Appendix to guideline for cost-effectiveness models in R: packages and versions

Appendix A: Allowed packages and versions

Supporting packages include packages that allow an efficient and straightforward execution of the code of various types of analysis (e.g. readxl). Preparatory packages include packages that are used to estimate input parameters for the CEA model. This may range from packages that include standard statistical methods such as linear regression (lm) to packages that include more advanced statistical methods such as generalized linear models (glm), mixed models (lmer), cox regression models (coxph) and survival analysis (survfit). Some of these statistical methods are already part of the standard functionality of R (base R). Additionally, several packages can be used to build models and/or to perform deterministic sensitivity analysis (DSA), probabilistic sensitivity analysis (PSA) and value of information (VOI) analyses and visualize the results from these analyses. Depending on the package, various types of models can be constructed, such as decision trees, Markov models, state-transition models, partitioned survival models and microsimulation models.

The list below is the current list of packages that are deemed acceptable for building cost-effectiveness models in R. The list itself as well as the package versions can be subject to updates, it is strongly recommended to get in touch before submitting a dossier that includes a model in R.

Nr	Name	CRAN link	Version
2	Amelia	https://cran.r-project.org/web/packages/Amelia/index.html	TBA
3	BBmisc	https://cran.rstudio.com/web/packages/BBmisc/index.html	TBA
4	BCEA	https://cran.r-project.org/web/packages/BCEA/index.html	2.4.1
5	caTools	https://cran.r-project.org/web/packages/caTools/index.html	TBA
6	cbsodataR	https://cran.r-project.org/web/packages/cbsodataR/index.html	TBA
7	checkpoint	https://cran.r-project.org/web/packages/muhaz/index.html	TBA
8	cmprsk	https://cran.r-project.org/web/packages/cmprsk/index.html	TBA
9	dampack	https://cran.rstudio.com/web/packages/dampack/index.html	1.0.1
10	data.table	https://cran.r-project.org/web/packages/data.table/index.html	1.14.2
11	des	https://cran.r-project.org/web/packages/DES/index.html	TBA
12	diagram	https://cran.r-project.org/web/packages/diagram/index.html	TBA
13	DiagrammeR	https://cran.r-project.org/web/packages/DiagrammeR/index.html	TBA
14	doPparallel	https://cran.r-project.org/web/packages/doParallel/index.html	TBA
15	doSNOW	https://cran.r-project.org/web/packages/doSNOW/index.html	TBA
16	dplyr	https://cran.r-project.org/web/packages/dplyr/index.html	1.0.8
17	eha	https://cran.r-project.org/web/packages/eha/index.html	TBA
18	flexsurv	https://cran.r-project.org/web/packages/flexsurv/index.html	2.1
19	flexsurvcurve	https://cran.r-project.org/web/packages/flexsurvcure/index.html	TBA
20	foreach	https://cran.r-project.org/web/packages/foreach/index.html	1.5.2
21	foreign	https://cran.r-project.org/web/packages/foreign/index.html	0.8-81
22	gee	https://cran.r-project.org/web/packages/gee/index.html	4.13-22
23	ggplot2	https://cran.r-project.org/web/packages/ggplot2/index.html	3.3.5
1	gt	https://cran.r-project.org/web/packages/tidyverse/index.html	TBA
24	heemod	https://cran.r-project.org/web/packages/heemod/index.html	0.14.4

25	here	https://cran.r-project.org/web/packages/here/index.html	1.0.1
26	hesim	https://cran.r-project.org/web/packages/hesim/index.html	0.5.2
27	igraph	https://cran.r-project.org/web/packages/igraph/index.html	1.3.0
28	kableExtra	https://cran.r-project.org/web/packages/kableExtra/index.html	TBA
29	knitr	https://cran.r-project.org/web/packages/knitr/index.html	1.38
30	lme4	https://cran.r-project.org/web/packages/lme4/index.html	1.1-29
31	MASS	https://cran.r-project.org/web/packages/MASS/index.html	7.3-54
32	mc2d	https://cran.r-project.org/web/packages/mc2d/index.html	TBA
33	mi	https://cran.r-project.org/web/packages/mi/index.html	TBA
34	mice	https://cran.r-project.org/web/packages/mice/index.html	TBA
35	miceadds	https://cran.r-project.org/web/packages/miceadds/index.html	TBA
36	micemd	https://cran.r-project.org/web/packages/micemd/index.html	TBA
37	missingHE	https://cran.r-project.org/web/packages/missingHE/index.html	TBA
38	msm	https://cran.r-project.org/web/packages/msm/index.html	1.6.9
39	mstate	https://cran.r-project.org/web/packages/mstate/index.html	TBA
40	muhaz	https://cran.r-project.org/web/packages/muhaz/index.html	1.2.6.4
41	mvtnorm	https://cran.r-project.org/web/packages/mvtnorm/index.html	1.1-3
42	nlme	https://cran.r-project.org/web/packages/nlme/index.html	3.1-157
43	openxlsx	https://cran.r-project.org/web/packages/openxlsx/index.html	TBA
44	parallel	https://cran.r-project.org/web/packages/parallelly/index.html	4.1.2
45	plotly	https://cran.r-project.org/web/packages/plotly/index.html	4.10.0
46	readxl	https://cran.r-project.org/web/packages/readxl/index.html	1.4.0
47	renv	https://cran.r-project.org/web/packages/renv/index.html	TBA
48	reshape	https://cran.r-project.org/web/packages/reshape/index.html	TBA
49	reshape2	https://cran.r-project.org/web/packages/reshape2/index.html	1.4.4
50	rmarkdown	https://cran.r-project.org/web/packages/rmarkdown/index.html	2.13
51	scales	https://cran.r-project.org/web/packages/scales/index.html	1.1.1
52	shiny	https://cran.r-project.org/web/packages/shiny/index.html	TBA
53	simmer	https://cran.r-project.org/web/packages/simmer/index.html	TBA
54	survHE	https://cran.r-project.org/web/packages/survHE/index.html	TBA
55	survival	https://cran.r-project.org/web/packages/survival/index.html	3.3-1
56	tidyr	https://cran.r-project.org/web/packages/tidyr/index.html	1.2.0
57	tidyverse	https://cran.r-project.org/web/packages/tidyverse/index.html	1.3.1
58	VIM	https://cran.r-project.org/web/packages/VIM/index.html	TBA