TECHNOLOGY TREND & STACK OVERFLOW 2019 SURVEY ANALYSIS

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IBM **D**eveloper

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OUTLINE

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EXECUTIVE SUMMARY

Relevant skills required for developers in the IT and Consulting business are ever changing and evolving. Identify the **future skill requirements and trends** can be beneficial to help current and aspiring developers, job seekers, students, educators, recruiters, employers, and policy makers to make informed data-driven decisions.

This presentation summarizes key findings from an analysis of data collected as part of the **2019 Stack Overflow Developer Survey**. The analysis yielded the following insights :

• Most popular **languages, databases, Platforms**, and **WebFrames** technology

• **Gender gap** among developers and technology divide in **countries**

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INTRODUCTION

The primary objective of the annual **Stack Overflow Developer 2019 survey** is to gather data regarding **technology usage and trends among developer.**

- In this analysis, a subset of the 2019 dataset was examined (present dataset: N = 11, 398; original dataset N ≈ 90,000).

- Audience: Developers (current and aspiring), IT professionals, educators, students, employers, and policy makers

METHODOLOGY

- **Data Collection** (Sources)
  - Stack overflow developer 2019 survey
  - GitHub job postings
  - Programming languages annual salary
- **Data Wrangling**
- **Data Exploration**
- **Data Cleaning**
- **Data Visualization**
  - Python matplotlib & turtle
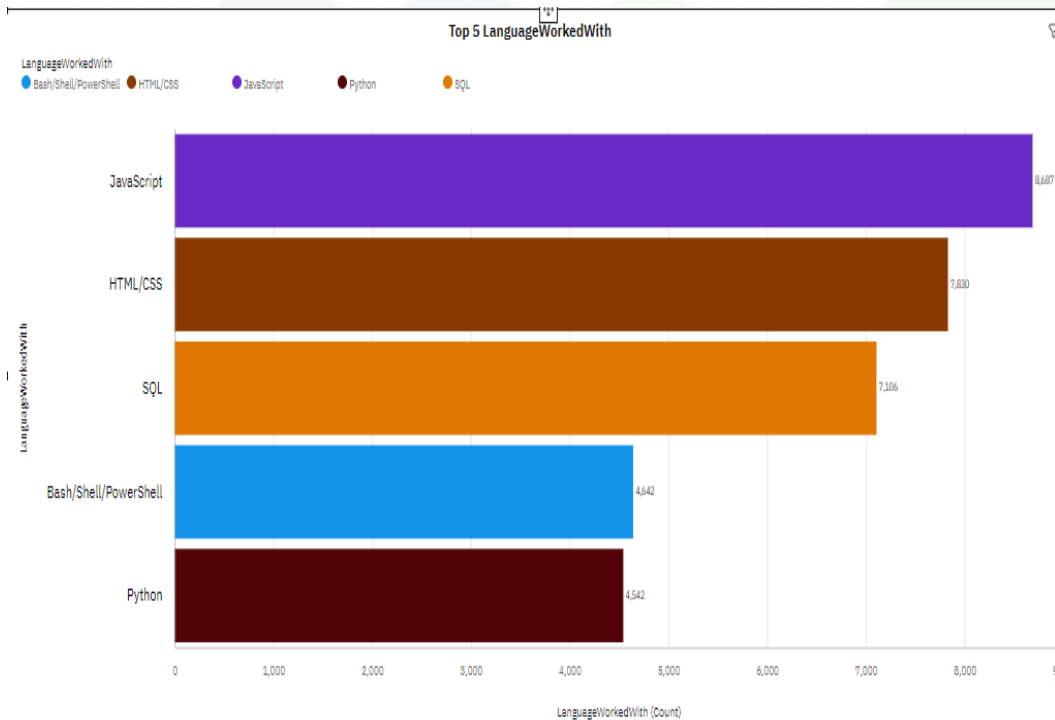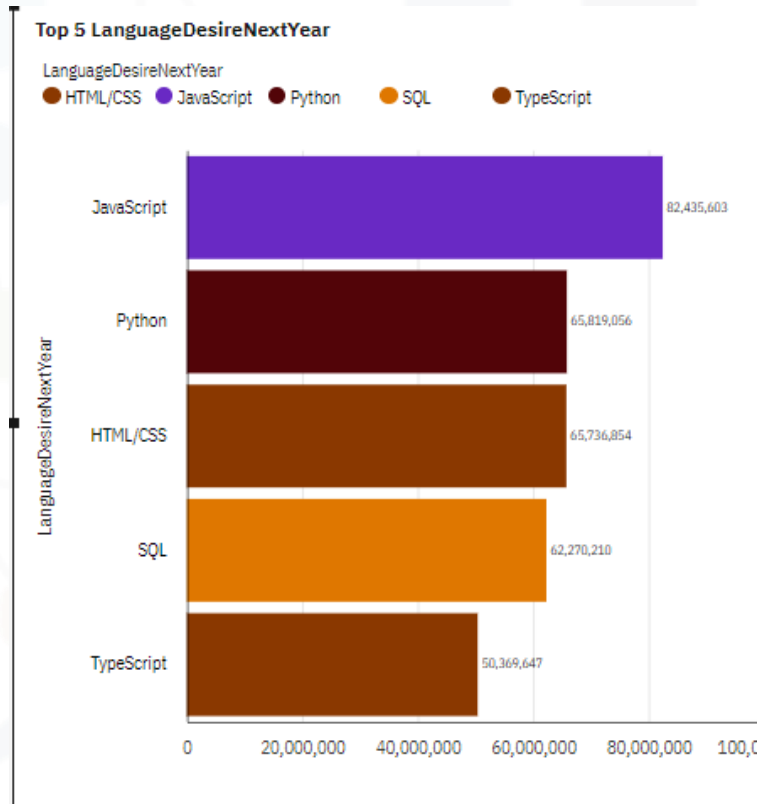 - IBM Cognos
- **Presentation**

