

# A study on increase rate of COVID-19 disease in India

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**Abstract:** Corona virus is worldwide disease. Corona virus is spreading very fast in the world. Day by day man is falling victim to Corona virus. It's spread in exponentially rate. In this paper we discuss about increases rate of corona virus disease in India. By mathematically and statistically we can show the rate of change of corona virus disease in humanity with respect to time.

**Index Terms – corona virus.**

## I. INTRODUCTION

COVID-19 is the disease caused by the new corona virus that first reported in China in December 2019. In India first corona virus case is reported on 30 January in Kerala which all were students who had returned from Wuhan, China. In Gujarat first case of corona virus is reported on March 19 of two person who returned from abroad. When a person has contact to corona virus, it can take 2 to 14 days for symptoms to appear in that person.

## II. OBJECTIVES OF THE STUDY

To study of increase rate of corona disease in humans day to day.

## III. LIMITATIONS OF THE STUDY

This study is only on data of Ahmedabad city cases and Gujarat state cases and overall Indian cases.

## 3.2 RESEARCH METHODOLOGY

The source of data in this study is obtained from the report of world health organization and Indian government daily report.

## 3.3 Data Analysis

Table 3.1: Ahmedabad city cases data

DATE	Ahmedabad Total Cases	daily cases in Ahmedabad
12-Apr-20	282	39
13-Apr-20	320	38
14-Apr-20	373	53
15-Apr-20	450	77
16-Apr-20	545	95
17-Apr-20	622	77
18-Apr-20	765	143
19-Apr-20	1101	336
20-Apr-20	1248	147
21-Apr-20	1373	125
22-Apr-20	1501	128
23-Apr-20	1652	151
24-Apr-20	1821	169
25-Apr-20	2003	182
26-Apr-20	2181	178
27-Apr-20	2378	197
28-Apr-20	2543	165
29-Apr-20	2777	234
30-Apr-20	3026	249
1-May-20	3293	267

2-May-20	3543	250
3-May-20	3817	274
4-May-20	4076	259
5-May-20	4425	349
6-May-20	4735	310
7-May-20	4991	256
8-May-20	5260	269
9-May-20	5540	280

