Package ‘GK2011’

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Type Package

Title Gaines and Kuklinski (2011) Estimators for Hybrid Experiments

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License GPL (>= 2)


BugReports https://github.com/leeper/GK2011/issues

LazyData TRUE

Imports stats

Suggests testthat

RoxygenNote 5.0.1

NeedsCompilation no

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GK2011-package

GK2011

Description

Gaines and Kuklinski (2011) Estimators for Hybrid Experiments

Author(s)

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References


See Also

estimate

ajps

Gaines and Kuklinski (2011) AJPS data

Description

Subset of data from Gaines and Kuklinski (2011)

Usage

ajps

Format

tr  The treatment indicator, where 1=treatment, 2=control, 3=chose treatment, 4=chose control.
therm.obama  A “feeling thermometer” toward John McCain.
therm.mccain  A “feeling thermometer” toward Barack Obama.
pid  An indicator of party identification, where -1=Republican, 0=Independent, 1=Democrat.

Details

This dataset contains a subset of variables, extracted from the dataset used by Gaines and Kuklinski (2011).
Source


See Also

estimate

Examples

data(ajps)

# replicate Gaines and Kuklinski (2011) Table 2
pmean <- function(x) sprintf("%.1f", mean(x))
cbind(
  # Democrats
  aggregate(cbind(therm.mccain, therm.obama) ~ tr,
    data = ajps[ajps$pid == 1, ], FUN = pmean)[, 1:3],
  n_dem = aggregate(therm.obama ~ tr,
    data = ajps[ajps$pid == 1, ], FUN = length)[, 2],
  # Republicans
  aggregate(cbind(therm.mccain, therm.obama) ~ tr,
    data = ajps[ajps$pid == -1, ], FUN = pmean)[, 1:3],
  n_rep = aggregate(therm.obama ~ tr,
    data = ajps[ajps$pid == -1, ], FUN = length)[, 2]
)

# effects for McCain among Democrats
with(ajps[ajps$pid == 1, ], {
  estimate(rand = tr %in% 1:2, tr = tr %in% c(1,3), y = therm.mccain)
})

# effects for McCain among Republicans
with(ajps[ajps$pid == -1, ], {
  estimate(rand = tr %in% 1:2, tr = tr %in% c(1,3), y = therm.mccain)
})

# effects for Obama among Democrats
with(ajps[ajps$pid == 1, ], {
  estimate(rand = tr %in% 1:2, tr = tr %in% c(1,3), y = therm.obama)
})

# effects for Obama among Republicans
with(ajps[ajps$pid == -1, ], {
  estimate(rand = tr %in% 1:2, tr = tr %in% c(1,3), y = therm.obama)
})
Description

Estimators for Hybrid Experiments

Usage

estimate(rand, tr, y, iterations = 5000L)

Arguments

rand An integer or logical vector specifying whether each observation is from the random (1) or self-selection (0) arm of the experiment.
tr An integer or logical vector specifying whether each observation was treated (1) or control (0), regardless of the arm of the experiment.
y A numeric vector specifying outcome values.
iterations An integer specifying the number of bootstrap iterations used to estimate standard errors.

Details

The package provides R implementations of the treatment effect estimators for hybrid (self-selection) experiments, as developed by Gaines and Kuklinski (2011). These functions estimate local average treatment effects for unobserved population subgroups inclined and disinclined to be treated, as revealed by a three-condition (two-arm) experimental design. In the design, participants are randomly assigned to one of three conditions: 1) treatment (T), 2) control (C), or 3) self-selection (S) of treatment or control. The design enables the estimation of three treatment effects:

1. First, the sample average treatment effect is estimated from conditions (1) and (2) as:
   \[ \hat{t} = \bar{Y}_T - \bar{Y}_C \]

2. The effect for those inclined to choose treatment is given by:
   \[ \hat{t}_S = \frac{\bar{Y}_S - \bar{Y}_C}{\hat{\alpha}} \]
   where \( \hat{\alpha} \) is the observed proportion of individuals in group S that choose T (rather than C).

3. The effect for those disinclined to choose treatment (or, equivalently, inclined to choose control) is given by:
   \[ \hat{t}_n = \frac{\bar{Y}_T - \bar{Y}_S}{1 - \hat{\alpha}} \]

By definition, the sample average treatment effect is an average of the other two effects.

Value

A data.frame containing the following variables:

- Effect, a character vector of effect names ("t", "t_s", "t_n", "naive")
- Estimate, a numeric vector of effect estimates
- SE, a numeric vector of bootstrapped standard errors
- t, a t-statistic for the effect
- p, a two-tailed p-value

The return value will also carry an attribute “alpha”, indicating the estimated proportion \( \alpha \).
Authors

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References


See Also

ajps

Examples

```r
# create fake data
data <-
data.frame(rand = c(rep(1, 200), rep(0, 100)),
           tr = c(rep(0, 100), rep(1, 100), rep(0, 37), rep(1, 63)),
           y = c(rnorm(100), rnorm(100) + 1, rnorm(37), rnorm(63) + 3))

# estimate effects
estimate(rand = d$rand, tr = d$tr, y = d$y)
```
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