# IBM CAPSTONE PROJECT

## PABLO LIMA

29-07-2023

IBM **Developer**

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# OUTLINE

- Executive Summary
- Introduction
- Methodology
- Results
  - Visualization – Charts
  - Dashboard
- Discussion
  - Findings & Implications
- Conclusion
- Appendix

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# EXECUTIVE SUMMARY

- Point1
- Point2
  - Sub Point 1
  - Sub Point 2
  - Sub Point 3
- Point3
- Point4
- Point5

# INTRODUCTION

- Popular at tech right now
  - Programming Languages
  - Databases
  - Platforms
  - Webframes
- The tomorrow of tech
  - What programmers desired to learn
- The Tech Census
  - Gender
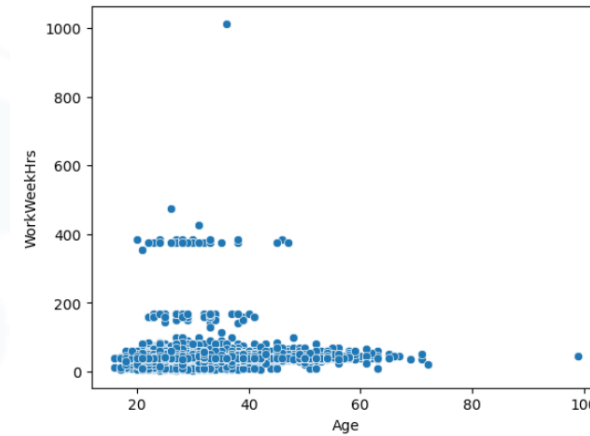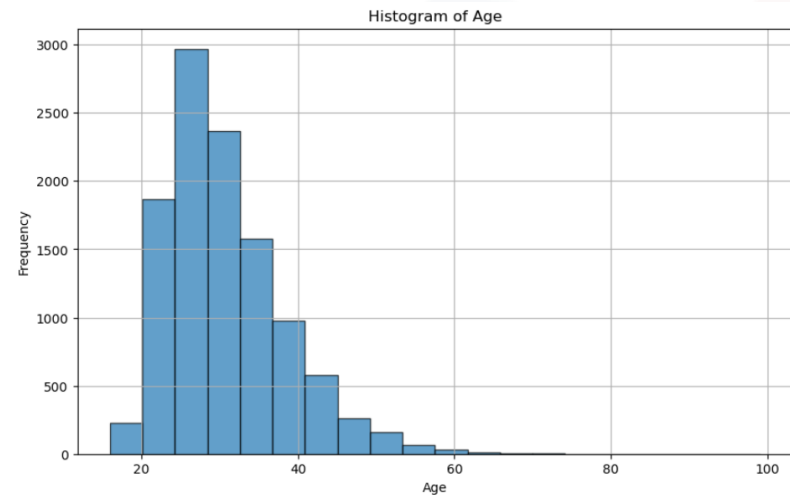  - Age
  - Country
  - Scholarship

