Package 'ehep'

December 15, 2021

Type Package

Title Ethiopia Health Extension Program Capacity Modelling

Version 0.1.0

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Description This work allows modeling of the burdens placed on healthcare workers by the addition of new services to the Ethiopian healthcare system.

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.2

Imports jsonlite, readxl, data.table, assertthat, dplyr, magrittr

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.computeDemographicsProjection *Compute Demographics Projection*

Description

Use an initial population pyramid, fertility rates, and mortality rates to predict future population pyramids

Usage

```
.computeDemographicsProjection(
  initial_population_pyramid,
  fertility_rates,
  mortality_rates,
  years
)
```

Arguments

initial_population_pyramid	Population pyramids dataframe. Must have $Male and $Female fields
fertility_rates	Fertility rates
mortality_rates	Mortality rates
years	Vector of years to model

Value

Demographics time-series

ClinicalTaskTime *Calculate Annual Time For Clinical Task*

Description

Calculate Annual Time For Clinical Task

Usage

```
ClinicalTaskTime(tasks, taskID, demographics, year)
```

Arguments

tasks	Dataframe of task parameters (as returned by loadTaskParameters)
taskID	Task ID string
demographics	List of population pyramid dataframes
year	Year (index into demographics list)

Value

Annual time in minutes

`computeBirths` *Compute Births*

Description

Compute the total number of births for a year, given the female population pyramid and the annual fertility rates per age.

Usage

```
computeBirths(female_population, rates)
```

Arguments

`female_population`	Vector of female population pyramid
`rates`	Exploded vector of annual fertility rates

Value

Total number of expected births

`computeDeaths` *Compute Deaths*

Description

Compute the total number of deaths for a year, given the population pyramids for females and males, and the annual rates per age for both sexes.

Usage

```
computeDeaths(population, rates)
```

Arguments

`population`	Dataframe of female and male population pyramids, as returned by, for example, `loadInitialPopulation`
`rates`	List with exploded vectors of annual death rates, as returned by `explodeMortalityRates`

Value

List of expected deaths, one vector for each sex

ComputeDemographicsProjection *Compute Demographics Projection*

Description

Use the population pyramid, fertility rates, and mortality rates loaded globally to predict future population pyramids. Drops through to `.computeDemographicsProjection()`

Usage

```
ComputeDemographicsProjection()
```

Value

Demographics time-series

explodeFertilityRates *Convert Fertility Rates From Banded To Per-Age*

Description

Birth rates are reported in age bands - 15-19 years, 20-29 years, etc. `explodeFertilityRates` converts the vector of banded rates into a vector with one rate per year of age.

Usage

```
explodeFertilityRates(banded_annual_rates)
```

Arguments

`banded_annual_rates`	Rates reported in age buckets

Value

List of vectors of per-year-of-age rates, for males and females

explodeMortalityRates *Convert Mortality Rates From Banded To Per-Age*

Description

Mortality rates are reported in age bands - 1-4 years, 5-9 years, etc. `explodeMortalityRates` converts the vector of banded rates into a vector with one rate per year of age.

Usage

```
explodeMortalityRates(banded_annual_rates)
```

Arguments

`banded_annual_rates`	Rates reported in age buckets

Value

List of vectors of per-year-of-age rates, for males and females

generateFertilityRates *Generate Time-Series of Fertility Rates*

Description

Take the initial value and change rate information returned be a call to `loadPopulationChangeParameters` and derive a database of annual fertility rates stratified by population age cohort.

Usage

```
generateFertilityRates(popChangeParamsList = NULL)
```

Arguments

`sheetName`	Population parameters list (see `loadPopulationChangeParameters`).

Value

Dataframe of annual fertility rates

generateMortalityRates *Generate Time-Series of Mortality Rates*

Description

Take the initial value and change rate information returned by a call to `loadPopulationChangeParameters` and derive a database of annual mortality rates stratified by age.

Usage

```
generateMortalityRates(popChangeParamsList = NULL)
```

Arguments

`sheetName`	Population parameters list (see `loadPopulationChangeParameters`).

Value

Dataframe of annual mortality rates

InitializePopulation *Initialize Population Data*

Description

Load basic population information into the global package environment, from which it can be used for later processing.

Usage

```
InitializePopulation()
```

Value

NULL (invisible)

Examples

```
## Not run:
ehep::InitializePopulation()

## End(Not run)
```

loadGlobalConfig *Load Global Configuration*

Description

Finds and loads global configuration data from a JSON file, including things like the default locations of data files.

Usage

```
loadGlobalConfig(path = "./globalconfig.json")
```

Arguments

path	Location of global configuration file

Value

NULL (invisible)

loadInitialPopulation *Load Initial Population*

Description

Read the initial population pyramid from the model inputs Excel file. The name and location of the model inputs Excel file is loaded from the global configuration JSON file.

Usage

```
loadInitialPopulation(sheetName = "TotalPop")
```

Arguments

sheetName	Sheet name from the model input Excel file

Value

Population pyramid data frame. Values are rounded to integers.

`loadPopulationChangeParameters` *Load Population Change Parameters*

Description

Load Population Change Parameters

Usage

```
loadPopulationChangeParameters(sheetName = "PopValues")
```

Arguments

`sheetName`	Sheet name from model input Excel file.

Value

List with two vectors: `initValues` and `changeRates`

`loadTaskParameters` *Load Healthcare Task Information*

Description

Read the healthcare task information from the model inputs Excel file. The name and location of the model inputs Excel file is loaded from the global configuration JSON file.

Usage

```
loadTaskParameters(sheetName = "TaskValues")
```

Arguments

`sheetName`	Sheet name from the model input Excel file

Value

Data frame of healthcare task parameters

Trace *Turn Package Tracing On/Off*

Description

Turn Package Tracing On/Off

Usage

```
Trace(state = NULL)
```

Arguments

state	TRUE/FALSE to set tracing state, NULL or empty to return current state.

Value

Original state

Examples

```
oldState <- Trace()
print(oldState)
```

TraceMessage *Log A Trace Message*

Description

Log A Trace Message

Usage

```
TraceMessage(msgString)
```

Arguments

msgString	Trace message

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