Analysis on Emerging Technology Skills and Trends

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EXECUTIVE SUMMARY

- **Staying Competitive in IT Industry**
- **Study Overview:**
  - Applies data analytics to highlight current and emerging trends in programming languages, databases, and technology domains, while also exploring the demographics of tech professionals.
- **Data Sources:**
  - Stack Overflow survey
  - IBM website
  - Job listings on GitHub
- **Data Analysis Process:**
  - Collection → Cleaning → Exploratory Analysis → Visualization via Dashboards
- **Key Findings:**
  - JavaScript is the most popular programming language and is expected to remain in high demand in the future.
  - MySQL is the most widely used database, with demand for PostgreSQL anticipated to grow.
- **Demographics of Technology Professionals:**
  - The majority are male, based in the USA, with an average age of 28 years.

INTRODUCTION

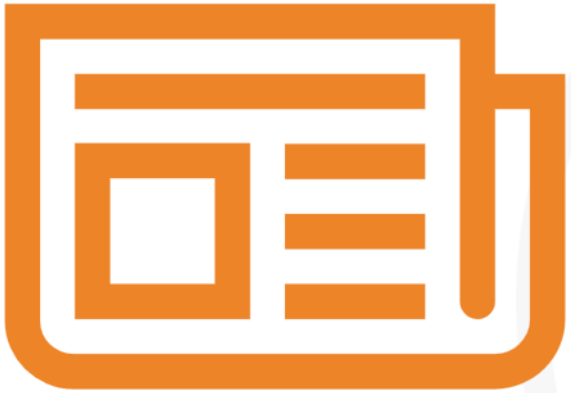
1. This presentation analyzes the current and future demand for skills in programming languages, databases, platforms, and web frameworks using data analytics tools.

2. The study explores key questions, including:
   - Which programming languages are in highest demand?
   - What are the most sought-after database skills?
   - Which Integrated Development Environments (IDEs) or web frameworks are most popular?

3. The research aims to provide insights into the leading, future-proof IT competencies.

4. The target audience includes IT professionals, HR managers, and anyone interested in the IT sector, with a focus on essential skills within their fields.

