ANALYZING DEVELOPER SURVEY 2019: UNVEILING KEY DATA TRENDS AND PATTERNS

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OUTLINE

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

EXECUTIVE SUMMARY

- This report highlights current and projected trends in the demand for skills in programming, database, platform and web frame. The demographics of the technology workforce are also examined.
- The data was collected from a Stack Overflow survey, IBM site, and GitHub job postings. It was then cleaned, analyzed, and visualized on dashboards.
- The findings indicate that JavaScript, PostgreSQL, Linux, and React.js are expected to experience increased demand in the future.
- Moreover, the survey respondents are predominantly male, from the USA, and 28 years old, with most holding a bachelor's degree.
- Identifying future skills needs and trends helps organizations make informed, data-driven recruitment and budget decisions.

INTRODUCTION

- The report showcases current and projected trends in demand for programming, database, platform, and web framework skills.
- The report targets IT professionals, hiring managers, and others interested in learning about the most in-demand IT skills in each industry.
- The reader gain this report by the following inquiries:
  1. Which programming languages are currently in high demand?
  2. What are the most popular database skills?
  3. What popular platforms are there?
  4. Which web frameworks are in demand?

METHODOLOGY

Data in various formats, such as the number of jobs currently available for different locations, were collected using the Github jobs API in Python.

The IBM website was scraped to obtain the names of programming languages and their corresponding annual salaries. The dataset from the 2019 Stack Overflow developer survey was downloaded and saved.

Python was used to clean and analyze the data. An exploratory data analysis was carried out to assess the distribution of data, the presence of outliers, and the correlation between various columns in the dataset.

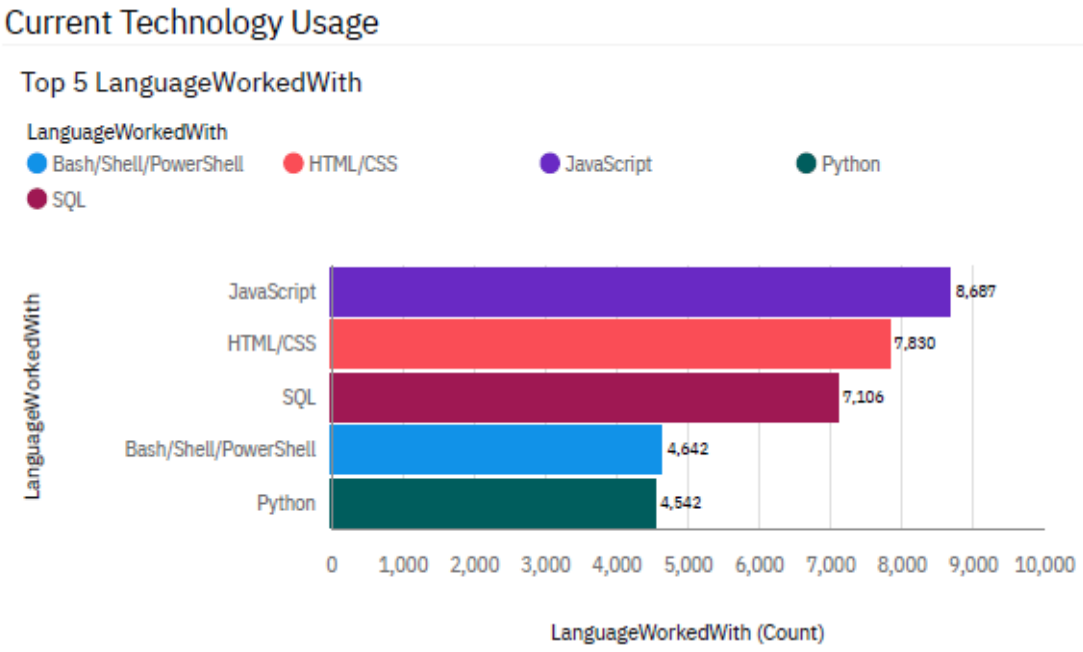
The data was visualized using Python and Cognos Analytics through charts, graphs, and dashboards. All Python analysis was carried out on Jupyter Notebook through Visual Studio.

