

This is the codebook to document the codes and outputs related to the SAS macro **CRTFASTGEEPWR**, which uses a fast, non-simulation based analytical power procedure to compute power for complete and incomplete cluster randomized trials based on generalized estimating equations. The calculation of power by this method is referred to as “fast GEE power” or “predicted power” and is described in the following open-access article (referred below as the “fast GEE power paper”):

Zhang Y, Preisser JS, Turner EL, Rathouz PJ, Toles M, Li F. A general method for calculating power for GEE analysis of complete and incomplete stepped wedge cluster randomized trials. *Statistical Methods in Medical Research* 2023, 32:71-87.

Open Access: <https://journals.sagepub.com/doi/epub/10.1177/09622802221129861>

1. The main file “CRTFASTGEEPWR.v2.02.sas” contains the SAS/IML macro code **CRTFASTGEEPWR**, which calculates the fast GEE power of a cluster randomized trial. This version of the macro updates version 1.01. Some of the details of the SAS macro options are in the header documentation internal to this file. Further detail on macro arguments and options, along with examples, are found in the slides in CRTFASTGEEPWR_SAS_macro_slides_2023_July.pdf
2. In the simulation section of the fast GEE power paper:
The SAS codes named “swpower_binary_power_designA_SAS_v4.sas” and “swpower_normal_power_designA_SAS_v4.sas” calculate the fast GEE powers for binary outcomes and the fast GEE powers for continuous outcomes, which are reported as predicted power in the pdf files called “Incomplete_SWCRT_Table2_WebTable2.pdf” and “Incomplete_SWCRT_WebTable3and4.pdf” respectively.
3. In the application section of the fast GEE power paper: There are two parts of the SAS codes to calculate the powers in the application section of the paper. The first part regards the predicted power comparison between 6 stepped wedge designs. The second part is related to the sample size calculation based on the Connect-Home trial (Design A).
 - 3.1 The SAS codes named “swpower_binary_PCORI_6_designs_ave_SAS_v4.sas” and “swpower_binary_PCORI_6_designs_incre_SAS_v4.sas” calculate the predicted powers for binary outcomes in the Table 3, which generates the output pdf file called “Incomplete_SWCRT_Table3_p1.pdf” and “Incomplete_SWCRT_Table3_p2.pdf”, respectively.
 - 3.2 The SAS codes named “swpower_normal_PCORI_6_designs_ave_SAS_v4.sas” and “swpower_normal_PCORI_6_designs_incre_SAS_v4.sas” calculate the predicted powers in the Web Table 7, which generates the output pdf file called “Incomplete_SWCRT_WebTable7_p1.pdf” and “Incomplete_SWCRT_WebTable7_p2.pdf”, respectively.
 - 3.3 “SW_CRT_binary_sample_size_designA_SAS_V4.sas” calculates the predicted powers in the Web Table 4, which are saved in the pdf files called “Incomplete_SWCRT_Table4.pdf”. “SW_CRT_normal_sample_size_designA_SAS_V4.sas” calculate the predicted powers in the Web Table 8, which generates “Incomplete_SWCRT_WebTable8.pdf”.