

# Usability and Enforceability of Global Privacy Control

Sebastian Zimmeck, Oliver Wang, Kuba Alicki, Jocelyn Wang and Sophie Eng

*Wesleyan University*

23rd Privacy Enhancing Technologies Symposium

*Université de Lausanne and École Polytechnique Fédérale de Lausanne*

July 13, 2023



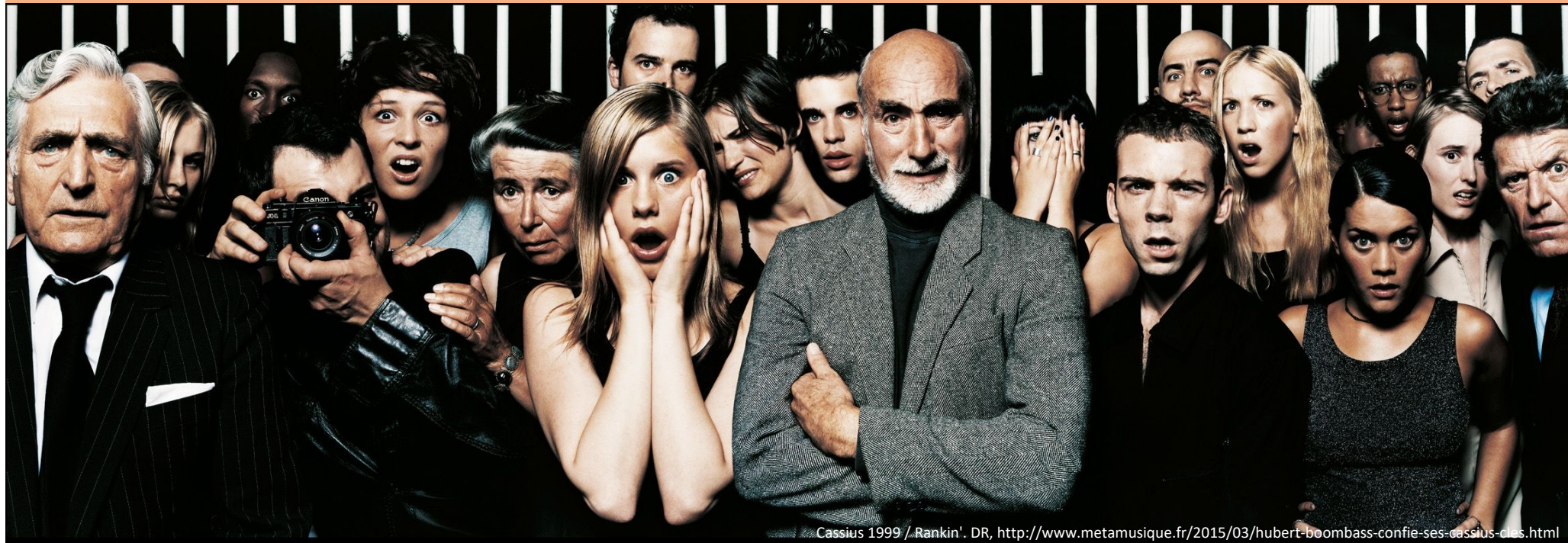
**There are two ways to  
make money online:**

**Collect from people:**

- 1. money**
- 2. data**



We have a problem with ...



Cassius 1999 / Rankin'. DR, <http://www.metamusique.fr/2015/03/hubert-boombass-confie-ses-cassius-dles.html>

... collecting data!

An illustration of an iceberg floating in the ocean. The tip of the iceberg, which is yellow and jagged, is visible above the water line. The vast majority of the iceberg, which is light blue with dark blue cracks, is submerged in the deep blue water. The sky is a pale blue with a small white cloud on the left. This visual metaphor represents the concept of transparency, where only a small portion of the total data or information is visible to the public.

# Transparency

People do not know  
about data collection  
and sharing practices




# Opting Out

Even if people know about ad tracking, it is difficult to do something about it

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#### We collect your personal information

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#### We use your data for:

- Store and/or access information on a device
- Strictly Necessary Cookies
- Functional
- Analytics
- Marketing
- Personalization
- Social Media

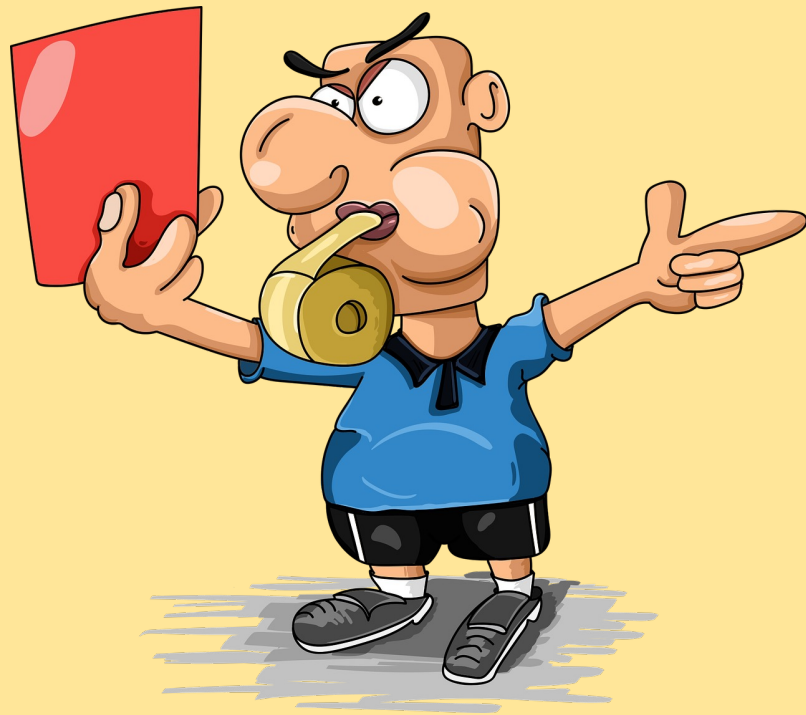
[Our Partners](#) [REJECT ALL](#) [Manage Settings](#) [ACCEPT ALL](#)

## Enforceability

While increasingly laws provide people rights to opt out, how can those rights be broadly enforced?



