

PRESENTED TO
IBM Data Analyst Capstone

PRESENTED BY
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Technology Skills Trends Report: Developer Insights 2025

Analyzing Emerging and Future In-Demand
Skills in Tech

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EXECUTIVE SUMMARY

This report identifies **key technology trends** from the latest global developer survey and highlights shifts in preference and in-demand programming languages, databases, and IDEs.

Key outcomes show **NoSQL DBs** (MongoDB, Redis) demonstrating **surging interest** and future demand for **cloud-native, high-performance** architectures. Go and Rust emerge as top preferences for their simplicity and **performance**. An inter-generational skill gap suggests **succession planning and upskilling is needed**. These insights can optimize **talent acquisition, workforce development, and training** initiatives across the tech industry.

INTRODUCTION

VALUE



Equips decision-makers with evidence & insight, helping to structure training, recruitment, and client services

PURPOSE



To identify and visualize current and future in-demand programming and database skills among global developers

TARGET AUDIENCE



External clients needing skill-trend insights

Internal stakeholders (ex.; HR, recruiters, project leads)

Educators

METHODOLOGY

SOURCES

Stack Overflow Developer Survey 2025, public job boards, and training platforms

DATA COLLECTION AND ANALYSIS

CSV datasets, web scraping, APIs, descriptive statistics, cross-tabulations by demographic factors, trend analysis, and frequency distributions were employed

WRANGLING STEPS

Standardized text names, replaced missing and duplicates, feature normalization

Filtered irrelevant values (ex.; outliers)



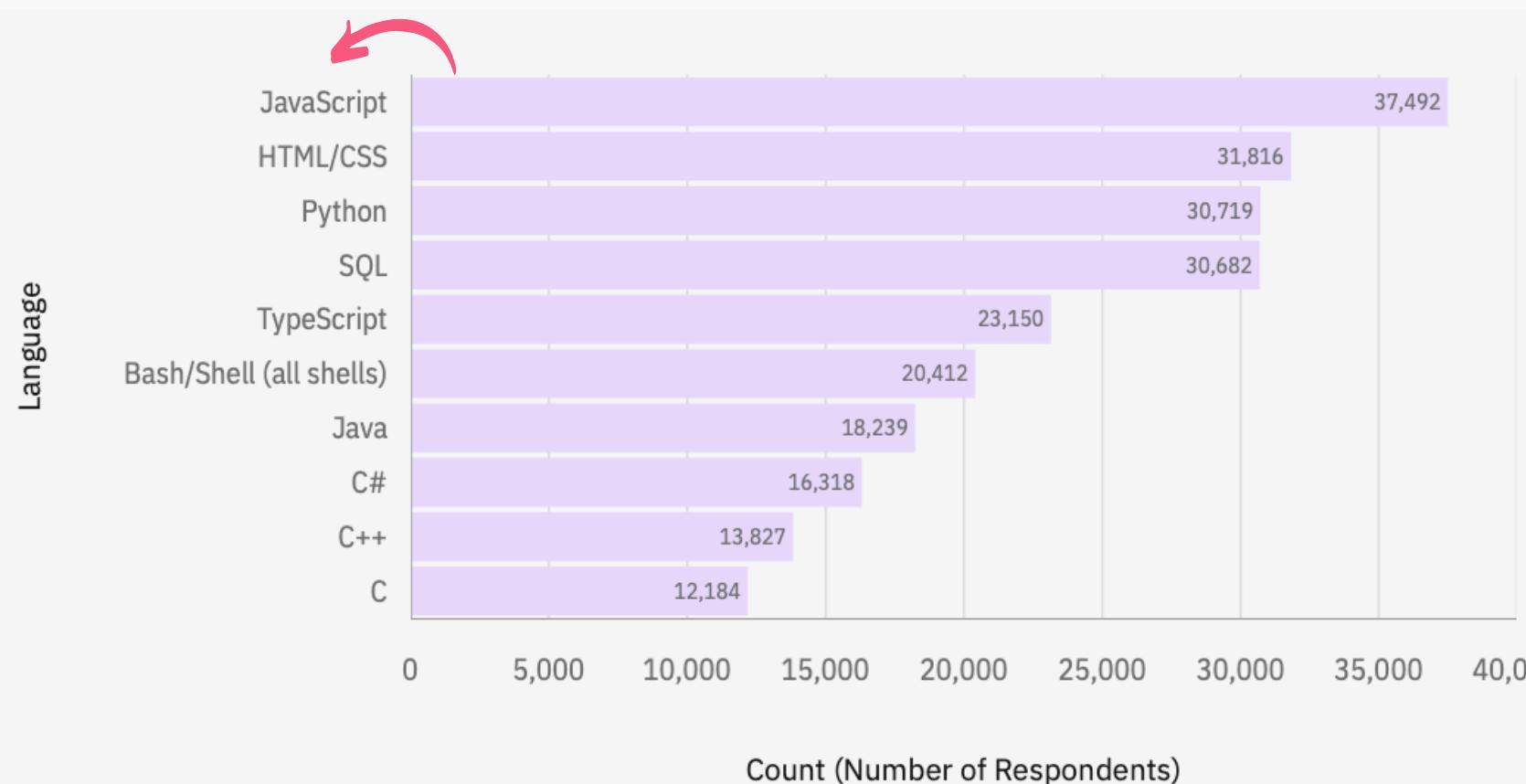
Categorical ordering for age and education for data type standardization

Grouped responses and separated pivoted charts

PROGRAMMING TRENDS

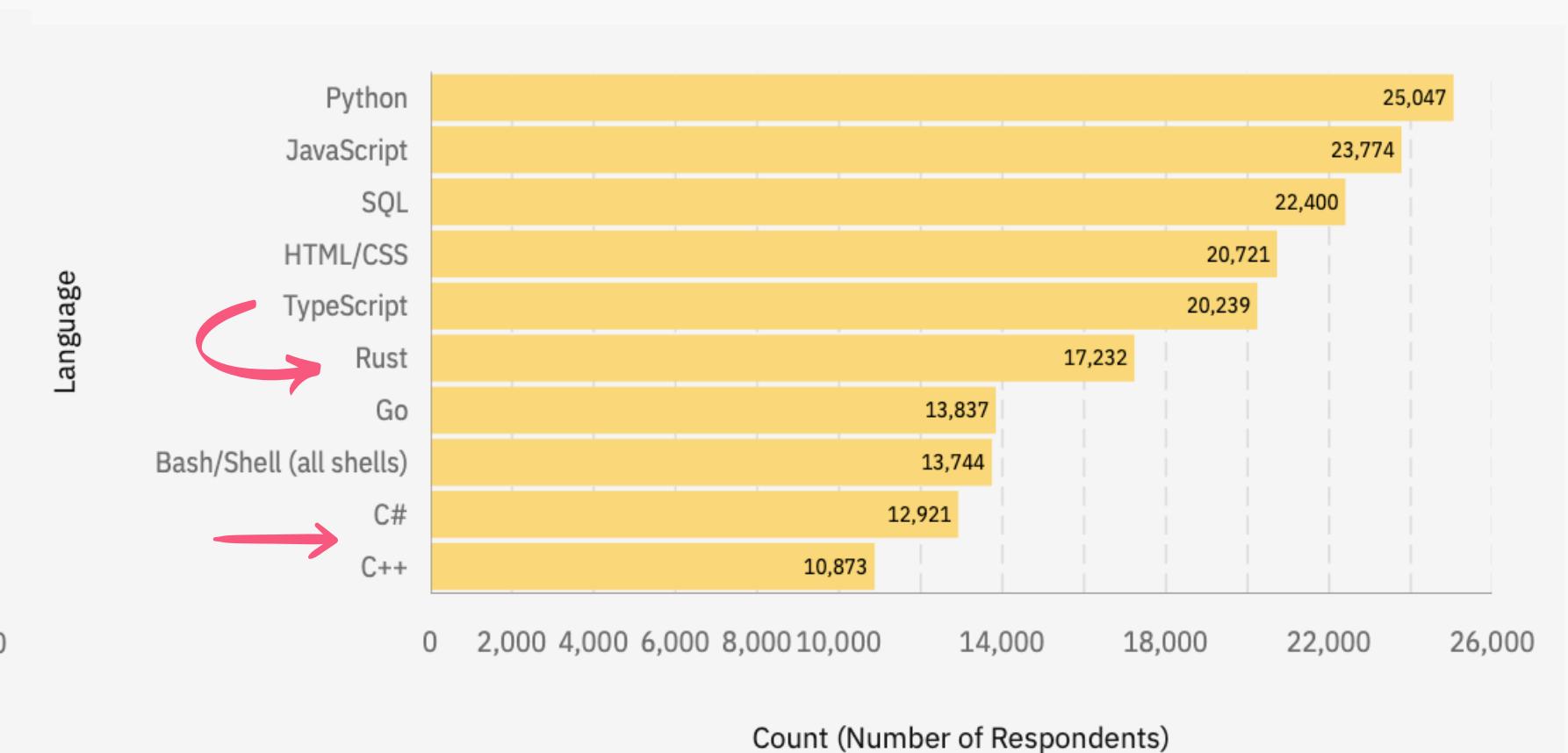
Bar chart 1: CURRENT

Identifying Most Used Programming Languages



Bar chart 2: FUTURE

Leading Desired Languages by Programmers



FINDINGS & IMPLICATIONS

- 01** JavaScript, Python, and web development (HTML/CSS) dominate use and preference
- 02** Go and TypeScript are rising in interest
- 03** Enterprise languages' desirability (e.g., C, C++, Java) is declining

PROGRAMMING TRENDS cont.

