

STATUS REPORT OF COVID-19 IN HARYANA

(No. 7 / June 14th 2020)

Dr. Usha Gupta
Director Health Services (IDSP)
Directorate of Health Services, Haryana

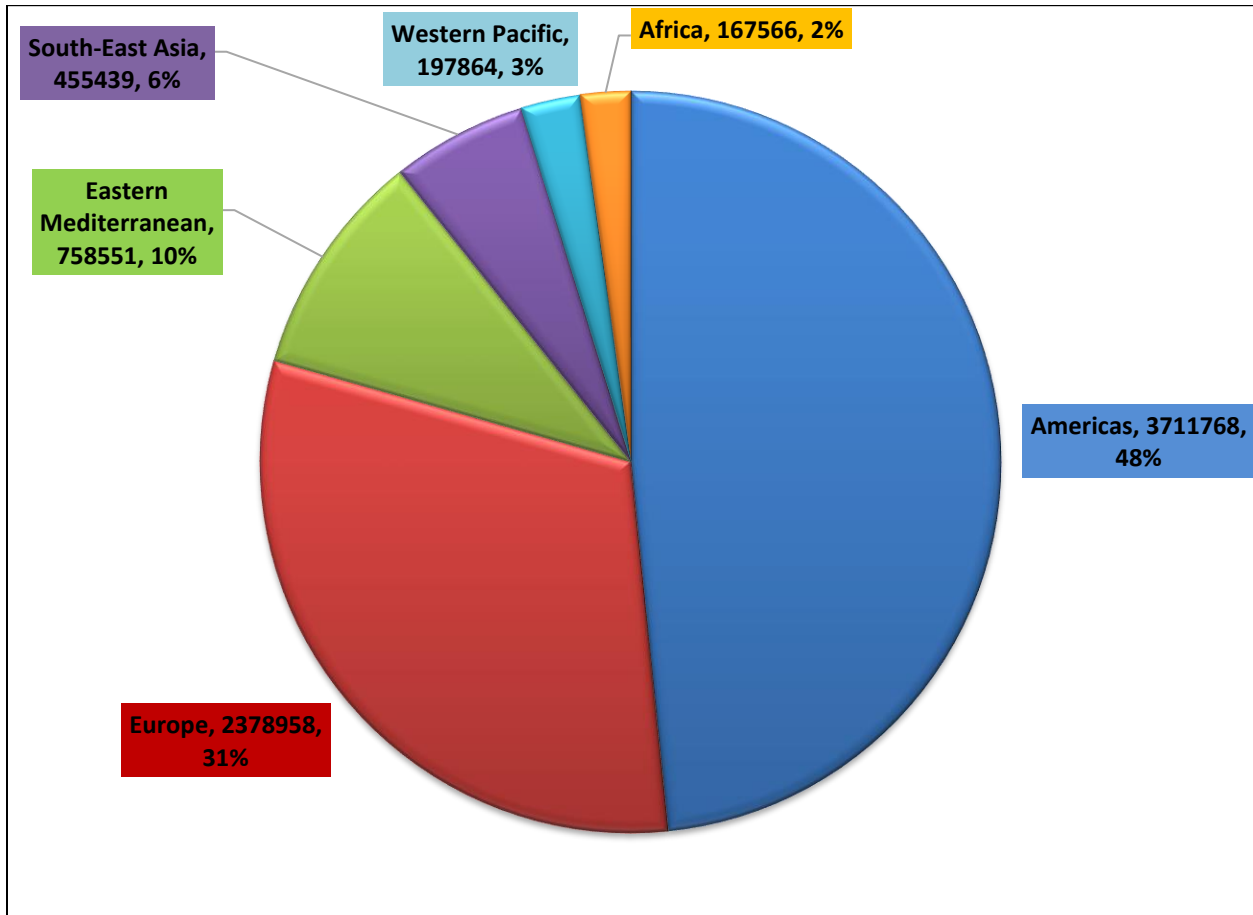
BACKGROUND: - Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Its first case was reported in China. On 31st December 2019, the World Health Organization (WHO) China Country Office was informed of cases of pneumonia of unknown etiology (unknown cause) detected in Wuhan City, Hubei Province of China. On 7th January 2020, Chinese authorities identified a new strain of Coronavirus as the causative agent for the disease. The virus has been renamed by WHO as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and the disease caused by it as COVID-19. World Health Organization has assessed the risk for spread of this disease and declared the current novel coronavirus outbreak as a Public Health Emergency of International Concern (PHEIC) on 30th January, 2020. Further, on 11th March, 2020, WHO declared COVID-19 as a pandemic.

EPIDEMIOLOGY: - The etiologic agent responsible for current outbreak of SARSCoV-2 is a novel coronavirus is closely related to SARS-Coronavirus. This disease is an infectious disease, which mainly spreads by the viral load present in the respiratory droplets of infected persons. Current estimates of the incubation period of COVID range from 2-14 days. Most common symptoms include fever, fatigue, dry cough and breathing difficulty. Diagnosis is by demonstration of the virus in respiratory secretions by special molecular tests. The deaths reported are mainly among elderly population particularly those with co-morbidities. The case fatality rate is estimated to range from 2 to 3% (Singhal T.; 2020). The disease is rapidly spreading from its origin in Wuhan City of Hubei Province of China to the rest of the World.

GLOBAL STATUS OF COVID-19 CASES

According to WHO, on 14.06.2020, worldwide, a total 7,670,887 cases of this disease have been reported. The distribution of COVID-19 cases in WHO Regions, represent that Americas Region is having highest share followed by Europe Region, Eastern Mediterranean Region, South-East Asia Region, Western Pacific Region and Africa Region (Figure No.1). On analyzing the Region wise trend of COVID-19 spread, it is estimated that the burden of this disease has been shifted to Americas and Europe Regions from South-East Asia Region. Further, the worldwide cumulative trends show that the number of patients of this disease are increasing day by day.

Figure No. 1: WHO Region Wise distribution of COVID-19 Patients (as on 14.06.2020)



Source – World Health Organisation (WHO)

Out of the 216 affected countries / areas / territories, the mostly affected countries were United States of America, Brazil, Russian Federation, **India**, The United Kingdom, Spain, Italy, Peru, Germany, Iran, Turkey, Chile, etc.

COVID-19 is also causing deaths worldwide. Since its inception, till 14.06.2020, total 427,097 deaths were reported by WHO. According to WHO, till 14.06.2020, highest deaths of COVID-19 patients occurred in United States of America followed by Brazil, The United Kingdom, Italy, France, Spain, Mexico, Belgium, **India**, Germany, Iran, Canada, etc.

On global scenario, India is having 4th ranking in overall case load of COVID-19. However, on the basis of COVID-19 related mortality indicator, India internationally stands at 9th position.

STATUS OF COVID-19 CASES IN INDIA

India reported the first confirmed case of the coronavirus infection on 30.01.2020 in the state of Kerala. The affected had a travel history from Wuhan, China. No significant rise in cases was seen in the rest of February. On 04.03.2020, 22 new cases came to light, including those of an Italian tourist group with 14 infected members. The transmission escalated during March month, after several cases were reported all over the country, most of which were linked to people with a travel history to affected countries. Further, on 31.03.2020, a Tablighi Jamaat religious congregation event that took place in Delhi in early March month emerged as a new virus hotspot after numerous cases across the country were traced back to the event.

On 14.06.2020, total 320,922 cases were confirmed in India. As a consequence of this disease, deaths have been reported in India. The first death was reported on 12th March, 2020, a 76-year-old man who had returned from Saudi Arabia, became the first victim of the virus in the country. As on 14.06.2020, the death toll crossed to 9,195. However, on comparing the mortality percentage with International statistics, Indian scenario was observed comparatively better as represented in Table No. 1.

Table No. 1: Comparison of COVID-19 Cases and Deaths (as on 14.06.2020)

Variables	World*	India#
Total Cases	76,70,887	3,20,922
Total Deaths	4,27,097	9,195
Mortality (%)	5.57%	2.87%

Source – *World Health Organisation (WHO) & Ministry of Health and Family Welfare (MOHFW)

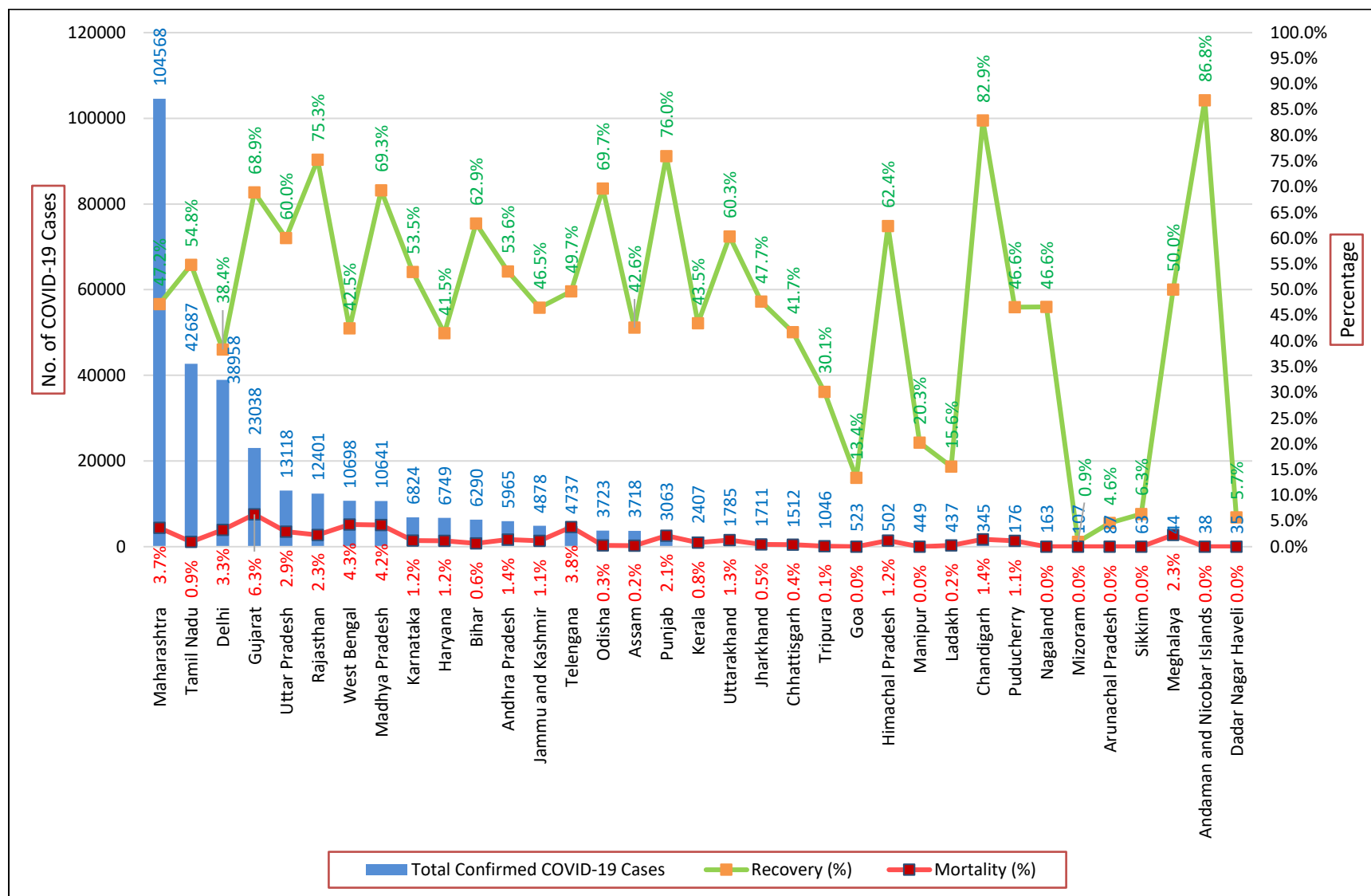
The number of COVID-19 cases are increasing continuously since the inception of first case. On dated 14.06.2020, Maharashtra, Tamil Nadu, Delhi, Gujrat, Uttar Pradesh, Rajasthan, West Bengal, Madhya Pradesh, etc. were emerged as most affected states in India according to the MOHFW. COVID-19 cases related mortality pattern of Indian states shows that the states like Maharashtra, Gujrat, Delhi, West Bengal, Madhya Pradesh, Tamil Nadu, Uttar Pradesh, Rajasthan, etc. had a large portion of deaths in India (Table No. 2).

