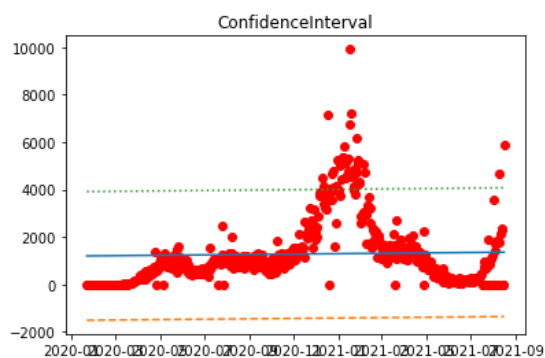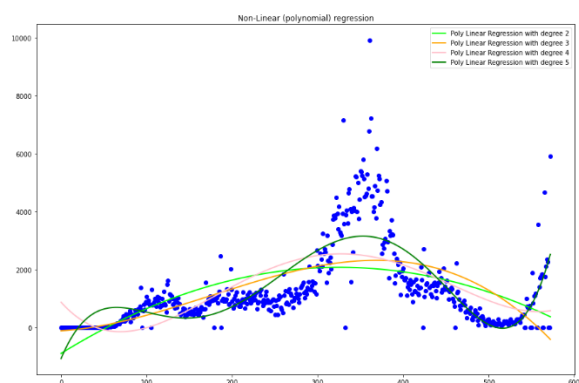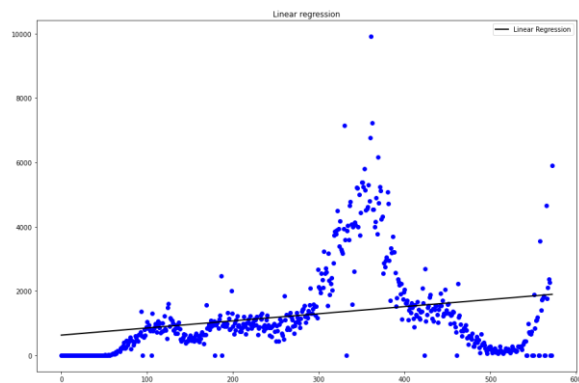# Varsha Veeramaneni

Linear and Non-Linear regression models:

Here I have utilized the linear and non-linear regression models to compare trends for the Virginia state. While plotting, the number of days since the first case is taken as X-axis and number of new cases is taken as Y-axis.
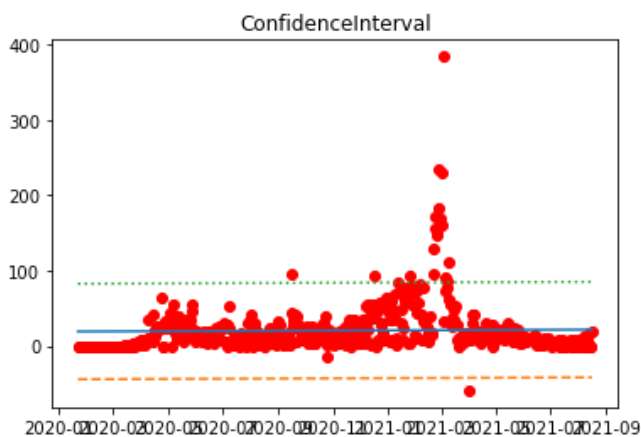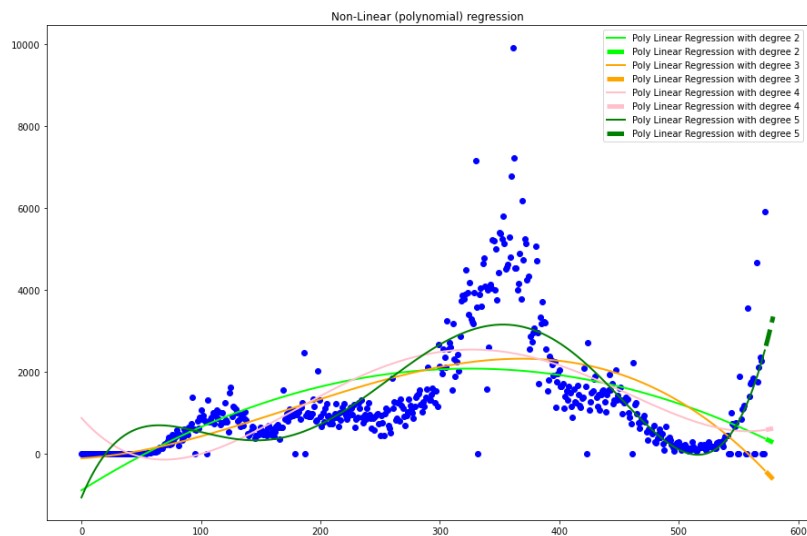
For Virginia state cases:

The linear and non-linear regression models for the Virginia state cases and graphs of trend line , prediction path and confidence intervals are mentioned below.
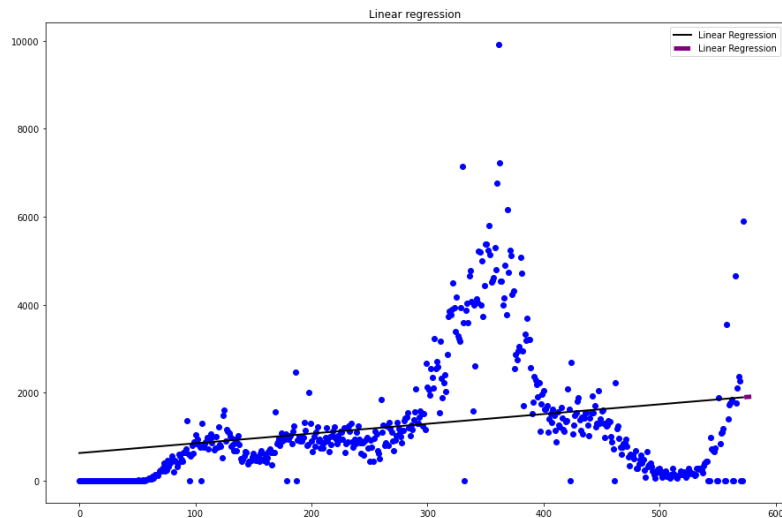
For Virginia state deaths:

The linear and non-linear regression models for the Virginia state deaths and graphs of trend line , prediction path and confidence intervals for all the plots are mentioned below.
Here, the number of days since the first death is taken as X-axis and number of new deaths is taken as Y-axis.

High risk counties :

I find out the high risk counties from Virginia state. They are mentioned below.

County Name	countyFIPS	cases
Fairfax County	51059	21040919
Prince William County	51153	12329588
City of Virginia Beach	51810	8880362
Loudoun County	51107	7262199
Chesterfield County	51041	7042499

Similarly for the above counties I find out the the linear and non-linear regression models are plotted trend line, forecast and confidence intervals. RMSE values for all the counties are as follows:

	Linear Regression	Non-Linear Regression (degree 2)	Non-Linear Regression (degree 3)	Non-Linear Regression (degree 4)
Fairfax County	161.683	143.1707148	140.3497	139.03596
Prince County	100.239	89.3051	87.833	86.998
City of Virginia beach	85.49	77.1658	75.026	71.78362
Loudoun County	60.6245	54.2936	52.7221	52.41120
Chesterfield County	60.9651	55.3267	53.8502	52.668

Performing Hypothesis Test:

My enrichment dataset is Presidential elections. From stage3 I have two hypothesis questions.
1.Are the voting percentages doesn't impact rise in Covid cases?
 2. Are the voting percentages doesn't impact rise in Deaths ?
By performing two tail -two sample t-test for categorical hypothesis testing, its concluded that the voting percentages impact rise in both Covid cases and deaths.