Social Networks and Privacy

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A social network site (SNS)

"We define social network sites as web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system" (boyd & Ellison, 2008, p. 2011).

SNS examples

http://www.empowerdigitalmarketing.com/wp-content/uploads/2014/02/which-social-media.jpgi

Social network of Facebook employee

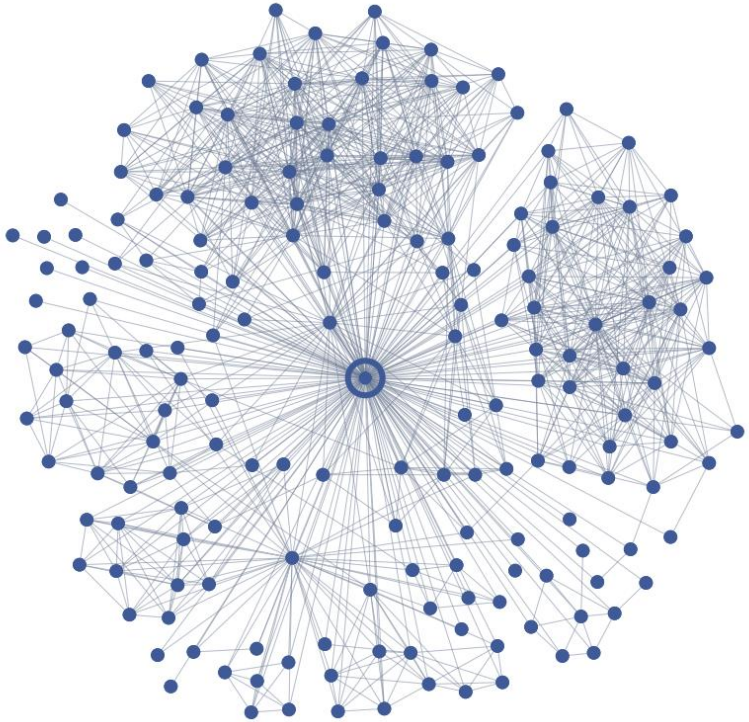


image from http://overstated.net/wp/uploads/2009/03/asmith-connections.pdf

Overview

- Privacy problems and consequences in SNS (Tatiana)

- Preventing privacy leaks (Su Mon)

Privacy consequences of SNS

- Information access (Jagatic et al., 2007; Stutzman et al., 2012)

- Boundary regulation (Iachello & Hong, 2007; Bernstein et al., 2013; Litt et al., 2014; Marwick & boyd, 2010)

Access to your information

- Individuals sometimes not aware of how much information is accessible about them on these sites (Jagatic et al., 2007).


JACK
VALE
social media experiment

CMU longitudinal Facebook study

Across 2005-2011:

- Found less CMU network “public” disclosures (though some reversals in 2010, linked to new privacy settings and adding Pages/connected profiles)
- Infer more private disclosures

Stutzman et al. (2012)

