

kableExtra 在 bookdown 项目中的使用

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第一章 表格

这是一个稍微复杂一点的经典表格样式，常出现在论文或期刊的数值模拟比较部分¹

```
library(dplyr)
library(kableExtra)
db <- mtcars[, 1:7]
db2 <- cbind(rownames(db), db)
colnames(db2) <- c("Methods", rep(c("Bias", "RMSE"), 3), "")
if (knitr::is_latex_output()) {
  kable(db2,
    format = "latex", booktabs = TRUE, escape = T, row.names = F,
    longtable = T, caption = " 第 1 种类型的统计表格样式",
    linesep = c("", "", "", "", "", "\\midrule")
  ) %>%
  kable_styling(
    latex_options = c("hold_position", "repeat_header"),
    full_width = F, position = "center", repeat_header_method = "replace",
    repeat_header_text = " 续表??"
  ) %>%
  add_header_above(c(" ",
    "$\\\\\\sigma^2$" = 2, "$\\\\\\phi$" = 2,
    "$\\\\\\tau^2$" = 2, "$r=\\\\\\delta/\\\\\\phi$" = 1
  ), escape = F) %>%
  footnote(
    general_title = " 注: ", title_format = "italic", threeparttable = T,
    general = "* 星号表示的内容可以很长"
  )
} else {
  kable(db2,
    format = "html", booktabs = TRUE, escape = T, row.names = F,
```

¹<https://arxiv.org/abs/1711.00437>

```

caption = " 第 1 种类型的统计表格样式"
) %>%
kable_styling(
  bootstrap_options = c("basic"),
  full_width = F, position = "center"
) %>%
add_header_above(c("",
  "$\\sigma^2$" = 2, "$\\phi$" = 2,
  "$\\tau^2$" = 2, "$r=\\delta/\\phi$" = 1
), escape = F) %>%
footnote(
  general_title = " 注: ", title_format = "italic", threeparttable = T,
  general = "* 星号表示的内容很长"
)
}

```

表 1.1: 第 1 种类型的统计表格样式

Methods	σ^2		ϕ		τ^2		$r = \delta/\phi$
	Bias	RMSE	Bias	RMSE	Bias	RMSE	
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02
Valiant	18.1	6	225.0	105	2.76	3.460	20.22
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30
Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90
Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40
Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60
Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00
Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98
Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82
Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42

表 1.1: 续表??

Methods	Bias	RMSE	Bias	RMSE	Bias	RMSE	
Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47
Honda Civic	30.4	4	75.7	52	4.93	1.615	18.52
Toyota Corolla	33.9	4	71.1	65	4.22	1.835	19.90
Toyota Corona	21.5	4	120.1	97	3.70	2.465	20.01
Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87
AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30
Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41
Pontiac Firebird	19.2	8	400.0	175	3.08	3.845	17.05
Fiat X1-9	27.3	4	79.0	66	4.08	1.935	18.90
Porsche 914-2	26.0	4	120.3	91	4.43	2.140	16.70
Lotus Europa	30.4	4	95.1	113	3.77	1.513	16.90
Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.50
Ferrari Dino	19.7	6	145.0	175	3.62	2.770	15.50
Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.60
Volvo 142E	21.4	4	121.0	109	4.11	2.780	18.60

注:

* 星号表示的内容可以很长

- `striped` 默认使用浅灰色, `stripe_color` 可以用来指定颜色 `stripe_color="white"`, 它只在 LaTeX 下工作, HTML 下更改颜色需要设置 CSS, 可以不使用 `striped` 改变默认的白底设置
- `threeparttable = TRUE` 处理超长的注解标记,
- `add_header_above` 函数内的 `escape = F` 用来处理数学公式,
- `longtable = T` 表格很长时需要分页, 因此使用续表,
- `hold_position` 使用了 `[!h]` 控制浮动
- 对于数学符号前要四个反斜杠这一点, 作者今后会改变, 只需要两个反斜杠, 与 HTML 格式表格保持一致 <https://github.com/haozhu233/kableExtra/issues/120>
- 对某些数据用不同颜色高亮 Selecting and colouring single table cells with **kableExtra** in R markdown `cell_spec` <https://stackoverflow.com/questions/50118394>

其实 Pandoc's Markdown 本身也支持不少表格样式², 少见的比如

²<https://pandoc.org/MANUAL.html#tables>

表 1.2: 没有编号的可以跨行的表格.

First	row	12.0	Example of a row that spans multiple lines.
Second	row	5.0	Here's another one. Note the blank line between rows.

