1116-62-2814 **Shannon Stock*** (`sstock@holycross.edu`). *Two-Sample Tests for Latent Recurrent Events: Application to Multiple Sclerosis EDSS Scores.*

The Expanded Disability Status Scale (EDSS) is a widely used measure of neurologic impairment and disease progression in patients with multiple sclerosis. However, since patients may experience small exacerbations of their disease severity that eventually subside, there is uncertainty whether an observed increase in EDSS scores is due to an actual jump in the disease process. Therefore, analyses involving such data require modeling unobservable recurrent events. In this paper, we introduce a two-sample test that accommodates latent recurrent events by weighting changes in an observable outcome measurement by the probability one or more events occurred since the previous time of measurement. We obtain estimates of these probabilities using an Expectation-Maximization algorithm. The utility of this method is demonstrated using simulation studies and the analysis of a motivating data set involving a cohort of patients with recent-onset multiple sclerosis. (Received September 22, 2015)