# Package 'vimr'

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Title vimr -- Vaccine Impact Model

**Version** 0.0.1

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<b>Description</b> 'vimr' is a vaccine impact model (R package) for estimating the health impact of vaccination programmes at the national level for a given set of countries. This R package is based of the spreadsheet-based tool (UNIVAC) which is a universal framework for evaluating vaccine policy options in low- and middle-income countries, and is accessible at https://www.paho.org/provac-toolkit/.
<b>Depends</b> R (>= 3.4.3)
License GPL-3
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LazyData true
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VignetteBuilder knitr
Imports data.table, foreach, knitr, rmarkdown
R topics documented:
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data.births
data.birthsbymaternalage
data.birthsquinquennial
data.centraldeathrateASMR
data.crudebirthrate
data.deathsbyage
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data.	agespecificfert Age-specific fertility rate	

# Description

Dataset containing age-specific fertility rate by country, age range, year and gender

# Usage

```
data.agespecificfert
```

# **Format**

A data frame with 20580 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value fertility rate
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.births

Number of Births

# Description

Dataset containing number of births by country, age range, year and gender

# Usage

data.births

### **Format**

A data frame with 14700 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value number of births
```

### Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

```
data.birthsbymaternalage
```

Number of births by age of mother

# **Description**

Dataset with the number of births by maternal by country, year and gender

# Usage

data.birthsbymaternalage

data.birthsquinquennial 5

#### **Format**

```
A data frame with 20580 observations on the following 8 variables.
```

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value number of births
```

#### Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

```
data.birthsquinquennial
```

Number of births - quinquennial

# Description

Dataset containing number of births occuring every 5 years by country, age range, year and gender

# Usage

```
data.birthsquinquennial
```

#### **Format**

A data frame with 2940 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value number of births occuring every 5 years
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

6 data.crudebirthrate

data.centraldeathrateASMR

Central death rate

# Description

Dataset containing central death rate by country, age range, year and gender

# Usage

data.centraldeathrateASMR

#### **Format**

A data frame with 55860 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value central death rate
```

### Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

# **Description**

Dataset containing crude birth rate by country, age range, year and gender

# Usage

data.crudebirthrate

data.crudedeathrate 7

#### **Format**

```
A data frame with 14700 observations on the following 8 variables.
```

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value crude birth rate
```

#### Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.crudedeathrate

Crude death rate

### **Description**

Dataset containing crude death rate (CDR) by country, age range, year and gender

# Usage

data.crudedeathrate

#### **Format**

A data frame with 14700 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value crude death rate
```

#### Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

8 data.growthrate

data.deathsbyage

Number of deaths by age

# Description

Dataset containing number of deaths by country, age range, year and gender

# Usage

```
data.deathsbyage
```

#### **Format**

A data frame with 58800 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value number of deaths
```

#### Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.growthrate

Growth rate

### **Description**

Dataset containing growth rate by country, age range, year and gender

# Usage

```
data.growthrate
```

### **Format**

A data frame with 2940 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value growth rate
```

data.Hib\_DALY

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.Hib\_DALY

Disability weights for Haemophilus influenzae type B

#### **Description**

Dataset disability weights for Haemophilus influenzae type B by condition/sequelae

#### Usage

data.Hib\_DALY

#### **Format**

A data frame with 24 observations on the following 3 variables.

Disease disease

Condition condition/sequelae

GBD\_2015\_mean Mean disability weight

#### **Source**

General Guidance for DALYs calculation VIMC with input from DOVE 2017-11-24 11:03:46

```
\tt data. Hib\_Hibmeningitis sequalae\_cases
```

Event rates (cases) for Haemophilus influenzae type b (Hib): Hib meningitis sequelae

#### **Description**

Dataset containing event rates (cases) for Hib meningitis sequelae

# Usage

```
data.Hib_Hibmeningitissequalae_cases
```

# Format

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

data.Hib\_Hibmeningitissequalae\_visits

Event rates (visits) for Haemophilus influenzae type b (Hib): Hib meningitis sequelae

# Description

Dataset containing event rates (visits) for Hib meningitis sequelae

# Usage

