IBM Data Analyst Capstone Project

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OUTLINE

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EXECUTIVE SUMMARY

- We are not currently seeing a change in the tech landscape:
  - Popular programming language combinations remain the same (see slides 6 & 7, Programming Language Trends)
  - Database popularity remains the same (see slides 8 & 9, Database Trends)
  - Platform popularity remains the same (see slides 11 & 12, Dashboard)
  - Web frame popularity remains the same (see slides 11 & 12, Dashboard)

INTRODUCTION

- **Purpose**:

This presentation aims to answer the following question:

Are we currently seeing a shift in the tech landscape and therefore should we alter our business strategy accordingly.

- **Target Audience:**

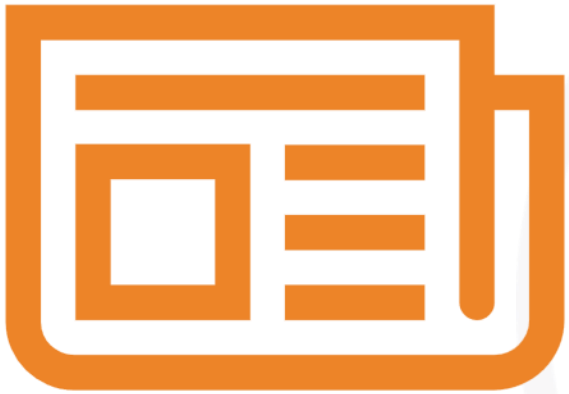
These findings will be presented to various stakeholders in the organization to allow for informed decision making.

- **Value:**

Using the latest Stack Overflow Developer Survey dataset, we will look at **trends in programming languages, databases, platforms and frameworks**

  - Focus on technologies professionals currently use and those they aim to learn in the future
  - We will extract insights that highlight emerging patterns and shifts in the tech landscape

