



# The 2019 Stack Overflow Developer Survey

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# OUTLINE

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- Executive Summary
- Introduction
- Methodology
- Results
  - Visualization – Charts
  - Dashboard
- Discussion
  - Findings & Implications
- Conclusion
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# EXECUTIVE SUMMARY

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- Staying ahead in the global IT game means keeping up with tech trends. This summary dives into the 2019 Stack Overflow Developer Survey, breaking down what's popular in programming languages, databases, and tech demographics.
- A data was pulled from nearly 90,000 developers through Stack Overflow's survey. After cleaning and analyzing the data, I visualized the trends that shaped the industry in 2019.
- JavaScript was the most popular when it comes to programming languages, with Python rapidly climbing the ranks. MySQL leads in database usage, but PostgreSQL – it's set to grow. AWS tops the list of cloud platforms, but Google Cloud Platform is catching up fast.
- Most of the respondents were male, mainly from the USA, and many code as a hobby. DevOps is a big deal, with Docker and Kubernetes standing out. Interestingly, a lot of developers have only been coding professionally for the last 10 years or so, showing a young and dynamic community.
- This summary gives you a quick look at the key insights from the 2019 survey, highlighting the current trends and shifts in the developer world.

# INTRODUCTION

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- This presentation uses data from the 2019 Stack Overflow Developer Survey to highlight current and future trends in the IT industry, focusing on programming languages, databases, platforms, and developer demographics.
- The following key questions were explored using the data:
  1. Which programming languages are in the highest demand today?
  2. What are the most sought-after database skills?
  3. Which cloud platforms and development tools are popular among developers?
- Our target audience includes IT professionals, HR managers, and anyone interested in understanding the top in-demand IT skills that are crucial today and will remain relevant in the future.

# METHODOLOGY

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1. **Data Collection:** The survey data was collected through Stack Overflow's annual questionnaire, targeting a diverse range of developers across various roles, regions, and experience levels.
2. **Data Cleaning:** Responses were cleaned to remove incomplete or inconsistent data, ensuring a high-quality dataset for analysis.
3. **Exploratory Analysis:** The cleaned data was subjected to exploratory data analysis (EDA) to uncover key trends and insights. This involved visualizing distributions, identifying patterns, and highlighting significant findings.
4. **Key Metrics:** The analysis focused on several key metrics:
  1. **Programming Languages:** Popularity and growth trends of various programming languages.
  2. **Database Skills:** Demand for different database technologies.
  3. **Cloud Platforms:** Usage and preferences for cloud services.
  4. **Developer Demographics:** Gender, geography, and experience levels.
5. **Visualization:** The results were visualized using dashboards and charts to clearly present the findings. These visualizations help in easily understanding complex data and trends.
6. **Insights Extraction:** Key insights were extracted to answer the main research questions about in-demand skills, popular technologies, and demographic patterns among developers.