The Current Online Ad Ecosystem is not Good  
for Privacy on the Web



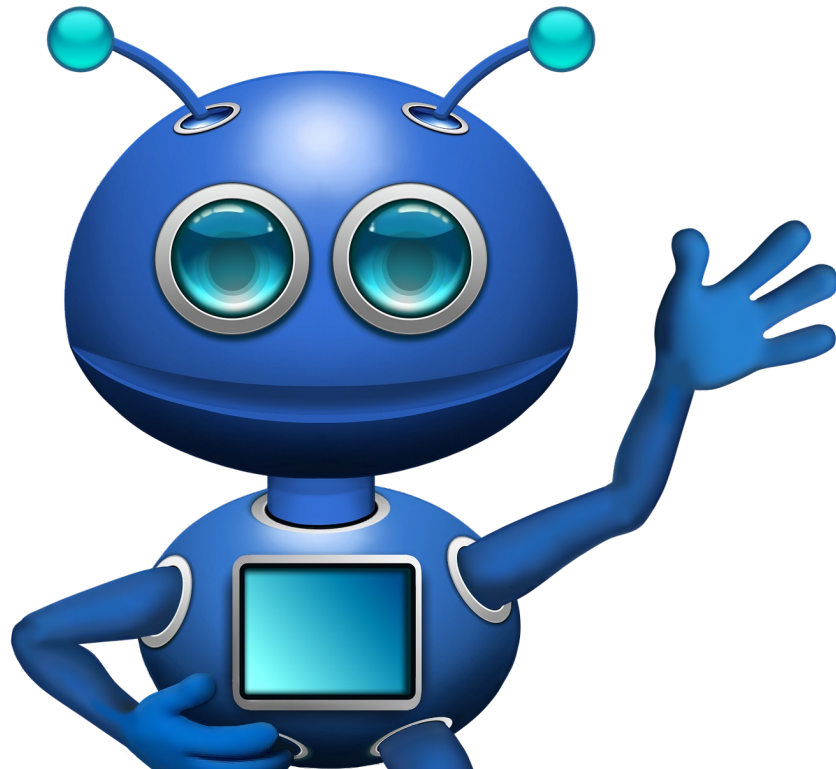
# Take Control Of Your Privacy

Exercising privacy rights more simply is critical to making online privacy accessible to all.



## Global Privacy Control (GPC)

<https://globalprivacycontrol.org/>

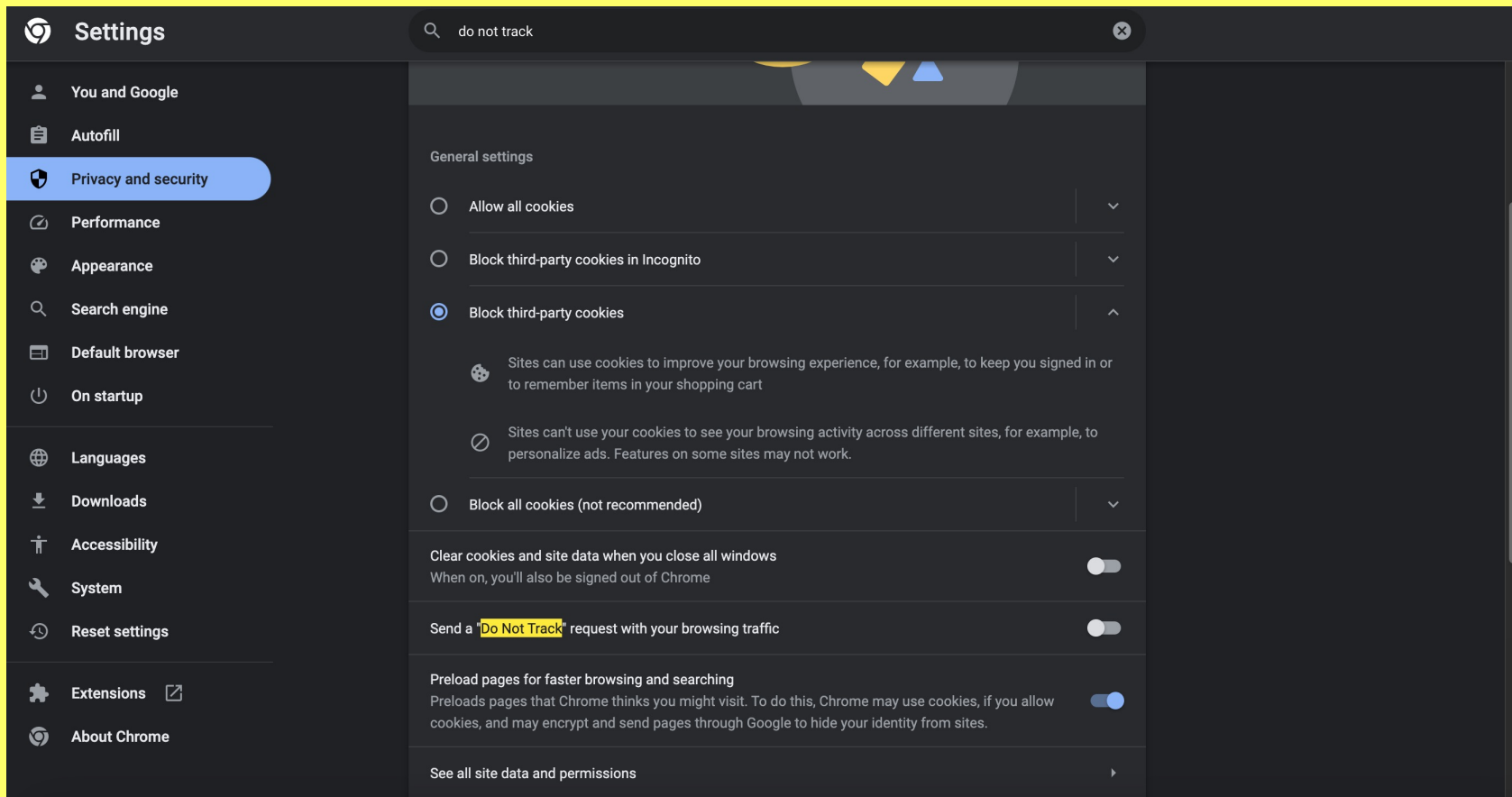


GPC is like a Little  
Robot Pushing the  
Opt out Button  
When You Visit a  
Site

Opt Out  
- For All Sites  
- For Some Sites



# Wait a minute, don't browsers have "Do Not Track" already?



Google Chrome Version 112.0.5615.137 (Official Build) (x86\_64)

# The California Online Privacy Protection Act (CalOPPA)

22575. (a) An operator of a commercial Web site or online service that collects personally identifiable information through the Internet about individual consumers residing in California who use or visit its commercial Web site or online service shall conspicuously post its privacy policy on its Web site, or in the case of an operator of an online service, make that policy available in accordance with paragraph (5) of subdivision (b) of Section 22577. An operator shall be in violation of this subdivision only if the operator fails to post its policy within 30 days after being notified of noncompliance.

