

# Electric Vehicle Data Analysis in SQL

- Write a query to list all electric vehicles with their VIN (1-10), Make, and Model.

42

43 #1 Write a query to list all electric vehicles with their VIN (1-10), Make, and Model.

44 • `select distinct VIN, Make, Model from EV_data;`

45

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

IA

Fetch rows:

VIN	Make	Model
WBY8P6C58K	BMW	I3
5YJSA1DN4D	TESLA	MODEL S
5YJSA1E26J	TESLA	MODEL S
WBY2Z2C54E	BMW	I8
5YJXCDE23J	TESLA	MODEL X
WBY33AW0XP	BMW	I4
5YJ3E1EB5L	TESLA	MODEL 3
1V2GNPE86P	VOLKSWAGEN	ID.4

- Write a query to display all columns for electric vehicles with a Model Year of 2020 or later.

45 #Pranali

46 #2. Write a query to display all columns for electric

47 #vehicles with a Model Year of 2020 or later.

48 • `select * from EV_data where `Model Year` >= 2020;`

Result Grid										Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:
VIN	County	City	State	Postal Code	Model Year	Make	Model	Electric Vehide Type	Clean Alternative Fuel Vehicle (CAFV) Eligibility				
WBY33AW0XP	King	Seattle	WA	98109	2023	BMW	I4	Battery Electric Vehicle (BEV)	Eligibility unknown as battery range has not bee...				
5YJ3E1EB5L	King	Bothell	WA	98011	2020	TESLA	MODEL 3	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehide Eligible				
1V2GNPE86P	King	Sammamish	WA	98075	2023	VOLKSWAGEN	ID.4	Battery Electric Vehicle (BEV)	Eligibility unknown as battery range has not bee...				
5YJ3E1EB0M	Yakima	Yakima	WA	98908	2021	TESLA	MODEL 3	Battery Electric Vehicle (BEV)	Eligibility unknown as battery range has not bee...				
SADHD2510L	King	Bellevue	WA	98004	2020	JAGUAR	I-PACE	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehide Eligible				
5YJYGAE8M	Snohomish	Snohomish	WA	98296	2021	TESLA	MODEL Y	Battery Electric Vehicle (BEV)	Eligibility unknown as battery range has not bee...				

- Write a query to list electric vehicles manufactured by Tesla.

49

50 #Pranali

51 #3Write a query to list electric vehicles manufactured by Tesla.

52 • `select * from ev_data where make = 'TESLA';`

53

54 #4. Write a query to find all electric vehicles

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

Fetch rows:

VIN	County	City	State	Postal Code	Model Year	Make	Model	Electric Vehicle Type	Clean Alternative Fuel Vehicle (CAEV) Eligibility	Electric Range	Base MSRP
5YJSA1DN4D	Kitsap	Bremerton	WA	98312	2013	TESLA	MODEL S	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	208	69900.00
5YJSA1E26J	King	Kent	WA	98042	2018	TESLA	MODEL S	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	249	0.00
5YJXCDE23J	King	Bellevue	WA	98004	2018	TESLA	MODEL X	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	238	0.00
5YJ3E1EB5L	King	Bothell	WA	98011	2020	TESLA	MODEL 3	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	322	0.00
5YJ3E1EB0M	Yakima	Yakima	WA	98908	2021	TESLA	MODEL 3	Battery Electric Vehicle (BEV)	Eligibility unknown as battery range has not been...	0	0.00
5YJSA1E29J	Kitsap	Poulsbo	WA	98370	2018	TESLA	MODEL S	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	249	0.00

data: 84

- Write a query to find all electric vehicles where the Model contains the word Leaf.

```

53 #Pranali
54 #4. Write a query to find all electric vehicles
55 #where the Model contains the word Leaf.
56 • select distinct* from ev_data
57 where Model like "%Leaf%";
58

```

VIN	County	City	State	Postal Code	Model Year	Make	Model	Electric Vehicle Type	Clean Alternative Fuel Vehicle (CAFV) Eligibility	Electric Range
1N4BZ1CP3K	Kitsap	Bainbridge Island	WA	98110	2019	NISSAN	LEAF	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	150
1N4AZ0CP4E	King	Redmond	WA	98052	2014	NISSAN	LEAF	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	84
1N4AZ0CP2D	King	Bellevue	WA	98004	2013	NISSAN	LEAF	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	75
1N4AZ0CP6G	King	Seattle	WA	98125	2016	NISSAN	LEAF	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	84
JN1AZ0CP7B	Kitsap	Kingston	WA	98346	2011	NISSAN	LEAF	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	73
1N4BZ0CP9G	Kitsap	Port Orchard	WA	98366	2016	NISSAN	LEAF	Battery Electric Vehicle (BEV)	Clean Alternative Fuel Vehicle Eligible	84

5. Write a query to count the total number of electric vehicles in the dataset.

```

57 where Model like "%Leaf%";
58 #Pranali
59 #5. Write a query to count the total number
60 # of electric vehicles in the dataset.
61 • select count(distinct Vin) as Total_EV_count from ev_data;
62

