



Could not connect to the reCAPTCHA service. Please check your internet connection and reload to get a reCAPTCHA challenge.

```
import pandas as pd
import numpy as np
from google.colab import files
```

```
uploaded = files.upload()
```

 Choose Files  ev_data.csv

ev_data.csv(text/csv) - 6859085 bytes, last modified: n/a - 100% done

Saving ev_data.csv to ev_data.csv

```
df = pd.read_csv('ev_data.csv')
```

```
df.head(-10)
```



	Year	Month_Name	Date	State	Vehicle_Class	Vehicle_Category
0	2014.0	jan	1/1/2014	Andhra Pradesh	ADAPTED VEHICLE	Others
1	2014.0	jan	1/1/2014	Andhra Pradesh	AGRICULTURAL TRACTOR	Others
2	2014.0	jan	1/1/2014	Andhra Pradesh	AMBULANCE	Others
3	2014.0	jan	1/1/2014	Andhra Pradesh	ARTICULATED VEHICLE	Others
4	2014.0	jan	1/1/2014	Andhra Pradesh	BUS	Bus
...
96830	2023.0	dec	12/1/2023	Goa	MOTOR CYCLE/SCOOTER-USED FOR HIRE	2-Wheelers
96831	2023.0	dec	12/1/2023	Goa	THREE WHEELER (GOODS)	3-Wheelers

Next steps:


[Generate code with df](#)

[View recommended plots](#)

[New interactive sheet](#)

df['Da

 What can I help you build?

```
df.head(-10)
```

	Year	Month_Name	Date	State	Vehicle_Class	Vehicle_Category	Ve
0	2014.0	jan	2014-01-01	Andhra Pradesh	ADAPTED VEHICLE	Others	
1	2014.0	jan	2014-01-01	Andhra Pradesh	AGRICULTURAL TRACTOR	Others	
2	2014.0	jan	2014-01-01	Andhra Pradesh	AMBULANCE	Others	
3	2014.0	jan	2014-01-01	Andhra Pradesh	ARTICULATED VEHICLE	Others	
4	2014.0	jan	2014-01-01	Andhra Pradesh	BUS	Bus	
...
96830	2023.0	dec	2023-12-01	Goa	MOTOR CYCLE/SCOOTER-USED FOR HIRE	2-Wheelers	
96831	2023.0	dec	2023-12-01	Goa	THREE WHEELER (GOODS)	3-Wheelers	

Next steps:

[Generate code with df](#)[View recommended plots](#)[New interactive sheet](#)

```
#checking for missing values
print(df.isnull().sum())
```

```
Year      0
Month_Name 0
Date      0
State     0
Vehicle_Class 0
Vehicle_Category 0
Vehicle_Type 0
EV_Sales_Quantity 0
dtype: int64
```

This ensures that we have no missing values in any of the columns of our database.

Let's point out the basic things about our data here.

Looking at the truncated table we can see :

- there are 8 columns in the datasheet
- total of 96835 rows
- data from 2014 to 2023 is available
- states and union territories combined, we have 34 different regions in this database
- 73 different vehicle class and 5 different vehicle categories have been mentioned

```
print("Total number of regions covered in this data base = " + str(df.State.nunique()))
```

```
➞ Total number of regions covered in this data base = 34
```

```
df.State.value_counts()
```

➞

	count
State	
Maharashtra	4912
Karnataka	4830
Uttar Pradesh	4557
Rajasthan	4552
Gujarat	4517
West Bengal	4196
Tamil Nadu	4063
Odisha	4027
Haryana	3842
Kerala	3666
Chhattisgarh	3590
Madhya Pradesh	3587
Andhra Pradesh	3457
Assam	3114
Uttarakhand	3045
Himachal Pradesh	2980
Delhi	2850

Punjab	2930
Jharkhand	2773
Bihar	2544
Jammu and Kashmir	2292
Arunachal Pradesh	2285
Goa	2139
DNH and DD	1927
Delhi	1871
Meghalaya	1867
Puducherry	1832
Manipur	1632
Nagaland	1588
Tripura	1564
Mizoram	1557
Chandigarh	1554
Sikkim	1246
Andaman & Nicobar Island	1226
Ladakh	1063

dtype: int64

```
df.Vehicle_Class.nunique()
```

 73

```
df.Vehicle_Category.nunique()
```

 5

```
df.Vehicle_Category.value_counts()
```



	count
Vehicle_Category	
Others	54423
2-Wheelers	13121
3-Wheelers	11491
Bus	9119
4-Wheelers	8691

dtype: int64

```
df.Vehicle_Class.value_counts()
```




	count
Vehicle_Class	
MOTOR CAR	4111
M-CYCLE/SCOOTER	4101
GOODS CARRIER	4096
MOTOR CAB	3985
BUS	3813
...	...
SEMI-TRAILER (COMMERCIAL)	18
X-RAY VAN	12
MOTOR CYCLE/SCOOTER-WITH TRAILER	9
MODULAR HYDRAULIC TRAILER	3
MOTOR CARAVAN	3