RESULTS

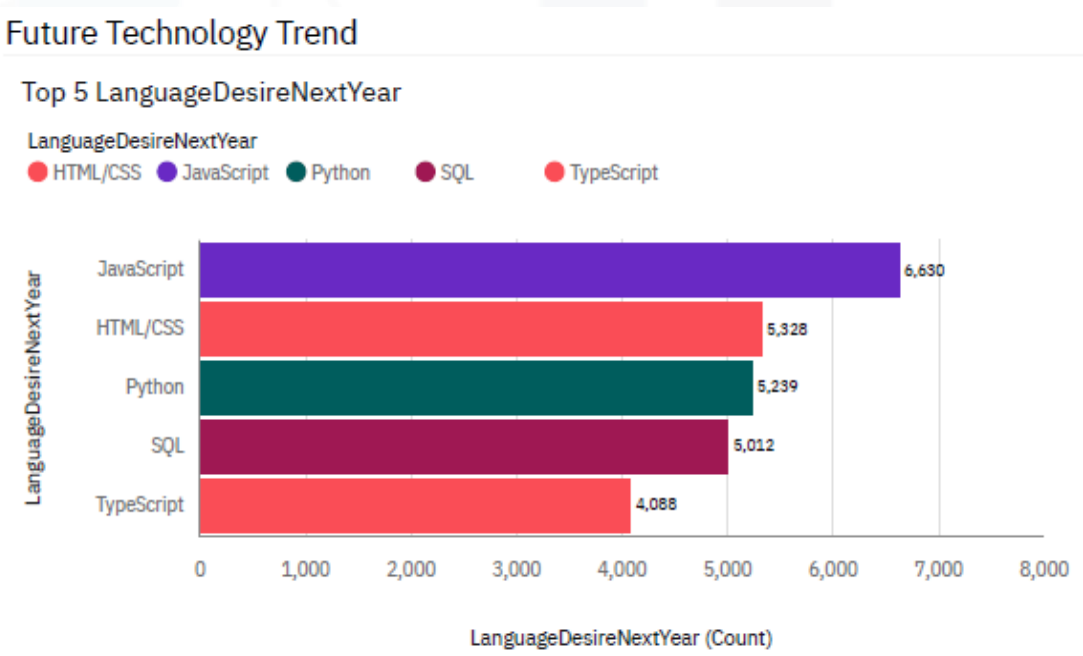
Respondent	LanguageWorkedWith	LanguageDesireNextYear	DatabaseWorkedWith	DatabaseDesireNextYear	PlatformWorkedWith	PlatformDesireNextYear	WebFrameWorkedWith	WebFrameDesireNextYear
4	C	C	MySQL	MySQL	Linux	Linux		
4	C++	C#	SQLite	SQLite	Windows	Windows		
4	C#	JavaScript						
4	Python	SQL						
4	SQL							
9	Bash/Shell/PowerShell	Bash/Shell/PowerShell	DynamoDB	PostgreSQL	AWS	AWS	Express	Express
9	C#	C	PostgreSQL	Redis	Docker	Docker	Ruby on Rails	Ruby on Rails
9	HTML/CSS	HTML/CSS	SQLite	SQLite	Heroku	Heroku	Other(s):	Other(s):
9	JavaScript	JavaScript			Linux	Linux		
9	Python	Ruby			MacOS	MacOS		
9	Ruby	Rust			Slack	Slack		
9	Rust	SQL				Other(s):		
9	SQL	TypeScript						
9	TypeScript	WebAssembly						
9	WebAssembly	Other(s):						
9	Other(s):							
13	Bash/Shell/PowerShell	Bash/Shell/PowerShell	Couchbase	Firebase	Android	Android	Angular/Angular.js	Express
13	HTML/CSS	HTML/CSS	DynamoDB	MySQL	AWS	AWS	ASP.NET	Vue.js
13	JavaScript	JavaScript	Firebase	Redis	Docker	Docker	Express	
13	PHP	Rust	MySQL		IBM Cloud or Watson	IBM Cloud or Watson	jQuery	
13	SQL	SQL			iOS	Linux	Vue.js	
13	TypeScript	TypeScript			Linux	Slack		
13		WebAssembly			MacOS	Windows		
13					Microsoft Azure	WordPress		
13					Slack			
13					Windows			
13					WordPress			
16	Bash/Shell/PowerShell	C#	MongoDB	Elasticsearch		AWS	Angular/Angular.js	Angular/Angular.js
16	C#	HTML/CSS	Microsoft SQL Server	MongoDB		Google Cloud Platform	ASP.NET	ASP.NET
16	HTML/CSS	JavaScript	MySQL	Microsoft SQL Server		Microsoft Azure	jQuery	React.js
16	JavaScript	TypeScript		SQLite				
16	TypeScript	WebAssembly						
16	VBA	Other(s):						
17	Bash/Shell/PowerShell	Bash/Shell/PowerShell	MongoDB	Elasticsearch	Arduino	Docker	Angular/Angular.js	Angular/Angular.js
17	HTML/CSS	HTML/CSS	PostgreSQL	Firebase	Docker		Express	Express
17	JavaScript	Java		MongoDB	Heroku		Spring	React.js
17	TypeScript	JavaScript		PostgreSQL	Raspberry Pi			Spring

