Expecting the Unexpected

Understanding Mismatched Privacy Expectations Online

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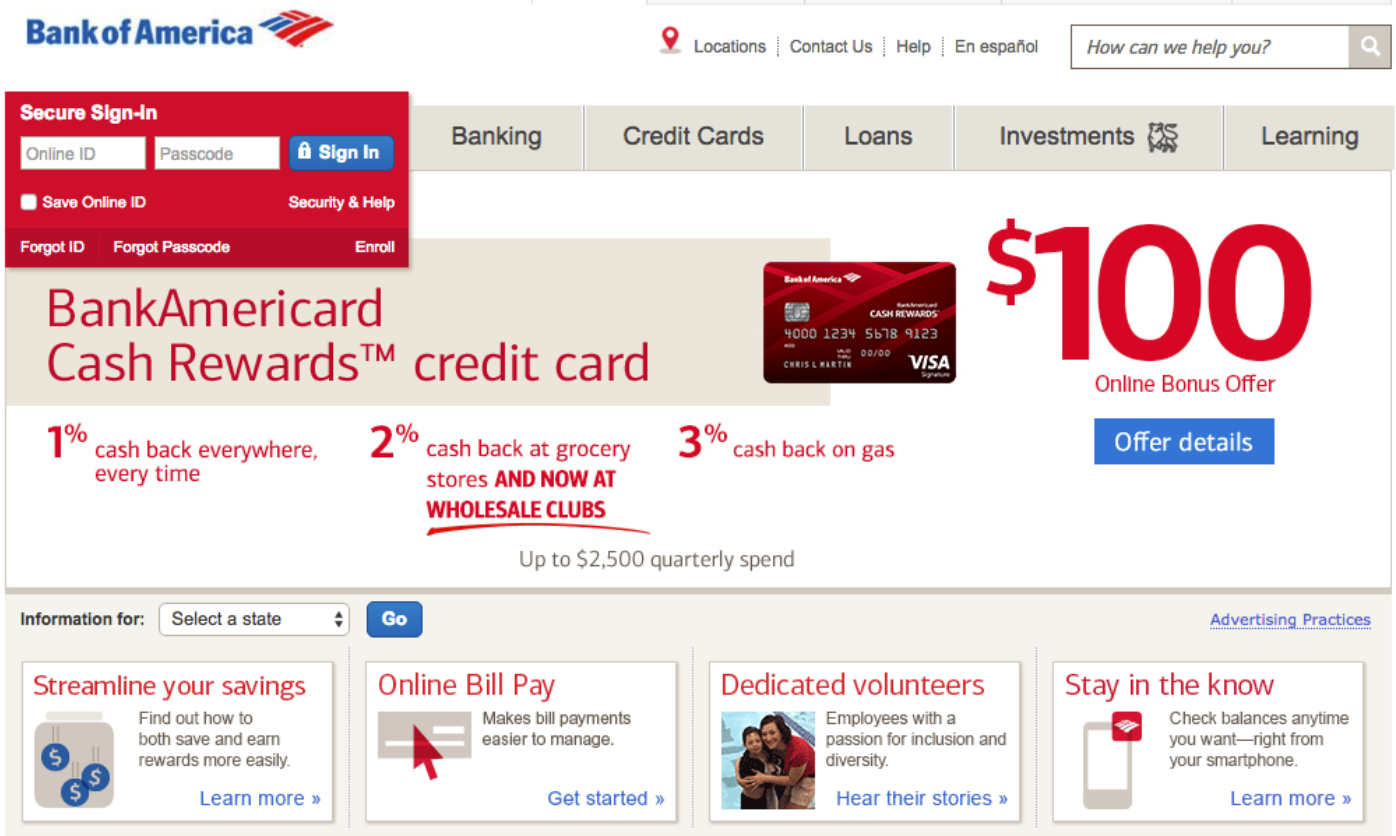
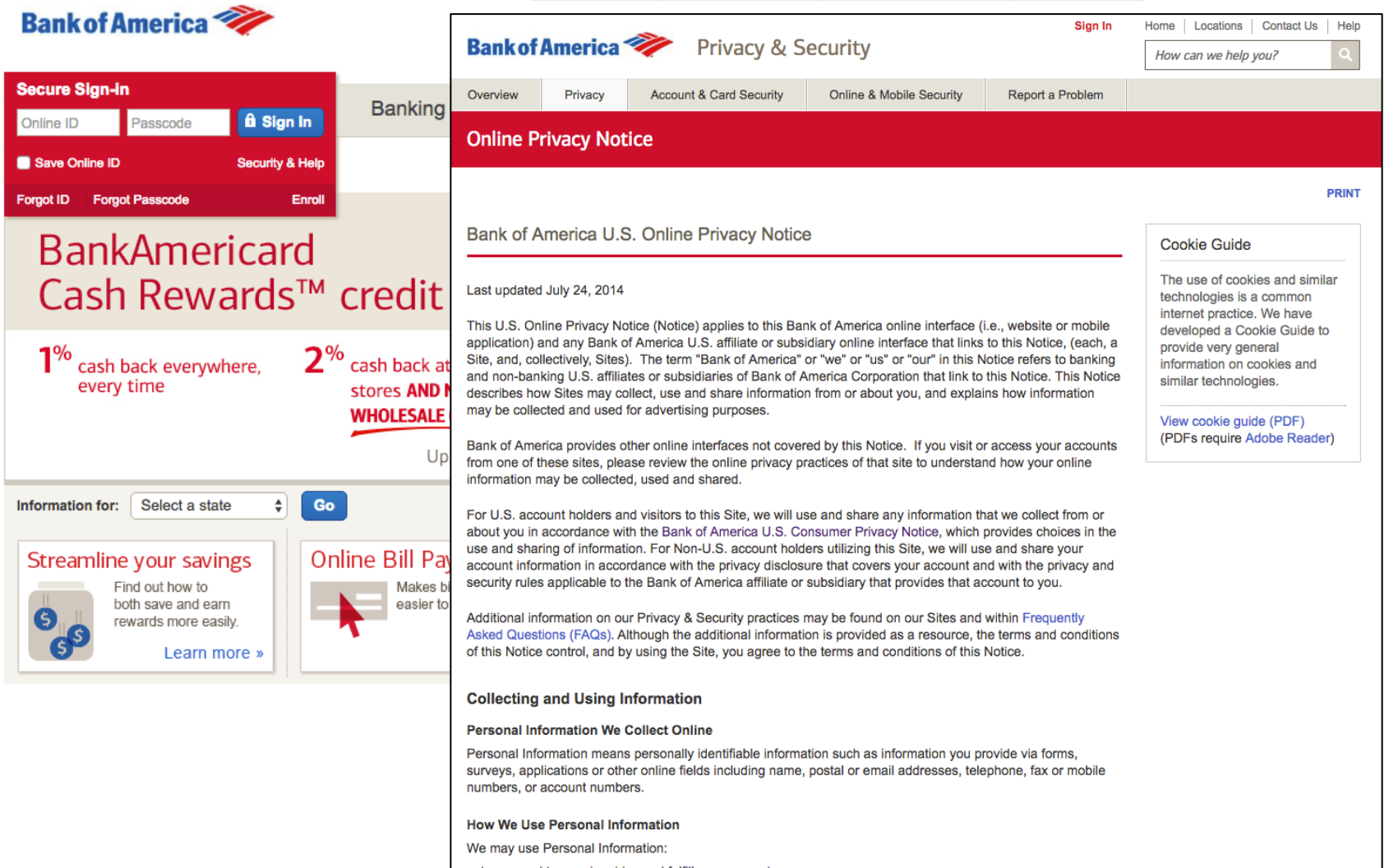


