# Privacy notice and choice

Lorrie Faith Cranor

October 1, 2013

*8-533 / 8-733 / 19-608 / 95-818:*
*Privacy Policy, Law, and Technology*

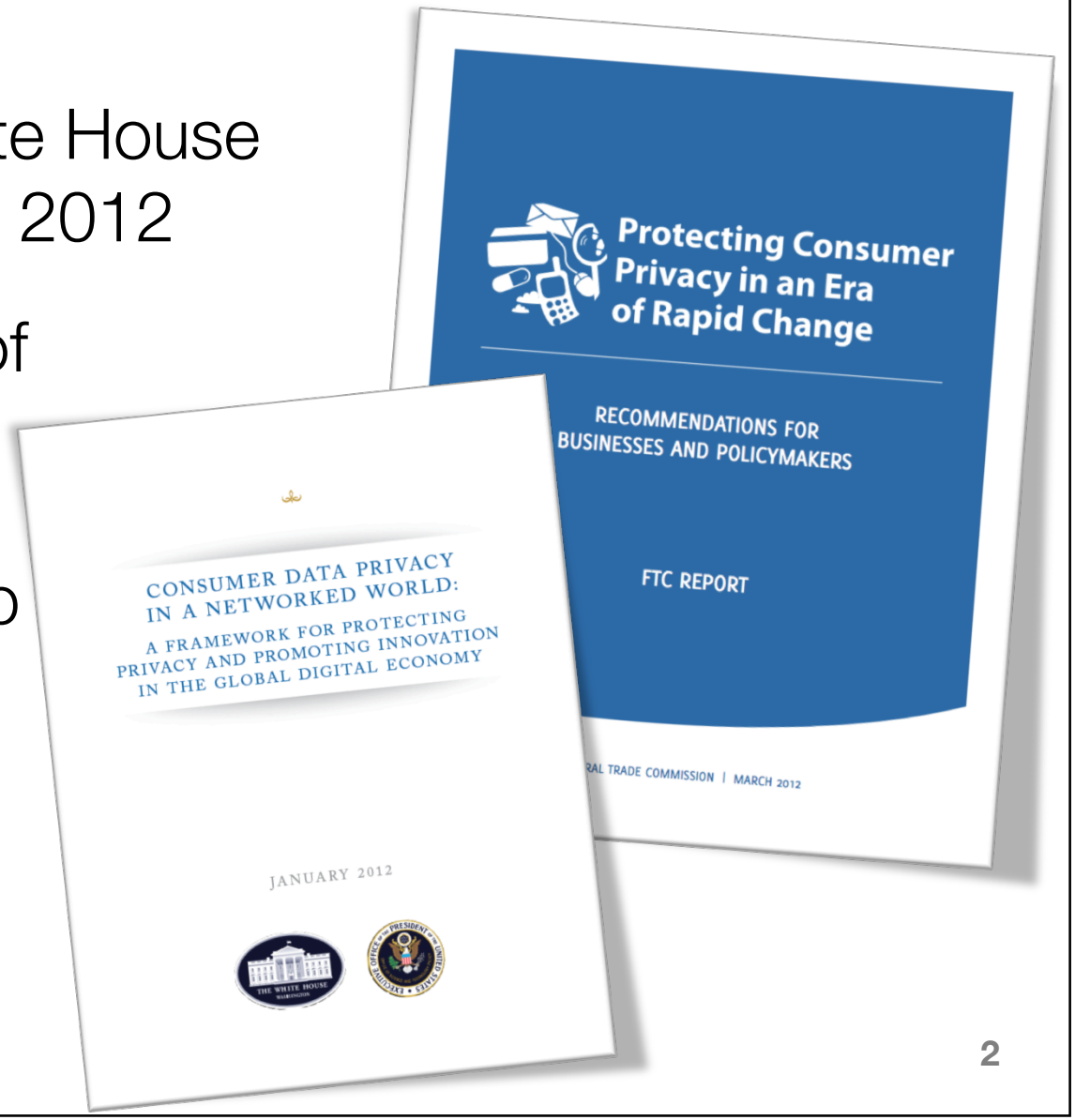
Carnegie Mellon University
CyLab

institute for SOFTWARE RESEARCH

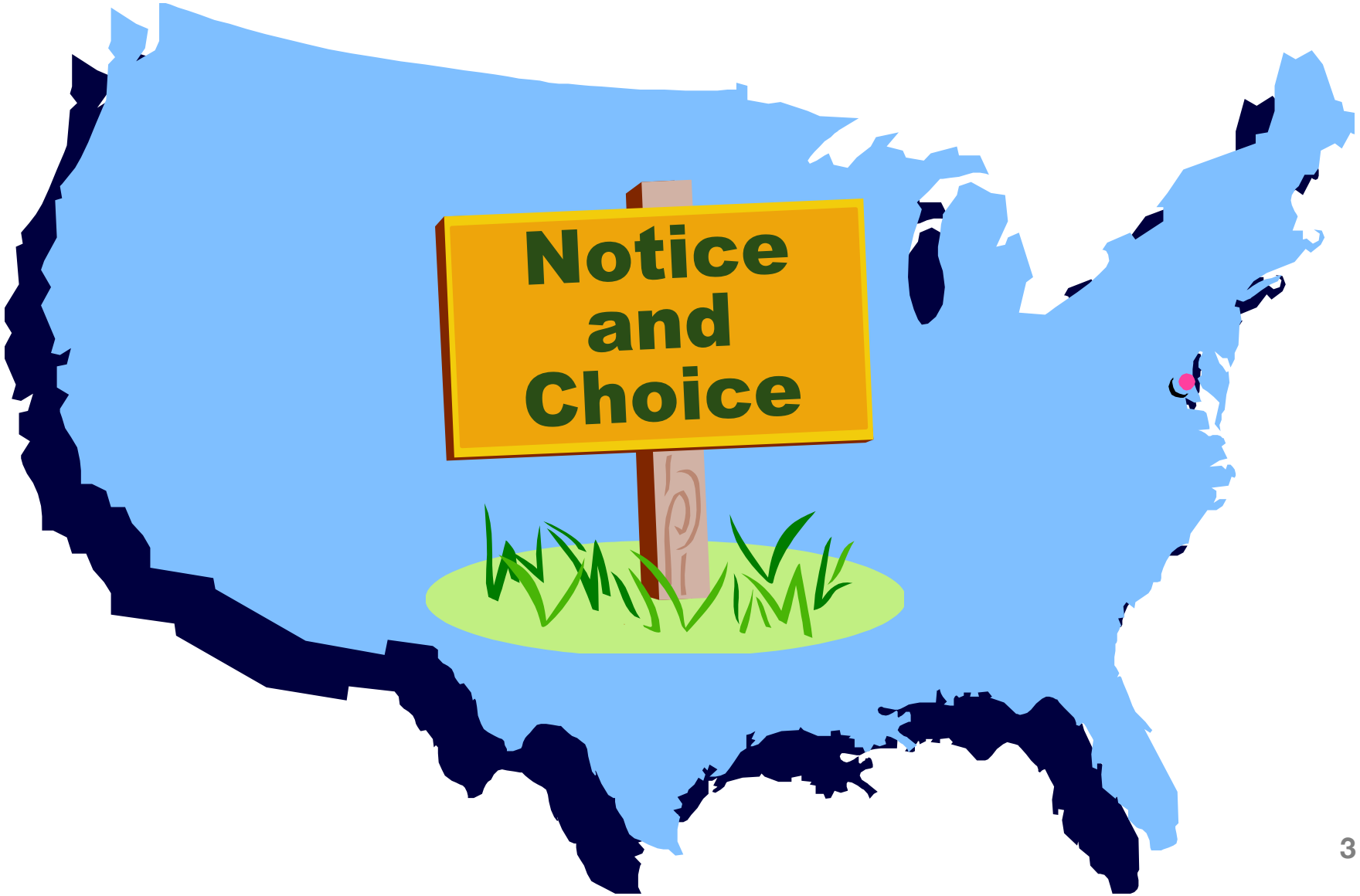
Engineering & Public Policy

# US government privacy reports

- U.S. FTC and White House reports released in 2012
- U.S. Department of Commerce multi-stakeholder process to develop enforceable codes of conduct



