



Programming Languages: Present and Future

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27 June, 2022

OUTLINE

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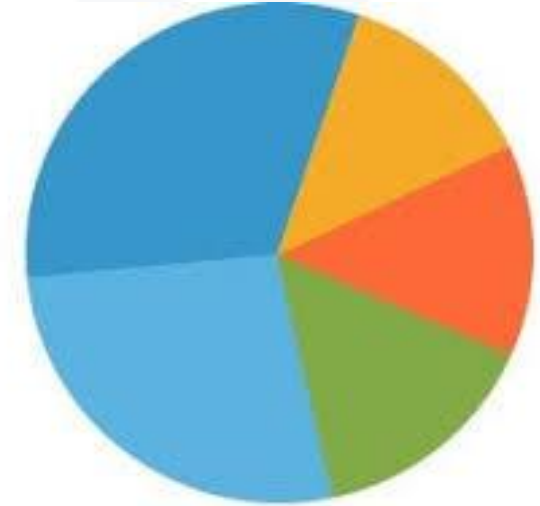
EXECUTIVE SUMMARY



- JavaScript and HTML are most popular languages and will remain so
- Python and TypeScript rising while SQL and Bash/Shell are falling
- PostgreSQL database is popular and will become more so
- Redis and Elasticsearch databases will jump up soon
- MySQL, Microsoft SQL, and SQLite are popular databases but will decrease in popularity

INTRODUCTION

- Programming languages drive and underlie many businesses and industries
- Knowing the landscape can boost productivity and predict future trends
- What programming languages are in demand?
- What database skills are most used?
- What are the general demographics of programmers?
- What are likely changes to these distributions in the short term future?



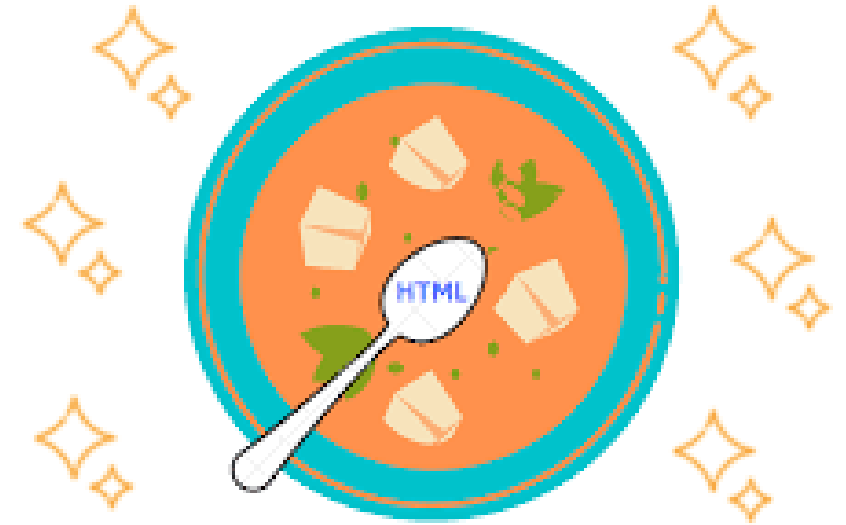
METHODOLOGY – API'S



- Data obtained from Kaggle.com by IBM
- Portion of data passed onwards by IBM
- Requests module used to grab data
- Json method converted format of data
- Custom functions used to grab desired data
- Openpyxl module used to transfer data to familiar Excel format.

METHODOLOGY – Webscraping

- Data obtained from kaggle.com by IBM
- Portion of data passed onwards by IBM
- Requests module used to grab data
- BeautifulSoup function from bs4 module used to parse html
- Custom functions utilized to grab desired data



METHODOLOGY – Data Exploration



- Data obtained from Kaggle.com by IBM
- Portion of data passed onwards by IBM as a URL
- Pandas module use to convert data to DataFrame
- Various Pandas methods employed to glean insights from data
 - head()
 - shape
 - dtypes
 - mean()
 - unique()

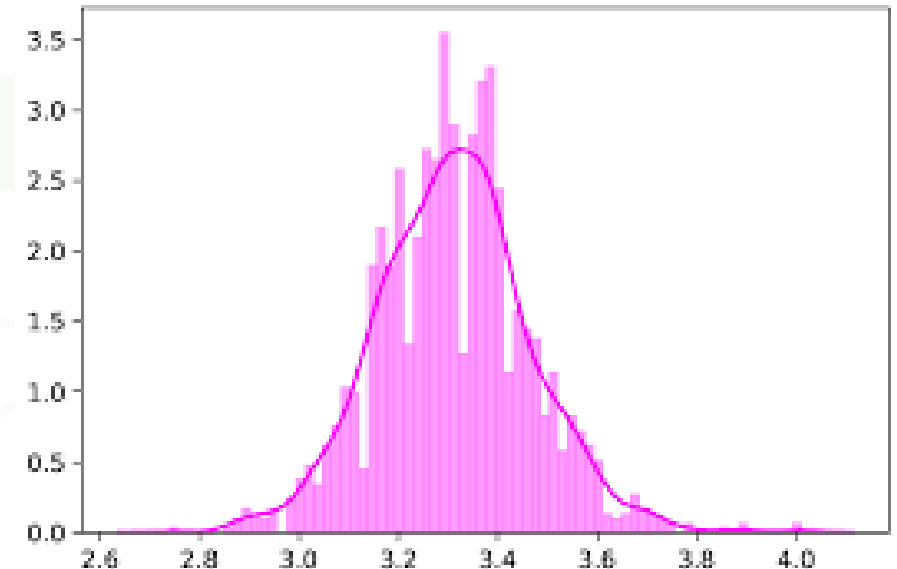
METHODOLOGY – Data Wrangling

- Data obtained from Kaggle.com by IBM
- Portion of data passed onwards by IBM as a URL
- Pandas module use to convert data to DataFrame
- Various Pandas methods employed to clean/prepare the data
 - `duplicated()`, `drop_duplicates()`
 - `isnull()`, `fillna()`
 - `mode()`,
 - `value_counts()`, `unique()`, `head()`

