

The Velocity of Censorship: High-Fidelity Detection of Microblog Post Deletions

Tao Zhu Independent Researcher

David Phipps Bowdoin College

Adam Pridgen Rice University

Jedidiah R. Crandall University of New Mexico

Dan S. Wallach Rice University

Microblogging sites in China



March
2006



July
2009

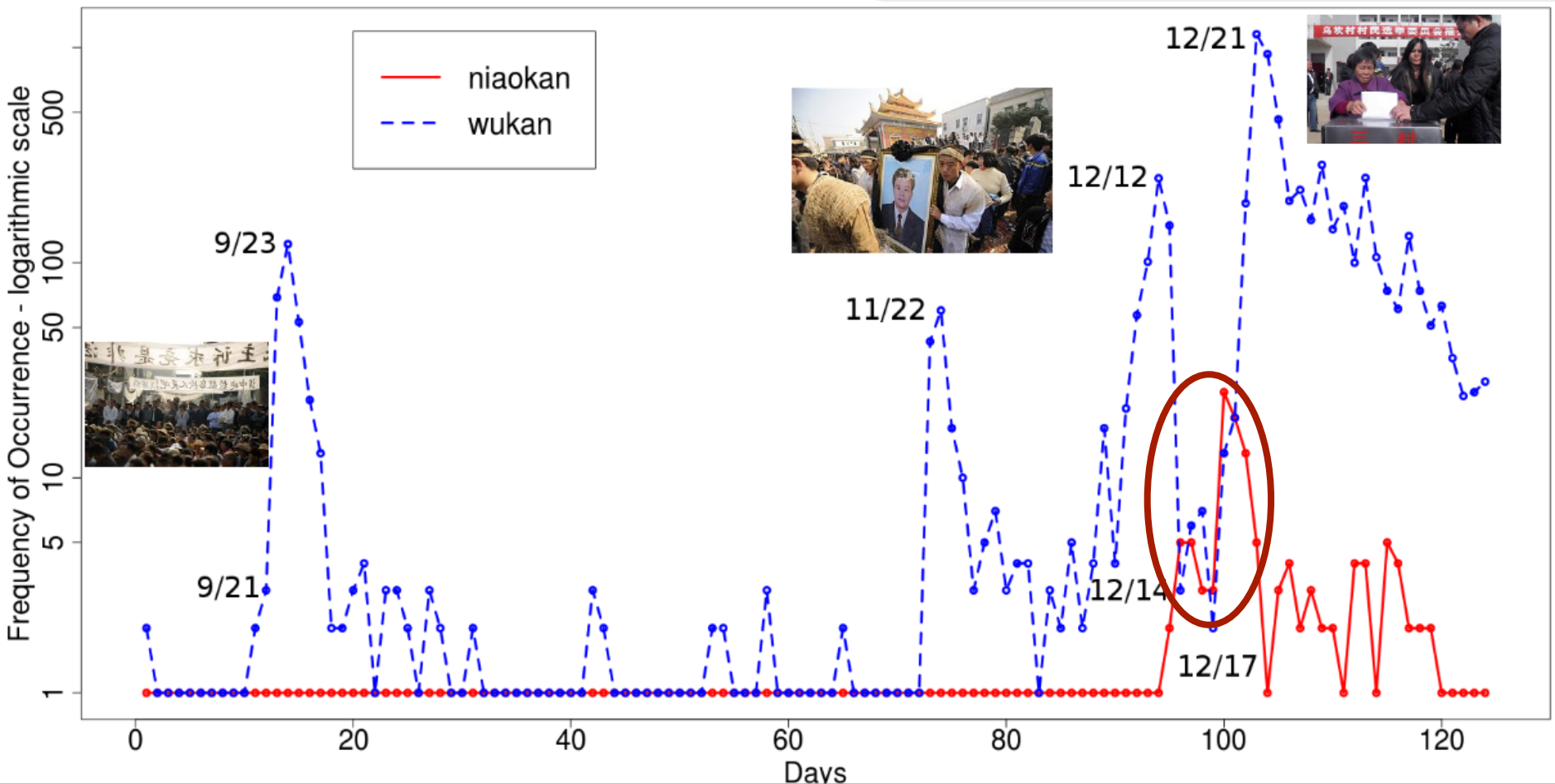


August
2009

Sina Weibo

- 503 million registered users as of Dec 2012.
 - More than half are from mobile devices.
- About 100 million messages are posted each day on Sina Weibo.
- Promote visibility of social issues.

Weibo's influence: Wukan incident - 2011



乌坎 (The village name) vs 鸟坎 (Neologism)

Sina Weibo

- Strict controls over the posts.

CBCnews | Community



Your Community Blog

Chinese users skirt Weibo censorship anniversary

by John Bowman | Posted: June 4, 2013 3:28 PM | Last Updated: June 4, 2013 3:28 PM
Categories: Community, World

Tens of thousands of people gathered in Hong Kong to commemorate the 24th anniversary of the violent pro-democracy protesters in Tiananmen Square, but the date of the ceremony — or the calendar date at all — was not mentioned from the social media site Sina Weibo.

These photos of the [candlelight vigil held in Hong Kong Park](#) appeared on Weibo for just a few moments before being deleted. The former British colony has been the site of many such ceremonies since the 1989 massacre.



