Future Skill Requirements in Changing Technologies Report

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EXECUTIVE SUMMARY

- This report examines the evolving skill requirements in the technology industry, focusing on programming languages and databases. Through an analysis of data from job postings and surveys, key trends and future demands were identified.
- Programming languages:
  - JavaScript remains the most widely used and sought-after language.
  - Python, HTML/CSS, and SQL are in stable demand, underscoring their ongoing relevance.
  - A decline in older languages like Java and C# suggests a shift towards modern languages such as TypeScript and Go.
- Databases:
  - PostgreSQL is gaining traction, projected to overtake MySQL, which shows a decline in future interest.
  - The rising demand for MongoDB, Redis, and other NoSQL databases highlights a move towards more flexible, scalable database solutions.
- The findings suggest that developers and organizations need to prioritize learning modern languages and adopting cloud-native, scalable database technologies. This shift reflects the industry's focus on efficiency, flexibility, and handling complex workloads, positioning those who adapt to stay competitive in the evolving tech landscape.

INTRODUCTION

- In today's rapidly evolving technology landscape, understanding the skill requirements is crucial for both job seekers and employers.
- This report aims to provide a comprehensive analysis of the current demands within the technology industry by leveraging data collected from diverse sources.
- By identifying the trends and insights related to programming languages, databases, and integrated development environments (IDEs), we can better equip professionals with the knowledge necessary to thrive in this competitive field.
- Specifically, we will address the following key questions:
    1. **What are the top programming languages in demand today?**
       This analysis will highlight the languages that are shaping the future of software development and influencing hiring trends.
    2. **What are the top databases in demand today?**
       Understanding the most sought-after databases will shed light on the data management technologies that organizations are prioritizing.
- Through this exploration, we aim to inform stakeholders about the skills that will be essential for success in the technology sector in the coming years.

METHODOLOGY

Our analysis focused on identifying current skill requirements in the technology industry through a comprehensive data collection process:

1. **Data Sources:**
    1. **Job Postings:** We scraped data from job boards in the USA to identify in-demand databases and programming languages skills
    2. **Surveys:** International surveys were conducted to gather insights from both employers and job seekers on in-demand skills.

    * See Appendix for data source citing

2. **Data Collection Techniques:**
    1. **Web Scraping:** Automated scripts collected data from job postings and training portals.
    2. **API Access:** Structured data was extracted from platforms with available APIs.
    3. **Survey Design:** Surveys included quantitative and qualitative questions to capture skill demands.

3. **Data Preparation and Analysis:**
    1. Data was cleaned to remove duplicates and standardized for consistency.
    2. Descriptive statistics and visualizations highlighted trends in skills.