RESULTS

CURRENT TEHNOLOGY TREND

FUTURE TECHNOLOGY TREND

DEMOGRAPHICS FACTORS

PROGRAMMING LANGUAGE TRENDS

Current Year

Top 5 LanguageWorkedWith

LanguageWorkedWith
● Bash/Shell/PowerShell ● HTML/CSS ● JavaScript ● Python ● SQL

Language	Count
JavaScript	8,687
HTML/CSS	7,830
SQL	7,106
Bash/Shell/PowerShell	4,642
Python	4,542

LanguageWorkedWith (Count)

Next Year

Top 5 LanguageDesireNextYear

LanguageDesireNextYear
● HTML/CSS ● JavaScript ● Python ● SQL ● TypeScript

Language	Count
JavaScript	82,435,603
Python	65,819,056
HTML/CSS	65,736,854
SQL	62,270,210
TypeScript	50,369,647

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PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS

Findings

- **Javascript, HTML/CSS**, and **SQL** are all time favorites

- Modern language such as **Python** and **TypeScript** are becoming popular

- Decreasing usages in Powershell/Bash and PHP
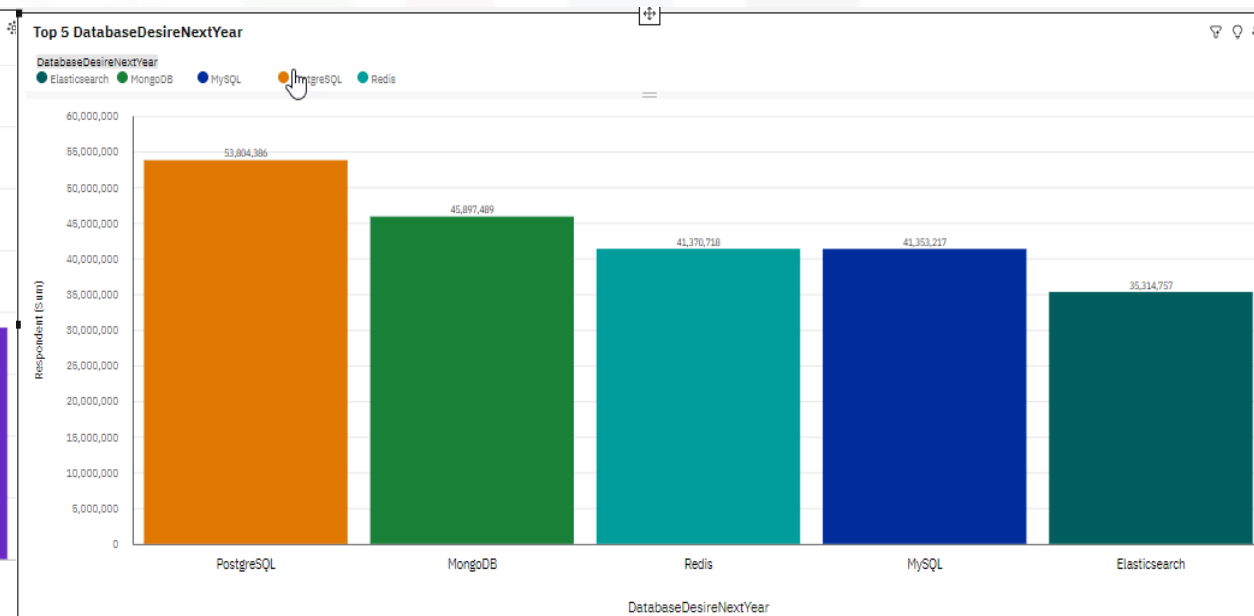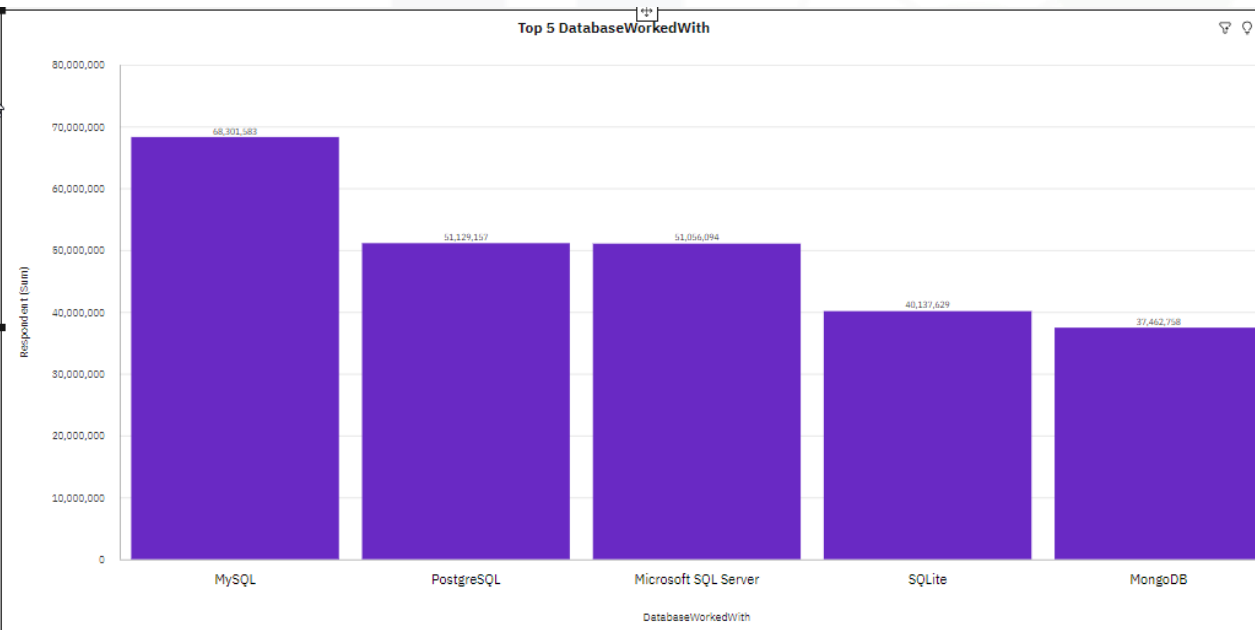
Implications

- **Web development** is in huge demand and thus any **WEB API** programming language such as **Python** and **TypeScript** become as the new trending technology

- **SQL** remains as the leading technology

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DATABASE TRENDS

Current Year

Next Year

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- **MySQL** is the most popular database

- **PostgreSQL** is gaining popularity over other SQL database programs

- **MongoDB** was popular and gaining interest

- Increasing interest in **Elasticsearch**.