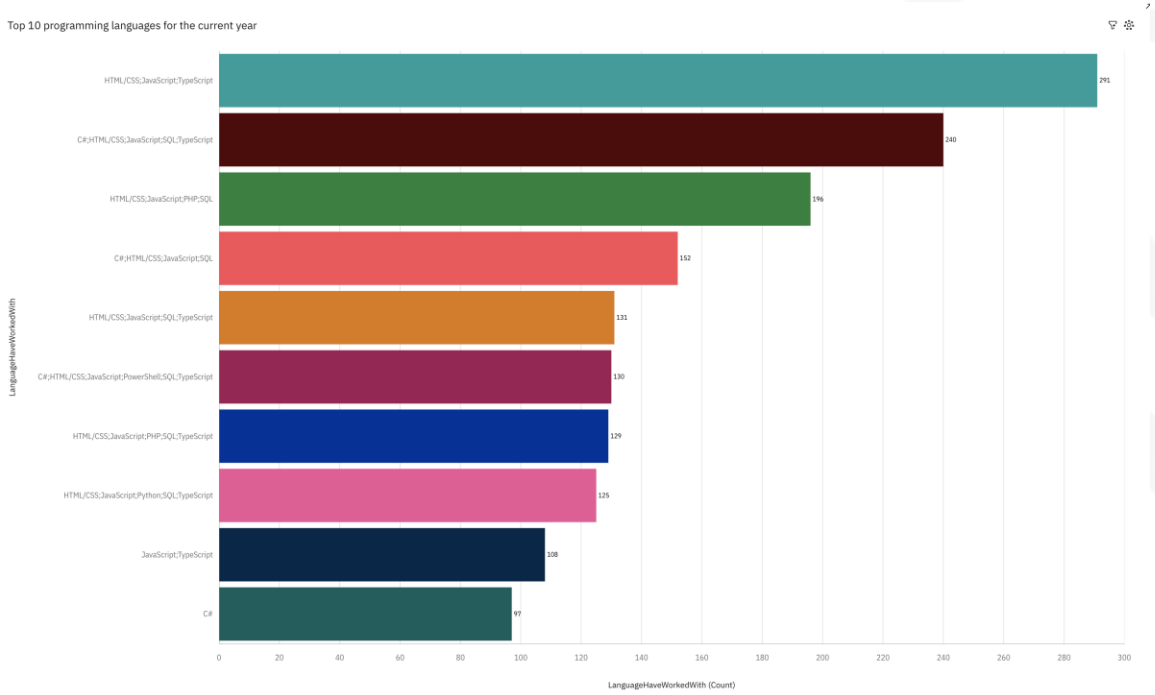
METHODOLOGY



- Data source: **Stack Overflow Developer Survey**
  - Includes responses from developers worldwide (*see slide 14: Discussion for a more in-dept analysis of the demographics of the dataset*)
  - Details the technologies they currently work with/those they wish to work with
- Collection methods: **API access and web scraping techniques**
- **Key data wrangling steps**
  - Handling duplicates
  - Identifying and addressing missing values
  - Normalizing the data

