AN OVERVIEW OF DEPENDENCY MODELS FOR CROSS-CLASSIFIED CATEGORICAL DATA INVOLVING ORDINAL VARIABLES

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In the late 1970's the popularity of loglinear and logistic model techniques for cross-classified categorical data led to a resurgence of interest in models and methods which directly incorporate information about the ordinal structure of the categories corresponding to the classification variables. In this paper we present an overview of some of the models for dependence that have been the focus of interest in this recent literature. In particular, we consider a class of association models extensively developed by Goodman and we examine order restrictions on parameters corresponding to the ordinal structure of the underlying variables. We attempt to summarize what is known about how these order restrictions for association and other models characterize monotonicity constraints on the underlying cross-classification probabilities or marginal totals. The principle context for our discussion is the dependency structure for two-dimensional ordinal contingency tables, but extensions to multi-dimensional tables that build on loglinear model ideas are relatively direct.

1. Introduction. The study of dependence among continuous random variables has a long history in statistics. The corresponding issue regarding dependency for categorical random variables also has a long history going back to the work of Yule (1900) and Pearson (1900); it has only been since the 1960's that a coherent and elaborate literature has developed. Much of the emphasis before this period was on the development of measures of association (e.g., see Goodman and

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