

Package: squeacr (via r-universe)

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Type Package

Title Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)
Tools

Version 0.1.1

Description In the recent past, measurement of coverage has been mainly through two-stage cluster sampled surveys either as part of a nutrition assessment or through a specific coverage survey known as Centric Systematic Area Sampling (CSAS). However, such methods are resource intensive and often only used for final programme evaluation meaning results arrive too late for programme adaptation. SQUEAC, which stands for Semi-Quantitative Evaluation of Access and Coverage, is a low resource method designed specifically to address this limitation and is used regularly for monitoring, planning and importantly, timely improvement to programme quality, both for agency and Ministry of Health (MoH) led programmes. This package provides functions for use in conducting a SQUEAC investigation.

License GPL-3

Depends R (>= 2.10)

Imports tibble, zoo

Suggests knitr, rmarkdown, testthat (>= 3.0.0), covr, spelling,
readxl, dplyr

Encoding UTF-8

Language en-GB

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VignetteBuilder knitr

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Contents

calculate_los	2
calculate_muac_median	3
calculate_performance	4
calculate_rout	5
find_var_names	6
monitoring	7
muac_admission	8
muac_admission_tidy	9
otp_beneficiaries	9
seasonal_calendar	10
smooth_m3a3	11
time_to_travel	12
Index	13

calculate_los	<i>Calculate CMAM length of stay and median length of stay for a cohort of CMAM discharges</i>
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Description

Calculate CMAM length of stay and median length of stay for a cohort of CMAM discharges

Usage

```
calculate_los(admission_date, discharge_date)

calculate_los_median(admission_date, discharge_date, group = NULL)
```

Arguments

- `admission_date` Date of admission in YYYY-MM-DD format. If child is a kwashiorkor case, date of lowest weight (when oedema has subsided). Can be a single date value or a vector of date values.
- `discharge_date` Date of discharge in YYYY-MM-DD format. Can be a single date value or a vector of date values.
- `group` A character value/s with the same length as `admission_date` and `discharge_date` to use as grouping variable within which median length-of-stay is to be calculated. Default is NULL for no grouping.

Value

Numeric value or vector of numeric values for length-of-stay in days for `calculate_los()`. A numeric value for median length-of-stay in days for `calculate_los_median()`. If `group` is not NULL, a vector of numeric values for median length-of-stay in days with length equal to the number of groups.

Author(s)

Ernest Guevarra

Examples

```
calculate_los(admission_date = "2010-03-15",
             discharge_date = "2010-06-14")

calculate_los(admission_date = c("2010-03-15", "2010-03-16"),
             discharge_date = c("2010-06-14", "2010-06-20"))

calculate_los_median(
  otp_beneficiaries$admDate,
  otp_beneficiaries$disDate,
  group = otp_beneficiaries$locality
)
```

`calculate_muac_median` *Calculate median MUAC-at_admissions*

Description

Calculate median MUAC-at_admissions

Usage

```
calculate_muac_median(muac, index = NULL, na_values = NULL)
```

Arguments

muac	A numeric vector of mid-upper arm circumference measurements either in centimetres or millimetres.
index	A list of one or more factors each of the same length as muac which defines the grouping to be used on muac. Default is NULL (no grouping applied).
na_values	A vector of values in muac that are to be considered as NA values. Default to NULL which will use NA.

Value

A numeric value (if index = NULL) or named vector of values for median mid-upper arm circumference with names from each level of index.

Examples

```
calculate_muac_median(otp_beneficiaries$muac)
calculate_muac_median(otp_beneficiaries$muac, otp_beneficiaries$locality)
```

calculate_performance *Calculate CMAM performance indicators*

Description

Calculate CMAM performance indicators

Usage

```
calculate_performance(df, vars = NULL, add = TRUE)

calculate_cured(cured, exit)

calculate_dead(dead, exit)

calculate_default(defaulter, exit)

calculate_no_response(nr, exit)
```

Arguments

df	A data.frame containing programme monitoring data on number of cured, deaths, defaulters and non-response. The required data.frame holds rows of data corresponding to total counts for each performance indicator (i.e., cured , dead , defaulter and non-responder) rather than rows of individual cases.
----	--

vars	A vector of variable names specifying cured , dead , defaulter and non-responder (in this specific order) values in df. If NULL (default), typical names used for these variables will be searched and used accordingly. If search doesn't yield matching variable names, the first 4 columns of the data.frame will be used.
add	Logical. Should result be added to df. Default is TRUE.
cured	Numeric value for total number of cured cases
exit	Numeric value for total number of programme exits
dead	Numeric value for total number of cases who died
defaulter	Numeric value for total number of cases who defaulted
nr	Numeric value for total number of cases who did not respond to

Value

A tibble of performance indicator results (for `calculate_performance()`) or a numeric value of specified CMAM performance indicator (for `calculate_cured()`, `calculate_default()`, `calculate_dead()`, and `calculate_no_response()`).

