

Privacy and Security in Online Social Networks
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Indian Institute of Technology, Madras

Week - 5.2
Lecture - 17
Policing and Online Social Media

(Refer Slide Time: 00:30)

Objective of Study

Whether OSN can support police to get actionable information about crime and residents' opinion about policing activities in urban cities of India.

The slide features a screenshot of the Bengaluru City Police Facebook page. The page header shows the organization's name and a verified badge. The main content area displays a post with a photo of a police station and a text box for writing a comment. The page also shows engagement metrics like '137k people like this' and '536 people have been here'.

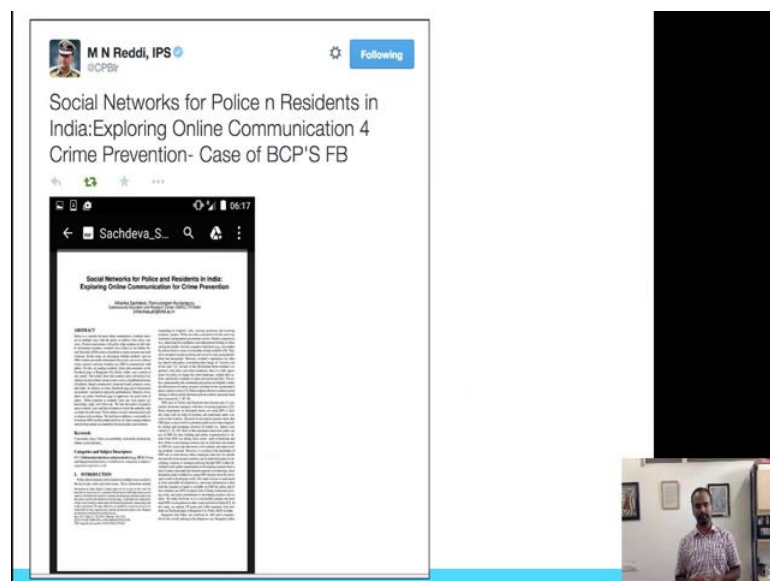
Welcome back. So, let me now talk a little bit about the specifics of how the **data** from police organizations can be collected, and what kind of analysis can be done to find out some interesting things.

Here is one research question; here is one question that you can think about - objectives of the study. And then I am going to be taking about whether online social media can support police to get actionable information about crime and residents' opinion about policing activities in urban cities yeah, so that is the goal. So, let us try and, see if you can actually teach this objective to study some data from Facebook **and Twitter** and make some useful inferences.

So, let me just break this objective into pieces, which is, can we use Facebook to support police to get actionable information? What is an actionable information, actionable

information is something like do this, can you actually get this done, I mean I am having a problem in the street that is traffic issues in the road there is a **pot** hole which is broken on this street, a car broken down. So, these are actionable information that police organizations can take from the post and **that is actually useful** for decision making. And residents' opinion, of course, what people think about police, what are they talking about police is also useful information for police organizations.

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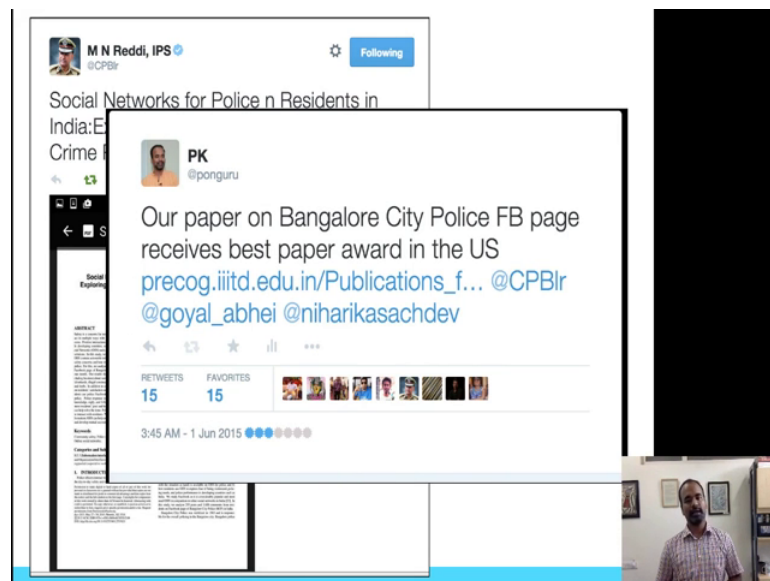
So, before I get into further I think there was a question in the forum asking about what is re-identification. I thought I will actually mention it here rather than actually packing it in the forum itself. So, re-identification is nothing but, take some information, you want to, actually, you got a information about **PK**, there is some publicly available information which has no reference to PK. For example, if you remember **the Latanya Sweeny** (Refer Time: 02:14) slide where we talked about **voters** record and medical record. Just in medical records they are actually identifiable. **Just in voter records** also they are **identifiable**. If we put together the identification actually becomes much stronger, you are able to uniquely identify more **people** with more data put together.

