

# dable manual

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## Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>Types</b>	<b>4</b>
2.1	The guide . . . . .	7
2.2	Variable and survival tables . . . . .	9
<b>3</b>	<b>Simple descriptive tables</b>	<b>12</b>
3.1	Table stratification . . . . .	14
3.1.1	Other descriptive functions . . . . .	16
3.1.2	Change default functions . . . . .	16
3.2	An emphasis on weight . . . . .	17
3.3	Table comparisons . . . . .	17
3.4	Table tests . . . . .	20
3.5	Custom made functions . . . . .	21
3.5.1	Custom made describers . . . . .	21
3.5.2	The 'meta' attribute . . . . .	22
3.5.3	Custom made describers for <code>surv</code> . . . . .	22
3.5.4	Custom made comparers/testers . . . . .	23
3.5.5	Custom made comparers/testers for <code>surv</code> . . . . .	23
3.6	The information functions are privy to . . . . .	24
3.7	Some notes on formatting . . . . .	25
<b>4</b>	<b>Baseline tables</b>	<b>26</b>
4.1	Baseline theme 0 (default) . . . . .	27
4.1.1	Baseline theme 1 $\approx$ 0 . . . . .	28
4.2	Baseline theme 2 . . . . .	29
4.3	Adjusting the baseline table . . . . .	30
4.4	Behind the scenes of baseline tables . . . . .	33
<b>A</b>	<b>Loose ends</b>	<b>36</b>
<b>B</b>	<b>Testing</b>	<b>37</b>
B.1	Default describers . . . . .	37
B.2	Default comparers . . . . .	39
B.3	Default testers . . . . .	40
B.4	Default baseline . . . . .	41

## List of Figures

1	Possible mappings.	5
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## List of Tables

1	The basic mapping idea.	4
2	Default baseline table.	11
3	Default L <sup>A</sup> T <sub>E</sub> X output for a descriptive table.	15
4	A descriptive table using less meta data.	15
5	Descriptive table with comparison.	18
6	Descriptive table with comparison order changed.	18
7	Comparison <i>across</i> the groups.	19
8	Comparison between <i>adjacent</i> groups.	19
9	Comparison between chosen groups.	20
10	Descriptive table with test.	20
11	Descriptive table with selected testing.	21
12	Baseline table theme 0 (default)	27
13	Baseline table theme 1.	28
14	Baseline table theme 2.	29
15	Adjusted baseline table	30
16	Another adjusted baseline table	31
17	Yet another adjusted baseline table	32
18	Table with info added in the foot.	34
19	Table with info added as footnotes.	35

# 1 Introduction

A *dable*, i.e. a *descriptive table*, has up to 3 (optional) parts consisting of

- descriptions (`desc`),

and if a stratification (grouping) is given, also

- comparisons (`comp`), as well as
- tests (`test`).

The table-creating functions will respond to a `part` argument which specifies which parts are wanted, with only the descriptive part being returned by default.

Each variable is given a type (Section 2), and each type is associated with its own set of functions to create the parts (Section 3.1.1). One must always choose one of these (or accept the default) to e.g. create the description part, but it is also possible to provide user defined functions (Section 3.5.1).

It is also possible to provide a *variable table* (`vtab`, Section 2.2) that provides a label and a group for each variable. The grouping can be used to group the rows of the output tables (if generated in e.g. L<sup>A</sup>T<sub>E</sub>X).

The package initially tried to strictly separate table creation into

- (1) generate the statistics/numbers that go into the table
- (2) format for a desired output generating program/language

This aim has not quite been achieved, but almost. It works pretty well for default versions of *simple descriptive tables* (Section 3), but is harder to do for *baseline tables* (Section 4). The compromise reached is that one can set package parameters pointing to the desired output. As an example, this document is generated in L<sup>A</sup>T<sub>E</sub>X so we could begin by restoring all defaults with that output<sup>1</sup> in mind - although this is superfluous since this currently is the default.

```
dpset_defaults(overwrite = TRUE, style = "latex") ## already the default
```

---

<sup>1</sup>Currently, this actually does very little - it's main purpose is to set the `output` parameter to "latex". The most obvious problem in this context is the fact that '%' has a special meaning, but that is easy to substitute just before translating to L<sup>A</sup>T<sub>E</sub>X code.

## 2 Types

To determine how to deal with a variable we classify it as

- numeric (`real`),
- categorical (`catg`),
- date (`date`), or
- time-to-event (`surv`).

Of course, a time-to-event variable will actually consist of a pair of variables - more on that later. There are also subcategories of `catg`:

- *binary* variables (`bnry`) are dichotomous variables where it should be completely obvious what the two levels are if you are only given one. The idea is that for these variables, it typically suffices to describe (e.g. by a count and/or percentage) one of the levels.
- *lavish categorical* variables (`lcat`) are those where there are too many unique values to routinely include value-level information in a table (e.g. an id-variable of some sort).

There is a non-surprising general idea of a mapping from the class (in R), of a variable, to the dable *type*, given by Table 1.

Table 1: The basic mapping idea.

R class	→	dable type
<code>numeric, integer</code>		<code>real</code>
<code>factor, character, logical</code>		<code>catg</code> (or <code>bnry/lcat</code> )
<code>Date</code>		<code>date</code>

But the types can be changed, manually or through parameters, so that e.g. integer variables with a small number of unique values can be described as if it was categorical. See Figure 1 for the full set of possible automatic mappings.

The parameters one can set that will alter the general mapping are given by:

- `real.tol` is an integer  $n$  and, if set, re-types a `real` variable *if* the number of unique values is  $\leq n$ . Why? `real` types typically describe variables measured on a continuous scale and if the number of unique values is low, it is probably a coding for something else *or* something you want described as a `catg`.
- `catg.tol` is an integer  $n$  and, if set, re-types a `catg` variable to a `lcat` variable *if* the number of unique values is  $> n$ . Why? Some categorical data just have too many levels to include in a descriptive table, the `lcat` type is meant to provide alternative descriptions for these.
- `bnry.list` is a list of length 2 vectors specifying, respectively, what the set of unique values can be in order for a variable to end up with the `bnry` type. Why? The `bnry` variables will generally only show descriptive measures for the reference level, thus it must be clear from that level alone what the hidden level is.

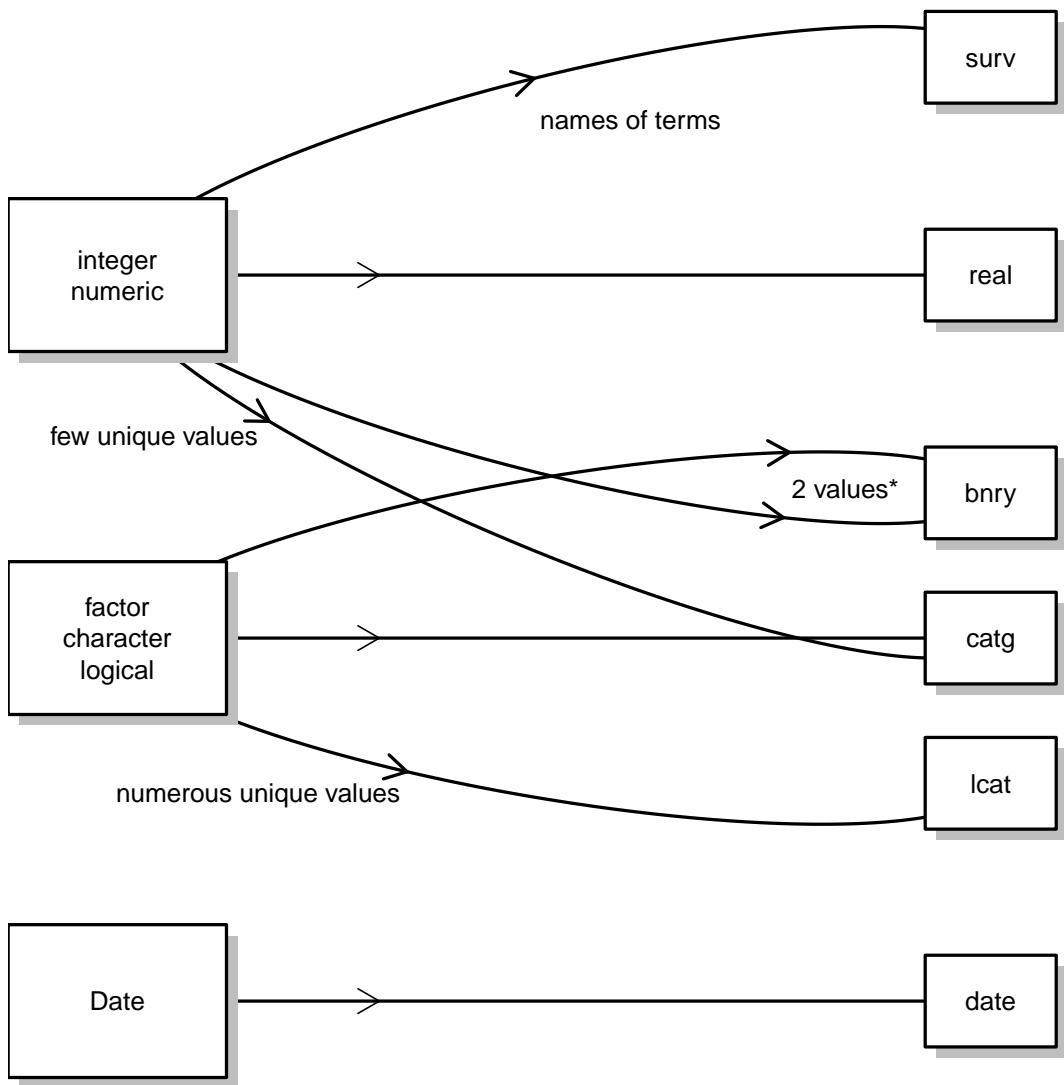


Figure 1: Possible mappings. For both numeric/integer and factor/character/logical, if there are exactly 2 unique values corresponding to one of the elements of `bnry.list`, they get type `bnry`. If number of unique values of a numeric/integer variable is `real.tol` or less, the type is `catg`. If number of unique values of a factor/character variable is strictly greater than `catg.tol`, the type is `lcat`. The `surv` type is determined through given names or pattern matching.

We can inspect the default values with the 'dable-parameter-get' function `dpget`:

```
dpget("real.tol")
## [1] 5

dpget("catg.tol")
## [1] 50

dpget("bnry.list")

## [[1]]
## [1] 0 1
##
## [[2]]
## [1] FALSE TRUE
##
## [[3]]
## [1] "No"  "Yes"
##
## [[4]]
## [1] "no"  "yes"
```

The time-to-event variable pairs need to be specified with a *survival table* (`stab`), an example of which is given in the package

```
test_stab()

##   label  time  event
## 1   Foo t.foo ev.foo
## 2   Bar t.bar ev.bar
```

But - if one utilizes a naming scheme where the time- and status component of a time-to-event variable differes only by a consistent use of a prefix or suffix, these variables can be identified automatically!

