



# The 2019 Stack Overflow Developer Survey Results

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# OUTLINE

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

# EXECUTIVE SUMMARY

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- Data briefing
- Methodology
  - Data gathering
  - Data analysis
  - Data visualizations
- Results
  - Visualization – Charts
  - Dashboards
- Discussion
  - Finding & implications
- Conclusions
- Appendix

# 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.
- A community-based space to find and contribute answers to technical challenges, and one of the most popular websites in the world.
- Stack Overflow's products and tools empower people to find what they need to develop technology at work or at home. The products include, Stack Overflow for Teams, Stack Overflow Advertising, Collectives™ on Stack Overflow, and Stack Overflow Talent.
- For this Data Analysis Capstone Project software like Python and platform like IBM Cognos Analytics were used to gather, clean, explore and visualize data from the dataset.

# METHODOLOGY

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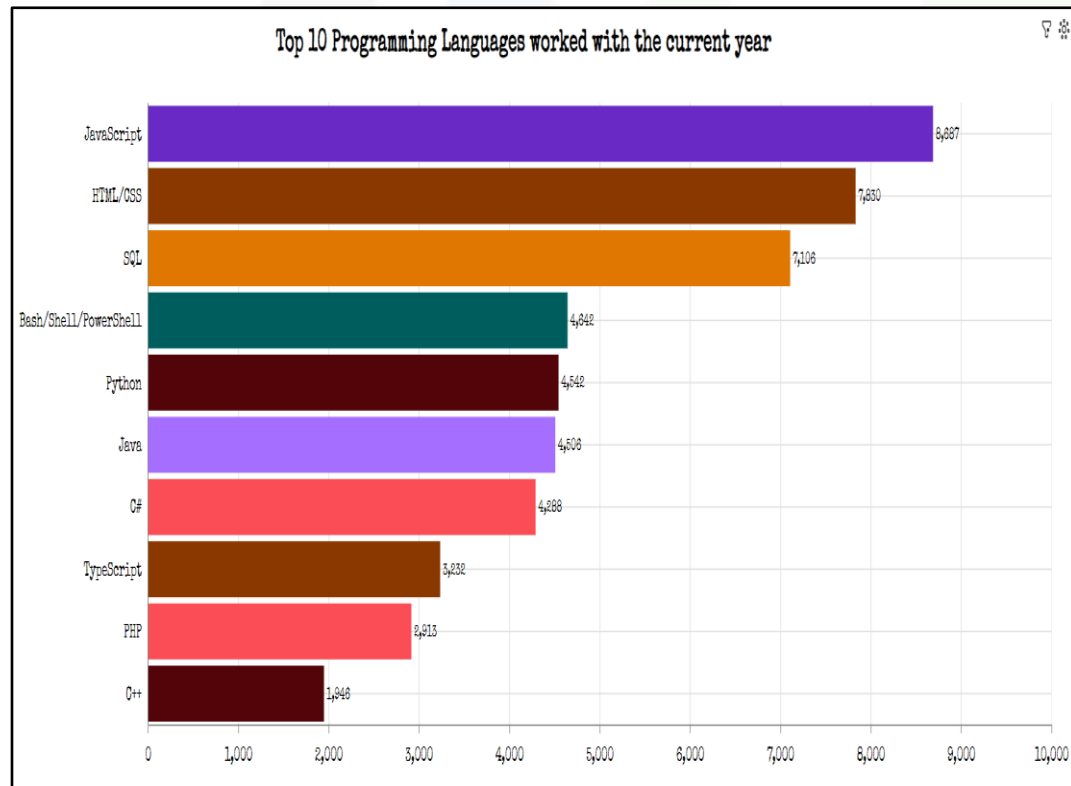
- Data Sources and Data Collection techniques
  - Stack Overflow Developers Survey 2019 (Web Scraping)
  - GitHub Job Posting (APIs)
  - Programming Language Annual Salary (Request Library)
- Data Wrangling (Python)
  - Cleaning data (duplicate rows, finding missing values, and data normalization)
- Data Exploration (Python)
  - Analyzing Data Distribution
  - Handling Outliers
  - Correlation
- Data Visualization (IBM Cognos Analytics)
  - Distribution, relationships, composition and comparison of data
- Dashboards
  - Current Technology Usage
  - Future Technology Trends
  - Demographics