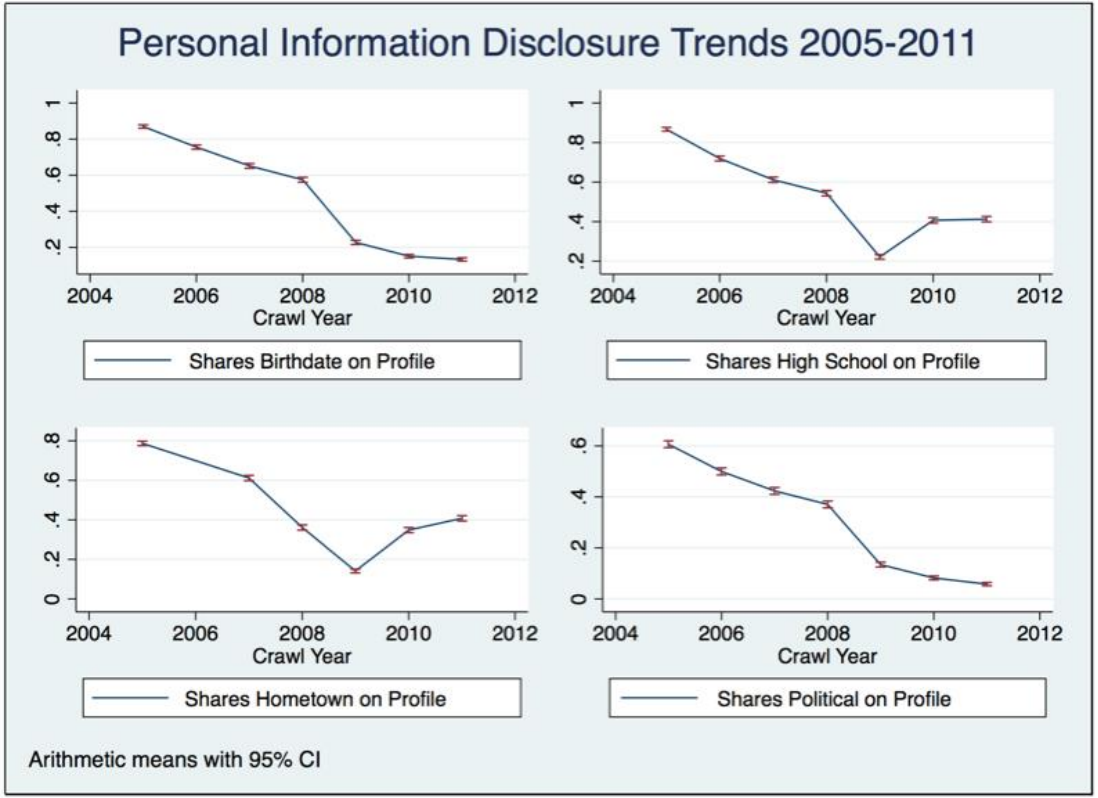


Figure 3: Personal information disclosure trends, 2005–2011. Note: trend lines are scaled.

Figure and caption from Stutzman et al. (2012, p. 19)

