



Business and Consumer Interactions: Communicating Business Practices and Consumer Preferences

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Agenda

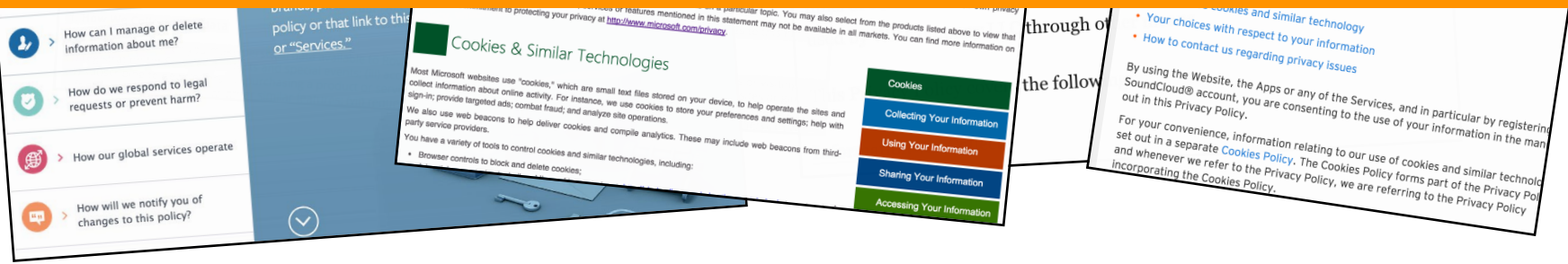
- Privacy policies and alternatives
- Privacy icons
- Privacy nutrition labels and tools
- Privacy choice interfaces
- Takeaways



Privacy policies and alternatives

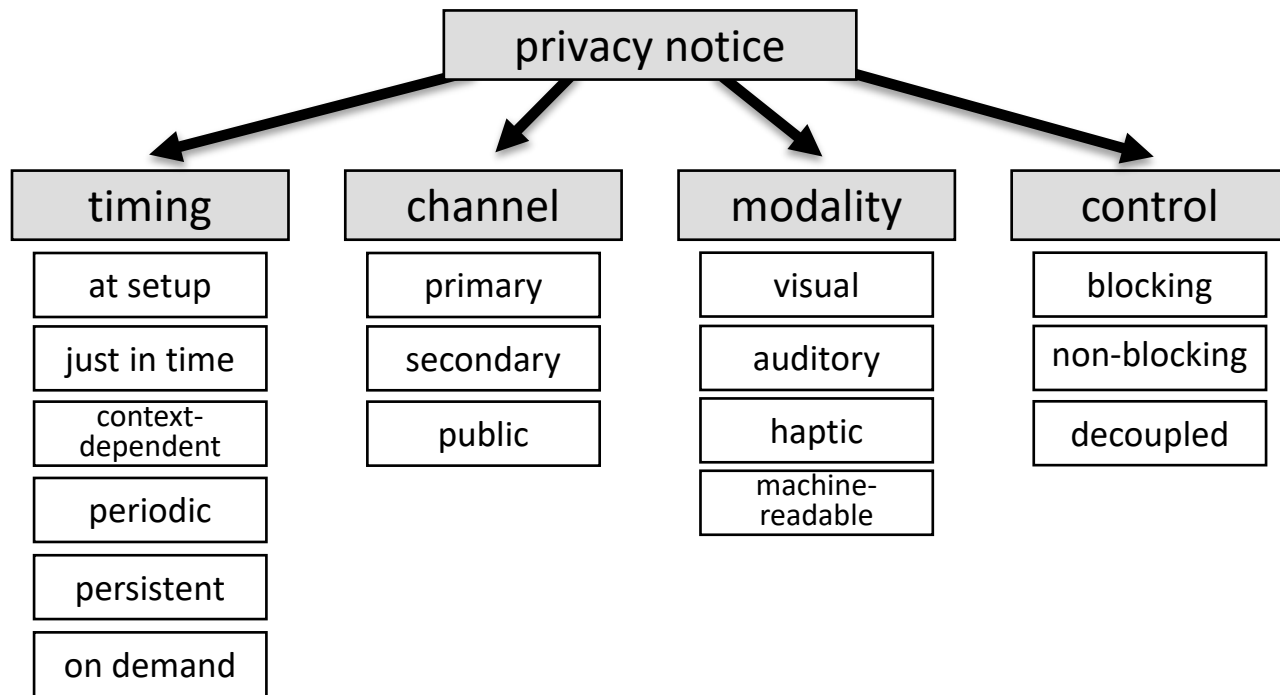


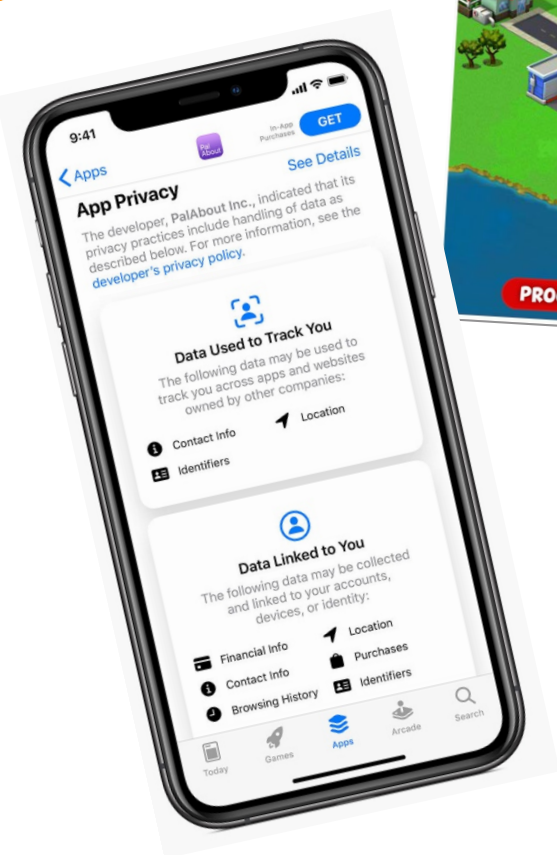
244 HOURS PER YEAR



A. McDonald & L. Cranor, The Cost of Reading Privacy Policies,
I/S: A Journal of Law and Policy for the Information Society, 2008.

Privacy notice design space

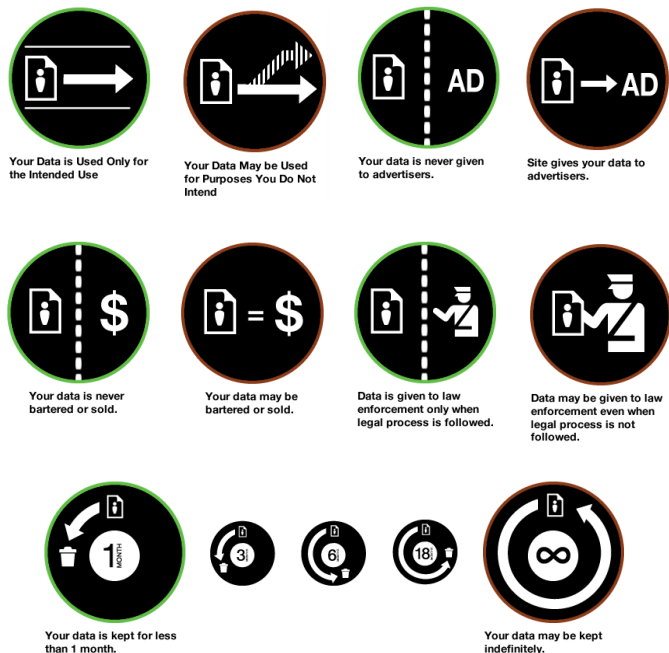



















Privacy icons

Icons may need accompanying words when conveying abstract privacy concepts



Mozilla privacy icons designed by Aza Raskin

TYPE OF DATA COLLECTED	GENERAL DATA PRACTICES	DATA SHARING
 contact: name, mailing address, email, or phone number	 ad customization: user data may be used for the purpose of customizing advertising	 affiliates: affiliates and subsidiaries bound by the same privacy practices
 computer: IP address, browser type, or operating system	 third party tracking: site allows third parties to place advertisements that may track user behavior	 contractors: third party contractors bound by the same privacy practices
 interactive: browsing behavior or search history	 public display: service allows users to contribute information which may be displayed publicly	 third parties: third parties not subject to same data practices
 financial: account status or activity, credit information, or purchase history	 user control: users allowed to access and correct personal data collected	
 content: contents of personal communications, stored documents or media	 data retention: explicitly stated duration of retention for personal data collected	

KnowPrivacy icons designed by Joshua Gomez, Travis Pinnick, and Ashkan Soltani

AdChoices icon is misunderstood, and “AdChoices” tagline doesn’t seem to help

- Recruited 1,505 participants through Amazon Mechanical Turk
- Between subjects online survey, varying taglines



What would happen if you clicked on the icon?



56% More ads will pop up

45% Will take you to a page where you can buy advertisements on this website

27% Will take you to a page where you can opt out of tailored ads

% who agreed with each statement; some participants agreed with multiple statements

What would happen if you clicked on the icon?

Configure Ad Preferences

~~AdChoices~~



~~42%~~ ~~56%~~ More ads will pop up

~~15%~~ ~~45%~~ Will take you to a page where you can buy advertisements on this website

~~50%~~ ~~27%~~ Will take you to a page where you can opt out of tailored ads

CHAPTER 20. CALIFORNIA CONSUMER PRIVACY ACT REGULATIONS

PROPOSED TEXT OF REGULATIONS

§ 999.315. Requests to Opt-Out

(a) A business shall provide two or more designated methods for submitting requests to opt-out, including, at a minimum, an interactive webform accessible via a clear and conspicuous link titled “Do Not Sell My Personal Information,” or “Do Not Sell My Info,” on the business’s website or mobile application. Other acceptable methods for submitting these requests include, but are not limited to, a toll-free phone number, a designated email address, a form

(e) Opt-Out Button or Logo

(1) The following opt-out button or logo may be used in addition to posting the notice of right to opt-out, but not in lieu of any posting of the notice. [BUTTON OR LOGO TO BE ADDED IN A MODIFIED VERSION OF THE REGULATIONS AND MADE AVAILABLE FOR PUBLIC COMMENT.]

Icon development and evaluation

1. Icon ideation
2. Preliminary icon evaluation
3. Refinement of most promising icons
4. Testing of refined icons
5. Link text ideation
6. Link text evaluation
7. Combined icon and link text evaluation

(all done before the end of 90-day comment period)

Icon ideation focused on 3 concepts

- Choice/consent
- Opting out
- Do-not-sell



Choice/consent



Opting out



Do not sell (personal info)



DAA Privacy
Rights

digitaladvertisingalliance.org

DigitalAdvertisingAlliance.org | License the Privacy Rights Icon

RESOURCES FOR CONSUMERS

DIGITAL
ADVERTISING
ALLIANCE

Powered By YourAdChoices

ABOUT

PRINCIPLES

PARTICIPANTS

ENFORCEMENT

RESOURCES

BLOG

NEWS

search

Home >> [License the Privacy Rights Icon](#)

License the Privacy Rights Icon

The Digital Advertising Alliance's (DAA) Privacy Rights icon and associated text is the visual representation of a link presented to consumers that provides access to information about how to opt-out of personal information sale as required by the California Consumer Privacy Act (CCPA), effective January 2020. Consistent and proper usage of the Privacy Rights icon and associated text will reinforce the application of consumer-friendly standards for transparency across the Internet.

To whom does this information apply?

All entities—publishers and third parties—that collect and sell personal information through a website or mobile app.

Implementation for Publishers

Do Not Sell My
Personal Information

Fees

The certification and licensing fee for the Privacy Rights icon is complimentary for both existing and first-time participants in the DAA Program. Only a signature on a Privacy Rights icon licensing agreement is required.

