# Lecture 16:
# Tracking Part 2;
# Pervasive
# Surveillance Systems

**CMSC 25910**

**Spring 2022**

**The University of Chicago**

THE UNIVERSITY OF CHICAGO

# Measuring Tracking
# via Data Access Rights

# What Twitter Knows

**Characterizing Ad Targeting Practices, User Perceptions, and Ad Explanations Through Users' Own Twitter Data**

**Miranda Wei, Madison Stamos, Sophie Veys, Nathan Reitinger, Justin Goodman, Margot Herman, Dorota Filipczuk, Ben Weinshel, Michelle L. Mazurek, Blase Ur**
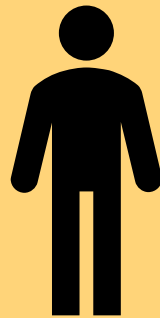In *Proc. USENIX Security 2020*.

# Targeted Advertising:

*Using detailed information about users' demographics, preferences, opinions, and activity to target ads*

## expectation:



**Blase Ur**
gender: M
location: Chicago, IL
interests: bicycles, succulents, punk rock

# **Reality:** organic ketchup buyer + 15 other criteria



Heinz Ketchup ✔
@HeinzKetchup_US

This is it, the last week of #HeinzFantasySandwich! This week, you're Team Grilled Cheese. You can only draft FOUR players. Who's on your team? #FantasyFootball #FantasyDraft

5:30 AM · Sep 26, 2018 · Twitter for Advertisers

```
targetingType: Tailored
audiences (lists)

targetingValue:
NCS_PD_04358_Kraft_Organic
and_natural_Ketchup
buyers_1_26362226

…

targetingType: Keywords

targetingValue: #parenting

…
```

5

**1.** What ad targeting mechanisms are currently used to target Twitter users?

**2.** What do Twitter users think about the mechanisms for…

**a)** ad targeting?   **b)** transparency?

# Requesting Data From Twitter
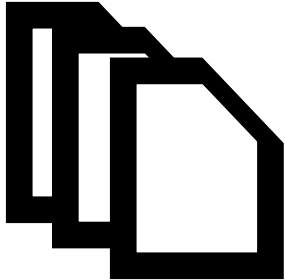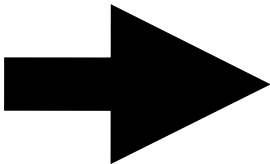
# Contents of ad-impressions.js

```
[ {
  "ad" : {
    "adsUserData" : {
      "adImpressions" : {
        "impressions" : [ {
          "deviceInfo" : {
            "osType" : "Ios",
            "deviceId" : "#############",
            "deviceType" : "iPhone X"
          },
          "displayLocation" : "SearchTweets",
          "promotedTweetInfo" : {
            "tweetId" : "##################",
            "tweetText" : "RT @SpotifyBrands: Young people's digital lives are subtly shifting
                           culture. Discover more with our global trends report.",
            "urls" : [ ],
            "mediaUrls" : [ ]
          },
          "advertiserInfo" : {
            "advertiserName" : "Spotify",
            "screenName" : "@Spotify"
          },
          "matchedTargetingCriteria" : [ {
            "targetingType" : "Events",
            "targetingValue" : "Back to School 2019"
          }, {
            "targetingType" : "Age",
            "targetingValue" : "18 to 49"
          }, {
            "targetingType" : "Locations",
            "targetingValue" : "United States"
          }, {
            "targetingType" : "Platforms",
            "targetingValue" : "iOS"
```

8

# Study Protocol
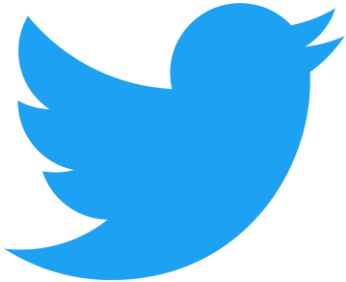


request Twitter data → upload ad-related data → take customized survey
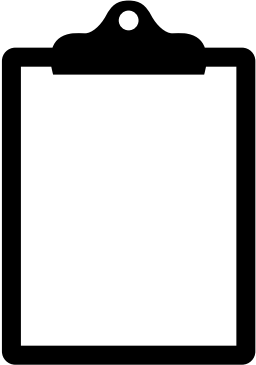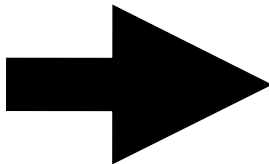
# Ethics and Participant Privacy

- Approved by IRB

- Did not collect any personally identifiable information

  - Only 3 advertising-related files from their Twitter archives

- Replace any potential identifiers in targeting data with #, *, MM, DD, YYYY as appropriate

# 231 Participants and Their Ads
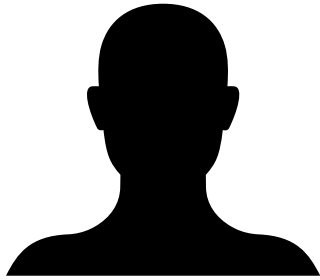
**per participant**

- mean 6.6 years on Twitter

- mean 1,046.6 ads in last 3 months
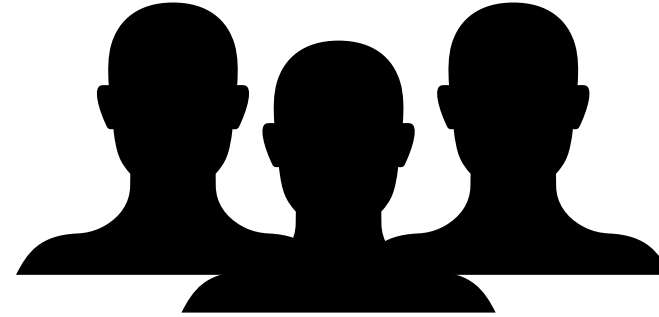
**across all participants**

- observed 240,651 ads with at least one targeting type
  - e.g., location targeting

- 45,209 unique instances
  - e.g., Boston

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# Targeting Types

**demographic:**
*characteristics about user and their device(s)*

- provided by user or inferred by Twitter

| targeting type | uses |
|---|---:|
| language | 350,121 |
| platform | 32,351 |
| location | 31,984 |
| new device | 236 |

# Targeting Types

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| --- | --- |
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| new device | 236 |

**psychographic:**
*user lifestyles, behaviors or attitudes*

- provided by user or inferred by Twitter

| targeting type | uses |
| --- | --- |
| follower lookalikes | 590,502 |
| conversation | 128,005 |
| behavior | 35,008 |
| interest | 25,284 |

# Targeting Types

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| interest | 25,284 |

**advertiser:**
*user information
collected offline*

- provided by advertiser

| targeting type | uses |
|---|---:|
| tailored (list) | 113,952 |
| mobile | 21,631 |
| tailored (web) | 18,016 |

# Some Lesser-discussed Targeting Types

- **follower lookalikes:** target people who don't necessarily follow a given account, but have similar interests or demographics to the account's actual followers

  - used 242,709 times, e.g., @netflix

- **behavior targeting:** specific behaviors on Twitter; inferred behavior, such as shopping and lifestyle habits or income

  - used 35,088 times, e.g., US - Household income: $30,000-$39,000

- **tailored audience (list):** reach specific people by uploading lists containing PII (email addresses, phone numbers, or Twitter handles) that are matched to Twitter users' accounts

  - used 113,952 times, e.g., Lifetime Suppression [Installs] (Device ID)

- **conversation topic targeting:** allows advertisers to target people based on topics they have engaged with (e.g., Tweeted, clicked, Retweeted, replied, liked, viewed) on Twitter

  - used 128,005 times, e.g., Food

# Targeting Types

(`https://business.twitter.com/en/targeting.html` and pages linked from it).

- **Age targeting** allows advertisers to target people by age buckets, such as 18+ years old or 18-24 years old.
- **Behavior targeting** allows advertisers to target people based on inferred behavior, such as shopping and lifestyle habits or income.
- **Conversation topic targeting** allows advertisers to target people based on topics they have engaged with (e.g., Tweeted, clicked, Retweeted, replied, liked, viewed) on Twitter.
- **Event targeting** allows advertisers to target people based on events they are interested in or have engaged with (e.g., Tweeted, clicked, Retweeted, replied, liked, viewed) on Twitter.
- **Follower lookalike targeting** allows advertisers to target people who don't necessarily follow a given account, but have similar interests or demographics to the account's actual followers.
- **Gender targeting** allows advertisers to target people based on their self-reported or inferred gender.
- **Interest targeting** allows advertisers to target people based on inferred interests, as determined by who they follow on Twitter and their Tweets, Retweets, and clicks.
- **Keyword targeting** allows advertisers to target people based on words or phrases they have Tweeted about or searched for on Twitter.
- **Language targeting** allows advertisers to target people who use a certain language on Twitter.
- **Location targeting** allows advertisers to target people based on region, city, metro or zip code.
- **Mobile audience targeting** allows advertisers to target people who use their mobile app.
- **Movie and TV show targeting** allows advertisers to target people based on movies and TV shows they have watched or are likely to watch.
- **Platform targeting** allows advertisers to target people who use a certain platform, such as iOS or Desktop, to access Twitter.
- **Retargeting campaign engager targeting** allows advertisers to target people based on prior engagement with (e.g., Tweeting, clicking, Retweeting, replying, liking, or viewing) their company.
- **Tailored audience (list) targeting** allows advertisers to reach specific people on Twitter by uploading lists, which contain personal information (email addresses, phone numbers, or Twitter handles) that are matched to Twitter users' accounts.
- **Tailored audience (web) targeting** allows advertisers to target people who have visited their website.