(b) The privacy policy required by subdivision (a) shall do all of the following:

- (1) Identify the categories of personally identifiable information that the operator collects through the Web site or online service about individual consumers who use or visit its commercial Web site or online service and the categories of third-party persons or entities with whom the operator may share that personally identifiable information.
- (2) If the operator maintains a process for an individual consumer who uses or visits its commercial Web site or online service to review and request changes to any of his or her personally identifiable information that is collected through the Web site or online service, provide a description of that process.
- (3) Describe the process by which the operator notifies consumers who use or visit its commercial Web site or online service of material changes to the operator's privacy policy for that Web site or online service.
- (4) Identify its effective date.
- (5) Disclose how the operator responds to Web browser "do not track" signals or other mechanisms that provide consumers the ability to exercise choice regarding the collection of personally identifiable information about an individual consumer's online activities over time and across third-party Web sites or online services, if the operator engages in that collection.



- California Consumer Privacy Act (CCPA)
- Colorado Privacy Act
- Connecticut Data Privacy Act

...

**NEW!**



**Archive - Attorney General Becerra**

@AGBecerra



**#CCPA** requires businesses to treat a user-enabled global privacy control as a legally valid consumer request to opt out of the sale of their data.

CCPA opened the door to developing a technical standard, like the GPC, which satisfies this legal requirement & protects privacy.

12:56 PM · Jan 28, 2021

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**23** Retweets   **17** Quotes   **43** Likes   **3** Bookmarks

---

<https://twitter.com/AGBecerra/status/1354850758236102656>

# Attorney General Bonta Announces Settlement with Sephora as Part of Ongoing Enforcement of California Consumer Privacy Act

Press Release / Attorney General Bonta Announces Settlement with Sephora as ...



Wednesday, August 24, 2022

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

*Marks strong second year of CCPA enforcement with update on enforcement efforts and new investigative sweep of businesses failing to process opt-out request via a user-enabled global privacy control*

**OAKLAND** – California Attorney General Rob Bonta today announced a settlement with Sephora, Inc. (Sephora), resolving allegations that the company violated the California Consumer Privacy Act (CCPA), California's first-in-the-nation landmark privacy law. After conducting an enforcement sweep of online retailers, the Attorney General alleged that Sephora failed to disclose to consumers that it was selling their personal information, that it failed to process user requests to opt out of sale via user-enabled global privacy controls in violation of the CCPA, and that it did not cure these violations within the 30-day period currently allowed by the CCPA. Today's settlement is part of ongoing efforts by the Attorney General to enforce California's comprehensive consumer privacy law that allows consumers to tell businesses to stop selling their personal information to third parties, including those signaled by the Global Privacy Control (GPC).



# Adoption

## Browsers and Extensions



Firefox Browser



DuckDuckGo.



OptMeowt



## Privacy and Consumer Orgs



## Consent Management Platforms (CMPs)



PRIVACY, SECURITY & GOVERNANCE



wirewheel

## Regulators

California, Colorado, Connecticut, ...

## Publishers, Retailers, Companies



Check if a site supports GPC at <https://gpcsup.com/>

# Standardization at the W3C

The screenshot shows a web browser displaying the GitHub page for the Global Privacy Control (GPC) specification. The browser's address bar shows the URL <https://privacycg.github.io/gpc-spec/>. The page has a dark theme. On the left, there is a 'TABLE OF CONTENTS' sidebar with a scroll bar. The main content area on the right is titled 'Global Privacy Control (GPC)' in large blue font, with a subtitle 'Proposal 20 April 2023'. A 'ReSpec' button is in the top right corner of the main content area. Below the title, there is a section '▼ More details about this document' which includes links for the latest editor's draft, commit history, and a list of editors and former editors. A 'Feedback' section provides links to GitHub pull requests, new issues, and open issues. A copyright notice at the bottom states that the text is available under the Creative Commons Attribution 4.0 International Public License. The 'Abstract' section begins with the text: 'This document defines a signal, transmitted over HTTP and through the DOM, that conveys a person's request to websites and services to not sell or share their personal information with third parties. This standard is'.

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- Abstract**
- Status of This Document**
- 1. Introduction**
- 2. Definitions**
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  - 3.1 Expression Format
  - 3.2 The Sec-GPC Header Field for HTTP Requests
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  - 4.1 GPC Support Representation
- 5. Legal Effects**
  - 5.1 User Interface Language
- 6. Conformance**
- A. Implementation Considerations**
- B. Acknowledgments**
- C. References**
  - C.1 Normative references

## Global Privacy Control (GPC)

Proposal 20 April 2023

▼ More details about this document

**Latest editor's draft:**  
<https://privacycg.github.io/gpc-spec/>

**History:**  
[Commit history](#)

**Editors:**  
[Sebastian Zimmeck](#) ([Wesleyan University](#))  
[Peter Snyder](#) ([Brave Software](#))  
[Justin Brookman](#) ([Consumer Reports](#))  
[Aram Zucker-Scharff](#) ([The Washington Post](#))

**Former editors:**  
[Robin Berjon](#) ([Protocol Labs](#)) (The New York Times until Sep 2022)  
[Ashkan Soltani](#) ([Independent](#))  
[David Harbage](#) ([DuckDuckGo](#))

