h6f1onlme

April 2, 2024

[1]:
```
!pip install pycaret
```

```
Requirement already satisfied: pycaret in /usr/local/lib/python3.10/dist-
packages (3.3.0)
Requirement already satisfied: ipython>=5.5.0 in /usr/local/lib/python3.10/dist-
packages (from pycaret) (7.34.0)
Requirement already satisfied: ipywidgets>=7.6.5 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (7.7.1)
Requirement already satisfied: tqdm>=4.62.0 in /usr/local/lib/python3.10/dist-
packages (from pycaret) (4.66.2)
Requirement already satisfied: numpy<1.27,>=1.21 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (1.25.2)
Requirement already satisfied: pandas<2.2.0 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: jinja2>=3 in /usr/local/lib/python3.10/dist-
packages (from pycaret) (3.1.3)
Requirement already satisfied: scipy<=1.11.4,>=1.6.1 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (1.11.4)
Requirement already satisfied: joblib>=1.2.0 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: scikit-learn>1.4.0 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (1.4.1.post1)
Requirement already satisfied: pyod>=1.1.3 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: imbalanced-learn>=0.12.0 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (0.12.2)
Requirement already satisfied: category-encoders>=2.4.0 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (2.6.3)
Requirement already satisfied: lightgbm>=3.0.0 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (4.1.0)
Requirement already satisfied: numba>=0.55.0 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: requests>=2.27.1 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (2.31.0)
Requirement already satisfied: psutil>=5.9.0 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: markupsafe>=2.0.1 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (2.1.5)
```

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Requirement already satisfied: importlib-metadata>=4.12.0 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (7.1.0)
Requirement already satisfied: nbformat>=4.2.0 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (5.10.3)
Requirement already satisfied: cloudpickle in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: deprecation>=2.1.0 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (2.1.0)
Requirement already satisfied: xxhash in /usr/local/lib/python3.10/dist-packages
(from pycaret) (3.4.1)
Requirement already satisfied: matplotlib<3.8.0 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (3.7.1)
Requirement already satisfied: scikit-plot>=0.3.7 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (0.3.7)
Requirement already satisfied: yellowbrick>=1.4 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (1.5)
Requirement already satisfied: plotly>=5.14.0 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: kaleido>=0.2.1 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: schemdraw==0.15 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (0.15)
Requirement already satisfied: plotly-resampler>=0.8.3.1 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (0.10.0)
Requirement already satisfied: statsmodels>=0.12.1 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (0.14.1)
Requirement already satisfied: sktime>=0.26.0 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: tbats>=1.1.3 in /usr/local/lib/python3.10/dist-
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Requirement already satisfied: pmdarima>=2.0.4 in
/usr/local/lib/python3.10/dist-packages (from pycaret) (2.0.4)
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Requirement already satisfied: patsy>=0.5.1 in /usr/local/lib/python3.10/dist-
packages (from category-encoders>=2.4.0->pycaret) (0.5.6)
Requirement already satisfied: packaging in /usr/local/lib/python3.10/dist-
packages (from deprecation>=2.1.0->pycaret) (24.0)
Requirement already satisfied: threadpoolctl>=2.0.0 in
/usr/local/lib/python3.10/dist-packages (from imbalanced-learn>=0.12.0->pycaret)
(3.4.0)
Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.10/dist-
packages (from importlib-metadata>=4.12.0->pycaret) (3.18.1)
Requirement already satisfied: setuptools>=18.5 in
/usr/local/lib/python3.10/dist-packages (from ipython>=5.5.0->pycaret) (67.7.2)
Requirement already satisfied: jedi>=0.16 in /usr/local/lib/python3.10/dist-
packages (from ipython>=5.5.0->pycaret) (0.19.1)
Requirement already satisfied: decorator in /usr/local/lib/python3.10/dist-
```

