2020

FUTURE PREDICTION of NOVEL CORONAVIRUS

TEAM PARIMZA

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TABLE OF CONTENTS:

Introduction/Business problem:

Novel Coronavirus – 2019 is a pandemic, we need to fight against it, by following precautions and by creating awareness, this is the only solution we have, because there is no vaccine to it until now. Most of the people are became panic and in rural areas even in urban there is lot of panic situations among people. To Overcome panic situations, we made a forecasting of nCOVID-2019 where we will show death and recovery rate of nCOVID-2019 and also gives prevention and precaution tips to follow. By Showing Recovery rate and Death rate we going to make awareness among people i.e., most of the people are recovering from virus, we have immunity power to fight against just follow the safety rules, be calm and be safe.

Data Acquisition and Cleaning:

- Novel Coronavirus 2019 Dataset from GitHub:
  https://raw.githubusercontent.com/imdevskp/covid_19_jhu_data_web_scrap_and_cleaning/master/covid_19_clean_complete.csv
- Date
- Province/State
- Country/Region
- Latitude
- Longitude
- Confirmed
- Deaths
- Recovered
- In total 13932 rows and 8 features in the dataset

Data Cleaning:

In Data, we found out about 7506 null values of Province/State so we replaced them with space. We add active cases to the data and rename the columns.

|	state	country	Lat	Long	date	confirm	death	recover	Active
0		Thailand	15.0000	101.0000	1/22/20	2	0	0	2
1		Japan	36.0000	138.0000	1/22/20	2	0	0	2
2		Singapore	1.2833	103.8333	1/22/20	0	0	0	0
3		Nepal	28.1667	84.2500	1/22/20	0	0	0	0
4		Malaysia	2.5000	112.5000	1/22/20	0	0	0	0

METHODOLOGY:

EXPLORATORY DATA ANALYSIS:

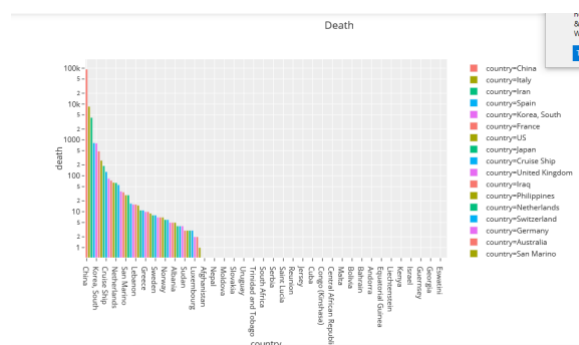We make country wise confirmed, Death and Recovery cases of nCOVID-2019

	country	confirm	death	recover
0	Afghanistan	74	0	0
1	Albania	160	5	0
2	Algeria	286	10	40
3	Andorra	14	0	3
4	Antigua and Barbuda	3	0	0
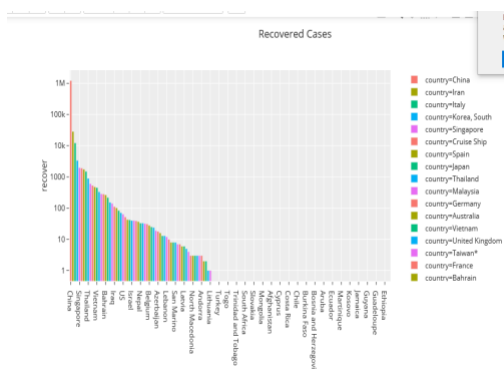
CONFIRM
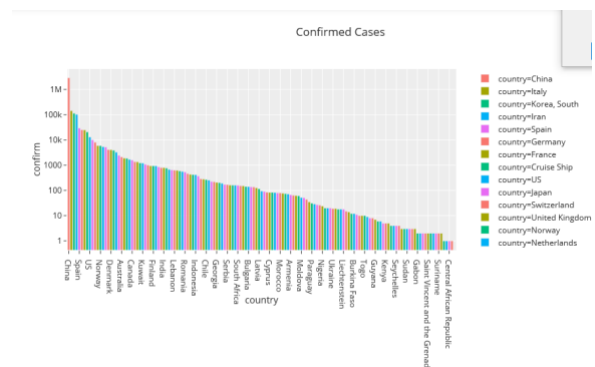
RECOVERY

