



Current and Future Technology Trends

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OUTLINE



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



- Introduction
 - Trends in programming languages and databases
- Methodology
 - Gathering Data
 - Programming languages & Databases
 - Demographics survey
 - Analyzing Data
 - Cleaning and organizing data
 - Visualizing Data
 - Creating Dashboards
 - Tools
- Results
- Dashboards
- Discussions
- Conclusions

INTRODUCTION



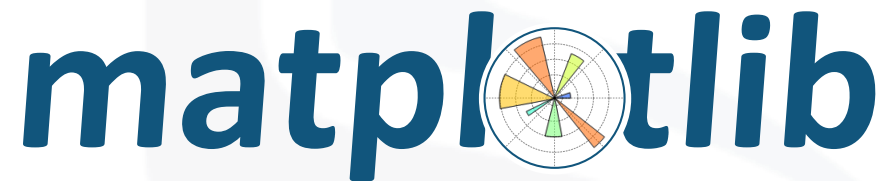
- What: Analyze of the developments languages and database technologies
- Why:
 - Follow the evolution of the various technologies in data managements and its development tools
 - Help for decision's making process concerning employees current and future needed skills
- Who: IT and HR deciders
- Support:
 - Analyzed database
 - Various dashboards

METHODOLOGY



- **Gathering Data**
 - From Stack Overflow Developer 2019 Survey
 - GitHub Job Postings
 - Annual Salary by programming languages
- **Data Cleaning**
- **Creating Data Visualization**
- **Dashboards**
- **Analyzing Results**
- **Presentation**

METHODOLOGY – TOOLS



IBM Cognos
Analytics

RESULTS

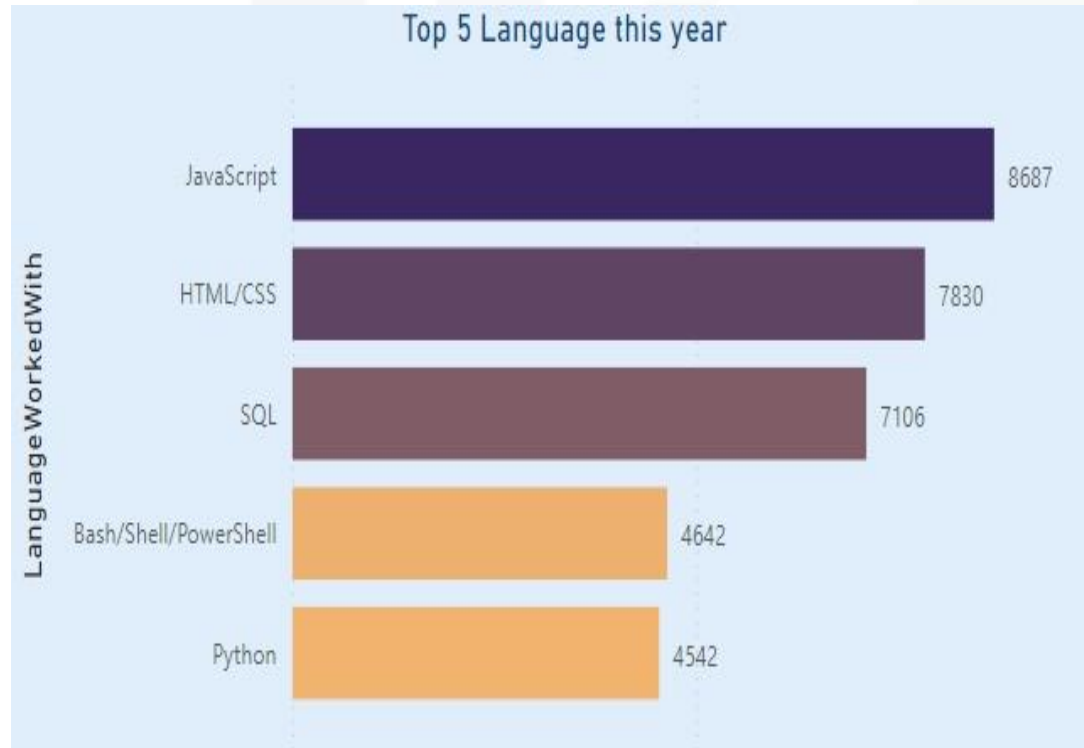
From Database to Dashboards

- The results of the analyze are taken from two databases that hold tens of thousands of information.
- We put them into Dashboards by filtering and grouping them, so they are easier to understand.