```
packages (from ipython>=5.5.0->pycaret) (4.4.2)
Requirement already satisfied: pickleshare in /usr/local/lib/python3.10/dist-
packages (from ipython>=5.5.0->pycaret) (0.7.5)
Requirement already satisfied: traitlets>=4.2 in /usr/local/lib/python3.10/dist-
packages (from ipython>=5.5.0->pycaret) (5.7.1)
Requirement already satisfied: prompt-toolkit!=3.0.0,!=3.0.1,<3.1.0,>=2.0.0 in
/usr/local/lib/python3.10/dist-packages (from ipython>=5.5.0->pycaret) (3.0.43)
Requirement already satisfied: pygments in /usr/local/lib/python3.10/dist-
packages (from ipython>=5.5.0->pycaret) (2.16.1)
Requirement already satisfied: backcall in /usr/local/lib/python3.10/dist-
packages (from ipython>=5.5.0->pycaret) (0.2.0)
Requirement already satisfied: matplotlib-inline in
/usr/local/lib/python3.10/dist-packages (from ipython>=5.5.0->pycaret) (0.1.6)
Requirement already satisfied: pexpect>4.3 in /usr/local/lib/python3.10/dist-
packages (from ipython>=5.5.0->pycaret) (4.9.0)
Requirement already satisfied: ipykernel>=4.5.1 in
/usr/local/lib/python3.10/dist-packages (from ipywidgets>=7.6.5->pycaret)
(5.5.6)
Requirement already satisfied: ipython-genutils~=0.2.0 in
/usr/local/lib/python3.10/dist-packages (from ipywidgets>=7.6.5->pycaret)
(0.2.0)
Requirement already satisfied: widgetsnbextension~=3.6.0 in
/usr/local/lib/python3.10/dist-packages (from ipywidgets>=7.6.5->pycaret)
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Requirement already satisfied: jupyterlab-widgets>=1.0.0 in
/usr/local/lib/python3.10/dist-packages (from ipywidgets>=7.6.5->pycaret)
(3.0.10)
Requirement already satisfied: contourpy>=1.0.1 in
/usr/local/lib/python3.10/dist-packages (from matplotlib<3.8.0->pycaret) (1.2.0)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.10/dist-
packages (from matplotlib<3.8.0->pycaret) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in
/usr/local/lib/python3.10/dist-packages (from matplotlib<3.8.0->pycaret)
(4.50.0)
Requirement already satisfied: kiwisolver>=1.0.1 in
/usr/local/lib/python3.10/dist-packages (from matplotlib<3.8.0->pycaret) (1.4.5)
Requirement already satisfied: pillow>=6.2.0 in /usr/local/lib/python3.10/dist-
packages (from matplotlib<3.8.0->pycaret) (9.4.0)
Requirement already satisfied: pyparsing>=2.3.1 in
/usr/local/lib/python3.10/dist-packages (from matplotlib<3.8.0->pycaret) (3.1.2)
Requirement already satisfied: python-dateutil>=2.7 in
/usr/local/lib/python3.10/dist-packages (from matplotlib<3.8.0->pycaret) (2.8.2)
Requirement already satisfied: fastjsonschema in /usr/local/lib/python3.10/dist-
packages (from nbformat>=4.2.0->pycaret) (2.19.1)
Requirement already satisfied: jsonschema>=2.6 in
/usr/local/lib/python3.10/dist-packages (from nbformat>=4.2.0->pycaret) (4.19.2)
Requirement already satisfied: jupyter-core in /usr/local/lib/python3.10/dist-
packages (from nbformat>=4.2.0->pycaret) (5.7.2)
```

```
Requirement already satisfied: llvmlite<0.42,>=0.41.0dev0 in
/usr/local/lib/python3.10/dist-packages (from numba>=0.55.0->pycaret) (0.41.1)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10/dist-
packages (from pandas<2.2.0->pycaret) (2023.4)
Requirement already satisfied: tenacity>=6.2.0 in
/usr/local/lib/python3.10/dist-packages (from plotly>=5.14.0->pycaret) (8.2.3)
Requirement already satisfied: dash>=2.9.0 in /usr/local/lib/python3.10/dist-
packages (from plotly-resampler>=0.8.3.1->pycaret) (2.16.1)
Requirement already satisfied: orjson<4.0.0,>=3.8.0 in
/usr/local/lib/python3.10/dist-packages (from plotly-
resampler>=0.8.3.1->pycaret) (3.10.0)
Requirement already satisfied: tsdownsample>=0.1.3 in
/usr/local/lib/python3.10/dist-packages (from plotly-
resampler>=0.8.3.1->pycaret) (0.1.3)
Requirement already satisfied: Cython!=0.29.18,!=0.29.31,>=0.29 in
/usr/local/lib/python3.10/dist-packages (from pmdarima>=2.0.4->pycaret) (3.0.9)
Requirement already satisfied: urllib3 in /usr/local/lib/python3.10/dist-
packages (from pmdarima>=2.0.4->pycaret) (2.0.7)
ERROR: Operation cancelled by user
```

[2]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from pycaret.regression import *
```

