Data Analysis of Technology Trends

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August 11, 2024

IBM Developer

SKILLS NETWORK

OUTLINE

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

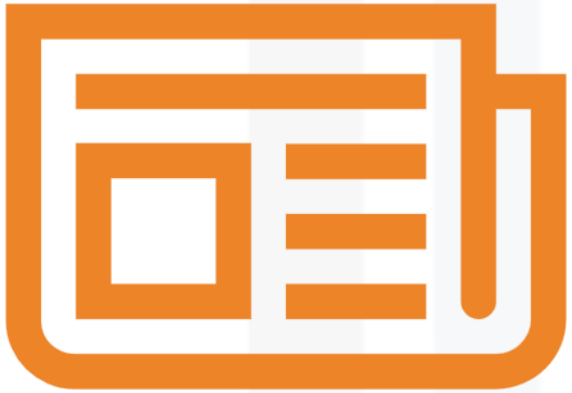
EXECUTIVE SUMMARY

- JavaScript, HTML/CSS, and SQL maintain strong current use and will likely stay relevant
- Python and TypeScript are gaining future importance, with Python's demand rising and TypeScript showing increased interest
- Bash/Shell/PowerShell and C++ are currently used but are expected to see decreased future interest
- PostgreSQL is becoming the most desired, while MongoDB and Redis are also rising in popularity
- MySQL and Microsoft SQL Server are seeing a decline in future interest

INTRODUCTION

- Create three dashboards using IBM Cognos Analytics, visualizing data from the Stack Overflow 2019 Developer Survey dataset.
- Dataset:
  - ✓ m5_survey_data_demographics.csv
  - ✓ m5_survey_data_technologies_normalised.csv
- Dashboards:
  - ✓ Current Technology Usage
  - ✓ Future Technology Trend
  - ✓ Demographics
- Finding results and implications

METHODOLOGY



1. **Upload Dataset**
   - ✓ m5_survey_data_demographics.csv
   - ✓ m5_survey_data_technologies_normalised.csv
2. **Create Dashboards**
   - ✓ Current Technology Usage
   - ✓ Future Technology Trend
   - ✓ Demographics
3. **Dashboard Current Technology Usage**
   - ✓ Top 10 LanguageWorkedWithOutliers
   - ✓ Top 10 DatabaseWorkedWith
   - ✓ PlatformWorkedWith
   - ✓ Top 10 WebFrameWorkedWith
4. **Dashboard Future Technology Trend**
   - ✓ Top 10 LanguageDesireNextYearRelationship
   - ✓ Top 10 DatabaseDesireNextYearComparison
   - ✓ PlatformDesireNextYear
   - ✓ Top 10 WebFrameDesireNextYear
5. **Dashboard Demographics**
   - ✓ Respondent classified by Gender
   - ✓ Respondent Count for Countries
   - ✓ Respondent Count by Age
   - ✓ Respondent Count by Gender, classified by Formal Education Level
6. **Results and Discussion**

RESULTS

Findings

- JavaScript, HTML/CSS, and SQL maintain strong current use and will likely stay relevant
- Python and TypeScript are gaining future importance, with Python's demand rising and TypeScript showing increased interest
- Bash/Shell/PowerShell and C++ are currently used but are expected to see decreased future interest
- PostgreSQL is becoming the most desired, while MongoDB and Redis are also rising in popularity
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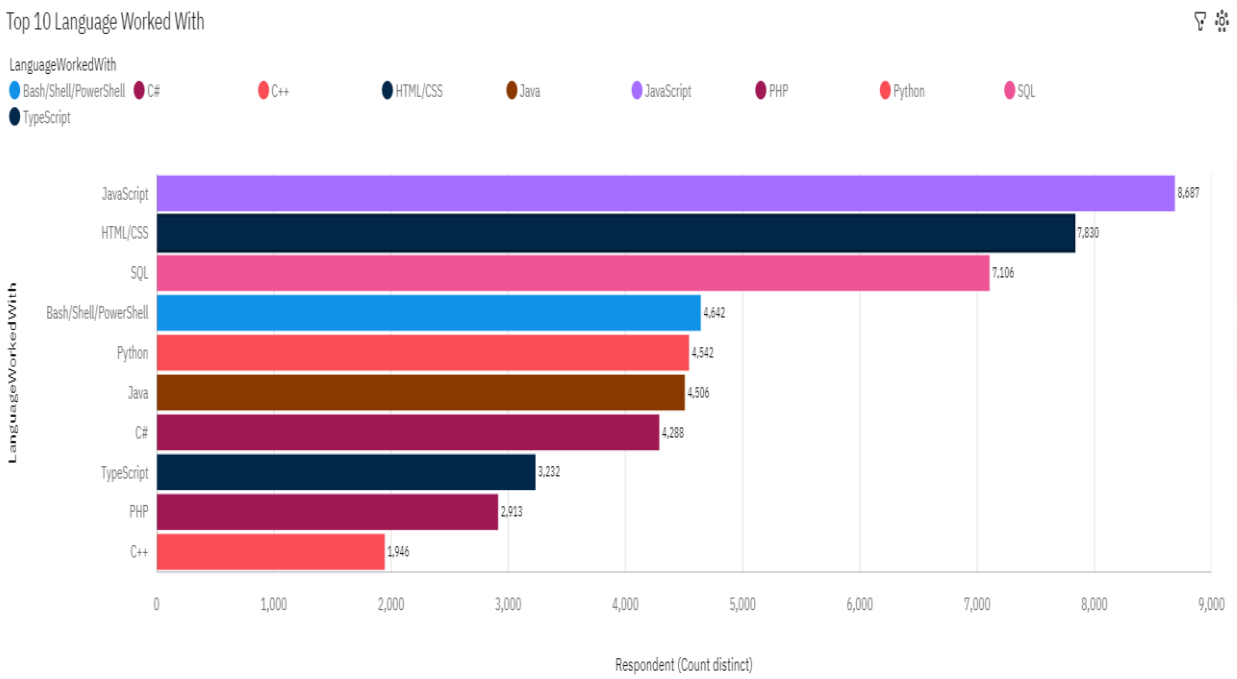
Implications

