

Package: riycf (via r-universe)

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Type Package

Title Utilities for Calculating Infant and Young Child Feeding Indicators

Version 0.0.0.9000

Description This package aims to generate updated indicators to assess infant and young child feeding (IYCF) practices at the individual under 2 years old children level. The indicators were developed using the technical guideline from the Indicators for assessing infant and young child feeding practices: definitions and measurement methods <<https://www.who.int/publications/i/item/9789240018389>>.

License GPL (>= 3)

Encoding UTF-8

LazyData true

Depends R (>= 2.10)

Suggests rmarkdown, knitr, testthat (>= 3.0.0), covr

VignetteBuilder knitr

RoxygenNote 7.1.2

Roxygen list(markdown = TRUE)

Config/testthat/edition 3

Repository <https://nutriverse.r-universe.dev>

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get_dummy	<i>Construction of Dummy Variable(s)</i>
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Description

generate dummy variables based on the input vector(s) binary parameters (true = 1 and false = 0). If the observation of one of the input parameter was true, that observation's newly generated dummy variable will return as true (1). And, if all input parameters were false, the return will be false (0).

Usage

```
get_dummy(var_list = NULL)
```

Arguments

var_list list of food consumption variables

Value

the vector with "0" and "1" binary result.

Author(s)

Nicholus Tint Zaw

Examples

```
# Individual Food Group Variable Construction

df <- iycfData

# Individual Food Group Specific Function
breastmilk <- get_dummy(var_list = list(df$child_bfyest))

grains <- get_dummy(var_list = list(df$child_rice, df$child_potatoes))

pulses <- get_dummy(var_list = list(df$child_beans))

dairy_list <- list(df$child_bms, df$child_milk,
                 df$child_mproduct, df$child_yogurt,
                 df$child_yogurt)
```

```
dairy <- get_dummy(var_list = dairy_list)

meat_list <- list(df$child_organ, df$child_insects,
                 df$child_beef, df$child_fish)

meat <- get_dummy(var_list = meat_list)

eggs <- get_dummy(var_list = list(df$child_eggs))

vita_fruveg_list <- list(df$child_pumpkin,
                        df$child_leafyveg,
                        df$child_mango)

vita_fruveg <- get_dummy(var_list = vita_fruveg_list)

oth_fruveg <- get_dummy(var_list = list(df$child_fruit, df$child_fruit))
```

get_ebf

Construct exclusive breastfeeding status for under 6 months old child

Description

Identification of individual 0-5 months old children exclusive breastfeeding status

Usage

```
get_ebf(q4, age, liquid_food, solid_food)
```

Arguments

q4	The binary variable which mentioned that the child was receiving breastfeeding in the previous day (yes = "1", no = "0").
age	This parameter holds the information about child age in the month format.
liquid_food	The binary variable which mentioned that the child was receiving any type of liquid foods beside breastfeeding yesterday (yes = 1 or no = 0).
solid_food	The binary variable which mentioned that the child was receiving any type of solid foods yesterday (yes = 1 or no = 0).

Value

binary variables indicate child was exclusively breastfed or not during the previous day (ebf = 1 or 0)

Author(s)

Nicholus Tint Zaw

Examples

```
df <- iycfData

# Liquid consumption previous day - yes/no
liquid <- list(df$child_vitdrop, df$child_ors, df$child_water,
              df$child_juice, df$child_broth, df$child_porridge,
              df$child_bms, df$child_milk, df$child_mproduct,
              df$child_liquid)

df$liquid_food <- get_dummy(var_list = liquid)

# Solid food consumption previous day - yes/no
solid <- list(df$child_rice, df$child_potatoes, df$child_pumpkin,
             df$child_beans, df$child_leafyveg, df$child_mango,
             df$child_fruit, df$child_organ, df$child_beef, df$child_fish,
             df$child_insects, df$child_eggs, df$child_yogurt,
             df$child_fat, df$child_plam, df$child_sweets,
             df$child_condiments)

df$solid_food <- get_dummy(var_list = solid)

# Child exclusively breastfed
ebf <- get_ebf(df$child_bfyest, df$calc_age_months, df$liquid_food,
              df$solid_food)
```

get_evbf

Construct other breastfeeding related indicators (from IYCF)

Description

Identification of individual 0-23 months old children breastfeeding status; Ever breastfed, Early initiation of breastfeeding, Exclusive breastfeeding for the first two days after birth, Mixed milk feeding under 6 months, Continuous breastfeeding 12-23 months, and Bottle feeding 0-23 months

