An Empirical Analysis of Data Deletion and Opt-Out Choices on 150 Websites

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Privacy Choices Are Mandated

European Union

The United States
Examples of Privacy Choices

**EMAIL PREFERENCES**

- Unsubscribe

  Email Address:
  Unsubscribe if you no longer wish to receive email updates from Lord & Taylor.

**Submit Your Preference**

- Personalize Ads from Amazon
- Do Not Personalize Ads from Amazon for this Internet Browser

**I would like to request the following regarding my personal information:**

- Update it
  Make changes described in comments field.
- Limit its processing
  Use it only for the services I requested.
- Port it
  Show me what I have shared and posted.
- Access it
  Show me what I have shared and posted, as well as what’s been collected about me.
- Restrict processing it
  Stop using my personal information, which will end my ability to use the respective service(s).
- Delete it
  Remove my personal information, which will end my ability to use the respective service(s).
User Attitudes and Behaviors

65% said it’s “very important” to them to control what information is collected about them.

86% had taken steps to remove or mask their digital footprints.

Usability Issues of Privacy Choices

<table>
<thead>
<tr>
<th>Large-scale measurement studies</th>
<th>Small-scale user studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cranor et al., TWEB ’16</td>
<td>• Komanduri et al., ISJLP ’11</td>
</tr>
<tr>
<td>• Libert, WWW ’18</td>
<td>• Leon et al., CHI ’12</td>
</tr>
<tr>
<td>• Degeling et al., NDSS ’19</td>
<td>• Ur et al., SOUPS ’12</td>
</tr>
<tr>
<td>• Zimeck et al., PETS ’19</td>
<td></td>
</tr>
</tbody>
</table>

Our Study
Our Study…

A **manual, in-depth** content analysis of privacy choices on 150 websites.

- Opt-outs for **email communications**
- Opt-outs for **targeted ads**
- Choices for **data deletion**
Research Questions

1. **What** choices related to email communications, targeted advertising, and data deletion do websites offer?

2. **How** are websites presenting these privacy choices to their visitors, and what are the potential **usability** issues?
Analysis Procedure

1. Visit home page
2. Create a user account
Analysis Procedure

3. Visit privacy policy

4. Visit account settings
Analysis Template

**Location**
Privacy Policy? Account Settings? Other places?

**Level of detail**
Specific types of communications that can be opted out?

**Link availability**
One or multiple links? Broken or not?

**Interaction path**
Clicks? Form fields? Other user actions required?
Sampling Strategy

150 English-language websites sampled from Alexa’s global top 10,000 sites

<table>
<thead>
<tr>
<th>Category</th>
<th>Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top traffic (50)</td>
<td>1-200</td>
</tr>
<tr>
<td>Middle traffic (50)</td>
<td>201-5,000</td>
</tr>
<tr>
<td>Bottom traffic (50)</td>
<td>&gt;5,000</td>
</tr>
</tbody>
</table>

All sites were analyzed between Apr. and Oct. 2018 ($\kappa = 0.82$).

Analysis only shows the status quo for US-based users.

Amazon Alexa Top Sites: https://www.alexia.com/topsites
What did we find for website privacy choices?
Findings of Website Privacy Choices

Presence

Description

Usability
Findings of Website Privacy Choices

Presence

Privacy choices commonly offered on all websites across different traffic tiers.
Privacy Choices Are Common

- Email: 100 total, 12 provide a choice, 39 do not provide a choice
- Targeted: 85 total, 10 provide a choice
- Data: 111 total, 12 provide a choice, 39 do not provide a choice

Colors: Provide a choice (light blue), DO NOT provide a choice (red)
Findings of Website Privacy Choices

Presence

Description

Privacy choices text has poor readability.

