Changing Trends in Artificial Technology

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OUTLINE

EXECUTIVE SUMMARY

Future of AI

- The future of business is inextricably linked to technology.
- By making investments in the technical skills that are most closely associated with the demand for capital investment, they can prepare for long-run success.

- Based on these findings, we could offer a more targeted account of the particular skills that are most likely to contribute to this career success, and those these employers look for in the hiring process.

INTRODUCTION

- In today's technologically advancing world, companies that aren't making good use of technology risk being left behind by those who are.

- You need to know a lot about new technologies and how to apply them successfully.

- Examples include entry-level/professional experience with programming languages, web development frameworks, and other database technologies.
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- Now to the problem at hand, which this current analysis hopes to resolve: Which way are we moving in terms of using these skills?

- With that information, what those have worked with in the past as well as now, the outcome of this report will probably be made clear along with what technological needs are essential for employers to ensure competitiveness in their corporation.
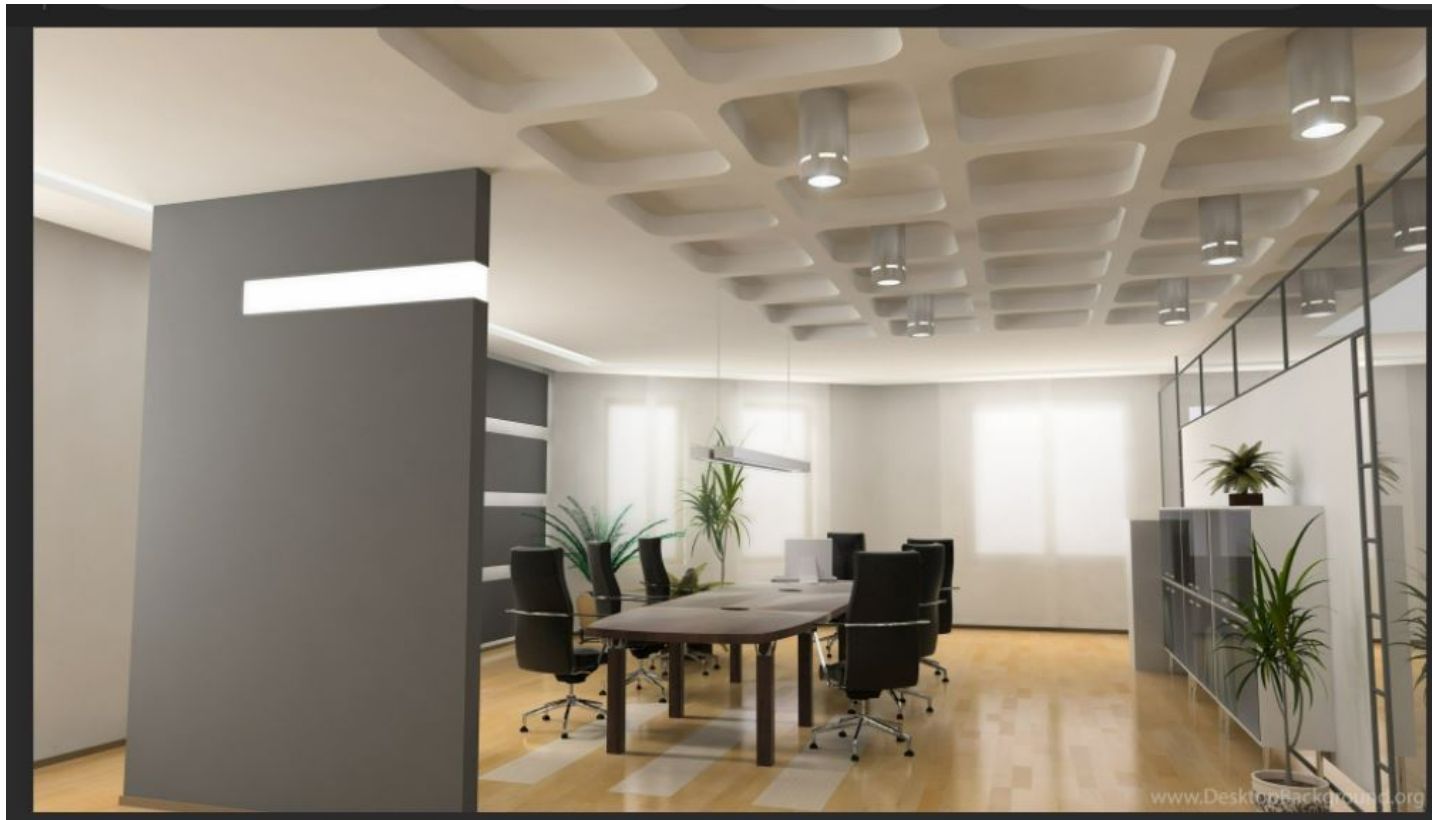
METHODOLOGY