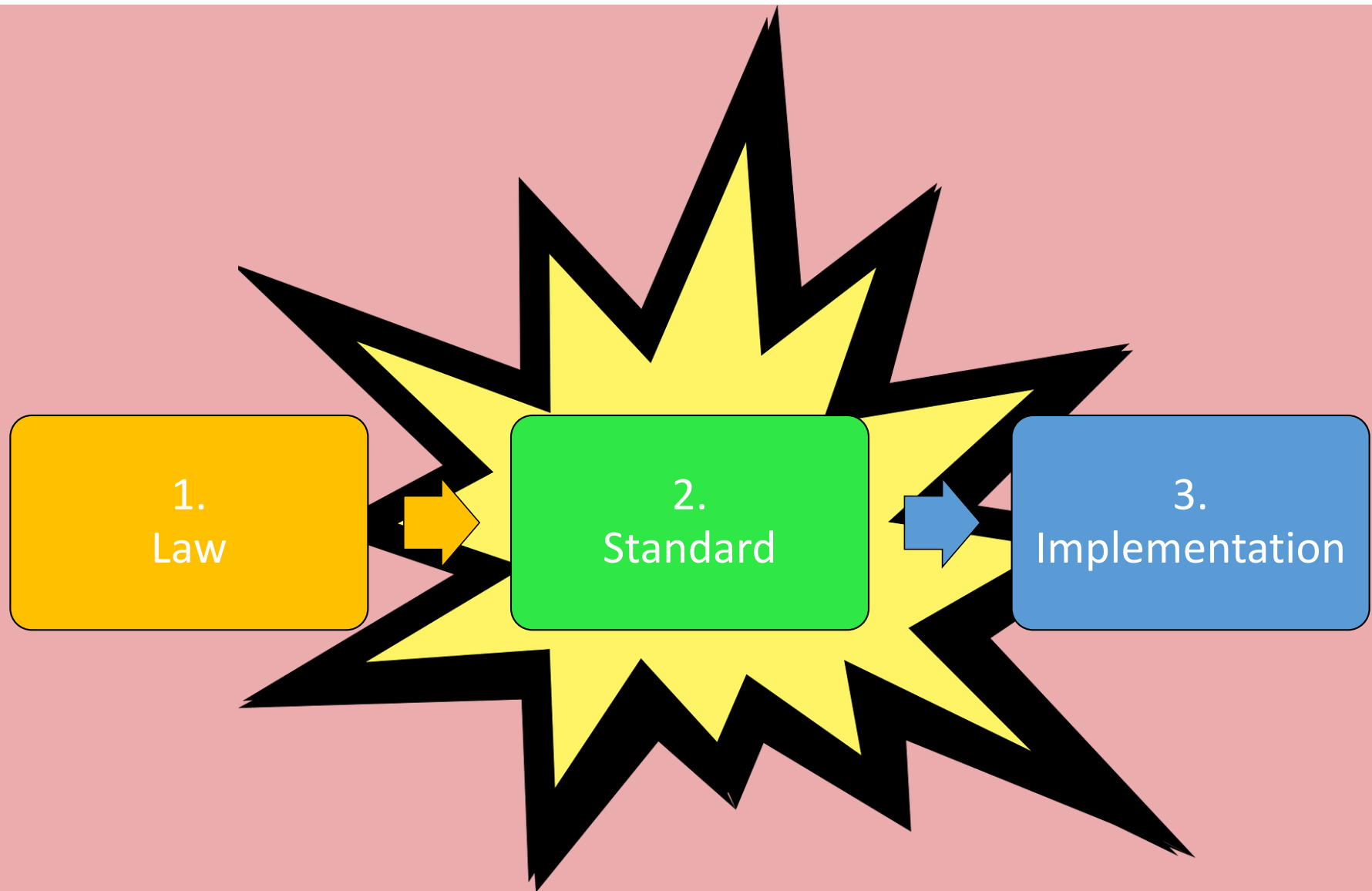
**Feedback:**  
[GitHub privacycg/gpc-spec](#) ([pull requests](#), [new issue](#), [open issues](#))

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### Abstract

This document defines a signal, transmitted over HTTP and through the DOM, that conveys a person's request to websites and services to not sell or share their personal information with third parties. This standard is



# How Does GPC Work?

- HTTP Header
- DOM Property

https://www.washingtonpost.com

The Washington Post Sign in

## Democrats begin process to bypass GOP House leaders and raise debt limit

By John Wagner and Marianna Sotomayor • 21 minutes ago

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- Biden needles House GOP amid concerns about spending cuts affecting veterans

**U.S. national debt**

See how the national debt grew to \$31 trillion

By Jeff Stein

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Network

Search

5000 ms 10000 ms 15000 ms 20000 ms 25000 ms 30000 ms 35000 ms 40000 ms 45000 ms

Name

- washingtonpost.com
- www.washingtonpost.
- main.js
- tetro.min.js
- gpc-dom.js
- gpc.json
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- 6031.a386dc6b46d2..
- 7783.01edc1fabd323.
- 3861.191ad9f989560.
- 8513.44f5f53768d54..

294 requests 3.8 MB tra

Headers

accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,\*/\*;q=0.8

accept-encoding: gzip, deflate, br

accept-language: en-US,en;q=0.9

cookie: wp\_ak\_pct=0|20230317; wp\_ak\_wab=0|0|0|0|0|20230130; rpisb=rEAA2QbG1eF+wAoLe0vAg==; wp\_pwapl\_ar="H4sIAAAAAAAAA/6uuBQBDv6ajAgAAAA=="; wp\_ak\_bt=1|20200518; wp\_ak\_bfd=1|20201222; wp\_ak\_tos=1|20211110; wp\_ak\_sff=1|20220425; wp\_ak\_lr=0|20221020; wp\_ak\_btm=1|20220615; wp\_ak\_co=2|20220505; wp\_ak\_btap=1|20211118; \_ga=GA1.1.678771525.1679498073

dnt: 1

sec-ch-ua: "Chromium";v="112", "Brave";v="112", "Not:A-Brand";v="99"

sec-ch-ua-mobile: ?0

sec-ch-ua-platform: "macOS"