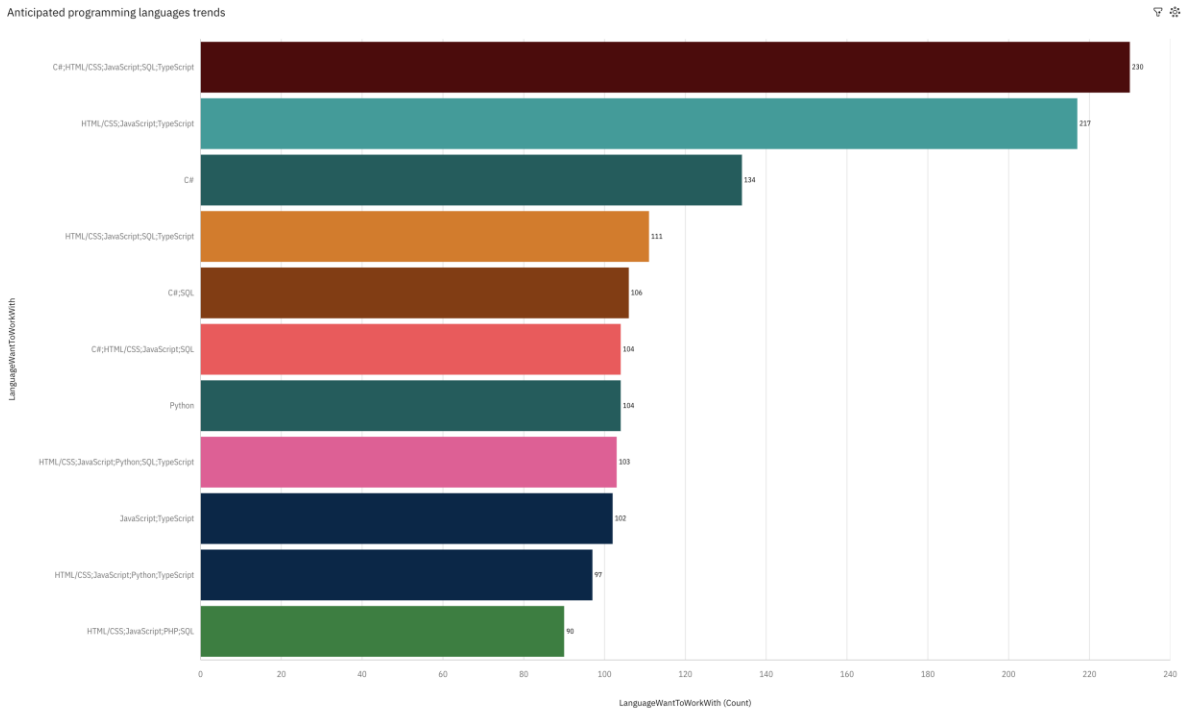
PROGRAMMING LANGUAGE TRENDS

Current Year: top 10 programming languages



Top programming language: **HTML/CSS; JavaScript: TypeScript**

Next Year: anticipated programming languages trends



Top programming language:
C#;HTML/CSS;JavaScript;SQL:TypeScript

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

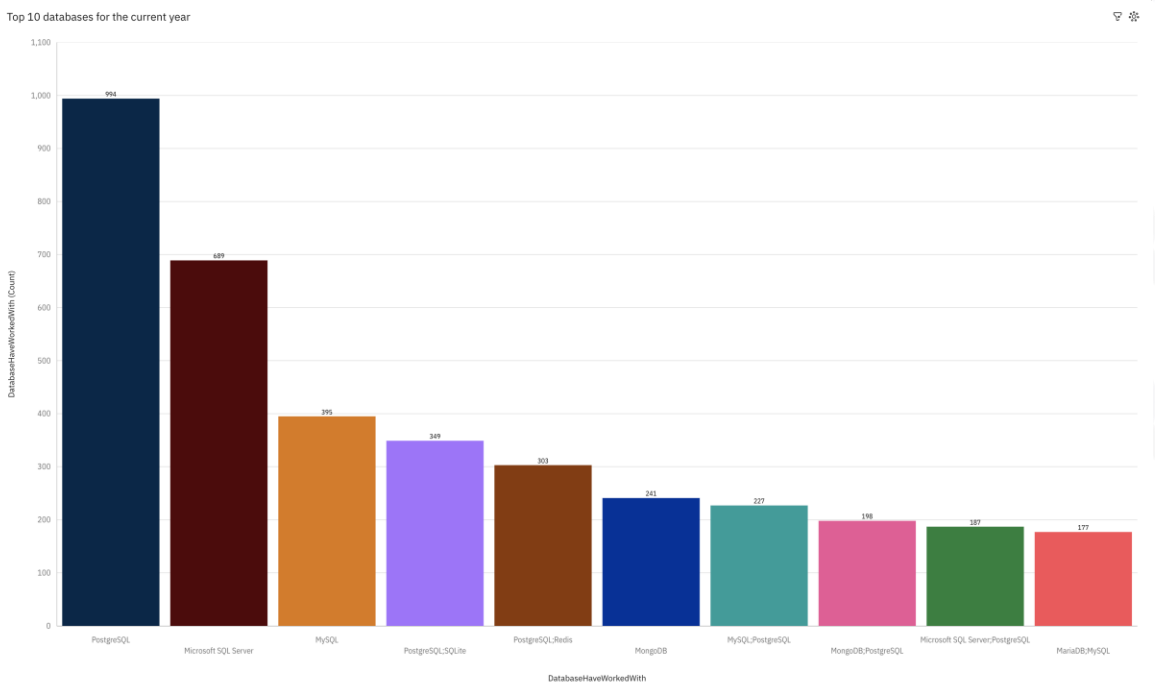
- The current most popular language combination is **HTML/CSS; JavaScript: TypeScript**
- This slips to second place in the next year, and **C#;HTML/CSS;JavaScript;SQL:TypeScript** becomes the anticipated most popular language combination
- **291** respondents gave HTML/CSS; JavaScript: TypeScript as their languages have worked with in the current year compared to **217** in the subsequent year
- **230** respondents gave C#;HTML/CSS;JavaScript;SQL:TypeScript as their most popular language combination in the subsequent year, compared with **240** in the current year

Implications

- The top two programming language combinations remain the same over the timeframe (albeit their ranking changes), meaning that we are not currently seeing a huge change in the tech landscape
- This doesn't correlate with the findings from our API data, where our most popular programming language, in terms of number of jobs posted, is C (see appendix 1).

