Stack Overflow 2019 Survey Findings

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EXECUTIVE SUMMARY

- Analyzed Stack Overflow's 2019 survey data to identify IT industry trends.
- Data Collection: data gathered from Stack Overflow’s 2019 survey, encompassing demographics and technology preferences.
- Data Analysis Plan: cleaned the data, employed descriptive statistics, visualization tools and Cognos for trend identification and insight extraction.
- Key findings:
  - ✓ Dominance of JavaScript and HTML/CSS; rising interest in Python, TypeScript, and NoSQL databases.
  - ✓ Platforms in focus: Linux, Docker, and AWS.
  - ✓ Noted gender disparity and youth predominance in the tech workforce.
  - ✓ Insights vital for shaping tech education, hiring strategies, and diversity initiatives.
- Future focus: addressing gender imbalance, adapting to open-source/cloud technology shifts.

INTRODUCTION

Analysis Nature

Conduct descriptive data analysis of a subset of Stack Overflow 2019 survey data.

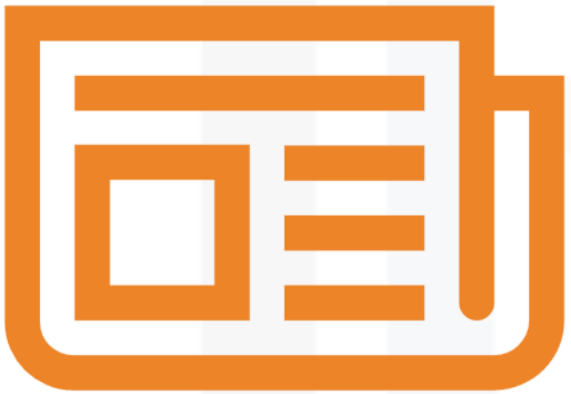
Problem

Assessing IT industry trends (to guide skills development, resources allocation and hiring strategies...)

Questions to answer through the analysis

- What are the prevailing and upcoming trends in programming languages?
- What shifts are suggested by database usage?
- What do platform and webframes trends suggest about tech needs?
- How do workforce demographics reflect on the tech industry's culture?

METHODOLOGY



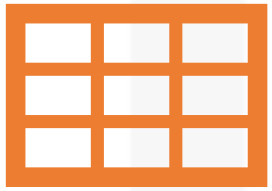
Data Sources

Utilized two datasets: "m5_survey_data_demographics.csv" and "m5_survey_data_technologies_normalised.csv" from Stack Overflow's survey.

Data Analysis Plan

1. Data collected from diverse sources including job postings, blog posts, and surveys for a comprehensive view.
2. Data prepared by employing data wrangling techniques to clean and structure data for analysis.
3. Analysis using applied statistical methods to extract insights and identify trends.
4. Visualization by choosing the best visuals that best illustrate findings, facilitating trend spotting and insight generation.
5. Dashboards development using Cognos, building interactive dashboards for dynamic data presentation.
6. Presentation of Findings

RESULTS



Data Organization

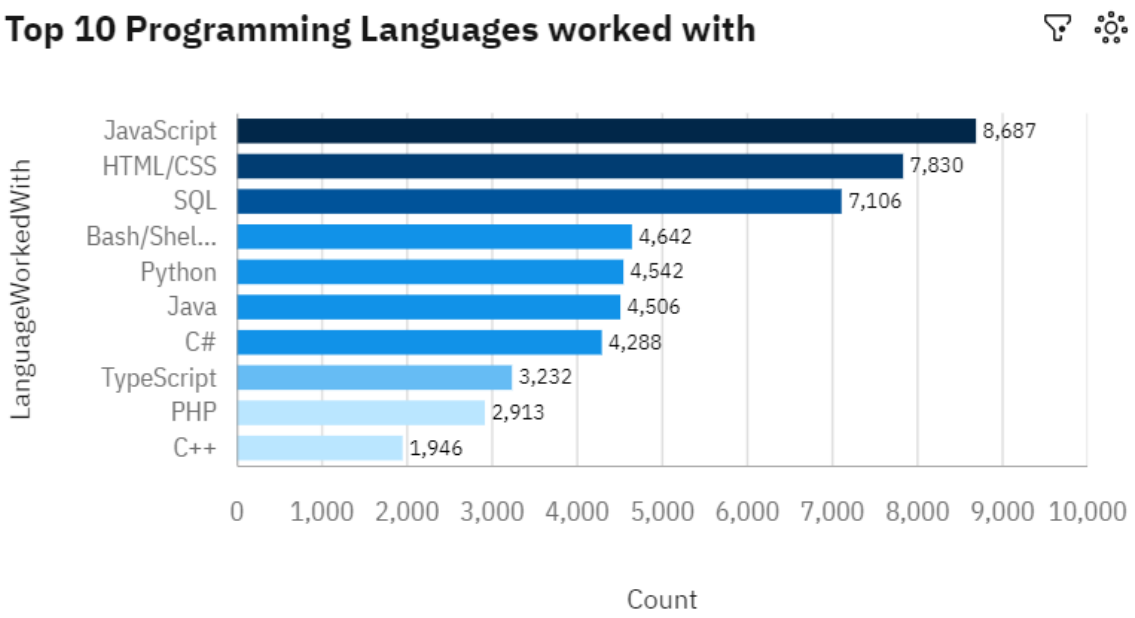
Data was categorized by demographics and technologies, with responses aligned under relevant survey question columns

