Validation Report

rbmi (v1.0.1)

Server: https://github.com **Repositary**: epijim/rbmi
Reference: refs/tags/v1.0.1-validation
Commit SHA: 6499045cf460f161b11587176a4a717ad491ae1b

Fri Oct 22 12:47:08 PM 2021

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1 Context

This report was generated via the GH-action insightsengineering/validatoR (gh-action ID: ___insightsengineering_thevalidatoR). It produces automated documentation of the installation of this package on an open source R environment, focussing on:

- Installation environment description
- Testing coverage
- Traceability matrix of specifications (documented behaviours) and testing
- Risk assessment benchmarks

This report is fully automated, so is limited to assess whether unit tests and documentation are present and can execute without error. An assessment would be required that the tests and documentation are meaningful. Validation is system dependent, so specific to the validation environment environment used by this gh-action (see `https://github.com/insightsengineering/thevalidatoR/blob/main/Dockerfile` for the base dockerfile, and details in this document for the session info).

2 Installation environment and package

2.1 System Info

Table 1: System info

Field	Value
OS	Ubuntu 20.04.3 LTS
Platform	x86_64-pc-linux-gnu
System	x86_64, linux-gnu
Execution Time	2021-10-22 12:49:00 UTC

2.2 Package installed

Table 2: Git information

Field	Value
branch	HEAD
commit ‘SHA1‘	6499045cf460f161b11587176a4a717ad491ae1b
commit date	2021-10-22 14:43:25 +0200

2.3 R Session Info

```
sessionInfo()
```

```
R version 4.1.1 (2021-08-10)
Platform: x86_64-pc-linux-gnu (64-bit)
Running under: Ubuntu 20.04.3 LTS

Matrix products: default
BLAS/LAPACK: /usr/lib/x86_64-linux-gnu/openblas-pthread/libopenblasp-r0.3.8.so

locale:
 [1] LC_CTYPE=en_US.UTF-8       LC_NUMERIC=C
 [3] LC_TIME=en_US.UTF-8        LC_COLLATE=en_US.UTF-8
 [5] LC_MONETARY=en_US.UTF-8    LC_MESSAGES=C
 [7] LC_PAPER=en_US.UTF-8       LC_NAME=C
 [9] LC_ADDRESS=C               LC_TELEPHONE=C
[11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C

attached base packages:
[1] stats     graphics  grDevices utils     datasets  methods   base

other attached packages:
[1] kableExtra_1.3.4 knitr_1.36       magrittr_2.0.1

loaded via a namespace (and not attached):
 [1] pillar_1.6.4      compiler_4.1.1    prettyunits_1.1.1 remotes_2.4.1
 [5] tools_4.1.1       testthat_3.1.0    digest_0.6.28     pkgbuild_1.2.0
 [9] pkgload_1.2.3     viridisLite_0.4.0 memoise_2.0.0     evaluate_0.14
[13] lifecycle_1.0.1   tibble_3.1.5      pkgconfig_2.0.3   rlang_0.4.12
[17] rstudioapi_0.13   cli_3.0.1         curl_4.3.2        yaml_2.2.1
[21] xfun_0.27         fastmap_1.1.0     xml2_1.3.2        httr_1.4.2
[25] stringr_1.4.0     withr_2.4.2       systemfonts_1.0.3 desc_1.4.0
[29] fs_1.5.0          vctrs_0.3.8       devtools_2.4.2    webshot_0.5.2
```

```
[33] rprojroot_2.0.2   svglite_2.0.0     glue_1.4.2        R6_2.5.1
[37] processx_3.5.2    fansi_0.5.0       rmarkdown_2.11    sessioninfo_1.1.1
[41] callr_3.7.0       purrr_0.3.4       scales_1.1.1      ps_1.6.0
[45] ellipsis_0.3.2    htmltools_0.5.2   usethis_2.1.0     rvest_1.0.2
[49] colorspace_2.0-2  utf8_1.2.2        stringi_1.7.5     munsell_0.5.0
[53] cachem_1.0.6      crayon_1.4.1
```

```
capabilities()
```

```
      jpeg         png        tiff       tcltk         X11        aqua
      TRUE        TRUE        TRUE        TRUE       FALSE       FALSE
   http/ftp     sockets      libxml        fifo      cledit       iconv
      TRUE        TRUE        TRUE        TRUE       FALSE        TRUE
       NLS       Rprof     profmem       cairo         ICU long.double
     FALSE        TRUE        TRUE        TRUE        TRUE        TRUE
    libcurl
      TRUE
```