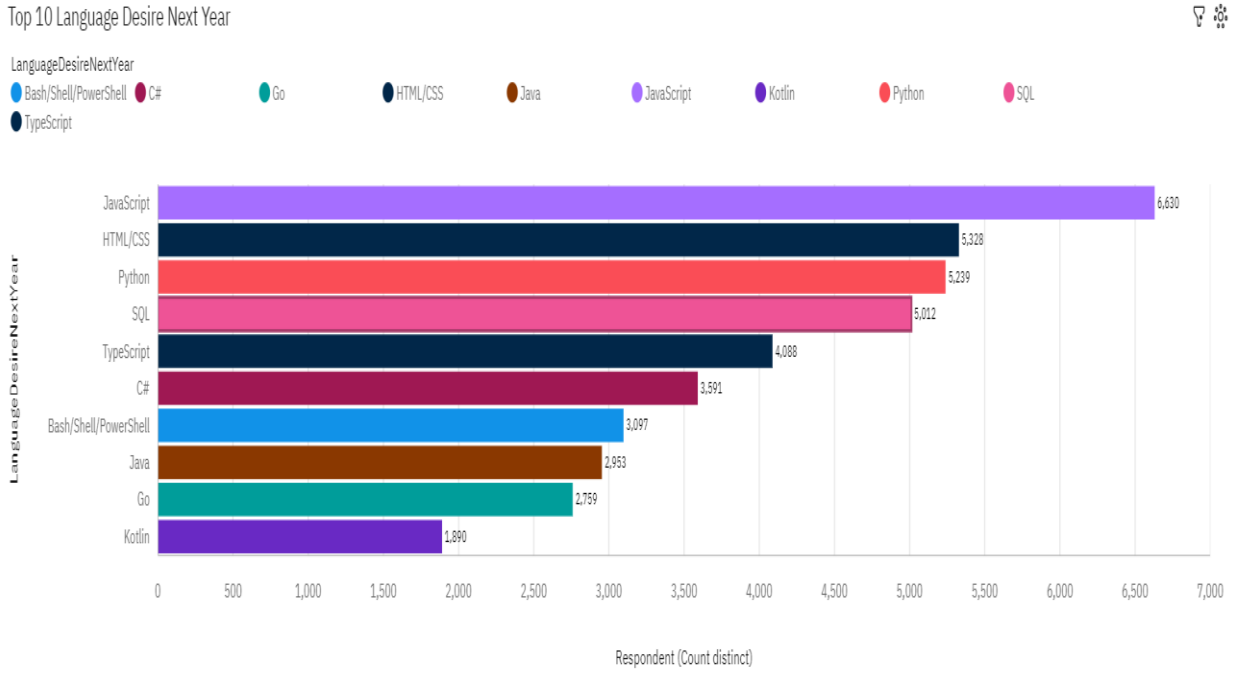
- Focus on core technologies like JavaScript, HTML/CSS, and SQL while upskilling in Python and TypeScript for future relevance
- Embrace open-source databases like PostgreSQL and MongoDB, and consider high-performance solutions like Redis
- Adapt to cloud-native tools and trends as they shape the industry

