Package 'yll'

July 21, 2025

Type Package

Title Compute Expected Years of Life Lost (YLL) and Average YLL

Version 1.0.0

Description Compute the standard expected years of life lost (YLL),
as developed by the Global Burden of Disease Study
(Murray, C.J., Lopez, A.D. and World Health Organization, 1996).
The YLL is based on comparing the age of death to an external standard life
expectancy curve. It also computes the average YLL, which highlights premature
causes of death and brings attention to preventable deaths
(Aragon et al., 2008).

URL https://github.com/AntoineSoetewey/yll

BugReports https://github.com/AntoineSoetewey/yll/issues

Depends R (>= 3.1.0)

License GPL (>= 2)

Encoding UTF-8

LazyData true

RoxygenNote 6.1.0

Suggests testthat

NeedsCompilation no

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Repository CRAN

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avg_yll   *Compute average years of life lost (YLL)*

Description

`avg_yll` computes the average expected years of life lost (YLL), given the number of deaths, the average age of death and the standard life expectancy.

Usage

```
avg_yll(ndeaths, avg.age.death, life.expectancy, discount.rate = 0.03,
  beta = 0.04, modulation = 0, adjustment = 0.1658)
```

Arguments

ndeaths	Number of deaths (numeric).
avg.age.death	Average age of death (numeric).
life.expectancy	
	The interpolated life expectancy at that age. In other words, the expected remaining number of years to live (numeric).
discount.rate	Discount rate (default is set to 0.03) (numeric).
beta	Age-weighting constant (default is set to 0.04) (numeric).
modulation	Age-weighting modulation constant (= 0, no weighting; = 1, weighting, default is set to 0) (numeric).
adjustment	Adjustment constant for age-weights (default is set to 0.1658) (numeric).

Details

`avg_yll` computes the average expected years of life lost (YLL). The average YLL, which highlights premature causes of death and brings attention to preventable deaths is computed by dividing the standard YLL by the number of deaths (Aragon et al., 2008). The number of deaths, the average age of death and the standard life expectancy at least must be provided (as numeric vectors). Other arguments are provided to incorporate time discounting and age weighting.

Value

Since all inputs are numeric vectors, the output will be a numeric vector.

Author(s)

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References

Aragon, T. J., Lichtensztajn, D. Y., Katcher, B. S., Reiter, R., & Katz, M. H. (2008). Calculating expected years of life lost for assessing local ethnic disparities in causes of premature death. *BMC public health, 8*(1), 116.

See Also

[yll](yll) for the standard measure of years of life lost.

Examples

```
# For 100 deaths with an average age of death of 60 years
# and an expected remaining number of years to live of 20 years:

avg_yll(100, 60, 20)

# Without discounting:

avg_yll(100, 60, 20, discount.rate = 0)

## Not run:
avg_yll("a", "b", "c") # arguments must be numeric
avg_yll(100) # avg.age.death and life.expectancy are missing,
# with no default
avg_yll(100, 60) # life.expectancy is missing,
# with no default

## End(Not run)
```

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yll   *Compute years of life lost (YLL)*

Description

yll computes the standard expected years of life lost (YLL), given the number of deaths, the average age of death and the standard life expectancy.

Usage

```
yll(ndeaths, avg.age.death, life.expectancy, discount.rate = 0.03,
  beta = 0.04, modulation = 0, adjustment = 0.1658)
```

Arguments

ndeaths	Number of deaths (numeric).
avg.age.death	Average age of death (numeric).
life.expectancy	
	The interpolated life expectancy at that age. In other words, the expected remaining number of years to live (numeric).
discount.rate	Discount rate (default is set to 0.03) (numeric).
beta	Age-weighting constant (default is set to 0.04) (numeric).
modulation	Age-weighting modulation constant (= 0, no weighting; = 1, weighting, default is set to 0) (numeric).
adjustment	Adjustment constant for age-weights (default is set to 0.1658) (numeric).

Details

yll computes the standard expected years of life lost (YLL) as developed by the Global Burden of Disease Study (Murray, C.J., Lopez, A.D. and World Health Organization, 1996). The YLL is based on comparing the age of death to an external standard life expectancy curve (Aragon et al., 2008). The number of deaths, the average age of death and the standard life expectancy at least must be provided (as numeric vectors). Other arguments are provided to incorporate time discounting and age weighting.

Value

Since all inputs are numeric vectors, the output will be a numeric vector.

Author(s)

Antoine Soetewey <antoine.soetewey@uclouvain.be>

References

Aragon, T. J., Lichtensztajn, D. Y., Katcher, B. S., Reiter, R., & Katz, M. H. (2008). Calculating expected years of life lost for assessing local ethnic disparities in causes of premature death. *BMC public health, 8*(1), 116.

Murray, C. J., Lopez, A. D., & World Health Organization. (1996). The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020: summary.

See Also

avg_yll for the average years of life lost.

Examples

```
# For 100 deaths with an average age of death of 60 years
# and an expected remaining number of years to live of 20 years:

yll(100, 60, 20)

# Without discounting:

yll(100, 60, 20, discount.rate = 0)

## Not run:
yll("a", "b", "c") # arguments must be numeric
yll(100) # avg.age.death and life.expectancy are missing,
# with no default
yll(100, 60) # life.expectancy is missing,
# with no default

## End(Not run)
```

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