

A background featuring a wireframe globe with a grid of latitude and longitude lines. The globe is rendered in a dark red or maroon color, with the lines appearing as a lighter, glowing red. The overall effect is a stylized, digital representation of the Earth.

EMERGING SKILLS IN THE IT INDUSTRY

A Data-Driven Analysis

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In Association With:



coursera

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Executive Summary

The purpose of this report is to help identify future skill requirements, current trends, and demographic analysis on the survey respondents. This report provides insights for various stakeholders, including developers, businesses, educators, and policy makers. The data analysis reveals four major trends.

The first trend identified is the dominance of web programming languages in the near future. Python and Data Science are becoming increasingly important, while legacy languages like C++ and PHP are gradually falling out of interest. The second trend indicates that open source databases are becoming more popular compared to commercial databases, with non-relational databases seeing increased usage in the future. However, relational databases still hold a leading position in the near future.

The third trend observed is that Windows and Linux are still the main developing platforms in the foreseeable future. Additionally, the transformation to cloud computing is a non-reversible process. Finally, the fourth trend identified is that jQuery is quickly losing market share, showing a lack of interest in its future development. React.js and Vue.js are becoming the new standard for web frame development.

Overall, these findings provide valuable insights into emerging skill requirements for IT professionals. Organizations and individuals looking to stay competitive should focus on web programming languages, open source databases, and cloud computing, as well as keep up-to-date with the latest web frame trends. These trends indicate a continued shift towards open source and cloud-based technologies, with a growing emphasis on data science and Python proficiency.

Introduction

The aim of the analysis is to identify emerging skills and current trends on collected data. The main results of an analysis conducted is presented in the following slides.

The analysis provides key insights into the most popular programming languages, databases, and other technologies at the time the data was collected. Additionally, it uncovers attitudes regarding which technologies are expected to become popular in the future. The analysis also highlights the demographics of developers, including the gender gap among them.

These findings are particularly useful for current and aspiring developers, recruiters, educators, and policy makers.

Methodology

1. Data Collection:

- Data on the top programming skills in demand is collected from various sources including: job postings, training portals, Surveys
- Done by scraping internet web sites and accessing APIs to collect data in various formats like .csv files, excel sheets, and databases.
- Data Source: 2019 Stack Overflow Developer Survey

2. Data Wrangling:

- Making the data ready for analysis using data wrangling techniques
- Techniques include data cleaning, data normalization, data imputation, and data reduction
- Done using SQL and Python's pandas library

3. Data Analysis:

- Apply statistical techniques to analyze the data, including exploratory data analysis, descriptive analysis, and inferential analysis

4. Data Visualization: Bring all information together by using IBM Cognos Analytics to create dashboard.



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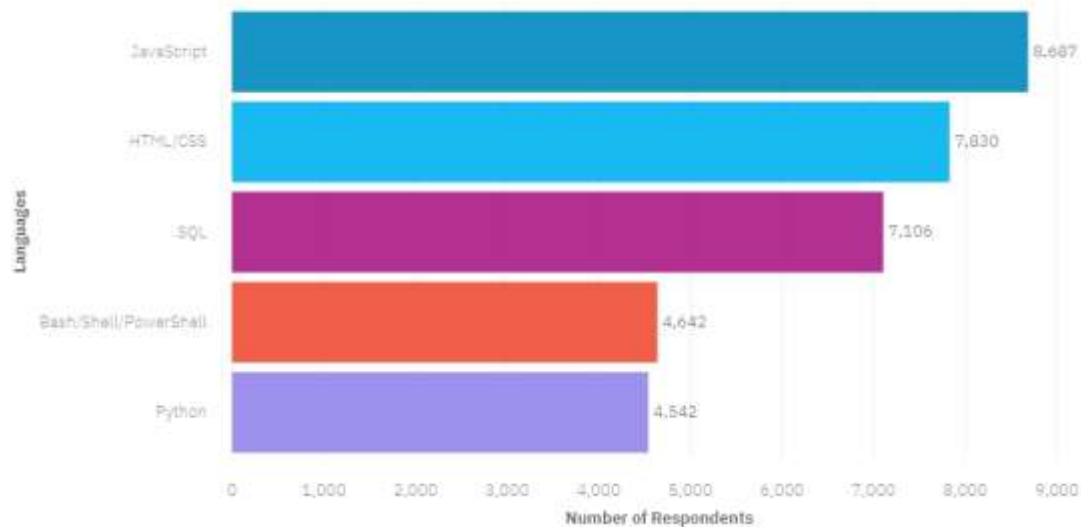
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Results

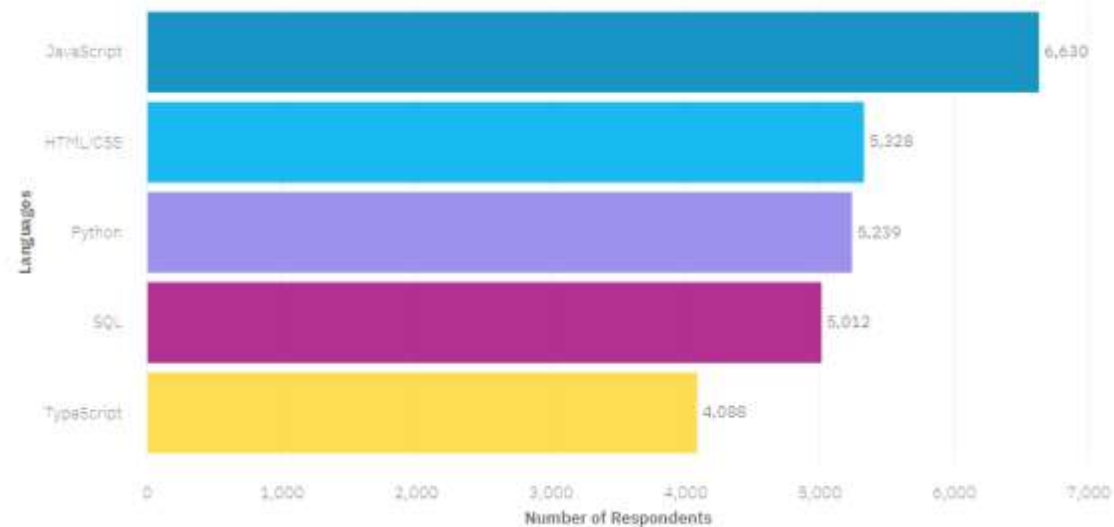
Examine the trends in:
Programming Languages
Databases
Platforms
Web Frames

