



Software Professionals Survey Analysis

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OUTLINE



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- Methodology
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 - Visualization – Charts
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EXECUTIVE SUMMARY



- An online survey was conducted of software professionals across the world.
 - Mean age of participants was 30.77 years
 - Survey participants came from 135 unique countries
 - Most active software professionals are in the age range of 21-40 years of age
- Javascript is the top in-demand programming language
- MySQL is the most used, with Postgres the top in-demand database skill
- JQuery is currently the most used WebFrame, with React set to be the top in-demand WebFrame
- The software industry is dominated by men who have at least a Bachelor's degree or Master's degree

INTRODUCTION



- The purpose of this report is to identify trends for emerging skills for software professionals
- The information is targeted at software professionals and companies in the industry who wish to gain insights changing technologies
- Through reading this report readers will gain insights on future skills that are required to remain competitive. Key insights that will be gained include:
 - top programming languages in demand
 - top database skills in demand
 - popular IDEs
- Statistical techniques were applied to analyse the data. All the information was then brought together via dashboards.

METHODOLOGY



- **Data sources** used were survey data stored in csv format, provided websites and RDBMS's
- The data was **collected** through:
 1. Reading survey dataset from csv file using pandas
 2. Collecting job data from the Jobs API
 3. Scrapping data from a given website
- **Data wrangling** included finding duplicates, removing duplicates, finding missing values, inputting missing values and normalizing data
- **Data exploration** techniques were; Analyzing data distribution, Handling outliers, Finding correlation

RESULTS

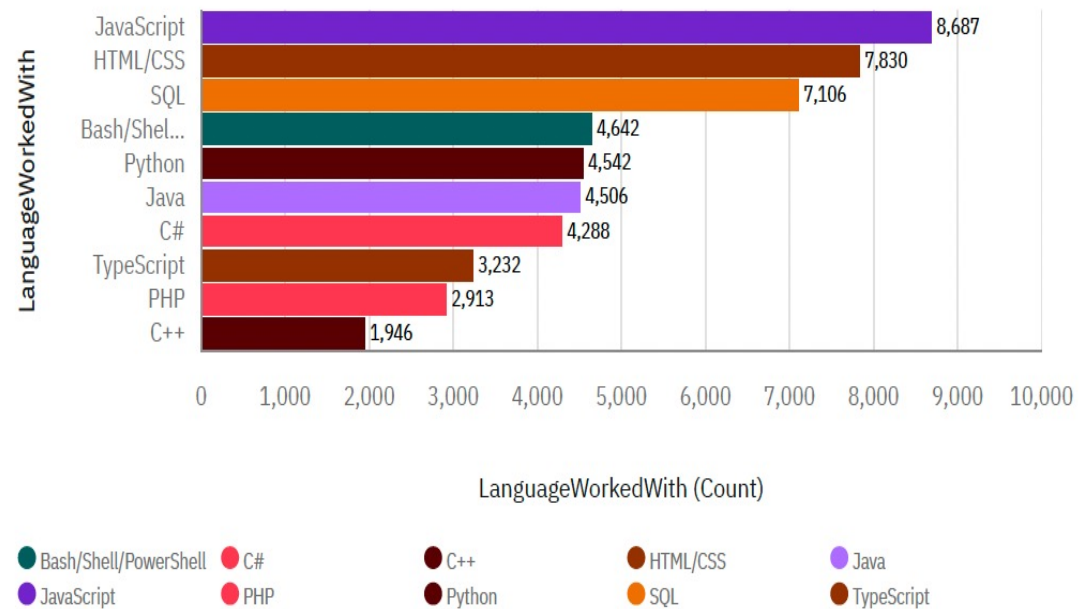
Insights and trends were achieved as follows:

- The dataset was available as a csv file
- Exploratory data analysis was performed by reading from csv using pandas dataframes, matplotlib and seaborn
- Data visualization was performed by extracting data using SQL from data in the form of a RDBMS. Plots were constructed using pandas, numpy and matplotlib
- Dashboards were created using the IBM Cognos Analytics platform.

PROGRAMMING LANGUAGE TRENDS

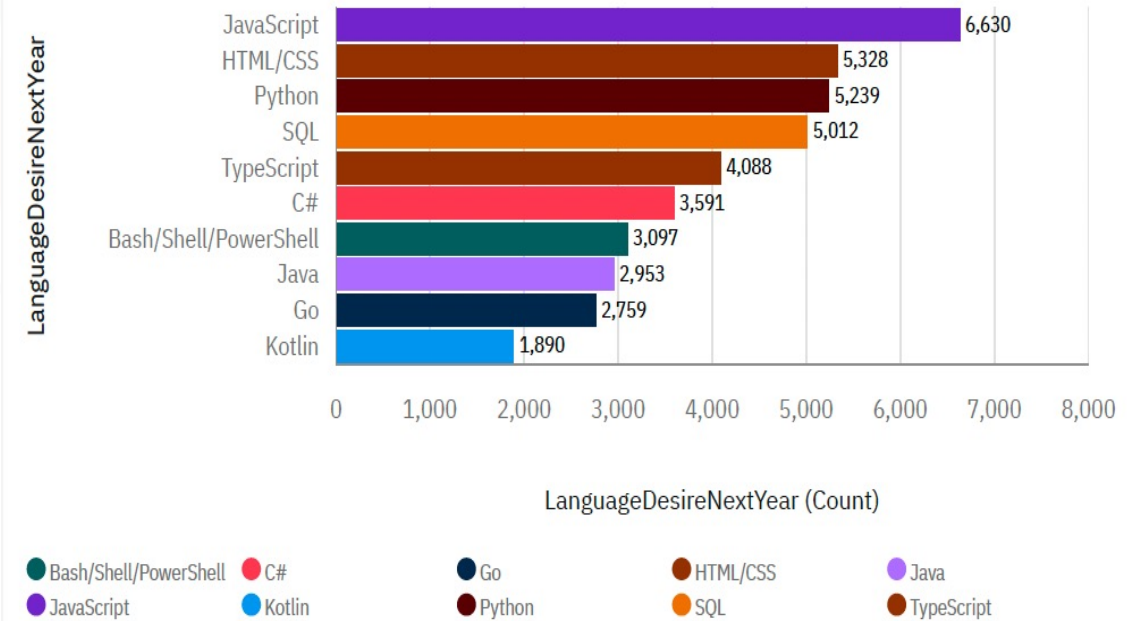
Current Year

Top 10 Languages Worked With



Next Year

Top 10 Language Desire Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Kotlin and Go are not in top 10 languages currently used, but desired for next year
- C++ and PHP dropped out of top 10 indicating their declining popularity
- Javascript will remain the most desired language next year
- Python being the fastest growing language in popularity next year

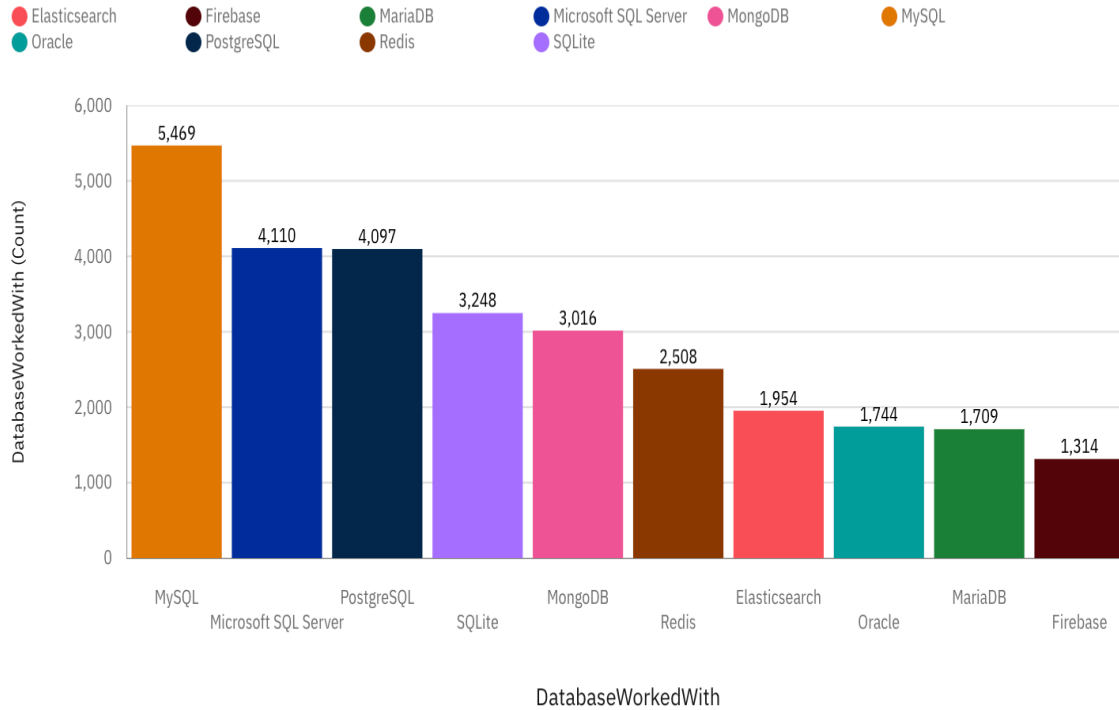
Implications

- There will be a requirement to upskill in Kotlin and Go programming languages
- A reduction in investment in C++ and PHP is expected
- Despite 24% decline in usage next year, Javascript will remain popular
- Python uptake increase indicates a need for continued investment