Blocker

What's not found on China (plus news about other China)

6/24/13: Article in Tea Leaf Nation about censorship
4/10/13: Book being published about Worker Award round-up
4/4/12: Asia Pacific In The Next Web
3/13/12: List of 343 explaining my project in more detail: How posted may no longer be blocked (they were deleted) you find any errors, contact me and I'd be happy to fix them

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Photograph by Jing Wei/AP Photo

WEB NEWS

56 COMMENTS

Social Media Censorship Offers Clues to China's Plans

What gets removed from China's social networks shows how censorship strategies are advancing, and can even hint at the government's plans.

By Tom Simonite on April 29, 2013

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...een Sina Weibo (SINA) and the it allows the provocative to exist at all is that it must be able of paid censors to scrub sensitive. A new academic study details on how this process works.

...researchers at Rice University, University of Mexico, and the University of Toronto. Tao Zhu wrote, "5% of the

...deletions [of controversial posts] happened in the first 8

Introduction of our research

- Detecting a censorship event within 1-2 minutes of its occurrence.
- Three strategies Weibo system uses to target sensitive content quickly.

Methodology

1. Identifying the sensitive user group
2. Crawling posts of sensitive user groups
3. Detecting deletions

Identifying the sensitive user group

- Use outdated sensitive keywords from China Digital Times

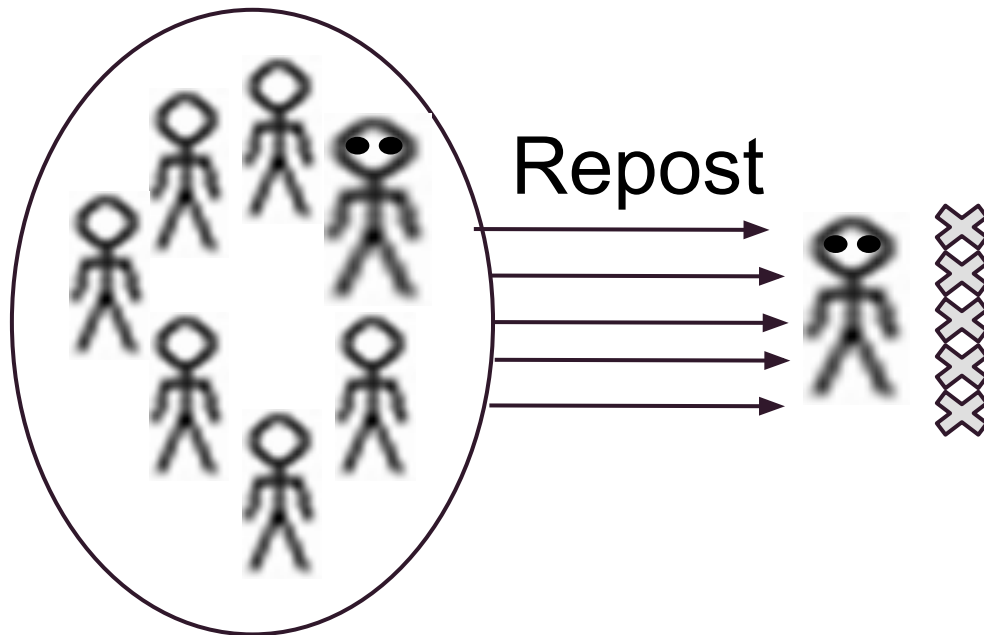


The banner features a green circular logo with the Chinese character '时' (Time) on the left. To its right, the text '中国数字时代' (China Digital Times) is written in large, bold Chinese characters, with 'CHINA DIGITAL TIMES' in English below it. On the far right of the banner are social media icons for Facebook, Twitter, Google+, and RSS.

敏感词	Sensitive Word	CDT English Post	第一次测试日期/结果 Date/Result of Test 1	第二次测试日期/结果 Date/Result of Test 2	第三次测试日期/结果 Date/Result of Test 3	第四次测试日期/结果 Date/Result of Test 4
薄+刘	Bo+Liu	http://goo.gl/xxKoSY	2013.7.25	1		
薄+死	Bo+death	http://goo.gl/xxKoSY	2013.7.25	1		
薄+保外就医	Bo+medical parole	http://goo.gl/xxKoSY	2013.7.25	1		
薄+(周)永康	Bo+(Zhou) Yongkang	http://goo.gl/xxKoSY	2013.7.25	1		
薄王	Bo Wang	http://goo.gl/xxKoSY	2013.7.25	1		
薄胡	Bo Hu	http://goo.gl/xxKoSY	2013.7.25	1		
五个重庆	Five Chongqings	http://goo.gl/xxKoSY	2013.7.25	1		
党内斗争	internal Party struggle	http://goo.gl/xxKoSY	2013.7.25	1		
挺薄	support Bo	http://goo.gl/xxKoSY	2013.7.25	1		
薄公	Master Bo	http://goo.gl/xxKoSY	2013.7.25	1		
怀念+薄	think fondly of+Bo	http://goo.gl/xxKoSY	2013.7.25	1		
南华(早报)+马云	South China (Morning Post)+Jack Ma	http://goo.gl/mm0Ja	2013.7.20	1		

Identifying the sensitive user group

- Identifying the sensitive user group
 - Use outdated sensitive keywords from China Digital Times.
 - Start with 25 sensitive users.



