Technology Trends and Demographics Presentation

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09 August 2024

OUTLINE

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

EXECUTIVE SUMMARY

- Technology trends analysis for programming languages & databases based on key skills and location
  - Collect Jobs Data as CSV using GitHub Jobs API
- Compensation data analysis based on developer location, gender and age
- Demographic Survey
- Technological GAP analysis in countries
- Gender GAP analysis in jobs
- Technology and Demographic trends based on
  - Work Experience
  - Countries
  - Age
  - Gender

INTRODUCTION

- Data Collection Sources
  - Collect Jobs Data for analysis using GitHub Jobs API
  - Collect Survey Data for wrangling and visualization from Stack Overflow
  - Collect Survey Data for dashboard from Kaggle survey 2023 data
  - GitHub Job Postings
- About: Analyze the trends in software development
- Purpose:
  - Identify skill requirement in future
  - What are the top programming languages in demand?
  - What are the top database skills in demand?
  - What are the popular IDE?
- Audience: Human Resources and IT Managers

METHODOLOGY

- Data Acquisition
  - Identifying relevant data sources
  - Understanding data formats and structures
  - Data extraction and collection methods
- Data Preparation
  - Data cleaning: handling missing values, outliers, inconsistencies
  - Data transformation: normalization, scaling, feature engineering
  - Data integration: combining multiple datasets if necessary
- Exploratory Data Analysis (EDA)
  - Summary statistics: mean, median, mode, standard deviation
  - Data visualization: histograms, scatter plots, box plots, correlation matrices
  - Identifying patterns, trends, and anomalies
- Data Modeling and Analysis
  - Selecting appropriate statistical methods or machine learning algorithms
  - Building models and evaluating performance
  - Interpreting model results and generating insights
- Data Visualization and Communication
  - Creating effective visualizations (charts, graphs, dashboards)
  - Communicating findings clearly and concisely
  - Tailoring visualizations to the target audience