DATABASE TRENDS

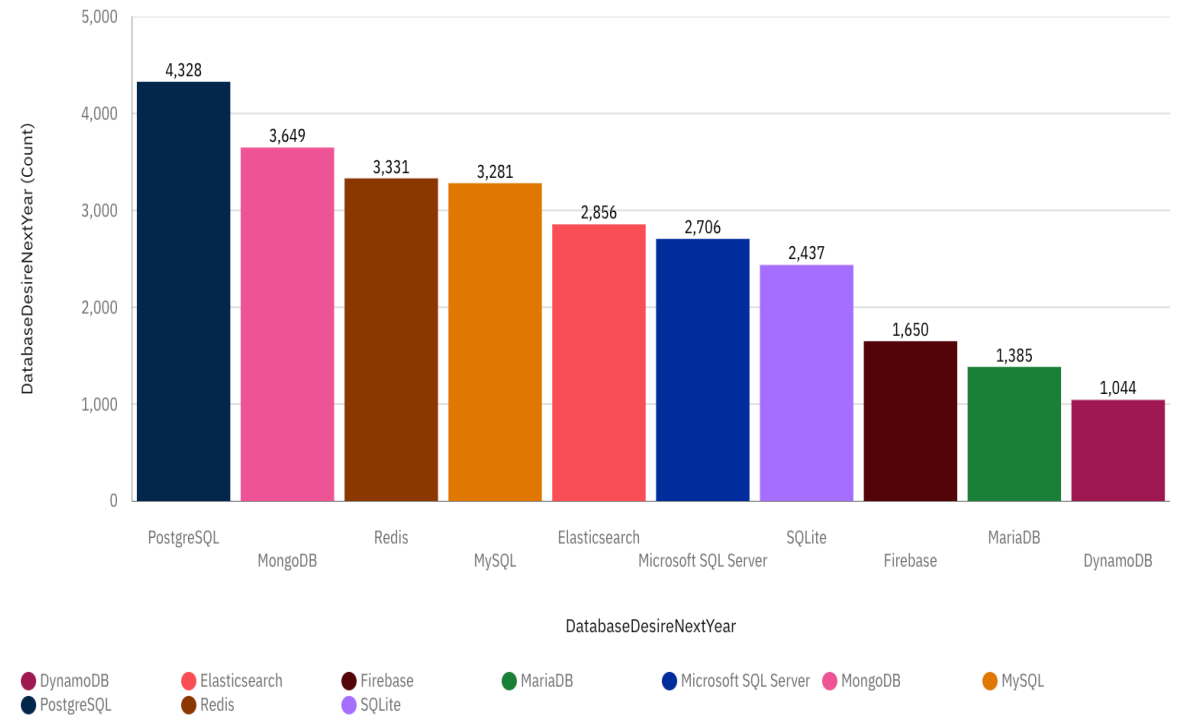
Current Year

Top 10 Database Worked With



Next Year

Top 10 Database Desire Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL will replace MySQL as most popular database skill next year
- Microsoft SQL Server will make biggest gains in popularity
- Dynamo DB is expected make it into top 10 desired database skills
- Oracle is expected to lose popularity and drop out of the top 10 next year

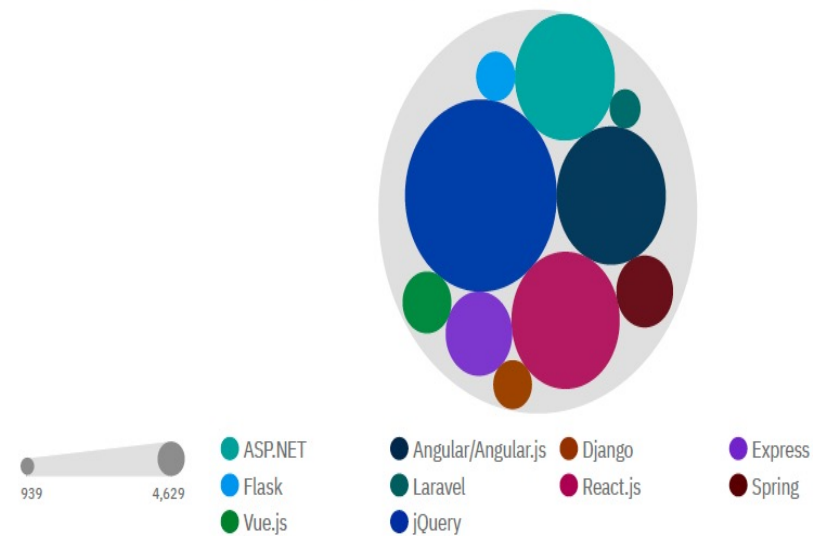
Implications

- There will be a requirement to upskill in PostgreSQL
- There will be a requirement to upskill in Microsoft SQL Server
- There will be a requirement to upskill in Dynamo DB
- A reduction in investment in the oracle database is expected next year

WEBFRAME TRENDS

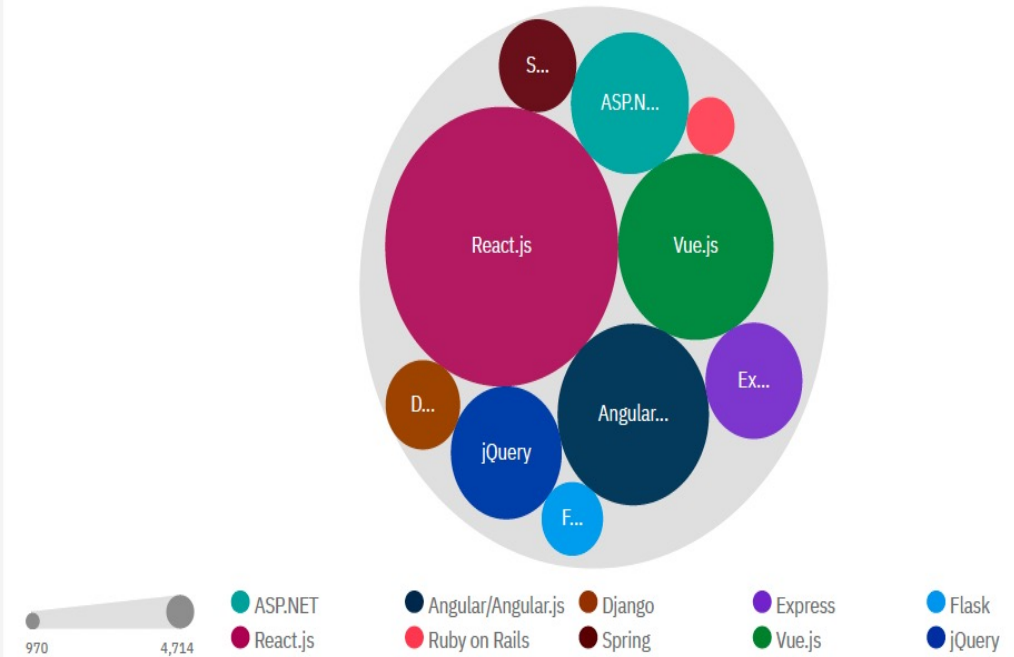
Current Year

Top 10 WebFrame Worked With



Next Year

Top 10 Web Frame Desire Next Year



WEBFRAME TRENDS - FINDINGS & IMPLICATIONS

Findings

- JQuery is most used, but is expected to be replaced by React next year as most popular
- Vue, Angular and ASP.Net also set to be most desired next year, behind React
- Ruby is set to replace Laravel in the top 10 next year

Implications

- There will be a requirement to upskill in JQuery IDE in preparation for next year
- There will be a requirement to upskill in Vue, Angular and ASP.Net IDEs in preparation for next year
- A reduction in investment in the Laravel is expected next year