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



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SKILLS NETWORK

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

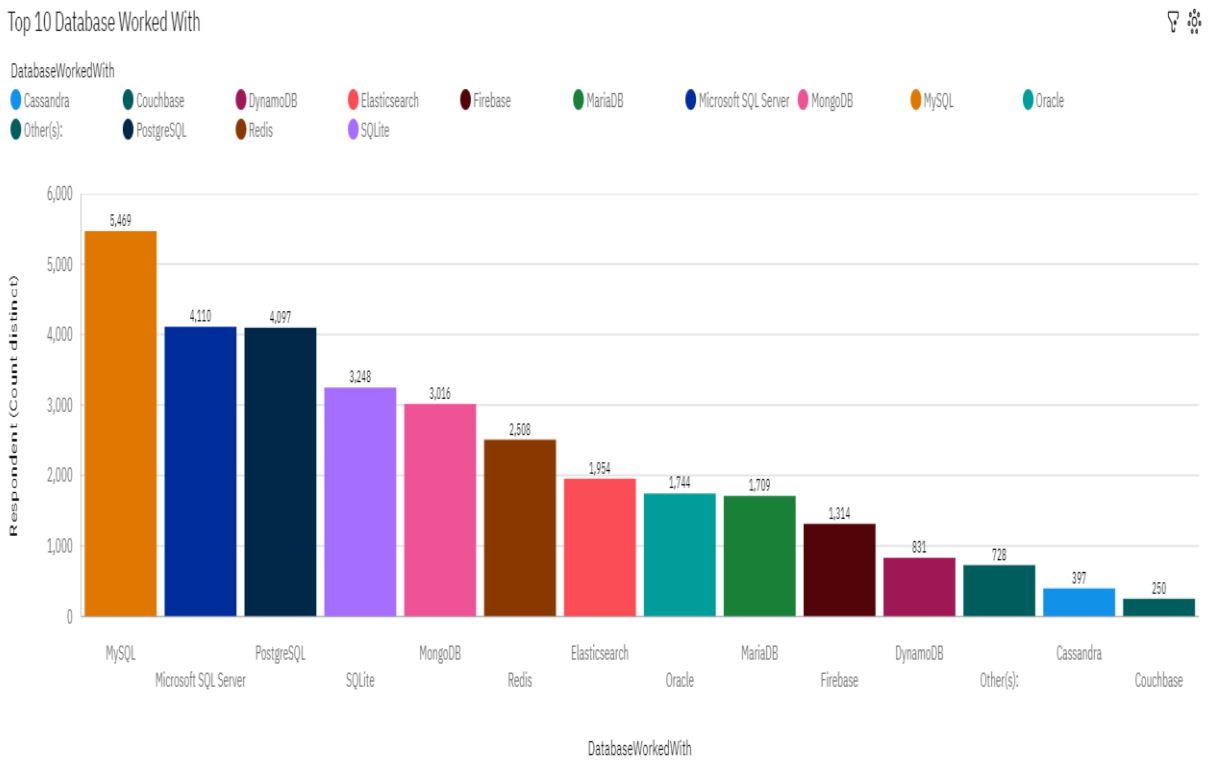
- JavaScript, HTML/CSS, and SQL are highly popular, with strong current usage and continued demand for the future
- Python is in high demand for the future, ranking 3rd in desire but 5th in current use, indicating its growing importance
- TypeScript shows increasing interest, ranking higher in future desire than current experience
- Bash/Shell/PowerShell and C++ have significant current use but lower future interest, suggesting they may be less favored in upcoming projects

Implications

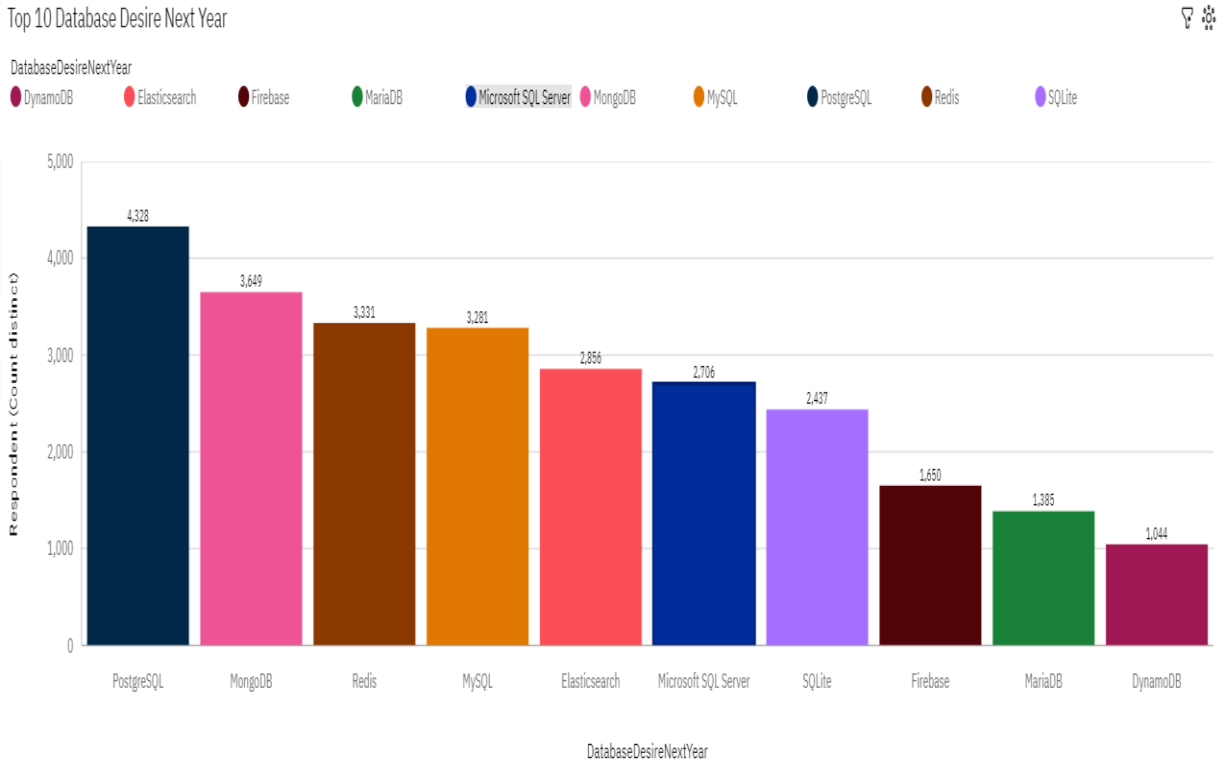
- Invest in JavaScript, HTML/CSS, and SQL: These languages will remain central to web and database development
- Upskill in Python: With rising demand, Python skills will be valuable, especially in data science and AI
- Learn TypeScript: Increasing interest suggests it's key for scalable JavaScript projects
- Diversify Skills Beyond Bash/Shell/PowerShell and C++: Lower future interest may lead to fewer opportunities