Data Analysis Process

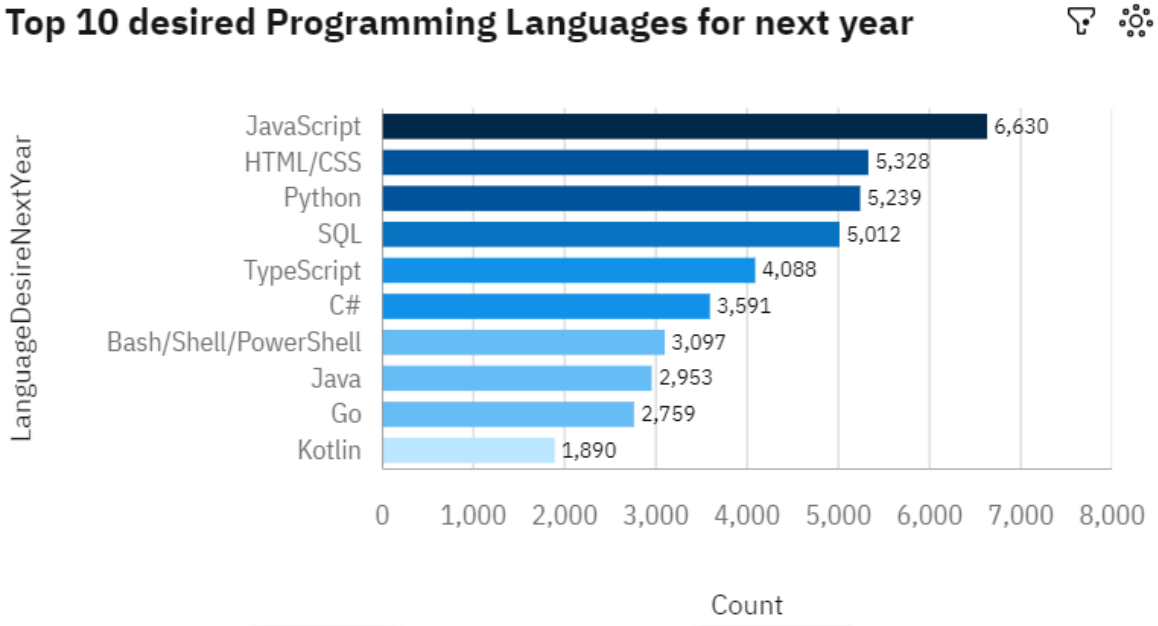
Analyzed using descriptive statistics to determine central trends and visualized via graphs and charts as shown in the next slides

