



# IBM DATA ANALYST CAPSTONE PROJECT:

## WHAT ARE THE CURRENT TECHNOLOGY SKILL TRENDS AND DEMOGRAPHICS?

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# AGENDA

Executive Summary

Introduction

Methodology

Results – Visualization Charts  
and Dashboard

Discussion- Findings and  
Implications

Conclusion

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# EXECUTIVE SUMMARY

- Perhaps the most exciting yet challenging characteristic of a technology career is how fast the field is growing and changing year to year. It is important to understand the tools that are most utilized now and what current professionals consider the most desirable to learn for the future. By understanding current trends and predicting future trends, both employers, stakeholders, and aspiring technology professionals can understand what they need to implement into their training, business plan to keep up with the lucrative field.
- This presentation shows current demographics and data trends including top current and top desired programming languages, databases, platforms and web frames according to current data professionals across the world via a Stack overflow survey and the IBM site.
- The data shows that 8 of the current top 10 programming languages now are also the most desired to learn for next year with the top languages being Javascript, HTML, Python and SQL. GO and KOTLIN which are desired for next year but not currently in the top 10. Similarly, 7 of the top 10 databases remain in the top for current and future databases with the most popular being Mongo, MySQL, Microsoft SQL Server, Firebase and Maria DB. PostgreSQL, Redis and SQLite are on the top desired databases for next year but not currently top 10. Demographic data shows that the 93.7% of the respondents are males, the majority of respondents are 25-28 years old and have their bachelor degree.





## INTRODUCTION

The data analyzed answers the following questions:

- What are the Current top programing languages and databases used by data professionals?
- What are the top desired programing languages, databases by data professionals?
- What are some of the most used platforms and web forms used in technology?

Understanding current trends and demographics within the technology field is helpful for technology companies and current and aspiring technology professionals. With this information they can plan how to move forward with training and consider new and possibly more efficient tools for their business or career.



# METHODOLOGY

Data was collected, cleaned and put into graphical visualizations using Python and Python libraries such as Matplotlib, Seaborn, Pandas and BeautifulSoup and SQL.

Then used IBM Cognos Dashboard to create an interactive visualization to clearly understand, analyze and present the results.



# Link to Interactive Dashboard

[HTTPS://DATAPLATFORM.CLOUD.IBM.COM/DASHBOARDS/EF946A42-6E2F-4446-A119-D92EF0E5AEA7/VIEW/7012FC070CEB2DCB77E5D4E40798790E2963255AE4BB880486D77B495E357497F06C1198C82B4F0E8E185063A5EE415ACE](https://dataplatform.cloud.ibm.com/dashboards/ef946a42-6e2f-4446-a119-d92ef0e5aea7/view/7012fc070ceb2dcb77e5d4e40798790e2963255ae4bb880486d77b495e357497f06c1198c82b4f0e8e185063a5ee415ace)



```
on: absolute; z-index: 999  
x 5px #ccc}.gbrtl .gbm  
display: block; position  
acity: 1; *top: -2px; *le  
/; top: -4px\0/; left: -6  
e-box; display: inline  
isplay: block; list-s  
e-block; line-height  
pointer; display: bl  
tive; z-index: 1000)  
padding-right: 9px  
durl111
```

# PROGRAMING LANGUAGES

LET'S DIVE IN



## Top 10 Languages Worked With

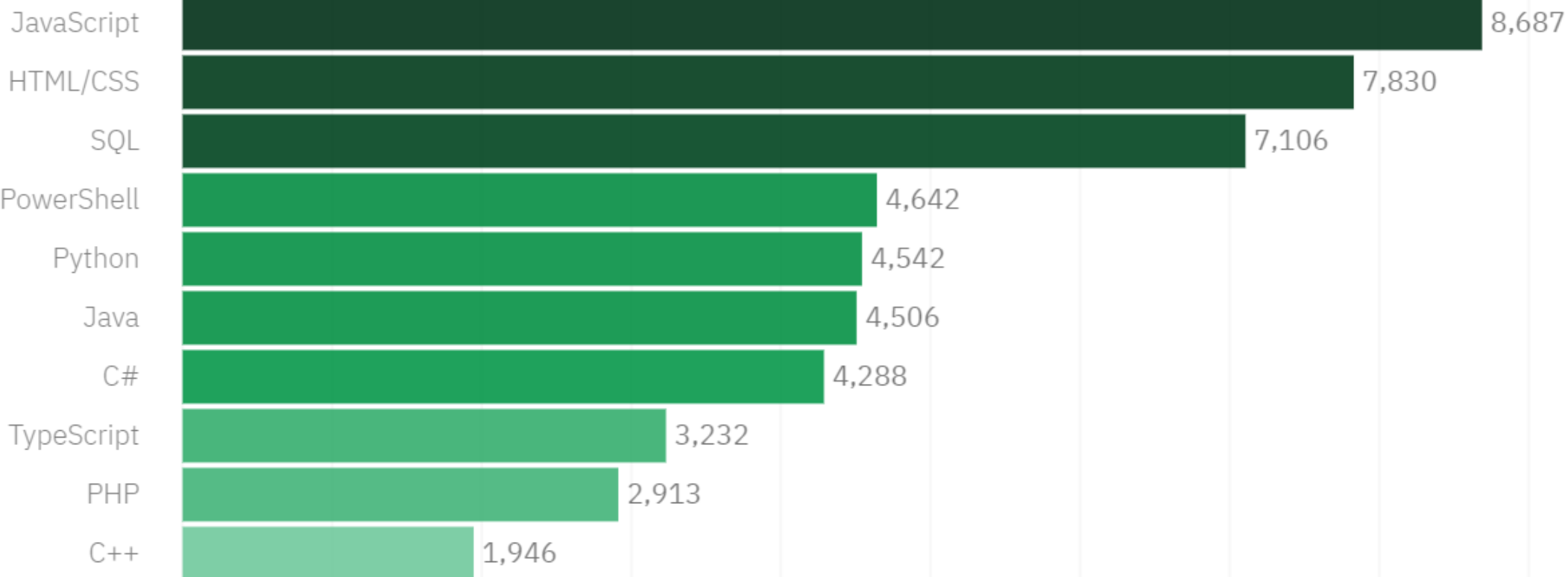
LanguageWorked...



