



Stack Overflow Users Survey – Analysis of responses

Rachel Armstrong
March 2022

OUTLINE

- Executive Summary
- Introduction
- Methodology
- Results
 - Visualization – Charts
 - Dashboard
- Conclusion
- Appendix

EXECUTIVE SUMMARY

- Respondents are usually using older languages and databases
- Respondents would like to be using younger languages and databases
- There is a lack of women who have been professionally coding for more than 35 years
- Women are paid less than men when they have the same number of years of professional coding experience
- Men with more years professional coding experience see a greater increase in compensation than women

INTRODUCTION

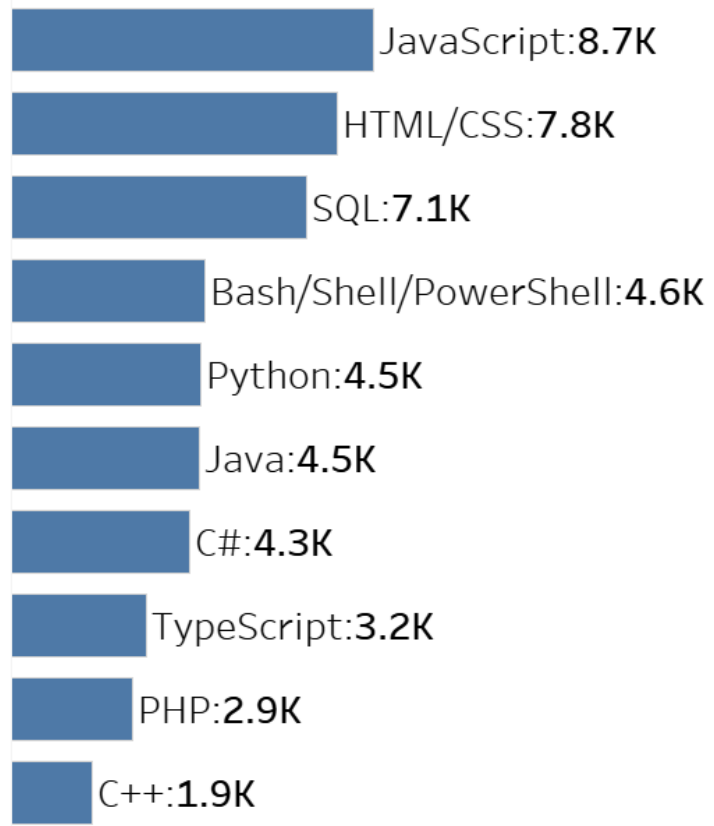
- Stack Overflow conducted an online survey of software professionals across the world and made the results publicly available
- Using a subset of approximately 10% of the original 90,000 responses, see appendix for details
- This report is aimed at people with some knowledge of the professional programming industry
- The author cleaned, explored and visualised the data to identify trends and patterns
- The report aims to help visualise and explain some of the data within the results
- As only a subset of data has been used, the results may not be representative of the entire industry