Author(s)

Ernest Guevarra

Examples

```
calculate_performance(df = monitoring)
calculate_cured(cured = 10, exit = 50)
calculate_dead(dead = 10, exit = 50)
calculate_default(defaulter = 10, exit = 50)
calculate_no_response(nr = 10, exit = 50)
```

calculate_rout	<i>CMAM coverage estimators</i>
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Description

CMAM coverage estimators

Usage

```
calculate_rout(cin, cout, rin, k = 3)

calculate_cf(cin, cout)

calculate_tc(cin, cout, rin, k = 3)
```

Arguments

cin	Cases in CMAM programme
cout	Cases not in CMAM programme
rin	Recovering cases in programme
k	Correction factor. Ratio of the mean length of an untreated episode to the mean length of a CMAM treatment episode

Value

Numeric value of required coverage estimator

Author(s)

Ernest Guevarra based on technical notes and equations by Mark Myatt

References

Safari Balegamire, Katja Siling, Jose Luis Alvarez Moran, Ernest Guevarra, Sophie Woodhead, Alison Norris, Lionella Fieschi, Paul Binns, and Mark Myatt (2015). A single coverage estimator for use in SQUEAC, SLEAC, and other CMAM coverage assessments. Field Exchange 49, March 2015. p81. <www.enonline.net/fex/49/singlecoverage>

Examples

```
calculate_rout(cin = 5, cout = 25, rin = 5, k = 3)
calculate_cf(cin = 5, cout = 20)
calculate_tc(cin = 5, cout = 20, rin = 5, k = 3)
```

find_var_names	<i>Find possible variable names from a data.frame given a set of search names</i>
----------------	---

Description

Find possible variable names from a data.frame given a set of search names

Usage

```
find_var_names(df, vars, all = FALSE)
```

Arguments

df	A data.frame to search variable names from
vars	A vector of terms to search for
all	Logical. Should all results of search be returned? If FALSE (default), only first value is returned.

Value

A character vector of variable name/s in df

Author(s)

Ernest Guevarra

Examples

```
find_var_names(df = otp_beneficiaries, vars = "MUAC")
```

monitoring	<i>Routine CMAM monitoring data from Sudan</i>
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Description

Routine CMAM monitoring data from Sudan

Usage

```
monitoring
```

Format

A tibble with 8234 rows and 16 columns

Variable	Description
<i>State</i>	Name of state
<i>Locality</i>	Name of locality
<i>Beginning of Month</i>	Cases in programme at beginning of month
<i>New Admissions</i>	New cases admitted within the month
<i>Male</i>	New male cases admitted within the month
<i>Female</i>	New female cases admitted within the month
<i>Cured</i>	Number of cured cases within the month
<i>Death</i>	Number of cases who died within the month
<i>Default</i>	Number of cases who defaulted within the month
<i>Non-Responder</i>	Number of non-responder cases within the month
<i>Total Discharge</i>	Total number of discharges within the month
<i>RUTF Consumed</i>	Number of RUTF consumed
<i>Screening</i>	Screening
<i>Sites</i>	Sites
<i>Month</i>	Month
<i>Year</i>	Year

Source

Federal Ministry of Health of Sudan

Examples

monitoring

muac_admission

MUAC at admission

Description

MUAC at admission

Usage

muac_admission

Format

A named list with 12 tibbles:

| *Telkuk* | MUAC at admission data for Telkuk locality | | *Halfa* | MUAC at admission data for Halfa locality | | *Kassala* | MUAC at admission data for Kassala locality | | *Naher Atbara* | MUAC at admission data for Naher Atbara locality | | *El Fasher* | MUAC at admission data for El Fasher locality | | *Tawila* | MUAC at admission data for Tawila locality | | *Kutumu* | MUAC at admission data for Kutumu locality | | *Kalamendo* | MUAC at admission data for Kalamendo locality | | *Medani Alkupra* | MUAC at admission data for Medani Alkupra locality | | *South Gazira* | MUAC at admission data for South Gazira locality | | *Sharg Algazira* | MUAC at admission data for Sharg Algazira locality | | *Al Kamlin* | MUAC at admission data for Al Kamlin locality |

Source

A CMAM programme evaluation in Sudan

Examples

muac_admission

muac_admission_tidy	<i>MUAC at admission in tidy format</i>
---------------------	---

