

Package ‘srvyr’

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Type Package

Title 'dplyr'-Like Syntax for Summary Statistics of Survey Data

Description Use piping, verbs like 'group_by' and 'summarize', and other 'dplyr' inspired syntactic style when calculating summary statistics on survey data using functions from the 'survey' package.

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Contents

as_survey	2
as_survey_design	4
as_survey_rep	7
as_survey_twophase	10
as_tibble	12
cascade	12
collect	13
cur_svy	13
cur_svy_wts	14
dplyr_filter_joins	15
get_var_est	15
groups	16
group_by	16
group_map_dfr	17
group_trim	18
interact	19
set_survey_vars	20
srvyr	20
srvyr-se-deprecated	22
srvyr_interaction	24
summarise	24
summarise_all	26
survey_corr	26
survey_mean	27
survey_old_quantile	30
survey_quantile	32
survey_ratio	33
survey_tally	35
survey_total	36
survey_var	37
sychisq	39
tbl_svy	39
tbl_vars	40
uninteract	41
unweighted	41
Index	44

as_survey

Create a tbl_svy from a data.frame

Description

as_survey can be used to create a tbl_svy using design information ([as_survey_design](#)), replicate weights ([as_survey_rep](#)), or a two phase design ([as_survey_twophase](#)), or an object created by the survey package.

Usage

```

as_survey(.data, ...)

## S3 method for class 'tbl_svy'
as_survey(.data, ...)

## S3 method for class 'data.frame'
as_survey(.data, ...)

## S3 method for class 'tbl_lazy'
as_survey(.data, ...)

## S3 method for class 'survey.design2'
as_survey(.data, ...)

## S3 method for class 'svyrep.design'
as_survey(.data, ...)

## S3 method for class 'twophase2'
as_survey(.data, ...)

```

Arguments

```

.data          a data.frame or an object from the survey package
...           other arguments, see other functions for details

```

Details

See vignette("databases", package = "dplyr") for more information on setting up databases in dplyr.

Value

a `tbl_svy`

Examples

```

# Examples from ?survey::svydesign
library(survey)
library(dplyr)
data(api)

# stratified sample
dstrata <- apistrat %>%
  as_survey(strata = stype, weights = pw)

# Examples from ?survey::svrepdesign
data(scd)
# use BRR replicate weights from Levy and Lemeshow
scd$rep1 <- 2 * c(1, 0, 1, 0, 1, 0)

```

```

scd$rep2 <- 2 * c(1, 0, 0, 1, 0, 1)
scd$rep3 <- 2 * c(0, 1, 1, 0, 0, 1)
scd$rep4 <- 2 * c(0, 1, 0, 1, 1, 0)

scdrep <- scd %>%
  as_survey(type = "BRR", repweights = starts_with("rep"),
            combined_weights = FALSE)

# Examples from ?survey::twophase
# two-phase simple random sampling.
data(pbc, package="survival")

pbc <- pbc %>%
  mutate(randomized = !is.na(trt) & trt > 0,
         id = row_number())
d2pbc <- pbc %>%
  as_survey(id = list(id, id), subset = randomized)

# dplyr 0.7 introduced new style of NSE called quosures
# See `vignette("programming", package = "dplyr")` for details
st <- quo(stype)
wt <- quo(pw)
dstrata <- apistrat %>%
  as_survey(strata = !!st, weights = !!wt)

```

as_survey_design

Create a tbl_svy survey object using sampling design

Description

Create a survey object with a survey design.

Usage

```

as_survey_design(.data, ...)

## S3 method for class 'data.frame'
as_survey_design(
  .data,
  ids = NULL,
  probs = NULL,
  strata = NULL,
  variables = NULL,
  fpc = NULL,
  nest = FALSE,
  check_strata = !nest,
  weights = NULL,
  pps = FALSE,
  variance = c("HT", "YG"),

```

```

    ...
  )

## S3 method for class 'survey.design2'
as_survey_design(.data, ...)

## S3 method for class 'tbl_lazy'
as_survey_design(
  .data,
  ids = NULL,
  probs = NULL,
  strata = NULL,
  variables = NULL,
  fpc = NULL,
  nest = FALSE,
  check_strata = !nest,
  weights = NULL,
  pps = FALSE,
  variance = c("HT", "YG"),
  ...
)

```

Arguments

<code>.data</code>	A data frame (which contains the variables specified below)
<code>...</code>	ignored
<code>ids</code>	Variables specifying cluster ids from largest level to smallest level (leaving the argument empty, NULL, 1, or 0 indicate no clusters).
<code>probs</code>	Variables specifying cluster sampling probabilities.
<code>strata</code>	Variables specifying strata.
<code>variables</code>	Variables specifying variables to be included in survey. Defaults to all variables in <code>.data</code>
<code>fpc</code>	Variables specifying a finite population correct, see svydesign for more details.
<code>nest</code>	If TRUE, relabel cluster ids to enforce nesting within strata.
<code>check_strata</code>	If TRUE, check that clusters are nested in strata.
<code>weights</code>	Variables specifying weights (inverse of probability).
<code>pps</code>	"brewer" to use Brewer's approximation for PPS sampling without replacement. "overton" to use Overton's approximation. An object of class HR to use the Hartley-Rao approximation. An object of class ppsmat to use the Horvitz-Thompson estimator.
<code>variance</code>	For pps without replacement, use variance="YG" for the Yates-Grundy estimator instead of the Horvitz-Thompson estimator

Details

If provided a data.frame, it is a wrapper around [svydesign](#). All survey variables must be included in the data.frame itself. Variables are selected by using bare column names, or convenience functions described in [select](#).

If provided a survey.design2 object from the survey package, it will turn it into a srvyr object, so that srvyr functions will work with it

Value

An object of class tbl_svy

Examples

```
# Examples from ?survey::svydesign
library(survey)
data(api)

# stratified sample
dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

# one-stage cluster sample
dclus1 <- apiclus1 %>%
  as_survey_design(dnum, weights = pw, fpc = fpc)

# two-stage cluster sample: weights computed from population sizes.
dclus2 <- apiclus2 %>%
  as_survey_design(c(dnum, snum), fpc = c(fpc1, fpc2))

## multistage sampling has no effect when fpc is not given, so
## these are equivalent.
dclus2wr <- apiclus2 %>%
  dplyr::mutate(weights = weights(dclus2)) %>%
  as_survey_design(c(dnum, snum), weights = weights)

dclus2wr2 <- apiclus2 %>%
  dplyr::mutate(weights = weights(dclus2)) %>%
  as_survey_design(c(dnum), weights = weights)

## syntax for stratified cluster sample
## (though the data weren't really sampled this way)
apistrat %>% as_survey_design(dnum, strata = stype, weights = pw,
                             nest = TRUE)

## PPS sampling without replacement
data(election)
dpps <- election_pps %>%
  as_survey_design(fpc = p, pps = "brewer")

# dplyr 0.7 introduced new style of NSE called quosures
# See `vignette("programming", package = "dplyr")` for details
```

```

st <- quo(stype)
wt <- quo(pw)
dstrata <- apistrat %>%
  as_survey_design(strata = !!st, weights = !!wt)

```

as_survey_rep

Create a tbl_svy survey object using replicate weights

Description

Create a survey object with replicate weights.

