

# **PSOSM - Endsem**

**-Harkishan Singh (2017233)**

**-Mayank Chopra (2017066)**

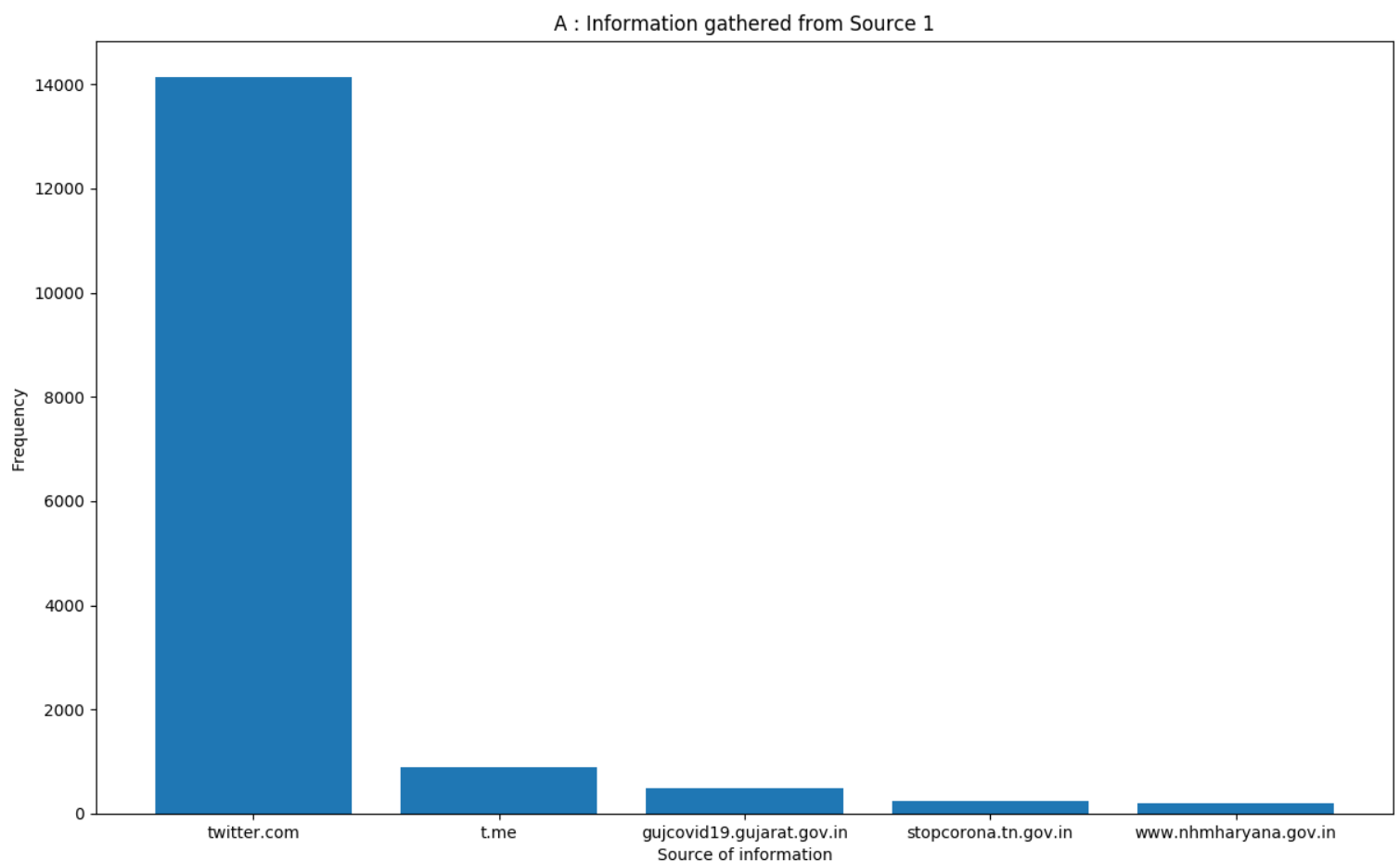
**-Aman Gulia (2017328)**

# COVID-19 Data Analysis

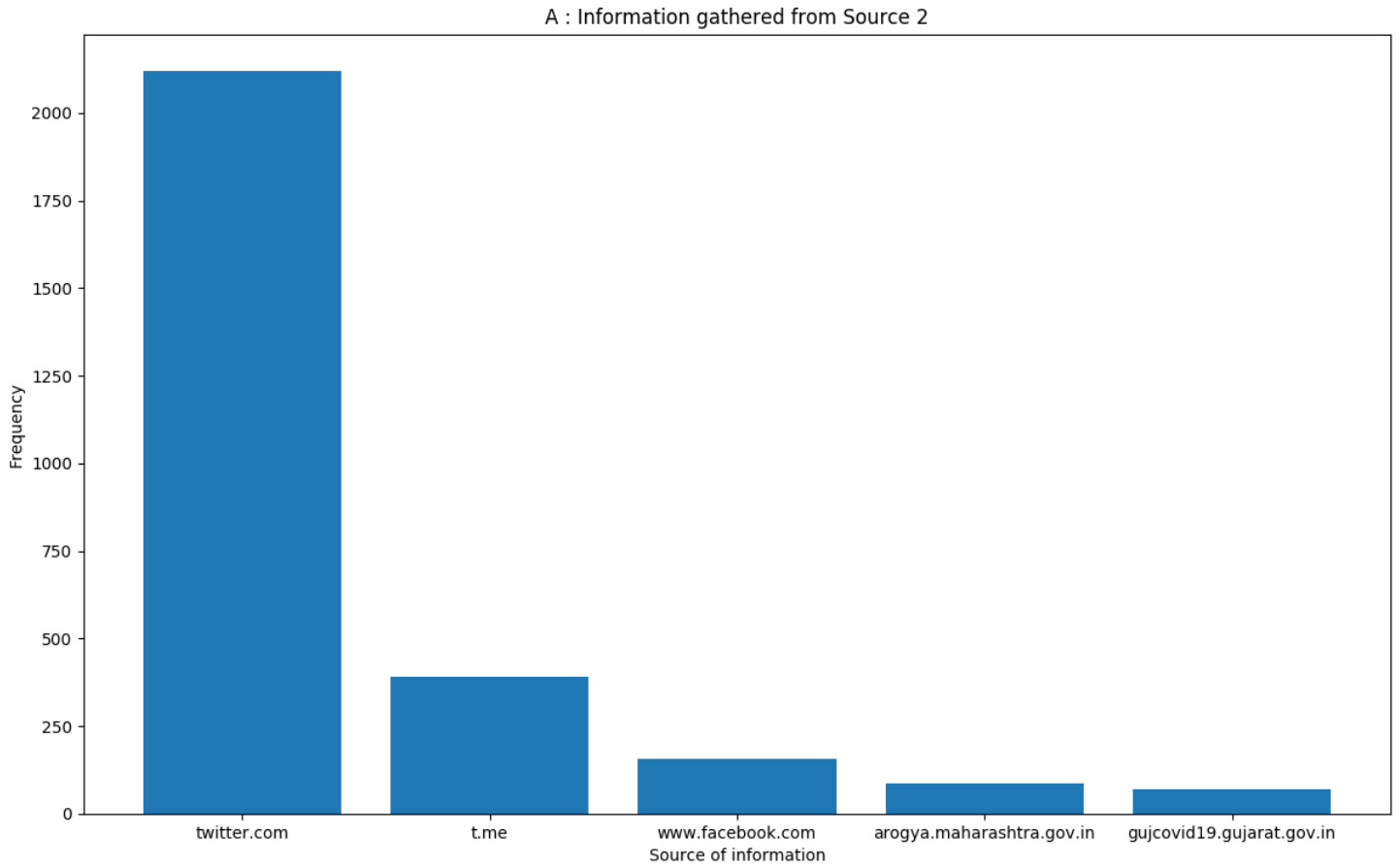
We are given data of people infected with COVID-19 and we are supposed to do some data analysis.

A) For this part, we have to plot bar graph showing the source of information. I