Identifying the sensitive user group

- Identifying the sensitive user group
 - Use outdated sensitive keywords from China Digital Times.
 - Start with 25 sensitive users.
 - Sensitive group reaches 3,567 users after 15 days.
 - More than 4,500 deletion daily

Crawling

- User timeline:
 - Weibo user timeline API returns the most recent 50 posts of the specified user.
 - Query 3,567 sensitive users once per minute
 - 100 accounts for API call
 - 300 concurrent Tor circuits.
 - Four-node cluster running Hadoop and Hbase
 - 2.38 million posts from July 20 to September 8, 2012.

Detecting deletions

Latest 50 posts



Diff



Our database



Deleted Post



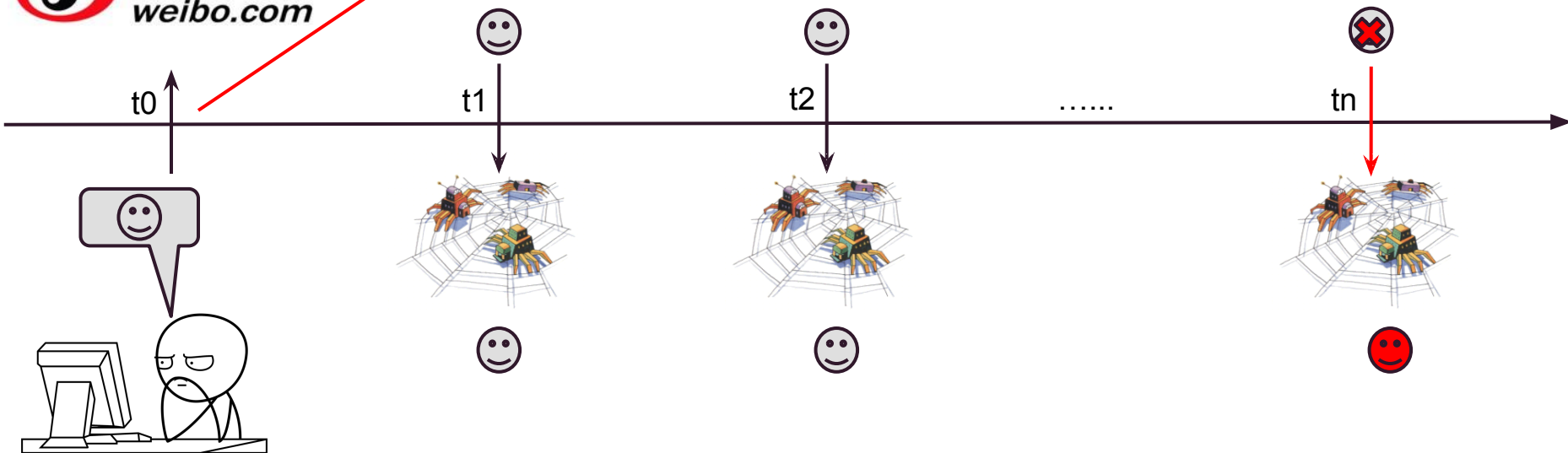
Detecting deletions

The lifetime of **deleted Post** = $t_n - t_0$

我们周围聪明人真多。左看专家，右观学者，上产公知，下聚五毛，左派右派，粪青愤中无处不在。不批评指责，不上岗上线会觉得自己毫无观点。站左，右边骂。靠右，左边怒。站中，两边骂。你讲啥不重要，别人如何解读你最关键，反正是错！养了几盆花就当园艺专家，看了点网络传闻就开始评点世界走向：)

7月16日 17:30 来自iPad客户端

👍(3378) | 转发(15991) | 收藏 | 评论(15204)