1.1 软件信息

```
devtools::session_info(.packages(T))
```

```
## - Session info -----
## setting value
## version R version 3.5.2 (2017-01-27)
## os      Ubuntu 14.04.5 LTS
## system x86_64, linux-gnu
## ui      X11
## language (EN)
## collate en_US.UTF-8
## ctype   en_US.UTF-8
## tz      UTC
## date    2019-02-22
##
## - Packages -----
## package      * version  date      lib source
## askpass      1.1      2019-01-13 [1] CRAN (R 3.5.2)
## assertthat   0.2.0    2017-04-11 [1] CRAN (R 3.5.2)
## backports    1.1.3    2018-12-14 [1] CRAN (R 3.5.2)
## base64enc    0.1-3    2015-07-28 [1] CRAN (R 3.5.2)
## BH           1.69.0-1 2019-01-07 [1] CRAN (R 3.5.2)
## bookdown     0.9      2018-12-21 [1] CRAN (R 3.5.2)
## boot        1.3-20   2017-08-06 [3] CRAN (R 3.5.2)
## callr        3.1.1    2018-12-21 [1] CRAN (R 3.5.2)
## class        7.3-14   2015-08-30 [3] CRAN (R 3.5.2)
## cli          1.0.1    2018-09-25 [1] CRAN (R 3.5.2)
## clipr        0.5.0    2019-01-11 [1] CRAN (R 3.5.2)
## clisymbols   1.2.0    2017-05-21 [1] CRAN (R 3.5.2)
## cluster      2.0.7-1  2018-04-13 [3] CRAN (R 3.5.2)
```


##	codetools	0.2-15	2016-10-05	[3]	CRAN	(R 3.5.2)
##	colorspace	1.4-0	2019-01-13	[1]	CRAN	(R 3.5.2)
##	crayon	1.3.4	2017-09-16	[1]	CRAN	(R 3.5.2)
##	curl	3.3	2019-01-10	[1]	CRAN	(R 3.5.2)
##	desc	1.2.0	2018-05-01	[1]	CRAN	(R 3.5.2)
##	devtools	2.0.1	2018-10-26	[1]	CRAN	(R 3.5.2)
##	digest	0.6.18	2018-10-10	[1]	CRAN	(R 3.5.2)
##	dplyr	* 0.8.0.1	2019-02-15	[1]	CRAN	(R 3.5.2)
##	evaluate	0.13	2019-02-12	[1]	CRAN	(R 3.5.2)
##	fansi	0.4.0	2018-10-05	[1]	CRAN	(R 3.5.2)
##	foreign	0.8-71	2018-07-20	[3]	CRAN	(R 3.5.2)
##	fs	1.2.6	2018-08-23	[1]	CRAN	(R 3.5.2)
##	gh	1.0.1	2017-07-16	[1]	CRAN	(R 3.5.2)
##	git2r	0.24.0	2019-01-07	[1]	CRAN	(R 3.5.2)
##	glue	1.3.0	2018-07-17	[1]	CRAN	(R 3.5.2)
##	highr	0.7	2018-06-09	[1]	CRAN	(R 3.5.2)
##	hms	0.4.2	2018-03-10	[1]	CRAN	(R 3.5.2)
##	htmltools	0.3.6	2017-04-28	[1]	CRAN	(R 3.5.2)
##	httr	1.4.0	2018-12-11	[1]	CRAN	(R 3.5.2)
##	ini	0.3.1	2018-05-20	[1]	CRAN	(R 3.5.2)
##	jsonlite	1.6	2018-12-07	[1]	CRAN	(R 3.5.2)
##	kableExtra	* 1.0.1	2019-01-22	[1]	CRAN	(R 3.5.2)
##	KernSmooth	2.23-15	2015-06-29	[3]	CRAN	(R 3.5.2)
##	knitr	1.21	2018-12-10	[1]	CRAN	(R 3.5.2)
##	labeling	0.3	2014-08-23	[1]	CRAN	(R 3.5.2)
##	lattice	0.20-38	2018-11-04	[3]	CRAN	(R 3.5.2)
##	magrittr	1.5	2014-11-22	[1]	CRAN	(R 3.5.2)
##	markdown	0.9	2018-12-07	[1]	CRAN	(R 3.5.2)
##	MASS	7.3-51.1	2018-11-01	[3]	CRAN	(R 3.5.2)
##	Matrix	1.2-15	2018-11-01	[3]	CRAN	(R 3.5.2)
##	memoise	1.1.0	2017-04-21	[1]	CRAN	(R 3.5.2)
##	mgcv	1.8-26	2018-11-21	[3]	CRAN	(R 3.5.2)
##	mime	0.6	2018-10-05	[1]	CRAN	(R 3.5.2)
##	munsell	0.5.0	2018-06-12	[1]	CRAN	(R 3.5.2)
##	nlme	3.1-137	2018-04-07	[3]	CRAN	(R 3.5.2)
##	nnet	7.3-12	2016-02-02	[3]	CRAN	(R 3.5.2)
##	openssl	1.2.1	2019-01-17	[1]	CRAN	(R 3.5.2)
##	pillar	1.3.1	2018-12-15	[1]	CRAN	(R 3.5.2)
##	pkgbuild	1.0.2	2018-10-16	[1]	CRAN	(R 3.5.2)

