Package ‘svydiags’

December 23, 2018

Type Package
Title Linear Regression Model Diagnostics for Survey Data
Version 0.3
Date 2018-12-13
Author Richard Valliant
Maintainer Richard Valliant <rvallian@umd.edu>
Description Contains functions for computing diagnostics for fixed effects linear regression models fitted with survey data. Extensions of standard diagnostics to complex survey data are included: standardized residuals, leverages, Cook's D, dfbetas, dffits, condition indexes, and variance inflation factors.
Suggests doBy, foreign, NHANES, sampling
Depends R (>= 2.10), MASS, Matrix, survey
License GPL (>= 2)
LazyLoad yes
NeedsCompilation no
Repository CRAN
Date/Publication 2018-12-23 16:20:02 UTC

R topics documented:

  nhanes2007 ................................................................. 2
  svycollinear .............................................................. 3
  svyCooksD ................................................................. 6
  svydfbetas ............................................................... 7
  svydfits ................................................................. 9
  svyhat ................................................................. 11
  svystdres ............................................................... 12
  svyvif ................................................................. 14
  Vmat ................................................................. 15

Index  18
Description

Demographic and dietary intake variables from a U.S. national household survey

Usage

data(nhanes2007)

Format

A data frame with 4,329 person-level observations on the following 26 variables measuring 24-hour dietary recall. See https://wwwn.cdc.gov/nchs/nhanes/2013-2014/DR2IFF_H.htm for more details about the variables.

SEQN Identification variable
SDMVSTRA Stratum
SDMVPSU Primary sampling unit, numbered within each stratum (1,2)
WTDI2 Dietary day 1 sample weight
GENDER Gender (0 = female; 1 = male)
RIDAGEYR Age in years at the time of the screening interview; reported for survey participants between the ages of 1 and 79 years of age. All responses of participants aged 80 years and older are coded as 80.
RIDRETH1 Race/Hispanic origin (1 = Mexican American; 2 = Other Hispanic; 3 = Non-Hispanic White; 4 = Non-Hispanic Black; 5 = Other Race including multiracial)
BMXWT Body weight (kg)
BMXBMI Body mass Index ((weight in kg) / (height in meters)**2)
DIET On any diet (0 = No; 1 = Yes)
CALDIET On a low-calorie diet (0 = No; 1 = Yes)
FATDIET On a low-fat diet (0 = No; 1 = Yes)
CARBDIET On a low-carbohydrate diet (0 = No; 1 = Yes)
DR1DRSTZ Dietary recall status that indicates quality and completeness of survey participant’s response to dietary recall section. (1 = Reliable and met the minimum criteria; 2 = Not reliable or not met the minimum criteria; 4 = Reported consuming breast-milk (infants and children only))
DR1TKCAL Energy (kcal)
DR1TPROT Protein (gm)
DR1TCARB Carbohydrate (gm)
DR1TSUGR Total sugars (gm)
DR1TFIBE Dietary fiber (gm)
Details

The National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and physical examinations. The nhis2007 data set contains observations for 4,329 persons collected in 2007-2008.

Source


Examples

data(nhanes2007)
str(nhanes2007)
summary(nhanes2007)

svycollinear

Condition indexes and variance decompositions in linear models fitted with complex survey data

Description

Compute condition indexes and variance decompositions for diagnosing collinearity in fixed effects, linear regression models fitted with data collected from one- and two-stage complex survey designs.

Usage

svycollinear(mod, intcpt=TRUE, w, Vcov, sc=TRUE, svyglm.obj, rnd=3, fuzz=0.3)

Arguments

mod
Either (i) an \( n \times p \) matrix of real-valued covariates used in fitting a linear regression; \( n = \) number of observations, \( p = \) number of covariates in model, excluding the intercept; the matrix \( \text{mod} \) should not contain columns for the strata and cluster identifiers (unless those variables are part of the model). No missing values are allowed. Or, (ii) a model object produced by \( \text{svyglm} \) in the \text{survey} package.
svycollinear

intcpt TRUE if the model contains an intercept; FALSE if not.

w n-vector of survey weights used in fitting the model. No missing values are allowed.

