In [1]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.preprocessing import StandardScaler
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestRegressor
from sklearn.linear_model import LinearRegression
print('all the modules are imported!!')
```

```
all the modules are imported!!
```

In [2]:

```
df=pd.read_csv('C:/Users/Dr697699/Downloads/train.csv',low_memory=False)
df.describe()
```

Out[2]:

	ID	pickup+AF8-loc	drop+AF8-loc	distance	num+AF8-passengers	payment+AF8-method	
count	1.048575e+06	1.048574e+06	1.048574e+06	1.048574e+06	1.048574e+06	1.048574e+06	1
mean	5.242870e+05	1.648085e+02	1.626675e+02	2.859832e+00	1.590696e+00	1.317943e+00	1
std	3.026977e+05	6.579282e+01	6.953073e+01	3.709541e+00	1.253700e+00	4.853266e-01	5
min	0.000000e+00	1.000000e+00	1.000000e+00	0.000000e+00	0.000000e+00	1.000000e+00	1
25%	2.621435e+05	1.250000e+02	1.130000e+02	9.300000e-01	1.000000e+00	1.000000e+00	1
50%	5.242870e+05	1.620000e+02	1.620000e+02	1.600000e+00	1.000000e+00	1.000000e+00	1
75%	7.864305e+05	2.330000e+02	2.330000e+02	2.900000e+00	2.000000e+00	2.000000e+00	1
max	1.048574e+06	2.650000e+02	2.650000e+02	1.138000e+02	9.000000e+00	4.000000e+00	9

In [3]:

```
df.columns
```

Out[3]:

```
Index(['ID', 'vendor+AF8-id', 'pickup+AF8-loc', 'drop+AF8-loc',
       'driver+AF8-tip', 'mta+AF8-tax', 'distance', 'pickup+AF8-time',
       'drop+AF8-time', 'num+AF8-passengers', 'toll+AF8-amount',
       'payment+AF8-method', 'rate+AF8-code', 'stored+AF8-flag',
       'extra+AF8-charges', 'improvement+AF8-charge', 'total+AF8-amount'],
      dtype='object')
```

In [4]:

```
f_1=['distance']

print(df[f_1].head(10))
print(df[f_1].dtypes)

df[f_1]=df[f_1].fillna(value=df[f_1].mean(),axis=0)
print(df[f_1].count())

len(df[f_1])==len(df)
```

```
   distance
0      0.70
1      4.64
2      1.29
3      2.74
4      0.45
5      0.40
6      1.72
7      8.80
8      1.20
9     17.00
distance    float64
dtype: object
distance    1048575
dtype: int64
```

Out[4]:

```
True
```

In [5]:

```
df[f_1].count()
```

Out[5]:

```
distance    1048575
dtype: int64
```

In [6]:

```
f_1a=np.array(df[f_1])
for i in range(len(f_1a)):
    f_1a[i]=float(f_1a[i])
print(type(f_1a[25][0]))

df[f_1]=pd.DataFrame(f_1a)

print(type(df[f_1]))
print(df[f_1].head(10))
```

```
<class 'numpy.float64'>
<class 'pandas.core.frame.DataFrame'>
   distance
0      0.70
1      4.64
2      1.29
3      2.74
4      0.45
5      0.40
6      1.72
7      8.80
8      1.20
9     17.00
```

In [7]:

```
df.columns
```

Out[7]:

```
Index(['ID', 'vendor+AF8-id', 'pickup+AF8-loc', 'drop+AF8-loc',
       'driver+AF8-tip', 'mta+AF8-tax', 'distance', 'pickup+AF8-time',
       'drop+AF8-time', 'num+AF8-passengers', 'toll+AF8-amount',
       'payment+AF8-method', 'rate+AF8-code', 'stored+AF8-flag',
       'extra+AF8-charges', 'improvement+AF8-charge', 'total+AF8-amount'],
      dtype='object')
```

In [8]:

```
f_2=['num+AF8-passengers']
print(df[f_2].dtypes)
df[f_2].describe()
```

```
num+AF8-passengers    float64
dtype: object
```

Out[8]:

	num+AF8-passengers
count	1.048574e+06
mean	1.590696e+00
std	1.253700e+00
min	0.000000e+00
25%	1.000000e+00
50%	1.000000e+00
75%	2.000000e+00
max	9.000000e+00

In [9]:

```
df[f_2]=df[f_2].fillna(value=df[f_2].mean(),axis=0)
df[f_2].describe()
```

Out[9]:

	num+AF8-passengers
count	1.048575e+06
mean	1.590696e+00
std	1.253700e+00
min	0.000000e+00
25%	1.000000e+00
50%	1.000000e+00
75%	2.000000e+00
max	9.000000e+00

In [10]:

```
df[f_2].count()
```

Out[10]:

```
num+AF8-passengers    1048575
dtype: int64
```

In [11]:

```
df.columns
```

Out[11]:

```
Index(['ID', 'vendor+AF8-id', 'pickup+AF8-loc', 'drop+AF8-loc',
       'driver+AF8-tip', 'mta+AF8-tax', 'distance', 'pickup+AF8-time',
       'drop+AF8-time', 'num+AF8-passengers', 'toll+AF8-amount',
       'payment+AF8-method', 'rate+AF8-code', 'stored+AF8-flag',
       'extra+AF8-charges', 'improvement+AF8-charge', 'total+AF8-amount'],
      dtype='object')
```

In [12]:

```
f_3=['extra+AF8-charges']
print(df[f_3].dtypes)
```

```
extra+AF8-charges    object
dtype: object
```

In [13]:

```
f_3a=np.array(df[f_3])
for i in range(len(f_3a)):
    if(f_3a[i]=='+AC0-0.5' or f_3a[i]=='+AC0-1' or f_3a[i]=='+AC0-4.5'):
        f_3a[i]='0'
    else:
        f_3a[i]=float(f_3a[i])
```

In [14]:

```
print(f_3a[0:5])
```

```
[[1.0]
 [1.0]
 [0.0]
 [0.0]
 [0.0]]
```

In [15]:

```
f_3a=list(f_3a)
for i in range(len(f_3a)):
    f_3a[i]=float(f_3a[i])
```

In [16]:

```
print(f_3a[1:10])
```

```
[1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.5, 4.5]
```

In [17]:

```
df[f_3]=pd.DataFrame(f_3a,index=df.ID)
```

In [18]:

```
df[f_3].dtypes
```

Out[18]:

```
extra+AF8-charges    float64
dtype: object
```

In [19]:

```
print(df[f_3].head())
print(df[f_3].count())
df[f_3]=df[f_3].fillna(value=df[f_3].mean(),axis=0)
```

```
   extra+AF8-charges
0                1.0
1                1.0
2                0.0
3                0.0
4                0.0
extra+AF8-charges    1048574
dtype: int64
```

In [20]:

```
df[f_3].count()
```

Out[20]:

```
extra+AF8-charges    1048575
dtype: int64
```

In [21]:

```
df[f_3].describe()
```

Out[21]:

	extra+AF8-charges
count	1.048575e+06
mean	3.413492e-01
std	4.836578e-01
min	0.000000e+00
25%	0.000000e+00
50%	0.000000e+00
75%	5.000000e-01
max	6.500000e+00

In [22]:

```
df[f_3]=df[f_3].fillna(value=df[f_3].mean(),axis=0)
```

In [23]:

```
df[f_3].describe()
```

Out[23]:

	extra+AF8-charges
count	1.048575e+06
mean	3.413492e-01
std	4.836578e-01
min	0.000000e+00
25%	0.000000e+00
50%	0.000000e+00
75%	5.000000e-01
max	6.500000e+00

In [24]:

```
f_4=['toll+AF8-amount']
df[f_4].describe()
```

Out[24]:

	toll+AF8-amount
count	1048573
unique	418
top	0
freq	991571

In [25]:

```
f_4a=np.array(df[f_4])
for i in range(len(f_4a)):
    if(f_4a[i][0]=='+AC0-5.76'):
        f_4a[i][0]='0'
    else:
        continue
```

In [26]:

```
f_4a=list(f_4a)
for i in range(len(f_4a)):
    f_4a[i]=float(f_4a[i])
print(f_4a[0:10])
```

```
[0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 5.76]
```

In [27]:

```
df[f_4]=pd.DataFrame(f_4a,index=df.ID)
```

In [28]:

```
print(df[f_4].iloc[0:15])
```

```
    toll+AF8-amount
0              0.00
1              0.00
2              0.00
3              0.00
4              0.00
5              0.00
6              0.00
7              0.00
8              0.00
9              5.76
10             0.00
11             0.00
12             0.00
13             0.00
14             0.00
```

In [29]:

```
df[f_4].describe()
```

Out[29]:

	toll+AF8-amount
count	1.048573e+06
mean	3.458420e-01
std	2.138408e+00
min	0.000000e+00
25%	0.000000e+00
50%	0.000000e+00
75%	0.000000e+00
max	9.057600e+02

In [30]:

```
print(df[f_4].dtypes)

mean=df[f_4].mean()
df[f_4]=df[f_4].fillna(value=mean,axis=0)

df[f_4].describe()
```

```
toll+AF8-amount    float64
dtype: object
```

Out[30]:

	toll+AF8-amount
count	1.048575e+06
mean	3.458420e-01
std	2.138406e+00
min	0.000000e+00
25%	0.000000e+00
50%	0.000000e+00
75%	0.000000e+00
max	9.057600e+02

In [31]:
```
df[f_4].describe()
```

Out[31]:

	toll+AF8-amount
count	1.048575e+06
mean	3.458420e-01
std	2.138406e+00
min	0.000000e+00
25%	0.000000e+00
50%	0.000000e+00
75%	0.000000e+00
max	9.057600e+02

In [32]:
```
df[f_4].count()
```

Out[32]:
```
toll+AF8-amount    1048575
dtype: int64
```

In [33]:
```
df.columns
```

Out[33]:
```
Index(['ID', 'vendor+AF8-id', 'pickup+AF8-loc', 'drop+AF8-loc',
       'driver+AF8-tip', 'mta+AF8-tax', 'distance', 'pickup+AF8-time',
       'drop+AF8-time', 'num+AF8-passengers', 'toll+AF8-amount',
       'payment+AF8-method', 'rate+AF8-code', 'stored+AF8-flag',
       'extra+AF8-charges', 'improvement+AF8-charge', 'total+AF8-amount'],
      dtype='object')
```

In [46]:
```
label='total+AF8-amount'
y_a=df[label]
```

In [47]:
```
y_a.describe()
```

Out[47]:
```
count     1048573
unique       6106
top           7.8
freq        24068
Name: total+AF8-amount, dtype: object
```

In [48]:
```
y_a=y_a.fillna(value='0',axis=0)
```

In [50]:
```
y_ar=np.array(y_a)
```

In [53]:

```
for i in range(len(y_ar)):
    if(y_ar[i]=='+AC0-5.3' or y_ar[i]=='+AC0-7.8' or y_ar[i]=='+AC0-6.8' or y_
ar[i]=='+AC0-6.3' or y_ar[i]=='+AC0-3.8' or y_ar[i]=='+AC0-4.3'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-4.94' or y_ar[i]=='+AC0-4.94' or y_ar[i]=='+AC0-4.8' o
r y_ar[i]=='+AC0-5.8' or y_ar[i]=='+AC0-7.75'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-3.3' or y_ar[i]=='+AC0-7.3' or y_ar[i]=='+AC0-52.8' or
y_ar[i]=='+AC0-20.3' or y_ar[i]=='+AC0-3.96'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-9.3' or y_ar[i]=='+AC0-25.6' or y_ar[i]=='+AC0-14.56'
or y_ar[i]=='+AC0-15.89' or y_ar[i]=='+AC0-57.3'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-8.8' or y_ar[i]=='+AC0-8.3' or y_ar[i]=='+AC0-20.8' or
y_ar[i]=='+AC0-15.8' or y_ar[i]=='+AC0-10.8'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-5.59' or y_ar[i]=='+AC0-75.3' or y_ar[i]=='+AC0-55.8'
or y_ar[i]=='+AC0-21.3' or y_ar[i]=='+AC0-65.3'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-14.8' or y_ar[i]=='+AC0-13.3' or y_ar[i]=='+AC0-9.6' o
r y_ar[i]=='+AC0-9.6' or y_ar[i]=='+AC0-260.8'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-58.56' or y_ar[i]=='+AC0-60.3' or y_ar[i]=='+AC0-35.8'
or y_ar[i]=='+AC0-30.8' or y_ar[i]=='+AC0-17.8'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-30.86' or y_ar[i]=='+AC0-13.8' or y_ar[i]=='+AC0-5.16'
or y_ar[i]=='+AC0-62.67' or y_ar[i]=='+AC0-0.85'):
        y_ar[i]='0'
    elif(y_ar[i]=='+AC0-105.8' or y_ar[i]=='+AC0-16.3'):
        y_ar[i]='0'
    else:
        continue
```

In [60]:

```
type(y_ar[25])
for i in range(len(y_ar)):
    y_ar[i]=float(y_ar[i])
```

In [61]:

```
df['total+AF8-amount']=pd.DataFrame(y_ar,index=df.ID)
```

In [65]:

```
print(df['total+AF8-amount'].describe())
df['total+AF8-amount'].iloc[1657]
```

```
count     1048575.0
unique       6060.0
top             7.8
freq        24068.0
Name: total+AF8-amount, dtype: float64
```

Out[65]:

```
0.0
```

In [66]:

```
#now we are done with cleaning the data.
#let's visualize the data.
```

In [67]:

```
df.columns
```

Out[67]:

```
Index(['ID', 'vendor+AF8-id', 'pickup+AF8-loc', 'drop+AF8-loc',
       'driver+AF8-tip', 'mta+AF8-tax', 'distance', 'pickup+AF8-time',
       'drop+AF8-time', 'num+AF8-passengers', 'toll+AF8-amount',
       'payment+AF8-method', 'rate+AF8-code', 'stored+AF8-flag',
       'extra+AF8-charges', 'improvement+AF8-charge', 'total+AF8-amount'],
      dtype='object')
```

In [68]:

```
features=['num+AF8-passengers','toll+AF8-amount','distance','extra+AF8-charge
s']
print(df[features].describe())
X_final=df[features]
y_final=df['total+AF8-amount']
```

```
       num+AF8-passengers  toll+AF8-amount      distance  extra+AF8-charges
count        1.048575e+06     1.048575e+06  1.048575e+06       1.048575e+06
mean         1.590696e+00     3.458420e-01  2.859832e+00       3.413492e-01
std          1.253700e+00     2.138406e+00  3.709539e+00       4.836578e-01
min          0.000000e+00     0.000000e+00  0.000000e+00       0.000000e+00
25%          1.000000e+00     0.000000e+00  9.300000e-01       0.000000e+00
50%          1.000000e+00     0.000000e+00  1.600000e+00       0.000000e+00
75%          2.000000e+00     0.000000e+00  2.900000e+00       5.000000e-01
max          9.000000e+00     9.057600e+02  1.138000e+02       6.500000e+00
```

In [69]:

```
y_final.describe()
```

Out[69]:

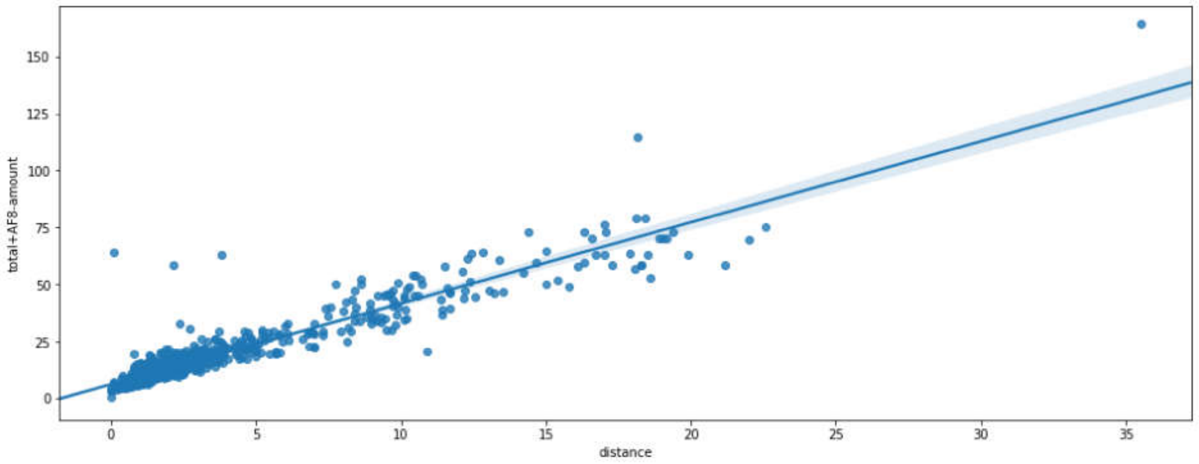
```
count     1048575.0
unique       6060.0
top             7.8
freq        24068.0
Name: total+AF8-amount, dtype: float64
```

In [151]:

```
plt.figure(figsize=(16,6))
sns.regplot(x=X_final['distance'].iloc[0:1000],y=y_final.iloc[0:1000])
```

Out[151]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x1ca370a5550>
```



clearly,we can see that,with increase in distance,the amount charged increases. hence,it(distance) can be taken as the major parameter for our model.