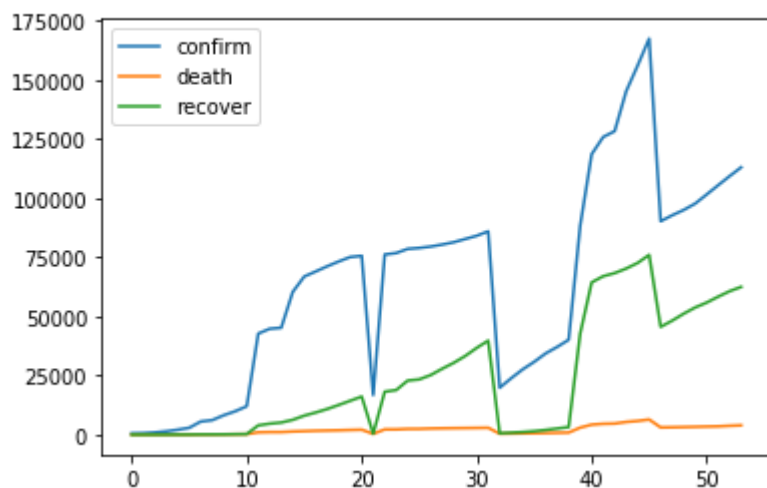**DEATH**

We make Recovered cases, confirmed cases and death cases chart representation across the world country wise.

```
<matplotlib.axes._subplots.AxesSubplot at 0x19885f3a088>
```
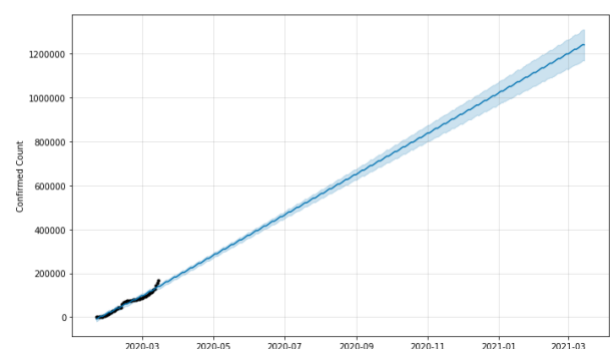

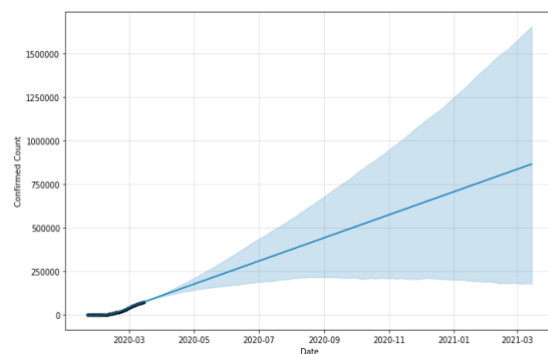We make Confirm Death and Recovery cases of nCOVID-2019 graphical representation of 50 observations.

MODELLING:

Autoregressive Integrated Moving Average (ARIMA MODEL) a popular statistical method for time series forecasting
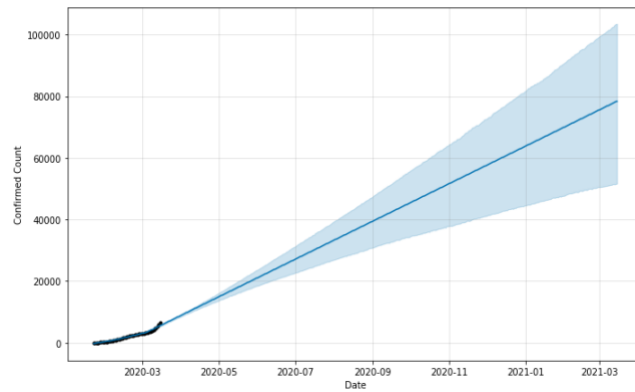
We make forecasting of confirm, recovery and death cases across the world of nCOVID-2019 for 365 days.

CONFIRM

RECOVERY

DEATH

ARIMA MODEL RESULTS WITH ACTUAL DATA OF CONFIRM, RECOVERY AND DEATH

ARIMA Model Results

Dep. Variable:		D2.y	No. Observations:		52
Model:		ARIMA(1, 2, 1)	Log Likelihood		-590.241
Method:		css-mle	S.D. of innovations		20572.328
Date:	Fri, 20 Mar 2020		AIC		1188.481
Time:		00:19:45	BIC		1196.286
Sample:		2	HQIC		1191.474

	coef	std err	z	P>|z|	[0.025	0.975]
const	2161.3847	2479.783	0.872	0.383	-2698.900	7021.670
ar.L1.D2.y	0.1234	1.179	0.105	0.917	-2.188	2.435
ma.L1.D2.y	-0.2406	1.154	-0.208	0.835	-2.503	2.022

Roots

	Real	Imaginary	Modulus	Frequency
AR.1	8.1051	+0.0000j	8.1051	0.0000
MA.1	4.1562	+0.0000j	4.1562	0.0000

