

DATABASE CONCEPTS ASSIGNMENT 4

Part D

Task D.1

a)

SELECT

Location.location_name AS Country_Name,

'2021-01-01' AS Date_1,

COALESCE(

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END)

) AS Vaccine_OD1,

'2021-06-01' AS Date_2,

COALESCE(

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END)

) AS Vaccine_OD2,

'2022-01-01' AS Date_3,

COALESCE(

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2022-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END)

) AS Vaccine_OD3,

-- Calculate absolute percentage change between dates, ensuring result is always positive

ABS(

(

```

(COALESCE(MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END)) -

COALESCE(MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END))) /

COALESCE(MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END))

) -

(

(COALESCE(MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2022-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END)) -

COALESCE(MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END))) /

COALESCE(MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-06-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END),

MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-01-01' THEN
Daily_Vaccination_Record.total_vaccinations ELSE NULL END))

)

) AS Percentage_Change

FROM

Location

JOIN

Daily_Vaccination_Record ON Location.iso_code = Daily_Vaccination_Record.iso_code

WHERE

Daily_Vaccination_Record.record_date IN ('2021-01-01', '2021-06-01', '2022-01-01')

AND Location.location_type = 'country' -- Added filter for countries only

```

GROUP BY

Location.location_name

ORDER BY

Percentage_Change DESC;

b)

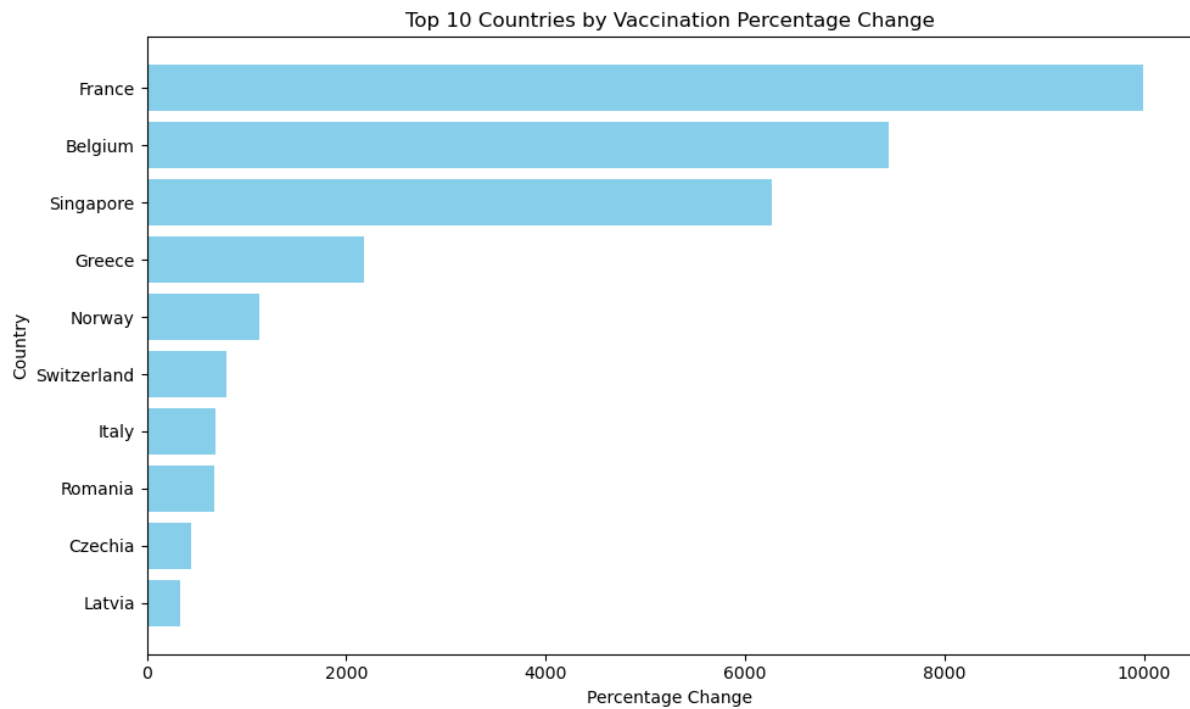
The screenshot shows a web browser with a SQL query editor. The query is as follows:

```
SELECT
  Location.location_name AS Country_Name,
  '2021-01-01' AS Date_1,
  COALESCE(
    MAX(CASE WHEN Daily_Vaccination_Record.record_date = '2021-01-01' THEN Daily_Vaccination_Record.total_vaccinations ELSE NULL END),
    0
  ) AS Vaccines_in_Locations
FROM Location
ORDER BY Percentage_Change DESC;
```

The results are displayed in a table with the following columns: Country_Name, Date_1, Vaccine_OD1, Date_2, Vaccine_OD2, Date_3, Vaccine_OD3, and Percentage_Change. The results are sorted by Percentage_Change in descending order.

