IBM Data Analyst Capstone Project

Analysis on Emerging Technology Skills and Trends

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IBM Developer

SKILLS NETWORK

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EXECUTIVE SUMMARY

- Analyzing the demand for open technology jobs across various locations.“
- By analyzing the data, we can identify key insights and trends
  - The Top Programming Languages
  - The Top Databases Skills
  - The Popular IDEs
- The dashboard consolidates key information, displaying current employee skillsets, emerging industry trends, and relevant demographic data.

INTRODUCTION

- To remain competitive in the global IT industry, professionals must stay current with rapidly evolving technologies. This report leverages data analytics to identify present and future trends in the demand for skills across programming languages, databases, and other key technologies. Additionally, the report examines the demographic profile of professionals working in the technology sector.
- The data was gathered from various sources, including a Stack Overflow survey, the IBM website, and GitHub job postings. This data was then collected, cleaned, subjected to exploratory analysis, and ultimately visualized through interactive dashboards.
- According to the findings, JavaScript is the most widely used programming language currently and is expected to maintain that position in the future. While MySQL currently has the highest database usage, PostgreSQL is projected to see greater demand going forward.
- Majority of the survey respondents are males, are from the USA and are 28 years of age.

METHODOLOGY

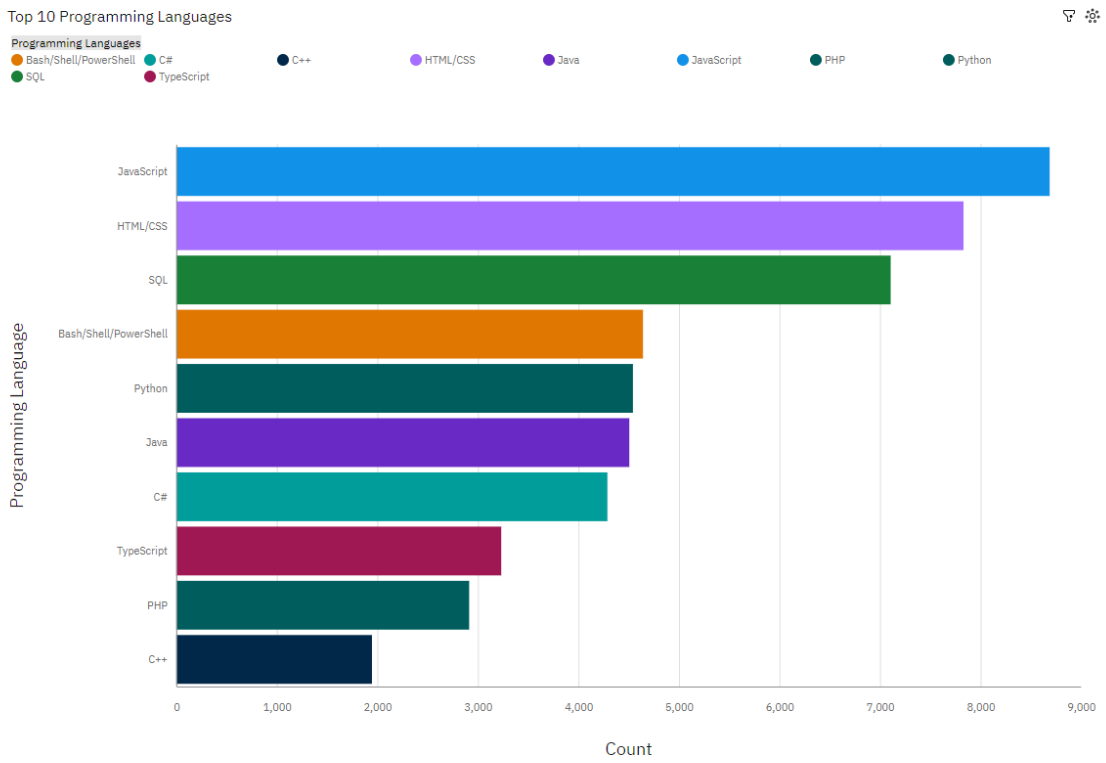
- The analysis utilized two datasets scraped from a modified subset of Stack Overflow data. This data contained information on current and emerging technology trends, as well as demographic details about the survey respondents.
- These datasets were subsets created for the IBM Data Analysis Capstone Project. As such, they only required minimal cleaning - simply filtering out any null values before visualization.
- The IBM Cognos Dashboard Embedded (CDE) platform was used to create the various dashboards for this analysis.