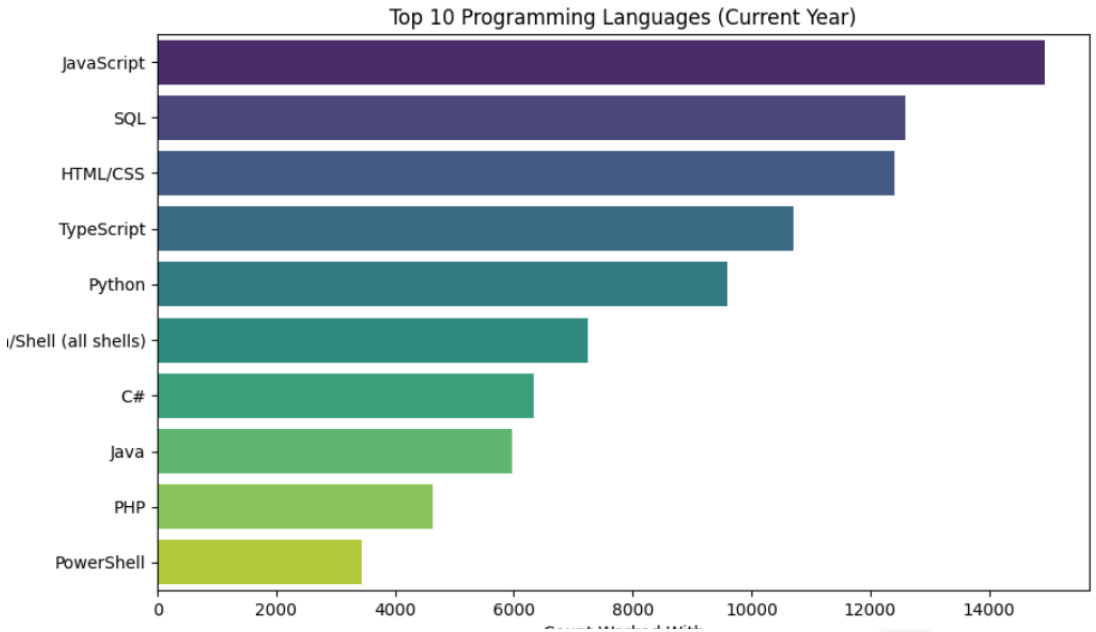
METHODOLOGY



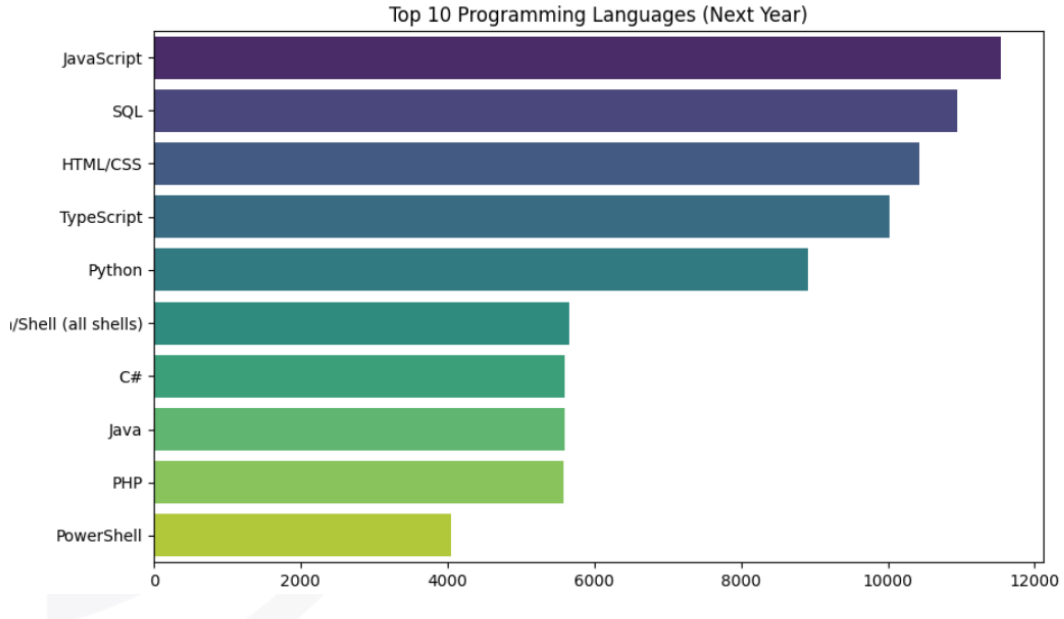
- **Data Collection:**
  - Collected survey and website data through web scraping and APIs, utilizing the Request library in Python.
- **Data Wrangling:**
  - Performed tasks such as removing unnecessary separators and handling missing values by either removing them or applying other criteria.
- **Exploratory Data Analysis:**
  - Analyzed data distribution, addressed outliers, and identified correlations.
- **Data Visualization:**
  - Created visualizations to showcase data distribution, relationships, composition, and comparisons using various techniques.
- **Dashboards:**
  - Developed interactive dashboards using IBM Cognos to present the analyzed data in an insightful and user-friendly format.

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

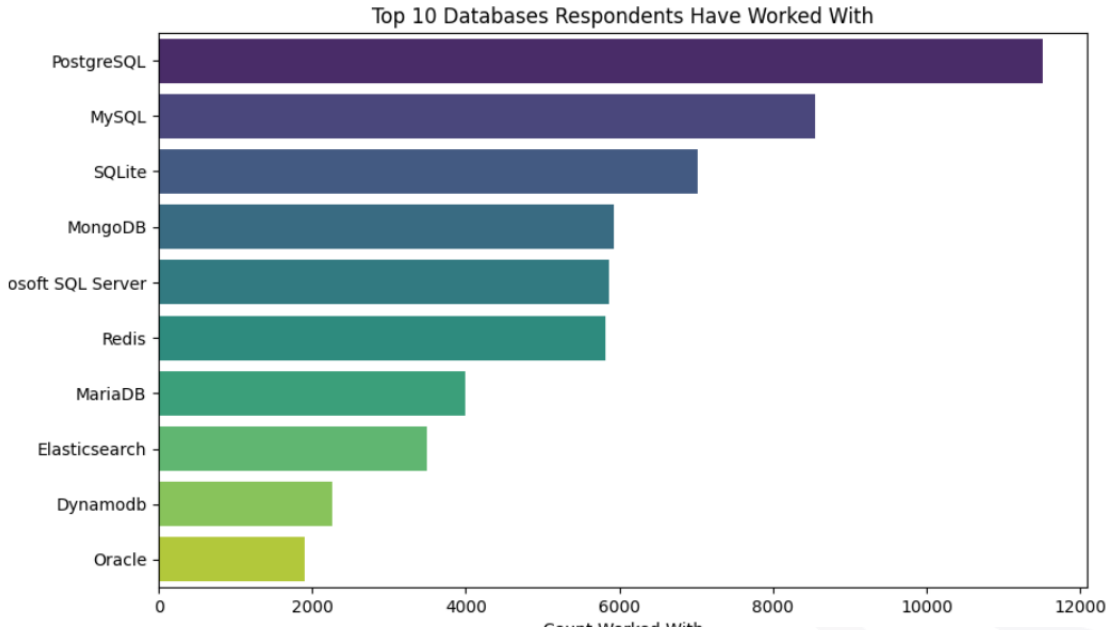
- At present, the most widely used languages include HTML/CSS, JavaScript, SQL, Python, and TypeScript.
- C#, java, PHP, Shell and PowerShell are also growing at a faster pace.
- JavaScript is the topmost language preferred by developers in the current year.