Country_Name	Date_1	Vaccine_OD1	Date_2	Vaccine_OD2	Date_3	Vaccine_OD3	Percentage_Change
France	2021-01-01	3826	2021-06-01	38234733	2022-01-01	124260120	9990
Belgium	2021-01-01	943	2021-06-01	7015765	2022-01-01	21730429	7436
Singapore	2021-01-01	649	2021-06-01	4065249	2022-01-01	11796084	6261
Greece	2021-01-01	2603	2021-06-01	5691818	2022-01-01	17470021	2183
Norway	2021-01-01	2449	2021-06-01	2759619	2022-01-01	9789496	1123
Switzerland	2021-01-01	6393	2021-06-01	5121833	2022-01-01	13847753	799
Italy	2021-01-01	51939	2021-06-01	35931813	2022-01-01	111473427	688
Romania	2021-01-01	11656	2021-06-01	7917467	2022-01-01	15825626	678
Czechia	2021-01-01	12151	2021-06-01	5495489	2022-01-01	15499575	450
Latvia	2021-01-01	2343	2021-06-01	786103	2022-01-01	2555631	332
Argentina	2021-01-01	43532	2021-06-01	13337024	2022-01-01	78310289	301
Bulgaria	2021-01-01	4739	2021-06-01	1383971	2022-01-01	3701105	290
Canada	2021-01-01	105461	2021-06-01	24379043	2022-01-01	68969997	229
Germany	2021-01-01	232650	2021-06-01	52450079	2022-01-01	153995046	223
Slovenia	2021-01-01	11641	2021-06-01	1082353	2022-01-01	2761949	90
United States	2021-01-01	5854174	2021-06-01	315286109	2022-01-01	521918004	52
Bahrain	2021-01-01	59351	2021-06-01	1755570	2022-01-01	3229937	28

c)



Task D.2

a)

WITH MonthlyGrowth AS (

SELECT

L.location_name AS country_name,

strftime('%Y-%m', D.record_date) AS month_year,

MAX(D.total_vaccinations) AS total_vaccinations,

MAX(D.total_vaccinations) -

COALESCE(

(SELECT MAX(D2.total_vaccinations)

FROM Daily_Vaccination_Record D2

WHERE D2.iso_code = D.iso_code

AND strftime('%Y-%m', D2.record_date) = strftime('%Y-%m', DATE(D.record_date, '-1 month'))),

