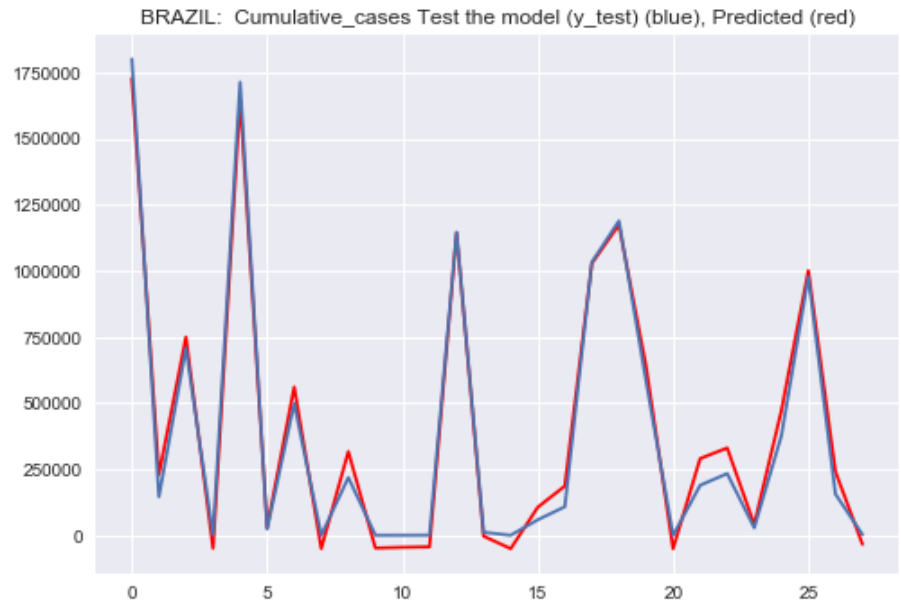
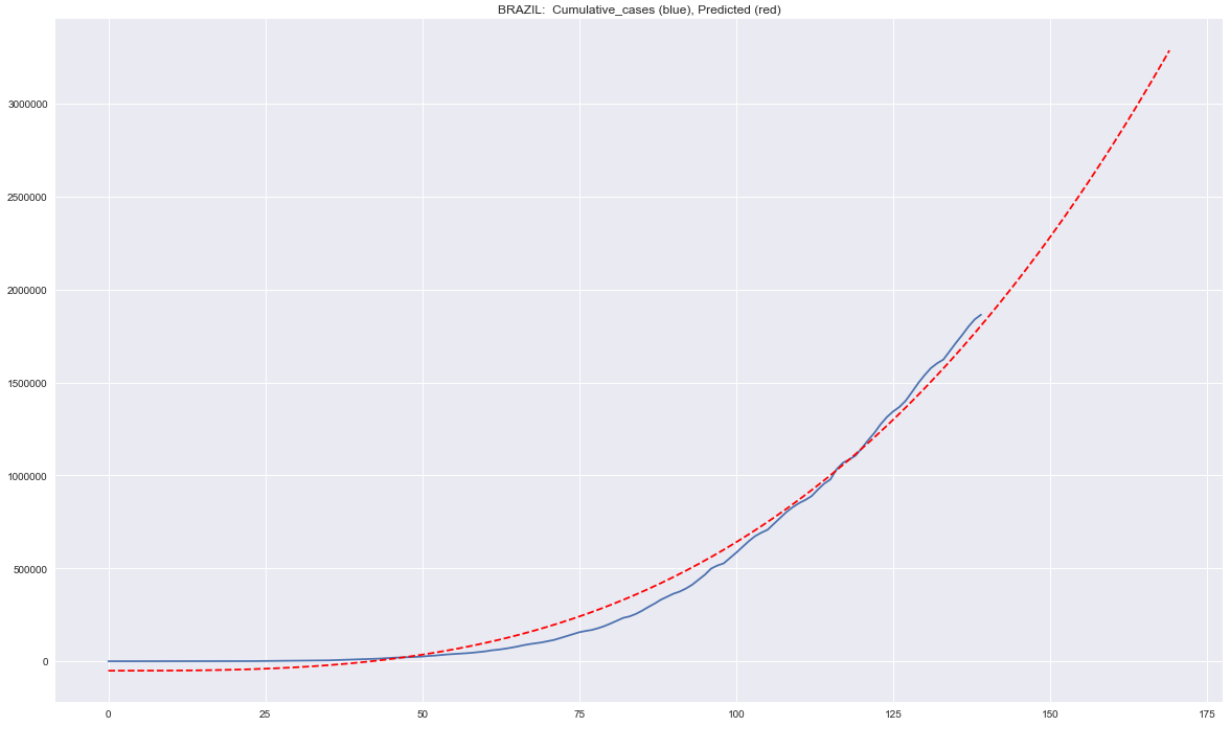
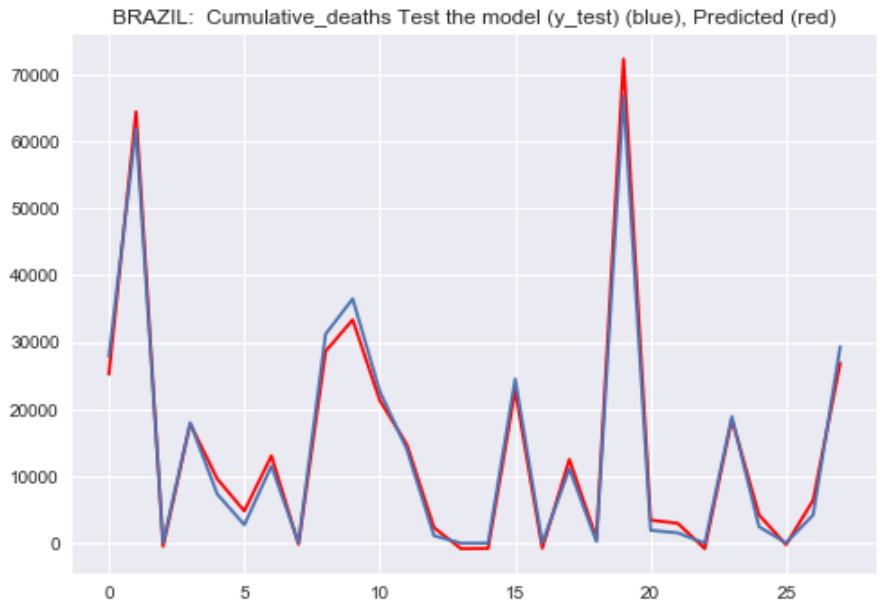
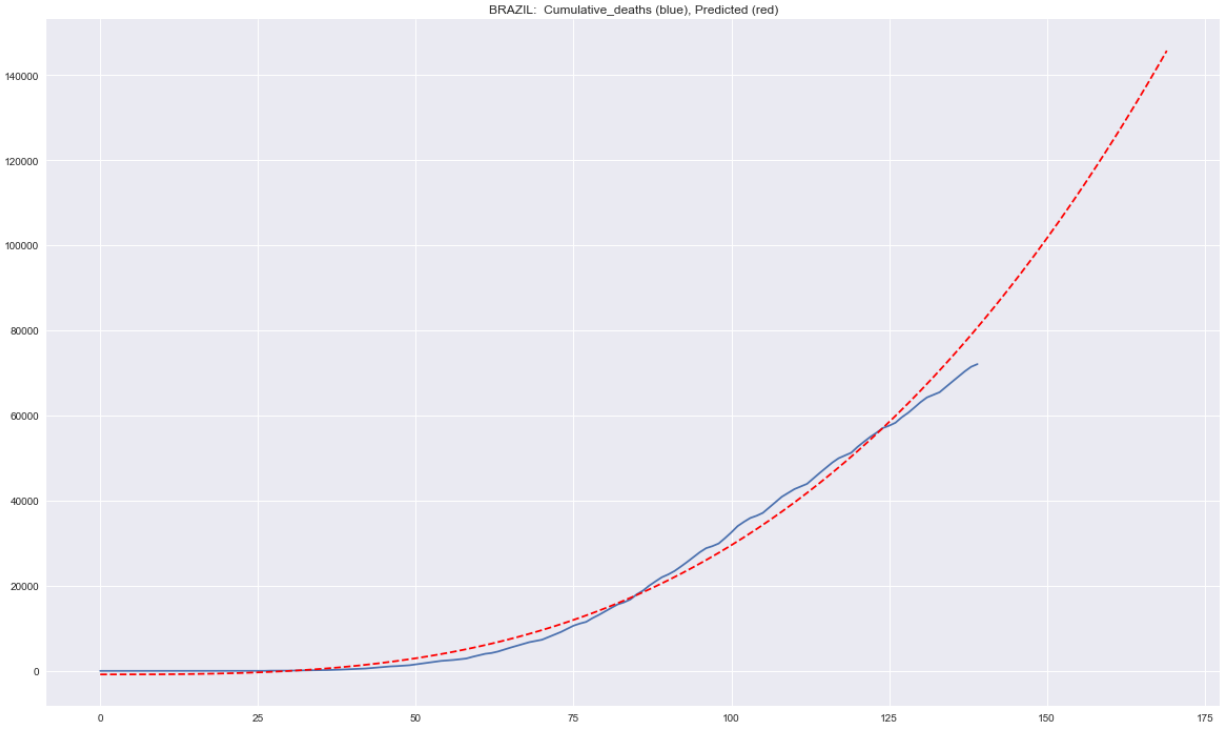
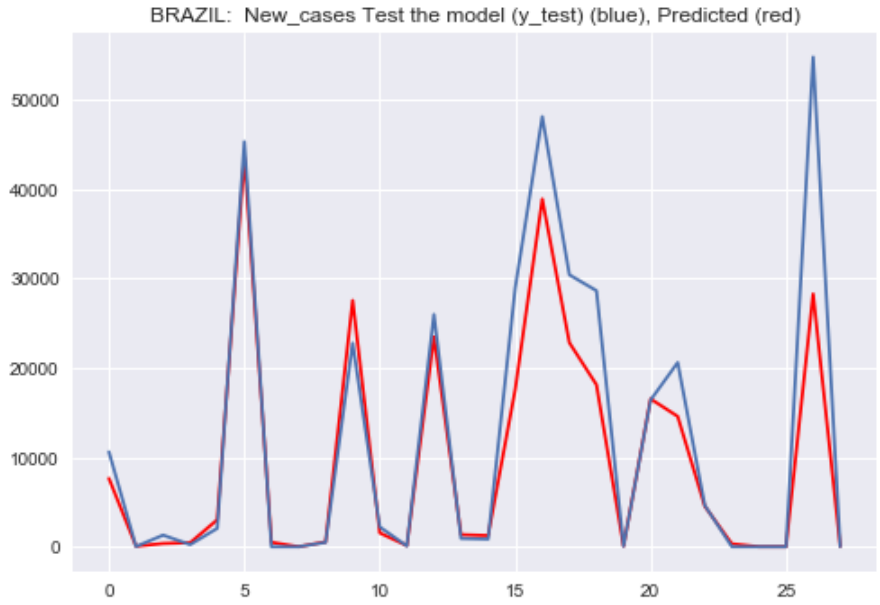
```
[Parallel(n_jobs=-1)]: Done  30 out of  30 | elapsed:  6.0min finished
/Users/annmcnamara/opt/anaconda3/envs/pydata/lib/python3.7/site-packages/sklearn/utils/validation.py:760: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n_samples, ), for example using ravel().
  y = column_or_1d(y, warn=True)
/Users/annmcnamara/opt/anaconda3/envs/pydata/lib/python3.7/site-packages/ipykernel_launcher.py:50: RuntimeWarning: More than 20 figures have been opened. Figures created through the pyplot interface (`matplotlib.pyplot.figure`) are retained until explicitly closed and may consume too much memory. (To control this warning, see the rcParam `figure.max_open_warning`).
/Users/annmcnamara/opt/anaconda3/envs/pydata/lib/python3.7/site-packages/ipykernel_launcher.py:58: RuntimeWarning: More than 20 figures have been opened. Figures created through the pyplot interface (`matplotlib.pyplot.figure`) are retained until explicitly closed and may consume too much memory. (To control this warning, see the rcParam `figure.max_open_warning`).
```



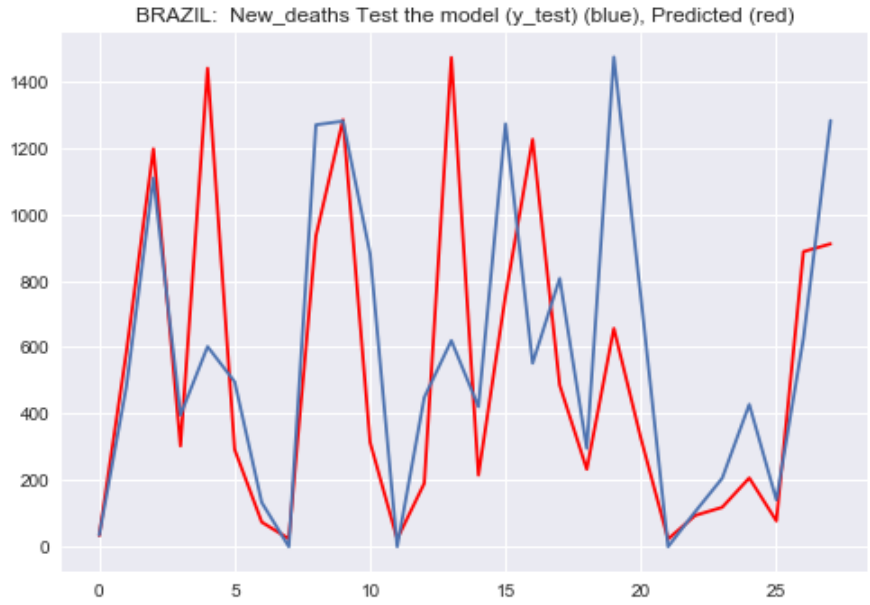


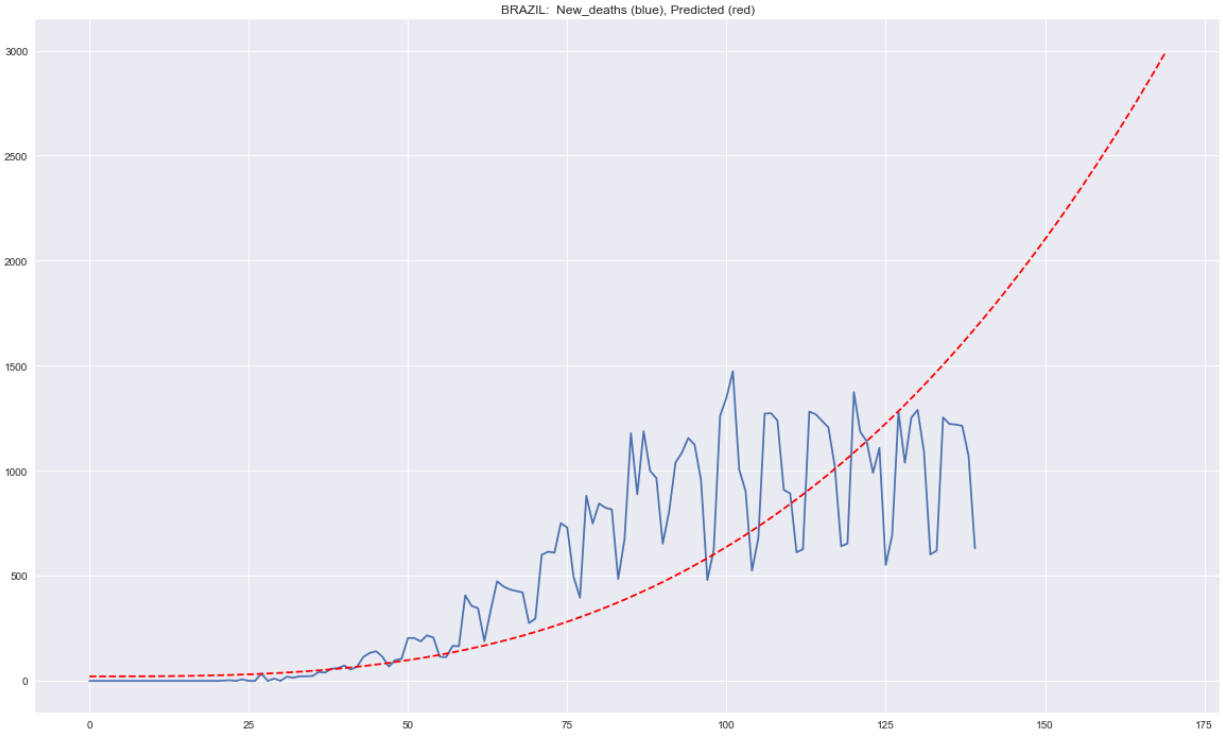

BRAZIL: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
70000
60000
50000
40000
30000
20000
10000
0
0
5
10
15
20
25

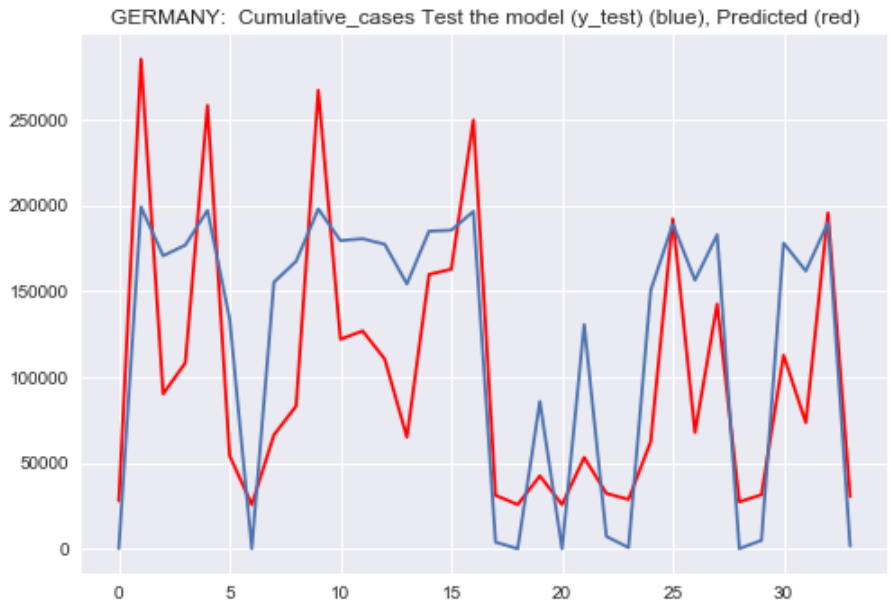

BRAZIL: Cumulative_deaths (blue), Predicted (red)
140000
120000
100000
80000
60000
40000
20000
0
0
25
50
75
100
125
150
175

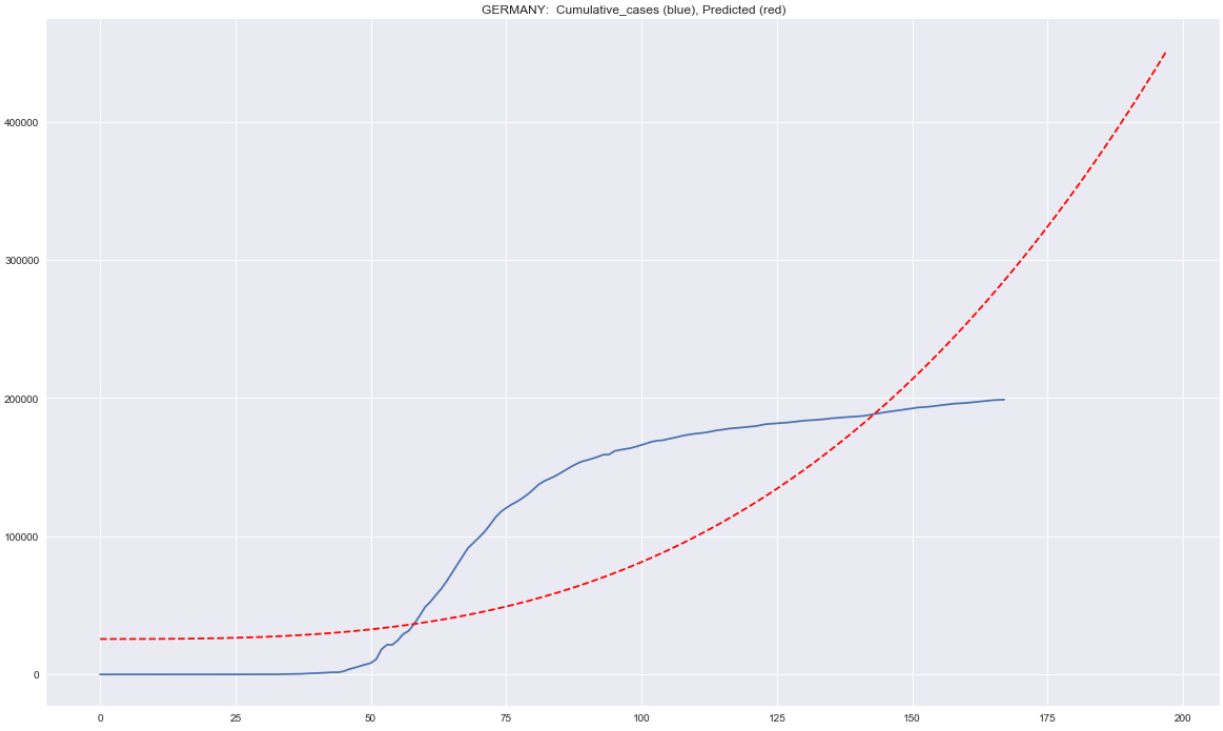

BRAZIL: New_cases Test the model (y_test) (blue), Predicted (red)
50000
40000
30000
20000
10000
0
0
5
10
15
20
25

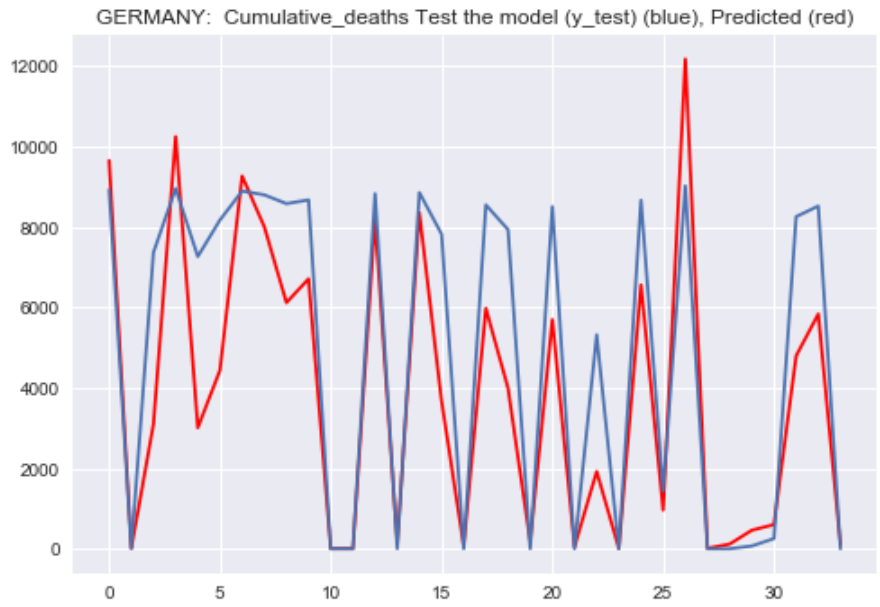

BRAZIL: New_cases (blue), Predicted (red)
80000
60000
40000
20000
0
0
25
50
75
100
125
150
175