For example, again, let me go to my own example, you can take some publicly available information about me on some websites. Say oh faculty at IIT and things like that. And

you go back to Facebook, and then you use the Facebook pictures that are publicly available about me, take those pictures **connect it with these posts** you can say it oh this is actually **PK**, this is how I will also I mean insides your faculty and IIIT, NPTEL.

So, re-identification of information of a particular individual, of a particular thing is actually the concept that we discussed last week. I hope that makes it clear which is unidentified datasets which in the class that we talked about max.com and identified data sets we stored which where there is if your time you know one can find out the this is here. So, taking some unidentified data and using some identified data putting them together and identifying the users actually is an (Refer Time: 03:26).

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So, we did this work on social networks for police and residents in India exploring online communications. So, this is the paper that with I am going to be talking about, but this actually more than a paper that the data that I will be talking about right now.

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CITIES - BENGALURU BENGALURU, June 19, 2015
Updated: June 19, 2015 05:32 IST

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This is outcome of a study

The city police have turned social media into an effective tool for crime prevention.

Most posts by citizens on the Bengaluru City Police (BCP) Facebook page pertain to flagging neighbourhood safety issues that gives the police actionable information, and helps grassroots policing, said a study of the BCP social media outreach.

The study, 'Social Networks for Police and Residents in India: Exploring Online Communication for Crime Prevention', conducted by the Cybersecurity Education and Research Centre (CERC), Indraprastha Institute of Information Technology (IIIT) Delhi, took the social media outreach of the city police as a case study.

The study analysed all posts during a one-month period from July 21 to August 21, 2014. Of the 255 posts from citizens during the period, 36 were regarding neighbourhood safety issues, such as alerting cops about eve-teasers, street violence and unidentified vehicles. An analysis of these posts revealed that most of them are detailed enough.

The study found that if there was lack of information, police requested for more information and was provided in 29 follow-up posts. An analysis of the response of the BCP to the posts by residents reveals that cops have replied to 172 posts with an action-taken report on Facebook. The average response time was found to be over 30 hours.

So, in general, actually in the last two years or so social media has been used for crime prevention. It can be used effectively for finding out what people are saying, you can actually collect the information lot of things about what is going on in the society, because it is going to be a very hard to have police organization, police personnel at every given point in time, **at any given point in the society also**. So you can actually get a lot of information from public through the social networks, which can be used to prevent crime. So, essentially you can build societies which are safer if were to actually analyze use social media services.

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Jun 08 2015 : The Economic Times (Bangalore)

Study on City Police's Social Media Use Bags US Varsity Award

K.V. ADITYAN
Bharath Joshi

Bengaluru
A paper presented by researchers with a Delhi institute shows how social media networks have forced the police become more accountable

The city police's impressive social media visibility caught the attention of participants at an academic event as far a place as the Arizona State University in the US last week.

It was an international conference on digital government research, where technology researchers Niharika Sachdeva and Ponnurangam Kumaraguru from the Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi), walked away with the award for producing the best research paper. The paper showed how social networks have forced the police in India to be more accountable.

This was also the first time the Bengaluru police experiment with the social media to promote community policing made its way into an academic institution.

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Karnataka IPS officers show way in smart policing

Continued from page 1

In September 2014, DCP with Bengaluru police batch officer and an IIT Delhi alumna, played a key role in launch of a social media initiative to bring about seamless communication between police and public. The city police and various officers launched their Twitter handles and in a year's time, the total following of Bengaluru police's Twitter accounts is more than 1.50 lakh.

Social media is used to take feedback from people and channelize police resources accordingly. A research on how the system made police accountable has already won two Delhi researchers an award in the US.

Goyal, who arrested suspected IIS follower Mehdi Masur Biswas, also launched a social media monitoring and using a software created to scan all social media platforms with key words related to terrorism.

Goyal's colleagues in their districts, including the Bangalore, are also using the same software to monitor social media.

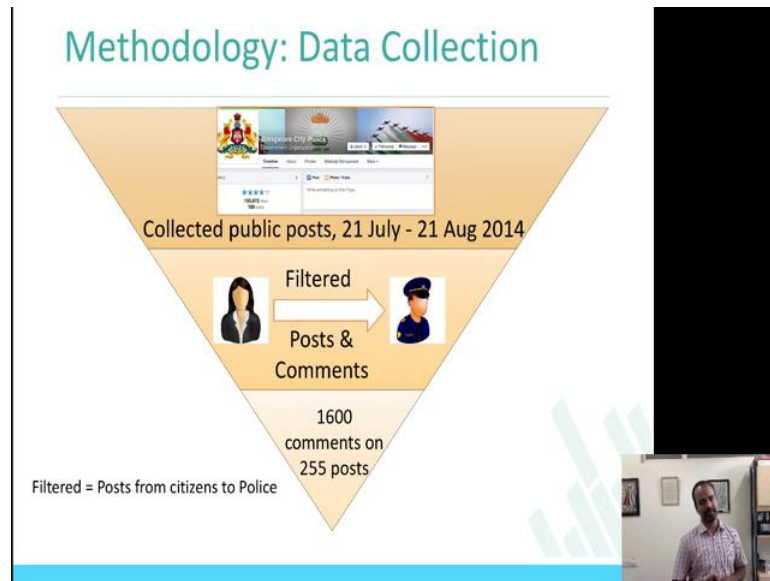
Police in other districts are also using the same software to monitor social media.

