New operations research paper tackles problems facing confidential databases

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As database managers for websites like the New Zealand census bureau have begun releasing a wide variety of information online, new operations research techniques are helping to balance the public's right to know with the need to maintain online security, according to a new study in Operations Research, a flagship journal of The Institute for Operations Research and the Management Sciences (INFORMS®).

The study, "Stochastic Protection of Confidential Information in Databases: A Hybrid of Data Perturbation and Query Restriction," is by Manuel A. Nunez, Robert S. Garfinkel, and Ram D. Gopal of the School of Business at the University of Connecticut, Storrs.

Data perturbation and query restriction are two methods developed to protect confidential data in statistical databases. In the former, the data is systematically changed to yield answers to queries that are statistically similar to those that would have resulted from the original data. The latter provides exact answers to queries as long as the risk of exact disclosure of confidential data does not become too great.

The authors present a new methodology to combine these techniques so that the advantages of both are captured. The hybrid model is appropriate and computationally viable for large databases. The results indicate that many queries can be answered exactly and the proposed perturbation approach provides more accurate answers than the standard perturbation method.

The study appears in the current issue of the journal *Operations Research* and is highlighted as a featured article.

Source: Institute for Operations Research and the Management Sciences