Emerging Technology Skills 2024

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EXECUTIVE SUMMARY

- Objective: Identify emerging tech talent demands to address skills gap
- Approach: Analyzed job postings, surveys, training data for growth signals
- Key Trends
  - Python and JavaScript lead programming language momentum
  - PostgreSQL and NoSQL databases show significant gains
- Implications
  - Accelerating language and database shifts
  - Existing workforce risks capability gaps
  - Proactive reskilling is essential
- Recommendations
  - Prioritize identified trends for training programs
  - Recruit to build missing skill and language capabilities
  - Enable workforce agility as needs evolve with cross-skilled staff

INTRODUCTION

1.Demand Shifts Require Continuous Skills Insights
- Tech talent needs rapidly evolve
- Workforce planning necessitates understanding momentum
- Analyze programming languages, databases, and developer tools

2. Identified 2024's Top Emerging Skills
- Used job postings, surveys, training portal searches
- Found leading growth trends across software, data, IDEs

3. Enable Proactive Decisions
- Inform recruiting, reskilling, resource planning
- Gain future-proof capabilities

4. Outcomes for Firms and Employees
- Staff get relevant skills
- Teams adept in new tech
- Supports innovation and speed

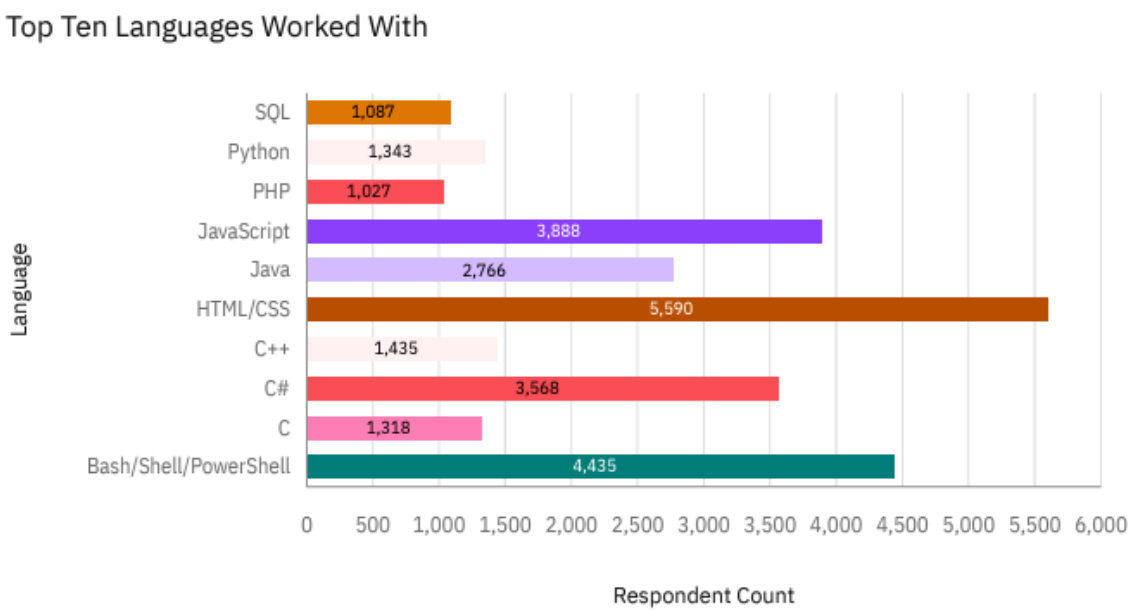
METHODOLOGY

- Data collection:
  - Web scraping for salary and language data
  - Accessed APIs to collect job location and language data in various formats like .csv files, excel sheets, and databases for later analysis and visualization.
  - Open-source survey data from Stack Overflow, a popular website for developers was utilized. The actual data set has around 90,000 responses and the dataset used was a 1/10 randomized sample
- Data Wrangling:
  - Finding and removing duplicates, Finding and replacing missing values, and normalizing data were conducted
- Exploratory Analysis:
  - Data distribution, outliers, and correlations were explored
- Data Visualization:
  - Data queries with SQL, Pandas, Matplotlib, and Seaborn
  - IBM Cognos Dashboard

