-- Question 1: How many unique manufacturers / makers are there in the 2-wheeler category?

```
SELECT
COUNT(DISTINCT maker) AS number_of_makers
FROM ev_sales_db.electric_vehicle_sales_by_makers
WHERE vehicle_category = '2-Wheelers'
```

number_of_makers
16

-- Question 2: List the top 3 makers for the fiscal years 2023 and 2024 in terms of the number of 2-wheelers sold.

```
SELECT maker,
            SUM(electric_vehicles_sold) AS total_sold
FROM ev_sales_db.electric_vehicle_sales_by_makers evm
JOIN dim_date
USING(date)
WHERE vehicle_category = '2-Wheelers' AND fiscal_year IN (2023, 2024)
GROUP BY maker
ORDER BY total_sold DESC
LIMIT 3
```

maker	total_sold
OLA ELECTRIC	475072
TVS	262836
ATHER	184473

-- Question 3: What is the average number of total vehicles sold per month in fiscal year 2024?

```
WITH CTE AS (
SELECT
		EXTRACT(MONTH FROM dd.date) AS month,
		SUM(evs.total_vehicles_sold) AS total_vehicle_sales
FROM ev_sales_db.electric_vehicle_sales_by_state evs
JOIN ev_sales_db.dim_date dd ON evs.date = dd.date
WHERE dd.fiscal_year = 2024
GROUP BY month
)
SELECT
		round(AVG(total_vehicle_sales),0) AS avg_total_sales_per_month
FROM CTE
```

avg_total_sales_per_month
1764771

-- Question 4: Identify the top 5 states with the highest penetration rate in 2-wheeler and 4-wheeler EV sales in FY 2024.

```
SELECT
	state,
	round((SUM(electric_vehicles_sold) / SUM(total_vehicles_sold)) * 100 , 2)  AS
penetration_rate
FROM ev_sales_db.electric_vehicle_sales_by_state evs
JOIN ev_sales_db.dim_date dd ON evs.date = dd.date
WHERE fiscal_year = 2024 AND vehicle_category IN ('2-Wheelers', '4-Wheelers')
GROUP BY state
ORDER BY penetration_rate DESC
LIMIT 5
```

state	penetration_rate
Goa	13.75
Kerala	11.59
Karnataka	10.18
Maharashtra	8.60
Delhi	7.71

-- Question 5: Which states recorded the highest and lowest total vehicle sales in fiscal year 2023?

```
WITH CTE AS (
SELECT
        evs.state,
        SUM(evs.total_vehicles_sold) AS total_vehicle_sales
FROM ev_sales_db.electric_vehicle_sales_by_state evs
JOIN ev_sales_db.dim_date dd ON evs.date = dd.date
WHERE dd.fiscal_year = 2023
GROUP BY evs.state
)
SELECT
        ss.state,
        ss.total_vehicle_sales
FROM CTE ss
WHERE ss.total_vehicle_sales = (SELECT MAX(total_vehicle_sales) FROM CTE)
   OR ss.total_vehicle_sales = (SELECT MIN(total_vehicle_sales) FROM CTE)
```

state	total_vehicle_sales
Ladakh	4379
Uttar Pradesh	2697449

-- Question 6: What are the peak and low season months for EV sales based on the data from 2022 to 2024?

```
SELECT
	DATE_FORMAT(date, '%M') AS month_name,
	SUM(evs.electric_vehicles_sold) AS total_ev_sales
FROM ev_sales_db.electric_vehicle_sales_by_state evs
JOIN dim_date dd
USING(date)
WHERE dd.fiscal_year BETWEEN 2022 AND 2024
GROUP BY month_name
ORDER BY total_ev_sales DESC
```

month_name	total_ev_sales
March	291587
November	205196
February	198049
January	189099
October	185185
December	180401
May	159869
September	145972
August	141961
April	134657
July	127426
June	106709

-- Question 7: List the compounded annual growth rate (CAGR) in 2-wheelers units for the top 4 makers from 2022 to 2024.

```
WITH cagr_data AS (
SELECT
		maker,
		SUM(CASE WHEN fiscal_year = 2022 THEN electric_vehicles_sold ELSE 0
END) AS start_value,
		SUM(CASE WHEN fiscal_year = 2024 THEN electric_vehicles_sold ELSE 0
END) AS end_value
FROM ev_sales_db.electric_vehicle_sales_by_makers evm
JOIN ev_sales_db.dim_date dd ON evm.date = dd.date
WHERE vehicle_category = '2-Wheelers'
GROUP BY maker
ORDER BY end_value DESC
LIMIT 4
)
SELECT
		maker,
	round((POWER((end_value / start_value), 1 / 2.0) - 1) * 100, 2) AS
cagr_percentage
FROM cagr_data
ORDER BY cagr_percentage DESC
```

maker	cagr_percenta...
OLA ELECTRIC	373.22
TVS	330.8
BAJAJ	285.45
ATHER	132.04

Question 8: Categorize the states based on electric vehicle penetration rates in fiscal year 2024, with classifications of Above 7%, Above 5%, Above 3%, Above 1%, and Below 1%

```
SELECT
	evs.state,
	SUM(evs.electric_vehicles_sold) AS total_ev_sales,
	SUM(evs.total_vehicles_sold) AS total_vehicles_sold,
	SUM(evs.electric_vehicles_sold) / SUM(evs.total_vehicles_sold) * 100 AS
penetration_rate,
CASE
	WHEN (SUM(evs.electric_vehicles_sold) / SUM(evs.total_vehicles_sold)) * 100 >
7 THEN 'Above 7%'
	WHEN (SUM(evs.electric_vehicles_sold) / SUM(evs.total_vehicles_sold)) * 100 >
5 THEN 'Above 5%'
	WHEN (SUM(evs.electric_vehicles_sold) / SUM(evs.total_vehicles_sold)) * 100 >
3 THEN 'Above 3%'
	WHEN (SUM(evs.electric_vehicles_sold) / SUM(evs.total_vehicles_sold)) * 100 >
1 THEN 'Above 1%'
	ELSE 'Below 1%'
END AS penetration_category
FROM ev_sales_db.electric_vehicle_sales_by_state evs
JOIN ev_sales_db.dim_date dd ON evs.date = dd.date
WHERE dd.fiscal_year = 2024
GROUP BY evs.state
ORDER BY penetration_rate DESC
```

	state	total_ev_sales	total_vehicles_sold	penetration_rate	penetration_category
	Goa	10799	78524	13.7525	Above 7%
	Kerala	73938	638114	11.5870	Above 7%
	Karnataka	160989	1581988	10.1764	Above 7%
	Maharashtra	197169	2293994	8.5950	Above 7%
	Delhi	46724	606348	7.7058	Above 7%
	Chandigarh	2877	45147	6.3725	Above 5%
	Odisha	39118	618149	6.3282	Above 5%
	Chhattisgarh	28540	503068	5.6732	Above 5%
	Tamil Nadu	94314	1716940	5.4931	Above 5%
	Puducherry	3098	57692	5.3699	Above 5%
	Gujarat	84359	1590987	5.3023	Above 5%
	Rajasthan	66444	1300476	5.1092	Above 5%
	Andhra Pra…	33183	782865	4.2387	Above 3%
	Madhya Pr…	43223	1286182	3.3606	Above 3%