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# METHODOLOGY

- Data Collection

    GitHub job postings

    Programming languages annual salaries

- Data Wrangling

- Data Exploration

- Data Cleaning

- Data Visualization
    - IBM Cognos Analytics

# RESULTS



Histogram of Age





Histogram of Converted Compensation

```
WorkLoc
Office                                          6905
Home                                            3638
Other place, such as a coworking space or cafe  977
Name: count, dtype: int64
```
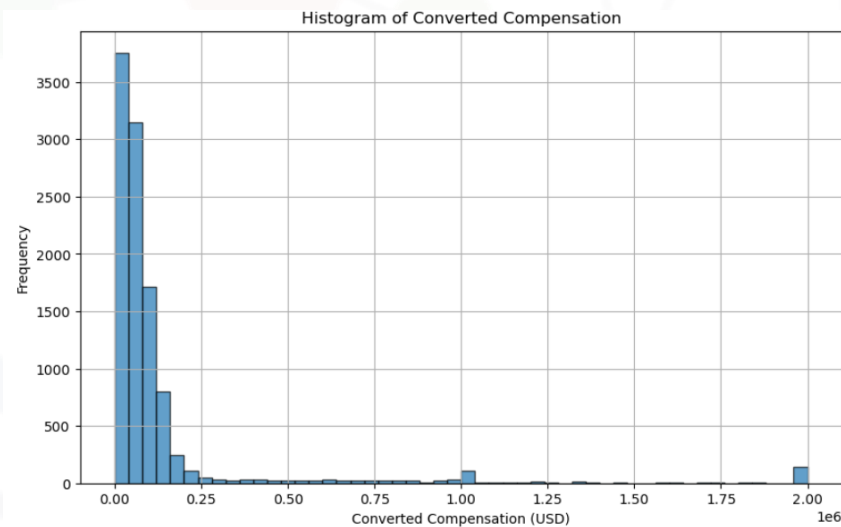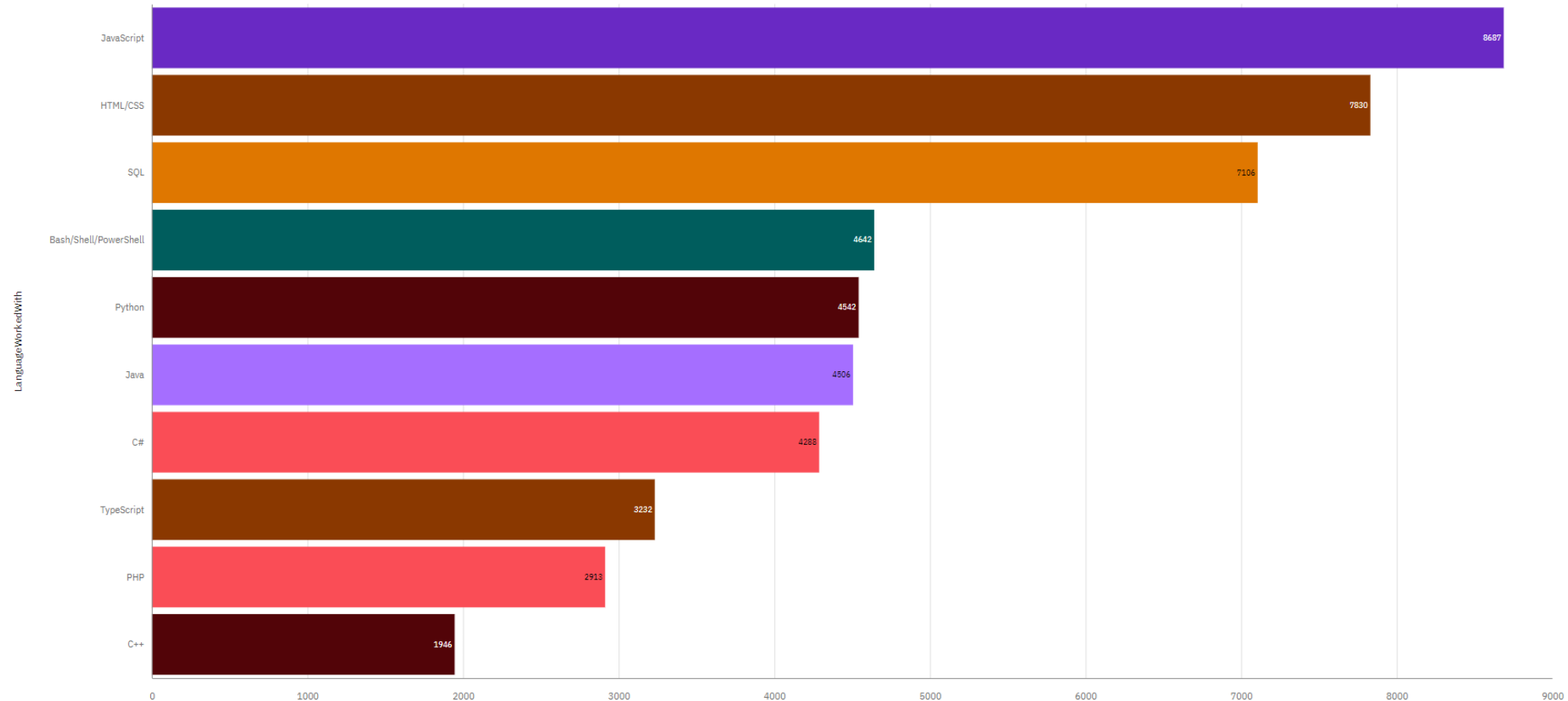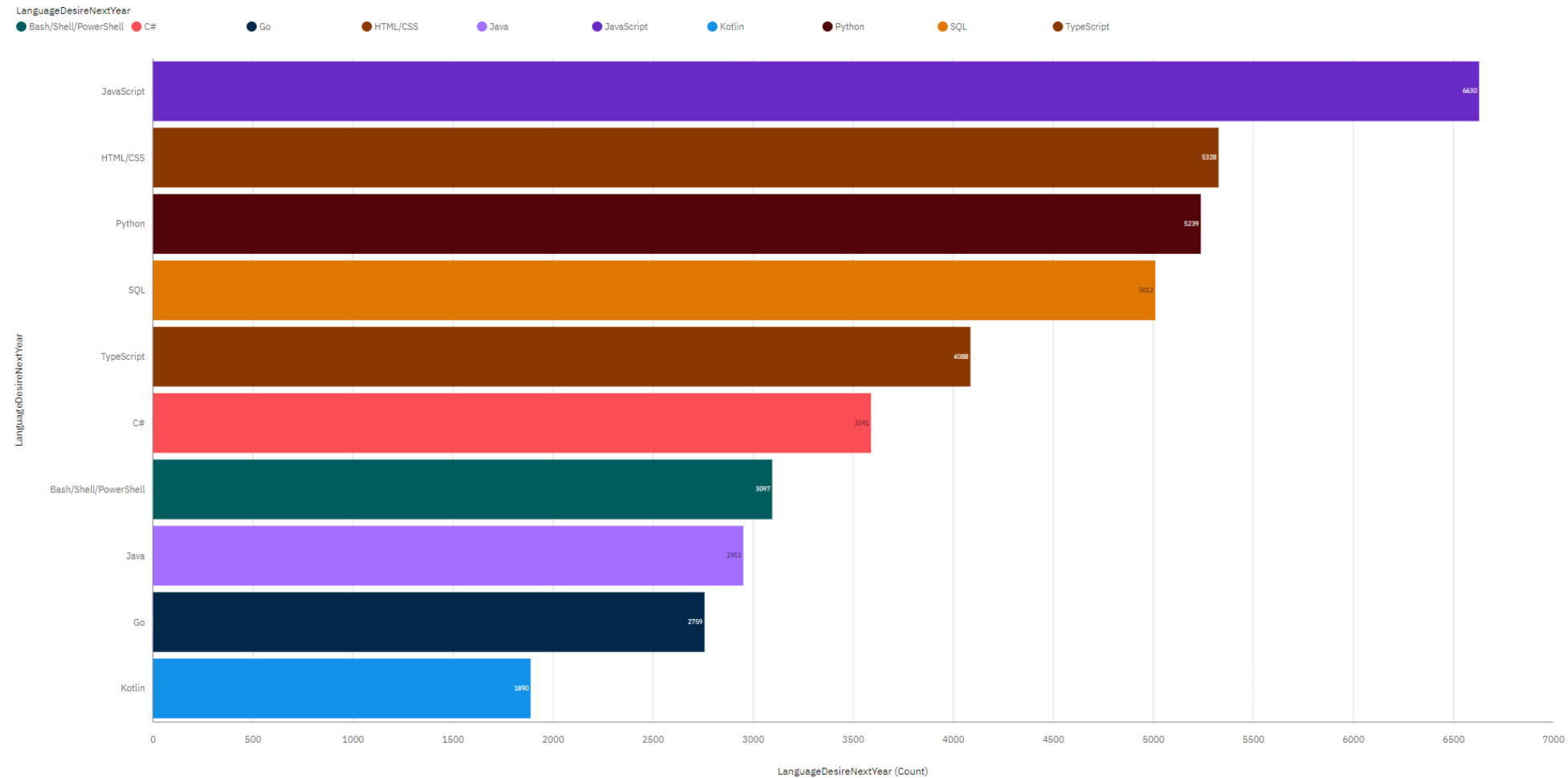
# PROGRAMMING LANGUAGE TRENDS TODAY

