

In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

In [2]:

```
car_data = pd.read_csv('new_car.csv')
```

In [3]:

```
car_data.head()
```

Out[3]:

	Car	Style	Range	Transmission	VehicleType	PriceRange	Rating(out
0	Tata Nexon EV	Compact SUV	312 Km/Full Charge	Automatic	Electric	₹ 13.99 - 17.4 L	
1	Hyundai Grand i10 Nios	Compact Hatchback	20.2 - 26.2 Km/l	AMT,Manual	Petrol,Petrol+CNG,Diesel	₹ 5.3 - 8.51 L	
2	Maruti Suzuki Alto 800	Entry Hatchback	24.7 - 31.39 Km/l	Manual	Petrol,Petrol+CNG	₹ 3.39 - 5.03 L	
3	Tata Punch	Compact SUV	NaN	AMT,Manual	Petrol	₹ 5.83 - 9.49 L	
4	MG Hector	SUV	13.96 - 17.4 Km/l	Automatic,Manual	Petrol,Diesel,Hybrid	₹ 13.5 - 19.36 L	

In [4]:



```
car_data.tail()
```

Out[4]:

	Car	Style	Range	Transmission	VehicleType	PriceRange	Rating(outof10)
250	Porsche Panamera	Premium Sports Sedan	8 Km/l	Automatic	Petrol	₹ 1.45 - 2.43 Cr	6.6
251	Ferrari 812 Superfast	Premium Sports Coupe	6.7 Km/l	Automatic	Petrol	₹ 5.2 Cr	na
252	Ferrari California	Sports Car	9.5 Km/l	Automatic	Petrol	₹ 3.8 Cr	7.9
253	Ferrari Portofino	Premium Sports Coupe	10 Km/l	Automatic	Petrol	₹ 3.5 Cr	na
254	MINI SE	Luxury Hatchback	270 Km/Full Charge	Automatic	Electric	₹ 47.2 L	na

In [5]:



```
car_data.shape
```

Out[5]:

```
(255, 7)
```

In [6]:



```
car_data.columns
```

Out[6]:

```
Index(['Car', 'Style', 'Range', 'Transmission', 'VehicleType', 'PriceRange',
      'Rating(outof10)'],
      dtype='object')
```

In [7]:

```
car_data.nunique()
```

Out[7]:

```
Car          255
Style        31
Range       202
Transmission    5
VehicleType   15
PriceRange   250
Rating(outof10) 31
dtype: int64
```

In [8]:

```
car_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 255 entries, 0 to 254
Data columns (total 7 columns):
 #   Column                Non-Null Count  Dtype
---  -
 0   Car                   255 non-null   object
 1   Style                 255 non-null   object
 2   Range                 244 non-null   object
 3   Transmission          255 non-null   object
 4   VehicleType           255 non-null   object
 5   PriceRange            255 non-null   object
 6   Rating(outof10)       255 non-null   object
dtypes: object(7)
memory usage: 14.1+ KB
```

In [9]:

```
car_data.isnull().sum()
```

Out[9]:

```
Car          0
Style        0
Range       11
Transmission    0
VehicleType    0
PriceRange    0
Rating(outof10) 0
dtype: int64
```

In [10]:

```
car_data['Style'].unique()
```

Out[10]:

```
array(['Compact SUV', 'Compact Hatchback', 'Entry Hatchback', 'SUV',
      'Subcompact SUV', 'Premium Hatchback', 'Compact MPV',
      'Subcompact Sedan', 'Compact Sedan', 'Premium Fullsize SUV',
      'Luxury SUV', 'Fullsize/Premium MPV', 'Supersports Car',
      'Quadricycle', 'Subcompact MPV', 'Premium Midsize Sedan',
      'Premium Luxury Sedan', 'Premium Compact Sedan',
      'Compact SUV/Crossover', 'Midsize Sedan', 'Premium Coupe',
      'Midsize SUV', 'Performance Sedan', 'Premium Midsize SUV',
      'Premium Fullsize Sedan', 'Luxury Hatchback', 'Sports Car',
      'Premium Sports Sedan', 'Premium Sports Coupe',
      'Premium Compact SUV', 'Fullsize Sedan'], dtype=object)
```

