**Research Questions**

- *(RQ1)* Do potential users care about protecting their information against disclosure to the entities against which DP systems can protect?
- *(RQ2)* If users are more confident that information disclosure will not occur, are they more willing to share their information?
- *(RQ3)* Do users expect DP systems to protect their information against disclosure? How does the way in which differential privacy is described impact their expectations?
- *(RQ4)* Are potential users more willing to share their information when their information will be protected by DP? How does the way in which DP is described impact sharing?

**Methods**

- We conducted two Amazon Turk surveys to answer our research questions. In each survey, we present respondents with one of two information-sharing scenarios: sharing information with a salary transparency initiative or sharing medical records with a research initiative.
- Survey 1 (n = 1216) addresses RQ1 and RQ2. We set respondent privacy expectation for each concern below and query if they would be willing to share their private information.
- Survey 2 (n = 1280) addresses RQ3 and RQ4. We inform each respondent their information will be protected with DP, as described using a random description (see "Representative Descriptions Of DP") and ask whether they would be willing to share their information.

**Alignment Between DP Protections & User Concerns**

- **Users Care About DP Protections (RQ3):** Our first survey overlays that users do indeed care about protecting their information against disclosure to the entities against which DP protects. Figure left shows the percentage of respondents that reported caring about each information disclosure.
- **Lower Risk Increases Some Willingness To Share (RQ2):** Respondents indicate that decreased risk of disclosure would increase their willingness to share their information. Table below shows logistic regression estimates of the increased willingness to share based on explicitly setting expectations for each kind of disclosure.

**Representative Descriptions Of Differential Privacy**

- We conducted a systematic search for publicly available descriptions of DP, putting a special focus on collecting descriptions used by industry and in the media coverage, as these descriptions are the ones that an uninformed consumer would be most likely to encounter.
- In total, we collected 76 descriptions of DP, 36 from industry, 30 from media outlets, and 10 from the academic literature. The research team employed a manual diagramming to extract the main themes of these widely varying descriptions of DP. Below are the themes that emerged, along with a representative, synthetic description for each theme.

**Impact of DP Descriptions on User Expectations & Willingness to Share**

Expectation by Description (RQ3): Different the descriptions of DP raised respondents privacy expectations. Table below shows logistic regression estimates of how descriptions increase expectations around specific information disclosures.

Alignment of Expectations With Baseline DP (RQ4): We find that the descriptions of DP (see Representative Descriptions of DP) mostly align respondent’s privacy expectations with the true privacy guarantees offered by DP. The graphs below show the percentage respondents expectations that correctly aligned with the true privacy guarantees offered by DP, as described by the representative descriptions. This finding holds true across both local (left) and central (right) DP, although respondents expectations aligned better with the central model.

**Misc & Contact Information**

Acm Cc'21 Preprint Link — https://tinyurl.com/krv3cfm

Survey were conducted with approval from the Georgia Tech and Microsoft IRBs.

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