04 - Introduction to Privacy

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Usable Privacy and Security

Carnegie Mellon University
CyLab

institute for SOFTWARE RESEARCH

Engineering & Public Policy

Today!

- What does privacy mean to you?
- Privacy goals
- Why is privacy hard to measure?
- How privacy is protected
- Privacy notice and choice (intro)
- Homework presentations

What does privacy mean to you?

http://cups.cs.cmu.edu/privacyillustrated/

Hard to define

"Privacy is a value so complex, so entangled in competing and contradictory dimensions, so engorged with various and distinct meanings, that I sometimes despair whether it can be usefully addressed at all."

Robert C. Post, Three Concepts of Privacy, 89 Geo. L.J. 2087 (2001).

Limited access to self

"Being alone."

- Shane (age 4)

"the right to be let alone"

- Samuel D. Warren and Louis D. Brandeis, *The Right to Privacy,* 4 Harv. L. Rev. 193 (1890)

"our concern over our accessibility to others: the extent to which we are known to others, the extent to which others have physical access to us, and the extent to which we are the subject of others attention.

- Ruth Gavison, "Privacy and the Limits of the Law," *Yale Law Journal* 89 (1980)

Control over information

"Privacy is the claim of individuals, groups or institutions to determine for themselves when, how, and to what extent information about them is communicated to others."

"…each individual is continually engaged in a personal adjustment process in which he balances the desire for privacy with the desire for disclosure and communication…."

Alan Westin, Privacy and Freedom, 1967

How does each goal relate to privacy?

I want to have…

- Solitude, uninterrupted
- Unseen, unheard, unread
- Not talked about
- Not judged
- Not profiled, not targeted, not treated differently than others
- Not misjudged
- Free to try, practice, make mistakes, self-reflect
- Not surprised (contextual integrity)
- Not accountable

I want to be….

- Not required to reveal
- Unknown
- Forgotten
- Intimacy
- Control
- Boundaries
- Identity
- Security
- Safety
- Others?

Measuring privacy

- Why is privacy hard to measure?
- Why are attitudes about privacy hard to measure?
- Why is the cost of privacy invasion hard to measure?

How privacy is protected

- Laws, self regulation, technology
  - Notice and access
  - Control over collection, use, deletion, sharing
  - Collection limitation
  - Use limitation
  - Security and accountability

Privacy laws around the world

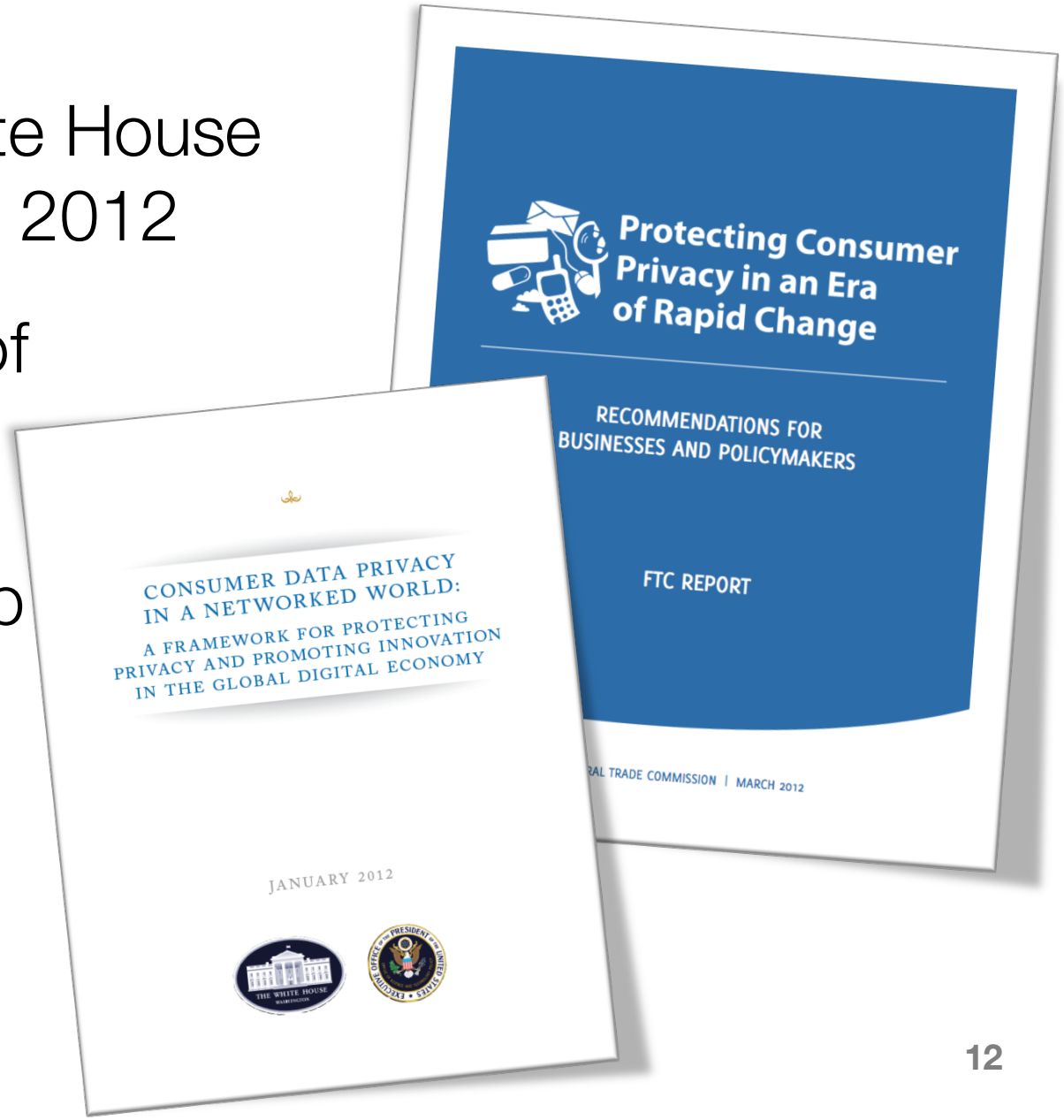
- Privacy laws and regulations vary widely
- US has mostly sector-specific laws, minimal protections, often referred to as “patchwork quilt”
  - No explicit constitutional right to privacy or general privacy law
  - But some privacy rights inferred from constitution
  - Narrow regulations for health, financial, education, videos, children, etc.
  - Federal Trade Commission jurisdiction over fraud and deceptive practices
  - Federal Communications Commission regulates telecommunications
  - Some state and local laws
- European Data Protection Directive - EU countries must adopt similar comprehensive laws, recognize privacy as fundamental human right
  - Privacy commissions in each country

