



Analyzing Stack Overflow Developer Survey 2019

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OUTLINE



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EXECUTIVE SUMMARY



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

- Skills needed in the field of IT are always changing and evolving.
- It is crucial to keep learning and updating your skill to keep the pace with ever-changing technologies.
- There is still a big gap between gender among developers.

INTRODUCTION



- Stack Overflow's annual Developer Survey is the largest and most comprehensive survey of people who code around the world
- The primary objective of the annual surveys is to gather data regarding technology usage and trends among developers.
- Since this randomized subset contains around 1/10th of the original data set. Any conclusions drawn after analyzing this subset may not reflect the real world scenario.
- The results don't represent everyone in the developer community evenly.

METHODOLOGY



- The dataset you are going to use in this assignment comes from the following source: <https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey-results-are-in/> under a ODbL: Open Database License.
- Using a subset contains around 1/10th of the original data set (about 11,398 rows)
- Data Wrangling: loaded and cleaned using SQL and Python's pandas library, such as:
 - Removing duplicates
 - Imputing missing values
 - Normalizing data
- Analysis & Visualization: EDA and data visualization were conducted using various Python libraries and Cognos Dashboard Embedded(CDE).

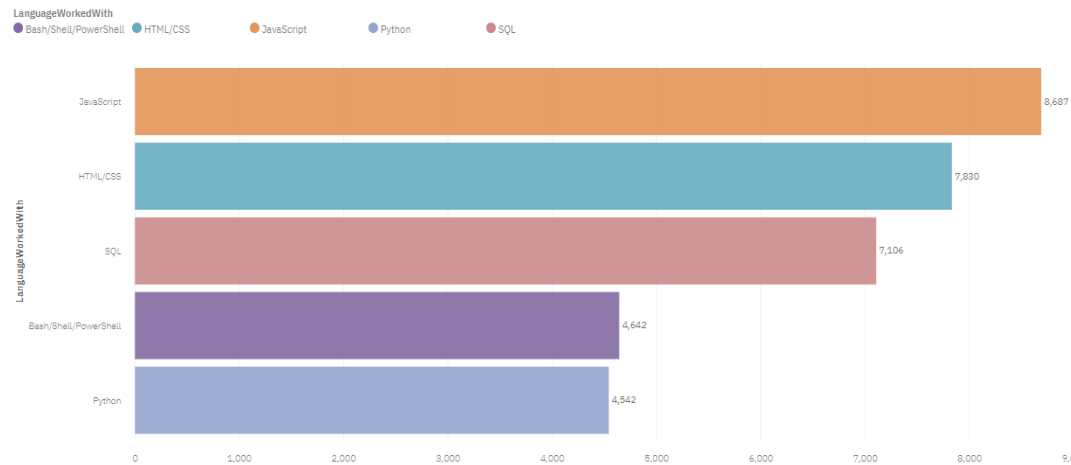
RESULTS

- Over half of respondents had written their first line of code by the time they were sixteen, although this experience varies by country and by gender.
- DevOps specialists and site reliability engineers are among the highest paid, most experienced developers most satisfied with their jobs, and are looking for new jobs at the lowest levels.
- About 50% of respondents identify as full-stack developers , and about 17% consider themselves mobile developers.
- The respondents had a median age of 29, and were predominantly male