```

Total_EV_count
11242

6. Write a query to find the average Electric Range of all electric vehicles.

```

63 #Pranali
64 #6Write a query to find the average
65 #Electric Range of all electric vehicles.
66 • select Avg(`Electric Range`)
67 as average_Electric_Range from ev_data;
68

```

average_Electric_Range
56.7078

7. Write a query to list the top 5 electric vehicles with the highest Base MSRP, sorted in descending order.

```

68 #Pranali Rayasane
69 #Q7 Write a query to list the top 5 electric vehicles
70 #with the highest Base MSRP, sorted in descending order.
71 • SELECT distinct VIN, `Model Year`, Make, Model,
72      `Base MSRP` FROM EV_data
73      ORDER BY `Base MSRP` DESC
74      LIMIT 5;

```

Result Grid					
Filter Rows: <input type="text"/>					
Export:  Wrap Cell Content:  Fetch rows:					
	VIN	Model Year	Make	Model	Base MSRP
▶	WP0CA2A13F	2015	PORSCHE	918	845000.00
	WP0AH2A70J	2018	PORSCHE	PANAMERA	184400.00
	WP0AH2A71J	2018	PORSCHE	PANAMERA	184400.00
	WP0AH2A73J	2018	PORSCHE	PANAMERA	184400.00
	WP0AH2A74J	2018	PORSCHE	PANAMERA	184400.00

8. Write a query to list all pairs of electric vehicles that have the same Make and Model Year. Include columns for VIN\_1, VIN\_2, Make, and Model Year.

```

--
76 #Pranali
77 #Write a query to list all pairs of electric vehicles that have the same Make and Model Year.
78 #Include columns for VIN_1, VIN_2, Make, and Model Year.
79 • Select E1.VIN As VIN_1, E2.VIN As VIN_2, E1.Make, E1.`Model Year`
80 From EV_data E1
81 Join EV_data E2 On E1.Make = E2.Make
82      And E1.`Model Year` = E2.`Model Year`
83      And E1.VIN < E2.VIN;
84
--

```

Result Grid					
Filter Rows: <input type="text"/>					
Export:  Wrap Cell Content:  Fetch rows:					
	VIN	Model Year	Make	Model	Base MSRP
▶	WP0CA2A13F	2015	PORSCHE	918	845000.00
	WP0AH2A70J	2018	PORSCHE	PANAMERA	184400.00
	WP0AH2A71J	2018	PORSCHE	PANAMERA	184400.00
	WP0AH2A73J	2018	PORSCHE	PANAMERA	184400.00
	WP0AH2A74J	2018	PORSCHE	PANAMERA	184400.00


EV\_data 88 x

9. Write a query to find the total number of electric vehicles for each Make. Display Make and the count of vehicles.

```

94
95 #Pranali rayasane
96 #9. Write a query to find the total number of electric vehicles for each Make. Display Make and the count of vehi
97 #select
98 • select make, count(distinct VIN) as vehicle_count
99 from EV_data group by make
100 order by vehicle_count DESC;
101
102 #Write a query using a CASE statement to categorize electric

```



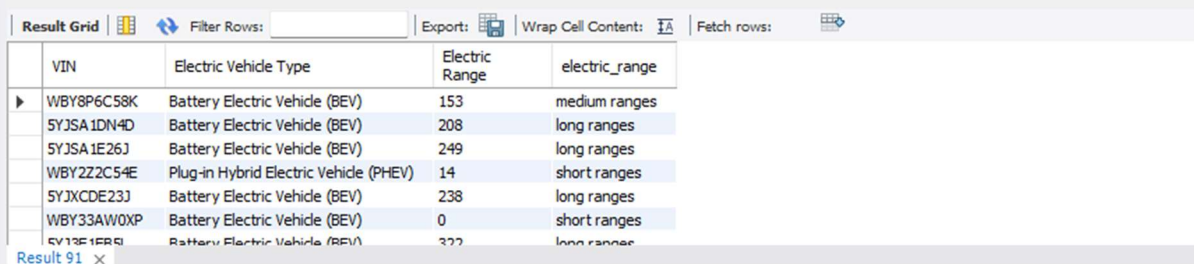
make	vehicle_count
TESLA	1453
VOLVO	1106
AUDI	924
FORD	878
BMW	861
CHEVROLET	771
KIA	696

10. Write a query using a CASE statement to categorize electric vehicles into three categories based on their Electric

```

101 #Pranali
102 #Write a query using a CASE statement to categorize electric
103 #vehicles into three categories based on their Electric
104 • SELECT VIN,
105         `Electric Vehicle Type`,
106         `Electric Range`,
107         CASE WHEN `Electric Range` < 100 THEN 'short ranges'
108              WHEN `Electric Range` BETWEEN 100 AND 200 THEN 'medium ranges'
109              WHEN `Electric Range` > 200 THEN 'long ranges'
110         END AS electric_range
111 FROM EV_data;

```



VIN	Electric Vehicle Type	Electric Range	electric_range
WBY8P6C58K	Battery Electric Vehicle (BEV)	153	medium ranges
5YJSA1DN4D	Battery Electric Vehicle (BEV)	208	long ranges
5YJSA1E26J	Battery Electric Vehicle (BEV)	249	long ranges
WBY2Z2C54E	Plug-in Hybrid Electric Vehicle (PHEV)	14	short ranges
5YJXCDE23J	Battery Electric Vehicle (BEV)	238	long ranges
WBY33AW0XP	Battery Electric Vehicle (BEV)	0	short ranges
5Y13E1F85	Battery Electric Vehicle (BEV)	322	long ranges

11. Write a query to add a new column Model\_Length to the electric vehicles table that calculates the length of each Model name.