Usage

```

as_survey_rep(.data, ...)

## S3 method for class 'data.frame'
as_survey_rep(
  .data,
  variables = NULL,
  repweights = NULL,
  weights = NULL,
  type = c("BRR", "Fay", "JK1", "JKn", "bootstrap", "successive-difference", "ACS",
    "other"),
  combined_weights = TRUE,
  rho = NULL,
  bootstrap_average = NULL,
  scale = NULL,
  rscales = NULL,
  fpc = NULL,
  fpc_type = c("fraction", "correction"),
  mse = getOption("survey.replicates.mse"),
  degf = NULL,
  ...
)

## S3 method for class 'tbl_lazy'
as_survey_rep(
  .data,
  variables = NULL,
  repweights = NULL,
  weights = NULL,
  type = c("BRR", "Fay", "JK1", "JKn", "bootstrap", "successive-difference", "ACS",
    "other"),
  combined_weights = TRUE,
  rho = NULL,

```

```

bootstrap_average = NULL,
scale = NULL,
rscales = NULL,
fpc = NULL,
fpctype = c("fraction", "correction"),
mse = getOption("survey.replicates.mse"),
degf = NULL,
...
)

## S3 method for class 'svyrep.design'
as_survey_rep(.data, ...)

## S3 method for class 'survey.design2'
as_survey_rep(
  .data,
  type = c("auto", "JK1", "JKn", "BRR", "bootstrap", "subbootstrap", "mrbootstrap",
    "Fay"),
  rho = 0,
  fpc = NULL,
  fpctype = NULL,
  ...,
  compress = TRUE,
  mse = getOption("survey.replicates.mse")
)

## S3 method for class 'tbl_svy'
as_survey_rep(
  .data,
  type = c("auto", "JK1", "JKn", "BRR", "bootstrap", "subbootstrap", "mrbootstrap",
    "Fay"),
  rho = 0,
  fpc = NULL,
  fpctype = NULL,
  ...,
  compress = TRUE,
  mse = getOption("survey.replicates.mse")
)

```

Arguments

.data	A data frame (which contains the variables specified below)
...	ignored
variables	Variables to include in the design (default is all)
repweights	Variables specifying the replication weight variables
weights	Variables specifying sampling weights
type	Type of replication weights

combined_weights	TRUE if the repweights already include the sampling weights. This is usually the case.
rho	Shrinkage factor for weights in Fay's method
bootstrap_average	For type = "bootstrap", if the bootstrap weights have been averaged, gives the number of iterations averaged over.
scale, rscales	Scaling constant for variance, see svrepdesign for more information.
fpc	Variables specifying a finite population correction, see svrepdesign for more details.
fpc_type	Finite population correction information
mse	if TRUE, compute variances based on sum of squares around the point estimate, rather than the mean of the replicates
degf	Design degrees of freedom: a single number, or NULL, in which case a value will be computed automatically, which can be slow for very large data sets. See svrepdesign for more details.
compress	if TRUE, store replicate weights in compressed form (if converting from design)

Details

If provided a `data.frame`, it is a wrapper around [svrepdesign](#). All survey variables must be included in the `data.frame` itself. Variables are selected by using bare column names, or convenience functions described in [select](#).

If provided a `svyrep.design` object from the survey package, it will turn it into a `svyr` object, so that `svyr` functions will work with it

If provided a survey design (`survey.design2` or `tbl_svy`), it is a wrapper around [as.svrepdesign](#), and will convert from a survey design to replicate weights.

Value

An object of class `tbl_svy`

Examples

```
# Examples from ?survey::svrepdesign()
library(survey)
library(dplyr)
data(scd)
# use BRR replicate weights from Levy and Lemeshow
scd <- scd %>%
  mutate(rep1 = 2 * c(1, 0, 1, 0, 1, 0),
         rep2 = 2 * c(1, 0, 0, 1, 0, 1),
         rep3 = 2 * c(0, 1, 1, 0, 0, 1),
         rep4 = 2 * c(0, 1, 0, 1, 1, 0))

scdrep <- scd %>%
  as_survey_rep(type = "BRR", repweights = starts_with("rep"),
```

```

combined_weights = FALSE)

# dplyr 0.7 introduced new style of NSE called quosures
# See `vignette("programming", package = "dplyr")` for details
repwts <- quo(starts_with("rep"))
scdrep <- scd %>%
  as_survey_rep(type = "BRR", repweights = !!repwts,
                combined_weights = FALSE)

```

as_survey_twophase *Create a tbl_svy survey object using two phase design*

Description

Create a survey object by specifying the survey's two phase design. It is a wrapper around [twophase](#). All survey variables must be included in the data.frame itself. Variables are selected by using bare column names, or convenience functions described in [select](#).

Usage

```

as_survey_twophase(.data, ...)

## S3 method for class 'data.frame'
as_survey_twophase(
  .data,
  id,
  strata = NULL,
  probs = NULL,
  weights = NULL,
  fpc = NULL,
  subset,
  method = c("full", "approx", "simple"),
  ...
)

## S3 method for class 'twophase2'
as_survey_twophase(.data, ...)

```

Arguments

.data	A data frame (which contains the variables specified below)
...	ignored
id	list of two sets of variable names for sampling unit identifiers
strata	list of two sets of variable names (or NULLs) for stratum identifiers
probs	list of two sets of variable names (or NULLs) for sampling probabilities

weights	Only for method = "approx", list of two sets of variable names (or NULLs) for sampling weights
fpc	list of two sets of variables (or NULLs for finite population corrections
subset	bare name of a variable which specifies which observations are selected in phase 2
method	"full" requires (much) more memory, but gives unbiased variance estimates for general multistage designs at both phases. "simple" or "approx" use less memory, and is correct for designs with simple random sampling at phase one and stratified randoms sampling at phase two. See twophase for more details.

Value

An object of class `tbl_svy`

Examples

```
# Examples from ?survey::twophase
# two-phase simple random sampling.
data(pbc, package="survival")
library(dplyr)

pbc <- pbc %>%
  mutate(randomized = !is.na(trt) & trt > 0,
         id = row_number())
d2pbc <- pbc %>%
  as_survey_twophase(id = list(id, id), subset = randomized)

d2pbc %>% summarize(mean = survey_mean(bili))

# two-stage sampling as two-phase
library(survey)
data(mu284)

mu284_1 <- mu284 %>%
  dplyr::slice(c(1:15, rep(1:5, n2[1:5] - 3))) %>%
  mutate(id = row_number(),
         sub = rep(c(TRUE, FALSE), c(15, 34-15)))

dmu284 <- mu284 %>%
  as_survey_design(ids = c(id1, id2), fpc = c(n1, n2))
# first phase cluster sample, second phase stratified within cluster
d2mu284 <- mu284_1 %>%
  as_survey_twophase(id = list(id1, id), strata = list(NULL, id1),
                    fpc = list(n1, NULL), subset = sub)

dmu284 %>%
  summarize(total = survey_total(y1),
           mean = survey_mean(y1))
d2mu284 %>%
  summarize(total = survey_total(y1),
           mean = survey_mean(y1))
```

```
# dplyr 0.7 introduced new style of NSE called quosures
# See `vignette("programming", package = "dplyr")` for details
ids <- quo(list(id, id))
d2pbc <- pbc %>%
  as_survey_twophase(id = !!ids, subset = "randomized")
```

as_tibble	<i>Coerce survey variables to a data frame (tibble)</i>
-----------	---

Description

Coerce survey variables to a data frame (tibble)

Arguments

x	A <code>tbl_svy</code> object
---	-------------------------------

cascade	<i>Summarise multiple values into cascading groups</i>
---------	--

Description

`cascade` is similar to [summarise](#), but calculates a summary statistics for the total of a group in addition to each group. The groupings are chosen by "unpeeling" from the end of the groupings, and also expanding out interactions to all terms (eg the interactions of all combinations of subsets of variables as well as each variable on it's own).

Usage

```
cascade(.data, ..., .fill = NA, .fill_level_top = FALSE, .groupings = NULL)
```

Arguments

.data	tbl A <code>tbl_svy</code> object
...	Name-value pairs of summary functions
.fill	Value to fill in for group summaries
.fill_level_top	When filling factor variables, whether to put the value <code>'fill'</code> in the first position (defaults to <code>FALSE</code> , placing it in the bottom).
.groupings	(Experimental) A list of lists of quosures to manually specify the groupings to use, rather than the default.