Implications

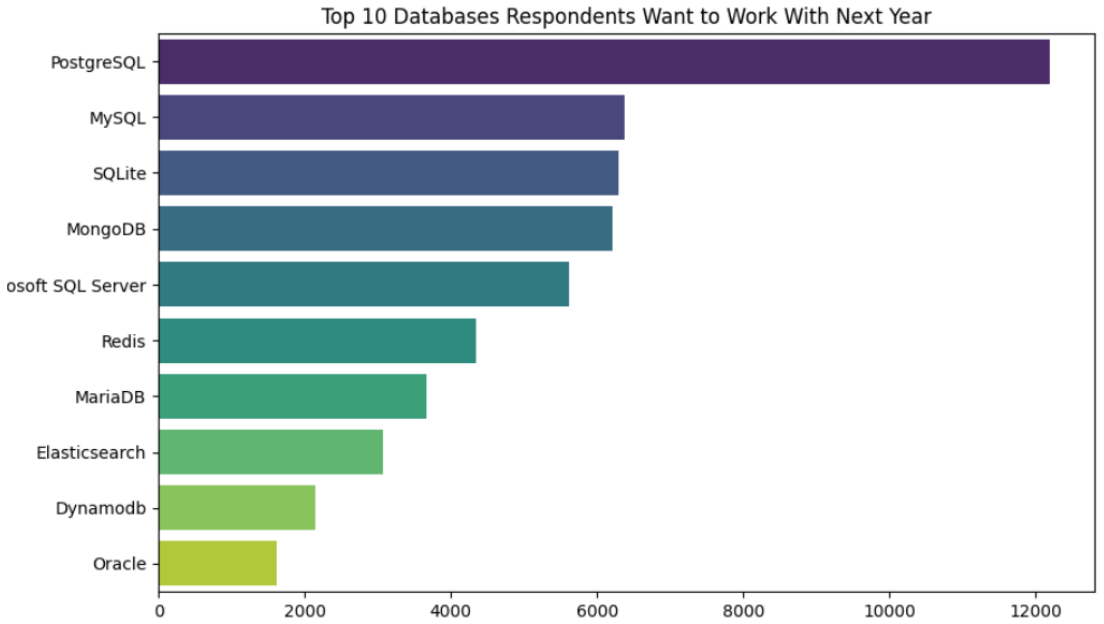
- JavaScript and HTML/CSS remain popular, driven by the strong demand for web development, while TypeScript is increasingly gaining traction among developers.
- Python's rising popularity is largely attributed to its applications in Artificial Intelligence and Machine Learning, where it enables efficient modeling and training.
- Although Python may surpass SQL in future demand, SQL continues to hold significant value for data professionals such as Data Analysts and Data Scientists.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

