

# Technology Trends In Data Analytics Among Developers

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# OVERVIEW

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



# EXECUTIVE SUMMARY

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- **Project Goal:** Analyze Stack Overflow Developer Survey data to uncover trends in technology
  - Current and desired popular demographics, compensation, satisfaction, and frameworks.
- **Approach:**
  - API access, web scraping, and data wrangling
  - Exploratory Data Analysis (EDA)
  - Visualizations with Python and Google Looker Studio
- **Key Insights:**
  - Compensation rises with age, plateauing after 40–45
  - Full-time employees show highest satisfaction
  - Remote work preferences vary by role and region
  - Satisfaction increases with professional experience
  - Tech preferences differ across regions



# INTRODUCTION

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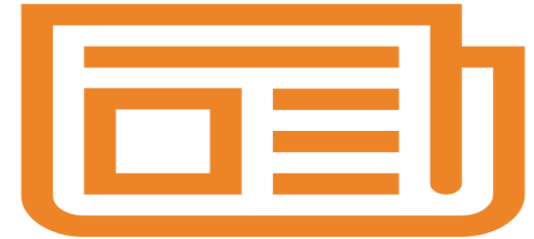
- The goal of this presentation is intended to uncover key patterns for the current and future technology among developers. It will demonstrate the application of data analysis, visualization, and reporting skills to real-world data.
  - This included data analysis on aspects like demographics, compensation, job satisfaction and workplace experience.
- Why this matters:
  - In a data-driven world, turning raw data into actionable insights is critical for improving decision-making, employee satisfaction, and innovation.
- We focused on questions like:
  - How does compensation vary across age, employment type, and country?
  - How is job satisfaction linked to professional experience?
  - Which groups report the highest and lowest satisfaction?



# METHODOLOGY

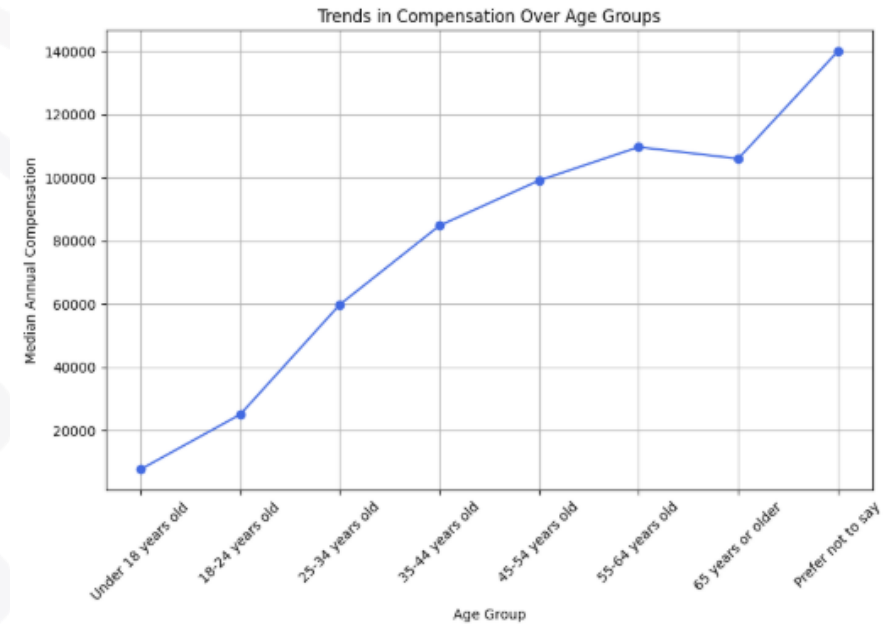
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- **Data Source:** Stack Overflow Developer Survey dataset, GitHub Jobs API
- **Data Collection:** API access, web scraping, direct downloads
- **Data Preparation:**
  - Handled missing values, duplicates, and outliers
  - Normalizing the data
- **Analysis Approach:**
  - Exploratory Data Analysis (EDA) to identify trends, outliers and anomalies
- **Data Exploration and Visualization:**
  - Python (matplotlib, seaborn)
- **Dashboard Creation:**
  - Google Looker Studio focusing on current and future technology trends and demographics
- **Rationale:**
  - Methods selected based on best practices in data science and supported by prior research on developer satisfaction, compensation, and tool adoption



