Package: eltr (via r-universe)

October 26, 2024

Title Utilise Catastrophe Model Event Loss Table Outputs

Version 0.1.0

Description Provides a tool to run Monte Carlo simulation of catastrophe model event loss tables, using a Poisson frequency and Beta severity distribution.

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Encoding UTF-8

LazyData true

Roxygen list(markdown = TRUE)

RoxygenNote 7.1.1

Suggests testthat, covr, knitr, rmarkdown

Imports data.table

VignetteBuilder knitr

Depends R (>= 2.10)

URL https://randhirbilkhu.github.io/eltr/, https://github.com/RandhirBilkhu/eltr

BugReports https://github.com/RandhirBilkhu/eltr/issues

Repository https://randhirbilkhu.r-universe.dev

RemoteUrl https://github.com/randhirbilkhu/eltr

RemoteRef HEAD

RemoteSha 9c9d0b1ba7a8724eb5d1617f51f284eeafea4885

Contents

`create_elt` *Create parameters for ELT simulation*

Description

Create parameters for ELT simulation

Usage

```
create_elt(dt, ann_rate, mu, sdev_i, sdev_c, expval)
```

Arguments

`dt`	an ELT (Event Loss Table)
`ann_rate`	a vector of annual rates for each event
`mu`	a vector of mean event loss
`sdev_i`	a vector of independent standard deviations
`sdev_c`	a vector of correlated standard deviations
`expval`	the total values exposed in each event

Value

a data.table object with mean damage ratio, total standard deviation and alpha/beta parameters

Examples

```
create_elt (eltr::example_elt, ann_rate="rate", mu="mean",
           sdev_i = "sdevi" , sdev_c = "sdevc", expval = "exp")
```

`create_oep_curve` *OEP Curve*

Description

OEP Curve

Usage

```
create_oep_curve(
  dt,
  y,
  z,
  rp = c(10000, 5000, 1000, 500, 250, 200, 100, 50, 25, 10, 5, 2)
)
```

Arguments

dt	aggregate annual YLT
y	vector of year
z	vector of loss amount
rp	return period default points= c(10000,5000,1000,500,250,200,100,50, 25,10,5 , 2)

Value

a vector of OEP at return periods as specified by the argument rp

Examples

```
create_oep_curve(data.table::data.table("Year" = c(1,2,3,4,5) ,
          "Loss" =c(1 , 20 , 500 , 100 , 10000)) , y= "Year", z="Loss")
```

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create_ylt *Create a YLT from ELT via monte carlo simulation*

Description

Create a YLT from ELT via monte carlo simulation

Usage

```
create_ylt(dt, sims, ann_rate, event_id, expval, mu)
```

Arguments

dt	a data.table with modified ELT
sims	number of years to simulate
ann_rate	event frequency
event_id	unique event identifier
expval	total amount exposed
mu	mean event loss

Value

a tidy data.table with Loss, Year and ID. Where a year simulated with zero events will show as "none"

Examples

```
create_ylt(create_elt(eltr::example_elt, ann_rate="rate", mu="mean",
      sdev_i = "sdevi" , sdev_c = "sdevc", expval="exp"),
      sims=10,ann_rate = "rate" ,event_id = "id",expval = "exp",mu ="mean")
```

eltr *eltr: a package with functions to help analyse Catastrophe model data*

Description

eltr provides functions to help

eltr functions

The eltr functions...

example_elt *Example ELT Data*

Description

This is a mock up of an ELT to help show case the typical structure of the data set and attributes

Usage

```
example_elt
```

Format

a data.table with 10 rows and 6 variables:

id unique event identifier

rate the expected annual frequency of occurence of each event

mean the mean event loss if it occurs

sdevi independent component of standard deviation of event loss if it occurs

sdevc correlated component of standard deviation of event loss if it occurs

exp maximum loss equivalent to total limit exposed

`layer_loss` *Limited loss to the layer*

Description

Limited loss to the layer

Usage

```
layer_loss(x, Excess, Limit)
```

Arguments

`x`	event loss
`Excess`	treaty retention
`Limit`	treaty limit

Value

limited loss to the layer

Examples

```
layer_loss(5,2,6)
layer_loss(5,10,6)
```

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