[3]:
```
txt_file = 'deliverytime.txt'

# Read the text file into a Pandas dfFrame
df = pd.read_csv(txt_file)

df.head()
```

[3]:

	ID	Delivery_person_ID	Delivery_person_Age	Delivery_person_Ratings	\
0	4607	INDORES13DEL02	37	4.9	
1	B379	BANGRES18DEL02	34	4.5	
2	5D6D	BANGRES19DEL01	23	4.4	
3	7A6A	COIMBRES13DEL02	38	4.7	
4	70A2	CHENRES12DEL01	32	4.6	

	Restaurant_latitude	Restaurant_longitude	Delivery_location_latitude	\
0	22.745049	75.892471	22.765049	
1	12.913041	77.683237	13.043041	
2	12.914264	77.678400	12.924264	
3	11.003669	76.976494	11.053669	

```
4            12.972793             80.249982                  13.012793

   Delivery_location_longitude Type_of_order Type_of_vehicle  Time_taken(min)
0                    75.912471        Snack      motorcycle               24
1                    77.813237        Snack         scooter               33
2                    77.688400       Drinks      motorcycle               26
3                    77.026494       Buffet      motorcycle               21
4                    80.289982        Snack         scooter               30
```

[4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 45593 entries, 0 to 45592
Data columns (total 11 columns):
 #   Column                       Non-Null Count  Dtype
---  ------                       --------------  -----
 0   ID                           45593 non-null  object
 1   Delivery_person_ID           45593 non-null  object
 2   Delivery_person_Age          45593 non-null  int64
 3   Delivery_person_Ratings      45593 non-null  float64
 4   Restaurant_latitude          45593 non-null  float64
 5   Restaurant_longitude         45593 non-null  float64
 6   Delivery_location_latitude   45593 non-null  float64
 7   Delivery_location_longitude  45593 non-null  float64
 8   Type_of_order                45593 non-null  object
 9   Type_of_vehicle              45593 non-null  object
 10  Time_taken(min)              45593 non-null  int64
dtypes: float64(5), int64(2), object(4)
memory usage: 3.8+ MB
```

[28]:
```
df.describe()
```

[28]:
```
       Delivery_person_Age  Delivery_person_Ratings  Restaurant_latitude  \
count         45593.000000             45593.000000         45593.000000
mean             29.544075                 4.632367            17.017729
std               5.696793                 0.327708             8.185109
min              15.000000                 1.000000           -30.905562
25%              25.000000                 4.600000            12.933284
50%              29.000000                 4.700000            18.546947
75%              34.000000                 4.800000            22.728163
max              50.000000                 6.000000            30.914057

       Restaurant_longitude  Delivery_location_latitude  \
count          45593.000000                45593.000000
mean              70.231332                   17.465186
std               22.883647                    7.335122
min              -88.366217                    0.010000
```

```
25%                73.170000                  12.988453
50%                75.898497                  18.633934
75%                78.044095                  22.785049
max                88.433452                  31.054057

       Delivery_location_longitude  Time_taken(min)      distance
count                 45593.000000     45593.000000  45593.000000
mean                     70.845702        26.294607     99.303911
std                      21.118812         9.383806   1099.731281
min                       0.010000        10.000000      1.465067
25%                      73.280000        19.000000      4.663493
50%                      76.002574        26.000000      9.264281
75%                      78.107044        32.000000     13.763977
max                      88.563452        54.000000  19692.674606
```

[5]:
```
df.isnull().sum()
```

[5]:
```
ID                             0
Delivery_person_ID             0
Delivery_person_Age            0
Delivery_person_Ratings        0
Restaurant_latitude            0
Restaurant_longitude           0
Delivery_location_latitude     0
Delivery_location_longitude    0
Type_of_order                  0
Type_of_vehicle                0
Time_taken(min)                0
dtype: int64
```

[31]:
```
#Checking for duplicated
df.duplicated().sum()
```

[31]:
```
0
```

[32]:
```
# Value count for each value
for i in df.columns:
    print(i,'\n',df[i].value_counts())
    print('-'*90)
```