The default is to use a prefix `t.` and `ev.` for the time- and event/status component, respectively.

```
dpget("surv.prefix") ## is a prefix used? (else suffix)
## [1] TRUE

dpget("surv.affix") ## what is the affix used?

##  time event
## "t." "ev."
```

## 2.1 The guide

The packages provides a test data set

```
d <- test_data()
str(d)

## 'data.frame': 1000 obs. of 24 variables:
## $ id       : int 1 2 3 4 5 6 7 8 9 10 ...
## $ pid      : chr "id1" "id2" "id3" "id4" ...
## $ status   : chr "included" "included" "included" "included" ...
## $ country  : Factor w/ 3 levels "SW","NO","DE": 1 3 1 2 1 3 3 2 2 3 ...
## $ area     : chr "urban" "rural" "urban" "urban" ...
## $ offspring: logi TRUE TRUE FALSE TRUE FALSE FALSE ...
## $ age      : num 50 54 44 75 37 64 36 42 67 56 ...
## $ male     : int 1 0 0 0 1 0 0 0 0 1 ...
## $ measA    : num 10.9 42.4 91.1 16 77.4 ...
## $ measNA   : num NA NA NA NA NA NA NA NA NA ...
## $ forgotten: num -0.899 -0.433 0.753 0.905 -0.803 ...
## $ importance: num 2.7 2 3.3 4.4 4.3 3.6 5.2 6 5.1 4.6 ...
## $ index    : Date, format: "2017-08-14" "2017-08-25" ...
## $ posix    : POSIXct, format: "2017-04-04 23:51:11" "2017-05-15 15:28:34" ...
## $ ev.foo   : int 1 1 1 0 0 1 1 0 0 0 ...
## $ ev.bar   : int 0 0 0 1 0 0 0 0 0 0 ...
## $ t.bar    : num 365 365 365 157 365 ...
## $ t.foo    : num 130.5 21.5 16.3 365 365 ...
## $ end      : Date, format: "2018-08-14" "2018-08-25" ...
## $ measB    : num 58.5 13.3 26.8 NA 29.4 ...
## $ measM    : num 2.99 NA NA NA 84.5 ...
## $ gender   : Factor w/ 2 levels "male","female": 1 2 2 2 1 2 2 2 2 1 ...
## $ kids     : int 1 2 0 3 0 0 2 0 0 0 ...
## $ region   : chr "A" "E" "B" "C" ...
```

We can use this data set to illustrate the *data guide* (`dguide`).

```
(g <- dguide(d))

## data guide:
##          term    type      class   label       group
## 1         id    real    integer    id Covariates
## 2        pid   lcat  character    pid Covariates
## 3     status   catg  character  status Covariates
## 4   country   catg     factor country Covariates
## 5      area   catg  character   area Covariates
## 6  offspring  bnry   logical offspring Covariates
## 7       age   real    numeric    age Covariates
## 8      male  bnry    integer   male Covariates
## 9     measA   real    numeric  measA Covariates
## 10    measNA  catg    numeric measNA Covariates
## 11  forgotten  real    numeric forgotten Covariates
## 12 importance  real    numeric importance Covariates
## 13      index  date     Date    index Covariates
## 14     posix unknown POSIXct    posix Covariates
## 17       end  date     Date     end Covariates
## 18     measB   real    numeric  measB Covariates
## 19     measM   real    numeric  measM Covariates
## 20     gender  catg     factor gender Covariates
## 21      kids   real    integer   kids Covariates
## 22    region   catg  character region Covariates
## 16 ev.bar / t.bar    surv integer / numeric   bar Time-to-event
## 15 ev.foo / t.foo    surv integer / numeric   foo Time-to-event
## with stab:
##   label time event      group
## 1  bar t.bar ev.bar Time-to-event
## 2  foo t.foo ev.foo Time-to-event
```

Note that the guide provides an automatically generated 'survival table' (`stab`) based on the naming of variables. Also, a default grouping of variables is always created with the value

```
dget("vtab.group.name")
## [1] "Covariates"
```

for all but the time-to-event variables which are grouped as

```
dget("stab.group.name")
## [1] "Time-to-event"
```

One can manually update the guide

```
g$type[g$term == "id"] <- "lcat"
```

or provide some parameters to influence the types.

The arguments for `dguide`:

- `data` the data (duh!)
- `id` a character vector of the terms that are id variables; these will be typed as `lcat`. (Also, the first entry will be singled out as the "unit id" and hidden from tables unless you set the dable option `unit.id.rm` to `FALSE`.)
- `elim.set` a character vector of variables to ignore
- `vtab` a "variable table", i.e. a `data.frame` with columns `term`, `label`, an optionally `group`. This table informs the `label` and `group` column of the guide.
- `stab` a "survival table", i.e. a `data.frame` with columns `label`, `time`, `event`, an optionally `group`.
- ... arguments passed to `term.type`.

## 2.2 Variable and survival tables

There are examples of `vtab` and `stab` in the package

```
(vt <- test_vtab())

##      term      label      group
## 1      id     ID (integer)  Meta data
## 2      pid           ID  Meta data
## 3    status      A constant  Meta data
## 4    index          Index  Meta data
## 5    posix  Unkown format  Meta data
## 6      end            End  Meta data
## 7      age            Age Demographics
## 8      male           Male Demographics
## 9    gender          Gender Demographics
## 10   country         Country Demographics
## 11    area            Area Demographics
## 12   region          Region Demographics
## 13 offspring        Offspring Measures etc.
## 14    kids            Kid count Measures etc.
## 15   measA           A measure Measures etc.
## 16   measB  Another measure Measures etc.
## 17   measM  Manly measure Measures etc.
## 18  measNA Missing measure Measures etc.

(st <- test_stab())

##   label time event
## 1   Foo t.foo ev.foo
## 2   Bar t.bar ev.bar
```

The survival table has no grouping, so we can create one

```
st$group <- "Outcomes"
```

We can see what the guide looks like, if we add some additional arguments:

```
(g <- dguide(d, id = c("id", "pid"), vtab = vt, stab = st))

## data guide:
##      term      type      class      label      group
## 1      id unit.id    integer    ID (integer) Meta data
## 2      pid   lcat character     ID      Meta data
## 3    status   catg character   A constant Meta data
## 13   index    date     Date      Index      Meta data
## 14  posix unknown POSIXct  Unkown format Meta data
## 17     end    date     Date      End      Meta data
## 7      age   real  numeric     Age Demographics
## 8      male  bnry  integer     Male Demographics
## 20    gender  catg   factor    Gender Demographics
## 4    country  catg   factor    Country Demographics
## 5      area  catg character     Area Demographics
## 22    region  catg character     Region Demographics
## 6  offspring  bnry logical Offspring Measures etc.
## 21      kids   real  integer Kid count Measures etc.
## 9    measA   real  numeric A measure Measures etc.
## 18    measB   real  numeric Another measure Measures etc.
## 19    measM   real  numeric Manly measure Measures etc.
## 10   measNA  catg  numeric Missing measure Measures etc.
## 15 ev.foo / t.foo surv integer / numeric      Foo Outcomes
## 16 ev.bar / t.bar surv integer / numeric      Bar Outcomes
## 11  forgotten   real  numeric forgotten Covariates
## 12  importance   real  numeric importance Covariates
## with stab:
##   label time event group
## 1  Foo t.foo ev.foo Outcomes
## 2  Bar t.bar ev.bar Outcomes
```

Note that the variables *not* specified by the 'variable table' gets the default grouping and are placed at the end.

To see the usefulness of setting up such a variable table, notice that with these preparations the following code generates Table 2:

```
b <- baseline(d, guide = g, gtab = "gender", part = c(T,T,T))
blatex(b, where = "!ht", caption = "Default baseline table.",
       label = "tab:default-bsl", size = "small")
```

Table 2: Default baseline table.

	<b>male</b> n = 489	<b>female</b> n = 511	<b>Std. diff.</b> male/female	<b>Test</b> male/female
<b>Meta data</b>				
ID	=489=	=511=		
A constant: included	489 (100.0%)	511 (100.0%)		
Index	170101/181229 [1]	170102/181225	-0.035	0.58 <sup>†</sup>
End	180101/191229 [1]	180102/191225	-0.035	0.58 <sup>†</sup>
<b>Demographics</b>				
Age	55.0 (48.0 - 63.0)	56.0 (49.0 - 62.0)	-0.069	0.28*
Male: 1	489 (100.0%)	0 (0%)	Inf	<0.0001 <sup>§</sup>
Country: SW	173 (35.4%)	178 (34.8%)	0.031	0.88 <sup>§</sup>
NO	168 (34.4%)	171 (33.5%)		
DE	148 (30.3%)	162 (31.7%)		
Area: rural	101 (20.7%) [2]	103 (20.3%) [3]	0.011	0.92 <sup>§</sup>
urban	386 (79.3%)	405 (79.7%)		
Region: A	147 (30.1%)	157 (30.7%)	0.044	0.97 <sup>§</sup>
B	105 (21.5%)	108 (21.1%)		
C	65 (13.3%)	61 (11.9%)		
D	86 (17.6%)	93 (18.2%)		
E	86 (17.6%)	92 (18.0%)		
<b>Measures etc.</b>				
Offspring: TRUE	358 (73.2%)	382 (74.8%)	-0.035	0.63 <sup>§</sup>
Kid count	1.00 (0 - 2.00)	1.00 (0 - 2.00)	-0.019	0.76*
A measure	26.9 (11.5 - 51.6) [5]	30.3 (12.6 - 59.1) [2]	-0.14	0.029*
Another measure	38.7 (18.4 - 81.2) [168]	46.7 (20.3 - 89.5) [171]	-0.13	0.088*
Manly measure	33.6 (14.3 - 68.2)	- [511]		
Missing measure:	- [489]	- [511]		
<b>Outcomes</b>				
Foo	92; 0.00057	109; 0.00066	-0.0036	0.31 <sup>#</sup>
Bar	140; 0.00091	160; 0.0010	-0.0031	0.38 <sup>#</sup>
<b>Covariates</b>				
forgotten	0.025 (-0.47 - 0.47)	-0.023 (-0.50 - 0.51)	0.022	0.72*
importance	3.10 (1.60 - 4.60)	3.30 (1.70 - 4.75)	-0.091	0.15*

Rows: 1000 (male:489, female:511). No duplicate subjects. <sup>§</sup>Chi-square. <sup>†</sup>Wilcoxon. \*t-test. <sup>#</sup>Log rank. Categorical variable: =unique values=. [n] is missing count (if applicable). Categorical variable: Count (Percent). Date variables: min/max. Numeric variable: Median (Q1-Q3). Time-to-event variable: events; rate

### 3 Simple descriptive tables

A *simple descriptive table* describes only 1 type. A table describing *all* variables will be referred to as a *baseline tables* - so we will cut the "simple" and just refer to the tables in this section as *descriptive*. The workhorse for all tables is the `dable` function. To create the default descriptive table for the `real` type we use

```
dable(d, type = "real", guide = g)

##          term      Mean       SD
## 1        age 55.332000000 10.072399
## 2       kids  1.472000000  1.206097
## 3     measA 41.058453071 42.242859
## 4     measB 61.475041370 58.837329
## 5     measM 47.721624171 44.726907
## 6 forgotten 0.001249743  0.577495
## 7 importance 3.168900000  1.739416
```

where the output is ordered as the guide since we supply the guide as an argument.

