ANALYSIS OF TECHNOLOGY TRENDS

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OUTLINE

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

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EXECUTIVE SUMMARY

- **Examination of IT survey respondents and IT related job postings**

- **Analysis of current and desired IT use**

- **Analysis of respondent demographics**

- **Data were extracted, cleaned, analyzed and presented graphically**

- **Dashboards created to portray addition information**

- **Conclusion: IT continues to be a quickly changing business area which are centered in certain demographics and geographic locations**

INTRODUCTION

- **Analyze trends in software and web development among developers from countries worldwide**

- **Purpose of Review and Analysis**
  - **Identify the top programming languages, top database skills, and the most popular IDEs**
  - **Identify skill requirements for the future**
  - **Identify gaps for human resources in IT**

- **Intended Audience**
  - **Programmers**
  - **Human Resources professionals**
  - **IT industry leaders**
  - **Programming students**

METHODOLOGY

- **Data Sources**
  - **2019 Stack Overflow Developer Survey**
  - **GitHub Job Postings**
  - **Programming Languages Annual Salary**
- **Data Collection by Use of APIs and Web Scraping**
- **Data Exploration, Cleaning and Wrangling**
- **Data Analysis**
- **Data Visualization**
- **Creation of Dashboards**
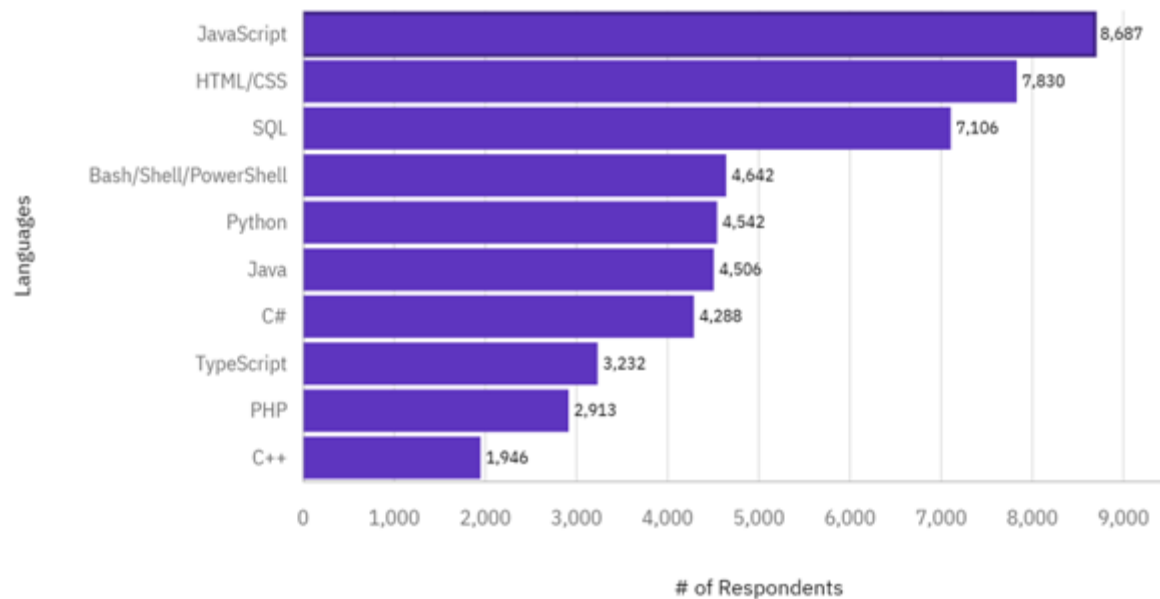- **Presentation of Results**