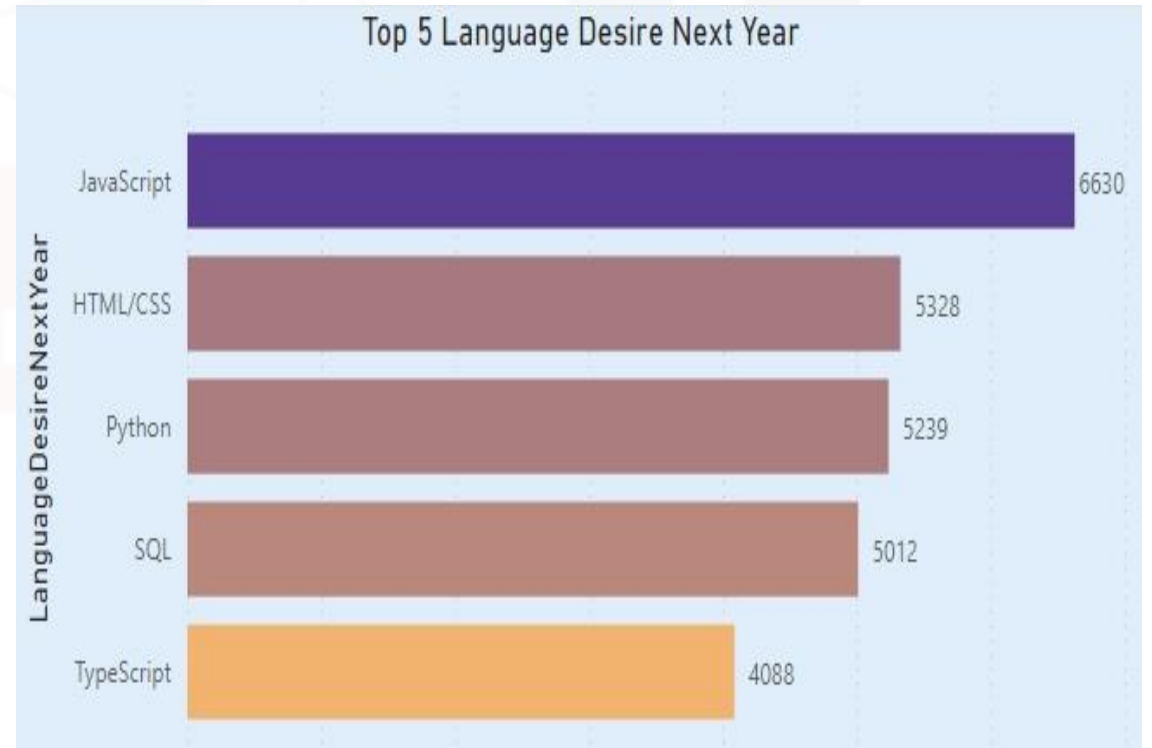
Response	MainBranch	Hobbyist	OpenSource	OpenSource	Employment	Country	Student	EdLevel	Undergraduate	EduOther	OrgSize	DevType	YearsCode	Age1stCode	YearsCode	CareerSat	JobSat	MgrIdiot	MgrMone	MgrWant	JobSeek	LastHireD	LastInt	FizzBuzz
4	I am a dev	No	Never	The quality	Employed	United States	No	Bachelor's	Computer	Taken an	<100 to 499	Developer	3	16	Less than	Very satisfied	Slightly satisfied	Very confident	No	Not sure	I am not interested	Less than	Write code	No
9	I am a dev	Yes	Once a month	The quality	Employed	New Zealand	No	Some college	Computer	Taken an	<10 to 19 employees	Database	12	11	4	Slightly satisfied	Slightly satisfied	Somewhat	No	Not sure	I am not interested	Less than	Write any	Yes
13	I am a dev	Yes	Less than	OSS is, on	Employed	United States	No	Master's	Computer	Taken an	<10 to 19 employees	Data or business	17	11	8	Very satisfied	Very satisfied				I am not interested	3-4 years ago	Complete	Yes
16	I am a dev	Yes	Never	The quality	Employed	United Kingdom	No	Master's	degree	Taken an	<100 to 499	Developer	10	17	3	Very satisfied	Slightly satisfied	Somewhat	No	No	I am not interested	3-4 years ago	Interview	Yes
17	I am a dev	Yes	Less than	The quality	Employed	Australia	No	Bachelor's	Computer	Taken an	<20 to 99 employees	Developer	5	18	2	Slightly satisfied	Neither satisfied nor dissatisfied	Somewhat	No	No	I am active	Less than	Complete	No
19	I am a dev	Yes	Never	The quality	Employed	Brazil	No	Some college	Computer	Received	100 to 499	Developer	14	13	13	Very dissatisfied	Very satisfied	Very confident	No	No	I am not interested	Less than	Interview	No
20	I am not a programmer	No	Never	OSS is, on	Employed	Lithuania	No	Master's	Informatics	Taken an	<1,000 to 4,999	Database	8	17	4	Very satisfied	Slightly dissatisfied	Very confident	No	I am already	I am not interested	More than	Interview	No
22	I am a dev	Yes	Less than	OSS is, on	Employed	United States	No	Some college/university		Taken an	<10,000 or more employees	Data or business	35	12	18	Slightly satisfied	Very dissatisfied	Somewhat	No	No	I am not interested	More than	Interview	No
23	I am a dev	Yes	Less than	The quality	Employed	United States	No	Bachelor's	Informatics	Taken an	<10,000 or more employees	Developer	3	19	1	Slightly satisfied	Slightly satisfied	Very confident	No	Not sure	I am not interested	Less than	Write any	No
24	I am a dev	Yes	Never	OSS is, on	Employed	Israel	No	Primary/elementary		Taken an	<10 to 19 employees	Developer	2	21	1	Very satisfied	Very satisfied	Very confident	No	No	I am not interested	1-2 years ago	Write any	No
25	I am a dev	No	Never	OSS is, on	Employed	South Africa	No	Associate	Computer	Taken an	<2-9 employees	Designer/analyst	2	16	1	Very satisfied	Very satisfied	Very confident	No	Not sure	I am not interested	1-2 years ago	Interview	No
26	I am a dev	Yes	Less than	The quality	Employed	United States	No	Some college	Computer	Taught by	10,000 or more employees	Designer/analyst	12	8	8	Very satisfied	Very satisfied				I am not interested	Less than	Interview	No
29	I am a dev	Yes	Less than	OSS is, on	Employed	United States	No	Bachelor's	degree	Taken an	<10,000 or more employees	Developer	4	20	2	Very satisfied	Slightly satisfied	Very confident	Not sure	Not sure	I am not interested	1-2 years ago	Write code	Yes