0

8,687

LanguageWorkedWith



0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000

LanguageWorkedWith (Count)



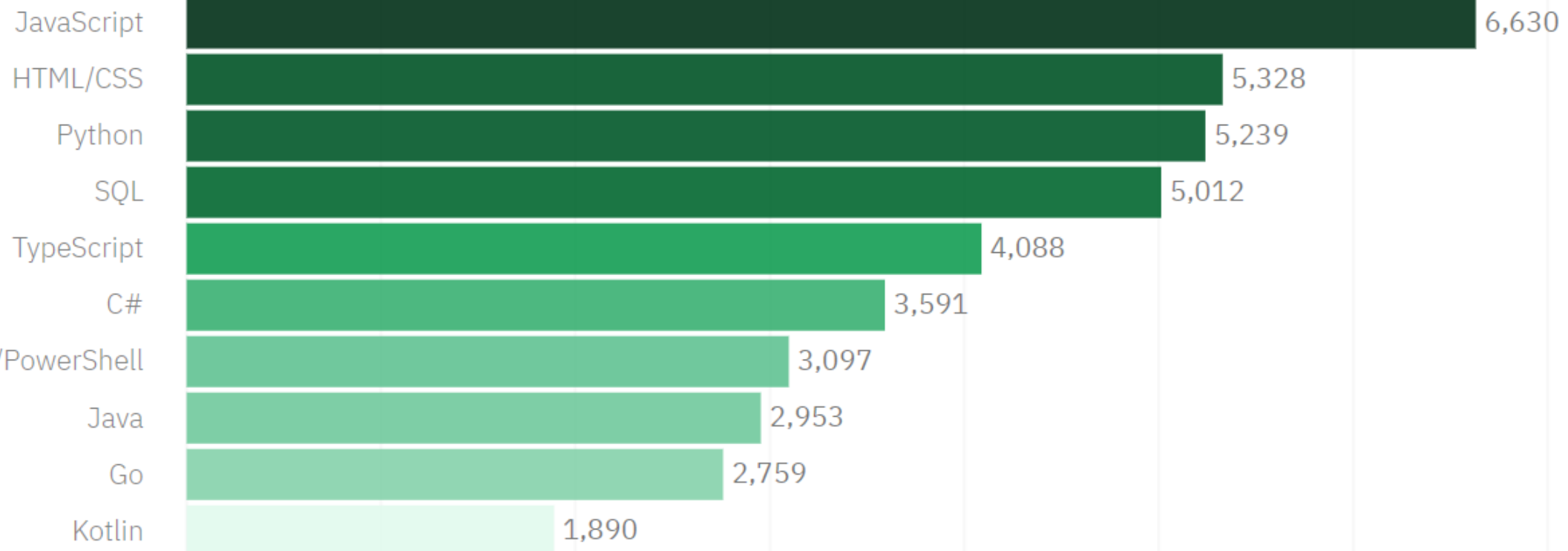


# Top 10 Languages Desired for Next Year

LanguageDesire...



LanguageDesireNextYear



0 1,000 2,000 3,000 4,000 5,000 6,000 7,000

LanguageDesireNextYear (Count)



