

Human-Computer Interaction

# Privacy

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# Questions

To ask questions during class:

- » Go to [slido.com](https://www.slido.com) and use code **#2938904** or [direct link](#) or scan QR code
- » Anonymous
- » I will monitor during class



# Today's Agenda

- » Topic overview: *Privacy*
- » Group discussion

What is **privacy**?

**Definition:** Privacy is the ability of an individual or group to seclude themselves or information about themselves, and thereby express themselves selectively.<sup>1</sup>

*Privacy is the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others.*

~

*Each individual is continually engaged in a personal adjustment process in which [the individual] balances the desire for privacy with the desire for disclosure and communication.<sup>2</sup>*

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<sup>1</sup>Wikipedia

<sup>2</sup>Westin, 1967, Privacy and freedom

tin & Dan Yankelovich<sup>3</sup>



## *The four functions of privacy*<sup>2</sup>

1. **Personal autonomy:** To avoid being manipulated, dominated, or exposed by others.
2. **Emotional release:** To let go emotions and tensions resulting from social demands.
3. **Self-evaluation:** To integrate experience into meaningful patterns and exert individuality on events.
4. **Limited & protected communication:** The former to set interpersonal boundaries and the latter to share personal information with trusted others.

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<sup>2</sup>Westin, 1967, Privacy and freedom

## *The four states of privacy<sup>2</sup>*

1. **Solitude:** The state of being free from observation by others.
2. **Intimacy:** The seclusion required for a close association.
3. **Anonymity:** The condition of being unknown and free from identification.
4. **Reserve:** The desire to limit disclosures to others.

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<sup>2</sup>Westin, 1967, Privacy and freedom

## Privacy Regulation Theory<sup>4</sup>

Privacy is not a static state of social withdrawal, but it is a dynamic process of regulating access to the self or to one's group.

1. Temporal dynamic process of interpersonal boundary
2. Desired vs. actual levels of privacy
3. Non-monotonic function of privacy (more privacy  $\neq$  better)
4. Bi-directional nature of privacy (involving other inputs)
5. Two levels of privacy (individual, group)

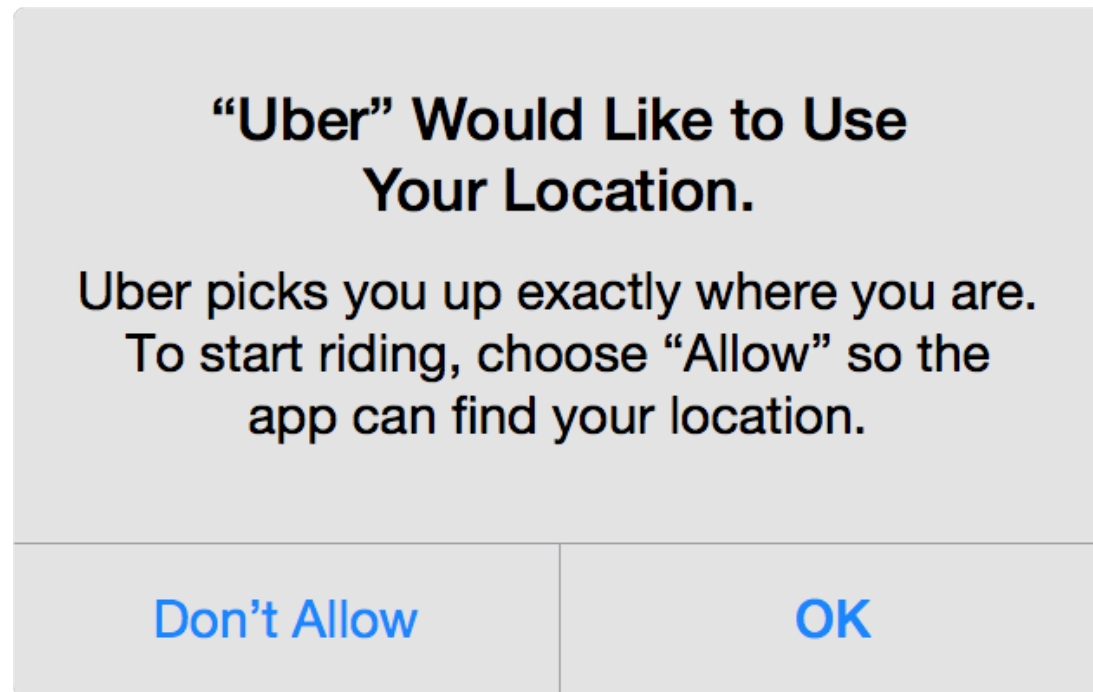
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<sup>4</sup>Altman, 1975, The environment and social behavior

