

# 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, and 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). 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](https://dhsprogram.com/pubs/pdf/DHSM4/DHS6_Sampling_Manual_Sept2012_DHSM4.pdf)>).

**License** GPL-2

**Encoding** UTF-8

**LazyData** true

**Depends** R(>= 3.4.0)

**Imports** reshape, survey, stats, haven, matrixStats, crayon

**RoxygenNote** 6.1.1

**VignetteBuilder** knitr

**Suggests** knitr, rmarkdown

**NeedsCompilation** no

**Repository** CRAN

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ADBR70	<i>DHS Births dataset</i>
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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>

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AWIR70

*DHS All Women dataset*

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**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>

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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 (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 is 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
)
```

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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>

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fert	<i>Calculates fertility indicators based on survey data.</i>
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### 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"
)
```

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