Exploring The Current And Future Technology Ecosystem Trends

NGUYEN DINH KHANH

11/07/2024

IBM Developer

SKILLS NETWORK

OUTLINE

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

EXECUTIVE SUMMARY

- An exploratory and visual analysis of various features of the coder's landscape
- Data used comprises responses from an online survey
- A subset of a larger open sourced survey
- Objective to identify popular and desirable databases, languages, platform and other tech tools used by coders
- Additional information on demographics of respondents elaborated
- Insights gathered on work dynamics, use of SO and representation among software professionals

INTRODUCTION

- Stack Overflow, a popular website for developers, conducted an online survey of software professionals across the world.
- The survey data was later open sourced by Stack Overflow.
- The actual data set has around 90,000 responses. However, only a subset of the data has been used for the analysis.
- The data gives comprehensive information on various aspects of the software ecosystem and key trends

METHODOLOGY

Methodology:

- Survey data consisting 11,552 responses to 85 questions
- Targeted towards software professionals, spanning across 135 countries
- Data was cleaned by removed of duplicates and outliers, impute missing value, normalized and standardized for analysis
- Distributions, correlations, measures of central tendency were identified for numerical data
- Categorical and numerical data plotted as bar, column, scatter, bubble charts for visualization

RESULTS

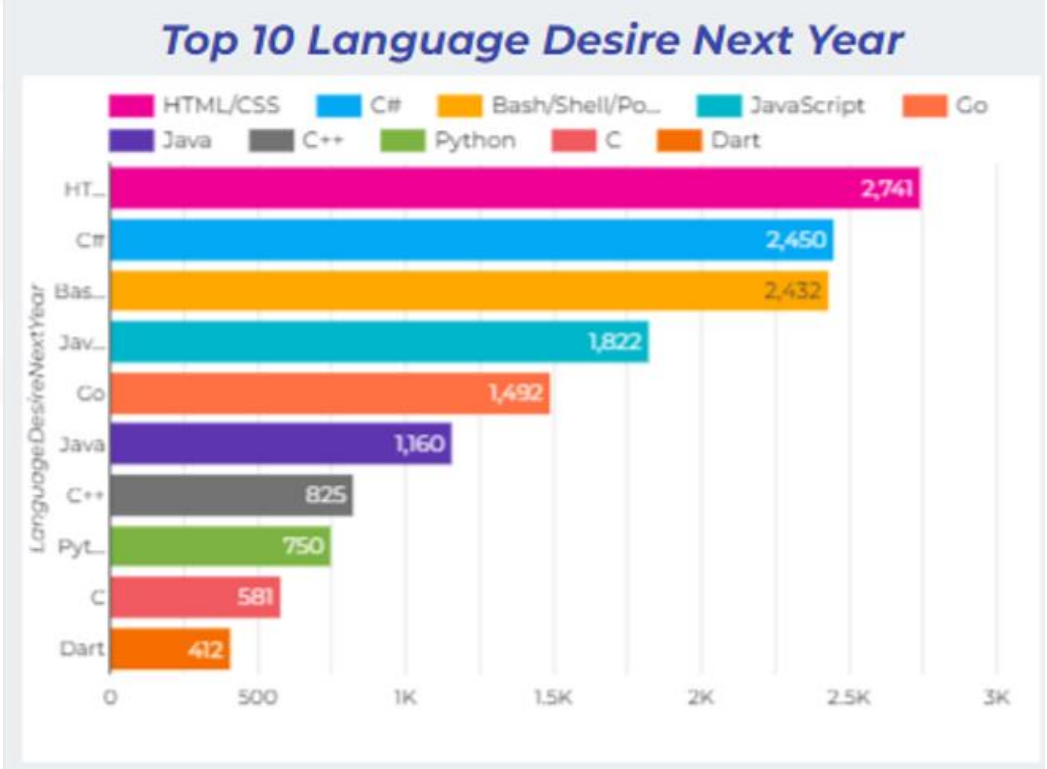
Key findings about respondents: Majority of respondents were:

- Most of the respondents are Male
- Around 24 – 35 years old (median = 29, average = 31)
- From top 3 countries of USA, UK and India
- Undergrads majored in computer science
- Work as Developers (backend, full stack)
- With 2-3 years of coding experience, rating themselves slightly above average
- Preferring to work at office and mostly satisfied with their jobs

PROGRAMMING LANGUAGE TRENDS

Current Year

Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

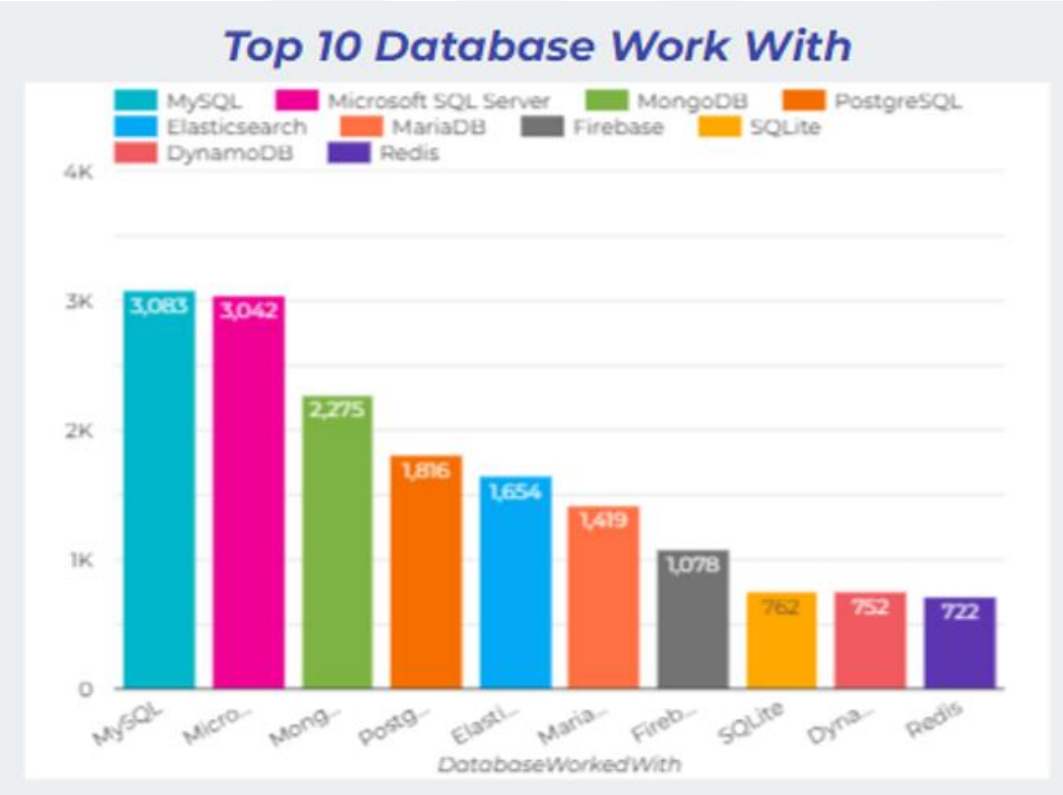
- Top language in use for current year is JavaScript, followed by HTML/CSS and SQL
- The gap between top 3 languages and the rest is quite large
- Top language for the next year is JavaScript again, followed by HTML/CSS and Python