# Potential Violations of Twitter's Policies?

prohibited to target by race, religion, sex life, health, politics, and financial status

yet…

- **keyword:** "unemployment," "Gay," "#AfricanAmerican," "latinas"

- **conversation:** "Liberal Democrats (UK)"

- **tailored list:** "YYYY account status: balance due," "Christian Audience to Exclude," "LGBT Suppression List"

# Opinions of Targeting Types

**vary by specificity and accuracy**

tend to approve
abstractly, but object
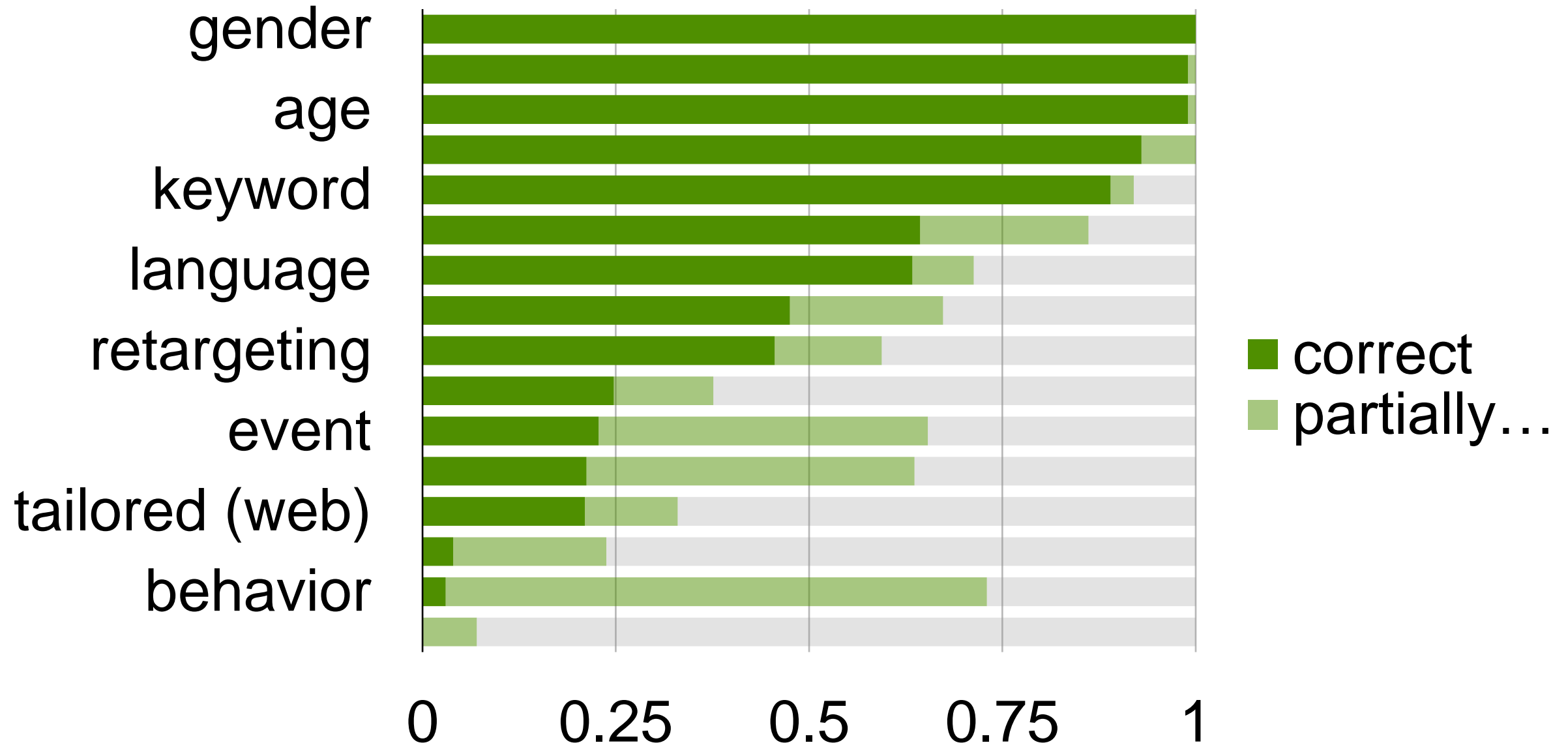to specific instances

e.g., event targeting

accuracy significantly
correlated with fairness
and comfort

… to a certain point

**Participants' Understanding of Targeting Types**

gender

age

keyword

language

retargeting

event

tailored (web)

behavior

correct

partially…

0    0.25    0.5    0.75    1

# Current Ad Explanations

## Why am I seeing this ad?

One reason you may be seeing this ad is that **Postmates** wants to reach people interested in **Health news and general info**. There may be other reasons you're seeing this ad, including that **Postmates** wants to reach **people above the age of 18 and located here: Phoenix AZ, US**.

You can view and manage information connected to your account that Twitter may use for ads purposes. See your Twitter data.

Twitter also personalizes ads using information received from partners as well as app and website visits. You can control these interest-based ads using the "Personalize ads" setting.

## Why am I seeing this ad?

You're seeing this ad because you're on a list **Postmates** wants to reach on Twitter. When the list was uploaded, Twitter did not learn any new identifying information about you.

### Your Data

**Postmates**
Learn more about **Postmates**

- March 17, 2019
  **Postmates** uploaded a **hashed** list. Twitter matched your information with information on that list.

- April 17, 2019
  You saw this ad from **Postmates**

There may be other reasons you're seeing this ad, including that **Postmates** wants to reach **people who are ages 18 and up, are located in Phoenix AZ, US, and are Female**. This information is based on your Twitter profile and where you've connected to the internet.

# Speculative Ad Explanations

**detailed text**

**Why am I seeing this ad?**

You may be seeing this ad because **Postmates** wants to reach people similar to people who follow **@chrishemsworth; and @BarackObama**.

You may also be seeing this ad because **Postmates** has added your Twitter username or email to a list of people who they want to reach. You may have been added if you **visited their webpage, used their mobile app, or signed up for their mailing list**.

You may also be seeing this ad because **Postmates** wants to reach people on the following audience lists: **Suppression (Installs All Time) (email); Suppression (Installs All Time) (Device Id); and Email Suppression List (May 2018)**

You may also be seeing this ad because **Postmates** wants to reach people interested in **Health news and general info**. Your interest profile is based on your **tweets and retweets, pages and people you follow, websites you visit, and more**.

You may also be seeing this ad because **Postmates** wants to reach people in the following demographics: **ages 18 and up; Phoenix AZ, US; and Female**.

You can view or manage account information used for ad purposes. Go to the "Personalize ads" setting to control internet-based ads.

**detailed visual**

**Why am I seeing this ad?**

Some of the targeting types used to target this ad to you were:

**Tailored audiences**: **Postmates** can add your name, your Twitter username, or your email to a list of people they want to reach.

Suppression (Installs All Time) (email)    Suppression (Installs All Time) (Device Id)    Email Suppression List (May 2018)

**Follower Look-alikes**: **Postmates** can target people who are similar to people who follow a person or page on Twitter.

@chrishemsworth    @BarackObama

**Interests**: **Postmates** can target people based on inferred interests.
**Postmates** did not target you using inferred interests.

**Demographics**: **Postmates** can target based on demographics or inferred demographics.

Ages 18 and up    Phoenix AZ, US    Female

# Speculative Ad Explanations

**creepy**

## Why am I seeing this ad?

You saw this ad on **April 17, 2019 at 11:05 AM** on **the Twitter app from a(n) Android device, IP address   ###.###.#.#   (Phoenix AZ, US).**

You are seeing this ad because **Postmates** used your information, such as your **email address or phone number**, to find you on Twitter.

You are also seeing this ad because **Postmates** has made the following determinations about you:

- Your information on Twitter was matched with external lists called **Suppression (Installs All Time) (email)**, **Suppression (Installs All Time) (Device Id)**, and **Email Suppression List (May 2018)**
- You have a lot in common with people who follow **@chrishemsworth**, and **@BarackObama**
- You are interested in **Health news and general info**.
- You are participating in the conversation about **Fitness** on Twitter.
- You **are ages 18 and up, and are Female**.
- You are located in or around **Phoenix AZ, US**.

These inferences are based on your Twitter profile and online activities, such as your **tweets and retweets, people and pages you follow, and websites you visit, as well as data that third parties have provided about you.**

You can view or manage account information used for ad purposes. Go to the "Personalize ads" setting to control internet-based ads.

# Speculative Ad Explanations

**control**

**Why am I seeing this ad?**

One reason you may be seeing this ad is that **Postmates** paid for an ad on this site.

