THE UNIVERSITY OF CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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An Exploration of Loss Functions Useful for Comparing the Observed and Expected Fisher Information

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ABSTRACT

One common method of determining the precision of a maximum likelihood estimate is to use the Fisher information. Since the Fisher information often depends on the parameters being estimated, one must in practice use an estimate of the Fisher information based on the data. The observed Fisher information and the expected Fisher information are two such estimates. After reviewing previous work on comparing the performance of observed and expected Fisher information using loss functions, I introduce a new loss function based on the kurtosis of z-scores. I then present the results of simulations that (1) explore the relative performance of the observed and expected Fisher information according to this new loss function, and (2) compare this new loss function to those used in previous studies. I find that my loss function generally favors the observed Fisher information and that it produces comparisons of performance similar to those found in previous work.