Implications

- **Open-source** database programs are becoming popular

- **NoSQL** database programs are gaining popularity

- Current and aspiring data analysts should develop competence in **NoSQL** in addition to SQL database programs
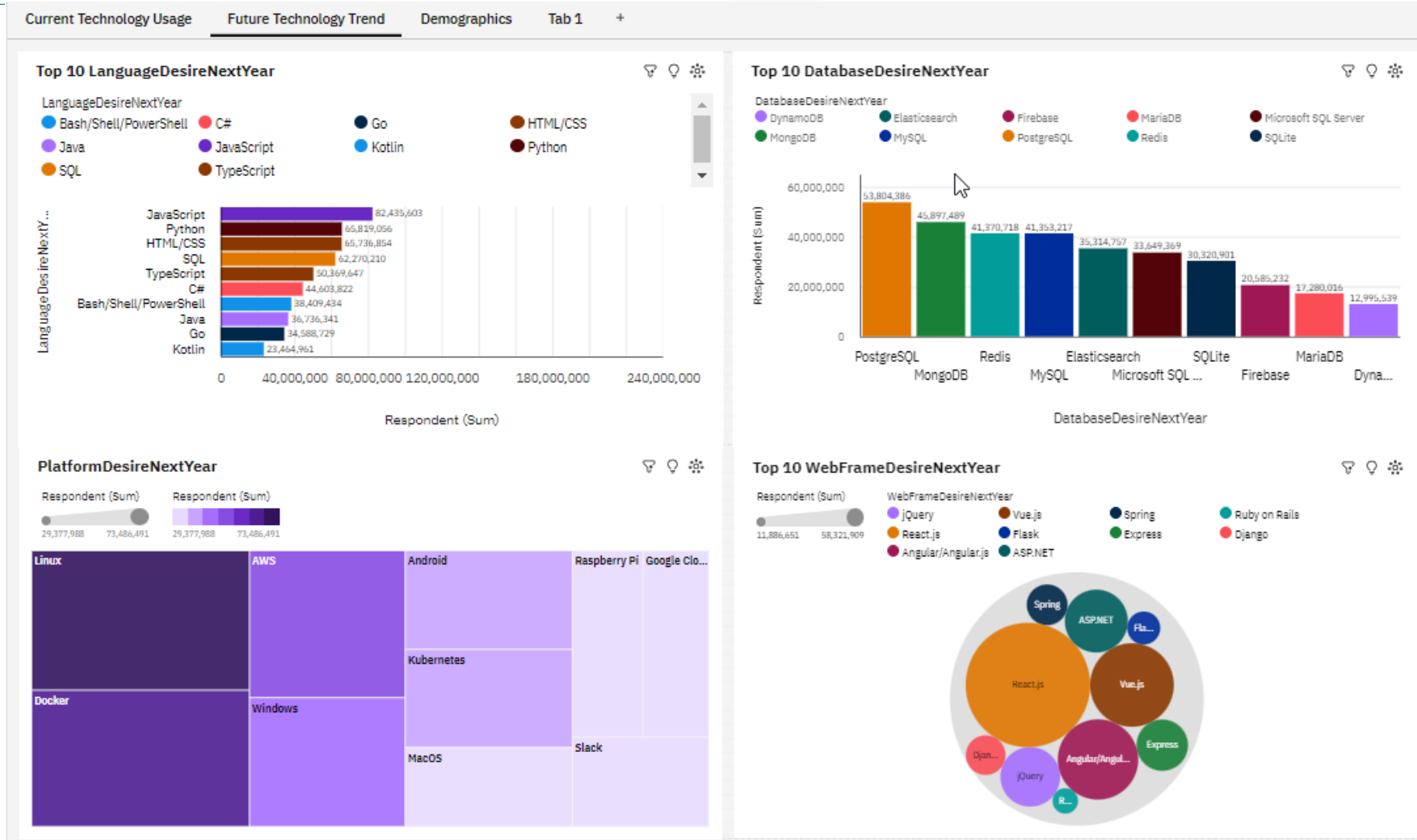
DASHBOARD

The following URL shows the image of the IBM Cognos Dashboard developed to visualize this analysis
(the permanent link is not sharable due to technical issues)