have taken top 5 sources and plotted them. Complete list is also provided below (in non graph manner). For this part I have made the function `a_create_graph()`, which return sorted list of source of information and their corresponding frequency.

## Source 1 :

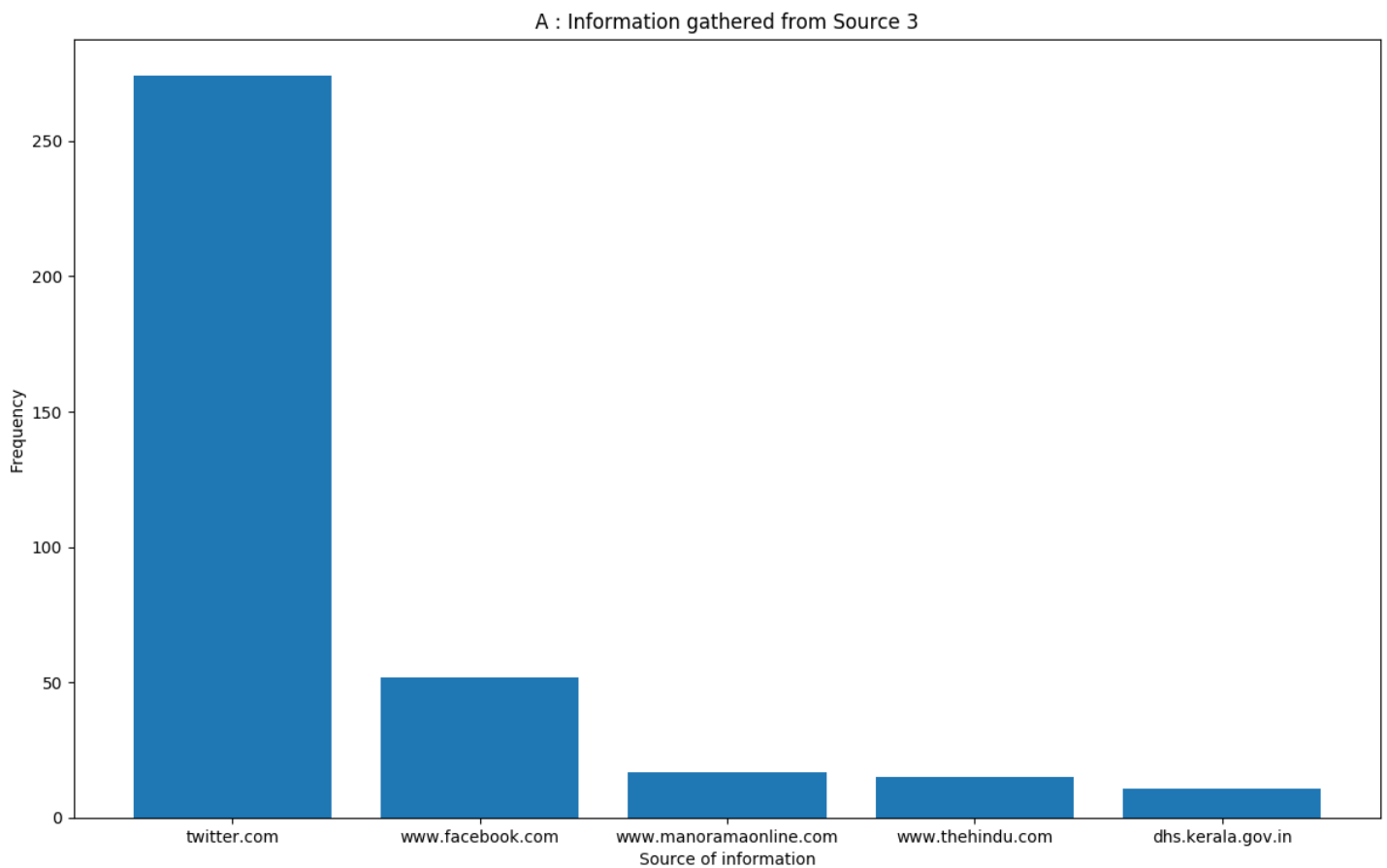


## Source 2:



This bar graph is made from column 'Source\_2' of data provided.