# Privacy self regulation

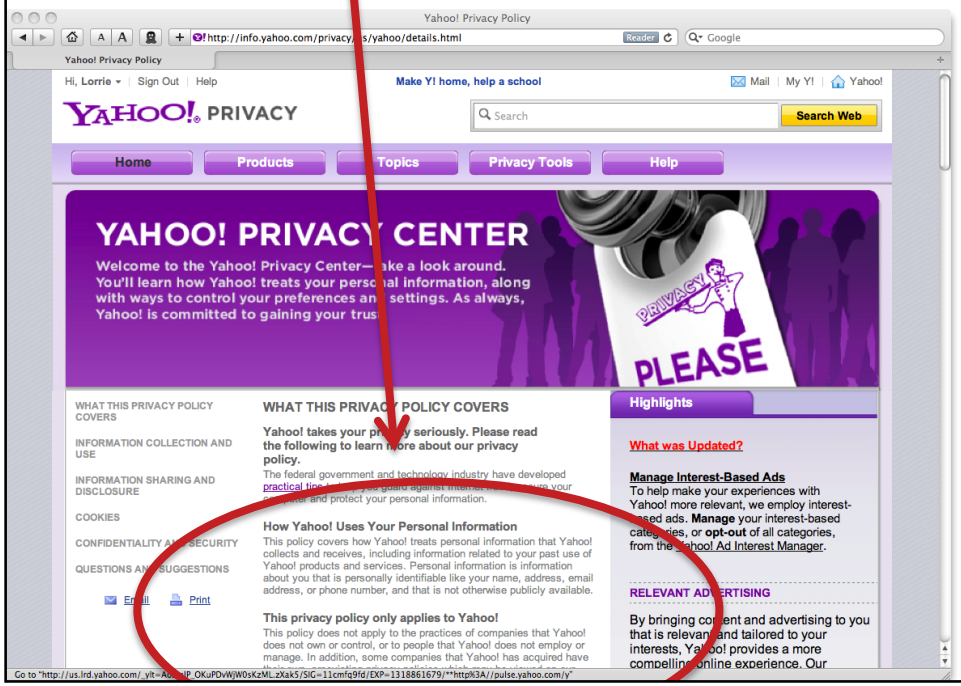


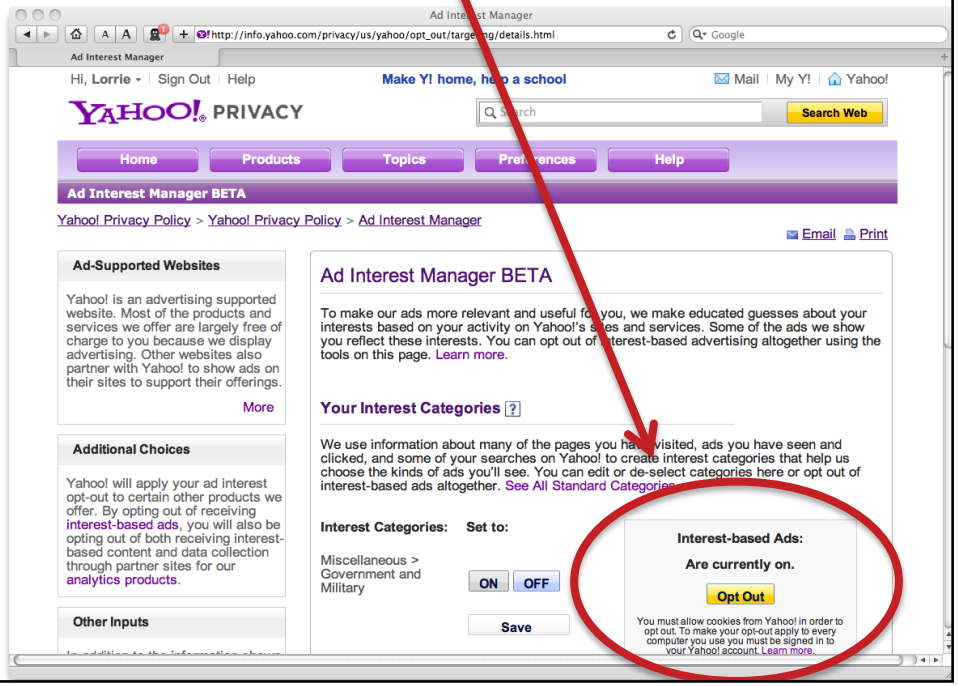
# Notice and choice

Protect privacy by giving people control over their information

Notice about data collection and use

Choices about allowing their data to be collected and used in that way



TRADER JOE'S
HREDDED
BITE SIZE
WHEATS
Nutrition Facts
Vitamin E (to preserve freshness).
Dist. & Sold Exclusively By:
Trader Joe's,
Monrovia, CA 91016
This product is sold by weight not volume. Some settling of contents may have occurred during handling and shipping.
BARBARA'S
BAKERY
Shredded Spoonfuls
Multigrain
Nutrition Facts
Serving Size 3/4 Cup (32g)
Servings Per Container About 21
Amount Per Serving
Cereal
with 1/2 cup Fortified Skim Milk
Calories 120 160
Calories from Fat 15 15
% Daily Value**
Total Fat 1.5g* 2% 2%
Saturated Fat 0g 0% 0%
Trans Fat 0g
Cholesterol 0mg 0% 1%
Sodium 200mg 8% 11%
Potassium 125mg 4% 9%
Total Carbohydrate 24g 8% 10%
Dietary Fiber 4g 15% 15%
Soluble Fiber 1g
Insoluble Fiber 3g
Sugars 5g
Protein 4g
Vitamin A 0% 4%
Vitamin C 8% 10%
Calcium 2% 15%
Iron 4% 4%
Vitamin E 4% 4%
Ingredients: Whole Oat Flour (With Added Oat Bran), Yellow Corn Flour (With Added Corn Bran), Unsulphured Molasses, Whole Wheat Flour, Salt, Baking Soda, Natural Vitamin E (Mixed Tocopherols [Soy]), Vitamin C.
Contains wheat and soy. Made in a peanut-free facility.
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TRADER JOE'S
Very Berry Clusters
CEREAL
Nutrition Facts
Serving Size 1 cup (55 g)
Servings Per Container about 7
Calories 230 Calories from Fat 50
% Daily Value*
Total Fat 5g 8%
Saturated Fat 0.5g 3%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 140mg 6%
Total Carbohydrate 42g 14%
Dietary Fiber 3g 11%
Sugars 12g
Protein 5g
Vitamin A 0% • Vitamin C 2%
Calcium 2% • Iron 6%
Ingredients: Whole Rolled Oats, Milled Cane Sugar, Corn Flour, Rice Flour, Vegetable Oil (Canola And/Or Safflower And/Or Sunflower Oil), Whole Wheat Flour, Brown Rice, Cornstarch, Honey, Salt, Barley Malt Syrup, Freeze Dried Blueberries, Freeze Dried Raspberries, Freeze Dried Strawberries, Natural Flavor, Annatto (For Color), Turmeric (For Color), Purple Carrot Juice (For Color), Cardamom Seed, Fennel Seed, Fenugreek Seed, Nutmeg.
Contains Wheat. May Contain Traces of Tree Nuts & Soy.
Dist. & Sold Exclusively By: Trader Joe's, Monrovia, CA 91016
This product is sold by weight not volume. Some settling of contents may have occurred during handling and shipping.
Nutrition Facts
Serving Size ¾ cup (30g)
Servings Per Container about 12
Amount Per Serving
Multi Grain Squares
with 1/2 cup skim milk
Calories 110 150
Calories from Fat 5 10
% Daily Value**
Total Fat 0.5g* 1% 1%
Saturated Fat 0g 0% 0%
Trans Fat 0g
Polyunsaturated Fat 0g
Monounsaturated Fat 0g
Cholesterol 0mg 0% 1%
Sodium 125mg 5% 8%
Potassium 85mg 2% 8%
Total Carbohydrate 25g 8% 10%
Dietary Fiber 2g 8% 8%
Sugars 4g
Other Carbohydrate 19g
Protein 3g
Vitamin A 0% 4%
Vitamin C 0% 0%
Calcium 0% 15%
Iron 25% 25%
Vitamin D 0% 15%
Thiamin 25% 30%
Niacin 25% 25%
Vitamin B6 25% 25%
Folic Acid 25% 25%
Phosphorus 8% 20%
Magnesium 6% 10%
Zinc 25% 30%
Ingredients: Whole Grain Wheat*, Rice*, Corn Meal,* Naturally Milled Sugar*, Salt, Malt Extract*, Vitamin E (Mixed Tocopherols) Added To Preserve Freshness. *Organic
Vitamins and Minerals: Iron And Zinc (Mineral Nutrients), A & D Vitamin (Niacinamide), A & D Vitamin (Folic Acid), Vitamin B1 (Thiamin Mononitrate), Vitamin B6 (Pyridoxine Hydrochloride).
Contains Wheat Ingredients. May Contain Almond, Soy And Milk Ingredients.
Distributed by: Small Planet Foods, Inc.
Sedro-Woolley, WA 98284 USA
Product of Canada
© 2008 Small Planet Foods, Inc.
Certified Organic
This product is certified organic by the Washington State Department of Agriculture in accordance with the organic standards of the U.S. Department of Agriculture.
This package is sold by weight, not by volume. You can be assured of proper weight even though some settling of contents normally occurs during shipment and handling.
Shredded Oats
Original
Nutrition Facts
Serving Size 1-1/4 Cup (2 oz/55g)
Servings Per Container About 12
Amount Per Serving
Cereal
With 1/2 Cup Fortified Skim Milk
Calories 220 260
Calories from Fat 25 25
% Daily Value**
Total Fat 2.5g* 4% 4%
Saturated Fat 0.5g 2% 2%
Trans Fat 0g
Cholesterol 0mg 0% 1%
Sodium 250mg 10% 12%
Potassium 180mg 5% 11%
Total Carbohydrate 42g 14% 16%
Dietary Fiber 5g 20% 20%
Soluble Fiber 2g
Insoluble Fiber 3g
Sugars 11g
Protein 6g
Vitamin A 0% 6%
Vitamin C 35% 35%
Calcium 2% 15%
Iron 10% 10%
Vitamin E 8% 8%
Thiamin 10% 15%
Riboflavin 4% 10%
Niacin 6% 6%
Phosphorus 15% 30%
Magnesium 15% 20%
Zinc 10% 15%
Copper 10% 10%
Ingredients: Whole Oat Flour, Whole Wheat Flour, Unsulphured Molasses, Malted Barley Extract, Baking Soda, Salt, Natural Vitamin E (Mixed Tocopherols [Soy]), Vitamin C.
Contains wheat and soy. Made on equipment that also processes milk, almonds and hazelnuts.
Distributed by: Barbara's Bakery, Inc.®, a Weetabix North America Company
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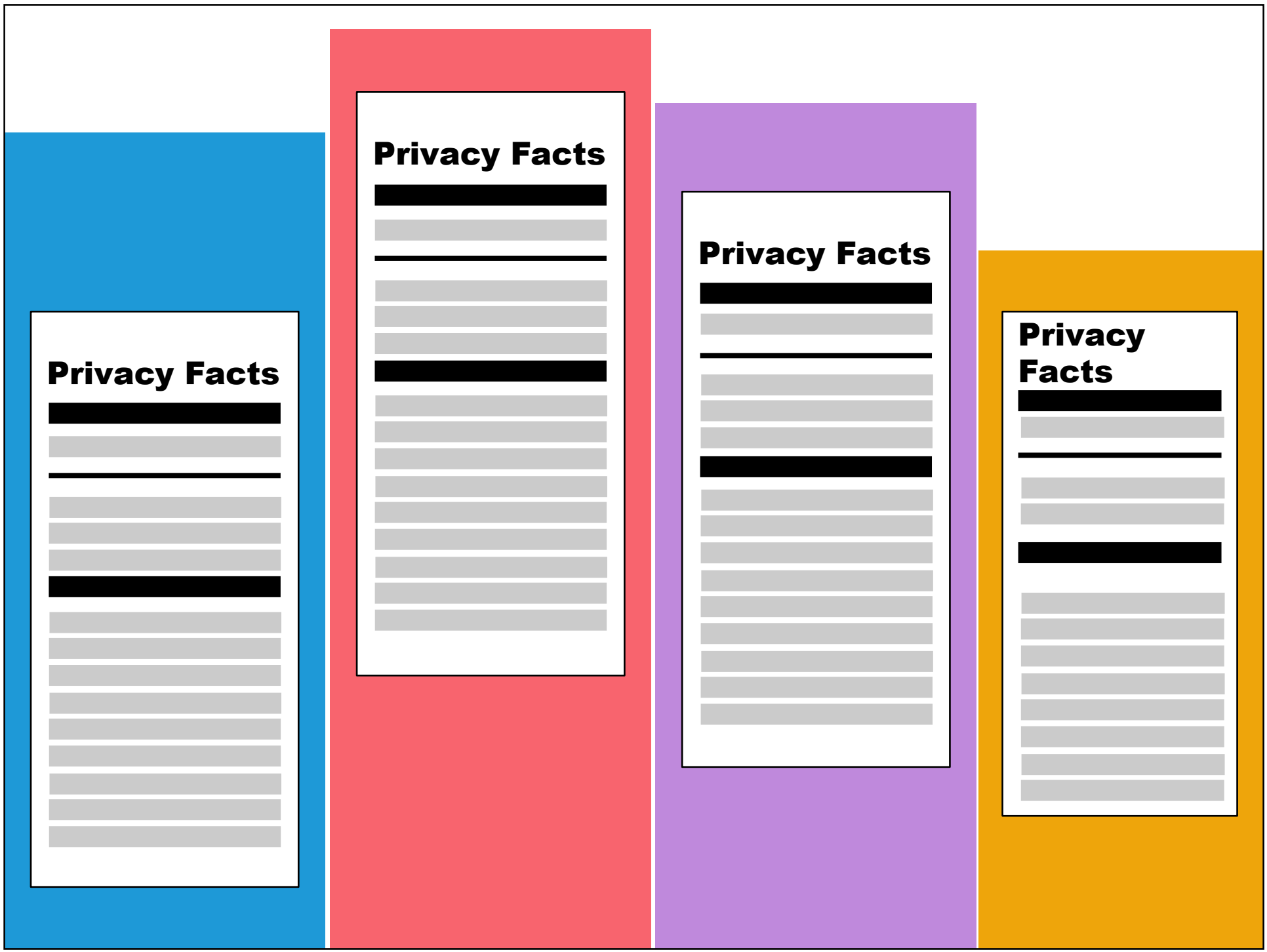
TRADER JOE'S
Organic
HIGH FIBER O's
Nutrition Facts
Serving Size 1 1/4 cup (55g)
Servings per Container 8
Amount per Serving
Calories 190 Calories from Fat 10
% Daily Value*
Total Fat 1g 2%
Saturated Fat 0g 0%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 115mg 5%
Total Carbohydrate 44g 15%
Dietary Fiber 9g 36%
Soluble Fiber less than 1g
Insoluble Fiber 8g
Sugars 9g
Protein 6g 12%
Vitamin A 0% • Vitamin C 130%
Calcium 4% • Iron 30%
Thiamin 25% • Riboflavin 25%
Niacin 25% • Vitamin B6 25%
Folate 25% • Vitamin B12 25%
Zinc 15%
Ingredients: Organic Whole Grain Wheat Flour, Organic Wheat Bran, Organic Evaporated Cane Juice, Organic Oat Fiber, Sea Salt, Organic Caramel Color, Natural Vitamin E. Nutrition Blend: Niacinamide, Vitamin C, Niacin, Iron, Zinc, Vitamin B6, Riboflavin, Thiamin, Folate, Vitamin B12.
Our vendors follow Good Manufacturing Practices to segregate ingredients to avoid cross contact with allergens. Made on shared equipment with milk, tree nuts & soy. Facility processes eggs & peanuts.
Dist. & Sold Exclusively By: Trader Joe's, Monrovia, CA 91016
Certified Organic by Quality Assurance International (QAI).
TRADER JOE'S
organic
Corn Flake
Nutrition Facts
Serving Size 1 Cup (30g)
Servings per Container about 11
Amount Per Serving
Calories 110 Calories from Fat 0
% Daily Value*
Total Fat 0g 0%
Saturated Fat 0g 0%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 280mg 12%
Total Carbohydrate 26g 9%
Dietary Fiber less than 1g 3%
Sugars 2g
Protein 2g
Vitamin A 25% • Vitamin C 25%
Calcium 0% • Iron 45%
Vitamin D 25% • Thiamin 25%
Riboflavin 25% • Niacin 25%
Vitamin B6 25% • Folic Acid 50%
Vitamin B12 25% • Zinc 25%
Ingredients: Organic Milled Corn, Organic Evaporated Cane Juice, Sea Salt, Organic Barley Malt Extract, Soy Lecithin (An Emulsifier), Mixed Tocopherols (Vitamin E) Added To Preserve Freshness. Vitamins & Minerals: Ferric Orthophosphate (Iron Source), Sodium Ascorbate (Vitamin C), Vitamin A Acetate, Niacinamide (A B Vitamin), Zinc Oxide (Zinc Source), Folic Acid (A B Vitamin), Cyanocobalamin (Vitamin B12), Cholecalciferol (Vitamin D), Pyridoxine Hydrochloride (Vitamin B6), Riboflavin (Vitamin B2), Thiamin Mononitrate (Vitamin B1).
Our vendors follow good manufacturing practices to segregate ingredients to avoid cross contact with allergens. Made on equipment shared with wheat and soy. Facility processes peanuts and tree nuts.
Dist. & Sold Exclusively By: Trader Joe's, Monrovia, CA 91016
Certified Organic by Quality Assurance International (QAI).
This product is sold by weight not volume. Some settling of contents may have occurred during shipping.
00923316


Privacy Facts
Privacy Facts
Privacy Facts
Privacy Facts

“In theory there is no difference between theory and practice. In practice there is.”