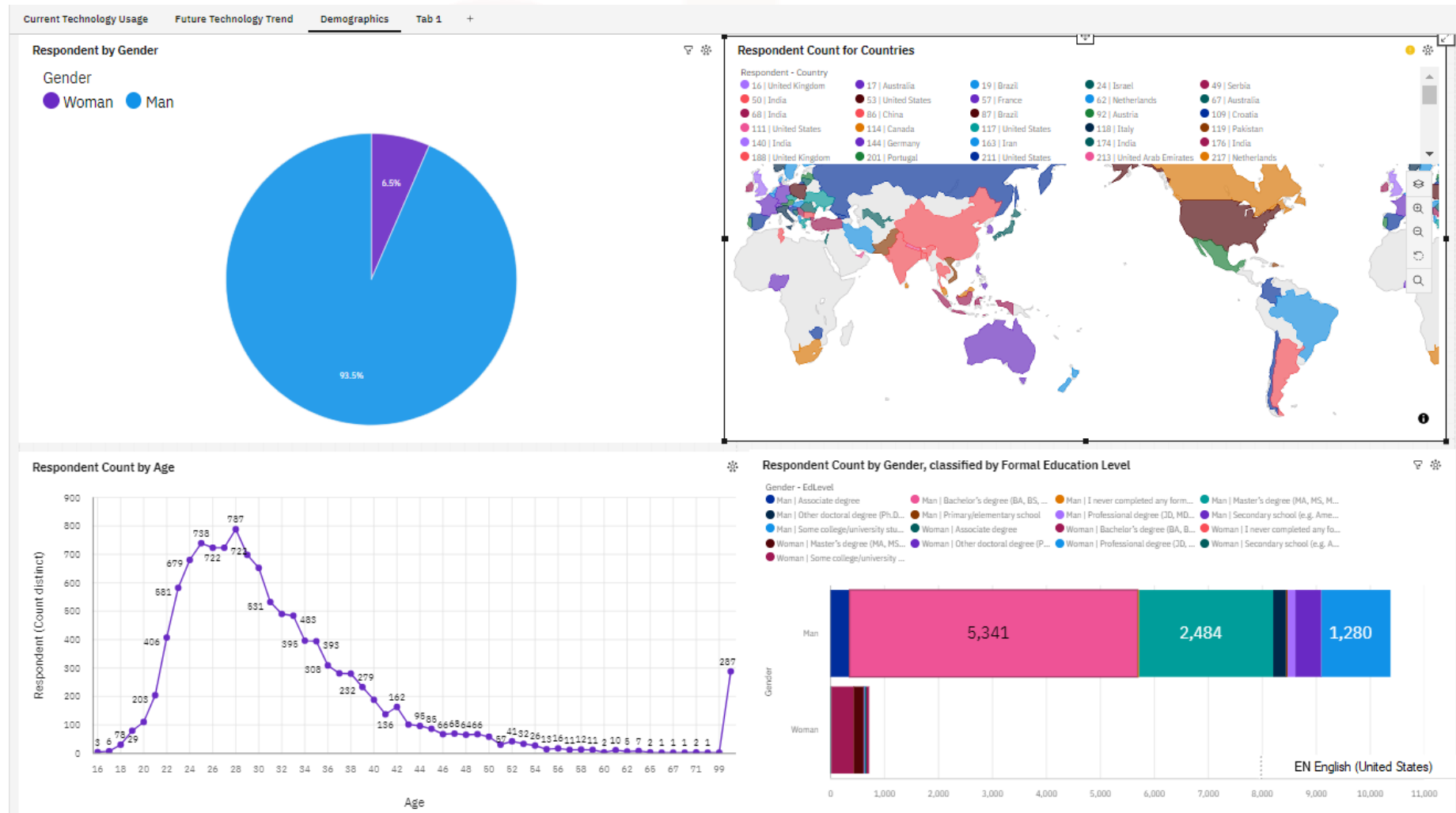https://github.com/shenghuisusansu/sharing-github/blob/IBM-Data-Analyst-Capstone-Project/IBM%20Cognos%20Dashboard.pdf