```
{\tt data.Hib\_Hibmeningitissequalae\_visits}
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### **Source**

DHS/MICS stratum

```
data.Hib_Hibmeningitis_cases
```

Event rates (cases) for Haemophilus influenzae type b (Hib): Hib meningitis

# Description

Dataset containing event rates (cases) for Hib meningitis

```
\tt data.Hib\_Hibmeningitis\_cases
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

#### **Source**

MCEE (Wahl et al 2017)

data.Hib\_Hibmeningitis\_deaths

Event rates (deaths) for Haemophilus influenzae type b (Hib): Hib meningitis

# Description

Dataset containing event rates (deaths) for Hib meningitis

### Usage

```
{\tt data.Hib\_Hibmeningitis\_deaths}
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

# Source

MCEE (Wahl et al 2017)

data.Hib\_Hibmeningitis\_hosps

Event rates (hosps) for Haemophilus influenzae type b (Hib): Hib meningitis

# Description

Dataset containing event rates (hosps) for Hib meningitis

# Usage

```
\tt data.Hib\_Hibmeningitis\_hosps
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### **Source**

DHS/MICS stratum

```
data.Hib_Hibmeningitis_visits
```

Event rates (visits) for Haemophilus influenzae type b (Hib): Hib meningitis

# Description

Dataset containing event rates (visits) for Hib meningitis

```
{\tt data.Hib\_Hibmeningitis\_visits}
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

#### Source

DHS/MICS stratum

data.Hib\_HibNPNM\_cases

Event rates (cases) for Haemophilus influenzae type b (Hib): Hib NPNM

# Description

Dataset containing event rates (cases) for Hib NPNM

# Usage

```
data.Hib_HibNPNM_cases
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

### Source

MCEE (Wahl et al 2017)

data.Hib\_HibNPNM\_deaths

Event rates (deaths) for Haemophilus influenzae type b (Hib): Hib NPNM

# Description

Dataset containing event rates (deaths) for Hib NPNM

# Usage

```
{\tt data.Hib\_HibNPNM\_deaths}
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

### **Source**

MCEE (Wahl et al 2017)

```
data.Hib_HibNPNM_hosps
```

Event rates (hosps) for Haemophilus influenzae type b (Hib): Hib NPNM

# Description

Dataset containing event rates (hosps) for Hib NPNM

```
data.Hib_HibNPNM_hosps
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

#### Source

DHS/MICS stratum

data.Hib\_HibNPNM\_visits

Event rates (visits) for Haemophilus influenzae type b (Hib): Hib NPNM

# Description

Dataset containing event rates (visits) for Hib NPNM

# Usage

```
data.Hib_HibNPNM_visits
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### Source

data.Hib\_nonsevere\_Hibpneumo\_cases

Event rates (cases) for Haemophilus influenzae type b (Hib): Hib pneumonia (non-severe)

# Description

Dataset containing event rates (cases) for Hib pneumonia (non-severe)

# Usage

```
data.Hib_nonsevere_Hibpneumo_cases
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### **Source**

MCEE (Wahl et al 2017)

```
data.Hib_nonsevere_Hibpneumo_visits
```

Event rates (visits) for Haemophilus influenzae type b (Hib): Hib pneumonia (non-severe)

# Description

Dataset containing event rates (visits) for Hib pneumonia (non-severe)

```
data.Hib_nonsevere_Hibpneumo_visits
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

#### **Source**

DHS/MICS stratum

data.Hib\_severe\_Hibpneumo\_cases

Event rates (cases) for Haemophilus influenzae type b (Hib): Hib pneumonia (severe)

#### **Description**

Dataset containing event rates (cases) for Hib pneumonia (severe)

### Usage

```
data.Hib_severe_Hibpneumo_cases
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

# Source

MCEE (Wahl et al 2017)

data.Hib\_severe\_Hibpneumo\_deaths

Event rates (deaths) for Haemophilus influenzae type b (Hib): Hib pneumonia (severe)

# Description

Dataset containing event rates (deaths) for Hib pneumonia (severe)

# Usage