# DATABASES

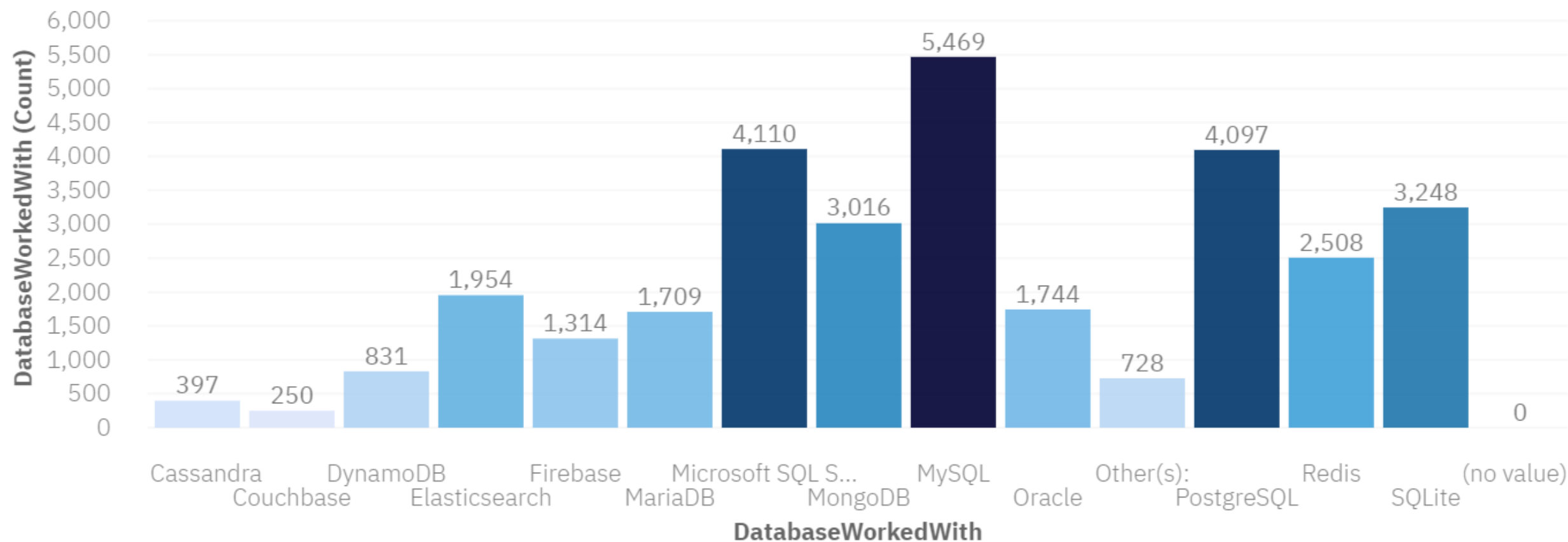
LET'S DIVE IN

# Top 10 Databases Worked With

DatabaseWorked...



0 5,469



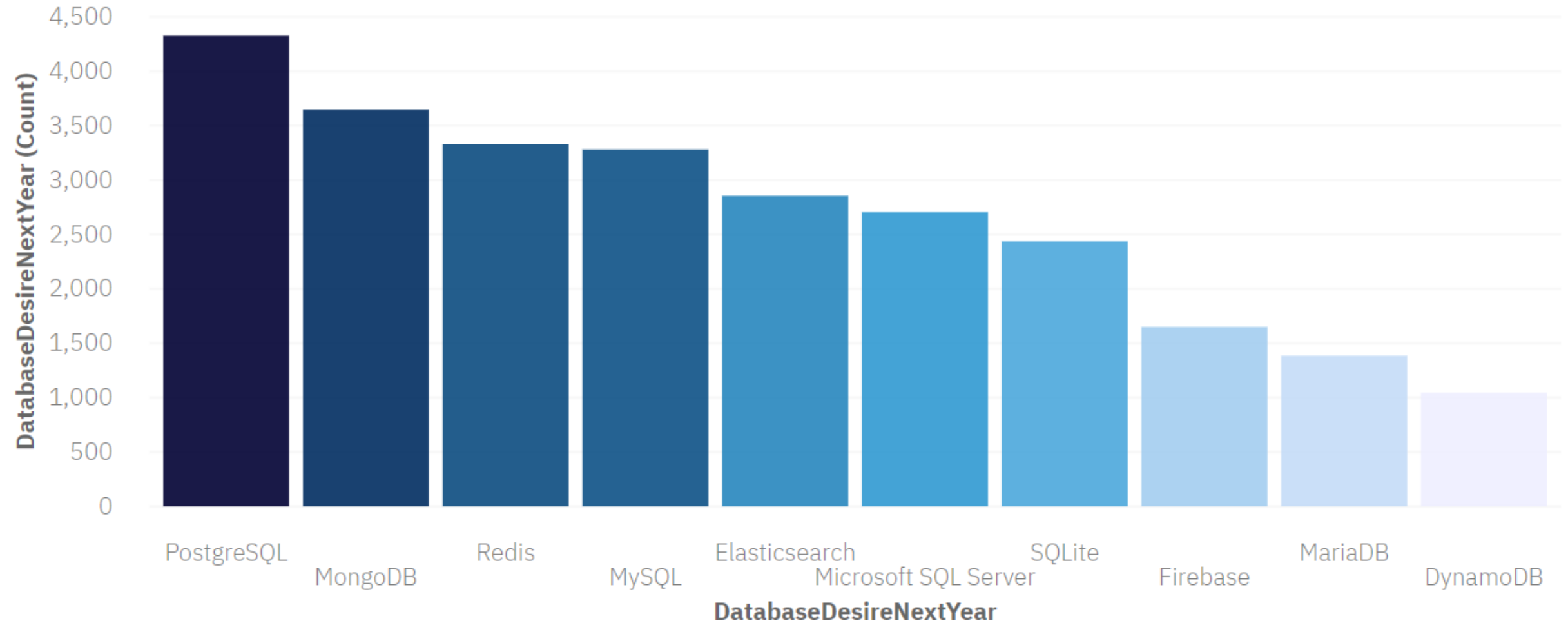


## Top 10 Databases Desired for Next Year

DatabaseDesireN...