73 rows × 1 columns

dtype: int64


```
df.EV_Sales_Quantity.describe()
```



EV_Sales_Quantity	
count	96845.000000
mean	37.108896
std	431.566675
min	0.000000
25%	0.000000
50%	0.000000
75%	0.000000
max	20584.000000

dtype: float64

```
df.info()
```



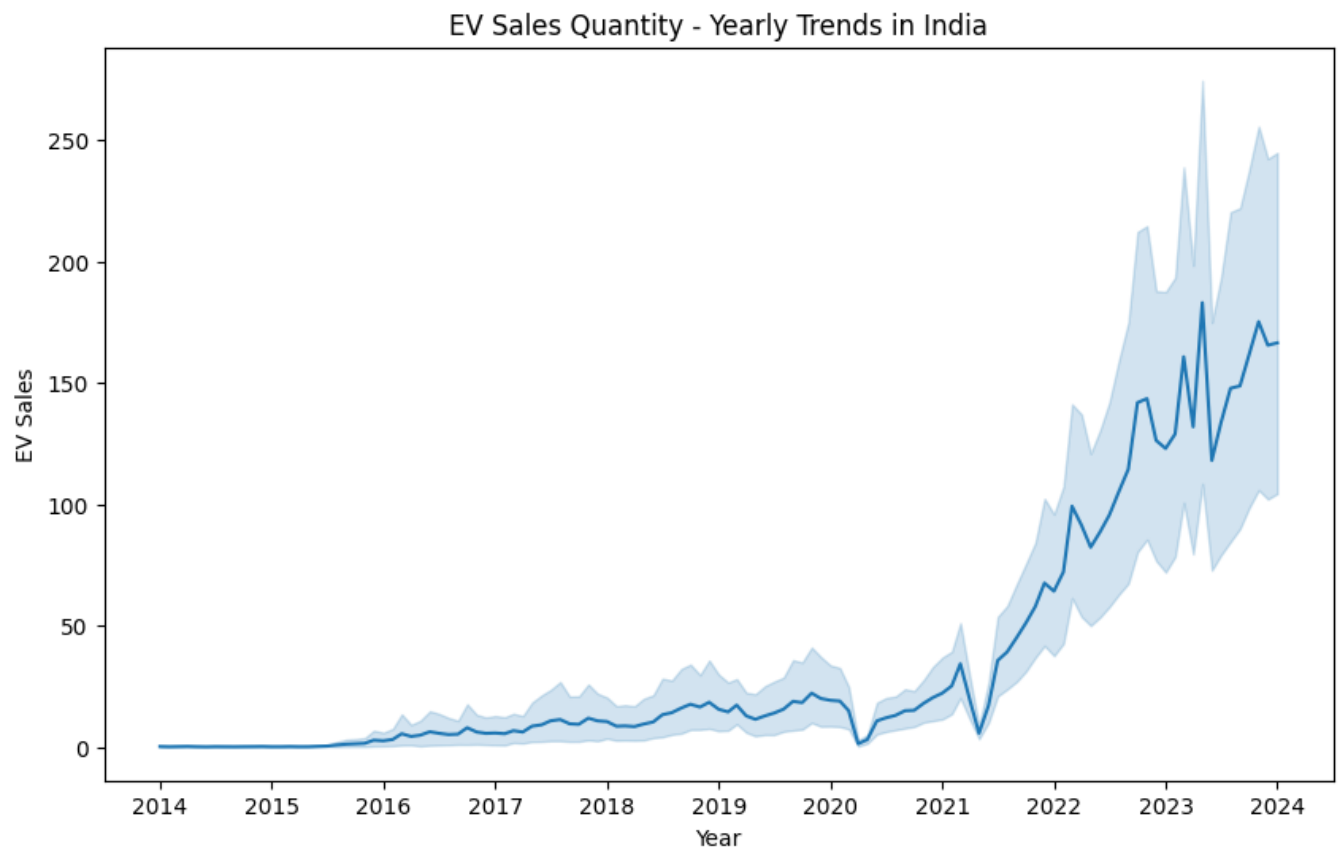
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 96845 entries, 0 to 96844
Data columns (total 8 columns):
#   Column                Non-Null Count  Dtype
---  -
0   Year                  96845 non-null  float64
1   Month_Name            96845 non-null  object
