Capstone Project Presentation

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OUTLINE

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- Methodology
- Results
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EXECUTIVE SUMMARY

This presentation summarizes an analysis of key findings from the 2019 Stack Overflow Developer Survey.

- Most popular languages, databases, and webframes
- Predictions of which technologies will be most popular in the future
- Demographic information

These findings are relevant to:

- Current/aspiring developers
- Recruiters
- Educators
- Policy makers

INTRODUCTION

- Since 2011, Stack Overflow has conducted their Annual Developer Survey
- The primary objective each year is to track technology usage and trends among developers
- I've examined a subset of the 2019 dataset
  - Presentation dataset: N = 11, 398
  - Original dataset N ≈ 90,000
- Target Audience
  - Current/aspiring developers
  - HR professionals
  - Educators
  - Policy makers

METHODOLOGY

Data Source

- 2019 Stack Overflow Developer Survey
- Link to Stack Overflow's annual survey data and results

Data Wrangling

- I cleaned a subset of the original dataset using Python's pandas library and SQL
  - Duplicate removal, data imputation, and data normalization
  - Link to the subset used

Analysis & Visualization

- Analysis and visualization were conducted using Python and Cognos
  - Languages, databases, and webframes used in 2019
  - Languages, databases, and webframes most desired in the future
  - Demographic information

RESULTS

Descriptive statistic computation

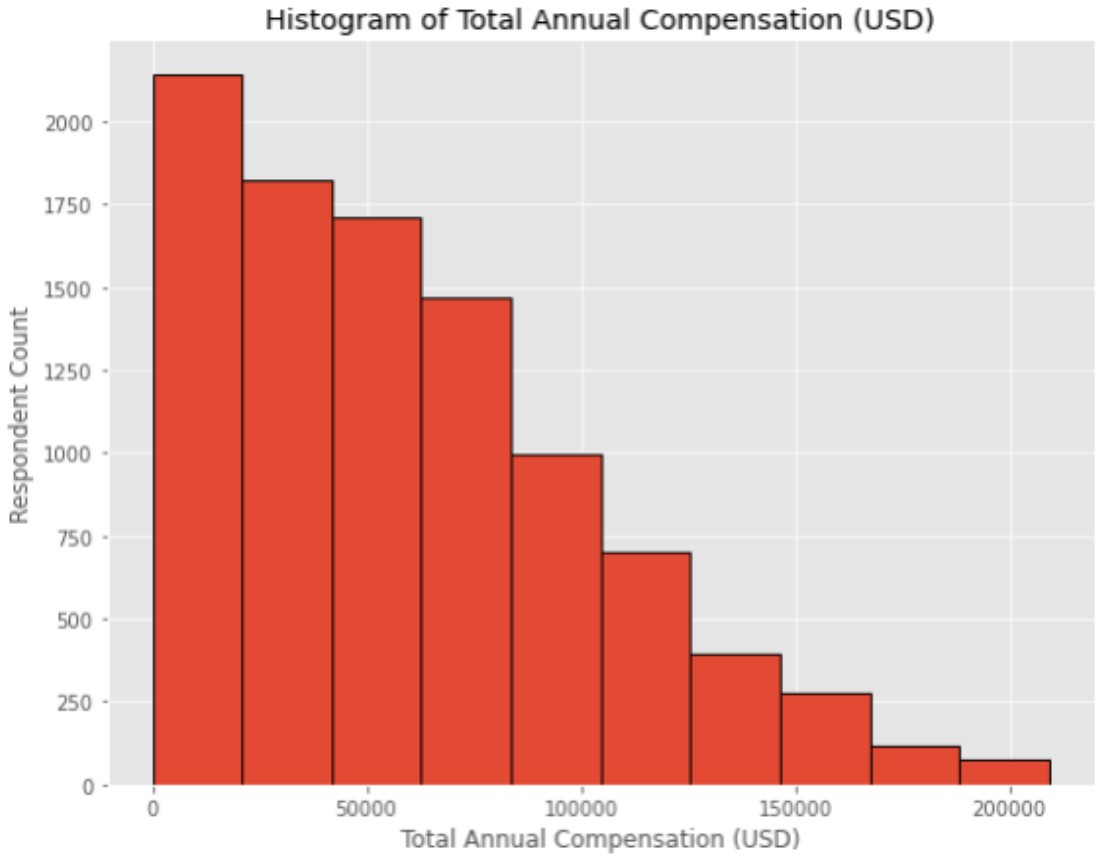
- Demographic information
- Total annual compensation