What information does this website collect?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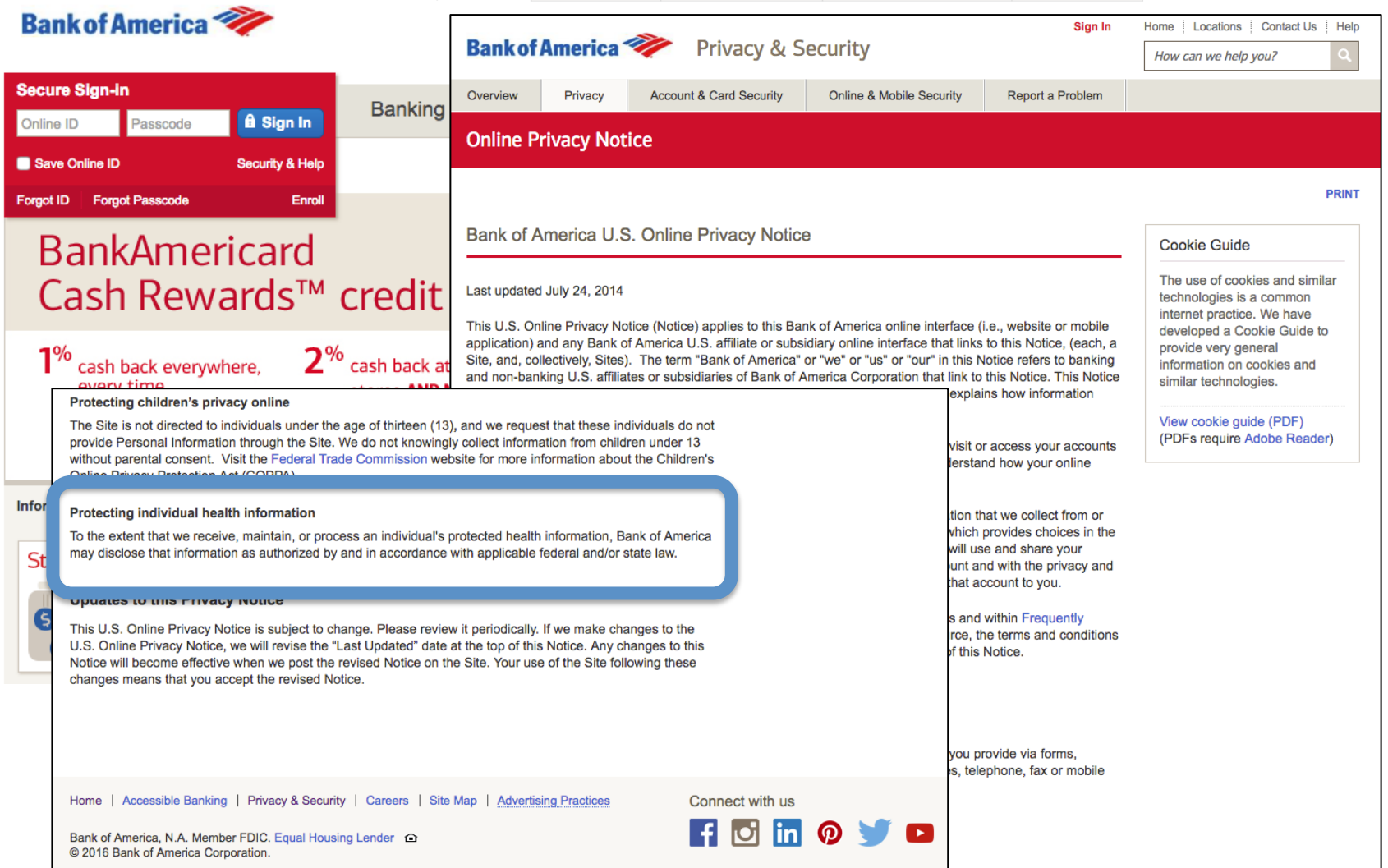
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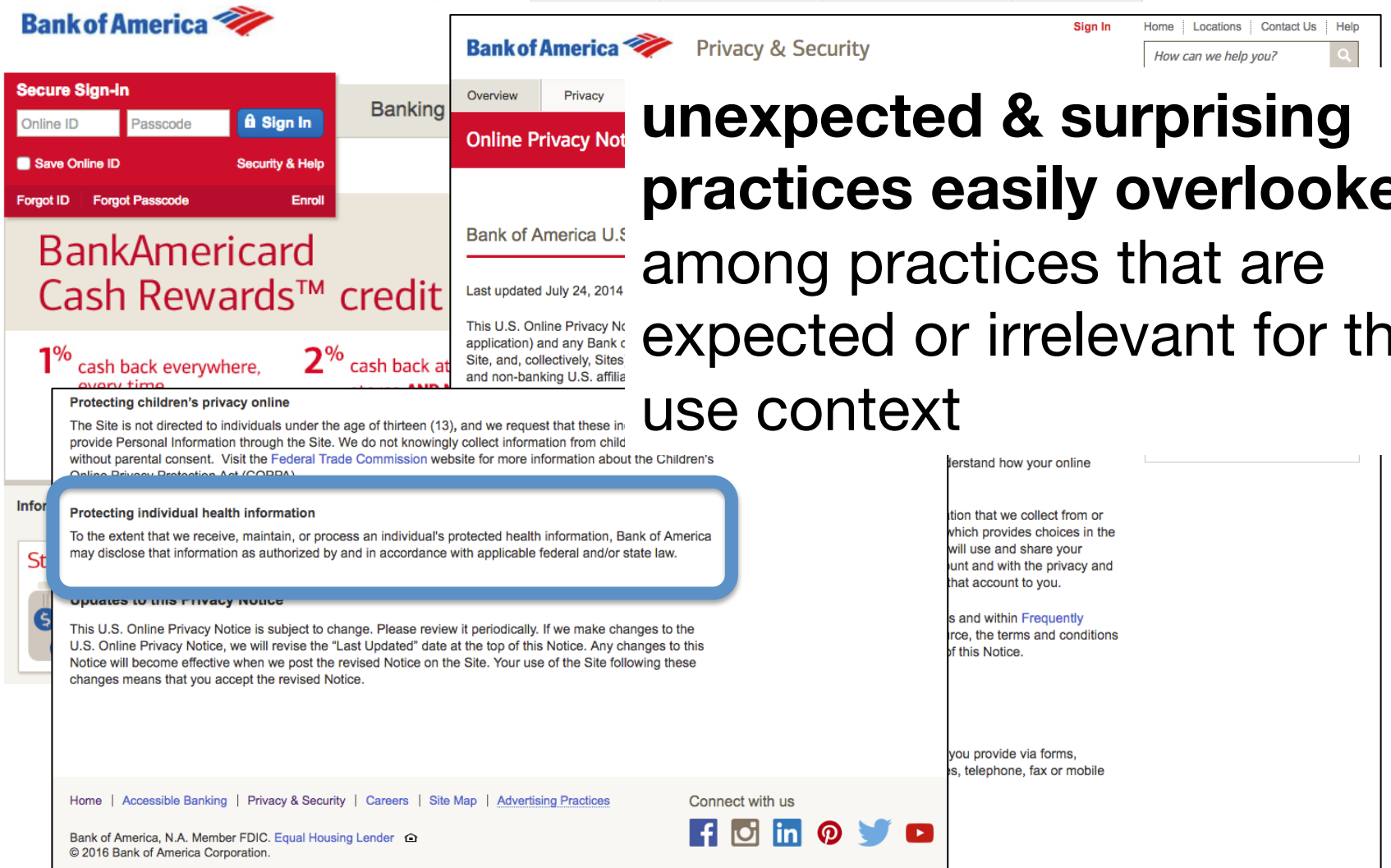


