



# Insights and Trends in Programming

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CAPSTONE PROJECT IN AFFILIATION WITH  
IBM DATA ANALYST PROFESSIONAL CERTIFICATE



# OBJECTIVES

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

# EXECUTIVE SUMMARY



- In keeping up with changing technology we are performing our annual report on emerging tech to tell us what programming languages and databases are going to be in demand and how we can adapt to ensure we are equipped to handle projects utilizing these skills.
- Through statistical analysis and data visualization we were able to isolate the appropriate data to find the most current popular tech and what the trends are for the future.
- Key findings were that Javascript and HTML remain the most popular programming languages but python is rapidly increasing in popularity. As for database trends MySQL, PostgreSQL, MongoDB were the three top players to give close attention to but Redis is up and coming. Microsoft remains the top platform but Linux is widely popular and increasing. Finally, React appears to be the rising webframe.
- Recommendations are that for the most commonly utilized languages, databases, platforms and webframes we should be ensuring that the top tech are standards within our teams and for the up and coming technology we should be trying to get ahead of competition by ensuring we have focus groups with one expert on the subject matter to be completely equipped to handle any project

# INTRODUCTION

**To keep pace with changing tech and remain competitive, we must identify patterns in current and future skill requirements**

For this year's report on emerging skills we have utilized data to answer the following:

- What are the top programming languages in demand?
- What are the top database skills in demand?

From this report we should be able to isolate the top tech and trending tech to better focus our efforts in our teams education and training

This presentation is for anyone interested in current tech trends or business implications on IT teams from tech trends

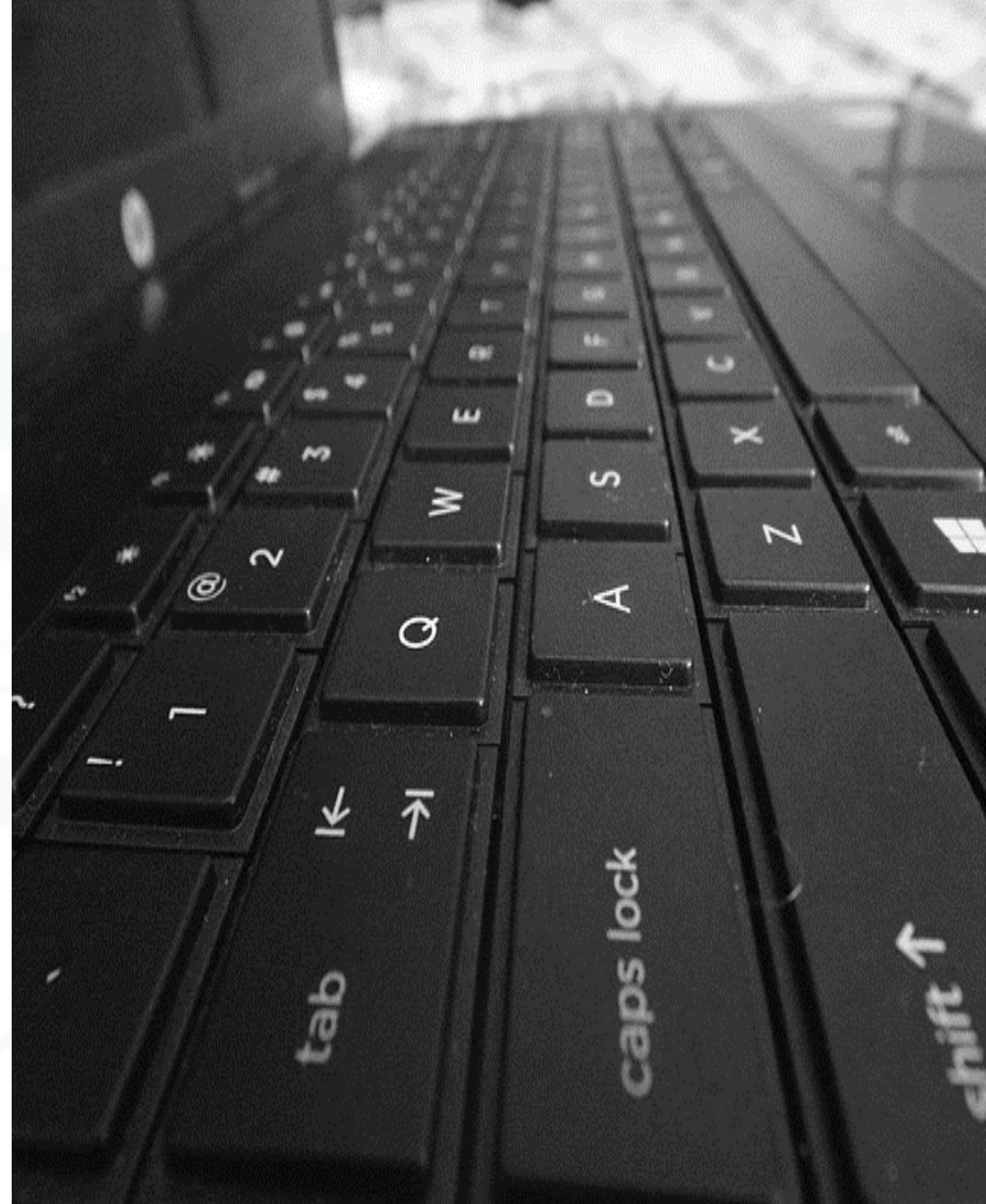




# METHODOLOGY

How did we look at the data?

