IBM Data Analyst Capstone Project - Stack Overflow Survey Analysis

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OUTLINE

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- Methodology
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  - ✓ Dashboard
- Discussion
  - ✓ Findings & Implications
- Conclusion
- Appendix

EXECUTIVE SUMMARY

Current Technology Trend

- Top programming languages in demand: HTML/CSS, JavaScript, TypeScript
- Top database skills in demand: PostgreSQL
- Popular platforms: Amazon Web Services (AWS) and Microsoft Azure
- Popular Platform: Spring Boot, React, ASP.NET CORE

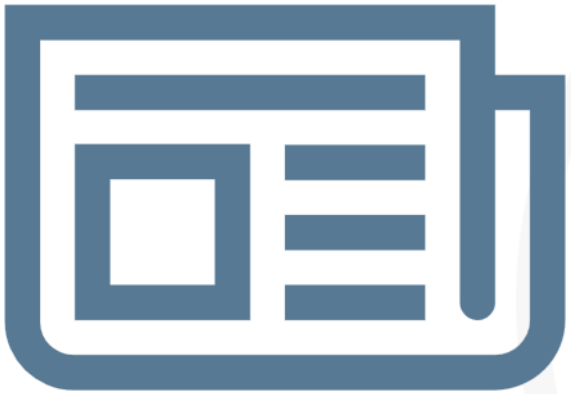
Future Technology Trend

- SQL and C# will take the first place, followed with current web programming language
- PostgreSQL still become a popular Data Management, followed by Microsoft SQL Server
- Google Cloud is in the Top 5 demanded platforms after Amazon and Microsoft Azure
- Spring Boot still takes the first place along with React

INTRODUCTION

- Company Background
  - A global IT and business consulting firm renowned for its expertise in IT solutions and highly experienced consultants.
- Problem
  - To stay competitive in the rapidly evolving technology landscape, this organization regularly analyzes data to identify emerging and future skill requirements.
- Goals
  - With Latest Stack Overflow Developer Survey, I will be identifying trends for this year's report on in-demand developers' skills.
  - These insights shed light on the evolving landscape of programming languages, web frameworks, and the demographics of professional developers.

