Technology Insights

Veronica
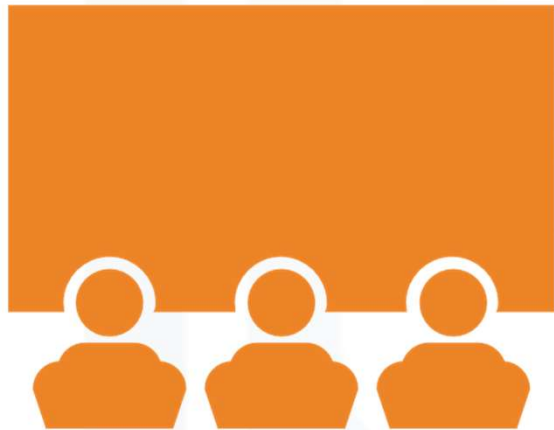
12/05/2024

OUTLINE

- Executive Summary

- Introduction

- Methodology

- Results
  - Visualization – Charts
  - Dashboard

- Discussion
  - Findings & Implications

- Conclusion

- Appendix

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EXECUTIVE SUMMARY

- **Current Technology Usage:**
  - **Top Programming Languages:** Visualized as a bar chart, the top 10 languages used currently are highlighted. Python, JavaScript, and Java are among the most frequently used.
  - **Top Databases:** A column chart displays the top 10 databases in use, with MySQL, PostgreSQL, and SQLite leading.
  - **Platform Usage:** A word cloud captures the diverse platforms in use, emphasizing Windows, Linux, and macOS.
  - **Collaboration Tools:** A hierarchy bubble chart showcases the top 10 collaboration tools, with GitHub and Slack being predominant.

- **Future Technology Trends:**
  - **Desired Programming Languages:** Bar chart visualizing the top 10 languages developers want to learn, highlighting Python and TypeScript.
  - **Future Databases:** Column chart indicating the most desired databases, with PostgreSQL and MongoDB as favorites.
  - **Platform Trends:** A tree map visualizes the platforms developers want to adopt, with an emphasis on cloud-based solutions.
  - **Collaboration Tools for the Future:** Hierarchy bubble chart shows the top collaboration tools anticipated for future use, with strong interest in GitHub and Jira.

EXECUTIVE SUMMARY

- **Demographics Analysis:**
  - **Gender Breakdown:** A pie chart illustrating the gender distribution among respondents, focusing on male and female participants.
  - **Geographical Distribution:** A map chart showing the respondent count by country, highlighting key regions like the USA, India, and Europe.
  - **Age Distribution:** Line chart depicting respondent count by age, revealing trends in different age groups.
  - **Education Level by Gender:** A stacked bar chart detailing education levels classified by gender, showing insights into educational backgrounds.

- **Key Findings:**
  - **Current Dominance:** Python and JavaScript dominate current programming language usage.
  - **Future Trends:** Increasing interest in cloud platforms and collaborative tools indicates a shift towards more integrated and remote-friendly technologies.
  - **Demographic Insights:** Gender and age distributions provide valuable insights into the diversity of the tech community.

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INTRODUCTION

Purpose: This presentation aims to provide an in-depth analysis of the current and anticipated future trends in technology usage, focusing on programming languages, databases, platforms, and collaboration tools.

1. **Current Technology Usage Dashboard**
    1. Overview of top programming languages, databases, platforms, and collaboration tools currently used.

2. **Future Technology Trend Dashboard**
    1. Insights into the technologies that professionals desire to learn and use in the near future.

3. **Demographics Dashboard**
    1. Analysis of respondent demographics, providing context to the data and insights.

METHODOLOGY

- **Primary Data Source:** The analysis is based on data from:
  - Database.csv
  - Languages.csv
  - Platform.csv
  - Collab.csv
  - Webframe.csv
  - survey_data_demographics.csv

- **Key Metrics Analyzed:**

- **Current Technology Usage:** Insights into the top programming languages, databases, platforms, and collaboration tools in use today.

- **Future Technology Trends:** Projections of the most desired technologies for the coming year.

- **Demographics Analysis:** Breakdown of respondent demographics to understand the diversity in gender, age, and education levels.
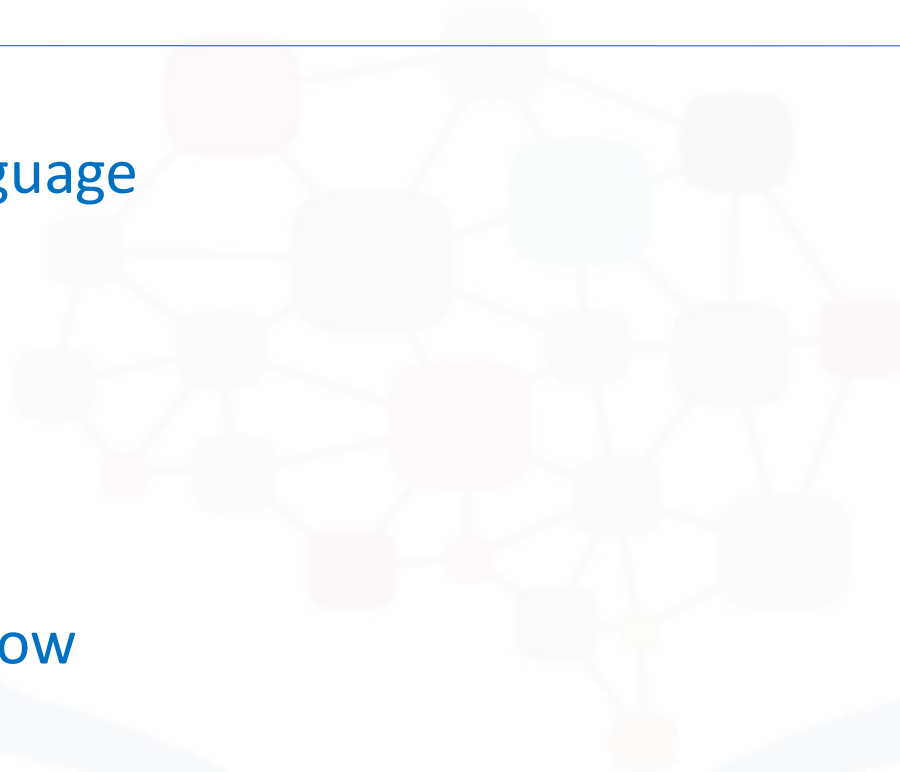
RESULTS

