

# Analysis of the Global Developer Landscape: Skills, Demographics, and Technology Trends

An Analysis of the Stack Overflow Survey.



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# OUTLINE

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- Executive Summary
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- Discussion
  - Findings & Implications
- Conclusion
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# EXECUTIVE SUMMARY

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- Dominance of Web & Database Technologies
- Cloud and Containerization as Industry Standard
- A Predominantly Young Workforce
- Global Talent with Key Hubs
- High Prevalence of Formal Education Level



# INTRODUCTION

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This report analyzes the results of a comprehensive global developer survey to identify key trends in technology stacks, developer demographics, and the educational landscape. The goal is to provide a clear, data-drive snapshot of the modern software development industry.

This analysis is intended for a diverse audience, including:

- Aspiring and current developers
- Tech recruiters and hiring managers
- Industry analysts and decision-makers

The insight presented in this report offer significant value by proving actionable intelligence on the most in-demand skills and the characteristics of the global tech workforce. It serves as a strategic guide for personal career development, targeted recruitment, and industry analysis.



# METHODOLOGY

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## Data Source:

- The analysis was based on the publicly available dataset from the Stack Overflow Survey.
- This annual survey is one of the largest of its kind, capturing responses from tens of thousands of developers globally on topics ranging from technologies used to demographic and educational backgrounds.

## Data Collection & Preparation:

- The original data was collected via publicly distributed online survey provided by **Skills Network**.
- Data preparation and analysis were conducted using Python with the Pandas library within a Jupyter Notebook environment.

## Key Data Wrangling & Analysis Steps:

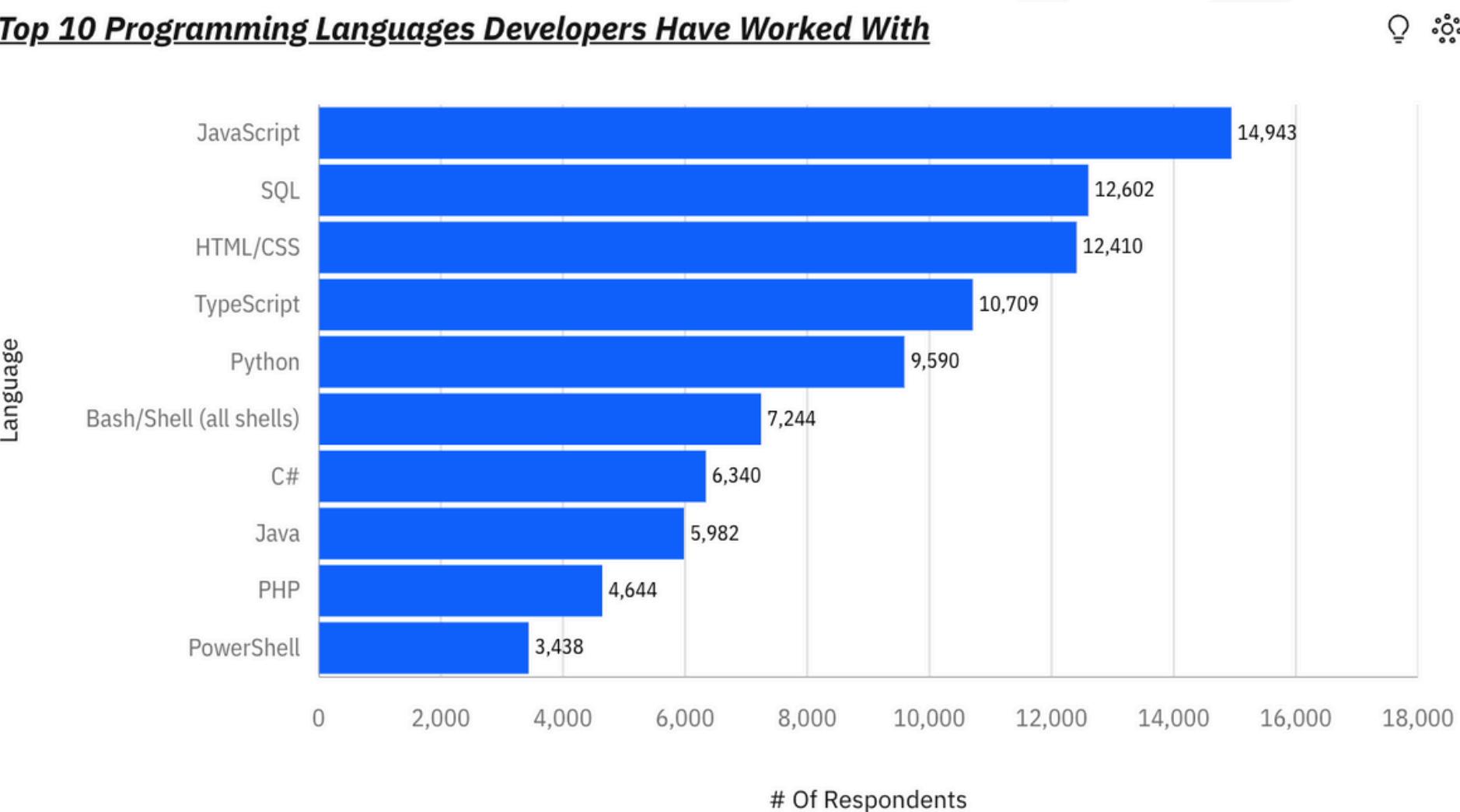
- The raw CSV data was loaded into Pandas, and key columns were cleaned by removing entries with missing values.
- Respondent counts were generated by splitting multi-select fields and aggregating frequencies by technology, country, and age group.



# PROGRAMMING LANGUAGE TRENDS

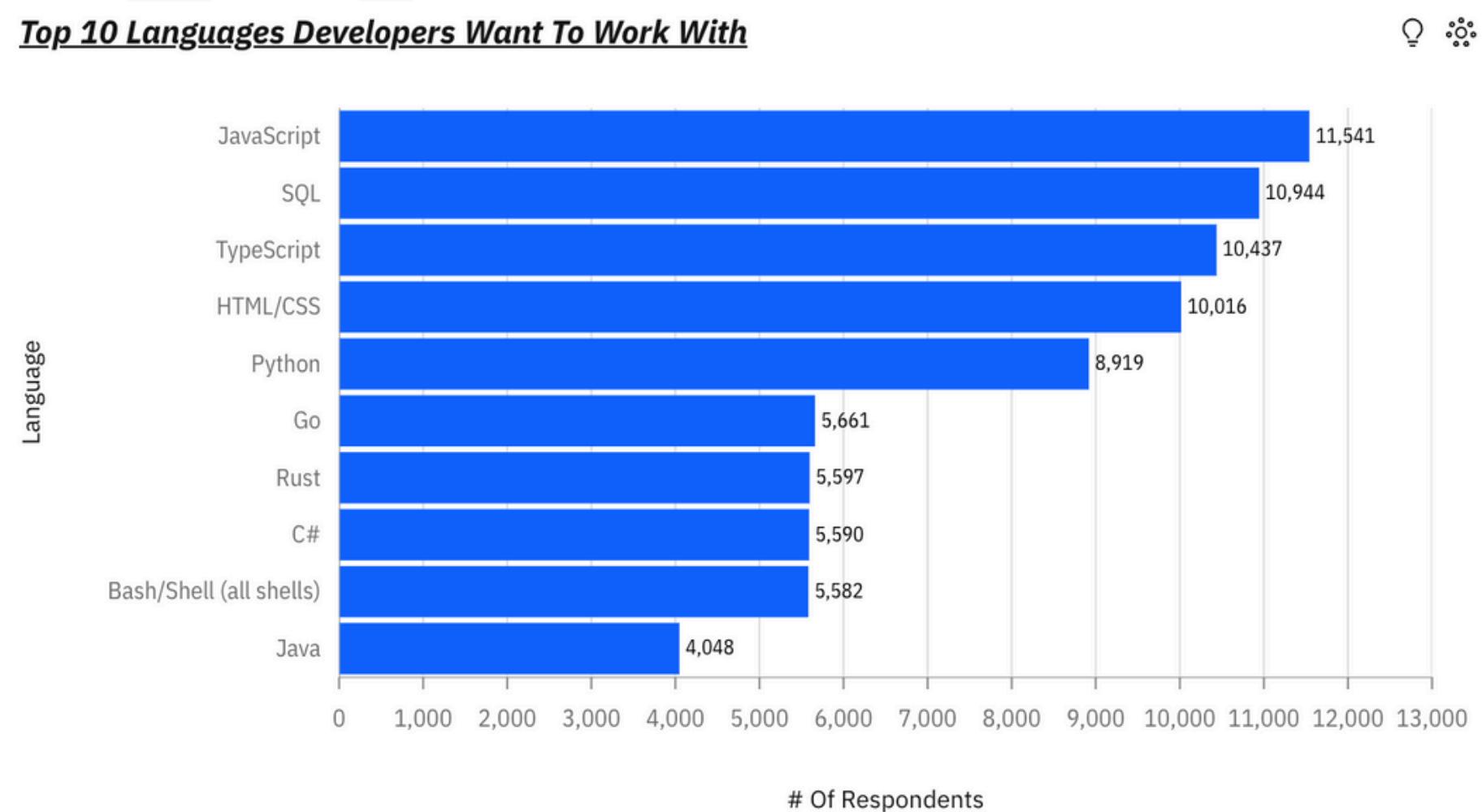
## Languages for the current year:

Top 10 Programming Languages Developers Have Worked With



## Languages trend for the next year:

Top 10 Languages Developers Want To Work With



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## FINDINGS

**JavaScript, Python, HTML/CSS, and SQL** dominate both lists. JavaScript is the most used language currently and the second most desired. Python, while ranked #5 in current use, skyrockets to #1 as the most desired language, showing incredible momentum.