unexpected & surprising practices easily overlooked among practices that are expected or irrelevant for the use context

simplified notice and choice

"the question is not whether consumers should be given a say over **unexpected uses** of their data; rather, the question **is how to provide simplified notice and choice.**"

Edith Ramirez
FTC Chairwoman
January 2015

research questions

What practices are expected or unexpected?

How can we measure expectations and mismatches in expectations?

How can we emphasize unexpected practices in privacy notices?

types of expectations

Privacy literature

- **Privacy preferences**
- **Willingness to share/disclose**
- **Desired level of privacy**
- **Actual privacy**

malleable, uncertain, context-dependent

Acquisti et al. Privacy and human behavior in the age of information. Science, 2015.
Norberg et al. The privacy paradox: Personal information disclosure intentions versus behaviors. Journal of Consumer Affairs, 2007.
Palen & Dourish. Unpacking “privacy” for a networked world. CHI 2003.
Altman. The environment and social behavior: Privacy, personal space, territory, and crowding. 1975.
Nissenbaum. Privacy in Context – Technology, Policy, and the Integrity of Social Life. Stanford University Press, 2009.

types of expectations

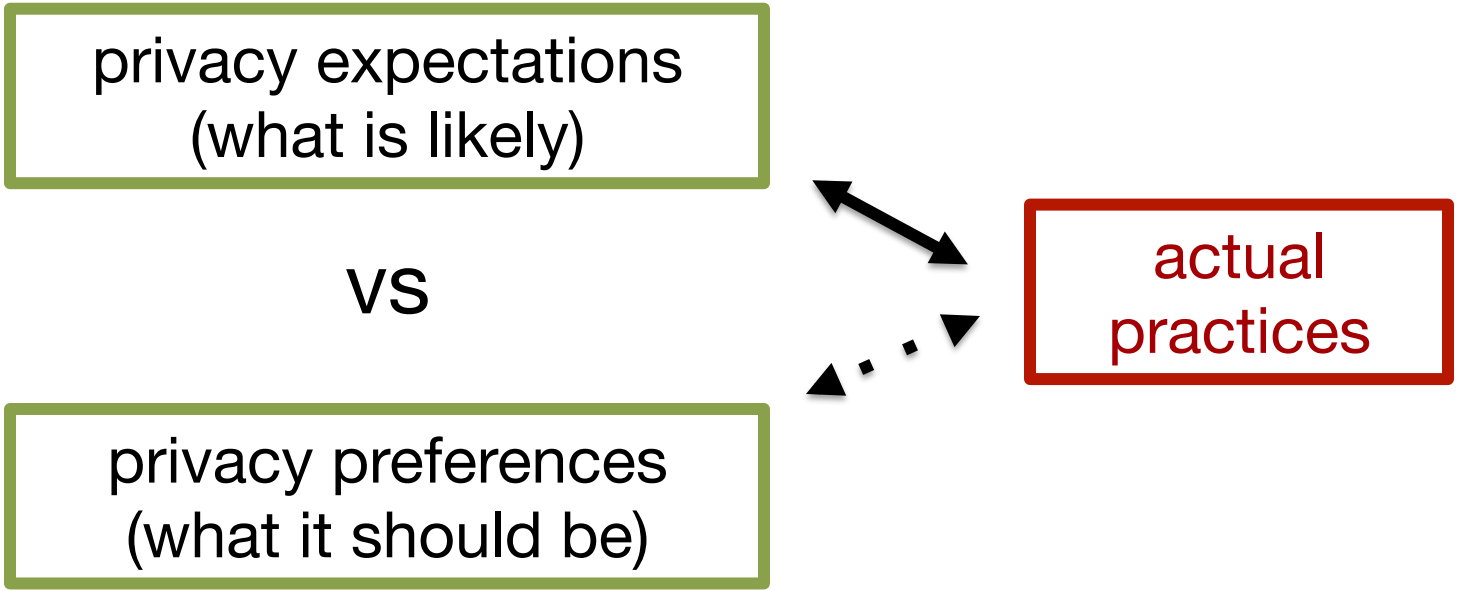
Other domains, e.g. consumer psychology, distinguish **different types of expectations**

Miller:

- **Ideal** (what it could be)
- **Expected** (what it likely will be)
- **Deserved** (what it should be)
- **Minimum Tolerable** (what it must be)

Miller J. A. Studying satisfaction … Conceptualization and Measurement of Consumer Satisfaction and Dissatisfaction 1977
Swan J. E. and Trawick I. F. Satisfaction related to predictive vs. desired expectations. Refining Concepts and Measures of Consumer Satisfaction and Complaining Behavior 1980

privacy expectations



methodology

elicit privacy expectations

- present participants with actual websites in online study
- ask participants to **rate likelihood** that website engages in certain data practices (objective expectation)

privacy policy analysis

- extract practices disclosed in website privacy policies

identify mismatches

- compare likelihood expectations with disclosed practices

data practices considered

data collection

- 4 information types: contact, financial, health, current location
- 2 scenarios: user with account, user without account

sharing with third parties

- 4 information types: contact, financial, health, current location
- 2 purposes: sharing for core purpose / other purpose

data deletion

- does the website allow deletion of personal data?

website features

website type:
finance
health
dictionary

popularity:
high rank
low rank

ownership:
private
government

user features

website experience
recent use, has account, familiarity, trust

demographics
age, gender, education, occupation, computer background

privacy
privacy protective behavior
privacy knowledge
negative online experience
online privacy concern (IUIPC)

study deployment

between-subjects study

- 16 websites
- 240 participants (Amazon Mechanical Turk)

- each participant randomly assigned to **one website**; 15 participants per website

example scenario description

"*Imagine that you are browsing [website name] website. You **do not have a user account** on [website name], that is, you have not registered or created an account on the website*"

"*What is the **likelihood that [website name] would** collect your information in this scenario? …*"

		Likely	Somewhat likely	Somewhat unlikely	Unlikely
Collects your **Contact information**	Email address	O	O	O	O
	Postal address	O	O	O	O
	Phone number	O	O	O	O
	Other Please specify	O	O	O	O

privacy policy analysis

ways to extract data practice statements from privacy policies

- machine-readable policy specification (e.g. P3P)
- (semi-)automated extraction of data practices from policy
- **manual annotation by experts**

