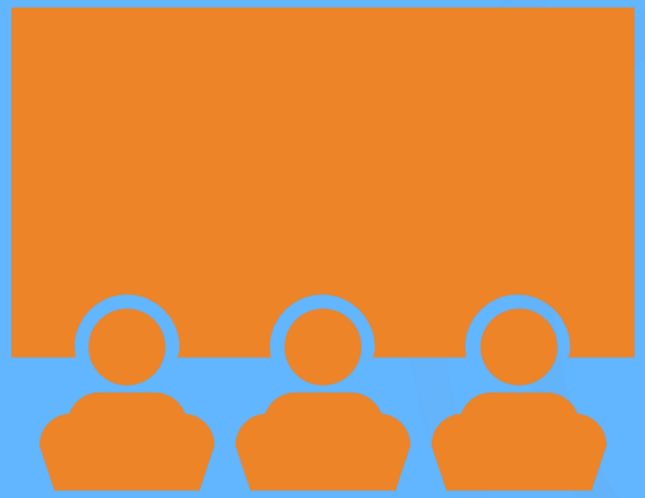
Unpacking Developer Trends: A Data-Driven Exploration of Future Technologies

Khushi

12-09-2025

OUTLINE



- Executive Summary
- Introduction
- Methodology
- Results
  - Visualization – Charts
  - Dashboard
- Discussion
  - Findings & Implications
- Conclusion
- Appendix

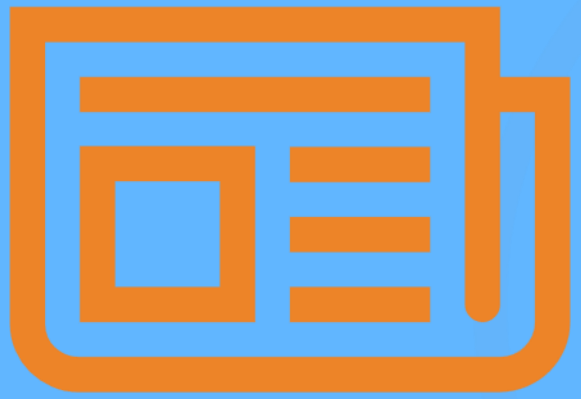
EXECUTIVE SUMMARY

- **Point 1**: Python dominates current (8,687 users) and future (6,630 adopters) programming language usage
- **Point 2**: Database market shows clear leadership patterns
  - Sub Point 1: PostgreSQL leads with 5,469 current users
  - Sub Point 2: MySQL (4,110) and MongoDB (4,097) nearly tied for second
  - Sub Point 3: Strong enterprise presence of Microsoft SQL Server (3,248 users)
- **Point 3:** TypeScript shows explosive 169% growth interest (1,946 → 5,239 future users)
- **Point 4**: Cloud platforms (Docker, AWS) and React.js (4,714 future users) drive technology evolution
- **Point 5**: Critical diversity gap exposed with 93.5% male, 6.5% female developer representation

INTRODUCTION

- Report Purpose - Analyze current and future technology trends using comprehensive developer survey data
- Data-driven insights for strategic technology adoption and workforce planning decisions
- Target audience includes technology leaders, HR professionals, developers, and educational institutions
- Value proposition through comprehensive analysis methodology
  - Multi-source data integration from surveys, job postings, and industry metrics
  - Interactive dashboard visualization for actionable business intelligence

