

US EPA ARCHIVE DOCUMENT

Version 2.2.1 (Released December 31, 2005)

Modified functions `framesum` and `dsgnsum` to print the output list plus labeling information to the console and to ensure that multidensity category (`mdcaty`) is not used for summarizing when the type of random selection (`seltype`) is equal to "Continuous" for any stratum.

Modified functions `grts` and `irs` to ensure that the variable which identifies panel names in the output object is created without error when the actual size of the sample is less than the desired size.

Modified function `grts` to ensure that argument `att.frame` contains valid values in the `mdcaty` column, which identifies the unequal probability category for each element in the frame.

Version 2.2 (Released November 30, 2005)

Created functions `irs`, `irspts`, `irslin`, and `irsarea` that implement independent random sample (IRS) survey designs for finite, linear, and area resources. Also, created C functions named `linSampleIRS` and `getShapeBox` that support creation of IRS survey designs.

Modified function `grtsarea` to remove sample points that failed to fall within the defined areal frame.

Created a C function named `pickGridCells` to select grid cells that get a sample point for GRTS survey designs. Previously, R code was used to select the grid cells.

Modified the C function `ranho` to replace use of the C function `rand` with the R function `runif`, which allows control over the random number generator seed that is used in the C function.

Version 2.1 (Released August 31, 2005)

Modified function `summary.SurveyDesign` to use an `sp` package object as input and renamed the function to `dsgnsum`. Also, renamed the function `summary.SurveyFrame` to `framesum`.

Modified function `read.shape` to output an `sp` package object.

Modified function `grts` to output an `sp` package object.

Modified the C function `writeDbfFile` to ensure that sufficient precision is used so that small values are not written as zero.

Modified function `summary.SurveyDesign` to eliminate summarizing by `mdcaty` (the unequal probability category for each element in the frame) when `seltype` (the type of random selection) is "Continuous".

Modified functions `grts`, `grtspts`, `grtslin`, and `grtsarea` to ensure that argument `maxlev` (the maximum number of hierarchical levels to use for the GRTS grid) does not exceed 12 and to define 12 as the default value for `maxlev`. Also, modified functions `grtspts`, `grtslin`, and `grtsarea`, and the C function `numLevels` to ensure that the initial number of hierarchical levels is at least one.

Modified function `grts` to ensure that the oversample is not included in the

sample size for the weight adjustment calculation that occurs when an oversample is present.

Modified functions `grtspts`, `grtslin`, and `grtsarea` to correct an error that occurred when creating the randomized hierarchical address for grid cells.

Modified the three demonstration programs to improve clarity of the material that is presented.

Modified function `grts` to ensure that the values specified by `caty.n` (the vector of sample sizes for each category in `mdcaty`, which is required for each element of the design list for which the selection type is "Unequal") occur among the levels of `mdcaty` (the variable in the attributes data frame that specifies the unequal probability category for each element in the frame).

Modified function `grts` to obtain the stratum name from the design list when a design is unstratified.

Version 2.0 (Released April 30, 2005)

Created the following demonstration programs, i.e., programs invoked using the `demo` function, that illustrate using the library to create survey designs:

- (1) Finite - survey designs for a finite population (discrete points)
- (2) Linear - survey designs for a linear resource
- (3) Area - survey designs for an areal (polygonal) resource

Created an R method for `summary` applied to an object of class "SurveyFrame", i.e., an object created by the `read.dbf` and `read.shape` functions, that will print information regarding the frame and tables containing the cross-tabulation of extent for the survey design variables multidensity category (`mdcaty`), `panel`, and `stratum` plus an optional set of user-specified attributes.

Created an R method for `summary` applied to an object of class "SurveyDesign", i.e., an object created by the `grts` function, that will print information regarding the design and tables containing the cross-tabulation of number of sites for the survey design variables multidensity category (`mdcaty`), `panel`, and `stratum` plus an optional set of user-specified attributes.

Used the R and C programming languages to create a function that will read an ESRI GIS (ArcView) shapefile.

Used the R and C programming languages to create a function that will read the attribute (`dbf`) file of an ESRI GIS (ArcView) shapefile.

Modified the function `selectpts` (select a sample of size one or larger from a set of cells based on inclusion probabilities) to ensure that sample size does not exceed frame size. Note: `selectpts` is used for creating a survey design for a finite resource.

Modified the `grts`, `grtspts`, `grtslin`, and `grtsarea` functions so that names used in the output objects are consistent with expectations of the `psurvey.analysis` library.

Used the C programming language to create a function that calculates either the length or area, as appropriate, of each record in ArcView shapefiles of types linear and polygon.

Used the R and C programming languages to modify the library so that the user can control both the initial number of levels and the maximum number of levels of the survey design grid.

Used the R and C programming languages to replace numerical integration with intersection of polygons for calculating polygon area in each cell of the survey design grid.

Version 1.2 (Released November 30, 2004)

Modified the functions `grtspts` (GRTS sample of a finite resource) and `grtslin` (GRTS sample of a linear resource) and associated support functions to use the cell-based approach for sample selection that was used for function `grtsarea`.

Created C language support functions for `grtspts`, `grtslin`, and `grtsarea`.

Created C language functions that improved speed of the sample selection process and allowed creation of survey designs of larger size.

Created C language functions for reading and writing shapefiles.

Version 1.1 (Released August 31, 2004)

Created a function named `grtsarea` and associated support functions that added the capability to select a GRTS sample of an area resource.

Version 1.0 (Released April 30, 2004)

This is the original version of the library.