

Global Developer Trends Analysis

(2023 Survey)

Insights on Compensation, Technology, and Work Preferences

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Date: 17/12/2025



Agenda

- Executive Summary
 - Project Objectives & Scope
 - Methodology
 - Programming Language Trends
 - Database Trends
 - Interactive Dashboards (Looker Studio)
 - Key Insights & Conclusions
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Executive Summary

- Developer compensation is highly skewed due to a small number of high earners
- Experience strongly impacts income stability and job satisfaction
- Remote and hybrid work have become the dominant work preferences
- Technology choices reflect a clear shift toward modern, scalable tools

This analysis highlights how demographic, professional, and technological factors shape today's developer landscape.



Introduction

Objective:

The goal of this project is to analyze global developer trends related to compensation, experience, job satisfaction, and technology preferences.

Target Audience:

- HR and recruitment teams
- Technology leaders
- Workforce and policy decision-makers

Value of the Report:

This analysis supports data-driven decisions in hiring, compensation strategy, and technology planning.

Methodology

Data Source:

Stack Overflow Developer Survey (Global dataset)

Tools Used:

- Python (data cleaning, exploration, visualization)
- Looker Studio (interactive dashboards)

Key Steps:

- Data cleaning and type conversion
- Handling missing and extreme values
- Grouping by demographic and professional attributes
- Exploratory data analysis and visualization

Programming Language Trends (Current Year)

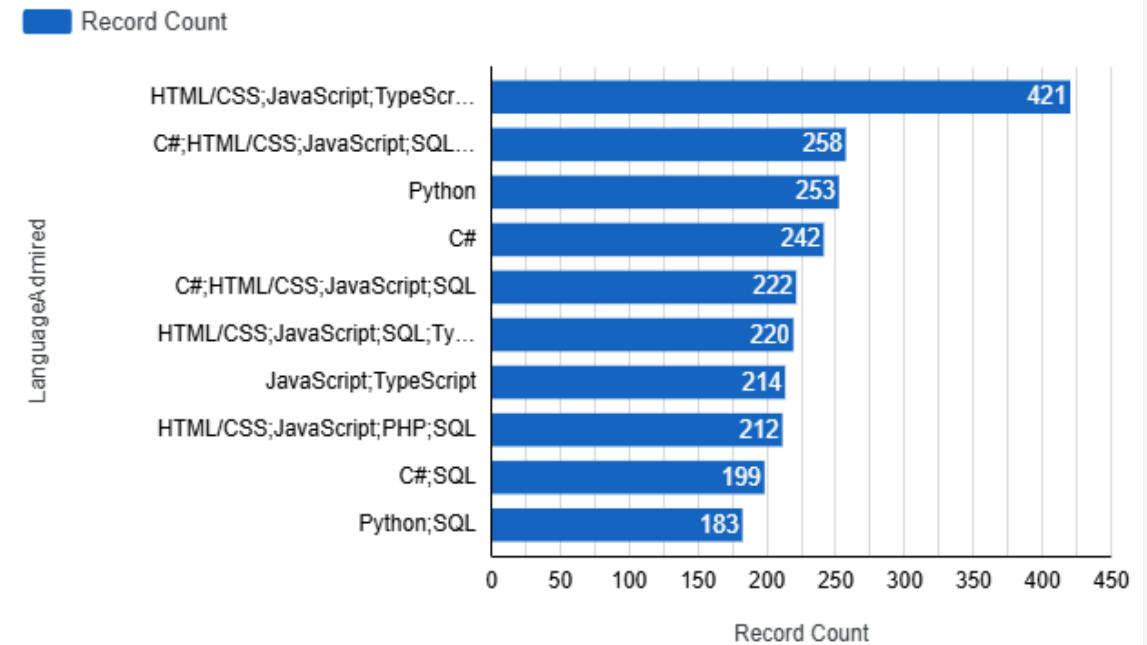
Key Message:

- A small number of languages dominate professional usage
- Established ecosystems remain critical in the industry

Annotation:

Mainstream languages continue to drive most development activity due to ecosystem maturity and enterprise adoption.

Top 10 Languages Used



Programming Language Trends (Future Demand)