There is a shorthand for each type.

```
dreal(d, guide = g)

##          term      Mean       SD
## 1        age 55.332000000 10.072399
## 2       kids  1.472000000  1.206097
## 3     measA 41.058453071 42.242859
## 4     measB 61.475041370 58.837329
## 5     measM 47.721624171 44.726907
## 6 forgotten 0.001249743  0.577495
## 7 importance 3.168900000  1.739416

dcatg(d, guide = g)

##          term   Level Count Proportion
## 1    status included   1000 1.0000000
## 2    gender    male     489 0.4890000
## 3    gender   female     511 0.5110000
## 4   country      SW     351 0.3510000
## 5   country      NO     339 0.3390000
## 6   country      DE     310 0.3100000
## 7     area    rural     204 0.2050251
## 8     area   urban     791 0.7949749
## 9   region        A     304 0.3040000
## 10  region        B     213 0.2130000
## 11  region        C     126 0.1260000
## 12  region        D     179 0.1790000
## 13  region        E     178 0.1780000
## 14   measNA           0       NA
```

```
dbnry(d, guide = g)
```

```

##      term Level Count Proportion
## 1     male    1   489      0.489
## 2 offspring TRUE   740      0.740

dcat(d, guide = g)

##  term Unique
## 1 pid 1000

ddate(d, guide = g)

##  term min max
## 1 index 170101 181229
## 2 end 180101 191229

dsurv(d, guide = g)

##  term Time Events Rate
## 1 Foo 325923.1    201 0.0006167099
## 2 Bar 311600.9    300 0.0009627700

```

Some of these accept type specific extra arguments, which can be of interest

```

ddate(d, guide = g, date.format = "%Y-%m-%d")

##  term min max
## 1 index 2017-01-01 2018-12-29
## 2 end 2018-01-01 2019-12-29

dsurv(d, guide = g, time.unit = 365.25)

##  term Time Events Rate
## 1 Foo 892.3288    201 0.2252533
## 2 Bar 853.1167    300 0.3516518

```

Also, `dcatg` has the option to include the subtypes `bnry` and `lcat`, respectively.

```

dcatg(d, guide = g, bnry = TRUE, lcat = FALSE)

##      term Level Count Proportion
## 1 status included 1000 1.0000000
## 2     male      0   511 0.5110000
## 3     male      1   489 0.4890000
## 4   gender     male   489 0.4890000
## 5   gender   female   511 0.5110000
## 6   country      SW   351 0.3510000
## 7   country      NO   339 0.3390000
## 8   country      DE   310 0.3100000
## 9     area    rural   204 0.2050251
## 10    area   urban   791 0.7949749
## 11   region       A   304 0.3040000
## 12   region       B   213 0.2130000

```

```

## 13   region      C  126  0.1260000
## 14   region      D  179  0.1790000
## 15   region      E  178  0.1780000
## 16 offspring    FALSE 260  0.2600000
## 17 offspring    TRUE  740  0.7400000
## 18   measNA          0       NA

```

### 3.1 Table stratification

Tables can be stratified using a *grouping table* (`gtab`). We are slightly overloading the "group" terminology here; the groups used to stratify a table have nothing to do with `group` column of the guide - those can be used to group rows of the output table created in e.g. L<sup>A</sup>T<sub>E</sub>X, whereas the `gtab` group columns of the descriptive table.

The simplest way to create a stratification is to point to a grouping variable

```

(dt <- dreal(d, guide = g, gtab = "gender"))

##           term      Mean        SD      Mean        SD
## 1         age 54.977505112 10.3251198 55.671232877 9.8226197
## 2        kids 1.460122699 1.1886350 1.483365949 1.2236306
## 3      measA 38.059724024 38.8539428 43.909896801 45.0839527
## 4      measB 57.459770884 55.8057254 65.265929095 61.4038813
## 5      measM 47.721624171 44.7269066      NaN      NA
## 6 forgotten 0.007871068 0.5604131 -0.005086515 0.5938614
## 7 importance 3.088343558 1.7199192 3.245988258 1.7560926

```

Note that column names become duplicated, but there is meta data in the attributes that keeps track of which columns belong to which grouping.

```

attr(dt, "part")

## [1] "meta"        "desc:male"     "desc:male"     "desc:female"  "desc:female"

```

In fact there is even more meta data behind the scene; if we pass this object to `datex`, it generates the L<sup>A</sup>T<sub>E</sub>X code for a table, using some of this additional information as can be seen in Table 3.

```

datex(dt, label = "tab:datex",
      caption = "Default \\LaTeX\\, output for a descriptive table.")

```

The package assumes utilization of meta data is wanted. If not, one typically have to turn these features off. We can e.g. opt out of using automatic row grouping (`row.group = FALSE`) as well as using labels (`t21 = FALSE`) as in Table 4.

```

datex(dt, row.group = FALSE, t21 = FALSE, label = "tab:datex-less",
      caption = "A descriptive table using less meta data.")

```

Table 3: Default L<sup>A</sup>T<sub>E</sub>X output for a descriptive table.

	male		female	
	Mean	SD	Mean	SD
<b>Demographics</b>				
Age	55.0	10.3	55.7	9.82
<b>Measures etc.</b>				
Kid count	1.46	1.19	1.48	1.22
A measure	38.1	38.9	43.9	45.1
Another measure	57.5	55.8	65.3	61.4
Manly measure	47.7	44.7		
<b>Covariates</b>				
forgotten	0.0079	0.56	-0.0051	0.59
importance	3.09	1.72	3.25	1.76

*Rows: 1000 (male:489, female:511). No duplicate subjects*

Table 4: A descriptive table using less meta data.

	male		female	
	Mean	SD	Mean	SD
age	55.0	10.3	55.7	9.82
kids	1.46	1.19	1.48	1.22
measA	38.1	38.9	43.9	45.1
measB	57.5	55.8	65.3	61.4
measM	47.7	44.7		
forgotten	0.0079	0.56	-0.0051	0.59
importance	3.09	1.72	3.25	1.76

*Rows: 1000 (male:489, female:511). No duplicate subjects*

But we are digressing. Another way to create a grouping is to use `gtab_maker`, or create one manually - it is simply a data frame with logical columns of length equal to the data set.

```
gt <- gtab_maker("area", data = d, all = TRUE)
head(gt)

##   rural urban All
## 1 FALSE  TRUE TRUE
## 2  TRUE FALSE TRUE
## 3 FALSE  TRUE TRUE
## 4 FALSE  TRUE TRUE
## 5 FALSE  TRUE TRUE
## 6 FALSE  TRUE TRUE
```

Lets use a less frequent type (`lcat`) to illustrate the next point; although the presentation defaults to the order of the `gtab`,

```
(dt <- dlcat(d, guide = g, gtab = gt))

##   term Unique Unique Unique
## 1 pid    204    791    1000

attr(dt, "part") ## ordered as gtab

## [1] "meta"      "desc:rural" "desc:urban" "desc:All"
```

it is possible to change it within the `part` argument

```
dt <- dlcat(d, guide = g, gtab = gt, part = list("desc" = c(3,1,2)))
attr(dt, "part") ## order now permuted

## [1] "meta"      "desc:All"    "desc:rural" "desc:urban"
```

It is also possible to specify `desc` as one of "all" (default), "first" or "last" ("none" is also accepted).

```
dt <- dlcat(d, guide = g, gtab = gt, part = "last")
attr(dt, "part") ## now only last group included

## [1] "meta"      "desc:All"
```

### 3.1.1 Other descriptive functions

If you are not happy with the default description, there are other describer functions to choose from, use `?desc-real` to see all build-in describers for the `real` type, and similar help pages exists for other types (`catg`; `bnry`; `lcat`; `date`; `surv`) and the other parts (`comp`; `test`). In section 3.5 you can see how to define your own functions. The name of the new function must be supplied to the `fnc` argument. As an example, `min_max` is a built-in function that one can choose

```
dreal(d, fnc = list(desc = "min_max"))

##          term      Min      Max
## 1        id 1.000000000 1000.000000
## 2        age 25.000000000  85.0000000
## 3     measA  0.018912588 367.3780576
## 4 forgotten -0.999758688  0.9965274
## 5 importance  0.100000000  6.0000000
## 6     measB  0.004979325 362.1742406
## 7     measM  0.195807952 306.1464719
## 8      kids  0.000000000  5.0000000
```

### 3.1.2 Change default functions

The default values can be viewed with `dpget`, e.g. the default describer, compararer and tester for `real`.

```
dpget("real.desc")
## [1] "mean_sd"

dpget("real.comp")
## [1] "real.std"

dpget("real.test")
## [1] "param"
```

New values can be set with `dpset`.

```
dpset("real.desc", "name_of_new_function") ## no eval
```

You can view *all* package parameters with `dpget_all()`.

### 3.2 An emphasis on weight

Most built-in describers and comparers has a `weight` argument (when it makes sense) - at the the of writing this is not implemented for the testers. This parameter is explicit in the higher order `dable` function so always exists (even if null), as can be seen in Section 3.6.

Currently, weights can only be specified as a variable in data.

```
dreal(d, guide = g, weight = "importance")
```

### 3.3 Table comparisons

The comparison part of a descriptive table is accessed by the `part` argument. This can be given either a logical vector of length up to 3 - if shorter, it fills in the missing values with `FALSE`. The position of the elements is associated with the parts: first *descriptions*, second *comparisons* and third *tests*.

```
dt <- dreal(d, guide = g, gtab = "gender", part = c(TRUE, TRUE))
datex(dt, label = "tab:desc-n-comp", row.group = FALSE,
      caption = "Descriptive table with comparison.")
```

But, as we've seen in Section 3.1, one can manipulate the order of the descriptive presentation, and one can change the "order" of the comparison as well. To do so, one provides a list to `part` instead. The first list entry corresponds to descriptions and is `TRUE/FALSE` or a vector of the wanted ordering. The second list entry corresponds to comparison and can be

- `TRUE/FALSE`
- A list of length 2 vectors for the comparison pairs
- A single character value "across" (Table 7) or "adjacent" (Table 8), "none" is also accepted.

So, to change to order of the comparison in Table 5 you use

Table 5: Descriptive table with comparison.

	male		female		Std. diff.
	Mean	SD	Mean	SD	male/female
Age	55.0	10.3	55.7	9.82	-0.069
Kid count	1.46	1.19	1.48	1.22	-0.019
A measure	38.1	38.9	43.9	45.1	-0.14
Another measure	57.5	55.8	65.3	61.4	-0.13
Manly measure	47.7	44.7			
forgotten	0.0079	0.56	-0.0051	0.59	0.022
importance	3.09	1.72	3.25	1.76	-0.091

Rows: 1000 (male:489, female:511). No duplicate subjects

```
dt <- dreal(d, guide = g, gtab = "gender",
             part = list(TRUE, list(c(2,1))))
datex(dt, label = "tab:desc-n-comp-2", row.group = FALSE,
      caption = "Descriptive table with comparison order changed.")
```

Table 6: Descriptive table with comparison order changed.

	male		female		Std. diff.
	Mean	SD	Mean	SD	female/male
Age	55.0	10.3	55.7	9.82	0.069
Kid count	1.46	1.19	1.48	1.22	0.019
A measure	38.1	38.9	43.9	45.1	0.14
Another measure	57.5	55.8	65.3	61.4	0.13
Manly measure	47.7	44.7			
forgotten	0.0079	0.56	-0.0051	0.59	-0.022
importance	3.09	1.72	3.25	1.76	0.091

Rows: 1000 (male:489, female:511). No duplicate subjects

to get Table 6.

