IT Skill Trends Analysis

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EXECUTIVE SUMMARY

This project analyzes emerging trends in the IT industry, focusing on the top in-demand programming languages, database skills, and integrated development environments (IDEs).

- The top programming languages in demand
- The top database skills in demand
- The popular IDEs

INTRODUCTION

As technology rapidly evolves, it is crucial for organizations to stay updated on the most in-demand skills in the tech industry. This project aims to analyze current trends in programming languages, database skills, and development environments by collecting data from job postings, surveys, and training portals.

- **Hypothesis**: The analysis will reveal that certain programming languages and database skills are consistently in high demand, with emerging technologies gaining prominence. These insights will help the organization align its training programs with future skill requirements, ensuring a competitive edge.

METHODOLOGY

- **Data Collection**:

Data was sourced from multiple platforms, including job postings, training portals, and industry surveys.

- **Data Wrangling**:

After collection, the data was cleaned and organized using Python libraries such as Pandas. Duplicates, missing values, and inconsistencies were handled to ensure data quality for accurate analysis.

- **Data Analysis**:

Statistical analysis was applied to identify trends in programming languages, database skills, and development environments. Visualizations were created using tools like IBM Cognos Analytics to highlight key insights and emerging patterns.

- **Hypothesis Testing**:

The analysis focused on testing the hypothesis that specific programming languages and skills are in consistent demand, with a focus on newer technologies gaining traction.

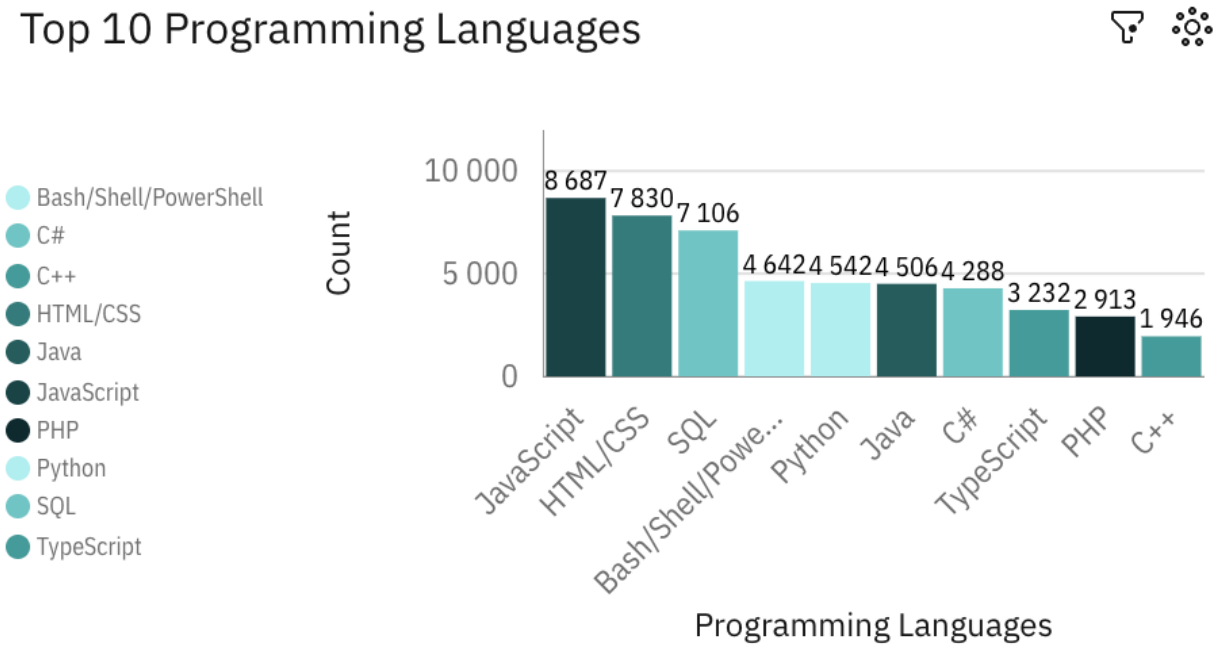
- **Dashboard Creation**:

The final insights were compiled into an interactive dashboard using IBM Cognos Analytics, allowing stakeholders to explore the data and draw actionable conclusions for aligning future training efforts.