IBM Developer



# METHODOLOGY – Data Collection/Wrangling



- Collected data through:
  - Application programming interface (API)
  - Web scraping
  - Survey results from Stack Overflow, a popular website for developer
- Cleaned and formatted data through:
  - Removing duplicates
  - Replacing or removing missing values
  - Normalizing the data

# METHODOLOGY – Data Visualization



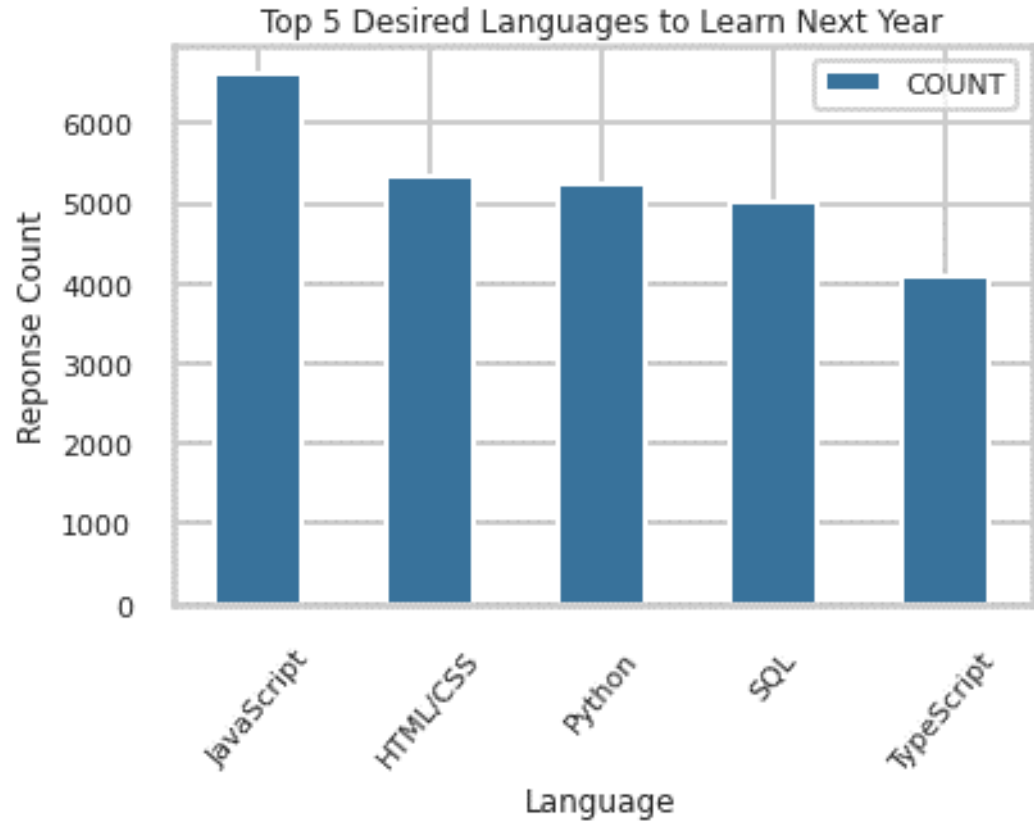
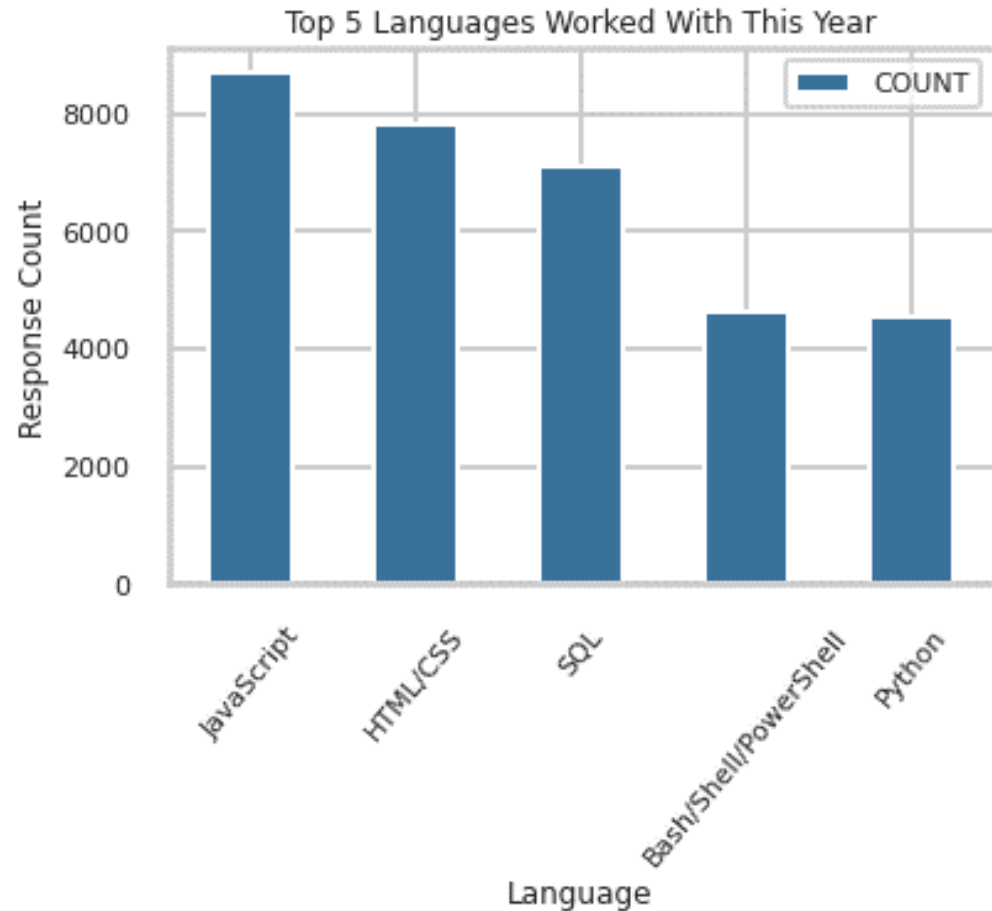
- Used visuals to:
  - Assess distribution (histogram, boxplot)
  - Find relationships in the data (scatter, bubble)
  - Assess composition of data (pie, stacked)
  - Compare the data (line, bar)

# RESULTS

What does the data say?



