

# Lecture 6: Pervasive Surveillance; Genetic Data

CMSC 25910

Spring 2024

The University of Chicago



THE UNIVERSITY OF  
CHICAGO

# Urban Surveillance

# Surveillance of Street Corners

**CCTV in operation** 

Images are being recorded and monitored for your safety and to prevent crime.

We will use CCTV images to aid successful prosecution.

**This CCTV system is operated by Thameslink**

You can contact Thameslink at:  
Thameslink Customer Relations  
PO Box 10240  
ASHBY-DE-LA-ZOUCH  
LE65 9EB

To report a crime to the British Transport Police, call freephone 0800 40 50 40



# Surveillance of (My Former) Street Corner



# Surveillance (?) of Street Corners

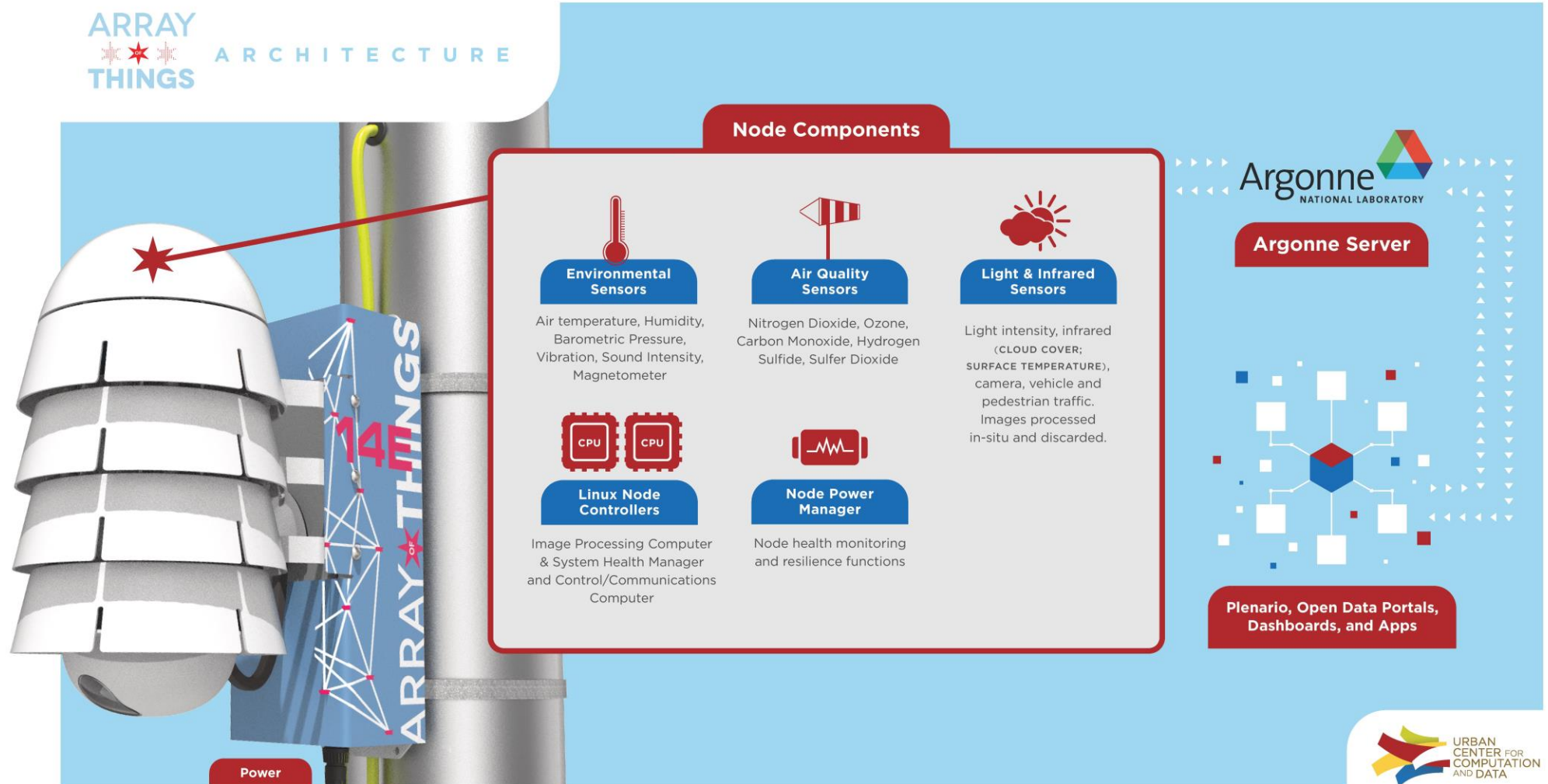