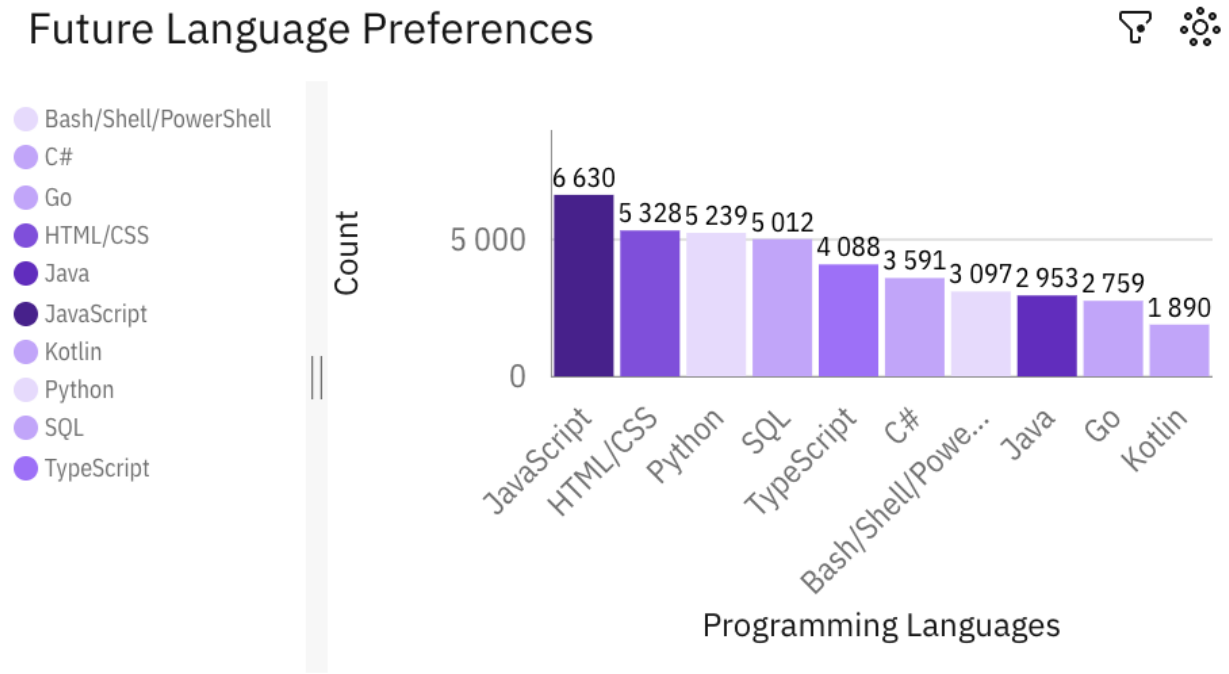
RESULTS

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

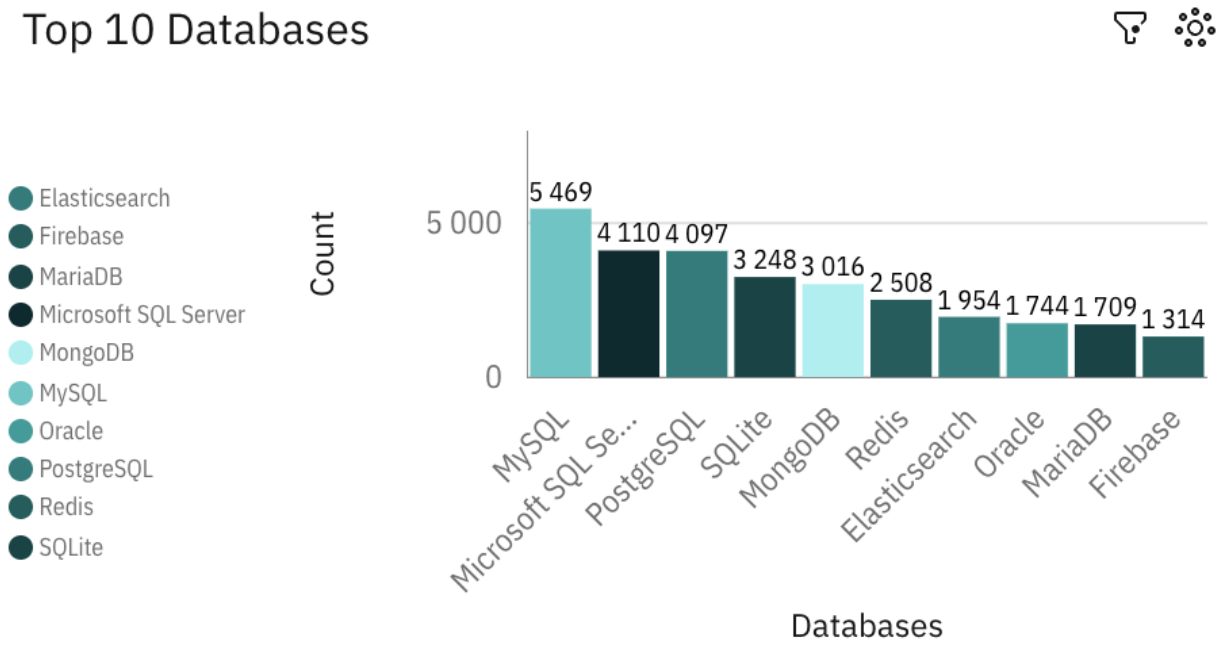
- **Python's Rise**: Python sees a 15.3% increase in demand, overtaking SQL and approaching JavaScript.
- **Decline of Java and PHP**: Java's interest drops 34.5%, and PHP falls out of the top 10.
- **Emergence of Go and Kotlin**: Go and Kotlin enter the top 10 for future demand, signaling interest in modern, efficient languages.

