IBM DATA ANALYST CAPSTONE PROJECT

Grace Kundred
02.12.2024
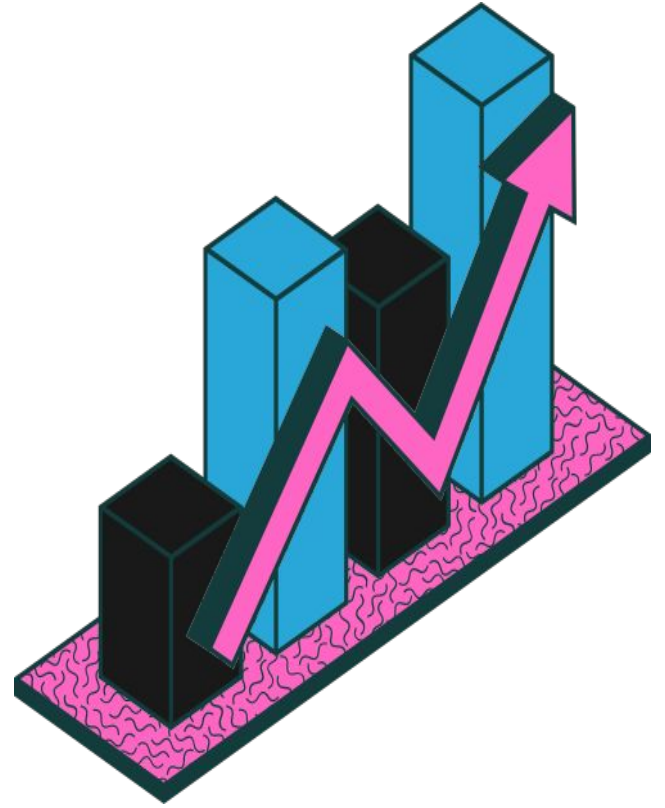
OUTLINE
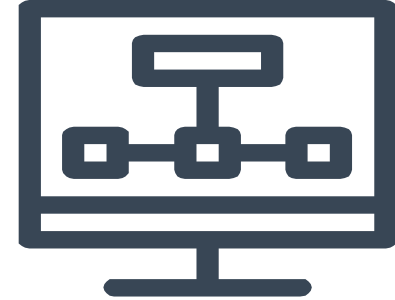
EXECUTIVE SUMMARY

- Discuss current technology trends
- Discuss overall findings and implications regarding the results
- Future technologies
    - Languages
    - Databases
    - Platforms
    - Web Frames
- Technology gap in USA
    - Rising trends in outsourcing
- Final conclusion

INTRODUCTION

I will be assisting with this initiative and have been tasked with collecting data from various sources and identifying trends for this year's report on emerging skills.

To keep pace with changing technologies & remain competitive in our sector, we must identify trends for emerging skills and technologies for our company to understand future skill requirements.

Questions for analysis:

What are the top programming languages in demand?

What are the top database skills in demand?

What are the popular IDEs?

METHODOLOGY

- Collect Survey data and explore content via:
  - APIs
  - Web Scraping
  - Request Library
- Collected the top programming skills that are in the most demand using the following publicly available sources:
  - Job Postings
  - Training Portals
  - Surveys
- Utilized **data wrangling techniques** to ensure data is properly cleaned and ready for analysis
- **Data Visualization** to understand the distribution of the data, relationships, the composition & comparison of data from various sources
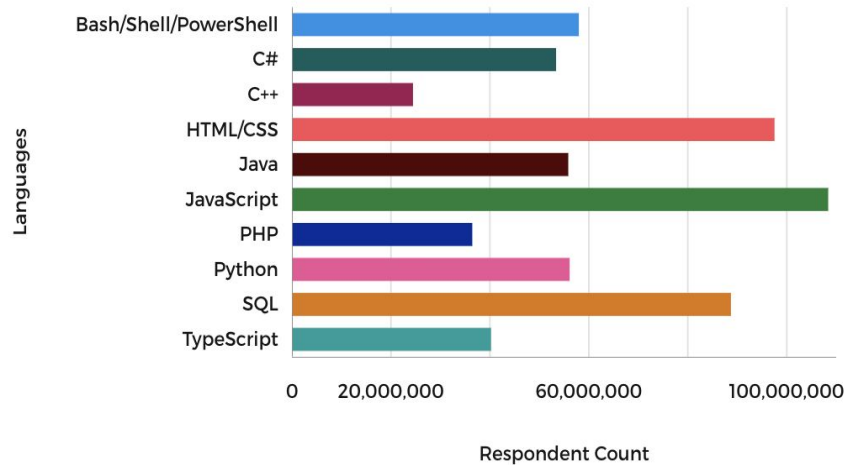- Identified **insights & trends** to visualize through Dashboards