Usage

```
get_evbf(q4, age)

get_eibf(age, q2, q2_hour)

get_ebf2d(q3, age)

get_mixmf(q4, age, q6b, q6c)

get_cbf(q4, age)
```

```
get_bof(q5, age)
```

Arguments

q4	The binary variable which mentioned that the child was receiving breastfeeding in the previous day (yes = "1", no = "0").
age	This parameter holds the information about child age in the month format.
q2	the parameter indicate how long after the child was put to the barest immediately after birth (0 = immediately, 1 = for hours and 2 = for days)
q2_hour	the integer parameter record the hour(s) after birth the child was put to the breast
q3	the binary variable indicating the child received anything else beside breastmilk with the first two days after birth
q6b	the binary variable indicates that the child got infant formula feeding in the previous day
q6c	the binary variable presents the child got any of the following milk related food; Milk from animals, such as fresh, tinned or powdered milk.
q5	the binary variable presents the child received the bottle feeding in the previous day

Value

binary variables indicate child met the respective breastfeeding status or not (yes = 1 or no = 0)

Author(s)

Nicholus Tint Zaw

Examples

```
df <- iycfData

# Ever Breastfed
evbf <- get_evbf(df$child_bf, df$calc_age_months)

# Early Initiation of Breastfeeding
eibf <- get_eibf(df$calc_age_months, df$child_eibf, df$child_eibf_hrs)

# Exclusive Breastfeeding for the first two days after birth
df$q3 <- rbinom(n = nrow(df), size = 1, prob = 0.5)

ebf2d <- get_ebf2d(df$q3, df$calc_age_months)

# Mixed Milk Feeding Under 6 months
mixmf <- get_mixmf(df$child_bfyest, df$calc_age_months,
                  df$child_bms, df$child_milk)

# Continuous Breastfeeding 12-23 months
cbf <- get_cbf(df$child_bfyest, df$calc_age_months)
```

```
# Bottle Feeding 0-23 months
df$q5 <- rbinom(n = nrow(df), size = 1, prob = 0.5)

bof <- get_bof(df$q5, df$calc_age_months)
```

get_foodscore	<i>Construct the food groups consumption score (from Minimum Dietary Diversity 6-23 months (MDD))</i>
---------------	---

Description

Identification of individual 6-23 months old children who meet the minimum dietary diversity requirement require the information about how many food groups the child consumed yesterday (8 groups in total).

Usage

```
get_foodscore(
  breastmilk,
  grains,
  pulses,
  dairy,
  meat,
  eggs,
  vita_fruveg,
  oth_fruveg
)
```

Arguments

breastmilk	child received breastfeeding or not
grains	child consumed grains food group or not
pulses	child consumed pulses food group or not
dairy	child consumed dairy and milk product food group or not
meat	child consumed meat food group or not
eggs	child consumed eggs food group or not
vita_fruveg	child consumed vitamin A-rich fruits and vegetables or not
oth_fruveg	child consumed fruits and vegetables or not

Value

the integer value at continuous scale (0-8 as the IYCF food groups have 8 food groups).

Author(s)

Nicholus Tint Zaw

Examples

```
# Individual Food Group Variable Construction

df <- iycfData

# General Dummy variable generator function
breastmilk <- round(runif(nrow(df), min = 0, max = 1), 0)
grains <- round(runif(nrow(df), min = 0, max = 1), 0)
pulses <- round(runif(nrow(df), min = 0, max = 1), 0)
dairy <- round(runif(nrow(df), min = 0, max = 1), 0)
meat <- round(runif(nrow(df), min = 0, max = 1), 0)
eggs <- round(runif(nrow(df), min = 0, max = 1), 0)
vita_fruveg <- round(runif(nrow(df), min = 0, max = 1), 0)
oth_fruveg <- round(runif(nrow(df), min = 0, max = 1), 0)

# Calculate Food Consumption Score
food_score <- get_foodscore(breastmilk, grains, pulses, dairy, meat,
                           eggs, vita_fruveg, oth_fruveg)
```

get_issf

Construct other breastfeeding related indicators (from IYCF)

Description

Identification of individual 0-23 months old children breastfeeding status

Usage

```
get_issf(solid_food, age)
```

```
get_eff(egg_meat, age)
```

```
get_swb(sweet, age)
```

```
get_ufc(unhealthy, age)
```

```
get_zvf(vege_fruit, age)
```

Arguments

solid_food The binary variable which mentioned that the child was received any type of solid foods yesterday (yes = 1 or no = 0).