RESULTS

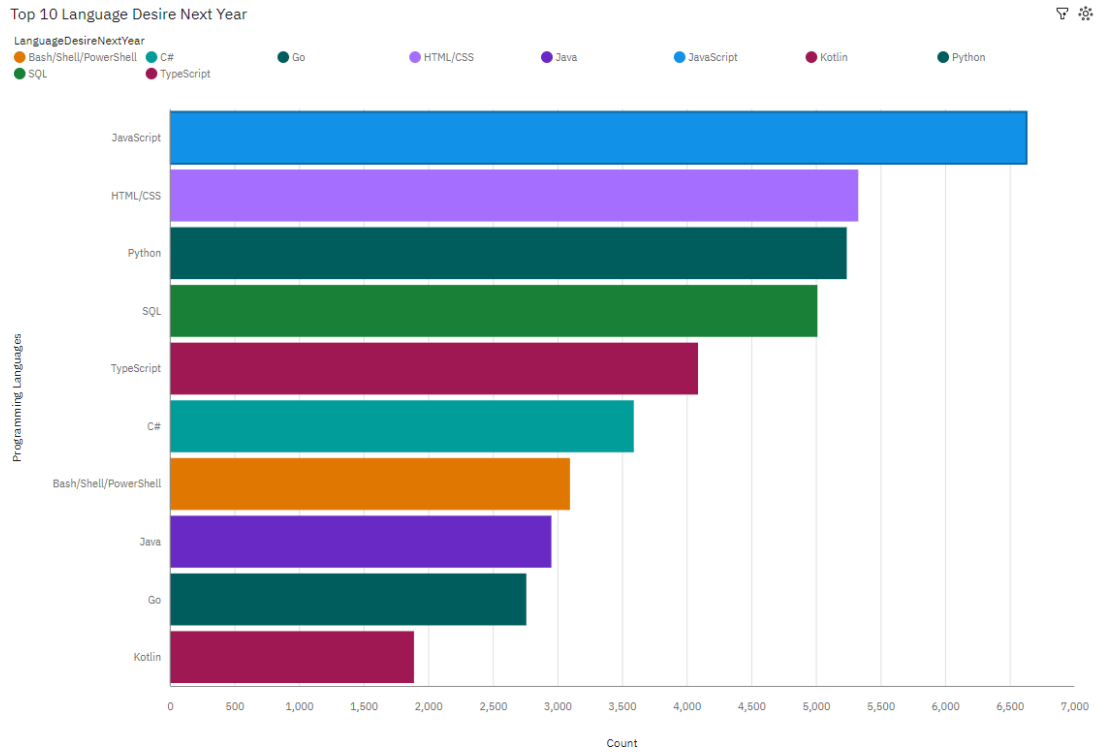
- The data was collected from a survey on a Stack Overflow blog under the OBDl: Open Database License.
- It consisted of two data sets:
  - The survey data, which was normalized, consisted of responses from approximately 75,000 participants. They were asked about their current and future technology interests.
  - The survey data consisted of a more clustered dataset with responses from approximately 11,000 participants. These respondents answered questions about various demographic factors, including country of origin, age, education level, ethnicity, and gender.

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



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PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

