IBM Data Analyst Capstone Project

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OUTLINE

- Executive Summary

- Introduction

- Methodology

- Results
  - Programming Language Trends
  - Database Trends
  - Dashboard

- Discussion
  - Findings & Implications

- Conclusion

- Appendix

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EXECUTIVE SUMMARY

- Data collected from a Stack Overflow survey
- Majority of developers are young, male, and from developed countries
- Similar distribution of applications known and wanted to learn in the future
- C+ is the dominant programming language
- Washington DC is premiere tech hub

INTRODUCTION

- Stack Overflow's annual survey is the largest survey for people who code around the entire world

- Over 65,000 respondents for this survey year

- Provides current statistics as well as insight and predictions for the future

- Project Goal:

  - Glean insights on the current and future programming applications which are at the forefront of development

METHODOLOGY

- Collect Survey Data
  - Web scraping job board postings
  - Stack overflow developer survey
- Data wrangling
  - Removing/replacing invalid values was vital
- Exploratory Data Analysis
  - Understand data set and which variables can produce useful information
- Data visualization
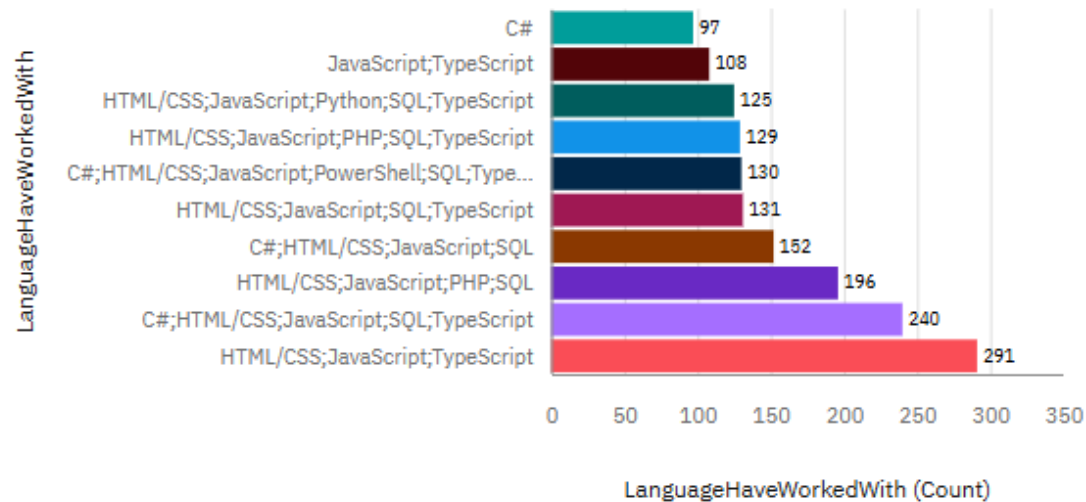 - Produce figures which are more digestible than raw data
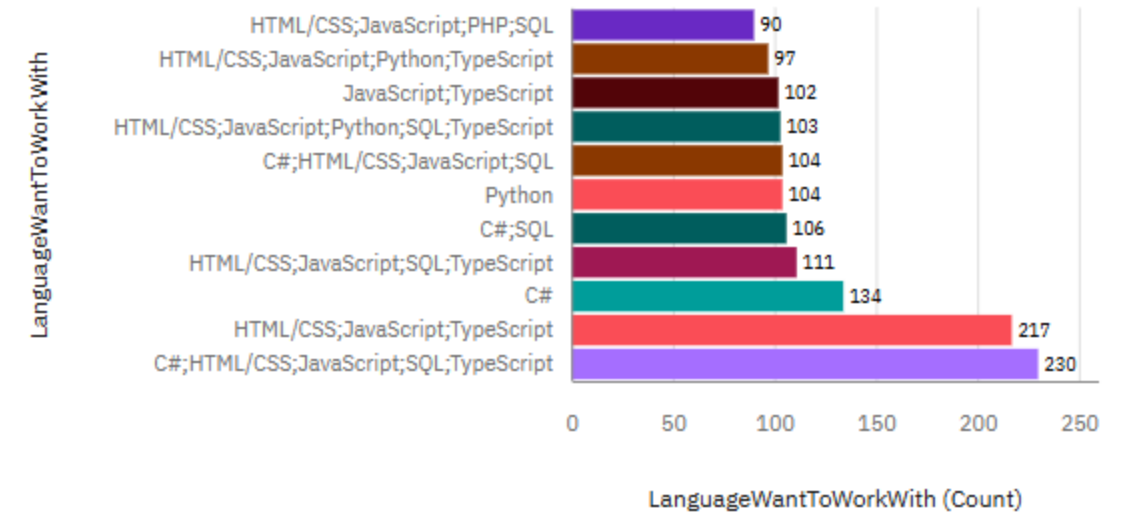
RESULTS

