Defining analysis Questions and their respective algorithm (analysis method)

Question	Main Question	Analysis Method	Visualization	Why this is interesting
Question 1	What are the top 15 most common job occupational categories of the underlying data (more standardized than JOB Titles and therefore easier to measure)	use SQL count(*) aggregation combined with group by	matplotlib bar chart	shows us what jobs of our underlying data are in highest demand
Question 2	How old is the median job posting for each of the 15 most common occupational categories of the underlying data (I will measure this using the date when I scraped the website)	use the median function that is supported in DuckDB	matplotlib box plots for each occupationalCategory	gives us a glimpse into how long jobs are available for each category (older postings → maybe hard to fill role)
Question 3	In how many job postings is each of the defined terms mentioned of the underlying data *terms = ["Bash", "Powershell", "Java ", "Kotlin", "JavaScript", "PHP", "Python",*	filtering and text-search	bar chart	This is a good use-case for valuable text-analysis! If I'm looking for a job in Software Engineering or Data Engineering I might be

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	"SQL", "TypeScript", "Angular", "CSS", "JavaFX", "React", "React Native", "Next.js", "Flutter", "Tailwind", "Vue.js", ".NET", "Express.js", "FastAPI", "Flask", "Django", "Node.js", "Spring", "MongoDB", "MySQL", "PostgreSQL", "Redis", "Airflow", "Camel", "dbt", "Hadoop", "Kafka", "Spark", "Influxdb", "Cassandra", "Prometheus" "pandas", "PyTorch", "scikit-learn", "TensorFlow", "Docker", "Git ", "Github", "Gitlab", "Jenkins", "Kubernetes", "Terraform", "Cypress", "Jest", "PyTest", "Postman", "VS Code", "IntelliJ", "Excel", "SAP", "Power BI", "Tableau", "Gradio", "Streamlit", "AWS", "S3", "Azure", "Firebase"]]			interested in what tools & technologies are in demand by employers. This result might also be interesting for the BFH or other educational institutions to validate if they teach things that are in demand 😉

Question	Main Question	Analysis Method	Visualization	Why this is interesting
Question 4 (Bonus)	How are the jobs distributed across Switzerland (Job Location) of the underlying data (top 50 most mentioned Job Locations)	use SQL count(*) aggregation combined with group by	sShow a barchart	It is valuable to know in what regions have high demand for jobs.