New participants can “bundle” the [YourAdChoices Icon](#) and [Privacy Rights Icon](#)

First icon evaluation

- 240 Mturk participants
- Tested 12 icons with and without “Do Not Sell My Personal Information” tagline
- Displayed 1 icon
 - Asked what the icon means and what would happen if you click on it
- Displayed all 12 icons
 - Asked which best conveyed Do Not Sell and Privacy Choices concepts

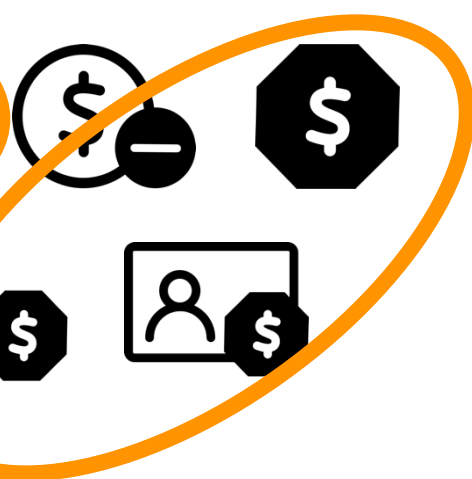
Icons difficult to interpret without words



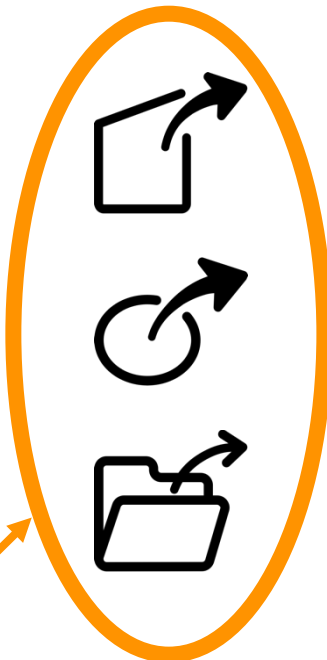
best conveys choices
about personal info



best conveys do not sell my
personal info, but also
conveys payments



mostly
confusing



people didn't
recognize stop sign



Refined icons for evaluation

ID-Card



Slash-Dollar



Stop-Dollar

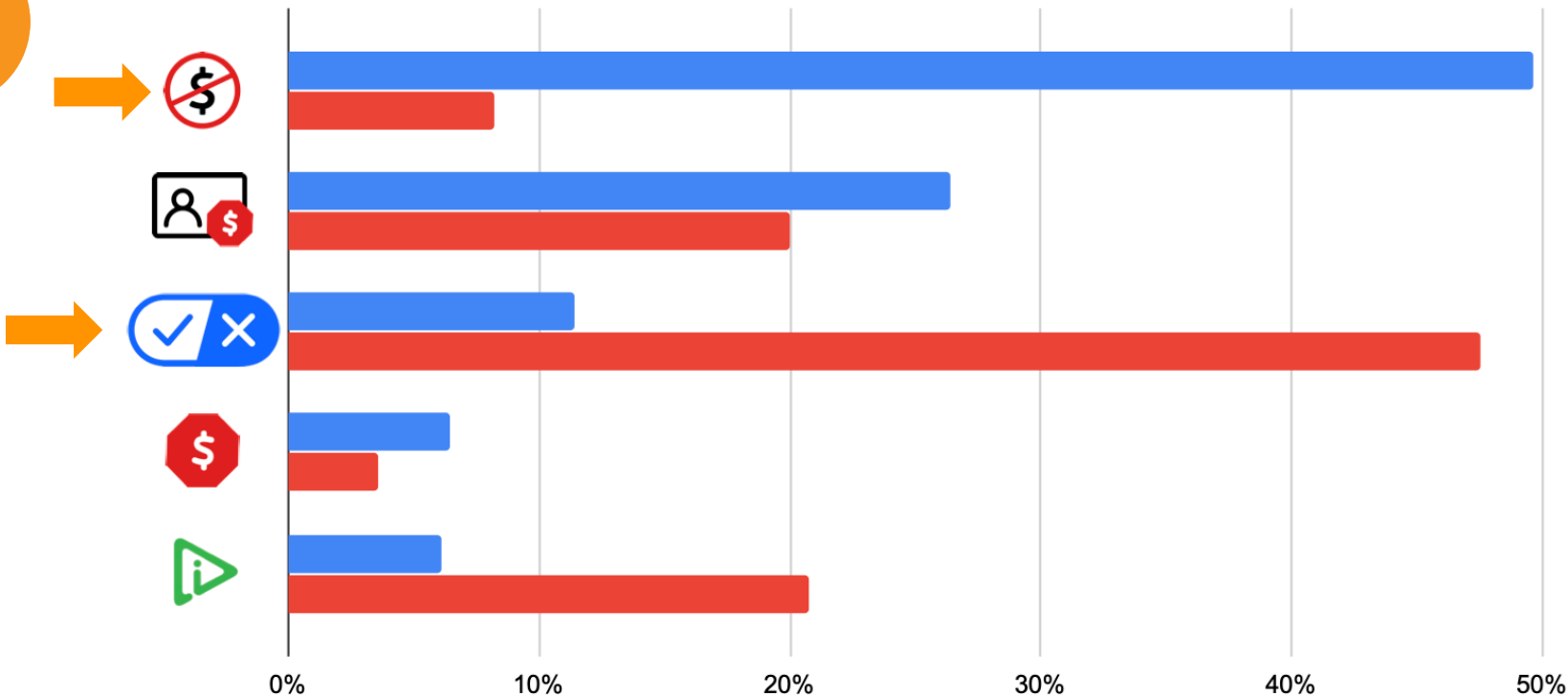


Toggle



DAA








Best conveys **do not sell my personal information**



Best conveys **choices about the use of personal information**

Icon	Common Interpretations without tagline (# of participants)
Toggle 	<ul style="list-style-type: none"> ✓ accept/decline something (11) ✓ activate/deactivate something (5) • okay/exit options (4) • mark as true/false (4)
DAA 	<ul style="list-style-type: none"> • get more information (15) • start audio/video content (7) • denotes website is safe or private (3) • move forward or next (2)
Slash-dollar 	<ul style="list-style-type: none"> • something is free or requires no money (12) • cash/dollars not accepted (7) • money (4) ✓ selling is not allowed (1)

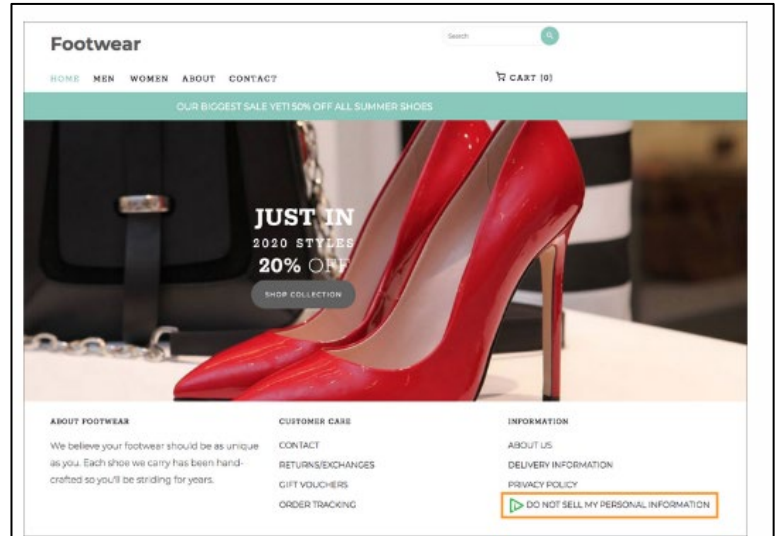
✓ **correct interpretation** • **misconception**

Tagline ideation and testing

- Do Not Sell My Personal Information
- Do Not Sell My Info
- Don't Sell My Info
- Do Not Sell
- Don't Sell
- Do-Not-Sell Choices
- Do-Not-Sell Options
- Do-Not-Sell Opt-Outs
- Privacy Choices
- Privacy Options
- Privacy Opt-Outs
- Personal Info Choices
- Personal Info Options
- Personal Info Opt-Outs
- Do Not Sell My Info Choices
- Do Not Sell My Info Options

Combo testing

- Mturk study with 1,416 participants
- Tested 3 icons + no icon
 -
 -
 -
- Tested 5 taglines + no tagline
 - Do not sell my personal information
 - Do not sell my info
 - Privacy choices
 - Privacy options
 - Personal info choices
- 23 combinations tested



Close up of highlighted area:



What do you think would happen if you clicked on the symbol and link in the highlighted area on this web page?

Combo testing results

- Misconceptions
 - “Personal info choices” conveyed info about shoe sizes, site settings, payment methods, etc.
 - Slash-dollar icon sometimes suggested payment options and encrypted payments (42 participants)
 - Toggle icon occasionally suggested it was a real toggle (6 participants)
- None of the icons were very good without a tagline
 - Slash-dollar was especially bad
- Icons didn’t have much impact on interpretation of taglines

Recommendations to OAG

Privacy Options

- This allows consumers to look for one button for all privacy-related choices
- Prevent the proliferation of buttons as other privacy regulations emerge

Do Not Sell My Personal Information

- Complies with CCPA as written

Our
recommended
icon



iOS toggle
switch



OAG's revised proposed regulations

- (1) The following opt-out button or logo may be used in addition to posting the notice of right to opt-out, but not in lieu of any posting of the notice of right to opt-out.



- (2) When the opt-out button is used, it shall appear to the left of the “Do Not Sell My Personal Information” or “Do Not Sell My Info” link, as demonstrated below, and shall be approximately the same size as other buttons on the business’s webpage.
[BUTTON OR LOGO TO BE ADDED IN A MODIFIED VERSION OF THE REGULATIONS AND MADE AVAILABLE FOR PUBLIC COMMENT.]

 Do Not Sell My Personal Information

 Do Not Sell My Info

Twitter responds



Alex Stamos  @alexstamos · 14h

Quick, tell me what that button indicates in its current state. Are you opted into your data being used or out? Red X next to "Do Not", so does that cancel out the not?

The California AG's office is now mandating really bad interaction design.
Great job everybody



Aaron Alva @aalvatar · 2h

This is terribly confusing. Was this disclosure user tested to make sure users' expectations align with what you're trying to convey? (Likely not)

We expect companies to do user testing; we should expect governments to do same.

one resource: ftc.gov/news-events/ev... **#CCPA**

So, we ran another study

Stylized toggle



CalAG toggle



CalAG-X toggle



+ swapped colors

- Insignificant difference between icons with the big and small X
- But big differences between the CalAG icon and our stylized toggle
- CalAG icon more likely to be misinterpreted as actual toggle
- Small differences based on color
- **Some small changes can sometimes make a big difference and you won't know unless you test with users**

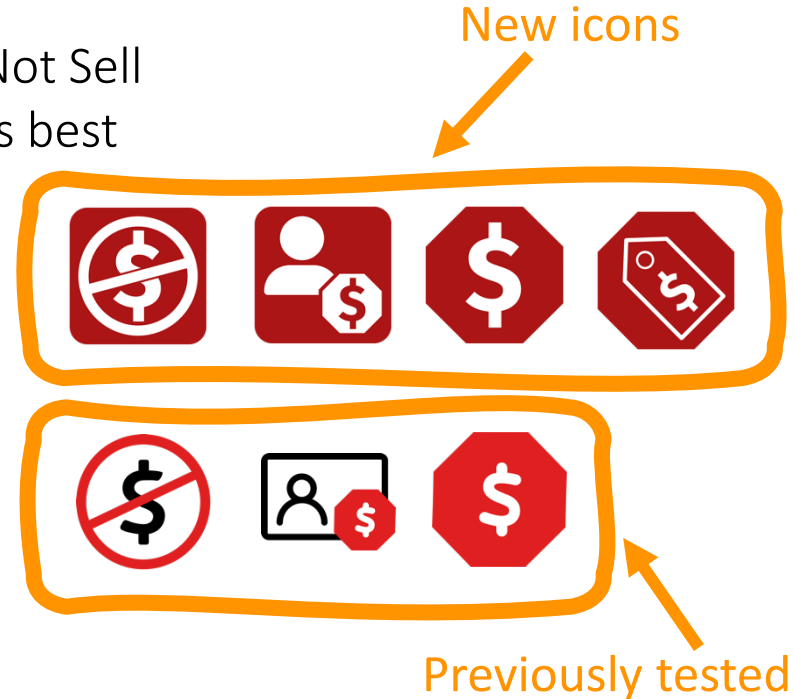
Then the OAG removed the button

- Button completely removed from regulation
- OAG will design a uniform and recognizable opt-out button in the future

Former subsection (f), regarding the proposed opt-out button, has been deleted in response to the various comments received during the public comment period. The OAG has removed this subsection in order to further develop and evaluate a uniform opt-out logo or button for use by all businesses to promote consumer awareness of how to easily opt-out of the sale of personal information.