To make comparisons "across":

```
dt <- dbnry(d, guide = g, gtab = "region",
             part = list(FALSE, "across"))
datex(dt, label = "tab:across", row.group = FALSE,
      caption = "Comparison \\\emph{across} the groups.")
```

Table 7: Comparison *across* the groups.

	Std. diff.			
	A/B	A/C	A/D	A/E
Male	0.019	0.065	0.0062	0.00081
Offspring	0.15	0.13	0.099	0.14

*Rows: 1000. No duplicate subjects*

To make comparisons "adjacent":

```
dt <- dbnry(d, guide = g, gtab = "region",
             part = list(FALSE, "adjacent"))
datex(dt, label = "tab:adjacent", row.group = FALSE,
      caption = "Comparison between \\\emph{adjacent} groups.")
```

Table 8: Comparison between *adjacent* groups.

	Std. diff.			
	A/B	B/C	C/D	D/E
Male	0.019	0.046	0.071	0.0054
Offspring	0.15	0.019	0.034	0.041

*Rows: 1000. No duplicate subjects*

To make your own comparison:

```
dt <- dbnry(d, guide = g, gtab = "region",
             part = list(FALSE, list(c(1,3), c(5,2))))
datex(dt, label = "tab:comp-list", row.group = FALSE,
      caption = "Comparison between chosen groups.")
```

Table 9: Comparison between chosen groups.

	Std. diff.	
	A/C	E/B
Male	0.065	0.020
Offspring	0.13	0.012

Rows: 1000. No duplicate subjects

### 3.4 Table tests

The testing part of the `part` argument can be given as TRUE/FALSE, with TRUE meaning to test all groups

```
dt <- dreal(d, guide = g, gtab = "country", part = c(TRUE, FALSE, TRUE))
datex(dt, label = "tab:desc-test", row.group = FALSE,
      caption = "Descriptive table with test.")
```

Table 10: Descriptive table with test.

	SW		NO		DE		F-test SW/NO/DE
	Mean	SD	Mean	SD	Mean	SD	
Age	55.5	9.78	55.4	10.0	55.1	10.5	0.88
Kid count	1.46	1.16	1.56	1.28	1.38	1.18	0.17
A measure	38.2	39.8	41.9	45.6	43.4	40.9	0.26
Another measure	63.3	62.8			59.4	54.1	0.4
Manly measure	50.8	49.4	46.1	43.2	45.9	40.6	0.53
forgotten	-0.038	0.59	0.022	0.59	0.023	0.55	0.29
importance	3.30	1.67	3.10	1.76	3.09	1.79	0.2

Rows: 1000 (SW:351, NO:339, DE:310). No duplicate subjects

One can also specify which groups to include in the test

```
dt <- dreal(d, guide = g, gtab = "country", part = list(TRUE, FALSE, c(2,3)))
datex(dt, label = "tab:desc-test-2", row.group = FALSE,
      caption = "Descriptive table with selected testing.")
```

Table 11: Descriptive table with selected testing.

	SW		NO		DE		t-test
	Mean	SD	Mean	SD	Mean	SD	NO/DE
Age	55.5	9.78	55.4	10.0	55.1	10.5	0.71
Kid count	1.46	1.16	1.56	1.28	1.38	1.18	0.068
A measure	38.2	39.8	41.9	45.6	43.4	40.9	0.66
Another measure	63.3	62.8			59.4	54.1	
Manly measure	50.8	49.4	46.1	43.2	45.9	40.6	0.97
forgotten	-0.038	0.59	0.022	0.59	0.023	0.55	0.97
importance	3.30	1.67	3.10	1.76	3.09	1.79	0.95

Rows: 1000 (SW:351, NO:339, DE:310). No duplicate subjects

### 3.5 Custom made functions

In general, all custom made functions must take a ... argument - since specific function arguments will be passed on through higher order functions, these additional arguments will be supplied to all describer, comparers, and testers. Therefore, they must tolerate being overfed arguments.

#### 3.5.1 Custom made describers

The recommended way is to define a function that returns a `data.frame`, even if a single value is wanted. This function can be pointed to in the `fnc` argument.

Describers need only take an `x` argument (as well as ...)

```
IQR <- function(x, ...){
  x <- quantile(x, probs = c(.25, .75), na.rm = TRUE)
  data.frame(IQR = x[2] - x[1])
}
dreal(d, fnc = list(desc = "IQR")) |> head(n = 3)

##   term      IQR
## 1 id 499.50000
## 2 age 14.25000
## 3 measA 43.98454
```

You can point to non-`data.frame`-returning functions as well (as long as they accept "..."), but they will not get great column names

```
dreal(d, fnc = list(desc = "mean"), na.rm = TRUE) |> head(n = 3)

##   term      r
## 1 id 500.50000
## 2 age 55.33200
## 3 measA 41.05845
```

unless you give them a label

```

myMean <- function(x, ...) mean(x, na.rm = TRUE, ...)
attr(myMean, "label") <- "The Mean Value"
dreal(d, fnc = list(desc = "myMean")) |> head(n = 3)

##      term The Mean Value
## 1      id      500.50000
## 2      age      55.33200
## 3  measA     41.05845

```

### 3.5.2 The 'meta' attribute

Some things a describer returns might be of a meta data character, e.g. the levels of a categorial variable - these are wasteful to repeat in each strata. To that end, there is a 'meta' attribute that can be set (on the function) to tell the program which columns not to repeat across a stratification.

```

myBnry <- function(x, ...){
  if(!is.factor(x)) x <- factor(x)
  data.frame(Level = levels(x),
             Count = as.integer(table(x)))
}
attr(myBnry, "meta") <- "Level"
dbnry(d, gtab = "gender", fnc = list(desc = "myBnry"))

##      term Level Count Count
## 1 offspring FALSE   131   129
## 2 offspring  TRUE   358   382
## 3      male    0     0   511
## 4      male    1   489     0

```

### 3.5.3 Custom made describers for surv

Describers for the `surv` type must take a `time` and `event` argument. Note that all functions *can* take extra arguments, and that these can be passed from the higher order functions.

```

Foo <- function(time, event, my.unit.of.time = 'time units', ... ){
  data.frame(Info = sprintf(paste0("%s events in %.2f ", my.unit.of.time),
                            sum(event), sum(time)))
}
dsurv(d, fnc = list(desc = "Foo"))

##      term                  Info
## 1  bar 300 events in 311600.89 time units
## 2  foo 201 events in 325923.10 time units

dsurv(d, fnc = list(desc = "Foo"), my.unit.of.time = "days")

##      term                  Info
## 1  bar 300 events in 311600.89 days
## 2  foo 201 events in 325923.10 days

```

### 3.5.4 Custom made comparers/testers

Comparers, and testers, must take an `x` and `g` argument. Conceptually, comparers always deal with 2 groups, whereas a tester can deal with any number of groups.

```
Delta <- function(x, g, ...){
  if(!is.factor(g)) g <- factor(g)
  x_i <- g == levels(g)[1]
  y_i <- g == levels(g)[2]
  data.frame(MinDelta = min(x[x_i], na.rm = TRUE) - min(x[y_i], na.rm = TRUE),
             MaxDelta = max(x[x_i], na.rm = TRUE) - max(x[y_i], na.rm = TRUE))
}
dreal(d, gtab = "gender", part = c(F,T), fnc = list(desc=NULL, comp = "Delta"))

##      term      MinDelta      MaxDelta
## 1      id -1.000000000 -1.000000000
## 2      age  3.000000000  0.000000000
## 3    measA -0.043488640 -97.310299769
## 4  forgotten  0.003472922 -0.006842324
## 5 importance  0.000000000  0.000000000
## 6    measB  0.054081002 -7.272849083
## 7    measM      -Inf          Inf
## 8     kids  0.000000000  0.000000000
```

This function could also be supplied as a tester (although it is not testing anything); here is an example where we keep the default comparer:

```
(dt <- dreal(d, gtab = "gender", part = c(F,T,T),
            fnc = list(desc=NULL, comp = NULL, test = "Delta"))

##      term Std. diff.      MinDelta      MaxDelta
## 1      id -0.03630706 -1.000000000 -1.000000000
## 2      age -0.06884267  3.000000000  0.000000000
## 3    measA -0.13901052 -0.043488640 -97.310299769
## 4  forgotten  0.02244206  0.003472922 -0.006842324
## 5 importance -0.09069944  0.000000000  0.000000000
## 6    measB -0.13304830  0.054081002 -7.272849083
## 7    measM      NaN      -Inf          Inf
## 8     kids -0.01926886  0.000000000  0.000000000
```

Recall that what is set as tester or comparer is remembered by the `part` attribute.

```
attr(dt, "part")
## [1] "meta"           "comp:male/female" "test:male/female" "test:female/male"
```

### 3.5.5 Custom made comparers/testers for surv

Comparers, and testers, for `surv` must take a `time`, `event`, and `g` argument.

```

HR <- function(time, event, g, weight = NULL, ...){
  if(!is.factor(g)) g <- factor(g)
  mod <- survival::coxph(survival::Surv(time, event) ~ g, weight = weight)
  data.frame(HR = as.numeric(exp(mod$coefficients)[1]))
}
dsurv(d, gtab = "gender", part = c(F,T), fnc = list(desc=NULL, comp = "HR"))

##   term      HR
## 1  bar 1.107036
## 2  foo 1.155531

```

### 3.6 The information functions are privy to

Internally, what is passed to each function is not only what the user supplies in the "...” of the higher order functions, but also some additional stuff; e.g. the name of the current variable (.term), the label (.label), if the variable has any missing values (.missing), etc.

```

theDots <- function(x, ...){
  dots <- list(...)
  foo <- function(z) if(is.null(z)) "NULL" else z
  data.frame(name = names(dots),
             value = unlist(lapply(dots, foo)))
}

dlcat(d, guide = g, fnc = list(desc = "theDots"),
       pass_this_along = "this was passed by the user")

##   term           name           value
## 1 pid      weight           NULL
## 2 pid pass_this_along this was passed by the user
## 3 pid     .table.type        lcat
## 4 pid       .term            pid
## 5 pid       .label            ID
## 6 pid       .type            lcat
## 7 pid     .group           Meta data
## 8 pid     .missing          FALSE

```

This allows for silly functions

```

silly <- function(x, ...){
  dots <- list(...)
  r <- paste0("'I'm %s (a %s type) but I prefer my to use my label: %s'")
  data.frame(Presentation = sprintf(r, dots$.term, dots$.type, dots$.label))
}

dlcat(d, guide = g, fnc = list(desc = "silly"))

##   term           Presentation
## 1 pid 'I'm pid (a lcat type) but I prefer my to use my label: ID'

```

### 3.7 Some notes on formatting

The details on formatting can be found in the help page `dable-formatting`. For now, we will leave the issue of numeric formatting - even though the details are somewhat idiosyncratic - as an exercise for the reader to learn on her own.

