# An In-Depth Analysis of Developer Trends and Demographics

*Navigating the Current and Future Landscape of Tech: Insights from the Stack Overflow 2019 Survey*

Vural Tuysuz

2024.Jan.20

IBM Developer

SKILLS NETWORK

# OUTLINE

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

# EXECUTIVE SUMMARY

**Highlights**

- The Stack Overflow 2019 Developer Survey provides critical insights into the technology landscape.
- Key findings include the continued prominence of JavaScript and the increasing interest in Python and TypeScript.
- Database preferences are shifting towards PostgreSQL and MongoDB, reflecting evolving data management needs.
- Cloud adoption is on the rise, with AWS, Docker, and Kubernetes gaining significance.
- The survey also highlights a significant gender disparity in the tech industry.
- These insights are invaluable for guiding decisions in technology development, education, and workforce diversity.

# INTRODUCTION

- The presentation aims to analyze and interpret the results of the 2019 Stack Overflow Developer Survey.
- The Stack Overflow Developer Survey is a comprehensive data source that provides insights into technology trends, developer preferences, and demographics.
- The survey's findings have significant implications for developers, tech companies, educators, and policymakers, offering a snapshot of the current state and future direction of technology.
- Our analysis covers various aspects, including technology usage, future trends, and demographic information.

# METHODOLOGY

- **Data Collection**
  - Utilized the Stack Overflow Developer Survey 2019.
  - Survey reached a diverse, global audience of developers.
- **Data Analysis**
  - Employed statistical techniques for robust data interpretation.
  - Focused on identifying key trends and patterns relevant to the technology sector.
- **Dashboard Development**
  - Designed three interactive dashboards:
    - Current Technology Usage.
    - Future Technology Trend.
    - Demographics.
  - Dashboards crafted for easy interpretation and visualization of complex data.
- **Limitations and Assumptions**
  - Acknowledgment of the inherent biases in survey-based data.
  - Assumptions made for data analysis are specified for transparency.

# RESULTS

**Current Technology Usage**:

- **Languages**: JavaScript, HTML/CSS, SQL, Bash/Shell/PowerShell, Python, Java, C#, TypeScript, PHP, C++
- **Databases**: MySQL, PostgreSQL, MSSQL, SQLite, MongoDB, Redis, Elasticsearch, MariaDB, Oracle, Firebase
- **Platforms**: Windows, Linux, AWS, Docker, Android, Slack, MacOS, Azure, GCP, WordPress
- **Web Frameworks**: JQuery, ASP.NET, Angular, React

**Future Technology Trends**:

- **Languages**: JavaScript, Python, HTML/CSS, SQL, TypeScript, C#, Bash/Shell/PowerShell, Java, Go, Kotlin
- **Databases**: PostgreSQL, MongoDB, Redis, MySQL, Elasticsearch, MSSQL, SQLite, Firebase, MariaDB
- **Platforms**: Linux, Docker, AWS, Windows, Android, Kubernetes, MacOS, Raspberry Pi, iOS, Slack
- **Web Frameworks**: React, Vue.js, Angular, JQuery, ASP.NET