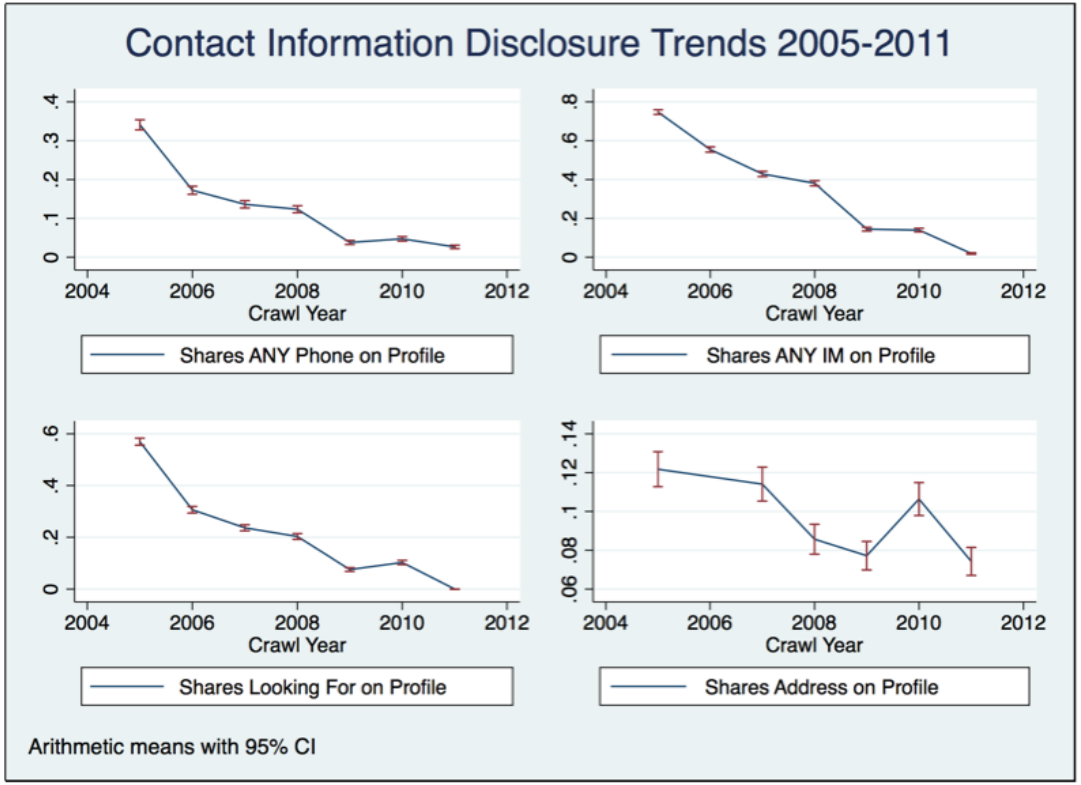


Figure 4: Contact information disclosure trends, 2005–2011. Note: trend lines are scaled.

Figure and caption from Stutzman et al. (2012, p. 20)

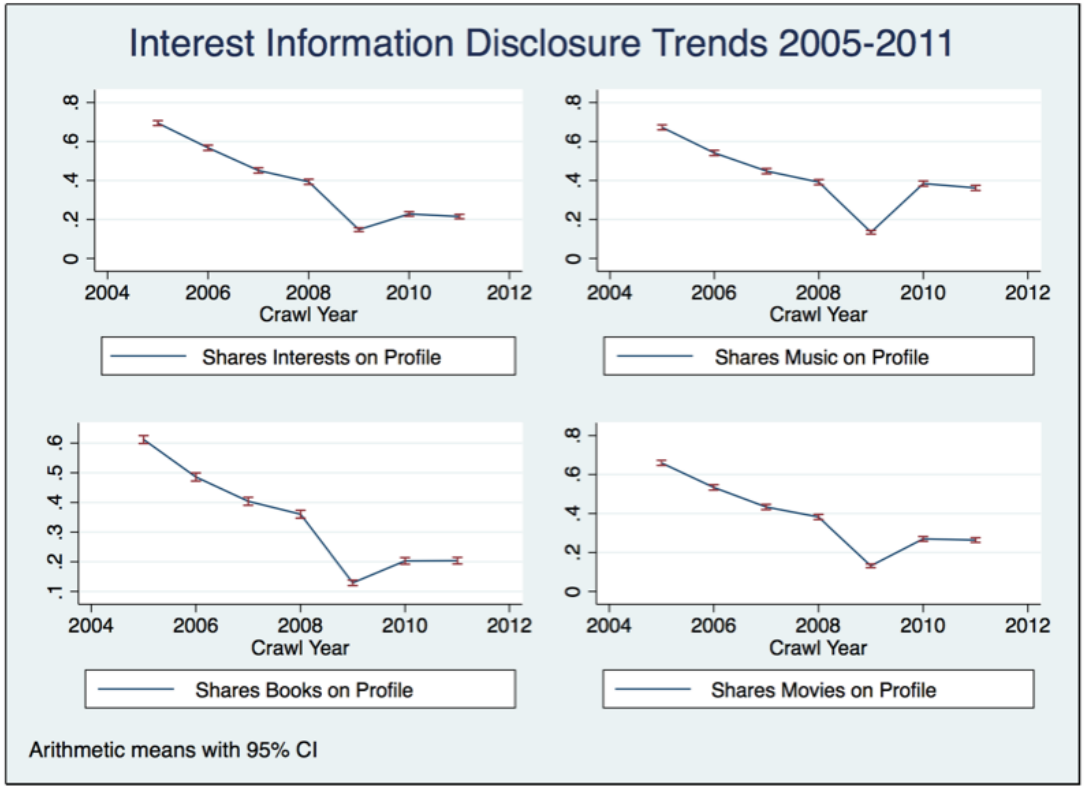


Figure 5: Interest information disclosure trends, 2005–2011. Note: trend lines are scaled.

