Package ‘LotkasLaw’

August 17, 2015

Title Runs Lotka’s Law which is One of the Special Applications of
Zipf’s Law

Version 0.0.1.0

Description Running Lotka's Law following Pao (1985)(DOI: 10.1016/0306-4573(85)90055-
X). The Law is based around the proof that the number of authors making n contribu-
tions is about 1/n^a of those making one contribution.

Depends R (>= 3.1.1)

License GPL

LazyData true

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LotkasLaw-package  LotkasLaw

Description

Runs Lotka’s Law which is One of the Special Applications of Zipf’s Law in Open Source R.

Details

Package: LotkasLaw
Type: Package
Version: 1.0
Date: 2015-07-29
License: What license is it under?

Author(s)

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References


CV  Runs Critical Value

Description

Runs Critical Value for Desired Data (in this case Sums). Assumes 1.63 Value.

Usage

CV(Sums)

Arguments

Sums  A Sumed Table of the Data Being Run Through Lotkas Law.

Value

The Value Returned is the Critical Value From the Data Inputted (as Sums)
Author(s)
Kenneth Buker

Examples
```r
# Should be DIRECTLY executable !! ----
# Define data, use random,
# or do help(data=index) for the standard data sets.

# The function is currently defined as
function (Sums)
{
    bottom <- sqrt(Sums[2])
    top <- 1.63
    answer <- top/bottom
    return(answer)
}
```

CVm

Runs Critical Value based on custom value

Description
Runs Critical Value Based on Custom value.

Usage
`CVm(value, Sums)`

Arguments
- `value`: Value Is the desired Critical Value test, See References to determine the Values Needed.
- `Sums`: A sumorization of The Data Being Tested.

Value
The value is the Critical Value Derived from Custom Critival Value Test.

Note
Typcial CV tests are .99 but this allows you to run .95 and .90 as well.

Author(s)
Kenneth Buker
References

The custom value inputed for Critical value can be found at both http://www.soest.hawaii.edu/wessel/courses/gg313/Critical_KS.pdf & also http://www.mathematik.uni-kl.de/~schwaar/Exercises/Tabellen/table_kolmogorov.pdf

Examples

```r
## Should be DIRECTLY executable !! ----
##-- ==> Define data, use random,
##--or do help(data=index) for the standard data sets.

## The function is currently defined as
function (value, Sums)
{
  bottom <- sqrt(Sums[2])
  top <- value
  answer <- top/bottom
  return(answer)
}
```

expected runs expected authors from table

Description

Generates Expected Value From the Data Being Tested

Usage

expected(Table, C, N)

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table</td>
<td>Table Imported and Being Edited for Lotkas Law</td>
</tr>
<tr>
<td>C</td>
<td>The value of C generated by LotkasC</td>
</tr>
<tr>
<td>N</td>
<td>The Value of N Generated by LotkasN</td>
</tr>
</tbody>
</table>

Value

The Value Returned is a Expected Authors Table Generated From Authors Table.

Author(s)

Kenneth Buker
Examples

```r
# Should be DIRECTLY executable !! ----
# Define data, use random,
#-- or do help(data=index) for the standard data sets.

# The function is currently defined as
function (N)
{
  P <- 20
  increm <- c(1:(P - 1))
  sum <- sum(1/increm^N)
}
```

---

LotkasC

*Runs the creation of C value in Lotkas Law*

Description

Generates Lotkas C value from Equations in Pao(1985)

Usage

```r
LotkasC(N)
```

Arguments

- **N** Value N Generated by LotkasN

Value

Value Returned is C.