Table No. 2: State Wise Distribution of COVID-19 Cases & Death in India (as on 14.06.2020)

Name of State / UT	Population (Census 2011)	Total Confirmed COVID-19 Cases	Cured / Discharged / Migrated	Deaths	Active Cases	Recovery (%)	Mortality (%)	Total Cases Per Million Population	Active Case Load Per Million Population
Andaman and Nicobar Islands	3,80,581	38	33	0	5	86.8%	0.0%	100	13
Andhra Pradesh	4,96,70,000	5965	3195	82	2688	53.6%	1.4%	120	54
Arunachal Pradesh	13,83,727	87	4	0	83	4.6%	0.0%	63	60
Assam	3,12,05,576	3718	1584	8	2126	42.6%	0.2%	119	68
Bihar	10,40,99,452	6290	3956	39	2295	62.9%	0.6%	60	22
Chandigarh	10,55,450	345	286	5	54	82.9%	1.4%	327	51
Chhattisgarh	2,55,45,198	1512	631	6	875	41.7%	0.4%	59	34
Dadar Nagar Haveli	3,43,709	35	2	0	33	5.7%	0.0%	102	96
Delhi	1,67,87,941	38958	14945	1271	22742	38.4%	3.3%	2321	1355
Goa	14,58,545	523	70	0	453	13.4%	0.0%	359	311
Gujarat	6,04,39,692	23038	15883	1448	5707	68.9%	6.3%	381	94
Haryana	2,53,51,462	6749	2803	78	3868	41.5%	1.2%	266	153
Himachal Pradesh	68,64,602	502	313	6	183	62.4%	1.2%	73	27
Jammu and Kashmir	1,24,07,815	4878	2269	55	2554	46.5%	1.1%	393	206
Jharkhand	3,29,88,134	1711	816	8	887	47.7%	0.5%	52	27
Karnataka	6,10,95,297	6824	3648	81	3095	53.5%	1.2%	112	51
Kerala	3,34,06,061	2407	1046	19	1342	43.5%	0.8%	72	40
Ladakh	1,33,487	437	68	1	368	15.6%	0.2%	3274	2757
Madhya Pradesh	7,26,26,809	10641	7377	447	2817	69.3%	4.2%	147	39
Maharashtra	11,23,74,333	104568	49346	3830	51392	47.2%	3.7%	931	457
Manipur	28,55,794	449	91	0	358	20.3%	0.0%	157	125
Meghalaya	29,66,889	44	22	1	21	50.0%	2.3%	15	7
Mizoram	10,97,206	107	1	0	106	0.9%	0.0%	98	97
Nagaland	19,78,502	163	76	0	87	46.6%	0.0%	82	44
Odisha	4,19,74,218	3723	2594	10	1119	69.7%	0.3%	89	27
Puducherry	12,47,953	176	82	2	92	46.6%	1.1%	141	74
Punjab	2,77,43,338	3063	2327	65	671	76.0%	2.1%	110	24
Rajasthan	6,85,48,437	12401	9337	282	2782	75.3%	2.3%	181	41
Sikkim	6,10,577	63	4	0	59	6.3%	0.0%	103	97
Tamil Nadu	7,21,47,030	42687	23409	397	18881	54.8%	0.9%	592	262
Telangana	3,50,04,000	4737	2352	182	2203	49.7%	3.8%	135	63
Tripura	36,73,917	1046	315	1	730	30.1%	0.1%	285	199
Uttar Pradesh	19,98,12,341	13118	7875	385	4858	60.0%	2.9%	66	24
Uttarakhand	1,00,86,292	1785	1077	23	685	60.3%	1.3%	177	68
West Bengal	9,12,76,115	10698	4542	463	5693	42.5%	4.3%	117	62
Cases Being Reassigned to States	NA	7436	0	0	7436	0.0%	0.0%	NA	NA
India	1,21,06,40,480	320922	162379	9195	149348	50.6%	2.9%	265	123

Source-MOHFW Link - <https://www.mohfw.gov.in/> (Retrieved on 07.06.2020 at 3:20 PM)

Figure No. 2: State Wise Trend of Total COVID-19 Cases, Mortality (%) and Recovery (%) in India (as on 14.06.2020)



Source – MOHFW Link - <https://www.mohfw.gov.in/> (Retrieved on 14.06.2020 at 5:30 PM)

STATUS OF COVID-19 CASES IN HARYANA

First case of COVID-19 was reported in Haryana on 17.03.2020. From the date of inception of COVID-19 case in Haryana, the numbers have been increased to 7208 on 14.06.2020. Out of these cases, 3003 have cured and 88 deaths were reported till 14.06.2020.

On date 14.06.2020, districts Gurugram, Faridabad, Sonapat, Rohtak, Palwal, Ambala, Jhajjar, Karnal, Hisar, Mahendergarh, Nuh, Bhiwani and Panipat were sharing the major part of total COVID-19 cases in Haryana. The influence of Jamat related cases was the also contributing as major triggering factor in overall number of COVID-19 patients in some districts.

Table No. 3: District Wise Distribution of COVID-19 Cases in Haryana (N=7208) (as on 14.06.2020)

District	Population (Census 2011 & Website)	Total Positive Cases	Discharged / Cured	Deaths	Total Active Cases	Active Case Per Lakh Population	Mortality (%)	Recovery (%)	Positive Cases Per Lakh Population
Ambala	11,28,350	183	73	3	107	9	1.6%	39.9%	16
Bhiwani	11,98,085	107	50	0	57	5	0.0%	46.7%	9
Ch. Dadri	5,02,276	47	7	1	39	8	2.1%	14.9%	9
Faridabad	18,09,733	1277	385	28	864	48	2.2%	30.1%	71
Fatehabad	9,42,011	65	31	0	34	4	0.0%	47.7%	7
Gurugram	15,14,432	3308	1279	31	1998	132	0.9%	38.7%	218
Hisar	17,43,931	125	68	1	56	3	0.8%	54.4%	7
Jhajjar	9,58,405	132	104	1	27	3	0.8%	78.8%	14
Jind	13,34,152	71	26	3	42	3	4.2%	36.6%	5
Kaithal	10,74,304	59	30	0	29	3	0.0%	50.8%	5
Karnal	15,05,324	128	47	2	79	5	1.6%	36.7%	9
Kurukshetra	9,64,655	76	50	0	26	3	0.0%	65.8%	8
Mahendergarh	9,22,088	122	87	0	35	4	0.0%	71.3%	13
Nuh	10,89,263	114	100	0	14	1	0.0%	87.7%	10
Palwal	10,42,708	198	105	1	92	9	0.5%	53.0%	19
Panchkula	5,61,293	54	26	0	28	5	0.0%	48.1%	10
Panipat	12,05,437	94	65	5	24	2	5.3%	69.1%	8
Rewari	9,00,332	76	12	0	64	7	0.0%	15.8%	8
Rohtak	10,61,204	300	128	6	166	16	2.0%	42.7%	28
Sirsa	12,95,189	70	42	0	28	2	0.0%	60.0%	5
Sonepat	14,50,001	536	263	6	267	18	1.1%	49.1%	37
Yamunanagar	12,14,205	45	20	0	25	2	0.0%	44.4%	4
Foreign (USA) Returnee Haryana Citizens	NA	21	5	0	16	NA	0.0%	23.8%	NA
Haryana	2,54,17,378	7208	3003	88	4117	16	1.2%	41.7%	28

Figure No. 3: Distribution of Total COVID-19 Cases in the Districts of Haryana (as on 14.06.2020)