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RESULTS

	Respondent	LanguageWorkedWith	LanguageDesireNextYear	DatabaseWorkedWith	DatabaseDesireNextYear	PlatformWorkedWith
0	4	C	C	MySQL	MySQL	Linux
1	4	C++	C#	SQLite	SQLite	Windows
2	4	C#	JavaScript	NaN	NaN	NaN
3	4	Python	SQL	NaN	NaN	NaN
4	4	SQL	NaN	NaN	NaN	NaN
...	...	...	...	...	...	...
74584	25142	Go	Python	NaN	NaN	NaN
74585	25142	HTML/CSS	R	NaN	NaN	NaN
74586	25142	PHP	NaN	NaN	NaN	NaN
74587	25142	Python	NaN	NaN	NaN	NaN
74588	25142	R	NaN	NaN	NaN	NaN

PROGRAMMING LANGUAGE TRENDS

Current Year

Top 10 Languages Respondents Use

Language	# of Respondents
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542
Java	4,506
C#	4,288
TypeScript	3,232
PHP	2,913
C++	1,946

Next Year

Top 10 Languages Respondents Desire Next Year

Language	# of Respondents
JavaScript	6,630
HTML/CSS	5,328
Python	5,239
SQL	5,012
TypeScript	4,088
C#	3,591
Bash/Shell/PowerShell	3,097
Java	2,953
Go	2,759
Kotlin	1,890

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PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **JavaScript maintains status as top ranking language**

- **Python fastest growing of all languages listed**

- **TypeScript growing in popularity**

Implications

- **Web development languages will continue to be in high demand**

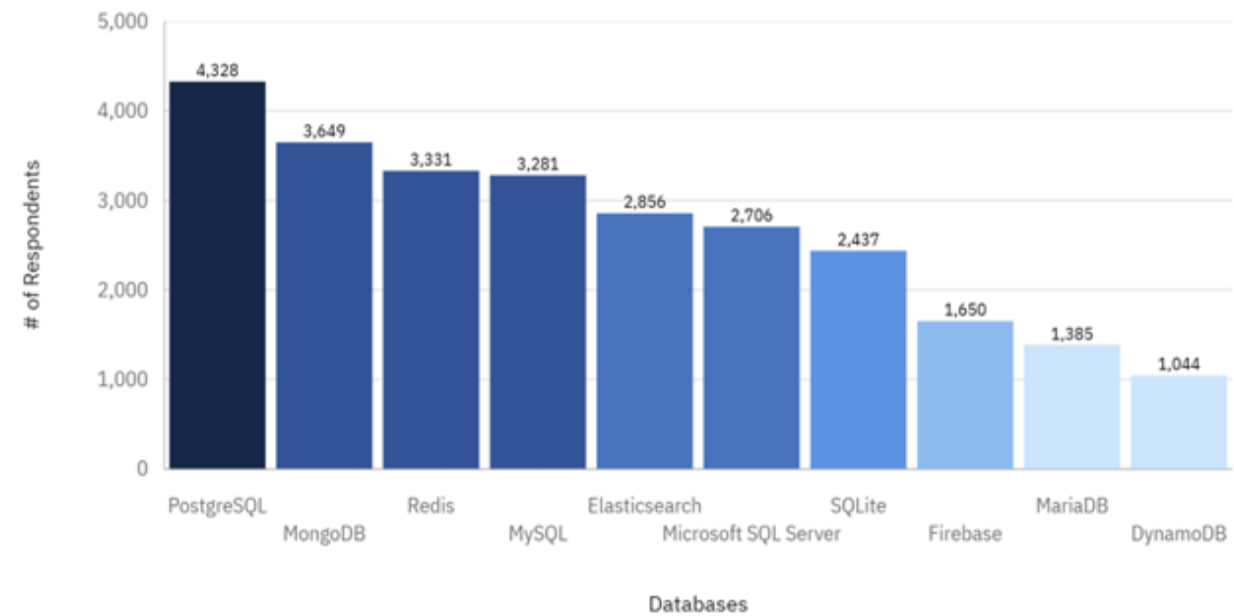- **Opportunities to add Python to IT professional's skill sets should be offered**