sec-fetch-dest: document

sec-fetch-mode: navigate

sec-fetch-site: none

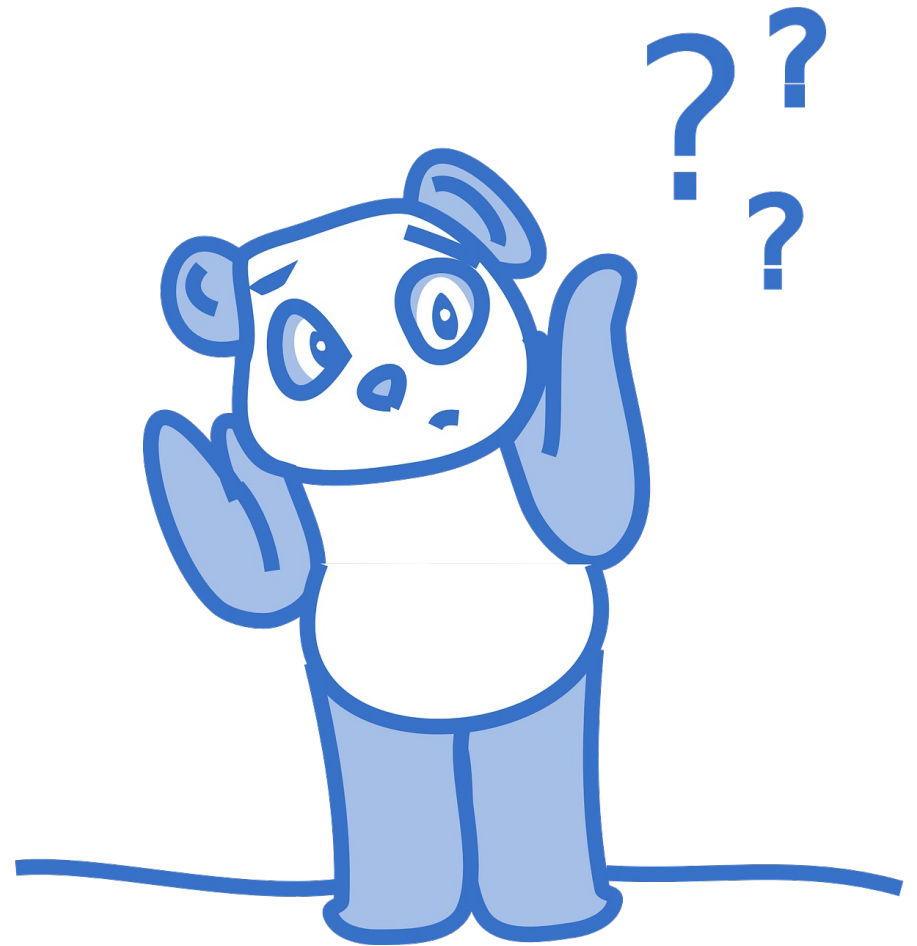
sec-fetch-user: ?1

sec-gpc: 1

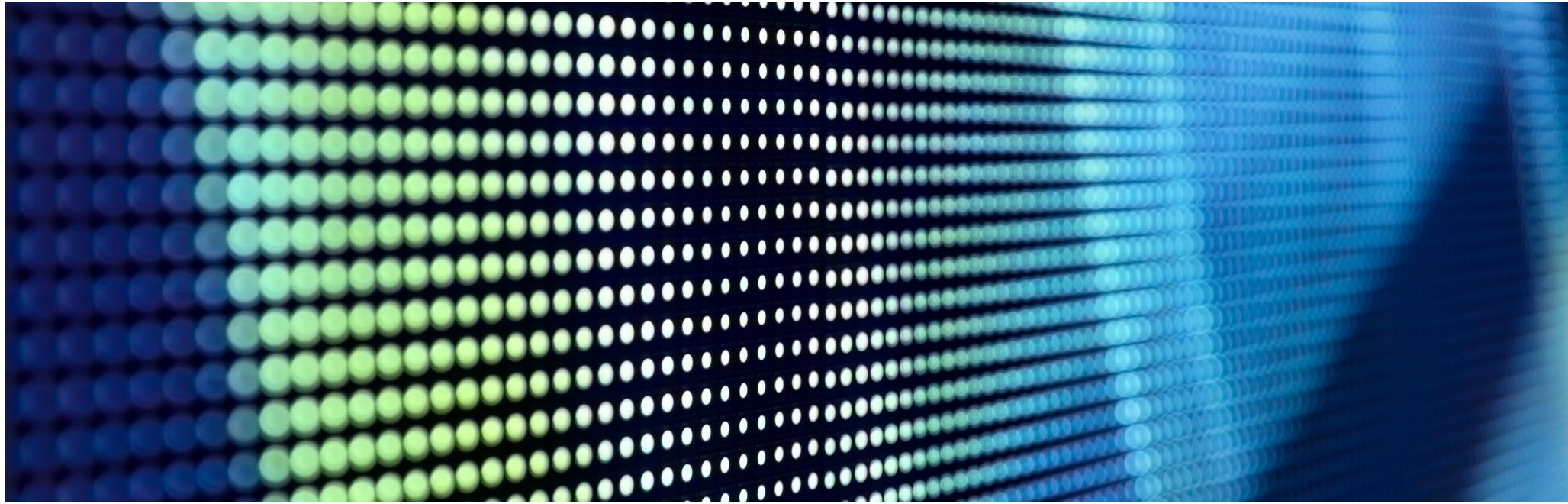
upgrade-insecure-requests: 1

user-agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_15\_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/112.0.0.0 Safari/537.36

Where is the  
Science, though?