Programming Language Trends

Top 5 Programming Languages (Current Year)



Top 5 Programming Languages (Next Year)



Findings

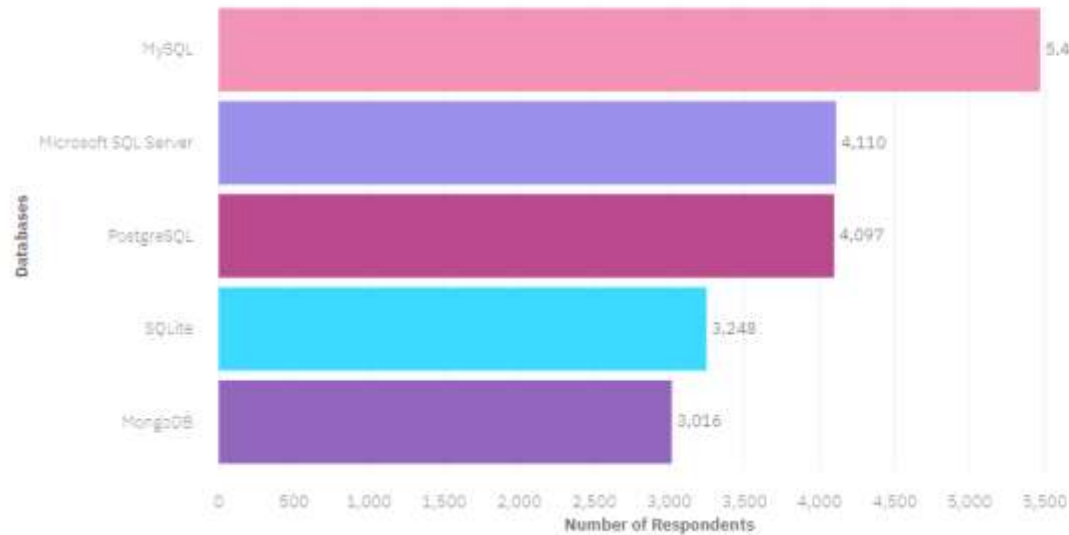
1. JavaScript and HTML/CSS are popular and will remain so next year.
2. Python is quickly gaining interest
3. SQL remains popular
4. Interest in Bash/Shell/Powershell is decreasing, pushed off the top 5 list for next year

Implications

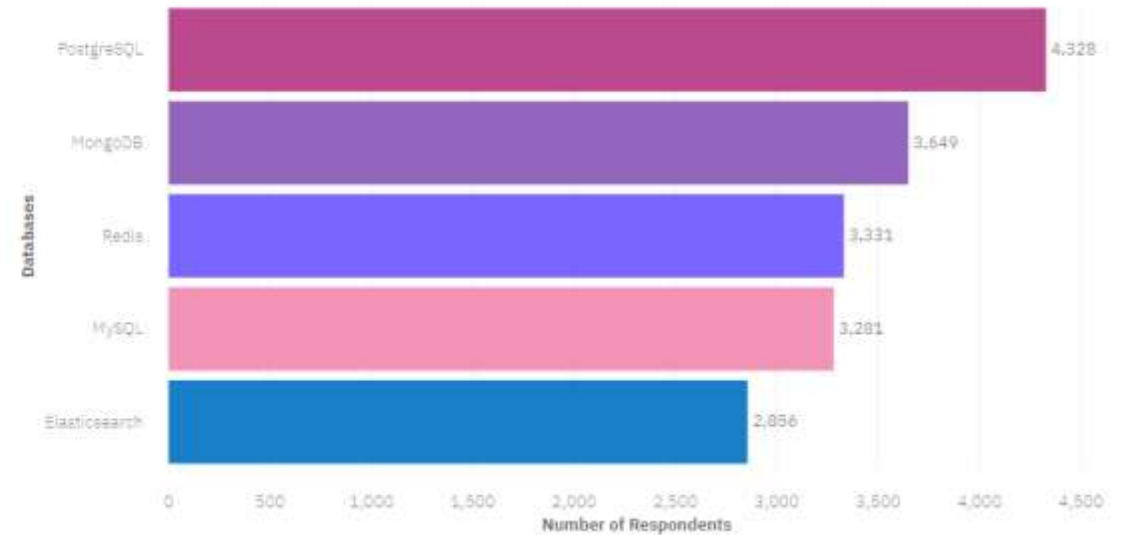
1. Web development languages (JavaScript, HTML/CSS) will remain dominant, with Typescript catching up
2. Python's popularity is rising due to the growth of AI and ML work.
3. SQL remains the preferred language for big data storage and querying; it looks like it will continue to be the preferred language in the near future.
4. Command shell and scripting language (Bash/Shell/Powershell) are falling out of favor

Database Trends

Top 5 Databases (Current Year)



Top 5 Databases (Next Year)