Implications

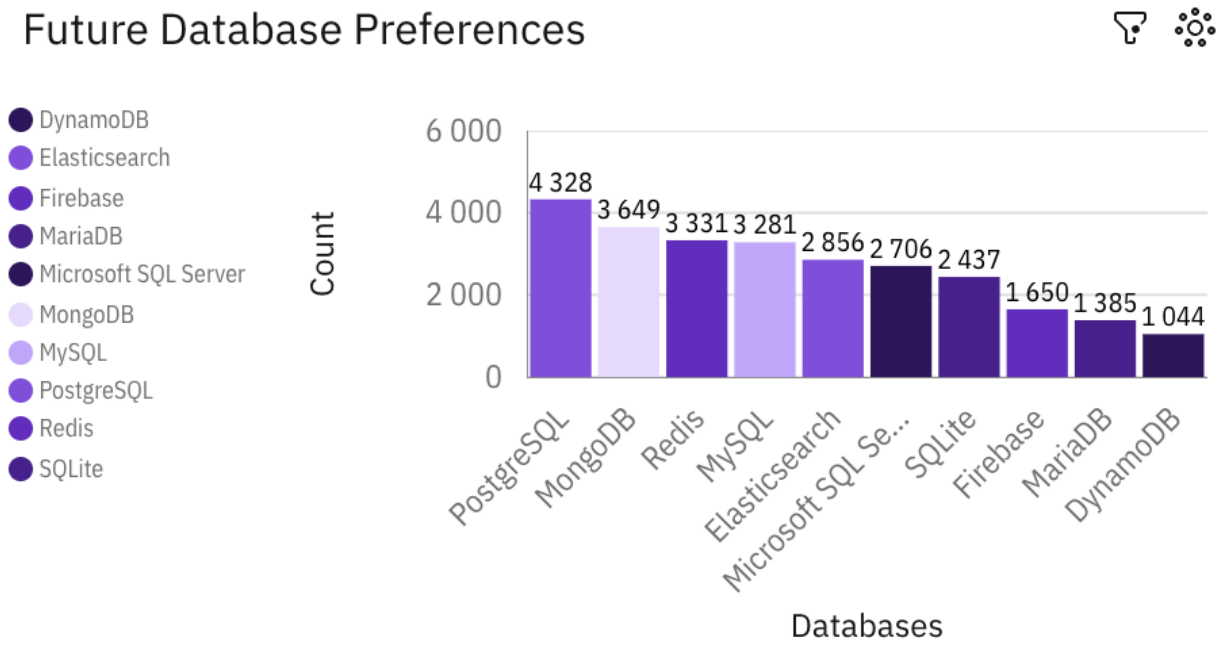
- Companies need to prioritize Python skills to meet growing demand in fields like data science and machine learning.
- Organizations reliant on these languages should consider transitioning to more in-demand technologies.
- Businesses should adopt these languages to attract talent and stay competitive.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **PostgreSQL's Growing Popularity**: PostgreSQL shows a rise from 4,097 current users to 4,328 who want to work with it (+5.6%).
- **Shift Toward NoSQL Databases**: MongoDB (+21%) and Redis (+32.8%) see notable increases in demand, while traditional databases like MySQL (-40%) and Microsoft SQL Server (-34.2%) decline.
- **New Interest in DynamoDB**: DynamoDB appears in the future demand list with 1,044 people wanting to work with it, despite not being in the current top 10.

