

Data Analysis to Identify Emerging and Future Technology Trends

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OUTLINE



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- Methodology
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 - Visualization – Charts
 - Dashboard
- Discussion
 - Findings & Implications
- Conclusion
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EXECUTIVE SUMMARY



- Overview of data analysis process and findings
- Key insights on emerging and future skills
 - Collected data using APIs and web scraping
 - Cleaned and wrangled data for analysis
 - Performed exploratory data analysis to uncover trends
 - Created visualizations to highlight key findings
 - Developed a comprehensive dashboard



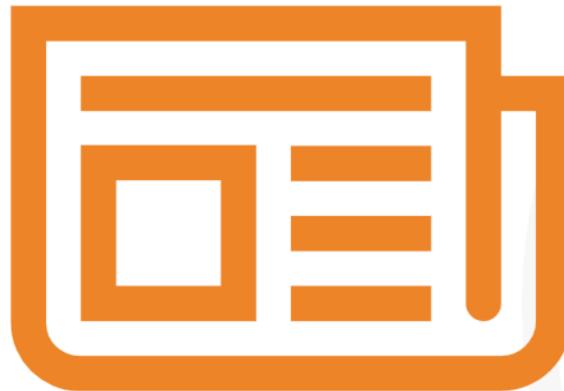
INTRODUCTION



- **Purpose:** To identify emerging and future skills by analyzing current and future technology trends
- **Target Audience:** Technology managers, recruiters, and developers.
 - **Value:** To provide concrete evidence to help you to choose the right technology.



METHODOLOGY



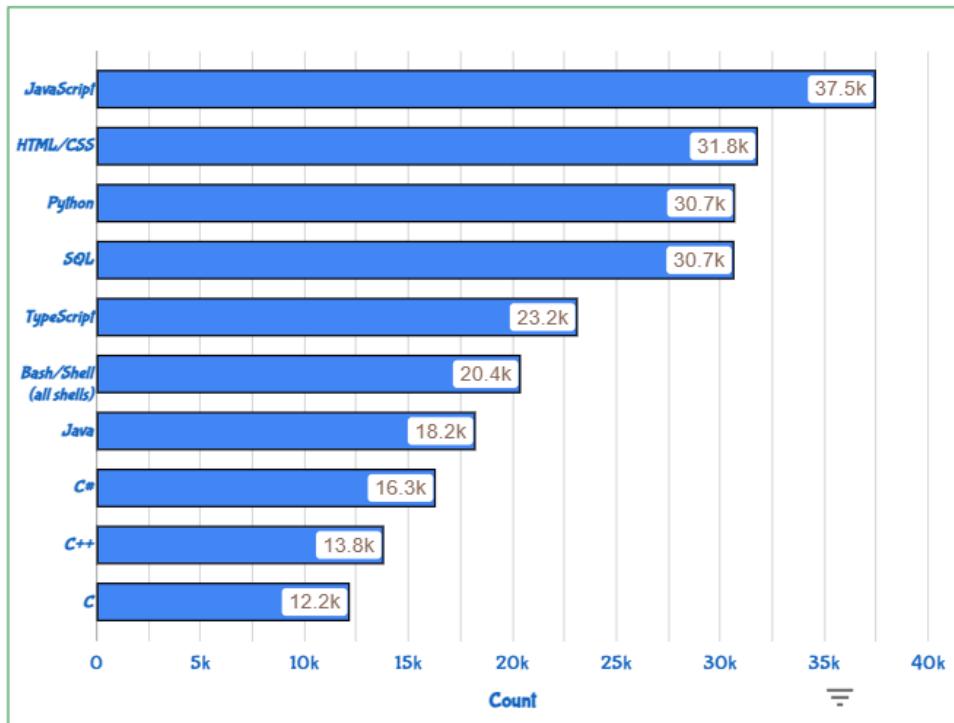
- Data Collection:
 - APIs and web scraping techniques
- Data Wrangling:
 - Cleaning, deduplication, imputation, and normalization
- Exploratory Data Analysis:
 - Distribution analysis, outlier detection, and correlation analysis
- Data Visualization:
 - Creating various plots to highlight trends
- Dashboard Creation:
 - Assembling visualizations into an intuitive dashboard



