



Tech Trend Analysis in IT

Rakesh Goel

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OUTLINE



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EXECUTIVE SUMMARY



Objective of the data analysis exercise is to help identify future skill requirements for the global IT and business consulting services firm.

Following are the key steps that were followed to achieve the intended objective.

- Identifying the Data Sources
 - Job postings
 - Training Portals
 - Surveys
- Data Collection Methodologies
 - APIs and Survey Data
 - Web Scrapping
- Data Exploration
- Data Wrangling
- Data Analysis
- Visualization
- Conclusion

INTRODUCTION



- Stack Overflow Developer Survey 2019 data used for the analysis
- Primarily, data is comprising of survey records of developers from different countries with gender diversity.
- There were 25,142 respondents to the survey, while after cleaning up the data, nearly ~11,552 records were analyzed in this study
- There is no PII (Personal Identifiable Information) were present in the dataset, and the study was not targeted toward any kind of user profiling

METHODOLOGY



- **Data Collection**

- Collecting Data Using APIs (Survey Data)
- Collecting Data Using Web-scraping (Git Hub Job postings)
- Exploring Data (CSV Files)

- **Data Wrangling Using Python**

- Finding Missing Values
- Determine Missing Values
- Finding Duplicates
- Removing Duplicates
- Normalizing Data

- **Data Analysis Using Python**

- Distribution
- Outliers
- Correlation

- **Data Visualization Using Python & SQL**

- Visualizing Distribution of Data
- Relationship
- Composition
- Comparison

- **Dashboard Creation Using Cognos**

- **Conclusion**

- **Technologies Used**

- Python Libraries – Pandas, Matplotlib, Plotly, numpy, Seaborn, sqlite3, requests etc.
- Cognos
- MS Excel

RESULTS

Program Language

JavaScript is the most popular language when it comes to the current skills, and it going to remain the language of choice in near future as well.

Databases

On the database front, **MySQL** is ruling the skill in DB space, however **PostgreSQL** may dethrone MySQL if we look at the future trend.

Platforms

Linux followed by **Windows** are platform of choice in market as of now, whereas **Docker** can potentially give tough competition to Windows for the second position while Linux will continue to rule the Platforms world.

Web Frameworks

jQuery is the leading beauty pageant in Web Framework, while **React.js** would get the crown in the upcoming future roundup.

- Experienced developers are paid more, where we see linear relation with the age, i.e. experience.
- The median annual compensation in USD comes to \$57,745 / annum