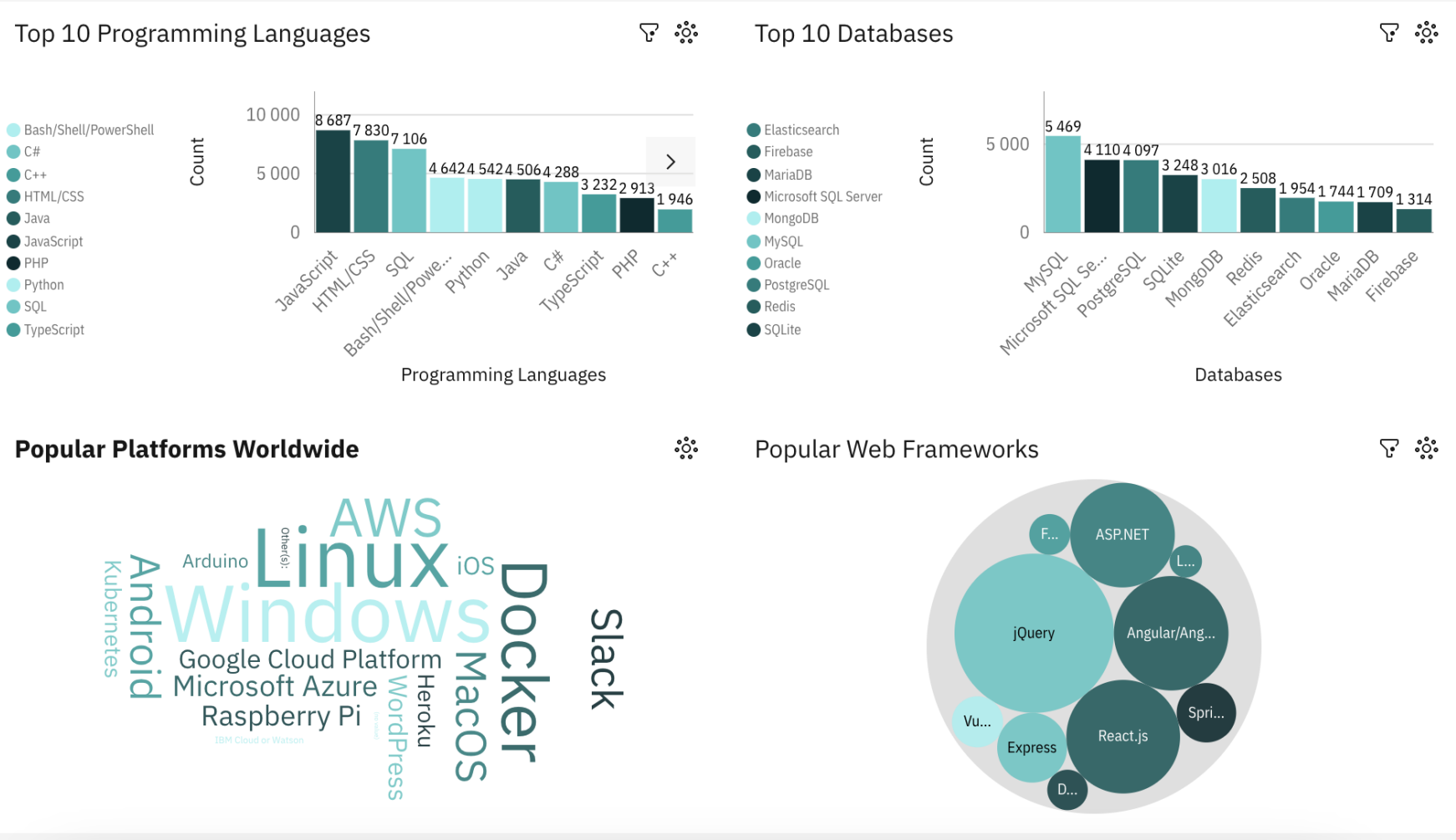
Implications

- PostgreSQL's flexibility and open-source nature are driving its growth. Organizations should invest in PostgreSQL expertise for future-proofing their databases.
- As NoSQL databases become more prominent, companies might need to adapt their infrastructure to support scalable, distributed database models.
- There's a growing shift toward cloud-based databases like DynamoDB, suggesting businesses should explore serverless architectures to meet evolving database needs.