age	This parameter holds the information about child age in the month format.
egg_meat	The binary variable which mentioned that the child was received any egg and/or flesh food yesterday
sweet	The binary variable which mentioned that the child was received any sweet beverage foods yesterday
unhealthy	The binary variable which mentioned that the child was received the unhealthy food consumption: sweets and instant foods
vege_fruit	The binary variable which mentioned that the child was received any vegetables or fruits yesterday

Value

binary variables indicate child met the respective complementary feeding status or not (yes = 1 or no = 0)

Author(s)

Nicholus Tint Zaw

Examples

```
df <- iycfData

# Introduction of Solid, Semi-solid or soft foods (6-8 months)
# Solid food consumption previous day - yes/no
solid <- list(df$child_rice, df$child_potatoes, df$child_pumpkin,
             df$child_beans, df$child_leafyveg, df$child_mango,
             df$child_fruit, df$child_organ, df$child_beef, df$child_fish,
             df$child_insects, df$child_eggs, df$child_yogurt,
             df$child_fat, df$child_plam, df$child_sweets,
             df$child_condiments)

df$solid_food <- get_dummy(var_list = solid)

issf <- get_issf(df$solid_food, df$calc_age_months)

# Egg and/or Flesh food consumption (6-23 months)
# Egg and/or Flesh food consumption previous day - yes/no
egg_meat <- list(df$child_organ, df$child_beef, df$child_fish,
               df$child_insects, df$child_eggs)

df$egg_meat <- get_dummy(var_list = egg_meat)

eff <- get_eff(df$egg_meat, df$calc_age_months)

# Sweet beverage consumption (6-23 months)
# Sweet beverage consumption previous day - yes/no
sweet <- list(df$child_milk_sweet, df$child_mproduct_sweet,
             df$child_chocolate, df$child_juice, df$child_soda,
```

```

df$child_tea_sweet, df$child_oth_drink_sweet)

df$sweet <- get_dummy(var_list = sweet)

swb <- get_swb(df$sweet, df$calc_age_months)

# Unhealthy food consumption (6-23 months)
# Unhealthy food consumption previous day - yes/no
unhealthy <- list(df$child_sweets, df$child_condiments)

df$unhealthy <- get_dummy(var_list = unhealthy)

ufc <- get_ufc(df$unhealthy, df$calc_age_months)

# Zero vegetable or fruit consumption (6-23 months)
# Zero vegetable or fruit consumption previous day - yes/no
vege_fruit <- list(df$child_pumpkin, df$child_leafyveg, df$child_mango,
                  df$child_fruit)

df$vege_fruit <- get_dummy(var_list = vege_fruit)

zvf <- get_zvf(df$vege_fruit, df$calc_age_months)

```

get_mad

Determining Minimum Acceptable Diet

Description

Identification of individual 6-23 months old children minimum acceptable diet based on their breast-feeding status

Identification of individual 6-23 months old children dietary practices meet the minimum requirement of dietary diversity (at least 5 food group out of 8 food groups)

Usage

```
get_mad(age, q4, mdd, mmf, mmff)
```

```
get_mdd(food_score, age)
```

Arguments

age	This parameter holds the information about child age in the month format.
q4	The binary variable which mentions that the child was receiving breastfeeding in the previous day (yes = "1", no = "0").
mdd	The binary variable which holds whether the child received the minimum dietary diversity or not (yes = "1", no = "0").

mmf	The binary variable which indicates that the child got minimum meal frequency ("1") or not ("0").
mmff	This parameter is about the non-breastfed children received minimum milk feeding frequency or not (yes = "1", no = "0").
food_score	the integer variable with continuous scale which indicates the number of food groups the child consumed in previous day

Value

binary variable indicate child get the minimum acceptable diet (mad = 1) or not (mad = 0)

binary variables indicate child get the minimum dietary diversity (mdd = 1) or not (mdd = 0)

Author(s)

Nicholus Tint Zaw

Nicholus Tint Zaw

Examples

```
df <- iycfData
df$mdd <- rbinom(n = nrow(df), size = 1, prob = 0.5)
df$mmf <- rbinom(n = nrow(df), size = 1, prob = 0.5)
df$mmff <- rbinom(n = nrow(df), size = 1, prob = 0.5)

mad <- get_mad(df$calc_age_months, df$child_bfyest, df$mdd, df$mmf, df$mmff)

# Minimum Dietary Diversity
df <- iycfData

df$food_score <- round(runif(nrow(df), min = 0, max = 8), 0)

mdd <- get_mdd(df$food_score, df$calc_age_months)
```

get_mmf

Determining Minimum Meal Freq

Description

Identification of individual 6-23 months old children received the minimum meal frequency based on their breastfeeding status.