PROGRAMMING LANGUAGE TRENDS

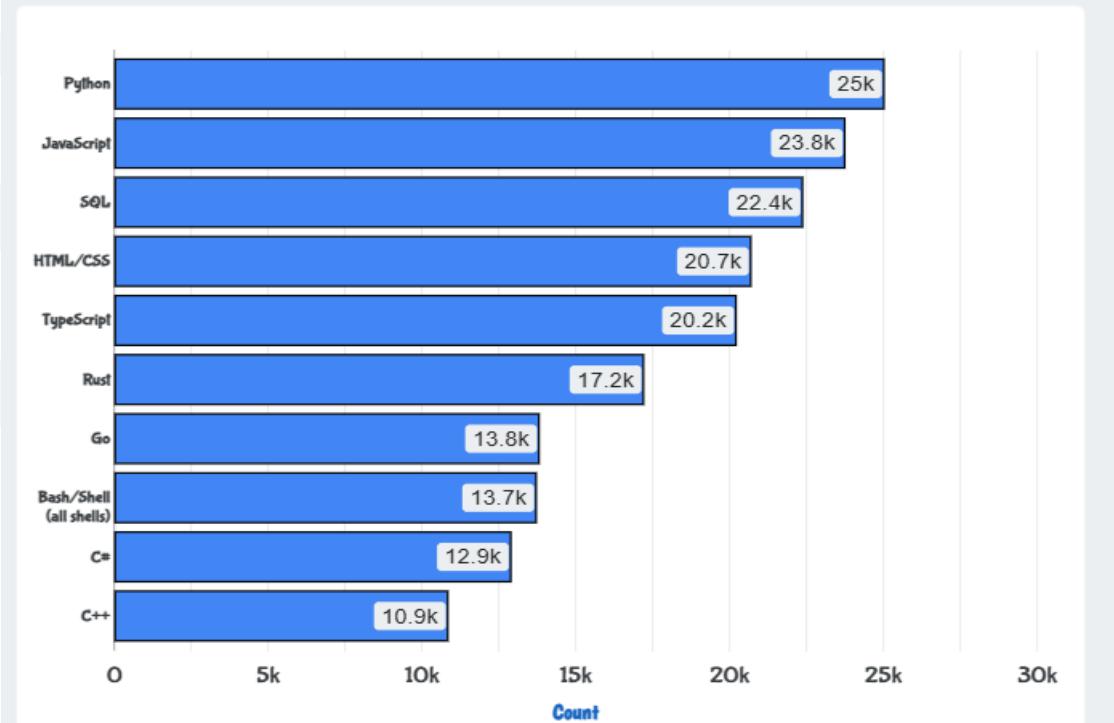
Current Year

Top Ten Programming Languages



Next Year

Top Ten Language Want To Work With



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **Current Popularity:** JavaScript is the most used language in the "Current Year" with 37.6k counts, followed closely by HTML/CSS, Python, and SQL.
- **Future Demand:** There is a significant shift in interest for the "Next Year". Python becomes the most desired language to work with (25k), while JavaScript drops to second place (23.8k).
- **Growing Interest:** Languages like Python and TypeScript show strong current usage and maintained or slightly increased interest for the next year, suggesting sustained or growing relevance.
- **Stable Usage:** HTML/CSS and SQL maintain high positions in both current usage and future interest, highlighting their foundational roles in web development and data management.