0) AS growth_rate

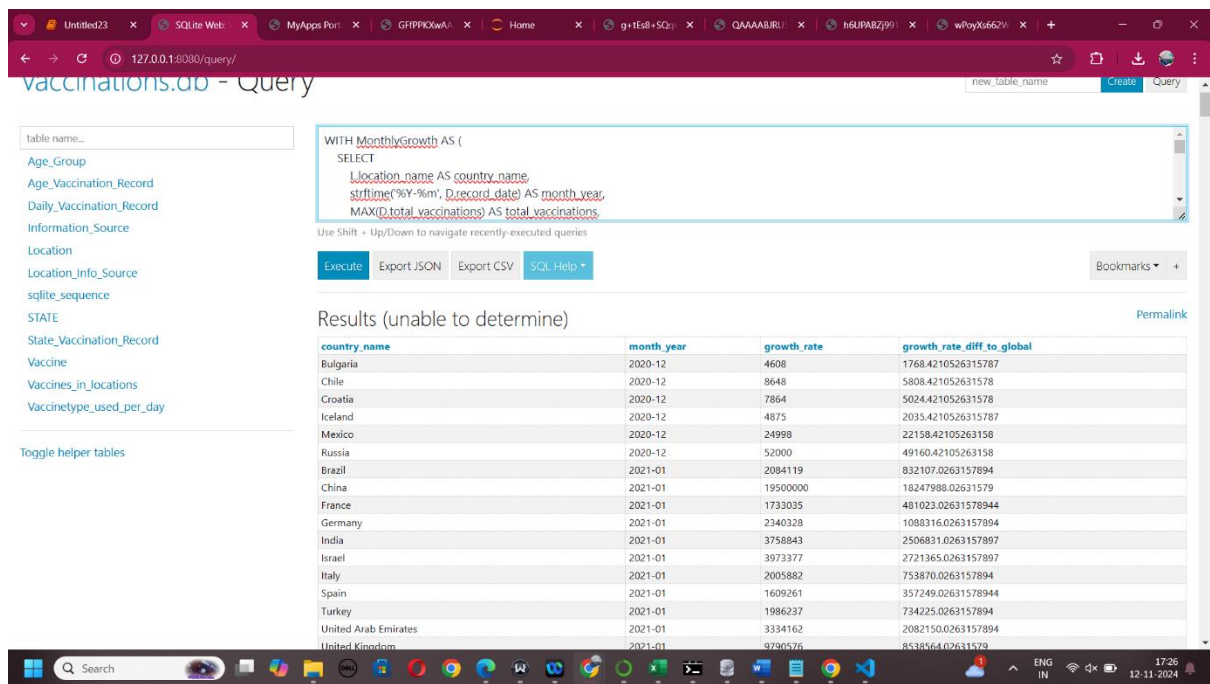
FROM Daily_Vaccination_Record D

JOIN Location L ON D.iso_code = L.iso_code

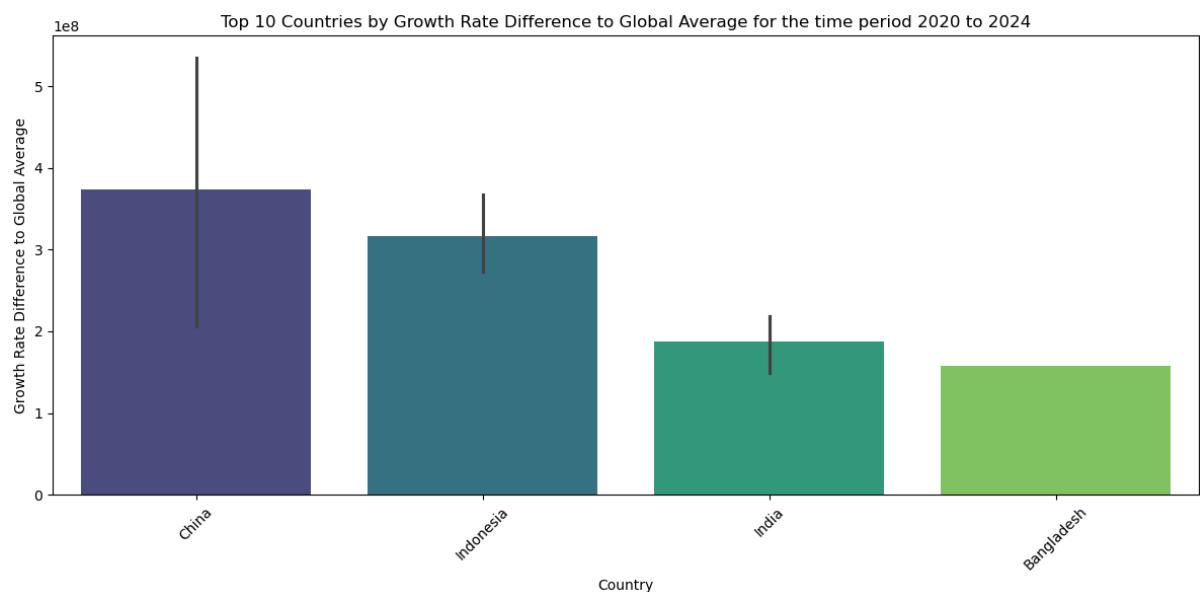
WHERE L.location_type = 'country'

```
GROUP BY L.location_name, month_year
),
GlobalGrowth AS (
SELECT
month_year,
AVG(growth_rate) AS global_avg_growth_rate
FROM MonthlyGrowth
GROUP BY month_year
)
SELECT
MG.country_name,
MG.month_year,
MG.growth_rate,
(MG.growth_rate - GG.global_avg_growth_rate) AS growth_rate_diff_to_global
FROM MonthlyGrowth MG
JOIN GlobalGrowth GG
ON MG.month_year = GG.month_year
WHERE MG.growth_rate > GG.global_avg_growth_rate
ORDER BY MG.month_year, MG.country_name;
```

b)



c)