—Yogi Berra

How effective is privacy notice and choice **in practice**?

Global Privacy Enforcement Network Internet Privacy Sweep – Questions and Answers – May 6, 2013
www.priv.gc.ca/media/nr-c/2013/nr-c_130506_qa_e.asp
Reader
Office of the Privacy Commissioner of Canada
Commissariat à la protection de la vie privée du Canada
OFFICE OF THE PRIVACY COMMISSIONER OF CANADA
Français
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Help
Search
canada.gc.ca
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Search
Search
Advanced search
Sections
About Us
Legal Corner
Commissioner's Findings
Parliamentary Activities
Resources
News Room
Frequently Asked Questions
A-Z Index
Transparency
Completed Access to Information Requests
Proactive Disclosure
HOW TO FILE
A privacy complaint
GO
SECURING PERSONAL INFORMATION
News
Global Privacy Enforcement Network Internet Privacy Sweep Questions and Answers
May 6, 2013
What will happen during the Internet Privacy Sweep? What is the goal?
Privacy enforcement authorities participating in the Sweep will designate individuals within their organizations to search the Internet in a coordinated effort to assess privacy practices related to a predetermined theme – this year the theme is Privacy Practice Transparency.
The Sweep will provide flexibility for privacy enforcement authorities to tailor their search within this common theme to focus on issues that are relevant in the context of domestic legislation, market factors and strategic priorities.
The purpose of the Sweep is not to conduct an in-depth analysis of the privacy practice transparency of each website, but to replicate the consumer experience by spending a few minutes per site checking for performance against set common indicators.
The Sweep is not an investigation, nor is it intended to conclusively identify
News
Year 2013 View
Speeches
Year 2013 View
UPCOMING EVENTS
GO
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Contact:
Anne-Marie Hayden
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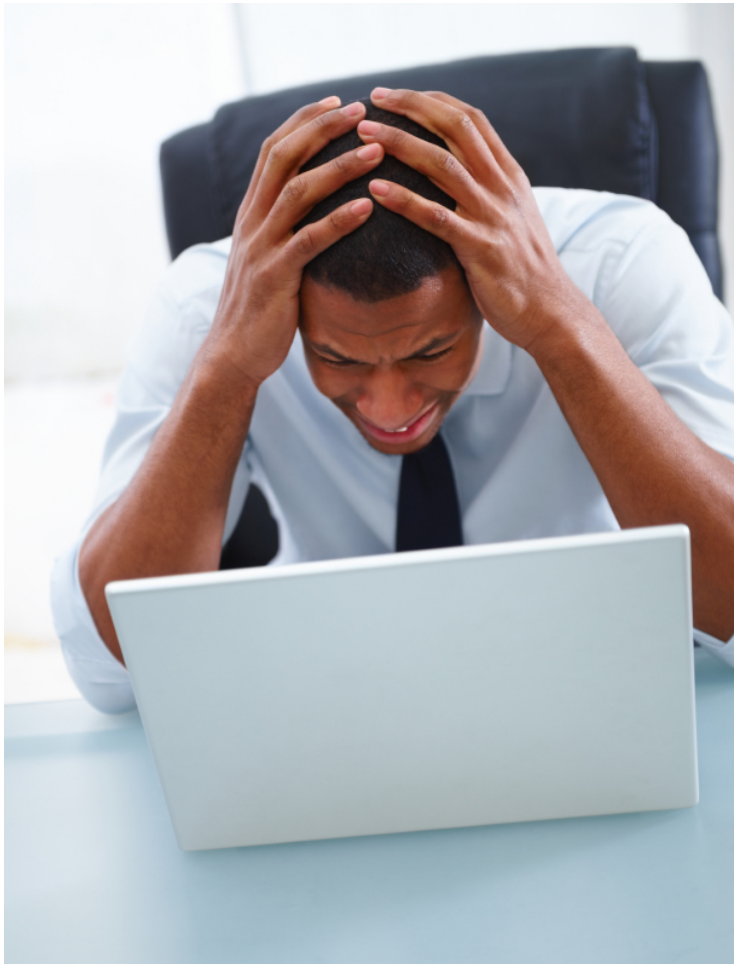
Address:
112 Kent Street
Ottawa, ON
K1A 1H3
Fax: (613) 995-1139

# Nobody wants to read privacy policies

"the notice-and-choice model, as implemented, has led to long, incomprehensible privacy policies that consumers typically do not read, let alone understand"

– *Protecting Consumer Privacy in an Era of Rapid Change.* Preliminary FTC Staff Report. December 2010.



# Cost of reading privacy policies

- What would happen if everyone read the privacy policy for each site they visited once each month?
- Time = 244/hours year
- Cost = $3,534/year
- National opportunity cost for time to read policies: $781 billion

A. McDonald and L. Cranor. The Cost of Reading Privacy Policies. I/S: A Journal of Law and Policy for the Information Society. 2008 Privacy Year in Review Issue. http://lorrie.cranor.org/pubs/readingPolicyCost-authorDraft.pdf

# Privacy Icons

http://www.azarask.in/blog/post/privacy-icons/ *2010*

Your Data is Used Only for the Intended Use

Your Data May be Used for Purposes You Do Not Intend

Your data is never given to advertisers.

Site gives your data to advertisers.

Your data is never bartered or sold.

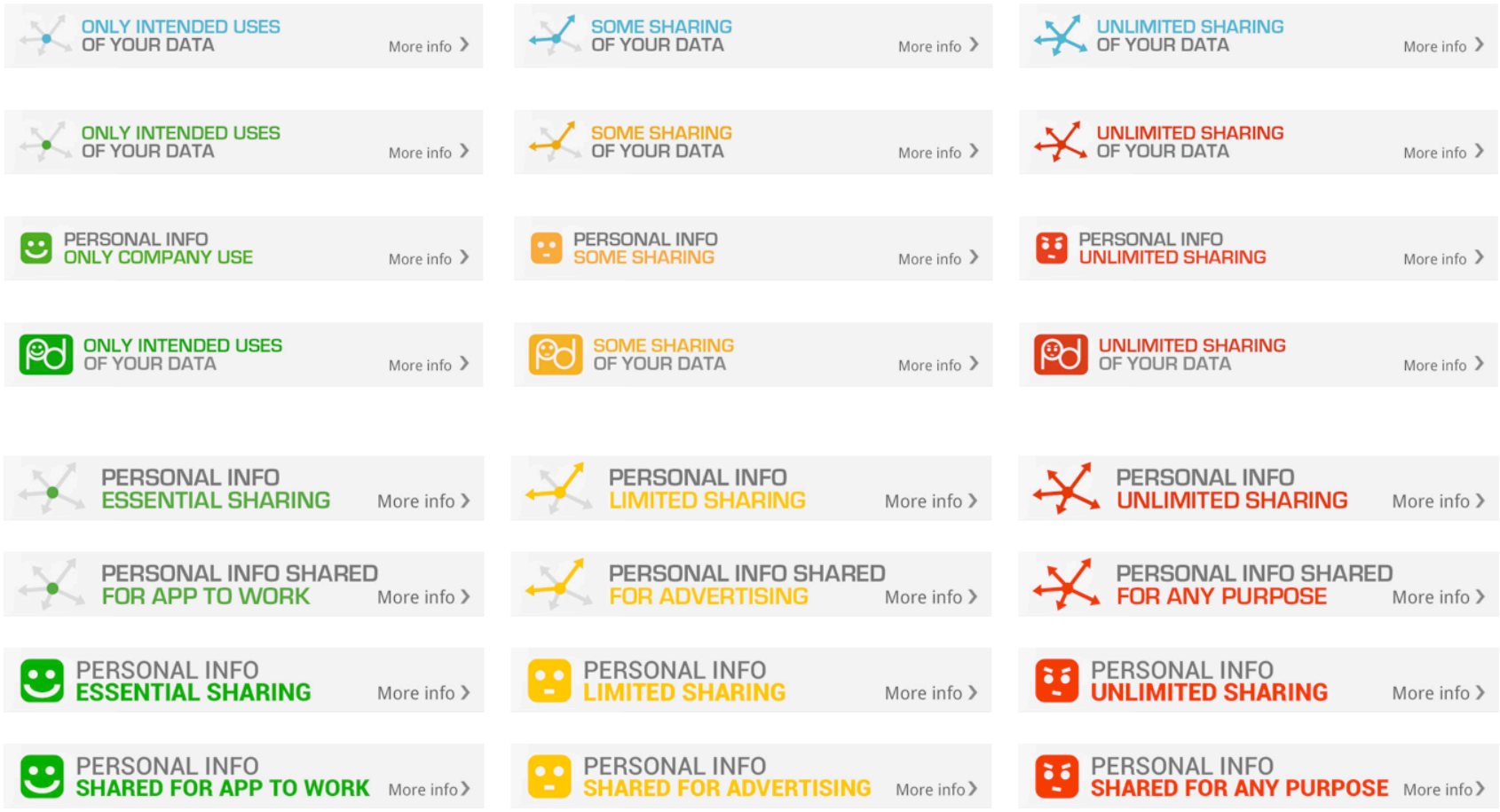
Your data may be bartered or sold.

Data is given to law enforcement only when legal process is followed.

Data may be given to law enforcement even when legal process is not followed.

Your data is kept for less than 1 month.

