

# User Testing of the Proposed CCPA Do-Not-Sell Icon

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# 1. Overview

In a previous report to the California Attorney General’s office (OAG) [1], we reported on a series of design sessions and online experiments we conducted to test the effectiveness of various approaches for communicating the presence of Do-Not-Sell choices. Our report provided recommendations, supported by empirical data, on what icons (buttons or logos) and text taglines most effectively signal the presence of an opt-out choice related to the sale of personal information. This choice is required to be made available to California consumers under the California Consumer Privacy Act. In our report we recommended the use of a blue *stylized toggle* icon paired with current CCPA taglines (“Do Not Sell My Personal Information” or “Do Not Sell My Info”):



The choice of this icon reflected multiple design considerations: (1) Our *stylized toggle* used both a checkmark and an X to visually convey the availability of yes/no options. (2) We slanted the dividing line in the icon to prevent the icon from being confused with a real toggle control. (3) We recommended the color blue since blue is a neutral color that does not convey a particular state, unlike green or red. The user testing results reported in our previous report [1] show that this particular icon paired with the CCPA taglines indeed effectively communicates the presence of a choice, particularly one related to the sale of personal information, without substantial misconceptions.

The OAG’s February 10, 2020 Revised Proposed Regulations [2] include a proposed opt-out button (§ 999.306.f) that is similar to, but not exactly like, the blue icon we had recommended [1]:



When we saw the OAG’s proposed opt-out button, which we refer to as *CalAG toggle*, we were concerned that it might suffer from some usability problems:

1. The *CalAG toggle* icon could be confused with an actual toggle switch. In fact, the *CalAG toggle* icon’s design appears to be closely modelled after an actual toggle switch as can be found in settings dialogs, for instance, in Apple’s IOS mobile operating system.<sup>1</sup> In contrast, our proposed icon was a stylized representation of a toggle using both a checkmark and X, as well as a slanted line to divide them.

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<sup>1</sup> See the Apple Developer Human Interface Guidelines:  
<https://developer.apple.com/design/human-interface-guidelines/ios/controls/switches/>

2. The *CalAG toggle* icon's close resemblance of a toggle switch in combination with the use of the color red may be misinterpreted as an indication of an off-state, i.e., a consumer may misinterpret the *CalAG toggle* icon as an indication that they have already opted-out of the sale of their personal information.
3. If the *CalAG toggle* icon is misinterpreted as a toggle switch in an off-state, a consumer might inaccurately assume that clicking the icon would reverse their opt-out and allow the company to sell their data, which is the opposite of the icon's intended function.

However, without testing, it is difficult to know how an icon will be perceived by users. Therefore, we conducted a follow-up online experiment to test for differences in interpretation between our proposed *stylized toggle* icon and the *CalAG toggle* icon. In addition, we created and tested a slightly modified version of the *CalAG toggle* icon, referred to as *CalAG-X toggle*, in which we increased the size of the X to give it a more visually balanced appearance next to the circle. We further tested each icon in a blue variant and in a red variant in order to determine the effects of both icon design and color on the icon's interpretation. For our experiment, we recruited 398 participants who were each randomly assigned to be shown one of the six toggle icons, all placed next to the "Do Not Sell My Personal Information" tagline.

Based on the findings from this follow-up study, we make the following recommendations:

**The CCPA opt-out button should use the *stylized toggle* in our earlier proposal because that toggle, when placed next to the "Do Not Sell My Personal Information" tagline, more effectively conveys the concept of do-not-sell without creating problematic misconceptions compared to the *CalAG toggle*.** Our results show that the *stylized toggle* consistently and significantly outperformed the *CalAG toggle* and *CalAG-X toggle* in creating the expectation of making do-not-sell choices or confirming a do-not-sell request on the landing page. Importantly, the *stylized toggle* also significantly reduced the misconception that the icon with an actual control switch for the website's do-not-sell setting.

**We recommend that the opt-out icon be colored blue instead of red.** Our results suggest that whether the icon is blue or red has little or no impact on users' interpretations and expectations. In most cases, we found no significant differences between the red and blue *stylized toggle* icons. For cases with differences, the red version better conveyed choices related to the sale of personal information. However, it also increased the odds of the toggle being perceived as an actual control toggle switch that would change the setting of the website to "Do Not Sell My Personal Information," possibly because red, as a color generally associated with a negative state, conveyed the message that the setting "Do Not Sell My Personal Information" is currently off. We recommend the blue icon, which can represent a more neutral option that may be less likely to be misinterpreted as representing a user's current opt-out setting.

## 2. Methodology

After reading the proposed revision of CCPA [2], we were concerned about the possibility that the *CalAG toggle*, by using a circle instead of a checkmark and by removing the slanted dividing line, creates a close resemblance to the iOS toggle switch (see Figure 1) and might be misinterpreted as being an actual and direct control over whether or not the user wants their personal information to be sold. The fact that red is usually associated with a negative state further complicates the issue due to the existence of a double negative in conjunction with the “Do Not Sell My Personal Information” tagline — the user could interpret it as “my data is currently being sold” (because red is understood as the setting “Do Not Sell My Personal Information” is off), or “my data is currently not being sold” (because red indicates something is prohibited, and in this case could be interpreted as meaning the sale of personal information). We conducted an online experiment to examine whether the change of toggle style and color of the *CalAG toggle* might lead to different interpretations and expectations related to the sale of personal information compared to the findings in our earlier studies [1].