	2020 Census Tract	Model Length
...	53033003601	2
	53035080700	7
...	53033031708	7
...	53033024002	2
...	53033023601	7
	53033007007	2

12. Write a query using an advanced function to find the electric vehicle with the highest Electric Range.

```





122 #Pranali
123 #12.#Write a query using an advanced function to find the
124 #electric vehicle with the highest Electric Range.
125 • select distinct VIN, `Electric Vehicle Type`, `Electric Range`
126 from (select distinct VIN,
127         `Electric Vehicle Type`,
128         `Electric Range`,
129         row_number() over (order by `Electric Range` desc) as rn
130        from EV_data
131       ) as RankedVehicles
132 where rn = 1;

```

Result Grid			
Filter Rows: <input type="text"/>			
Export:			
Wrap Cell Content:			
VIN	Electric Vehicle Type	Electric Range	
5YJSA1E4XL	Battery Electric Vehicle (BEV)	337	

13. Create a view named HighEndVehicles that includes electric vehicles with a Base MSRP of \$50,000 or higher.



Result Grid		 Filter Rows: <input type="text"/>	Export: 	Wrap Cell Content: 
VIN	Make	Model	Electric Vehicle Type	Base MSRP
5YJSA1BG1D	TESLA	MODEL S	Battery Electric Vehicle (BEV)	69900.00
5YJSA1DG3D	TESLA	MODEL S	Battery Electric Vehicle (BEV)	69900.00
5YJSA1BG2D	TESLA	MODEL S	Battery Electric Vehicle (BEV)	69900.00
YV4BR0DM6J	VOLVO	XC60	Plug-in Hybrid Electric Vehicle (PHEV)	52900.00
WBA7J2C36H	BMW	740E	Plug-in Hybrid Electric Vehicle (PHEV)	89,100.00

[illegible]

15. Write a query to calculate the cumulative count of electric vehicles registered each year sorted by Model Year.

```

159 #Pranali
160 #15 . Write a query to calculate the cumulative count of
161 #electric vehicles registered each year sorted by Model Year.
162 • SELECT `Model Year`,count(*) as year_count,
163         SUM(COUNT(*)) OVER (order by `model year`) as cumulative_count
164 FROM ev_data
165 group by `model year`;
166

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

	Model Year	year_count	cumulative_count
▶	1997	1	1
	1998	1	2
	1999	5	7
	2000	7	14
	2002	2	16
	2003	1	17
	2008	20	37

16. Write a stored procedure to update the Base MSRP of a vehicle given its VIN (1-10) and new Base MSRP.

```

177
180 #Pranali
181 DELIMITER //
182 • CREATE PROCEDURE Update_msrp(IN a text, IN b INT)
183 BEGIN
184     UPDATE evdata SET base_msrp=b WHERE `VIN(1-10)`=a;
185 END //
186 DELIMITER ;
187 • CALL update_msrp('WBY8P6C58K',5000);
188 • select VIN , `Base MSRP` from EV_data;

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

	VIN	Base MSRP
▶	WBY8P6C58K	5000.00

17. Write a query to find the county with the highest average Base MSRP for electric vehicles. Use subqueries and aggregate functions to achieve this.

```

165 • SELECT COUNTY,AVG_
166 FROM (
167     SELECT county,AVG(`base msrp`) as AVG_
168     FROM ev_data
169     GROUP BY county
170 ) AS t
171 ORDER BY AVG_ DESC
172 LIMIT 1;

```

Result Grid	Filter Rows:	Export:	Wrap Cell Content
COUNTY	AVG_		
Charles	102000.000000		

18. Write a query to find pairs of electric vehicles from the same City where one vehicle has a longer Electric Range than the other. Display columns for VIN\_1, Range\_1, VIN\_2, and Range\_2.

```

• SELECT ev1.city as city_,
        ev1.`VIN (1-10)` as VIN_1, ev1.`electric range` as Range_1,
        ev2.`VIN (1-10)` as VIN_2, ev2.`electric range` as Range_2
FROM ev_data ev1
JOIN ev_data ev2
ON ev1.city=ev2.city AND ev1.`electric range` > ev2.`electric range`;

```

alt Grid	Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:
city_	VIN_1	Range_1	VIN_2	Range_2
Seattle	5YJSA1E45J	249	WBY8P6C58K	153
Seattle	5YJYGDEE0L	291	WBY8P6C58K	153
Seattle	5YJSA1DP2D	208	WBY8P6C58K	153
Seattle	5YJXCAE27J	238	WBY8P6C58K	153
Seattle	1G1FZ6S07L	259	WBY8P6C58K	153