Then we tested more icons with new criteria

- Which of these icons, paired with the “Do Not Sell My Personal Information” link text performs best
 - **communicating** do-not-sell choice?
 - **standing out** to users on a website?
 - **motivating** users to click?
- This time all participants were from CA
- Results
 - Best communication: No icon!
 - Adding any icon made users more likely to notice link but did not create a significantly higher motivation to click





XAVIER BECERRA
Attorney General

Translate Website | Traducir Sitio Web

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ABOUT

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REGULATIONS

RESOURCES

PROGRAMS

CONTACT

Attorney General Becerra Announces Approval of Additional Regulations That Empower Data Privacy Under the California Consumer Privacy Act

Press Release / Attorney General Becerra Announces Approval of Additional Re...

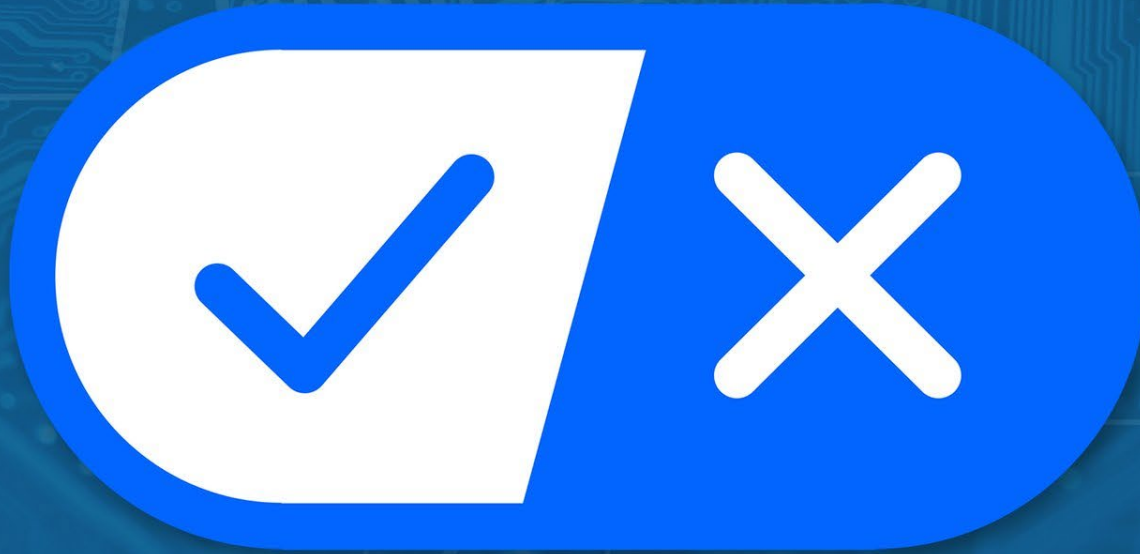
Monday, March 15, 2021

Contact: (916) 210-6000, agpressooffice@doj.ca.gov

Includes new Privacy Options icon that businesses are encouraged to use to help build consumer awareness of Californians' privacy rights

SACRAMENTO – California Attorney General Xavier Becerra today announced additional regulations approved by the Office of Administrative Law that advance protections for Californians seeking to control the sale of their personal information. The California Consumer Privacy Act (CCPA) gives consumers new tools and rights for protecting their data privacy. These newly-approved rules strengthen the language of the CCPA regulations [approved by OAL in August 2020](#), including protecting consumers from unlawful business practices that may be deceptive or misleading.

CCPA PRIVACY OPTIONS Icon



Standard icon, but not widely adopted... how can we incentivize adoption?





Privacy nutrition labels and tools

Standardized privacy “nutrition labels” make it easier to find info and compare policies

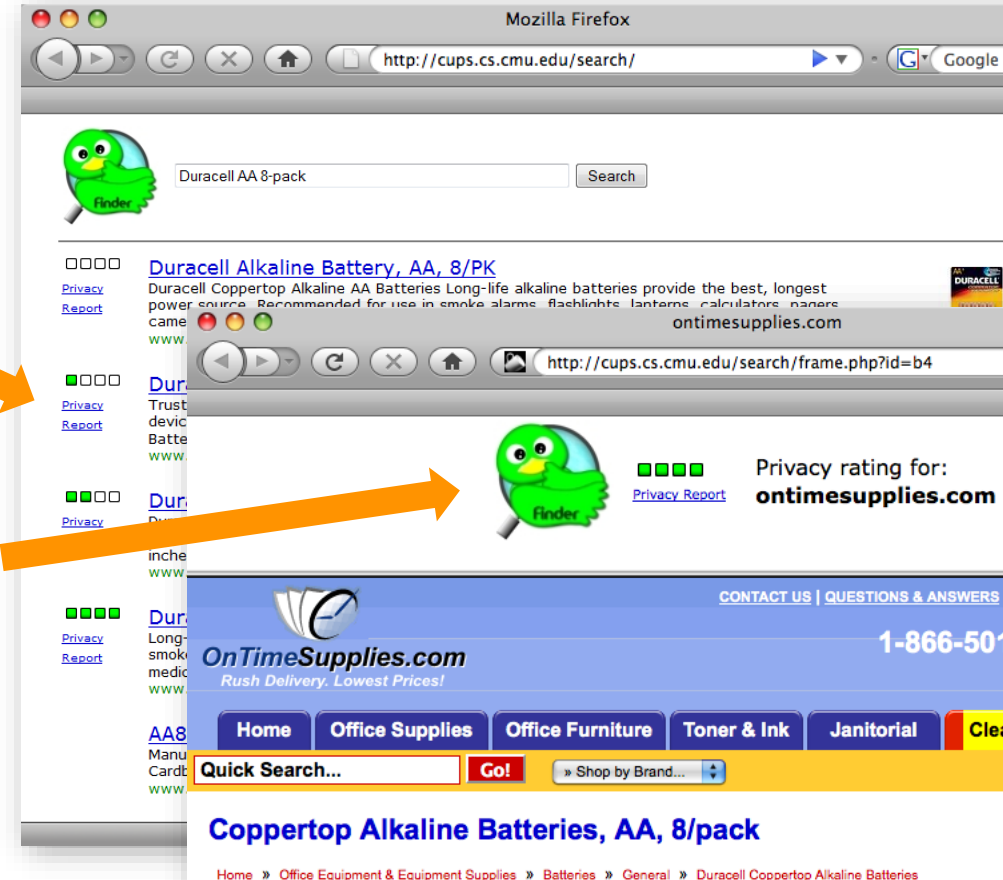
Acme						
information we collect	ways we use your information				information sharing	
	provide service and maintain site	marketing	telemarketing	profiling	other companies	public forums
contact information		opt out	opt out		opt out	opt in
cookies		opt out	opt out			
demographic information		opt out	opt out			
financial information						
health information		opt out	opt out			
preferences		opt out	opt out			opt in
purchasing information		opt out	opt out			opt in
social security number & govt ID						
your activity on this site		opt out	opt out			
your location						

Bell Group						
information we collect	ways we use your information				information sharing	
	provide service and maintain site	marketing	telemarketing	profiling	other companies	public forums
contact information		opt in			opt out	
cookies						
demographic information		opt in			opt out	
financial information						
health information						
preferences		opt in			opt out	
purchasing information		opt in			opt out	
social security number & govt ID						
your activity on this site		opt in			opt out	
your location						

Salient privacy info in search engines influences purchases

Studies with privacy meters in search engines demonstrated that salient privacy information influences purchases

- Many participants paid more to purchase from sites with better privacy
- But when participants weren't shown the privacy meter until after they clicked through to the website, they tended to ignore it



S. Egelman, J. Tsai, L. Cranor, A. Acquisti. Timing is Everything? The Effects of Timing and Placement of Online Privacy Indicators. CHI 2019.

Bank privacy policies are standardized! Can we leverage this to help consumers find banks that meet their privacy needs?

WHAT DOES BANK OF AMERICA DO WITH YOUR PERSONAL INFORMATION?		
FACTS		
Why?	Financial companies choose how they share your personal information. Under federal law, that means personally identifiable information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.	
What?	The types of personal information we collect and share depend on the product or service you have with us. This information can include: <ul style="list-style-type: none">• Social Security number and employment information• account balances, transaction history and credit information• assets and investment experience	
How?	All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons Bank of America chooses to share; and whether you can limit this sharing.	