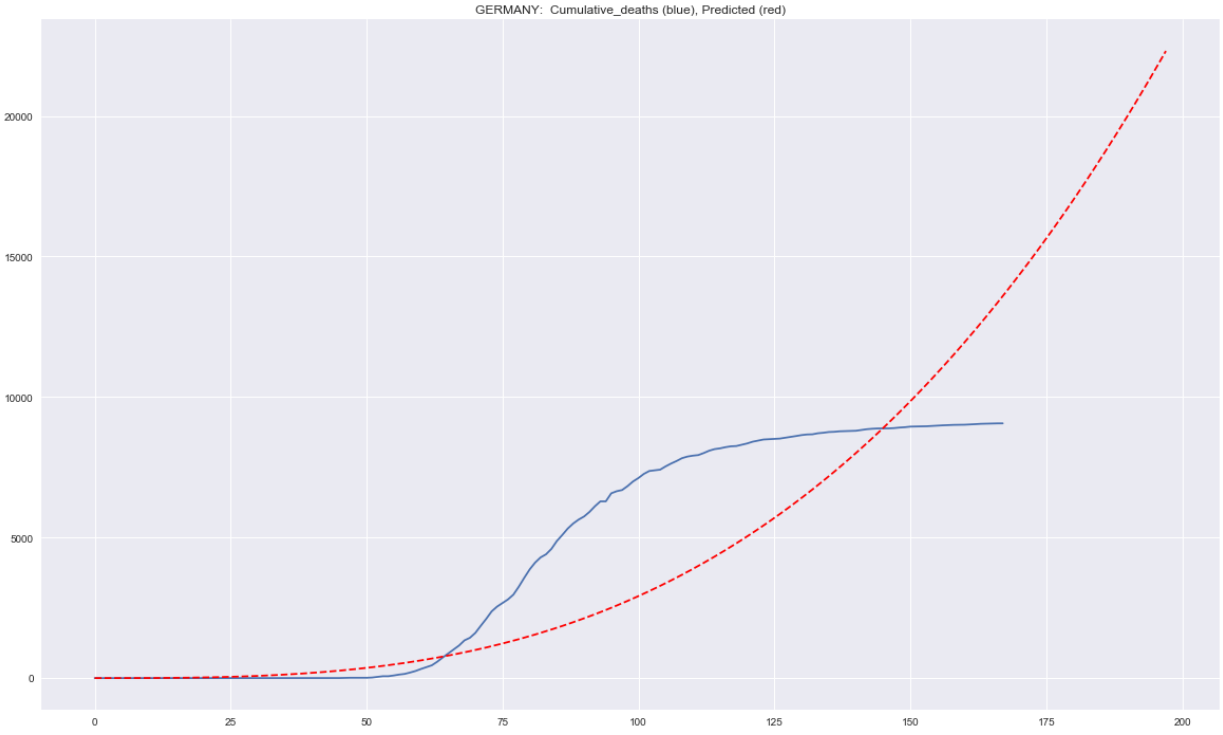

BRAZIL: New_deaths Test the model (y_test) (blue), Predicted (red)
1400
1200
1000
800
600
400
200
0
0
5
10
15
20
25

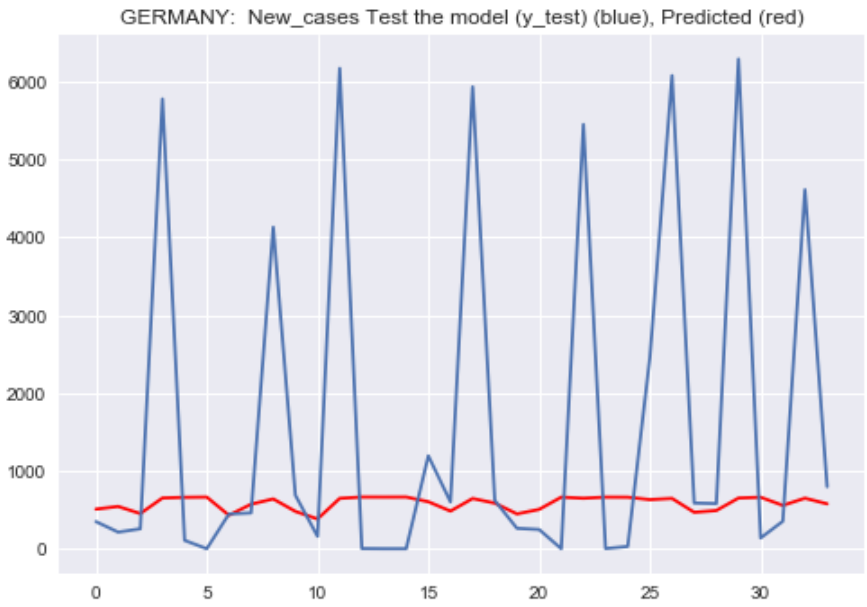

BRAZIL: New_deaths (blue), Predicted (red)
3000
2500
2000
1500
1000
500
0
0
25
50
75
100
125
150
175

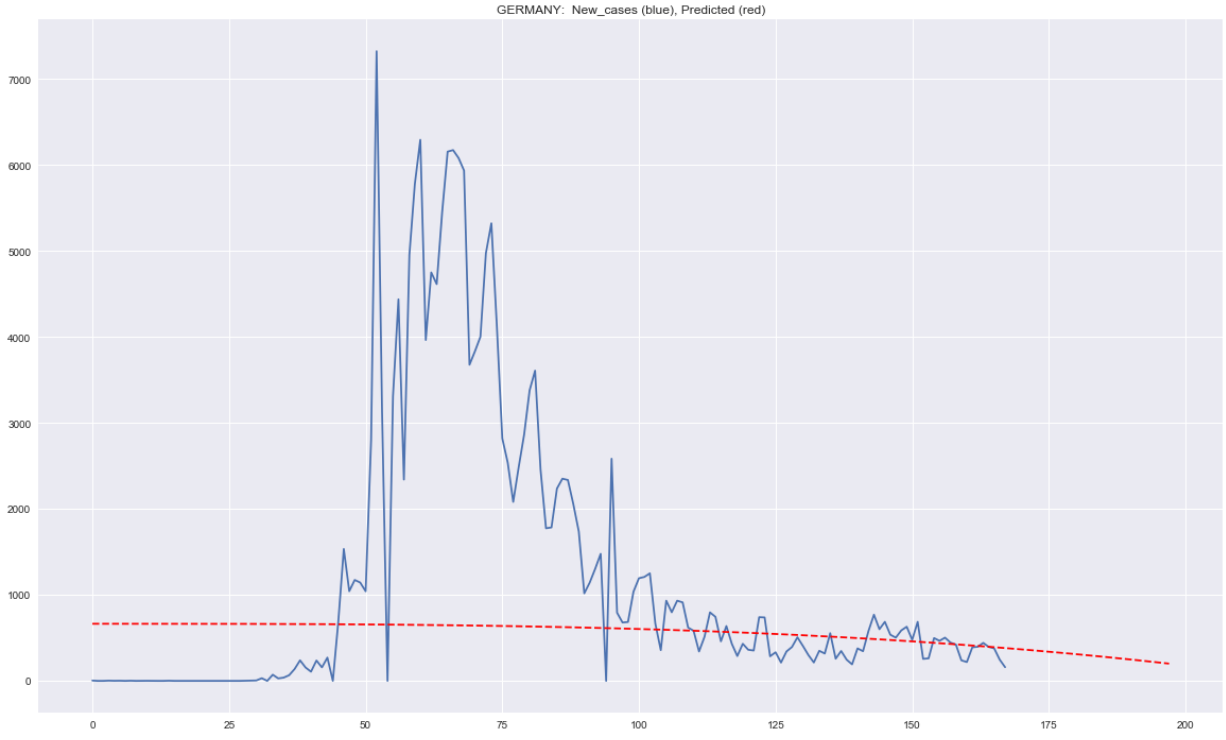

GERMANY: Cumulative_cases Test the model (y_test) (blue), Predicted (red)
250000
200000
150000
100000
50000
0
0
5
10
15
20
25
30

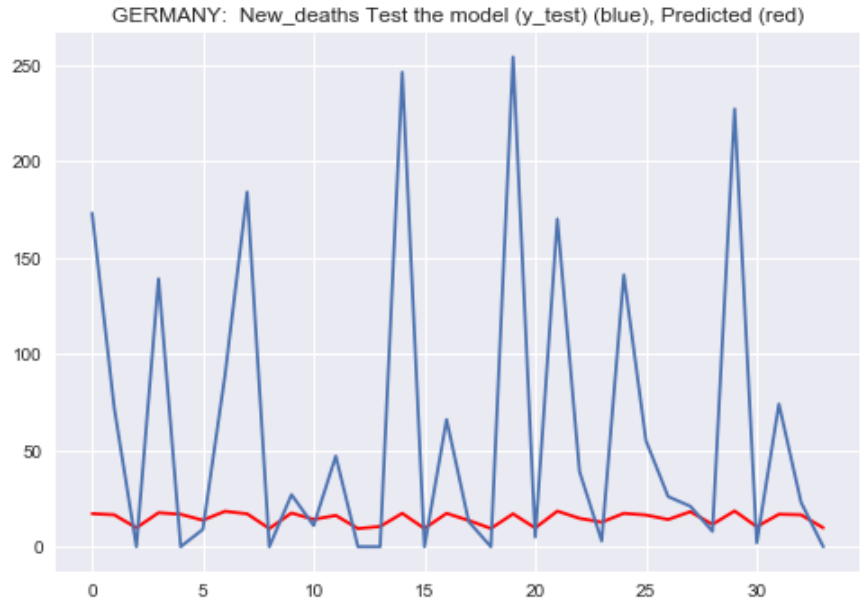

GERMANY: Cumulative_cases (blue), Predicted (red)
400000
300000
200000
100000
0
0
25
50
75
100
125
150
175
200

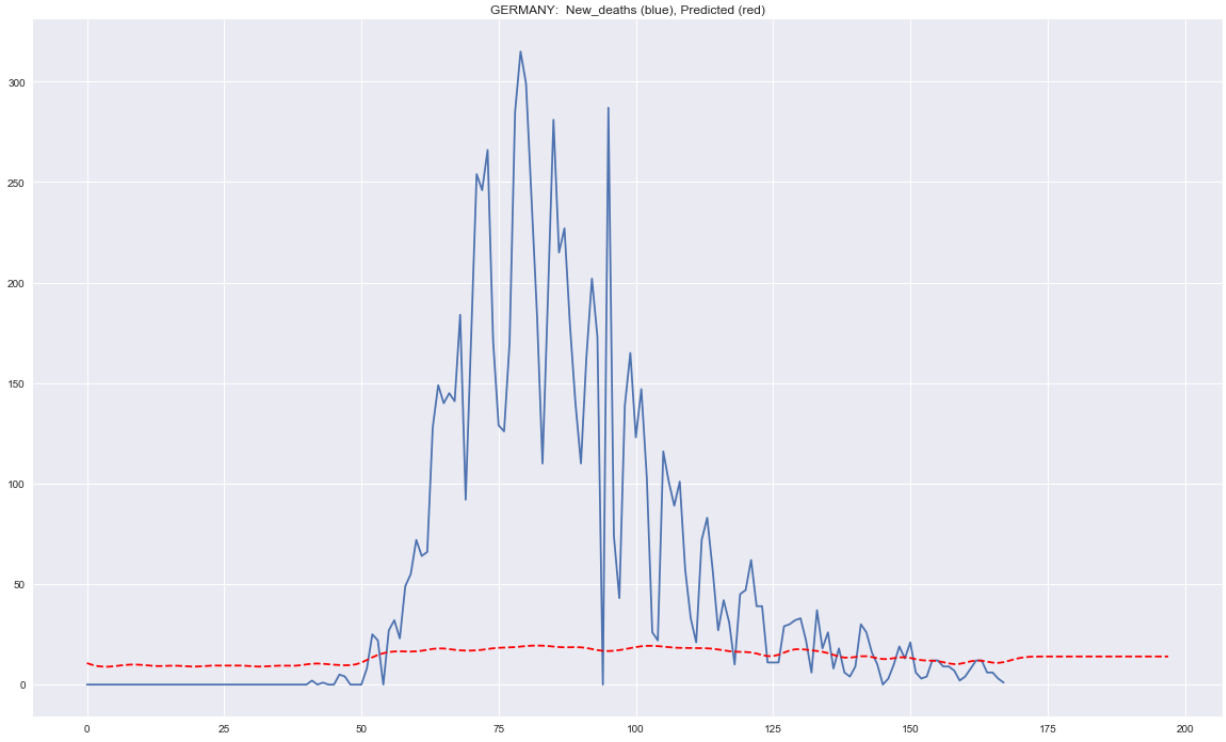

GERMANY: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
12000
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30

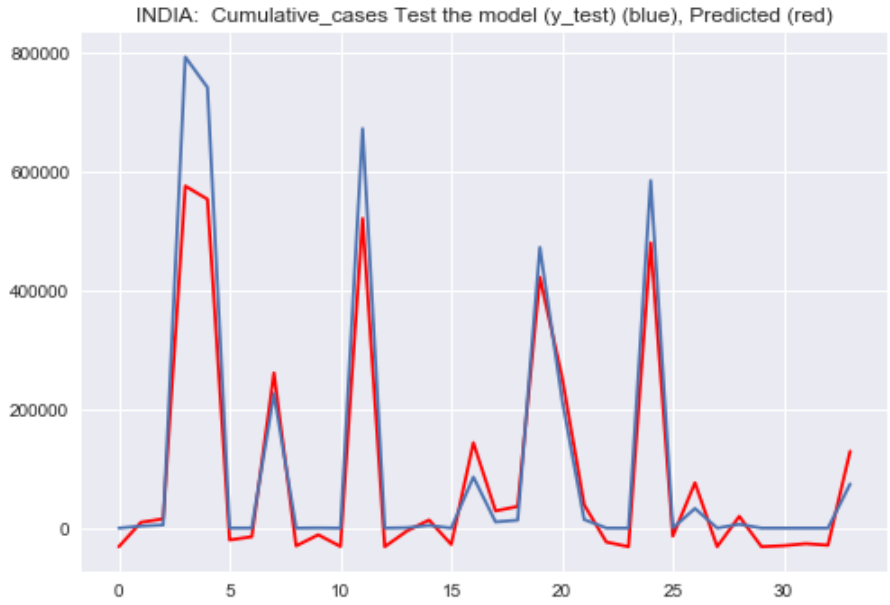

GERMANY: Cumulative_deaths (blue), Predicted (red)
20000
15000
10000
5000
0
0
25
50
75
100
125
150
175
200

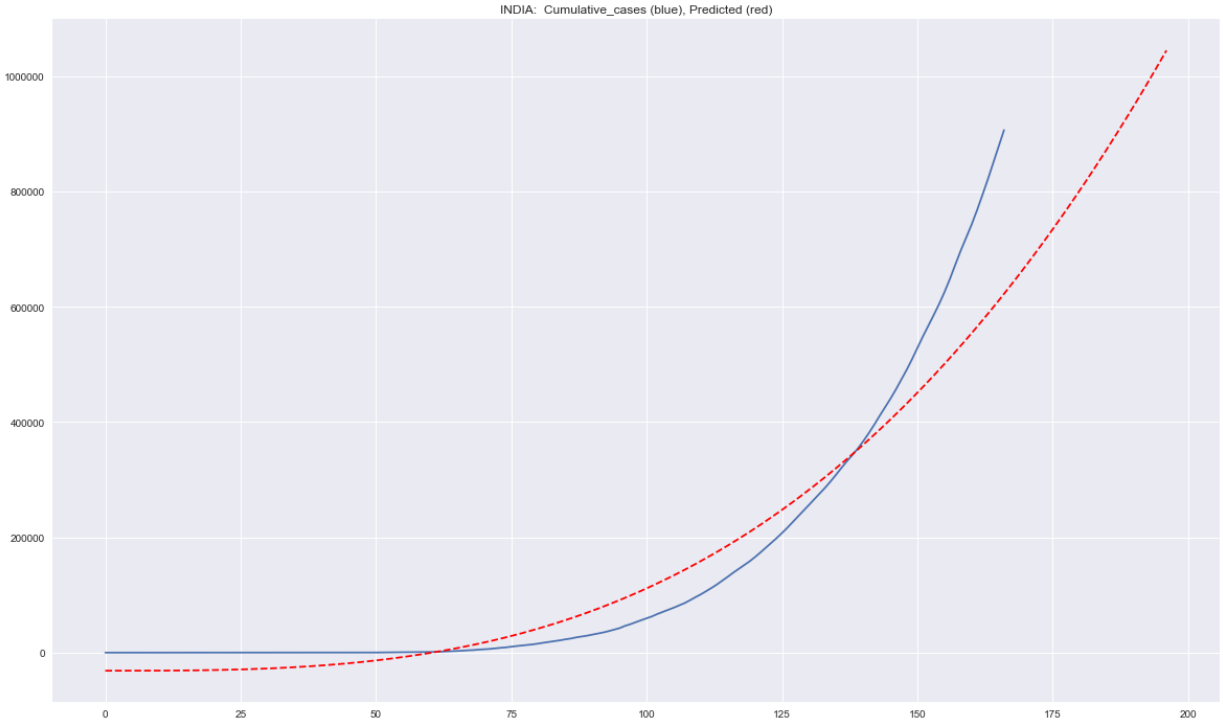

GERMANY: New_cases Test the model (y_test) (blue), Predicted (red)
6000
5000
4000
3000
2000
1000
0
0
5
10
15
20
25
30

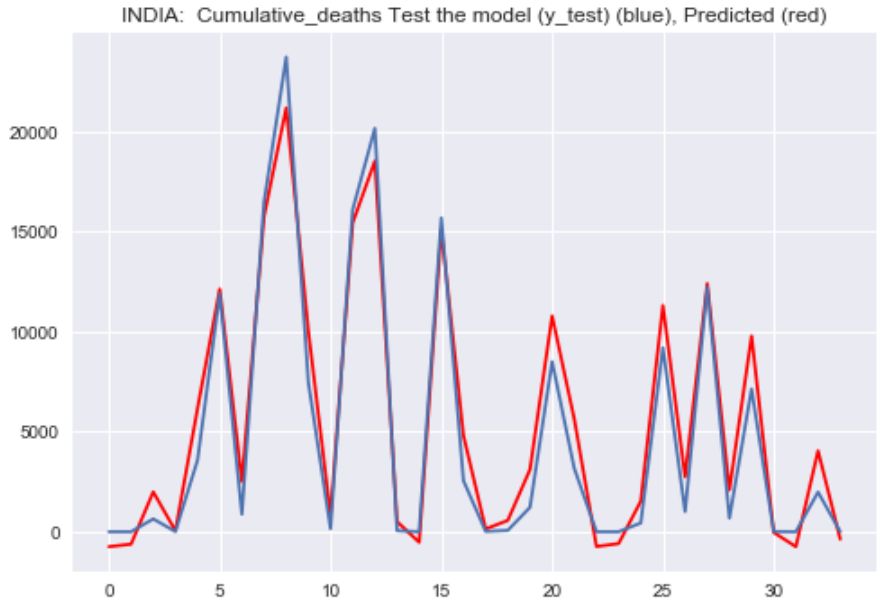

GERMANY: New_cases (blue), Predicted (red)
7000
6000
5000
4000
3000
2000
1000
0
0
25
50
75
100
125
150
175
200

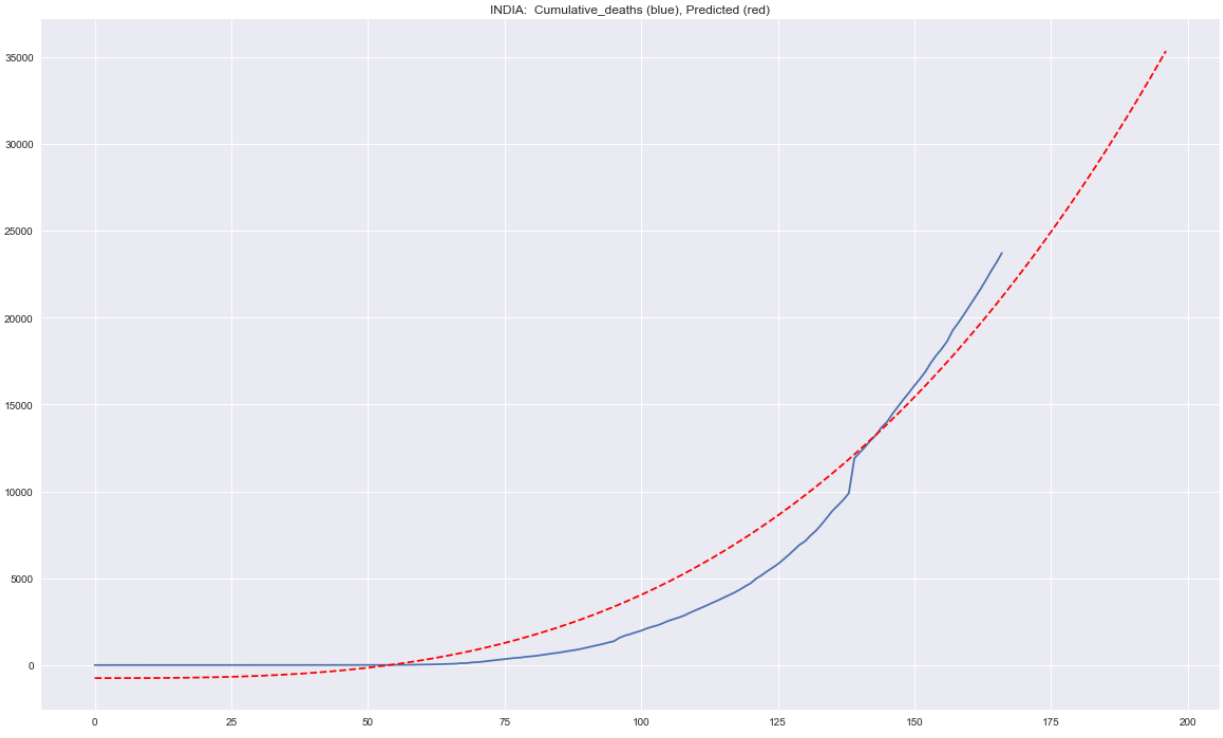

GERMANY: New_deaths Test the model (y_test) (blue), Predicted (red)
250
200
150
100
50
0
0
5
10
15
20
25
30

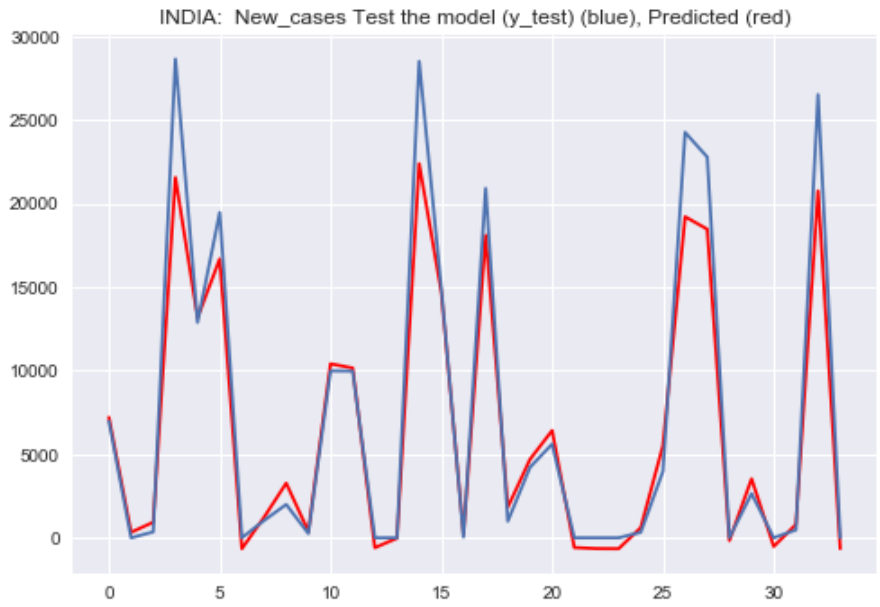

GERMANY: New_deaths (blue), Predicted (red)
300
250
200
150
100
50
0
0
25
50
75
100
125
150
175
200