Findings

1. PostgreSQL is the most desirable database of 2020
2. MySQL is the most desirable database of 2019, with Microsoft SQL Server ranking 2nd, but both lost its lead by next year
3. In 2019, Microsoft SQL Server and SQLite disappear from top 5 next year
4. MongoDB has gaining interest
5. Redis and Elasticsearch enters the top 5 rankings

Implications

1. Open-source databases are increasingly preferred by developers
2. NoSQL databases are gaining popularity, denoting a need for handling non-relational and unstructured data
3. Competence in both NoSQL and SQL database programs is essential for data analysts

Dashboard

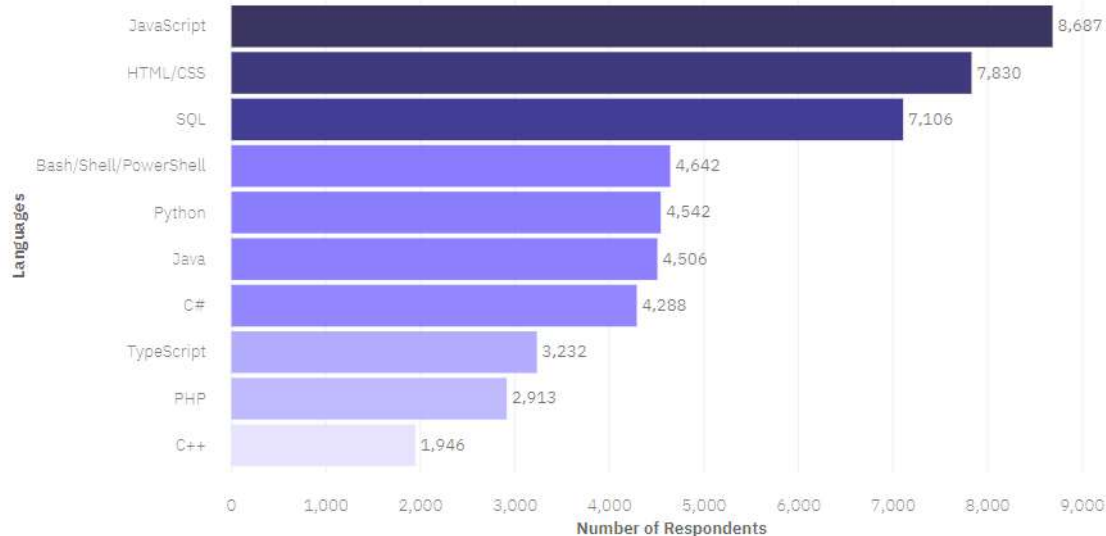
The link provided contains an interactive Cognos dashboard that summarizes:

- Current technology trends
- Future technology trends, and
- Demographics of survey respondents.

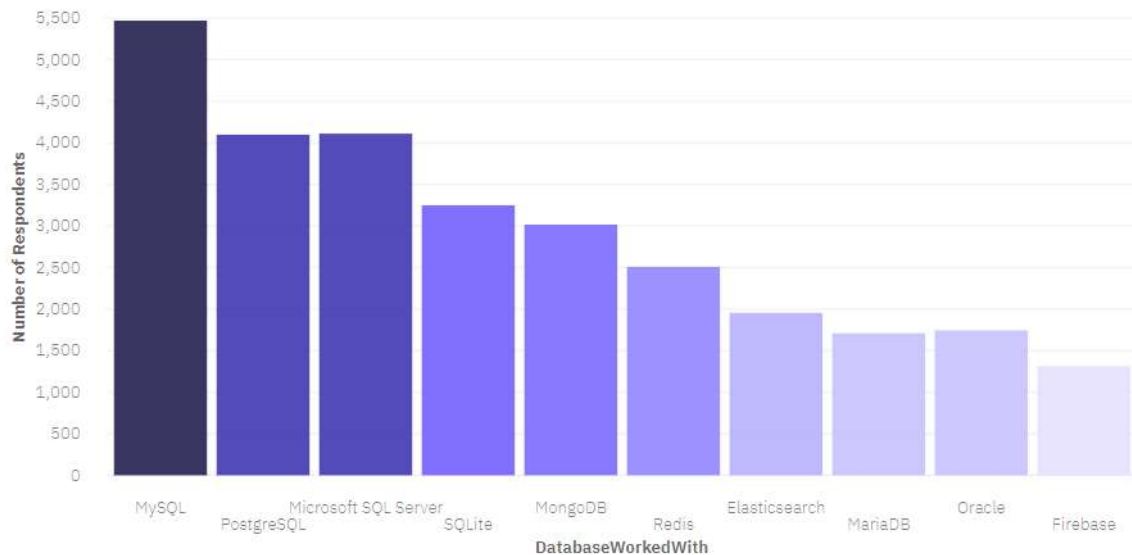
[OPEN COGNOS DASHBOARD](#)

The next three slides show static screenshots of the dashboard.