32	I am a dev	No	Never	The quality	Employed	United States	No	Associate	Informatics	Complete	100 to 499	Developer	3	16	2	Slightly satisfied	Slightly satisfied	Somewhat	No	No	I am active	1-2 years ago	Write any	No
38	I am a dev	Yes	Never	OSS is, on	Employed	Czech Republic	No	Master's	Computer	Participated	10 to 19 employees	Developer	30	14	22	Slightly satisfied	Very satisfied	Somewhat	Yes	I am already	I am not interested	More than	Write any	No
39	I am a dev	Yes	Less than	The quality	Employed	United States	No	Bachelor's	Computer	Taken an	<100 to 499	Database	30	6	23	Very satisfied	Very satisfied	Somewhat	No	No	I am not interested	More than	Write any	No
43	I am a dev	Yes	Less than	OSS is, on	Employed	Spain	No	Bachelor's	Computer	Taken an	<10,000 or more employees	Developer	9	15	2	Very dissatisfied	Slightly dissatisfied	Very confident	No	Yes	I am not interested	Less than	Write any	No
44	I am a dev	Yes	Once a month	The quality	Employed	Germany	No	Bachelor's	Informatics	Taken an	<10,000 or more employees	Developer	26	12	19	Slightly satisfied	Neither satisfied nor dissatisfied	Not at all	No	Not sure	I am not interested	More than	Interview	No
49	I am a dev	Yes	Less than	The quality	Employed	Serbia	Yes, full-time	Some college	Computer	Taught by	20 to 99 employees	Database	15	15	8	Very satisfied	Very satisfied	Very confident	Yes	Not sure	I am not interested	More than	Write any	Yes
50	I am a dev	Yes	Once a month	OSS is, on	Employed	India	No	Bachelor's	Another	Received	10,000 or more employees	Developer	7	15	2	Slightly satisfied	Very satisfied	Very confident	Not sure	Yes	I am not interested	1-2 years ago	Write code	No
53	I am not a programmer	Yes	Less than	OSS is, on	Employed	United States	Yes, full-time	Secondary school	(e.g., high school)	Taken an	<500 to 999	Developer	5	10	3	Slightly satisfied	Slightly satisfied	Somewhat	Not sure	Not sure	I am not interested	3-4 years ago		No
54	I am a dev	Yes	Once a month	OSS is, on	Employed	Sweden	No		Computer	Taken an	<20 to 99 employees	Developer	20	13	10	Very satisfied	Slightly satisfied	Very confident	Yes	No	I am not interested	1-2 years ago	Interview	No
56	I am a dev	No	Never	The quality	Employed	China	No	Bachelor's	Informatics	Taken an	<10,000 or more employees	Developer	13	19	10	Slightly dissatisfied	Slightly dissatisfied	Somewhat	Yes	No	I am not interested	1-2 years ago	Interview	No
57	I am not a programmer	Yes	Never	OSS is, on	Employed	France	No	Master's	A business	Taken an	<10,000 or more employees		2	29	Less than	Very satisfied	Very satisfied	Not at all	No	No	I am active	NA - I am not interested	Interview	No
60	I am a dev	Yes	Less than	OSS is, on	Employed	United States	No	Secondary school	(e.g., high school)	Taught by	100 to 499	Developer	10	13	9	Slightly satisfied	Neither satisfied nor dissatisfied	Somewhat	Yes	No	I am not interested	1-2 years ago	Complete	Yes
61	I am a dev	Yes	Less than	OSS is, on	Employed	United States	No	Some college	Computer	Taken an	<20 to 99 employees	Database	15	10	8	Very satisfied	Very satisfied	Very confident	No	Not sure	I am not interested	More than	Interview	No
62	I am a dev	Yes	Less than	OSS is, on	Employed	Netherlands	Yes, full-time	Associate	Computer	Taken an	<10,000 or more employees	Data or business	1	11	1	Very satisfied	Slightly dissatisfied	Not at all	No	Yes	I am not interested	1-2 years ago	Write any	No