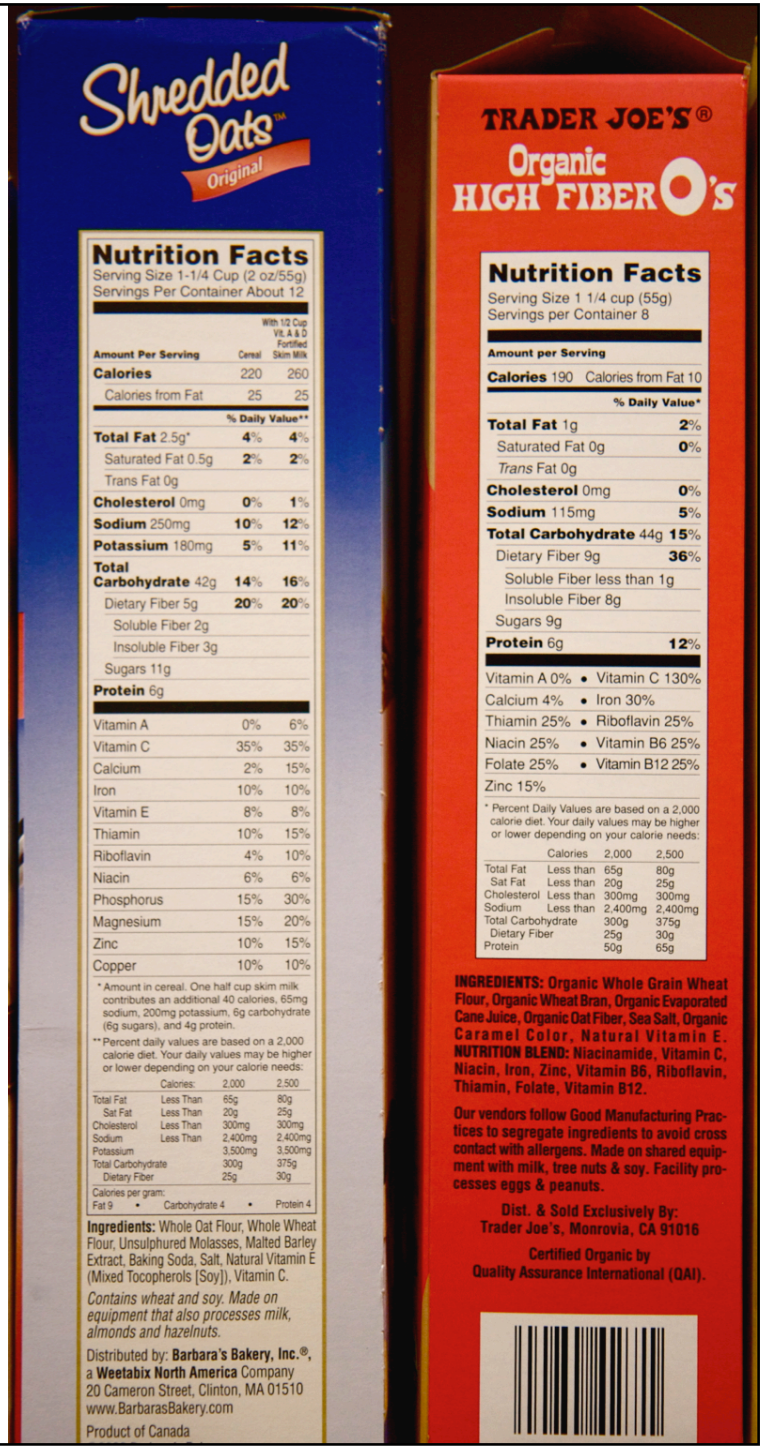
Your data may be kept indefinitely.




Smartphone App Privacy Icon Study Conducted for LifeLock, Inc. by Cranor et al., 2013

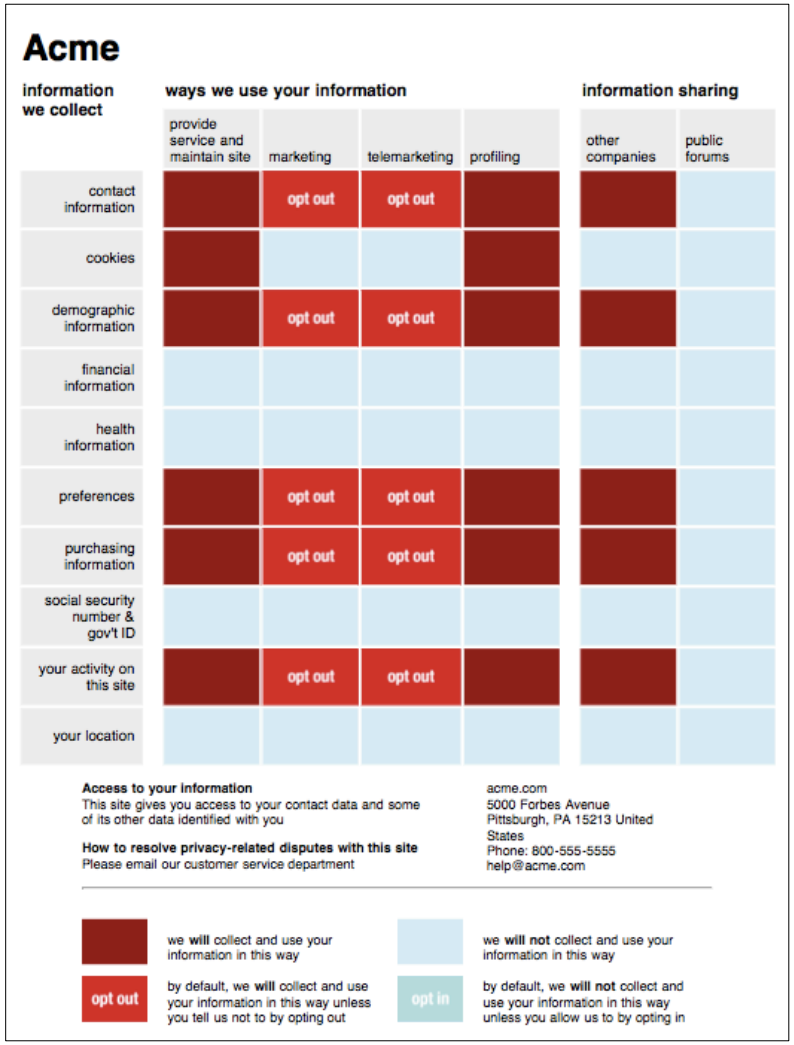
# Towards a privacy "nutrition label"

- Standardized format
  - People learn where to find answers
  - Facilitates policy comparisons
- Standardized language
  - People learn terminology
- Brief
  - People find info quickly
- Linked to extended view
  - Get more details if needed



# Iterative design process

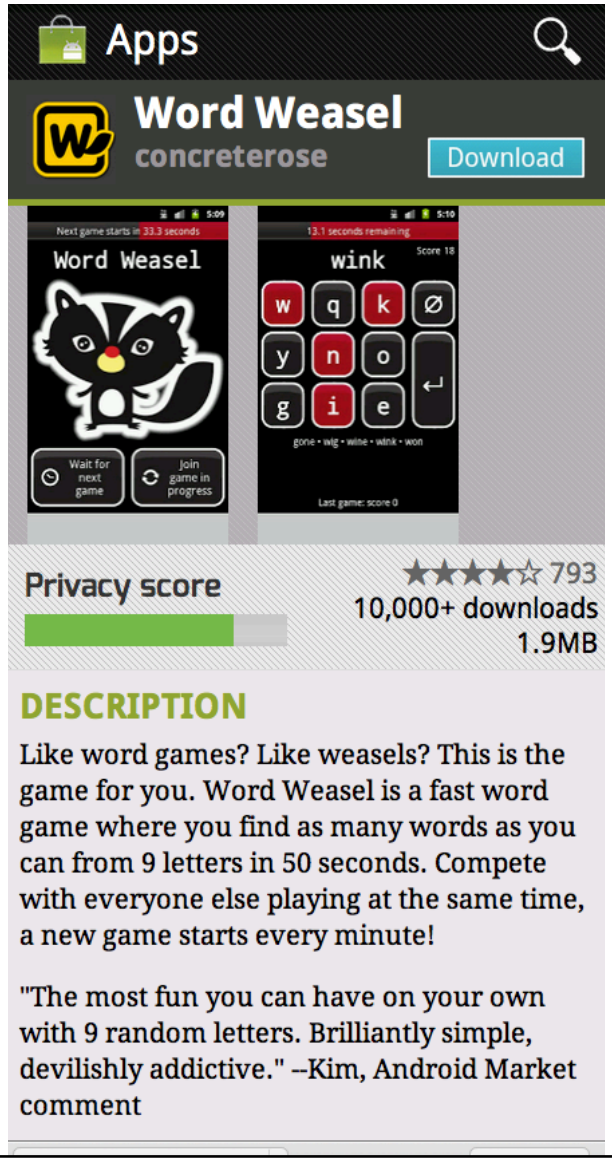
- Series of studies
  - Focus groups
  - Lab studies
  - Online studies
- Metrics
  - Reading-comprehension (accuracy)
  - Time to find information
  - Ease of policy comparison
  - Subjective opinions, ease, fun, trust

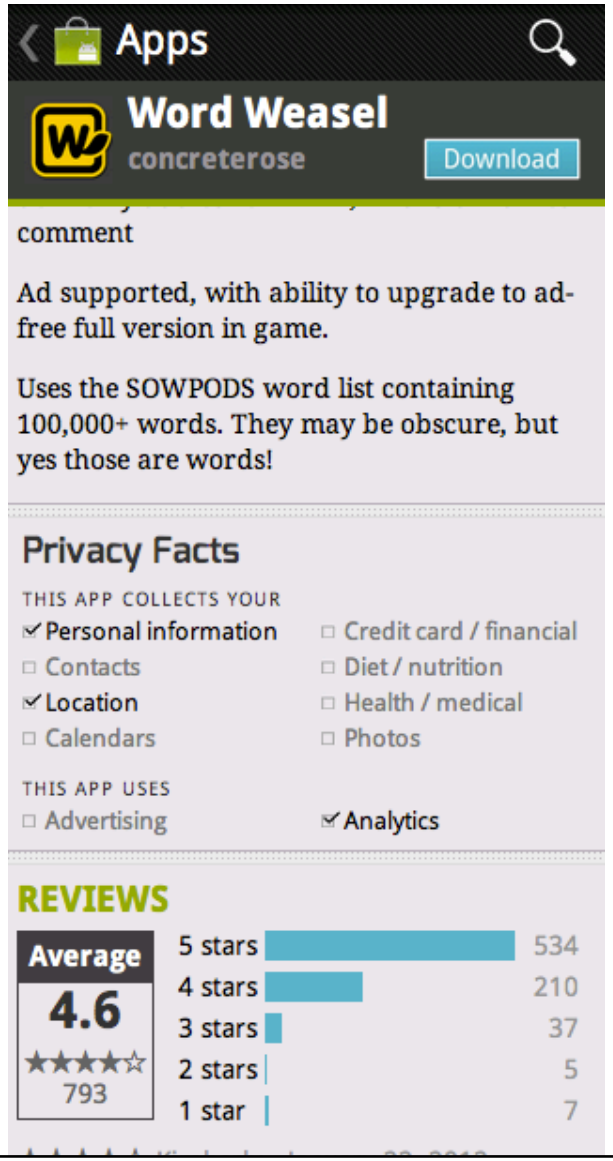



P.G. Kelley, J. Bresee, L.F. Cranor, and R.W. Reeder. A "Nutrition Label" for Privacy. SOUPS 2009.

P.G. Kelley, L.J. Cesca, J. Bresee, and L.F. Cranor. Standardizing Privacy Notices: An Online Study of the Nutrition Label Approach. CHI2010.

# Privacy label for Android



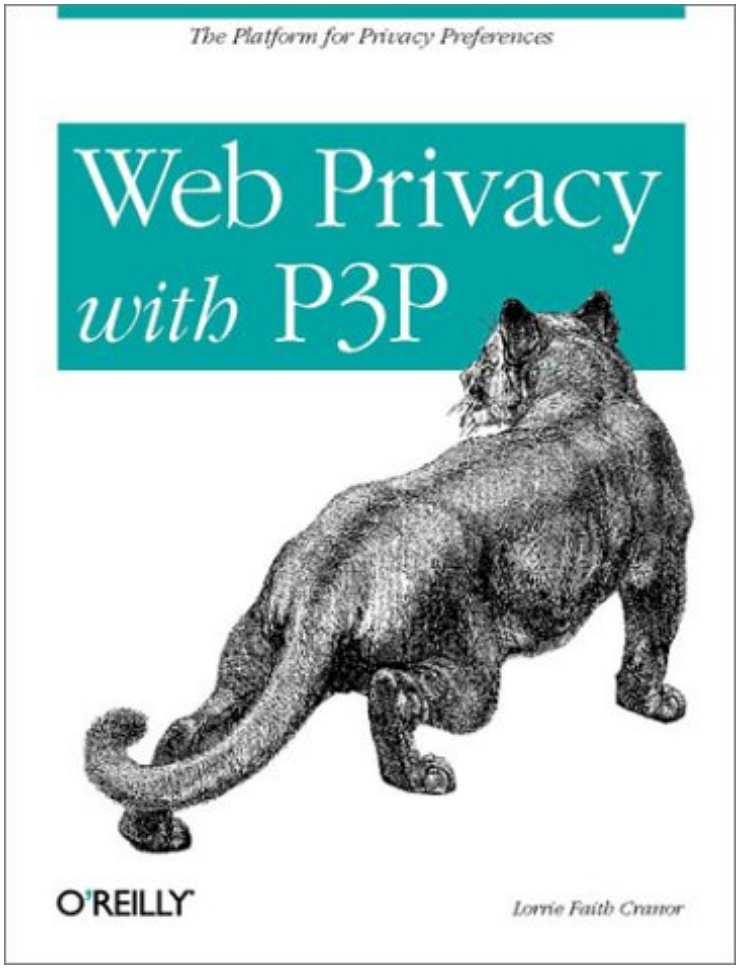



# Role play studies

- Task for participants in lab or online
  - Select apps for friend with new Android phone
  - Choose from 2 similar apps w/ different permission requests in each of 6 categories
  - Click on app name to visit download screens
- Post-task questionnaire
- Participants who saw Privacy Facts more likely to select apps that requested fewer permissions
  - Other factors such as brand and rating reduce effect

P.G. Kelley, L.F. Cranor, and N. Sadeh. Privacy as part of the app decision-making process. CHI 2013.