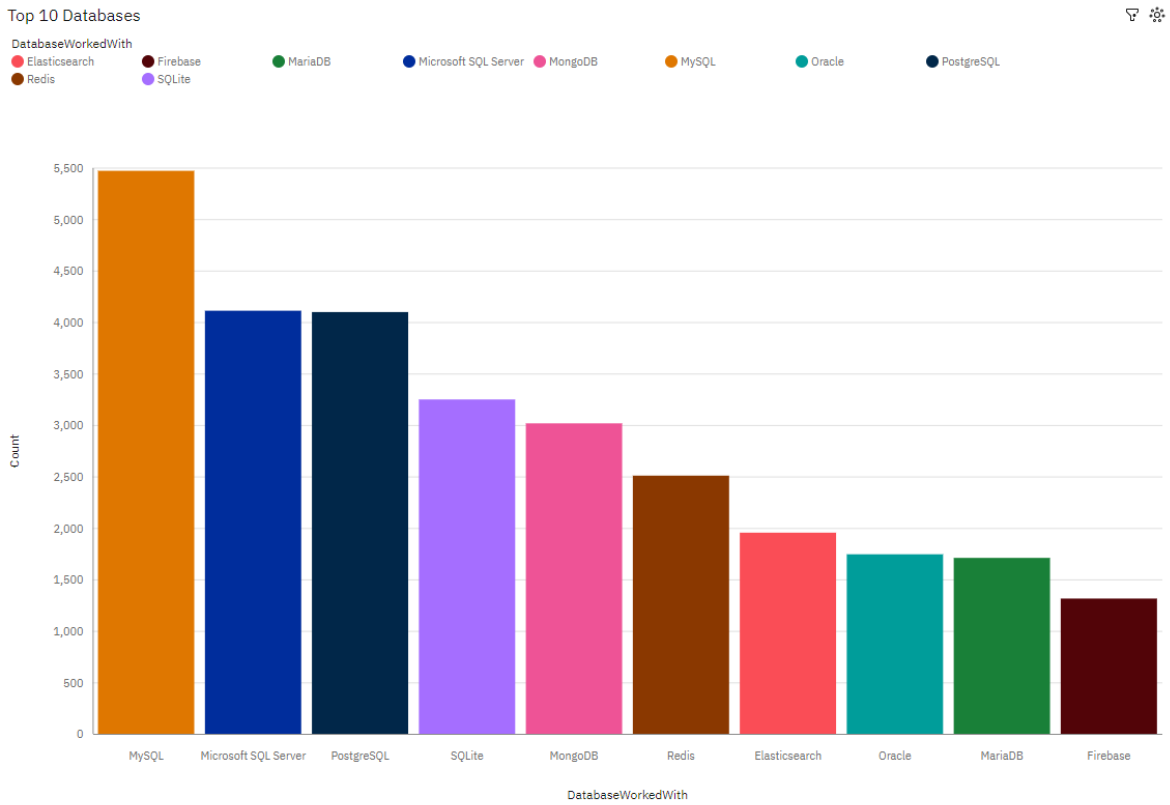
- JavaScript and HTML were the preferred programming languages, followed by SQL, PowerShell, and Python
- The languages listed above are the most in-demand for language learning in the coming year.

Implications

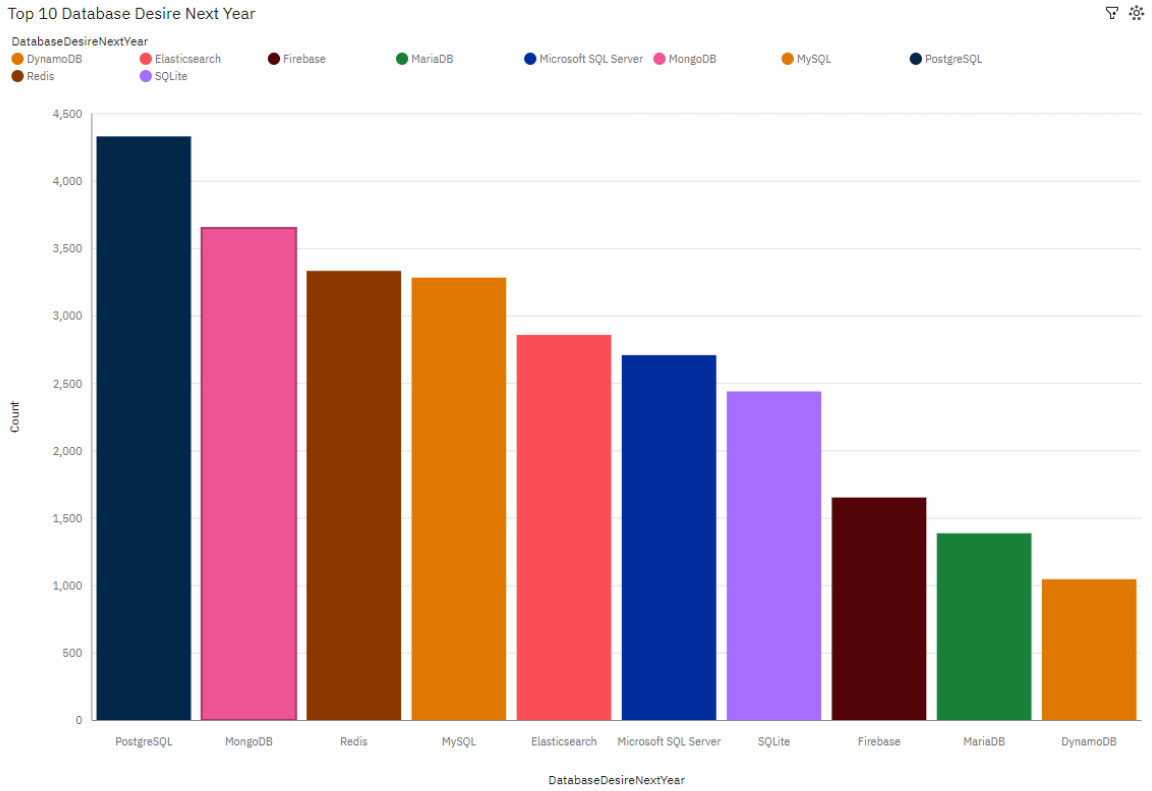
- As more JavaScript and HTML engineers enter the job market, the current high demand for these developers may decrease.

