Emerging Trends in Programming and Database Skills: A Data-Driven Analysis

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OUTLINE

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- Methodology
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- Discussion
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- Conclusion
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EXECUTIVE SUMMARY

- **Objective**

  Identify top emerging programming and database skills based on job market trends.

- **Data Sources:**
  - Job Postings (scraped data, APIs)
  - Surveys and training portals
- **Key Findings:**
  - Programming Languages: Power Shell, HTML, C# are the most in demand
  - Databases: SQL (Microsoft SQL, MySQL) dominate, Elasticsearch Desired
  - IDEs: IntelliJ, Notepad++, Visual Studio Code lead in usage.
- **Implications:**
  - IT professionals should upskill in Python and NoSQL databases.
  - Companies should focus training on these emerging trends
- **Conclusion:**

  Staying agile in learning these skills is crucial for success in the evolving IT landscape.

INTRODUCTION

- **What is the report about?**

  A report analyzing trends in programming languages, databases, and tools, drawn from job market data.

- **Who is the report for?**

  IT companies, workforce planners, data analysts, and IT professionals looking to stay updated on emerging skills.

- **What will a reader gain?**

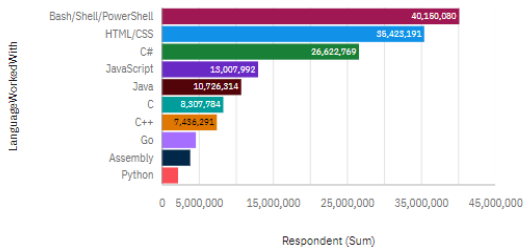
  Insight into future skill requirements, helping organizations and professionals align with market trends.

METHODOLOGY

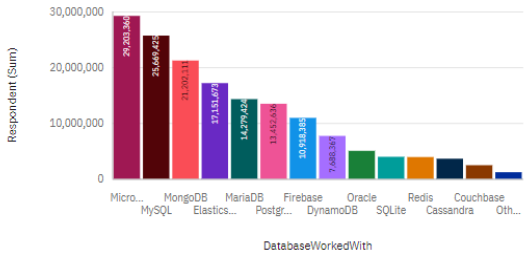
- **Data Sources:**
  - Job postings (Scraped)
  - API data (jobposting.xlsx), and
  - Survey results
- **Data Collection Methods:**
  - Web Scrapping
  - API integration
  - Data Wrangling
- **Tools used:**
  - Python for web scrapping
  - IBM Cognos for analytics