You can view or manage account information used for ad purposes. Go to the "Personalize ads" setting to control internet-based ads.
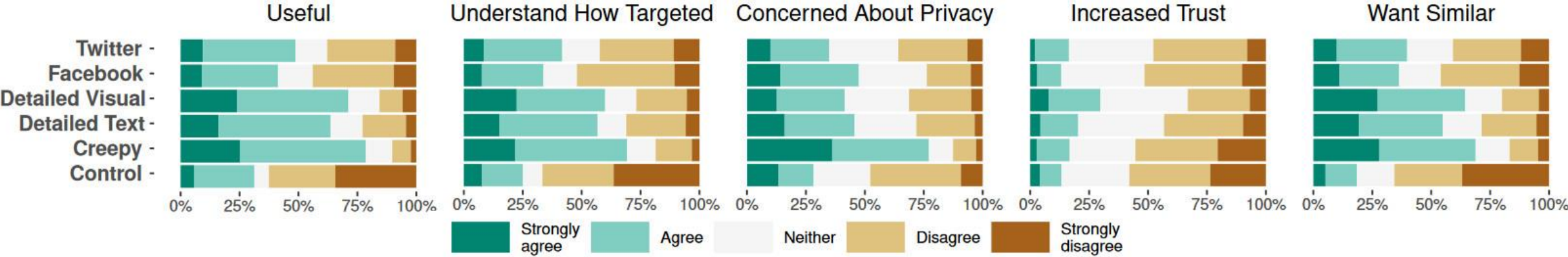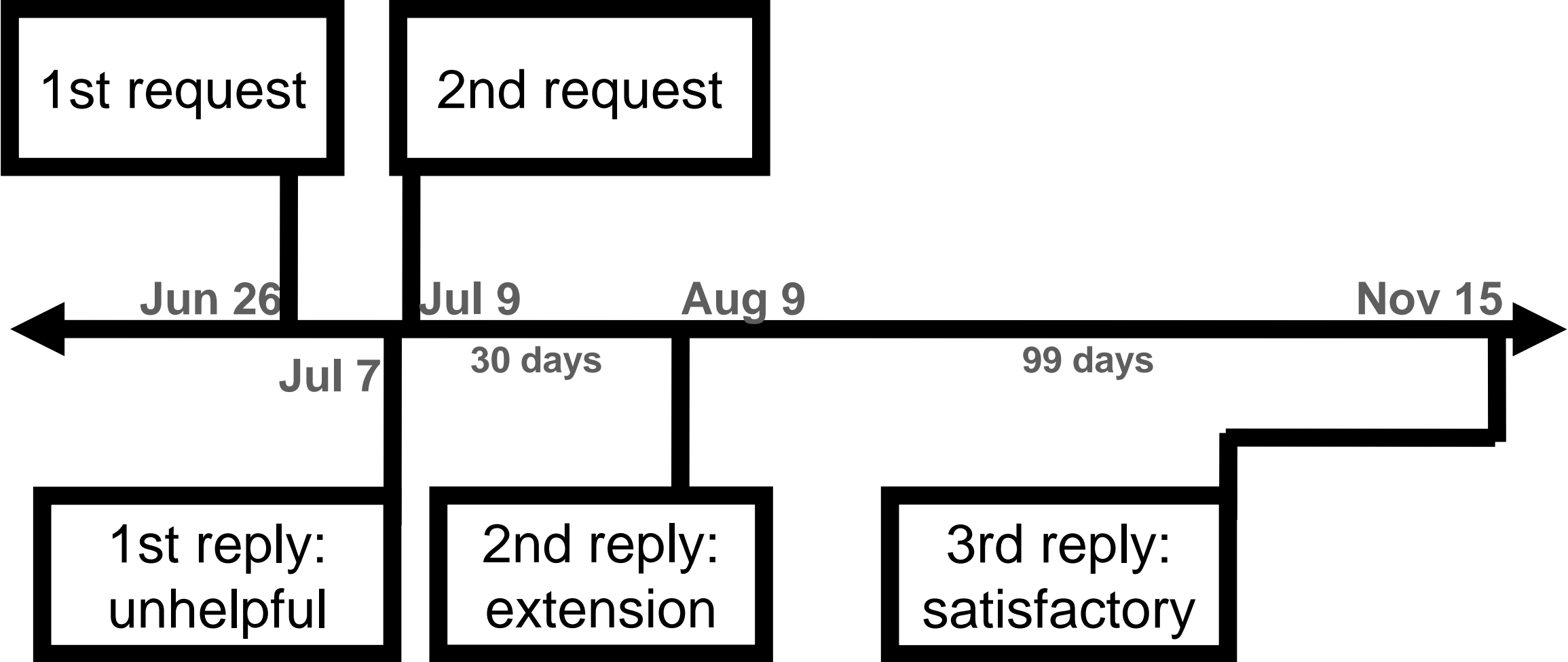
# Ad Explanation Results



Figure 5: Participants' level of agreement to questions about ad explanations.

# Clarifications from Twitter

# Key Takeaways

- Transparency is key, especially data access

- Some of the most concerning targeting types are understudied

    - e.g., tailored audiences, follower lookalikes

- How to enforce targeting policies if skirting scrutiny is trivial?

- Ad explanations should be more detailed

# Urban Surveillance

# Surveillance of Street Corners

# Surveillance of (My Former) Street Corner

# Surveillance (?) of Street Corners



Image from https://arrayofthings.github.io/

# Surveillance (?) of Street Corners



Image from https://arrayofthings.github.io/
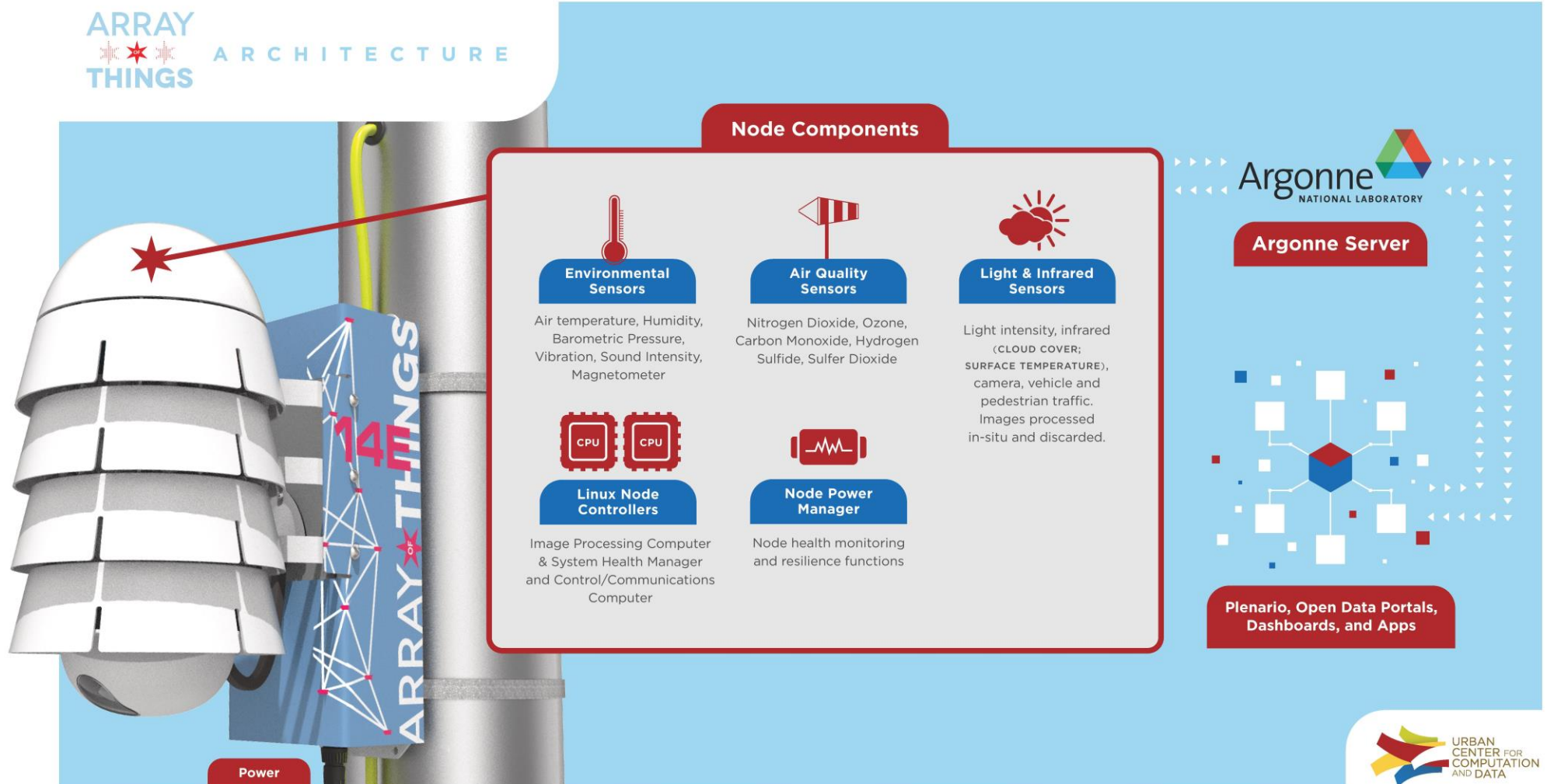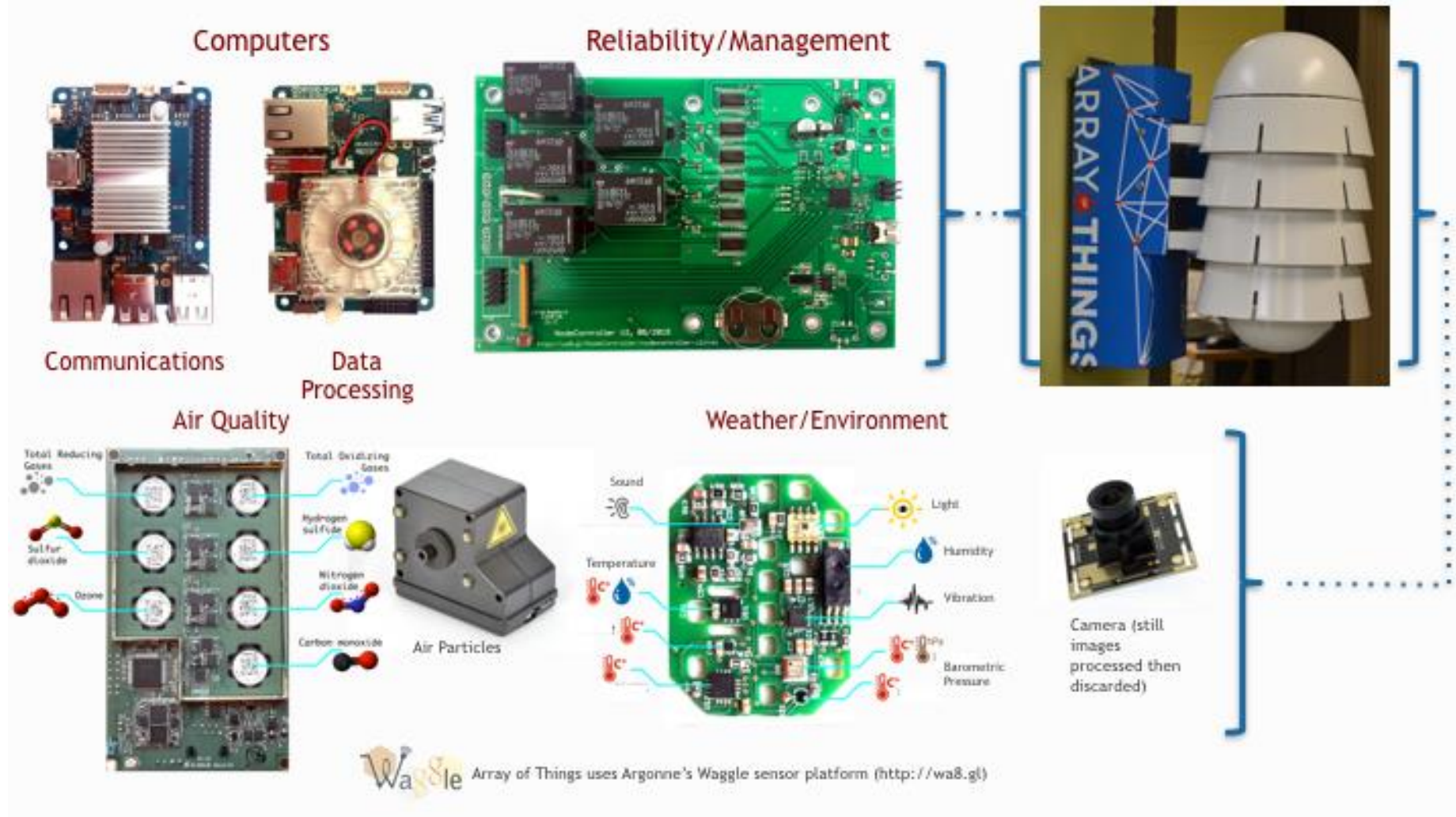
# Surveillance of a Population