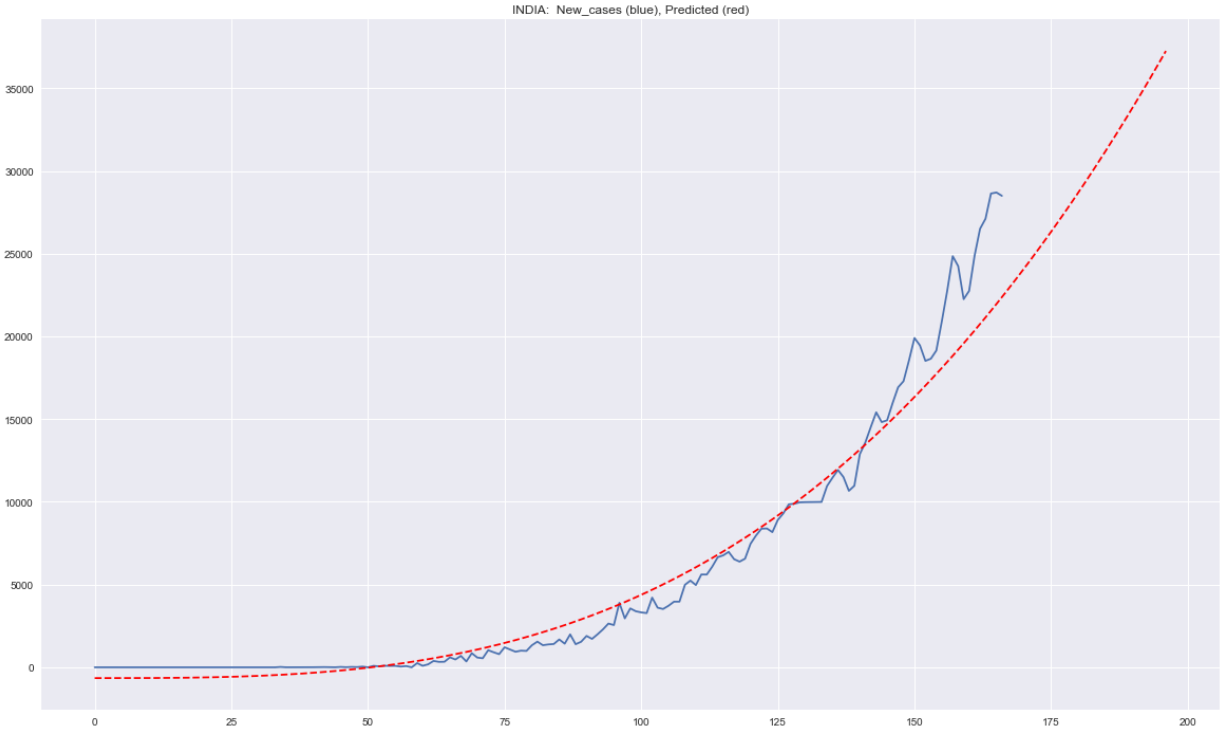

INDIA: Cumulative_cases Test the model (y_test) (blue), Predicted (red)
800000
600000
400000
200000
0
0
5
10
15
20
25
30

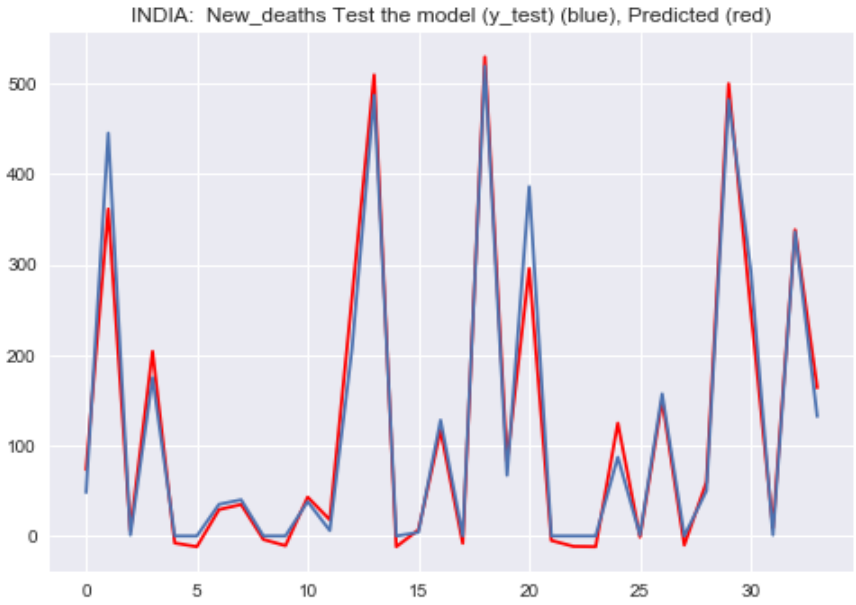

INDIA: Cumulative_cases (blue), Predicted (red)
1000000
800000
600000
400000
200000
0
0
25
50
75
100
125
150
175
200

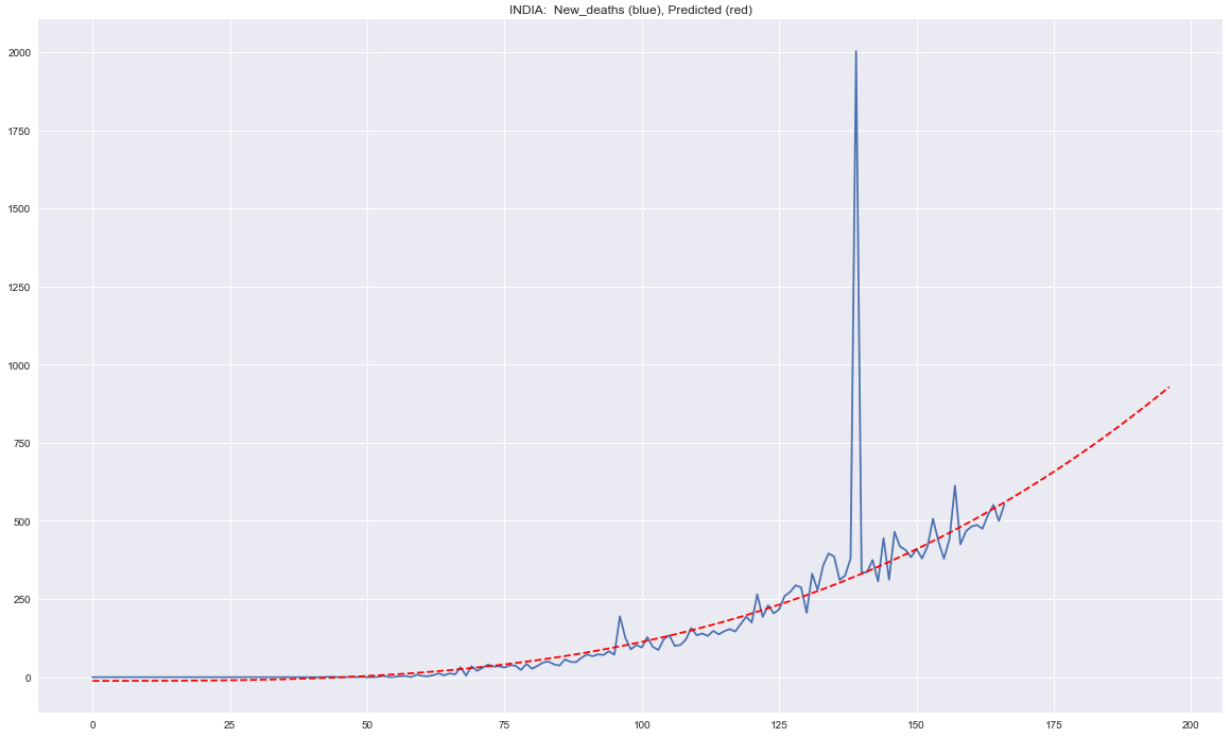

INDIA: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
20000
15000
10000
5000
0
0
5
10
15
20
25
30

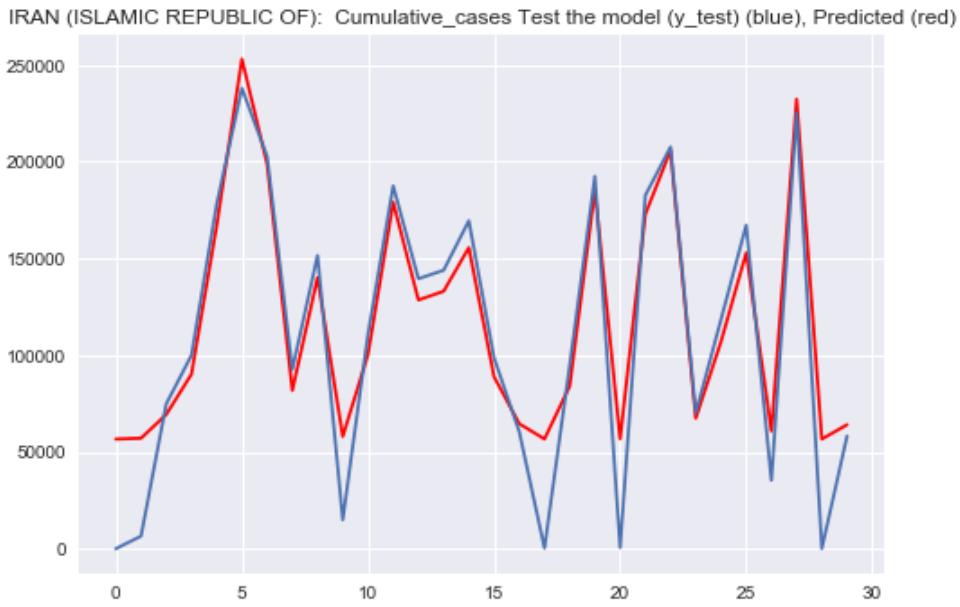

INDIA: Cumulative_deaths (blue), Predicted (red)
35000
30000
25000
20000
15000
10000
5000
0
0
25
50
75
100
125
150
175
200

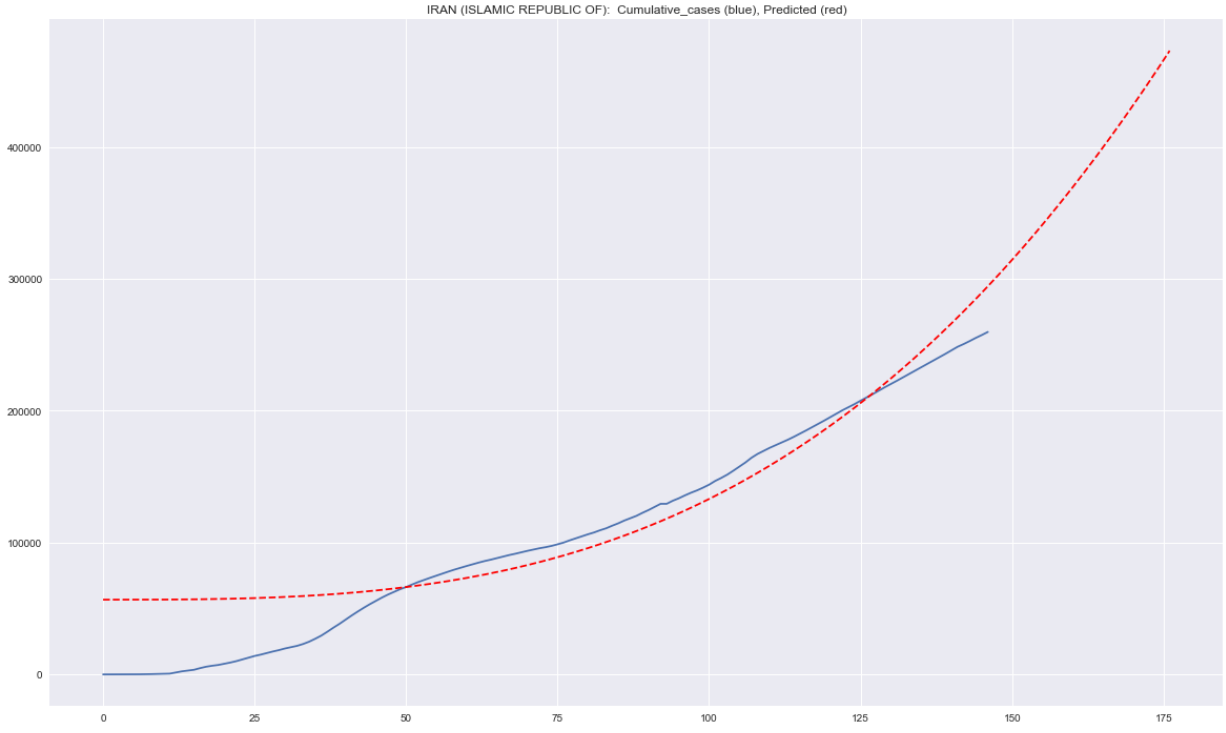

INDIA: New_cases Test the model (y_test) (blue), Predicted (red)
30000
25000
20000
15000
10000
5000
0
0
5
10
15
20
25
30

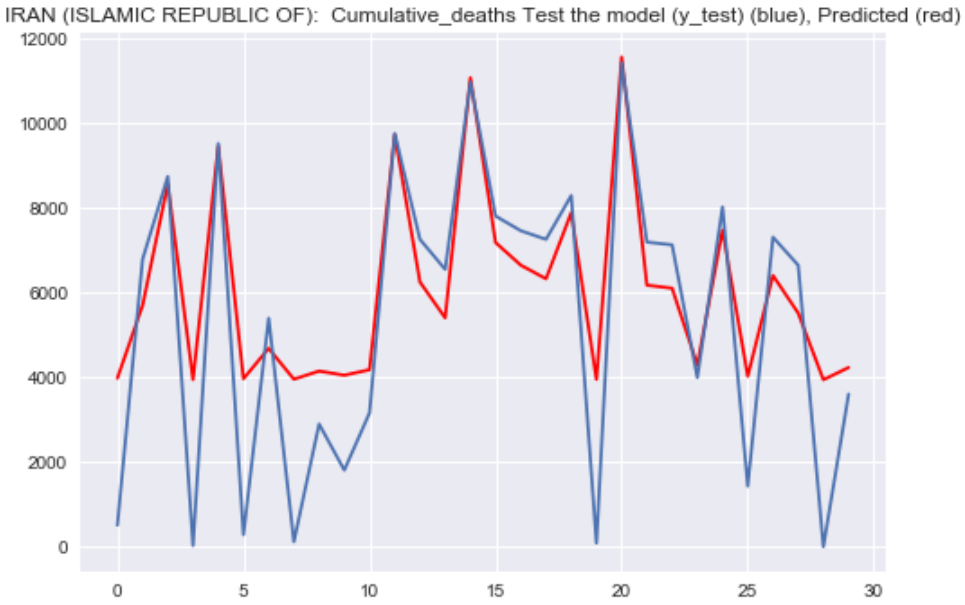

INDIA: New_cases (blue), Predicted (red)
35000
30000
25000
20000
15000
10000
5000
0
0
25
50
75
100
125
150
175
200

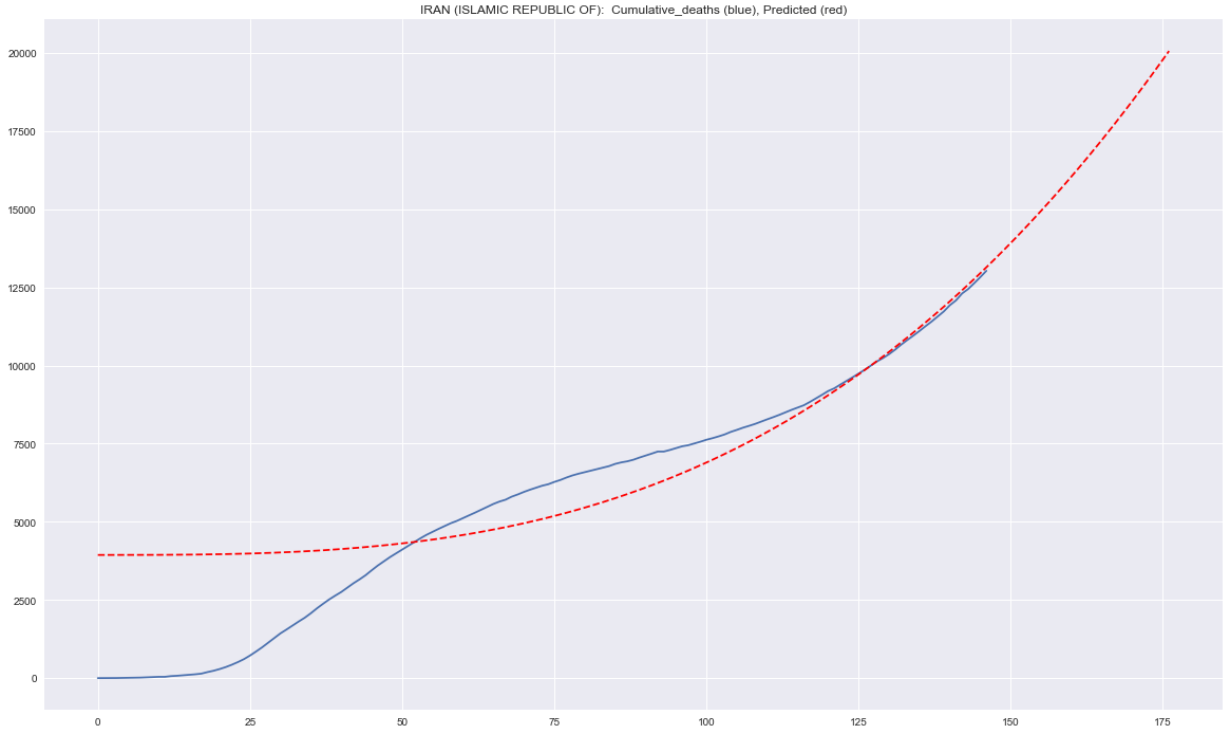

INDIA: New_deaths Test the model (y_test) (blue), Predicted (red)
500
400
300
200
100
0
0
5
10
15
20
25
30

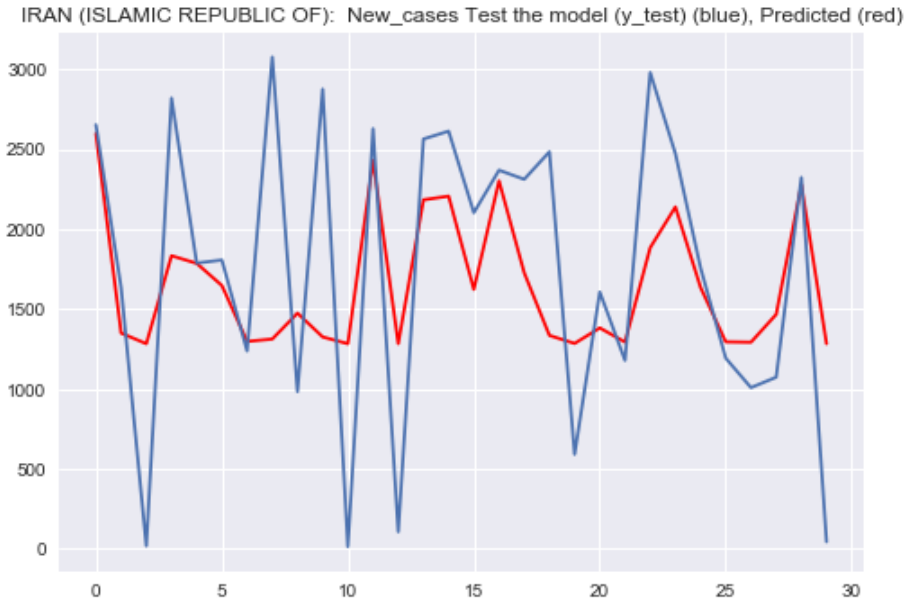

INDIA: New_deaths (blue), Predicted (red)
2000
1750
1500
1250
1000
750
500
250
0
0
25
50
75
100
125
150
175
200


IRAN (ISLAMIC REPUBLIC OF): Cumulative_cases Test the model (y_test) (blue), Predicted (red)
250000
200000
150000
100000
50000
0
0
5
10
15
20
25
30

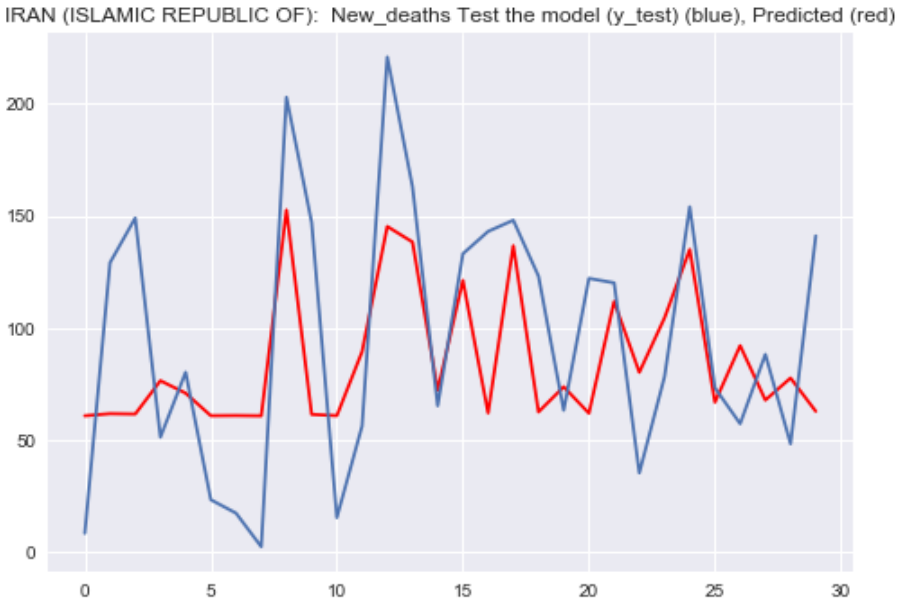

IRAN (ISLAMIC REPUBLIC OF): Cumulative_cases (blue), Predicted (red)
400000
300000
200000
100000
0
0
25
50
75
100
125
150
175


IRAN (ISLAMIC REPUBLIC OF): Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
12000
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30

