

Technology Trends and Workforce Insights

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OUTLINE



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EXECUTIVE SUMMARY



- Survey and API data were analyzed to identify technology adoption trends.
- Bar and line charts reveal top programming languages and databases for current and future use.
- Dashboards in Cognos/Looker highlight trends in demographics and technology usage.
- Key takeaway: Python and SQL remain dominant, but newer technologies like Go, Rust, and Firebase are gaining traction.

INTRODUCTION



- **Purpose:** To analyze technology trends in programming languages and databases using survey data.
- **Audience:** Tech recruiters, educators, and software industry professionals.
- **Value:** Offers data-driven insights for hiring, curriculum planning, and strategic investment.

METHODOLOGY



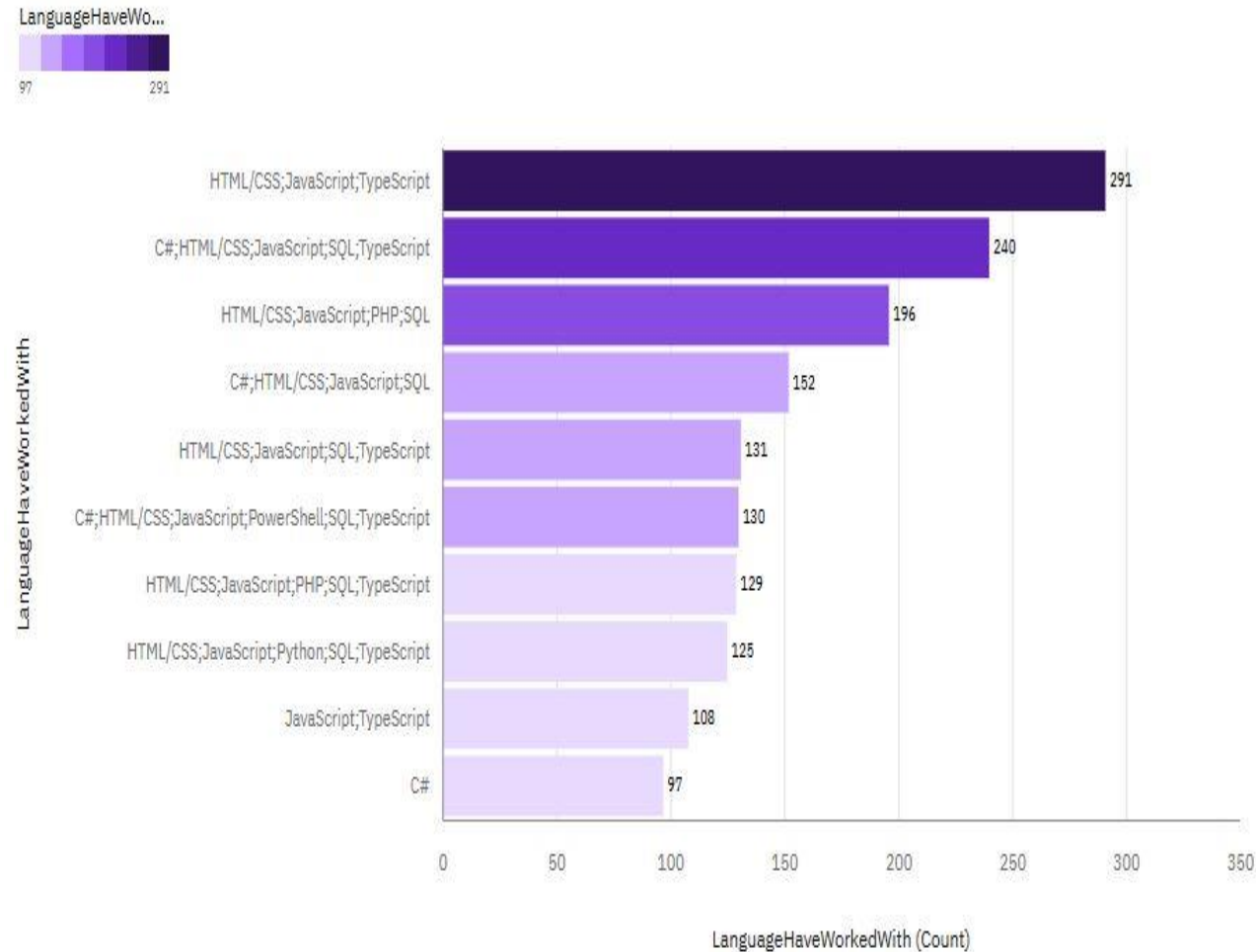
- **Data Source:** Stack Overflow Developer Survey dataset (via IBM Cloud storage)
- **Collection:** Accessed via CSV and API requests (see Lab 1)
- **Wrangling:**
 - Removed null/duplicate values
 - Focused on key columns: LanguageWorkedWith, DatabaseWorkedWith, YearsCodePro, Age, ConvertedCompYearly
 - Grouped and aggregated usage statistics