# RESULTS

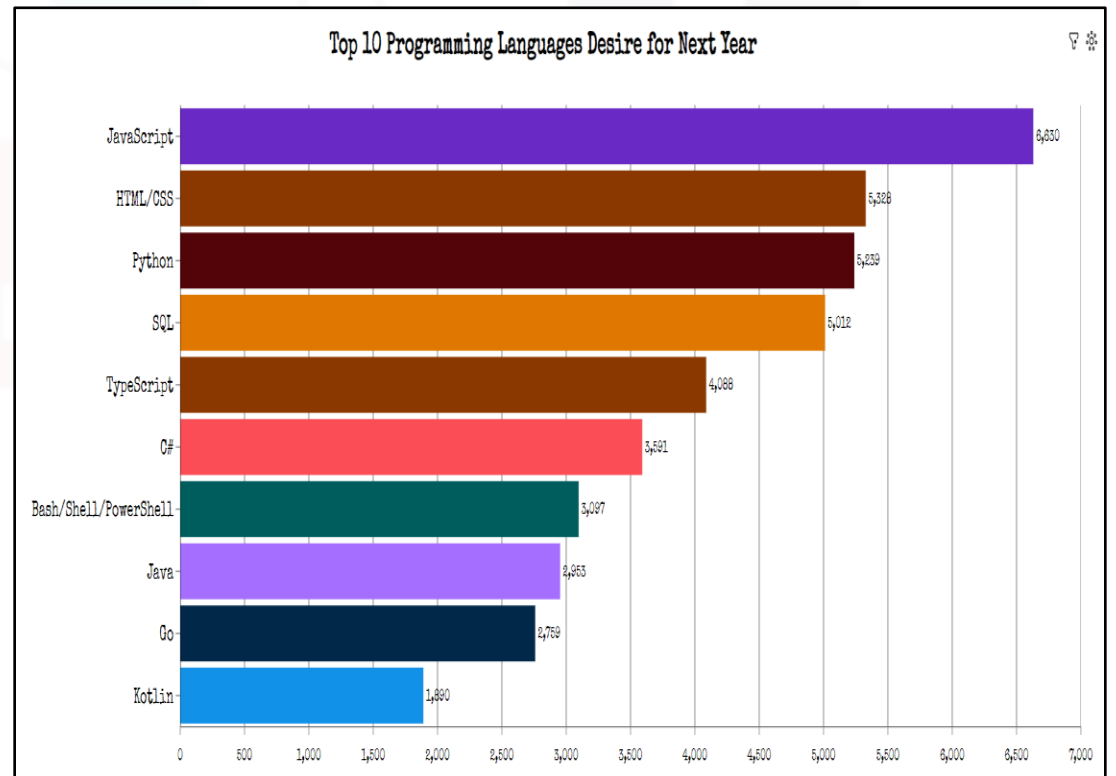


# PROGRAMMING LANGUAGE TRENDS

## Current Year



## Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

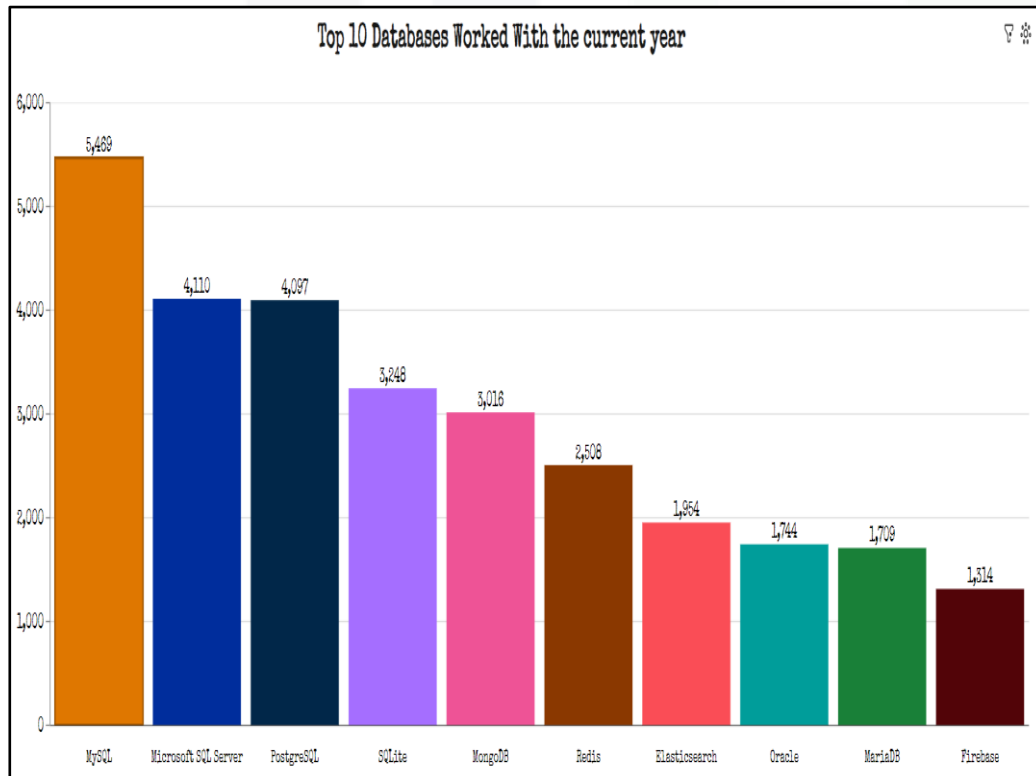
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- JavaScript is the # 1 programming language.
- Programmers has shown increased interest in Python and TypeScript.
- Kotlin and Go has paved the way in the share market next year regarding high-level Programming Languages.
- Powershell lost ground among respondents.
- Web development is still field with a high demand.
- Possible migration from JavaScript to TypeScript. Python is still considered as the best choice regarding AI and ML.
- New options regarding Programming Languages has emerged in the sector.
- Platforms like Google and Android are now being considered owing to their versatility and popularity of the mobile phones and tablets.