Image from <https://arrayofthings.github.io/>



# Surveillance (?) of Street Corners

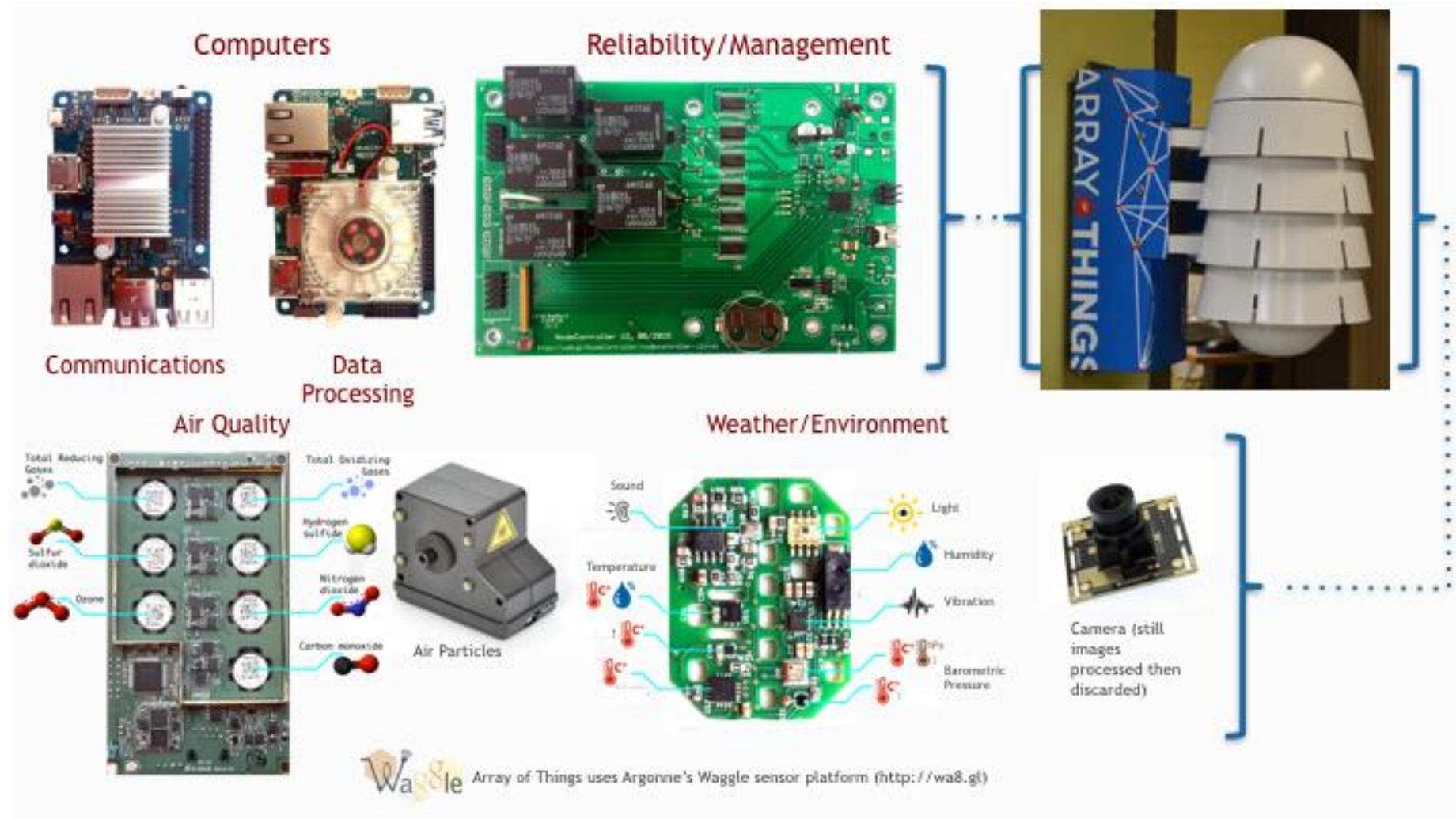


Image from <https://arrayofthings.github.io/>

# **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.

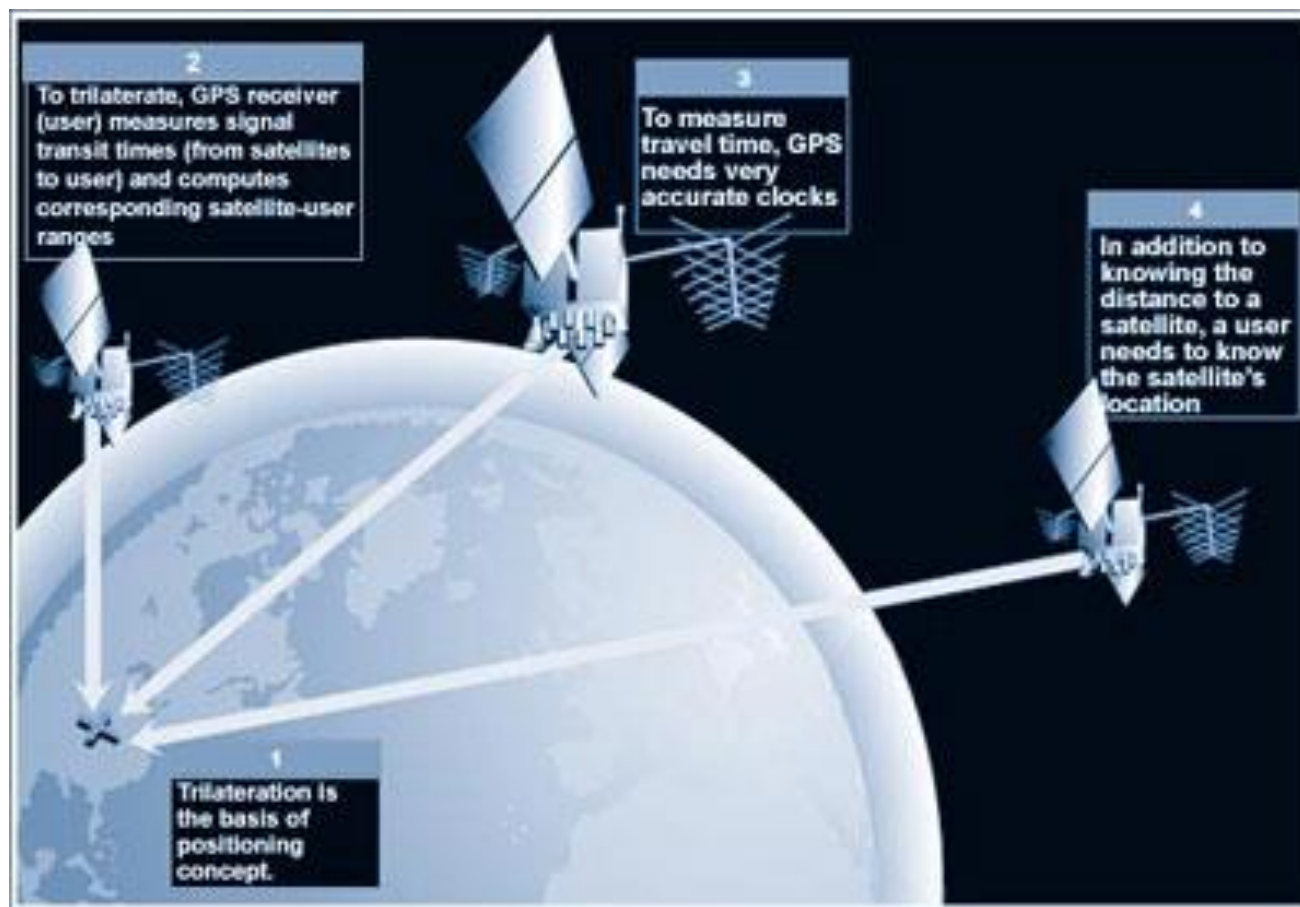
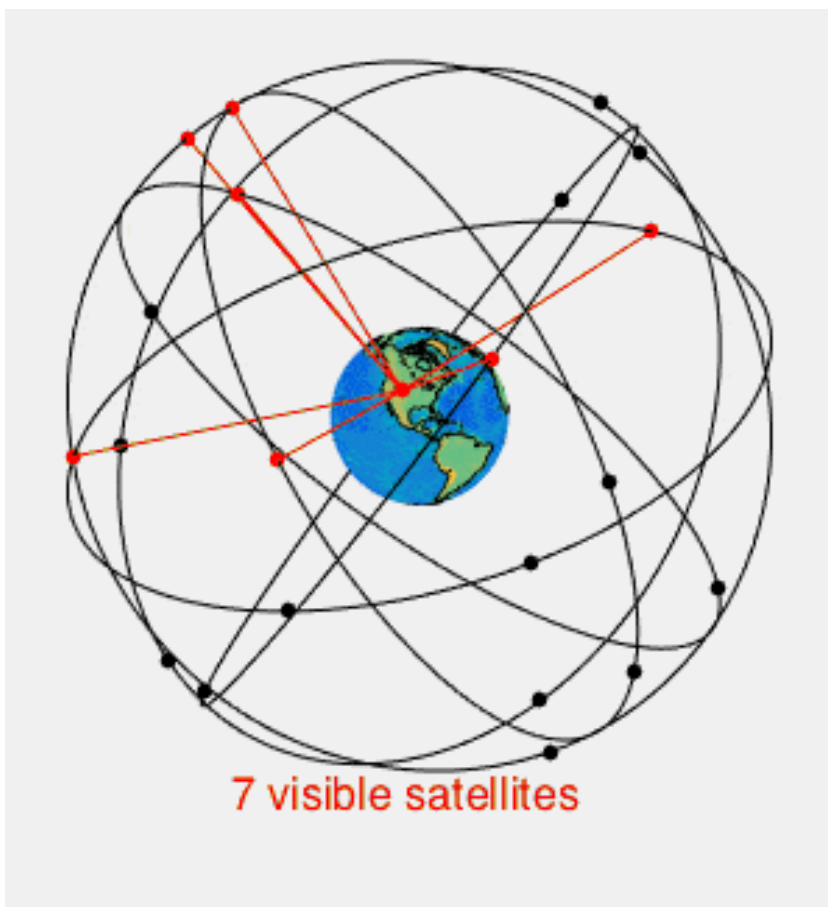
*This story was co-published with [Citylab](#).*

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



Images from [https://en.wikipedia.org/wiki/Global\\_Positioning\\_System](https://en.wikipedia.org/wiki/Global_Positioning_System) and [https://www.faa.gov/about/office\\_org/headquarters\\_offices/ato/service\\_units/techops/navservices/gnss/gps/howitworks](https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/gps/howitworks)