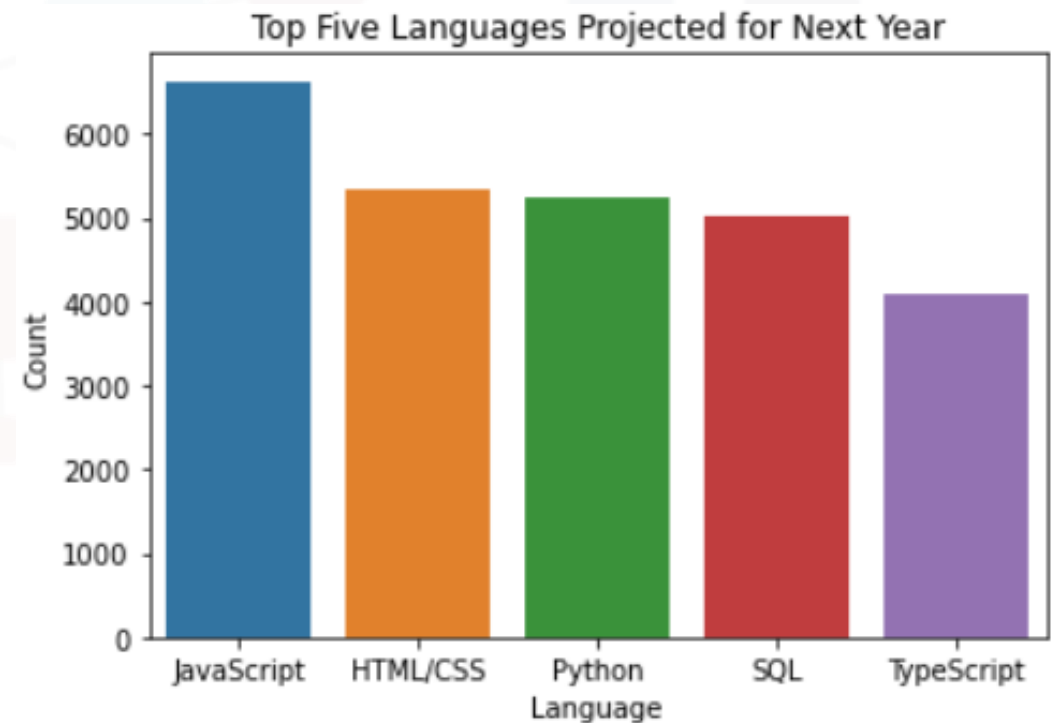
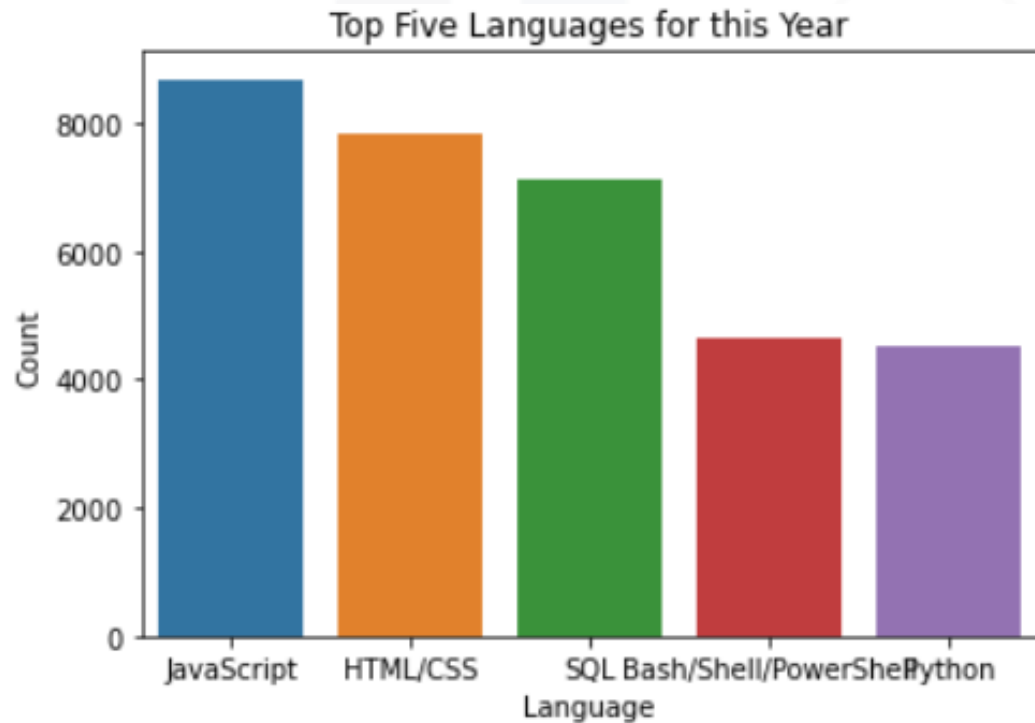