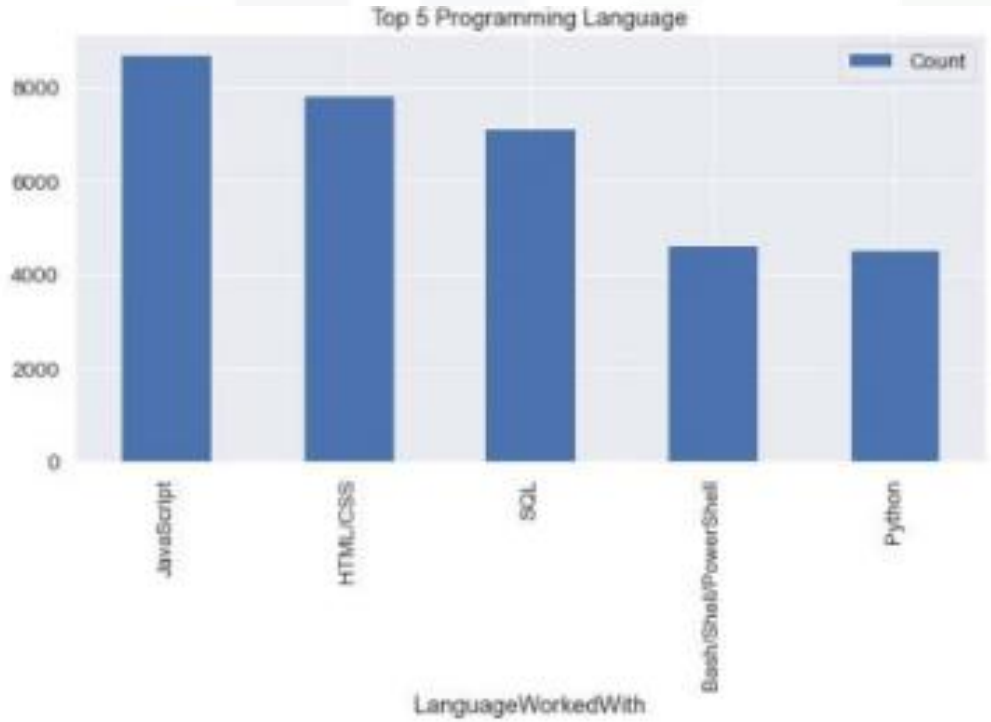
RESULTS

Results based on below table

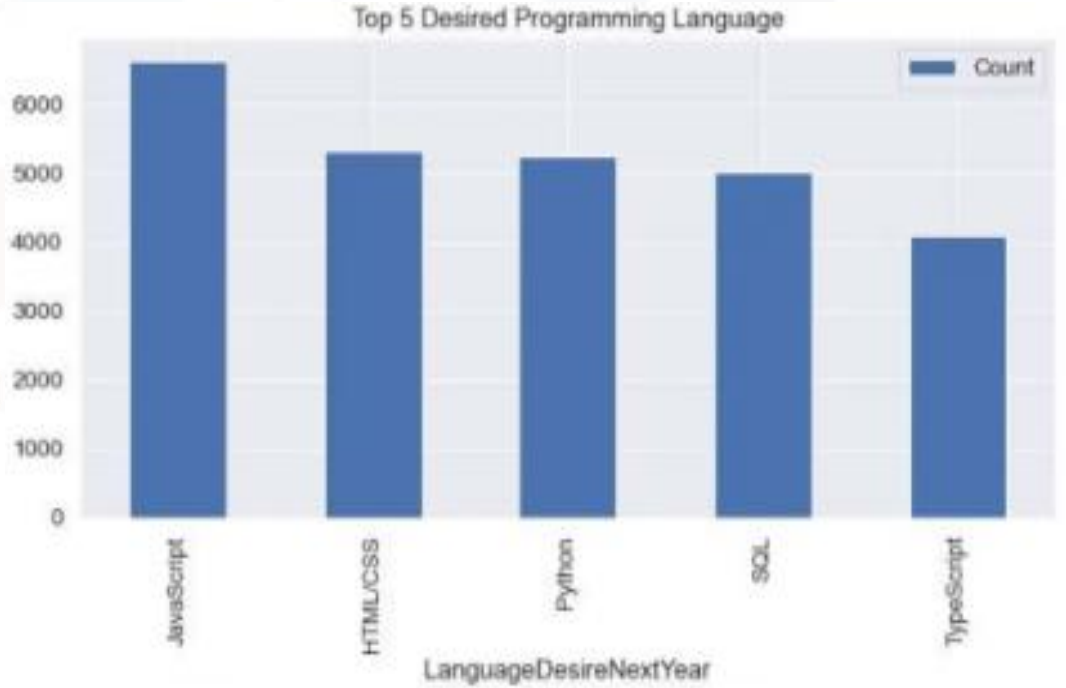
	Respondent	LanguageWorkedWith	LanguageDesireNextYear	DatabaseWorkedWith	DatabaseDesireNextYear	PlatformWorkedWith
0	4	C	C	MySQL	MySQL	Linux
1	4	C++	C#	SQLite	SQLite	Windows
2	4	C#	JavaScript	NaN	NaN	NaN
3	4	Python	SQL	NaN	NaN	NaN
4	4	SQL	NaN	NaN	NaN	NaN
...	...	...	...	...	...	...
74584	25142	Go	Python	NaN	NaN	NaN
74585	25142	HTML/CSS	R	NaN	NaN	NaN
74586	25142	PHP	NaN	NaN	NaN	NaN
74587	25142	Python	NaN	NaN	NaN	NaN
74588	25142	R	NaN	NaN	NaN	NaN

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

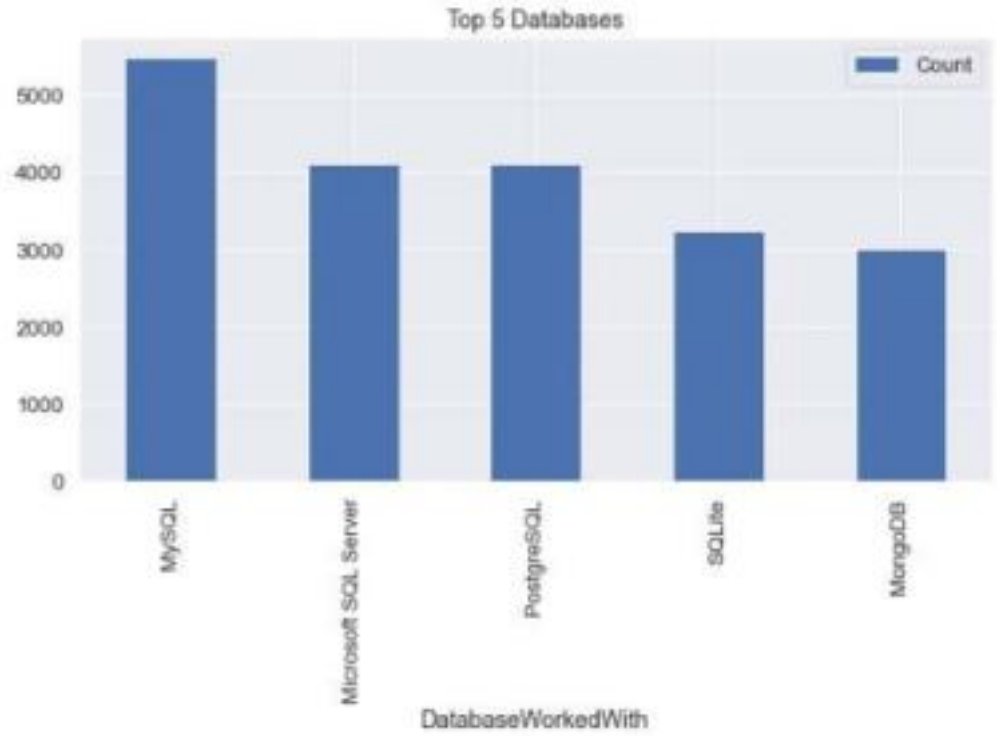
- JavaScript, HTML/CSS, SQL are top 3 in this year
- Python and TypeScript becoming popular next year
- PowerShell edged out in next year