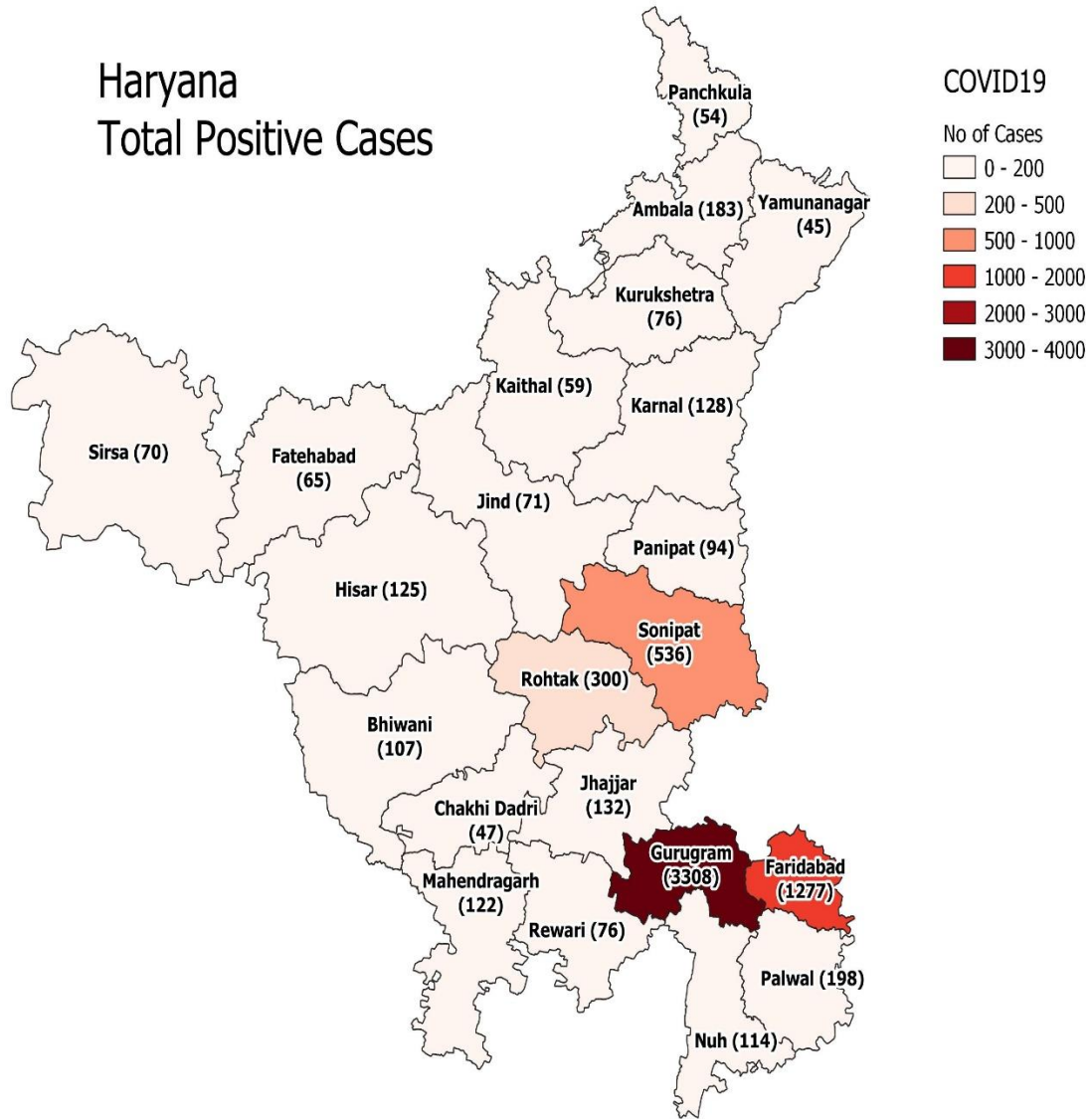


Figure No. 4: Distribution of Total Active COVID-19 Cases in the Districts of Haryana (as on 14.06.2020)

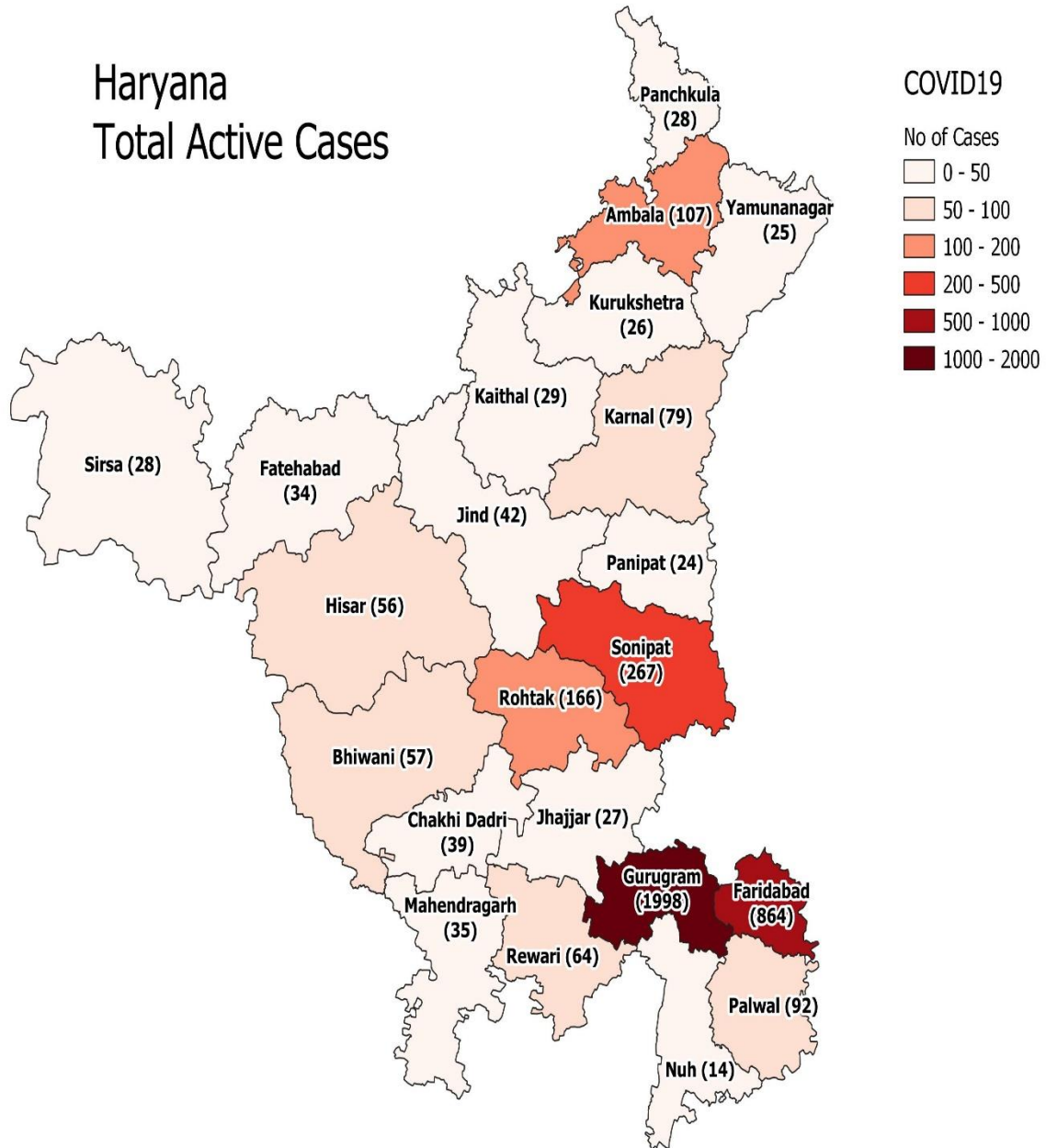


Figure No. 5: District Wise Distribution of COVID-19 Cases in Haryana (as on 14.06.2020)

