

Supplemental material for the Paper “Robustness Against Outliers: A New Variance Inflated
Regression Model for Proportions”

by A. M. Di Brisco, S. Migliorati and A. Ongaro

Extension of Robustness evaluation’s study

For the sake of completeness, we further evaluated the impact of outliers with respect to a smaller sample size equal to $n = 50$ and for the same proportion of outliers (i.e. we considered two outliers). For brevity, we report below (see Figures S1, S2, S3, and S4) only the outcome relative to scenario III. The inferential results are similar to those with $n = 100$ with respect to all robustness measures listed in the paper. The only appreciable difference concerns posterior distributions which are more widespread around their peak in case $n = 50$, regardless of the intensity of perturbation.

Figure S1: Scenario III, $n=50$: posterior mean (solid line) and 95%-credible interval (dashed line) of β_0 (top panel) and β_1 (bottom panel) for each regression model as δ varies

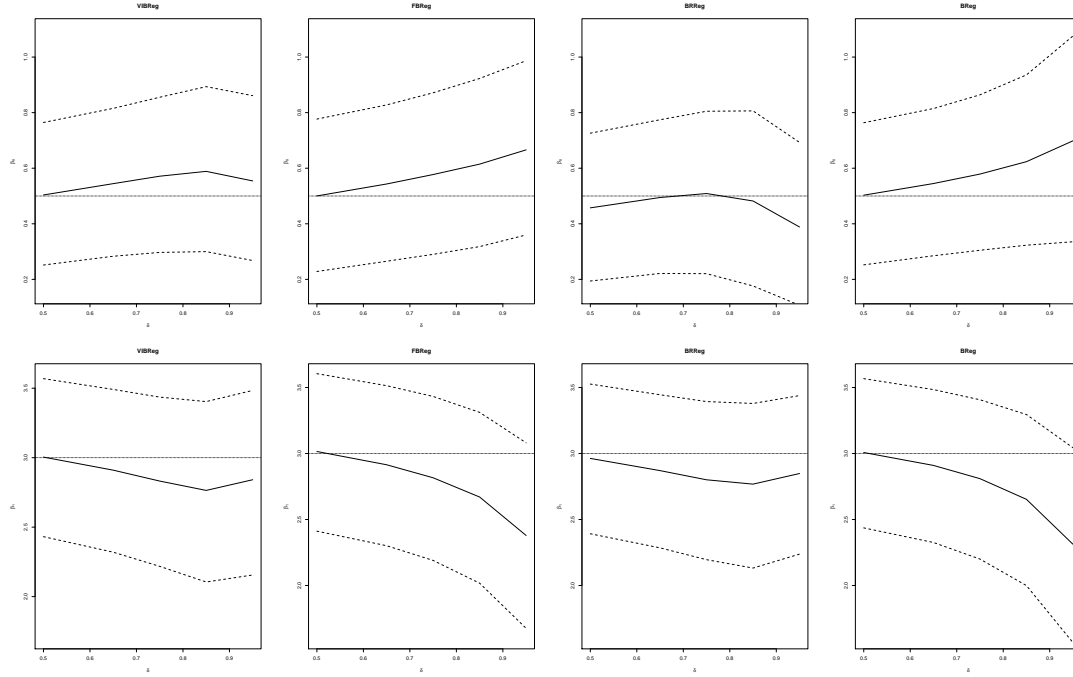


Figure S2: Scenario III, $n=50$: KL divergence measure (left panel), distance measure (central panel) and $WAIC_1$ (right panel) for VIBReg (solid line), FBReg (dashed line), BRReg (dotted line) and BReg (dotdash line).

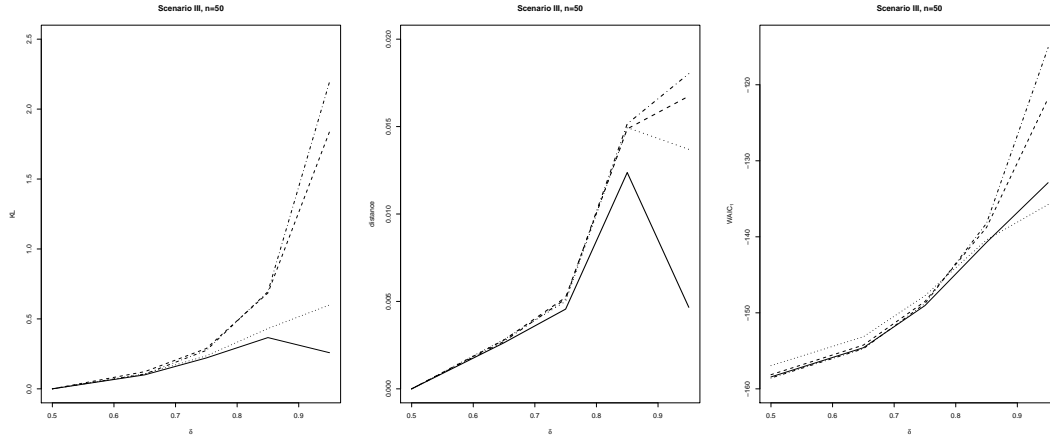


Figure S3: Scenario III, $n=50$: bayesian residuals for the four models in each scenario. Filled-in circles for outliers.

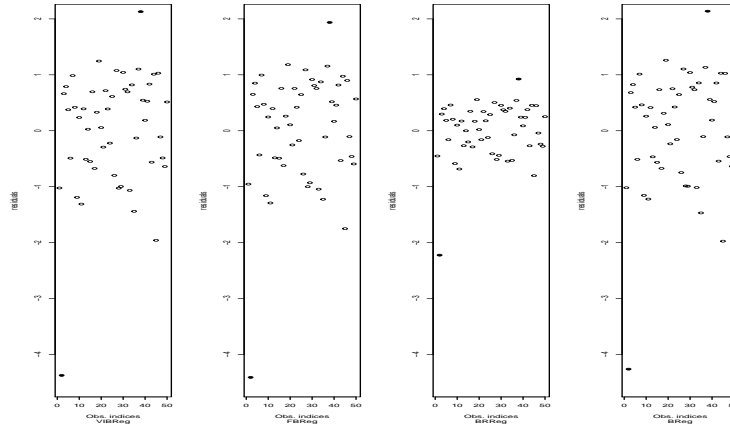


Figure S4: Scenario III, $n=50$: posterior predictive means (cross symbols) and 90% predictive intervals for each subject and for each model (observed values in circles, filled-in for outliers).

