Package ‘DHS.rates’

October 12, 2022

Type Package
Title Calculates Demographic Indicators
Version 0.9.1
Date 2021-12-09
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Description Calculates key indicators such as fertility rates (Total Fertility Rate (TFR), General Fertility Rate (GFR), and Age Specific Fertility Rate (ASFR)) using Demographic and Health Survey (DHS) women/individual data, childhood mortality probabilities and rates such as Neonatal Mortality Rate (NNMR), Post-neonatal Mortality Rate (PNNMR), Infant Mortality Rate (IMR), Child Mortality Rate (CMR), and Under-five Mortality Rate (U5MR), and adult mortality indicators such as the Age Specific Mortality Rate (ASMR), Age Adjusted Mortality Rate (AAMR), Age Specific Maternal Mortality Rate (ASMMR), Age Adjusted Maternal Mortality Rate (AAMMR), Age Specific Pregnancy Related Mortality Rate (ASPRMR), Age Adjusted Pregnancy Related Mortality Rate (AAPRMR), Maternal Mortality Ratio (MMR) and Pregnancy Related Mortality Ratio (PRMR).
In addition to the indicators, the 'DHS.rates' package estimates sampling errors indicators such as Standard Error (SE), Design Effect (DEFT), Relative Standard Error (RSE) and Confidence Interval (CI).
License GPL-2
Encoding UTF-8
LazyData true
Depends R(>= 3.4.0)
Imports reshape, survey, stats, haven, matrixStats, dplyr, rlang, crayon
RoxygenNote 7.1.1
VignetteBuilder knitr
Suggests knitr, rmarkdown
NeedsCompilation no
Repository CRAN
Date/Publication 2021-12-09 19:00:02 UTC

R topics documented:

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Description

Example for a DHS data of births.

Usage

ADBR70

Format

A data frame with 2753 rows and 8 variables:

- **v005** Women individual sample weight
- **v007** Year of interview
- **v008** Date of interview (CMC)
- **v021** Primary sampling unit
- **v022** Sample strata for sampling error
- **v025** Type of residence urban/rural
- **b3** Date of birth (CMC)
- **b7** Age at death
Source

https://dhsprogram.com/data/available-datasets.cfm

\[
\text{admort} \quad \text{Calculates adult and maternal mortality indicators based on survey data.}
\]

Description

\text{admort} \text{ returns adult mortality indicators such as the Age Specific Mortality Rate (ASMR), Age Adjusted Mortality Rate (AAMR), Age Specific Maternal Mortality Rate (ASMMR), Age Adjusted Maternal Mortality Rate (AAMMR), Age Specific Pregnancy Related Mortality Rate (ASPRMR), Age Adjusted Pregnancy Related Mortality Rate (AAPRMR), Maternal Mortality Ratio (MMR) and Pregnancy Related Mortality Ratio (PRMR). admort returns the Standard Error (SE), exposure (N), weighted exposure (WN), Design Effect (DEFT), Relative Standard Error (RSE), and Confidence Interval (CI).}

Usage

\begin{verbatim}
admort(
  Data.Name,Indicator,
  JK = NULL,
  CL = NULL,
  Strata = NULL,
  Cluster = NULL,
  Weight = NULL,
  Date_of_interview = NULL,
  PeriodEnd = NULL,
  Period = NULL
)
\end{verbatim}

Arguments

- **Data.Name**: The DHS women (IR) dataset or data from other survey with the same format.
- **Indicator**: Type of indicator to be calculated ("asmr", "aamr", "asmmr", "aammr", "asprmr", "aaprmr", "mmr", "prmr", "aagfr").
- **JK**: "Yes" to estimate Jackknife SE for AAMR, AAMMR, AAPRMR, MMR and PRMR.
- **CL**: Confidence level to calculate the Confidence Coefficient Z of the Confidence Intervals; default if 95.
- **Strata**: Stratification variable if other than "v022".
- **Cluster**: Sample cluster variable if other than "v021".
- **Weight**: Survey weight variable if other than "v005".
Date_of_interview

Date of Interview (CMC) variable if other than "v008".

PeriodEnd

The end of the exposure period in YYYY-MM format; default is the date of the survey.

Period

The study period for fertility in months; default is 36 months (3 years).

Value

Mortality indicators (ASMR, AAMR, ASMMR, AAMMR, ASPRMR, AAPRMR, MMR, PRMR and AAGFR), and precision indicators (SE, DEFT, RSE, and CI).

Author(s)

Mahmoud Elkasabi.

**AWIR70**

*DHS All Women dataset*

**Description**

Example for a DHS data based on all women.