Instead we will illustrate a point about the `output` parameter of the package. To set up this example we will use the built-in `catg.bl0` function (i.e. the default function for the `catg` type in baseline theme 0).

```
foo <- rep(LETTERS[1:3], c(5,2,9))
foo[c(2,6)] <- NA
test <- catg.bl0(foo, .label = "Foo")
```

This function creates a 'Variable' column listing the variable label and the levels. But the label is not repeated on each line, but instead indented with a `\t`. This works well for flextable output where it is substituted sensibly, but for L<sup>A</sup>T<sub>E</sub>X output it needs replacing.

```
test[,1:2]

##   Variable      desc
## 1   Foo: A 4 (28.6%) [2]
## 2     \t B    1 (7.14%)
## 3     \t C    9 (64.3%)

dable_format(test[,1:2], output = "flextable") ## no change

##   Variable      desc
## 1   Foo: A 4 (28.6%) [2]
## 2     \t B    1 (7.14%)
## 3     \t C    9 (64.3%)

dable_format(test[,1:2], output = "latex")      ## latexification

##   Variable      desc
## 1   Foo: A 4 (28.6\%) [2]
## 2 \quad B    1 (7.14\%)
## 3 \quad C    9 (64.3\%)

dable_format(test[,1:2], output = "console")
```

When formatting is done with higher order table producing functions (e.g. `b latex`), the correct formatting can be done automatically.

## 4 Baseline tables

*Baseline tables* describe several types in one table - the name is chosen from the world of clinical trials where the various traits of the study population are often described by the characteristics collected at the start of the study, at baseline.

Combining various types adds a layer of complexity for the functions that generate the parts of the table. For one, they have to return the same number of columns (per part). One may want (continuous) measurement data to be described by the quartiles (3 numbers) and categorical data to be the count and percentage of each level (2 numbers). The solution in this package<sup>2</sup> is to collapse all the numbers into a string, e.g. to describe measurements as "median (Q1-Q3)" and categorical as "N (p%)", which also means that formatting of numbers have to be done already at the table-generating phase. In contrast, the default simple descriptive tables could be populated with all numbers without the need for formatting.

Another problem is how to know what the presented numbers are. In a simple descriptive table, we name the columns to indicate what is in them; e.g. "Mean" and "SD" when we present the mean values and standard deviations for the variables. But in a baseline table, we mix the types - so the column names are not sufficient for that end. One solution employed in this packages is to have the functions return both the wanted summary string as well as the information on what the summary string contains, so e.g. the baseline default for the `real` type returns columns

- `desc`: The actually summary string of the form: Median (Q1-Q3)
- `desc.info`: The text string "Numeric variable: Median (Q1-Q3)"

The information from `desc.info` is presented in the foot of the table, which works since each types summary measure has a unique presentation.

In a similar fashion, the default baseline comparer return columns

- `comp`: A comparison
- `comp.info`: A text string with information on the comparison made.

and the default baseline tester return columns

- `test`: An actual p-value
- `test.info`: A text string with information on the test that generated the p-value.

The information from `test.info` is attached as footnotes on the `test` column.

A third problem in the context of this package, is that it becomes much more involved to pass user defined functions to baseline tables (so much so that it is currently not possible) - we need a at least a function per type.

The current approach is that there is a set of default functions for baseline tables that is partially distinct from the set of default functions for simple descriptive tables. To "manually" implement a completely new set of baseline functions is somewhat cumbersome. However, the aim is to put together a number of baseline *themes* that the user easily can choose between without having to reset any default values - and if a new theme is needed, it would be best to implement it *within* the package.

Before going further into the details, lets look at the two (actually three, but really just two) themes that exist currently.

---

<sup>2</sup>At least for baseline theme 0-2. The idea shamelessly stolen from the `ucr.base.tab` function in the `ucr` package.

## 4.1 Baseline theme 0 (default)

The distinct feature of the default theme is that it tries to be compact.

The default baseline table was shown in Table 2, but we'll do a version of it again. We reuse the variable table stored in `vt` and we will also trim down the data so that the table becomes a bit smaller, see Table 12.

```
sel <- subset(g, !group %in% c("Measures etc.", "Outcomes", "Covariates"))$term
d2 <- d[, sel]
g2 <- dguide(d2, id = c("id", "pid"), vtab = vt,
              elim.set = c("end", "region", "area"))
b <- baseline(d2, theme = 0, guide = g2, gtab = "gender", part = c(T,T,T))
blatex(b, caption = "Baseline table theme 0 (default)",
       label = "tab:bsl-0", size = "small")
```

Table 12: Baseline table theme 0 (default)

	male n = 489	female n = 511	Std. diff. male/female	Test male/female
<b>Meta data</b>				
ID	=489=	=511=		
A constant: included	489 (100.0%)	511 (100.0%)		
Index	170101/181229 [1]	170102/181225	-0.035	0.58 <sup>†</sup>
<b>Demographics</b>				
Age	55.0 (48.0 - 63.0)	56.0 (49.0 - 62.0)	-0.069	0.28*
Male: 1	489 (100.0%)	0 (0%)	Inf	<0.0001 <sup>§</sup>
Country: SW	173 (35.4%)	178 (34.8%)	0.031	0.88 <sup>§</sup>
NO	168 (34.4%)	171 (33.5%)		
DE	148 (30.3%)	162 (31.7%)		

Rows: 1000 (male:489, female:511). No duplicate subjects. <sup>§</sup>Chi-square. <sup>†</sup>Wilcoxon. \*t-test.

Categorical variable: =unique values=. [n] is missing count (if applicable). Categorical variable: Count (Percent). Date variables: min/max. Numeric variable: Median (Q1-Q3)

Notice that each type has a unique form of the numbers presented in the descriptive part of the table. This allows for the explanation of those numbers to be in the "foot" of the table. The comparison part only contain 1 kind of numbers - the standardized differences - indicated by the column name. The test part contains different kinds of test, all of which are explained through footnotes.

Also, notice that baseline tables have their own LATEX-code-generating function `blatex`.

#### 4.1.1 Baseline theme 1 $\approx$ 0

The only difference between theme 0 and 1 is that the `real` type is described as "Median (Q1-Q3)" in 0 and "Mean (SD)" in 1, see Table 13.

```
b <- baseline(d2, theme = 1, guide = g2, gtab = "gender", part = c(T,T,T))
blatex(b, caption = "Baseline table theme 1.",
       label = "tab:bsl-1", size = "small")
```

Table 13: Baseline table theme 1.

	male n = 489	female n = 511	Std. diff. male/female	Test male/female
<b>Meta data</b>				
ID	=489=	=511=		
A constant: included	489 (100.0%)	511 (100.0%)		
Index	170101/181229 [1]	170102/181225	-0.035	0.58 <sup>†</sup>
<b>Demographics</b>				
Age	55.0 (10.3)	55.7 (9.82)	-0.069	0.28*
Male: 1	489 (100.0%)	0 (0%)	Inf	<0.0001 <sup>§</sup>
Country: SW	173 (35.4%)	178 (34.8%)	0.031	0.88 <sup>§</sup>
NO	168 (34.4%)	171 (33.5%)		
DE	148 (30.3%)	162 (31.7%)		

Rows: 1000 (male:489, female:511). No duplicate subjects. <sup>§</sup>Chi-square. <sup>†</sup>Wilcoxon. \*t-test.

Categorical variable: =unique values=. [n] is missing count (if applicable). Categorical variable:  
Count (Percent). Date variables: min/max. Numeric variable: Mean (SD)

## 4.2 Baseline theme 2

The baseline theme 2 takes more space, but is perhaps simpler to parse, as the information on the description is explicitly written in the first column on (almost) each row.

```
b <- baseline(d2, theme = 2, guide = g2, gtab = "gender", part = c(T,T,T))
blatex(b, caption = "Baseline table theme 2.",
       label = "tab:bsl-2", size = "small")
```

Table 14: Baseline table theme 2.

	male n = 489	female n = 511	Std. diff. male/female	Test male/female
<b>Meta data</b>				
<i>ID</i> ; Unique	489	511		
<i>A constant</i> , n (%): included	489 (100.0%)	511 (100.0%)		
<i>Index</i> ; Min	2017-01-01	2017-01-02	-0.035	0.58 <sup>†</sup>
Max	2018-12-29	2018-12-25		
Missing	1	0		
<b>Demographics</b>				
<i>Age</i> ; Mean (SD)	55.0 (10.3)	55.7 (9.82)	-0.069	0.28*
Median (Q1,Q3)	55.0 (48.0, 63.0)	56.0 (49.0, 62.0)		
Min, Max	28.0, 85.0	25.0, 85.0		
<i>Male</i> , n (%): 0	0 (0%)	511 (100.0%)	Inf	<0.0001 <sup>§</sup>
1	489 (100.0%)	0 (0%)		
<i>Country</i> , n (%): SW	173 (35.4%)	178 (34.8%)	0.031	0.88 <sup>§</sup>
NO	168 (34.4%)	171 (33.5%)		
DE	148 (30.3%)	162 (31.7%)		

Rows: 1000 (male:489, female:511). No duplicate subjects. <sup>§</sup>Chi-square. <sup>†</sup>Wilcoxon. \*t-test

### 4.3 Adjusting the baseline table

This section is just a reminder of some of the features that were presented for simple descriptive tables. E.g. suppose you want a default baseline table by `gender` but also a column showing the data for everyone, as well as a test - but, of course, the test should only contrast the gender levels. Then you can use `gtab_maker` and supply the correct input for the `part` argument.

```
gt <- gtab_maker("gender", data = d2, all = TRUE, all.first = TRUE)
b <- baseline(d2, theme = 0, guide = g2, gtab = gt,
              part = list(T, F, c(2,3)))
blatex(b, label = "tab:adj-bsl-1", caption = "Adjusted baseline table")
```

Table 15: Adjusted baseline table

	All n = 1000	male n = 489	female n = 511	Test male/female
<b>Meta data</b>				
ID	=1000=	=489=	=511=	
A constant: included	1000 (100.0%)	489 (100.0%)	511 (100.0%)	
Index	170101/181229 [1]	170101/181229 [1]	170102/181225	0.58 <sup>†</sup>
<b>Demographics</b>				
Age	55.0 (48.8 - 63.0)	55.0 (48.0 - 63.0)	56.0 (49.0 - 62.0)	0.28*
Male: 1	489 (48.9%)	489 (100.0%)	0 (0%)	<0.0001 <sup>§</sup>
Gender: male	489 (48.9%)	489 (100.0%)	0 (0%)	<0.0001 <sup>§</sup>
female	511 (51.1%)	0 (0%)	511 (100.0%)	
Country: SW	351 (35.1%)	173 (35.4%)	178 (34.8%)	0.88 <sup>§</sup>
NO	339 (33.9%)	168 (34.4%)	171 (33.5%)	
DE	310 (31.0%)	148 (30.3%)	162 (31.7%)	

Rows: 1000 (All:1000, male:489, female:511). No duplicate subjects. <sup>§</sup>Chi-square. <sup>†</sup>Wilcoxon.