# RESULTS

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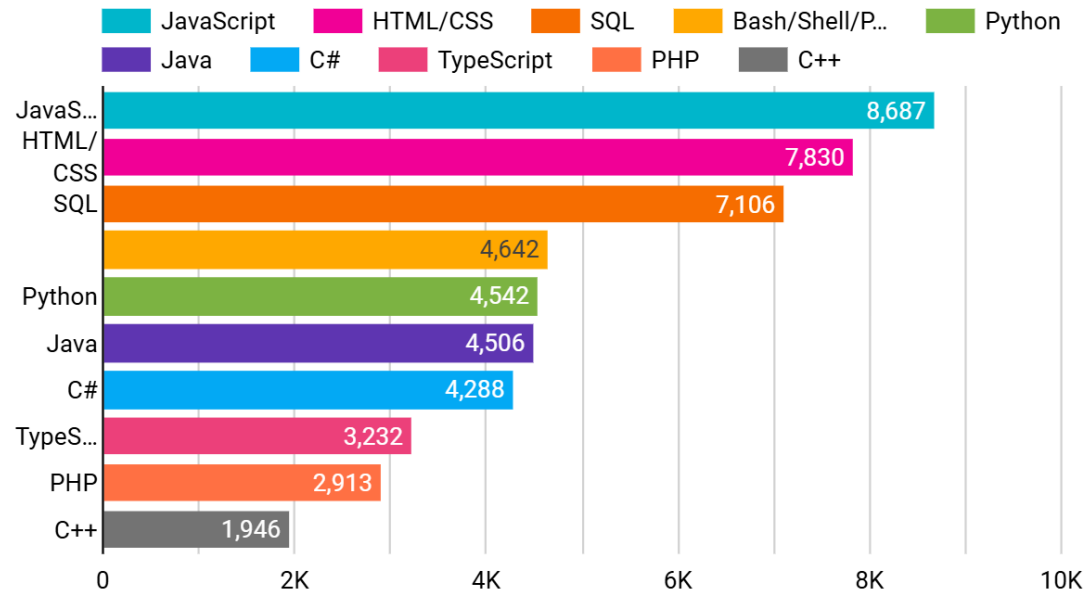
- **Programming Languages:** The 2019 Stack Overflow Developer Survey results highlight that **JavaScript** remains the most widely used programming language, continuing its dominance from previous years. **HTML/CSS**, **SQL**, **Python**, and **Java** also feature prominently among the top languages. **Python**, in particular, has shown significant growth, driven by its applications in AI, machine learning, and data science.
- **Database Technologies:** **MySQL** and **PostgreSQL** are the most popular databases among developers, with **MongoDB**, **SQLite**, and **Microsoft SQL Server** also ranking high. The survey predicts a growing demand for **PostgreSQL** and **MongoDB**, while newer technologies like **Redis** and **Elasticsearch** are gaining traction due to their performance and scalability.
- **Cloud Platforms and DevOps:** **AWS** leads the cloud platform segment, followed by **Google Cloud Platform** and **Microsoft Azure**. The survey indicates a rising interest in container technologies, with **Docker** and **Kubernetes** being highly favored by developers for their efficiency in managing applications. DevOps practices are becoming mainstream, emphasizing continuous integration and delivery (CI/CD).
- **Developer Demographics:** The majority of survey respondents are male, reflecting a gender imbalance in the tech industry. Most respondents are based in the USA and engage in coding as a hobby. The data shows a young professional community, with nearly 45% of developers having less than 10 years of coding experience.

# PROGRAMMING LANGUAGE TRENDS

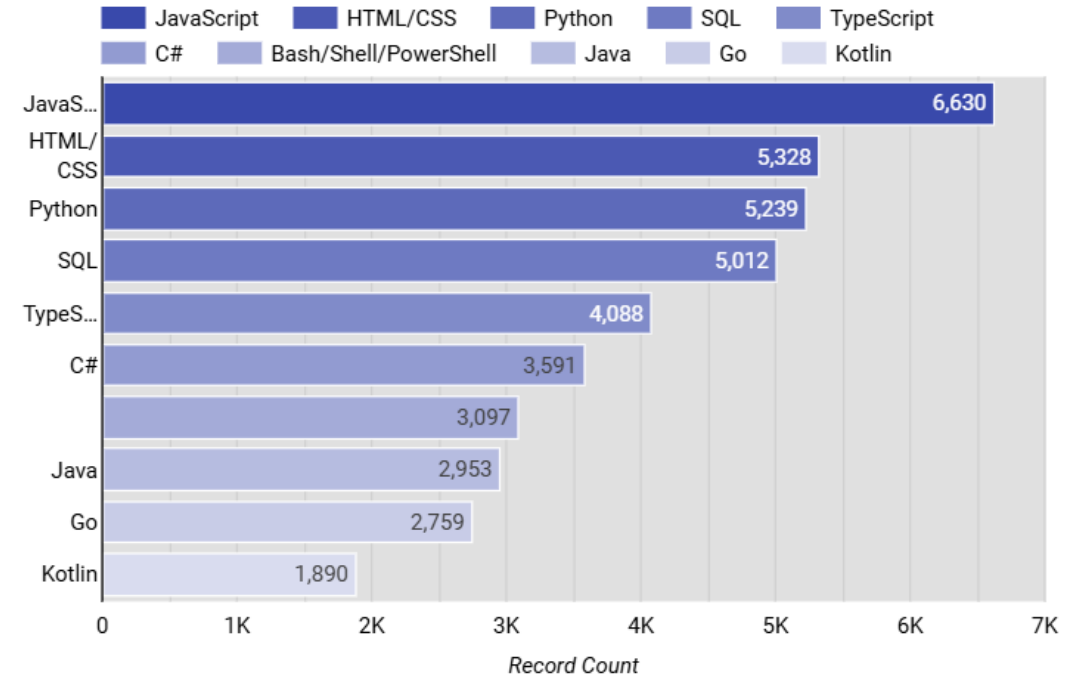
Current Year

Next Year

Top 10 Language Worked With



Top 10 Language Desire Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- **JavaScript, HTML/CSS, SQL, Python, and Java** are the most commonly used programming languages currently.
- **JavaScript, Python, HTML/CSS, SQL, and Typescript** are expected to remain the most used languages in the coming years.
- **Python** is rapidly gaining popularity and is projected to see higher demand compared to SQL.