### Source 3:



This bar graph is made from column 'Source\_2' of data provided.

**Observation :** In all three graphs, mostly, twitter is being used as a source of information.

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B) Major information source is twitter in all above three graph. Quantitatively :

Source 1

```
['twitter.com', 14130]
['t.me', 893]
['gujccovid19.gujarat.gov.in', 497]
['stopcorona.tn.gov.in', 248]
['www.nhmharyana.gov.in', 190]
['www.mohfw.gov.in', 82]
['www.indiatoday.in', 68]
['arogya.maharashtra.gov.in', 54]
['indianexpress.com', 38]
['www.rajswasthya.nic.in', 27]
['dronamaps.com', 26]
['dhs.kerala.gov.in', 26]
['english.manoramaonline.com', 23]
['timesofindia.indiatimes.com', 19]
['www.thehindu.com', 18]
['hmfw.ap.gov.in', 17]
['mobile.twitter.com', 15]
['www.livemint.com', 13]
['english.mathrubhumi.com', 11]
['www.hindustantimes.com', 10]
['www.thenewsminute.com', 10]
['karunadu.karnataka.gov.in', 10]
['www.facebook.com', 9]
['chdcovid19.in', 8]
['www.deccanherald.com', 7]
['www.ndtv.com', 7]
['www.wbhealth.gov.in', 7]
['www.businesstoday.in', 6]
['www.newindianexpress.com', 6]
['www.mohfw.gov.in', 6]
['www.cghealth.nic.in', 6]
['covid19.telangana.gov.in', 5]
['economictimes.indiatimes.com', 4]
['www.jagran.com', 4]
['www.amarujala.com', 4]
['www.ptinews.com', 4]
['www.firstpost.com', 3]
['www.indiatvnews.com', 3]
['www.business-standard.com', 3]
['health.odisha.gov.in', 3]
['health.delhigovt.nic.in', 2]
['ahmedabadmirror.indiatimes.com', 2]
['www.youtube.com', 2]
['www.bhaskar.com', 2]
['english.varthabharati.in', 2]
['www.manoramanews.com', 2]
['', 2]
['www.outlookindia.com', 2]
['stopcoronatin.in', 2]
['www.jipmer.edu.in', 2]
['www.businessinsider.in', 1]
['mumbaimirror.indiatimes.com', 1]
['epaper.hindustantimes.com', 1]
['m.hindustantimes.com', 1]
['www.babushahi.com', 1]
['kannada.asianetnews.com', 1]
['dbpost.com', 1]
['covid.ladakh.gov.in', 1]
```

Source 2

```
['twitter.com', 2119]
['t.me', 391]
['www.facebook.com', 158]
['arogya.maharashtra.gov.in', 88]
['gujccovid19.gujarat.gov.in', 69]
['experience.arcgis.com', 63]
['www.thehindu.com', 47]
['dhs.kerala.gov.in', 46]
['www.indiatoday.in', 36]
['timesofindia.indiatimes.com', 35]
['economictimes.indiatimes.com', 31]
['www.livemint.com', 23]
['www.outlookindia.com', 23]
['www.hindustantimes.com', 19]
['www.nhmharyana.gov.in', 18]
['www.thenewsminute.com', 15]
['www.deccanherald.com', 13]
['www.manoramaonline.com', 13]
['www.newindianexpress.com', 11]
['english.manoramaonline.com', 9]
['indianexpress.com', 9]
['punjabupdate.com', 8]
['www.ndtv.com', 7]
['www.gujaratsamachar.com', 7]
['in.news.yahoo.com', 6]
['punemirror.indiatimes.com', 6]
['dbpost.com', 6]
['www.google.com', 5]
['thewire.in', 5]
['khabar.ndtv.com', 5]
['ahmedabadmirror.indiatimes.com', 4]
['www.naidunia.com', 4]
['www.patrika.com', 4]
['dronamaps.com', 4]
['www.nrhmp.gov.in', 4]
['health.odisha.gov.in', 4]
['www.theweek.in', 3]
['www.news18.com', 3]
['www.businessinsider.in', 3]
['weather.com', 2]
['www.firstpost.com', 2]
['mumbaimirror.indiatimes.com', 2]
['www.bhaskar.com', 2]
['theprint.in', 2]
['www.amarujala.com', 2]
['stopcorona.tn.gov.in', 2]
['www.indiatv.in', 2]
['www.thekashmirmonitor.net', 2]
['www.financialexpress.com', 2]
['www.tribuneindia.com', 2]
['collectorate.py.gov.in', 2]
['health.delhigovt.nic.in', 1]
['newsonair.com', 1]
['drive.google.com', 1]
['epaper.hindustantimes.com', 1]
['www.latestly.com', 1]
['kalingatv.com', 1]
['pbs.twimg.com', 1]
['www.oneindia.com', 1]
```

Source 3

```
['twitter.com', 274]
['www.facebook.com', 52]
['www.manoramaonline.com', 17]
['www.thehindu.com', 15]
['dhs.kerala.gov.in', 11]
['punjabupdate.com', 9]
['gujccovid19.gujarat.gov.in', 8]
['economictimes.indiatimes.com', 5]
['english.manoramaonline.com', 5]
['www.deccanherald.com', 5]
['indianexpress.com', 5]
['timesofindia.indiatimes.com', 4]
['m.hindustantimes.com', 4]
['www.hindustantimes.com', 3]
['prd.kerala.gov.in', 3]
['www.jagran.com', 3]
['www.indiatvnews.com', 3]
['www.mathrubhumi.com', 2]
['docs.google.com', 2]
['ahmedabadmirror.indiatimes.com', 2]
['www.outlookindia.com', 2]
['weather.com', 1]
['health.delhigovt.nic.in', 1]
['www.indiatoday.in', 1]
['www.theweek.in', 1]
['thepigeonexpress.com', 1]
['www.news18.com', 1]
['english.jagran.com', 1]
['www.tribuneindia.com', 1]
```

Above is the name of source and the frequency. For example : ['twitter.com',14130] means that twitter is used as source of information of COVID-19 patients 14130 times.