# RESULTS

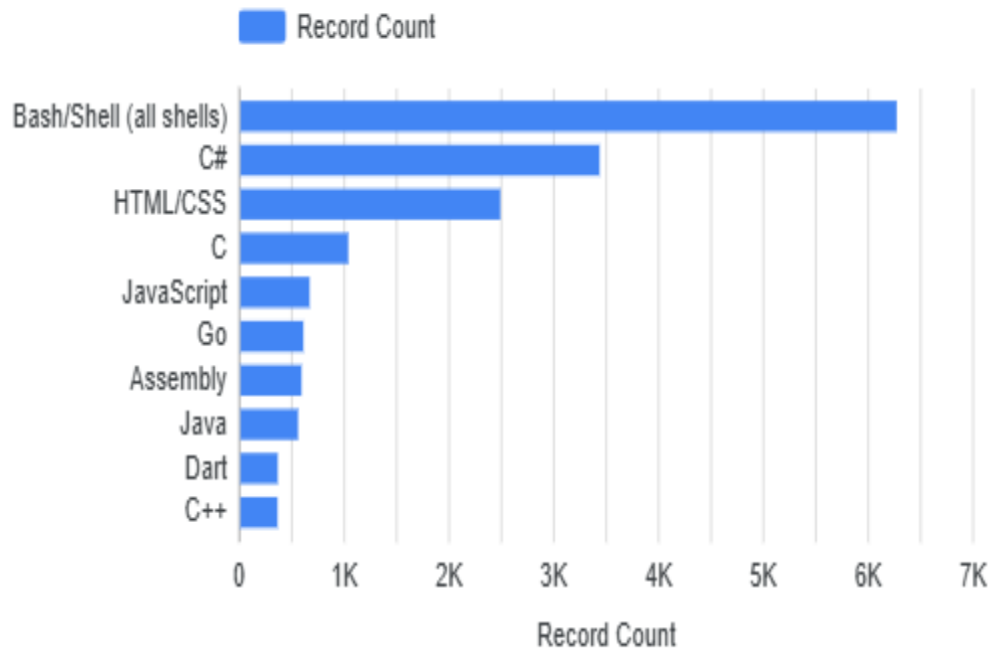
- **Compensation Trends:**  
Compensation rises with age but levels off after ~50 years → due to market ceilings and career stability; based on median salary analysis by age group
- **Job Satisfaction:**  
Full-time employees and experienced developers report the highest satisfaction → reflected in satisfaction scores across employment types and seniority levels
- **Remote Work Preferences:**  
Strong preference for remote work, especially among developers, with some regional variation → evident in survey responses and cross-tabulations by region and role
- **Technology Trends:**  
Popular programming languages and tools vary widely across regions → seen in the frequency counts and heatmaps of tool usage across countries
- **Experience-Satisfaction Link:**  
Job satisfaction increases steadily with years of professional coding experience → confirmed through median satisfaction scores mapped over experience ranges