PROGRAMMING LANGUAGE TRENDS

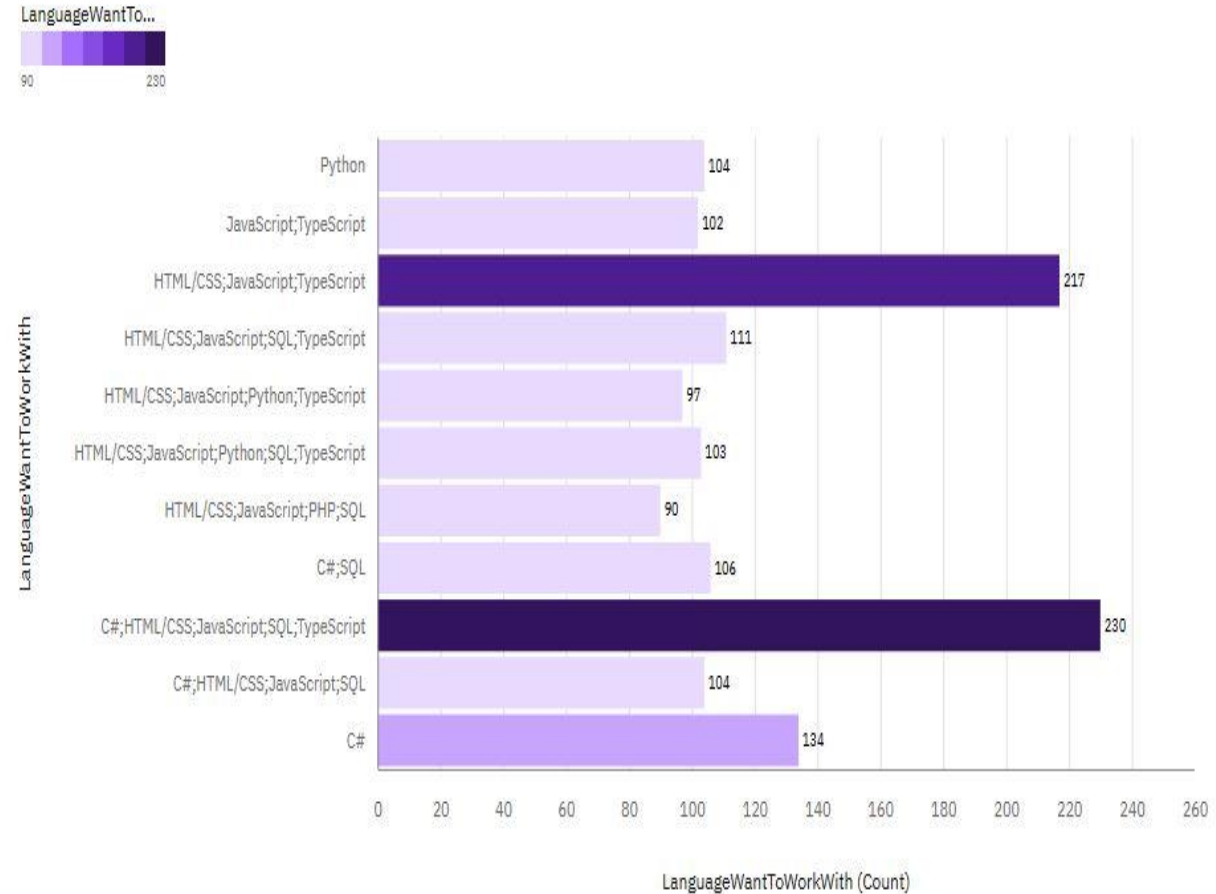
Current Year

Next Year

Top 10 LanguageHaveWorkedWith



LanguageWantToWorkWith



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- ▶ Python, JavaScript, and SQL are most widely used
- ▶ C# and Java maintain stable presence
- ▶ TypeScript and Go are rising