```
data.Hib_severe_Hibpneumo_deaths
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### **Source**

MCEE (Wahl et al 2017)

```
data.Hib_severe_Hibpneumo_hosps
```

Event rates (hosps) for Haemophilus influenzae type b (Hib): Hib pneumonia (severe)

# Description

Dataset containing event rates (hosps) for Hib pneumonia (severe)

```
data.Hib_severe_Hibpneumo_hosps
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### Source

DHS/MICS stratum

data.Hib\_severe\_Hibpneumo\_visits

Event rates (visits) for Haemophilus influenzae type b (Hib): Hib pneumonia (visits)

### **Description**

Dataset containing event rates (visits) for Hib pneumonia (visits)

# Usage

```
data.Hib_severe_Hibpneumo_visits
```

### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### **Source**

20 data.lifeexpectancy

# Description

Dataset containing population - interpolated (1-year time and age) by country, age range, year and gender

# Usage

```
data.interpolatedpop
```

#### **Format**

A data frame with 170480 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value population interpolated 1-year time and age
```

#### Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.lifeexpectancy Life expectancy at birth

# **Description**

Dataset containing life expectancy at birth by country, age range, year and gender

```
data.lifeexpectancy
```

data.neonatalmortality 21

#### **Format**

```
A data frame with 1470 observations on the following 8 variables.
```

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value expected remaining years of life
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

```
data.neonatalmortality
```

Neonatal mortality rate

# Description

Dataset containing 28-day neonatal mortality rate by country, age range, year and gender

# Usage

```
data.neonatalmortality
```

### **Format**

A data frame with 14700 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value 28-day neonatal mortality rate
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

22 data.PCV\_DALY

data.netmigration

Net migration rate

### Description

Dataset containing net migration rate by country, age range, year and gender

#### Usage

```
data.netmigration
```

#### **Format**

A data frame with 2940 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value net migration rate
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

 $data.PCV\_DALY$ 

Disability weights for Pneumococcus (Pneumococcal conjugate vaccine)

# Description

Dataset disability weights for PCV by condition/sequelae

### Usage

```
data.PCV_DALY
```

#### **Format**

A data frame with 27 observations on the following 3 variables.

Disease disease
Condition condition/sequelae
GBD\_2015\_mean Mean disability weight

#### Source

General Guidance for DALYs calculation VIMC with input from DOVE 2017-11-24 11:03:46

```
data.PCV_nonsevere_SpNPNM_cases
```

Event rates (cases) for Streptococcus pneumoniae (Sp): Sp NPNM (non-severe)

# Description

Dataset containing event rates (cases) for Sp NPNM (non-severe)

# Usage

```
data.PCV_nonsevere_SpNPNM_cases
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### **Source**

MCEE (Wahl et al 2017)

```
data.PCV_nonsevere_SpNPNM_hosps
```

Event rates (hosps) for Streptococcus pneumoniae (Sp): Sp NPNM (non-severe)

# Description

Dataset containing event rates (hosps) for Sp NPNM (non-severe)

```
data.PCV_nonsevere_SpNPNM_hosps
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### Source

DHS/MICS stratum

data.PCV\_nonsevere\_SpNPNM\_visits

Event rates (visits) for Streptococcus pneumoniae (Sp): Sp NPNM (non-severe)

# Description

Dataset containing event rates (visits) for Sp NPNM (non-severe)

# Usage

```
data.PCV_nonsevere_SpNPNM_visits
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### **Source**

```
data.PCV_nonsevere_Sppneumo_cases
```

Event rates (cases) for Streptococcus pneumoniae (Sp): Sp pneumonia (non-severe)

# Description

Dataset containing event rates (cases) for Sp pneumonia (non-severe)

# Usage

```
data.PCV_nonsevere_Sppneumo_cases
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### **Source**

MCEE (Wahl et al 2017)

```
data.PCV_nonsevere_Sppneumo_visits
```

Event rates (visits) for Streptococcus pneumoniae (Sp): Sp pneumonia (non-severe)