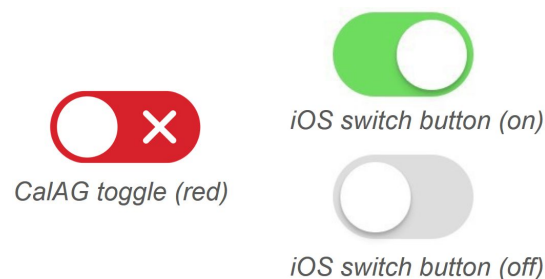


Figure 1: A comparison of the proposed *CalAG opt-out button* and the *iOS toggle switch button*.

### 2.1 Study Design

To capture the potential interaction effects between icon style and color, we implemented a fully-factorial experimental design which included two color conditions and three style conditions. The resulting six conditions are shown in Figure 2. We tested blue versus red color to examine the potential impact of the color’s indication of state: red is generally conceived as negative or something being prohibited, whereas blue is a neutral color. In addition to our proposed toggle icon (*stylized toggle*) and the toggle icon proposed by the California AG office in the revised CCPA regulation (*CalAG toggle*), we created a third condition for the toggle style, denoted as *CalAG-X toggle*, which fixes some aesthetical design details of the *CalAG toggle*. Specifically, we increased the size of the “X” to make it look visually equivalent to the circle. This creates a more harmonious look without substantially altering the design concept.



Figure 2: Icons tested in this study.

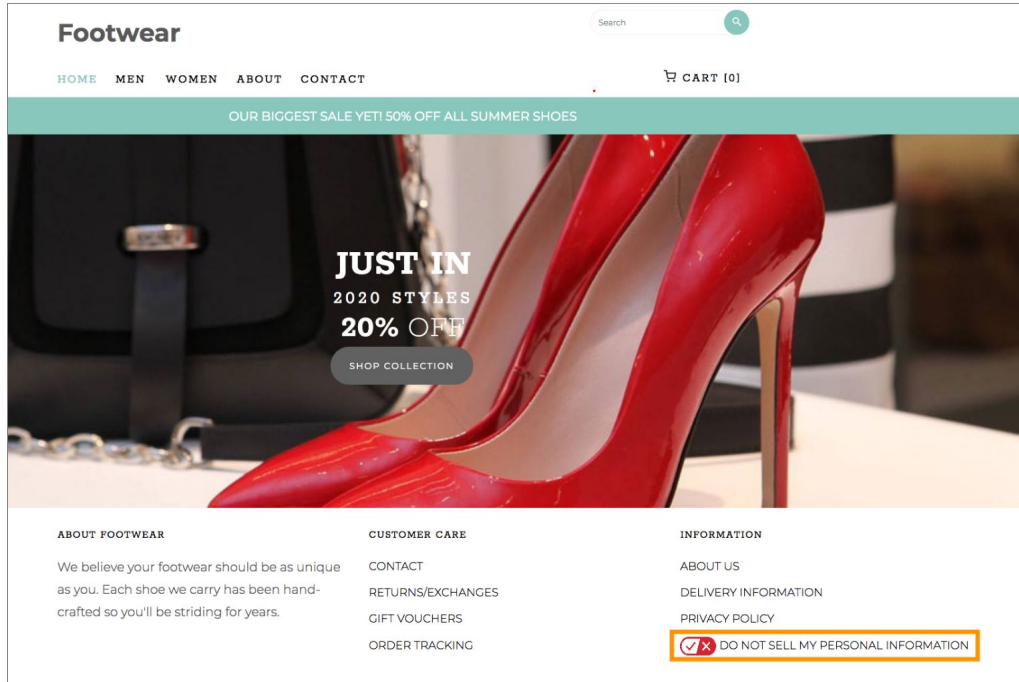
## 2.2 Evaluation Method

Similarly to our previous study [1], we conducted a between-subjects online study in which we showed participants one of the six icons at random, next to the CCPA tagline “Do Not Sell My Personal Information.” Participants were shown a screenshot of a fictitious shoe retailer website called “Footwear,” with the opt-out icon and tagline placed in the footer under the link to the website’s privacy policy, to mimic the scenario of how users are likely to see a CCPA opt-out in the real world (see Figure 3). To ensure participants were able to read the text link within the survey, we highlighted the icon and tagline with an orange box and displayed a close-up of just the icon and tagline portion of the website.

After seeing the screenshot, we asked participants follow-up questions to explore which combinations of the icon style and color best conveyed the presence of a do-not-sell opt-out. The set of questions participants answered was similar to those asked in our previous testing [1] with minor modifications.<sup>2</sup> Participants were first asked to describe their expectations of what they thought would happen if they would click on the symbol and link shown in the orange box on the webpage. Additionally, we derived eight specific scenarios about people’s possible expectations based on participants’ open-ended responses in our previous studies. Three of these scenarios were accurate expectations related to do-not-sell, i.e., after clicking the user would be taken to a page where they could choose whether or not the website can sell their personal information, confirm that they do not want their personal information to be sold, or read more information about how the website uses and shares their personal information. Two scenarios were incorrect, reflecting expectations in which the toggle is perceived as an actual control, i.e., after clicking, the toggle would switch to the opposite direction and change the setting on the website from “Do Not Sell My Personal Information” to “Sell My Personal Information” or the other way around. Three scenarios were incorrect expectations related to other misconceptions, namely clicking the icon would cause the website to send unwanted emails, result in seeing ads about privacy or security products, or result in exposure to phishing or malware risks. For each scenario, we asked participants to indicate whether it is “definitely

<sup>2</sup> The full set of survey questions for this study are included in Appendix A.

not,” “probably not,” “not sure,” “probably,” or “definitely” going to happen. As with our previous testing [1], participants were asked about their familiarity with CCPA and to provide their demographic information.