Implications

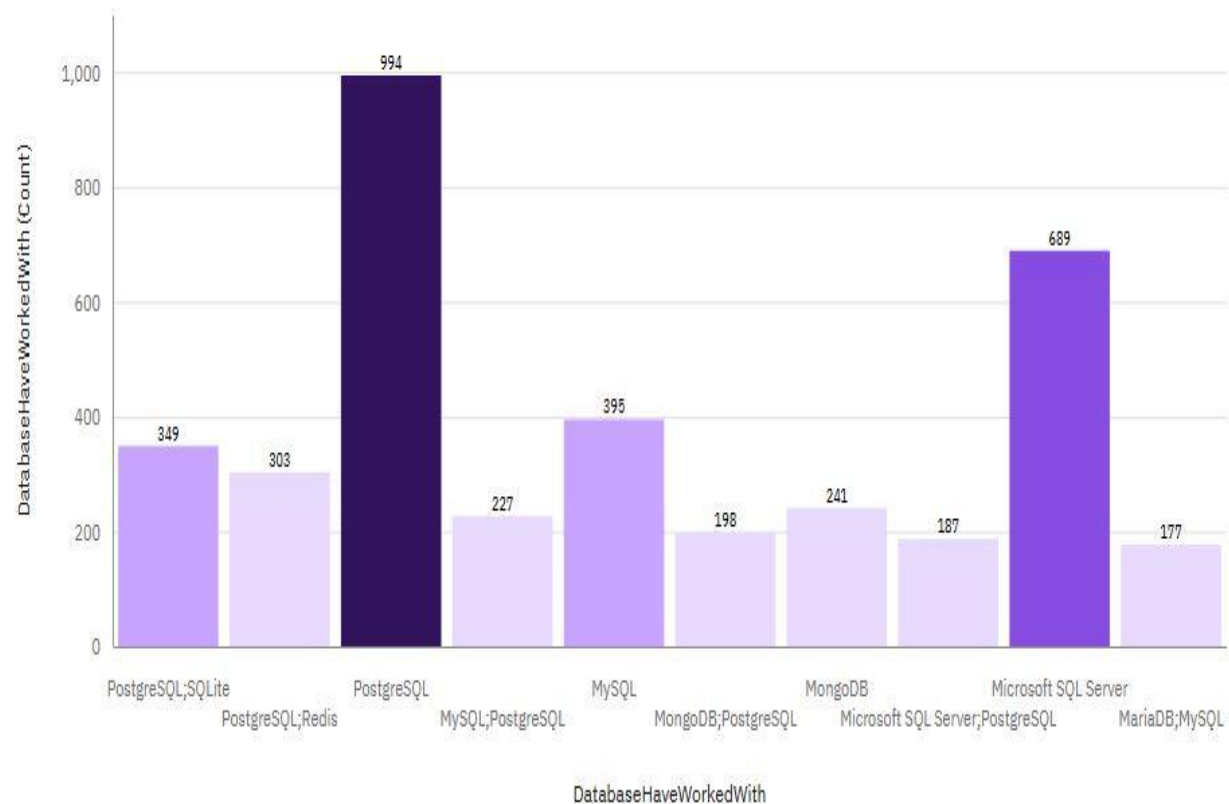
- ▶ Developers show growing interest in Rust, Go, and TypeScript
- ▶ Enterprises may face skill gaps without training investments
- ▶ Projected usage or growth expectations for next year
(e.g., based on interest in learning or professional development plans)

DATABASE TRENDS

Current Year

Top 10 DatabaseHaveWorkedWith

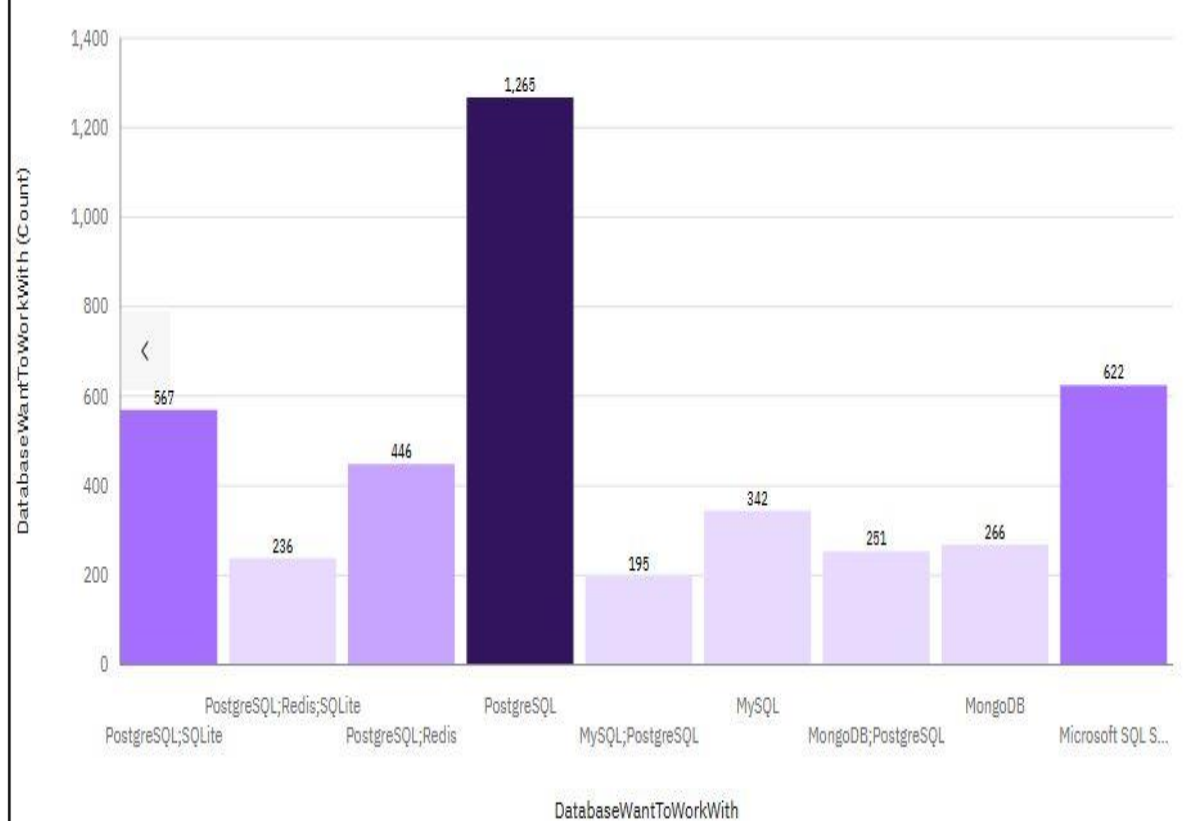
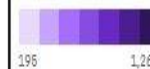
DatabaseHaveWor...