DASHBOARD

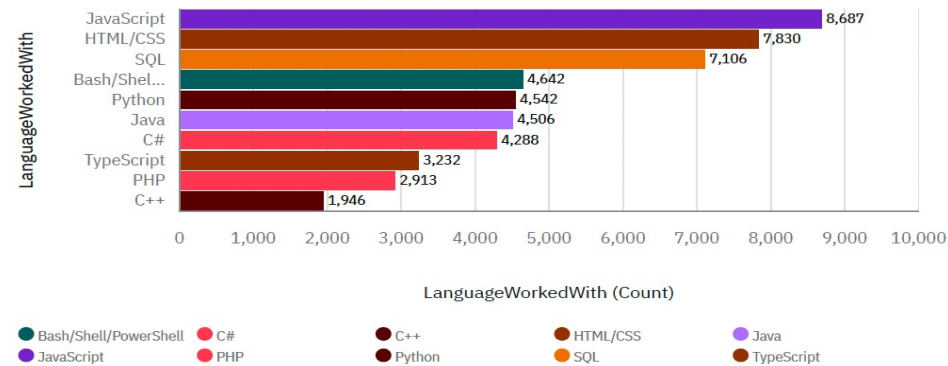


<https://github.com/mulwib/dataAnalysisCapstone/blob/main/Survey%20Data%20Dashboard%20-%20Capstone.pdf>