Top 10 Languages Worked With



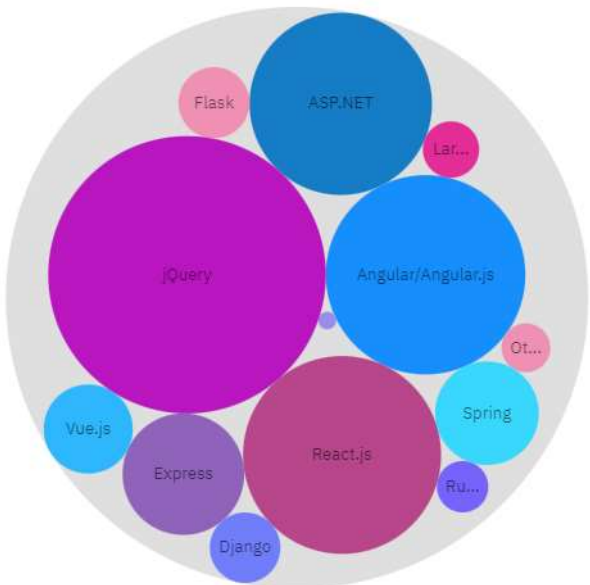
Top 10 Databases Worked With



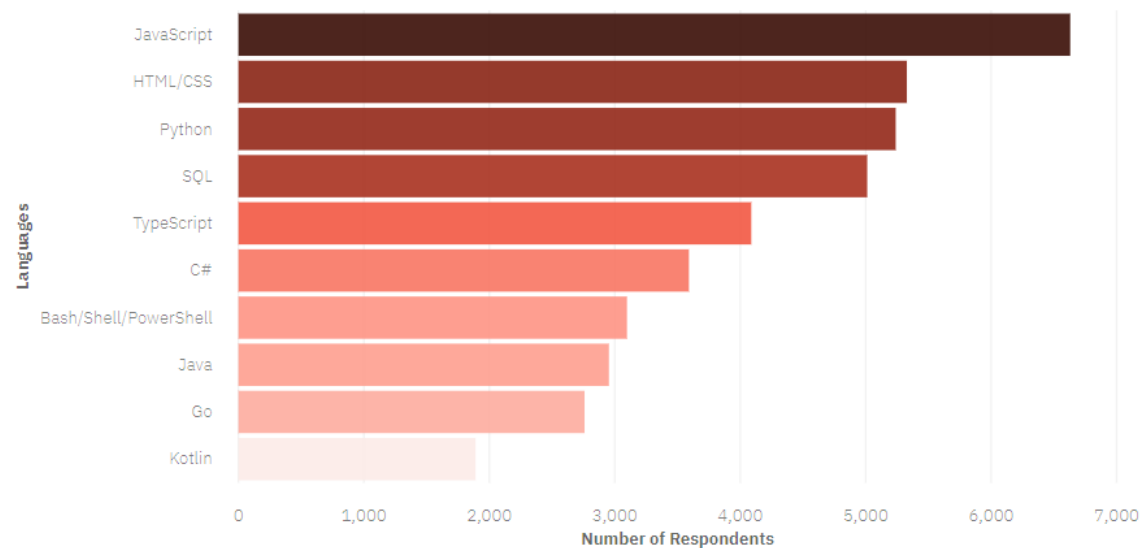
Platform Worked With



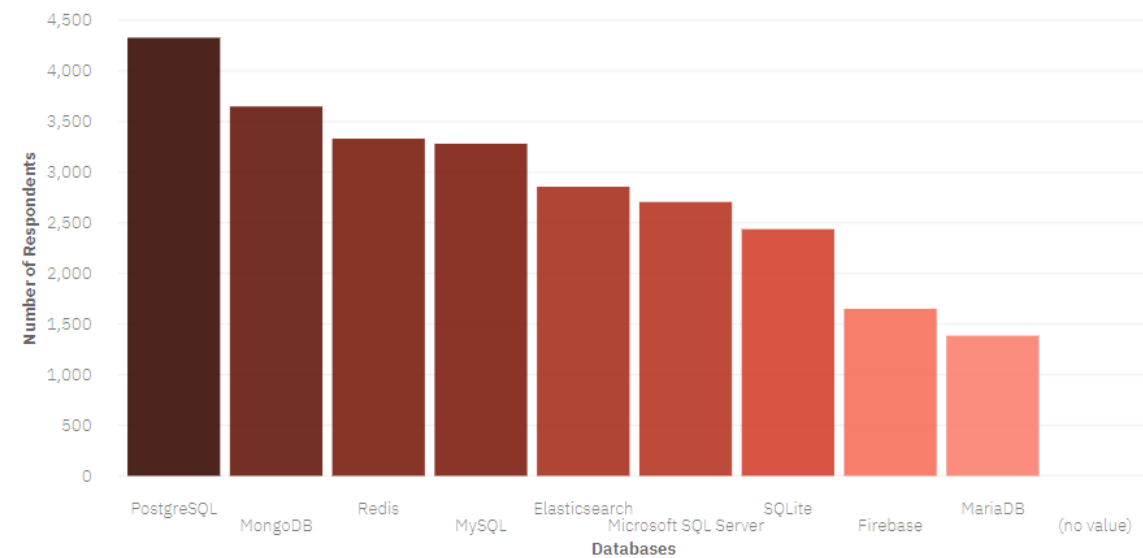
Top 10 WebFrame Worked With



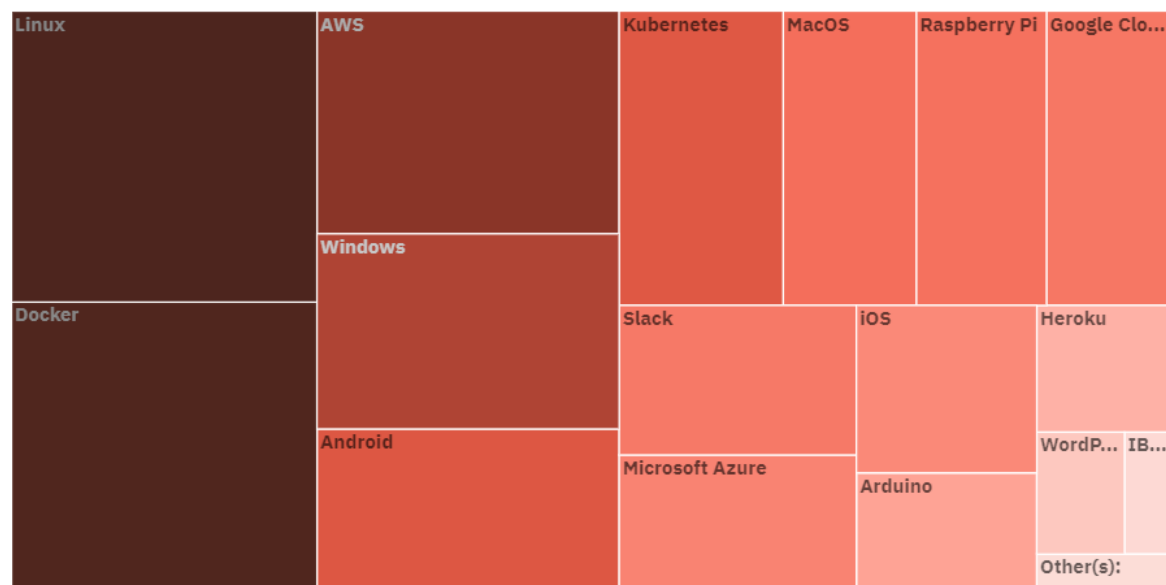
Top 10 Languages Desired Next Year



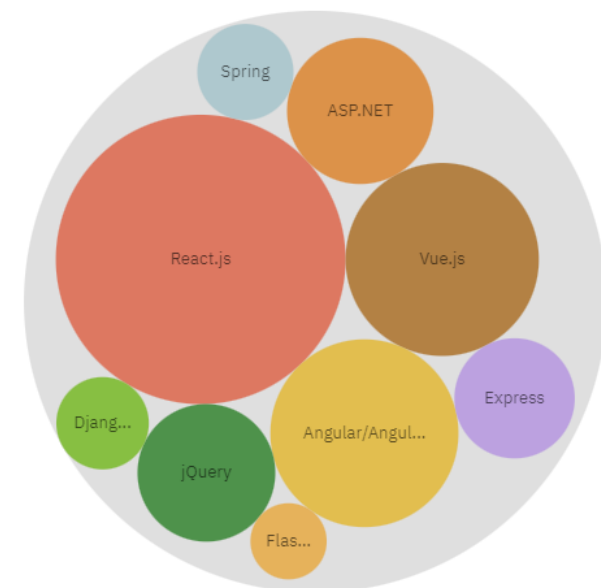
Top 10 Databases Desired Next Year



