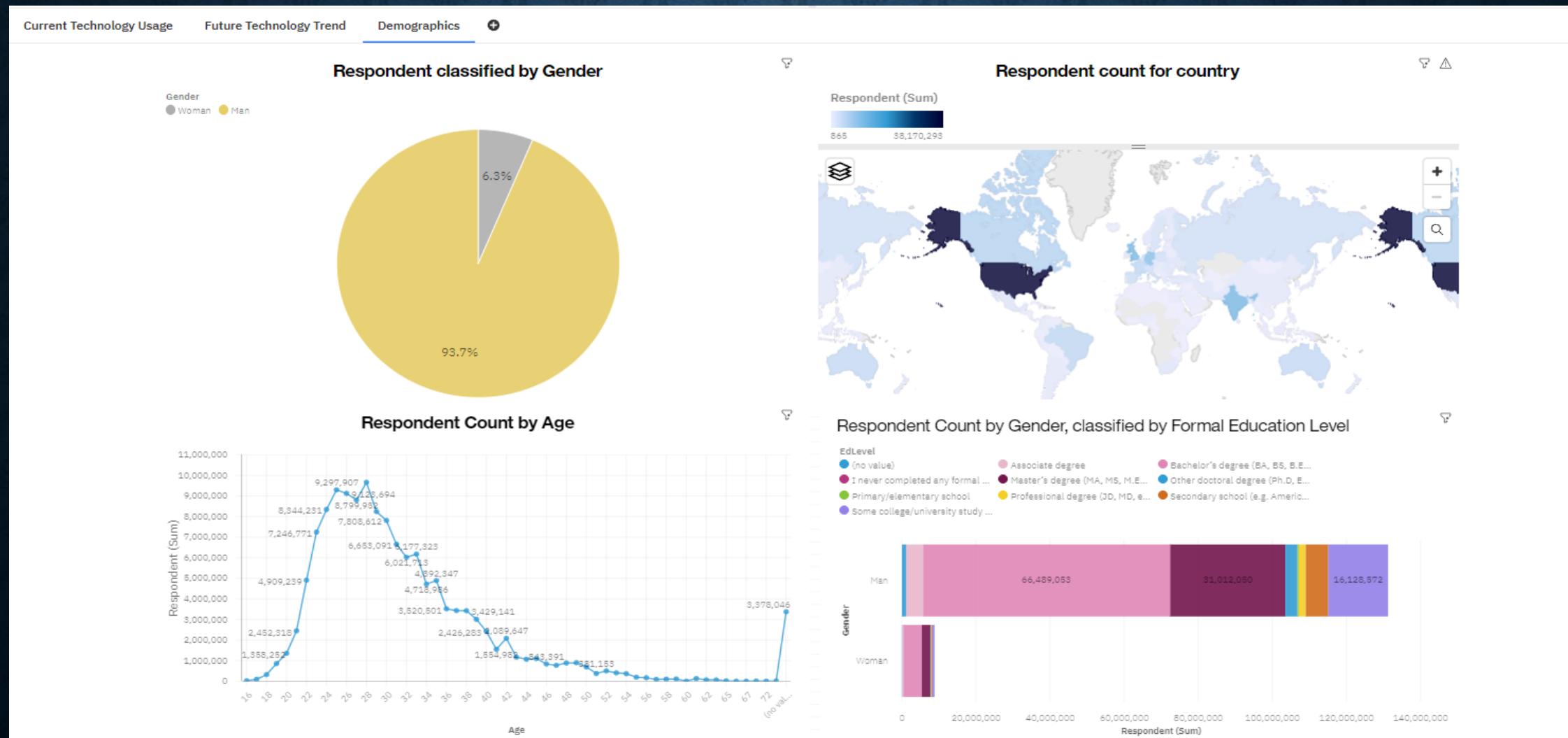
DASHBOARD TAB 1:CURRENT USAGE



DASHBOARD TAB 2:FUTURE USAGE



DASHBOARD TAB 3: DEMOGRAPHICS



DISCUSSION

Taken together, the findings yield insights into the following questions:



- What kinds of developer technologies are in top demand?
- Which technologies should prospective developers and data professionals be learning?
- Which technologies should educators place more emphasis on teaching in upcoming years?
- What does the distribution of annual compensation for developers look like?
- What is the developer demographic like? Is there a gender representation gap?

