**Sim 17 Simulations README**

This README provides information for navigating the results for Simulation 17 on github: <https://github.com/AlexBowring/Contour_Inference_2019/tree/master/Sim_17_results>

Results have been filed in the format:

/{effect\_size}\_effect\_size/{smoothing}\_smoothing/Figures/

{bootstrap\_type}\_{variance\_estimator}\_{distribution\_type}\_{boundary\_dimensions}\_{effect\_size}\_{smoothing}.pdf

For example:

/02\_effect\_size/1\_smoothing/Figures/

mult\_bootstrap\_cohen\_var\_abs\_max\_dist\_10\_square\_dim\_02\_effect\_1\_smo.pdf

This table provides a description on what each of these parameters mean and the values of each parameter explored in the simulation:

In all simulations, for N subjects (N = 30, 60, 120) a constant signal was generated over a 2D square grid of size (10x10/60x60/124x124), and Gaussian noise was added smoothed with a (1, 3, 5, 7) voxel FWHM Gaussian kernel. 30,000 Monte Carlo simulations were generated to obtain the empirical maximum, minimum, and absolute maximum distribution. 10,000 bootstrap samples were used to obtain the same distributions with a couple of our proposed methods. I then found the 95 percentile of the abs. max distribution, 97.5 percentile of max, and 2.5 percentile of the min distribution for the monte carlo and bootstrap methods over all subject sizes.

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| --- | --- | --- |
| **Parameter** | **Description** | **Values explored** |
| effect\_size | The constant ‘true’ effect size generated for all subjects | μ = 1, 2, 0.2, 5, 0.7 |
| smoothing | The smoothing FWHM used for the Gaussian kernel to smooth the noise | 1 voxel FWHM  3 voxel FWHM  5 voxel FWHM  7 voxel FWHM |
| bootstrap\_type | Which bootstrap type was used in the simulations | Mult\_bootstrap (multiplier bootstrap, bootstrapped residuals)  t\_bootstrap (t-bootstrap, bootstrapped residuals divided by bootstrap standard deviation) |
| variance\_estimator | The variance estimator used to standardized the residuals before the bootstrap. | cohen\_var  (Variance of cohens d,  1 + d^2/2)  SNR\_var  (Variance of Fabians SNR residuals) |
| distribution\_type | The distribution from which the quantile values have been obtained | abs\_max  (Absolute maximum, 95%-ile)  max  (Maximum, 97.5%-ile)  min  (Minimum, 2.5%-ile) |
| boundary\_dimensions | Dimensions of the square grid for which the constant signal was generated over | 10\_square\_dim  (10 x 10 grid, i.e boundary length of 10^2)  60\_square\_dim  (60 x 60 grid, i.e. boundary length of 60^2)  (124x124 grid, i.e boundary length of 124^2) |