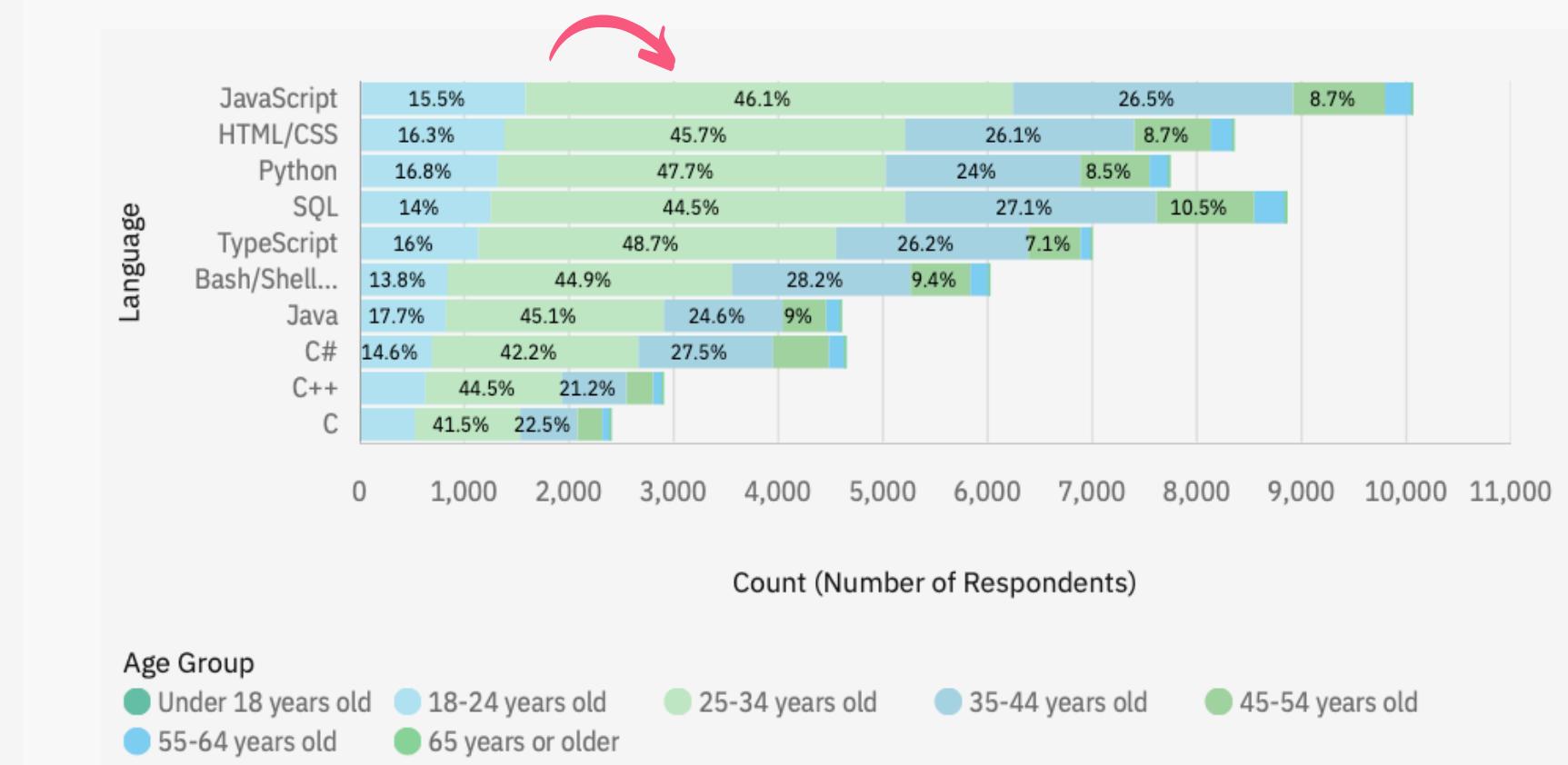
Heat map: TREND ANALYSIS

Satisfaction by Language Use Across Age Groups



Stacked bar: DRILL DOWN

Programming Language Usage by Age Group



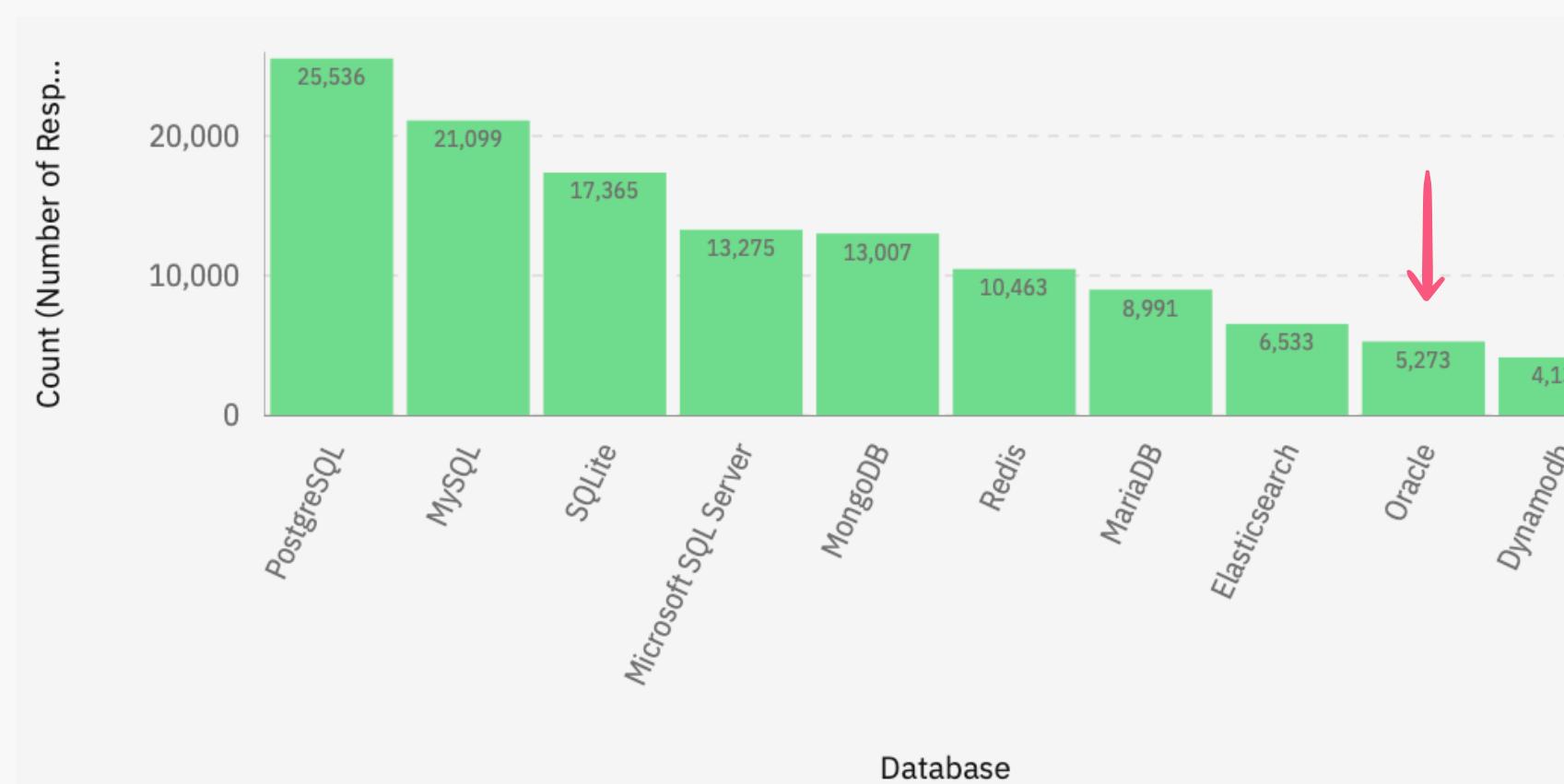
FINDINGS & IMPLICATIONS

- 01** Older age groups show broader language diversity
- 02** Modern languages (like TypeScript) are skewed toward younger developers
- 03** TypeScript and Python demonstrate higher job satisfaction scores across age group

DB TRENDS

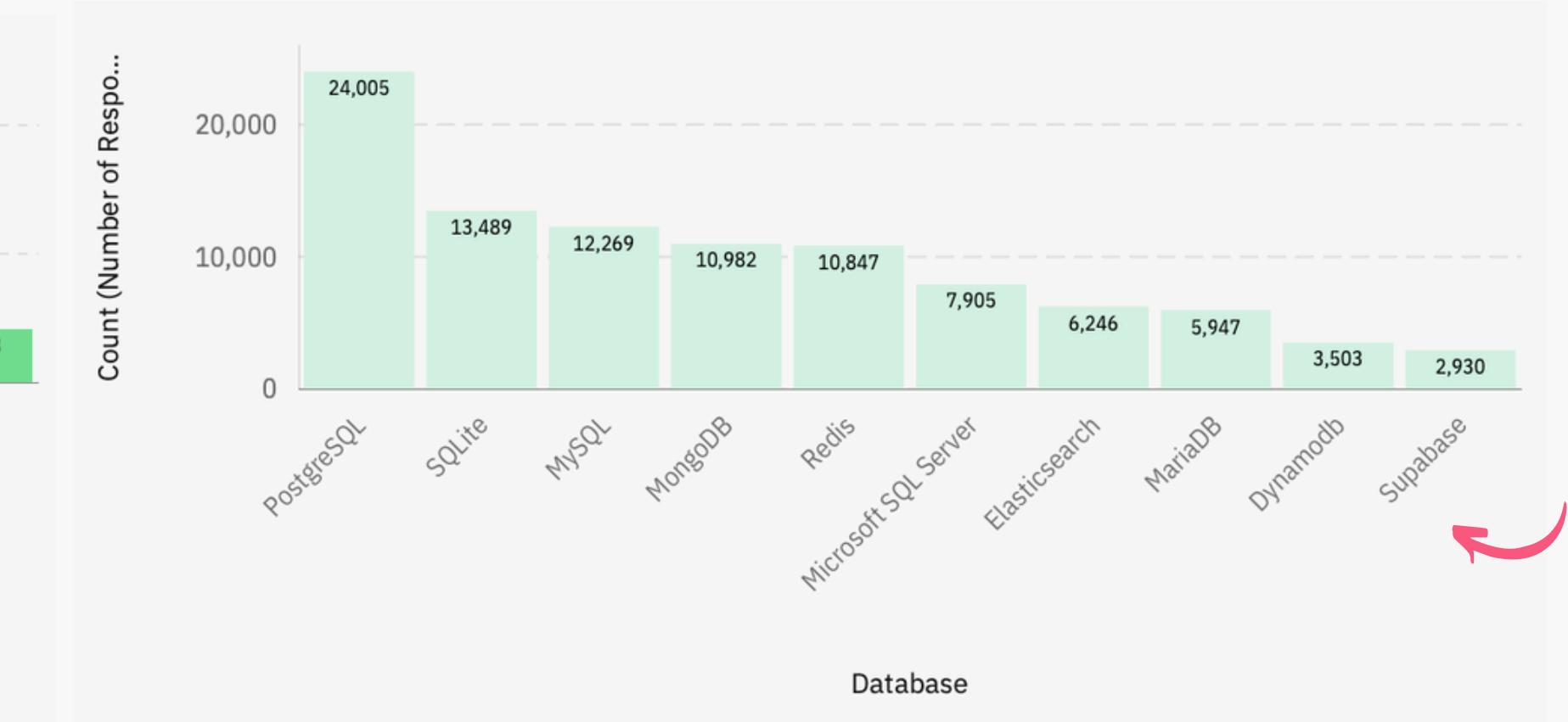
Column chart 1: CURRENT

Identifying **Most Used** Databases by Developers



Column chart 2: FUTURE

Leading **Desired** Databases by Developers



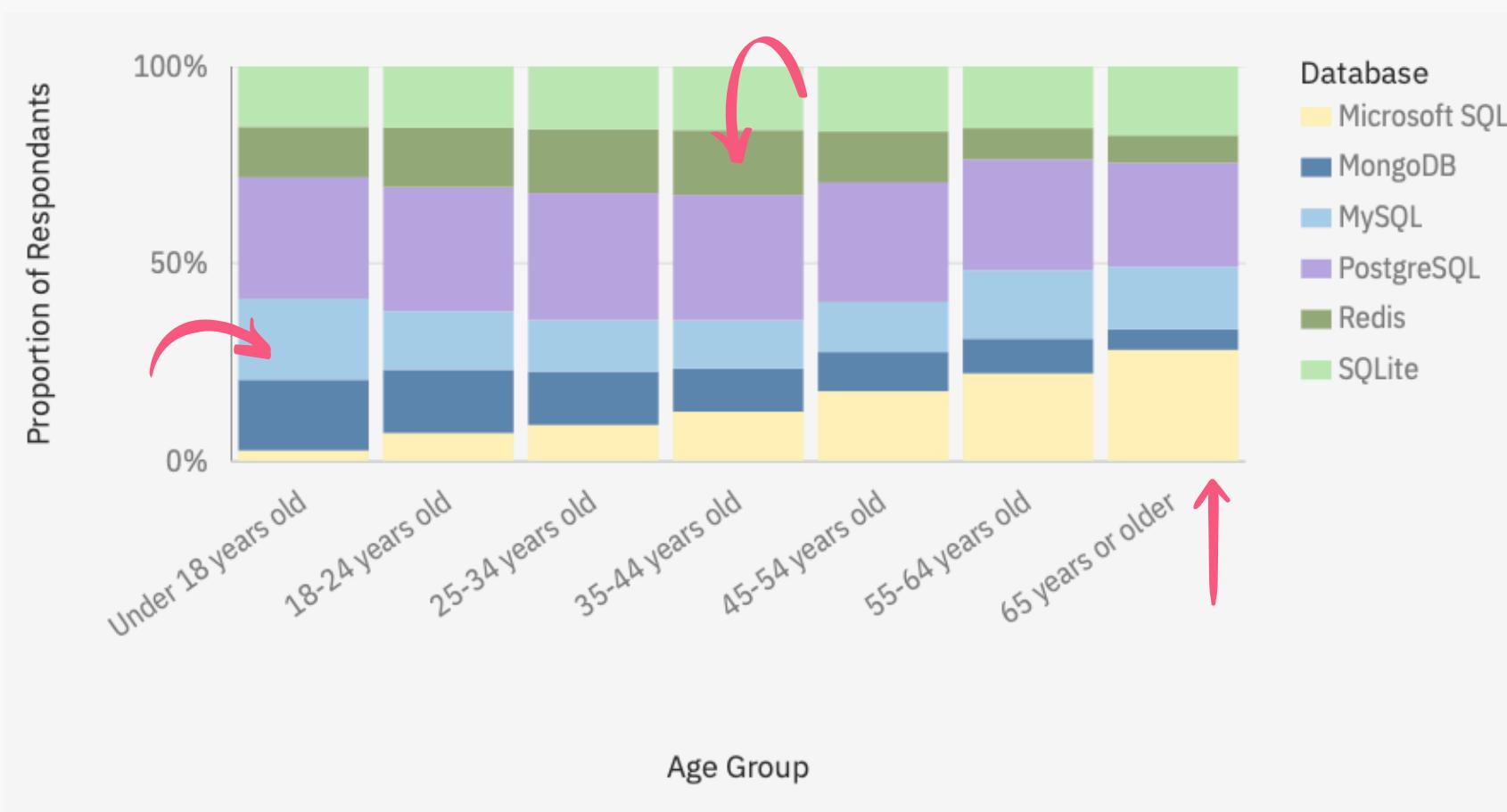
FINDINGS & IMPLICATIONS

- 01** PostgreSQL is broad in popularity and deserves support and standardization for long-term skill value
- 02** Embedded databases (like SQLite and Supabase) are in demand, signaling opportunity in low-overhead or embedded data solutions
- 03** Traditional enterprise databases (like Oracle) are in decline while demand is shifting toward flexible, scalable, and high-performance databases

DB TRENDS cont.