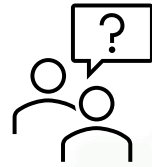# DASHBOARD – Current Technology Trend
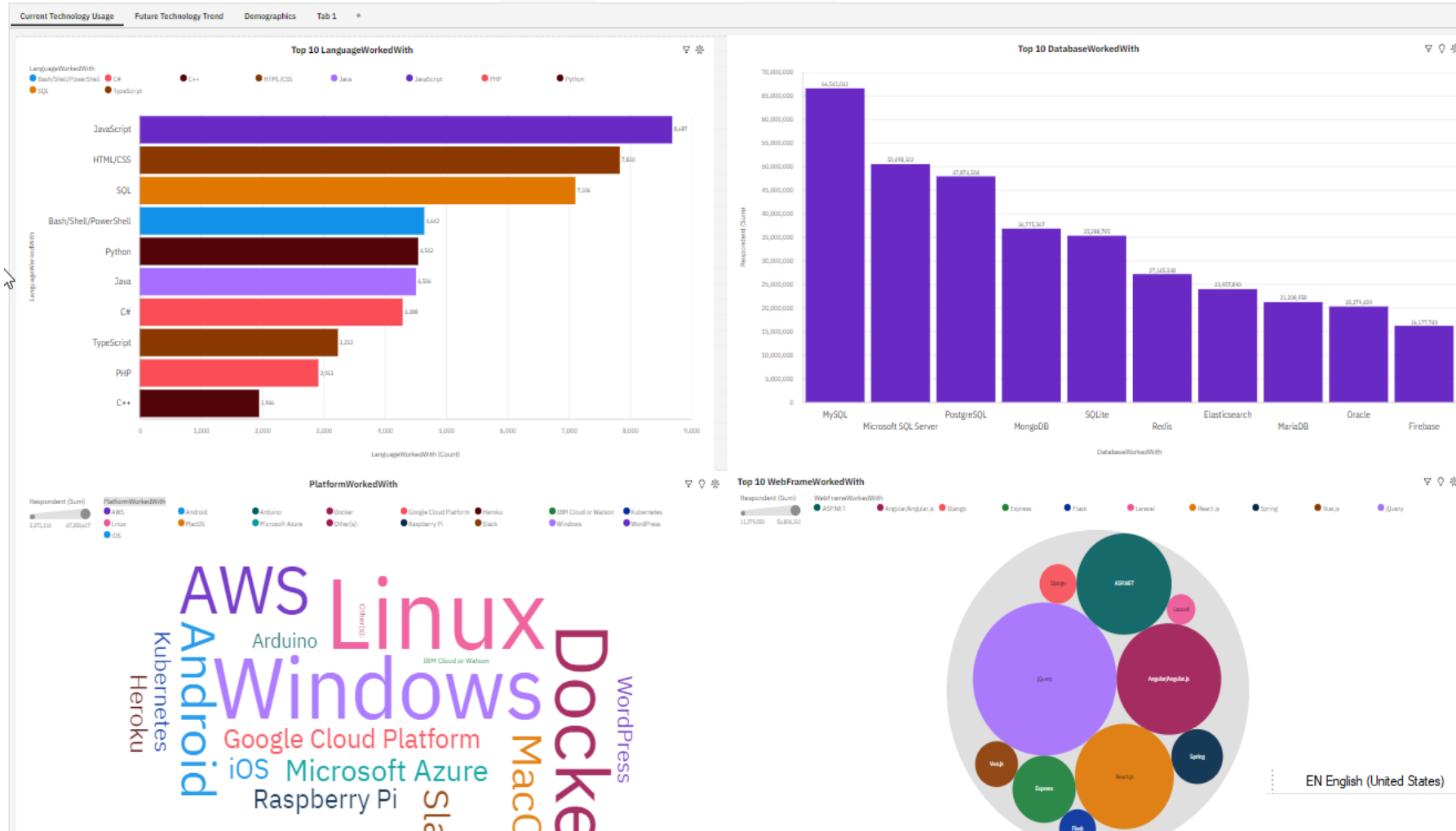
DASHBOARD — Future Technology Trend

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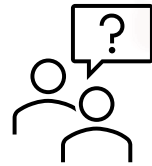
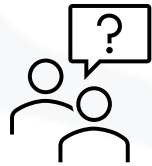SKILLS NETWORK

DASHBOARD – Demographics

DISCUSSION

? What **programming languages and database programs** are in top demand?
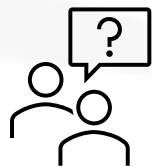
? Which technology should prospective **developers and data professionals** be learning?

? Which technology should our **education system** focus more to prepare students in upcoming years?

? Does higher **education** and degrees matter?

? What is the **developer demographics** like? Is there a gender representation gap?

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OVERALL FINDINGS & IMPLICATIONS

Findings

- High Demand Technology:
  - **Javascript, HTML/CSS, Typescript, Python** languages
  - **SQL, MySQL, PostgreSQL, MongosDB**, and **NoSQL** database programs
  - Web API such as **React.js** and **Vue.js**
- A severe **gender representation gap** (in favor of men)
- Technology divide between countries.

Implications

- **Web development** is still in high demand.
- Current and prospective developers may consider picking up **Python, Typescript, Javascript and HTML/CSS.**
- IT professional should continue to **enhance competence in both SQL and NoSQL** database programs.
- Businesses need to adapt to changing technology preferences, especially in terms of **talent acquisition and development**.
- Policy makers, educators, and organizations should work to **minimize the gender representation gap** in addition to the technology divide between **countries**.

CONCLUSION

Build job-ready skills for an in-demand career is critical. Based on the analysis of the subset data extracted from the **Overflow developer 2019 survey**, current and aspiring developers, students, educators, employers, and policy makers are suggested to consider building or gaining exposure of the following skills to keep pace with the changing technologies and remain competitive.