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

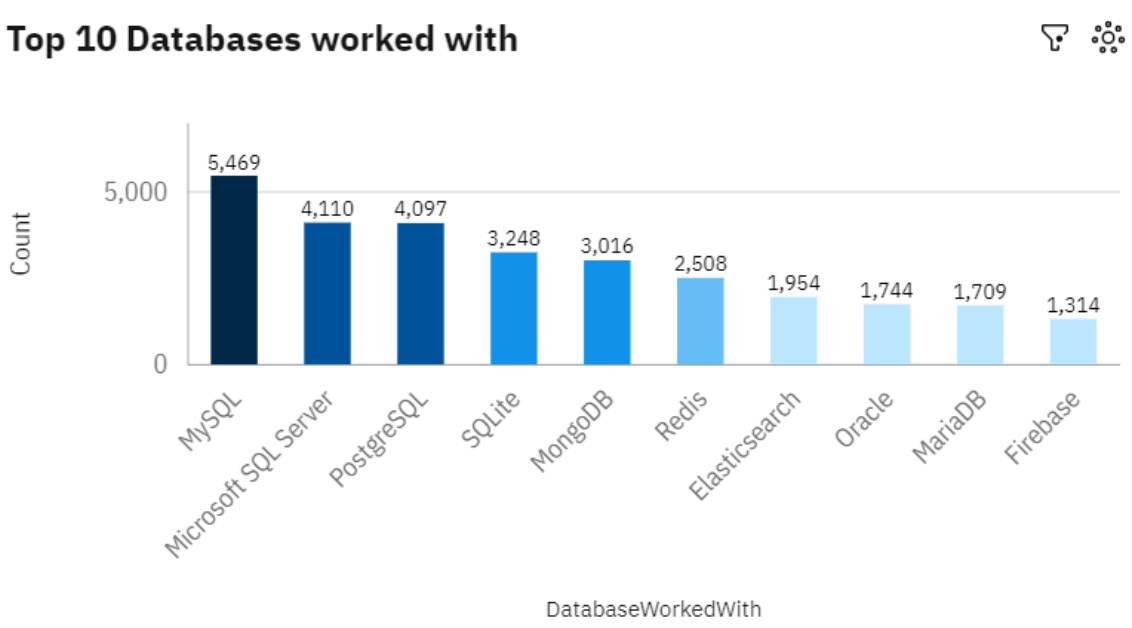
- **JavaScript**: Most used and desired by IT professionals.
- **HTML/CSS**: Consistently second in use and future interest.
- **Python**: Rising interest for next year.
- **TypeScript**: Gaining popularity for future learning.

Implications

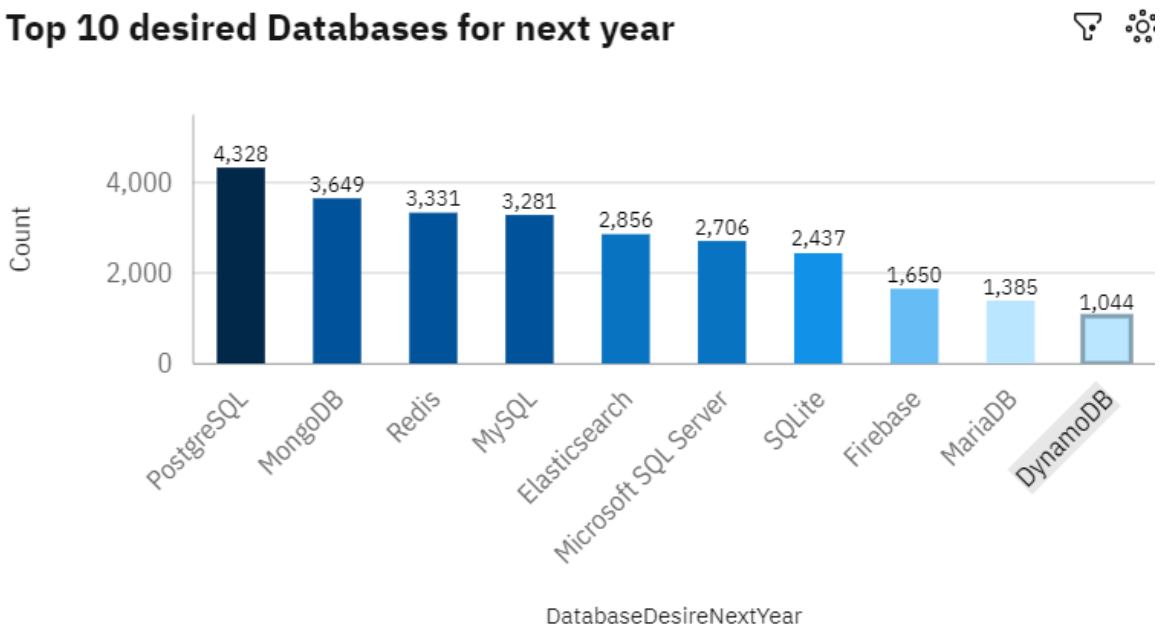
- Dominance of Web Technologies with JavaScript and HTML/CSS, suggesting that web technologies remain central to IT career growth.
- Python's rising demand suggests broader applications in tech fields (web development, data analysis, AI..)