# 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”

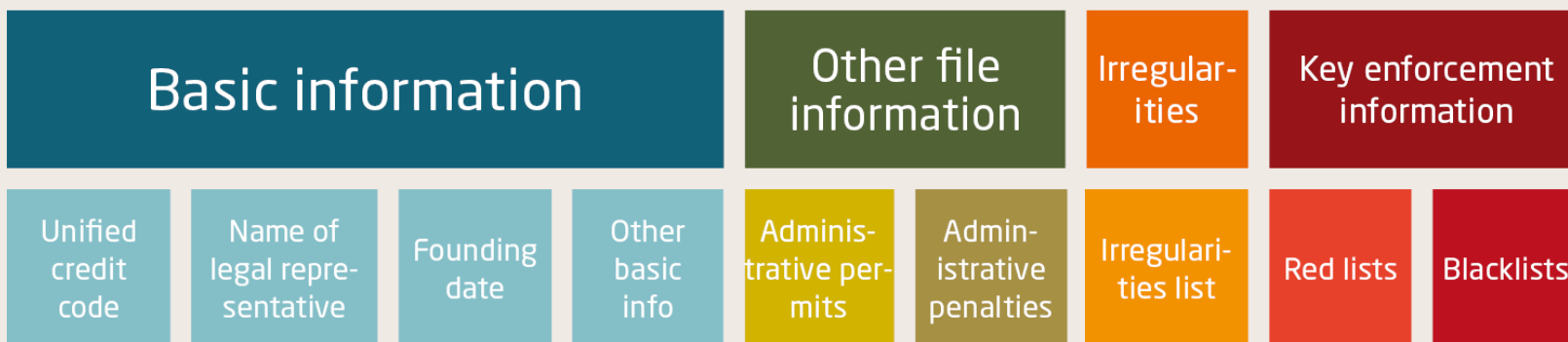
# Social Credit System in China

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



\*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

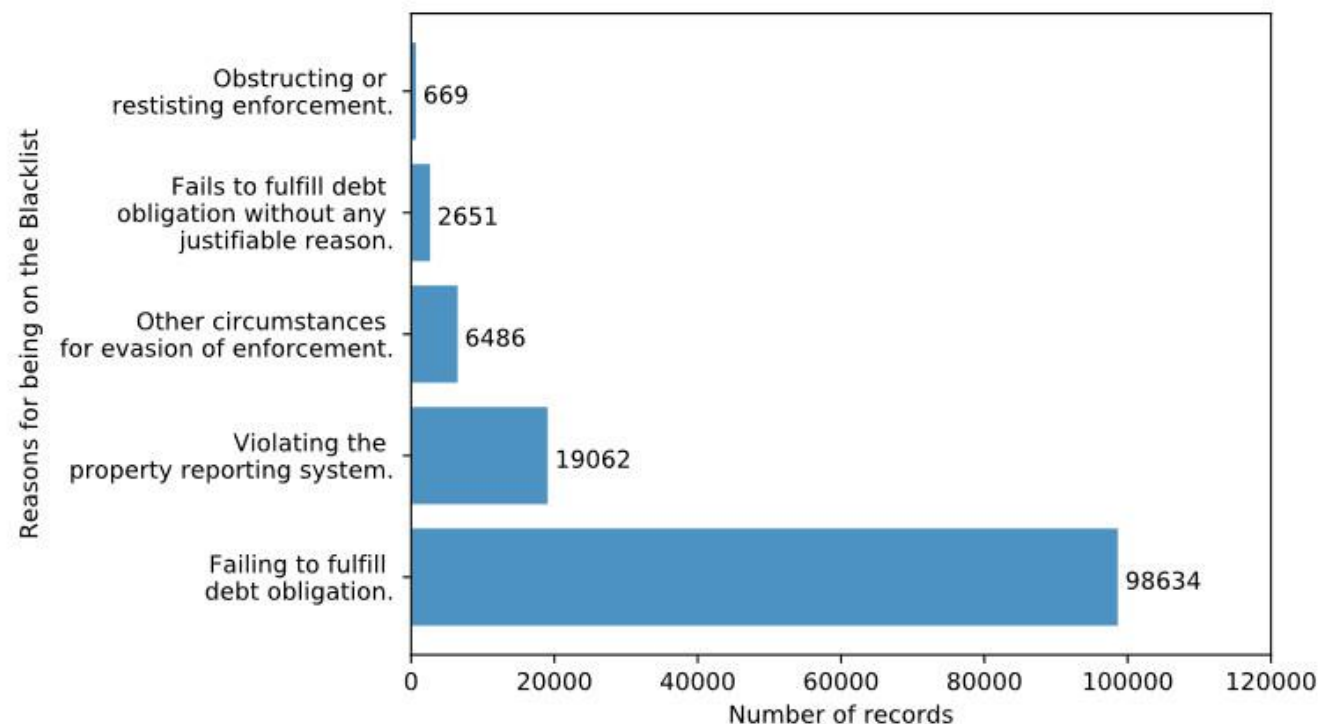
# Social Credit System in China

数据来源：	证监会
数据类别：	市场禁入
主体名称：	吴 [ ]
加密证件号码：	110104*****4X
证件类型：	身份证
个人代码：	
处罚处理名称：	证监法律字[2006]12号 市场禁入决定书 (梁 [ ]、吴 [ ]、孙 [ ])
处罚处理日期：	2006/11/27
处罚处理种类：	市场禁入(5年)
处罚对象类型 (1组织机构, 2个人)：	
真实证件号码：	
信息类型：	
处罚机关：	中国证监会
处罚决定书id：	
处罚处理内容：	证监法律字[2006]12号市场禁入决定书当事人：梁 [ ] 女，1948年出生，北京中兴信托投资有限公司（以下简称中兴信托）法定代表人、健富投资有限公司（以下简称健富投资）法定代表人，住址北京市东城区前门东大街1号2单元207号。吴 [ ] 女，1949年出生，中兴信托北京亚运村营业部经理、健富投资经理，住址北京市朝阳区北四环东路106号3号楼1804号。孙 [ ] 男，1942年出生，健富投资顾问，住址北京市东城区前门东大街1号2单元207号。依据《中华人民共和国证券法》（以下简称《证券法》）的有关规定，本会对中兴信托北京亚运村营业部等机构违反证券法律法规行为进行了立案调查、审理，并依法向当事人告知了实施市场禁入措施的事实、理由及依据及当事人依法享有的权利，现已调查、审理终结。经查明：自2000年4月20日起，健富投资在中兴信托北京营业部开设并控制“健富公司”、“华捷经贸”、“华捷发展”、“兴发机械”、“兴发广告”、“国利通达”、“张 [ ]”、“孙 [ ]”、“靳 [ ]”、“孙 [ ]”、“张 [ ]”等资金账户，下挂个人股东账户842个，买卖证券。上述事实，有相关账户开户资料、客户对账单、资金划转凭据、情况说明等证据在案证实，证据确实、充分，足以认定。健富投资的上述行为违反了原《证券法》第七十四条“在证券交易中，严禁法人以个人名义开立账户，买卖证券”的规定，构成了原《证券法》第一百九十条所述“违反本法规定，法人以个人名义设立账户买卖证券”的行为。根据当事人违法行为的事实、性质、情节与社会危害程度，依据《证券市场禁入暂行规定》第二条第七项等相关规定，本会决定认定当事人梁 [ ]、吴 [ ]、孙 [ ] 为市场禁入者，自本会宣布决定之日起5年内不得担任上市公司高级管理人员和从事证券业务。二〇〇六年十一月二十七日

**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.**

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



**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

engadget Sections Login


## Chinese facial recognition system confuses bus ad with a jaywalker

It illustrates one of the many issues with China's surveillance culture.

  
**J. Fingas**  
@jonfingas  
November 23rd, 2018



In this article: bigbrother, china, facialrecognition, gadgetry, gadgets, gear, politics, surveillance



Weibo

There are many criticisms you can level at China's [growing reliance on facial recognition](#), including its absolute faith in technology: what happens if there's a false positive? Unfortunately, we just saw an example of that in action. Police in the city of Ningbo have taken [corrective action](#) after the facial recognition system at a crosswalk mistakenly accused famous businesswoman Dong



# 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 fuel crackdown on the mostly Muslim minority group



<https://www.washingtonpost.com/technology/2020/12/08/huawei-tested-ai-software-that-could-recognize-uighur-minorities-alert-police-report-says/>

# 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

## BAN FACIAL RECOGNITION

This interactive map shows where facial recognition surveillance is happening, where it's spreading to next, and where there are local and state efforts to rein it in. See something missing? Contact us: [team@fightforthefuture.org](mailto:team@fightforthefuture.org)

[SIGN THE PETITION](#)

[DONATE](#)



### OAKLAND FACIAL RECOGNITION BAN

© Oakland, CA

On July 16, 2019, the City Council unanimously adopted a facial recognition ban; the ban must go to a second Council vote before it is officially enacted. As elsewhere, the ban addresses the insufficiency of a previous surveillance technology ordinance that did not limit any specific forms of tech.

### SAN FRANCISCO FACIAL RECOGNITION BAN

© San Francisco, CA

The City Supervisors voted to ban facial recognition technology on May 14, 2019, becoming the first city in the country to do so.

### SOMERVILLE FACIAL RECOGNITION BAN

© Somerville, MA

The City Council unanimously enacted the second facial recognition ban in the US on June 27, 2019. Previously, Somerville had passed the first ordinance in MA to require significant controls and transparency for the purchase and use of surveillance technology.