# Description

Dataset containing event rates (visits) for Sp pneumonia (non-severe)

```
data.PCV_nonsevere_Sppneumo_visits
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### Source

DHS/MICS stratum

```
data.PCV_severe_SpNPNM_cases
```

Event rates (cases) for Streptococcus pneumoniae (Sp): Sp NPNM (severe)

# Description

Dataset containing event rates (cases) for Sp NPNM (severe)

# Usage

```
{\tt data.PCV\_severe\_SpNPNM\_cases}
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

# Source

MCEE (Wahl et al 2017)

```
data.PCV_severe_SpNPNM_deaths
```

Event rates (deaths) for Streptococcus pneumoniae (Sp): Sp NPNM (severe)

# Description

Dataset containing event rates (deaths) for Sp NPNM (severe)

# Usage

```
data.PCV_severe_SpNPNM_deaths
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### **Source**

MCEE (Wahl et al 2017)

```
data.PCV_severe_SpNPNM_hosps
```

Event rates (hosps) for Streptococcus pneumoniae (Sp): Sp NPNM (severe)

# Description

Dataset containing event rates (hosps) for Sp NPNM (severe)

```
data.PCV_severe_SpNPNM_hosps
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### Source

DHS/MICS stratum

```
data.PCV_severe_SpNPNM_visits
```

Event rates (visits) for Streptococcus pneumoniae (Sp): Sp NPNM (severe)

# Description

Dataset containing event rates (visits) for Sp NPNM (severe)

# Usage

```
data.PCV_severe_SpNPNM_visits
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### **Source**

```
data.PCV_severe_Sppneumo_cases
```

Event rates (cases) for Streptococcus pneumoniae (Sp): Sp pneumonia (severe)

# Description

Dataset containing event rates (cases) for Sp pneumonia (severe)

# Usage

```
data.PCV_severe_Sppneumo_cases
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### **Source**

MCEE (Wahl et al 2017)

```
data.PCV_severe_Sppneumo_deaths
```

Event rates (deaths) for Streptococcus pneumoniae (Sp): Sp pneumonia (severe)

# Description

Dataset containing event rates (deaths) for Sp pneumonia (severe)

```
data.PCV_severe_Sppneumo_deaths
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### Source

MCEE (Wahl et al 2017)

data.PCV\_severe\_Sppneumo\_hosps

Event rates (hosps) for Streptococcus pneumoniae (Sp): Sp pneumonia (severe)

# Description

Dataset containing event rates (hosps) for Sp pneumonia (severe)

# Usage

```
data.PCV_severe_Sppneumo_hosps
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### **Source**

data.PCV\_severe\_Sppneumo\_visits

Event rates (visits) for Streptococcus pneumoniae (Sp): Sp pneumonia (severe)

# Description

Dataset containing event rates (visits) for Sp pneumonia (severe)

# Usage

```
data.PCV_severe_Sppneumo_visits
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### Source

DHS/MICS stratum

```
data.PCV_Spmeningitissequelae_cases
```

Event rates (cases) for Streptococcus pneumoniae (Sp): Sp meningitis sequelae

# Description

Dataset containing event rates (cases) for Sp meningitis sequelae

```
{\tt data.PCV\_Spmeningitissequelae\_cases}
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age ageMid midLow lowHigh high

data.PCV\_Spmeningitissequelae\_visits

Event rates (visits) for Streptococcus pneumoniae (Sp): Sp meningitis sequelae

# Description

Dataset containing event rates (visits) for Sp meningitis sequelae

#### Usage

```
{\tt data.PCV\_Spmeningitissequelae\_visits}
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

#### Source

```
data.PCV_Spmeningitis_cases
```

Event rates (cases) for Streptococcus pneumoniae (Sp): Sp meningitis

# Description

Dataset containing event rates (cases) for Sp meningitis

# Usage

```
data.PCV_Spmeningitis_cases
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

```
Country country
```

