

# Analysis of Current Technology Usage, Future Technology Trend, and Demographics

---

Name: Linh Huynh

Date: July 2, 2025

© IBM Corporation. All rights reserved.



# OUTLINE

---



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

# EXECUTIVE SUMMARY

---



- Data contextualization and analysis goals
- Methodologies
  - Data gathering
  - Data analysis
  - Data visualizations
- Presentation of results and insights with graphs
- Overall findings and implications regarding results
- Final conclusions of analysis

# INTRODUCTION

---



## About:

Analyzing the trends from Stack Overflow's annual Developer Survey. It is the largest and most comprehensive survey of people who code around the world

## Purpose:

- Identify skill requirements for the future
- What are the top programming languages in demand?
- What are the top databases skills in demand?
- What are the popular IDEs?

## Audience:

Human Resource and IT head



# METHODOLOGY

---



- Collect survey data & explore its content
  - Web scraping
  - APIs
  - Request library
- Data wrangling
- Exploratory data analysis
  - Analyzing data distribution
  - Handling outliers
  - Correlations
- Data visualization
  - Highlight distribution of data, relationships, the composition and comparison of data
- Dashboards

# RESULTS

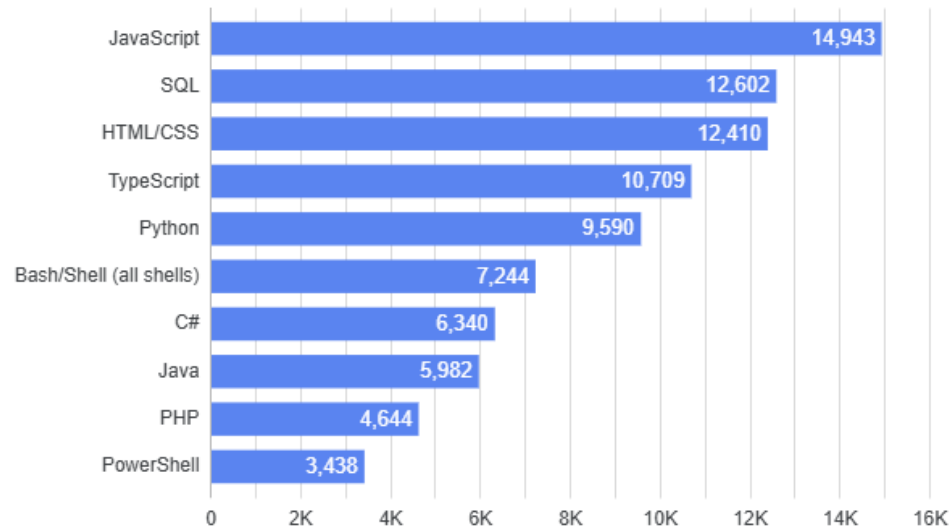
Row	Respond	MainBranch	Age	Employment	RemoteWork	Check	CodingActivities	EdLevel	LearnCode	LearnCodeOnline	TechDoc	Year
1	29	I am a developer by profession	25-34 years old	Independent contractor, freelancer, or self-employed	Remote	Apples	Hobby;Other (please specify);Business;Professional development or self-paced learning from online	Secondary school (e.g. American high school, German Realschule or Gymnasium, etc.)	On the job training;Other online resources (e.g., videos, blogs, forum, online community)	Technical documentation;Written Tutorials;Stack Overflow;Social Media;Interactive	API document(s) and/or SDK document(s);User guides or README files found in the source repository;First-party knowledge base;Traditional	18
2	230	I am a developer by profession	45-54 years old	Employed, full-time	Remote	Apples	Hobby	Professional degree (JD, MD, Ph.D., etc.)	Books / Physical media;On the job training;Other online resources (e.g., videos, blogs, forum, online community);School (i.e., college, university, etc.)	Technical documentation;Blogs;Books;Written Tutorials;Stack Overflow;Social Media;Interactive	API document(s) and/or SDK document(s);User guides or README files found in the source repository;First-party knowledge base;Traditional	25
3	230	I am a developer by profession	45-54 years old	Employed, full-time	Remote	Apples	Hobby	Professional degree (JD, MD, Ph.D., etc.)	Books / Physical media;On the job training;Other online resources (e.g., videos, blogs, forum, online community);School (i.e., college, university, etc.)	Technical documentation;Blogs;Books;Written Tutorials;Stack Overflow;Social Media;Interactive	API document(s) and/or SDK document(s);User guides or README files found in the source repository;First-party knowledge base;Traditional	25
4	360	I am a developer by profession	45-54 years old	Employed, full-time;Independent contractor, freelancer, or self-employed	Remote	Apples	Contribute to open-source projects;Bootstrapping a business;Freelance/contract work	Bachelor's degree (B.A., B.S., B.Sc., etc.)	On the job training;Other online resources (e.g., videos, blogs, forum, online community);Online Courses or Certification	Technical documentation;Blogs;Written Tutorials;Stack Overflow;Social Media	API document(s) and/or SDK document(s);User guides or README files found in the source repository;First-party knowledge base;Traditional	26
5	412	I am not primarily a developer, but I write code sometimes as part of my work/studies	55-64 years old	Independent contractor, freelancer, or self-employed;Employed, part-time	Hybrid (some remote, some in-person)	Apples	Hobby;Contribute to open-source projects;Professional development or self-paced learning from online	Master's degree (M.A., M.S., M.Ed., etc.)	Books / Physical media;Colleague;On the job training;Other online resources (e.g., videos, blogs, forum, online community)	Technical documentation;Books;Written Tutorials;Stack Overflow;Social Media;How-to videos;Written-based Online	API document(s) and/or SDK document(s);User guides or README files found in the source repository;First-party knowledge base;Traditional	38
6	412	I am not primarily a developer, but I write code sometimes as part of my work/studies	55-64 years old	Independent contractor, freelancer, or self-employed;Employed, part-time	Hybrid (some remote, some in-person)	Apples	Hobby;Contribute to open-source projects;Professional development or self-paced learning from online	Master's degree (M.A., M.S., M.Ed., etc.)	Books / Physical media;Colleague;On the job training;Other online resources (e.g., videos, blogs, forum, online community)	Technical documentation;Books;Written Tutorials;Stack Overflow;Social Media;How-to videos;Written-based Online	API document(s) and/or SDK document(s);User guides or README files found in the source repository;First-party knowledge base;Traditional	38
7	475	I am a developer by profession	35-44 years old	Not employed, but looking for work;Independent contractor, freelancer, or self-employed	Remote	Apples	Hobby;Contribute to open-source projects;Bootstrapping a business;Professional development or self-paced learning from online	Bachelor's degree (B.A., B.S., B.Sc., etc.)	Books / Physical media;Colleague;On the job training;Other online resources (e.g., videos, blogs, forum, online community)	Technical documentation;Blogs;Books;Written Tutorials;Video-based Online Courses	API document(s) and/or SDK document(s);User guides or README files found in the source repository	6