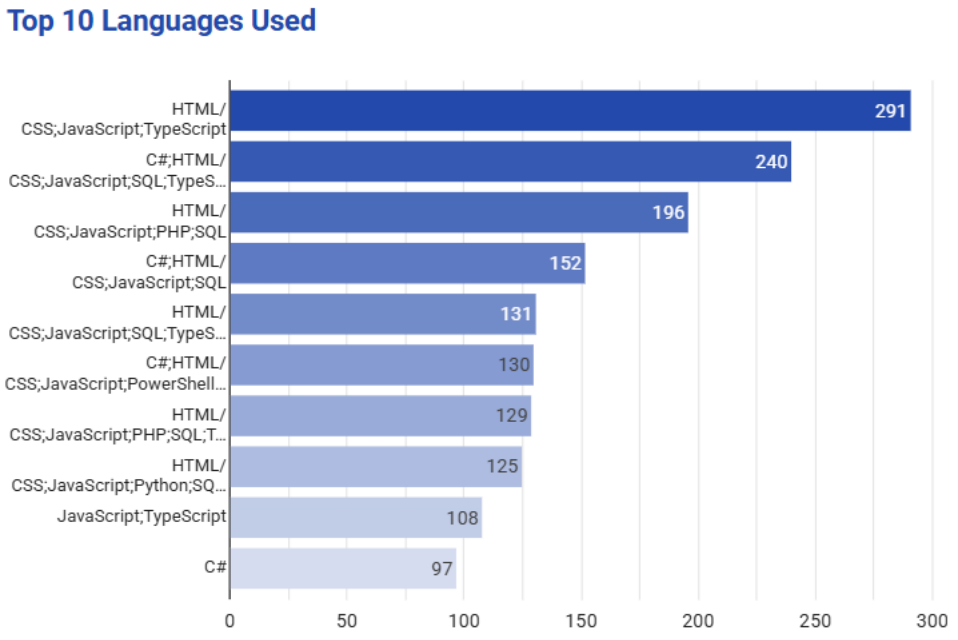
METHODOLOGY



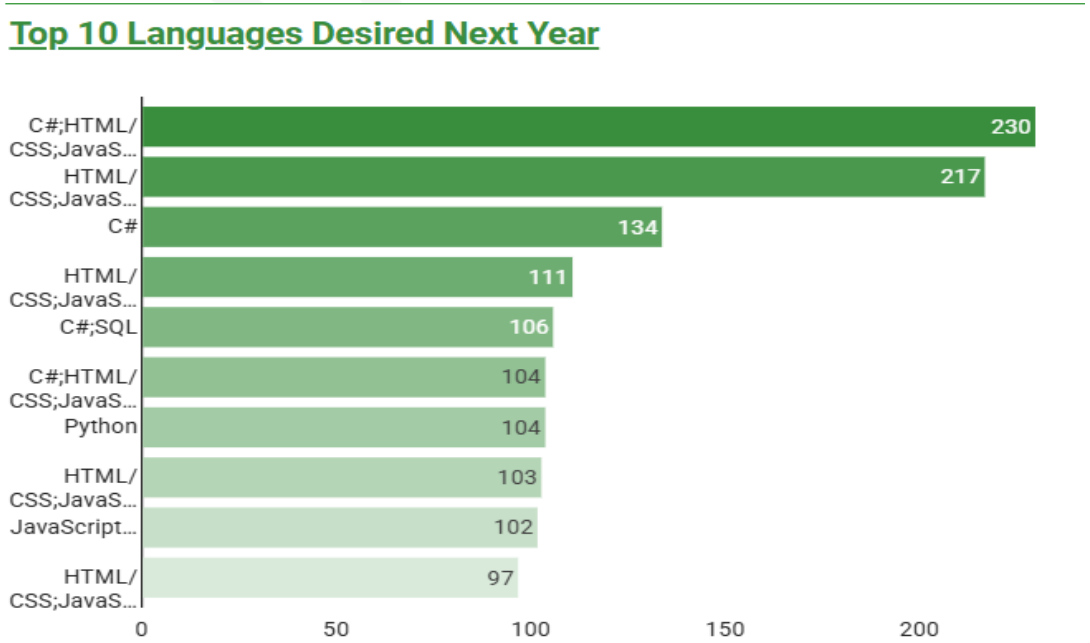
- Data Collecting
  - Web Scraping, Accessing APIs, Initial review of Dataset
- Data Wrangling
  - Handling duplicates (finding, removing, impute), Normalizing Data
- Exploratory Data Analysis (EDA)
  - Apply statistical technique: Data distribution, Handling outliers, Finding correlation
- Building Dashboard with Google Looker Studio
  - Identify key trends and insights
- Executive Summary

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

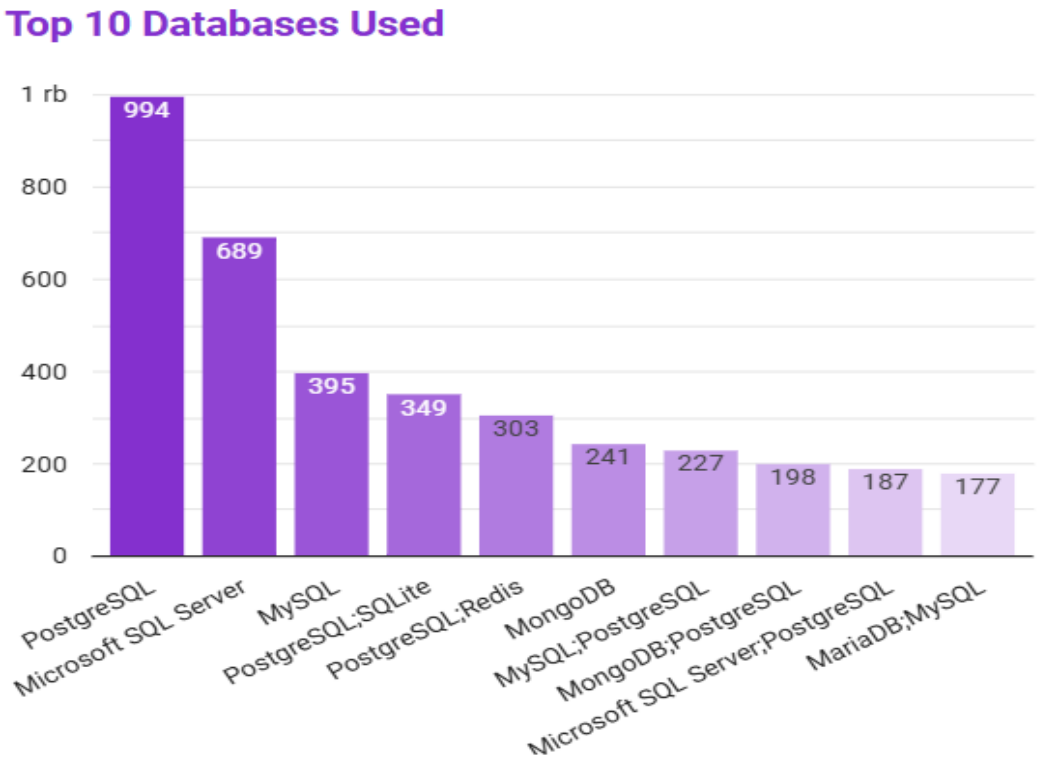
- HTML/CSS, JavaScript, TypeScript emerge as the most combination programming languages among all respondents.
- SQL is the first who included inside most web programming language.
- C# is the most popular stand-alone language.