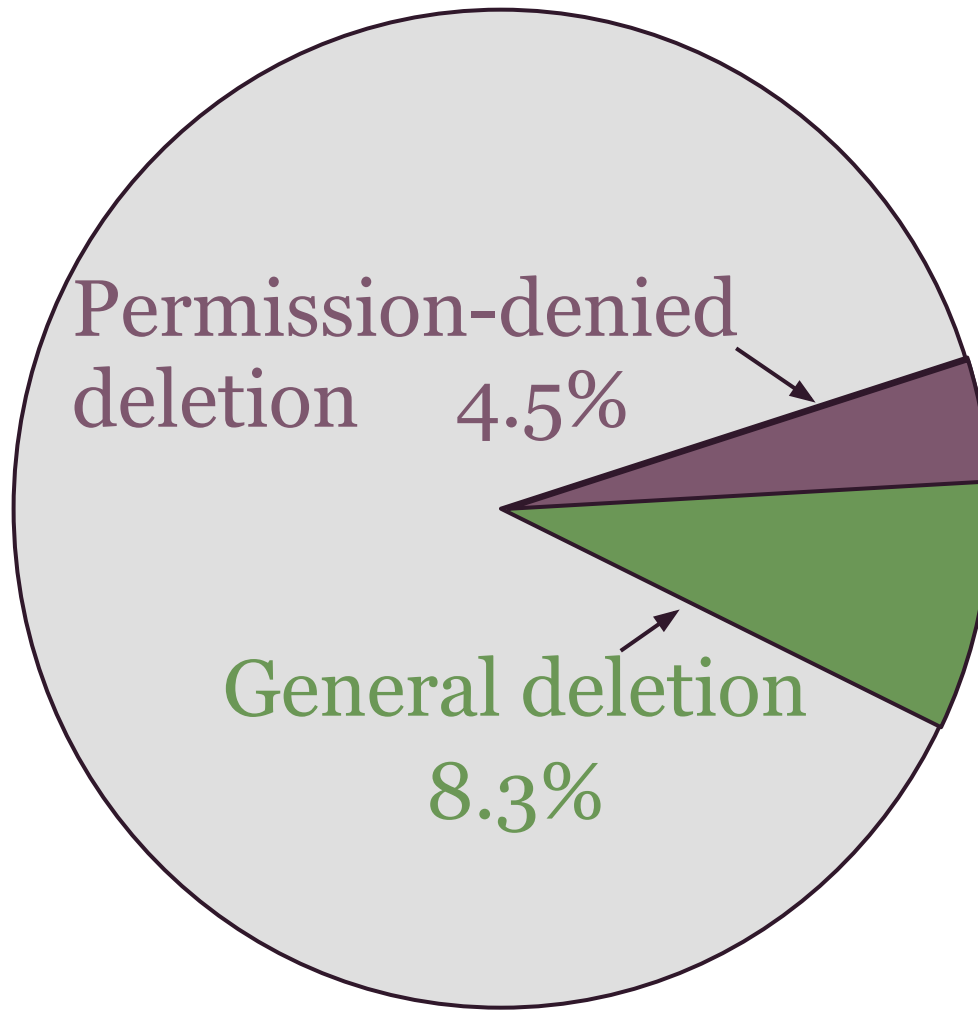


Detecting deletions

- **Permission-denied or system deletion**
 - “Permission denied” error.
 - Caused by censorship events.
 - The post still exists but cannot be accessed by users.
- **General deletion**
 - “Post does not exist” error.
 - May caused by user self deletion or censorship events.
 - The post does not exist.

Detecting deletions

2.38 Million user timeline posts

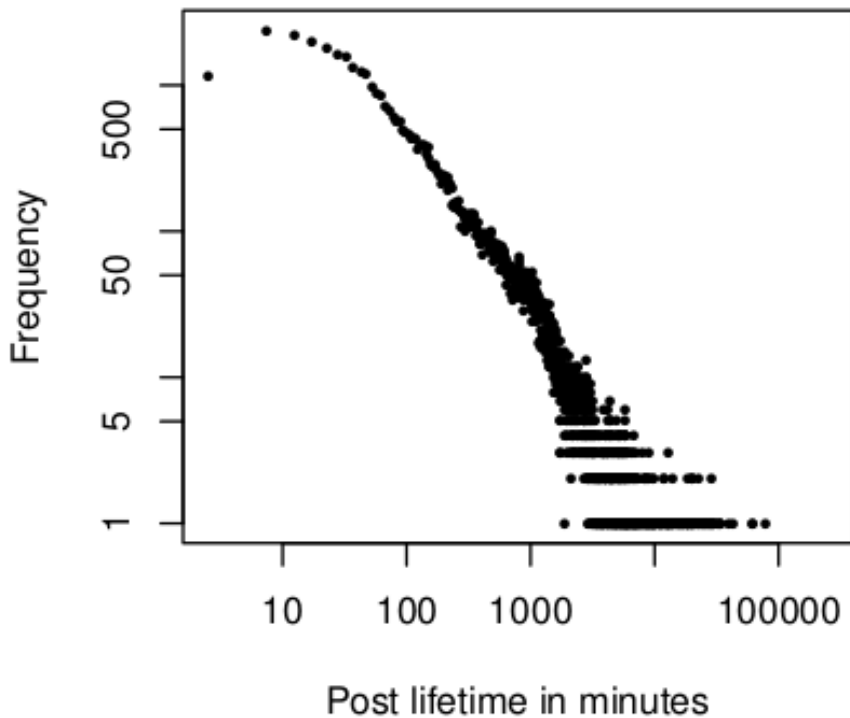


Detecting deletions

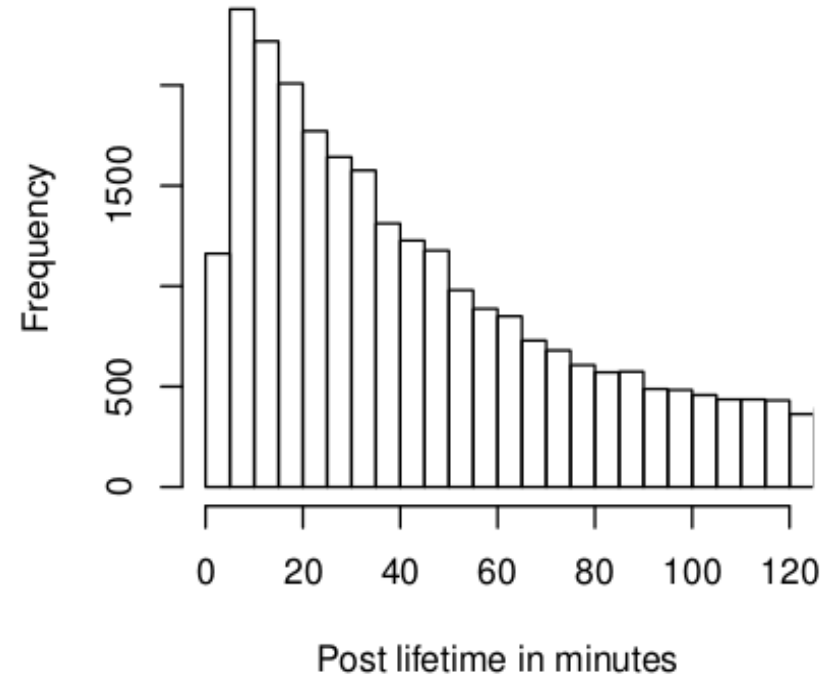
- Permission-denied deletion or system deletion
 - Around 1,500 permission denied deletions.
 - Comparing with WeiboScope, which is tracking around 300,000 users and have no more than 100 permission denied deletions daily.

