LEC_03_GR

January 24, 2023

[2]:
```
import pandas as pd
from sklearn.linear_model import LinearRegression
```

[3]:
```
kpi = pd.read_csv('../data/kpisetting.csv')
kpi['date'] = pd.to_datetime(kpi.date)
kpi = kpi.set_index('date', drop=True)
kpi.head()
```

[3]:

date	visitors	downloads	installations	28dactive
2015-01-14	16489	1826	570	270
2015-01-15	16362	936	266	104
2015-01-16	16463	188	61	67
2015-01-17	15972	474	112	40
2015-01-18	16659	186	109	32

[5]:
```
from sklearn.model_selection import train_test_split
X = kpi[['visitors']]
y = kpi.downloads
X_train, X_test, y_train, y_test = train_test_split(X, y, train_size=0.2)
X_train.head()
```

[5]:

date	visitors
2018-02-28	28048
2017-04-30	24676
2016-09-02	22336
2020-06-04	36255
2018-03-20	27439

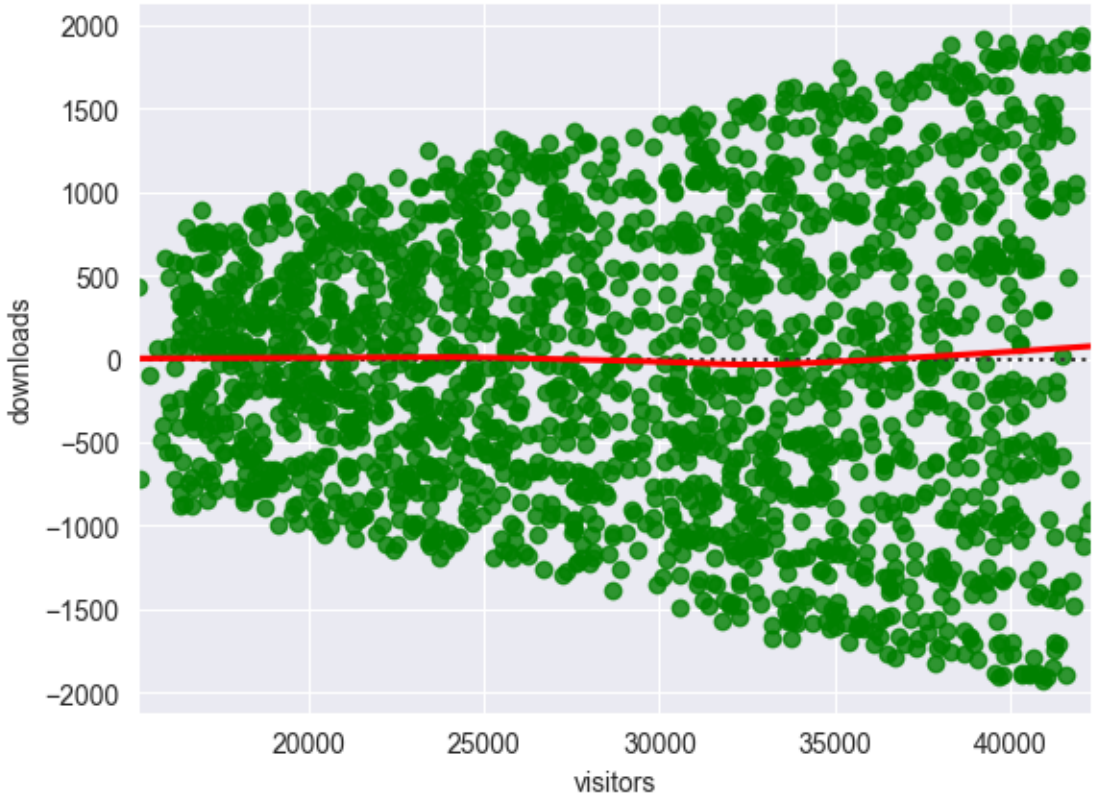
[7]:
```
model = LinearRegression()
model.fit(X_train, y_train)
y_pred = model.predict(X_test)
```