# Tracking Chicago Juveniles

## CHICAGO IS TRACKING KIDS WITH GPS MONITORS THAT CAN CALL AND RECORD THEM WITHOUT CONSENT
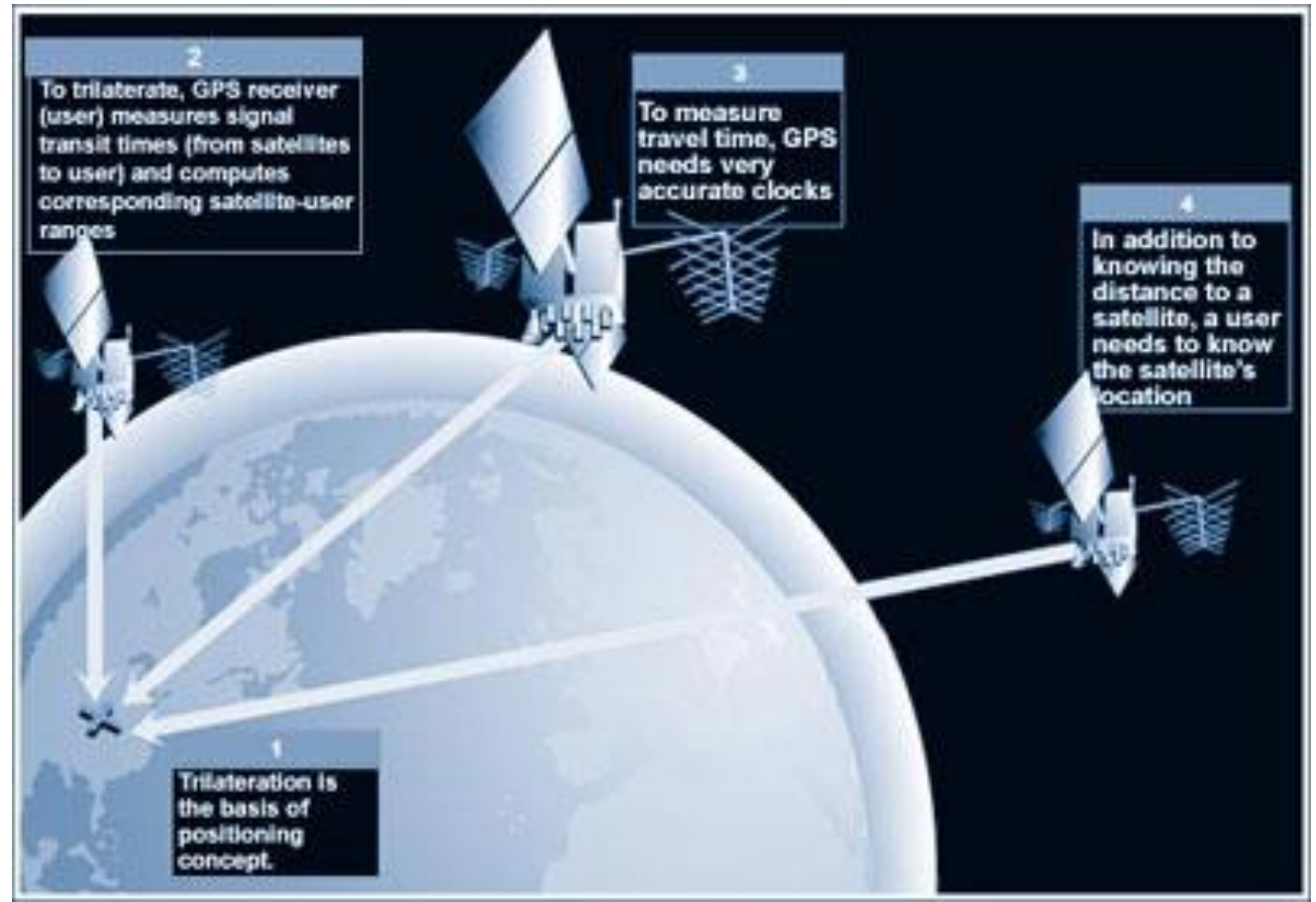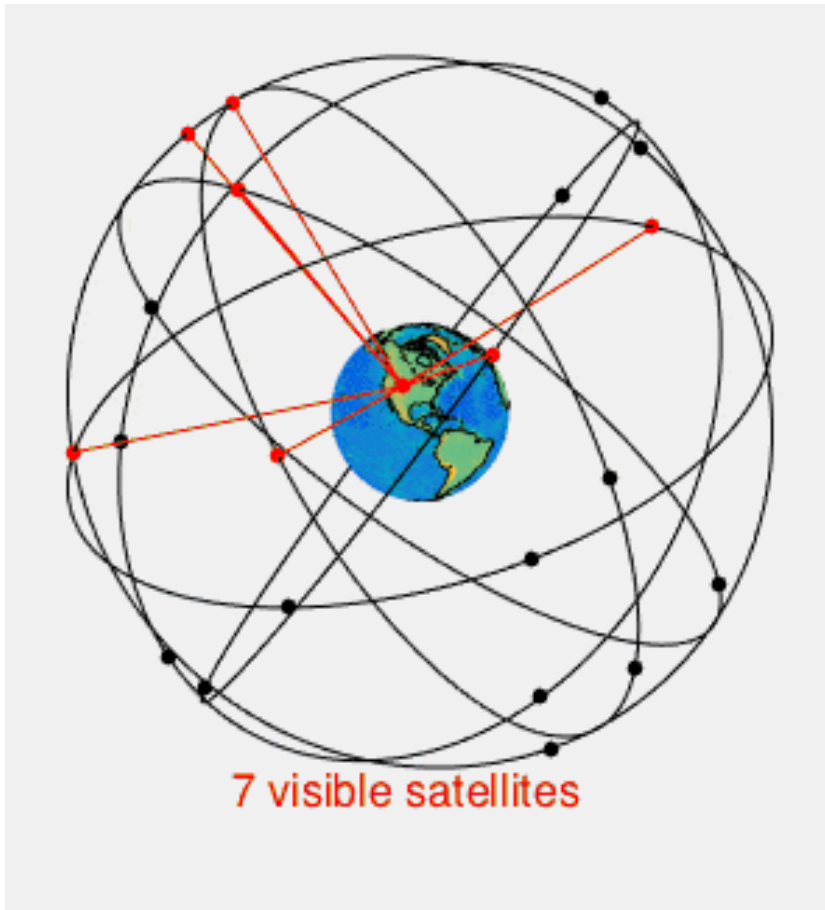
Cook County has a new contract for juvenile ankle monitors that critics say are an invasion of privacy.