Sample size after removing compensation outliers

- Before: N = 11,398
- After: N = 10,519

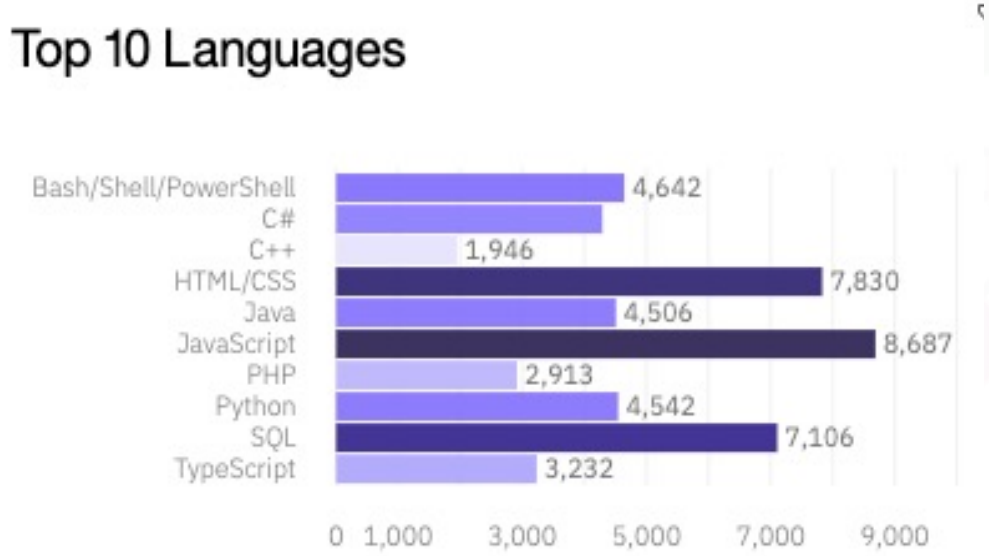
Respondent statistics

- Median age: 29
  - 93.5% male
  - 6.5% female
- Median compensation: $52,704 USD/yr
  - Women: $54,956
  - Men: $52,339

