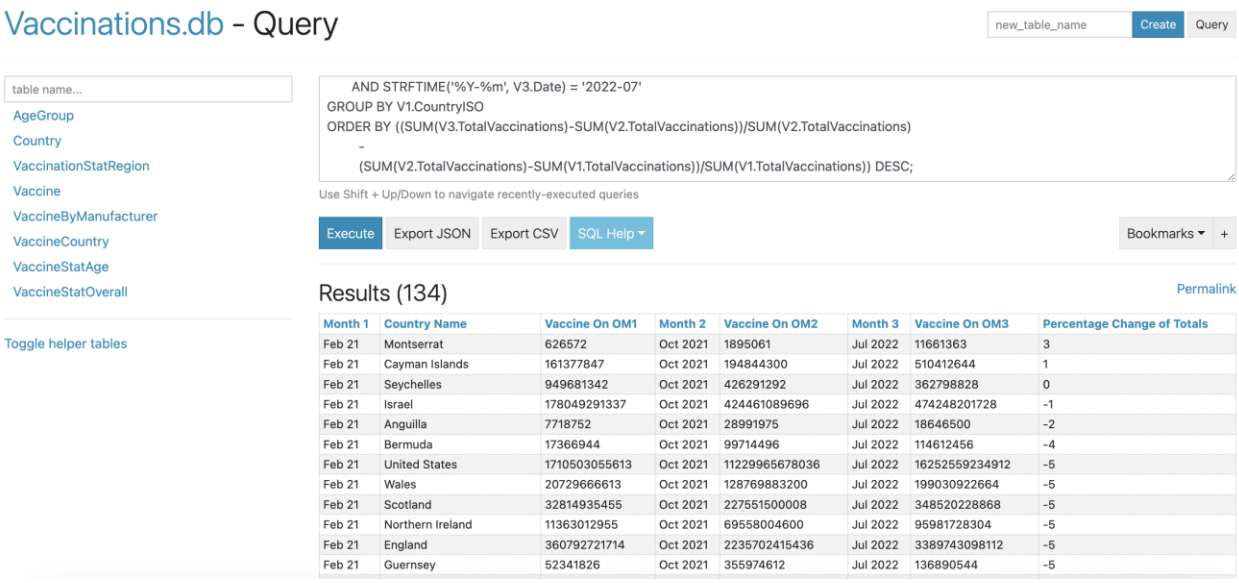
Query 1 - Total number of vaccines administered in each observation month in each of all countries, and the percentage change between the administered vaccines. Countries are ranked left to right based on total change in vaccine administration.

```
SELECT 'Feb 2021' AS "Month 1",
        C.CountryName AS "Country Name",
        SUM(V1.TotalVaccinations) AS "Vaccine On OM1",
        'Oct 2021' AS "Month 2",
        SUM(V2.TotalVaccinations) AS "Vaccine On OM2",
        'Jul 2022' AS "Month 3",
        SUM(V3.TotalVaccinations) AS "Vaccine On OM3",
        ((SUM(V3.TotalVaccinations)-
        SUM(V2.TotalVaccinations))/SUM(V2.TotalVaccinations)
        -
        (SUM(V2.TotalVaccinations)-
        SUM(V1.TotalVaccinations))/SUM(V1.TotalVaccinations)) AS "Percentage Change
of Totals"
        FROM ((VaccineStatOverall V1
            LEFT JOIN VaccineStatOverall V2
                ON V1.CountryISO = V2.CountryISO)
            LEFT JOIN VaccineStatOverall V3
                ON V1.CountryISO = V3.CountryISO)
            LEFT JOIN Country C
                ON V1.CountryISO = C.CountryISO
        WHERE STRFTIME ('%Y-%m', V1.Date) = '2021-02'
        AND STRFTIME('%Y-%m', V2.Date) = '2021-10'
        AND STRFTIME('%Y-%m', V3.Date) = '2022-07'
GROUP BY V1.CountryISO
ORDER BY ((SUM(V3.TotalVaccinations)-
SUM(V2.TotalVaccinations))/SUM(V2.TotalVaccinations)
-
(SUM(V2.TotalVaccinations)-SUM(V1.TotalVaccinations))/SUM(V1.TotalVaccinations))
DESC;
```