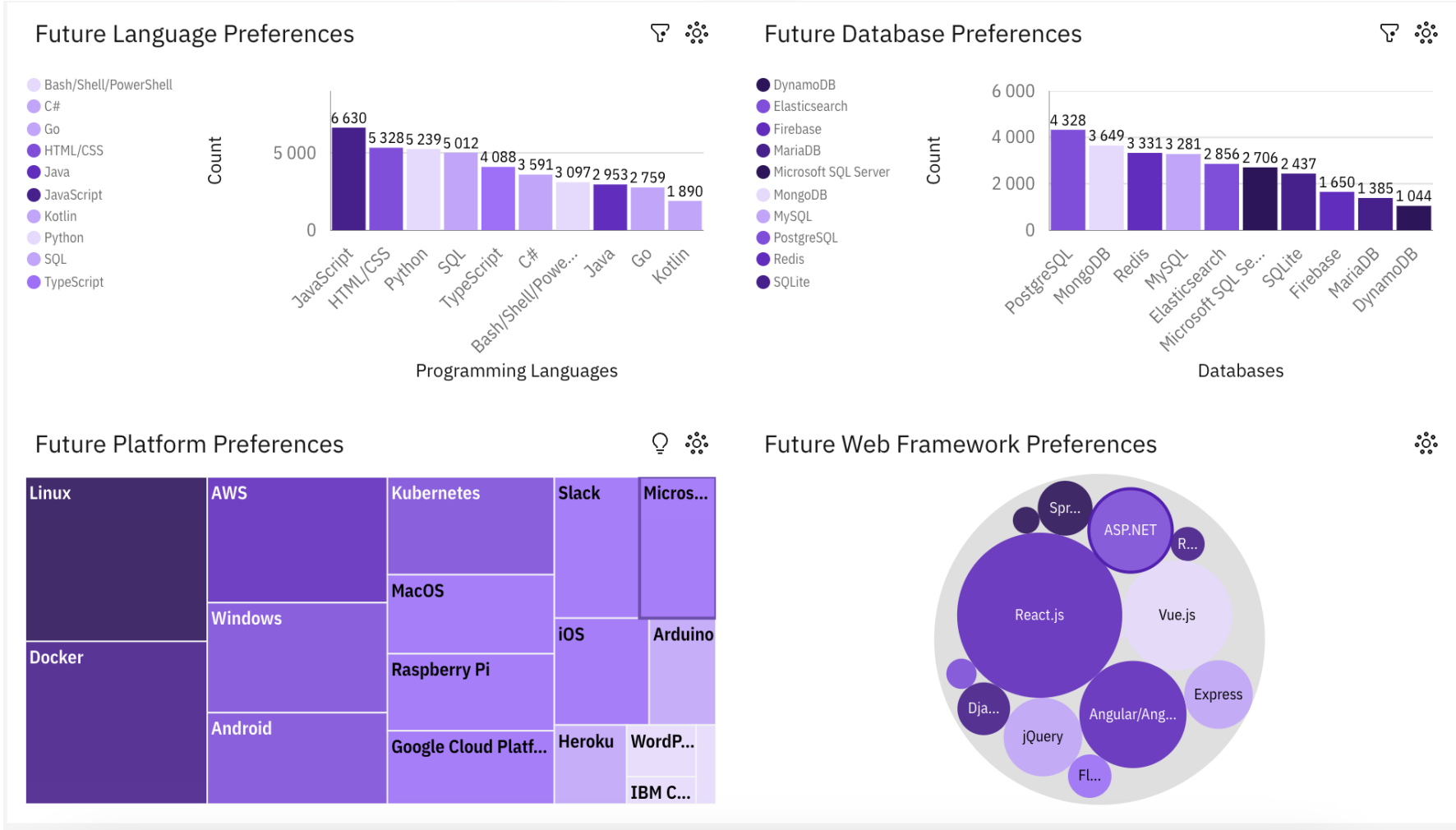
DASHBOARD

https://github.com/juliabulanaja/TechTrends-Analysis/blob/master/charts/Dashboard%20with%20Cognos.pdf