Vcov Variance-covariance matrix of the estimated slopes in the regression model; component cov.unscaled in an svyglm object. This matrix can also be extracted with vcov(m) where m is an svyglm object.

sc TRUE if the columns of the weighted model matrix  \( \tilde{X} \) (defined in Details) should be scaled for computing condition indexes; FALSE if not. If TRUE, each column of  \( \tilde{X} \) is divided by its Euclidean norm,  \( \sqrt{\tilde{x}^T \tilde{x}} \).

svyglm.obj Is mod a svyglm.obj object? TRUE or FALSE.

rnd Round the output to \( \text{rnd} \) decimal places.

fuzz Replace any variance decomposition proportions that are less than \( \text{fuzz} \) by \( . \) in the output.

Details

svycollinear computes condition indexes and variance decomposition proportions to use for diagnosing collinearity in a linear model fitted from complex survey data as discussed in Liao and Valliant (2012). All measures are based on  \( \tilde{X} = W^{1/2}X \) where  \( W \) is the diagonal matrix of survey weights and  \( X \) is the  \( n \times p \) matrix of covariates. In a full-rank model with  \( p \) covariates, there are  \( p \) condition indexes, defined as the ratio of the maximum eigenvalue of  \( \tilde{X} \) to its minimum eigenvalue. Before computing condition indexes, as recommended by Belsley (1991), the columns are normalized by their individual Euclidean norms,  \( \sqrt{\tilde{x}^T \tilde{x}} \), so that each column has unit length. The columns are not centered around their means because that can obscure near-dependencies between the intercept and other covariates (Belsley 1984).

Variance decompositions are for the variance of each estimated regression coefficient and are based on a singular value decomposition of the variance formula. Proportions of the model variance,  \( Var_M(\hat{\beta}_k) \), associated with each column of  \( \tilde{X} \) are displayed in an output matrix described below.

Value

\( p \times (p + 1) \) data frame,  \( \Pi \). The first column gives the condition indexes of  \( \tilde{X} \). Values of 10 or more are usually considered to potentially signal collinearity of two or more columns of  \( \tilde{X} \). The remaining columns give the proportions (within columns) of variance of each estimated regression coefficient associated with a singular value decomposition into  \( p \) terms. Columns 2,\ldots,\( p + 1 \) will each approximately sum to 1. Note that some ‘proportions’ can be negative due to the nature of the variance decomposition. If two proportions in a given row of  \( \Pi \) are relatively large and its associated condition index in that row in the first column of  \( \Pi \) is also large, then near dependencies between the covariates associated with those elements are influencing the regression coefficient estimates.

Author(s)

Richard Valliant
**svycollinear**

**References**


**See Also**

`svyvif`

**Examples**

```r
require(survey)
  # example from svyglm help page
data(api)
dstrat <- svydesign(id=~1,strata=~stype, weights=~pw, data=apistrat, fpc=~fpc)
m1 <- svyglm(api00~rm+meals+mobility, design=dstrat)
  # send model object from svyglm
CI.out <- svycollinear(mod = m1, w=apistrat$pw, Vcov=vcov(m1), sc=TRUE, svyglm.obj=TRUE, rnd=3, fuzz= 0.3)

  # send model matrix from svyglm
svycollinear(mod = m1$model, w=apistrat$pw, Vcov=vcov(m1), sc=TRUE, svyglm.obj=TRUE, rnd=3, fuzz=0.3)

  # use model.matrix to create matrix of covariates in model
data(nhanes2007)
newPSU <- paste(nhanes2007$SDMVSTRA, nhanes2007$SDMVPSU, sep=" ")
nhanes.dsgn <- svydesign(ids = ~newPSU,
                      strata = NULL,
                      weights = ~WTDRD1, data=nhanes2007)
m1 <- svyglm(BMXWT ~ RIDAGEYR + as.factor(RIDRETH1) + DR1TKCAL +
            DR1TFAT + DR1MFFAT + DR1TSFAT + DR1TPFAT, design=nhanes.dsgn)
X <- model.matrix(~ RIDAGEYR + as.factor(RIDRETH1) + DR1TKCAL + DR1TFAT + DR1MFFAT + DR1TSFAT + DR1TPFAT,
                  data = data.frame(nhanes2007))
CI.out <- svycollinear(mod = X, w=nhanes2007$WTDRD1, Vcov=vcov(m1), sc=TRUE, svyglm.obj=FALSE, rnd=2, fuzz=0.3)
```
svyCooksd

Modified Cook’s D for models fitted with complex survey data

Description

Compute a modified Cook’s D for fixed effects, linear regression models fitted with data collected from one- and two-stage complex survey designs.

