Consumer Perceptions of Differential Privacy's Privacy Risk

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Abstract:
Firms collect a huge amount of personal data to derive marketing insights. Consumers, on the other hand, are concerned about their privacy and increasingly refuse to disclose information, share false information, or provide socially desirable answers. These concerns introduce a response bias in firms' data with large scientific and economic consequences. We develop randomized response (RR) models to reduce this response bias. Importantly, we prove our RR models to satisfy a level of differential privacy to control customers' privacy risk in a data collection setting. Such that, we can study the effect of customers' objective privacy risk (from differential privacy) on perceived privacy concerns (i.e., subjective privacy risk). In a field experiment with a Dutch loyalty program, we find a positive effect of differential privacy's privacy risk on consumers' perceived privacy concerns. In other words, stronger mathematical privacy protection reduces customers' perceived privacy concerns. In terms of response bias, we find that for increasingly strong privacy protection, customers' response bias decreases when compared with direct questioning. Our findings show that analysts can simultaneously reduce customers' response bias and reduce privacy concerns.