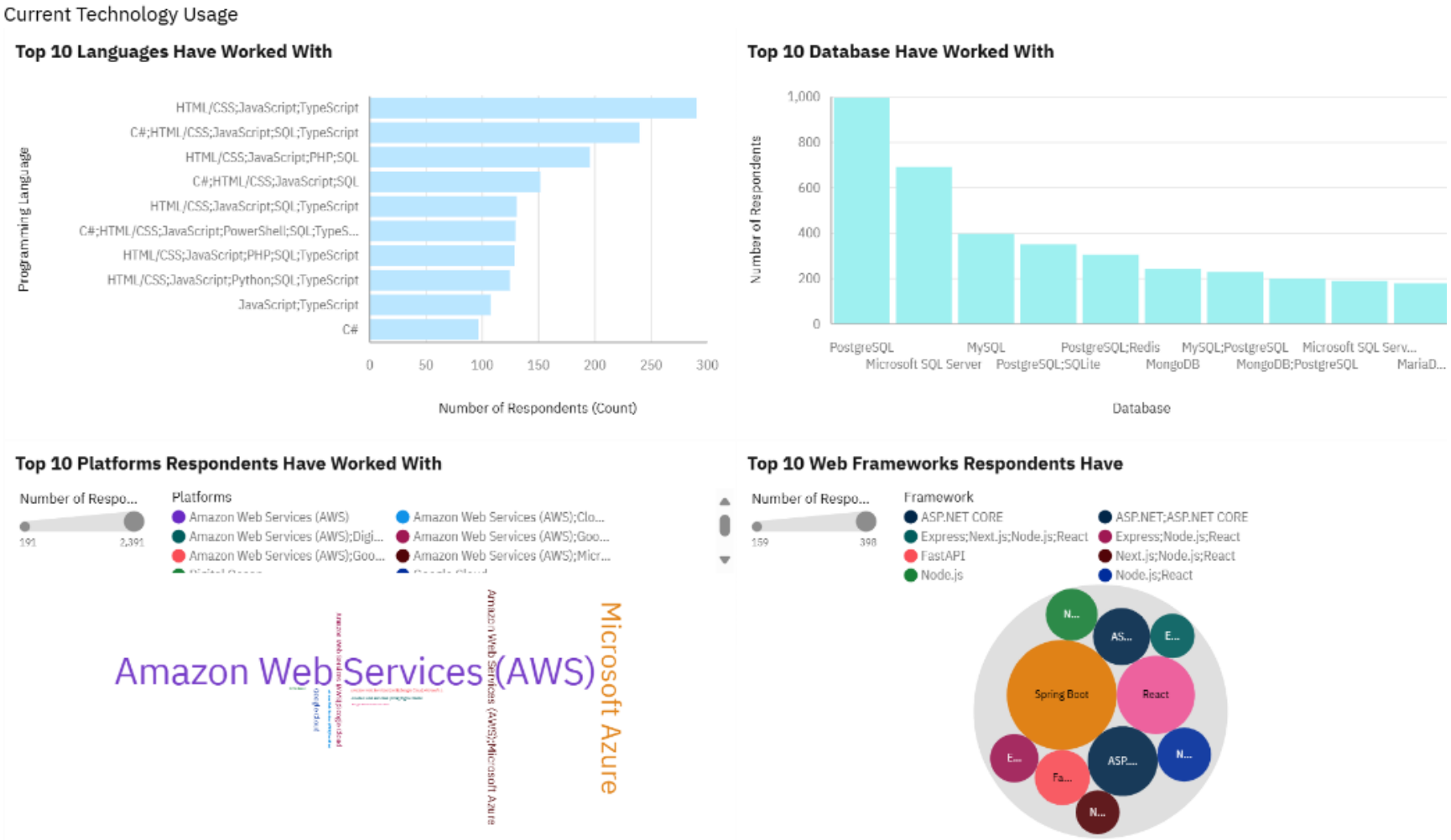
- PostgreSQL is currently the most widely preferred database.
- The demand for Oracle and DynamoDB is on the decline.
- MySQL and SQLite are emerging as the most sought-after databases for the future.

Implications

- Microsoft SQL Server and MariaDB are gradually losing market attention, resulting in a decline in their usage.
- MongoDB and SQLite have gained significant traction, positioning them as the most desirable databases in the near future similar to MYSQL.