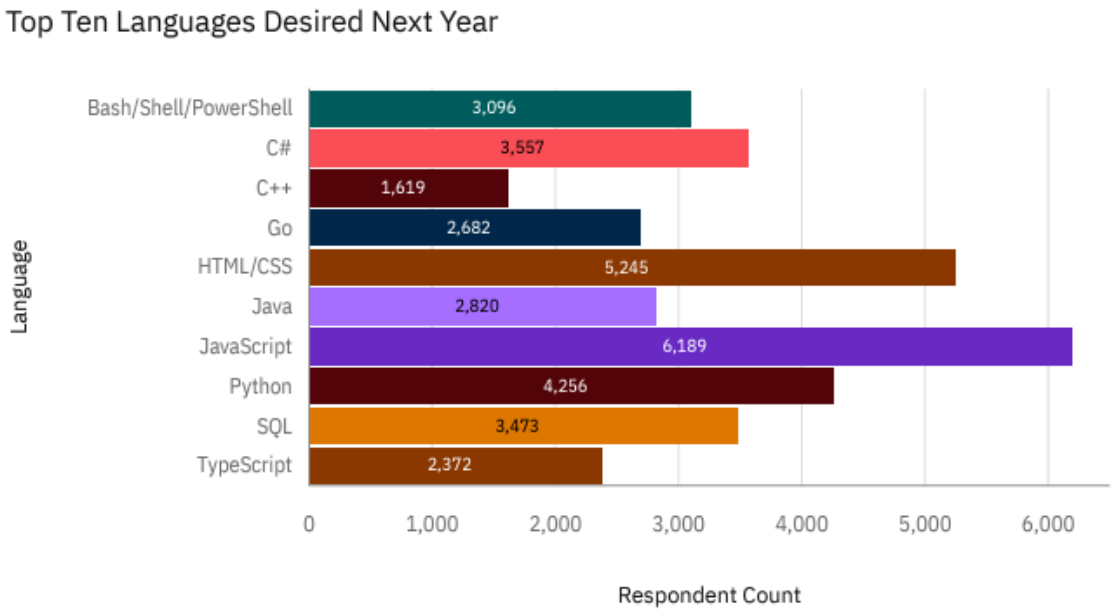
RESULTS

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

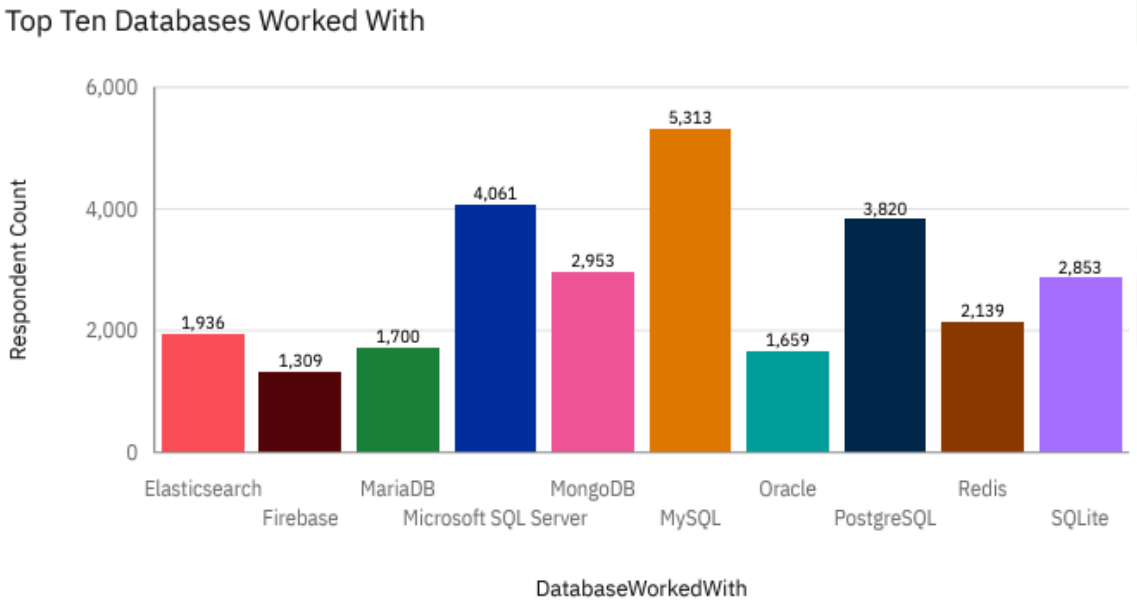
- HTML/CSS is #1 now and top 3 tomorrow
- Python and SQL are expected to grow in popularity in the near future
- Javascript will contend to be the most desirable language