Platforms Desired Next Year

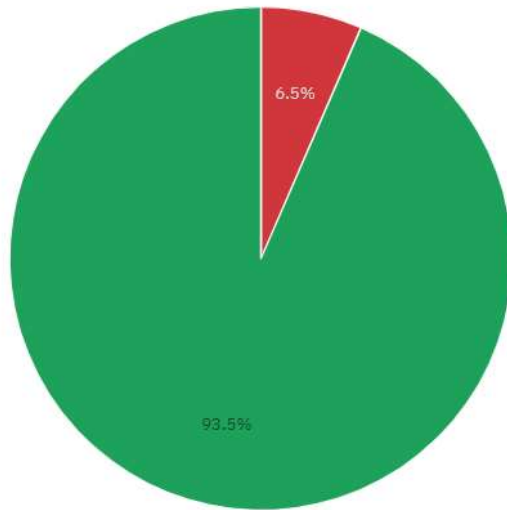


Top 10 WebFrames Desired Next Year



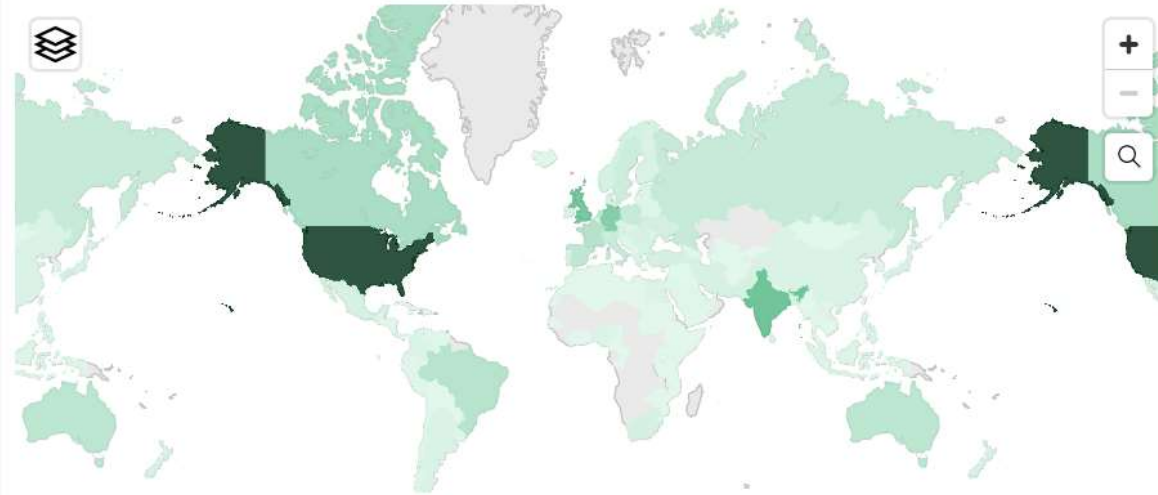
Respondent by Gender

Gender
● Woman ● Man

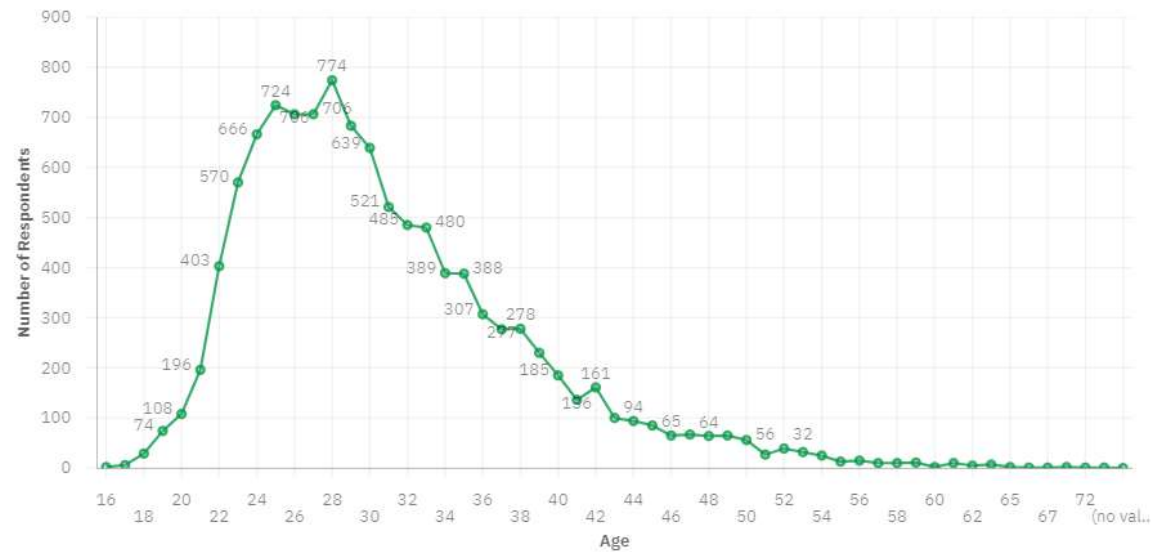


Distribution of Respondents

Country (Count)
1 3,058

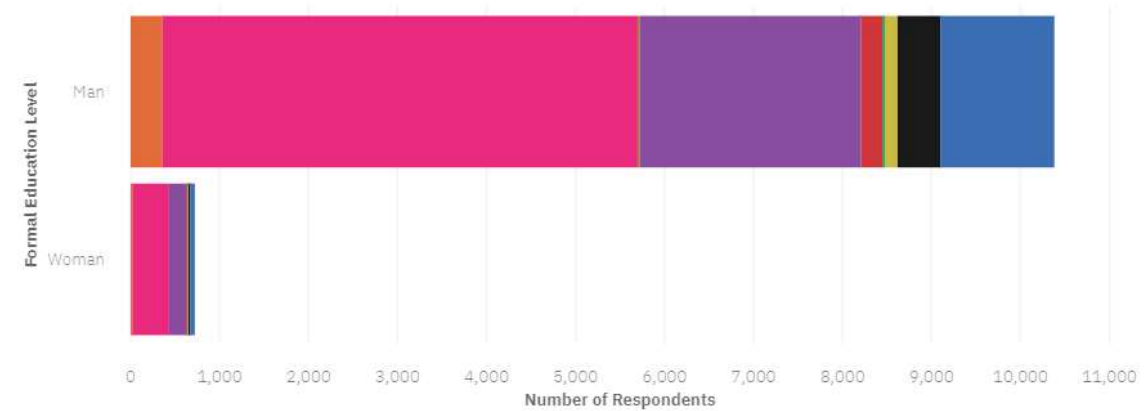


Respondent by Age