Implications

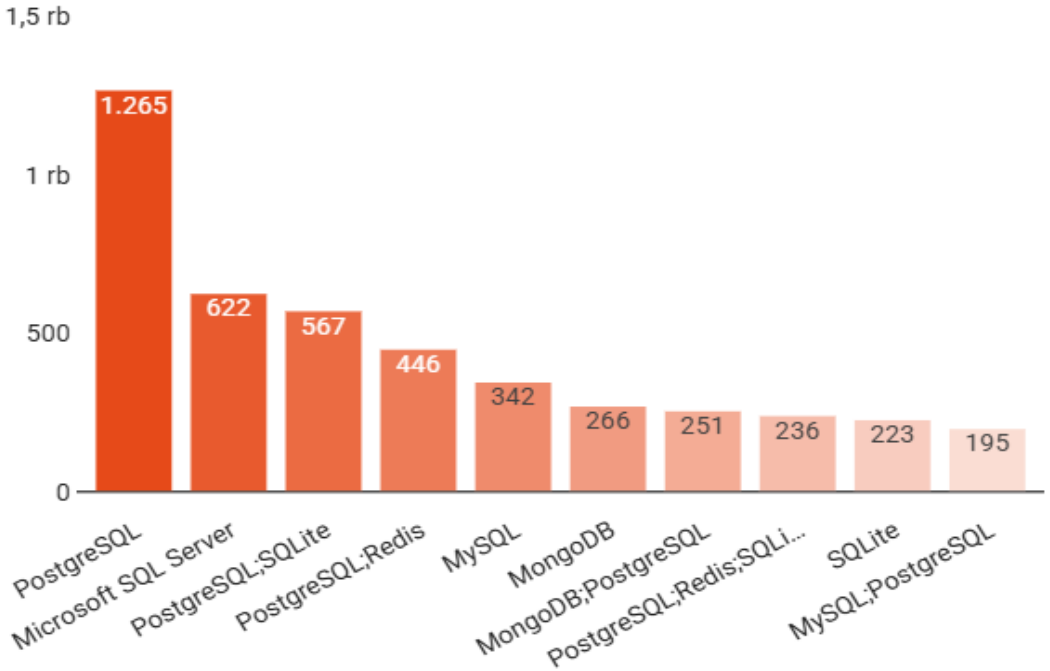
- Web programming languages are still the most popular at the moment and will remain a trend in the future.
- SQL is still a popular query language and will rise alongside web languages in the future.
- Together with SQL, C# has succeeded in becoming a popular language trend in the future.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

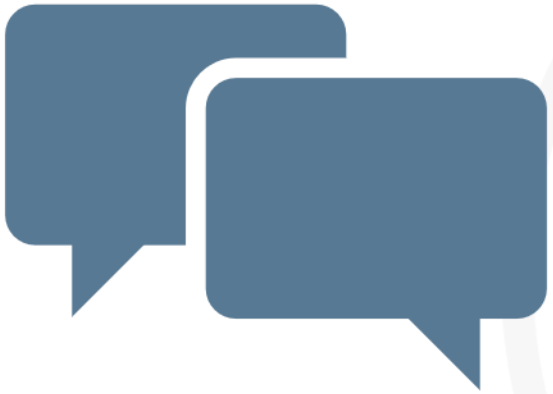
Findings

- PostgreSQL emerge as the most popular database query.
- PostgreSQL and SQL Server are both the best relational database management systems based on developers' choice.
- PostgreSQL, SQLite is the first most popular combination query language.
- MongoDB is still the single choice trend for popular NoSQL category.
- Unfortunately, MySQL will become less used by developers for the next year.

Implications

- PostgreSQL still remains the most preferred query trend among all respondents followed by Microsoft SQL Server for now and next year.
- The high usage of MongoDB reflects the growing trend towards NoSQL databases.
- PostgreSQL's reputation in scope of reliability, stability, and flexibility rather than MySQL, Postgre has made it an attractive option for various companies and developers' choices.
- The diverse range of database systems utilized by developers indicates the importance of selecting the right tool for the job, considering factors such as data structure, scalability, and performance requirements.