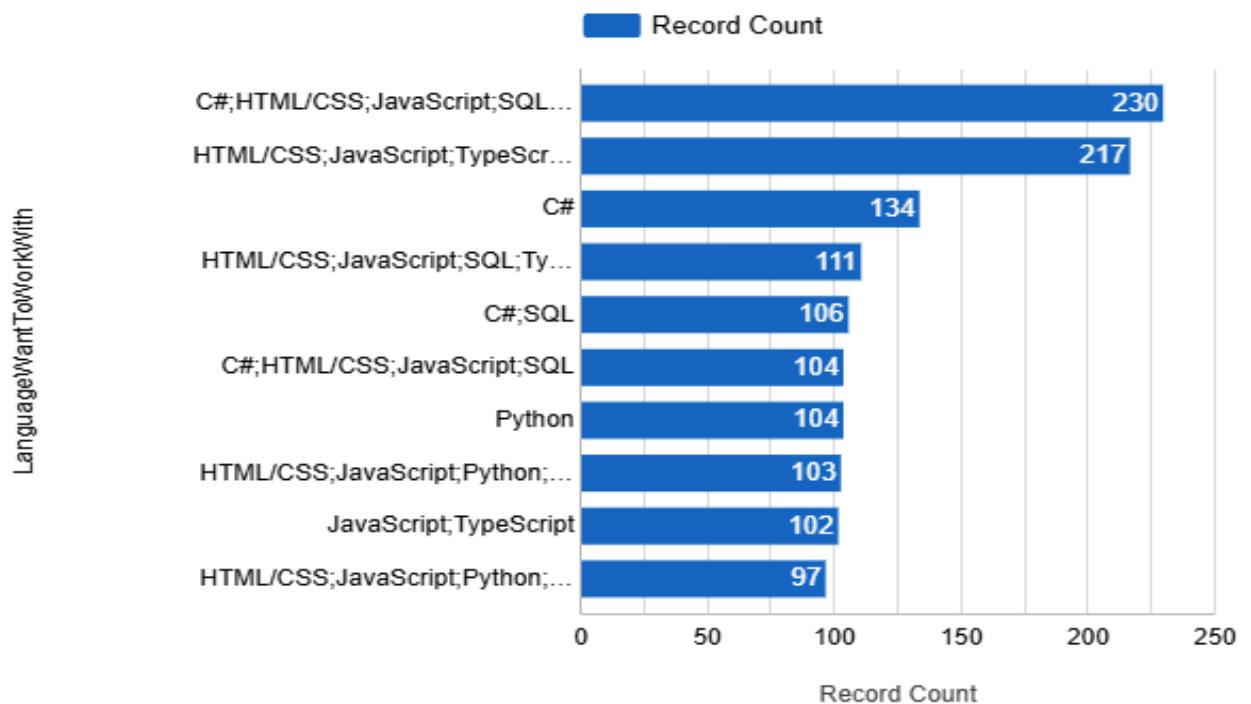
Key Message:

- Strong interest in modern, high-performance languages
- Developers favor tools aligned with scalability and cloud environments

Annotation:

Future preferences indicate where the industry is heading rather than where it currently stands.

Top 10 LanguageWantToWorkWith



Database Trends (Current Usage)

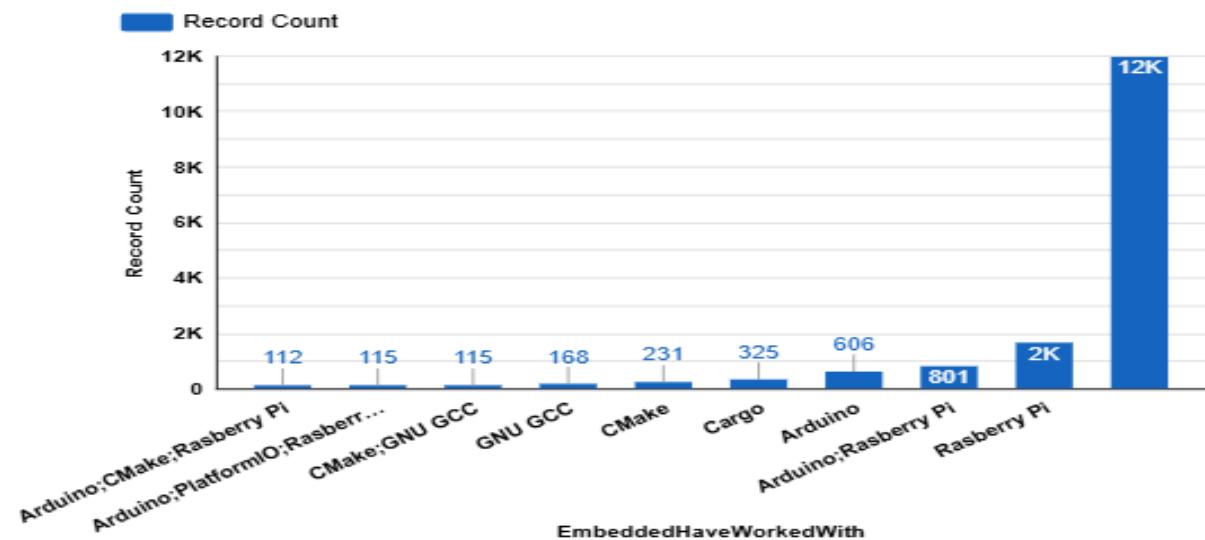
Key Message:

- Relational databases remain widely adopted
- Open-source solutions dominate professional usage

Annotation:

Reliability and proven performance continue to drive database adoption.