### BERKELEY FACIAL RECOGNITION

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



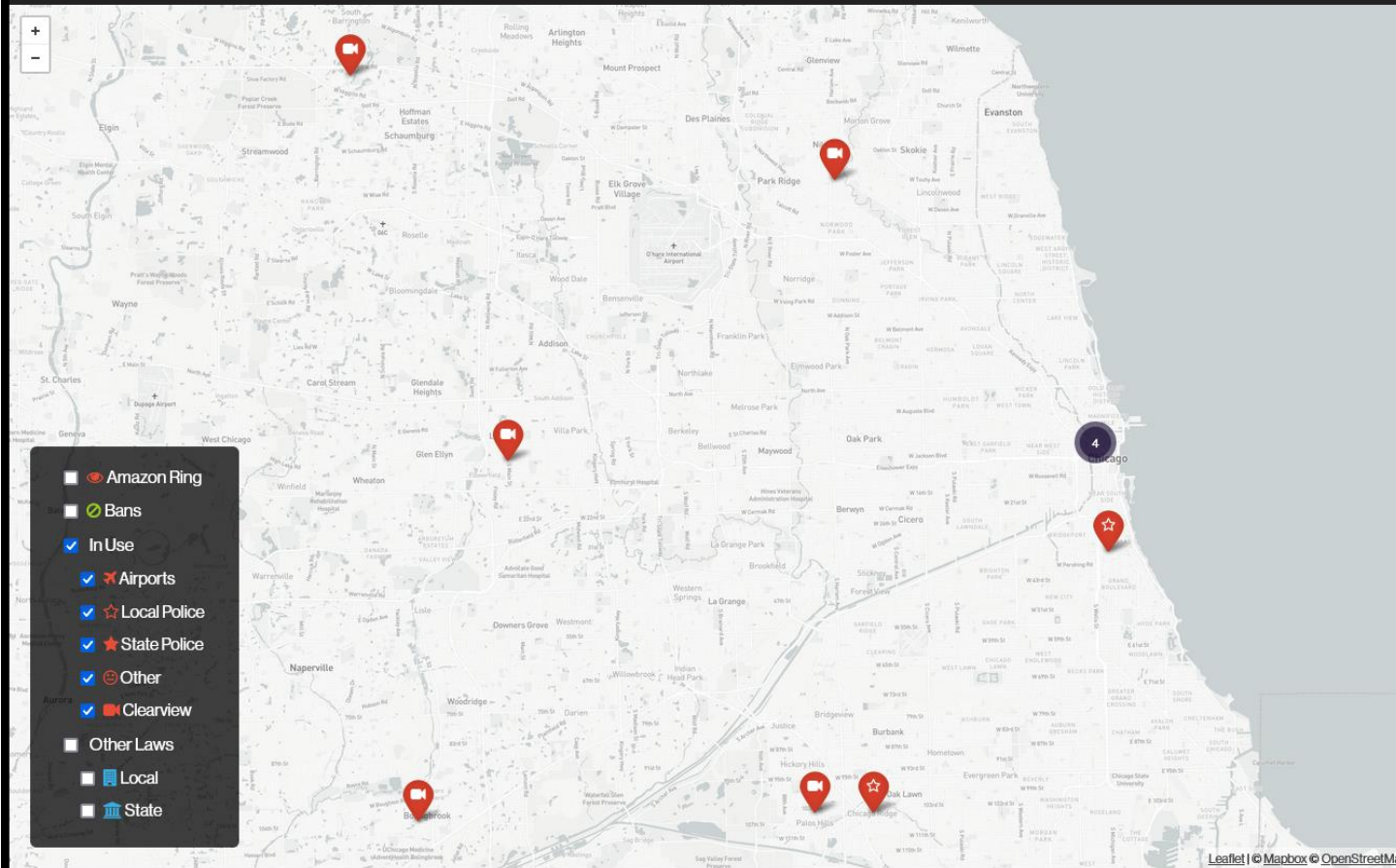
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### ✈ U.S. CUSTOMS AND BORDER PROTECTION - CHICAGO O'HARE INTERNATIONAL AIRPORT

© Chicago, IL

The Chicago O'Hare International Airport is one of 18 airports where Customs and Border Protection is using face recognition technology as of March 2019. An executive order signed by Pres. Trump in 2019 requires Customs and Border Protection to install face recognition technology at the United States' top 20 airports by 2021.

### ✈ U.S. CUSTOMS AND BORDER PROTECTION - FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT

© Fort Lauderdale, FL

The Fort Lauderdale-Hollywood International Airport is one of 18 airports where Customs and Border Protection is using face recognition technology as of March 2019. An executive order signed by Pres. Trump in 2019 requires Customs and Border Protection to install face recognition technology at the United States' top 20 airports by 2021.

### ✈ U.S. CUSTOMS AND BORDER PROTECTION - LOS ANGELES INTERNATIONAL AIRPORT

© Los Angeles, CA

<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



2699 383

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





# **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

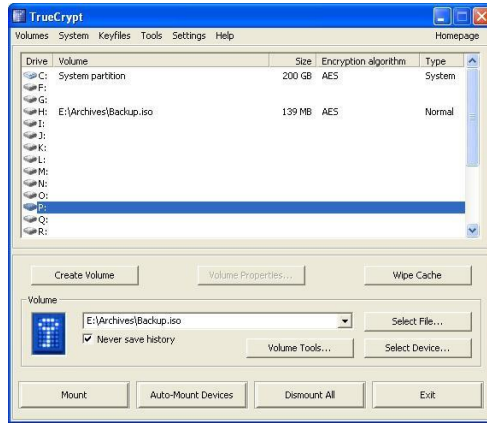
When Andreas Gal returned from a business trip in Sweden last fall, he was carrying two company-owned devices: an iPhone XS that flashed “Confidential and Proprietary” on its lock screen and a MacBook Pro bearing a sticker that read “PROPERTY OF APPLE. PROPRIETARY.”

<https://www.washingtonpost.com/technology/2019/04/03/apple-employee-detained-by-us-customs-agents-after-declining-unlock-phone-laptop/>

# Phones in the Legal System

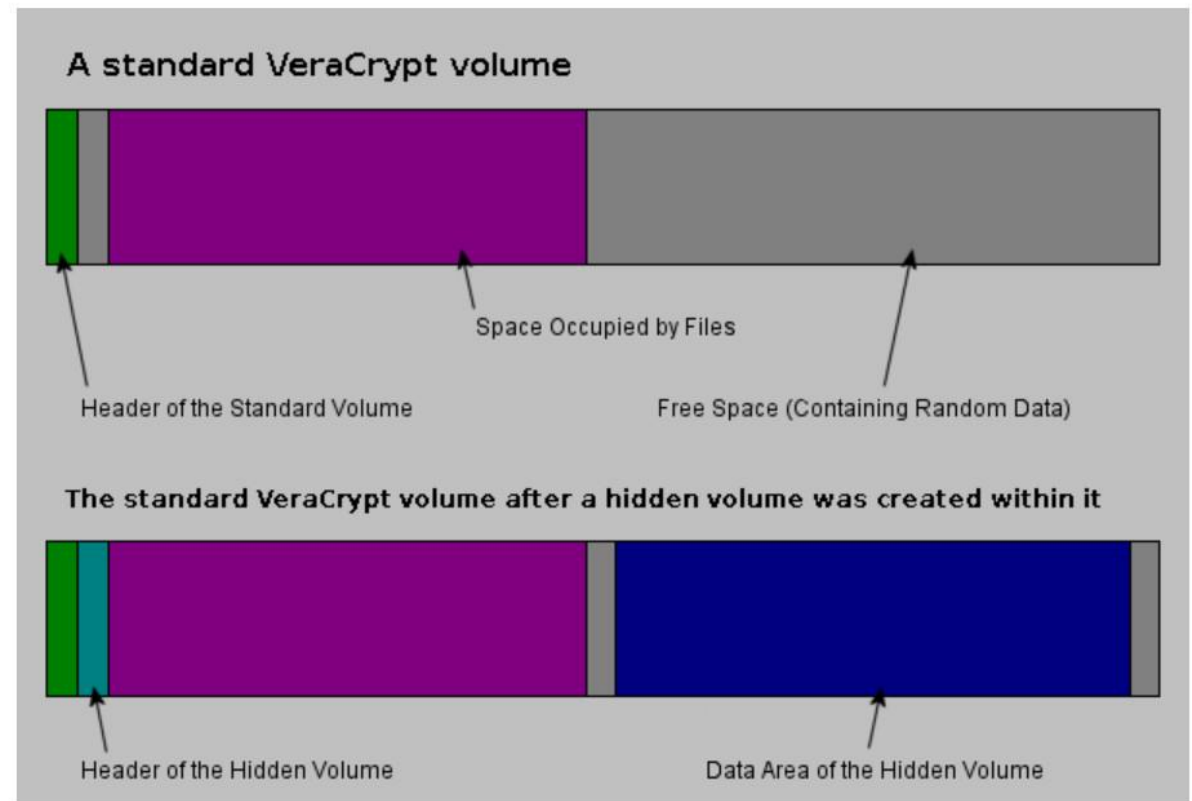
- Riley v. California
  - SCOTUS 2014
- Unanimous ruling that **warrantless** search of a phone during an arrest is unconstitutional
- Fifth Amendment from the Bill of Rights: Speech cannot be compelled
  - Many (but not all) courts consider passwords to be “speech”
  - Biometrics are not considered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