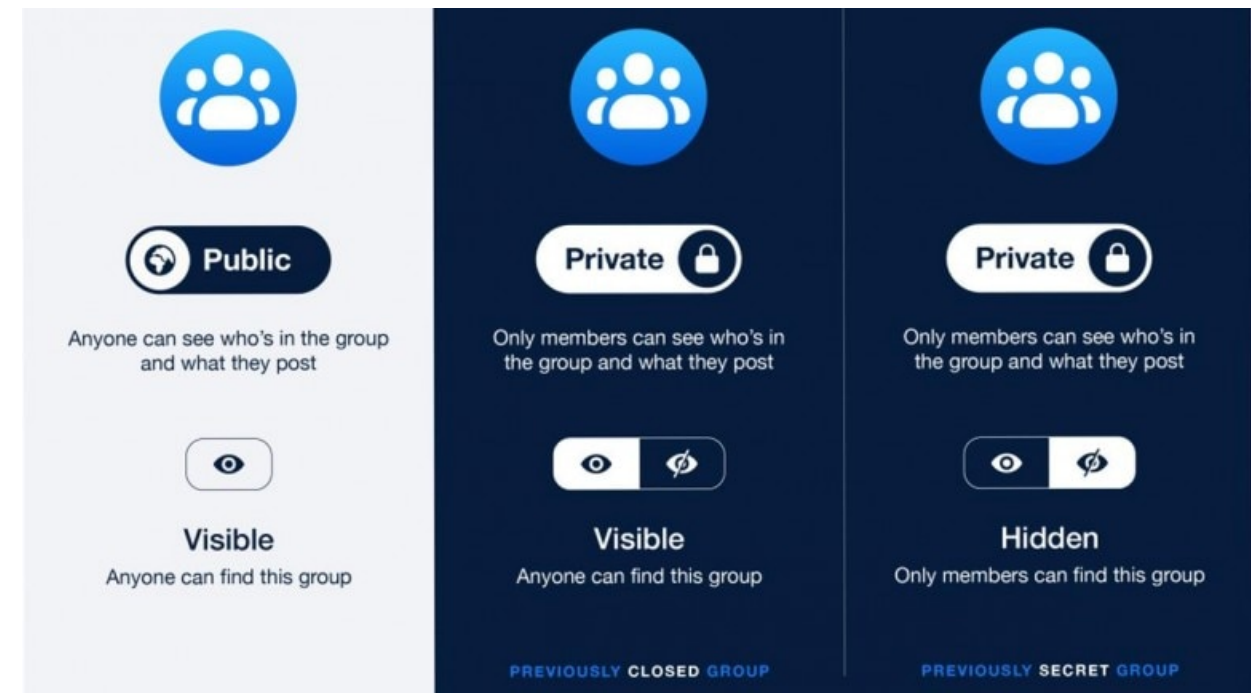


## Two Views of Privacy<sup>5 6</sup>

**Limiting access:** minimizing how much access people have to us or information about us



**Controlling access:** having control over who gets access to us or information about us



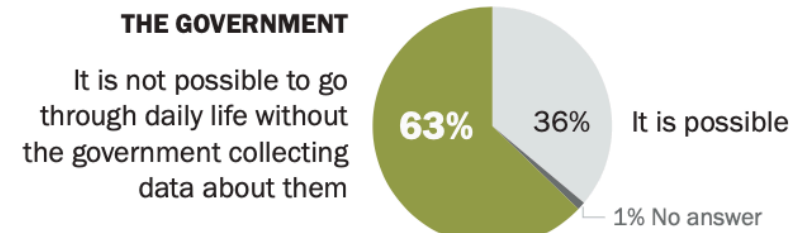
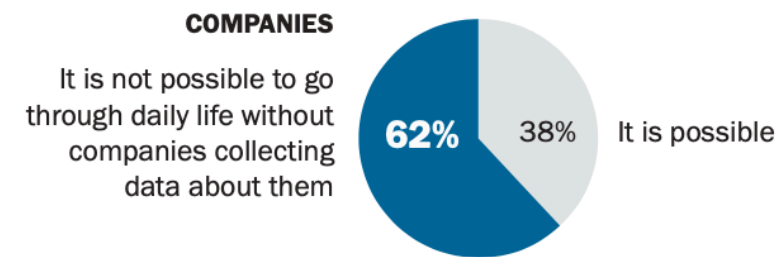
<sup>5</sup>Lorrie Cranor