Examples

```

library(survey)
data(api)

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

# Calculates the means by stype and also for the whole
# sample
dstrata %>%
  group_by(stype) %>%
  cascade(api99_mn = survey_mean(api99),
          api00_mn = survey_mean(api00),
          api_diff = survey_mean(api00 - api99))

# Calculates the proportions by the interaction of stype & awards
# as well as by each of those variable's groups alone, and finally
# the total as well
dstrata %>%
  group_by(interact(stype, awards)) %>%
  cascade(prop = survey_mean())

# Can also specify the .groupings manually, though this interface
# is a little ugly, as it requires passing a list of quosures or
# symbols you've created, rather than the usual syntax
dstrata %>%
  cascade(
    prop = survey_mean(),
    .groupings = list(rlang::quos(stype, awards), rlang::quos(NULL))
  )

```

collect*Force computation of a database query*

Description

collect retrieves data from a database query (and when run on a `tbl_svy` object adjusts weights accordingly). Use `collect` when you want to run a function from the `survey` package on a `srvyr` db backed object. `compute` stores results in a remote temporary table.

cur_svy*Get the survey data for the current context*

Description

This is a helper to allow `srvyr`'s syntactic style. In particular, it tells functions inside of a `summarize` call what survey to use (for the current group with `cur_svy()` or the complete survey for `cur_svy_full()`). In general, users will not have to worry about getting (or setting) the current context's survey, unless they are trying to extend `srvyr`. See `vignette("extending-srvyr")` for more details. `current_svy()` is deprecated, but returns the same value as `cur_svy()`.

Usage

```
cur_svy()

cur_svy_full()

current_svy()
```

Value

a `tbl_svy` (or error if called with no survey context)

<code>cur_svy_wts</code>	<i>Get the full-sample weights for the current context</i>
--------------------------	--

Description

This is a helper to allow `srvyr`'s syntactic style. This function allows quick access to the full-sample weights for the current group, using `cur_svy_wts()`. See `vignette("extending-srvyr")` for more details.

Usage

```
cur_svy_wts()
```

Value

a numeric vector containing full-sample weights

Examples

```
data(api, package = 'survey')

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarize(sum_of_weights = sum(cur_svy_wts()),
            kish_deff = var(cur_svy_wts())/(mean(cur_svy_wts())^2))
```

dplyr_filter_joins *Filtering joins from dplyr*

Description

These are data manipulation functions designed to work on a `tbl_svy` object and another data frame or `tbl_svy` object.

Details

`semi_join` and `anti_join` filter certain observations from a `tbl_svy` depending on the presence or absence of matches in another table. See [filter-joins](#) for more details.

Mutating joins (`full_join`, `left_join`, etc.) are not implemented for any `tbl_svy` objects. These data manipulations may require modifications to the survey variable specifications and so cannot be done automatically. Instead, use `dplyr` to perform them while the data is still stored in `data.frames`.

get_var_est *Get the variance estimates for a survey estimate*

Description

This is a helper to allow `srvyr`'s syntactic style. In general, users will not have to worry about getting survey variance estimates directly unless they are trying to extend `srvyr`. This function helps convert from the result of a survey function into a `data.frame` with an estimate and measures of variance around it in a way that summarize expects. See `vignette("extending-srvyr")` for more details.

Usage

```
get_var_est(
  stat,
  vartype,
  level = 0.95,
  df = Inf,
  pre_calc_ci = FALSE,
  deff = FALSE
)
```

Arguments

<code>stat</code>	A survey statistic object, usually the result of a function from the survey package or <code>svyby</code> .
<code>vartype</code>	A vector indicating which variance estimates to calculate (options are <code>se</code> for standard error, <code>ci</code> for confidence interval, <code>var</code> for variance or <code>cv</code> for coefficient of variation). Multiples are allowed.

level	One or more levels to calculate a confidence interval.
df	Degrees of freedom, many survey functions default to Inf, but svyr functions generally default to the result of calling degf on the survey object.
pre_calc_ci	Whether the confidence interval is pre-calculated (as in svycirop)
deff	Whether to return the design effect (calculated using survey::deff)

Value

a tbl_svy with the variables modified

groups	<i>Get/set the grouping variables for tbl.</i>
--------	--

Description

These functions do not perform non-standard evaluation, and so are useful when programming against tbl objects. ungroup is a convenient inline way of removing existing grouping.

Arguments

x data `tbl_df` or `tbl_svy` object.

See Also

[groups](#) for information.

group_by	<i>Group a (survey) dataset by one or more variables.</i>
----------	---

Description

Most data operations are useful when done on groups defined by variables in the dataset. The `group_by` function takes an existing table (or `svy_table`) and converts it to a grouped version, where operations are performed "by group".

Arguments

.data	A tbl
...	variables to group by. All tbls accept variable names, some will also accept functions of variables. Duplicated groups will be silently dropped.
add	By default, when <code>add = FALSE</code> , <code>group_by</code> will override existing groups. To instead add to the existing groups, use <code>add = TRUE</code>
.dots	Used to work around non-standard evaluation. See <code>vignette("nse", package = "dplyr")</code> for details.

Details

See [group_by](#) for more information about grouping regular data tables.

On `tbl_svy` objects, `group_by` sets up the object for operations similar to those allowed in [svyby](#).

See Also

[group_by](#) for information about `group_by` on normal data tables.

Examples

```
# Examples of svy_tbl group_by
library(survey)
data(api)
dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw) %>%
  group_by(stype)

dstrata %>%
  summarise(api_diff = survey_mean(api00 - api99))
```

<code>group_map_dfr</code>	<i>Apply a function to each group</i>
----------------------------	---------------------------------------

Description

`group_map()`, `group_walk` and `group_map_dfr` are purrr-style functions that can be used to iterate on grouped survey objects (note that `group_map_dfr` replaces `dplyr::group_modify` because we are changing the data from a `tbl_svy` to a regular tibble).

Usage

```
group_map_dfr(.data, .f, ..., .keep = FALSE)
```

```
## S3 method for class 'tbl_svy'
group_map(.data, .f, ..., .keep = FALSE)
```

```
group_map_dfr(.data, .f, ..., .keep = FALSE)
```

Arguments

<code>.data</code>	A <code>tbl_svy</code> object
<code>.f</code>	A function or purrr-style formula to apply to each group
<code>...</code>	Other arguments passed to <code>.f</code>
<code>.keep</code>	Whether the grouping variables are kept when passed into <code>.f</code>

Value

For `group_map` a list, for `group_map_dfr` a `'tbl_df'`, and for `group_walk` invisibly the original `tbl_svy`.

Examples

```
data(api, package = "survey")
dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

results <- dstrata %>%
  group_by(both) %>%
  group_map(~survey::svyglm(api00~api99 + stype, .))

# group_map_dfr calls `bind_rows` on the list returned and includes
# grouping variables. This is most useful with a package like `broom`
# but could also be used with survey package functions.
result_coef <- dstrata %>%
  group_by(both) %>%
  group_map_dfr(
    ~data.frame(
      api99_coef = coef(survey::svyglm(api00~api99 + stype, .))["api99"]
    )
  )
```

group_trim

Single table verbs from dplyr and tidy

Description

These are data manipulation functions designed to work on `tbl_svy` objects.

Details

`mutate` and `transmute` can add or modify variables. See [mutate](#) for more details.

`select`, `rename`, and `rename_with` keep or rename variables. See [select](#) for more details.

`pull` extracts a variable as a vector (whereas `select` returns a `tbl_svy`). See [pull](#) for more details.

`filter` keeps certain observations. See [filter](#) for more details.

`#'` `drop_na` drops observations containing missing values. See [drop_na](#) for more details.

`arrange` is not implemented for `tbl_svy` objects. Nor are any two table verbs such as `bind_rows`, `bind_cols` or any of the joins (`full_join`, `left_join`, etc.). These data manipulations may require modifications to the survey variable specifications and so cannot be done automatically. Instead, use `dplyr` to perform them while the data is still stored in `data.frames`.

`interact`*Create interaction terms to group by when summarizing*

Description

Allows multiple grouping by multiple variables as if they were a single variable, which allows calculating proportions that sum to 100 more than a single grouping variable with `survey_mean`.

Usage

```
interact(...)
```

Arguments

... variables to group by. All types of `tbls` accept variable names, and most will also accept functions of variables (though some database-backed `tbls` do not allow creating variables).