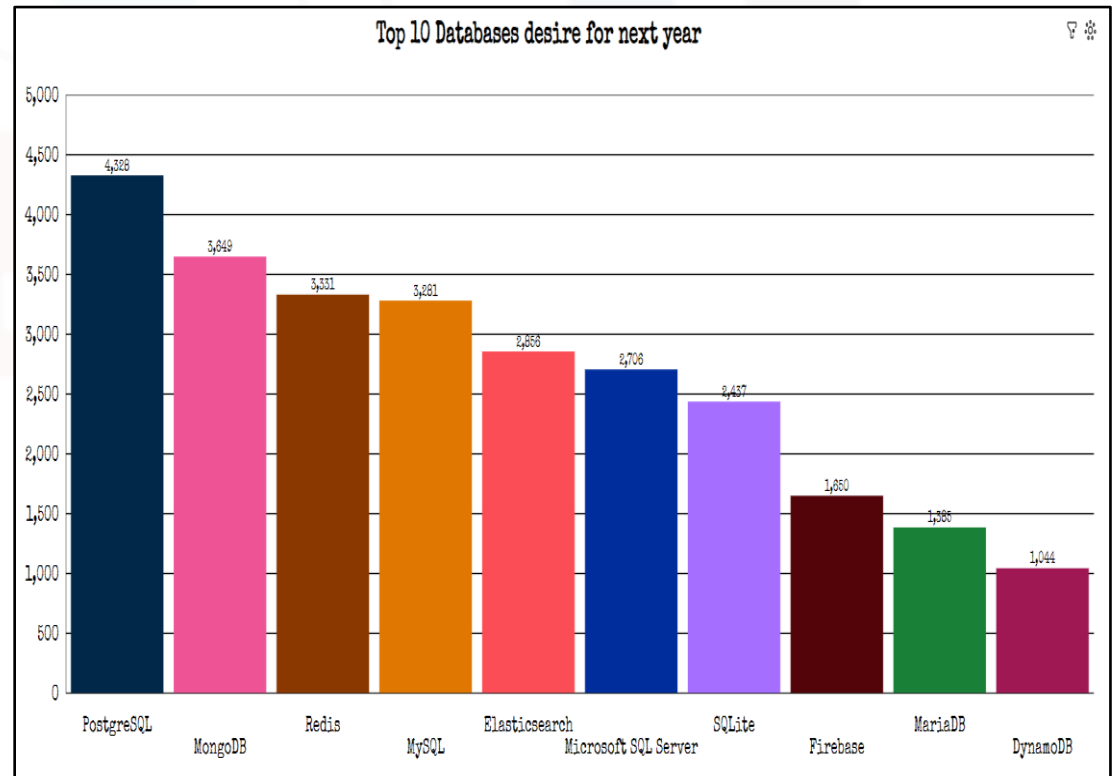


# DATABASE TRENDS

## Current Year



## Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

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- MySQL was the most used Database this year.
- My SQL and Microsoft SQL lost ground whereas PostgreSQL and MongoDB were ranked as the leading Databases for next year.
- Oracle was edged out, Elastic Share and DynamoDB gained interest among programmers.
- Open Source Databases are still in high demand within companies. It is clearly visible a switch pattern in the usage of relational Databases.
- New options like DynamoDB has gained market regarding NoSQL databases.
- Search engines and software libraries like Elasticsearch are going to be widely used next year.

# DASHBOARD

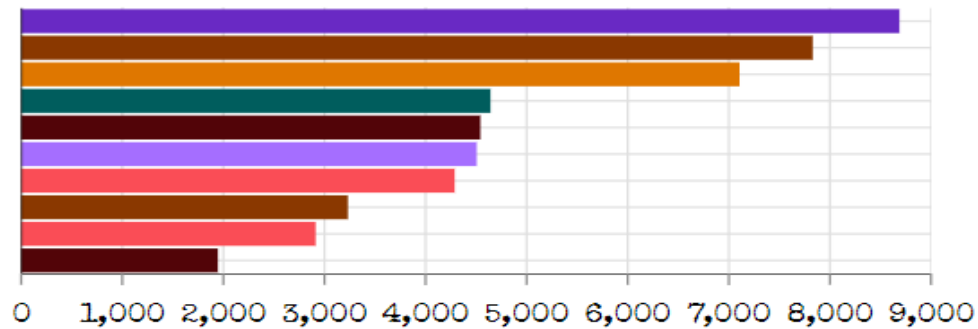
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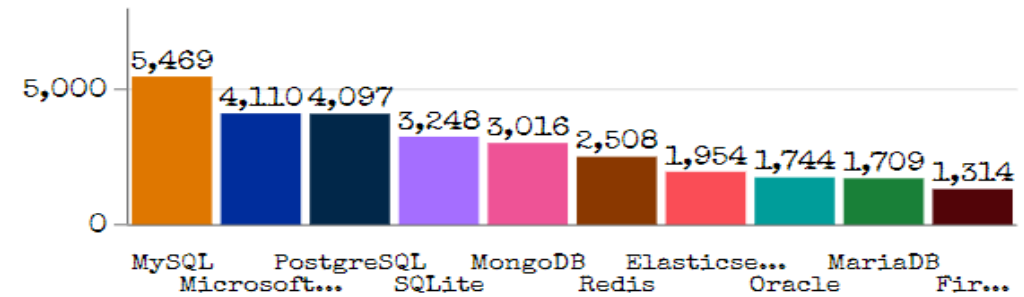
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# DASHBOARD TAB 1

Top 10 Programming Languages worked with the current year



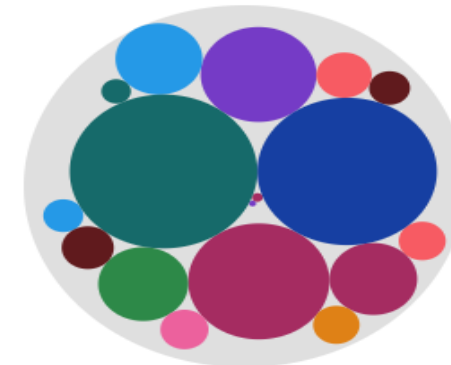
Top 10 Databases Worked With the current year



