



THE UNIVERSITY OF
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Department of Statistics
The University of Chicago

An Empirical Study of Regularization on Large Covariance Matrix
Estimation

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Jones 303, 5747 S. Ellis Avenue

ABSTRACT

An increasing interest has been shown in the covariance matrix estimation problem, especially in the context of high dimensional statistics. Indeed, this problem is crucial in a wide variety range of fields and it's interesting yet challenging to provide reliable estimates in some cases. In this article, we reviewed the methods of banding, tapering, and hard thresholding for estimating the covariance matrix. Then, we performed simulations with normal-distributed multivariate data to compare the different estimators with the sample covariance matrix estimator. We also conducted an analysis of the Chicago Divvy bike-share data to illustrate its usage in real-world data analysis problems.