PROGRAMMING LANGUAGE TRENDS

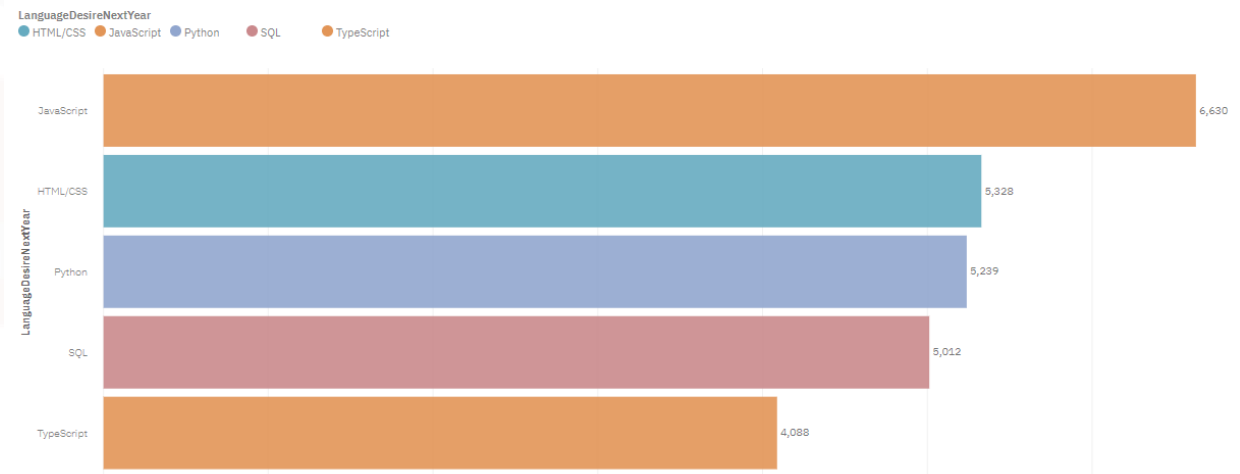
Current Year

Top 5 Languages for The Current Year (2019)



Next Year

Top 5 Languages Desire Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript is the most commonly used programming language.
- JavaScript is the most desired language next year.
- Python is the 3rd most desired language next year
- Decreasing interest in PowerShell/Bash

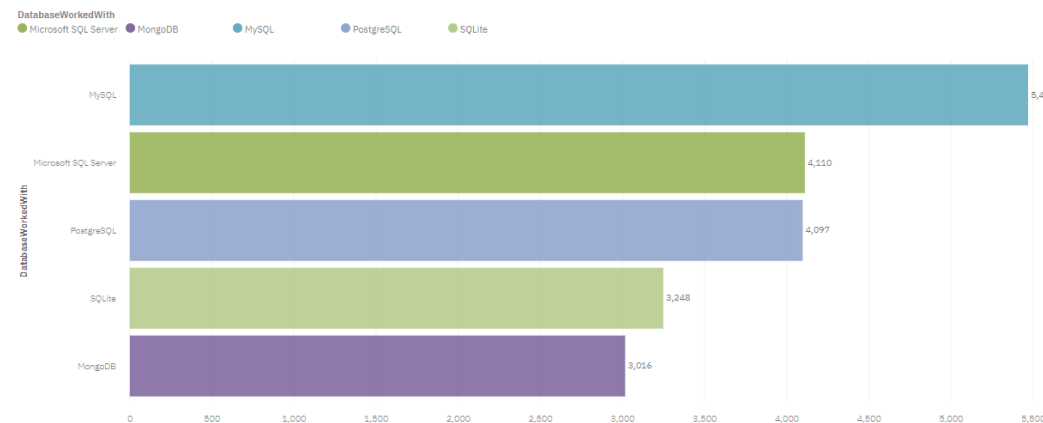
Implications

- Web development is still in high demand, and Javascript and HTML/CSS remain the dominant languages
- SQL remains the preferred language for big data storage and querying
- Python is the fastest-growing major programming language today.