- **<u>DATA COLLECTION & WRANGLING</u>**
  - Customized the GitHub Jobs API.

  - Worked with the Survey Results dataset.
- **<u>DATA ANALYSIS & VISUALIZATION</u>**
  - Conducted exploratory data analysis using Python to assess data distribution.

  - Utilized Python for data analysis to generate various visualizations.

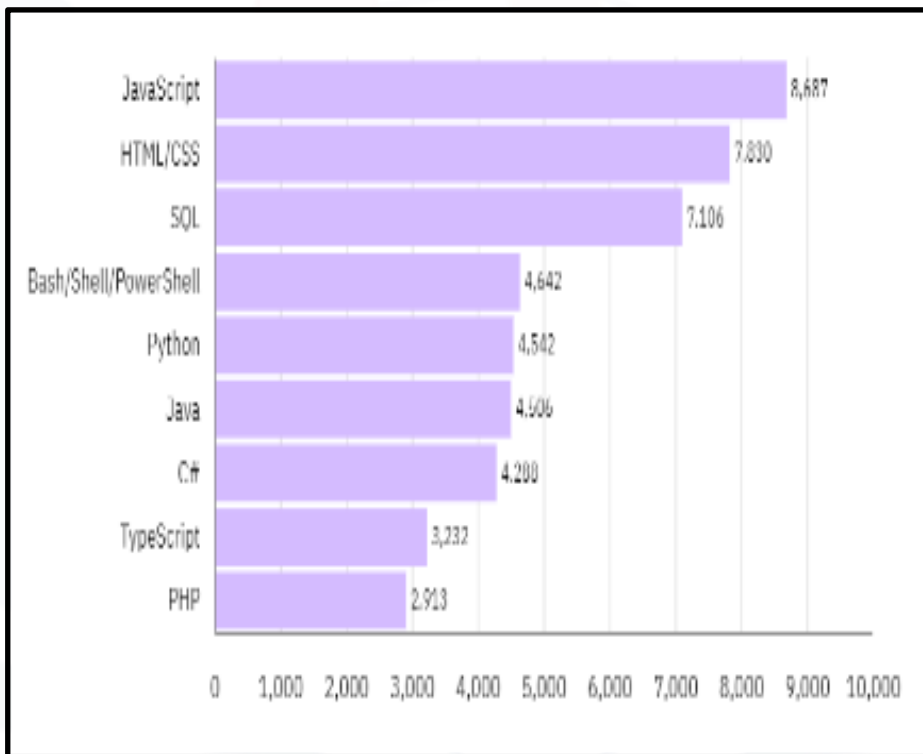 - Developed three dashboards in Google Looker Studio featuring visualizations of key data
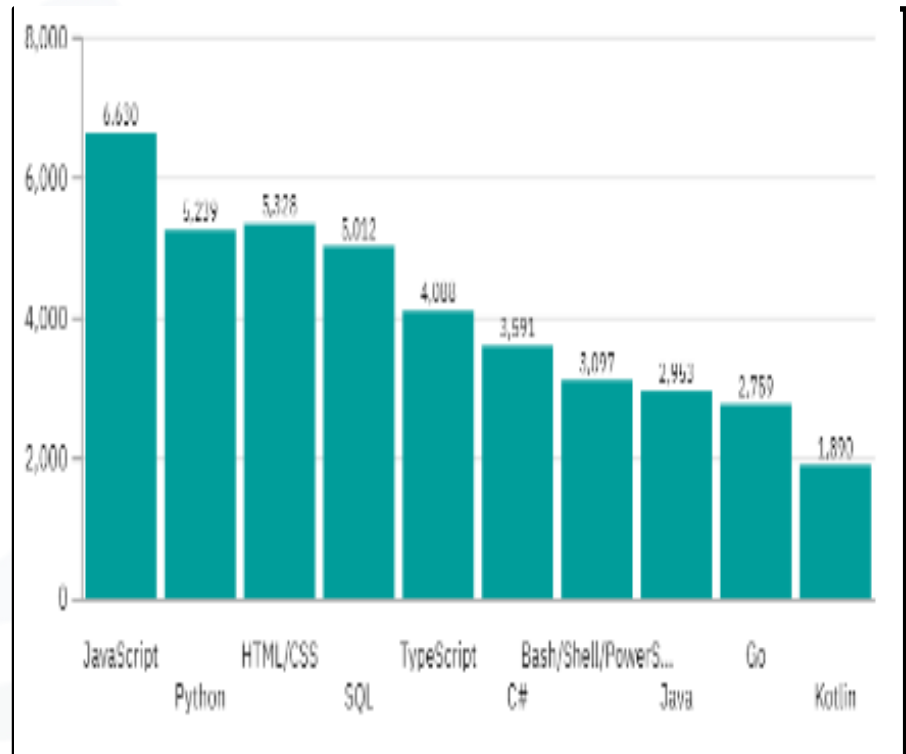
RESULTS