Implications

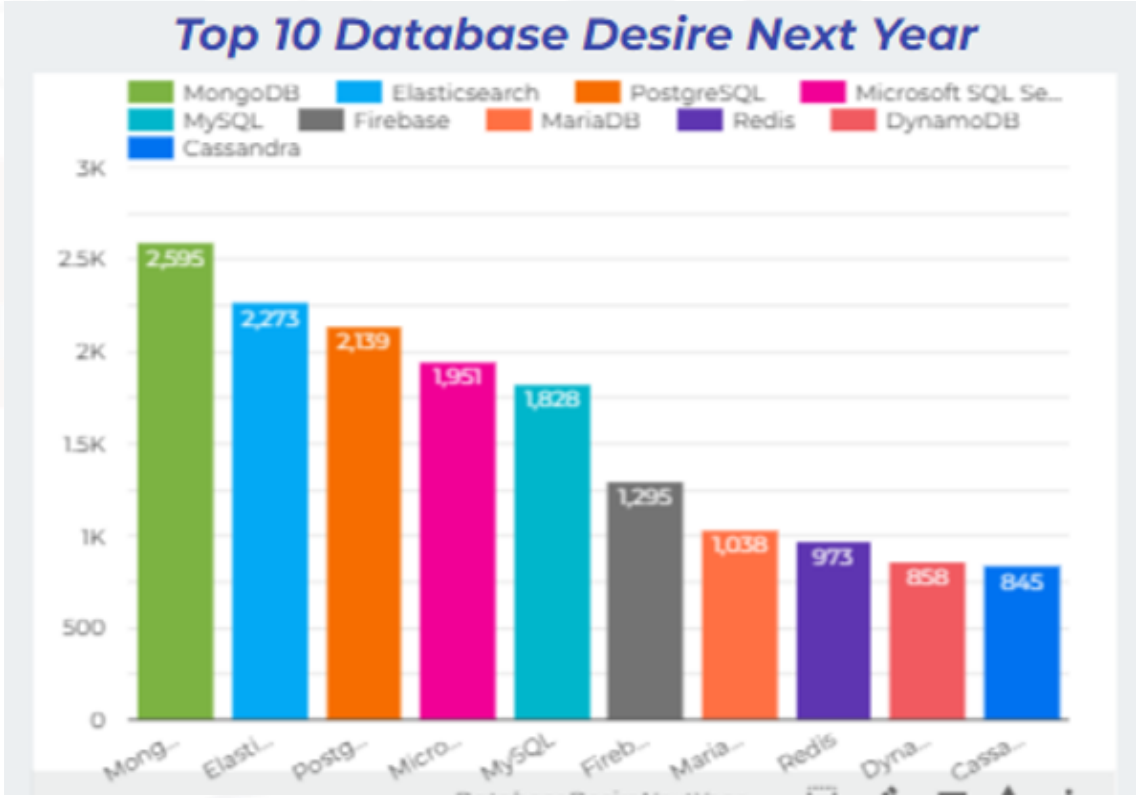
- JavaScript remains the most popular and important programming language among developers. HTML/CSS is a close seconds
- Python appears to emerge as an important language in the next year
- As far as Python and Typescript is concerned, there is a wide gap when current and future usage is concerned. Hence it is important to upskill in these languages.
- There seems to be a comparatively less popularity for Bash/PowerShell/Shell for the next year

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Top database in use for current year is MySQL, followed by PostgreSQL and Microsoft SQL Server
- The gap between top database and the rest is quite large
- Top language for the next year is PostgreSQL, followed by MongoDB and Redis