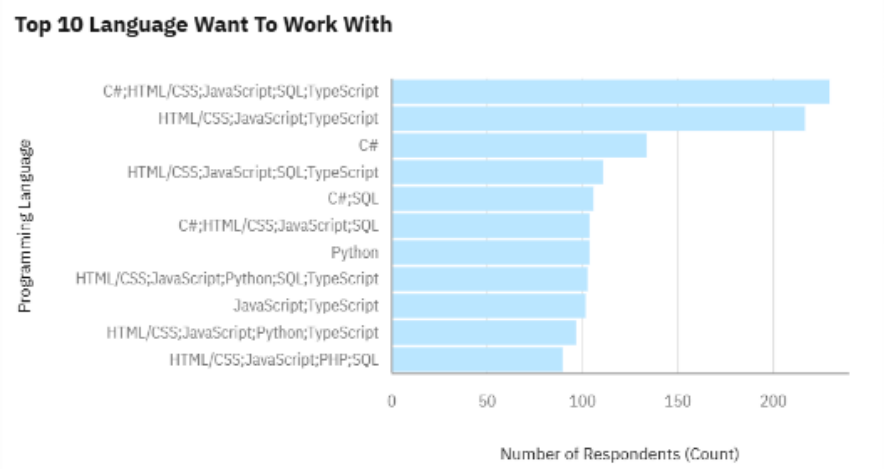
DASHBOARD

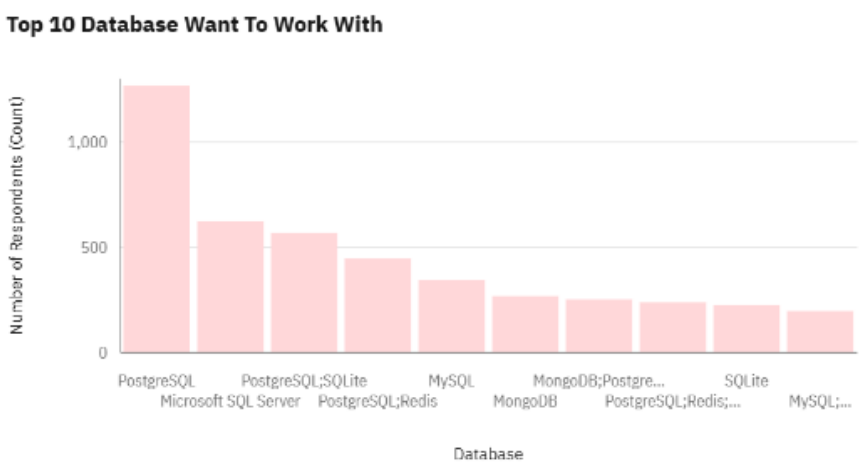
DASHBOARD TAB 1

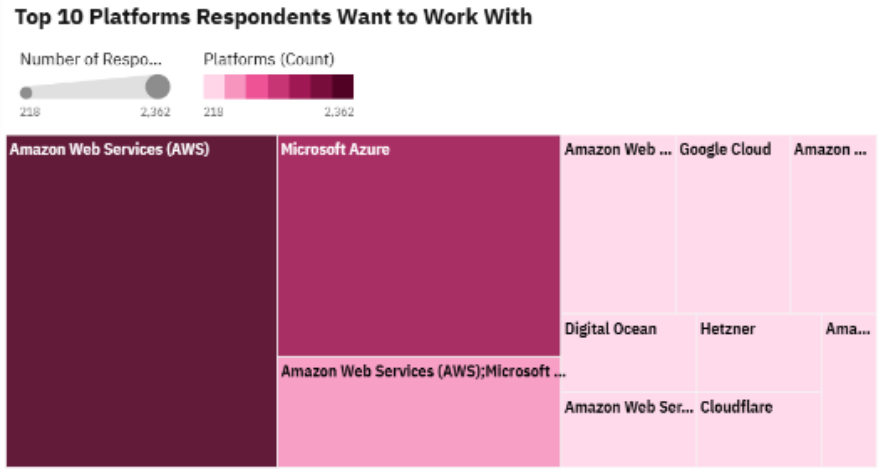


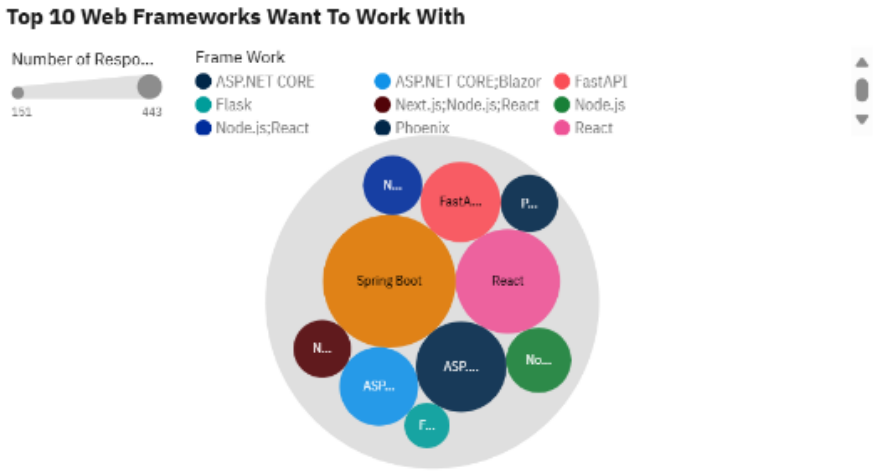
DASHBOARD TAB 2

Future Technology Trend



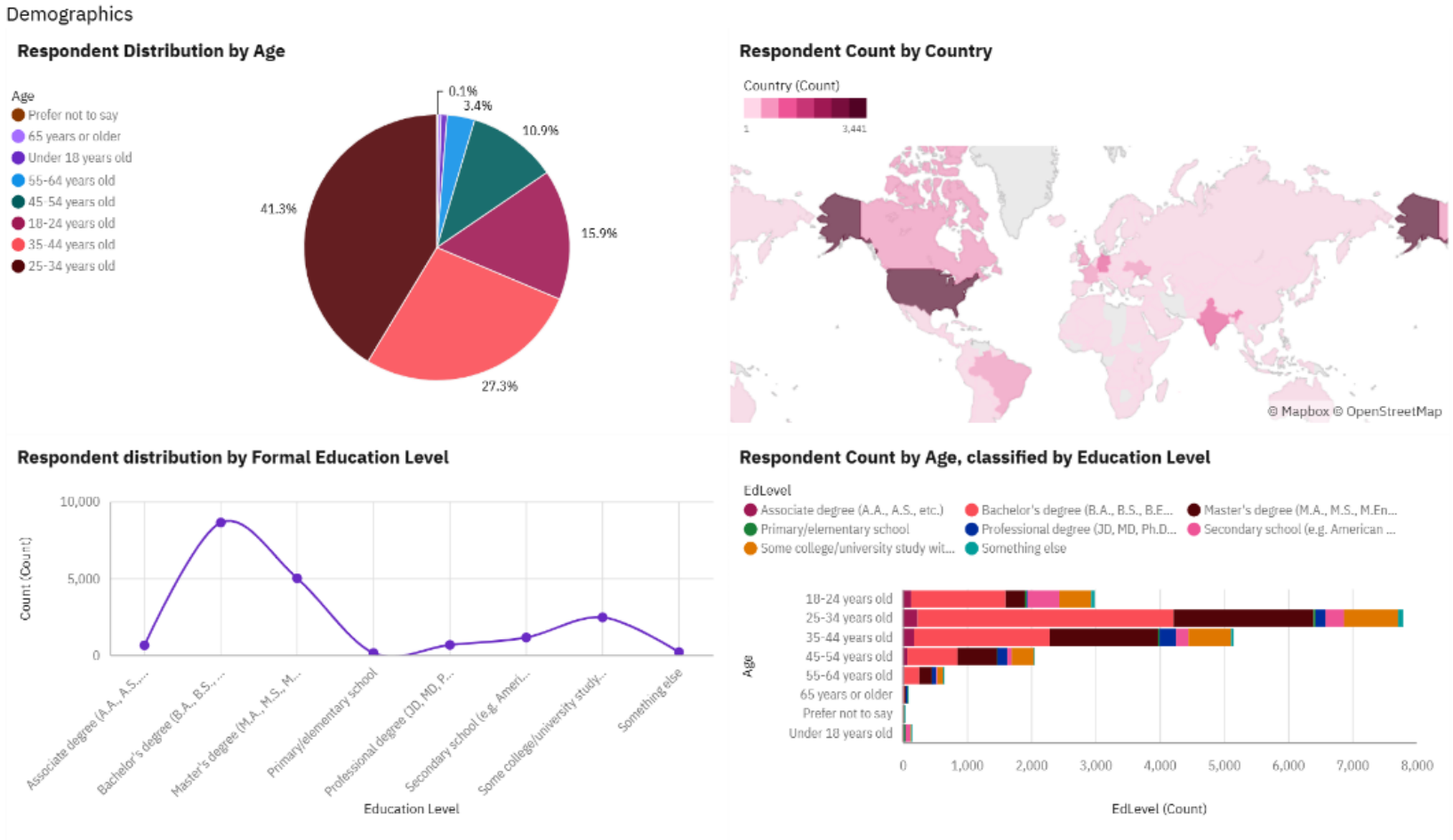






IBM

DASHBOARD TAB 3



DISCUSSION

- Change and evolution are inevitable, even within the developer community.
- Priority changes and so is the technology.
- The technology sector continues to face a significant gender gap that needs to be addressed.
- The majority of developers hold an undergraduate degree.
- Some of the languages and databases widely used today may lose relevance in the future.