Top 10 Databases Used



Organizations should continue investing in relational databases while preparing gradual migration paths toward cloud-native solutions.

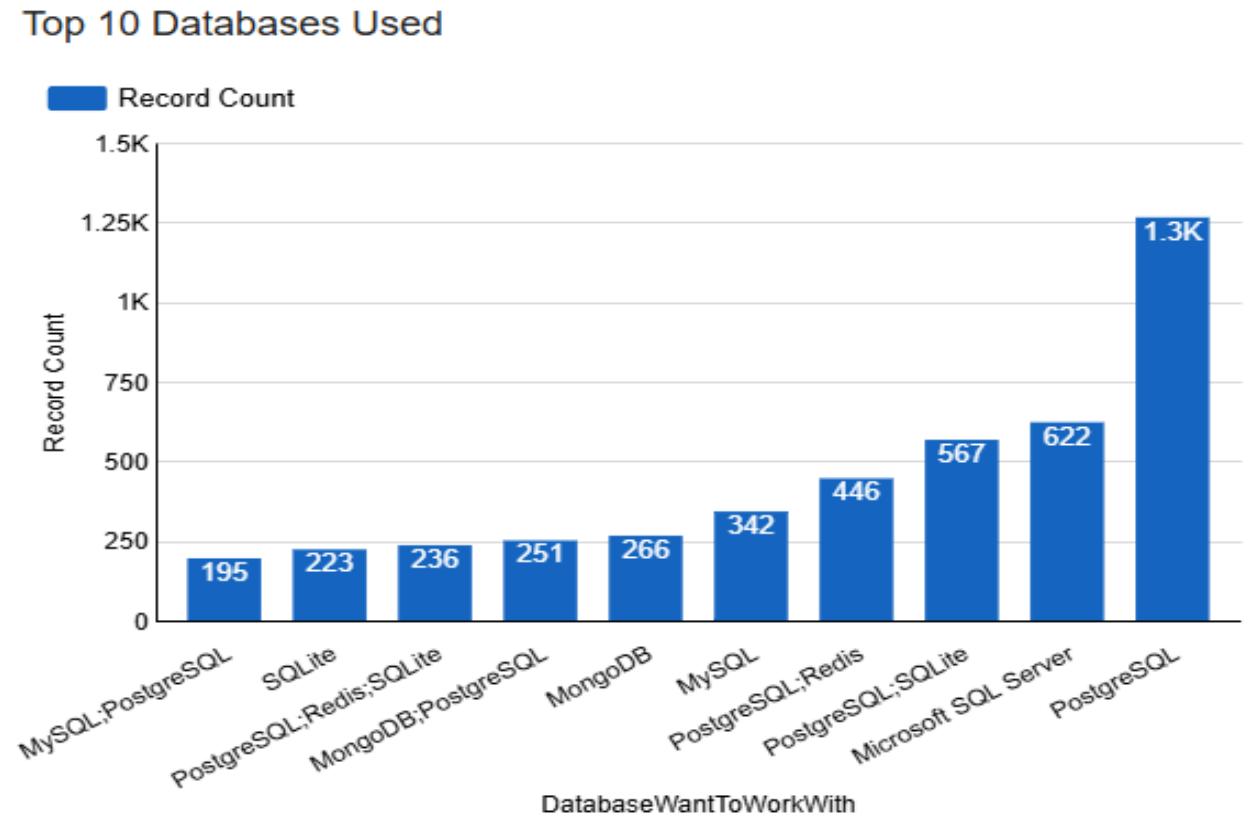
Database Trends (Future Demand)

Key Message:

- Growing interest in modern, scalable database systems
- Cloud-ready technologies gain momentum

Annotation:

Developer interest signals future shifts in data infrastructure strategies.