Figure and caption from Stutzman et al. (2012, p. 21)

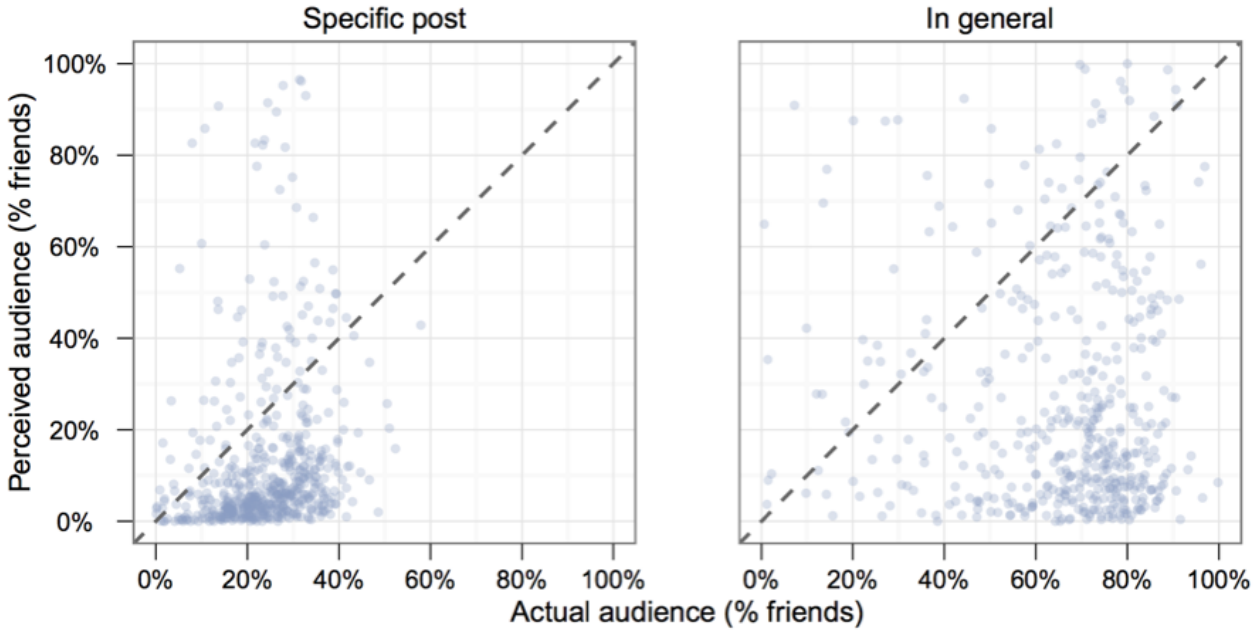
CMU longitudinal Facebook study

Across 2005-2011:

- Infer more “private” disclosures to Friends & Friends of Friends, but also to “silent listeners” like Facebook, apps, and ads.

Stutzman et al. (2012)

Underestimation of Facebook audience



Partial figure from Bernstein et al. (2013, p. 23)

Underestimation of Facebook audience

Likes, comments, and amount of friends are not good predictors of audience size on Facebook (Bernstein et al., 2013).

Context collapse

"The need for variable self-presentation is complicated by increasingly mainstream social media technologies that collapse multiple contexts and bring together commonly distinct audiences" (Marwick & boyd, 2010, p. 115).

“That was the first picture I saw of you.”

952 Facebook friends see my profile picture:

- Partner
- Friends
- Acquaintances
- Immediate family
- Extended family
- Partner’s immediate and extended family
- Previous and current classmates
- Previous co-workers and employers
- Previous and current teachers and professors
- Potential co-workers and employers
- People I don’t remember

Impression management

- Present as well as past content
- For example, three Facebook domains (Zhao et al., 2013)
  - “performance”
  - “exhibition”
  - “personal”

Get into groups and chat!

- Can you think of scenarios where you or people you know experienced privacy breaches or self-presentation threats from mixed audiences in any SNS?
- Are there any benefits to context collapse in SNSs?