Implications

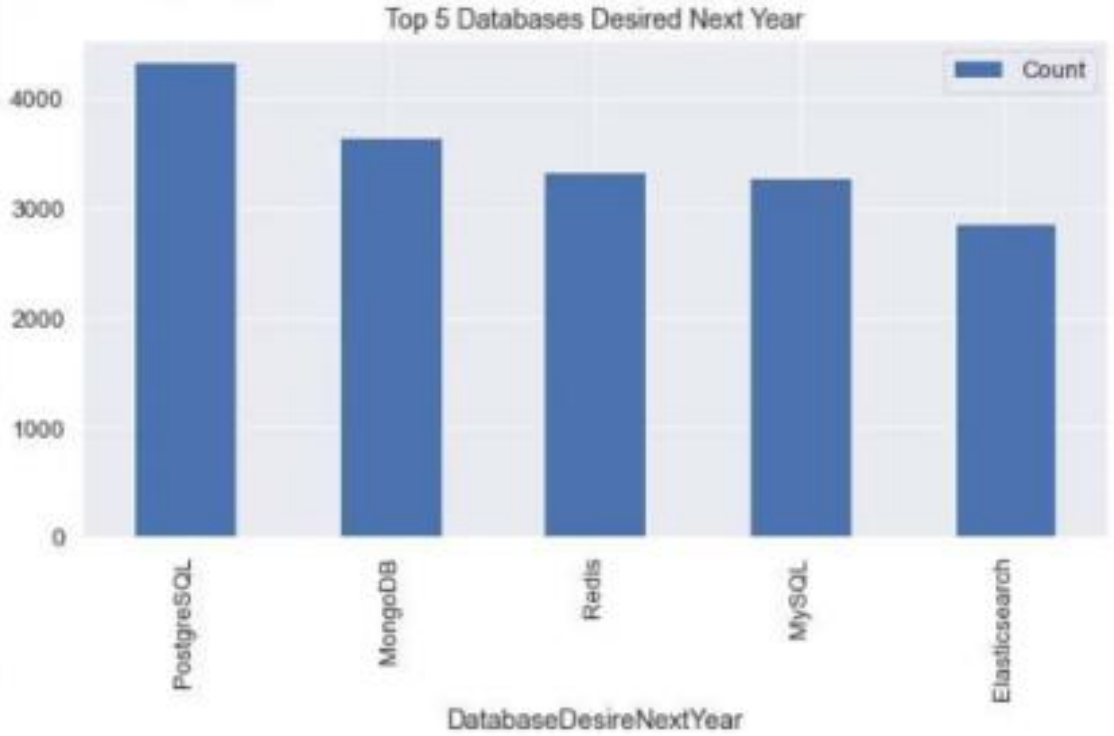
- Web development are still in high demand
- Big Data technology in companies still required SQL
- With Artificial Intelligence and Machine Learning in rising demand, Python is the best choice

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL is most popular
- Microsoft SQL Server is second best
- MongoDB and Redis are upcoming favorites
- New kid on the block: Elasticsearch

Implications

- Open-source databases are still preferable in organizations
- NoSQL databases will make an impact for storing non-relational data
- Redis supports abstract datatypes
- Pre-tuned search to website, app or e-commerce store

DASHBOARD

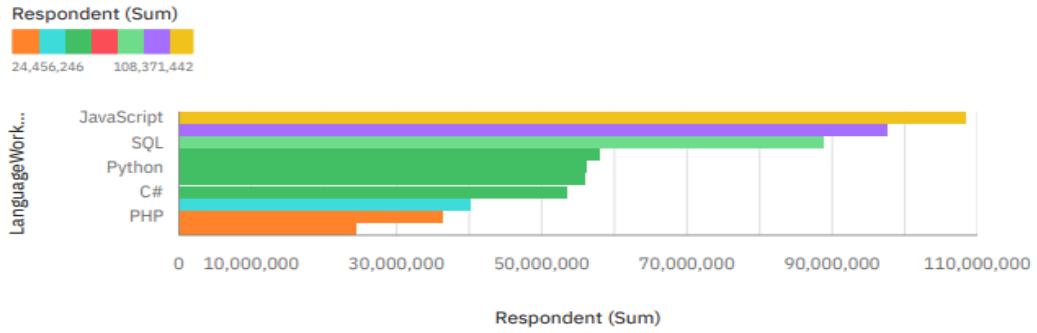
Unlocking Insights: The Power of Cognos Dashboard

https://github.com/sayaridutta/Cognos-Technology-and-Demographic-dashboard/blob/main/Technology%20and%20Demographic%20dashboard%20-%20Final.pdf