OECD fair information principles

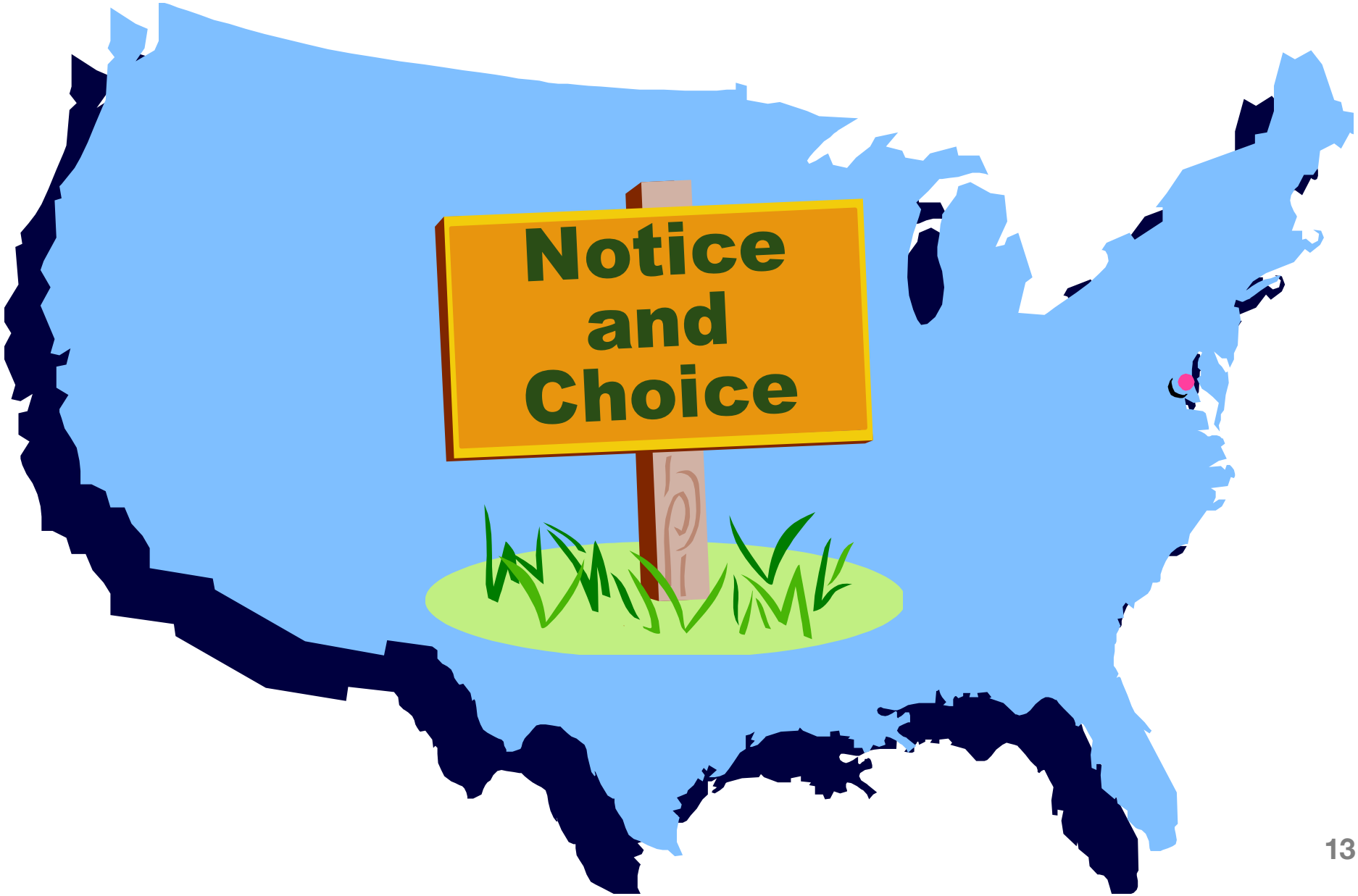
- Collection limitation
- Data quality
- Purpose specification
- Use limitation
- Security safeguards
- Openness
- Individual participation
- Accountability
- http://www.privacyrights.org/ar/fairinfo.htm