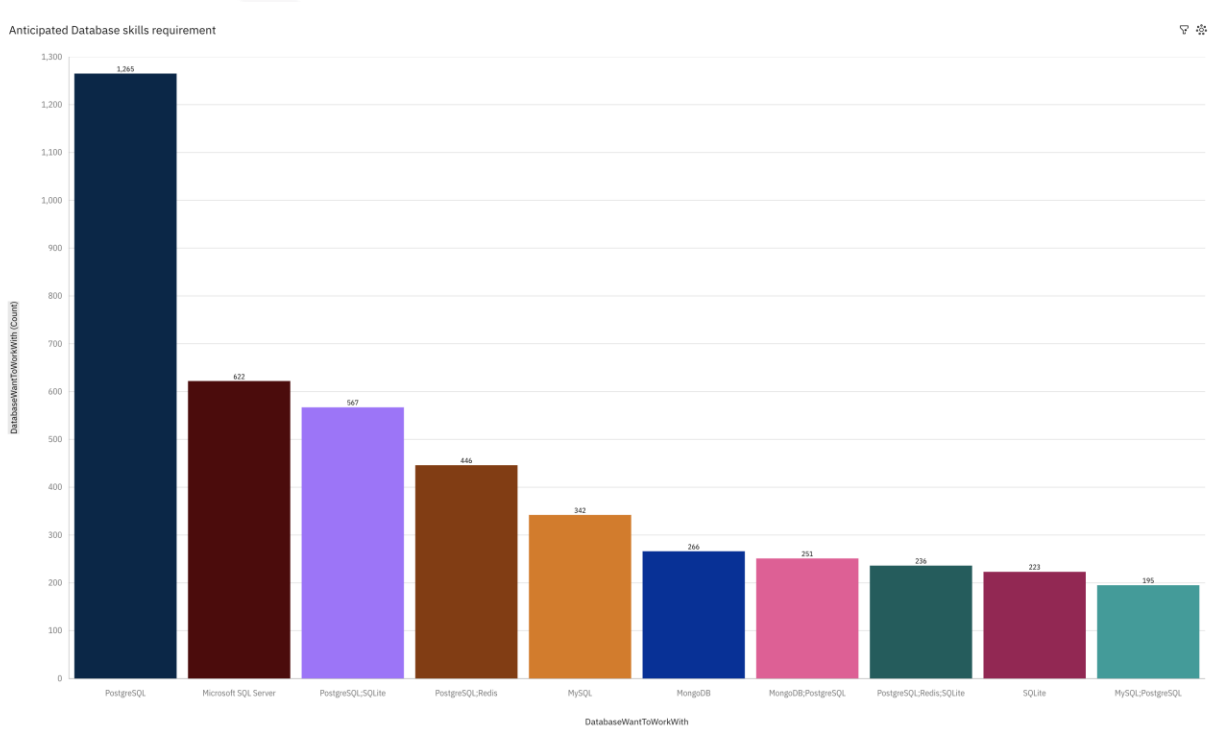
DATABASE TRENDS

Current Year: top 10 databases in use



Top database: **PostgreSQL**

Next Year: anticipated future demand for database skills



Top database: **PostgreSQL**

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- For both years, the top database identified is **PostgreSQL**
- **994** respondents gave PostgreSQL as their database of choice in the current year, compared to **1,265** in the next year
- The top 5 databases of choice in the current year are:
  - PostgreSQL
  - Microsoft SQL Server
  - MySQL
  - PostgreSQL;SQLite
  - PostgreSQL;Redis

  All 5 databases remain in the top 5 databases of choice in subsequent years (albeit they are reported in a slighly different order)