RESULTS

- Python maintains its ranking as a top used programming skillset
- Cloud based technologies are increasing as a top priority for companies in the tech space
- The amount of women in the workforce in the Tech industry is continuing to grow, while still small at this period in time
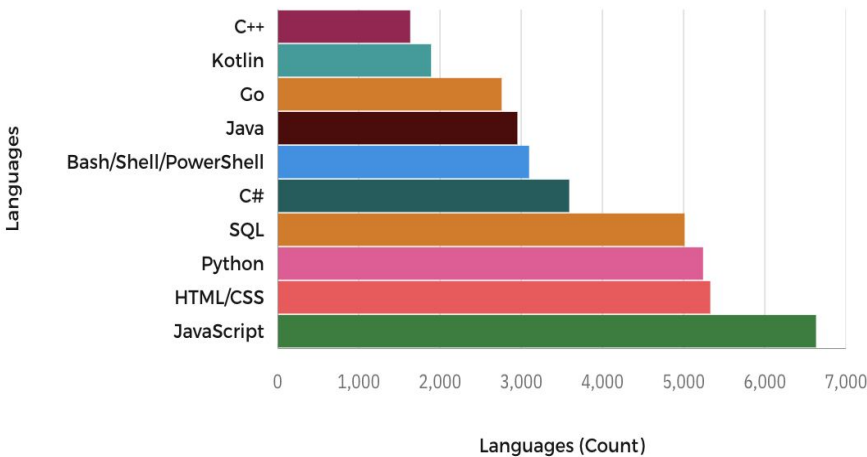
PROGRAMMING LANGUAGE TRENDS

Current Year

Next Year

Top 10 Languages Worked With

Top 10 Languages Desired to Work With Next Year

PROGRAMMING LANGUAGE TRENDS: FINDINGS & IMPLICATIONS

Findings

- JavaScript, SQL, and HTML/CSS are the most popular languages currently
- Python continues to gain popularity as a desired language for next year
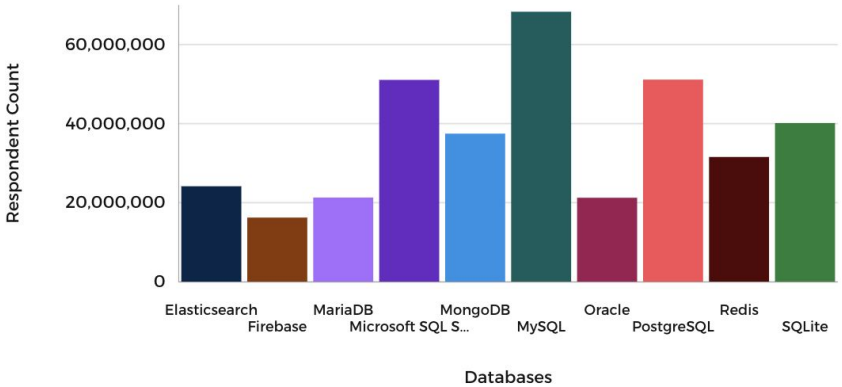- PowerShell popularity will decrease significantly next year

Implications

- Web Development will continue to be in high demand
- Python maintains its rank as one of the most popular languages moving into the next year
- SQL will continue to grow in demand likely due to the applications use in Companies for various professions (data analysis, data science, machine learning, software engineering, etc.)
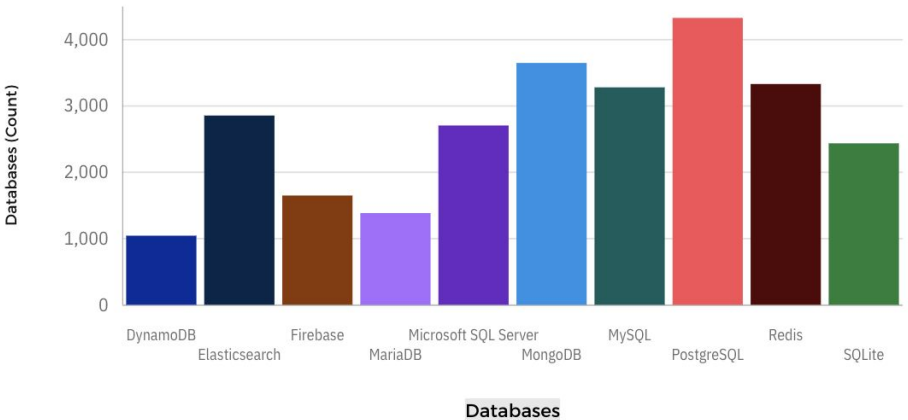
DATABASE TRENDS