Programming Language

Database

Detail in Slides below

PROGRAMMING LANGUAGE TRENDS

Current Year

PROGRAMMING LANGUAGE TRENDS

Next Year

Top 10 Language Desire Next Year

LanguageDesireNextYear
● Bash/Shell/PowerShell ● C# ● Go ● HTML/CSS ● Java ● JavaScript ● Python ● Rust ● SQL
● TypeScript

JavaScript — 2,877 (15.6%)
HTML/CSS — 2,339 (12.7%)
TypeScript — 2,331 (12.6%)
SQL — 2,289 (12.4%)
Python — 2,223 (12.1%)
C# — 1,723 (9.3%)
Go — 1,423 (7.7%)
Bash/Shell/PowerShell — 1,337 (7.3%)
Rust — 1,024 (5.6%)
Java — 866 (4.7%)

Respondent (Count)
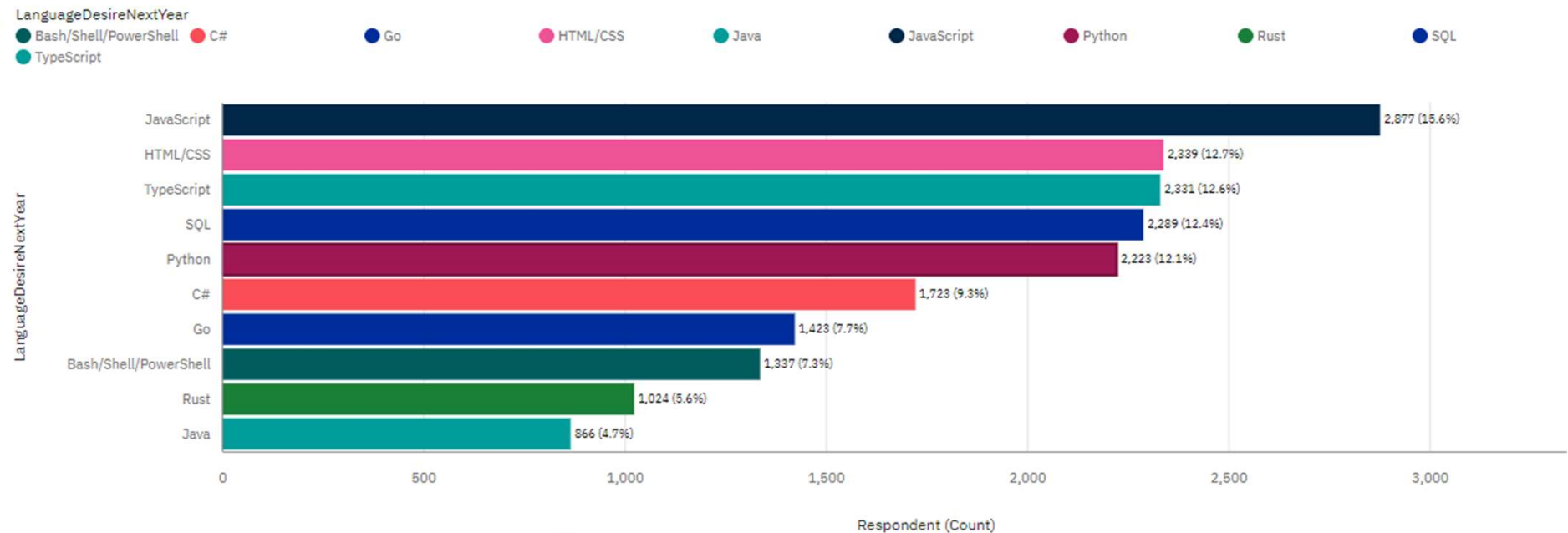
PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript and Html/CSS web based still most popular
- PHP and C ++ less desire for future, out of top 10 league
- Java, Shell and C# falling on the ladder, but TypeScript (Complied to JavaScript) has climbed the ladder
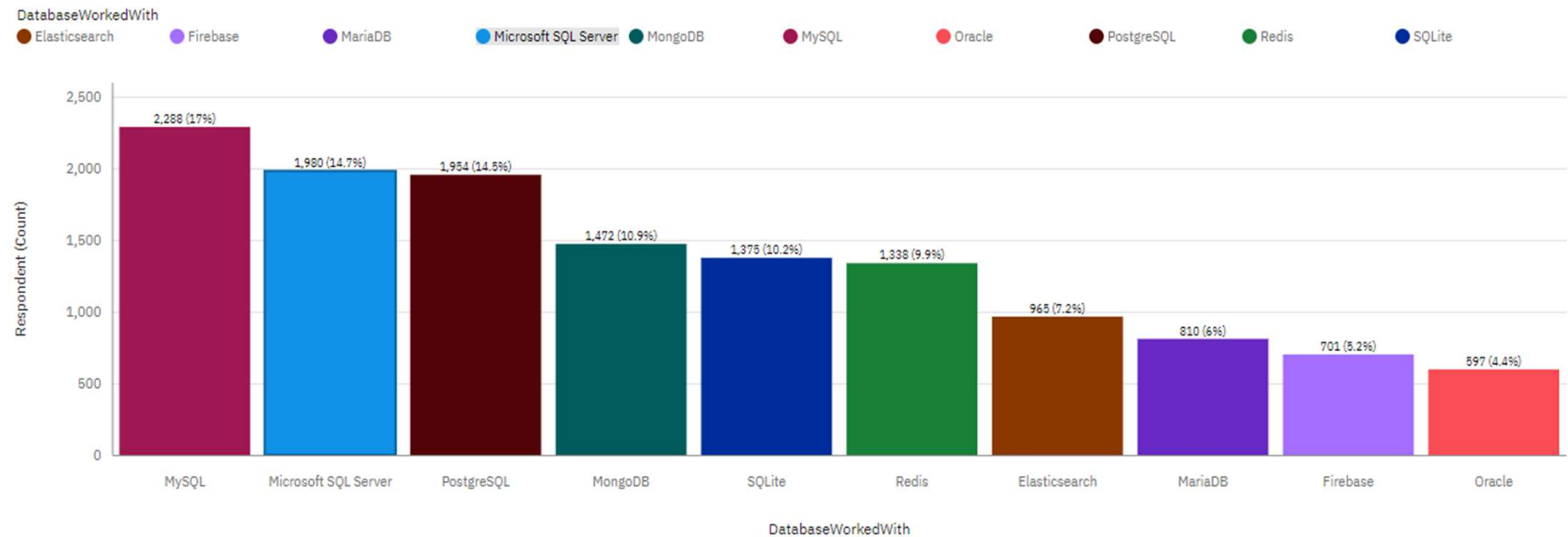
Implications