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DATABASE TRENDS

Current Year

Top 10 Database Respondents Use
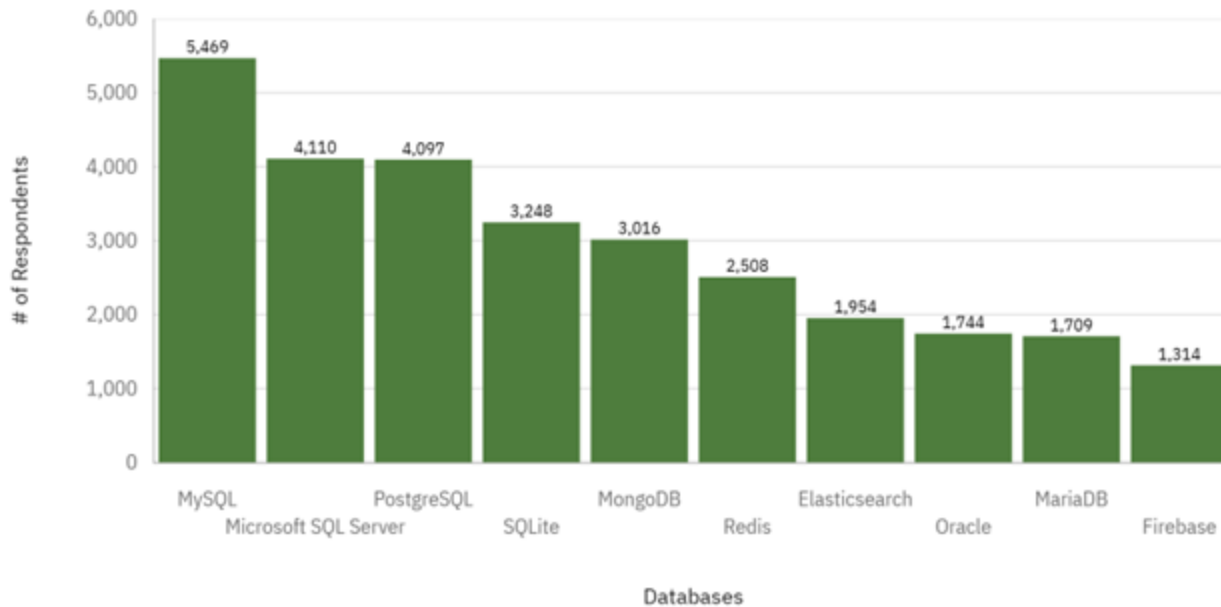
Next Year

Top 10 Databases Respondents Desire Next Year

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **MySQL is most popular database**
- **Microsoft SQL Server and SQLite are decreasing in importance**
- **Increasing interest in PostgreSQL and MongoDB**

Implications

- **Resources should still be directed towards open-source databases like MySQL**
- **Resources should be directed away from Microsoft SQL Server and SQLite**
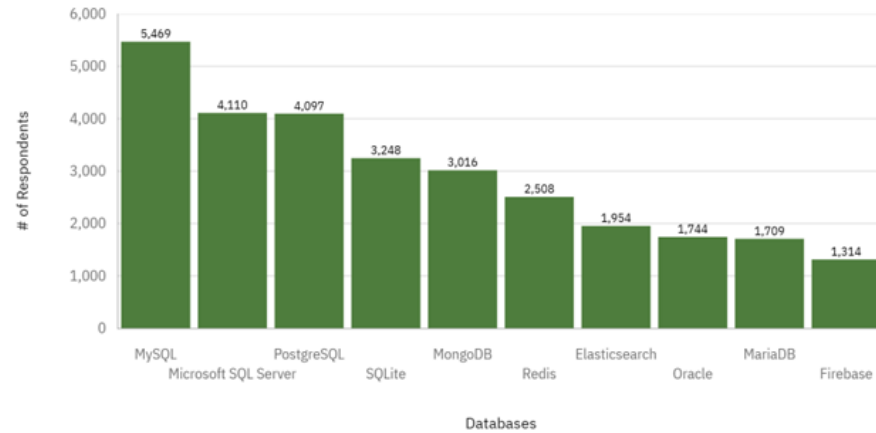- **Training should be offered in PostgreSQL and MongoDB as they grow in importance**