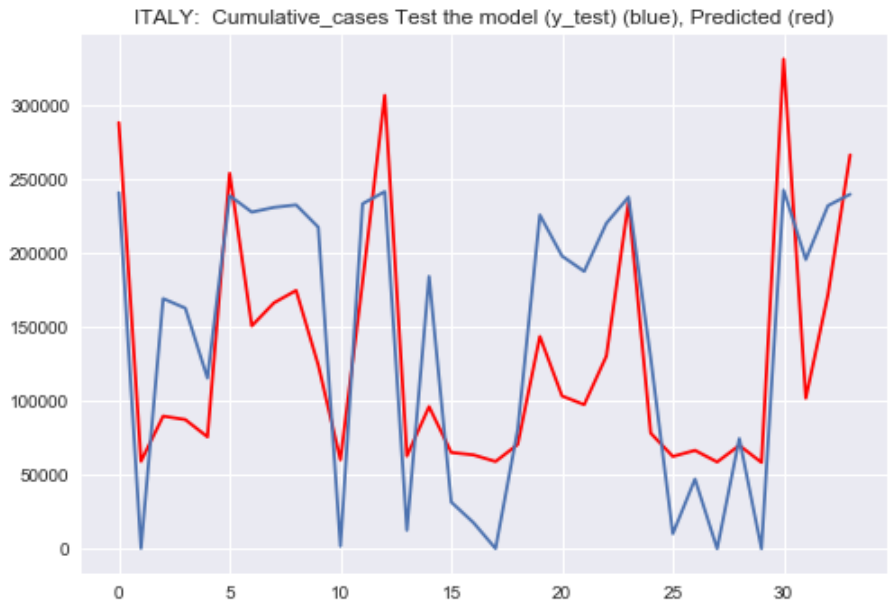

IRAN (ISLAMIC REPUBLIC OF): Cumulative_deaths (blue), Predicted (red)
20000
17500
15000
12500
10000
7500
5000
2500
0
0
25
50
75
100
125
150
175

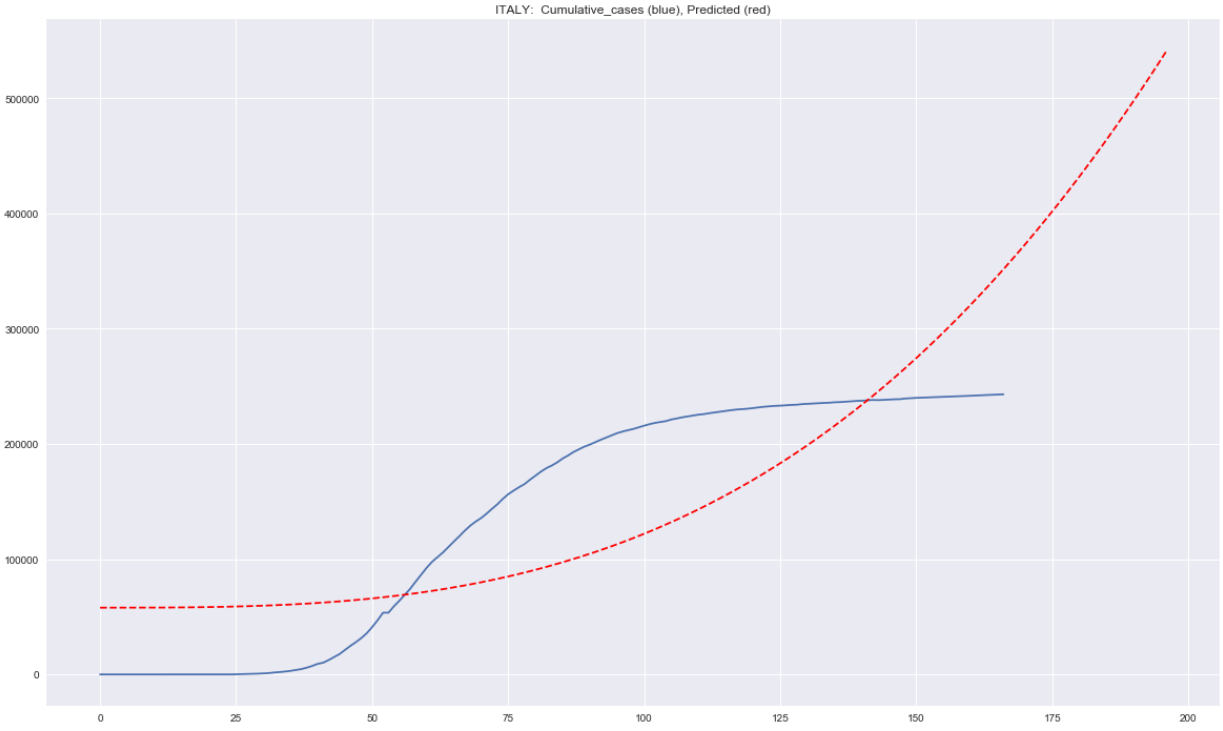

IRAN (ISLAMIC REPUBLIC OF): New_cases Test the model (y_test) (blue), Predicted (red)
3000
2500
2000
1500
1000
500
0
0
5
10
15
20
25
30

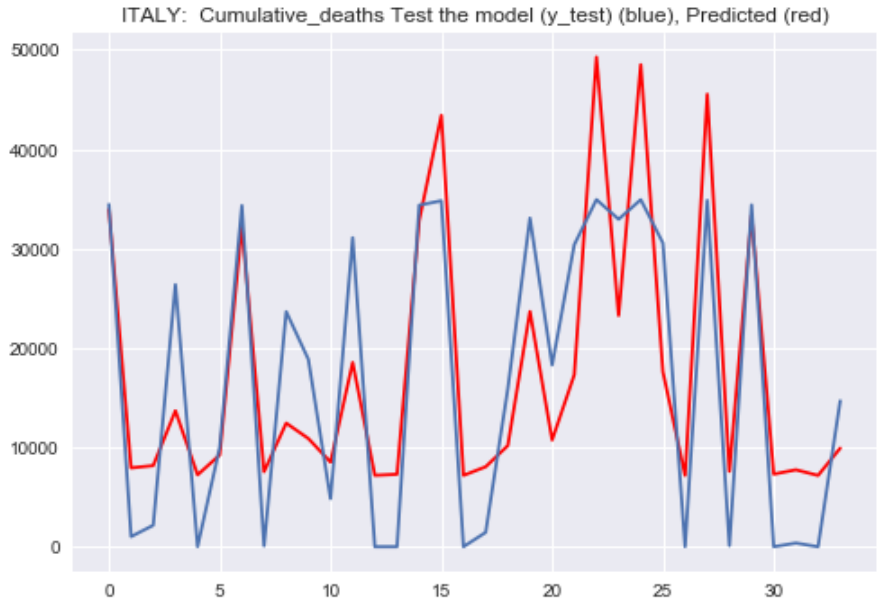

IRAN (ISLAMIC REPUBLIC OF): New_cases (blue), Predicted (red)
4000
3000
2000
1000
0
0
25
50
75
100
125
150
175

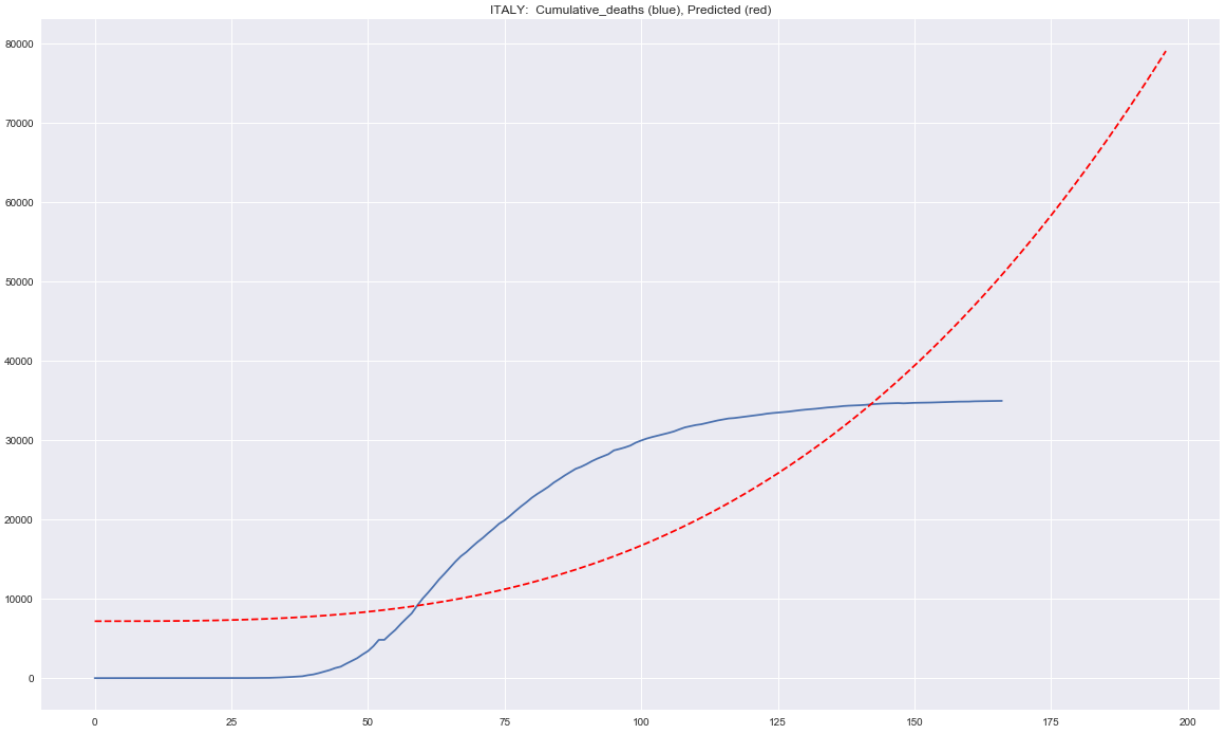

IRAN (ISLAMIC REPUBLIC OF): New_deaths Test the model (y_test) (blue), Predicted (red)
200
150
100
50
0
0
5
10
15
20
25
30

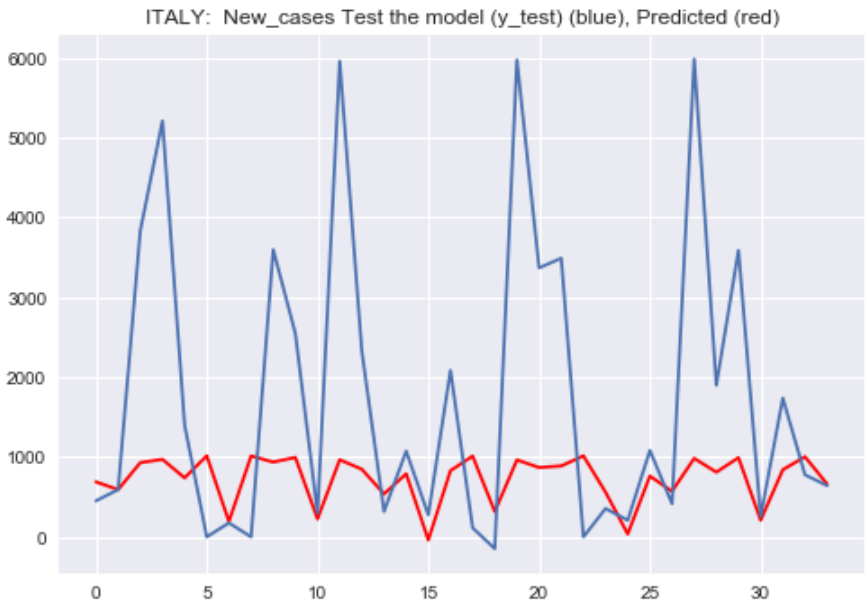

IRAN (ISLAMIC REPUBLIC OF): New_deaths (blue), Predicted (red)
200
150
100
50
0
0
25
50
75
100
125
150
175

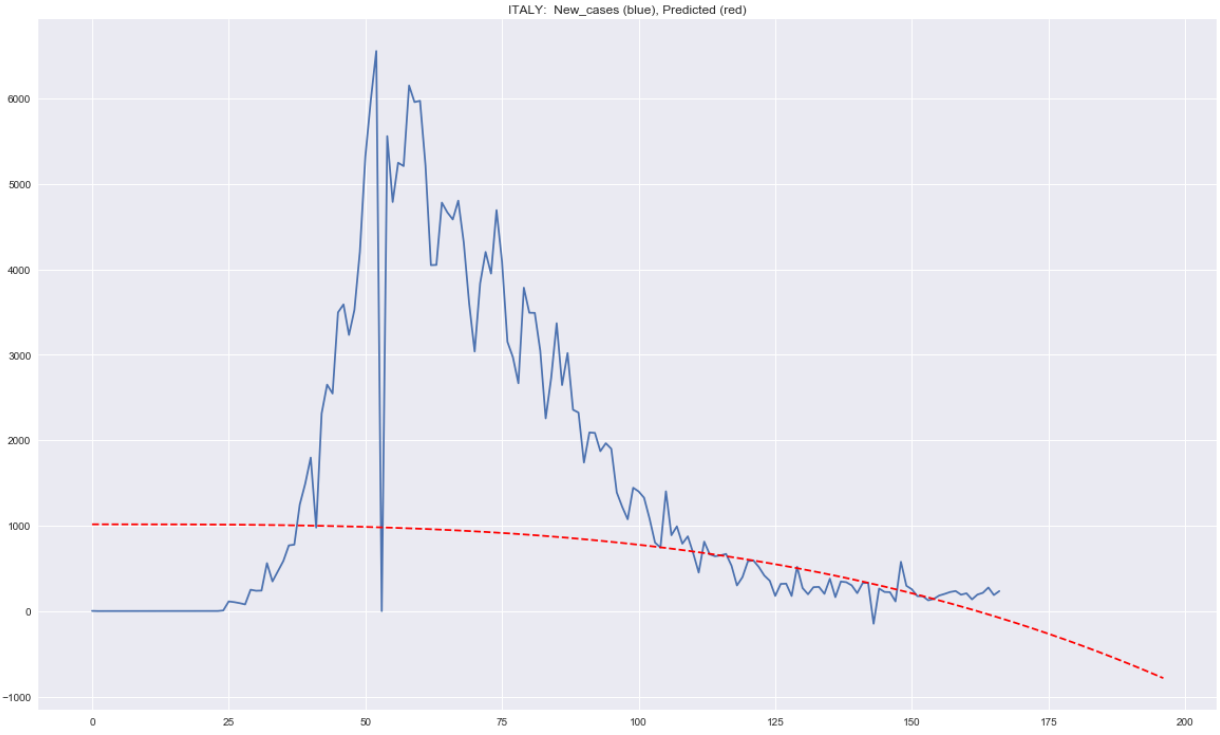

ITALY: Cumulative_cases Test the model (y_test) (blue), Predicted (red)
300000
250000
200000
150000
100000
50000
0
0
5
10
15
20
25
30

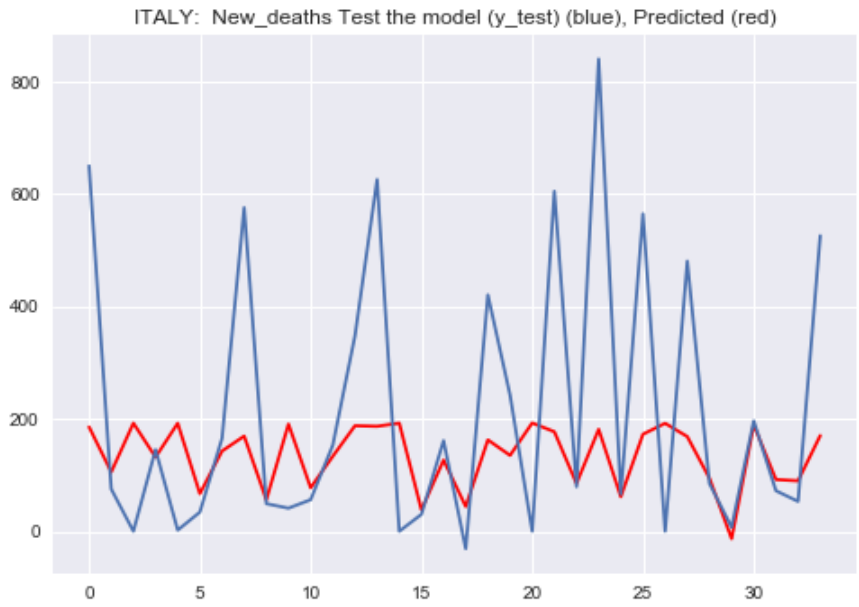

ITALY: Cumulative_cases (blue), Predicted (red)
500000
400000
300000
200000
100000
0
0
25
50
75
100
125
150
175
200

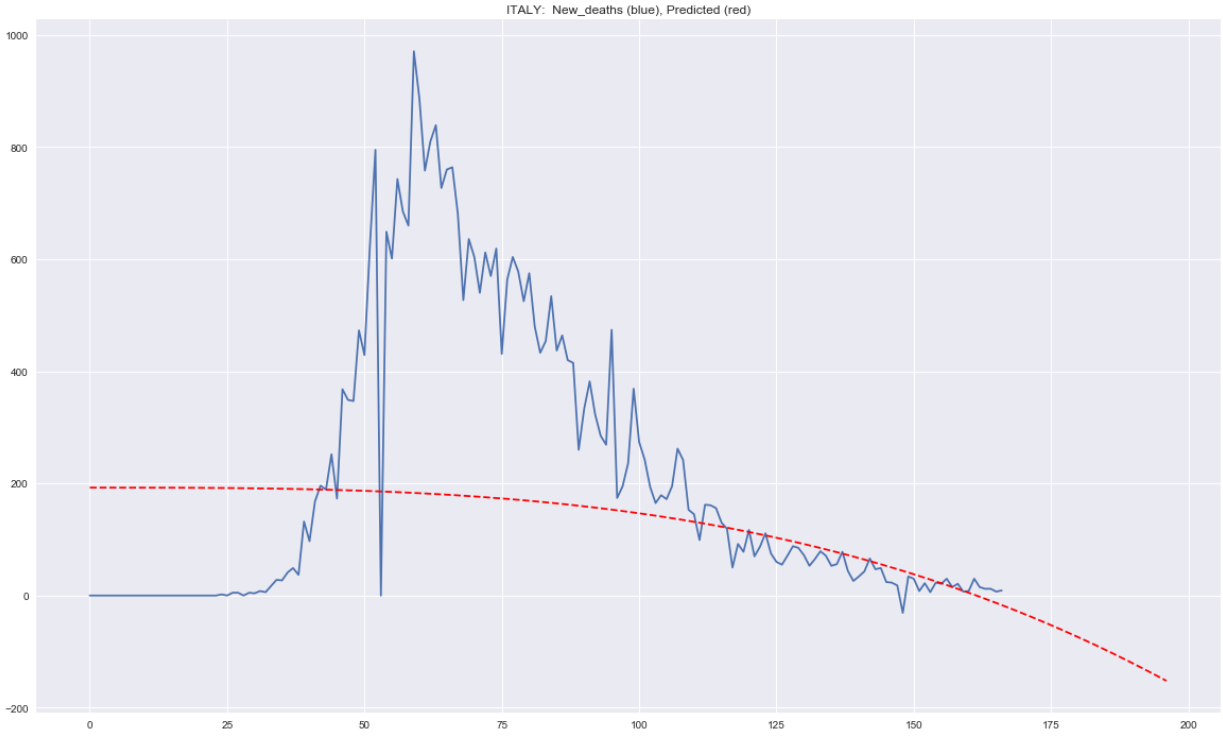

ITALY: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
50000
40000
30000
20000
10000
0
0
5
10
15
20
25
30

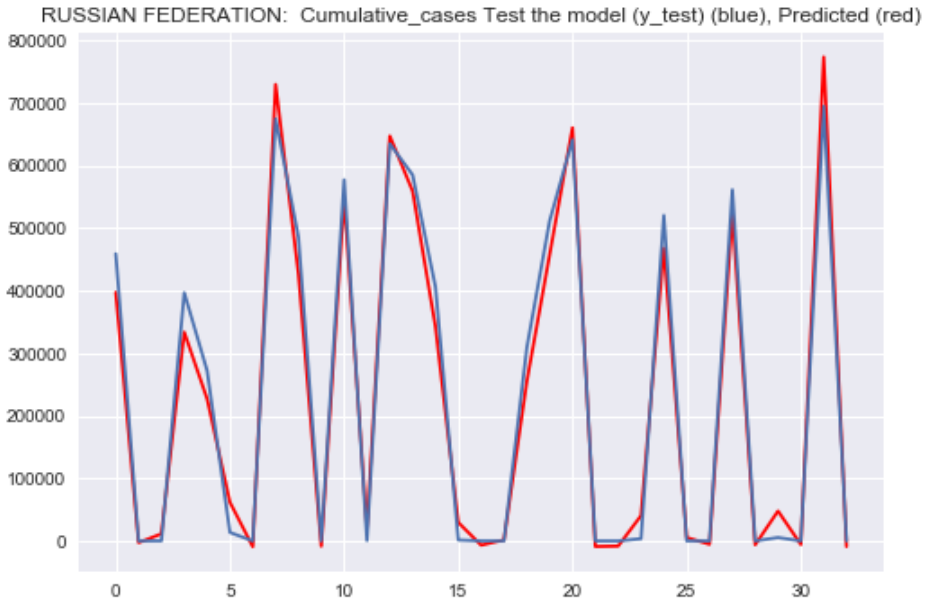

ITALY: Cumulative_deaths (blue), Predicted (red)
80000
70000
60000
50000
40000
30000
20000
10000
0
0
25
50
75
100
125
150
175
200

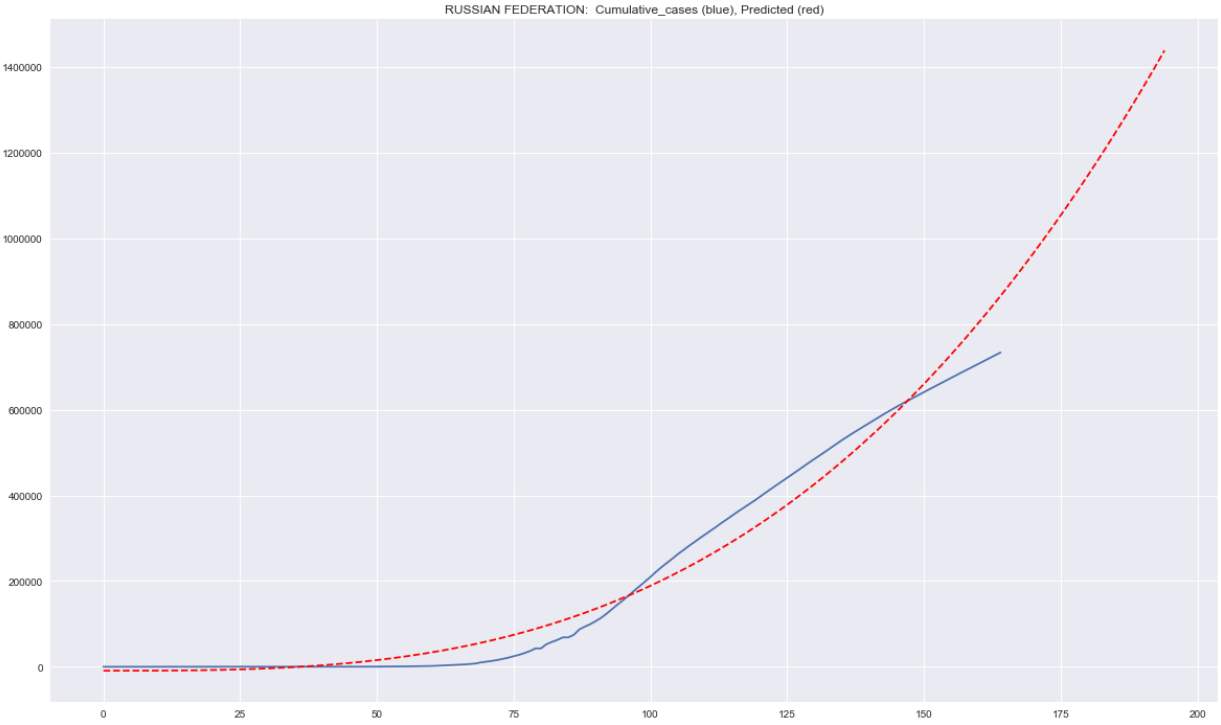

ITALY: New_cases Test the model (y_test) (blue), Predicted (red)
6000
5000
4000
3000
2000
1000
0
0
5
10
15
20
25
30