##	pkgconfig	2.0.2	2018-08-16	[1]	CRAN	(R 3.5.2)
##	pkgload	1.0.2	2018-10-29	[1]	CRAN	(R 3.5.2)
##	plogr	0.2.0	2018-03-25	[1]	CRAN	(R 3.5.2)
##	prettyunits	1.0.2	2015-07-13	[1]	CRAN	(R 3.5.2)
##	processx	3.2.1	2018-12-05	[1]	CRAN	(R 3.5.2)
##	ps	1.3.0	2018-12-21	[1]	CRAN	(R 3.5.2)
##	purrr	0.3.0	2019-01-27	[1]	CRAN	(R 3.5.2)
##	R6	2.4.0	2019-02-14	[1]	CRAN	(R 3.5.2)
##	rcmdcheck	1.3.2	2018-11-10	[1]	CRAN	(R 3.5.2)
##	RColorBrewer	1.1-2	2014-12-07	[1]	CRAN	(R 3.5.2)
##	Rcpp	1.0.0	2018-11-07	[1]	CRAN	(R 3.5.2)
##	readr	1.3.1	2018-12-21	[1]	CRAN	(R 3.5.2)
##	remotes	2.0.2	2018-10-30	[1]	CRAN	(R 3.5.2)
##	rlang	0.3.1	2019-01-08	[1]	CRAN	(R 3.5.2)
##	rmarkdown	1.11	2018-12-08	[1]	CRAN	(R 3.5.2)
##	rpart	4.1-13	2018-02-23	[3]	CRAN	(R 3.5.2)
##	rprojroot	1.3-2	2018-01-03	[1]	CRAN	(R 3.5.2)
##	rstudioapi	0.9.0	2019-01-09	[1]	CRAN	(R 3.5.2)
##	rvest	0.3.2	2016-06-17	[1]	CRAN	(R 3.5.2)
##	scales	1.0.0	2018-08-09	[1]	CRAN	(R 3.5.2)
##	selectr	0.4-1	2018-04-06	[1]	CRAN	(R 3.5.2)
##	sessioninfo	1.1.1	2018-11-05	[1]	CRAN	(R 3.5.2)
##	spatial	7.3-11	2015-08-30	[3]	CRAN	(R 3.5.2)
##	stringi	1.3.1	2019-02-13	[1]	CRAN	(R 3.5.2)
##	stringr	1.4.0	2019-02-10	[1]	CRAN	(R 3.5.2)
##	survival	2.43-3	2018-11-26	[3]	CRAN	(R 3.5.2)
##	sys	2.1	2018-11-13	[1]	CRAN	(R 3.5.2)
##	tibble	2.0.1	2019-01-12	[1]	CRAN	(R 3.5.2)
##	tidyselect	0.2.5	2018-10-11	[1]	CRAN	(R 3.5.2)
##	tinytex	0.10	2019-01-10	[1]	CRAN	(R 3.5.2)
##	usethis	1.4.0	2018-08-14	[1]	CRAN	(R 3.5.2)
##	utf8	1.1.4	2018-05-24	[1]	CRAN	(R 3.5.2)
##	viridisLite	0.3.0	2018-02-01	[1]	CRAN	(R 3.5.2)
##	webshot	0.5.1	2018-09-28	[1]	CRAN	(R 3.5.2)
##	whisker	0.3-2	2013-04-28	[1]	CRAN	(R 3.5.2)
##	withr	2.1.2	2018-03-15	[1]	CRAN	(R 3.5.2)
##	xfun	0.5	2019-02-20	[1]	CRAN	(R 3.5.2)
##	xml2	1.2.0	2018-01-24	[1]	CRAN	(R 3.5.2)
##	xopen	1.0.0	2018-09-17	[1]	CRAN	(R 3.5.2)

```
## yaml          2.2.0    2018-07-25 [1] CRAN (R 3.5.2)
##
## [1] /home/travis/R/Library
## [2] /usr/local/lib/R/site-library
## [3] /home/travis/R-bin/lib/R/library
```