Next Year

Top 10 DatabaseWantToWorkWith

DatabaseWantTo...



DATABASE TRENDS - FINDINGS & IMPLICATIONS

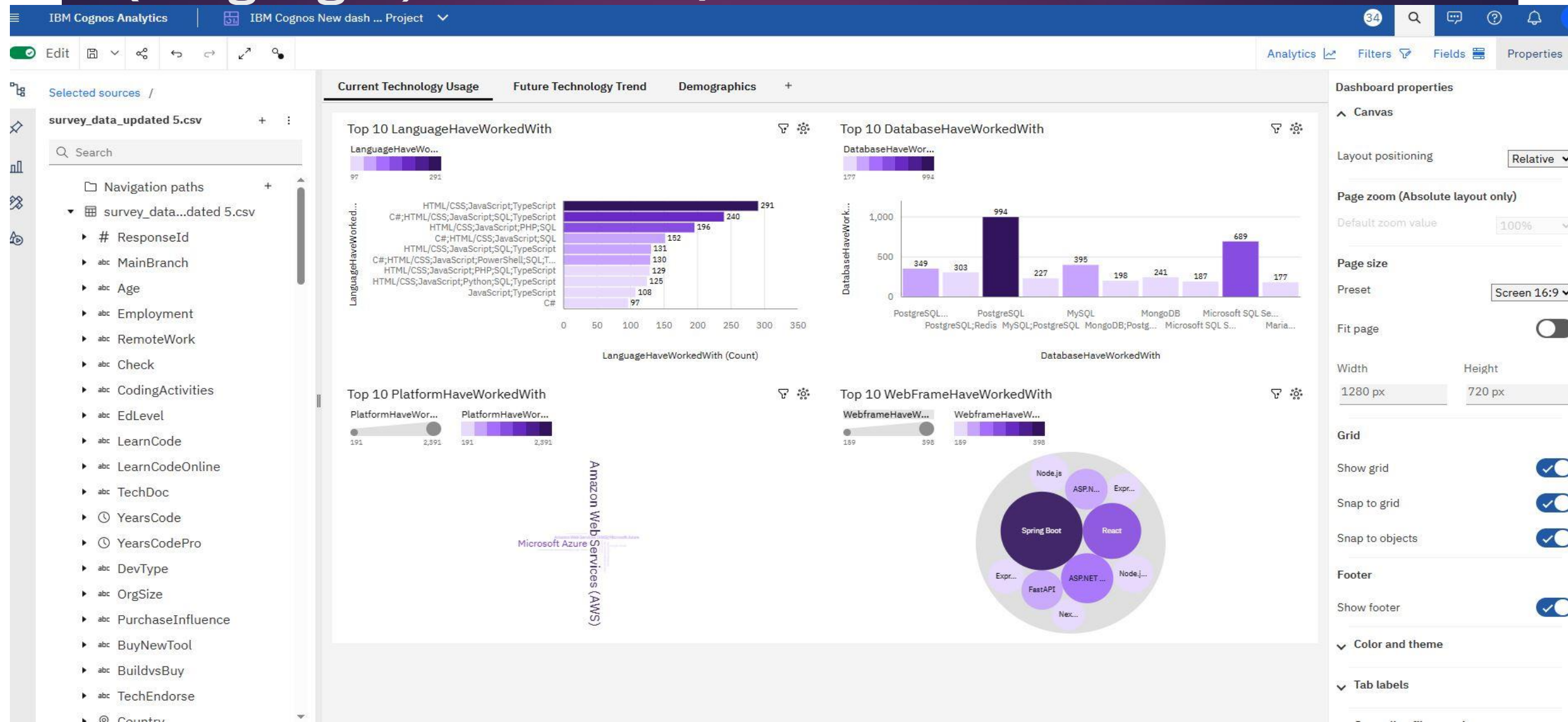
Findings

- ▶ MySQL, PostgreSQL, and SQLite lead
- ▶ MongoDB shows strong NoSQL adoption
- ▶ Microsoft SQL Server remains significant in enterprise