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So, in terms of actually the theme itself the data that we looked at is actually from Bangalore, Karnataka.

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So, in terms of methodology, what kind of data did we collect? So, keeping the goal for studying whether we can actually collect **actionable** information from social media we started looking at this data, we collected the data from the Facebook page of Bangalore City Police in 2014. Looking at what are the posts that was done. And we filtered the posts and comments, because we wanted to study what public said to the police in terms of what post that they did, what comments that they say on the Facebook page. And about 1600 comments and 255 posts were actually collected.

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Methodology: Data Coding

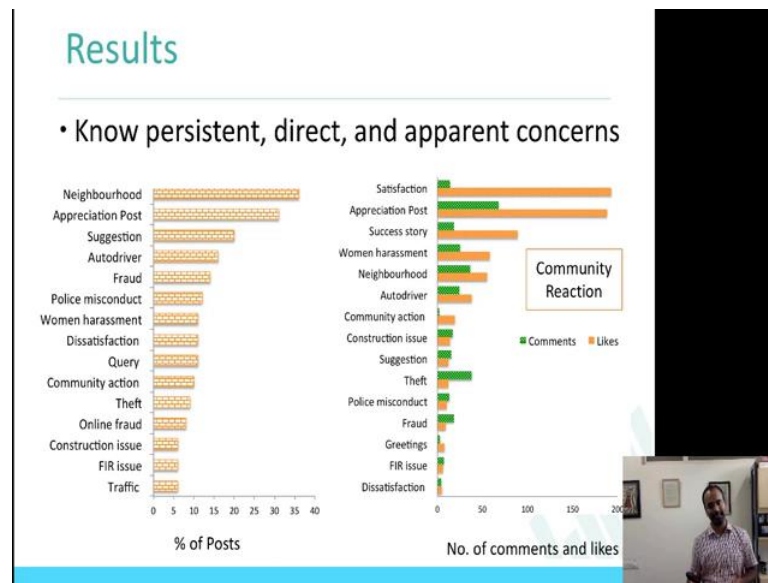
- Thematic Inductive Analysis 24 categories (Public)
 - Content
 - Missing: Missing people complains
 - Query: Ask how to get police assistance
 - Traffic: Report Traffic menace on roads
 - Style 2 Categories (both)
 - Formal
 - Informal
 - Type 4 Categories (police)
 - Acknowledge to: Like or say thanks
 - Reply to: Suggest a solution
 - Follow-up by: Ask for further details
 - Ignored by: No reply
- Lexical analysis using word trees

So, in terms of methodology, there are actually multiple ways the people actually look at this data type. We are looking at the post and we are looking at the comments we can analyze in different ways. So, one approach that we took was finding out what people are talking about which is **misinformation**, query, traffic details that is about the content. And then we looked at for the style of I think which is formal or informal.

And in terms of types of post that were showing up which is acknowledge to, like, or say thanks, reply to, such suggest a solution and the follow up by asking further details, ignored by no reply, because these are the **ones** that are coming from the police side. So, **citizens** post and what do police do about it.

So, if you look at in the right hand side, it is says twenty four categories for the public post and two categories for the style, and four categories of the police responses. So, again given that we are talking about content and injecting some analysis that you could do with the data yourself also in terms of lexical analysis in terms of **actually** (Refer Time: 06:27) the content itself that is from the post.

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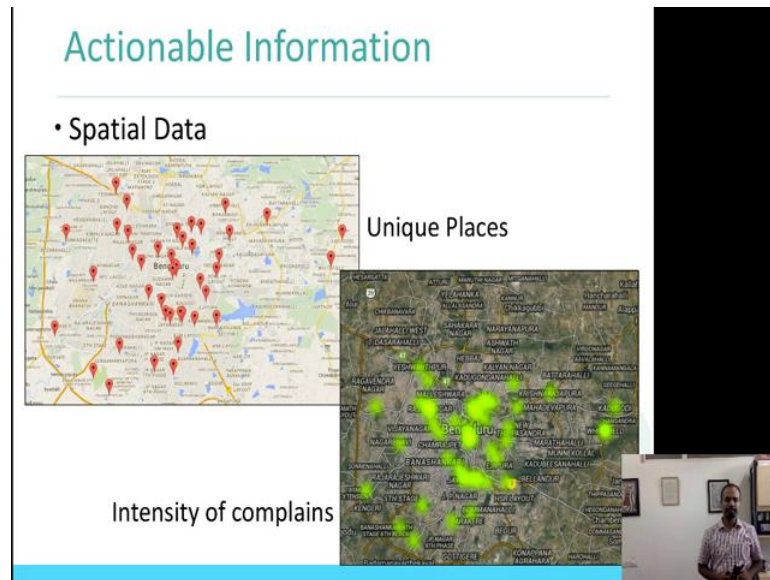
So, if you look at the results, some of the results are very interesting in terms of what kind of post were done by citizens for these on this page. Majority of the things were actually from the neighborhood concerns right. Then it is appreciation which is talking about thanks to police and appreciating the things that police does. And **it kind of goes down.** suggestions, auto driver related, fraud, till traffic issues.