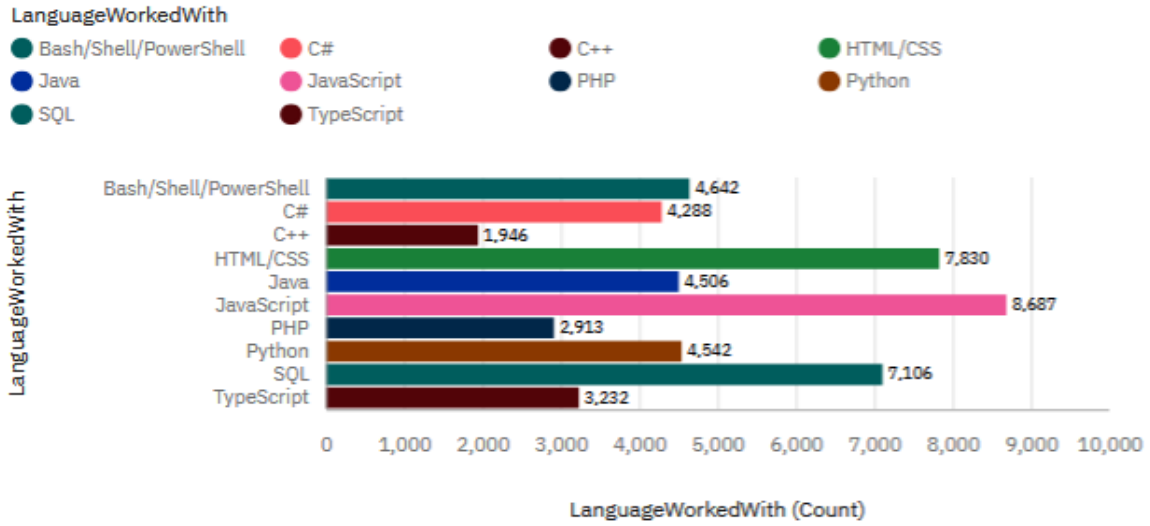
METHODOLOGY



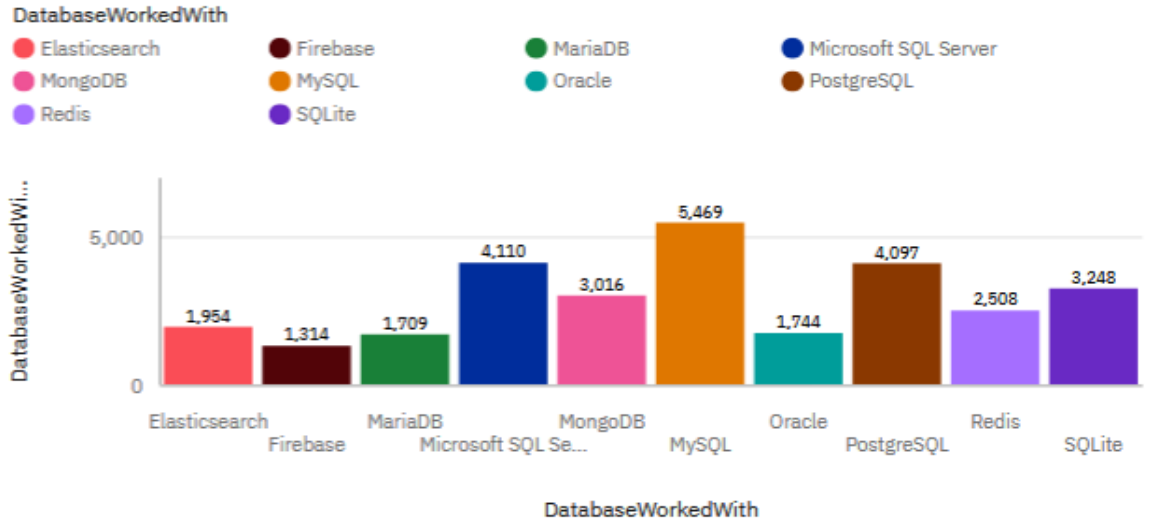
- Data Sources: Stack Overflow Developer Survey, GitHub repositories, job posting databases, industry survey responses
- Collection Methods: Web scraping, API extraction, database queries, survey response aggregation
- Data Wrangling Process: Cleaning inconsistent technology names, handling missing values, standardizing job categories
- Analysis Framework: Statistical analysis, trend visualization, predictive modeling
  - Cross-platform data validation and consistency verification
  - Interactive dashboard development using IBM Cognos Analytics platform
  - Time series analysis for future trend predictions and growth rate calculations
- Quality Assurance: Data integrity checks, outlier detection, statistical significance testing