3 Metric based risk assessment

The following metrics are derived from the `riskmetric` R package. Metrics overlapping with `covr` and `R CMD Check` are removed.

Table 3: Package info assessed by the R package riskmetric

Metric	Status
number of discovered vignettes files	4
software is released with an acceptable license	Apache License (>= 2)
number of downloads in the past year	0

4 Installation documentation

4.1 `R CMD check`

```
* using log directory '/tmp/RtmpwBZi0h/file1fcee3bf/rbmi.Rcheck'
* using R version 4.1.1 (2021-08-10)
* using platform: x86_64-pc-linux-gnu (64-bit)
* using session charset: UTF-8
* using options '--no-manual --no-build-vignettes'
* checking for file 'rbmi/DESCRIPTION' ... OK
* this is package 'rbmi' version '1.0.1'
* package encoding: UTF-8
* checking package namespace information ... OK
* checking package dependencies ... OK
* checking if this is a source package ... OK
* checking if there is a namespace ... OK
* checking for executable files ... OK
* checking for hidden files and directories ... OK
* checking for portable file names ... OK
* checking for sufficient/correct file permissions ... OK
* checking whether package 'rbmi' can be installed ... OK
* checking installed package size ... NOTE
  installed size is 57.1Mb
```

```
  sub-directories of 1Mb or more:
    libs  56.1Mb
* checking package directory ... OK
* checking 'build' directory ... OK
* checking DESCRIPTION meta-information ... OK
* checking top-level files ... OK
* checking for left-over files ... OK
* checking index information ... OK
* checking package subdirectories ... OK
* checking R files for non-ASCII characters ... OK
* checking R files for syntax errors ... OK
* checking whether the package can be loaded ... OK
* checking whether the package can be loaded with stated dependencies ... OK
* checking whether the package can be unloaded cleanly ... OK
* checking whether the namespace can be loaded with stated dependencies ... OK
* checking whether the namespace can be unloaded cleanly ... OK
* checking loading without being on the library search path ... OK
* checking dependencies in R code ... NOTE
Namespaces in Imports field not imported from:
  'RcppParallel' 'rstantools'
  All declared Imports should be used.
* checking S3 generic/method consistency ... OK
* checking replacement functions ... OK
* checking foreign function calls ... OK
* checking R code for possible problems ... OK
* checking Rd files ... OK
* checking Rd metadata ... OK
* checking Rd cross-references ... OK
* checking for missing documentation entries ... OK
* checking for code/documentation mismatches ... OK
* checking Rd \usage sections ... OK
* checking Rd contents ... OK
* checking for unstated dependencies in examples ... OK
* checking contents of 'data' directory ... OK
* checking data for non-ASCII characters ... OK
* checking LazyData ... OK
* checking data for ASCII and uncompressed saves ... OK
* checking line endings in shell scripts ... OK
* checking line endings in C/C++/Fortran sources/headers ... OK
* checking line endings in Makefiles ... OK
* checking compilation flags in Makevars ... OK
* checking for GNU extensions in Makefiles ... NOTE
GNU make is a SystemRequirements.
* checking for portable use of $(BLAS_LIBS) and $(LAPACK_LIBS) ... OK
* checking use of PKG_*FLAGS in Makefiles ... OK
* checking compiled code ... OK
* checking installed files from 'inst/doc' ... OK
* checking files in 'vignettes' ... OK
* checking examples ... OK
* checking for unstated dependencies in 'tests' ... OK
* checking tests ...
  Running 'testthat.R'
 OK
* checking for unstated dependencies in vignettes ... OK
```

```
* checking package vignettes in ‘inst/doc’ ... OK
* checking running R code from vignettes ...
  ‘advanced.Rmd’ using ‘UTF-8’... OK
  ‘quickstart.Rmd’ using ‘UTF-8’... OK
  ‘stat_specs.Rmd’ using ‘UTF-8’... OK
 NONE
* checking re-building of vignette outputs ... SKIPPED
* DONE

Status: 3 NOTEs
See
  ‘/tmp/RtmpwBZi0h/file1fcee3bf/rbmi.Rcheck/00check.log’
for details.
```