**Go** and **Rust** are the clearest revelations. They do not appear in the Top 10 for current usage but break in at #3 and #5 on the desired list, respectively. **TypeScript** also shows enormous growth, jumping from #8 in usage to #4 in desire.

Languages like **PHP** and **C++** are in the Top 10 for current use but disappear completely from the most desired list. **Java**, while still relevant, drops from #6 in usage to #10 in desire.

## IMPLICATIONS

These languages form the core of modern development. Continued high demand for JavaScript and Python solidifies them as essential and safe-skill investments for any developer. SQL and HTML/CSS remain fundamental and show no signs of slowing down.

This signals a clear shift in developer preference toward modern languages that offer better performance, type safety, and concurrency. Learning Go, Rust, or TypeScript could provide a significant competitive advantage in the future job market.

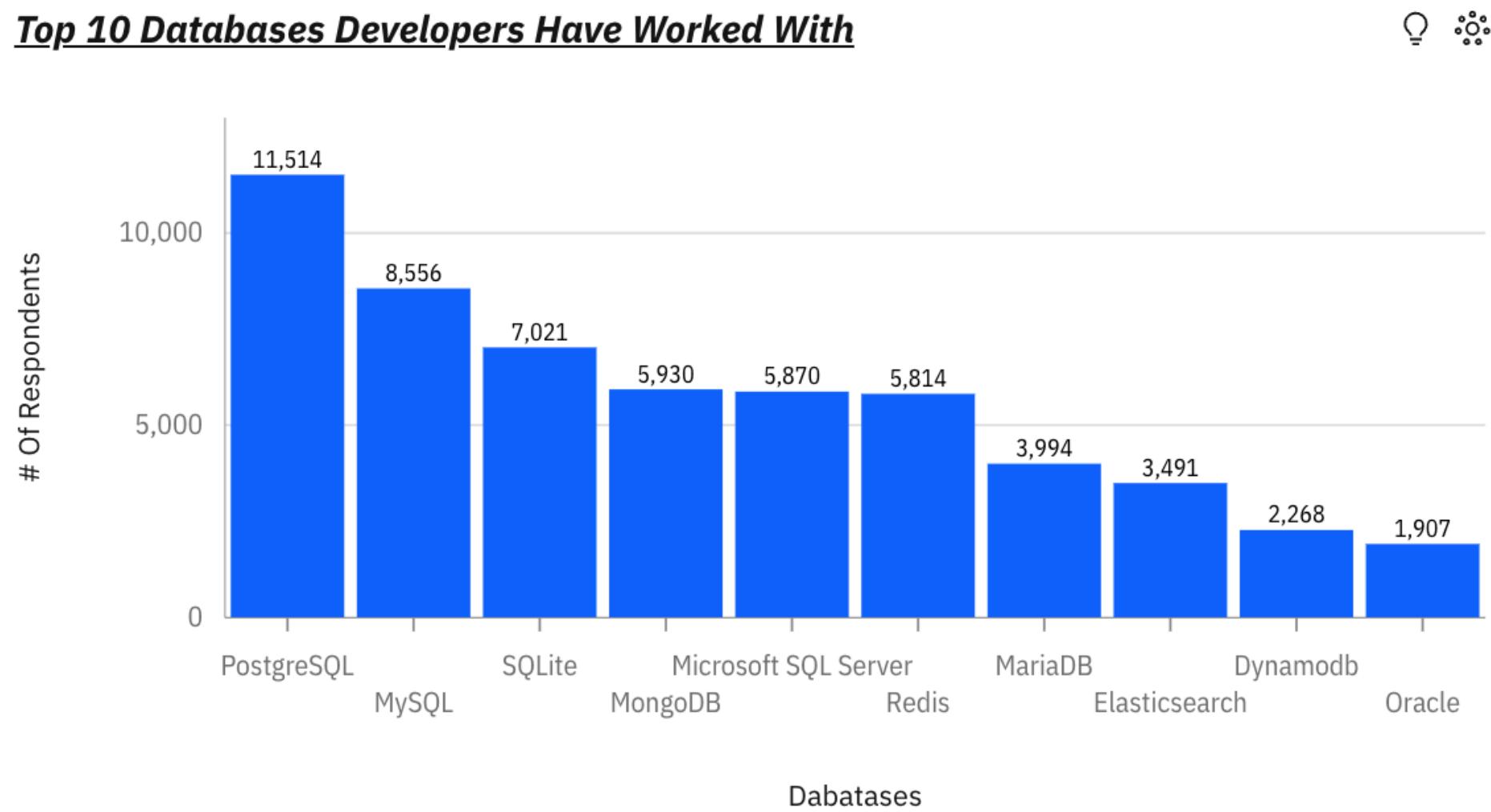
While these languages remain crucial for maintaining a large number of existing systems (especially PHP on the web and Java in the enterprise world), there is less enthusiasm from developers to learn or use them for new projects.



# DATABASE TRENDS

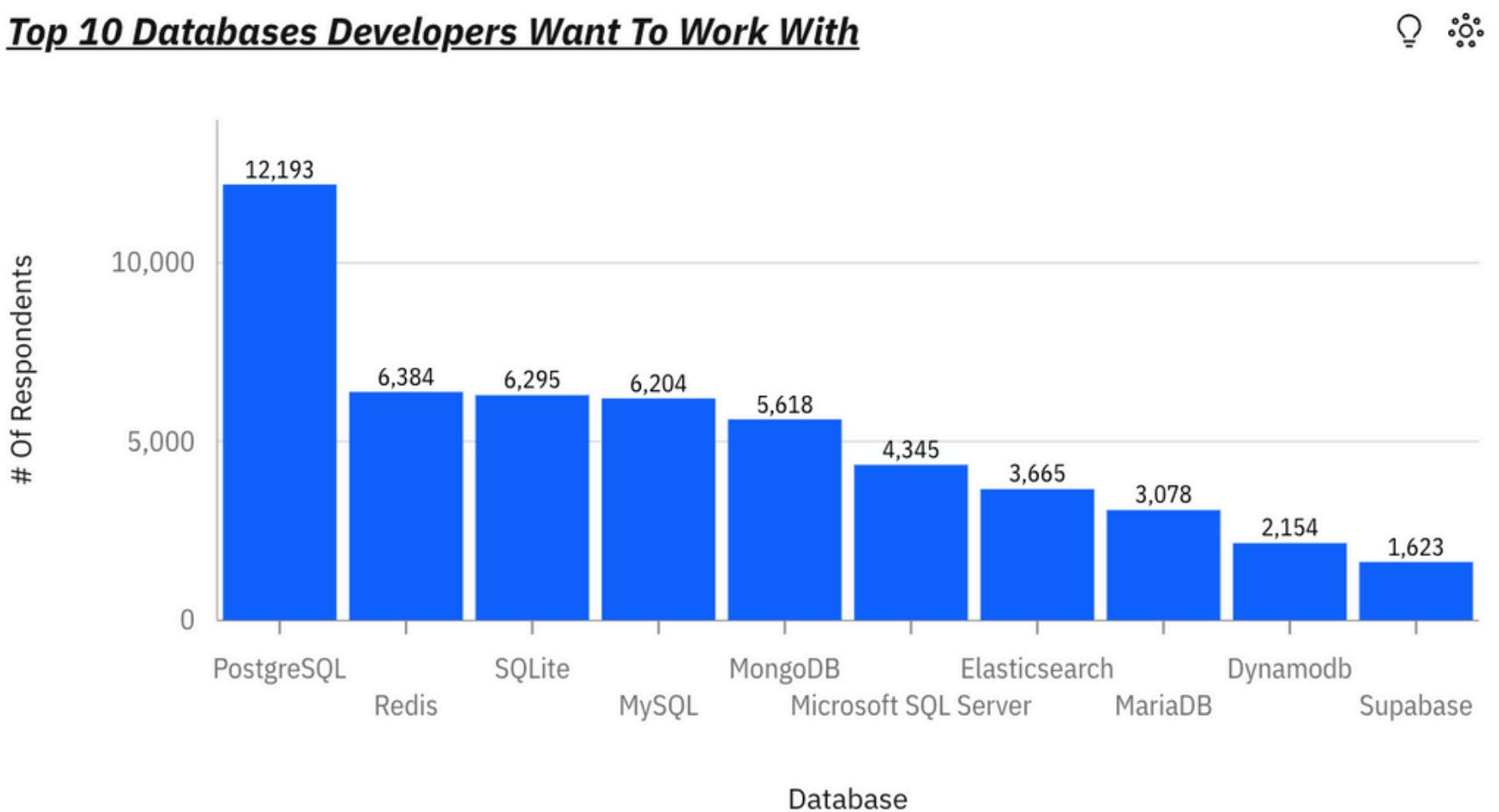
## Databases for the current year:

Top 10 Databases Developers Have Worked With



## Databases trend for the next year:

Top 10 Databases Developers Want To Work With



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## FINDINGS

**MySQL** and **PostgreSQL** are dominant, ranking #1 and #2 in both current usage and future desire.

**MongoDB** and **Redis** show significantly higher rankings on the "desired" list than on the "used" list. PostgreSQL's high desire also reflects its growing use for NoSQL workloads.