```
ID
 7E+08    3
7E+06    3
7E+03    3
5E+07    3
6E+02    3
        ..
```

```
C3E      1
4438     1
A8B3     1
8537     1
5FB2     1
Name: ID, Length: 45451, dtype: int64
--------------------------------------------------------------------------------
----------
Delivery_person_ID
 PUNERES01DEL01    67
JAPRES11DEL02     67
HYDRES04DEL02     66
JAPRES03DEL01     66
VADRES11DEL02     66
                  ..
DEHRES18DEL03      7
AURGRES11DEL03     7
KOLRES09DEL03      6
KOCRES16DEL03      6
BHPRES010DEL03     5
Name: Delivery_person_ID, Length: 1320, dtype: int64
--------------------------------------------------------------------------------
----------
Delivery_person_Age
 29    4045
35    2262
36    2260
37    2227
30    2226
38    2219
24    2210
32    2202
22    2196
33    2187
28    2179
25    2174
34    2166
26    2159
21    2153
27    2150
39    2144
20    2136
31    2120
23    2087
50      53
15      38
Name: Delivery_person_Age, dtype: int64
--------------------------------------------------------------------------------
```

```
----------
Delivery_person_Ratings
 4.6    8848
4.8    7148
4.7    7142
4.9    7041
5.0    3996
4.5    3303
4.1    1430
4.2    1418
4.3    1409
4.4    1361
4.0    1077
3.5     249
3.8     228
3.7     225
3.6     207
3.9     197
6.0      53
1.0      38
3.4      32
3.1      29
3.2      29
3.3      25
2.6      22
2.7      22
2.5      20
2.8      19
2.9      19
3.0       6
Name: Delivery_person_Ratings, dtype: int64
--------------------------------------------------------------------------------
----------
Restaurant_latitude
  0.000000     3640
 26.911378     182
 26.914142     180
 26.892312     176
 26.902940     176
              …
-23.355164       1
-15.513150       1
-22.311358       1
-27.161661       1
-12.978453       1
Name: Restaurant_latitude, Length: 657, dtype: int64
--------------------------------------------------------------------------------
----------
```

```
Restaurant_longitude
  0.000000     3640
 75.789034     182
 75.805704     181
 75.793007     177
 75.806896     176
              …
-76.626167       1
-85.316842       1
-76.643622       1
-72.814492       1
-77.643685       1
Name: Restaurant_longitude, Length: 518, dtype: int64
--------------------------------------------------------------------------------
----------
Delivery_location_latitude
 0.130000     341
0.020000     337
0.090000     336
0.060000     336
0.070000     335
            …
19.976969      1
19.916219      1
26.562001      1
23.324249      1
20.005337      1
Name: Delivery_location_latitude, Length: 4373, dtype: int64
--------------------------------------------------------------------------------
----------
Delivery_location_longitude
 0.130000     341
0.020000     337
0.090000     336
0.060000     336
0.070000     335
            …
75.428894      1
75.386017      1
80.444002      1
77.524007      1
75.446722      1
Name: Delivery_location_longitude, Length: 4373, dtype: int64
--------------------------------------------------------------------------------
----------
Type_of_order
 Snack      11533
Meal       11458
```

```
Drinks     11322
Buffet     11280
Name: Type_of_order, dtype: int64
--------------------------------------------------------------------------------
----------
Type_of_vehicle
 motorcycle           26435
scooter              15276
electric_scooter      3814
bicycle                 68
Name: Type_of_vehicle, dtype: int64
--------------------------------------------------------------------------------
----------
Time_taken(min)
 26    2123
25    2050
27    1976
28    1965
29    1956
19    1824
15    1810
18    1765
16    1706
17    1696
24    1680
23    1643
20    1640
22    1626
21    1601
33    1259
30    1218
31    1213
34    1172
32    1124
38     887
36     852
39     847
35     832
37     828
11     757
10     750
12     746
14     739
13     716
43     567
42     561
40     555
41     553
```