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?

Figure 3: Screenshot of what participants assigned to the condition “stylized toggle in red” saw within the survey platform Qualtrics.

## 2.3 Participant Profile

We launched the study in mid-February 2020, recruiting 398<sup>3</sup> participants through Amazon Mechanical Turk. Participants were required to be residents of the United States over the age of 18 and have a 95% or higher approval rate on Mechanical Turk to be eligible to take the survey. As with our previous study populations, the demographic information we collected indicated that our sample was fairly diverse, but not U.S.-census representative. Our participants were evenly distributed between men and women, but skewed younger and more educated than the general U.S. population. Participants reported being residents of 44 different states plus Washington D.C., with 15.1% reporting residence in California. Our study population was also fairly tech savvy, with 27.9% reporting that they have an education in, or work in, the field of computer science, computer engineering or IT. 29 (7.3%) participants reported that they were aware of a law in the U.S. that required companies to provide a “do not sell” option, and 19 (4.8%) participants explicitly mentioned the CCPA or California when asked to name or describe the law.

## 2.4 Data Analysis

To categorize all open-ended responses provided by participants, we followed the same qualitative data analysis approach used in our previous studies [1].<sup>4</sup> To explore which toggle icon paired with the CCPA tagline conveyed the most correct expectations related to do-not-sell and the least misconceptions, we ran binomial regression models on the coded open-ended responses as well as on the quantitative data related to the eight expectation scenarios, after binning the five-point rating scale into a binary variable of expected (including “definitely” and “probably”) versus unexpected (including “not sure,” “probably not,” and “definitely not”). Participants’ age, gender, education and technical expertise were also included in the regression model as control variables.

## 3. Results

Next, we discuss our findings. Based on these results we conclude that the *stylized toggle* effectively conveyed correct expectations related to do-not-sell and generated significantly fewer misconceptions compared to the *CalAG toggle* and the *CalAG-X toggle*. The switch between different toggle styles had a much bigger impact on participants’ interpretations than whether the toggle was blue or red.

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<sup>3</sup> We initially recruited 421 participants, but had to remove 23 responses from our analysis since these responses included nonsensical text to all open-ended questions in the survey. This is a common data cleaning practice.

<sup>4</sup> The codebook used for this study is included in Appendix B.

### 3.1 Open-ended Responses for Stylized Toggle More Frequently Mention Correct Expectations

Common expectations in the stylized toggle vs. CalAG/CalAG-X toggle conditions

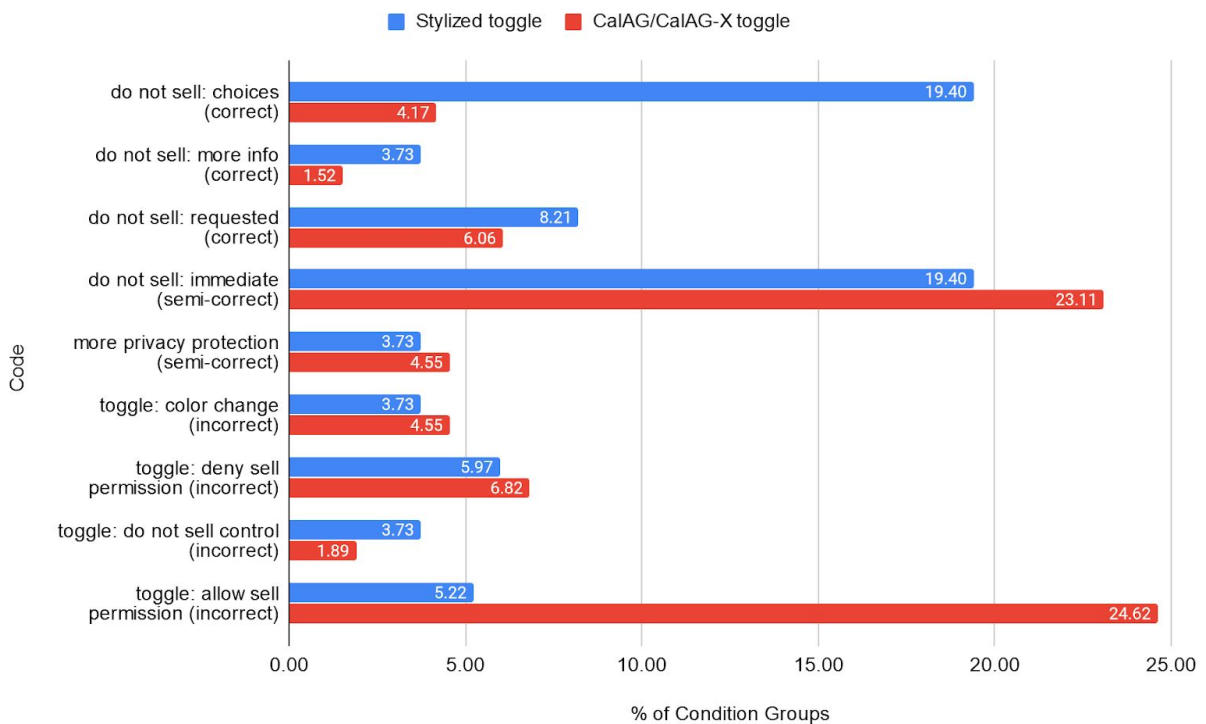


Figure 4: The proportion of participants in the two stylized toggle conditions (N=134) vs. in the four CalAG/CalAG-X toggle conditions (N=264) for common expectations after clicking the icon accompanied by “Do Not Sell My Personal Information,” based on open-ended responses.