RESULTS

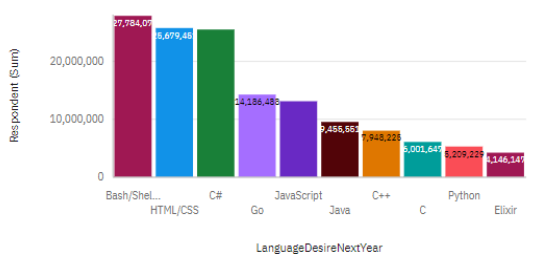
Top 10 LanguageWorkedWith



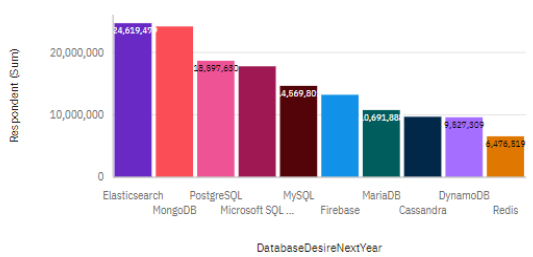
Top10 DatabaseWorkedWith



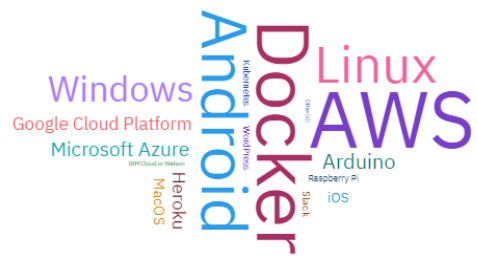
Top 10 LanguageDesireNextYear



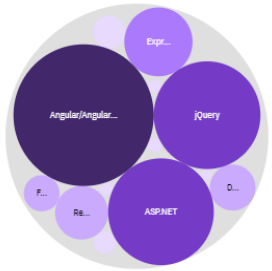
Top 10 DatabaseDesireNextYear



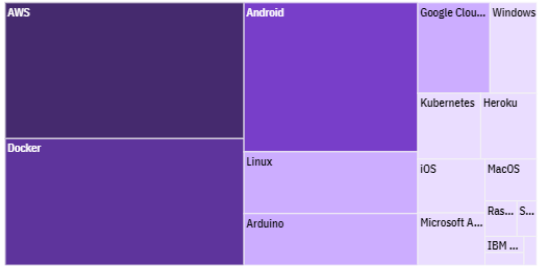
PlatformWorkedWith



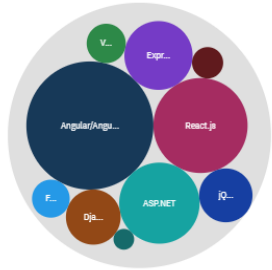
Top 10 WebFrameWorkedWith



PlatformDesireNextYear

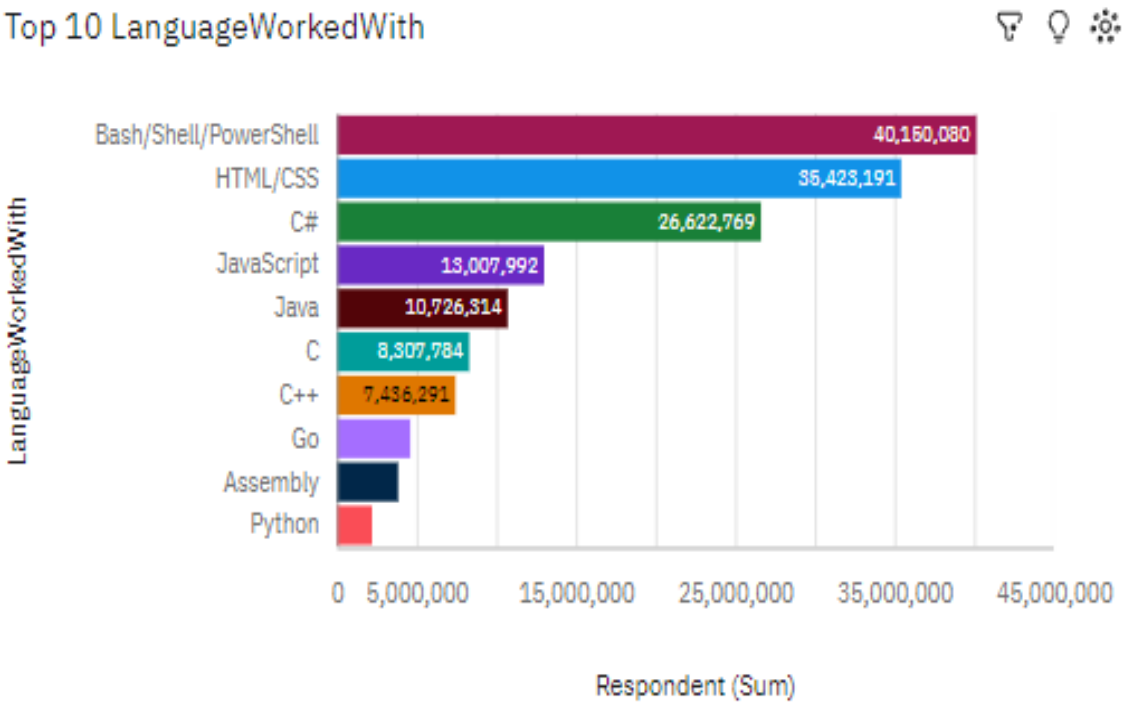


Top 10 WebFrameDesireNextYear

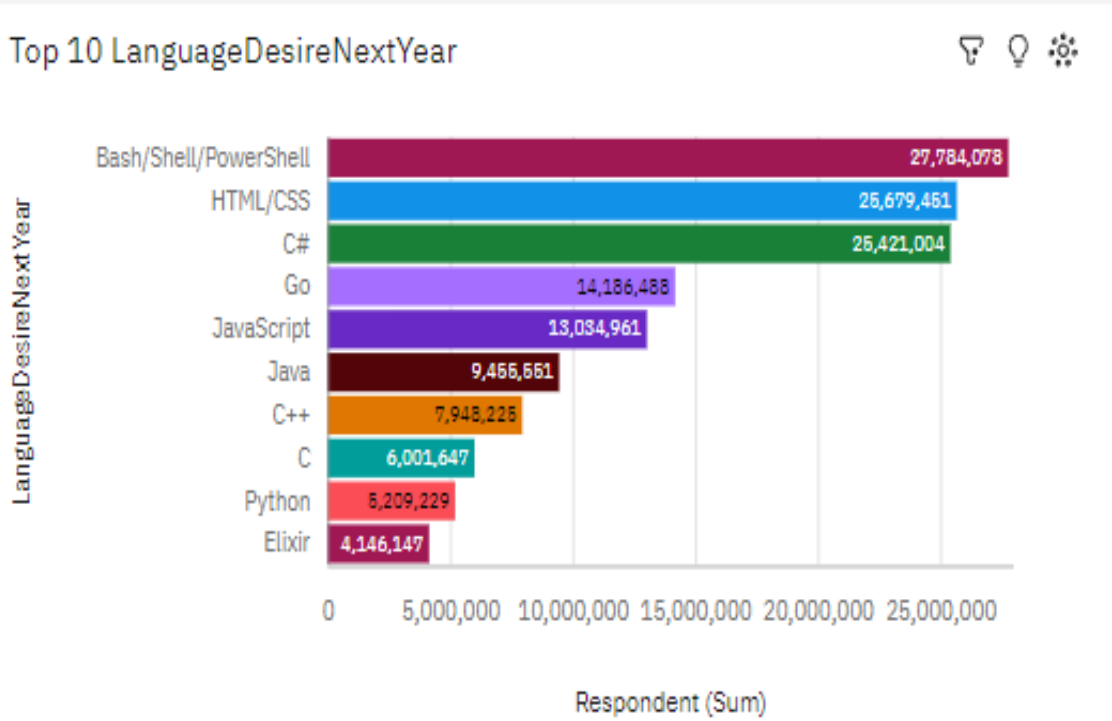


PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



IBM Developer

SKILLS NETWORK

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

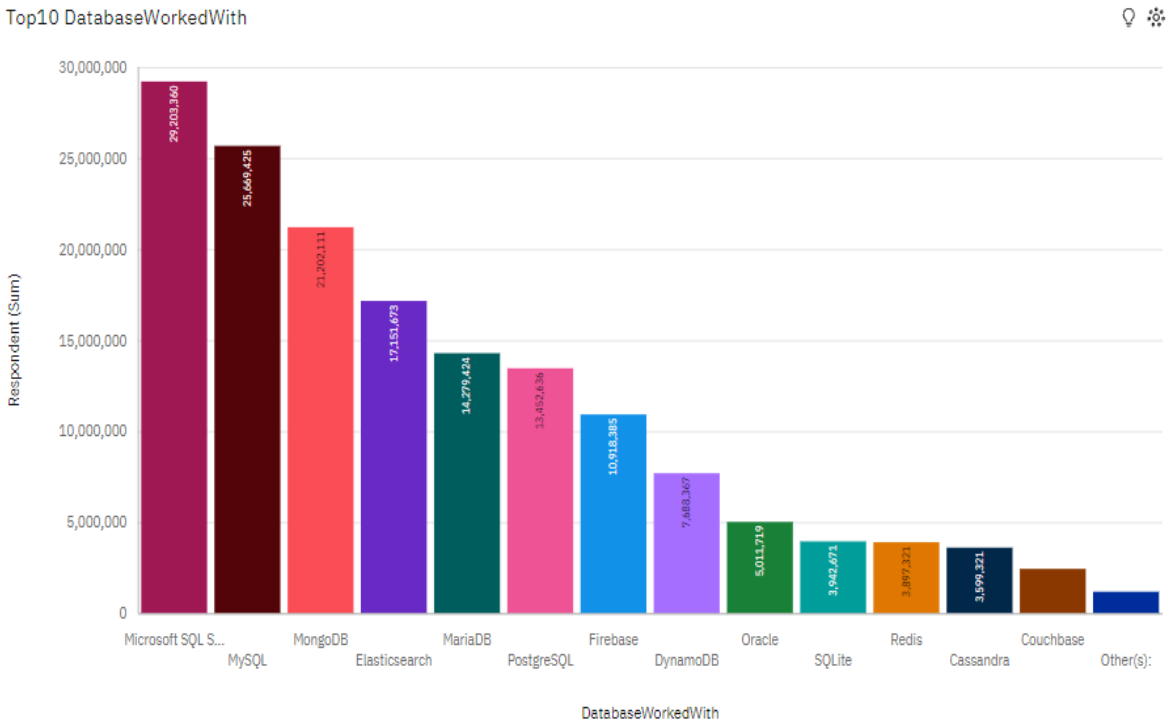
- **Bash/Shell/PowerShell** ranks as the top language both for current usage and future interest.