Current Technology Usage

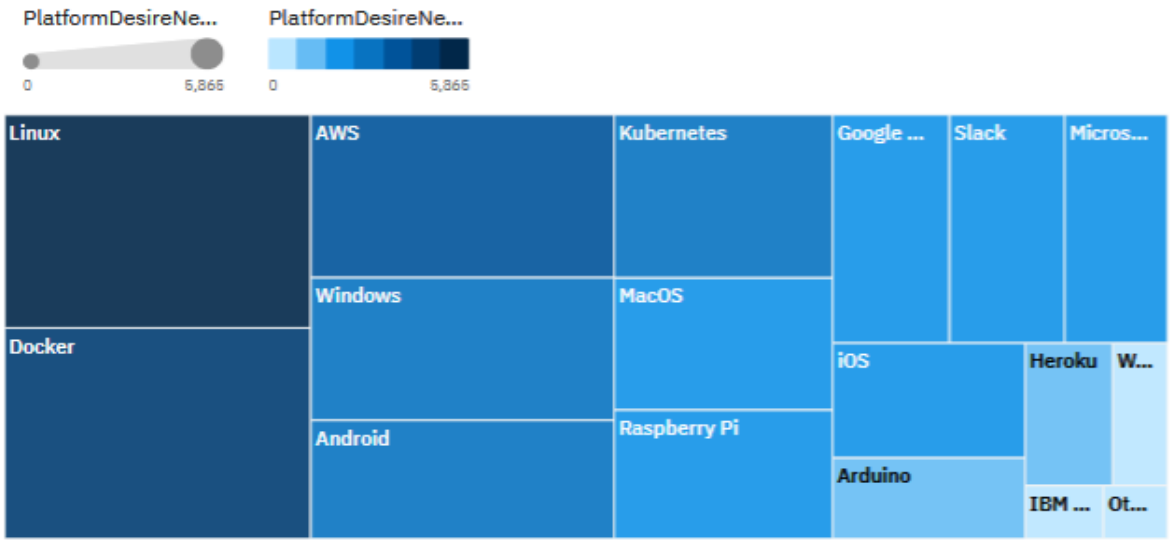
Top 10 LanguageWorkedWith



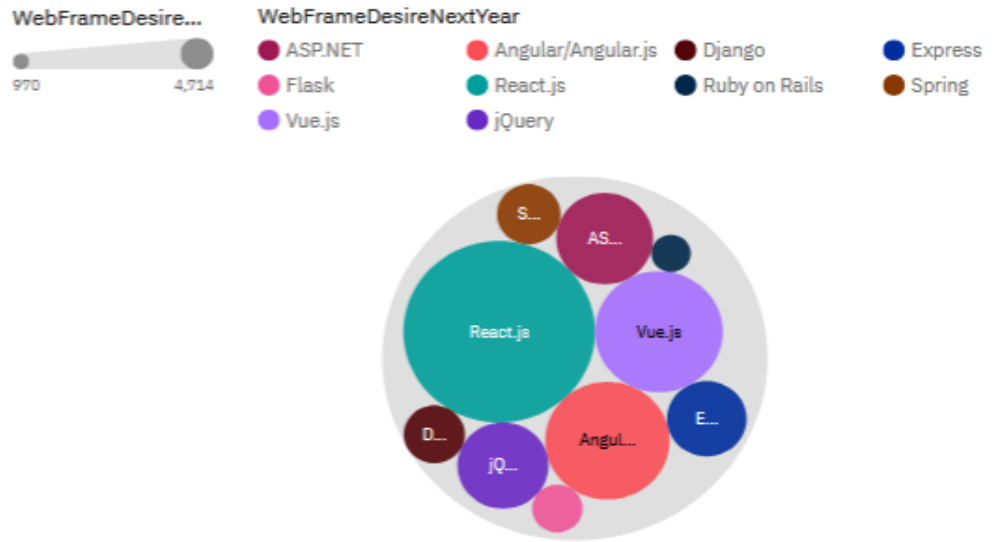
Top 10 DatabaseWorkedWith.



PlatformDesireNextYear.

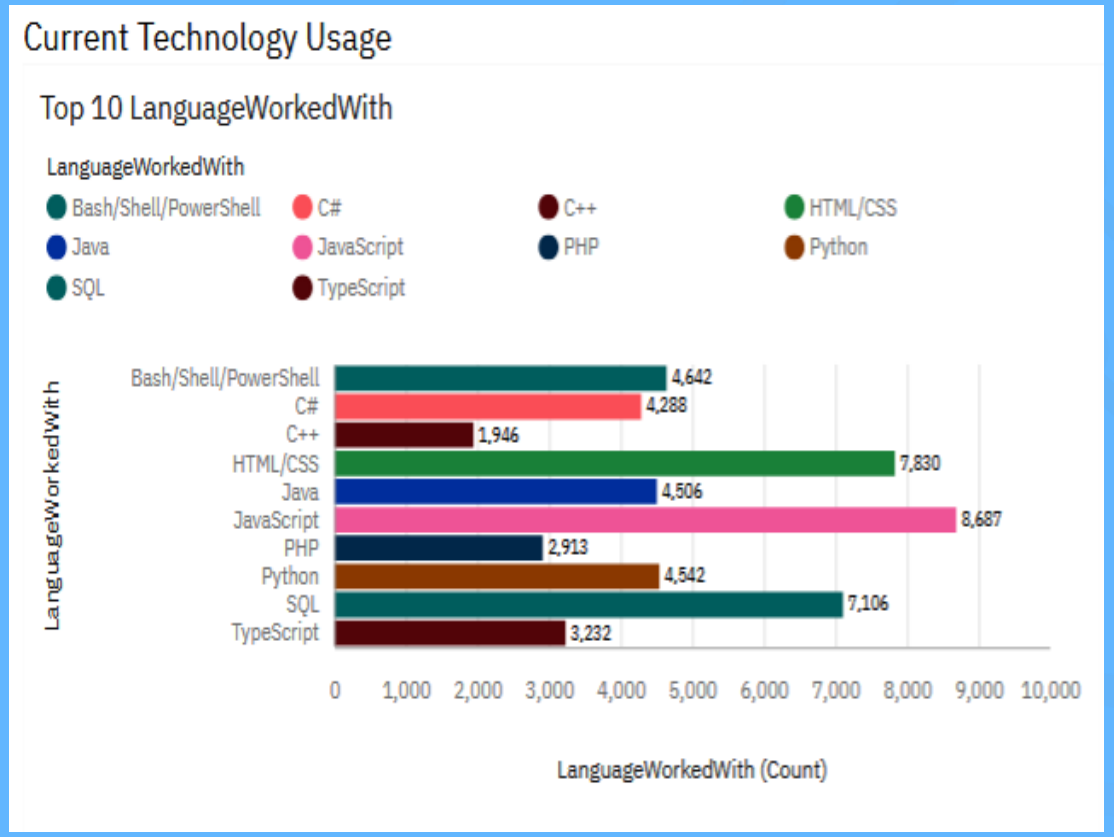


Top 10 WebFrameDesireNextYear.