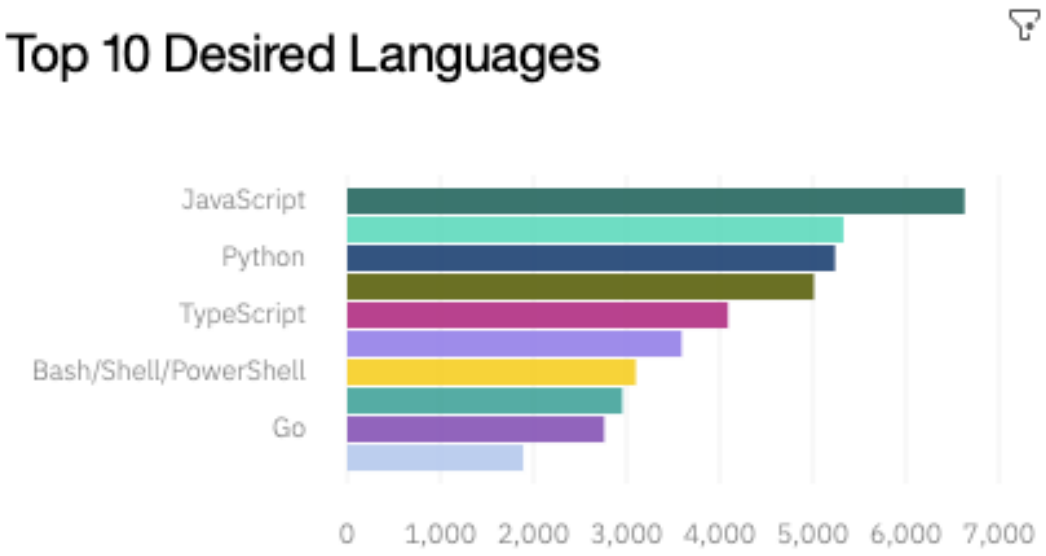


PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS

Findings

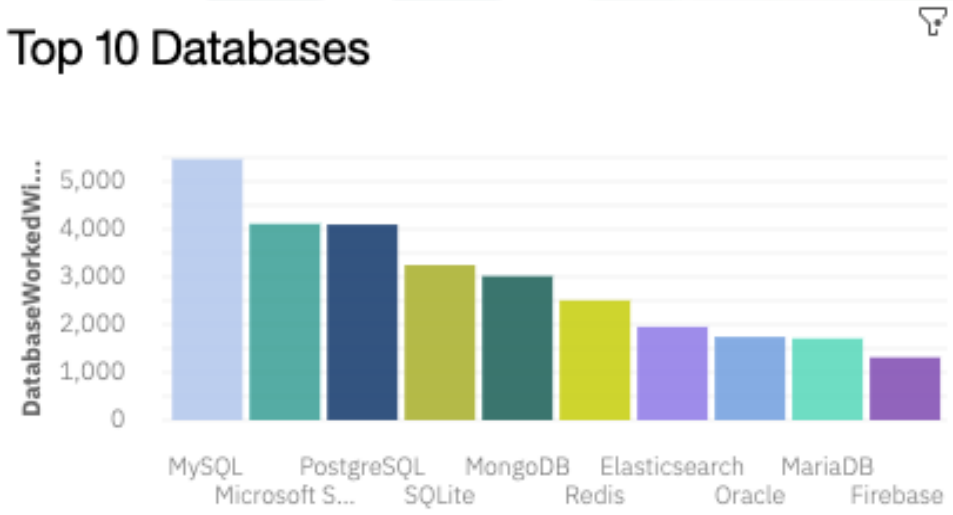
- The most popular languages in 2019
  - Javascript, HTML/CSS, and SQL
  - Both are forecasted to retain popularity
- Languages with increasing interest
  - Python and TypeScript.
- Languages with decreasing interest
  - PowerShell/Bash

Implications

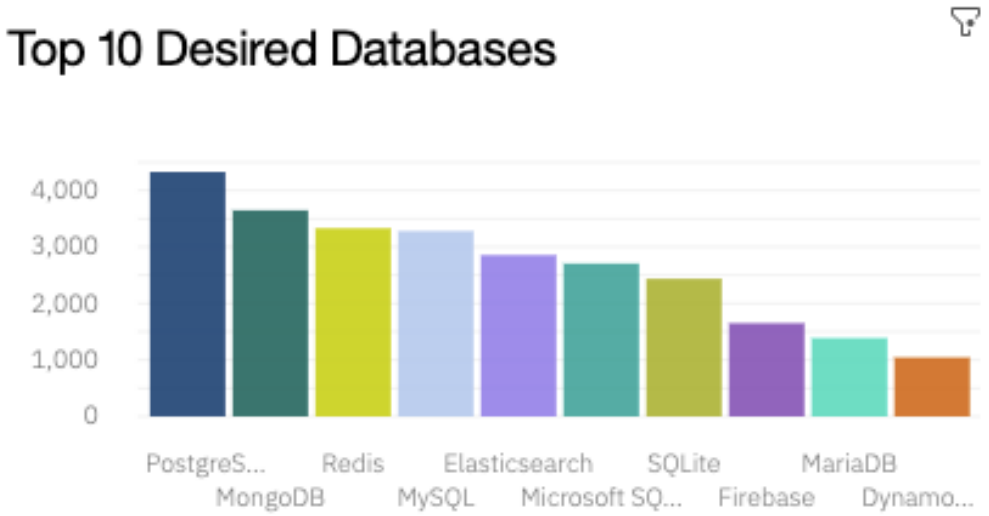
- Web development is in high demand
  - Javascript and HTML/CSS will remain the most popular languages
  - TypeScript is growing in popularity and will soon be a big player
- SQL remains the preferred language for relational database management
  - Big data storage and querying
- The rise of Python suggests industry changes
  - Growth of artificial intelligence and machine learning

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS

Findings

- The most popular databases in 2019
  - SQL databases were the most popular
  - MySQL and Microsoft SQL Server
- Databases gaining popularity
  - PostgreSQL and MongoDB
- Interest in Elasticsearch is increasing