```
44      553
47      295
49      280
48      277
46      274
45      241
53      100
51       94
54       91
52       79
50       72
Name: Time_taken(min), dtype: int64
--------------------------------------------------------------------------------
----------
distance
 20.442930       341
3.145067         337
9.435202         336
14.152801        336
11.007735        335
                 …
17213.974705       1
2.930344           1
12.484871          1
5022.490583        1
17340.702823       1
Name: distance, Length: 4791, dtype: int64
--------------------------------------------------------------------------------
----------
```

[6]:
```
df.isna().sum()
```

[6]:
```
ID                            0
Delivery_person_ID            0
Delivery_person_Age           0
Delivery_person_Ratings       0
Restaurant_latitude           0
Restaurant_longitude          0
Delivery_location_latitude    0
Delivery_location_longitude   0
Type_of_order                 0
Type_of_vehicle               0
Time_taken(min)               0
dtype: int64
```

[7]:
```
df.columns
```

[7]:
```
Index(['ID', 'Delivery_person_ID', 'Delivery_person_Age',
       'Delivery_person_Ratings', 'Restaurant_latitude',
       'Restaurant_longitude', 'Delivery_location_latitude',
       'Delivery_location_longitude', 'Type_of_order', 'Type_of_vehicle',
       'Time_taken(min)'],
      dtype='object')
```

[8]:
```
# Set the earth's radius (in kilometers)
R = 6371

# Convert degrees to radians
def deg_to_rad(degrees):
    return degrees * (np.pi/180)

# Function to calculate the distance between two points using the haversine␣
 ↪formula
def distcalculate(lat1, lon1, lat2, lon2):
    d_lat = deg_to_rad(lat2-lat1)
    d_lon = deg_to_rad(lon2-lon1)
    a = np.sin(d_lat/2)**2 + np.cos(deg_to_rad(lat1)) * np.
 ↪cos(deg_to_rad(lat2)) * np.sin(d_lon/2)**2
    c = 2 * np.arctan2(np.sqrt(a), np.sqrt(1-a))
    return R * c

# Calculate the distance between each pair of points
df['distance'] = np.nan

for i in range(len(df)):
    df.loc[i, 'distance'] = distcalculate(df.loc[i, 'Restaurant_latitude'],
                                          df.loc[i, 'Restaurant_longitude'],
                                          df.loc[i, 'Delivery_location_latitude'],
                                          df.loc[i,␣
 ↪'Delivery_location_longitude'])
```

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

[9]:

	ID	Delivery_person_ID	Delivery_person_Age	Delivery_person_Ratings	\
0	4607	INDORES13DEL02	37	4.9	
1	B379	BANGRES18DEL02	34	4.5	
2	5D6D	BANGRES19DEL01	23	4.4	
3	7A6A	COIMBRES13DEL02	38	4.7	
4	70A2	CHENRES12DEL01	32	4.6	

	Restaurant_latitude	Restaurant_longitude	Delivery_location_latitude	\
0	22.745049	75.892471	22.765049	
1	12.913041	77.683237	13.043041	
2	12.914264	77.678400	12.924264	

```
3            11.003669             76.976494                   11.053669
4            12.972793             80.249982                   13.012793

   Delivery_location_longitude Type_of_order Type_of_vehicle  Time_taken(min)  \
0                    75.912471        Snack      motorcycle               24
1                    77.813237        Snack         scooter               33
2                    77.688400       Drinks      motorcycle               26
3                    77.026494       Buffet      motorcycle               21
4                    80.289982        Snack         scooter               30

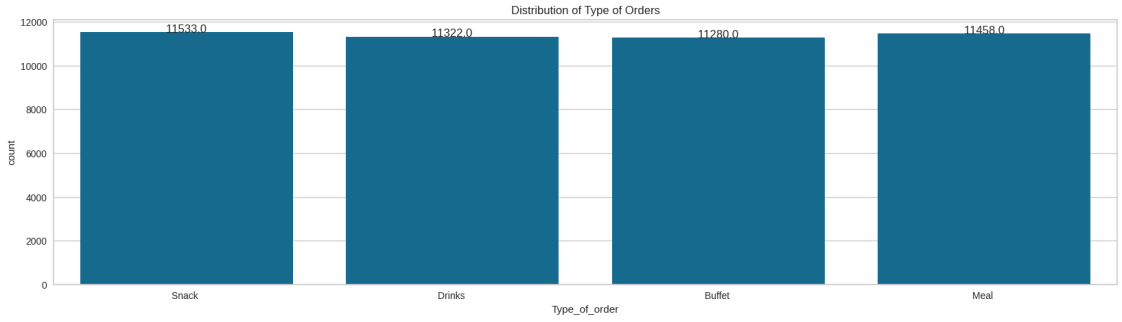
    distance
0   3.025149
1  20.183530
2   1.552758
3   7.790401
4   6.210138
```

[10]:
```
# Plotting charts
plt.figure(figsize=(20, 5))