C) In this part, we are supposed to retrieve the twitter handles tweeting about COVID-19 patients and then, their 10 most recent tweets. There are total of 76 unique twitter handles in the whole dataset and those are :

Total number of twitter users : 81

['vijayanpinarayi', 'ani', 'pti\_news', 'xpressandhra', 'arogyaandhra', 'timesofindia', 'airnewsalerts', 'sriramulubjp', 'aninewsup', 'vijayabaskarofl', 'thmumbai', 'kansalrohit69', 'iprtelangana', 'hfwodisha', 'pibjaipur', 'tabeenahanjum', 'gujhfwdpt', 'zeerajasthan\_', 'pibshimla', 'telanganahealth', 'timesnow', 'huffpostindia', 'tv9gujarati', 'thandhra', 'mybmc', 'wilson\_thehindu', 'toihyderabad', 'httweets', 'thhyderabad', 'abpanandatv', 'arvindkejriwal', 'mohfw\_gujarat', 'thepunemirror', 'rajeshtopell', 'the\_hindu', 'bbmpcomm', 'dhfwka', 'rishikasadam', 'diprjk', 'economictimes', 'xpresskerala', 'cmodelhi', 'chetansanghi', 'nhm\_tn', 'iebengaluru', 'toiahmedabad', 'sreyashidey', 'iprd\_bihar', 'toibengaluru', 'toimumbai', 'thchennai', 'kbssidhu1961', 'pibtvpm', 'sanjayjavin', 'toinoida', 'himantabiswa', 'vpsbadnore', 'eatala\_rajender', 'pemakhandubjp', 'ians\_india', 'jansamparkmp', 'visrane', 'aamaadmiparty', 'collectordnh', 'bjpbiplab', 'pibahmedabad', 'nhm\_hp', 'ts\_singhdeo', 'ipr\_odisha', 'ladags', 'pibshillong', 'sangmaconrad', 'upgovt', 'ipskabra', 'dc\_dhanbad', 'nagarkoti']

For recent tweets, I have made a sorted (by date) csv file : 'tweets.csv', which contains : date of creation of tweet, tweet text and the user (twitter handle). 10 of them is shown below :

```
Tweet Created on = Wed May 06 18:10:01 +0000 2020 User = cmodelhi
Tweet :
🇮🇳Delhi Health Bulletin – 6th May 2020 🇮🇳
#DelhiFightsCorona https://t.co/KuImcBDjNh

Tweet Created on = Wed May 06 16:07:54 +0000 2020 User = dc_dhanbad
Tweet :
https://t.co/vW0aqEJ1st

Tweet Created on = Wed May 06 15:06:32 +0000 2020 User = ladags
Tweet :
https://t.co/jC0xcexRmp

Tweet Created on = Wed May 06 14:50:44 +0000 2020 User = telanganahealth
Tweet :
Media bulletin
Date: May 6, 2020
Status of positive cases of #COVID19 and also a list of districts with zero acti... https://t.co/uynC0ZlGzn

Tweet Created on = Wed May 06 14:46:40 +0000 2020 User = ladags
Tweet :
RT @DvCom_Secretary: 25 ppl from Gaya, Bihar to commence journey tomorrow morning, undergoing registration and medical screening.
@lg_lada...

Tweet Created on = Wed May 06 14:32:30 +0000 2020 User = nhm_tn
Tweet :
#UPDATE: 771 new COVID19 positive cases reported in Tamil Nadu bringing the total count to 4829 @CMOTamilNadu... https://t.co/OH3BNOz398

Tweet Created on = Wed May 06 13:28:18 +0000 2020 User = vijayanpinarayi
Tweet :
#COVID19 Update | May 6

No new cases.
7 recoveries.
8 districts (of a total 14) now have no active cases.
👥14,67... https://t.co/5rHPHjNnbm
```

Tweet Created on = Wed May 06 12:25:34 +0000 2020 User = ladags

Tweet :

RT @javedLadakh: @ladags @justcsachin Finally our family members reached home today. Thank you #UTLADAKH  
Hope by next batch, there would be...

Tweet Created on = Wed May 06 11:30:28 +0000 2020 User = dc\_dhanbad

Tweet :

चाकिंज्सा अथवा आवश्यक सेवा हेतु यात्रा करने हेतु आ सभी <https://t.co/Djzp0hJCKH> लिंक पर वहन पस के लिए आबदन दे सक. <https://t.co/dS3WURDLA8>