**Usage**

**AWIR70**

**Format**

A data frame with 3024 rows and 27 variables:

- **v005** Women individual sample weight
- **v007** Year of interview
- **v008** Date of interview (CMC)
- **v011** Date of birth (CMC)
- **v021** Primary sampling unit
- **v022** Sample strata for sampling error
- **v025** Type of residence urban/rural
- **b3_01** Date of birth (CMC) birth 1
- **b3_02** Date of birth (CMC) birth 2
- **b3_03** Date of birth (CMC) birth 3
- **b3_04** Date of birth (CMC) birth 4
- **b3_05** Date of birth (CMC) birth 5
- **b3_06** Date of birth (CMC) birth 6
- **b3_07** Date of birth (CMC) birth 7
chmort

b3_08 Date of birth (CMC) birth 8
b3_09 Date of birth (CMC) birth 9
b3_10 Date of birth (CMC) birth 10
b3_11 Date of birth (CMC) birth 11
b3_12 Date of birth (CMC) birth 12
b3_13 Date of birth (CMC) birth 13
b3_14 Date of birth (CMC) birth 14
b3_15 Date of birth (CMC) birth 15
b3_16 Date of birth (CMC) birth 16
b3_17 Date of birth (CMC) birth 17
b3_18 Date of birth (CMC) birth 18
b3_19 Date of birth (CMC) birth 19
b3_20 Date of birth (CMC) birth 20

Source

https://dhsprogram.com/data/available-datasets.cfm

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chmort

*Calculates childhood mortality rates based on survey data.*

**Description**

chmort returns childhood mortality rates such as the Neonatal Mortality Rate (NNMR), Post-neonatal Mortality Rate (PNMR), Infant Mortality Rate (IMR), Child Mortality Rate (CMR), and Under-5 Mortality Rate (U5MR) chmort returns the Standard Error (SE), mortality exposure (N), weighted exposure (WN), Design Effect (DEFT), Relative Standard Error (RSE), and Confidence Interval (CI).

**Usage**

```r
chmort(
    Data.Name,
    JK = NULL,
    CL = NULL,
    Strata = NULL,
    Cluster = NULL,
    Weight = NULL,
    Date_of_interview = NULL,
    Date_of_birth = NULL,
    Age_at_death = NULL,
    PeriodEnd = NULL,
    Period = NULL,
    Class = NULL
)
```
Arguments

Data.Name  The DHS births (BR) dataset or data from other survey with the same format.
JK          "Yes" to estimate Jackknife SE.
CL          Confidence level to calculate the Confidence Coefficient Z of the Confidence Intervals; default if 95.
Strata      Stratification variable if other than "v022".
Cluster     Sample cluster variable if other than "v021".
Weight      Survey weight variable if other than "v005".
Date_of_interview  Date of Interview (CMC) variable if other than "v008".
Date_of_birth   Child date of birth (CMC) variable if other than "b3".
Age_at_death   Child age at death (in months) variable if other than "b7".
PeriodEnd      The end of the exposure period in YYYY-MM format; default is the date of the survey.
Period         The study period for mortality in months; default is 60 months (5 years).
Class          Allow for domain level indicators.

Value

Childhood mortality rates (NNMR, PNNMR, IMR, CMR, and U5MR), and precision indicators (SE, RSE, and CI).

Author(s)

Mahmoud Elkasabi.

Examples

# Calculate five-year children mortality rates based on ADBR70 data

data("ADBR70")
chmort(
  ADBR70,
  JK = "Yes"
)

# Calculate ten-year children mortality rates based on ADBR70 data

data("ADBR70")
chmort(
  ADBR70,
  JK = "Yes",
  Period = 120
)

# The exposure period ends in June 2011
chmortp

```r
data("ADBR70")
chmort(
  ADBR70,
  PeriodEnd = "2011-06"
)
```

---

### chmortp

Calculates the childhood component death probabilities based on survey data.

**Description**

chmortp returns weighted childhood component death probabilities for 8 age segments 0, 1-2, 3-5, 6-11, 12-23, 24-35, 36-47, and 48-59 months. chmort returns weighted and unweighted number of deaths and children-years exposure.

**Usage**

```r
chmortp(
  Data.Name,
  Weight = NULL,
  Date_of_interview = NULL,
  Date_of_birth = NULL,
  Age_at_death = NULL,
  PeriodEnd = NULL,
  Period = NULL,
  Class = NULL
)
```

**Arguments**

- **Data.Name**: The DHS births (BR) dataset or data from other survey with the same format.
- **Weight**: Survey weight variable if other than "v005".
- **Date_of_interview**: Date of Interview (CMC) variable if other than "v008".
- **Date_of_birth**: Child date of birth (CMC) variable if other than "b3".
- **Age_at_death**: Child age at death (in months) variable if other than "b7".
- **PeriodEnd**: The end of the exposure period in YYYY-MM format; default is the date of the survey.
- **Period**: The study period for mortality in months; default is 60 months (5 years).
- **Class**: Allow for domain level indicators.