\*t-test. Categorical variable: =unique values=. [n] is missing count (if applicable). Categorical variable: Count (Percent). Date variables: min/max. Numeric variable: Median (Q1-Q3)

You might also want to display the *absolute* rather than standardized differences

```
rm(b)
b <- baseline(d2, theme = list(0, "diff"), guide = g2, gtab = "gender",
               part = list(T, T, T))
blatex(b, label = "tab:adj-bsl-2", caption = "Another adjusted baseline table")
```

Table 16: Another adjusted baseline table

	male n = 489	female n = 511	Difference male/female	Test male/female
<b>Meta data</b>				
ID	=489=	=511=		
A constant: included	489 (100.0%)	511 (100.0%)	0	
Index	170101/181229 [1]	170102/181225	-7.24	0.58 <sup>†</sup>
<b>Demographics</b>				
Age	55.0 (48.0 - 63.0)	56.0 (49.0 - 62.0)	-0.69	0.28*
Male: 1	489 (100.0%)	0 (0%)	1.00	<0.0001 <sup>§</sup>
Country: SW	173 (35.4%)	178 (34.8%)	0.0054	0.88 <sup>§</sup>
NO	168 (34.4%)	171 (33.5%)	0.0089	
DE	148 (30.3%)	162 (31.7%)	-0.014	

Rows: 1000 (male:489, female:511). No duplicate subjects. <sup>§</sup>Chi-square. <sup>†</sup>Wilcoxon. \*t-test.

Categorical variable: =unique values=. [n] is missing count (if applicable). Categorical variable: Count (Percent). Date variables: min/max. Numeric variable: Median (Q1-Q3)

Or, you might want something more complex, e.g. only describe the first (of the five) regions and compare it to the second and third, with a test of difference among the three. *But* you are adamant that `bnry` should be compared with odds ratios.

```
dpset("bnry.comp.bl", "odds_ratio.bl")
g3 <- g2
g3$type[g3$term == "gender"] <- "bnry"
b <- baseline(d2, theme = list(desc=0, comp=NULL),
               guide = g3, gtab = "region",
               part = list(desc = 1,
                           comp = list(c(1,2), c(1,3)),
                           test = 1:3))
blatex(b, label = "tab:adj-bsl-3",
        caption = "Yet another adjusted baseline table")
```

Table 17: Yet another adjusted baseline table

	A n = 304	Compare		Test
		A/B	A/C	A/B/C
<b>Meta data</b>				
ID	=304=			
A constant: included	304 (100.0%)			
Index	170101/181227	-0.045 <sup>§</sup>	-0.064 <sup>§</sup>	0.83 <sup>#</sup>
<b>Demographics</b>				
Age	55.0 (49.0 - 62.0)	-0.13 <sup>§</sup>	0.0031 <sup>§</sup>	0.3 <sup>◊</sup>
Male: 1	147 (48.4%)	0.96 <sup>†</sup>	0.88 <sup>†</sup>	0.83*
Gender: female	157 (51.6%)	1.04 <sup>†</sup>	1.14 <sup>†</sup>	0.83*
Country: SW	160 (52.6%)	1.10 <sup>§</sup>	1.10 <sup>§</sup>	<0.0001*
NO	100 (32.9%)			
DE	44 (14.5%)			

Rows: 1000 (A:304). No duplicate subjects. <sup>§</sup>Standardized difference. <sup>†</sup>Odds ratio. \* Chi-square.  
<sup>#</sup>Kruskal-Wallis. <sup>◊</sup>F-test. Categorical variable: =unique values=. [n] is missing count (if applicable).  
Categorical variable: Count (Percent). Date variables: min/max. Numeric variable: Median (Q1-Q3)

```
dpset_defaults(overwrite = TRUE)
```

## 4.4 Behind the scenes of baseline tables

We will use `dcatg` in a nonsense example to illustrate a few tools.

```
foo <- function(x, ...){  
  dots <- list(...)  
  z <- length(unique(x[!is.na(x)]))  
  data.frame(mode = d.mode(x),  
             someInfo = paste("Info ", LETTERS[z]))  
}  
(dt <- dcatg(d, guide = g, fnc = list(desc = "foo")))  
  
##      term      mode someInfo  
## 1  status included   Info   A  
## 2  gender    female   Info   B  
## 3 country        SW   Info   C  
## 4   area     urban   Info   B  
## 5 region         A   Info   E  
## 6  measNA          Info  
  
attr(dt, "part")  
  
## [1] "meta"      "desc:All"   "desc:All"
```

We need to know that there is a function that collects some of the meta data.

```
attr2text(dt)  
  
## [1] "Rows: 1000. No duplicate subjects"
```

Also, we can store things in an 'info' attribute in the, which can be part of the information collected by `attr2text`.

```
attr(dt, "info") <- "Something important."  
attr2text(dt)  
  
## [1] "Rows: 1000. No duplicate subjects. Something important."
```

To proceed with our example, suppose we are not interested in displaying the 'someInfo' column. In order to not destroy the meta data, columns should be removed with `dable_prune`.

```
(dt2 <- dable_prune(dt, rm = "someInfo"))  
  
##      term      mode  
## 1  status included  
## 2  gender    female  
## 3 country        SW  
## 4   area     urban  
## 5 region         A  
## 6  measNA  
  
attr(dt2, "part") ## sane meta data
```

```

## [1] "meta"      "desc:All"

attr(dt2, "info") ## unchanged

## [1] "Something important."

```

But if the stuff in 'someInfo' is pertinent to the data, there are a couple of options. One, we can store the information in the 'info' attribute

```

dt2 <- dable_prune(dt, rm = "someInfo", info = TRUE)
attr(dt2, "info")

## [1] "Something important." "Info A"           "Info B"
## [4] "Info C"              "Info E"           "Info "

```

```

datex(dt2, label = "tab:info-added", row.group = FALSE,
      caption = "Table with info added in the foot.")

```

Table 18: Table with info added in the foot.

All	
	mode
A constant	included
Gender	female
Country	SW
Area	urban
Region	A
Missing measure	

Rows: 1000. No duplicate subjects. Something important.. Info A. Info B. Info C. Info E. Info

By default, only unique information is kept, i.e. duplicates are removed.

Another option for L<sup>T</sup>E<sub>X</sub> output is to put the information in a footnote

```

dt2 <- dable_fnote(dt, info = "someInfo", fn.var = "mode")
datex(dt2, label = "tab:fnote-added", row.group = FALSE,
      caption = "Table with info added as footnotes.")

```

Table 19: Table with info added as footnotes.

	All
	mode
A constant	included <sup>§</sup>
Gender	female <sup>†</sup>
Country	SW*
Area	urban <sup>†</sup>
Region	A <sup>#</sup>
Missing measure	

Rows: 1000. No duplicate subjects. Something important.. <sup>§</sup>Info A. <sup>†</sup>Info B. \*Info C. <sup>#</sup>Info E.  
 $\diamond$  Info

The true nature of the baseline tables are that they are very *tidy*:

```
b <- baseline(d, theme = 0, guide = g, gtab = "gender", part = c(T,T,T))
str(subset(b)) ## subset used here only to strip all the attributes

## 'data.frame': 26 obs. of  9 variables:
## $ term      : chr  "pid" "status" "index" "end" ...
## $ Variable  : chr  "ID" "A constant: included" "Index" "End" ...
## $ desc.info : chr  "Categorical variable: =unique values=. [n] is missing count (if applicable)"
## $ comp.info : chr  "Standardized difference" "Standardized difference" "Standardized difference"
## $ test.info : chr  NA "Chi-square" "Wilcoxon" "Wilcoxon" ...
## $ desc     : chr  "=489=" "489 (100.0%)" "170101/181229 [1]" "180101/191229 [1]" ...
## $ desc.1   : chr  "=511=" "511 (100.0%)" "170102/181225" "180102/191225" ...
## $ comp     : num  NA NA -0.0349 -0.0349 -0.0688 ...
## $ test     : num  NA NA 0.583 0.583 0.276 ...
```

For the summary and p-values there are separate columns containing the information on the contents thereof. These are added as info in the foot, and as footnotes.

## A Loose ends

- No loose ends?

## B Testing

This section is for testing all the defaults, to see that the code goes through.

### B.1 Default describers

```
dable(d, type = "real", guide = g)

##      term      Mean       SD
## 1    age 55.332000000 10.072399
## 2   kids 1.472000000 1.206097
## 3  measA 41.058453071 42.242859
## 4  measB 61.475041370 58.837329
## 5  measM 47.721624171 44.726907
## 6 forgotten 0.001249743 0.577495
## 7 importance 3.168900000 1.739416

dable(d, type = "catg", guide = g)

##      term     Level Count Proportion
## 1  status included 1000 1.0000000
## 2   gender     male  489 0.4890000
## 3   gender   female  511 0.5110000
## 4   country      SW  351 0.3510000
## 5   country      NO  339 0.3390000
## 6   country      DE  310 0.3100000
## 7   area     rural  204 0.2050251
## 8   area    urban  791 0.7949749
## 9   region        A  304 0.3040000
## 10  region        B  213 0.2130000
## 11  region        C  126 0.1260000
## 12  region        D  179 0.1790000
## 13  region        E  178 0.1780000
## 14  measNA          0      NA

dable(d, type = "bnry", guide = g)

##      term Level Count Proportion
## 1   male     1    489      0.489
## 2 offspring TRUE   740      0.740

dable(d, type = "date", guide = g)

##      term      min      max
## 1 index 170101 181229
## 2 end 180101 191229

dable(d, type = "surv", guide = g)

##      term      Time Events       Rate
## 1  Foo 325923.1     201 0.0006167099
## 2  Bar 311600.9     300 0.0009627700
```

```
dable(d, type = "lcat", guide = g)  
##   term Unique  
## 1  pid   1000
```

## B.2 Default comparers

```
dable(d, type = "real", guide = g, gtab = "gender", part = c(F,T))

##      term Std. diff.
## 1     age -0.06884267
## 2     kids -0.01926886
## 3   measA -0.13901052
## 4   measB -0.13304830
## 5   measM       NaN
## 6 forgotten  0.02244206
## 7 importance -0.09069944

dable(d, type = "catg", guide = g, gtab = "gender", part = c(F,T))

##      term Std. diff.
## 1 status       NA
## 2 country  0.03139396
## 3 area    0.01148310
## 4 region   0.04429413
## 5 measNA       NA

dable(d, type = "bnry", guide = g, gtab = "gender", part = c(F,T))

##      term Std. diff.
## 1 male        Inf
## 2 offspring  0.03521521

dable(d, type = "date", guide = g, gtab = "gender", part = c(F,T))

##      term Std. diff.
## 1 index -0.03490307
## 2 end   -0.03490307

dable(d, type = "surv", guide = g, gtab = "gender", part = c(F,T))

##      term Std. diff.
## 1 Foo -0.003611166
## 2 Bar -0.003116198

dable(d, type = "lcat", guide = g, gtab = "gender", part = c(F,T))

##      term Std. diff.
## 1 pid       NA
```