# Bar chart for Type_of_order
ax = sns.countplot(x='Type_of_order', data=df)
plt.title('Distribution of Type of Orders')

# Add count labels on each bar
for p in ax.patches:
    height = p.get_height()
    ax.text(p.get_x() + p.get_width() / 2., height + 0.1, height, ha="center")

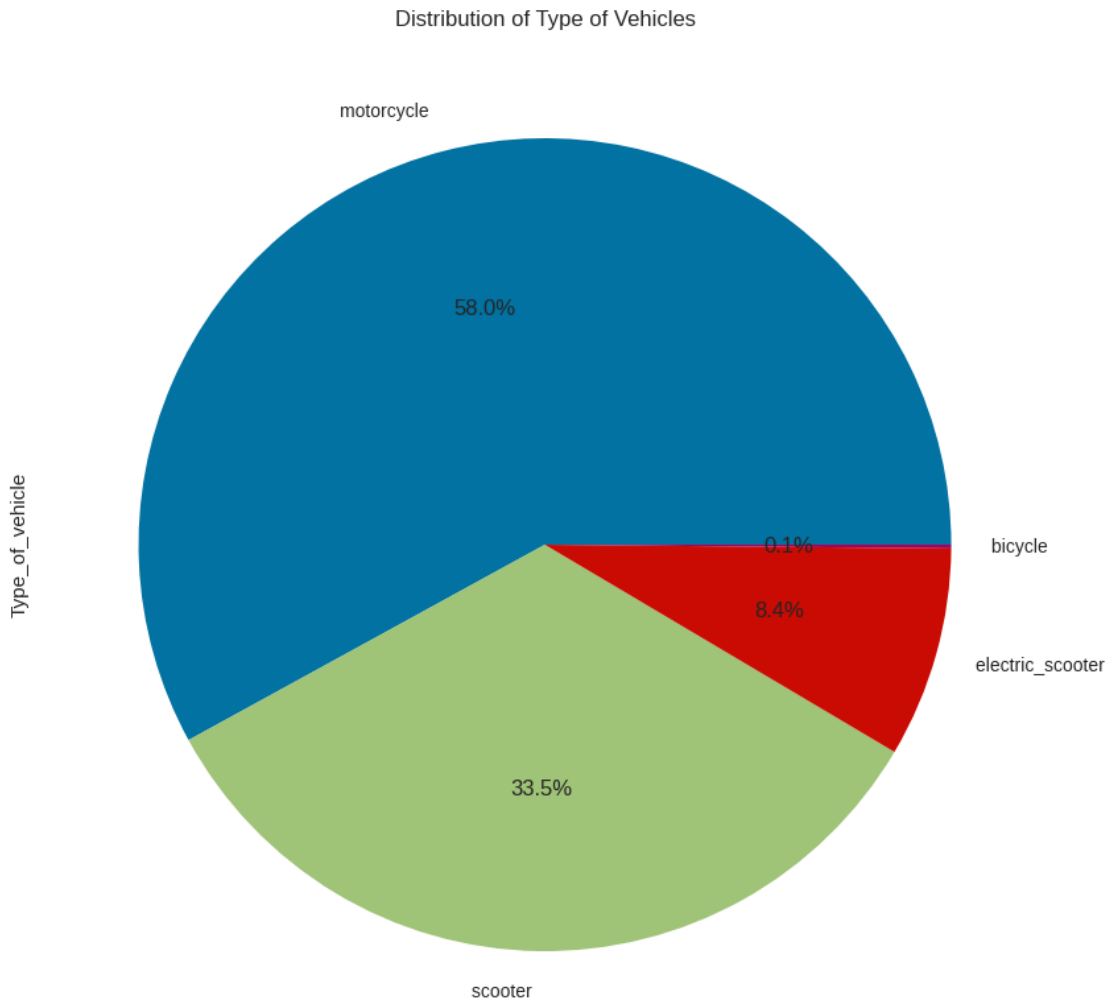
plt.show()
```



[11]:
```
# Plotting charts
plt.figure(figsize=(100, 10))
# Pie chart for Type_of_vehicle
df['Type_of_vehicle'].value_counts().plot.pie(autopct='%1.1f%%')
```