Implications

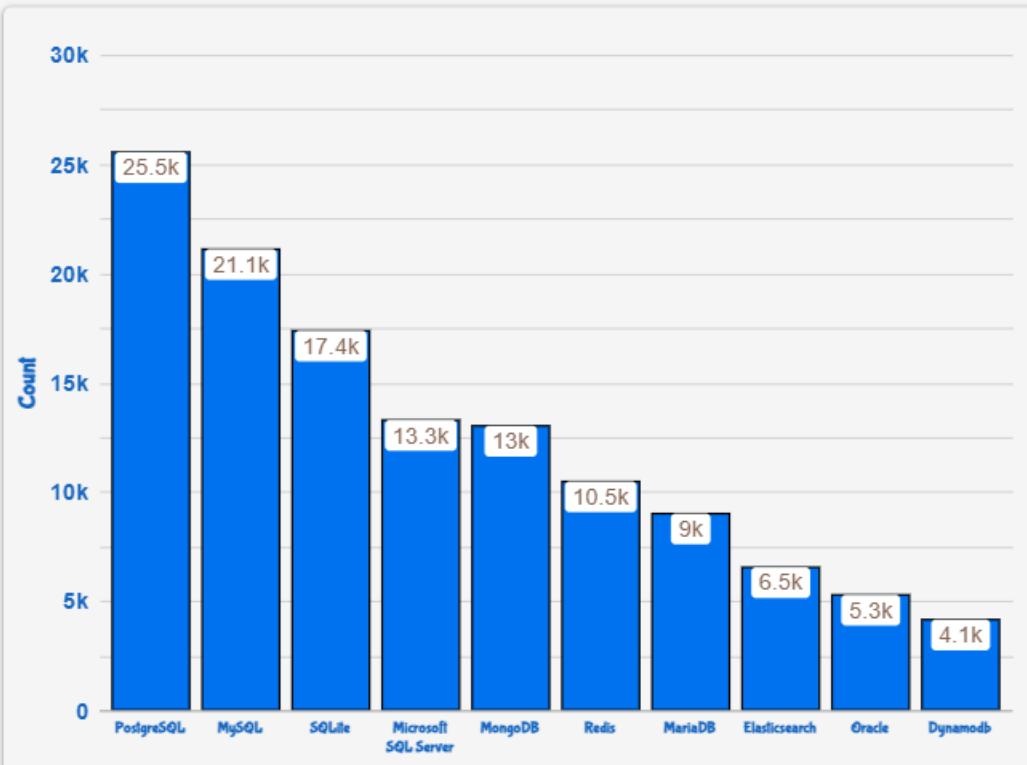
- **Skill Prioritization:** The data suggests that while core web technologies like JavaScript and HTML/CSS are essential, developers are increasingly focused on acquiring or using skills in Python, likely due to its applications in data science, machine learning, and backend development.
- **Educational Focus:** Educational institutions and training programs might consider emphasizing Python and TypeScript to meet future developer demand and ensure graduates have sought-after skills.
- **Hiring Trends:** Companies looking to hire for future projects may find a larger pool of talent interested in working with Python and TypeScript, indicating where the workforce is trending.
- **Technology Adoption:** The desire to work with certain languages over others can influence the adoption of new technologies and frameworks within the industry.