Top 10 USED LANGUAGES

LanguageWorkedWith

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



| Language | Value |
|---|---|
| JavaScript | 8687 |
| HTML/CSS | 7830 |
| SQL | 7106 |
| Bash/Shell/PowerShell | 4642 |
| Python | 4542 |
| Java | 4506 |
| C# | 4288 |
| TypeScript | 3232 |
| PHP | 2913 |
| C++ | 1946 |

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# PROGRAMMING LANGUAGE TRENDS FOR THE NEXT YEAR

TOP 10 LANGUAGES DESIRED TO LEARN NEXT YEAR

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

# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS
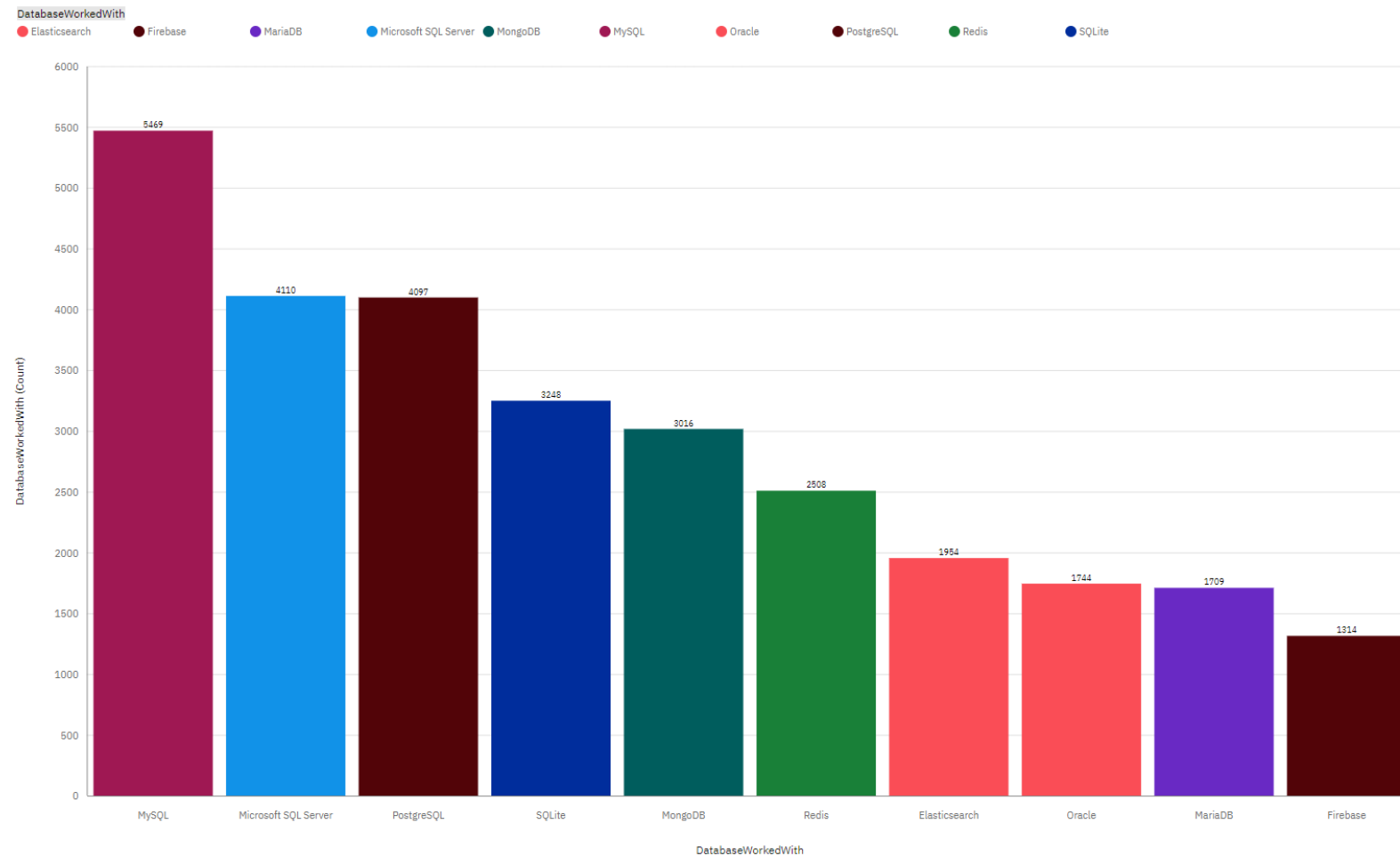
## Findings

- **JavaScript** (**17.5** %), **HTML/CSS** (**15.8** %), and **SQL** (**14.3** %) are the most frequently occurring categories of **LanguageWorkedWith** with a combined count of **23,623** items with **LanguageWorkedWith** values (**47.5** % of the total).