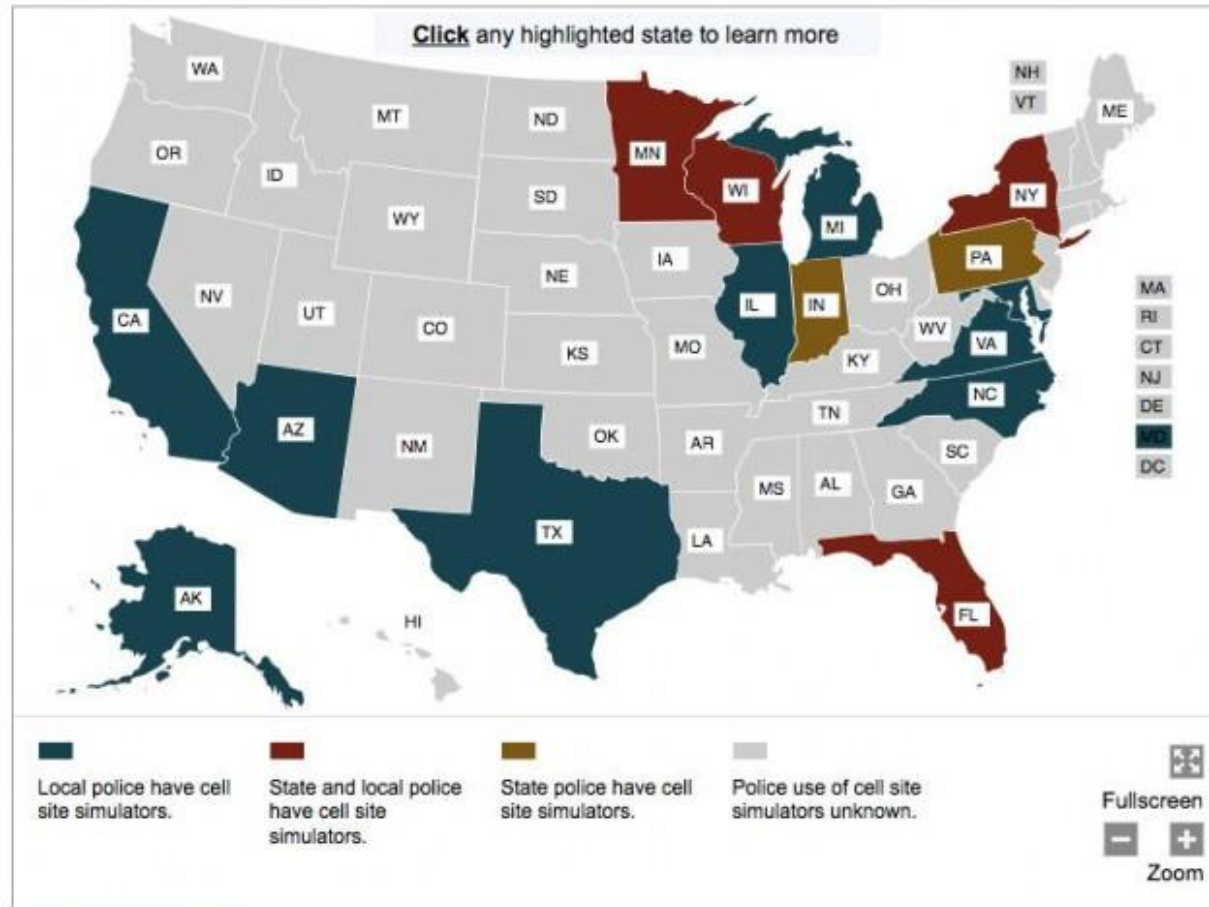


*The layout of a standard VeraCrypt volume before and after a hidden volume was created within it.*

# **Surveillance of Activism**

# Mobile Devices

- Stingrays (cell site simulator)






[Display a table of the map data.](#)



# FBI Surveillance of Activists


**The Intercept\_**

**DONATE**  49

## 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-

# Understanding the Security and Privacy Advice Given to

# **BLACK LIVES MATTER** Protesters

Maia Boyd, Jamar Sullivan, Marshini Chetty, Blase Ur



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**JUSTICE FOR  
TRAYVON**



NAACP.ORG



# 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



Nondescript, solid color, layered clothing; cover identifying tattoos

Goggles & mask

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



### 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 Goggles 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.

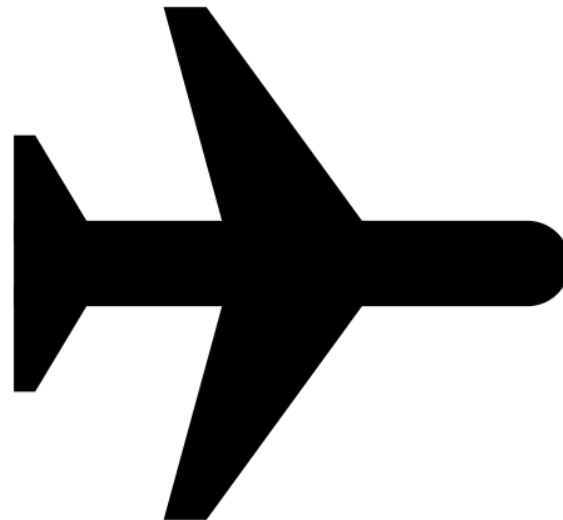
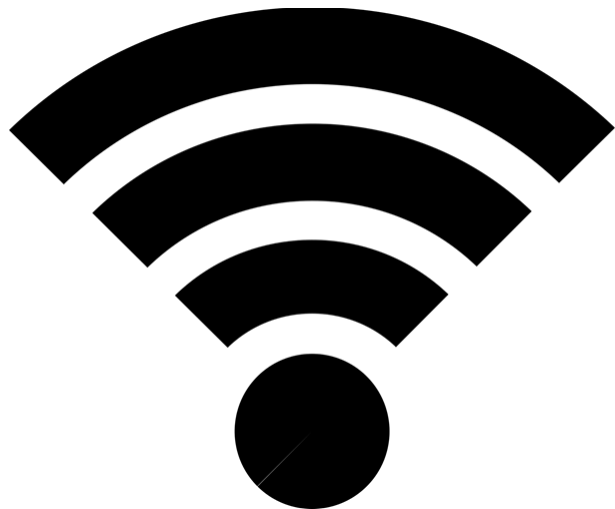
# Part 1: Analysis of Safety Guides

- 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)



**Signal**



# 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)



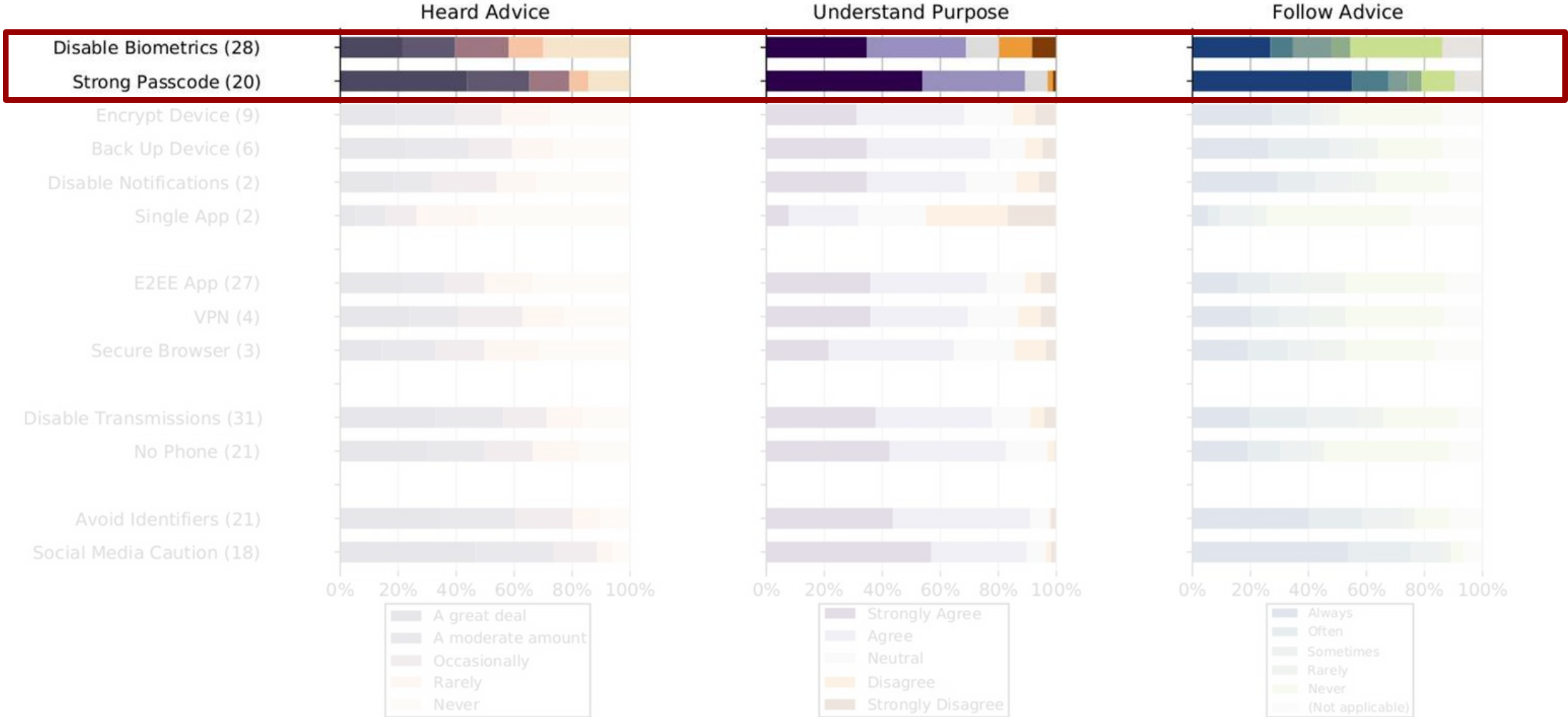
## Part 2: Survey of Primarily Novice Protesters