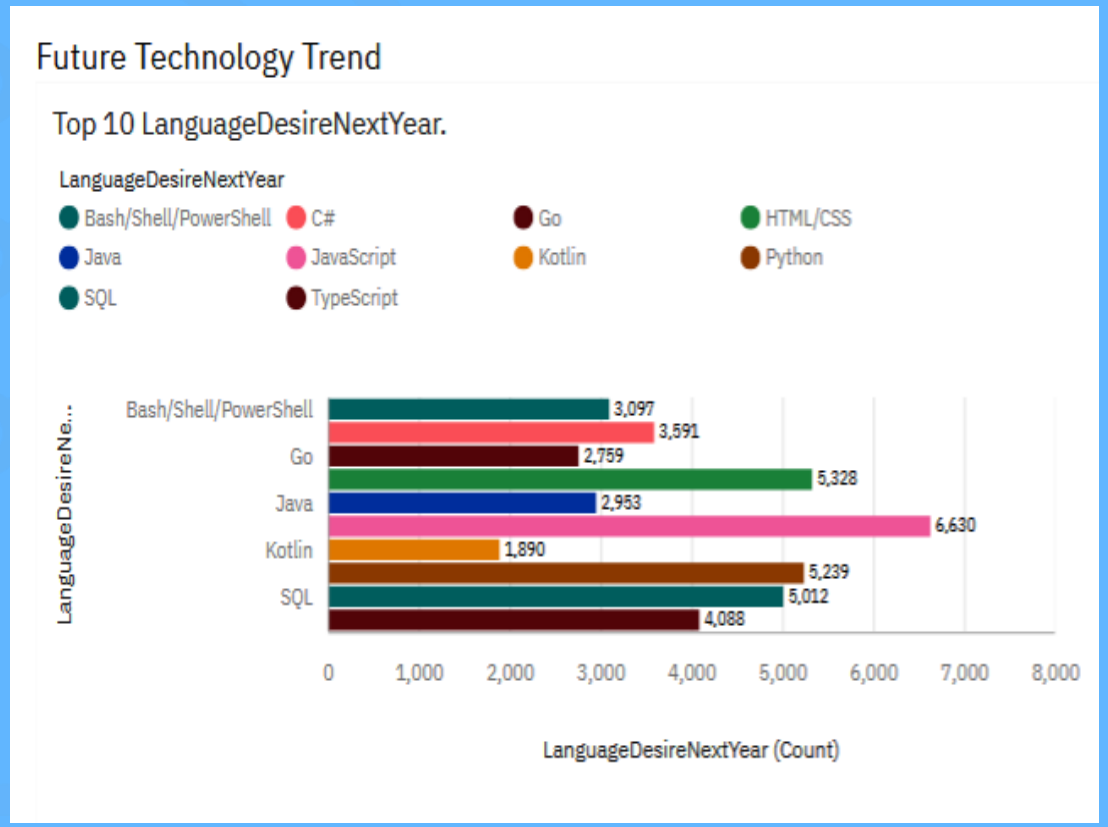


PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

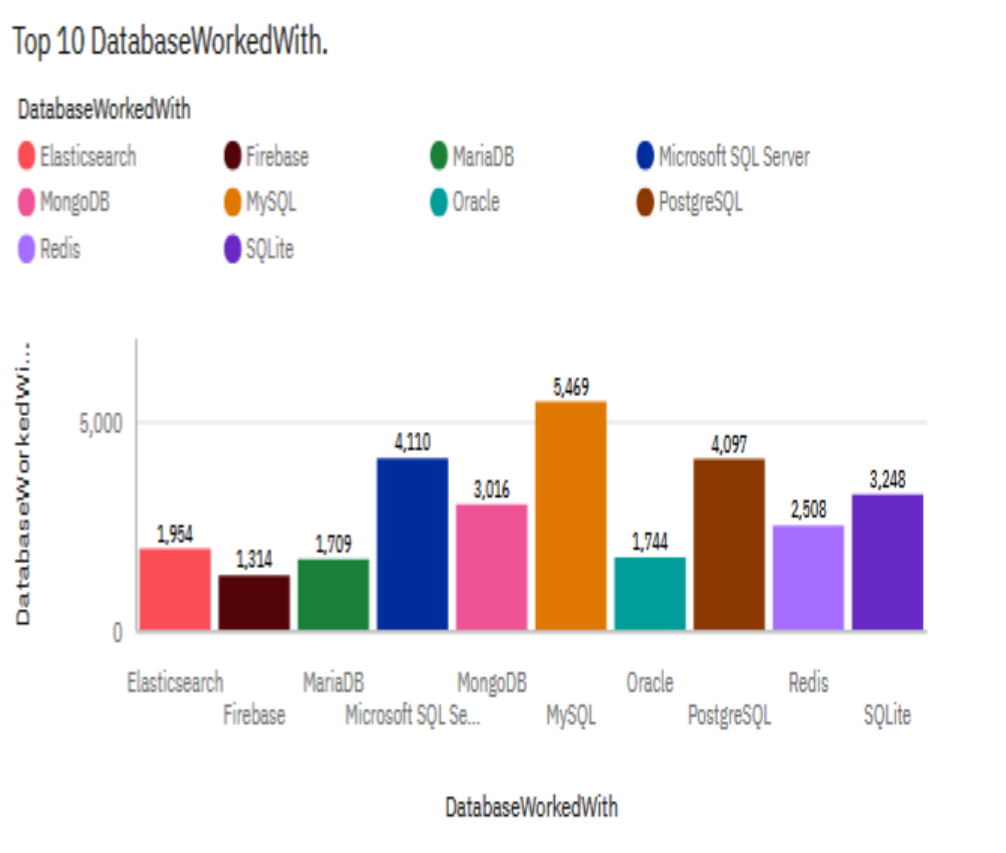
- **Python maintains absolute dominance** with 8,687 current users and 6,630 future adopters, confirming its data science leadership
- **TypeScript shows explosive growth potential** from 1,946 current users to 5,239 future adopters (169% growth interest)
- **Go emerges as key systems language** with 5,012 future adopters despite lower current usage, indicating market shift

