Current and Future Technology Trends

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EXECUTIVE SUMMARY

- An IT and business consulting services firm needs to keep pace with changing technologies by identifying emerging skills.

- This includes visualizations that display current and future technology trends such as in-demand programming languages and database management systems.

- These trends were determined on how many respondents used specific technologies and which technologies they wish to work with in the future.

- In identifying these trends, the firm should be better equipped in advising businesses on how to use those technologies.

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INTRODUCTION

- This report is about identifying trends on emerging skills in order for an IT and business consulting services firm to remain competitive with other organizations.

- This report answers questions such as what are the top programming languages and the top database management systems that are in demand.

METHODOLOGY

- Data sources used: job postings and surveys

- Collected job postings data in an Excel spreadsheet by accessing GitHub API through Python.

- Collected programming language data in a .csv file by scraping an internet web site through Python.

RESULTS

- Used a relational database management system to perform SQL queries of programming language and database trends for current year and future year.

- Utilized a .csv file that contained a survey recording respondents' use of technologies and a .csv file that contained a survey recording demographics of those respondents.

- Utilizing IBM Cognos Analytics, the data was organized in a dashboard that identifies top current and future trends for programming languages, databases, platforms, and web frameworks.

- The data was analyzed by recording how many respondents in a survey worked with certain technologies, and how many respondents desire to learn new technologies and acquire new skills in the future.

PROGRAMMING LANGUAGE TRENDS

Current Year
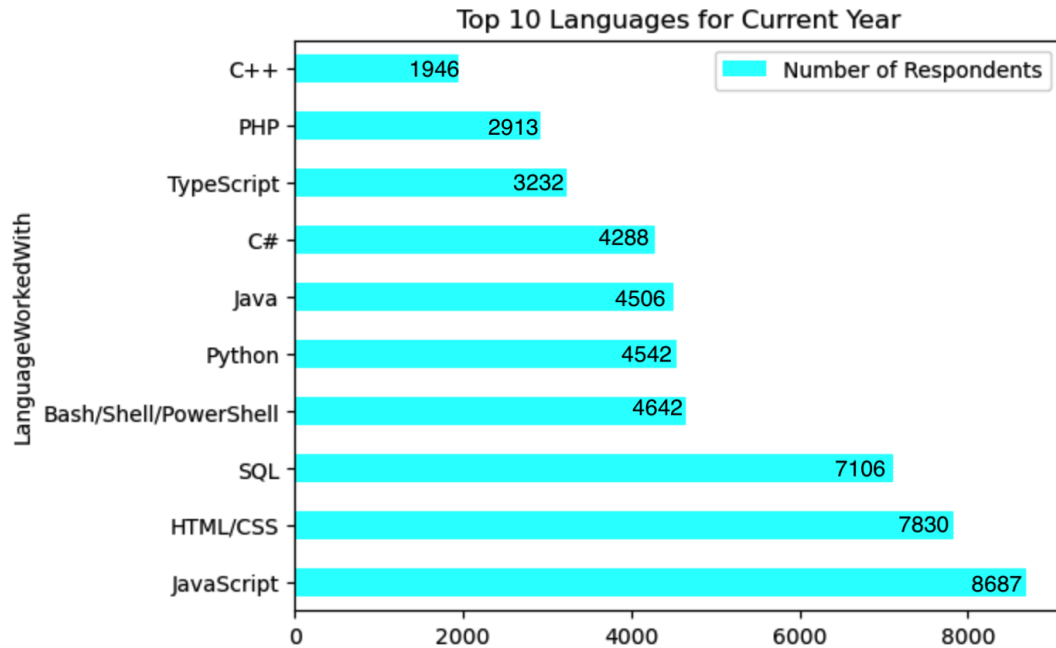
Next Year
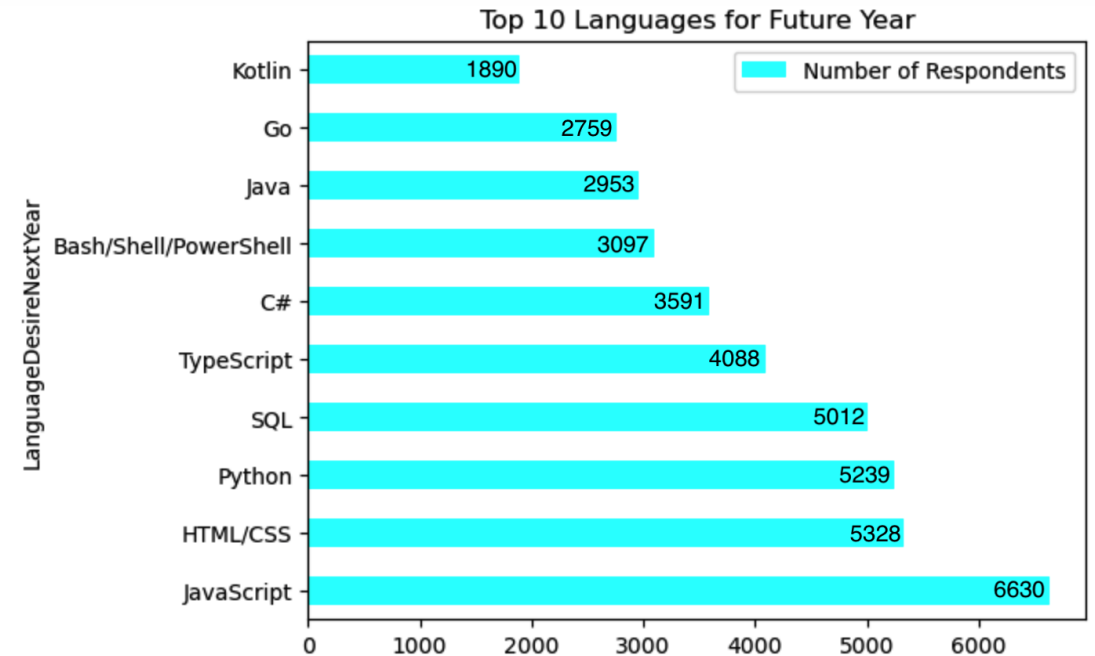
PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript is the most commonly used language among respondents in the survey.

