

# Report

# Stack overflow 2024 survey data analysis findings report

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# Executive summary



- Current: JavaScript, SQL, HTML/CSS dominate current skills; PostgreSQL, MySQL, AWS, Azure lead databases—web/cloud focus.
- Future: JavaScript/SQL/TypeScript rise; AWS/Azure/GCP platforms, Node/React frameworks signal upskilling priorities.
- Demographics: 35% aged 25-34 (Bachelors/Masters heavy); job postings favor sales/dev roles.
- Recommendation: Focus Training on JS/TS/Postgres/AWS for 2025 competitiveness (despite NA/EU/India survey bias).

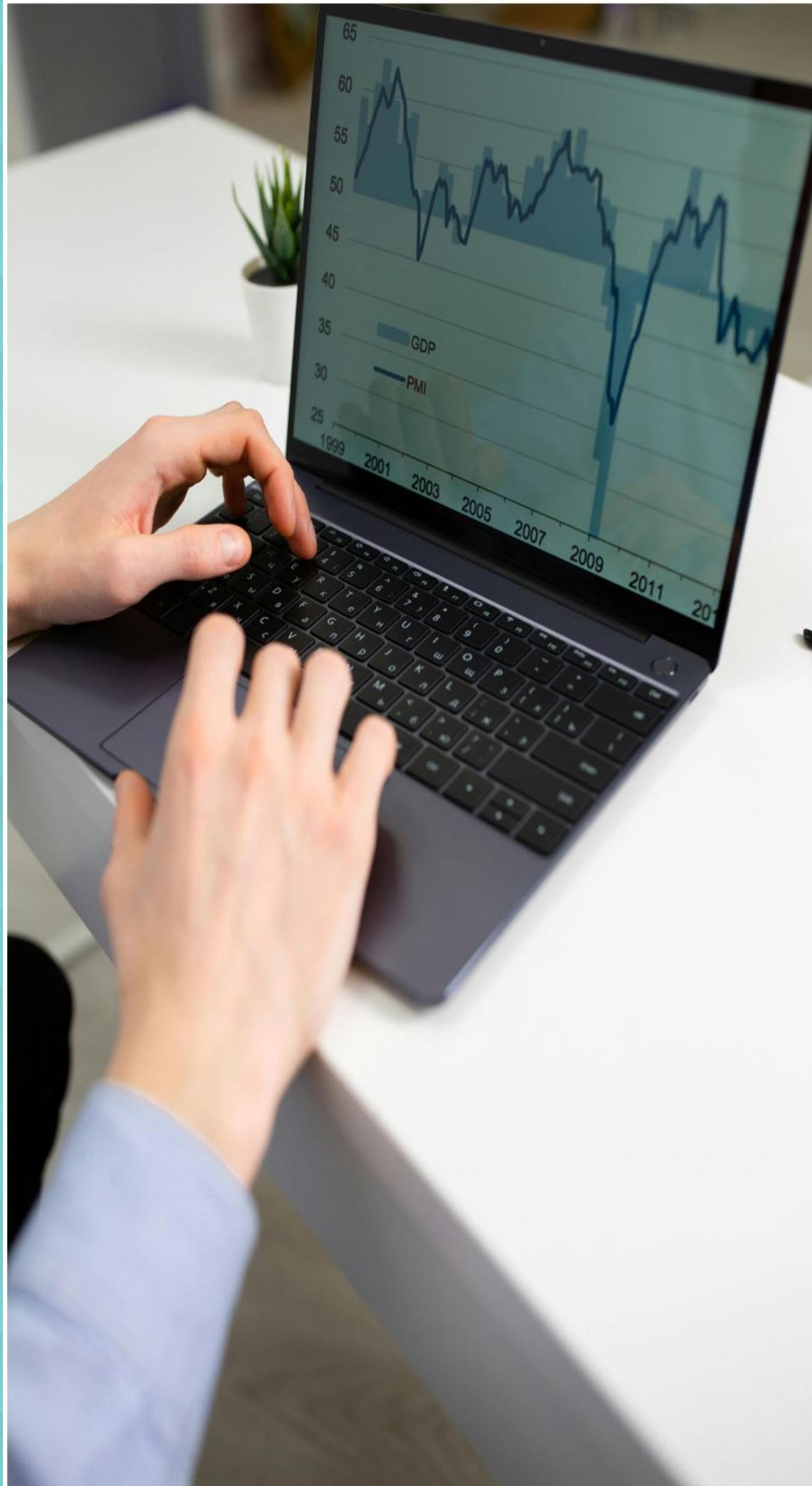


# Introduction

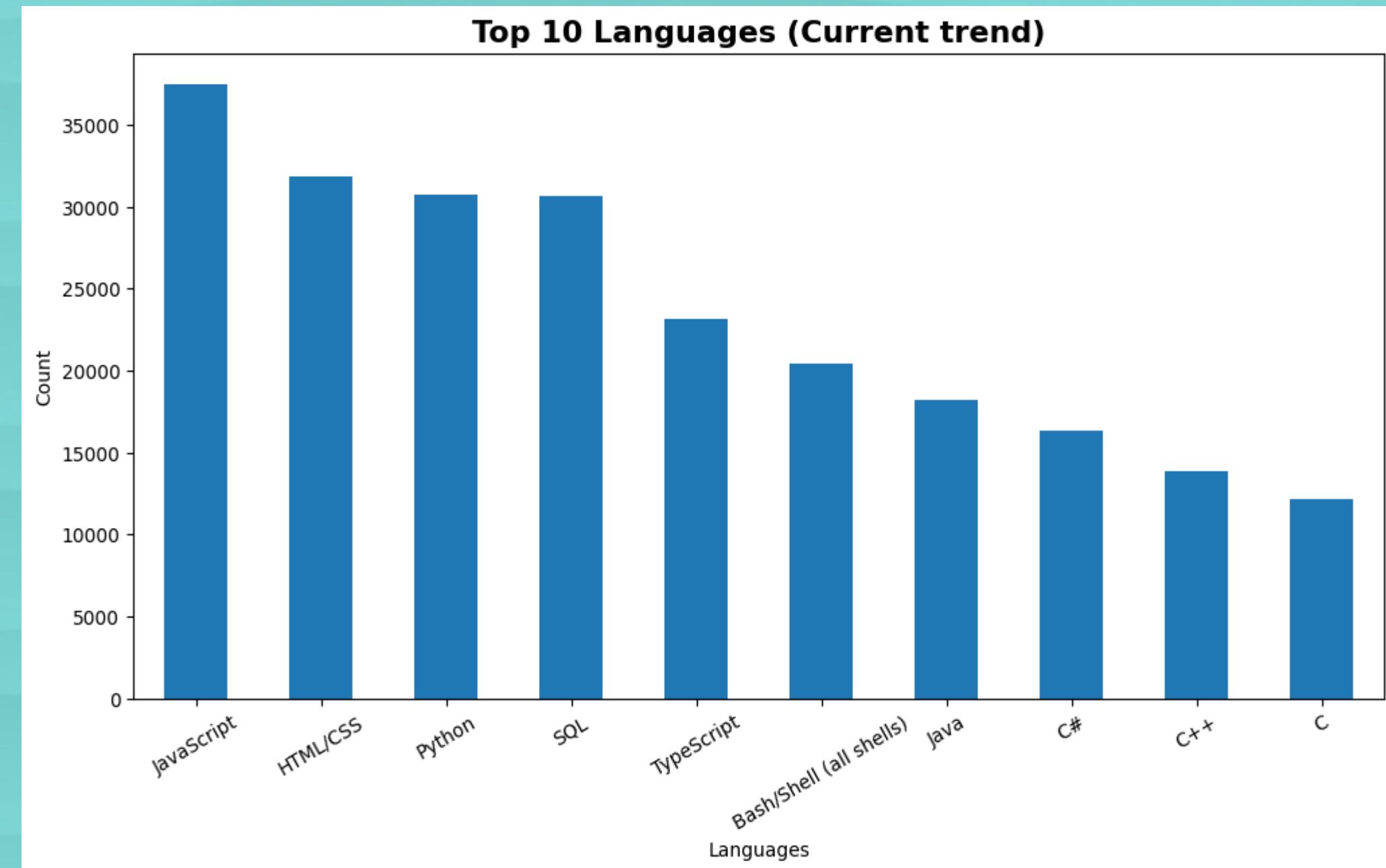
- This report analyzes 2024 Stack Overflow Developer Survey to identify current/future in-demand skills (languages, Databases, platforms, frameworks) for our global IT consulting firm's annual trends report.
- The target of this report are Engineering managers, HR leaders, and consultants prioritizing hiring, training, and client solutions in evolving technological requirements.
- This report provides data-backed roadmap—e.g., prioritize JS/TS/Postgres/AWS upskilling amid cloud/web shifts—to maintain competitive edge.

# Methodology

- **Data Sources:** 2024 Stack Overflow Developer Survey (global subset, thousands of devs/students); job-postings.xlsx (hiring demand).
- **Collection:** Direct download; multi-select cols exploded for top-N analysis (e.g., languages "worked with"/"want").
- **Key Wrangling:** Removed duplicate rows; Treated nulls according to their missing % : Used mode (<10% null in categorical data like age, remote work type), Used median (for numerical data), Also in some cases, filled nulls with 'No response' to prevent bias, 3-step group/global median (>50% numerical data like job satisfaction rating, salary); salary outliers >\$800K removed to improve visualization and remove bias because of high salary executives.
- **Analysis Tools:** Python (pandas, seaborn, plotly, matplotlib, sklearn); sqlite3 queries; Looker Studio dashboard.