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

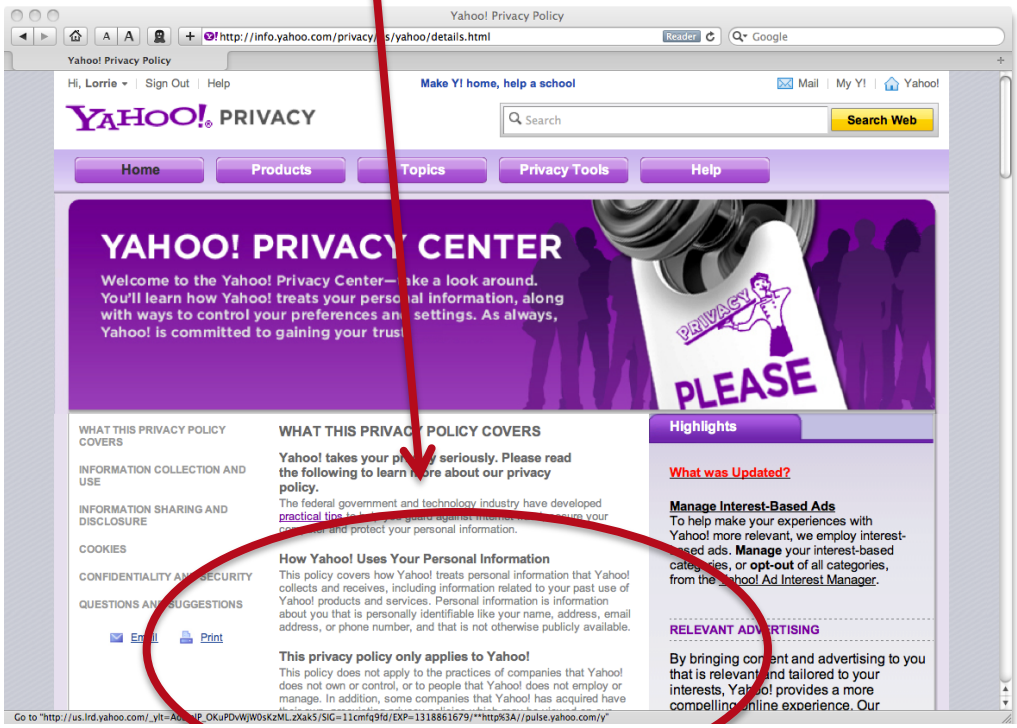


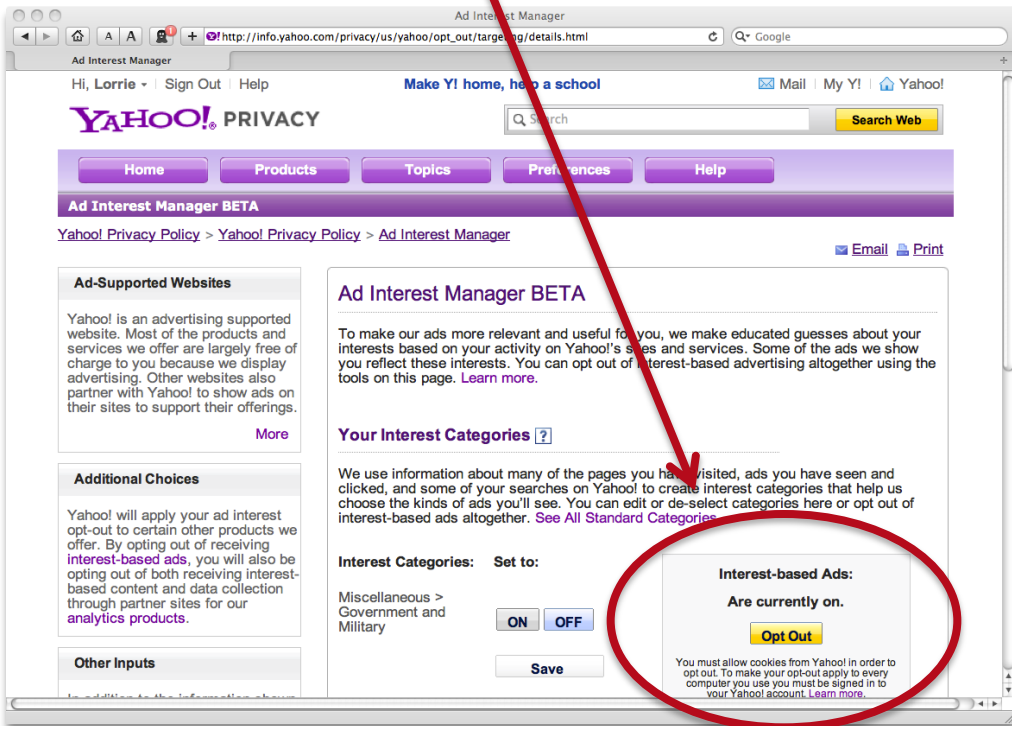
Notice and choice

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

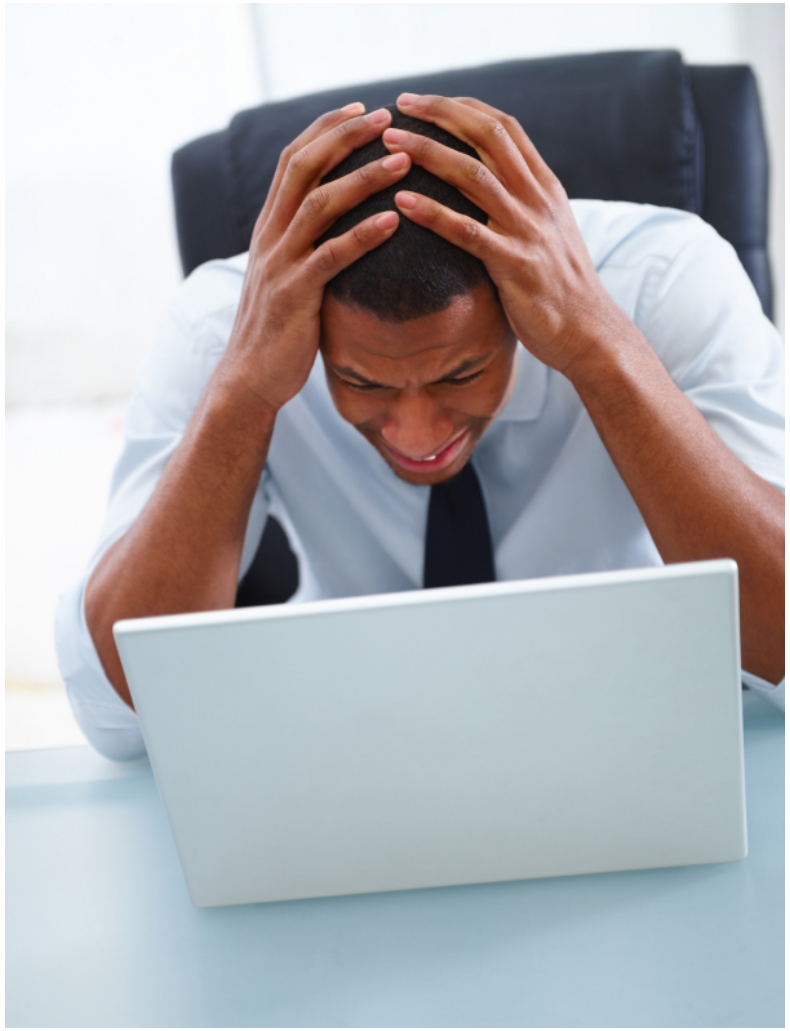




Nobody wants to read privacy policies

"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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BITE SIZE
WHEATS
Nutrition Facts
Serving Size 1 cup (49 g)
Servings Per Container about 10
Amount Per Serving
Calories 180 Calories from Fat 10