<sup>6</sup>Image source: Left, Right

# What do people think about privacy?<sup>7</sup>

## Roughly six-in-ten Americans believe it is not possible to go through daily life without having their data collected

% of U.S. adults who say ...



Note: Respondents were randomly assigned to answer a question about whether they think it is possible to go about daily life without having personal information collected from them by “companies” or “the government.”

Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

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## Majority of Americans feel as if they have little control over data collected about them by companies and the government

% of U.S. adults who say ...

		Companies	The government
<b>Lack of control</b>	They have very little/no control over the data ___ collect(s)	<b>81%</b>	<b>84%</b>
<b>Risks outweigh benefits</b>	Potential risks of ___ collecting data about them outweigh the benefits	<b>81%</b>	<b>66%</b>
<b>Concern over data use</b>	They are very/somewhat concerned about how ___ use(s) the data collected	<b>79%</b>	<b>64%</b>
<b>Lack of understanding about data use</b>	They have very little/no understanding about what ___ do/does with the data collected	<b>59%</b>	<b>78%</b>

Note: Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

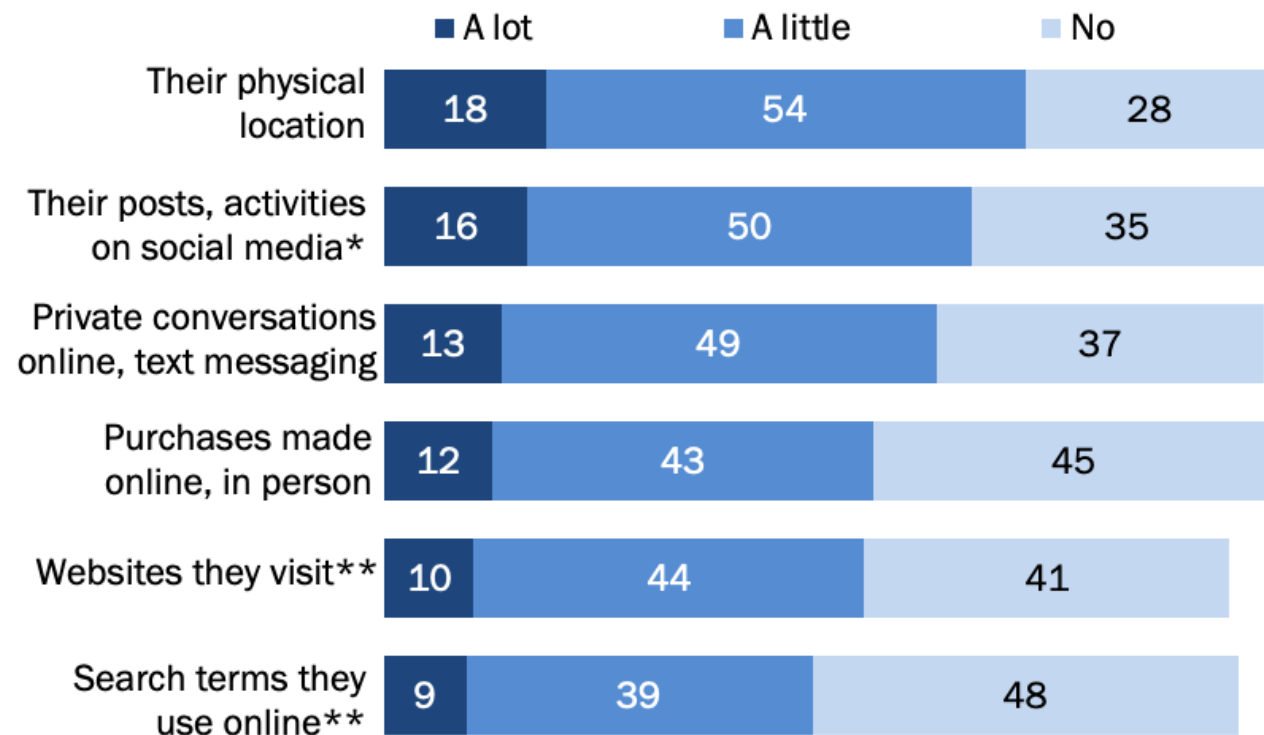
“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