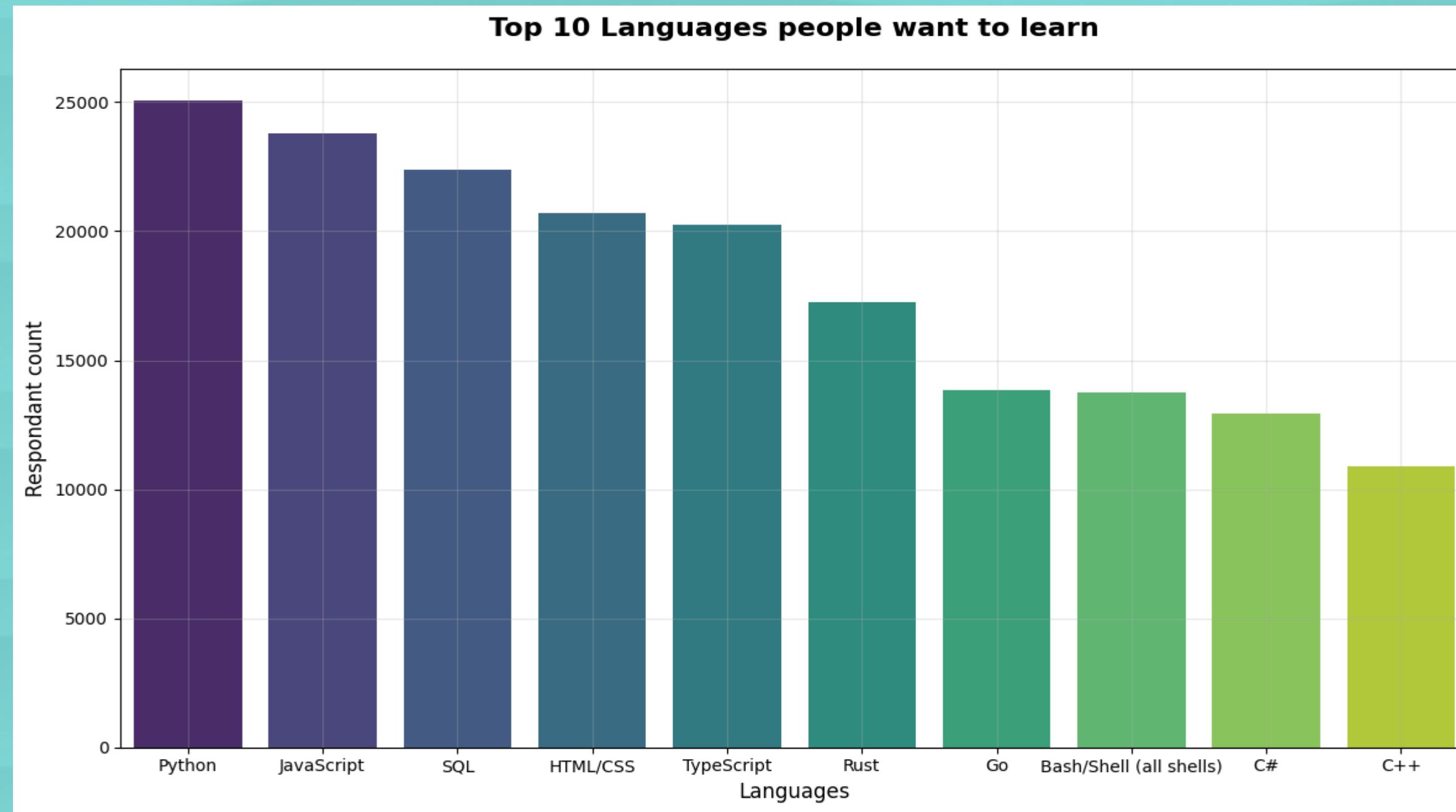
# Programming Languages (Current Trend)



- **Web stack dominates:** **JavaScript/HTML/CSS**, Python top 3 (full-stack/frontend priority).
- **SQL** universal choice (data access critical across roles).
- **TypeScript** (#5) signals modern scripting language adoption.

Implications: Hiring/training must **prioritize JS ecosystem + SQL fluency**; Typescript upskilling will differentiate.

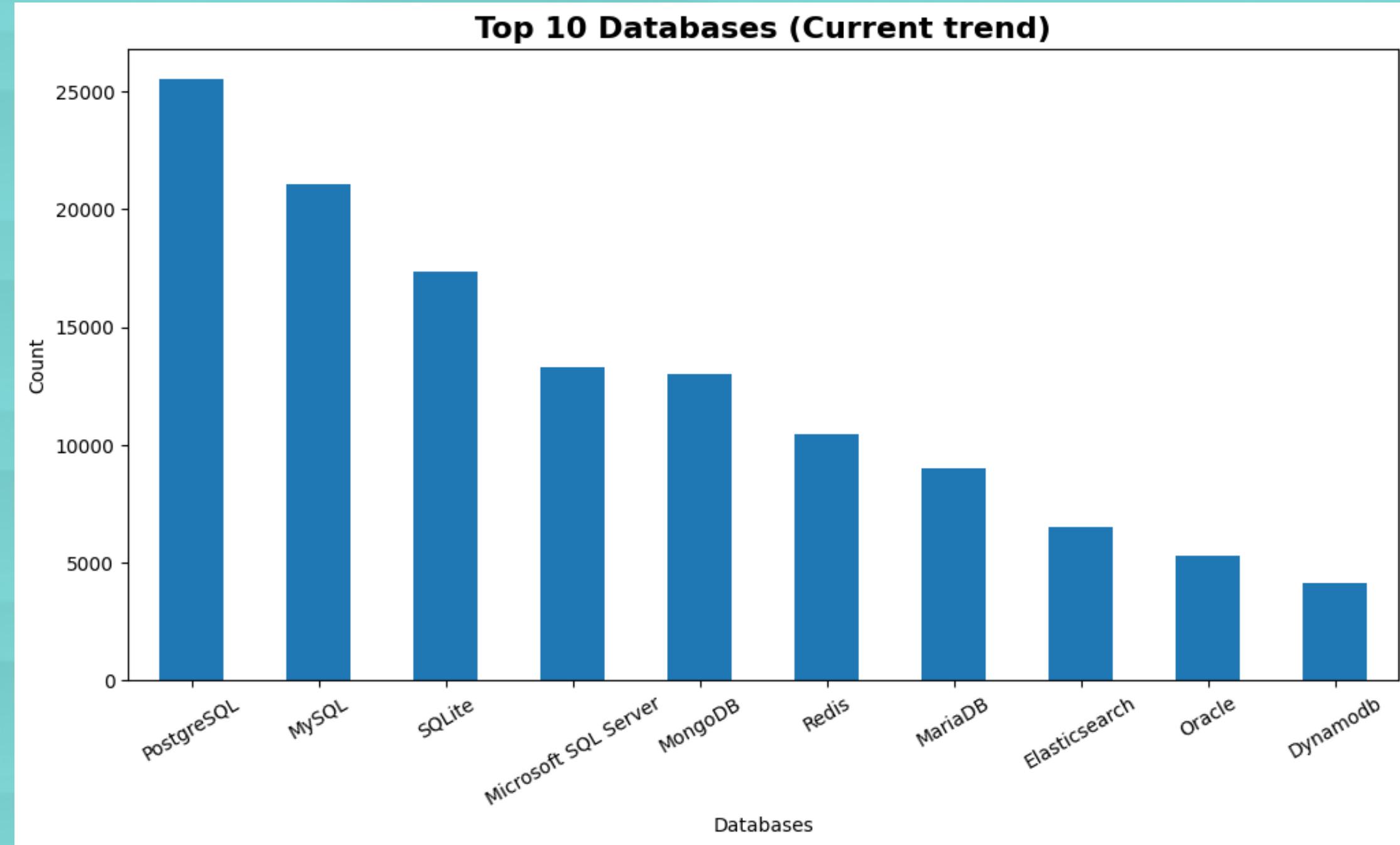
# Programming Languages (Future Trend)



- **Python** capturing future trend (emerging AI/data science interest).
- **JS/SQL/TS remain top 4 (sustained demand).**
- Emerging interest: **Go (#6), Rust (#7)—performance/systems programming.**

Implications: **Future-proof consultants with Go/Rust** for cloud-native/high-performance projects; **Python now essential**, not optional.