Findings and Validity

General thoughts about validity

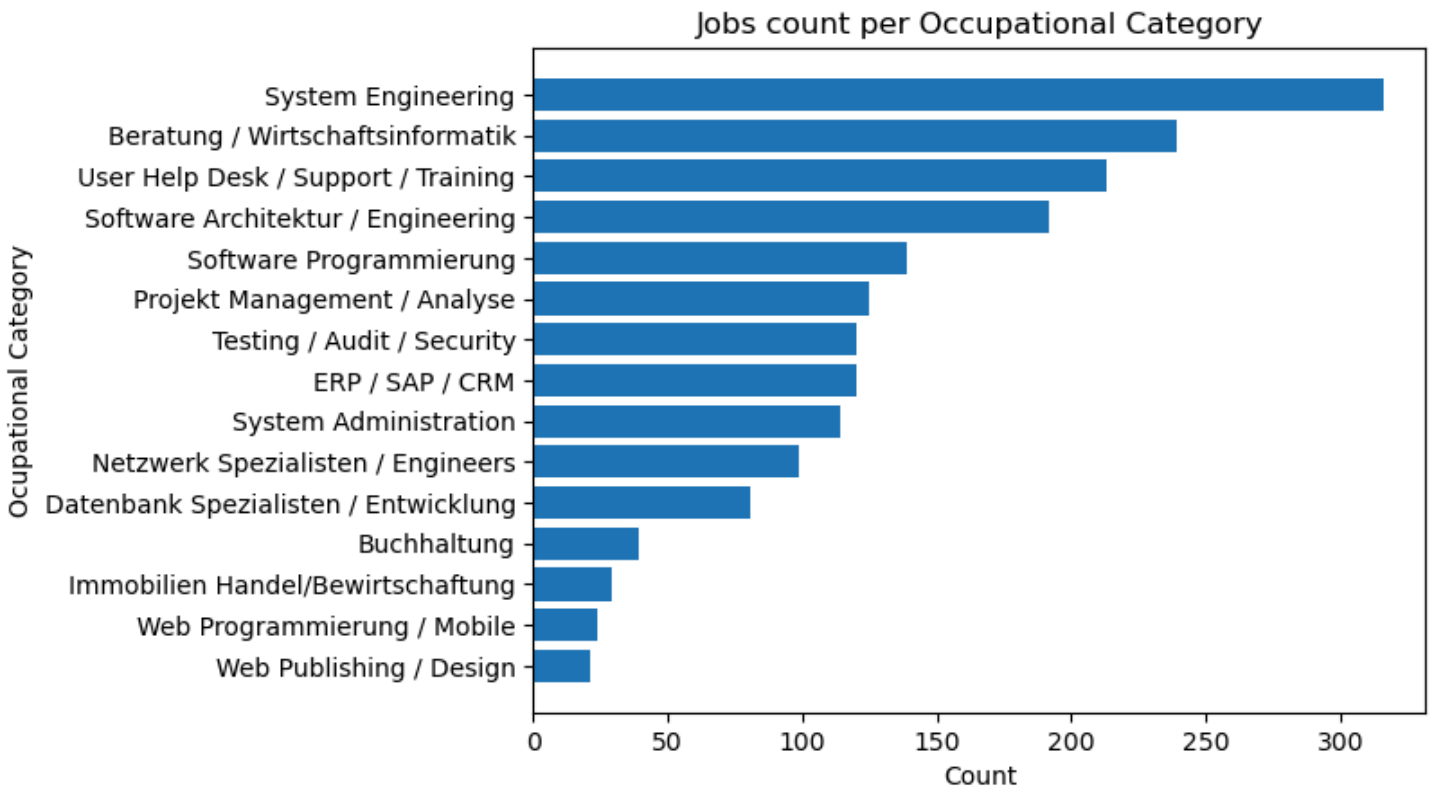
In this task we wanted to analyze our structured data. An important question to consider is: **What are we analyzing and measuring?**

- For each question I wrote "What/How is xyz **of the underlying data**?" This is crucial!
- As described in a previous notebook, I mainly scraped jobs from the "Berufsgruppe" *Informatik / Telekommunikation* and also some of the "Berufsgruppe" *Finanzen / Treuhand / Immobilien*.
- I just scraped them from jobs.ch, and I only scraped them once (15.10.2025 in the morning).
- So the underlying data is just from one website at a certain point in time.
- Therefore the data might not represent the job market of Switzerland in an accurate way.
- For a better representation we would have to scrape different websites (e.g. also indeed.ch) and then scrape many times over a defined time interval (e.g. 3 months).
- So as a summary: from the results of our analysis we can only draw pretty certain conclusions about the underlying data, not about the general job market situation in Switzerland! However, these conclusions and findings are still interesting and might give us a rough idea about the Swiss job market (IT field).

Question 1

Question: What are the top 15 most common job occupational categories of the underlying data?

Findings:



Validity:

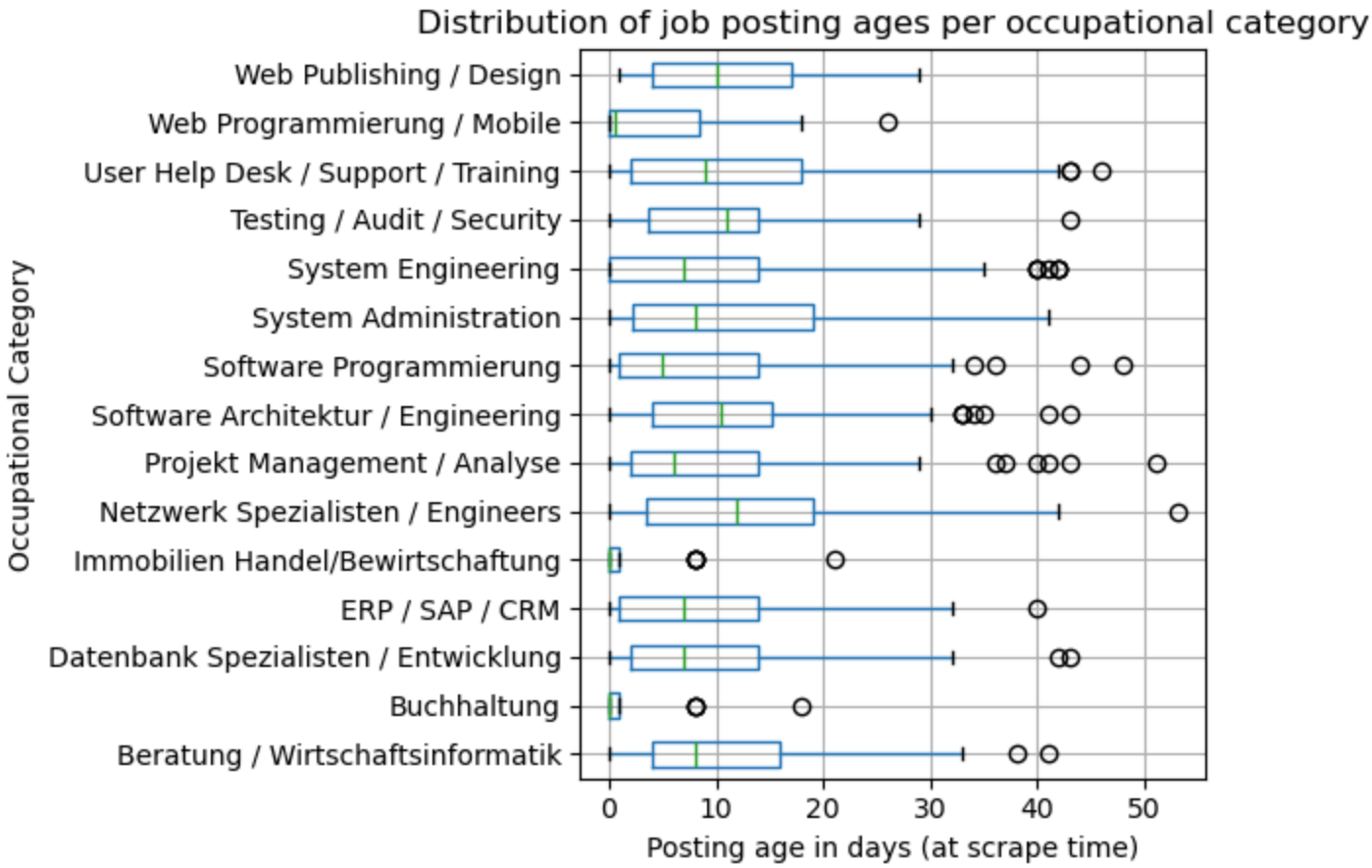
Since we only consider the underlying data, the validity is quite high, since the occupational categories field uses standardized values (jobTitle does not).

We can easily count those categories using `COUNT` and `GROUP BY` in SQL.

Question 2

Question: How old is the median job posting for each of the 15 most common occupational categories of the underlying data?

Findings:



Validity:

Here we want to look at things like: how easy is it to fill this role or how popular is this role.

We must take into account that maybe companies delete old job postings and then repost them again when they did not find somebody.