# PROGRAMMING LANGUAGE TRENDS

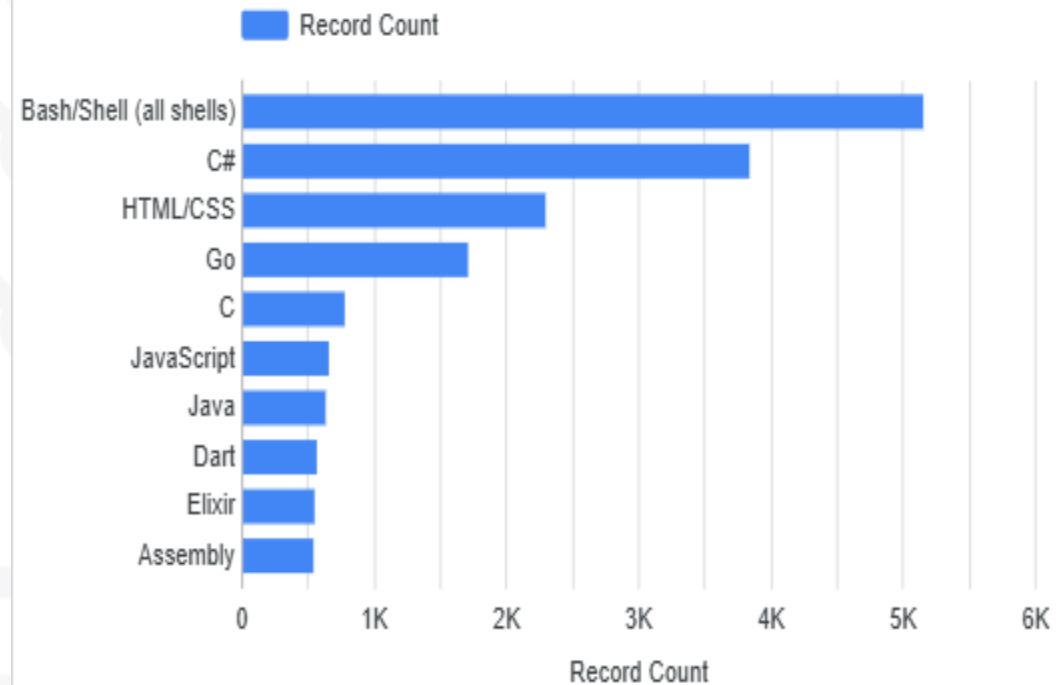
## Current Year

Top Ten Languages Have Worked With



## Next Year

Top 10 Languages Desired Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

1. Bash/Shell remains the most commonly used and most desired language across both current and next year.
2. C# and HTML/CSS rank consistently high in both current usage and future interest.
3. Traditional languages like Java and C maintain steady presence across both charts.

## Implications

1. This indicates enduring demand for automation and scripting skills, making it a priority skill for developers to master
2. These languages will continue to dominate in enterprise, web, and application development, suggesting stability in job market demand.
3. Investing in foundational languages remains valuable for long-term career resilience and cross-industry opportunities.