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<sup>7</sup>Pew Research Center, November 2019, [Americans and Privacy](#)

## About half of Americans feel as if they have no control over who can access their online searches

% who say they feel \_\_\_ control over who can access the following types of their information



\* Based on social media users.

\*\* Based on internet users.

Note: Respondents were randomly assigned questions about how much control they feel they have over who can access different types of their information. Those who did not give an answer are not shown.

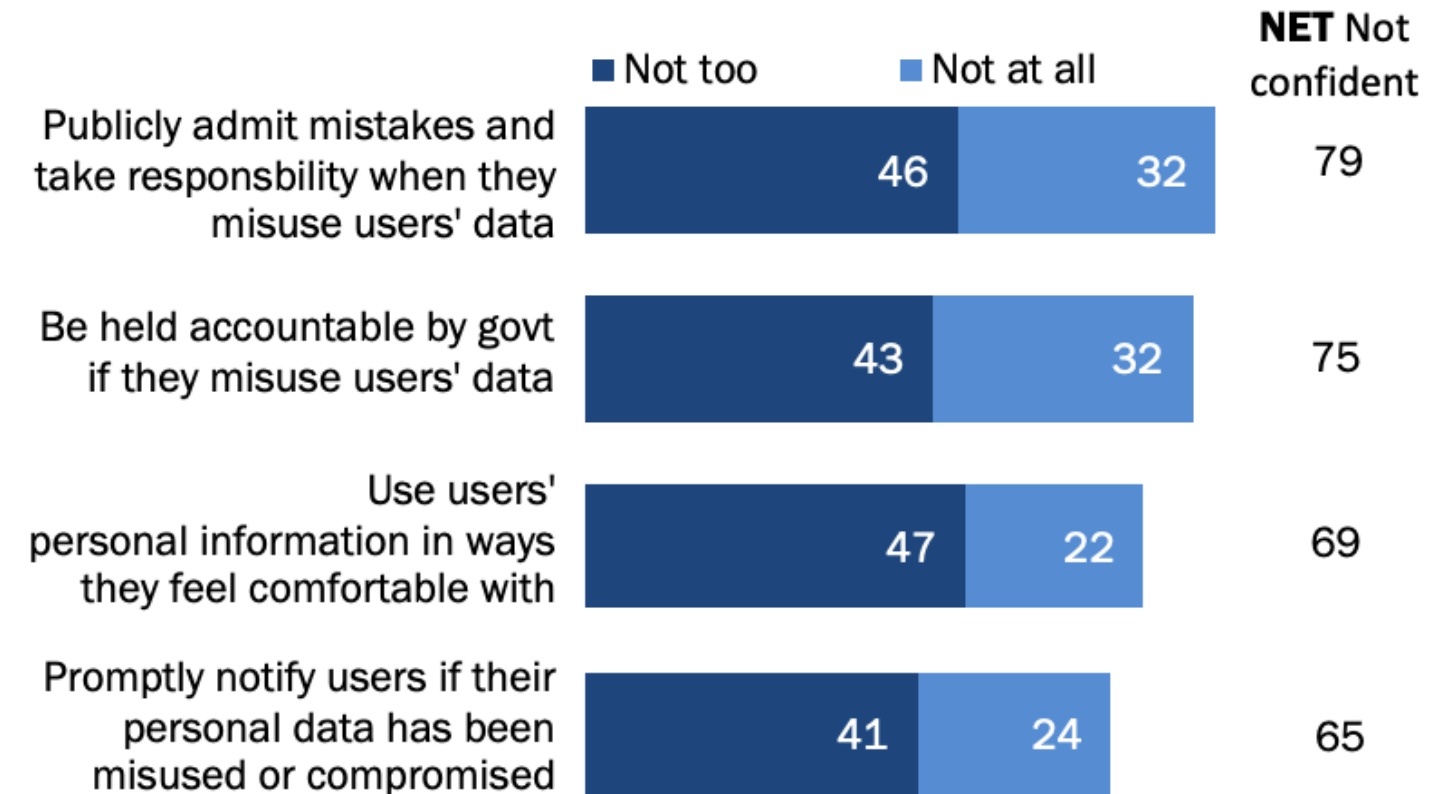
Source: Survey of U.S. adults conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

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## Most Americans are not confident that companies would publicly admit to misusing consumers' data

% of U.S. adults who say they are \_\_\_ confident that companies will ...