Dashboard 1: Current Technology Usage

Current Technology Usage Overview

Key message

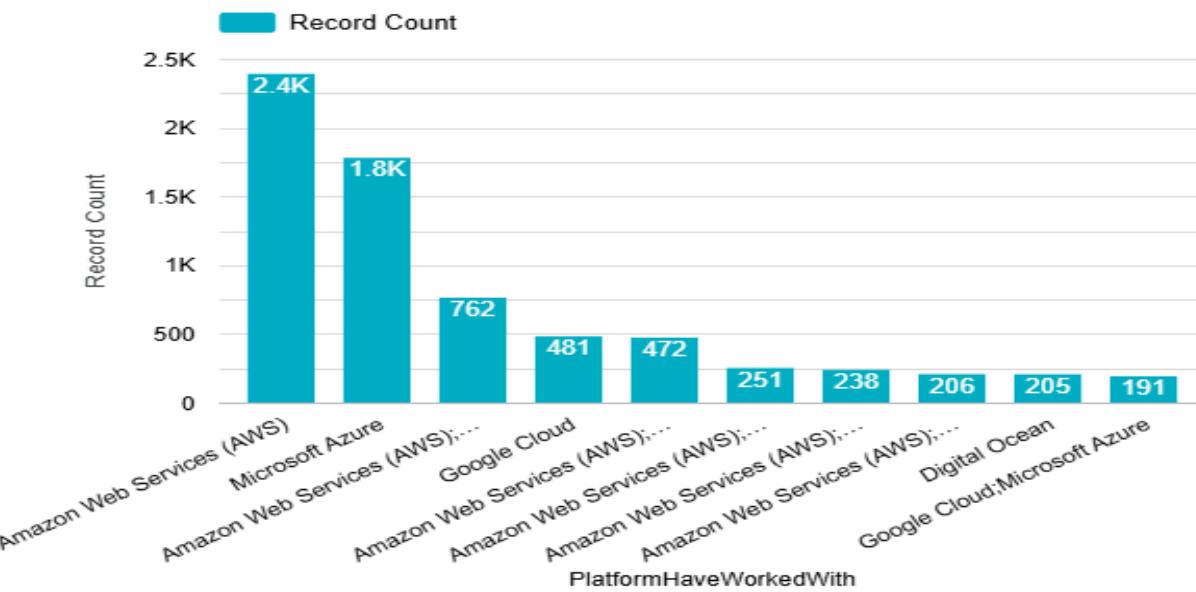
- A small number of technologies dominate current usage.
- Tool adoption follows a strong concentration pattern with a long tail of niche technologies.

Interpretation

Most developers rely on a limited set of core technologies, while many alternative tools coexist with lower adoption rates.

This concentration suggests that organizations benefit from standardizing around widely adopted technologies while maintaining flexibility for specialized use cases.