# Top Databases (Current Trend)

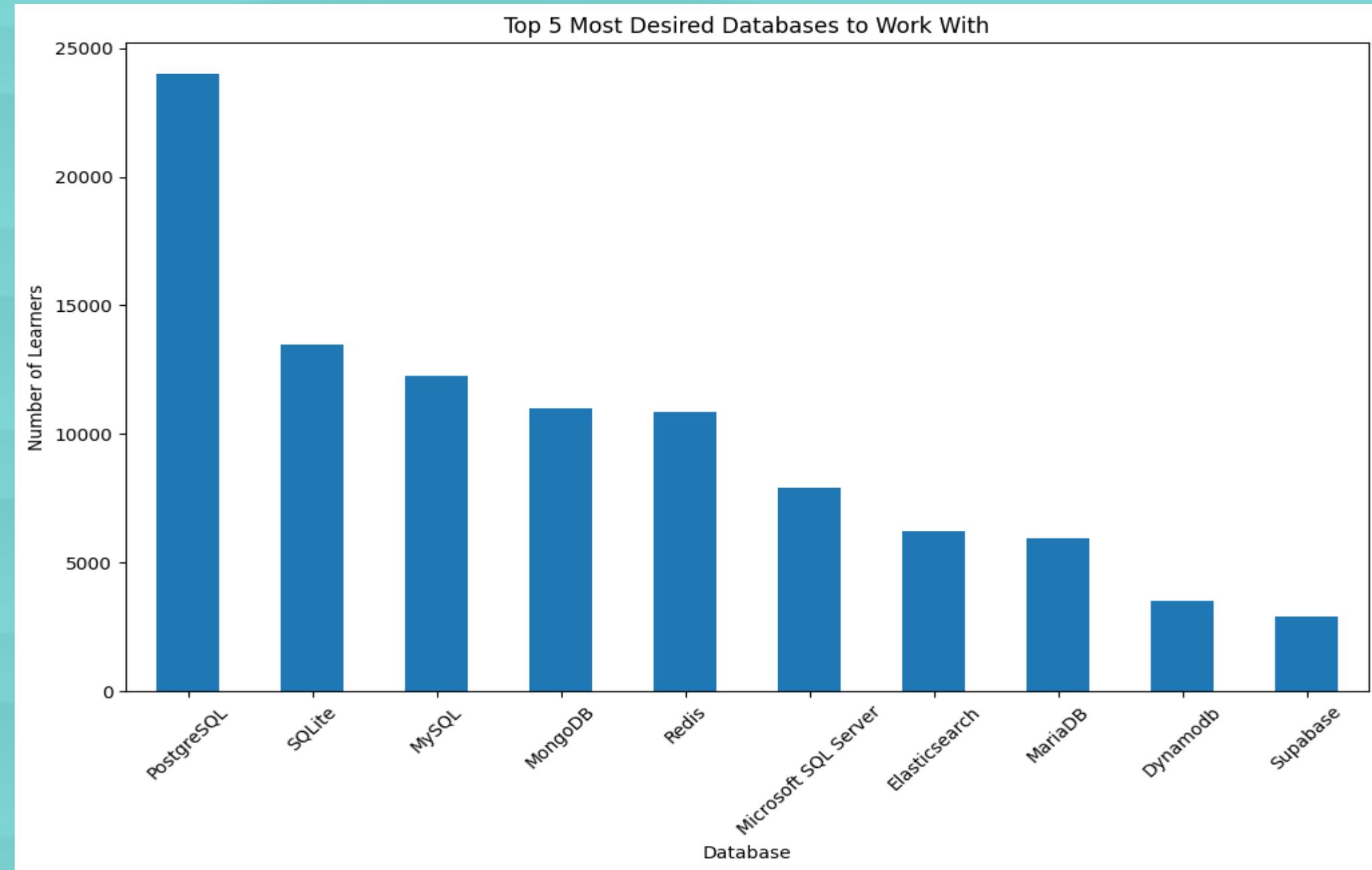


- Relational DBs lead: **PostgreSQL dominates** (25K+ users), runner-up MySQL—open-source, enterprise-grade choice.
- NoSQL presence: MongoDB (#5, 13K), Redis (#6, 10.5K) signal cloud/real-time use cases.
- Drop-off: **Oracle (#9, 5.3K) trails modern stacks** significantly.

Implications:

Train on **Postgres first**: Industry standard for new projects, Dual-skill consultants: SQL + NoSQL (MongoDB/Redis) needed for hybrid architectures. Cloud-native insight: Postgres/MongoDB align with AWS/Azure managed services.

# Top Databases (Future Trend)



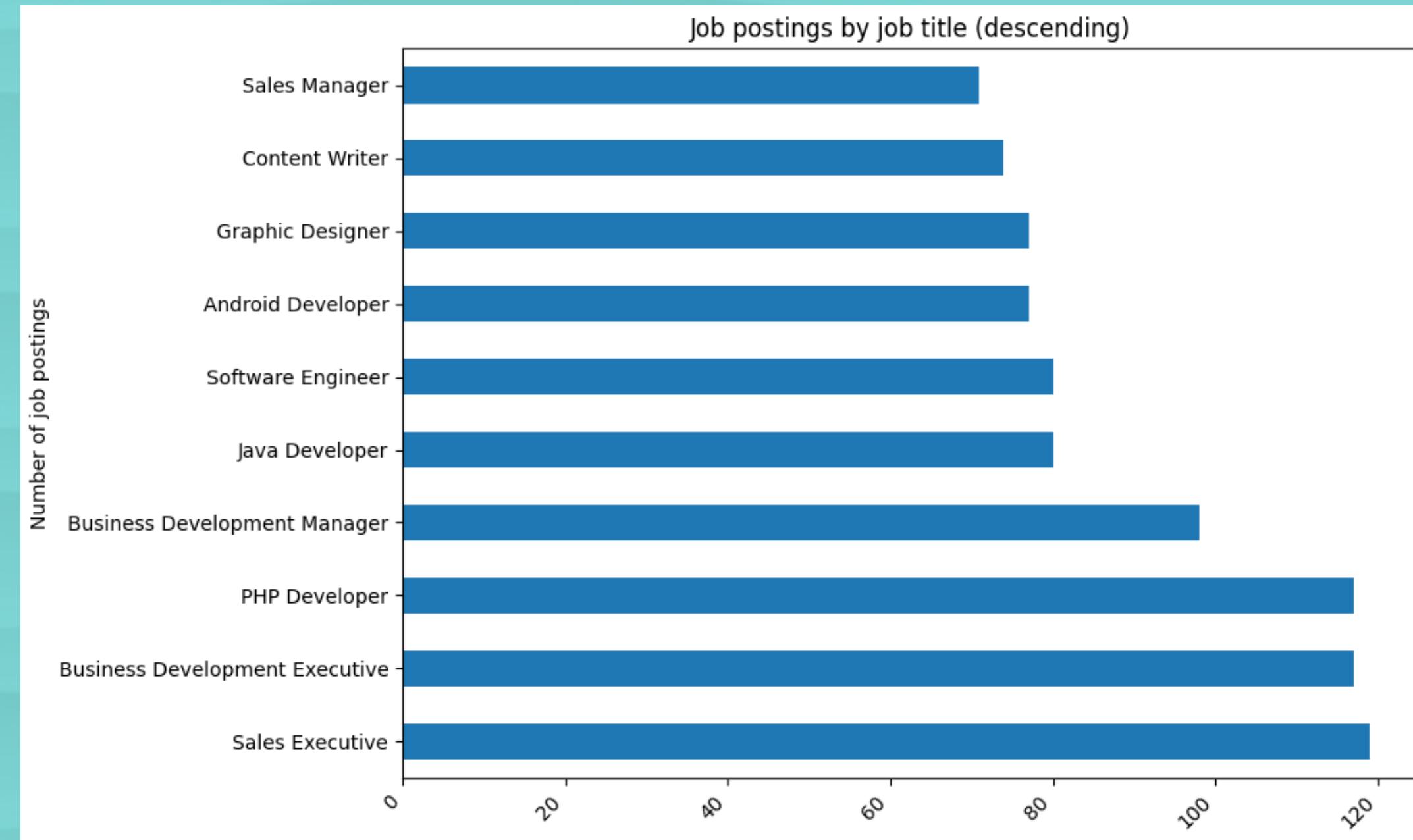
- **PostgreSQL maintains #1** (24K learners)—current dominance extends to future aspirations.
- **SQLite jumps to #2** (13.5K vs 17K current)—lightweight DB for edge/mobile development gaining traction.
- Emerging: **Supabase** (#10, 3K)—Firebase alternative signals interest.

Implications:

**Postgres** relevance validated: Sustained top demand → **prioritize advanced training** (replication, partitioning, JSON ops). MySQL declining appeal: **Consider Postgres migrations for long-term projects**. Pair Postgres with managed services (AWS RDS, Supabase).