DASHBOARD

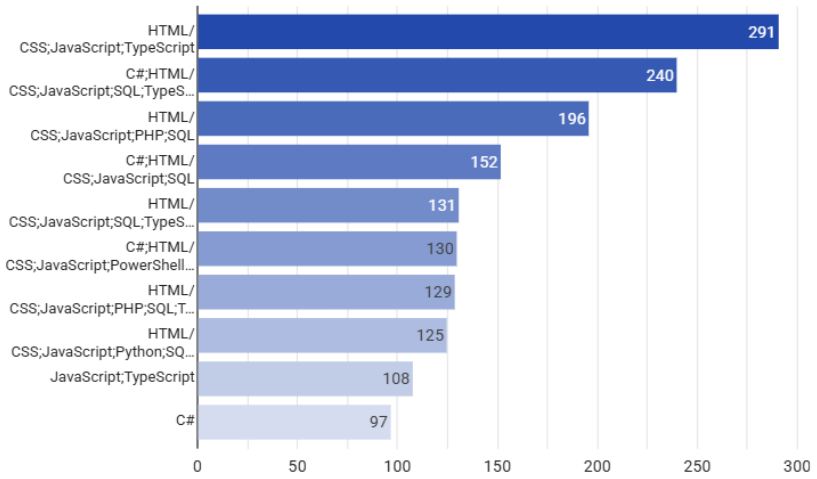


LINK Dashboard

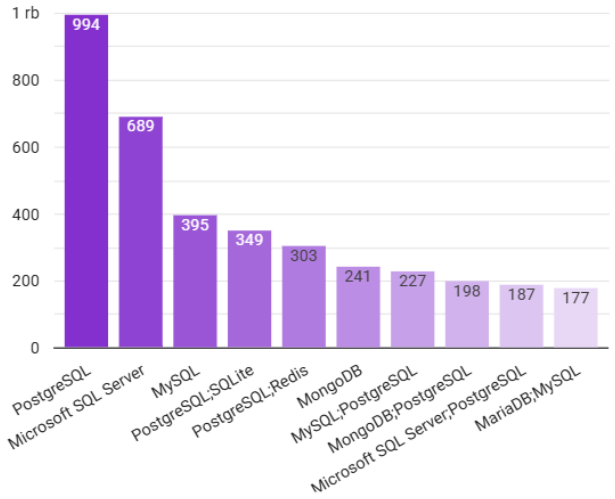
DASHBOARD TAB 1

Current Technology Usage

Top 10 Languages Used

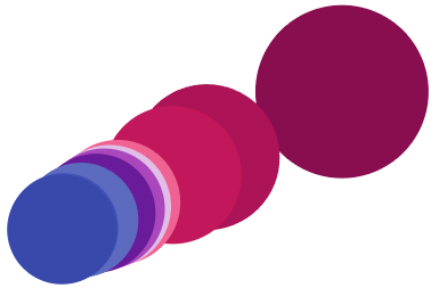


Top 10 Databases Used



Top 10 Platforms Used

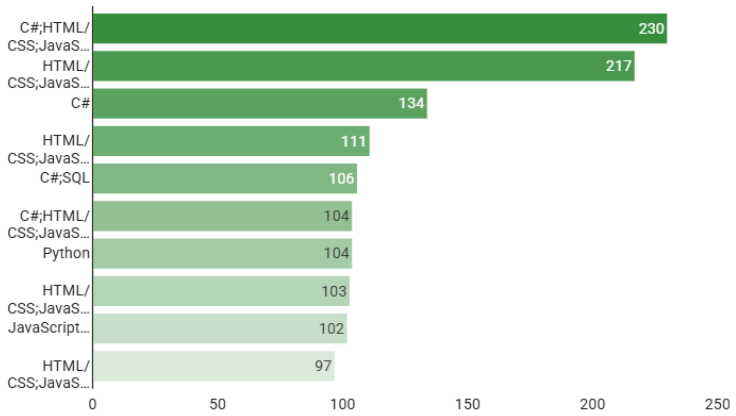
Top 10 Web Frameworks Used



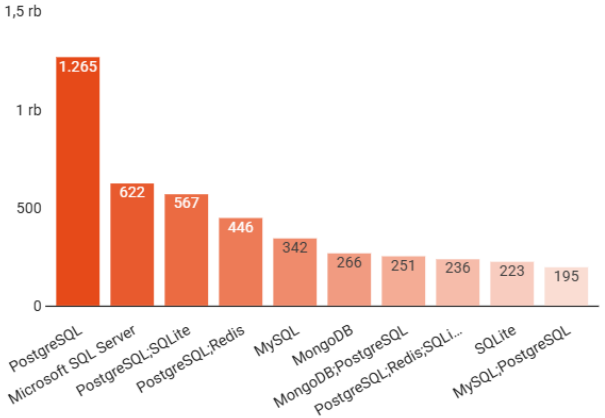
DASHBOARD TAB 2

Future Technology Trend

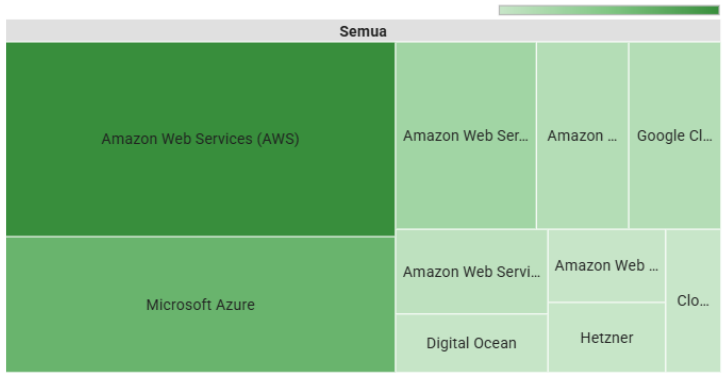
Top 10 Languages Desired Next Year



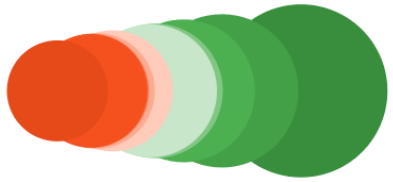
Top 10 Databases Desired Next Year