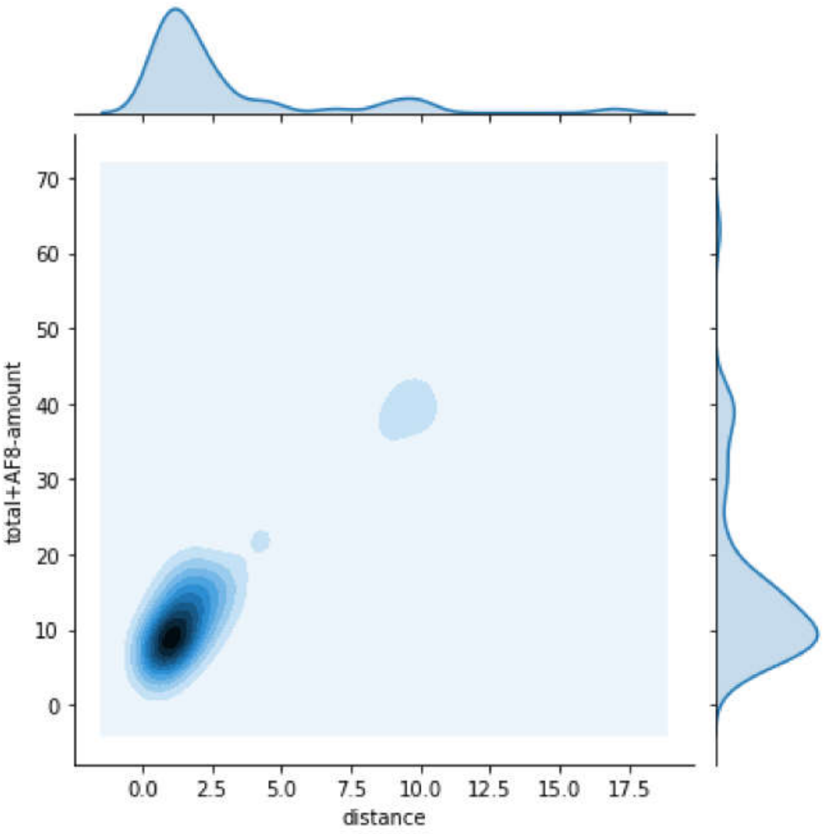
In [71]:

```
plt.figure(figsize=(16,10))
sns.jointplot(x=X_final['distance'].iloc[0:50],y=y_final.iloc[0:50],kind='kde'
)
```

Out[71]:

```
<seaborn.axisgrid.JointGrid at 0x1ca3dde7c18>
```

```
<Figure size 1152x720 with 0 Axes>
```



looking at the probability curve(kde->kernel density index),it can be said that,max. frequency of the travel takes in the distance range=(0.1-4.5)kms;