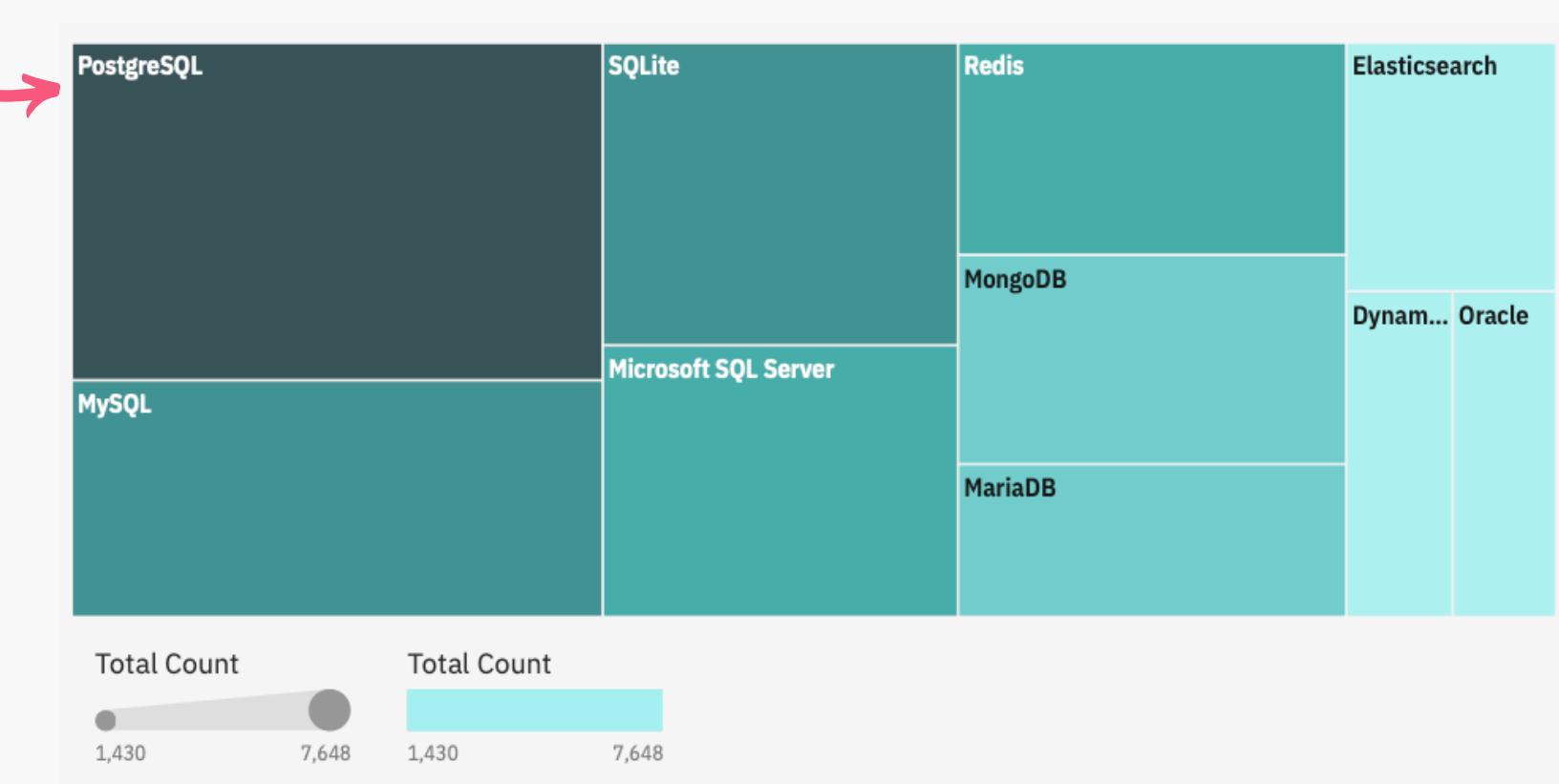
Stacked column chart: DRILL DOWN

Leading Preferred Databases by **Age Breakdown**



Tree map: FOOTPRINT

Proportion of Database Usage by Developers



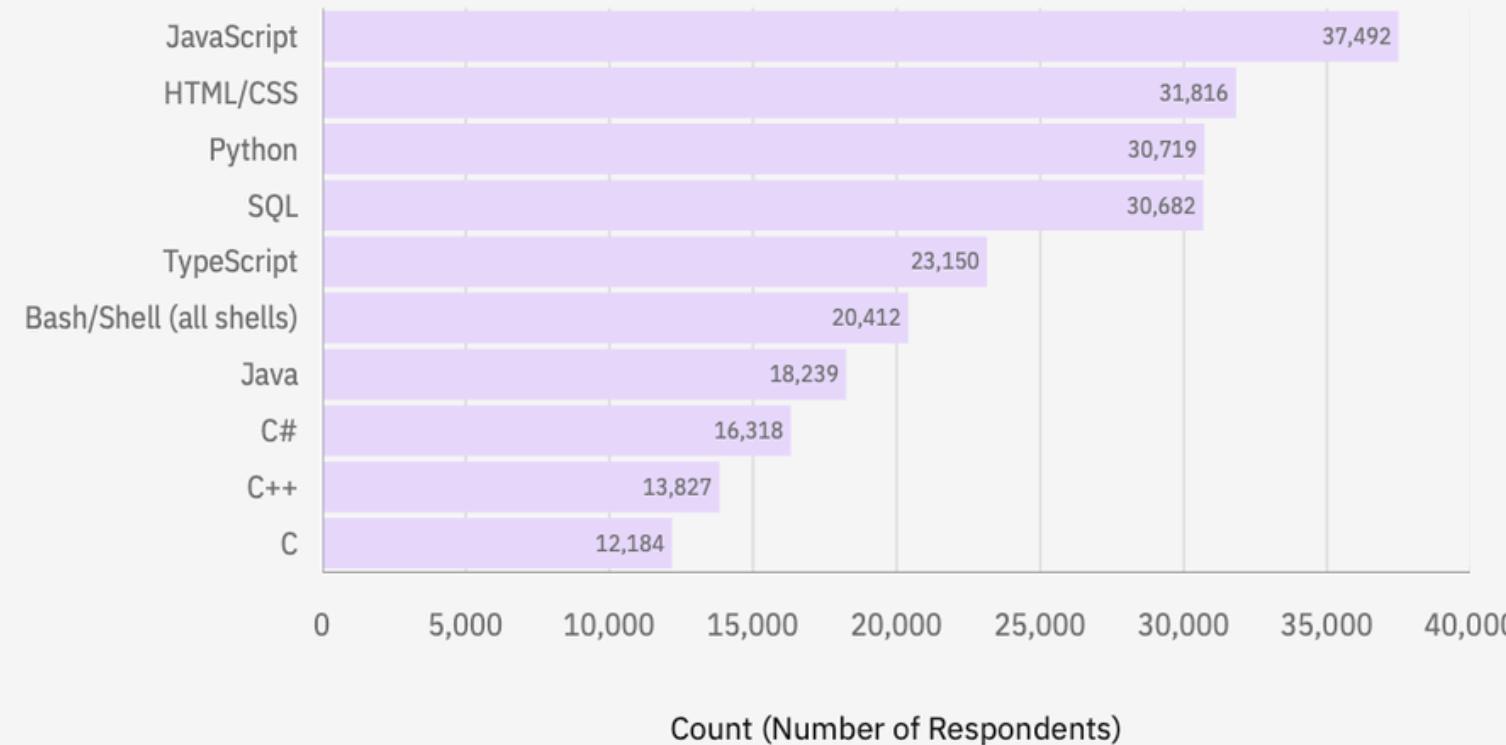
FINDINGS & IMPLICATIONS

- 01** PostgreSQL and MySQL lead by a wide margin in desirability
- 02** Interest in MongoDB and Redis is aligned with modern architectures and greatly reflected in younger developers
- 03** NoSQL databases are greatly represented, while interest in traditional enterprise databases (like Microsoft SQL Server) are piquing interest only in older age groups