**Supabase: Early adoption opportunity to gain advantage.**

# Job postings visualization



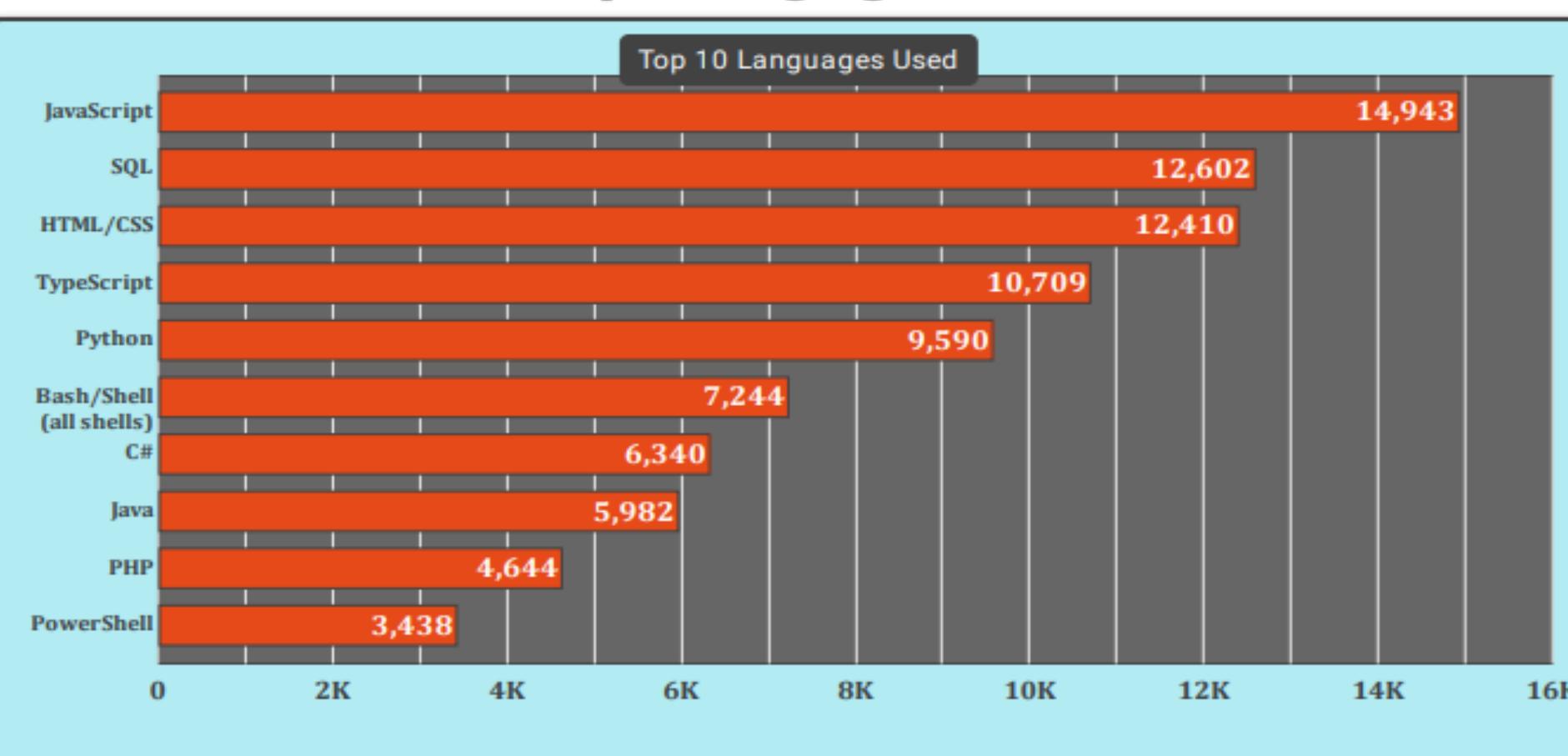
- **Sales/Business roles dominate** (Sales Exec/Bus Dev Exec/Manager)—**3x technical postings**.
- **PHP Developer #3** (120 postings)—legacy web stack still drives hiring despite language trend decline (Not in either top 10 current/future trends)
- **Java/Software Engineer tier 2** (85 each)—**enterprise demand stable** for backend/Android.

Implications:

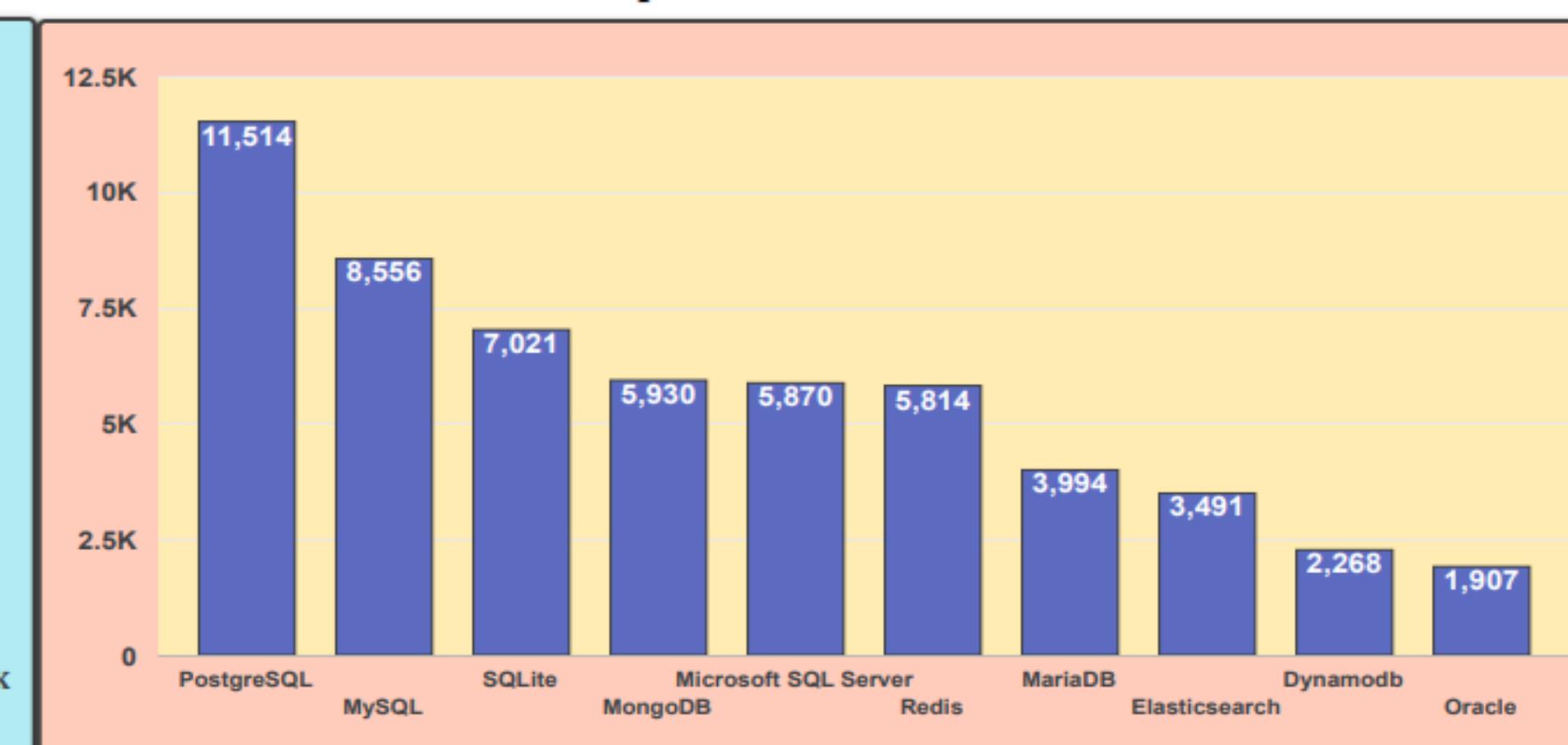
**Hybrid consulting opportunity:** Technical skills (PHP/Java) + sales acumen = high-value client-facing roles. **PHP paradox: High job demand vs declining developer interest = competitive advantage opportunity.**