USABLEPRIVACY.ORG
the usable privacy policy project

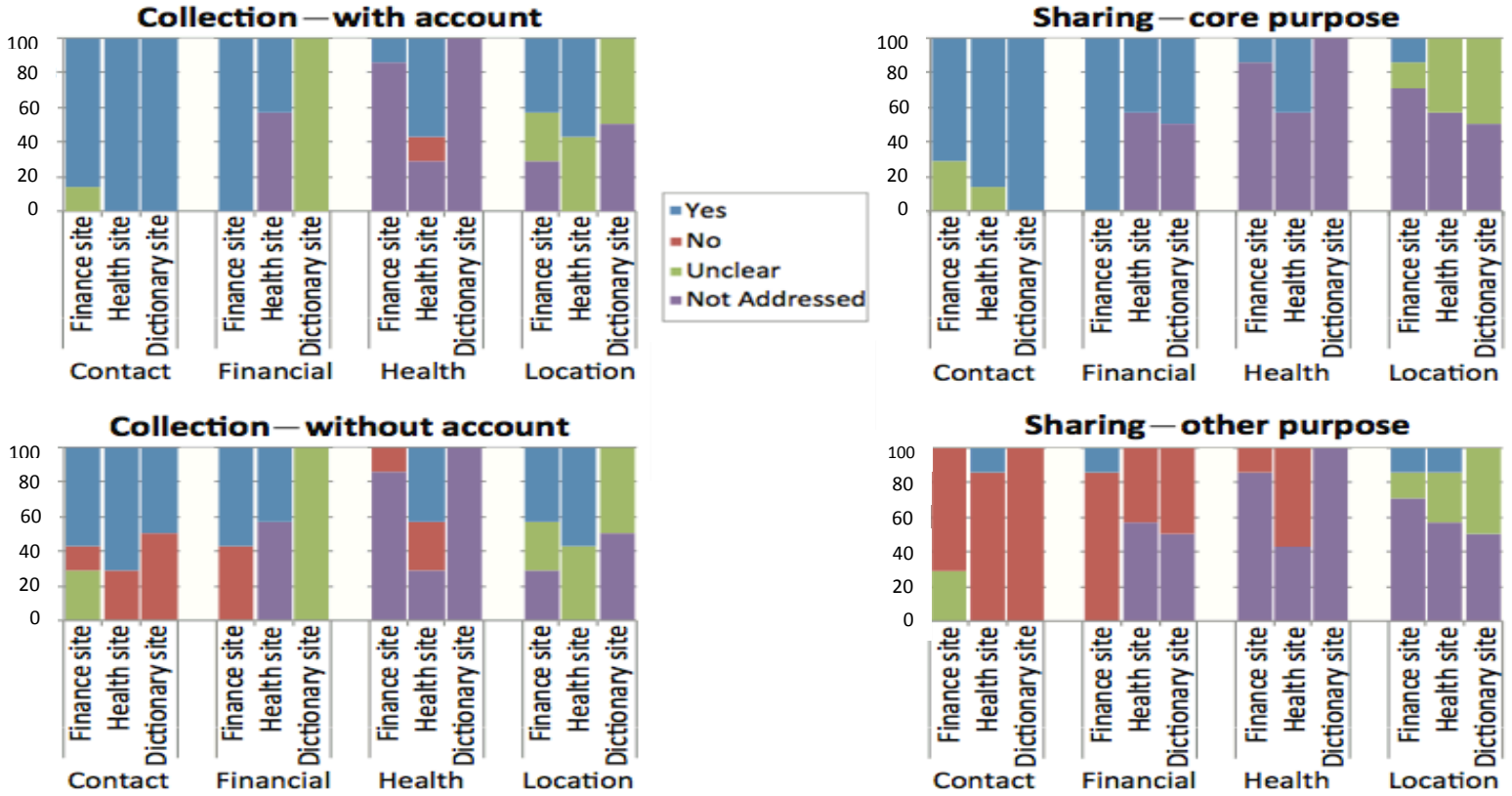
privacy policy analysis

extracting data practice statements from privacy policies

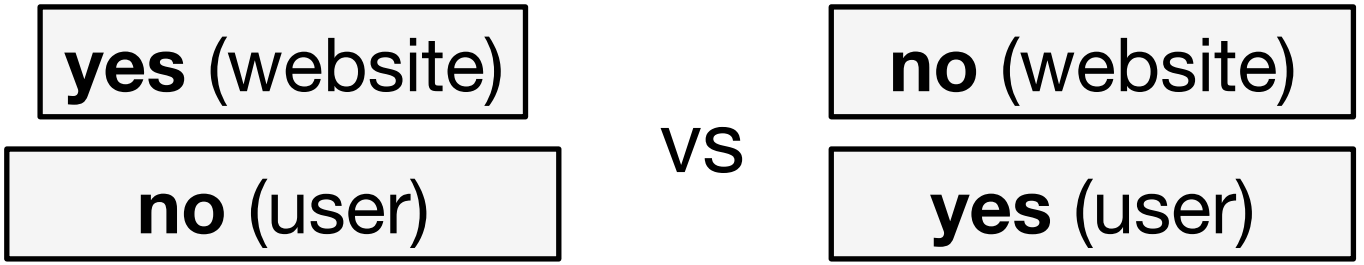
- **manual annotation by experts**
  - **Yes** website engages in practice
  - **No** website does not engage in practice
  - **Unclear** not clear if website engages in practice
  - **Not addressed** the policy is silent regarding practice

  - 2 annotators analyzed 16 websites' privacy policies

privacy policy analysis



types of mismatched expectations



- website shares data, but user doesn't expect it
- user may give up data unknowingly; website may lose trust