METHODOLOGY – Exploratory Data Analysis

- Data obtained from Kaggle.com by IBM
- Portion of data passed onwards by IBM as a URL
- Various Pandas methods employed to format/plot data
 - Pandas/Numpy modules for formatting
 - min(), max(), median(), quantile()
 - matplotlib and Seaborn for plotting
 - distplot(), plot(), boxplot(), .corr()



Results: PROGRAMMING LANGUAGE TRENDS



PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS

Findings:

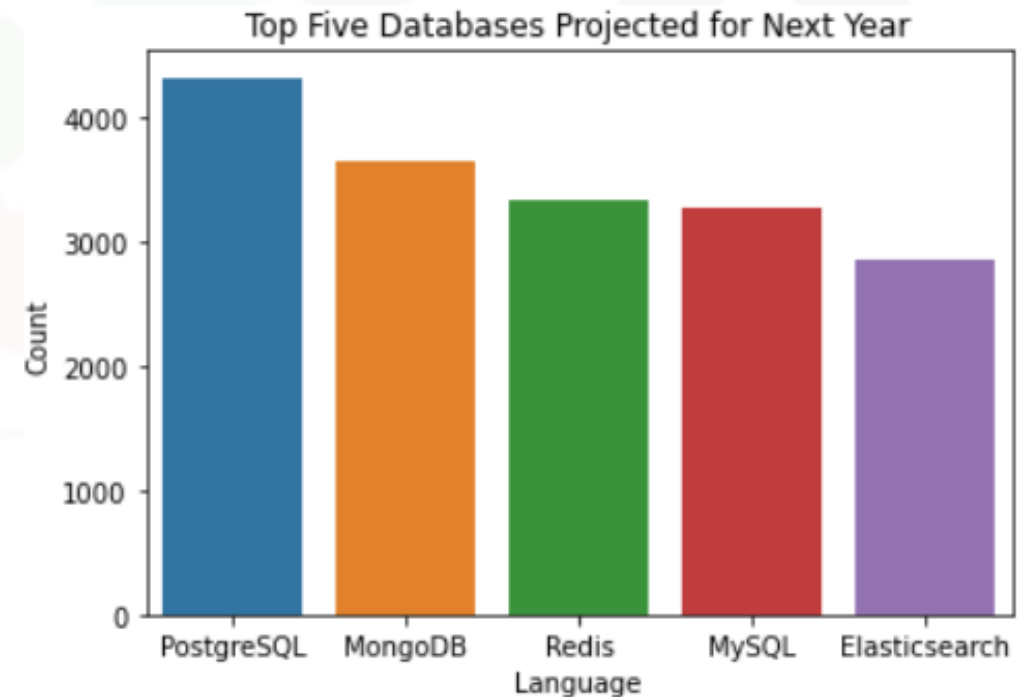
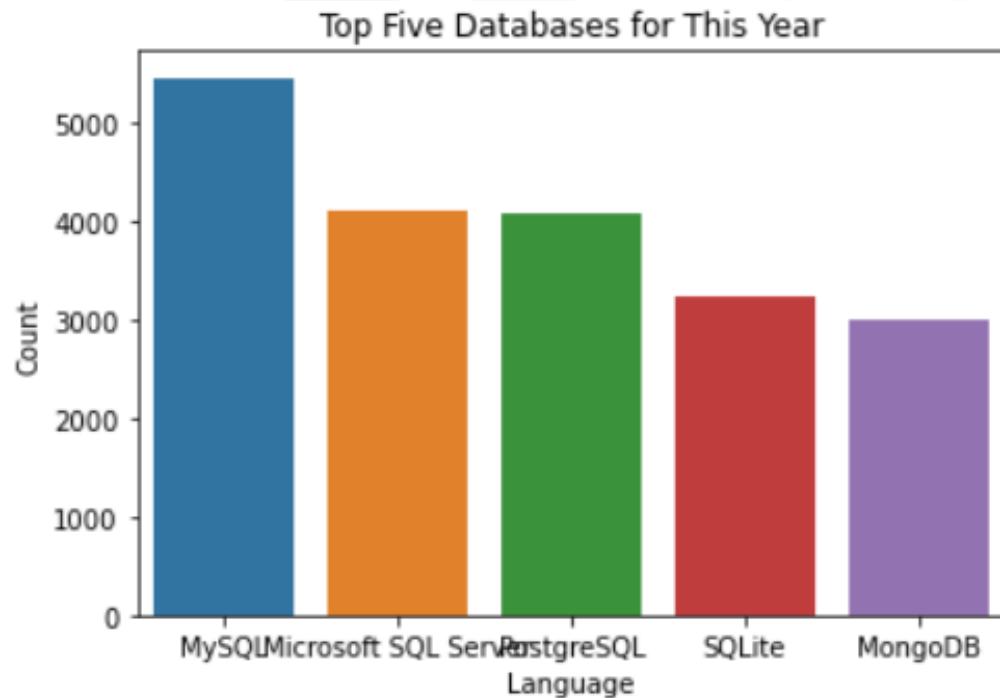
JavaScript and HTML are and are projected to be the two 2 languages

- SQL and Bash/Shell are just behind, but both drop in the future.
- Python is closely behind those and is climbing!