### B.3 Default testers

```
dable(d, type = "real", guide = g, gtab = "gender", part = c(F,F,T))

## [META_param] testing 'measM' against 'gender' does not compute; with error:
## Error in `contrasts<-`('*tmp*', value = contr.funs[1 + isOF[nn]]): contrasts
## can be applied only to factors with 2 or more levels

##      term      t-test
## 1     age 0.27649031
## 2     kids 0.76081326
## 3    measA 0.02908696
## 4    measB 0.08824107
## 5   measM      NA
## 6 forgotten 0.72301814
## 7 importance 0.15205441

dable(d, type = "catg", guide = g, gtab = "gender", part = c(F,F,T))

## [META_chisq] testing 'status' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels
## [META_chisq] testing 'measNA' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels

##      term      p
## 1 status      NA
## 2 country 0.8841969
## 3 area 0.9183285
## 4 region 0.9744276
## 5 measNA      NA

dable(d, type = "bnry", guide = g, gtab = "gender", part = c(F,F,T))

##      term      p
## 1     male 1.328233e-218
## 2 offspring 6.279693e-01

dable(d, type = "date", guide = g, gtab = "gender", part = c(F,F,T))

##      term Wilcoxon
## 1 index 0.5834804
## 2 end 0.5834804

dable(d, type = "surv", guide = g, gtab = "gender", part = c(F,F,T))

##      term Logrank
## 1   Foo 0.3068142
## 2   Bar 0.3793844

dable(d, type = "lcat", guide = g, gtab = "gender", part = c(F,F,T))

##      term no.test
## 1    pid      NA
```

## B.4 Default baseline

```

baseline(d, guide = g, gtab = "gender", part = c(F,F,F))

## no table produced

## data frame with 0 columns and 0 rows

baseline(d, guide = g, gtab = "gender", part = c(T,F,F))

##          term            Variable
## 22      pid                 ID
## 10    status A constant: included
## 25    index                Index
## 26      end                 End
## 1       age                 Age
## 8       male                Male: 1
## 11   country             Country: SW
## 12   country              \t NO
## 13   country              \t DE
## 14     area               Area: rural
## 15     area                \t urban
## 16   region             Region: A
## 17   region              \t B
## 18   region              \t C
## 19   region              \t D
## 20   region              \t E
## 9   offspring            Offspring: TRUE
## 2      kids                Kid count
## 3   measA                A measure
## 4   measB            Another measure
## 5   measM            Manly measure
## 21  measNA            Missing measure:
## 6   forgotten           forgotten
## 7   importance           importance
## 23      Foo                  Foo
## 24      Bar                  Bar
##                                         desc.info
## 22 Categorical variable: =unique values=. [n] is missing count (if applicable)
## 10 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 25          Date variables: min/max. [n] is missing count (if applicable)
## 26          Date variables: min/max. [n] is missing count (if applicable)
## 1       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 8   Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 11  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 12  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 13  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 14  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 15  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 16  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 17  Categorical variable: Count (Percent). [n] is missing count (if applicable)

```

```

## 18 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 19 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 20 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 9  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 2   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 3   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 4   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 5   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 21 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 6   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 7   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 23 Time-to-event variable: events; rate. [n] is missing count (if applicable)
## 24 Time-to-event variable: events; rate. [n] is missing count (if applicable)
##           desc          desc
## 22          =489=          =511=
## 10          489 (100.0%)      511 (100.0%)
## 25          170101/181229 [1] 170102/181225
## 26          180101/191229 [1] 180102/191225
## 1           55.0 (48.0 - 63.0) 56.0 (49.0 - 62.0)
## 8           489 (100.0%)      0 (0%)
## 11          173 (35.4%)       178 (34.8%)
## 12          168 (34.4%)       171 (33.5%)
## 13          148 (30.3%)       162 (31.7%)
## 14          101 (20.7%) [2]   103 (20.3%) [3]
## 15          386 (79.3%)       405 (79.7%)
## 16          147 (30.1%)       157 (30.7%)
## 17          105 (21.5%)       108 (21.1%)
## 18          65 (13.3%)        61 (11.9%)
## 19          86 (17.6%)        93 (18.2%)
## 20          86 (17.6%)        92 (18.0%)
## 9           358 (73.2%)       382 (74.8%)
## 2           1.00 (0 - 2.00)    1.00 (0 - 2.00)
## 3           26.9 (11.5 - 51.6) [5] 30.3 (12.6 - 59.1) [2]
## 4           38.7 (18.4 - 81.2) [168] 46.7 (20.3 - 89.5) [171]
## 5           33.6 (14.3 - 68.2)      - [511]
## 21          - [489]            - [511]
## 6           0.025 (-0.47 - 0.47) -0.023 (-0.50 - 0.51)
## 7           3.10 (1.60 - 4.60)   3.30 (1.70 - 4.75)
## 23          92; 0.00057       109; 0.00066
## 24          140; 0.00091      160; 0.0010
baseline(d, guide = g, gtab = "gender", part = c(F,T,F))

##           term          comp.info          comp
## 15          pid             <NA>            NA
## 10          status Standardized difference     NA
## 18          index Standardized difference -0.034903068
## 19          end  Standardized difference -0.034903068
## 1           age  Standardized difference -0.068842671
## 8           male Standardized difference      Inf
## 11          country Standardized difference  0.031393958

```

```

## 12      area Standardized difference  0.011483102
## 13      region Standardized difference  0.044294127
## 9   offspring Standardized difference -0.035215213
## 2       kids Standardized difference -0.019268860
## 3      measA Standardized difference -0.139010518
## 4      measB Standardized difference -0.133048304
## 5      measM Standardized difference          NaN
## 14     measNA Standardized difference          NA
## 6   forgotten Standardized difference  0.022442056
## 7 importance Standardized difference -0.090699441
## 16      Foo Standardized difference -0.003611166
## 17      Bar Standardized difference -0.003116198

baseline(d, guide = g, gtab = "gender", part = c(F,F,T))

## [META_param] testing 'measM' against 'gender' does not compute; with error:
## Error in `contrasts<-`('*tmp*', value = contr.funs[1 + isOF[nn]]): contrasts
## can be applied only to factors with 2 or more levels
## [META_chisq] testing 'status' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels
## [META_chisq] testing 'measNA' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels

##           term test.info      test
## 15      pid    <NA>        NA
## 10    status Chi-square        NA
## 18     index Wilcoxon  5.834804e-01
## 19      end Wilcoxon  5.834804e-01
## 1     age    t-test  2.764903e-01
## 8      male Chi-square 1.328233e-218
## 11   country Chi-square  8.841969e-01
## 12      area Chi-square  9.183285e-01
## 13    region Chi-square  9.744276e-01
## 9   offspring Chi-square  6.279693e-01
## 2      kids    t-test  7.608133e-01
## 3      measA    t-test  2.908696e-02
## 4      measB    t-test  8.824107e-02
## 5      measM    t-test          NA
## 14     measNA Chi-square        NA
## 6   forgotten    t-test  7.230181e-01
## 7 importance    t-test  1.520544e-01
## 16      Foo   Log rank  3.068142e-01
## 17      Bar   Log rank  3.793844e-01

baseline(d, guide = g, gtab = "gender", part = c(T,T,F))

##           term      Variable
## 22      pid            ID
## 10    status A constant: included
## 25     index           Index
## 26      end            End

```

```

## 1      age          Age
## 8      male         Male: 1
## 11     country      Country: SW
## 12     country      \t NO
## 13     country      \t DE
## 14     area          Area: rural
## 15     area          \t urban
## 16     region        Region: A
## 17     region        \t B
## 18     region        \t C
## 19     region        \t D
## 20     region        \t E
## 9      offspring    Offspring: TRUE
## 2      kids          Kid count
## 3      measA         A measure
## 4      measB         Another measure
## 5      measM         Manly measure
## 21     measNA        Missing measure:
## 6      forgotten     forgotten
## 7      importance    importance
## 23     Foo           Foo
## 24     Bar           Bar
##
## desc.info
## 22 Categorical variable: =unique values=. [n] is missing count (if applicable)
## 10 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 25             Date variables: min/max. [n] is missing count (if applicable)
## 26             Date variables: min/max. [n] is missing count (if applicable)
## 1      Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 8      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 11     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 12     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 13     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 14     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 15     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 16     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 17     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 18     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 19     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 20     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 9      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 2      Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 3      Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 4      Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 5      Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 21     Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 6      Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 7      Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 23     Time-to-event variable: events; rate. [n] is missing count (if applicable)
## 24     Time-to-event variable: events; rate. [n] is missing count (if applicable)
##                  comp.info          desc          desc

```

		=489=	=511=
## 22	<NA>		
## 10	Standardized difference	489 (100.0%)	511 (100.0%)
## 25	Standardized difference	170101/181229 [1]	170102/181225
## 26	Standardized difference	180101/191229 [1]	180102/191225
## 1	Standardized difference	55.0 (48.0 - 63.0)	56.0 (49.0 - 62.0)
## 8	Standardized difference	489 (100.0%)	0 (0%)
## 11	Standardized difference	173 (35.4%)	178 (34.8%)
## 12	<NA>	168 (34.4%)	171 (33.5%)
## 13	<NA>	148 (30.3%)	162 (31.7%)
## 14	Standardized difference	101 (20.7%) [2]	103 (20.3%) [3]
## 15	<NA>	386 (79.3%)	405 (79.7%)
## 16	Standardized difference	147 (30.1%)	157 (30.7%)
## 17	<NA>	105 (21.5%)	108 (21.1%)
## 18	<NA>	65 (13.3%)	61 (11.9%)
## 19	<NA>	86 (17.6%)	93 (18.2%)
## 20	<NA>	86 (17.6%)	92 (18.0%)
## 9	Standardized difference	358 (73.2%)	382 (74.8%)
## 2	Standardized difference	1.00 (0 - 2.00)	1.00 (0 - 2.00)
## 3	Standardized difference	26.9 (11.5 - 51.6) [5]	30.3 (12.6 - 59.1) [2]
## 4	Standardized difference	38.7 (18.4 - 81.2) [168]	46.7 (20.3 - 89.5) [171]
## 5	Standardized difference	33.6 (14.3 - 68.2)	- [511]
## 21	Standardized difference	- [489]	- [511]
## 6	Standardized difference	0.025 (-0.47 - 0.47)	-0.023 (-0.50 - 0.51)
## 7	Standardized difference	3.10 (1.60 - 4.60)	3.30 (1.70 - 4.75)
## 23	Standardized difference	92; 0.00057	109; 0.00066
## 24	Standardized difference	140; 0.00091	160; 0.0010
##	comp		
## 22	NA		
## 10	NA		
## 25	-0.034903068		
## 26	-0.034903068		
## 1	-0.068842671		
## 8	Inf		
## 11	0.031393958		
## 12	NA		
## 13	NA		
## 14	0.011483102		
## 15	NA		
## 16	0.044294127		
## 17	NA		
## 18	NA		
## 19	NA		
## 20	NA		
## 9	-0.035215213		
## 2	-0.019268860		
## 3	-0.139010518		
## 4	-0.133048304		
## 5	NaN		
## 21	NA		
## 6	0.022442056		

```

## 7 -0.090699441
## 23 -0.003611166
## 24 -0.003116198

baseline(d, guide = g, gtab = "gender", part = c(T,F,T))

## [META_param] testing 'measM' against 'gender' does not compute; with error:
## Error in `contrasts<-`('*tmp*', value = contr.funs[1 + isOF[nn]]): contrasts
can be applied only to factors with 2 or more levels
## [META_chisq] testing 'status' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels
## [META_chisq] testing 'measNA' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels

##           term          Variable
## 22      pid            ID
## 10    status A constant: included
## 25     index           Index
## 26      end             End
## 1       age             Age
## 8      male            Male: 1
## 11   country          Country: SW
## 12   country          \t NO
## 13   country          \t DE
## 14     area            Area: rural
## 15     area            \t urban
## 16   region           Region: A
## 17   region           \t B
## 18   region           \t C
## 19   region           \t D
## 20   region           \t E
## 9   offspring        Offspring: TRUE
## 2      kids            Kid count
## 3     measA           A measure
## 4     measB           Another measure
## 5     measM           Manly measure
## 21    measNA          Missing measure:
## 6   forgotten         forgotten
## 7   importance        importance
## 23      Foo            Foo
## 24      Bar            Bar
##
##                                     desc.info
## 22 Categorical variable: =unique values=. [n] is missing count (if applicable)
## 10 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 25           Date variables: min/max. [n] is missing count (if applicable)
## 26           Date variables: min/max. [n] is missing count (if applicable)
## 1       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 8   Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 11  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 12  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 13  Categorical variable: Count (Percent). [n] is missing count (if applicable)