- **Javascript, HTML/CSS, Typescript, Python** languages;
- **MySQL, PostgreSQL, MongoDB**, and **NoSQL** database programs;
- **Open source Web API** such as **REST.js and Vue.js**

Policy makers, educators, and organizations should work to **minimize the gender representation gap** in addition to the technology divide between **countries**

APPENDIX

- **APPENDIX A**

Job Posting by Programming Language

- **APPENDIX B**
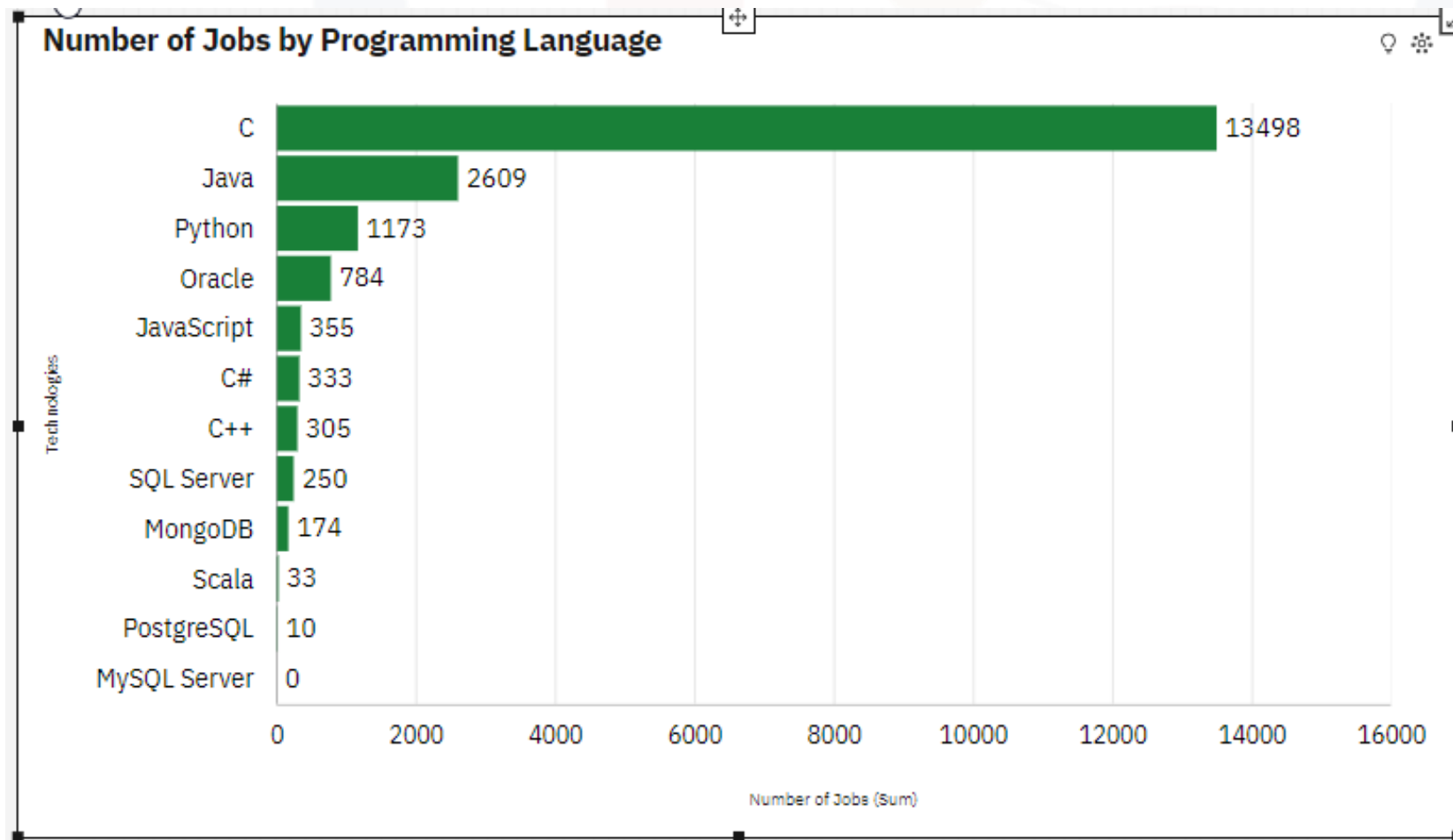
Popular Languages

- **APPENDIX C**

Resources
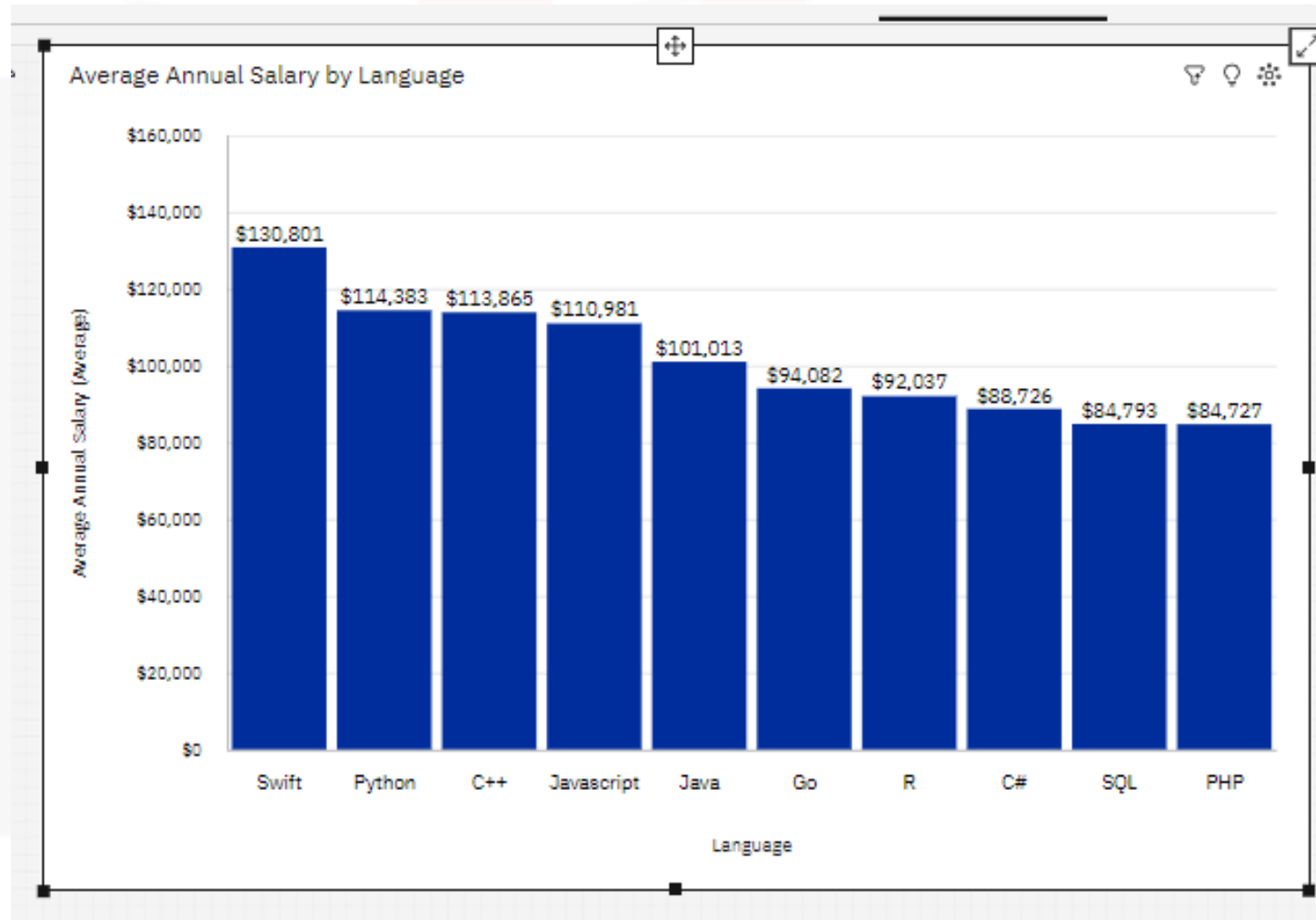
APPENDIX A
JOB POSTINGS by Programming Language

Number of Jobs by Programming Language

Technologies	Number of Jobs (Sum)
C	13498
Java	2609
Python	1173
Oracle	784
JavaScript	355
C#	333
C++	305
SQL Server	250
MongoDB	174
Scala	33
PostgreSQL	10
MySQL Server	0

APPENDIX B
POPULAR LANGUAGES

Average Annual Salary by Language

APPENDIX C
RESOURCES

- [GitHub](#) job listing

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

- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/%E2%86%AAIBM-DA0321EN-SkillsNetwork/labs/datasets/Programming_Languages.html

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

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