Package: obcost (via r-universe)

Title Obesity Cost Database

Version 0.1.0

Description This database contains necessary data relevant to medical costs on obesity throughout the United States. This database, in form of an R package, could output necessary data frames relevant to obesity costs, where the clients could easily manipulate the output using difference parameters, e.g. relative risks for each illnesses. This package contributes to parts of our published journal named ``Modeling the Economic Cost of Obesity Risk and Its Relation to the Health Insurance Premium in the United States: A State Level Analysis''. Please use the following citation for the journal: Woods Thomas, Tatjana Miljkovic (2022) ``Modeling the Economic Cost of Obesity Risk and Its Relation to the Health Insurance Premium in the United States: A State Level Analysis'' <doi:10.3390/risks10100197>. The database is composed of the following main tables: 1. Relative_Risks: (constant) Relative risks for a given disease group with a risk factor of obesity; 2. Disease_Cost: (obesity_cost_disease) Supplementary output with all variables related to individual disease groups in a given state and year; 3. Full_Cost: (obesity_cost_full) Complete output with all variables used to make cost calculations, as well as cost calculations in a given state and year; 4. National_Summary: (obesity_cost_national_summary) National summary cost calculations in a given year. Three functions are included to assist users in calling and adjusting the mentioned tables and they are data_load(), data_produce(), and rel_risk_fun().

License LGPL

Depends R (>= 2.10)

Imports dplyr,tidyr, stats

Encoding UTF-8

LazyData true

RoxygenNote 7.1.2

NeedsCompilation no

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Contents

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obcost-package   *Obesity Cost Database*

Description

This database contains necessary data relevant to medical costs on obesity throughout the United
States. This database, in form of an R package, could output necessary data frames relevant to
obesity costs, where the clients could easily manipulate the output using difference parameters, e.g.
relative risks for each illnesses.

So far the functions included in the package are:

- `data_load` generate the essential four tables that concerns obesity

- `data_produce` load all critical values in a returned list format

- `rel_risk_fun` update the relative risks (or the constants) when crucial data needs updating

The database is composed of the following main tables:

- `constant` Relative risks for a given disease group with a risk factor of obesity.

- `obesity_cost_disease` Supplementary output with all variables related to individual disease
  groups in a given state and year.

- `obesity_cost_full` Complete output with all variables used to make cost calculations, as well as cost calculations in a given state and year.

- `obesity_cost_national_summary` National summary cost calculations in a given year.

- `full_data` Necessary raw data for generating new tables with user input

This package contributes to parts of our published journal named "Modeling the Economic Cost of Obesity Risk and Its Relation to the Health Insurance Premium in the United States: A State Level Analysis" Please use the following citation for the journal: Woods Thomas, Tatjana Miljkovic. 2022. Modeling the Economic Cost of Obesity Risk and Its Relation to the Health Insurance Premium in the United States: A State Level Analysis. Risks 10: 197. <doi:10.3390/risks10100197>

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Type:	Package
Version:	0.1.0
Date:	2022-10-23
License:	public
LazyData:	no

Note

Please make sure that packages of dplyr and tidyr is applied

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Consumer Price Index. 2021. All Urban Consumers (Current Series). Available online: www.bls.gov (accessed on 21 July 2021).

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constant	*Default Input of Relative Risk*

Description

This dataset gives default input of Relative Risk, however could be updated latter by the user

cvd Relative Risk for cardiovascular disease

diabetes Relative Risk for diabetes

cancer Relative Risk for cancer

copd_asthma Relative Risk for chronic obstructive pulmonary disease or asthma

osteoarthritis Relative Risk for osteoarthritis

hypertension Relative Risk for hypertension

kidney Relative Risk for kidney diseases

g_p_l Relative Risk for gallbladder, liver, and pancreatic diseases

stroke Relative Risk for strokes

Usage

```
constant
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 9 rows and 2 columns.

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data_load   *data_load function*

Description

The function "data_load" would load all critical values in a returned list format

Usage

```
data_load()
```

Value

a list(dataframe) of pop (population), gdp (global gdp), mi (median income), bmi (body mass index), disab (disability rate), employ (employment rate), med_cost (medical conditions cost), med_prev (medical conditions prevalence cost), natl_med_prev (national medical conditions prevalence), rel_risk (relative risk), benefits, and insurance

Examples