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **MySQL** most used, with SQL Server and PostgreSQL close behind.
- **PostgreSQL** tops desired databases for learning next year; MySQL remains popular.
- Noticeable shift towards **MongoDB**.
- Lower future interest in learning SQL Server and Oracle.

Implications

- Growing preference for open-source databases.
- Trend towards flexible, scalable NoSQL databases like MongoDB.
- Decreased focus on traditional SQL databases for future learning.

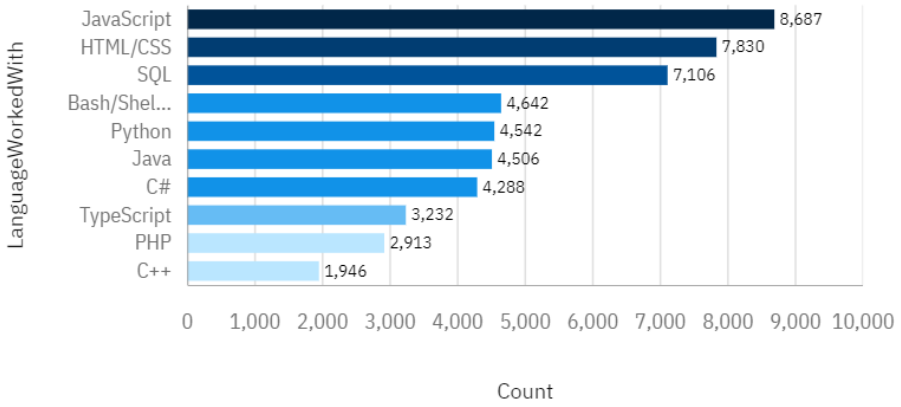
DASHBOARD

The GitHub Dashboard link:

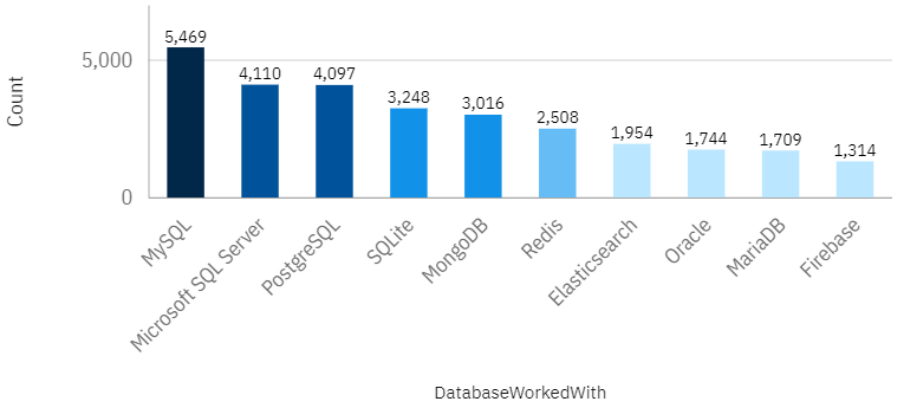
https://github.com/adnankh760/IBM_Capstone_Project/blob/7b16b1375b502d3d79e21810b27a0ca2ba6c08fb/Dashboard_Assignment_StackoverflowSurvey%2020240127.pdf