PROGRAMMING LANGUAGE TRENDS

Current Year

Top 10 Languages respondents have worked with

Next Year

Top 10 Languages respondents want to work with

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PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Javascript is a leading language for current year and next year

- High interest in Python for the future
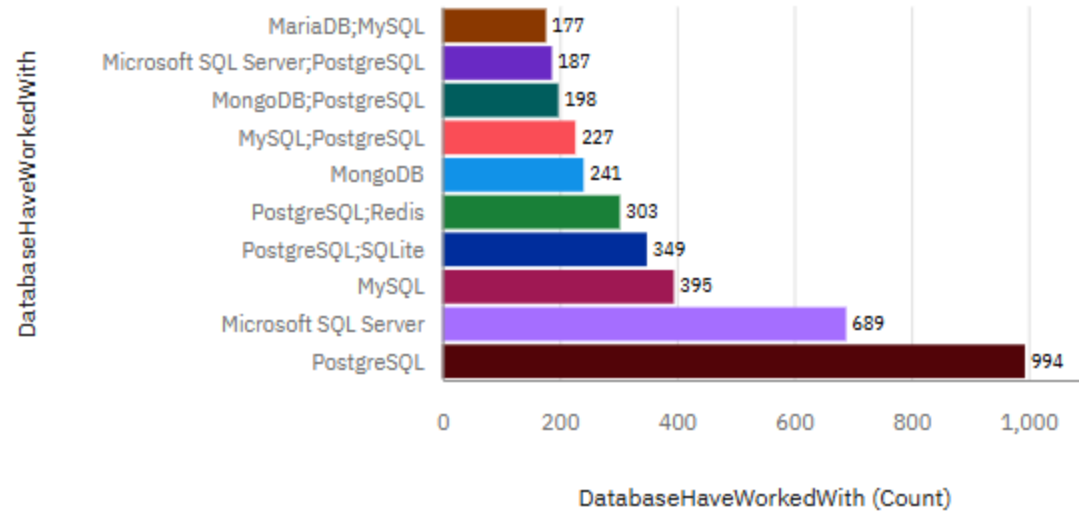
- C# and Typescript also popular

Implications

- Python developers are at a premium currently but will be more popular in the future
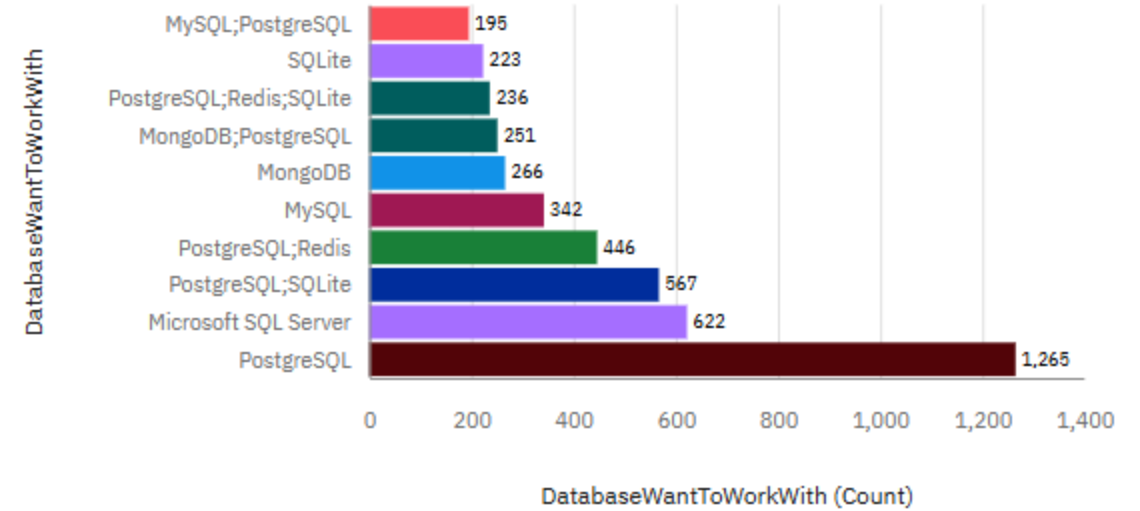
DATABASE TRENDS