And, if you look at the comments and the likes, the comments for **actions** like appreciation are actually higher than the comments for satisfaction; whereas, if you look at the likes, the likes for satisfaction, appreciation and success stories are actually **very high.** **It is probably very intuitive that** (Refer Time: 07:20) how the police post gets reactions from the society, the likes are actually pretty high for satisfaction, appreciation post and for success stories compared to some of the other ones.

So, this is gives you a sense of the analysis that you can do with any kind of data that you collect. You remember we talked about **Boston blasts and Hurricane Sandy** (Refer Time: 07:44) and those kind of events in the context of **credibility and trust** (Refer Time: 07:50). So here, we are doing these similar kinds of analysis, similar kinds of questions that we are asking, but we are actually using **different** sets of data and different kinds of graphs that we are producing. So, this will help you to get a sense of what are kind of

posts are actually showing up on these pages, and what kind of reactions are being seen on for these posts also.

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Similar to the analysis that we did in **Boston and Hurricane Sandy**, we can do the geospatial analysis also **with this data here** (Refer Time: 08:22). The one on the top is showing you the posts that are coming from the **different** parts of Bangalore for the posts that we saw in the **page**. And of course, **one could** do some heat map, **one could** find out where are the places from where majority of the posts are coming and **you could use** that for making some decisions.

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Actionable Information

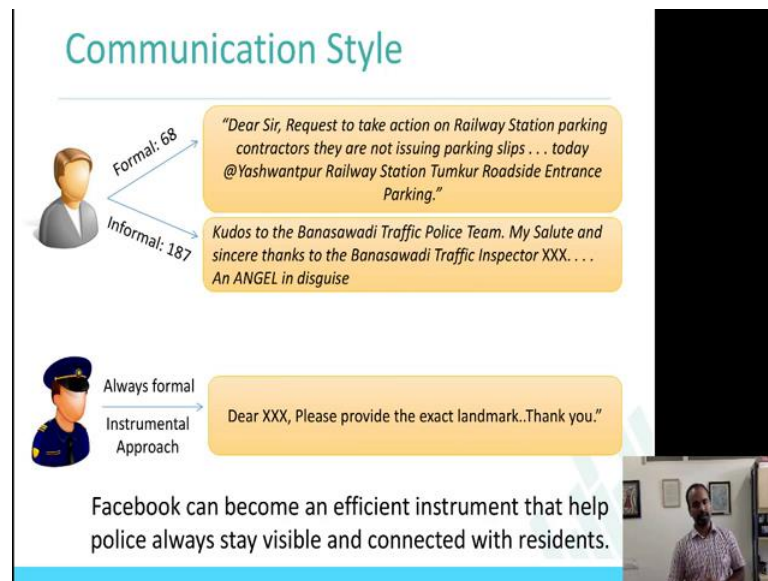
- Temporal data

Saturday evening.
"Time – between 5.30 pm and 6pm. Location: The circle between Freedom Park and the route that goes into Cubbon Park, towards Century Club. Not a single police posted here. I was waiting for an auto at the circle and these two guys rode by asking if they could drop me. . . . Please ensure there are police put here for safety ..."



So, given the goal was actionable information, **we were** actually focused on finding out from the content **what kind of** information can be drawn. So, here is one post which talks about temporal data **at least which can be drawn,** (Refer Time: 09:00) time between 5.30 and 6 pm. Location, blah, blah, blah, not a single police posted here, I was waiting for an auto at the circle blah, blah, blah right. So, this gives them, this gives the **police** organizations a good sense of **what** time is it, **what** location is it, what should be done, what is the problem, it is easy to actually collect this information. If it was not given in this form, if this information was not there, the police has to actually ask saying what location is it, **what time is it, and things like that.**

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So, if you look at the communication style, the style is also **interesting** (Refer Time: 09:37) that lot of discussions that happen on from the police side is actually very formal; formal versus in informal. Dear Sir, Request to take action on Railway Station this is from the citizens, parking contractors they are not issuing parking slips right. Kudos to the Banasawadi Traffic Police Team. My salute and this is post for appreciation.

So, **from the police if it comes, it is** (Refer Time: 10:07) almost going to be always formal. And stay visible of course, this is the point I have said earlier, which is Facebook and any social network for that matter can become the way by which police can actually connect with society most **strongly**.