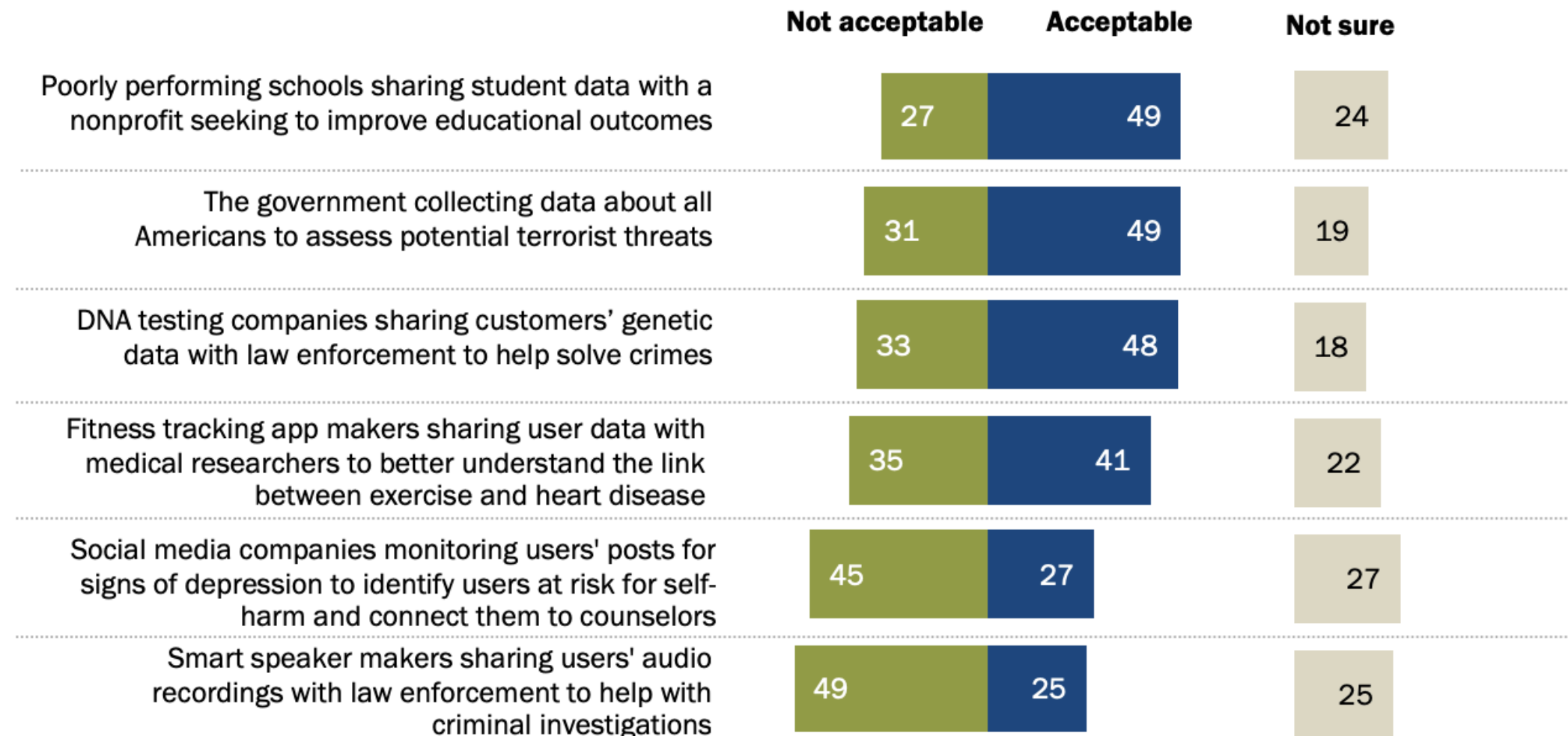
Note: Those who did not give an answer or who gave other responses are not shown. Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