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

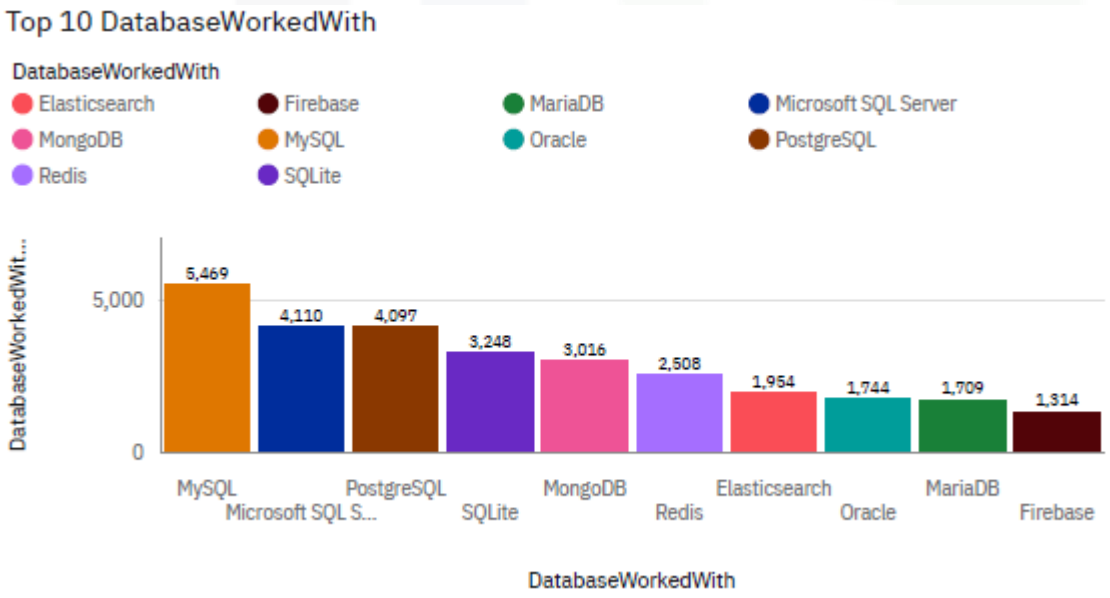
- JavaScript and HTML/CSS remain popular programming languages.
- Python will be more in demand than SQL next year.
- TypeScript is a strong preference.
- Bash/Shell/PowerShell is not a top 5 language anymore.