```
plt.title('Distribution of Type of Vehicles')
```

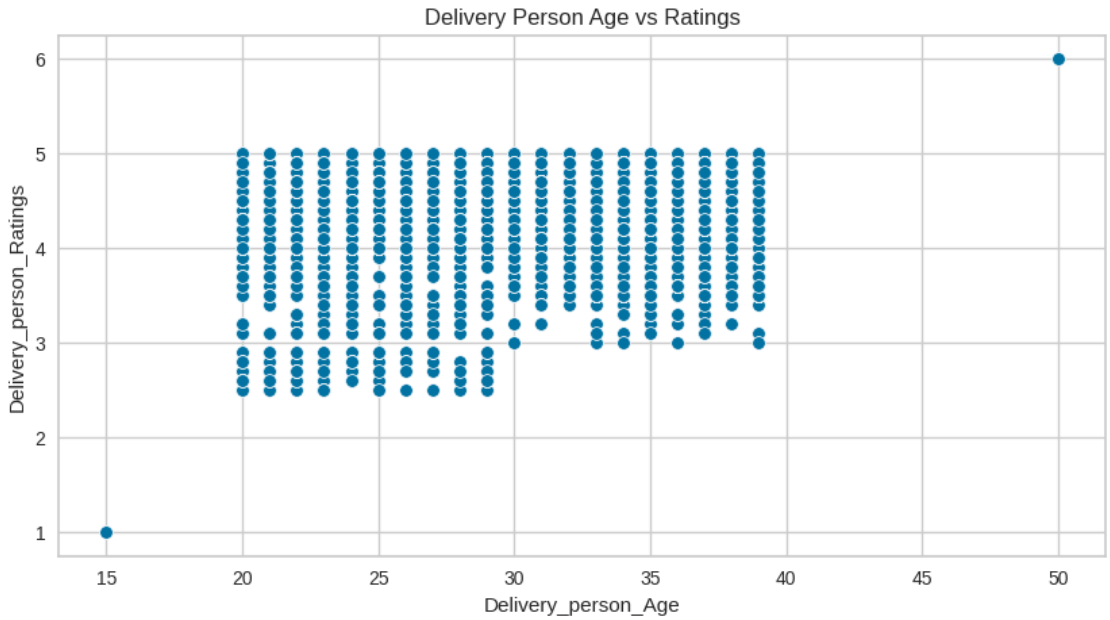
[11]: Text(0.5, 1.0, 'Distribution of Type of Vehicles')



[12]:
```
# Plotting charts
plt.figure(figsize=(10, 5))

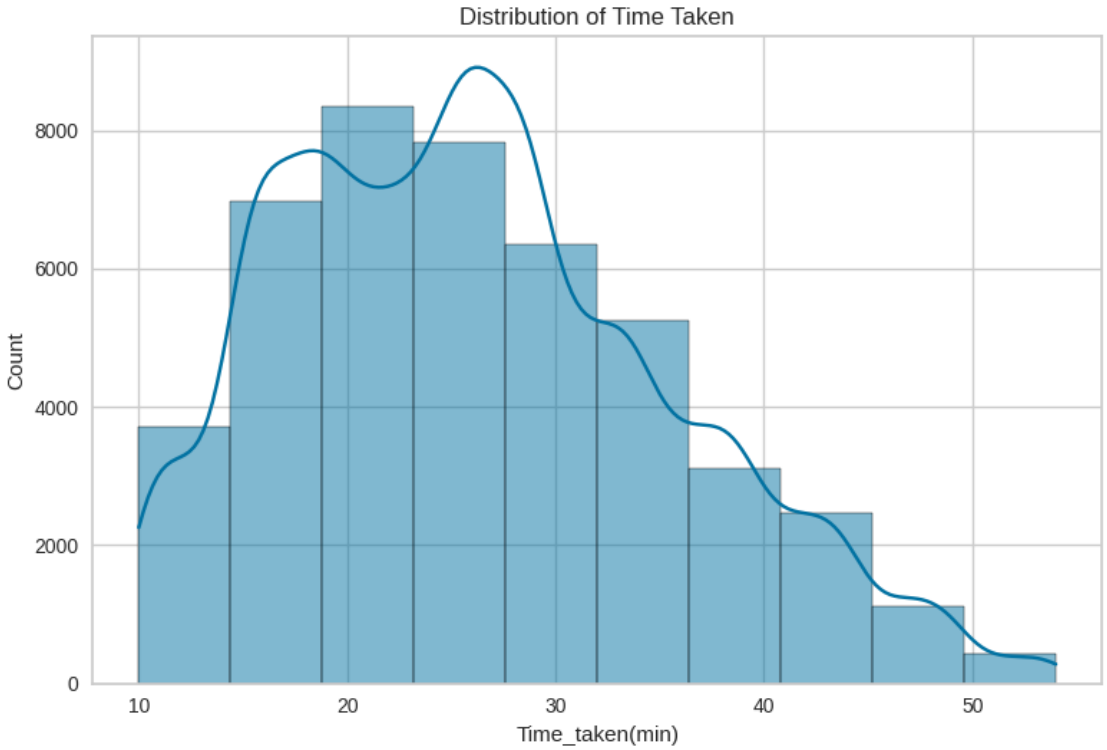
# Scatter plot for Delivery_person_Age vs Delivery_person_Ratings
sns.scatterplot(x='Delivery_person_Age', y='Delivery_person_Ratings', data=df)
plt.title('Delivery Person Age vs Ratings')
```

[12]: Text(0.5, 1.0, 'Delivery Person Age vs Ratings')



[13]:
```
# Histogram for Time_taken(min)
sns.histplot(df['Time_taken(min)'], bins=10, kde=True)
plt.title('Distribution of Time Taken')