*This story was co-published with Citylab.*

On March 29, court officials in Chicago strapped an ankle monitor onto Shawn, a 15-year-old awaiting trial on charges of armed robbery. They explained that the device would need to be charged for two hours a day and that it would track his movements using GPS technology. He was told he would have to be given permission to leave his house, even to go to school.

https://theappeal.org/chicago-electronic-monitoring-wiretapping-juveniles/

# Side Note: How GPS Works



7 visible satellites



2 To trilaterate, GPS receiver (user) measures signal transit times (from satellites to user) and computes corresponding satellite-user ranges

3 To measure travel time, GPS needs very accurate clocks

4 In addition to knowing the distance to a satellite, a user needs to know the satellite's location

1 Trilateration is the basis of positioning concept.

# Social Credit System in China

- "China's Social Credit System (SCS, 社会信用体系 or shehui xinyong tixi) is expected to become the first digitally-implemented nationwide scoring system with the purpose to rate the behavior of citizens, companies, and other entities… "good" behavior can result in material rewards and reputational gain while "bad" behavior can lead to exclusion from material resources and reputational loss."
  - Redlist = "information on "good" behavior"
  - Blacklist = "information on "bad" behavior"

# Social Credit System in China



The Social Credit System integrates various types of data into its public files*
Not all data is related to blacklists or red lists

**The Social Credit File**

| Basic information | | | | Other file information | | Irregular-ities | Key enforcement information | |
|---|---|---|---|---|---|---|---|---|
| Unified credit code | Name of legal repre-sentative | Founding date | Other basic info | Adminis-trative per-mits | Admin-istrative penalties | Irregulari-ties list | Red lists | Blacklists |
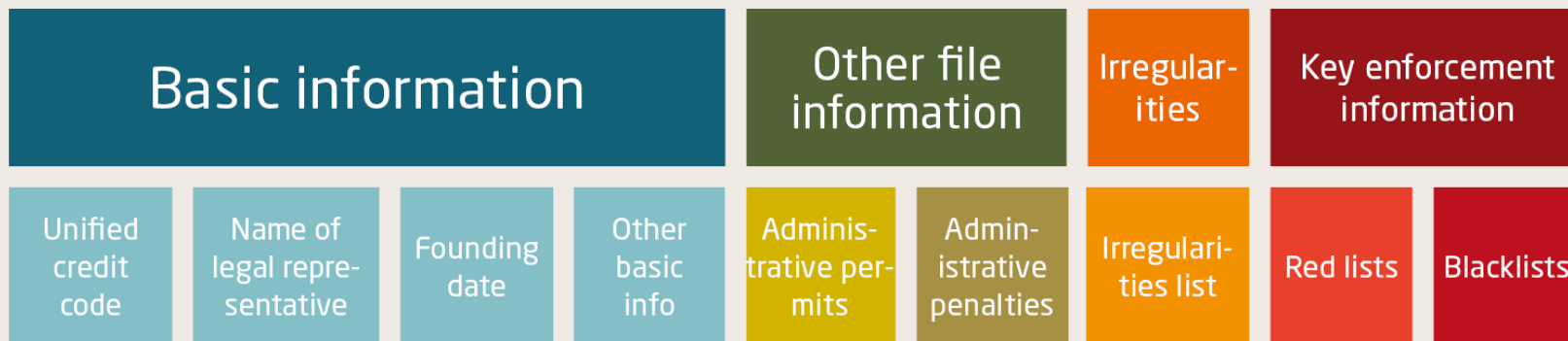
*Note: This is the file represented in the national Credit China and Corporate Credit Information databases. While these are the model for national implementation, different formats exist and are shattered across different administrative levels. A significant portion (in some cases over eighty percent) of this data remains confined to these local portals.
Source: Credit China

© MERICS

Image from https://merics.org/en/report/chinas-social-credit-system-2021-fragmentation-towards-integration

# Social Credit System in China



**Figure 3: An entry from the Blacklist of "Securities Market Entry Prohibition". The first column, from top to down: the first arrow points to "name of punishment" and the second points to "content of punishment". The table on the right side of the second arrow shows the detailed explanation of the punishment.**

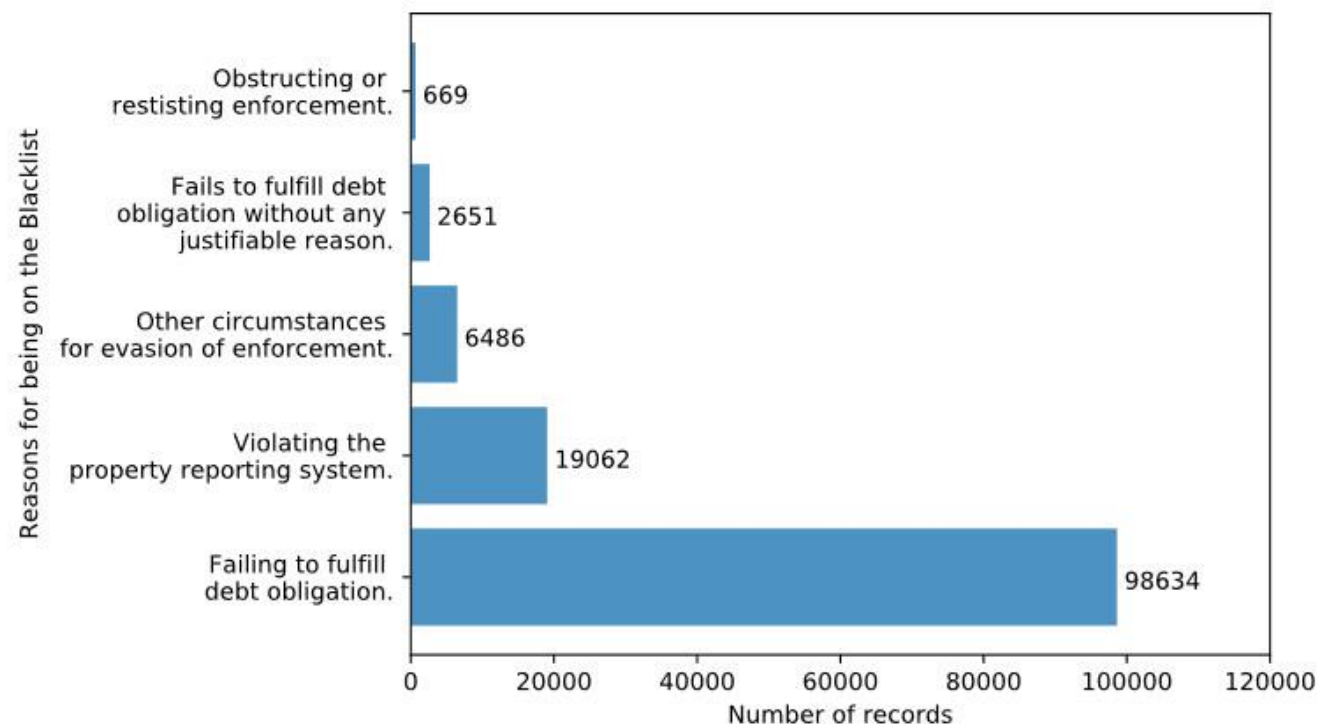# Social Credit System in China



Figure 4: The top 5 reasons for being on the Blacklist of company debtors.

Image from Engelmann et al. Clear Sanctions, Vague Rewards: How China's Social Credit System Currently Defines "Good" and "Bad" Behavior. In *Proc. FAT* 2019*.

# Social Credit System in China

# Facial Recognition in China



The Washington Post
*Democracy Dies in Darkness*

**Technology**

## Huawei tested AI software that could recognize Uighur minorities and alert police, report says

An internal report claims the face-scanning system could trigger a 'Uighur alarm,' sparking concerns that the software could help fu[...] crackdown on the mostly Muslim minority group

# Facial Recognition in China

- "A document signed by Huawei representatives… shows that the telecommunications firm worked in 2018 with the facial recognition start-up Megvii to test an artificial-intelligence camera system that could scan faces in a crowd and estimate each person's age, sex and ethnicity. If the system detected the face of a member of the mostly Muslim minority group, the test report said, it could trigger a "Uighur alarm" — potentially flagging them for police in China, where members of the group have been detained en masse as part of a brutal government crackdown."

# Facial Recognition in the USA



https://www.banfacialrecognition.com/map/

# Tracking You

**Opinion**
**Surveillance**

## Amazon's Ring is the largest civilian surveillance network the US has ever seen
*Lauren Bridges*

Tue 18 May 2021 08.51 EDT

One in 10 US police departments can now access videos from millions of privately owned home security cameras without a warrant

2699 383

# Surveillance At Borders

# Surveillance at Borders



**Technology**

## Apple employee detained by U.S. customs agents after declining to unlock phone, laptop

Customs and Border Protection officers violated a citizen's rights when they demanded he turn over passwords to his electronic devices at the airport, the American Civil Liberties Union Foundation of Northern California said in a civil complaint filed Tuesday. (Daniel Acker/Bloomberg)

By **Hamza Shaban**
April 3

When Andreas Gal returned from a business trip in Sweden last fall, he was carrying two company-owned devices: an iPhone XS that flashed "Confidential and Proprietary" on its lock screen and a MacBook Pro bearing a sticker that read "PROPERTY OF APPLE. PROPRIETARY."