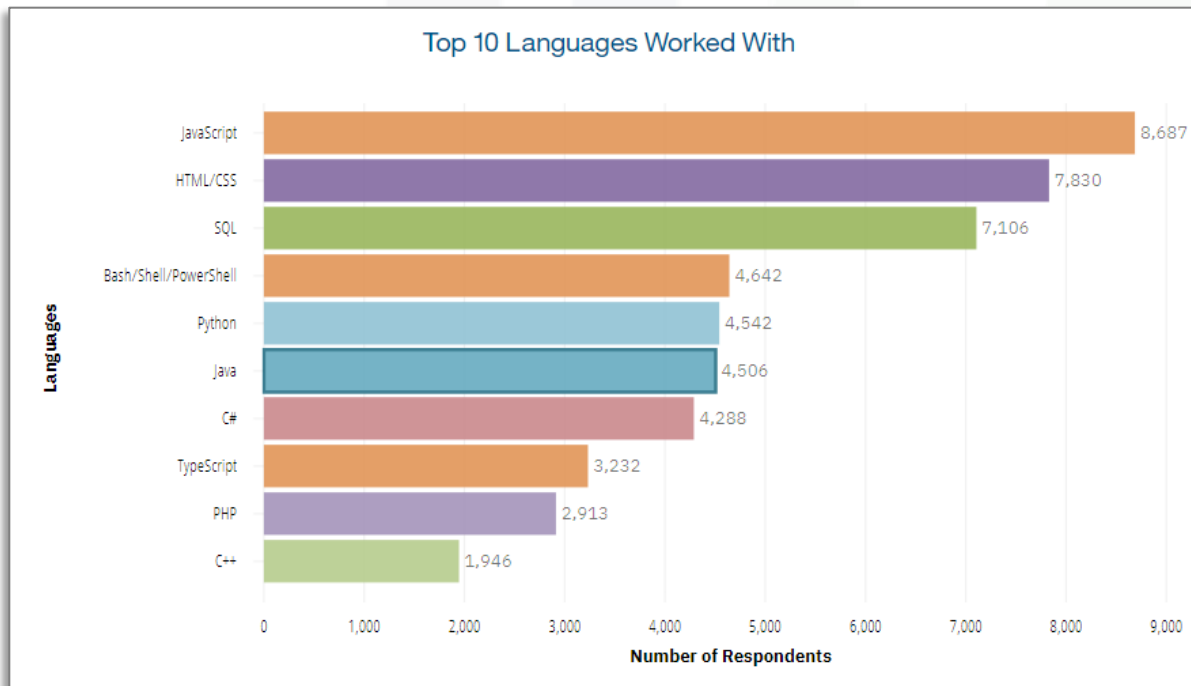


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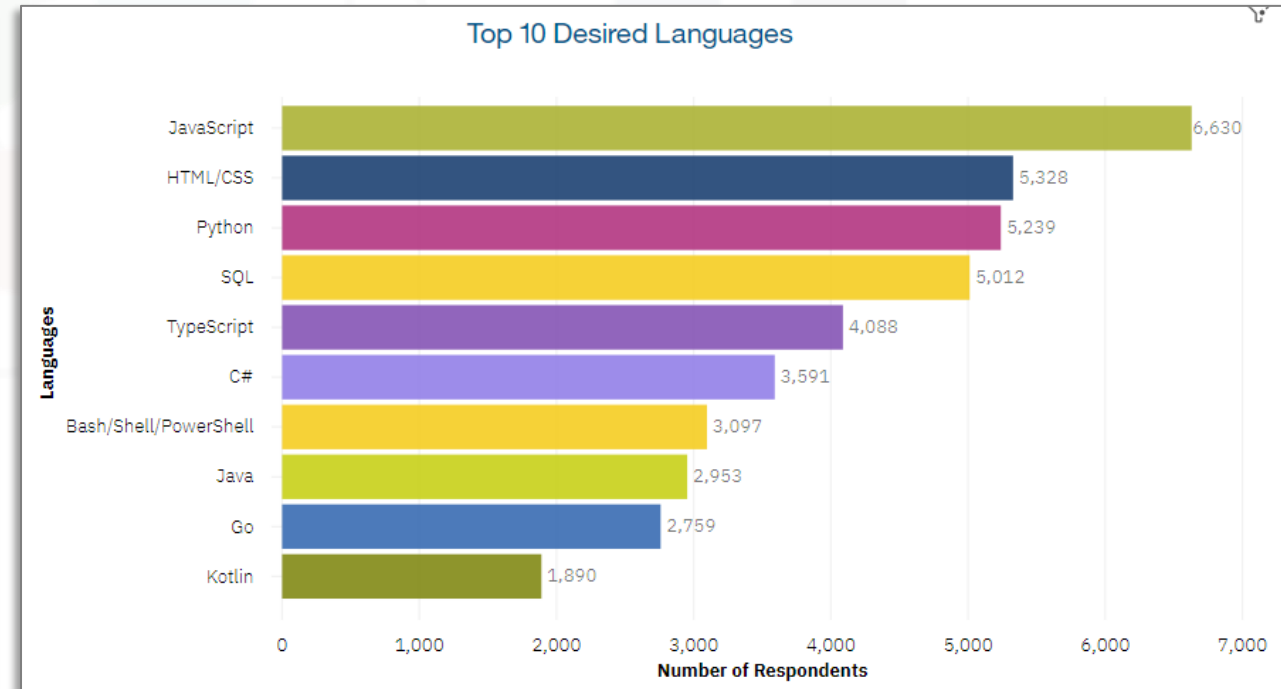
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std	2.947865e+05
min	0.000000e+00
25%	2.686800e+04
50%	5.774500e+04
75%	1.000000e+05
max	2.000000e+06