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

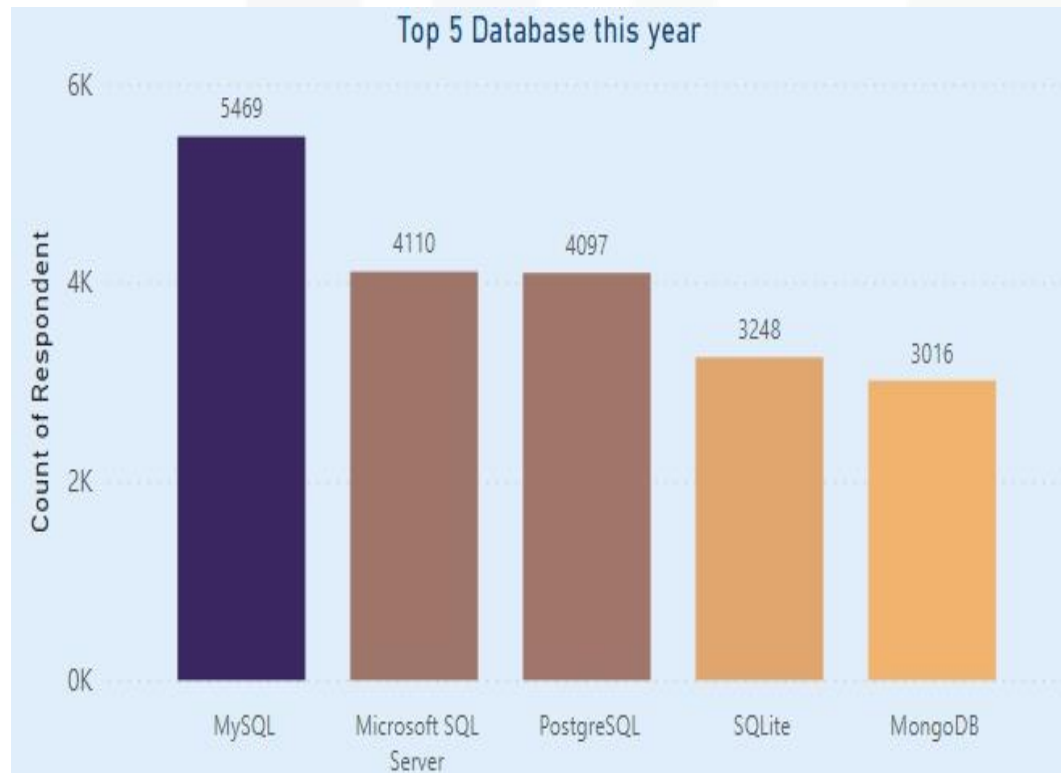
- JavaScript, HTML/CSS and SQL will continue to be popular
- Python will surpass SQL next year
- PowerShell is fading out of the Top 5 next year

Implications

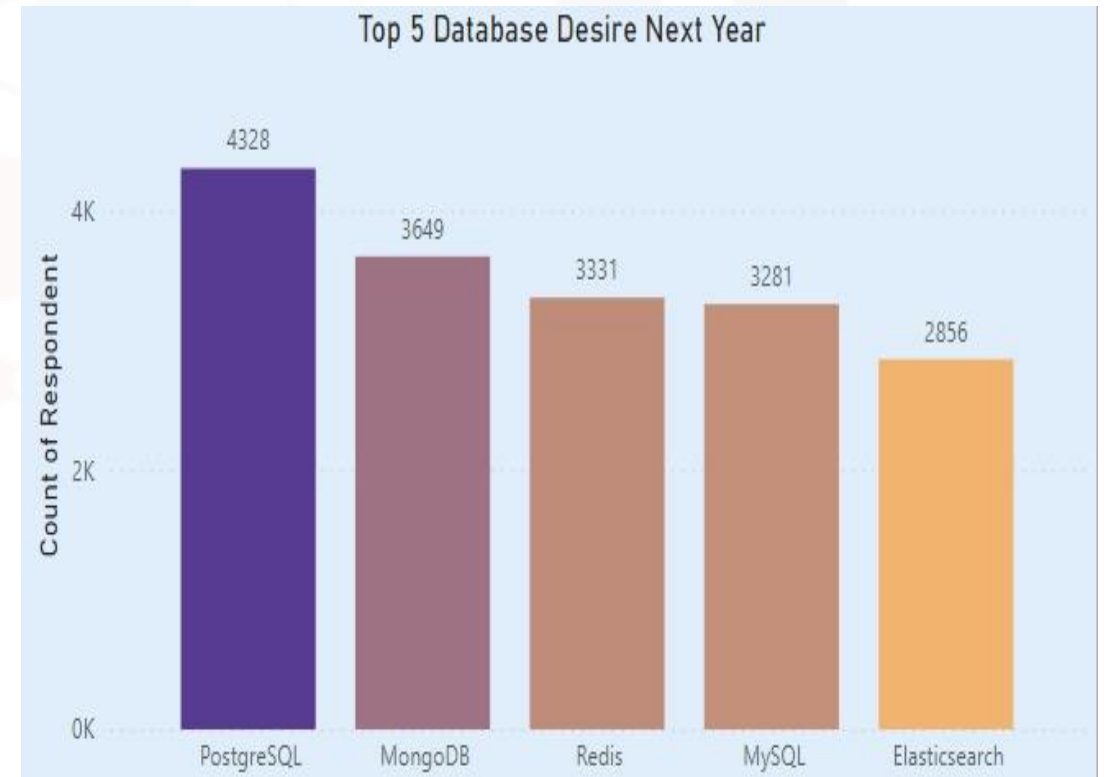
- Web development is in high demand
- Data Science technologies are getting more demand
- SQL will still be needed even with Python for data manipulation