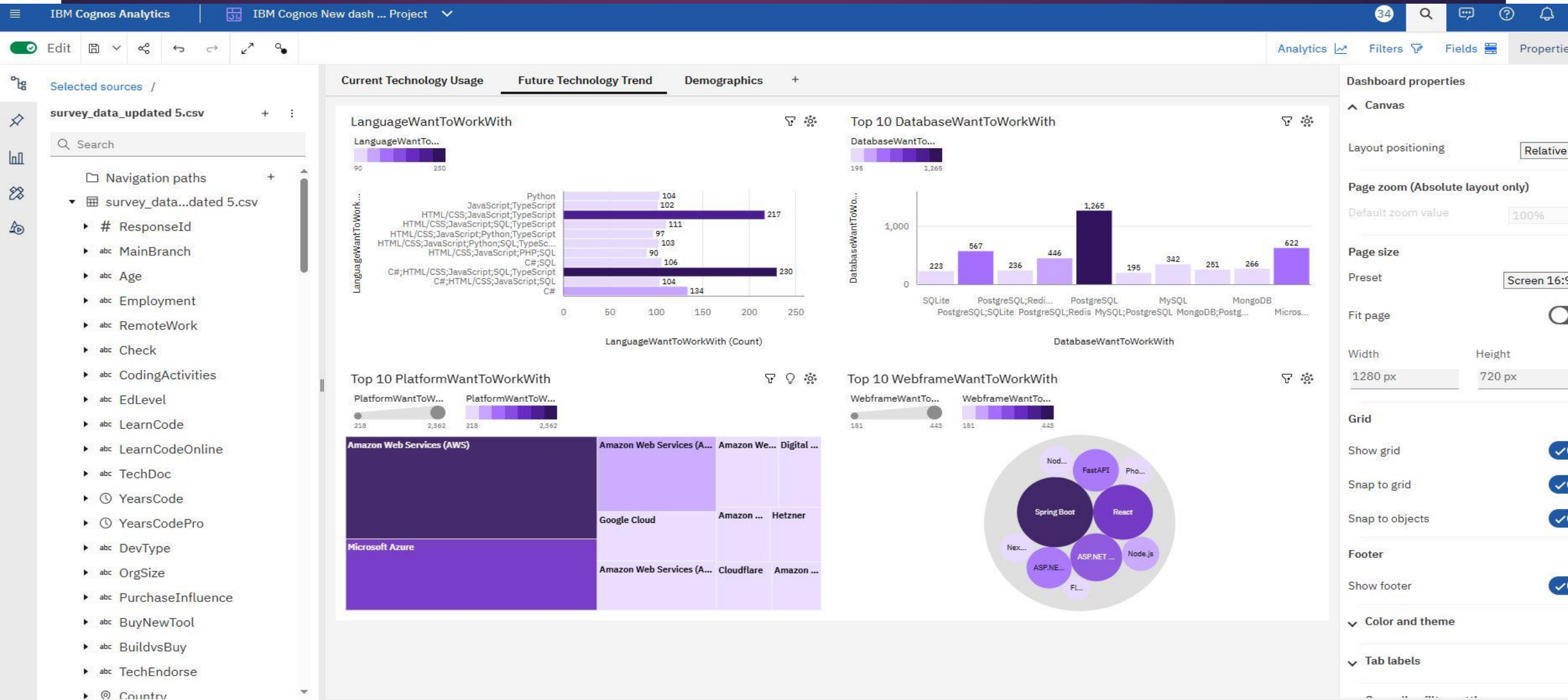
Implications

- ▶ Cloud-native and NoSQL databases like Firebase and DynamoDB gaining momentum
- ▶ Increased need for scalable solutions prompts shift
- ▶ Projected adoption based on developers' preferences

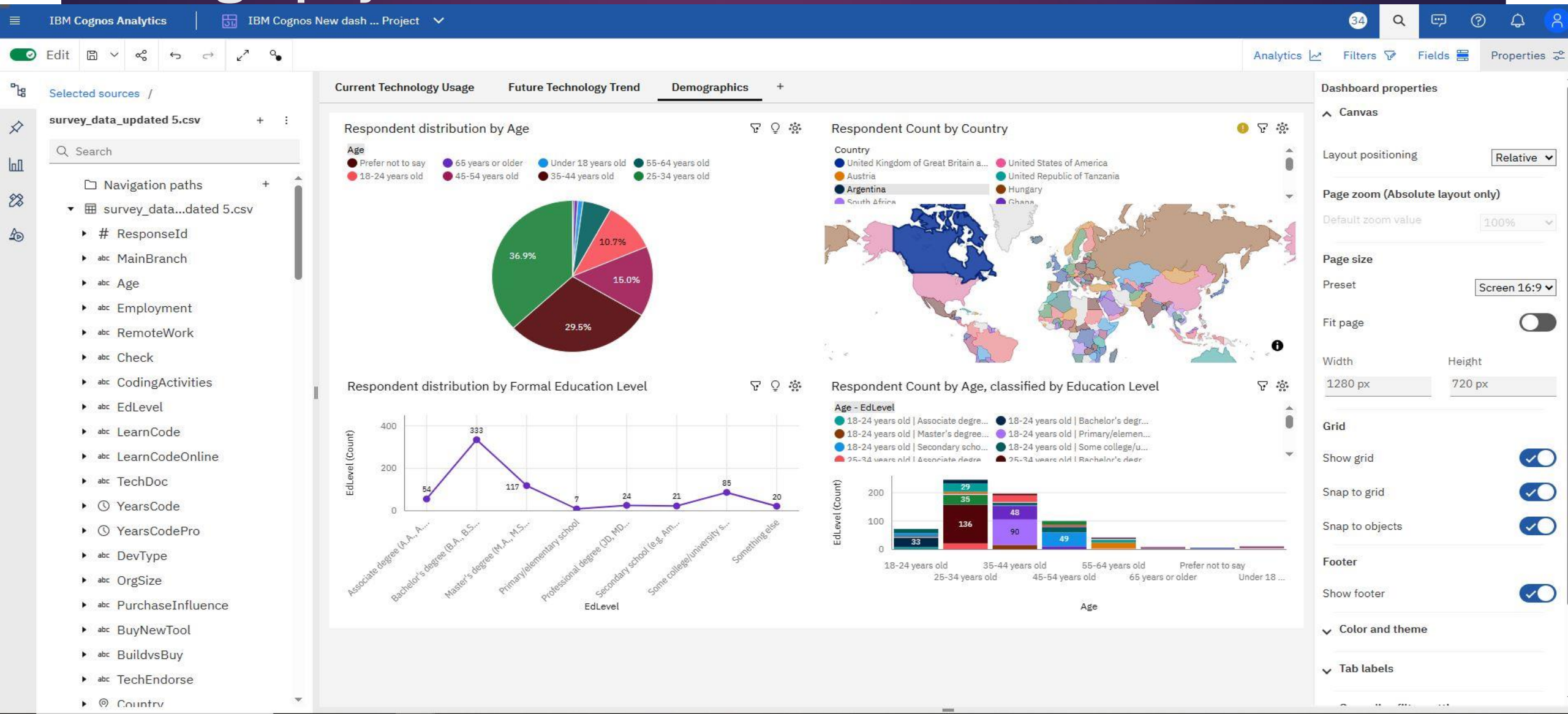
DASHBOARD TAB 1: *Current Technology Usage* (Languages, Databases)