Usage

svyCooksd(mobj, stvar=NULL, clvar=NULL, doplot=FALSE)

Arguments

mobj model object produced by svyglm in the survey package
stvar name of the stratification variable in the svydesign object used to fit the model
clvar name of the cluster variable in the svydesign object used to fit the model
doplot if TRUE, plot the modified Cook’s D values vs. their sequence number in data set. Reference lines are drawn at 2 and 3

Details

svyCooksd computes the modified Cook’s D (m-cook; see Atkinson (1982) and Li & Valliant (2011, 2015)) which measures the effect on the vector of parameter estimates of deleting single observations when fitting a fixed effects regression model to complex survey data. The function svystdres is called for some of the calculations. Values of m-cook are considered large if they are greater than 2 or 3. The R package MASS must also be loaded before calling svyCooksd. The output is a vector of the m-cook values and a scatterplot of them versus the sequence number of the sample element used in fitting the model. By default, svyglm uses only complete cases (i.e., ones for which the dependent variable and all independent variables are non-missing) to fit the model. The rows of the data frame used in fitting the model can be retrieved from the svyglm object via as.numeric(names(mobj$y)). The data for those rows is in mobj$data.

Value

Numeric vector whose names are the rows of the data frame in the svydesign object that were used in fitting the model

Author(s)

Richard Valliant
svydfbetas

References


See Also

svydfbetas, svydffits, svystdres

Examples

```r
require(MASS)  # to get ginv
require(survey)
data(api)
  # unstratified design single stage design
d0 <- svydesign(id=-1,strata=NULL, weights=-pw, data=apistrat)
m0 <- svyglm(api00 ~ ell + meals + mobility, design=d0)
mcook <- svyCooksd(m0, doplot=TRUE)

  # stratified clustered design
require(NHANES)
data(NHANESraw)
dnhanes <- svydesign(id=-SDMVPSU, strata=-SDMVSTR, weights=-WTINT2YR, nest=TRUE, data=NHANESraw)
m2 <- svyglm(BPDiaAve ~ as.factor(Race1) + BMI + AlcoholYear, design = dnhanes)
mcook <- svyCooksd(mobj=m2, stvar="SDMVSTR", clvar="SDMVPSU", doplot=TRUE)
```

svydfbetas

dfbetas for models fitted with complex survey data

Description

Compute the dfbetas measure of the effect of extreme observations on parameter estimates for fixed effects, linear regression models fitted with data collected from one- and two-stage complex survey designs.

Usage

svydfbetas(mobj, stvar=NULL, clvar=NULL, z=3)
svydfbetas

Arguments

- **mobj**: model object produced by `svyglm` in the `survey` package
- **stvar**: name of the stratification variable in the `svydesign` object used to fit the model
- **clvar**: name of the cluster variable in the `svydesign` object used to fit the model
- **z**: numerator of cutoff for measuring whether an observation has an extreme effect on its own predicted value; default is 3 but can be adjusted to control how many observations are flagged for inspection

Details

`svydfbetas` computes the values of dfbetas for each observation and parameter estimate, i.e., the amount that a parameter estimate changes when the unit is deleted from the sample. The model object must be created by `svyglm` in the `survey` package. The output is a vector of the df-beta and standardized dfbetas values. By default, `svyglm` uses only complete cases (i.e., ones for which the dependent variable and all independent variables are non-missing) to fit the model. The rows of the data frame used in fitting the model can be retrieved from the `svyglm` object via `as.numeric(names(mobj$y))`. The data for those rows is in `mobj$data`.

Value

List object with values:

- **Dfbeta**: Numeric vector of unstandardized dfbeta values whose names are the rows of the data frame in the `svydesign` object that were used in fitting the model
- **Dfbetas**: Numeric vector of standardized dfbetas values whose names are the rows of the data frame in the `svydesign` object that were used in fitting the model
- **cutoff**: Value used for gauging whether a value of dfits is large. For a single-stage sample, $cutoff = z / \sqrt{n}$; for a 2-stage sample, $cutoff = z / \sqrt{n[1 + \rho(m - 1)]}$

Author(s)