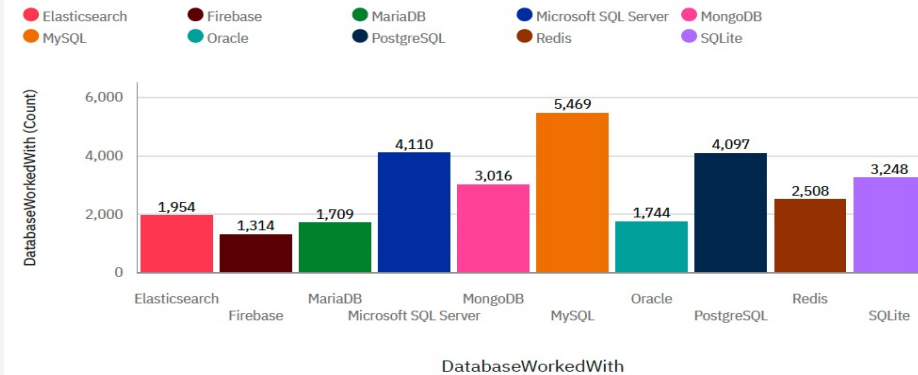
DASHBOARD TAB 1

A - Current Technology Usage

Top 10 Languages Worked With



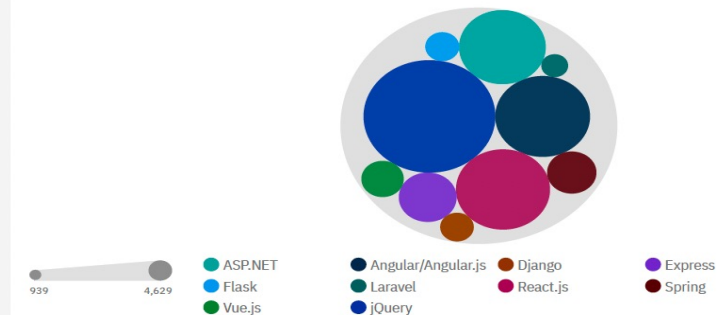
Top 10 Database Worked With



Platform Worked With



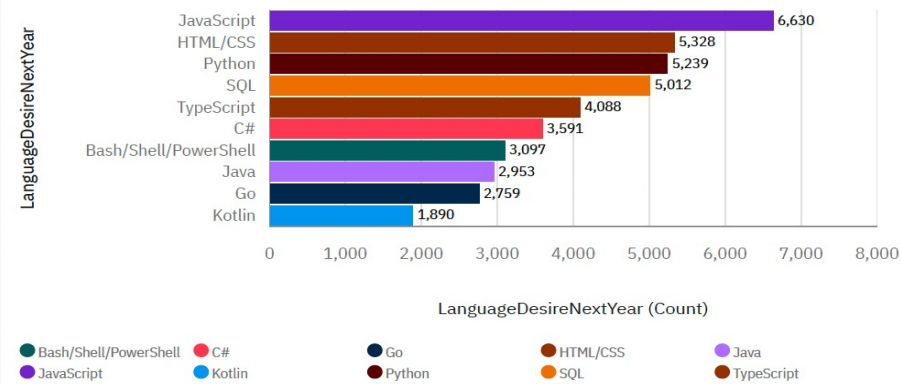
Top 10 WebFrame Worked With



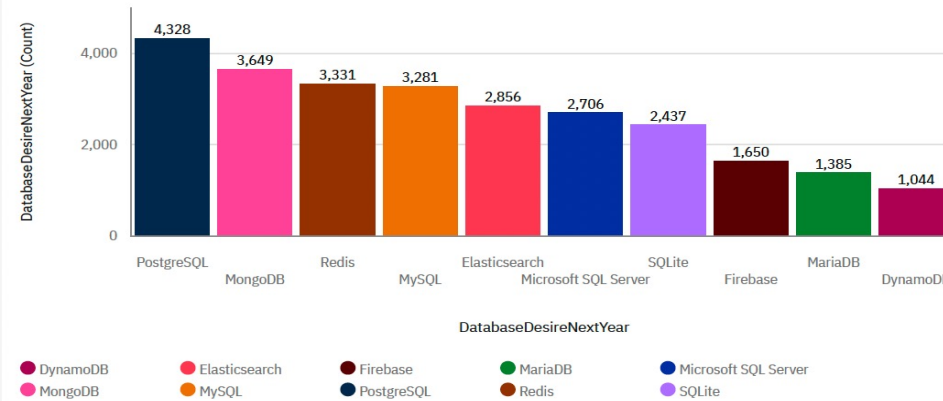
DASHBOARD TAB 2

B - Future Technology Trend

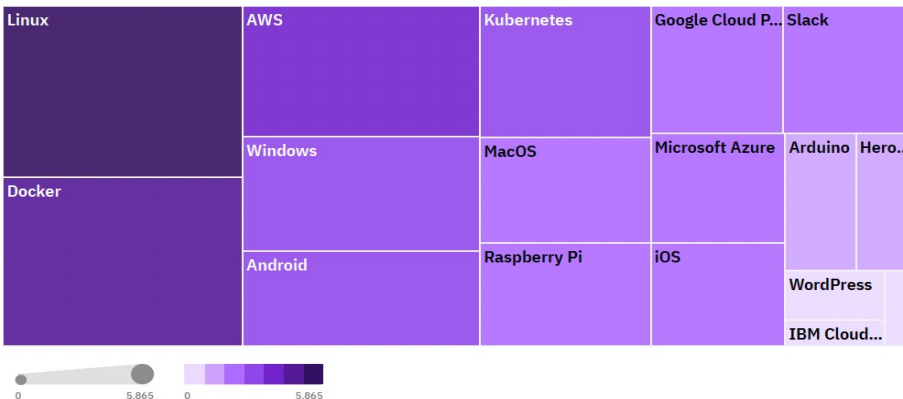
Top 10 Language Desire Next Year



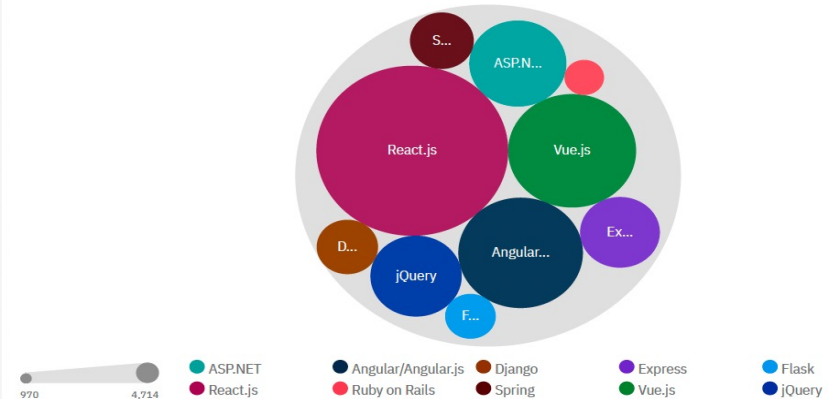
Top 10 Database Desire Next Year



Platform Desire Next Year



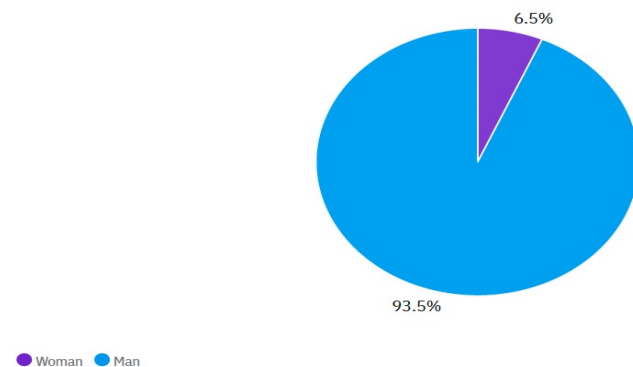
Top 10 Web Frame Desire Next Year



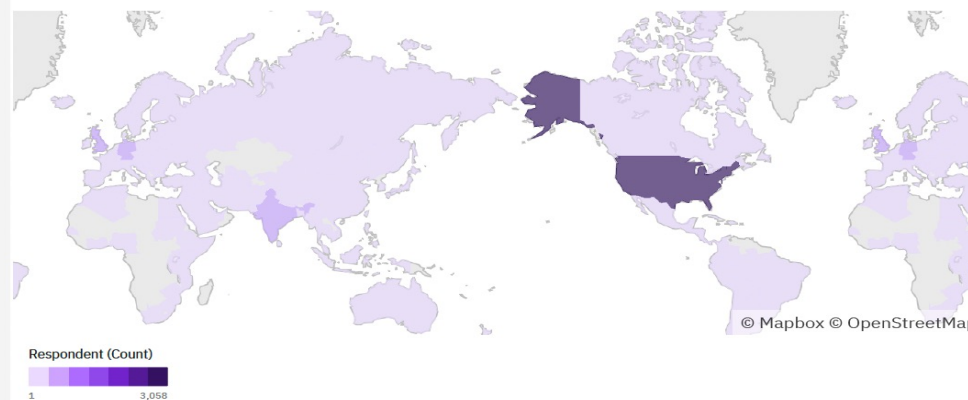
DASHBOARD TAB 3

C - Demographics

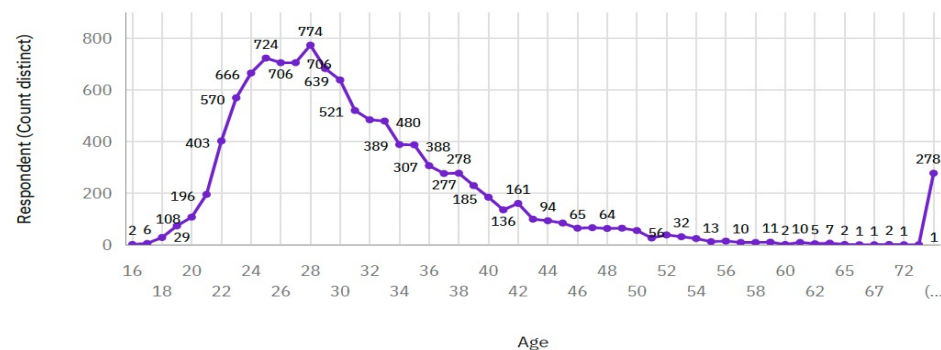
Respondent classified by Gender



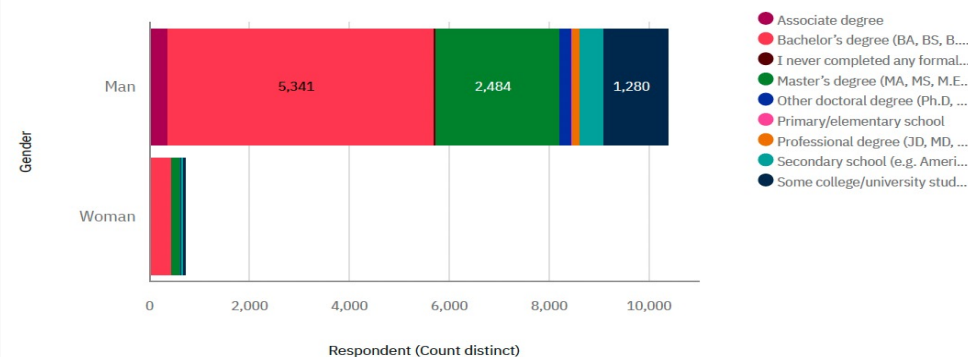
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender by Formal Education Level



DISCUSSION



- Majority of survey respondents were male (93.5%)
- Most of the respondents were between 21 and 40 years old
- The USA had the highest number of respondents
- The highest number of respondents had a bachelors degree

OVERALL FINDINGS & IMPLICATIONS

Findings

- 80 percent of in-demand programming language skills are expected to remain popular next year (excluding C++ and PHP)
- 90 percent of in-demand databases skills are expected to remain popular next year (excluding Oracle)
- Approximately 93.5 percent of the practitioners are male, whilst 6.5 percent are female
- Majority of practitioners are educated to Bachelor's degree or Masters degree level

Implications

- C++ and PHP programming languages will drop out of top-10 in-demand skills
- Oracle database will drop out of top-10 in-demand skills
- Participation levels indicate that there is still work to do to address gender parity
- Participation levels indicate that there is still work to do to address social economic parity

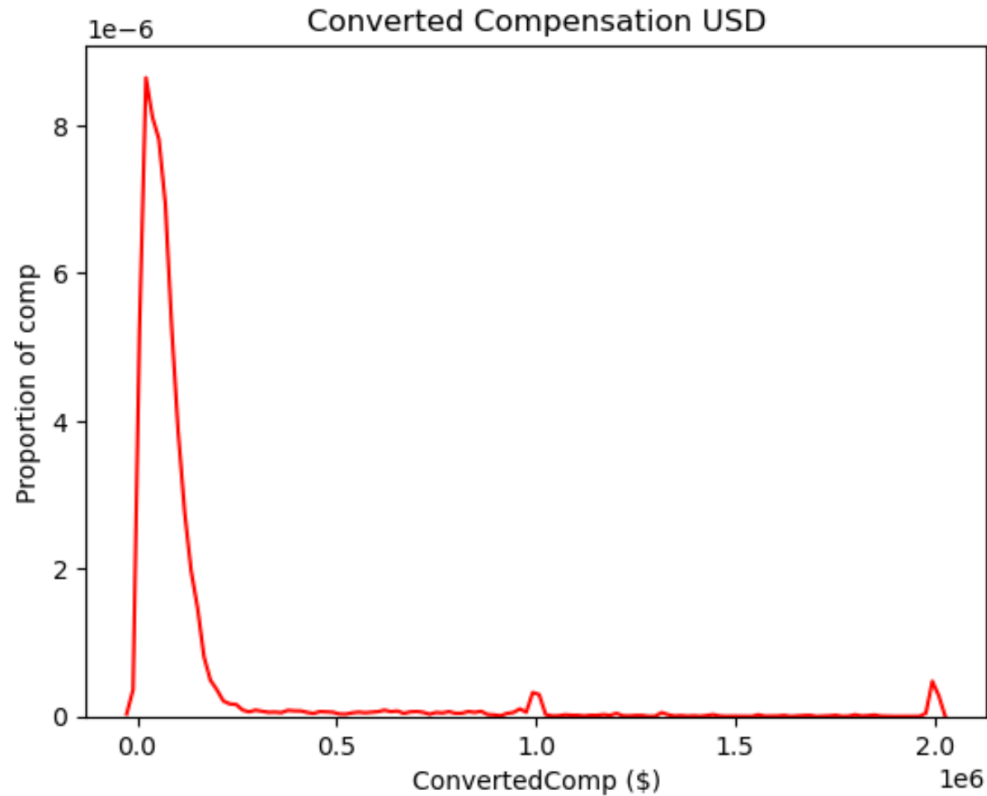
CONCLUSION



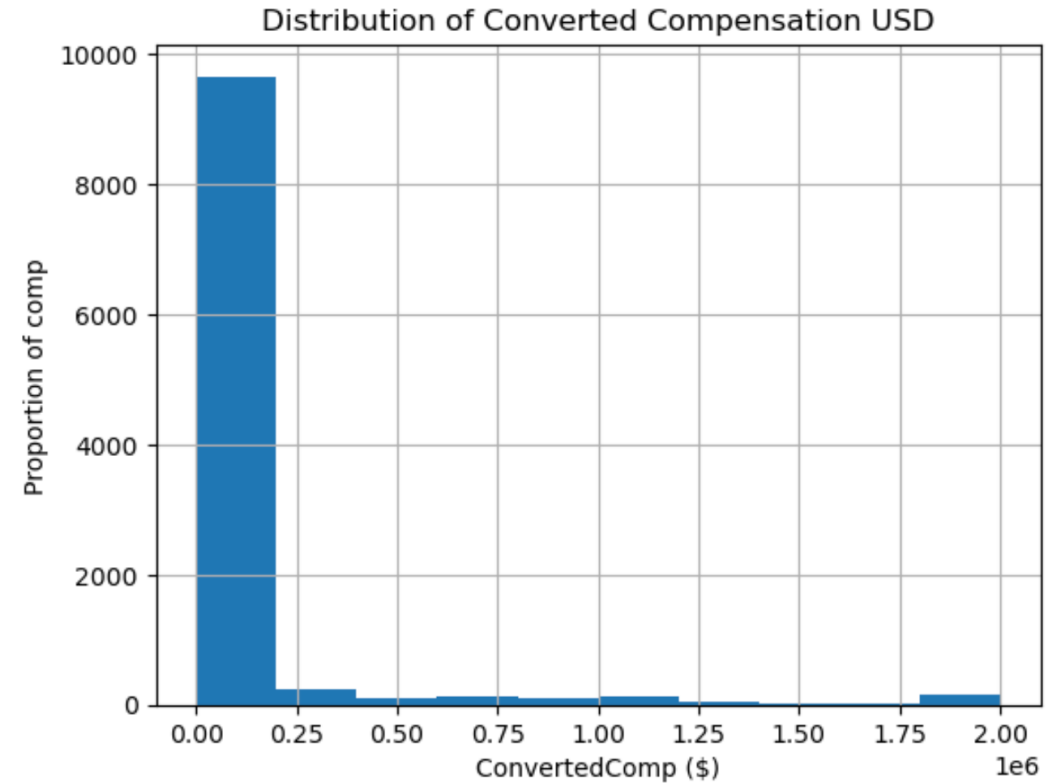
Analysis of the collected data has led to the conclusion that:

- Javascript is the top in-demand programming language, and this will continue into next year
- Whilst MySQL is currently the most used database skill, PostgreSQL will replace it as the top in-demand database skill next year
- The software industry is dominated by men who have at least a Bachelor's or Master's degree
- Most active software professionals are in the age range of 21-40 years of age

APPENDIX (1)



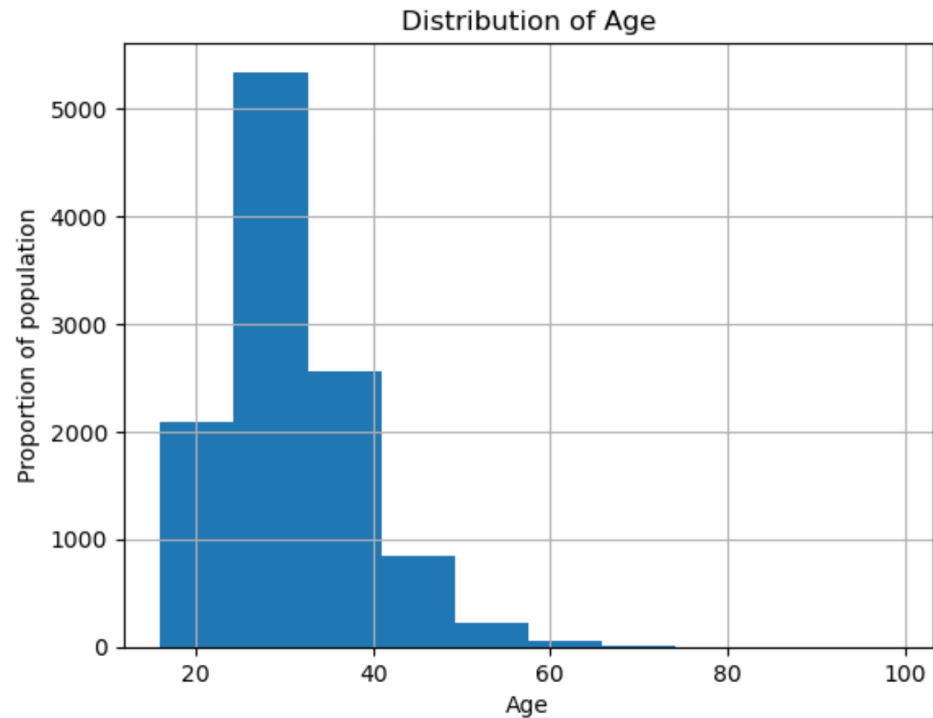
Distribution curve for the column ConvertedComp



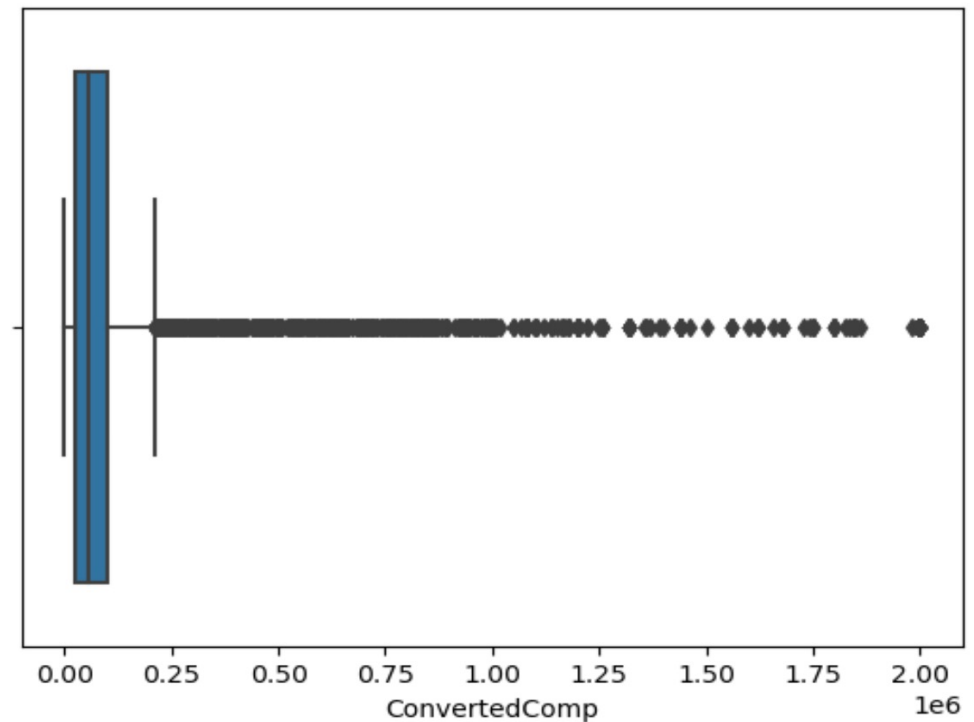
Histogram for the column ConvertedComp

APPENDIX (2)

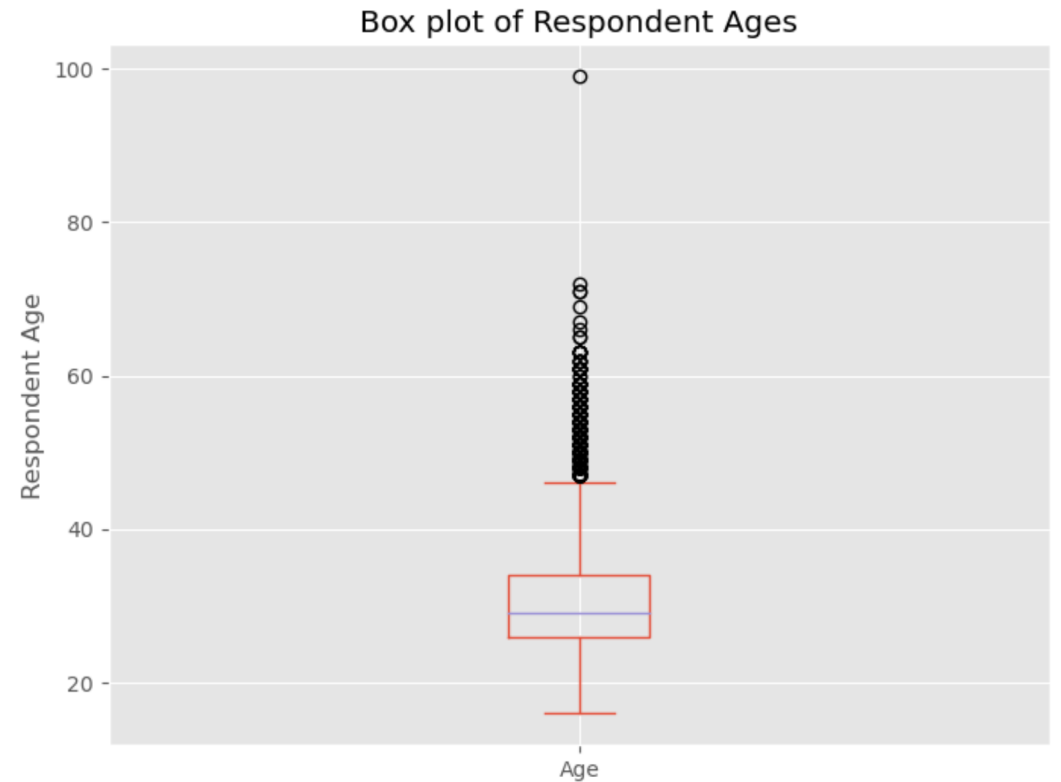
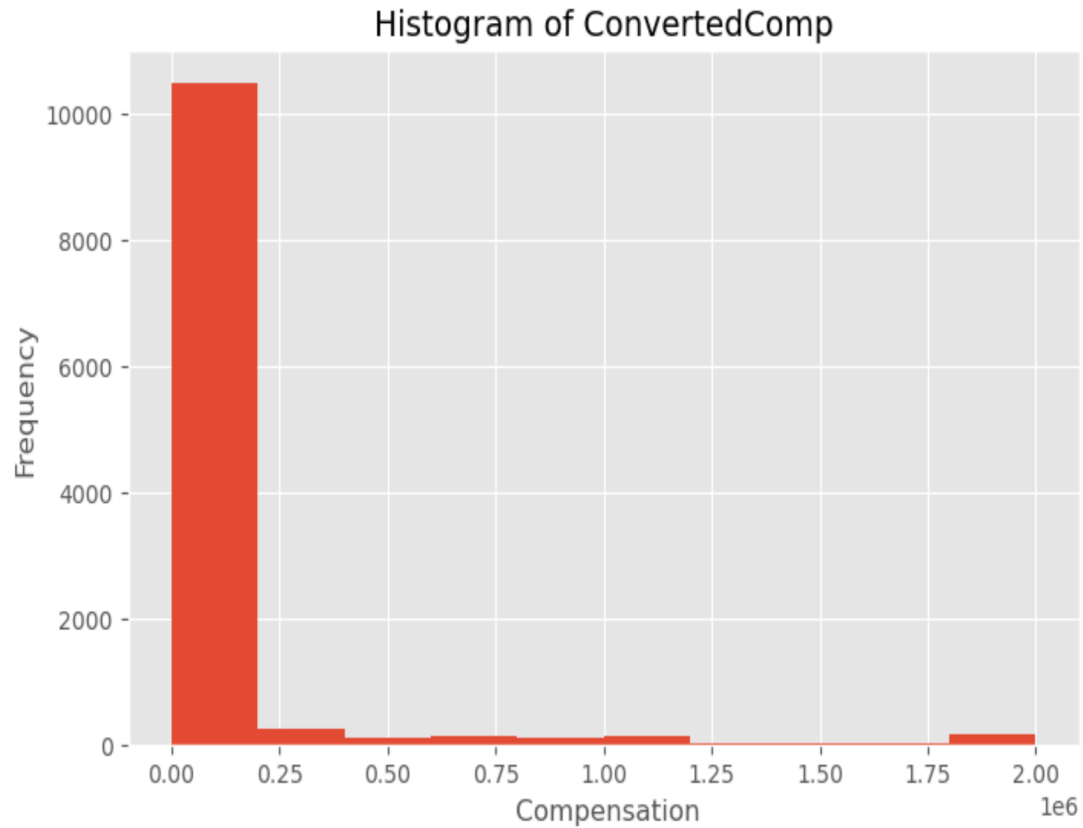
Distribution for Age



