

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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as_survey	<i>Create a tbl_svy from a data.frame</i>
-----------	---

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 '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

.data	A data frame (which contains the variables specified below)
...	ignored
ids	Variables specifying cluster ids from largest level to smallest level (leaving the argument empty, NULL, 1, or 0 indicate no clusters).
probs	Variables specifying cluster sampling probabilities.
strata	Variables specifying strata.
variables	Variables specifying variables to be included in survey. Defaults to all variables in .data
fpc	Variables specifying a finite population correct, see svydesign for more details.
nest	If TRUE, relabel cluster ids to enforce nesting within strata.
check_strata	If TRUE, check that clusters are nested in strata.
weights	Variables specifying weights (inverse of probability).
pps	"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.
variance	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", "other"),
  combined_weights = TRUE,
  rho = NULL,
  bootstrap_average = NULL,
  scale = NULL,
  rscales = NULL,
  fpc = NULL,
  fpctype = c("fraction", "correction"),
  mse = getOption("survey.replicates.mse"),
  ...
)

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

## 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

<code>.data</code>	A data frame (which contains the variables specified below)
<code>...</code>	ignored
<code>variables</code>	Variables to include in the design (default is all)
<code>repweights</code>	Variables specifying the replication weight variables
<code>weights</code>	Variables specifying sampling weights
<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, fpctype</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>compress</code>	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 `srvyr` object, so that `srvyr` 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

<code>.data</code>	A data frame (which contains the variables specified below)
<code>...</code>	ignored
<code>id</code>	list of two sets of variable names for sampling unit identifiers
<code>strata</code>	list of two sets of variable names (or NULLs) for stratum identifiers
<code>probs</code>	list of two sets of variable names (or NULLs) for sampling probabilities
<code>weights</code>	Only for <code>method = "approx"</code> , list of two sets of variable names (or NULLs) for sampling weights
<code>fpc</code>	list of two sets of variables (or NULLs for finite population corrections)
<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 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

Coerce survey variables to a data frame (tibble)

Description

Coerce survey variables to a data frame (tibble)

Arguments

x A `tbl_svy` 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.

Usage

```
cascade(.data, ..., .dots, .fill = NA)
```

Arguments

.data,	tbl A <code>tbl_svy</code> object
...	Name-value pairs of summary functions
.dots	Used to work around non-standard evaluation. See <code>vignette("nse", package = "dplyr")</code> for details.
.fill	Value to fill in for group summaries

Examples

```
library(survey)
data(api)

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

dstrata_grp <- dstrata %>%
  group_by(stype)

dstrata_grp %>%
  cascade(api99 = survey_mean(api99),
          api00 = survey_mean(api00),
          api_diff = survey_mean(api00 - api99))
```

collect	<i>Force computation of a database query</i>
---------	--

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.

 current_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. 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.

Usage

```
current_svy()
```

Value

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

 dplyr_single

Single table verbs from dplyr

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` and `rename` 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.

`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`.

 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,
  grps = "",
  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.
<code>grps</code>	A vector indicating the names of the grouping variables for grouped surveys ("" indicates no groups).
<code>level</code>	One or more levels to calculate a confidence interval.
<code>df</code>	Degrees of freedom, many survey functions default to <code>Inf</code> , but <code>srvyr</code> functions generally default to the result of calling <code>degf</code> on the survey object.
<code>pre_calc_ci</code>	Whether the confidence interval is pre-calculated (as in <code>svyciprop</code>)
<code>deff</code>	Whether to return the design effect (calculated using <code>survey::deff</code>)

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

<code>.data</code>	A <code>tbl</code>
<code>...</code>	variables to group by. All <code>tbls</code> accept variable names, some will also accept functions of variables. Duplicated groups will be silently dropped.
<code>add</code>	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>
<code>.dots</code>	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))
```

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

Description

This is a helper to allow `svyr`'s syntactic style. In general, users will not have to worry about setting variables in a survey object unless they are trying to extend `svyr`. 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-svyr")` 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>	<code>FALSE</code> , the default, overwrite all current variables. If <code>TRUE</code> , will add this variable instead.

Value

a `tbl_svy` with the variables modified

srvyr

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

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 `var` 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.

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). See [se-deprecated](#) or the dplyr vignette on programming (`vignette("programming", package = "dplyr")`) for more details.

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", "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 repweights 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</code>	Scaling constant for variance, see svrepdesign for more information.
<code>rscals</code>	Scaling constant for variance, see svrepdesign for more information.
<code>fpc_type</code>	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
id	list of two sets of variable names for sampling unit identifiers
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.
.dots	Used to work around non-standard evaluation. See <code>vignette("nse", package = "dplyr")</code> for details.
.fill	Value to fill in for group summaries

summarise

Summarise multiple values to a single value.

Description

Summarise multiple values to a single value.

Arguments

.data	tbl A <code>tbl_svy</code> object
...	Name-value pairs of summary functions
.groups	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).

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 survey mean of the entire population or by groups. Based on [svymean](#).

[survey_total](#) Calculate the survey total of the entire population or by groups. Based on [svytotal](#).

[survey_ratio](#) Calculate the ratio of 2 variables in the entire population or by groups. Based on [svyratio](#).

[survey_quantile](#) Calculate quantiles in the entire population or by groups. Based on [svyquantile](#).

[survey_median](#) Calculate the median in the entire population or by groups. [svyquantile](#).

[unweighted](#) Calculate an unweighted estimate as you would on a regular `tbl_df`. Based on `dplyr`'s [summarise](#).

Examples

