

1116-VP-2651 **Brian R Zaharatos*** (brian.zaharatos@colorado.edu), Engineering Center, ECOT 331,
Boulder, CO 80309-0526. *Clarifications and Caveats on Data Cloning.*

Mathematical and statistical models often contain model parameters that need to be estimated from data. Many estimation techniques require that a model satisfy certain structural properties. For example, parameter *identifiability* is a necessary condition for the consistency of the maximum likelihood estimator. A parameter is identifiable if there is a one-to-one correspondence between parameter values and density functions. It is also desirable that a parameter be *estimable*. A parameter is estimable if the maximum likelihood estimator yields a unique result (i.e., the likelihood function has a unique mode). The method of *data cloning* has been proposed as a way to diagnose structural deficiencies—such as non-identifiability and inestimability—in a model. However, the data cloning literature seems to conflate the concepts of identifiability and estimability. In this paper, we seek to clarify exactly what data cloning diagnoses by upholding the distinction between identifiability and estimability. Once these issues are made clear, we consider several examples in which data cloning can be misleading in practice. (Received September 22, 2015)