Month 1	Country Name	Vaccine On OM1	Month 2	Vaccine On OM2	Month 3	Vaccine On OM3	Percentage Change of Totals
Feb 21	Montserrat	626572	Oct 2021	1895061	Jul 2022	11661363	3
Feb 21	Cayman Islands	161377847	Oct 2021	194844300	Jul 2022	510412644	1
Feb 21	Seychelles	949681342	Oct 2021	426291292	Jul 2022	362798828	0
Feb 21	Israel	178049291337	Oct 2021	424461089696	Jul 2022	474248201728	-1
Feb 21	Anguilla	7718752	Oct 2021	28991975	Jul 2022	18646500	-2
Feb 21	Bermuda	17366944	Oct 2021	99714496	Jul 2022	114612456	-4
Feb 21	United States	1710503055613	Oct 2021	11229965678036	Jul 2022	16252559234912	-5
Feb 21	Wales	20729666613	Oct 2021	128769883200	Jul 2022	199030922664	-5
Feb 21	Scotland	32814935455	Oct 2021	227551500008	Jul 2022	348520228868	-5
Feb 21	Northern Ireland	11363012955	Oct 2021	69558004600	Jul 2022	95981728304	-5
Feb 21	England	360792721714	Oct 2021	2235702415436	Jul 2022	3389743098112	-5
Feb 21	Guernsey	52341826	Oct 2021	355974612	Jul 2022	136890544	-5