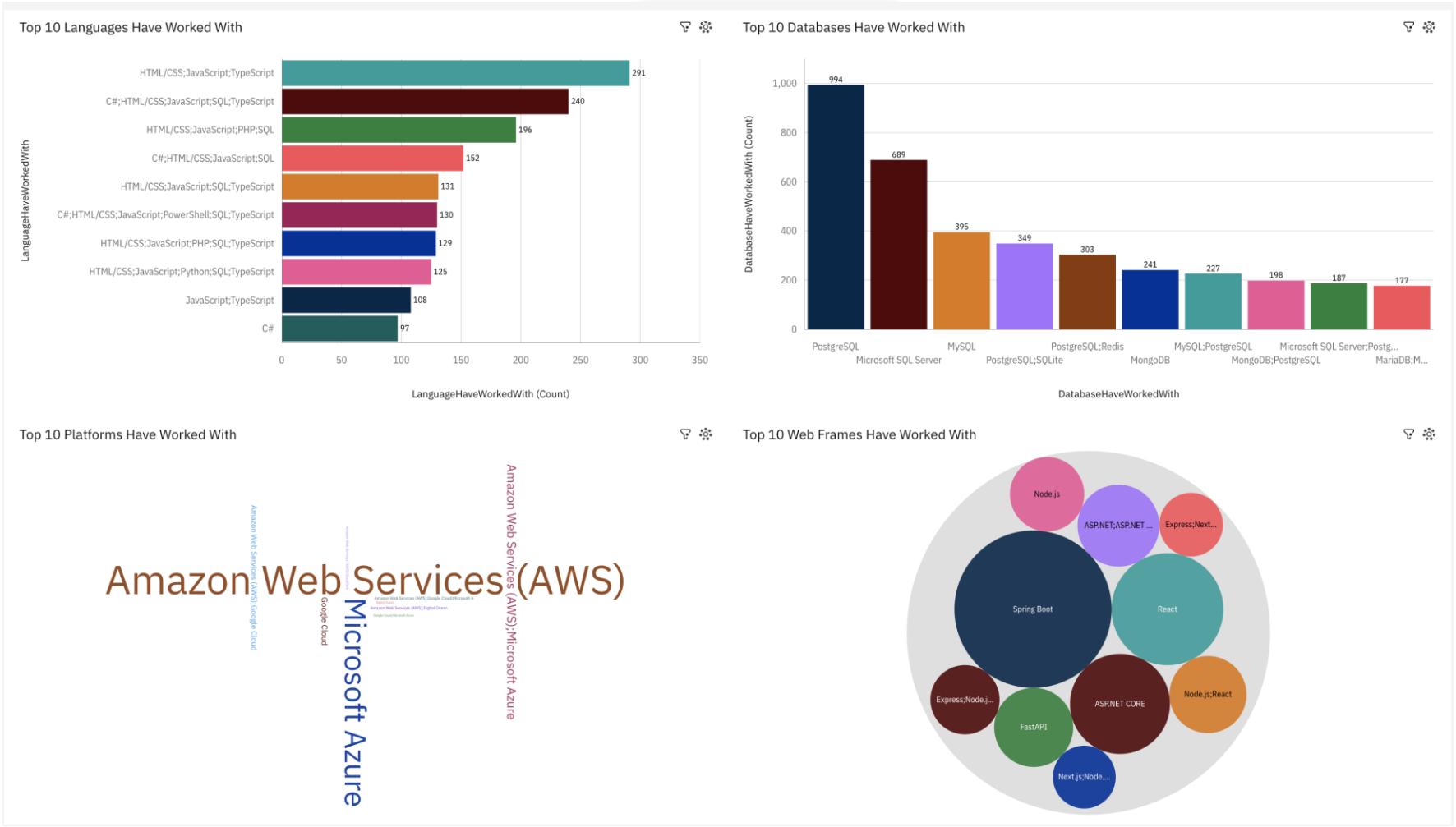
Implications

- **The top five databases of choice remain the same over the timeframe (albeit their ranking changes), meaning that we are not currently seeing a huge change in the tech landscape**