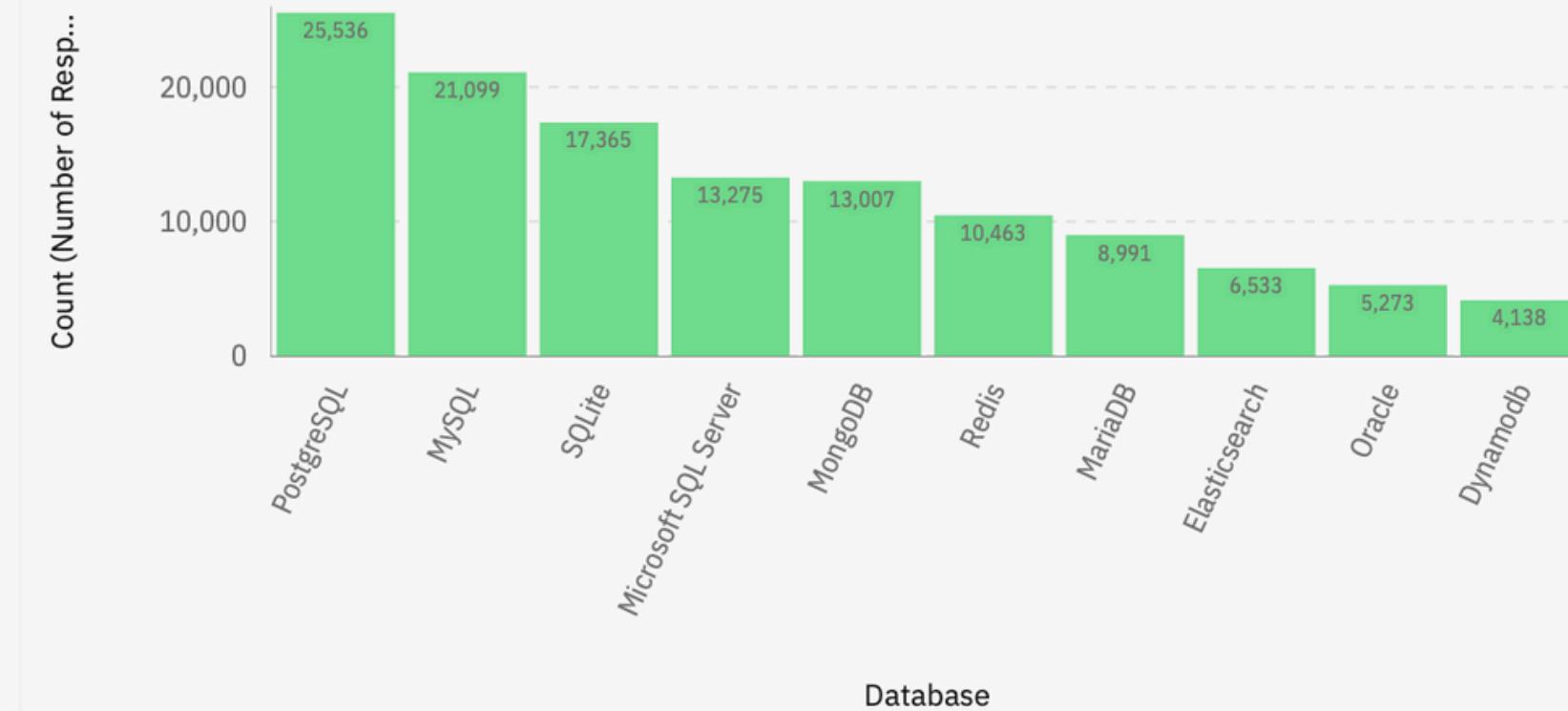
TECH TREND DASHBOARD AT A GLANCE

PAGE 1 CURRENT USAGE

Top 10 Languages Programmers Work With



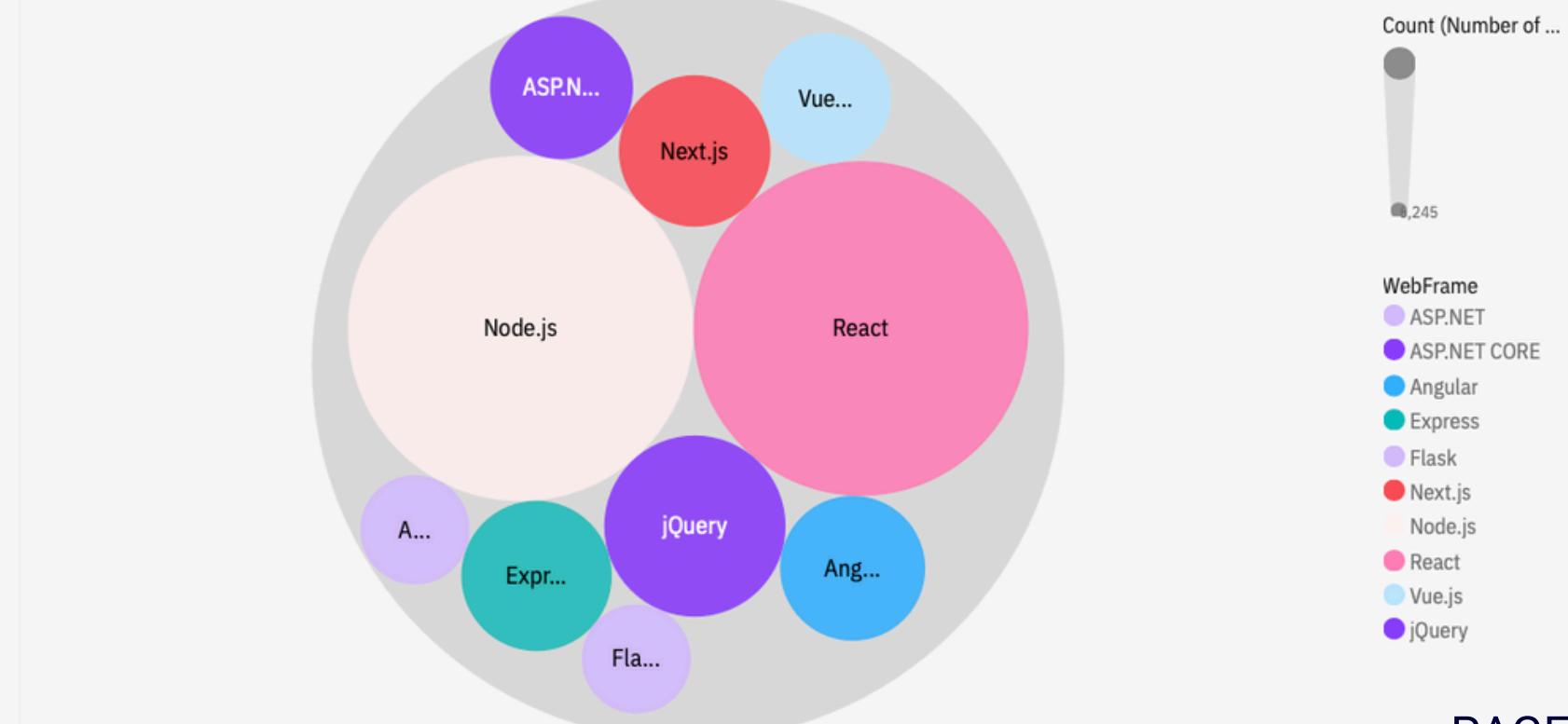
Top 10 Databases Programmers Work With



Top 10 Platforms Programmers Work With

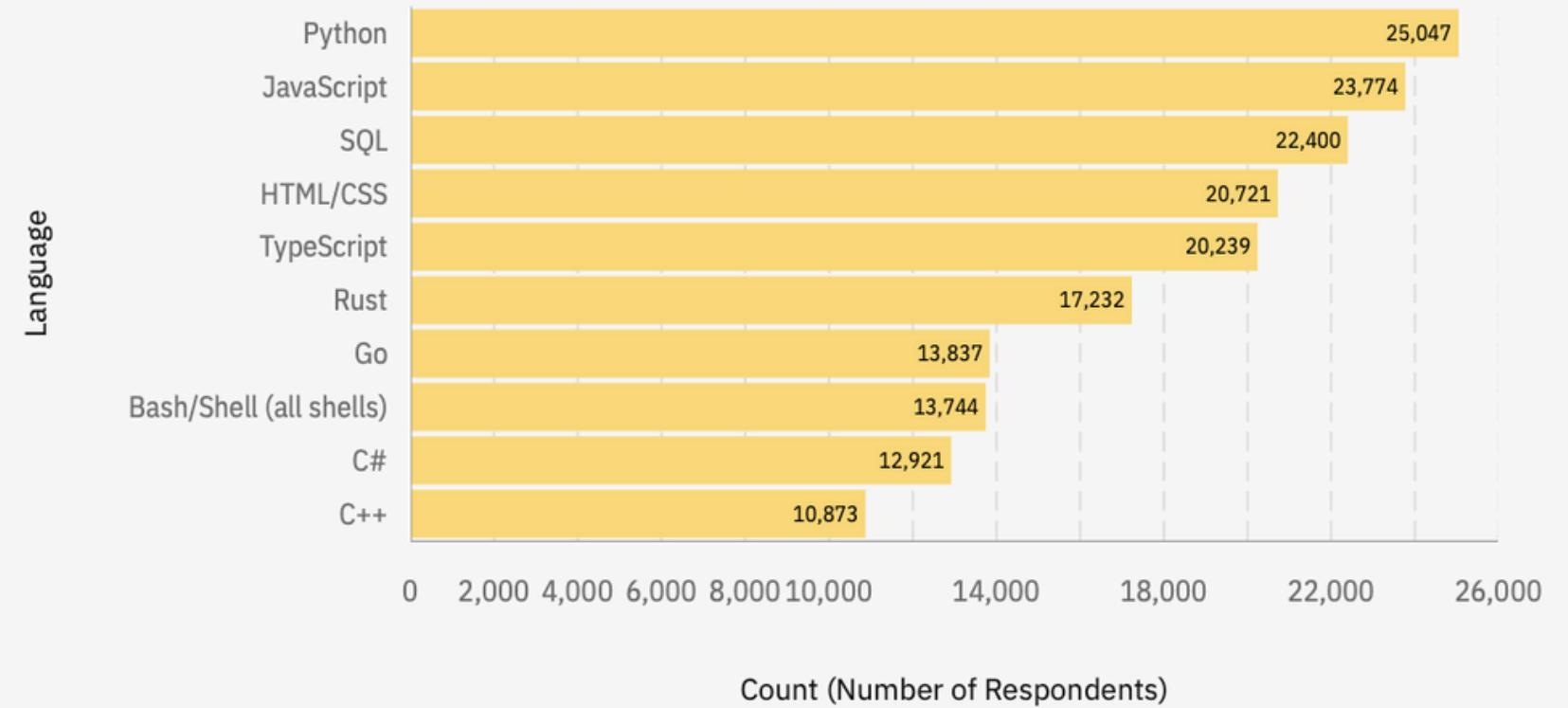


Top 10 WebFrames Programmers Work With

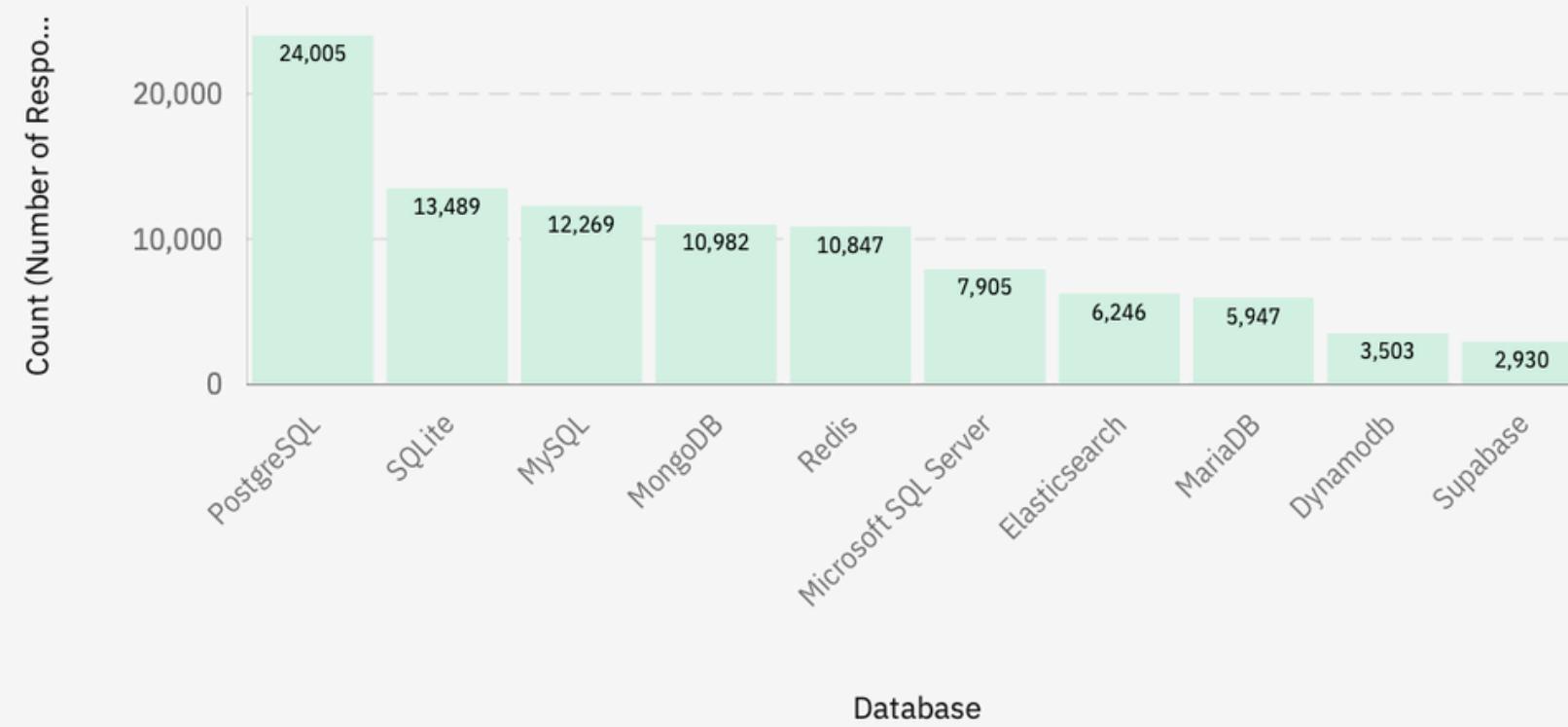


PAGE 2 PREFERENCE EVOLUTION: FUTURE TRENDS