- **HTML/CSS** is the second most used and desired skill, reflecting its critical role in front-end development.
- **C#** holds third place in both categories, with significant interest continuing next year.
- **JavaScript** is highly used (30 million) but drops in future desire (13 million), suggesting possible saturation in this skill.
- **Go** emerges as a future star, with a notable jump from **11.7 million** (current) to **14.2 million** (next year), highlighting its growing adoption.
- **Python** usage is widespread (13.6 million), but it surprisingly ranks lower in next year's learning desires (5.2 million), likely due to many professionals already acquiring this skill.

Implications

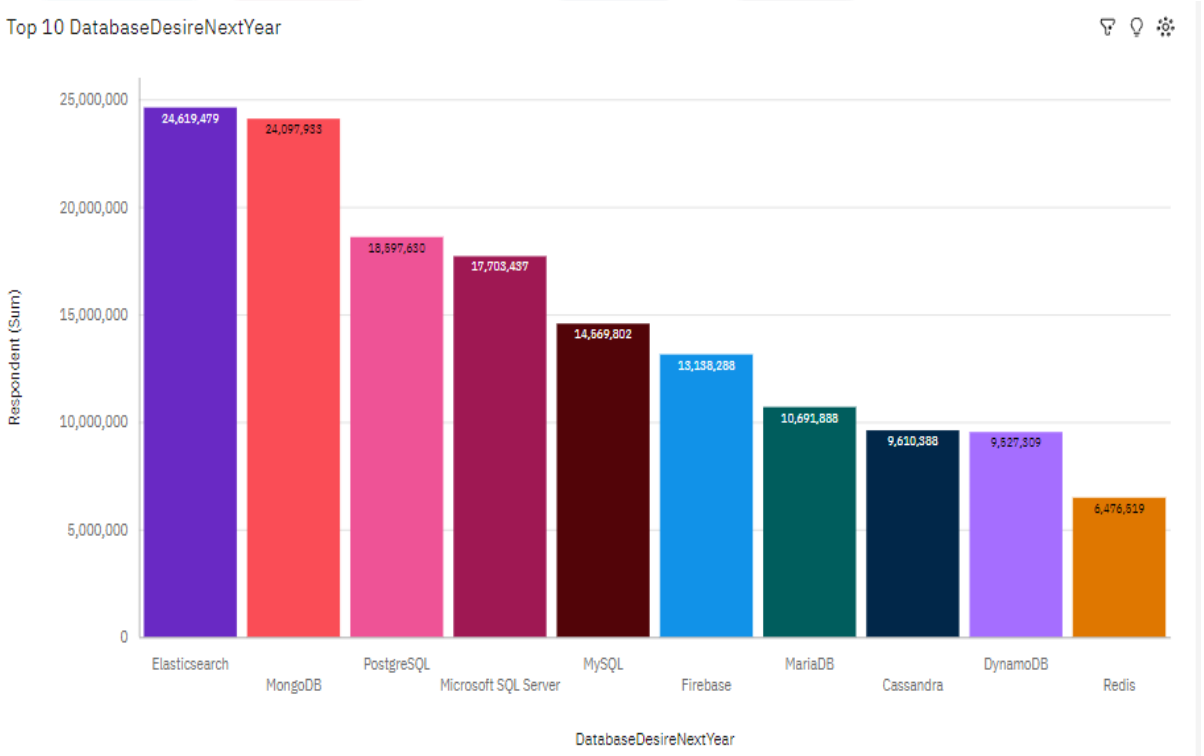
- **Continuing Importance of Bash/Shell/PowerShell and HTML/CSS**: These tools remain essential for developers, especially in scripting and front-end web development.
- **Growth of Go**: The rising interest in Go suggests that developers are moving toward languages that support high-performance, scalable applications, particularly for cloud-native and concurrent systems.
- **Saturation in JavaScript and Python**: While these languages are still highly used, the decline in future learning interest indicates that most professionals may already possess these skills, prompting them to explore other languages like Go and Elixir.
- **Shifting Demand**: IT professionals should focus on acquiring or deepening skills in C#, Go, and Bash to remain competitive in the evolving tech landscape, as these skills will be increasingly important.