[8]:
```
from sklearn.metrics import mean_squared_error, r2_score
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
```

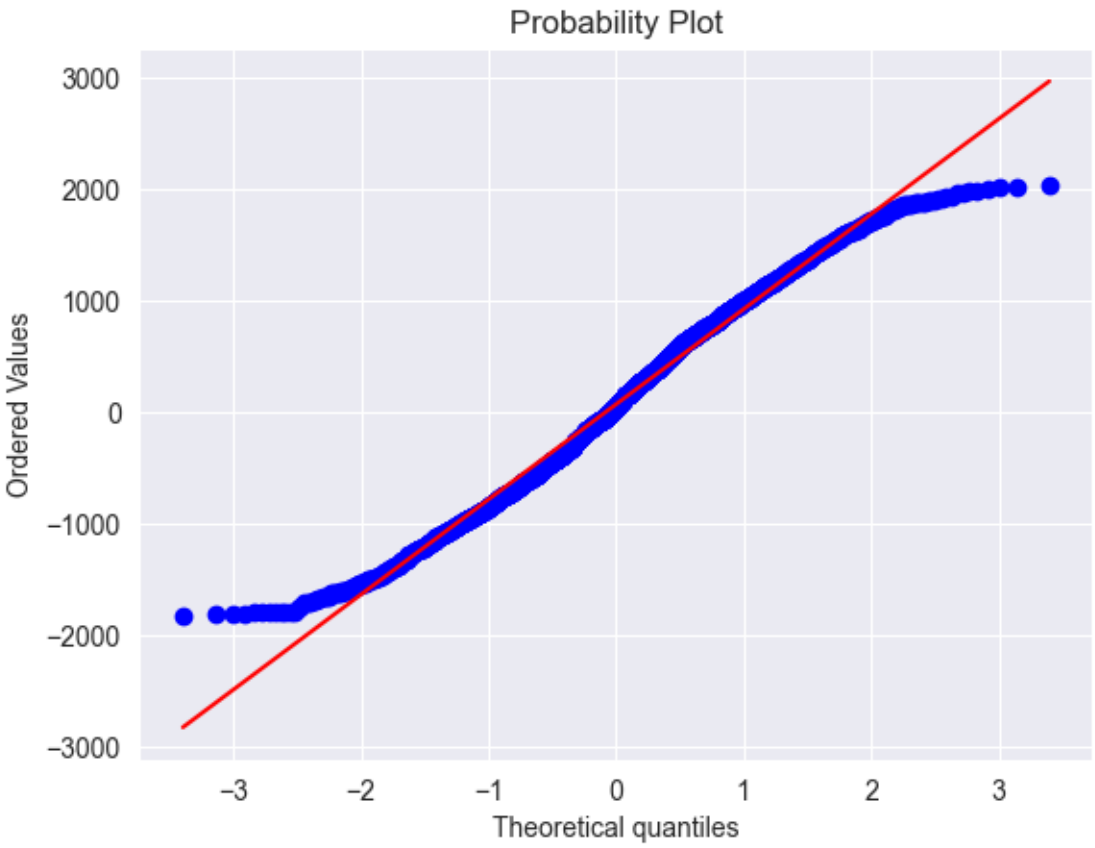
```
print(mse, r2)
```

```
740457.8704963165 0.23043040140011595
```

[9]:
```
import seaborn as sns
sns.residplot(x=X_test, y=y_test, lowess=True, line_kws={'color': 'red'},␣
↪color='green');
```



[10]:
```
import scipy.stats as stats
import matplotlib.pyplot as plt
residuals = y_test - y_pred
# Plot the residuals
stats.probplot(residuals, plot=plt);
```


Probability Plot
Ordered Values
Theoretical quantiles
3000
2000
1000
0
−1000
−2000
−3000
−3
−2
−1
0
1
2
3