Richard Valliant

References


See Also

`svydffits`, `svyCooksd`
svydffits

Examples

```r
require(survey)
data(api)
  # unstratified design single stage design
d0 <- svydesign(id=-1, strata=NULL, weights=-pw, data=apistrat)
m0 <- svyglm(api$0 ~ ell + meals + mobility, design=d0)
svydfbetas(mobj=m0)

  # stratified cluster
require(NHANES)
data(NHANESraw)
dnhanes <- svydesign(id=SDMPSU, strata=SDMVSTRA, weights=WTINT2YR, nest=TRUE, data=NHANESraw)
m2 <- svyglm(BPDiaAve ~ as.factor(Race1) + BMI + AlcoholYear, design=dnhanes)
yy <- svydfbetas(mobj=m2, stvar="SDMVSTRA", clvar="SDMPSU")
apply(abs(yy$dfbetas) > yy$cutoff,1, sum)
```

svydffits
dffits for models fitted with complex survey data

Description

Compute the dffits measure of the effect of extreme observations on predicted values for fixed effects, linear regression models fitted with data collected from one- and two-stage complex survey designs.

Usage

```
svydffits(mobj, stvar=NULL, clvar=NULL, z)  
```

Arguments

- `mobj`: model object produced by `svyglm` in the `survey` package
- `stvar`: name of the stratification variable in the `svydesign` object used to fit the model
- `clvar`: name of the cluster variable in the `svydesign` object used to fit the model
- `z`: numerator of cutoff for measuring whether an observation has an extreme effect on its own predicted value; default is 3 but can be adjusted to control how many observations are flagged for inspection

Details

`svydffits` computes the value of dffits for each observation, i.e., the amount that a unit’s predicted value changes when the unit is deleted from the sample. The model object must be created by `svyglm` in the R `survey` package. The output is a vector of the dffit and standardized dffits values. By default, `svyglm` uses only complete cases (i.e., ones for which the dependent variable and all independent variables are non-missing) to fit the model. The rows of the data frame used in fitting the model can be retrieved from the `svyglm` object via `as.numeric(names(mobj$y))`. The data for those rows is in `mobj$data`.
svydffits

Value

List object with values:

- **Dffit**
  - Numeric vector of unstandardized dffit values whose names are the rows of the data frame in the svydesign object that were used in fitting the model.

- **Dffits**
  - Numeric vector of standardized dffits values whose names are the rows of the data frame in the svydesign object that were used in fitting the model.

- **cutoff**
  - Value used for gauging whether a value of dffits is large. For a single-stage sample, \( \text{cutoff} = z / \sqrt{n} \); for a 2-stage sample, \( \text{cutoff} = z \sqrt{p/n \bar{m} [1 + \rho(\bar{m} - 1)]} \).

Author(s)

Richard Valliant

References


See Also

- svydfbetas, svyCooksd

Examples

```r
require(survey)
data(api)

# unstratified design single stage design
d0 <- svydesign(id=-1, strata=NULL, weights=-pw, data=apistrat)
m0 <- svyglm(api00 ~ ell + meals + mobility, design=d0)
yy <- svydffits(mobj=m0)
yy$cutoff

require(NHANES)
data(NHANESraw)
dnhanes <- svydesign(id=-SDMVPSU, strata=-SDMVSTRA, weights=-WTINT2YR, nest=TRUE, data=NHANESraw)
m2 <- svyglm(BPDiaAve ~ as.factor(Race1) + BMI + AlcoholYear, design = dnhanes)
yy <- svydffits(mobj=m2, stvar="SDMVSTRA", clvar="SDMVPSU", z=4)
sum(abs(yy$Dffits) > yy$cutoff)
```
Leverages for models fitted with complex survey data

Description

Compute leverages for fixed effects, linear regression models fitted from complex survey data.

Usage

svyhat(mobj, doplot=FALSE)

Arguments

mobj model object produced by svyglm in the survey package
doplot if TRUE, plot the standardized residuals vs. their sequence number in data set. A reference line is drawn at 3 times the mean leverage

Details

svyhat computes the leverages from a model fitted with complex survey data. The model object mobj must be created by svyglm in the R survey package. The output is a vector of the leverages and a scatterplot of them versus the sequence number of the sample element used in fitting the model. By default, svyglm uses only complete cases (i.e., ones for which the dependent variable and all independent variables are non-missing) to fit the model. The rows of the data frame used in fitting the model can be retrieved from the svyglm object via as.numeric(names(mobj$y)). The data for those rows is in mobj$data.

Value

Numeric vector whose names are the rows of the data frame in the svydesign object that were used in fitting the model.

Author(s)

Richard Valliant

References


**Description**

Compute standardized residuals for fixed effects, linear regression models fitted with data collected from one- and two-stage complex survey designs.