Respondent by Gender, classified by Formal Education Level

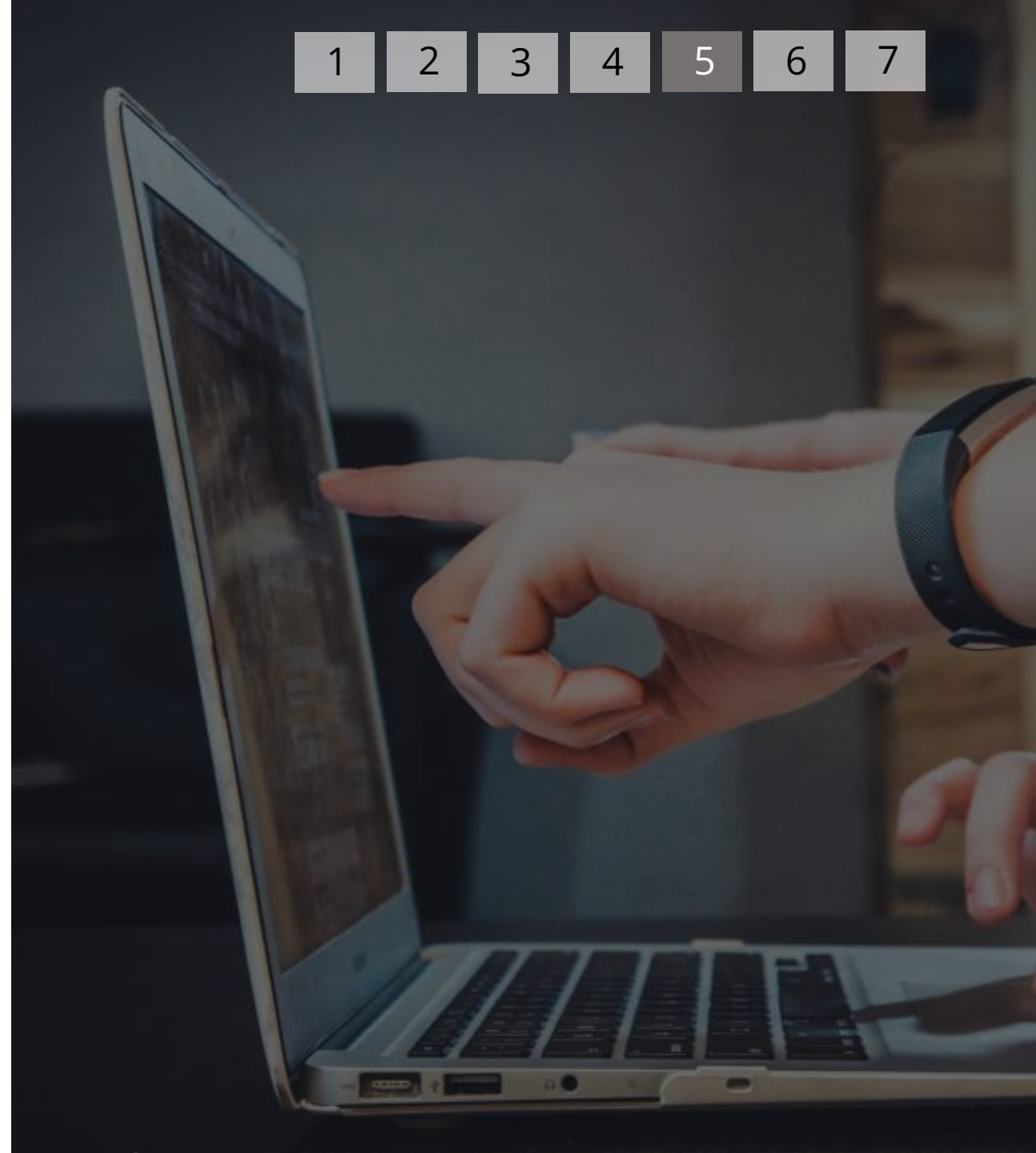
EdLevel
● Associate degree ● Bachelor's degree (BA, BS, B.E... ● I never completed any formal ...
● Master's degree (MA, MS, M.E... ● Other doctoral degree (Ph.D, E... ● Primary/elementary school
● Professional degree (JD, MD, e... ● Secondary school (e.g. Americ... ● Some college/university study ...