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

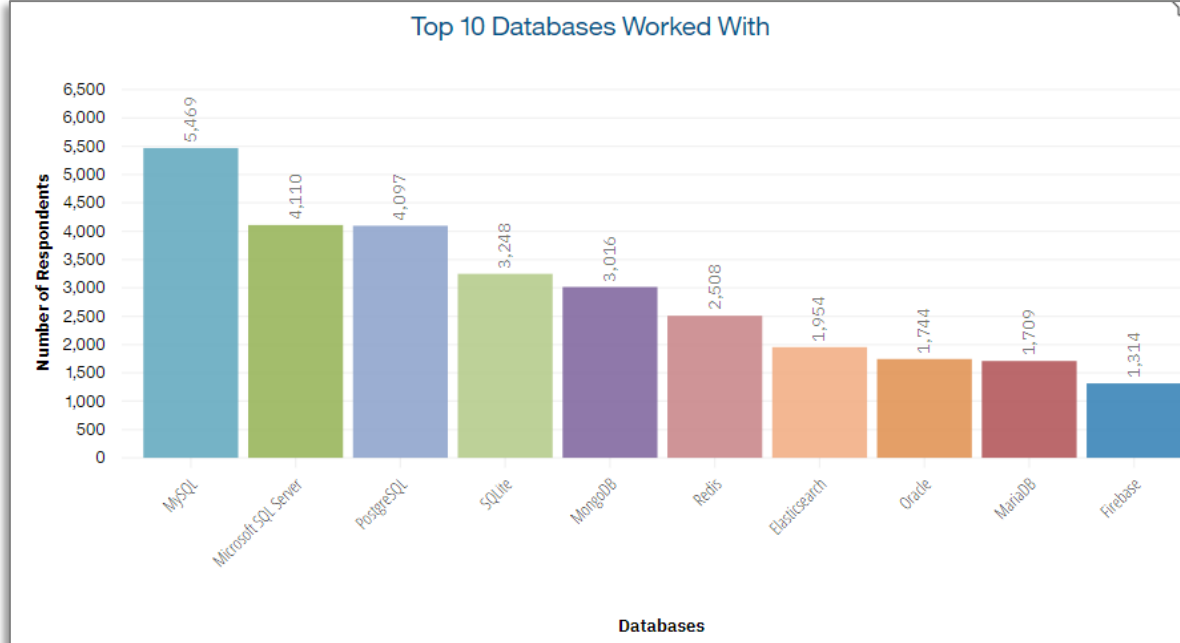
- **JavaScript** is the most popular language when it comes to the current skills, and it going to remain the language of choice in near future as well.
- Python popularity is growing significantly that can not be ignored
- Other languages to keep an eye on are TypeScript, Go and Kotlin. In this Go and Kotlin are the young blood on the street
- C++ is getting phased out

Implications

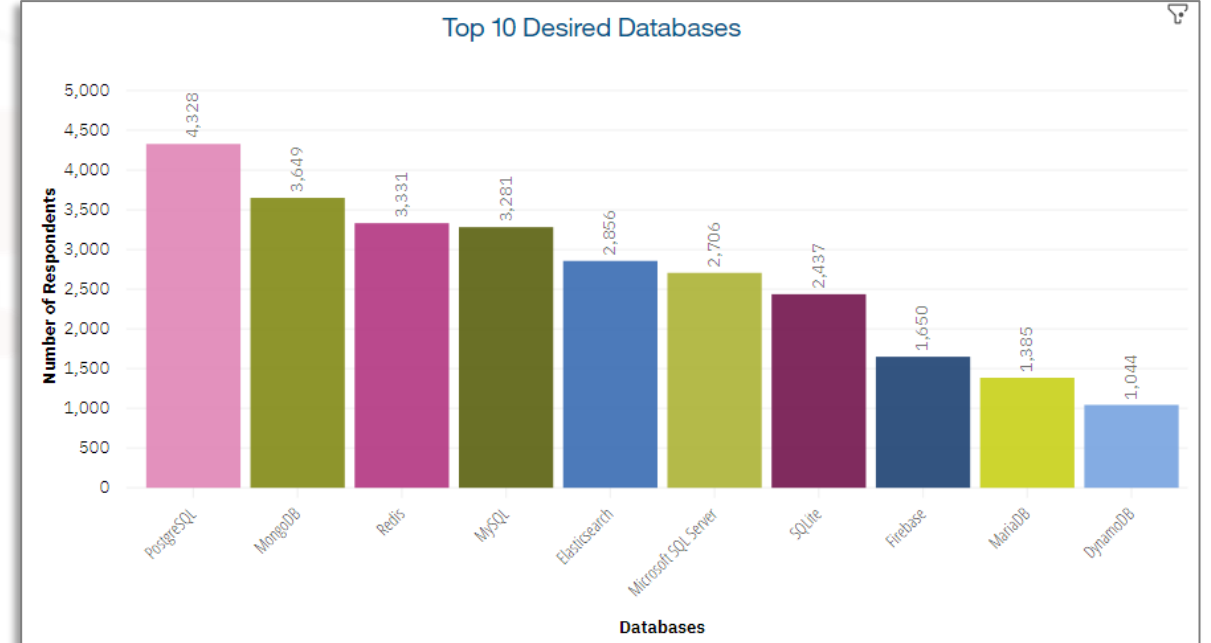
- Continue building the capabilities in JavaScript
- Python and TypeScript skills should be ramped up
- Start exploring and investing in Go and Kotlin