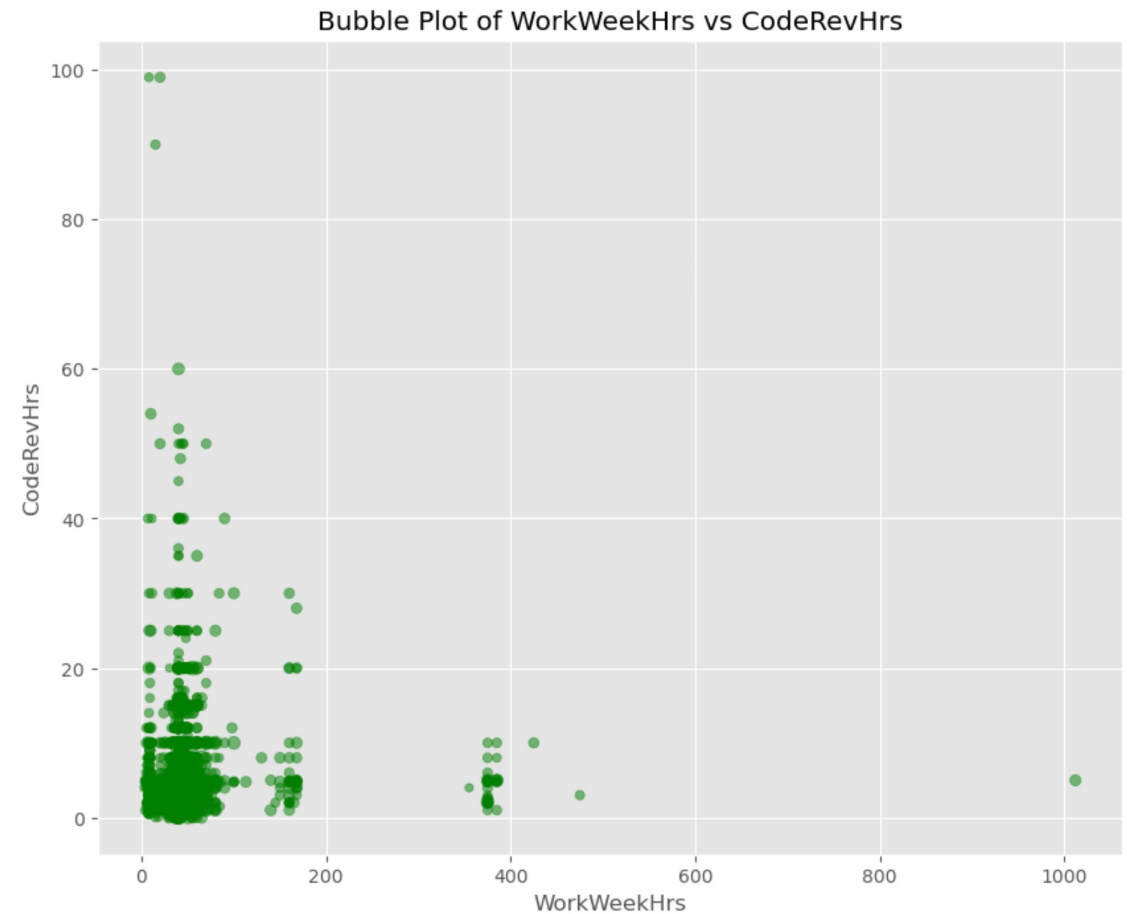
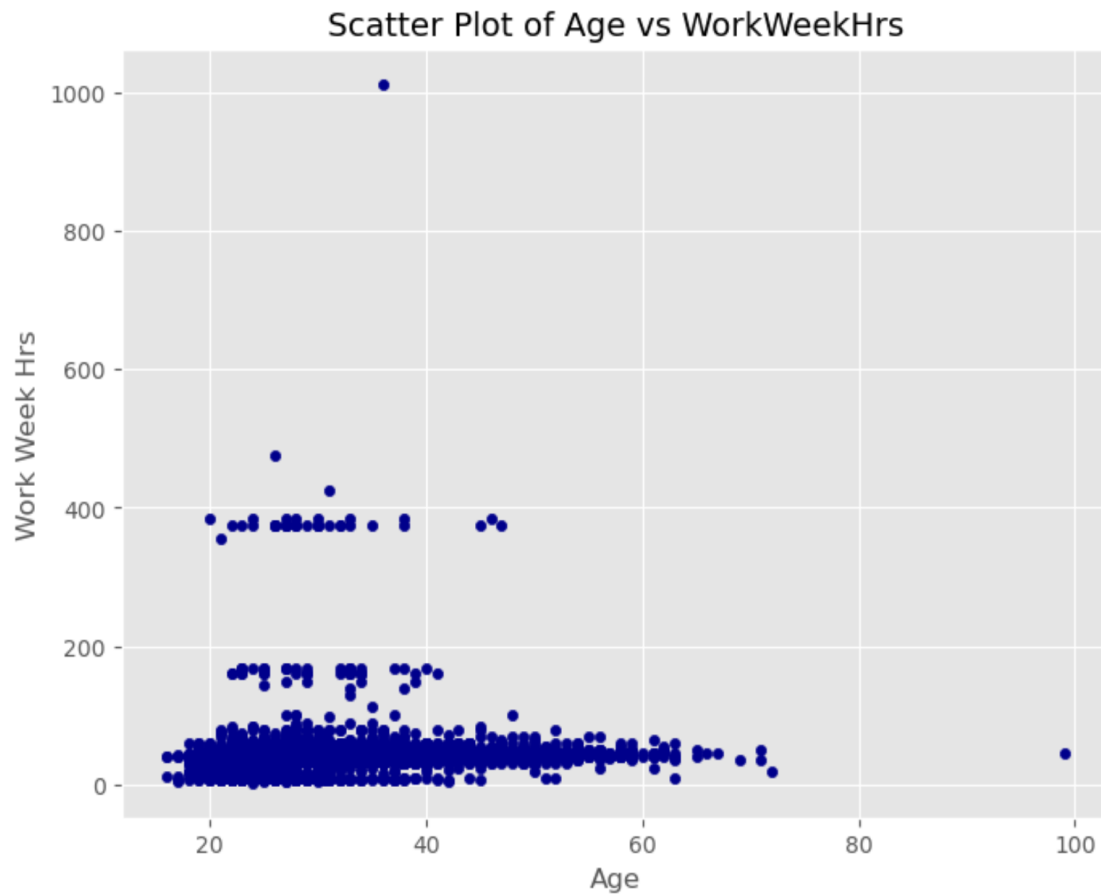
Boxplot for ConvertedComp