# PROGRAMMING LANGUAGE TRENDS

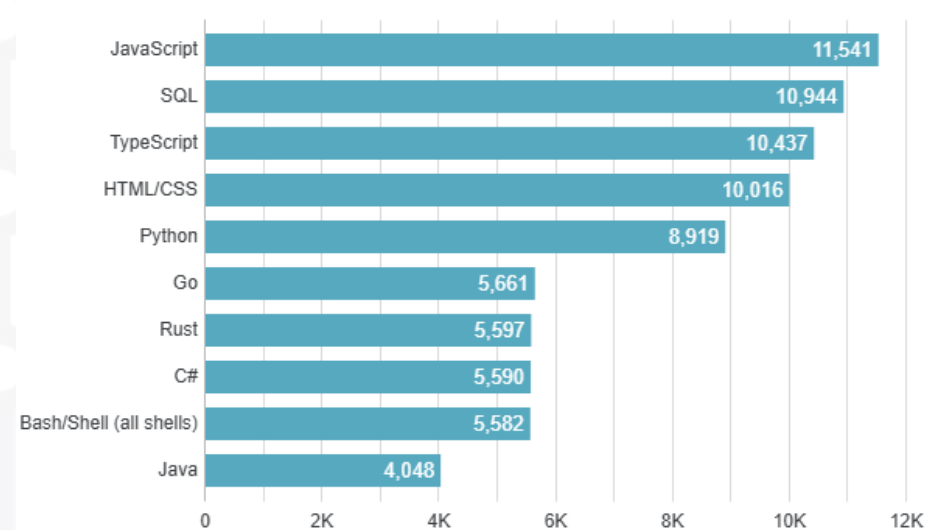
## Current Year

Top 10 Languages Used



## Next Year

Top 10 Languages Desired Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

---

## Findings

- JavaScript is the most in-demand and desired language
- SQL is the second most popular programming language
- There is not a big shift for the Top 5 programming languages
- Go and Rust is becoming more popular