DATABASE TRENDS

Current Year



Next Year



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SKILLS NETWORK

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL rises from third in current usage to the most desired database for next year, indicating growing interest
- MongoDB jumps from fifth in usage to second in future desirability, showing strong momentum
- Redis also sees increased interest, moving from sixth in usage to third in desirability
- MySQL remains the most used but drops to fourth in future interest, suggesting a shift away from it
- Microsoft SQL Server falls from second in usage to sixth in desirability, indicating waning interest

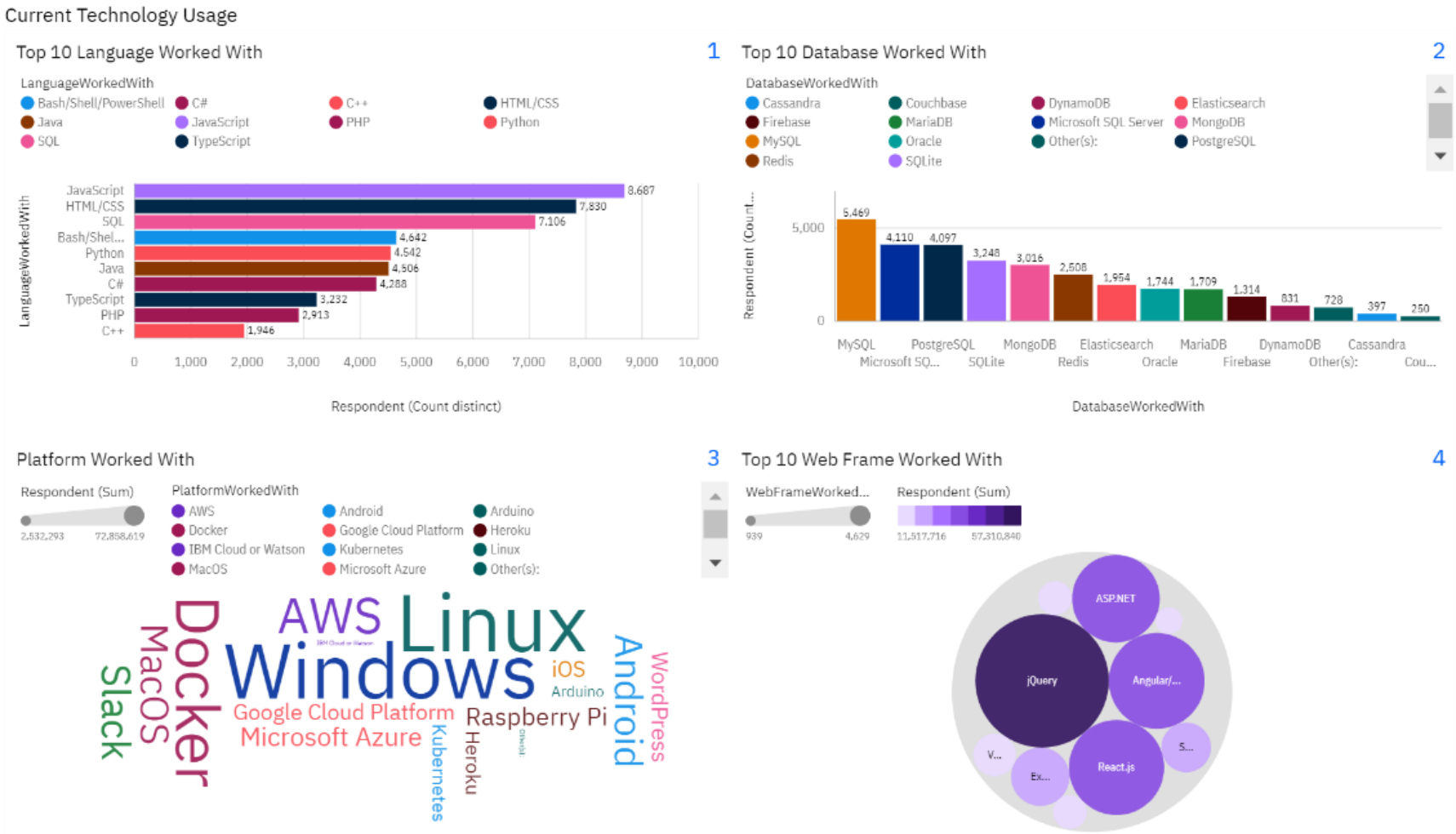
Implications

- Rising Open-Source Adoption: Increased interest in PostgreSQL and MongoDB indicates a trend toward open-source solutions, urging companies to invest in these technologies
- Decline of Traditional Databases: Decreased interest in MySQL and Microsoft SQL Server signals a potential shift away from traditional relational databases
- Focus on Performance: The growing appeal of Redis highlights the need for high-performance, scalable solutions, especially for real-time applications
- Evolving Skillsets: Developers may need to adapt by learning more about PostgreSQL, MongoDB, and Redis, influencing training and hiring
- Cloud Adoption: Increased interest in cloud-friendly databases like MongoDB and DynamoDB may drive further cloud-native development