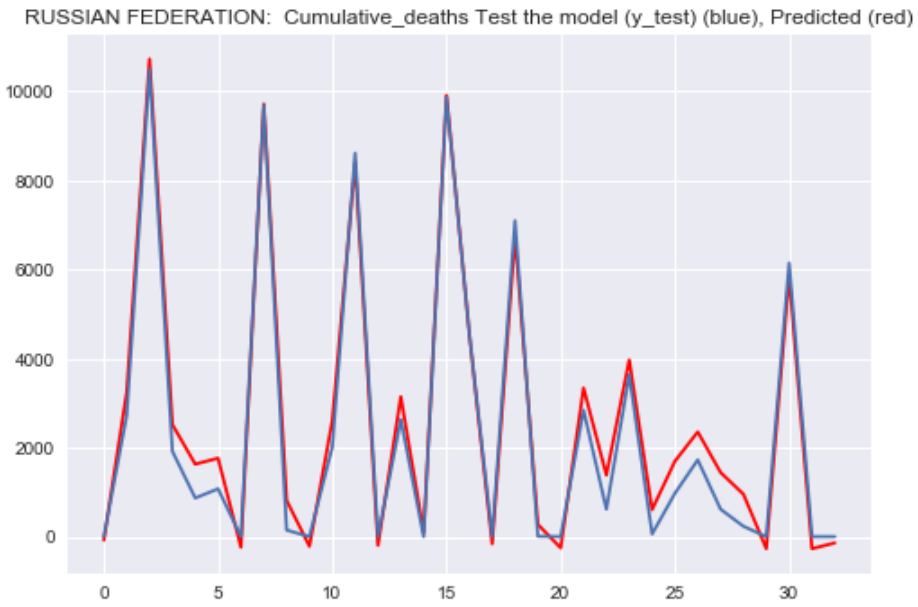

ITALY: New_cases (blue), Predicted (red)
6000
5000
4000
3000
2000
1000
0
−1000
0
25
50
75
100
125
150
175
200

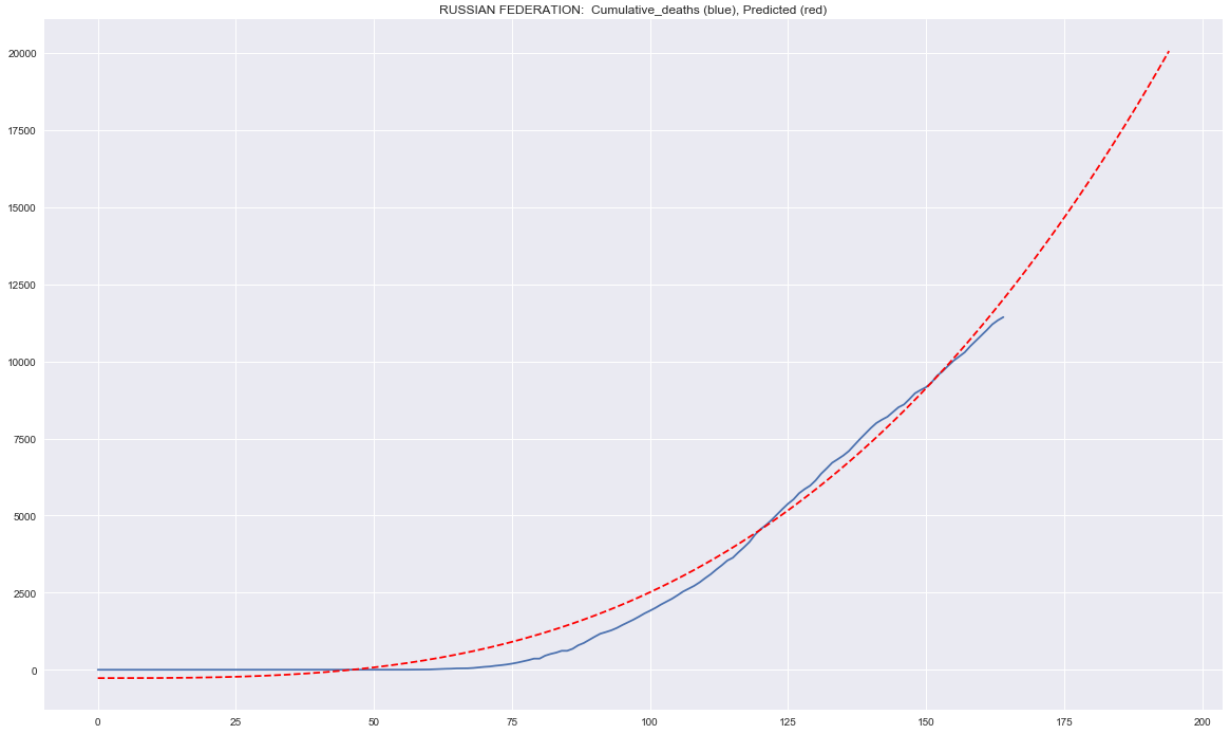

ITALY: New_deaths Test the model (y_test) (blue), Predicted (red)
800
600
400
200
0
0
5
10
15
20
25
30

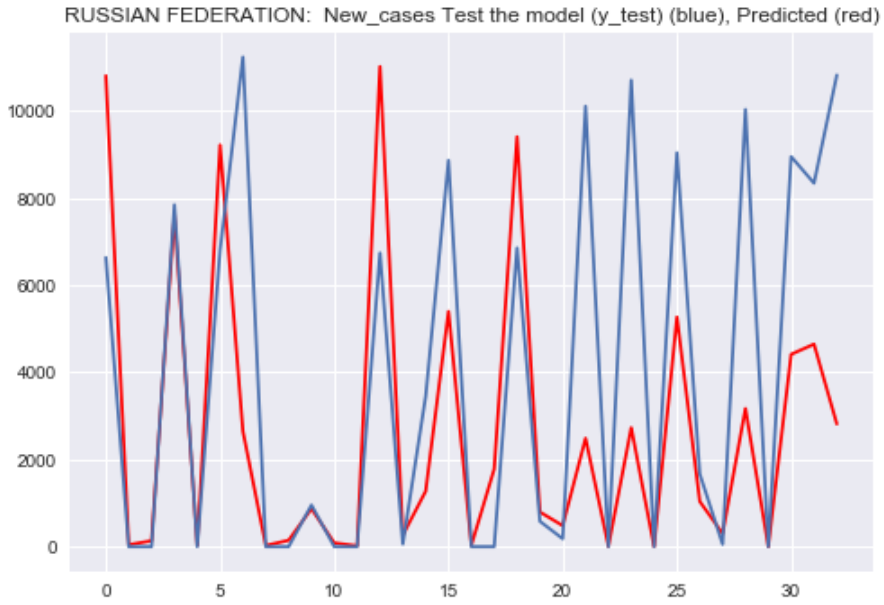

ITALY: New_deaths (blue), Predicted (red)
1000
800
600
400
200
0
-200
0
25
50
75
100
125
150
175
200

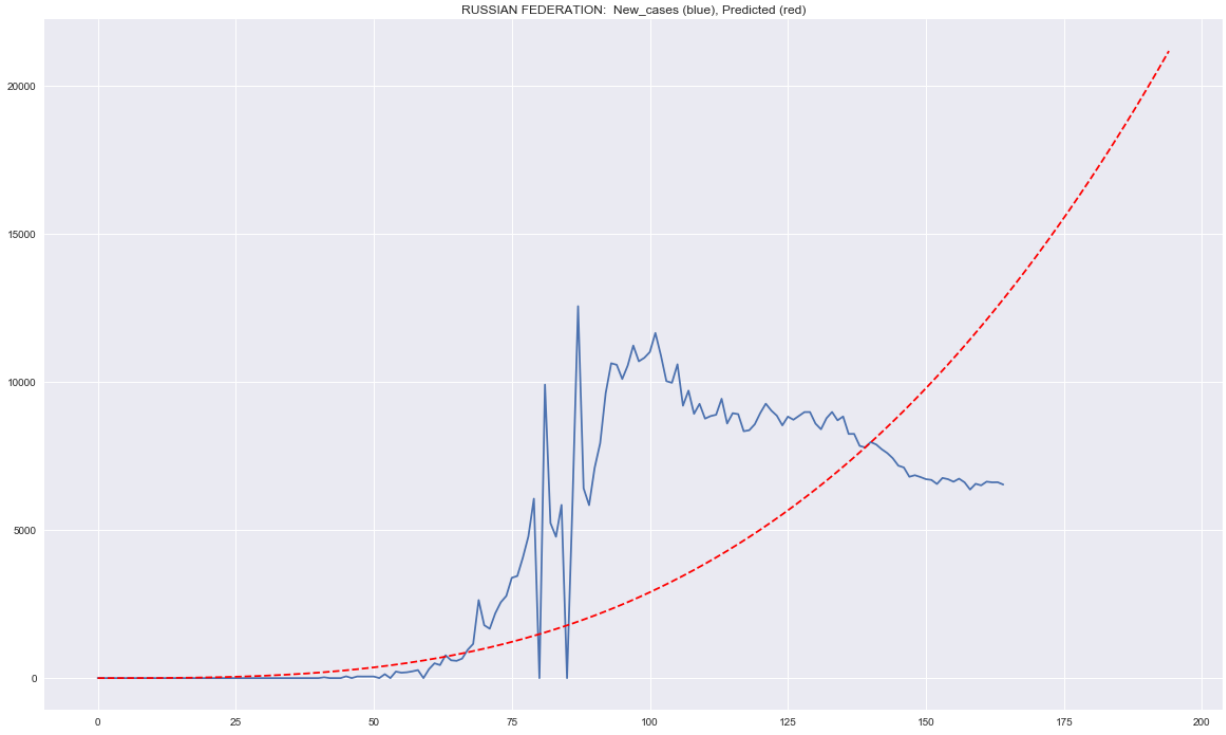

RUSSIAN FEDERATION: Cumulative_cases Test the model (y_test) (blue), Predicted (red)
800000
700000
600000
500000
400000
300000
200000
100000
0
0
5
10
15
20
25
30

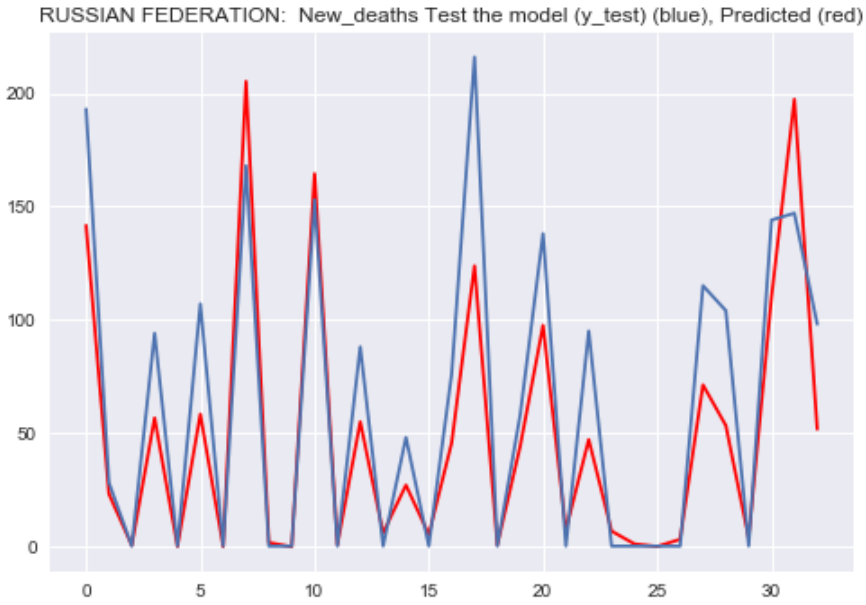

RUSSIAN FEDERATION: Cumulative_cases (blue), Predicted (red)
1400000
1200000
1000000
800000
600000
400000
200000
0
0
25
50
75
100
125
150
175
200

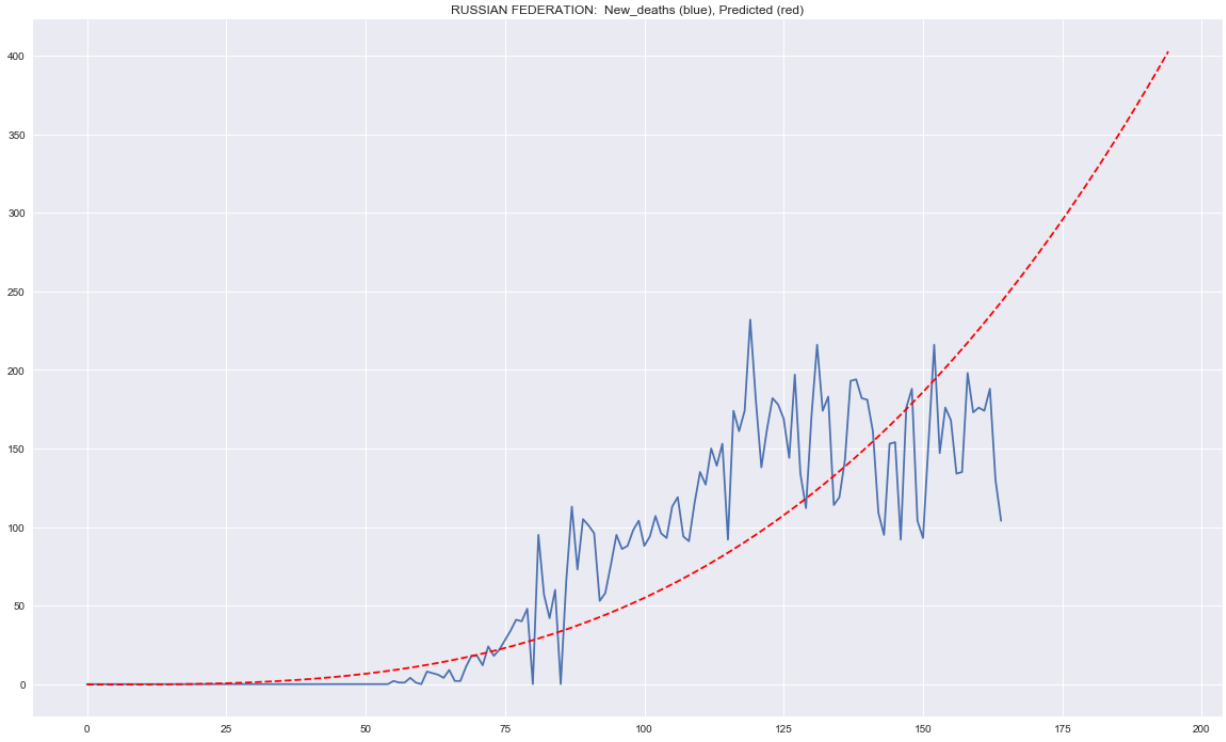

RUSSIAN FEDERATION: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30

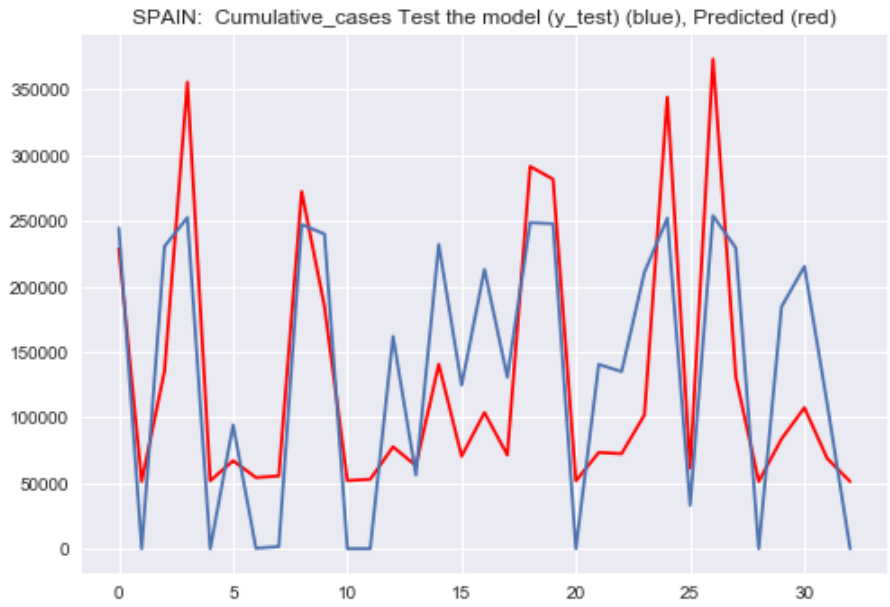

RUSSIAN FEDERATION: Cumulative_deaths (blue), Predicted (red)
20000
17500
15000
12500
10000
7500
5000
2500
0
0
25
50
75
100
125
150
175
200

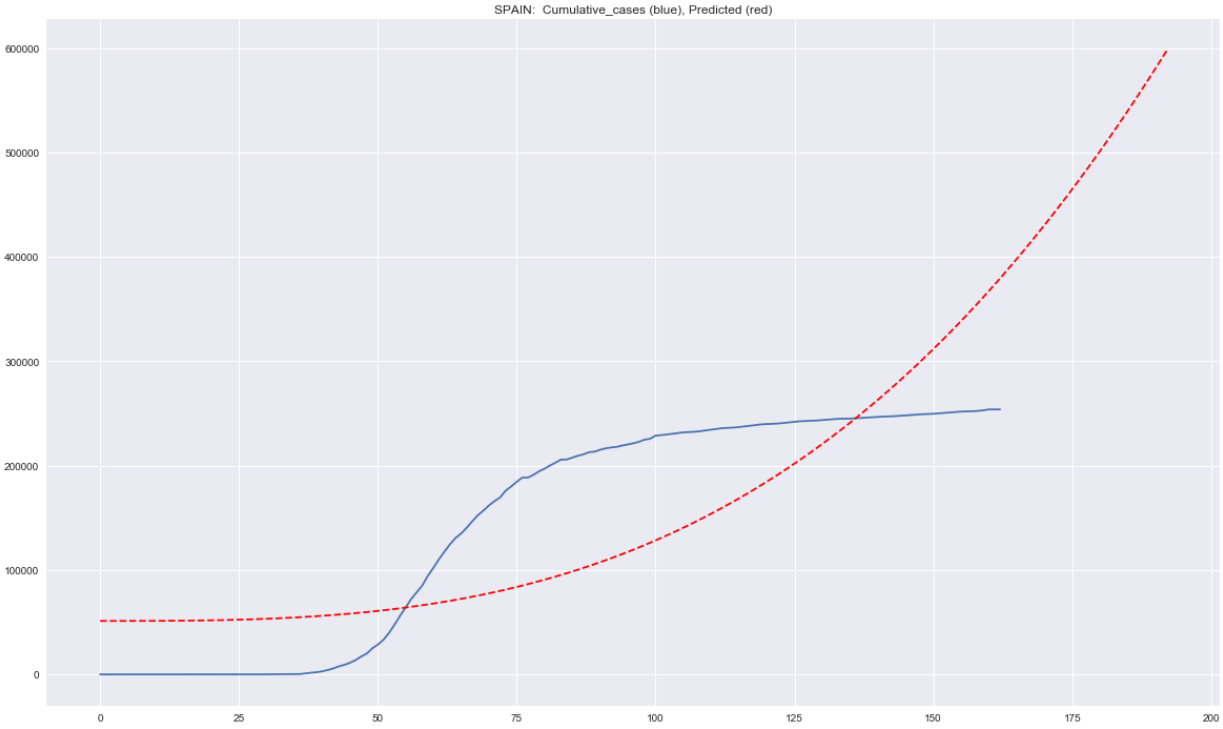

RUSSIAN FEDERATION: New_cases Test the model (y_test) (blue), Predicted (red)
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30

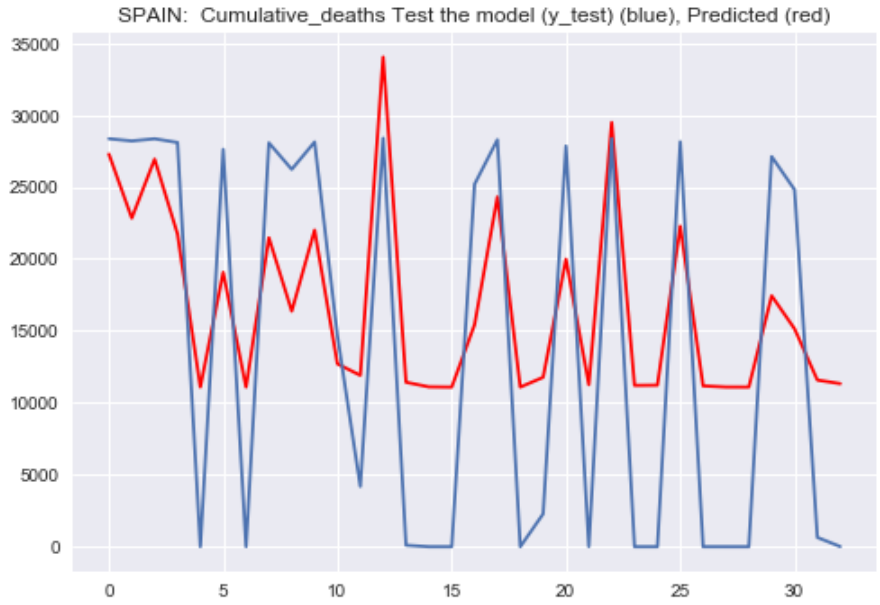

RUSSIAN FEDERATION: New_cases (blue), Predicted (red)
20000
15000
10000
5000
0
0
25
50
75
100
125
150
175
200

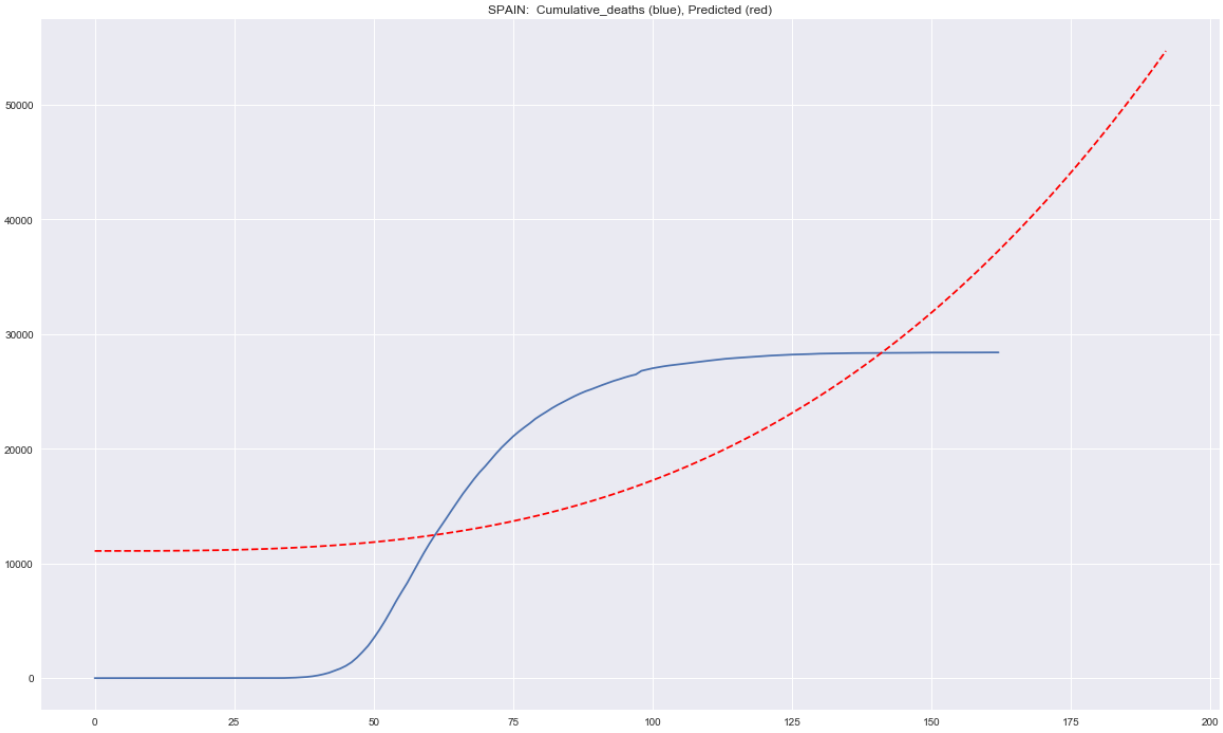

RUSSIAN FEDERATION: New_deaths Test the model (y_test) (blue), Predicted (red)
200
150
100
50
0
0
5
10
15
20
25
30

