1046-92-162   **Ariel Cintron-Arias*** (`acintro@ncsu.edu`), Center for Research in Scientific Computation, North Carolina State University, P.O. Box 8212, Raleigh, NC 27695-8212. *The Estimation of the Effective Reproductive Number from Disease Outbreak Data.*

We consider a single outbreak Susceptible-Infected-Recovered (SIR) model and corresponding estimation procedures for the effective reproductive number $\mathcal{R}(t)$. We discuss the estimation of the underlying SIR parameters with a generalized least squares (GLS) estimation technique. We do this in the context of appropriate statistical models for the measurement process. We use asymptotic statistical theories to derive the mean and variance of the limiting (Gaussian)sampling distribution and to perform post statistical analysis of the inverse problems. We illustrate the ideas and pitfalls (e.g., large condition numbers on the corresponding Fisher information matrix) with both synthetic and influenza incidence data sets. (Received September 03, 2008)