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- On the database front, **MySQL** is ruling the skill in DB space, however **PostgreSQL** may dethrone MySQL if we look at the future trend.
- PostgreSQL, MongoDB and Redis are going to lead the Database space in future
- DynamoDB could be a new entrant in the top 10

Implications

- Skill up in PostgreSQL, MongoDB and Redis database technologies
- Cloud based serverless databases such as DynamoDB has potential to change the game in long term
- NoSQL databases has a bigger role to play overall.

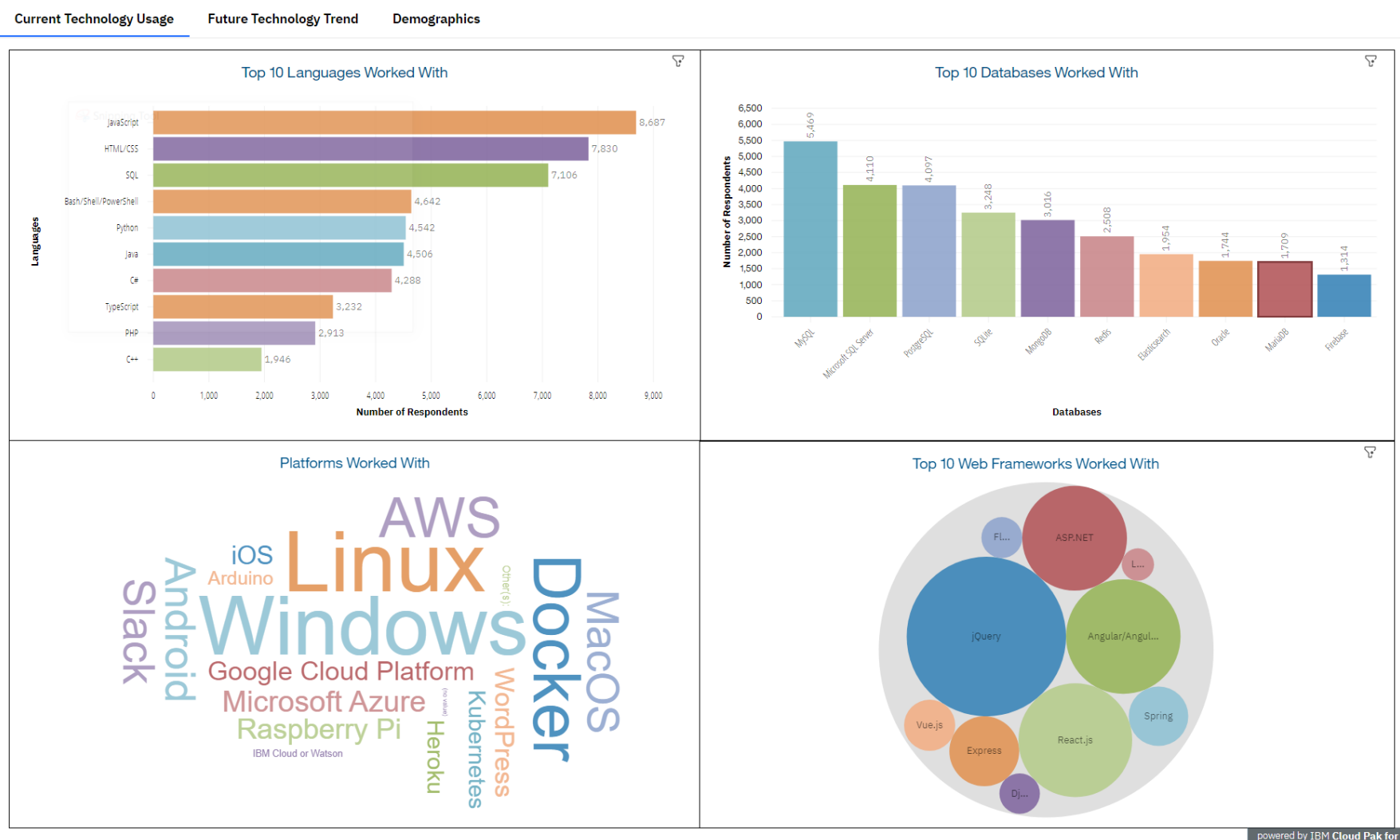
DASHBOARD

Link to Cognos Dashboard



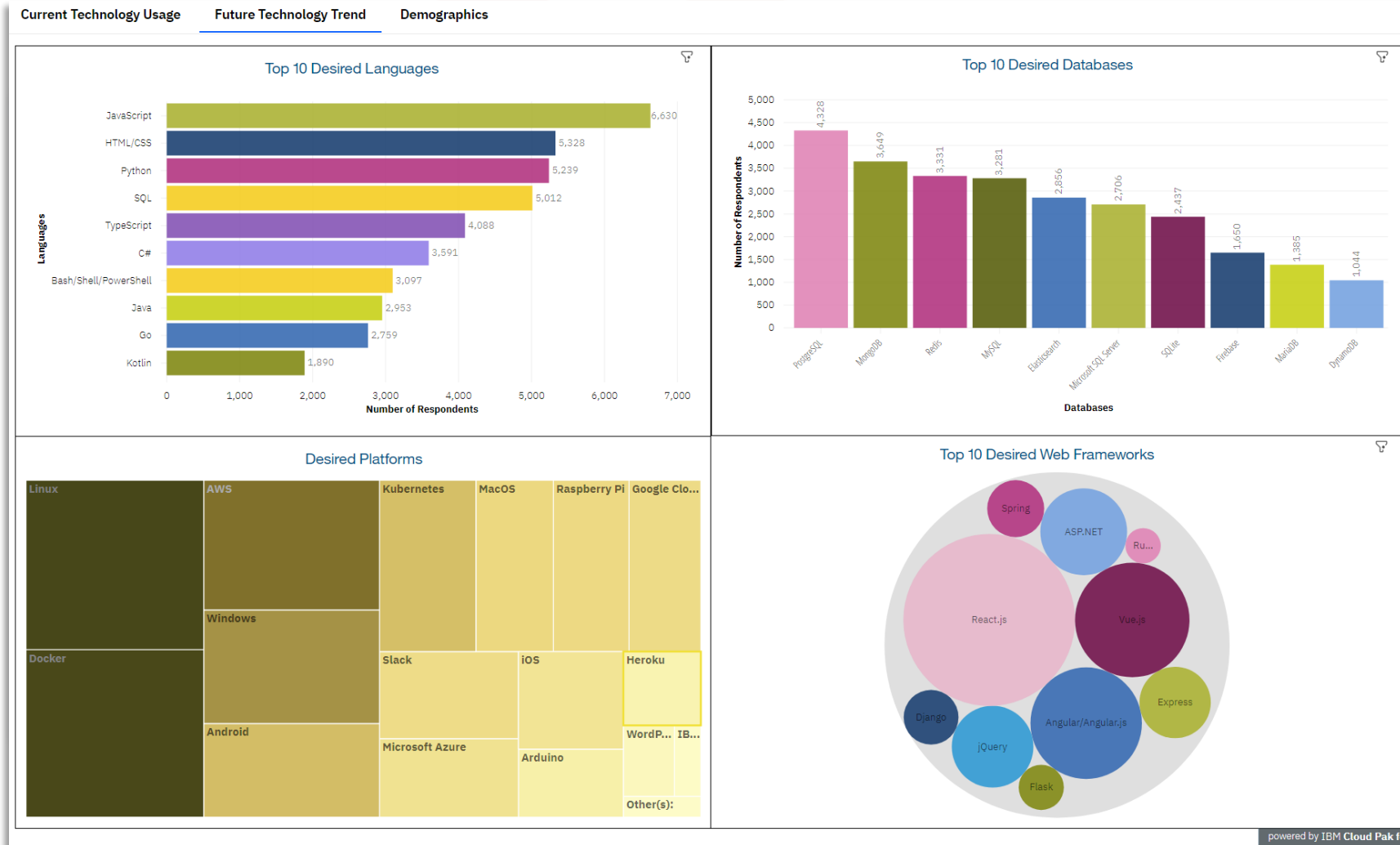
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DASHBOARD TAB 1