OVERALL FINDINGS & IMPLICATIONS

Findings

- Javascript/HTML is most used and there is high interest in following year as well. There's also growing interest in Typescript and Python
- High usage and interest in SQL .MySQL had the highest usage in 2019
- PostgreSQL is gaining interest and also most desired database program for the next year
- NoSQL database programs gaining interest, of which MongoDB was the most used in 2019 and desired for the next year.
- A severe gender representation gap (in favor of men), despite median compensation being slightly higher for women.

Implications

- Current and prospective developers may consider picking up Typescript and Python in addition to Javascript and HTML/CSS.
- Considering growing need to handle big data and perform AI and ML work, data professionals should continue to enhance SQL competence as well as NoSQL database programs and Python.
- Need to minimize the gender representation gap in addition to the technology divide between countries.

CONCLUSION

A subset of data collected as part of the 2019 Stack Overflow Developer Survey was examined.

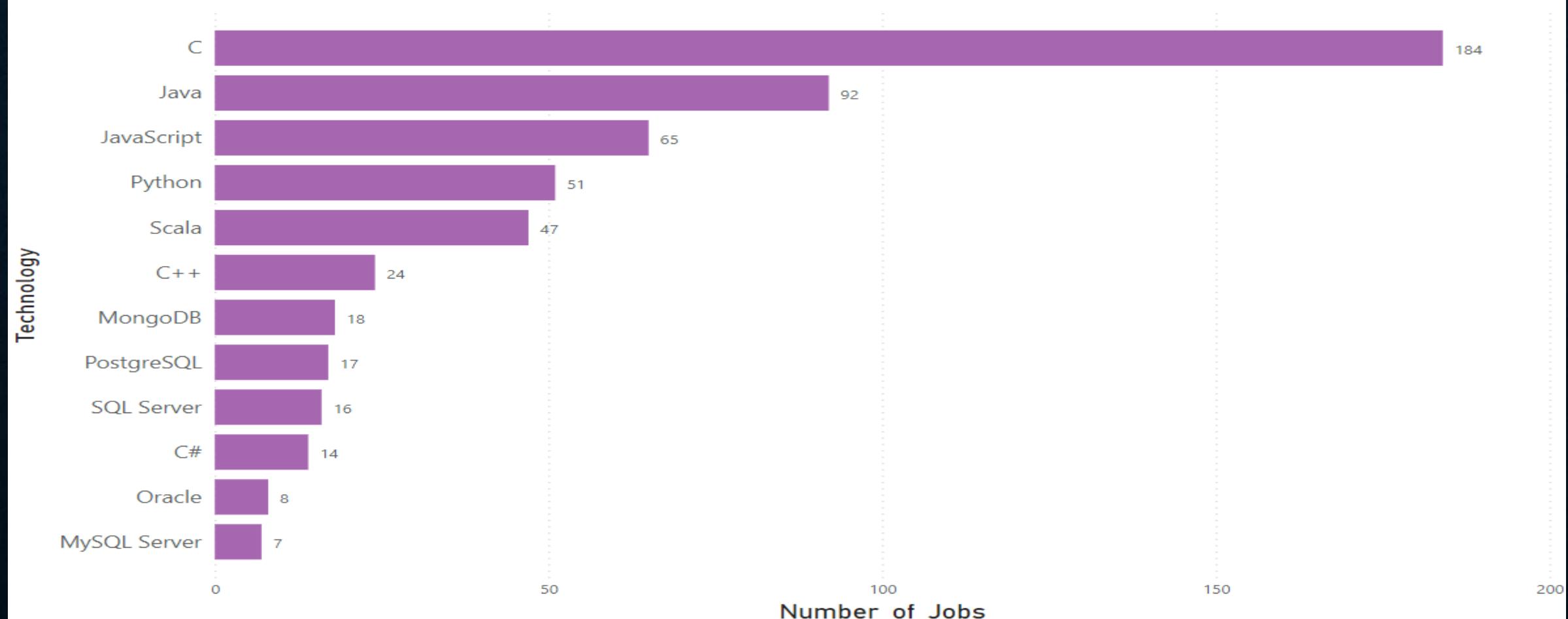


The findings yielded numerous insights into the technologies most used and desired by developers in addition to the developer demographic.

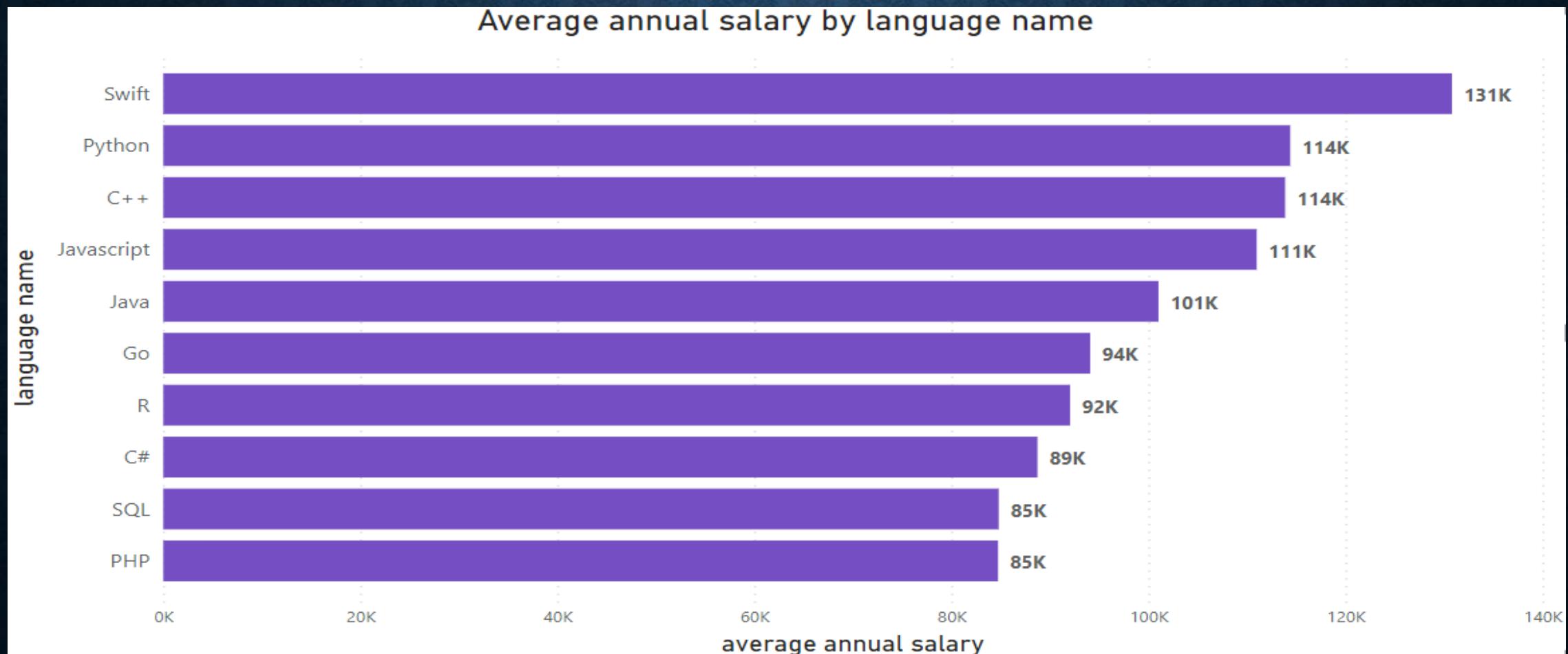
- The demand in the cloud technologies are rapidly increasing.
- The programming languages that have web based applications are most in demand
- Databases which can be accessed from everywhere are high in demand and will continue to have higher demands
- Open source platforms will have a higher impact due to the flexibility with working them .