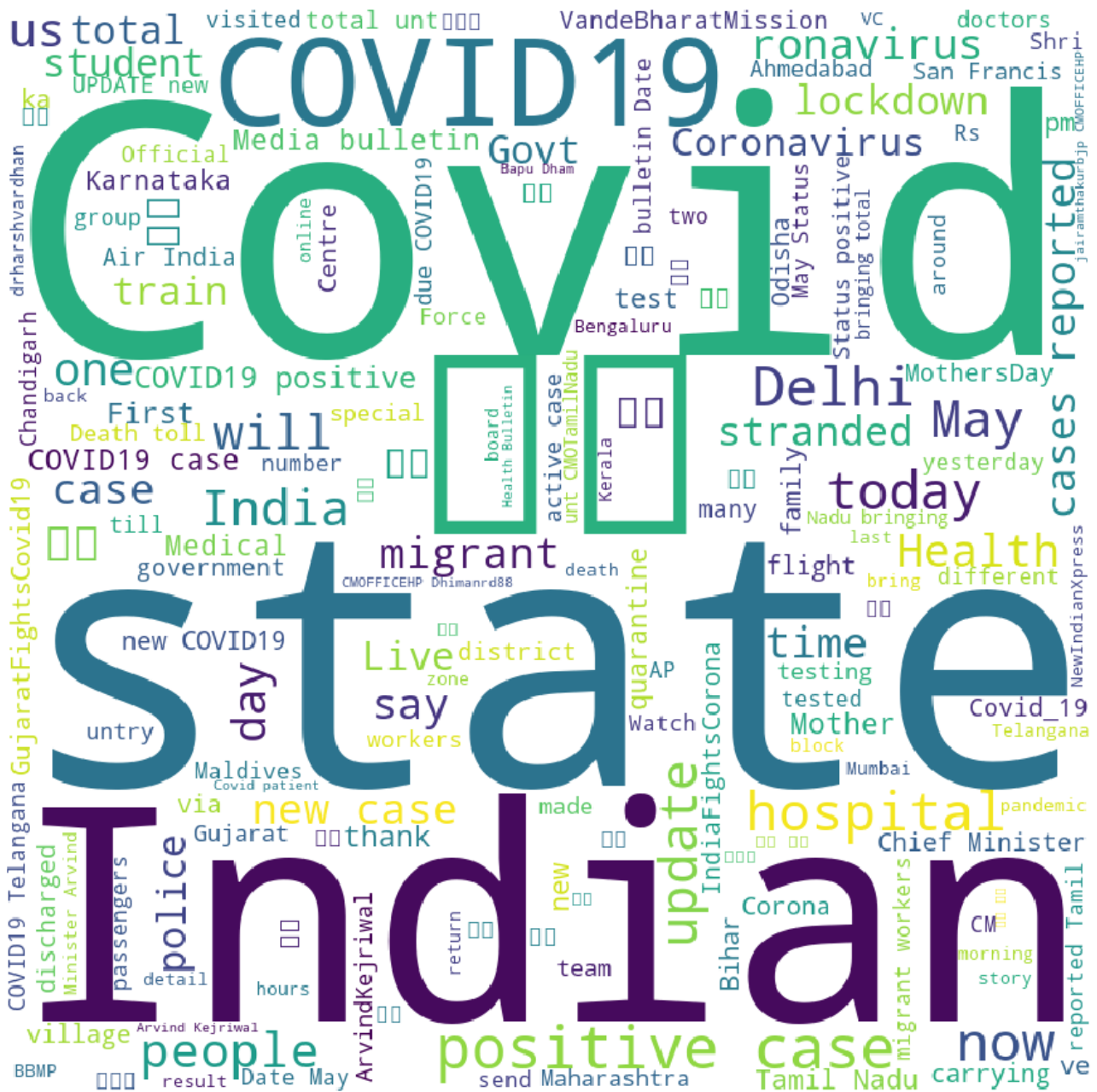
Tweet Created on = Wed May 06 10:57:32 +0000 2020 User = dc\_dhanbad

Tweet :

अन्य रण्यों के व्यक्तां जो लॉकडाउन के कारण इतर खंड में फसे हुए हैं। वैसे व्यक्तां नमिनलिखित लिंक पर अपना पंजोन करे। <https://t.co/RDifj5TeBE>

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#### D) Word Cloud:



It is pretty much clear from the figure above that the most prominent words used in the tweets are : COVID19, Covid, state, Indian, positive cases, hospital, new cases etc.



E) For this part, I have divide the users (twitter handles) into 2 categories : verified and unverified.  
See files : 'verified.csv' and 'unverified.csv'.

**Total verified users (twitter handle) = 58    Total unverified users (twitter handle)= 18**

Unverified Twitter Handles chosen-

1. @SreyashiDey
2. @RishikaSadam
3. @diprjk
4. @ladags
5. @kansalrohit69

### **Observations-**


- @SreyashiDey mentions in her bio that she is a Senior correspondent from TimesNow and “Views are strictly personal.” hence this automatically labels her profile as personal even though she mentions she is a senior correspondent and hence legitimacy is less.
- @SreyashiDey is part of TimesNow and has retweeted only one of their posts in the past month while the @TimesNow handle posts very frequently (Posts concerning the same region (West Bengal) are also very frequent and aren't retweeted) hence again , it is difficult to digest the fact that she is associated with TimesNow even though she claims that she is.
- There is no coverage that displays that @SreyashiDey being part of TimesNow hence again , the profile being legitimate is still doubtful.
- @RishikaSadam also has similar remarks in her twitter bio that reduces legitimacy - “Chai lover” , “Personal views”
- Her account displays more legitimacy than @SreyashiDey as she regularly retweets the posts of CNNNews18 (currently part of) and has also featured in a sports special interview with Rohit Sharma (Indian Cricketer) which is posted by the @CNNNews18 handle which is verified.
- @diprjk seems to be a legitimate twitter handle but if we search for “Department of information and public relations jammu and kashmir” on google , the second link takes us to a website which has a different logo than what is used here as a display picture which may hint that it might not be legitimate.
- Also , @diprjk has a low frequency of retweeting tweets from verified accounts and hence we can say they aren't linked to any verified accounts hence they have a lesser probability of being legitimate.

- @ladags has the bio - “Commissioner/ Secretary, Health and Medical Education, Union Territory of Ladakh.” but the fact that he isn’t verified raises concerns over legitimacy because of the fact that he is a public figure in the region.
- The posts and retweets of @ladags seems legitimate but as most of them aren’t linked to any verified sources , we don’t know whether it is the account of the real person even after verifying the fact that the name is present in the website of government of India with the same post. (Although trusting the govt of india website is again a matter of concern (sometimes))
- @ladags also contains one line informal posts (right now about new findings for corona virus cases) which may also hint at it being not legitimate.
- The twitter handle chosen for @kansalrohit69 first raises concerns over legitimacy as usually official twitter handles don’t usually employ the use of numbers . (for example , our transport minister Mr. Nitin Gadkari uses nitin\_gadkari etc)
- Comparing with @diprjk , the posts containing official documents are lesser in number while the engagement with verified profiles remains almost the same. This may hint at the fact that it is not legitimate.
- Overall, @RishikaSadam establishes more legitimacy as an account based on her twitter posts and activity and if we say rate the legitimacy of accounts on a scale of 10 , she gets 8 on 10 while all the other twitter handles get 6 on 10.


