1056-92-730 **Alex Capaldi*** (alex_capaldi@ncsu.edu), Campus Box 8213, NC State University, Raleigh, NC 27695-8213, and **A. L. Lloyd**. *Parameter Estimation and Uncertainty Quantification for an Epidemic Model.*

We examine estimation of the parameters of Susceptible-Infective-Recovered (SIR) models in the context of least squares. We review the use of asymptotic statistical theory and sensitivity analysis to obtain measures of uncertainty for estimates of model parameters and thebasic reproductive number (R_0) - an epidemiologically significant parameter grouping. We find that estimates of different parameters, such as the transmission parameter and recovery rate, are correlated, with the magnitude and sign of this correlation depending on the value of R_0. Situations are highlighted in which this correlation allows the basic reproductive number to be estimated with greater ease than its constituent parameters. Uncertainty estimates and sensitivity analysis are used to investigate how the frequency at which data is sampled affects the estimation process and how the accuracy and uncertainty of estimates improves as data is collected over the course of an outbreak. We assess the informativeness of individual data points in a given time series with a view to better understanding when more frequent sampling (if possible) would prove to be most beneficial to the estimation process. This technique can be used to design data sampling schemes in a general context. (Received September 16, 2009)