CONFIRM

ARIMA Model Results

Dep. Variable:		D2.y	No. Observations:		52
Model:		ARIMA(1, 2, 1)	Log Likelihood		-552.270
Method:		css-mle	S.D. of innovations		9912.926
Date:	Fri, 20 Mar 2020		AIC		1112.541
Time:		00:20:00	BIC		1120.346
Sample:		2	HQIC		1115.533

	coef	std err	z	P>|z|	[0.025	0.975]
const	1201.0965	1470.729	0.817	0.414	-1681.480	4083.673
ar.L1.D2.y	-0.0244	1.395	-0.017	0.986	-2.758	2.709
ma.L1.D2.y	0.0973	1.386	0.070	0.944	-2.618	2.813

Roots

	Real	Imaginary	Modulus	Frequency
AR.1	-41.0252	+0.0000j	41.0252	0.5000
MA.1	-10.2756	+0.0000j	10.2756	0.5000

RECOVERY

Dep. Variable:	D2.y	No. Observations:	52
Model:	ARIMA(1, 2, 1)	Log Likelihood	-420.292
Method:	css-mle	S.D. of innovations	783.274
Date:	Fri, 20 Mar 2020	AIC	848.584
Time:	00:20:12	BIC	856.389
Sample:	2	HQIC	851.576

	coef	std err	z	P>|z|	[0.025	0.975]
const	75.7531	105.635	0.717	0.473	-131.288	282.795
ar.L1.D2.y	-0.7689	0.598	-1.286	0.199	-1.941	0.403
ma.L1.D2.y	0.7197	0.648	1.110	0.267	-0.551	1.990

Roots

	Real	Imaginary	Modulus	Frequency
AR.1	-1.3005	+0.0000j	1.3005	0.5000
MA.1	-1.3895	+0.0000j	1.3895	0.5000

DEATH

PREDICTIONS OF FORECASTING Vs ACTUAL CASES OF NOVEL CORONAVIRUS 2019 OF 50 OBSERVATIONS

CONFIRM

RECOVERY

Forecast vs Actual
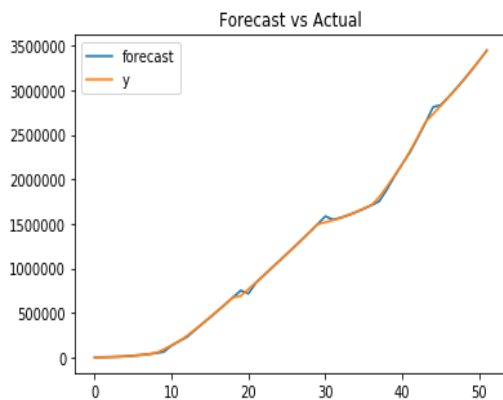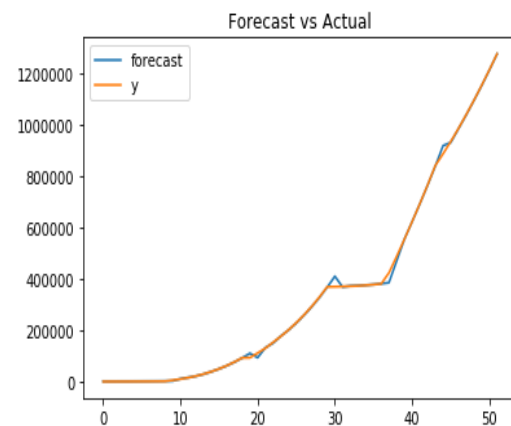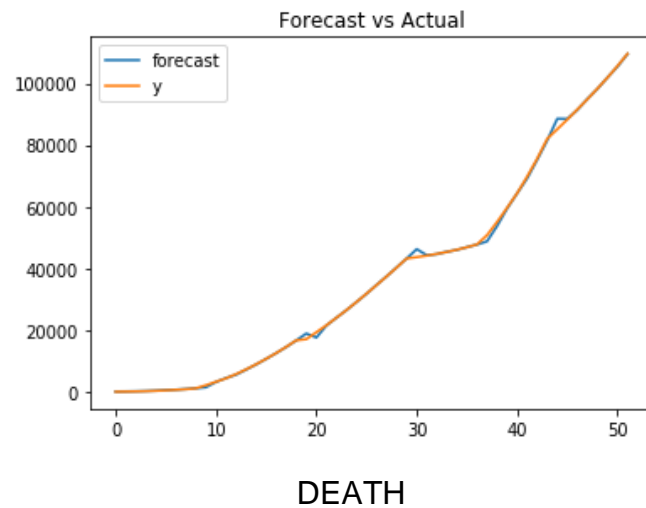
DEATH

Predictions of Confirm, Recovery and Death Cases across the world of novel coronavirus – 2019

