Trajectories of Disability and Mortality Among the U.S. Elderly Population: Evidence from the 1984–1999 NLTCS

Eric Stallard, A.S.A., M.A.A.A, F.C.A.
Center for Demographic Studies

Abstract

This paper employs a longitudinal form of the Grade of Membership (GoM) model to specify and estimate a multivariate model of the trajectories of disability and mortality among longitudinally followed elderly respondents to the National Long-Term-Care Survey (NLTCS) of 1984, 1989, 1994, and 1999. A distinct trajectory is constructed for each individual respondent to the survey. The trajectories describe the progressive declines over time in physical and cognitive functioning among a nationally representative sample of the U.S. elderly population.

The model is structured to simultaneously represent the essential features of the fixed frailty model (Vaupel et al. 1979) and the model of linearly declining vitality (Strehler and Mildvan 1960). Unlike those models, however, the longitudinal GoM model is designed for easy and direct application to existing longitudinal data sets.

The measurement space in the NLTCS application includes from one to four sets of repeated measures for each survey respondent on 95 independent variables characterizing the nature and intensity of limitations in activities of daily living, instrumental activities of daily living, physical functioning, and cognitive functioning, as well as indicators of behavioral characteristics, medical conditions, subjective health, age, race, sex, and institutional status.

The application shows that the model can be fitted to existing data and that the results are interpretable as generalizations of fixed frailty with linearly declining vitality.