4.2 Testing Coverage

```
rbmi Coverage: 97.95%

R/analyse.R: 92.49%

src/stanExports_MMRM.h: 93.14%

R/as_ascii_table.R: 93.85%

R/lsmeans.R: 97.73%

R/mcmc.R: 97.90%

R/draws.R: 98.99%

R/mmrm.R: 99.25%

R/delta.R: 99.28%

R/utilities.R: 99.35%

R/longData.R: 99.49%

R/impute.R: 99.67%

R/ancova.R: 100.00%

R/bootstrap.R: 100.00%

R/expand.R: 100.00%

R/methods.R: 100.00%

R/pool.R: 100.00%

R/scaling.R: 100.00%

R/simulate.R: 100.00%

R/strategies.R: 100.00%

R/validate_datalong.R: 100.00%

R/validate.R: 100.00%

src/stanExports_MMRM.cc: 100.00%
```

4.3 Traceability

Tracebility matrix that maps each unit test to the corresponding documentation, creating a link between intended use and testing.

4.3.1 Testing matrix

Table 4: Tracebility matrix mapping unit tests to documented behaviours.

Test Description	Documentation
Basic Usage	man/add_class.Rd
print - Condmean (jackknife)	man/add_class.Rd
impute can recover known values	man/add_class.Rd
extract_imputed_dfs + delta	man/add_class.Rd
print - condmean (bootstrap)	man/add_class.Rd
print - Approx Bayes	man/add_class.Rd
print - condmean (bootstrap)	man/analyse.Rd
print - Approx Bayes	man/analyse.Rd
print - Approx Bayes	man/analyse.Rd
print - Condmean (jackknife)	man/analyse.Rd
print - Condmean (jackknife)	man/analyse.Rd
print - condmean (bootstrap)	man/analyse.Rd
ancova	man/ancova.Rd
print - Condmean (jackknife)	man/ancova.Rd
least_square_means	man/ancova.Rd
print - Approx Bayes	man/ancova.Rd
print - condmean (bootstrap)	man/ancova.Rd
ancova	man/ancova.Rd
least_square_means	man/ancova.Rd
incorrect constructions of as_analysis fail	man/as_class.Rd
bayes - seed argument works without set.seed	man/as_class.Rd
condmean - bootstrap	man/as_class.Rd
print - Condmean (jackknife)	man/as_class.Rd
basic constructions of ‘analysis‘ work as expected	man/as_class.Rd
pool	man/as_class.Rd
condmean doesn’t use first element in CI	man/as_class.Rd
print - Approx Bayes	man/as_class.Rd
print - condmean (bootstrap)	man/as_class.Rd
failure limits	man/as_class.Rd
approxbayes	man/as_class.Rd
condmean - jackknife	man/as_class.Rd
impute can recover known values	man/as_class.Rd
validate_references	man/as_class.Rd
extract_imputed_dfs + delta	man/as_class.Rd
Validate ‘is_mar‘ object	man/as_class.Rd
Verbose supression works	man/as_class.Rd
longdata rejects data that has no useable observations for a visit	man/as_class.Rd
methods	man/as_class.Rd
delta_template & delta_lagscale	man/as_class.Rd
validate_references	man/as_class.Rd

Table 4: Tracebility matrix mapping unit tests to documented behaviours. *(continued)*