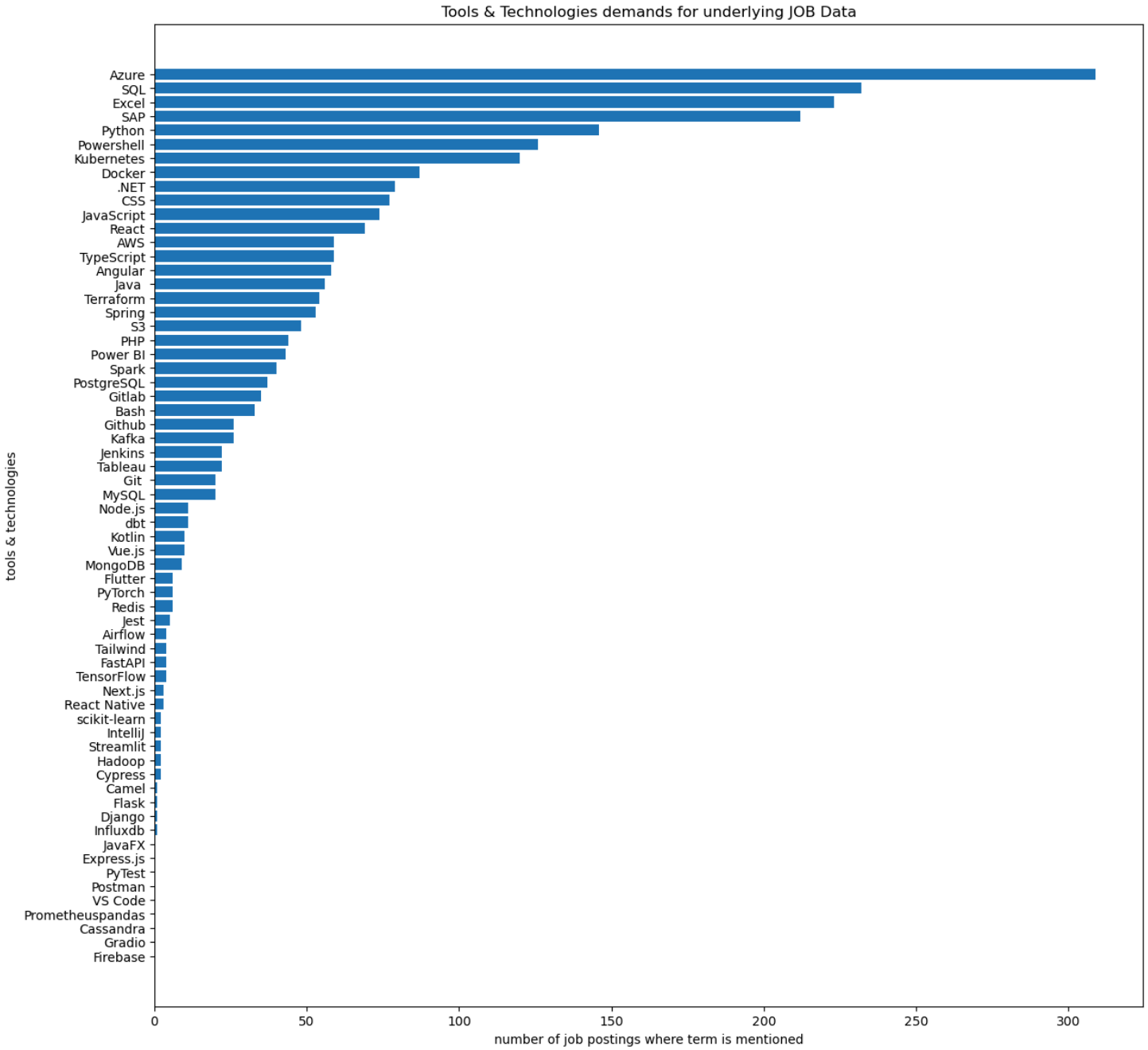
Or maybe a company does not delete the job posting even though the position is now occupied.

I used the median instead of the mean to mitigate these effects.

Question 3

Question: In how many job postings is each of the defined terms mentioned in the underlying data?

Findings:



Validity:

Here the validity is moderately high since we just try counting mentions of terms in the job posting descriptions.