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### Source

```
MCEE (Wahl et al 2017)
```

```
data.PCV_Spmeningitis_deaths
```

Event rates (deaths) for Streptococcus pneumoniae (Sp): Sp meningitis

# Description

Dataset containing event rates (deaths) for Sp meningitis

```
data.PCV_Spmeningitis_deaths
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### Source

MCEE (Wahl et al 2017)

data.PCV\_Spmeningitis\_hosps

Event rates (hosps) for Streptococcus pneumoniae (Sp): Sp meningitis

# Description

Dataset containing event rates (hosps) for Sp meningitis

# Usage

```
data.PCV_Spmeningitis_hosps
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

### Source

```
data.PCV_Spmeningitis_visits
```

Event rates (visits) for Streptococcus pneumoniae (Sp): Sp meningitis

# Description

Dataset containing event rates (visits) for Sp meningitis

# Usage

```
data.PCV_Spmeningitis_visits
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

```
Country country
```

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

### Source

DHS/MICS stratum

```
data.PCV_sp_acuteotitismedia_cases
```

Event rates (cases) for Streptococcus pneumoniae (Sp): Sp acute otitis media

# Description

Dataset containing event rates (cases) for Sp acute otitis media

```
{\tt data.PCV\_sp\_acuteotitismedia\_cases}
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

#### **Source**

Monasta L et al, & CDC

data.PCV\_sp\_acuteotitismedia\_visits

Event rates (visits) for Streptococcus pneumoniae (Sp): Sp acute otitis media

# Description

Dataset containing event rates (visits) for Sp acute otitis media

### Usage

```
{\tt data.PCV\_sp\_acuteotitismedia\_visits}
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### **Source**

data.pdeathbyage 37

data.pdeathbyage

Probability of dying by age

# Description

Dataset containing probability of dying by age by country, age range, year and gender

# Usage

data.pdeathbyage

#### **Format**

A data frame with 52920 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value probability of dying
```

## **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.quinquennialpop

*Quinquennial population (5-year time and age)* 

# Description

Dataset containing population - quinquennial population (5-year time and age) by country, age range, year and gender

# Usage

data.quinquennialpop

```
A data frame with 71442 observations on the following 8 variables.
```

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value population quinquennial 5-year time and age
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

```
data.remainingyearsoflife

Expected remaining years of life
```

# **Description**

Dataset containing expected remaining years of life by country, age range, year and gender

# Usage

```
data.remainingyearsoflife
```

# Format

A data frame with 64680 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value expected remaining years of life
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.rotavirus\_intussusception\_cases

Event rates (cases) for Rotavirus intussusception

# **Description**

Dataset containing event rates (cases) for rotavirus intussusception

# Usage

data.rotavirus\_intussusception\_cases

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

#### **Source**

Clark et al, unpublished update of the Jiang literature review. Medians of available country datasets within countries were used. For countries without data, the median for all datasets in the same WHO region was used. This was a better indicator of incidence than U5MR quintile e.g. WPRO has uniquely high incidence.

data.rotavirus\_intussusception\_deaths

Event rates (deaths) for Rotavirus intussusception

# **Description**

Dataset containing event rates (deaths) for rotavirus intussusception

# Usage

data.rotavirus\_intussusception\_deaths

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age
Mid mid
Low low
High high

data.rotavirus\_intussusception\_hosps

Event rates (hosps) for Rotavirus intussusception

# Description

Dataset containing event rates (hosps) for rotavirus intussusception

#### Usage

data.rotavirus\_intussusception\_hosps

# **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age ageMid midLow low

High high

# Source

Clark et al, unpublished update of the Jiang literature review. Medians of available country datasets within countries were used. For countries without data, the median for all datasets in the same WHO region was used. This was a better indicator of incidence than U5MR quintile e.g. WPRO has uniquely high incidence.

data.rotavirus\_nonsevere\_RVGE\_cases

Event rates (cases) for Rotavirus non-severe RVGE

# **Description**

Dataset containing event rates (cases) for rotavirus D1 for non-severe RVGE

#### Usage

data.rotavirus\_nonsevere\_RVGE\_cases

#### **Format**

A data frame with 195 observations on the following 8 variables.