PROGRAMMING LANGUAGE TRENDS

Current Year

Language	Value
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542
Java	4,506
C#	4,288
TypeScript	3,232
PHP	2,913

Next Year

Language	Value
JavaScript	6,600
Python	5,219
HTML/CSS	5,328
SQL	5,012
TypeScript	4,000
C#	3,591
Bash/Shell/PowerS...	3,097
Java	2,953
Go	2,759
Kotlin	1,800

PROGRAMMING LANGUAGE TRENDS
FINDINGS & IMPLICATIONS

Findings

- JavaScript, along with HTML/CSS, continues to be among the most widely used and sought-after programming languages.

- The demand for Python has been steadily increasing.

- Fewer developers are inclined to work with Bash/Shell scripting.

Implications

- Although HTML and CSS aren't considered traditional programming languages, they are crucial for web development, and when combined with JavaScript, they form a powerful toolkit for building dynamic, interactive web applications.

- Bash/Shell scripting has several limitations, such as a lack of advanced features, reduced readability, and slower performance.

- The rising demand for languages with simple syntax and strong automation and scripting capabilities is driving the growing popularity of Python, Go, and Kotlin.
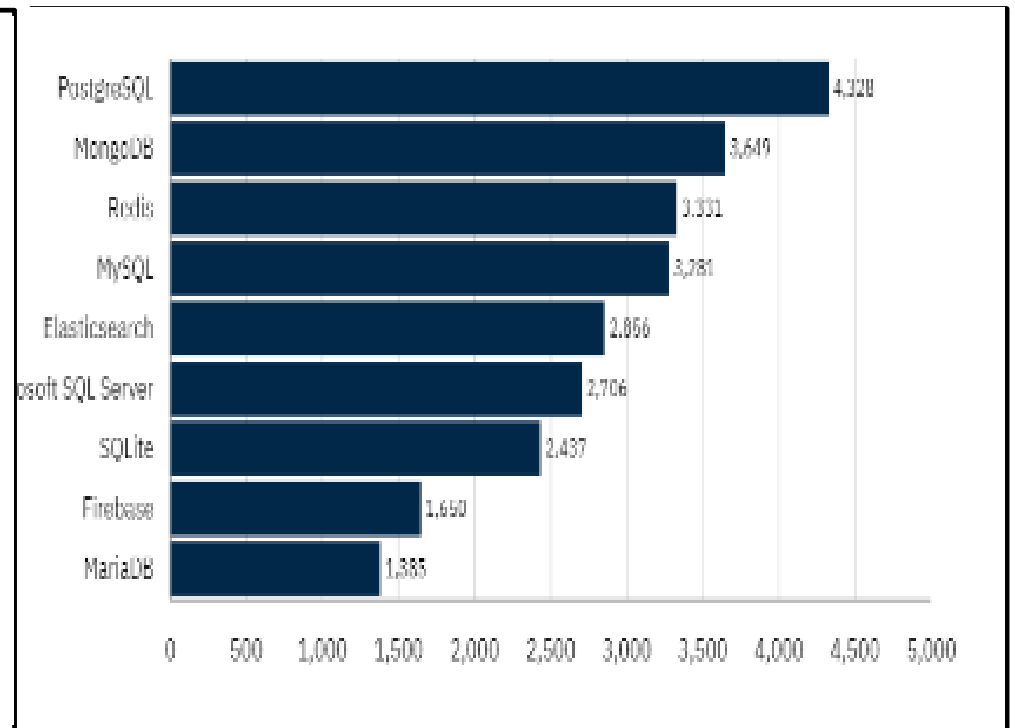
DATABASE TRENDS