Top 10 Desired Platforms



Top 10 Desired Web Frameworks



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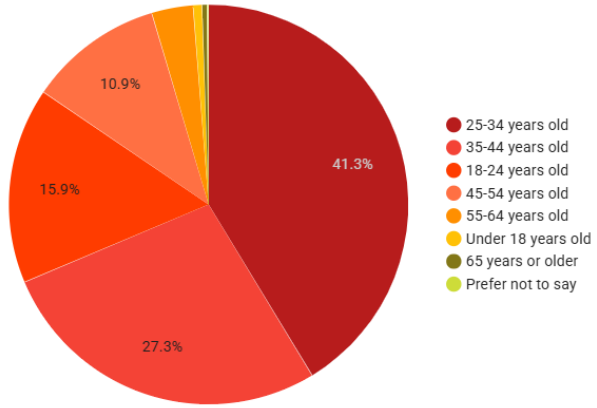
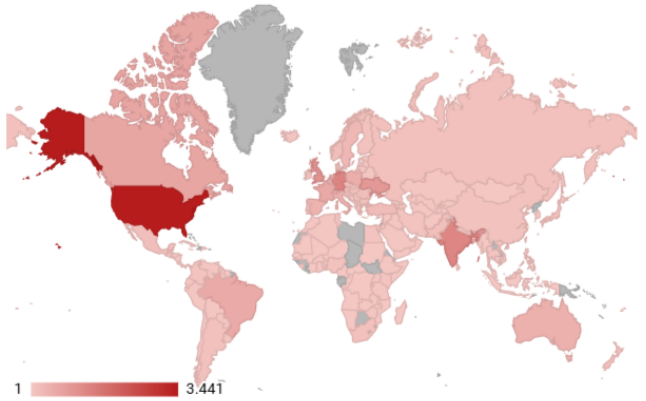
DASHBOARD TAB 3

Demographics

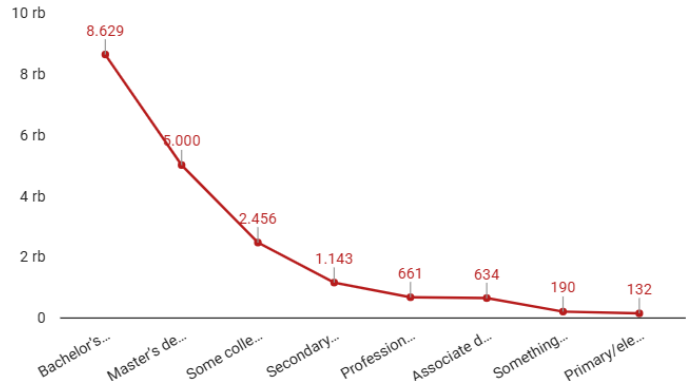
Respondents by Age



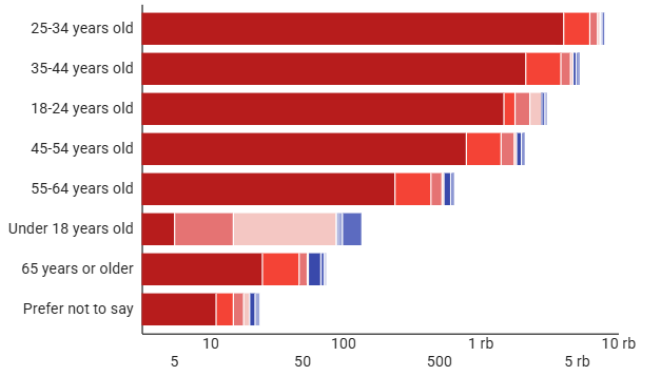
Respondent Count by Country



Respondent Distribution by Education Level



Respondent Count by Age, Classified by Education Level



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DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