METHODOLOGY

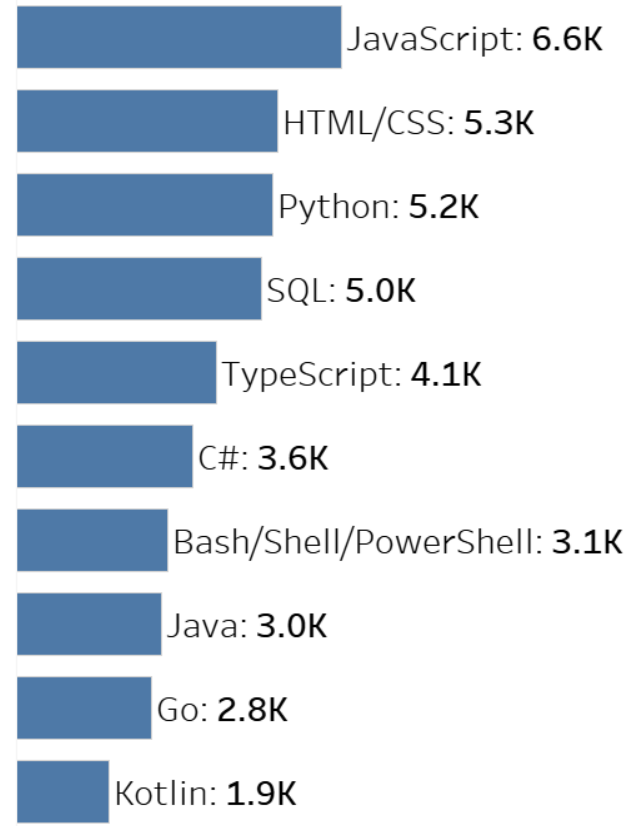
- Data was:
 - Loaded into a python pandas dataframe from an online data source, see appendix for URL
 - Cleaned by:
 - Removing duplicates
 - Removing or imputing missing values
 - Explored using pandas
 - Visualised using Tableau Public

PROGRAMMING LANGUAGE TRENDS

Languages that respondents are **currently** using



Languages that respondents would like to use **next year**



PROGRAMMING LANGUAGE TRENDS

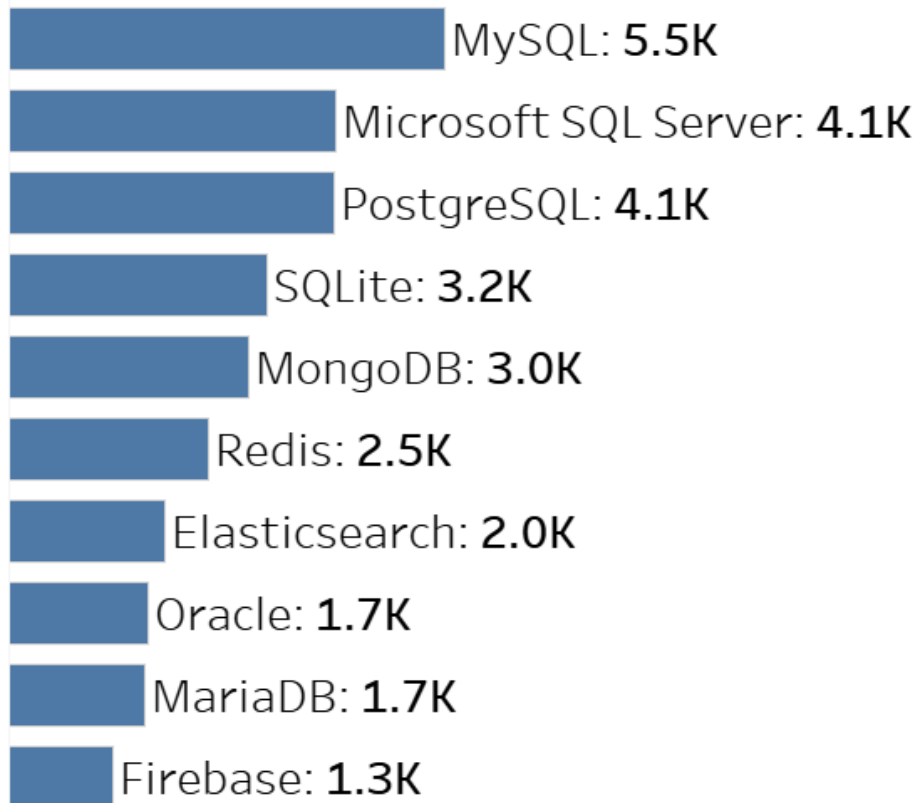
Language	Initial release (newest first)	Ranking change	
Typescript	2012	▲	+3
Kotlin	2011	▲	+1
Go	2009	▲	+2
C#	2000	▲	+1
Javascript	1995	—	0
Java	1995	▼	-2
PHP	1994	▼	-2
HTML/CSS	1993	—	0
Python	1991	▲	+2
Bash/Shell/Powershell	1989	▼	-3
C++	1985	▼	-1
SQL	1974	▼	-1