**Demographics**:

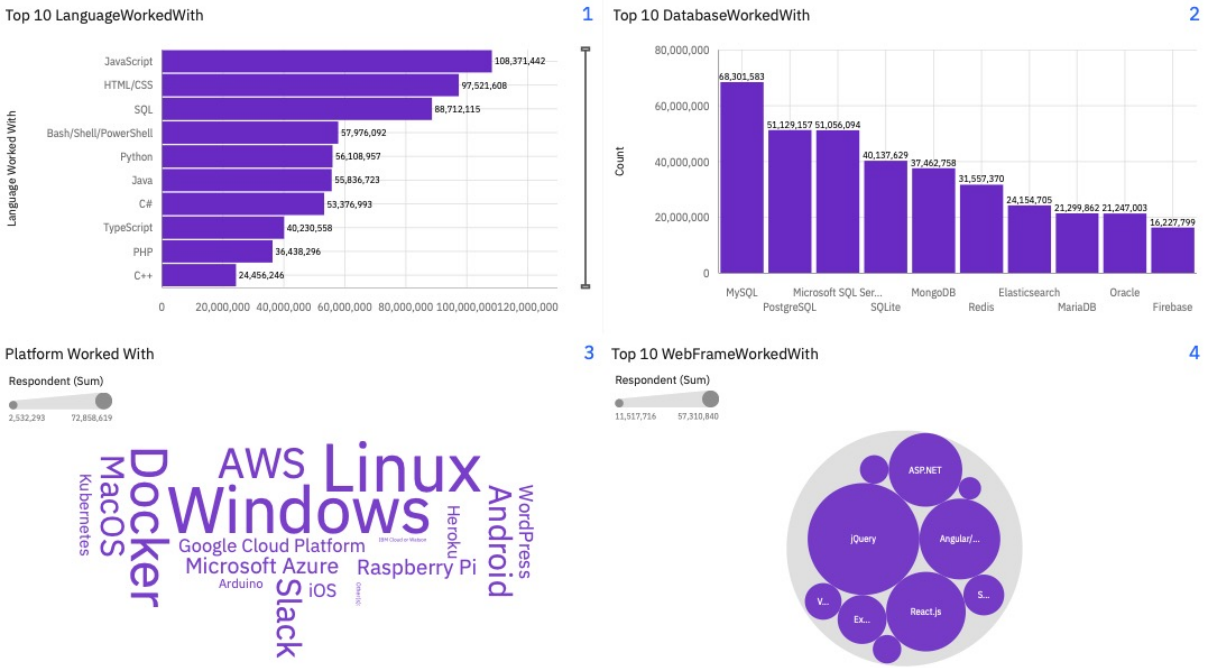
- **Gender Distribution**: 6.5% Women, 93.5% Men
- **Age Distribution**: Diverse age range from 20 to 60 years, with significant representation in the 22-32 age bracket.

# DASHBOARD

[Click here to review the Dashboard](https://github.com/tuysux/coursera/blob/main/VT%20Dashboard.pdf)

https://github.com/tuysux/coursera/blob/main/VT%20Dashboard.pdf

# Visualization
# Current Technology Usage




**Languages**:

- Chart displaying the prevalence of JavaScript, HTML/CSS, SQL, Bash/Shell/PowerShell, Python, and others.

**Databases**:

- Graph showing the popularity of MySQL, PostgreSQL, MSSQL, and others.

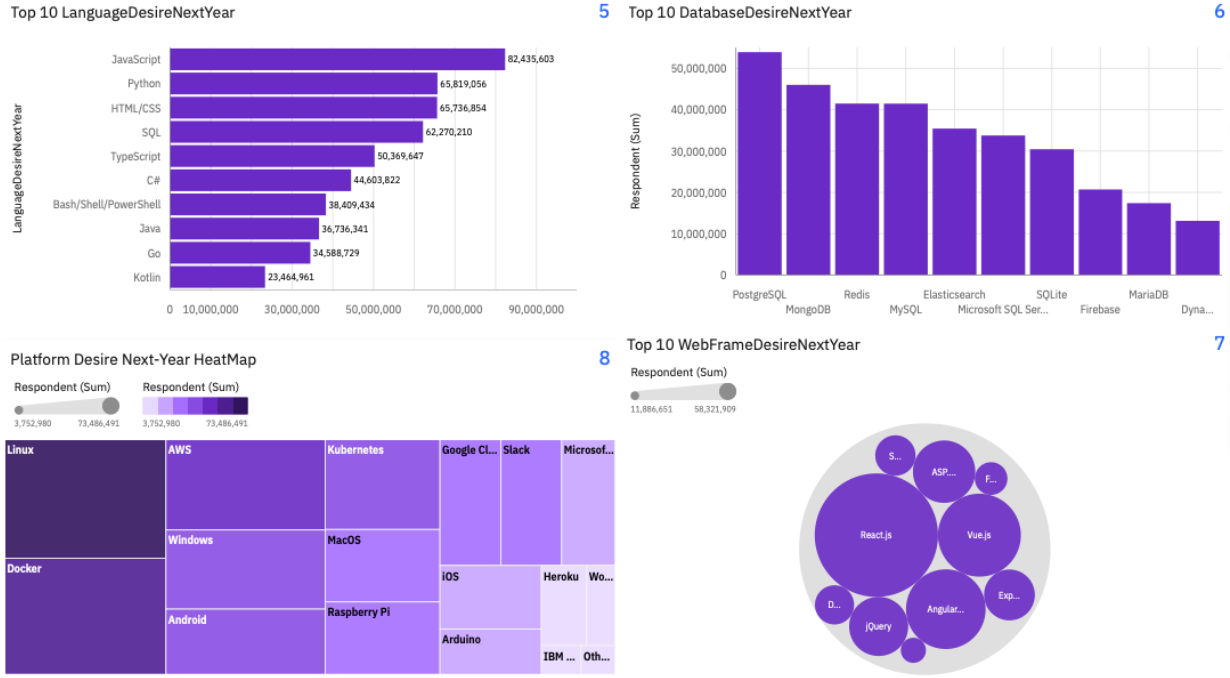
**Platforms**:

- Visualization of the usage of Windows, Linux, AWS, Docker, and more.

**Web Frameworks**:

- Usage data for JQuery, ASP.NET, Angular, React, highlighting their market presence.

# Visualization
# Future Technology Usage




**Languages:**

- Chart highlighting the expected popularity of JavaScript, Python, HTML/CSS, SQL, TypeScript, etc.

**Databases:**

- Future trend graph for PostgreSQL, MongoDB, Redis, MySQL, Elasticsearch, etc.

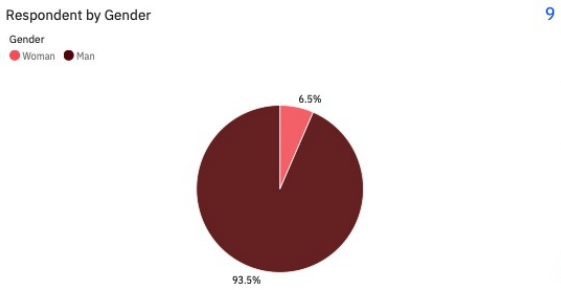
**Platforms:**

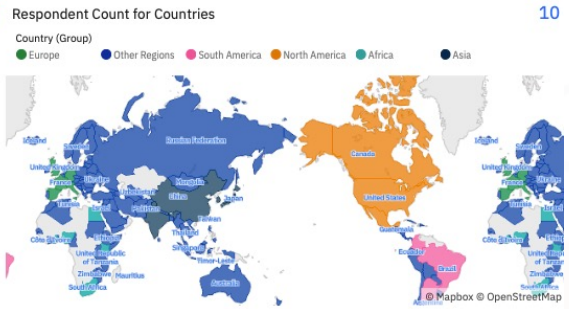
- Visualization indicating the anticipated preference for Linux, Docker, AWS, Windows, Android, etc.

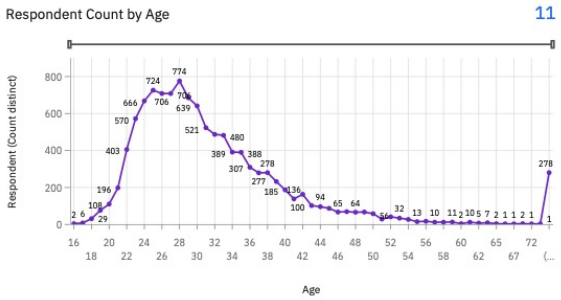
**Web Frameworks:**

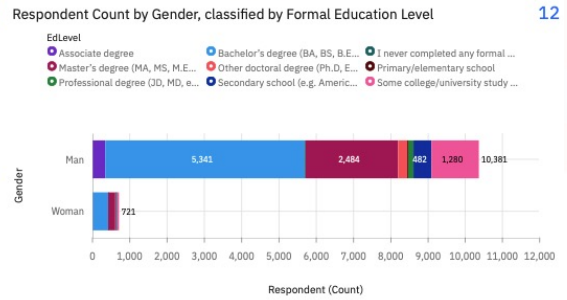
- Projection of increasing interest in React.js, Vue.js, Angular, JQuery, ASP.NET.

# Visualization Demographics




## Gender Distribution:

- Pie chart or bar graph showing the gender split of 6.5% Women and 93.5% Men.