In [11]:

```
car_data['Style'].value_counts()
```

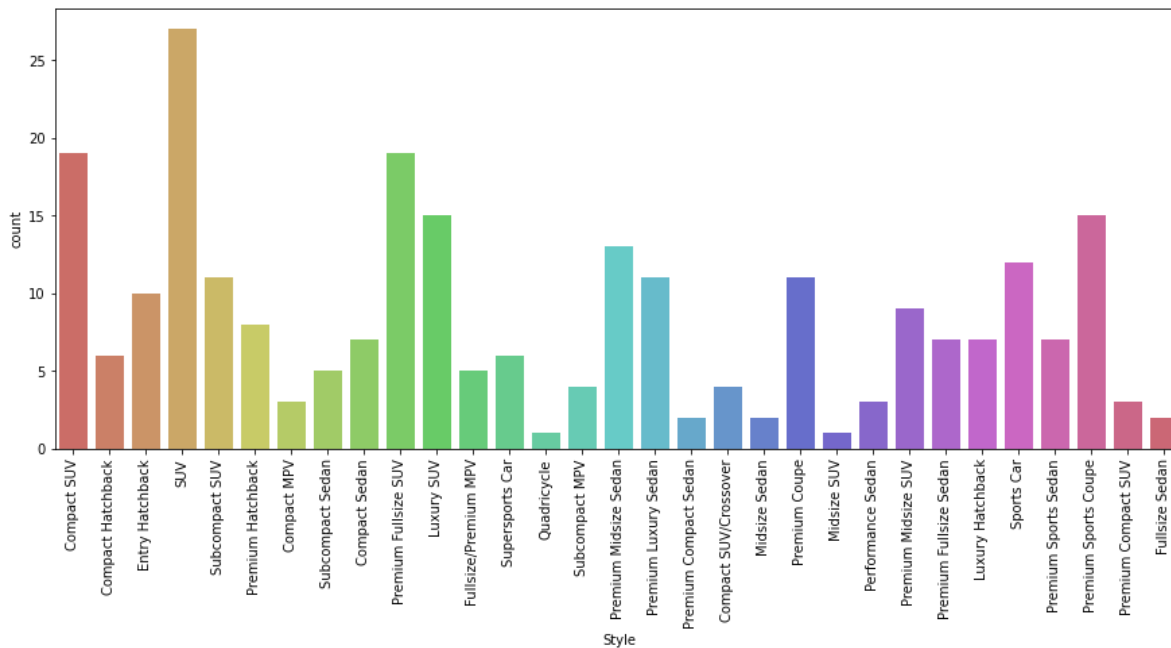
Out[11]:

SUV	27
Compact SUV	19
Premium Fullsize SUV	19
Premium Sports Coupe	15
Luxury SUV	15
Premium Midsize Sedan	13
Sports Car	12
Subcompact SUV	11
Premium Coupe	11
Premium Luxury Sedan	11
Entry Hatchback	10
Premium Midsize SUV	9
Premium Hatchback	8
Compact Sedan	7
Luxury Hatchback	7
Premium Sports Sedan	7
Premium Fullsize Sedan	7
Compact Hatchback	6
Supersports Car	6
Subcompact Sedan	5
Fullsize/Premium MPV	5
Subcompact MPV	4
Compact SUV/Crossover	4
Premium Compact SUV	3
Compact MPV	3
Performance Sedan	3
Midsize Sedan	2
Premium Compact Sedan	2
Fullsize Sedan	2
Midsize SUV	1
Quadricycle	1

Name: Style, dtype: int64

In [12]:

```
plt.figure(figsize=(15,6))
sns.countplot('Style', data = car_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [13]:

```
car_data['Transmission'].unique()
```

Out[13]:

```
array(['Automatic', 'AMT,Manual', 'Manual', 'Automatic,Manual',
      'AMT,Automatic,Manual'], dtype=object)
```

In [14]:

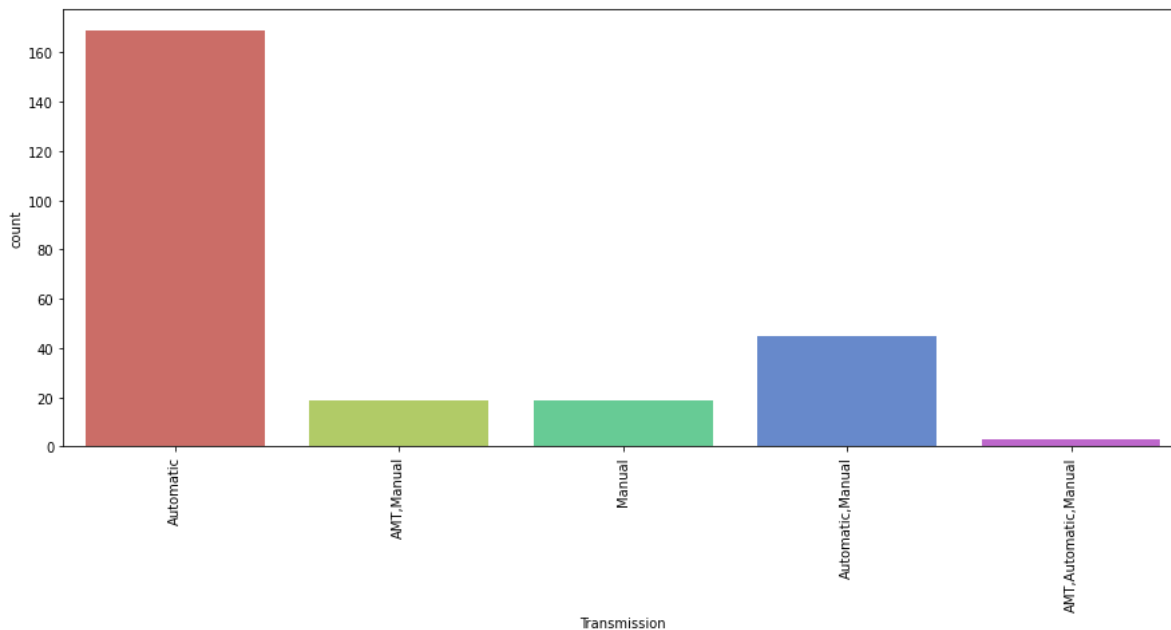
```
car_data['Transmission'].value_counts()
```

Out[14]:

```
Automatic          169
Automatic,Manual   45
AMT,Manual         19
Manual             19
AMT,Automatic,Manual  3
Name: Transmission, dtype: int64
```

In [15]:

```
plt.figure(figsize=(15,6))
sns.countplot('Transmission', data = car_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [16]:

```
car_data['VehicleType'].unique()
```

Out[16]:

```
array(['Electric', 'Petrol,Petrol+CNG,Diesel', 'Petrol,Petrol+CNG',
      'Petrol', 'Petrol,Diesel,Hybrid', 'Petrol,Diesel', 'Diesel',
      'Hybrid', 'Diesel,Petrol+CNG', 'Petrol,Petrol+LPG',
      'Diesel,Petrol', 'Diesel,Petrol,Hybrid', 'Hybrid,Petrol,Diesel',
      'Petrol,Hybrid', 'Diesel,Hybrid'], dtype=object)
```

In [17]:

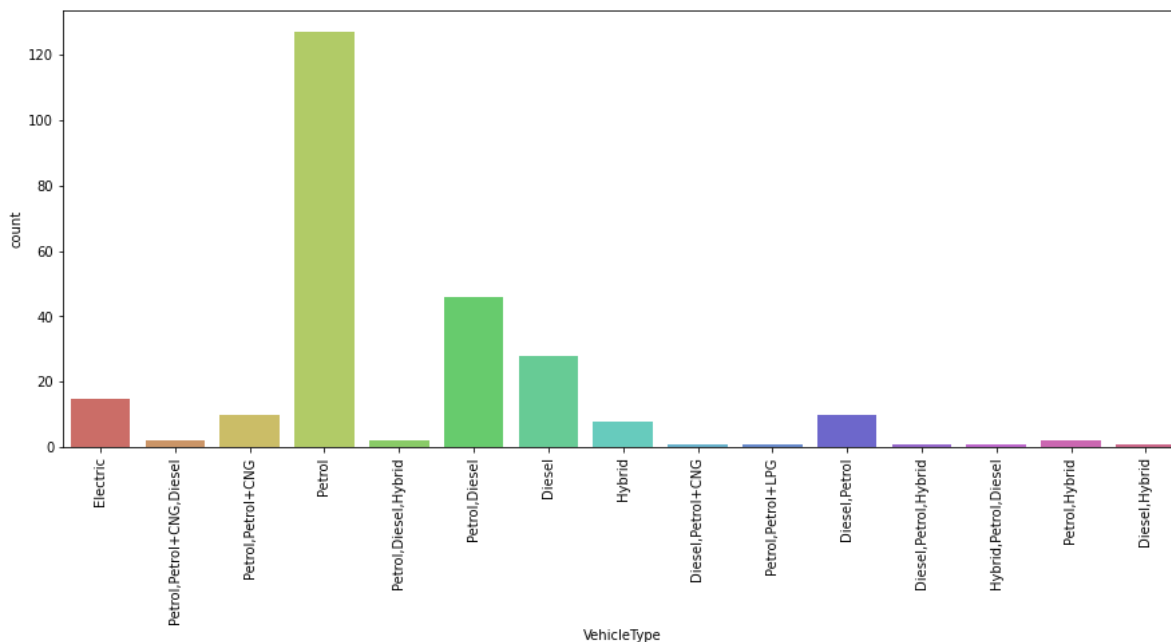
```
car_data['VehicleType'].value_counts()
```

Out[17]:

```
Petrol          127
Petrol,Diesel   46
Diesel          28
Electric        15
Petrol,Petrol+CNG 10
Diesel,Petrol   10
Hybrid          8
Petrol,Petrol+CNG,Diesel 2
Petrol,Diesel,Hybrid 2
Petrol,Hybrid   2
Diesel,Petrol+CNG 1
Petrol,Petrol+LPG 1
Diesel,Petrol,Hybrid 1
Hybrid,Petrol,Diesel 1
Diesel,Hybrid   1
Name: VehicleType, dtype: int64
```

In [18]:

```
plt.figure(figsize=(15,6))
sns.countplot('VehicleType', data = car_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [19]:



```
car_data['Rating(outof10)'].unique()
```

Out[19]:

```
array(['8.5', '6.6', 'na', '7.5', '7.8', '8.2', '8.4', '7.3', '8.7',  
      '6.1', '7.9', '7.7', '8.3', '7.6', '8.8', '5.5', '5', '8', '6.8',  
      '6.5', '5.4', '8.1', '6.9', '7', '7.1', '7.4', '8.6', '9', '7.2',  
      '6.4', '6.3'], dtype=object)
```

In [20]:



```
car_data['Rating(outof10)'].value_counts()
```

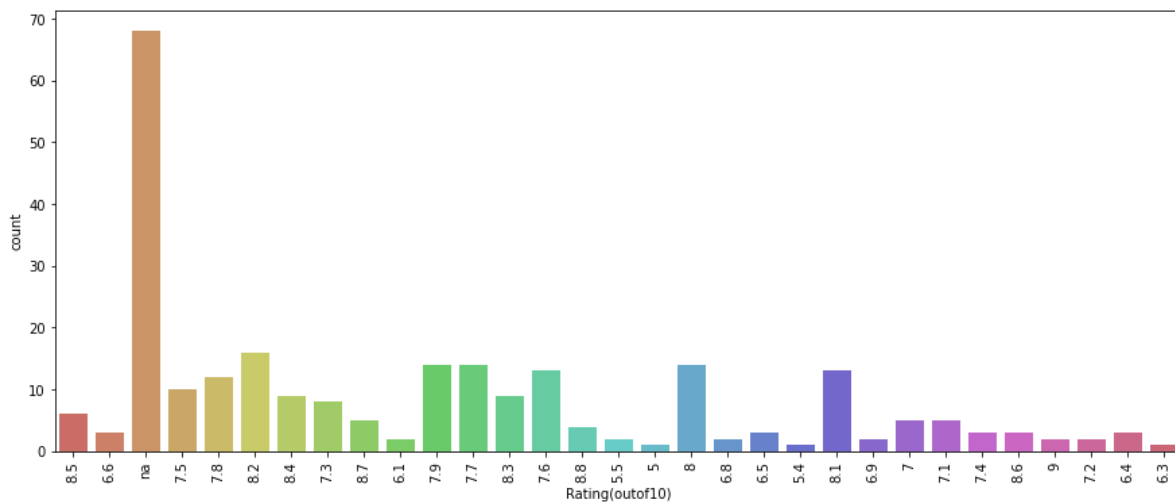
Out[20]:

na	68
8.2	16
8	14
7.9	14
7.7	14
7.6	13
8.1	13
7.8	12
7.5	10
8.3	9
8.4	9
7.3	8
8.5	6
7.1	5
8.7	5
7	5
8.8	4
6.6	3
6.4	3
6.5	3
8.6	3
7.4	3
7.2	2
9	2
5.5	2
6.9	2
6.8	2
6.1	2
5.4	1
5	1
6.3	1

Name: Rating(outof10), dtype: int64

In [21]:

```
plt.figure(figsize=(15,6))
sns.countplot('Rating(outof10)', data = car_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [22]:

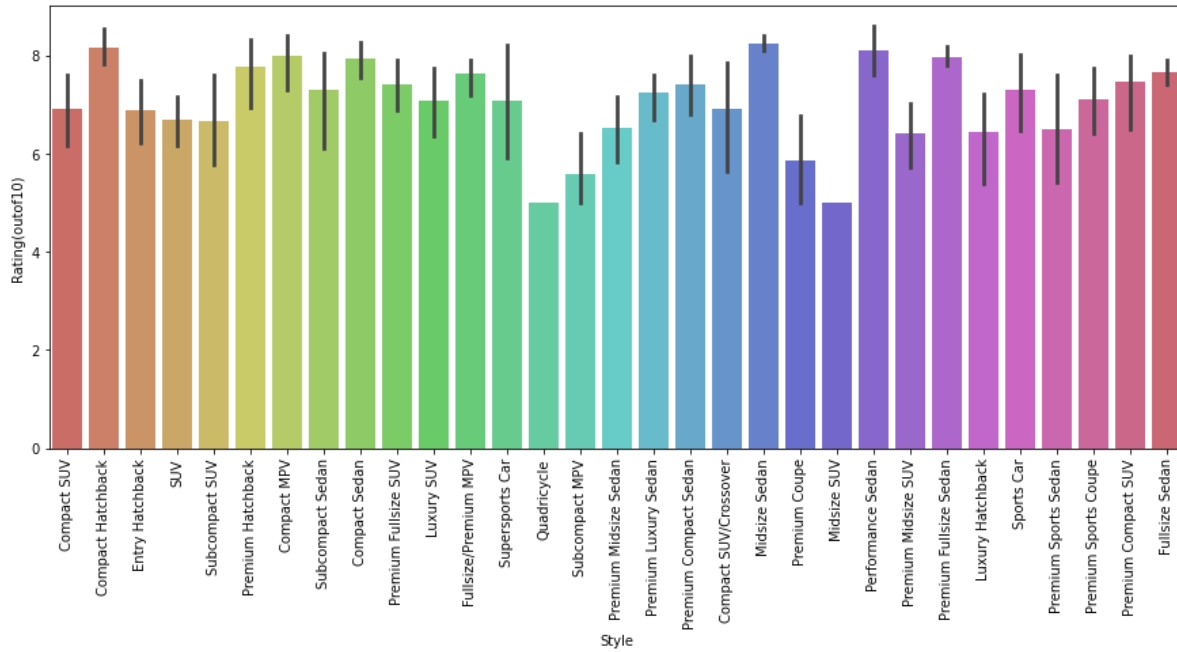
```
car_data['Rating(outof10)'].replace('na', 5, inplace=True)
```

In [23]:

```
car_data['Rating(outof10)'] = car_data['Rating(outof10)'].astype(float)
```