- **JavaScript** is the most frequently occurring category of **LanguageDesireNextYear** with a count of **6630** items with **LanguageDesireNextYear** values (**16.3** % of the total).

- Python goes from the 5th most popular right now to 3rd most desired to learn next year

## Implications

- JavaScript has a high demand for programmers, being interest to them right now and for the next year

- Almost 50% of the programmers works with JavaScrpit, HTML/CSS and SQL, proving that is a hot market.

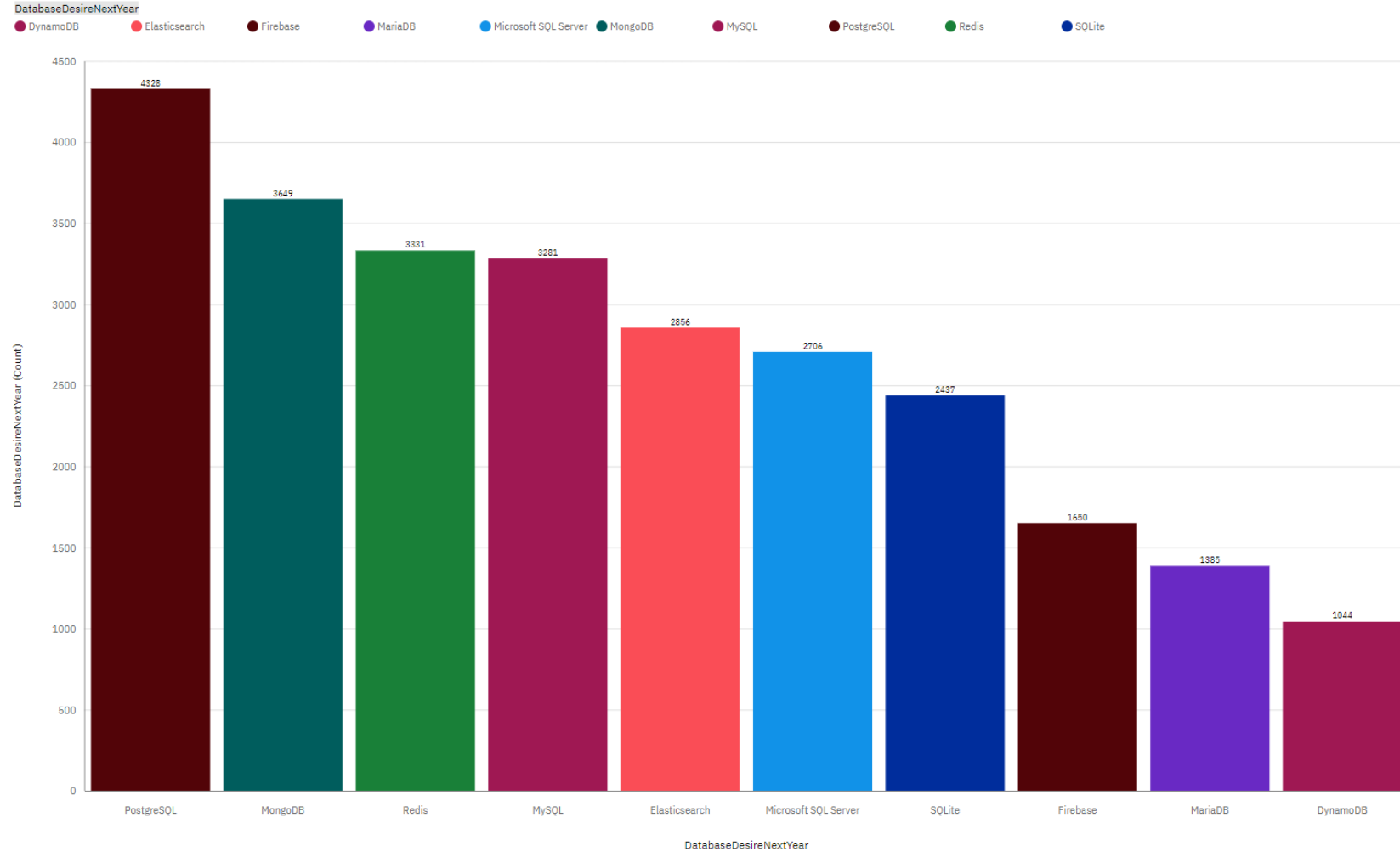- Python is increasing, showing that has a demand to grow for programmers

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# DATABASE TRENDS TODAY



TOP 10 USED DATABASES

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

# DATABASE TRENDS FOR THE NEXT YEAR

TOP 10 DATABASES DESIRED TO WORK NEXT YEAR

DatabaseDesireNextYear

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

# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- **PostgreSQL** is the most frequently occurring category of **DatabaseDesireNextYear** with a count of **4328** items with **DatabaseDesireNextYear** values (**16.2** % of the total).

- **MySQL** is the most frequently occurring category of **DatabaseWorkedWith** with a count of **5469** items with **DatabaseWorkedWith** values (**18.7** % of the total).

- While Microsoft SQL Server is the second most popular right now, is the 6th most desired to learn next year

## Implications

- PostgreSQL has potential to become one of the most popular Databases.

- MySQL is the most popular right now, but for the desired next year, goes to 4th, showing that the market is shrinking.