Current Technology Usage DASHBOARD

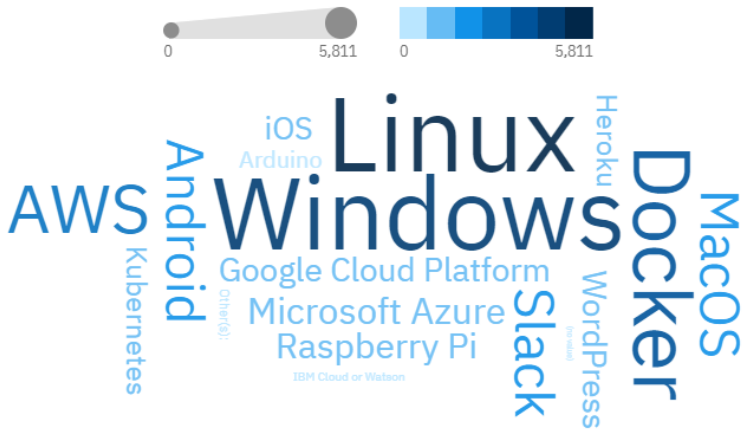
Top 10 Programming Languages worked with



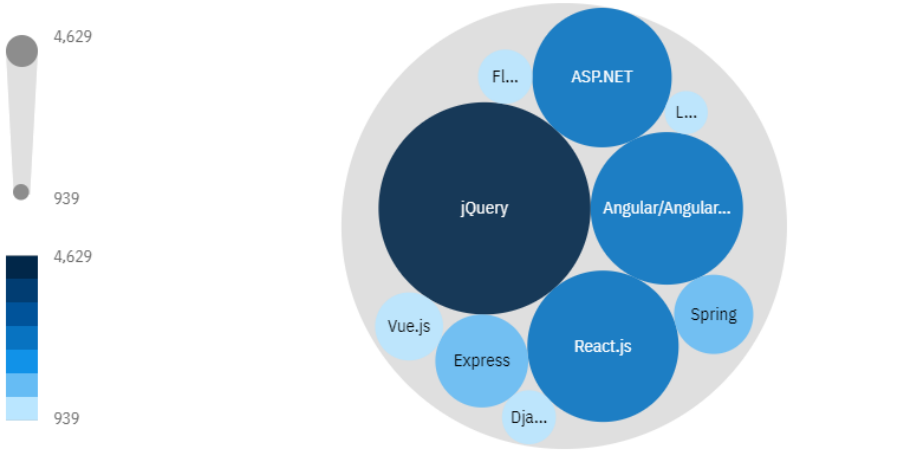
Top 10 Databases worked with



Popular Platforms worked with



Top 10 WebFrames worked with



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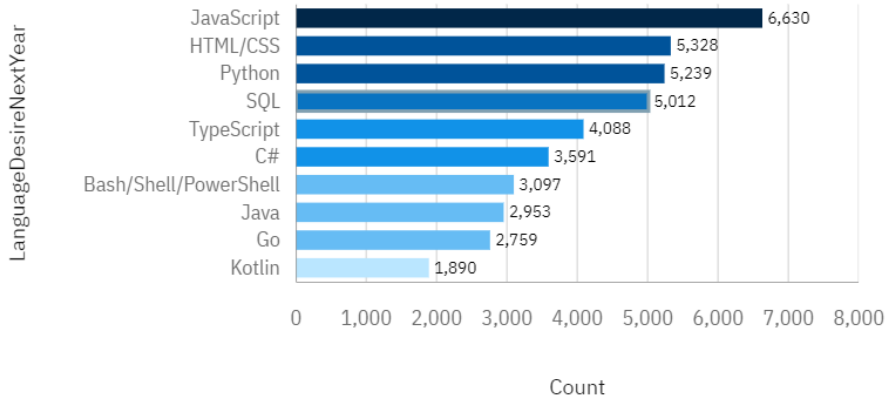
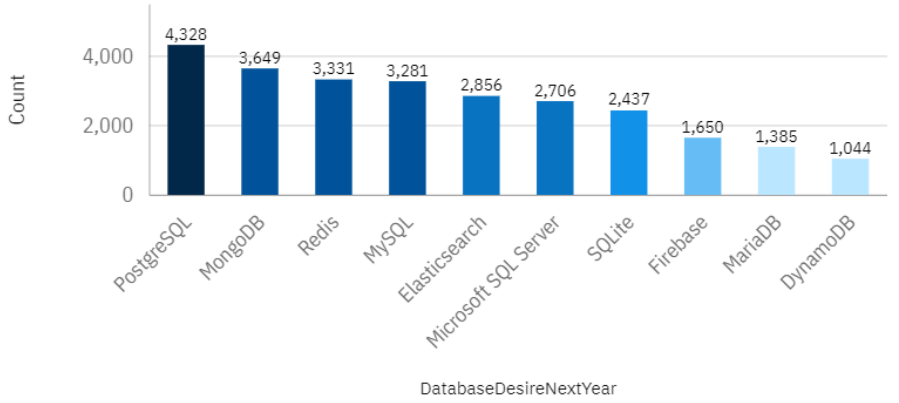
SKILLS NETWORK