Implications:

- JavaScript and HTML maintain tops spots
- Python and TypeScript gaining in relative use/popularity
- SQL and Bash/Shell dropping in relative use/popularity

Results: DATABASE TRENDS



DATABASE TRENDS – FINDINGS & IMPLICATIONS

Findings

- MySQL is most popular now but will drop in the future.
- PostgreSQL popular and will become more so
- Microsoft SQL and SQLite popular but will drop significantly
- MongoDB popular and rising
- Redis and Elasticsearch will jump into top 5 soon

Implications

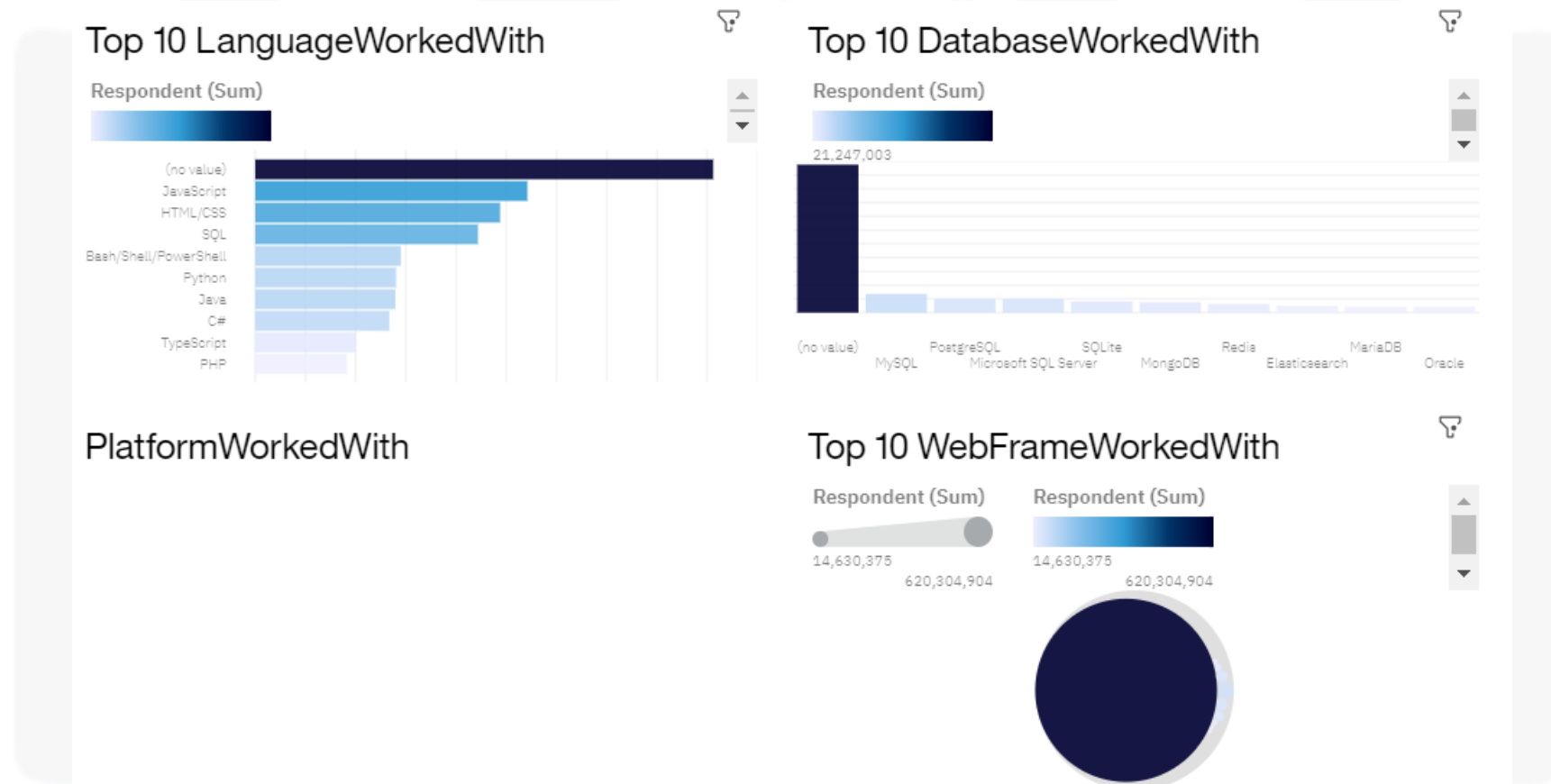
- PostgreSQL, Redis, and Elasticsearch worth investing in
- Perhaps best to move away from Microsoft SQL, SQLite, MySQL
- MongoDB also worthy on further investment/education