# Current language usage trend

Top 10 Languages Used



Top 10 Databases Used

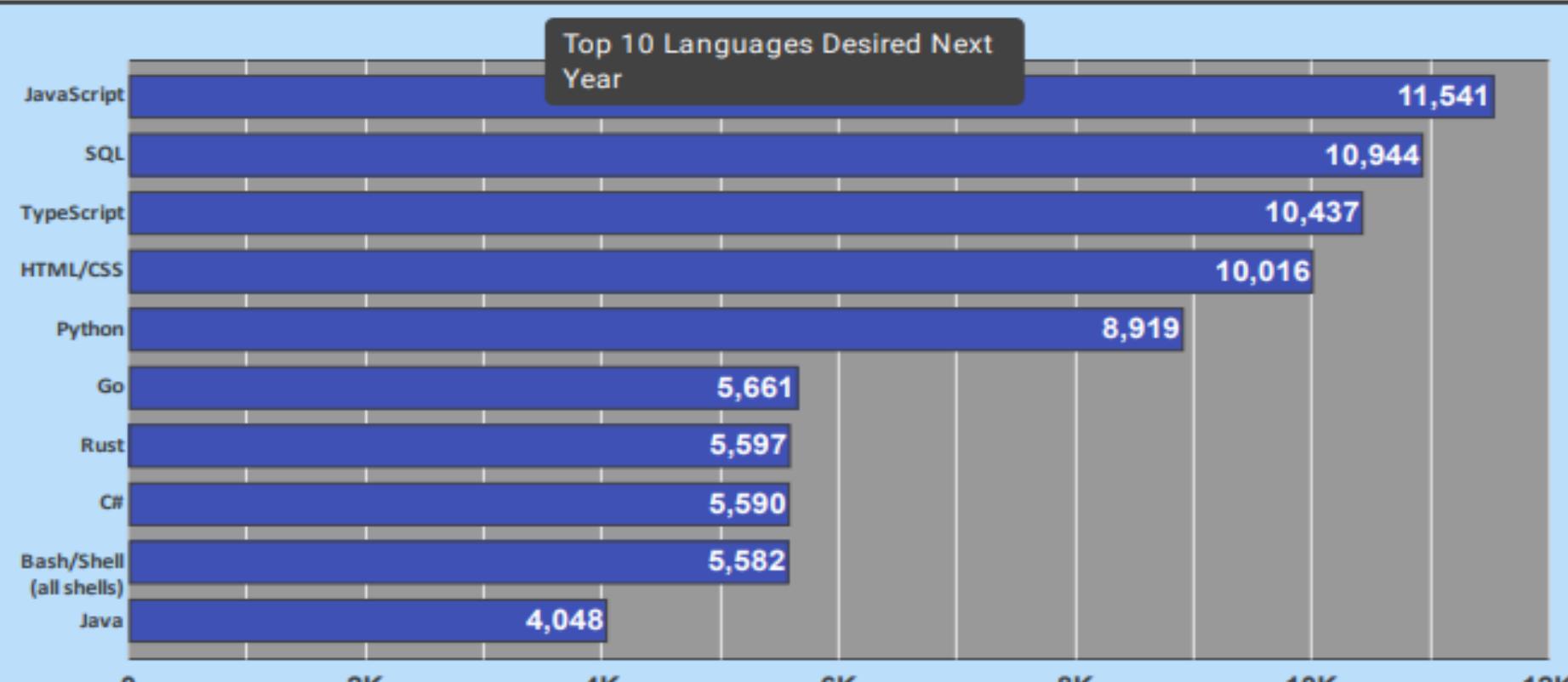


Top 10 Platforms Used

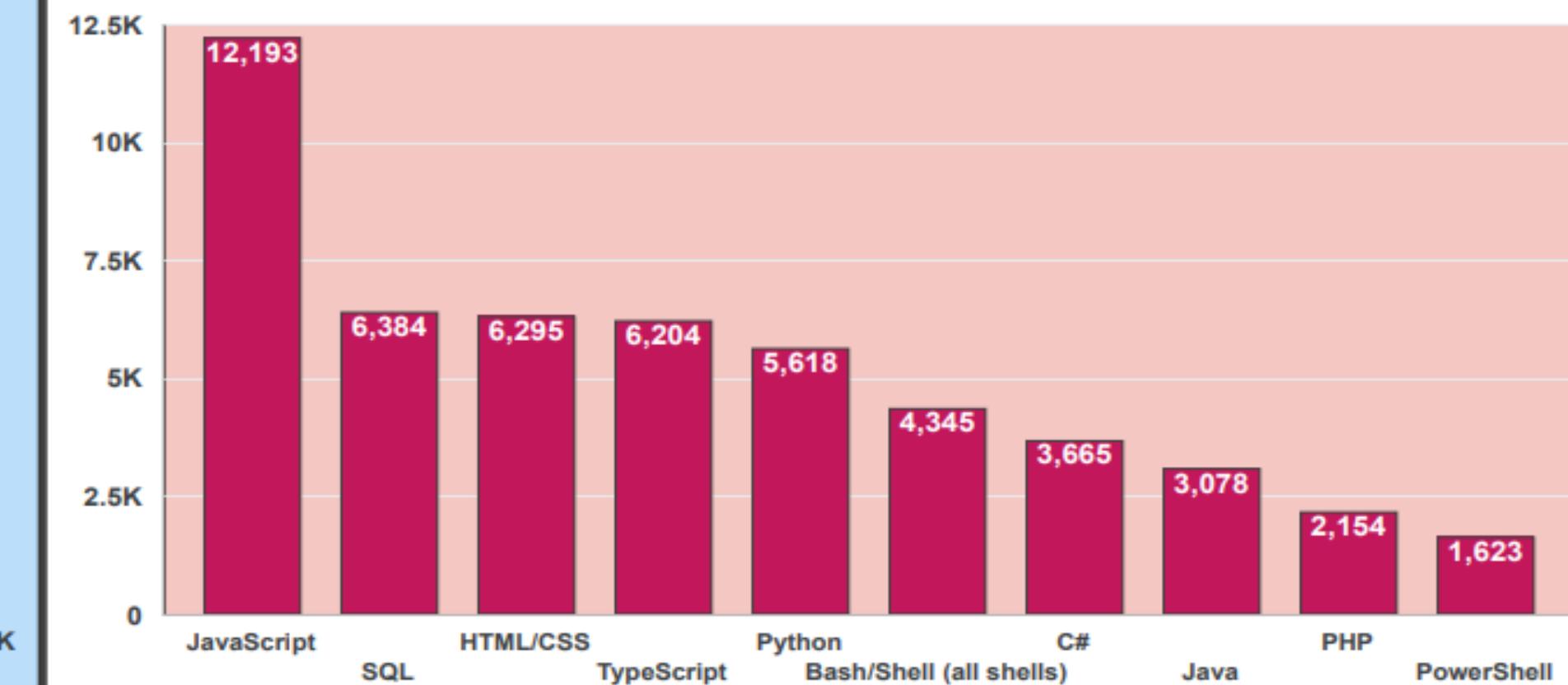


# Future Technology trends

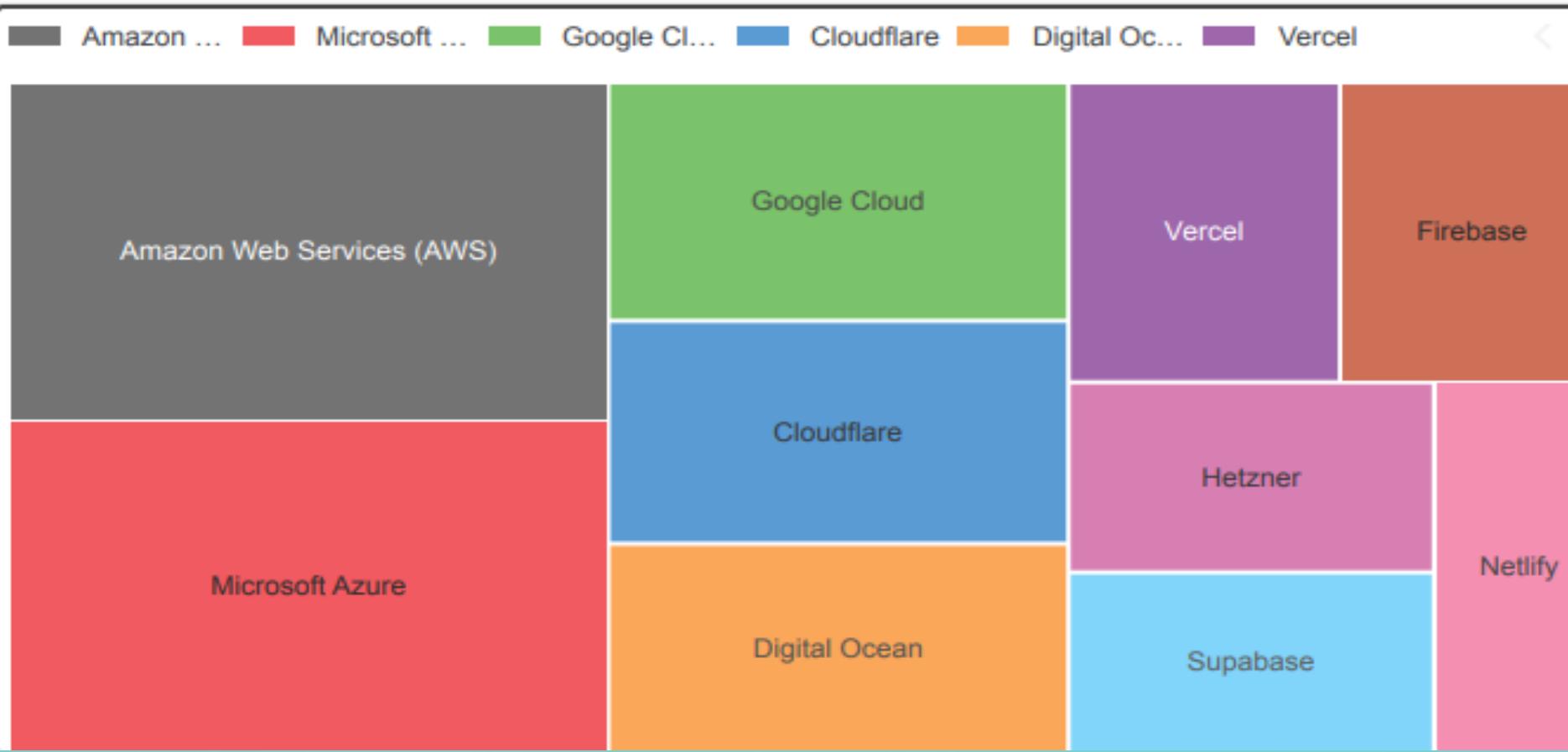
## Top 10 Languages Desired Next Year



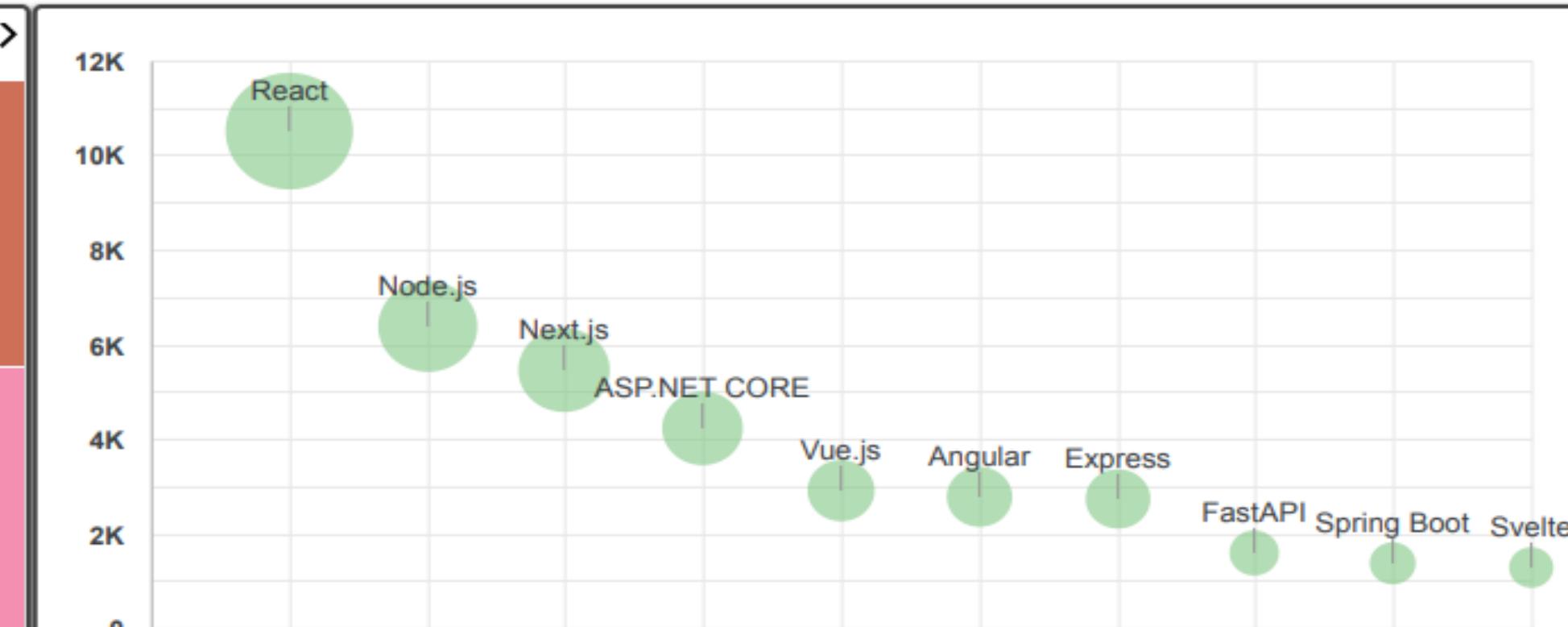
## Top 10 Databases Desired Next Year



## Top 10 Desired Platforms

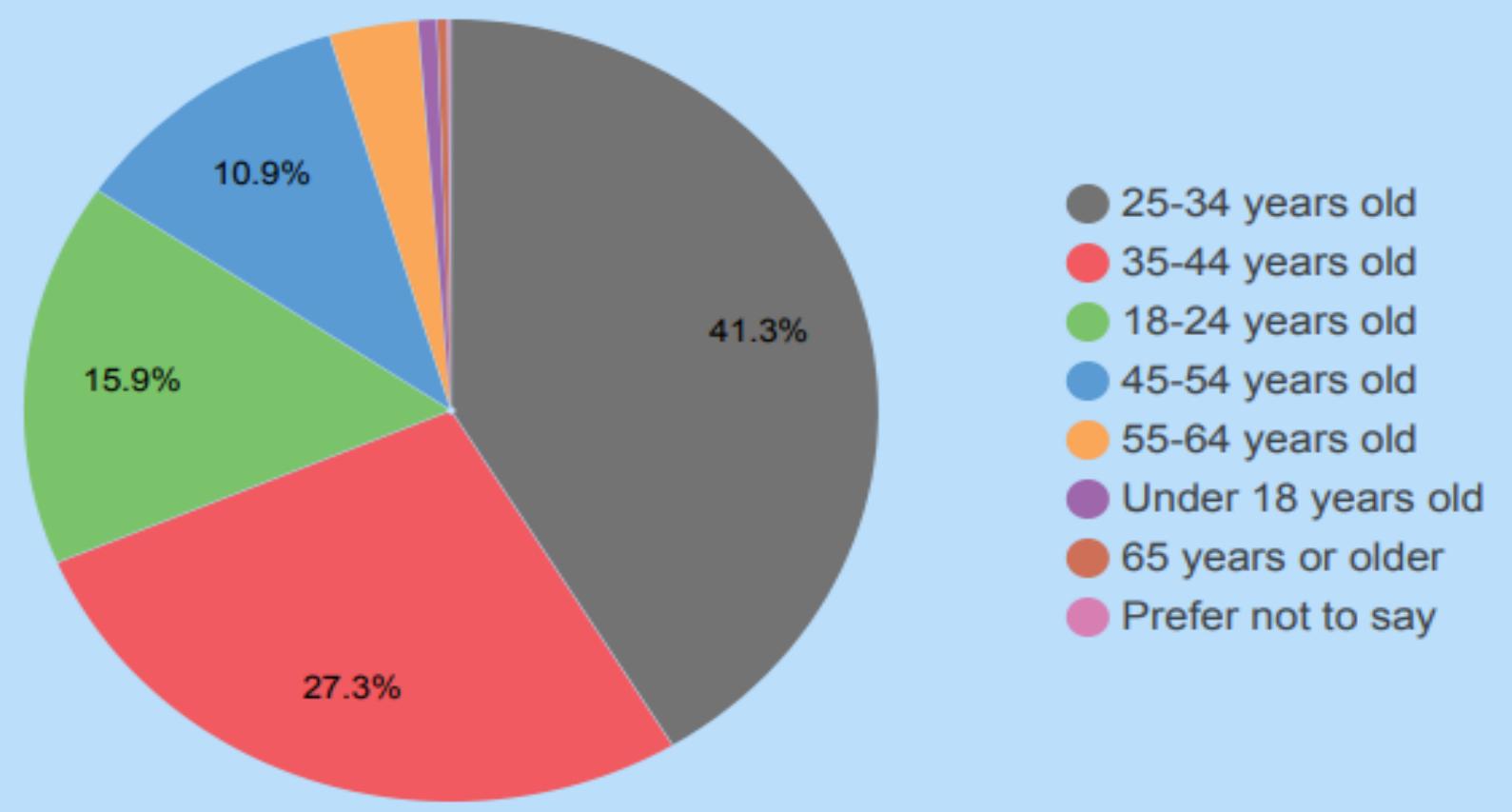


## Top 10 Desired Web Frameworks

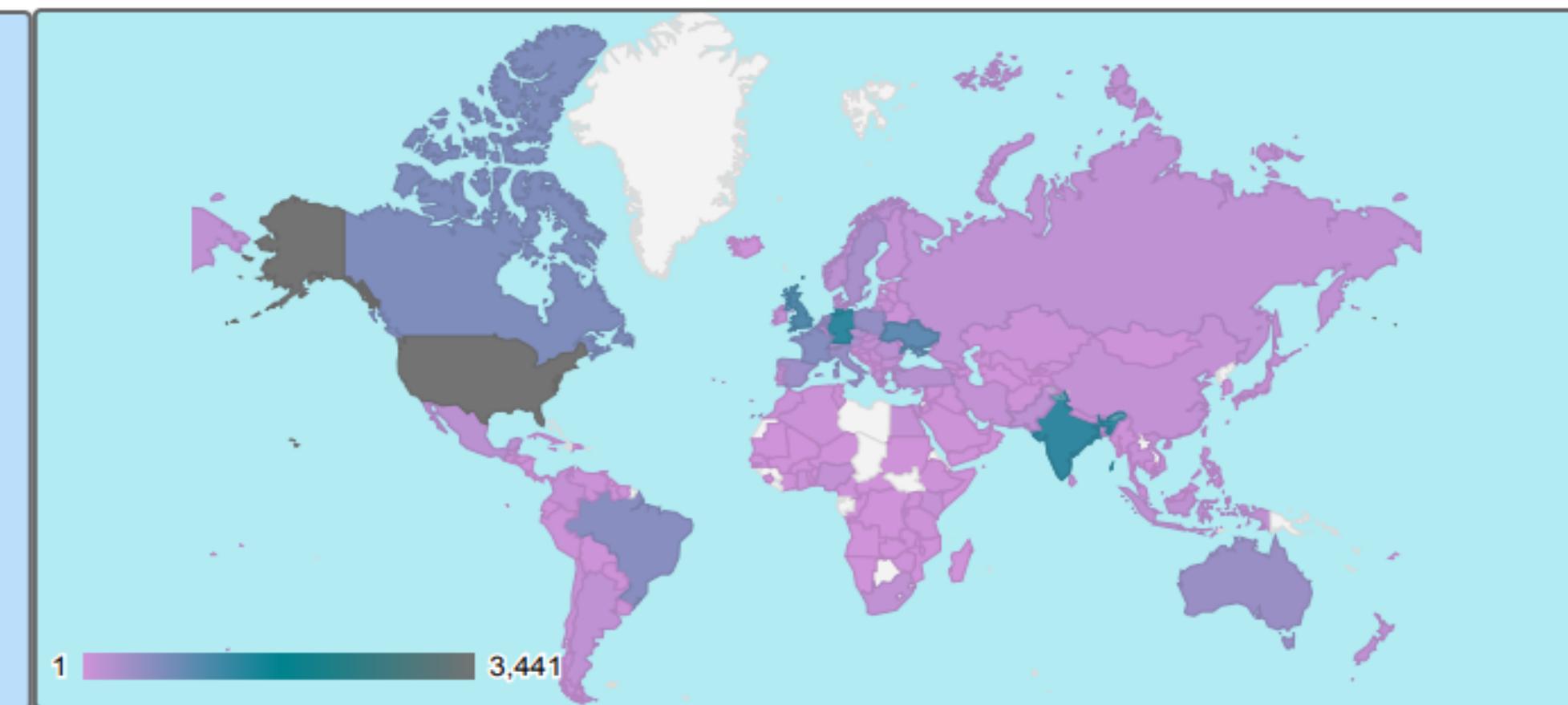


# Demographics trends

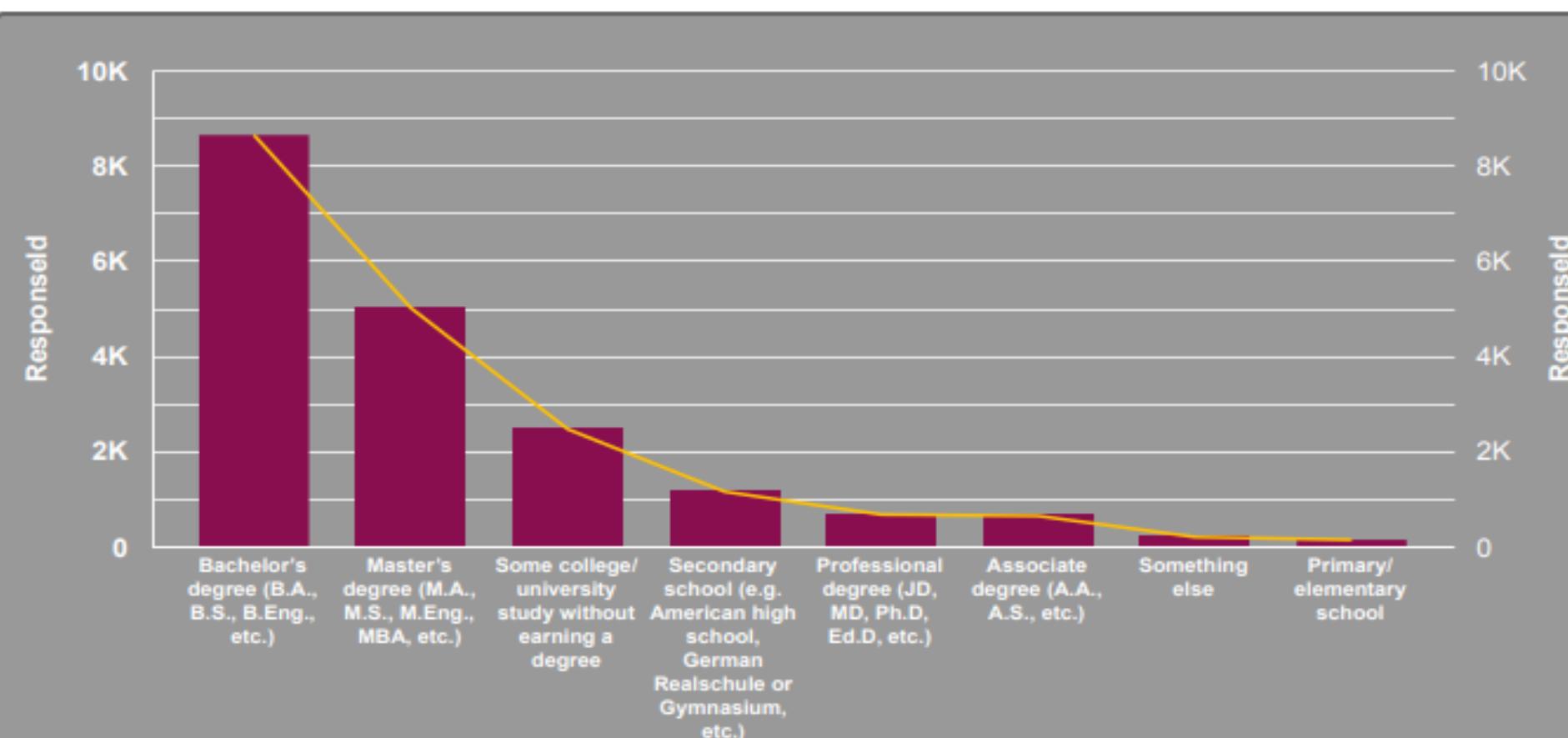
## Respondents by Age



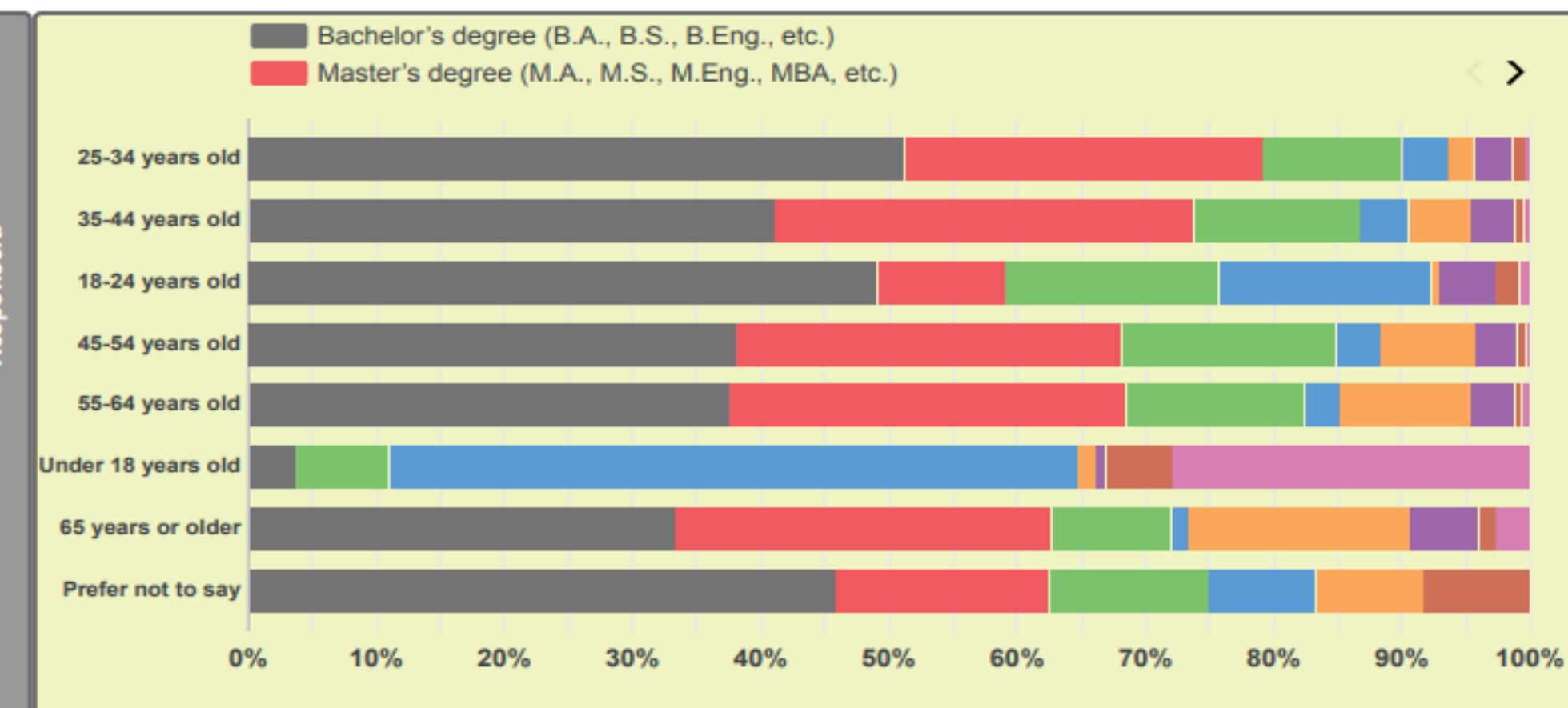
## Respondent Count by Country



## Respondent Distribution by Education Level



## Respondent Count by Age, Classified by Education Level



# Visualization insights

## Current Technology Usage Insights

- Languages:** JS/SQL/HTML/CSS/Python dominate usage (~15K-9K counts)—web/data stack core.