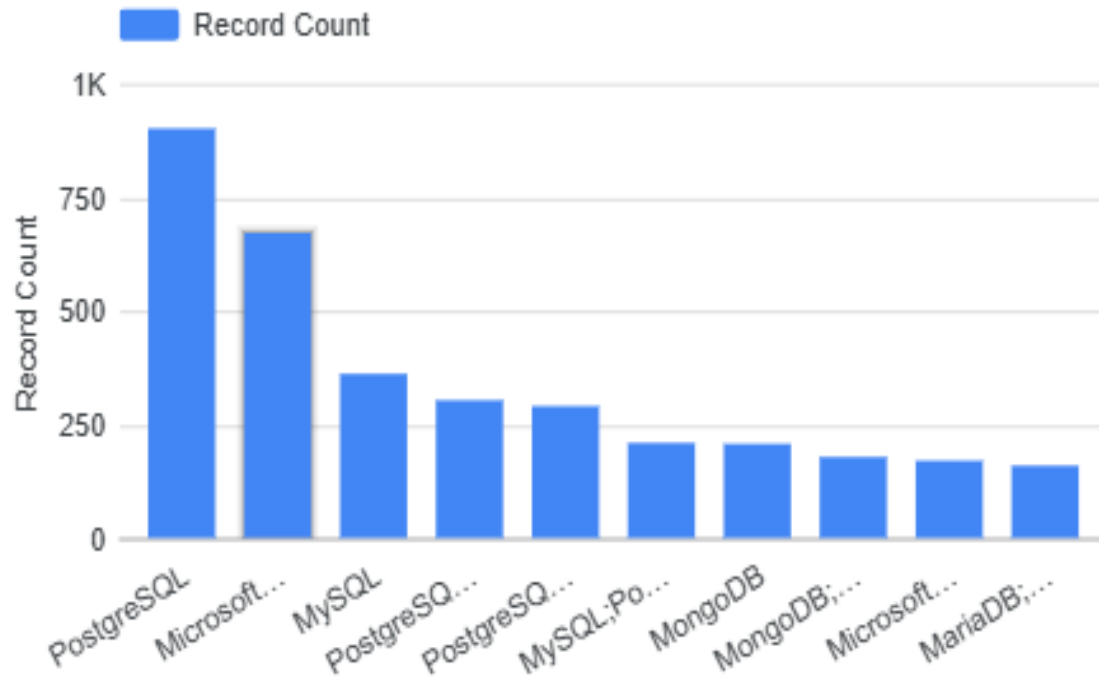




# DATABASE TRENDS

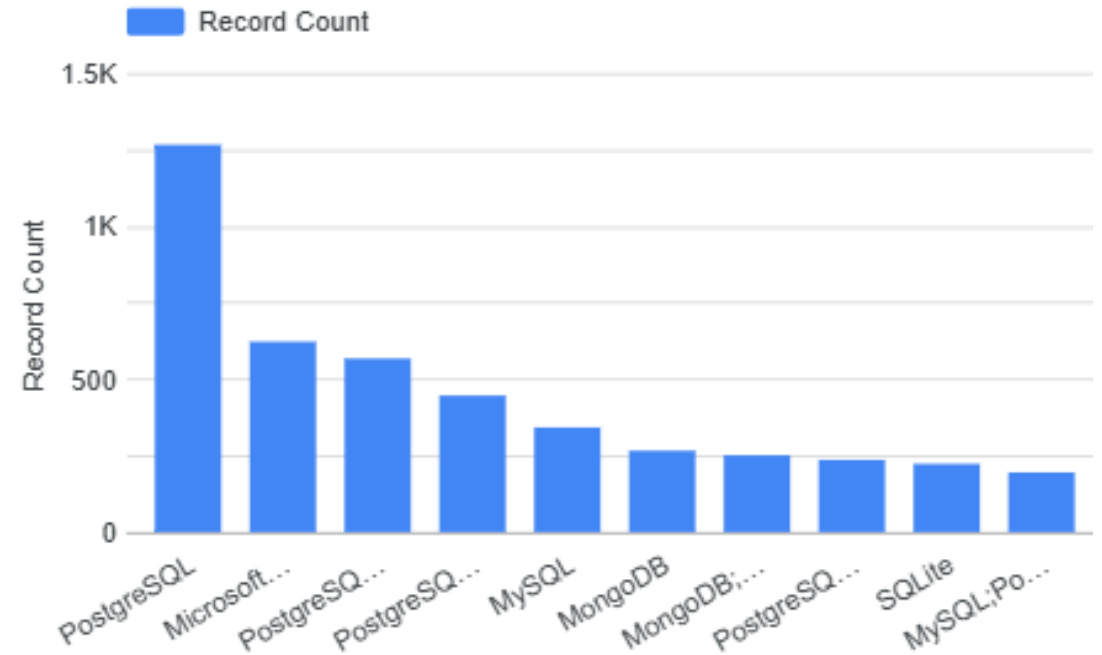
Current Year

Top 10 Databases Used



Next Year

Top 10 Databases Desired Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

1. PostgreSQL leads both current use and future demand, with a strong gap over other databases.
2. MongoDB shows consistent placement and slight growth in future preference, especially among NoSQL options.
3. The top 5 databases dominate record counts, while the bottom tier shows limited growth.

## Implications

1. PostgreSQL skills are in high and growing demand, making it a critical investment area for developers.
2. MongoDB shows consistent placement and slight growth in future preference, especially among NoSQL options.
3. Professionals should focus on mastering the top-tier databases while selectively exploring smaller players for emerging opportunities.



# DASHBOARD

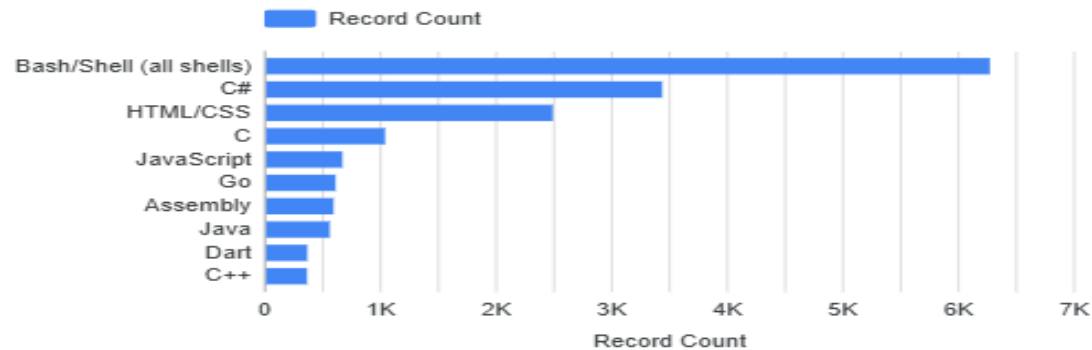
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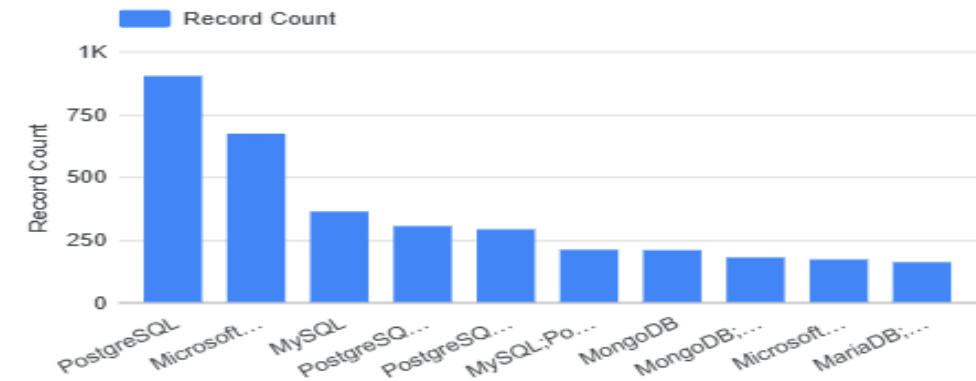
IBM Capstone Project > Demographics