2   Date                  96845 non-null  datetime64[ns]
3   State                 96845 non-null  object
4   Vehicle_Class         96845 non-null  object
5   Vehicle_Category     96845 non-null  object
6   Vehicle_Type          96845 non-null  object
7   EV_Sales_Quantity    96845 non-null  float64
dtypes: datetime64[ns](1), float64(2), object(5)
memory usage: 5.9+ MB
```

So far we were trying to understand the data and tried to draw out some basic statistical info about the EV sales from the table.

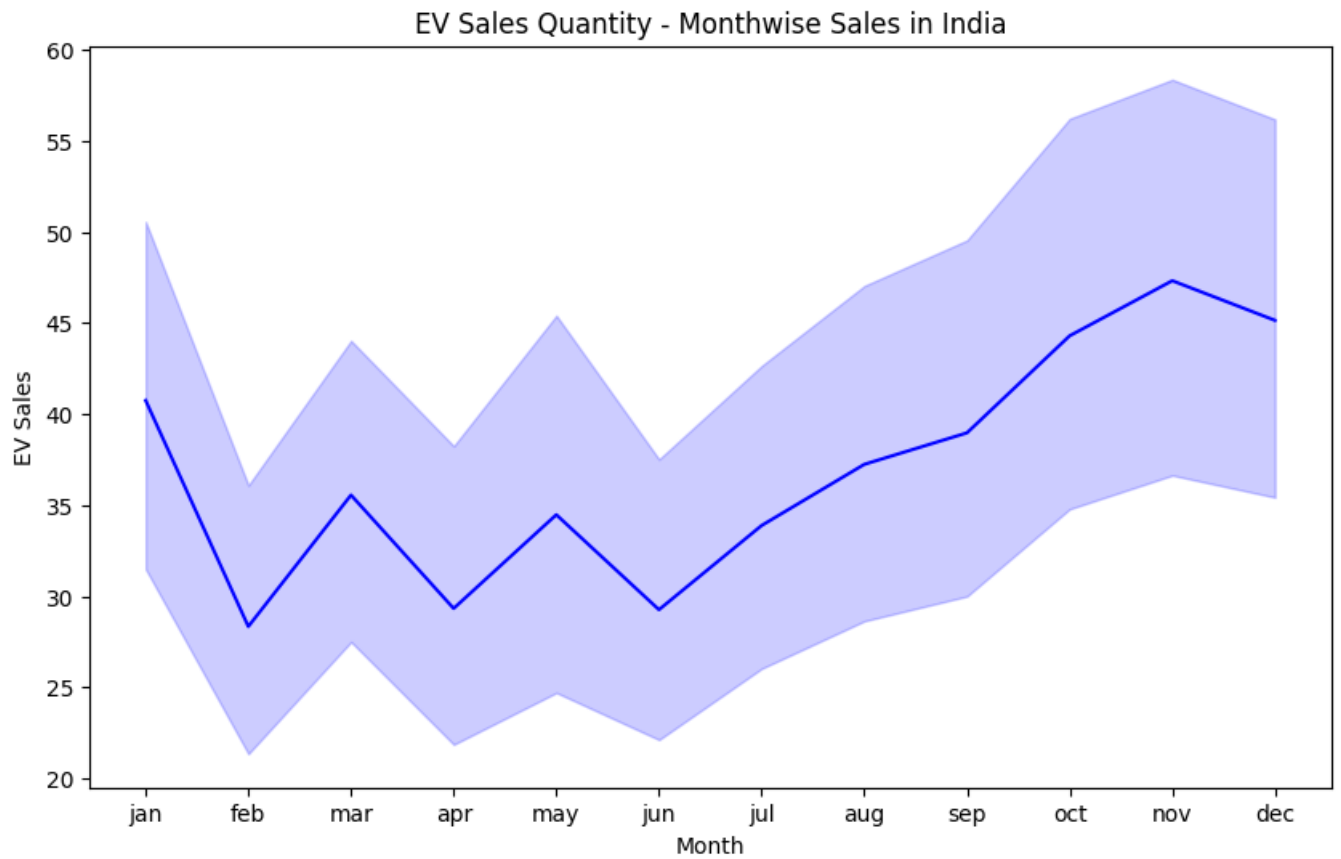
Data Visualization