Test Description	Documentation
bayes	man/as_class.Rd
Validate ‘is_mar‘ object	man/as_class.Rd
Strategies	man/as_class.Rd
strategies part 2	man/as_class.Rd
longdata can handle data that isn’t sorted	man/as_class.Rd
Basic Usage	man/as_class.Rd
nmar data is removed as expected	man/as_class.Rd
NULL data_ice works uses MAR by default	man/as_class.Rd
delta_template & delta_lagscale	man/delta_template.Rd
delta_template & delta_lagscale	man/delta_template.Rd
condmean - bootstrap	man/draws.Rd
condmean - jackknife	man/draws.Rd
bayes	man/draws.Rd
failure limits	man/draws.Rd
print - Approx Bayes	man/draws.Rd
Verbose supression works	man/draws.Rd
approxbayes	man/draws.Rd
NULL data_ice works uses MAR by default	man/draws.Rd
bayes - seed argument works without set.seed	man/draws.Rd
print - condmean (bootstrap)	man/draws.Rd
print - Condmean (jackknife)	man/draws.Rd
nmar data is removed as expected	man/draws.Rd
extract_imputed_dfs + delta	man/draws.Rd
expand_locf	man/expand.Rd
expand	man/expand.Rd
expand	man/expand.Rd
expand_locf	man/expand.Rd
expand_locf	man/expand.Rd
fill_locf	man/expand.Rd
expand_locf	man/expand.Rd
fill_locf	man/expand.Rd
expand_locf	man/expand.Rd
extract_imputed_dfs + delta	man/extract_imputed_dfs.Rd
extract_imputed_dfs + delta	man/extract_imputed_dfs.Rd
print - Condmean (jackknife)	man/getStrategies.Rd
Basic Usage	man/getStrategies.Rd
print - Approx Bayes	man/getStrategies.Rd
print - condmean (bootstrap)	man/getStrategies.Rd
getStrategies	man/getStrategies.Rd
impute can recover known values	man/getStrategies.Rd
extract_imputed_dfs + delta	man/getStrategies.Rd
getStrategies	man/getStrategies.Rd
print - Approx Bayes	man/has_class.Rd
Basic Usage	man/has_class.Rd
condmean doesn’t use first element in CI	man/has_class.Rd

Table 4: Tracebility matrix mapping unit tests to documented behaviours. *(continued)*

Test Description	Documentation
impute can recover known values	man/has_class.Rd
print - condmean (bootstrap)	man/has_class.Rd
pool	man/has_class.Rd
print - Condmean (jackknife)	man/has_class.Rd
extract_imputed_dfs + delta	man/has_class.Rd
Basic Usage	man/impute.Rd
extract_imputed_dfs + delta	man/impute.Rd
impute can recover known values	man/impute.Rd
print - Approx Bayes	man/impute.Rd
print - Condmean (jackknife)	man/impute.Rd
print - condmean (bootstrap)	man/impute.Rd
expand_locf	man/locf.Rd
fill_locf	man/locf.Rd
locf	man/locf.Rd
locf	man/locf.Rd
bayes - seed argument works without set.seed	man/longDataConstructor.Rd
impute can recover known values	man/longDataConstructor.Rd
strategies part 2	man/longDataConstructor.Rd
failure limits	man/longDataConstructor.Rd
condmean - jackknife	man/longDataConstructor.Rd
longdata can handle data that isn't sorted	man/longDataConstructor.Rd
longData - Basics	man/longDataConstructor.Rd
Strategies	man/longDataConstructor.Rd
nmar data is removed as expected	man/longDataConstructor.Rd
print - Condmean (jackknife)	man/longDataConstructor.Rd
idmap	man/longDataConstructor.Rd
bayes	man/longDataConstructor.Rd
longData - Sampling	man/longDataConstructor.Rd
Stratification works as expected	man/longDataConstructor.Rd
Basic Usage	man/longDataConstructor.Rd
print - Approx Bayes	man/longDataConstructor.Rd
validate_strategies	man/longDataConstructor.Rd
Verbose supression works	man/longDataConstructor.Rd
NULL data_ice works uses MAR by default	man/longDataConstructor.Rd
longdata rejects data that has no useable observations for a visit	man/longDataConstructor.Rd
print - condmean (bootstrap)	man/longDataConstructor.Rd
delta_template & delta_lagscale	man/longDataConstructor.Rd
extract_imputed_dfs + delta	man/longDataConstructor.Rd
approxbayes	man/longDataConstructor.Rd
condmean - bootstrap	man/longDataConstructor.Rd
Group is a stratification variable by default	man/longDataConstructor.Rd
longdata can handle data that isn't sorted	man/longDataConstructor.Rd
longData - Sampling	man/longDataConstructor.Rd
impute can recover known values	man/longDataConstructor.Rd
idmap	man/longDataConstructor.Rd