DATABASE TRENDS

Current Year



Next Year



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DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- While MySQL has long been the preferred database among developers, its dominance may wane in the coming years.
- PostgreSQL has become the database of choice among developers and is the most sought-after database for learning in the coming years.
- MongoDB was ranked the 5th most widely used database, its popularity continues to grow, making it the 2nd most in-demand database for people to learn in the year ahead.

Implications

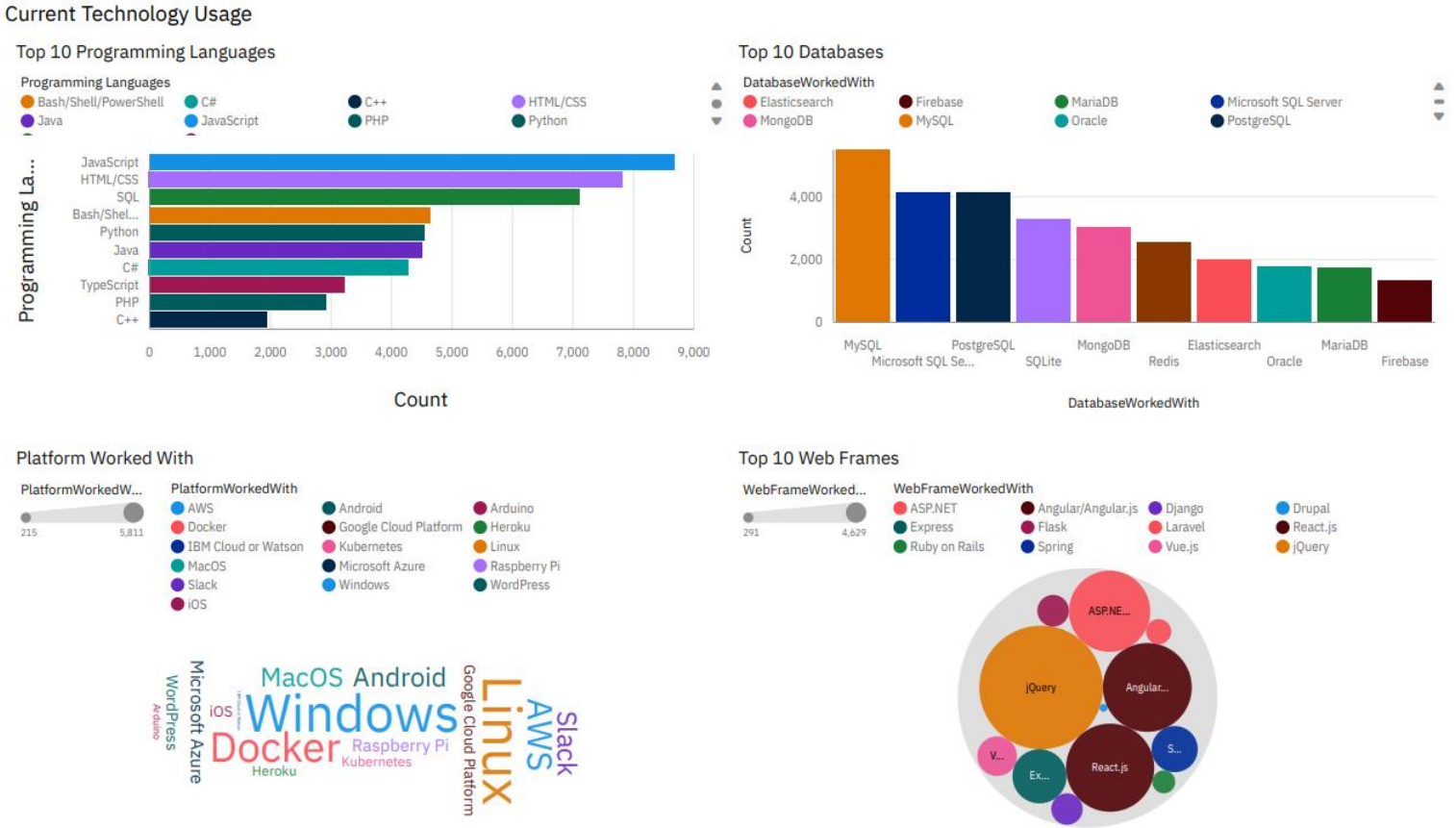
- In the coming years, the growing popularity of PostgreSQL and MongoDB is likely to lead more organizations to adopt these database technologies.
- As MySQL becomes more widely adopted, it may become insufficient for providing a competitive edge in terms of skills. Focusing solely on MySQL could limit your ability to stand out from others in the job market.