We examined participants’ open-ended responses to “what do you think would happen if you clicked on the symbol and link in the highlighted area on this web page?” and **observed different patterns between the stylized toggle conditions and the CalAG/CalAG-X toggle conditions** (see Figure 4). We discuss potential effects of color later on.

The most frequent expectation from participants who saw the *stylized toggle* (26, 19.40%) was that clicking the icon would lead them to a page where they could make choices related to the sale of personal information, which is the correct and desired interpretation of the icon. This correct expectation, however, was mentioned much less frequently in the CalAG/CalAG-X toggle conditions (11, 4.17%). In contrast, the **most frequent expectation from participants who saw the CalAG/CalAG-X toggle (65, 24.62%)** was that the icon was an actual toggle



**switch that is currently set to “Do Not Sell My Personal Information” and that by clicking the icon they would allow permission to sell their personal information.** The prevalence of this expectation is problematic and concerning, considering that people who have this notion might avoid clicking on the icon and/or the link text for fear of the loss of privacy, thus missing the chance of finding relevant information and choices related to do-not-sell available to them after clicking the icon. This misconception was only mentioned by 7 (5.22%) participants who saw the *stylized toggle*.

Relatedly, another erroneous expectation is that the website currently sells the user’s personal information and the toggle, perceived as a functioning button, would deny the permission to continue doing so. This expectation was mentioned less frequently, by only 8 (5.97%) participants in the *stylized toggle* conditions and 18 (6.82%) participants in the *CalAG/CalAG-X toggle* conditions. This misconception is less problematic as it is less likely to cause people to avoid clicking on the icon and/or link text.

### 3.2 The Stylized Toggle Better Conveys the Concept of Do-Not-Sell

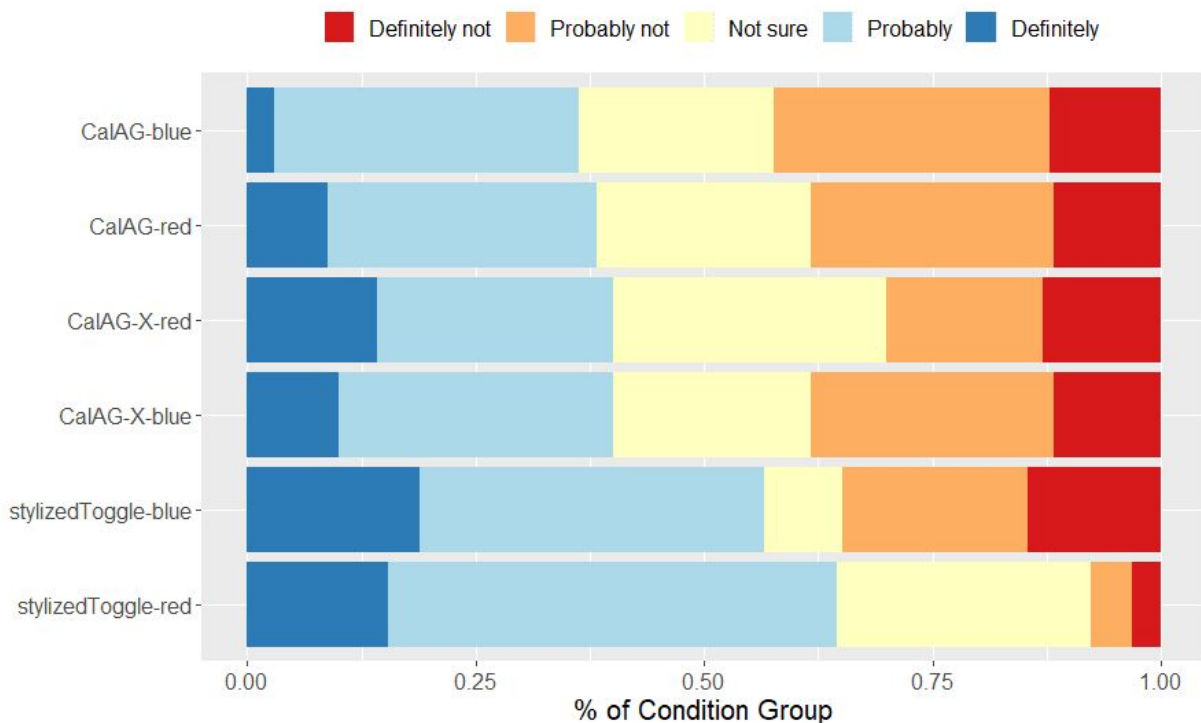


Figure 5: Distribution of participants’ responses across conditions to the scenario “It [the symbol/link] will take me to a page where I can choose whether or not the website can sell my personal information.”

Our observation in Section 3.1 that *the stylized toggle* best conveyed the expectation of choices related to the sale of personal information was further corroborated by our analysis of multiple-choice question responses. As shown in Figure 5, when asked whether the symbol/link would take them to a page for opting out of the sale of personal information, the *stylized toggle* appeared in the top two conditions with the most positive responses (“definitely” and “probably”). **The *stylized toggle* significantly increased the odds of expecting choices related to do-not-sell on the landing page compared to the *CalAG toggle* (OR=2.89, p<0.001) and the *CalAG-X toggle* (OR=2.42, p=0.001).** Looking at differences between the six conditions, our proposed icon design (*stylized toggle-blue*) conveyed the expectation of making do-not-sell related choices significantly better than the *CalAG toggle* in both colors (OR=2.42, p=0.02 for blue; OR=2.48, p=0.02 for red).