DATABASE TRENDS

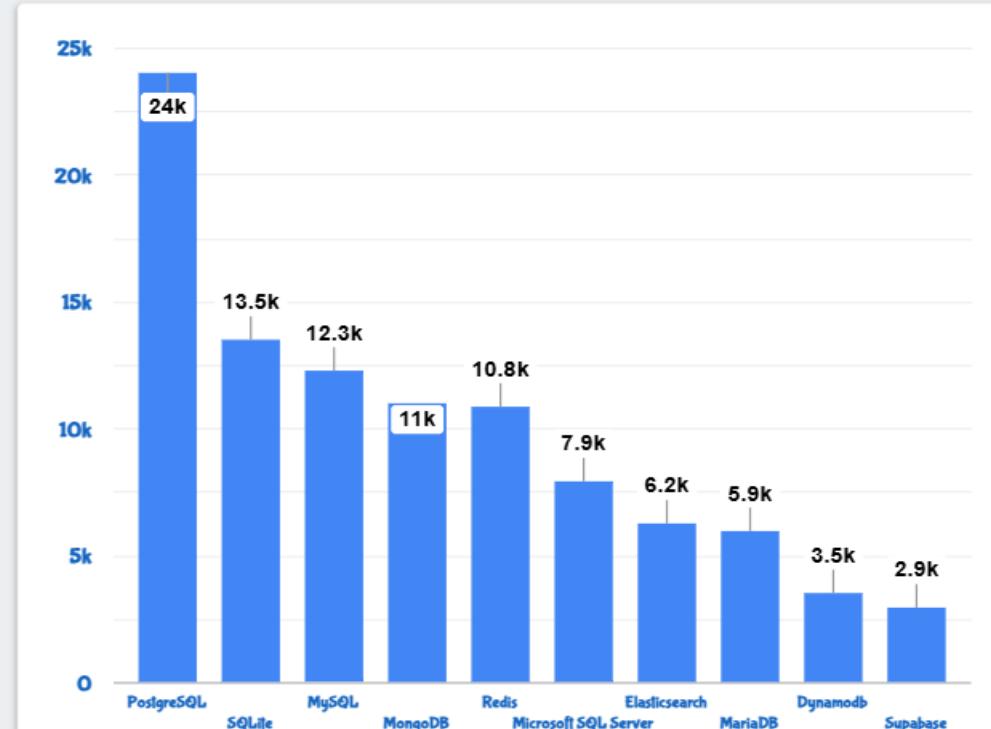
Current Year

Top Ten Databases



Next Year

Top Ten Databases Want to Work With



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **Current Dominance:** PostgreSQL is the most used database in the current year, with approximately 25.5k users. MySQL is second with 21.1k users.
- **Strong Future Interest:** PostgreSQL also leads as the database users most want to work with next year (24k), indicating strong satisfaction and continued relevance.
- **Emerging Interest:** Redis and MongoDB show a substantial level of interest for the next year (13.5k and 12.3k respectively), suggesting growing adoption or exploration of NoSQL and in-memory databases.
- **Stable Players:** Microsoft SQL Server and MongoDB maintain a consistent presence in both current usage and future interest rankings.
- **Declining Interest:** Oracle shows lower numbers in both charts compared to others, indicating a potential shift away from traditional, potentially more expensive, enterprise solutions.

Implications

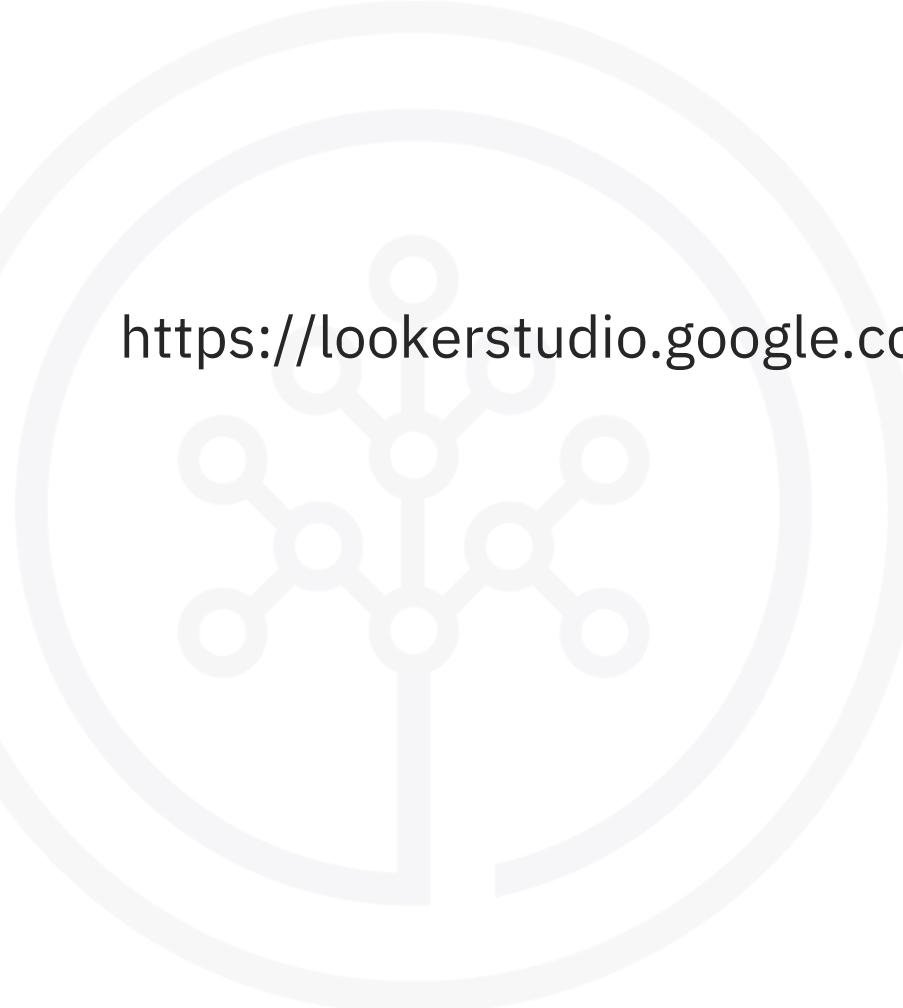
- **Talent and Training:** The high demand for PostgreSQL skills suggests a strong job market for professionals proficient in this system. Training programs and educational institutions may need to prioritize PostgreSQL in their curricula.
- **Market Shifts:** The data implies a potential shift in the database market, with open-source and specialized databases (like Redis and MongoDB) gaining traction over proprietary systems like Oracle.
- **Technology Adoption:** Businesses and developers are increasingly looking towards flexible, scalable, and potentially more cost-effective database solutions to meet evolving data management needs.
- **Focus on Modern Stacks:** The strong interest in "Next Year" options highlights a desire to work with modern technologies that support current development practices and application requirements.



