Package: squeacr (via r-universe)

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Type Package

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

Version 0.0.0.9000

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, stringr, zoo

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

Encoding UTF-8

Language en-GB

LazyData true

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.2

VignetteBuilder knitr

URL https://nutriverse.io/squeacr/, https://github.com/nutriverse/squeacr

BugReports https://github.com/nutriverse/squeacr/issues

Config/testthat/edition 3

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

RemoteUrl https://github.com/nutriverse/squeacr

RemoteRef HEAD

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Contents

`calculate_cf` *Estimate case finding effectiveness*

Description

Estimate case finding effectiveness

Usage

```
calculate_cf(cin, cout)
```

Arguments

`cin`	Cases in CMAM programme
`cout`	Cases not in CMAM programme

Value

Value of case finding effectiveness

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.ennonline.net/fex/49/singlecoverage>

Examples

```
calculate_cf(cin = 5, cout = 20)
```

`calculate_cured` *Calculate CMAM performance indicators - cure rate*

Description

Calculate CMAM performance indicators - cure rate

Usage

```
calculate_cured(cured, exit)
```

Arguments

`cured`	Numeric value for total number of cured cases
`exit`	Numeric value for total number of programme exits

Value

A proportion of cured cases of the total programme exits

Author(s)

Ernest Guevarra

Examples

```
calculate_cured(cured = 10, exit = 50)
```

calculate_dead *Calculate CMAM performance indicators - death rate*

Description

Calculate CMAM performance indicators - death rate

Usage

```
calculate_dead(dead, exit)
```

Arguments

dead	Numeric value for total number of cases who died
exit	Numeric value for total number of programme exits

Value

A proportion of dead cases of the total programme exits

Author(s)

Ernest Guevarra

Examples

```
calculate_dead(dead = 10, exit = 50)
```

calculate_default *Calculate CMAM performance indicators - default rate*

Description

Calculate CMAM performance indicators - default rate

Usage

```
calculate_default(defaulter, exit)
```

Arguments

defaulter	Numeric value for total number of cases who defaulted
exit	Numeric value for total number of programme exits

Value

A proportion of defaulter cases of the total programme exits

Author(s)

Ernest Guevarra

Examples

```
calculate_default(defaulter = 10, exit = 50)
```

`calculate_los` *Calculate CMAM length of stay*

Description

Calculate CMAM length of stay

Usage

```
calculate_los(admission_date, discharge_date)
```

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.

Value

Numeric value or vector of numeric values for length-of-stay in days.

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_median_los` *Calculate median length of stay for a cohort of CMAM discharges*

Description

Calculate median length of stay for a cohort of CMAM discharges

Usage

```
calculate_median_los(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_data` to use as grouping variable within which median length-of-stay is to be calculated. Default is NULL for no grouping.

Value

A numeric value for median length-of-stay in days. 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_median_los(
  otp_beneficiaries$admDate,
  otp_beneficiaries$disDate,
  group = otp_beneficiaries$locality
)
```

calculate_no_response *Calculate CMAM performance indicators - non-response rate*

Description

Calculate CMAM performance indicators - non-response rate

Usage

```
calculate_no_response(nr, exit)
```

Arguments

nr	Numeric value for total number of cases who did not respond to treatment
exit	Numeric value for total number of programme exits

Value

A proportion of non-responders of the total programme exits

Author(s)

Ernest Guevarra

Examples

```
calculate_no_response(nr = 10, exit = 50)
```

calculate_performance *Calculate CMAM performance indicators*

Description

Calculate CMAM performance indicators

Usage

```
calculate_performance(.data, vars = NULL, add = TRUE)
```

Arguments

.data	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 .data. 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 .data. Default is TRUE.

Value

A tibble of performance indicator results

Author(s)

Ernest Guevarra

Examples

```
calculate_performance(.data = monitoring)
```

---

calculate_rout *Estimate cases not in CMAM programme*

Description

Estimate cases not in CMAM programme

Usage

```
calculate_rout(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

Value of number of cases not in CMAM programme

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.ennonline.net/fex/49/singlecoverage>

Examples

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

---

calculate_tc *Estimate treatment coverage*

Description

Estimate treatment coverage

Usage

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

Arguments

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

Value

Value of treatment coverage

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.ennonline.net/fex/49/singlecoverage>

Examples

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

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

Description

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

Usage

```
find_var_names(.data, vars, all = FALSE)
```

Arguments

`.data`	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 `.data`

Author(s)

Ernest Guevarra

Examples

```
find_var_names(.data = muac_admission, vars = "MUAC")
```

`monitoring` *Routine CMAM monitoring data from Sudan*

Description

Routine CMAM monitoring data from Sudan

Usage

```
monitoring
```

Format

A tibble with 8234 rows and 16 columns

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

Description

MUAC at admission in tidy format

Usage

```
muac_admission_tidy
```

Format

A tibble with 506 rows and 3 columns

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

Source

A SQUEAC survey in Lokori, Kenya

Examples

```
muac_admission
```

---

otp_beneficiaries *Outpatient Therapeutic Care Programme (OTP) beneficiaries data*

Description

Outpatient Therapeutic Care Programme (OTP) beneficiaries data

Usage

```
otp_beneficiaries
```

Format

A tibble with 405 rows and 13 columns:

Variable	Description
index	Unique identifier
state	Name of state
locality	Name of locality
health_facility	Name of health facility
age	Age of child
muac	Mid-upper arm circumference (cms) at admission
wt	Weight (kgs) at admission
ht	Height (cms) at admission
admDate	Date of admission
disDate	Date of discharge
diswt	Weight (kgs) at discharge
attended	Number of OTP sessions attended
exitType	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` *Seasonal calendar data for Sudan*

Description

Seasonal calendar data for Sudan

Usage

```
seasonal_calendar
```

Format

A tibble with 28 rows and 4 columns

Variables	Description
event	Name of seasonal calendar event or activity
start	Starting date of event/activity
end	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 *Apply median of 3 and average of 3 smoothing on a time series*

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

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

Source

Data collected from beneficiary cards from Kassala State, Sudan

Examples

```
time_to_travel
```

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