A similar distribution of responses emerged for the scenario of expecting to confirm a do-not-sell request on the landing page that appears after clicking the icon (“It will take me to a page where I can confirm that I do not want my personal information to be sold by the website”), with the two *stylized toggle* conditions having the highest percentage of positive responses. Similarly, **the *stylized toggle* significantly increased the odds of expecting a do-not-sell request confirmation on the landing page compared to the *CalAG toggle* (OR=2.24, p=0.004) and the *CalAG-X toggle* (OR=1.86, p=0.03).** Our proposed design performed significantly better than the *CalAG toggle* in red (OR=3.88, p<0.001) and the *CalAG toggle* in blue (OR=2.45, p=0.02) in conveying this expectation.

For the scenario of expecting more information about the company’s practices related to do-not-sell (“It will take me to a page with more information about how the website uses and shares my personal information”), the two *stylized toggle* conditions still had the highest percentage of expected responses, but the advantage over other conditions was no longer substantial. Neither toggle style, color, nor their combination made a significant impact on the expected/unexpected responses to this scenario.

Furthermore, our analysis on the coded open-ended responses shows that **the *stylized toggle* was more effective than the *CalAG/CalAG-X toggle* at conveying the concept of do-not-sell accurately, without creating the impression that the toggle is an actual privacy control switch.** We created a binary variable to denote whether the response was a correct expectation specifically related to do-not-sell, namely when it mentioned choices or more information related to the sale of personal information, making a do-not-sell request (sometimes with doubts of its effectiveness), confirming a do-not-sell request, or the website immediately stopping the sale of the user’s data. We then ran a regression model on this binary variable. **The *stylized toggle* significantly increased the odds of conveying the do-not-sell concept accurately compared to the *CalAG toggle* (OR=2.21, p=0.004) and the *CalAG-X toggle* (OR=2.23, p=0.004).** Looking at differences between the six conditions, our proposed design significantly increased the odds of conveying the do-not-sell concept accurately compared to the CalAG’s proposed design *CalAG toggle-red*, OR=2.32, p=0.03.

### 3.3 The Stylized Toggle Caused Fewer Misconceptions

We binned participants' open-ended responses regarding their expectations of what would happen if they clicked on the icon into two categories, correct and incorrect, where incorrect means the responses exhibited misconceptions. Examples of misconceptions range from perceiving the toggle icon as an actual switch, to negative scenarios (e.g., triggering unwanted emails, introducing phishing/malware risks, seeing ads of privacy products, and less privacy protection) and the expectation that nothing would happen. We ran a regression model on the correct/incorrect variable. **Both the *CalAG toggle* and the *CalAG-X toggle* significantly increased the odds of misconceptions compared to the *stylized toggle*** (OR=2.78,  $p<0.001$ ; OR=2.63,  $p=0.001$ ). In addition, the red *CalAG-X toggle*, the blue *CalAG toggle*, and the red *CalAG toggle* all significantly increased the odds of misconceptions compared to the *stylized toggle* (OR=3.00,  $p=0.006$ ; OR=2.34,  $p=0.04$ ; OR=2.37,  $p=0.04$ ).

We then took a closer look at responses that mentioned the toggle being an actual button. Specifically, we code open-ended responses as toggle-specific misconceptions if they mentioned clicking would result in the toggle changing color or position, the toggle being a control for do-not-sell settings (e.g., "How I opt in/out or it would change between red and green depending on if I wanted to allow it."), or specified the direction of change as from "Do Not Sell My Personal Information" to "Sell My Personal Information" or the other way around. Our regression model on this binary variable shows that **both the *CalAG toggle* and the *CalAG-X toggle* significantly increased the odds of toggle-specific misconceptions compared to the *stylized toggle*** (OR=2.98,  $p<0.001$ ; OR=2.45,  $p=0.004$ ). Looking at individual conditions, the *CalAG toggle* in blue or red, and the *CalAG-X toggle* in red all significantly increased the odds of toggle-specific misconceptions compared to our stylized toggle design (OR=3.02,  $p=0.01$ ; OR=3.17,  $p=0.008$ ; OR=3.83,  $p=0.002$ ).

The analysis of likert responses results in the same overall conclusion that the *stylized toggle* conveyed fewer toggle-specific misconceptions, but the differences were less pronounced. As shown in Figure 6, for the expectation that clicking would immediately grant permission to sell personal information, i.e., the icon is perceived to be an actual toggle switch, the *CalAG toggle* exhibited significantly higher odds compared to the *stylized toggle* (OR=1.79,  $p=0.04$ ), but the difference between the stylized toggle and the *CalAG-X toggle* was not significant. No significant differences were found between individual conditions for this scenario either.

For the expectation that clicking would deny permission to sell personal information, no significant impact was found from the use of different styles or colors. However, as shown in Figure 7, there were interaction effects between the style and color: compared to our blue *stylized toggle* design, the *stylized toggle* in red, the *CalAG-X toggle* in blue, and the *CalAG toggle* in blue all significantly increased the odds of the toggle being perceived as an actual toggle switch that, after clicking, denies the permission to sell consumer data (OR=2.92,  $p=0.006$ ; OR=2.89,  $p=0.008$ ; OR=2.18,  $p=0.04$ ).