**Usage**

```r
svystdres(mobj, stvar=NULL, clvar=NULL, doplot=FALSE)
```

**Arguments**

- `mobj` model object produced by `svyglm` in the `survey` package
- `stvar` name of the stratification variable in the `svydesign` object used to fit the model
- `clvar` name of the cluster variable in the `svydesign` object used to fit the model
- `doplot` if `TRUE`, plot the standardized residuals vs. their sequence number in data set. Reference lines are drawn at +/-3

**Details**

`svystdres` computes the standardized residuals, i.e., the residuals divided by an estimate of the model standard deviation of the residuals. Residuals are used from a model object created by `svyglm` in the R `survey` package. The output is a vector of the standardized residuals and a scatterplot of them versus the sequence number of the sample element used in fitting the model. By default, `svyglm` uses only complete cases (i.e., ones for which the dependent variable and all independent variables are non-missing) to fit the model. The rows of the data frame used in fitting the model can be retrieved from the `svyglm` object via `as.numeric(names(mobj$y))`. The data for those rows is in `mobj$data`. 

---

**See Also**

- `svystdres`
### svystdres

**Value**

List object with values:

- `stdresids` Numeric vector whose names are the rows of the data frame in the `svydesign` object that were used in fitting the model
- `n` number of sample clusters
- `mbar` average number of non-missing, sample elements per cluster
- `rtsgihat` estimate of the square root of the model variance of the residuals, $\sqrt{\sigma^2}$
- `rhohat` estimate of the intracluster correlation of the residuals, $\rho$

**Author(s)**

Richard Valliant

**References**


**See Also**

`svyhat`, `svyCooksd`

**Examples**

```r
require(survey)
data(api)
  # unstratified single stage design
d0 <- svydesign(id=-1, strata=(NULL, weights=~pw, data=apistrat)
m0 <- svyglm(api00 ~ ell + meals + mobility, design=d0)
svystdres(mobj=m0, stvar=NULL, clvar=NULL)

  # stratified cluster design
require(NHANES)
data(NHANESraw)
dnhanes <- svydesign(id=~SDMVPSU, strata=SDMVSTRA, weights=~WTINT2YR, nest=TRUE, data=NHANESraw)
m1 <- svyglm(BPDiaAve ~ as.factor(Race1) + BMI + AlcoholYear, design = dnhanes)
svystdres(mobj=m1, stvar= "SDMVSTRA", clvar="SDMVPSU")
```
svyvif

Variance inflation factors (VIF) for linear models fitted with complex survey data

Description

Compute a VIF for fixed effects, linear regression models fitted with data collected from one- and two-stage complex survey designs.

Usage

svyvif(X, w, V)

Arguments

X  \( n \times p \) matrix of real-valued covariates used in fitting a linear regression; \( n = \) number of observations, \( p = \) number of covariates in model, excluding the intercept. A column of 1’s for an intercept should not be included. \( X \) should not contain columns for the strata and cluster identifiers (unless those variables are part of the model). No missing values are allowed.

w  \( n \)-vector of survey weights used in fitting the model. No missing values are allowed.

V  \( n \times n \) covariance matrix of the residuals as estimated, e.g., using vmat. No missing values are allowed.

Details

\texttt{svyvif} computes a variance inflation factor (VIF) appropriate for a model fitted from complex survey data (see Liao & Valliant 2012). A VIF measures the inflation of a slope estimate caused by nonorthogonality of the predictors over and above what the variance would be with orthogonality (Theil 1971; Belsley, Kuh, and Welsch 1980). The standard VIF equals \( 1/(1 - R_k^2) \) where \( R_k \) is the multiple correlation of the \( k^{th} \) column of \( X \) regressed on the remaining columns. The complex sample value of the VIF consists of the standard VIF multiplied by two adjustments denoted in the output as \texttt{zeta} and \texttt{varrho}. There is no widely agreed-upon cutoff value for identifying high values of a VIF.