# DASHBOARD TAB 1: Current Technology Usage

Top Ten Languages Have Worked With



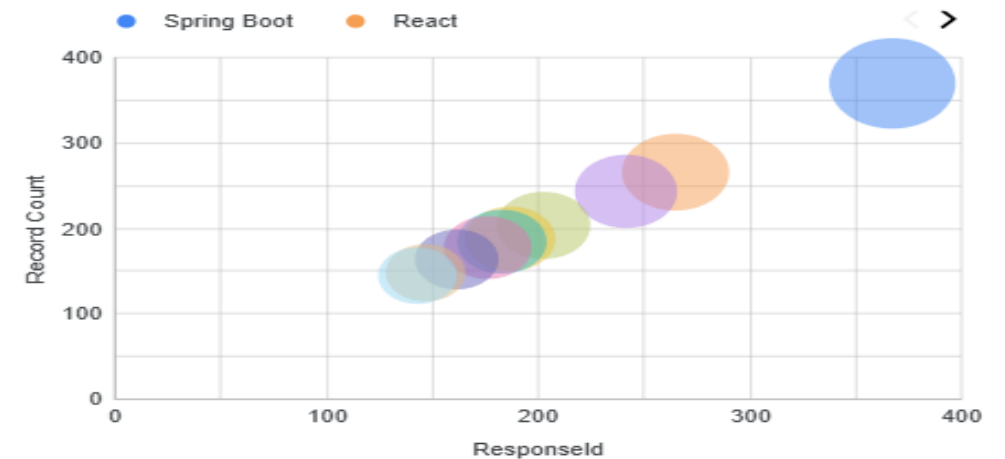
Top 10 Databases Used



Top 10 Platforms Used

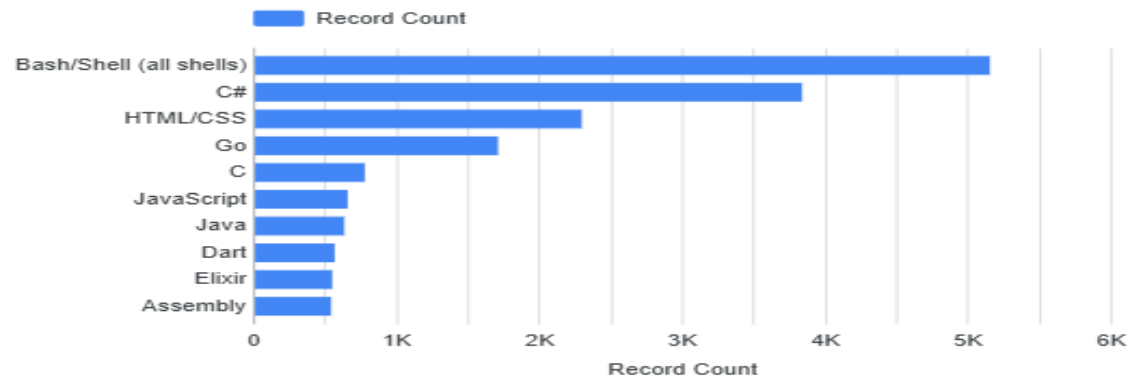


Top 10 Web Frameworks Used

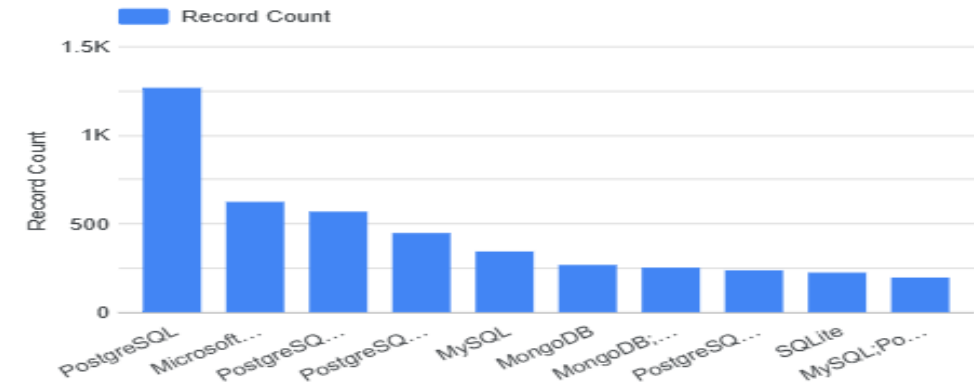


# DASHBOARD TAB 2: Future Technology Trends

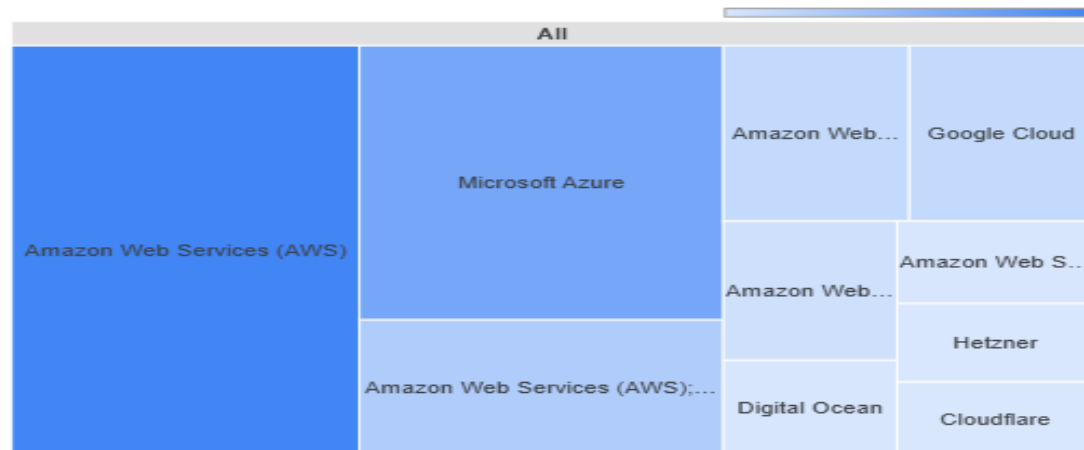
Top 10 Languages Desired Next Year



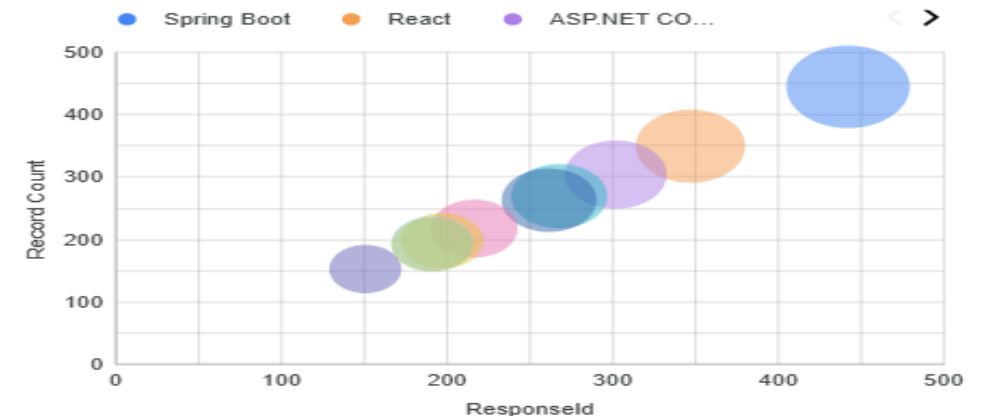