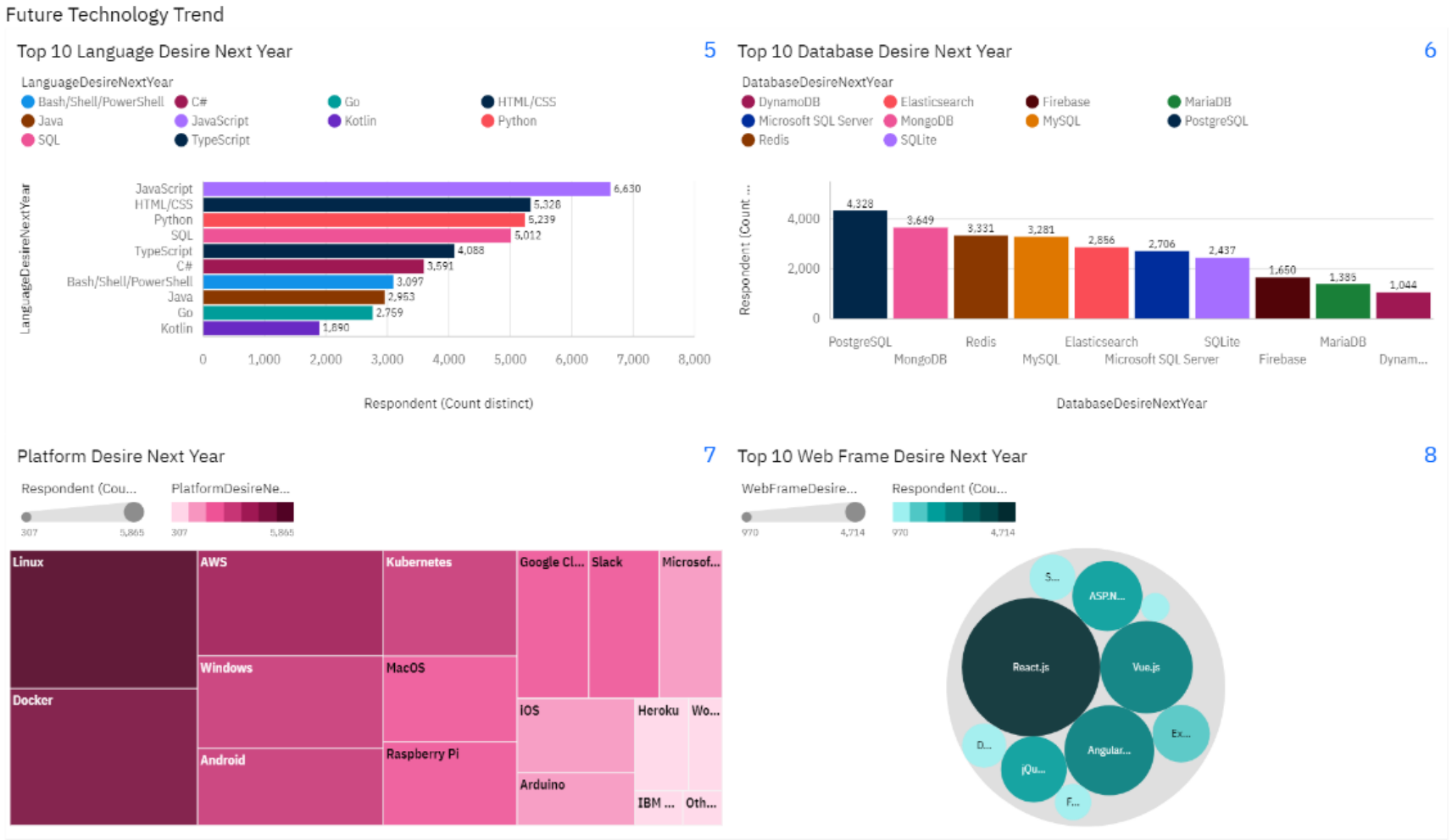
DASHBOARD

https://github.com/herywibowoipb/Dashboards

DASHBOARD TAB 1



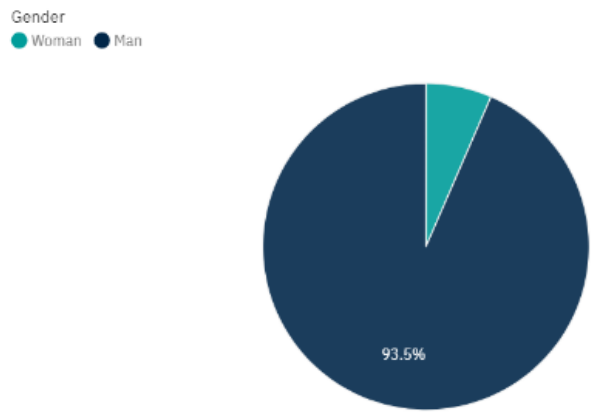
DASHBOARD TAB 2



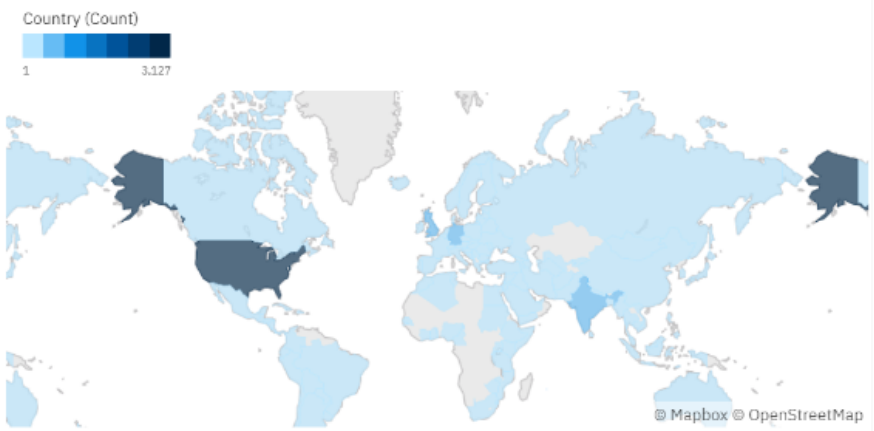
DASHBOARD TAB 3

Demographics

Respondent classified by Gender



9 Respondent Count for Countries



Respondent Count by Age

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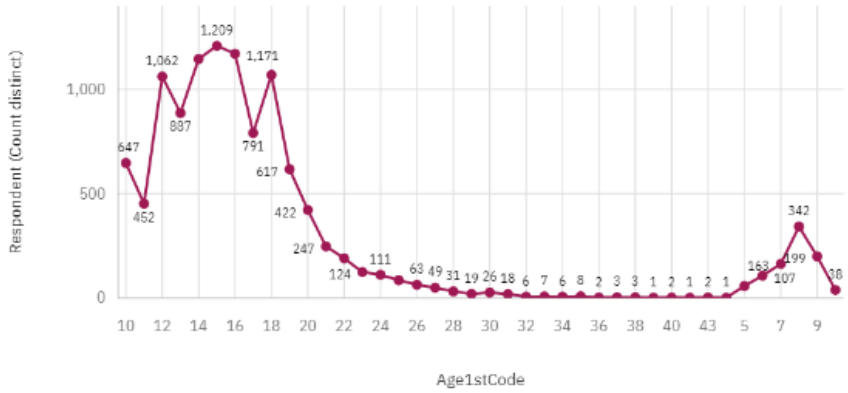