DASHBOARD TAB 2: *Future Technology Trends* (Interest in emerging tech)



DASHBOARD TAB 3: *Demographics* (Age, Experience, Geography)



DISCUSSION: Insights from Dashboards



- ▶ Younger developers prefer newer tools like Rust and Firebase
- ▶ High compensation correlates with Python and SQL use
- ▶ Regions with higher tech exposure show broader language diversity

OVERALL FINDINGS & IMPLICATIONS

Findings

- ▶ Core languages remain stable, but innovation is shifting preferences
- ▶ Companies should prioritize learning support and open-source contributions
- ▶ Academic curriculum needs realignment to upcoming tech

Implications

- ▶ Long-term support is still required for core languages like Python, JavaScript, and SQL due to their widespread use in enterprise, education, and tooling.
- ▶ Developers are drawn to companies that support professional development and contribute to open-source ecosystems
- ▶ There's a mismatch between what students learn (e.g., Java, C++) and what industry uses or is trending toward (e.g., TypeScript, Go, cloud-native tools).

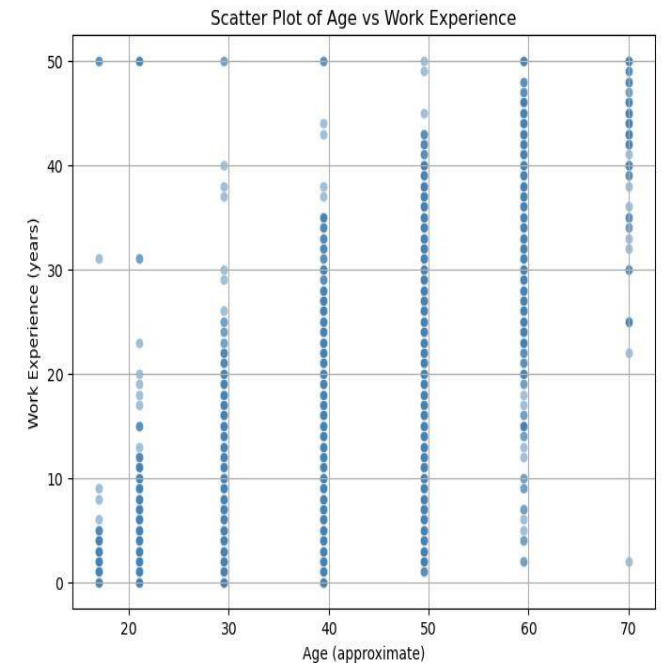
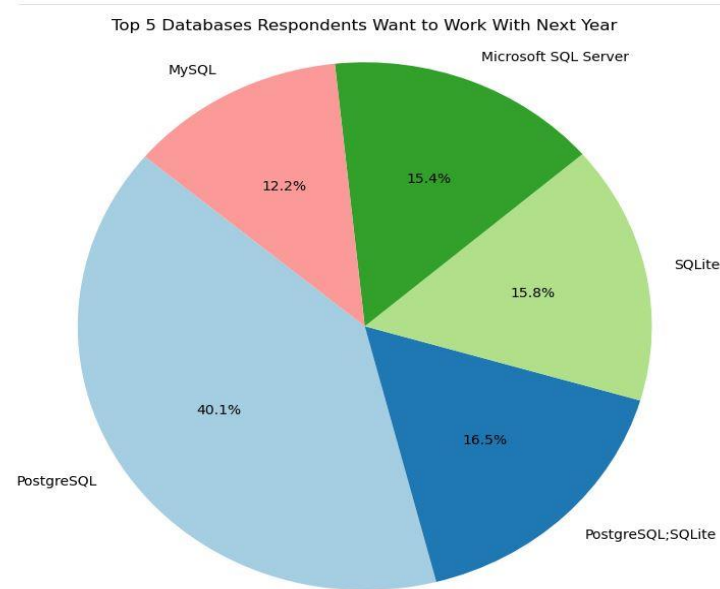
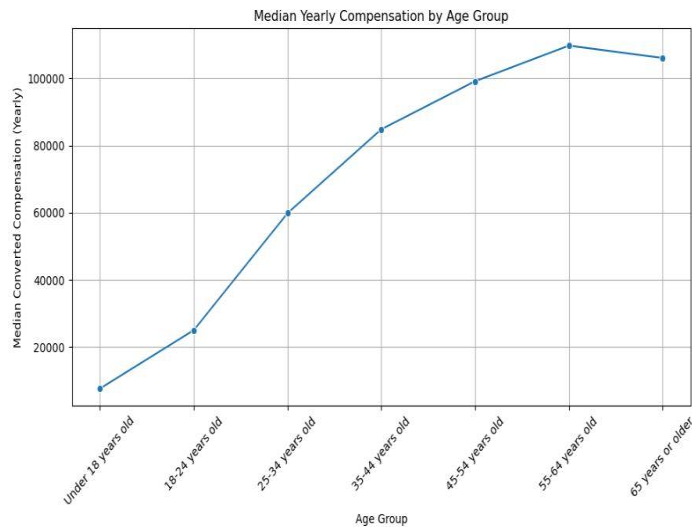
CONCLUSION