- website doesn't share data, but user thinks so
- user may not use website & lose utility; website may lose customer

different types of mismatches may impact user privacy differently

results

expectations

mismatches with policy statements

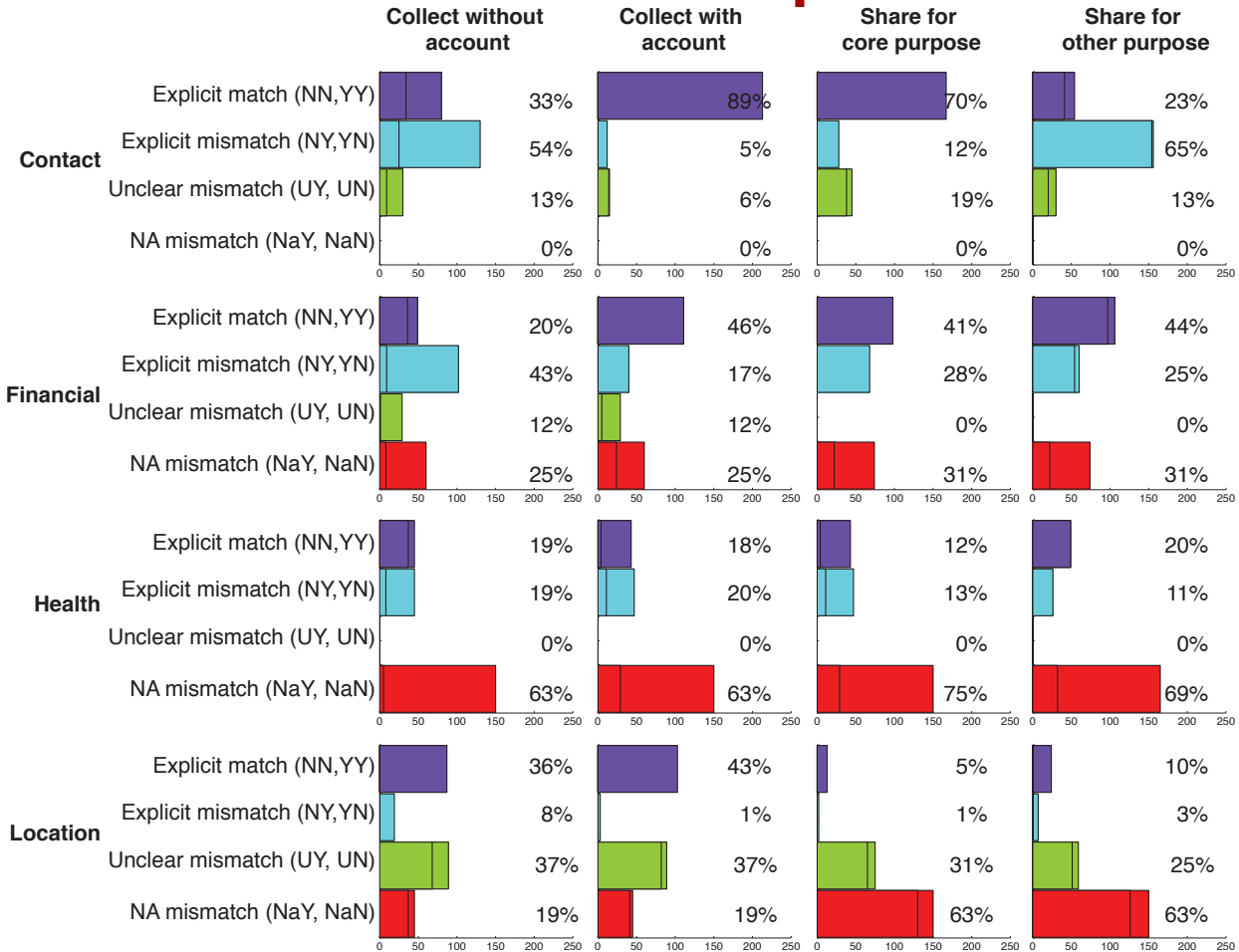
impact of website characteristics

- participants expect almost all websites to collect location and contact information and share it for core purposes
- **website type** had statistically significant effect on participants' expectations
  - for collection of financial & health information
  - for sharing of financial and health information
- popularity and ownership had no effect