# Phones in the Legal System

- Riley v. California
  - SCOTUS 2014
- Unanimous ruling that **warrantless** search of a phone during an arrest is unconstitutional
- Fifth Amendment from the Bill of Rights: Speech cannot be compelled
  - Many (but not all) courts consider passwords to be "speech"
  - Biometrics are not considered speech

# Plausible Deniability of Encryption
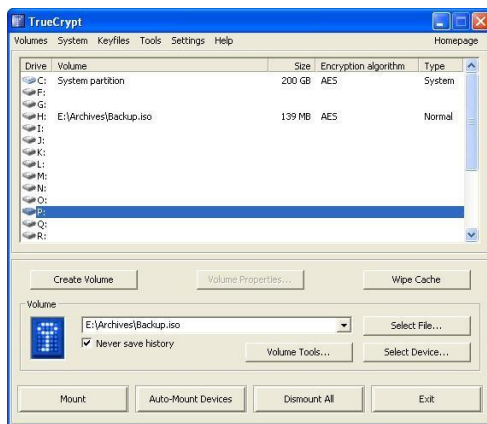


## Hidden Volume

It may happen that you are forced by somebody to reveal the password to an encrypted volume. There are many situations where you cannot refuse to reveal the password (for example, due to extortion). Using a so-called hidden volume allows you to solve such situations without revealing the password to your volume.

### A standard VeraCrypt volume

Space Occupied by Files

Header of the Standard Volume · Free Space (Containing Random Data)

### The standard VeraCrypt volume after a hidden volume was created within it

Header of the Hidden Volume · Data Area of the Hidden Volume
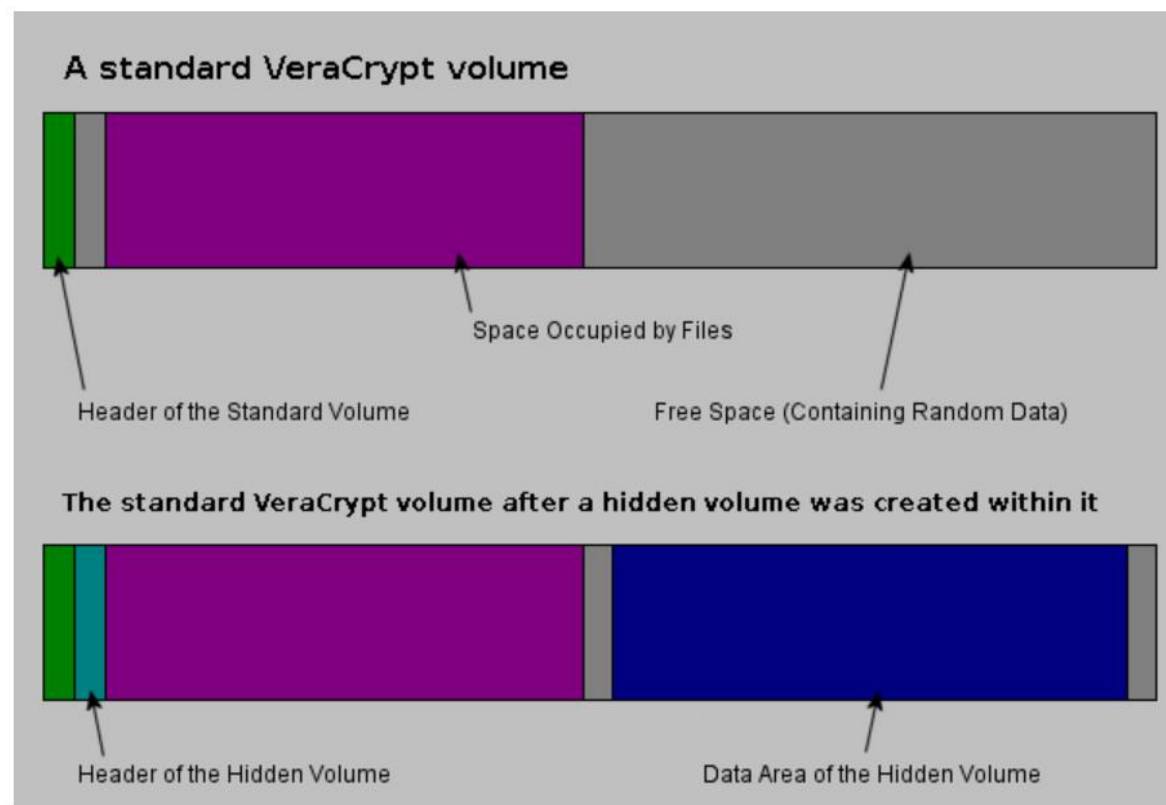
*The layout of a standard VeraCrypt volume before and after a hidden volume was created within it.*

https://veracrypt.eu/en/docs/hidden-volume/

# Surveillance of Activism

# Mobile Devices

- Stingrays (cell site simulator)
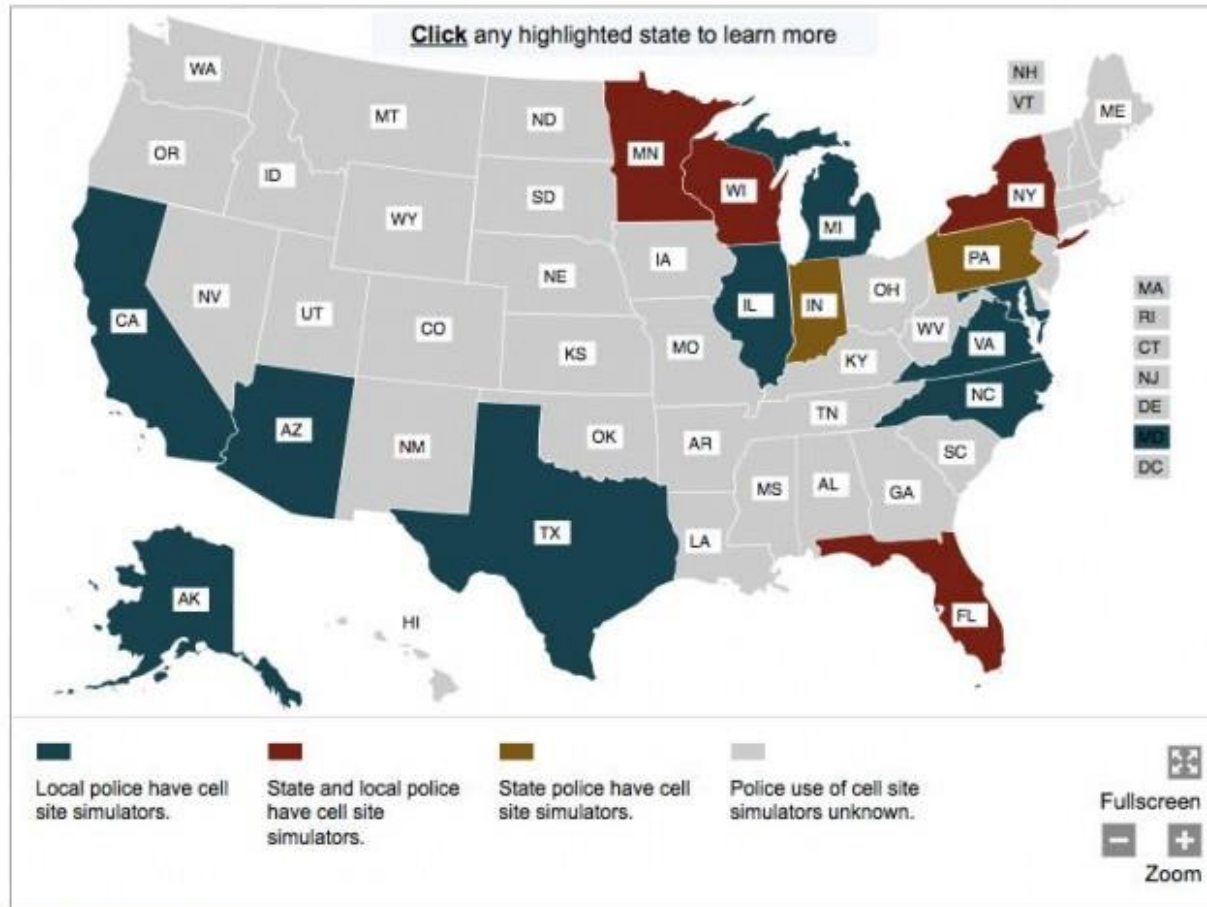
# FBI Surveillance of Activists



The Intercept

## THE FBI SPENDS A LOT OF TIME SPYING ON BLACK AMERICANS

The FBI released a new trove of documents relating to its surveillance of black activists. They're mostly redacted.

Alice Speri
October 29 2019, 9:07 a.m.