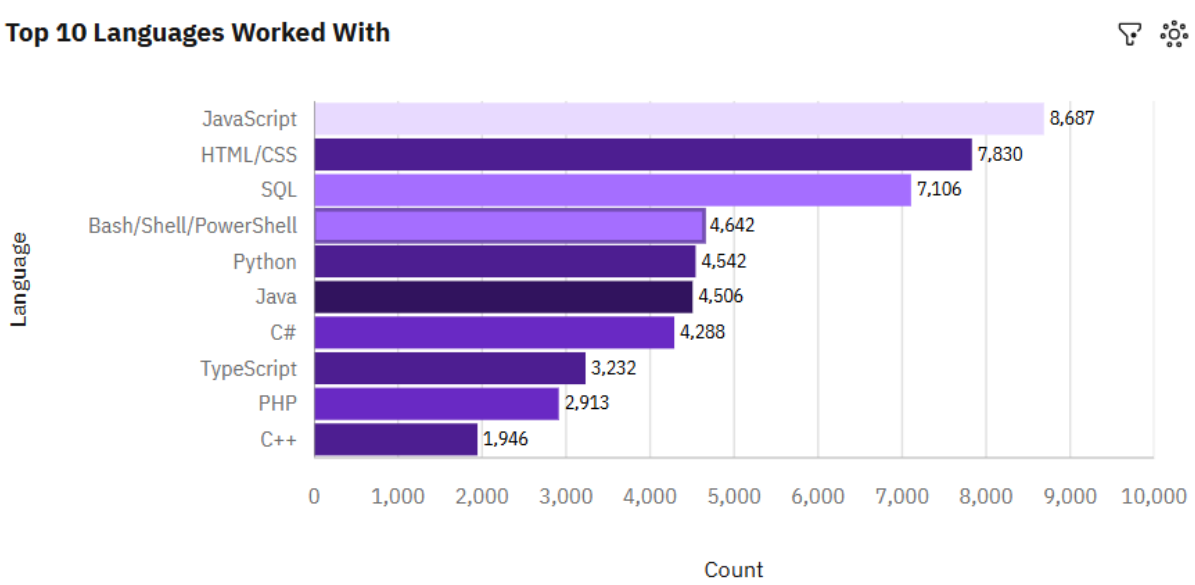
4. **Limitations:**

    The dataset may have biases due to geographical limitations and the dynamic nature of technology skills.