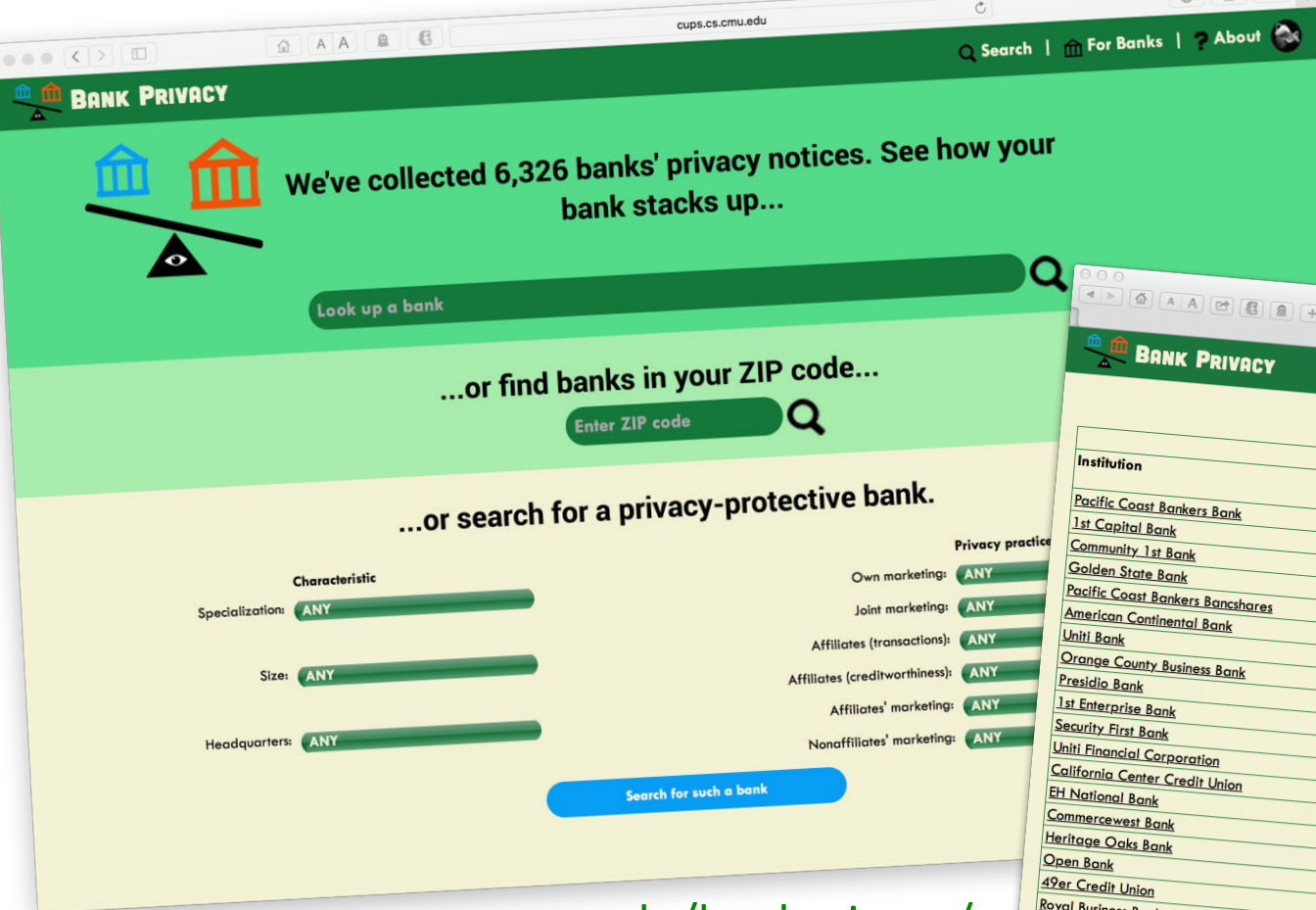
Reasons we can share your personal information	Does Bank of America share?	Can you limit this sharing?
For our everyday business purposes — such as to process your transactions, maintain your account(s), respond to court orders and legal investigations, or report to credit bureaus	Yes	No
For our marketing purposes — with service providers we use to offer our products and services to you (please see below to limit the ways we contact you)	Yes	No
For joint marketing with other financial companies	Yes	No
For our affiliates' everyday business purposes — Information about your transactions and experiences	Yes	No
For our affiliates' everyday business purposes — Information about your creditworthiness	Yes	Yes
For nonaffiliates to market to you — for all credit card accounts	Yes	Yes
For nonaffiliates to market to you — for accounts and services endorsed by another organization (e.g., debit card co-branded with a baseball team) "Sponsored Accounts"	Yes	Yes
For nonaffiliates to market to you — for accounts other than credit card accounts and Sponsored Accounts, such as insurance, investments, deposit and lending	No	We don't share

WHAT DOES CIT Group Inc. ("CIT") DO WITH YOUR PERSONAL INFORMATION?		
FACTS		
Why?	Financial companies choose how they share your personal information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.	
What?	<p>The types of personal information we collect and share depends on the product or service you have with us. This information can include:</p> <ul style="list-style-type: none"> • Social Security Number and income • account balances and transaction history • credit history and credit scores <p>When you are no longer our customer, we continue to share your information as described in this notice.</p>	
How?	All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons CIT chooses to share; and whether you can limit this sharing.	
Reasons we can share your personal information		
Reasons we can share your personal information	Does CIT share?	Can you limit this sharing?
For our everyday business purposes – such as to process your transactions, maintain your account(s), respond to court orders and legal investigations, or report to credit bureaus	Yes	No
For our marketing purposes – with service providers we use to offer our products and services to you	Yes	No
For joint marketing with other financial companies	No	We don't share
For our affiliates' everyday business purposes – Information about your transactions and experiences	Yes	No
For our affiliates' everyday business purposes – Information about your creditworthiness	No	We don't share
For nonaffiliates to market to you – for all credit card accounts	No	We don't share
For nonaffiliates to market to you – for accounts and services endorsed by another organization (e.g., debit card co-branded with a baseball team) "Sponsored Accounts"	No	We don't share
Call: 1-800-681-0740 or go to: http://www.cit.com/utility/privacy-policy/index.htm		

37

Call: 1-800-681-0740
policy/index.htm'

or go to: <http://www.cit.com/utility/privacy->



Bank Privacy: About

Bank Privacy: About

The following 96 banks meet your criteria:

Institution	Location	This institution's privacy practices				
		Everyday business	Our marketing	Joint marketing	Affiliates: trans...	Affiliates: credit...
Pacific Coast Bankers Bank	Walnut Creek, CA					
1st Capital Bank	Monterey, CA					
Community 1st Bank	Auburn, CA					
Golden State Bank	Upland, CA					
Pacific Coast Bankers Bancshares	Walnut Creek, CA					
American Continental Bank	City Of Industry, CA					
Uniti Bank	Buena Park, CA					
Orange County Business Bank	Irvine, CA					
Presidio Bank	San Francisco, CA					
1st Enterprise Bank	Los Angeles, CA					
Security First Bank	Fresno, CA					
Uniti Financial Corporation	Buena Park, CA					
California Center Credit Union	Ontario, CA					
EH National Bank	Beverly Hills, CA					
Commercewest Bank	Newport Beach, CA					
Heritage Oaks Bank	Paso Robles, CA					
Open Bank	Los Angeles, CA					
49er Credit Union	Placerville, CA					
Royal Business Bank	Los Angeles, CA					
FNB Bancorp	South San Francisco, CA					
Folsom Lake Bank	Folsom, CA					

cups.cs.cmu.edu/bankprivacy/

Security & Privacy Overview

Smart Device Co.

Smart Video Doorbell NS200
Firmware version: 2.5.1 - updated on: 11/12/2020
The device was manufactured in: China

Security Mechanisms	
Security updates	Automatic - Available until at least 1/1/2022
Access control	Password - Factory default - User changeable, Multi-factor authentication, Multiple user accounts are allowed

Data Practices	
Sensor data collection	<div>Visual</div> <div>Audio</div> <div>Physiological</div> <div>Location</div>
	<div>Sensor type</div> <div>Purpose</div>
Data stored on device	Identified
Data stored on cloud	Identified
Shared with	Manufacturer, Government
Sold to	Not disclosed
Other collected data	Motion, Account info, Payment info, Contact info, Device setup info, Device usage info
Privacy policy	www.NS200.smartdeviceco.com/policy

Detailed Security & Privacy Label:
www.iotsecurityprivacy.org/labels

CMU IoT Security and Privacy Label **CISPL 1.0** iotsecurityprivacy.org

Security & Privacy Details

Smart Device Co.

Smart Video Doorbell NS200
Firmware version: 2.5.1 - updated on: 11/12/2020
The device was manufactured in: China

Security Mechanisms	
Security updates	Automatic - Available until at least 1/1/2022
Access control	Password - Factory default - User changeable, Multi-factor authentication, Multiple user accounts are allowed
Security oversight	No security audits
Ports and protocols	www.NS200.smartdeviceco.com/ports
Hardware safety	Not disclosed
Software safety	www.NS200.smartdeviceco.com/sw_safety
Personal safety	www.NS200.smartdeviceco.com/user_safety
Vulnerability disclosure and management	www.NS200.smartdeviceco.com/vulnreport
Software and hardware composition list	www.NS200.smartdeviceco.com/BCM
Encryption and key management	www.NS200.smartdeviceco.com/encryption

Data Practices	
Sensor data collection	<div>Visual</div> <div>Audio</div> <div>Motion</div>
Sensor type	Camera
Collection frequency	Continuous - Option to opt out
Purpose	Providing device functions, Research
Stored on the device	Identified
Local data retention time	Up to a year
Data stored in the cloud	Identified - Data subject access request
Cloud data retention time	Up to 10 years
Data shared with	Manufacturer, Government
Data sharing frequency	Periodic
Data sold to	Not disclosed
Other collected data	Account info, Payment info, Contact info, Device setup info, Device tech info, Device usage info
Data linkage	Data will not be linked with other data sources
What will be inferred from user's data	Not disclosed
Special data handling practices for children	No
In compliance with	GDPR
Privacy policy	www.NS200.smartdeviceco.com/policy

More Information	
Call Smart Device Co. with your questions at	1 000-000-0000
Email Smart Device Co. with your questions at	info@smartdeviceco.com
Functionality when offline	Limited functionality on offline mode
Functionality with no data processing	Limited functionality on dumb mode
Physical activations and triggers	Device blinks when motion is detected
Compatible platforms	Amazon Alexa

CMU IoT Security and Privacy Label **CISPL 1.0** iotsecurityprivacy.org

User studies suggest users mostly accurately understand risk from labels and labels have some influence on willingness to purchase devices

Prototype IoT device comparison shopping app that leverages IoT label and allows users to set priorities for and preferences for factors of greatest interest

Could be even more useful with search engine integration

Priority Settings

Priority attributes will be indicated with a star icon: ★

☒

Security Updates

☒

Access Control

☐

Security Audit

☐

Inference

☐

Data Linkage

☐

Data collection frequency

☒

Purpose

☒

Data stored on the device

☐

Local data retention time

☒

Data stored in the cloud

☐

Cloud data retention time

☒

Data shared with

☐

Data sharing frequency

☒

Data sold to

User Preferences

View priority attributes only

☐

View all

Security Updates

Automatic

Don't Warn

☐

Warn

Consent-based

Don't Warn

☒

Warn

Manual

Don't Warn

☒

Warn

No update

Don't Warn

☒

Warn

Access Control

Biometric

Don't Warn

☒

Warn

Multi-Factor Authentication

Don't Warn

☐

Warn

Multiple user accounts are allowed

Don't Warn

☒

Warn

No control

Don't Warn

☒

Warn

Password - Factory Default - Not User Changeable

Don't Warn

☒

Warn

Password - Factory Default - User Changeable

Don't Warn

☒

Warn

Password - User Generated

Don't Warn

☒

Warn

Single account

Don't Warn

☒

Warn

Device Comparison

View priority attributes only

☐

View all

Erlo Pro 3 Security Camera System	Goggle Nest Cam IQ Indoor
SECURITY UPDATES Manual	SECURITY UPDATES Automatic
ACCESS CONTROL Single account	ACCESS CONTROL Password - Factory Default - User Changeable