Collective impression management

	Definition	%	Example
Norm Violations	The target worries about self-presentation because the other posts content showcasing the target engaged in norm-violating behavior (whether toward a public and/or sub-audience).	45.3	*My friend posted a picture of me doing hookah once. even though it is legal, i did not want my family on facebook to see me smoking, so i asked my friend to un-tag me from the picture, which she did.*
Ideal Self-Presentation Violations	The target is concerned about self-presentation because the other's content is disharmonious with his/her ideal self-presentation (even though the content refers to normative behaviors).	28.7	*My friend posted a really unattractive picture of me that I did not want other people to see.*
Association Effects	The target worries about self-presentation because of another's self-presentation. The posting does not directly involve the target, but he/she worries that others will negatively judge him/her because of the other's behaviors.	21.3	*One time a friend posted a link to an image that she thought was funny on my wall…I was slightly embarrassed because I did not find the image funny and I was worried about how my other Facebook friends would think of me for having the link on my wall. I did not want my other Facebook friends to think that I was the type of person to find the image funny. In the end, I hid the link.*
Aggregate Effects	The target becomes self-conscious about self-presentation because another's posting draws attention to it.	4.7	*A friend of mine commented on a picture I forgot I had posted of me with my ex boyfriend and it showed in the newsfeed.*

Table 1. Types of other-generated face threats.

Table from Litt et al. (2014, p. 454)

Ways to Prevent Privacy Leaks

- Self-censorship
  - Don’t share

- Selective sharing
  - Privacy settings

- Automated detection
  - Machine learning

- Other ways
  - Delete after posting
  - Deactivate & Activate

Reference: https://www.youtube.com/watch?v=lxaI4_9xr-Y

Self-Censorship

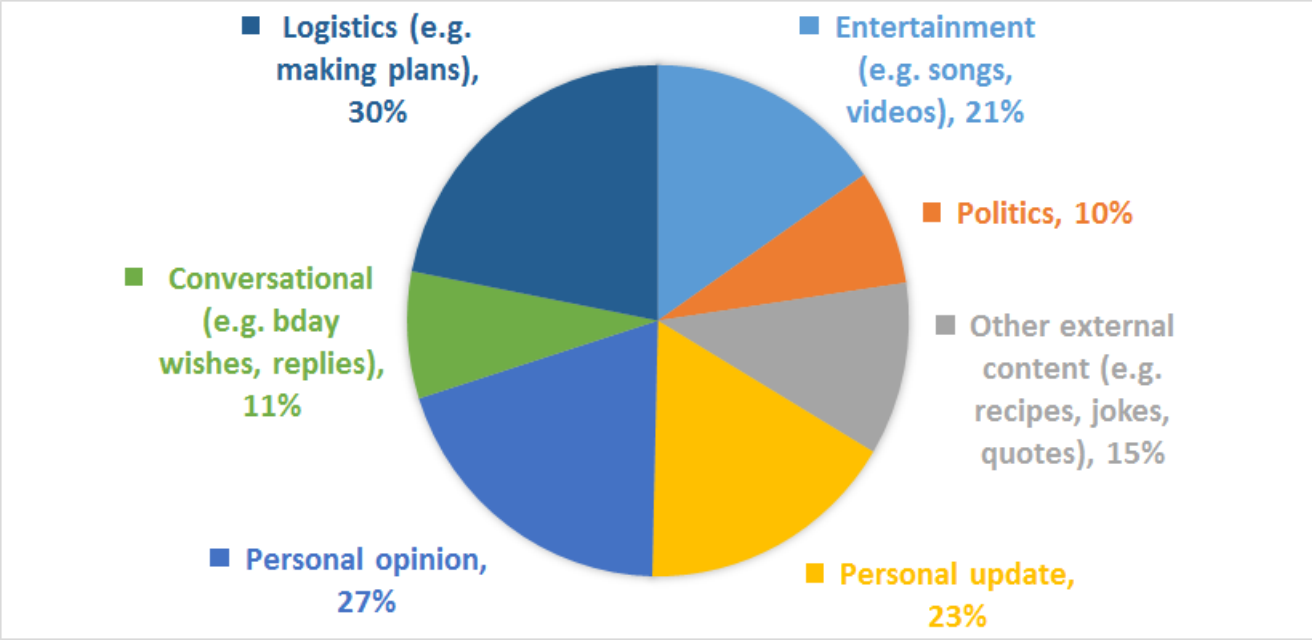
What are the things that you think of sharing, but choose not to share?

