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## Multi-State Actuarial Models of Functional Disability

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We apply generalized linear models to evaluate disability transitions for individuals in old age based on a large sample of U.S. elderly. We estimate a multi-state model for long-term care insurance applications, and find significant differences in disability rate patterns and levels from the commonly-used Robinson (1996) model. Our results suggest that the elderly face a 10% chance of becoming long-term care disabled only at ages past 90, rather than in their 80s. Furthermore, age patterns of recovery are found to differ significantly between the sexes. These estimates of transition probability are sensitive to the definition of 'long-term care disability', which has implications for the design of benefit triggers for private and public long-term care insurance programs.

**Keywords:** morbidity, health transitions, long-term care insurance, generalized linear models