Commercial databases like **Microsoft SQL Server** and **Oracle** are widely used but drop significantly in the "desired" rankings, with Oracle falling off the top 10 list entirely.

## IMPLICATIONS

Open-source relational databases remain the industry standard and the most valuable database skill for developers.

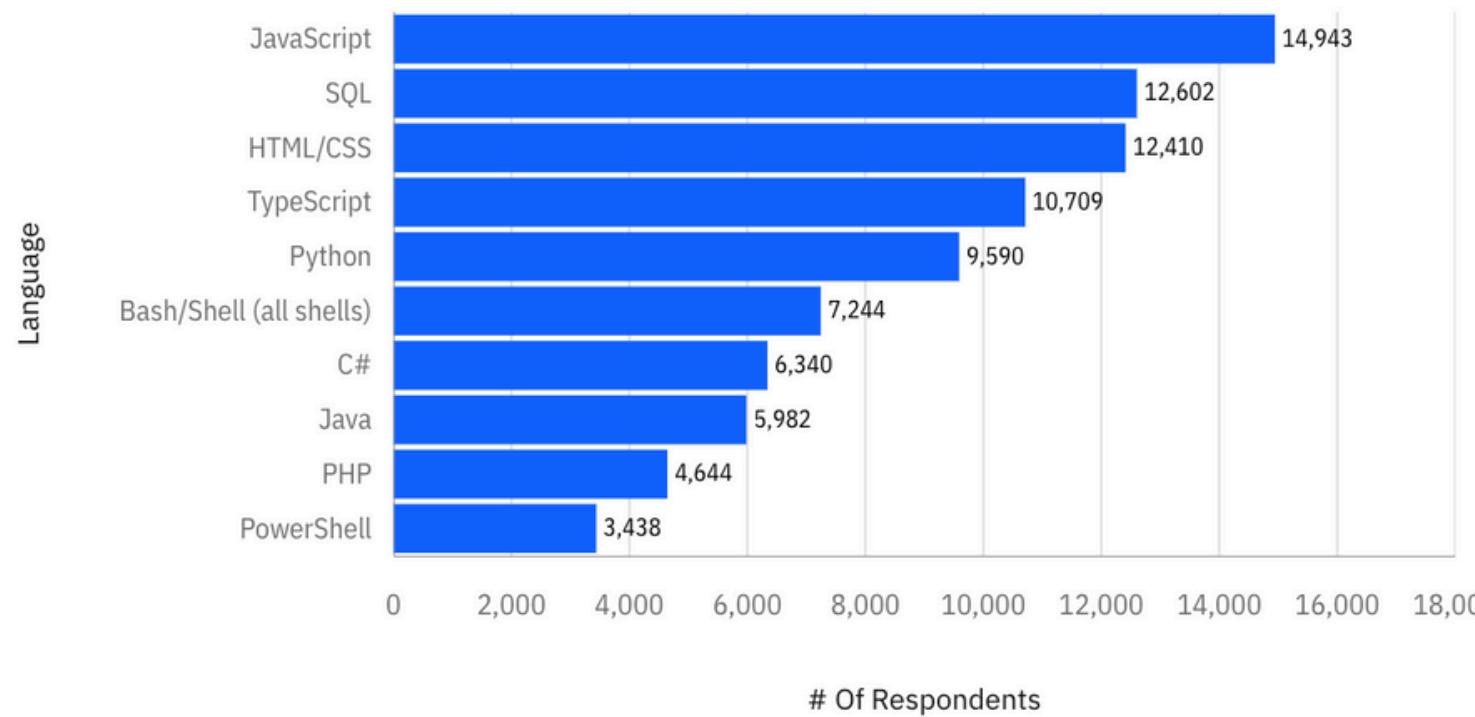
There is a strong and growing demand for flexible, high-performance NoSQL and in-memory solutions to handle modern application needs.

While still important in the enterprise sector, developers show less enthusiasm for learning or starting new projects with traditional commercial databases, preferring modern open-source alternatives.