Top 10 Databases Desired Next Year



Top 10 Desired Platforms

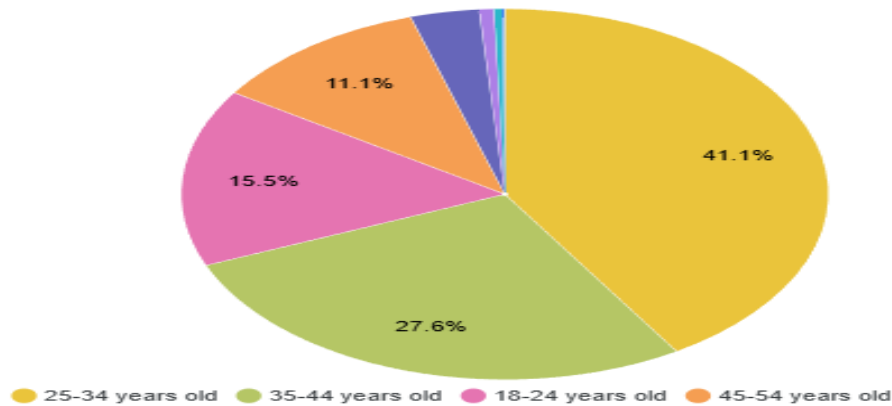


Top 10 Web Frameworks Used

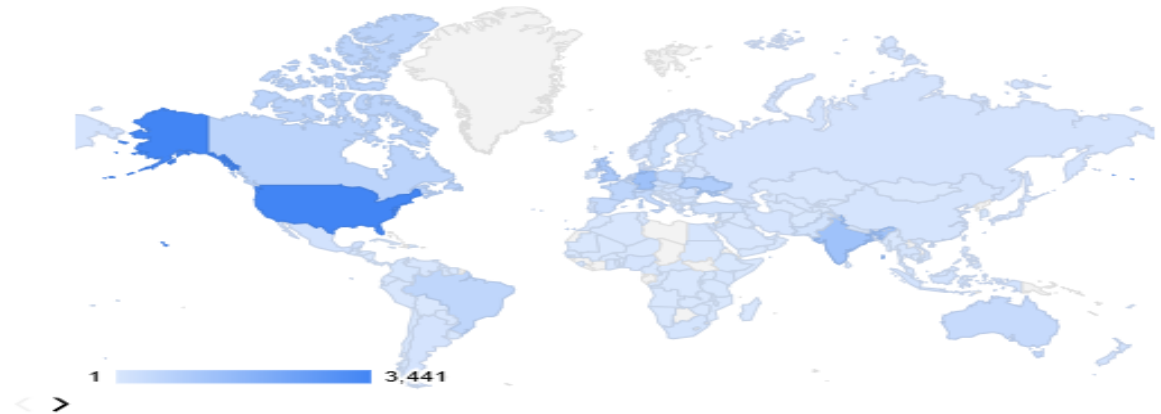


# DASHBOARD TAB 3: Demographics

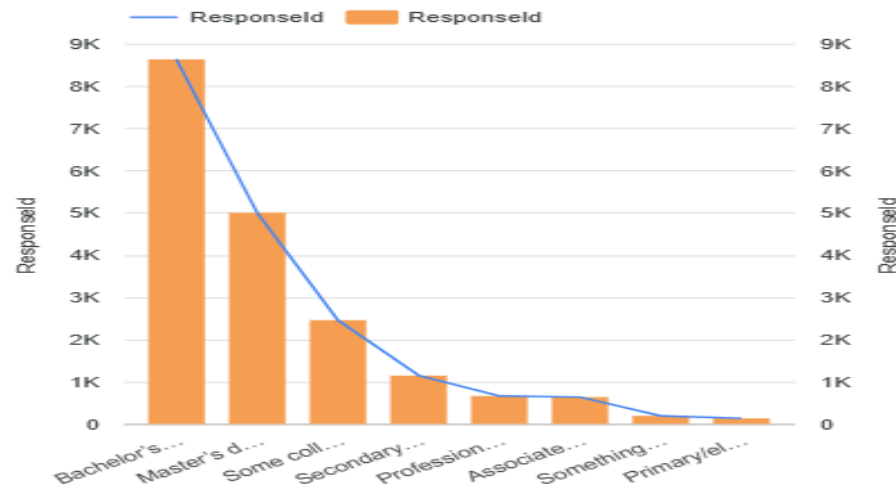
Respondents by Age



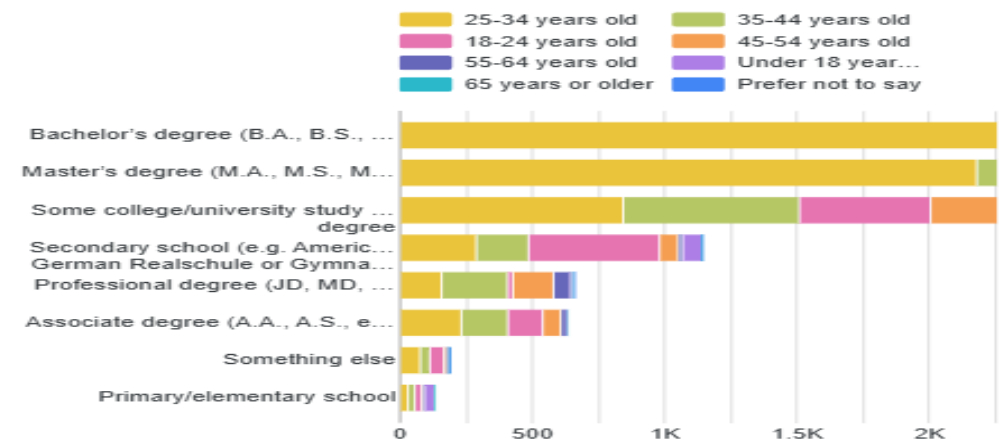
Respondent Count by Location



Respondent Distribution by Education Level



Respondent Count by Age, Classified by Education Level



# DISCUSSION

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# OVERALL FINDINGS & IMPLICATIONS

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## Findings

1. Median compensation rises sharply from ages 18–34 (~\$50K–\$70K), then plateaus after 45.
2. Current top languages: Bash/Shell, C#, HTML/CSS (~6,000–3,000 records); next-year interest shifts to Go, Dart, Elixir.
3. Job satisfaction is highest in full-time/contract roles (JobSat ~6–7), lower in part-time/unemployed groups (~4–5).