- **Current Technology Usage**: The dominance of HTML/CSS, JavaScript, and TypeScript underscores the importance of keeping up with technology trends in web development. For Data Management: PostgreSQL, Microsoft SQL Server, and MySQL highlight the critical role of effective data management in software development.
- **Future Technology Trend**: C# and SQL will be the future trending languages along with the current popular web development. For Data Management: PostgreSQL and Microsoft SQL Server are still the future trends, and unfortunately MySQL will experience a decline in popularity.
- **Demographics:** Majority of respondents are having Bachelor's Degree with an age range between 25 - 34 years old. Developers mostly are from English speaking nations.

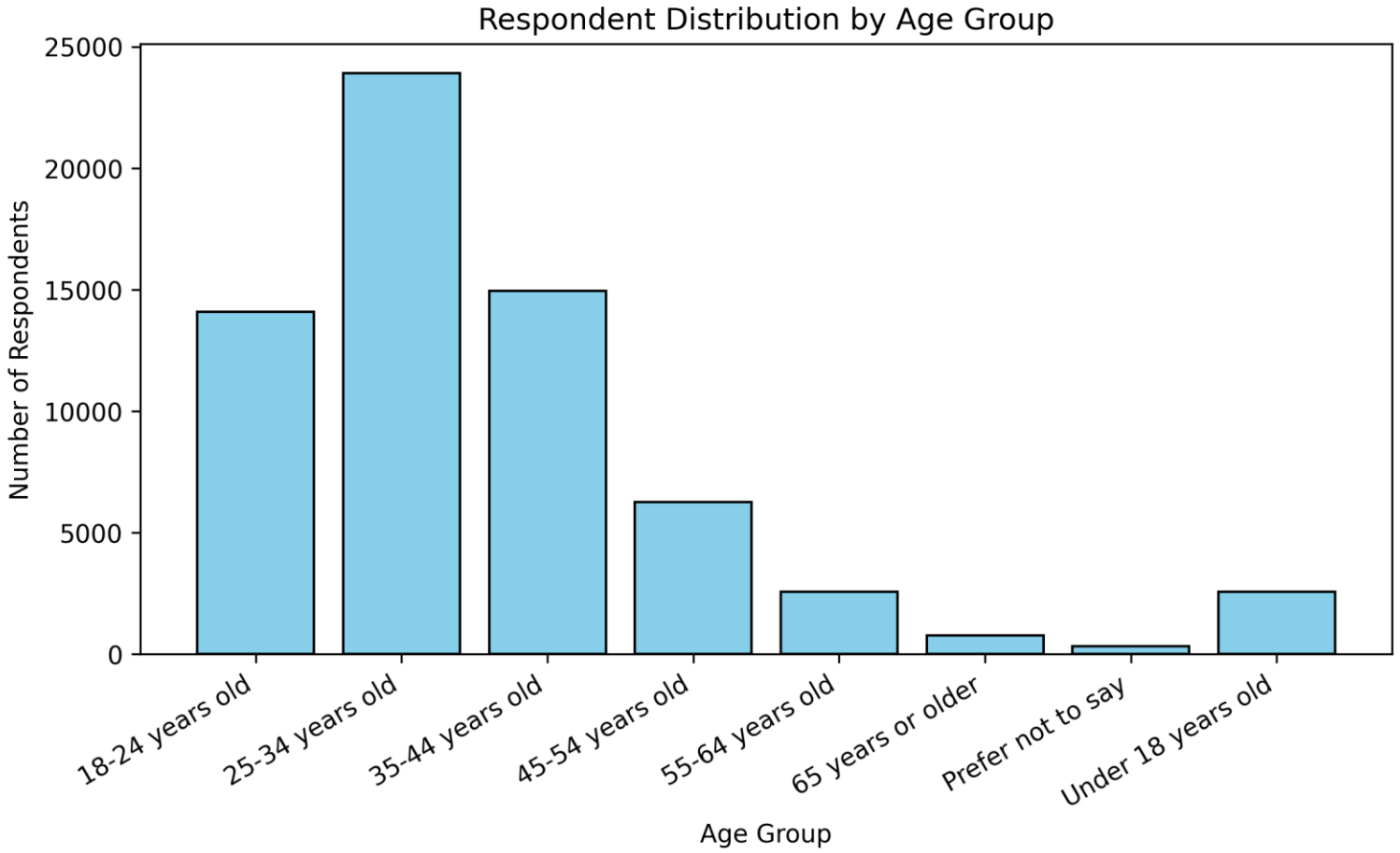
Implications

- **Web Dominance**: The widespread usage of HTML/CSS, JavaScript, and TypeScript indicates the dominance of web development in the programming ecosystem, reflecting the growing importance of online platforms and digital experiences.