1,044 4,328







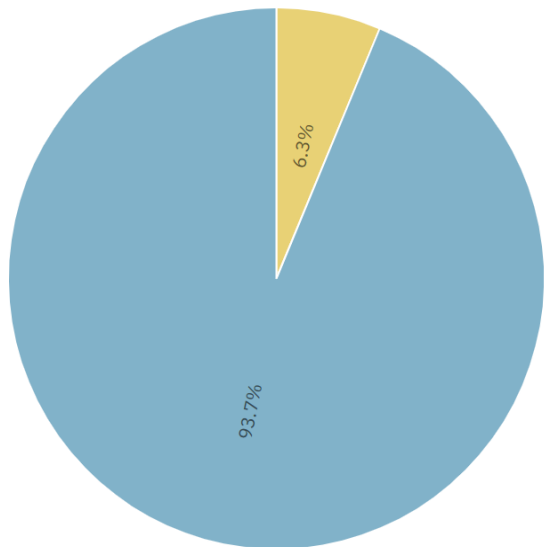
# DEMOGRAPHICS

LET'S DIVE IN

Respondent Genders

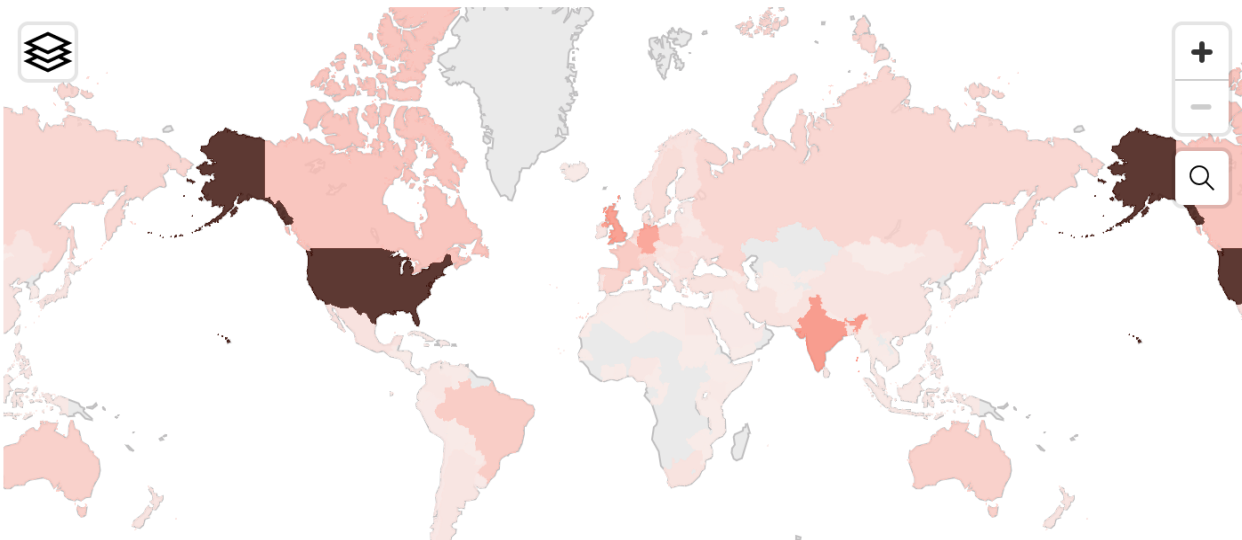
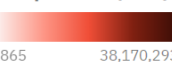
Gender

Woman Man

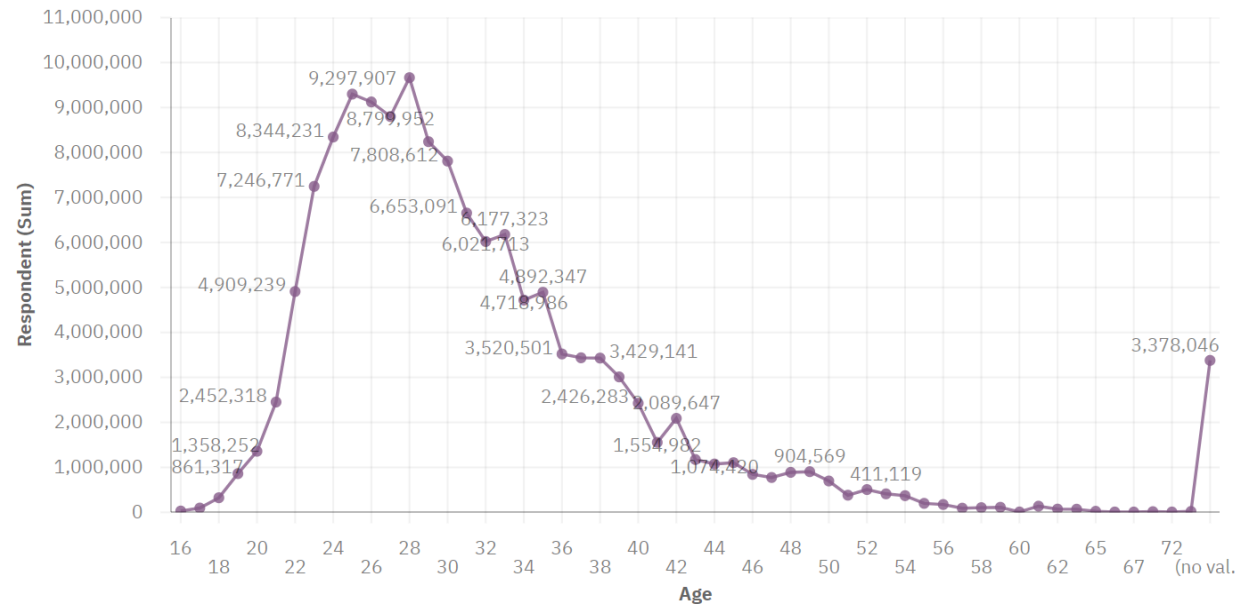


Respondent Locations

Respondent (Sum)