Author(s)

Kenneth Buker

Examples

```r
# Should be DIRECTLY executable !! ----
# Define data, use random,
#-- or do help(data=index) for the standard data sets.

# The function is currently defined as
function (N)
{
  P <- 20
  increm <- c(1:(P - 1))
  sum <- sum(1/increm^N)
}
part1 <- sum
part2 <- 1/((N - 1) * (P^(N - 1)))
part3 <- 1/(2 * (P^N))
part4 <- N/(24 * (P - 1)^((N + 1))
result <- (part1 + part2 + part3 + part4)
result <- 1/result
return(result)

LotkasLogX

Generate a Log 10(of X from Table)

Description
Generates a table of Log base 10 of X

Usage
LotkasLogX(Table)

Arguments
Table      The table being imported containing Papers and Authors

Value
Returns a Column with Log base 10 of X.

Author(s)
Kenneth

Examples
```r
# The function is currently defined as
function (Table)
{
  value <- log(Table[, 1:1], base = 10)
  return(value)
}
```
LotkasLogY

Generates a Table of Log base 10 of Y

Description
This formula is to create the Log base 10 of Y

Usage
LotkasLogY(Table)

Arguments
Table Table imported containing Papers and Authors.

Value
Returned value is a Column containing Log base 10 of Y

Author(s)
Kenneth Buker

Examples
```r
# Should be DIRECTLY executable !! ----
#-- > Define data, use random,
#-- or do help(data=index) for the standard data sets.

# The function is currently defined as
function (Table)
{
  value <- log(Table[, 2:2], base = 10)
  return(value)
}
```

LotkasN

Runs the creation of N in Lotkas Law

Description
Runs The Creation of Lotkas Value N.

Usage
LotkasN(Sums, FullTable)
**Arguments**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sums</td>
<td>Sumed table from the Data being Tested</td>
</tr>
<tr>
<td>FullTable</td>
<td>Full table is the full table of data that is being imported for testing.</td>
</tr>
</tbody>
</table>

**Value**

The returned value is N in Lotkas Law.

**Author(s)**

Kenneth Buker

**Examples**

```r
#---- Should be DIRECTLY executable !! ----
### => Define data, use random,
###-or do help(data=index) for the standard data sets.

# The function is currently defined as
LotkasN <- function(Sums,FullTable)
{
  N <- nrow(FullTable)
  lx <- Sums[3]
  ly <- Sums[4]
  xy <- Sums[5]
  x2 <- Sums[6]
  lx2 <- lx^2
  top <- (N*xy) - (lx*ly)
  bottom <- (N*x2) - (lx2)
  Nfinal <- top/bottom
  return(Nfinal)
}
```

---

**LotkasXX**

*Multiplies Log base 10 of X by itself. (x^2)*

**Description**

This forumla is to create value of X^2

**Usage**

LotkasXX(Table)

**Arguments**

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table</td>
</tr>
</tbody>
</table>

---
LotkasXY

Value

Returned value is the result of X^2

Author(s)

Kenneth Buker

Examples

```r
##---- Should be DIRECTLY executable !! ----
##-- => Define data, use random,
##-- or do help(data=index) for the standard data sets.

## The function is currently defined as
## function (Table)
## {
##   value <- (Table[, 3:3] * Table[, 3:3])
##   return(value)
## }
```

---

LotkasXY  
Multiplies Log base 10 of X and Log base 10 of Y

Description

Multiplies Log base 10 of X and Log base 10 of Y together and returns a table.

Usage

LotkasXY(Table)

Arguments

Table

Value

Returns a table of X*Y.

Author(s)

Kenneth Buker
Examples

```r
###----- Should be DIRECTLY executable !! ----
###-- ==> Define data, use random,
###--or do help(data=index) for the standard data sets.

### The function is currently defined as
function (Table)
{
    value <- (Table[, 3:3] * Table[, 4:4])
    return(value)
}
```

**percauthors**

Runs a Percent of Authors Total from the table.

Description

Creates a Percent Authors Table based on each column variable for authors against the total.

Usage

```r
percauthors(Table, Sums)
```

Arguments

- **Table**: The Table of data that is being tested,
- **Sums**: The sum of data based off the Table,

Value

The value returned is a table with percent Authors Table.

Author(s)

Kenneth Buker

Examples

```r
###----- Should be DIRECTLY executable !! ----
###-- ==> Define data, use random,
###--or do help(data=index) for the standard data sets.

### The function is currently defined as
function (Table, Sums)
{
    justy <- Table[, 2:2]
    newcol <- justy/Sums[2]
    return(newcol)
}
```
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