- JavaScript, Python, HTML/CSS, and SQL are top languages respondents both worked with and desired to work with in the future.
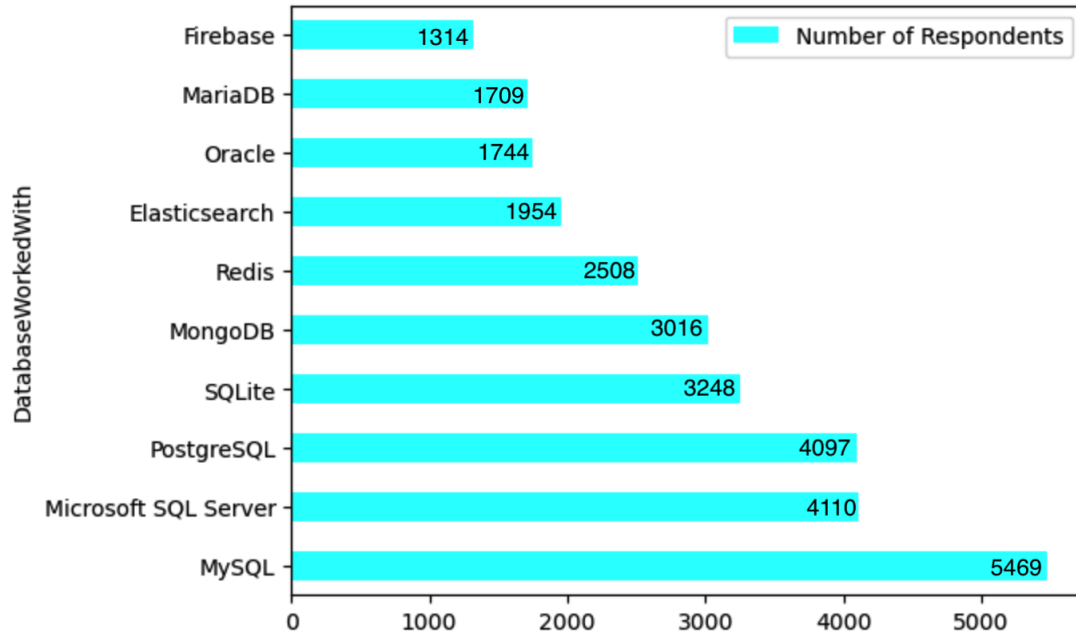
Implications