Chart 3.1: Increase cases in Ahmedabad city

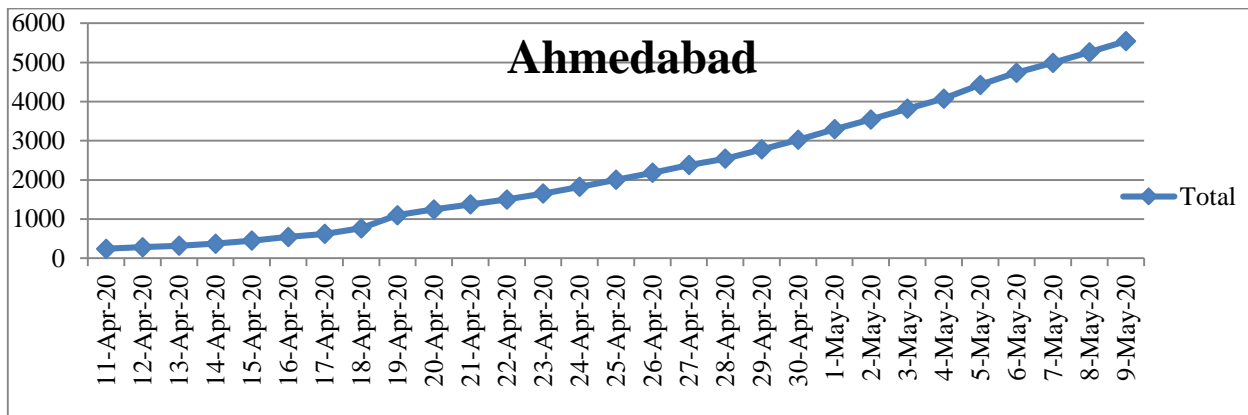


Table 3.2: Gujarat state cases data

Date	Gujarat Total cases	Daily cases in Gujarat
12-Apr-20	516	48
13-Apr-20	572	56
14-Apr-20	650	78
15-Apr-20	766	116
16-Apr-20	929	163
17-Apr-20	1099	170
18-Apr-20	1272	173
19-Apr-20	1743	471
20-Apr-20	1939	196
21-Apr-20	2178	239
22-Apr-20	2407	229
23-Apr-20	2624	217
24-Apr-20	2815	191
25-Apr-20	3071	256
26-Apr-20	3301	230
27-Apr-20	3548	247
28-Apr-20	3774	226
29-Apr-20	4082	308
30-Apr-20	4395	313
1-May-20	4721	326
2-May-20	5054	333
3-May-20	5428	374
4-May-20	5804	376
5-May-20	6245	441
6-May-20	6662	417
7-May-20	7013	351

8-May-20	7403	390
9-May-20	7797	394

Chart 3.2: Increase cases in Gujarat state

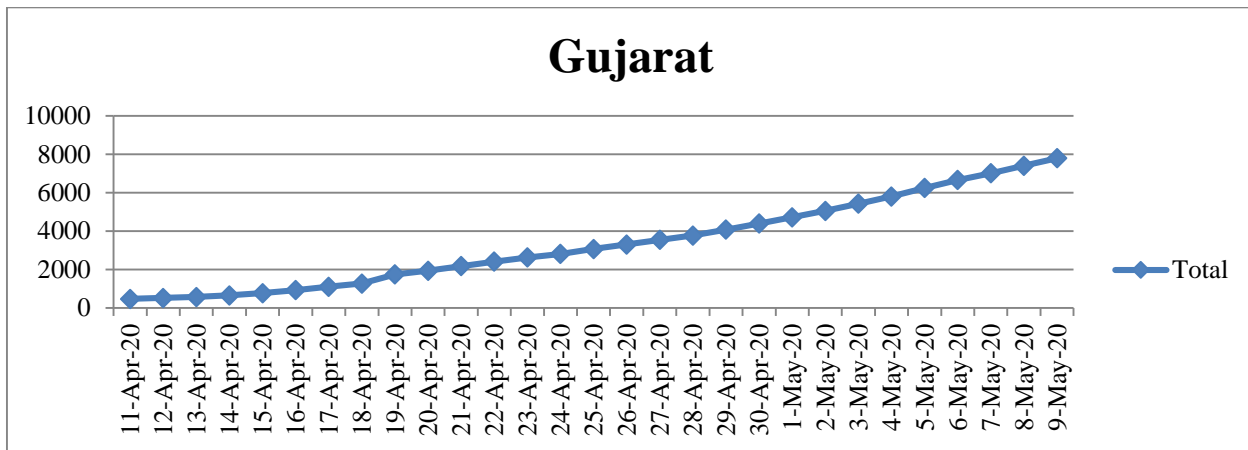
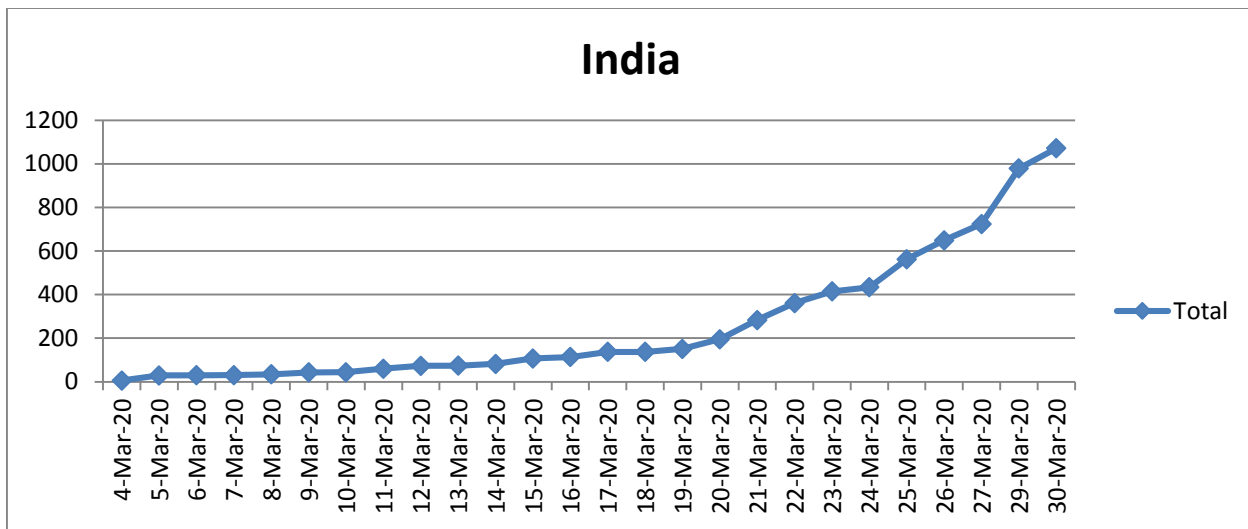