DASHBOARD

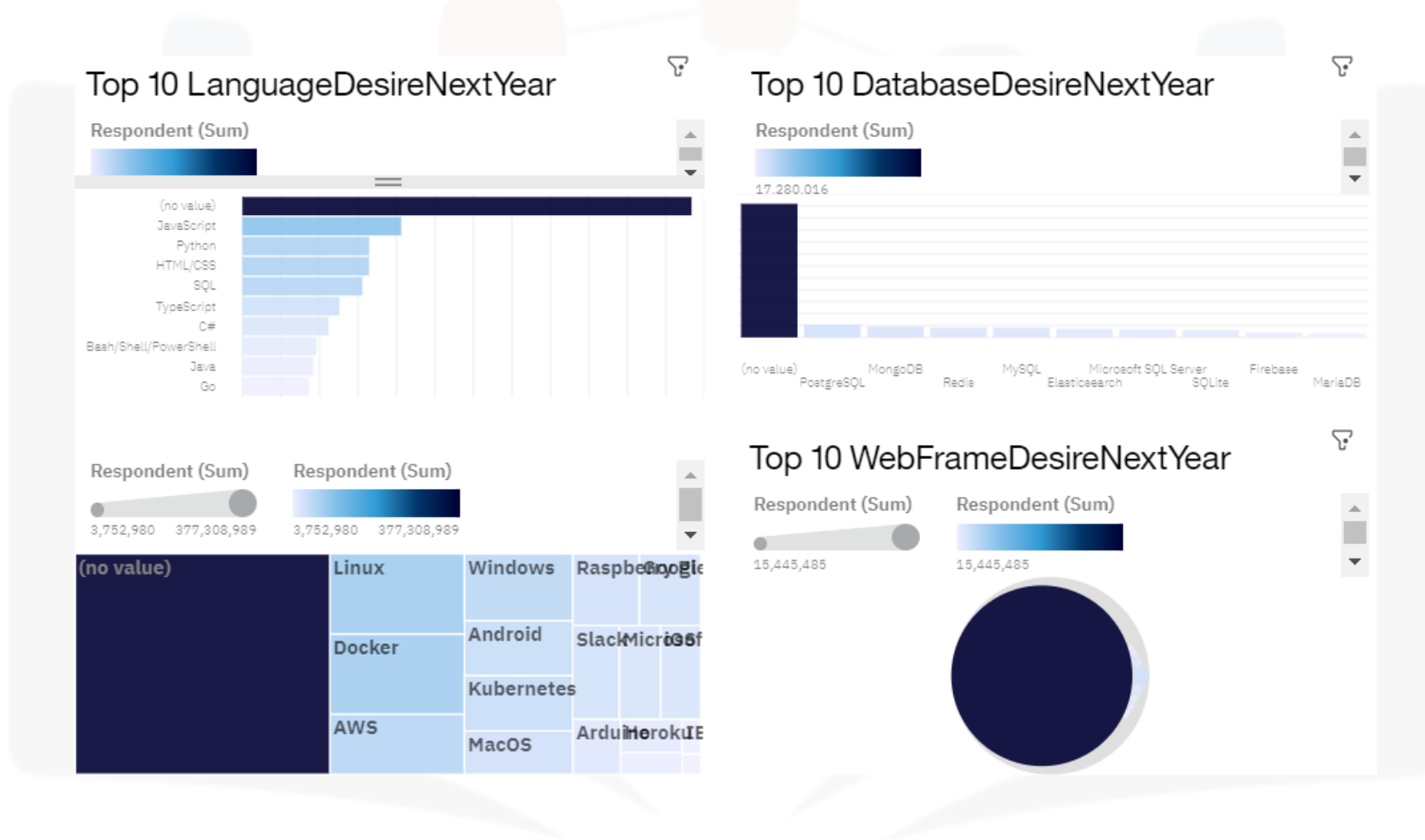


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DASHBOARD: Current Technology Use



DASHBOARD: Future Technology Use

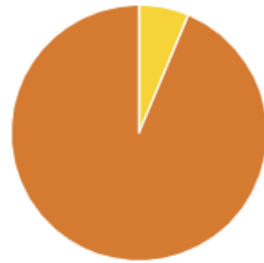


DASHBOARD: Demographics

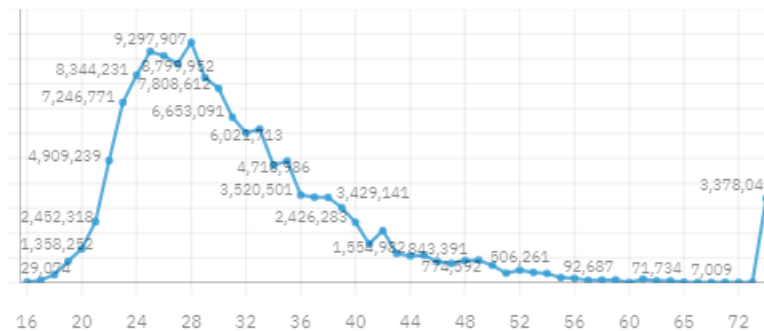
Respondents by Gender

Gender

Woman Man



Respondent Count by Age



Respondents by Country

Respondent Count by Gender, classified by Formal Education Level

EdLevel

(no value)
Associate degree



DISCUSSION

- Men in their 20's dominate the programming field
- JavaScript, HTML and Python are and will be strong language choices
- MongoDB and PostgreSQL are strong databases with upward momentum
- Bash/Shell in a language that is being moved away from
- Microsoft SQL, SQLite, and MySQL are databases that are being moved away from

OVERALL FINDINGS & IMPLICATIONS

Findings

- Investing in HTML, JS, and Python are and will be top languages
- MongoDB and PostgreSQL are and will be top databases
- Decrease expected for Microsoft SQL and Bash/Shell