Implications

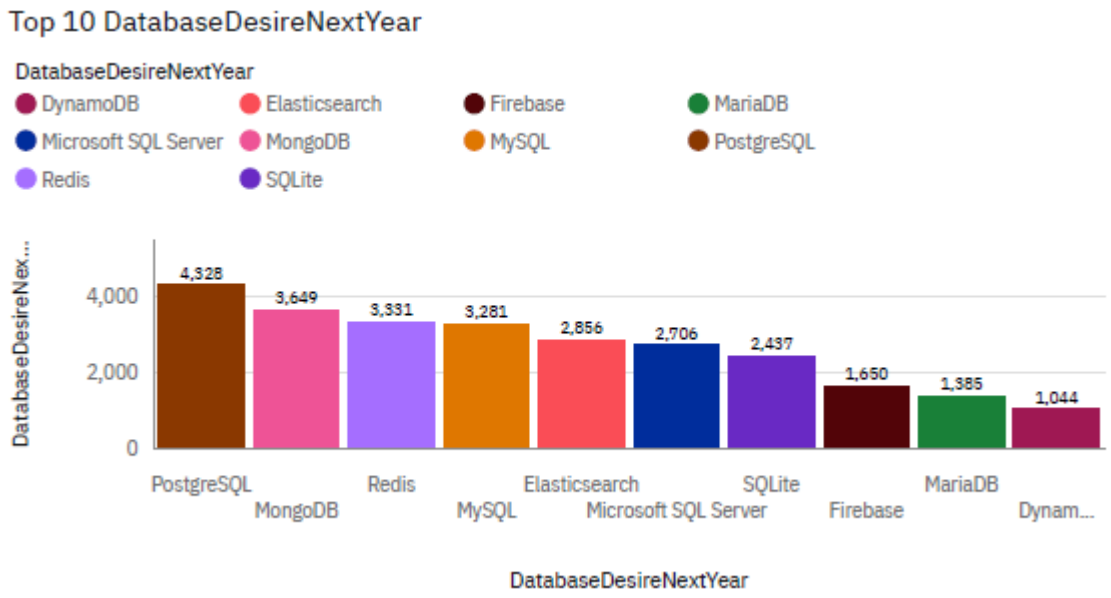
- Maintain a similar number of JavaScript and HTML/CSS specialists.
- Continue to hire more individuals skilled in Python.
- Bring on extra TypeScript skills.
- Possible migration of developers from Bash / Shell / PowerShell to TypeScript.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- MySQL has dropped out of the top spot.
- Lack of interest in Microsoft SQL Server and SQLite.
- PostgreSQL and MongoDB have become increasingly popular.
- Oracle has a less requested database.