DASHBOARD

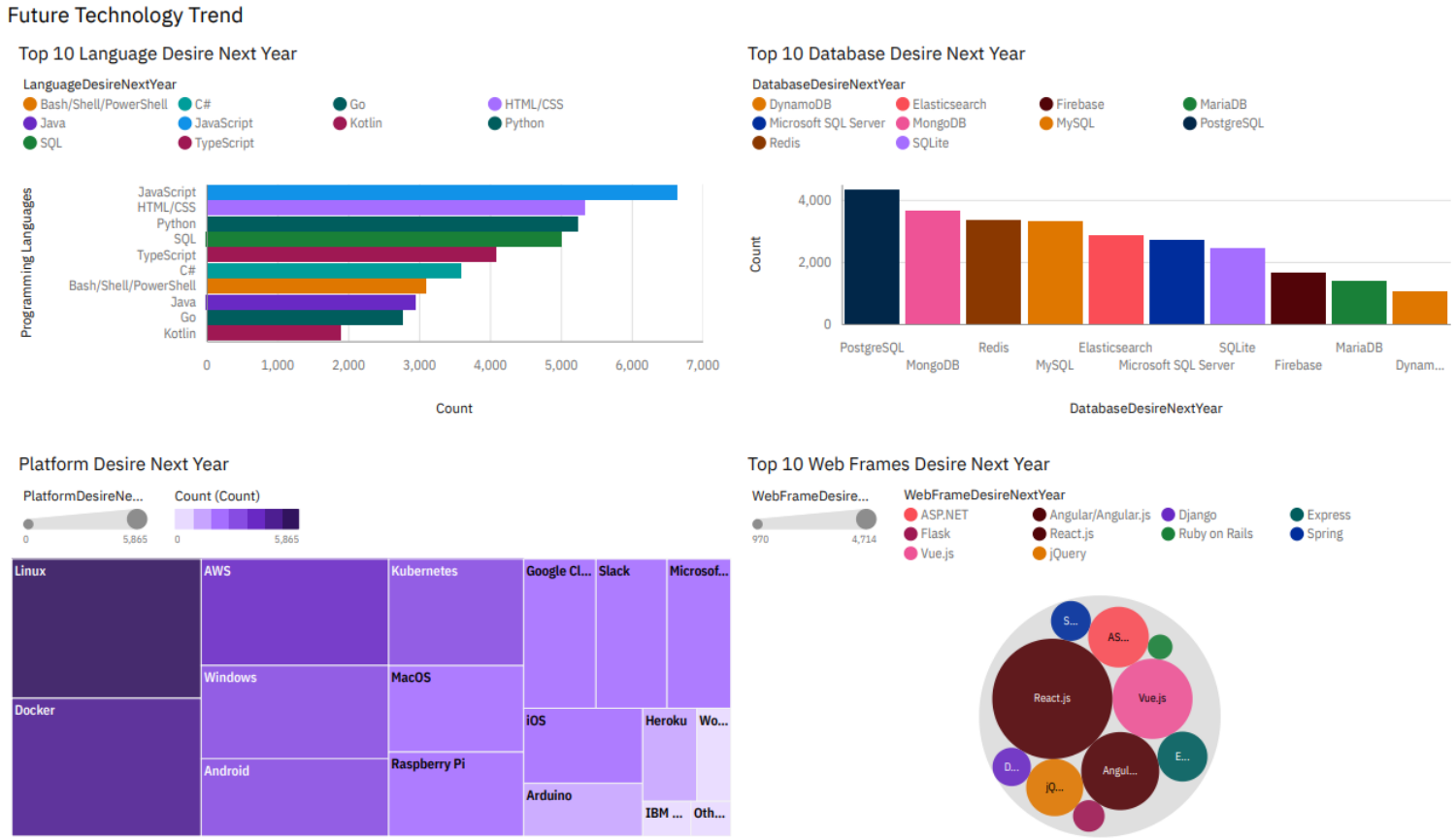
Link Below:

https://github.com/TheWanderer66/IBM-DA-Capstone-Project/blob/main/IBM%20DA%20Capstone%20Dashboard.pdf