## Implications

- The Top 5 programming languages stays a safe bet to learn and desire
- Web services and memory are becoming big due to the increase of need for both Go and Rust in the next year
- The desire for C++ and Java are decreasing as well as Bash/Shell

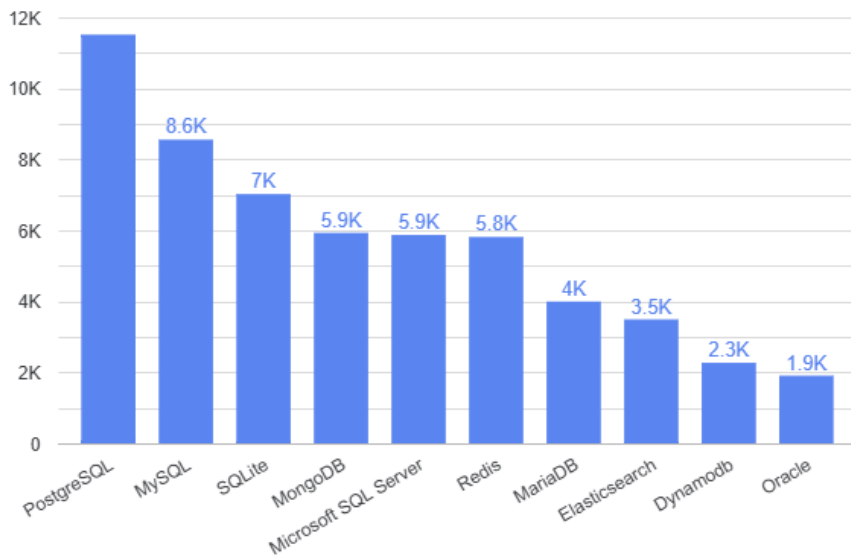




# DATABASE TRENDS

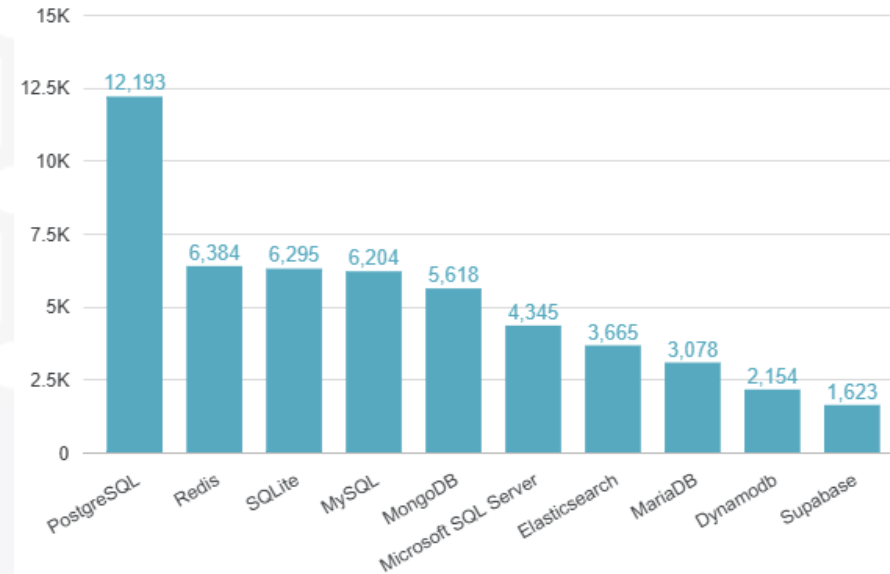
## Current Year

Top 10 Databases Used



## Next Year

Top 10 Databases Desired Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

---

## Findings

- PostgreSQL stays the most used and desired database
- Redis becomes more popular in the next year as the second most desired
- Oracle becomes less desired next year as it's no longer part of the Top 10

## Implications

- Organizations may need to invest in training and resources to adopt to Redis as it becomes more popular next year
- PostgreSQL, an open source database is still preferable
- The need for which type of database to use will depend on the project