Implications

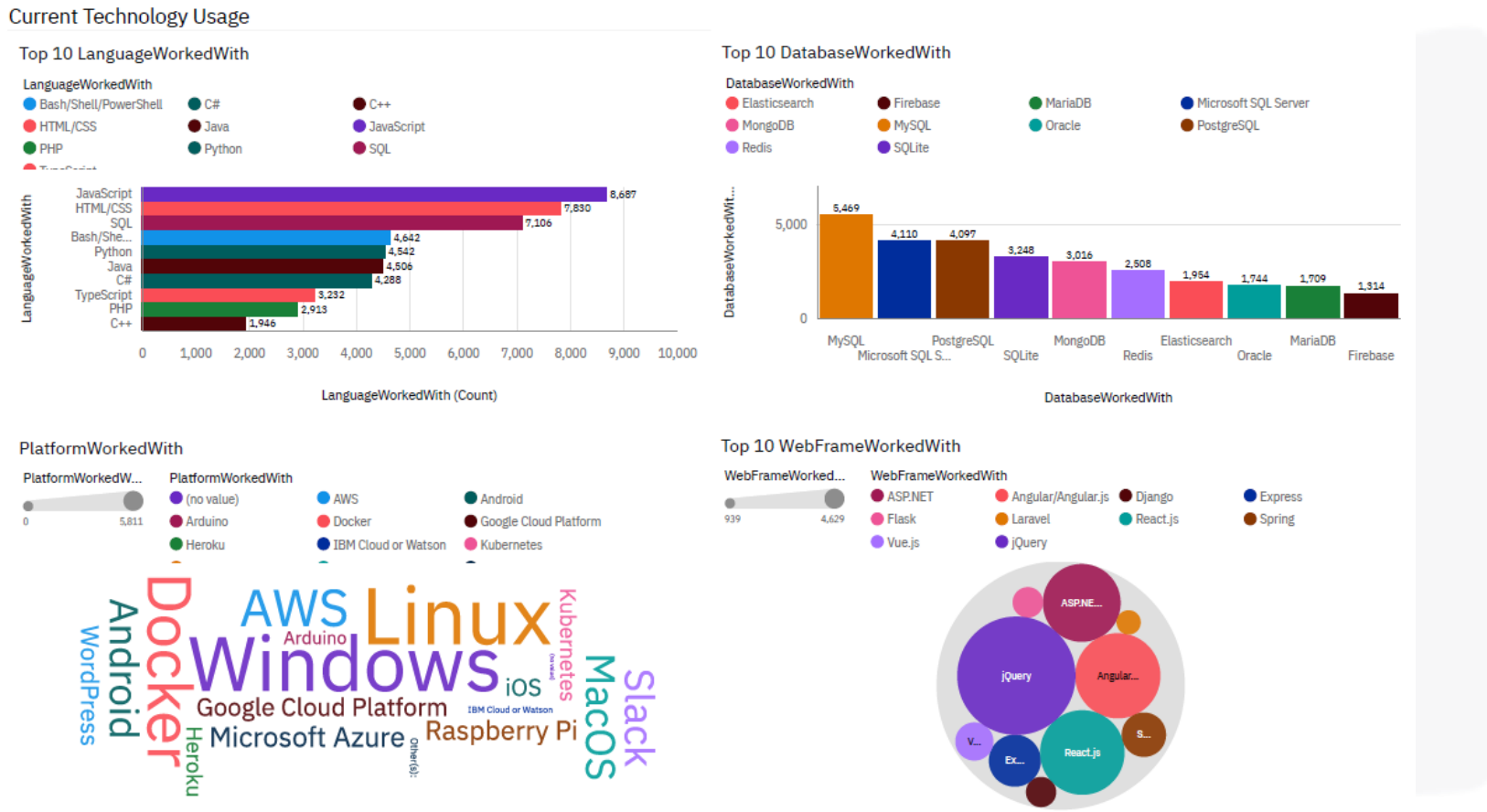
- Employing fewer people with MySQL skills.
- Reduce the number of people with Microsoft SQL Server and SQLite skills.
- Hire additional personnel with expertise in PostgreSQL and MongoDB.
- Decrease the number of people with Oracle expertise.