Visual

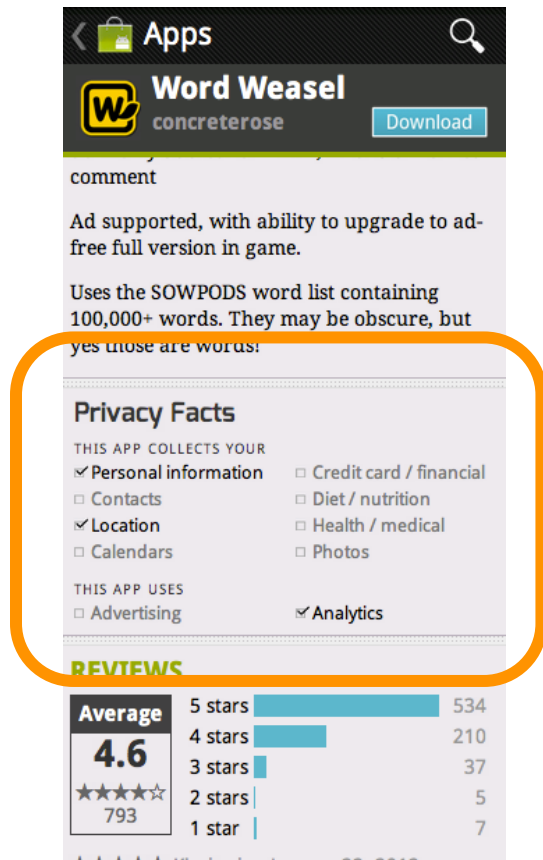
Audio

Motion

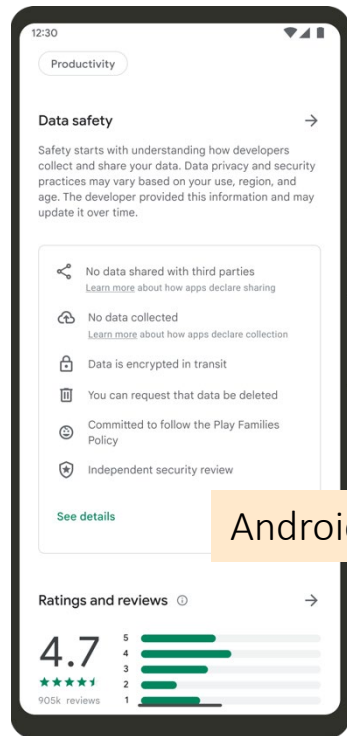
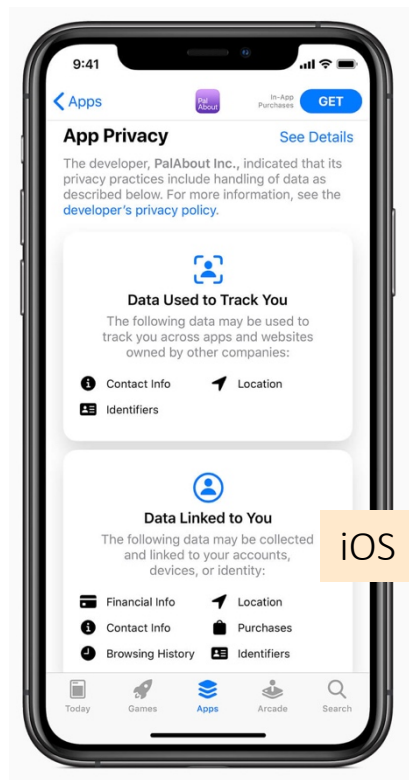
PURPOSE Providing and improving device functions	PURPOSE Providing and improving device functions
DATA STORED ON THE DEVICE Identifiable	DATA STORED ON THE DEVICE De-identified
DATA STORED IN THE CLOUD Identifiable	DATA STORED IN THE CLOUD De-identified
DATA SHARED WITH Third parties	DATA SHARED WITH Not shared
DATA SOLD TO Third parties	DATA SOLD TO Not sold

Android Privacy Facts prototype also showed influence of salient privacy info

- Task: select apps for friend with new smartphone
 - Choose from 2 similar apps w/ different permission requests
- Participants who saw Privacy Facts more likely to select apps with fewer permissions
 - Brand and rating reduce effect



Privacy nutrition labels in major app stores!



- iOS privacy labels since December 2020; Google privacy labels expected in April 2022
- Studies suggest iOS labels are confusing for developers and users
- Confusing definitions, a lot of information, and not salient to users
- With some improvements plus tools for developers and end users, could be quite useful

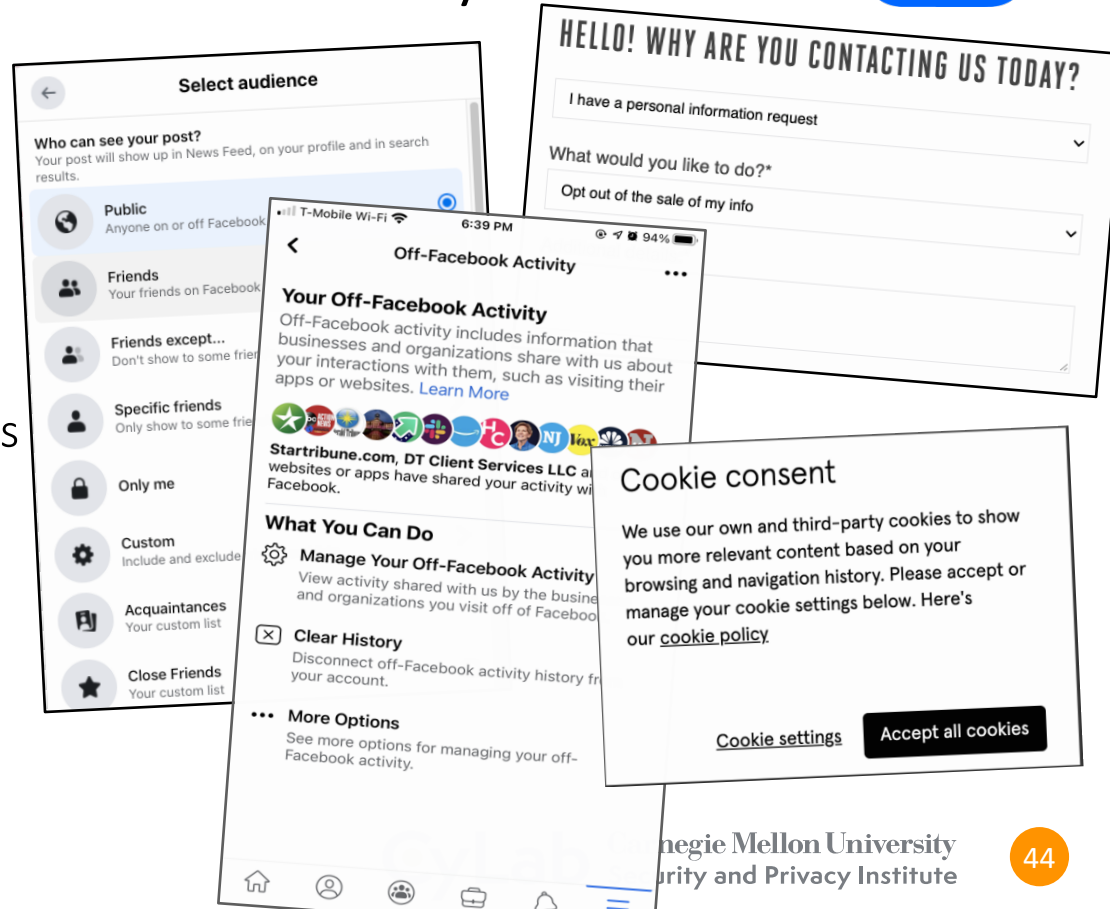


Privacy choice interfaces

Privacy choice interfaces are everywhere



- Cookie banners
- Audience controls on social media
- App permissions interfaces
- Third-party advertising controls
- Marketing opt-outs
- CCPA do not sell my personal information interfaces
- GDPR privacy rights interfaces

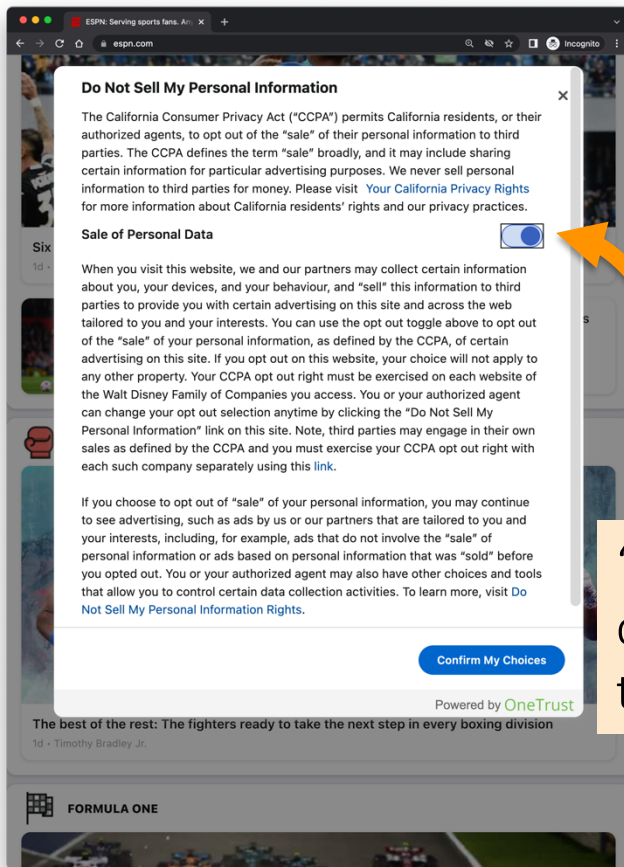


What makes a privacy choice interface useable?

- Addresses user needs
- Requires minimal user effort
- Makes users aware of what choices exist and where to find them
- Conveys choices and their implications so users understand them easily (comprehension)
- Users are are satisfied with interface and choice options, trust their choices will be honored (sentiment)
- Allows users to change their decision due to errors or changing their mind (decision reversal)
- Doesn't nudge users towards less privacy-protective options

Many privacy choices are difficult to find and use!

CCPA opt-out interfaces are not standardized

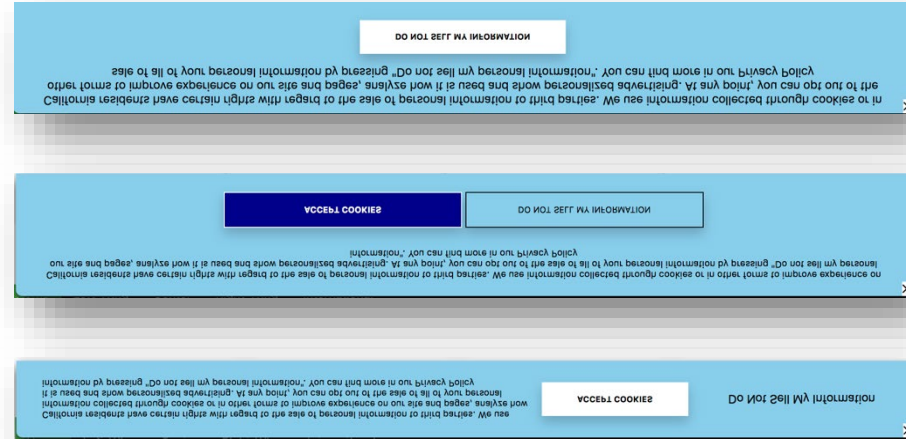


- Many have links buried at the very bottom of a long website
- Once you find the link the interfaces vary considerably
- Even when they use standard platforms they can be confusing

“Sale of Personal Data” is not a question or a statement: What does the state of the blue toggle indicate?

Opt-out interface details impact opt-out rates

- Eleanor Birrell and her students at Pomona College have tested several CCPA opt-out user interface variations
- A simple one-click “Do Not Sell My Information” button results in much higher opt-out rates than fillable forms, multiple buttons (Accept Cookies + Do Not Sell), or inline links

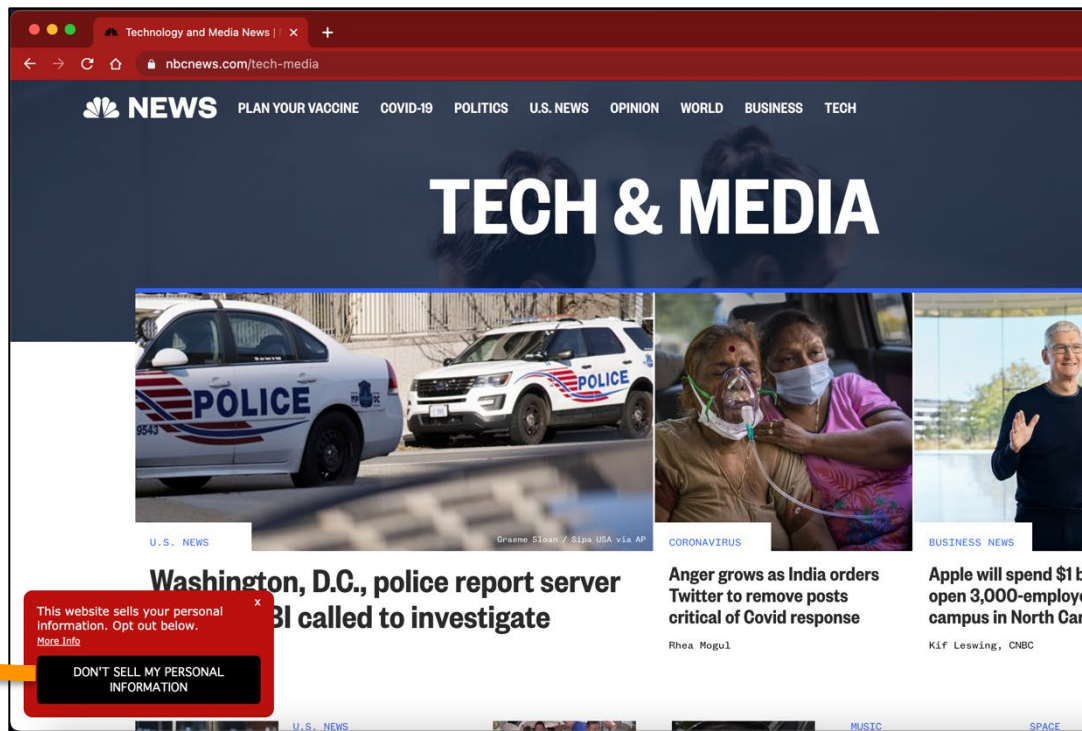


CCPA Opt-out Assistant

This website sells your personal information. Opt out below.