DATABASE TRENDS

Current Year



Next Year



IBM Developer

SKILLS NETWORK

DATABASE TRENDS-FINDINGS & IMPLICATIONS

Findings

- **Current Year**:
  - **Microsoft SQL Server** leads with 28.3M users, followed by **MySQL** (24.5M) and **MongoDB** (20.4M).
  - **PostgreSQL** and **MariaDB** show moderate adoption, while **Redis** and **Couchbase** have lower usage.
- **Next Year**:
  - **Elasticsearch** is projected to grow, leading with 24.6M respondents.
  - Strong future interest in **MongoDB** (20.9M), **PostgreSQL**, and **Firebase** indicates the rise of NoSQL and cloud solutions.

Implications

- **NoSQL databases** (e.g., MongoDB, Elasticsearch) continue to rise, supporting unstructured data needs.
- **Relational databases** like SQL Server and PostgreSQL remain vital for structured data.
- Increasing demand for **cloud-based and scalable** databases like **Firebase** and **DynamoDB**.

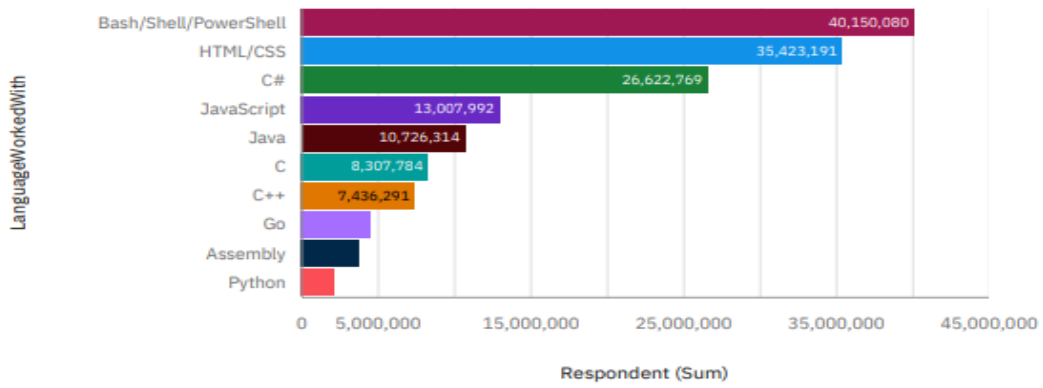
DASHBOARD

Click here to check out the dashboard build with Cognos Analytics

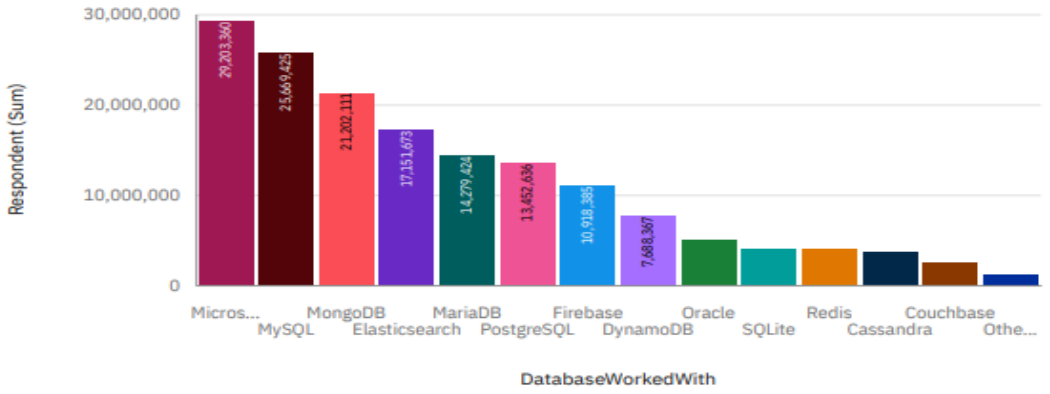
DASHBOARD TAB 1

Current Technology Usage

Top 10 LanguageWorkedWith

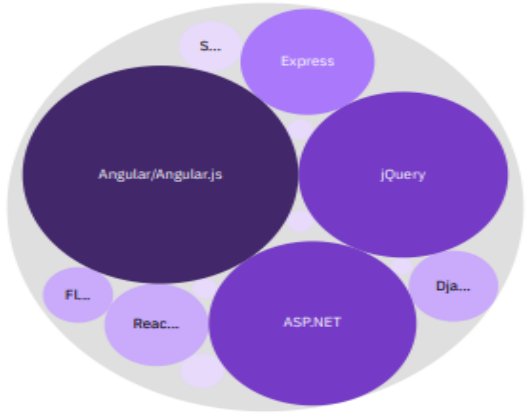


Top10 DatabaseWorkedWith



PlatformWorkedWith

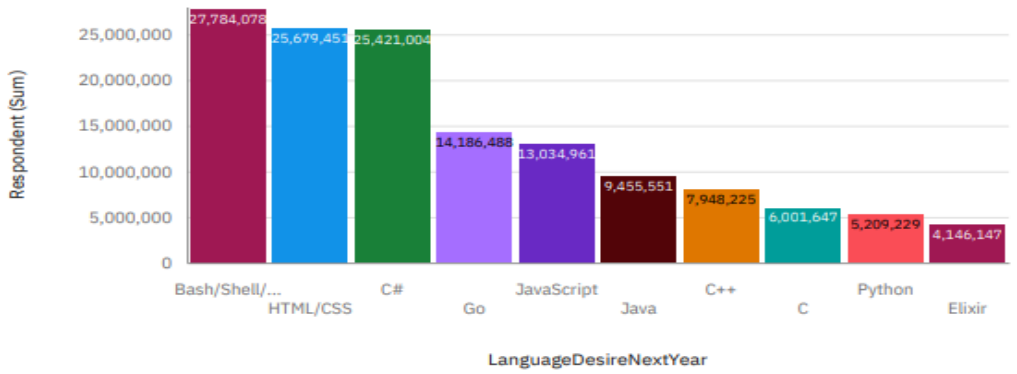
Top 10 WebFrameWorkedWith