- Analyzed both current and future tech adoption trends
- Dashboard visualizations clarified demographic and usage patterns
- Results offer guidance for tech hiring, education, and strategy

APPENDIX

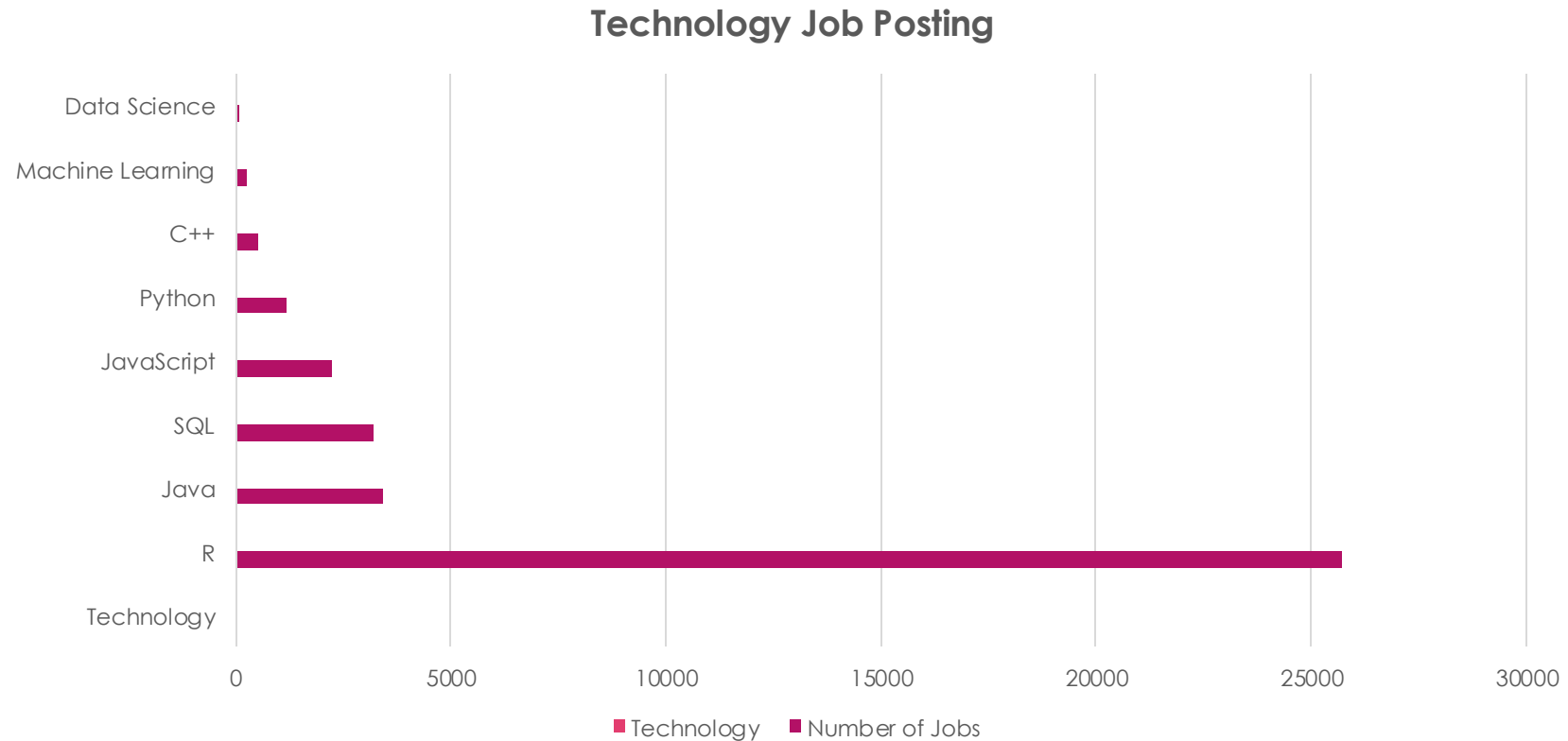
- Other relevant additional charts created during the analysis phase