```
raw_data <- data_load()
population <- raw_data$pop
```

---

data_produce   *data_produce function*

Description

The data_produce function would generate the essential four tables that concerns obesity including 1. Relative Risks (constant): Relative risks for a given disease group with a risk factor of obesity. 2. Disease Cost (obesity_cost_disease): Supplementary output with all variables related to individual disease groups in a given state and year. 3. Full Cost (obesity_cost_full): Complete output with all variables used to make cost calculations, as well as cost calculations in a given state and year. 4. National Summary (obesity_cost_national_summary): National summary cost calculations in a given year.

Usage

```
data_produce(rr = c())
```

Arguments

rr   the relative risks of diseases – Cardiovascular disease, diabetes, cancer, Chronic obstructive pulmonary disease or asthma, osteoarthritis, hypertension, kidney diseases, (Gallbladder, Liver, Pancreatic) diseases, and strokes.

Value

a list (dataframe) of constant, obesity_cost_disease, obesity_cost_full, and obesity_cost_national_summary

Examples

```
new_data <- data_produce(rr = c(1,2,3,4,5,6,7,8,9.1))
cnst <- new_data$constant
```

---

full_data	*Necessary Raw Data for Generating New Tables With User Input*

Description

This dataset gives users opportunities to update the outputs with there own input of relative risks

pop Population

gdp GDP 1963-2020 in millions of current dollars

mi Median Income 1967-2019

bmi BMI 1996-2019

disab Disability 1981-2019

employ Employment Rate 1950-2020

med_cost Medical Conditions Cost 1996-2018

med_prev Medical Conditions Prevalence 1996-2019

natl_med_prev Medical Conditions National Prevalence 2996-2019

rel_risk Relative Risks

benefits Employee Benefits 1996-2018

insurance insurance_data

Usage

```
full_data
```

Format

An object of class list of length 12.

---

obesity_cost_disease *Relevant Data for Obesity, Cost, and Diseases*

Description

This dataset gives supplementary output with all variables related to individual disease groups in a given state and year.

State state of interest

Year year of interest

pi_it obesity prevalence in state i and year t

cause disease group

rr_j relative risk of disease group j on obesity

psi_jt national cost of disease group j in year t

rho_jit population-attributable risk percent of disease group j in state i and year t

DC_jit direct cost for disease group j in state i and year t

Usage

```
obesity_cost_disease
```

Format

An object of class data.frame with 10350 rows and 8 columns.

---

obesity_cost_full *Relevant Data for Obesity, Cost, and Diseases*

Description

Complete output with all variables used to make cost calculations, as well as cost calculations in a given state and year.

State state of interest

Year year of interest

m_t median income in year t

d_t work-impacting disability prevalence in year t

e_t employment average ration in year t

b_t employment benefit in year t

p_it population in state i and year t

pi_it obesity prevalence in state i and year t

tau_t total employee benefits in year t

varphi_it gross domestic product of state i in year t

DC_it direct cost of state i in year t

M_it excess mortality cost of state i in year t

A_it absenteeism cost of state i in year t

D_it disability cost of state i in year t

IC_it indirect cost of state i in year t

TC_it total cost of state i in year t

Usage

```
obesity_cost_full
```

Format

An object of class `data.frame` with 1150 rows and 16 columns.

---

obesity_cost_national_summary

National summary cost calculations in a given year

Description

National summary cost calculations in a given year

Year year of interest

DC_t direct cost in year t

M_t excess mortality cost in year t

A_t absenteeism cost in year t

D_t disability cost in year t

IC_t indirect cost in year t

TC_t total cost in year t

p_t total population in year t

pi_t average obesity rate in year t

Usage

```
obesity_cost_national_summary
```

Format

An object of class `data.frame` with 23 rows and 9 columns.

---

rel_risk_fun *rel_risk_fun function*

Description

The "rel_risk_fun" could update the relative risks (or the constants) when crucial data needs updating

Usage

```
rel_risk_fun(rr)
```

Arguments

rr   the relative risks of diseases – Cardiovascular disease, diabetes, cancer, Chronic
                obstructive pulmonary disease or asthma, osteoarthritis, hypertension, kidney
                diseases, (Gallbladder, Liver, Pancreatic) diseases, and strokes.

Value

a list (dataframe) of relative risks

Examples

```
key <- rel_risk_fun(rr = c(1,2,3,4,5,6,7,8,1.2))
key$rr
```

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