and the amount paid ranges b/w~Rs.(0-50)/-

In [72]:

```
print(X_final['num+AF8-passengers'].dtypes)
```

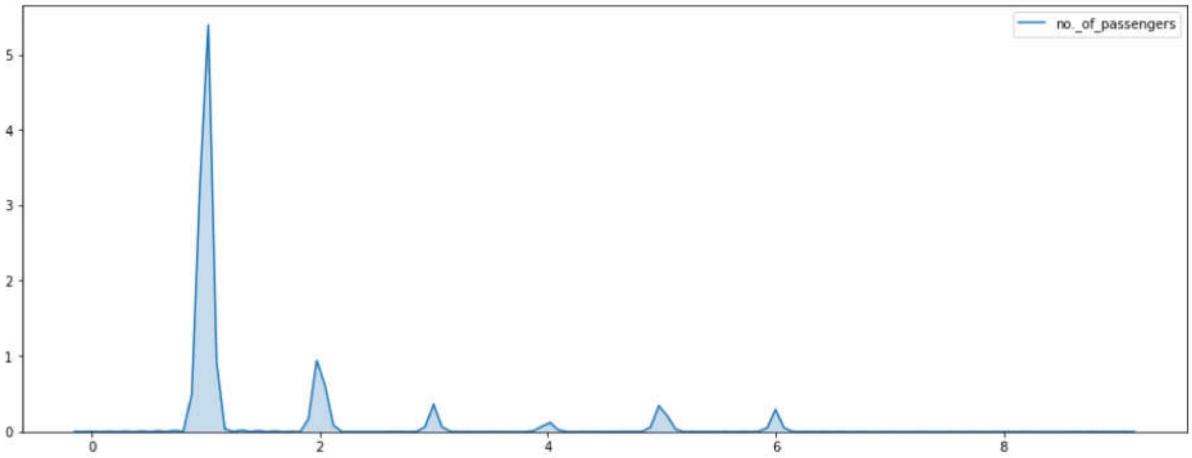
```
float64
```

In [73]:

```
plt.figure(figsize=(16,6))
sns.kdeplot(data=X_final['num+AF8-passengers'],label='no._of_passengers',shade
=True)
```

Out[73]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x1ca3c063e48>
```

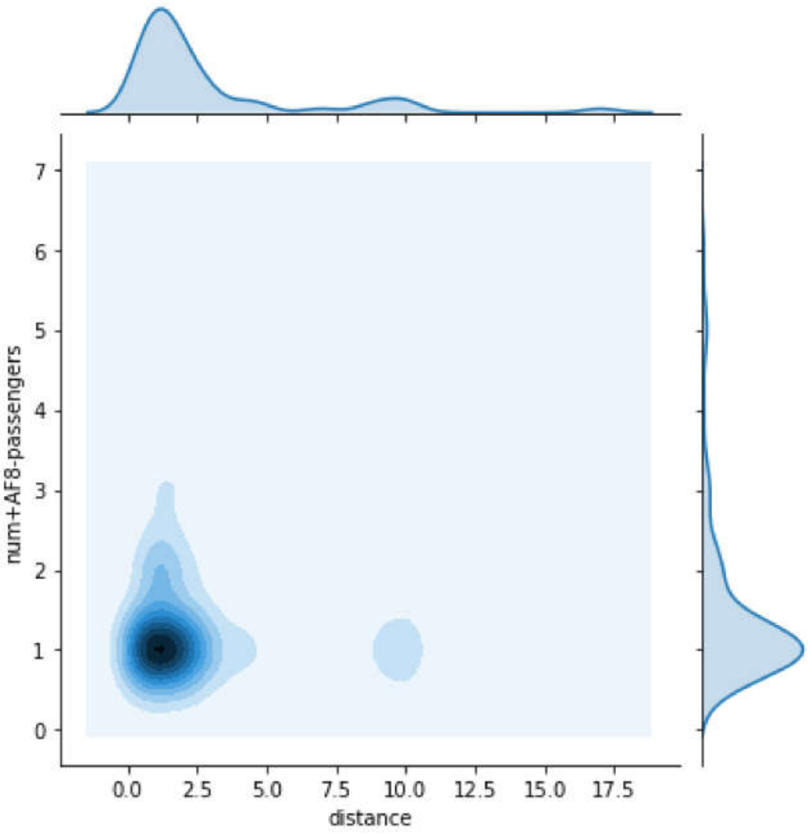


It can be observed from the above graph that, max. occupancy in most of the rides remains b/w 1-2.

In [74]:
```
plt.figure(figsize=(16,10))
sns.jointplot(x=X_final['distance'].iloc[0:50],y=X_final['num+AF8-passengers']
.iloc[0:50],kind='kde')
```

Out[74]:
```
<seaborn.axisgrid.JointGrid at 0x1ca3c07e2b0>
```

```
<Figure size 1152x720 with 0 Axes>
```



mostly the journey ranges b/w ~ (0.1-5.0)kms and the no. of passengers travelling varies b/w ~ (1-3).

In [75]:
```
df.columns
```

Out[75]:
```
Index(['ID', 'vendor+AF8-id', 'pickup+AF8-loc', 'drop+AF8-loc',
       'driver+AF8-tip', 'mta+AF8-tax', 'distance', 'pickup+AF8-time',
       'drop+AF8-time', 'num+AF8-passengers', 'toll+AF8-amount',
       'payment+AF8-method', 'rate+AF8-code', 'stored+AF8-flag',
       'extra+AF8-charges', 'improvement+AF8-charge', 'total+AF8-amount'],
      dtype='object')
```

In [76]:
```
a_fa=np.array(df['vendor+AF8-id'])
```

In [77]:
```
print(a_fa[0:10])
```