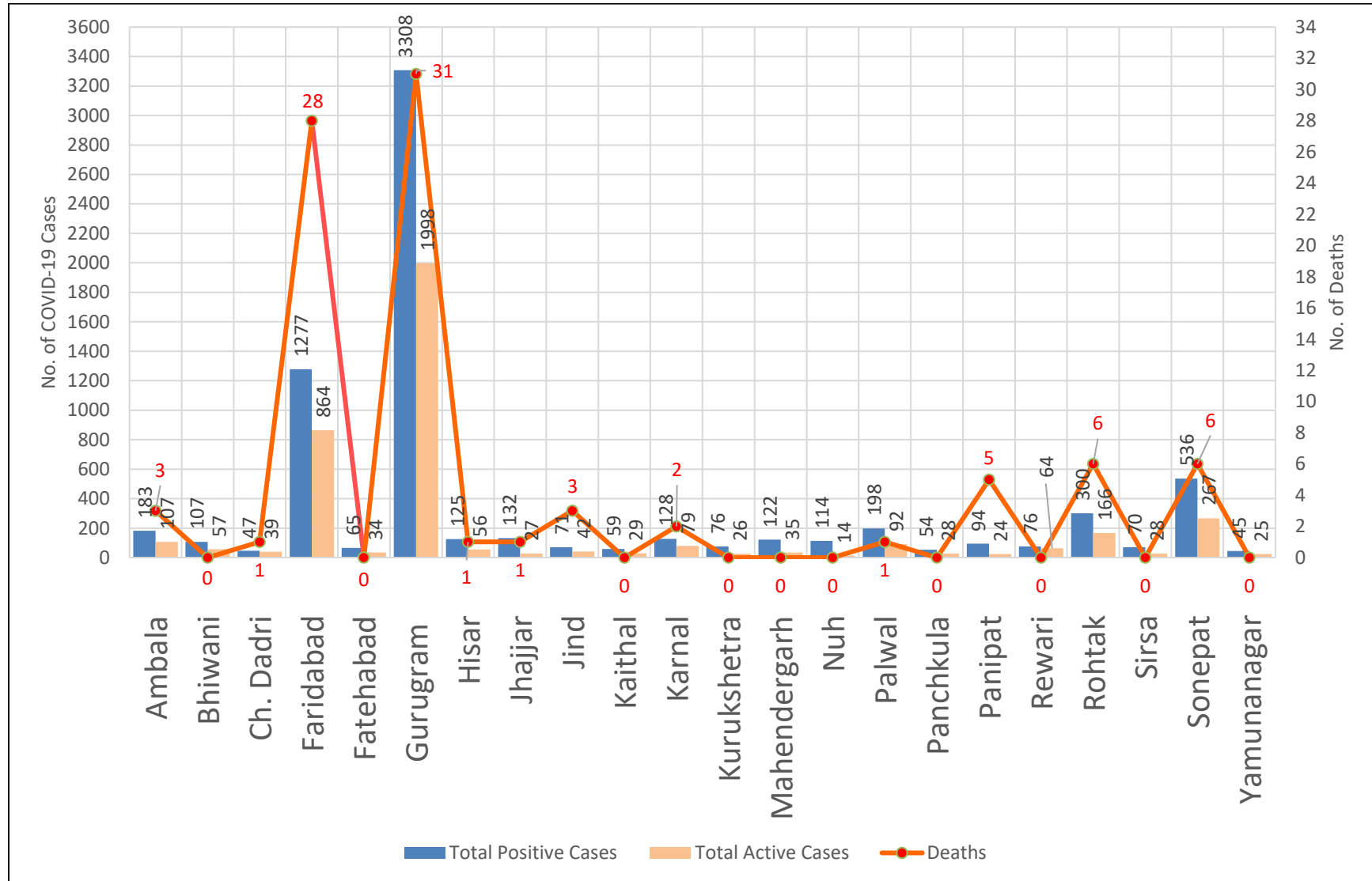
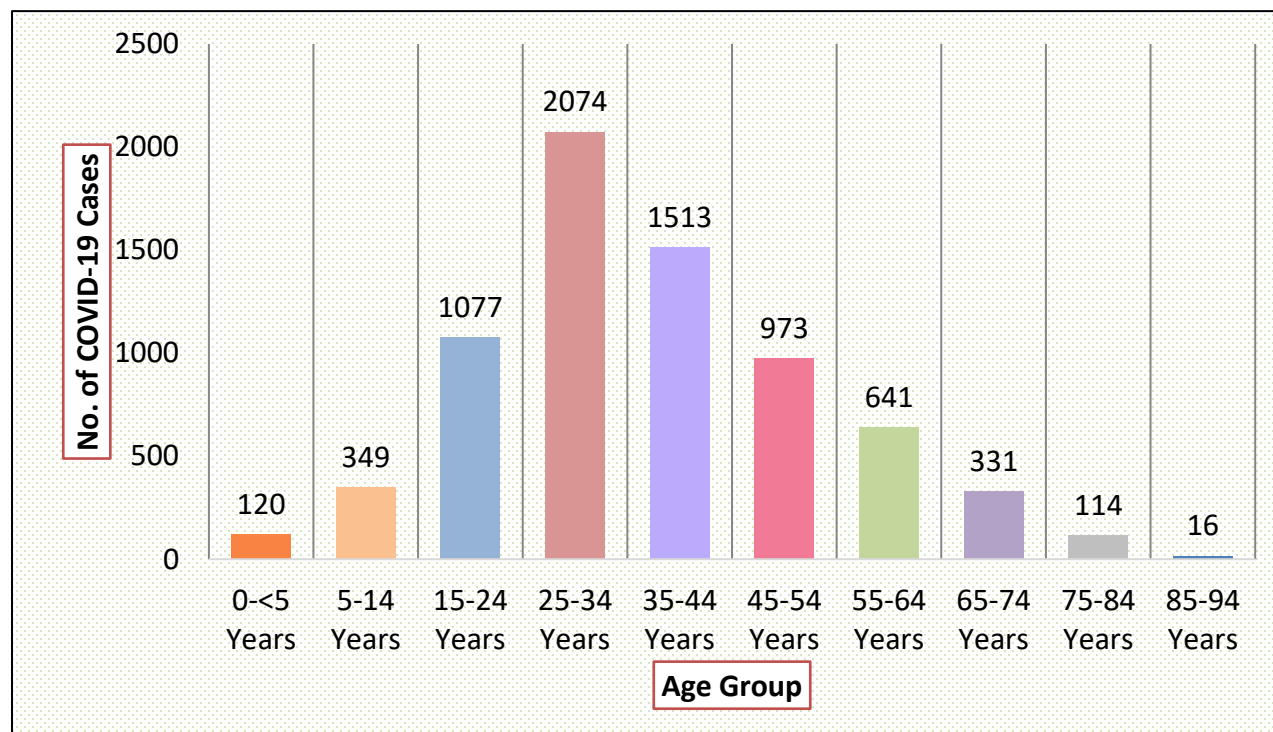


Table No. 4: Age Wise Distribution of COVID-19 Cases and Deaths in Haryana (as on 14.06.2020)

Age Group	No. of Cases	No. of Death	Mortality (%)
0-<5 Years	120	0	0.0%
5-14 Years	349	0	0.0%
15-24 Years	1077	4	0.4%
25-34 Years	2074	6	0.3%
35-44 Years	1513	13	0.9%
45-54 Years	973	16	1.6%
55-64 Years	641	18	2.8%
65-74 Years	331	19	5.7%
75-84 Years	114	9	7.9%
85-94 Years	16	3	18.8%
Total	7208	88	1.2%

Figure No. 6: Age Wise Distribution of COVID-19 Cases in Haryana (N=7208) (as on 14.06.2020)



The age wise distribution of COVID-19 Cases in Haryana is represent that the highest number of cases reported in Haryana belongs to age group 25-34 years followed by age groups 35-44 years, 15-24 years, 45-54 years, 55-64 years, 5-14 years, 65-74 years, 0-<5 years, 75-84 years, and 85-94 years.

Figure No. 7: Age Wise Distribution of COVID-19 Deaths in Haryana (N=88) (as on 14.06.2020)

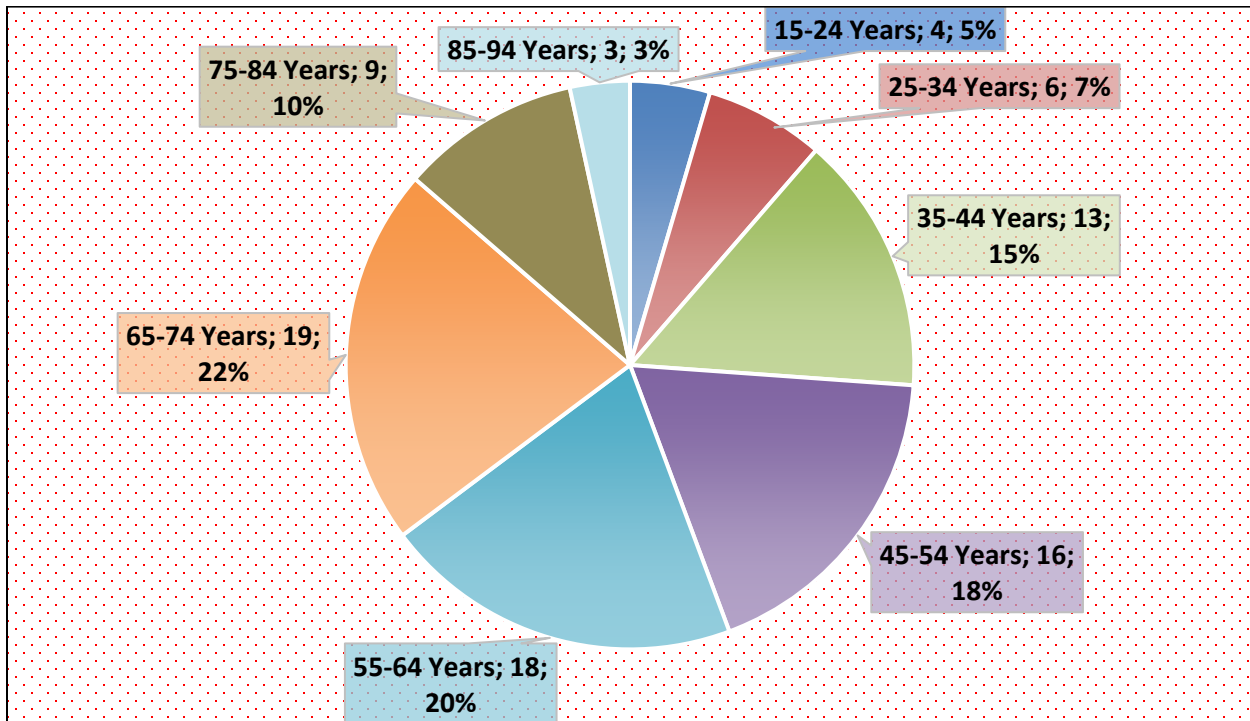


Figure No. 8: Gender Wise Distribution of COVID-19 Cumulative Cases in Haryana (N=7208) (as on 14.06.2020)

(as on 14.06.2020)

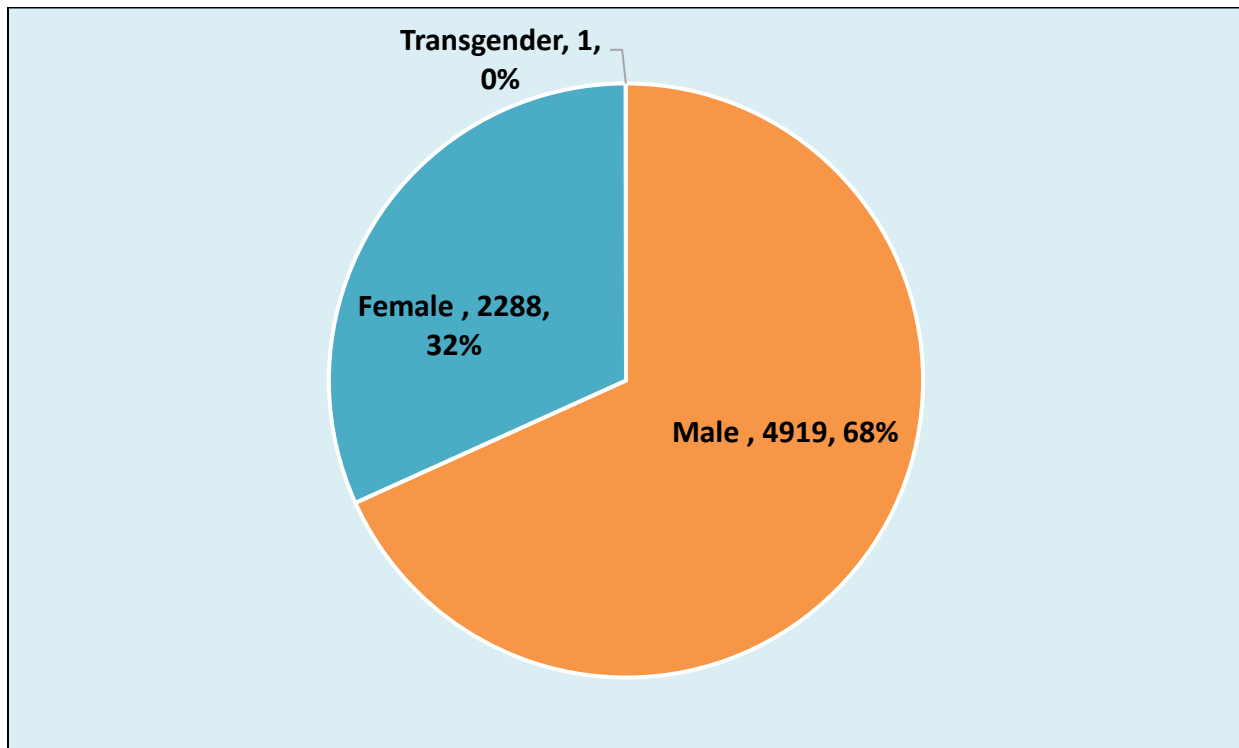


Figure No. 9: Gender Wise Distribution of COVID-19 Deaths in Haryana (N=88) (as on 14.06.2020)