DASHBOARD TAB 1



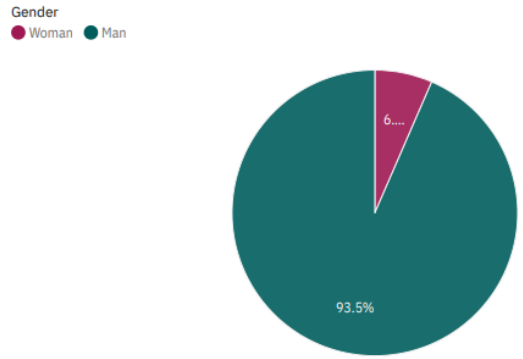
DASHBOARD TAB 2



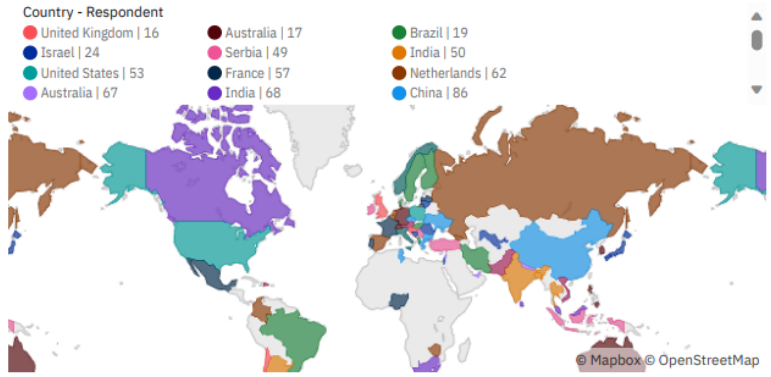
DASHBOARD TAB 3

Demographics

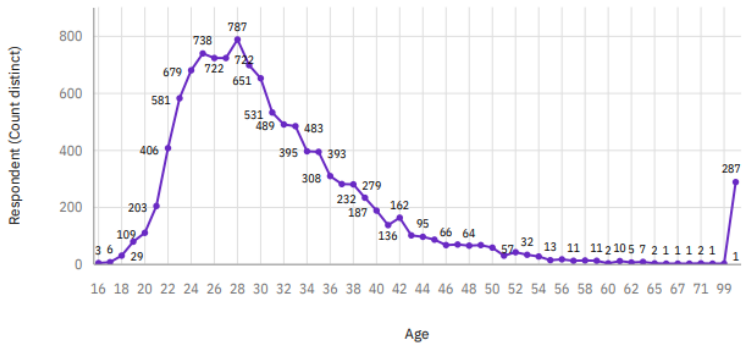
Respondent classified by Gender



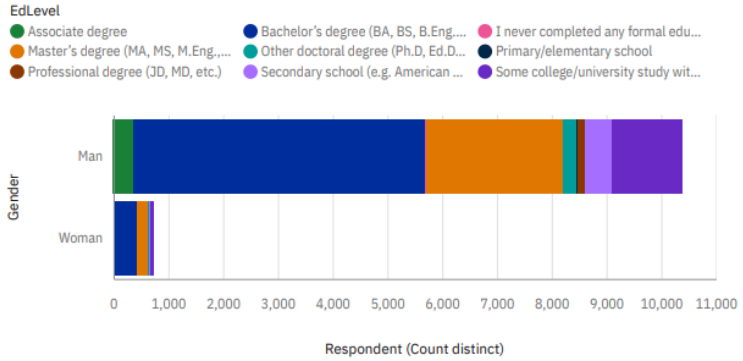
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



DISCUSSION

- Languages:
  - As newer programming languages gain popularity, will SQL and Python's dominance diminish in the coming years?
- Databases:
  - Is MongoDB and PostgreSQL poised to surpass MySQL as the preferred database technology in the years ahead?
  - Why is the popularity of MySQL declining so drastically?

OVERALL FINDINGS & IMPLICATIONS

Findings

- The technology survey results show a male-dominated respondent pool, with the majority hailing from the USA, followed by India, and falling within the 21 to 43 age range.
- Students with bachelor's or master's degrees frequently specialized in data technology.