DATABASE TRENDS

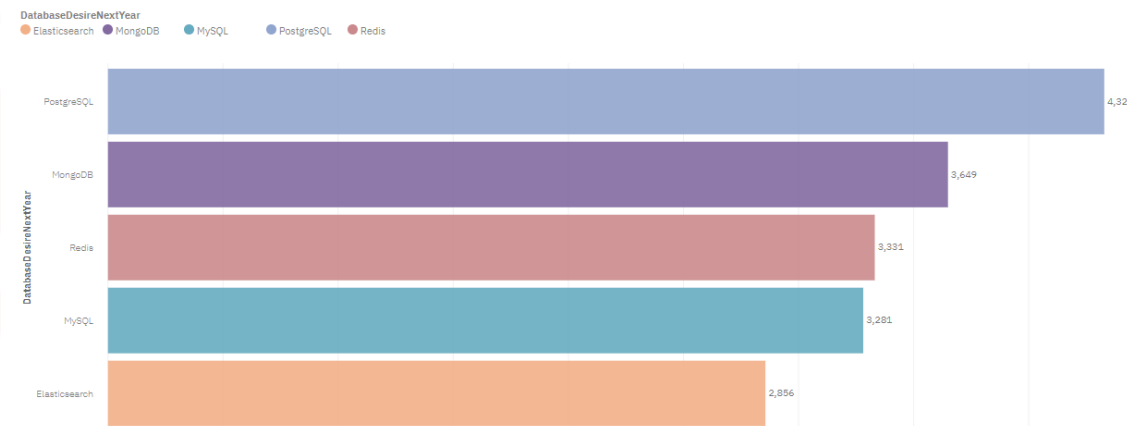
Current Year

Top 5 Databases for Current Year (2019)



Next Year

Top 5 Databases Desire Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is the most commonly used database
- PostgreSQL, MongoDB and Redis is three the most desired language for next year respectively.
- MongoDB was popular in 2019 and gaining interest.
- Microsoft SQL Server doesn't make it to Top 5 Language Desire Next Year

Implications

- PostgreSQL is the most loved database, meaning that proportionally more developers want to continue working with it than any other database.
- There appears to be increasing developer preference toward open-source database programs
- NoSQL database programs are gaining popularity, which likely reflects a growing need to handle nonrelational and unstructured data.

DASHBOARD

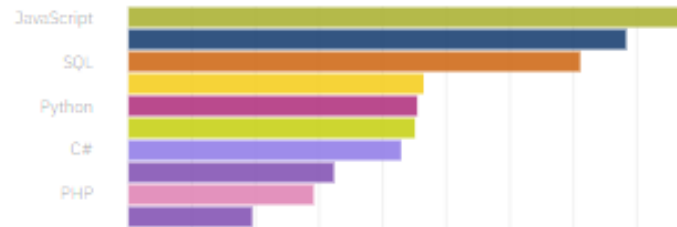


The following link contains interactive Cognos dashboard summarizing
(a)current technology use
(b)future technology trend, and
(c)demographics of the survey respondents:

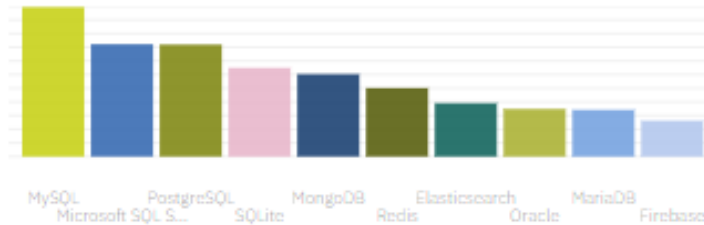
[IBM Cloud Pak for Data](#)