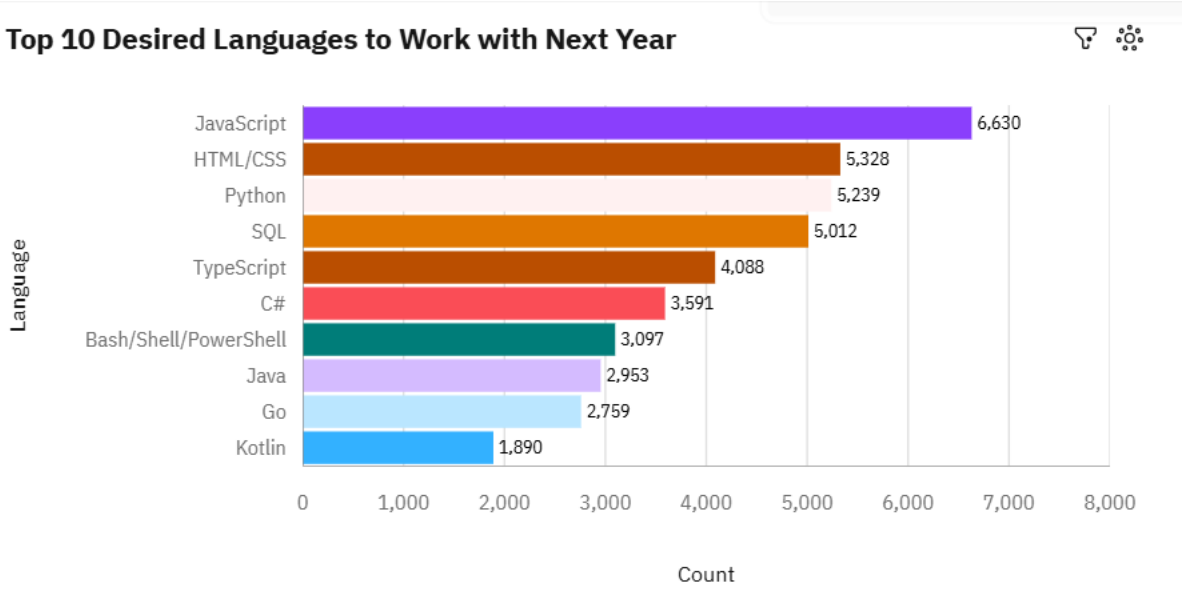
RESULTS

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



IBM Developer

SKILLS NETWORK

PROGRAMMING LANGUAGE TRENDS
FINDINGS & IMPLICATIONS

Findings

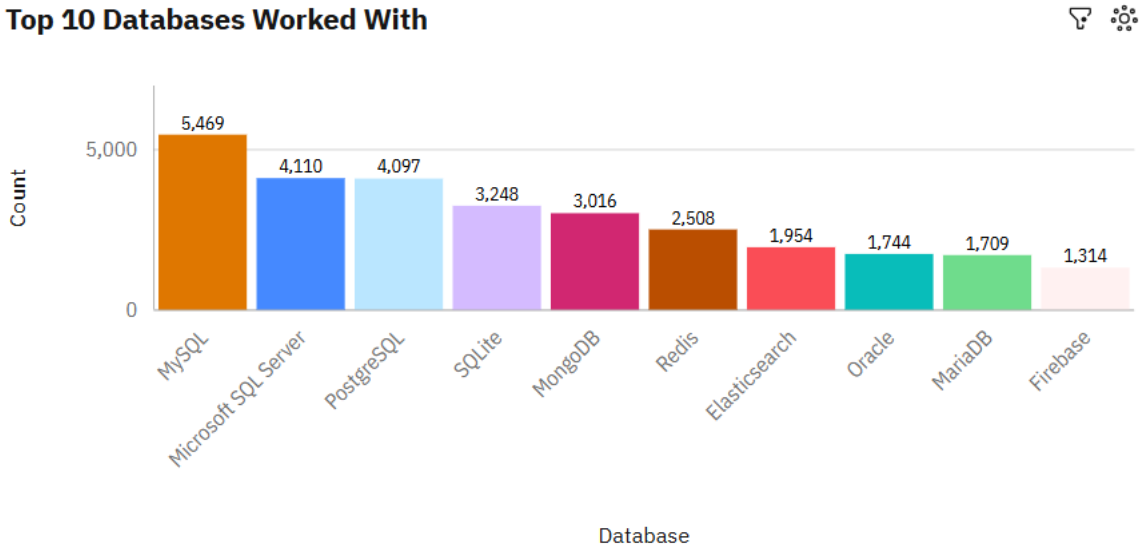
- **JavaScript Dominance** as it is currently the most widely used language and is the most sought after language in the upcoming near.
- **Stable demand for both HTML/CSS, Python and SQL** as they remain in the top 5 for both currently used languages and future demand.
- **Decline in interest for older languages** such as Java and C# may suggest a moving trend toward more more modern languages. C++ and PHP in particular did not make the top 10 for future skills desired.
- **Rise in interest next year for new languages** such as TypeScript and Go, that are currently not as prevalent.

Implications

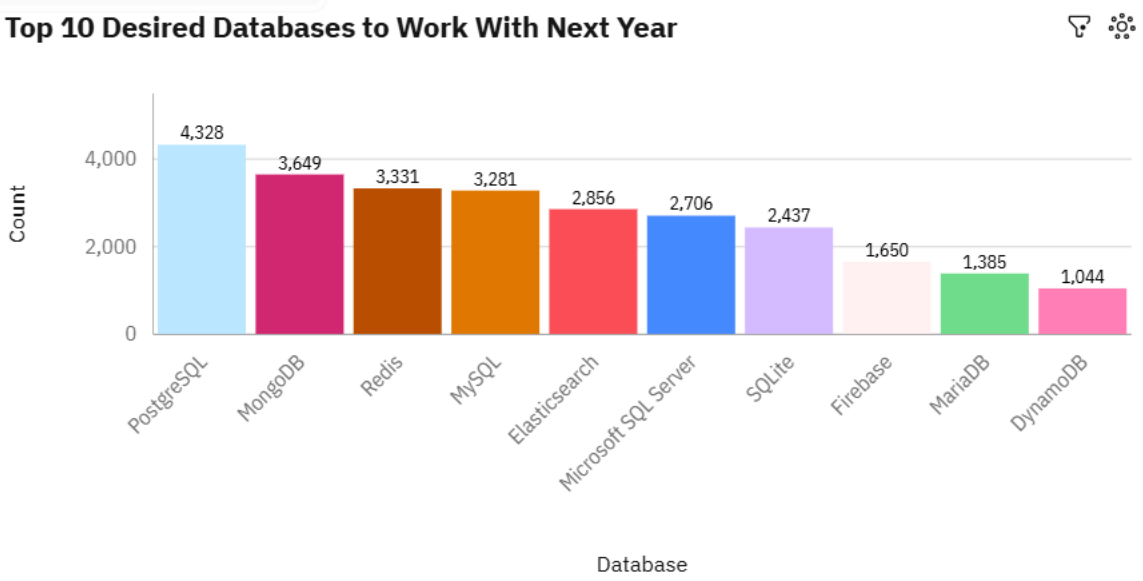
- The 4 key languages JavaScript, HTML, Python and SQL stable demand showing their continuous importance in current and future technologies.
- Python and SQL are and will continue to be important languages required for the handling of data and data analysis
- Decline in legacy languages suggests there may be fewer job opportunities that require these skills and the need for those users to adopt more widely languages