## Implications

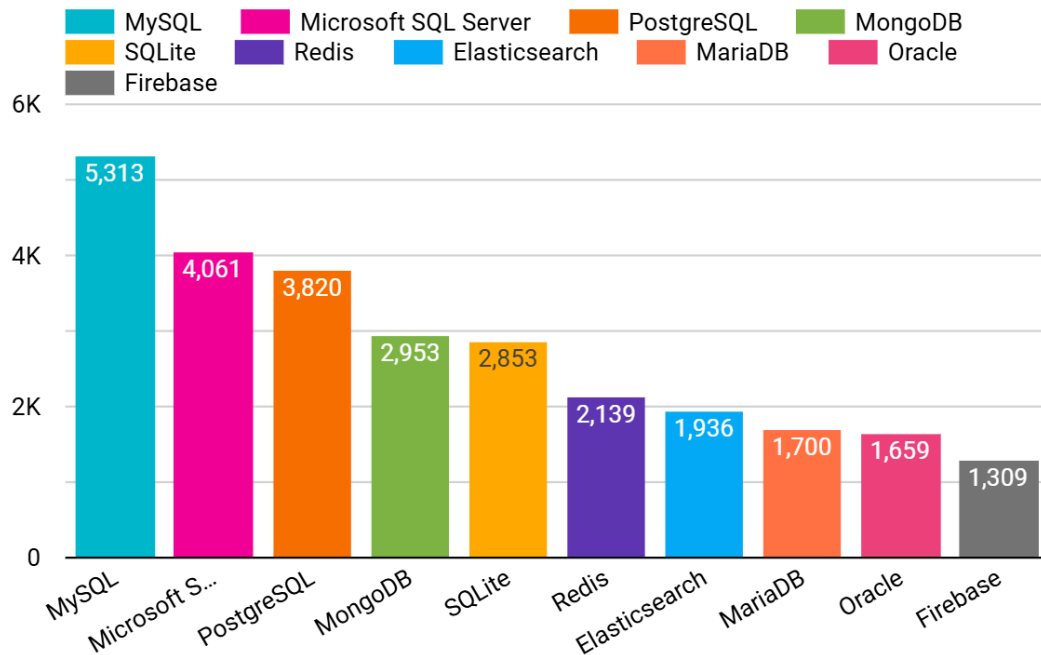
- **JavaScript and HTML/CSS:** Essential for web development, highlighting the continued high demand for web development skills. **Typescript's** rise indicates growing complexity in web applications.
- **Python:** Increasing traction due to its critical role in AI, machine learning, and data science, making it a valuable skill for the future.
- **SQL:** Remains vital for data professionals, essential for aspiring data analysts, scientists, and business analysts to master for effective data management and analysis.