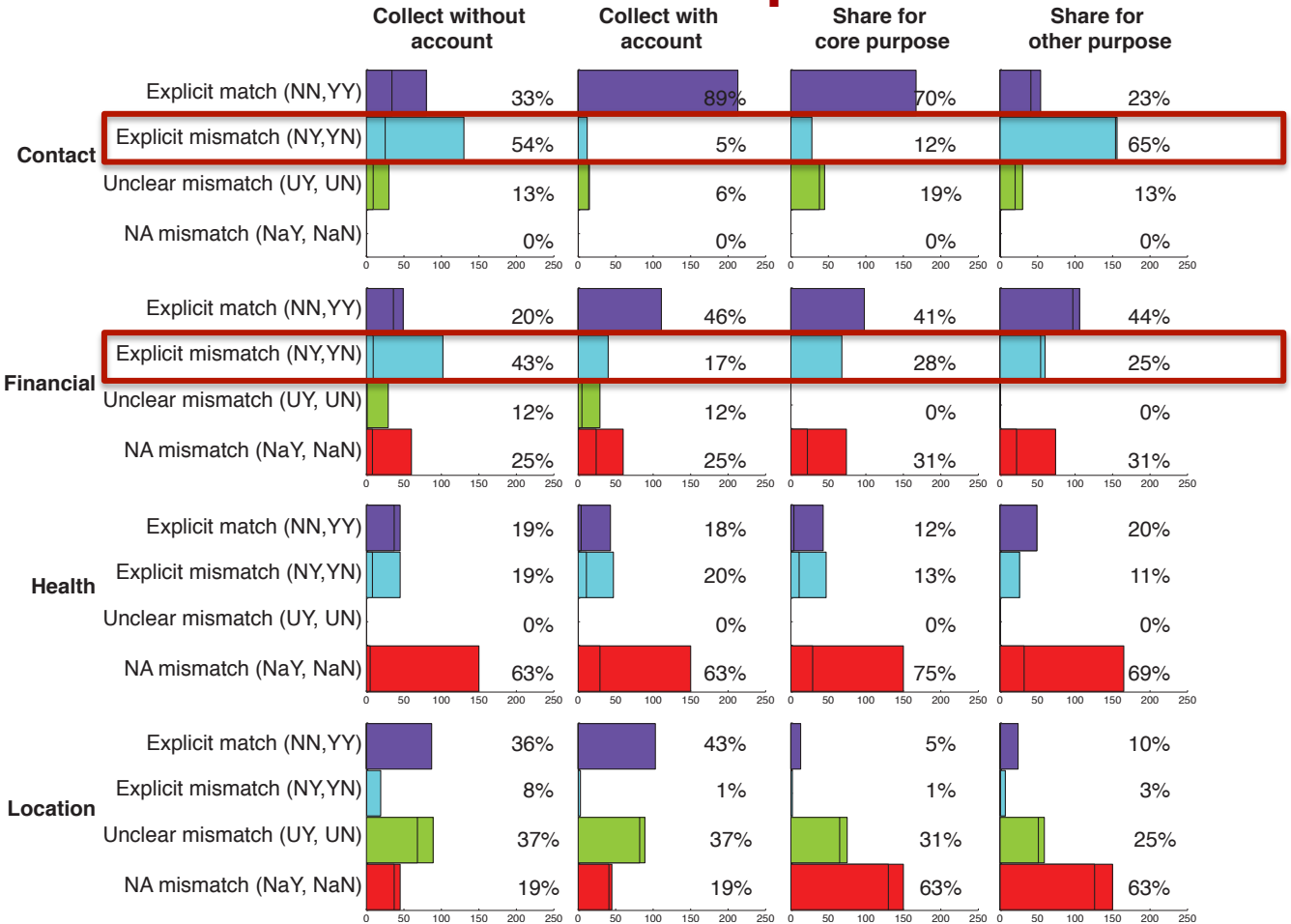
impact of user characteristics

collection of **location** information **with account**	**recent use**	➔	**NO**
	privacy concern	➔	**YES**
collection of **health** information **without account**	**privacy knowledge**	➔	**NO**
sharing of **location** information for **core purpose**	**trust in website**	➔	**YES**
	privacy concern	➔	**YES**
sharing of **contact** information for **core purpose**	**recent use**	➔	**NO**
	privacy concern	➔	**YES**
sharing of **financial** information for **other purposes**	**trust in website**	➔	**NO**