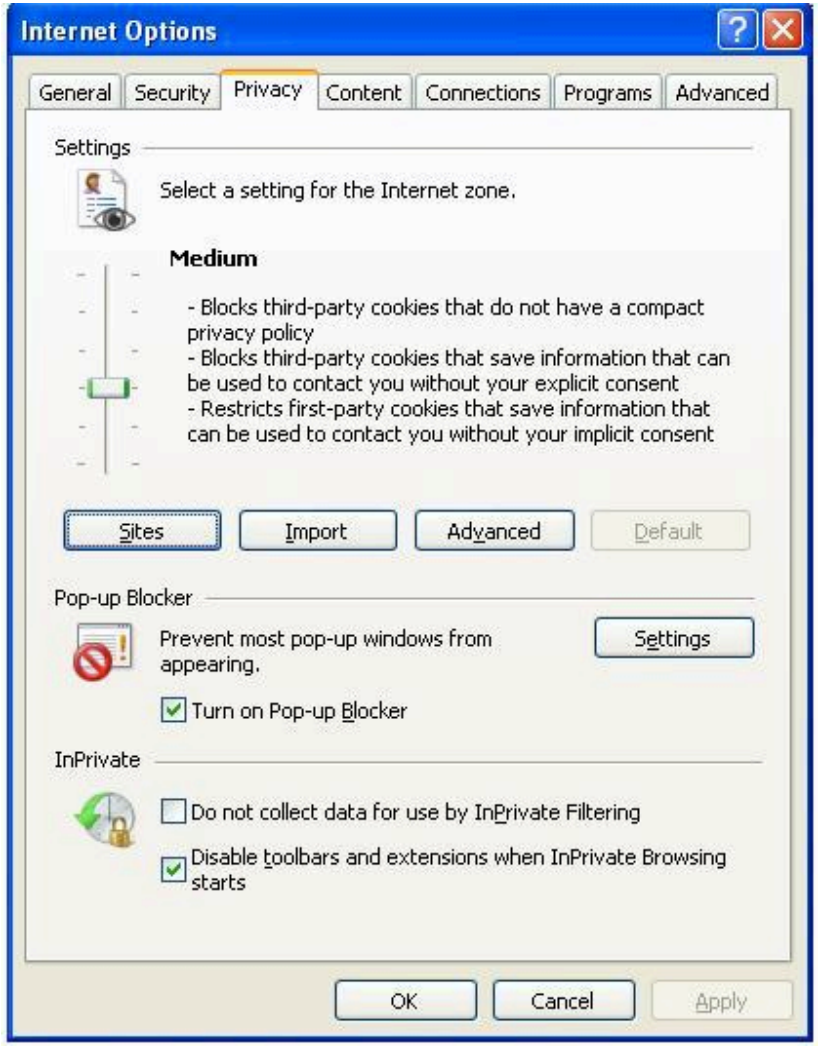
# Let your computer read for you




- Platform for Privacy Preferences (P3P)
- W3C specification for XML privacy policies
  - Proposed 1996
  - Adopted 2002
- Optional P3P compact policy HTTP headers to accompany cookies
- Lacks incentives for adoption

# P3P in Internet Explorer

- P3P implemented in IE 6, 7, 8, 9, 10 …
- Default privacy setting
  - Rejects third-party cookies without a CP
  - Rejects unsatisfactory third-party cookies



# No P3P syntax checking in IE

- IE accepts P3P policies containing bogus tokens or missing required tokens
- Example of valid compact policy:

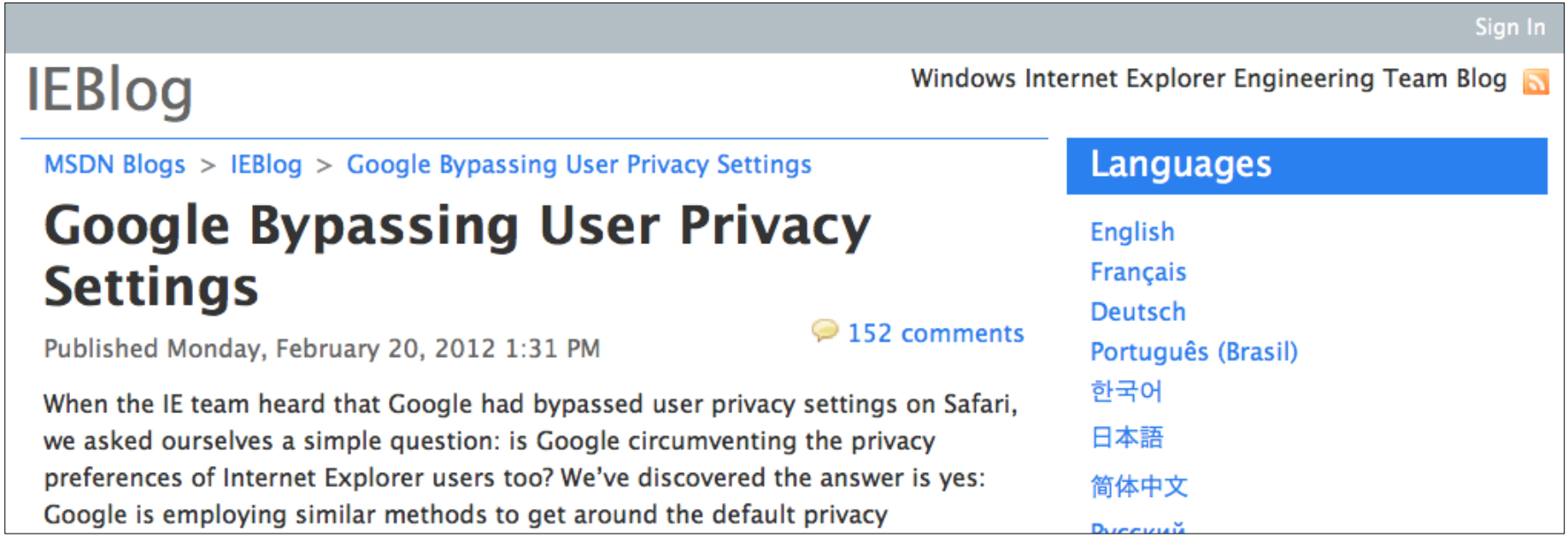
**CAO DSP COR CURa ADMa DEVa OUR IND PHY ONL UNI COM NAV INT DEM PRE**

- Examples of invalid policies accepted by IE:

**AMZN**

**Facebook does not have a P3P policy. Learn why here: http://fb.me/p3p**

P. Leon, L. Cranor, A. McDonald, and R. McGuire. Token Attempt: The Misrepresentation of Website Privacy Policies through the Misuse of P3P Compact Policy Tokens. WPES 2010.

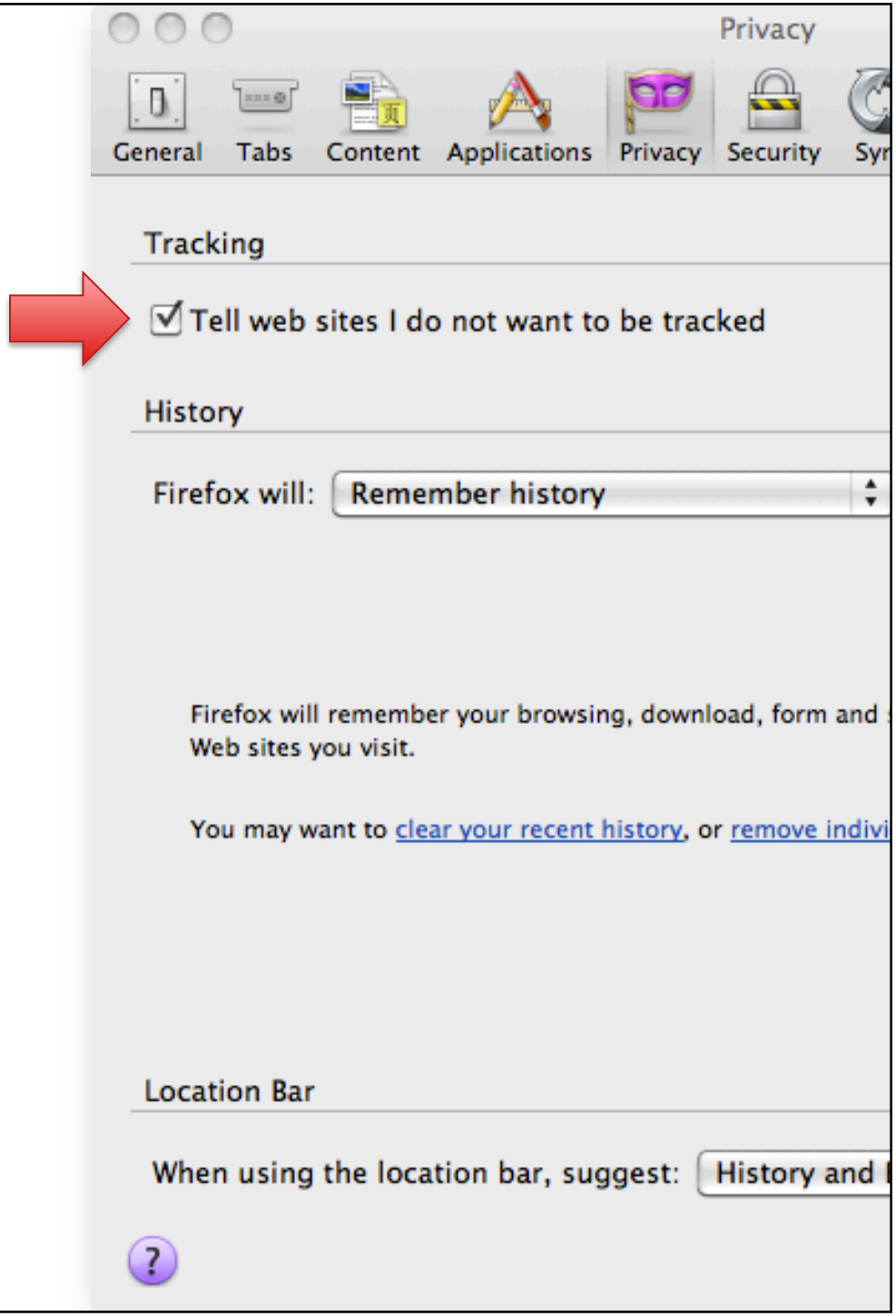



Google

Microsoft uses a "self-declaration" protocol (known as "P3P") dating from 2002 …. It is well known – including by Microsoft – that it is impractical to comply with Microsoft's request while providing modern web functionality.

# Do not track

- Proposed W3C standard
- User checks a box
- Browser sends “do not track” header to website
- Website stops “tracking”
- W3C working group trying to define what that means



# Lots of tools to stop tracking

- Browser privacy settings
  - Cookie blocking
  - P3P
  - Tracking Protection Lists
  - Do Not Track
- Browser add-ons
- Opt-out cookies
- Digital Advertising Alliance (DAA) AdChoices icon and associated opt-out pages

DoNotTrackMe

# Are any of these tools effective?

- Do the tools work?
  - Does technology do what it is supposed to do?
  - Do companies respect user choices?
- Can consumers use them?
  - Do users understand tracking?
  - Do users understand what tools do?
  - Can users make tools do what they want?