## Respondent Age Range:

- Age distribution graph illustrating respondent count across various age groups: 20, 22, 28, 32, 38, 44, 54, and 60 years.

## Educational Background:

- Visualization of respondents classified by their formal education level.

# DISCUSSION

**Discussion Points:**

- The survey data indicates a significant shift in technology trends, with a steady interest in established languages like JavaScript, but a notable rise in the popularity of Python and TypeScript.
- There's a clear movement towards more advanced and scalable database technologies, particularly PostgreSQL and MongoDB, reflecting the evolving needs of data management in the tech industry.
- The increase in the use of cloud platforms such as AWS, Docker, and Kubernetes highlights a trend towards cloud computing and containerization.
- The demographic data, especially the gender disparity, raises important questions about diversity and inclusivity in the tech sector.
- These trends suggest a future where adaptability and continuous learning are crucial for professionals in the tech industry.

# OVERALL FINDINGS & IMPLICATIONS

**Key Findings**:

- Continued dominance of languages like JavaScript and SQL in technology usage.
- Rising interest in Python and TypeScript for future development.
- Shift towards PostgreSQL and MongoDB in database preferences.
- Increased focus on cloud platforms like AWS, Docker, and Kubernetes.
- Gender disparity in tech, with a need for increased diversity.

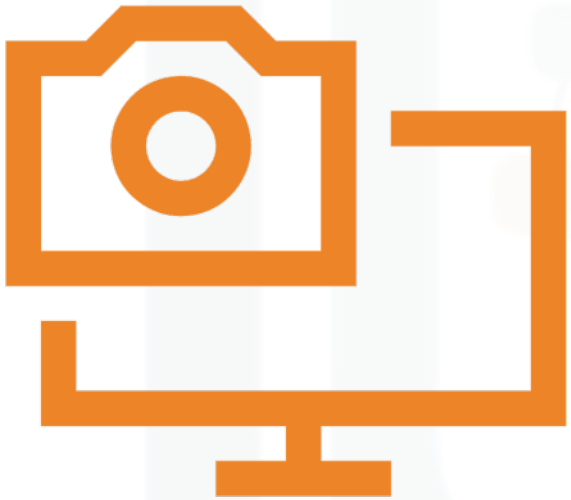
**Implications:**

- These trends necessitate skill adaptation among developers and updating educational curricula in tech-related fields.
- Businesses must strategize for evolving database technologies and cloud platform integrations.
- Addressing the gender gap in tech becomes imperative for fostering innovation and a balanced work culture.
- These insights provide a roadmap for future technological investments and workforce development strategies.

# CONCLUSION

- The 2019 Stack Overflow Developer Survey reveals critical insights into current and future tech landscapes. The persistent dominance of JavaScript, alongside the rising interest in Python and TypeScript, reflects a dynamic and evolving programming environment.
- Database technologies are also shifting, with PostgreSQL and MongoDB gaining traction, suggesting a trend towards more flexible and scalable solutions.
- The survey highlights a significant gender disparity in the tech industry, underscoring the urgent need for increased diversity and inclusiveness.
- These trends are not just indicators but drivers of change in the tech sector, influencing everything from corporate strategy to educational curricula.
- Embracing these changes and promoting diversity are key to staying relevant and competitive in the rapidly evolving world of technology.

# APPENDIX



Stack Overflow Developer Survey Details & Blogs

- https://stackoverflow.blog/2019/02/07/how-the-2019-stack-overflow-developer-survey-came-to-be-and-your-last-chance-to-take-it/
- https://insights.stackoverflow.com/survey/2019?utm_source=so-owned&utm_medium=blog&utm_campaign=dev-survey-2019&utm_content=launch-blog
- https://stackoverflow.blog/2019/04/09/the-2019-stack-overflow-developer-survey-results-are-in/