Current Year
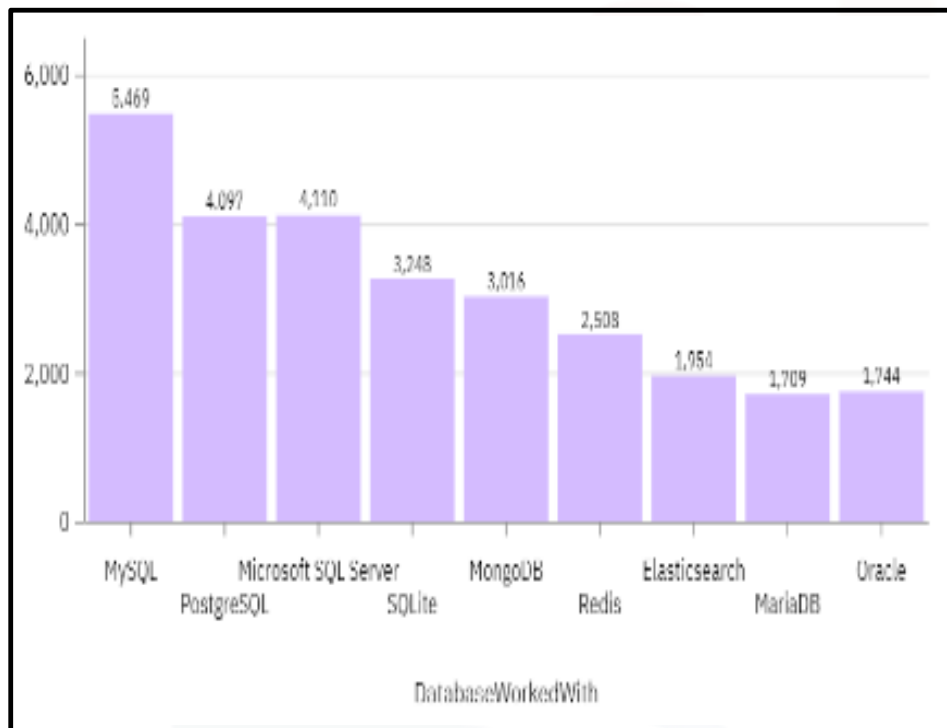
Next Year

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Non-relational databases such as MongoDB, Redis, and DynamoDB have become more popular among developers.

- Despite a surge in demand for using PostgreSQL, other relational databases such as MySQL, Microsoft SQL Server, Oracle, and SQLite have been less desired.

- There's been an increase in demand for other tools such as Elasticsearch and Firebase.

Implications

- While the traditional relational database systems are still desired, the ability to handle larger, complex workloads of unstructured/semi-structured data more efficiently fits well with the schema of non-relational database systems.

- PostgreSQL has gained significant popularity for its wide range of advanced features and capabilities such as support for JSON data, built-in full-text searching, cloud integration, etc.

- Databases such as Microsoft SQL Server and Oracle are licensed commercial products, leading to high costs and less accessibility for smaller organizations.