Implications

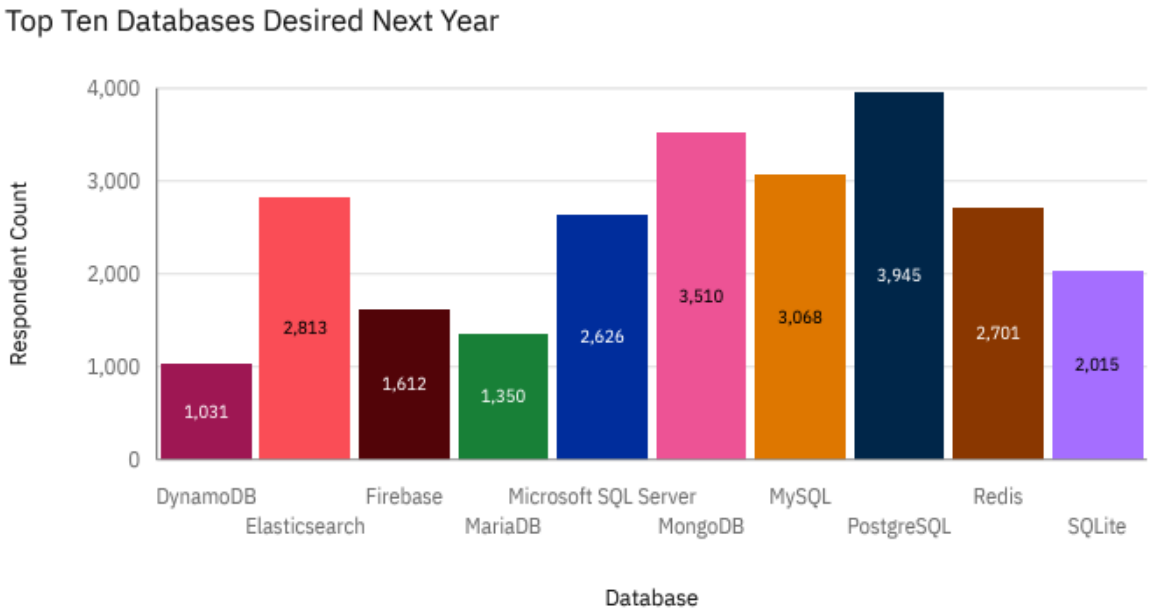
1. We may see more instruction, online communities, and frameworks focused on HTML/CSS, Python, SQL, and JavaScript to meet the growing demand.
2. Jobs and careers outlook requiring expertise in HTML/CSS, Python, SQL, and JavaScript languages appears strong. Web development roles utilizing HTML/CSS and JavaScript should expand. Data science/analysis roles leveraging Python and SQL will increase.
3. Other programming languages like Java, C++, PHP, etc. may decline in popularity and usage over time if they are replaced by faster-growing languages like Python and JavaScript. Experts in less popular languages may need to skill up on more widely-used ones.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL and Microsoft SQL are desirable now but may decline in the future
- PostgreSQL is the most desired in the future
- MongoDB is gaining popularity as a future database

Implications

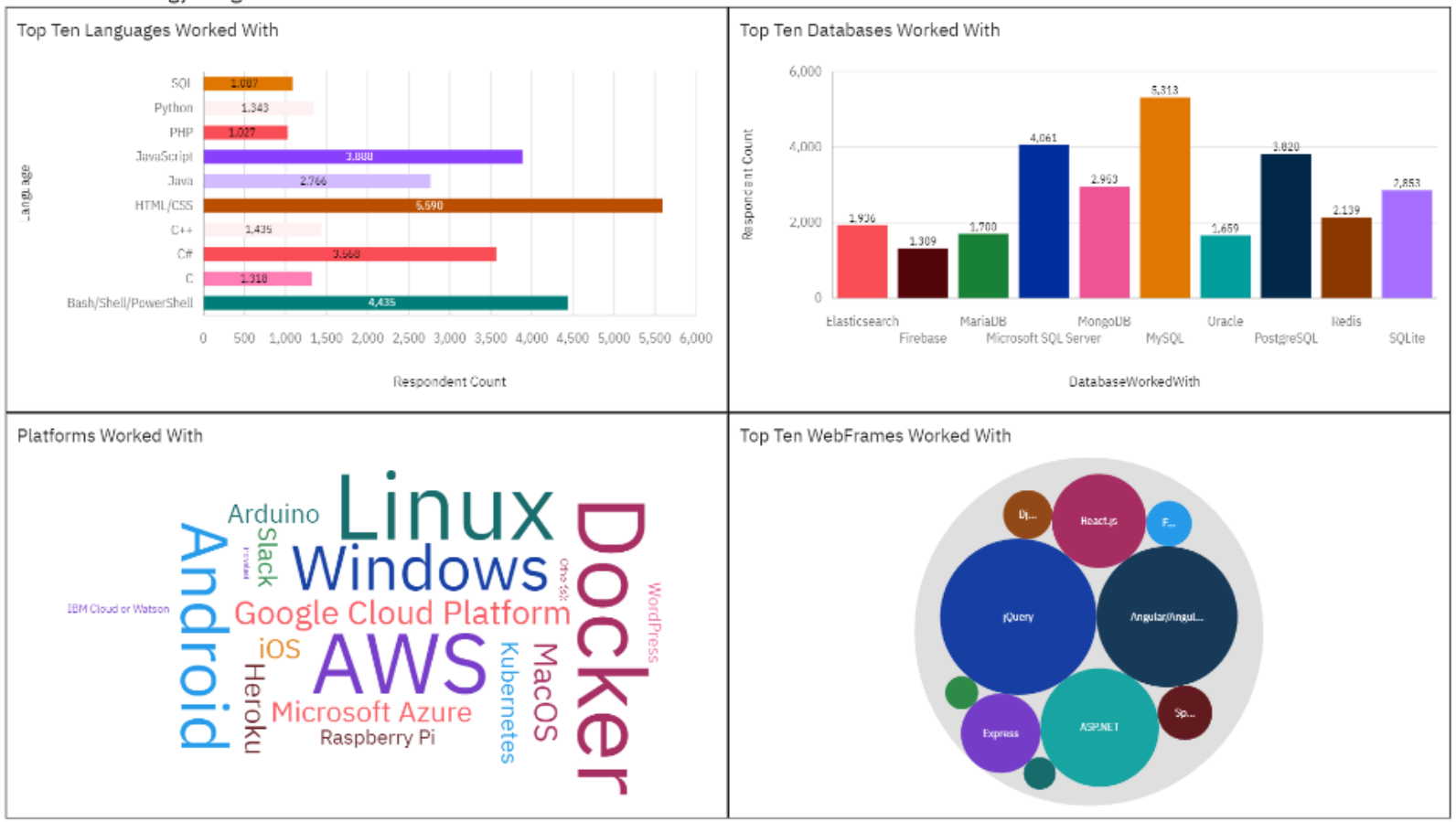
- Shifting momentum from MySQL and Microsoft SQL to MongoDB and PostgreSQL could be increasing demand for NoSQL skills
- PostgreSQL's popularity growth means knowledge of PostgreSQL may become an essential data skill. It could emerge as the new database.
- NoSQL databases may be beginning dominant open-source relational to carving out their own niche in the market (MongoDB).