**THE FBI HAS** come under intense criticism after a 2017 leak exposed that its counterterrorism division had invented a new, unfounded domestic terrorism category it called "black identity extremism." Since then, legislators have pressured the bureau's leadership to be more transparent about its investigation of black activists, and a number of civil rights groups have filed public records requests to try to better un-

https://theintercept.com/2019/10/29/fbi-surveillance-black-activists/

BLACK LIVES MATTER

NO JUSTICE
NO PEACE
PROSECUTE THE POLICE
#BLM

**Our Goals**

- Characterize advice given to novice protesters

- Test protesters' understanding and use of advice

- Focus on security or privacy advice given to participants in BLM protests

# PROTESTING SAFELY

## WHAT TO WEAR

- Goggles & mask
- Nondescript, solid color, layered clothing; cover identifying tattoos
- Emergency contacts written down
- Heat resistant gloves
- Tie your hair up

## WHAT TO BRING

- Water for drinking & tear gas
- Snacks
- Cash/change & ID
- Washcloth
- Ear plugs
- Bandages & first aid supplies
- Protest signs

## ~~DON'T BRING~~

- Cell phone without first turning off Face/Touch ID, going on airplane mode, and disabling data.
- Jewelry
- Anything you don't want to be arrested with
- Contact lenses

---

Passwords might be safer than biometric authentication methods. **GETTY**

## Turn off biometric authentication

In January 2019, a federal judge ruled that police can't force you to unlock your phone using your fingerprint, eyes or face. Still, to be on the safe side, it's probably best to turn off those biometric authentication methods while you're protesting.

Passwords may be safer, as they're generally protected under the Fifth Amendment. Besides, you might conveniently happen to forget yours if an officer asks you to unlock your device.

---

## protesting tips for being safe and strong + #blacklivesmatter

**COMMUNICATION:**

1. make sure you write 2+ phone numbers in sharpie on your body. be careful in case they are identified.

2. med bracelet!

3. turn location/cellular data off. enable emergency SOS.

4. passcode only option.

5. ductape camera in case you have to secretly record evidence

6. DO NOT POST PHOTOS OF PEOPLE. THEY WILL BE TRACKED BY POLICE. YOUR ACTIONS HAVE CONSEQUENCES. YOU ARE NOT THERE TO BE A TOURIST. SOME PEOPLE WILL BREAK YOUR CAMERA.

7. cash for transportation. have a plan. it will be chaotic. be careful with bikes. buses and streets will be shut down. try to be as local as possible. i repeat. have a plan.

---

# SAFETY DURING PROTEST

AMNESTY INTERNATIONAL

## WHAT TO DO

+ Plan ahead: For essential needs, care and supplies. Know what to expect. Know how to get assistance. Plan for how to re-contact your buddies if separated

+ Be calm and focused: when things get most intense, react to danger or warning signs sooner, not later

+ Watch for signs of physical and mental problems in yourself and others. Cool down others who exhibit panic behavior

+ Document: film or write down police actions, brutality, and injuries

## WHAT NOT TO DO

+ Don't put vaseline, mineral oil, oil-based sunscreen or moisturizers on skin as they can trap chemicals

+ Don't wear contact lenses, which can trap irritating chemicals underneath

+ Don't wear things which can easily be grabbed (i.e. jewelry, ties, loose hair)

+ Don't go alone, if you can help it – go with an affinity group or some friends who know you well

+ Don't forget to eat food and drink lots of water

## WHAT TO BRING

+ Water in a plastic bottle with squirt top, to drink and to wash off your skin or eyes

+ Energy snacks

+ Identification and/or emergency contact information

+ Enough money for pay-phone, food, transportation

+ Watch, paper, pen for accurate documentation of events

+ Inhaler, epipen, insulin & several days of prescription medication

+ Menstrual pads. Avoid using tampons – if you're arrested you may not have a chance to change

+ Basic First Aid Kit

+ Wet Wipes and tissues

## WHAT TO WEAR

+ Shatter resistant Swimming Googles and a N95 Facemask

+ Comfortable, protective shoes that you can run in

+ Clothing covering all your skin to protect from sun and pepper spray exposure

+ Shatter-resistant eye protection (i.e. sunglasses, swim goggles, or gas mask)

+ Bandana to cover nose and mouth soaked in water, lemon juice or vinegar, it can aid in breathing during chemical exposure

+ Fresh clothes in plastic bag (in case yours get contaminated by chemical weapons)

+ A hat to protect you from the sun and from chemical weapons

## DEALING WITH TEARGAS

+ Avoid use of oils & lotions because they can trap the chemicals and thereby prolong exposure

+ Gas masks provide the best facial protection, if properly fitted and sealed. Alternatively, goggles, respirators, or a wet bandana over the nose & mouth will help

+ STAY CALM. Panicking increases the irritation. Breathe slowly and remember it is only temporary

+ Blow your nose, rinse your mouth, cough & spit. Try not to swallow

+ Wearing contacts: you must remove the lenses or get someone to remove them for you, with CLEAN, uncontaminated fingers. Destroy the lenses after exposure

+ DO NOT RUB IT IN

+ Use an eye flush using a solution of half liquid antacid and half water. This only applies to aluminum hydroxide or magnesium hydroxide

## KNOW YOUR RIGHTS

+ Freedom of Expression and Assembly: Everyone has the right to carry their opinion to the streets.

+ Protection of the Right to Freedom of Assembly: Law enforcement must facilitate and not restrict a peaceful public assembly.

+ Freedom from excessive use of force: In the policing of non-violent protests, police must avoid the use of force.

+ Right to Medical Assistance: If you are injured you have a right to medical assistance without delay.

+ Freedom from Arbitrary Arrest and Detention: If you are arrested you have a right to be told of the reason for your arrest, you also have the right promptly after your arrest to have access to a lawyer and to your family.

+ Right to Complain: If your rights have been violated you have a right to file a complaint and to be provided information on how to do so.

# Part 1: Analysis of Safety Guides

- 13 classes of advice, including advice about:
  - Protecting against phone confiscation
  - Protecting messages and web browsing
  - Disabling communication features
  - Protecting against identification

**Part 1: Analysis of Safety Guides**

- Disabling transmissions (31 guides)
  - Using airplane mode (18 guides)
  - Turning off phone (8 guides)
  - Turning off location services (20), WiFi (8), Bluetooth (7), and cellular data (7)
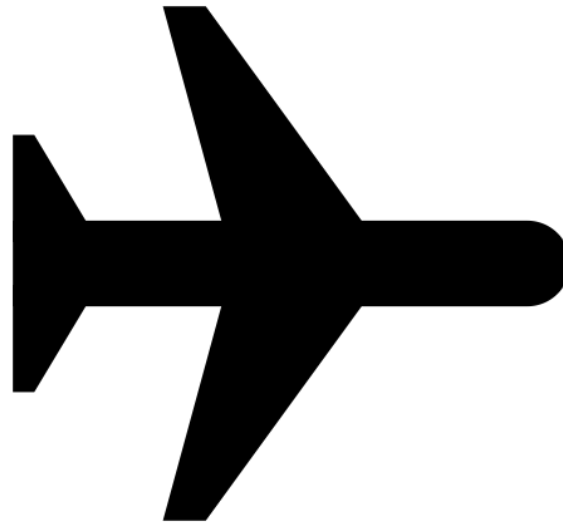
**Part 1: Analysis of Safety Guides**

- Leave primary phone at home (21 guides)
  - Bring a burner phone (16 guides)
  - Provided rationale for advice (14 guides)
    - Vague
    - "To protect your privacy and prevent surveillance, the best thing you can do is leave your phone at home."

**Part 1: Analysis of Safety Guides**

- Disable biometrics (28 guides)
    - Use a passcode instead (11 guides)
    - Explained importance of advice (6 guides)
        - Vague explanations
        - "It might be best to deactivate facial recognition or fingerprint unlocking if you're concerned about being approached by the police."
        - Specifically mention key rationale (2 guides)

# Part 1: Analysis of Safety Guides

- Using a strong passcode (20 guides)
    - Recommended using passcode/password instead of biometrics (12 guides)
    - Explained purpose of following advice (7 guides)

**Part 1: Analysis of Safety Guides**

- Using end-to-end encrypted (*E2EE*) apps (27 guides)
  - Use Signal (26 guides)
  - Use WhatsApp (3), Wire (3), Wickr (2), Dust (1), Keybase (1), or Telegram (1)

**Part 1: Analysis of Safety Guides**

- Avoid identifiers (21 guides)
    - Avoid people in photos/recordings (20 guides)
    - Avoid faces (14 guides), identifying features (14), and locations (6)
    - Remove metadata (9 guides)
    - Blur features (12 guides)
- Social media caution (18 guides)

**Part 1: Analysis of Safety Guides**

- Less prevalent classes of advice:
    - Encrypt device (9 guides)
    - Back up device (6 guides)
    - Use a VPN (4 guides)
    - Use a secure browser (3 guides)
    - Disable notifications (2 guides)
    - Use screen pinning (2 guides)

**Part 2: Survey of Primarily Novice Protesters**

- US-based supporters of BLM
- Had attended at least one BLM protest in person
- 167 eligible survey respondents
  - 100% supported the BLM movement
  - 7% considered themselves organizers (vs. participants)
  - 53% women, 46% men, 1% non-binary
  - 52% Black, 31% White, 5% Asian, 5% Hispanic/Latinx
- 75% of respondents had attended 1 - 4 BLM protests total

**Part 2: Survey of Primarily Novice Protesters**

- 13 classes of advice, 13 statements
  - "Disable biometric (face or fingerprint) unlocking for your phone. Use a password/passcode instead."
- For each statement, we asked:
  - Had they seen this advice?
  - Did they understand this advice?
  - Did they follow this advice? (Why or why not?)

# Part 2: Survey Results



(a) "I have seen or heard similar advice about attending a protest."