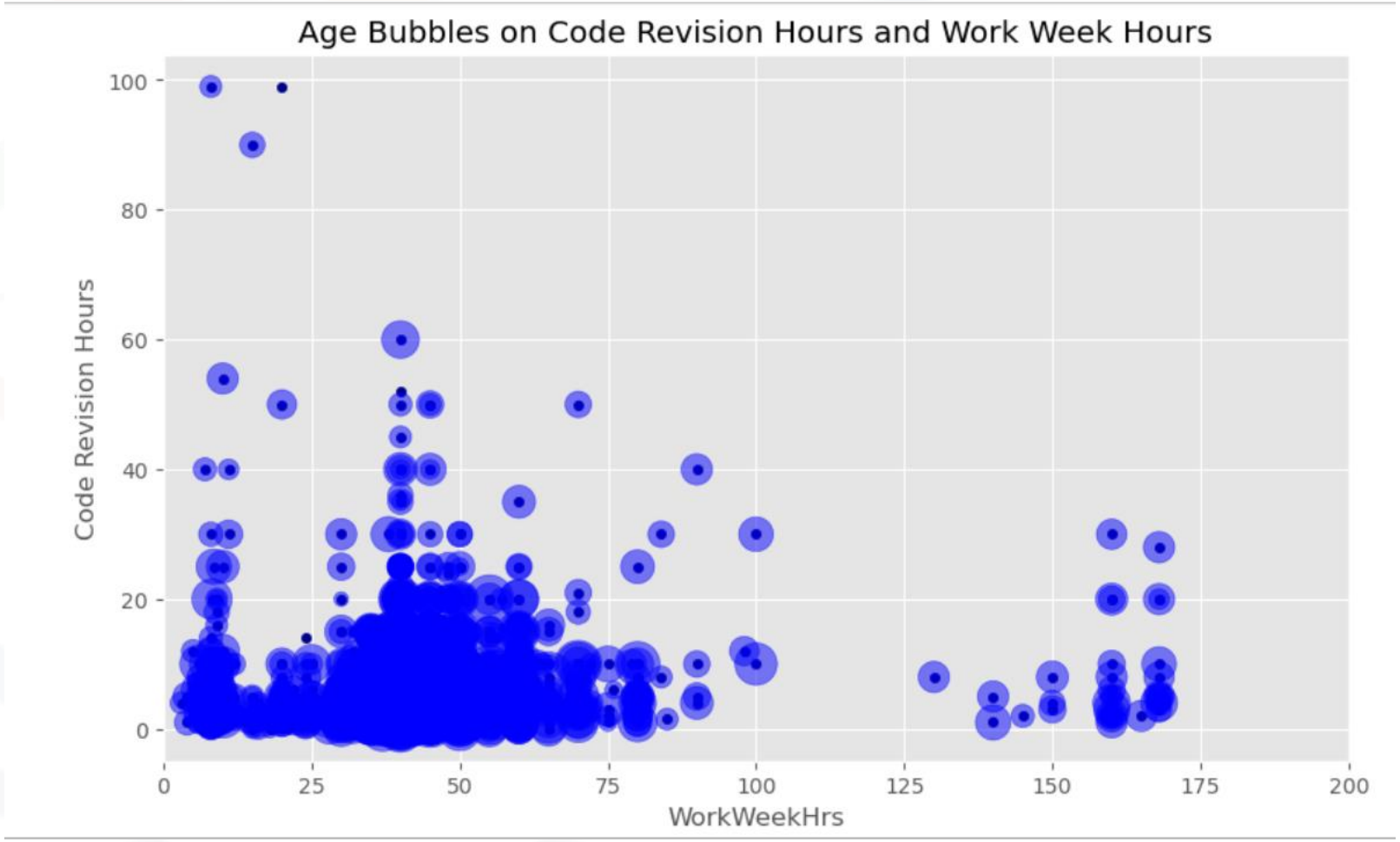
Implications

- The growing popularity of bootstrap camps among young people may prompt the creation of more such programs to enhance their skills.
- As more multinational corporations expand into this sector, popularity trends may also increase in other countries.

