

The U.S. Census Bureau Adopts Differential Privacy

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ABSTRACT

The U.S. Census Bureau announced, via its [Scientific Advisory Committee](#), that it would protect the publications of the 2018 End-to-End Census Test (E2E) using differential privacy. The E2E test is a dress rehearsal for the 2020 Census, the constitutionally mandated enumeration of the population used to reapportion the House of Representatives and redraw every legislative district in the country. Systems that perform successfully in the E2E test are then used in the production of the 2020 Census.

Motivation: The Census Bureau conducted internal research that confirmed that the statistical disclosure limitation systems used for the 2000 and 2010 Censuses had serious vulnerabilities that were exposed by the Dinur and Nissim (2003) database reconstruction theorem. We designed a differentially private publication system that directly addressed these vulnerabilities while preserving the fitness for use of the core statistical products.

Problem statement: Designing and engineering production differential privacy systems requires two primary components: (1) inventing and constructing algorithms that deliver maximum accuracy for a given privacy-loss budget and (2) insuring that the privacy-loss budget can be directly controlled by the policy-makers who must choose an appropriate point on the accuracy-privacy-loss tradeoff. The first problem lies in the domain of computer science. The second lies in the domain of economics.

Approach: The algorithms under development for the 2020 Census focus on the data used to draw legislative districts and to enforce the 1965 Voting Rights Act (VRA). These algorithms efficiently distribute the noise injected by differential privacy. The Data Stewardship Executive Policy Committee selects the privacy-loss parameter after reviewing accuracy-privacy-loss graphs.

CCS Concepts/ACM Classifiers

Privacy-preserving protocols; Privacy protections

Author Keywords

Differential privacy; Economics of privacy

BIOGRAPHY

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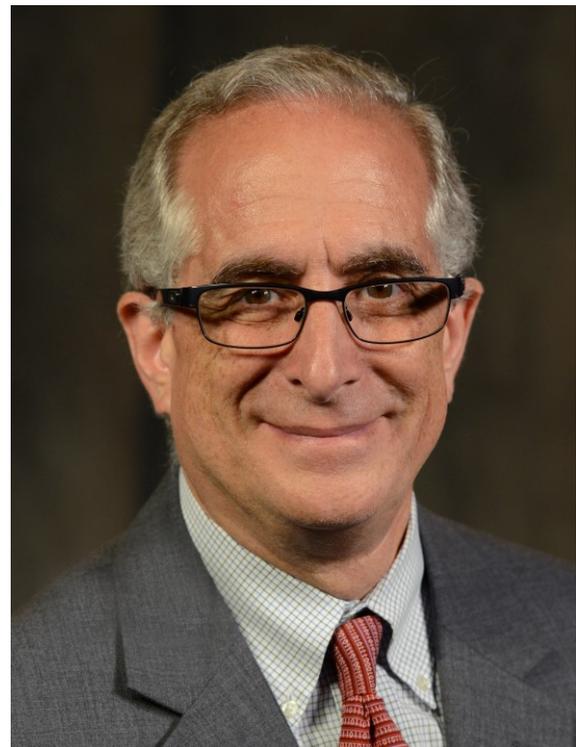
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