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS
FINDINGS & IMPLICATIONS

Findings

- **PostgreSQL is growing in popularity** as it currently ranks third but shows the highest interest next year.
- **Interest in MySQL declines** where it is currently the most widely used database but drops to 4th ranking in databses to work with next year.
- **SQLite and Microsoft SQL Server also show significant lower interest in the upcoming year.**
- **Rise in interest next year for MongoDB, Redis, Elasticsearch, and DynamoDB** which the latter does not rank yet rank in the top 10 currently used databases.

Implications

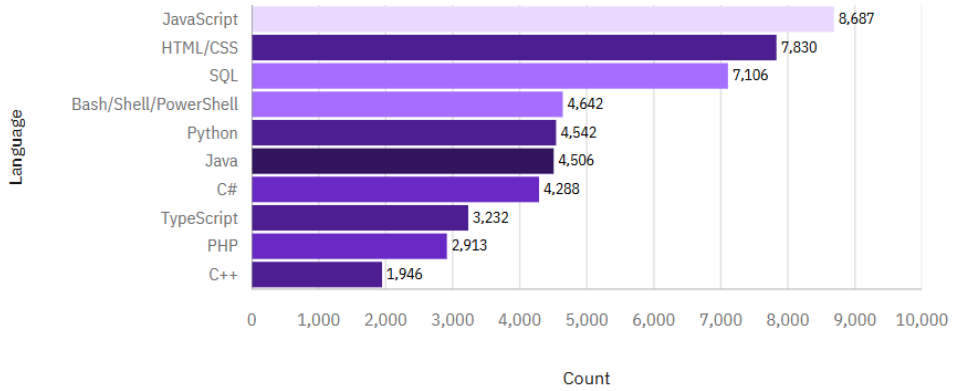
- There is shifting preferences toward open-source and Cloud-based databases such as PostgreSQL and MongoDB.
- Legacy systems and traditional databases usage may be declining suggesting that organizations relying on these legacy systems may need to consider migrating to more flexible alternatives.
- The rise of NoSQL databases such MongoDB, Redis, Firebase indicates that developers and organizations are looking for more flexible and scalable solutions to handle complex and varied workloads.

DASHBOARD

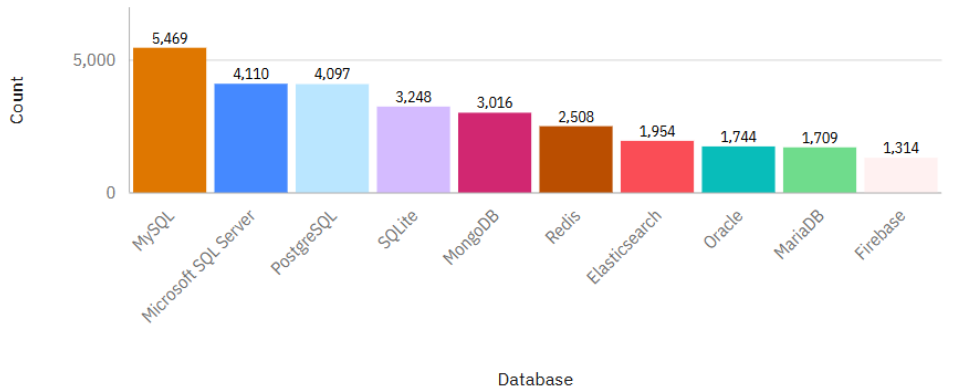
https://github.com/kibly/Capstone/blob/ecc76ecb524244cf756a2f2da1bfc68b3857bfc1/_%20Survey%20dashboard.pdf