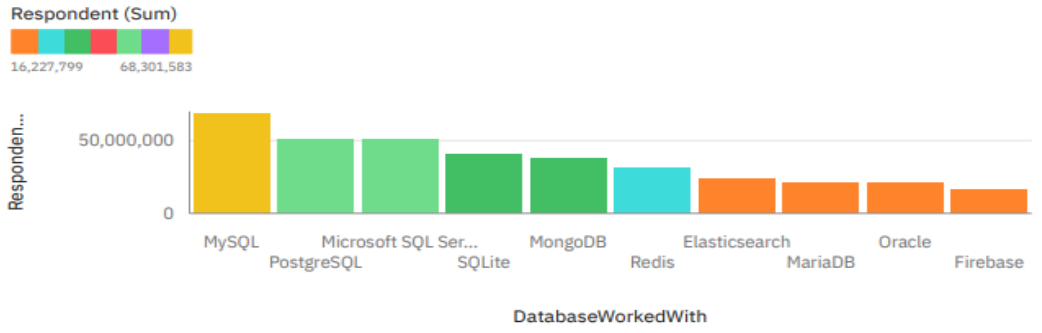
CURRENT TECHNOLOGY USAGE DASHBOARD

Current Technology Usage

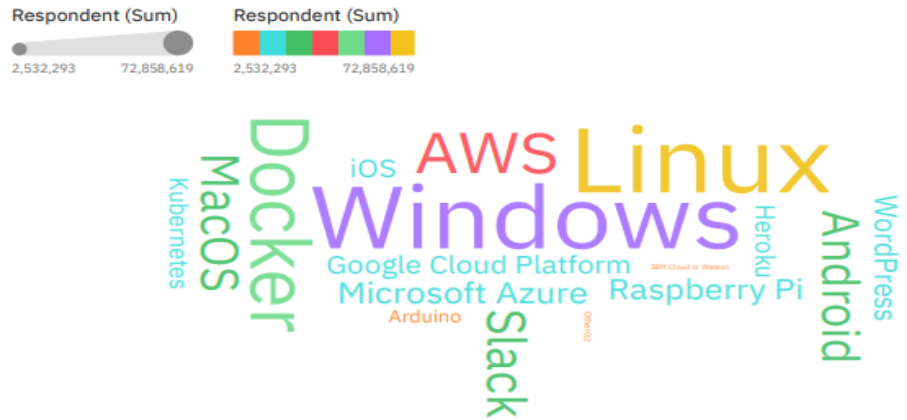
Top 10 Language Worked With vs Respondent



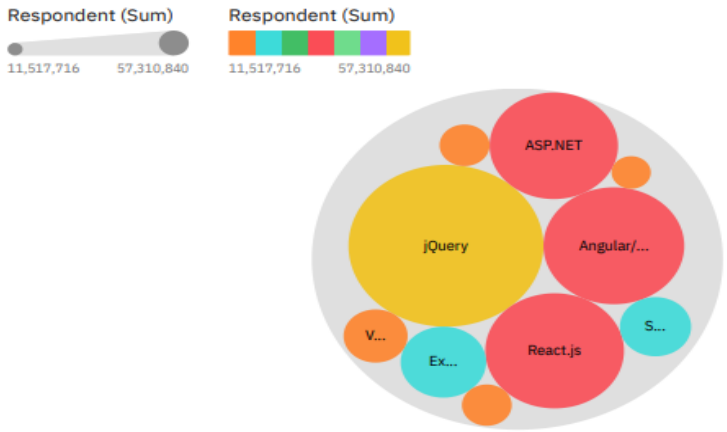
Top 10 Database Worked With vs Respondent