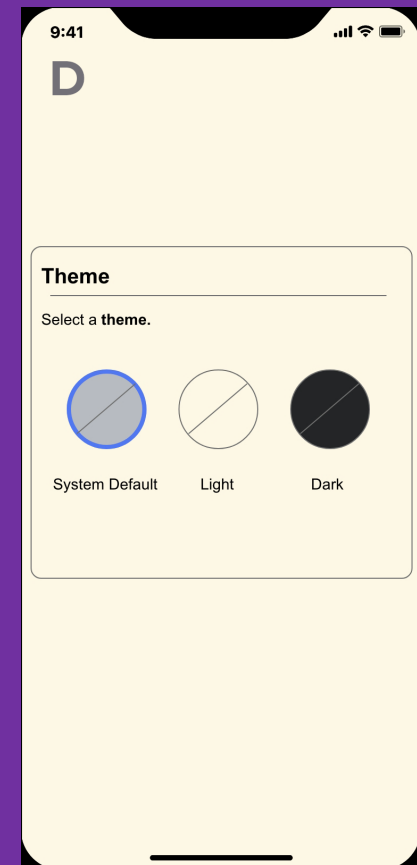
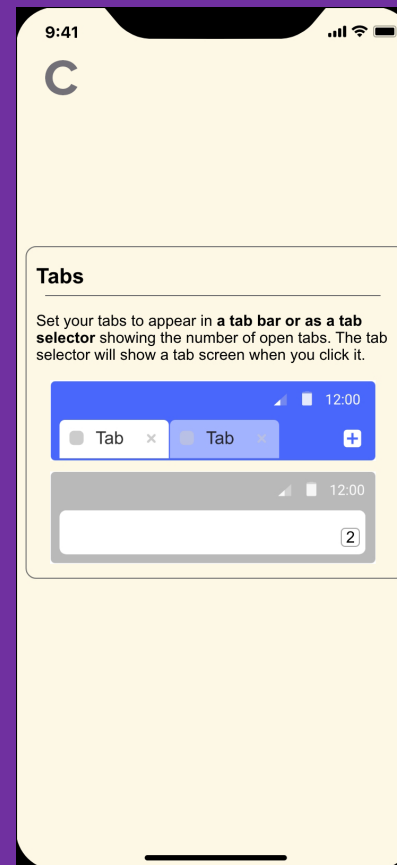
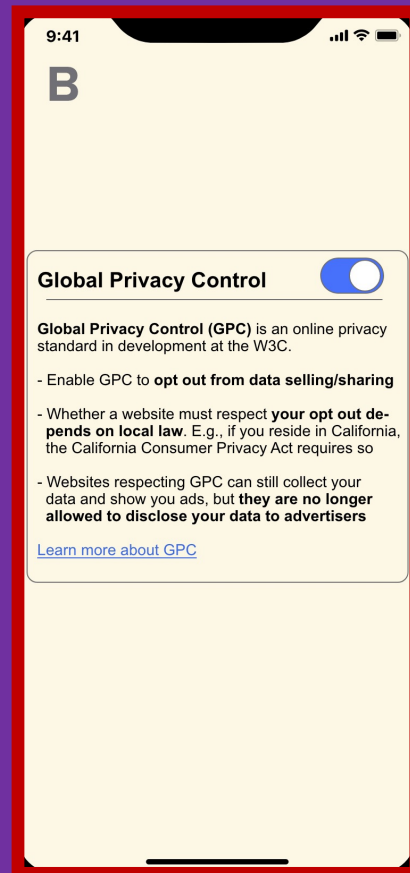
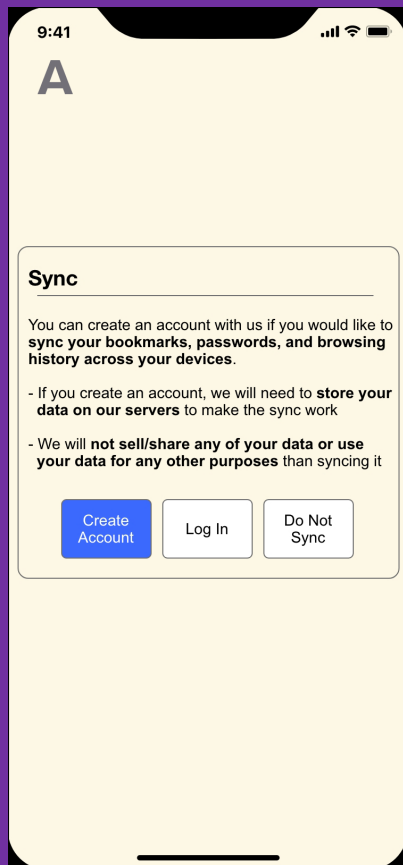






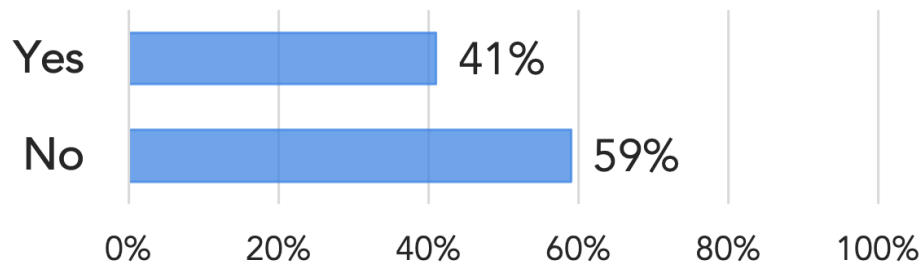
# Usability of GPC

# Would People Enable GPC?

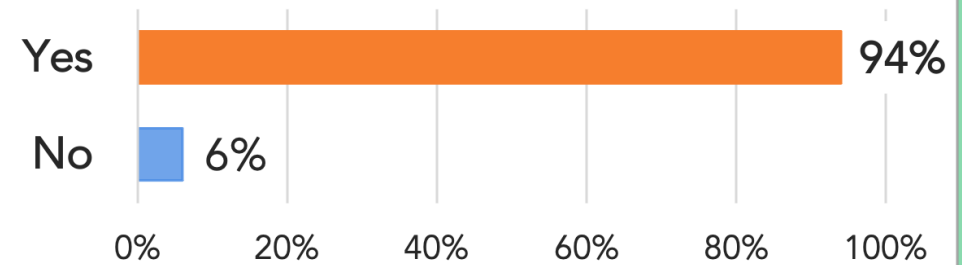


# Would People Enable GPC? (n=49)

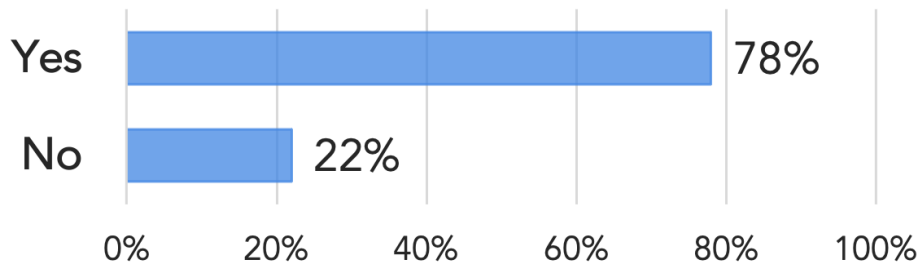
A. Would you create an account to log in to sync your data?



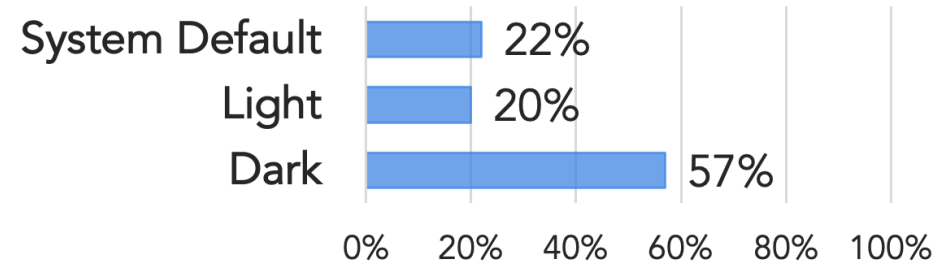
B. Would you enable Global Privacy Control?