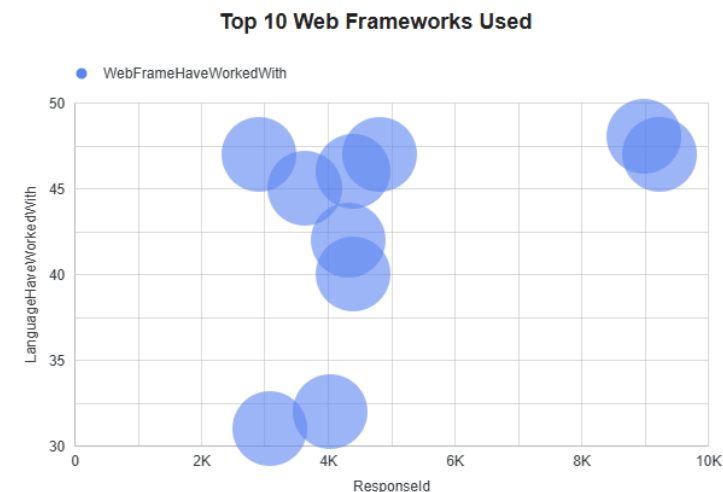
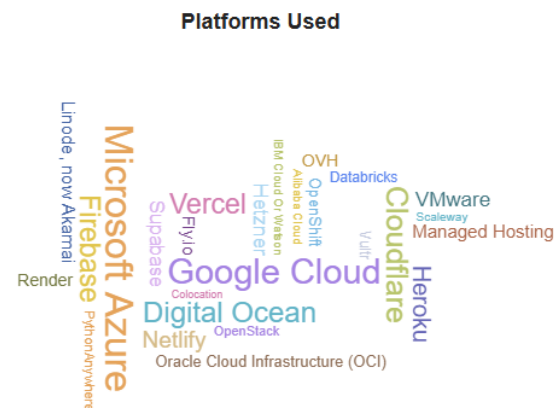
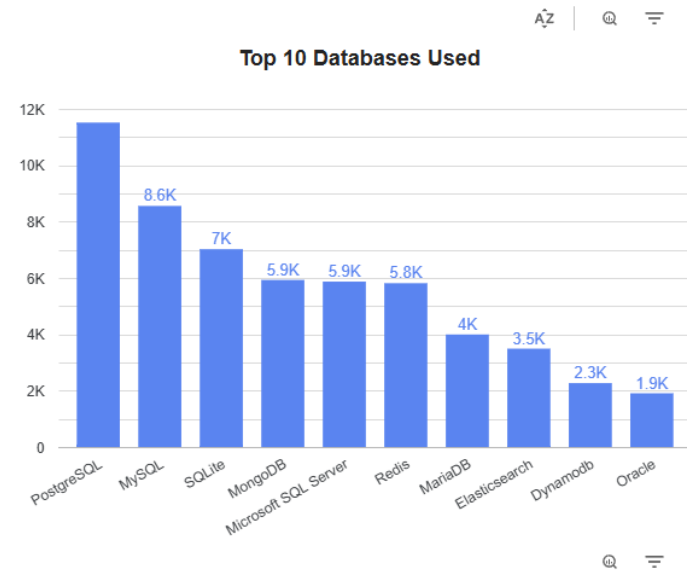
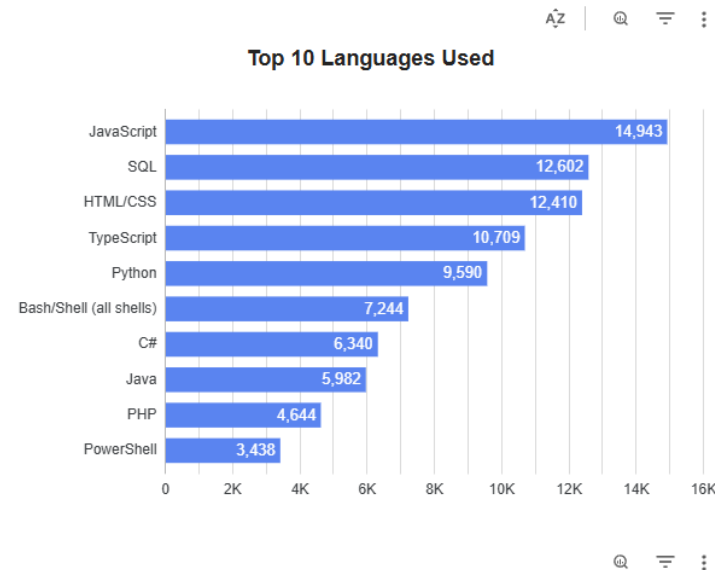
# DASHBOARD