Implications

- Increasing developer preference toward open-source database programs
  - PostgreSQL and MySQL
- Increasing popularity of NoSQL databases
  - Suggests a growing use of nonrelational/unstructured data
  - Data analysts should become familiar with NoSQL in addition to SQL database programs

DASHBOARD

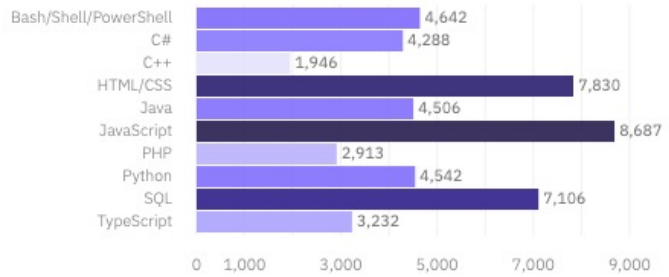
Link to Dashboard

Static screenshots of the dashboard are shown in the next three slides

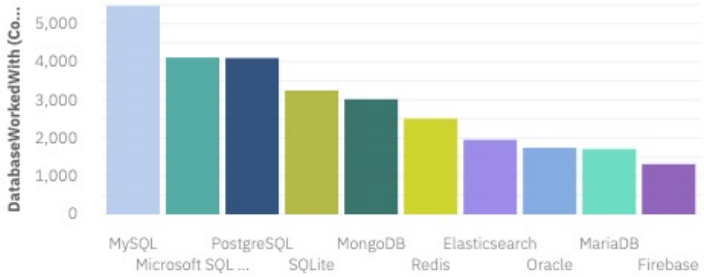
CURRENT TECHNOLOGY USAGE

Current Technology Usage | Future Technology Trend | Demographics

Top 10 Languages

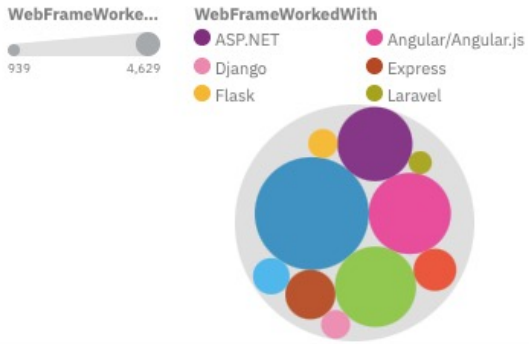


Top 10 Databases



Platforms Worked With

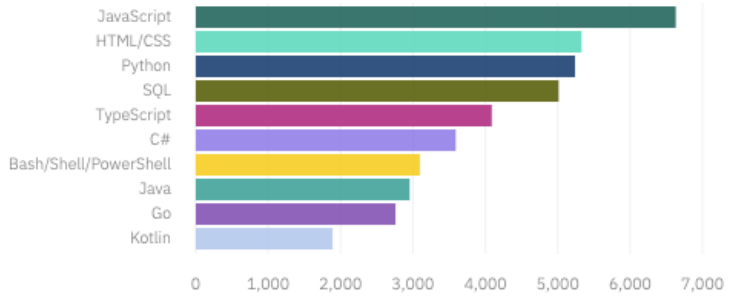
WebFrames Worked With



FUTURE TECHNOLOGY TREND

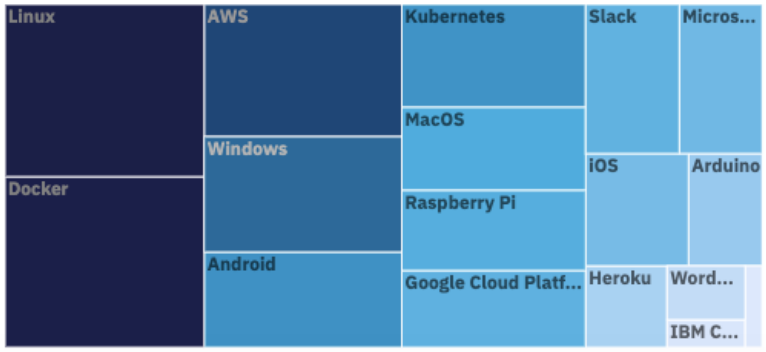
Current Technology Usage | Future Technology Trend | Demographics