DASHBOARD

Dashboard URL

<https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FCapstone%2B-%2BTechnology&action=view&mode=dashboard&subView=model0000018d0f2a866b_00000000>
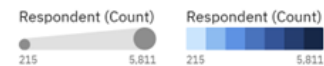
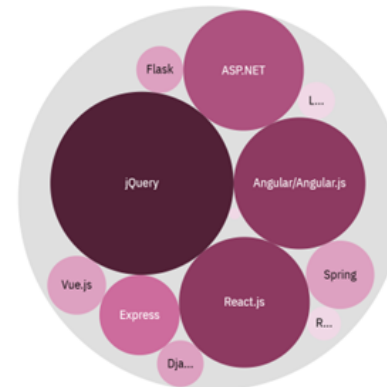# CURRENT TECHNOLOGY USAGE (DASHBOARD TAB 1)
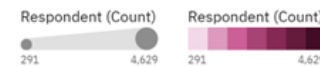

Top 10 Languages Respondents Use

Language	# of Respondents
JavaScript	8,687
HTML/CSS	7,830
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Bash/Shell/PowerShell	4,642
Python	4,542
Java	4,506
C#	4,288
TypeScript	3,232
PHP	2,913
C++	1,946

Top 10 Database Respondents Use

Database	# of Respondents
MySQL	5,469
Microsoft SQL Server	4,110
PostgreSQL	4,097
SQLite	3,248
MongoDB	3,016
Redis	2,508
Elasticsearch	1,954
Oracle	1,744
MariaDB	1,709
Firebase	1,314
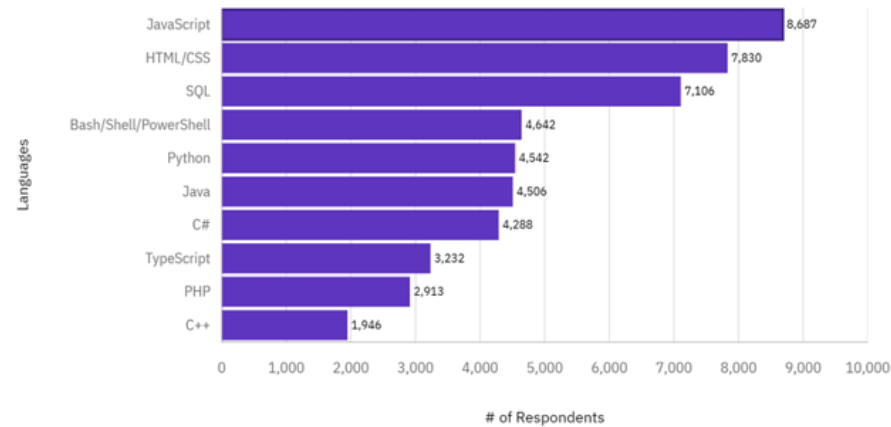
Platforms Utilized by Respondents

Respondent (Count) 215 – 5,811

Web Frames Respondents Use

Respondent (Count) 291 – 4,629

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FUTURE TECHNOLOGY TRENDS (DASHBOARD TAB 2)

Top 10 Languages Respondents Desire Next Year

Language	# of Respondents
JavaScript	6,630
HTML/CSS	5,328
Python	5,239
SQL	5,012
TypeScript	4,088
C#	3,591
Bash/Shell/PowerShell	3,097
Java	2,953
Go	2,759
Kotlin	1,890