- The organization should prioritize to keep pace with JavaScript, Python, HTML/CSS, and SQL.
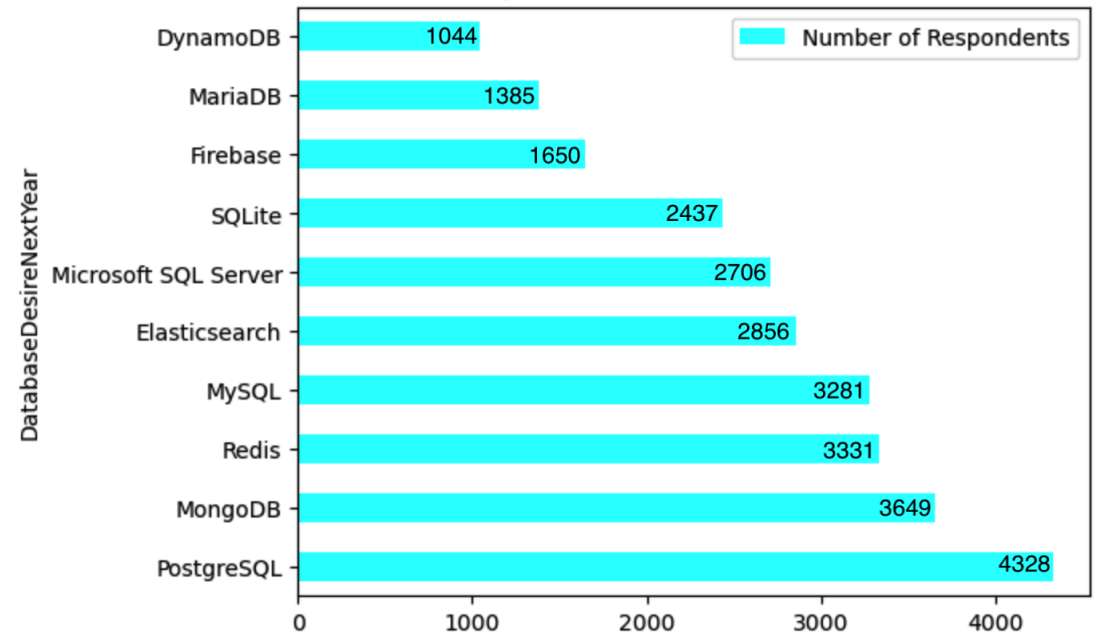
DATABASE TRENDS

Current Year

Top 10 Databases for Current Year

DatabaseWorkedWith	Number of Respondents
Firebase	1314
MariaDB	1709
Oracle	1744
Elasticsearch	1954
Redis	2508
MongoDB	3016
SQLite	3248
PostgreSQL	4097
Microsoft SQL Server	4110
MySQL	5469

Next Year

Top 10 Databases for Future Year

DatabaseDesireNextYear	Number of Respondents
DynamoDB	1044
MariaDB	1385
Firebase	1650
SQLite	2437
Microsoft SQL Server	2706
Elasticsearch	2856
MySQL	3281
Redis	3331
MongoDB	3649
PostgreSQL	4328

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is the most commonly used database management system among respondents in the survey.

