



# Analyzing Trends in Programming and IT Competencies

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# OUTLINE

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

# EXECUTIVE SUMMARY

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- In-Demand Programming Languages
  - Bash/Shell/PowerShell, HTML/CSS, C#, JavaScript
- Essential Database Expertise
  - MySQL, Microsoft SQL Server, PostgreSQL, SQLite, MongoDB
- Leading Platforms for IT Professionals
  - Windows, Linux, Docker, AWS, Slack
- Most Popular Web Frameworks
  - jQuery, Angular/Angular.js, React.js, ASP.NET, Express
- Emerging Trends in Technology
  - **Programming Languages:** Python, SQL, TypeScript
  - **Databases:** Redis, Elasticsearch
  - **Platforms:** Android rises in demand
  - **Frameworks:** React.js stays dominant

# INTRODUCTION

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- In recent years, significant trends have emerged in the field of programming and technology, highlighting changes in programming languages, web frameworks, and the demographic makeup of developers.
- Stack Overflow's annual survey provides a global view of the programming community, covering topics such as preferred technologies, career aspirations, and industry trends.
- The 2019 edition of the survey marked its ninth consecutive year of publication, with nearly 90,000 developers participating in a 20-minute survey.
- Some important points will be presented

# METHODOLOGY

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- **Source:** Data comes from the Stack Overflow survey conducted between **January 23 and February 14, 2019**, with participation from **88,883 software developers** representing **179 countries**.
- **Preparation:** Familiarization with the dataset was achieved through hands-on activities, covering:
  - **Web Scraping**
  - **Dataset Exploration**
  - **Data Wrangling**
  - **Exploratory Data Analysis (EDA)**
  - **Data Visualization**
- **Tools Used:** Analysis and visualizations were conducted using **Google Looker Studio** to derive actionable insights and present findings effectively.

# RESULTS

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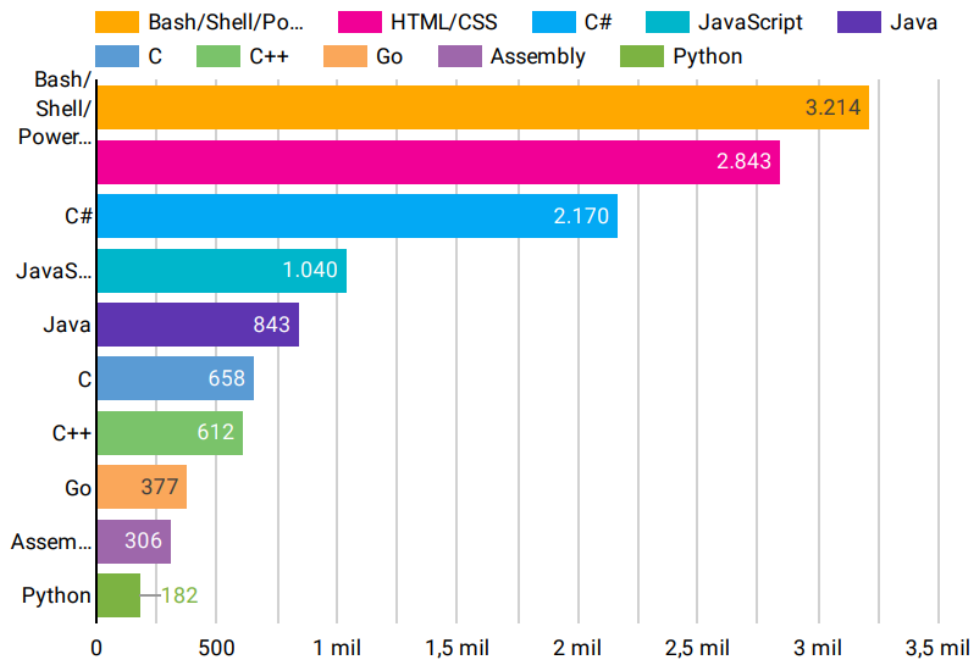


- **Bash/Shell/Powershell** are among the most used languages, while **JavaScript** tops the list of languages most wanted to learn in the next year.
- **MySQL** is currently the most widely used database, while **PostgreSQL, MongoDB, and Redis** are among the most desired databases to learn next year.
- **Male Predominance:** 93.5% of respondents are male, indicating a notable gender disparity in the participant pool.
- **Diverse Geographic Participation:** Respondents come from different countries, with a higher concentration in certain regions according to the map, reflecting a geographic diversity in the sample.
- **Concentration of Young People with High Educational Levels:** The majority of respondents are in the 28-30 age range and have high educational levels, with bachelor's and master's degrees predominating, especially among men.