Table 4: Tracebility matrix mapping unit tests to documented behaviours. *(continued)*

Test Description	Documentation
Basic Usage	man/longDataConstructor.Rd
validate_strategies	man/longDataConstructor.Rd
longData - Basics	man/longDataConstructor.Rd
Stratification works as expected	man/longDataConstructor.Rd
longdata rejects data that has no useable observations for a visit	man/longDataConstructor.Rd
Group is a stratification variable by default	man/longDataConstructor.Rd
strategies part 2	man/longDataConstructor.Rd
Strategies	man/longDataConstructor.Rd
delta_template & delta_lagscale	man/longDataConstructor.Rd
incorrect constructions of as_analysis fail	man/method.Rd
failure limits	man/method.Rd
approxbayes	man/method.Rd
Basic Usage	man/method.Rd
print - Approx Bayes	man/method.Rd
extract_imputed_dfs + delta	man/method.Rd
basic constructions of ‘analysis‘ work as expected	man/method.Rd
failure limits	man/method.Rd
approxbayes	man/method.Rd
Basic Usage	man/method.Rd
incorrect constructions of as_analysis fail	man/method.Rd
bayes - seed argument works without set.seed	man/method.Rd
bayes - seed argument works without set.seed	man/method.Rd
Verbose supression works	man/method.Rd
basic constructions of ‘analysis‘ work as expected	man/method.Rd
bayes	man/method.Rd
bayes	man/method.Rd
print - condmean (bootstrap)	man/method.Rd
condmean doesn’t use first element in CI	man/method.Rd
print - Condmean (jackknife)	man/method.Rd
incorrect constructions of as_analysis fail	man/method.Rd
nmar data is removed as expected	man/method.Rd
impute can recover known values	man/method.Rd
NULL data_ice works uses MAR by default	man/method.Rd
methods	man/method.Rd
condmean - jackknife	man/method.Rd
condmean - bootstrap	man/method.Rd
Basic Usage	man/method.Rd
pool	man/method.Rd
basic constructions of ‘analysis‘ work as expected	man/method.Rd
condmean - bootstrap	man/method.Rd
condmean - jackknife	man/method.Rd
nmar data is removed as expected	man/method.Rd
Basic Usage	man/method.Rd
methods	man/method.Rd
print - Approx Bayes	man/pool_internal.Rd

Table 4: Tracebility matrix mapping unit tests to documented behaviours. *(continued)*