- Databases:** PostgreSQL/MySQL/SQLite lead relational (~25K-17K)—structured data rules.
- Platforms:** AWS/Microsoft Azure/Google Cloud top 3—cloud migration mature.
- Frameworks:** Node.js/React/jQuery/Spring Boot (~12K-10K)—full-stack web priority.

## Future Technology Trends Insights

- Languages Desired:** JS/SQL/TS/HTML/CSS/Python stable; Go/Rust emerge (5.6K)—performance focus.
- Databases Desired:** PostgreSQL/SQLite/MySQL/MongoDB/Redis (~24K-10K)—Postgres unchallenged.
- Platforms Desired:** AWS/Azure/GCP/Cloudflare/Vercel—serverless edge rising.
- Frameworks Desired:** React/Node/Next.js/Angular/Vue/Svelte (~12K-8K)—React ecosystem locks in.

## Demographics Insights

- Age:** 41% 25–34yo, 27% 35–44yo—millennial core driving trends.
- Education:** Bachelors (purple dominant), Masters (orange)—degree-heavy sample.
- Geography:** India/EU/NA hotspots (darker shades); low Russia/China/Africa/SA (bias noted).

# Overall findings and implications

## 1. JavaScript Ecosystem Dominates Present & Future

- JS leads current (14.9K) and desired (11.5K) usage; React/Node.js top frameworks (12K+/11K current).
- TypeScript surges to #3 future (10.4K vs 10.7K current)—modern JS standard.

## 2. PostgreSQL Wins Database Race

- PostgreSQL #1 current (25K+) and future (24K); MySQL declining 40% in appeal (21K→12.5K).
- NoSQL stable: MongoDB/Redis consistent

## 3. Cloud-Native Stack Locked In

- AWS/Azure/dominate; Node/React/Next.js frameworks signal serverless/edge computing.
- Emerging: Go/Rust (5.6K), Svelte/FastAPI frameworks—performance-critical future.

## 4. Job Market Paradox

- PHP Developer #3 in postings (120) despite language decline (#9 current, drops to #11 future).
- Sales/Business roles outnumber technical 3:1 (352 vs ~115 dev postings)—commercialization priority.