```
import matplotlib.pyplot as plt
import seaborn as sns
```

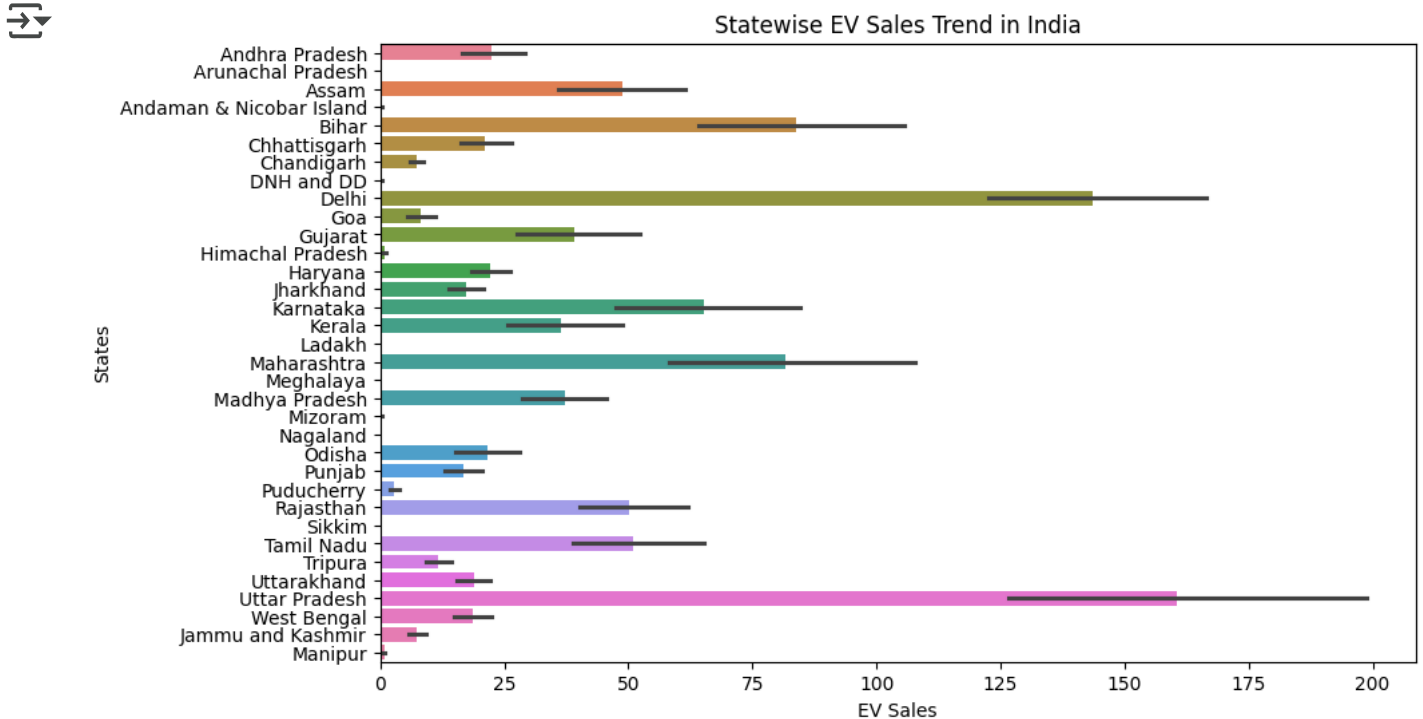
```
plt.figure(figsize=(10,6))  
plt.title('EV Sales Quantity - Yearly Trends in India')  
sns.lineplot(x='Date', y='EV_Sales_Quantity', data=df)  
plt.xlabel('Year')  
plt.ylabel('EV Sales')  
plt.show()