- PostgreSQL is the most desired database management system respondents would like to work with in the future.

- PostgreSQL and MongoDB are among the top database management systems respondents both worked with and desired to work with in the future.

Implications

- The organization should prioritize to keep pace with MySQL, PostgreSQL, and MongoDB.

DASHBOARD

Link to dashboard: https://dataplatform.cloud.ibm.com/dashboards/fb96784f-0f0f-46ec-b73b-d0abe8fd79df/view/7827a4076e8f1fee11dccce4079e7e52783f7609b2bbd50287d07b490f667397a86d4093c82a430e89145167f2b8110f9c
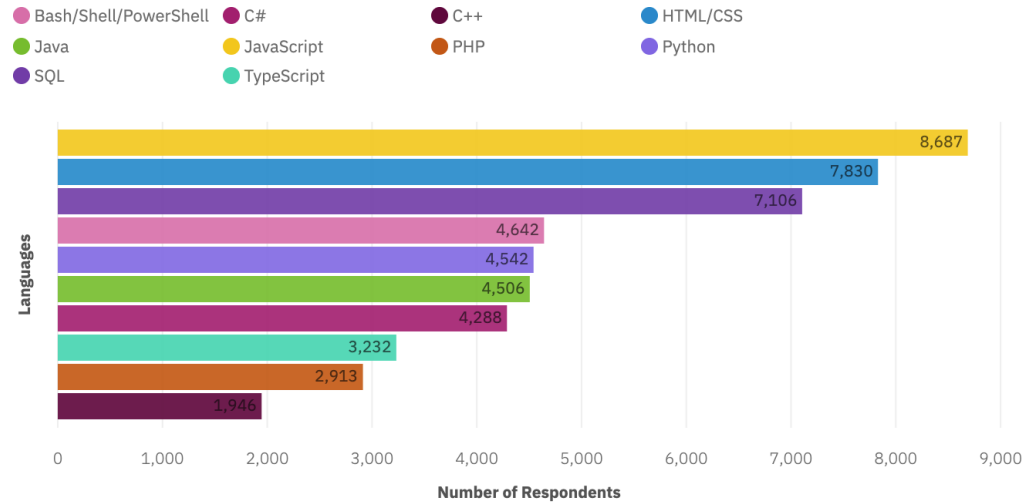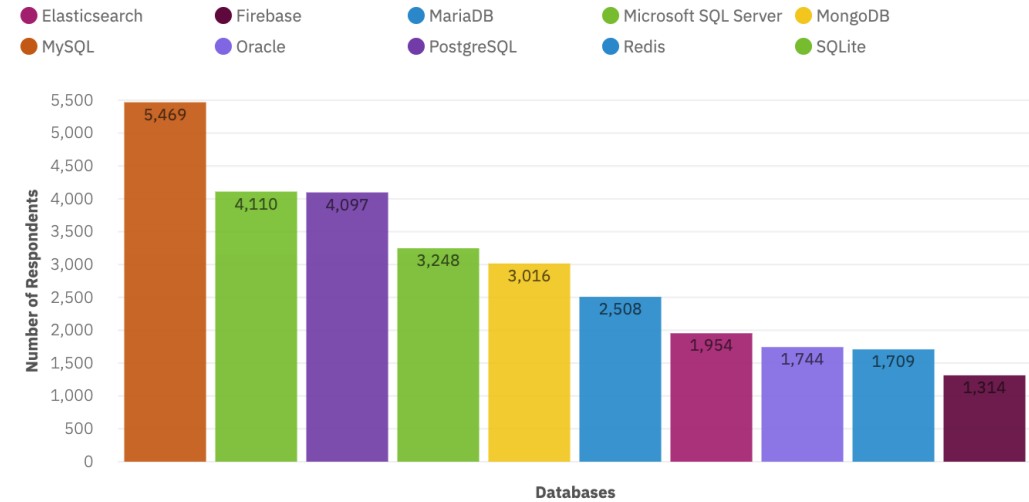
DASHBOARD TAB 1