- **Database Diversity**: The variety of database management systems used highlights the importance of flexibility and adaptability in data storage solutions. Organizations must consider factors such as data structure, scalability, and performance when selecting a database system.
- **Developer Diversity**: Active respondents were in their productive age range, and a bachelor's degree is a common qualification for developers today. Native English speakers were the most likely to align with the programming language.

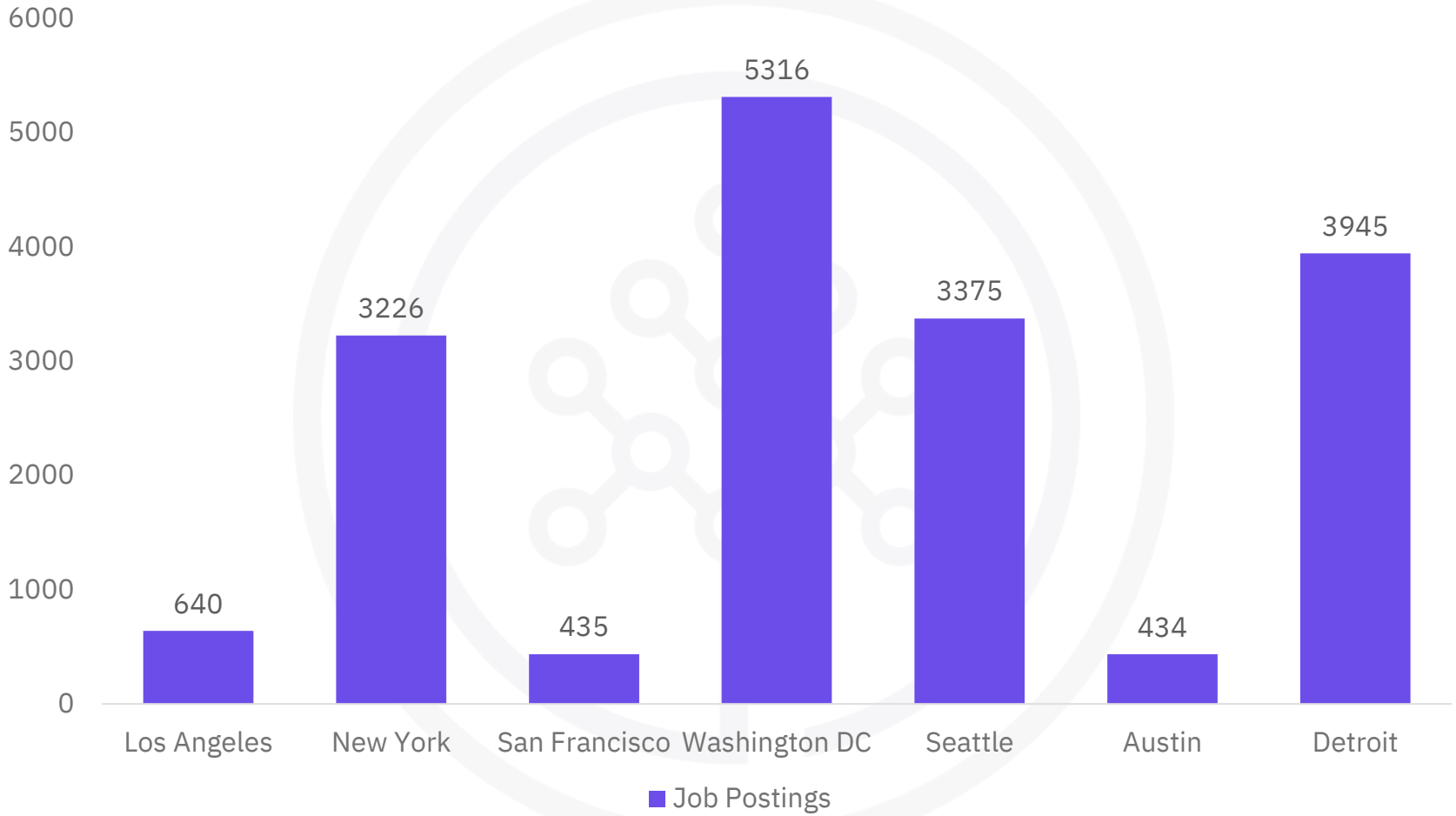
CONCLUSION

- **Web programming** remains popular due to its high demand, widespread use, and the internet's essential role in modern business and communication.
- The variety of database management systems used highlights the importance of flexibility and adaptability in data storage solutions. **PostgreSQL has earned a strong reputation** for its proven architecture, reliability, data integrity, robust set feature
- The diverse range of programming languages and database systems utilized by developers underscores the importance of understanding the strengths and weaknesses of different tools.