And I am sure as you are going through the course you will also start looking at, I hope you will also start looking at the police pages of a local city from your location are actually start saying, what kind of post **they are** doing, what kind of things that they are looking for, what kind of interactions are they having. So, the whole body of knowledge, body of **research**, body of work is to actually look at increase the **community** policing right. So, you can actually increase the interactions with the society to get more information from **them**.

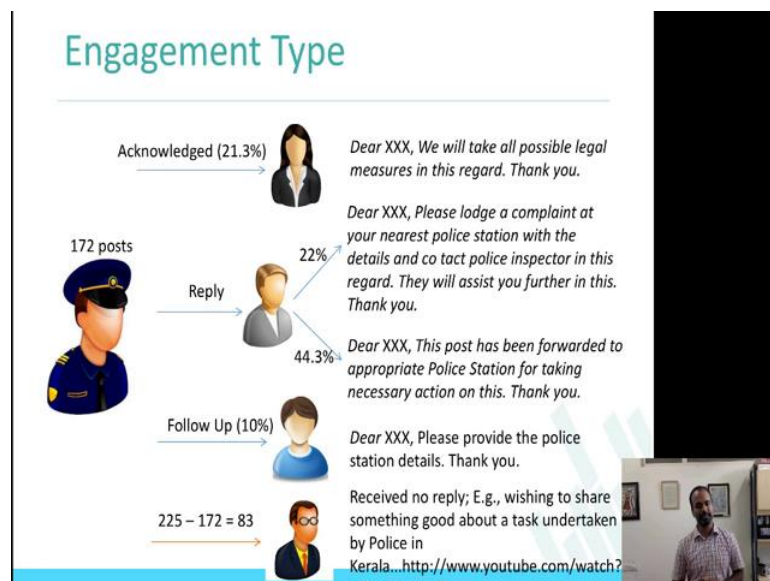
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Response Time

	Time Taken to Respond
Average time	30.53 hours
Maximum time	211.16 hours
Minimum time	4 minutes
Std. dev	41.26 hours

Of course, these are some details, I will go through them slightly **quickly**. Average time response 30 hours, maximum time was 211 hours, minimum time was about 4 minutes. Showing that there is large **variance** in terms of actually responses that they get 4 minutes to 211 hours, so that is a lot of difference in terms of the times response that they get.

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So, here are the different types of post that come from police and the kind of engagement that they have. So, acknowledged 21 percent of the post police actually acknowledged. Dear XXX, we will take all possible legal measures in this regard, thank you. And as a reply Dear XXX, Please lodge a complaint – 22 percent. And Dear XXX, This post has been forwarded to appropriate police station. And about follow up, Dear XXX, Please provide the police station details. Thank you.

So, this kind tells you what kind of interactions of police organizations having. And about anything posted not have getting response. So, the goal is to find out the one of the interesting questions that you could also think about is how to actually have a post which will have the response from police, that would be also an interesting question to look at.

(Refer Slide Time: 12:20)

The slide is titled "Understanding Victimization". It features a table on the left and a diagram on the right.

Word	#
Fear	7
Worried	6
Concerned	8
Notice of	13
Issue	22
Trouble	4

The diagram shows the word "worried" in the center, with two main branches: "that" and "about".

- that**
 - if somebody will miss use my bike , and because i do not have a
 - the person who has duplicated my Reg no will commit
 - once they realize that this girl (my daughter) has med
- about**
 - them coming back to attack me .
 - being traced .

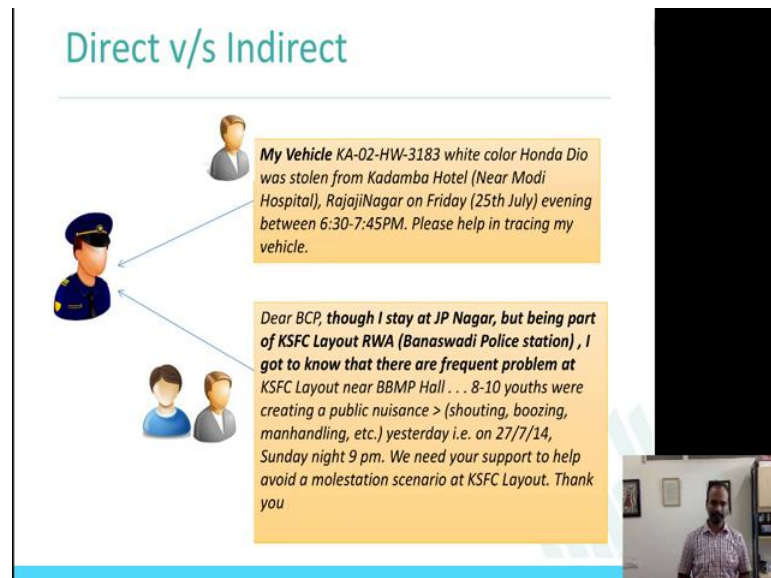
Below the diagram, there is a partial sentence: "to approach the local police as I have seen them take money from".