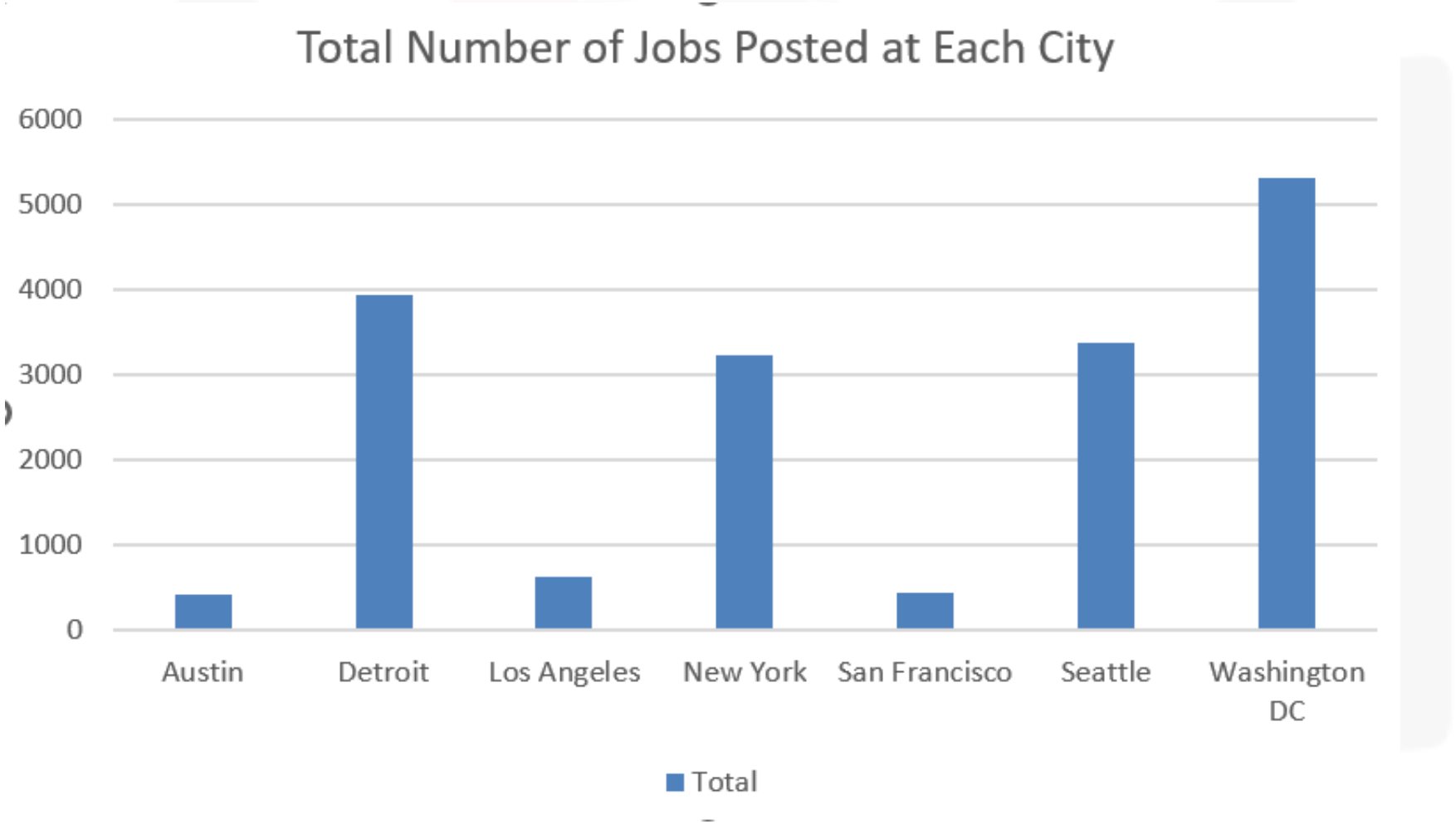
CONCLUSION

- To gain a comprehensive understanding, we analyzed the dataset to identify the current and emerging technology trends preferred by the respondents, taking into account their demographic profiles.
- The visualizations clearly indicate that the preferred technology trends are concentrated among individuals aged 21 to 43.
- HTML and JavaScript are widely regarded as the most popular programming languages, a trend that is expected to continue in the coming years based on projected technology developments.
- The popularity of MySQL appears to be declining, with PostgreSQL and MongoDB emerging as increasingly preferred database options.
- As multinational corporations expand into new technology fields to stay competitive, we may see a rise in the use of these technologies across various countries.

APPENDIX


Age Bubbles on Code Revision Hours and Work Week Hours
Code Revision Hours
WorkWeekHrs
0
20
40
60
80
100
0
25
50
75
100
125
150
175
200

JOB POSTINGS



POPULAR LANGUAGES