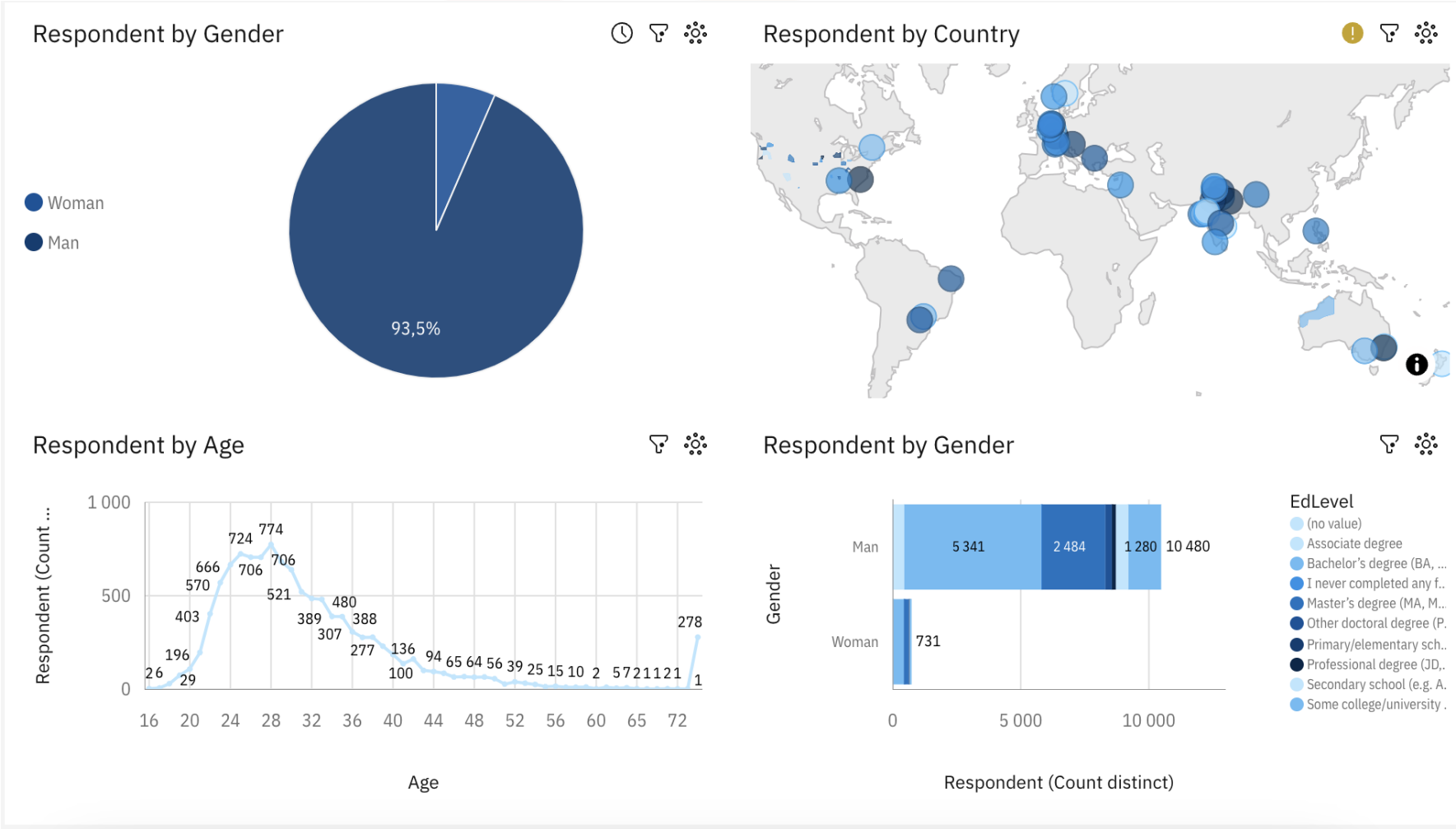
DASHBOARD TAB 1



DASHBOARD TAB 2



DASHBOARD TAB 3



DISCUSSION

Our analysis shows clear trends toward modern technologies. Python, Go, and Kotlin are gaining popularity, while Java and PHP are losing traction. In databases, PostgreSQL, MongoDB, and Redis are seeing more demand, while traditional systems like MySQL and Microsoft SQL Server are declining. Developers are shifting toward flexible, scalable tools, signaling that companies should adjust their tech stacks and focus on upskilling to stay competitive.