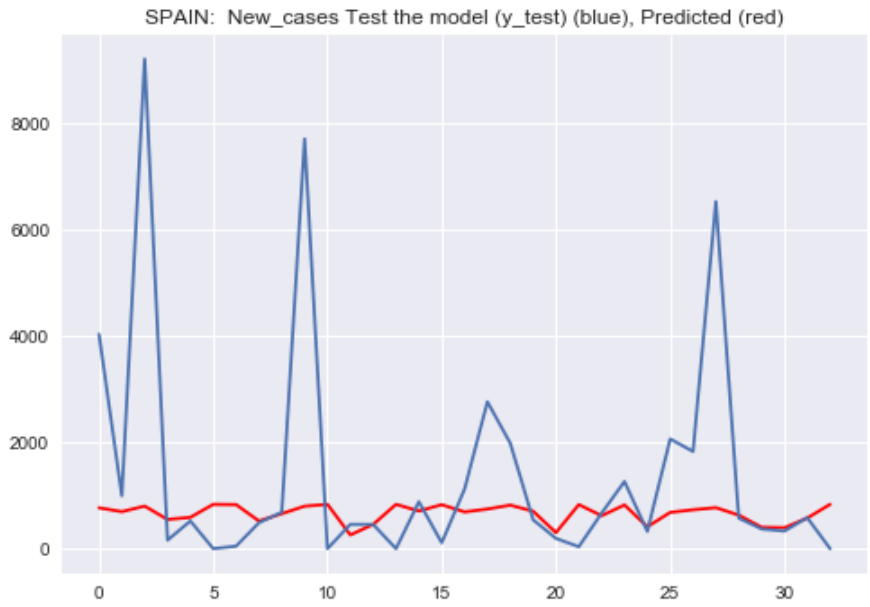

RUSSIAN FEDERATION: New_deaths (blue), Predicted (red)
400
350
300
250
200
150
100
50
0
0
25
50
75
100
125
150
175
200

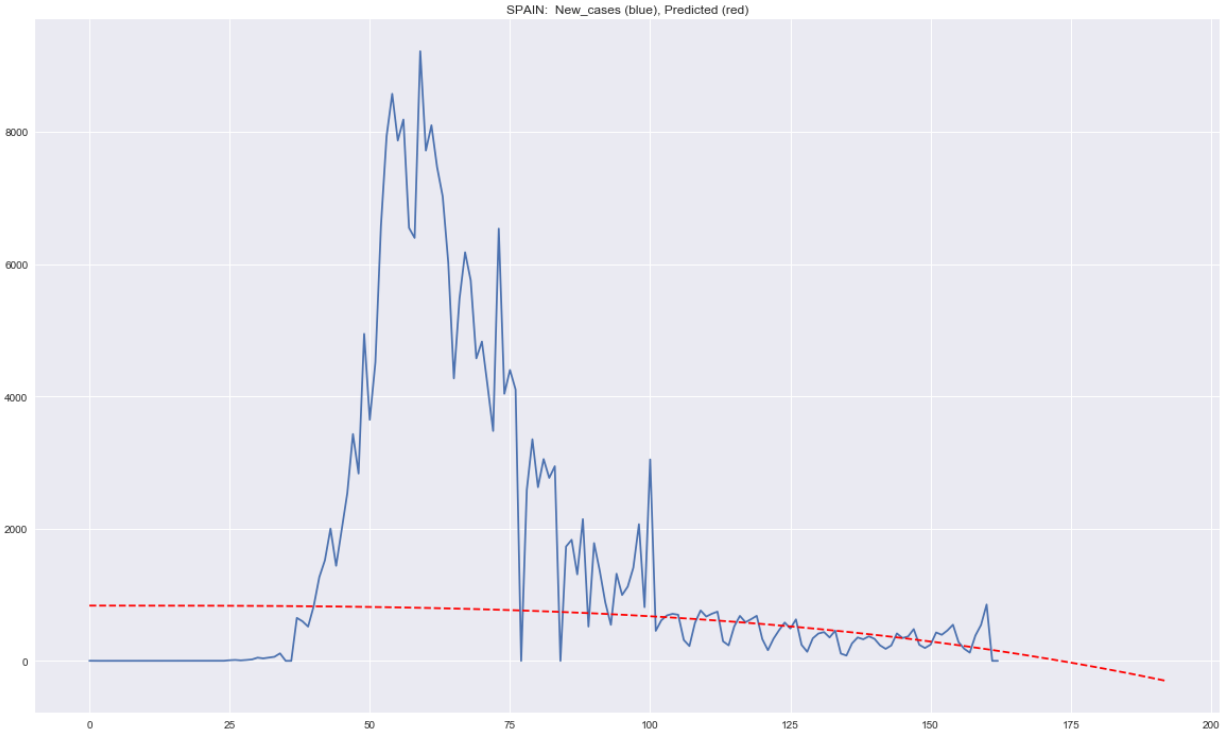

SPAIN: Cumulative_cases Test the model (y_test) (blue), Predicted (red)
350000
300000
250000
200000
150000
100000
50000
0
0
5
10
15
20
25
30

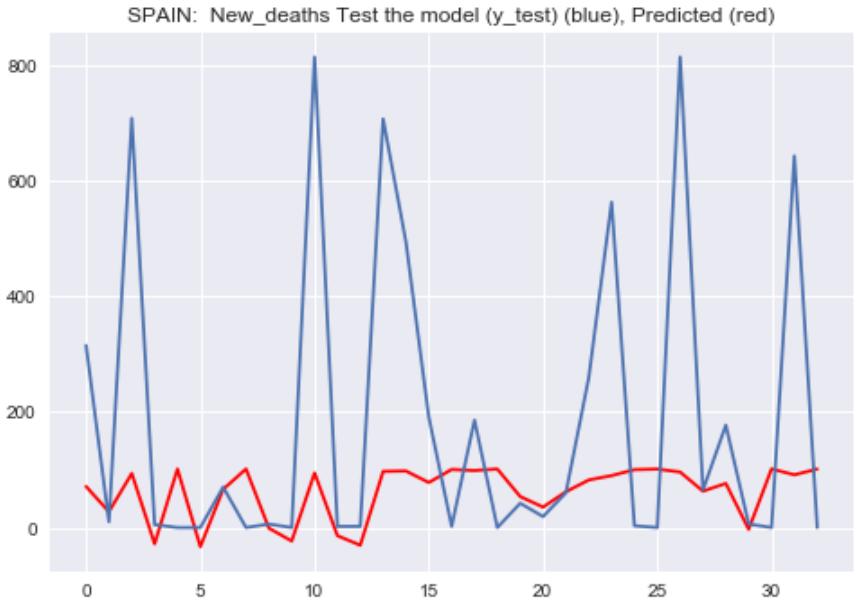

SPAIN: Cumulative_cases (blue), Predicted (red)
600000
500000
400000
300000
200000
100000
0
0
25
50
75
100
125
150
175
200

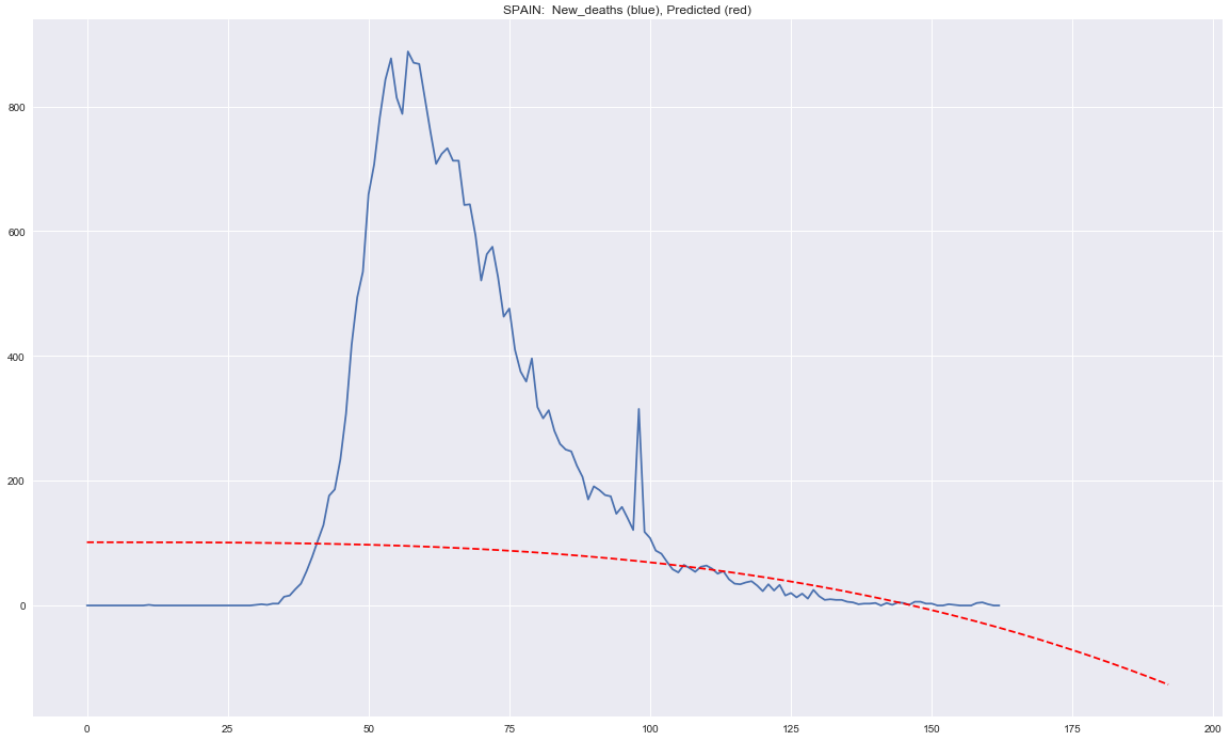

SPAIN: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
35000
30000
25000
20000
15000
10000
5000
0
0
5
10
15
20
25
30

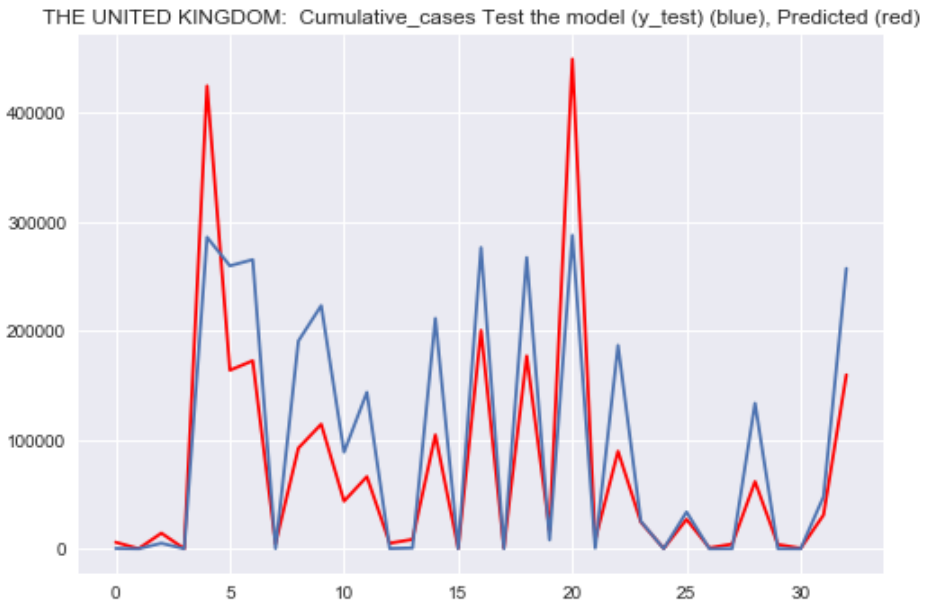

SPAIN: Cumulative_deaths (blue), Predicted (red)
50000
40000
30000
20000
10000
0
0
25
50
75
100
125
150
175
200

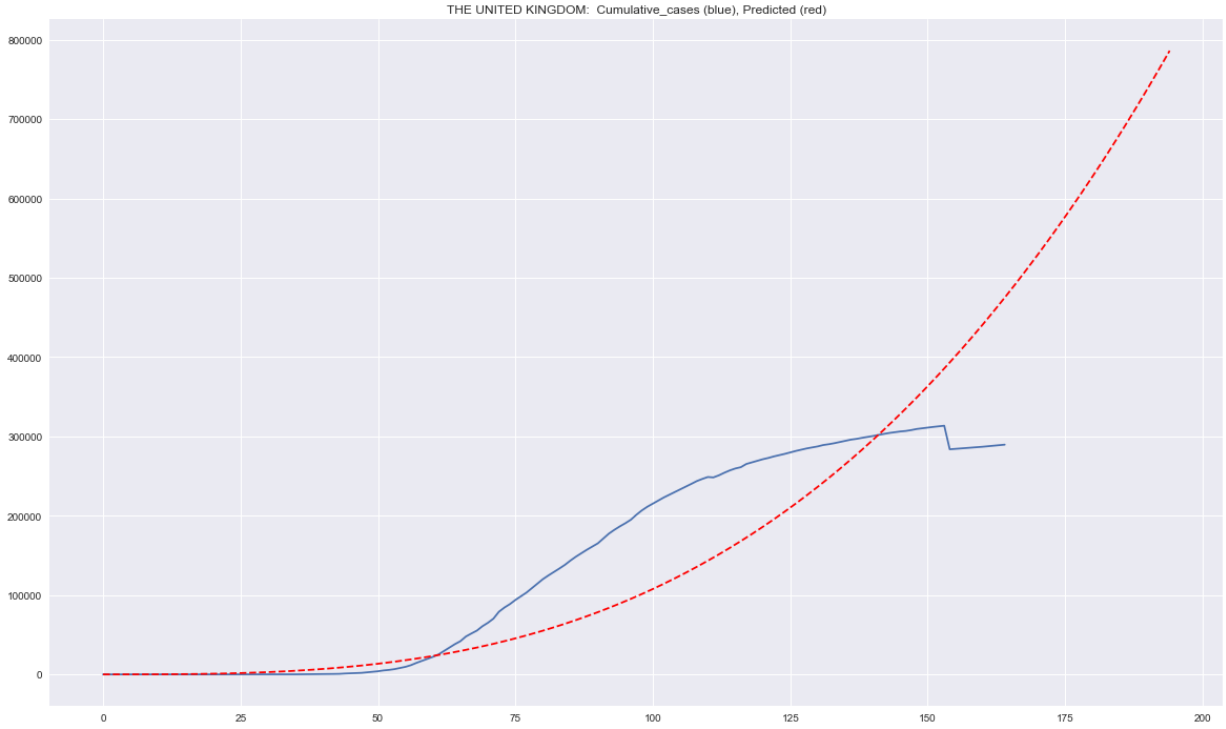

SPAIN: New_cases Test the model (y_test) (blue), Predicted (red)
8000
6000
4000
2000
0
0
5
10
15
20
25
30

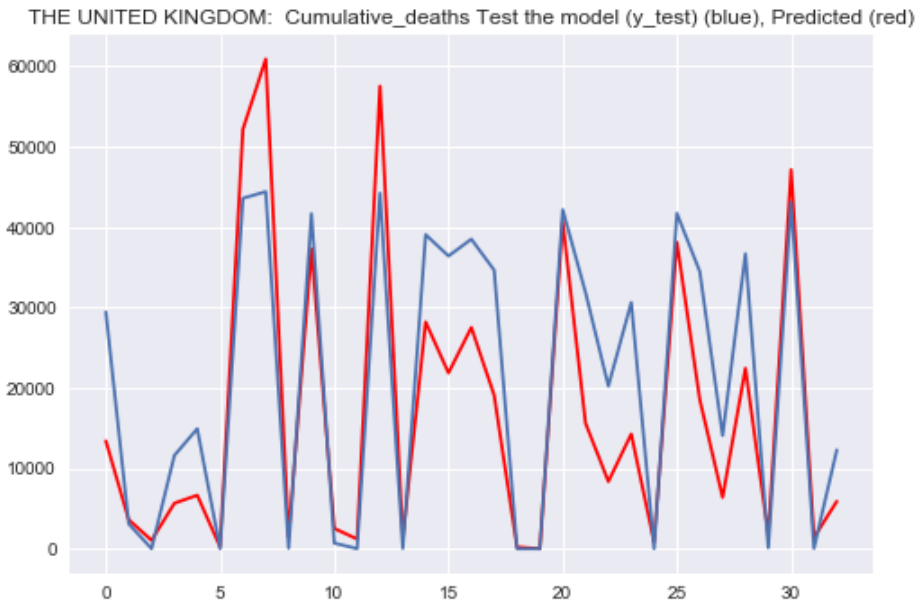

SPAIN: New_cases (blue), Predicted (red)
8000
6000
4000
2000
0
0
25
50
75
100
125
150
175
200

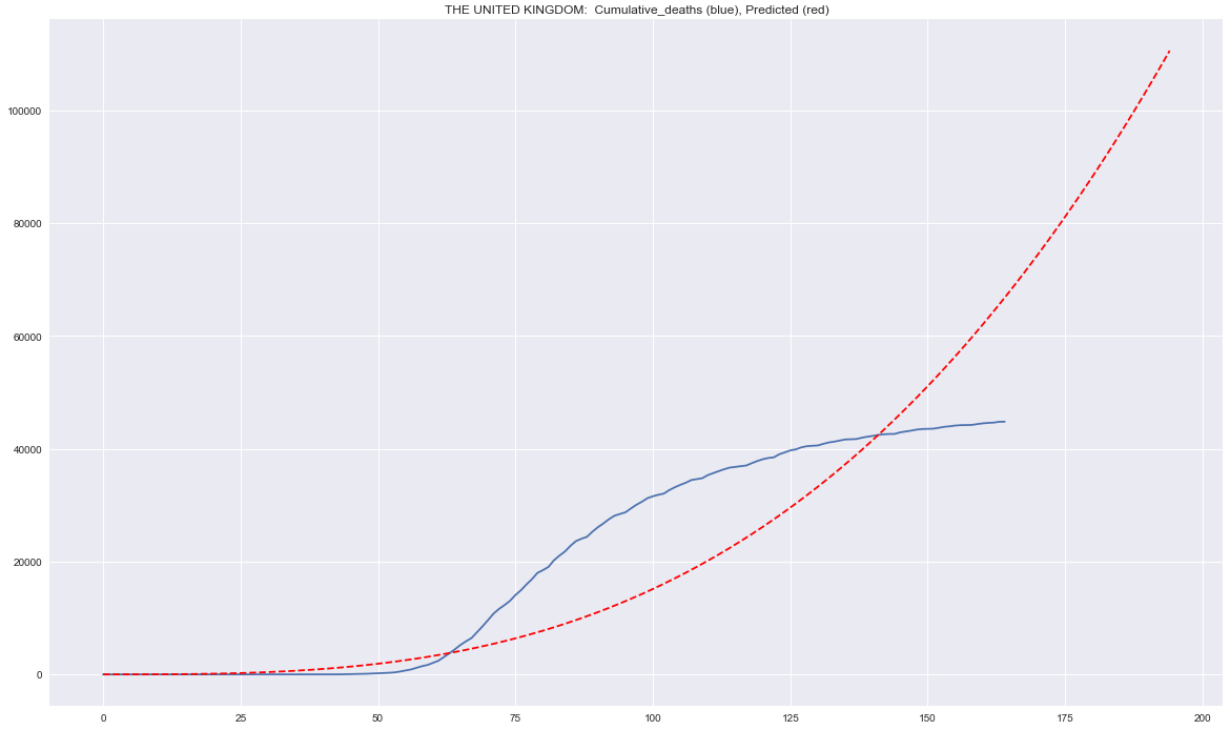

SPAIN: New_deaths Test the model (y_test) (blue), Predicted (red)
800
600
400
200
0
0
5
10
15
20
25
30

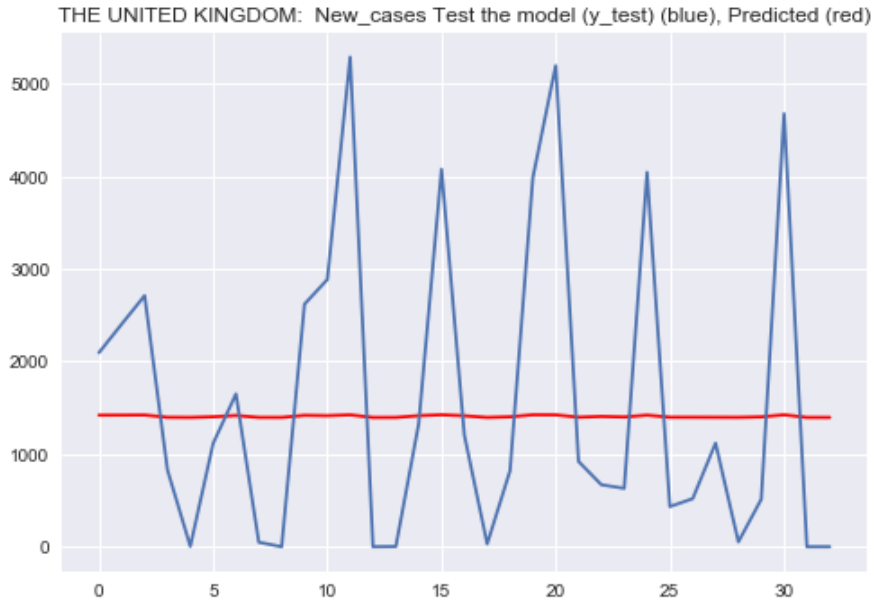

SPAIN: New_deaths (blue), Predicted (red)
800
600
400
200
0
0
25
50
75
100
125
150
175
200