Platforms Worked With

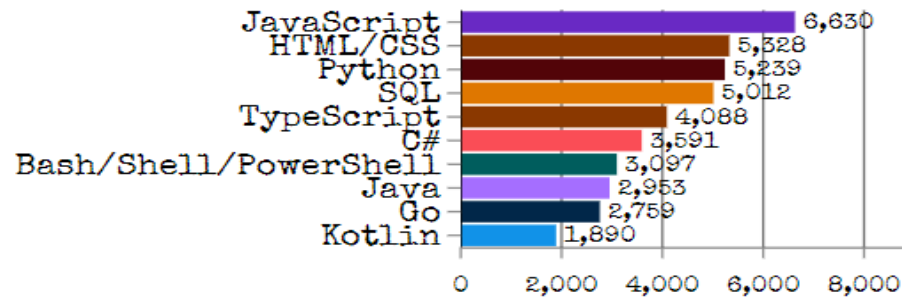


Platforms Worked With

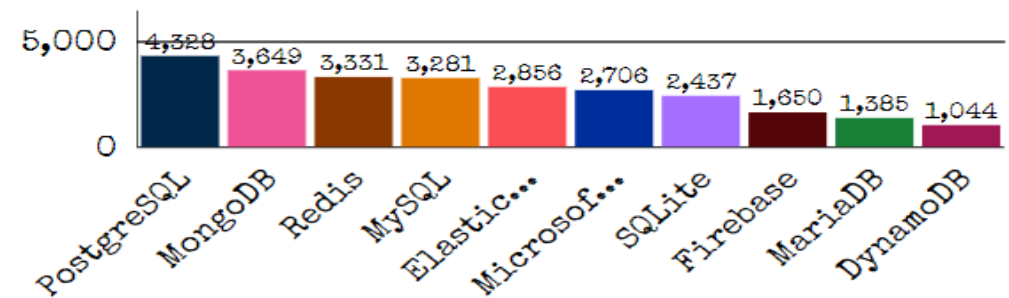


# DASHBOARD TAB 2

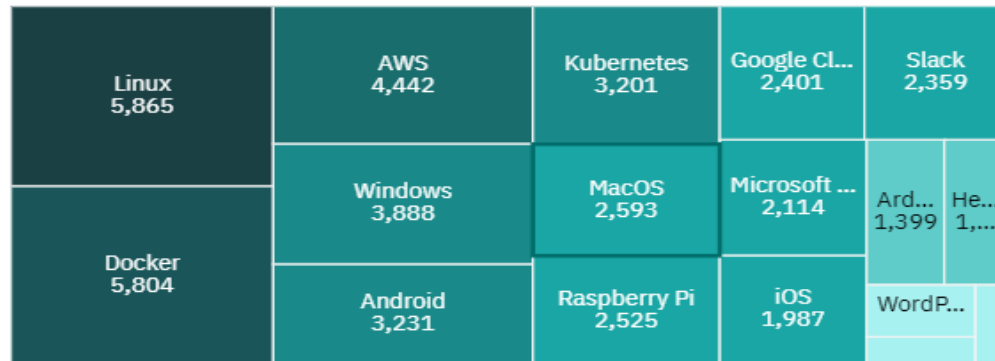
## Top 10 Programming Languages Desire for Next Year



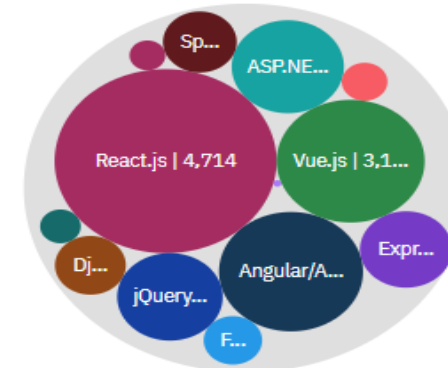
## Top 10 Databases desire for next year