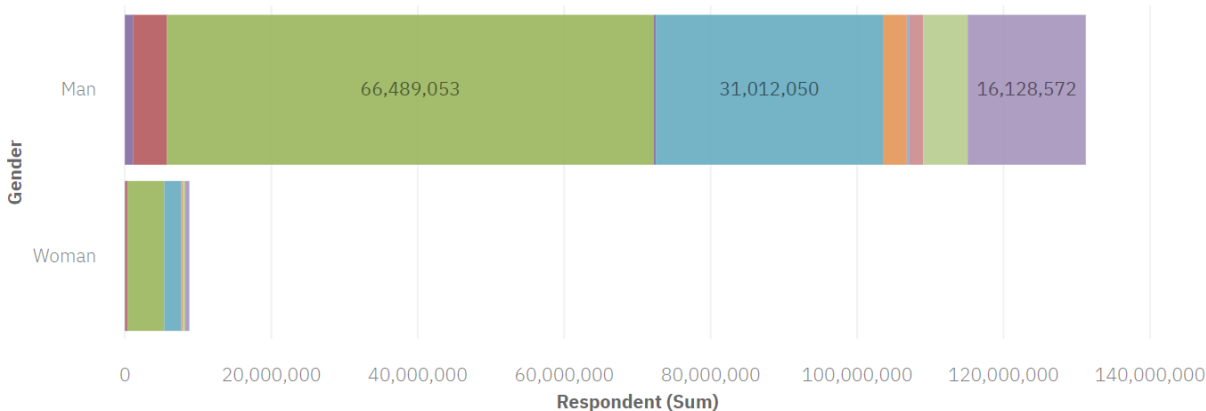
Respondent Ages



Respondent Education Levels

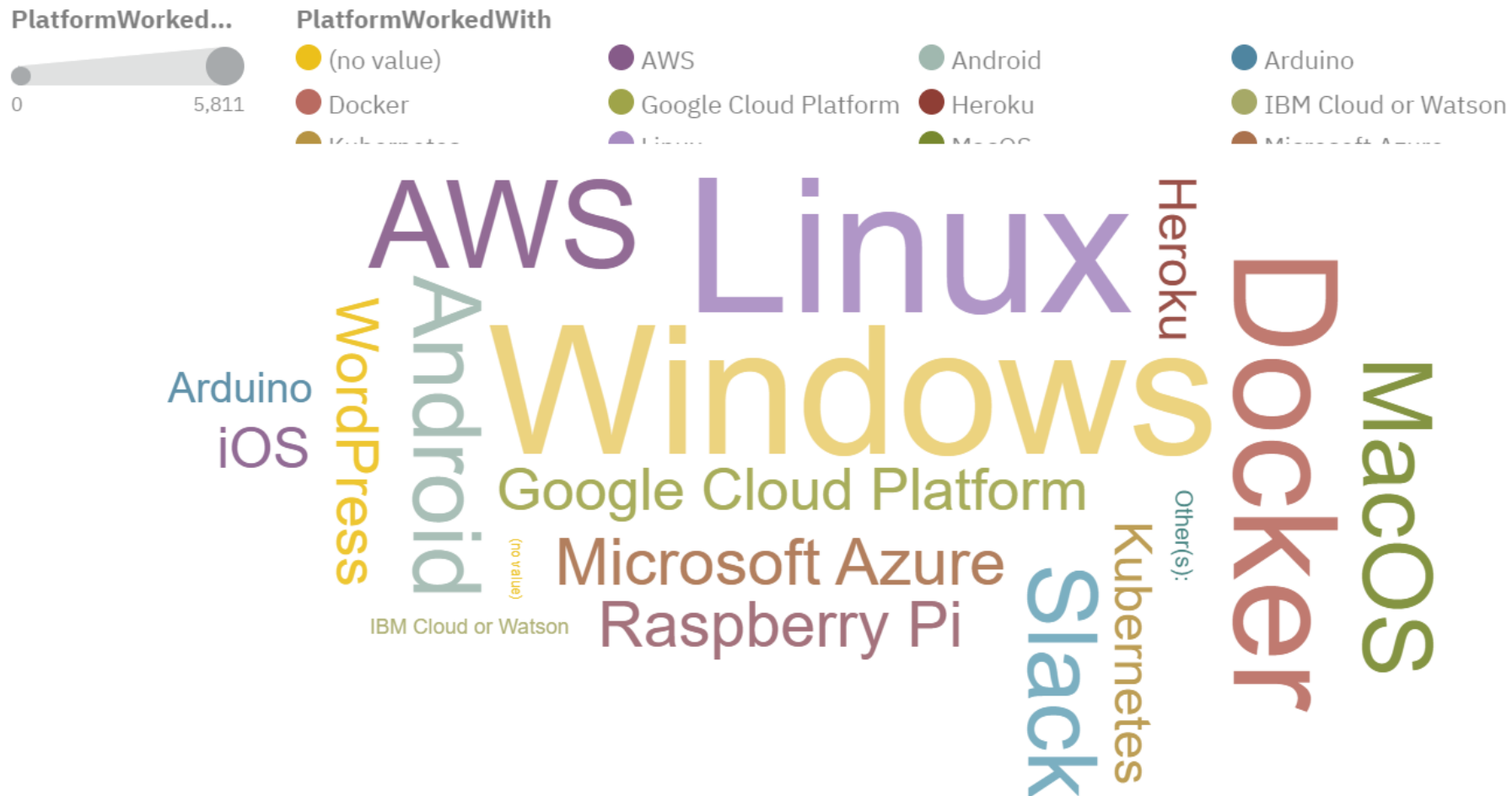
EdLevel

- (no value)
- I never completed any formal ...
- Primary/elementary school
- Some college/university study ...
- Associate degree
- Master's degree (MA, MS, M.E...
- Professional degree (JD, MD, e...
- Bachelor's degree (BA, BS, B.E...
- Other doctoral degree (Ph.D, E...
- Secondary school (e.g. Americ...