Current Year

Next Year

Top 10 Databases respondents have worked with

DatabaseHaveWorkedWith

Database	Count
MariaDB;MySQL	177
Microsoft SQL Server;PostgreSQL	187
MongoDB;PostgreSQL	198
MySQL;PostgreSQL	227
MongoDB	241
PostgreSQL;Redis	303
PostgreSQL;SQLite	349
MySQL	395
Microsoft SQL Server	689
PostgreSQL	994

DatabaseHaveWorkedWith (Count)

Top 10 Databases respondents want to work with

DatabaseWantToWorkWith

Database	Count
MySQL;PostgreSQL	195
SQLite	223
PostgreSQL;Redis;SQLite	236
MongoDB;PostgreSQL	251
MongoDB	266
MySQL	342
PostgreSQL;Redis	446
PostgreSQL;SQLite	567
Microsoft SQL Server	622
PostgreSQL	1,265

DatabaseWantToWorkWith (Count)

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DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL is most popular database and will continue to be

- Microsoft SQL Server, MySQL, and MondoDB have consistent value

- More interest in learning Redis and SQLite in the future

Implications

- Knowing PostgreSQL seen as the most valuable asset by developers

- Strong desire to learn up-and-coming database languages (i.e. Redis and SQLite)

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DASHBOARD

https://github.com/ttrupke/capstone/blob/3b7629ef16861477706c9af0aec7941c3bf66ac5/Technology%20Dashboard.pdf

DASHBOARD TAB 1

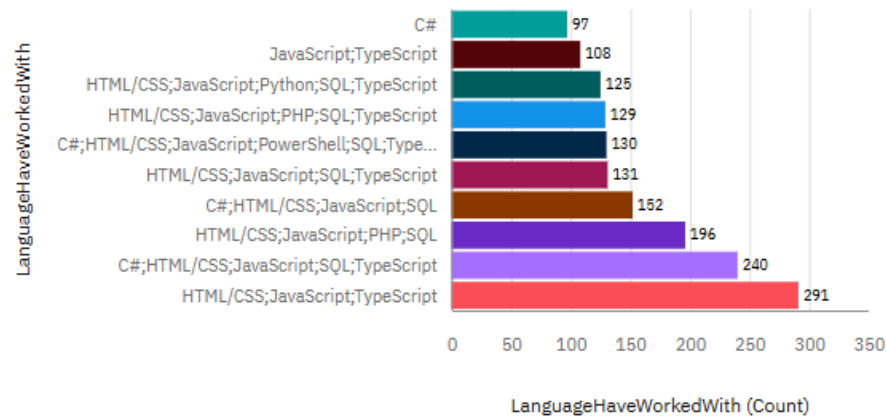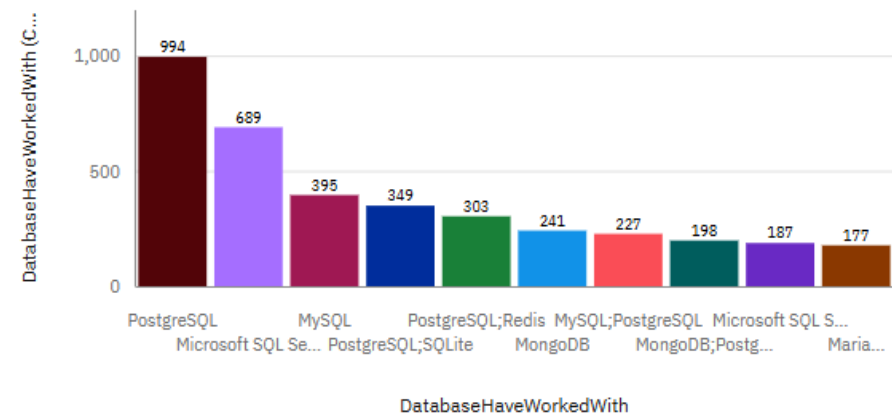Current Technology Usage   Future Technology Trend   Demographics   +