Current Year

Next Year

Top 10 Databases Worked With

Top 10 Databases Desired to Work With Next Year

DATABASE TRENDS: FINDINGS & IMPLICATIONS

Findings

- MySQL is the top database used presently
- PostgreSQL and MongoDB are seen to have increasing popularity for the upcoming year

Implications

- Redis and Elasticsearch are going to be very popular in the database world
- Open Source databases maintain their popularity next year
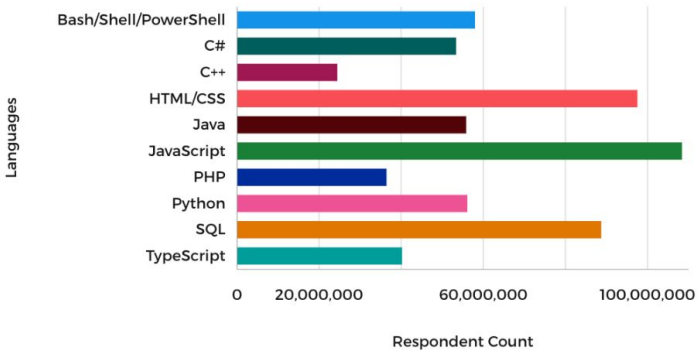- Additional NoSQL databases will be utilized to store non-relational data

DASHBOARD

https://github.com/gracekundred/IBM-Data-Analyst-Capstone/blob/main/IBM%20Dashboards%20(Capstone%20Project).pdf

DASHBOARD : TAB 1

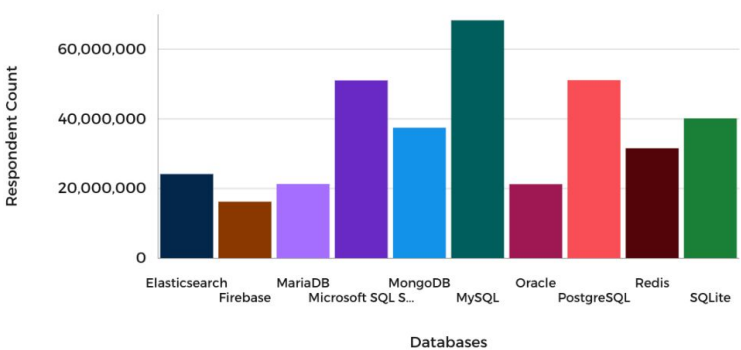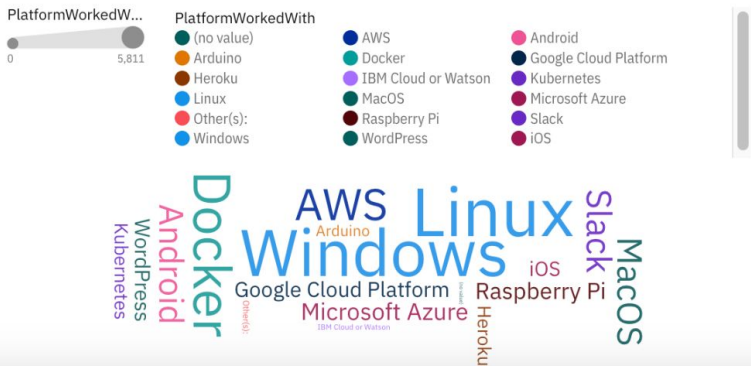## Top 10 Languages Worked With

Top 10 Databases Worked With

Platforms Worked With

WebFrames Worked With

DASHBOARD : TAB 2
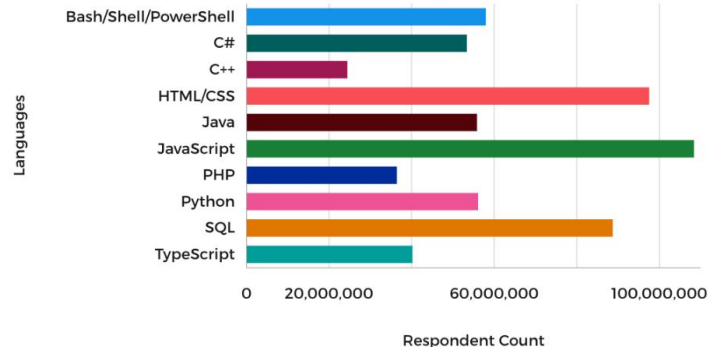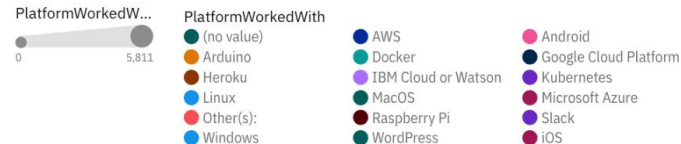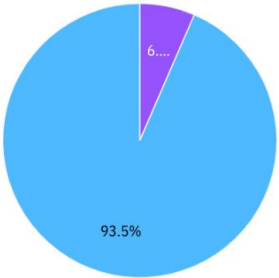
DASHBOARD : TAB 3