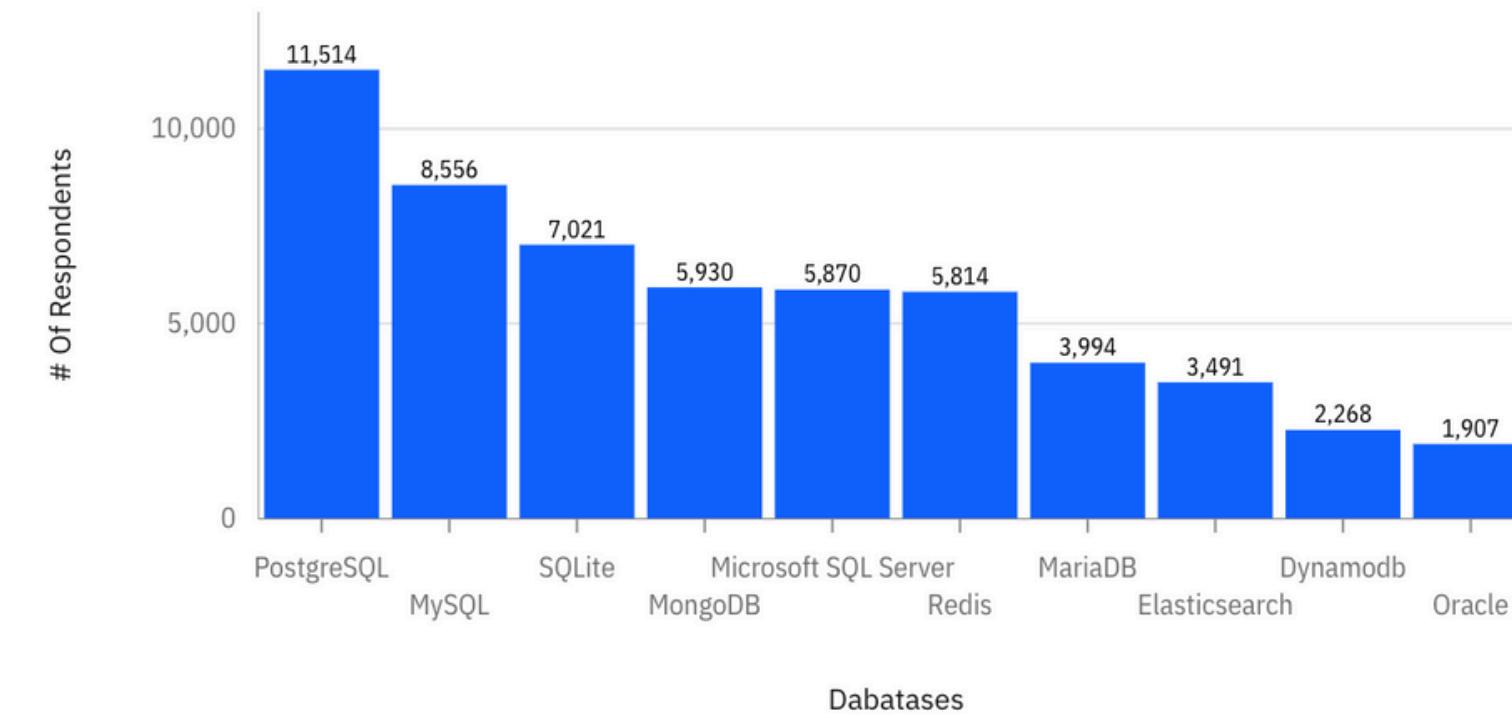


# Dashboard 1 - Current Technology Usage

Top 10 Programming Languages Developers Have Worked With



Top 10 Databases Developers Have Worked With



Top 10 Platforms Developers Have Worked With



Top 10 Webframes Developers Have Worked With



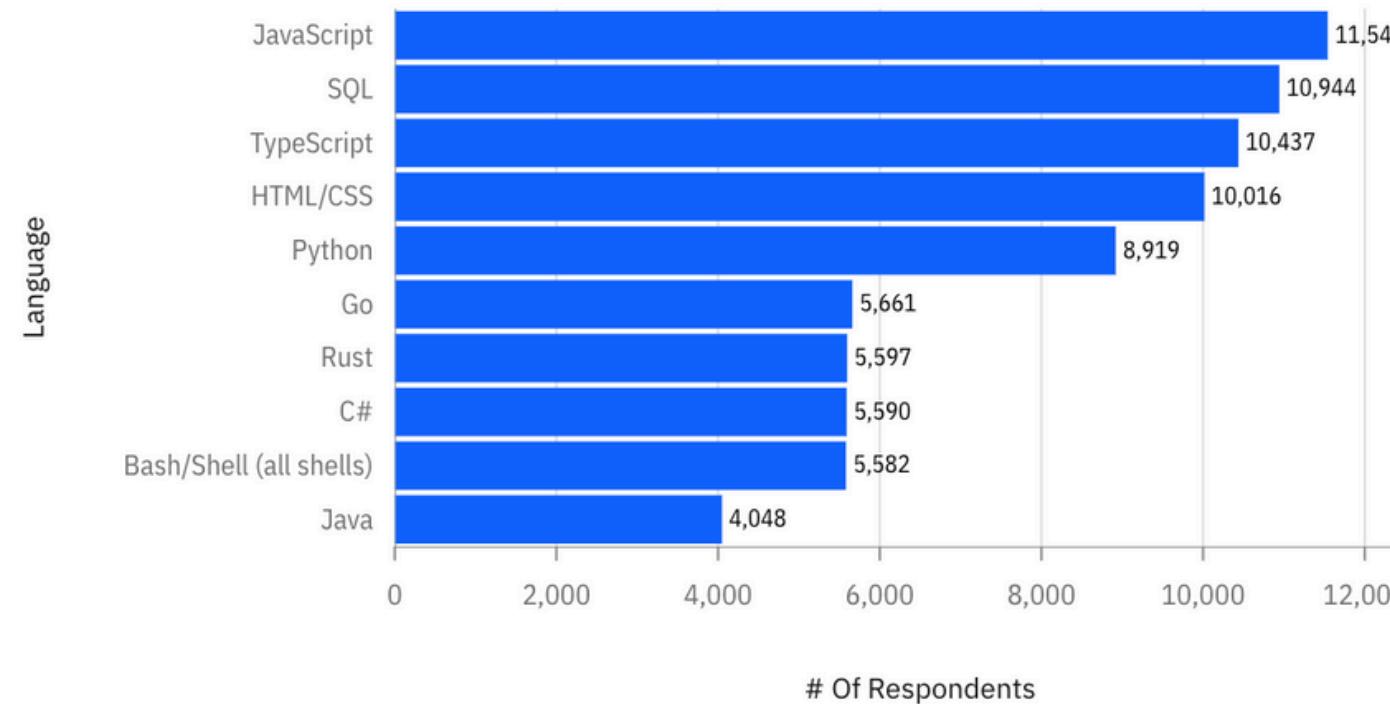
Amazon Web Services (AWS)

Vercel Netlify  
Digital Ocean Heroku  
Cloudflare Firebase  
Google Cloud Microsoft Azure

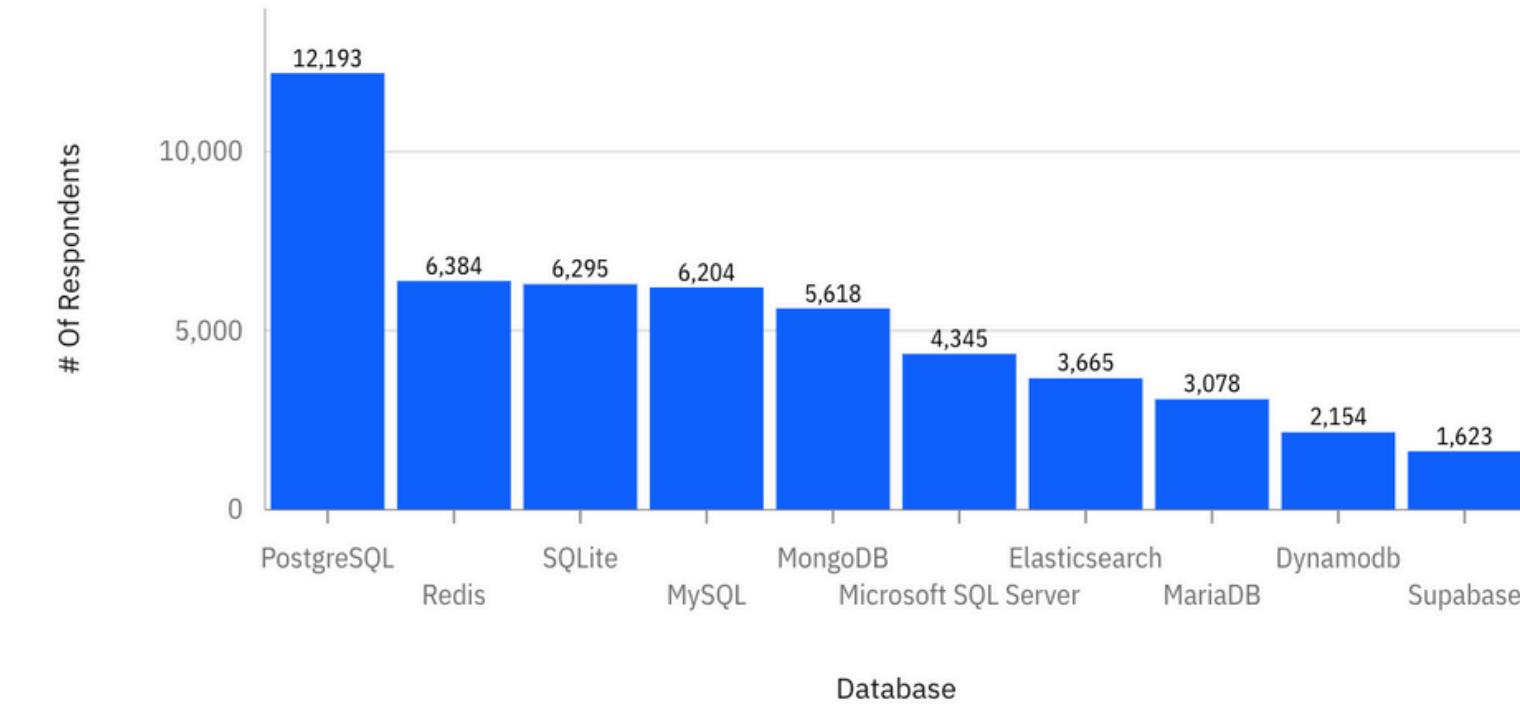


# Dashboard 2 - Future Technology Trend

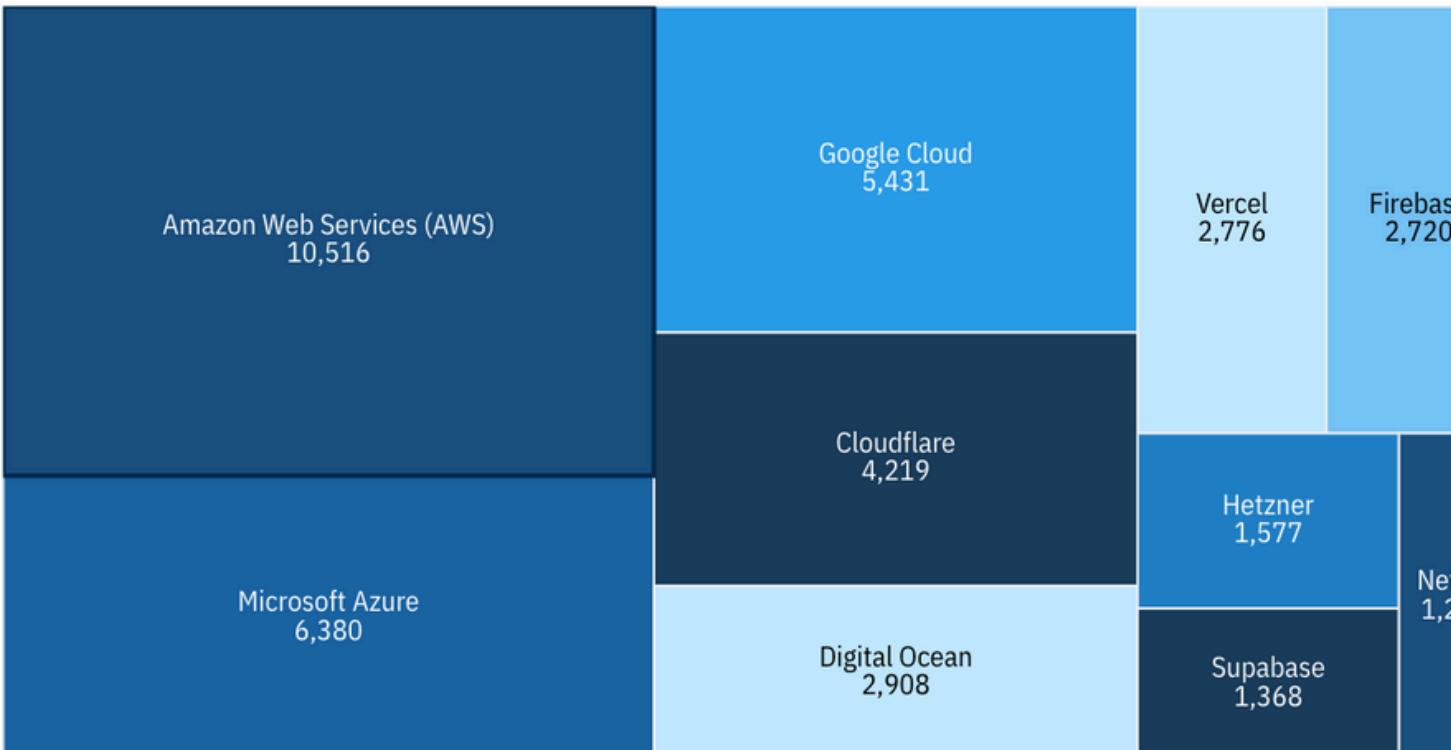
Top 10 Languages Developers Want To Work With