DASHBOARD TAB 1

Top 10 Languages Worked With

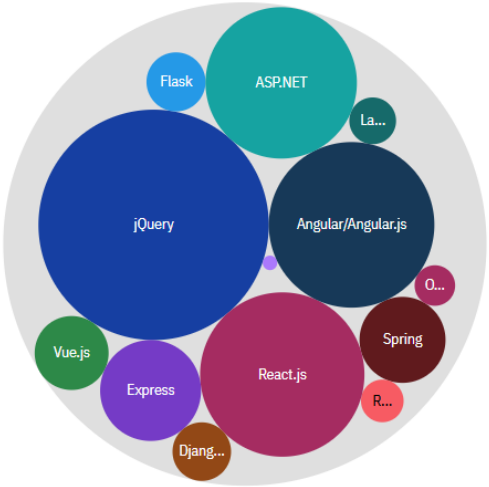


Top 10 Databases Worked With

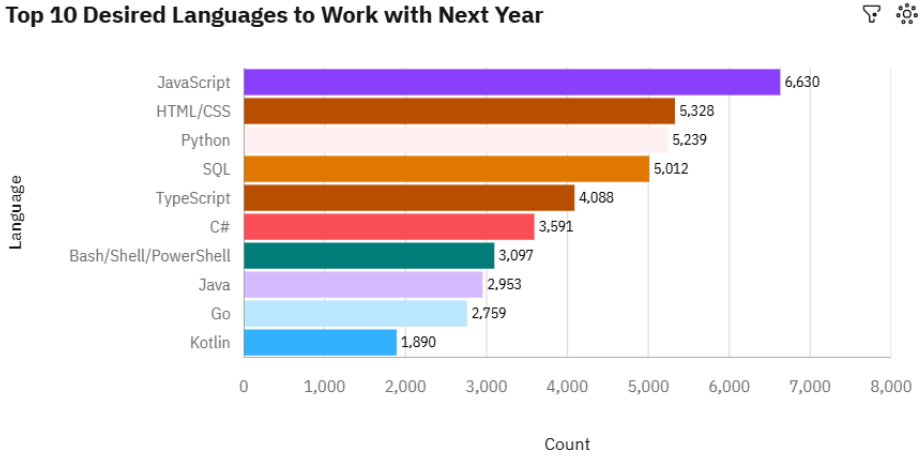


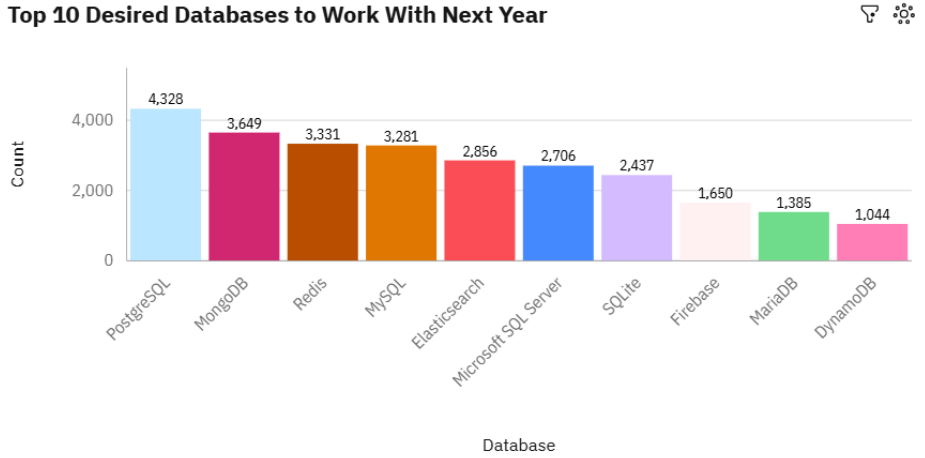
Platforms Worked With

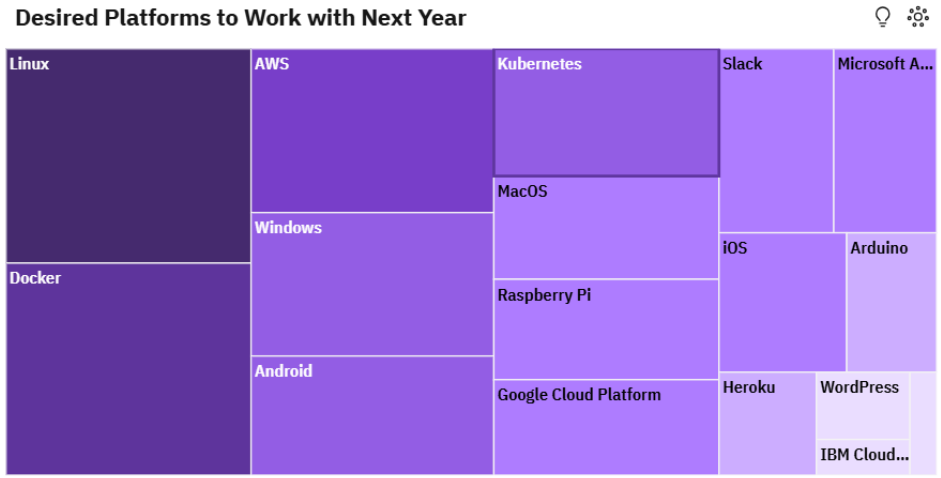
Top 10 Webframes Worked With

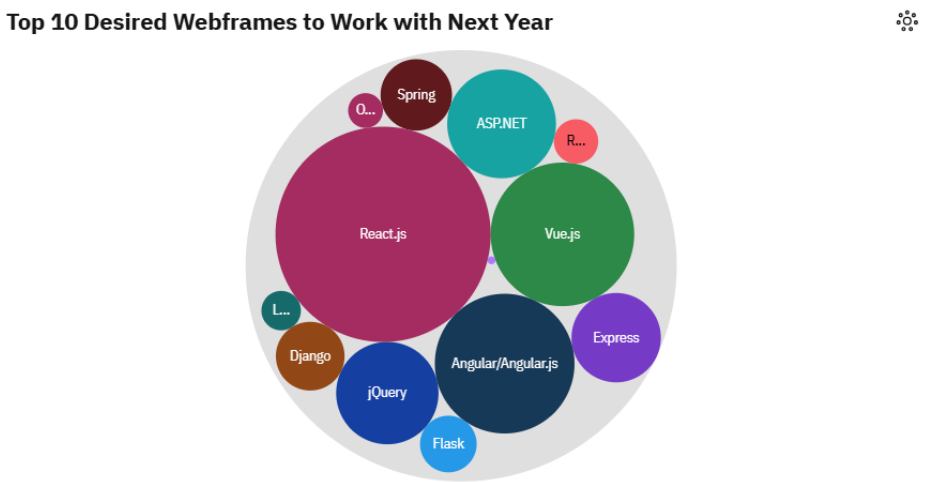


DASHBOARD TAB 2









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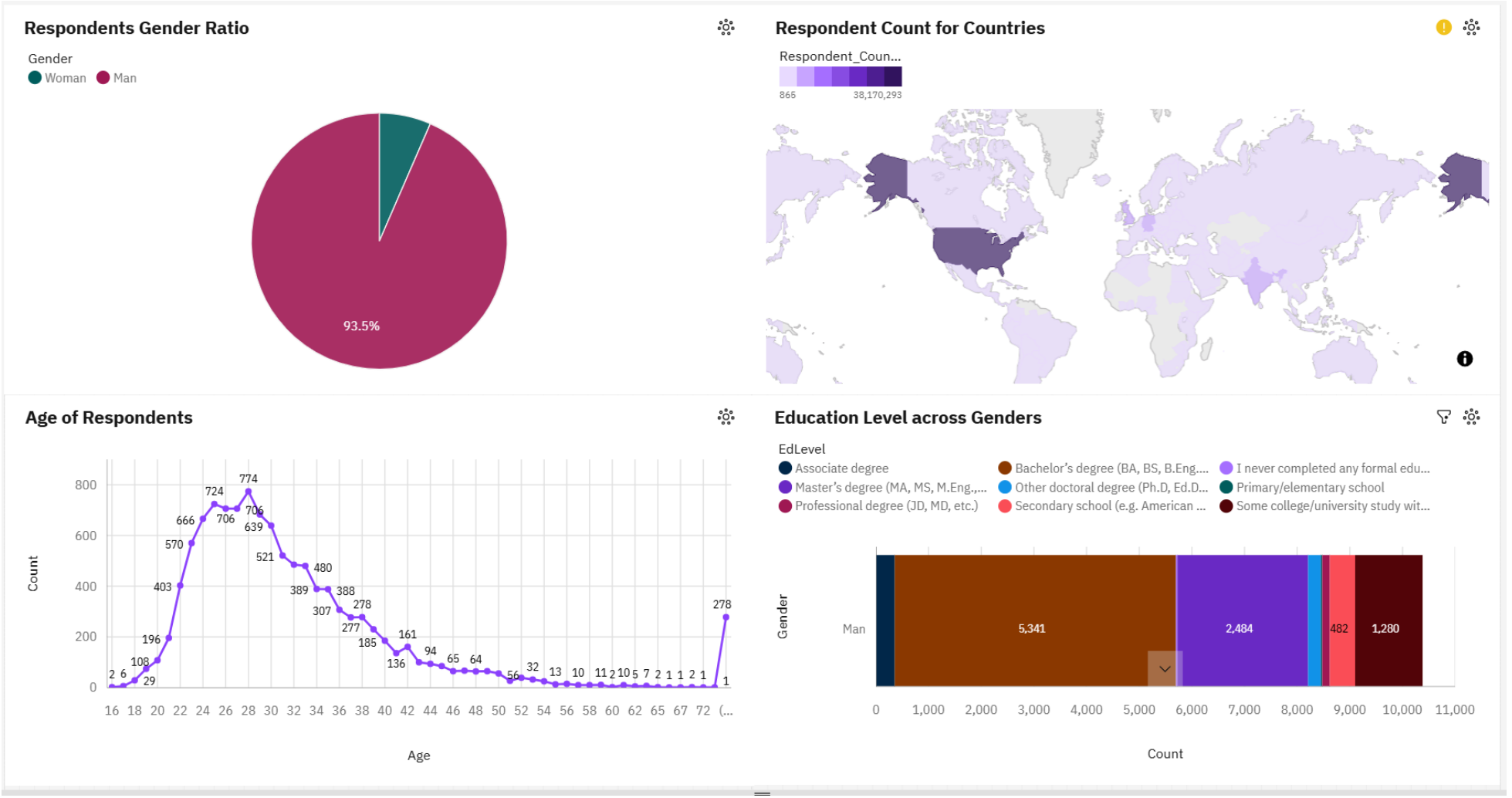
SKILLS NETWORK

DASHBOARD TAB 3



DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

- Stable demand for JavaScript, HTML/CSS, Python, and SQL
- Decline in legacy languages and rising interest in modern languages
- Increased demand for modern databases
- Decline in traditional database systems

Implications

- Key programming languages remain crucial and data handling skills are key
- Decline in legacy languages and the need to adapt to new technologies and languages
- Shift toward open-source and cloud-native database systems
- Decline of legacy systems
- Rise of NoSql solutions

CONCLUSION

- This report set out to explore the current and future skill requirements in programming languages and databases, aiming to provide insights into the technologies shaping the future of the tech industry. Through an analysis of job postings, surveys, and various data sources, we identified key trends that highlight the growing demand for modern, scalable technologies.
- **JavaScript, HTML/CSS, Python, and SQL** remain essential, while demand for legacy languages like **Java** and **C#** is declining in favour of modern languages such as **TypeScript** and **Go**. In databases, **PostgreSQL** and **MongoDB** are gaining popularity, with a shift away from traditional systems like **MySQL** and **SQLite**.
- To stay competitive, professionals should focus on emerging technologies, while organizations may need to transition from legacy systems to modern, scalable, and cloud-native solutions. Adapting to these trends will be key to thriving in the evolving tech landscape.