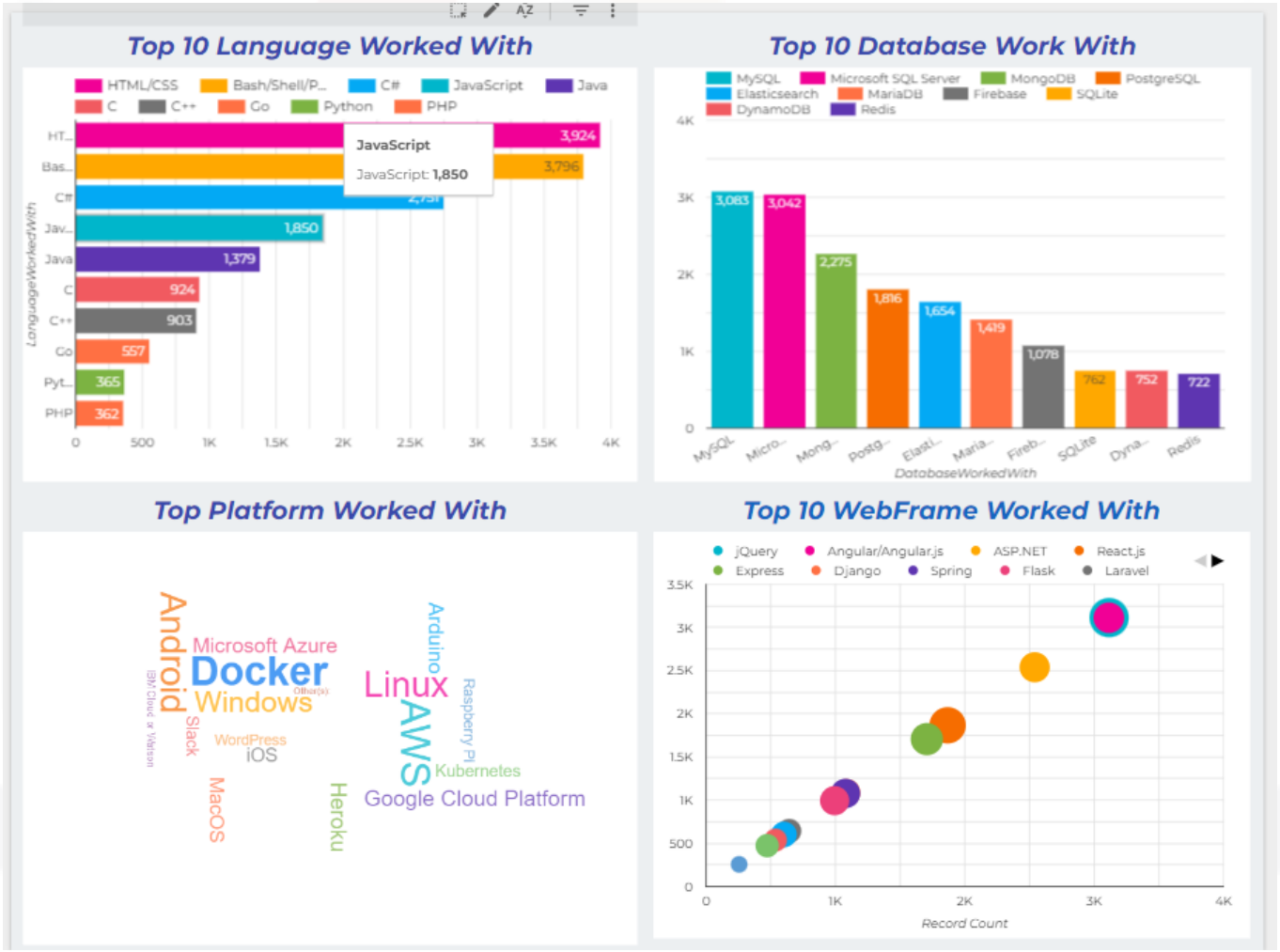
Implications

- MySQL remains the most popular and important database among developers as of current year with a wide userbase
- PostgreSQL is an important imminent database with many upcoming learners and existing users
- As far as MongoDB and Redis is concerned, there is a wide gap when current and future usage is concerned. Hence it is important to upskill in these languages.
- There seems to be a comparatively less popularity for Microsoft SQL Server for the next year