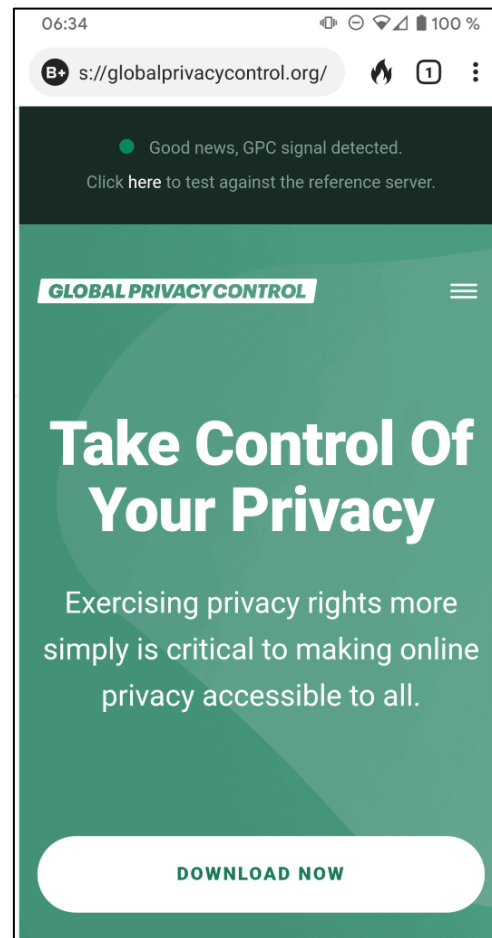
[More Info](#)

DON'T SELL MY PERSONAL INFORMATION



Global Privacy Control

- Let your browser be your privacy user agent
- With Global Privacy Control users can set their browsers to opt-out of having their information sold at all compatible websites
- But status indicator is needed so users know whether GPC has successfully opted them out



Amazon.com: Online Shopping

amazon.com

Apps Karpthy CS231n Convoluti... New Karpthy Google CMU College

amazon

Try Prime

All

Hello Select your address

Help Test's Amazon.com Browsing History Prime Video Best Sellers

Five ideas to maximize your small space

home

Hi, Test

Recommendations for you

Your Orders

Electronics

Gifts

Fashion

Find your perfect-fit shoes

Try Prime Wardrobe

Shop Bargain Finds

Ad feedback

TAKE CONTROL OF YOUR PRIVACY!
Extracted from amazon.com's privacy policy on Aug 5, 2019.

- OPT-OUT OF AD TRACKING** from amazon.com
Last visited on Jan 28, 2020. [Tell us what you did.](#)
- LIMIT MARKETING EMAILS** from amazon.com
Last visited on Jan 28, 2020. [Tell us what you did.](#)
- OPT-OUT OF SHARING** from amazon.com
- OTHER WEBSITES' PRIVACY CHOICES**
See more choices on 2 more recently visited sites

OPT-OUT EASY Powered by **USABLE PRIVACY.ORG**
the usable privacy policy project

Listen anytime, anywhere on Audible.

Learn more

Opt-Out Easy browser plugin makes it **easy for users to find opt-outs** on websites, but opting out still requires more effort

Download from **optouteasy.isr.cmu.edu**

Common usability problems with cookie banners

- Nudge users to accept all cookies by presenting that option as a big button
- Require extra steps to make other choices – first you have to click through to cookie settings
- It's not even clear what the other choices are without clicking through


Cookie consent

We use our own and third-party cookies to show you more relevant content based on your browsing and navigation history. Please accept or manage your cookie settings below. Here's our [cookie policy](#).

[Cookie settings](#)

Accept all cookies

Default is least privacy protective option



Your Choices Regarding Cookies on this Site

Please choose whether this site may use Functional and/or Advertising cookies, as described below:

REQUIRED COOKIES

These cookies are required to enable core site functionality.

FUNCTIONAL COOKIES

These cookies allow us to analyze site usage so we can measure and improve performance.

☒

ADVERTISING COOKIES

These cookies are used by advertising companies to serve ads that are relevant to your interests.

Functionality Allowed


- Provide secure log-in
- Remember how far you are through an order
- Remember your log-in details
- Remember what is in your shopping cart
- Make sure the website looks consistent
- Allow you to share pages with social networks
- Allow you to post comments
- Serve ads relevant to your interests

This page transmits information using HTTPS protocol. Some vendors cannot support HTTPS opt-out requests. TrustArc will submit your preferences through HTTP in a pop-up window.

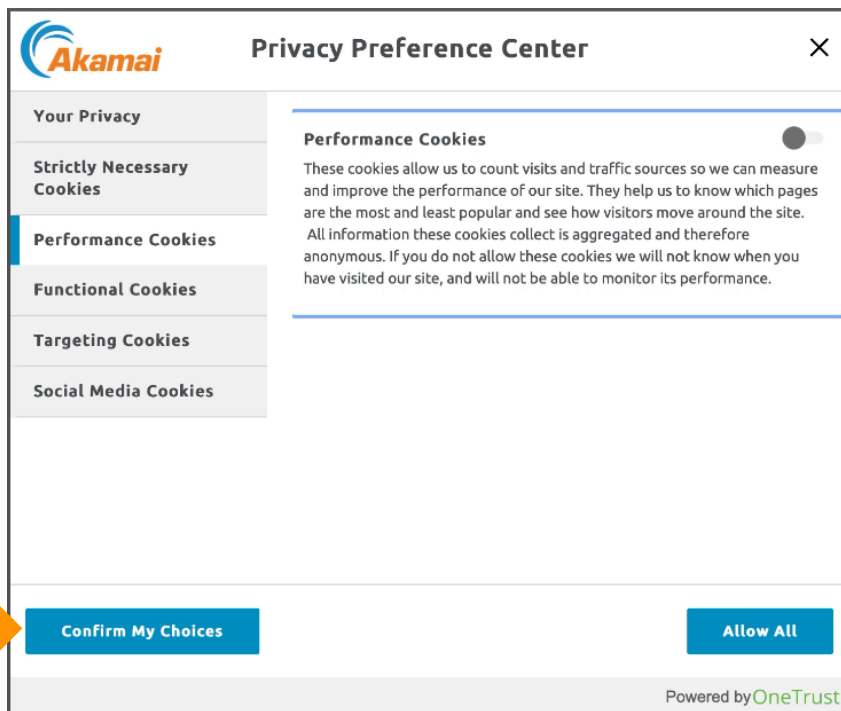
CANCEL

SUBMIT PREFERENCES

ADVANCED SETTINGS

Privacy Policy | Powered by:  TRUSTe

Confusing buttons, requires checking multiple tabs to know what you are confirming



The screenshot shows the Akamai Privacy Preference Center interface. On the left is a vertical sidebar with tabs: "Your Privacy", "Strictly Necessary Cookies", "Performance Cookies" (highlighted with a blue bar), "Functional Cookies", "Targeting Cookies", and "Social Media Cookies". The main content area is titled "Performance Cookies" and contains a toggle switch (currently off) and explanatory text about how these cookies are used for site performance. At the bottom of the interface are two prominent blue buttons: "Confirm My Choices" and "Allow All". A large orange arrow points from the left towards the "Confirm My Choices" button, highlighting the potential confusion between the two options.

No choices

This site uses cookies



By proceeding, you are agreeing to our [Privacy Policy](#), including the use of cookies and other tracking technologies.

Confirmshaming

You don't want to miss out on the
highest quality organic experience!
Why are you worried?

We want to give you the very best service during your search for the highest quality foods.

By clicking “Accept All Cookies”, you agree to the storing of cookies on your device to enhance site navigation, analyse site usage, and assist in our marketing efforts.

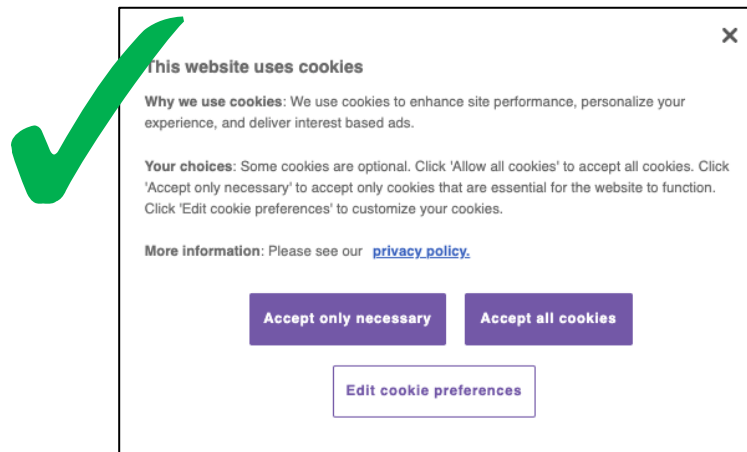
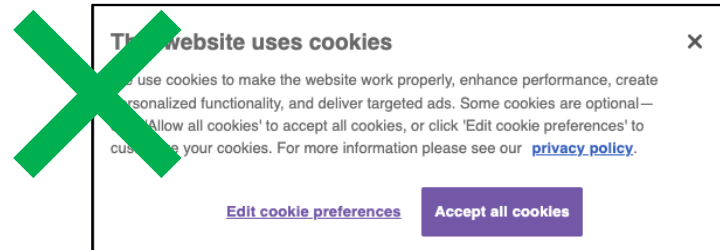
Don't worry, all of our cookies are made from the best quality organic ingredients!

[Cookies Settings](#)

Accept All Cookies

CMPs standardize cookie banners

- Cookie banners all look generally similar since they are created using a small number of Consent Management Platforms (CMPs)
- But most CMPs provide developers with MANY options
- How can we nudge developers to choose options that result in more usable cookie consent banners?