Task D.3

a)

SELECT

v.vaccine_name AS Vaccine_Type,

l.location_name AS Country,

(SUM(vup.total_vaccinations) * 100.0 / (SELECT SUM(total_vaccinations) FROM

Daily_Vaccination_Record dvr WHERE dvr.iso_code = vup.iso_code)) AS Percentage_of_vaccine_type

FROM

Vaccinetype_used_per_day vup

JOIN

Vaccine v ON vup.vaccine_id = v.vaccine_id

JOIN

Location l ON vup.iso_code = l.iso_code

GROUP BY

v.vaccine_name, l.location_name, vup.iso_code

ORDER BY

l.location_name, Percentage_of_vaccine_type DESC;

b)

Vaccinations.db - Query

new_table_name

table name...

Age_Group
Age_Vaccination_Record
Daily_Vaccination_Record
Information_Source
Location
Location_Info_Source
sqlite_sequence
STATE
State_Vaccination_Record
Vaccine
Vaccines_in_locations
Vaccinetype_used_per_day

Toggle helper tables

```
SELECT  
v.vaccine_name AS Vaccine_Type,  
l.location_name AS Country,  
(SUM(vup.total_vaccinations) * 100.0 / (SELECT SUM(total_vaccinations) FROM Daily_Vaccination_Record dvr WHERE dvr.iso_code = vup.iso_code)) AS  
Percentage_of_vaccine_type
```