APPENDIX A: JOB POSTINGS

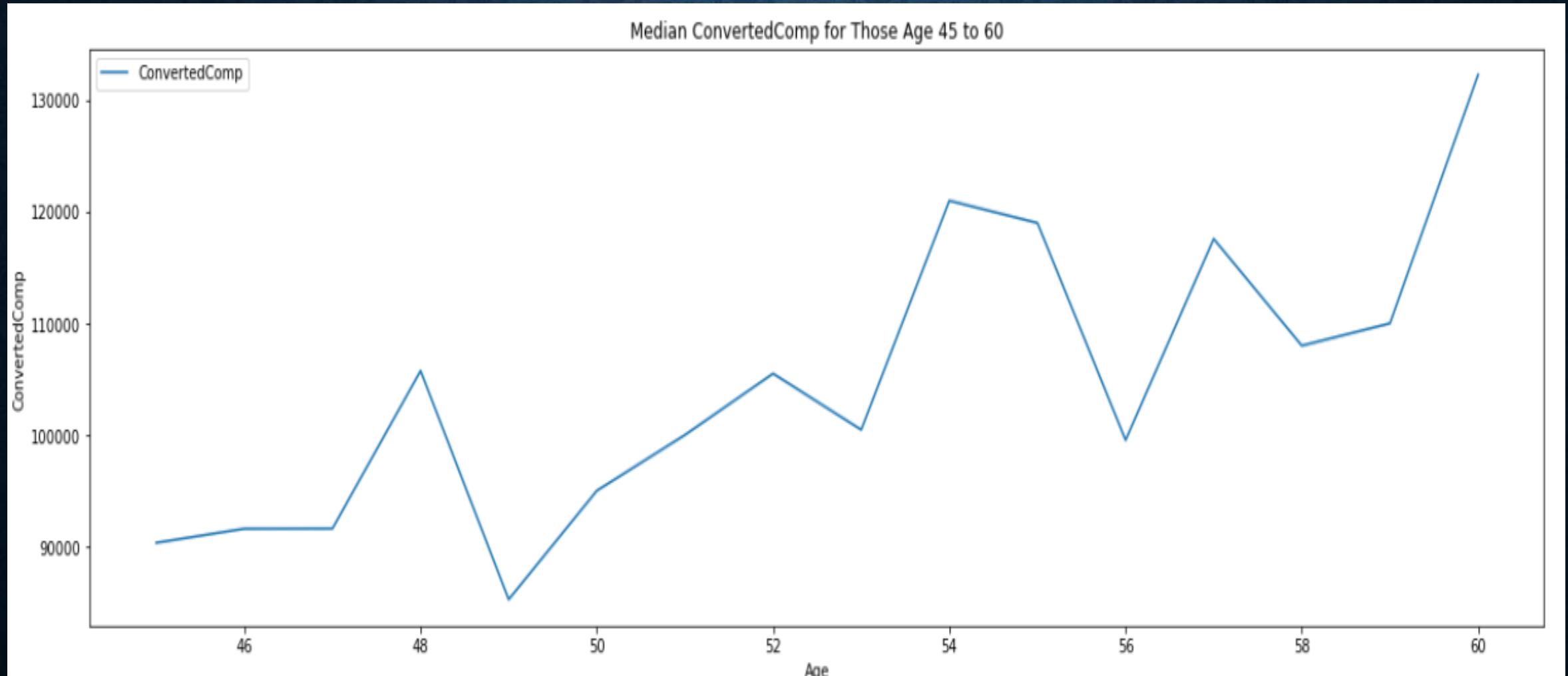
Number_of_Jobs by Technology



APPENDIX B:POPULAR LANGUAGES



ADDITIONAL VISUAL



ADDITIONAL VISUAL