Current Technology Usage   Future Technology Trends   **Demographics**   +
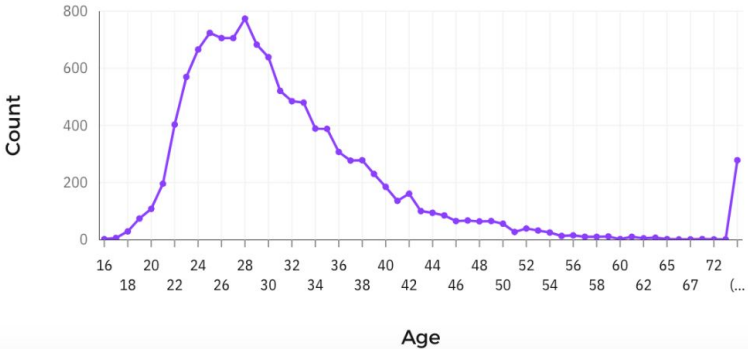
Respondent Classified by Gender

Gender
- Woman
- Man

6....
93.5%

Respondent Count for Countries

Respondent (Count)
1   3,127

Respondent Count by Age

Count (y-axis): 0, 200, 400, 600, 800
Age (x-axis): 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 72, (...
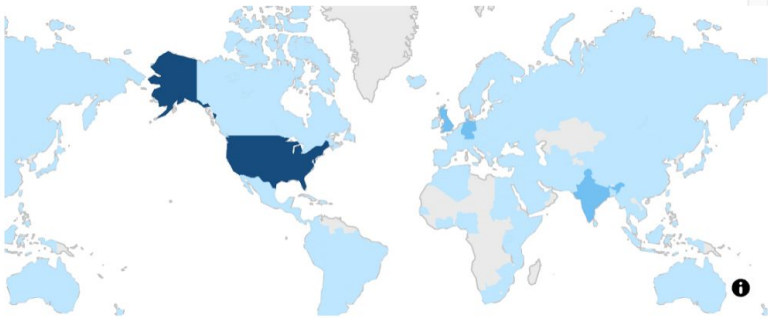
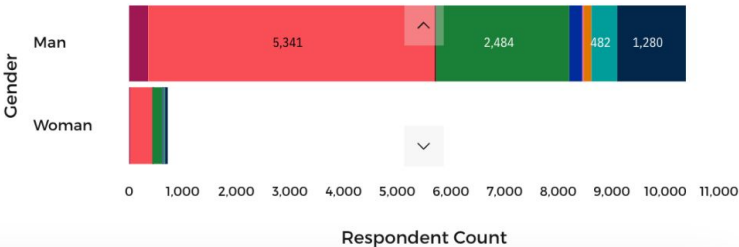**Respondent Count by Gender, classified by Formal Education Level**

EdLevel
- Associate degree
- Master's degree (MA, MS, M.Eng., MBA, etc.)
- Professional degree (JD, MD, etc.)
- Bachelor's degree (BA, BS, B.Eng., etc.)
- Other doctoral degree (Ph.D, Ed.D., etc.)
- I never completed any formal education
- Primary/elementary school
- ..

Gender:
- Man: 5,341   2,484   482   1,280
- Woman

Respondent Count (x-axis): 0, 1,000, 2,000, 3,000, 4,000, 5,000, 6,000, 7,000, 8,000, 9,000, 10,000, 11,000

DISCUSSION

- Rising popularity of employees entering into tech space
- Companies using budget to build upon current tech stack to make workforce more efficient due to lack of budget for employees
- Rising popularity of different roles? Increase in Career transitions from non-tech roles to tech?
- How can we incentivize more women to work in the tech space?