So, if you look at the concept of finding out what citizens are worried about, what citizens are talking about, I will go through some tweets what we so to say in terms of actually looking at what posts the citizens are doing, how we can actually take out some useful information from these posts. So, in this case, we are talking about worried as the starting point which is from the post you can actually look at worried, if somebody will

misuse my bike, worried at the person who is duplicated my registration number will commit, blah, blah, worried about they coming back to attack me.

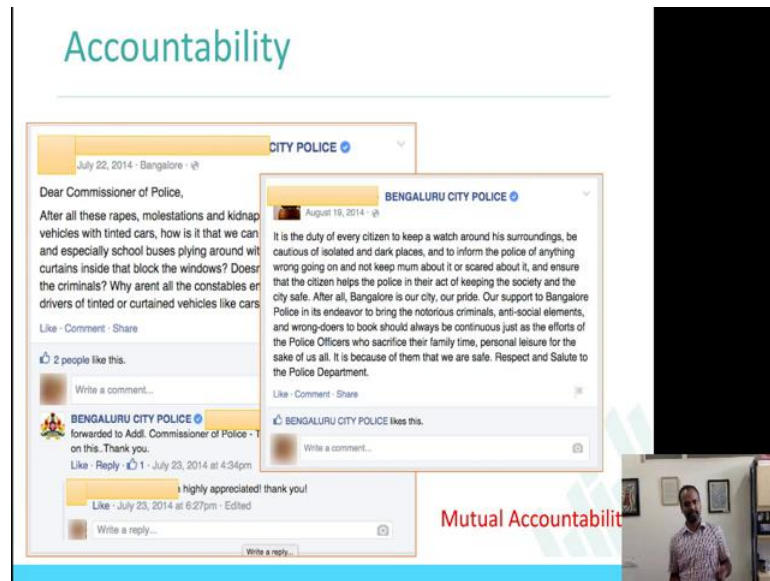
For instance, this concept of identifying the content, textual content and seeing what kind of posts that citizens are doing can be extremely useful. If only if one can generate these **trees** in real time it can be very useful for police to make some decisions. And if this can be done in real time to showing up, oh, **currently there is a post on Facebook which has actionable** information and the **actionable** information is the time, the details and this citizen's post is actually having about worried about few things can be very useful.

(Refer Slide Time: 13:37)



Of course, the direct versus indirect information drawing from this post - Direct information, it going on with me, I am actually going through the problem or I am actually **part of** the situation that I am talking about. Sometimes it could be indirect which is 'Dear BCP, though I stay at JP Nagar, but being part of KSFC layout near blah, blah, blah. I am not **from** there, but I see a problem there, **so I'm letting you know** (Refer Time: 14:05) It could be that my friend says this, my friend **lives there** on the regardingly I post, post on Facebook, I do a post on Facebook about the friend that who lives in a different location not about myself.

(Refer Slide Time: 14:26)





So, there are recent posts also which is directly about myself and indirectly about somebody else. And of course, being it is probably very intuitive or to realize that you could take the content from the social networks, and actually took for accountability of both sides for example, accountability of police **and accountability of citizens also**. How we can do that we could look at the post and see how fast they are responding, what kind of responses they are it is coming and how citizens are also responding to these queries that the **police is making**.

So, accountability can be good question to ask from the post that is collected from the social network. And of course, the little that we have seen little that is being looked at there is also mutual accountability that is going on citizens think that police should be doing and (Refer Time: 15:21) **police think that citizens should be doing it**, there is a accountability, in terms of, because this platforms publicly available.

(Refer Slide Time: 15:24)

Accountability

- Police responds and allows itself to be held accountable
 - Maintains formal communication style even for frustrated people




And of course, police organizations respond to this post, and request for information and follow up **on things** also making themselves accountable for the activity that is going on.

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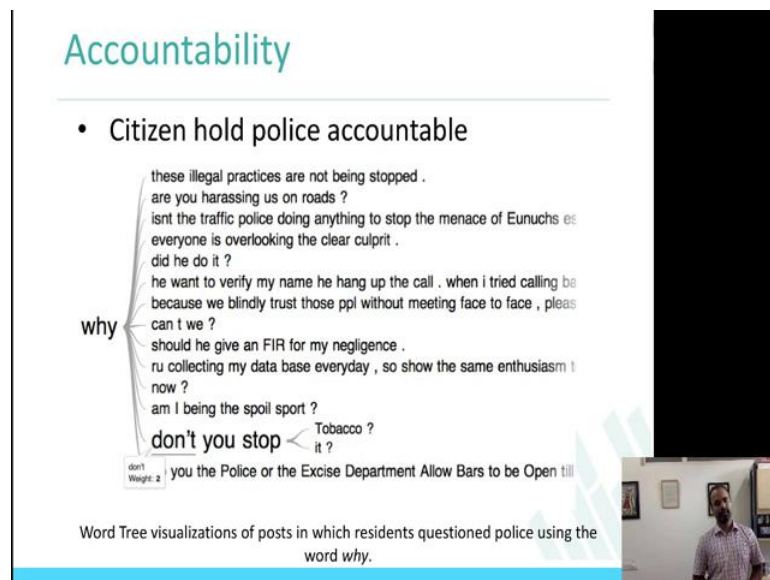
Accountability