Description

MUAC at admission in tidy format

Usage

```
muac_admission_tidy
```

Format

A tibble with 506 rows and 3 columns

Variable	Description
<i>muac</i>	Mid-upper arm circumference in centimetres
<i>district</i>	Name of district
<i>count</i>	Number of cases with specific MUAC

Source

A SQUEAC survey in Lokori, Kenya

Examples

```
muac_admission
```

otp_beneficiaries	<i>Outpatient Therapeutic Care Programme (OTP) beneficiaries data</i>
-------------------	---

Description

Outpatient Therapeutic Care Programme (OTP) beneficiaries data

Usage

```
otp_beneficiaries
```

Format

A tibble with 405 rows and 13 columns:

Variable	Description
<i>index</i>	Unique identifier
<i>state</i>	Name of state
<i>locality</i>	Name of locality
<i>health_facility</i>	Name of health facility
<i>age</i>	Age of child
<i>muac</i>	Mid-upper arm circumference (cms) at admission
<i>wt</i>	Weight (kgs) at admission
<i>ht</i>	Height (cms) at admission
<i>admDate</i>	Date of admission
<i>disDate</i>	Date of discharge
<i>diswt</i>	Weight (kgs) at discharge
<i>attended</i>	Number of OTP sessions attended
<i>exitType</i>	Type of exit (cured, dead, default or non-responder)

Source

Data collected from beneficiary cards from Kassala, North Darfur, and Algazira State, Sudan

Examples

```
otp_beneficiaries
```

seasonal_calendar	<i>Seasonal calendar data for Sudan</i>
-------------------	---

Description

Seasonal calendar data for Sudan

Usage

```
seasonal_calendar
```

Format

A tibble with 28 rows and 4 columns

Variables	Description
<i>event</i>	Name of seasonal calendar event or activity
<i>start</i>	Starting date of event/activity
<i>end</i>	Starting date of event/activity

group Classification/group of activity or event

Source

<https://fews.net/east-africa/sudan/seasonal-calendar/december-2013>

Examples

seasonal_calendar

smooth_m3a3	<i>Apply median of 3 and average of 3 smoothing on a time series</i>
-------------	--

Description

Apply median of 3 and average of 3 smoothing on a time series

Usage

```
smooth_m3a3(x)
```

Arguments

x A vector of numerical information to be smoothed

Value

A vector of smoothed data

Author(s)

Ernest Guevarra

Examples

```
x <- aggregate(cbind(`New Admissions`, Default) ~ Month + Year,
               data = monitoring, FUN = sum)
smooth_m3a3(x = x$Default)
```

time_to_travel	<i>Time-to-travel to health facilities for beneficiaries and volunteers</i>
----------------	---

Description

Time-to-travel to health facilities for beneficiaries and volunteers

Usage

time_to_travel

Format

A tibble with 165 rows and 9 columns:

Variable	Description
<i>State</i>	Name of state
<i>Locality</i>	Name of locality
<i>Health Facility</i>	Name of health facility
<i>Category</i>	Category of beneficiary or volunteer
<i>30 or less</i>	Travel time of 30 minutes or less
<i>31 to 60</i>	Travel time of 31 minutes to 60 minutes
<i>61 to 90</i>	Travel time of 61 minutes to 90 minutes
<i>91 to 120</i>	Travel time of 91 minutes to 120 minutes
<i>more than 120</i>	Travel time of more than 120 minutes

Source

Data collected from beneficiary cards from Kassala State, Sudan

Examples

time_to_travel

Index

- * **datasets**
 - monitoring, [7](#)
 - muac_admission, [8](#)
 - muac_admission_tidy, [9](#)
 - otp_beneficiaries, [9](#)
 - seasonal_calendar, [10](#)
 - time_to_travel, [12](#)
- calculate_cf (calculate_rout), [5](#)
- calculate_cured
 - (calculate_performance), [4](#)
- calculate_cured(), [5](#)
- calculate_dead (calculate_performance),
[4](#)
- calculate_dead(), [5](#)
- calculate_default
 - (calculate_performance), [4](#)
- calculate_default(), [5](#)
- calculate_los, [2](#)
- calculate_los(), [3](#)
- calculate_los_median (calculate_los), [2](#)
- calculate_los_median(), [3](#)
- calculate_muac_median, [3](#)
- calculate_no_response
 - (calculate_performance), [4](#)
- calculate_no_response(), [5](#)
- calculate_performance, [4](#)
- calculate_performance(), [5](#)
- calculate_rout, [5](#)
- calculate_tc (calculate_rout), [5](#)
- find_var_names, [6](#)
- monitoring, [7](#)
- muac_admission, [8](#)
- muac_admission_tidy, [9](#)
- otp_beneficiaries, [9](#)
- seasonal_calendar, [10](#)
- smooth_m3a3, [11](#)