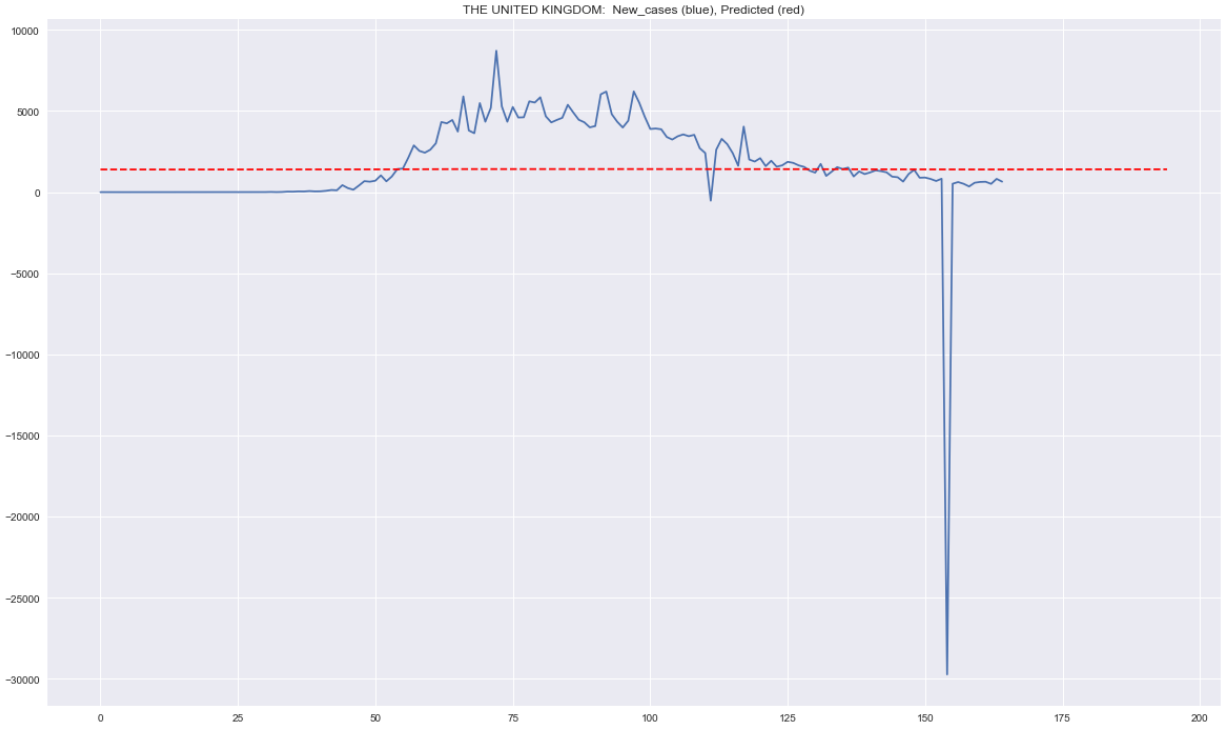

THE UNITED KINGDOM: Cumulative_cases Test the model (y_test) (blue), Predicted (red)
400000
300000
200000
100000
0
0
5
10
15
20
25
30

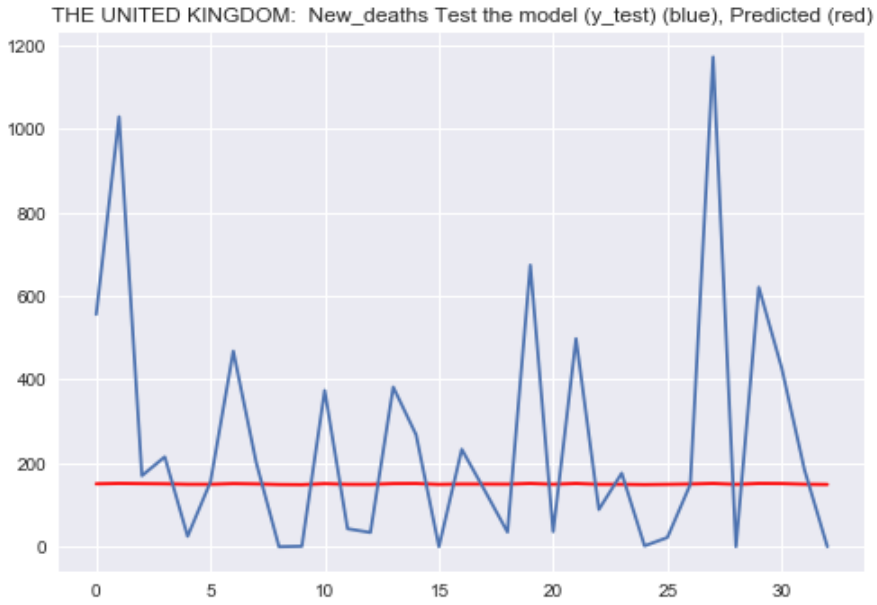

THE UNITED KINGDOM: Cumulative_cases (blue), Predicted (red)
800000
700000
600000
500000
400000
300000
200000
100000
0
0
25
50
75
100
125
150
175
200

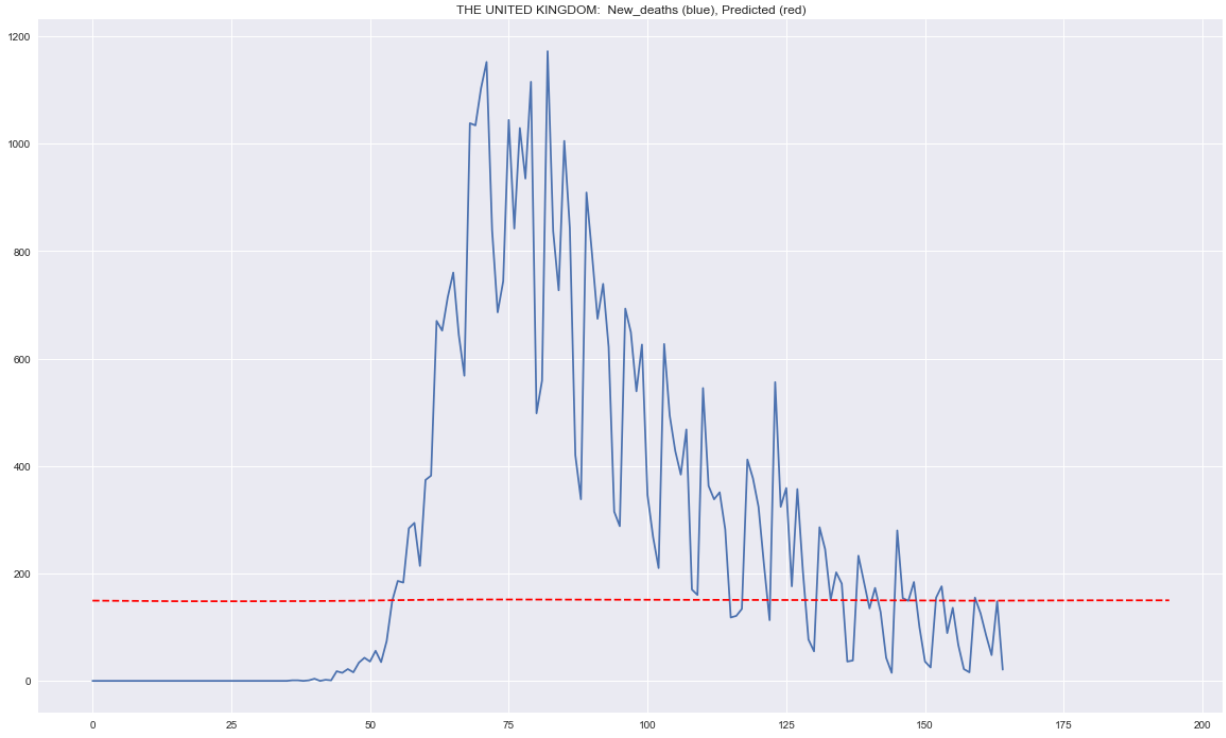

THE UNITED KINGDOM: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
60000
50000
40000
30000
20000
10000
0
0
5
10
15
20
25
30

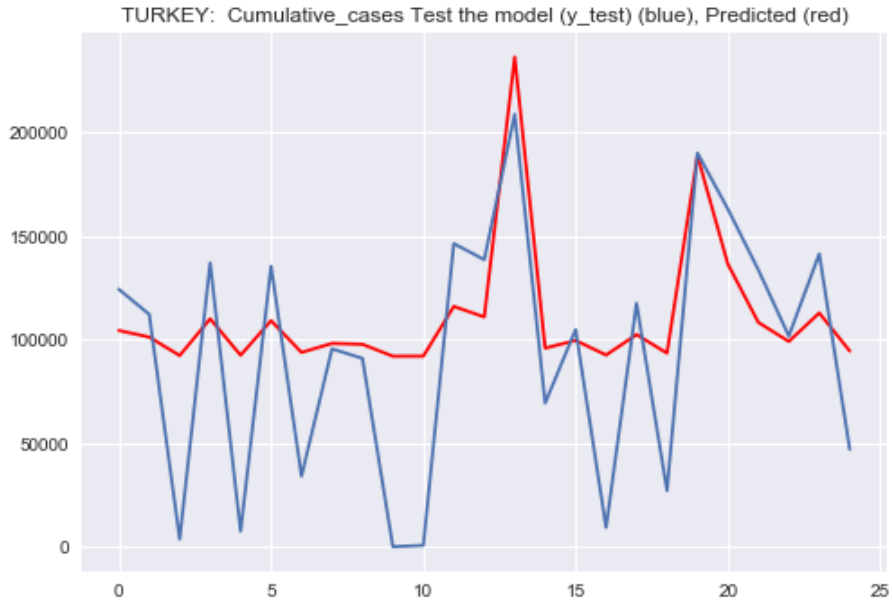

THE UNITED KINGDOM: Cumulative_deaths (blue), Predicted (red)
100000
80000
60000
40000
20000
0
0
25
50
75
100
125
150
175
200

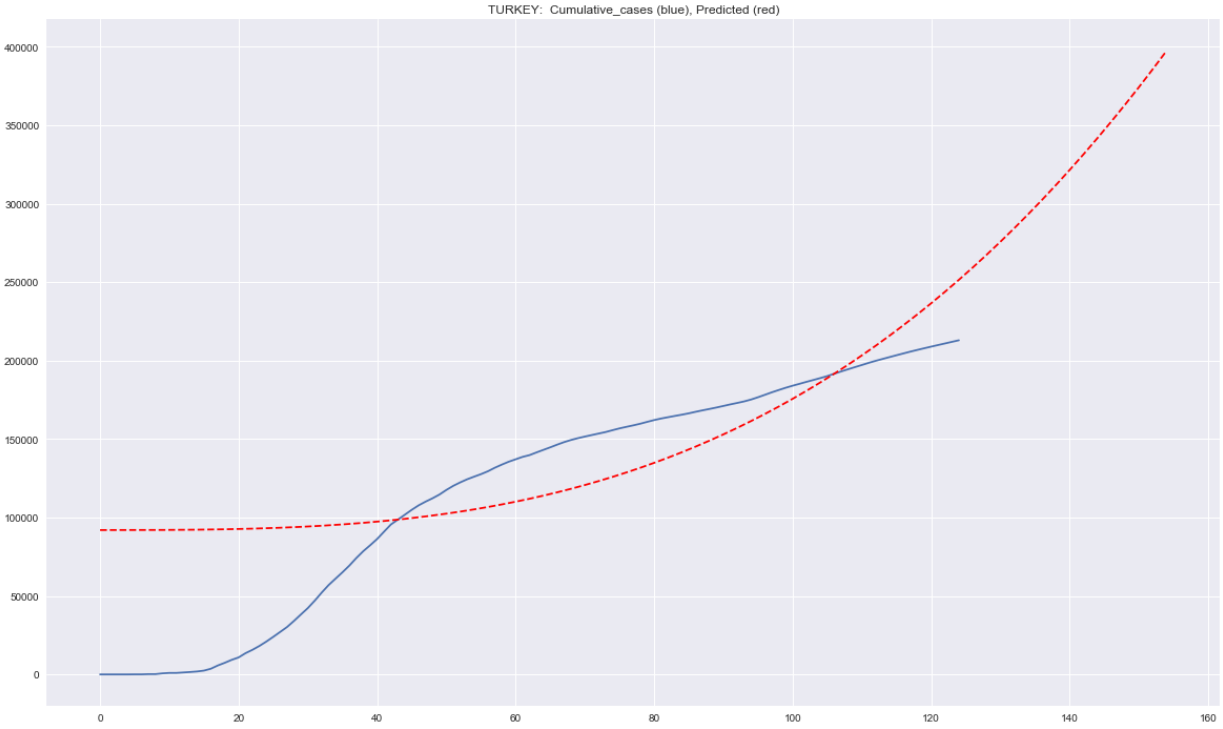

THE UNITED KINGDOM: New_cases Test the model (y_test) (blue), Predicted (red)
5000
4000
3000
2000
1000
0
0
5
10
15
20
25
30

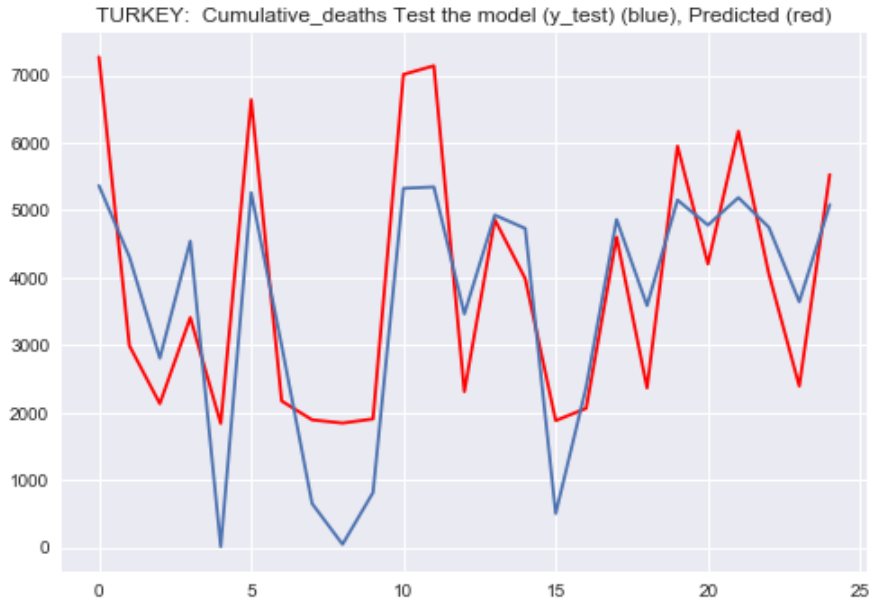

THE UNITED KINGDOM: New_cases (blue), Predicted (red)
10000
5000
0
−5000
−10000
−15000
−20000
−25000
−30000
0
25
50
75
100
125
150
175
200

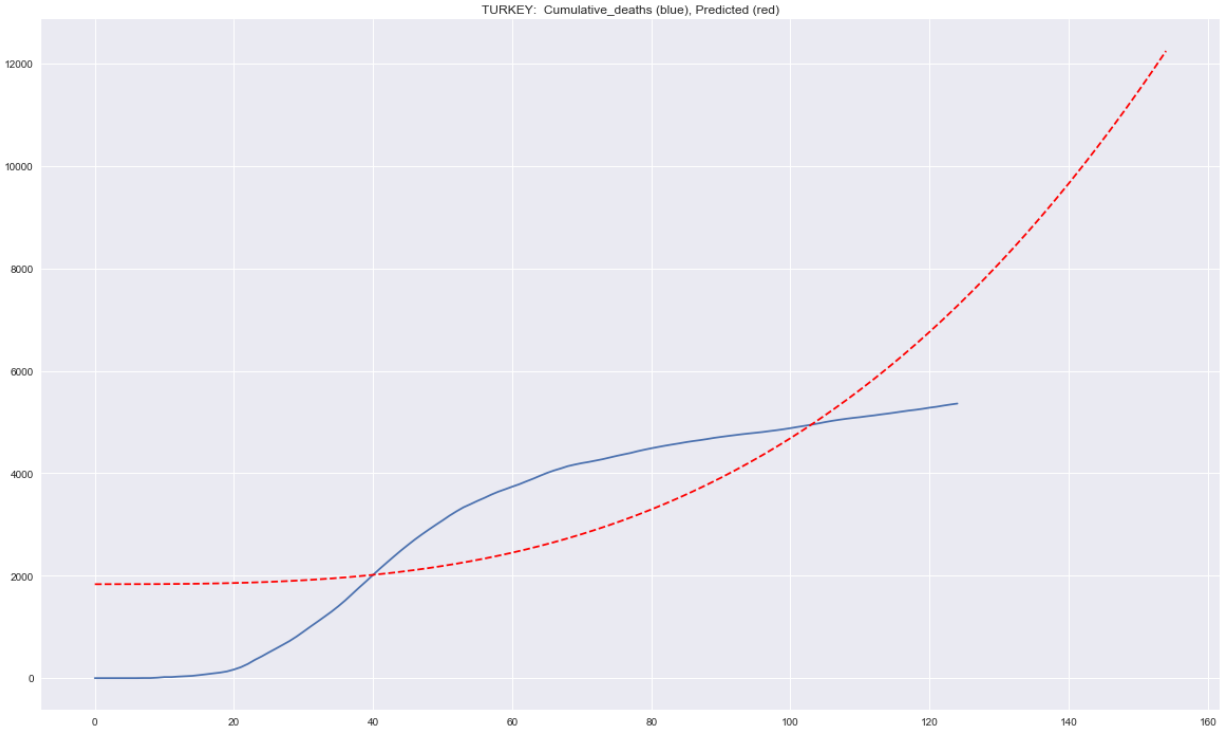

THE UNITED KINGDOM: New_deaths Test the model (y_test) (blue), Predicted (red)
1200
1000
800
600
400
200
0
0
5
10
15
20
25
30

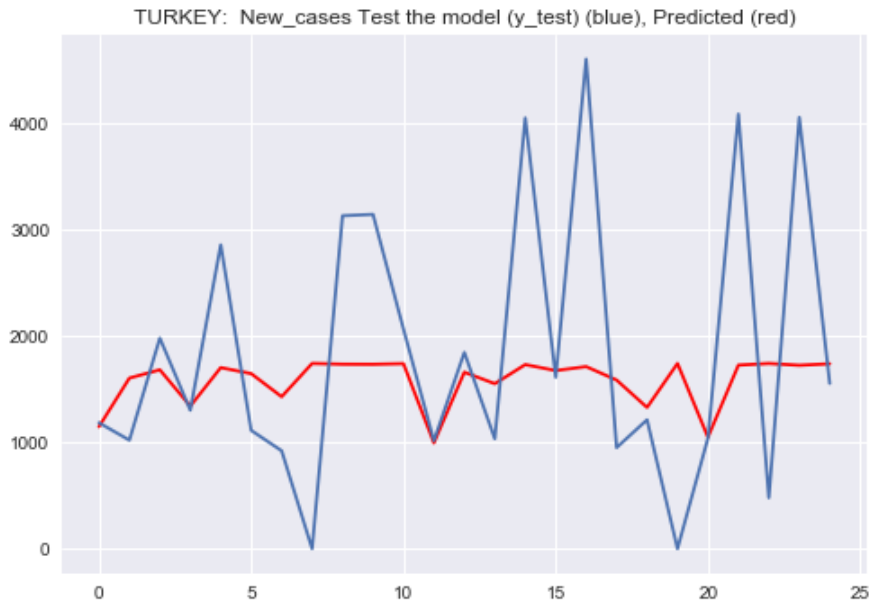

THE UNITED KINGDOM: New_deaths (blue), Predicted (red)
1200
1000
800
600
400
200
0
0
25
50
75
100
125
150
175
200

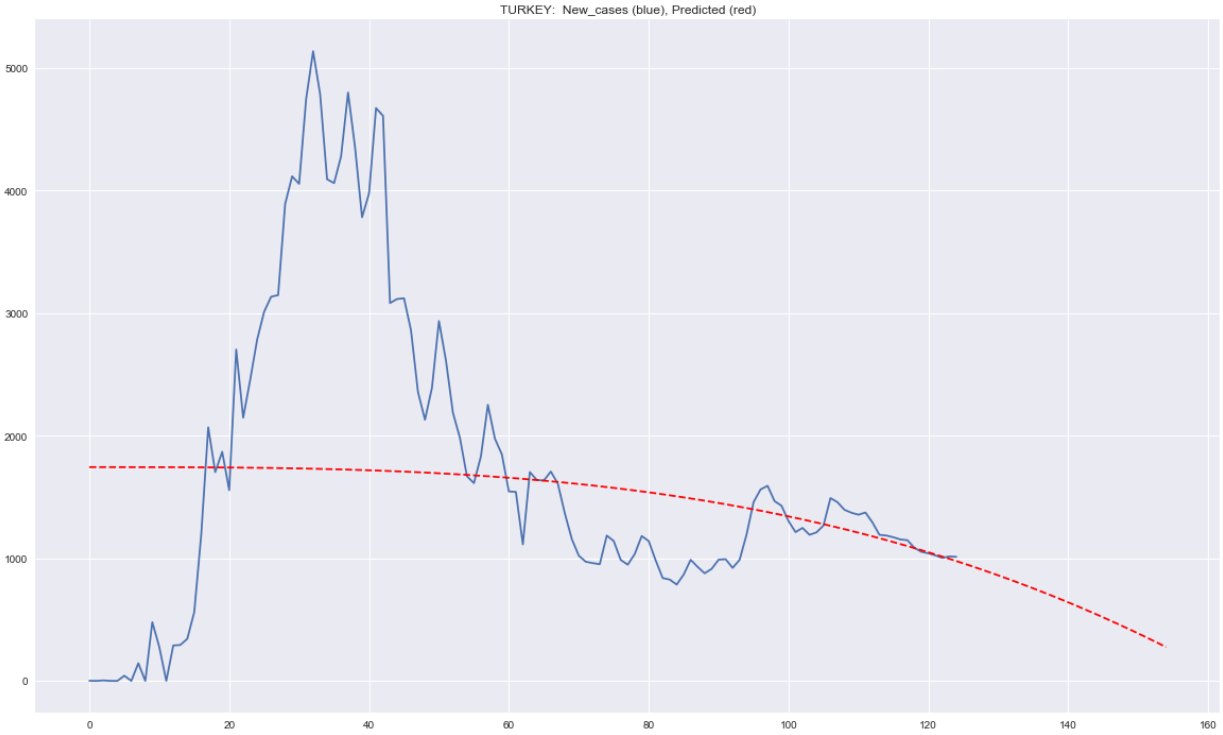

TURKEY: Cumulative_cases Test the model (y_test) (blue), Predicted (red)
200000
150000
100000
50000
0
0
5
10
15
20
25

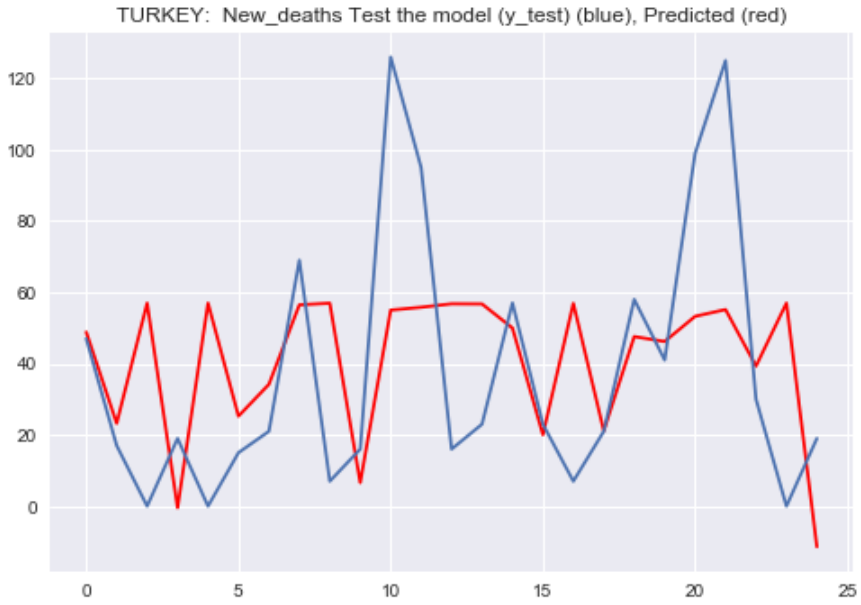

TURKEY: Cumulative_cases (blue), Predicted (red)
400000
350000
300000
250000
200000
150000
100000
50000
0
0
20
40
60
80
100
120
140
160