Details

Behind the scenes, this function creates a special column type that is split back into the component columns automatically by `summarize`.

Value

A vector of type `srvyr_interaction`, which is generally expected to be automatically split apart.

Examples

```
data(api, package = "survey")

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

# The sum of the whole prop column is equal to 100%
dstrata %>%
  group_by(interact(stype, awards)) %>%
  summarize(prop = survey_mean())

# But if you didn't interact, the sum of each stype's prop is 100%
dstrata %>%
  group_by(stype, awards) %>%
  summarize(prop = survey_mean())
```

set_survey_vars	<i>Set the variables for the current survey variable</i>
-----------------	--

Description

This is a helper to allow `srvyr`'s syntactic style. In general, users will not have to worry about setting variables in a survey object unless they are trying to extend `srvyr`. This function helps convert a vector to a variable in the correct part of a survey object's structure so that functions can refer to it using the survey package's formula notation. See `vignette("extending-srvyr")` for more details.

Usage

```
set_survey_vars(.svy, x, name = "__SRVYR_TEMP_VAR__", add = FALSE)
```

Arguments

<code>.svy</code>	A survey object
<code>x</code>	A vector to be included in the variables portion of the survey object
<code>name</code>	The name of the variable once it is added. Defaults to ' <code>__SRVYR_TEMP_VAR__</code> ', which is formatted weirdly to avoid name collisions.
<code>add</code>	FALSE, the default, overwrite all current variables. If TRUE, will add this variable instead.

Value

a `tbl_svy` with the variables modified

srvyr	<i>srvyr: A package for 'dplyr'-Like Syntax for Summary Statistics of Survey Data.</i>
-------	--

Description

The `srvyr` package provides a new way of calculating summary statistics on survey data, based on the `dplyr` package. There are three stages to using `srvyr` functions, creating a survey object, manipulating the data, and calculating survey statistics.

Functions to create a survey object

`as_survey_design`, `as_survey_rep`, and `as_survey_twophase` are used to create surveys based on a `data.frame` and design variables, replicate weights or two phase design respectively. Each is based on a function in the survey package (`svydesign`, `svrepdesign`, `twophase`), and it is easy to modify code that uses the survey package so that it works with the `srvyr` package. See `vignette("srvyr_vs_survey")` for more details.

The function `as_survey` will choose between the other three functions based on the arguments given to save some typing.

Functions to manipulate data in a survey object

Once you've created a survey object, you can manipulate the data as you would using `dplyr` with a `data.frame`. `mutate` modifies or creates a variable, `select` and `rename` select or rename variables, and `filter` keeps certain observations.

Note that `arrange` and two table verbs such as `bind_rows`, `bind_cols`, or any of the joins are not usable on survey objects because they might require modifications to the definition of your survey. If you need to use these functions, you should do so before you convert the `data.frame` to a survey object.

Functions to summarize a survey object

Now that you have your data set up correctly, you can calculate summary statistics. To get the statistic over the whole population, use `summarise`, or to calculate it over a set of groups, use `group_by` first.

You can calculate the mean, (with `survey_mean`), the total (`survey_total`), the quantile (`survey_quantile`), or a ratio (`survey_ratio`). By default, `srvyr` will return the statistic and the standard error around it in a `data.frame`, but with the `vartype` parameter, you can also get a confidence interval ("ci"), variance ("var"), or coefficient of variation ("cv").

Within `summarise`, you can also use `unweighted`, which calculates a function without taking into consideration the survey weighting.

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See Also

Useful links:

- <http://gdfe.co/srvyr/>
- <https://github.com/gergness/srvyr/>
- Report bugs at <https://github.com/gergness/srvyr/issues>

srvyr-se-deprecated *Deprecated SE versions of main srvyr verbs*

Description

srvyr has updated its standard evaluation semantics to match dplyr 0.7, so these underscore functions are no longer required (but are still supported for backward compatibility reasons). As the dplyr package has removed support for underscore functions, srvyr will soon.

Usage

```
as_survey_(.data, ...)
```

```
as_survey_design_(  
  .data,  
  ids = NULL,  
  probs = NULL,  
  strata = NULL,  
  variables = NULL,  
  fpc = NULL,  
  nest = FALSE,  
  check_strata = !nest,  
  weights = NULL,  
  pps = FALSE,  
  variance = c("HT", "YG")  
)
```

```
as_survey_rep_(  
  .data,  
  variables = NULL,  
  repweights = NULL,  
  weights = NULL,  
  type = c("BRR", "Fay", "JK1", "JKn", "bootstrap", "successive-difference", "ACS",  
           "other"),  
  combined_weights = TRUE,  
  rho = NULL,  
  bootstrap_average = NULL,  
  scale = NULL,  
  rscales = NULL,  
  fpc = NULL,  
  fpc_type = c("fraction", "correction"),  
  mse = getOption("survey.replicates.mse")  
)
```

```
as_survey_twophase_(  
  .data,  
  id,
```

```

    strata = NULL,
    probs = NULL,
    weights = NULL,
    fpc = NULL,
    subset,
    method = c("full", "approx", "simple")
  )

  cascade_(.data, ..., .dots, .fill = NA)

```

Arguments

<code>.data</code>	a data.frame or an object from the survey package
<code>...</code>	other arguments, see other functions for details
<code>ids</code>	Variables specifying cluster ids from largest level to smallest level (leaving the argument empty, NULL, 1, or 0 indicate no clusters).
<code>probs</code>	Variables specifying cluster sampling probabilities.
<code>strata</code>	Variables specifying strata.
<code>variables</code>	Variables specifying variables to be included in survey. Defaults to all variables in <code>.data</code>
<code>fpc</code>	Variables specifying a finite population correct, see svydesign for more details.
<code>nest</code>	If TRUE, relabel cluster ids to enforce nesting within strata.
<code>check_strata</code>	If TRUE, check that clusters are nested in strata.
<code>weights</code>	Variables specifying weights (inverse of probability).
<code>pps</code>	"brewer" to use Brewer's approximation for PPS sampling without replacement. "overton" to use Overton's approximation. An object of class HR to use the Hartley-Rao approximation. An object of class ppsmat to use the Horvitz-Thompson estimator.
<code>variance</code>	For pps without replacement, use <code>variance="YG"</code> for the Yates-Grundy estimator instead of the Horvitz-Thompson estimator
<code>repweights</code>	Variables specifying the replication weight variables
<code>type</code>	Type of replication weights
<code>combined_weights</code>	TRUE if the <code>repweights</code> already include the sampling weights. This is usually the case.
<code>rho</code>	Shrinkage factor for weights in Fay's method
<code>bootstrap_average</code>	For <code>type = "bootstrap"</code> , if the bootstrap weights have been averaged, gives the number of iterations averaged over.
<code>scale, rscales</code>	Scaling constant for variance, see svrepdesign for more information.
<code>fpc_type</code>	Finite population correction information
<code>mse</code>	if TRUE, compute variances based on sum of squares around the point estimate, rather than the mean of the replicates

<code>id</code>	list of two sets of variable names for sampling unit identifiers
<code>subset</code>	bare name of a variable which specifies which observations are selected in phase 2
<code>method</code>	"full" requires (much) more memory, but gives unbiased variance estimates for general multistage designs at both phases. "simple" or "approx" use less memory, and is correct for designs with simple random sampling at phase one and stratified random sampling at phase two. See twophase for more details.
<code>.dots</code>	Used to work around non-standard evaluation. See <code>vignette("nse", package = "dplyr")</code> for details.
<code>.fill</code>	Value to fill in for group summaries

<code>srvyr_interaction</code>	<i>srvyr interaction column</i>
--------------------------------	---------------------------------

Description

`srvyr_interaction` columns help calculate proportions of the interaction of 2 or more variables. They are created by [interact](#), generally used as grouping variables in [group_by](#) and then automatically split apart by [summarise](#).

<code>summarise</code>	<i>Summarise multiple values to a single value.</i>
------------------------	---

Description

Summarise multiple values to a single value.