Distribution of deleted posts

Whole lifetime



First two hours



Strategies to target sensitive contents

1. Weibo has filtering mechanisms as a proactive, automated defense.
2. Weibo targets specific users, such as those who frequently post sensitive content.
3. When a sensitive post is found, a moderator will use automated searching tools to find all of its related reposts, and delete them all at once.

1. Keywords list filtering

- Weibo has filtering mechanisms as a proactive, automated defense
 - Explicit filtering

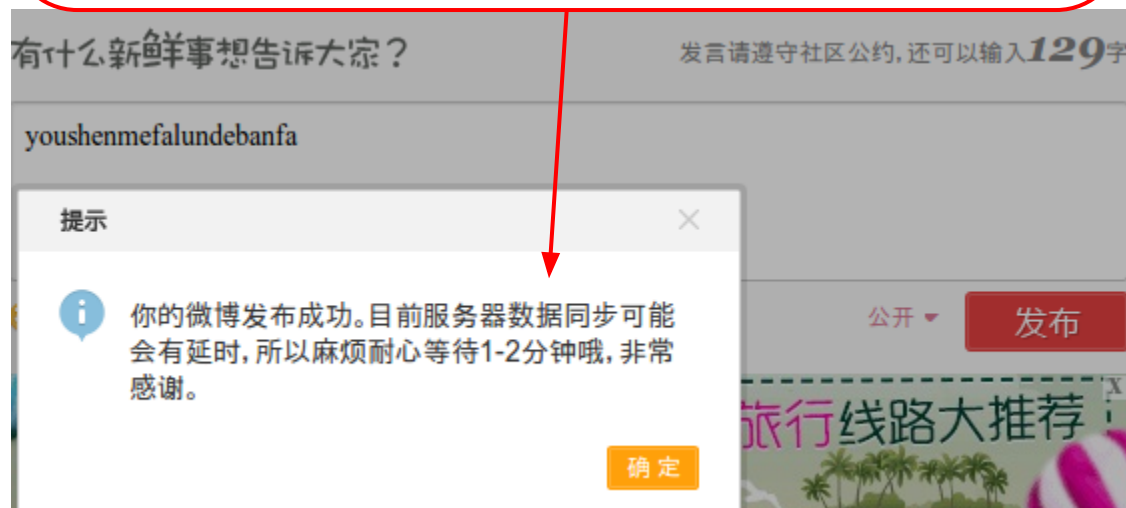
Sorry, The content violates the relevant laws and regulations. If need help, please contact customer service.



1. Keywords list filtering

- Weibo has filtering mechanisms as a proactive, automated defense
 - Explicit filtering
 - Implicit filtering

Your post has been submitted successfully. Currently, there is a delay caused by server data synchronization. Please wait for 1 to 2 minutes. Thank you very much.



1. Keywords list filtering

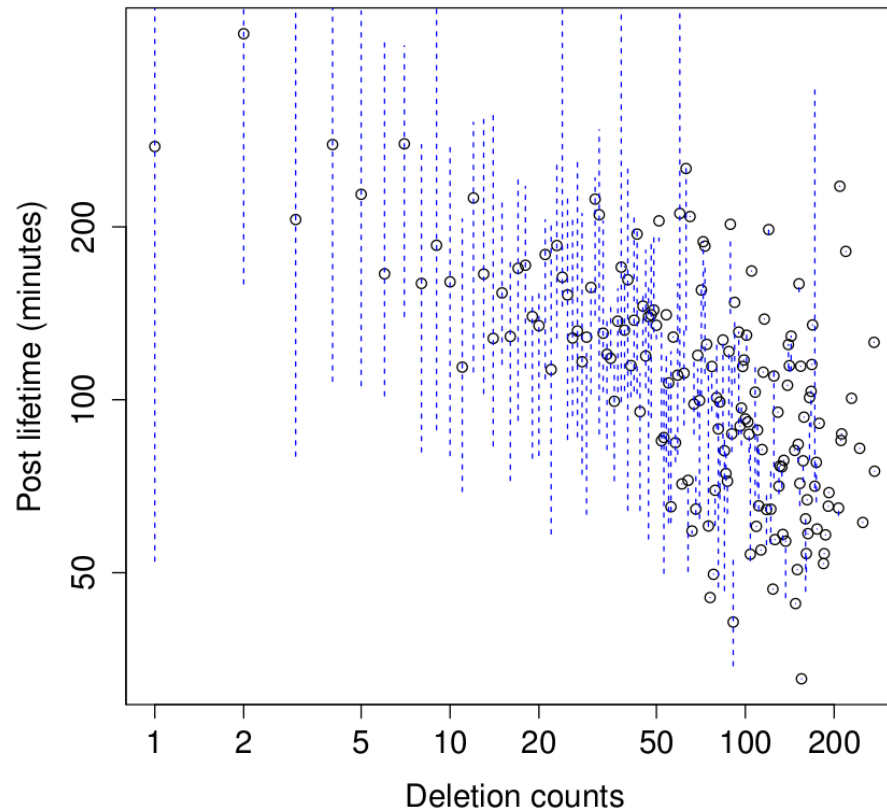
- Weibo has filtering mechanisms as a proactive, automated defense
 - Explicit filtering
 - Implicit filtering
 - Camouflaged posts