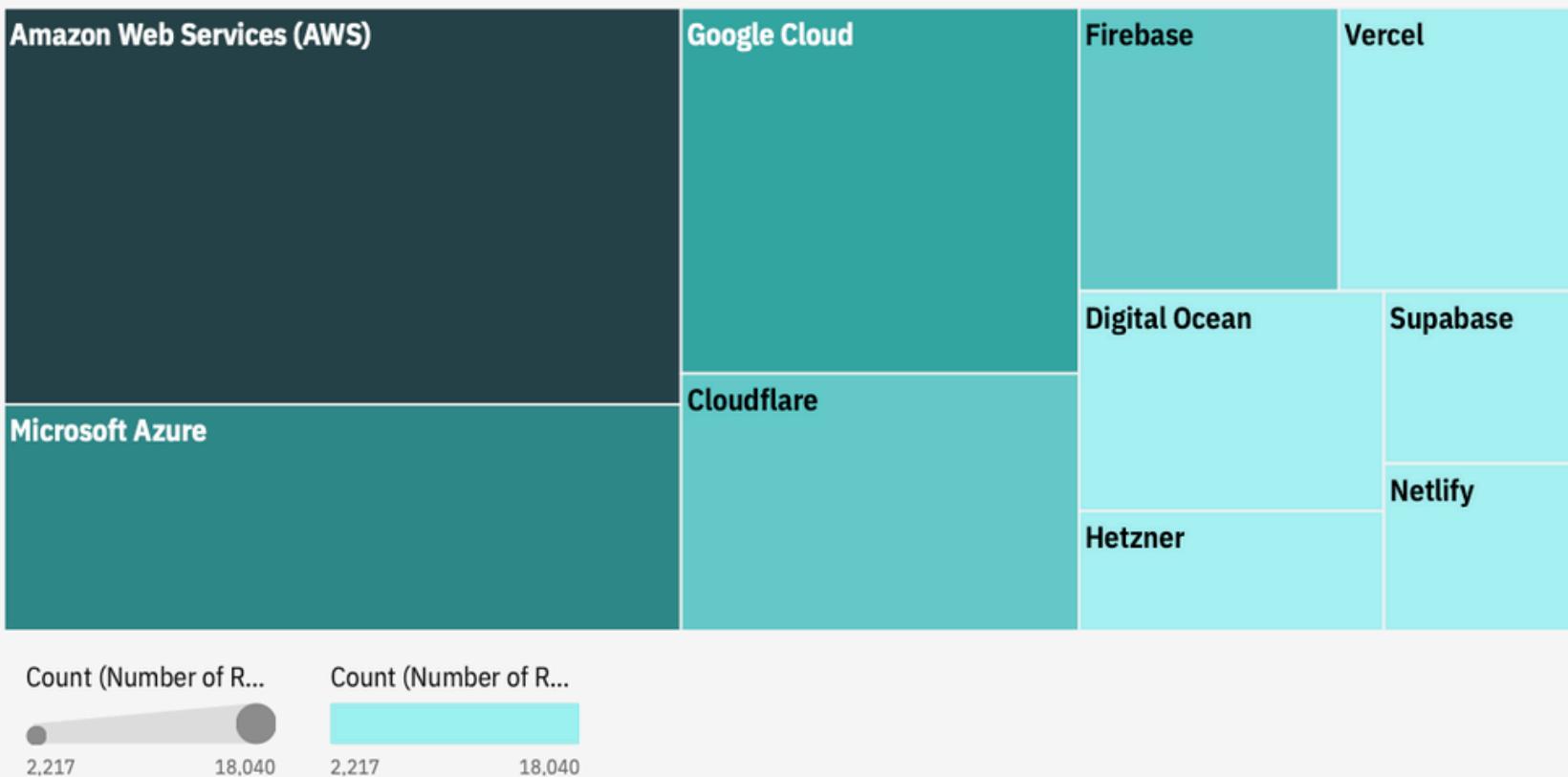
Top 10 Desired Languages by Programmers



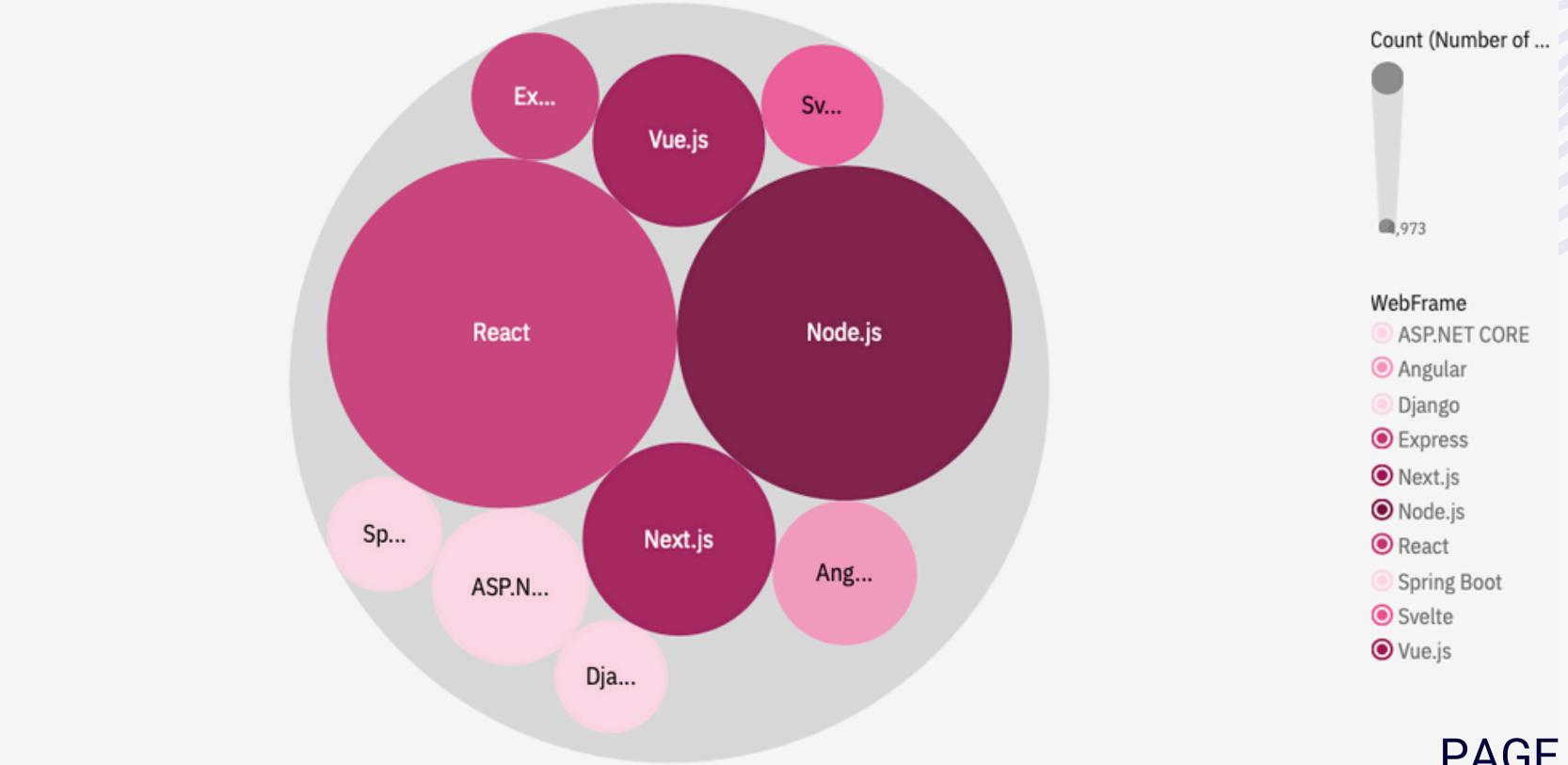
Top 10 Desired Databases by Programmers



Top 10 Desired Platforms by Programmers



Top 10 Desired WebFrames by Programmers

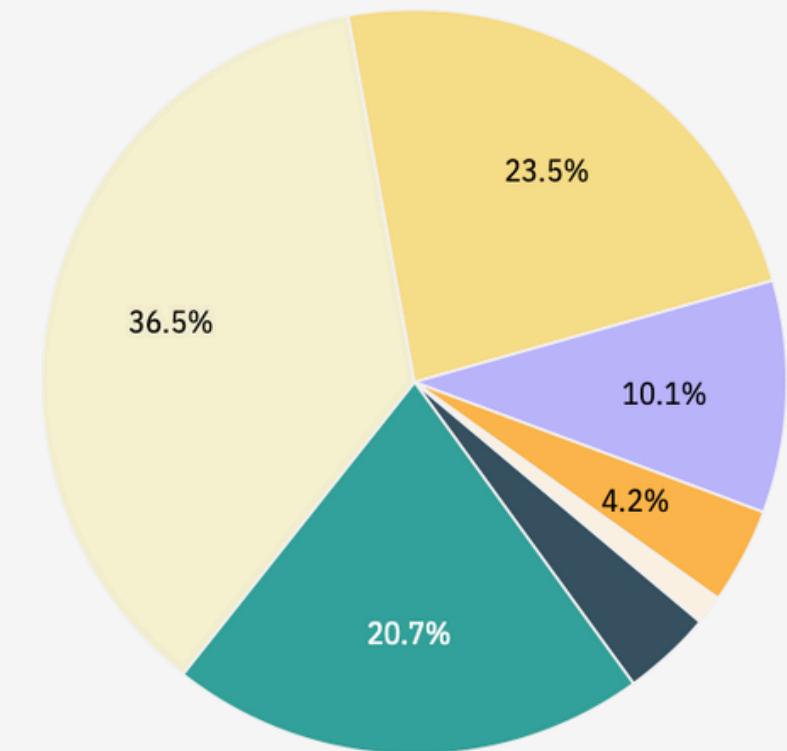


PAGE 3 DEMOGRAPHICS

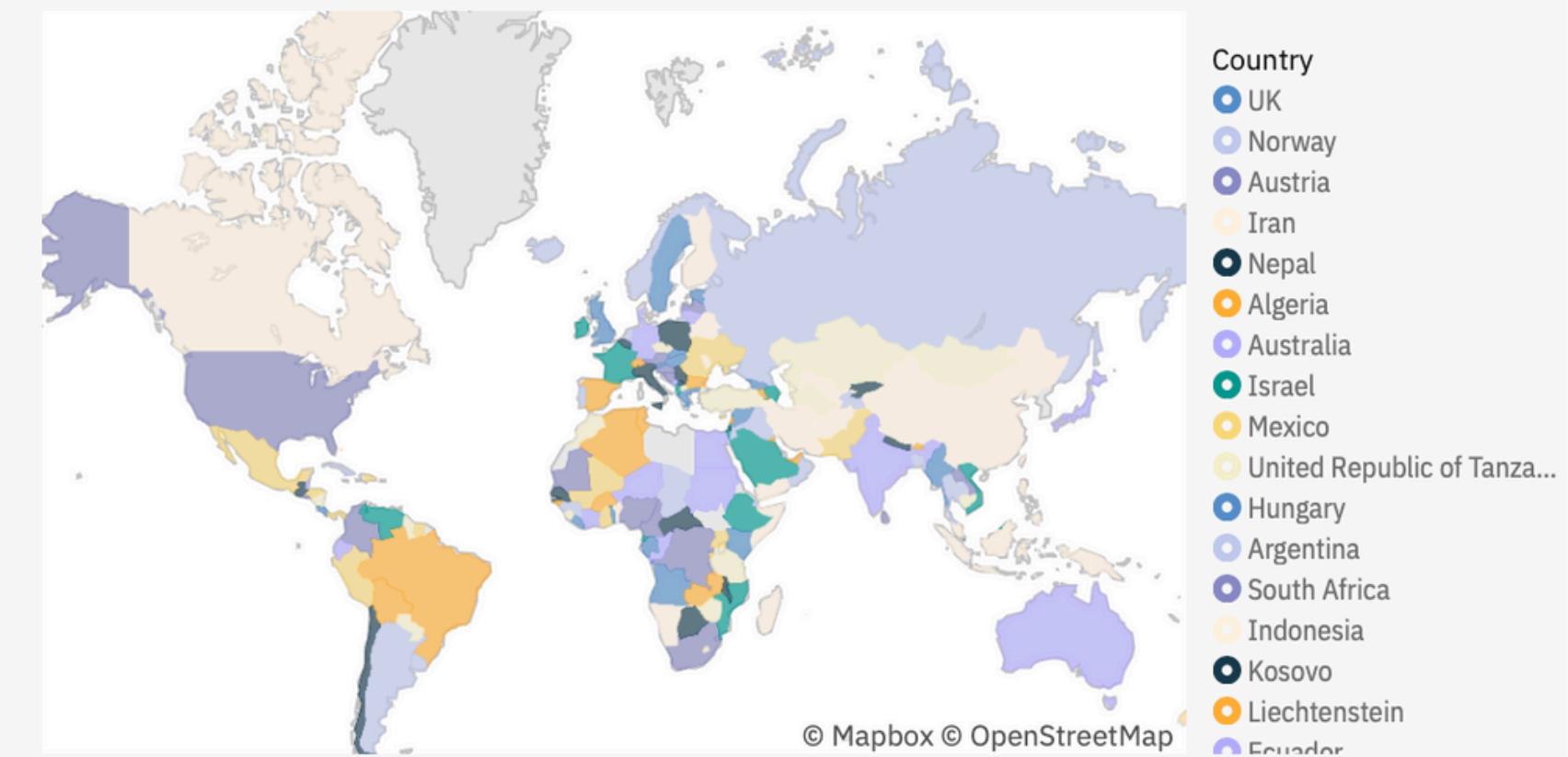
Distribution of Participants **Across Age Groups**