OVERALL FINDINGS & IMPLICATIONS

Findings

- **Age Distribution**: The majority of respondents are aged 24-30, with numbers declining after age 35, indicating a younger workforce.
- **Gender Disparity**: The vast majority (93%) of respondents are male, with a significant gender gap in the tech workforce.
- **Regional Concentration**: Respondents are heavily concentrated in the US, India, and Western Europe, with limited representation from Africa and the Middle East.
- **Education Level**: Most respondents have a bachelor's or master's degree, particularly among men, with women underrepresented at all education levels.

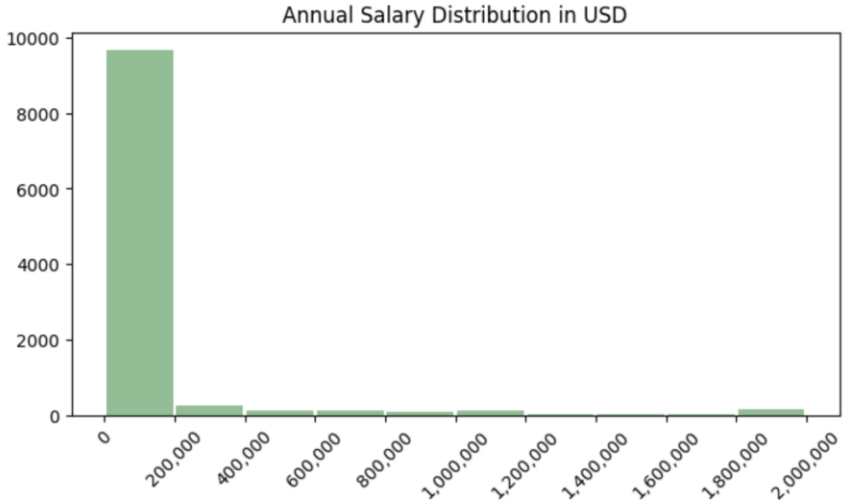
Implications

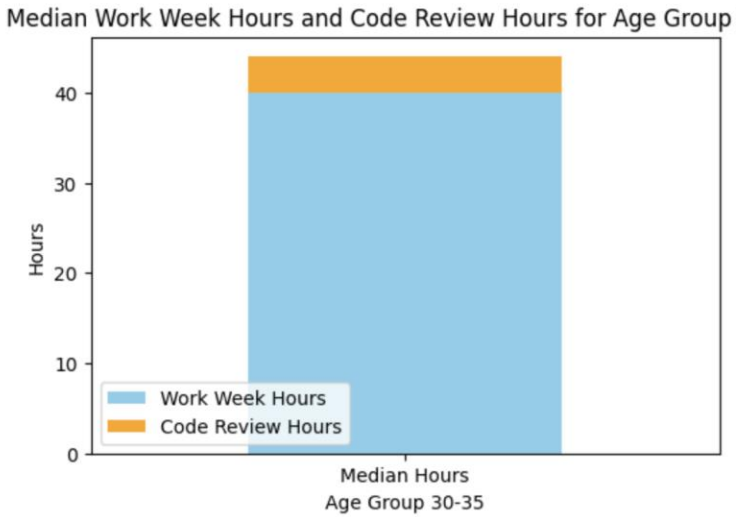
- **Youth Focus**: Tech companies should prioritize talent pipelines targeting younger professionals and recent graduates.
- **Gender Diversity**: Organizations need to address the gender gap with initiatives that attract and retain women in tech roles.
- **Global Strategy**: Companies expanding into underrepresented regions like Africa and the Middle East may find untapped talent.
- **Upskilling**: Investing in continuous education and skills development, particularly for women, will be crucial for reducing the skills gap.