# PROGRAMMING LANGUAGE TRENDS



# PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS

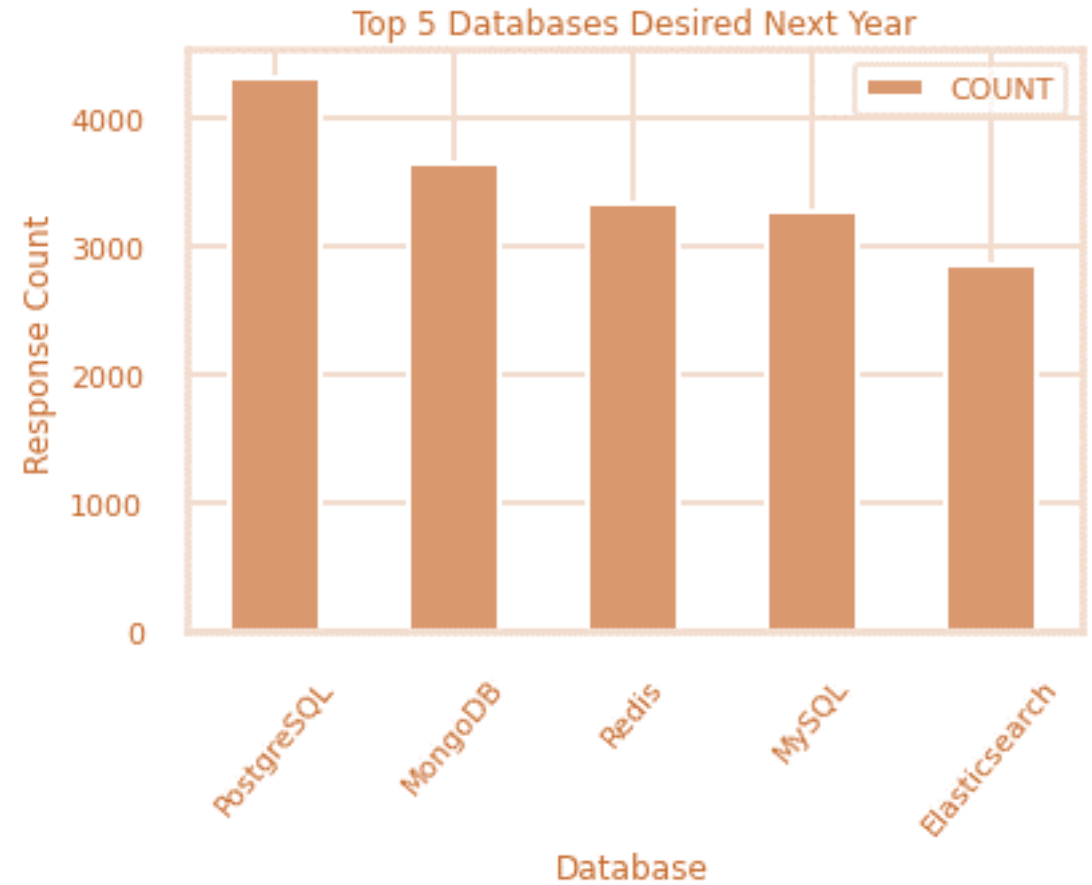
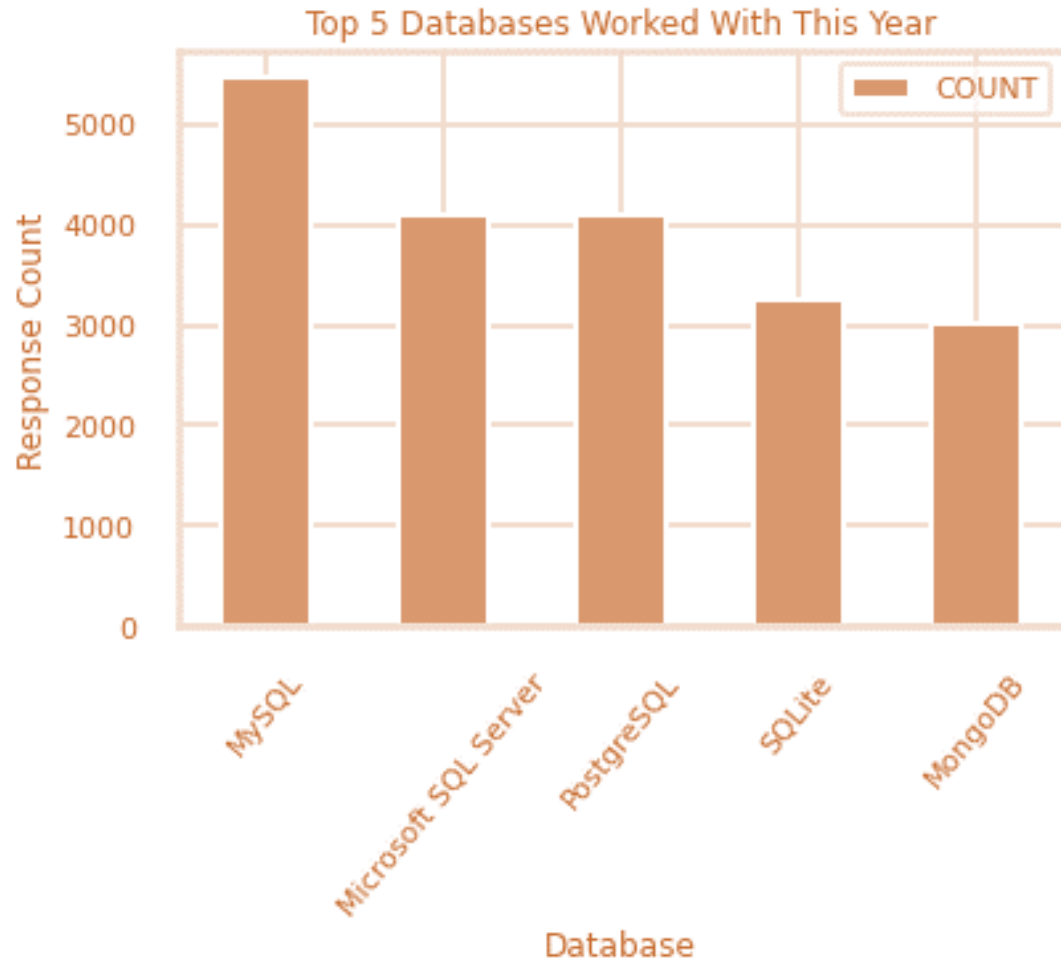
## Findings

- Javascript & HTML continue popularity
- Python rapidly increasing in popularity
- Bash/shell falling out of favor

## Implications

- Should be a basic skill among team members and should be prioritized since they are and continue to be most popular
- An area to potentially get ahead in the industry as it is rapidly rising
- Bash/shell becoming more of a specialty language and should not utilize excessive resources towards this

# DATABASE TRENDS



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- MySQL, PostgreSQL, MongoDB
- Redis desired for future
- Sqlite, Elasticsearch