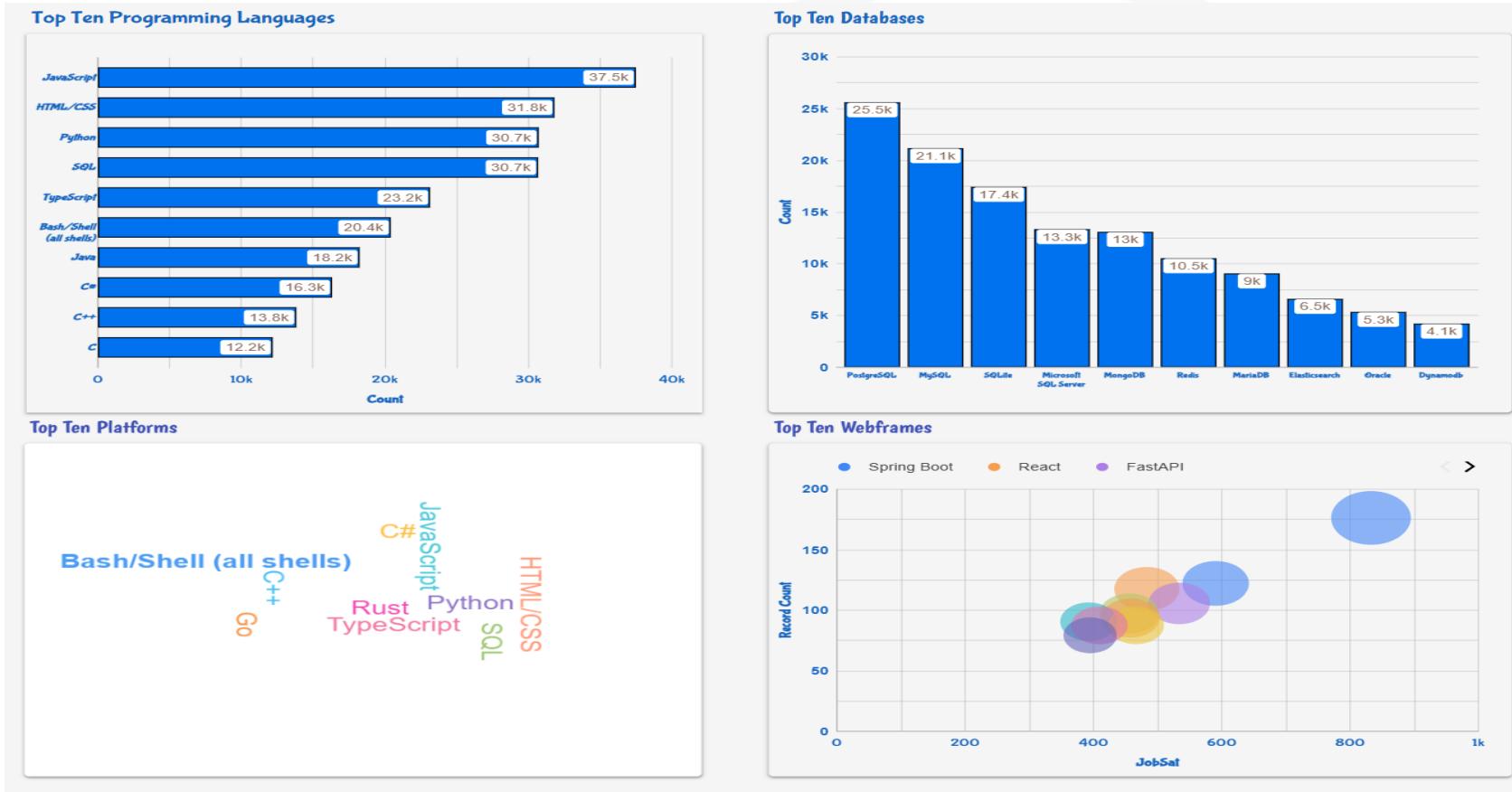
DASHBOARD



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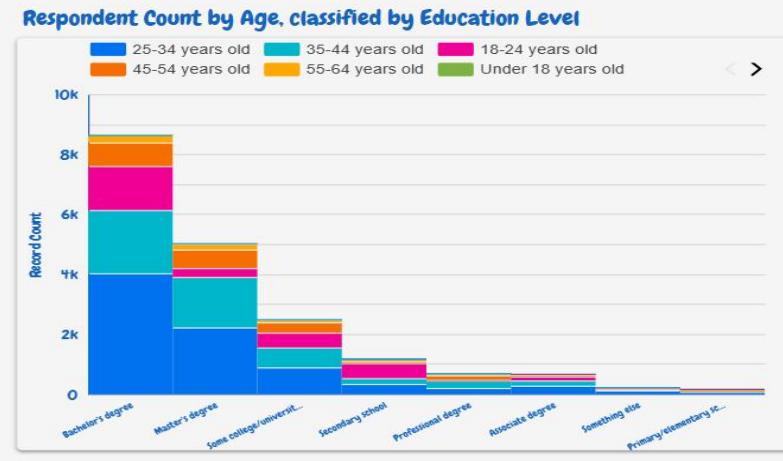
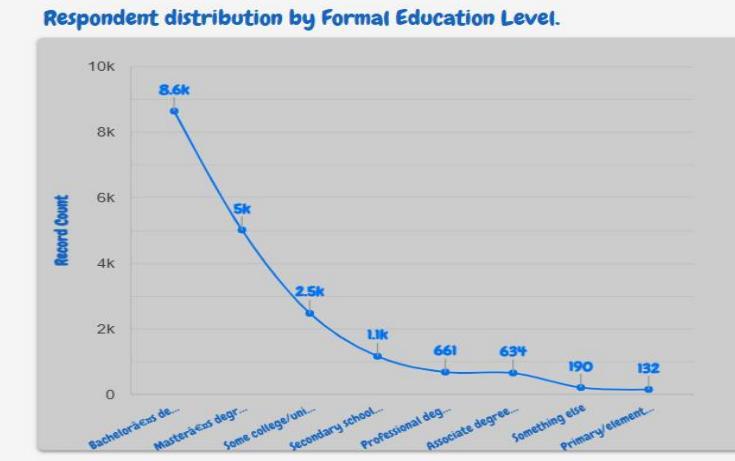
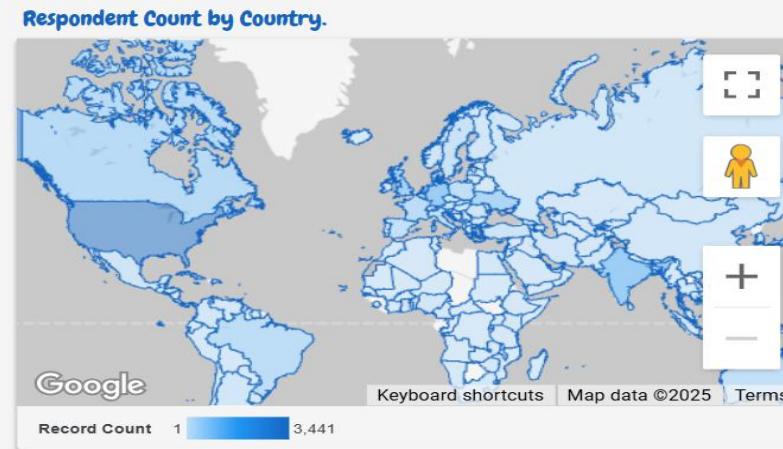
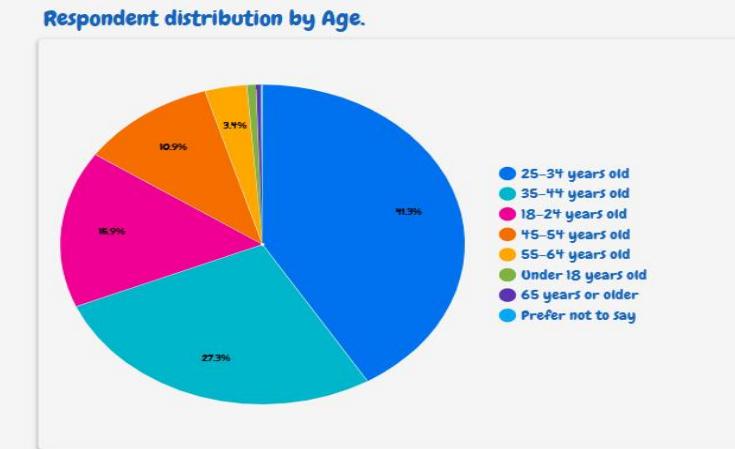
Current Technology Usage



Future Technology Trends



Demographics



DISCUSSION



- **Diversify skills:** The data highlights a diverse set of languages being used and desired. Having a mix of skills across different paradigms (e.g., scripting, object-oriented, functional, database) can make one a more versatile and attractive candidate.
- **Overall Trend:** The data suggests a market where established databases like PostgreSQL maintain strong appeal, while others like Redis and MongoDB are gaining rapid interest, and some traditional options like Oracle might be facing a decline in developer preference.
- **Major Competitors:** Google Cloud and Microsoft Azure are the next largest platforms, indicating they are significant players, though smaller than AWS in this representation.
- **Talent and Job Market Trends:** The high interest in React and Node.js suggests these skills are in high demand and that a large pool of developers is interested in using them.