# DATABASE TRENDS

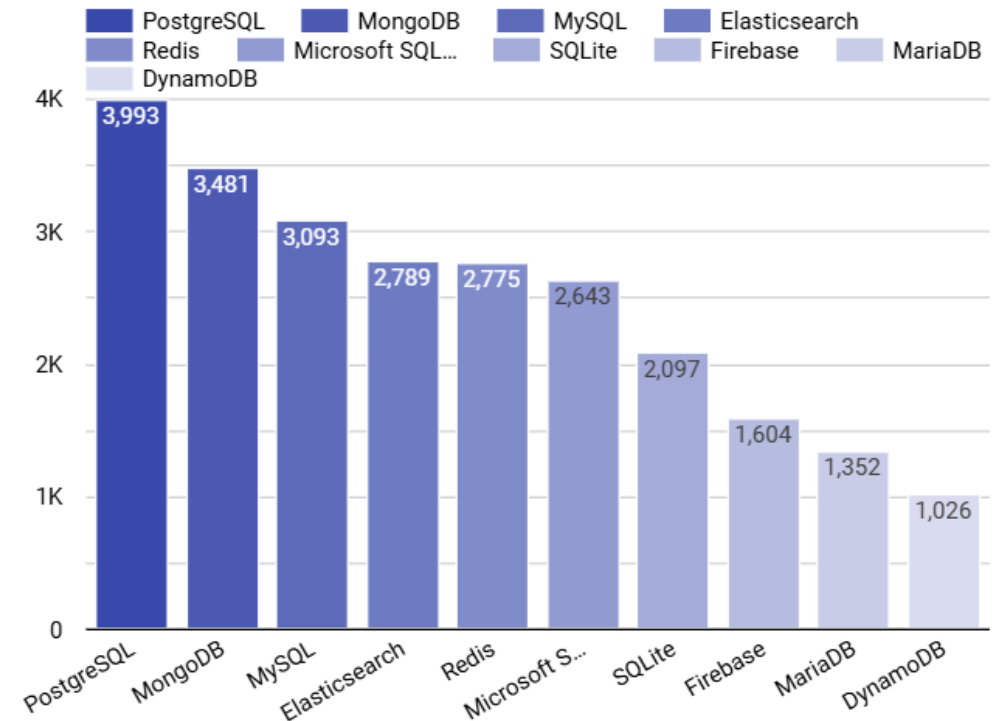
## Current Year

Top 10 Database Worked With



## Next Year

Top 10 Database Desire Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- MySQL, PostgreSQL, Microsoft SQL Server, SQLite, and MongoDB are currently the top 5 most used databases.
- PostgreSQL, MongoDB, Redis, MySQL, and Elasticsearch are expected to gain more popularity in the future.
- Redis and Elasticsearch are relatively new tools but are set to gain more traction in the IT space.

## Implications

- SQL: Continues to be a crucial tool for data specialists, maintaining its relevance in data management and analysis.
- Open-Source Databases: Companies increasingly prefer open-source databases, reflecting a shift towards more flexible and cost-effective solutions.
- Oracle SQL: Not among the top 5, indicating a decline in its relevance as newer technologies take precedence.

# DASHBOARD

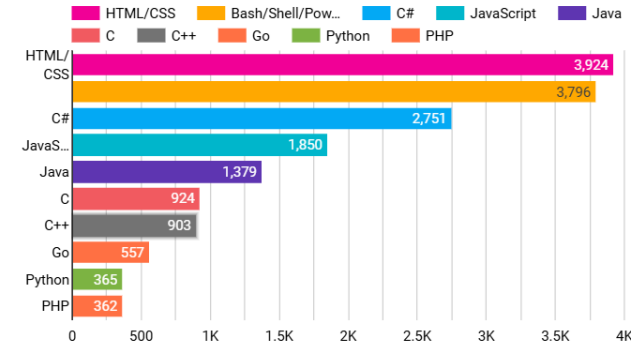
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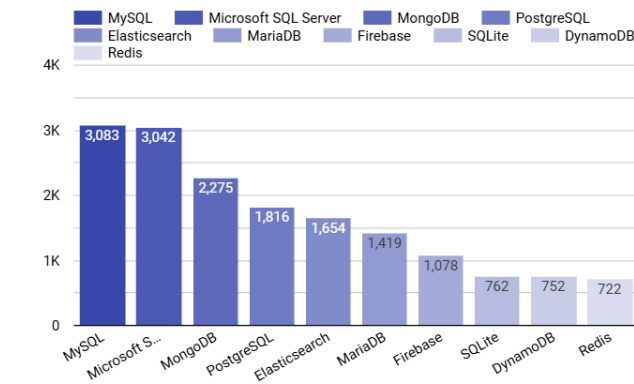
[IBM-Data-Analyst-Course/final.pdf at main · branislavblatnjak/IBM-Data-Analyst-Course \(github.com\)](https://github.com/branislavblatnjak/IBM-Data-Analyst-Course/blob/main/final.pdf)