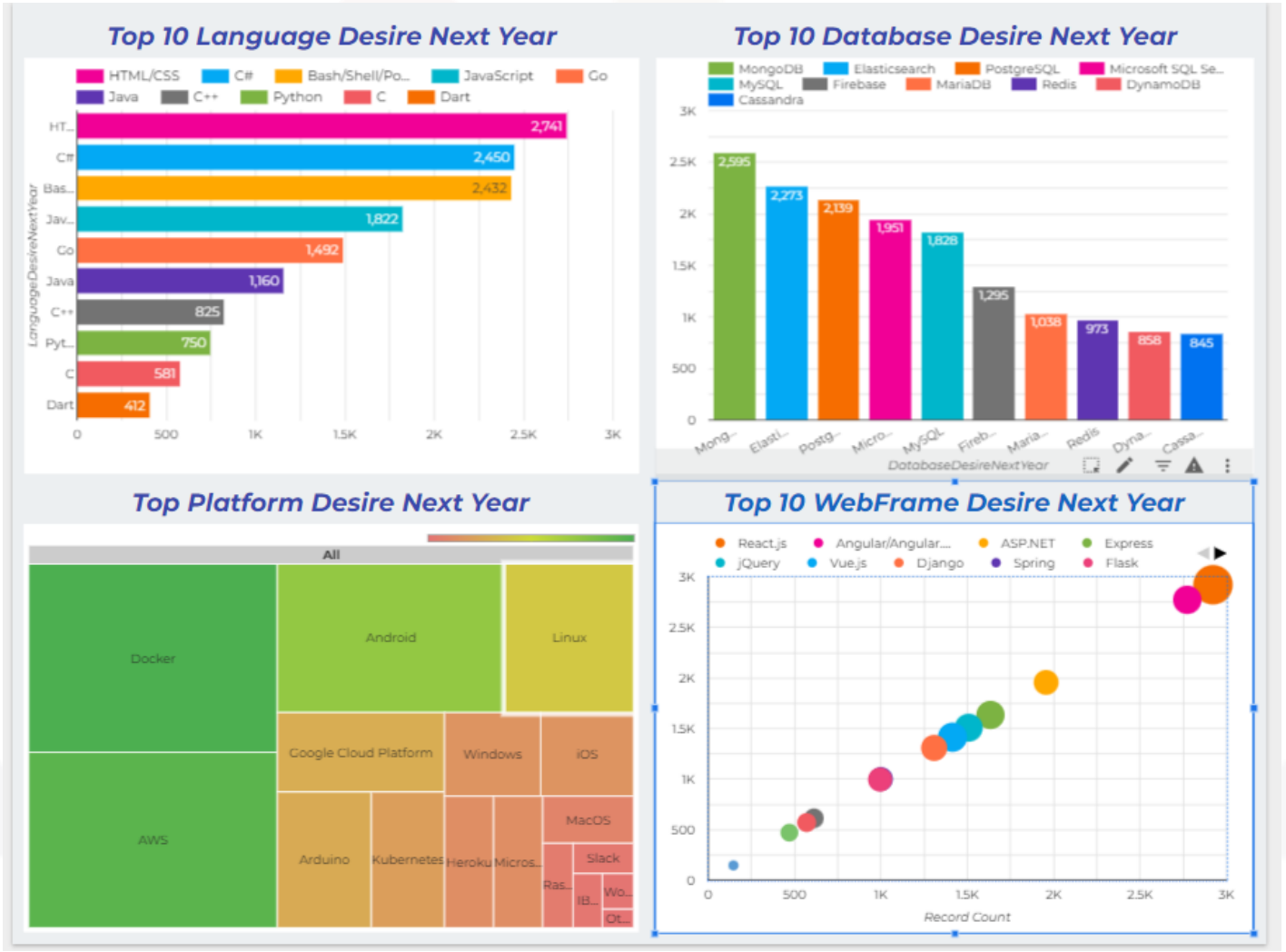
DASHBOARD

https://github.com/KhanhKhanh1010/Assignment-Dashboard/blob/main/Assignment.pdf

DASHBOARD TAB 1

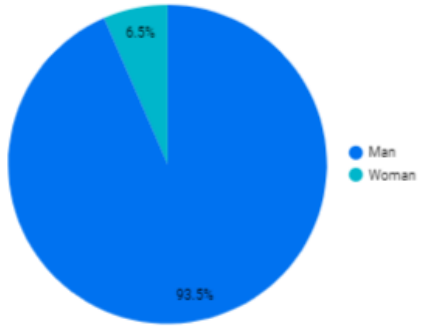


DASHBOARD TAB 2

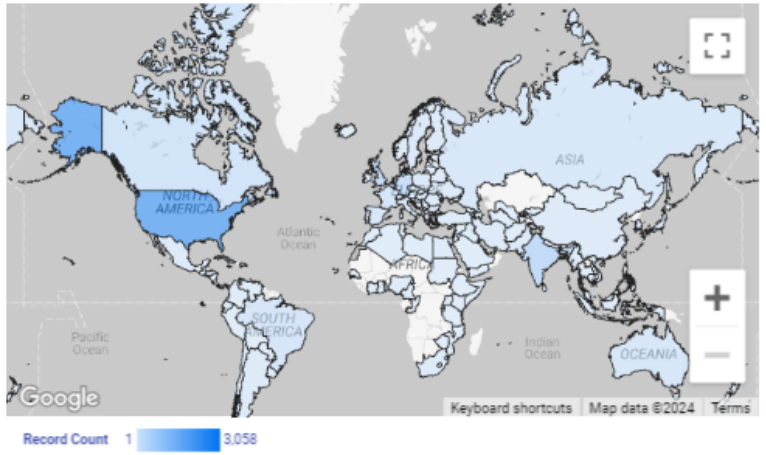


DASHBOARD TAB 3

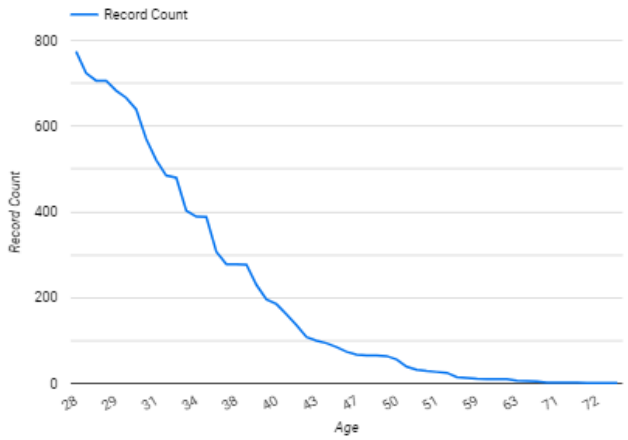
Respondent classified by Gender.



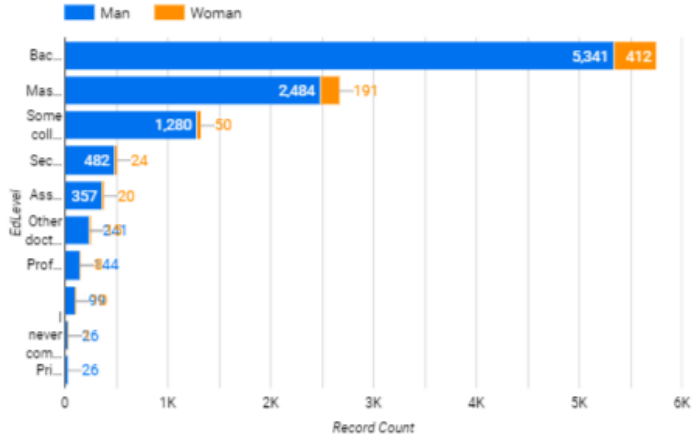
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



DISCUSSION

- The survey responses implies there is a high gender gap with representation of women in the developer ecosystem being extremely less
- Among countries too, many responses are from US, hence gaining such information across other countries is just as important
- Gaps between tools in the current year and next year should be minimized by constant upskilling

DISCUSSION

- Majority of the developers have a Stack Overflow account and participate in answering questions once a month. They also suggest they somewhat feel part of the SO community
- A good chunk prefer to work in-office and plan out their workdays. The main challenges faced includes: Being tasked with non-development work, Distracting work environment and Meetings

OVERALL FINDINGS & IMPLICATIONS

Findings

- Gaps in gender and demography
- Gaps in current and future year tech trends
- A number of work challenges discovered

