

Matlab Programs for Computing Confidence Intervals in Müller and Wang 2018 JASA

The matlab programs implement two methods: the optimal CI method and the generalized LR method. The main.m file is the main script including some preliminary setup, path setting, data loading, etc.

For the optimal CI method, we use

1. There is a nulltab.mat file, which contains the values of the Lagrangian multipliers, Λ , computed by the fortran program
2. There is a alttab.mat file, which contains the values of the weights, W
3. There is a compute_CI_opt.m file, which is the main function to be used in main.m to compute the optimal confidence interval
4. There are several supporting files, including log_fyx_tce.m, log_WA.m, and log_WALgth_fx.m.

For the generalized LR method, we use

1. There is a genLRtab.mat file, which contains the critical values for inference on the extreme quantile and TCE at different h and k .
2. There is a compute_CI_glr.m file, which is the main function to be used in main.m to compute the generalized LR confidence interval
3. There are several supporting files, including jevLR.m, LRcon.m, LRcon_cv.m, and target.m.

We heavily use the script lgwt.m which computes the weights for Gauss-Legendre quadrature. This function is written by Greg von Winckel and downloaded from the MATLAB website.