DASHBOARD TAB 1

Top 10 Languages Worked With in 2019



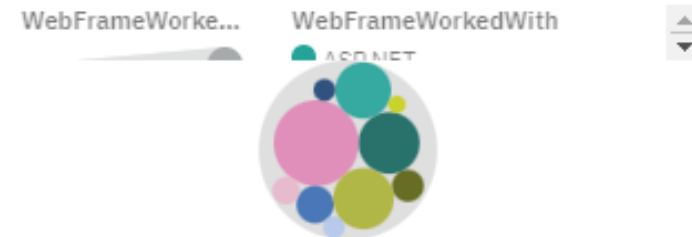
Top 10 Database Worked With in 2019



Platform Worked With in 2019

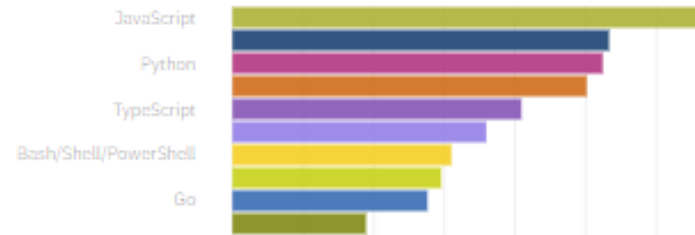


Top 10 Web Frame Worked With in 2019

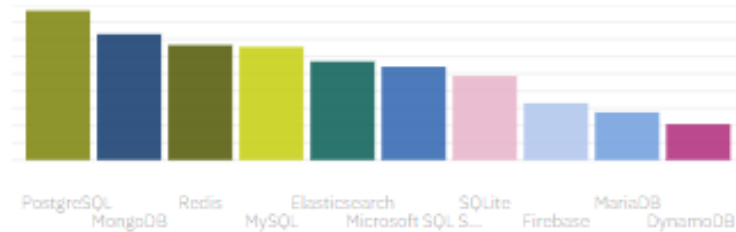


DASHBOARD TAB 2

Top 10 Language Desire Next Year (from 2019)



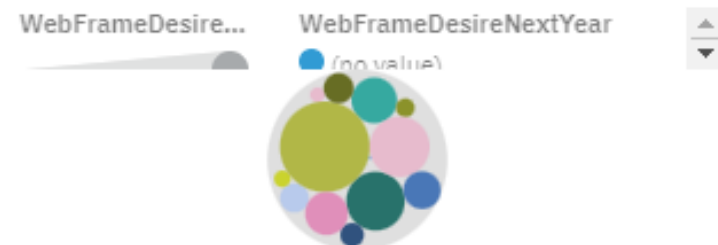
Top 10 Database Desire Next Year (from 2019)



Platform Desire Next Year (from 2019)



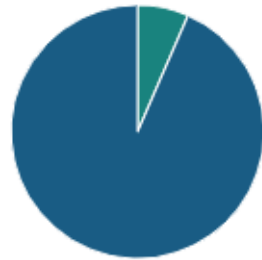
Top 10 Web Frame Desire Next Year (from 2019)



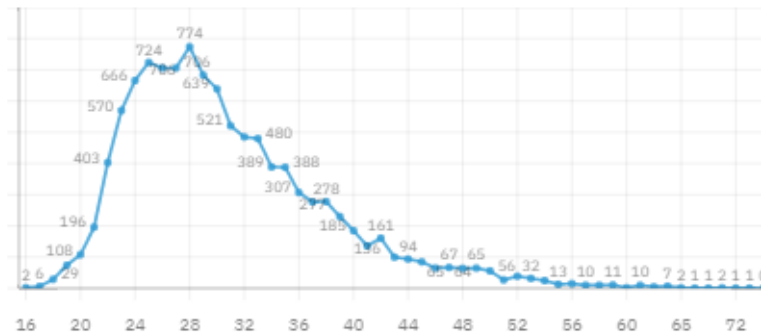
DASHBOARD TAB 3

Respondent's Gender

Gender
● Woman ● Man

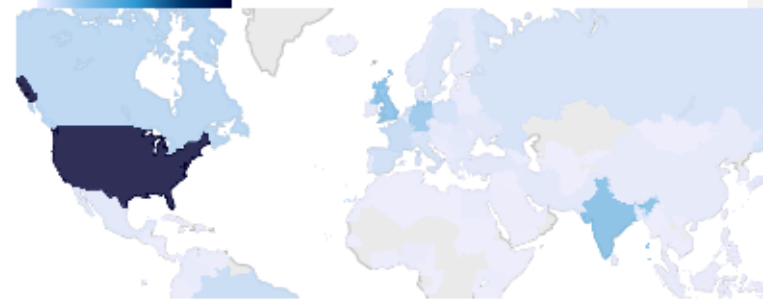


Respondent Count by Age.



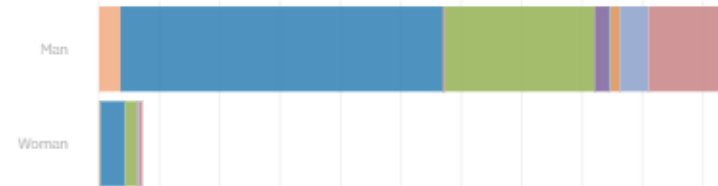
Respondent Count for Countries

Country (Count)



Respondent Count by Gender, classified by Formal Education Level

EdLevel
● (no value)
● Associate degree



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

- High usage and interest in Javascript and HTML/CSS remain high usage. There's also increasing interest in Typescript.
- MySQL had the highest usage in 2019, but PostgreSQL is gaining interest and was the overall most desired database program for the next year
- There are about 93% of respondents are men.
- Age has the highest positive correlation with ConvertedComp
- About three-fourths of professional developer respondents have the equivalent of a bachelor's degree or higher.