Current Technology Usage   Future Technology Trend   Demographics
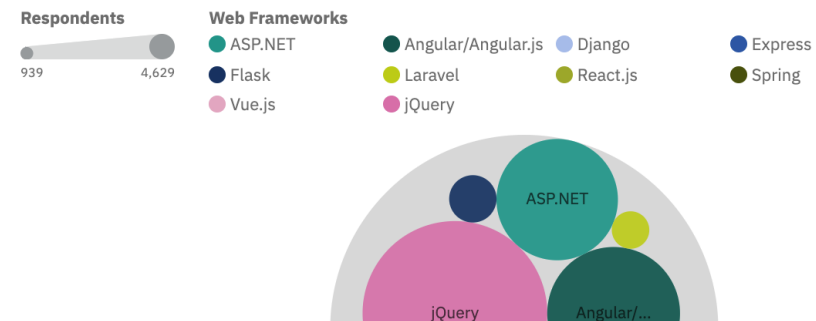
Top 10 Languages Respondents Worked with

- Bash/Shell/PowerShell
- C#
- C++
- HTML/CSS
- Java
- JavaScript
- PHP
- Python
- SQL
- TypeScript

Top 10 Databases Respondents Worked with

- Elasticsearch
- Firebase
- MariaDB
- Microsoft SQL Server
- MongoDB
- MySQL
- Oracle
- PostgreSQL
- Redis
- SQLite

Platforms Respondents Worked with

Top 10 Web Frameworks Respondents Worked with

Respondents
939   4,629

Web Frameworks
- ASP.NET
- Angular/Angular.js
- Django
- Express
- Flask
- Laravel
- React.js
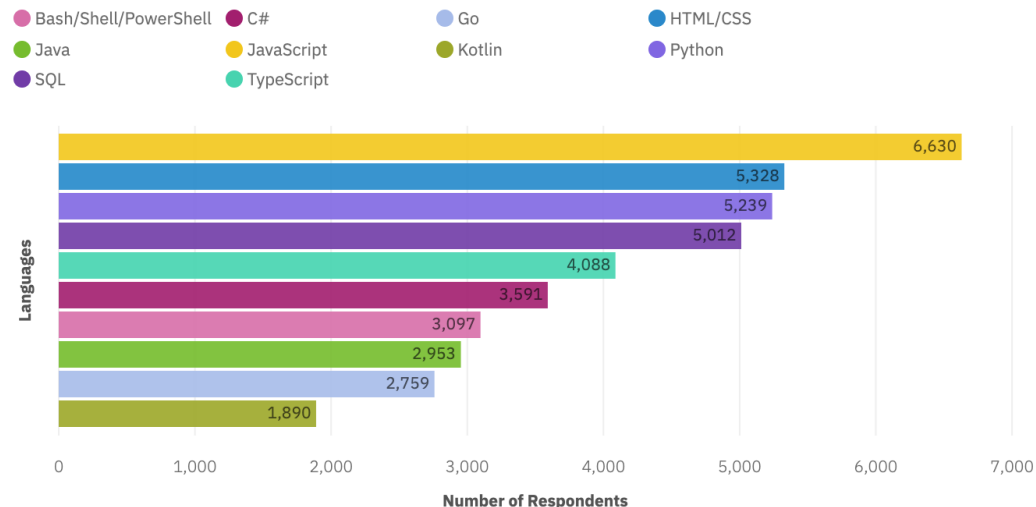- Spring
- Vue.js
- jQuery

DASHBOARD TAB 2

Current Technology Usage   **Future Technology Trend**   **Demographics**

Top 10 Languages Respondents Desire to Work with Next Year

● Bash/Shell/PowerShell   ● C#   ● Go   ● HTML/CSS
● Java   ● JavaScript   ● Kotlin   ● Python
● SQL   ● TypeScript