Arguments

<code>.data</code>	tbl A <code>tbl_svy</code> object
<code>...</code>	Name-value pairs of summarizing expressions, see details
<code>.groups</code>	Defaults to "drop_last" in <code>srvyr</code> meaning that the last group is peeled off, but if there are more groups they will be preserved. Other options are "drop", which drops all groups, "keep" which keeps all of them and "rowwise" which converts the object to a rowwise object (meaning calculations will be performed on each row).
<code>.unpack</code>	Whether to "unpack" named <code>data.frame</code> columns. <code>srvyr</code> predates <code>dplyr</code> 's support for <code>data.frame</code> columns so it does not treat them the same way by default.

Details

Summarise for `tbl_svy` objects accepts several specialized functions. Each of the functions a variable (or two, in the case of `survey_ratio`), from the `data.frame` and default to providing the measure and its standard error.

The argument `vartype` can choose one or more measures of uncertainty, `se` for standard error, `ci` for confidence interval, `var` for variance, and `cv` for coefficient of variation. `level` specifies the level for the confidence interval.

The other arguments correspond to the analogous function arguments from the `survey` package.

The available functions from `srvyr` are:

`survey_mean` Calculate the mean of a numeric variable or the proportion falling into groups for the entire population or by groups. Based on `svymean` and `svyciprop`.

`survey_total` Calculate the survey total of the entire population or by groups. Based on `svytotal`.

`survey_prop` Calculate the proportion of the entire population or by groups. Based on `svyciprop`.

`survey_ratio` Calculate the ratio of 2 variables in the entire population or by groups. Based on `svyratio`.

`survey_quantile` & `survey_median` Calculate quantiles in the entire population or by groups. Based on `svyquantile`.

`unweighted` Calculate an unweighted estimate as you would on a regular `tbl_df`. Based on `dplyr`'s `summarise`.

You can use expressions both in the `...` of `summarise` and also in the arguments to the summarizing functions. Though this is valid syntactically it can also allow you to calculate incorrect results (for example if you multiply the mean by 100, the standard error is also multiplied by 100, but the variance is not).

Examples

```
data(api, package = "survey")

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarise(api99_mn = survey_mean(api99),
            api00_mn = survey_mean(api00),
            api_diff = survey_mean(api00 - api99))

dstrata_grp <- dstrata %>%
  group_by(stype)

dstrata_grp %>%
  summarise(api99_mn = survey_mean(api99),
            api00_mn = survey_mean(api00),
            api_diff = survey_mean(api00 - api99))

# `dplyr::across` can be used to programmatically summarize multiple columns
# See https://dplyr.tidyverse.org/articles/colwise.html for details
```

```

# A basic example of working on 2 columns at once and then calculating the total
# the mean
total_vars <- c("enroll", "api.stu")
dstrata %>%
  summarize(across(c(all_of(total_vars)), survey_total))

# Expressions are allowed in summarize arguments & inside functions
# Here we can calculate binary variable on the fly and also multiply by 100 to
# get percentages
dstrata %>%
  summarize(api99_over_700_pct = 100 * survey_mean(api99 > 700))

# But be careful, the variance doesn't scale the same way, so this is wrong!
dstrata %>%
  summarize(api99_over_700_pct = 100 * survey_mean(api99 > 700, vartype = "var"))
# Wrong variance!

```

summarise_all	<i>Manipulate multiple columns.</i>
---------------	-------------------------------------

Description

See [summarize_all](#) for more details. *_each functions will be deprecated in favor of *_all/*_if/*_at functions.

survey_corr	<i>Calculate correlation and its variation using survey methods</i>
-------------	---

Description

Calculate correlation from complex survey data. A wrapper around [svyvar](#). `survey_corr` should always be called from [summarise](#). Note this is Pearson's correlation.

Usage

```

survey_corr(
  x,
  y,
  na.rm = FALSE,
  vartype = c("se", "ci", "var", "cv"),
  level = 0.95,
  df = NULL,
  ...
)

```

Arguments

x	A variable or expression
y	A variable or expression
na.rm	A logical value to indicate whether missing values should be dropped
vartype	NULL to report no variability. Otherwise one or more of: standard error ("se", the default), confidence interval ("ci"), variance ("var") or coefficient of variation ("cv").
level	(For vartype = "ci" only) A single number or vector of numbers indicating the confidence level
df	(For vartype = "ci" only) A numeric value indicating the degrees of freedom for t-distribution. The default (NULL) uses degf, but Inf is the usual survey package's default
...	Ignored

Examples

```
data('api', package = 'survey')

apisrs %>%
  as_survey_design(.ids = 1) %>%
  summarize(api_corr = survey_corr(x = api00, y = api99))

apisrs %>%
  as_survey_design(.ids = 1) %>%
  group_by(sch.wide) %>%
  summarize(
    api_emer_corr = survey_corr(x = api00, y = emer, na.rm=TRUE, vartype="ci")
  )
```

 survey_mean

Calculate mean/proportion and its variation using survey methods

Description

Calculate means and proportions from complex survey data. `survey_mean` with `proportion = FALSE` (the default) or `survey_prop` with `proportion = FALSE` is a wrapper around `svymean`. `survey_prop` with `proportion = TRUE` (the default) or `survey_mean` with `proportion = TRUE` is a wrapper around `svyciprop`. `survey_mean` and `survey_prop` should always be called from `summarise`.

Usage

```
survey_mean(
  x,
  na.rm = FALSE,
  vartype = c("se", "ci", "var", "cv"),
  level = 0.95,
```

```

    proportion = FALSE,
    prop_method = c("logit", "likelihood", "asin", "beta", "mean", "xlogit"),
    deff = FALSE,
    df = NULL,
    ...
)

survey_prop(
  vartype = c("se", "ci", "var", "cv"),
  level = 0.95,
  proportion = TRUE,
  prop_method = c("logit", "likelihood", "asin", "beta", "mean", "xlogit"),
  deff = FALSE,
  df = NULL,
  ...
)

```

Arguments

<code>x</code>	A variable or expression, or empty
<code>na.rm</code>	A logical value to indicate whether missing values should be dropped. See the section "Missing Values" later in this help page.
<code>vartype</code>	Report variability as one or more of: standard error ("se", default), confidence interval ("ci"), variance ("var") or coefficient of variation ("cv").
<code>level</code>	(For <code>vartype = "ci"</code> only) A single number or vector of numbers indicating the confidence level
<code>proportion</code>	Use methods to calculate the proportion that may have more accurate confidence intervals near 0 and 1. Based on svyciprop .
<code>prop_method</code>	Type of proportion method to use if <code>proportion</code> is TRUE. See svyciprop for details.
<code>deff</code>	A logical value to indicate whether the design effect should be returned.
<code>df</code>	(For <code>vartype = "ci"</code> only) A numeric value indicating the degrees of freedom for t-distribution. The default (NULL) uses degf , but Inf is the usual survey package's default (except in svyciprop).
<code>...</code>	Ignored

Details

Using `survey_prop` is equivalent to leaving out the `x` argument in `survey_mean` and setting `proportion = TRUE` and this calculates the proportion represented within the data, with the last grouping variable "unpeeled". [interact](#) allows for "unpeeling" multiple variables at once.

Missing Values

When calculating proportions for a grouping variable `x`, NA values will affect the estimated proportions unless they are first removed by calling `filter(!is.na(x))`.

When calculating means for a numeric variable, equivalent results are obtained by calling `filter(!is.na(x))` or using `survey_mean(x, na.rm = TRUE)`. However, it is better to use `survey_mean(x, na.rm = TRUE)` if you are simultaneously producing summaries for other variables that might not have missing values for the same rows as `x`.