% Daily Value*
Total Fat 1g 2%
Saturated Fat 0g 0%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 0mg 0%
Potassium 180mg 5%
Total Carbohydrate 36g 13%
Dietary Fiber 5g 20%
Sugars 0g
Protein 5g
Vitamin A 0% • Vitamin C 0%
Calcium 0% • Iron 8%
Thiamine 8% • Riboflavin 2%
Niacin 10% • Vitamin D 0%
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Nutrition Facts
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Servings Per Container About 21
Amount Per Serving
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.
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Serving Size 1 cup (55 g)
Servings Per Container about 7
Amount Per Serving
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.
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Nutrition Facts
Serving Size ½ cup (30g)
Servings Per Container about 12
Amount Per Serving
Multi Grain Squares
with ½ 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 B VITAMIN (NIACINAMIDE), A B VITAMIN (FOLIC ACID), VITAMIN B1 (THIAMIN MONONITRATE), VITAMIN B6 (PYRIDOXINE HYDROCHLORIDE).
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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 Vt. A & D 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.
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Organic
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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.
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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).
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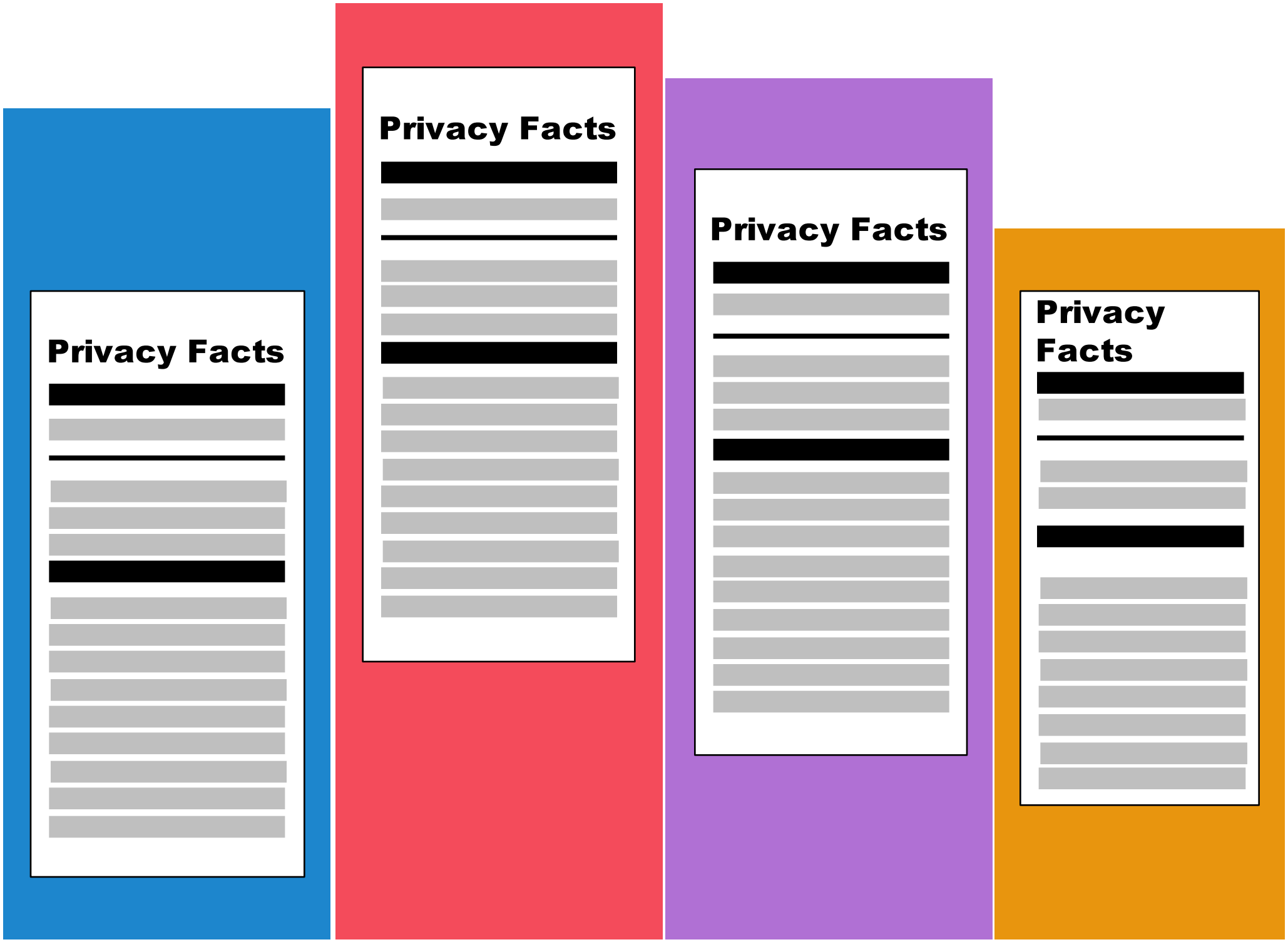
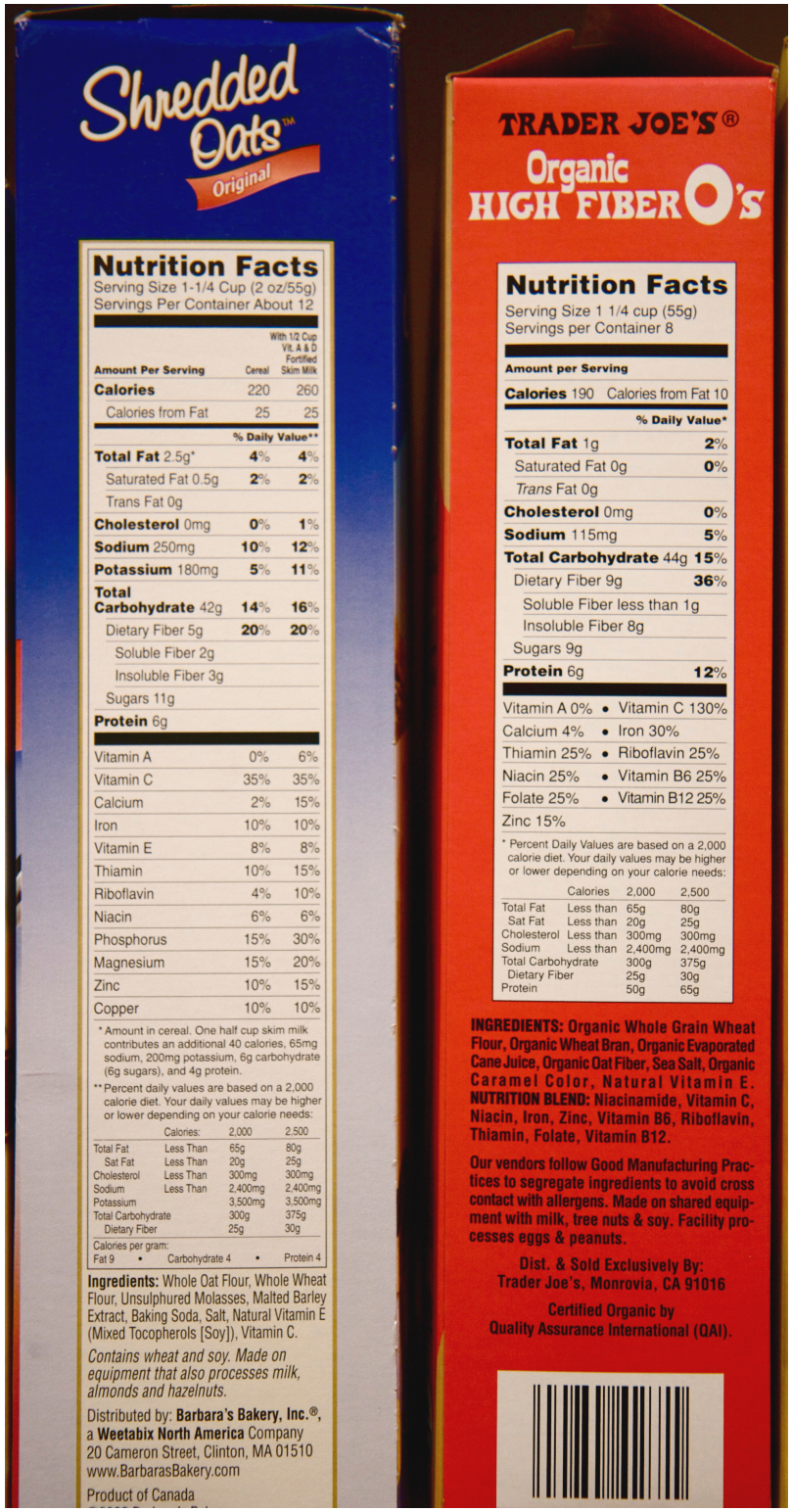