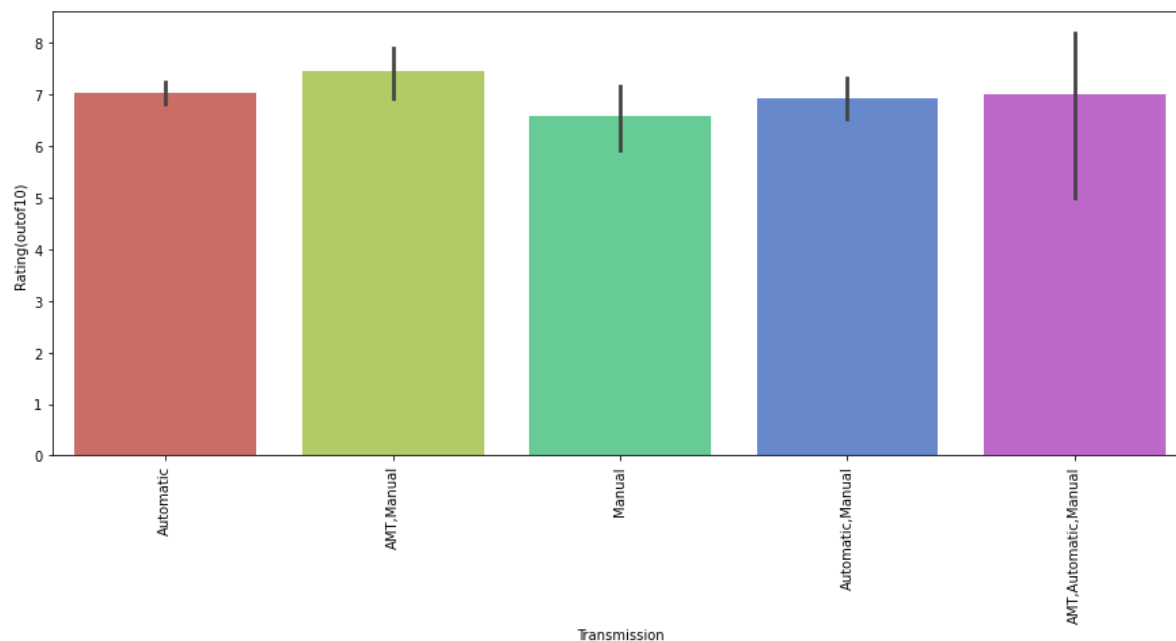
In [25]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Style', y = 'Rating(outof10)', data = car_data,
            palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



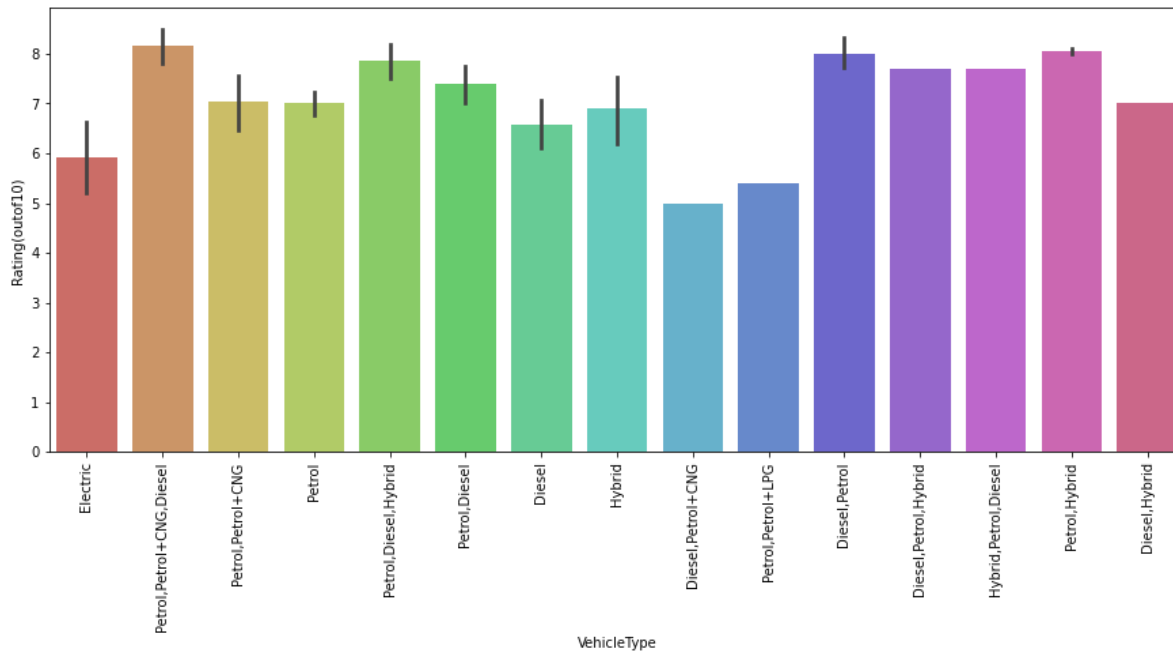
In [26]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Transmission', y = 'Rating(outof10)', data = car_data,
            palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [27]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'VehicleType', y = 'Rating(outof10)', data = car_data,
            palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [28]:

```
new_car_data = car_data.sort_values(by=['Rating(outof10)'], ascending=False)
```