Implications

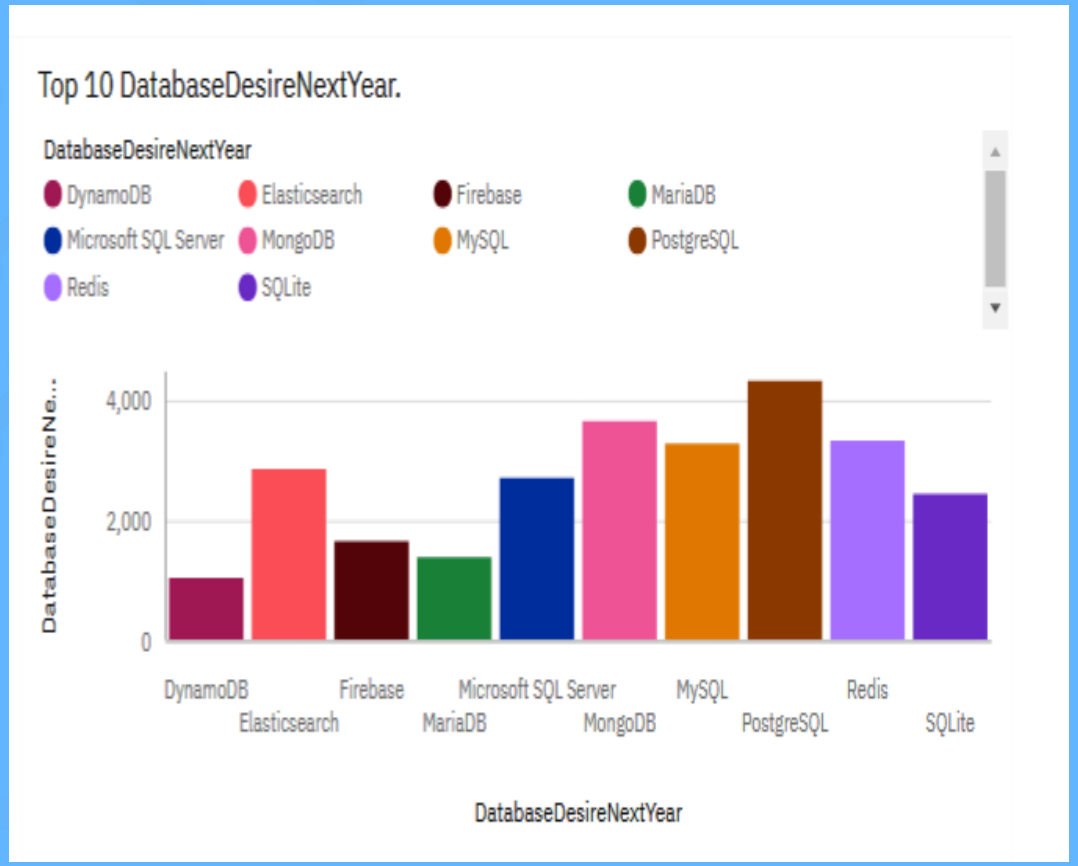
- **Educational institutions must prioritize Python-first curricula** to meet overwhelming market demand and career opportunities
- **Enterprise organizations should invest in TypeScript training** to capitalize on the massive adoption trend for type-safe development
- **Developers should diversify into Go programming** to position themselves for emerging systems programming opportunities and competitive advantage

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

1. **PostgreSQL dominates with clear market leadership** holding 5,469 current users (33% more than nearest competitor)
2. **SQL vs NoSQL shows balanced adoption** with MySQL (4,110) and MongoDB (4,097) nearly tied for second place
3. **Enterprise databases maintain stability** with Microsoft SQL Server securing 3,248 users in corporate environments
4. **Specialized databases gain traction** with Redis (2,508) and Firebase (1,744) showing strong niche adoption

Implications

1. **Organizations should standardize on PostgreSQL** for new projects to leverage its robust feature set and community support
2. **Hybrid database strategies are essential** combining SQL reliability with NoSQL flexibility for modern application requirements
3. **Database administrators must develop multi-platform expertise** across PostgreSQL, MongoDB, and cloud-native solutions
4. **Cloud migration planning should prioritize** PostgreSQL and MongoDB skills for maximum market alignment and future scalability

DASHBOARD

https://github.com/Khushii1709/IBM-Capstone/blob/main/IBM%20Data%20analytics%20project%20Cognis%20Dashboard-1.pdf

DASHBOARD TAB 1

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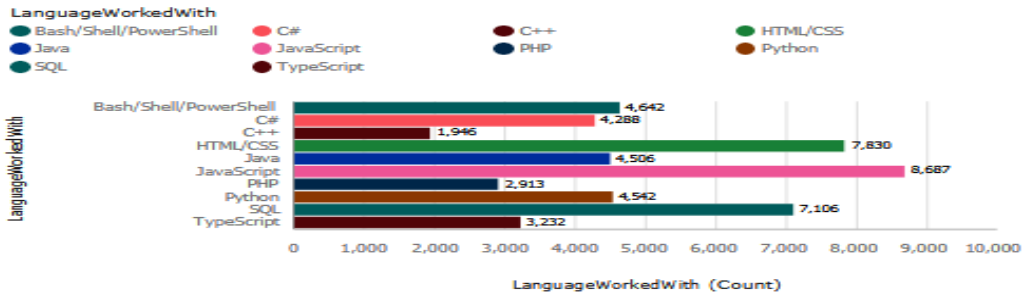
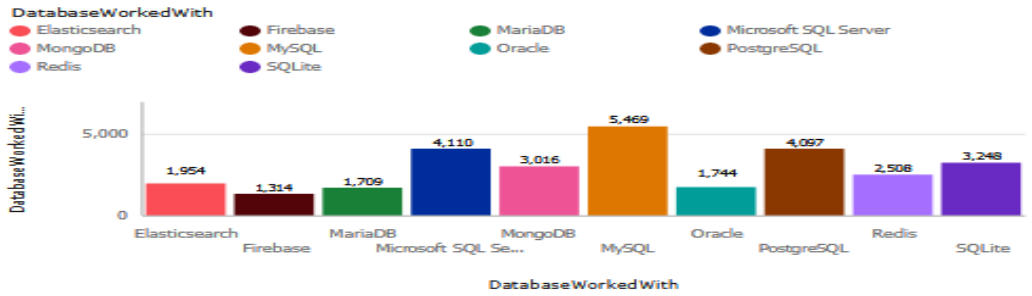
IBM Data analytics project

