swdpwr: A SAS Macro and An R Package for Power Calculation in Stepped Wedge Cluster Randomized Trials

Installing and Compiling swdpwr

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1 SAS macro

The SAS macro **%swdpwr** includes a SAS file and an executable file, and provides different versions for Windows and Unix. The SAS file can be downloaded from CMIPS website and the executable file can be downloaded from: `https://github.com/jiachenchen322/swdpwr`. Please refer to file "readme" in the downloaded file for the proper executable file of your platform. If you have downloaded the files corresponding to the platform of your computer, no installation is necessary. You will need to put the two files under the same directory and edit line "%let mydir=" in the SAS macro (.sas) file to be the correct directory to the parent folder of the downloaded files. It's recommended to work on your own computer since the executive file may need extra approval to be used on clusters.

2 R package

The R package has versions of Package source, Windows binaries and macOS binaries on CRAN at: `https://CRAN.R-project.org/package=swdpwr`. If you have installed the binary package of your platform from CRAN, no compilation is necessary. The binary package can be installed by

"install.packages("swdpwr")" (you might need to update R to the latest version to install the binary package if there reports an error that the version of your R doesn't support this binary package) and loaded by "library(swdpwr)" directly.

If you download the package source, you will need to compile **swdpwr** on your local computer, and you will need a standard Fortran compiler such as GNU gcc or gfortran. The requirements for compilation on Windows and macOS are different. For Mac users, before installing gfortran, you will need to have the Xcode installed, as well as "command line developer tools". These can be downloaded from `https://developer.apple.com/download/more/` (free registration required). The gfortran maintainers offer nice Apple-style installers at `https://github.com/fxcoudert/gfortran-for-macOS/releases`, where users can download the DMG file and install according to the instructions easily. For Windows users, gcc can be accessed and downloaded at `https://sourceforge.net/projects/mingw/files/MinGW/Base/gcc/Version6/`. In addition, RTools is needed to build R packages with C/C++/Fortran code from source and can be downloaded at `https://cran.r-project.org/bin/windows/Rtools/`. For more details on installing gfortran, please refer to `https://gcc.gnu.org/wiki/GFortranBinaries`.

After the installation of gfortran, the R package can be installed by "install.packages("", repos=NULL, type="source)" (specify the path to the downloaded tar.gz file as the first parameter) and loaded by "library(swdpwr)".

3 Shiny App

The Shiny App can be accessed through the internet with a web browser at: `https://jiachenchen322.shinyapps.io/swdpwr_shinyapp/`, which does not need installation on your own computer and is friendly for people without coding knowledge. Just a friendly reminder that, in case the app responds too slowly, please do not update the input parameters too frequently especially when you choose the conditional model. A way to avoid this issue is to set the model to be marginal at first until the last step and then revise it to be conditional, if you would like to use the conditional model. Also, please note that you need to make sure the I and J correspond with the input design matrix.

4 Contact

More examples about using this software can be accessed from the manuscript of this project posted on CMIPS website. Please do not hesitate to contact Jiachen Chen (jiachen.chen@yale.edu) if you encounter any problems or have comments about this software.