DASHBOARD

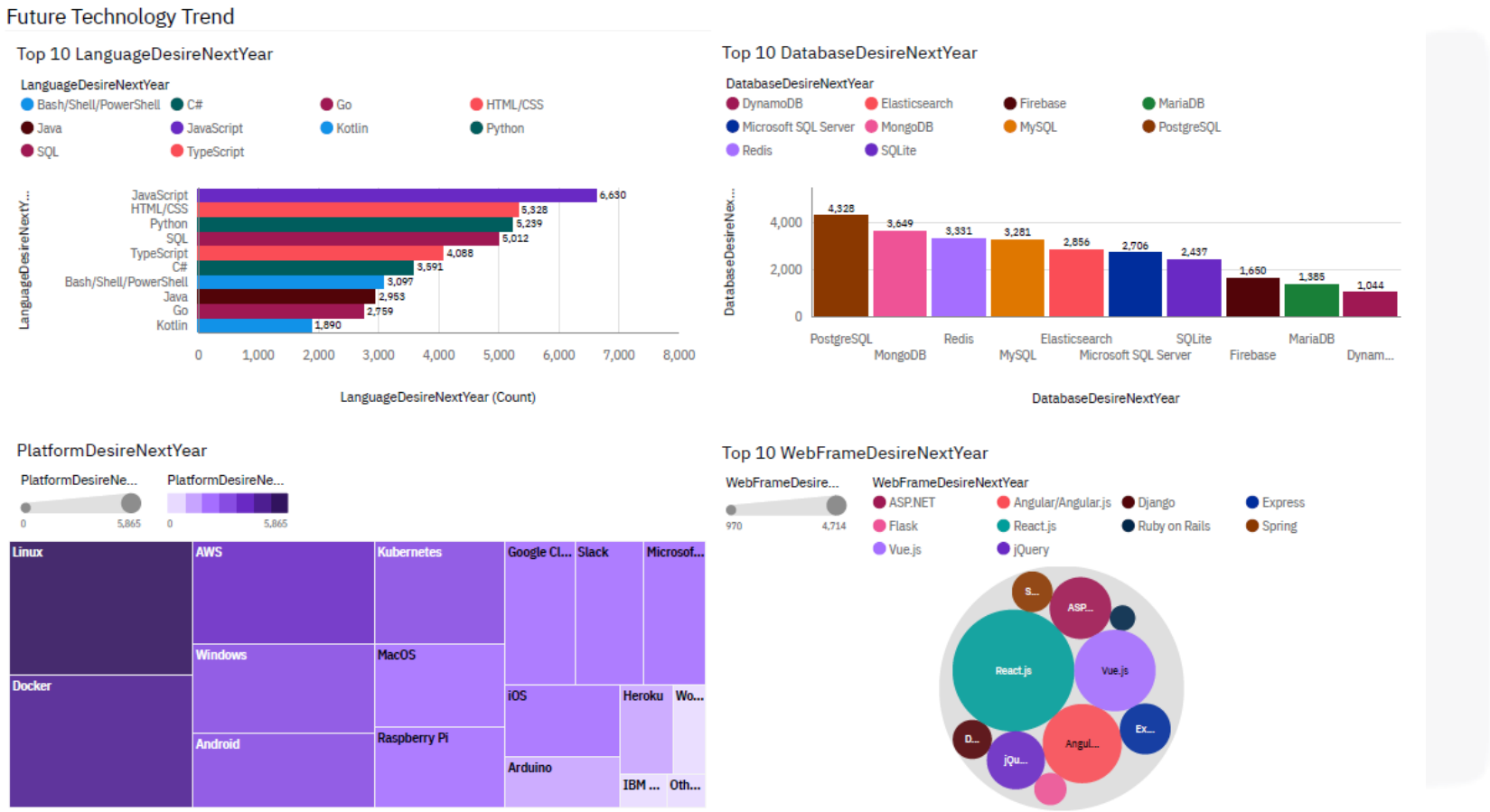
The permanent shareable link of Cognos dashboard:

https://ap1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FDashboards&action=view&mode=dashboard&subView=model0000018e710f9865_00000001