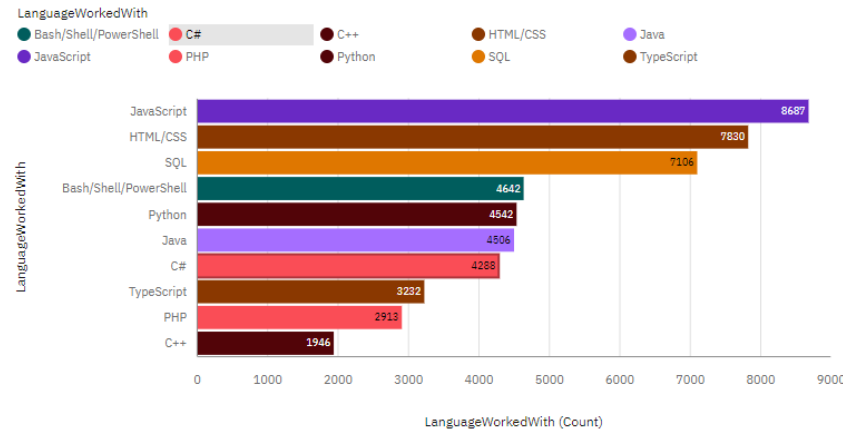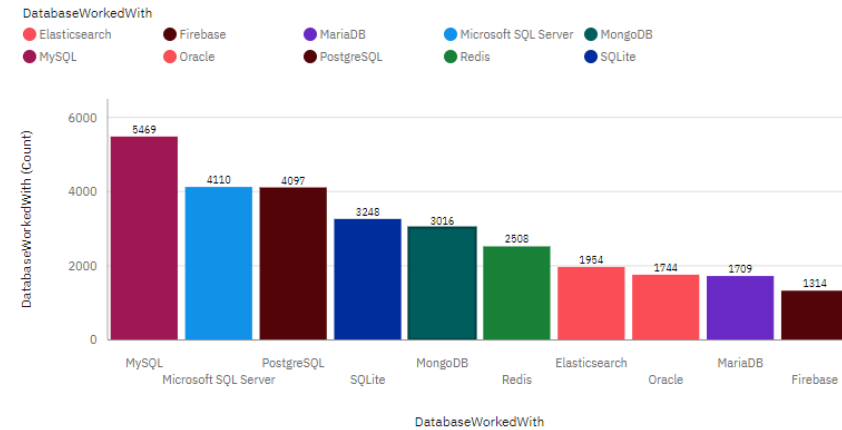- Microsoft SQL Server will have a big decreasing market in the near future

# DASHBOARD



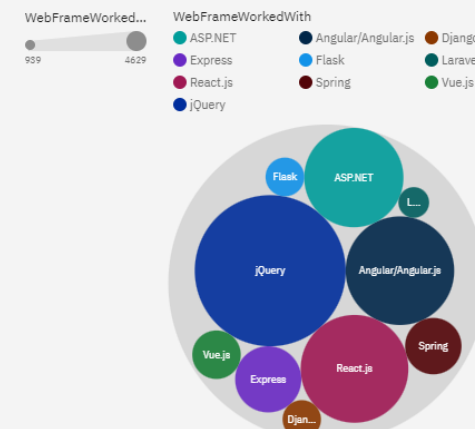[* WEEK5 CAPSTONE Dashboard (ibm.com)](#)

# CURRENT TECHNOLOGY USAGE
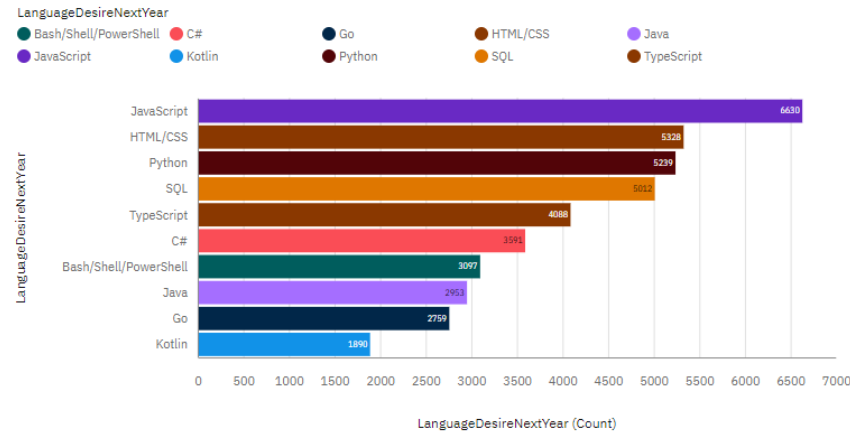
# FUTURE TECHNOLOGY TREND

TOP 10 LANGUAGES DESIRED TO LEARN NEXT YEAR

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

| Language | Count |
|---|---|
| JavaScript | 6630 |
| HTML/CSS | 5328 |
| Python | 5239 |
| SQL | 5012 |
| TypeScript | 4088 |
| C# | 3591 |
| Bash/Shell/PowerShell | 3097 |
| Java | 2953 |
| Go | 2759 |
| Kotlin | 1890 |

LanguageDesireNextYear (Count)

TOP 10 DATABASES DESIRED TO WORK NEXT YEAR

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

| Database | Count |
|---|---|
| PostgreSQL | 4328 |
| MongoDB | 3649 |
| Redis | 3331 |
| MySQL | 3281 |
| Elasticsearch | 2856 |
| Microsoft SQL Server | 2706 |
| SQLite | 2437 |
| Firebase | 1650 |
| MariaDB | 1385 |
| DynamoDB | 1044 |

DatabaseDesireNextYear (Count)

