cars-dataset-analysis

January 30, 2024

0.1 Working on Real Project with Python

0.1.1 Cars Dataset

Here, the data of different cars is given with their specifications. This data is avaialable as acsv file. We are going to analyze this data set using the Pandas DataFrame.

[1]:
```
import pandas as pd
```

[8]:
```
car = pd.read_csv("D:/data analystics/Python for data analytics/Python Projects/
↪Cars Dataset Analysis Project/file.csv")
```

[9]:
```
car.head()
```

[9]:

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	\
0	Acura	MDX	SUV	Asia	All	$36,945	$33,337	
1	Acura	RSX Type S 2dr	Sedan	Asia	Front	$23,820	$21,761	
2	Acura	TSX 4dr	Sedan	Asia	Front	$26,990	$24,647	
3	Acura	TL 4dr	Sedan	Asia	Front	$33,195	$30,299	
4	Acura	3.5 RL 4dr	Sedan	Asia	Front	$43,755	$39,014	

	EngineSize	Cylinders	Horsepower	MPG_City	MPG_Highway	Weight	\
0	3.5	6.0	265	17	23	4451	
1	2.0	4.0	200	24	31	2778	
2	2.4	4.0	200	22	29	3230	
3	3.2	6.0	270	20	28	3575	
4	3.5	6.0	225	18	24	3880	

	Wheelbase	Length
0	106	189
1	101	172
2	105	183
3	108	186
4	115	197

[10]:
```
car.shape
```

[10]:
```
(428, 15)
```

0.1.2 Question.1. Find all Null values in dataset. IF there is any Null Values in any column, then fill it with mean of that column

[11]:
```
car.isnull().sum()
```

[11]:
```
Make           0
Model          0
Type           0
Origin         0
DriveTrain     0
MSRP           0
Invoice        0
EngineSize     0
Cylinders      2
Horsepower     0
MPG_City       0
MPG_Highway    0
Weight         0
Wheelbase      0
Length         0
dtype: int64
```

[13]:
```
car['Cylinders'].fillna(car['Cylinders'].mean(), inplace= True)
```

0.1.3 Question.2. Check what are the different types of Make are there in our Dataset. And, What is the count (Occurence) of each Make in the Data?

[14]:
```
car['Make'].value_counts()
```

[14]:
```
Make
Toyota           28
Chevrolet        27
Mercedes-Benz    26
Ford             23
BMW              20
Audi             19
Honda            17
Nissan           17
Volkswagen       15
Chrysler         15
Dodge            13
Mitsubishi       13
Volvo            12
Jaguar           12
Hyundai          12
Subaru           11
Pontiac          11
```

```
Mazda            11
Lexus            11
Kia              11
Buick             9
Mercury           9
Lincoln           9
Saturn            8
Cadillac          8
Suzuki            8
Infiniti          8
GMC               8
Acura             7
Porsche           7
Saab              7
Land Rover        3
Oldsmobile        3
Jeep              3
Scion             2
Isuzu             2
MINI              2
Hummer            1
Name: count, dtype: int64
```

0.1.4 Question.3. Show all the Records where Orgin is Asia or Europe

[17]:
```
car[car['Origin'].isin(['Asia','Europe'])]
```

[17]:

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepower	MPG_City	MPG_Highway
0	Acura	MDX	SUV	Asia	All	$36,945	$33,337	3.5	6.0	265	17	23
1	Acura	RSX Type S 2dr	Sedan	Asia	Front	$23,820	$21,761	2.0	4.0	200	24	31
2	Acura	TSX 4dr	Sedan	Asia	Front	$26,990	$24,647	2.4	4.0	200	22	29
3	Acura	TL 4dr	Sedan	Asia	Front	$33,195	$30,299	3.2	6.0	270	20	28
4	Acura	3.5 RL 4dr	Sedan	Asia	Front	$43,755	$39,014	3.5	6.0	225	18	24
..	…	…	…	…	…	…	…	…	…	…	…	…
423	Volvo	C70 LPT convertible 2dr	Sedan	Europe	Front	$40,565						
424	Volvo	C70 HPT convertible 2dr	Sedan	Europe	Front	$42,565						
425	Volvo	S80 T6 4dr	Sedan	Europe	Front	$45,210						
426	Volvo	V40	Wagon	Europe	Front	$26,135						
427	Volvo	XC70	Wagon	Europe	All	$35,145						

```
423  $38,203          2.4        5.0        197        21          28
424  $40,083          2.3        5.0        242        20          26
425  $42,573          2.9        6.0        268        19          26
426  $24,641          1.9        4.0        170        22          29
427  $33,112          2.5        5.0        208        20          27

     Weight  Wheelbase  Length
0      4451        106     189
1      2778        101     172
2      3230        105     183
3      3575        108     186
4      3880        115     197
..      …          …       …
423    3450        105     186
424    3450        105     186
425    3653        110     190
426    2822        101     180
427    3823        109     186

[281 rows x 15 columns]
```

0.1.5 Question.4. Remove all the records (rows) where Weight is above 4000.

[19]:
```
car.shape
```

[19]:
```
(428, 15)
```

[24]:
```
car = car[~(car['Weight'] > 4000)]
```

[25]:
```
car.shape
```

[25]:
```
(325, 15)
```

0.1.6 Question.5. Increase all the Values og 'MPG_City' Column by 3.

[26]:
```
car['MPG_City'] = car['MPG_City'].apply(lambda x:x +3)
```

```
C:\Users\Hxtreme\AppData\Local\Temp\ipykernel_13016\2093516831.py:1:
SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  car['MPG_City'] = car['MPG_City'].apply(lambda x:x +3)
```

[27]:
```
car
```

[27]:
```
      Make                       Model   Type  Origin DriveTrain      MSRP  \
1    Acura           RSX Type S 2dr  Sedan    Asia      Front  $23,820
2    Acura                 TSX 4dr  Sedan    Asia      Front  $26,990
3    Acura                  TL 4dr  Sedan    Asia      Front  $33,195
4    Acura              3.5 RL 4dr  Sedan    Asia      Front  $43,755
5    Acura  3.5 RL w/Navigation 4dr  Sedan    Asia      Front  $46,100
..     …                        …    …      …         …       …
423  Volvo  C70 LPT convertible 2dr  Sedan  Europe      Front  $40,565
424  Volvo  C70 HPT convertible 2dr  Sedan  Europe      Front  $42,565
425  Volvo               S80 T6 4dr  Sedan  Europe      Front  $45,210
426  Volvo                    V40  Wagon  Europe      Front  $26,135
427  Volvo                   XC70  Wagon  Europe        All  $35,145

      Invoice  EngineSize  Cylinders  Horsepower  MPG_City  MPG_Highway  \
1    $21,761          2.0        4.0         200        27           31
2    $24,647          2.4        4.0         200        25           29
3    $30,299          3.2        6.0         270        23           28
4    $39,014          3.5        6.0         225        21           24
5    $41,100          3.5        6.0         225        21           24
..       …          …        …         …       …          …
423  $38,203          2.4        5.0         197        24           28
424  $40,083          2.3        5.0         242        23           26
425  $42,573          2.9        6.0         268        22           26
426  $24,641          1.9        4.0         170        25           29
427  $33,112          2.5        5.0         208        23           27

     Weight  Wheelbase  Length
1      2778        101     172
2      3230        105     183
3      3575        108     186
4      3880        115     197
5      3893        115     197
..      …        …      …
423    3450        105     186
424    3450        105     186
425    3653        110     190
426    2822        101     180
427    3823        109     186

[325 rows x 15 columns]
```