PlatformWorkedWith colored by Respondent sized by Respondent



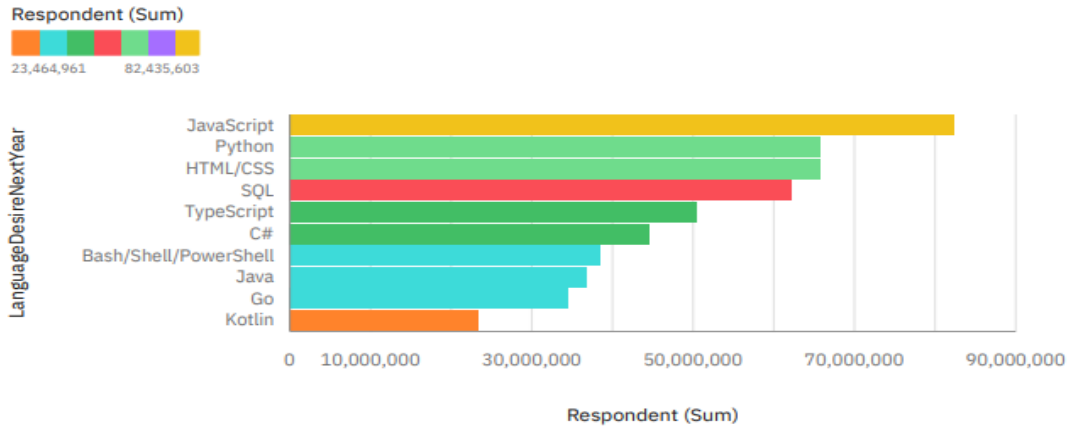
Top 10 Web Frame Worked With vs Respondent



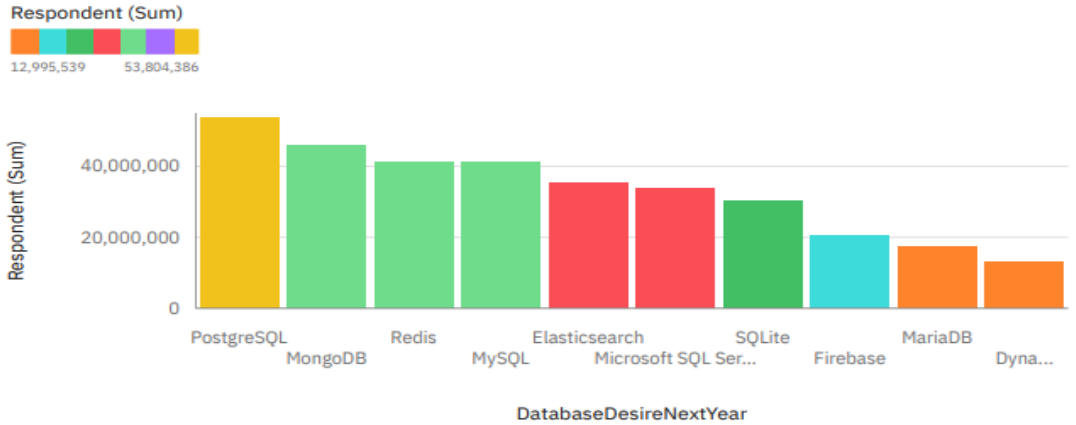
FUTURE TECHNOLOGY TREND DASHBOARD

Future Technology Trend

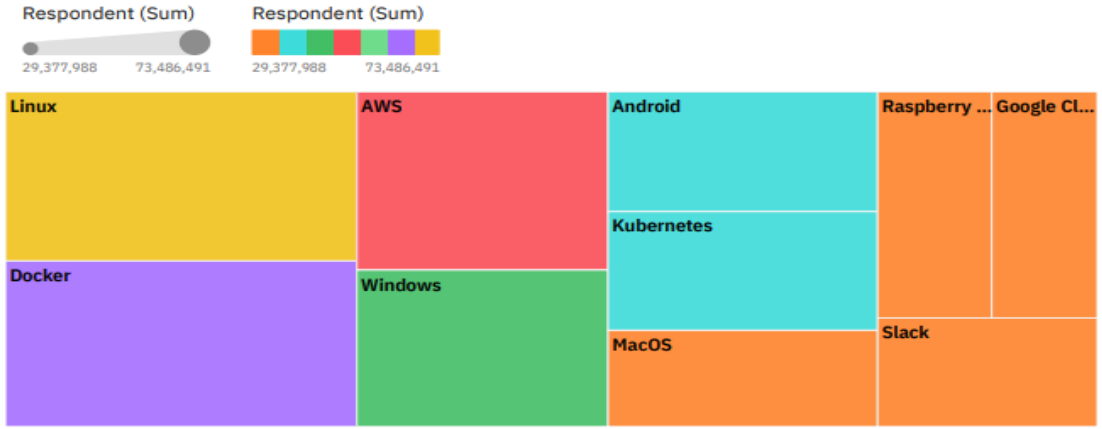
Top 10 Language Desire Next Year by Respondent



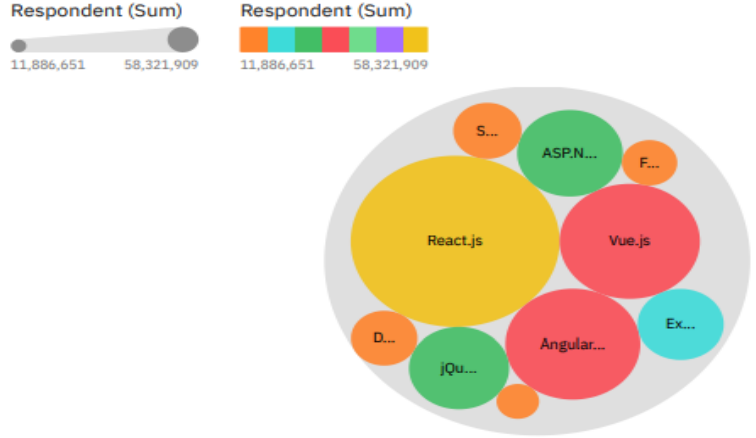
Top10DatabaseDesireNext Year by Respondent