```
library(survey)
data(api)

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

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

dstrata_grp <- dstrata %>%
  group_by(stype)

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

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_mean	<i>Calculate the mean and its variation using survey methods</i>
-------------	--

Description

Calculate means and proportions from complex survey data. A wrapper around [svymean](#), or if `proportion = TRUE`, [svyciprop](#). `survey_mean` 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"),
  deff = FALSE,
  df = NULL,
  .svy = current_svy(),
  ...
)

```

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>	(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>.svy</code>	A <code>tbl_svy</code> object. When called from inside a summarize function the default automatically sets the survey to the current survey.
<code>...</code>	Ignored

Examples

```

library(survey)
data(api)

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

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

dstrata %>%

```

```

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

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

# 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_quantile

Calculate the quantile and its variation using survey methods

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 = NULL,
  level = 0.95,
  q_method = "linear",
  f = 1,
  interval_type = c("Wald", "score", "betaWald", "probability", "quantile"),
  ties = c("discrete", "rounded"),
  df = NULL,

```

```

    .svy = current_svy(),
    ...
  )

survey_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,
  .svy = current_svy(),
  ...
)

```

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 svyquantile
ties	See svyquantile
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".
.svy	A <code>tbl_svy</code> object. When called from inside a summarize function the default automatically sets the survey to the current survey.
...	Ignored

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,
  .svy = current_svy(),
  ...
)
```

Arguments

<code>numerator</code>	The numerator of the ratio
<code>denominator</code>	The denominator of the ratio
<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.
<code>df</code>	(For <code>vartype = "ci"</code> only) A numeric value indicating the degrees of freedom for t-distribution. The default (NULL) uses <code>degf</code> , but Inf is the usual survey package's default (except in <code>svyciprop</code>).
<code>.svy</code>	A <code>tbl_svy</code> object. When called from inside a summarize function the default automatically sets the survey to the current survey.
<code>...</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

x	A <code>tbl_svy</code> object, as created by <code>as_survey</code> and related functions.
wt	(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> .
sort	Whether to sort the results (defaults to <code>FALSE</code>)
name	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.
vartype	What types variation estimates to calculate, passed to survey_total .
...	Variables to group by, passed to <code>group_by()</code> .
.drop	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	<i>Calculate the total and its variation using survey methods</i>
--------------	---

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,
  .svy = current_svy(),
  ...
)
```

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.
<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.
<code>.svy</code>	A <code>tbl_svy</code> object. When called from inside a <code>summarize</code> function the default automatically sets the survey to the current survey.
<code>...</code>	Ignored

Examples

```
library(survey)
data(api)

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

dstrata %>%
  summarise(enroll = 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

Calculate the population variance and its variation using survey methods

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,
  .svy = current_svy(),
  ...
)

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

```

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>.svy</code>	A <code>tbl_svy</code> object. When called from inside a summarize function the default automatically sets the survey to the current survey.
<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	<i>Chisquared tests of association for survey data.</i>
----------	---

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	<i>tbl_svy object.</i>
---------	------------------------

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	<i>List variables produced by a tbl.</i>
----------	--

Description

List variables produced by a tbl.

Arguments

x	A tbl object
---	--------------

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](#).

Usage

```
unweighted(x, .svy = current_svy(), ...)
```

Arguments

x	A variable or expression
.svy	A tbl_svy object. When called from inside a summarize function the default automatically sets the survey to the current survey.
...	Ignored

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)))

# If you want to use a wrapper function, be sure to treat
# non-standard evaluation correctly
umean <- function(x) {
  unweighted(mean({{x}}))
}
dstrata %>%
  group_by(stype) %>%
  summarize(api_diff_unw = umean(api00 - api99))
```

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