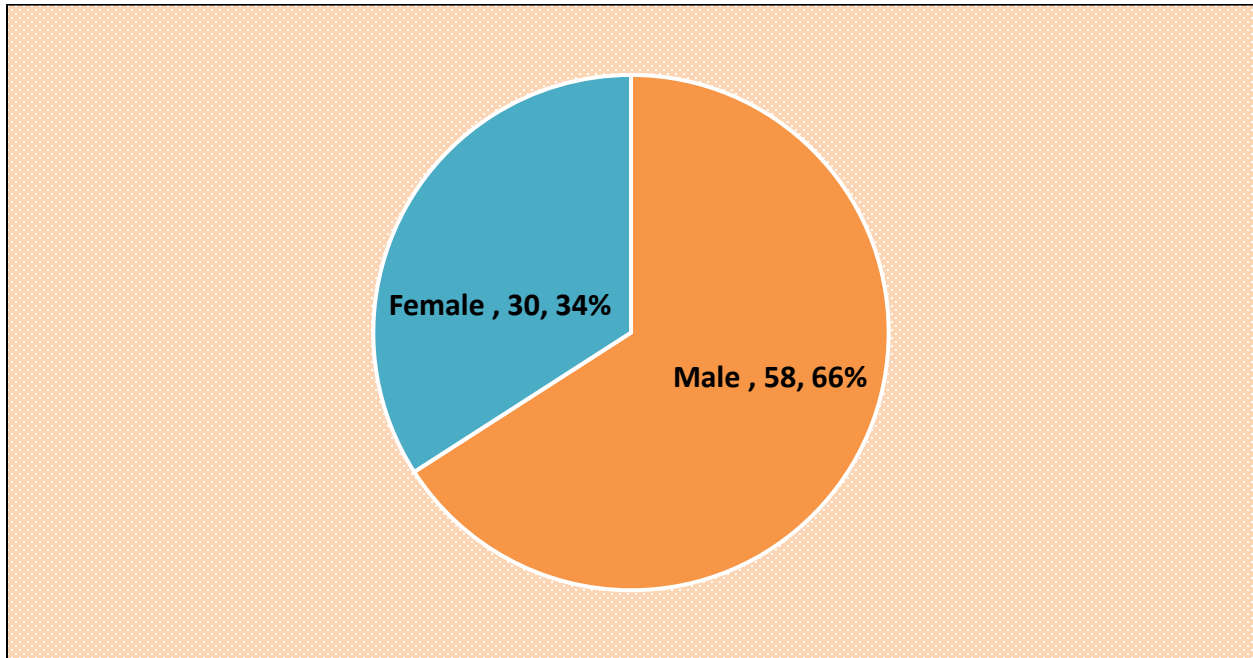


Figure No. 10: Occupation Wise Distribution of COVID-19 Cases in Haryana (N=7208) (as on 14.06.2020)

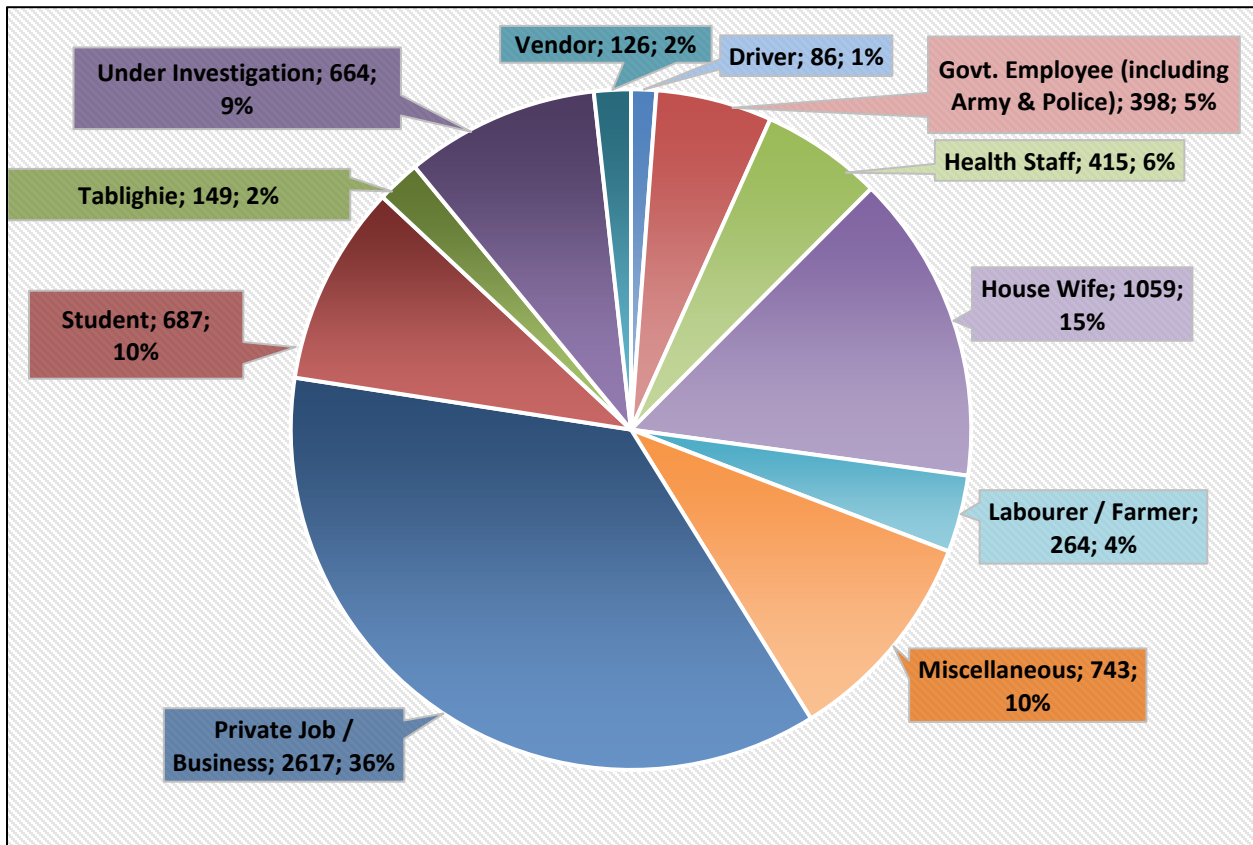


Figure No. 11: Date and Day Wise Trend of Cumulative Cases of COVID-19 and Moving Average (7 Days) in Haryana since the Inception of First Case on 17.03.2020 (as on 14.06.2020)

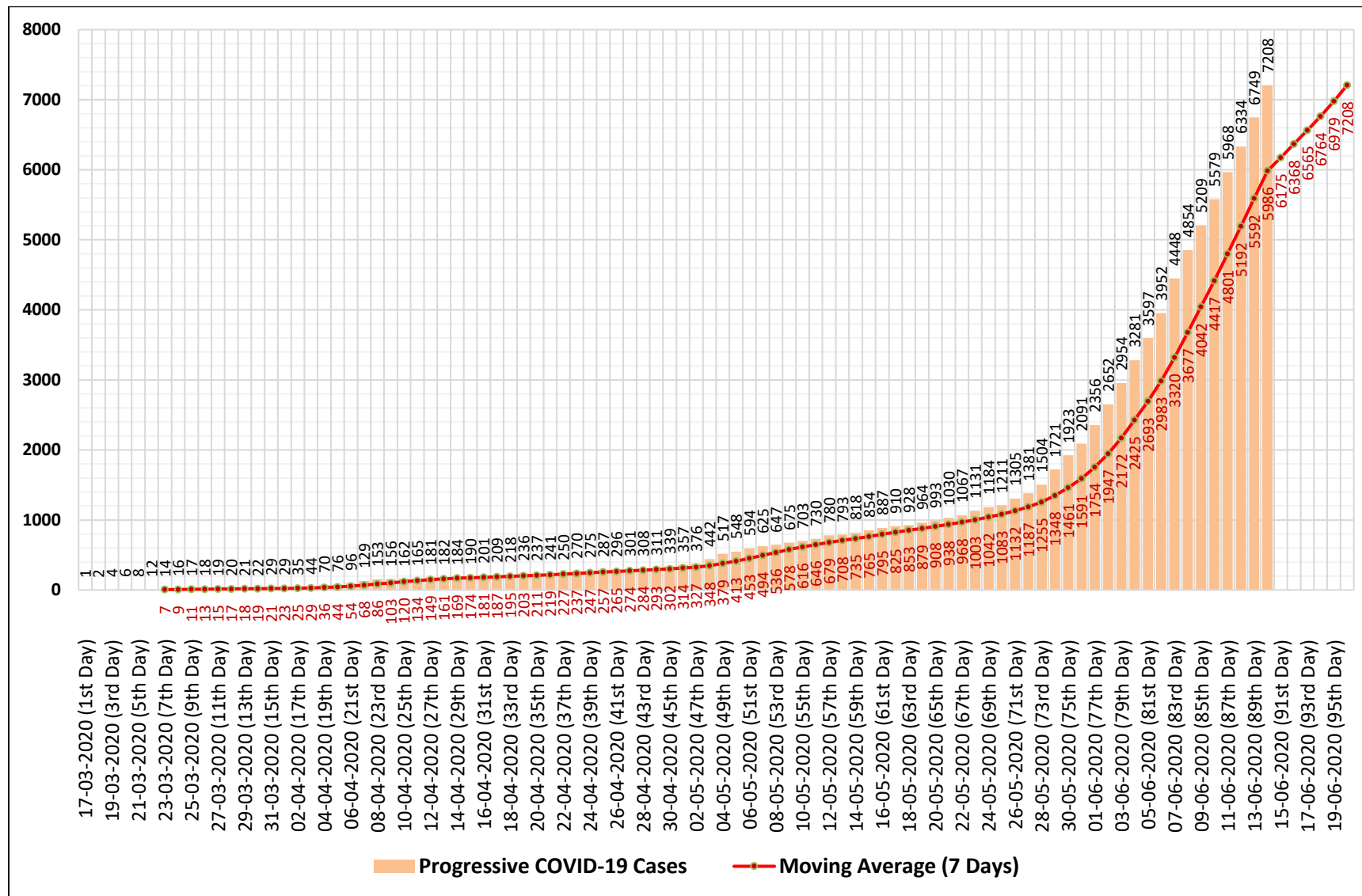


Figure No. 12: Weekly Trend of COVID-19 Cumulative and New Cases in Haryana (as on 14.06.2020)