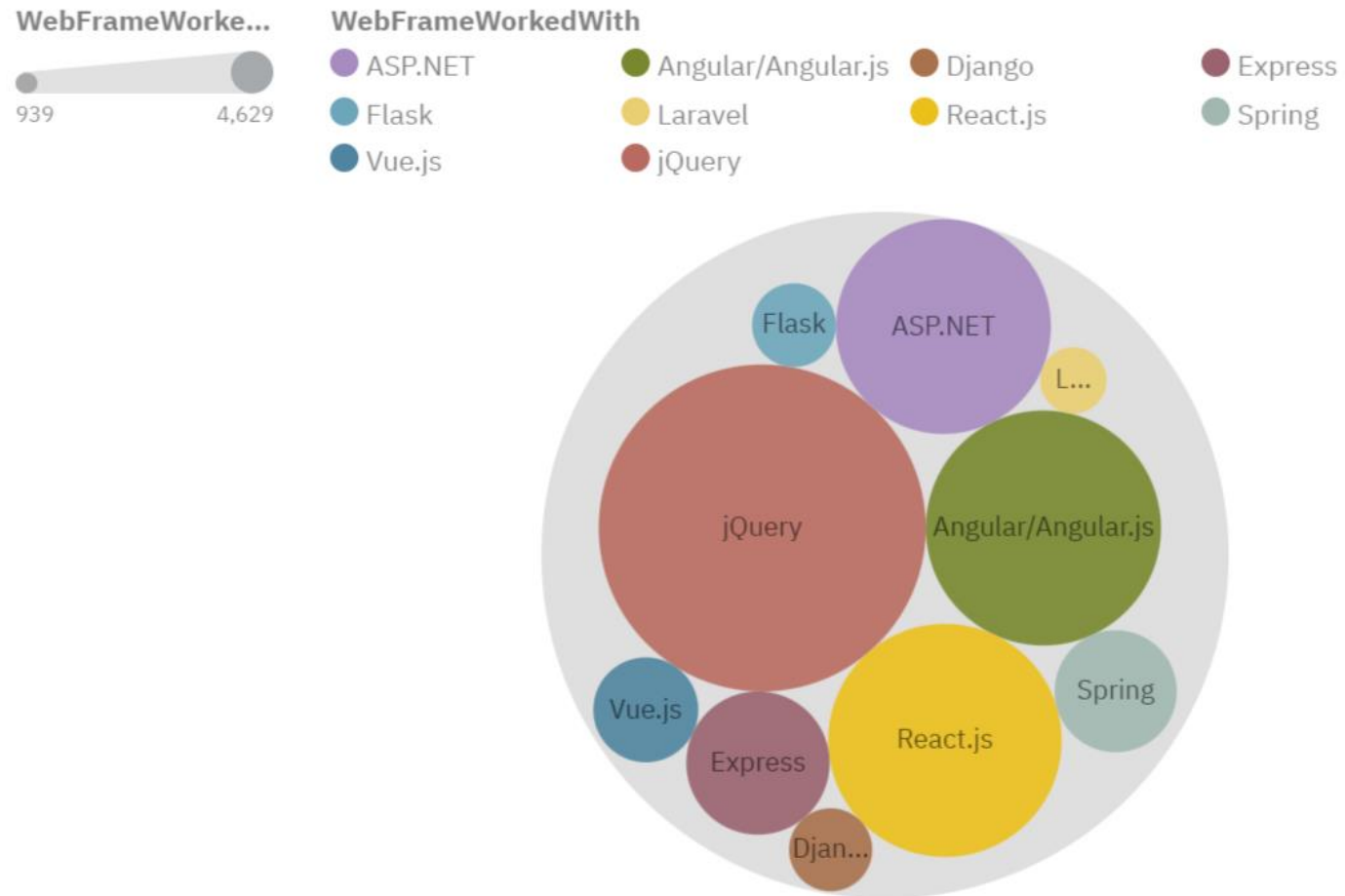
# POPULAR PLATFORMS

## Platforms Worked With



# CURRENT POPULAR WEB FRAMES

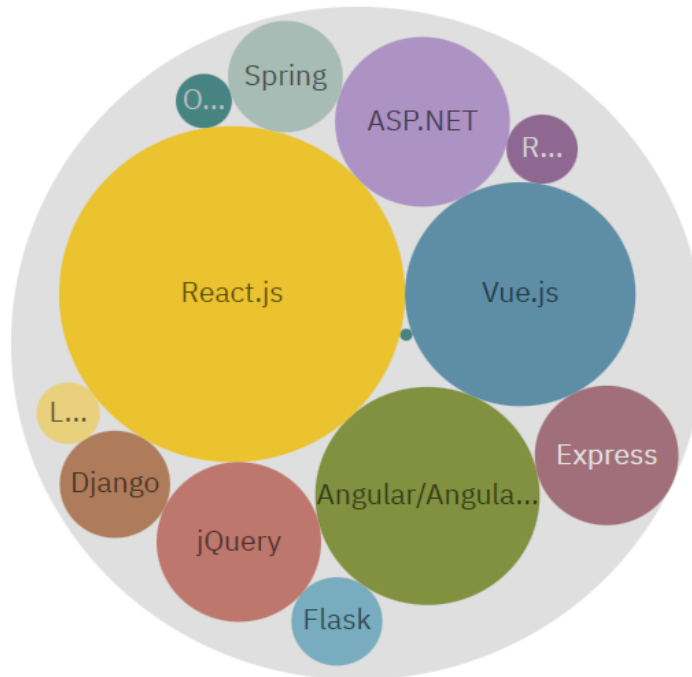
## Top 10 Web Frames Worked With





# DESIRED WEB FRAMES

## Top 10 Web Frames Desired for Next Year



# DISCUSSION: FINDINGS AND IMPLICATIONS



## Trends

Do the trends in the data align with what you see in your own practices experience?

Which data skills or tools to do you think would be beneficial to train on based on the 'desired' trends?



## Demographics

Did any of the current gender data surprise you?  
What about education levels?

What are actions we can take to decrease the gender differences in technology professionals?

How does education level affect job performance/success? Is having a degree still necessary?  