1. Keywords list filtering

- Weibo has filtering mechanisms as a proactive, automated defense
 - Explicit filtering
 - Implicit filtering
 - Camouflaged posts
 - Surveillance keywords list ?
 - If no such list the cost will be too expansive
 - Suppose to censor 70,000 new posts in one minute, it needs 1400 simultaneous workers (50 posts per minutes per worker).
 - Assuming 8 hour shift, 4200 works is required.
 - It is not cost efficient

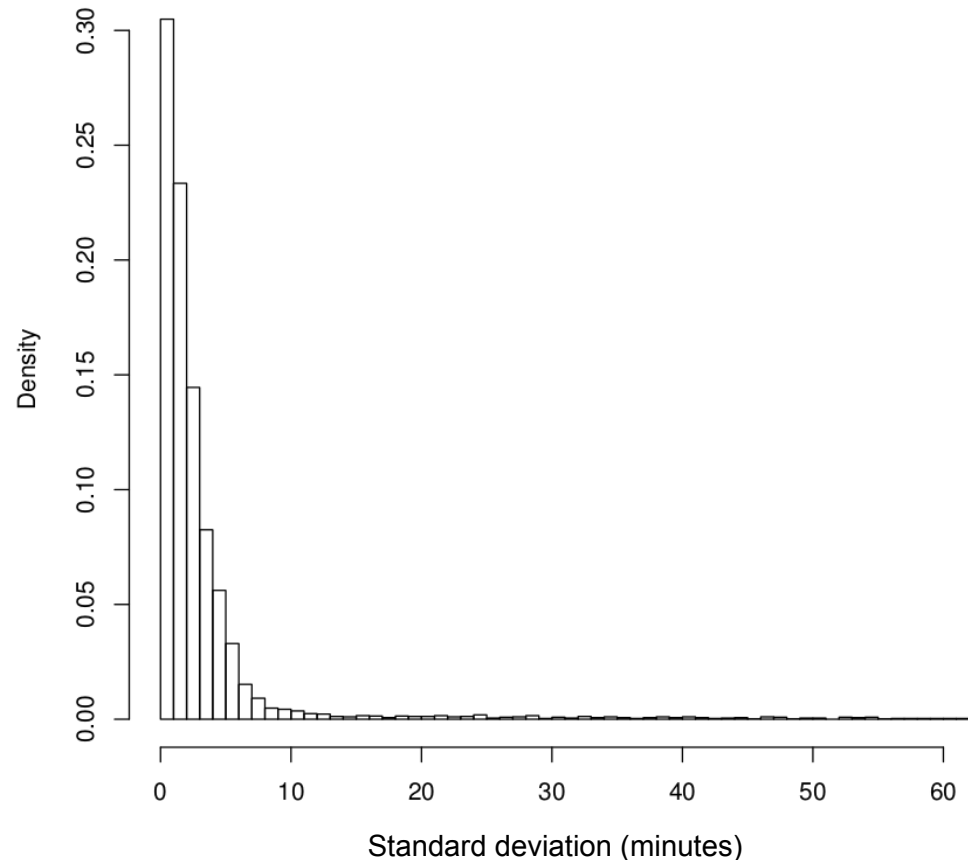
2. Targeting specific users

- Weibo targets specific users, such as those who frequently post sensitive content.