DASHBOARD

https://github.com/jcgoing/capstone/blob/a118d66e695b6f5b4979feee791d50a0510e036e/_%20Capstone%20Dashboard%20M5.pdf

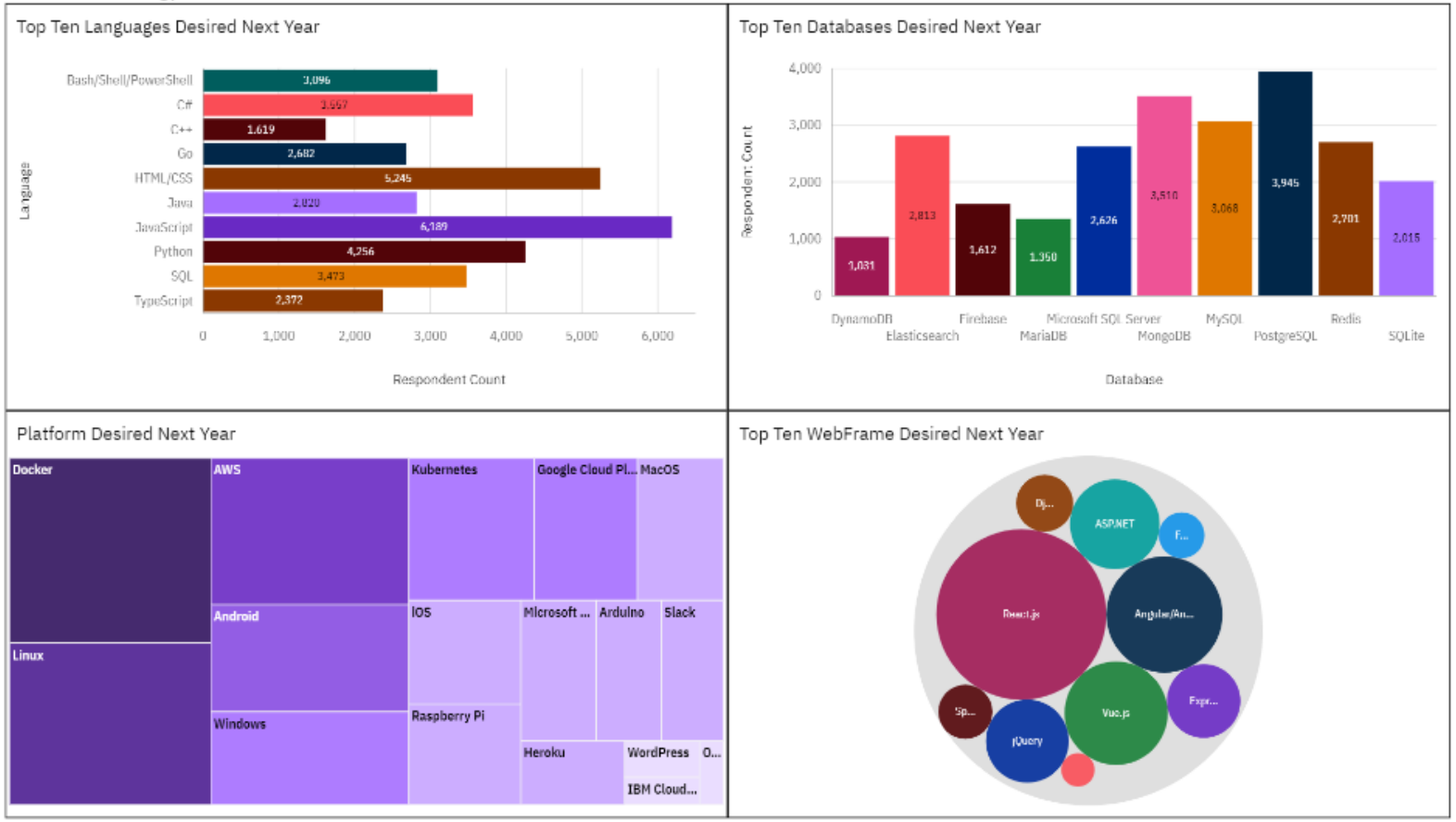
DASHBOARD TAB 1