Shifts in Technology Adoption:

- Web-Based Technologies Dominance: The continued dominance of web-based technologies indicates a trend towards more web-centric development practices.
- Legacy Technology Phasing Out: The declining desirability of technologies like PHP and C++ suggests a gradual phasing out of legacy technologies in favor of more modern, efficient alternatives.
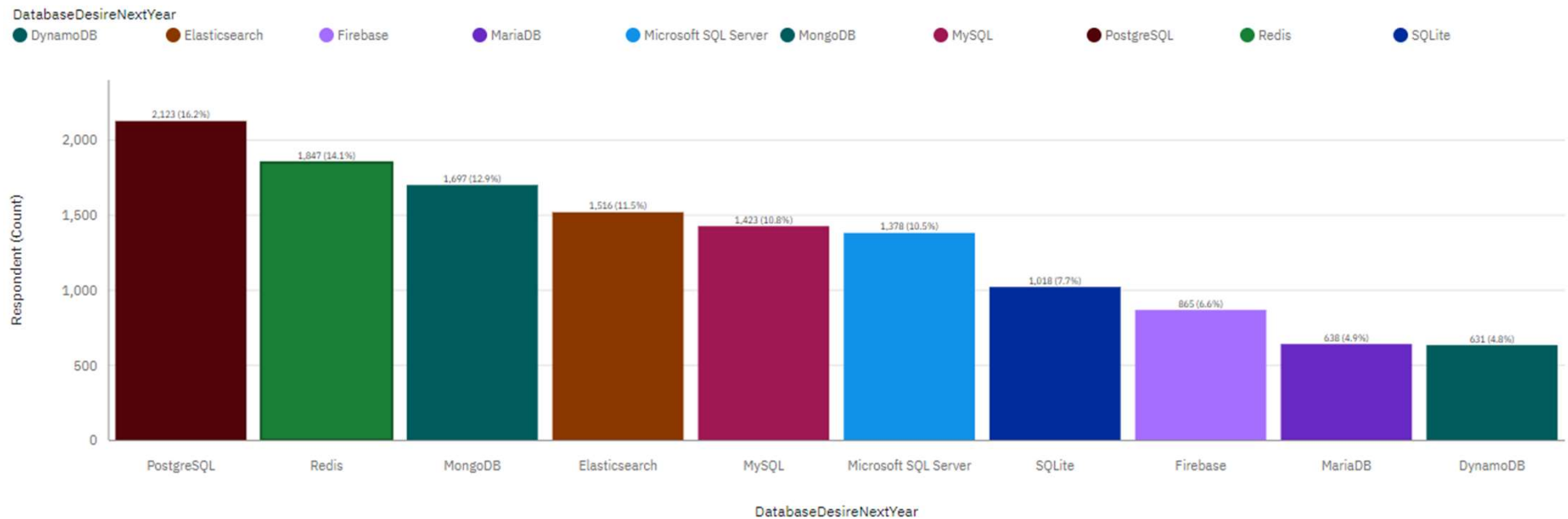
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DATABASE TRENDS

Current Year

Top 10 Database Worked With

DatabaseWorkedWith

● Elasticsearch ● Firebase ● MariaDB ● Microsoft SQL Server ● MongoDB ● MySQL ● Oracle ● PostgreSQL ● Redis ● SQLite

Bar chart – Respondent (Count) vs DatabaseWorkedWith:
- MySQL: 2,288 (17%)
- Microsoft SQL Server: 1,980 (14.7%)
- PostgreSQL: 1,954 (14.5%)
- MongoDB: 1,472 (10.9%)
- SQLite: 1,375 (10.2%)
- Redis: 1,338 (9.9%)
- Elasticsearch: 965 (7.2%)
- MariaDB: 810 (6%)
- Firebase: 701 (5.2%)
- Oracle: 597 (4.4%)

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DATABASE TRENDS

Next Year

Top 10 Database Desired Next Year

DatabaseDesireNextYear
● DynamoDB ● Elasticsearch ● Firebase ● MariaDB ● Microsoft SQL Server ● MongoDB ● MySQL ● PostgreSQL ● Redis ● SQLite

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Dynamo DB became Top 1

- Elasticsearch, Firebase, MariaDB, Microsoft SQL server, My SQL and Oracle all become more desired

- MongoDB, PostgreSQL, Redis and SQLite stay popular

Implications

Evolving Database Landscape:

- Shifts in Popularity: The rise of DynamoDB and the increased desirability of databases like Elasticsearch and Firebase indicate a shift towards cloud-native, scalable solutions tailored for specific needs such as real-time data handling and search functionalities.