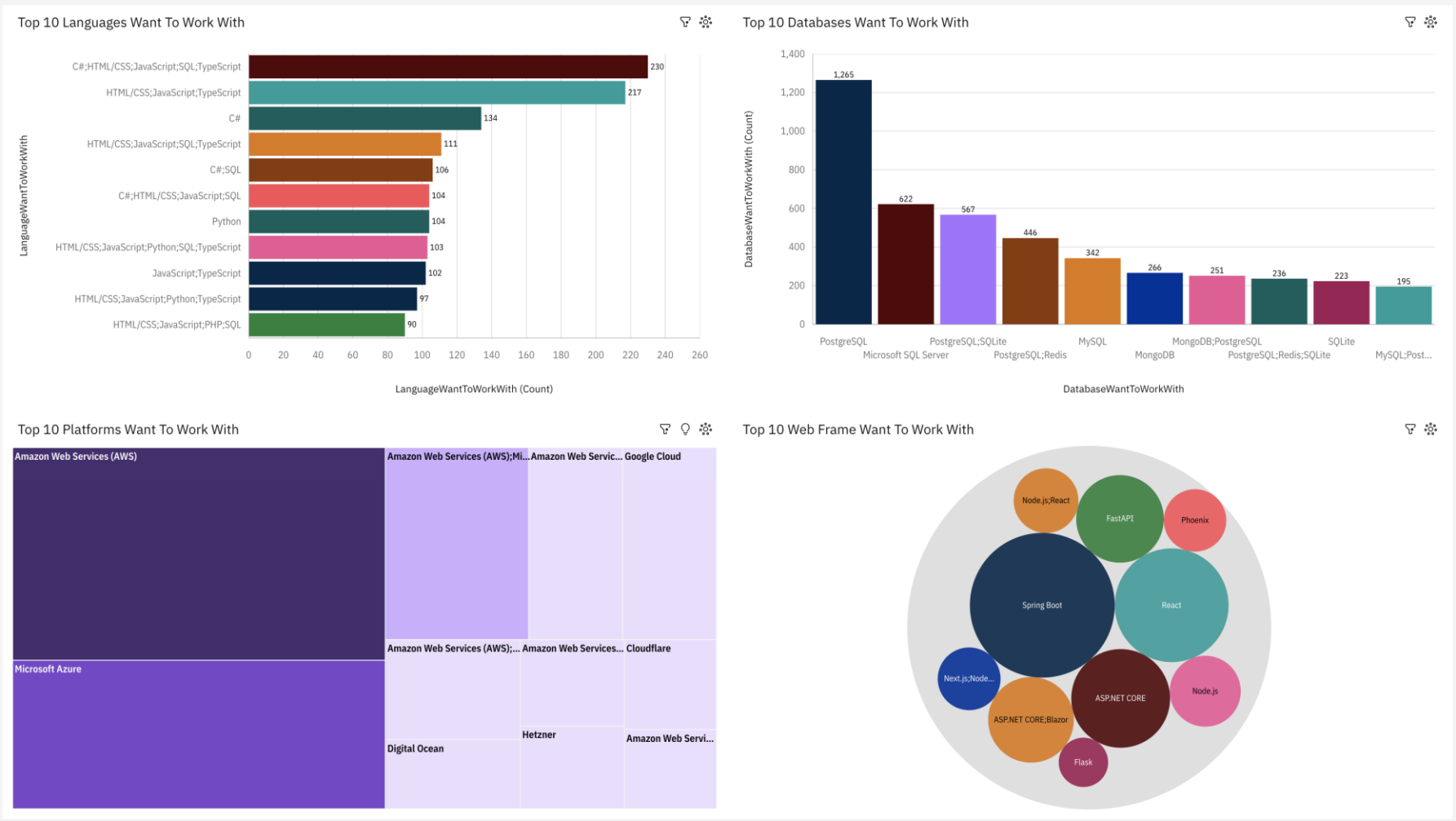
DASHBOARD

My dashboard, summarizing the data, is presented in the following slides

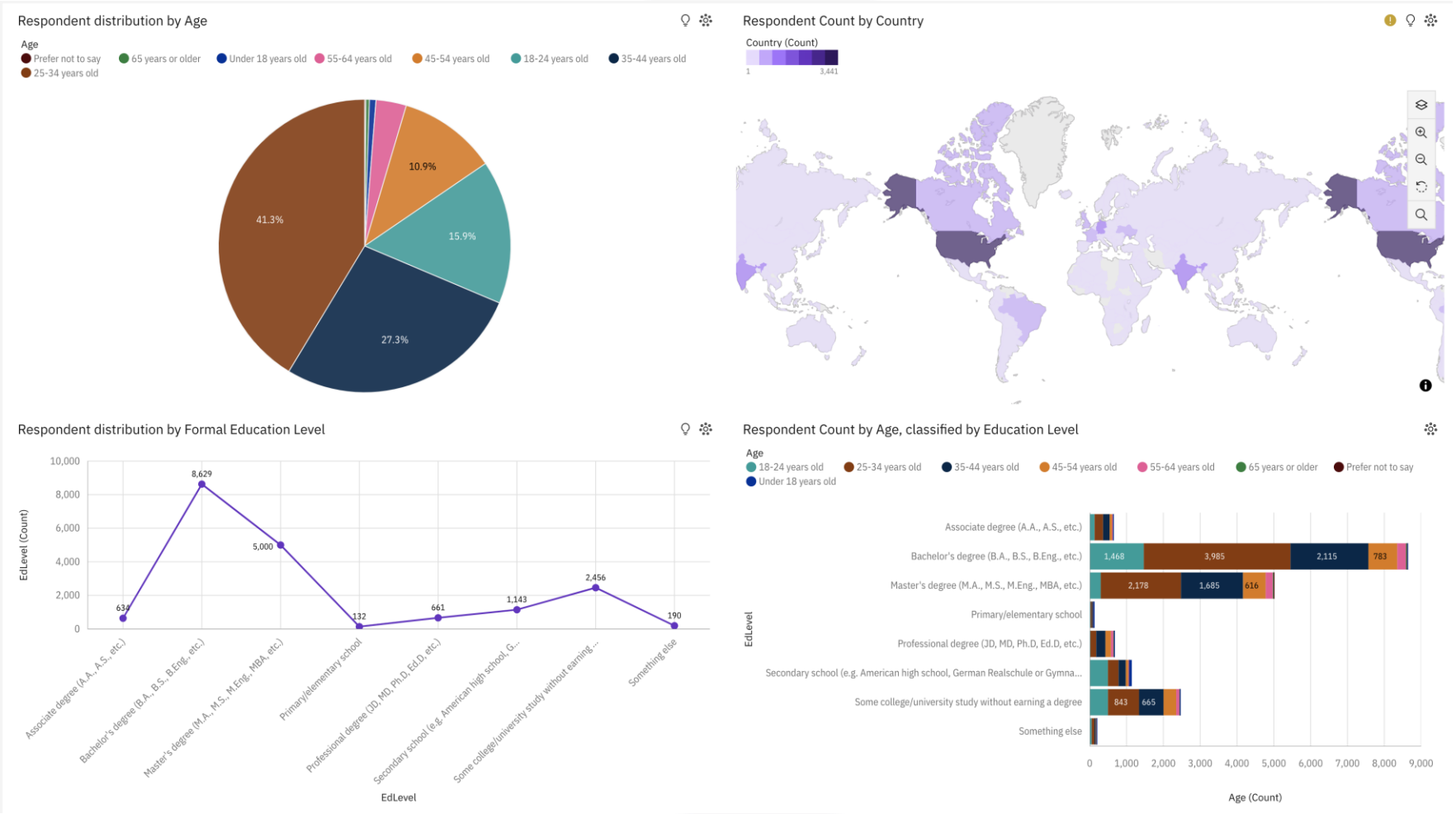
DASHBOARD TAB 1: Current Technology Usage



DASHBOARD TAB 2: Future Technology Trends



DASHBOARD TAB 3: Demographics



DISCUSSION: insights derived from the dashboard

Languages and databases have already been discussed so here I will focus on platforms, webframes and demographics

Platform: **AWS** is the current and future top platform to use

Webframe: **Spring Boot** is the current and future top Webframe to use

Demographics:

- **41.3%** of respondents are 25-34 years old
- The country with the highest number of respondents is the **USA** (3,441 respondents)
- **8,629** respondents are educated to Batchelor's degree level
- Of those 8,629 respondents, **46%** are 25-34 years old

OVERALL FINDINGS & IMPLICATIONS

Significant results from the stack overflow developer survey:

- The top 2 programming language combinations are:
  - HTML/CSS; JavaScript: TypeScript
  - C#;HTML/CSS;JavaScript;SQL:TypeScript
- The top database is PostgreSQL
- The top platform is AWS
- The top webframe is Spring Boot

Other significant findings:

- Job postings in the US tend to request C as a programming language (see appendix 1)
- Annual Salary is dependent on programming language and is in the range of $84,727-$130,801 (see appendix 2)

Broader implications

- The top languages / databases / platforms / webframes do not change from current year to next, suggesting that **we are not seeing a shift in the technology landscape**