Implications

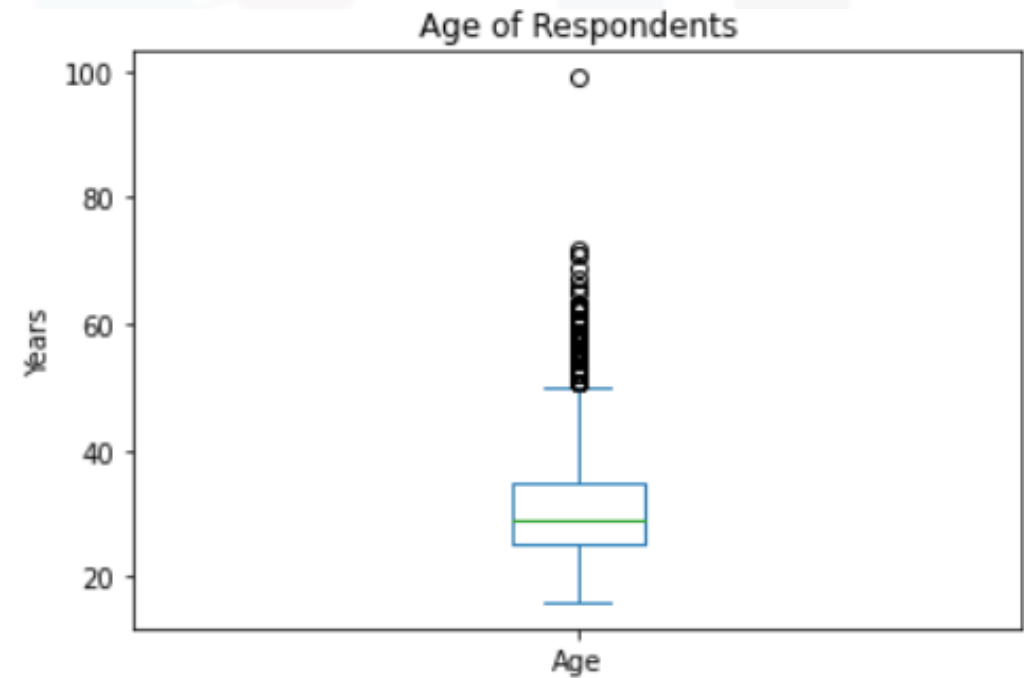
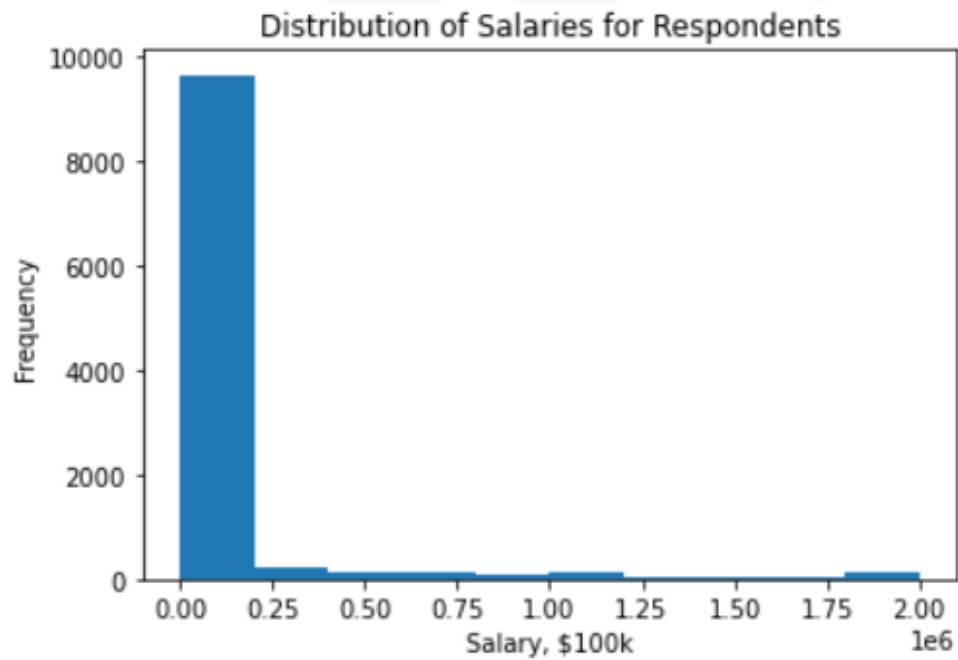
- Investing in HTML, JS, and Python are likely to pay off
- Investing in MongoDB and PostgreSQL are likely to pay off
- Focusing employee searches on men in their 20's like to pay off

CONCLUSION

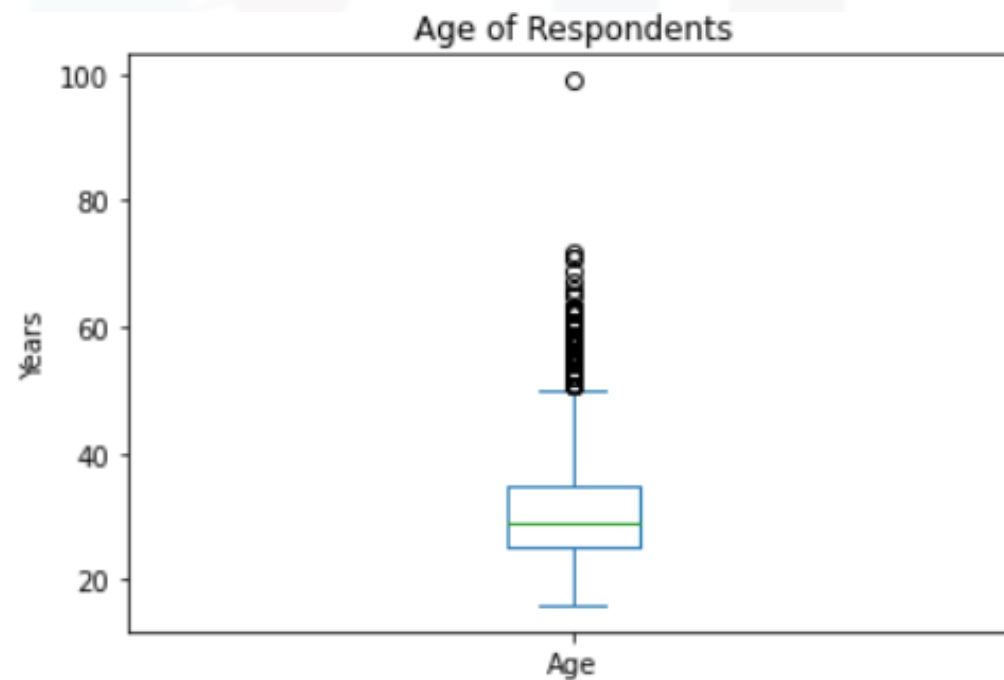
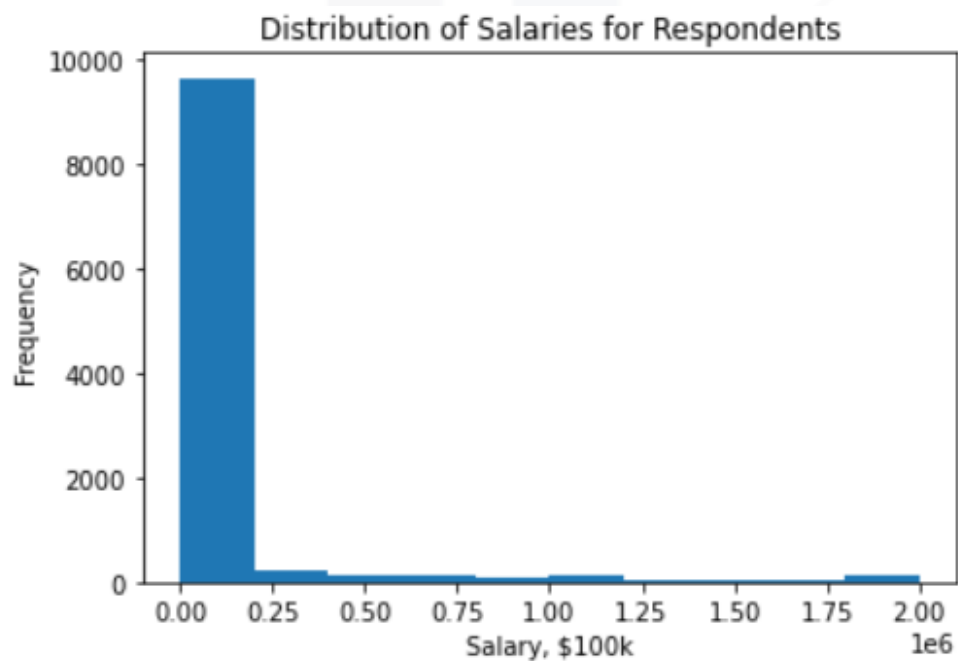