X-axis: Number of Respondents (0 to 7,000); Y-axis: Languages

Bar values: 6,630 · 5,328 · 5,239 · 5,012 · 4,088 · 3,591 · 3,097 · 2,953 · 2,759 · 1,890

Top 10 Databases Respondents Desire to Work With Next Year

● DynamoDB   ● Elasticsearch   ● Firebase   ● MariaDB   ● Microsoft SQL Server
● MongoDB   ● MySQL   ● PostgreSQL   ● Redis   ● SQLite
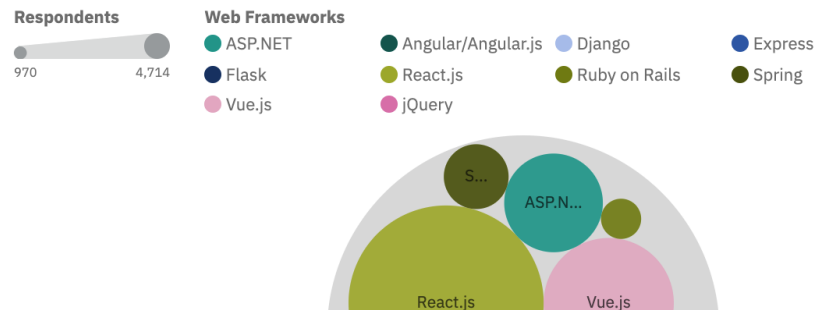

Y-axis: Number of Respondents (0 to 4,500); X-axis: Databases

Bar values: 4,328 · 3,649 · 3,331 · 3,281 · 2,856 · 2,706 · 2,437 · 1,650 · 1,385 · 1,044

Platforms Respondents Desire to Work with Next Year

Respondents: 307 — 5,865
Respondents: 307 — 5,865

Linux · AWS · Kubernetes · Google Cl... · Slack · Microso... · Windows · MacOS

Top 10 Web Frameworks Respondents Desire to Work with Next Year

Respondents: 970 — 4,714

Web Frameworks
● ASP.NET   ● Angular/Angular.js   ● Django   ● Express
● Flask   ● React.js   ● Ruby on Rails   ● Spring
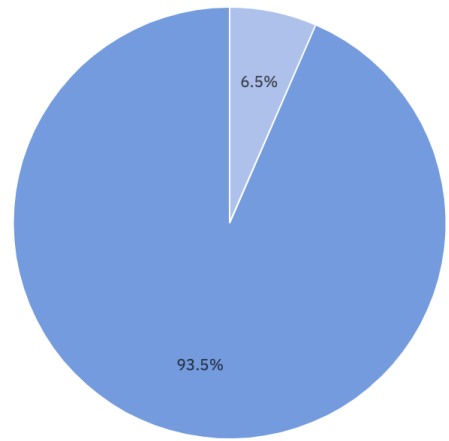● Vue.js   ● jQuery

S... · ASP.N... · React.js · Vue.js
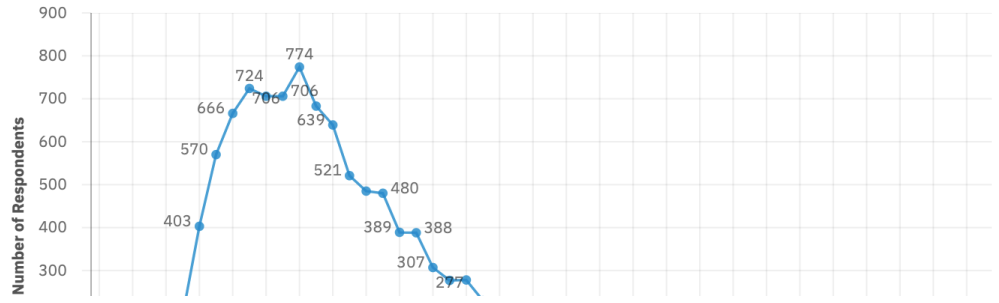
DASHBOARD TAB 3

Current Technology Usage   Future Technology Trend   **Demographics**

Respondents Classified by Gender

Gender
● Woman ● Man

6.5%

93.5%

Respondent Count for Countries

Respondent (Cou...