---

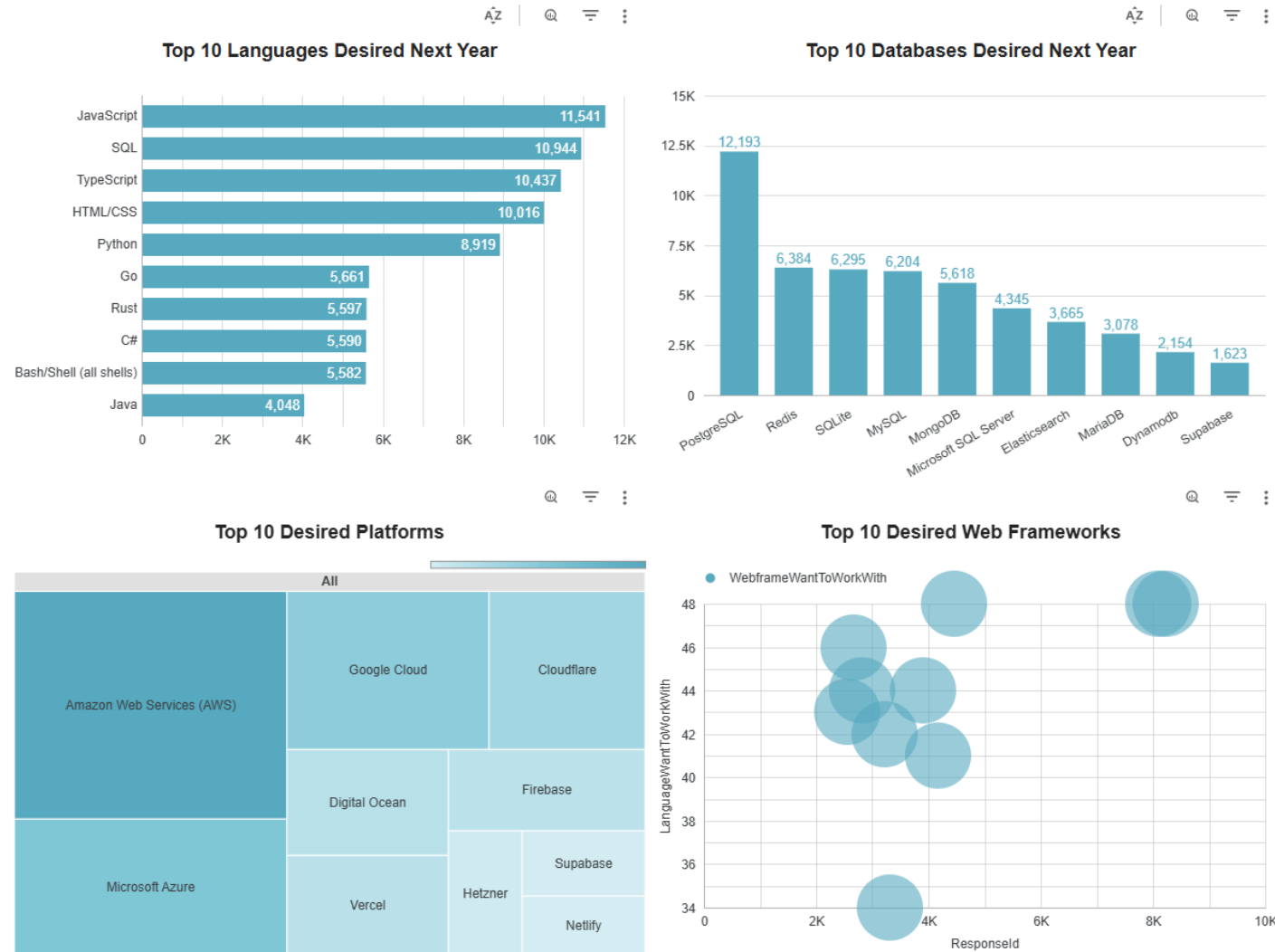


<https://lookerstudio.google.com/s/j8EEiax83Rk>

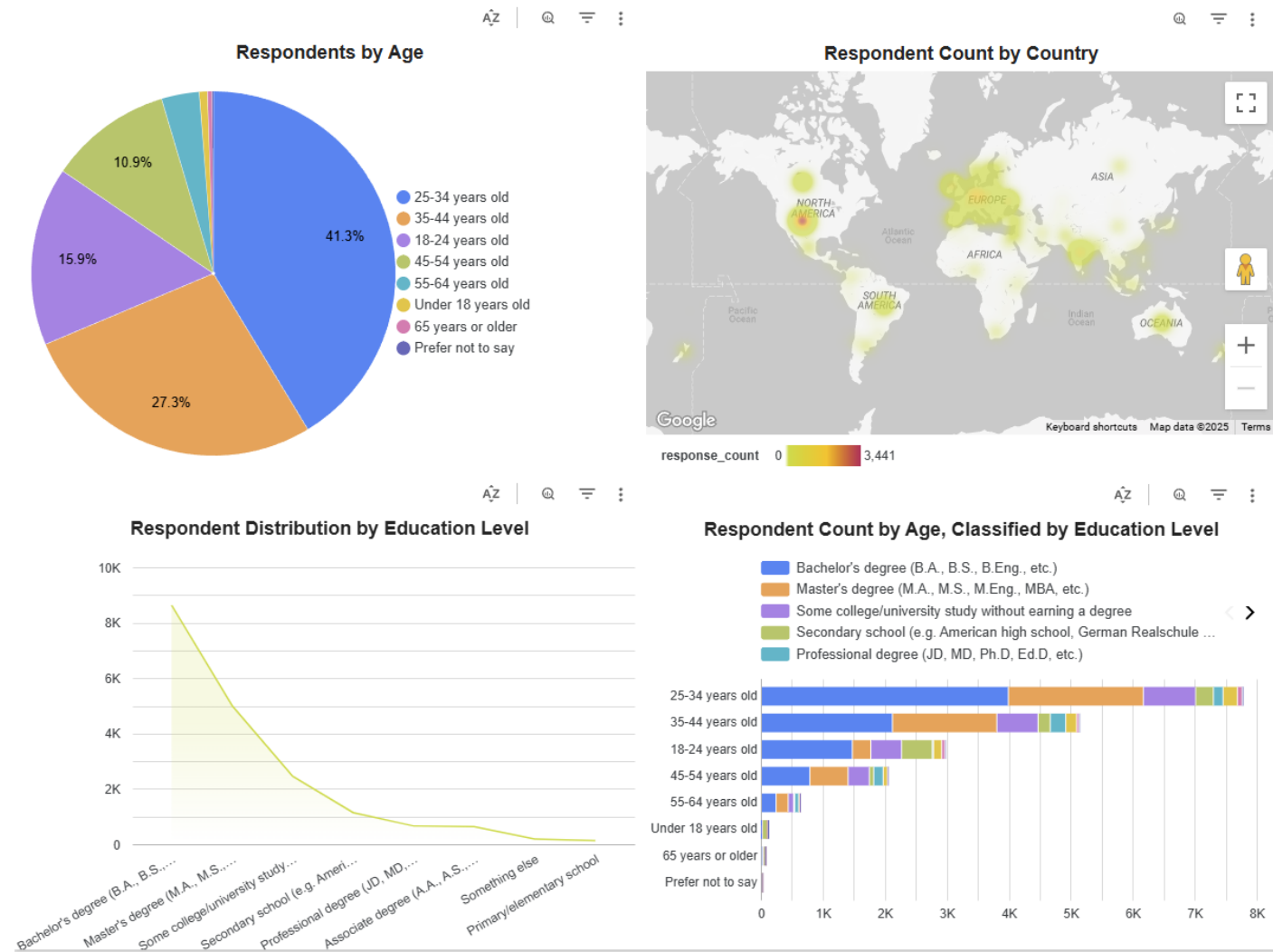
# Dashboard: Current Technology Usage



# Dashboard: Future Technology Trends



# Dashboard: Demographics



# DISCUSSION

---



# OVERALL FINDINGS & IMPLICATIONS

---

## Findings

- JavaScript is widely used with Go and Rust getting popular and desired next year
- Most developers are in their mid-twenties to mid-thirties and most have a Bachelor's Degree
- Developers are mostly located in the US and Europe