- Traditional vs. Modern Databases: While traditional databases like MySQL and Oracle remain important, the growing interest in NoSQL and specialized databases highlights the industry's move towards more diverse and specialized data storage solutions.
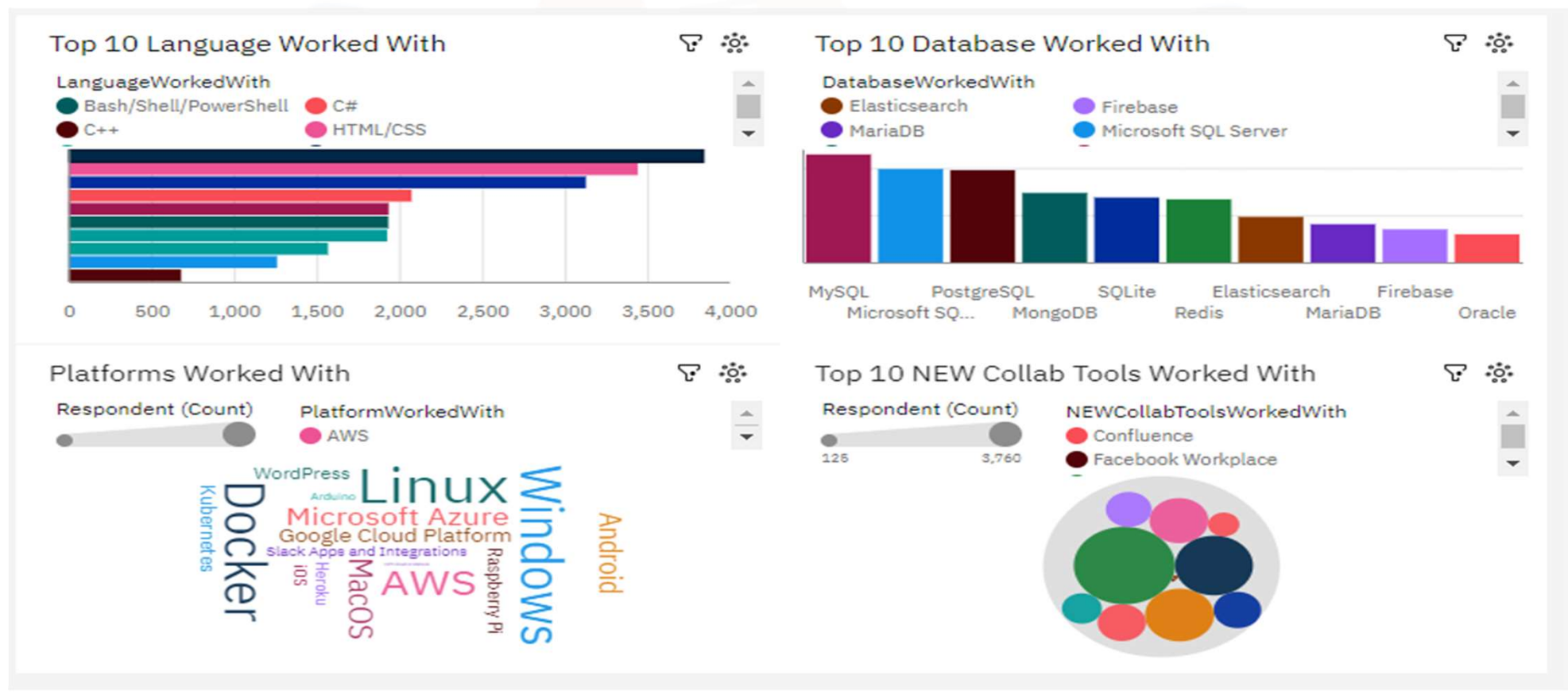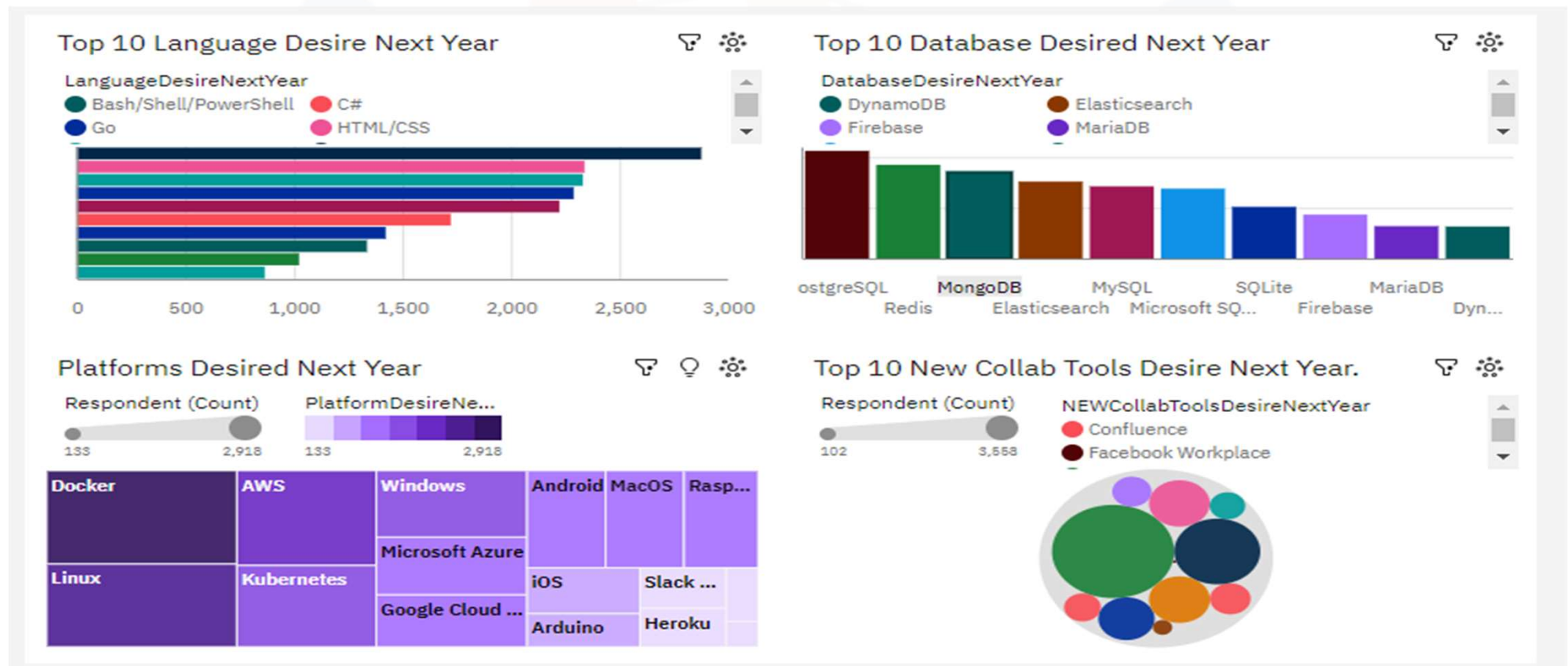
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DASHBOARD

https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FDashboard&action=view&mode=dashboard&subView=model0000018f53157d97_00000000