PlatformDesireNextYear hierarchy colored by Respondent and sized by Respondent



Top 10 Web Frame Desire Next Year by Respondent



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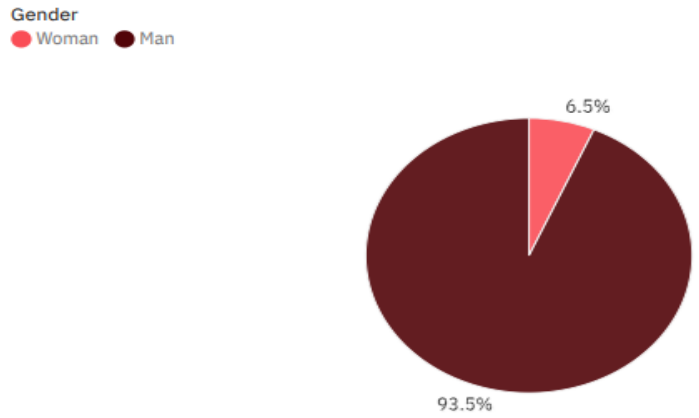
SKILLS NETWORK

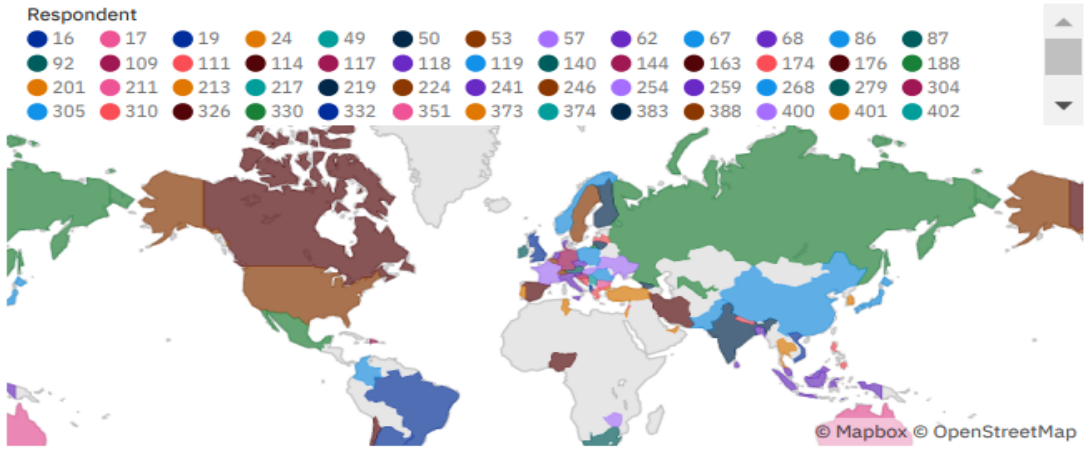
DEMOGRAPHICS DASHBOARD

Demographics

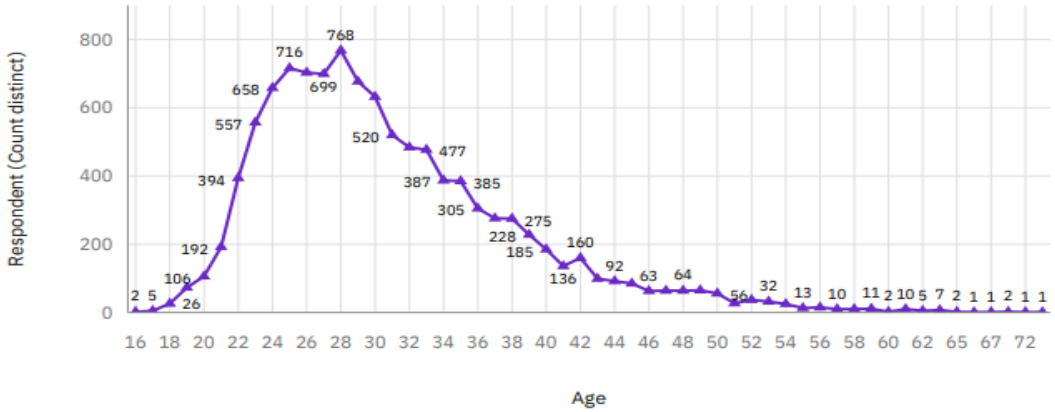
Respondent classified by Gender



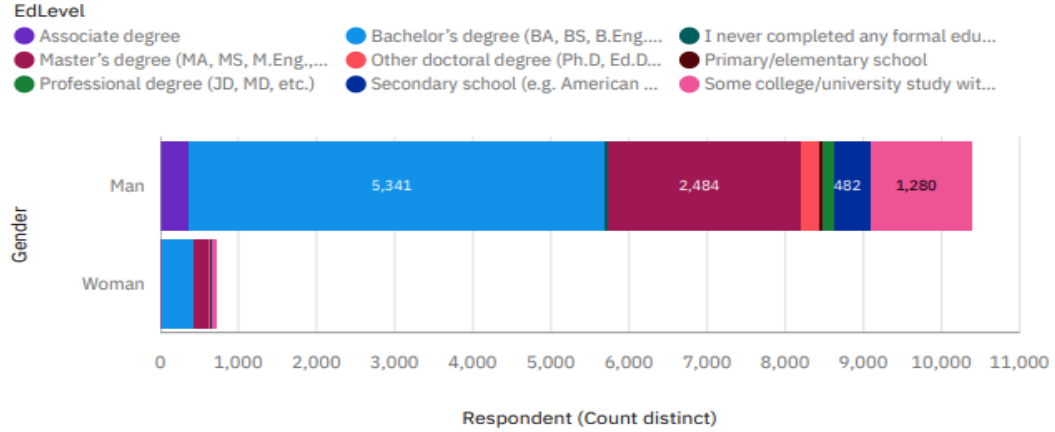
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender Classified by Formal Education Level



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SKILLS NETWORK

DISCUSSION

- Technology trends now and future