Examples

```
data(api, package = "survey")

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarise(api99_mn = survey_mean(api99),
            api_diff = survey_mean(api00 - api99, vartype = c("ci", "cv")))

dstrata %>%
  group_by(awards) %>%
  summarise(api00 = survey_mean(api00))

# Use `survey_prop` calculate the proportion in each group
dstrata %>%
  group_by(awards) %>%
  summarise(pct = survey_prop())

# Or you can also leave out `x` in `survey_mean`, so this is equivalent
dstrata %>%
  group_by(awards) %>%
  summarise(pct = survey_mean())

# When there's more than one group, the last group is "peeled" off and proportions are
# calculated within that group, each adding up to 100%.
# So in this example, the sum of prop is 200% (100% for awards=="Yes" &
# 100% for awards=="No")
dstrata %>%
  group_by(stype, awards) %>%
  summarize(prop = survey_prop())

# The `interact` function can help you calculate the proportion over
# the interaction of two or more variables
# So in this example, the sum of prop is 100%
dstrata %>%
  group_by(interact(stype, awards)) %>%
  summarize(prop = survey_prop())

# Setting proportion = TRUE uses a different method for calculating confidence intervals
dstrata %>%
  summarise(high_api = survey_mean(api00 > 875, proportion = TRUE, vartype = "ci"))

# level takes a vector for multiple levels of confidence intervals
dstrata %>%
  summarise(api99 = survey_mean(api99, vartype = "ci", level = c(0.95, 0.65)))
```

```

# Note that the default degrees of freedom in srvyr is different from
# survey, so your confidence intervals might not be exact matches. To
# Replicate survey's behavior, use df = Inf
dstrata %>%
  summarise(srvyr_default = survey_mean(api99, vartype = "ci"),
            survey_default = survey_mean(api99, vartype = "ci", df = Inf))

comparison <- survey::svymean(~api99, dstrata)
confint(comparison) # survey's default
confint(comparison, df = survey::degf(dstrata)) # srvyr's default

```

survey_old_quantile *Calculate the quantile and its variation using survey methods*

Description

Calculate quantiles from complex survey data. A wrapper around `oldsvyquantile`, which is a version of the function from before version 4.1 of the `survey` package, available for backwards compatibility. `survey_old_quantile` and `survey_old_median` should always be called from `summarise`. See Thomas Lumley's blogpost <<https://notstatschat.rbind.io/2021/07/20/what-s-new-in-the-survey-package/>> for more details.

Usage

```

survey_old_quantile(
  x,
  quantiles,
  na.rm = FALSE,
  vartype = c("se", "ci", "var", "cv"),
  level = 0.95,
  q_method = "linear",
  f = 1,
  interval_type = c("Wald", "score", "betaWald", "probability", "quantile"),
  ties = c("discrete", "rounded"),
  df = NULL,
  ...
)

survey_old_median(
  x,
  na.rm = FALSE,
  vartype = c("se", "ci"),
  level = 0.95,
  q_method = "linear",
  f = 1,
  interval_type = c("Wald", "score", "betaWald", "probability", "quantile"),

```

```

    ties = c("discrete", "rounded"),
    df = NULL,
    ...
  )

```

Arguments

x	A variable or expression
quantiles	A vector of quantiles to calculate
na.rm	A logical value to indicate whether missing values should be dropped
vartype	NULL to report no variability (default), otherwise one or more of: standard error ("se") confidence interval ("ci") (variance and coefficient of variation not available).
level	A single number indicating the confidence level (only one level allowed)
q_method	See "method" in approxfun
f	See approxfun
interval_type	See oldsvyquantile
ties	See oldsvyquantile
df	A number indicating the degrees of freedom for t-distribution. The default, Inf uses the normal distribution (matches the survey package). Also, has no effect for type = "betaWald".
...	Ignored

Examples

```

library(survey)
data(api)

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarise(api99 = survey_old_quantile(api99, c(0.25, 0.5, 0.75)),
            api00 = survey_old_median(api00, vartype = c("ci")))

dstrata %>%
  group_by(awards) %>%
  summarise(api00 = survey_old_median(api00))

```

survey_quantile	<i>Calculate the quantile and its variation using survey methods</i>
-----------------	--

Description

Calculate quantiles from complex survey data. A wrapper around [svyquantile](#). `survey_quantile` and `survey_median` should always be called from [summarise](#).

Usage

```
survey_quantile(
  x,
  quantiles,
  na.rm = FALSE,
  vartype = c("se", "ci", "var", "cv"),
  level = 0.95,
  interval_type = c("mean", "beta", "xlogit", "asin", "score", "quantile"),
  qrule = c("math", "school", "shahvaish", "hf1", "hf2", "hf3", "hf4", "hf5", "hf6",
    "hf7", "hf8", "hf9"),
  df = NULL,
  ...
)

survey_median(
  x,
  na.rm = FALSE,
  vartype = c("se", "ci", "var", "cv"),
  level = 0.95,
  interval_type = c("mean", "beta", "xlogit", "asin", "score", "quantile"),
  qrule = c("math", "school", "shahvaish", "hf1", "hf2", "hf3", "hf4", "hf5", "hf6",
    "hf7", "hf8", "hf9"),
  df = NULL,
  ...
)
```

Arguments

<code>x</code>	A variable or expression
<code>quantiles</code>	A vector of quantiles to calculate
<code>na.rm</code>	A logical value to indicate whether missing values should be dropped
<code>vartype</code>	NULL to report no variability. Otherwise one or more of: standard error ("se", the default), confidence interval ("ci"), variance ("var") or coefficient of variation ("cv").
<code>level</code>	A single number indicating the confidence level (only one level allowed). Note that this may effect estimated standard errors (see svyquantile details on alpha, which equals 1-level).

interval_type	See svyquantile . Note that interval_type = "quantile" is only available for replicate designs, and interval_type = "score" is unavailable for replicate designs.
qrule	See svyquantile
df	A number indicating the degrees of freedom for t-distribution. The default, NULL, uses the design degrees of freedom (matches the survey package).
...	Ignored

Details

Note that the behavior of these functions has changed in srvyr version 1.1, but the old functions are still (currently) supported as [survey_old_quantile](#) and [survey_old_median](#) if you need to replicate the old results. For more details about what has changed, see Thomas Lumley's blog post on the changes, available here: <https://notstatschat.rbind.io/2021/07/20/what-s-new-in-the-survey-package/>

Examples

```
library(survey)
data(api)

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarise(api99 = survey_quantile(api99, c(0.25, 0.5, 0.75)),
            api00 = survey_median(api00, vartype = c("ci")))

dstrata %>%
  group_by(awards) %>%
  summarise(api00 = survey_median(api00))
```

survey_ratio

Calculate the ratio and its variation using survey methods

Description

Calculate ratios from complex survey data. A wrapper around [svyratio](#). `survey_ratio` should always be called from [summarise](#).

Usage

```
survey_ratio(
  numerator,
  denominator,
  na.rm = FALSE,
  vartype = c("se", "ci", "var", "cv"),
```

```

    level = 0.95,
    deff = FALSE,
    df = NULL,
    ...
  )

```

Arguments

numerator	The numerator of the ratio
denominator	The denominator of the ratio
na.rm	A logical value to indicate whether missing values should be dropped
vartype	Report variability as one or more of: standard error ("se", default), confidence interval ("ci"), variance ("var") or coefficient of variation ("cv").
level	A single number or vector of numbers indicating the confidence level
deff	A logical value to indicate whether the design effect should be returned.
df	(For vartype = "ci" only) A numeric value indicating the degrees of freedom for t-distribution. The default (NULL) uses <code>degf</code> , but <code>Inf</code> is the usual survey package's default (except in <code>svyciprop</code>).
...	Ignored

Examples

```

library(survey)
data(api)

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarise(enroll = survey_ratio(api00, api99, vartype = c("ci", "cv")))

dstrata %>%
  group_by(awards) %>%
  summarise(api00 = survey_ratio(api00, api99))

# level takes a vector for multiple levels of confidence intervals
dstrata %>%
  summarise(enroll = survey_ratio(api99, api00, vartype = "ci", level = c(0.95, 0.65)))

# Note that the default degrees of freedom in srvyr is different from
# survey, so your confidence intervals might not exactly match. To
# replicate survey's behavior, use df = Inf
dstrata %>%
  summarise(srvyr_default = survey_total(api99, vartype = "ci"),
            survey_default = survey_total(api99, vartype = "ci", df = Inf))

comparison <- survey::svytotal(~api99, dstrata)
confint(comparison) # survey's default
confint(comparison, df = survey::degf(dstrata)) # srvyr's default

```

survey_tally

*Count/tally survey weighted observations by group***Description**

Analogous to [tally](#) and [count](#), calculates the survey weighted count of observations. `survey_tally` will call [survey_total](#) empty (resulting in the count of each group) or on `wt` if it is specified (resulting in the survey weighted total of `wt`). `survey_count` is similar, but calls `group_by` before calculating the count and then returns the data to the original groupings.