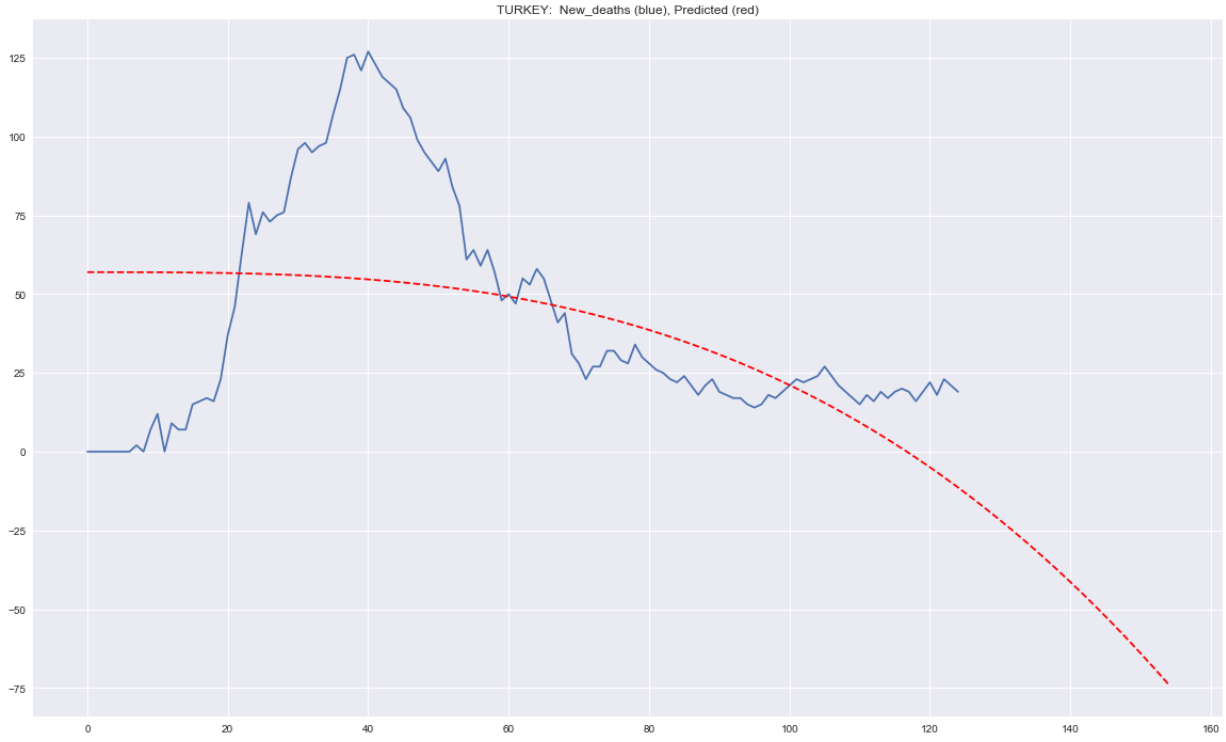

TURKEY: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
7000
6000
5000
4000
3000
2000
1000
0
0
5
10
15
20
25

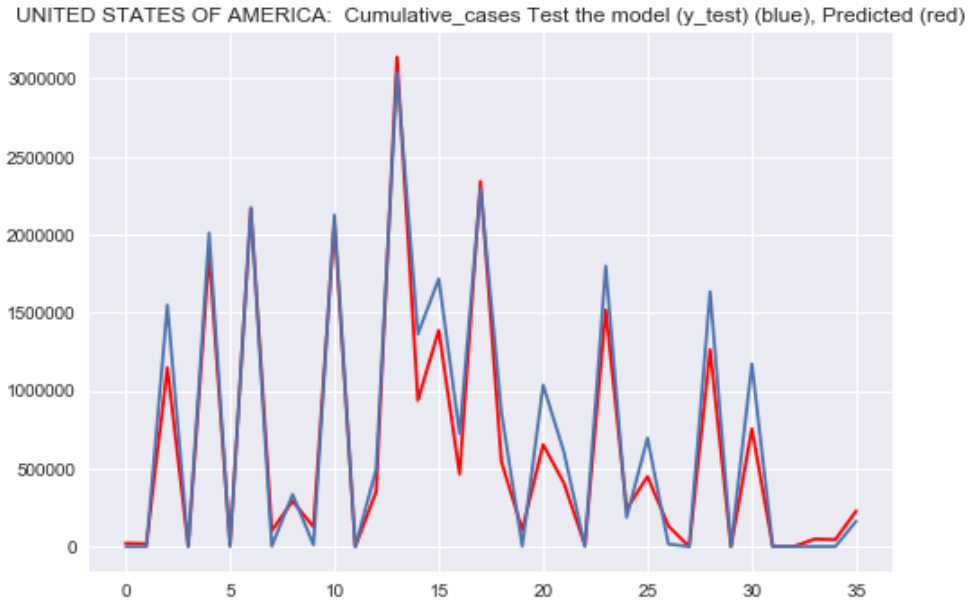

TURKEY: Cumulative_deaths (blue), Predicted (red)
12000
10000
8000
6000
4000
2000
0
0
20
40
60
80
100
120
140
160

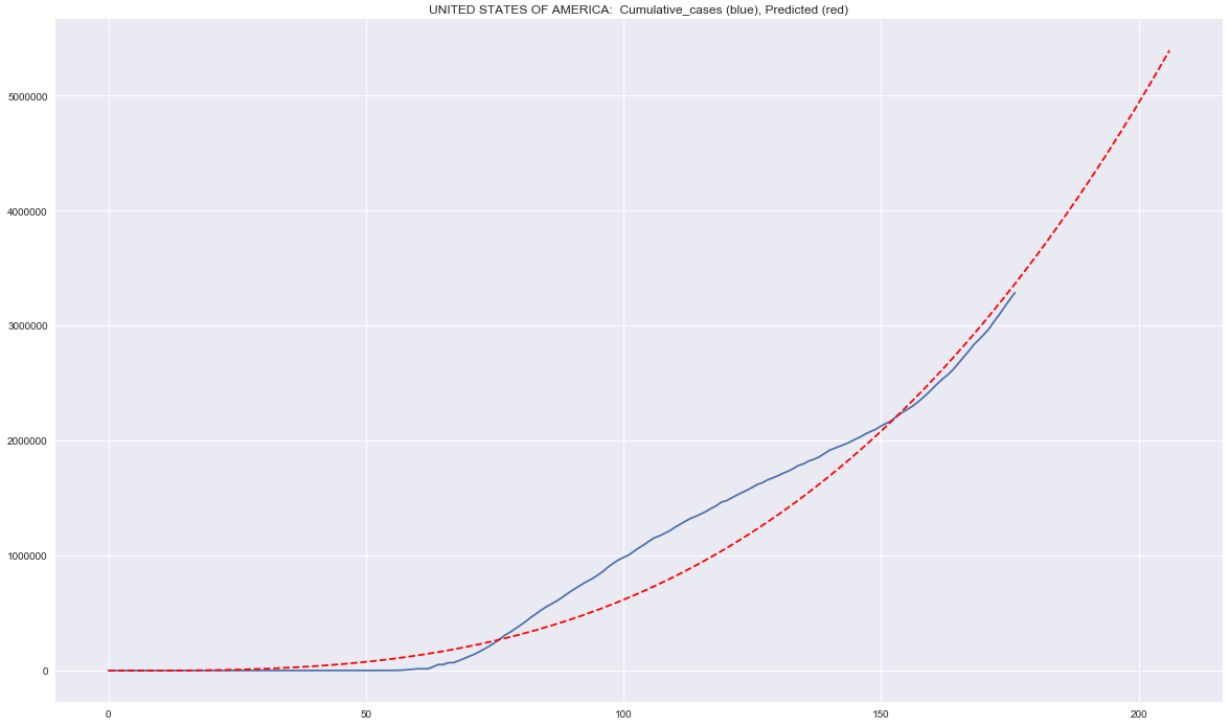

TURKEY: New_cases Test the model (y_test) (blue), Predicted (red)
4000
3000
2000
1000
0
0
5
10
15
20
25


TURKEY: New_cases (blue), Predicted (red)
5000
4000
3000
2000
1000
0
0
20
40
60
80
100
120
140
160

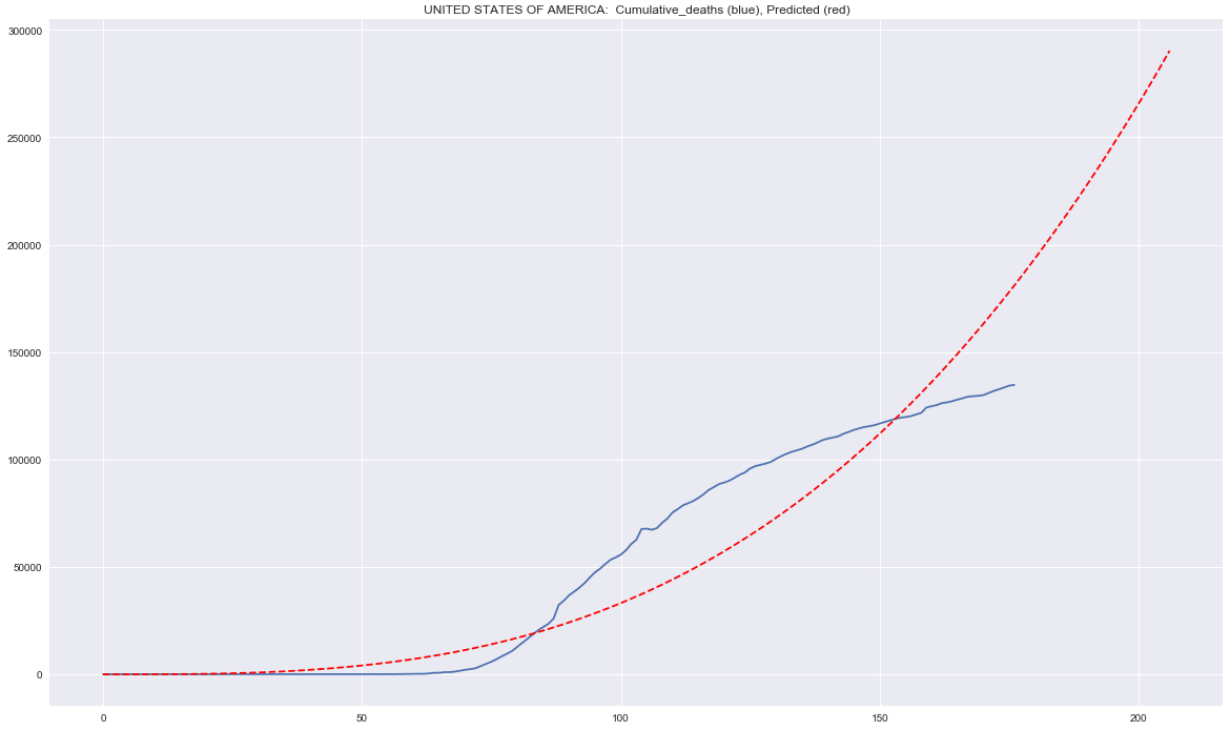

TURKEY: New_deaths Test the model (y_test) (blue), Predicted (red)
120
100
80
60
40
20
0
0
5
10
15
20
25

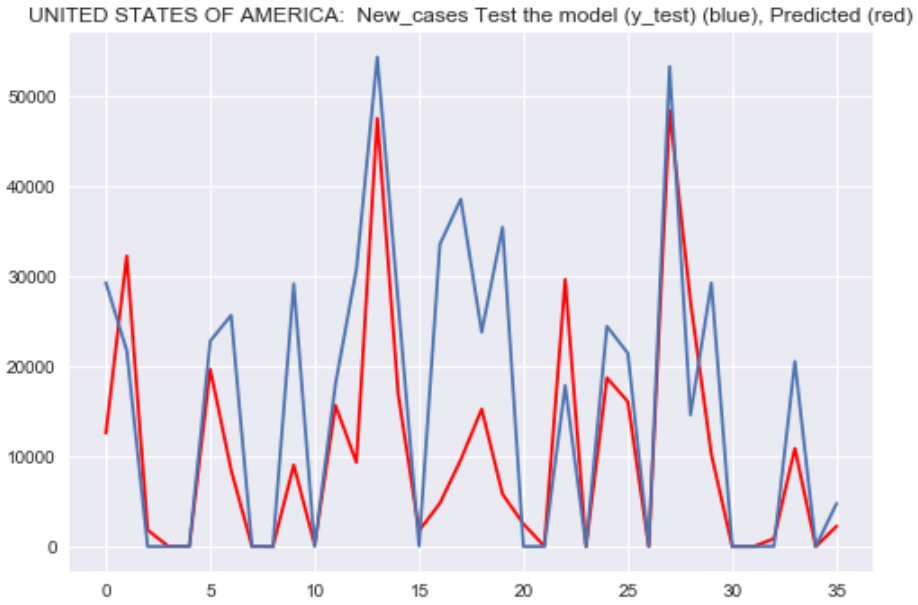

TURKEY: New_deaths (blue), Predicted (red)
125
100
75
50
25
0
−25
−50
−75
0
20
40
60
80
100
120
140
160

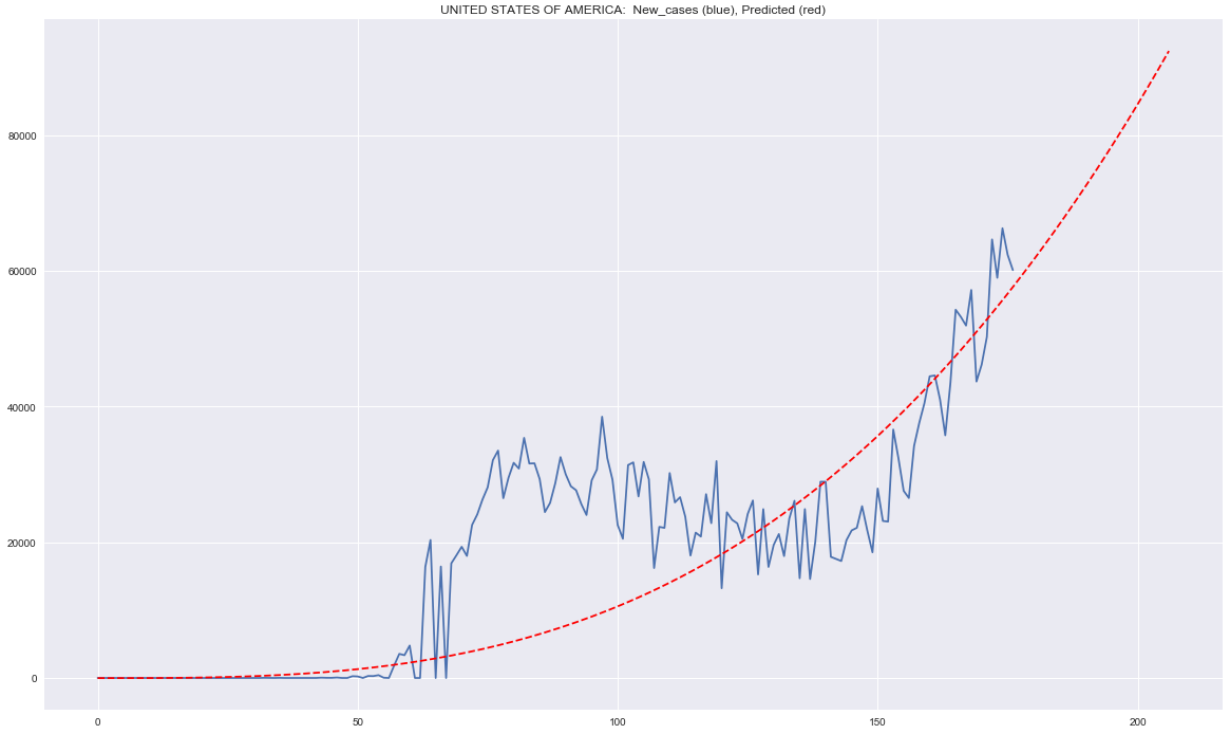

UNITED STATES OF AMERICA: Cumulative_cases Test the model (y_test) (blue), Predicted (red)
3000000
2500000
2000000
1500000
1000000
500000
0
0
5
10
15
20
25
30
35

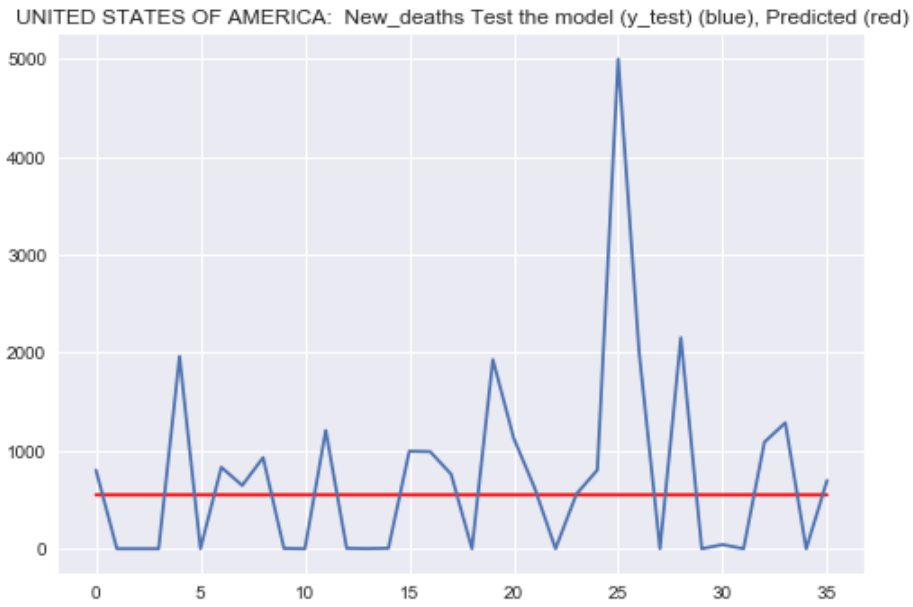

UNITED STATES OF AMERICA: Cumulative_cases (blue), Predicted (red)
5000000
4000000
3000000
2000000
1000000
0
0
50
100
150
200

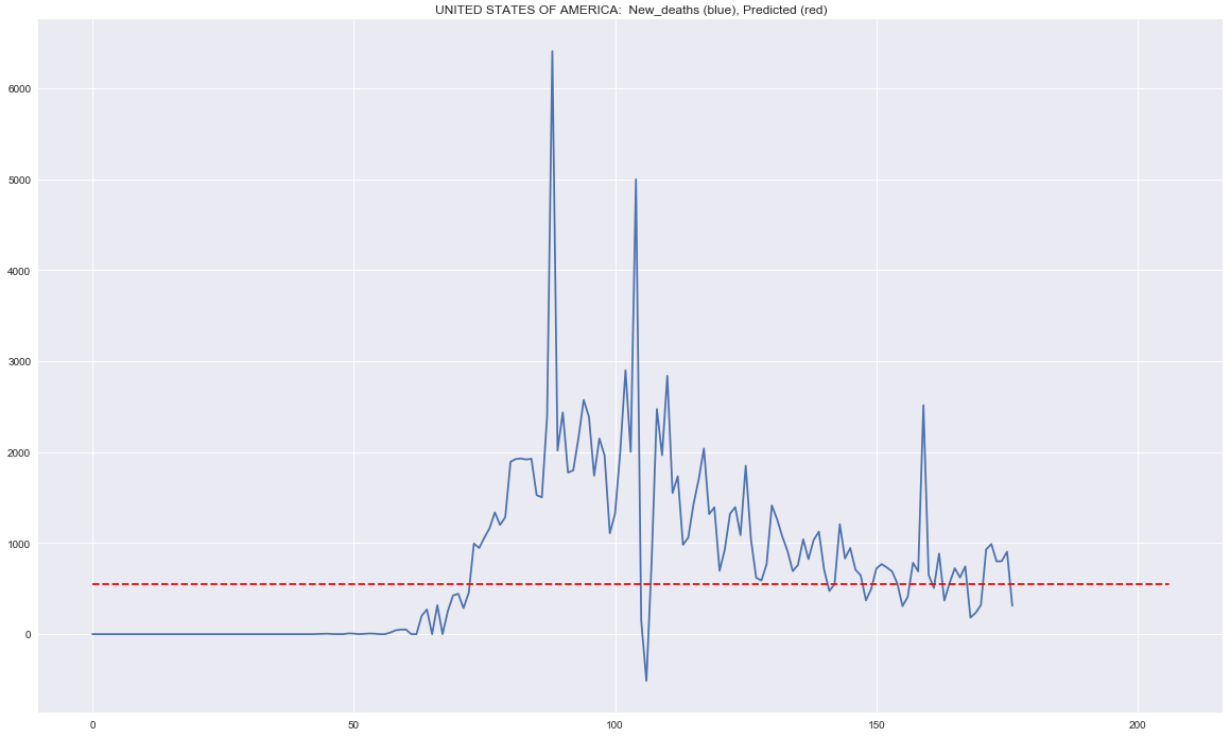

UNITED STATES OF AMERICA: Cumulative_deaths Test the model (y_test) (blue), Predicted (red)
160000
140000
120000
100000
80000
60000
40000
20000
0
0
5
10
15
20
25
30
35


UNITED STATES OF AMERICA: Cumulative_deaths (blue), Predicted (red)
300000
250000
200000
150000
100000
50000
0
0
50
100
150
200


UNITED STATES OF AMERICA: New_cases Test the model (y_test) (blue), Predicted (red)
50000
40000
30000
20000
10000
0
0
5
10
15
20
25
30
35


UNITED STATES OF AMERICA: New_cases (blue), Predicted (red)
80000
60000
40000
20000
0
0
50
100
150
200





In [ ]:

Linear Regression model

In [ ]:
```
from sklearn.linear_model import LinearRegression

linear_model = LinearRegression(normalize=True, fit_intercept=True)

linear_model.fit(X_train_confirmed, y_train_confirmed)

test_linear_pred = linear_model.predict(X_test_confirmed)

linear_pred = linear_model.predict(future_forecast)

print ('Mean Absolute Error', mean_absolute_error(test_linear_pred, y_test_confirm
ed))
print ('Mean Squared Error',  mean_squared_error(test_linear_pred, y_test_confirme
d))
```

In [ ]:
```
plt.plot(y_test_confirmed)
plt.plot(test_linear_pred, color="purple")
```

In [ ]:
```

```

In [ ]:
```
#predictions for next 10 days
print('LINEAR REGRESSION PREDICTIONS')
print(linear_pred[-10:])
```

In [ ]:
```
xtrain = X_train_confirmed
ytrain = Y_train_confirmed
xtest  = X_test_confirmed
ytest  = Y_test_confirmed

regressor=SVR(kernel='rbf',epsilon=1.0)
regressor.fit(xtrain,ytrain)
pred=regressor.predict(xtest)
print(regressor.score(xtest,ytest))
print(r2_score(ytest,pred))
```