Current Technology Usage

Top 10 LanguageWorkedWith



Top 10 DatabaseWorkedWith.



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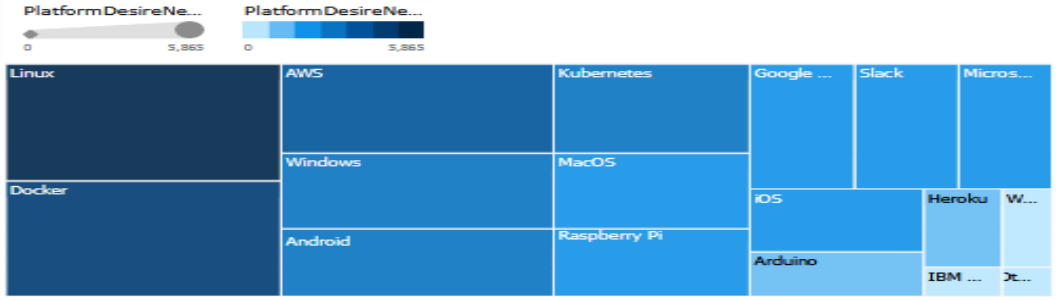
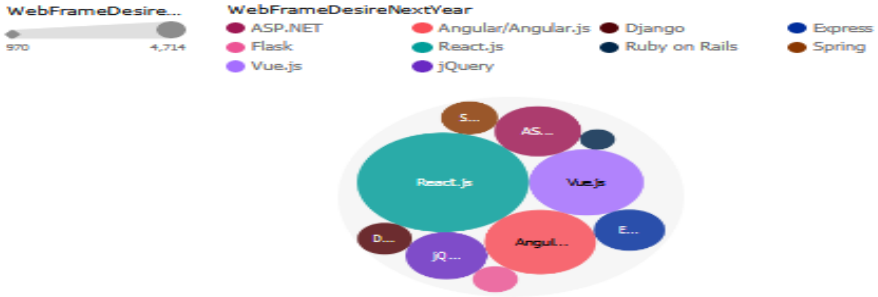


Top 10 WebFrameDesireNextYear.



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DASHBOARD TAB 2

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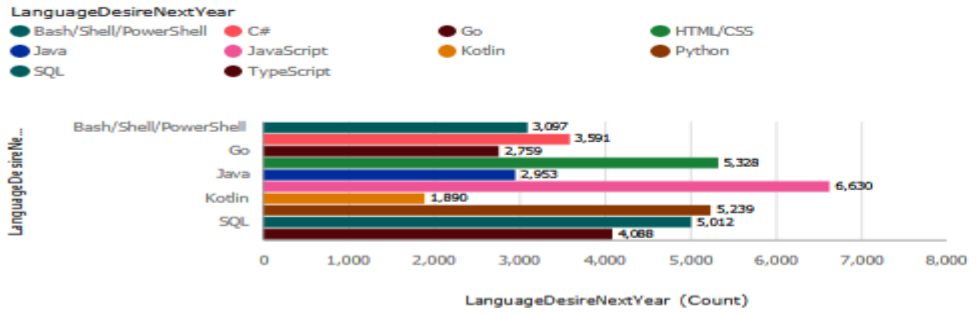
IBM Data analytics project

Future Technology Trend

Top 10 LanguageDesireNextYear.



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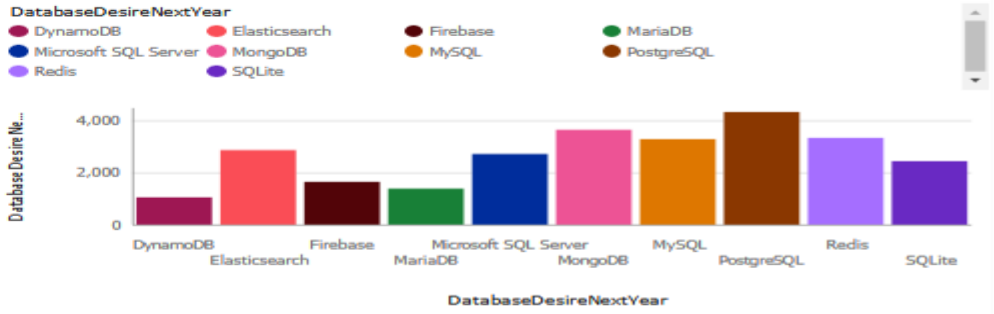