CONCLUSION

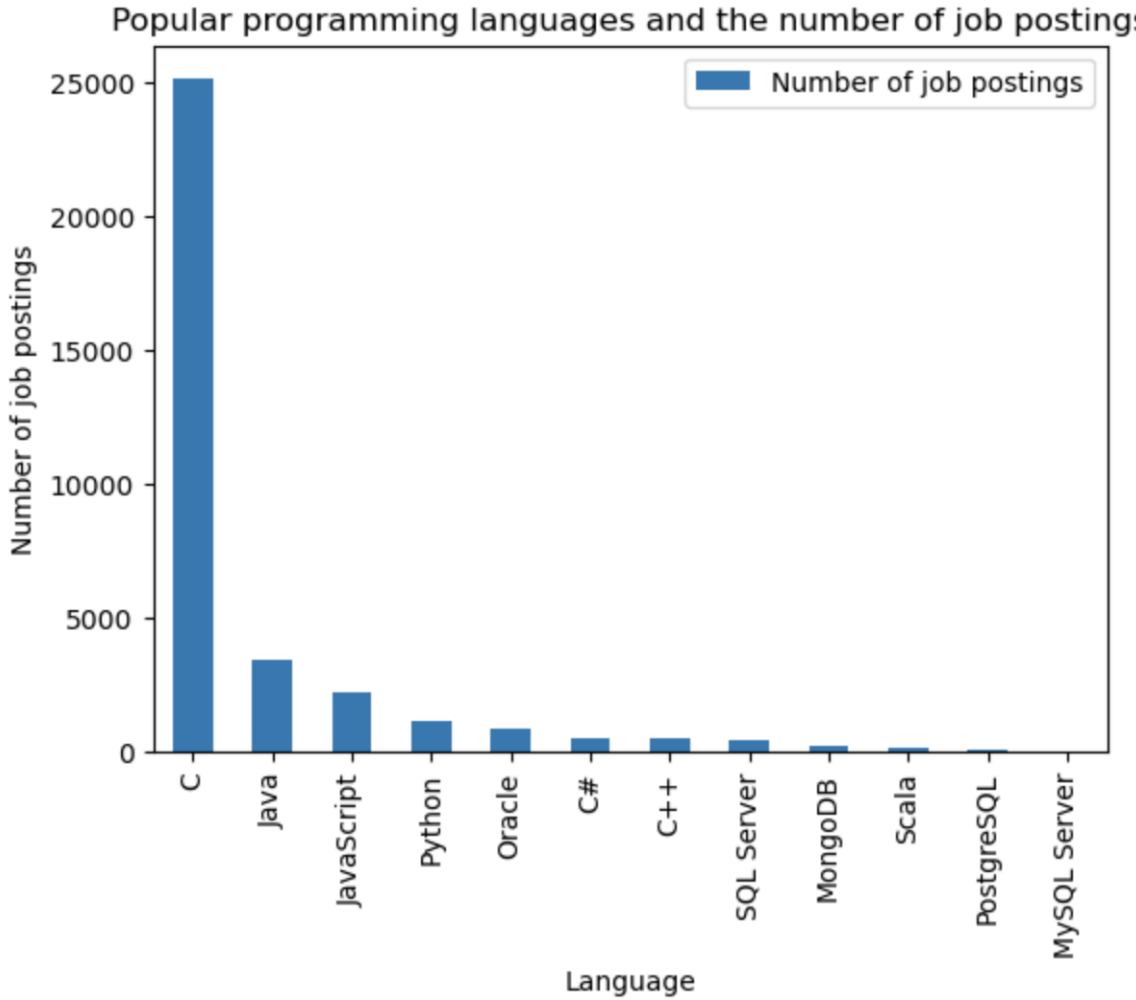
- The top languages / databases / platforms / webframes do not change from current year to next, suggesting that **we are not seeing a shift in the technology landscape**
- The data used has a large number of respondents from USA in the age bracket of 24-35 years old. **Further insights** could be gained from studying the data from other countries and age ranges (e.g. late stage career respondents)

APPENDIX

Appendix 1: JOB POSTINGS

In Module 1: lab 2

Data: over 34,000 US-based job postings



Appendix 2: POPULAR LANGUAGES

In Module 1: lab 4

Popular programming languages and their average annual salary.