Age Group

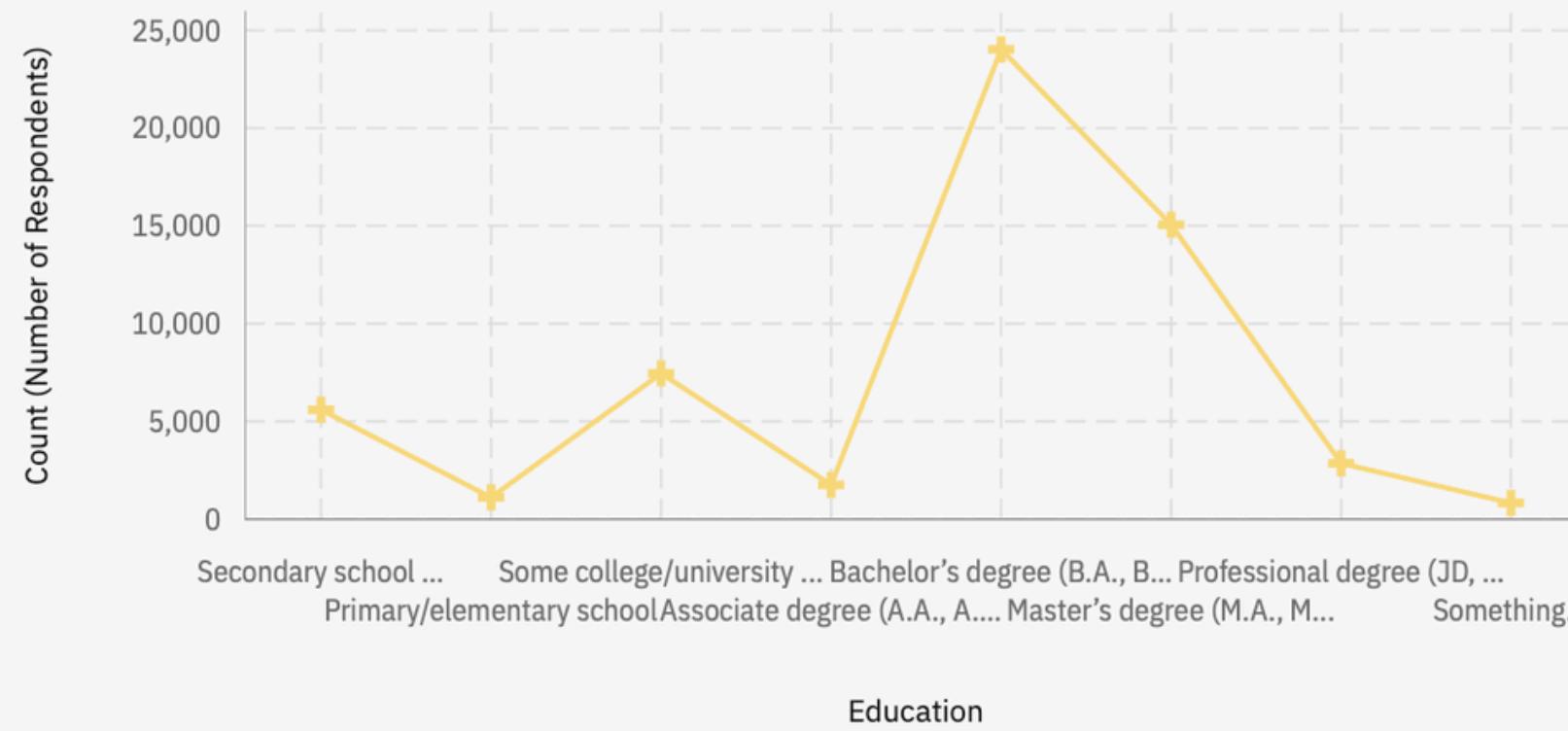
- Under 18 years old
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65 years or older



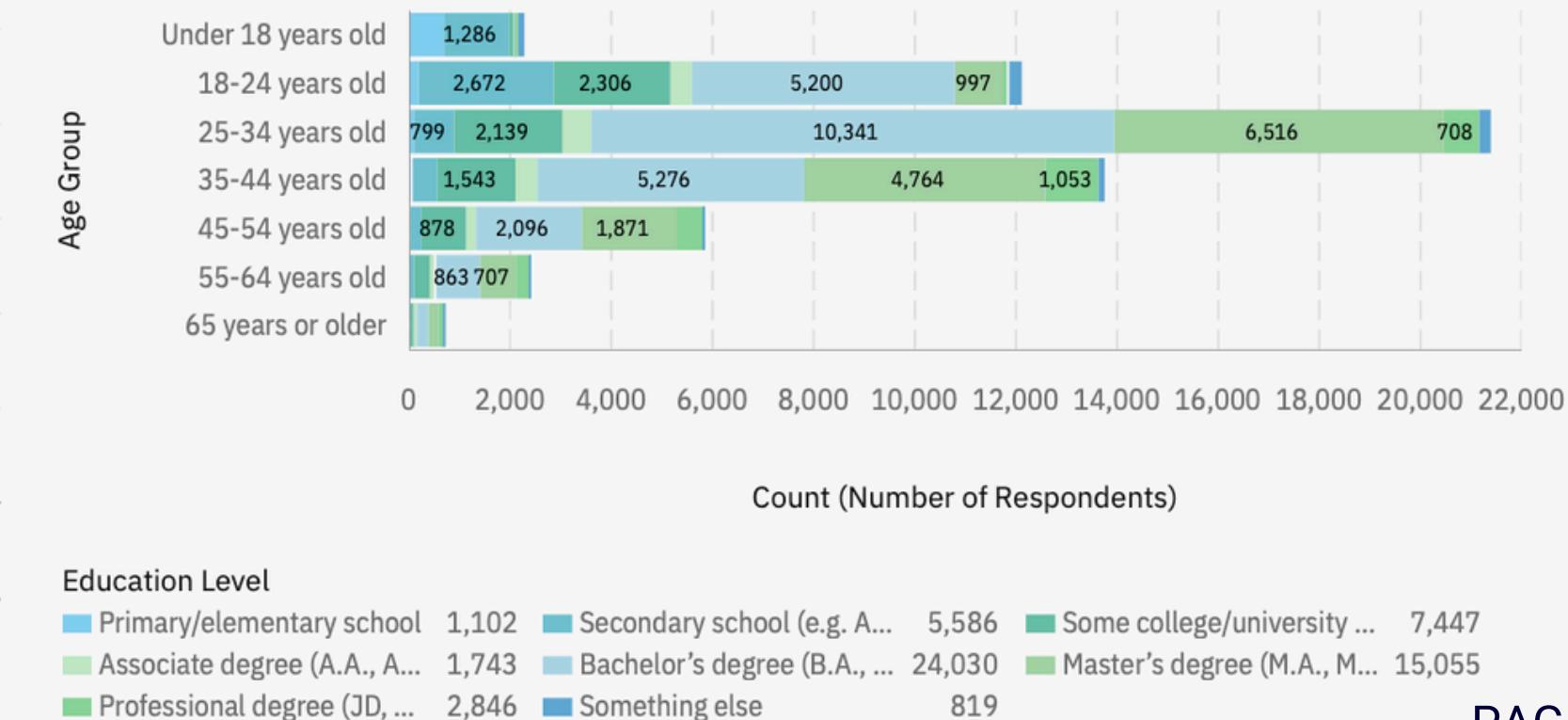
Participant **Distribution by Country**



Participant Breakdown by **Education**

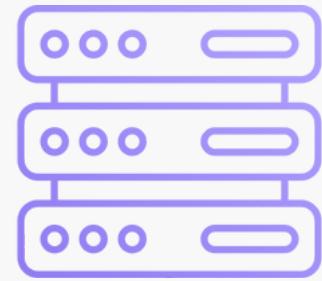


Participant Breakdown by **Age Group and Education Level**



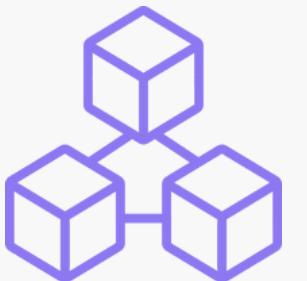
OVERALL FINDINGS & IMPLICATIONS

01



Modern languages for young talent, legacy languages for experienced.

03



Emphasis on **component-based** and **server-side** JavaScript frameworks for **web development** (React, Node.js, Next.js).

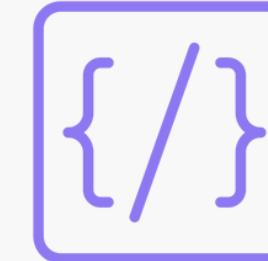
02

Flexible, scalable, and high-performance databases are in demand, especially for real-time data processing.

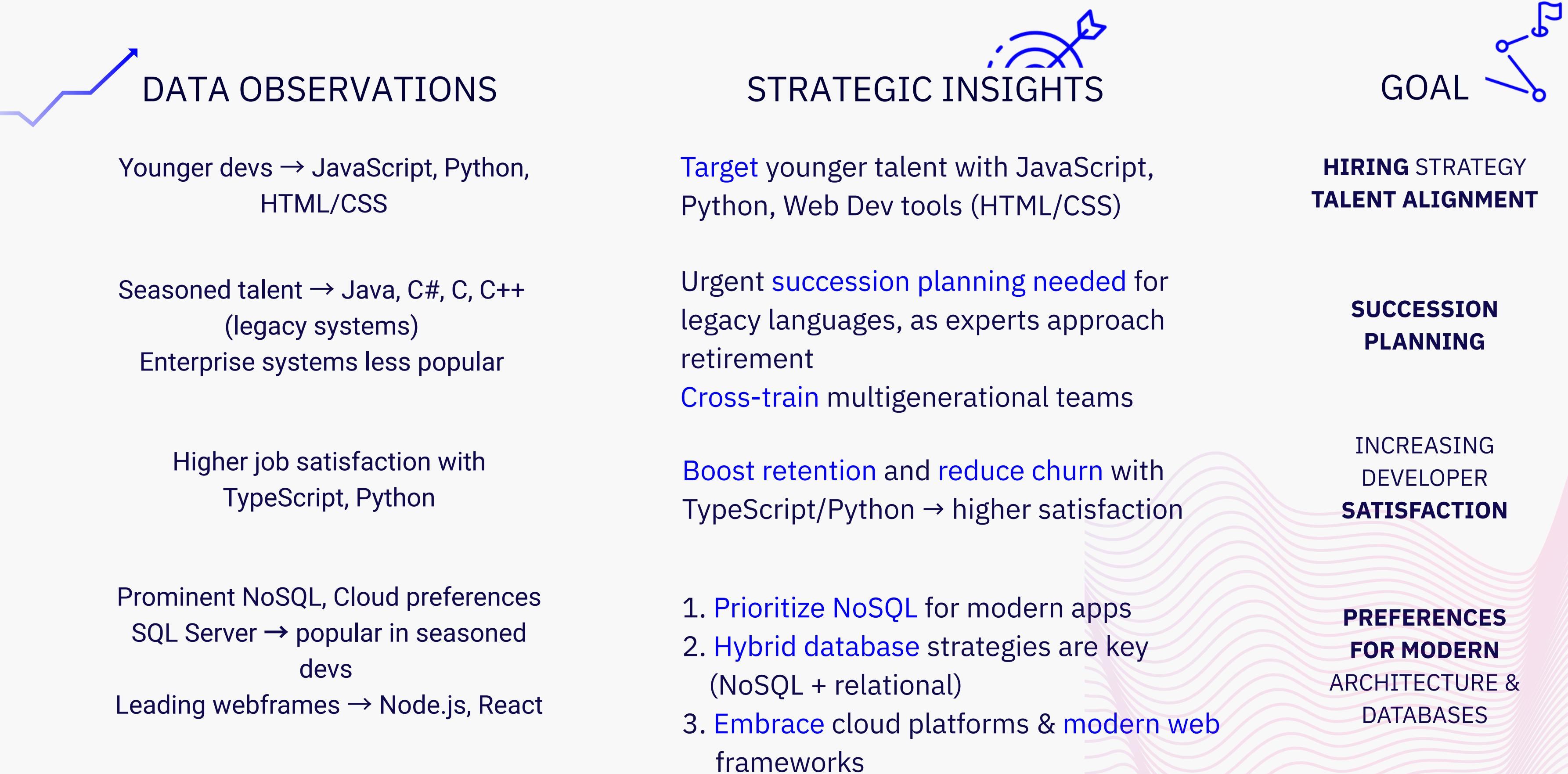


04

Web development and **data science** languages dominate **current and future** skill demand.



DISCUSSION



CONCLUSION

KEY SUMMARY

The developer pool: young (primarily 25-34 with a Bachelor's degree), and proficient in web technologies.

A significant generational skill gap exists, necessitating strategic succession planning for critical systems.

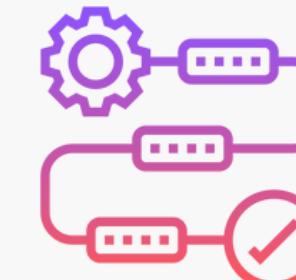
Developer satisfaction is tied to modern frameworks.

The tech landscape is evolving towards cloud-native and NoSQL solutions, creating a strategic divide with traditional relational databases that remain critical for core operations.

FUTURE RESEARCH

Explore the growth and prevalence of low-code/no-code platforms on the developer communities, and dive deeper into emerging variations in skill demand including AI/ML integration

NEXT STEPS



OPTIMIZE TALENT

leveraging current market insights.