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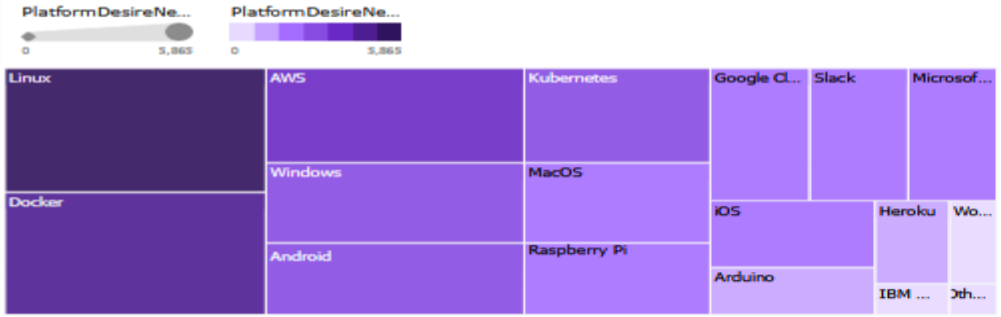

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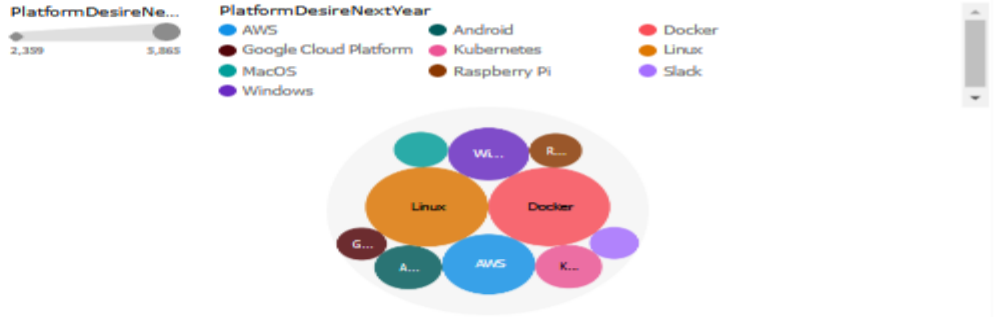
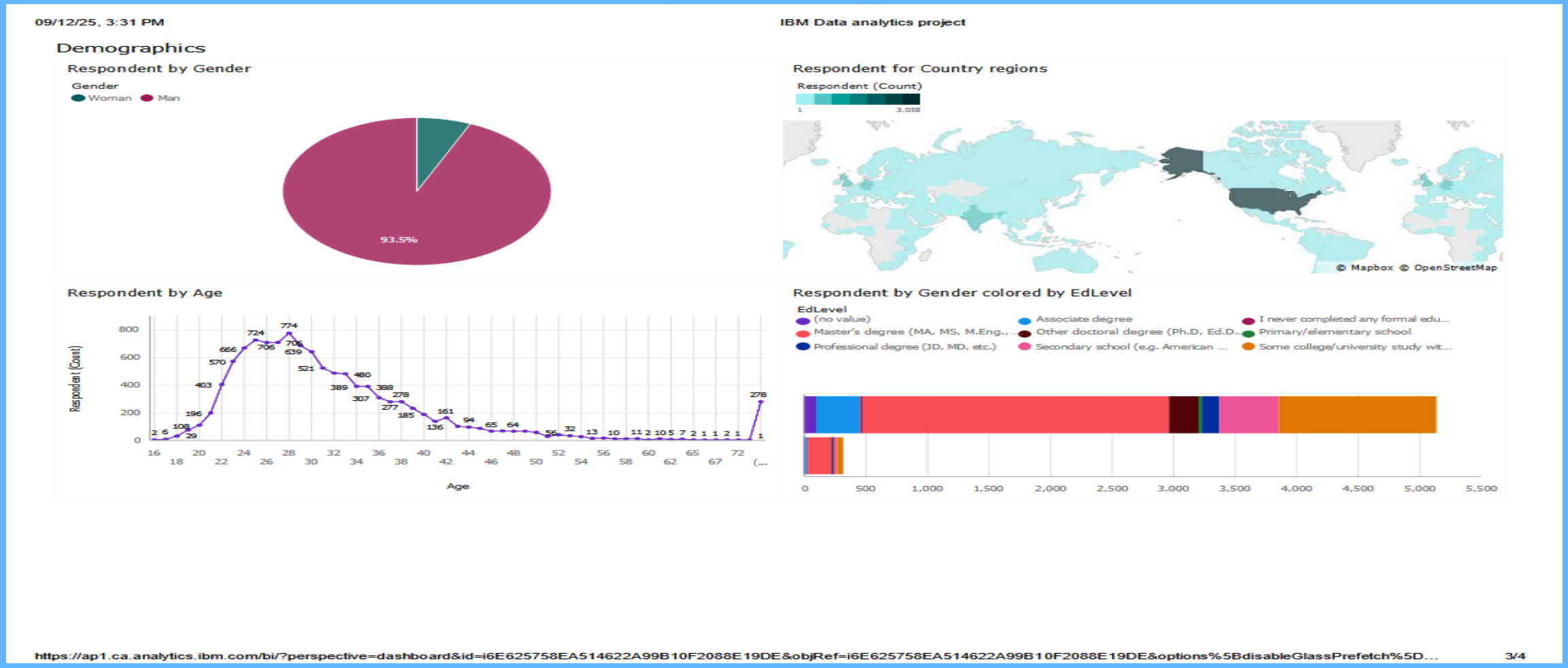


DASHBOARD TAB 3



DISCUSSION

- **Python remains the clear leader** in both current (8,687) and future (6,630) developer usage → confirms long-term demand.
- **TypeScript shows strongest growth trend** (169% increase), making it the fastest-rising programming language.
- **PostgreSQL dominates databases** (5,469 users), while MySQL and MongoDB balance SQL/NoSQL adoption.
- **Cloud & container platforms** (Docker, AWS, Linux) are shaping the future developer ecosystem.
- **Demographic challenge:** Gender gap (93.5% male vs 6.5% female) highlights diversity issue.