Why?

Self-Censorship

Reference: The Post that Wasn't: Exploring Self-Censorship on Facebook (CSCW'13)

- Diary study with 18 participants



Why?

- Argument
- Offend
- Boring
- Presentation of self
- Inconvenient

Self-Censorship

Reference: The Post that Wasn't: Exploring Self-Censorship on Facebook (CSCW'13)

Self-censorship to selective sharing

- Half of the self-censored contents should have been shared
- Under ‘optimal’ audience grouping

Self-Censorship on Facebook

Reference: Self-Censorship on Facebook (ICWSM `13)

- Last-minute censorship
  - 71% of 3.9 million users self-censor within 17 days
  - Posts are censored more than comments
  - Males censor more posts than females, but not comments
  - Males censor more, when there are more male audience
  - Older people censor fewer posts, but more comments
  - People with more politically and age diverse friends censor fewer posts
  - Users, who target specific audience, self-censor more
    - Contradictory to previous paper?

Selective Sharing

Reference: The Post that Wasn't: Exploring Self-Censorship on Facebook (CSCW'13)

Group characteristics

- Close friends & Not close friends
- Family
- Work/School → classmates, co-workers
- Demographics → age, geography, race
- Relationship to post → interest, personal relevancy

Selective Sharing: Google+ Circles

Group Exercise: What are the good and bad features of Google+ circles?

- Tasks
  - Add a new friend
  - Manage circles
    - Add a friend to 2 circles
    - Remove a friend from circles
  - Share/Post something using circles

Note: You can compare with Facebook

Selective Sharing: Google+ Circles

Reference: +Your Circles: Sharing Behavior on Google+ (SOUPS `12)

Good

- Force users to use circles
- Clean and interactive interface for managing circles
- Highly visible circles during sharing
- Trust in Google with personal data (e.g.search, map, gmail)

Bad

- Effort to manage circles
- Users already used to self-censorship
- Unintended disclosure (e.g. resharing, inference from posts)
- Default setting is public

Selective Sharing: Google+ Circles

Reference: Talking in Circles: Selective Sharing in Google+ (CHI `12)

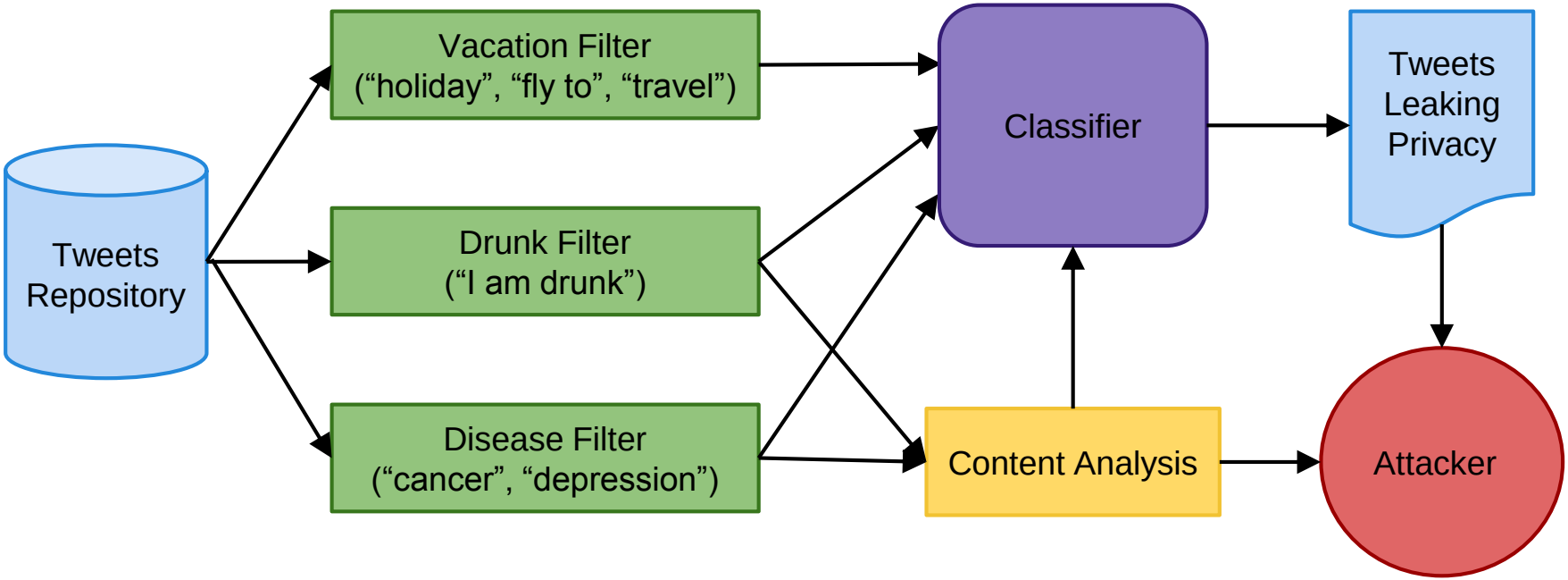
Interview: “Please describe the audience you chose and why you chose to share this content with them”