# DASHBOARD TAB 1

Top 10 Language Worked With



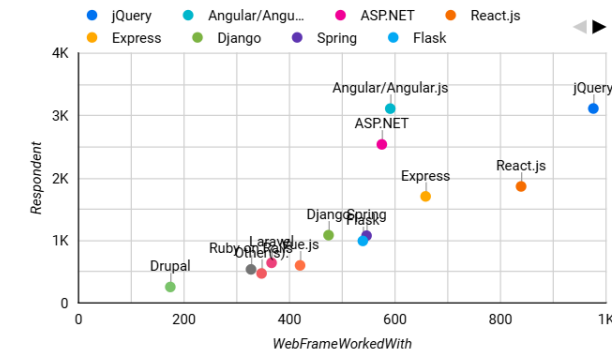
Top 10 Database Worked With



Top 10 Platforms Worked With



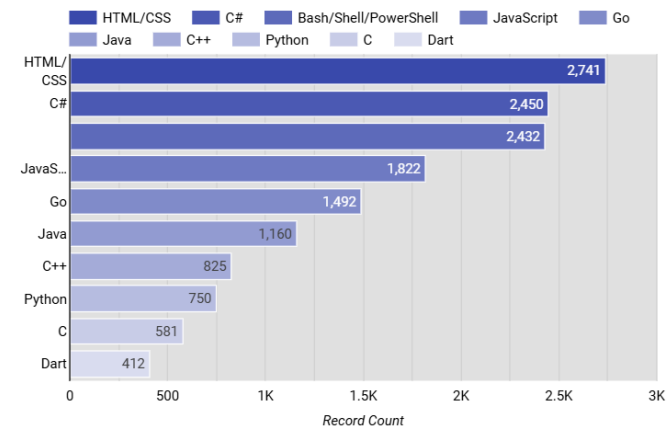
Top 10 Web Frame Worked With



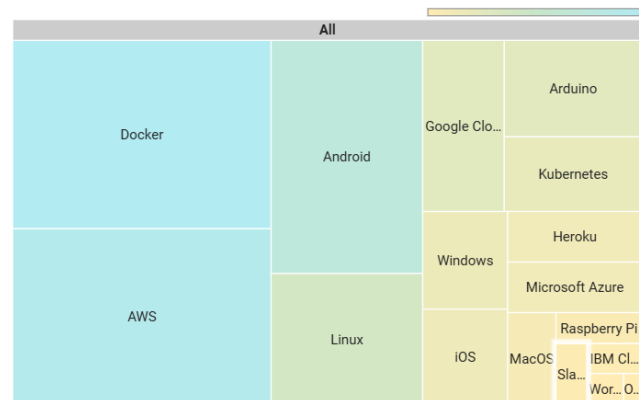
Current Technology Usage

# DASHBOARD TAB 2

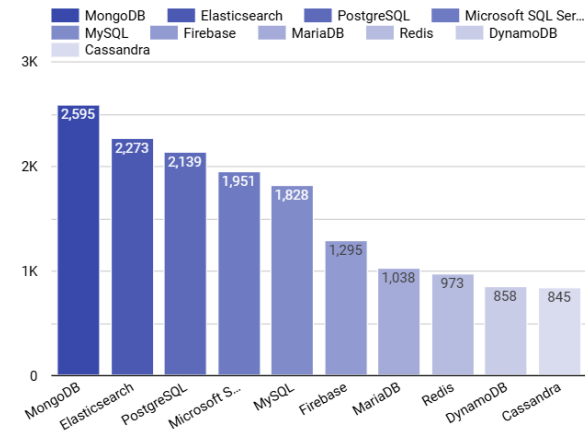
Top 10 Language Desire Next Year



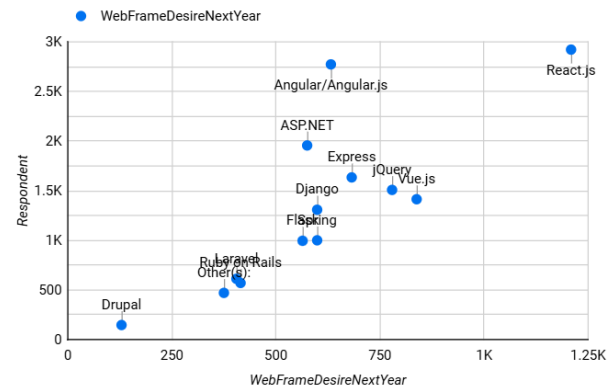
Platform Desire Next Year



Top 10 Database Desire Next Year



Top WebFrame Desire Next Year

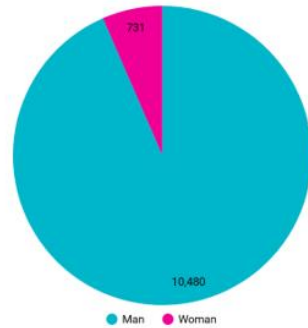


Future Trends

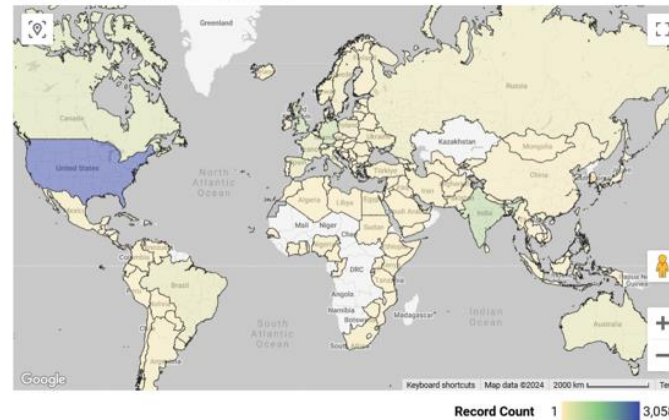
# DASHBOARD TAB 3

## Demographics

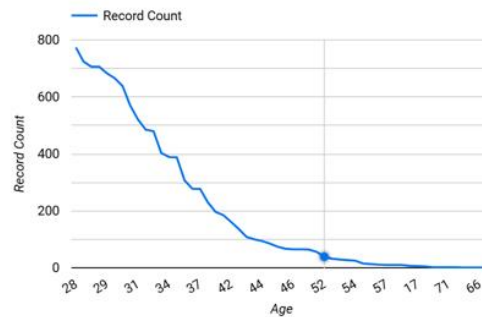
Respondent classified by Gender



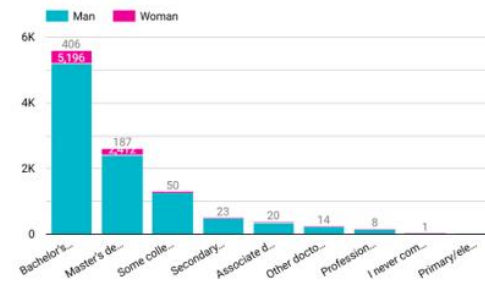
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



# DISCUSSION

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- What skills should developers prioritize to stay relevant in the evolving tech landscape?
- How can companies effectively choose between cloud providers like AWS, Google Cloud Platform, and Azure?
- What are the benefits of integrating container technologies such as Docker and Kubernetes into DevOps practices?
- How should hiring processes adapt to prioritize in-demand skills such as Python and JavaScript?
- What training programs can companies offer to keep employees updated with the latest technologies?
- How can developers and companies prepare for the increasing demand for web development skills?
- In what ways can the growing importance of data science and machine learning influence project planning?
- What platforms can developers use to share knowledge and collaborate on projects?
- How can open-source contributions and community involvement drive technological advancements?

# OVERALL FINDINGS & IMPLICATIONS

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## Findings

- **JavaScript Dominance:** JavaScript continues to be the most widely used programming language among developers, with significant usage in web development.
- **Growth of Python:** Python is rapidly gaining popularity, driven by its applications in data science, AI, and machine learning.
- **Cloud and DevOps Adoption:** AWS leads in cloud platform usage, and there is a significant rise in the adoption of container technologies like Docker and Kubernetes.

## Implications

- **Web Development Demand:** The continued dominance of JavaScript and the rise of frameworks like TypeScript highlight the sustained high demand for web development skills.
- **Data Science and AI Focus:** The increasing popularity of Python indicates a growing need for skills in data science, AI, and machine learning, suggesting that both developers and companies should invest in these areas.
- **Infrastructure Modernization:** The adoption of cloud platforms and container technologies underscores the importance of modernizing IT infrastructure for scalability and efficiency, prompting organizations to enhance their DevOps practices.