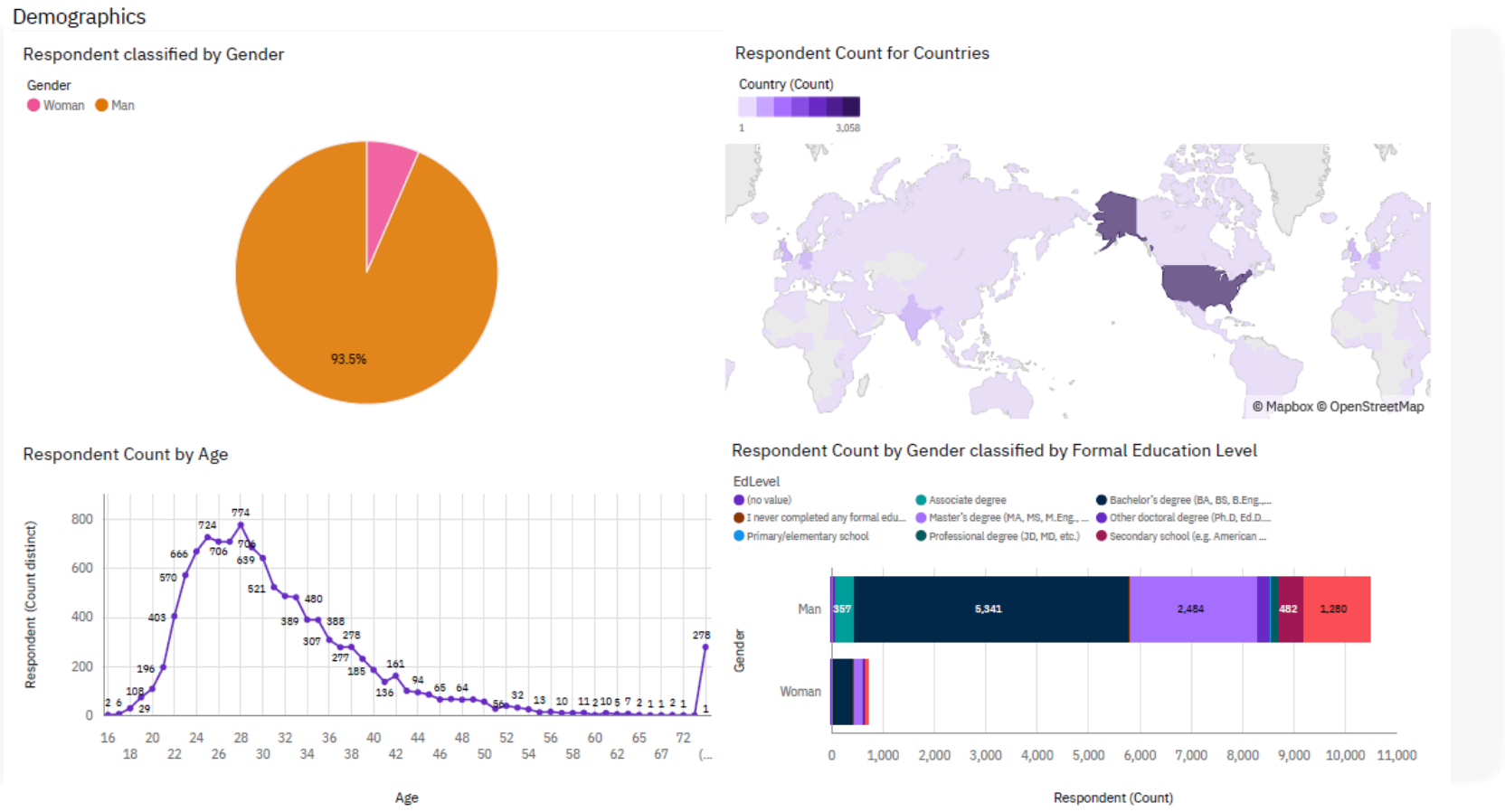
DASHBOARD TAB 1



DASHBOARD TAB 2



DASHBOARD TAB 3



DISCUSSION

- Current and future technology trends.
- Training and retraining of employees.
- Women's participation in technology.
- Eliminating employment discrimination based on age and education.
- Bridging the technology divide in developing countries.

OVERALL FINDINGS & IMPLICATIONS

Findings

- JavaScript remains the top programming language.
- Migration of the interest database from MySQL into PostgreSQL.
- Linux is the leading platform technologies.
- React.js is becoming a more popular web framework than jQuery.
- More than 90% of young developers in the tech industry, aged 28, are male.
- Developers are concentrated in the United States and India.
- Most individuals in the IT industry hold a bachelor's degree.

Implications

- Continue to employ enough staff skilled in JavaScript.
- Hire more professionals with expertise in PostgreSQL.
- Continue to hire enough Linux experts.
- Keep hiring people with React.js skills.
- Polarizing the global gender of developers.
- Technology needs to be spread to lagging countries.
- Developing countries need better access to technology education.