Future Technology Trends DASHBOARD

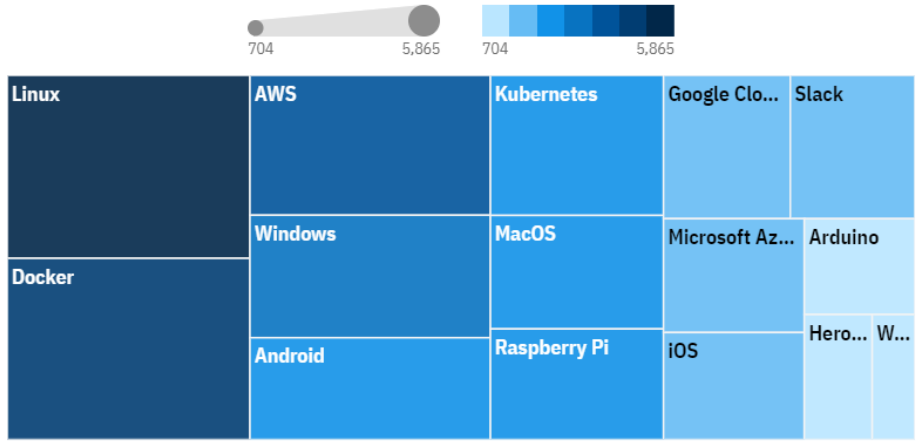
Top 10 desired Programming Languages for next year



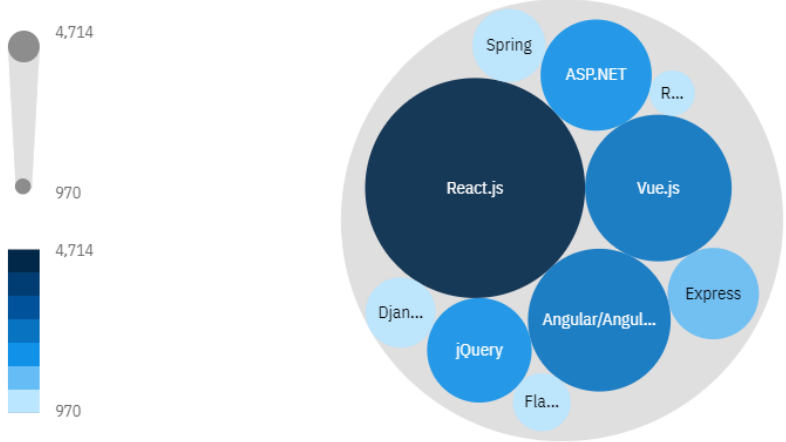
Top 10 desired Databases for next year



Most desired Platforms for next year



Top 10 desired WebFrames for next year



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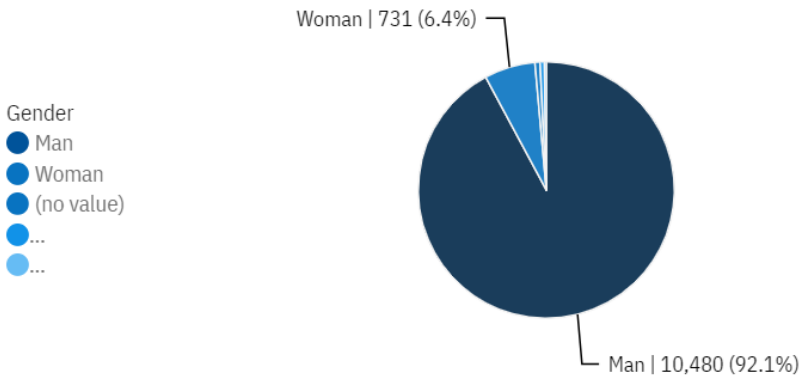
SKILLS NETWORK