Test Description	Documentation
condmean doesn't use first element in CI	man/pool_internal.Rd
print - condmean (bootstrap)	man/pool_internal.Rd
pool	man/pool_internal.Rd
print - Condmean (jackknife)	man/pool_internal.Rd
pool	man/pool.Rd
condmean doesn't use first element in CI	man/pool.Rd
print - Approx Bayes	man/pool.Rd
print - Condmean (jackknife)	man/pool.Rd
print - condmean (bootstrap)	man/pool.Rd
pool	man/pool.Rd
print - condmean (bootstrap)	man/pool.Rd
print - Condmean (jackknife)	man/pool.Rd
condmean doesn't use first element in CI	man/pool.Rd
print - Approx Bayes	man/pool.Rd
Stratification works as expected	man/set_vars.Rd
extract_imputed_dfs + delta	man/set_vars.Rd
strategies part 2	man/set_vars.Rd
Group is a stratification variable by default	man/set_vars.Rd
initial values speed up BFGS	man/set_vars.Rd
Group is a stratification variable by default	man/set_vars.Rd
Basic Usage	man/set_vars.Rd
Stratification works as expected	man/set_vars.Rd
longData - Basics	man/set_vars.Rd
longdata can handle data that isn't sorted	man/set_vars.Rd
impute can recover known values	man/set_vars.Rd
Strategies	man/set_vars.Rd
longData - Sampling	man/set_vars.Rd
longData - Sampling	man/set_vars.Rd
approxbayes	man/set_vars.Rd
[test-mmrm.R#L180] (vars <- set_vars(outcome = "outcome", visit = "visit", subjid = "subjid", ; group = "group", covaria	man/set_vars.Rd
strategies part 2	man/set_vars.Rd
NULL data_ice works uses MAR by default	man/set_vars.Rd
Verbose supression works	man/set_vars.Rd
failure limits	man/set_vars.Rd
bayes	man/set_vars.Rd
print - Approx Bayes	man/set_vars.Rd
[test-validate-longdata.R#L36] (vars <- set_vars(outcome = "outcome", visit = "visit", subjid = "subjid", ; group = "gro	man/set_vars.Rd
nmar data is removed as expected	man/set_vars.Rd
condmean - bootstrap	man/set_vars.Rd
print - condmean (bootstrap)	man/set_vars.Rd
longdata rejects data that has no useable observations for a visit	man/set_vars.Rd
nmar data is removed as expected	man/set_vars.Rd
condmean - jackknife	man/set_vars.Rd
bayes	man/set_vars.Rd

Table 4: Tracebility matrix mapping unit tests to documented behaviours. *(continued)*

Test Description	Documentation
delta_template & delta_lagscale	man/set_vars.Rd
longData - Basics	man/set_vars.Rd
condmean - bootstrap	man/set_vars.Rd
impute can recover known values	man/set_vars.Rd
Strategies	man/set_vars.Rd
validate_strategies	man/set_vars.Rd
idmap	man/set_vars.Rd
Basic Usage	man/set_vars.Rd
failure limits	man/set_vars.Rd
delta_template & delta_lagscale	man/set_vars.Rd
extract_imputed_dfs + delta	man/set_vars.Rd
ancova	man/set_vars.Rd
condmean - jackknife	man/set_vars.Rd
Verbose supression works	man/set_vars.Rd
print - Condmean (jackknife)	man/set_vars.Rd
bayes - seed argument works without set.seed	man/set_vars.Rd
[test-mmrm.R#L180] (vars <- set_vars(outcome = "outcome", visit = "visit", subjid = "subjid", ; group = "group", covaria	man/set_vars.Rd
initial values speed up BFGS	man/set_vars.Rd
approxbayes	man/set_vars.Rd
print - Approx Bayes	man/set_vars.Rd
validate_strategies	man/set_vars.Rd
[test-validate-longdata.R#L36] (vars <- set_vars(outcome = "outcome", visit = "visit", subjid = "subjid", ; group = "gro	man/set_vars.Rd
ancova	man/set_vars.Rd
longdata can handle data that isn't sorted	man/set_vars.Rd
bayes - seed argument works without set.seed	man/set_vars.Rd
print - condmean (bootstrap)	man/set_vars.Rd
idmap	man/set_vars.Rd
longdata rejects data that has no useable observations for a visit	man/set_vars.Rd
print - Condmean (jackknife)	man/set_vars.Rd
initial values speed up BFGS	man/simulate_data.Rd
MMRM returns expected estimates under different model specifications	man/simulate_data.Rd
sample_mvnorm	man/simulate_data.Rd
vcov	man/simulate_data.Rd
vcov	man/simulate_data.Rd
[test-fullusage.R#L10] (sigma <- as_vcov(c(2, 1, 0.7), c(0.5, 0.3, 0.2)))()	man/simulate_data.Rd
simulate data	man/simulate_data.Rd
Stratification works as expected	man/simulate_data.Rd
scaler	man/simulate_data.Rd
approxbayes	man/simulate_data.Rd
print - Approx Bayes	man/simulate_data.Rd
[test-mmrm.R#L175] (sigma <- as_vcov(c(5, 3, 8), c(0.4, 0.6, 0.3)))()	man/simulate_data.Rd