## Platform desire next year

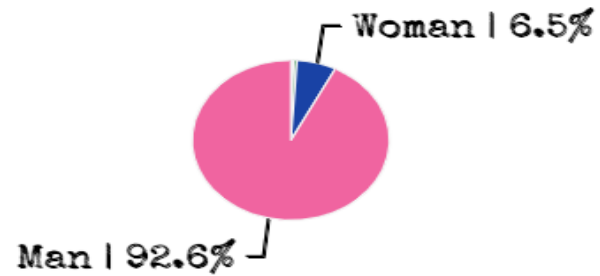


## WebFrame desire next year

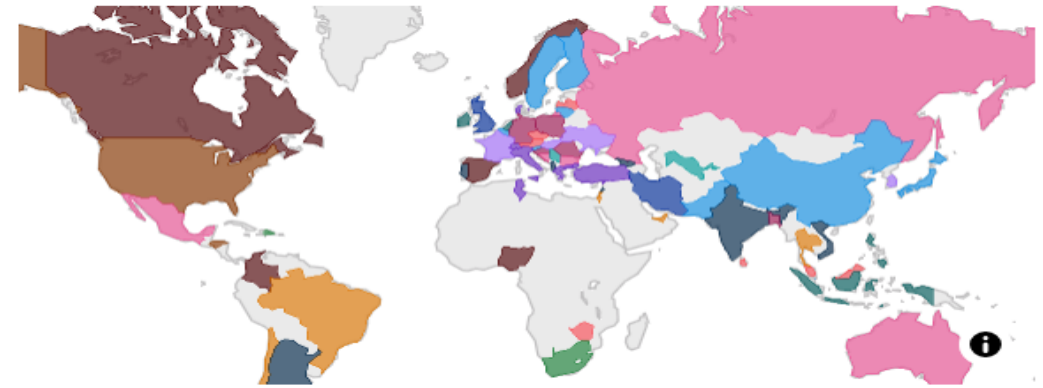


# DASHBOARD TAB 3

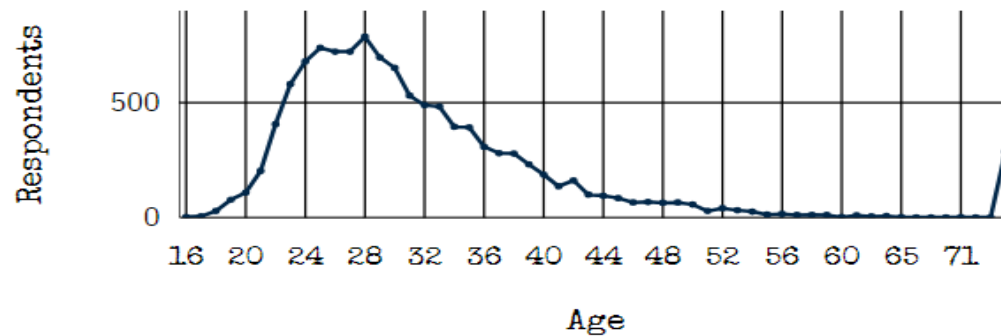
## Respondents by Gender



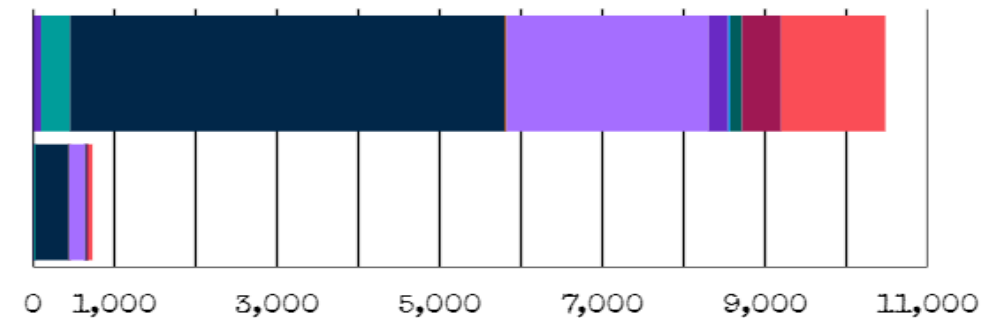
## Respondents for Countries



## Respondents by Age



## Respondents by Gender and Educational Level



# DISCUSSION

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Based on the charts and dashboards previously plotted via IBM Cognos analytics and Python via Anaconda Navigator, the most relevant findings and implications are going to be outlined below as well as the main conclusions of this Stack Overflow's annual Developer Survey

# OVERALL FINDINGS & IMPLICATIONS

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- Technologies are fast-changing every year.
- U.S.A. India and the U.K. are the countries where most of the surveyed are based.
- Male respondents accounts for 93.5% and female counterparts for 6.5% whose age range mostly lies within 20 – 35 years.
- C programming language is the most demanded one as per job postings and Washington D.C. is the US location where most of the positions are offered.
- Swift is the programming language with the highest salaries.
- Linux, Docker, AWS, Windows and Android are the TOP # 5 platforms for next year.
- Flexibility is highly required for companies to adapt to the fast changing market.
- Developing countries should prioritize the technology sector both academically and professionally.
- Age, gender and Educational level gaps should be bridged by governments and companies to make the technology sector more competitive and accessible.
- Companies must have state of the art training to keep updated the personnel.
- C programming language is and will continue be the # 1 option for companies. Swift is gaining room among programmers.
- A change in pattern is seen regarding Platforms for the years to come.



# CONCLUSION

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- A deeper and broader study is required for a better understanding of the technology sector.
- Programming Languages, Databases and Demographic trends were obtained based on the surveyed people and their backgrounds.
- Actions to be taken into consideration regarding Age, Gender and Educational Level.
- Technology should focus on emerging countries where there is a big gap to fill.
- Platforms are gaining room in the sector as the market is aiming to smartphone and tablets.
- Fields like Machine Learning, Artificial Intelligence and Deep Learning should included in the coming surveys.