Respondent Count by Gender, classified by Formal Education Level

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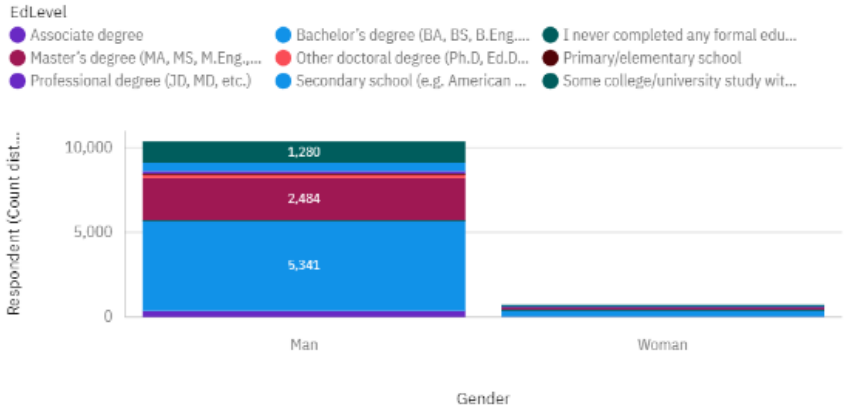

DISCUSSION

OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript, HTML/CSS, and SQL maintain strong current use and will likely stay relevant
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- Focus on core technologies like JavaScript, HTML/CSS, and SQL while upskilling in Python and TypeScript for future relevance
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- Adapt to cloud-native tools and trends as they shape the industry

