

STATISTICS COLLOQUIUM

MONDAY, OCTOBER 01, 2012

TALK: 4:00 PM — SCIENCE CENTER RM. 309

RECEPTION: 5:15 PM — SCIENCE CENTER, 7TH FLOOR

“Comparing block Kronecker and unstructured covariance matrix estimation in a hierarchical model for health care quality”

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ABSTRACT

In hierarchical models, it may be useful to enforce some restrictions on the covariance matrix, such as autoregressive, compound symmetric, or block diagonal, according to the problem at hand. Here, we develop an approach to estimating block structured covariance matrices when some of the blocks have additional Kronecker product constraints. The motivating application concerns ratings of and reports on health care quality by Medicare beneficiaries enrolled in Medicare Advantage managed care plans. The Consumer Assessments of Health Plans Study (CAHPS) survey includes items concerning experiences with the plan, individual physicians, prescriptions, and access to care. Previous work has found that age, general health status, and educational attainment are important predictors of quality ratings. Plans that attract enrollees that tend to provide lower quality ratings should not be penalized for this; instead, differences among plans should be standardized to a common casemix. We construct a model that allows adjustments for these casemix factors to vary across plans and focus on estimating a structured covariance matrix for the plan-level random effects.