- In recent years, cloud computing and storage has become popular for storing real-time, user-generated content, hence why more desire to work with Firebase.
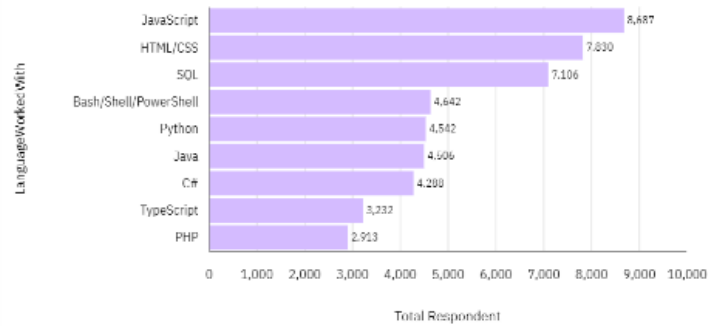
LINK TO FULL DASHBOARD

https://github.com/carloskappa/Final-Capstone-Project/
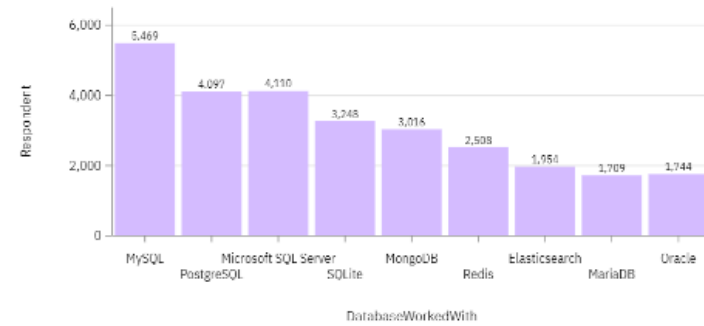blob/main/Data%20Survey%20in%20Cognos.pdf

https://github.com/carloskappa/Carlosfinalcapstone

DASHBOARD #1

Current Technology Usage

Top 10 Language Worked With

Language Worked With	Total Respondent
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542
Java	4,506
C#	4,288
TypeScript	3,232
PHP	2,913

Top 10 Database Worked With

DatabaseWorkedWith	Respondent
MySQL	5,469
PostgreSQL	4,097
Microsoft SQL Server	4,110
SQLite	3,248
MongoDB	3,016
Redis	2,508
Elasticsearch	1,954
MariaDB	1,709
Oracle	1,744

Platform Worked With Sized
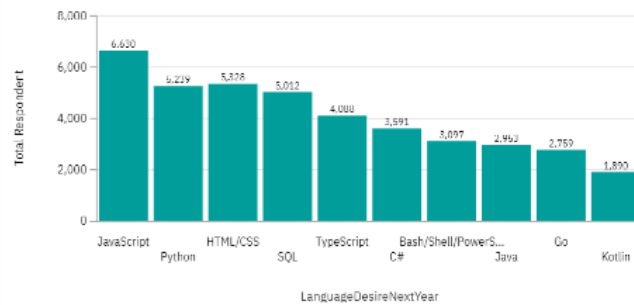
Respondent

215   5,881

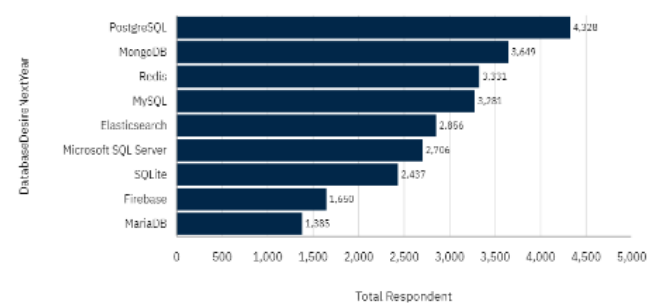### Web Frame Worked With hierarchy colored by Total Respondent
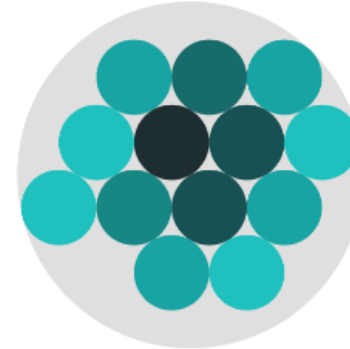
DASHBOARD #2