- 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

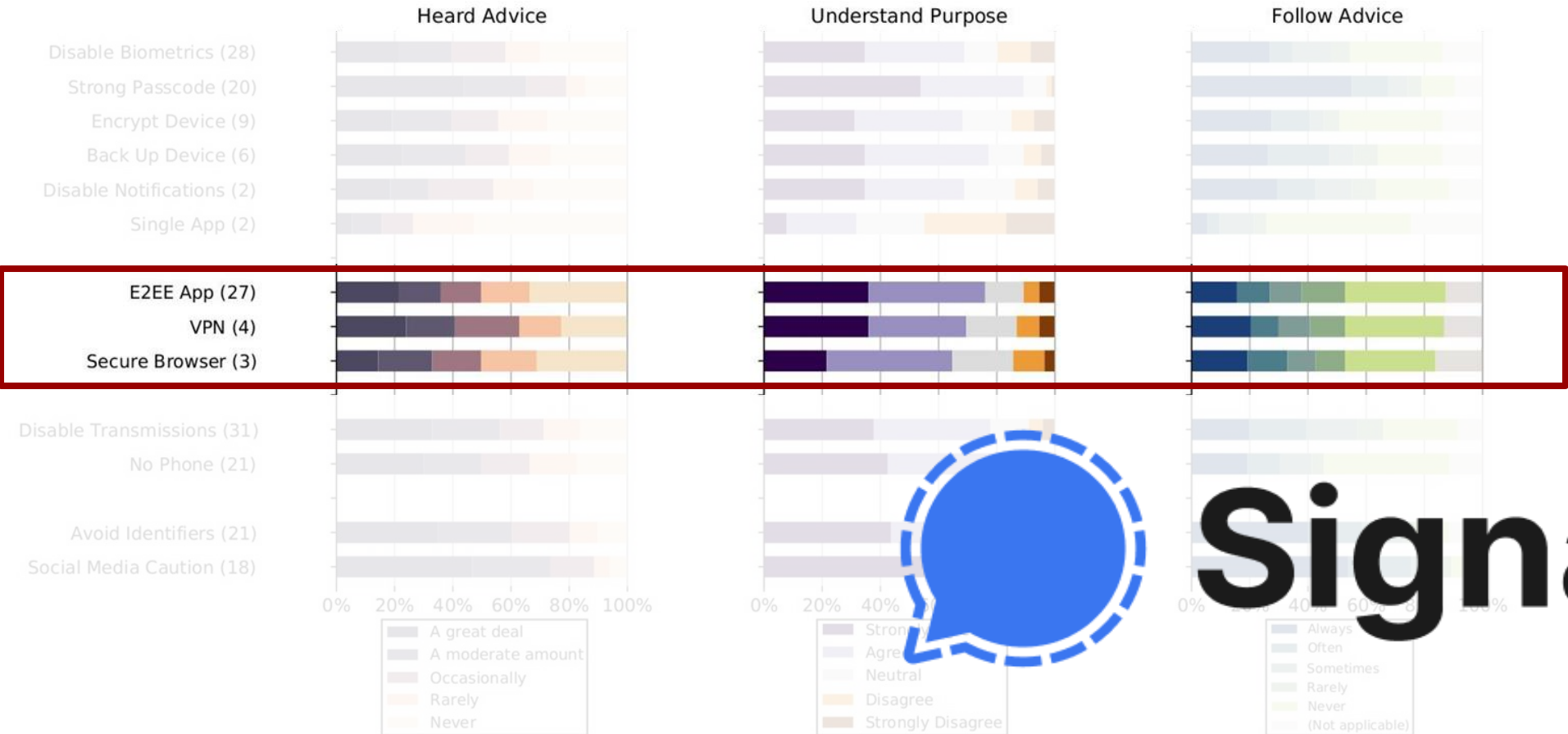


## Using a strong passcode

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



# Part 2: Survey Results



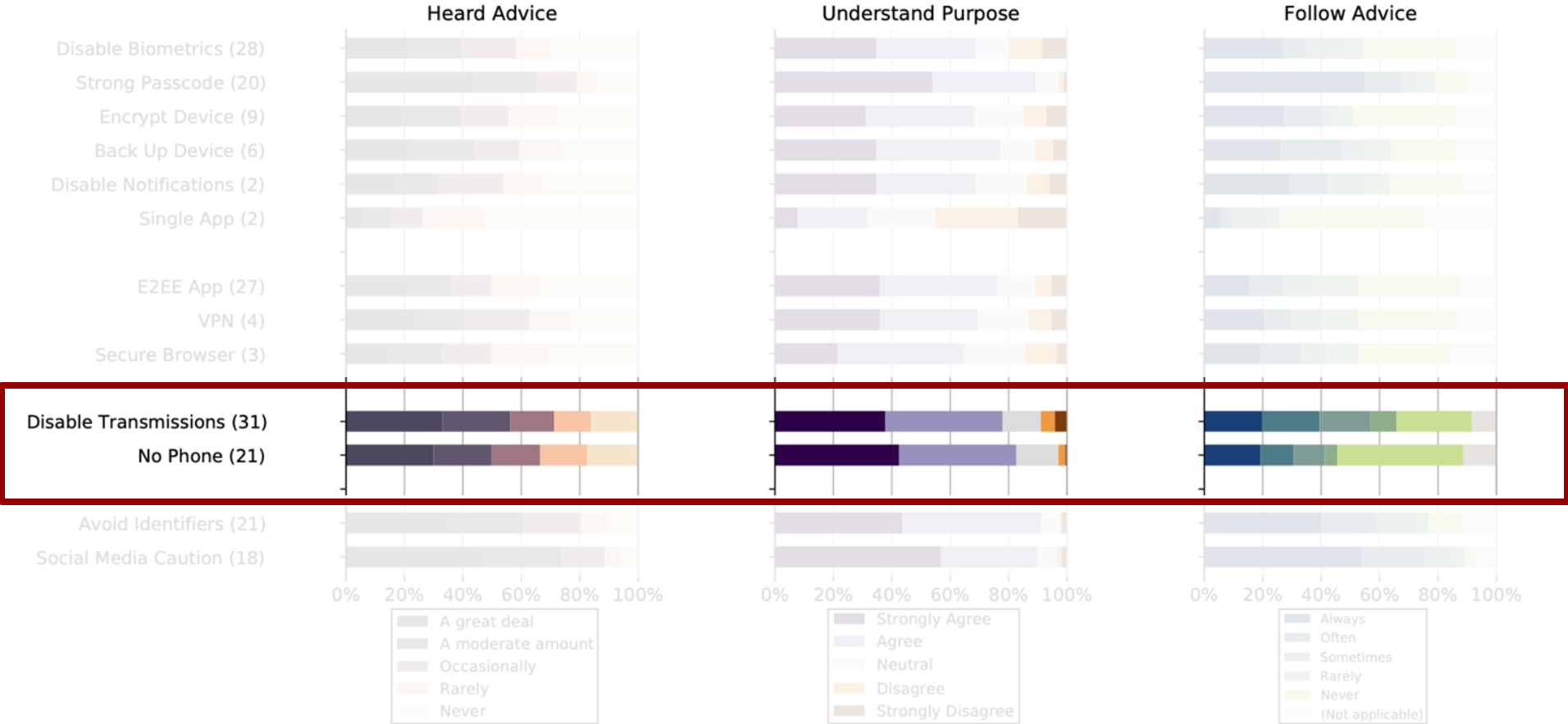
(a) "I have seen or heard similar advice about attending a protest."

(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."

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# **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)

Email

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72

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353

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Print

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

Bonnie Stewart does not work for, consult, own shares in or receive funding from any company or organization that would benefit from this article, and has disclosed no relevant affiliations beyond their academic appointment.