Implications

- Web development is still in high demand. Current and prospective developers may consider picking up Typescript in addition to Javascript and HTML/CSS.
- With the growing need to handle big data and perform AI and ML work, data professionals should continue to enhance SQL competence but also enhance competence with NoSQL database programs and Python.
- Businesses need to adapt to changing technology preferences, especially in terms of talent acquisition and development.
- It seems like it's easier to be hired as professional developer when you have a degree but also it is not rare to find accomplished professional developers who have not completed a degree.

CONCLUSION



- Python, the fastest-growing major programming language, has risen in the ranks of programming languages
- Business can provide a program in place for employees to upgrade their skill.

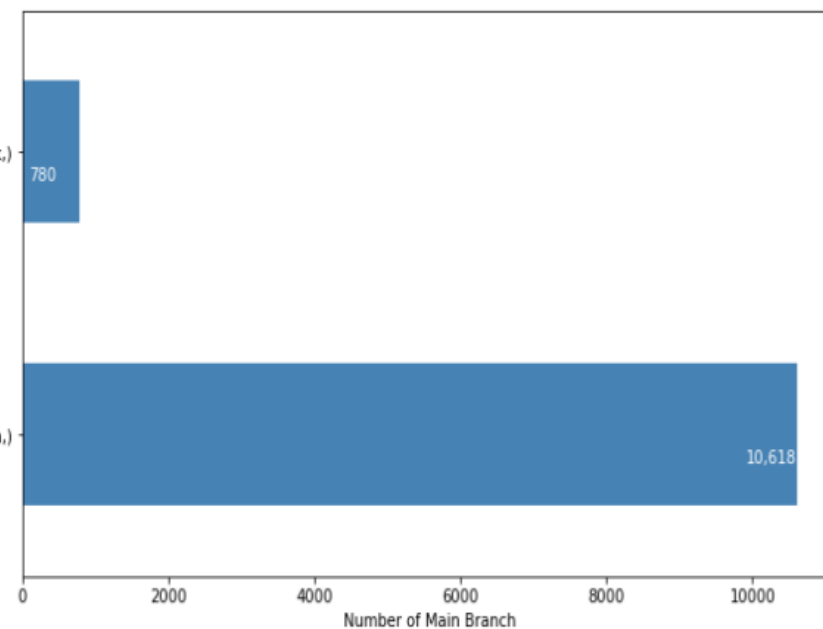
APPENDIX



(I am not primarily a developer, but I write code sometimes as part of my work.)

