

1125-VP-2420 **Mehdi Razzaghi*** (mrazzagh@bloomu.edu), Department of Mathematics, Bloomsburg University, Bloomsburg, PA 17815. *The Use of Non-Canonical Link Functions in Generalized Linear Models.*

A Generalized Linear Model (GLM) consists of three components. One is the random component which represents the outcome variable. This variable could be binary, multi-class, count or continuous. The second component is the systematic component which consists of a set of explanatory variables. A linear function of these systematic variables is used for prediction of the outcome variable. The third component of a GLM is the link function which, depending on the outcome variable, is defined as a function the other two components. Now, one general assumption is that the random component has a distribution belonging the exponential family. In that case, then there is a natural choice of the link function and is the canonical link. For example, when the outcome is binary, the logistic link defines the canonical link. Similarly, when the outcome is count or continuous, then the Poisson and normal distributions respectively define the canonical links. There is, however, some argument that non-canonical links can also be of value and sometimes even preferred. In this talk, we present the case for the non-canonical link functions and discuss their application. The emphasis will be placed on comparing the logistic and probit links when the outcome is binary or in general categorical. (Received September 20, 2016)