Figure 1. Query D.1 results on SQLite_Web

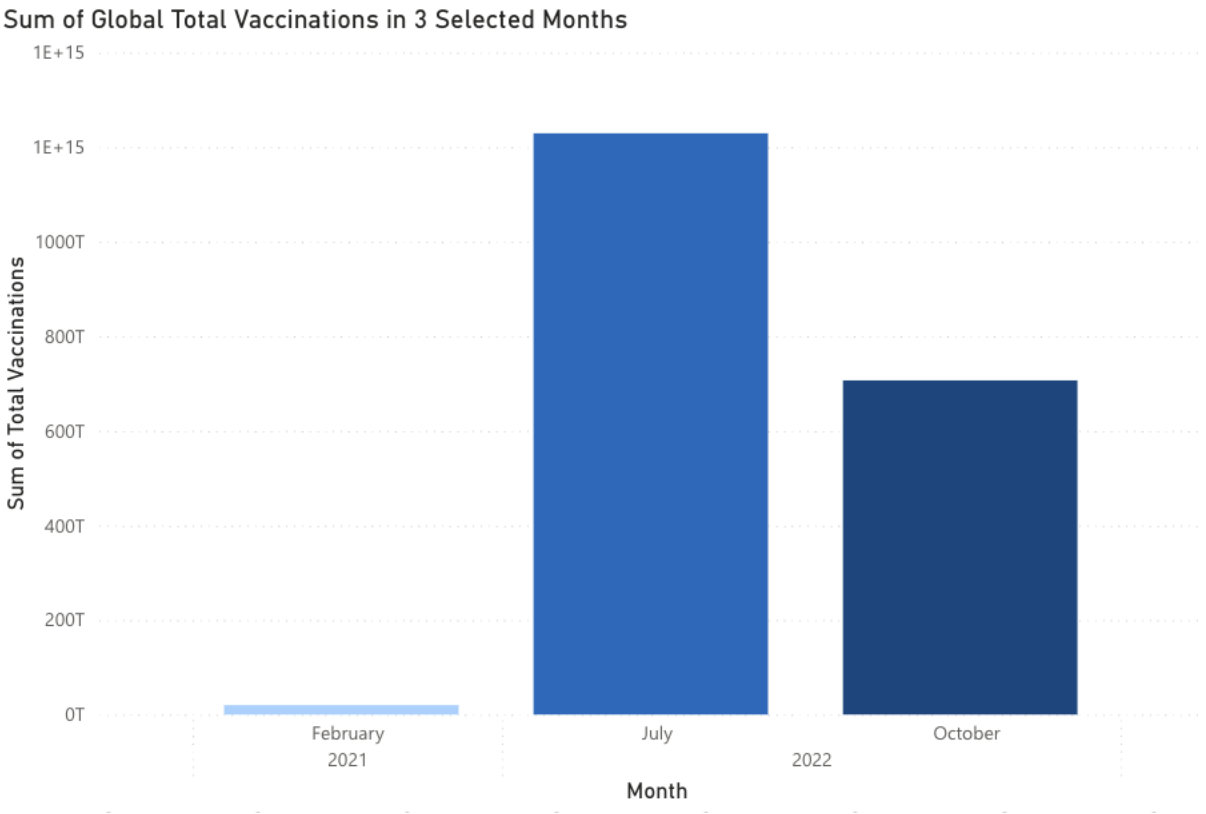


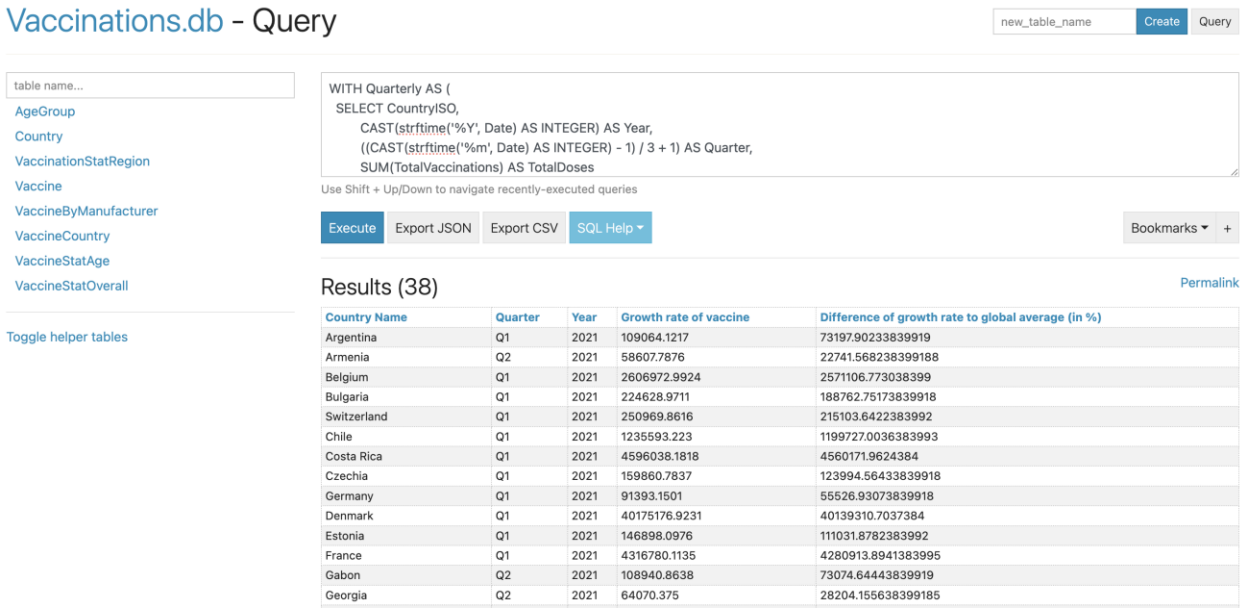
Figure 2. Bar chart of sum of global total vaccinations in 3 specific months

Query 2 - Quarterly growth rate of vaccine administered by each country which performs better than the global average with the difference of growth rate to global average.

```
WITH Quarterly AS (
SELECT CountryISO,
        CAST(strftime('%Y', Date) AS INTEGER) AS Year,
        ((CAST(strftime('%m', Date) AS INTEGER) - 1) / 3 + 1) AS Quarter,
        SUM(TotalVaccinations) AS TotalDoses
        FROM VaccineStatOverall
GROUP BY CountryISO, Year, Quarter
),
      Ratios AS(
SELECT curr.CountryISO,
        curr.Year,
        'Q' || curr.Quarter AS Quarter,
        ROUND (100.0*curr.TotalDoses / prev.TotalDoses,4) AS Ratio
        FROM Quarterly curr
            LEFT JOIN Quarterly prev
                ON curr.CountryISO = prev.CountryISO
                AND (
                (curr.Year = prev.Year AND curr.Quarter = prev.Quarter + 1)
                OR (curr.Year = prev.Year + 1 AND curr.Quarter = 1 AND prev.Quarter
            = 4))
),
      GlobalAvg AS(
SELECT AVG(Ratio) AS GlobalRatio
        FROM Ratios
)

SELECT Country.CountryName AS "Country Name",
        Ratios.Quarter AS Quarter,
        Ratios.Year AS Year,
        Ratios.Ratio AS "Growth rate of vaccine",
        Ratios.Ratio - GlobalAvg.GlobalRatio AS "Difference of growth rate to global
average (in %)"
        FROM (Ratios JOIN GlobalAvg)
            JOIN Country
                ON Country.CountryISO = Ratios.CountryISO
```