Discussion

The findings provide insights into:

- The most in-demand developer technologies
- The technologies that prospective developers and data professionals should learn
- The technologies that educators should focus on teaching in the future
- The distribution of annual compensation for developers
- The demographic of developers and whether there is a gender representation gap



Overall Findings & Implications

Findings:

- Javascript and HTML/CSS continue to have high usage and interest, with Typescript also gaining interest.
- Python is seeing increasing interest.
- SQL remains highly used and popular, with PostgreSQL becoming the most desired database program for the future, despite MySQL having the highest usage in 2019.
- NoSQL databases, particularly MongoDB, are gaining interest.
- Despite slightly higher median compensation for women, there is still a severe gender representation gap in technology.
- There is a technology divide between countries.

Implications:

- Web development remains a sought-after skill. Consider learning Typescript with Javascript and HTML/CSS.
- Data professionals should enhance competence with SQL and NoSQL database programs like MongoDB and Python for handling big data and performing AI and ML work.
- Businesses should adapt to evolving technology preferences in terms of talent acquisition and development.
- Policy makers, educators, and organizations should address the gender representation gap and technology divide between countries.

Conclusion

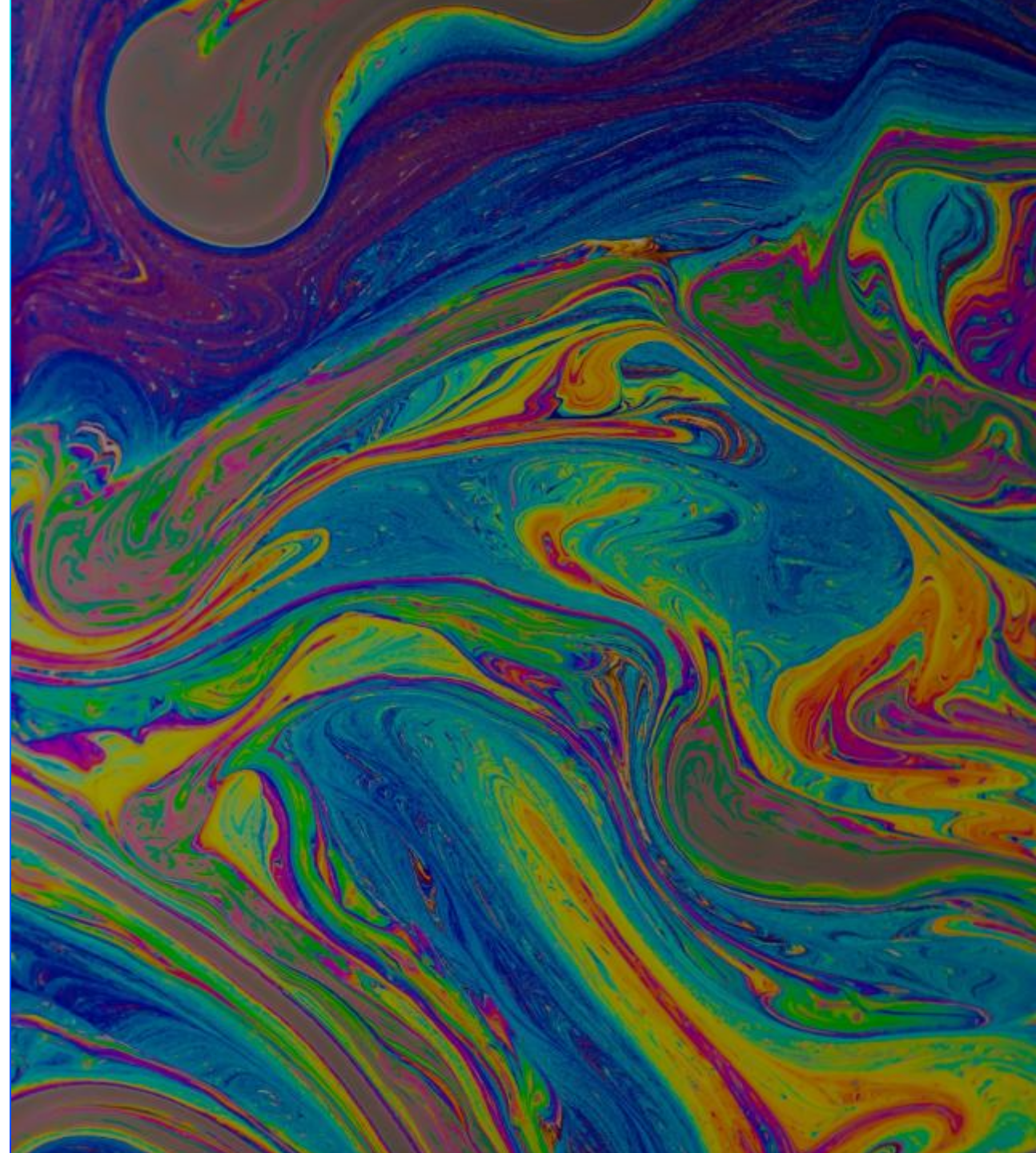
The findings from the survey provide valuable insights for various stakeholders, including current and aspiring developers, businesses, educators, and policy makers.