Top 10 Databases Respondents Desire Next Year

Database	# of Respondents
PostgreSQL	4,328
MongoDB	3,649
Redis	3,331
MySQL	3,281
Elasticsearch	2,856
Microsoft SQL Server	2,706
SQLite	2,437
Firebase	1,650
MariaDB	1,385
DynamoDB	1,044
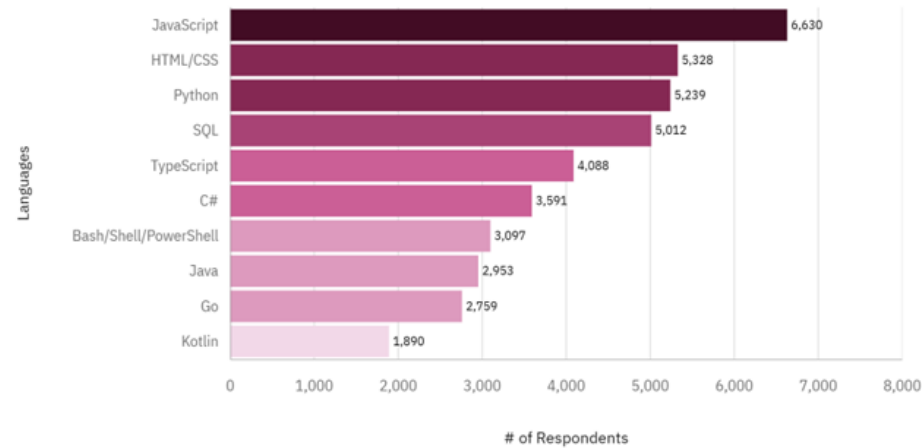
Platforms Respondents Desire Next Year