Usability
## Poor Readability in Text Description

**Flesch-Kincaid Grade Level (FGL) scores**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email Communications</td>
<td>13.89</td>
</tr>
<tr>
<td>Targeted Advertising</td>
<td>13.72</td>
</tr>
<tr>
<td>Data Deletion</td>
<td>14.28</td>
</tr>
<tr>
<td>Privacy Policies Overall</td>
<td>10.20</td>
</tr>
</tbody>
</table>

Text requires university-level reading abilities!
Findings of Website Privacy Choices

Presence

Description

Usability

No dominant wording for section headings.
No Dominant Wording for Headings

<table>
<thead>
<tr>
<th>N-Gram</th>
<th>Email Communications</th>
<th>Targeted Advertising</th>
<th>Data Deletion</th>
</tr>
</thead>
<tbody>
<tr>
<td>your choic*</td>
<td>11</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>opt out</td>
<td>13</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>third part*</td>
<td>0</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>your right*</td>
<td>9</td>
<td>2</td>
<td>20</td>
</tr>
</tbody>
</table>

No single n-gram occurred in >20 analyzed policies.

"*" is a place holder for one or more letters that follow the beginning pattern.
Findings of Website Privacy Choices

Presence

Description

Usability

Ambiguity in what happens after exercising the choice.
Ambiguity in Targeted Ads Opt-outs

Among 80 sites that offered targeted ads opt-outs:

50% did not specify if it also applies to tracking.

90% did not specify if it works across multiple browsers or devices.
Ambiguity in Data Deletion Choices

Among 108 sites that offered data deletion:

83% did not describe when the data would be permanently deleted.
Findings of Website Privacy Choices

Presence

Usability

Exercising privacy choices requires many actions.
Average Number of Actions

Actions we counted:

- Clicks
- Hovers
- Checkboxes
- Form fields

Average number for the shortest path:

5.3 for email opt-outs and data deletion choices.

3.2 for targeted ads opt-outs.
Request Form

Please use this form to initiate processing your personal data request.

To unsubscribe from any marketing or newsletter emails from the New York Times, please select the 'unsubscribe' link at the bottom of each email.

To change or cancel your subscription, please contact Customer Care

I would like to request the following regarding my personal information:

- Update it
  Make changes described in comments field.

- Limit its processing
  Use it only for the services I requested.

- Port it
  Show me what I have shared and posted.

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  Stop using my personal information, which will end my ability to use the respective service(s).

- Delete it
  Remove my personal information, which will end my ability to use the respective service(s).

Please select the New York Times Company products and services for which you would like us to review and apply your personal data request towards:

Choose the area to which your request applies:
Findings of Website Privacy Choices

Presence

Description

Usability

Multiple links leading to different opt-out tools.
1. Twitter implemented
2. DAA

Advertisers and Other Ad Partners

Managing your privacy settings.

Personalized ads

You will always see ads on Twitter based on your activity with other online activity and devices you’ve used to log in. Where other inferences about your identity or email addresses and phone numbers.

Personalize based on the places you visit.

Twitter always uses some information about you to show you more relevant content. When this setting is enabled, Twitter experience based on other places you’ve been.

About Ads

Advertising revenue allows us to support and improve our services. We use the information described in this Privacy Policy to help make our advertising more relevant to you, to measure its effectiveness, and to help recognize when someone is not complying with the rules of the site. To help manage your privacy preferences, we work with others, also enable us to use your information.

Twitter and third-party ad networks, also referred to as “Ad Partners,” implement interest-based advertising at https://optout.aboutads.info. In addition, our ads policies prohibit advertisers from targeting ads based on categories that we consider sensitive or are prohibited by law, such as race, religion, politics, sex life, or health. Learn more about your privacy options for interest-based ads here and about how ads work on our services here.

If you’re an advertiser or a prospective advertiser, we process your personal data to help offer and provide our advertising services. You can update your data in your Twitter Ads dashboard or by contacting us directly as described in this Privacy Policy.

Account Settings

“About Ads” page

Privacy Policy
Findings of Website Privacy Choices

Presence

Description

Usability Poor design choices.
Send me notifications from the following categories and new categories as they become available.