Hana Habib, Megan Li, Ellie Young, Lorrie Faith Cranor

Paper to be presented at CHI 2022

“Okay, whatever”: An Evaluation of Cookie Consent Interfaces



Evaluating the impact of design parameters on the usability of cookie consent interfaces

- Inspection evaluation
 - Reviewed ~200 cookie consent banners from 5 CMPs
 - Identified key design parameters
- User study
 - Tested 12 cookie consent design variants with users, evaluating 6 usability factors

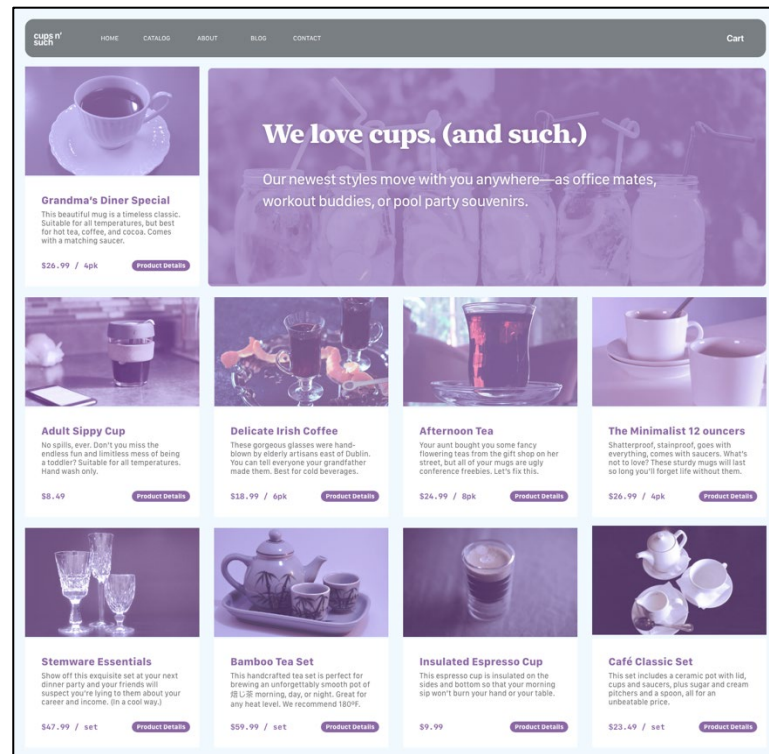
Inspection evaluation procedure

1. Compiled a diverse set of 810 websites with consent interfaces implemented through 5 CMPs
 - OneTrust, Quantcast, CookieBot, TrustArc, CrownPeak
2. Identified 5 dark pattern heuristics based on prior work
 - Unequal paths, “bad” defaults, confusing buttons, no choices, confirmshaming
3. Manually inspected consent interfaces on 191 websites using a standardized procedure to evaluate against these heuristics and note other usability barriers

88% of consent interfaces we reviewed exhibited dark patterns!

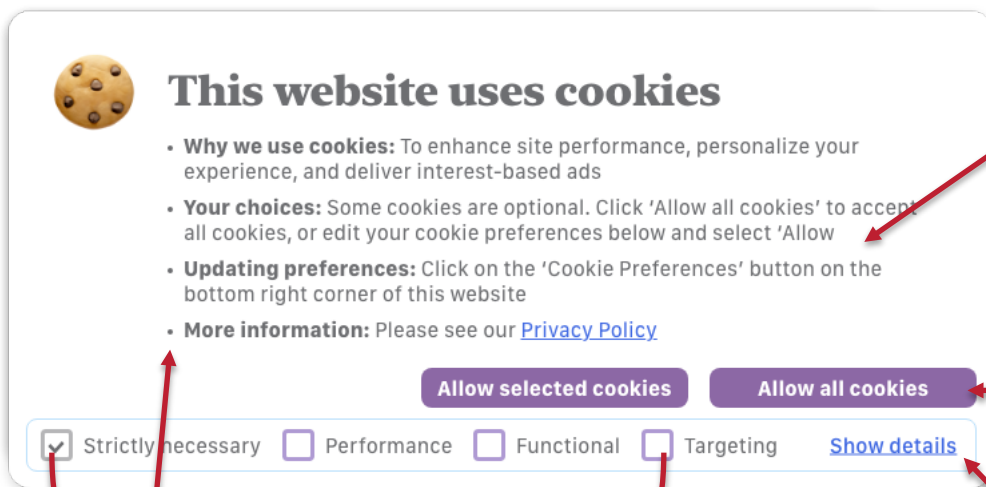
Tested 12 variants with crowd workers on Prolific

- Participants assigned website shopping task
 - Select item and put it in your shopping cart
- Exposed to 1 of 12 consent interface variants
- Asked to fill out survey
- Asked to review consent interface again and answer more survey questions
- Median completion time ~16 min, compensation \$5.00
- Analyzed interactions and surveys from 1,109 participants (mostly young women)
 - Where they clicked, consent choices made, time spent, etc.



“Best-practices” variant

(Best of what we tested in this study, others could be better)



This website uses cookies

- **Why we use cookies:** To enhance site performance, personalize your experience, and deliver interest-based ads
- **Your choices:** Some cookies are optional. Click 'Allow all cookies' to accept all cookies, or edit your cookie preferences below and select 'Allow'
- **Updating preferences:** Click on the 'Cookie Preferences' button on the bottom right corner of this website
- **More information:** Please see our [Privacy Policy](#)

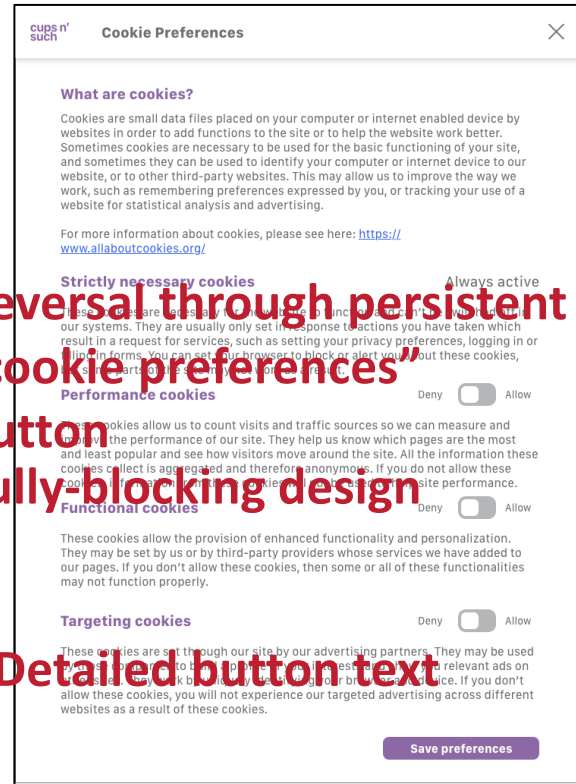
☒ Strictly necessary ☐ Performance ☐ Functional ☐ Targeting [Show details](#)

[Allow selected cookies](#) [Allow all cookies](#)

Bulleted text
In-line options available

Reversal through persistent
“cookie preferences”
button
Fully-blocking design

Detailed button text



Cookie Preferences

What are cookies?

Cookies are small data files placed on your computer or internet enabled device by websites in order to add functions to the site or to help the website work better. Sometimes cookies are necessary to be used for the basic functioning of your site, and sometimes they can be used to identify your computer or internet device to our website, or to other third-party websites. This may allow us to improve the way we work, such as remembering preferences expressed by you, or tracking your use of a website for statistical analysis and advertising.

For more information about cookies, please see here: <https://www.allaboutcookies.org/>

Strictly necessary cookies Always active

These cookies are necessary for the website to function and they cannot be turned off in our systems. They are usually only set in response to actions you have taken which result in a request for services, such as setting your privacy preferences, logging in or using certain parts of the website.

Performance cookies ☐ Deny ☒ Allow

These cookies allow us to count visits and traffic sources so we can measure and improve the performance of our site. They help us know which pages are the most and least popular and see how visitors move around the site. All the information these cookies collect is aggregated and therefore anonymous. If you do not allow these cookies, we will not be able to improve our website's performance.

Functional cookies ☐ Deny ☒ Allow

These cookies allow the provision of enhanced functionality and personalization. They may be set by us or by third-party providers whose services we have added to our pages. If you don't allow these cookies, then some or all of these functionalities may not function properly.

Targeting cookies ☐ Deny ☒ Allow

These cookies are set through our site by our advertising partners. They may be used to enhance your navigation of our site, to enhance the use of our services, to enhance the relevance of our ads on our site and to enhance your browsing experience. If you don't allow these cookies, you will not experience our targeted advertising across different websites as a result of these cookies.

[Save preferences](#)

Single-layer “Cookie
Preferences” interface



This website uses cookies

- **Why we use cookies:** To enhance site performance, personalize your experience, and deliver interest-based ads
- **Your choices:** Some cookies are optional. Click 'Allow all cookies' to accept all cookies, or edit your cookie preferences below and select 'Allow'
- **Updating preferences:** Click on the 'Cookie Preferences' button on the bottom right corner of this website
- **More information:** Please see our [Privacy Policy](#)

[Allow selected cookies](#)[Allow all cookies](#)

Strictly necessary



Performance



Functional



Targeting

[Show details](#)[Cookie preferences](#)

ABOUT US

The Earth... Is A Cup.
(Holds Things)
— ancient proverb

We sell things that hold things.
Especially liquid things.
Mostly cups but also other things
and such.

CUSTOMER CARE

Contact Us
Ordering & Payment
Shipping
Returns
FAQ

INFORMATION

Mission
Careers
Terms & Conditions
Privacy Policy
Cookie Policy



“Worst-practices” variant

Banner design at bottom of page
Loss aversion text

Paragraph text

Decision reversal not mentioned

Embedded link to multi-layer interface

Generic button text

Cookie Preferences

About cookies

Strictly necessary cookies

Performance cookies

Functional cookies

Targeting cookies

What are cookies?

Cookies are small data files placed on your computer or internet enabled device by websites in order to add functions to the site or to help the website work better. Sometimes cookies are necessary to be used for the basic functioning of your site, and sometimes they can be used to identify your computer or device. We and other third-party websites may use cookies to improve the way we work, such as remembering preferences expressed by you, or tracking your use of a website for statistical analysis and marketing purposes.

For more information about cookies, please see here: <https://www.allaboutcookies.org/>

Save preferences

ALL OF THE CUPS.

Our biggest restock ever.
Use code SUMMER21 for 21% off all cold cups.

[SHOP COLLECTIONS](#)

This website uses cookies

We use cookies to make the website work properly, enhance performance, create personalized functionality, and deliver targeted ads. Note that if you do not accept optional cookies, your experience may be affected. By continuing to use this site you agree to the use of cookies as shown in your [cookie preferences](#). You may update your cookie preferences at any time For more information, please see our [Privacy Policy](#).

[Okay](#)

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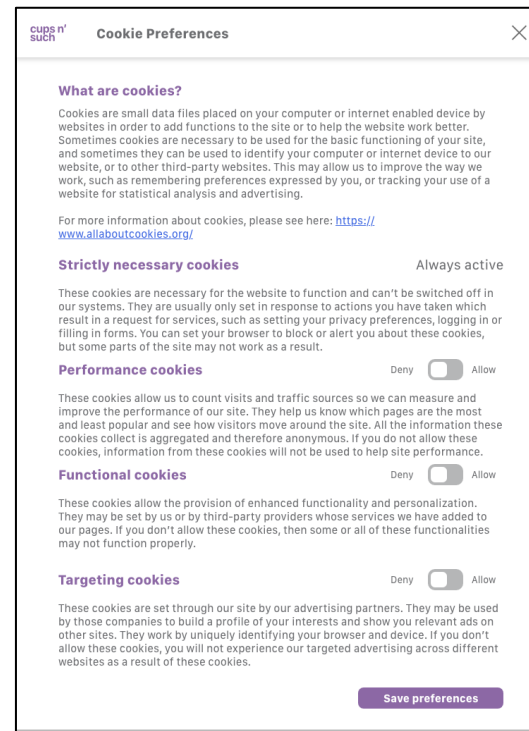
Mission
Careers
Terms & Conditions
Privacy Policy
Cookie Policy



“Corner button” variant

Cookie preferences

Single-layer “Cookie Preferences” interface



The screenshot shows a 'Cookie Preferences' dialog box with a close button (X) in the top right corner. The dialog is titled 'Cookie Preferences' and has a logo 'cups n' such' in the top left. It contains the following sections:

- What are cookies?**

Cookies are small data files placed on your computer or internet enabled device by websites in order to add functions to the site or to help the website work better. Sometimes cookies are necessary to be used for the basic functioning of your site, and sometimes they can be used to identify your computer or internet device to our website, or to other third-party websites. This may allow us to improve the way we work, such as remembering preferences expressed by you, or tracking your use of a website for statistical analysis and advertising.