```

```

## 14 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 15 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 16 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 17 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 18 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 19 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 20 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 9  Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 2   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 3   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 4   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 5   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 21 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 6   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 7   Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 23 Time-to-event variable: events; rate. [n] is missing count (if applicable)
## 24 Time-to-event variable: events; rate. [n] is missing count (if applicable)

## test.info          desc          desc      test
## 22    <NA>        =489=        =511=      NA
## 10 Chi-square      489 (100.0%)  511 (100.0%) NA
## 25  Wilcoxon       170101/181229 [1] 170102/181225 5.834804e-01
## 26  Wilcoxon       180101/191229 [1] 180102/191225 5.834804e-01
## 1   t-test          55.0 (48.0 - 63.0) 56.0 (49.0 - 62.0) 2.764903e-01
## 8   Chi-square      489 (100.0%)  0 (0%) 1.328233e-218
## 11 Chi-square      173 (35.4%)   178 (34.8%) 8.841969e-01
## 12    <NA>         168 (34.4%)  171 (33.5%) NA
## 13    <NA>         148 (30.3%)  162 (31.7%) NA
## 14 Chi-square      101 (20.7%) [2] 103 (20.3%) [3] 9.183285e-01
## 15    <NA>         386 (79.3%)  405 (79.7%) NA
## 16 Chi-square      147 (30.1%)  157 (30.7%) 9.744276e-01
## 17    <NA>         105 (21.5%)  108 (21.1%) NA
## 18    <NA>         65 (13.3%)   61 (11.9%) NA
## 19    <NA>         86 (17.6%)   93 (18.2%) NA
## 20    <NA>         86 (17.6%)   92 (18.0%) NA
## 9  Chi-square      358 (73.2%)  382 (74.8%) 6.279693e-01
## 2   t-test          1.00 (0 - 2.00) 1.00 (0 - 2.00) 7.608133e-01
## 3   t-test          26.9 (11.5 - 51.6) [5] 30.3 (12.6 - 59.1) [2] 2.908696e-02
## 4   t-test          38.7 (18.4 - 81.2) [168] 46.7 (20.3 - 89.5) [171] 8.824107e-02
## 5   t-test          33.6 (14.3 - 68.2)  - [511] NA
## 21 Chi-square      - [489]        - [511] NA
## 6   t-test          0.025 (-0.47 - 0.47) -0.023 (-0.50 - 0.51) 7.230181e-01
## 7   t-test          3.10 (1.60 - 4.60)  3.30 (1.70 - 4.75) 1.520544e-01
## 23 Log rank        92; 0.00057   109; 0.00066 3.068142e-01
## 24 Log rank        140; 0.00091  160; 0.0010  3.793844e-01

baseline(d, guide = g, gtab = "gender", part = c(F,T,T))

## [META_param] testing 'measM' against 'gender' does not compute; with error:
## Error in `contrasts<-`('*tmp*', value = contr.funs[1 + isOF[nn]]): contrasts
## can be applied only to factors with 2 or more levels

```

```

## [META_chisq] testing 'status' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels
## [META_chisq] testing 'measNA' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels

##          term      comp.info   test.info      comp       test
## 15      pid           <NA>     <NA>        NA        NA
## 10    status Standardized difference Chi-square        NA        NA
## 18    index Standardized difference Wilcoxon -0.034903068 5.834804e-01
## 19      end Standardized difference Wilcoxon -0.034903068 5.834804e-01
## 1      age Standardized difference t-test -0.068842671 2.764903e-01
## 8      male Standardized difference Chi-square           Inf 1.328233e-218
## 11    country Standardized difference Chi-square  0.031393958 8.841969e-01
## 12      area Standardized difference Chi-square  0.011483102 9.183285e-01
## 13      region Standardized difference Chi-square  0.044294127 9.744276e-01
## 9      offspring Standardized difference Chi-square -0.035215213 6.279693e-01
## 2      kids Standardized difference t-test -0.019268860 7.608133e-01
## 3      measA Standardized difference t-test -0.139010518 2.908696e-02
## 4      measB Standardized difference t-test -0.133048304 8.824107e-02
## 5      measM Standardized difference t-test           NaN        NA
## 14    measNA Standardized difference Chi-square        NA        NA
## 6      forgotten Standardized difference t-test  0.022442056 7.230181e-01
## 7      importance Standardized difference t-test -0.090699441 1.520544e-01
## 16      Foo Standardized difference Log rank -0.003611166 3.068142e-01
## 17      Bar Standardized difference Log rank -0.003116198 3.793844e-01

baseline(d, guide = g, gtab = "gender", part = c(T,T,T))

## [META_param] testing 'measM' against 'gender' does not compute; with error:
## Error in `contrasts<-`('*tmp*', value = contr.funs[1 + isOF[nn]]): contrasts
## can be applied only to factors with 2 or more levels
## [META_chisq] testing 'status' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels
## [META_chisq] testing 'measNA' against 'gender' does not compute; with error:
## Error in stats::chisq.test(x, g): 'x' and 'y' must have at least 2 levels

##          term      Variable
## 22      pid            ID
## 10    status A constant: included
## 25      index          Index
## 26      end            End
## 1      age            Age
## 8      male           Male: 1
## 11    country         Country: SW
## 12    country          \t NO
## 13    country          \t DE
## 14      area           Area: rural
## 15      area            \t urban
## 16    region          Region: A
## 17    region            \t B
## 18    region            \t C

```

```

## 19      region          \t D
## 20      region          \t E
## 9   offspring    Offspring: TRUE
## 2       kids           Kid count
## 3       measA          A measure
## 4       measB          Another measure
## 5       measM          Manly measure
## 21      measNA         Missing measure:
## 6       forgotten      forgotten
## 7       importance     importance
## 23      Foo            Foo
## 24      Bar            Bar
##
##                                         desc.info
## 22 Categorical variable: =unique values=. [n] is missing count (if applicable)
## 10 Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 25       Date variables: min/max. [n] is missing count (if applicable)
## 26       Date variables: min/max. [n] is missing count (if applicable)
## 1       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 8       Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 11      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 12      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 13      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 14      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 15      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 16      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 17      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 18      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 19      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 20      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 9       Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 2       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 3       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 4       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 5       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 21      Categorical variable: Count (Percent). [n] is missing count (if applicable)
## 6       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 7       Numeric variable: Median (Q1-Q3). [n] is missing count (if applicable)
## 23      Time-to-event variable: events; rate. [n] is missing count (if applicable)
## 24      Time-to-event variable: events; rate. [n] is missing count (if applicable)
##             comp.info  test.info          desc
## 22              <NA>    <NA>        =489=
## 10 Standardized difference Chi-square        489 (100.0%)
## 25 Standardized difference Wilcoxon      170101/181229 [1]
## 26 Standardized difference Wilcoxon      180101/191229 [1]
## 1   Standardized difference t-test        55.0 (48.0 - 63.0)
## 8   Standardized difference Chi-square        489 (100.0%)
## 11  Standardized difference Chi-square        173 (35.4%)
## 12              <NA>    <NA>        168 (34.4%)
## 13              <NA>    <NA>        148 (30.3%)
## 14 Standardized difference Chi-square        101 (20.7%) [2]

```

## 15	<NA>	<NA>	386 (79.3%)
## 16	Standardized difference	Chi-square	147 (30.1%)
## 17	<NA>	<NA>	105 (21.5%)
## 18	<NA>	<NA>	65 (13.3%)
## 19	<NA>	<NA>	86 (17.6%)
## 20	<NA>	<NA>	86 (17.6%)
## 9	Standardized difference	Chi-square	358 (73.2%)
## 2	Standardized difference	t-test	1.00 (0 - 2.00)
## 3	Standardized difference	t-test	26.9 (11.5 - 51.6) [5]
## 4	Standardized difference	t-test	38.7 (18.4 - 81.2) [168]
## 5	Standardized difference	t-test	33.6 (14.3 - 68.2)
## 21	Standardized difference	Chi-square	- [489]
## 6	Standardized difference	t-test	0.025 (-0.47 - 0.47)
## 7	Standardized difference	t-test	3.10 (1.60 - 4.60)
## 23	Standardized difference	Log rank	92; 0.00057
## 24	Standardized difference	Log rank	140; 0.00091
	desc	comp	test
## 22	=511=	NA	NA
## 10	511 (100.0%)	NA	NA
## 25	170102/181225	-0.034903068	5.834804e-01
## 26	180102/191225	-0.034903068	5.834804e-01
## 1	56.0 (49.0 - 62.0)	-0.068842671	2.764903e-01
## 8	0 (0%)	Inf	1.328233e-218
## 11	178 (34.8%)	0.031393958	8.841969e-01
## 12	171 (33.5%)	NA	NA
## 13	162 (31.7%)	NA	NA
## 14	103 (20.3%) [3]	0.011483102	9.183285e-01
## 15	405 (79.7%)	NA	NA
## 16	157 (30.7%)	0.044294127	9.744276e-01
## 17	108 (21.1%)	NA	NA
## 18	61 (11.9%)	NA	NA
## 19	93 (18.2%)	NA	NA
## 20	92 (18.0%)	NA	NA
## 9	382 (74.8%)	-0.035215213	6.279693e-01
## 2	1.00 (0 - 2.00)	-0.019268860	7.608133e-01
## 3	30.3 (12.6 - 59.1) [2]	-0.139010518	2.908696e-02
## 4	46.7 (20.3 - 89.5) [171]	-0.133048304	8.824107e-02
## 5	- [511]	NaN	NA
## 21	- [511]	NA	NA
## 6	-0.023 (-0.50 - 0.51)	0.022442056	7.230181e-01
## 7	3.30 (1.70 - 4.75)	-0.090699441	1.520544e-01
## 23	109; 0.00066	-0.003611166	3.068142e-01
## 24	160; 0.0010	-0.003116198	3.793844e-01