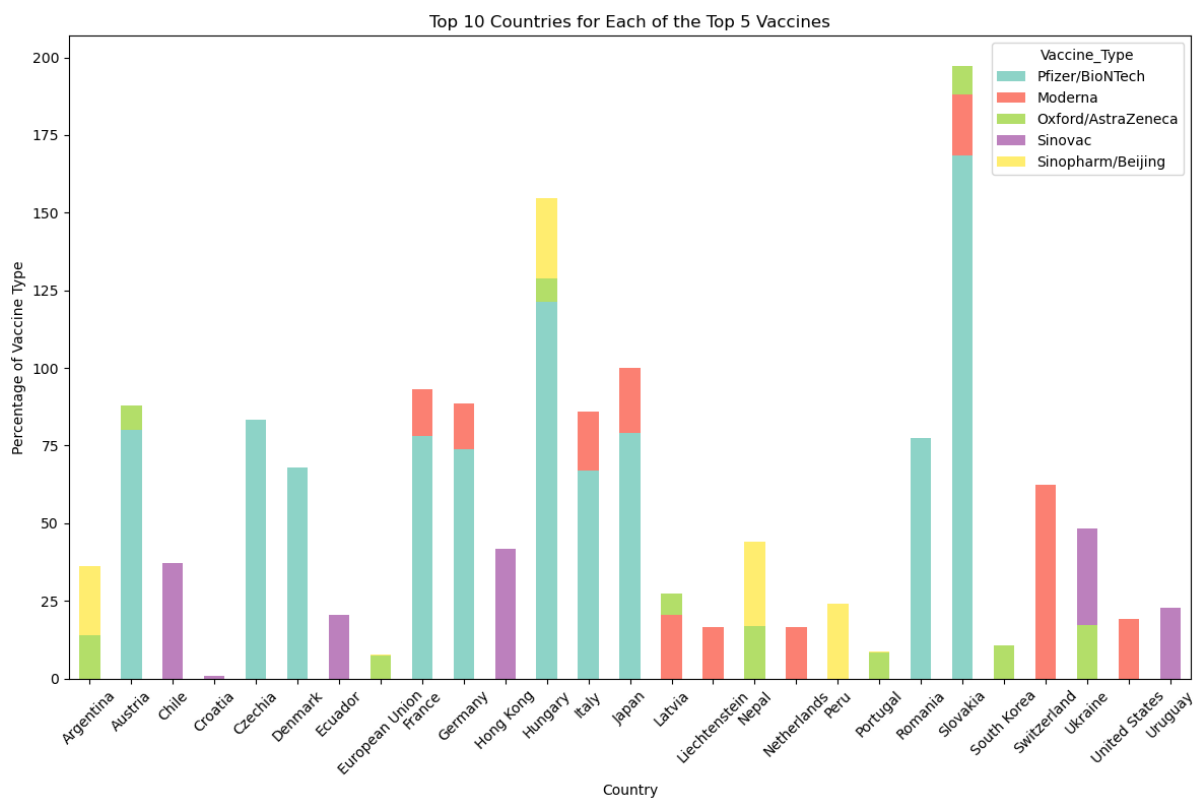
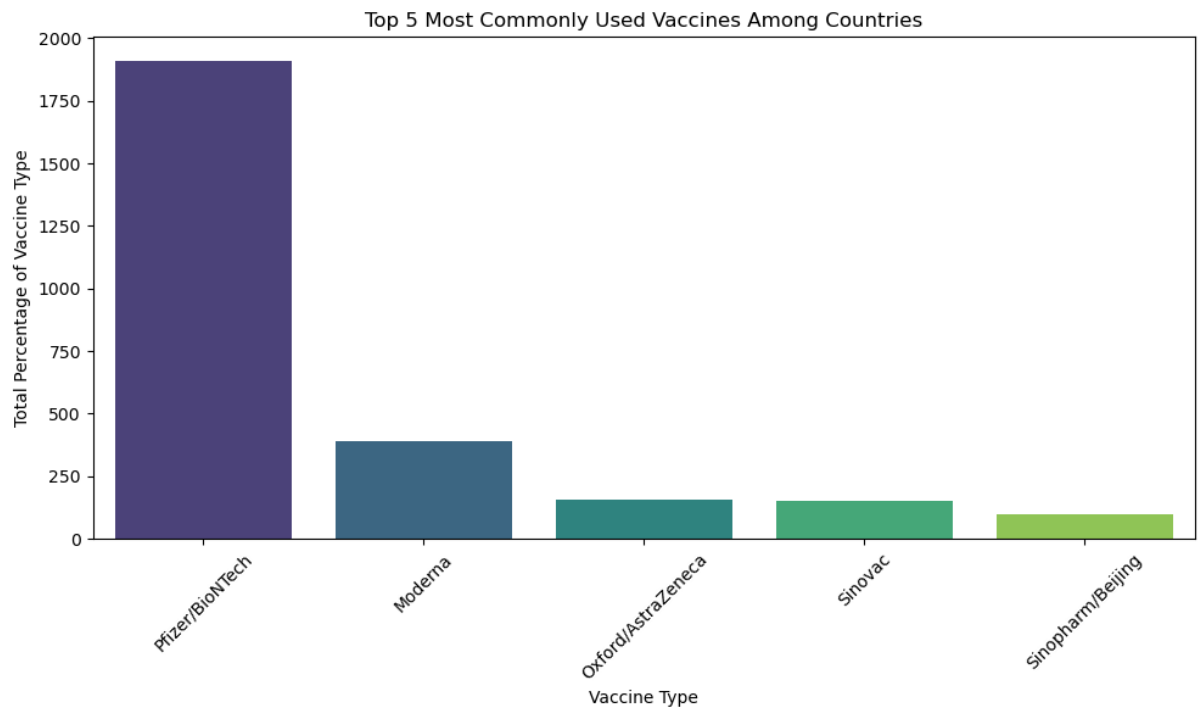
Use Shift + Up/Down to navigate recently-executed queries

Bookmarks +

Results (unable to determine) [Permalink](#)

Vaccine_Type	Country	Percentage_of_vaccine_type
Sinopharm/Beijing	Argentina	22.225766616862135
Pfizer/BioNTech	Argentina	15.18000821771814
Oxford/AstraZeneca	Argentina	13.833789953032936
Sputnik V	Argentina	12.07373699153597
Moderna	Argentina	11.824719321924113
CanSino	Argentina	0.3105576625869992
Sputnik Light	Argentina	0.0031913633138315987
Pfizer/BioNTech	Austria	79.90579610053392
Moderna	Austria	8.598569484710211
Oxford/AstraZeneca	Austria	7.841303923840265
Johnson&Johnson	Austria	1.6433174487538655
Novavax	Austria	0.04645031007604156
Valneva	Austria	0.004057269636054799
Sanofi/GSK	Austria	0.00029981641856041305

c)