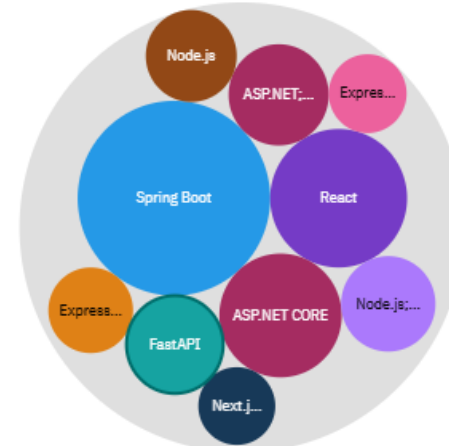## Top 10 Languages respondents have worked with

LanguageHaveWorkedWith:
- C# — 97
- JavaScript;TypeScript — 108
- HTML/CSS;JavaScript;Python;SQL;TypeScript — 125
- HTML/CSS;JavaScript;PHP;SQL;TypeScript — 129
- C#;HTML/CSS;JavaScript;PowerShell;SQL;Type... — 130
- HTML/CSS;JavaScript;SQL;TypeScript — 131
- C#;HTML/CSS;JavaScript;SQL — 152
- HTML/CSS;JavaScript;PHP;SQL — 196
- C#;HTML/CSS;JavaScript;SQL;TypeScript — 240
- HTML/CSS;JavaScript;TypeScript — 291

LanguageHaveWorkedWith (Count)

Top 10 Databases respondents have worked with

DatabaseHaveWorkedWith (C...):
- PostgreSQL — 994
- Microsoft SQL Se... — 689
- MySQL — 395
- PostgreSQL;SQLite — 349
- PostgreSQL;Redis — 303
- MongoDB — 241
- MySQL;PostgreSQL — 227
- MongoDB;Postg... — 198
- Microsoft SQL S... — 187
- Maria... — 177

DatabaseHaveWorkedWith

Top 10 Platforms respondents have worked with

Amazon Web Services (AWS)
Microsoft Azure

Top 10 Web frames respondents have worked with

Node.js, ASP.NET;..., Expres..., Spring Boot, React, Express..., FastAPI, ASP.NET CORE, Node.js;..., Next.j...

DASHBOARD TAB 2

Current Technology Usage   Future Technology Trend   Demographics   +

Top 10 Languages respondents want to work with

LanguageWantToWorkWith (Count)

Top 10 Databases respondents want to work with
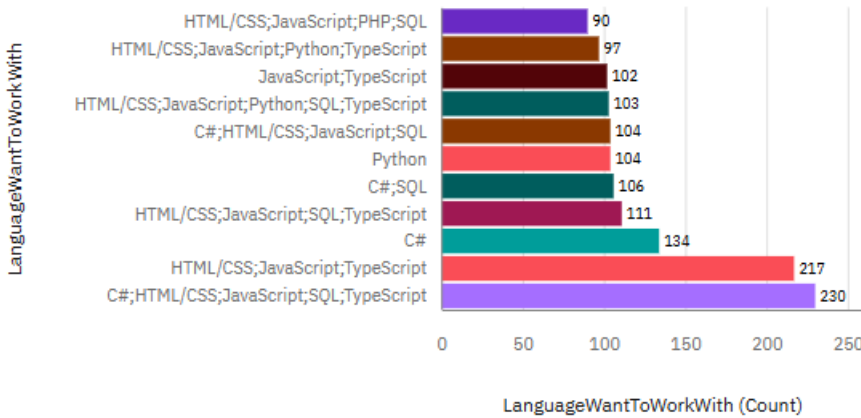
DatabaseWantToWorkWith
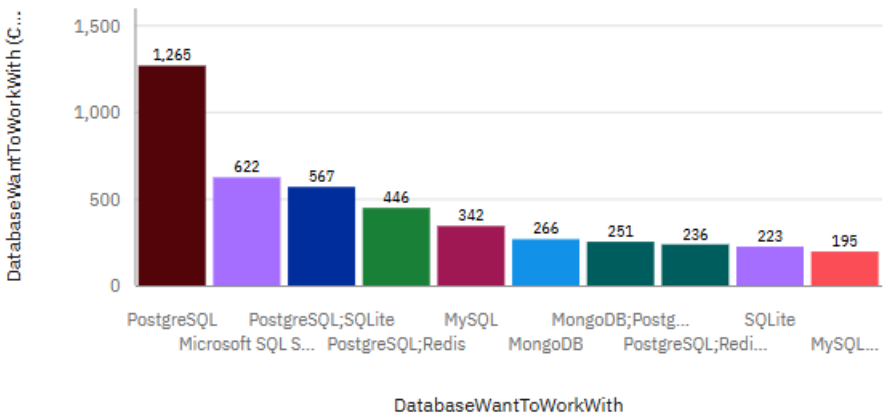
Top 10 Platforms respondents want to work with