```
['1' '2' '2' '2' '2' '1' '2' '1' '1' '1']
```

In [78]:
```
for i in range(len(a_fa)):
    if(a_fa[i]=='+ACI-  +ACIAIg-status+ACIAIg- : 500+ACI-'):
        a_fa[i]='0'
    else:
        continue
```

In [79]:
```
for i in range(len(a_fa)):
    a_fa[i]=float(a_fa[i])
```

In [80]:
```
print(a_fa[0:10])
```

```
[1.0 2.0 2.0 2.0 2.0 1.0 2.0 1.0 1.0 1.0]
```

In [81]:
```
len(a_fa)
```

Out[81]:
```
1048575
```

In [82]:
```
df['vendor+AF8-id']=pd.DataFrame(a_fa,index=df.ID)
```

In [83]:
```
print(type(df['vendor+AF8-id'].iloc[21]))
df['vendor+AF8-id']=df['vendor+AF8-id'].astype('float')
```

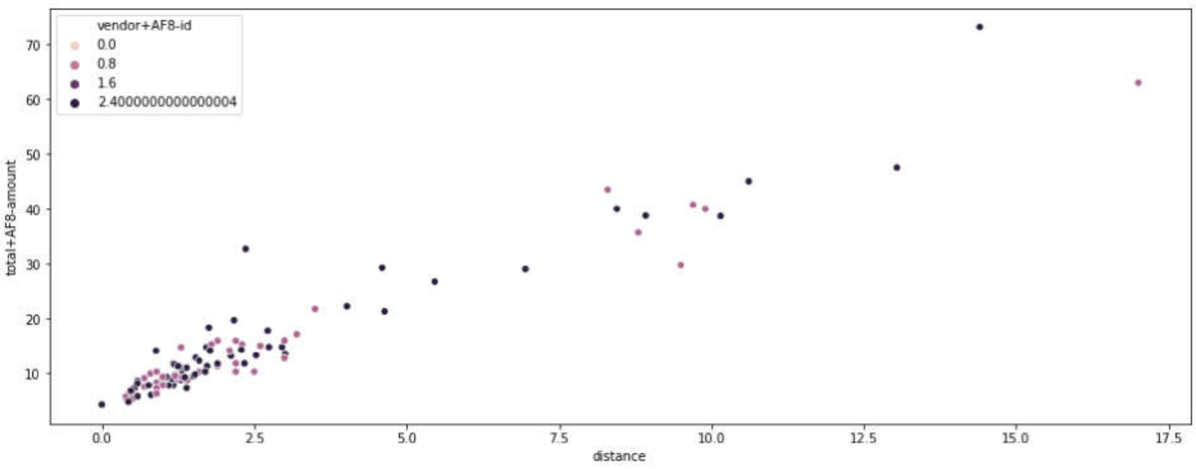
```
<class 'float'>
```

In [84]:
```
print(df['vendor+AF8-id'].iloc[0:10])
```

```
0    1.0
1    2.0
2    2.0
3    2.0
4    2.0
5    1.0
6    2.0
7    1.0
8    1.0
9    1.0
Name: vendor+AF8-id, dtype: float64
```

In [155]:
```
plt.figure(figsize=(16,6))
sns.scatterplot(x=X_final['distance'].iloc[0:100],y=y_final.iloc[0:100],hue=df
['vendor+AF8-id'])
```

Out[155]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x1ca462fa358>
```



the plot above shows that,the vendor with ID =2 tends to charge more than the vendor with ID =1 as the distance increases.

In [86]:
```
X=np.array(X_final)
Y=np.array(y_final)
```

In [179]:
```
scaler.fit(X)
scaled_train=scaler.transform(X)
```

In [180]:
```
print(scaled_train[3])
```

```
[-0.47116207 -0.16172892 -0.0323037  -0.70576616]
```

In [181]:
```
x_train,x_val,y_train,y_val=train_test_split(scaled_train,Y,test_size=0.1,rand
om_state=1)
print(x_train[1657][3])
```

```
-0.7057661585421416
```

In [182]:
```
y_val=y_val.reshape(-1,1)
print(y_val)
```

```
[[11.8]
 [12.96]
 [9.8]
 ...
 [8.8]
 [6.3]
 [7.8]]
```