Usage

```

get_mmf(mmf_bf, mmf_nonbf)

get_mmf_bf(mmfbf_6to8, mmfbf_9to23)

get_mmf_bf_6to8(q4, q8, age)

get_mmf_bf_9to23(q4, q8, age)

get_mmf_nonbf(q4, q8, nonbf_frq, age)

get_nonbf_frq(q6bnum, q6cnum, q6dnum, q8)

```

Arguments

mmf_bf	to The binary variable indicates that the overall breastfed child received minimum meal frequency or not.
mmf_nonbf	The binary variable indicates that the overall non-breastfed child received minimum meal frequency or not.
mmfbf_6to8	to The binary variable indicates that the 6-8 months breastfed child received minimum meal frequency or not.
mmfbf_9to23	The binary variable indicates that the 9-23 months breastfed child received minimum meal frequency or not.
q4	The binary variable which mentioned that the child received breastfeeding in the previous day (yes = "1", no = "0").
q8	the integer variable with continuous scale indicates the number of meals (solid, semi-solid or soft foods) the child ate yesterday.
age	This parameter holds the information about child age in the month format.
nonbf_frq	the integer variables with continuous scale presents the frequency of non-Breastfed child meal including milk feeding.
q6bnum	This parameter indicates the number of infant formula feeding the children received in previous days.
q6cnum	This parameter holds information about the frequency of milk related food feeding the child received yesterday (milk from animals, such as fresh, tinned, or powdered milk)
q6dnum	This parameter presents the information about the frequency of yogurt drinks the child received in the previous day.

Value

binary variables indicate child get the minimum meal frequency (mmf = 1) or not (mmf = 0)

Author(s)

Nicholus Tint Zaw

Examples

```
# Minimum Meal Frequency

df <- iycfData

# breastfeeding children
mmfbf_6to8 <- get_mmff_bf_6to8(df$child_bfyest,
                              df$child_food_freq,
                              df$calc_age_months)
mmfbf_9to23 <- get_mmff_bf_9to23(df$child_bfyest,
                                 df$child_food_freq,
                                 df$calc_age_months)

mmf_bf <- get_mmff_bf(mmfbf_6to8, mmfbf_9to23)

# non-breastfeeding children
nonbf_frq <- get_nonbf_frq(df$child_bms_freq,
                          df$child_milk_freq,
                          df$child_mproduct_freq,
                          df$child_food_freq)

mmf_nonbf <- get_mmff_nonbf(df$child_bfyest,
                           df$child_food_freq,
                           nonbf_frq,
                           df$calc_age_months)

# all children
mmf <- get_mmff(mmf_bf, mmf_nonbf)
```

get_mmff

Determining Minimum Milk Feeding Frequency

Description

Identification of individual 6-23 months old children minimum milk feeding frequency for non-breastfeed children 6-23 months (MMFF)

Usage

```
get_mmff(q4, age, milk_frq)
```

```
get_milk_frq(q6bnum, q6cnum, q6dnum, q7anum)
```

Arguments

q4	The binary variable which mentioned that the child was receiving breastfeeding in the previous day (yes = "1", no = "0").
age	This parameter holds the information about child age in the month format.
milk_frq	the integer variable with continuous scale represents all the milk consumption frequency (beside breastmilk)
q6bnum	This parameter indicates the number of infant formula feeding the children received in previous days.
q6cnum	This parameter holds information about the frequency of milk related food feeding the child received yesterday (milk from animals, such as fresh, tinned, or powdered milk)
q6dnum	This parameter presents the information about the frequency of yogurt drinks the child received in the previous day.
q7anum	the integer variable with continuous scale represents the frequency of yogurt (solid or semi-solid) the child consumed yesterday.

Value

The output of the get_mmff and get_milk_frq variables includes the following added variable.