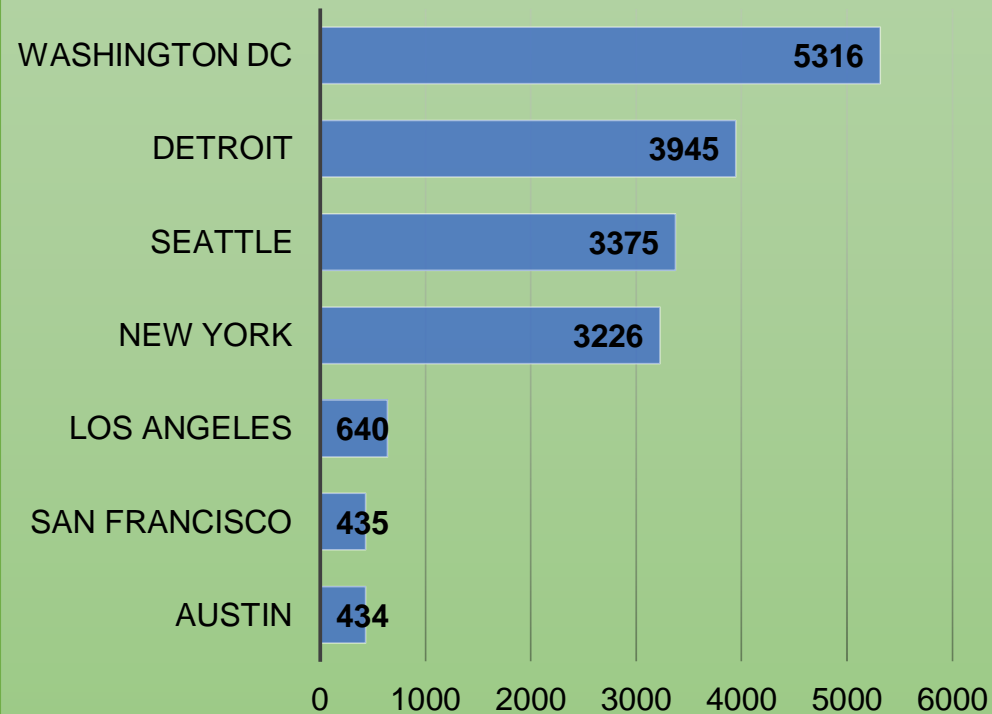
MainBranch

(I am a developer by profession,)