- Training and re-skilling workers
- Female participation in technology industry
- Bridge divide of technology gaps in developing countries
- Eliminate age and education discrimination

OVERALL FINDINGS & IMPLICATIONS

Findings

- First changing technology every year
- Concentration on several countries like USA and India
- Gender gap in technology jobs
- Platforms like dockers and AWS are growing

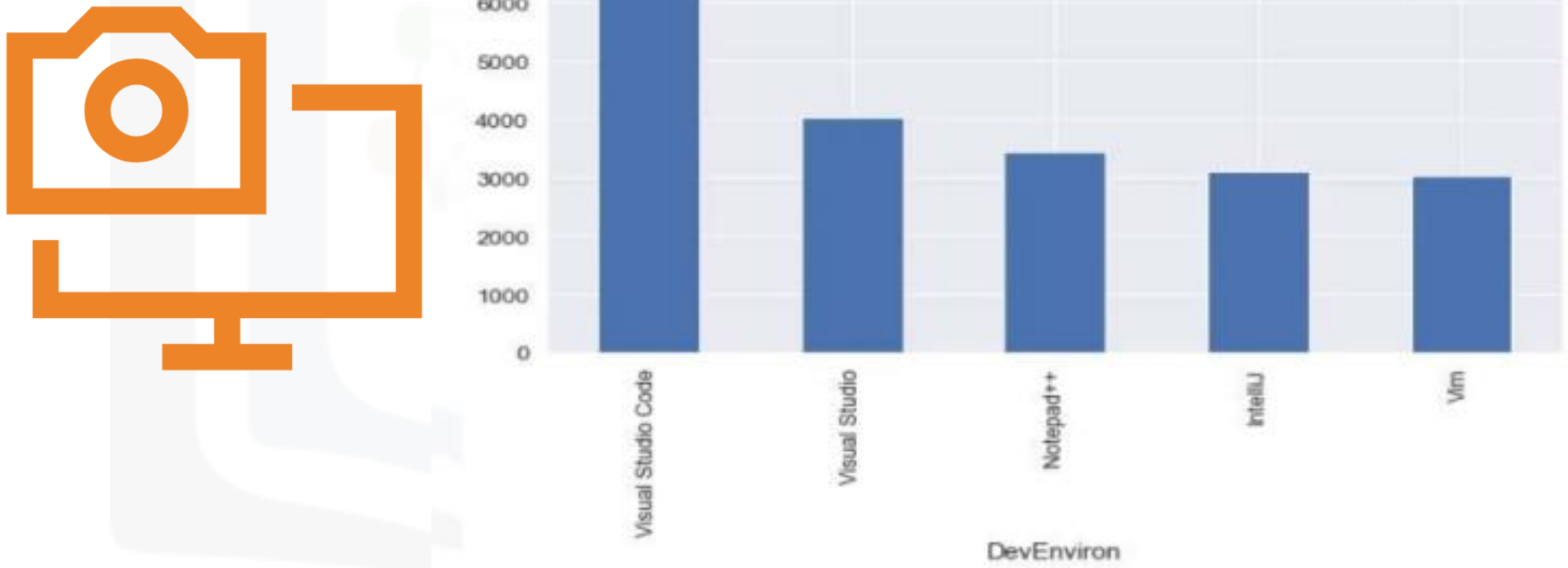
Implications

- Companies need to be flexible and adjust to rapid changes
- Need to spread technology out to lagging countries
- Impact of job hirings
- Shift to faster app deployment and cloud environments in future