CONCLUSION

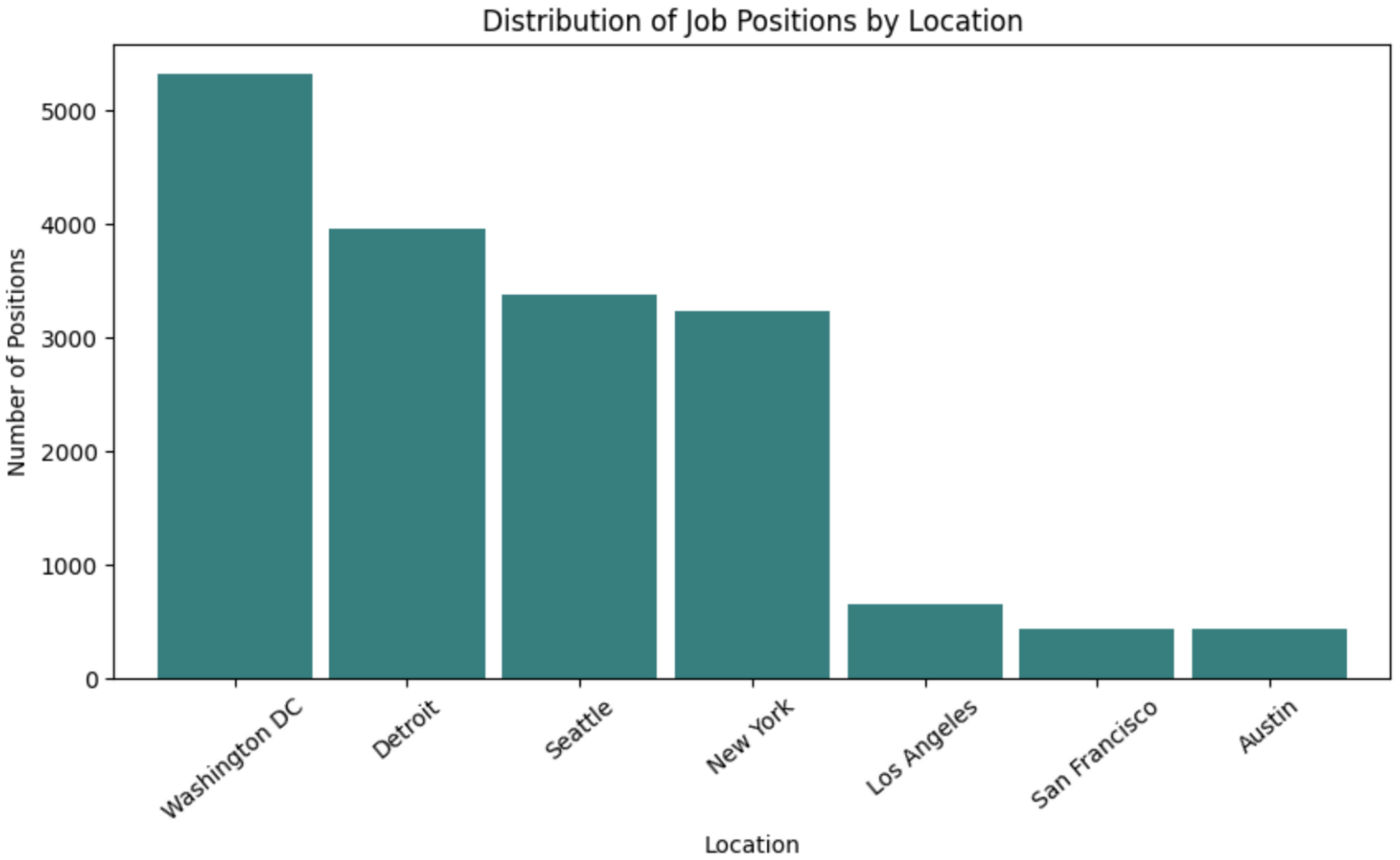
- **Youth Dominance**: The tech industry is driven by younger professionals, signaling a rapidly evolving and dynamic workforce.
- **Gender Imbalance**: The significant gender gap highlights the need for inclusive policies to attract and retain more women in tech roles.
- **Geographic Opportunity**: Underrepresented regions, such as Africa and the Middle East, offer potential for expansion and tapping into new talent pools.
- **Educational Upskilling**: Continuous learning and targeted education programs are essential to bridge the skills gap, particularly for women and minority groups in tech.

APPENDIX


Annual Salary Distribution in USD
10000
8000
6000
4000
2000
0
0
200,000
400,000
600,000
800,000
1,000,000
1,200,000
1,400,000
1,600,000
1,800,000
2,000,000


Median Work Week Hours and Code Review Hours for Age Group 30-35
Hours
40
30
20
10
0
Work Week Hours
Code Review Hours
Median Hours
Age Group 30-35

JOB POSTINGS



POPULAR LANGUAGES