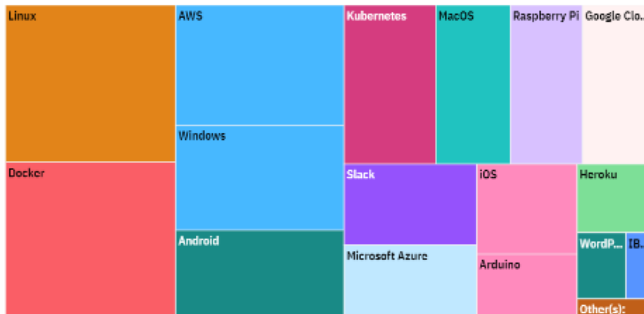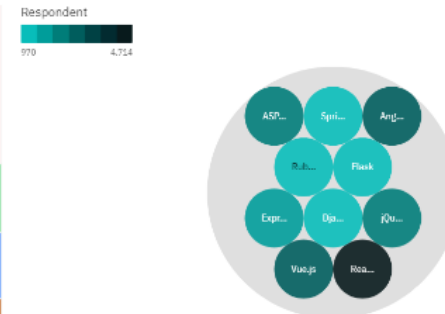## Future Technology Trend

Top 10 Language Desire Next Year

Top 10 Database Desire Next Year

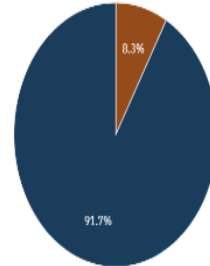### Respondent for PlatformDesireNextYear hierarchy

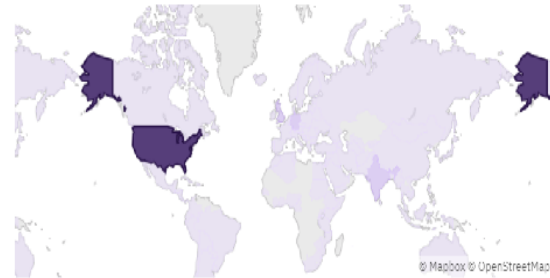### Top 10 Web Frame Desire Next Year

DASHBOARD #3
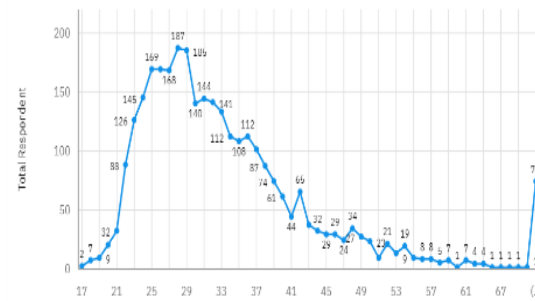
DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

- A majority of survey respondents were American men.
- A majority of survey respondents fall between the ages of 21-35, most of whom studied computer science and/or engineering during their undergraduate education.
  - Within this age range, respondents aged 24-28 showcased the highest count.
- Programming languages including Python and JavaScript are valuable for employers, both of which are within the top ten highest average salaries for all languages.

Implications

- Technologies such as Python, JavaScript, C, and Swift primarily use English keywords and syntax, explaining why most survey respondents are English-speaking/American.
- The age range 24-28 represents respondents transitioning from tertiary (and onward) education to the professional world, representing their desire to learn updated, simpler technologies on top of their previous programming knowledge to secure jobs.

CONCLUSION

In conclusion, professionals and employers in the field of data science prioritize the following factors when adopting emerging technologies:

- Programming languages with simple syntax and flexible readability, making them adaptable to various use cases.

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- Databases capable of managing all types of data—structured, semi-structured, and unstructured—while offering robust cloud integration with other services.

Furthermore, candidates nearing the completion of their education can leverage this report to align their technological skills with the most sought-after qualifications by employers, enhancing their professional profile.