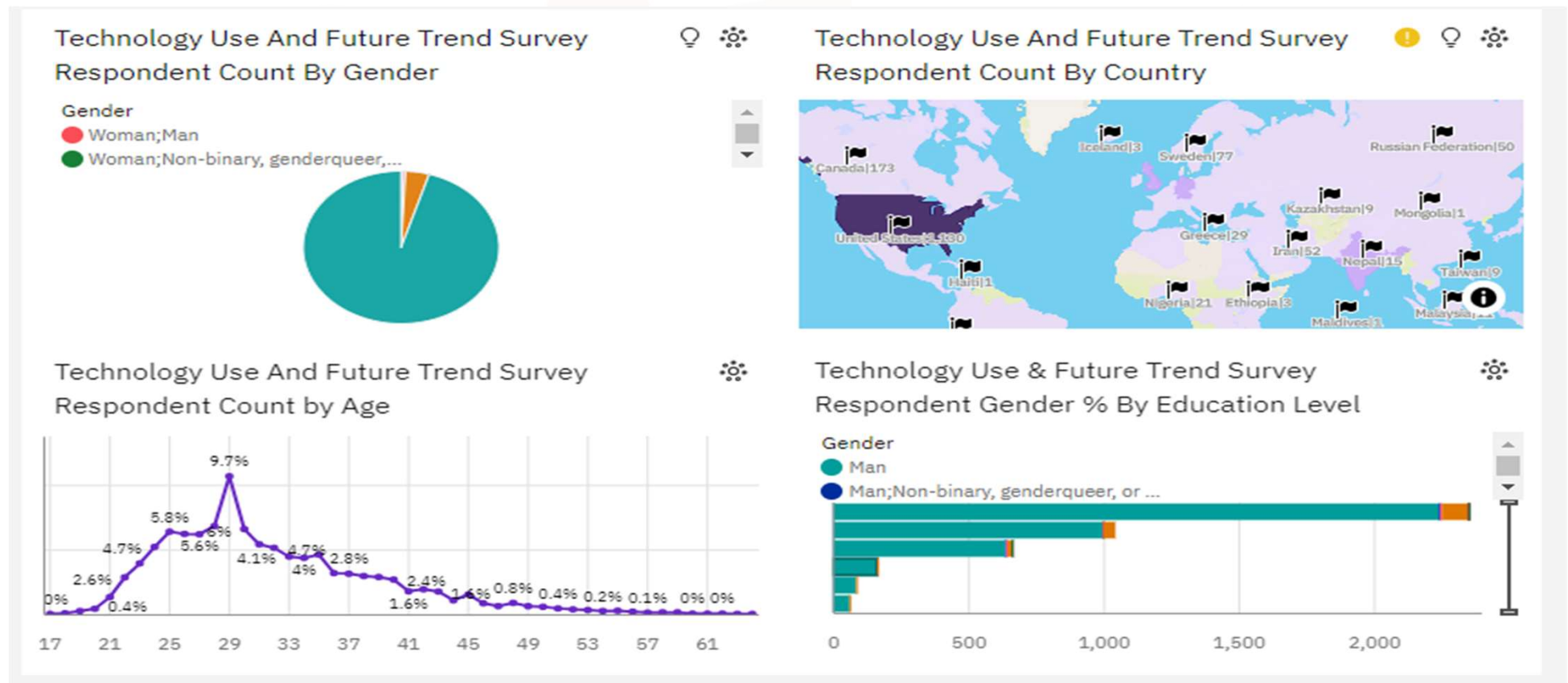Above is the link of the dashboard

DASHBOARD - Current Technology Usage

DASHBOARD - Future Technology Trend

DASHBOARD - Demographics

DISCUSSION

- **Challenges and Considerations:**

- **1. Rapid Technological Change:**

- **Keeping Pace:** The fast pace of technological advancements poses a challenge for individuals and organizations to keep up.

- **Resource Allocation:** Balancing investment in new technologies with maintaining and upgrading existing systems.

- **2. Skill Gaps:**

- **Bridging the Gap:** Ensuring that the workforce is equipped with the necessary skills for new technologies can be challenging.

- **Training Programs:** Importance of developing comprehensive training programs to address skill gaps.

- **3. Legacy Systems:**

- **Transitioning:** Moving from legacy systems to modern technologies can be complex and resource-intensive.

- **Integration:** Ensuring seamless integration between old and new systems to avoid disruptions.

OVERALL FINDINGS & IMPLICATIONS

Findings

- **1. Current Technology Usage:**

- **JavaScript and HTML/CSS:** These web technologies continue to dominate, underscoring the importance of web development skills.

- **TypeScript's Rise:** The increasing popularity of TypeScript indicates a shift towards more structured and maintainable JavaScript codebases.

- **2. Future Technology Trends:**

- **DynamoDB Leading:** The top position of DynamoDB highlights the growing importance of scalable, cloud-native databases.

- **Increased Demand for Elasticsearch and Firebase:** These technologies are becoming more desirable, reflecting their utility in search and real-time applications.

- **3. Declining Technologies:**

- **PHP and C++:** Their reduced desirability suggests a shift away from older, traditional programming languages in favor of modern alternatives.

- **Java, Shell, and C#:** These languages are falling in popularity, though still widely used.

Implications

- **For Developers:**

- **Skill Adaptation:** Need to focus on in-demand technologies such as JavaScript, TypeScript, and DynamoDB.

- **Continuous Learning:** Importance of staying updated with emerging trends to remain competitive.

- **For Businesses:**

- **Technology Adoption:** Consideration of integrating modern databases and languages into their technology stack.

- **Training and Development:** Investing in employee training for new technologies to maintain a competitive edge.

- **For Educational Institutions:**

- **Curriculum Update:** Incorporate trending technologies into course offerings.

- **Industry Collaboration:** Partner with tech companies to provide practical training opportunities.

- **For Technology Providers:**

- **Product Innovation:** Enhance features of popular technologies and ensure they meet the evolving needs of the industry.

- **Community Support:** Strengthen support and documentation to facilitate easier adoption and utilization.

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CONCLUSION

- **Future Directions:**

- **1. Embrace Cloud-Native Solutions:**

- **Scalability and Flexibility:** Leveraging cloud-native databases and technologies for greater scalability and flexibility.