Privacy Facts
Privacy Facts
Privacy Facts
Privacy Facts

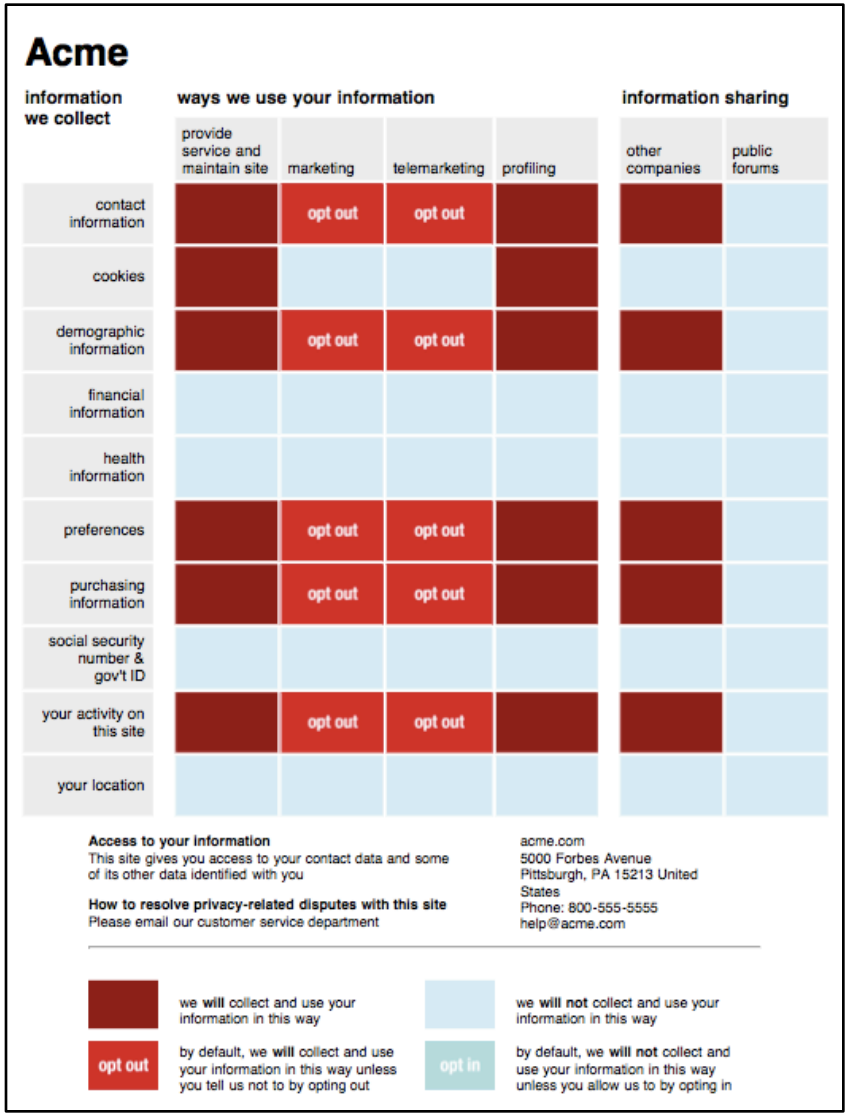
Towards a privacy "nutrition label"