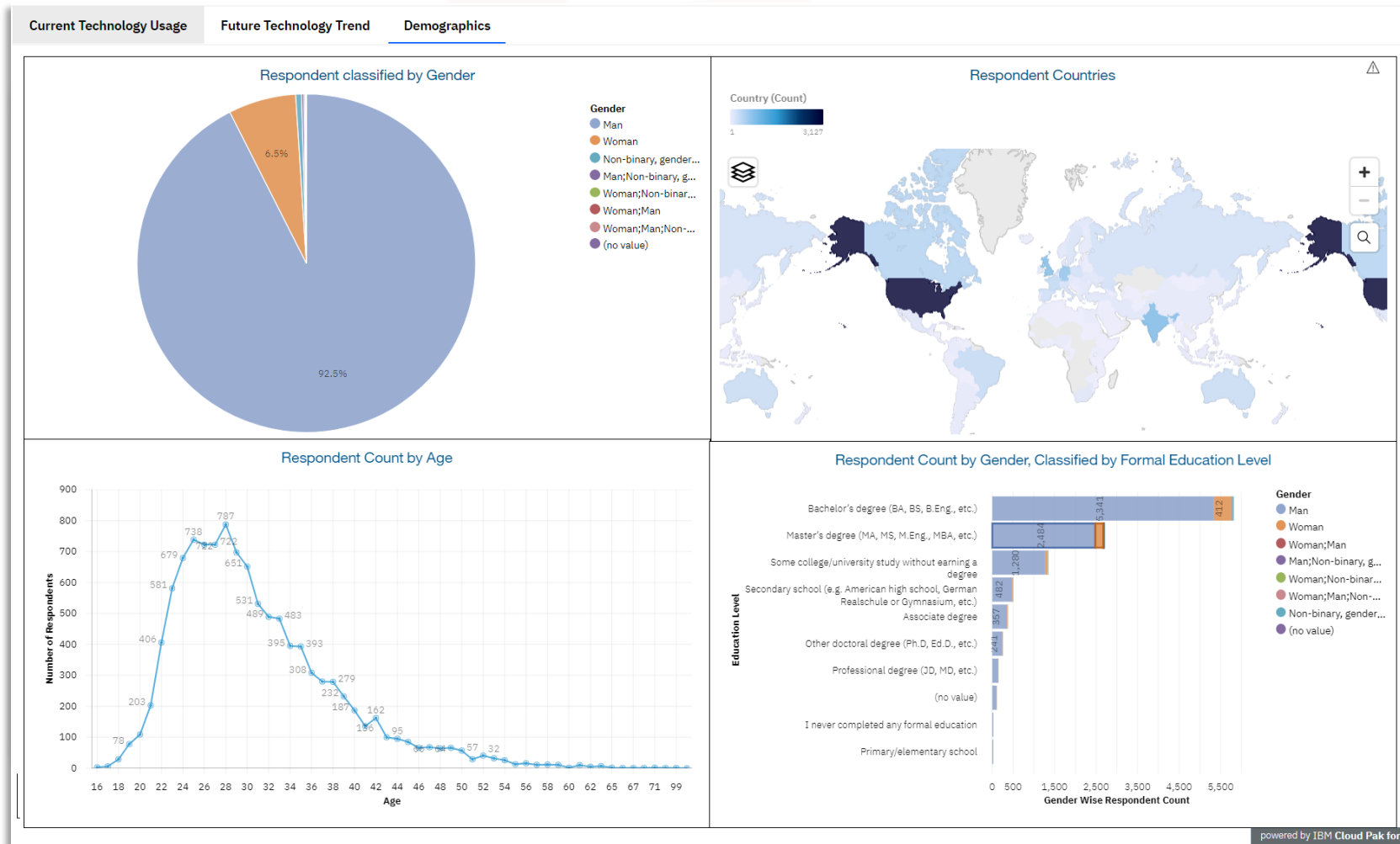


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DASHBOARD TAB 2



DASHBOARD TAB 3



DISCUSSION



Let's Discuss

- The observations on the gender gap in technologies and the associated pay parity
- How can we check on annual compensation while leveraging the experienced skills?
- Can we consider extensive trainings with help of experienced developers, so that the knowledge gain can also be shared along with technology know-how?
- What will the impact of future technologies on the boundary skills, such as testing, architecture, implementation costs etc.?