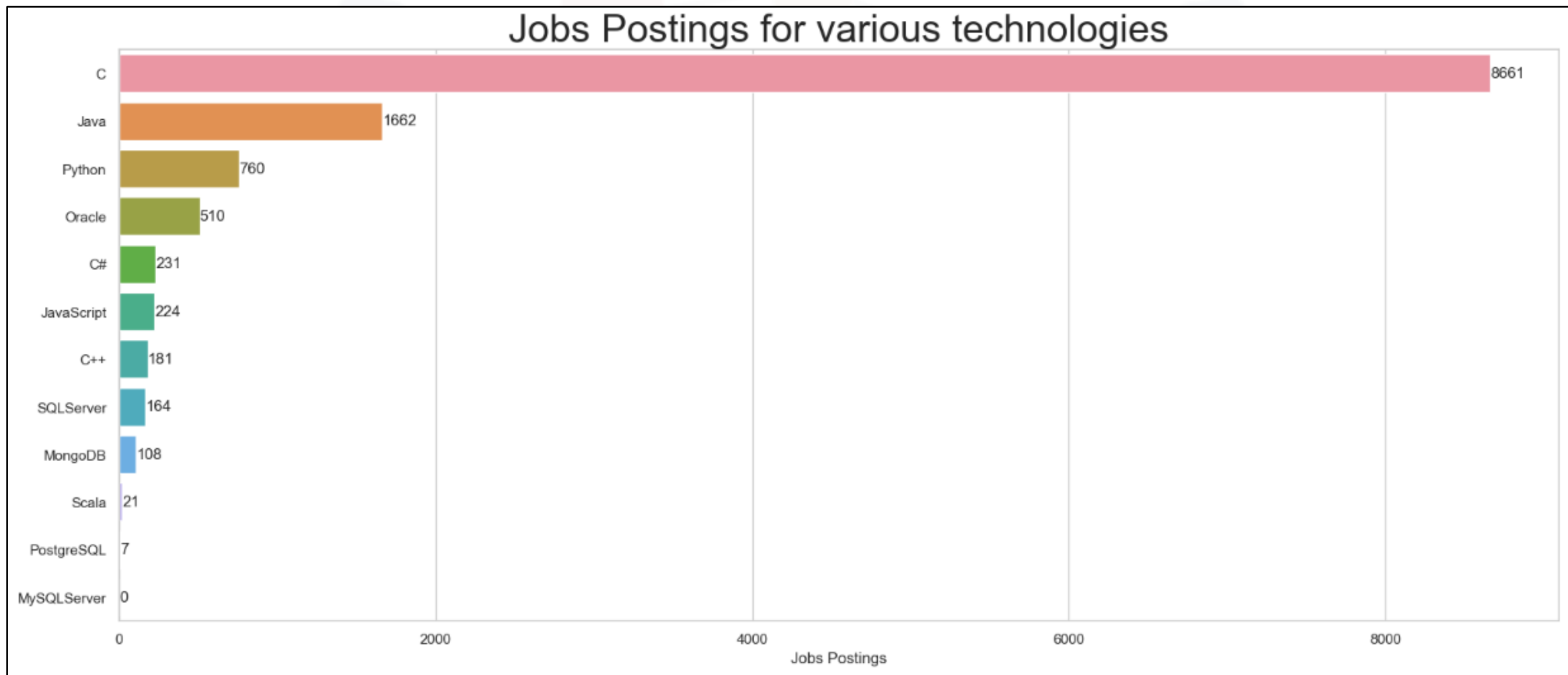
# APPENDIX

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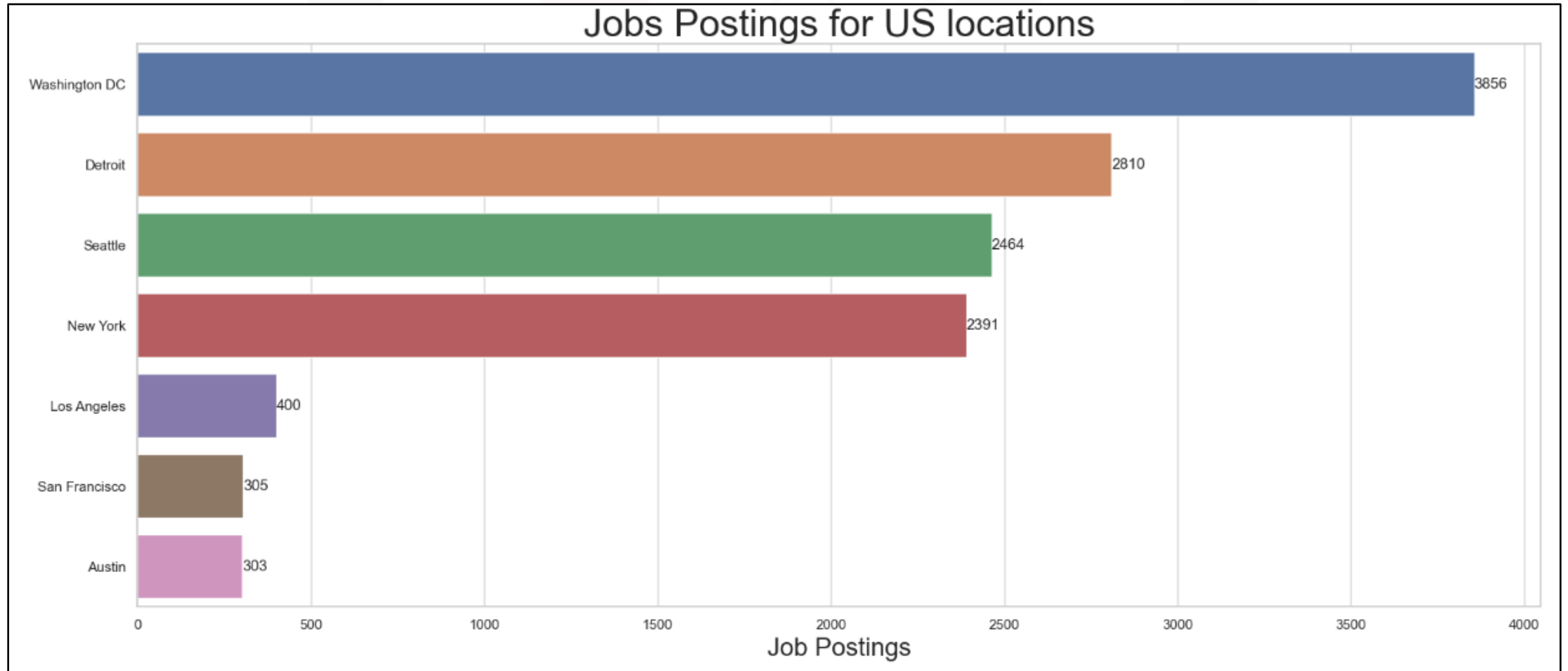


- Relevant additional charts were included to support the findings and conclusions outlined below.