1   3,058

Respondent Count by Age

900
800
774
724
706 706
666   639
700
570   521
600
500   480
403   389 388
400   307
300   277

Number of Respondents
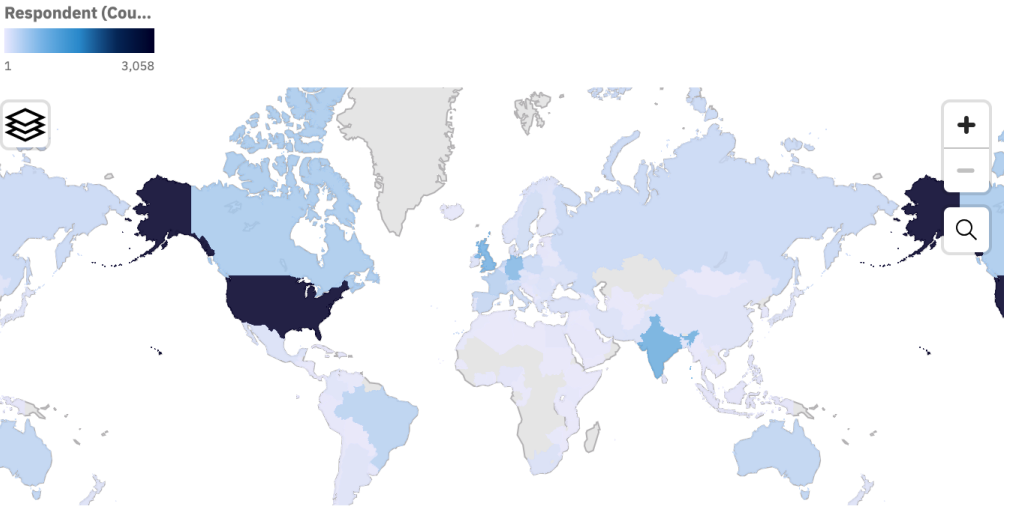
Respondent Count by Gender Classified by Formal Education Level

Formal Education Level
● Associate degree   ● Bachelor's degree (BA, BS, B.E...   ● I never completed any formal ...
● Master's degree (MA, MS, M.E... ● Other doctoral degree (Ph.D, E... ● Primary/elementary school
● Professional degree (JD, MD, e... ● Secondary school (e.g. Americ...   ● Some college/university study ...

Man   5,341   2,484   482   1,280

Gender

DISCUSSION

- Overall Findings & Implications

OVERALL FINDINGS & IMPLICATIONS

Findings

Implications

- JavaScript, Python, HTML/CSS, and SQL are the programming languages most commonly used.

- MySQL, PostgreSQL, and MongoDB are among the top database management systems used.

- Linux, Docker, and AWS are among the top platforms respondents worked with and desired to work with in the future.

- ASP.NET, Angular.js, and React.js are among the top web frameworks respondents both worked with and desired to work with in the future.

- The organization should keep pace with these top programming languages including at least one top database language.

- The organization should also prioritize these top platforms and web frameworks, particularly Linux and React.js.

