Semiparametric robust mean estimations based on the orderliness of quantile averages

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1 Inequalities related to weighted averages

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

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