OVERALL FINDINGS & IMPLICATIONS

Findings

- Gender participation among professional developers varies by country. More than 90% are male professionals.
- When analyzing age and experience by region, developers in North America and Western Europe tend to be older and possess more coding experience compared to those in other parts of the world.
- Most people have a minimum degree.
- Most people like to work with PostgreSQL next year, which is same as current year trend.

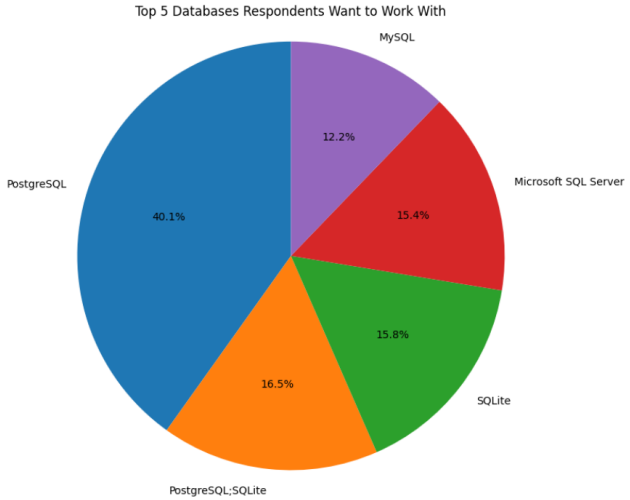
Implications

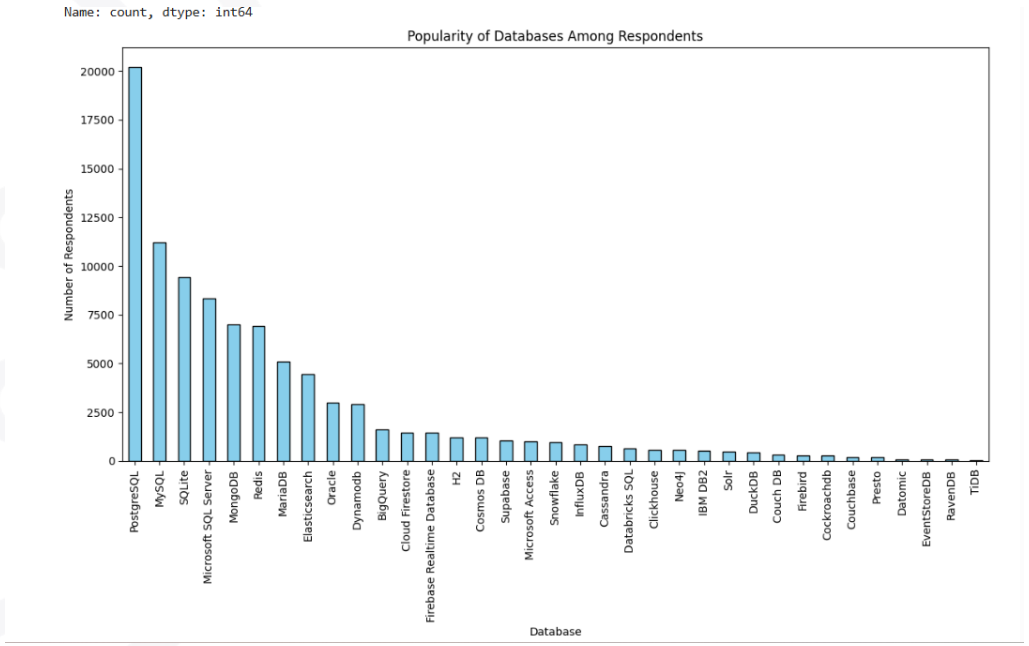
- There is significant global disparity in the developer community based on gender and geographic location.
- Web development is expected to offer abundant job opportunities in the future, making JavaScript and TypeScript highly sought-after languages.
- Developing countries need to place greater emphasis on tech education and skill development.

CONCLUSION

- The ever-evolving and diversified tech market highlights the importance of continuous skill upgrades for developers, with web development remaining a promising field and a bachelor’s degree often being sufficient.