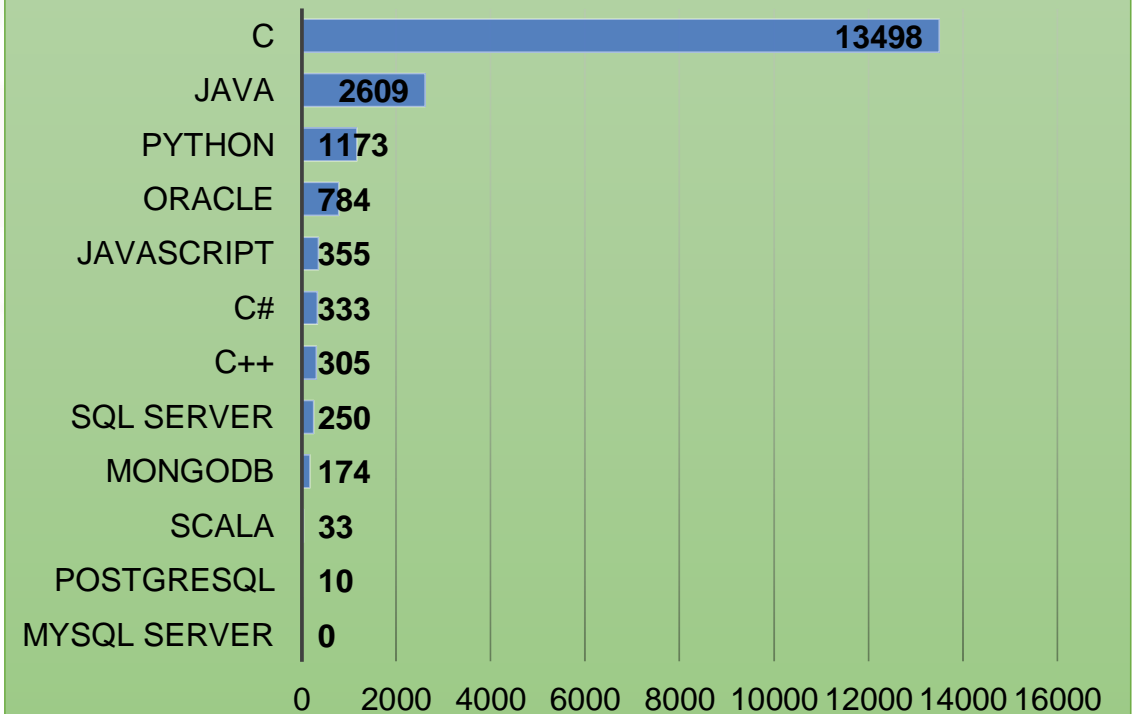


JOB POSTINGS

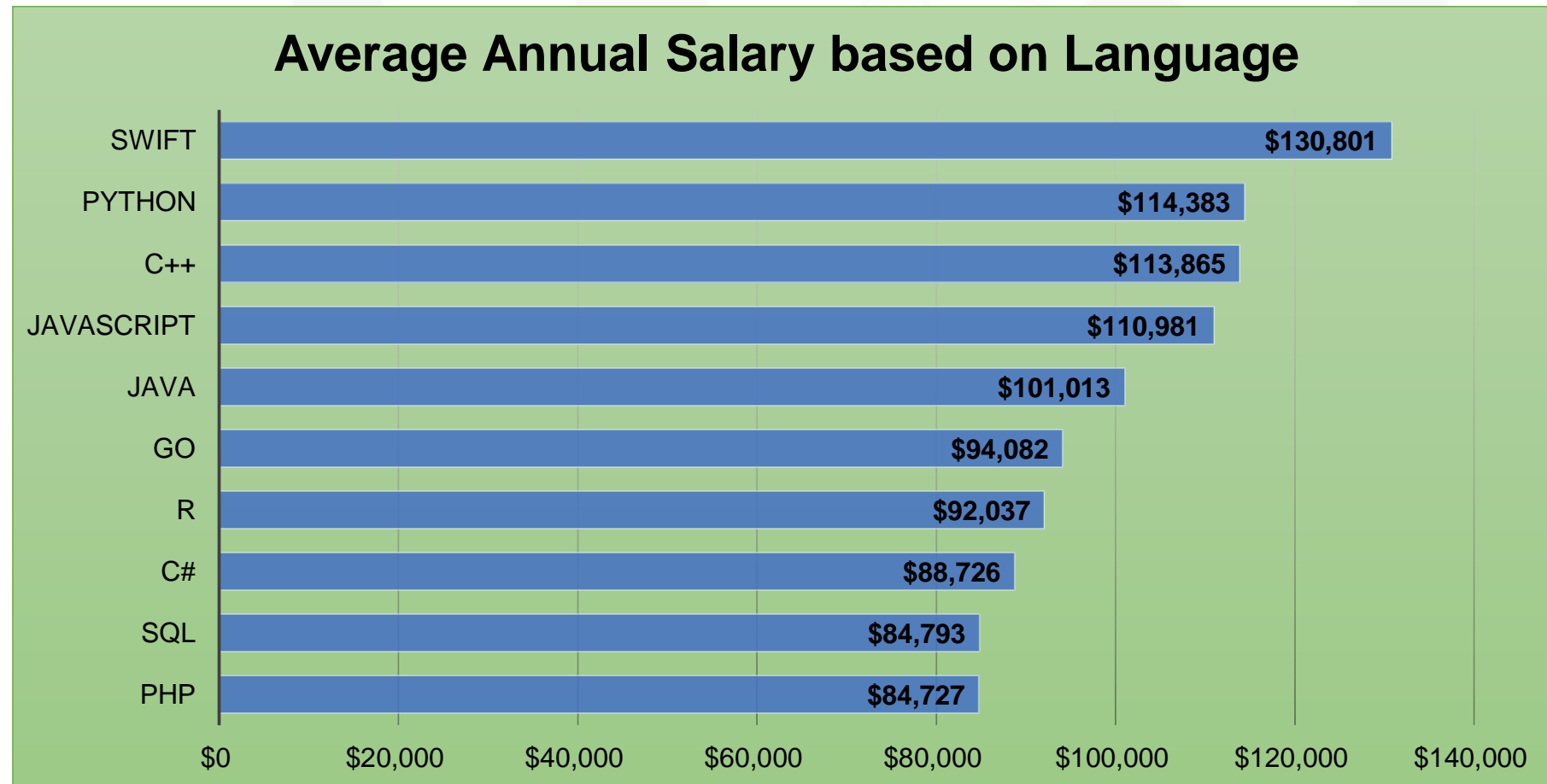
Number of Jobs Postings based on City



Number of Jobs Postings based on technology



POPULAR LANGUAGES



R e s o u r c e

- <https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey-results-are-in/>
- [m5_survey_data_demographics.csv](#)
- [m5_survey_data_technologies_normalised.csv](#).