## Implications

1. Young professionals gain earning power fast; mid-career pay stagnation may risk retention.
2. Developer demand is shifting to cloud-native, lightweight languages — impacting hiring and training.
3. Work conditions matter more than age; companies should improve flexibility, stability, and compensation.





# CONCLUSION

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- **Tech Talent Is Evolving Fast**  
Dynamic shift toward modern, cloud-ready programming languages and databases
- **Compensation Trends Offer Retention Levers**
- **Job Satisfaction Hinges on Work Conditions**  
Employment type and stability emerged as key drivers of satisfaction
- **Future-Proofing Requires Bold Action and continue to focus on web development**

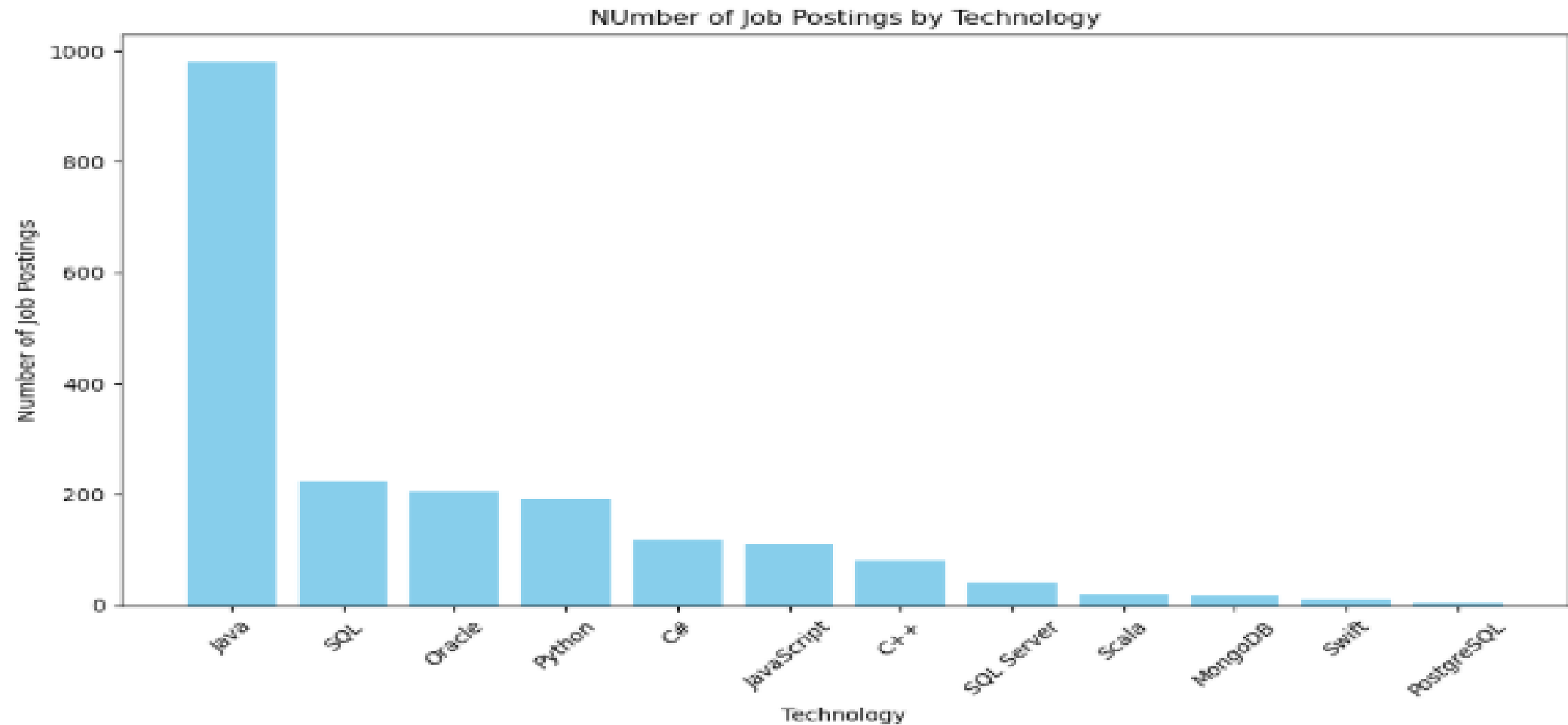


# APPENDIX

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# JOB POSTINGS



# POPULAR LANGUAGES