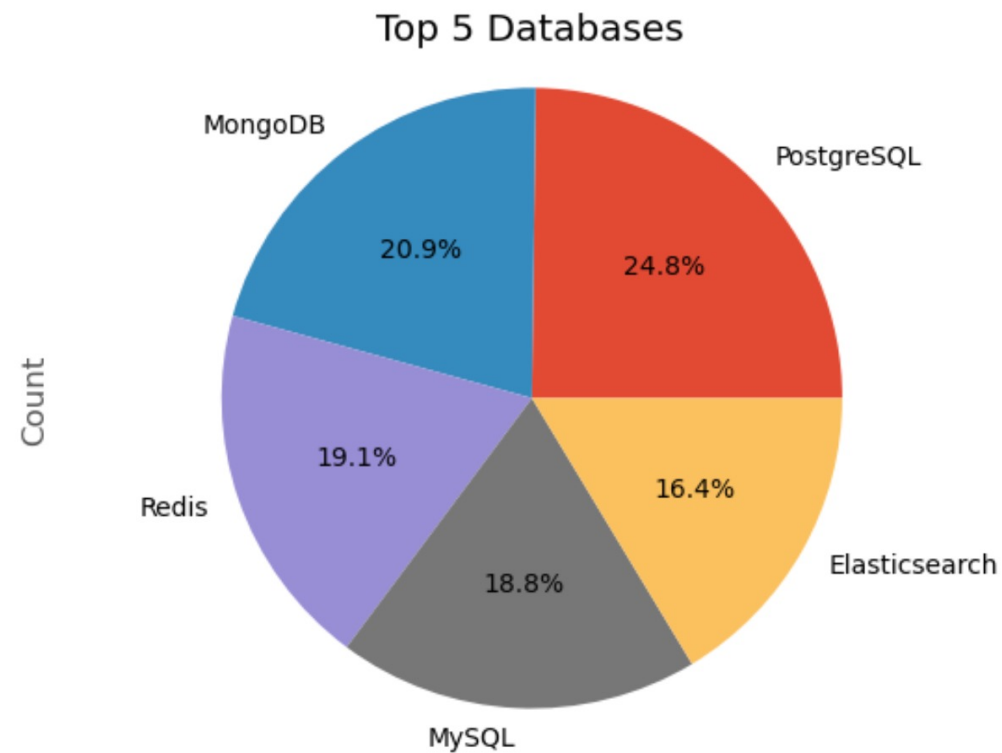
APPENDIX (3)



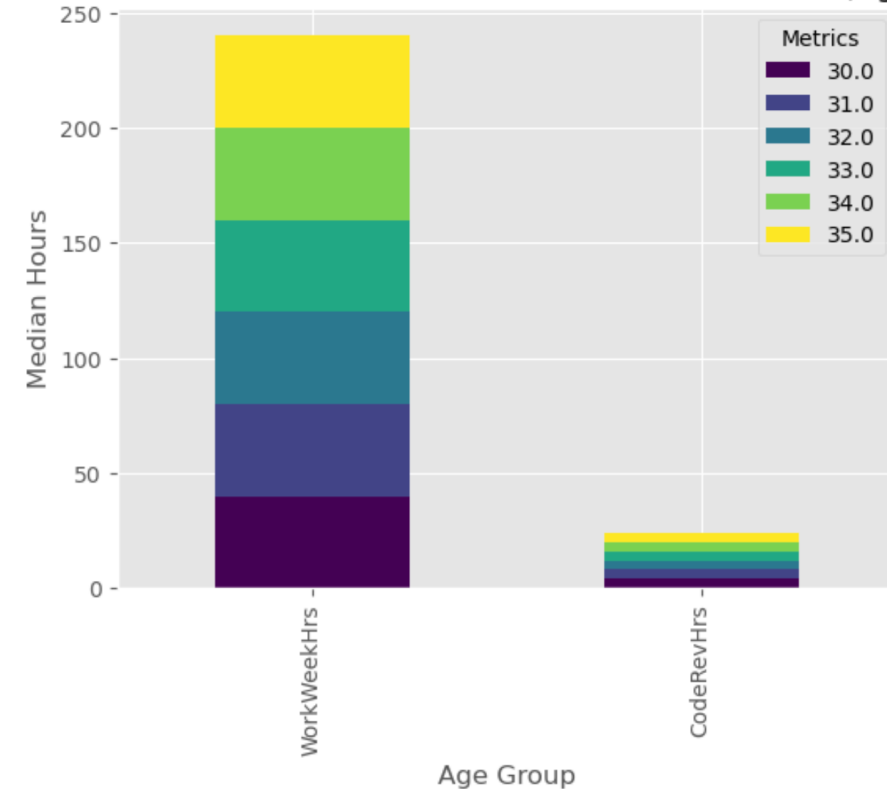
APPENDIX (4)



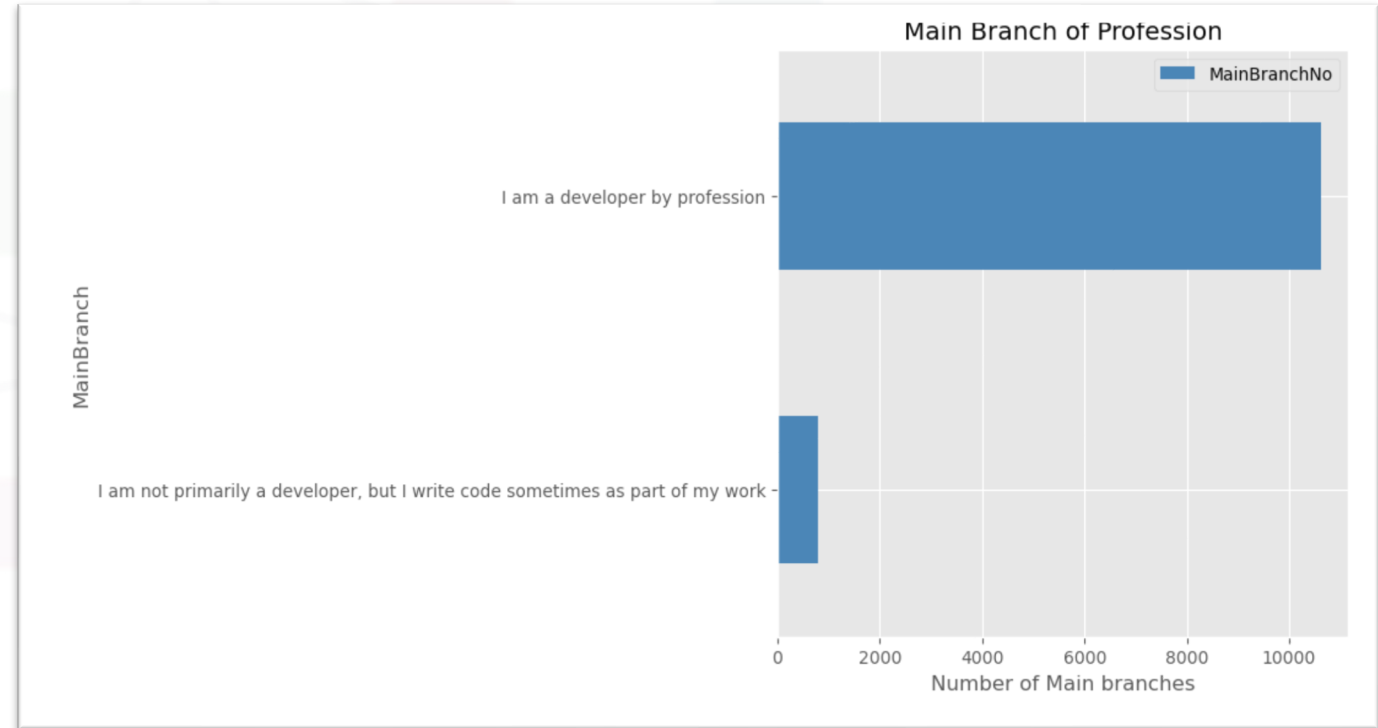
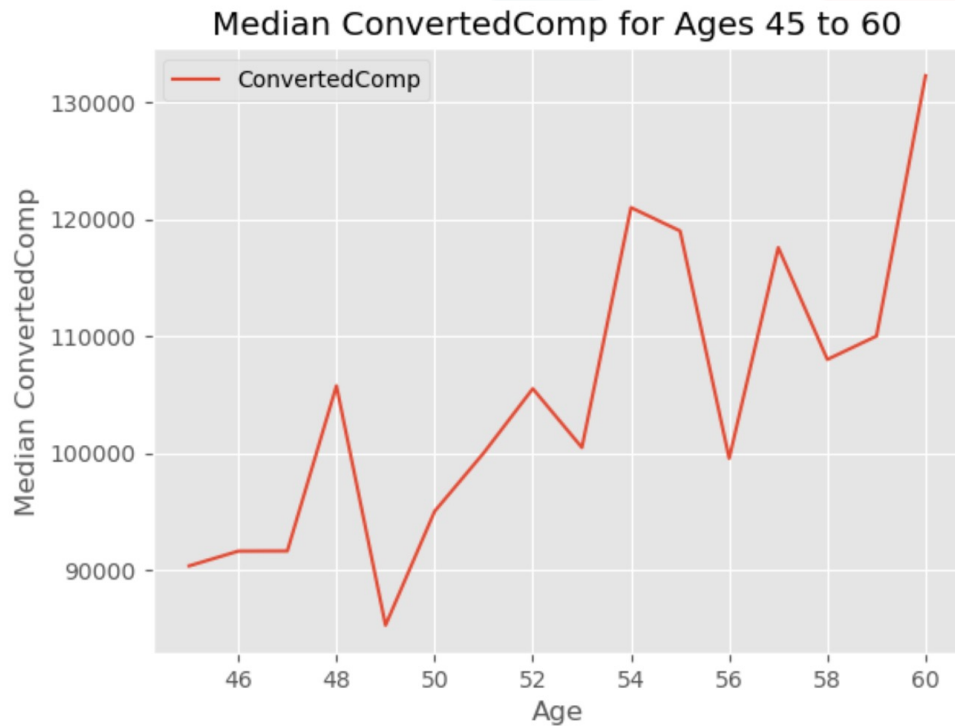
APPENDIX (5)