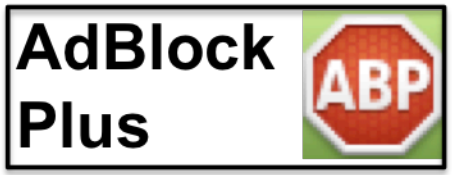
# Why Johnny Can't Opt Out: A Usability Evaluation of Tools to Limit Online Behavioral Advertising

Pedro G. Leon, Blase Ur, Rebecca Balebako, Lorrie Faith Cranor, Richard Shay, and Yang Wang

*CHI 2012*

# Three types of tools tested

**Blocking Tools**



**Opt-out Tools**

**Privacy built in browser**

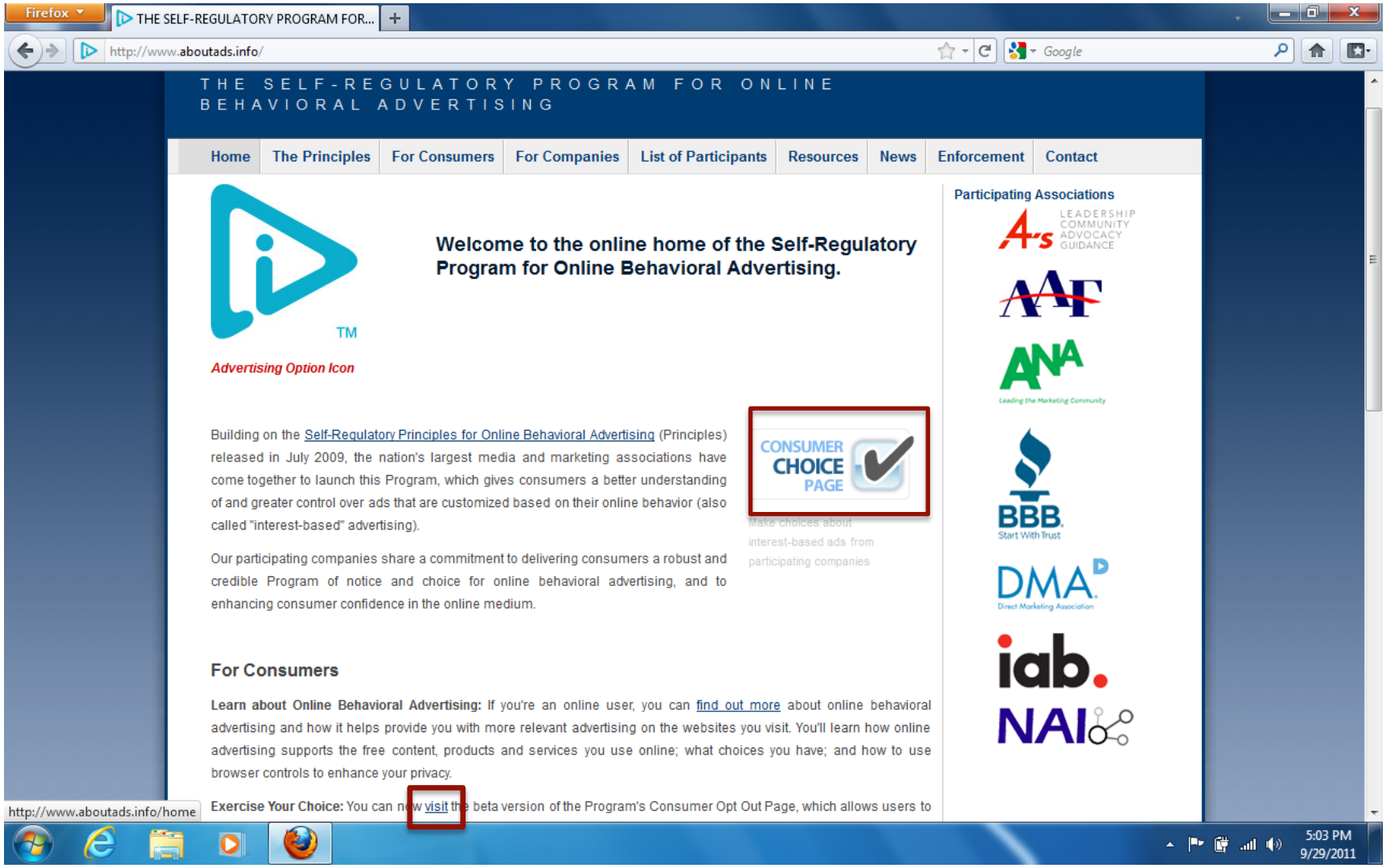
# Methodology

- Part of previous interview study
- 45 participants evaluated 9 tools
  - Between subjects study
  - Random assignment, controlled for preferred web browser and operating system

# Testing protocol

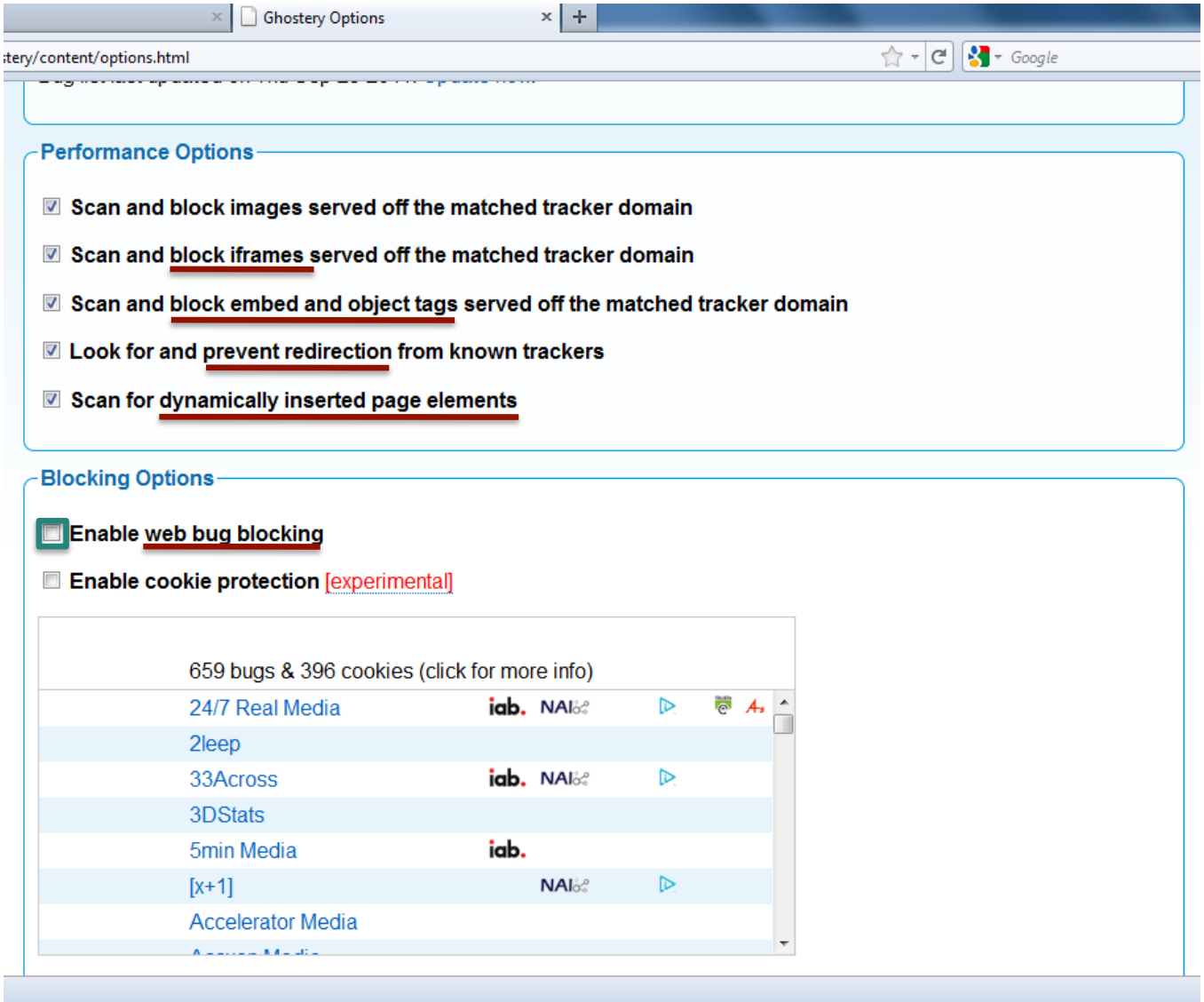
- Semi-structured interview
- Usability testing
  - Task 1: Learn about and install the tool
  - Task 2: Change tool settings
  - Task 3: Browsing scenarios
- Exit questionnaire

# DAA website

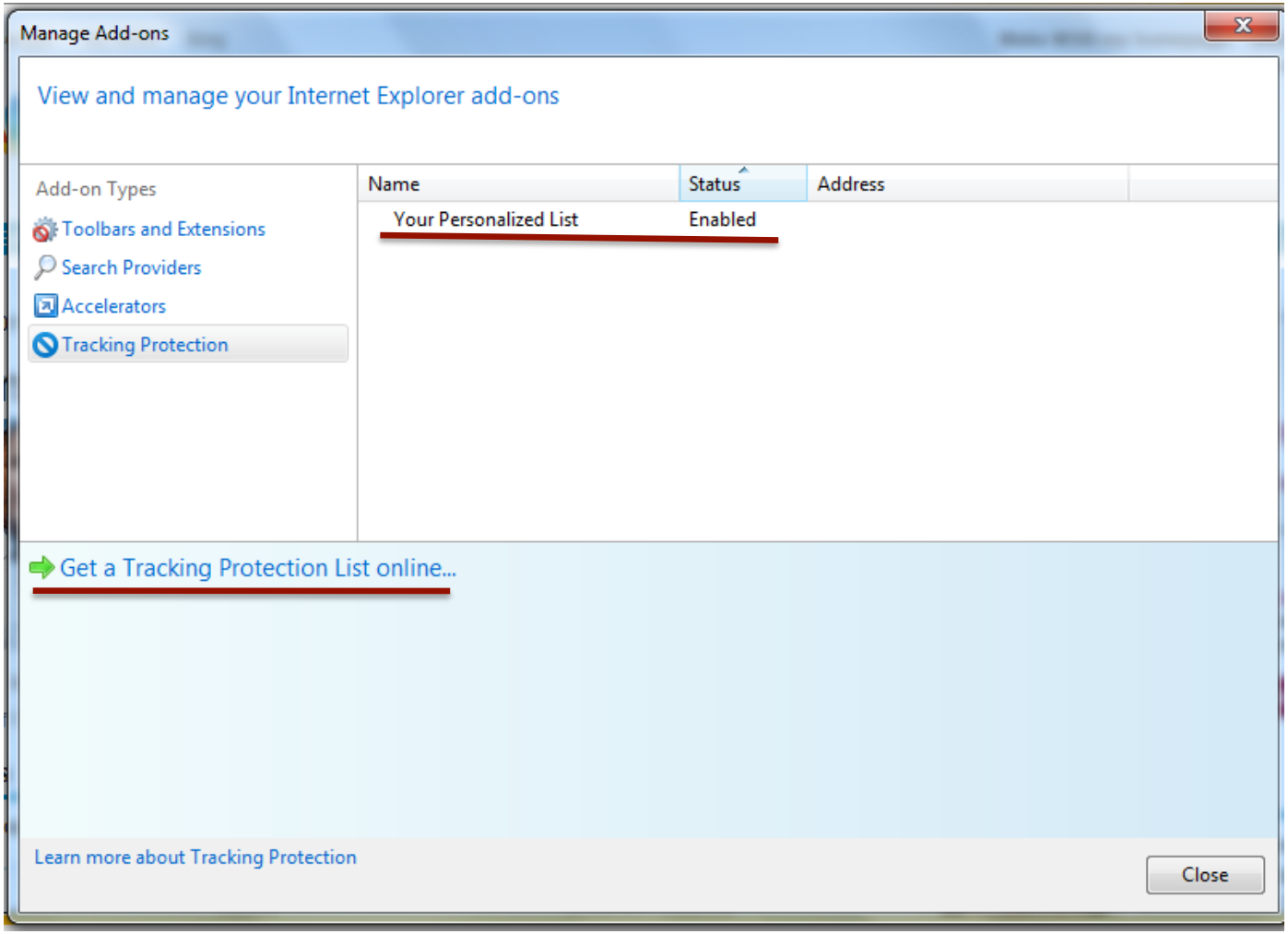

Firefox
THE SELF-REGULATORY PROGRAM FOR...
http://www.aboutads.info/
Google
THE SELF-REGULATORY PROGRAM FOR ONLINE BEHAVIORAL ADVERTISING
Home
The Principles
For Consumers
For Companies
List of Participants
Resources
News
Enforcement
Contact
TM
Advertising Option Icon
Welcome to the online home of the Self-Regulatory Program for Online Behavioral Advertising.
Building on the Self-Regulatory Principles for Online Behavioral Advertising (Principles) released in July 2009, the nation's largest media and marketing associations have come together to launch this Program, which gives consumers a better understanding of and greater control over ads that are customized based on their online behavior (also called "interest-based" advertising).
Our participating companies share a commitment to delivering consumers a robust and credible Program of notice and choice for online behavioral advertising, and to enhancing consumer confidence in the online medium.
CONSUMER CHOICE PAGE
Make choices about interest-based ads from participating companies
For Consumers
Learn about Online Behavioral Advertising: If you're an online user, you can find out more about online behavioral advertising and how it helps provide you with more relevant advertising on the websites you visit. You'll learn how online advertising supports the free content, products and services you use online; what choices you have; and how to use browser controls to enhance your privacy.
Exercise Your Choice: You can now visit the beta version of the Program's Consumer Opt Out Page, which allows users to
Participating Associations
LEADERSHIP COMMUNITY ADVOCACY GUIDANCE
AAF
ANA
Leading the Marketing Community
BBB
Start With Trust
DMA
Direct Marketing Association
iab.
NAI
http://www.aboutads.info/home
5:03 PM
9/29/2011