Task D.4

a)

SELECT

loc.location_name AS "Country Name",


```

    strftime('%Y-%m', dvr.record_date) AS "Month",
    src.source_website AS "Source Name (URL)",
    SUM(dvr.total_vaccinations) AS "Total Administered Vaccines"
FROM
    Daily_Vaccination_Record dvr
JOIN
    Location loc ON dvr.iso_code = loc.iso_code
JOIN
    Information_Source src ON dvr.source_id = src.source_id
GROUP BY
    loc.location_name,
    strftime('%Y-%m', dvr.record_date),
    src.source_website
ORDER BY
    "Total Administered Vaccines" DESC,
    loc.location_name ASC,
    strftime('%Y-%m', dvr.record_date) ASC;

```

b)

Vaccinations.db - Query

Table name...

Age_Group
Age_Vaccination_Record
Daily_Vaccination_Record
Information_Source
Location
Location_Info_Source
sqlite_sequence
STATE
State_Vaccination_Record
Vaccine
Vaccines_in_locations
Vaccinetype_used_per_day

Toggle helper tables

```
SELECT
loc.location_name AS "Country Name",
strftime("%Y-%m", dvr.record_date) AS "Month",
src.source_website AS "Source Name (URL)",
SUM(dvr.total_vaccinations) AS "Total Administered Vaccines"
```

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

Execute Export JSON Export CSV SQL Help

Bookmarks +

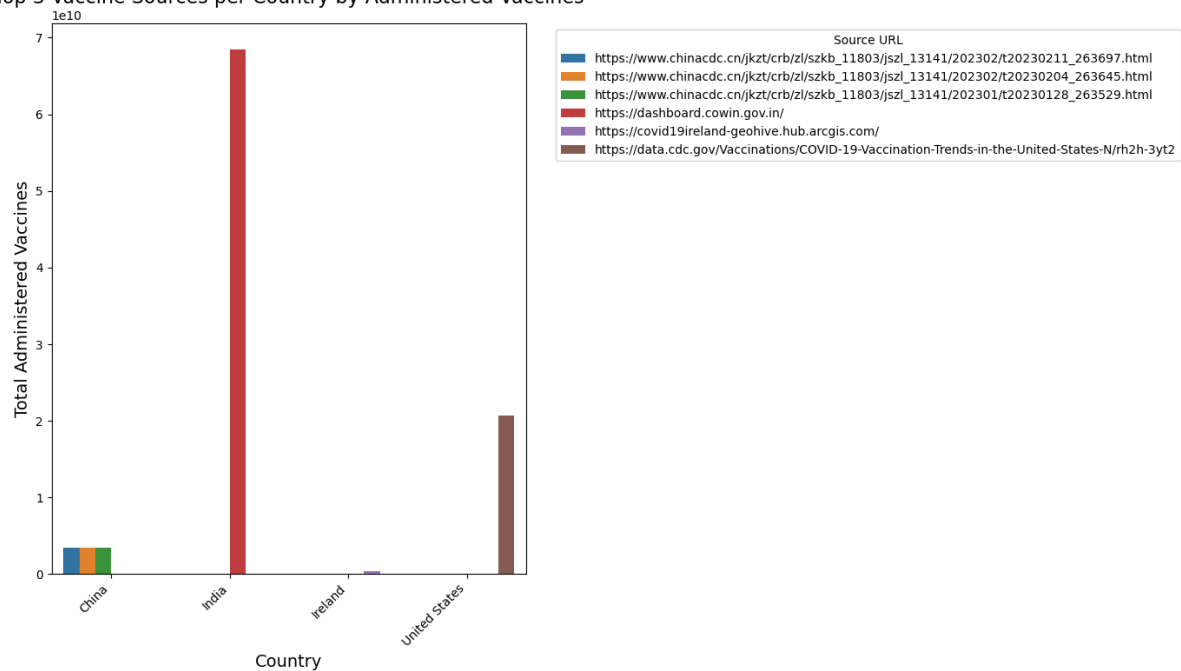
Results (unable to determine)