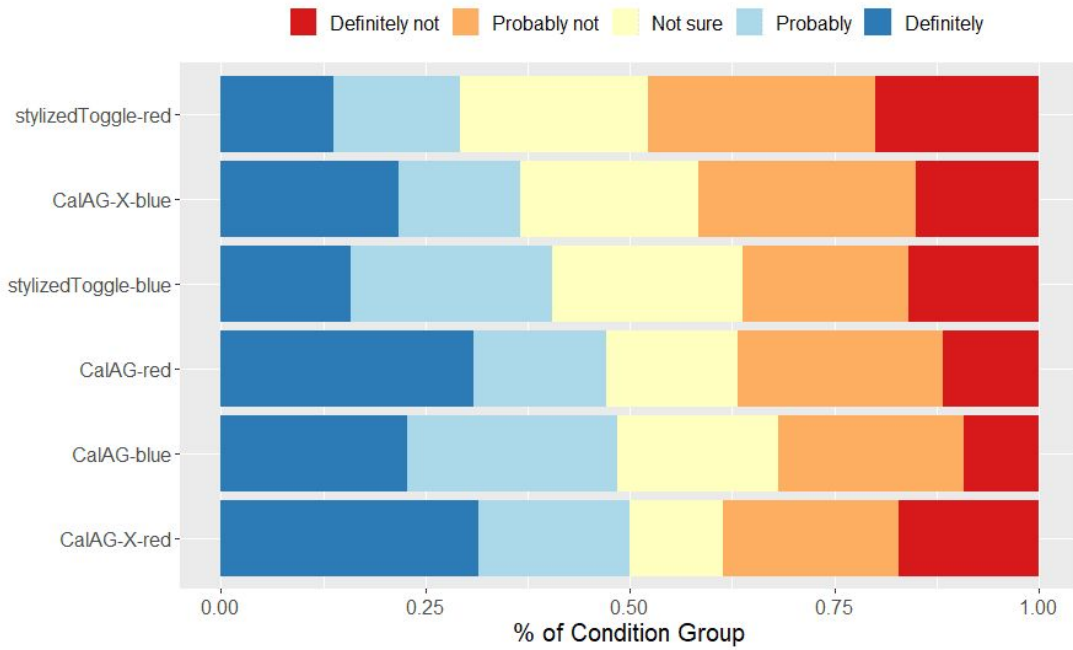


Figure 6: Distribution of participants' responses across conditions to the scenario "It [the symbol/link] will immediately change the setting on this website from "Do Not Sell My Personal Information" to "Sell My Personal Information."

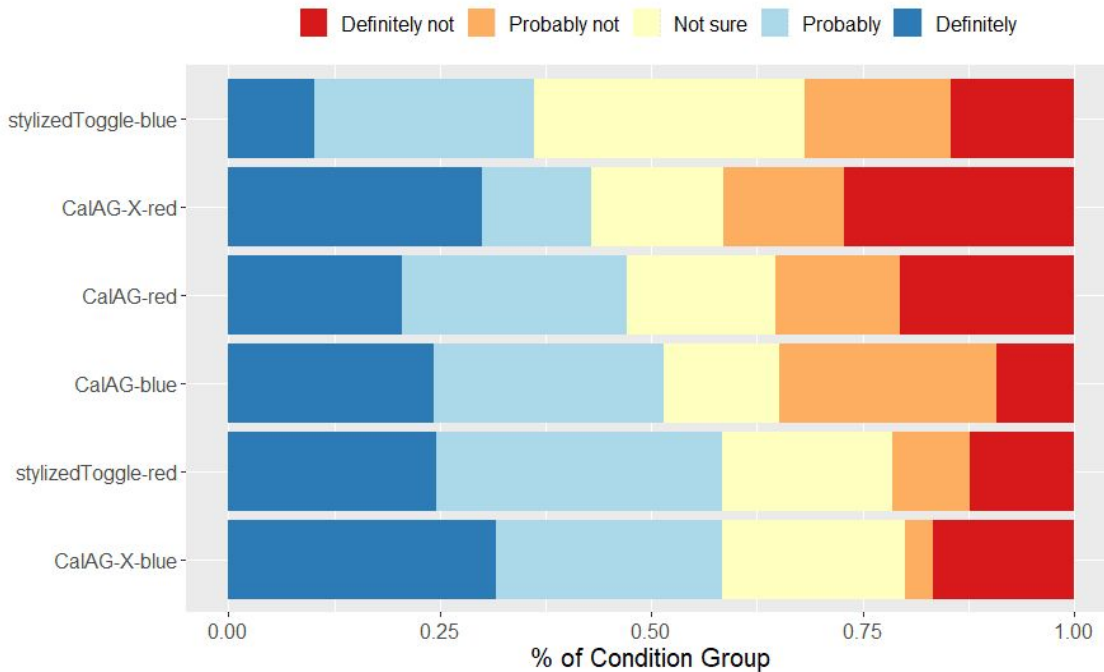


Figure 7: Distribution of participants' responses across conditions to the scenario "It [the symbol/link] will immediately change the setting on this website from "Sell My Personal Information" to "Do Not Sell My Personal Information."

### 3.4 Blue Color for Stylized Toggle Reduces Misconceptions

Based on the analysis above, we reach the conclusion that the *stylized toggle* is preferable to the *CalAG/CalAG-X toggle*, as the stylized toggle more effectively conveyed the concept of do-not-sell and generated fewer misconceptions. However, whether the icon is blue or red does not appear to have a significant impact on the dependent variable in any of the regression models we ran.

The only significant difference we found between the red and blue *stylized toggle* in the tests discussed above is that the ***stylized toggle in red significantly increased the odds of the toggle being perceived as an actual toggle switch that, after clicking, denies the permission to sell consumer data***, as shown in Figure 7.