In [183]:

```
print(y_train[1657])
```

```
11.16
```

In [184]:

```
model=RandomForestRegressor(n_estimators=10,random_state=1)
```

In [185]:

```
model.fit(x_train,y_train)
```

Out[185]:

```
RandomForestRegressor(bootstrap=True, criterion='mse', max_depth=None,
                      max_features='auto', max_leaf_nodes=None,
                      min_impurity_decrease=0.0, min_impurity_split=None,
                      min_samples_leaf=1, min_samples_split=2,
                      min_weight_fraction_leaf=0.0, n_estimators=10,
                      n_jobs=None, oob_score=False, random_state=1, verbose=
0,
                      warm_start=False)
```

In [186]:

```
pred=model.predict(x_val)
```

In [187]:

```
pred=pred.reshape(-1,1)
print(pred)
```

```
[[13.57272794]
 [12.99986659]
 [10.97593652]
 ...
 [ 9.18495333]
 [ 5.5169565 ]
 [ 7.12135725]]
```

In [188]:

```
print(y_val)
```

```
[[11.8]
 [12.96]
 [9.8]
 ...
 [8.8]
 [6.3]
 [7.8]]
```

In [189]:

```
a=[]
for i in range(len(pred)):
    if(pred[i]>=y_val[i]):
        a.append(pred[i]-y_val[i])
    else:
        a.append(y_val[i]-pred[i])
```

In [190]:

```
pred[i]-y_val[i]
len(a)
```

Out[190]:

```
104858
```

In [191]:

```
s=0
for i in range(len(a)):
    s=s+a[i]
```

In [192]:

```
print(s)
```

```
[247061.90132720504]
```

In [193]:

```
len(y_val)
```

Out[193]:

```
104858
```

In [194]:

```
print(s/len(y_val))
```

```
[2.3561569105571825]
```

mean_absolute_error(for the model) ~ 2.36036

In [195]:

```
from sklearn.metrics import mean_squared_error
```

In [196]:

```
error=mean_squared_error(pred,y_val)
```

In [197]:

```
print(error)
```

```
28.113020635874804
```

In [198]:

```
print(error**0.5)
```

```
5.302171313327664
```

working on our test data.

In [199]:

```
df1=pd.read_csv('C:/Users/Dr697699/Downloads/test.csv',low_memory=False)
```

In [200]:

```
features=['num_passengers','toll_amount','distance','extra_charges']
df1.columns
```

Out[200]:

```
Index(['ID', 'vendor_id', 'pickup_loc', 'drop_loc', 'driver_tip', 'mta_tax',
       'distance', 'pickup_time', 'drop_time', 'num_passengers', 'toll_amoun
t',
       'payment_method', 'rate_code', 'stored_flag', 'extra_charges',
       'improvement_charge'],
      dtype='object')
```

In [201]:

```
x_test=df1[features]
x_tf=np.array(x_test)
print(x_test.iloc[25])
```

```
num_passengers    1.0
toll_amount       0.0
distance          0.7
extra_charges     1.0
Name: 25, dtype: float64
```

In [202]:

```
scaler=StandardScaler()
scaler.fit(x_tf)
scaled_f=scaler.transform(x_tf)
```

In [203]:

```
model=RandomForestRegressor(n_estimators=10,random_state=1)
```

In [217]:

```
model.fit(X,Y)
```

Out[217]:

```
RandomForestRegressor(bootstrap=True, criterion='mse', max_depth=None,
                      max_features='auto', max_leaf_nodes=None,
                      min_impurity_decrease=0.0, min_impurity_split=None,
                      min_samples_leaf=1, min_samples_split=2,
                      min_weight_fraction_leaf=0.0, n_estimators=10,
                      n_jobs=None, oob_score=False, random_state=1, verbose=
0,
                      warm_start=False)
```

In [218]:

```
pred=model.predict(x_tf)
```

In [219]:

```
output = pd.DataFrame({'ID': df1.ID,'total_amount':pred})
output.to_csv('C:/Users/Dr697699/Downloads/sampleSubmission.csv', index=False)
```

In [213]:

```
model1=LinearRegression(fit_intercept=True,n_jobs=8)
```

In [214]:

```
model1.fit(scaled_train,Y)
```

Out[214]:

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=8, normalize=False)
```

In [215]:

```
prediction=model1.predict(scaled_f)
```

In [216]:

```
output = pd.DataFrame({'ID': df1.ID,'total_amount':prediction})
output.to_csv('C:/Users/Dr697699/Downloads/sampleSubmission.csv', index=False)
```

In [ ]:

```

```