Table 4: Tracebility matrix mapping unit tests to documented behaviours. *(continued)*

Test Description	Documentation
print - condmean (bootstrap)	man/simulate_data.Rd
print - Condmean (jackknife)	man/simulate_data.Rd
bayes - seed argument works without set.seed	man/simulate_data.Rd
condmean - jackknife	man/simulate_data.Rd
print - Approx Bayes	man/simulate_data.Rd
extract_imputed_dfs + delta	man/simulate_data.Rd
as_mmrm_df & as_mmrm_formula	man/simulate_data.Rd
print - condmean (bootstrap)	man/simulate_data.Rd
Verbose supression works	man/simulate_data.Rd
bayes	man/simulate_data.Rd
failure limits	man/simulate_data.Rd
nmar data is removed as expected	man/simulate_data.Rd
condmean - bootstrap	man/simulate_data.Rd
scaler	man/simulate_data.Rd
bayes - seed argument works without set.seed	man/simulate_data.Rd
NULL data_ice works uses MAR by default	man/simulate_data.Rd
initial values speed up BFGS	man/simulate_data.Rd
as_mmrm_df & as_mmrm_formula	man/simulate_data.Rd
Group is a stratification variable by default	man/simulate_data.Rd
failure limits	man/simulate_data.Rd
print - Condmean (jackknife)	man/simulate_data.Rd
MMRM returns expected estimates under different model specifications	man/simulate_data.Rd
sample_mvnorm	man/simulate_data.Rd
Verbose supression works	man/simulate_data.Rd
Group is a stratification variable by default	man/simulate_data.Rd
[test-mmrm.R#L175] (sigma <- as_vcov(c(5, 3, 8), c(0.4, 0.6, 0.3)))()	man/simulate_data.Rd
nmar data is removed as expected	man/simulate_data.Rd
[test-fullusage.R#L10] (sigma <- as_vcov(c(2, 1, 0.7), c(0.5, 0.3, 0.2)))()	man/simulate_data.Rd
Stratification works as expected	man/simulate_data.Rd
condmean - bootstrap	man/simulate_data.Rd
bayes	man/simulate_data.Rd
approxbayes	man/simulate_data.Rd
condmean - jackknife	man/simulate_data.Rd
extract_imputed_dfs + delta	man/simulate_data.Rd
simulate data	man/simulate_data.Rd
NULL data_ice works uses MAR by default	man/simulate_data.Rd
simulate data	man/simulate_data.Rd
NULL data_ice works uses MAR by default	man/simulate_data.Rd
mean and covariance under CIR are as expected	man/stratgies.Rd
mean and covariance under CIR are as expected	man/stratgies.Rd
mean and covariance under CR are as expected	man/stratgies.Rd
impute can recover known values	man/stratgies.Rd
print - Condmean (jackknife)	man/stratgies.Rd

Table 4: Tracebility matrix mapping unit tests to documented behaviours. *(continued)*