Table 3.3 India cases Data

Date	Total confirmed cases in India	Daily new cases in India
3-Mar-20	5	2
4-Mar-20	6	1
5-Mar-20	29	23
6-Mar-20	30	1
7-Mar-20	31	1
8-Mar-20	34	3
9-Mar-20	43	9
10-Mar-20	44	1
11-Mar-20	60	16
12-Mar-20	73	13
13-Mar-20	74	1
14-Mar-20	82	8
15-Mar-20	107	25
16-Mar-20	114	7
17-Mar-20	137	23
18-Mar-20	137	23
19-Mar-20	151	14
20-Mar-20	195	44
21-Mar-20	283	88
22-Mar-20	361	78
23-Mar-20	415	132
24-Mar-20	434	19
25-Mar-20	562	128
26-Mar-20	649	87
27-Mar-20	724	75
29-Mar-20	979	255
30-Mar-20	1071	92

1-Apr-20	1636	565
3-Apr-20	1965	329
4-Apr-20	2301	336
5-Apr-20	3374	1073
6-Apr-20	4067	693
8-Apr-20	5194	1127
9-Apr-20	5734	540
10-Apr-20	6412	678
11-Apr-20	7447	1035
12-Apr-20	8356	909
13-Apr-20	9152	796
14-Apr-20	10363	1211
15-Apr-20	11439	1076
16-Apr-20	12380	941
17-Apr-20	13387	1007
18-Apr-20	14378	991
19-Apr-20	15712	1334
20-Apr-20	17265	1553
21-Apr-20	18601	1336
22-Apr-20	19984	1383
23-Apr-20	21393	1409
24-Apr-20	23077	1684
25-Apr-20	24506	1429
26-Apr-20	26496	1990
27-Apr-20	27892	1396
28-Apr-20	29435	1543
29-Apr-20	31332	1897
30-Apr-20	33050	1718
1-May-20	35043	1993
2-May-20	37336	2293
3-May-20	39980	2644
4-May-20	42533	2553
5-May-20	46433	3900
6-May-20	49 391	2958
7-May-20	52 952	3561
8-May-20	56 342	3390
9-May-20	59 662	3320
10-May-20	62 939	3277

Chart 3.3: Increase cases in India



#### IV. RESULTS AND DISCUSSION

From the above data we can see that daily new cases increase with the formula  $Y = e^x$ . Where  $x$  is in different interval and  $Y$  is daily increase cases number.

##### 4.1 Results of Descriptive Statics of Study Variables

Table 4.1: Descriptive Statics

Date	Interval of x	Day
3-Mar-2020 to 20-Mar-2020	[0,4]	18
21-Mar-2020 to 30-Mar-2020	[0,6]	10
1-Apr-2020 to 13-Apr-2020	[0,7]	11
14-Apr-2020 to 4-May-2020	[0,8]	21

Table 4.1 Looking at the table above, it is clear that on an average after 15 day the interval of  $x$  is become larger. In Gujarat state and Ahmedabad city the value of  $x$  is lies in the interval  $[0, 6]$  after someday the value of  $x$  will be lies in larger interval.

#### V. CONCLUSION

The increase rate of change of covid-19 disease in India and as well as in Gujarat state and Ahmedabad city is exponential rate..

#### REFERENCES

- [1] <https://www.who.int>
- [2] <https://gujccovid19.gujarat.gov.in>