## Implications

- Popular and continue to rise, should be focus point
- An area not currently popular – may be an opportunity
- Institute small focus groups on these areas, but don't divert unnecessary resources



# DASHBOARD

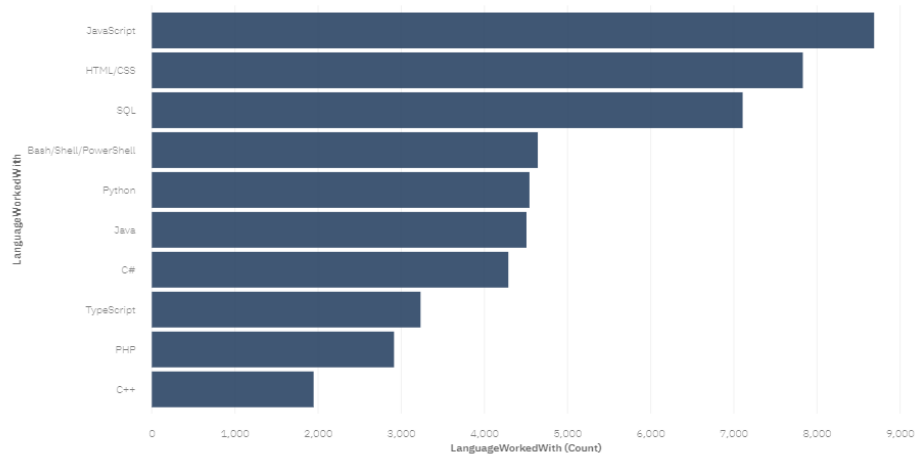
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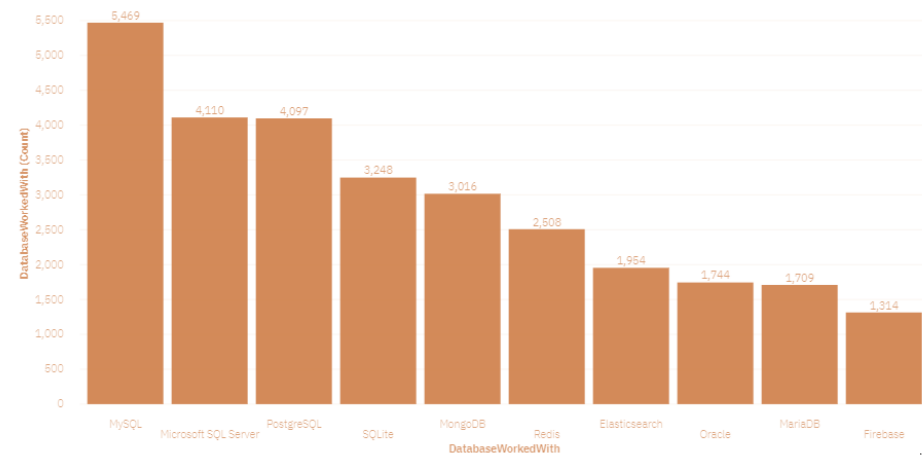
# DASHBOARD - CURRENT TECH

Current Technology Usage   Future Technology Trend   Demographics

Top 10 Languages Respondents Worked With



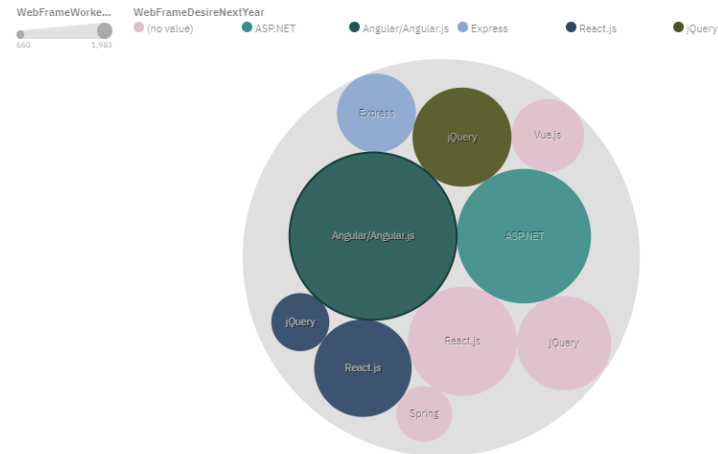
Top 10 Databases Respondents Worked With