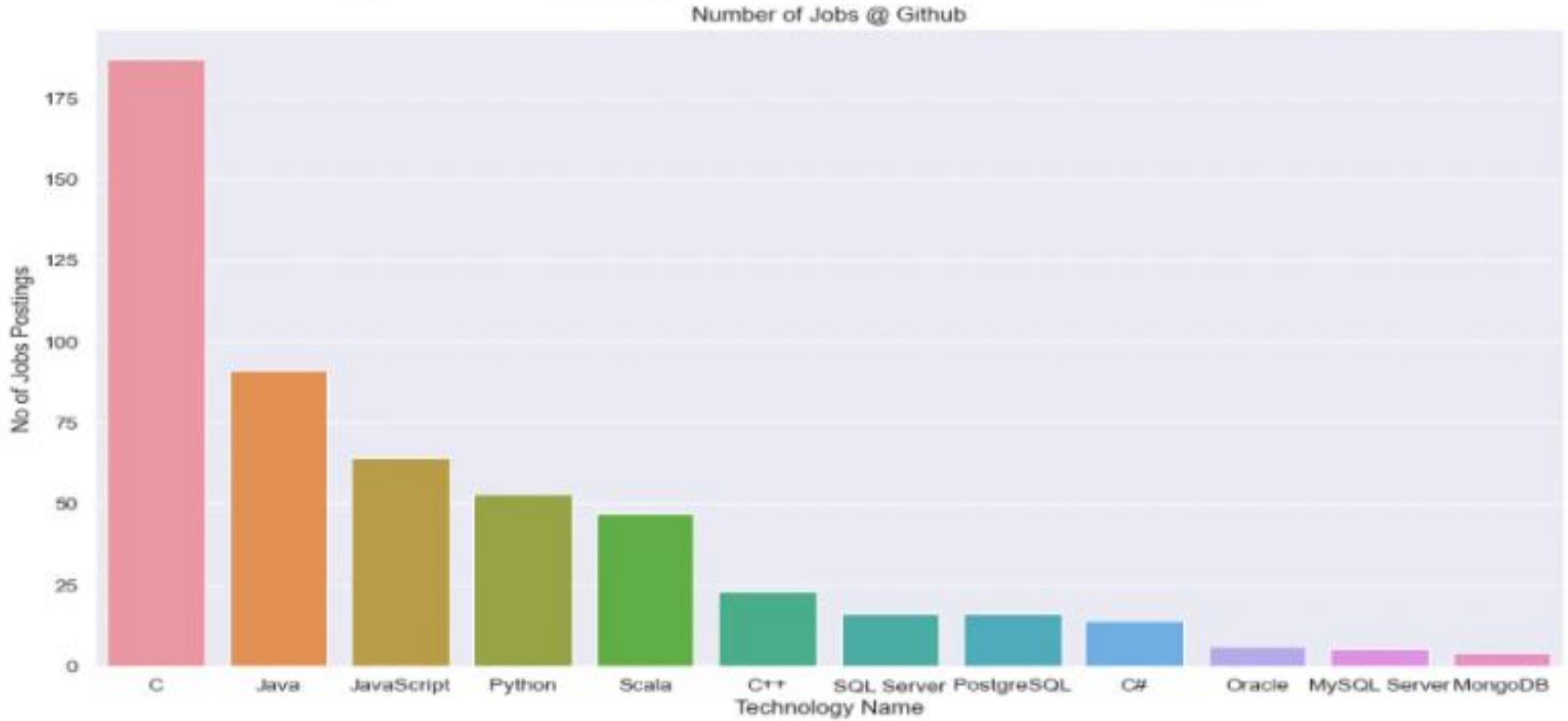
CONCLUSION

- **The Evolving Tech Landscape:** Brief overview of rapid technological advancements.
- **Importance of Staying Updated:** Highlight the need for continuous learning and adaptation.
- **Current Technology Trends:** Programming Languages, Databases, Platforms etc.
- **Demographic Overview:** Developer demographics, Skillset distribution, Industry trends
- **Actionable Insights:** skill development, technology adaptation, talent acquisition
- **Future Trends and Machine Learning:** Anticipating future technologies, Potential impact on workforce, Leveraging machine learning for trend prediction

APPENDIX


Top 5 Development Environments
Count
6000
5000
4000
3000
2000
1000
0
Visual Studio Code
Visual Studio
Notepad++
IntelliJ
Vim
DevEnviron

JOB POSTINGS



POPULAR LANGUAGES