- Privacy (21.8 %)
- Relevance (23 %)
- Social norms (7.9 %)
- Distribution (43 %)

Automated Detection of Privacy Leaks

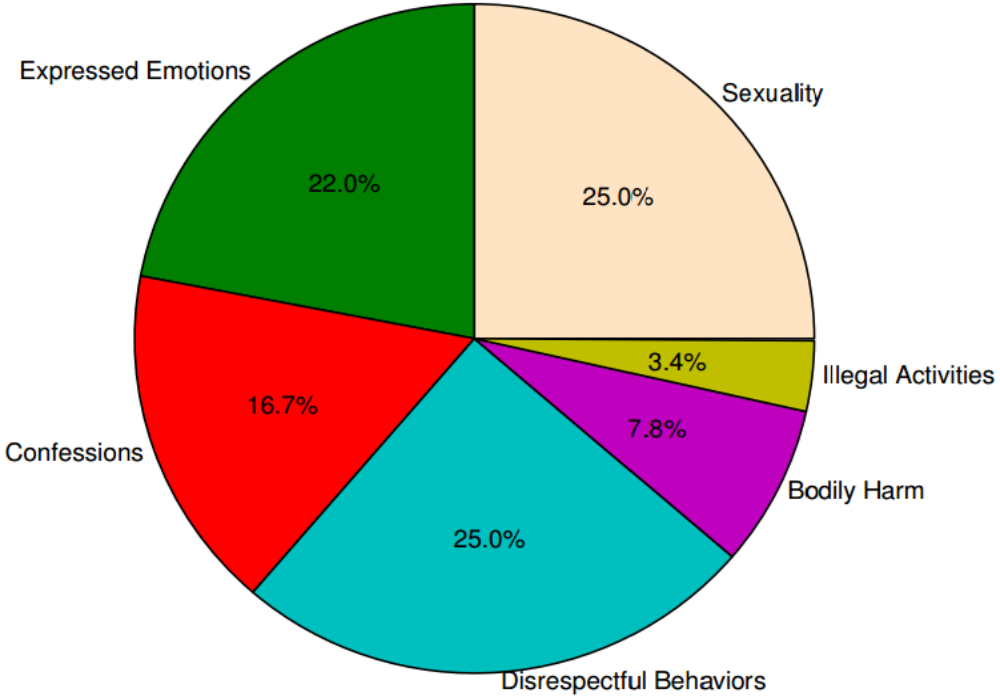
Reference: Loose Tweets: An Analysis of Privacy Leaks on Twitter (WPES `11)

