

Semiparametric robust mean estimations based on the orderliness of quantile averages

Tuban Lee

This manuscript was compiled on June 8, 2023

semiparametric | mean-median-mode inequality | asymptotic | unimodal
| Hodges–Lehmann estimator

1 **Inequalities related to weighted averages**

2 So far, it seems plausible that the bias of a trimmed mean
3 should be monotonically related to its degree of robustness in
4 a semiparametric distribution, since it is a linear combination
5 of quantile averages as shown in Section ???. Analogous to
6 the γ -orderliness, the γ -trimming inequality for a right-skewed
7 distribution is defined as $\forall 0 \leq \epsilon_1 \leq \epsilon_2 \leq \frac{1}{1+\gamma}, TM_{\epsilon_1, \gamma} \geq$
8 $TM_{\epsilon_2, \gamma}$.

9 **Data Availability.** Data for Figure ?? are given in SI Dataset
10 S1. All codes have been deposited in [GitHub](#).

11 **ACKNOWLEDGMENTS.** I sincerely acknowledge the insightful
12 comments from the editor which considerably elevated the lucidity
13 and merit of this paper.

DRAFT