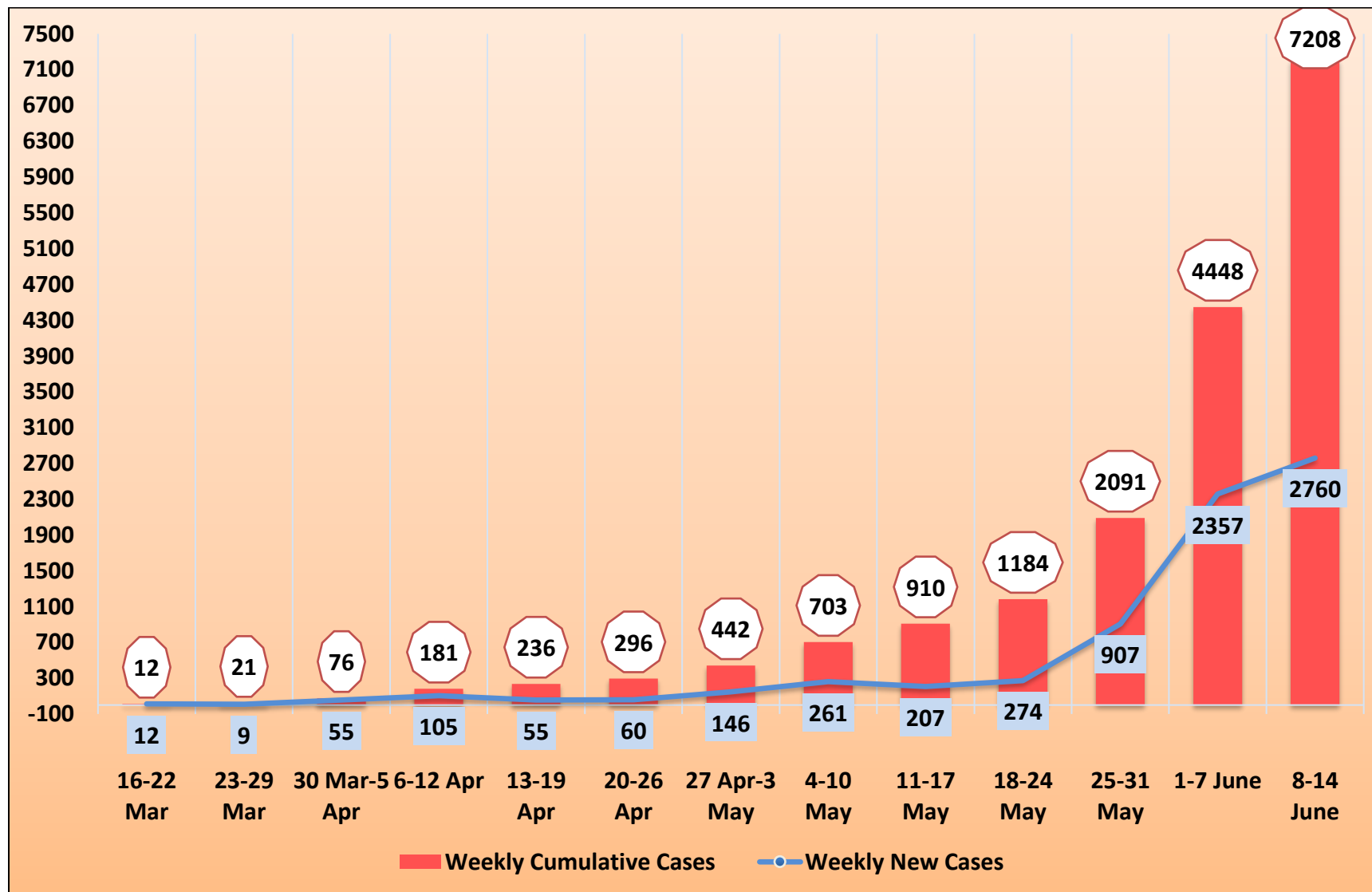


Figure No. 13: Date and Day Wise Distribution of COVID-19 New Cases and Moving Average (7 Days) in Haryana (as on 14.06.2020)

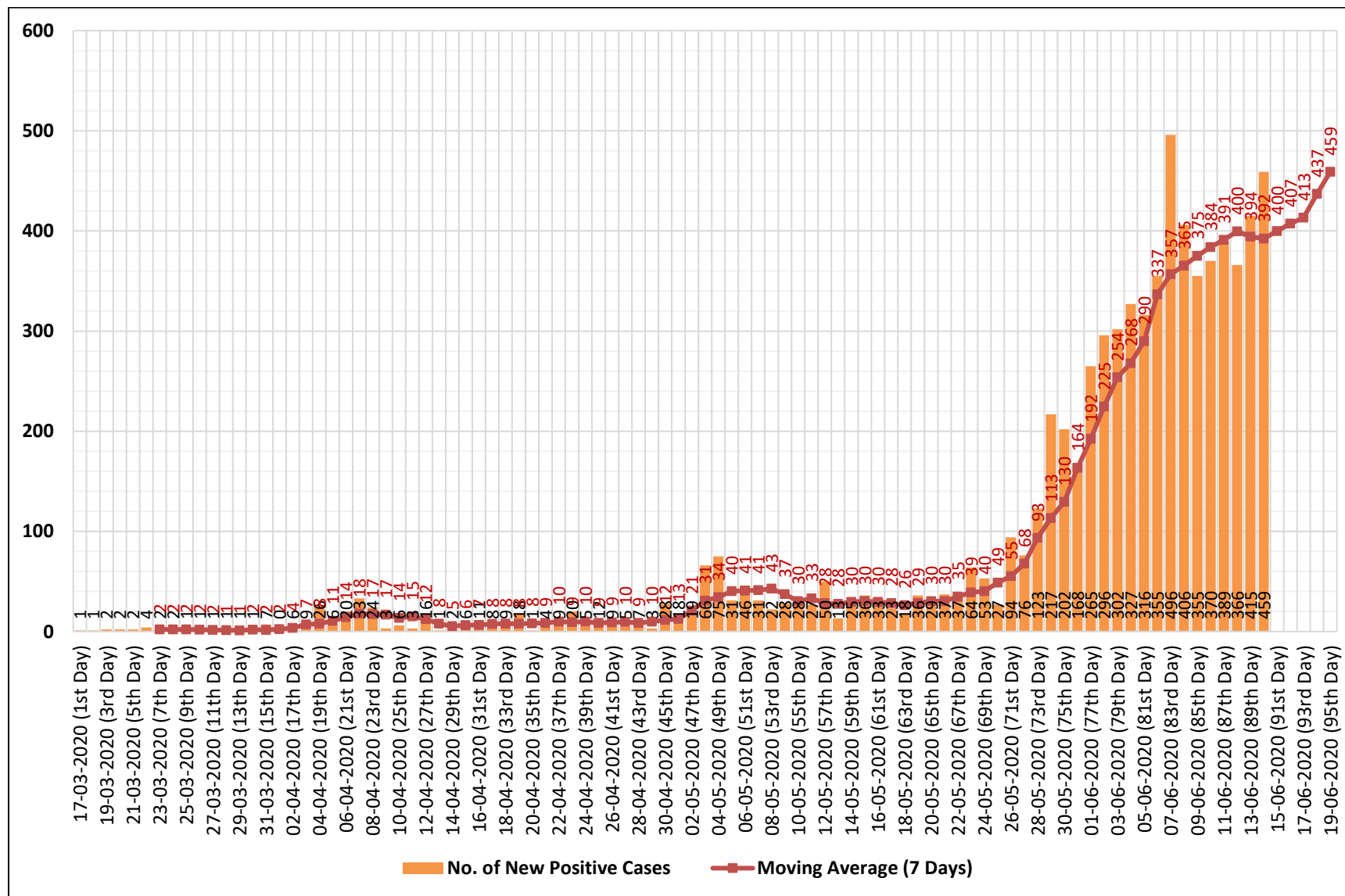


Table No. 5: COVID-19 Testing Status in Haryana (as on 14.06.2020)

District	Total Samples Collected	Positive Samples	Negative Samples	Awaited Samples	Total Samples Tested	Positivity Rate (%)	Samples Collected Per Lakh Population	Samples Tested Per Lakh Population
Ambala	9015	183	8385	447	8568	2.1	799	759
Bhiwani	4535	107	4172	256	4279	2.5	379	357
Charkhi Dadri	3834	47	3616	171	3663	1.3	763	729
Faridabad	17327	1277	15668	382	16945	7.5	957	936
Fatehabad	5102	65	4823	214	4888	1.3	542	519
Gurugram	28460	3308	24938	214	28246	11.7	1879	1865
Hisar	10210	125	9798	287	9923	1.3	585	569
Jhajjar	4857	132	4528	197	4660	2.8	507	486
Jind	7335	71	6988	276	7059	1.0	550	529
Kaithal	5466	59	5107	300	5166	1.1	509	481
Karnal	11310	128	10835	347	10963	1.2	751	728
Kurukshetra	7942	76	7583	283	7659	1.0	823	794
Mahendergarh	4737	122	4380	235	4502	2.7	514	488
Nuh	6517	114	6188	215	6302	1.8	598	579
Palwal	7377	198	6997	182	7195	2.8	707	690
Panchkula	6303	75	5967	261	6042	1.2	1123	1076
Panipat	5927	94	5638	195	5732	1.6	492	476
Rewari	3613	76	3392	145	3468	2.2	401	385
Rohtak	13696	300	13027	369	13327	2.3	1291	1256
Sirsa	4432	70	4154	208	4224	1.7	342	326
Sonepat	13062	536	12140	386	12676	4.2	901	874
Yamunanagar	4665	45	4354	266	4399	1.0	384	362
Haryana	185722	7208	172678	5836	179886	4.0	731	708