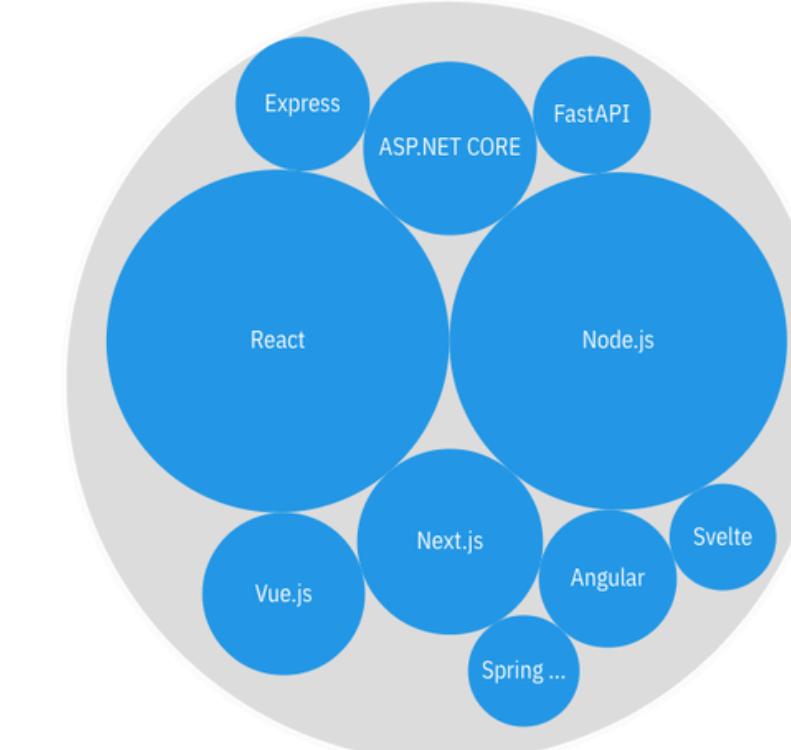
Top 10 Databases Developers Want To Work With