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- Investing in MongoDB and PostgreSQL are likely to pay off
- Focusing employee searches on men in their 20's like to pay off

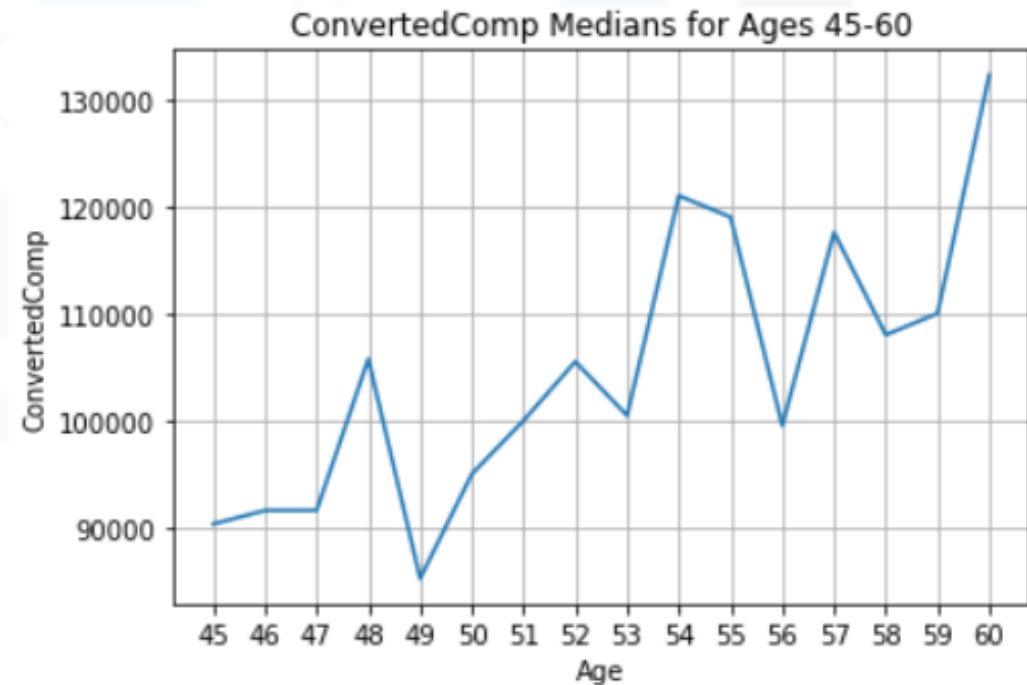
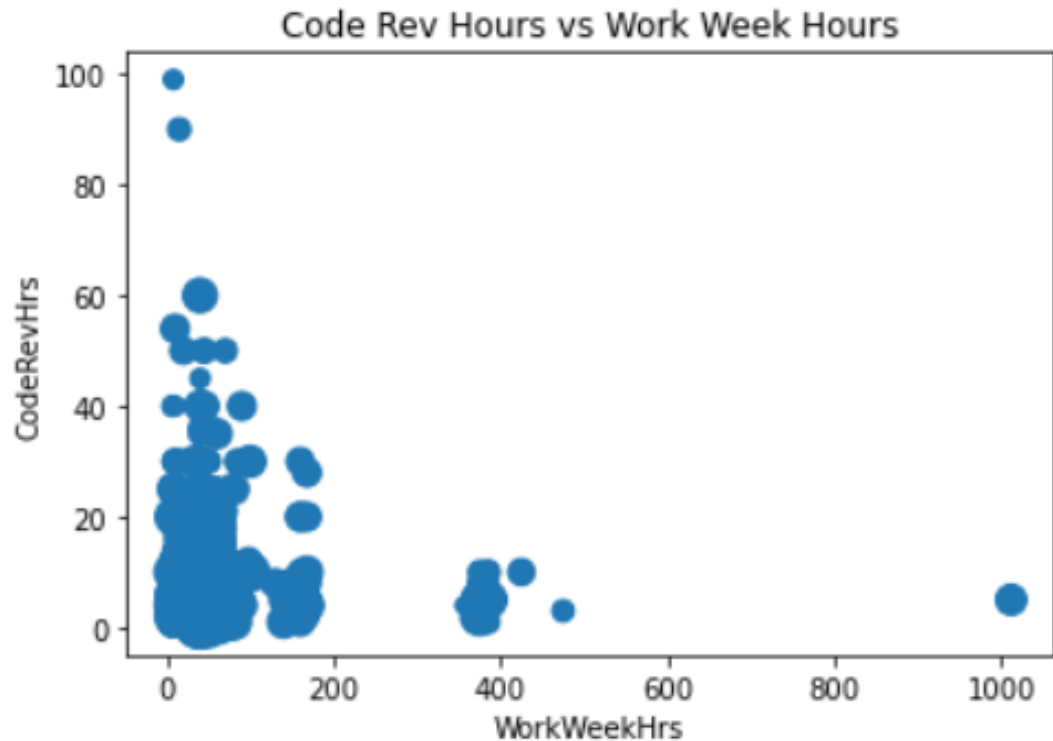
APPENDIX