Web Frames Respondents Desire Next Year

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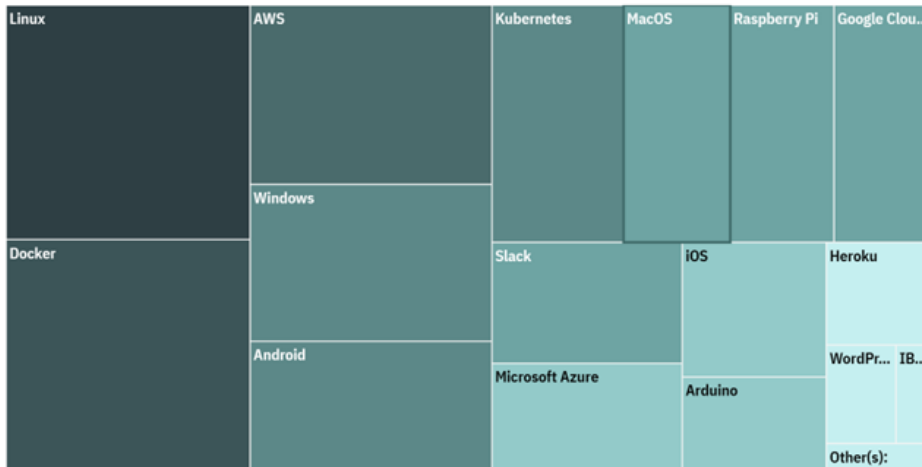
RESPONDENT DEMOGRAPHICS (DASHBOARD TAB 3)
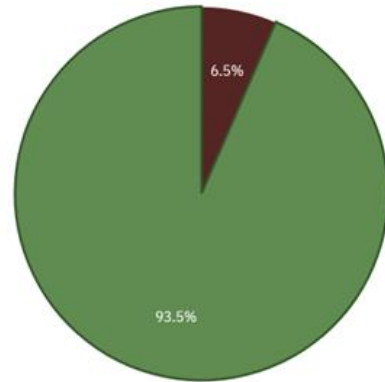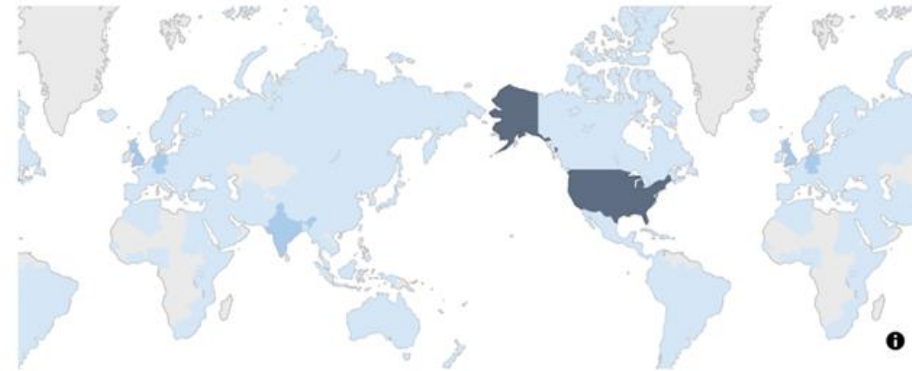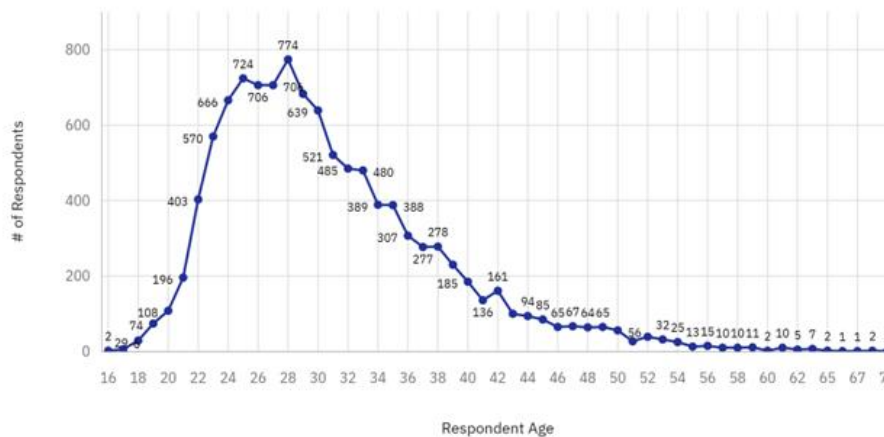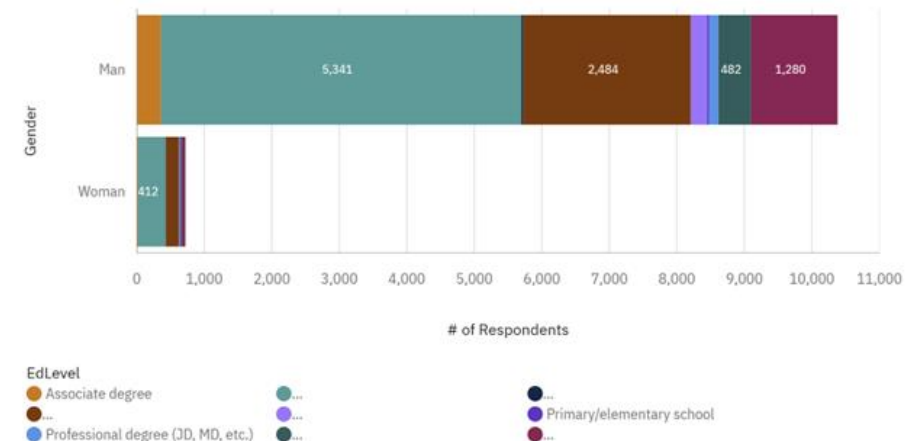
DISCUSSION

- **Shifts from current to future needs in programming languages, database skills, and IDEs**

- **Demographic, education and geographical gaps within IT**

- **Change management as platforms and software move in and out of favor**

OVERALL FINDINGS & IMPLICATIONS

Findings

- **Technology trends shift quickly, on a yearly basis**
- **Shift towards more open source platforms such as MySQL and Python**
- **Respondents were predominantly younger, male and from the USA & India**

Implications

- **Companies and programmers should be prepared to learn new IT solutions (platforms, languages and database) quickly**
- **Education opportunities should prioritize women and those outside of the USA & India to draw increased equity in workforce**

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CONCLUSION

- IT professionals represent distinct demographics (younger and male)

- IT environment is changing rapidly in notable directions such as open source and cloud based solutions

- Agility and speed in adapting to changing trends will create success in the future of IT