Top 10 Desired Languages

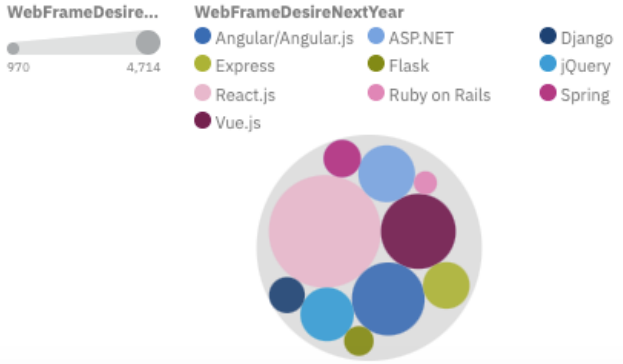


Top 10 Desired Databases

Desired Platforms



Top 10 Desired Webframes



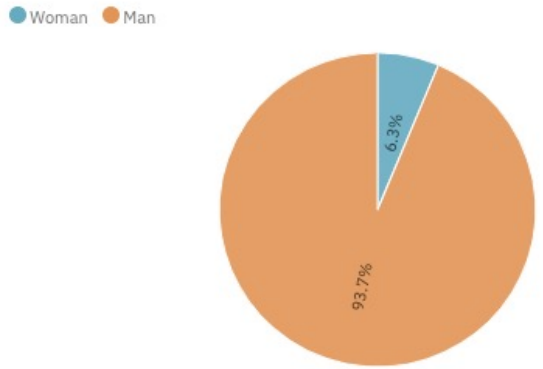
IBM Developer

SKILLS NETWORK

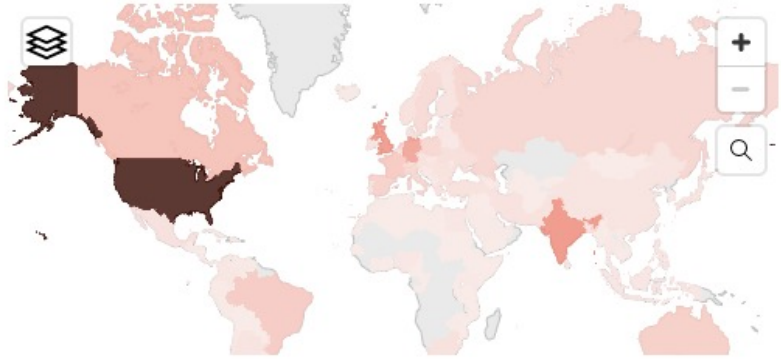
DEMOGRAPHICS

Current Technology Usage | Future Technology Trend | Demographics

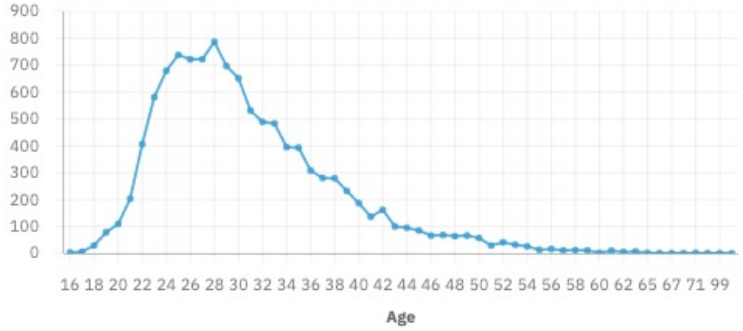
Gender of Respondents



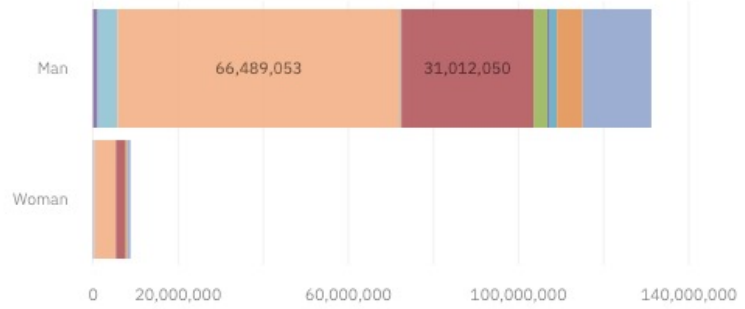
Countries of Respondents



Age of Respondents



Education Level of Respondents



DISCUSSION

Questions:

- What languages and databases have the highest demand?
- What technologies should aspiring professionals be learning?
- What tools should be included in the curriculum for degree programs to best prepare aspiring developers?
- What is the distribution of annual compensation?
- Is there a gender representation gap?