WHERE Ratios.Ratio - GlobalAvg.GlobalRatio > 0;



Country Name	Quarter	Year	Growth rate of vaccine	Difference of growth rate to global average (in %)
Argentina	Q1	2021	109064.1217	73197.90233839919
Armenia	Q2	2021	58607.7876	22741.568238399188
Belgium	Q1	2021	2606972.9924	2571106.773038399
Bulgaria	Q1	2021	224628.9711	188762.75173839918
Switzerland	Q1	2021	250969.8616	215103.6422383992
Chile	Q1	2021	1235593.223	1199727.0036383993
Costa Rica	Q1	2021	4596038.1818	4560171.9624384
Czechia	Q1	2021	159860.7837	123994.56433839918
Germany	Q1	2021	91393.1501	55526.93073839918
Denmark	Q1	2021	40175176.9231	40139310.7037384
Estonia	Q1	2021	146898.0976	111031.8782383992
France	Q1	2021	4316780.1135	4280913.8941383995
Gabon	Q2	2021	108940.8638	73074.64443839919
Georgia	Q2	2021	64070.375	28204.155638399185

Figure 3. Query D.2 results on SQLite_Web

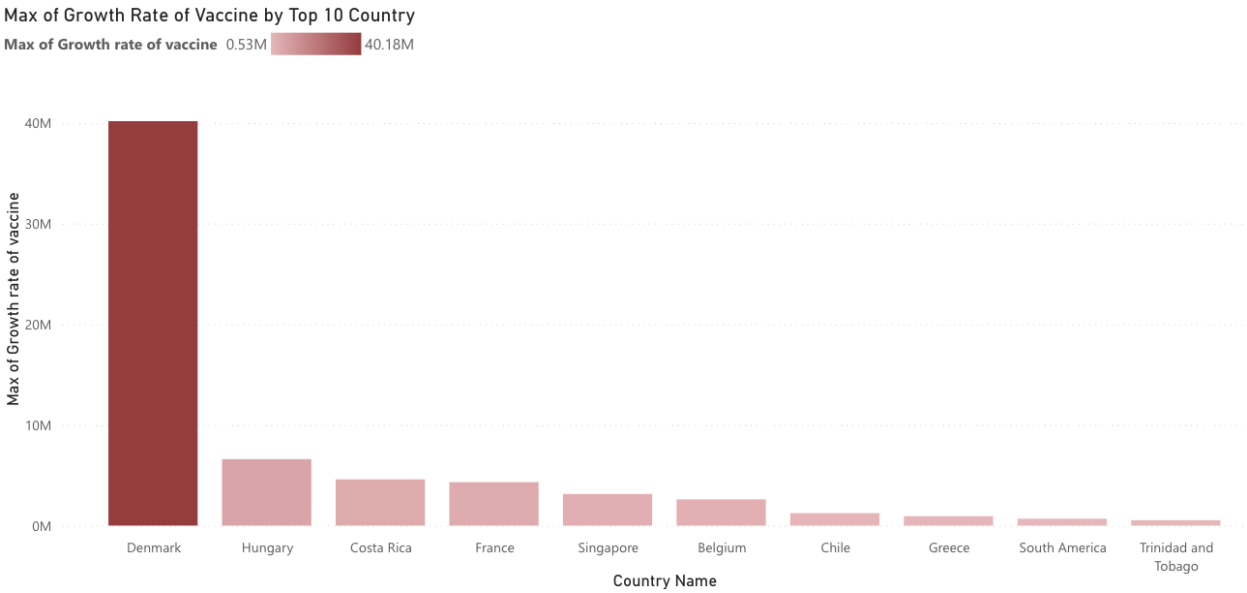


Figure 4. Bar chart of the max of quarterly growth rate of vaccine by top 10 countries