Implications

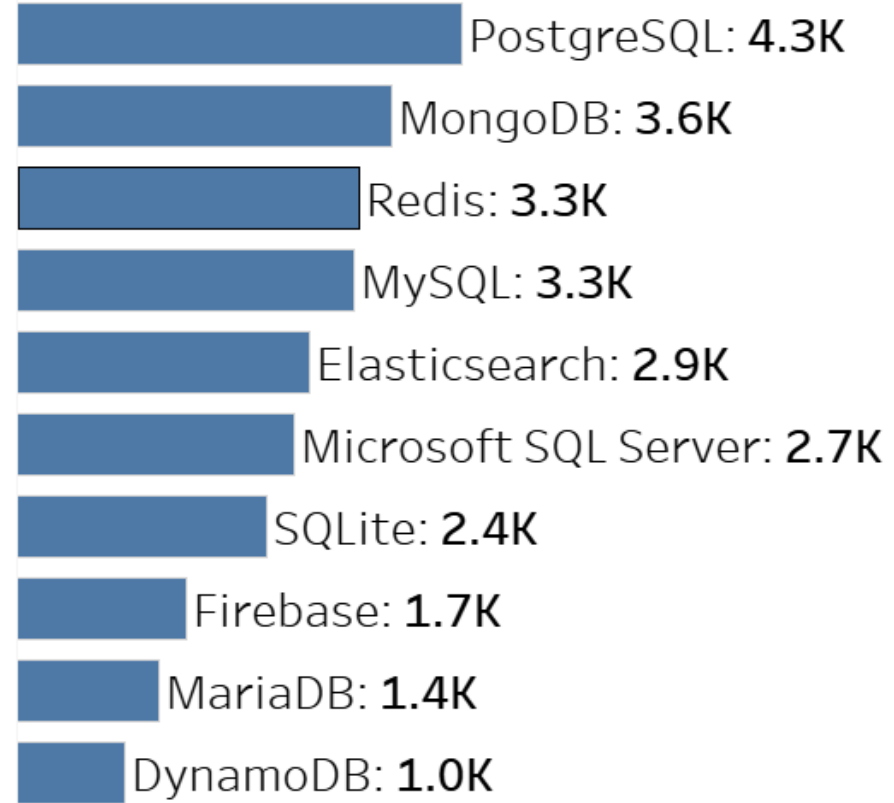
- Older languages more likely to be currently used
- Newer languages more likely to be desired by respondents
- **Python** is an exception being an old language that respondents want to use more than they currently are

DATABASE TRENDS

Databases that respondents are **currently** using



Databases that respondents would like to use **next year**



DATABASE TRENDS

Findings

Database	Initial release (newest first)	Ranking change
Firebase	2011	▲ +2
Elasticsearch	2010	▲ +2
MongoDB	2009	▲ +3
Redis	2009	▲ +3
MariaDB	2009	— 0
SQLite	2000	▼ -3
PostgreSQL	1996	▲ +2
MySQL	1995	▼ -3
Microsoft SQL Server	1989	▼ -4
Oracle	1979	▼ -3

Implications

- Older databases more likely to be currently used
- Newer databases more likely to be desired by respondents
- **PostgreSQL** is an exception being an old database that respondents want to use more than they currently are

COMPENSATION TRENDS



COMPENSATION TRENDS

- No data for women coding professionally for more than 35 years
- Compensation for men higher than that for women with similar coding experience
- Compensation for men increases more than for women as the respondent gains years of professional coding experience

RESULTS Dashboard

URL: <https://dataplatform.cloud.ibm.com/dashboards/31c0817f-e62e-4d3a-8584-9b04d34af120/view/4f34f90b23be1bc075ddcce4079e2f017a372c5eb1bb8506d68d7b4908622497f3694599c82e4c5bd8150636f3be160a9c>

