

Reproducibility Guidelines: Step 1

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Set up The System

These codes have been tested in Ubuntu-based linux systems. Please ensure that R version 4.2.1, `cpp17`, `openmp`, `openblas` are installed in the linux system.

Then open R and set the location of this readme file as the working directory.

Define the following function to check whether an R package is installed in the system. If not it installs the package.

```
pkgTest <- function(x)
{
  if (!require(x,character.only = TRUE))
  {
    install.packages(x,dep=TRUE)
    if(!require(x,character.only = TRUE)) stop("Package not found")
  }
}
```

Then check and install the following packages.

```
packages=c("Rcpp", "RcppArmadillo", "RcppGSL", "RcppDist", "plyr", "reshape2", "ggplot2",
           "caret", "parallel", "psrwe", "mvtnorm", "foreach", "doParallel", "MASS",
           "inline", "devtools", "writexl", "ggpubr", "coda", "ggmcmc", "latex2exp",
           "ape", "survival", "survminer", "data.table", "dplyr", "optmatch", "MCMCpack",
           "ROCR", "dbarts", "randomForest", "mltools", "gtools")
sapply(packages, pkgTest)
```

- Please double check whether **ALL OF THE** the above packages are installed successfully.

Then install the `OpenMPController` package from Github.

```
devtools::install_github("cran/OpenMPController",force = T)
```

Install the `CAPPMx` package from the source files:

```
install.packages("CAPPMx.tar.gz", repos = NULL, type = "source")
library("CAPPMx")
```

After successfully installing and loading the `CAPPMx` package we proceed with the analysis.

- The simulations require a lot of space in the hard drive. Before proceeding please secure **1 terabyte** of disk space.
- We do not reproduce **Figure 1 in the main paper** and **Figure S.1 in the supplementary materials** since these require the actual data which we can not share in order to maintain patients' privacy.