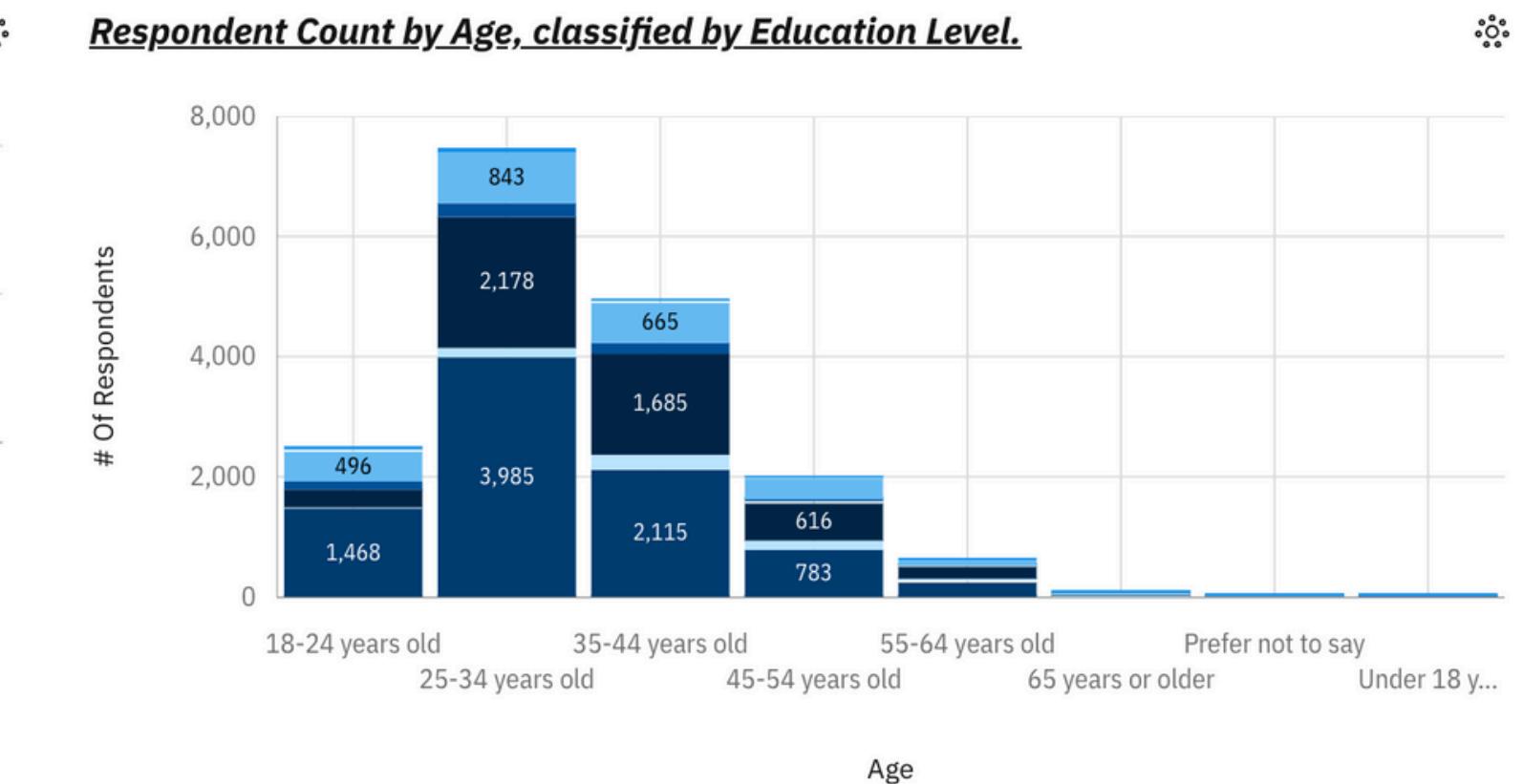
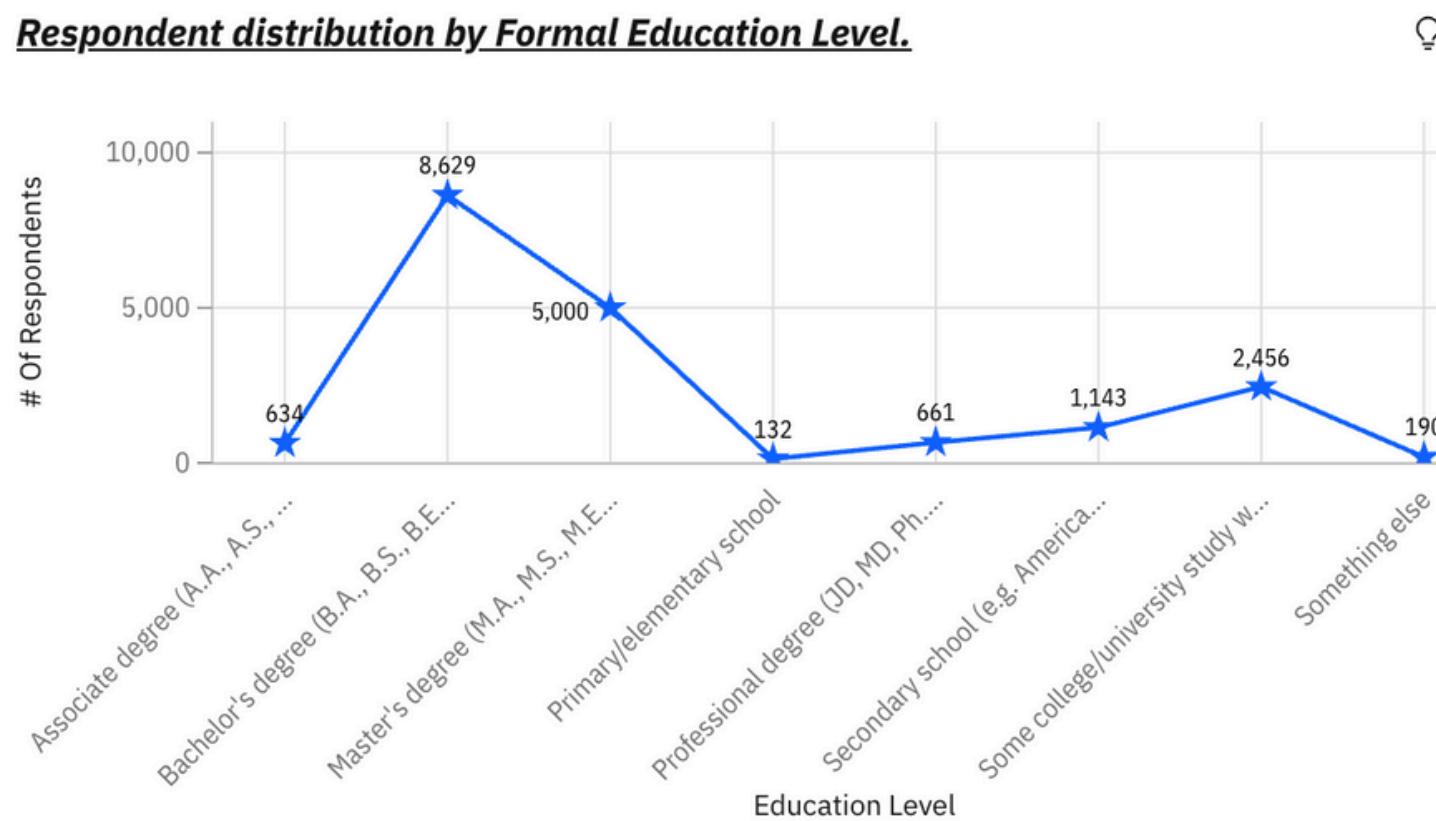
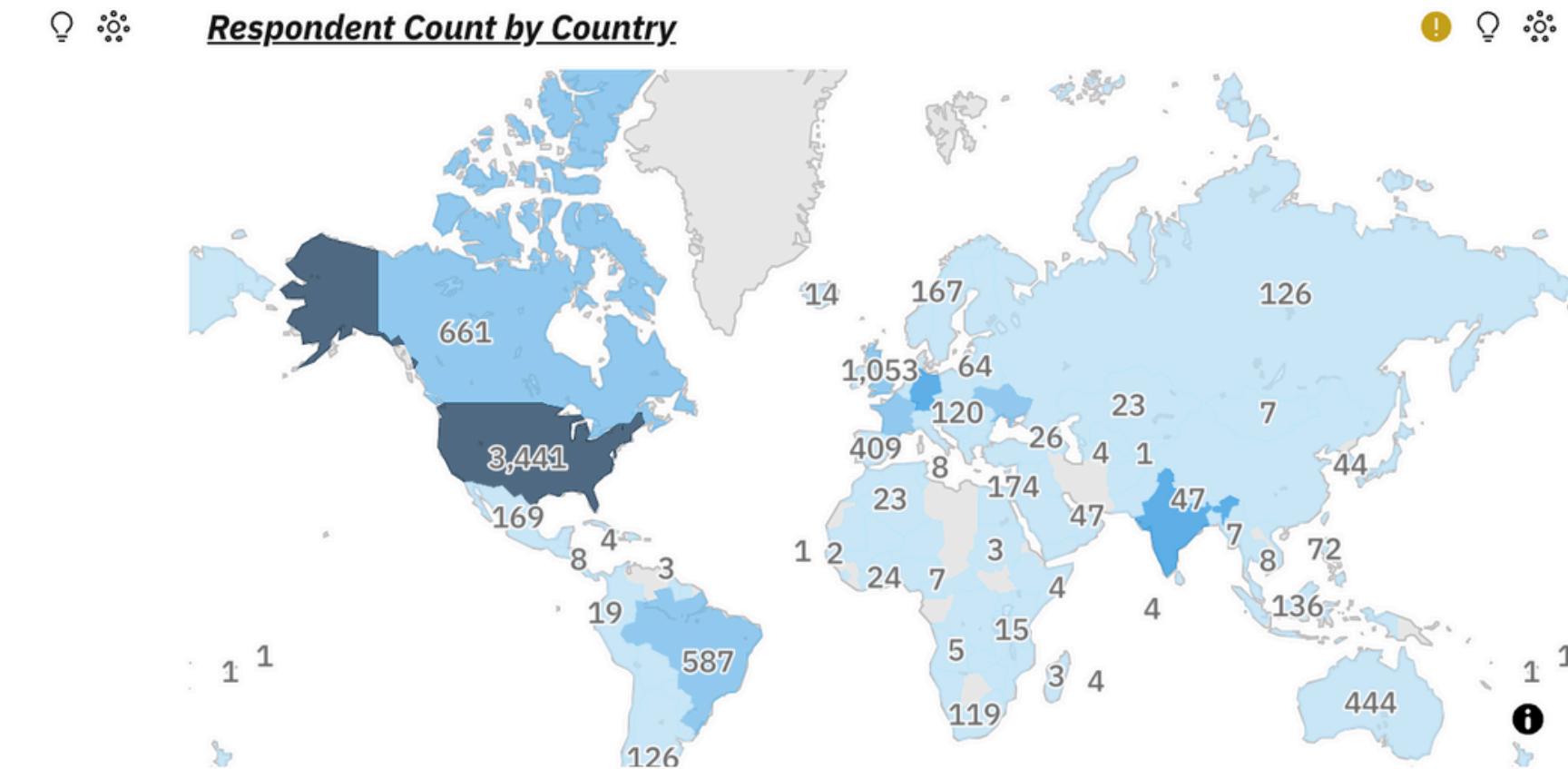
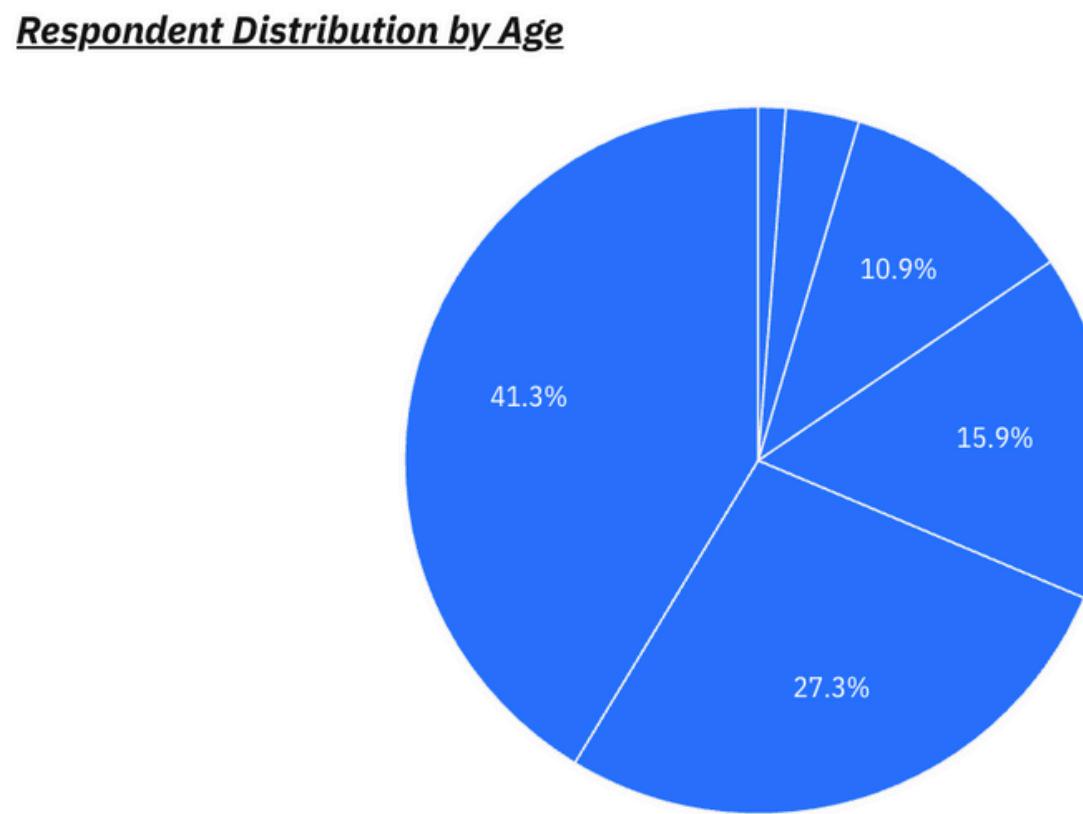
Top 10 Platforms Developers Want To Work With