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Microsoft SQL Server and MySQL will fade out
- PostgreSQL, MongoDB are on the rise
- Elasticsearch will be getting a lot of attention in the next years

Implications

- Enterprises are switching to open-source technologies
- New technologies for fast processing will generate cheaper workload
- More resources will be available using faster, easier, cheaper database technologies

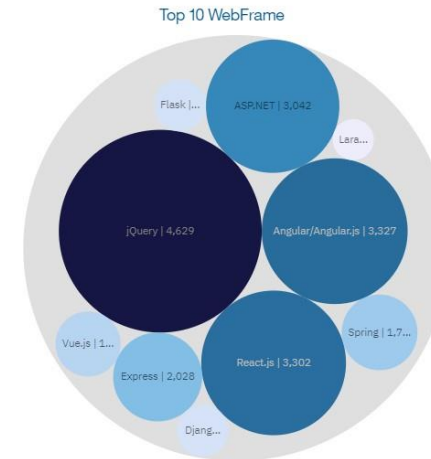
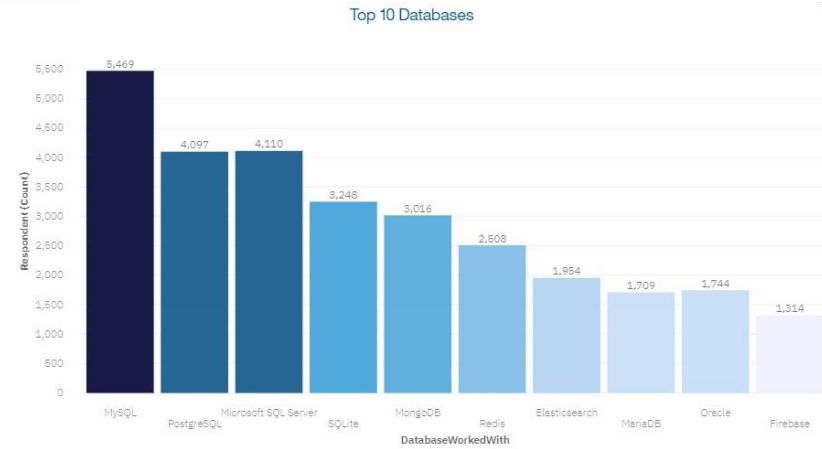
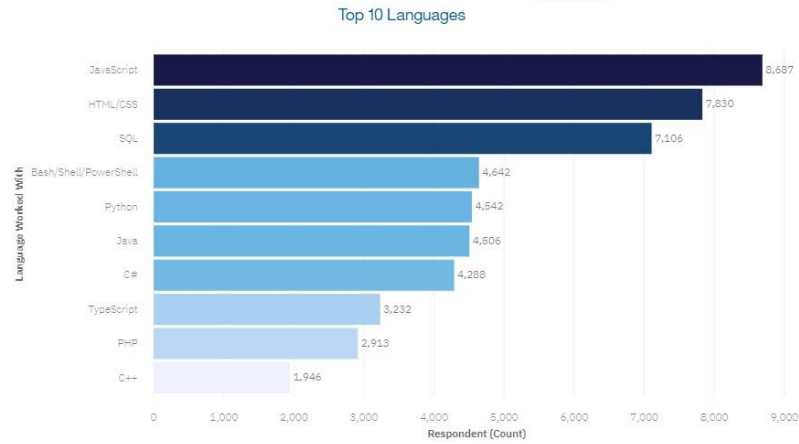
DASHBOARD