- Citizens accept that they are also accountable to make city safe



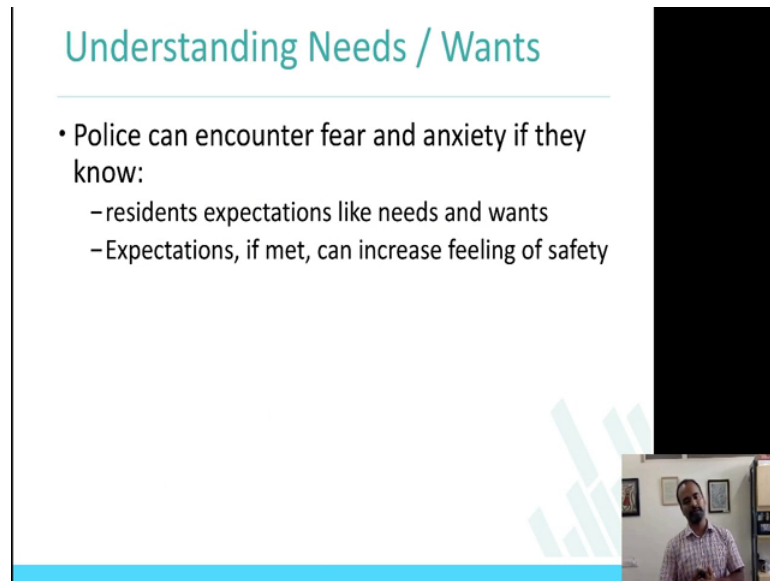
A citizen accepts that they are also accountable to make the city safe. Citizens also believe that they should be participating in these activities in terms of posting, interacting with police, giving information and making sure that the city is safe.

(Refer Slide Time: 16:01)



So, if you look at **the tree** again earlier the example was worried now if you look at the other concept of why. So, why these illegal practices are not being stopped? Why do not you stop tobacco? Why this, why that, right. So, this could also be a good way to look at the content and **cull out** the actionable information from these posts right. So, these are things that you can do this is the types of analysis that you can do in terms of what citizens are talking about, what police organizations are actually posting.

(Refer Slide Time: 16:29)



The slide features a title 'Understanding Needs / Wants' in teal text at the top left. Below the title is a horizontal line. A bulleted list follows, starting with '• Police can encounter fear and anxiety if they know:' and containing two sub-points: '- residents expectations like needs and wants' and '- Expectations, if met, can increase feeling of safety'. On the right side of the slide, there is a vertical black bar. At the bottom right, there is a small video inset showing a man in a checkered shirt speaking. A light blue bar is at the bottom of the slide area.

Understanding Needs / Wants

- Police can encounter fear and anxiety if they know:
 - residents expectations like needs and wants
 - Expectations, if met, can increase feeling of safety

Of course, police can also understand needs and wants right police can encounter fear and anxiety if they know resident expectations like needs and wants I want something living in this place I want some specific safety, I know that this is happening, I'm complaining, please take care of it. If only all this can be done using the content, using the information that is coming on social media, it could be very helpful. Of course, it is not that only this is the only source for making all these judgements (Refer Time: 17:10).

(Refer Slide Time: 17:11)

Understanding Needs

- to be**
 - punished, being strong like and strong, may help but rather from punishing out what why not to stop leakage
 - strict law system as well, these kind of how must not escape from law...
 - strict check for physical offences in order to prevent such pervers from harming society again?
 - discuss with their higher-ups to be an F (R)?
 - send her mothers
- to do more research on why that is**
 - bring this guy - please put him in jail for future...
 - amend the criminal laws...
 - ask our top down to such behaviour
- such**
 - understand that for such genuine grievances most search does the people and yehud are very helpful provided their a genuineness of the follow this
 - know that it there in his PC or MOBILE phone just show his face to public and make sure the laws are amended...
 - lead to another incident
 - provide their status identity card as proof and must be submitted during their travel...
 - punish this scolar like that, they will hit very hard and out neck separately or hang or shoot... then others will also affected to do same risk taken on school authority
 - people don't like a poster picture and I will reach in 10 minutes to identify the crime and the criminals along with the locations.
 - good leader like up & add up now what they are having now
 - improvement
 - general action on every case to prove holder justice in the best
 - a top in each quarter year that even to the west or thought if it the person wanting to do such a favour some should have other than his name, may to them
 - residential permit to park in residential areas for longer times given only after you show proof of residence...
 - they're very arrogant
 - help we are new to bangalore
 - our girls in PTA to be safe, please
 - more such things to happen
 - it is take some cut from school excise and chink where justice is delivered with in 30 days.
 - CCTVs in police stations more than we need the CCP on social media
 - the CCP on social media
 - same kind of parking...
 - safety
 - all your support
 - any sort of help from the citizens of Bangalore, pls let us know.
 - Long term solutions
 - change the person who framed this was citizens of future, 10 day we cannot follow the same rules, we need changes, we cannot keep saying no our law doesn't change, we cannot keep saying no our law doesn't say this, I want show that, come on amend it give justice, Make my country a safe place, I know writing to a rule to shoot or hang such rapist in public
 - for them to do the business
 - justice - not just the parents

Looking at few more examples in terms of need to be punished blah, blah, blah, need to be so and so, need to hang this guy, need to do more research on why that is going on, need such information for doing this. So, this kind of **tree** (Refer Time: 17:28) information can be actually very **helpful**, I think I have **emphasised** enough about **this tree**, I'll go through.