# Opting out can be challenging

# Ghostery configuration interface



# IE-TPL configuration interface



# Takeaways

- Problematic defaults
- Poorly designed interfaces and jargon
- Feedback
- Misconceptions about opt-out tools
- Users unable to make meaningful decisions on a per-company basis

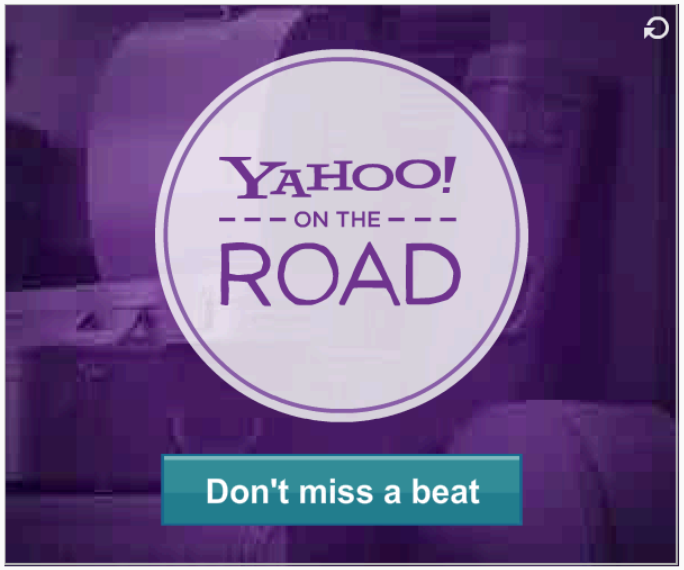
# What Do Online Behavioral Advertising Disclosures Communicate to Users?

Pedro Giovanni Leon, Justin Cranshaw, Lorrie Faith Cranor, Jim Graves, Manoj Hastak, Blase Ur, and Guzi Xu. WPES 2012

AdChoices
Tide PODS
Pop in. Stand out.
Buy Now!
TARGET
P&G eStore
by eStore Retail Services
amazon.com

AT&T.
The nation's
largest
4G
network.
LEARN MORE
Rethink Possible
4G speeds not available everywhere.

It's 1702, a decade after
The Crucible's infamous seductress
danced with the devil in Salem.
MAY 4–26, 2013
Abigail/1702
BY ROBERTO AGUIRRE-SACASA
DIRECTED BY TRACY BRIGDEN
BUY TICKETS >


YAHOO!
ON THE
ROAD
Don't miss a beat
Ad Feedback
AdChoices

# The industry claims total success

*"The DAA has revolutionized consumer education and choice by delivering a real-time, in-ad notice more than 10 billion times every day through the increasingly ubiquitous DAA Advertising Option Icon (also known as the 'Ad Choices' Icon)"*

Peter Kosmala, Former Managing Director of The Digital Advertising Alliance. *Yes, Johnny Can Benefit From Transparency and Control*. November 3, 2011.

# Objectives

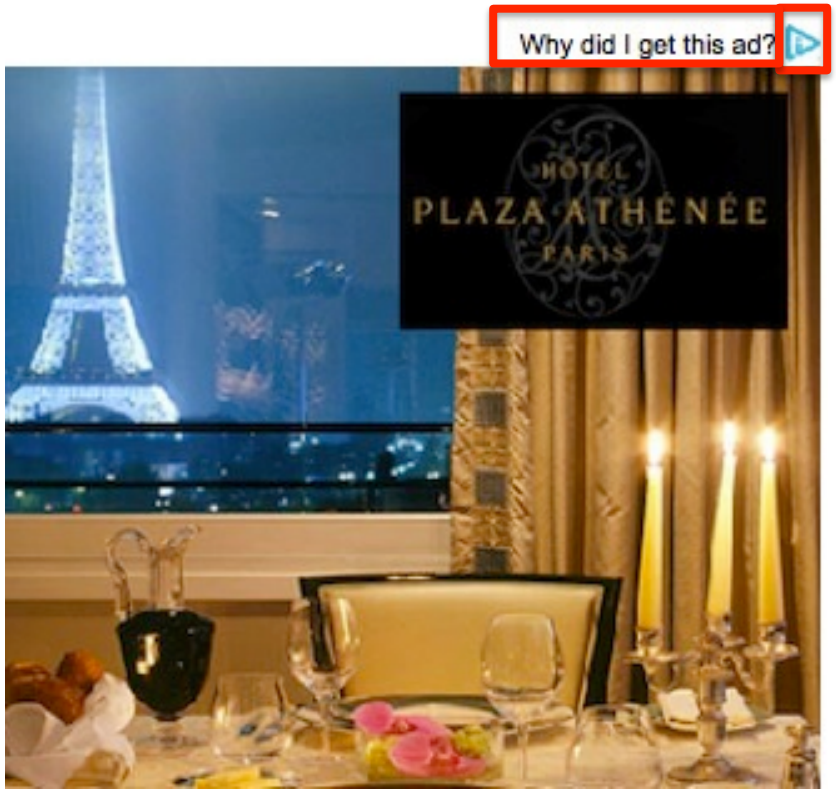
- Evaluate the effectiveness of different OBA disclosures at communicating notice and choice about OBA
- Find ways to improve effectiveness of OBA disclosures

# Methodology

- Large scale between-subjects online study
  - 1,505 participants
  - Over 100 participants per treatment
- Participants recruited through Amazon Mechanical Turk
- Guided browsing scenario
- Online survey

# First exposure to OBA disclosures

# Second exposure to OBA disclosures



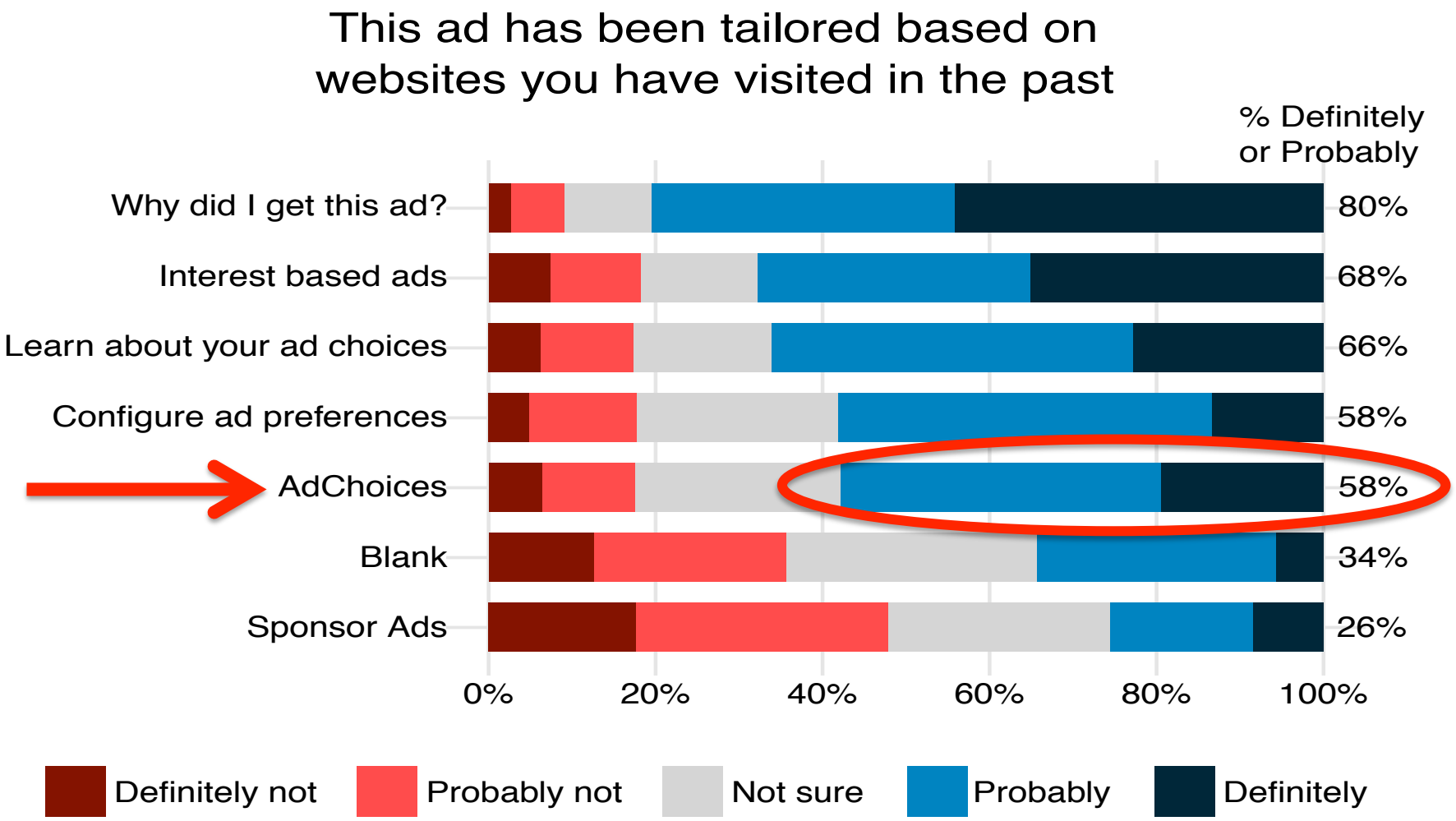

- Why did I get this ad?
- Interest based ads
- AdChoices
- Sponsor ads
- Learn about your ad choices
- Configure ad preferences
- ‘No tagline’