Query 3 - The top 5 market share percentage of each country for each Vaccine type, and the vaccine types taken by each country.

```
WITH ByVaccineType AS(
        SELECT CountryISO,
```

```
                VaccineName,
                Sum(TotalVaccinations) AS TotalByVaccine
                FROM VaccineByManufacturer
        GROUP BY CountryISO, VaccineName
),
        TotalVaccinations AS(
        SELECT SUM(TotalVaccinations) AS GlobalTotalVaccinations
                FROM VaccineByManufacturer
),
        Ranking AS(
        SELECT V1.CountryISO AS CountryISO,
                V1.VaccineName AS VaccineName,
                ROUND( 100.0* V1.TotalByVaccine/V2.GlobalTotalVaccinations, 4) AS
          MarketShare,
                ROW_NUMBER() OVER(
                        PARTITION BY V1.VaccineName
                        ORDER BY 100.0* V1.TotalByVaccine/V2.GlobalTotalVaccinations
                        DESC) AS RankOfCountry
                        FROM ByVaccineType V1 JOIN TotalVaccinations V2
)

SELECT C.CountryName AS "Country Name",
          R.VaccineName AS "Vaccine Type",
          R.MarketShare AS "Percentage of vaccine type in a country"
          FROM Ranking R JOIN Country C
                ON R.CountryISO = C.CountryISO
          WHERE RankOfCountry <= 5 AND MarketShare <> 0;
```

Vaccinations.db - Query

new_table_name Create Query

table name...

AgeGroup
Country
VaccinationStatRegion
Vaccine
VaccineByManufacturer
VaccineCountry
VaccineStatAge
VaccineStatOverall

Toggle helper tables

```
WITH ByVaccineType AS(
  SELECT CountryISO,
      VaccineName,
      Sum(TotalVaccinations) AS TotalByVaccine
  FROM VaccineByManufacturer
```

Use Shift + Up/Down to navigate recently-executed queries

Execute Export JSON Export CSV SQL Help Bookmarks +

Results (43) Permalink

Country Name	Vaccine Type	Percentage of vaccine type in a country
Argentina	CanSino	0.0153
Ecuador	CanSino	0.0034
European Union	Johnson&Johnson	1.0115
United States	Johnson&Johnson	0.3419
South Africa	Johnson&Johnson	0.1277
Germany	Johnson&Johnson	0.1149
South Korea	Johnson&Johnson	0.0464
European Union	Moderna	7.7302
United States	Moderna	4.1968
Japan	Moderna	2.0166
Italy	Moderna	1.133
Germany	Moderna	0.8442
European Union	Novavax	0.0122
South Korea	Novavax	0.0053
Japan	Novavax	0.0039