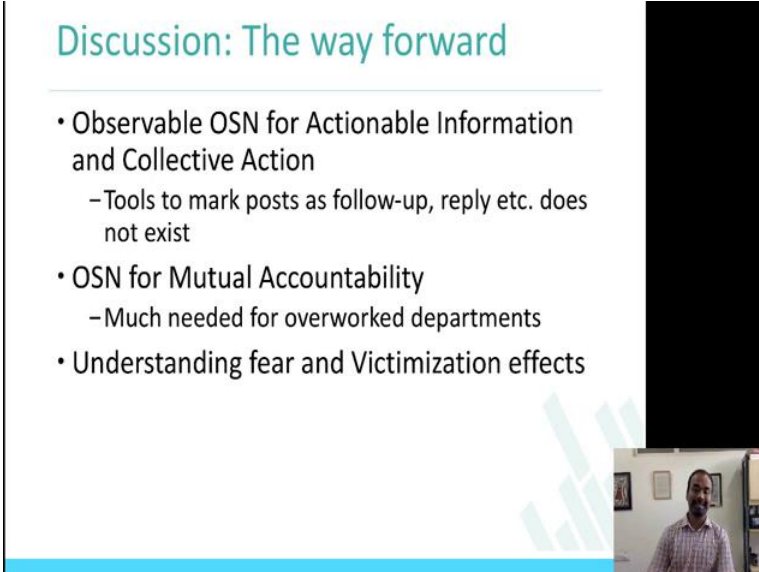
(Refer Slide Time: 17:31)

Understanding Wants

- to see**
 - hear more of these
 - the punishment to such rapist.
 - this monster !!!!
 - and delete the rest ?
 - know .
 - say thanks to BCP SIR .
 - tell this to our parents because my friend marriage is going to happen
 - ask you one question if those teachers of vibgyer school proved guilty
 - read in papers about all the solved cases and the next , we dont want
 - work not people who want to beg and make children beg I suggest
 - beg and make children beg I suggest u take up the issue of giving
 - protect that bastard ... why you dont have any daughters you dont
 - save your daughters from like this bastards ... why you are protecting
 - BCP to seriously look into this issue .
 - details i can give
 - a safe city and we are dependent on you ..
 - his spouse , daughter , parents and relatives to see his face in T.V and n

So, this is about needs which is what this needed by the citizens, and what did they want also. Want to hear more of these, want to see the punishment of xyz, want to and **delete the rest** (Refer Time: 17:46) want to say thanks to BCP SIR right. This kind of analysis in terms of wants and needs which is also connected to the actionable information that we talked about is very helpful.

(Refer Slide Time: 17:59)



Discussion: The way forward

- Observable OSN for Actionable Information and Collective Action
 - Tools to mark posts as follow-up, reply etc. does not exist
- OSN for Mutual Accountability
 - Much needed for overworked departments
- Understanding fear and Victimization effects

The slide features a light blue background with a white border. A small video inset in the bottom right corner shows a man with a beard and glasses, wearing a patterned shirt, speaking. The slide is partially obscured by a black vertical bar on the right side.

So, now just keeping these things in mind the data that we have collected from the Facebook Bangalore City police what are the things that we can think about. Just a quick summary of **what we looked at also, right,** (Refer Time: 18:10) in terms of the data one could actually look at collecting all these information, and helping understand actionable information.

Actionable information, in the sense that I showed you it was just a **tree**, but how you actually take this **and give it** to police organizations to look at. It could be that the same **tree could be shown, but I think** highlighting some post saying that here is the post that you should look at more carefully. And probably when proposing what kind of post to be given and for a specific post here is a template for the reply that you should produce and **things like that**. Increasing the productivity of the police organizations looking at this

post can be very, very useful. Of course, we saw that both citizens and police are actually accountable because they are actually interacting on this public forum.

And of course, that is also understanding of fear; understanding of wants, understanding of needs from the citizens for police also. With that I will stop with this part of the lecture which is so to in this week, we looked at how initially we just started off with privacy, closing up the topic on privacy, then we look at different police organizations Facebook handles why they should do, what kind of post **show up on** these Facebook pages and Twitter **handles**, what kind of **handles** exist. And then we looked at specifically analyzing the post for identifying actionable information. With this, I will stop this lecture.