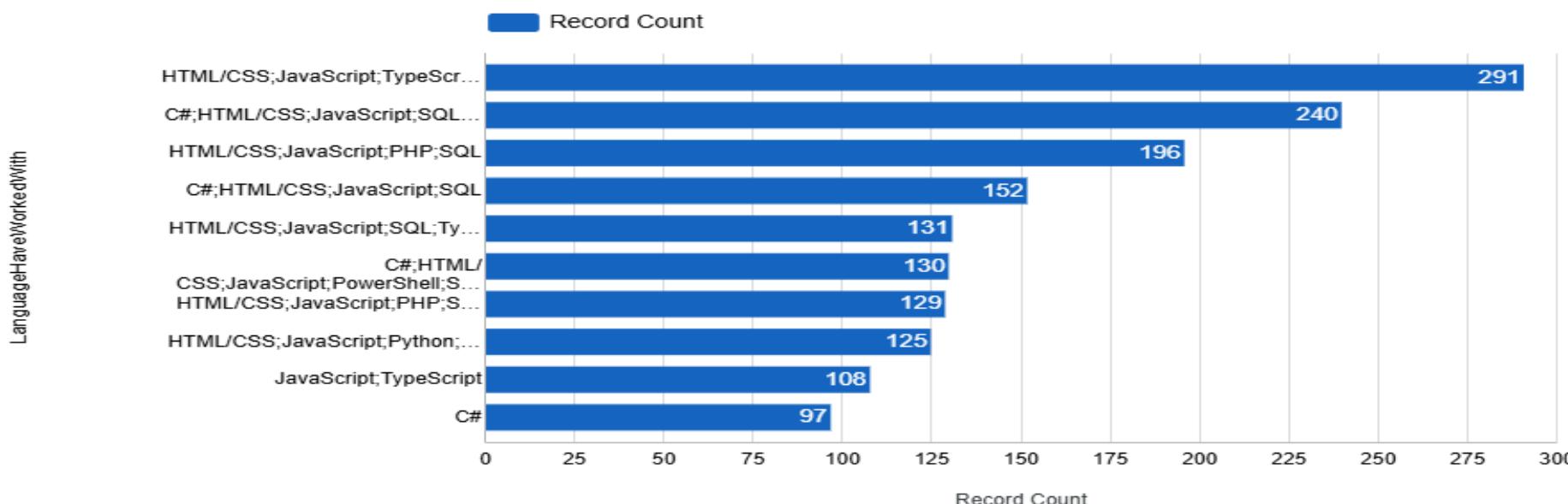
Top 10 PlatformHaveWorkedWith



Top 10 DatabaseHaveWorkedWith



Top 10 LanguageHaveWorkedWith



Dashboard 2: Future Technology Trends

Future Technology Trends and Developer Preferences

Key message

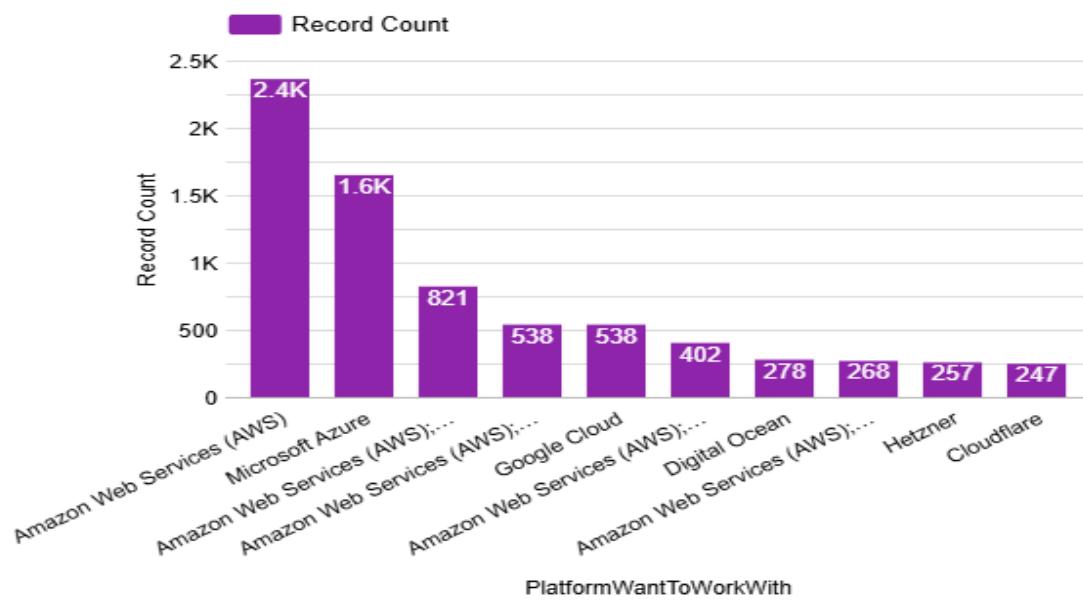
- Developers express strong interest in modern, scalable technologies.
- Future adoption trends align with cloud-native and performance-oriented tools.

Interpretation

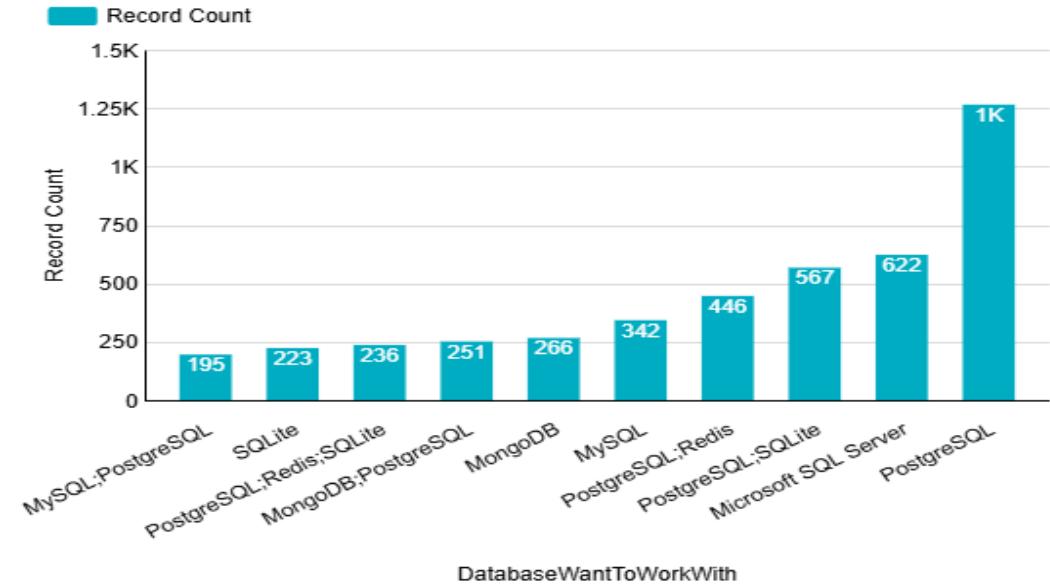
Developer preferences suggest a gradual shift toward technologies that support scalability, flexibility, and cloud integration.

Organizations anticipating these trends can reduce future skill gaps by investing early in training and infrastructure modernization.