Variables	Description
<i>mf_frq</i>	continuous variables indicate non-breastfeed child consume number of milk and milk-product food feeding
<i>mmff</i>	binary variables indicate child get the minimum milk feeding frequency (mmff =1) or not (mmff = 0)

Author(s)

Nicholus Tint Zaw

Examples

```
# Calculate Non-breastfeed Children Milk Frequency
df <- iycfData

df$milk_frq <- get_milk_frq(df$child_bms_freq, df$child_milk_freq,
                           df$child_mproduct_freq, df$child_yogurt)

# MMFF
df$mmff <- get_mmff(df$child_bfyest, df$calc_age_months, df$milk_frq)
```

iycfData

*Infant and Young Children Indicators Sample Dataset***Description**

This sample demo dataset (iycfData) contained 359 observations and 46 variables. The following tables explain the detailed description of each variable included in the sample dataset. The CARE International Myanmar Country program provided this demo dataset, and all the Personal Identifiable Information (PII) were excluded.

Usage

iycfData

Format

A data frame with 46 columns and 359 rows.

Variables	WHO Question Number	Description
<i>csex</i>		child sex
<i>calc_age_months</i>		child age in month
<i>child_bf</i>	Q1	ever breastfed
<i>child_eibf</i>	Q2	first put to the breast - immediately
<i>child_eibf_hrs</i>	Q2	first put to the breast - hours
<i>child_eibf_days</i>	Q2	first put to the breast - days
<i>bf_2days</i>	Q3	given anything other than breast milk, first 2-days of child age
<i>child_bfyest</i>	Q4	breastfed yesterday during the day or at night
<i>bf_bottle</i>	Q5	drink anything from a bottle with a nipple yesterday
<i>child_water</i>	Q6A	Plain water
<i>child_bms</i>	Q6B	Infant formula
<i>child_bms_freq</i>	Q6Bnum	Infant formula - frequency
<i>child_milk</i>	Q6C	Milk from animals
<i>child_milk_freq</i>	Q6Cnum	Milk from animals - frequency
<i>child_milk_sweet</i>	Q6Cswt	Milk from animals - sweet or flavored type milk
<i>child_mproduct</i>	Q6D	Yogurt drinks
<i>child_mproduct_freq</i>	Q6Dnum	Yogurt drinks - frequency
<i>child_mproduct_sweet</i>	Q6Dswt	Yogurt drinks - sweet or flavored type yogurt
<i>child_chocolate</i>	Q6E	Chocolate-flavored drinks
<i>child_juice</i>	Q6F	Fruit juice or fruit-flavored drinks
<i>child_soda</i>	Q6G	Sodas, malt drinks, sports drinks or energy drinks
<i>child_tea</i>	Q6H	Tea, coffee, or herbal drinks
<i>child_tea_sweet</i>	Q6Hswt	Tea, coffee, or herbal drinks - sweetened
<i>child_broth</i>	Q6I	Clear broth or clear soup
<i>child_oth_drink</i>	Q6J	Any other liquids
<i>child_oth_drink_sweet</i>	Q6Jswt	Other liquids - sweetened
<i>child_yogurt</i>	Q7A	Yogurt, other than yogurt drinks
<i>child_yogurt_frq</i>	Q7Anum	Yogurt, other than yogurt drinks - frequency

<i>child_rice</i>	Q7B	Porridge, bread, rice, noodles, pasta
<i>child_pumpkin</i>	Q7C	Pumpkin, carrots, sweet potatoes (yellow or orange inside)
<i>child_potatoes</i>	Q7D	Plantains, white potatoes, white yams, manioc, cassava
<i>child_leafyveg</i>	Q7E	Dark green leafy vegetables
<i>child_oth_veg</i>	Q7F	Any other vegetables
<i>child_mango</i>	Q7G	Ripe mangoes, ripe papayas
<i>child_fruit</i>	Q7H	Any other fruits
<i>child_organ</i>	Q7I	Liver, kidney, heart
<i>child_processmeat</i>	Q7J	Sausages, hot dogs, ham, bacon, salami, canned meat
<i>child_beef</i>	Q7K	Any other meat, such as beef, pork, lamb, goat, chicken, duck
<i>child_eggs</i>	Q7L	Eggs
<i>child_fish</i>	Q7M	Fresh fish, dried fish or shellfish
<i>child_beans</i>	Q7N	Beans, peas, lentils, nuts , seeds
<i>child_cheese</i>	Q7O	Hard or soft cheese
<i>child_sweets</i>	Q7P	Sweet foods such as chocolates, candies, cakes and biscuits
<i>child_snack</i>	Q7Q	Chips, crisps, puffs, French fries, instant noodles
<i>child_oth_food</i>	Q7R	Any other solid, semi-solid or soft food
<i>child_food_freq</i>	Q8	number of any solid, semi-solid or soft foods yesterday

Source

CARE Myanmar

Examples

```
# explore the first 6 observations from the dataset
head(iycfData)
```

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