# Virtual Meetings

THE UNIVERSITY OF CHICAGO 1.888.799.9666

JOIN A MEETING HOST A MEETING

From: 05/19/2021 To: 05/25/2021 Search

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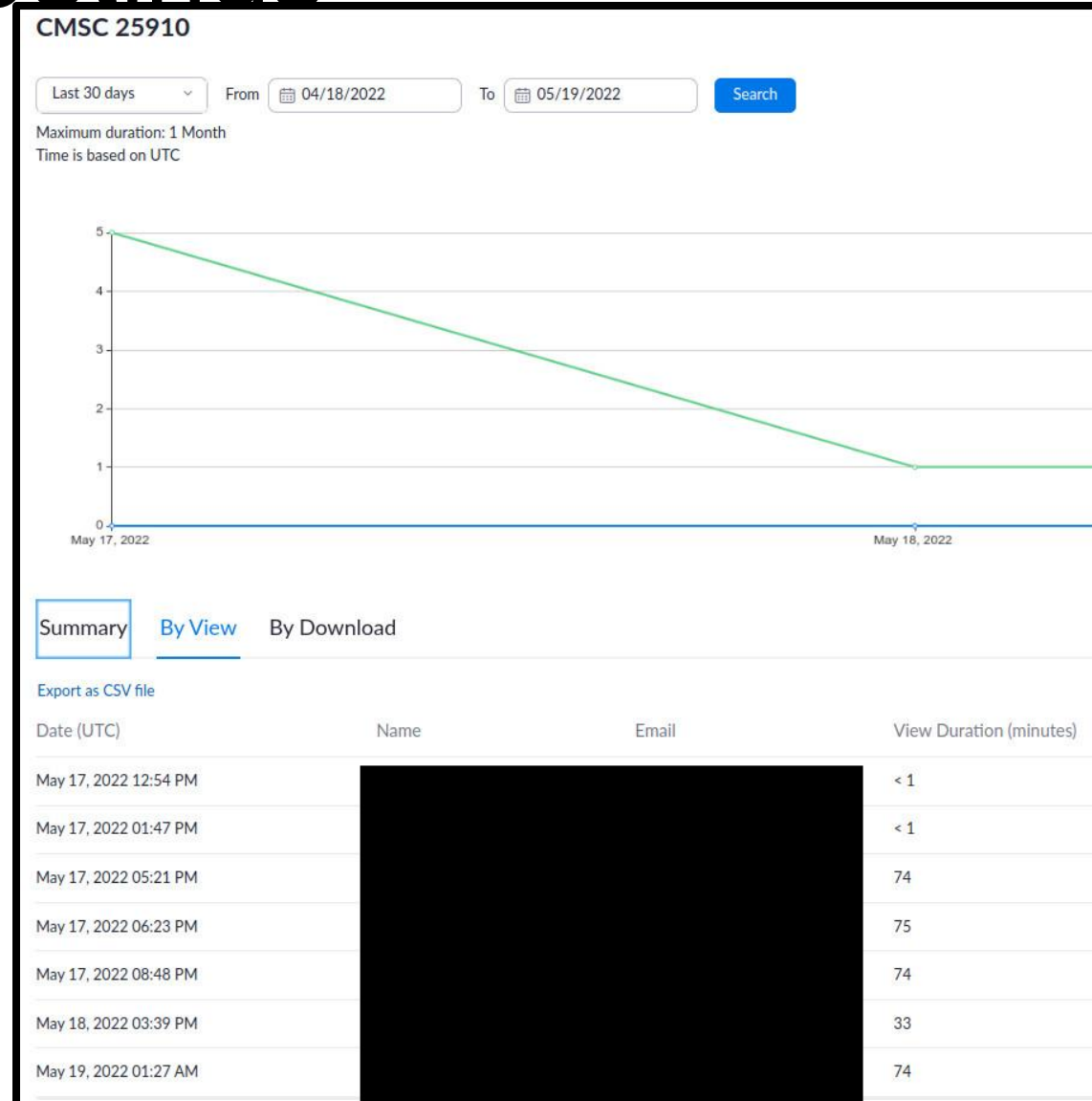
The report displays information for meetings that ended at least 15 minutes ago.

Export as CSV File Toggle columns

Topic	Meeting ID	User Name	User Email	Department	Group	Has Zoom Rooms?	Creation Time	Start Time	End Time	Duration (Minutes)	Participants	Source
CS 259 (Spring 2021)		Blase Ur (he/him)	blase@uchicago.edu	Computer Sci	22	No	03/25/2021 03:59:57 PM	05/20/2021 02:39:22 PM	05/20/2021 04:01:52 PM	83	30	Zoom

Attend Live Training

# Virtual Meetings



# **Genetic Data**

# The Ownership of Biological Data

## 'Henrietta Lacks': A Donor's Immortal Legacy

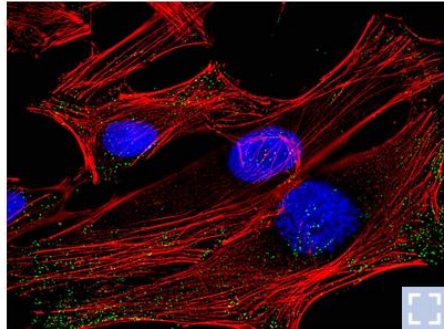
February 2, 2010 · 12:00 PM ET  
Heard on Fresh Air

FRESH AIR

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In 1951, an African-American woman named Henrietta Lacks was diagnosed with terminal cervical cancer. She was treated at Johns Hopkins University, where a doctor named George Gey snipped cells from her cervix without telling her. Gey discovered that Lacks' cells could not only be kept alive, but would also grow indefinitely.

For the past 60 years Lacks' cells have been cultured and used in experiments ranging from determining the long-term effects of radiation to



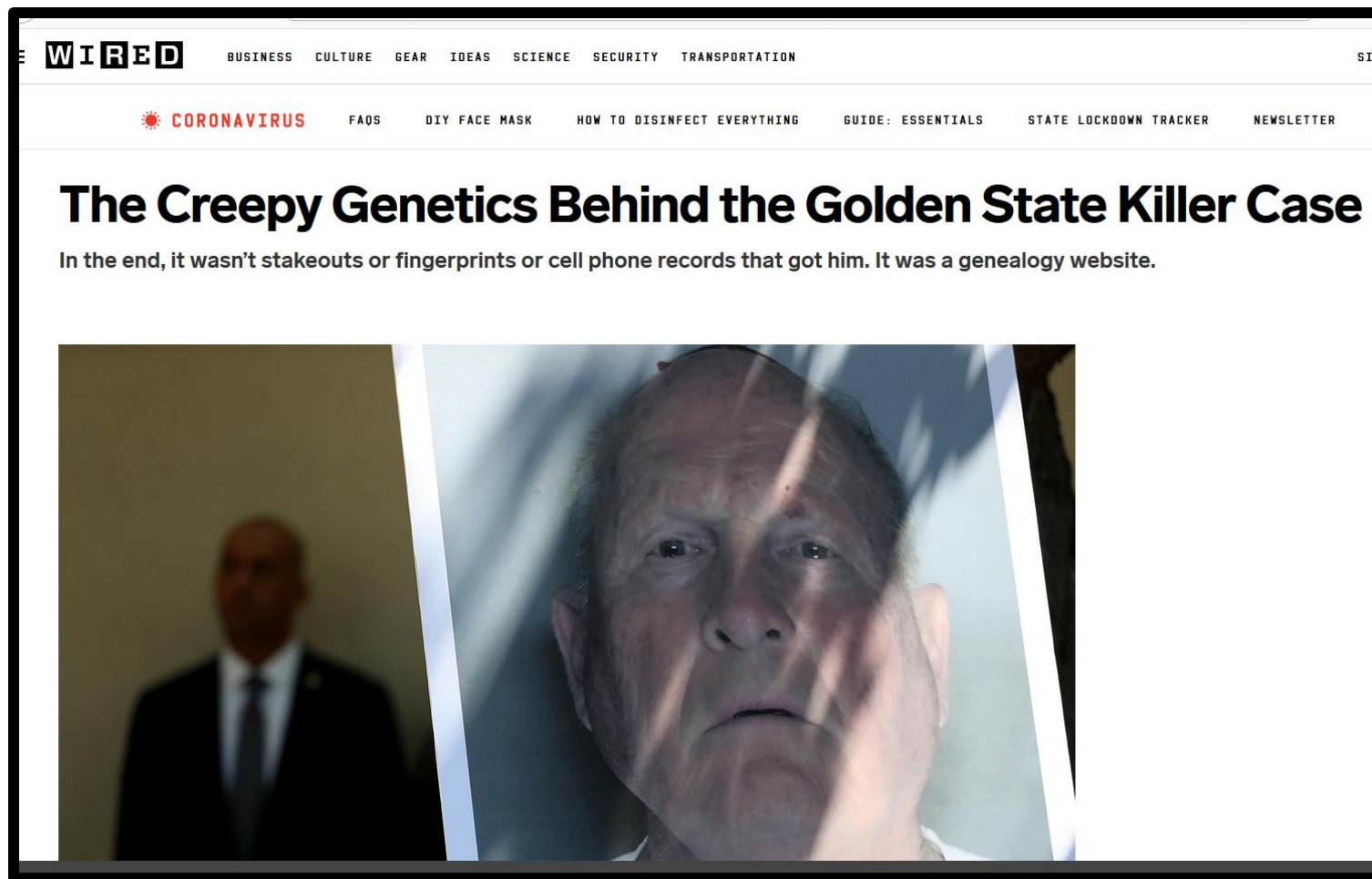
A fluorescence micrograph of HeLa cells, derived from cervical cancer cells taken from Henrietta Lacks and named in her honor