**Country** country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

## Source

Bilcke J. et al. Estimating the Incidence of Symptomatic Rotavirus Infections: A Systematic Review and Meta-Analysis. PLOS One, June 2009, Volume 4, Issue 6, e6060. Note: random effects model resulted in a global incidence estimate of 0.24 [0.17; 0.34] symptomatic RV infections per person year of observation for children below 2 years of age. Crudely extrapolating to children aged <5yrs, and assuming minimal incidence aged 2+yrs, gives an under-five incidence rate of 0.10 [0.07 - 0.14] or 10,000 [7,000 - 14,000] per 100,000 per year <5yrs. Severe incidence rates derived from Fischer-Walker (see source for severe RVGE incidence), were then subtracted to give non-severe RVGE incidence.

data.rotavirus\_nonsevere\_RVGE\_visits

Event rates (visits) for Rotavirus non-severe RVGE

# **Description**

Dataset containing event rates (visits) for rotavirus D1 for non-severe RVGE

#### Usage

data.rotavirus\_nonsevere\_RVGE\_visits

A data frame with 195 observations on the following 8 variables.

Country country
WHO region WHO region
WHO region2 WHO region country code
Income income level
Age age
Mid mid
Low low

# Source

High high

Assume 1 visit for every 2 non-severe cases

data.rotavirus\_severe\_RVGE\_cases

Event rates (cases) for Rotavirus severe RVGE

#### **Description**

Dataset containing event rates (cases) for rotavirus D2 for severe RVGE

#### Usage

```
data.rotavirus_severe_RVGE_cases
```

# **Format**

A data frame with 195 observations on the following 8 variables.

Country country
WHO region WHO region
WHO region2 WHO region country code
Income income level
Age age
Mid mid
Low low
High high

## Source

Fischer-Walker C. et al, Table 1: Global and regional burden of diarrhoea and pneumonia per year in children aged 0–4 years, by WHO region. Global burden of childhood pneumonia and diarrhoea. Lancet 2013; 381: 1405–16. Notes: Episodes per child per year <5yrs (2010) by WHO region were multiplied by the proportion of episodes that were severe by WHO region (approximately 2 by the rotavirus-positive proportion <5yrs by WHO region, reported among hospitalised diarrhoea cases in CHERG (Lanata C. et al, Global Causes of Diarrheal Disease Mortality in Children <5 Years of Age: A Systematic Review. PLOS One. September 2013, Volume 8, Issue 9, e72788). The uncertainty range only reflects uncertainty in the incidence of diarrhoea episodes.

 ${\tt data.rotavirus\_severe\_RVGE\_deaths}$ 

Event rates (deaths) for Rotavirus severe RVGE

# Description

Dataset containing event rates (deaths) for rotavirus for severe RVGE

# Usage

```
data.rotavirus_severe_RVGE_deaths
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

Income income level

Age age

Mid mid

Low low

High high

# Source

See Clark et al, TRIVAC, Vaccine, Appendix

data.rotavirus\_severe\_RVGE\_hosps

 $Event\ rates\ (hospital)\ for\ Rotavirus\ severe\ RVGE$ 

# Description

Dataset containing event rates (hospitals) for rotavirus for severe RVGE

# Usage

```
data.rotavirus_severe_RVGE_hosps
```

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

#### Source

See Clark et al, TRIVAC, Vaccine, Appendix

data.rotavirus\_severe\_RVGE\_visits

Event rates (visits) for Rotavirus severe RVGE

# **Description**

Dataset containing event rates (visits) for rotavirus for severe RVGE

# Usage