sharing of **health** information for **other purposes**	**trust in website**	➔	**YES**
allow deletion of personal data	**age**	➔	**NO**
	recent use	➔	**NO**
	trust in website	➔	**YES**

mismatched expectations



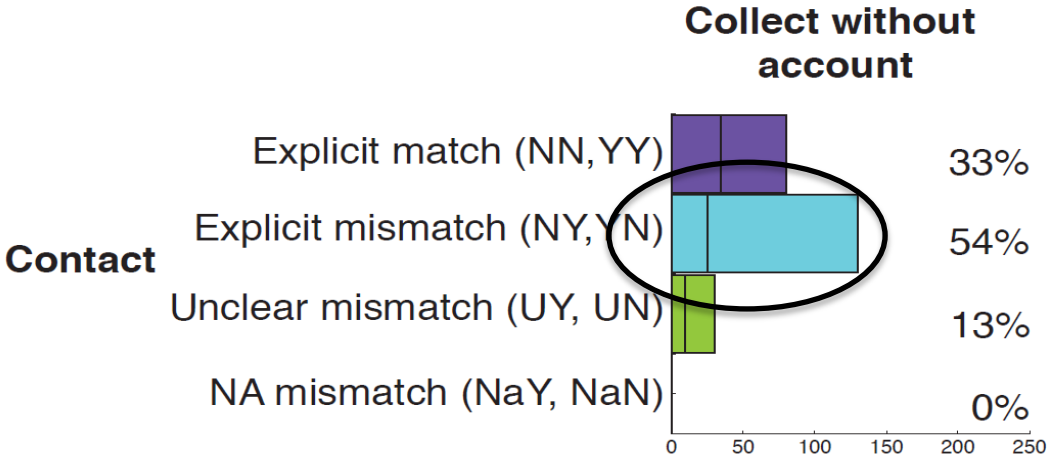
mismatched expectations



most explicit mismatches for contact and financial information

mismatched expectations

collection of contact information

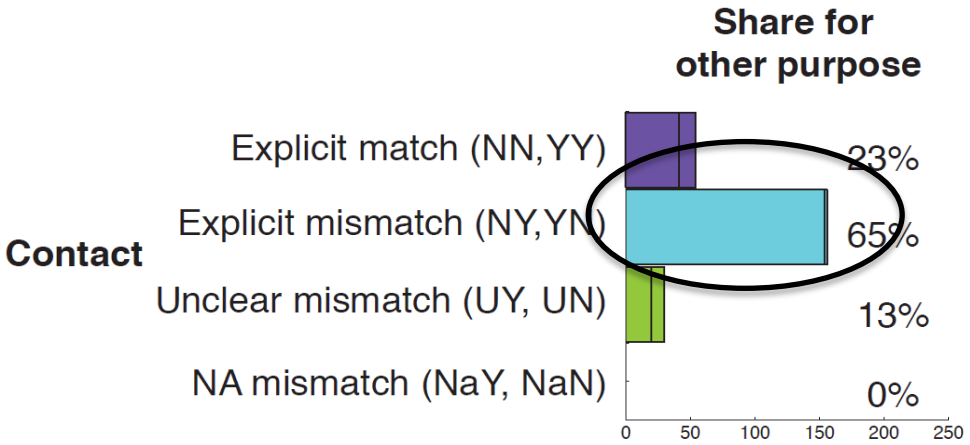


Yes—No
(Website – user)
mismatch

websites collect contact information without an account but participants don't expect it