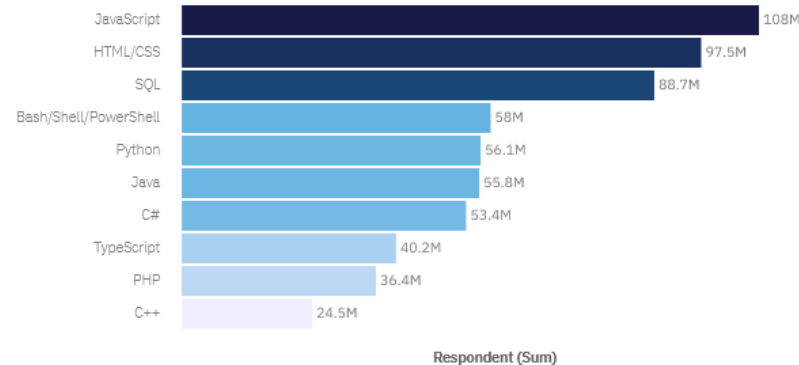
DASHBOARD TAB 1

Current Technology Usage

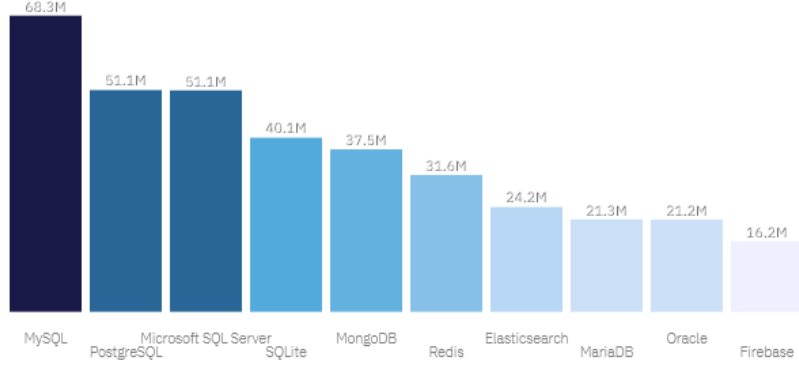
Future Technology Trend

Demographics

Top 10 Current Technologies being used



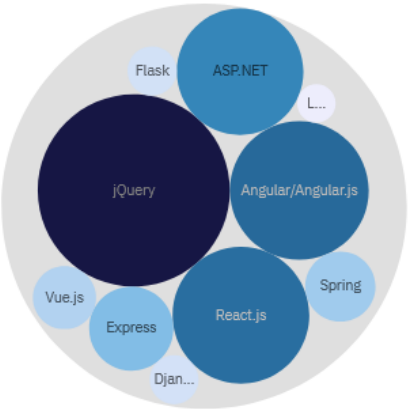
Top 10 Current Databases being used



Current Platforms being used



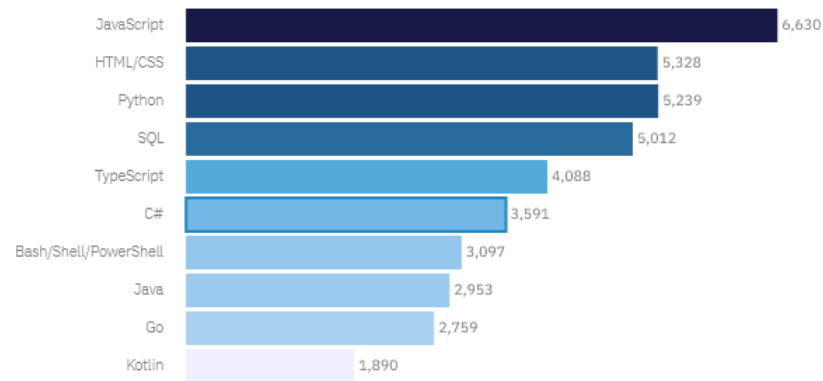