MITIGATE RISK

through targeted cross-training programs and existing teams in high-demand areas to ensure operational continuity and enhance competitive edge.



DRIVE CONTINUOUS GROWTH

and develop cloud-native and hybrid databases, and adapt to agile workflows for new skill trends.

APPENDIX

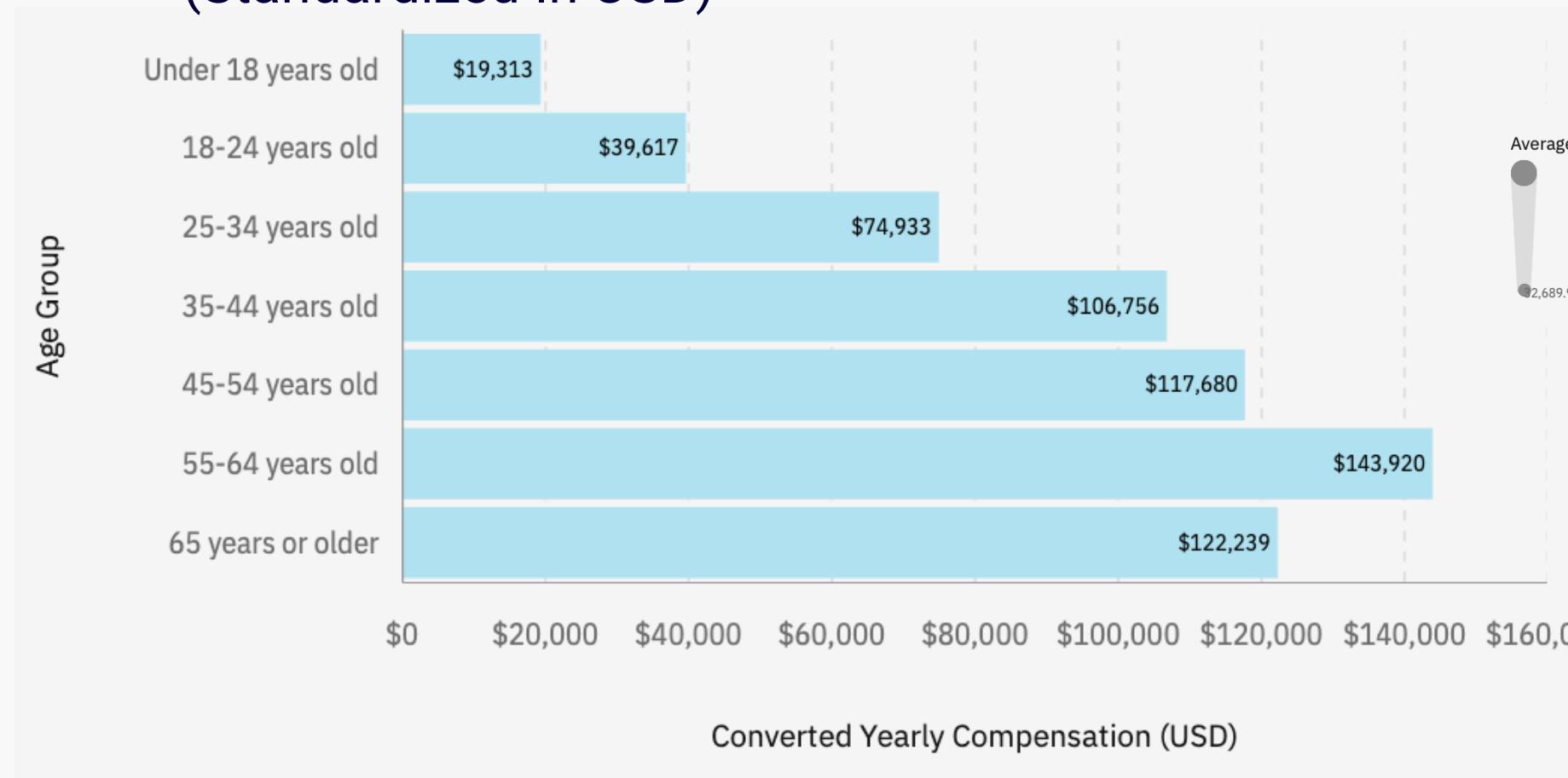
SUPPLEMENTARY ANALYSIS

For additional context on the broader developer landscape, including factors influencing talent pools, employment types, and satisfaction, please refer to the following data points.

01 Compensation and Experience: A Global Developer View

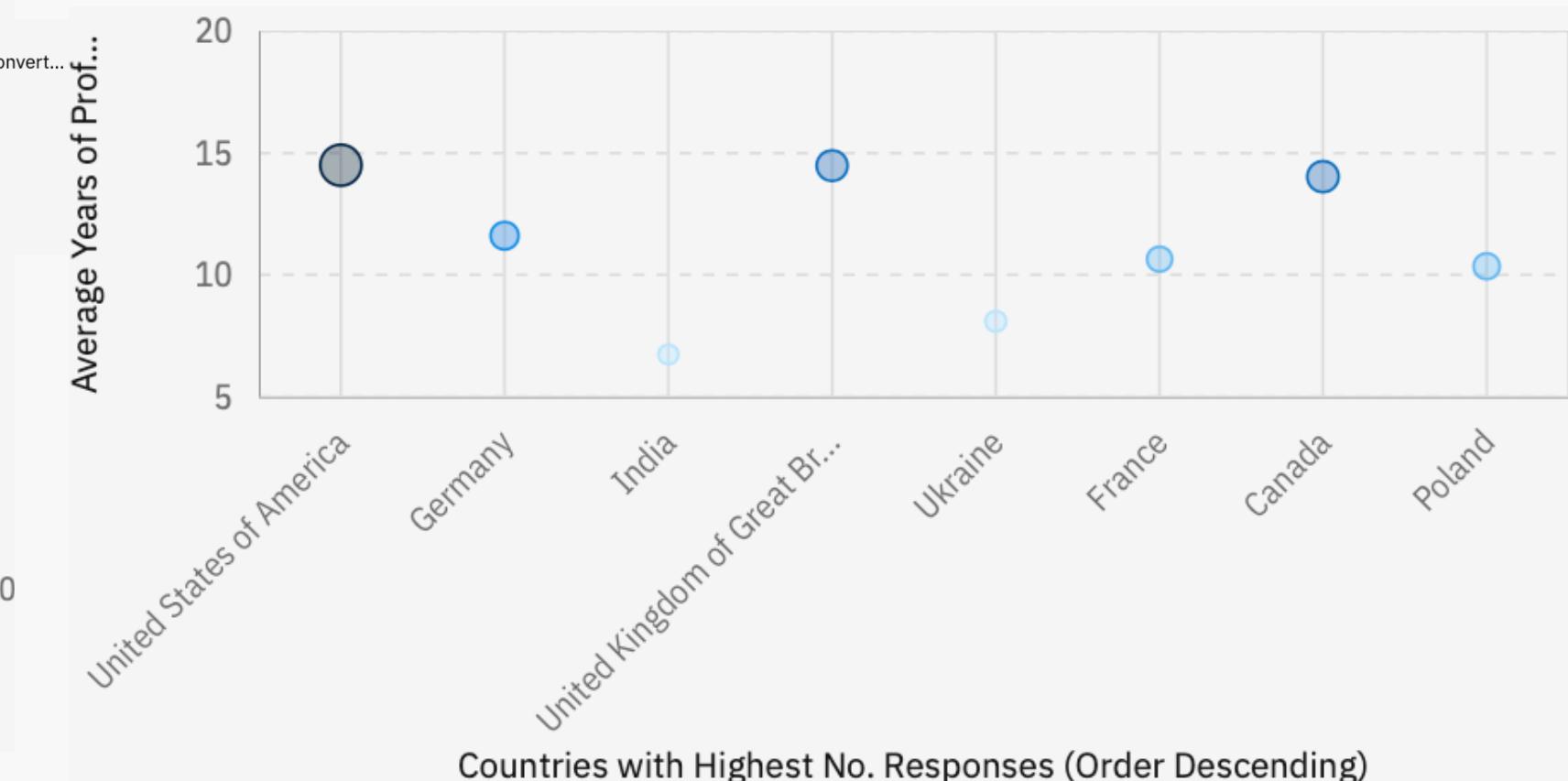
Bar: AVERAGE COMPENSATION

Average Annual Compensation Across Age Groups
(Standardized In USD)



Bubble: GLOBAL VIEW

Years of Coding Experience Across Leading Countries
(Bubble Size: Avg. Annual Compensation)



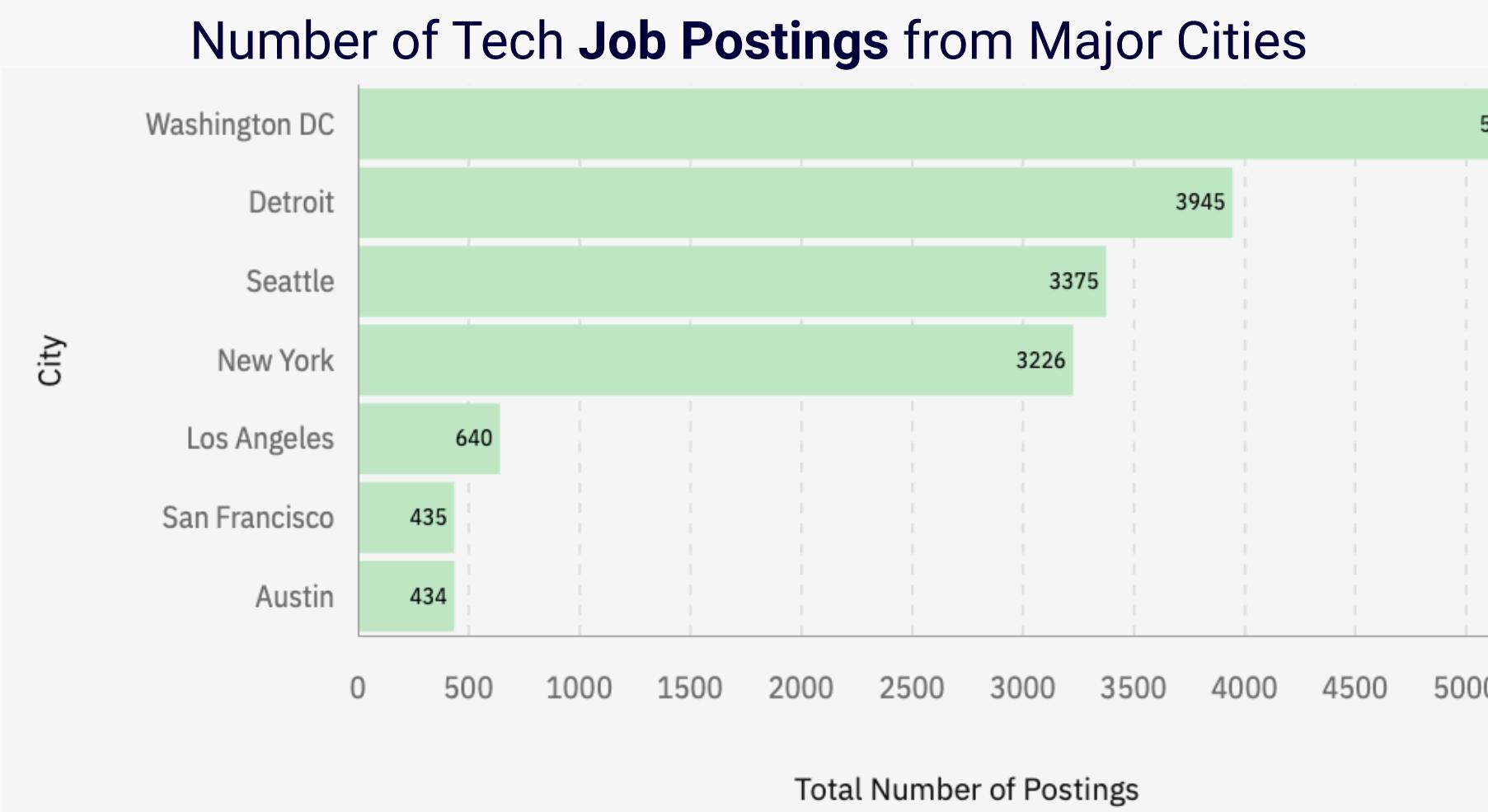
APPENDIX cont.

