

# Package ‘glorenz’

July 22, 2025

**Title** Transformed and Relative Lorenz Curves for Survey Weighted Data

**Version** 0.1.1

**Description** Functions for constructing Transformed and Relative Lorenz curves with survey sampling weights. Given a variable of interest measured in two groups with scaled survey weights so that their hypothetical populations are of equal size, `tlorenz()` computes the proportion of members of the group with smaller values (ordered from smallest to largest) needed for their sum to match the sum of the top `qth` percentile of the group with higher values. `rlorenz()` shows the fraction of the total value of the group with larger values held by the `pth` percentile of those in the group with smaller values. `Fd()` is a survey weighted cumulative distribution function and `Eps()` is a survey weighted inverse cdf used in `rlorenz()`. Ramos, Graubard, and Gastwirth (2025) <[doi:10.1093/jrssa/qnaf044](https://doi.org/10.1093/jrssa/qnaf044)>.

**License** GPL-3

**Encoding** UTF-8

**Author** Mark Ramos [aut, cre, cph]

**Imports** dplyr , magrittr , stats , LorenzRegression, rlang

**RoxygenNote** 7.3.2

**NeedsCompilation** no

**Maintainer** Mark Ramos <[mlr6219@psu.edu](mailto:mlr6219@psu.edu)>

**Repository** CRAN

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|-----|-----------------------------------------------------------------------------|
| Eps | <i>Inverse cumulative distribution function for a subset of the dataset</i> |
|-----|-----------------------------------------------------------------------------|

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**Description**

Inverse cumulative distribution function for a subset of the dataset

**Usage**

```
Eps(p, data, group = "qtyvar")
```

**Arguments**

|       |                                               |
|-------|-----------------------------------------------|
| p     | cumulative distribution percentile            |
| data  | dataset with defined group and newwts columns |
| group | variable of interest                          |

**Value**

Cumulative distribution percentile for quantile y

**Examples**

```
df_samp <- data.frame(qtyvar = rnorm(1000, mean = 5, sd = 2), newwts = rep(1, 1000))
Eps(0.25, df_samp)
# Finds the quantile for 25th percentile in simulated data.
```

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|    |                                                                     |
|----|---------------------------------------------------------------------|
| Fd | <i>Cumulative distribution function for a subset of the dataset</i> |
|----|---------------------------------------------------------------------|

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**Description**

Cumulative distribution function for a subset of the dataset

**Usage**

```
Fd(y, data, group = "qtyvar", newwts = "newwts")
```

**Arguments**

|        |                                               |
|--------|-----------------------------------------------|
| y      | cumulative distribution quantile              |
| data   | dataset with defined group and newwts columns |
| group  | variable of interest                          |
| newwts | sampling weights                              |

**Value**

Cumulative distribution percentile for quantile y

**Examples**

```
df_samp <- data.frame(qtyvar = rnorm(1000, mean = 5, sd = 2), newwts = rep(1, 1000))
Fd(3.5, df_samp)
# Finds the percentile for 3.5 in simulated data.
```

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|         |                                                                                        |
|---------|----------------------------------------------------------------------------------------|
| rlorenz | <i>Compute relevant probabilities and estimates for selecting performance criteria</i> |
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**Description**

Compute relevant probabilities and estimates for selecting performance criteria

**Usage**

```
rlorenz(p, data, group, edata, newwts = "newwts")
```

**Arguments**

|        |                                                                                                                                           |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------|
| p      | percentile based on data from group with lower mean value                                                                                 |
| data   | dataset of group with higher mean value.                                                                                                  |
| group  | variable of interest. Entered in quotes. Must be present in data and edata.                                                               |
| edata  | dataset of group with lower mean value. Must have defined newwts column. Sum of newwts for edata must be equal to sum of newwts for data. |
| newwts | sampling weights. "newwts" by default. Must be present in data and edata.                                                                 |

**Value**

Relative Lorenz function value for p

**Examples**

```
df_samp <- data.frame(x1 = rnorm(500, mean = 5, sd = 2), newwts = rep(1, 500))
df_samp2 <- data.frame(x1 = rnorm(500, mean = 4.5, sd = 2), newwts = rep(1, 500))
p_vals <- seq(0, 1, length.out = 100)
lc_vals <- rlorenz(p_vals, data = df_samp, group = "x1", edata = df_samp2)

#Creates relative Lorenz curve values for two sets of simulated data
```

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|         |                                                                                        |
|---------|----------------------------------------------------------------------------------------|
| tlorenz | <i>Compute relevant probabilities and estimates for selecting performance criteria</i> |
|---------|----------------------------------------------------------------------------------------|

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**Description**

Compute relevant probabilities and estimates for selecting performance criteria

**Usage**

```
tlorenz(q, d1, group, d2, newwts = "newwts")
```

**Arguments**

|        |                                                                              |
|--------|------------------------------------------------------------------------------|
| q      | 1-percentile of data on variable of interest in group with higher mean value |
| d1     | dataset of group with higher mean value.                                     |
| group  | variable of interest. Entered in quotes. Must be present in d1 and d2        |
| d2     | dataset of group with lower mean value.                                      |
| newwts | sampling weights. "newwts" by default. Must be present in data and edata.    |

**Value**

Transformed Lorenz function value for q

**Examples**

```
df_samp <- data.frame(x1 = rnorm(500, mean = 5, sd = 2), newwts = rep(1, 500))
df_samp2 <- data.frame(x1 = rnorm(500, mean = 4.5, sd = 2), newwts = rep(1, 500))
p_vals <- seq(0, 1, length.out = 100)
lc_vals <- tlorenz(p_vals, d1 = df_samp, group = "x1", d2 = df_samp2)

#Creates transformed Lorenz curve values for two sets of simulated data
```

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