For more information about cookies, please see here: <https://www.allaboutcookies.org/>
- Strictly necessary cookies** Always active

These cookies are necessary for the website to function and can't be switched off in our systems. They are usually only set in response to actions you have taken which result in a request for services, such as setting your privacy preferences, logging in or filling in forms. You can set your browser to block or alert you about these cookies, but some parts of the site may not work as a result.
- Performance cookies** Deny ☐ Allow ☒

These cookies allow us to count visits and traffic sources so we can measure and improve the performance of our site. They help us know which pages are the most and least popular and see how visitors move around the site. All the information these cookies collect is aggregated and therefore anonymous. If you do not allow these cookies, information from these cookies will not be used to help site performance.
- Functional cookies** Deny ☐ Allow ☒

These cookies allow the provision of enhanced functionality and personalization. They may be set by us or by third-party providers whose services we have added to our pages. If you don't allow these cookies, then some or all of these functionalities may not function properly.
- Targeting cookies** Deny ☐ Allow ☒

These cookies are set through our site by our advertising partners. They may be used by those companies to build a profile of your interests and show you relevant ads on other sites. They work by uniquely identifying your browser and device. If you don't allow these cookies, you will not experience our targeted advertising across different websites as a result of these cookies.

A 'Save preferences' button is located at the bottom right of the dialog.

ALL OF THE CUPS.

Our biggest restock ever.
Use code SUMMER21 for 21% off all cold cups.

[SHOP COLLECTIONS](#)[Cookie preferences](#)

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CUSTOMER CARE

[Contact Us](#)
[Ordering & Payment](#)
[Shipping](#)
[Returns](#)
[FAQ](#)

INFORMATION

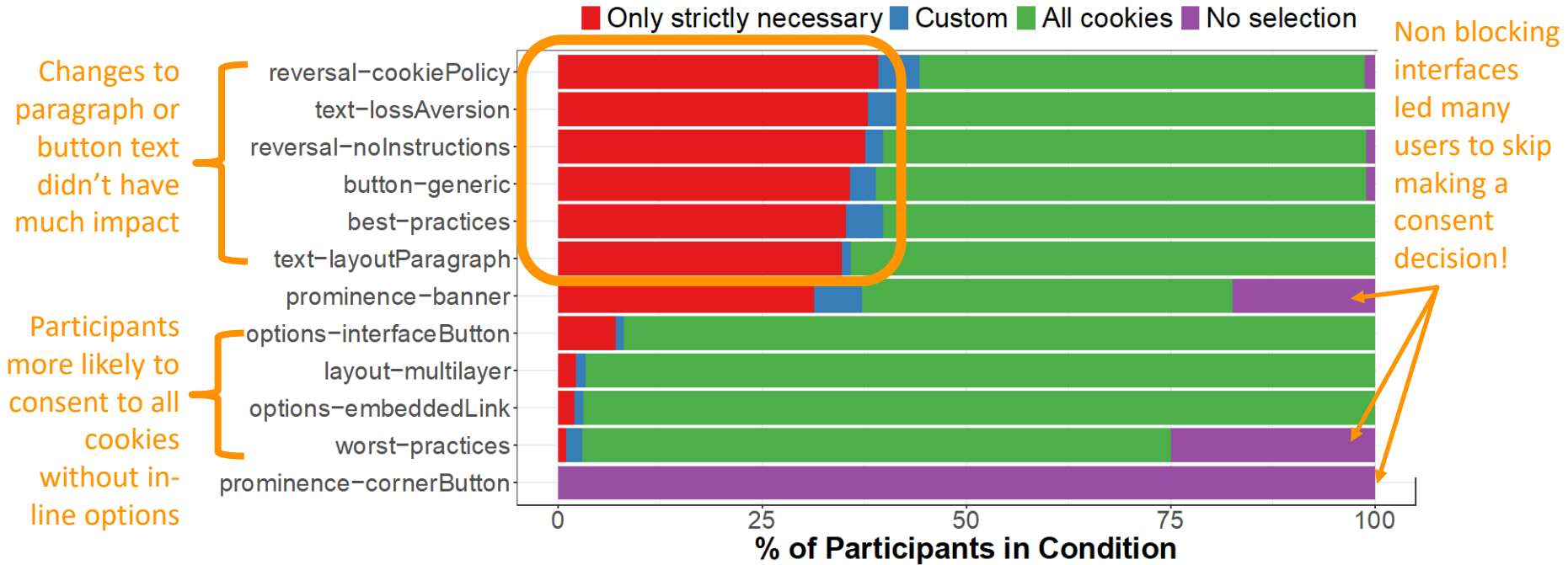
[Mission](#)
[Careers](#)
[Terms & Conditions](#)
[Privacy Policy](#)
[Cookie Policy](#)



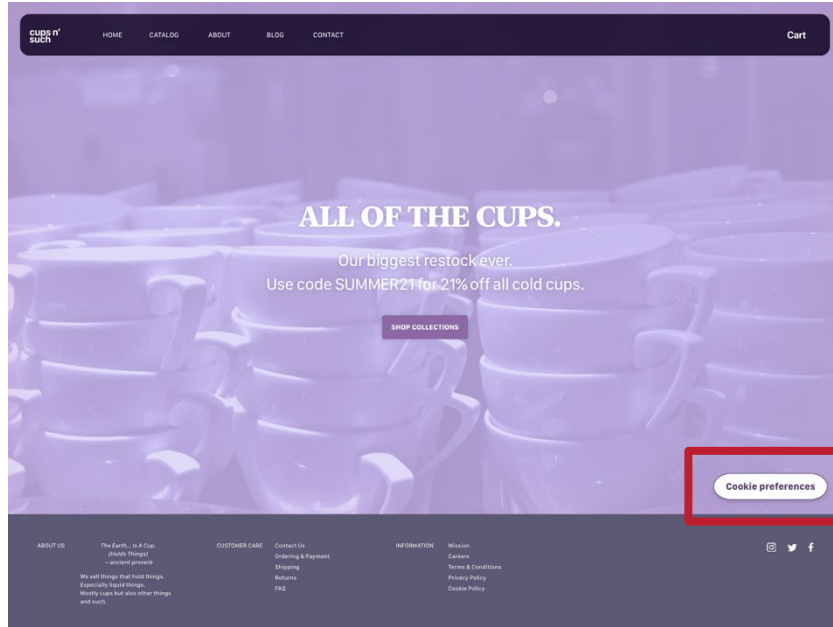
Other variants similar to best-practices w/ one change

- **Prominence-banner** – non-blocking banner at bottom of screen
- **Options-embeddedLink** – no in-line options, link to preference interface
- **Options-interfaceButton** – no in-line options, button to preference interface
- **Text-lossAversion** – add loss-aversion text
- **Text-layoutParagraph** – paragraph of text instead of bullets
- **Button-generic** – buttons say “submit” and “ok”
- **Layout-multilayer** – preference interface uses multiple tabs
- **Reversal-noInstructions** – removed instructions for decision reversal but kept button
- **Reversal-cookiePolicy** – removed cookie button (but reversal could be done from cookie policy)

Some variables impacted consent decisions, others not so much



Absence of fully-blocking or banner notice led to poor awareness



- No participants interacted with the Cookie Preferences button
- Less awareness of a privacy decision and available cookie options compared to *best-practices*

Absence of in-line options led to lower investment in decision-making

This website uses cookies

- **Why we use cookies:** To make the website work properly, enhance performance, create personalized functionality, and deliver targeted ads
- **Your choices:** Some cookies are optional—click 'Allow all cookies' to accept all cookies, or edit your [cookie preferences](#)
- **Updating preferences:** Click on the 'Cookie Preferences' button on the bottom right corner of this website
- **More information:** Please see our [Privacy Policy](#)

[Allow all cookies](#)

This website uses cookies

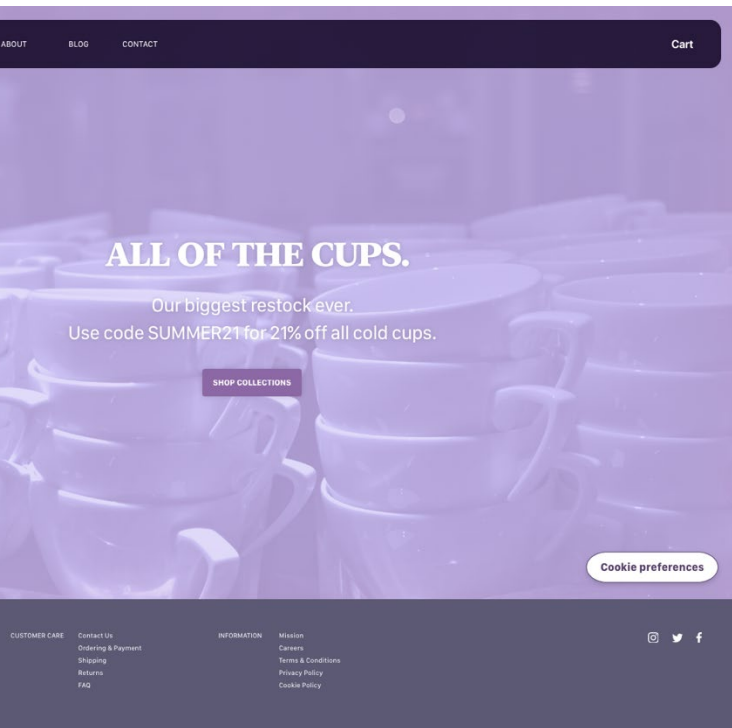
- **Why we use cookies:** To enhance site performance, personalize your experience, and deliver interest-based ads
- **Your choices:** Some cookies are optional. Click 'Allow all cookies' to accept all cookies, or edit your cookie preferences below and select 'Allow'
- **Updating preferences:** Click on the 'Cookie Preferences' button on the bottom right corner of this website
- **More information:** Please see our [Privacy Policy](#)

[Allow selected cookies](#) [Allow all cookies](#)

☒ Strictly necessary ☐ Performance ☐ Functional ☐ Targeting [Show details](#)

- Few clicked through to “cookie preferences”
- Without in-line options, more likely to say they chose “easiest option” and made choice “not at all carefully”

Persistent “Cookie Preferences” button enabled decision reversal



- **82%** of *best-practices* participants said they would use the button to change their decision
 - Only **45%** of participants who saw a link to cookie policy but no button said they would visit cookie policy to change their decision
- It didn't matter whether we included reversal instructions in banner

Standard cookie categories cause confusion

- **Performance cookies**
 - Cookies that help measure and improve website features
 - Only 48% of participants selected correct definition
- **Functional cookies**
 - Cookies that help personalize the website's services for you
 - Only 16% of participants selected correct definition
- Can we come up with more intuitive terminology?

In this context,
these terms
don't mean what
people think
they mean!


Categories used by OneTrust and other CMPs are from ICC UK Cookie Guide

https://www.cookielaw.org/wp-content/uploads/2019/12/icc_uk_cookiesguide_revnov.pdf

The burden of user consent

- Considerable cost to reading consent interfaces, comprehending available options, and making decisions at large numbers of websites
- Need to reduce user burden
 - Standardized interfaces
 - Search and comparison tools
 - User agents – including browser-based consent management

Takeaways

- Alternatives to long privacy notices can help users obtain information they need quickly
- It is difficult to convey privacy concepts with icons, but accompanying words can help
- Reduce user burden with standardized interfaces, search engines, and user agents
- Need to incentivize adoption of privacy options button and other standardized interfaces 
- Interface design has a large impact on the choices people make
 - “Accept only necessary cookies” should be just as easy as “accept all cookies”
- User testing is essential for evaluating usability – consider user needs, sentiment, findability, effort to use, comprehension, decision reversal, and nudges