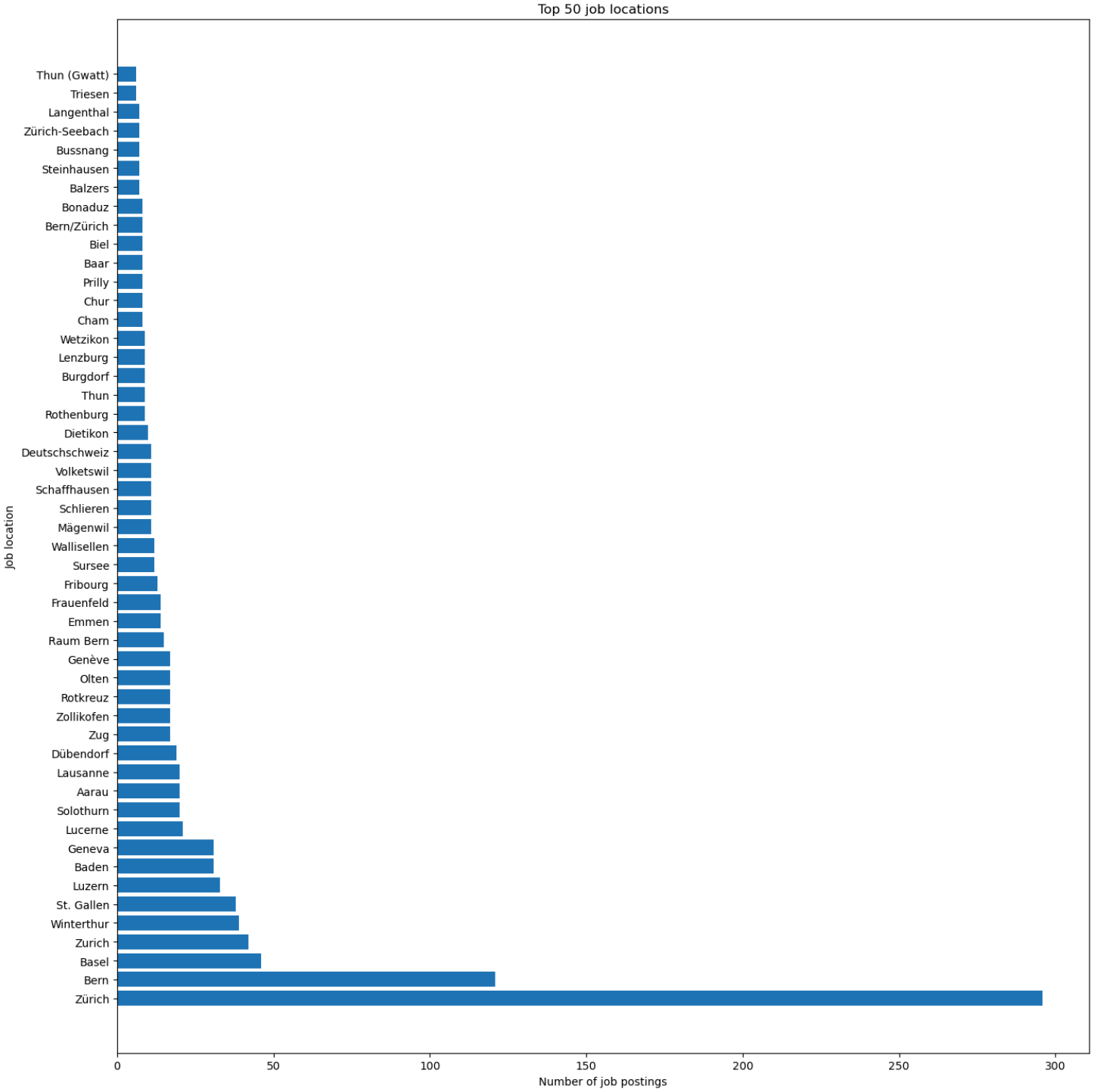
We would only not count them if they are not written correctly (which is very unlikely), or maybe we would count “Java” too often because it appears also in “JavaScript” (for this reason I included a whitespace in the "Java" term and also in the "Git" term).

Even if not 100% accurate, this gives us a good idea of how demanded certain technologies & tools are, at least in the underlying data.

Question 4 (Bonus)

Question: How are the jobs distributed across Switzerland (Job Location) in the underlying data?

Findings:



Validity:

In this example the validity is more difficult because the `jobLocation` attribute is not standardized. A job posting can have just one location or also many locations (you can choose where you want to

work).

However, most job postings still only indicate 1 jobLocation.

We can easily count those location values using `COUNT` and `GROUP BY` in SQL.