- Amazon Cloud Cam
- Amazon Invites
- Alexa
- Amazon Appstore
- Amazon Books - physical stores
- Amazon Dash Button
- Amazon Echo
- Amazon Family
- Amazon Fresh
- Amazon Game Studios
- Amazon Home Services
- Amazon Marketplace
- Amazon Move
- Amazon Music Unlimited
- Amazon News
- Amazon Outfit Compare
- Amazon Partners
- Amazon Pop-Ups
- Amazon Prime Marketing Communications
- Amazon Registry Services
- Amazon Returns
- Amazon Reviews
- Amazon Seller App
- Amazon Surveys
- Friends & Social Networks
- Furniture
- General Offers
- Grocery
- Health & Personal Care
- Home, Garden & Pets
- Industrial & Scientific
- Jewelry
- Kindle & Fire Devices
- Kindle Books
- Kindle eperiodicals
- Local Services
- MP3 Downloads
- Magazine Subscriptions
- Movies & TV
- Music
- Musical Instruments
- News
- Office Products & Supplies
- PillPack
- Prime Music
- Prime Now
- Prime Student
- Prime Video
- Restaurants
- Sale, Promotion, & Deals
How do we improve website privacy choices?
Improving Website Privacy Choices

Planning

Determining what to do

Translation

Determining how to do it

Physical action

Doing it

Assessment

Determining outcomes via feedback

Improving Website Privacy Choices

Planning
Translation
Physical action
Assessment

Standardize section headings in privacy policies.
## Standardize Policy Section Headings

<table>
<thead>
<tr>
<th>FACTS</th>
<th>WHAT DOES [NAME OF FINANCIAL INSTITUTION] DO WITH YOUR PERSONAL INFORMATION?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Why?</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>What?</strong></td>
<td>The types of personal information we collect and share depend on the product or service you have with us. This information can include:</td>
</tr>
<tr>
<td></td>
<td>- Social Security number and [income]</td>
</tr>
<tr>
<td></td>
<td>- [account balances] and [payment history]</td>
</tr>
<tr>
<td></td>
<td>- [credit history] and [credit scores]</td>
</tr>
<tr>
<td><strong>How?</strong></td>
<td>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 [name of financial institution] chooses to share; and whether you can limit this sharing.</td>
</tr>
</tbody>
</table>
Improving Website Privacy Choices

Planning
Translation
Physical action
Assessment

Simplify the process of learning opt-outs.
1. Twitter implemented
2. DAA

Unify multiple choice mechanisms into a single interface.
Help users distinguish different opt-out tools.
Improving Website Privacy Choices

Planning
Translation
Physical action
Assessment

Reduce number of actions to exercise choices.
Reduce Number of User Actions

Select the option 'Do not send me any marketing email for now' to stop receiving marketing emails from Amazon.
Regulation Needs to Combat Dark Patterns

CNIL Fines Google €50 Million for Alleged GDPR Violations

For alleged failure to...
• Provide notice in an accessible form.
• Obtain valid user consent to data processing for ad personalization.
Improving Website Privacy Choices

Planning
Translation
Physical action
Assessment

Describe what privacy choices achieve clearly.
Describe What Privacy Choices Do

Online Behavioral Advertising. This program offers a centralized location where users can make choices about the use of their information for online behavioral advertising. To learn more and to make choices about the use of your information for online behavioral advertising on websites, please click here. Please note that if you exclude online behavioral advertising using this method, this choice will only apply to the specific browser or device from which you opt out.

If you would like to cancel your account or delete your User Personal Information, you may do so in your user profile. We will retain and use your information as necessary to comply with our legal obligations, resolve disputes, and enforce our agreements, but barring legal requirements, we will delete your full profile (within reason) within 90 days. You may contact GitHub Support or GitHub Premium Support to request the erasure of the data we process on the basis of consent within 30 days.
Summary

Privacy choices are **prevalent** on websites.

Severe issues exist regarding their **description** and **usability**.

**Companies** and **regulators** must ensure usability of privacy choices.

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