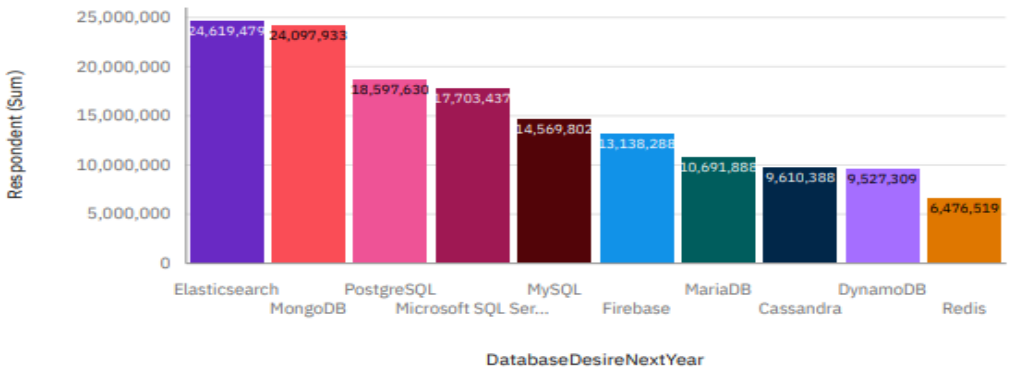
DASHBOARD TAB 2

Future Technology Trend

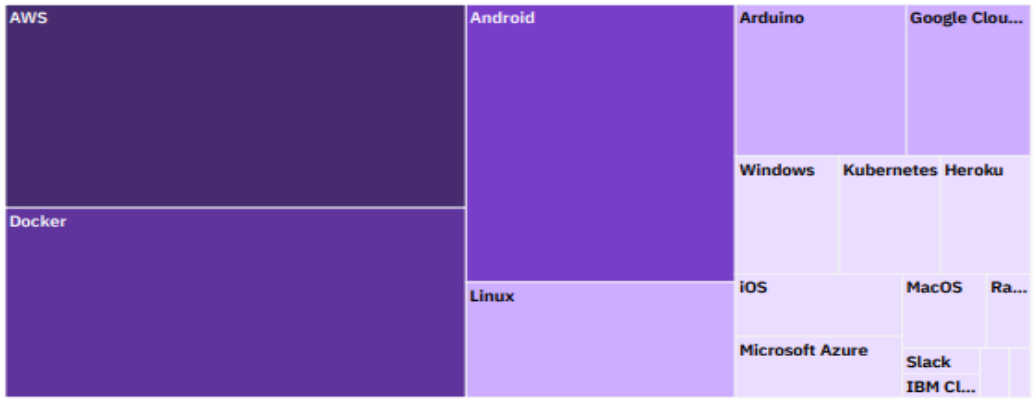
Top 10 LanguageDesireNextYear



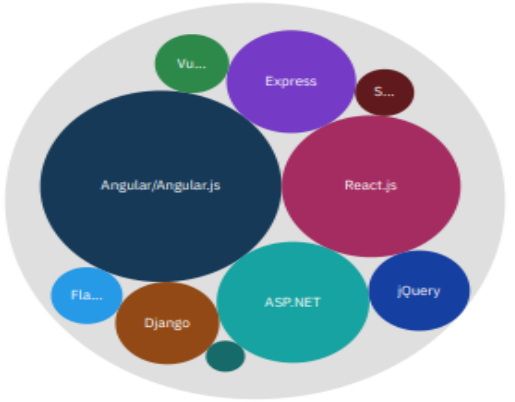
Top 10 DatabaseDesireNextYear



PlatformDesireNextYear



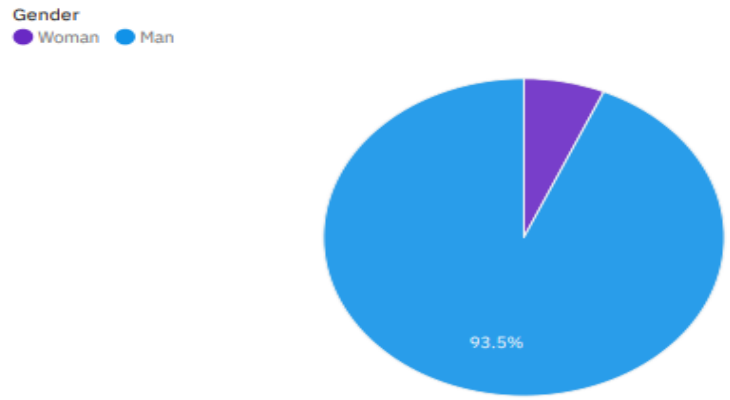
Top 10 WebFrameDesireNextYear



DASHBOARD TAB 3

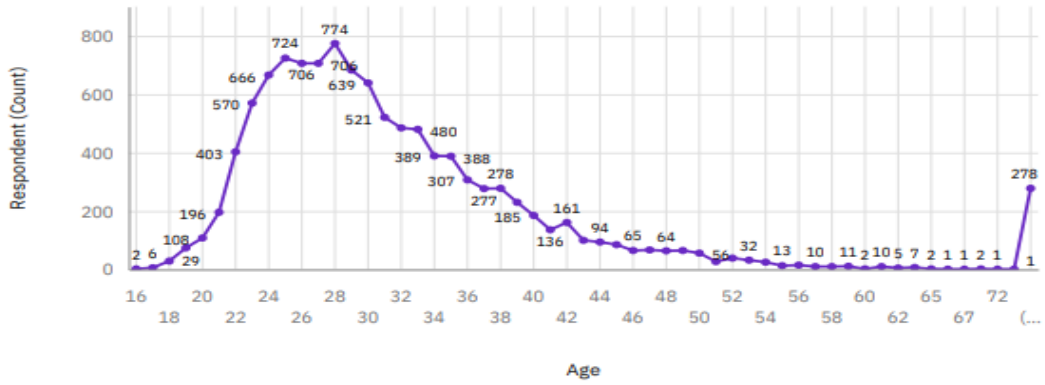
Demographics

Respondents as per Gender

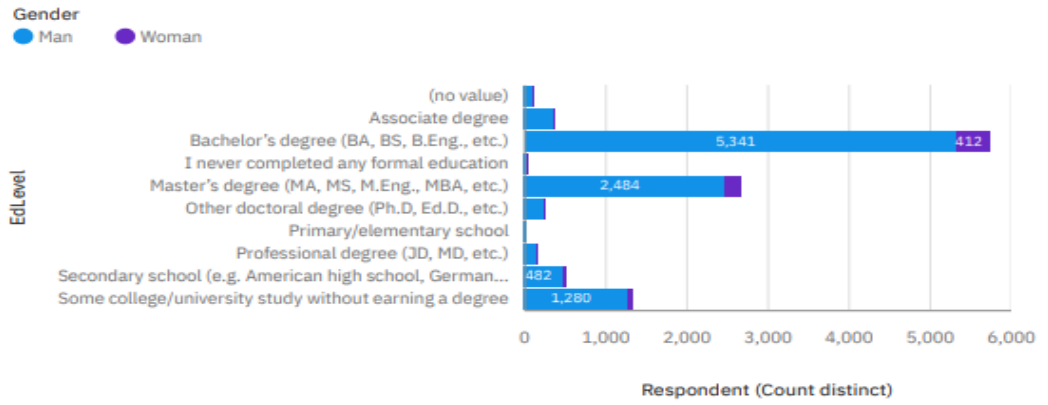


Respondent count for Country

Respondent count by Age



Respondent count by gender classified by Formal Education Level



DISCUSSION

The IBM Cognos Analytics dashboard provides a comprehensive view of current and future technology trends across databases, programming languages, and platforms. The **key insights** show a strong preference for SQL-based databases, particularly Microsoft SQL Server and MySQL, which are currently the most worked with. Looking towards the **future**, Elasticsearch is expected to overtake SQL Server in demand, reflecting the growing need for scalable search engines in data-driven industries. The dashboard also highlights the **increasing interest** in NoSQL databases like MongoDB and Firebase, indicating a shift towards more flexible and scalable solutions.