IBM COGNOS DASHBOARD LINK

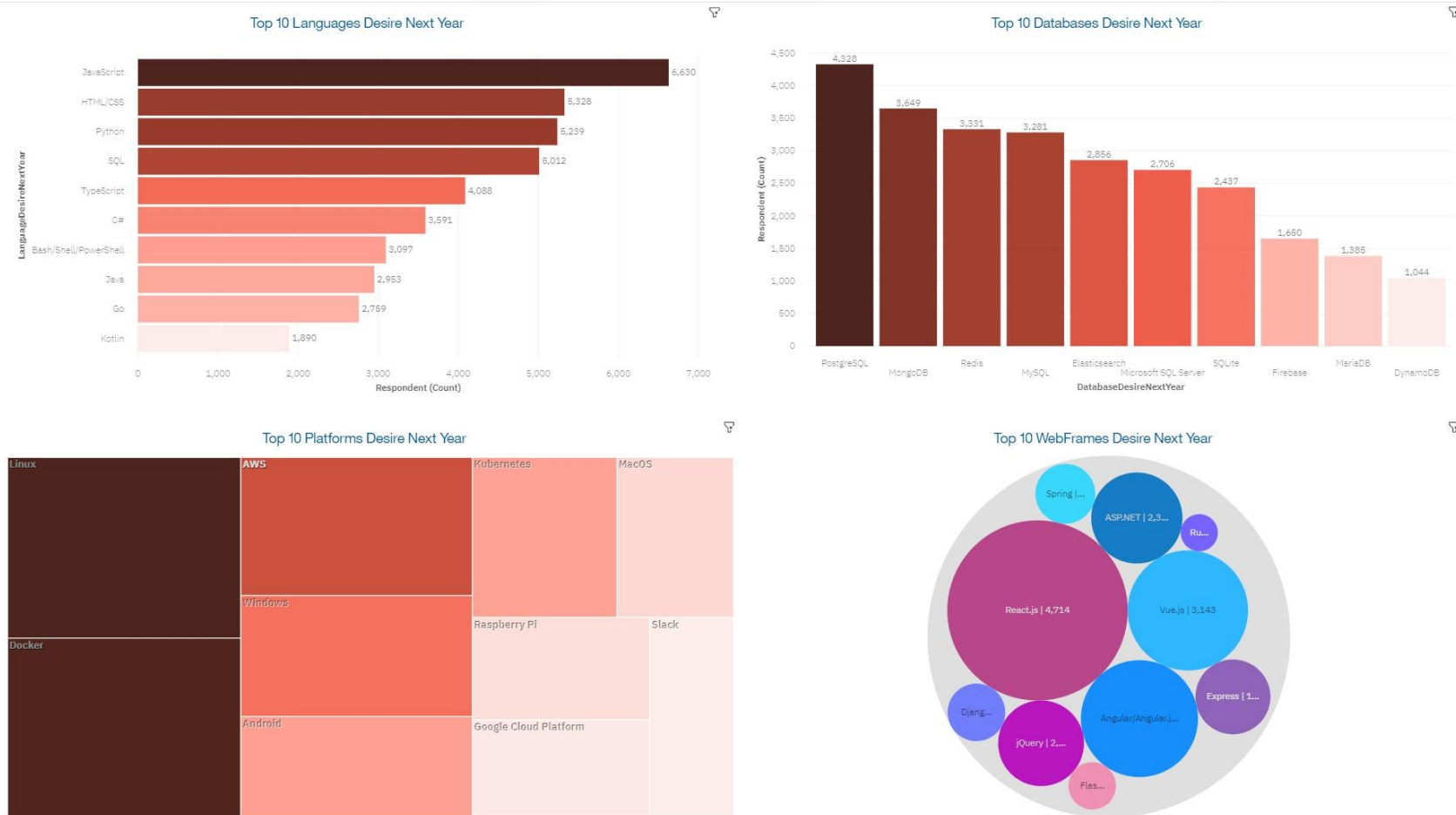


<https://dataplatform.cloud.ibm.com/dashboards/467eea90-cba9-4f93-a9cd-5fef95d0e90a/view/7824a60b2f8b11f041cbf6e407902a5229632655bbbbd15780837b4906697397f3611690c82a425f89160c66a0b9435f9d>