Figure 5. Query D.3 results on SQLite_Web

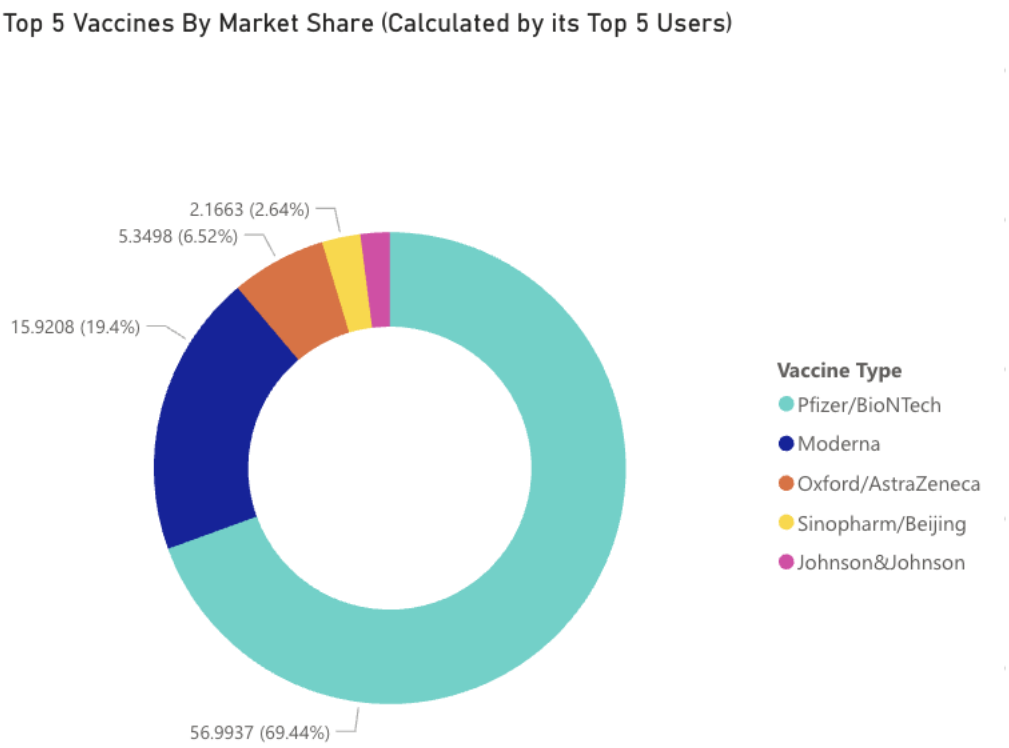


Figure 6. Donut chart of marketshare of top 5 vaccines calculated by its top 5 users

Query 4 - The ratio of vaccines administered in each country to the average of vaccines administered in all countries for each month according to each data source.

```
WITH PerURL AS(
        SELECT C.CountryName,
                STRFTIME ('%Y-%m', V.Date) AS Month,
                C.URL,
                SUM(V.TotalVaccinations) AS Total
                FROM Country C JOIN VaccineStatOverall V
                        ON C.CountryISO = V.CountryISO
                WHERE URL IS NOT NULL
        GROUP BY C.URL, C.CountryISO, Month
),
        AllURL AS (
        SELECT Month,
                AVG(Total) AS Average
                FROM PerURL
        GROUP BY Month
)
SELECT CountryName AS "Country Name",
          PerURL.Month AS "Month",
          URL AS "Source Name(URL)",
          ROUND(100.0* Total/Average, 4) AS "Ratio of administered vaccines"
                FROM PerURL JOIN AllURL
                        ON PerURL.Month = AllURL.Month;
```