Key metrics, such as respondent counts and preferences, underline the significance of cloud platforms (AWS, Azure, Google Cloud) and containerization tools (Docker) in shaping future technology adoption. Furthermore, trends in web frameworks emphasize the **rising dominance** of Angular and React.js, which are poised to remain the top choices in the web development space.

OVERALL FINDINGS & IMPLICATIONS

Findings

- **Database Trends**: The current year shows a strong reliance on SQL-based databases, but the next year is forecasted to see a rise in Elasticsearch and MongoDB, signaling a transition to more dynamic, search-oriented database systems. This shift suggests that businesses are preparing to handle larger and more complex datasets.
- **Programming Languages**: While Python and JavaScript dominate the present landscape, newer languages like Go and Elixir are gaining popularity for future development, reflecting a push towards more efficient and scalable coding practices.
- **Platform Adoption**: Cloud platforms (AWS, Google Cloud) and container technologies (Docker, Kubernetes) will continue to see increased adoption, indicating that companies are moving towards more distributed, scalable infrastructure solutions.

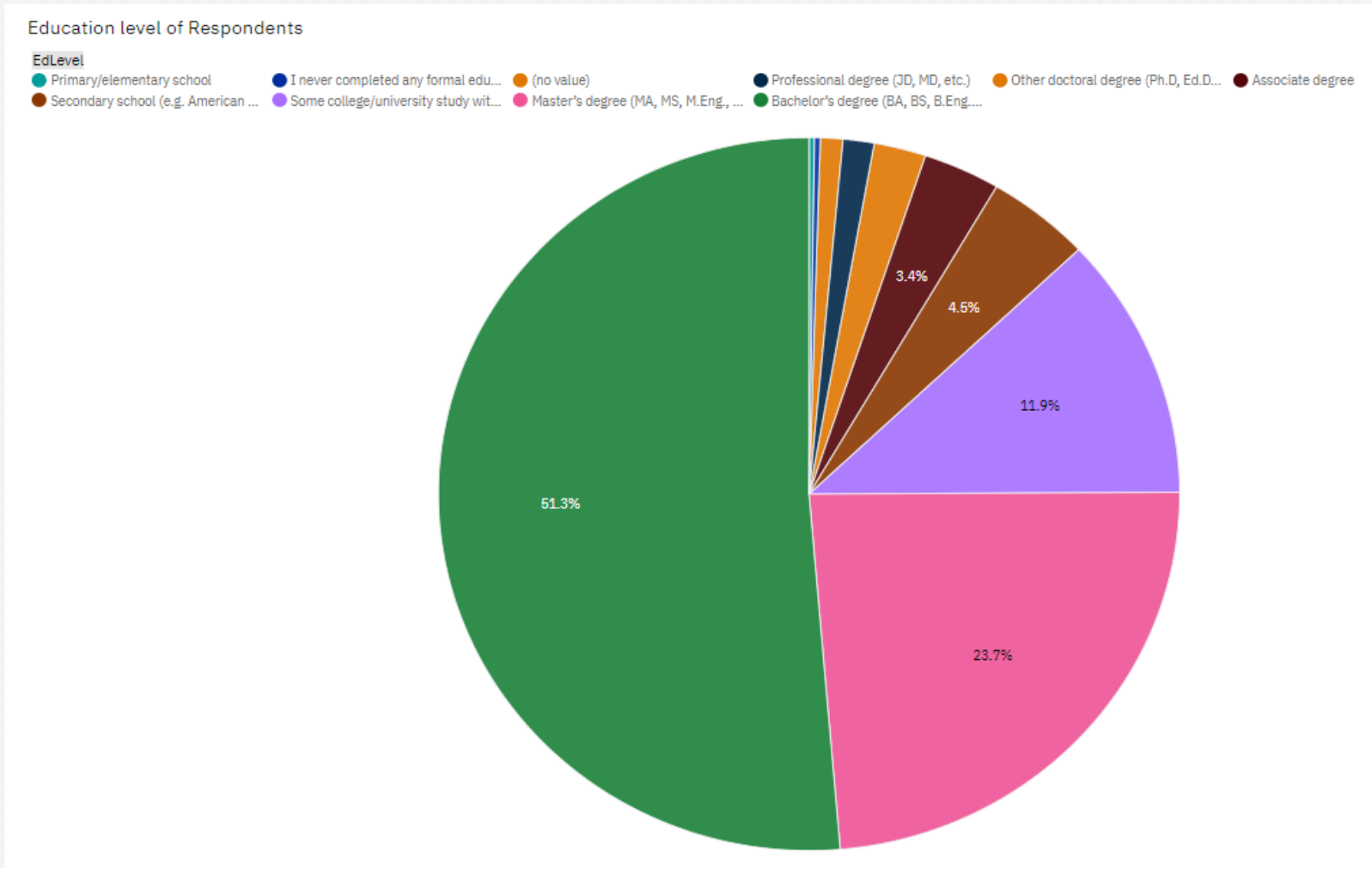
Implications

The overall implication is clear: Organizations must adapt to evolving technologies by investing in scalable, flexible, and efficient solutions, particularly in database management and cloud infrastructure, to stay competitive in the future landscape.