- Git hub for detail project labs: <https://github.com/Nguisaj/IBM-Capstone-Project/tree/main>

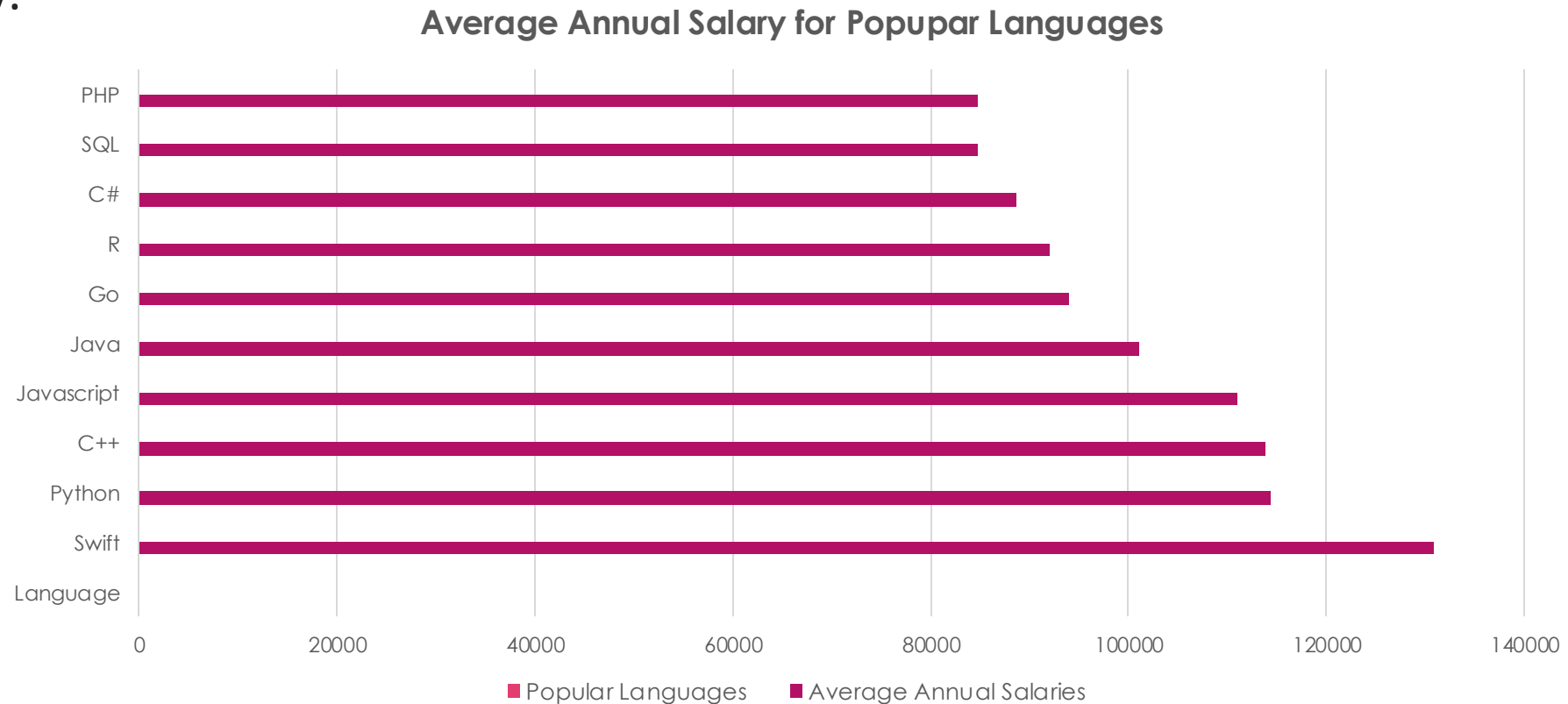
JOB POSTINGS

In Module 1 you have collected the job posting data using Job API in a file named “job-postings.xlsx”. Present that data using a bar chart here. Order the bar chart in the descending order of the number of job postings.



POPULAR LANGUAGES

In Module 1 you have collected the job postings data using web scraping in a file named “popular-languages.csv”. Present that data using a bar chart here. Order the bar chart in the descending order of salary.



THANK YOU