CONCLUSION

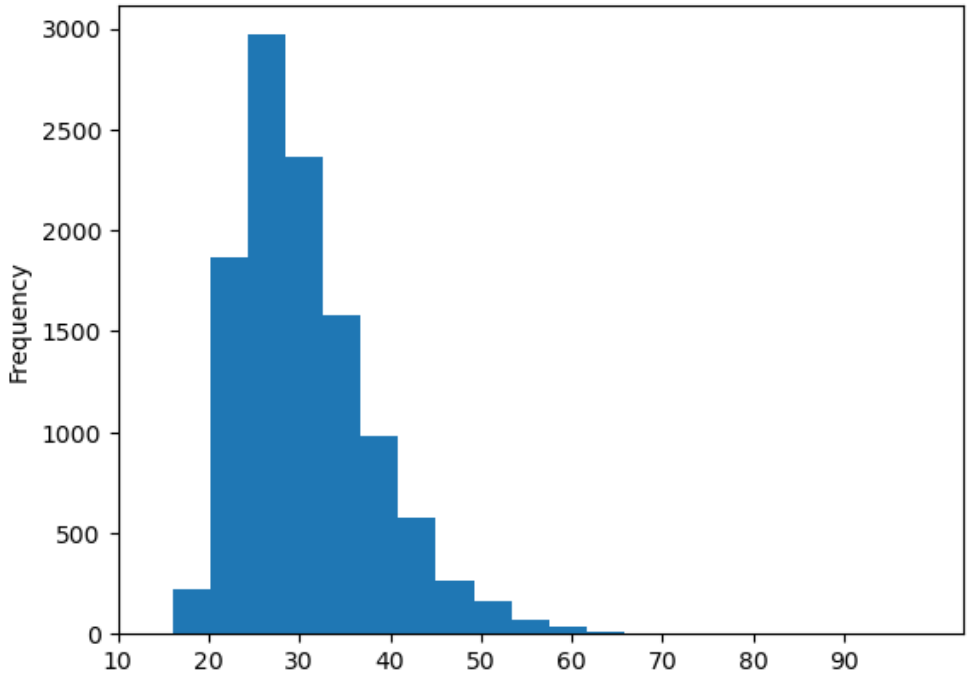
- Adapt the workforce according to the skills that are in demand.
- Allocate budget to hire additional staff with the necessary skills to fill any gaps.
- The task at hand is to increase accessibility to the labor market in developing. countries.
- Access to technology education needs to be improved in developing countries.

APPENDIX

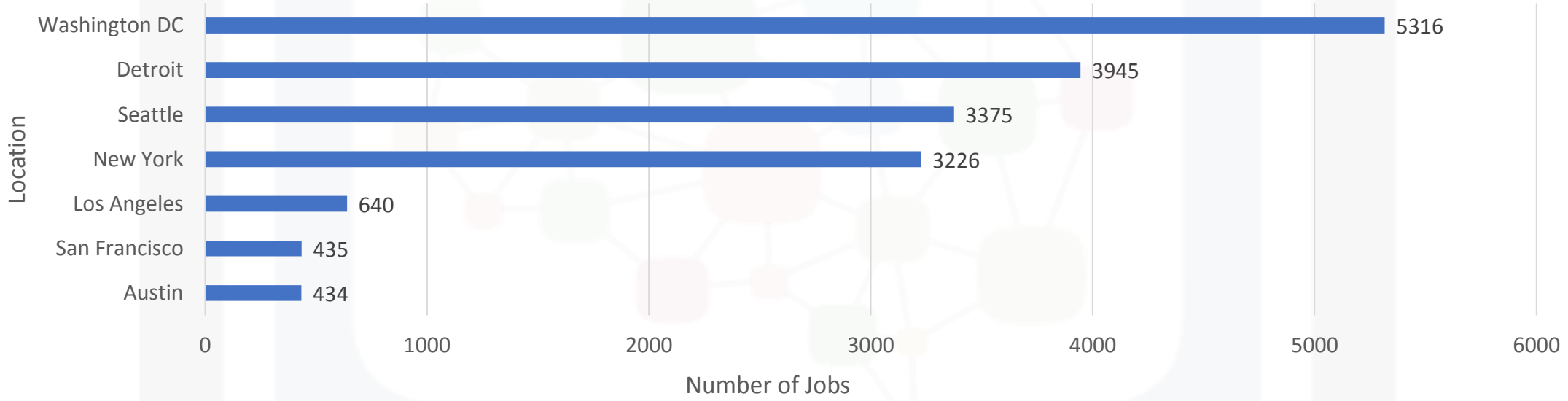
Plot a histogram of the column `Age`.

```
# your code goes here
df.Age.plot(kind = 'hist',bins = 20, xticks = [10,20,30,40,50,60,70,80,90])
```

```
<AxesSubplot:ylabel='Frequency'>
```



JOB POSTINGS



POPULAR LANGUAGES