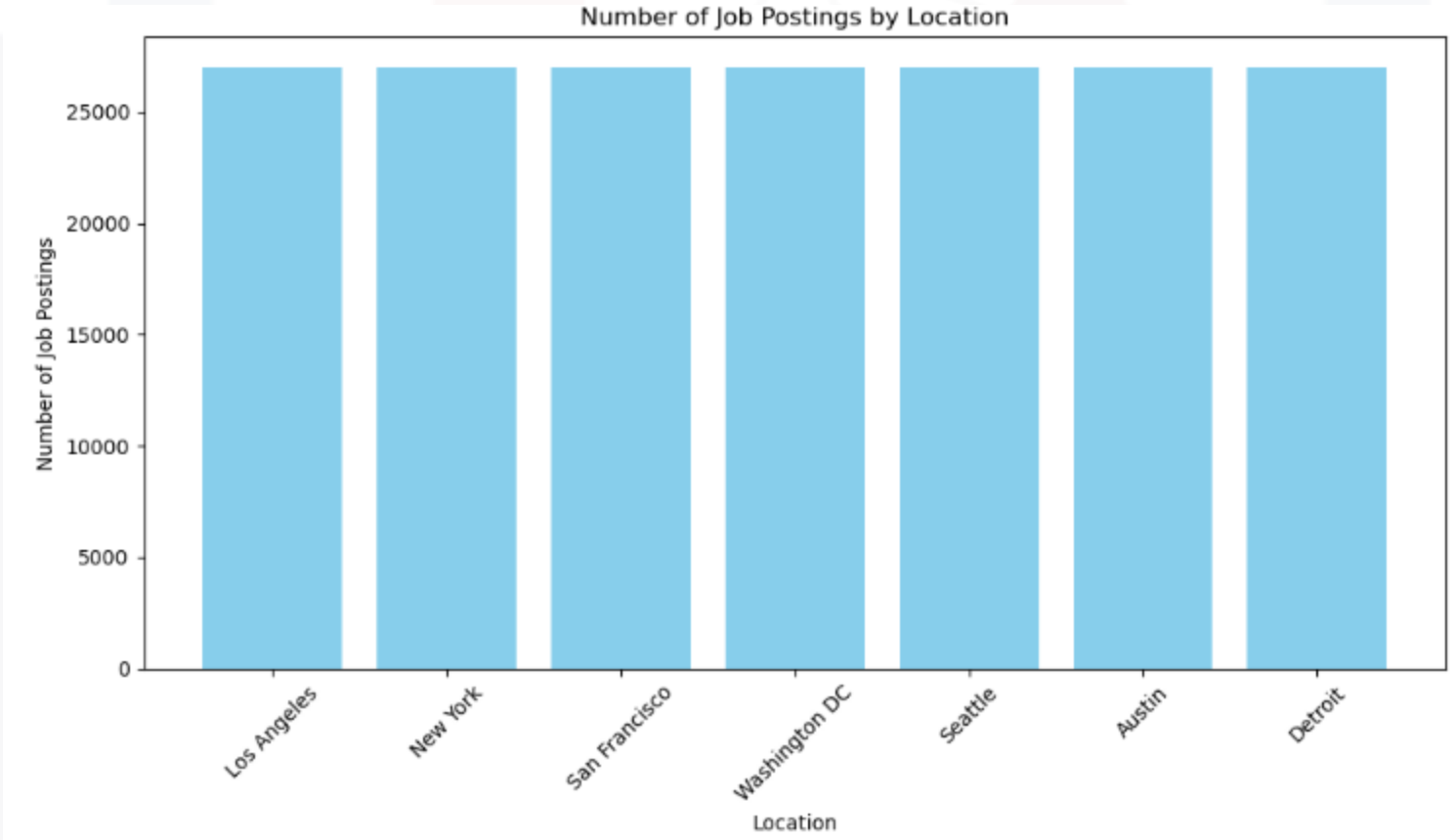
CONCLUSION

- **Dominance of Python and Other Languages**
  - Python remains the most sought-after language for its versatility in data science, machine learning, and web development.
  - Other languages like JavaScript, Go, and Bash/PowerShell continue to grow, driven by their specific applications in automation, system administration, and backend development.
- **Rising Importance of Database and Cloud Skills**
  - Cloud computing and databases are becoming critical, with technologies like AWS, Google Cloud, and Elasticsearch expected to dominate.
  - SQL-based systems (Microsoft SQL Server, MySQL) maintain their relevance, but NoSQL solutions (Elasticsearch, MongoDB) are on the rise due to their scalability and flexibility in handling big data.
- **Strategic Recommendations for IT Professionals**
  - Focus on expanding expertise in both cloud infrastructure and database management.
  - Upskill in modern languages like Go and tools like Docker and Kubernetes to remain competitive in a rapidly evolving tech landscape.
  - Prioritize learning NoSQL databases and scalable cloud solutions as they are key for future technology infrastructure.

APPENDIX


Education level of Respondents
EdLevel
Primary/elementary school
I never completed any formal edu...
(no value)
Professional degree (JD, MD, etc.)
Other doctoral degree (Ph.D, Ed.D...
Associate degree
Secondary school (e.g. American ...
Some college/university study wit...
Master's degree (MA, MS, M.Eng., ...
Bachelor's degree (BA, BS, B.Eng....
3.4%
4.5%
11.9%
51.3%
23.7%

JOB POSTINGS



POPULAR LANGUAGES