Package 'DHS.rates'

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Type Package

Title Calculates Demographic Indicators

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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), Postneonatal 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).
The package is developed according to the DHS methodology of calculating the fertility indicators and
the childhood mortality rates outlined in the
``Guide to DHS Statistics" (Croft, Trevor N., Aileen M. J. Marshall, Courtney K. Allen, et al. 2018, <https://dhsprogram.com/Data/Guide-to-DHS-Statistics/index.cfm>)
and the DHS methodology of estimating the sampling errors indicators outlined in
the ``DHS Sampling and Household Listing Manual" (ICF International 2012, <https://dhsprogram.com/pubs/pdf/DHSM4/DHS6_Sampling_Manual_Sept2012_DHSM4.pdf>).

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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

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Contents

`ADBR70` *DHS Births dataset*

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

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admort *Calculates adult and maternal mortality indicators based on survey data.*

Description

admort 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

```
admort(
  Data.Name,
  Indicator,
  JK = NULL,
  CL = NULL,
  Strata = NULL,
  Cluster = NULL,
  Weight = NULL,
  Date_of_interview = NULL,
  PeriodEnd = NULL,
  Period = 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 ("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

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

`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 (PNNMR), 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

```
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
```

```
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

```
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

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,
```

```
  AWFact = NULL,
  PeriodEnd = NULL,
  Period = NULL,
  Class = 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"
)
```

Index