DatabaseDesireNextYear

PLATFORM DESIRED TO WORK NEXT YEAR

PlatformDesireNe...  0  — 6866
PlatformDesireNe...  0  — 6865

Linux, Docker, AWS, Windows, Android, Kubernetes, MacOS, Raspberry Pi, Google Cloud Platfo..., Microsoft Azure, iOS, Slack, Arduino, Heroku, WordPress, O..., IBM Cloud or ...
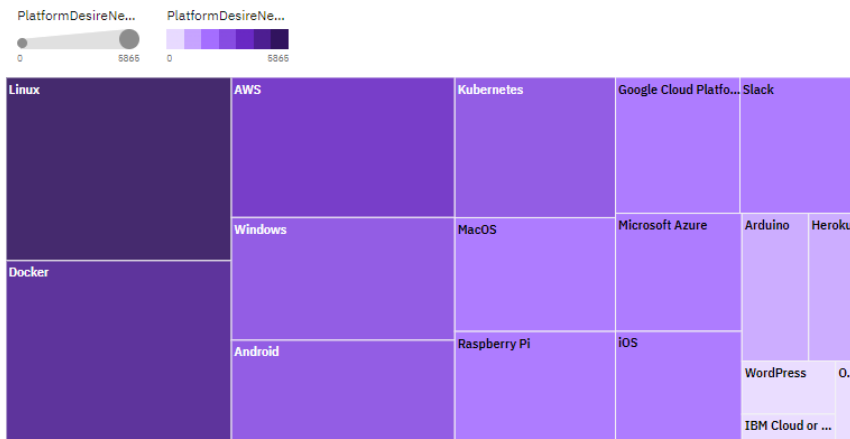
TOP 10 WEBFRAMES DESIRED TO WORK NEXT YEAR
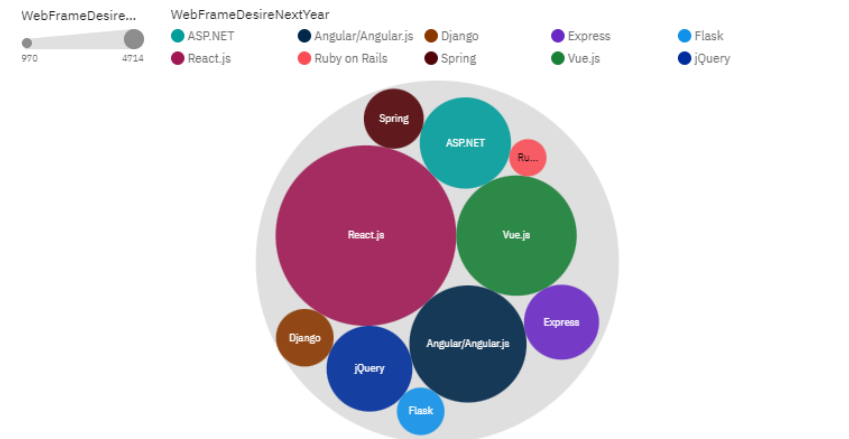
WebFrameDesire...  970 — 4714

WebFrameDesireNextYear
- ASP.NET
- Angular/Angular.js
- Django
- Express
- Flask
- React.js
- Ruby on Rails
- Spring
- Vue.js
- jQuery

Spring, ASP.NET, Ru..., React.js, Vue.js, Django, jQuery, Angular/Angular.js, Express, Flask

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# DEMOGRAPHICS

# DISCUSSION

- How AI affected the market?

- Why USA leads in programmers?

- Why 91.9% of the programmers are men?

# OVERALL FINDINGS & IMPLICATIONS

## Findings
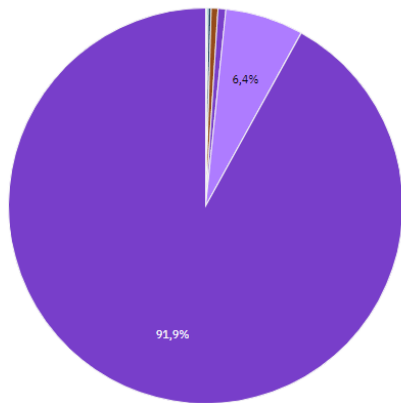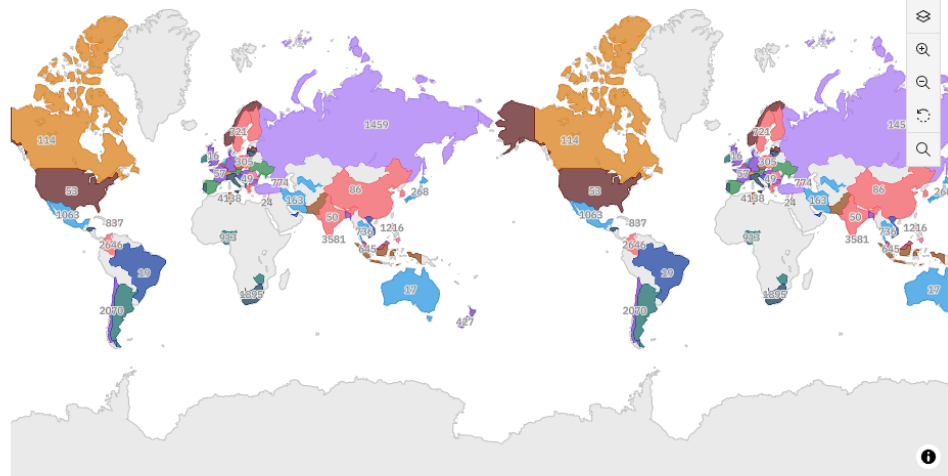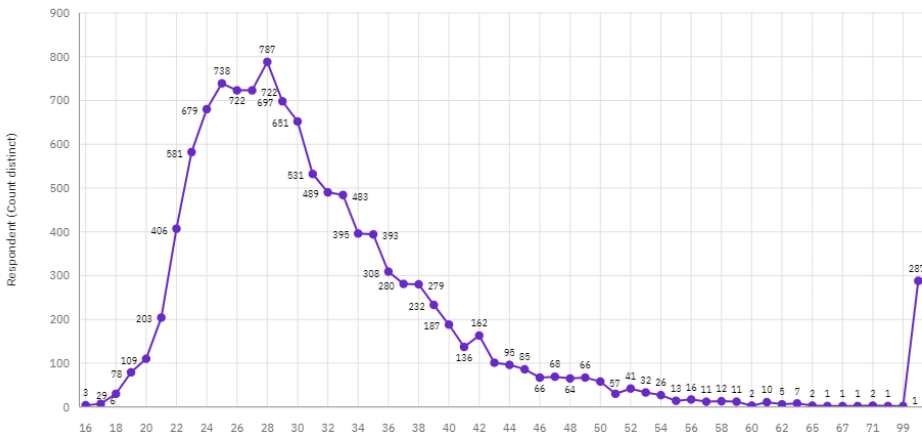
- **EdLevel Bachelor's degree (BA, BS, B.Eng., etc.)** has the highest **Respondent** at **nearly 6 thousand**, out of which **Gender Man** contributed the most at **nearly 5500**.