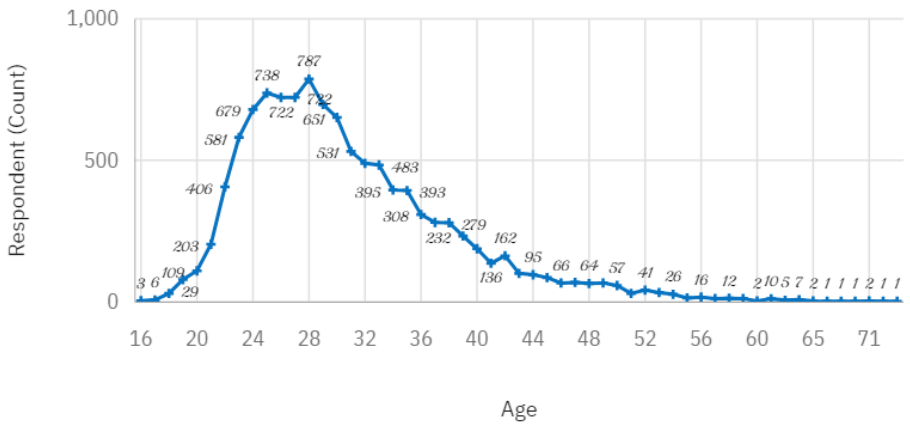
Demographics DASHBOARD

Respondents classified by Gender

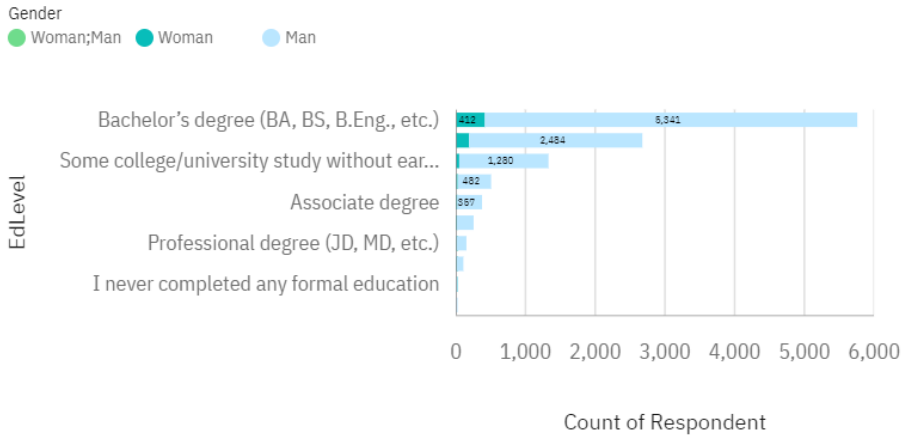


Respondent Count by Countries

Respondent Count by Age



Respondents classified by Educational Level, by Gender



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SKILLS NETWORK

DISCUSSION

- How will the most desired languages impact tech job markets?
- What do trends in database preferences say about future tech needs?
- How might the rise of platforms like Docker and AWS change tech roles?
- What steps can be taken to address the gender disparity and support a more diverse and inclusive workforce?

OVERALL FINDINGS & IMPLICATIONS

Findings

- **Programming Languages Trend**: JavaScript and HTML/CSS dominate; Python and TypeScript rising in interest.
- **Database Shift**: MySQL and PostgreSQL top current use; increasing focus on NoSQL like MongoDB for next year.
- **Platform and Framework Evolution**: Linux and Docker lead platform use; AWS tops cloud services; React.js emerging as preferred web framework.
- **Tech Demographics**: Men and youth (20-30) predominate in the workforce.

Implications

- **Technological Skill Shift**: Essential to master JavaScript, HTML/CSS, Linux, Docker, and cloud-based platforms.
- **Database Trends**: Growing need for SQL and NoSQL database skills, especially PostgreSQL and MongoDB.
- **Diversity and Inclusion**: Urgent need for initiatives to bridge the gender gap in tech.
- **Young workforce** driving industry towards agility and innovation.