To further understand the impact of color on the interpretation of the *stylized toggle*, we ran pairwise chi-square tests between the red and blue variants of this icon on likert-scale responses to the eight scenarios, as well as coded open-ended responses regarding expectations. To discern potential subtle differences we used all five points of the scale instead of binning into the expected/unexpected categories. We found that the ***stylized toggle in red performed significantly better than the blue version in suggesting do-not-sell choices on the landing page*** ( $p=0.004$ , Cramer's  $V=0.36$ ). No significant differences between the red and blue *stylized toggles* were found in any of the other seven tests.

We conclude that there are tradeoffs to be made when deciding whether to present the *stylized toggle* icon in blue or red. While red is indeed more effective at conveying the presence of choices related to do-not-sell, it also increases the odds of the toggle being perceived as an actual control toggle switch that, after clicking, would change the setting of the website to “Do Not Sell My Personal Information.” This is probably because participants interpreted red as an indication that the setting “Do Not Sell My Personal Information” is currently turned off. **To reduce the potential for misinterpreting the toggle as conveying the user’s current opt-out setting we recommend presenting the icon in blue.**

## References

1. L.F. Cranor, H. Habib, Y. zou, A. Acquisti, J. Reidenberg, N. Sadeh, F. Schaub. Design and Evaluation of a Usable Icon and Tagline to Signal an Opt-Out of the Sale of Personal Information as Required by CCPA. February 4, 2020.  
<https://oag.ca.gov/sites/all/files/agweb/pdfs/privacy/ccpa-cranor.pdf>

2. Revised Proposed Regulations, modified February 10, 2020. Office of the California Attorney General.

<https://oag.ca.gov/sites/all/files/agweb/pdfs/privacy/ccpa-text-of-mod-clean-020720.pdf>

## Appendix A: Survey Questions

### Open-ended Expectations

Please answer the following questions with regards to the symbol and link in the rectangular highlighted area near the bottom of the web page displayed. Make sure not to reveal any private or personally identifiable information about yourself or others in your responses to any open-ended questions.

*[Display the screenshot of the web page that participants were randomly assigned to]*

Close up of highlighted area:

*[Display the highlighted area]*

1. What do you think would happen if you clicked on the symbol and link in the highlighted area on this web page? *[Open-ended response.]*

### Tagline Elements

2. What do you think “sell” refers to in this link? *[Open-ended response]*
3. What do you think “information” refers to in this link? *[Open-ended response]*

### Scenario Expectations

*[Display the highlighted area]*

4. Which of the following do you think could happen if you clicked this symbol and link on a web page? *[For each statement below, participants were asked to choose from a 5-point likert scale “Definitely” “Probably” “Not sure” “Probably not” and “Definitely not.” Statements were presented in randomized order.]*

- It will immediately change the setting on this website from "Do Not Sell My Personal Information" to "Sell My Personal Information."
- It will immediately change the setting on this website from "Sell My Personal Information" to "Do Not Sell My Personal Information."
- It will take me to a page where I can choose whether or not the website can sell my personal information.

- It will take me to a page where I can confirm that I do not want my personal information to be sold by the website.
- It will take me to a page with more information about how the website uses and shares my personal information.
- It will cause the website to send me unwanted emails.
- It will take me to a page with ads about privacy and security products.
- It will take me to a page that steals my information or has a virus or malware.

## Demographics and Background

5. Are you aware of any laws in the United States that require companies to provide a “do not sell my personal information” option?

- No
- Yes (please name or describe them): \_\_\_\_

6. What is your age?

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75-84
- 85 or older
- Prefer not to answer

7. What is your gender?

- Female
- Male
- Non-binary
- Prefer to self-describe: \_\_\_\_
- Prefer not to answer

8. What is the highest level of education you have completed?

- Less than high school
- High school degree or equivalent
- Some college, no degree
- Associate’s degree, occupational
- Associate’s degree, academic
- Bachelor’s degree
- Master’s degree
- Professional degree
- Doctoral degree
- Prefer not to answer

9. What was your total household income before taxes during the past 12 months?
- Under \$15,000
  - \$15,000 to \$24,999
  - \$25,000 to \$34,999
  - \$35,000 to \$49,999
  - \$50,000 to \$74,999
  - \$75,000 to \$99,999
  - \$100,000 to \$149,999
  - \$150,000 or above
  - Prefer not to answer
10. In which state do you currently reside? *[Open-ended response]*
11. Which of the following best describes your educational background or job field?
- I have an education in, or work in, the field of computer science, computer engineering or IT.
  - I do not have an education in, or work in, the field of computer science, computer engineering or IT.
  - Prefer not to answer
12. Which of the following best describes your primary occupation?
- Administrative Support (e.g., secretary, assistant)
  - Art, Writing, or Journalism (e.g., author, reporter, sculptor)
  - Business, Management, or Financial (e.g., manager, accountant, banker)
  - Education or Science (e.g., teacher, professor, scientist)
  - Legal (e.g., lawyer, paralegal)
  - Medical (e.g., doctor, nurse, dentist)
  - Computer Engineering or IT Professional (e.g., programmer, IT consultant)
  - Engineer in other field (e.g., civil or bio engineer)
  - Service (e.g., retail clerk, server)
  - Skilled Labor (e.g., electrician, plumber, carpenter)
  - Unemployed
  - Retired
  - College student
  - Graduate student
  - Mechanical Turk worker
  - Other: \_\_\_\_
  - Prefer not to answer
13. If you have any feedback on the survey, please leave it here. *[Open-ended response]*



## Appendix B: Codebook

**Open-ended expectations** (for responses to “Which of the following do you think could happen if you clicked this symbol and link on a web page?”)