**Value**

Childhood component death probabilities.
Author(s)

Mahmoud Elkasabi.

Examples

# Calculate childhood component death probabilities based on ADBR70 data

data("ADBR70")
chmortp(
  ADBR70
)

---

**EMIR70**

*DHS Ever-Married Women dataset*

Description

Example for a DHS data based on ever-married women.

Usage

EMIR70

Format

A data frame with 3014 rows and 30 variables:

- **v005** Women individual sample weight
- **v007** Year of interview
- **v008** Date of interview (CMC)
- **v011** Date of birth (CMC)
- **v021** Primary sampling unit
- **v022** Sample strata for sampling error
- **v025** Type of residence urban/rural
- **awfactt** All woman factor - total
- **awfactu** All woman factor - urban/rural
- **awfactr** All woman factor - regional
- **b3_01** Date of birth (CMC) birth 1
- **b3_02** Date of birth (CMC) birth 2
- **b3_03** Date of birth (CMC) birth 3
- **b3_04** Date of birth (CMC) birth 4
- **b3_05** Date of birth (CMC) birth 5
fert

b3_06 Date of birth (CMC) birth 6
b3_07 Date of birth (CMC) birth 7
b3_08 Date of birth (CMC) birth 8
b3_09 Date of birth (CMC) birth 9
b3_10 Date of birth (CMC) birth 10
b3_11 Date of birth (CMC) birth 11
b3_12 Date of birth (CMC) birth 12
b3_13 Date of birth (CMC) birth 13
b3_14 Date of birth (CMC) birth 14
b3_15 Date of birth (CMC) birth 15
b3_16 Date of birth (CMC) birth 16
b3_17 Date of birth (CMC) birth 17
b3_18 Date of birth (CMC) birth 18
b3_19 Date of birth (CMC) birth 19
b3_20 Date of birth (CMC) birth 20

Source

https://dhsprogram.com/data/available-datasets.cfm

---

**fert**

*Calculates fertility indicators based on survey data.*

---

**Description**

fert returns fertility indicators such as the Total Fertility Rate (TFR), General Fertility Rate (GFR), and Age Specific Fertility Rate (ASFR) fert returns the Standard Error (SE), fertility exposure (N), weighted exposure (WN), Design Effect (DEFT), Relative Standard Error (RSE), and Confidence Interval (CI).

**Usage**

```
fert(
    Data.Name,
    Indicator,
    JK = NULL,
    CL = NULL,
    Strata = NULL,
    Cluster = NULL,
    Weight = NULL,
    Date_of_interview = NULL,
    Woman_DOB = NULL,
    EverMW = NULL,
)```
Arguments

Data.Name         The DHS women (IR) dataset or data from other survey with the same format.
Indicator         Type of indicator to be calculated ("tfr", "gfr", "asfr").
JK                "Yes" to estimate Jackknife SE for TFR.
CL                Confidence level to calculate the Confidence Coefficient Z of the Confidence Intervals; default if 95.
Strata            Stratification variable if other than "v022".
Cluster           Sample cluster variable if other than "v021".
Weight            Survey weight variable if other than "v005".
Date_of_interview Date of Interview (CMC) variable if other than "v008".
Woman_DOB        Woman date of birth (CMC) variable if other than "v011".
EverMW            "Yes" for ever-married women data.
AWFact            All-women factor variable in case of EverMW = "Yes".
PeriodEnd         The end of the exposure period in YYYY-MM format; default is the date of the survey.
Period            The study period for fertility in months; default is 36 months (3 years).
Class             Allow for domain level indicators.

Value

Fertility indicators (TFR, GFR, or ASFR), and precision indicators (SE, DEFT, RSE, and CI).

Author(s)

Mahmoud Elkasabi.

Examples

# Calculate TFR and estimate Jackknife SE based on all women AWIR70 data

data("AWIR70")
Total_Fertility_Rate <- fert(
    AWIR70,
    Indicator = "tfr",
    JK = "Yes"
)

# Calculate GFR and estimate SE based on ever-married women EMIR70 data
data("EMIR70")
General_Fertility_Rate <- fert(
  EMIR70,
  Indicator = "gfr",
  EverMW = "YES",
  AWFact = "awfactt"
)

# Calculate Urban/Rural level ASFR and estimate SE based on all women AWIR70 data

data("AWIR70")
Age_Specific_Fertility_Rate <- fert(
  AWIR70,
  Indicator = "asfr",
  Class = "v025"
)
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