Figure No. 14: Date Wise Trend of Positivity Rate and Sample Tested in Haryana (as on 14.06.2020)

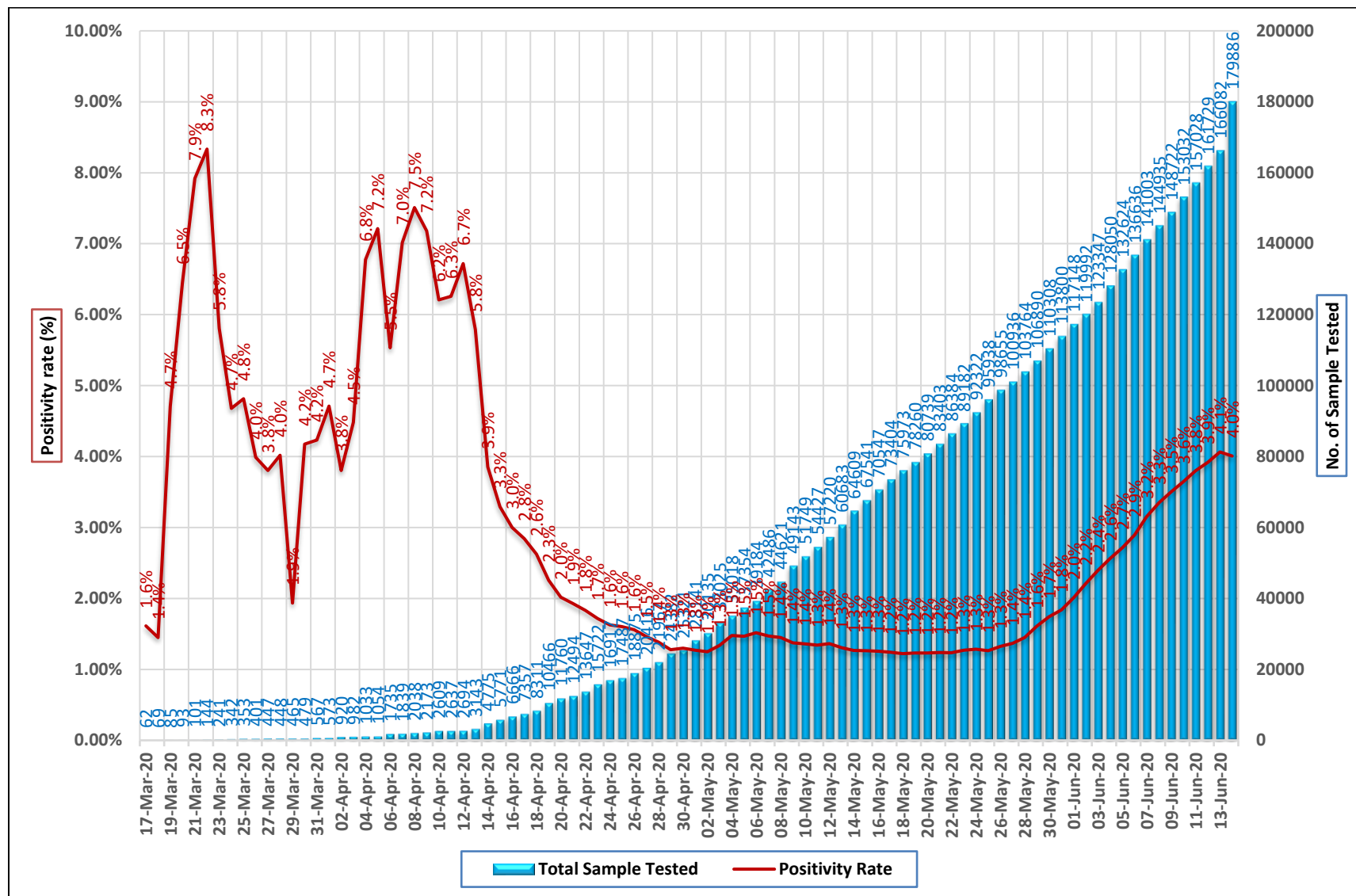


Figure No. 15: District Wise Comparison of Positivity Rate (%) and Samples Tested Per Lakh Population as per the Census 2011 & Official Website of New Districts (as on 14.06.2020)

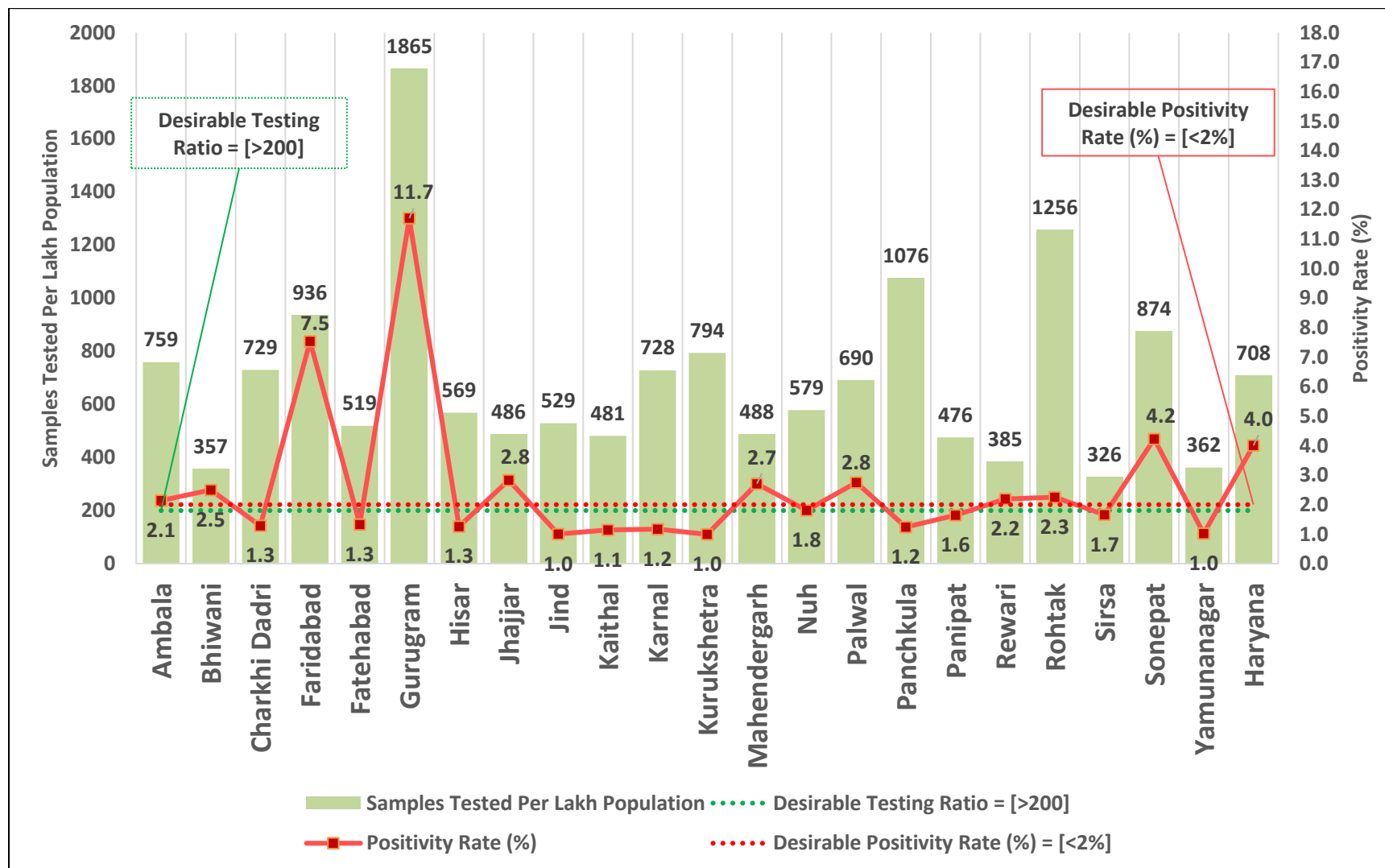


Figure No. 16: District Wise Distribution of Containment Zones and Person Found Symptomatic ILI / SARI in Haryana (as on 14.06.2020)