Code	Definition	Example
choices: opt out	Either generic opt out of "something" or opt out of things other than do not sell, such as data collection or email subscription list.	"I would probably go to one of those forms that lists all the information-gathering the site makes, and which ones I can opt out of."
do not sell: choices	Specific mentioning that consumers will have the option to choose whether or what types of data can or cannot be sold to third-parties by the site.	"It would give you the option to not have your personal information given, shared, or sold to someone else."
do not sell: confirmation	The link will lead to a page that double checks whether or not the participant wants their information not to be sold to others.	"You would be taken to a page to confirm you wish your personal information not to be shared."
do not sell: doubted	The user expects that the website will not sell their personal information but meanwhile expresses reservation that the site might not follow this rule.	"I would hope that it would mean the company wouldn't sell my personal information. Not sure if that would actually happen or not."
do not sell: immediate	The user assumes that the company will not sell their personal data.	"My data will not be sold."
do not sell: more info	The link leads to more info on how to make use of the "do not sell" choice or how the company does not sell consumer information to third parties.	"It would tell me how to choose not to share my information."
do not sell: requested	The link will take the user to a page where they can require the company to not sell their personal data, but they do not explicitly expect the request to be honored.	"I will be shown a page that allows me to opt out of allowing companies to sell my private information, similar to opting out of junk mail."
less privacy protection	The participant indicates that clicking the icon/link would lead to less privacy protection or another negative outcome but doesn't specify that it's because their data would now be sold.	"Your personal information will be available and spread on the internet."

more info: collected data	The link will lead to more info on what types of data (or specific data) the site has collected about the user.	"It would pull up information that the company has collected about me, possibly my demographics and what they think my shoe preferences are based on what pages I've spent time looking at."
more info: data practices	The link will lead to more info on how the site collects, uses, and shares user data, a more granular description of privacy policy.	"A page where you understand how your info will be used."
more info: generic	The general feeling that they would see more information.	"It would take me to a page with more info."
more info: products/services	The link will lead to info on the products and services sold on this website, including promotions and discounts.	"I think it would lead me to a page with more information about how to purchase these shoes."
more privacy protection	The user will enjoy a higher level of privacy protection that does not relate to do not sell, such as less tracking and use of cookies, removing existing collected data, or providing an incognito version of the site.	"It could provide privacy for me."
new page	The link will direct the user to a new page/site, open a new tab/window, without giving any further context of what's included in the page.	"It opens a web page."
not sure	The user is not sure what to expect.	"I don't know."
nothing	The user expects nothing would happen if they clicked, or is skeptical that there's actually a privacy choice present, or complains that the "toggle" is not working	"Nothing really, They would still track me."
personalization	The site will ask for more information that creates a better personalization experience or for targeted ads, e.g., recommending more relevant shoes.	"I assume it takes you to a page where you can supply personal information that will influence what the site shows you, perhaps sending you emails regarding products you might be interested in based on the information you've provided."

privacy choices: data processing	The user expects to see choices related to how the company uses collected data. However, if the response mentions choices related to how the company *share* data with others we assume the sharing involves transactions, hence code it as "do not sell: choices."	"I think a drop-down menu will open and you can choose how your private information is handled if you are using the website."
privacy choices: generic	The user expects to be led to general privacy/cookie settings.	"You should be able to set your privacy options, meaning, how your info is used, how you are contacted."
privacy policy	The link leads to a privacy policy. We use this code when participants mention the word "privacy policy" explicitly.	"I would be taken to another page full of text with their privacy policy that i most likely won't read or understand if i did read it."
spamming	The link leads to settings that would bring the user annoying messages such as unwanted emails.	"Your IP address and information would go to other sources and then you would receive a bunch of emails from other sources."
toggle: color change	The user expects the color or the motion of the icon to change, but does not specify anything else related to the configuration of do-not-sell.	"It would turn green."
toggle: do not sell control	The user expects that the toggle is a control for whether or not they want their personal data to be sold, but did not specify the direction as sell → not sell or not sell → sell.	"I would toggle back and forth from 'do not sell' to 'it's okay to sell.'"
toggle: deny sell permission	The user expects clicking will toggle the setting such that the website won't be able to sell your data.	"I think it would activate the button and let the business know that I didn't want to share my personal information."
toggle: allow sell permission	The user expects clicking will toggle the setting such that the website can now sell your data.	"Right now it is clicked 'off' so if you click it 'on' they will be free to sell your personal information."

## Mapping of Expectation Codes for Regressions

Code	Conveys the ability to opt-out of selling personal info (yes/no)	Conveys misconceptions (yes/no)	Conveys icon as an actual toggle switch (yes/no)
choices: opt out	no	no	no
do not sell: choices	yes	no	no
do not sell: confirmation	yes	no	no
do not sell: doubted	yes	no	no
do not sell: immediate	yes	no	no
do not sell: more info	yes	no	no
do not sell: requested	yes	no	no
less privacy protection	no	yes	no
more info: collected data	no	no	no
more info: data practices	no	no	no
more info: generic	no	no	no
more info: products/services	no	yes	no
more privacy protection	no	no	no
new page	no	no	no
not sure	no	no	no
nothing	no	yes	no
personalization	no	yes	no
privacy choices: data processing	no	no	no
privacy choices: generic	no	no	no
privacy policy	no	no	no
spamming	no	yes	no
toggle: color change	no	yes	yes
toggle: do not sell control	yes	yes	yes
toggle: deny sell permission	yes	yes	yes
toggle: allow sell permission	yes	yes	yes