Permalink

Country Name	Month	Source Name (URL)	Total Administered Vaccines
India	2024-03	https://dashboard.cowin.gov.in/	68411119833
India	2023-07	https://dashboard.cowin.gov.in/	68408302682
India	2023-05	https://dashboard.cowin.gov.in/	68406582592
India	2023-01	https://dashboard.cowin.gov.in/	68268723452
India	2022-12	https://dashboard.cowin.gov.in/	68199379399
India	2024-06	https://dashboard.cowin.gov.in/	66206021953
India	2024-04	https://dashboard.cowin.gov.in/	66205985516
India	2023-11	https://dashboard.cowin.gov.in/	66202467948
India	2023-10	https://dashboard.cowin.gov.in/	66202381104
India	2023-09	https://dashboard.cowin.gov.in/	66202268778
India	2023-08	https://dashboard.cowin.gov.in/	66201981260
India	2023-03	https://dashboard.cowin.gov.in/	66193767275
India	2022-11	https://dashboard.cowin.gov.in/	65942478722
India	2022-09	https://dashboard.cowin.gov.in/	64737530536
India	2023-06	https://dashboard.cowin.gov.in/	63994375992
India	2023-04	https://dashboard.cowin.gov.in/	63091509322

c)

Top 3 Vaccine Sources per Country by Administered Vaccines



Task D.5

a)

SELECT

dvr1.record_date AS "Dates",

```

-- United States (USA)

COALESCE(

NULLIF(dvr1.people_fully_vaccinated, 0),

LAG(NULLIF(dvr1.people_fully_vaccinated, 0))

OVER (PARTITION BY dvr1.iso_code ORDER BY dvr1.record_date)

) AS "United States",

-- China (CHN)

COALESCE(

NULLIF(dvr2.people_fully_vaccinated, 0),

LAG(NULLIF(dvr2.people_fully_vaccinated, 0))

OVER (PARTITION BY dvr2.iso_code ORDER BY dvr2.record_date)

) AS "China",

-- Ireland (IRL)

COALESCE(

NULLIF(dvr3.people_fully_vaccinated, 0),

LAG(NULLIF(dvr3.people_fully_vaccinated, 0))

OVER (PARTITION BY dvr3.iso_code ORDER BY dvr3.record_date)

) AS "Ireland",

-- India (IND)

COALESCE(

NULLIF(dvr4.people_fully_vaccinated, 0),

LAG(NULLIF(dvr4.people_fully_vaccinated, 0))

OVER (PARTITION BY dvr4.iso_code ORDER BY dvr4.record_date)

) AS "India"

FROM

Daily_Vaccination_Record dvr1

LEFT JOIN

Daily_Vaccination_Record dvr2 ON dvr1.record_date = dvr2.record_date AND dvr2.iso_code = 'CHN'

LEFT JOIN

Daily_Vaccination_Record dvr3 ON dvr1.record_date = dvr3.record_date AND dvr3.iso_code = 'IRL'

LEFT JOIN

```

Daily_Vaccination_Record dvr4 ON dvr1.record_date = dvr4.record_date AND dvr4.iso_code = 'IND'

WHERE

dvr1.iso_code = 'USA' -- Filter for United States data

AND strftime('%Y', dvr1.record_date) IN ('2022', '2023') -- Filter for 2022 and 2023

ORDER BY

dvr1.record_date;

b)

SELECT
dvr1.record_date AS "Dates",
-- United States (USA)
COALESCE(
NULLIF(dvr1.people_fully_vaccinated, 0),

Results (494)

Dates	United States	China	Ireland	India
2022-01-01	210378438	NULL	3884686	607094031
2022-01-02	210470142	NULL	3885317	608920928
2022-01-03	210670531	NULL	3886050	611955199
2022-01-04	21087459	NULL	3886846	614541749
2022-01-05	211103637	NULL	3887766	617737538
2022-01-06	211319761	1213000000	3889469	620902308
2022-01-07	211569940	1215878000	3890259	625966848
2022-01-08	211747838	1215878000	3891009	627076701
2022-01-09	211824316	NULL	3891676	631501200
2022-01-10	212017928	NULL	3892193	634265259
2022-01-11	212221112	NULL	3893570	640117846
2022-01-12	212426178	NULL	3894503	643070555
2022-01-13	212618022	NULL	3895323	647586748
2022-01-14	212795330	1220584000	3896167	648878102
2022-01-15	212883686	1220584000	3896826	653514044
2022-01-16	212942215	NULL	3898044	656011893

c)