C. Would you like to have a tab bar?

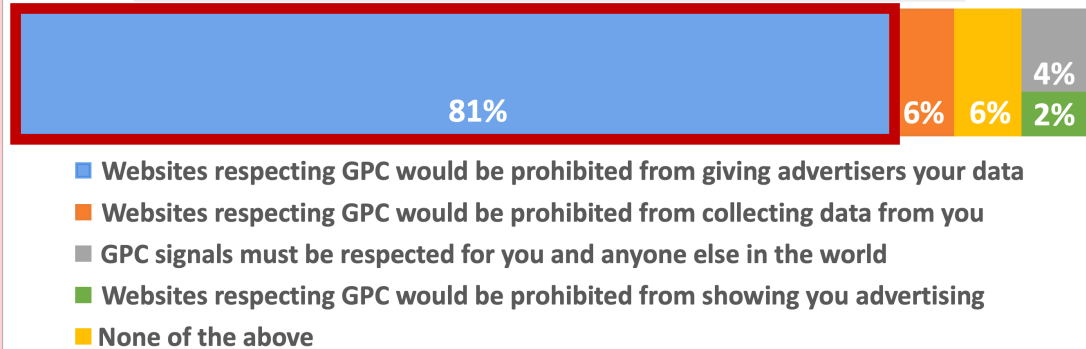


D. Which theme would you select?

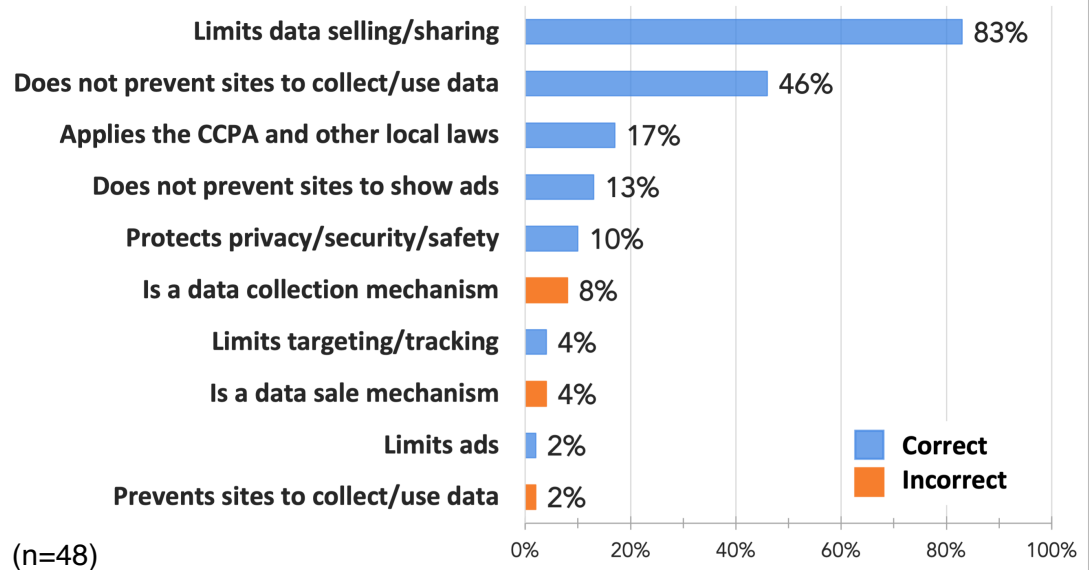


# Would People Understand What GPC Does?

## A. What do you expect to happen if you enable GPC?



## B. Please explain in your own words what GPC does.



(n=48)



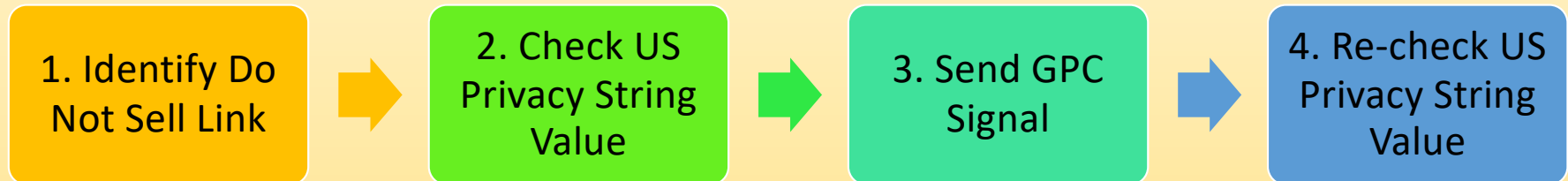
# Compliance with GPC



# Are Sites Honoring GPC?

-> How to Detect GPC Compliance?

-> Based on the US Privacy String!



**1YNY**



# OptMeowt Compliance Analysis

Paper Version

<https://github.com/privacy-tech-lab/gpc-optmeowt#6-installing-the-optmeowt-pets-2023-version>

Continuing Work Version:

<https://github.com/privacy-tech-lab/gpc-web-crawler>

washingtonpost.com

## ^ Analysis Breakdown

Do Not Sell Link		✓
US Privacy String	N	✓
GPC Signal Sent		✓
US Privacy String Updated	Y	✓

Run Analysis

Stop Analysis

View All

Download

Dark Mode



washingtonpost.com

## ^ Analysis Breakdown

Do Not Sell Link		✓
US Privacy String	1---	✓
GPC Signal Sent		✓
US Privacy String Updated	1---	✗