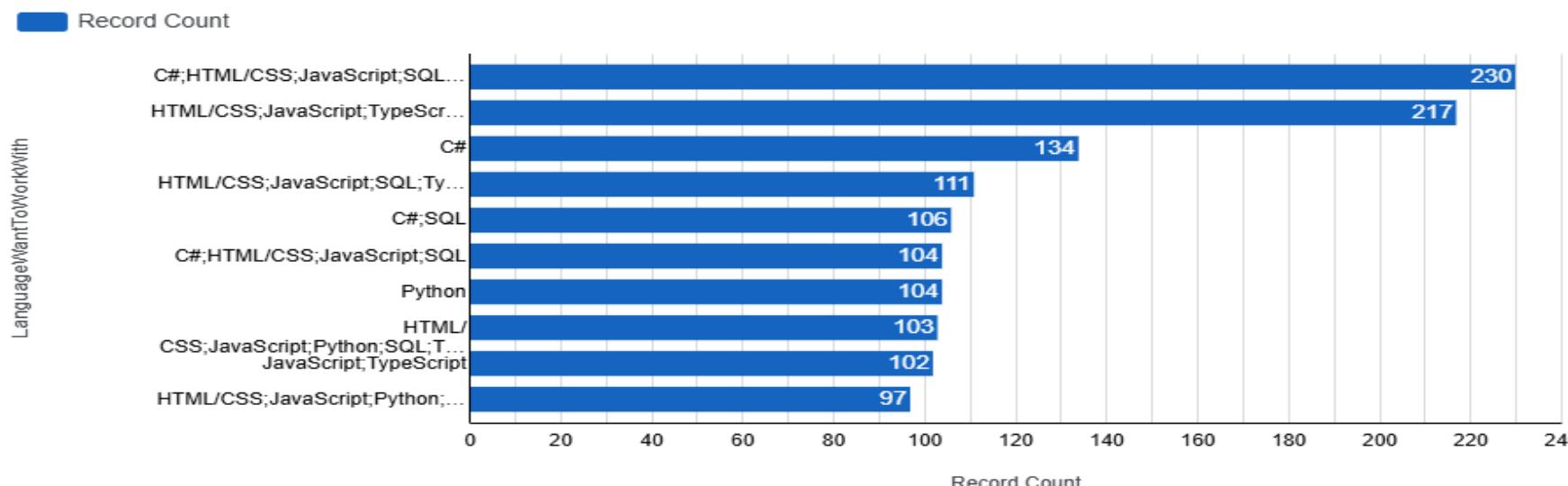
Top 10 PlatformWantToWorkWith



Top 10 DatabaseWantToWorkWith



Top 10 LanguageWantToWorkWith



Dashboard 3: Demographic Overview

Developer Demographics Overview

Key message

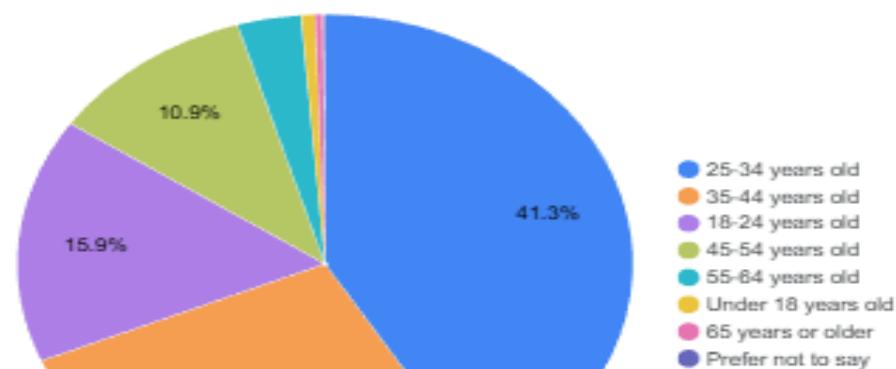
- The developer population is globally distributed.
- Early-to-mid career professionals form the majority of respondents.

Interpretation

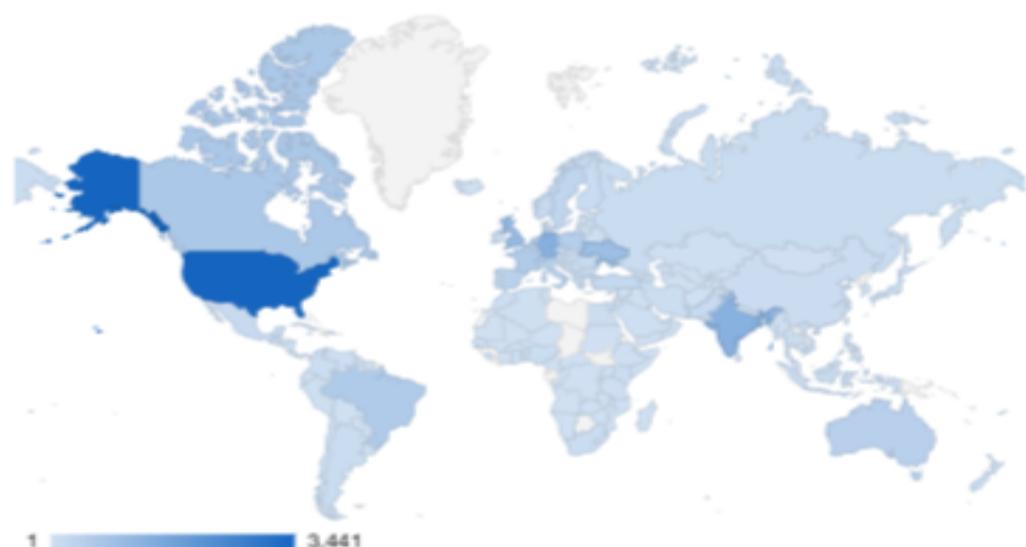
The demographic structure reflects a workforce that is still actively evolving in terms of skills and career paths.