# PROGRAMMING LANGUAGE TRENDS

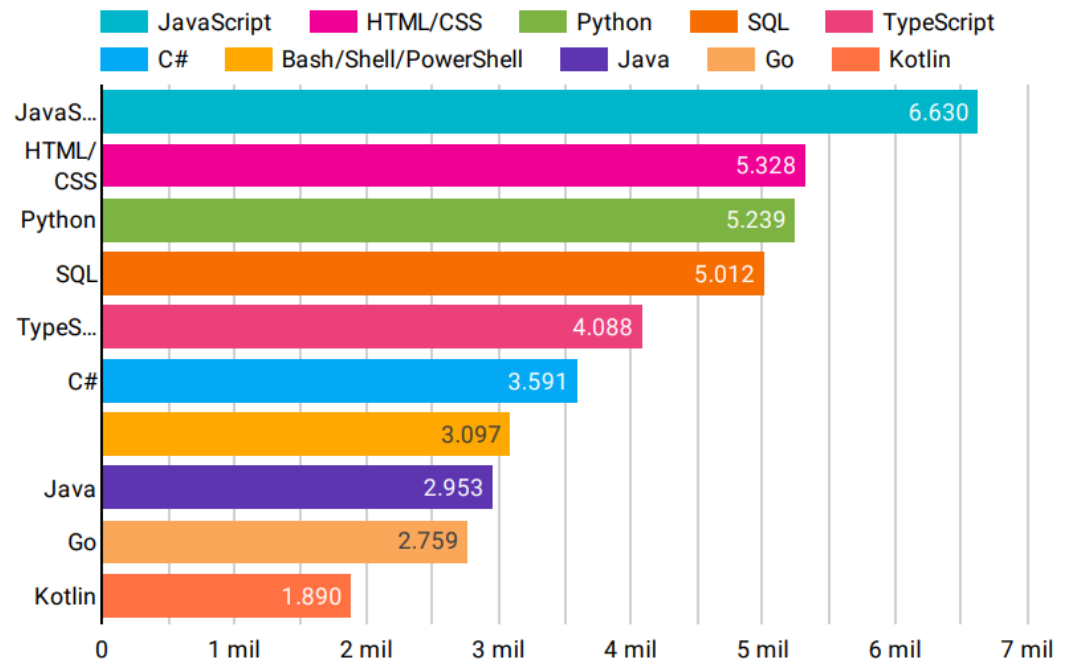
## Current Year

Top 10 LanguageWorkedWith



## Next Year

Top 10 LanguageDesireNextYear



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- **Web Dominance:** JavaScript and HTML/CSS lead, reflecting web development's importance.
- **Python's Rise:** Python's popularity is growing, driven by data science and machine learning.
- **Niche Demand:** Specialized languages like C++, Kotlin, and Go are in demand for specific applications.