APPENDIX


Top 5 Databases Respondents Want to Work With
MySQL
12.2%
Microsoft SQL Server
15.4%
SQLite
15.8%
PostgreSQL;SQLite
16.5%
PostgreSQL
40.1%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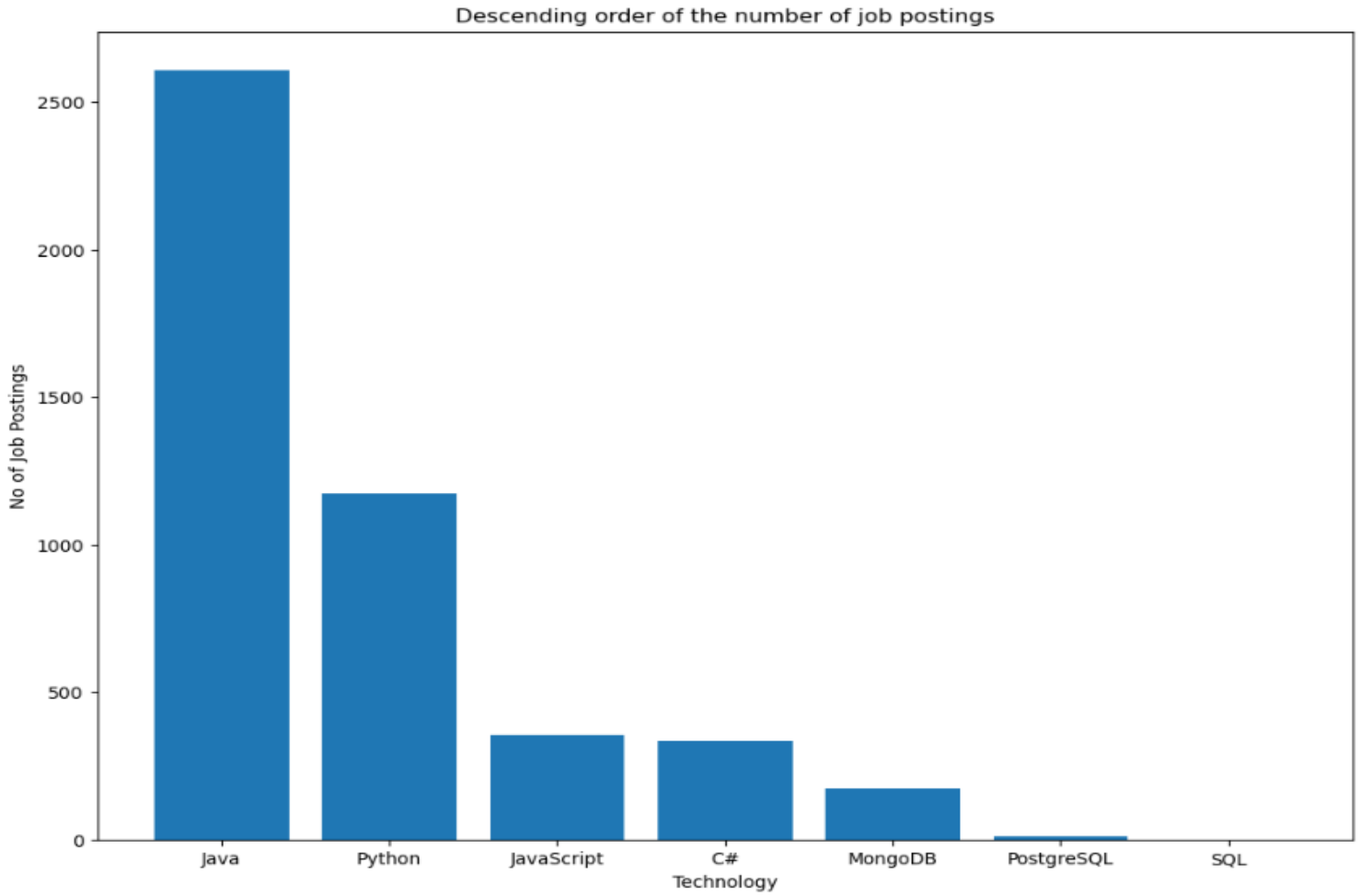
Popularity of Databases Among Respondents
Number of Respondents
20000
17500
15000
12500
10000
7500
5000
2500
0
PostgreSQL
MySQL
SQLite
Microsoft SQL Server
MongoDB
Redis
MariaDB
Elasticsearch
Oracle
Dynamodb
BigQuery
Cloud Firestore
Firebase Realtime Database
H2
Cosmos DB
Supabase
Microsoft Access
Snowflake
InfluxDB
Cassandra
Databricks SQL
Clickhouse
Neo4j
IBM DB2
Solr
DuckDB
Couch DB
Firebird
Cockroachdb
Couchbase
Presto
Datomic
EventStoreDB
RavenDB
TiDB
Database

JOB POSTINGS



POPULAR LANGUAGES