OVERALL FINDINGS AND IMPLICATIONS

Findings

- Javascript and HTML/CSS remain popular
  - Increasing interest in Python and TypeScript should be considered by aspiring developers
- High usage of SQL
  - MySQL is currently the most popular
  - PostgreSQL is gaining interest and is the most desired database for future use
- NoSQL databases are gaining popularity
- There's a severe gender representation gap
  - In favor of men, even though median compensation is higher for women

Implications

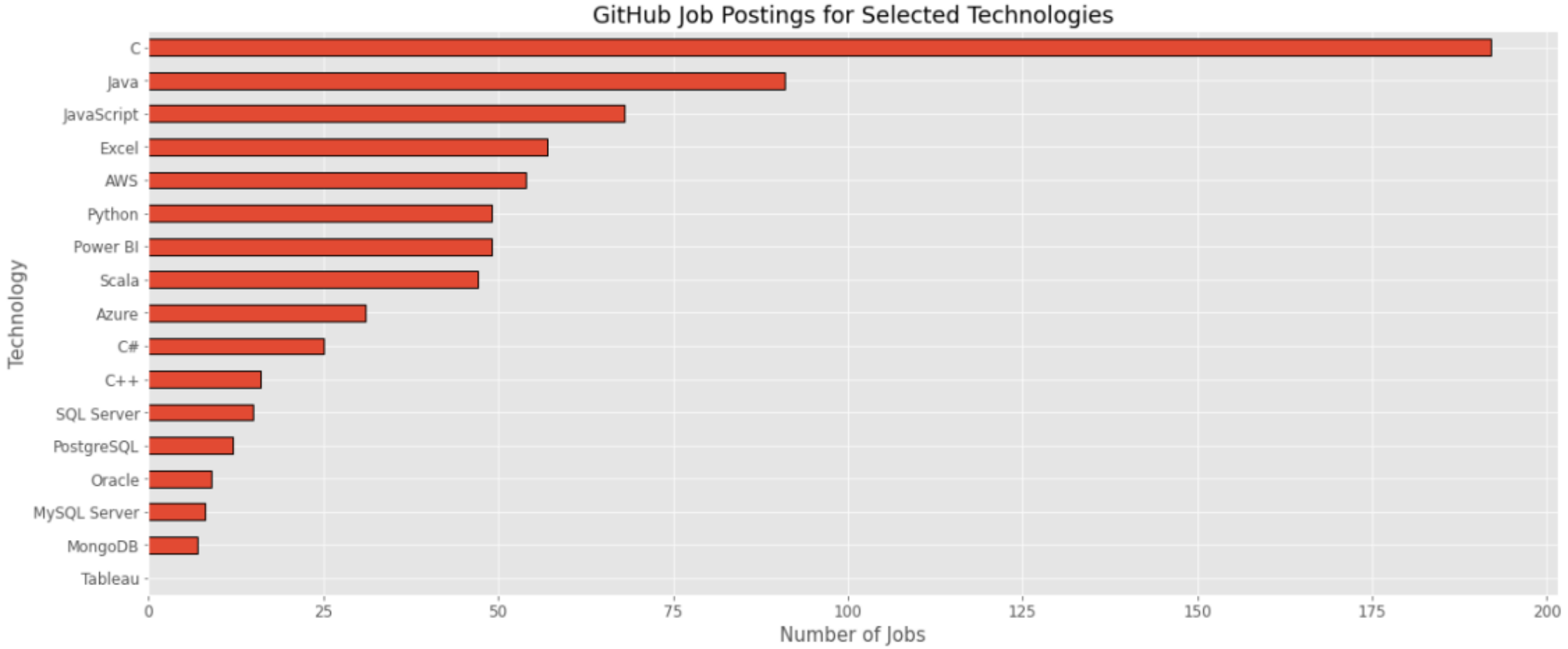
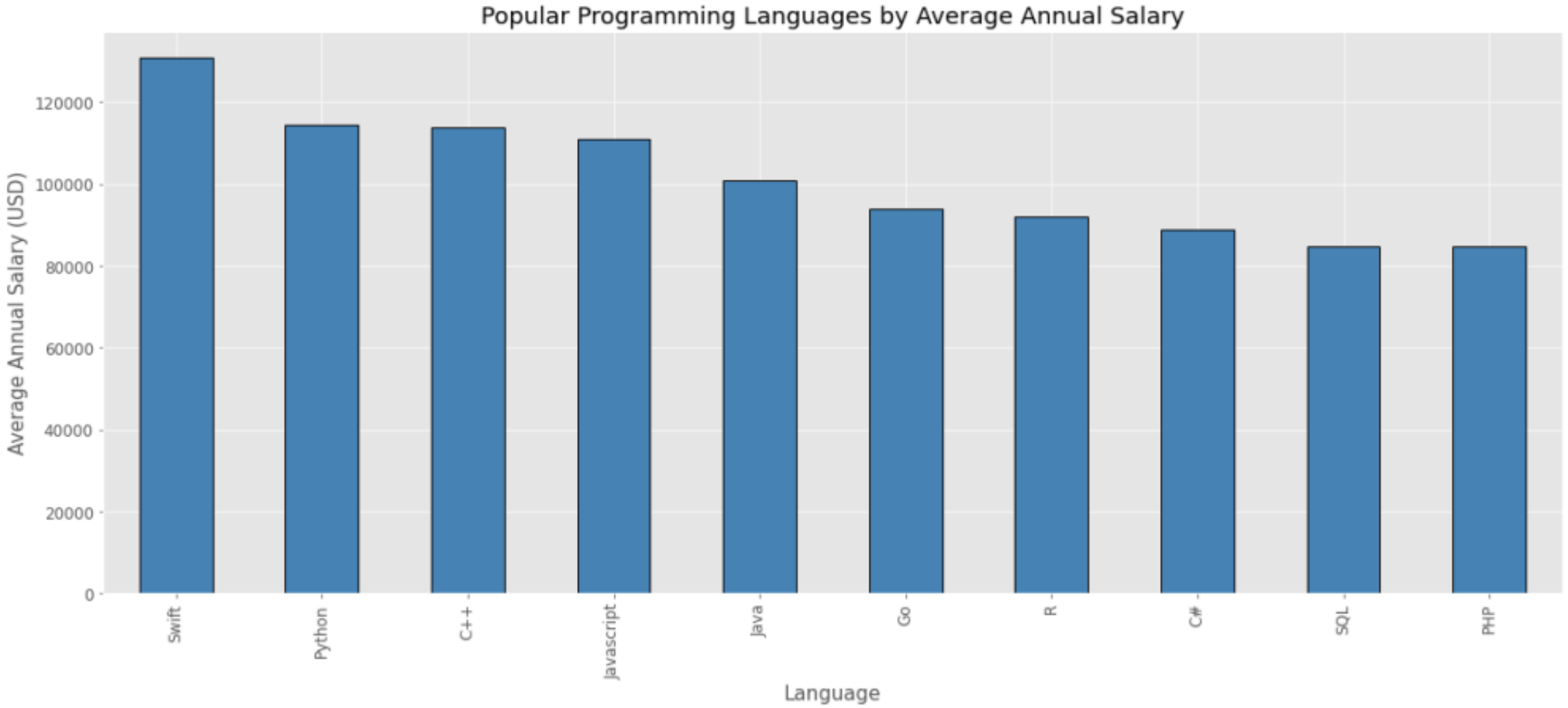
- Web development is still in high demand
  - Current/aspiring developers may want to learn TypeScript
- Data professionals should continue to enhance SQL competence
  - Growing need to handle big data, artificial intelligence, and machine learning
- Businesses will need to adapt to changing technology preferences
  - Strategic planning with technology trends in minds
- The gender representation gap is an issue that will require a large-scale solution
  - Policy makers, educators, and organizations will need to work to boost the prevalence of women in STEM

CONCLUSION

The findings of this analysis provide insight into the languages and databases most used developers and forecasts of trends in future usage.

These insights are relevant for current/aspiring developers looking to develop a competitive advantage, businesses looking to acquire talent, and those looking for educational opportunities to provide to women targeting a career in STEM.

JOB POSTINGS



POPULAR LANGUAGES