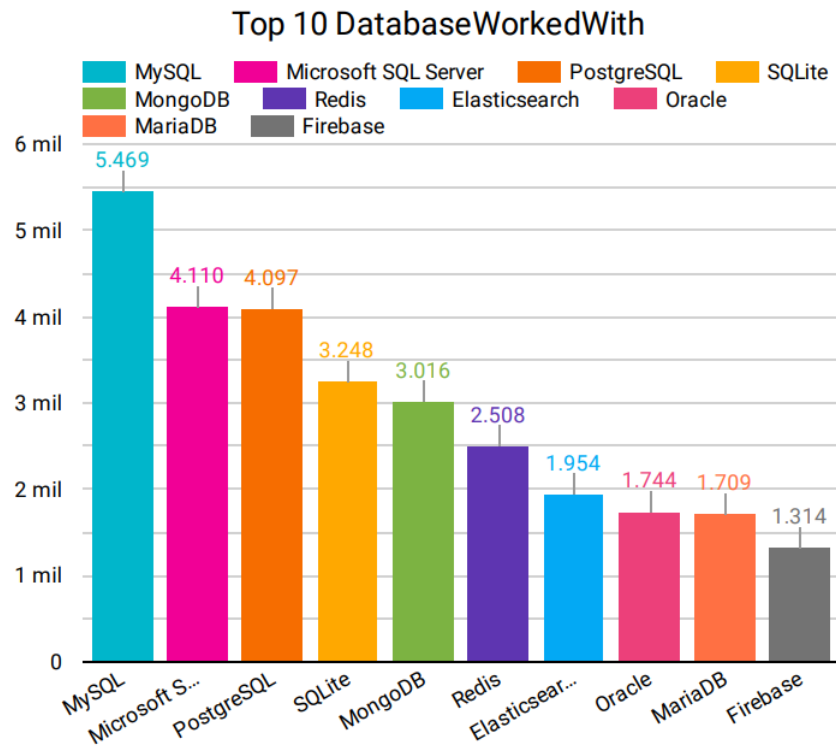
## Implications

- **Web Focus:** Prioritize web development skills for strong career prospects.
- **Python Proficiency:** Learn Python for diverse opportunities in data science and software engineering.
- **Niche Specialization:** Consider specializing in niche languages for competitive advantages.

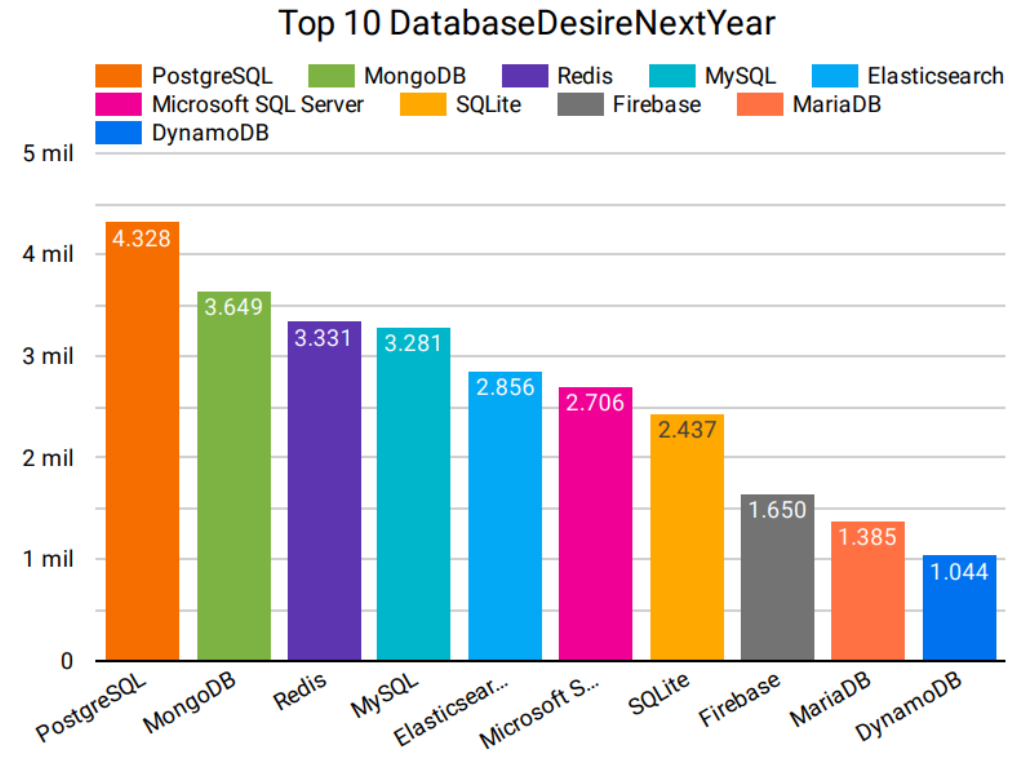


# DATABASE TRENDS

## Current Year



## Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- **Relational Dominance:** MySQL and DynamoDB are growing. PostgreSQL lead, offering reliability and versatility.
- **NoSQL Rise:** MongoDB and Redis are gaining traction for scalability and flexibility.
- **Cloud Adoption:** Cloud-based databases like Firebase and DynamoDB are growing.