- 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

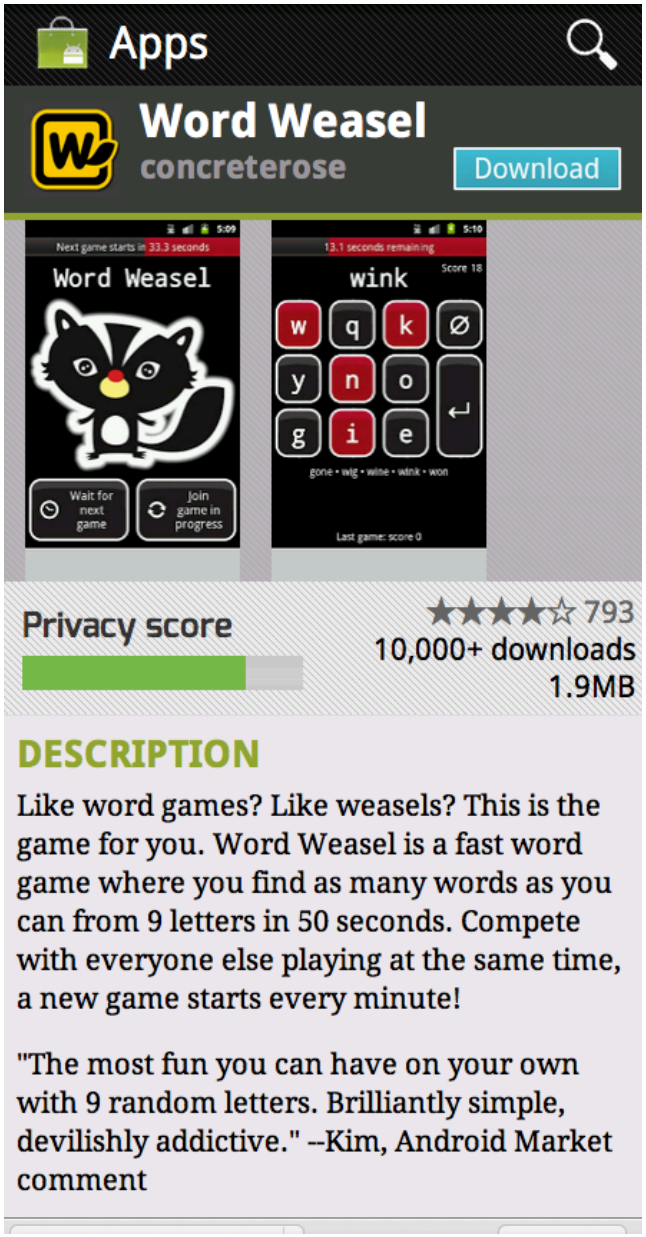
- Series of studies
  - Focus groups
  - Lab studies
  - Online studies
- Metrics
  - Reading-comprehension (accuracy)
  - Time to find information
  - Ease of policy comparison
  - Subjective opinions, ease, fun, trust

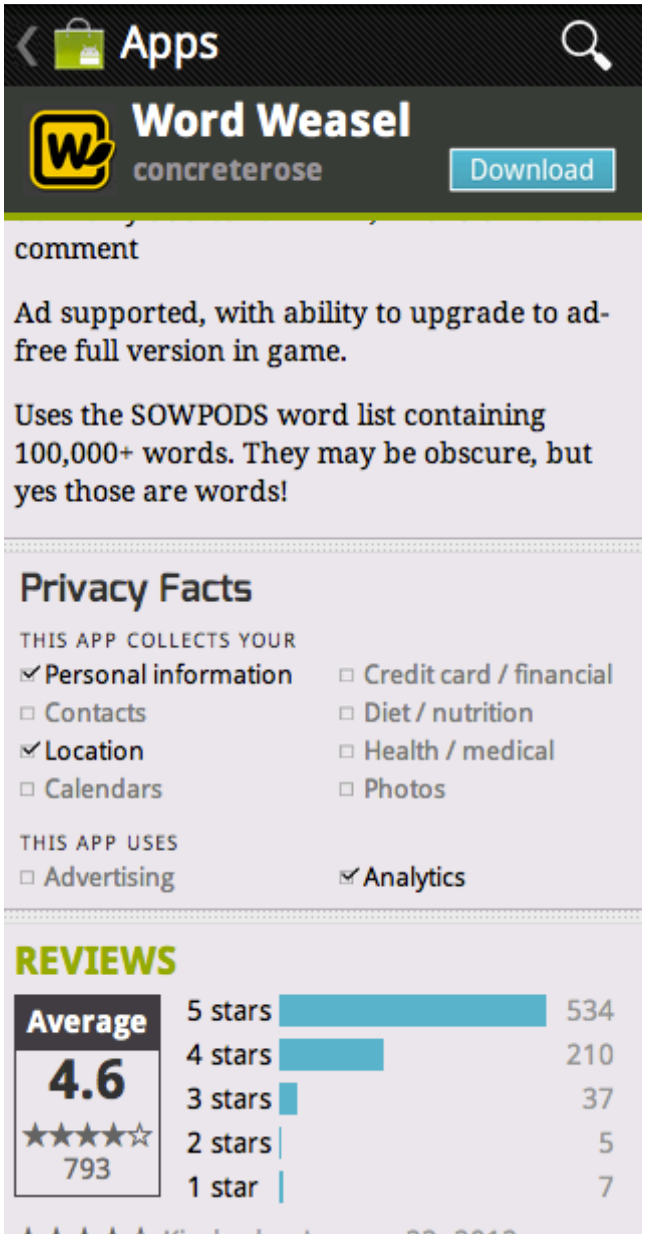


P.G. Kelley, J. Bresee, L.F. Cranor, and R.W. Reeder. A "Nutrition Label" for Privacy. SOUPS 2009.

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





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

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Your data may be kept indefinitely.

More on privacy and privacy notices coming March 16

Homework 1 presentations