

Truthful Mechanisms for Agents That Value Privacy

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Recent work has constructed economic mechanisms that are both truthful and differentially private. In these mechanisms, privacy is treated separately from truthfulness; it is not incorporated in players' utility functions (and doing so has been shown to lead to nontruthfulness in some cases). In this work, we propose a new, general way of modeling privacy in players' utility functions. Specifically, we only assume that if an outcome o has the property that any report of player i would have led to o with approximately the same probability, then o has a small privacy cost to player i. We give three mechanisms that are truthful with respect to our modeling of privacy: for an election between two candidates, for a discrete version of the facility location problem, and for a general social choice problem with discrete utilities (via a VCG-like mechanism). As the number n of players increases, the social welfare achieved by our mechanisms approaches optimal (as a fraction of n).

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