```



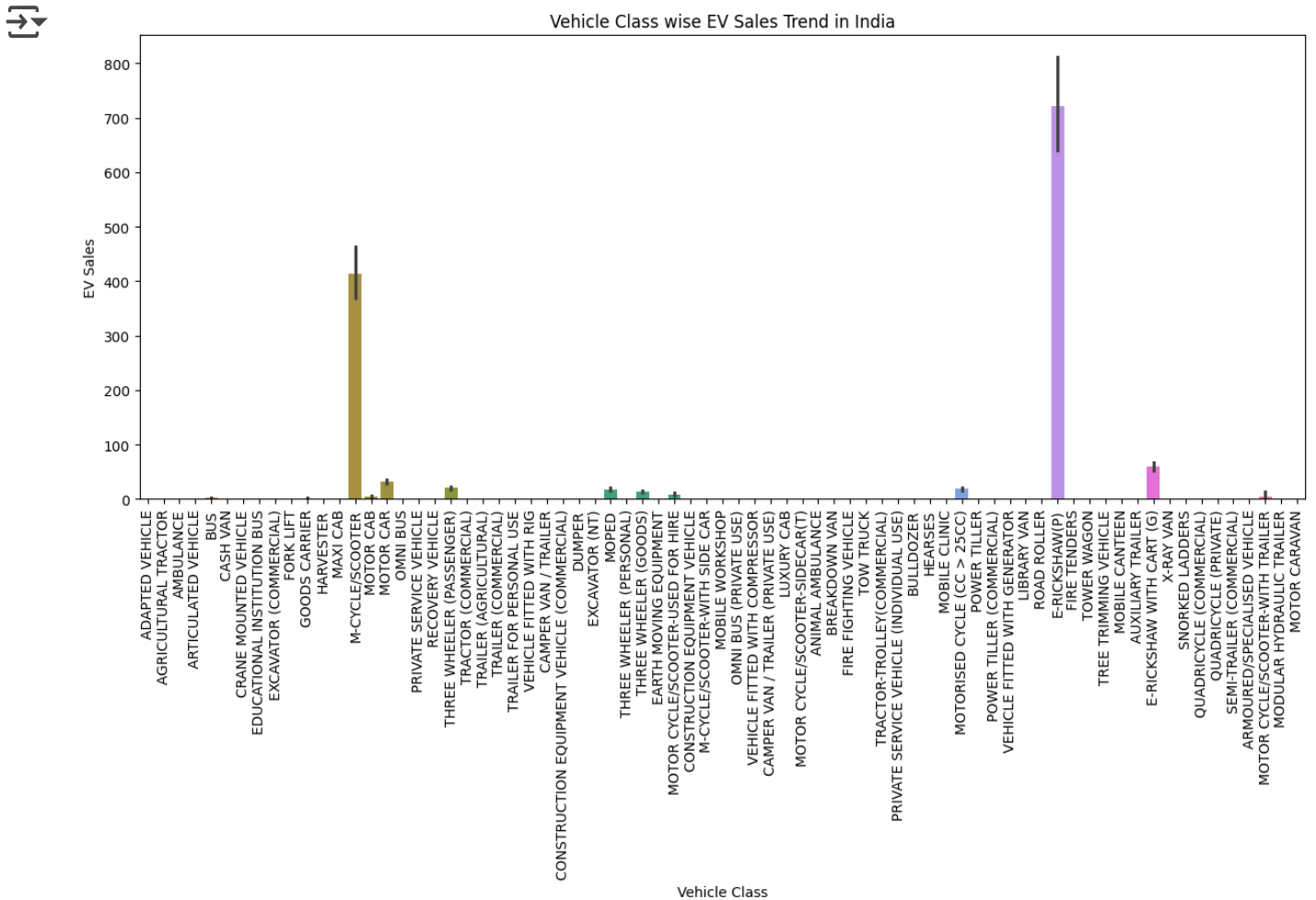
```
plt.figure(figsize=(10,6))
plt.title('EV Sales Quantity - Monthwise Sales in India')
sns.lineplot(x='Month_Name', y='EV_Sales_Quantity', data=df, color='b')
plt.xlabel('Month')
plt.ylabel('EV Sales')
plt.show()
```



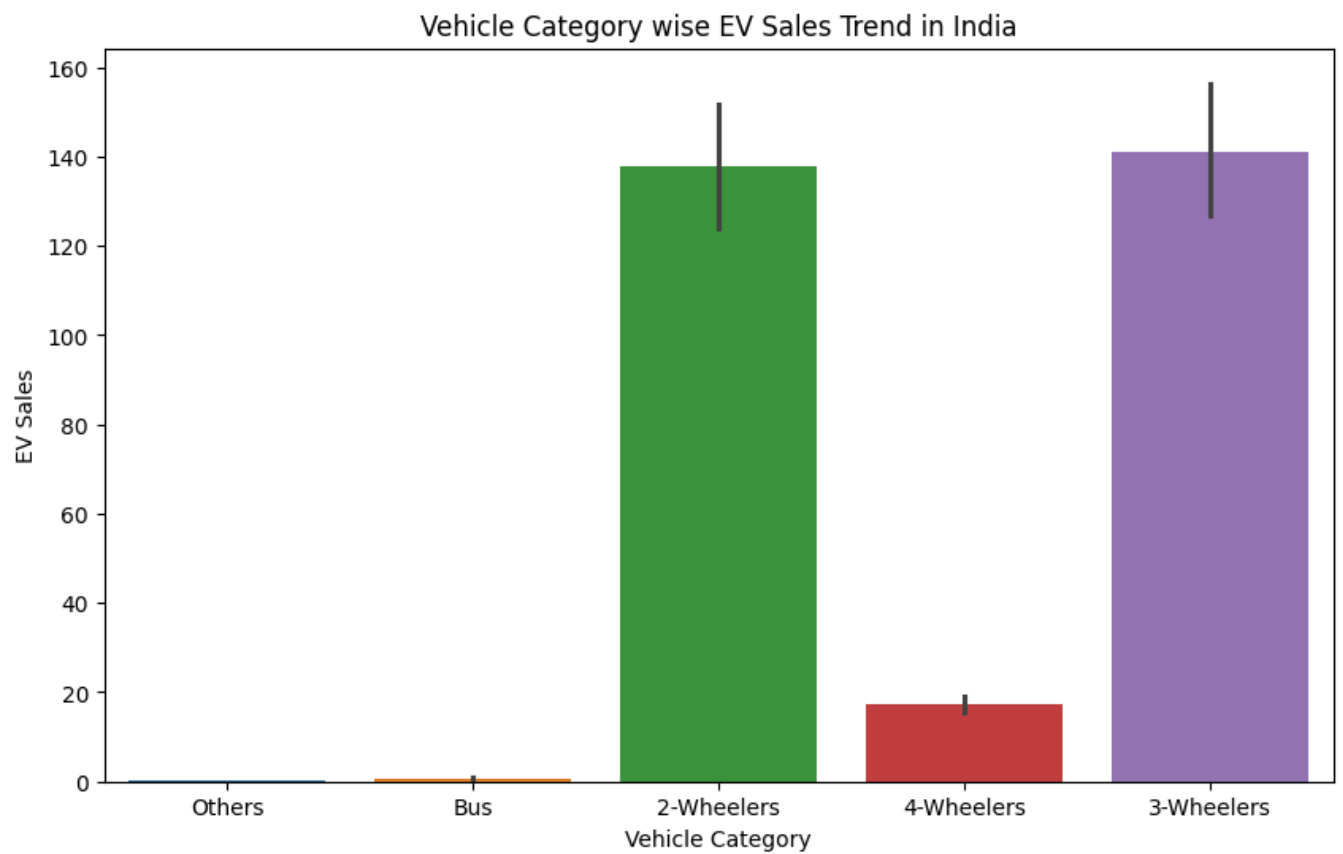