Usage

```
survey_tally(
  x,
  wt,
  sort = FALSE,
  name = "n",
  vartype = c("se", "ci", "var", "cv")
)

survey_count(
  x,
  ...,
  wt = NULL,
  sort = FALSE,
  name = "n",
  .drop = dplyr::group_by_drop_default(x),
  vartype = c("se", "ci", "var", "cv")
)
```

Arguments

<code>x</code>	A <code>tbl_svy</code> object, as created by <code>as_survey</code> and related functions.
<code>wt</code>	(Optional) A variable to weight on (in addition to the survey weights, which are always used). If left unspecified, <code>tally()</code> will use a variable named "n" if one exists, but <code>count()</code> will not. Override this behavior by specifying <code>wt = NULL</code> .
<code>sort</code>	Whether to sort the results (defaults to <code>FALSE</code>)
<code>name</code>	Name of count variable created (defaults to <code>n</code>). If the variable already exists, will add "n" to the end until it does not.
<code>vartype</code>	What types variation estimates to calculate, passed to survey_total .
<code>...</code>	Variables to group by, passed to <code>group_by()</code> .
<code>.drop</code>	When <code>.drop = TRUE</code> , empty groups are dropped, see group_by documentation for more details.

Details

If `n` already exists, `tally` will use it as the weight, but `count` will not.

Examples

```
library(survey)
data(api)

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  group_by(awards) %>%
  survey_tally()

dstrata %>%
  survey_count(awards)
```

survey_total

Calculate the total and its variation using survey methods

Description

Calculate totals from complex survey data. A wrapper around `svytotal`. `survey_total` should always be called from `summarise`.

Usage

```
survey_total(
  x,
  na.rm = FALSE,
  vartype = c("se", "ci", "var", "cv"),
  level = 0.95,
  deff = FALSE,
  df = NULL,
  ...
)
```

Arguments

<code>x</code>	A variable or expression, or empty
<code>na.rm</code>	A logical value to indicate whether missing values should be dropped
<code>vartype</code>	Report variability as one or more of: standard error ("se", default), confidence interval ("ci"), variance ("var") or coefficient of variation ("cv").
<code>level</code>	A single number or vector of numbers indicating the confidence level
<code>deff</code>	A logical value to indicate whether the design effect should be returned.

`df` (For `vartype = "ci"` only) A numeric value indicating the degrees of freedom for t-distribution. The default (NULL) uses `degf`, but `Inf` is the usual survey package's default.

`...` Ignored

Examples

```
library(survey)
data(api)

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarise(enroll_tot = survey_total(enroll),
            tot_meals = survey_total(enroll * meals / 100, vartype = c("ci", "cv")))

dstrata %>%
  group_by(awards) %>%
  summarise(api00 = survey_total(enroll))

# Leave x empty to calculate the total in each group
dstrata %>%
  group_by(awards) %>%
  summarise(pct = survey_total())

# level takes a vector for multiple levels of confidence intervals
dstrata %>%
  summarise(enroll = survey_total(enroll, vartype = "ci", level = c(0.95, 0.65)))

# Note that the default degrees of freedom in srvyr is different from
# survey, so your confidence intervals might not exactly match. To
# replicate survey's behavior, use df = Inf
dstrata %>%
  summarise(srvyr_default = survey_total(api99, vartype = "ci"),
            survey_default = survey_total(api99, vartype = "ci", df = Inf))

comparison <- survey::svytotal(~api99, dstrata)
confint(comparison) # survey's default
confint(comparison, df = survey::degf(dstrata)) # srvyr's default
```

survey_var	<i>Calculate the population variance and its variation using survey methods</i>
------------	---

Description

Calculate population variance from complex survey data. A wrapper around `svyvar`. `survey_var` should always be called from `summarise`.

Usage

```

survey_var(
  x,
  na.rm = FALSE,
  vartype = c("se", "ci", "var"),
  level = 0.95,
  df = NULL,
  ...
)

survey_sd(x, na.rm = FALSE, ...)

```

Arguments

<code>x</code>	A variable or expression, or empty
<code>na.rm</code>	A logical value to indicate whether missing values should be dropped
<code>vartype</code>	Report variability as one or more of: standard error ("se", default) or variance ("var") (confidence intervals and coefficient of variation not available).
<code>level</code>	(For <code>vartype = "ci"</code> only) A single number or vector of numbers indicating the confidence level.
<code>df</code>	(For <code>vartype = "ci"</code> only) A numeric value indicating the degrees of freedom for t-distribution. The default (Inf) is equivalent to using normal distribution and in case of population variance statistics there is little reason to use any other values (see <i>Details</i>).
<code>...</code>	Ignored

Details

Be aware that confidence intervals for population variance statistic are computed by package *survey* using *t* or normal (with `df=Inf`) distribution (i.e. symmetric distributions). **This could be a very poor approximation** if even one of these conditions is met:

- there are few sampling design degrees of freedom,
- analyzed variable isn't normally distributed,
- there is huge variation in sampling probabilities of the survey design.

Because of this be very careful using confidence intervals for population variance statistics especially while performing analysis within subsets of data or using grouped survey objects.

Sampling distribution of the variance statistic in general is asymmetric (chi-squared in case of simple random sampling of normally distributed variable) and if analyzed variable isn't normally distributed or there is huge variation in sampling probabilities of the survey design (or both) it could converge to normality only very slowly (with growing number of survey design degrees of freedom).

Examples

```

library(survey)
data(api)

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarise(api99_var = survey_var(api99),
            api99_sd = survey_sd(api99))

dstrata %>%
  group_by(awards) %>%
  summarise(api00_var = survey_var(api00),
            api00_sd = survey_sd(api00))

# standard deviation and variance of the population variance estimator
# are available with vartype argument
# (but not for the population standard deviation estimator)
dstrata %>%
  summarise(api99_variance = survey_var(api99, vartype = c("se", "var")))

```

svychisq

*Chisquared tests of association for survey data.***Description**

Chisquared tests of association for survey data.

Arguments

formula	See details in svychisq
design	See details in svychisq
na.rm	See details in svychisq
...	See details in svychisq

tbl_svy

*tbl_svy object.***Description**

A `tbl_svy` wraps a locally stored `svydesign` and adds methods for dplyr single-table verbs like `mutate`, `group_by` and `summarise`. Create a `tbl_svy` using [as_survey_design](#).

Methods

tbl_df implements these methods from dplyr.

select or rename Select or rename variables in a survey's dataset.

mutate or transmute Modify and create variables in a survey's dataset.

group_by and summarise Get descriptive statistics from survey.

Examples

```
library(survey)
library(dplyr)
data(api)
svy <- as_survey_design(apistrat, strata = stype, weights = pw)
svy

# Data manipulation verbs -----
filter(svy, pcttest > 95)
select(svy, starts_with("acs")) # variables used in survey design are automatically kept
summarise(svy, col.grad = survey_mean(col.grad))
mutate(svy, api_diff = api00 - api99)

# Group by operations -----
# To calculate survey
svy_group <- group_by(svy, dname)

summarise(svy, col.grad = survey_mean(col.grad),
          api00 = survey_mean(api00, vartype = "ci"))
```

tbl_vars

List variables produced by a tbl.

Description

List variables produced by a tbl.