This creates opportunities for targeted training programs and long-term workforce planning.

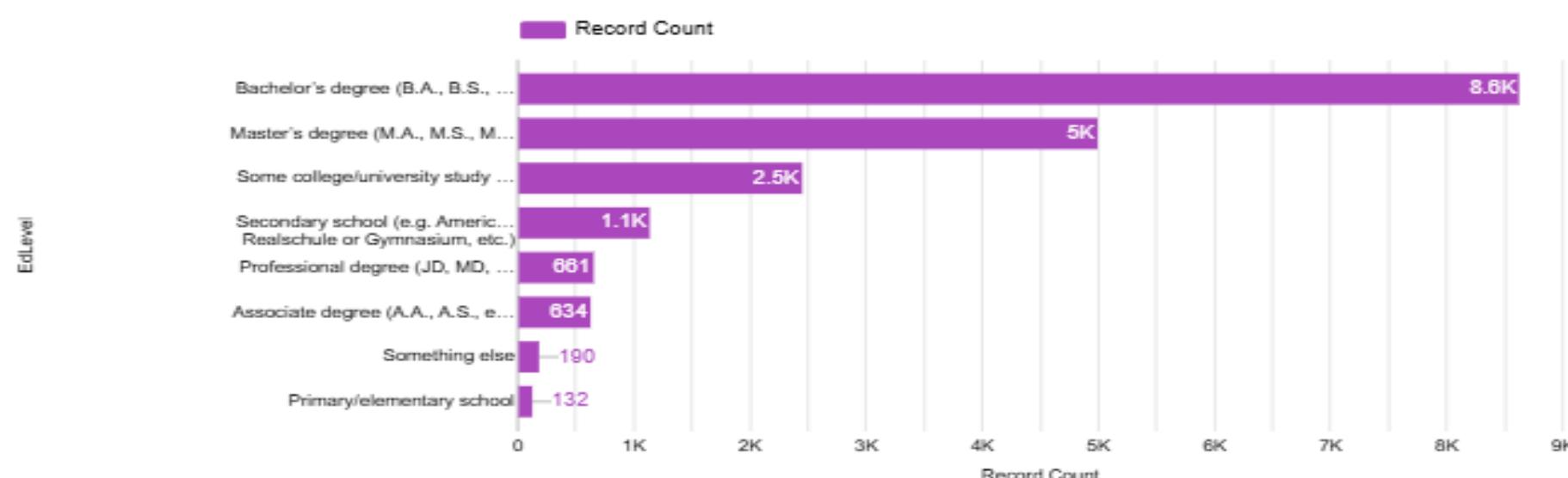
Respondents by Age



Respondents by Country



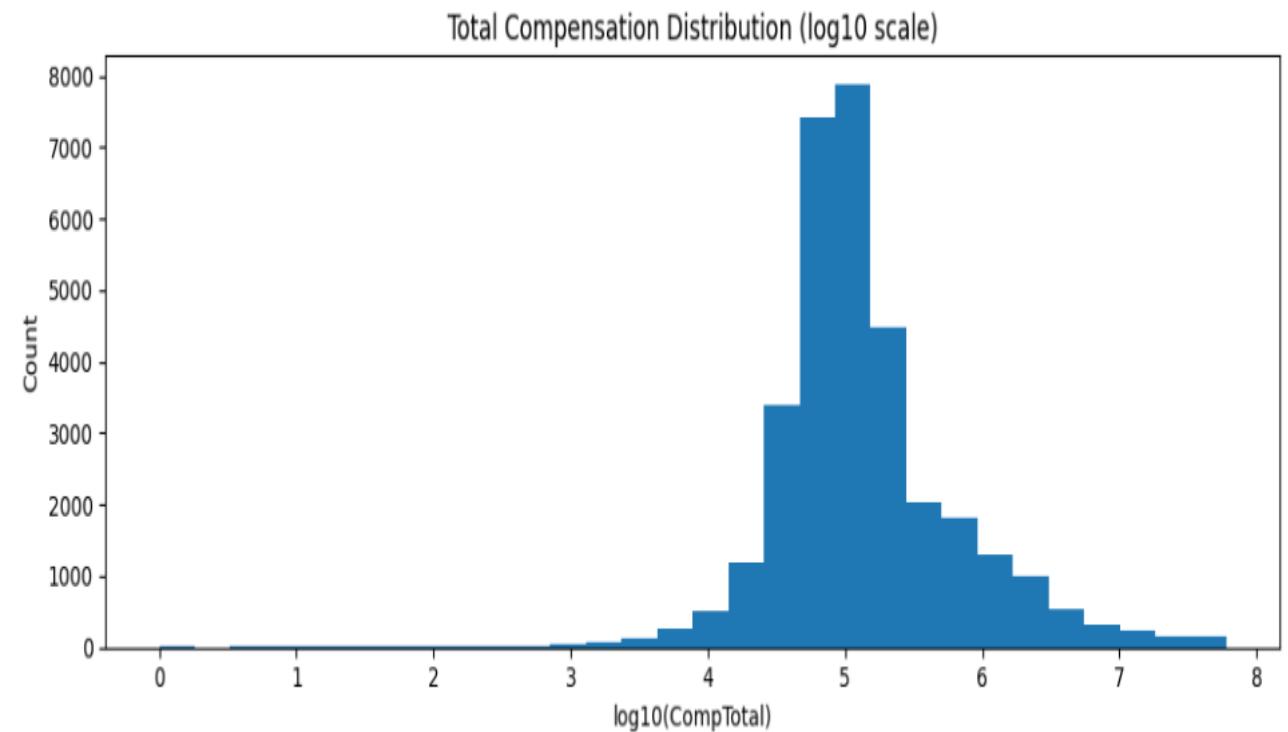
Respondents by Education Level



Compensation Distribution

Key Message:

- Compensation is heavily right-skewed
 - A small group of high earners strongly impacts averages
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- **Annotation:**
Median values provide a more reliable representation than mean compensation.



Experience & Job Satisfaction

Key message

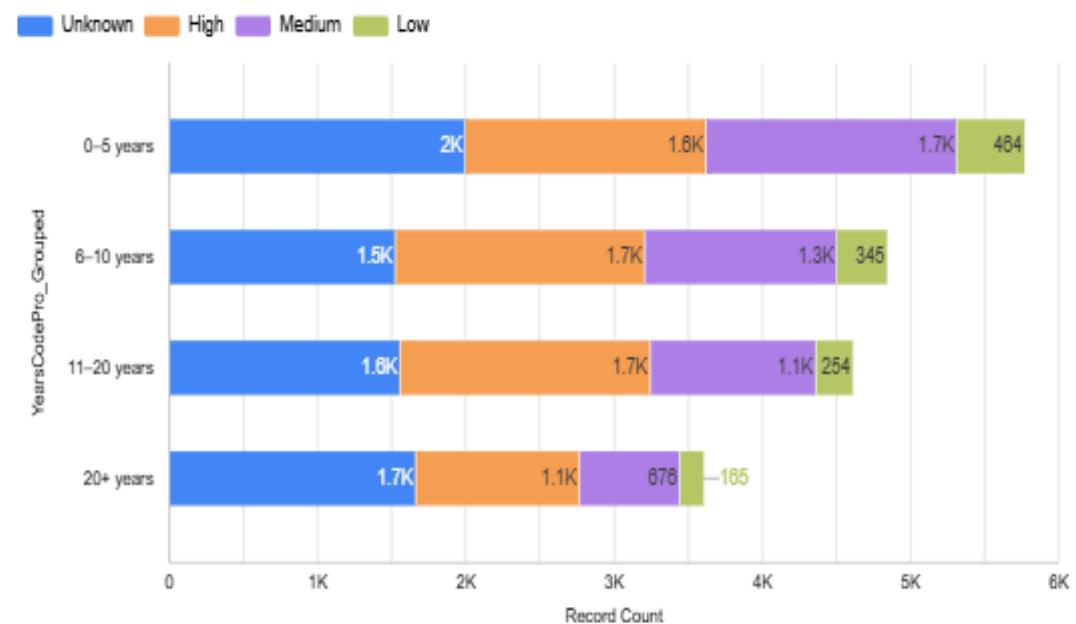
- Job satisfaction becomes more stable with increased experience.
- Junior developers show greater variability in satisfaction levels.

Interpretation

Experience appears to reduce uncertainty in job expectations and career alignment.

Organizations can improve retention by providing clearer career progression and mentoring for early-career professionals.

Record Count by YearsCodePro_Grouped and JobSat_Grouped





Key Insights Summary

Key message

- Compensation is highly skewed due to high-income outliers.
- Experience strongly influences income stability and job satisfaction.
- Remote work has become a dominant expectation.
- Technology choices reflect ongoing industry modernization.

Interpretation

The data reveals structural patterns in compensation, workforce expectations, and technology adoption that organizations must account for in strategic decision-making.

Conclusion & Next Steps

Conclusion:

- Developer trends reveal clear shifts in work expectations and technology adoption
- Insights support informed decisions in HR, compensation, and tech strategy

Future Work:

- Regional and country-specific analysis
- Longitudinal trend comparison
- Role-specific compensation modeling

These findings provide a strong foundation for data-driven workforce planning.