What are the most important qualities/qualifications that you believe makes an individual successful in this field?



What are you still curious about?



## CONCLUSION

SQL, HTML, and JavaScript are both the top languages now and desired next year.

MySQL is the top database now and PostgreSQL is the most desired for next year. Although different databases, SQL types remain a theme in popular tools.

Men make up nearly 98% of the technology profession.





# APPENDIX

Data sourced from Stack Overflow:  
<https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey-results-are-in/>

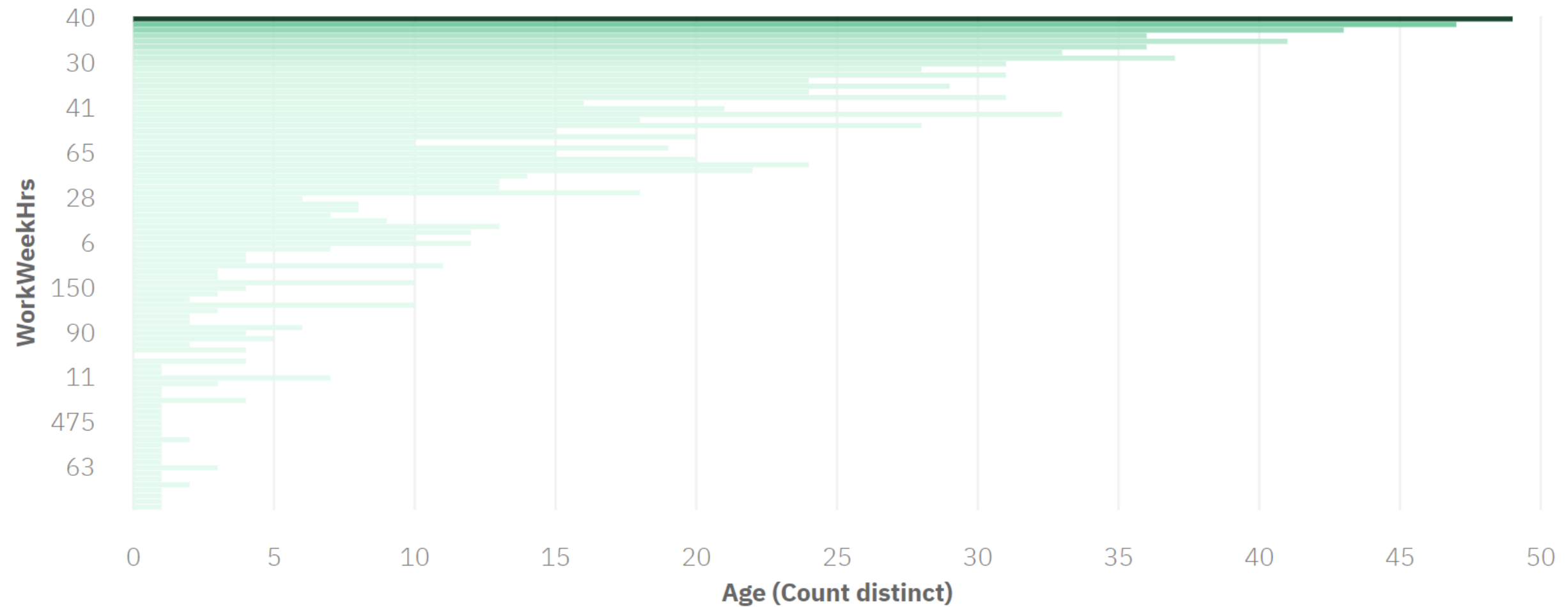
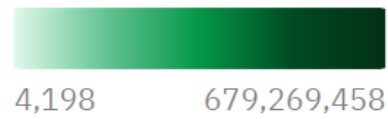
And GitHub job postings data sets

