# Package 'truncProxy'

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**Type** Package

**Title** Proximal Weighting Estimation for Dependent Left Truncation

**Version** 0.1.0

**Description** Implements proximal weighting estimators for the expectation of an arbitrarily transformed event time under dependent left truncation, with optional inverse probability of censoring weighting to handle right censoring. The methods leverage proxy variables to handle dependent left truncation in settings where dependence-inducing factors are not fully observed.

**License** GPL-3

**Encoding** UTF-8

**Depends** R (>= 4.1.0)

**Imports** Rcpp, survival

**LinkingTo** Rcpp, RcppArmadillo

**Suggests** testthat (>= 3.0.0)

**Config/testthat/edition** 3

**URL** https://github.com/wangyuyao98/truncProxy_weighting, https://arxiv.org/pdf/2512.21283

**BugReports** https://github.com/wangyuyao98/truncProxy_weighting/issues

**RoxygenNote** 7.3.2

**NeedsCompilation** yes

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**Repository** CRAN

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`PQB_estimator` *Proximal Weighting Estimation Under Dependent Left Truncation*

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## Description

Computes the proximal weighting estimator for the expectation of an arbitrarily transformed event time under dependent left truncation.

## Usage

```
PQB_estimator(
  nu,
  dat,
  time.name,
  Q.name,
  W1.name,
  W2.name,
  Z.name,
  weights = rep(1, nrow(dat)),
  trim.min = 1e-07,
  trim.max = 1e+07
)
```

## Arguments

| | |
|---|---|
| `nu` | A user-supplied transformation of the event time. For example, `function(t) as.numeric(t > tau)` results in estimating a survival probability beyond time `tau`. |
| `dat` | A data frame containing the observed data. |
| `time.name` | Name of the event time variable. |
| `Q.name` | Name of the left truncation time variable. |
| `W1.name` | Name of the truncation proxies. |
| `W2.name` | Name of the event time proxies. |
| `Z.name` | Name of the measured covariates that are directly associated with both the event time and the truncation time. |
| `weights` | Optional nonnegative case weights. Defaults to equal weights. |
| `trim.min` | Lower bound used to stabilize the estimated bridge weights. |
| `trim.max` | Upper bound used to stabilize the estimated bridge weights. |

## Value

A numeric scalar containing the proximal weighting estimator.

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`PQB_IPCW_estimator` *IPCW-Adjusted Proximal Weighting Estimation under Dependent Left Truncation and Random Right Censoring*

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## Description

Computes the IPCW-adjusted proximal weighting estimator for the expectation of an arbitrarily transformed event time under dependent left truncation and random right censoring.

## Usage

```
PQB_IPCW_estimator(
  nu,
  t0,
  dat,
  time.name,
  Q.name,
  event.name = NULL,
  W1.name,
  W2.name,
  Z.name,
  weights = rep(1, nrow(dat)),
  trim.min = 1e-07,
  trim.max = 1e+07,
  IPCW_time_varying = FALSE,
  trim.IPCW = 1e-07
)
```

## Arguments

| | |
|---|---|
| `nu` | A user-supplied transformation of the event time. For example, `function(t) as.numeric(t > tau)` results in estimating a survival probability beyond time `tau`. |
| `t0` | A cutoff such that `nu(t) = nu(min(t, t0))`. For example, for survival probability at time `tau`, one can set `t0 = tau`. |
| `dat` | A data frame containing the observed data. |
| `time.name` | Name of the observed event or censoring time variable. |
| `Q.name` | Name of the left truncation time variable. |
| `event.name` | Name of the event indicator variable. Set to `NULL` when there is no right censoring. |
| `W1.name` | Name of the truncation proxies. |

| | |
|---|---|
| `W2.name` | Name of the event time proxies. |
| `Z.name` | Name of the measured covariates that are directly associated with both the event time and the truncation time. |
| `weights` | Optional nonnegative case weights. Defaults to equal weights. |
| `trim.min` | Lower bound used to stabilize the estimated bridge weights. |
| `trim.max` | Upper bound used to stabilize the estimated bridge weights. |
| `IPCW_time_varying` | Logical; if `TRUE`, use time-varying IPCW weights in the bridge estimation step. |
| `trim.IPCW` | Lower bound used to stabilize the denominators of IPCW weights. |

## Value

A numeric scalar containing the IPCW-adjusted proximal weighting estimator.

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