OVERALL FINDINGS & IMPLICATIONS

Findings

- Python's rise due its accelerating adoption driven by AI, machine learning, and data science applications. Desire for Modern Alternatives Languages such as Rust and GO , due to their focus on memory safety, performance, and use in cloud-native development.
- PostgreSQL dominance indicates strong satisfaction and continued growth potential. High Interest in Redis suggests significant interest in in-memory data structures and NoSQL solutions .Stable Popularity for MySQL and MongoDB indicating their established and ongoing relevance in the market.
- Amazon Web Services (AWS) is the most prominent platform, significantly larger than any other, suggesting it is the most desired platform to work with among the survey or data source's audience.
- React and Node.js are the two most popular frameworks

Implications

- While established languages like JavaScript and HTML/CSS remain widely used, there is a strong trend of developers wanting to adopt modern, high-performance languages.
- Developers are increasingly interested in modern, flexible, and potentially specialized databases (like Redis and DynamoDB) over some legacy systems, while solidifying the position of open-source powerhouses like PostgreSQL
- For individuals seeking careers or professional opportunities in cloud computing and related fields, focusing on skills related to AWS, Google Cloud, and Microsoft Azure may offer the highest demand and potential job prospects.
- The high interest in React and Node.js suggests these skills are in high demand and that a large pool of developers is interested in using them.

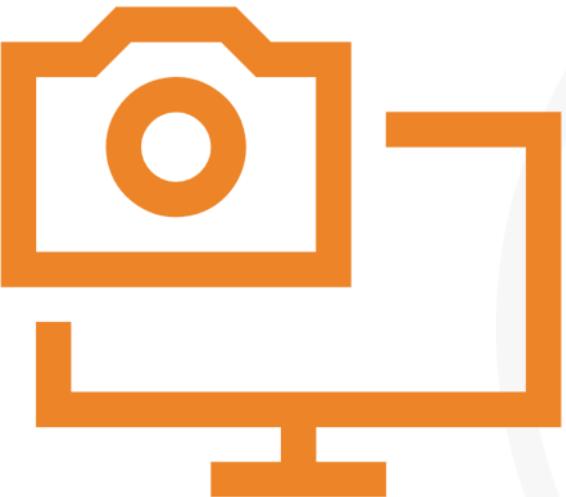


CONCLUSION



- Overall, the data suggests that the programming landscape is diversifying, with strong demand for skills that align with future-proof areas like AI, data, and robust system performance.
- PostgreSQL is the leading database that developers want to work with in the future, while traditional leaders like MySQL and Microsoft SQL Server are seeing their popularity decline.
- Amazon Web Services (AWS) is the most prominent platform in the visualization. Google Cloud and Microsoft Azure are the next largest platforms.
- React and Node.js are the most desired frameworks. The data indicates a strong preference for these leading frameworks