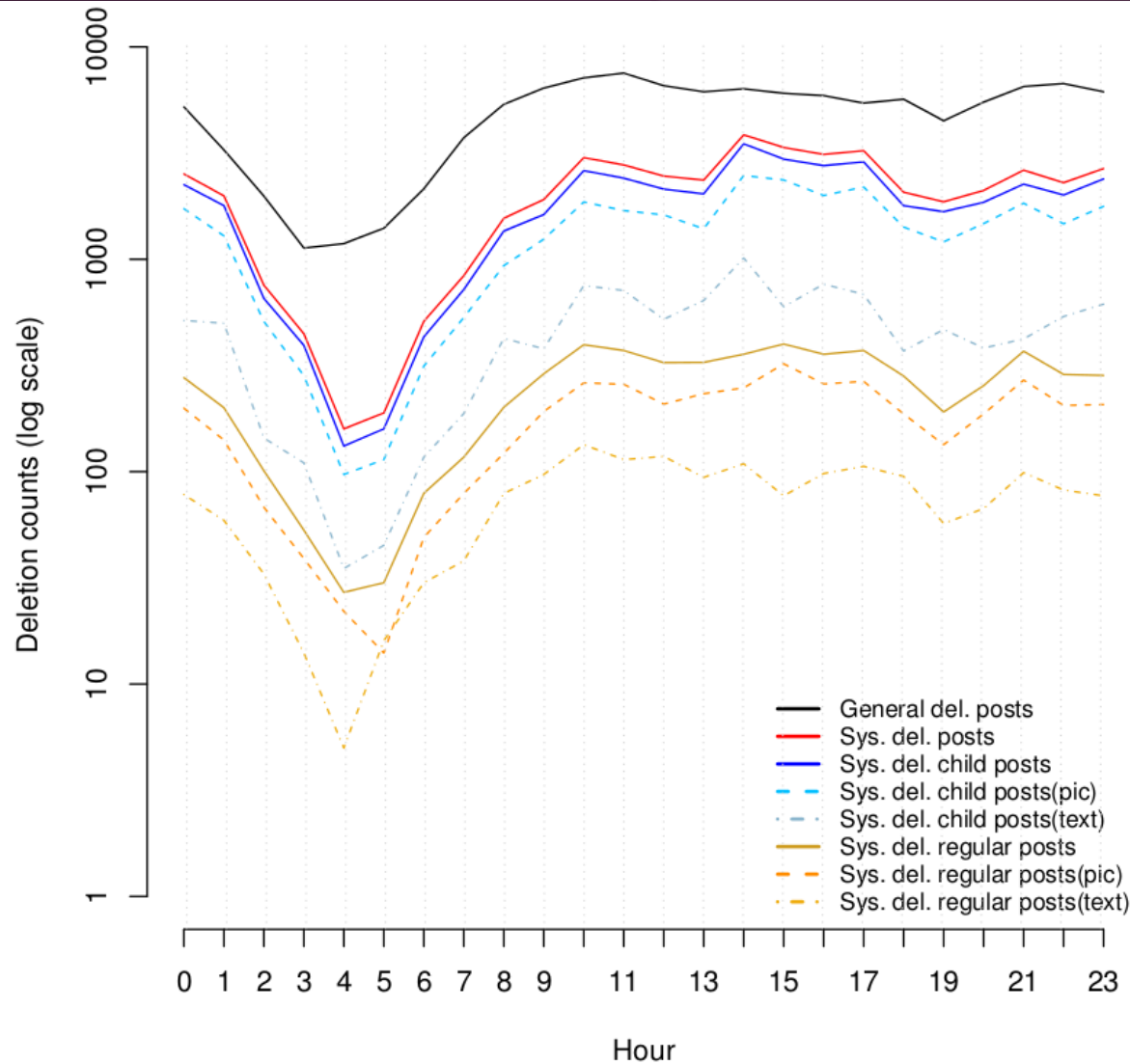


3. Finding all related reposts

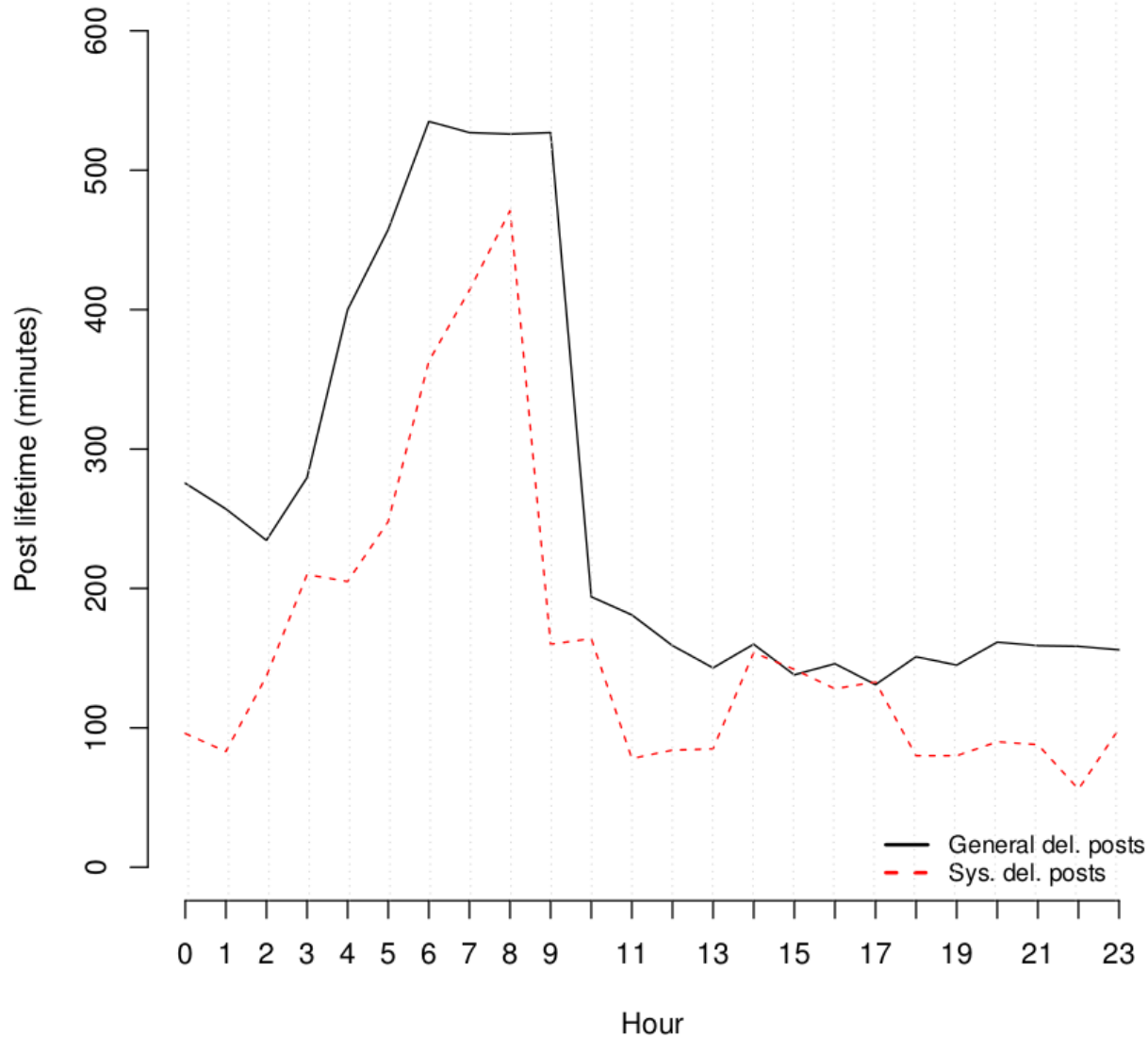
- When a sensitive post is found, a moderator can find all of its related reposts, and delete them all at once



