

**LATENT CLASS REGRESSION FOR CROSS-SECTIONAL
AND LONGITUDINAL MULTIVARIATE OUTCOMES**

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Quantifying health and functioning poses significant challenges in many research areas. Commonly in the social and behavioral sciences, and increasingly often in health and biomedical sciences, multiple response variables are measured due to the lack of an obvious single measure of the outcome of interest. Examples of such outcomes include chronic pain, depression, functional disability, and vision. Frequently, these outcomes are measured repeatedly through time, further complicating the analytic challenges imposed by this type of data. In this talk, I will introduce a latent variable approach for studying the dependence of such responses on covariates (e.g., risk factors) in both cross-sectional and longitudinal studies. The outcome of interest is treated as a categorical latent variable, and the observed variables are treated as surrogates, measured with error. The proposed approach directly models the relationship between the underlying variable of interest and covariates, which (hopefully) leads to a reduction of measurement error and increased power for detecting associations. The methods will be exemplified using multiple examples including functional disability, cataract surgery, chronic pain, and depression.