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Katherine E. Masyn^a

^a University of California at Davis,

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Discrete-Time Survival Factor Mixture Analysis for Low-Frequency Recurrent Event Histories

Katherine E. Masyn
University of California at Davis

In this article, the latent class analysis framework for modeling single event discrete-time survival data is extended to low-frequency recurrent event histories. A partial gap time model, parameterized as a restricted factor mixture model, is presented and illustrated using juvenile offending data. This model accommodates event-specific baseline hazard probabilities and covariate effects; event recurrences within a single time period; and accounts for within- and between-subject correlations of event times. This approach expands the family of latent variable survival models in a way that allows researchers to explicitly address questions about unobserved heterogeneity in the timing of events across the lifespan.

INTRODUCTION

In the study of human development, research questions around specific life course events, such as initiation of sexual activity, onset of alcohol use, incidents of felony arrest, transitions to parenthood, retirement, or assisted-living, and so on, are often concerned with the “whether” and “when” of event occurrence. For example, it may be of interest to investigate not only the risk factors that influence whether an adolescent chooses to engage in underage drinking, but also which of those factors influence when or at what age such a behavior begins. Furthermore, the timing of first alcohol use in adolescence may itself be a critical

Address correspondence to Katherine E. Masyn, Department of Human and Community Development, University of California at Davis, One Shields Ave, Davis, CA 95616. E-mail: kmasyn@ucdavis.edu