## Business Implications:

- Immediate hiring priorities: JS/TS + PostgreSQL + AWS (covers 70%+ demand).
- Training roadmap: Upskill PHP→TS, MySQL→Postgres migrations; add Go/Rust for high-performance projects.
- Competitive edge: Hybrid tech-sales talent (PHP skill gap = opportunity).
- Real-world alignment: Findings match Gartner cloud adoption trends (85% enterprises multi-cloud by 2025).

# Conclusion

## Strategic Recommendations:

- 1. Core Skill Stack for 2025:** Prioritize JavaScript/TypeScript, PostgreSQL, AWS, React/Node.js—these technologies show sustained demand across current usage and future aspirations.
- 2. Phase Out Legacy Dependencies:** Accelerate MySQL→PostgreSQL migrations; maintain PHP expertise only for legacy support given declining developer interest despite job demand.
- 3. Invest in Emerging Technologies:** Pilot Go/Rust for performance-critical projects; explore Svelte/FastAPI/Supabase for next-gen client offerings.
- 4. Talent Acquisition Focus:** Target 25–34 year-old developers with Bachelors/Masters degrees (68% of workforce); emphasize hybrid technical-sales capabilities given market dynamics.
- 5. Geographic Diversity Needed:** Survey shows India/EU/NA bias—expand talent sourcing to underrepresented regions for competitive advantage.

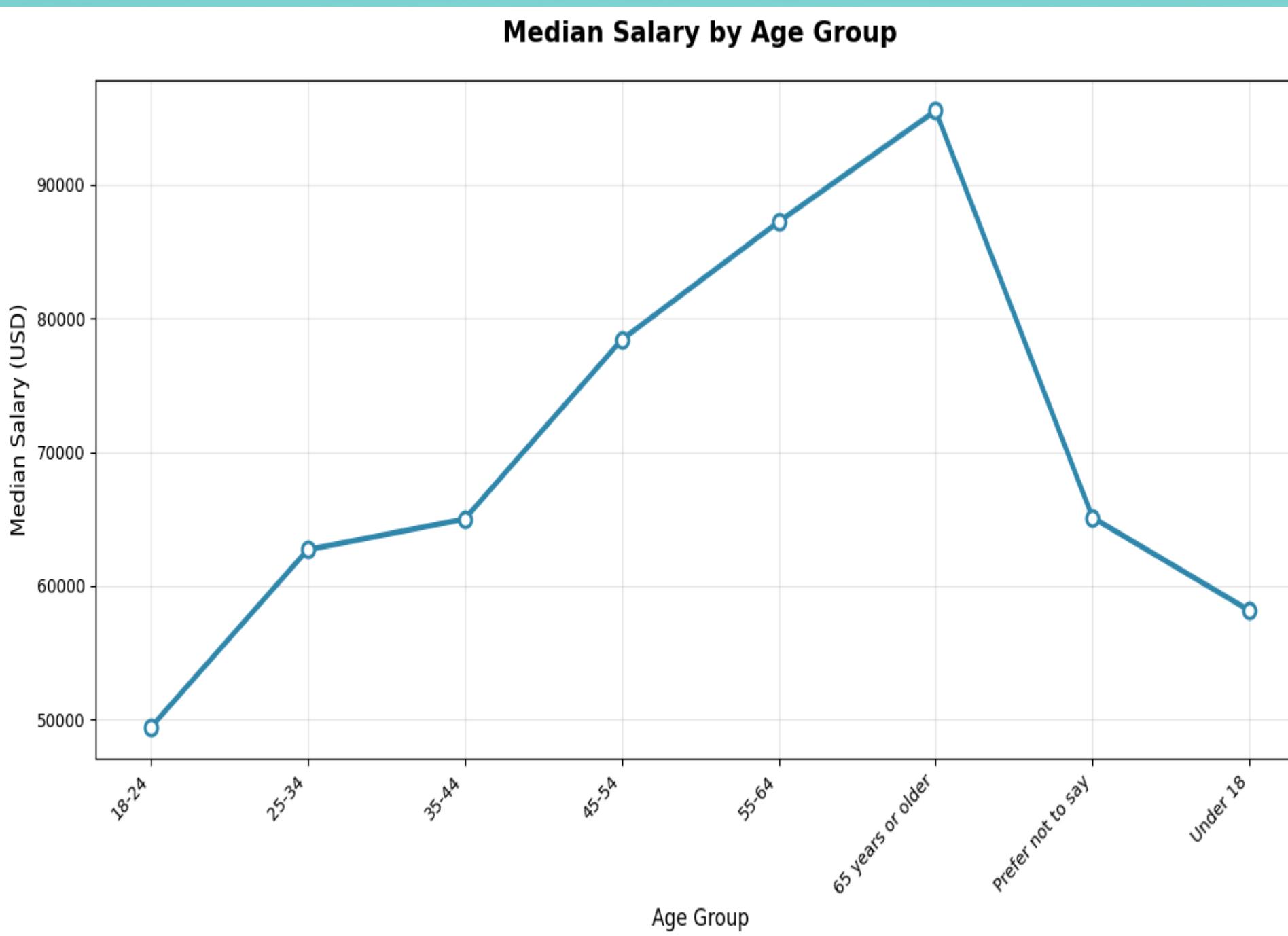
## Next Steps:

- Quarterly skill demand monitoring (Stack Overflow + job posting tracking)
- Launch Postgres/TypeScript bootcamps Q2 2026
- Pilot Go/Rust projects with performance-sensitive clients Q3 2026
- Final Takeaway: Data-driven upskilling in JS/TS/Postgres/AWS positions our firm competitively in cloud-native consulting market.

# Appendix

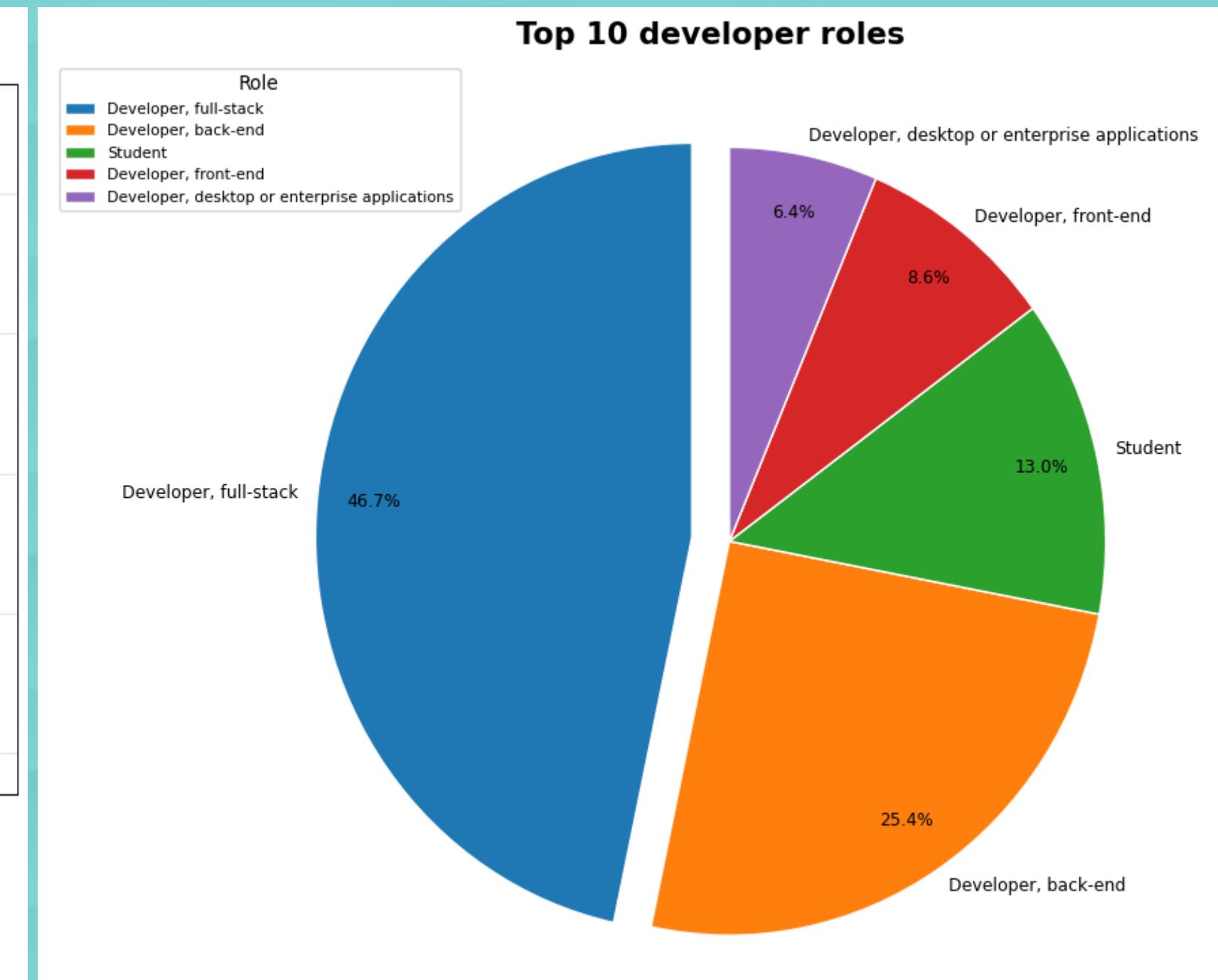
## Median Salary Distribution by age group

Median Salary by Age Group



## Top 10 developer roles

Top 10 developer roles



Finding – Salary increases with age  
(Experience is a strong factor)

Finding – Full stack developers domination