Architecture

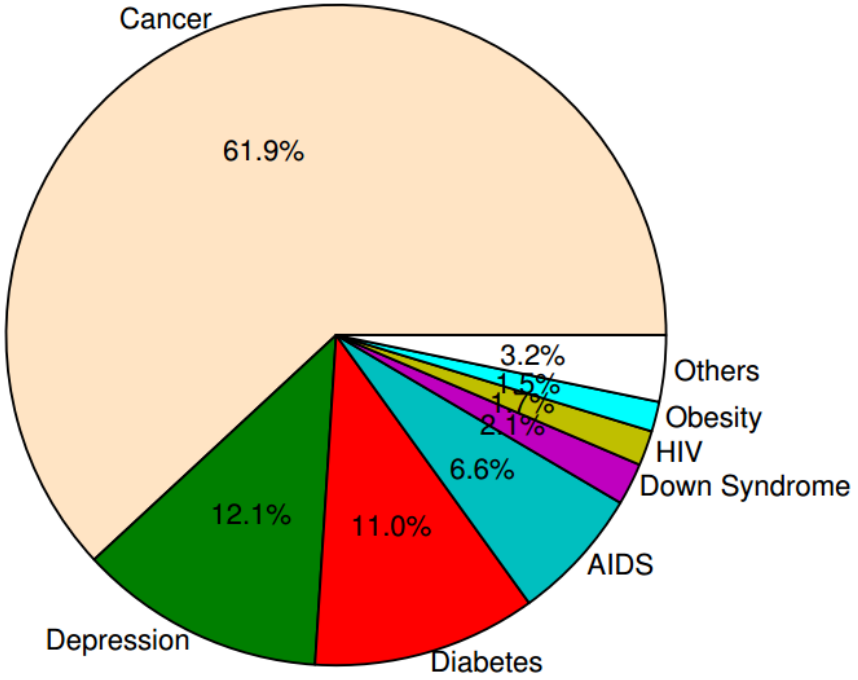


Content Analysis

Reference: Loose Tweets: An Analysis of Privacy Leaks on Twitter (WPES `11)



Drunk Tweets



Disease Tweets

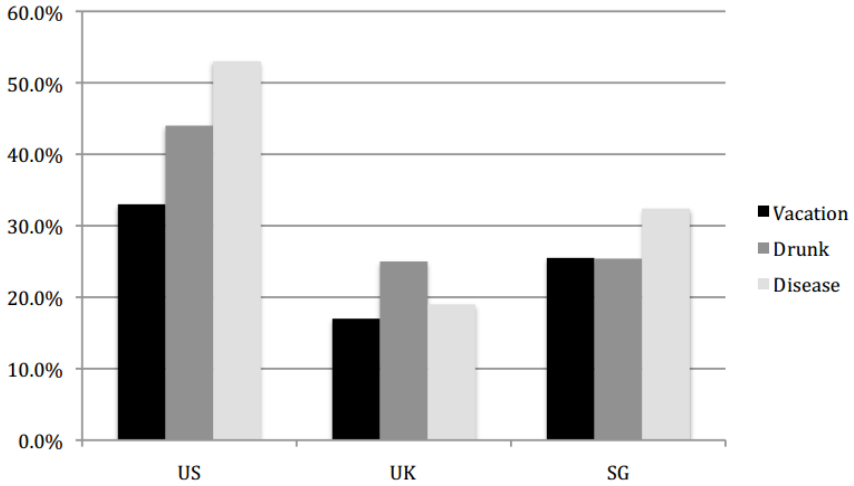
Classifier Output: Sensitive or not

Reference: Loose Tweets: An Analysis of Privacy Leaks on Twitter (WPES `11)

Cross-Cultural Analysis

	US	UK	SG
Vacation	0.34	0.4	0.34
Drunk	0.01	0.01	0.006
Disease	0.02	0.02	0.008

Percentage of Vacation, Drunk & Disease Tweets across Countries



Fractions of **Sensitive** Tweets Across Countries

Summary

Problems and consequences

- Information access
- Audience size
- Context collapse
- Face threat

Preventing privacy leaks


Self-censorship


Selective sharing


Automated detection

Q & A