(b) "I feel that I understand the purpose of this advice about attending a protest."

(c) "I follow this advice when attending a protest."

# Biometric authentication

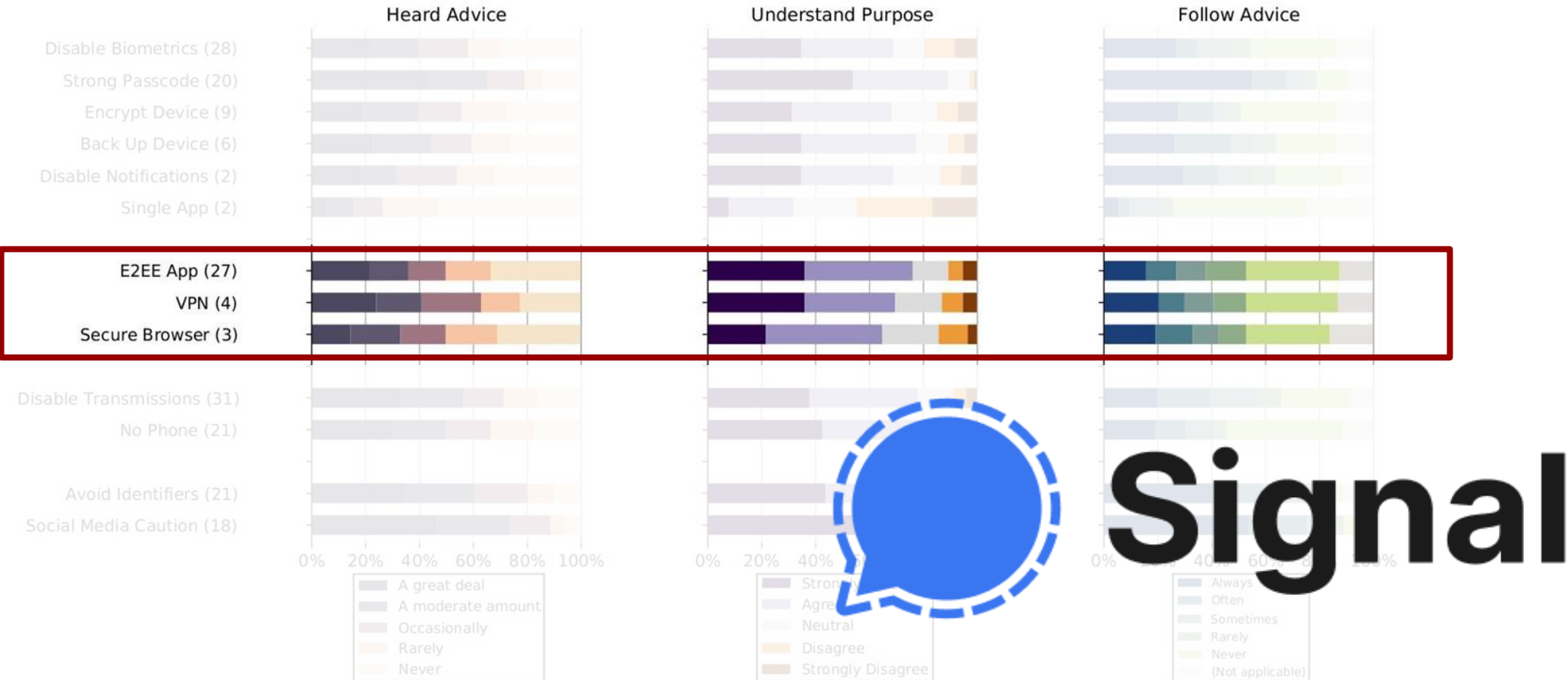- Not protected by 5th amendment
- Device can be forcefully unlocked



# Using a strong passcode

- Protected by 5th amendment
- Device cannot be forcefully unlocked

# Part 2: Survey Results



|  | Heard Advice | Understand Purpose | Follow Advice |
|---|---|---|---|
| Disable Biometrics (28) | | | |
| Strong Passcode (20) | | | |
| Encrypt Device (9) | | | |
| Back Up Device (6) | | | |
| Disable Notifications (2) | | | |
| Single App (2) | | | |
| **E2EE App (27)** | | | |
| **VPN (4)** | | | |
| **Secure Browser (3)** | | | |
| Disable Transmissions (31) | | | |
| No Phone (21) | | | |
| Avoid Identifiers (21) | | | |
| Social Media Caution (18) | | | |

Legend (Heard Advice): A great deal · A moderate amount · Occasionally · Rarely · Never

Legend (Understand Purpose): Strongly... · Agree... · Neutral · Disagree · Strongly Disagree

Legend (Follow Advice): Always · Often · Sometimes · Rarely · Never · (Not applicable)
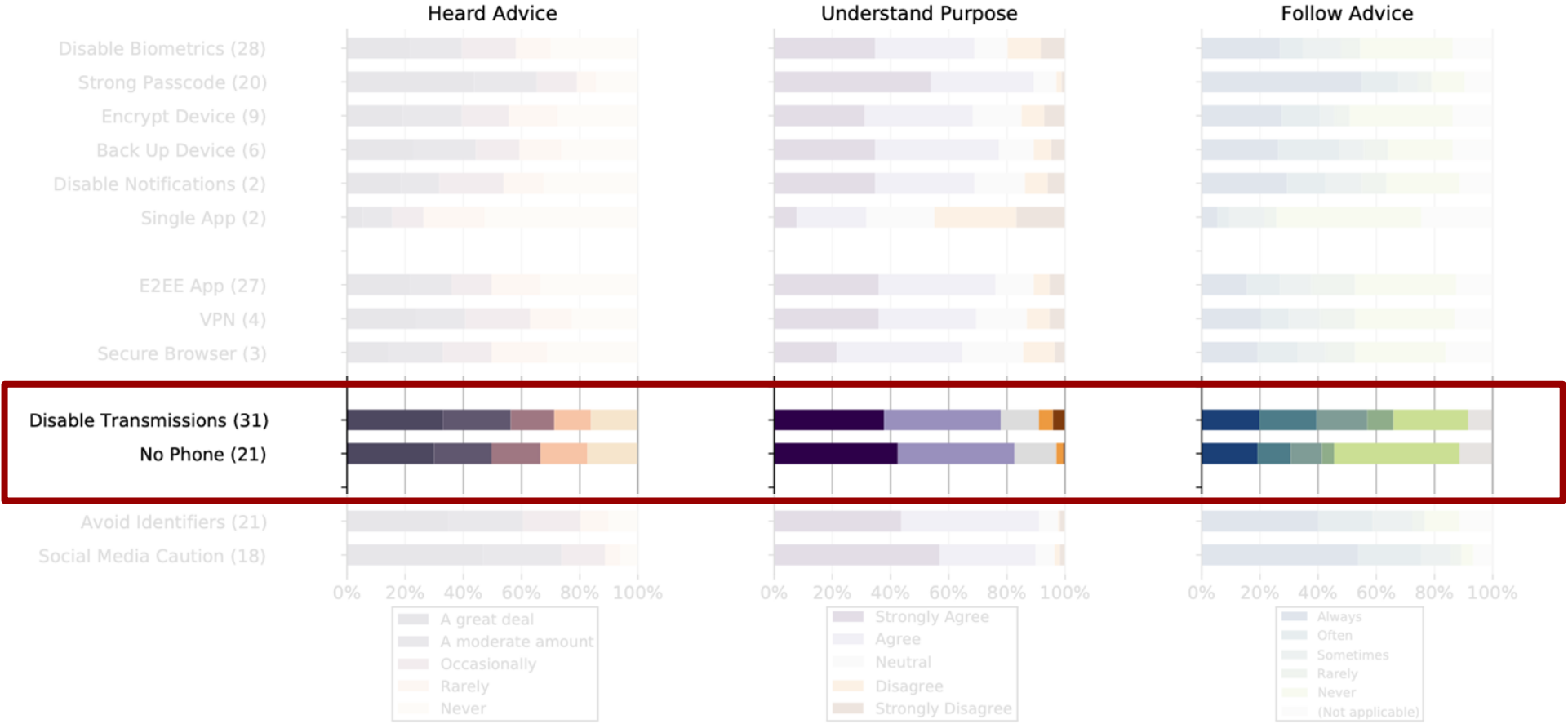
(a) "I have seen or heard similar advice about attending a protest."

(b) "I feel that I understand the purpose of this advice about attending a protest."

(c) "I follow this advice when attending a protest."

Signal

# Part 2: Survey Results



(a) "I have seen or heard similar advice about attending a protest."

(b) "I feel that I understand the purpose of this advice about attending a protest."

(c) "I follow this advice when attending a protest."

# Surveillance of Students

# Exam-Proctoring Software



**Online exam monitoring can invade privacy and erode trust at universities**

December 3, 2020 5.16pm EST

Testing and exam proctoring methods that invade privacy and erode trust undermine the very integrity that institutions demand students uphold. (Shutterstock)

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The health risks posed by COVID-19 mean most Canadian university classes are online this year. As a result, some students will write exams online via remote proctoring platforms that surveil their activities.

These tools go by names like ProctorU, Examity, Respondus and Proctorio, among others. Designed by for-profit tech startups, they monitor students' laptops, tablets or phones during the course of an exam. Proctoring tools can monitor eye movements, capture students' keystrokes, record their screens and track their searches as well as their home environments and

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**Disclosure statement**

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# Virtual Meetings

# Virtual Meetings