## Implications

- **Hybrid Approach:** Combine relational and NoSQL databases for optimal solutions.
- **Cloud Migration:** Consider cloud-based databases for scalability and cost-efficiency.
- **Skill Diversification:** Expand skillset to include NoSQL and cloud databases.

# DASHBOARD

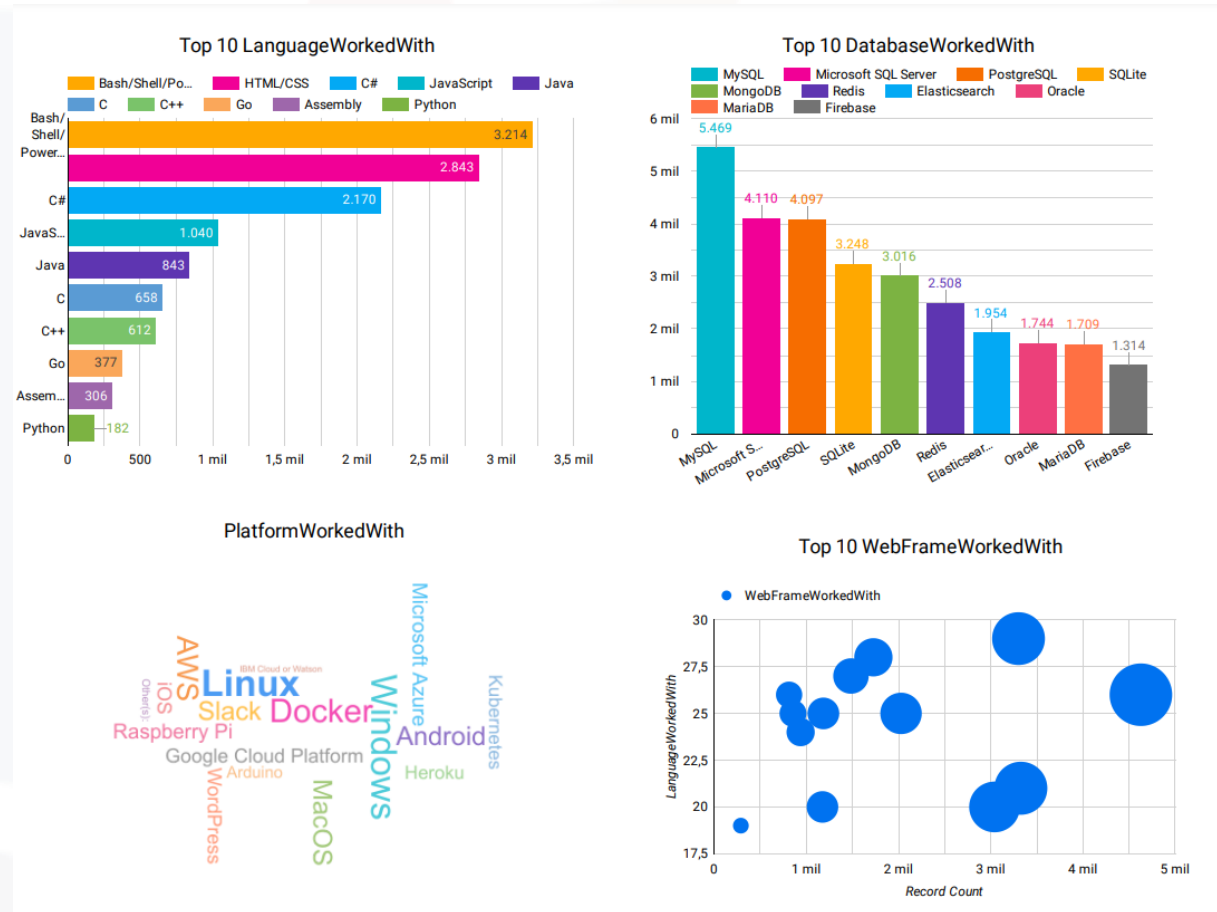
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Dashboard here:

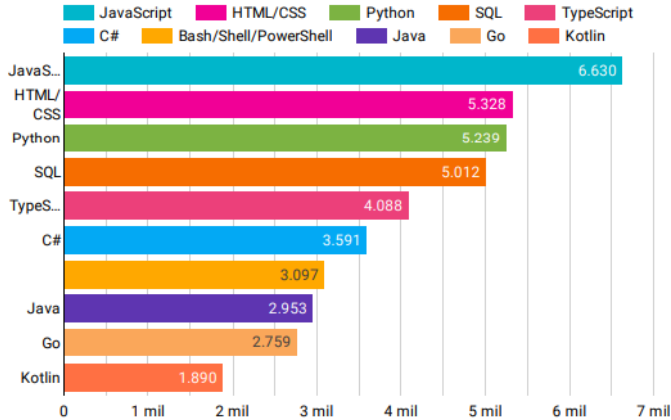
<https://github.com/quinls/Building-A-Dashboard-With-Google-Looker-Studio/blob/main/Dashboard.pdf>

# CURRENT TECHNOLOGY USAGE

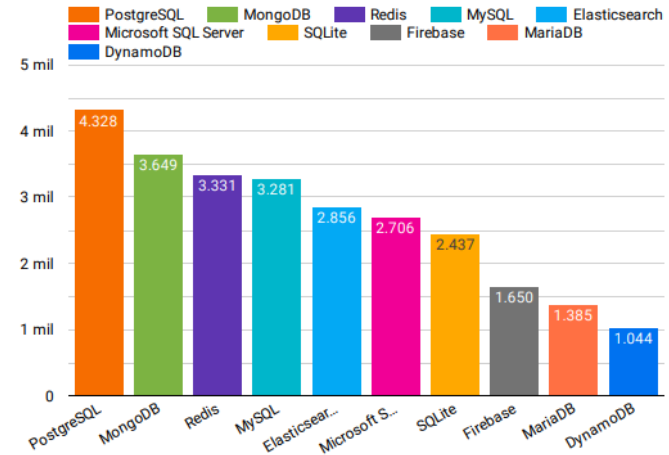


# FUTURE TECHNOLOGY TREND

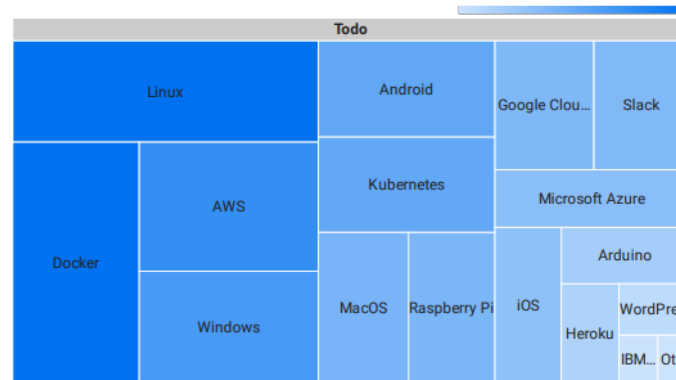
Top 10 LanguageDesireNextYear



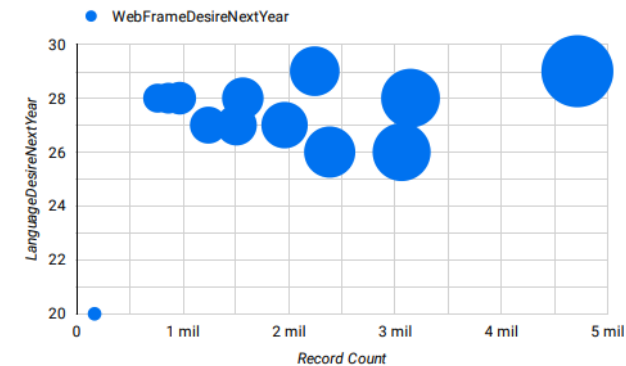
Top 10 DatabaseDesireNextYear



PlatformDesireNextYear

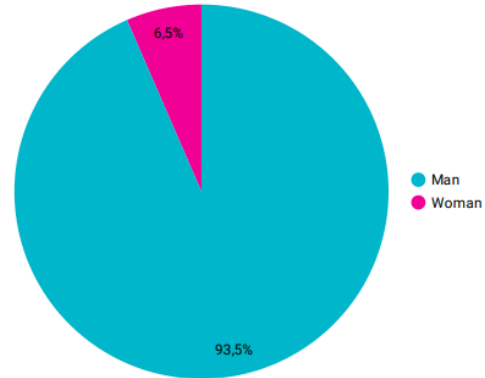


Top 10 WebFrameDesireNextYear

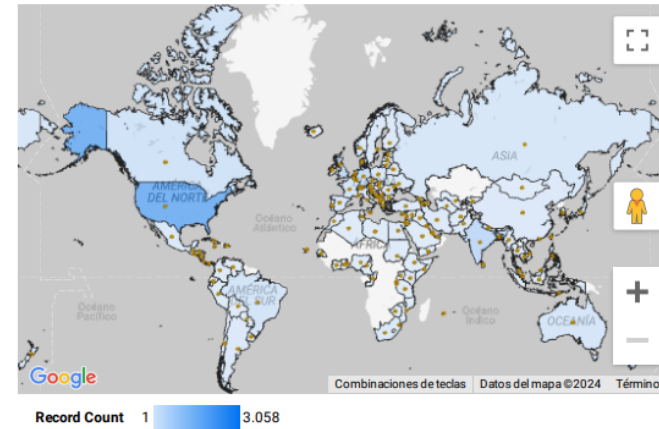


# DEMOGRAPHICS

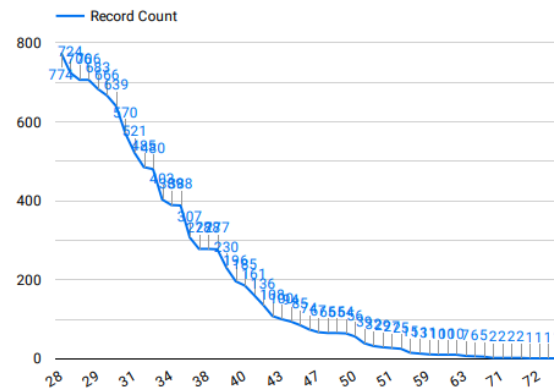
Respondent classified by Gender



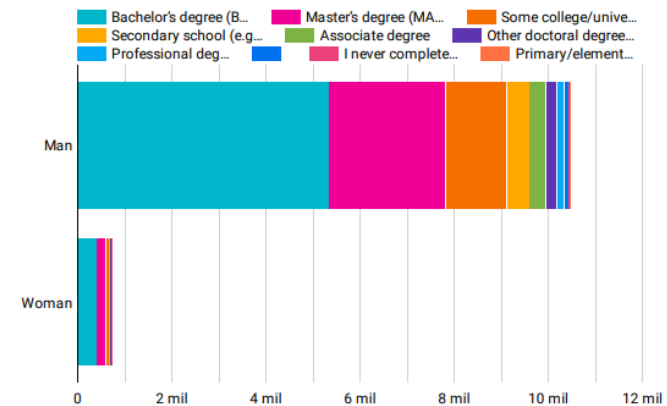
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



# DISCUSSION

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- **Web development dominance:** JavaScript, HTML, and CSS are the core technologies for building websites and web applications, highlighting the central role of web development in programming.
- **MySQL leadership:** MySQL is the most widely used database management system, supporting a broad range of web applications.
- **Evolution and trends:** The web development landscape is constantly evolving, with a growing emphasis on client-side development (JavaScript), visual design (CSS), and adapting to new trends and frameworks.

# OVERALL FINDINGS & IMPLICATIONS

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## Findings

- **Technology Trends:** The prominence of JavaScript and HTML/CSS highlights the need to stay up-to-date with key web development tools to remain competitive.
- **Data Management:** MySQL, PostgreSQL, and Microsoft SQL Server lead the pack as the leading database systems, highlighting the importance of solid strategies to efficiently manage and organize data.
- **Tool Diversity:** The broad spectrum of languages and technologies used by developers emphasizes the importance of understanding the capabilities and limitations of each tool based on the specific needs of the projects.

## Implications

**Rise of NoSQL and Mixed Systems:** Adoption of hybrid models that integrate structured and unstructured data is growing, complementing traditional databases.

**Specialized Tools:** Industry-specific technologies such as machine learning and blockchain are emerging, driving developers to broaden their expertise.

**Design and Development Merger:** HTML/CSS and JavaScript are bridging design and programming, requiring combined skills to create integrated experiences.