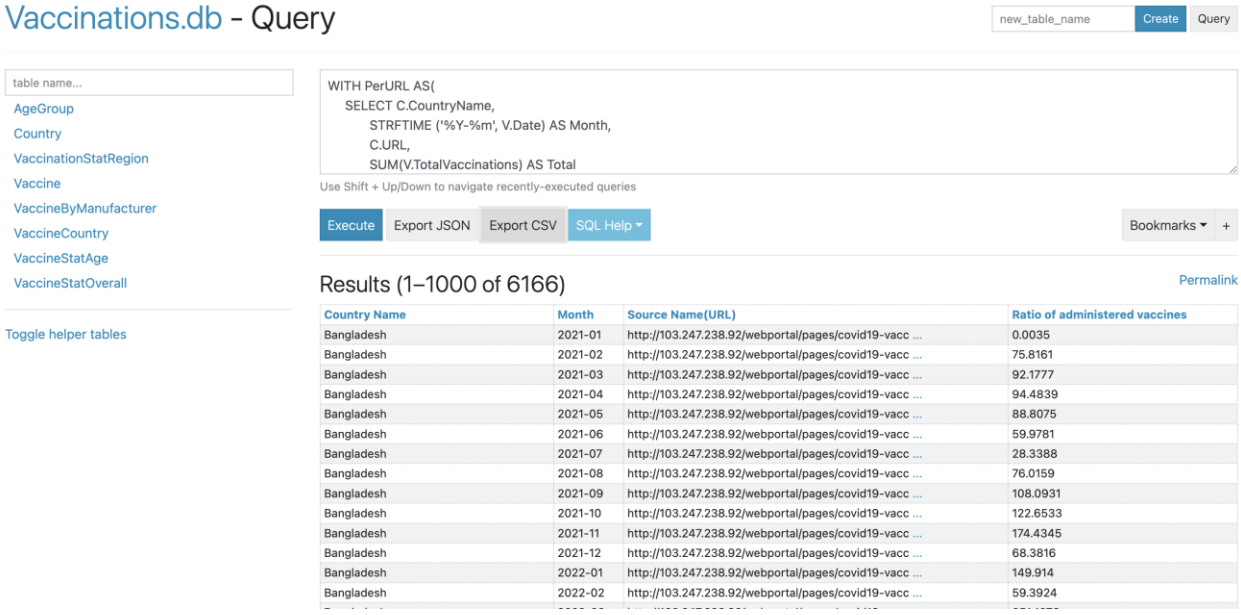


Figure 7. Query D.4 results on SQLite_Web

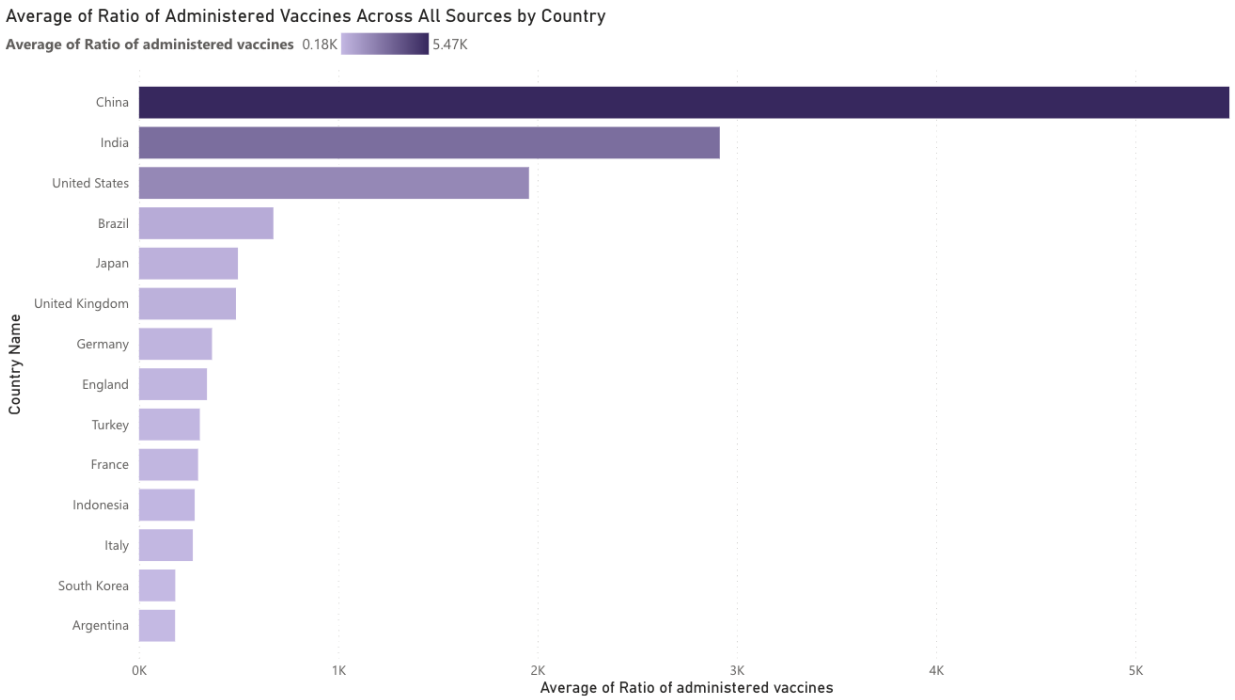


Figure 8. Bar chart of ratio of administered vaccines across all sources by top 14 countries

Query 5 – Comparison of the speed of vaccination of top 3 vaccines by the daily increment of fully vaccinated people from 2022-2023.

```
With Total AS(
        SELECT VaccineName,
                SUM(TotalVaccinations) AS Total
                        FROM VaccineByManufacturer
                        WHERE Date LIKE '2022%' OR Date LIKE '2023%'
        GROUP BY VaccineName
),
        Ranking AS(
        SELECT VaccineName,
                Total,
                ROW_NUMBER () OVER(
                ORDER BY Total DESC) AS Rank
                FROM Total
                LIMIT 3
),
        DailyTotals AS (
        SELECT Date,
                VaccineName,
```

```
            SUM(TotalVaccinations) AS TotalVaccinated
            FROM VaccineByManufacturer
            WHERE VaccineName IN (SELECT VaccineName FROM Ranking WHERE
        Rank <= 3)
            AND Date LIKE '2022%' OR Date LIKE '2023%'
        GROUP BY Date, VaccineName
),
        Increment AS (
        SELECT Date,
            VaccineName,
            TotalVaccinated - LAG(TotalVaccinated) OVER (
            PARTITION BY VaccineName ORDER BY Date) AS DailyIncrement
            FROM DailyTotals
),
        LabelledVaccines AS (
        SELECT I.Date,
            I.VaccineName,
            I.DailyIncrement,
            R.Rank
            FROM Increment I
                JOIN Ranking R
                    ON I.VaccineName = R.VaccineName
)
SELECT Date,
          MAX(CASE WHEN Rank = 1 THEN DailyIncrement END) AS "Vaccine Type 1",
          MAX(CASE WHEN Rank = 2 THEN DailyIncrement END) AS "Vaccine Type 2",
          MAX(CASE WHEN Rank = 3 THEN DailyIncrement END) AS "Vaccine Type 3"
          FROM LabelledVaccines
GROUP BY Date
ORDER BY Date;
```

Vaccinations.db - Query

new_table_name Create Query

table name...