- Among college graduates, learning these programming languages and systems is essential for those interested in working in software development or another IT field.
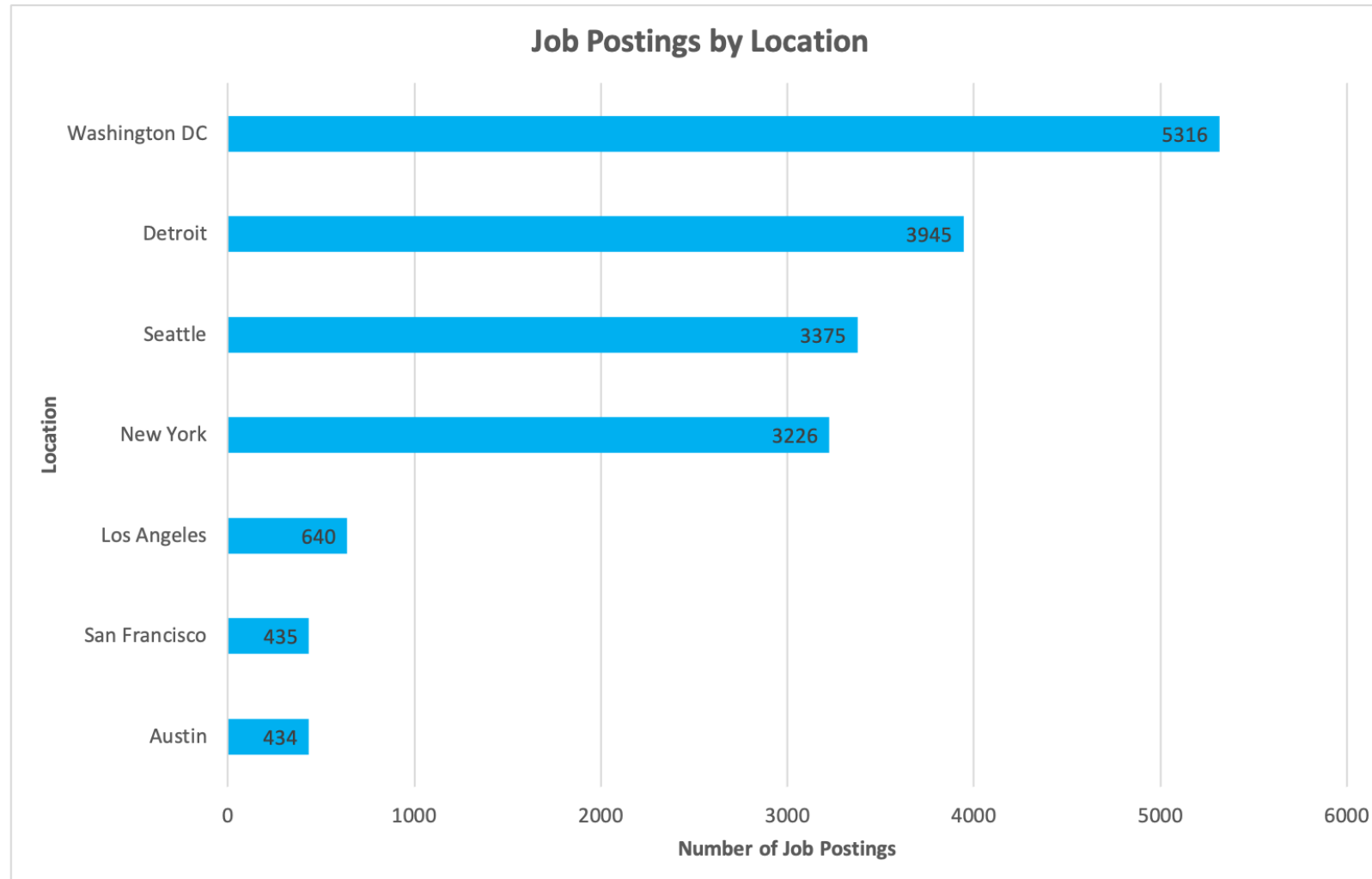
CONCLUSION

- This report is about identifying future skill requirements in order for an IT and business consulting services firm to remain competitive with other organizations.

- This report addresses the top programming languages such as JavaScript, Python, and SQL.

- The report includes the top database skills such as learning to work with MySQL and MongoDB.

- It also contains current and future trends on top platforms and web frameworks such as Linux and React.js.

- The consulting services firm should keep up with these technologies in order to assist companies on how to use them to make better business decisions.

APPENDIX

- Job postings

- Popular Languages

JOB POSTINGS

Job Postings by Location

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

POPULAR LANGUAGES

Popular Programming Languages by Average Annual Salary