Tomasz Szul/Visuals Unlimited, Inc./Getty Images

<https://www.npr.org/2010/02/02/123232331/henrietta-lacks-a-donors-immortal-legacy>



# Wins (?) for DNA Data



<https://www.wired.com/story/detectives-cracked-the-golden-state-killer-case-using-genetics/>

# Losses (?) for DNA Data



<https://www.theguardian.com/lifeandstyle/2018/sep/18/your-fathers-not-your-father-when-dna-tests-reveal-more-than-you-bargained-for>

# **The Impact of Companies' Decisions About Tracking and Surveillance**

# iOS App Tracking Transparency

## Why Apple's new privacy feature is such a big deal

*What does App Tracking Transparency actually mean?*

By [Chaim Gartenberg](#) | [@cgartenberg](#) | Apr 27, 2021, 10:30am EDT

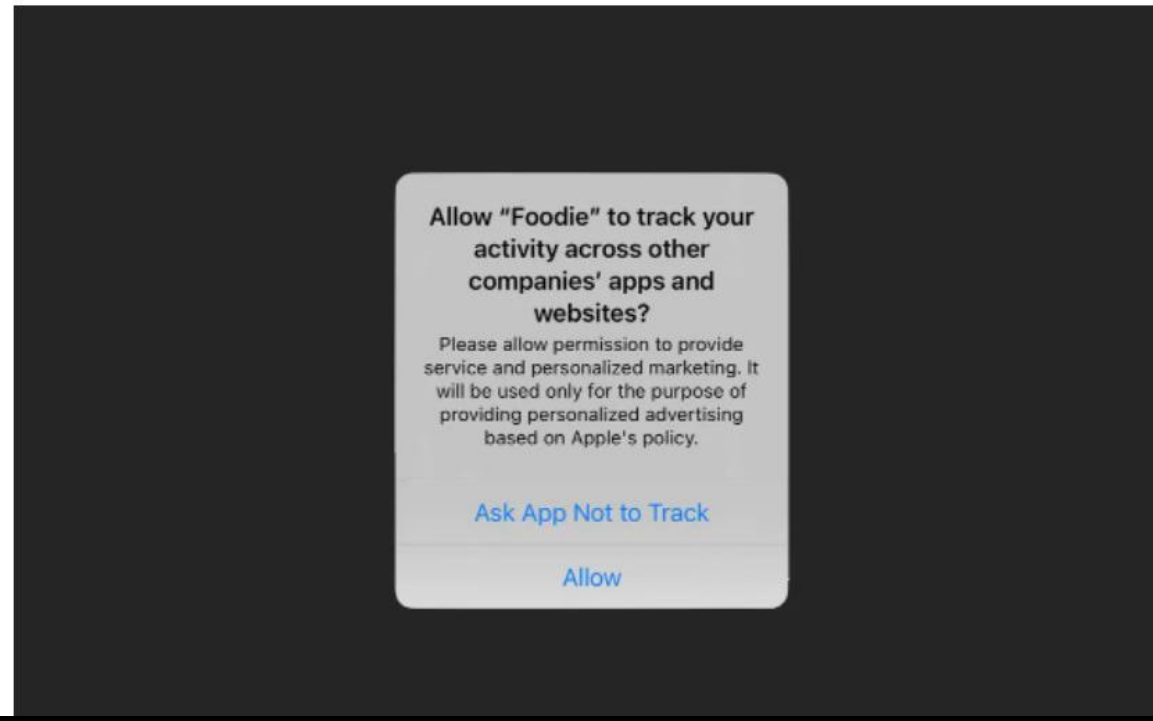


Image taken from <https://www.theverge.com/2021/4/27/22405474/apple-app-tracking-transparency-ios-14-5-privacy-update-facebook-data>



# Android Tracking

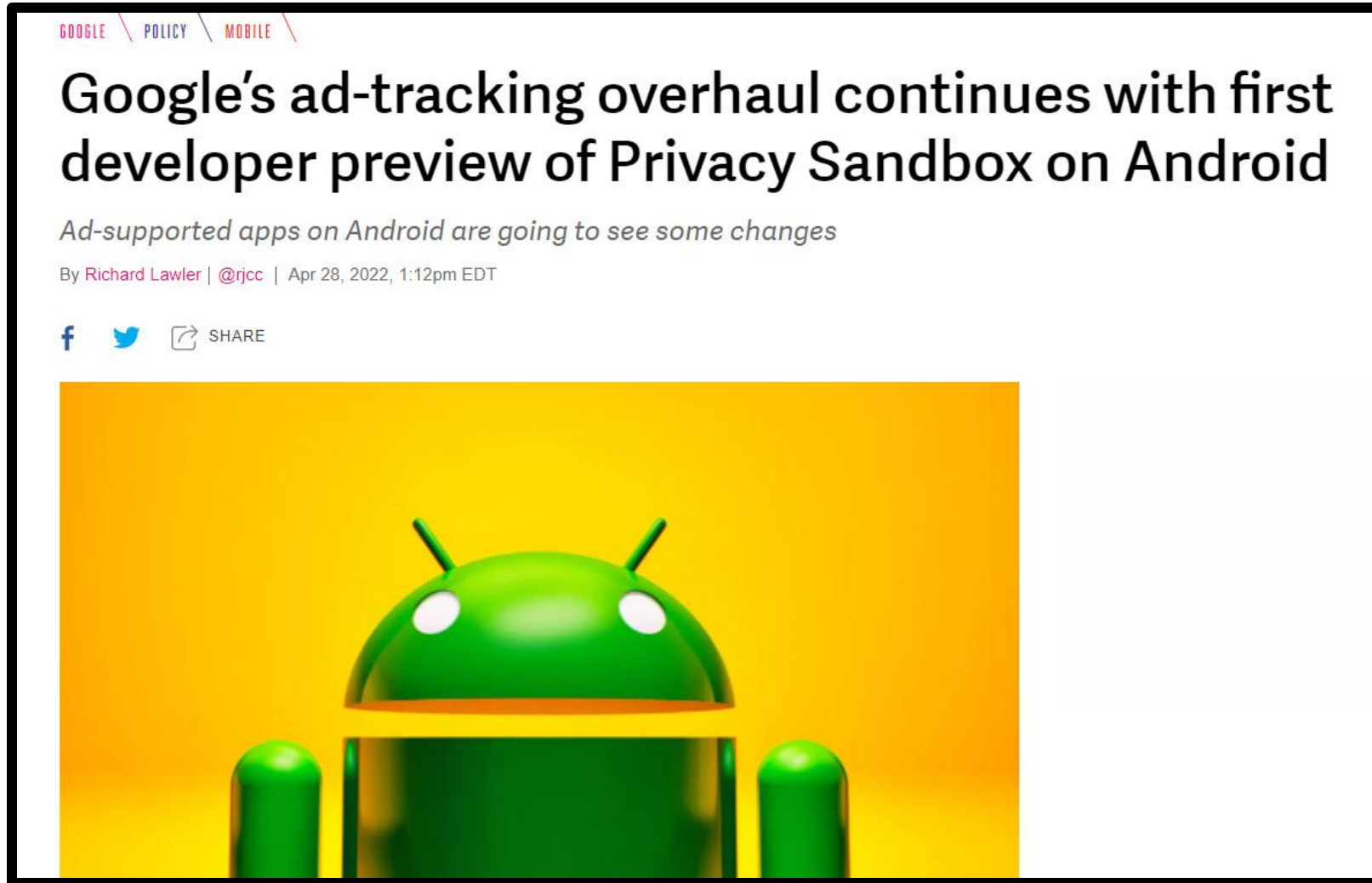


Image taken from <https://www.theverge.com/2022/4/28/23046608/android-advertising-privacy-sandbox-google-preview>