Run Analysis

Stop Analysis

View All

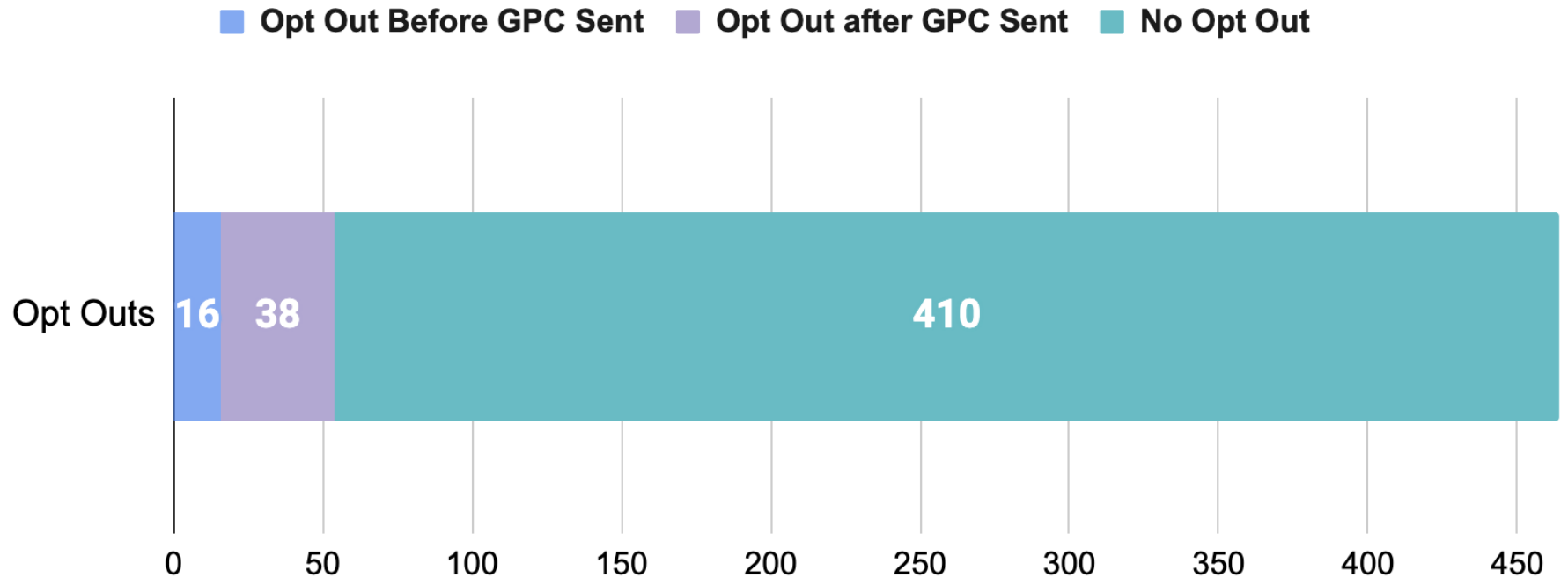
Download

Dark Mode



# Crawling the Web for GPC Non-compliance

## C. Opt Outs on Crawl Set Sites with USPS (n=464)





A long  
way to go

...





# Three Upcoming Tasks



# 1. Standardize GPC and Promote Adoption

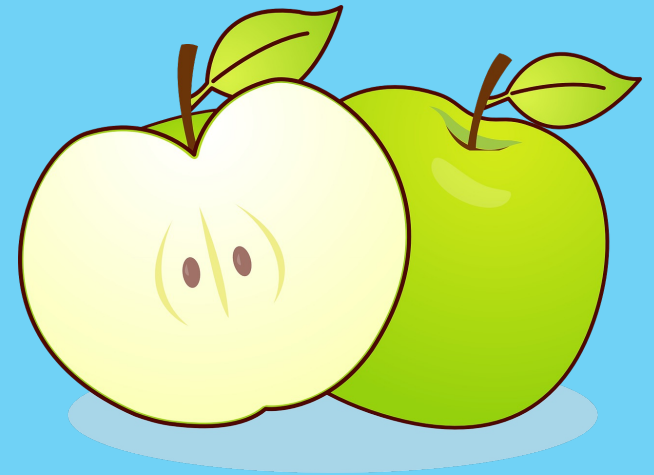
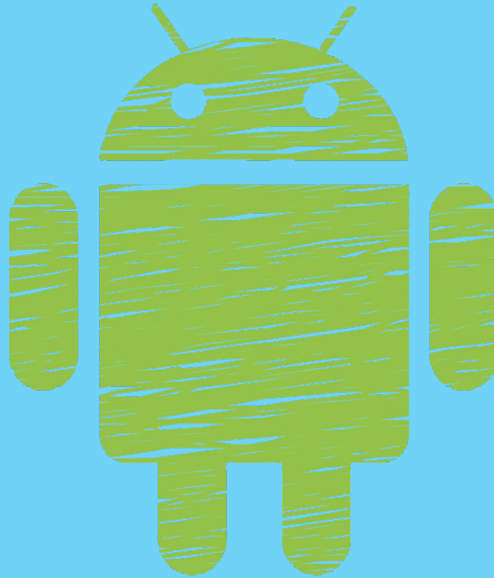
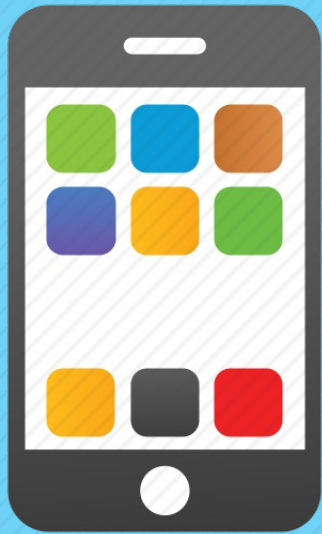


## 2. Crawling Sites at Scale Repeatedly Over Time

<https://github.com/privacy-tech-lab/gpc-web-crawler>



### 3. What about Mobile? – GPC for Android



<https://github.com/privacy-tech-lab/gpc-android>

# Takeaways

01

We have created  
Global Privacy  
Control (GPC) for  
opting out from ad  
tracking

02

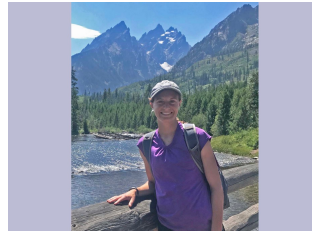
We are continuing  
our work so that  
GPC will be adopted  
broadly and become  
part of the web and  
mobile ecosystems

03

Crucial for success is  
the interplay of  
implementation,  
standardization, and  
legal enforcement



*GPC Web  
Team*



Kate Hausladen



Kuba Alicki



Sebastian Zimmeck



Sophie Eng



Oliver Wang



Jocelyn Wang

The logo consists of a large, stylized circular shape composed of multiple concentric, slightly offset rings in shades of blue, green, and grey, creating a sense of depth and movement. The text "Global Privacy Control Group" is centered within the white space of the logo.

# Global Privacy Control Group

Robin Berjon

Justin Brookman

Peter Dolanjski

Nick Doty

Max Gendler

David Harbage

Jason Kint

Konrad Kollnig

Don Marti

Maureen Mahoney

Peter Snyder

Ashkan Soltani

Aram Zucker-Scharff

...

# Thank You!



We are grateful to the National Science Foundation (Award #2055196) and to the Alfred P. Sloan Foundation (Program in Universal Access to Knowledge) for their support of this research. We also thank Wesleyan University, its Department of Mathematics and Computer Science, and the Anil Fernando Endowment for their additional support. Andrew Rogers and Gary Brewer of BuiltWith added privacy flag identification functionality to their service and provided us with a free Pro account, for which we are grateful.

# Questions?

01

We have created  
Global Privacy  
Control (GPC) for  
opting out from ad  
tracking

02

We are continuing  
our work so that  
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