- **2. Focus on Emerging Technologies:**

- **Innovation:** Investing in research and development to stay ahead of technological trends.

- **Adoption Strategies:** Developing clear strategies for the adoption of emerging technologies like TypeScript and DynamoDB.

- **3. Enhance Education and Training:**

- **Continuous Learning:** Promoting a culture of continuous learning within organizations and educational institutions.

- **Industry Collaboration:** Strengthening collaborations between industry and academia to ensure that training programs are aligned with real-world needs.
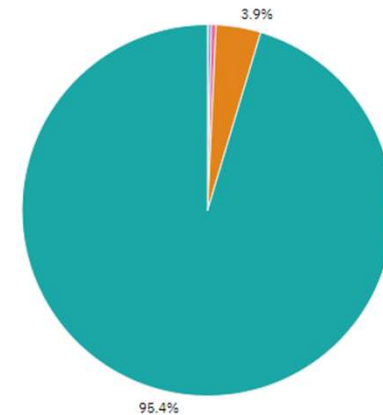
APPENDIX 1 - Technology Use And Future Trend Survey Respondent Count By Gender
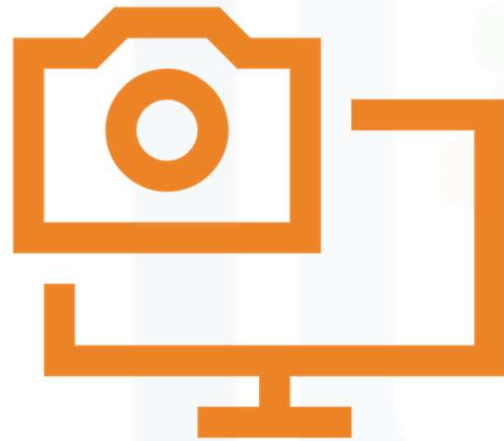
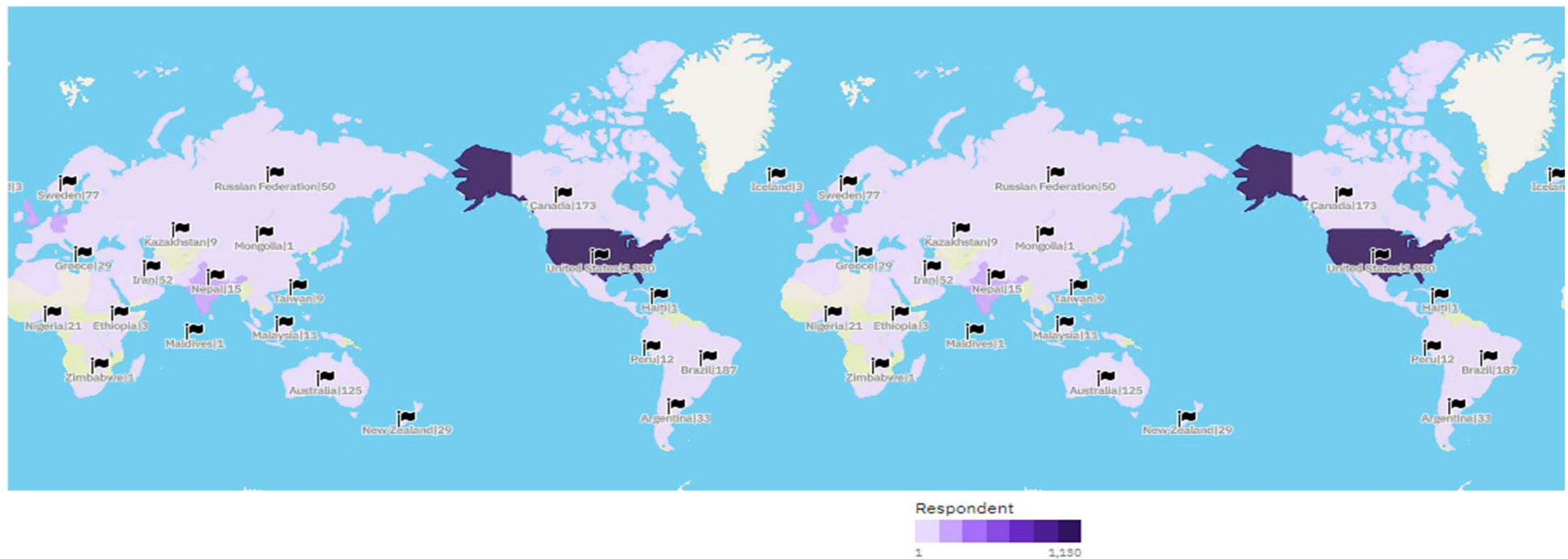Technology Use And Future Trend Survey Respondent Count By Gender

