

**University of California, Irvine
Statistics Seminar**

***A One Covariate at a Time, Multiple Testing Approach to
Variable Selection in High-Dimensional Linear Regression
Models***

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**Thursday, Nov. 2, 2017
4 p.m., 6011 Bren Hall
(Bldg. #314 on campus map)**

Model specification and selection are recurring themes in econometric analysis. Both topics become considerably more complicated in the case of large-dimensional data sets where the set of possible specifications can become quite large. In the context of linear regression models, penalised regression has become the de facto benchmark technique used to trade off parsimony and fit when the number of covariates is large, often much larger than the number of available observations. In this paper, we provide an alternative approach that considers the statistical significance of the individual covariates one at a time, whilst taking full account of the multiple testing nature of the inferential problem involved. We refer to the proposed method as One Covariate at a Time Multiple Testing (OCMT) procedure. The OCMT provides an alternative to penalised regression and boosting methods. It is based on statistical inference and is therefore easier to interpret and relate to the classical statistical analysis, it allows working under more general assumptions, it is faster, and performs well in small samples. The usefulness of OCMT is also illustrated by an empirical application to forecasting U.S. output growth and inflation.