Test Description	Documentation
mean and covariance under JR are as expected	man/stratgies.Rd
print - Approx Bayes	man/stratgies.Rd
mean and covariance under JR are as expected	man/stratgies.Rd
print - condmean (bootstrap)	man/stratgies.Rd
mean and covariance under LMCF are as expected	man/stratgies.Rd
mean and covariance under LMCF are as expected	man/stratgies.Rd
Basic Usage	man/stratgies.Rd
impute can recover known values	man/stratgies.Rd
pool	man/validate_analyse_pars.Rd
basic constructions of ‘analysis‘ work as expected	man/validate_analyse_pars.Rd
incorrect constructions of as_analysis fail	man/validate_analyse_pars.Rd
print - Approx Bayes	man/validate_analyse_pars.Rd
print - Condmean (jackknife)	man/validate_analyse_pars.Rd
print - condmean (bootstrap)	man/validate_analyse_pars.Rd
condmean doesn’t use first element in CI	man/validate_analyse_pars.Rd
failure limits	man/validate.Rd
strategies part 2	man/validate.Rd
validate.ivars	man/validate.Rd
bayes - seed argument works without set.seed	man/validate.Rd
print - Condmean (jackknife)	man/validate.Rd
longData - Sampling	man/validate.Rd
delta_template & delta_lagscale	man/validate.Rd
bayes	man/validate.Rd
incorrect constructions of as_analysis fail	man/validate.Rd
untranspose_imputations	man/validate.Rd
longData - Basics	man/validate.Rd
Basic Usage	man/validate.Rd
Stratification works as expected	man/validate.Rd
print - condmean (bootstrap)	man/validate.Rd
nmar data is removed as expected	man/validate.Rd
validate_strategies	man/validate.Rd
impute can recover known values	man/validate.Rd
ancova	man/validate.Rd
Validate ‘is_mar‘ object	man/validate.Rd
longdata rejects data that has no useable observations for a visit	man/validate.Rd
basic constructions of ‘analysis‘ work as expected	man/validate.Rd
Verbose supression works	man/validate.Rd
validate_data_ice	man/validate.Rd
pool	man/validate.Rd
validate_references	man/validate.Rd
incorrect constructions of as_analysis fail	man/validate.Rd
idmap	man/validate.Rd
approxbayes	man/validate.Rd
[test-validate-longdata.R#L36] (vars <- set_vars(outcome = "outcome", visit = "visit", subjid = "subjid", ; group = "gro	man/validate.Rd
NULL data_ice works uses MAR by default	man/validate.Rd

Table 4: Tracebility matrix mapping unit tests to documented behaviours. *(continued)*

Test Description	Documentation
Group is a stratification variable by default	man/validate.Rd
initial values speed up BFGS	man/validate.Rd
longdata can handle data that isn't sorted	man/validate.Rd
print - Approx Bayes	man/validate.Rd
approxbayes	man/validate.Rd
condmean - bootstrap	man/validate.Rd
[test-mmrm.R#L180] (vars <- set_vars(outcome = "outcome", visit = "visit", subjid = "subjid", ; group = "group", covaria	man/validate.Rd
condmean doesn't use first element in CI	man/validate.Rd
condmean - bootstrap	man/validate.Rd
extract_imputed_dfs + delta	man/validate.Rd
bayes	man/validate.Rd
basic constructions of 'analysis' work as expected	man/validate.Rd
condmean - jackknife	man/validate.Rd
condmean - jackknife	man/validate.Rd
Strategies	man/validate.Rd

4.3.2 Untested

Table 5: Untested behaviours: documentation that is not covered by any test.

Exported package object	Documentation
analyse()	man/analyse.Rd
longDataConstructor()	man/longDataConstructor.Rd

4.3.3 Testing granularity

An indicator of test granularity by whether the function is directly tested.

Table 6: Granularity of unit tests: directly tested exported functions.

Exported package object	Tested Directly
add_class()	FALSE
analyse()	TRUE
ancova()	TRUE
as_class()	TRUE
as_vcov()	TRUE
delta_template()	TRUE
draws()	TRUE
expand_locf()	TRUE
expand()	TRUE
extract_imputed_dfs()	TRUE
fill_locf()	TRUE

Table 6: Granularity of unit tests: directly tested exported functions. *(continued)*

Exported package object	Tested Directly
getStrategies()	TRUE
has_class()	FALSE
impute()	TRUE
locf()	TRUE
longDataConstructor()	TRUE
method_approxbayes()	TRUE
method_bayes()	TRUE
method_condmean()	TRUE
pool_internal()	FALSE
pool()	TRUE
set_vars()	TRUE
simulate_data()	TRUE
strategy_CIR()	TRUE
strategy_CR()	TRUE
strategy_JR()	TRUE
strategy_LMCF()	TRUE
strategy_MAR()	FALSE
validate_analyse_pars()	FALSE
validate()	TRUE