OVERALL FINDINGS & IMPLICATIONS

Findings

- Strong alignment between **developer skill trends and industry demand** (Python, PostgreSQL, TypeScript).
- **Cloud-native technologies** (Docker, AWS, Linux) are becoming a foundation across roles.
- **Age group 25–35 dominates** adoption of new technologies, driving innovation pace.
- **Diversity imbalance** remains the biggest non-technical challenge in the industry.

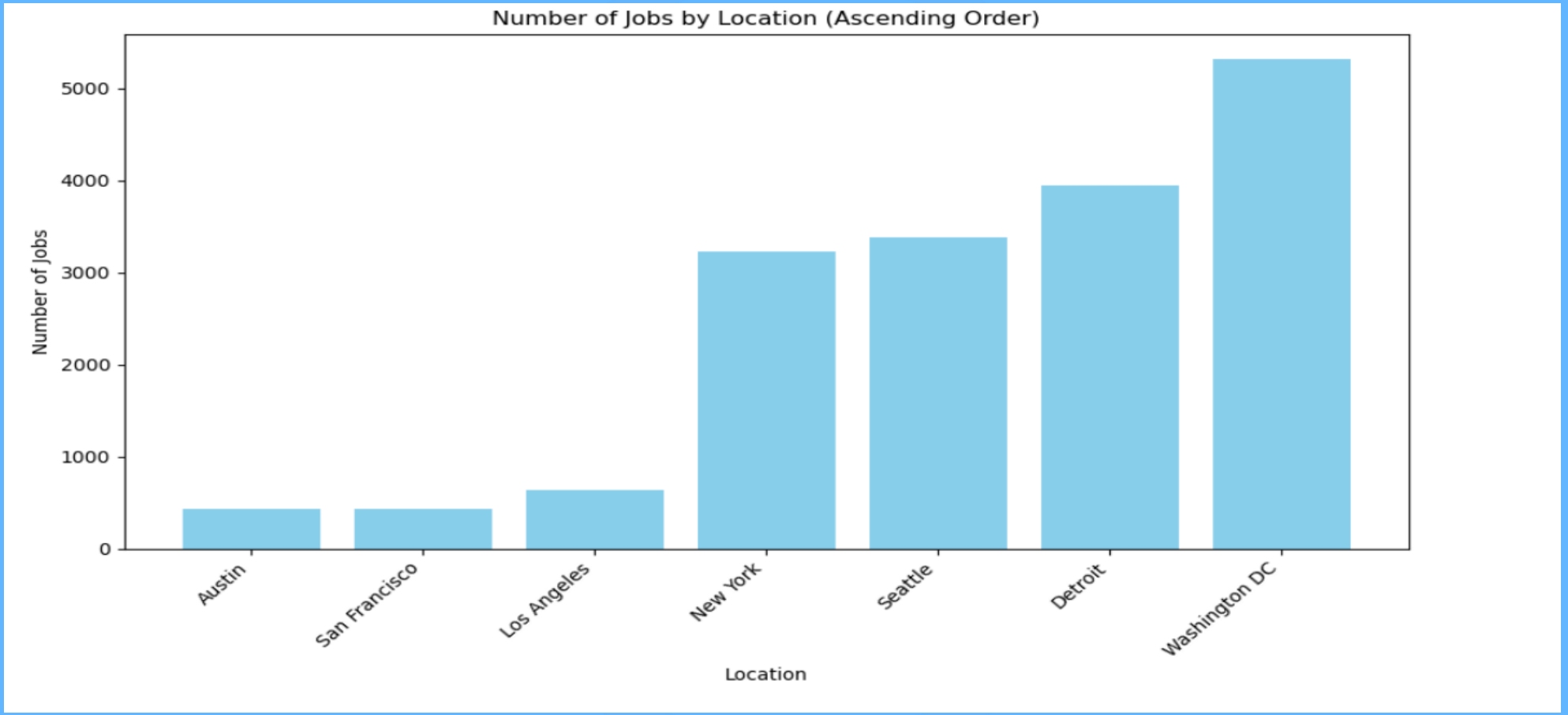
Implications

- Organizations should **integrate cloud-native tools** into their core workflows and training.
- Educational programs must **adapt to younger workforce needs**, offering practical, project-driven curricula.
- Tech leaders should **design inclusive hiring and retention strategies** to reduce demographic gaps.
- Developers should **adopt continuous learning practices** to stay relevant with evolving stacks.

CONCLUSION

In conclusion, Python, PostgreSQL, and TypeScript lead current and future technology trends, while cloud platforms like Docker and AWS are essential for modern development. Adoption is driven by developers aged 25–35, highlighting the need for targeted skill growth, and the significant gender gap calls for more inclusive workforce strategies. These insights from the Cognos dashboards provide actionable guidance for organizations, educators, and developers.

JOB POSTINGS



POPULAR LANGUAGES