

**MR. XINSI HUANG**

**PRESENTS HIS MASTER OF SCIENCE RESEARCH PROJECT IN  
STATISTICS**

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**LINEAR SHRINKAGE, PRETEST AND STEIN-TYPE  
ESTIMATION:  
A REVIEW**

Variable selection and modified submodel result in biased estimation, but can be more sufficient and effective at times. Such as the shrinkage estimator, the pretest, and the Stein-type estimator. They combine the raw data with other useful information, or through variable and model selecting, in which it accepts the bias in exchange for smaller variance. The results from these estimators have been extended to a wide class of distributions and loss functions. Publications that involve the linear shrinkage, the pretest, and the Stein-type estimation, as well as their related applications, are reviewed in this paper. Furthermore, we look at the methods of these estimations, their bias and MSE, their related applications, and related asymptotic analysis. We then summarize our findings, and project their possible modifications and the directions of their future applications.

Keywords: Linear Shrinkage Estimation, Pretest Estimation, Shrinkage Pretest Estimation, Stein-type Estimation.

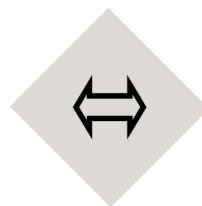
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**NOTES**

Date: November 14, 2019

Time: 9:30 am

Room: TH 248