DASHBOARD – CURRENT TECHNOLOGY USAGE



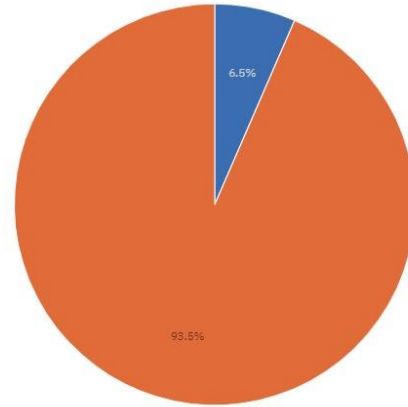
DASHBOARD – FUTURE TECHNOLOGY TREND



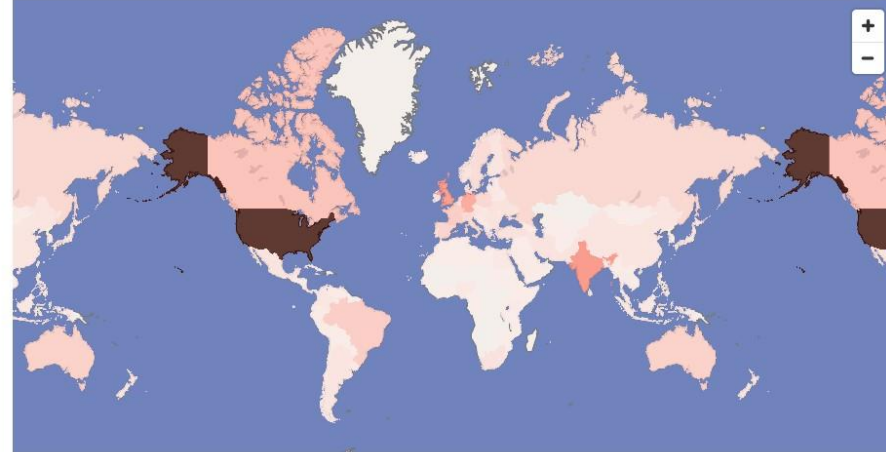
DASHBOARD - DEMOGRAPHICS

Respondents by Gender

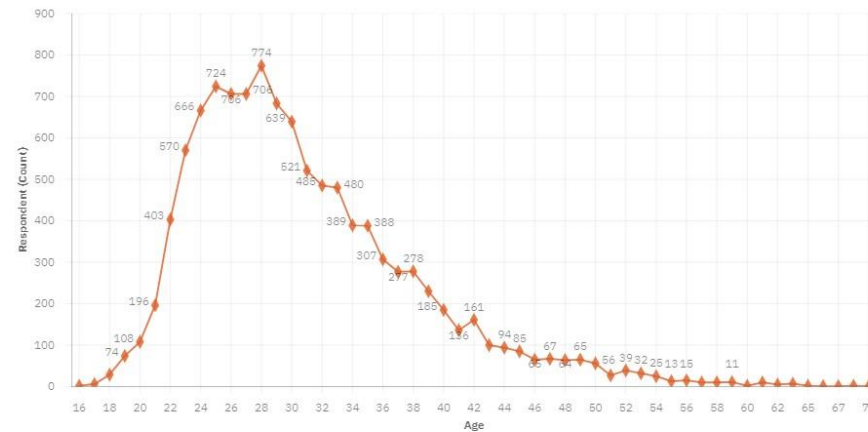
Gender
● Woman ● Man



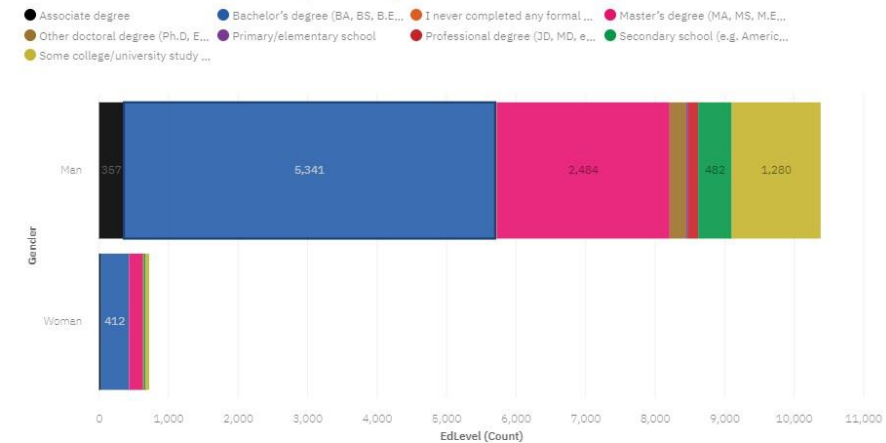
Respondents by Country



Respondents count by Age



Respondents by Gender and Education Level



DISCUSSION



- Current and Future Technology Trends
- Demographics in Technology jobs
- Training to be prepared
- Saving in products licensing

OVERALL FINDINGS & IMPLICATIONS

Findings

- Technologies are evolving fast all the times
- Employees will need constant training
- Disparity between gender
- Educated employees are concentrated in few countries (USA, INDIA)

Implications

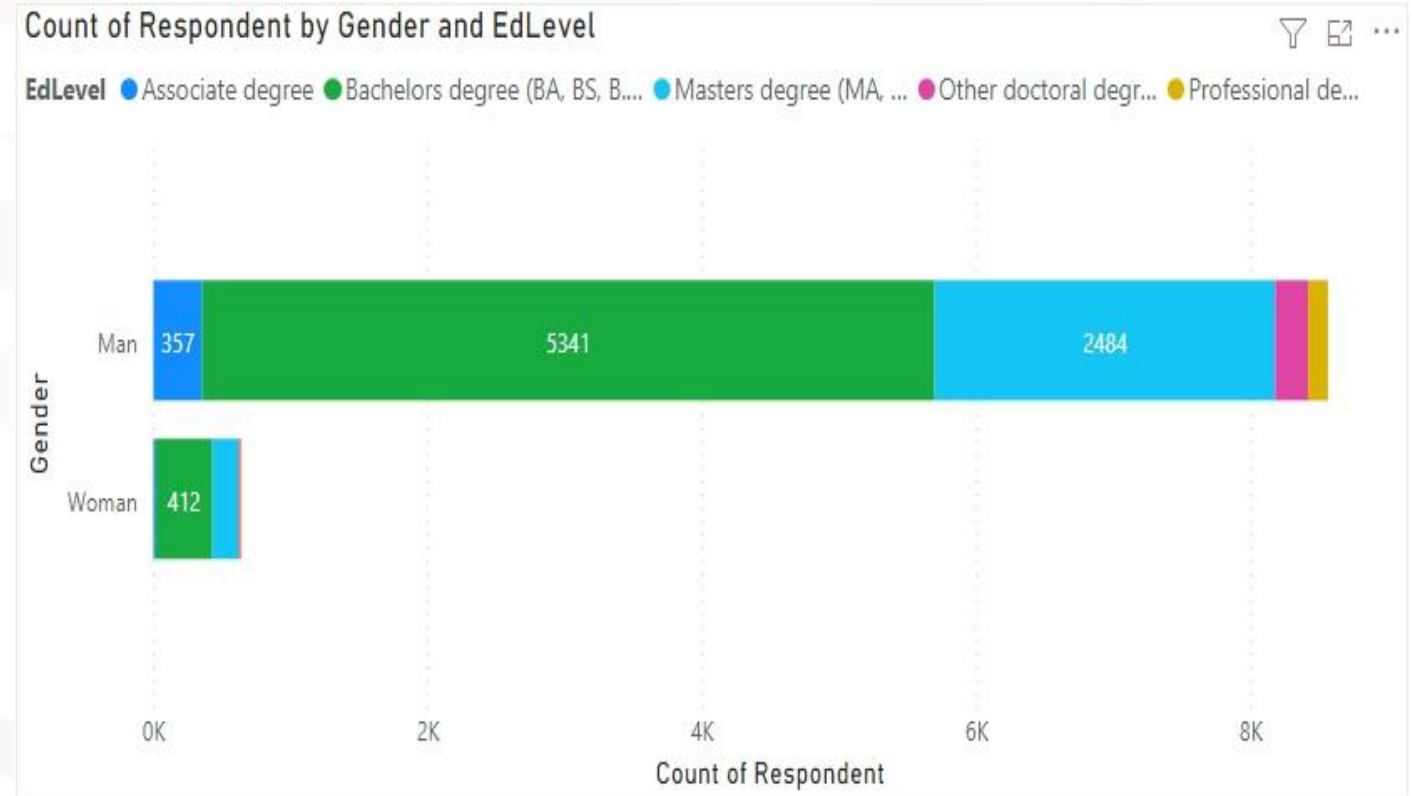
- Need to be following the trend with changes
- Changes will increase training cost but will lower licensing cost and increase efficiency
- Need to create better family friendly jobs to attract more women
- Open source and cloud platform is still the future