F)

- K'taka Health Dept on Twitter: "Evening Media Bulletin 15-04-2020 @CMofKarnataka @sriramulubjp @drashwathcn @BSBommai @mla\_sudhakar @BBMP\_MAYOR @BBMPCOMM @CCBBangalore @BlrCityPolice... <https://t.co/mehEP8N5ly>"

Below is the list given in the tweet containing PII (mainly Linkable information) about patients in Karnataka being treated at various facilities by the Karnataka Health Department. We even know their current location due to the aforementioned hospitals. We know the age , sex , Area of residence , history of medical disease and facility where they are currently being isolated/treated.



**GOVERNMENT OF KARNATAKA**  
**DEPARTMENT OF HEALTH AND FAMILY WELFARE**  
**BENGALURU**



**NOVEL CORONAVIRUS (COVID-19)**  
**MEDIA BULLETIN**

**DATED: 15/04/2020**
**Evening Report**

World Health Organization has declared the recent Novel Corona Virus, COVID-19 as **Public Health Emergency of International Concern (PHEIC)** which has affected **213 Countries / Territories** including India till date. WHO has characterized COVID-19 as a **Pandemic** on 11<sup>th</sup> March 2020.

In this context, Karnataka State has strengthened all Surveillance and containment measures against the possible spread of disease.

**"As of 5:00 PM of 15<sup>th</sup> April 2020, Cumulatively 279 COVID-19 positive cases have been confirmed in the State, it includes 12 Deaths & 80 Discharges"**

Out of remaining 187 cases, 184 COVID-19 positive patients (including 1 pregnant woman, P-176) are in isolation at designated hospitals are stable and 3 **in ICU** (P43, P101 & P195).

19 new cases have been confirmed for COVID-19 in the state from 14.04.2020, 5:00 PM to 15.04.2020, 5:00 PM.

SL No.	Case Numbers	Age (years)	Sex	Place of Residence	History	Isolated at
1	P-261	59	Male	Person from Ananthpur, in BBMP, Bengaluru Urban	SARI	Private Hospital, Bengaluru Urban
2	P-262	52	Male	Bagalakote	Contact of P186	Designated Hospital, Bagalakote
3	P-263	39	Male	Jamakandi, Bagalakote	Police on duty at Madrasa, Mudhol, Bagalakote	Designated Hospital, Bagalakote
4	P-264	41	Male	Nanjanagudu, Mysuru	Pharma Company worker	Designated Hospital, Mysuru
5	P-265	30	Male	Nanjanagudu, Mysuru	Pharma Company worker	Designated Hospital, Mysuru
6	P-266	27	Male	Nanjanagudu, Mysuru	Pharma Company worker	Designated Hospital, Mysuru
7	P-267	35	Male	Nanjanagudu, Mysuru	Pharma Company worker	Designated Hospital, Mysuru
8	P-268	26	Male	Nanjanagudu, Mysuru	Pharma Company worker	Designated Hospital, Mysuru
9	P-269	23	Male	Nanjanagudu, Mysuru	Pharma Company worker	Designated Hospital, Mysuru

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10	P-270	35	Male	Nanjanagudu, Mysuru	Pharma Company worker	Designated Hospital, Mysuru
11	P-271	28	Male	Mysuru	Pharma Company worker	Designated Hospital, Mysuru
12	P-272	32	Male	Nanjanagudu, Mysuru	Pharma Company worker	Designated Hospital, Mysuru
13	P-273	72	Male	Mysuru	SARI	Designated Hospital, Mysuru
14	P-274	1	Male	Kalaburagi	Influenza Like Illness (ILI)	Designated Hospital, Kalaburagi
15	P-275	38	Female	Vijayapura	Contact of P221	Private Hospital, Vijayapura
16	P-276	25	Male	Vijayapura	Contact of P221	Designated Hospital, Vijayapura
17	P-277	32	Female	Bengaluru Urban	Contact of P252	Designated Hospital, Bengaluru Urban
18	P-278	28	Female	Vijayapura	Contact of P221	Designated Hospital, Vijayapura
19	P-279	80	Female	Hirebagewadi, Belagavi	Contact of P224	Expired at Designated Hospital, Belagavi

#### Death Case

- a) **P-250**, 65 years male patient resident of Chikkaballapur, was referred from a Private Hospital, Bengaluru Urban to COVID-19 Designated Hospital, on late evening 13.04.2020, with complaint of H1N1 positive, Chronic Obstructive Pulmonary Disease with obstructive sleep apnea and past history of uncontrolled diabetes mellitus, hypertension. Expired on early morning 15.04.2020.
- b) **P-279**, 80 years female patient resident of Hirebagewadi, Belagavi and expired.

District wise Abstract of COVID-19					
SL No.	District Name	Total Positives	No. Discharged	Active Cases	No. of Deaths
1	Bengaluru Urban	71	35	34	2
2	Mysuru	58	12	46	0
3	Belagavi	19	0	18	1
4	Kalaburagi	17	2	12	3
5	Bagalakote	14	0	13	1
6	Bidar	13	0	13	0
7	Chikkaballapura	13	8	3	2
8	Bengaluru Rural	12	0	12	0
9	Dakshina Kannada	11	8	3	0
10	Uttara Kannada	11	8	3	0
11	Vijayapura	10	0	9	1
12	Mandya	8	0	8	0
13	Ballari	6	0	6	0
14	Dharwad	6	1	5	0

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- ANI on Twitter: "17 more #COVID19 cases reported in Karnataka. The total number of coronavirus positive cases in the state is now at 277, including 75 discharged & 11 deaths. Of the 17 new cases, 9 are workers of a pharmaceutical company in Mysuru: Karnataka Government... <https://t.co/9s30AYHktr>"

This is another tweet from a twitter handle of a news channel (@ANI) which reveals the same information (displays the same sheet) as that of the previous tweet mentioned above. PII mentioned are - age , sex , Area of residence , history of medical disease and facility where they are currently being isolated/treated.