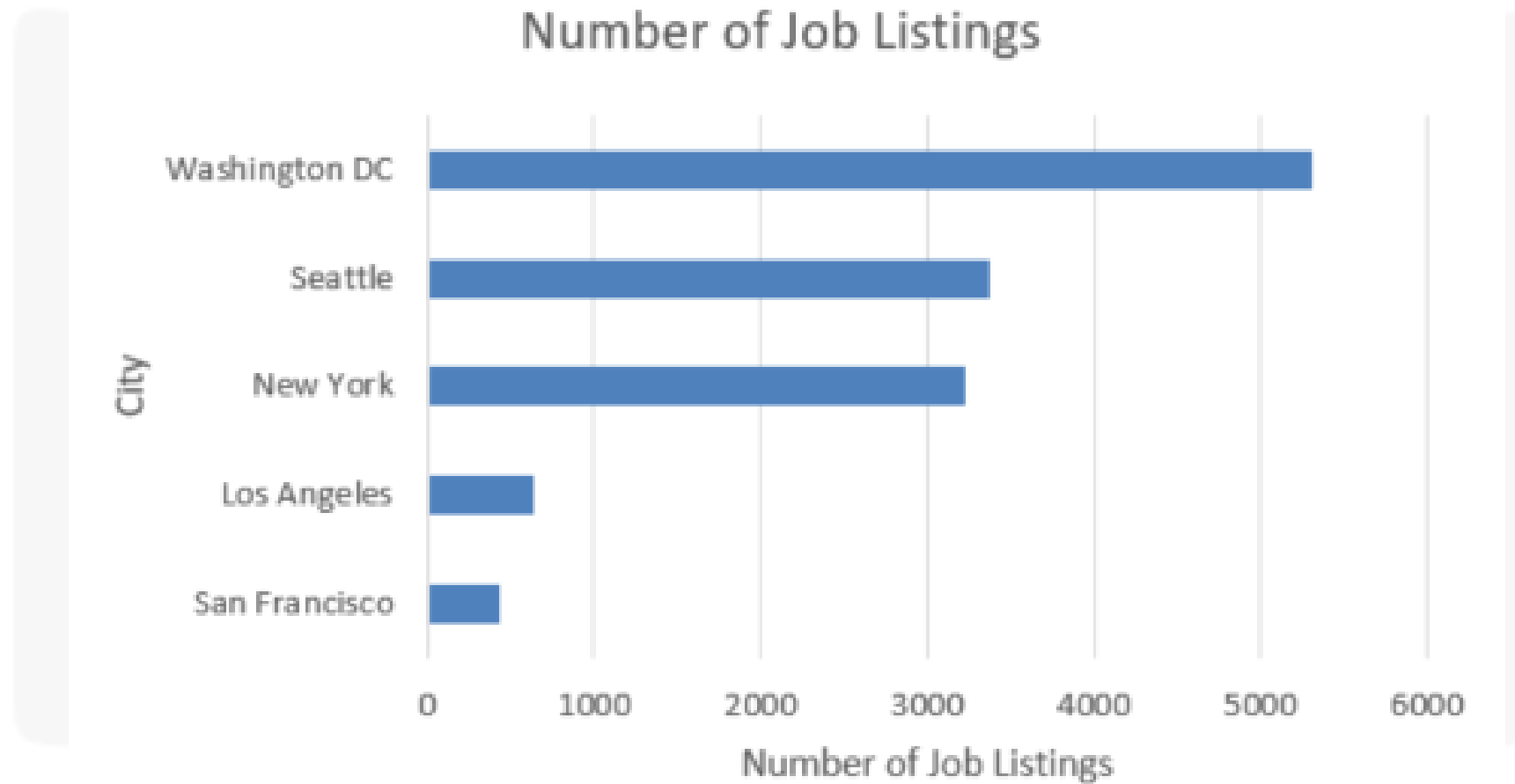
APPENDIX: Respondent Data



APPENDIX: Respondent Data



JOB POSTINGS



POPULAR LANGUAGES (job listings)