Top 10 Current Web Frames being used



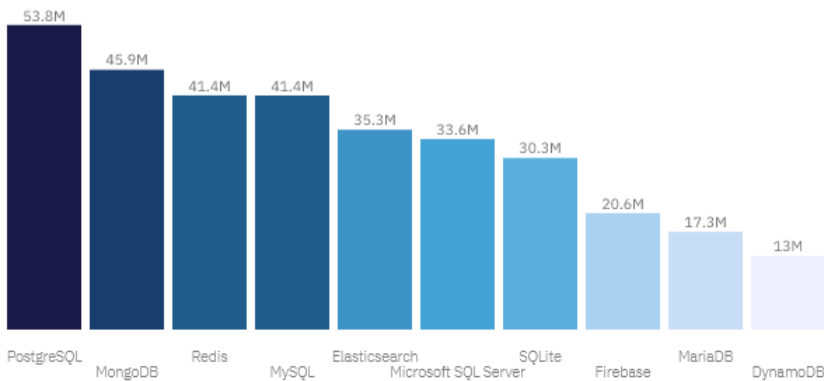
DASHBOARD TAB 2

Current Technology Usage **Future Technology Trend** Demographics

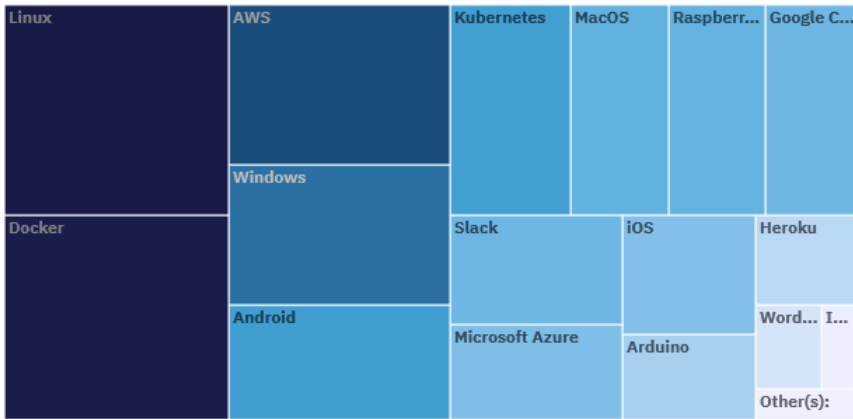
Top 10 Desirable Languages for next year



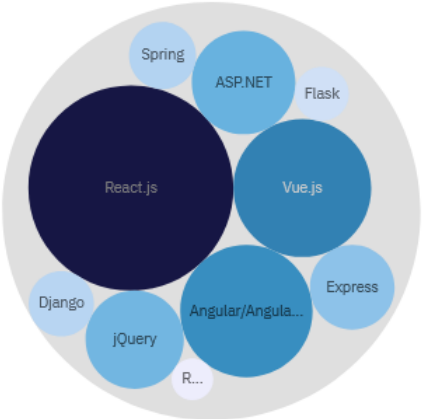
Top 10 Desirable Databases for next year