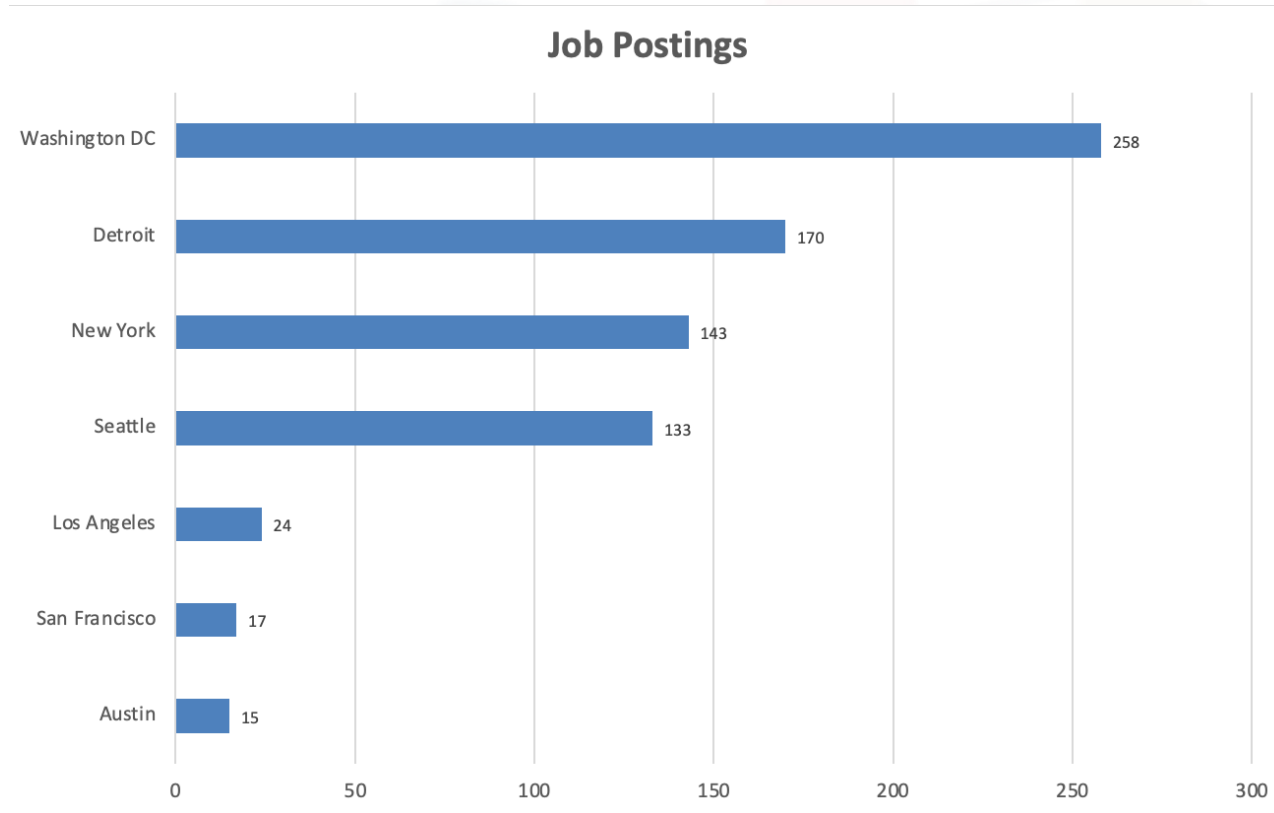
Stacked Chart of Median WorkWeekHrs and CodeRevHrs (Age 30 to 35)



APPENDIX (6)



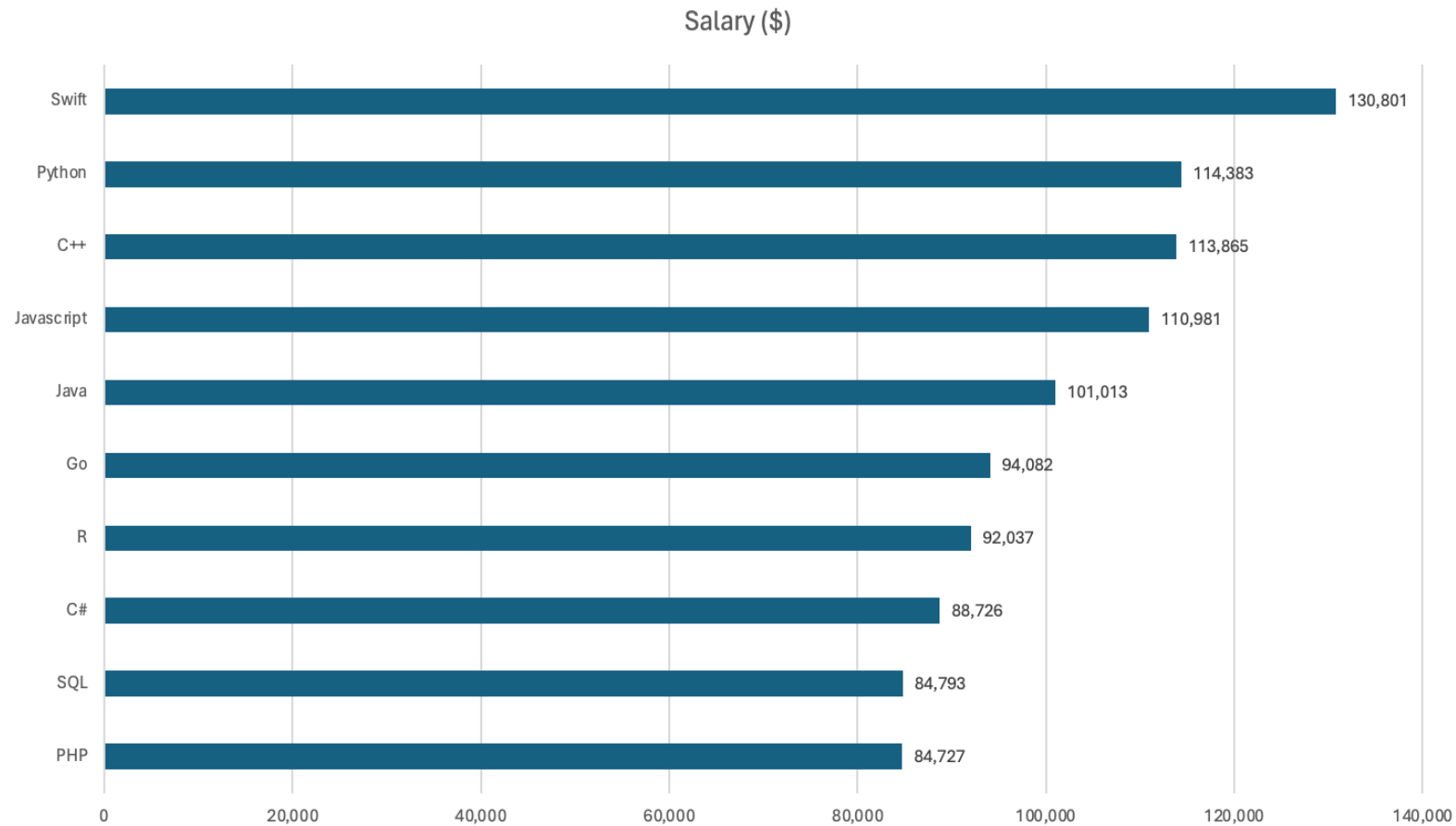
JOB POSTINGS



Survey was done on the number of jobs currently open for various technologies across Los Angeles, New York, San Francisco, Washington DC, Seattle, Austin and Detroit.

Data was collected using the API for the **number of job postings** for the above locations

POPULAR LANGUAGES



Data was extracted from a given web site.

Scraped data included the name of the **programming language** and **average annual salary**.