OVERALL FINDINGS & IMPLICATIONS

Findings

- Massive changes in the Technology space
- Rising popularity of outsourcing to countries out of the USA, likely a cause for new technologies becoming more popular
- Cloud-based technologies gaining popularity as the tech space shifts away from on-prem environments

Implications

- Need for companies to adapt new technologies to maintain security and stay modern in the coming years
- Focus must stay on optimizing cloud technologies, may look to increasing the teams for our company
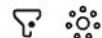- Hiring on new consultants for the technology we currently do not utilize

CONCLUSION

- New Technology will keep us at the top of the market space

- Trends showing the importance of cloud computing roles and AI

- The tech stack for newer Software Engineers and Database employees should be considered before hiring anyone on
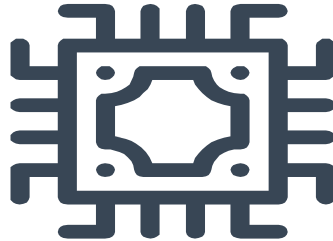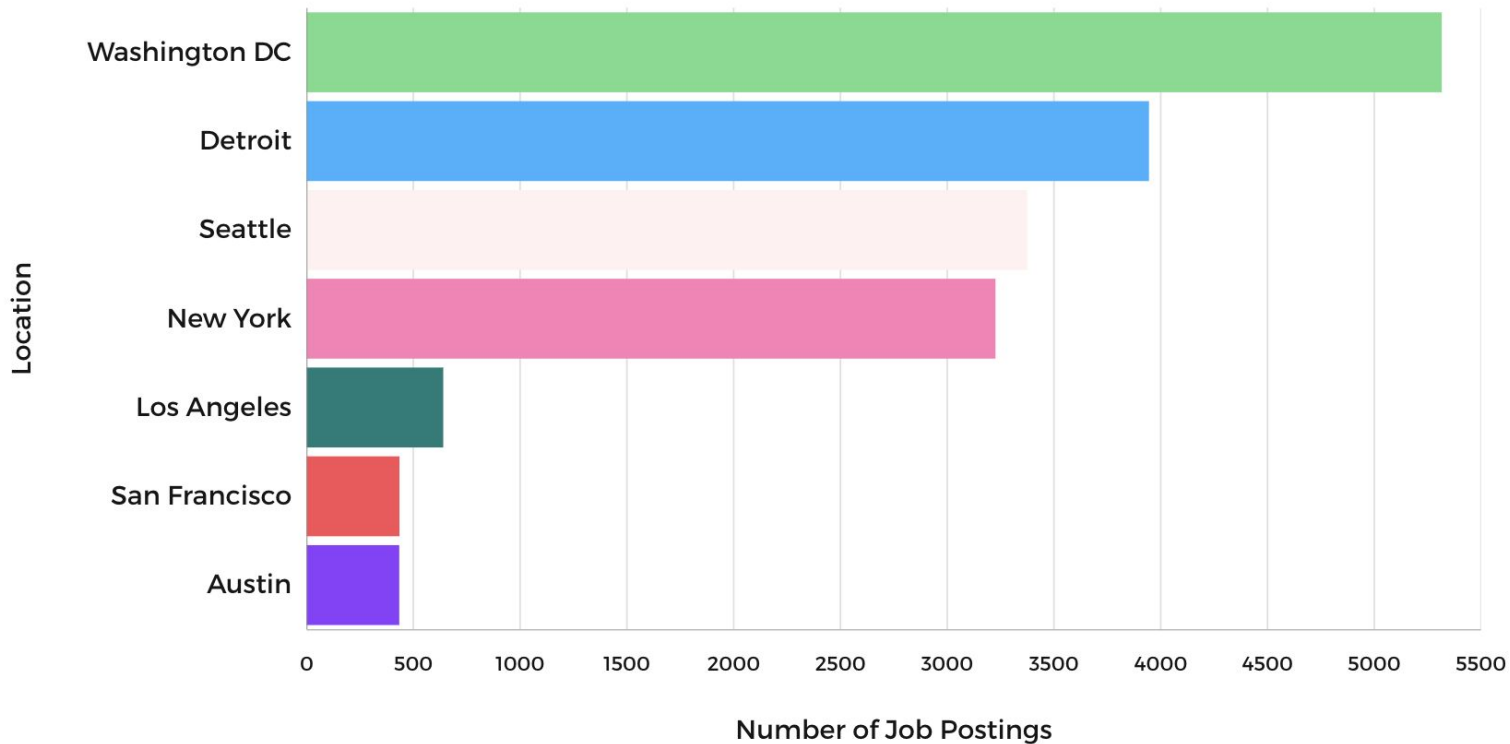
APPENDIX

JOB POSTINGS

Number of Job Postings by Location

POPULAR LANGUAGES

Popular Languages