mismatched expectations

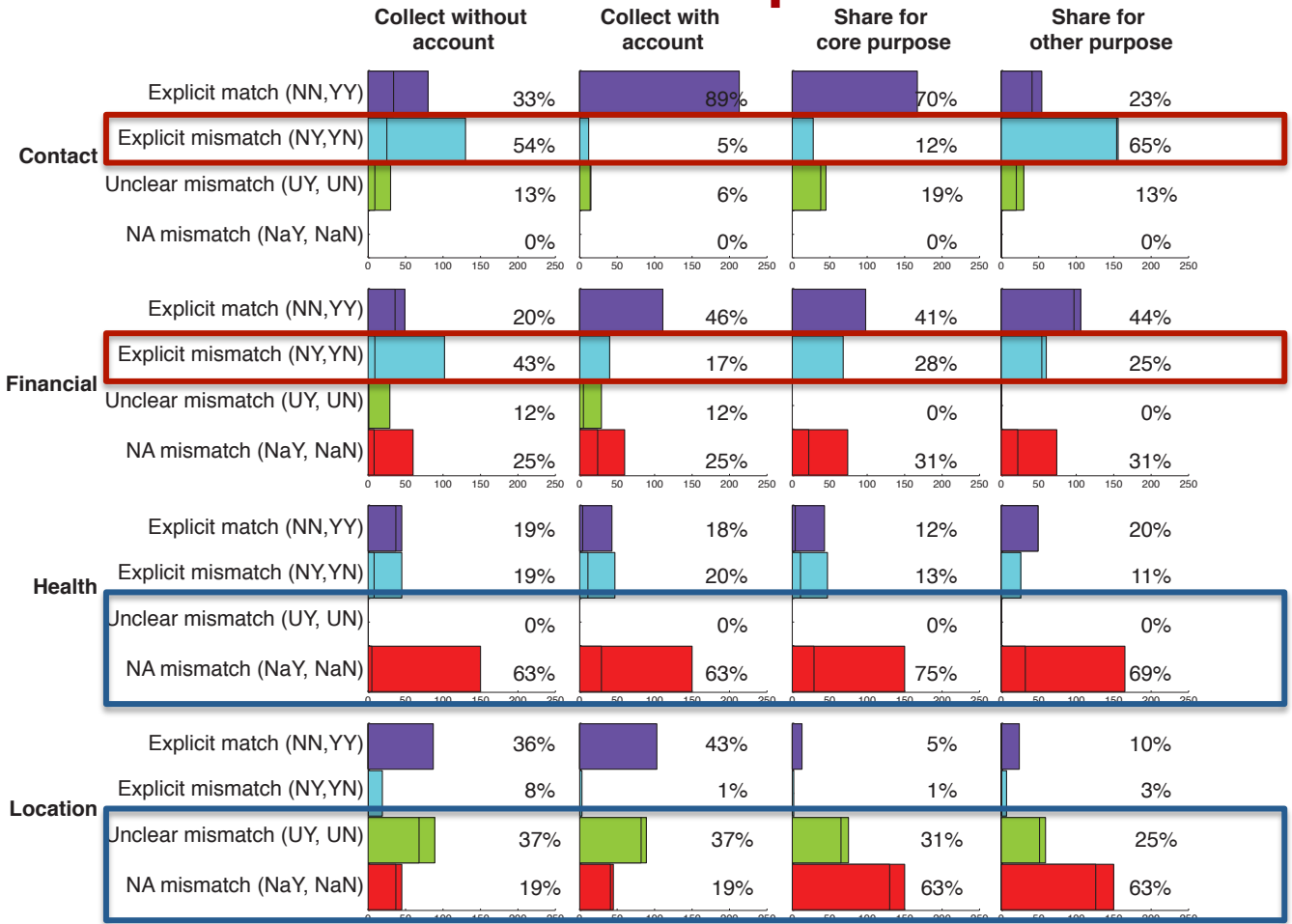
sharing of contact information for other purposes



No — Yes
(Website – user)
mismatch

participants expect that contact information is shared with third parties for any reason but websites do not share it for non-core purposes

mismatched expectations



most explicit mismatches for contact and financial information

but policies are less clear for health and location

mismatched expectations

data deletion

allow deletion	% users expect	% websites permit
Yes – full	**32%**	19%
Yes – partial	**48%**	12%
No	20%	19%

participants expect websites to permit deletion, but most websites don’t

mismatched expectations

summary

- few explicit mismatches but policies often unclear or silent on certain practices
- information collection without account often unexpected (contact, financial)
- participants assume that sharing is not limited to core purposes (e.g. also marketing)
- participants expect to be able to fully delete information, but most websites don’t allow it

limitations

- practices disclosed in privacy policy may not match service's actual behavior
- online / MTurk study to elicit expectations
- additional practices may be of interest
- additional websites may be of interest

highlighting unexpected practices

display in notice	# practices	% reduction
All practices	17	–
Mismatched practices only	11	35%
Unexpected practices only (Yes—No mismatch)	5	**70%**

potential reduction in information that users have to process in a layered or short notice

conclusions

- privacy expectations vs. preferences
- elicit expectations in surveys & compare with stated or actual data practices
- privacy expectations are affected by website type, privacy awareness, age, and experience with website
- opportunity for contextualizing and personalizing notices
- highlighting unexpected practices could reduce user burden and facilitate more informed privacy decision making

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moving in the fall to

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