APPENDIX

Data Sources :

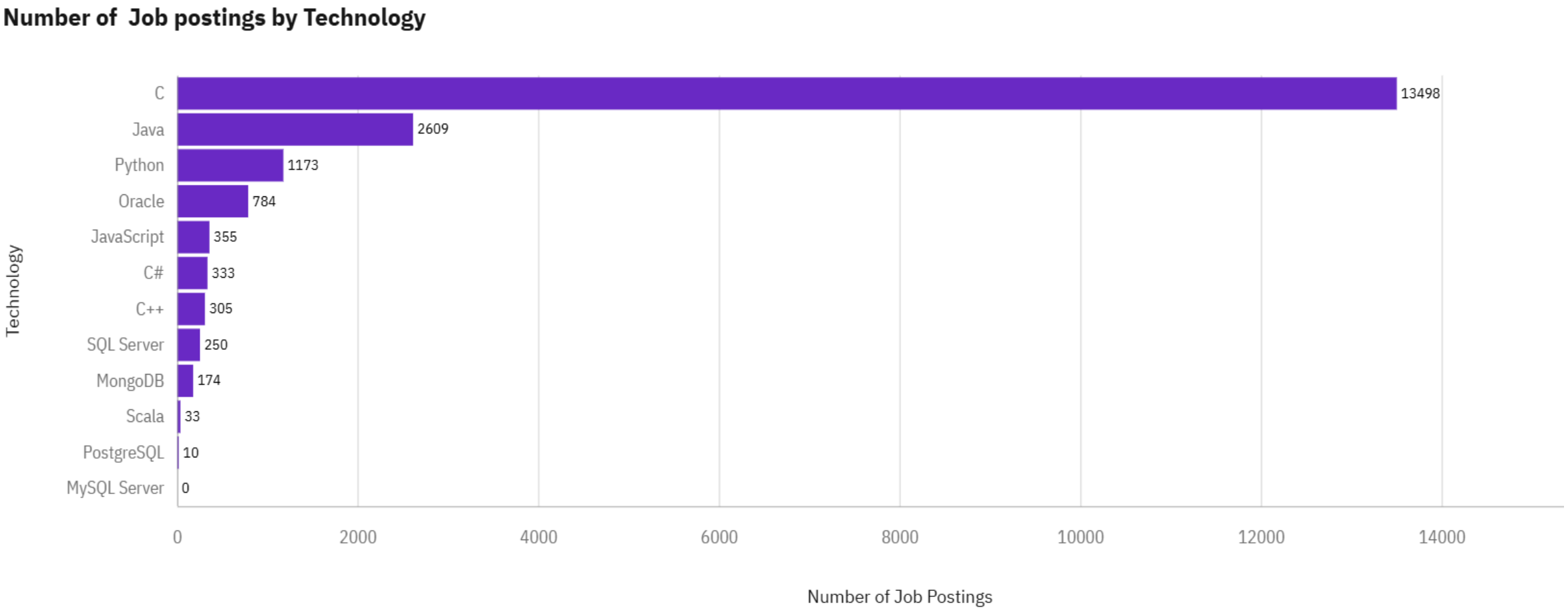
https://www.kaggle.com/promptcloud/jobs-on-naukricom

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/labs/datasets/Programming_Languages.html

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m1_survey_data.csv

The following charts highlight the most sought-after skills by organizations and the average annual salary for professionals proficient in specific programming languages.

JOB POSTINGS



POPULAR LANGUAGES