- Himanta Biswa Sarma on Twitter: "Alert ~ A woman from Dhubri has tested #COVID positive. She is wife of a #COVID19 positive person who is connected both with #NizamuddinMarkaz, and Athgaon Kabristan congregation in Guwahati. The number of patients is now 32. Update at 10.25 pm / April 14 #AssamCovidCount"

This is a tweet from a Minister from the Government of Assam (verified account) which disseminates information about a lady (sex as PII) who has tested positive for a corona virus. She hails from Dhubri (Area of Residence as PII) and is the wife (Marital Status as PII) of a covid-19 positive person. There is also the mention of her being connected with the NizamuddinMarkaz and Athgaon Kabristan congregation in Guwahati (Recent Sighting region as PII). All information found above is Linkable Information.

- <https://twitter.com/PIBAhmedabad/status/1250069127743537155?s=19>

১৪.০৪.২০২০ ১০.০০ ঘটিকা লাইন বা নোডায়েল ডিসচার্জনি বিবরণ				
ক্রম	উম্মর	লিঙ্গ	লিঙ্গ	হাস্পিতালনং নাম
১	২৮	পুরুষ	সুরত	রুমীমের হাস্পিতাল সুরত
২	২৮	স্ত্রী	অমদাবাদ	এস.বি.পি. হাস্পিতাল অমদাবাদ
৩	২৮	স্ত্রী	লাবলনর	সর.টি. হাস্পিতাল লাবলনর
৪	১৫	পুরুষ	লাবলনর	সর.টি. হাস্পিতাল লাবলনর

১৪.০৪.২০২০ ১০.০০ ঘটিকা লাইন বা নোডায়েল মরুগনি বিবরণ					
ক্রম	উম্মর	লিঙ্গ	লিঙ্গ	হাস্পিতালনং নাম	অন্য যি মারীনি বিবরণ
১	৫০	পুরুষ	লাবলনর	সর.টি. হাস্পিতাল লাবলনর	ডায়াবীটিস
২	৫৮	পুরুষ	বড়োয়া	সর.টি. হাস্পিতাল বড়োয়া	-

কোভিড পসীকিতি			
	বিশ্ব	ভারত	মুম্বাই
নবা কেস	৩৭৪৮৮	৪৫২	৩৩
কুল কেস	১৩৩৩০৮৪	১০৮৭৫	৫৫০
নবা মরুগ	৫৩০২	১৪	০২
কুল মরুগ	১১১১৫২	৩৫৩	২৮

১০৪ টেলিচার্জ বিবরণ		
ক্রম	বিবরণ	সংখ্যা
১	কোভিড রীলিফেড কেস	৪২২৮৮
২	সারবার অপারেটর ব্যক্তি	৩৮৩


  

কোভিড টেস্টিং সিস্টেমি বিবরণ				
ক্রম	হোম কোভিড টেস্টিং	সরকারী কোভিড টেস্টিং	প্রাইভেট কোভিড টেস্টিং	কুল কোভিড টেস্টিং সংখ্যা
১	১২২০৮	১৩৩৪	১৭৮	১৩৬৭০


This photo was uploaded in this tweet by PIB in Gujarat. If we see the first 6 rows of the top two tables, I am able to make out the information of 6 individuals being shown. The PII information

gathered from it is - sex , age , area of residence , History of disease and History of any other chronic illness (from the last 2).

- K'taka Health Dept on Twitter: "Evening Media Bulletin 14-04-2020 @CMofKarnataka @sriramulubjp @drashwathcn @BSBommai @mla\_sudhakar @BBMP\_MAYOR @BBMPCOMM @CCBBangalore @BlrCityPolice @KarnatakaVarthe @PIBBengaluru @KarFireDept @BMTc\_BENGALURU @NammaBESCOM @tv9kannada @publictvnews @suvarnanewstv @timesofindia... <https://t.co/U69x4Kt8By>"



**GOVERNMENT OF KARNATAKA**  
**DEPARTMENT OF HEALTH AND FAMILY WELFARE**  
**BENGALURU**



**NOVEL CORONAVIRUS (COVID-19)**  
**MEDIA BULLETIN**

**DATED: 14/04/2020** **Evening Report**

World Health Organization has declared the recent Novel Corona Virus, COVID-19 as **Public Health Emergency of International Concern (PHEIC)** which has affected **213 Countries / Territories** including India till date. WHO has characterized COVID-19 as a **Pandemic** on 11<sup>th</sup> March 2020.

In this context, Karnataka State has strengthened all Surveillance and containment measures against the possible spread of disease.

**"As of 5:00 PM of 14<sup>th</sup> April 2020, Cumulatively 260 COVID-19 positive cases have been confirmed in the State, it includes 10 Deaths & 71 Discharges"**

Out of remaining 179 cases, 175 COVID-19 positive patients (including 1 pregnant woman, P-176) are in isolation at designated hospitals are stable and 4 **in ICU** (P43, P101, P108-K & P195).

13 new cases have been confirmed for COVID-19 in the state from 13.04.2020, 5:00 PM to 14.04.2020 5:00 PM.