Arguments

x A tbl object

uninteract	<i>Break interaction vectors back into component columns</i>
------------	--

Description

This function will not generally be needed by users because summarise automatically un-interacts interaction columns for you.

Usage

```
uninteract(x)

## S3 method for class 'srvyr_interaction'
uninteract(x)

## S3 method for class 'data.frame'
uninteract(x)

is.interaction(x)
```

Arguments

x Either a srvyr_interaction column or a data.frame

Value

A data.frame

unweighted	<i>Calculate the an unweighted summary statistic from a survey</i>
------------	--

Description

Calculate unweighted summaries from a survey dataset, just as on a normal data.frame with [summarise](#). Though it is possible to use regular functions directly, because the survey package doesn't always remove rows when filtering (instead setting the weight to 0), this can sometimes give bad results. See examples for more details.

Usage

```
unweighted(...)
```

Arguments

... variables or expressions, calculated on the unweighted data.frame behind the tbl_svy object.

Details

Uses tidy evaluation semantics and so if you want to use wrapper functions based on variable names, you must use tidy evaluation, see the examples here, documentation in [nse-force](#), or the dplyr vignette called 'programming' for more information.

Examples

```
library(survey)
library(dplyr)
data(api)

dstrata <- apistrat %>%
  as_survey_design(strata = stype, weights = pw)

dstrata %>%
  summarise(api99_unw = unweighted(mean(api99)),
            n = unweighted(n()))

dstrata %>%
  group_by(stype) %>%
  summarise(api_diff_unw = unweighted(mean(api00 - api99)))

# Some survey designs, like ones with raked weights, are not removed
# when filtered to preserve the structure. So if you don't use `unweighted()`
# your results can be wrong.
# Declare basic clustered design ----
cluster_design <- as_survey_design(
  .data = apiclus1,
  id = dnum,
  weights = pw,
  fpc = fpc
)

# Add raking weights for school type ----
pop.types <- data.frame(stype=c("E","H","M"), Freq=c(4421,755,1018))
pop.schwide <- data.frame(sch.wide=c("No","Yes"), Freq=c(1072,5122))

raked_design <- rake(
  cluster_design,
  sample.margins = list(~stype,~sch.wide),
  population.margins = list(pop.types, pop.schwide)
)

raked_design %>%
  filter(cname != "Alameda") %>%
  group_by(cname) %>%
  summarize(
    direct_unw_mean = mean(api99),
    wrapped_unw_mean = unweighted(mean(api99))
  ) %>%
  filter(cname == "Alameda")
```

```
# Notice how the results are different when using `unweighted()``
```

Index

`all_vars` (`summarise_all`), 26
`anti_join` (`dplyr_filter_joins`), 15
`any_vars` (`summarise_all`), 26
`approxfun`, 31
`as.svrepdesign`, 9
`as_survey`, 2, 20
`as_survey_` (`srvyr-se-deprecated`), 22
`as_survey_design`, 2, 4, 20, 39
`as_survey_design_`
 (`srvyr-se-deprecated`), 22
`as_survey_rep`, 2, 7, 20
`as_survey_rep_` (`srvyr-se-deprecated`), 22
`as_survey_twophase`, 2, 10, 20
`as_survey_twophase_`
 (`srvyr-se-deprecated`), 22
`as_tibble`, 12

`cascade`, 12
`cascade_` (`srvyr-se-deprecated`), 22
`collect`, 13
`compute` (`collect`), 13
`cur_svy`, 13
`cur_svy_full` (`cur_svy`), 13
`cur_svy_wts`, 14
`current_svy` (`cur_svy`), 13

`degf`, 28, 34, 37
`dplyr_filter_joins`, 15
`dplyr_single` (`group_trim`), 18
`drop_na`, 18
`drop_na` (`group_trim`), 18

`filter`, 18, 21
`filter` (`group_trim`), 18
`filter_` (`srvyr-se-deprecated`), 22
`filter_all` (`summarise_all`), 26
`filter_at` (`summarise_all`), 26
`filter_if` (`summarise_all`), 26
`funs` (`summarise_all`), 26
`funs_` (`srvyr-se-deprecated`), 22

`get_var_est`, 15
`group_by`, 16, 17, 21, 24, 35, 40
`group_by_` (`group_by`), 16
`group_by_all` (`summarise_all`), 26
`group_by_at` (`summarise_all`), 26
`group_by_if` (`summarise_all`), 26
`group_data` (`groups`), 16
`group_indices` (`groups`), 16
`group_keys` (`groups`), 16
`group_map.tbl_svy` (`group_map_dfr`), 17
`group_map_dfr`, 17
`group_rows` (`groups`), 16
`group_size` (`groups`), 16
`group_trim`, 18
`group_vars` (`groups`), 16
`groups`, 16, 16

`interact`, 19, 24, 28
`is.interaction` (`uninteract`), 41

`mutate`, 18, 21, 40
`mutate` (`group_trim`), 18
`mutate_` (`srvyr-se-deprecated`), 22
`mutate_all` (`summarise_all`), 26
`mutate_at` (`summarise_all`), 26
`mutate_each` (`summarise_all`), 26
`mutate_each_` (`srvyr-se-deprecated`), 22
`mutate_if` (`summarise_all`), 26

`n_groups` (`groups`), 16
`nse-force`, 42

`oldsvyquantile`, 30, 31

`pull`, 18
`pull` (`group_trim`), 18

`rename`, 21, 40
`rename` (`group_trim`), 18
`rename_` (`srvyr-se-deprecated`), 22
`rename_all` (`summarise_all`), 26

- rename_at (summarise_all), 26
- rename_if (summarise_all), 26
- rename_with (group_trim), 18

- select, 6, 9, 10, 18, 21, 40
- select (group_trim), 18
- select_ (srvyr-se-deprecated), 22
- select_all (summarise_all), 26
- select_at (summarise_all), 26
- select_if (summarise_all), 26
- semi_join (dplyr_filter_joins), 15
- set_survey_vars, 20
- srvyr, 20
- srvyr-package (srvyr), 20
- srvyr-se-deprecated, 22
- srvyr_interaction, 19, 24
- summarise, 12, 21, 24, 24, 25–27, 30, 32, 33, 36, 37, 40, 41
- summarise_ (srvyr-se-deprecated), 22
- summarise_all, 26
- summarise_at (summarise_all), 26
- summarise_each (summarise_all), 26
- summarise_each_ (srvyr-se-deprecated), 22
- summarise_if (summarise_all), 26
- summarize (summarise), 24
- summarize_ (srvyr-se-deprecated), 22
- summarize_all, 26
- summarize_all (summarise_all), 26
- summarize_at (summarise_all), 26
- summarize_each (summarise_all), 26
- summarize_each_ (srvyr-se-deprecated), 22
- summarize_if (summarise_all), 26
- survey_corr, 26
- survey_count (survey_tally), 35
- survey_mean, 21, 25, 27
- survey_median, 25
- survey_median (survey_quantile), 32
- survey_old_median (survey_old_quantile), 30
- survey_old_quantile, 30, 33
- survey_prop, 25
- survey_prop (survey_mean), 27
- survey_quantile, 21, 25, 32
- survey_ratio, 21, 25, 33
- survey_sd (survey_var), 37
- survey_tally, 35
- survey_total, 21, 25, 35, 36

- survey_var, 37
- svrepdesign, 9, 20, 23
- svyby, 17
- svychisq, 39, 39
- svyciprop, 25, 27, 28, 34
- svydesign, 5, 6, 20, 23
- svymean, 25, 27
- svyquantile, 25, 32, 33
- svyratio, 25, 33
- svytotals, 25, 36
- svyvar, 26, 37

- tally, 35
- tbl_df, 16
- tbl_svy, 16, 39
- tbl_vars, 40
- transmute, 40
- transmute (group_trim), 18
- transmute_ (srvyr-se-deprecated), 22
- twophase, 10, 11, 20, 24

- ungroup (groups), 16
- uninteract, 41
- unweighted, 21, 25, 41

- vars (summarise_all), 26