Developers should focus on enhancing their skills in high-demand technologies like Typescript, SQL, NoSQL, Python, and web development.

Businesses should adapt to changing technology preferences and focus on upskilling their talent accordingly.

Educators should place emphasis on teaching these high-demand technologies to prepare students for the job market.

Policy makers should work to address gender and economic issues in the technology industry.



Appendix

List of Figures:

1. Job Postings
2. Popular Languages

Top 10 Locations by Job Numbers

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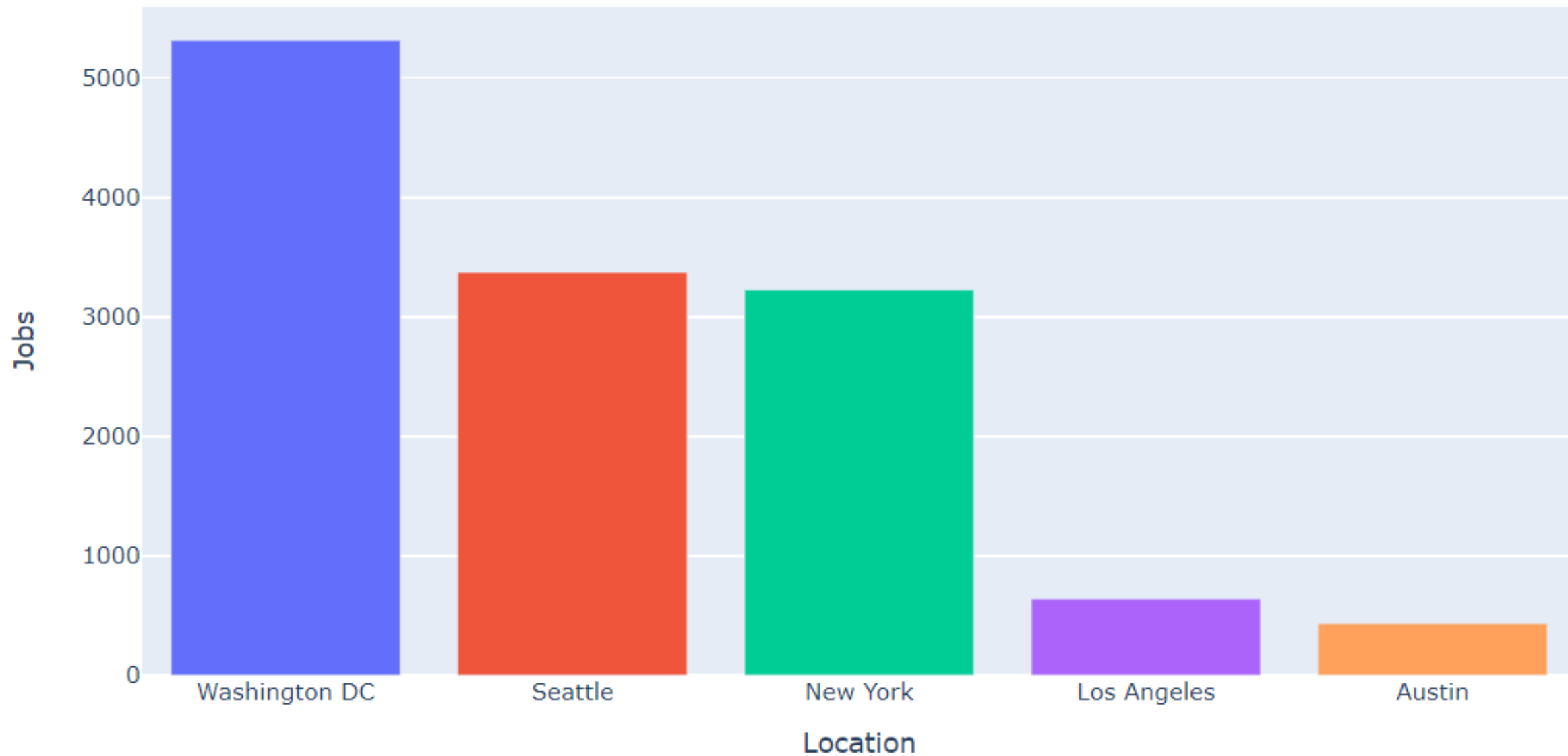
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Top 10 Languages by Salary