# CONCLUSION

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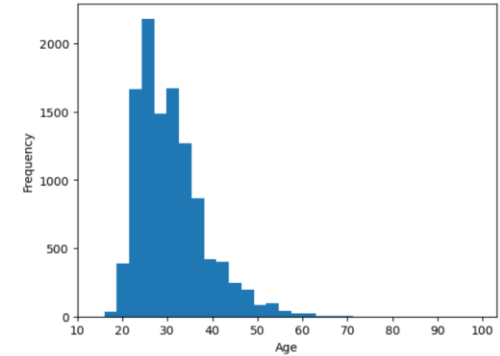
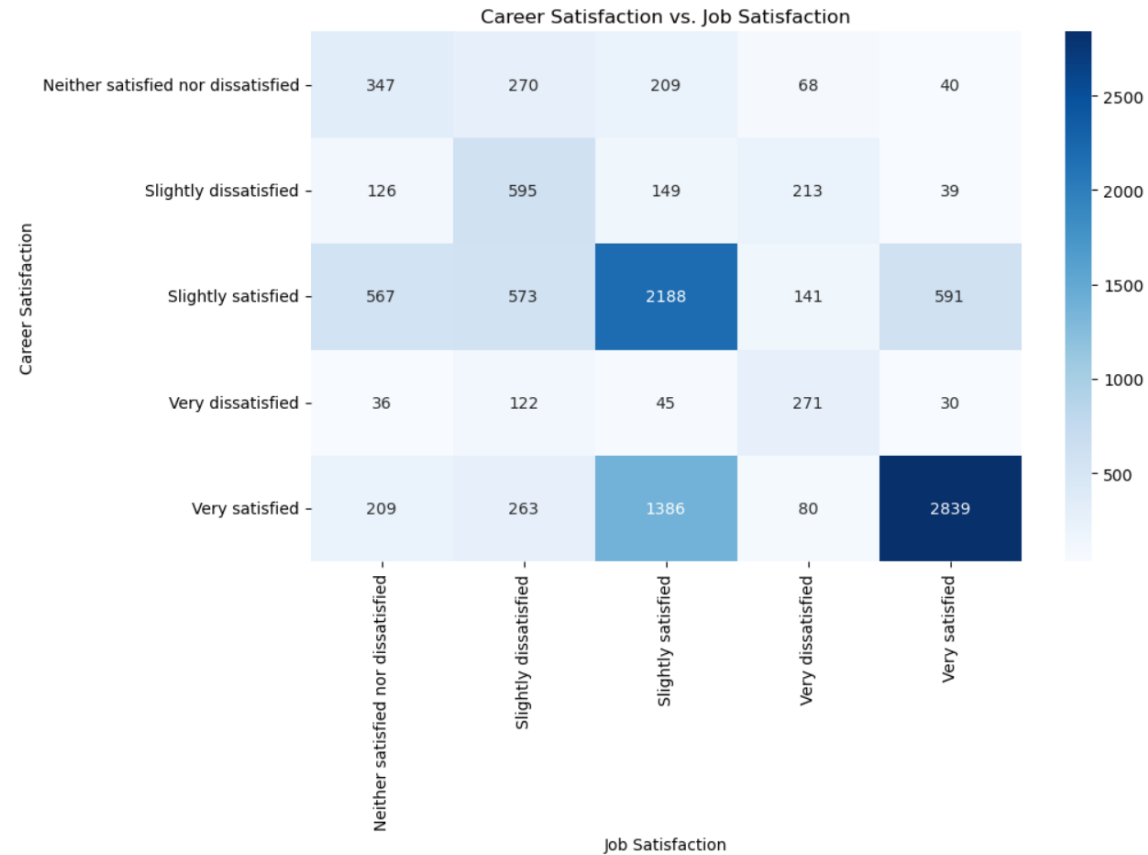
- The 2019 Stack Overflow Developer Survey offers deep insights into the current state and future trends of the developer community. The survey highlights JavaScript's enduring popularity and the rapid rise of Python, driven by its applications in AI and data science. The findings underscore the critical role of cloud platforms like AWS and the growing adoption of DevOps practices, with tools such as Docker and Kubernetes gaining traction.
- For developers, this means prioritizing skills in JavaScript and Python, while also gaining proficiency in cloud technologies and containerization. Companies should focus on enhancing their infrastructure with modern DevOps practices and investing in training programs to keep their teams up-to-date with the latest trends. Additionally, addressing the gender imbalance in the tech industry through diversity and inclusion initiatives remains a crucial goal.
- By staying informed and adaptable, both developers and organizations can thrive in the fast-evolving tech landscape, leveraging these insights to drive innovation and growth.