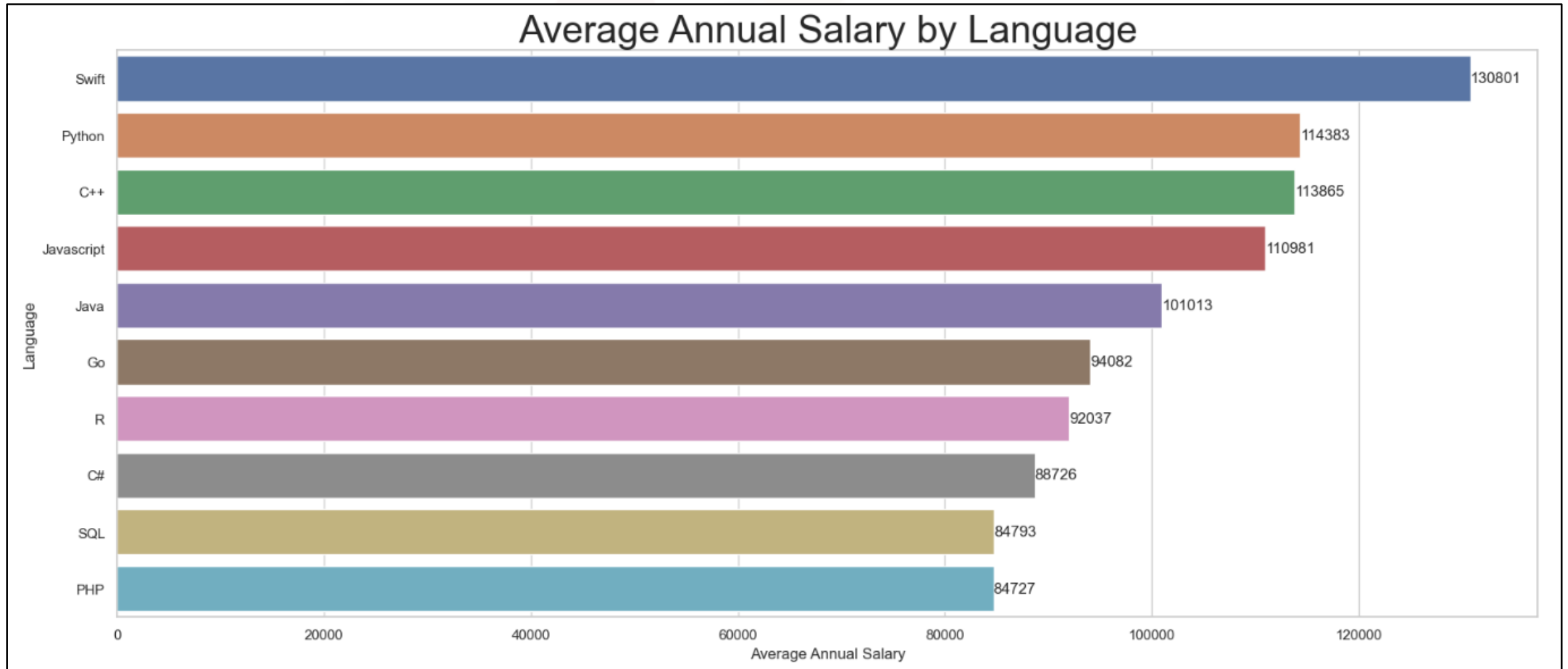
# JOB POSTINGS PER POPULAR PROGRAMMING LANGUAGES



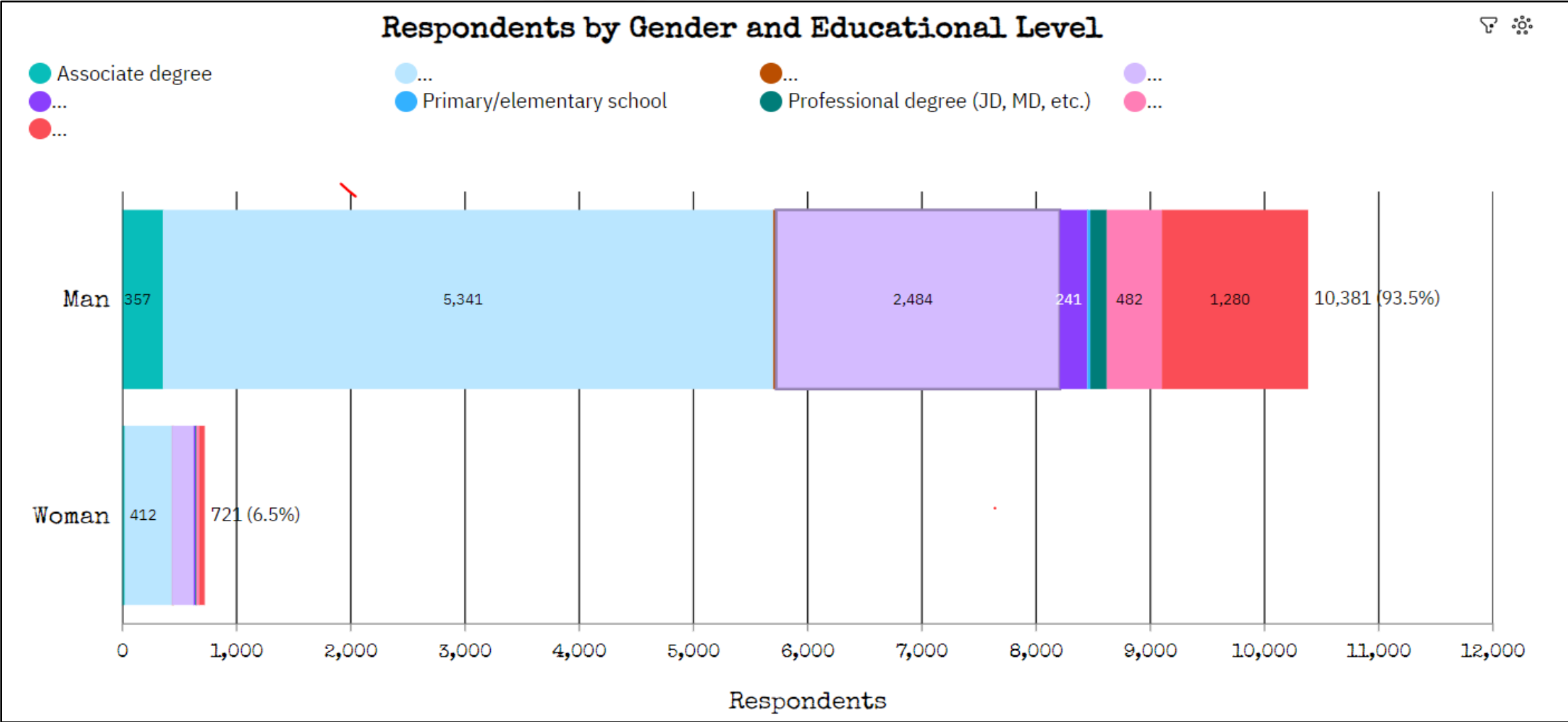
# JOB POSTINGS FOR US LOCATIONS



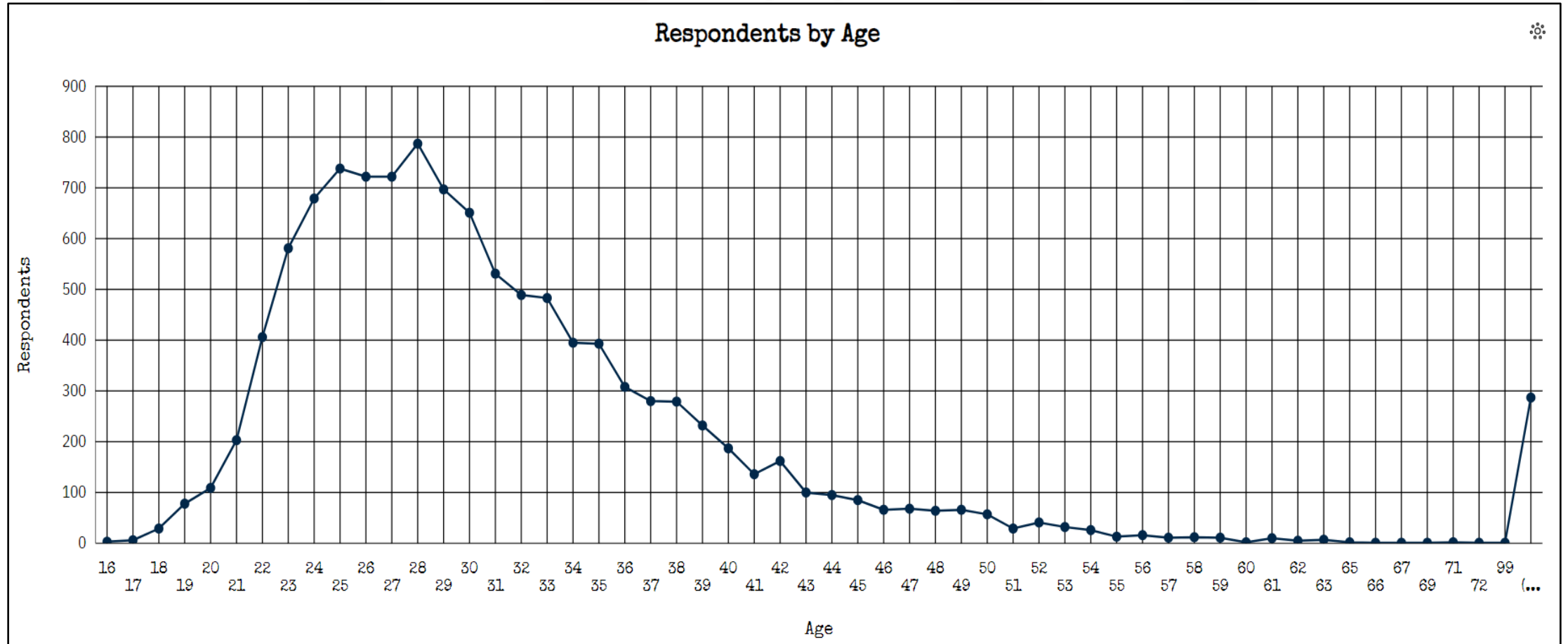
# AVERAGE ANNUAL SALARY PER POPULAR PROGRAMMING LANGUAGES



# RESPONDENTS BY GENDER AND ED.LEVEL



# RESPONDENTS BY AGE



# RESPONDENTS BY COUNTRY OF ORIGIN