Gender
- Woman;Man
- Woman;Non-binary, genderqueer,...
- Woman;Man;Non-binary, genderq...
- Man;Non-binary, genderqueer, or ...
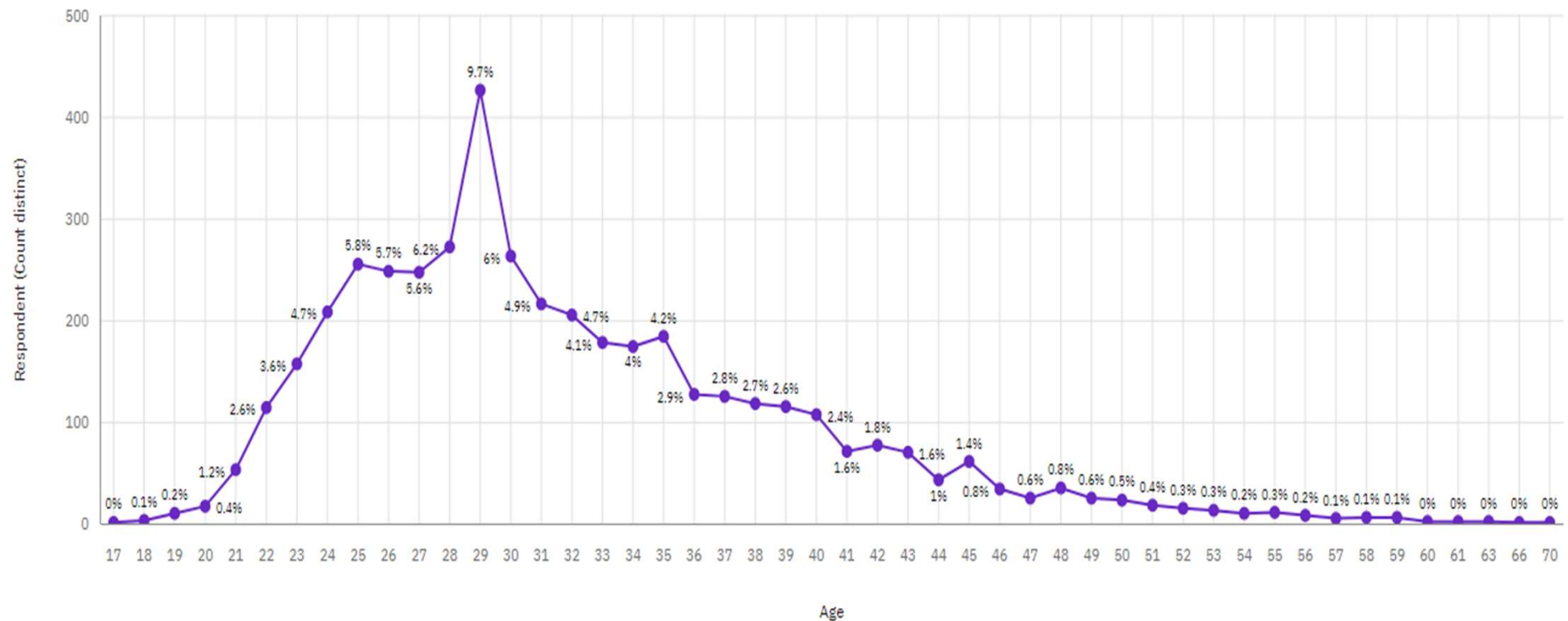- Non-binary, genderqueer, or gend...
- Woman
- Man

3.9%

95.4%

APPENDIX 2 - Technology Use And Future Trend Survey Respondent Count By Region

Technology Use And Future Trend Survey Respondent Count By Country

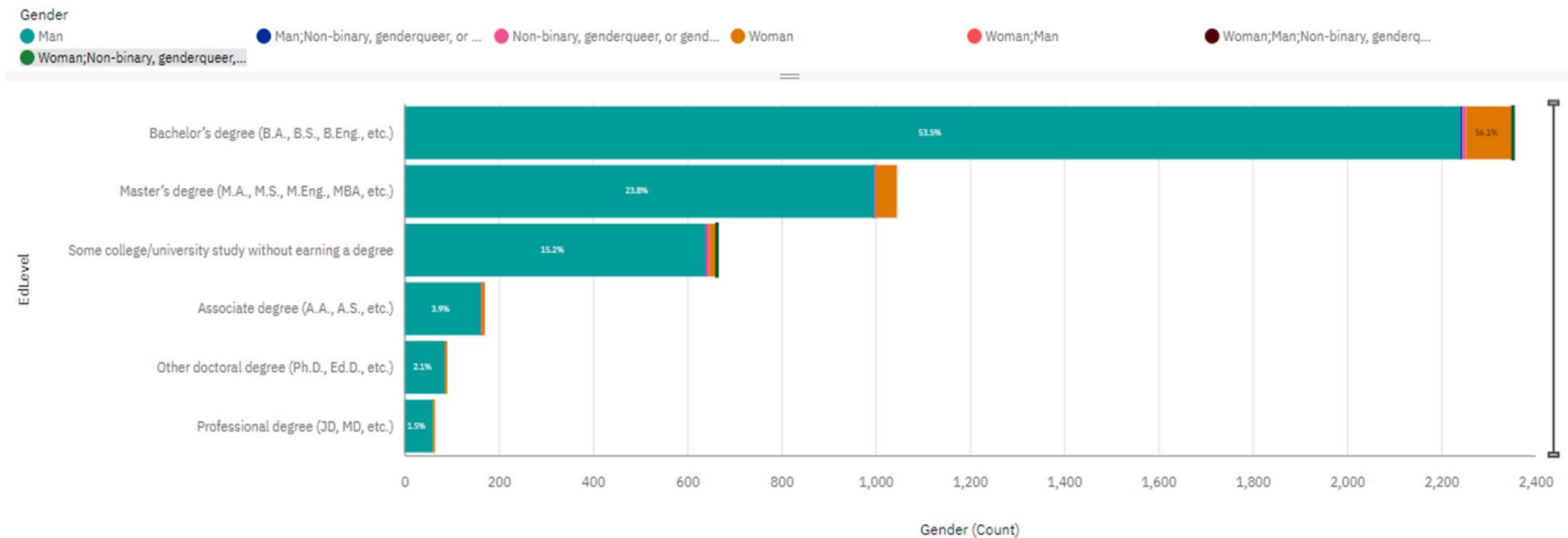# APPENDIX 3 - Technology Use And Future Trend Survey Respondent Count by Age

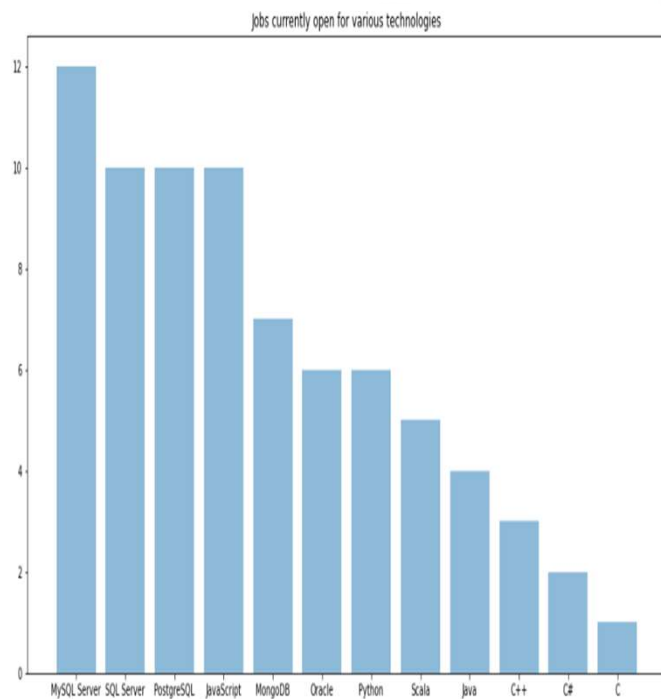Technology Use And Future Trend Survey Respondent Count by Age