```
plt.figure(figsize=(10,6))
plt.title('Statewise EV Sales Trend in India')
sns.barplot(x='EV_Sales_Quantity', y='State', data=df, hue='State')
plt.xlabel('EV Sales')
plt.ylabel('States')
plt.show()
```



```
plt.figure(figsize=(15,6))
plt.title('Vehicle Class wise EV Sales Trend in India')
sns.barplot(y='EV_Sales_Quantity', x='Vehicle_Class', data=df, hue='Vehicle_Class')
plt.ylabel('EV Sales')
plt.xlabel('Vehicle Class')
plt.xticks(rotation=90)
plt.show()
```



```
plt.figure(figsize=(10,6))  
plt.title('Vehicle Category wise EV Sales Trend in India')  
sns.barplot(y='EV_Sales_Quantity', x='Vehicle_Category', data=df, hue='Vehicle_')  
plt.ylabel('EV Sales')  
plt.xlabel('Vehicle Category')  
plt.show()
```



```
plt.figure(figsize=(10,6))
plt.title('Vehicle Type Aalysis of EV Sales in India')
sns.barplot(y='EV_Sales_Quantity', x='Vehicle_Type', data=df, hue='Vehicle_Type')
plt.ylabel('EV Sales')
plt.xlabel('Vehicle Type')
plt.xticks(rotation=90)
plt.show()
```