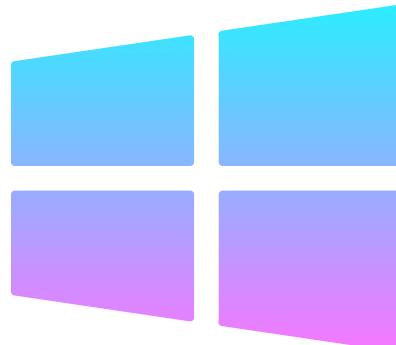
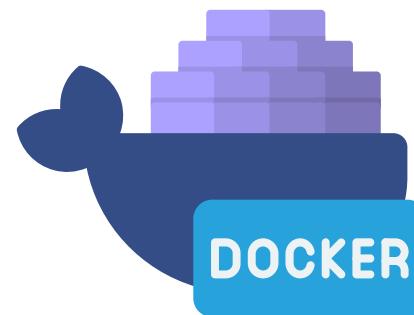
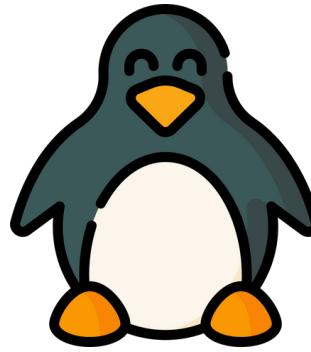
Top 10 Webframes Developers Want To Work With



# Dashboard 3 - Demographics



# Insights from Dashboards



- **Building in the Cloud is the New Normal:** The most popular tools show that developers today are expected to build and run their software online. While Linux and Windows are the foundational platforms, knowing technologies like Docker and Amazon Web Services (AWS) has become essential for creating and deploying modern applications.
- **A Young, University-Educated Community:** The tech world is fueled by a young and vibrant workforce. The typical developer is in their late twenties or early thirties (the 25-34 age group is the largest) and is very likely to have a college degree, such as a Bachelor's or Master's, making it the most common path into the industry.
- **A Global Community with Major Hubs:** While developers live and work all over the world, the community has clear centers of gravity. The map shows that the United States and India are the two biggest homes for tech talent, with countries like Germany and the United Kingdom also serving as key hubs in Europe.



# OVERALL FINDINGS & IMPLICATIONS

## FINDINGS

The technology landscape is dominated by open-source, web, and cloud-native technologies. JavaScript and Python are the most desired languages, PostgreSQL and MySQL are the leading databases, and Docker and AWS are essential platforms.

The developer workforce is predominantly young (ages 25-34), formally educated (holding Bachelor's or Master's degrees), and geographically concentrated in key hubs like the United States, India, and Western Europe.

There is a clear and rapid shift in developer interest towards newer, high-performance languages like Go, Rust, and TypeScript, even while established languages like Java and PHP remain widely used.

## IMPLICATIONS

Developers must prioritize skills in these specific ecosystems to remain competitive. Companies need to support these technologies to attract and retain top talent.

Recruitment strategies should be tailored to this demographic, leveraging university pipelines and focusing on these major talent pools. The industry's reliance on a young workforce also raises questions about long-term career progression for older developers.

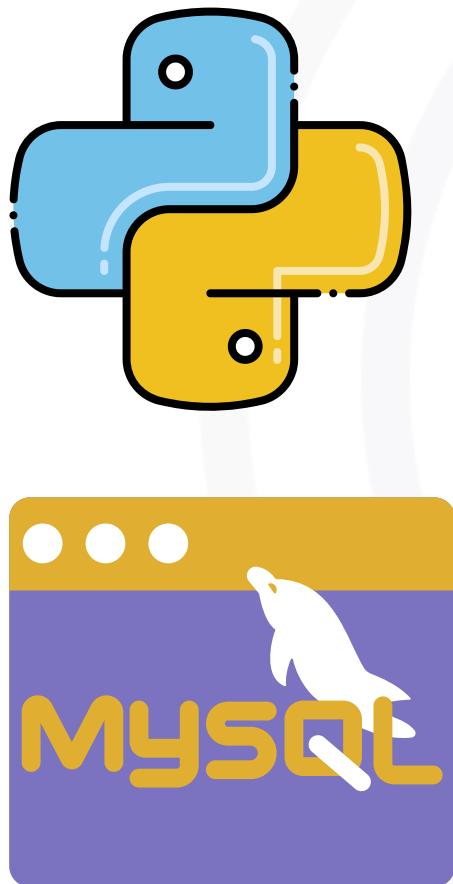
The industry is in a state of transition. While legacy systems require ongoing support, a significant portion of the workforce is eager to adopt modern tools for new projects. This creates both a challenge for maintaining old systems and an opportunity for innovation.



# CONCLUSIONS

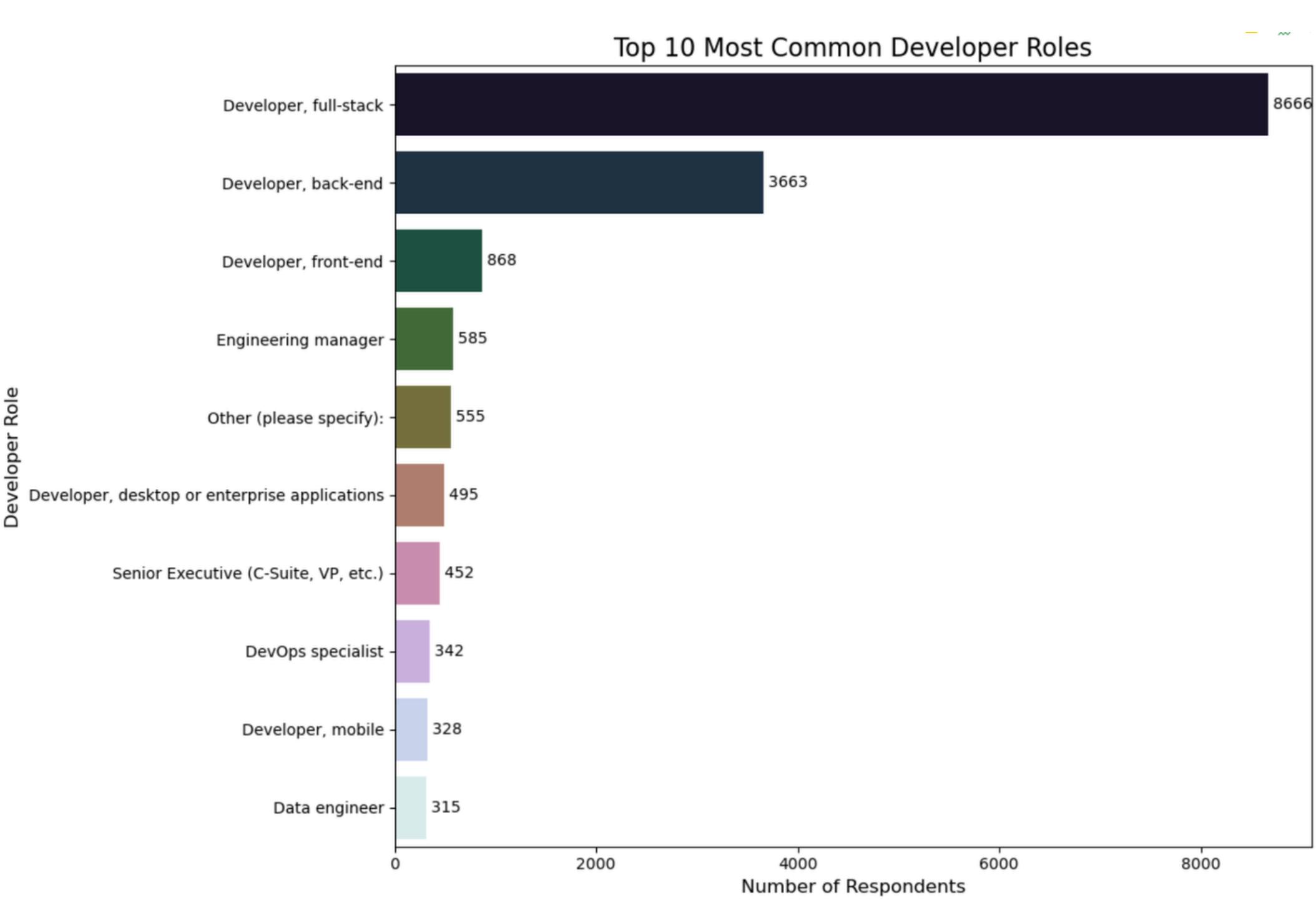
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{ JavaScript }



- The Modern Developer Toolkit is Defined by Open-Source, Web, and Cloud Technologies. The most valuable and desired skills are concentrated in specific ecosystems, with JavaScript/Python for programming, PostgreSQL/MySQL for databases, and Docker/AWS for deployment.
- The Developer Profession is Shaped by a Young, Highly Educated, and Geographically Focused Demographic. The typical developer profile is a university-educated individual under 35, primarily located in major global tech hubs like the US, India, and Western Europe.
- A Clear Generational Shift in Technology is Underway. While mature languages like Java and PHP still run much of the digital world, developer enthusiasm and future-facing interest have decisively moved towards modern, high-performance languages such as Go, Rust, and TypeScript.