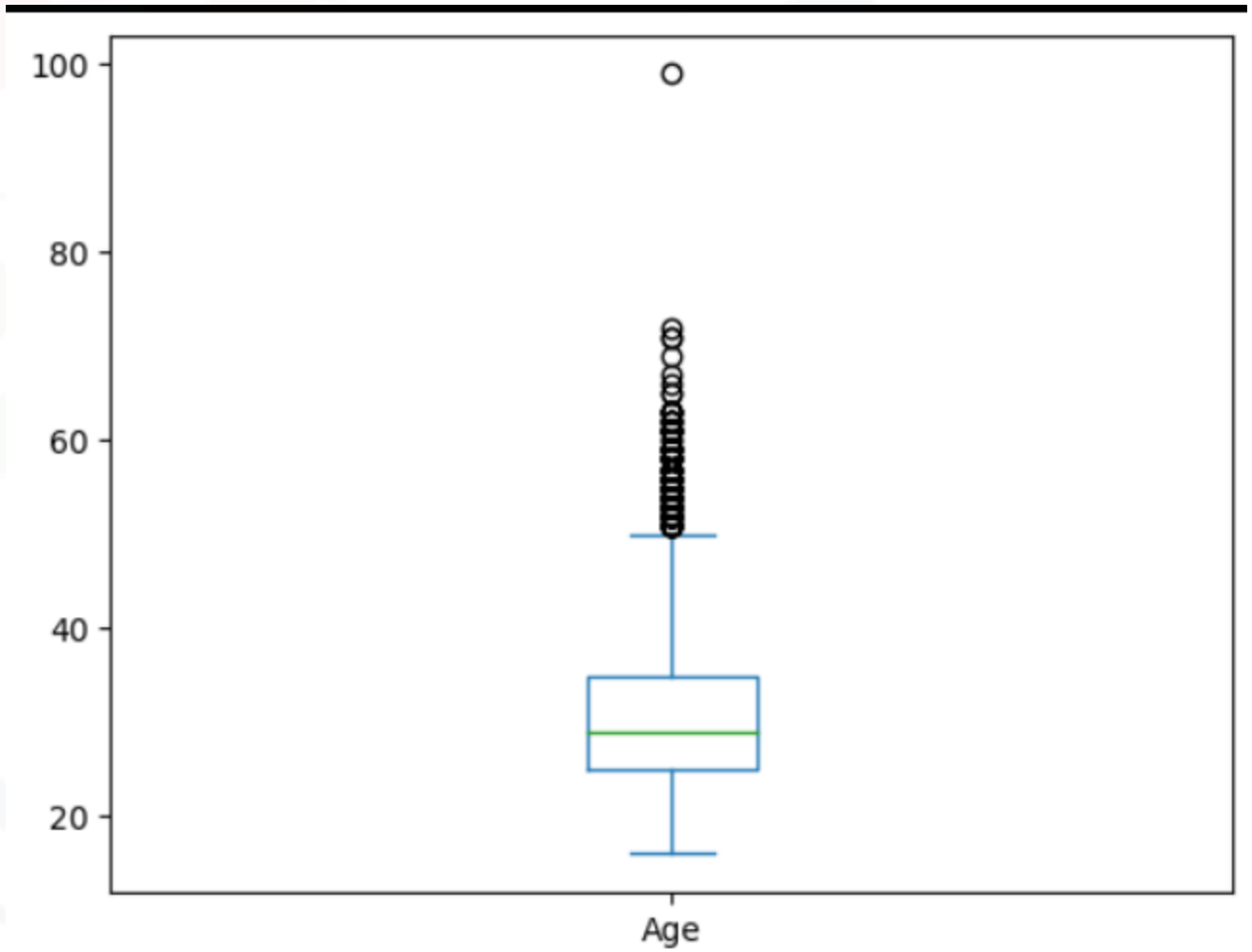
Implications

- Important to reduce gaps for better representation
- Important to upskill and provide more opportunities for on the job learning
- Important to provide quality environment for best performance of developers