Top 10 Web frames respondents want to work with

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DASHBOARD TAB 3
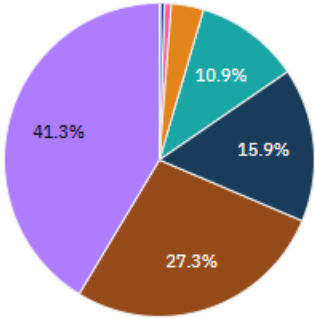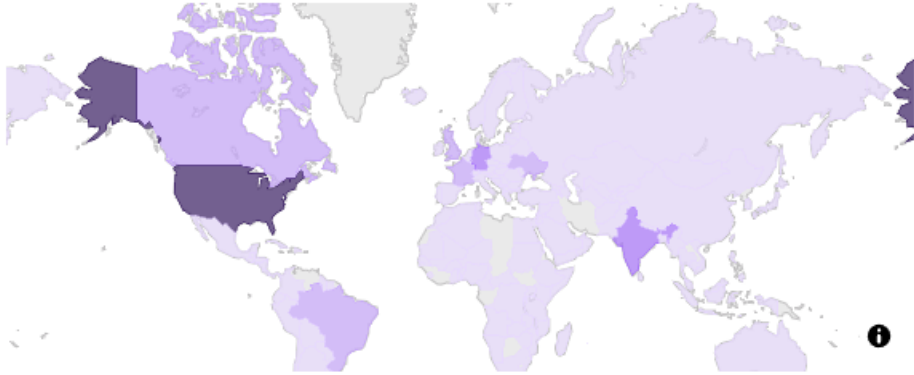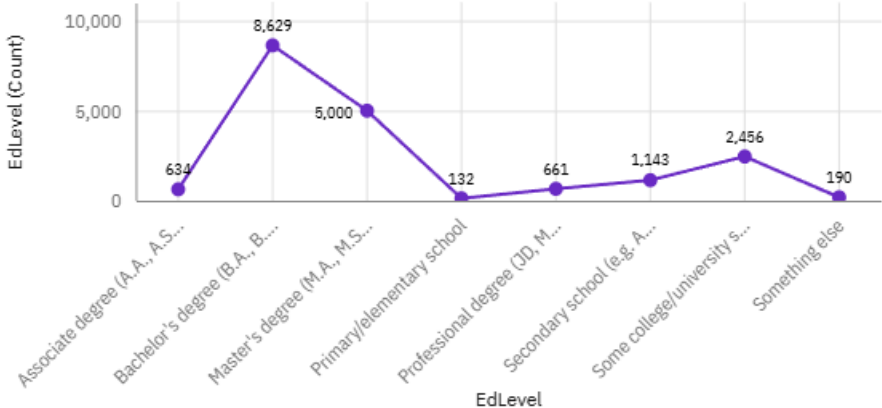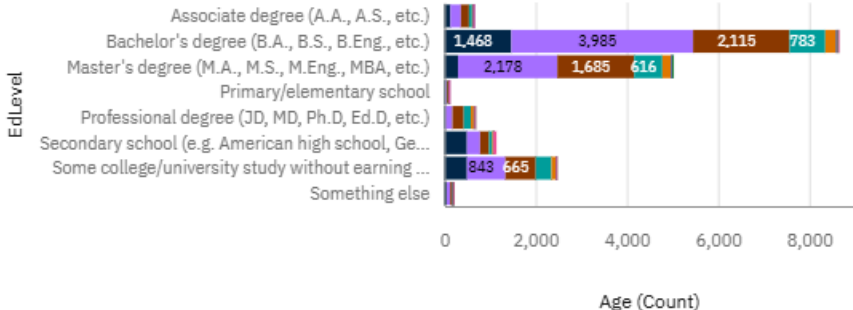
DISCUSSION