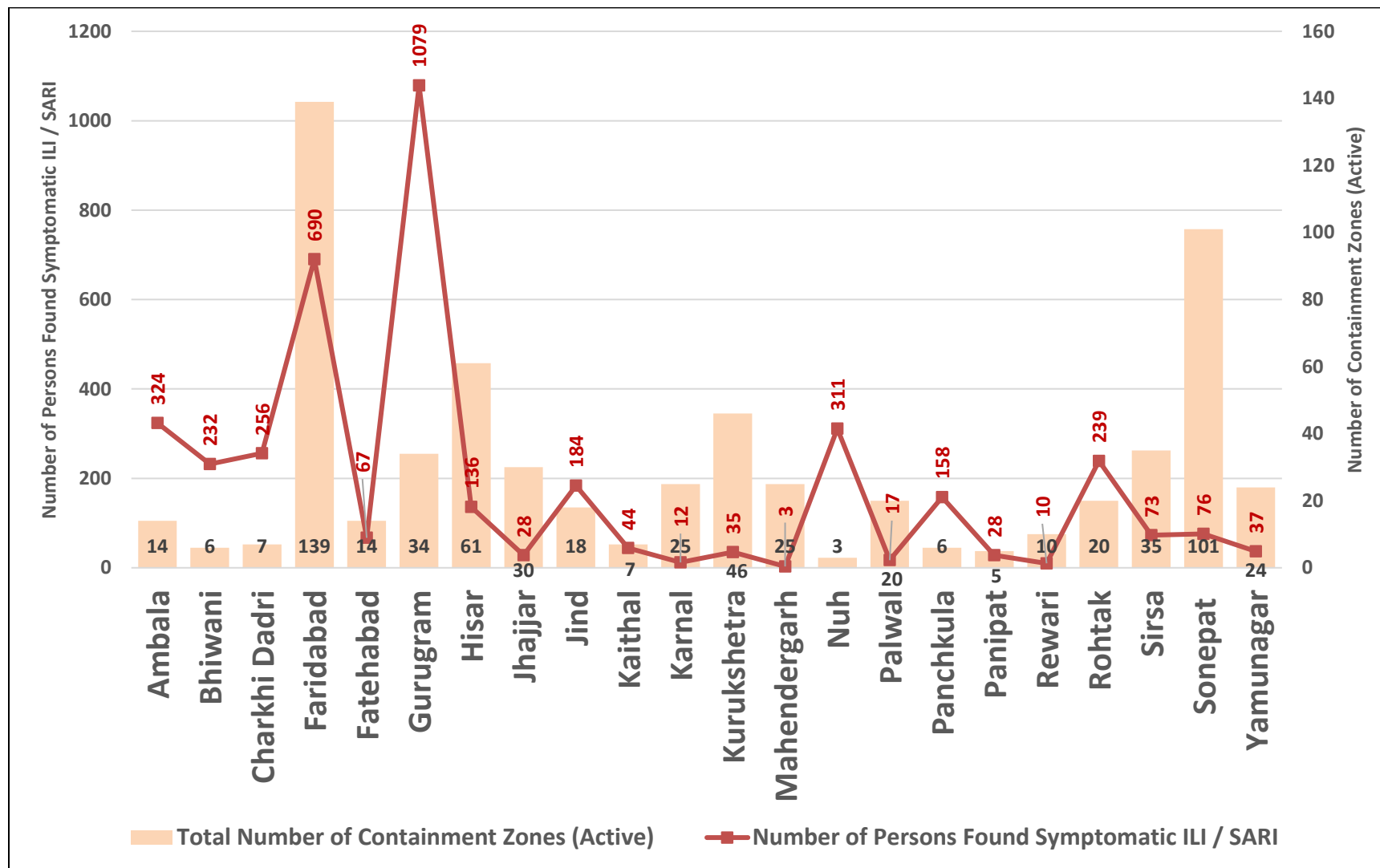


Table No. 6: District Wise Distribution of Containment Zones in Haryana (as on 14.06.2020)

Districts	Total Number of Containment Zones (Active)	Total Households in Containment Zone	Total Population in Containment Zone	Number of Persons Found Symptomatic ILI / SARI
Ambala	14	4342	22756	324
Bhiwani	6	10417	54746	232
Charkhi Dadri	7	6913	39941	256
Faridabad	139	105986	480219	690
Fatehabad	14	1099	5698	67
Gurugram	34	46141	207603	1079
Hisar	61	6163	31607	136
Jhajjar	30	10921	50083	28
Jind	18	13726	73848	184
Kaithal	7	489	2540	44
Karnal	25	8272	38683	12
Kurukshetra	46	2290	12046	35
Mahendergarh	25	2532	12870	3
Nuh	3	1723	10638	311
Palwal	20	19045	138504	17
Panchkula	6	4064	19608	158
Panipat	5	7406	34760	28
Rewari	10	15783	75791	10
Rohtak	20	6723	40744	239
Sirsa	35	1944	9495	73
Sonepat	101	99650	473737	76
Yamunanagar	24	3969	20469	37
Total	650	379598	1856386	4039

Table No. 7: Health Facility Wise Distribution of Critical COVID-19 Patients in Haryana (as on 14.06.2020)

Sr. No.	Health Facility / Medical College	Patient on Oxygen Support	Patient on Ventilator	Total
1	Pt. BD Sharma PGIMS, Rohtak	6	2	8
2	BPSGMC, Khanpur Kalan, Sonapat	1	0	1
3	SGT Medical College & Hospital & Research Institute, Budhera, Gurugram	8	0	8
4	ESIC Medical College and Hospital, Faridabad	16	2	18
5	MM Institute of Medical Sciences & Research, Mullana, Ambala	2	0	2
6	Medeor Hospital, Manesar, Gurugram	0	3	3
7	Fortis Hospital, Gurugram	0	3	3
8	Medanta Hospital, Gurugram	0	4	4
	Total	33	14	47

Table No. 8: Category Wise Distribution of COVID-19 Facilities in Haryana (as on 14.06.2020)

Category	No of Facilities	Total Isolation Beds	Beds for Confirmed Cases	Beds for Suspected Cases	O2 Supported Beds	Total ICU Beds	No of Ventilators	O2 Manifold Available	Available PPEs	Available N95	Compatible to B.W.M. System
Cat. I - Dedicated COVID Hospitals / DCH	42	3674	2060	1614	2344	573	281	40	19219	47857	42
Cat. II - Dedicated COVID Health Center / DCHC	182	5311	2257	3054	2642	1530	770	110	31300	68443	182
Cat. III - Dedicated COVID Center / DCCC	421	36611	8633	27978	NA	NA	NA	NA	4946	6852	403
Total	645	45596	12950	32646	4986	2103	1051	150	55465	123152	627

Table No. 9: Status of Districts of Haryana According to Zoning Parameters Recommended by MOHFW (as on 14.06.2020)

District	Population (Census 2011 & Website)	Total Cases	Total Active Cases	Active Case Per Lakh Population	Case Fatality Rate (%)	Testing Ratio (No. of Sample Tested Per Lakh Population)	Confirmation Rate (%) / Positivity Rate (%)	Doubling Rate (7 days) = 7/Log 2 (N7/N1)
Ambala	1128350	183	107	9	1.6%	759	2.1	7.4
Bhiwani	1198085	107	57	5	0.0%	357	2.5	13.1
Ch. Dadri	502276	47	39	8	2.1%	729	1.3	16.6
Faridabad	1809733	1277	864	48	2.2%	936	7.5	9.7
Fatehabad	942011	65	34	4	0.0%	519	1.3	12.4
Gurugram	1514432	3308	1998	132	0.9%	1865	11.7	11.6
Hisar	1743931	125	56	3	0.8%	569	1.3	13.8
Jhajjar	958405	132	27	3	0.8%	486	2.8	27.9
Jind	1334152	71	42	3	4.2%	529	1.0	9.2
Kaithal	1074304	59	29	3	0.0%	481	1.1	18.0
Karnal	1505324	128	79	5	1.6%	728	1.2	24.4
Kurukshetra	964655	76	26	3	0.0%	794	1.0	12.8
Mahendergarh	922088	122	35	4	0.0%	488	2.7	26.6
Nuh	1089263	114	14	1	0.0%	579	1.8	42.8
Palwal	1042708	198	92	9	0.5%	690	2.8	11.4
Panchkula	561293	54	28	5	0.0%	1076	1.2	10.5
Panipat	1205437	94	24	2	5.3%	476	1.6	46.5
Rewari	900332	76	64	7	0.0%	385	2.2	10.6
Rohtak	1061204	300	166	16	2.0%	1256	2.3	9.2
Sirsa	1295189	70	28	2	0.0%	326	1.7	23.4
Sonepat	1450001	536	267	18	1.1%	874	4.2	23.4
Yamunanagar	1214205	45	25	2	0.0%	362	1.0	6.0
Foreign (USA) Returnee Haryana Citizens	NA	21	16	NA	NA	NA	NA	NA
Haryana	25417378	7208	4117	16	1.2%	708	4.0	12.4

Glossary of Formula Used: -

- ❖ **Active Case Load Per Lakh Population** = (No. of Active Cases / Total Population) *100000
- ❖ **Growth Rate** = {(Current Value – Previous Value) /Current Value} *100
- ❖ **Mortality (%)** = (No. of Deaths/Total Confirmed Cases) *100
- ❖ **Moving Average** = Average (No. of Cumulative Cases on N1: No. of Cumulative Cases on N7)
- ❖ **Positivity Rate (%)** = No. of Positive Cases/ (Total Sample Tested) *100
- ❖ **Positive Cases Per Lakh Population** = (No. of Positive Cases / Total Population) *100000
- ❖ **Recovery (%)** = (No. of Cured Cases/Total Confirmed Cases) *100
- ❖ **Sample Collected Per Lakh Population** = (Total Sample Collected/Total Population) *100000
- ❖ **Total Sample Tested** = Sum (No. of Positive Cases + No. of Negative Cases)
- ❖ **Testing Ratio / Sample Tested Per Lakh Population** = (Total Sample Collected/Total Population) *100000

Bibliography: -

- Adhikari, S. P., Meng, S., Wu, Y. J., Mao, Y. P., Ye, R. X., Wang, Q. Z., . . . Zhou, H. (2020, March). Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infectious Diseases of Poverty*, 9(29). doi:<https://doi.org/10.1186/s40249-020-00646-x>
- Coronavirus (COVID-19)*. (2020, June 14). Retrieved June 14, 2020, from World Health Organization: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- Coronavirus (COVID-19)*. (2020, June 14). Retrieved June 14, 2020, from www.covid19.who.int: <https://covid19.who.int/>
- COVID-19 INDIA*. (2020, June 14). Retrieved June 14, 2020, from www.mohfw.gov.in: <https://www.mohfw.gov.in/>
- Guo, Y. R., Cao, Q. D., Hong, Z. S., Tan, Y. Y., Chen, S. D., Jin, H. J., . . . Yan, Y. (2020, March). The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak – an update on the status. *Military Medical Research*, 7(11). doi:<https://doi.org/10.1186/s40779-020-00240-0>
- Prasad, R., Perappadan, B. S., Shelar, J., & Koshy, J. (2020). *The Pandemic Notebook - A handy guide from The Hindu on understanding the coronavirus*. (P. J. George, Ed.) Retrieved April 28, 2020, from www.creatives.thehindu.com: https://creatives.thehindu.com/covid_19_ebook.pdf
- Singhal, T. (2020, March). A Review of Coronavirus Disease-2019 (COVID-19). *Indian Journal of Pediatrics*, 27(4), 281-286. Retrieved April 28, 2020, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7090728/>
- Wikipedia contributors. (2020, April 28). *2020 Coronavirus Pandemic in India*. (Wikipedia, The Free Encyclopedia) Retrieved April 28, 2020, from en.wikipedia.org: https://en.wikipedia.org/wiki/2020_coronavirus_pandemic_in_India#cite_note-mohfw-5