plt.tight_layout()
plt.show()
```



[19]:
```
# Splitting data
X = np.array(df[["Delivery_person_Age", "Delivery_person_Ratings", "distance"]])
y = np.array(df[["Time_taken(min)"]])

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,␣
↪random_state=42)
```

[16]:
```
# Initialize the setup
reg_setup = setup(data=df, target='Time_taken(min)')

# Compare models
best_model = compare_models()
```

```
<pandas.io.formats.style.Styler at 0x7fc45d74f0d0>
```

```
<IPython.core.display.HTML object>
```

```
<pandas.io.formats.style.Styler at 0x7fc45d7acac0>
```

```
Processing:   0%|          | 0/81 [00:00<?, ?it/s]
```

```
<IPython.core.display.HTML object>
```

[26]:
```
from sklearn.ensemble import AdaBoostRegressor
from sklearn.model_selection import GridSearchCV
```

```
from sklearn.metrics import mean_squared_error, r2_score, mean_absolute_error
```

[29]:
```
# Create AdaBoost Regressor model
ada_boost = AdaBoostRegressor(n_estimators=50, learning_rate=1, random_state=42)
ada_boost.fit(X_train, y_train)

y_pred = ada_boost.predict(X_test)

# Calculate evaluation metrics
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
mae = mean_absolute_error(y_test, y_pred)

print("Mean Squared Error:", mse)
print("R-squared:", r2)
print("Mean Absolute Error:", mae)
```

```
Mean Squared Error: 58.76900954057931
R-squared: 0.32971876760610874
Mean Absolute Error: 6.144489441015594
```

[24]:
```
from xgboost import XGBRegressor
```

[25]:
```
# Create XGBoost Regressor model
xgboost = XGBRegressor(n_estimators=100, learning_rate=0.1, random_state=42)
xgboost.fit(X_train, y_train)

# Predictions
y_pred = xgboost.predict(X_test)

# Calculate evaluation metrics
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
mae = mean_absolute_error(y_test, y_pred)

print("Mean Squared Error:", mse)
print("R-squared:", r2)
print("Mean Absolute Error:", mae)
```

```
Mean Squared Error: 54.35829857162347
R-squared: 0.38002447816880935
Mean Absolute Error: 5.782657563679835
```

[33]:
```
print("Food Delivery Time Prediction")
a = int(input("Age of Delivery Partner: "))
b = float(input("Ratings of Previous Deliveries: "))
```

```
c = int(input("Total Distance: "))

features = np.array([[a, b, c]])
print("Predicted Delivery Time in Minutes = ", ada_boost.predict(features))
```

```
Food Delivery Time Prediction
Age of Delivery Partner: 29
Ratings of Previous Deliveries: 2.9
Total Distance: 6
Predicted Delivery Time in Minutes =  [34.15377616]
```

[ ]:
```
6
```