- Applications desirable currently versus in the future are mostly consistent

- Bachelor's degree is most common level of education

- Majority of Developers are between 25 and 44
  - Young professionals are looking to improve their skills

OVERALL FINDINGS & IMPLICATIONS

Findings

- Javascript and PostgreSQL are the most important applications
- Developer age skews on the younger side
- Master's degree not needed for employment

Implications

- Web based programming (Javascript) will continue to be the most marketable
- Barrier to entry into developer profession for older workers
- Not worth it to earn an advanced degree

CONCLUSION

- There are very specific conditions/qualifications for developers

- Future trends suggest knowing as many application as possible will be preferred

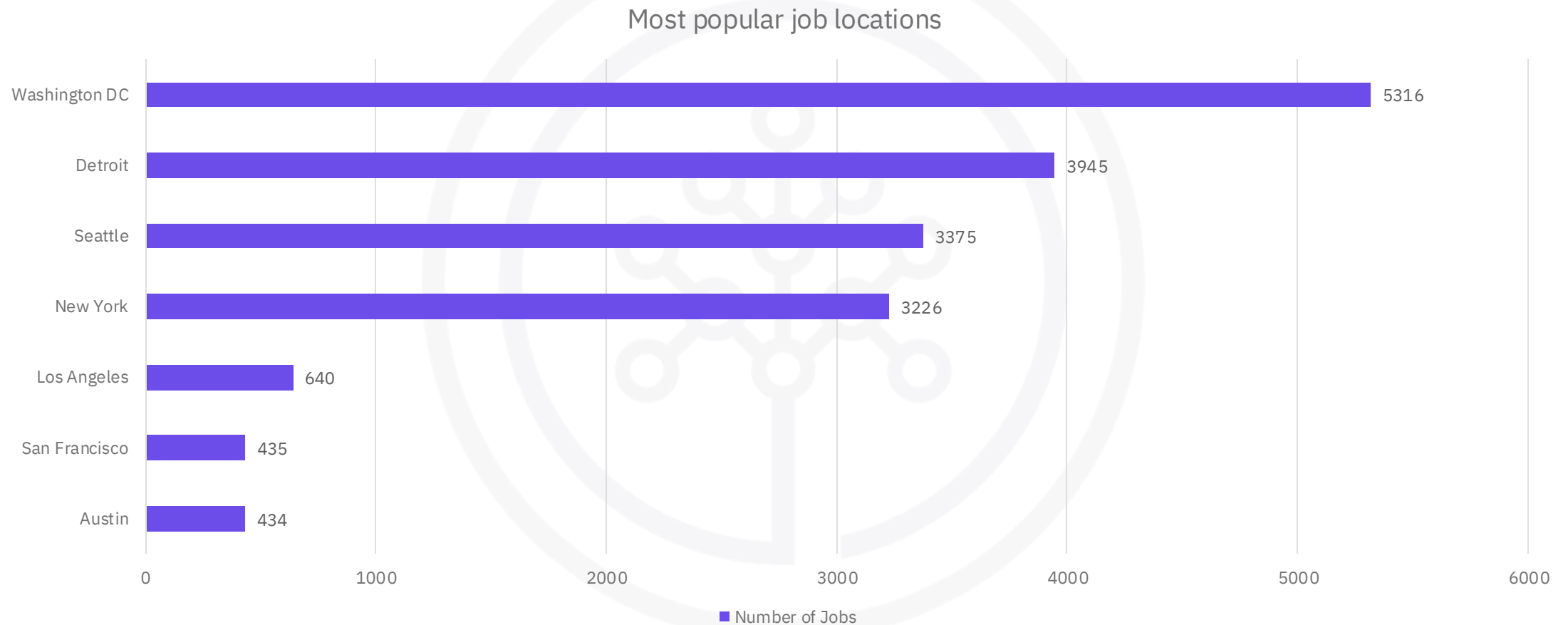- Spend time learning applications rather than university coursework.

APPENDIX

- Job postings chart
- Popular languages chart

JOB POSTINGS

Most popular job locations

Location	Number of Jobs
Washington DC	5316
Detroit	3945
Seattle	3375
New York	3226
Los Angeles	640
San Francisco	435
Austin	434

■ Number of Jobs

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POPULAR LANGUAGES

Salary for various programming languages