Platforms Respondents Worked With

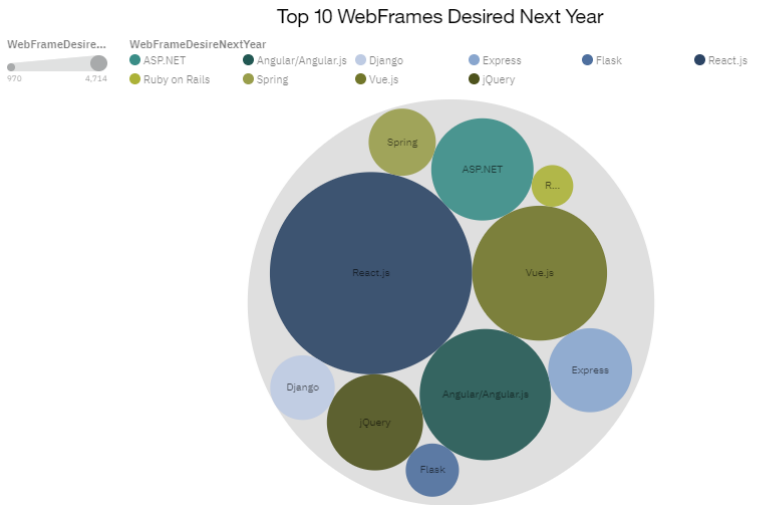
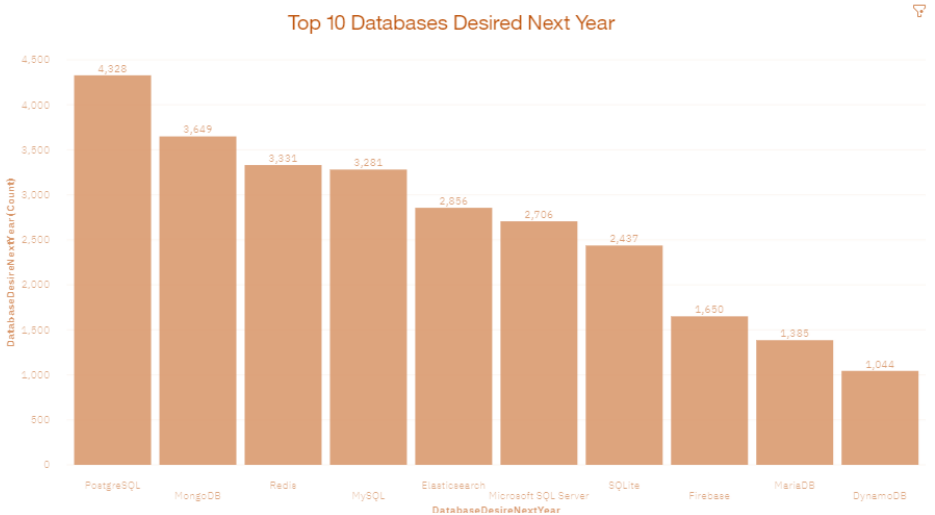
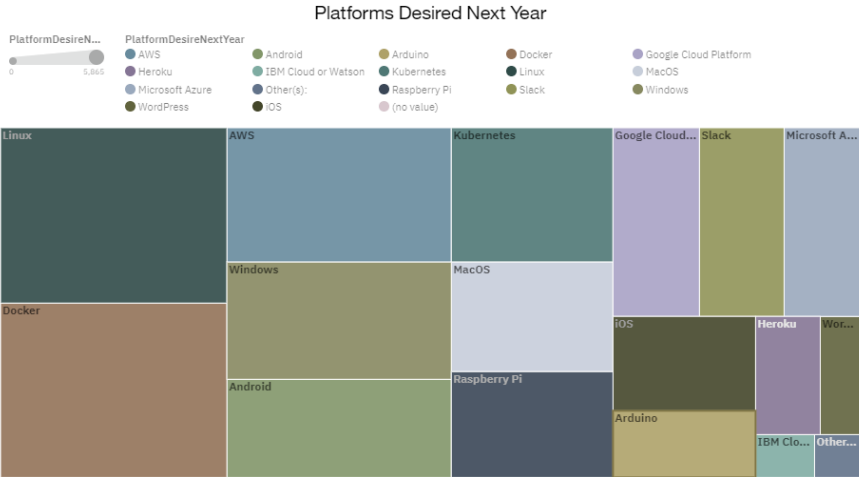
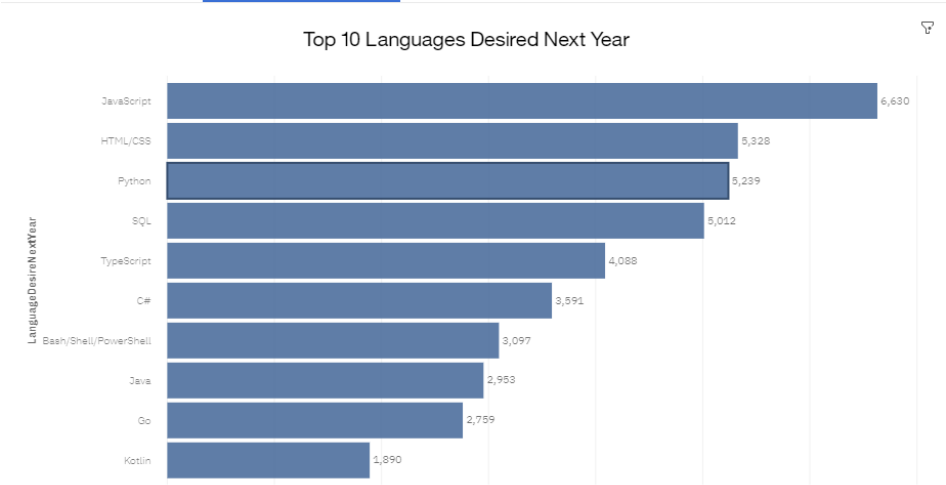


Top 10 WebFrames Respondents Worked With



# DASHBOARD - FUTURE TECH

Current Technology Usage   Future Technology Trend   Demographics

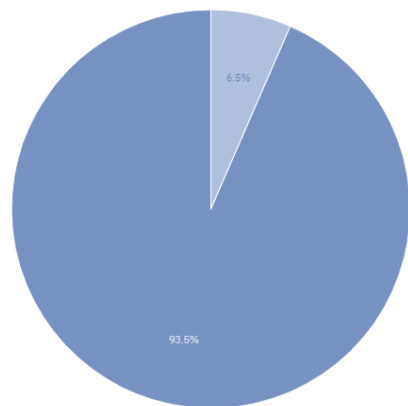


# DASHBOARD - DEMOGRAPHICS

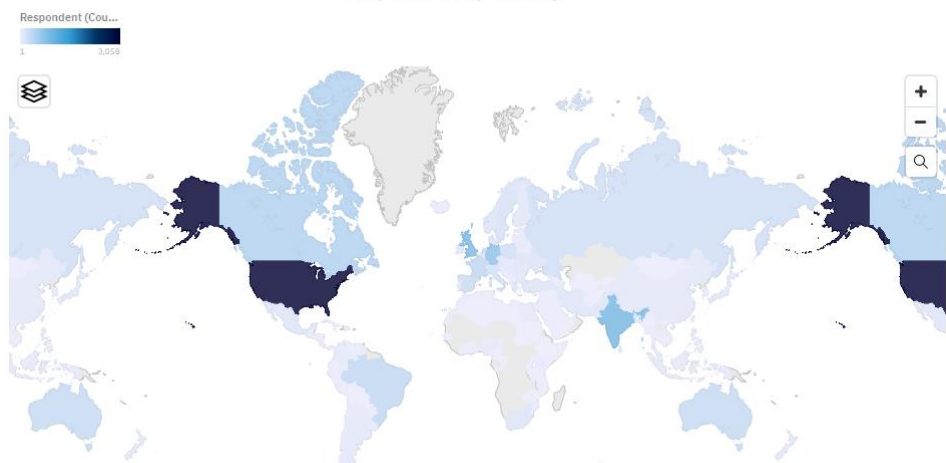
Current Technology Usage   Future Technology Trend   Demographics