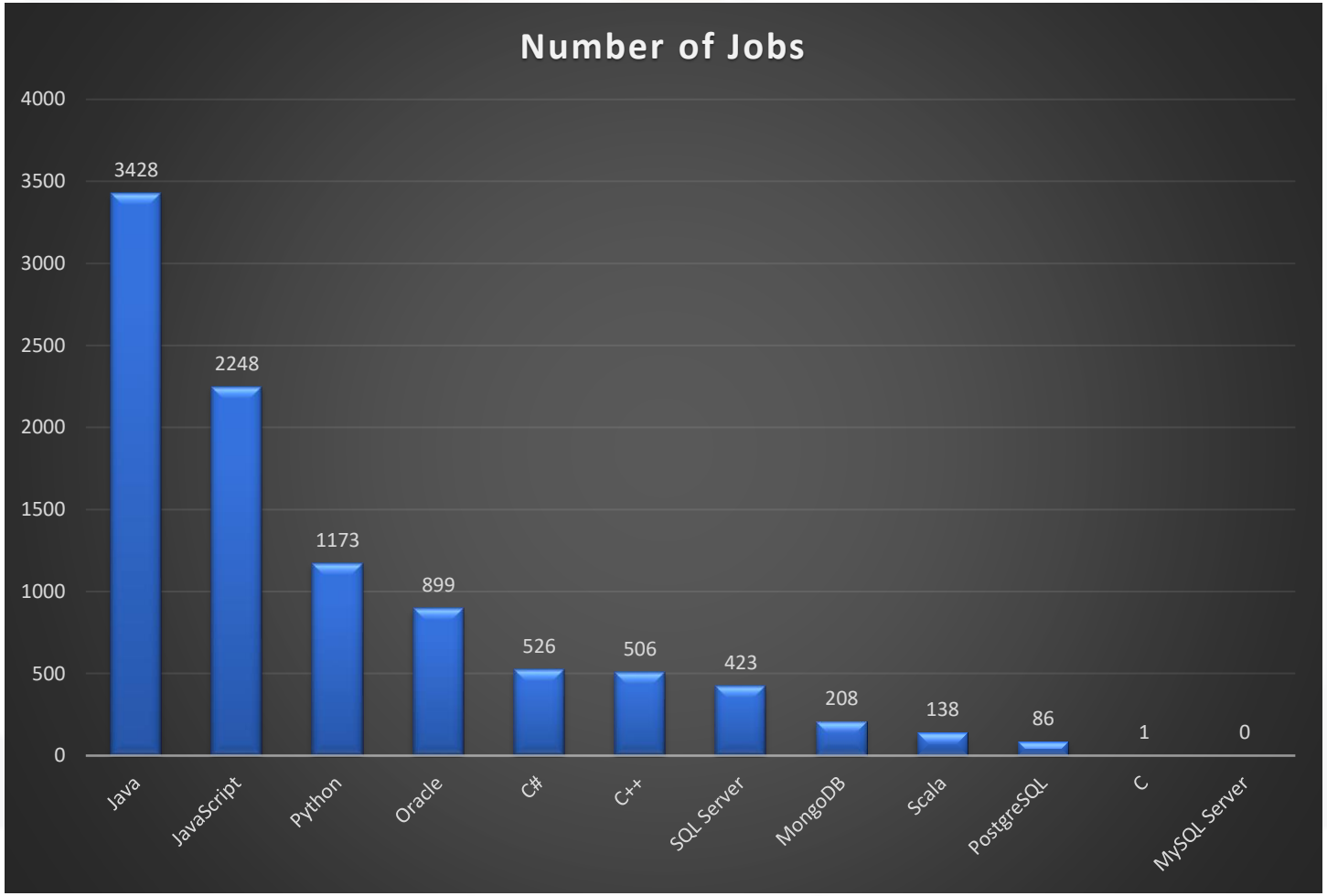
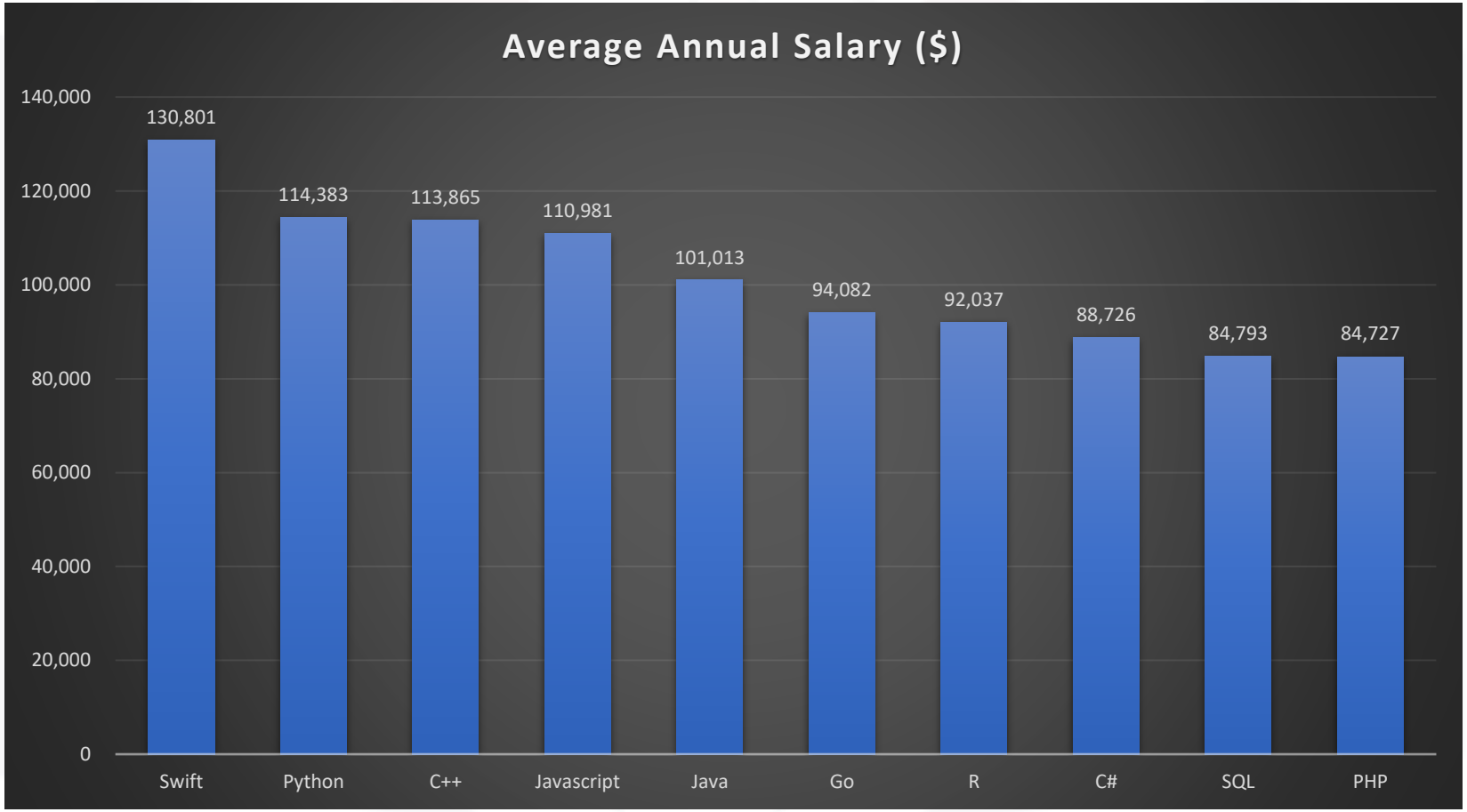
CONCLUSION

- Focus on Core Skills: Maintain proficiency in JavaScript, HTML/CSS, and SQL, as they remain essential
- Learn Emerging Languages: Upskill in Python and TypeScript, which are growing in demand
- Adopt Open-Source Databases: Shift towards PostgreSQL, MongoDB, and Redis for future-proofing
- Adapt to Cloud Trends: Embrace cloud-native tools to stay competitive

APPENDIX

- IBM Cognos Analytics
- Dataset:
  - ✓ m5_survey_data_demographics.csv
  - ✓ m5_survey_data_technologies_normalised.csv
- ✓ https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/labs/module%201/Accessing%20Data%20Using%20APIs/jobs.json
- ✓ https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/labs/datasets/Programming_Languages.html

JOB POSTINGS



POPULAR LANGUAGES