- IT leaders, IT professional organizations and human resource professional should prioritize solution to bring demographic and geographic equity to the IT workforce
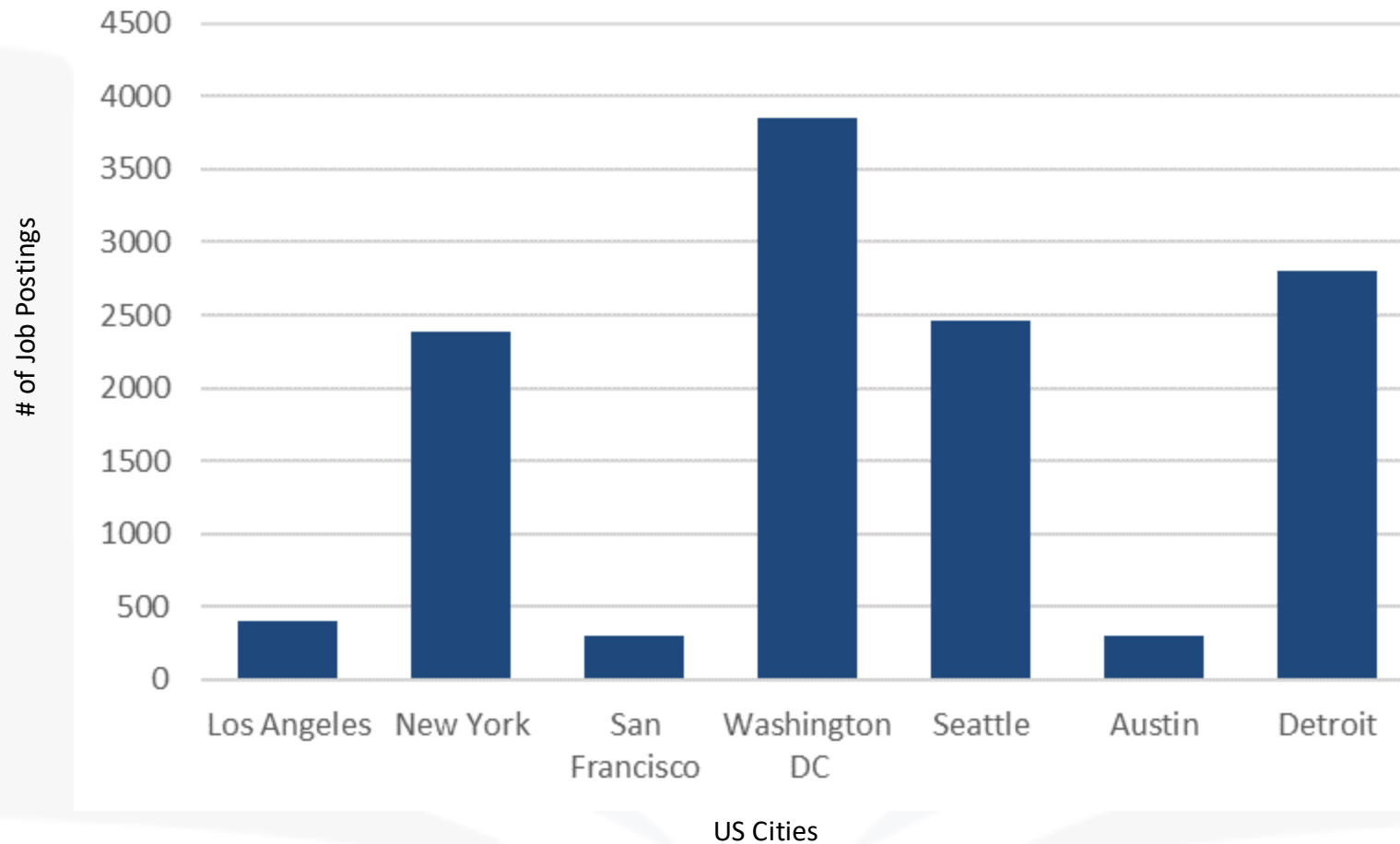
APPENDIX