Respondents by Gender

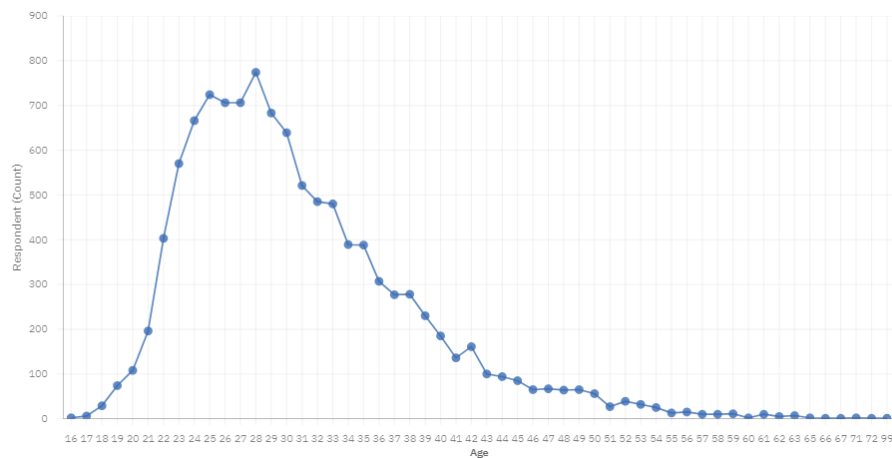
Gender  
● Woman ● Man



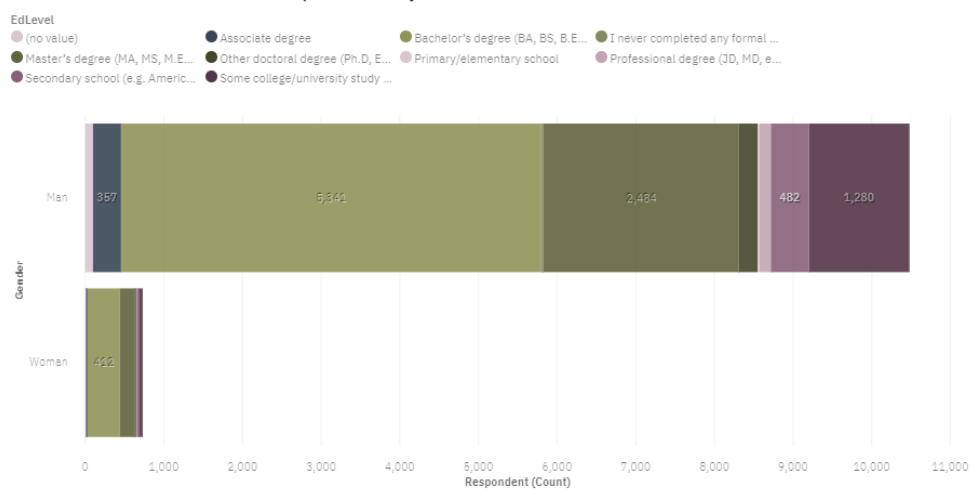
Respondents by Country



Respondents by Age



Respondents by Education Level and Gender



# DISCUSSION



What exactly did we find and  
what does this mean for us?

# OVERALL FINDINGS & IMPLICATIONS

## Findings

- Javascript, HTML most common and desired but python rising rapidly
- MySQL, PostgreSQL, MongoDB most common but redis up and coming
- React highly desired for the future for webplatforms

## Implications

- Javascript/HTML should be staples but python should be a focus point
- Redis new to the list, should be prioritized, the others should be standard skills within the team
- React is new and complex and should have focus group on this