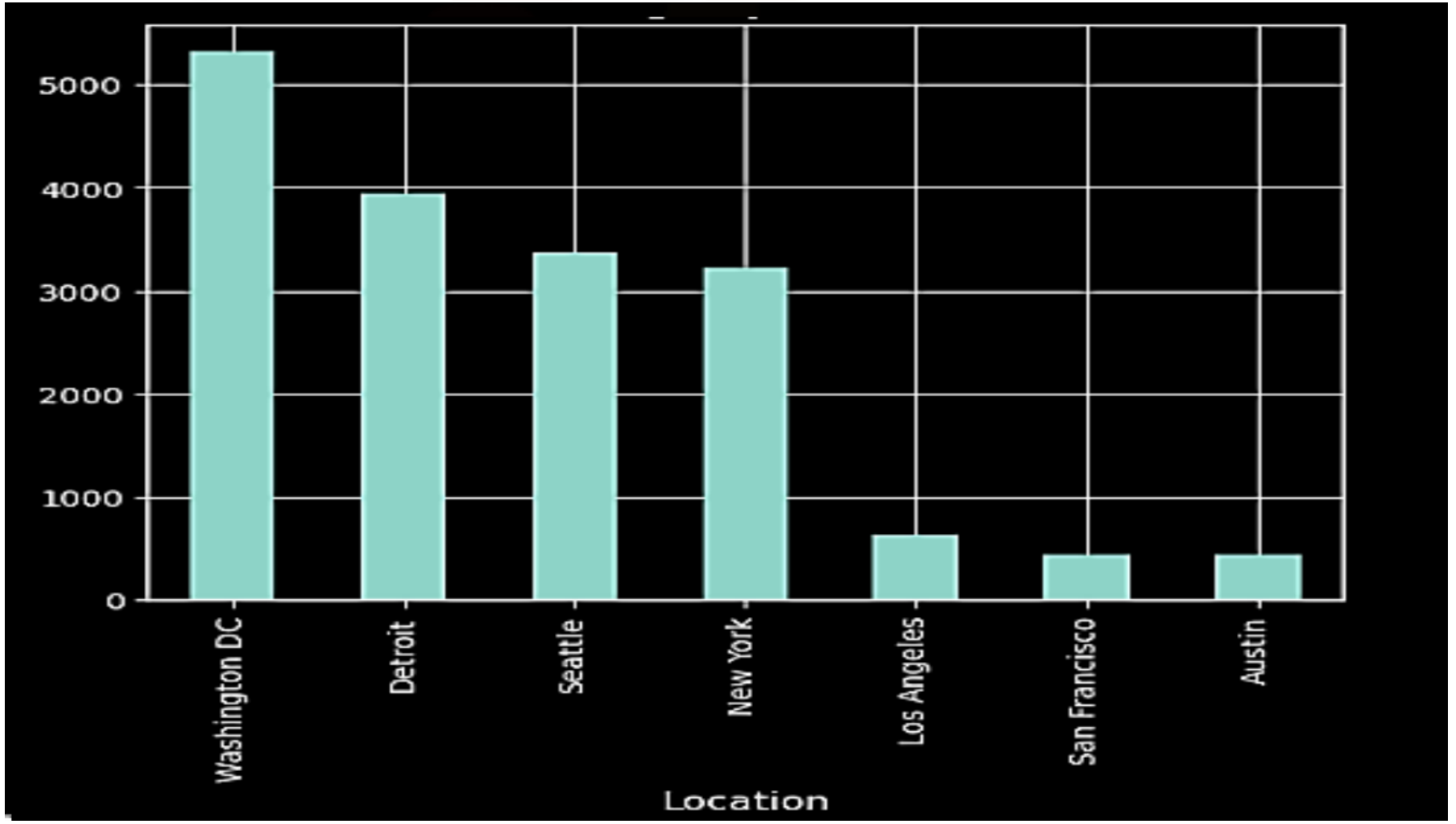
CONCLUSION

- An overview of various aspects of the developer ecosystem
- Survey data scraped/extracted, cleaned, analyzed and visualized
- Data revealed information on work dynamics and demography of the developer community
- Important to address various gaps to improve the overall developer landscape

APPENDIX



JOB POSTINGS



POPULAR LANGUAGES