CONCLUSION

Problem and analysis plan recall

- What IT trends for skill development and strategies in the Tech?
- Data sets and Data Organization
- Descriptive data analysis of responses

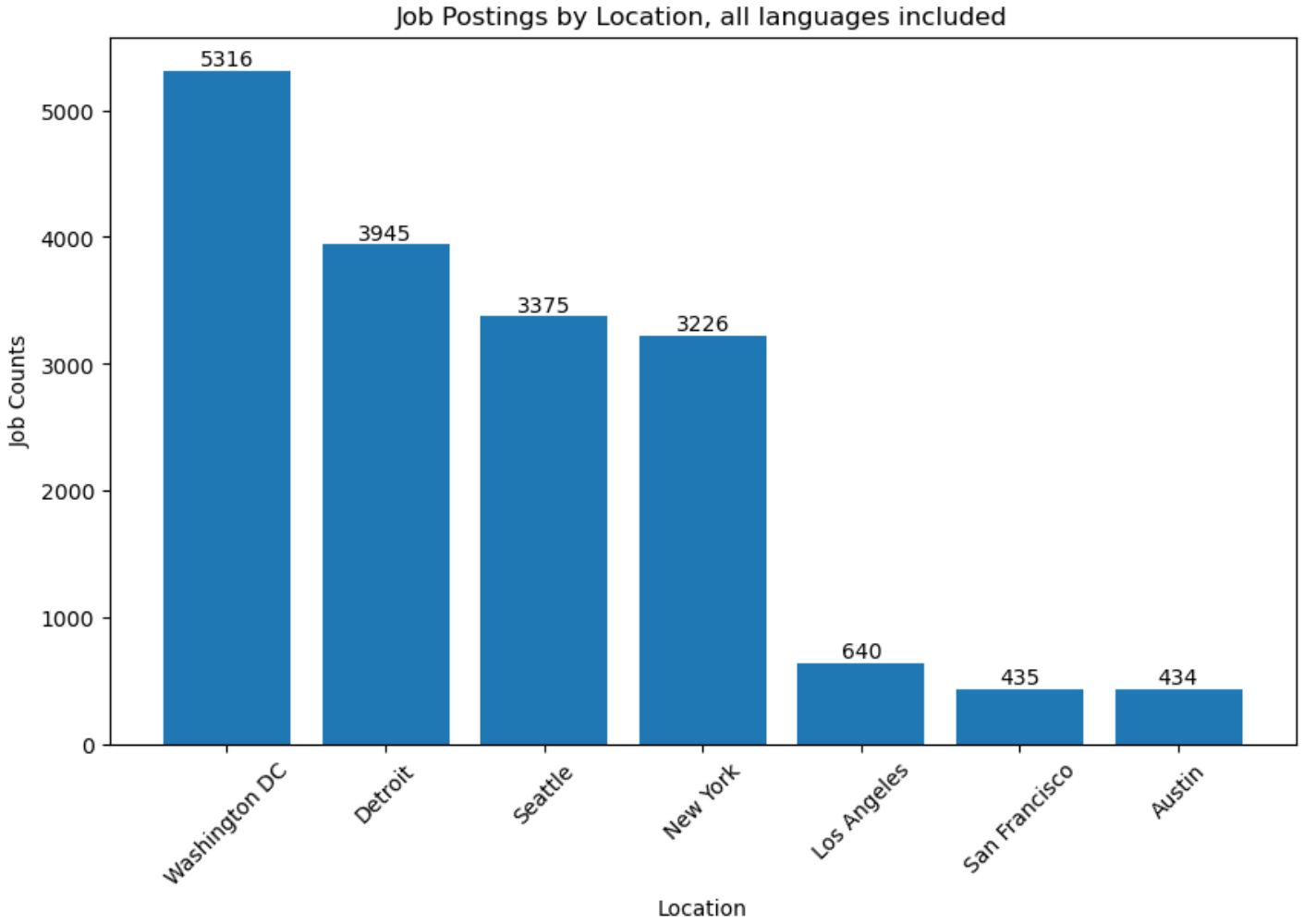
Key findings

- JavaScript, HTML/CSS lead; Python, TypeScript rising.
- Shift to NoSQL databases; Linux, Docker, AWS in demand.
- Gender gap and youth dominance in tech.

Outcome and next steps

- Important insights for tech education, hiring, and diversity policies.
- How to close the tech gender gap?
- Impact of open-source/cloud tech on IT roles?

APPENDIX: JOB POSTINGS BY LOCATION



APPENDIX: SALARIES OF POPULAR LANGUAGES