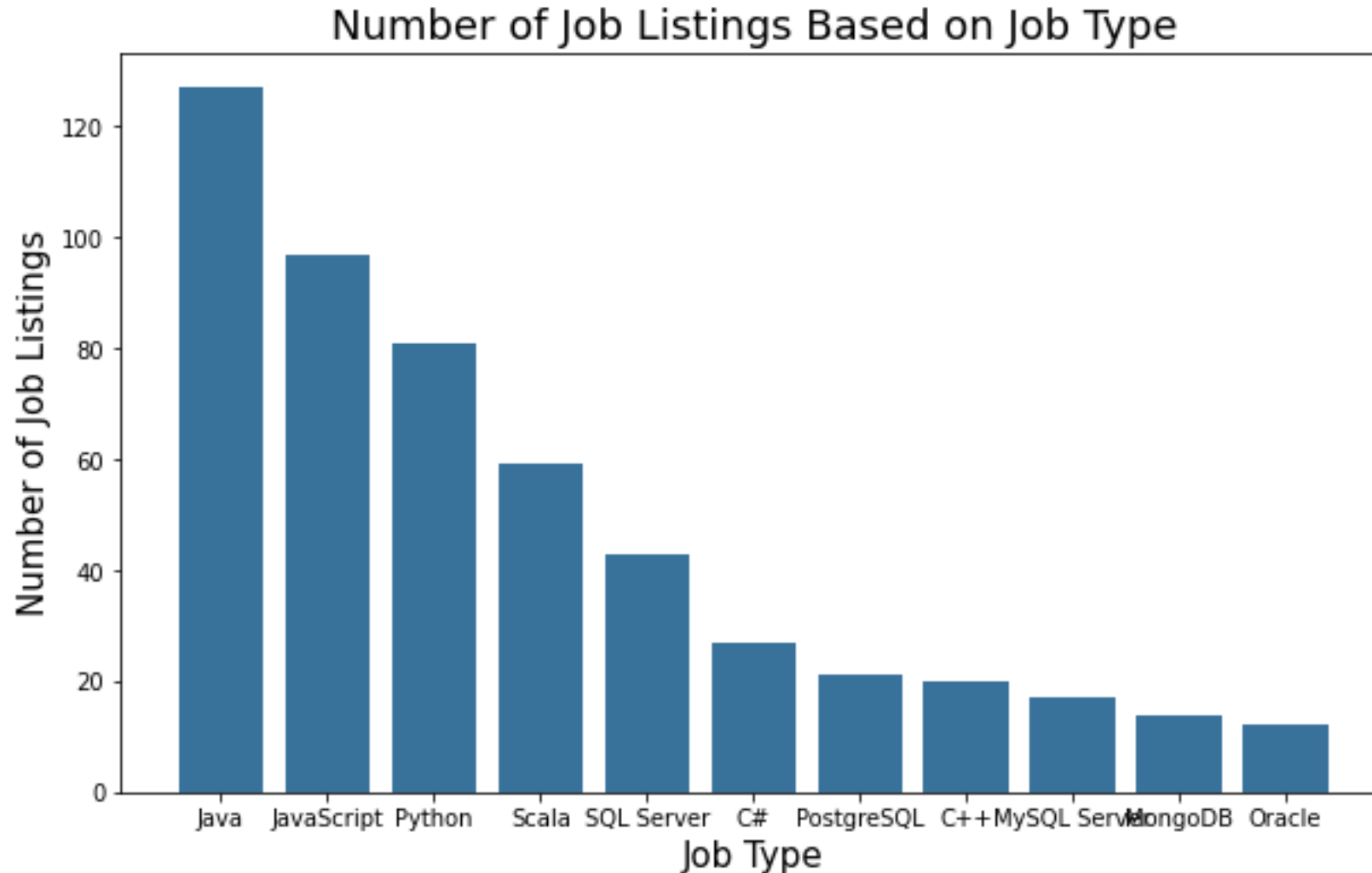
# CONCLUSION

- We worked to identify patterns in emerging programming skills to help better enhance our teams skills
- Through databases, webscraping and data analysis we were able to point to most popular current skills and skills that are highly desired
- By ensuring most popular skills are basic standards among the team we can then isolate focus groups to ensure we have a few experts in each of the up and coming areas
- Through this data we have the opportunity to create a well developed and well rounded team of experts to lead the industry in emerging tech