JOB POSTINGS BY TYPE OF TECHNOLOGY
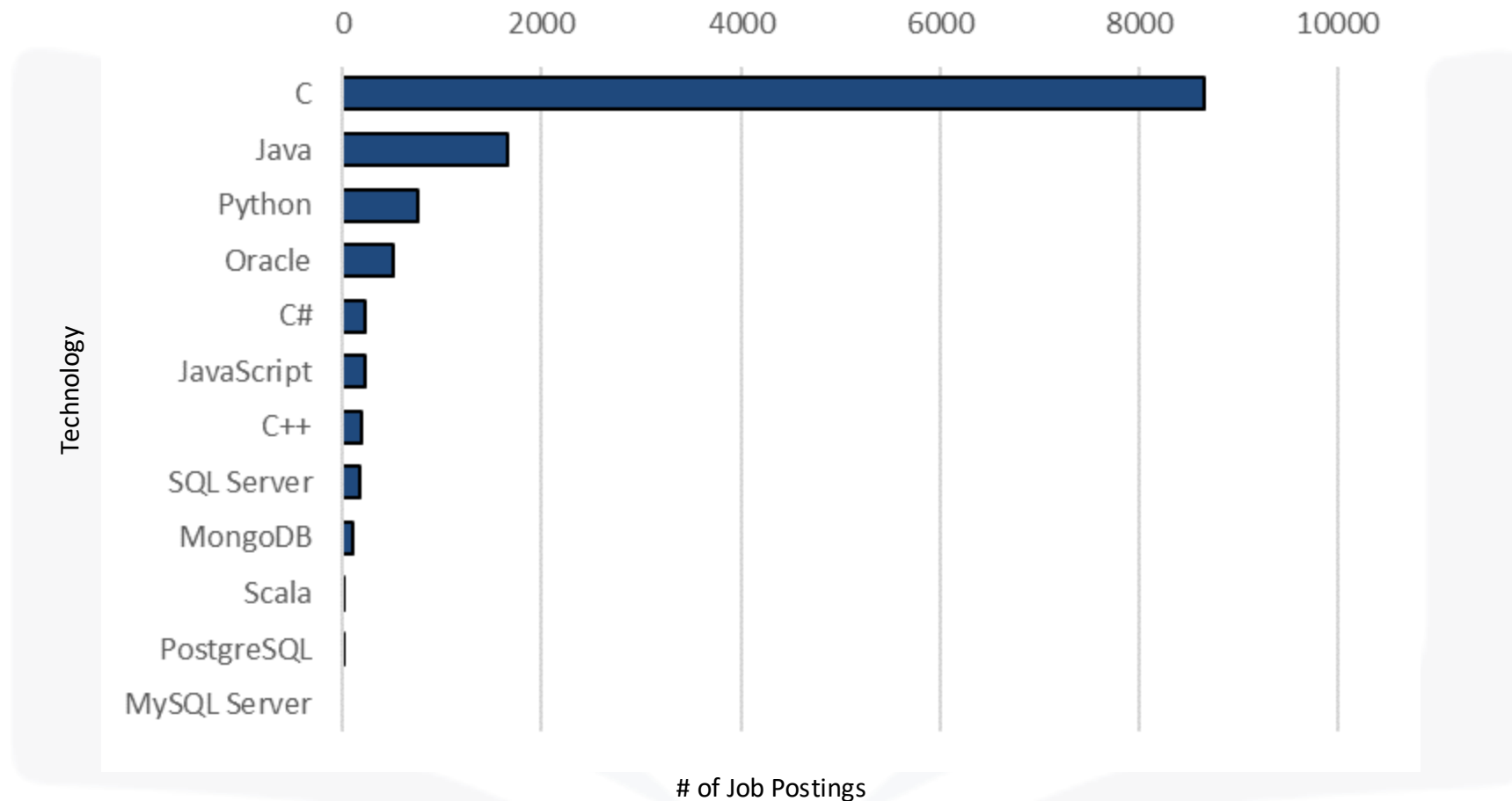
# of Job Postings

JOB POSTING BY US CITIES

POPULAR LANGUAGES

RESPONDENT AGE