OVERALL FINDINGS & IMPLICATIONS

Findings

- The most sought full stack in future would include JavaScript, Python, PostgreSQL, MongoDB, Linux, Docker, React.js, Vue.js
- JavaScript is the most popular language when it comes to the current skills, and it going to remain the language of choice in near future as well.
- On the database front, MySQL is ruling the skill in DB space, however PostgreSQL may dethrone MySQL if we look at the future trend.
- US, India and GB are the main talent hub to tap
- In beauty-and-the-beast story sequels, React.js will play the beauty part with Vue.js to play the co-lead star
- We can say 28 years of age is the career peak after which developers tend to move on to other career paths (Demographics study- Age vs Number of Respondents)

Implications

- Developer community is slowly moving away from complex programming. Technologies that provide ready to use libraries are becoming the norm.
- NoSQL will be adopted at faster pace in future
- Visualization is becoming more important than ever in any kind of technology adoption
- Tap in the young population to get cost effective talent in newer technologies
- Female contribution in technologies is still a concern that needs to be addressed.

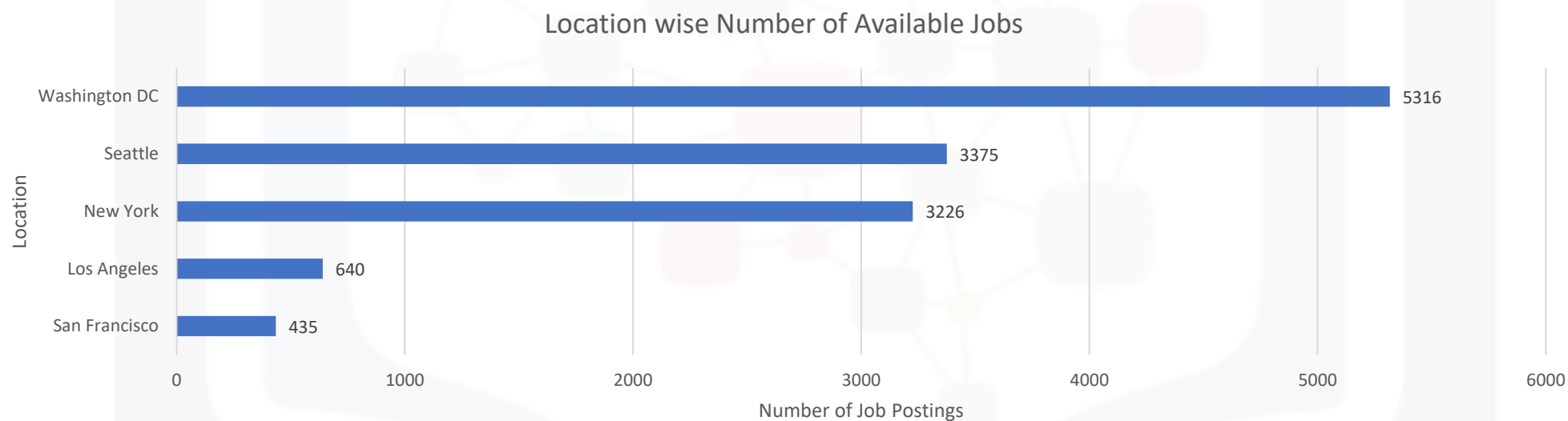
CONCLUSION



- Technology landscape is changing fast
- There is no replacement to some of the technologies due to simplicity that will continue to rule respective segment, such as JavaScript
- Gender gap exists and it is real, that should be addressed
- Technologies that are easy to port and manageable on cloud through dockers or opensource platforms are ruling the overall IT landscape

APPENDIX 1 - GITHUB JOB POSTINGS

Washington DC has the most jobs available as per jobs posted on Github.



APPENDIX 2 - POPULAR LANGUAGES

Swift is the best paid skill, while PHP and SQL are kind of commodity skills.



Data is scraped from web collated through survey data.