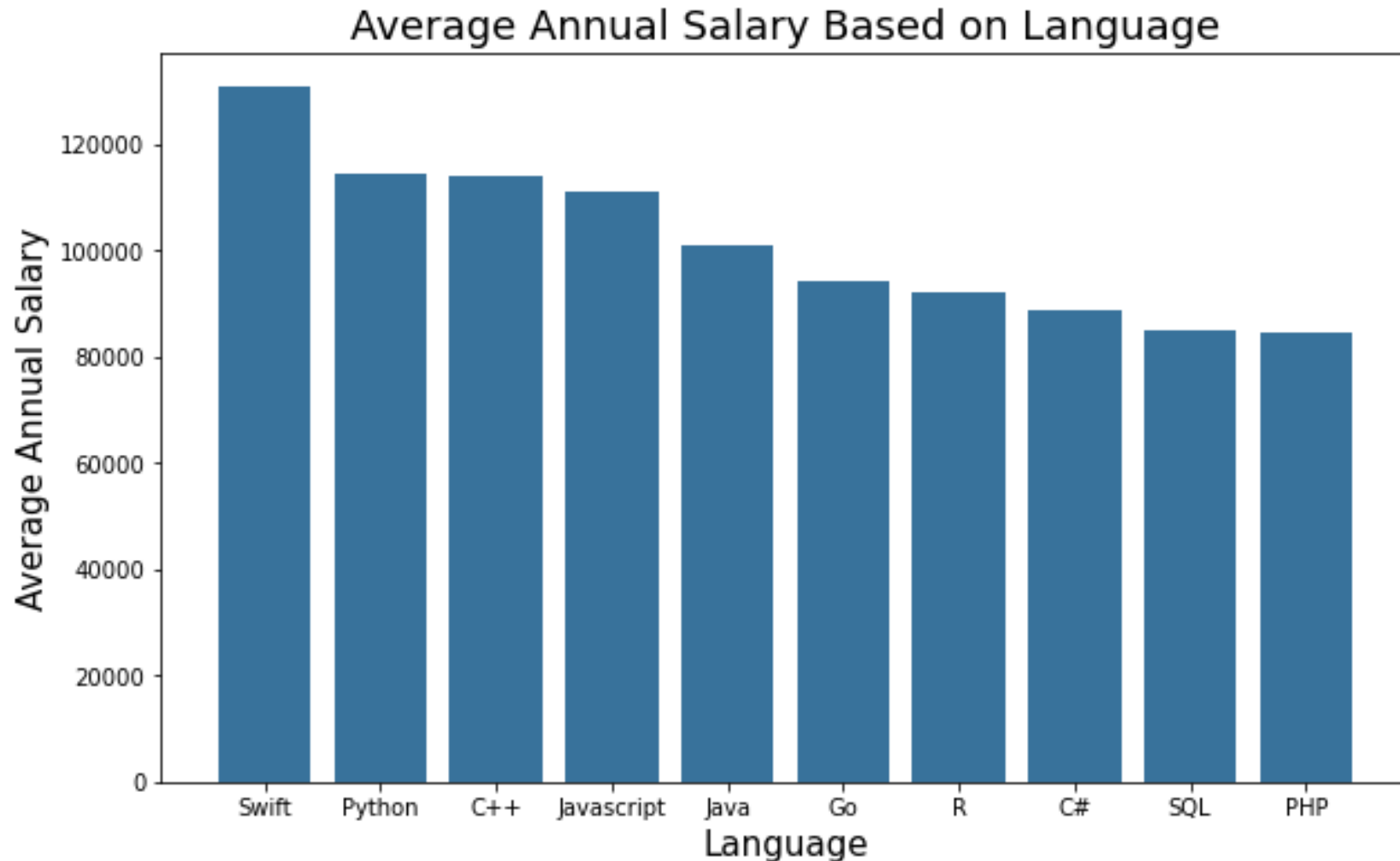
# APPENDIX



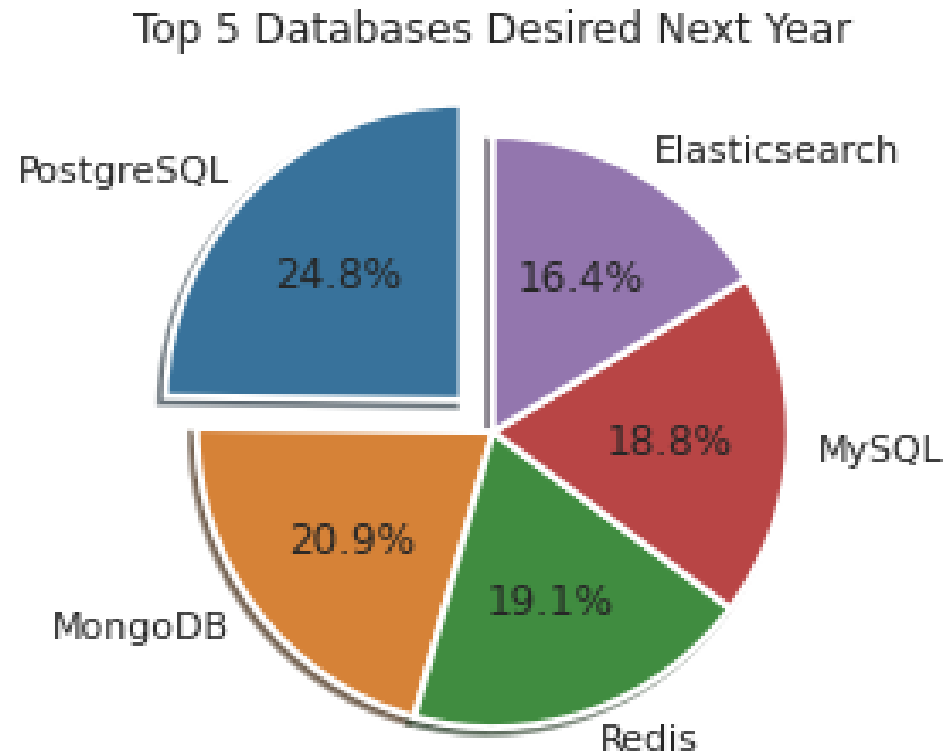
# CURRENT GITHUB JOB POSTINGS



# POPULAR LANGUAGES AND SALARY

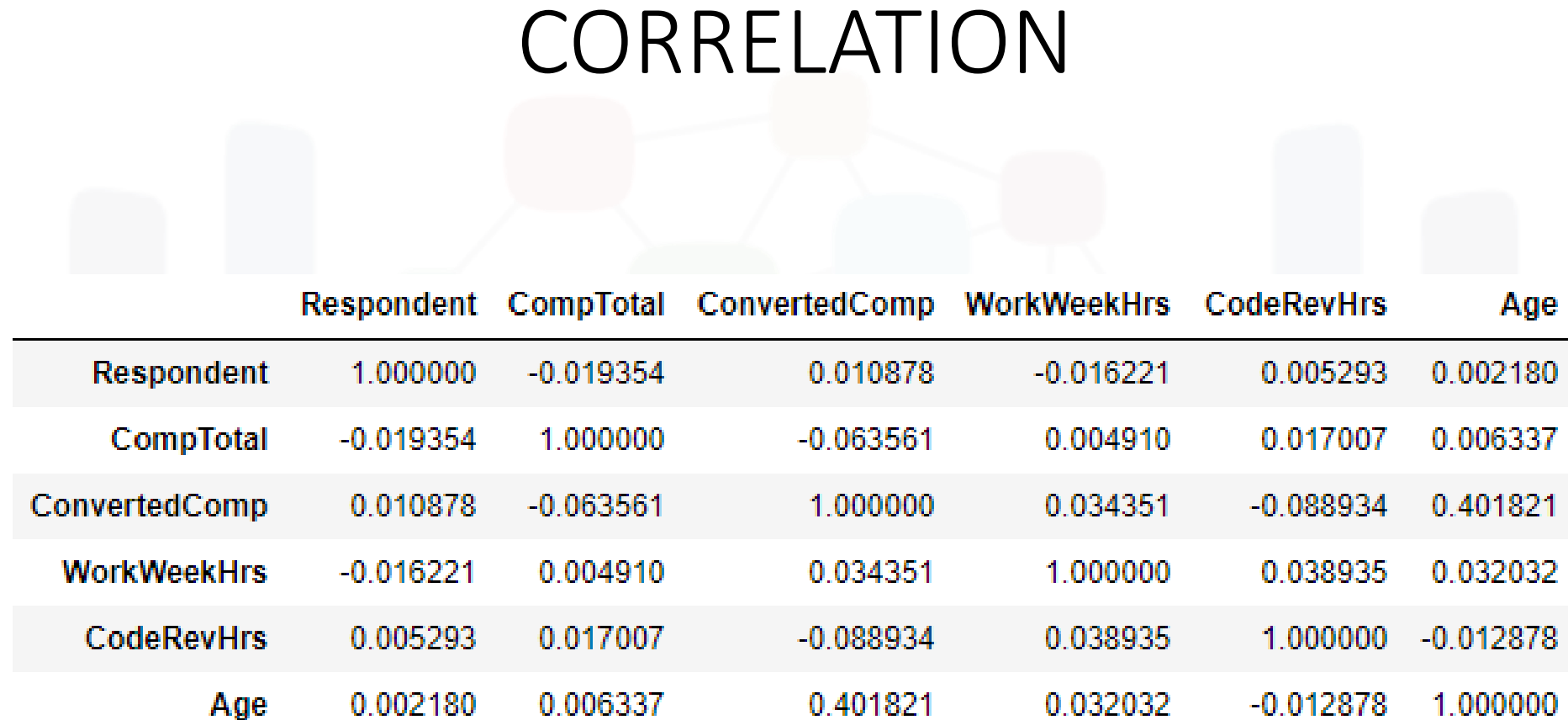


# TOP 5 DATABASES NEXT YEAR





# CORRELATION

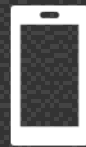


	Respondent	CompTotal	ConvertedComp	WorkWeekHrs	CodeRevHrs	Age
Respondent	1.000000	-0.019354	0.010878	-0.016221	0.005293	0.002180
CompTotal	-0.019354	1.000000	-0.063561	0.004910	0.017007	0.006337
ConvertedComp	0.010878	-0.063561	1.000000	0.034351	-0.088934	0.401821
WorkWeekHrs	-0.016221	0.004910	0.034351	1.000000	0.038935	0.032032
CodeRevHrs	0.005293	0.017007	-0.088934	0.038935	1.000000	-0.012878
Age	0.002180	0.006337	0.401821	0.032032	-0.012878	1.000000

Thank you



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