- **Country Jamaica** has the lowest average **Age** at **21.0**, followed by **Somalia** at **22.0**.

- **Gender Man Respondent** from **Country United States** is **2805**, whereas **Woman** is only **253**.

## Implications

- Programmers usually goes to college and get a degree. So the market has a high Education level.

- Jamaican programmers are young, showing that is a recent market in the country

- The market is predominantly male.

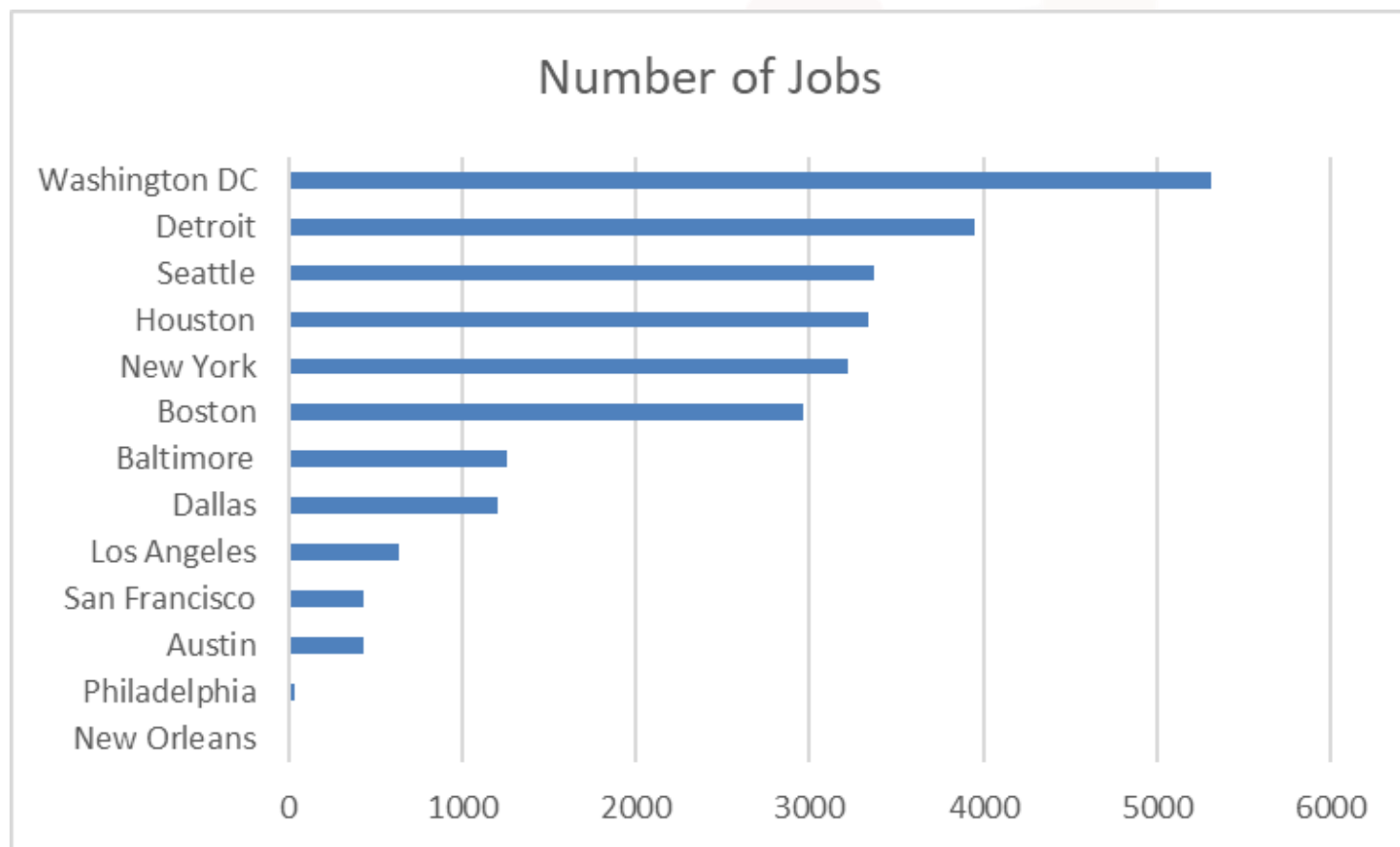IBM Developer

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# CONCLUSION

- The market of popular technologies changes very fast.

- The AI will have a big impact in where the market goes.

- Programmers needs to be very versatile, always learning trending technologies.

- While USA has the most programmers, the programmers are distributed in a lot of countries.