CONCLUSION

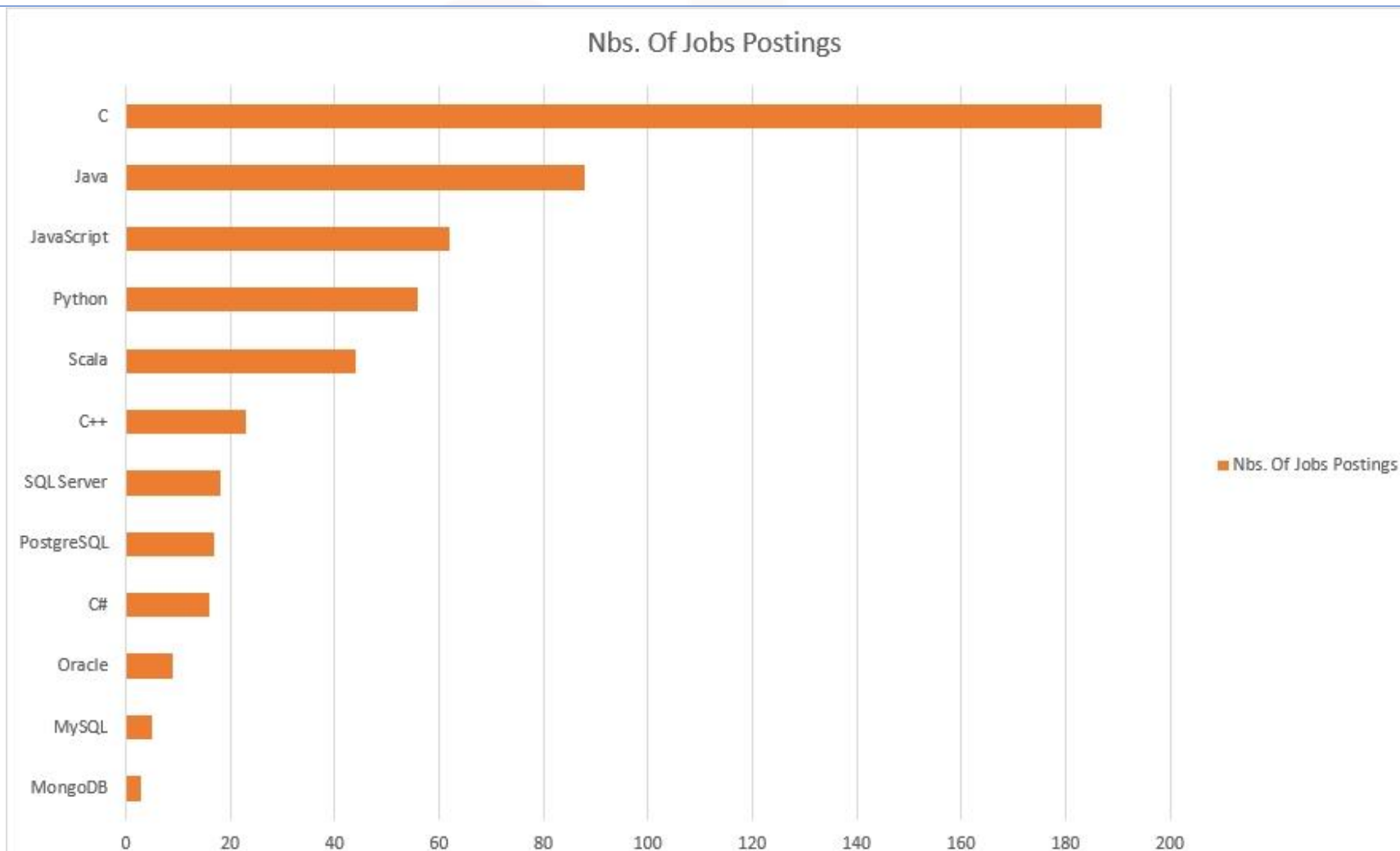


- Open-source technology trend
- Effect on the cost categories in the future
 - Training vs. licenses
- Demographics overview
- Next up: What to prepare for next year

APPENDIX



GITHUB JOB POSTINGS



POPULAR LANGUAGES