AGE DISTRIBUTION BARCHART



JOB POSTINGS



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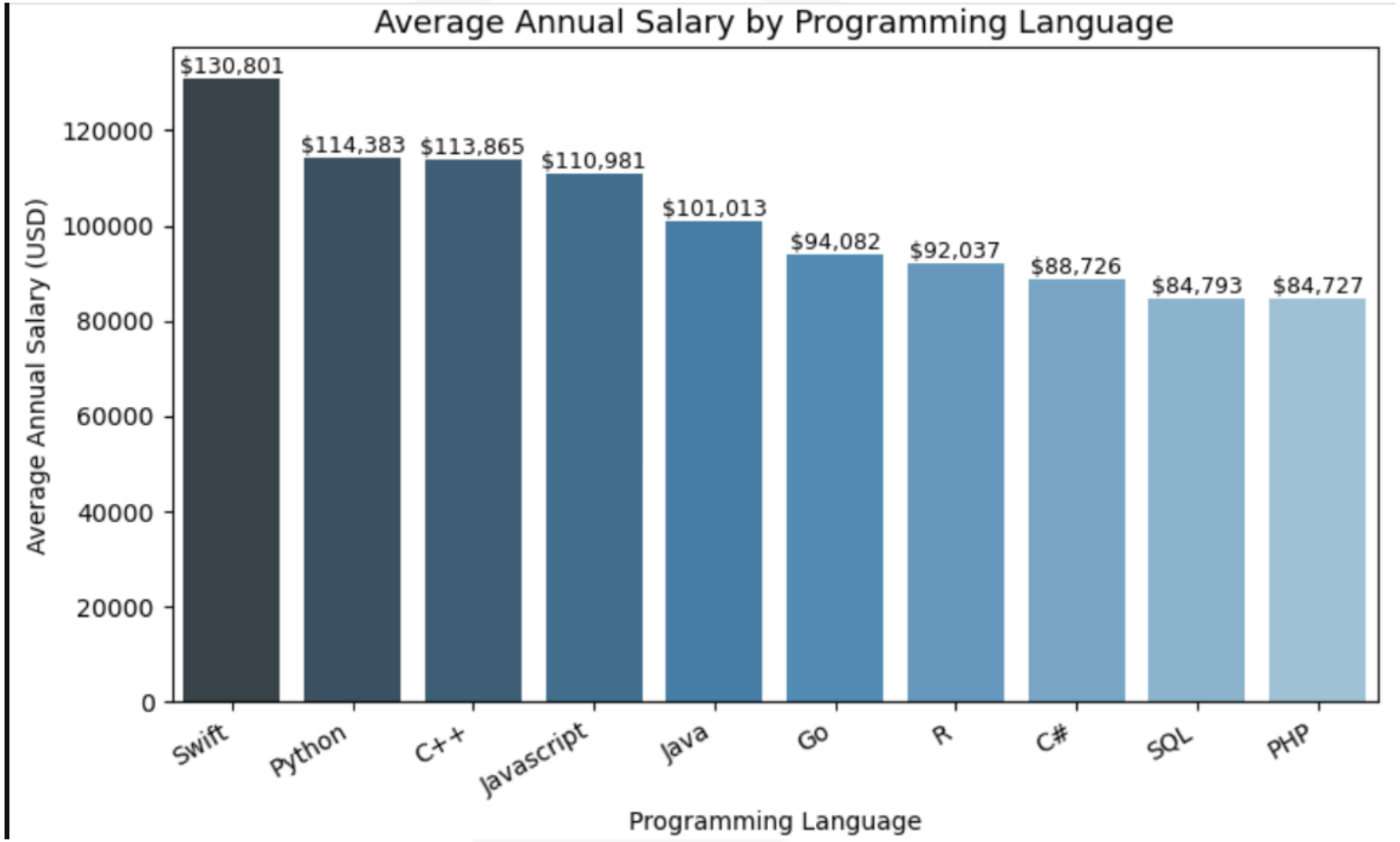
POPULAR LANGUAGES



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