Dashboard

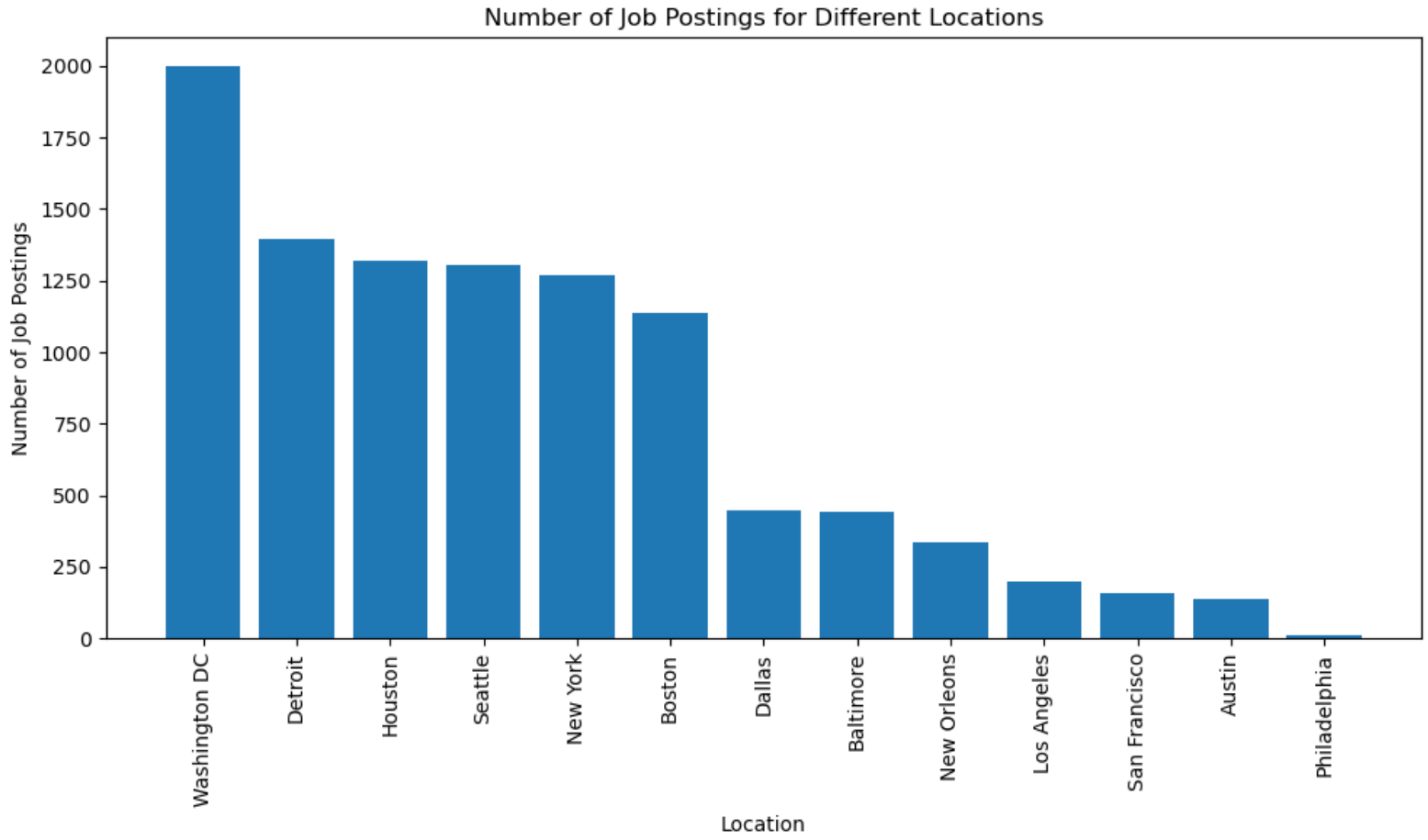
- https://github.com/tuysux/coursera/blob/main/VT%20Dashboard.pdf

DataSets

- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m5_survey_data_demographics.csv
- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m5_survey_data_technologies_normalised.csv

# JOB POSTINGS

In Module 1 you have collected the job posting data using Job API in a file named “job-postings.xlsx”. Present that data using a bar chart here. Order the bar chart in the descending order of the number of job postings.



# POPULAR LANGUAGES

In Module 1 you have collected the job postings data using web scraping in a file named “popular-languages.csv”. Present that data using a bar chart here. Order the bar chart in the descending order of salary.