Dashboard: IBM Cloud Pak for Data

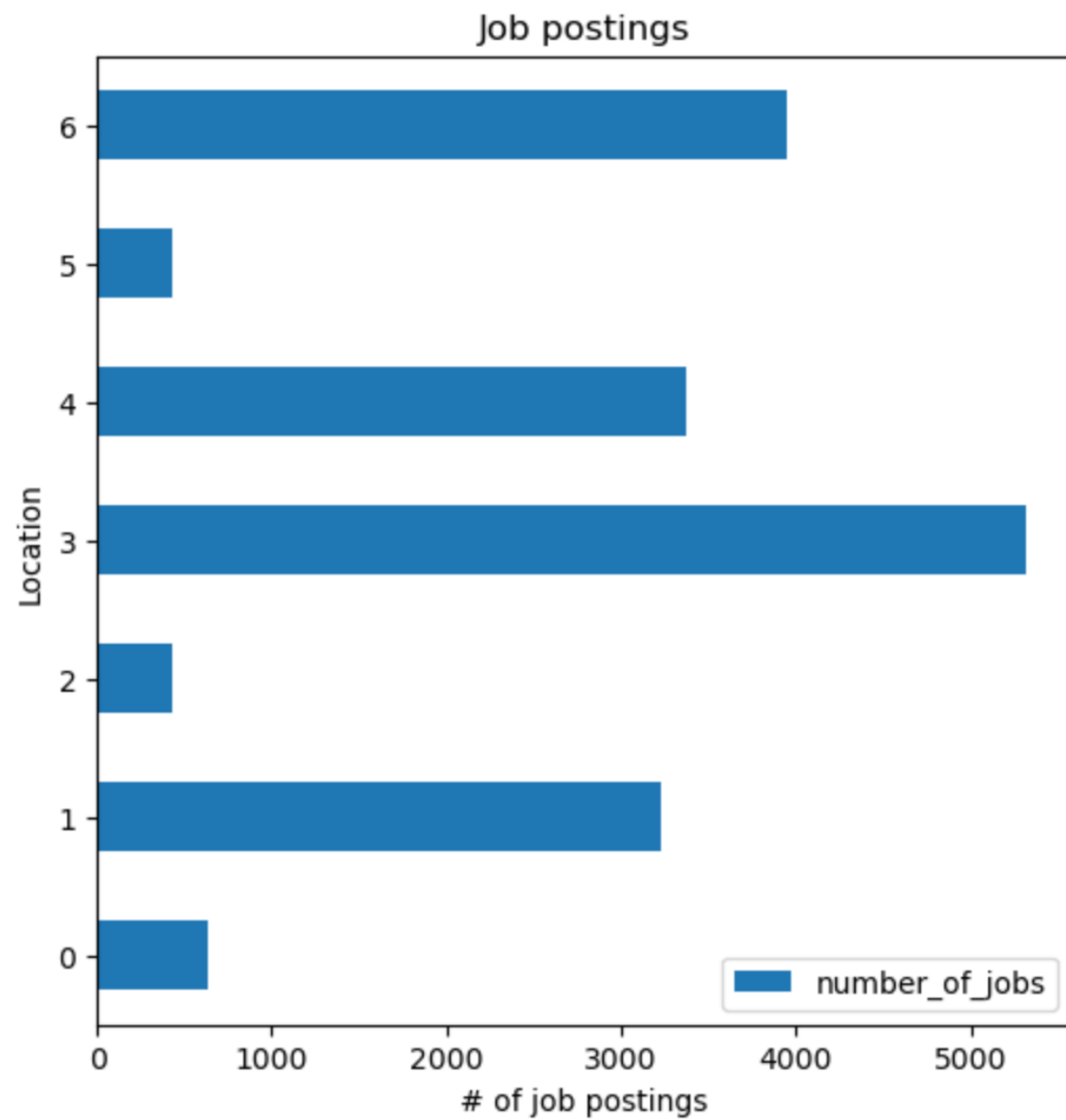


# WorkWeekHrs by Age Sorted by Salary

ConvertedComp (...)



```
plt.xlabel("# of job postings")  
plt.ylabel("Location")  
  
plt.show()
```



# THANK YOU



Ava Somers



On LinkedIn @ Ava  
Somers