APPENDIX

Respondents Classified by Undergraduate Major

Legend:

- Computer science, computer engineering, or software engineering
- Information systems, information technology, or system administration
- Another engineering discipline (ex. civil, electrical, mechanical)
- Web development or web design
- A natural science (ex. biology, chemistry, physics)
- Mathematics or statistics
- A business discipline (ex. accounting, finance, marketing)
- A social science (ex. anthropology, psychology, political science)
- A humanities discipline (ex. literature, history, philosophy)
- Others

Pie chart values: 65.2%, 7.4%, 7.1%, 3.8%, 3.8%, 3.5%, 2.3%, 2%, 2.9%

Additionally, candidates completing their education can use this report to align their technical skills with the most in-demand qualifications sought by employers, strengthening their credentials.
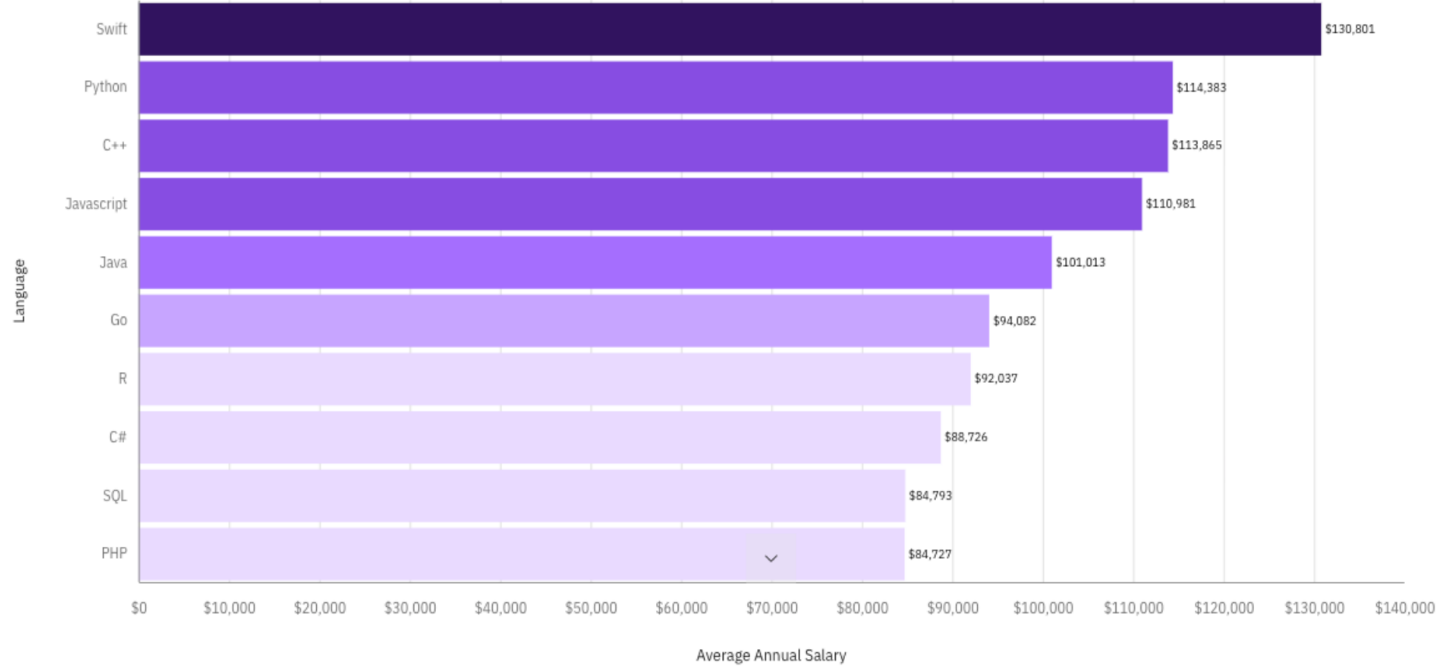
JOB POSTINGS

Number of Jobs by Language

Number of Jobs

10   13498

Language	Number of Jobs
C	13498
C++	13498
Java	2609
Python	1173
Oracle	784
JavaScript	355
C#	333
SQL Server	250
MongoDB	174
Scala	33
PostgreSQL	10