In [30]:

```
new_car_data = new_car_data.reset_index()
```

In [32]:

```
new_car_data = new_car_data.drop(['index'], axis = 1)
```

In [33]:

```
new_car_data.head()
```

Out[33]:

	Car	Style	Range	Transmission	VehicleType	PriceRange	Rating(outof10)
0	BMW X7	Premium Fullsize SUV	10.54 - 13.38 Km/l	Automatic	Diesel,Petrol	₹ 1.18 - 1.79 Cr	9.0
1	Ford Figo	Compact Hatchback	16 Km/l	Automatic	Petrol	₹ 7.75 - 8.2 L	9.0
2	Jaguar F-Pace	Luxury SUV	18 Km/l	Automatic	Diesel,Petrol	₹ 69.99 L - 1.51 Cr	8.8
3	Tata Altroz	Premium Hatchback	19.05 - 25.11 Km/l	AMT,Manual	Petrol,Diesel	₹ 6.2 - 10.15 L	8.8
4	Ferrari 488 GTB	Sports Car	8.8 Km/l	Automatic	Petrol	₹ 3.88 Cr	8.8

In [34]:

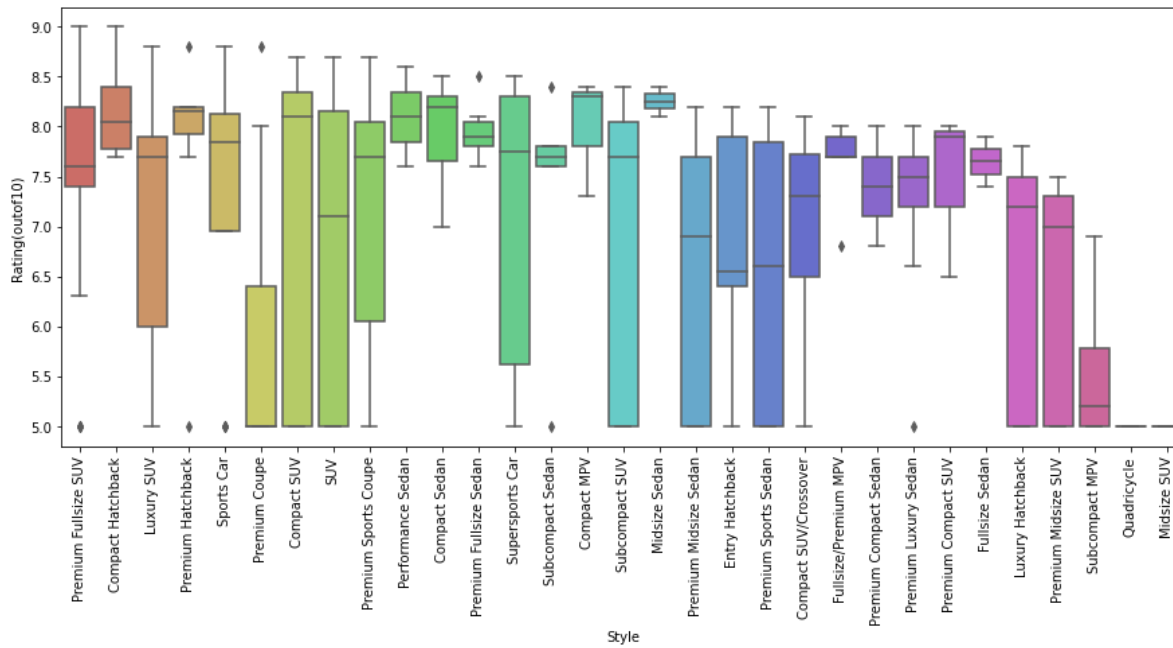
```
new_car_data.tail()
```

Out[34]:

	Car	Style	Range	Transmission	VehicleType	PriceRange	Rating(outof10)
250	BMW iX	Premium Fullsize SUV	425 Km/Full Charge	Automatic	Electric	₹ 1.16 Cr	5.0
251	Citroen C5 Aircross	Compact SUV	18.6 Km/l	Automatic	Diesel	₹ 31.3 - 32.8 L	5.0
252	Jaguar I-Pace	Premium Midsize Sedan	470 Km/Full Charge	Automatic	Electric	₹ 1.06 - 1.12 Cr	5.0
253	Land Rover Range Rover Velar	SUV	9.2 - 16.6 Km/l	Automatic	Petrol,Diesel	₹ 79.87 - 80.71 L	5.0
254	MINI SE	Luxury Hatchback	270 Km/Full Charge	Automatic	Electric	₹ 47.2 L	5.0

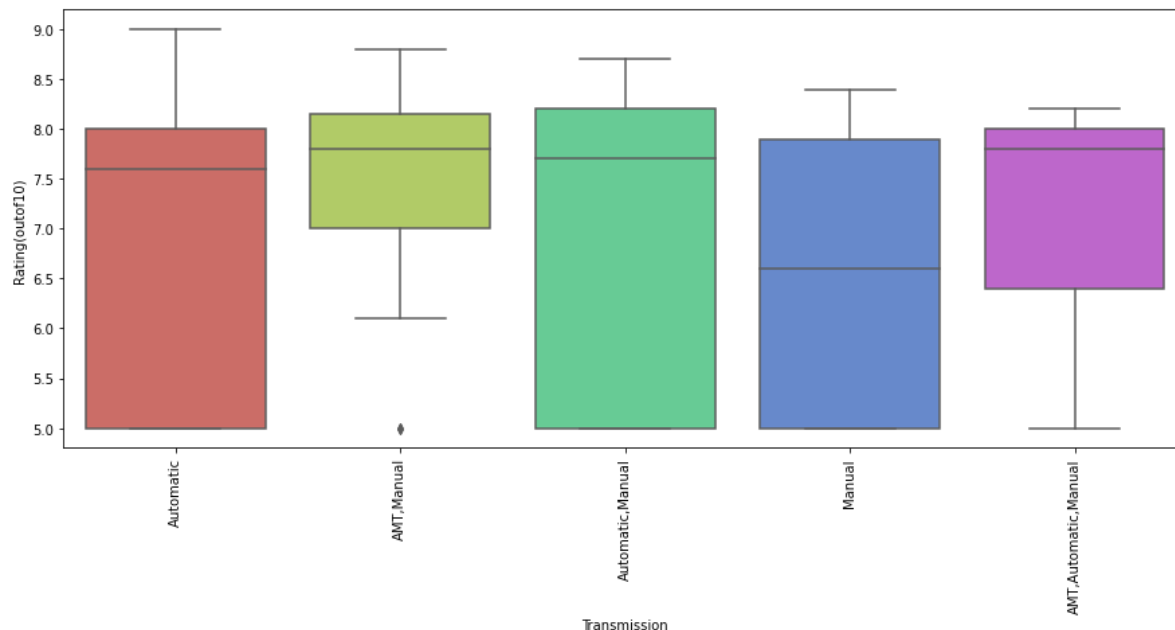
In [42]:

```
plt.figure(figsize=(15,6))
sns.boxplot(x = 'Style', y = 'Rating(outof10)', data = new_car_data,
            palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [43]:

```
plt.figure(figsize=(15,6))
sns.boxplot(x = 'Transmission', y = 'Rating(outof10)', data = new_car_data,
            palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [44]:

```
plt.figure(figsize=(15,6))
sns.boxplot(x = 'VehicleType', y = 'Rating(outof10)', data = new_car_data,
            palette='hls')
plt.xticks(rotation = 90)
plt.show()
```