Current Technology Usage

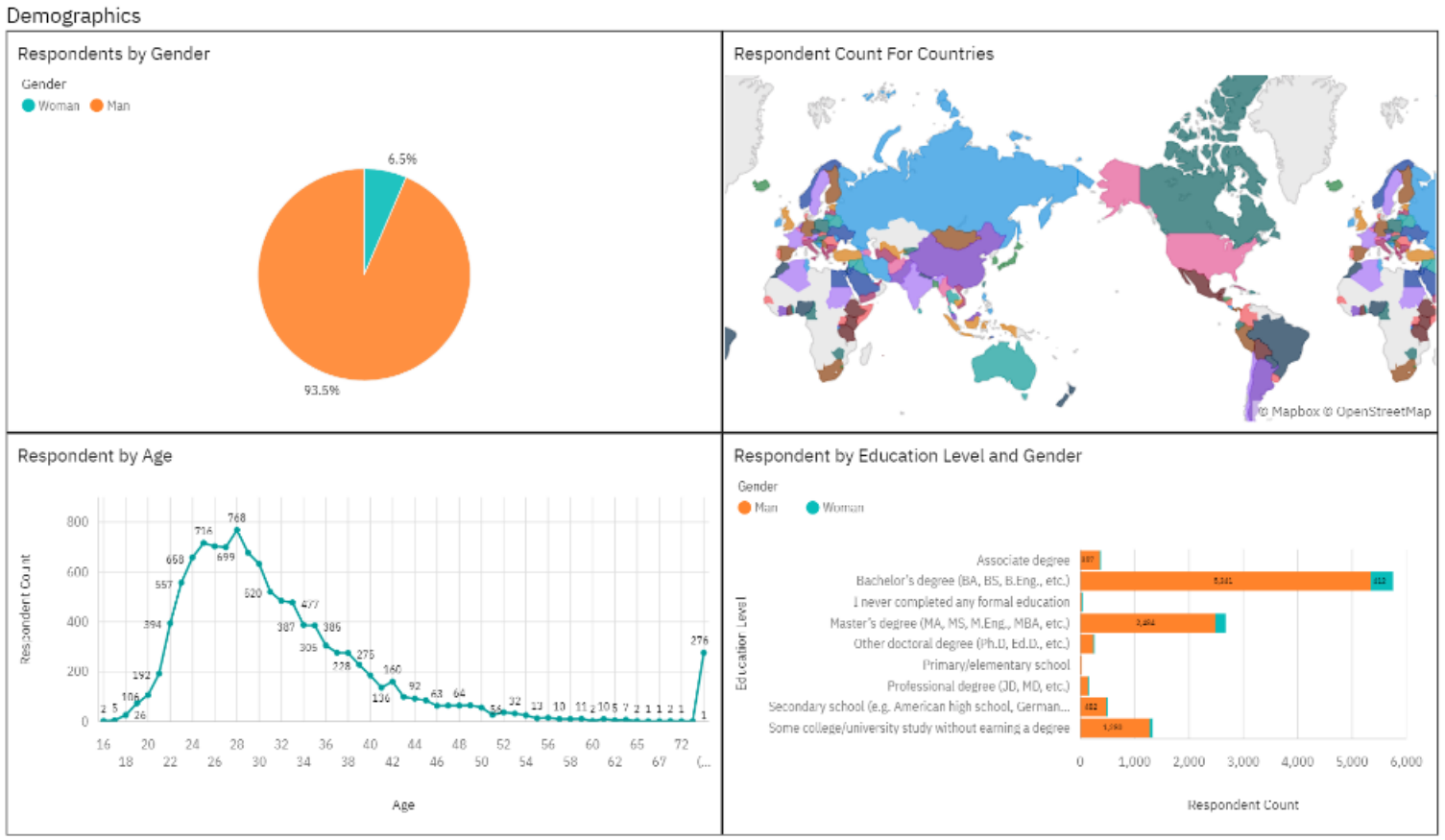


DASHBOARD TAB 2

Future Technology Trend



DASHBOARD TAB 3



DISCUSSION

Addressing the Emerging Skills Gap:

- The data reveals an acceleration in technology skill momentum across languages, databases, and tools. Demand signals indicate needs are shifting towards areas like Python, cloud databases, and open-source IDEs.
- Existing workforce still relies heavily on legacy options - C++, SQL Server, desktop IDEs. As our findings showed, job postings have not caught up to emerging preferences.
- This implies an upcoming skills gap as company requirements evolve faster than internal talent. Staff risk lacking the experience in newly prominent technologies that external recruits may possess.
- Proactive reskilling is essential to prevent growing mismatches between staff capabilities and tech needs. The trends identified allow organizations to get ahead of the curve via training programs.
- As the data showed, JavaScript, PostgreSQL and open-source code like MongoDB dominate growth indicators from surveys. Prioritizing these for learning and growth enables staying relevant.
- Workforce planning informed by tech momentum data is key. The insights uncovered offer a roadmap to address the emerging skills gap through both upskilling and external hiring focused on future-focused roles.

OVERALL FINDINGS & IMPLICATIONS

Findings

- JS, Python and SQL lead programming demand
- NoSQL and cloud databases gain momentum

Implications

- Potential software and data skills gaps
- Requires proactive realignment of workforce and skilling

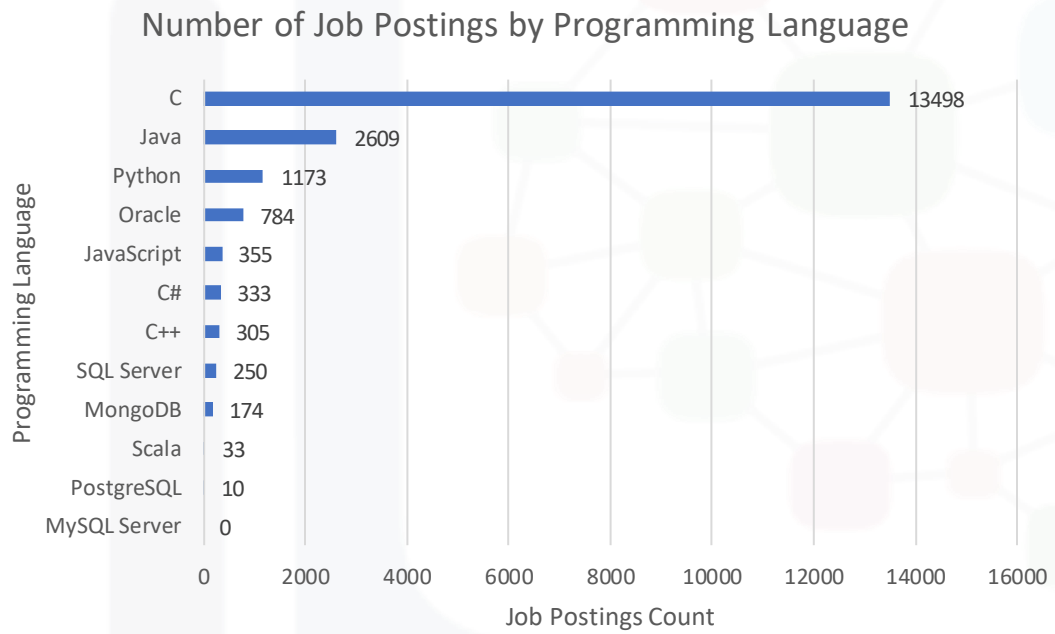
CONCLUSION

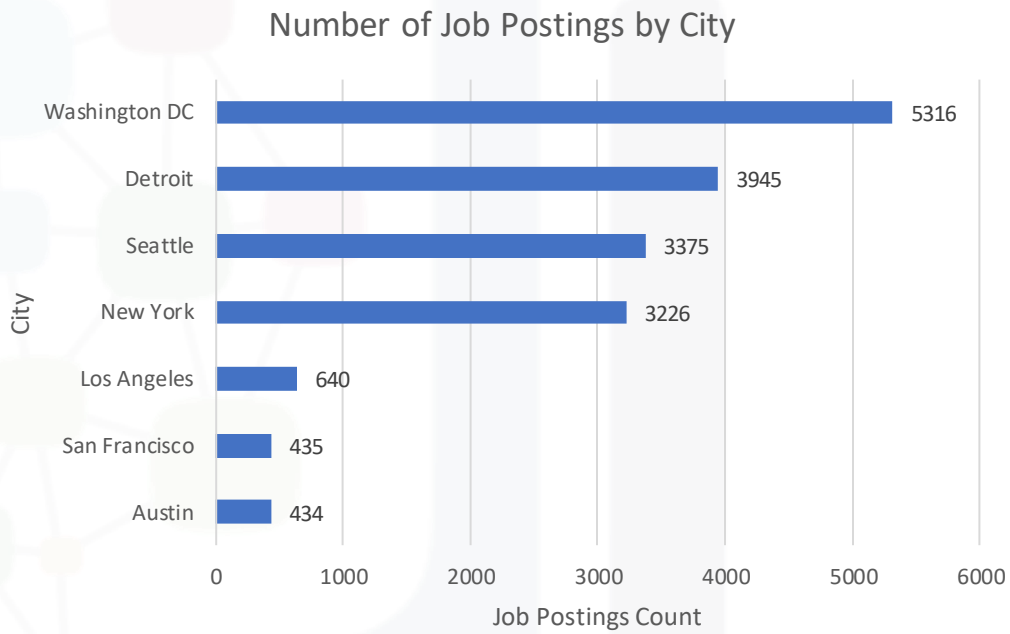
1. JavaScript, Python, SQL in demand
   - Prioritize for training and recruitment
2. NoSQL database growth signals shift
   - Evaluate integration plans
3. Monitor adoption of new languages
   - Go and Typescript gaining interest
4. Proactively realign workforce skills
   - Address emerging capability gaps

APPENDIX

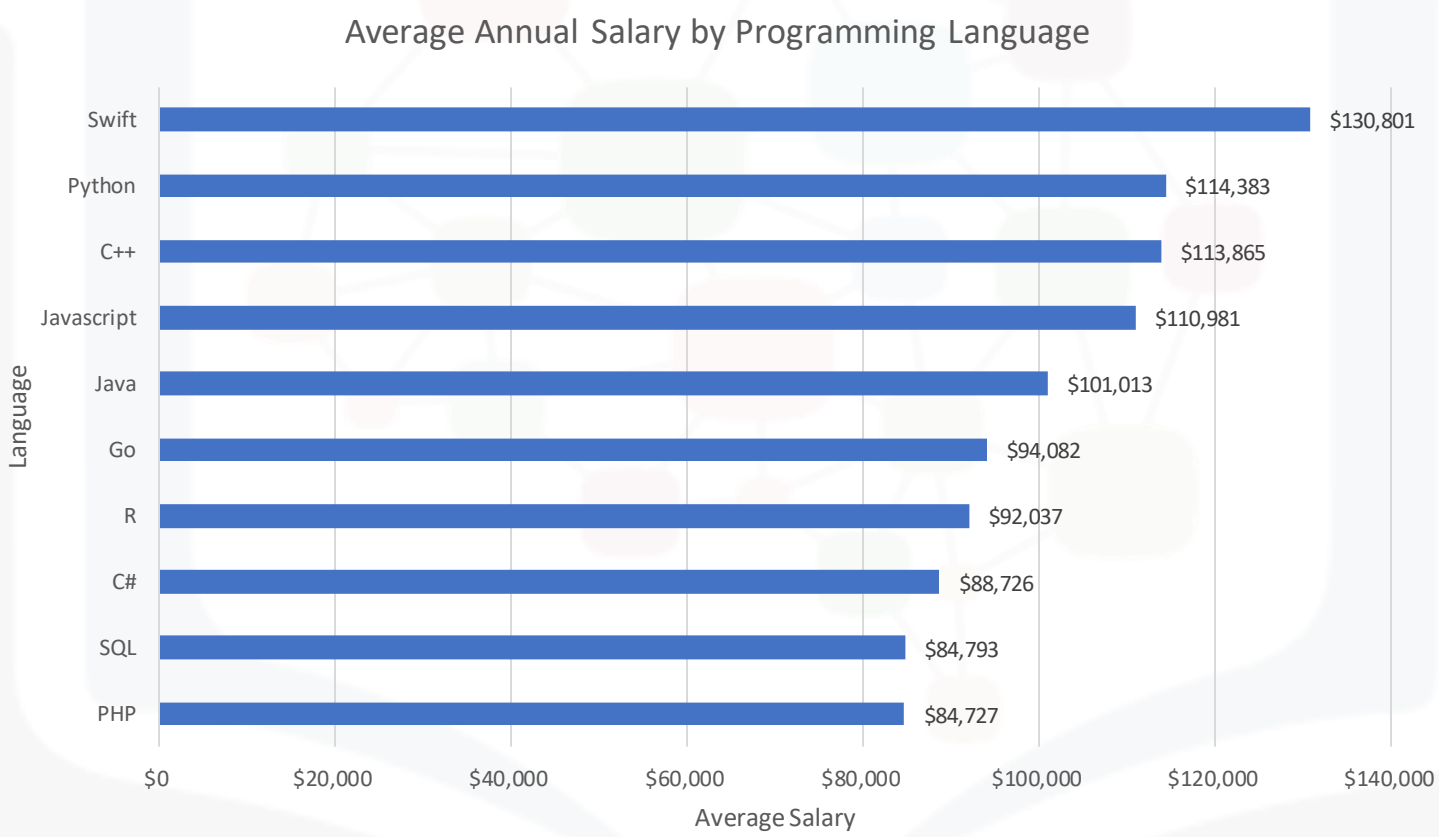
- Also included are additional charts on job postings and popular languages