# APPENDIX

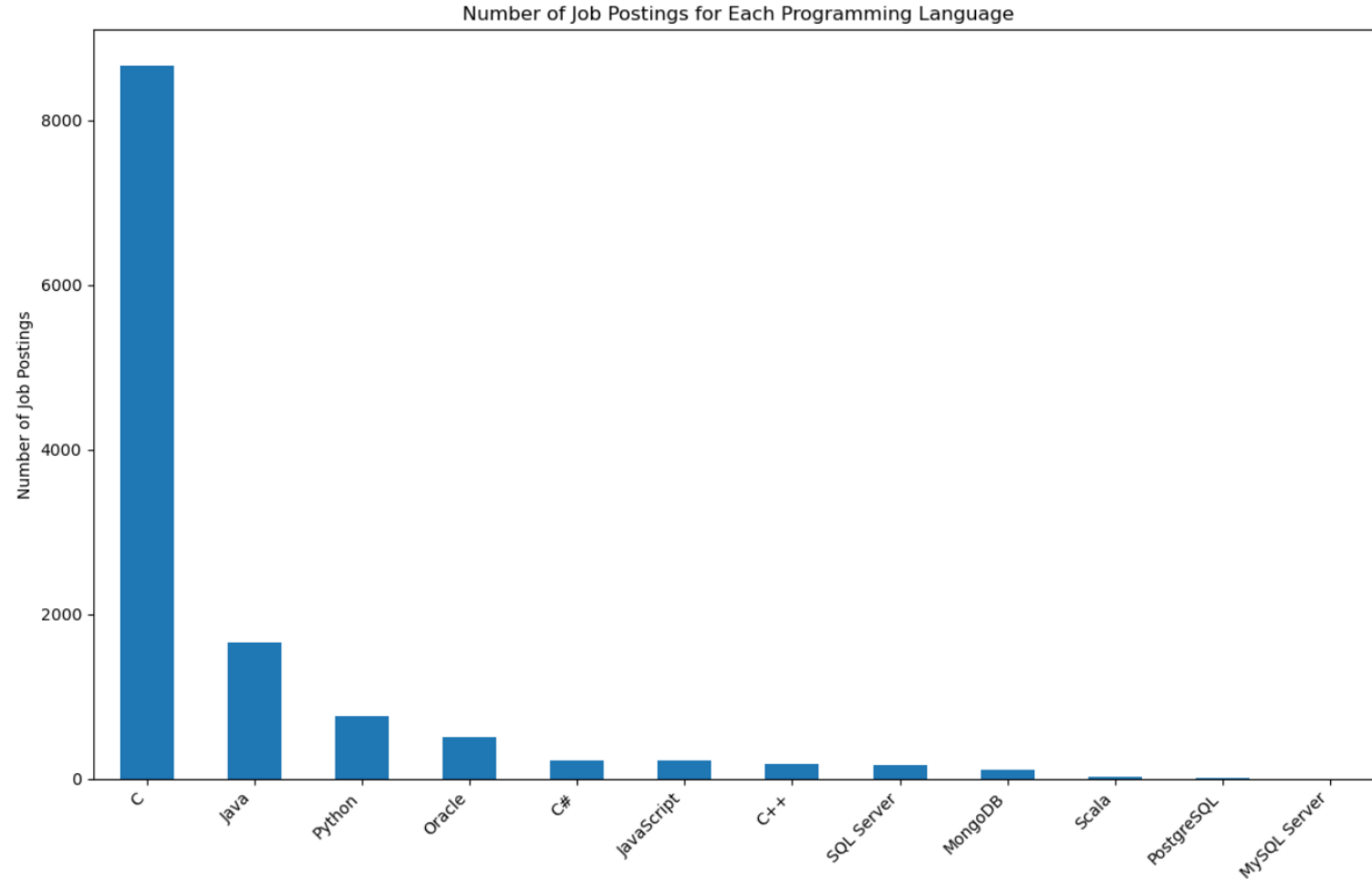


```
df = pd.DataFrame(data, columns=['Language', 'Avg Salary'])
df
```

|   | Language   | Avg Salary |
|---|------------|------------|
| 0 | Python     | \$114,383  |
| 1 | Java       | \$101,013  |
| 2 | R          | \$92,037   |
| 3 | Javascript | \$110,981  |
| 4 | Swift      | \$130,801  |
| 5 | C++        | \$113,865  |
| 6 | C#         | \$88,726   |
| 7 | PHP        | \$84,727   |
| 8 | SQL        | \$84,793   |
| 9 | Go         | \$94,082   |



# JOB POSTINGS



# POPULAR LANGUAGES