```
data.rotavirus_severe_RVGE_visits
```

#### **Format**

A data frame with 195 observations on the following 8 variables.

Country country

WHO region WHO region

WHO region 2 WHO region country code

**Income** income level

Age age

Mid mid

Low low

High high

## **Source**

Clark A et al, unpublished update of the IHME/MCEE/WHOCDC estimates. Median/Min/Max 2015 estimates were used or the estimate for the most recent pre-vax year (using WUENIC 15th July 2017).

data.Rota\_DALY 45

data.Rota\_DALY

Disability weights for Rotavirus

# **Description**

Dataset disability weights for Rotavirus by condition/sequelae

# Usage

```
data.Rota_DALY
```

#### **Format**

A data frame with 3 observations on the following 3 variables.

Disease disease

Condition condition/sequelae

GBD\_2015\_mean Mean disability weight

#### **Source**

General Guidance for DALYs calculation VIMC with input from DOVE 2017-11-24 11:03:46

data.sexratio

Sex ratio at birth

# Description

Dataset containing sex-ratio at birth by country, age range, year and gender

#### Usage

```
data.sexratio
```

# Format

A data frame with 2940 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value sex-ratio
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

46 data.totaldeaths

data.survival

Survivors from a birth-cohort of 100k

# **Description**

A data frame with 64680 observations on the following 8 variables.

# Usage

data.survival

#### **Format**

A data frame with 20580 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value number of survivors
```

#### Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.totaldeaths

Deaths in total

# Description

Dataset containing total number of deaths by country, age range, year and gender

# Usage

data.totaldeaths

## **Format**

A data frame with 14700 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value number of deaths
```

data.totalfert 47

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.totalfert

Total fertility rate

# Description

Dataset containing total fertility rate by country, age range, year and gender

#### Usage

data.totalfert

# **Format**

A data frame with 14700 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value total fertility rate
```

# Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.totalpop

Total population

# Description

Dataset containing total population country, age range, year and gender

# Usage

data.totalpop

data.u1mortality

#### **Format**

```
A data frame with 14798 observations on the following 8 variables.
```

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value total population
```

#### **Source**

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.u1mortality

Under 1 mortality rate

# **Description**

Dataset containing under 1 mortality rate by country, age range, year and gender

# Usage

```
data.u1mortality
```

#### **Format**

A data frame with 14700 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value under 1 mortality rate
```

## Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

data.u5mortality 49

data.u5mortality

Under 5 mortality rate

# **Description**

Dataset containing under 5 mortality rate by country, age range, year and gender

# Usage

```
data.u5mortality
```

#### **Format**

A data frame with 20580 observations on the following 8 variables.

```
country_code_numeric a numeric vector
country_code country code
country name of country
age_from starting age
age_to end age
year year
gender gender
value fertility rate
```

# Source

Demographic data from the Vaccine Impact Modelling Consortium (VIMC)

```
data.vaccine_schedules
```

Disability weights for Haemophilus influenzae type B

# Description

Dataset containing disability weights for Haemophilus influenzae type B by condition/sequelae (UNIVAC model)

# Usage

```
data.vaccine_schedules
```

# **Format**

A data frame with 195 observations on the following 6 variables.

Country country

BCG BCG target age in weeks

DTP1 DTP1 target age in weeks

DTP2 DTP2 target age in weeks

**DTP3** DTP3 target age in weeks

Meas1 Measles target age in weeks

50 writelog

#### **Source**

www.who.int/immunization/monitoring\_surveillance/data/schedule\_data.xls

vimr

vimr: Vaccine Impact Model

# **Description**

"vimr" is a vaccine impact model (R package) for estimating the health impact of vaccination programmes at the national level for a given set of countries. This R package is based of the spreadsheet-based tool (UNIVAC) which is a universal framework for evaluating vaccine policy options in low- and middle-income countries, and is accessible at https://www.paho.org/provactoolkit/,

# Vaccine impact model

Estimate the health impact of vaccination at the national level.

Hib, pneumococcal and rotavirus vacccination can be separately analysed.

Multiple countries can be analysed and results are generated for each country.

writelog

Simulation log reporting

## **Description**

Appends message of simulation run (x) to log file (logname).

### Usage

```
writelog(logname, x)
```

# **Arguments**

logname log filename

x message of simulation run

# Value

None

## **Examples**

#

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