1014-62-265 **Seth Sullivant** (seths@math.harvard.edu), Department of Mathematics, Harvard University, Cambridge, MA 02138, and **Ruriko Yoshida*** (ruriko@math.duke.edu), Mathematics Department, Duke University, Box 90320, Durham, NC 27713. *Relaxation Techniques for Computing Bounds on Cell Entries in Contingency Tables.* Preliminary report.

Given a multiway table of counts together with a collection of its marginal tables, how should one compute upper and lower bounds? This question is appeared in statistical security problems. Statistical agencies are faced with the problem of deciding what information from census data and sample surveys can be released to the public that simultaneously minimizes the risk that the identity of individual survey respondents can be inferred while maximizing the utility of the released information. In generally, a cell entry is secure the upper and lower bound are far enough apart and is disclosed if the upper and lower bound are too near each other.

The computation of exact integer upper and lower bounds can be formulated as integer programs, however these integer programs are NP-hard in general. Thus, rather than develop specialized integer programming algorithms for these problems, we want to estimate. In this talk we will describe two general relaxation approaches for the bounds problem: Semidefinite Programming relaxations and subproblem relaxations, as well as a general method to iteratively improve given approximate bounds. We will also explain how known heuristics fit into our general framework. This is joint work with Seth Sullivant. (Received September 02, 2005)