Value

\( p \times 5 \) matrix with columns:

\begin{itemize}
  \item \texttt{svy.vif}  complex sample VIF
  \item \texttt{reg.vif}  standard VIF, \( 1/(1 - R_k^2) \)
  \item \texttt{zeta}  1st multiplicative adjustment to \texttt{reg.vif}
  \item \texttt{varrho}  2nd multiplicative adjustment to \texttt{reg.vif}
  \item \texttt{zeta.x.varrho}  product of the two adjustments to \texttt{reg.vif}
\end{itemize}
Vmat

Author(s)
Richard Valliant

References

See Also
Vmat

Examples
require(survey)
data(nhanes2007)
X1 <- nhanes2007[order(nhanes2007$SDMVSTRA, nhanes2007$SDMVPSU),]
   # eliminate cases with missing values
delete <- which(complete.cases(X1)==FALSE)
X2 <- X1[-delete,]
nhanes.dsgn <- svydesign(ids = ~SDMVPSU,
                        strata = ~SDMVSTRA,
                        weights = ~WTDRD1, nest=TRUE, data=X2)
m1 <- svyglm(BMXWT ~ RIDAGEYR + as.factor(RIDRETH1) + DR1TKCAL
               + DR1TTFAT + DR1TMFAT, design=nhanes.dsgn)
summary(m1)
V <- Vmat(mobj = m1,
          stvar = "SDMVSTRA",
          clvar = "SDMVPSU")
   # construct X matrix using model.matrix from stats package
X3 <- model.matrix(~ RIDAGEYR + as.factor(RIDRETH1) + DR1TKCAL + DR1TTFAT + DR1TMFAT,
                   data = data.frame(X2))
   # remove col of 1's for intercept with X3[,1]
svyvif(X = X3[,1], w = X2$WTDRD1, V = V)

Vmat

Compute covariance matrix of residuals for linear models fitted with complex survey data

Description
Compute a covariance matrix using residuals from a fixed effects, linear regression model fitted with data collected from one- and two-stage complex survey designs.
Usage

Vmat(mobj, stvar = NULL, clvar = NULL)

Arguments

mobj model object produced by svyglm
stvar field in mobj that contains the stratum variable in the complex sample design;
use stvar = NULL if there are no strata
clvar field in mobj that contains the cluster variable in the complex sample design; use
clvar = NULL if there are no clusters

Details

Vmat computes a covariance matrix among the residuals returned from svyglm in the survey package. The matrix that is computed is appropriate under these model assumptions: (1) in single-stage, unclustered sampling, units are assumed to be uncorrelated but can have different model variances, (2) in single-stage, stratified sampling, units are assumed to be uncorrelated within strata and between strata but can have different model variances; (3) in unstratified, clustered samples, units in different clusters are assumed to be uncorrelated but units within clusters are correlated; (3) in stratified, clustered samples, units in different strata or clusters are assumed to be uncorrelated but units within clusters are correlated.

Value

$ n \times n $ matrix where $ n $ is the number of cases used in the linear regression model

Author(s)

Richard Valliant

References


See Also

Vmat

Examples

require(Matrix)
require(survey)
data(nhanes2007)
black <- nhanes2007$RIDRETH1 == 4
X <- nhanes2007
X <- cbind(X, black)
X1 <- X[order(X$SDMVSTRA, X$SDMVPSU),]

# unstratified, unclustered design
nhanes.dsgn <- svydesign(ids = 1:nrow(X1),
                          strata = NULL,
                          weights = ~WTDRD1, data=X1)
ml <- svyglm(BMXWT ~ RIDAGEYR + as.factor(black) + DR1TKCAL, design=nhanes.dsgn)
summary(ml)

V <- Vmat(mobj = ml,
           stvar = NULL,
           clvar = NULL)

# stratified, clustered design
nhanes.dsgn <- svydesign(ids = ~SDMVPSU,
                          strata = ~SDMVSTRA,
                          weights = ~WTDRD1, nest=TRUE, data=X1)
ml <- svyglm(BMXWT ~ RIDAGEYR + as.factor(black) + DR1TKCAL, design=nhanes.dsgn)
summary(ml)
V <- Vmat(mobj = ml,
           stvar = "SDMVSTRA",
           clvar = "SDMVPSU")
Index

∗Topic datasets
nhanes2007, 2

∗Topic methods
svycollinear, 3
svyCooksD, 6
svydfbetas, 7
svydfits, 9
svyhat, 11
svystdres, 12
svyvif, 14
Vmat, 15

∗Topic survey
svycollinear, 3
svyCooksD, 6
svydfbetas, 7
svydfits, 9
svyhat, 11
svystdres, 12
svyvif, 14
Vmat, 15

nhanes2007, 2

svycollinear, 3
svyCooksD, 6, 8, 10, 13
svydfbetas, 7, 7, 10
svydfits, 7, 8, 9
svyhat, 11, 13
svystdres, 7, 12, 12
svyvif, 5, 14

Vmat, 15, 15, 16