Reproducibility Report: System and R Environment Summary

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2024-10-10

This report summarises our R environment, OS, CPU, and memory for reproducibility. This report will capture the key details for anyone wishing to replicate our computational setup.

System Information

Operating System (OS) Info

This section retrieves the operating system and system kernel details.

```
Sys.info()
```

```
##                                       sysname
##                                       "Linux"
##                                       release
##                                 "5.10.0-1023-oem"
##                                       version
## "#24-Ubuntu SMP Thu Apr 15 13:46:37 UTC 2021"
##                                      nodename
##                                       "zfury"
##                                       machine
##                                      "x86_64"
##                                         login
##                                      "287658c"
##                                          user
##                                      "287658c"
##                                 effective_user
##                                      "287658c"
```

CPU and Memory Information (Linux/macOS)

Below is the CPU and memory information retrieved from system commands.

```
# CPU Info
system("lscpu", intern = TRUE)
```

```
##  [1] "Architecture:                    x86_64"
##  [2] "CPU op-mode(s):                  32-bit, 64-bit"
##  [3] "Byte Order:                      Little Endian"
##  [4] "Address sizes:                   39 bits physical, 48 bits virtual"
##  [5] "CPU(s):                          16"
##  [6] "On-line CPU(s) list:             0-15"
##  [7] "Thread(s) per core:              2"
##  [8] "Core(s) per socket:              8"
##  [9] "Socket(s):                       1"
## [10] "NUMA node(s):                    1"
```

```
## [11] "Vendor ID:                         GenuineIntel"
## [12] "CPU family:                        6"
## [13] "Model:                             141"
## [14] "Model name:                        11th Gen Intel(R) Core(TM) i7-11850H @ 2.50GHz"
## [15] "Stepping:                          1"
## [16] "CPU MHz:                           3855.001"
## [17] "CPU max MHz:                       4800.0000"
## [18] "CPU min MHz:                       800.0000"
## [19] "BogoMIPS:                          4992.00"
## [20] "Virtualisation:                    VT-x"
## [21] "L1d cache:                         384 KiB"
## [22] "L1i cache:                         256 KiB"
## [23] "L2 cache:                          10 MiB"
## [24] "L3 cache:                          24 MiB"
## [25] "NUMA node0 CPU(s):                 0-15"
## [26] "Vulnerability Itlb multihit:       Not affected"
## [27] "Vulnerability L1tf:                Not affected"
## [28] "Vulnerability Mds:                 Not affected"
## [29] "Vulnerability Meltdown:            Not affected"
## [30] "Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and s
## [31] "Vulnerability Spectre v1:          Mitigation; usercopy/swapgs barriers and __user pointer sanit
## [32] "Vulnerability Spectre v2:          Mitigation; Enhanced IBRS, IBPB conditional, RSB filling"
## [33] "Vulnerability Srbds:               Not affected"
## [34] "Vulnerability Tsx async abort:     Not affected"
## [35] "Flags:                             fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
```

```
# Memory Info
system("free -h", intern = TRUE)
```

```
## [1] "               total        used        free      shared  buff/cache   available"
## [2] "Mem:            62Gi       7.3Gi        49Gi       282Mi       5.8Gi        54Gi"
## [3] "Swap:          2.0Gi          0B       2.0Gi"
```

Note about code editor

Note that the Rstudio editor version gave errors and so the Emacs ESS editor was used instead.

The Rstudio Editor version that failed was

```
RStudio 2023.06.1+524 "Mountain Hydrangea" Release (547dcf861cac0253a8abb52c135e44e02ba407a1, 2023-07-0
Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) rstudio/2023.06.1+524 Chrome/110
```

R Environment

The session information for R

```
sessionInfo()
```

```
## R version 4.4.2 (2024-10-31)
## Platform: x86_64-pc-linux-gnu
## Running under: Ubuntu 20.04.6 LTS
##
## Matrix products: default
## BLAS:   /usr/lib/x86_64-linux-gnu/openblas-pthread/libblas.so.3
## LAPACK: /usr/lib/x86_64-linux-gnu/openblas-pthread/liblapack.so.3;  LAPACK version 3.9.0
##
## locale:
```

```
##  [1] LC_CTYPE=en_AU.UTF-8       LC_NUMERIC=C
##  [3] LC_TIME=en_AU.UTF-8        LC_COLLATE=en_AU.UTF-8
##  [5] LC_MONETARY=en_AU.UTF-8    LC_MESSAGES=en_AU.UTF-8
##  [7] LC_PAPER=en_AU.UTF-8       LC_NAME=C
##  [9] LC_ADDRESS=C               LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_AU.UTF-8 LC_IDENTIFICATION=C
##
## time zone: Australia/Perth
## tzcode source: system (glibc)
##
## attached base packages:
## [1] splines   stats     graphics  grDevices utils     datasets  methods
## [8] base
##
## other attached packages:
##  [1] fields_16.3         viridisLite_0.4.2   spam_2.11-0
##  [4] animation_2.7       knitr_1.49          glmnet_4.1-8
##  [7] Matrix_1.7-1        raster_3.6-26       sp_1.6-0
## [10] data.table_1.15.0   CAST_1.0.3          xgboost_1.7.8.1
## [13] gbm_2.2.2           ranger_0.17.0       lubridate_1.9.4
## [16] caret_7.0-1         lattice_0.22-5      ggplot2_3.4.4
## [19] SuperLearner_2.0-29 gam_1.22-5          foreach_1.5.2
## [22] nnls_1.6
##
## loaded via a namespace (and not attached):
##  [1] tidyselect_1.2.0     timeDate_4032.109    dplyr_1.1.4
##  [4] fastmap_1.2.0        pROC_1.18.5          dotCall64_1.2
##  [7] digest_0.6.34        rpart_4.1.23         timechange_0.3.0
## [10] lifecycle_1.0.4      survival_3.8-3       terra_1.7-71
## [13] magrittr_2.0.3       compiler_4.4.2       rlang_1.1.3
## [16] tools_4.4.2          utf8_1.2.4           yaml_2.3.8
## [19] plyr_1.8.9           withr_3.0.0          purrr_1.0.2
## [22] nnet_7.3-20          grid_4.4.2           stats4_4.4.2
## [25] fansi_1.0.6          colorspace_2.1-0     future_1.33.1
## [28] globals_0.16.2       scales_1.3.0         iterators_1.0.14
## [31] MASS_7.3-64          cli_3.6.2            rmarkdown_2.28
## [34] generics_0.1.3       rstudioapi_0.15.0    future.apply_1.11.1
## [37] reshape2_1.4.4       stringr_1.5.1        maps_3.4.2
## [40] parallel_4.4.2       vctrs_0.6.5          hardhat_1.3.0
## [43] jsonlite_1.8.8       listenv_0.9.1        gower_1.0.0
## [46] recipes_1.0.9        glue_1.7.0           parallelly_1.36.0
## [49] codetools_0.2-19     shape_1.4.6          stringi_1.8.3
## [52] gtable_0.3.4         munsell_0.5.0        tibble_3.2.1
## [55] pillar_1.9.0         htmltools_0.5.8.1    ipred_0.9-14
## [58] lava_1.7.3           R6_2.5.1             evaluate_0.23
## [61] class_7.3-23         Rcpp_1.0.12          nlme_3.1-166
## [64] prodlim_2023.08.28   xfun_0.49            forcats_1.0.0
## [67] pkgconfig_2.0.3      ModelMetrics_1.2.2.2
```

Summary

This report provides a complete summary of the system and R environment to aid in reproducibility of analyses. This document along with our code and data ensure that others can replicate our results under a similar computational setup.