APPENDIX

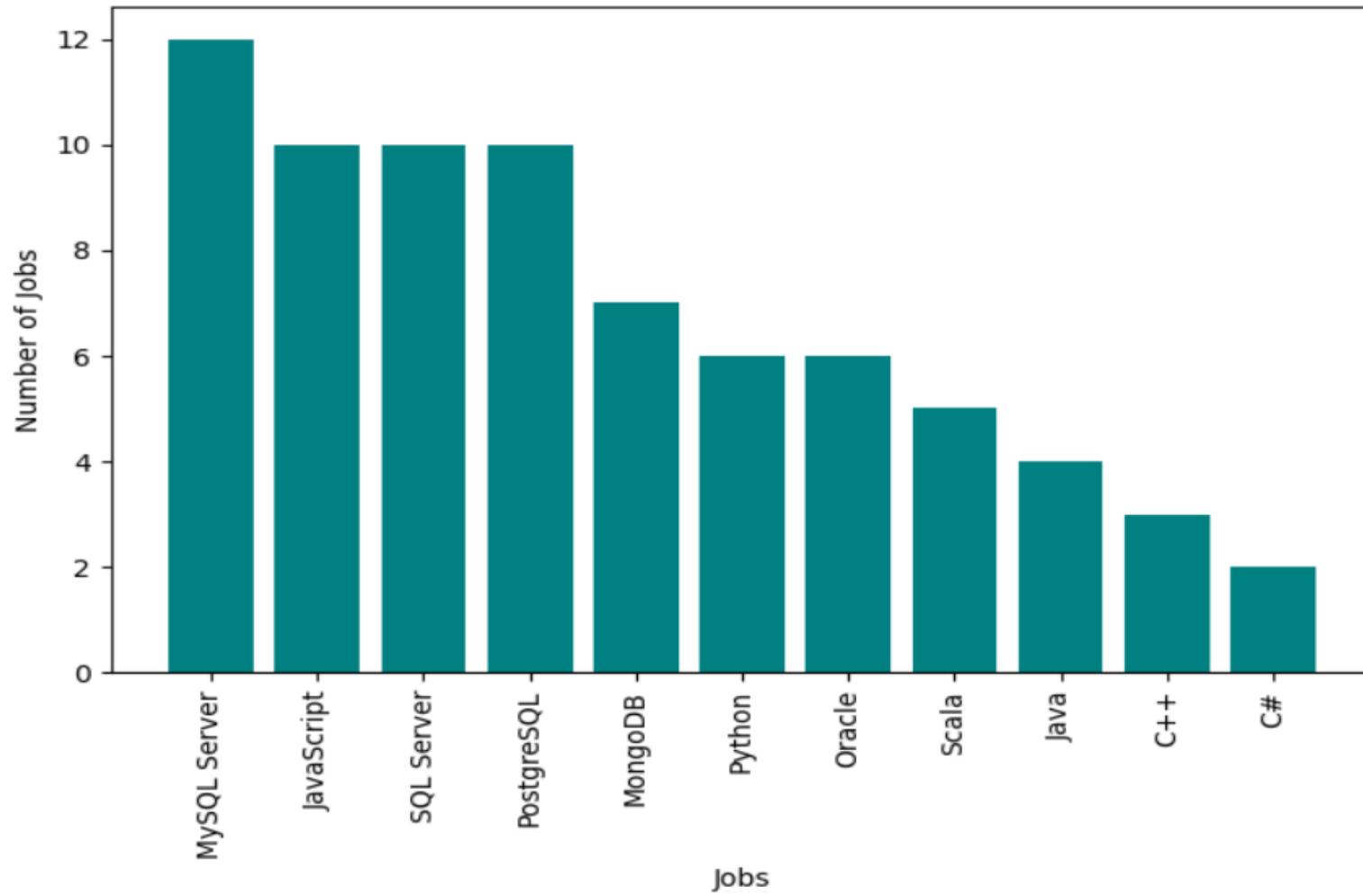


ProgrammingLanguageHaveWorkedWith	Count	DatabaseHaveWorkedWith	Count	PlatformWantToWorkWith	count
JavaScript	37492	PostgreSQL	25536	Amazon Web Services (AWS)	18040
HTML/CSS	31816	MySQL	21099	Microsoft Azure	10304
Python	30719	SQLite	17365	Google Cloud	9772
SQL	30682	Microsoft SQL Server	13275	Cloudflare	6881
TypeScript	23150	MongoDB	13007	Firebase	4952
Bash/Shell (all shells)	20412	Redis	10463	Vercel	4614
Java	18239	MariaDB	8991	Digital Ocean	4507
C#	16318	Elasticsearch	6533	Hetzner	2460
C++	13827	Oracle	5273	Supabase	2287
C	12184	Dynamodb	4138	Netlify	2217
ProgrammingLanguageWanttowork	Count	DatabaseWantToWorkWith	Count	WebframeWantToWorkWith	count
Python	25047	PostgreSQL	24005	React	15404
JavaScript	23774	SQLite	13489	Node.js	14735
SQL	22400	MySQL	12269	Next.js	8507
HTML/CSS	20721	MongoDB	10982	Vue.js	7604
TypeScript	20239	Redis	10847	ASP.NET CORE	6905
Rust	17232	Microsoft SQL Server	7905	Angular	6364
Go	13837	Elasticsearch	6246	Express	5616
Bash/Shell (all)	13744	MariaDB	5947	Svelte	5374
C#	12921	Dynamodb	3503	Spring Boot	5068
C++	10873	Supabase	2930	Django	4973



JOB POSTINGS

Number of Job Postings by Technology



POPULAR LANGUAGES