# Exposure to landing pages

- AOL
- Yahoo!
- Microsoft
- Google
- Monster

# Do icons and taglines suggest tailored ads?

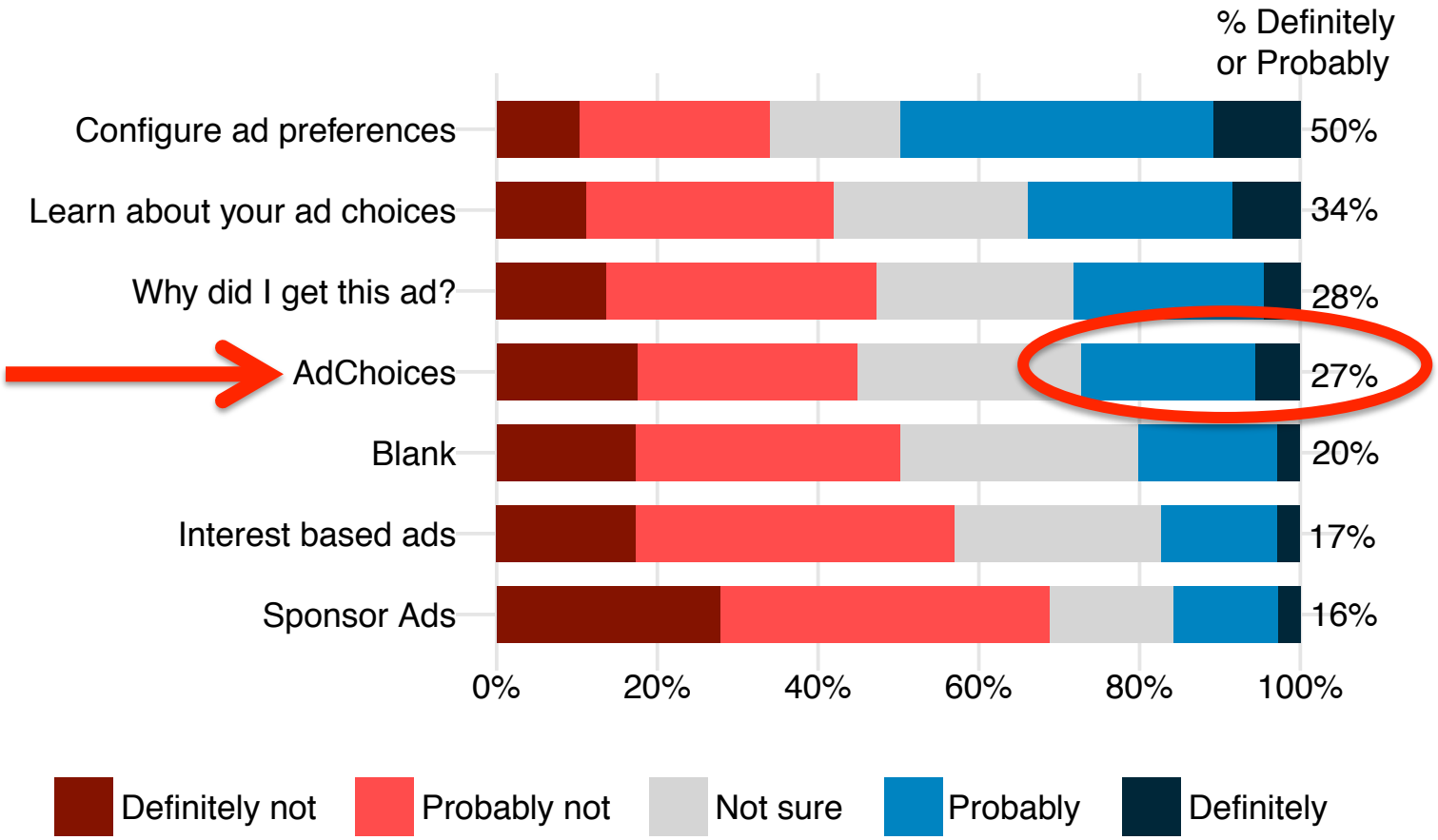
- To what extent, if any, does this combination of the symbol and phrase, placed on the top right corner of the above ad suggest the following?
  - This ad has been tailored based on websites you have visited in the past. [true]


This ad has been tailored based on websites you have visited in the past
% Definitely or Probably
Why did I get this ad?
80%
Interest based ads
68%
Learn about your ad choices
66%
Configure ad preferences
58%
AdChoices
58%
Blank
34%
Sponsor Ads
26%
0%
20%
40%
60%
80%
100%
Definitely not
Probably not
Not sure
Probably
Definitely

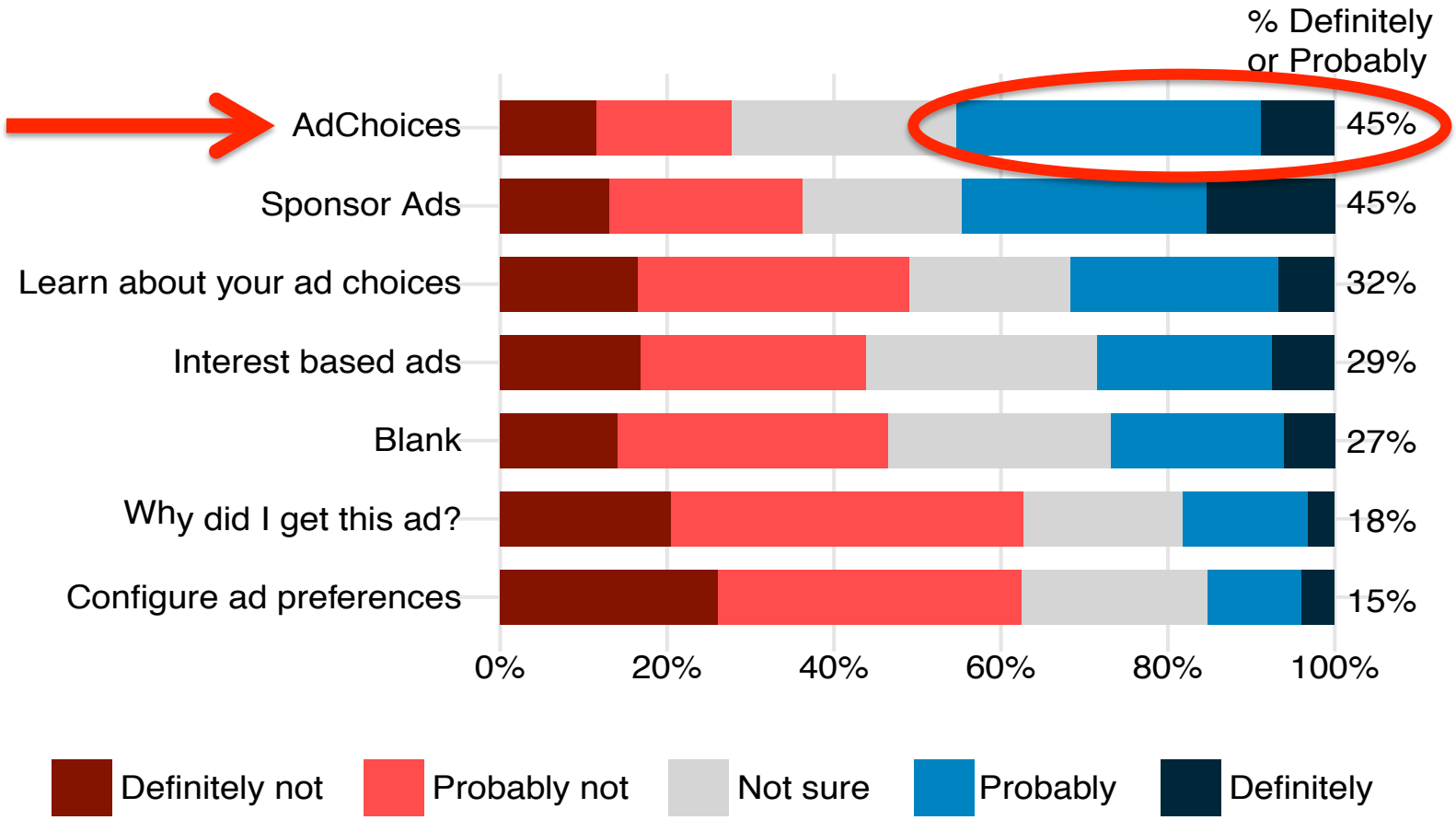
# Willingness to click

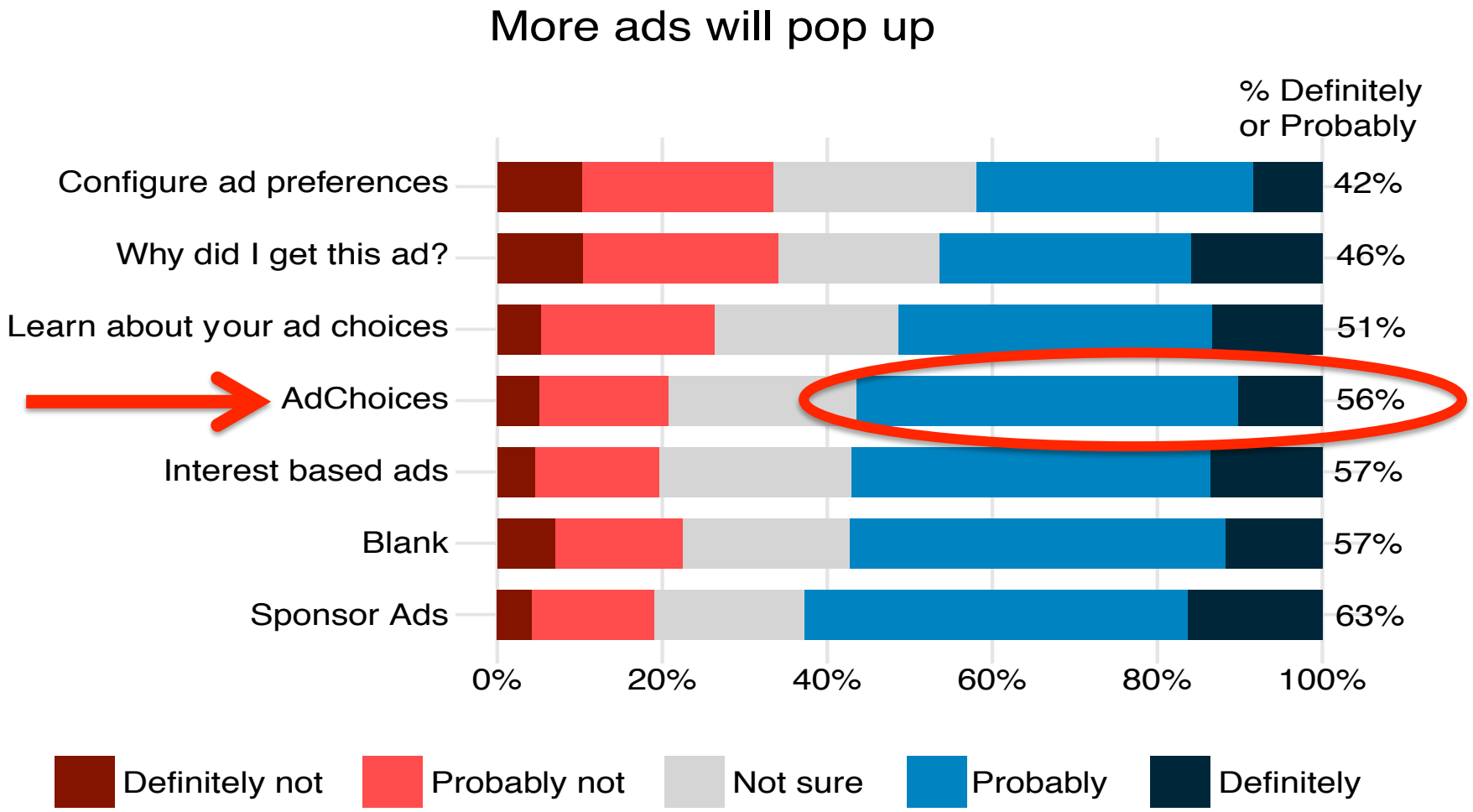
- What do you think would happen if you click on that symbol or that phrase?
  - It will take you to a page where you can tell the advertising company that you do not want to receive tailored ads. [true]
  - More ads will pop up. [false]
  - It will take you to a page where you can buy advertisements on this website. [false]

## Will take you to a page where you can tell the advertising company that you do not want to receive tailored ads



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




More ads will pop up
% Definitely or Probably
Configure ad preferences
Why did I get this ad?
Learn about your ad choices
AdChoices
Interest based ads
Blank
Sponsor Ads
42%
46%
51%
56%
57%
57%
63%
0%
20%
40%
60%
80%
100%
Definitely not
Probably not
Not sure
Probably
Definitely

# Takeaways

- OBA icons and taglines are not noticed
- “AdChoices” was outperformed by other tagline treatments at communicating notice and choice about OBA
- Users are afraid to click on icon

How effective is privacy notice and choice in practice?

| Notice and Choice Mechanism | Effectiveness in Practice |
| --- | --- |
| Privacy policies | |
| Privacy nutrition labels | |
| Privacy Facts for Android | |
| P3P | |
| Do Not Track | |
| Tools to opt-out of tracking | |
| AdChoices icon | |
| Model financial privacy notice | |

| Notice and Choice Mechanism | Effectiveness in Practice |
|---|---|
| **Privacy policies** | Nobody reads |
| **Privacy nutrition labels** | Promising research, not used |
| **Privacy Facts for Android** | Promising research, not used |
| **P3P** | Used to circumvent browser privacy settings |
| **Do Not Track** | No agreement on what it means |
| **Tools to opt-out of tracking** | Difficult to use |
| **AdChoices icon** | Nobody knows what it means and people are afraid to click on it |
| **Model financial privacy notice** | Adopted by thousands of websites, could be more useful with directory |

# How to make notice and choice more effective

- Incentives for adoption
- Enforcement (legal and technical)
- Baseline requirements
- Standardized notice formats
- Machine-readable notice formats
- Reduce ambiguity
- Link to full disclosure
- Comparison tools
- More research

Carnegie Mellon University
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