



THE UNIVERSITY OF
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Asymptotic Minimax Estimation Theory for ε -Contaminated
Normal Mean

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ABSTRACT

In this paper, we examine the minimax estimation theory for the ε -contamination normal mean model. In other words, we aim to find the best estimator for 1-dimensional normal mean with the existence of contamination. Estimators are evaluated using maximum risk with regard to bounded L2 loss. Our work shows that when either the bias or the variance dominates the other, the best procedure is to use sample median when the bias dominates, and to use Huber's estimator when the variance dominates. In general situations, Huber's estimator is within 1.2 times the minimax risk.

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