JOB POSTINGS

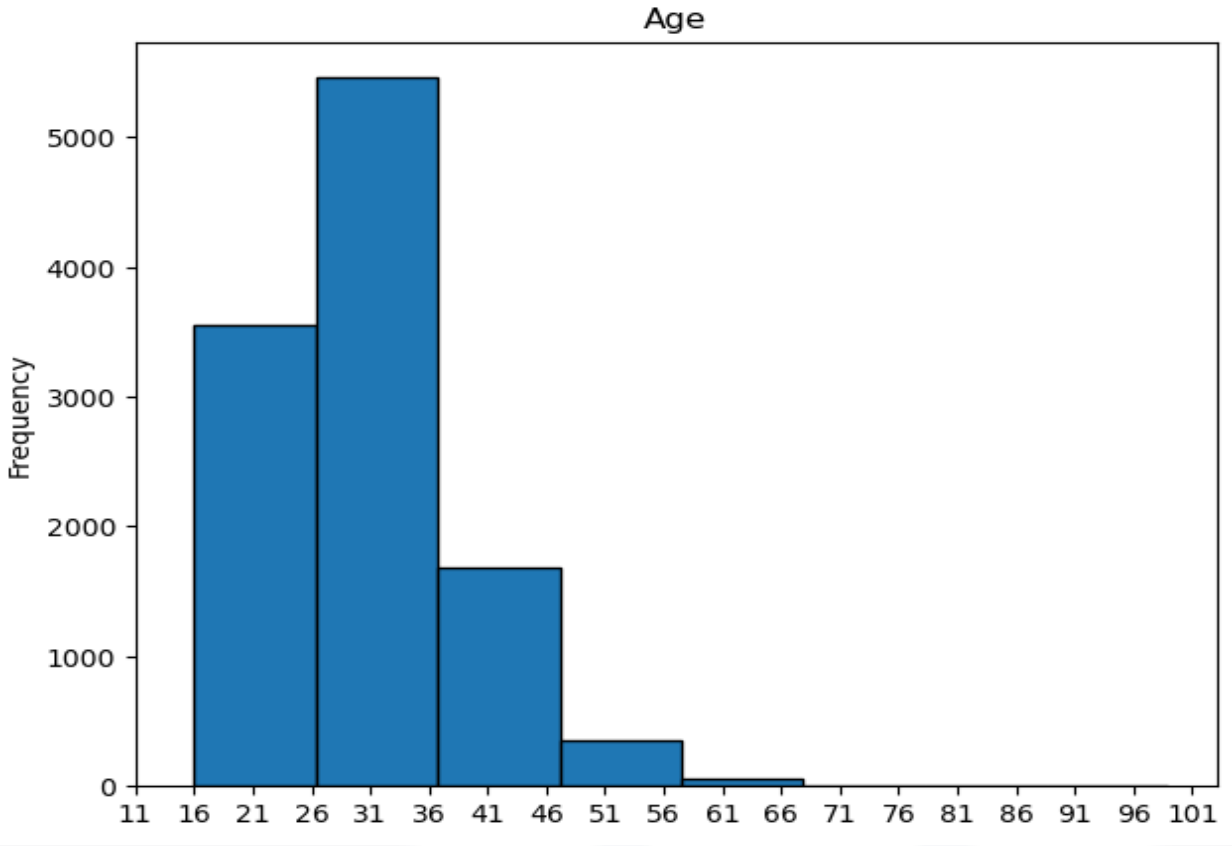




POPULAR LANGUAGES



AGE OF SURVEY RESPONDENTS



DATA COORELATION

	Respondent	CompTotal	ConvertedComp	WorkWeekHrs	CodeRevHrs	\
Respondent	1.000000	-0.013490	0.002181	-0.015314	0.004621	
CompTotal	-0.013490	1.000000	0.001037	0.003510	0.007063	
ConvertedComp	0.002181	0.001037	1.000000	0.021143	-0.033865	
WorkWeekHrs	-0.015314	0.003510	0.021143	1.000000	0.026517	
CodeRevHrs	0.004621	0.007063	-0.033865	0.026517	1.000000	
Age	0.004041	0.006970	0.105386	0.036518	-0.020469	

	Age
Respondent	0.004041
CompTotal	0.006970
ConvertedComp	0.105386
WorkWeekHrs	0.036518
CodeRevHrs	-0.020469
Age	1.000000