AgeGroup
Country
VaccinationStatRegion
Vaccine
VaccineByManufacturer
VaccineCountry
VaccineStatAge
VaccineStatOverall

Toggle helper tables

```
With Total AS(
    SELECT VaccineName,
        SUM(TotalVaccinations) AS Total
        FROM VaccineByManufacturer
        WHERE Date LIKE '2022%' OR Date LIKE '2023%'
```

Use Shift + Up/Down to navigate recently-executed queries

Execute | Export JSON | Export CSV | SQL Help | Bookmarks | +

Results (730) Permalink

Date	Vaccine Type 1	Vaccine Type 2	Vaccine Type 3
2022-01-01	NULL	NULL	NULL
2022-01-02	-47969516	-16194556	-13204912
2022-01-03	2397159	1965558	822086
2022-01-04	301961693	197887142	320223
2022-01-05	3974150	2768493	184853
2022-01-06	3735343	2390459	170818
2022-01-07	242009382	52533477	27723695
2022-01-08	-179441494	-25577746	-24787118
2022-01-09	-47682378	-17022800	-2758285
2022-01-10	3372815	2177953	501980
2022-01-11	3996355	2565088	151994
2022-01-12	4323041	2572705	-112993
2022-01-13	4447100	2818576	-716338
2022-01-14	247877445	55657352	28080151
2022-01-15	-184206632	-27800105	-25093382

Figure 9. Query D.5 results on SQLite_Web

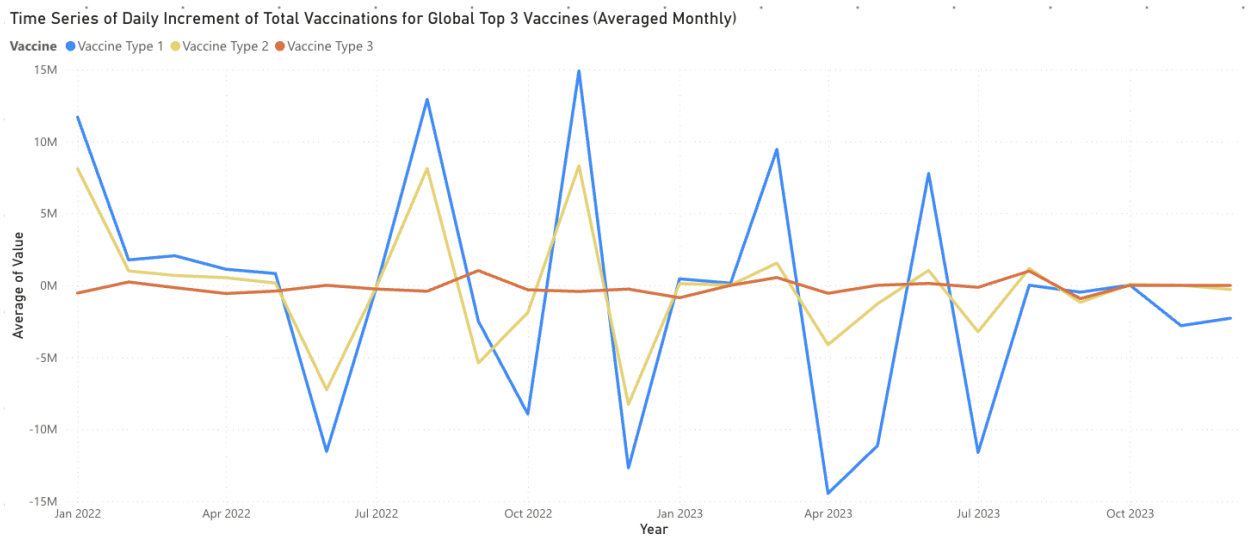


Figure 10. Time series line chart of daily increment of total vaccinations for global top 3 vaccines averaged monthly from 2022 to 2023