APPENDIX 4 - Technology Use & Future Trend Survey Respondent Gender % By Education Level

Technology Use & Future Trend Survey Respondent Gender % By Education Level
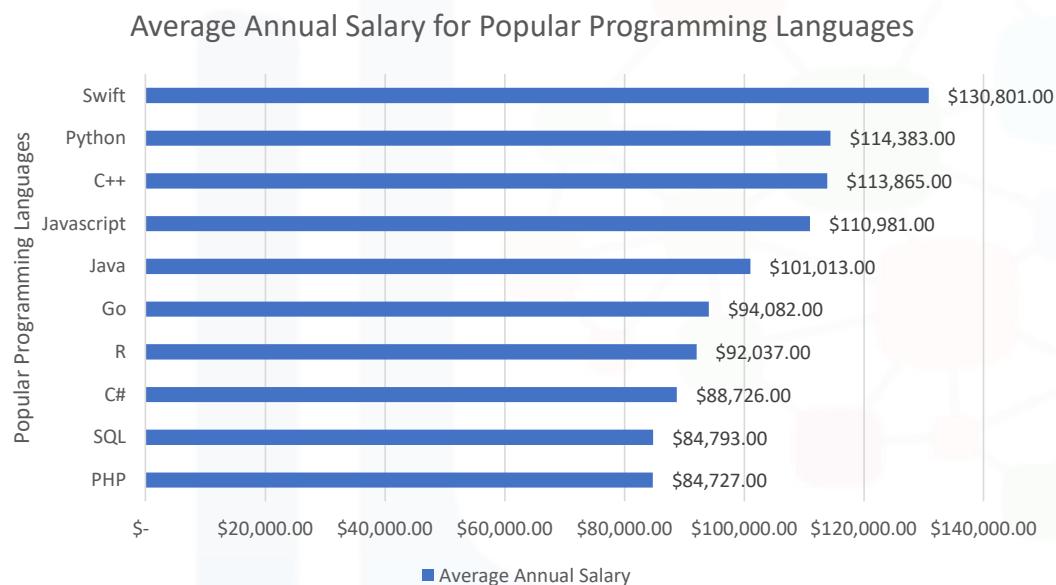
JOB POSTINGS For Popular Programming Language

Jobs currently open for various technologies

- The implications of the analysis of job postings for different programming languages are multifaceted and extend to various stakeholders in the technology industry:

1. **Educational Institutions**:
   1. Curriculum Development: Educational institutions can use this data to tailor their curriculum to meet the demands of the job market. They can offer courses and training programs focused on the most in-demand programming languages, ensuring that students are equipped with relevant skills upon graduation.
   2. Industry Partnerships: Institutions can establish partnerships with companies to offer internships, co-op programs, or industry-sponsored projects that align with the skills sought after by employers.

2. **Job Seekers**:
   1. Skill Development: Job seekers can use this information to prioritize learning programming languages that are in high demand. By acquiring proficiency in sought-after languages, they increase their chances of securing employment and advancing their careers.
   2. Career Planning: Understanding which industries and sectors have a high demand for specific programming languages can help job seekers make informed decisions about their career paths. They can target industries where their skills are most valued and explore opportunities for specialization.

3. **Employers**:
   1. Recruitment Strategies: Employers can tailor their recruitment strategies to attract candidates with expertise in the most in-demand programming languages. They can adjust job descriptions, offer competitive salaries, and provide professional development opportunities to attract top talent.
   2. Talent Retention: Employers can also focus on retaining existing employees with valuable skills by offering incentives such as training programs, career advancement opportunities, and challenging projects that utilize their expertise in sought-after languages.

4. **Technology Trends**:
   1. Market Insights: Analysis of job postings provides insights into emerging technology trends and the evolving needs of industries. It helps technology companies and investors identify opportunities for innovation and investment in areas such as web development, data science, artificial intelligence, and cloud computing.
   2. Adoption Strategies: Companies can use this information to inform their technology adoption strategies, deciding which programming languages to incorporate into their tech stack based on market demand and industry trends.

5. **Economic Development**:
   1. Regional Opportunities: Governments and economic development agencies can use data on job postings to identify regions with high demand for specific programming languages. They can then develop policies and incentives to attract tech companies and foster the growth of the technology sector in those regions, ultimately driving economic growth and creating jobs.

Annual Salary for POPULAR LANGUAGES

Average Annual Salary for Popular Programming Languages

Popular Programming Languages	Average Annual Salary
Swift	$130,801.00
Python	$114,383.00
C++	$113,865.00
Javascript	$110,981.00
Java	$101,013.00
Go	$94,082.00
R	$92,037.00
C#	$88,726.00
SQL	$84,793.00
PHP	$84,727.00

■ Average Annual Salary

Challenges and Considerations:

- **1. Rapid Technological Changes:**

- **Keeping Up-to-Date:** The tech landscape changes rapidly, and developers must continuously learn and adapt to new languages and frameworks.

- **Survey Variability:** Survey results on language popularity and demand can vary year by year, requiring businesses and developers to stay informed about the latest trends.

- **2. Learning and Development:**

- **Balancing Ease and Demand:** Developers must balance learning easier languages with those that offer higher salaries but are harder to learn.

- **Resource Allocation:** Businesses need to allocate resources effectively to train their teams in the most beneficial languages.

Future Directions:

- **1. Embracing Emerging Languages:**

- **Continual Learning:** Developers should keep an eye on emerging languages that could offer new opportunities and advantages in the future.

- **Adaptability:** Businesses should remain adaptable and ready to integrate new technologies that align with their strategic goals.

- **2. Enhancing Education:**

- **Curriculum Updates:** Educational institutions should regularly update their curricula to include the most in-demand languages and technologies.

- **Industry Partnerships:** Strengthening partnerships with industry can help ensure that educational programs align with current market needs and future trends.

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