Top 10 Desirable Platforms for next year



Top 10 Desirable Web Frames for next year



DASHBOARD TAB 3

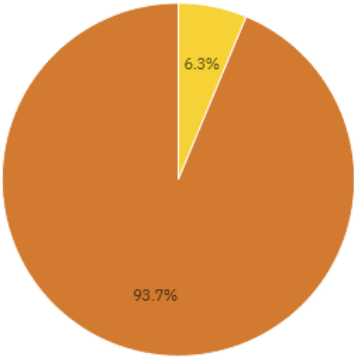
Current Technology Usage

Future Technology Trend

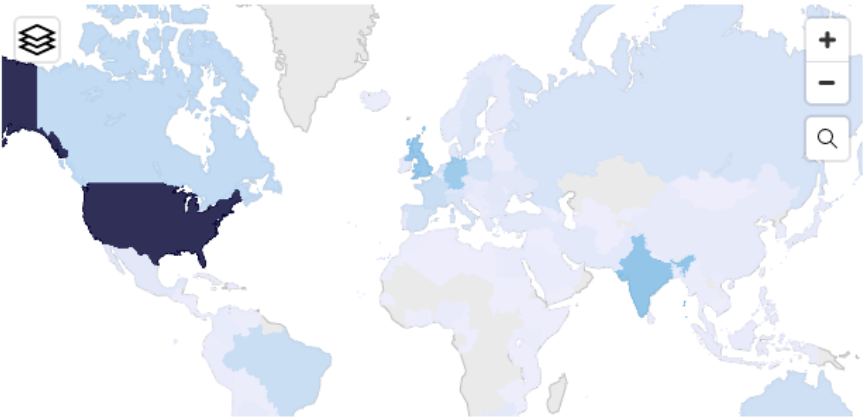
Demographics

Gender of Respondents

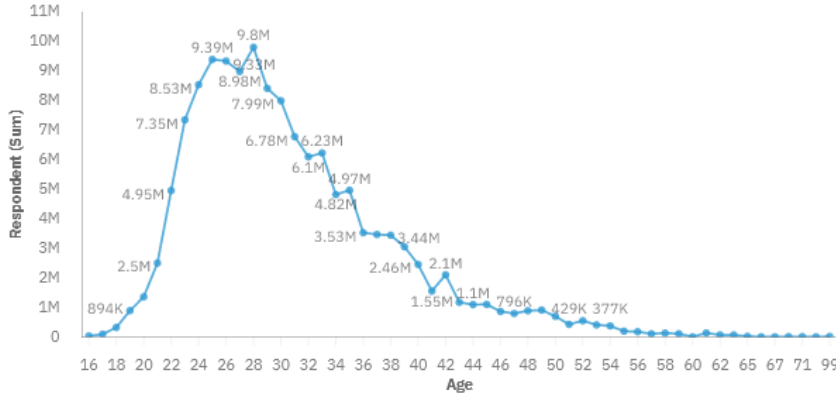
Gender
● Woman ● Man



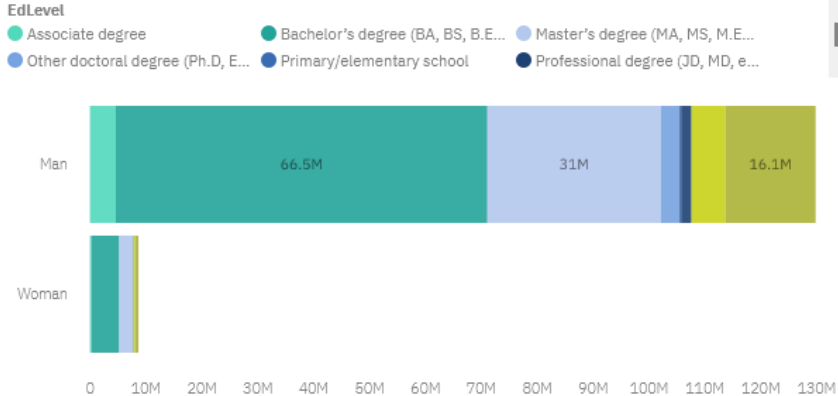
Location of Respondents



Age of Respondents



Gender and Education Level of Respondents



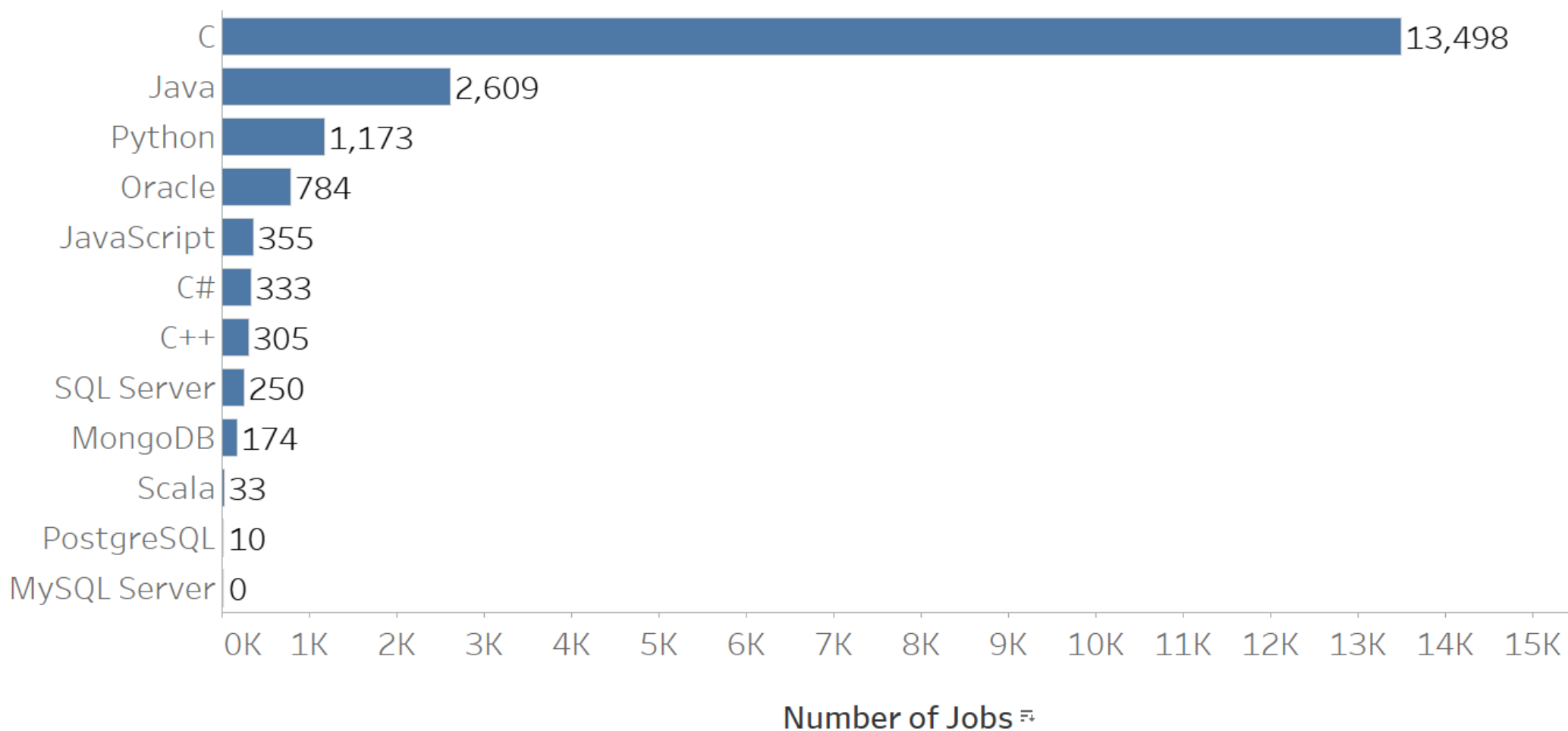
CONCLUSION

- Respondents are usually using older languages and databases
- Respondents would like to be using younger languages and databases
- There is a lack of women who have been professionally coding for more than 35 years
- Women are paid less than men when they have the same number of years of professional coding experience
- Men with more years professional coding experience see a greater increase in compensation than women

APPENDIX

- Original survey data: https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey-results-are-in/?utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=10006555&utm_id=NA-SkillsNetwork-Channel-SkillsNetworkCoursesIBMDA0321ENSkillsNetwork21426264-2021-01-01
- Subset of survey data used in this project: https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m1_survey_data.csv?utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=10006555&utm_id=NA-SkillsNetwork-Channel-SkillsNetworkCoursesIBMDA0321ENSkillsNetwork21426264-2021-01-01

GITHUB JOB POSTINGS



POPULAR LANGUAGES