SUPPLEMENTARY ANALYSIS

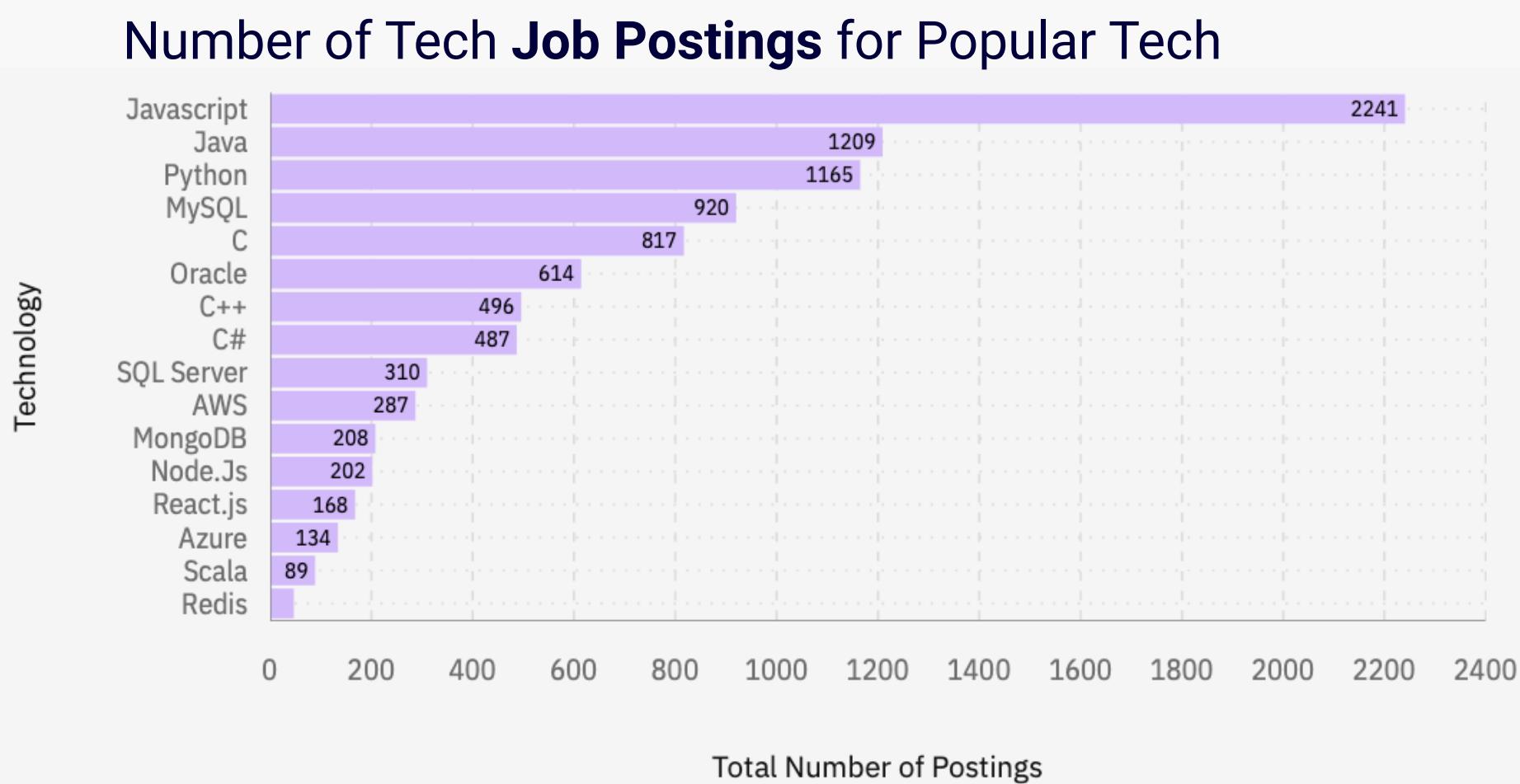
For additional context on the broader developer landscape, including factors influencing talent pools, employment types, and satisfaction, please refer to the following data points.

02 Top Hubs by Job Postings: A Snapshot of Talent Demand

Bar 1: LOCATIONS



Bar 2: TOOLS & SKILLS



APPENDIX cont.

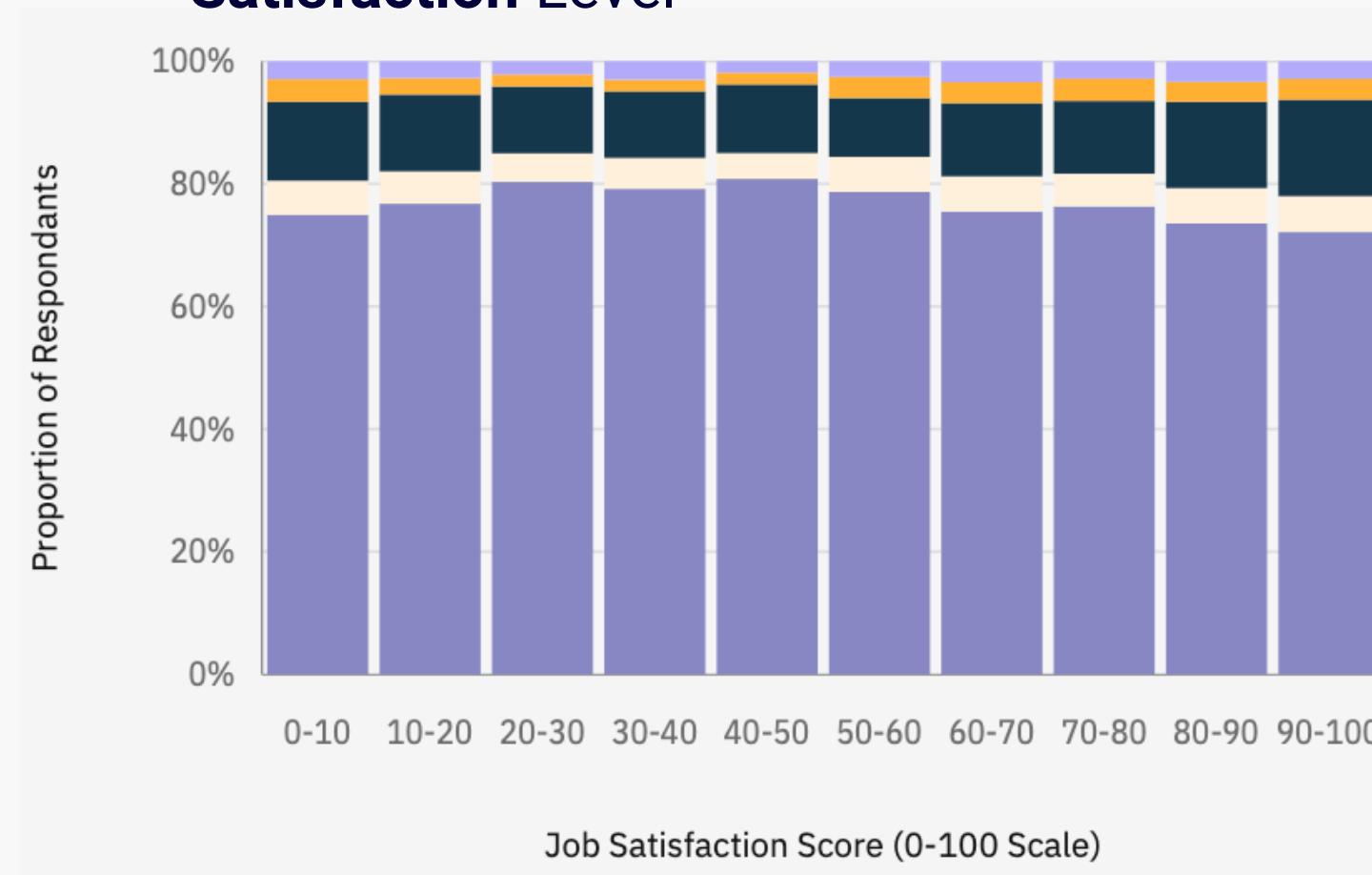
SUPPLEMENTARY ANALYSIS

For additional context on the broader developer landscape, including factors influencing talent pools, employment types, and satisfaction, please refer to the following data points.

03 What Affects Developer Satisfaction

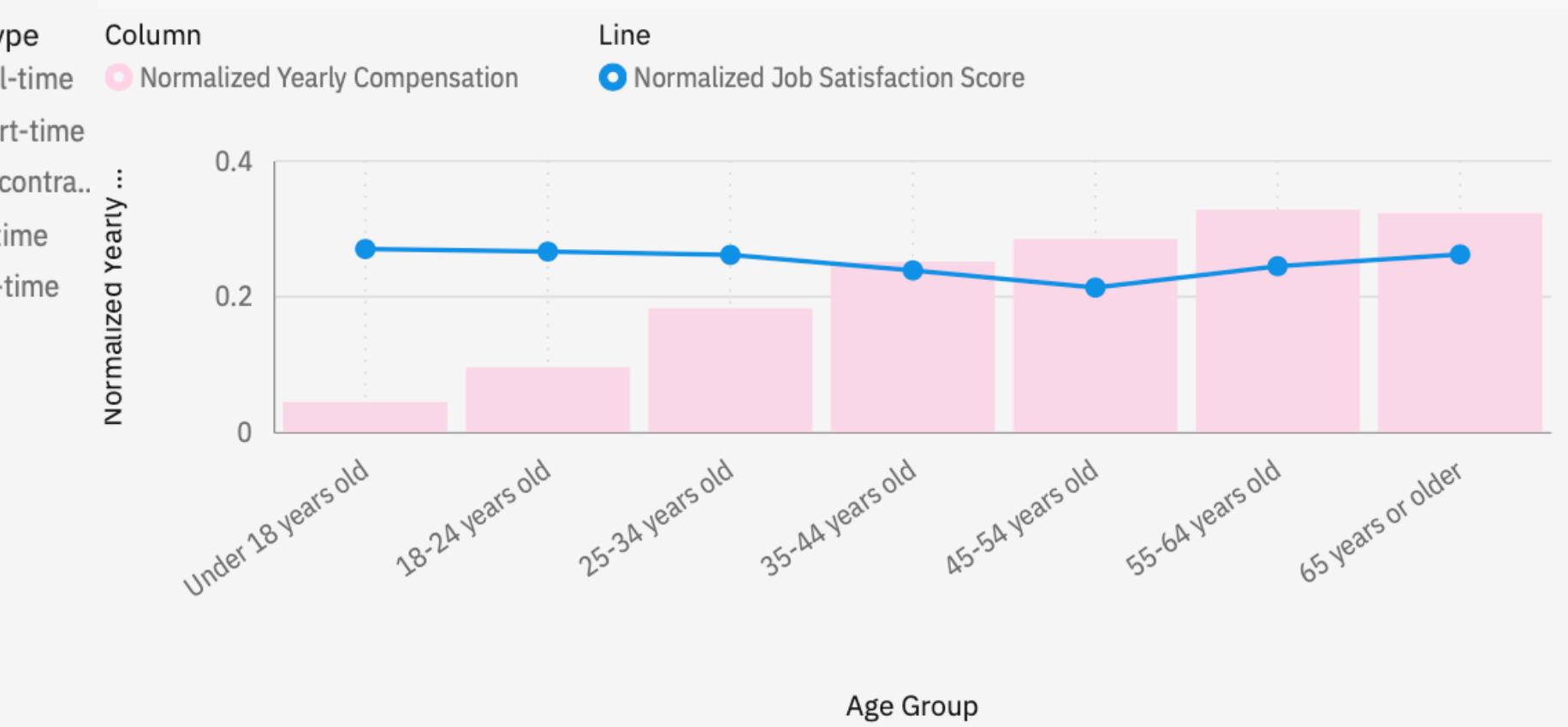
Percentage Stacked: TYPE OF EMPLOYMENT

Distribution of **Employment Types** Within Each Job Satisfaction Level



Line and Column: CAREER GROWTH

Normalized Avg **Compensation and Job Satisfaction Score** by Age



APPENDIX cont.

DATA SOURCES

Stack Overflow Developer Survey 2025

Description:

Comprehensive annual survey providing insights into developer demographics, purchasing activities, experience, technologies used, compensation, participation frequency, sentiment analysis, and job satisfaction

Source

Access Date: *April 2025*

Job Data Available from Naukri.com

Description:

Aggregated data from online job boards identifying required experience and skills, company, industry/domain, salary and location in active advertisements

Source

Access Date: *April 2025*

LIMITATIONS

The report primarily relies on publicly available job postings and a specific developer survey, which may not comprehensively capture the entire global IT job market or the opinions of all developer demographics (ex.; those not active on Stack Overflow or specific job boards). This could introduce a bias towards certain popular technologies or regions.