Censors work in the night

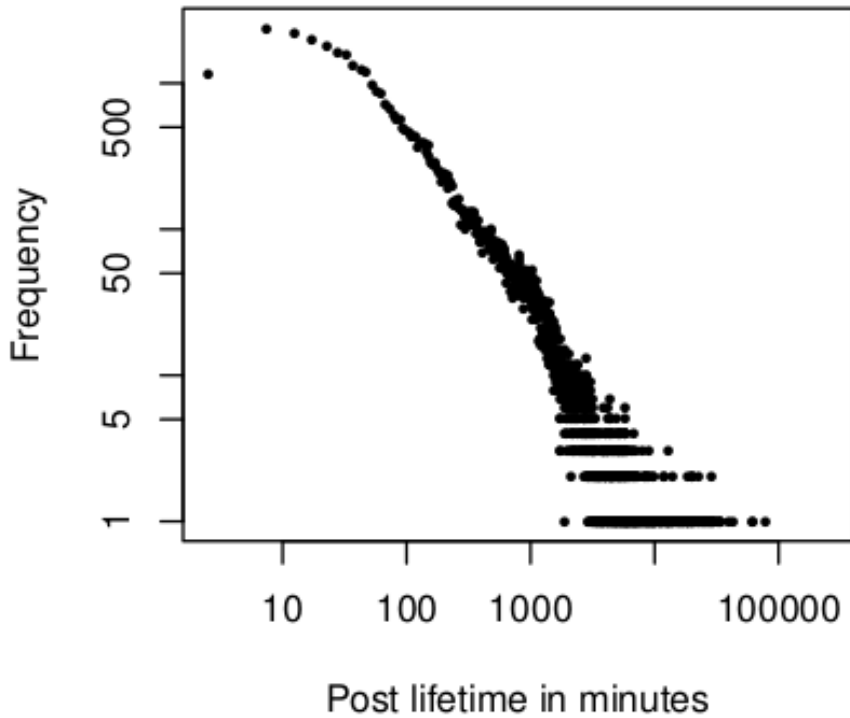


Censors catch up on overnight posts by late morning

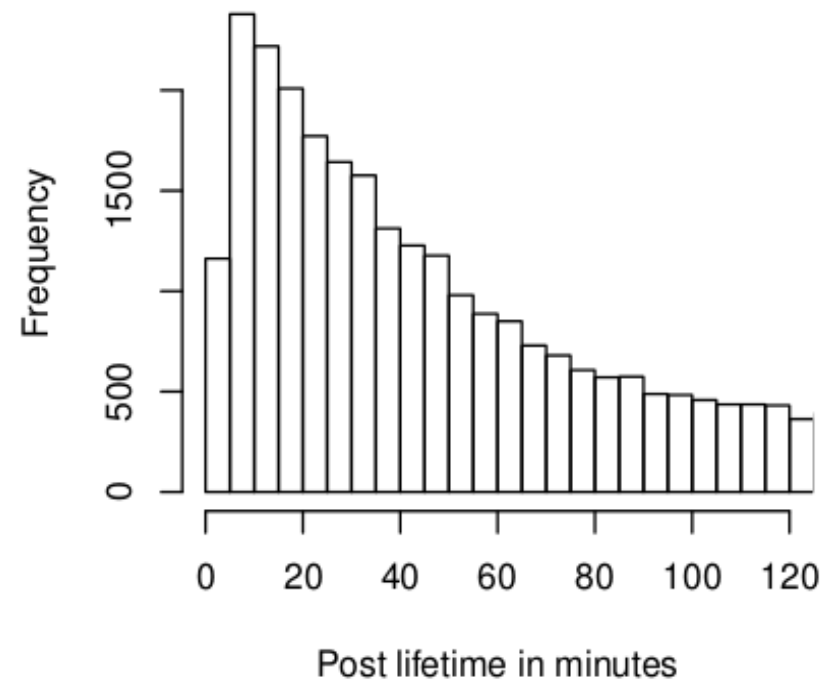


Conclusion

Whole lifetime



First two hours



Thank you!

Q & A