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## Americans are more accepting of using personal data to help improve schools or assess potential terrorist threats, but are more wary of some other data uses

*% of U.S. adults who say the following uses of data or personal information are ...*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

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*What does the law say about privacy?*

1. US Privacy Act (1974), HIPAA (1996), GLBA (1999), COPPA (2000)
2. General Data Protection Regulation (GDPR) (2016)
3. OECD Privacy Guidelines (2013)
4. Many new laws enacted by US states, e.g., California Consumer Privacy Act (CCPA) (2018)

## *US Privacy Act (1974)*<sup>8</sup>

- » Right of US citizens to access any data held by government agencies and a right to copy that data
- » Right of citizens to correct any information errors
- » Agencies should follow data minimization principles when collecting data—the least amount of information to accomplish its purposes
- » Access to data is restricted on a need to know basis, e.g., employees who need the records for their job role
- » Sharing of information between other federal (and non-federal) agencies is restricted and only allowed under certain conditions

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<sup>8</sup>Varonis

## GDPR<sup>9</sup>

Personal data may not be processed unless (see Article 6):

1. The data subject has given consent;
2. Contractual obligations with the data subject require it;
3. To comply with a data controller's legal obligations;
4. To protect the vital interests of a data subject or another individual;
5. To perform a task in the public interest or in official authority;
6. For the legitimate interests of a data controller or a third party, unless these interests are overridden by interests of the data subject or her or his rights according to the Charter of Fundamental Rights.

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<sup>9</sup>Wikipedia

*What do these mean?*

Two conclusions can be drawn:

1. In general, legal protections (e.g., CCPA, GDPR) and guidelines (e.g., OECD) are being put into place to protect user privacy.
2. Usable privacy and security (research and practice) are going to be increasingly important (and a requirement).



## What is **usable privacy and security**?

Let's look at some definitions:

**Usable privacy** refers to the extent to which a product or a service protects the privacy of the users in an efficient, effective, and satisfactory way by taking into consideration the particular characteristics of the users, goals, tasks, resources, and the technical, physical, social, cultural, and organizational environments in which the product/service is used.<sup>10</sup>

**Usable security** "deals with making sure that security products and processes are usable by those who need them (in this case almost everyone with a computer)."<sup>11</sup>

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<sup>10</sup> ISO 9241-11:2018

<sup>11</sup> Wharton, 2007, Usable Security

## What does usable privacy research look like?

Some examples:

1. *Privacy from individuals*: Freed et al., 2018, [A Stalker's Paradise](#)
2. *Privacy from organizations*: Chandrasekaran et al., 2018. [PowerCut and Obfuscator](#); Sleeper et al., 2015, [Attitudes Toward Vehicle-Based Sensing and Recording](#)
3. *Privacy from governments*: Dufaux et al., 2008, [Scrambling for privacy protection in video...](#)



*Other phenomena:*

**Privacy Paradox:** *While users claim to be very concerned about their privacy, they nevertheless undertake very little to protect their personal data.*<sup>12</sup>

**Privacy Profiles:** Westin's classification of privacy attitudes:<sup>13</sup>

1. Privacy fundamentalists — 19.28% (latest data from 2019)<sup>14</sup>
2. Privacy pragmatists — 74.28%
3. Privacy unconcerned — 6.42%

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<sup>12</sup> Barth & Jong, 2017, The Privacy Paradox

<sup>13</sup> Kumaraguru & Cranor, 2005, Privacy Indexes: A Survey of Westin's Studies

<sup>14</sup> Javed et al., 2019, Alexa's Voice Recording Behavior

# Discussion Format

- » Group discussion ~15 minutes
  - » Separate to 9 groups randomly
  - » Discuss with your group members
  - » Take notes in the shared doc– pick your group number
- » Summary from each group & discussion ~10 minutes

# Discussion Questions

- » What are situations where you have felt privacy violations? Did these indicate technology design issues?
- » What privacy profile do you fall into? Why? Has that changed over time? How might it change in the future?
- » What are the implications of findings regarding privacy on HCI research and technology design?
- » What external resources have you found?