Number of Jobs
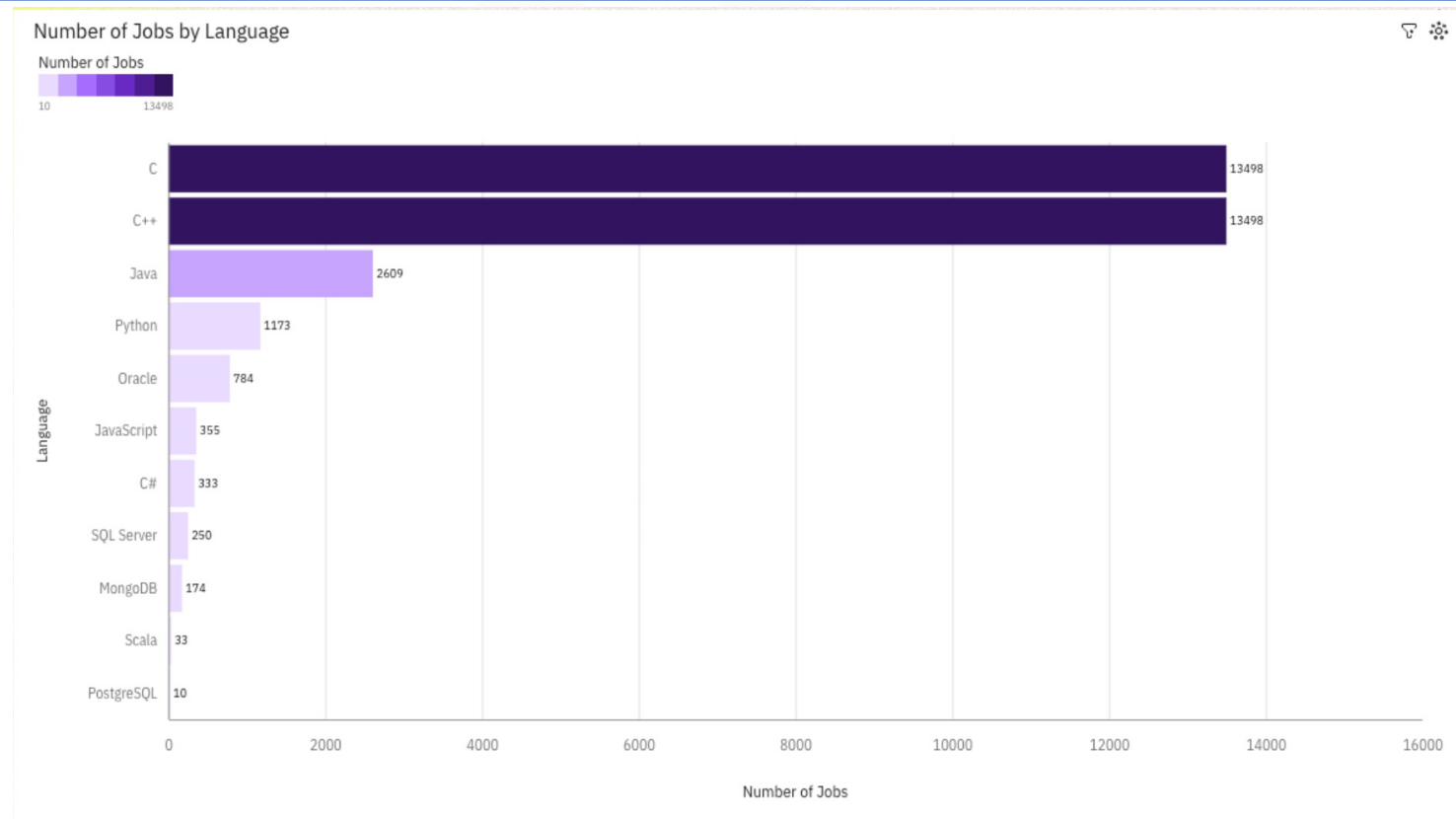
POPULAR LANGUAGES

Average Annual Salary by Language

Avg Annual Salary

$84,727 — $130,801

Language	Average Annual Salary
Swift	$130,801
Python	$114,383
C++	$113,865
Javascript	$110,981
Java	$101,013
Go	$94,082
R	$92,037
C#	$88,726
SQL	$84,793
PHP	$84,727

Average Annual Salary

References

1. https://www.kaggle.com/datasets/promptcloud/jobs-on-naukricom/data

2. https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m1_survey_data.csv