# APPENDIX — PROGRAMMERS AGE/CODEREV
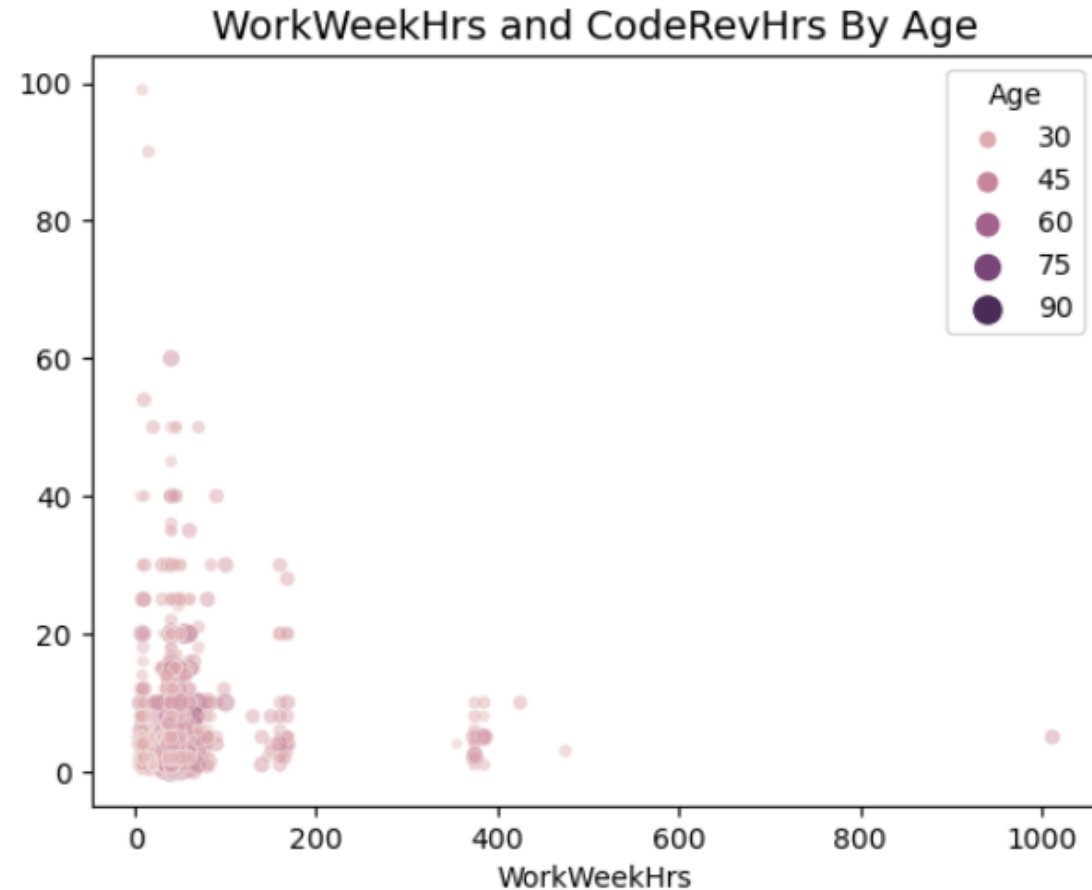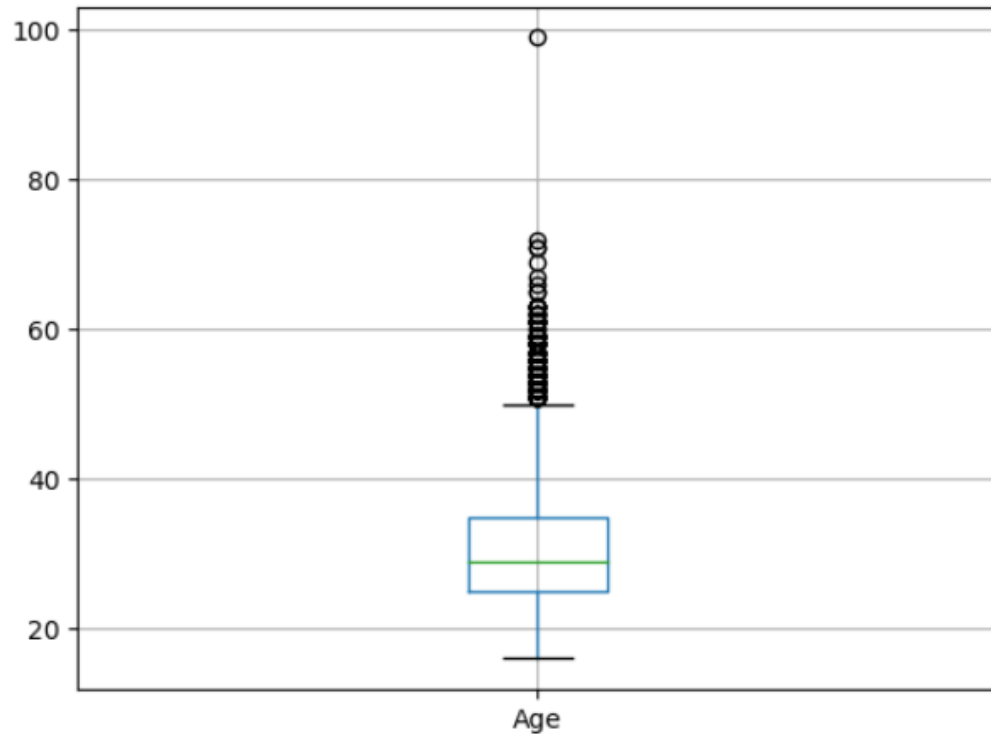
# JOB POSTINGS

# POPULAR LANGUAGES



Average Annual Salary