## Implications

- Invest in JavaScript skills and PostgreSQL as both are considered the most used and desired programming languages and database
- The Top 3 degrees remain to be Bachelor, Master, and Some University/College without earning a degree for all age group
- With Redis, Go, and Rust becoming more popular and desired next year, there would be an increase of need for training and resources availability





# CONCLUSION

---



- A good idea of popularity trends of different tools, platforms, and languages can be obtained
- There's a growing demand for developers to bridge front-end and back-end development, coupled with data analysis

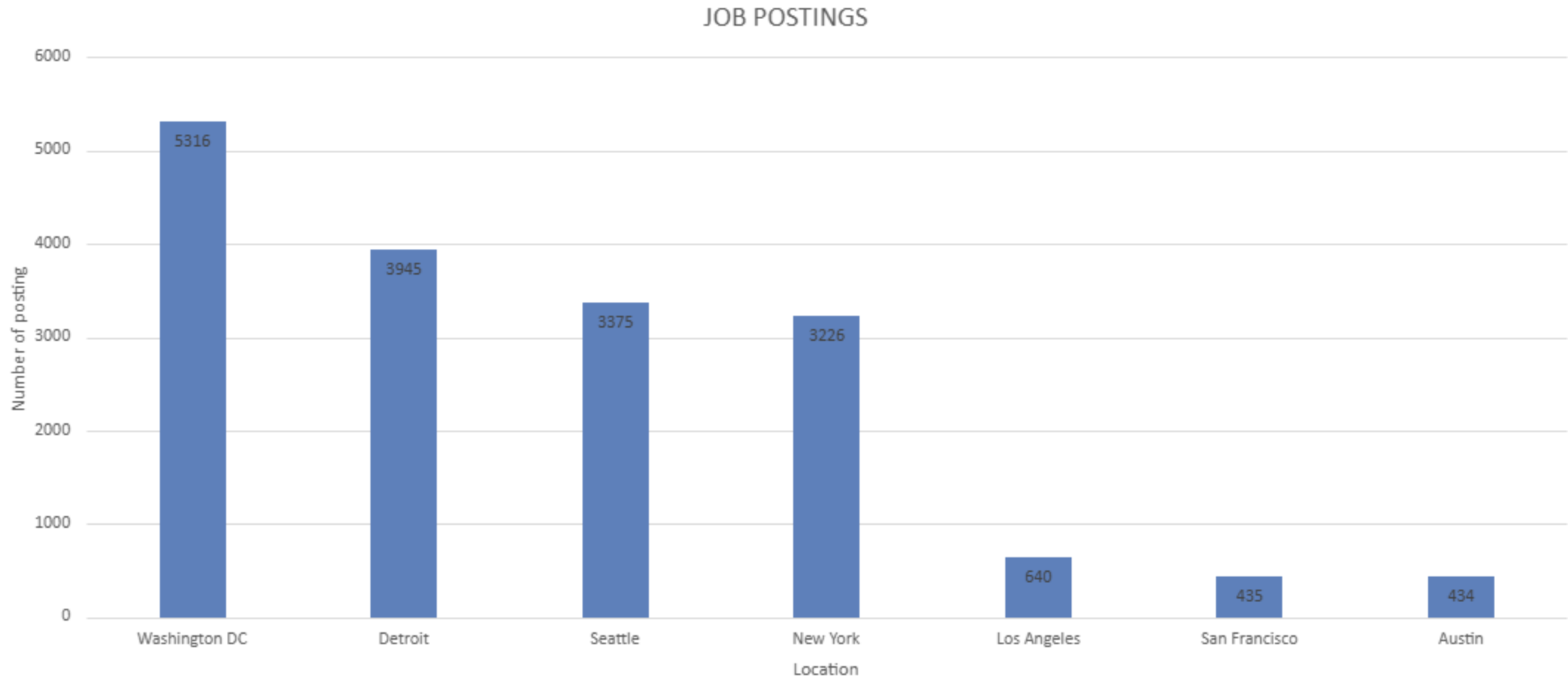


# APPENDIX

---



# JOB POSTINGS



# POPULAR LANGUAGES