SL. No.	Case Numbers	Age (years)	Sex	Place of Residence	History	Isolated at
1	P-248	43	Male	Bagalakote	Contact of P186 & 165	Designated Hospital, Bagalakote
2	P-249	32	Female	Bagalakote	Contact of P186 & 165	Designated Hospital, Bagalakote
3	P-250	65	Male	Resident of Chikkaballapura, admitted in Bengaluru Urban	SARI	Designated Hospital, Bengaluru Urban
4	P-251	39	Female	Bagalakote	Contact of P125 (Neighbour)	Designated Hospital, Bagalakote
5	P-252	65	Male	Bengaluru Urban	SARI	Expired at Designated Hospital, Bengaluru Urban
6	P-253	26	Male	Bengaluru Urban	History of travel from Hindupur by 2 wheeler on 7.4.2020	Designated Hospital, Bengaluru Urban
7	P-254	10	Female	Kalaburagi	Contact of P177	Designated Hospital, Kalaburagi
8	P-255	51	Male	Kalaburagi	Contact of P205 (Brother)	Designated Hospital, Kalaburagi
9	P-256	35	Female	Kalaburagi	Contact of P177	Designated Hospital, Kalaburagi

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10	P-257	69	Male	Vijayapura	Contact of P221 (Husband)	Expired at Designated Hospital, Vijayapura
11	P-258	33	Male	Belagavi	History of travel to Delhi	Designated Hospital, Belagavi
12	P-259	35	Female	Bengaluru Urban	Contact of P199	Designated Hospital, Bengaluru Urban
13	P-260	36	Male	Bhatkal, Uttara Kannada	Contact of P176 (Husband)	Designated Hospital, Uttara Kannada

This is also a post from Karnataka Health Department which displays information about 13 individuals in the same format as the earlier post from the same source . PII revealed are : age , sex ,



Area of residence , history of medical disease and facility where they are currently being isolated/ treated.

- PIB in Gujarat on Twitter: "#Gujarat #CoronaVirusUpdates #Gujaratcorona રાજ્યમાં #COVID19 ના વધુ 45 નવા કેસ નોંધાયા જેમાં સૌથી વધારે અમદાવાદના 31 કેસ નોંધાયા છે. કુલ 617 પોઝિટિવ કેસ, કુલ 26 લોકોના મોત થયા છે, કુલ 55 દર્દીઓને ડિસ્ચાર્જ કરાયા છે.... <https://t.co/h5Akqrfsi>"

૧૩.૦૪.૨૦૨૦ ૧૮.૦૦ કલાક બાદ નવા નોંધાયેલ ડીસ્ચાર્જની વિગત				
ક્રમ	ઉંમર	જાતિ	છાત્રો	હોસ્પિટલનું નામ
૧	૨૦	પુરુષ	અમદાવાદ	એસ.વી.પી. હોસ્પિટલ અમદાવાદ

રોગની પરીસ્થિતિ			
	વિશ્વ	ભારત	ગુજરાત
નવા કેસ	૭૬૪૯૮	૧૨૧૧	૪૫
કુલ કેસ	૧૭૭૩૦૮૪	૧૦૩૧૩	૬૧૭
નવા મરણ	૫૭૦૨	૩૧	૦૦
કુલ મરણ	૧૧૧૬૫૨	૩૩૯	૨૬

૧૦૪ હેલ્પ લાઈન વિગત		
ક્રમ	વિગત	સંખ્યા
૧	કોરોના રીલેટેડ કોલ	૪૧૧૧૨
૨	સારવાર અપાયેલ વ્યક્તિ	૭૪૧

કોરોનાટાઇન હેસિલીટીની વિગતો				
ક્રમ	હોમ કોરોનાટાઇન	સરકારી હેસિલીટીમાં કોરોનાટાઇન	પ્રાઇવેટ હેસિલીટીમાં કોરોનાટાઇન	કુલ કોરોનાટાઇન સંખ્યા
૧	૧૨૨૦૮	૧૩૭૪	૧૬૯	૧૩૭૫૧

This is another tweet from PIB in Gujarat which reveals information about a covid positive patient . PII displayed are - sex , age , area of residence , History of disease , Facility at which they are being treated (First row of the table)

Therefore , the major PII information revealed by the means of the tweets are :-

1. Sex.
2. Age.
3. Area of Residence.
4. History of disease.
5. History of any other chronic illness.
6. Facility where people are being treated/isolated.
7. Marital Status.
8. Region of Recent sighting.

G)

For this part, I have used spacy library. If the country present in the notes is also present in the detected city or detected state, I mark it up. In total of 17k + data there are only **59 items** which are revealing about their location. See function : 'location()' in the code file.

In percentage terms :  $59 / 17306 * 100 = 0.3409\%$  items (rows) are revealing about the location.



H) Below is the list of twitter handle tweeting about COVID patients with number of tweets. There are more user but I could only screenshot this much :

```
[['ani', 7063],  
 ['pti_news', 1853],  
 ['cmodelhi', 1247],  
 ['pibahmedabad', 772],  
 ['jansamparkmp', 759],  
 ['rajeshtope11', 647],  
 ['arogyaandhra', 611],  
 ['pibjaipur', 552],  
 ['aninewsup', 455],  
 ['iprtelangana', 354],  
 ['kansalrohit69', 265],  
 ['nhm_tn', 219],  
 ['kbssidhu1961', 171],  
 ['eatala_rajender', 171],  
 ['toihyderabad', 142],  
 ['dhfwka', 135],  
 ['thchennai', 123],  
 ['vijayabaskarofl', 109],  
 ['pibtvp', 88],  
 ['diprjk', 81],  
 ['sriramulubjp', 73],  
 ['sanjayjavin', 73],  
 ['telanganahhealth', 72],  
 ['mybmc', 60],  
 ['aamaadmiparty', 59],  
 ['airnewsalerts', 56],  
 ['hfwodisha', 44],  
 ['tabeenahanjum', 22],  
 ['toiahmedabad', 20],  
 ['himantabiswa', 20],  
 ['ipr_odisha', 20],  
 ['xpresskerala', 19],  
 ['ians_india', 19],  
 ['chetansanghi', 15],  
 ['the_hindu', 12],  
 ['nhm_hp', 12],  
 ['timesnow', 10],  
 ['sangmaconrad', 10],  
 ['upgovt', 8],  
 ['iebengaluru', 7],  
 ['toimumbai', 7],  
 ['zeerajasthan_', 6],  
 ['thhyderabad', 5],  
 ['economictimes', 5],  
 ['toibengaluru', 5],  
 ['httweets', 4],  
 ['timesofindia', 3],  
 ['gujhwdept', 3],  
 ['abpanandatv', 3],  
 ['arvindkejriwal', 3],
```

ANI have the highest number of tweets (= 7063) and it is a **verified** twitter handle. ANI is a news reporting channel.