	0
0	20572.328366
1	43857.384308
2	71600.309715
3	103273.154689
4	138471.734578

CONFIRM

	0
0	9912.925616
1	22815.008600
2	38625.454988
3	56903.474541
4	77358.132366

RECOVERY

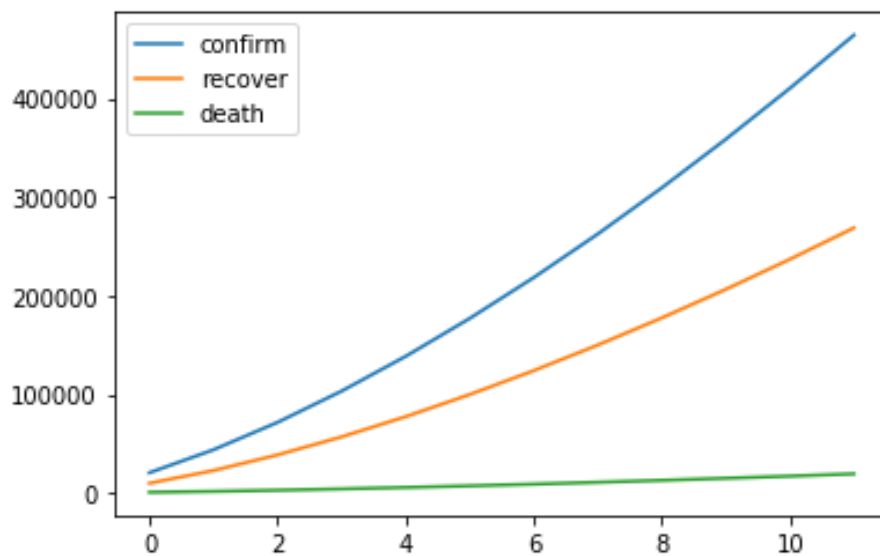|	0
0	783.274494
1	1717.041790
2	2872.106510
3	4192.286616
4	5673.666554

DEATH

RESULTS:

Future Ratios of confirm, death and recovery cases of novel coronavirus-2019 for 365 days.

FUTURE RATIOS:

Present Death rate percentage is 3.18

Future Death rate percentage is 4.15

Present Recovery rate percentage is 37.12

Future Recovery rate percentage is 56.98

DISCUSSION:

Novel Coronavirus aka n-CoViD-19 is a respiratory illness caused in humans which was supposedly transferred from a Mammal Bat to a Pangolin and then to Human being. The virus was informed to the WORLD HEALTH ORGANIZATION on December 31st 2019 which was detected in Wuhan City, Hubei province, China. Till March 18th, 2020 10:30pm AEDT, there are over 207,518 cases of COVID-19 confirmed globally.

This Project is developed to create awareness among people and make sure the situation is panic free from the outbreak of the virus. Do follow the safety rules procedure, precautions and take apt, precise measures to contain the spread of this virus. In future we will all recover from this situation as the spread of the virus and death rate is going to decrease.

CONCLUSION:
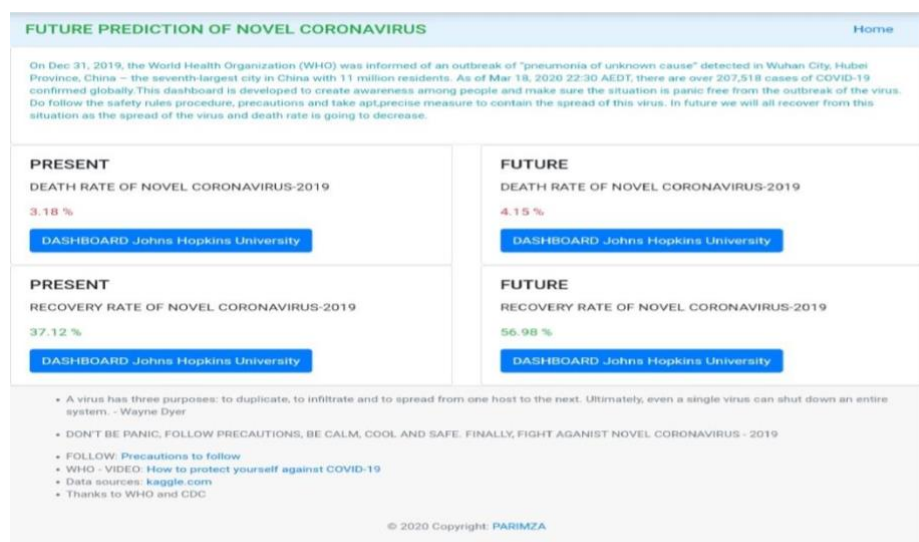
This Dashboard helps the people to follow precaution tips, how to prevent nCOVID-2019 and how to fight against nCOVID-2019 rather than panic for the situation of Pandemic-nCOVID-2019. Future, we are going to create more awareness by reaching most of the people in the world and try to predict more accurately future ratios of death and recovery rates of nCOVID-2019.

REFERENCE:

Website: FUTURE PREDICTION OF NOVEL CORONAVIRUS-2019