# APPENDIX



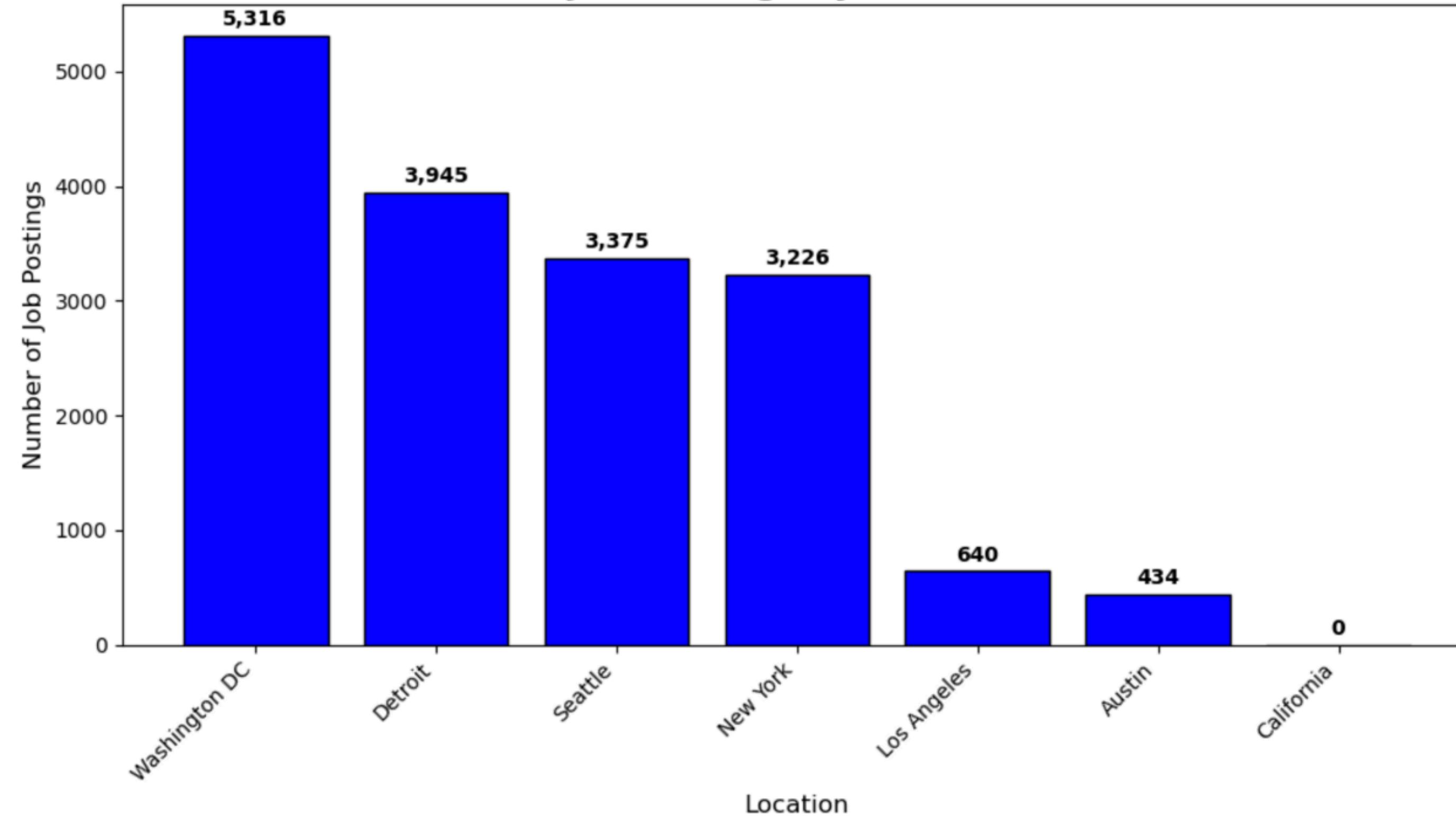
This chart illustrates the breakdown of the **10 most common professional roles identified by survey respondents.**

- **Key Insight:** The data clearly shows that "Developer, full-stack" is the most prevalent role, significantly outnumbering more specialized positions. This, combined with the high rankings of "back-end" and "front-end" developers, underscores the continued dominance of web-centric development in the industry.
- **Additional Context:** The presence of roles like "DevOps specialist", "Data scientist", and "Data engineer" within the top 10 is significant. It highlights that beyond traditional application development, specializations in infrastructure automation and data analysis are now core components of the modern tech landscape.



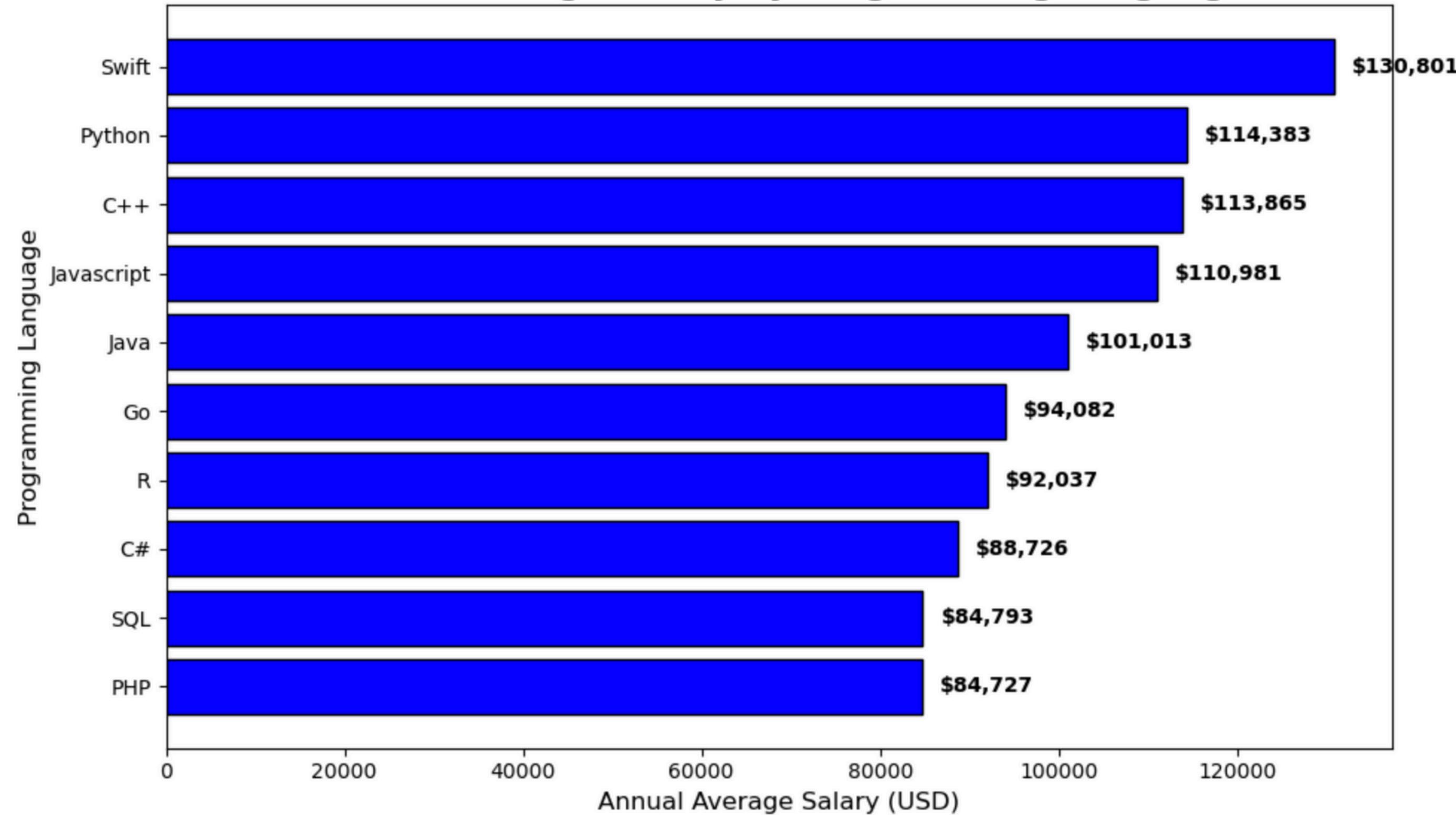
# JOB POSTINGS

**Job Postings by Location**



# POPULAR LANGUAGES

**Annual Average Salary by Programming Language**



Skills Network