# CONCLUSION

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- The findings highlight the evolving nature of programming and the pivotal role technology plays in fostering innovation across various sectors.
- Developers must adapt to this shifting landscape by mastering diverse programming languages and database systems, ensuring they meet the demands of contemporary applications and achieve successful project outcomes.

# APPENDIX

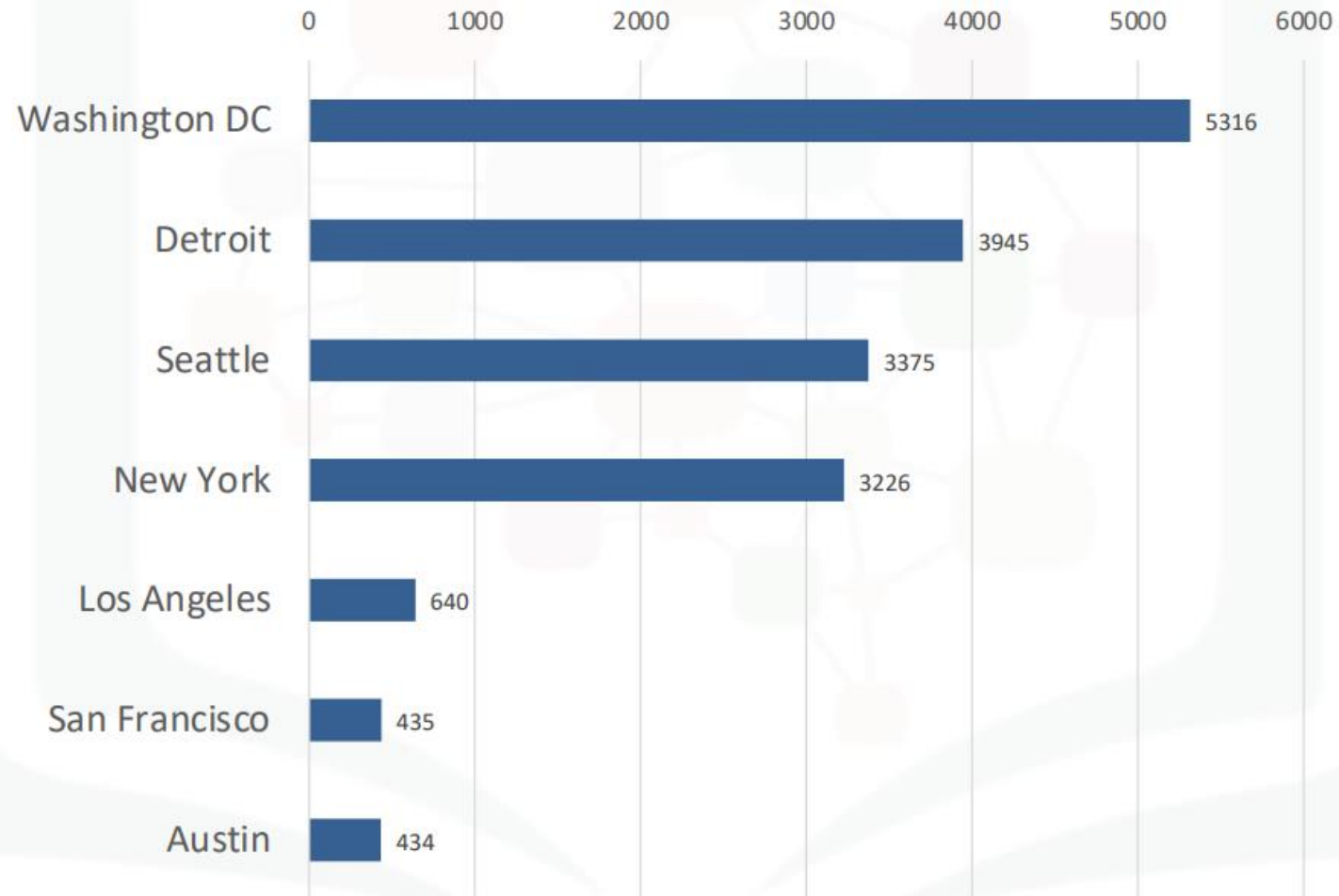
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- A- Job Postings Chart
- B-Popular Languages Chart

# JOB POSTINGS

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# POPULAR LANGUAGES

