Package: peditools (via r-universe)

January 8, 2025

Title Pediatric Clinical Data Science Tools

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Version 0.3.1.00

Description A collection of tools for newborn and pediatric anthropometric calculations and data abstraction from Vermont Oxford Network registry exports. Includes charts based on Lambda, Mu, Sigma (LMS) parameters, including: Fenton 2003, Olsen 2010, Olsen BMI, CDC infant, CDC pediatric, CDC BMI, CDC (Addo) skin, WHO infant, WHO skin, Abdel-Rahman 2017, Mramba 2017, Zemel Down Syndrome, Brooks cerebral palsy, WHO expanded, Cappa 2024 (except BMI). Includes functions to take a Vermont Oxford Network XML or CSV data file export read into a data frame, converting the coded variables into human readable factors.

Depends R (>= 3.5.0)

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Encoding UTF-8

LazyData true

RoxygenNote 7.3.2

Imports stats

Suggests testthat, car, XML, utils

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

RemoteUrl https://github.com/jhchou/peditools

RemoteRef HEAD

RemoteSha 2e1115698172c1184a26dca48b9c37b89ca3824f

Contents

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add_lmsdata   *Add lmsdata*

Description

Function to add to lmsdata in data_env environment

Usage

```
add_lmsdata(df)
```

Arguments

df   Dataframe of new LMS data to add

---

get_chartmetadata   *Get chart metadata*

Description

Function to return the dataframe containing chart metadata, including chart name, anthropometric measure and units, age label and units with min, max, and range, number of parameters, source text and URL, and notes

Usage

```
get_chartmetadata()
```

Examples

```
head(get_chartmetadata())
```

---

get_lms   *Get LMS parameters function*

Description

Function to interpolate LMS parameters, given age, gender, chart, and measure

Usage

```
get_lms(age, gender, chart, measure = "weight")
```

Arguments

age	Vector of ages
gender	Vector of gender, either 'm' or 'f'
chart	Which chart to obtain LMS parameters for
measure	Which measure for the chart. Defaults to 'weight'

Examples

```
get_lms(c(11.5, 11.5), c('m', 'f'), chart = 'cdc_2000_infant', measure = 'weight')
```

---

get_lmsdata   *Get lmsdata*

Description

Function to return the dataframe containing all LMS values, measures, and units of measure, including any added with add_lmsdata()

Usage

```
get_lmsdata()
```

Examples

```
head(get_lmsdata())
```

---

recode_von   *VON recoding function*

Description

This function takes a VON export converted into a dataframe, and recodes the variables.

Usage

```
recode_von(von)
```

Arguments

von   A dataframe output of a VON data export

Examples

```
# recode_von()
```

---

recode_von_xml   *VON XML recoding function*

Description

This function takes a link to a VON XML export and coverts it into a dataframe and recodes the variables.

Usage

```
recode_von_xml(von_xml)
```

Arguments

von_xml   A link to the XML output of a VON data export

Examples

```
# recode_von_xml()
```

---

x_lms_to_z	*X and LMS to Z function*

Description

function to convert X + LMS parameters to a Z-score

Usage

```
x_lms_to_z(x, lms)
```

Arguments

x	Vector of measurements
lms	List of L, M, and S elements, each with length(x) elements

Examples

```
# x_lms_to_z()
```

---

x_to_z	*X to Z-score function*

Description

Function to take vectors of measurements, age, and gender, and unique chart and measure, to return Z score

Usage

```
x_to_z(x, age, gender, chart, measure = "weight")
```

Arguments

x	Vector of measurements
age	Vector of age parameters
gender	Vector of genders, either 'm' or 'f'
chart	Uniquely specified chart to obtain LMS parameters for
measure	Uniquely specified measure for the chart. Defaults to 'weight'.

Details

The following charts are available, with their corresponding measures.

chart	age_units	measures
abdel-rahman_2017	months	arm_circ(cm)
addo_2010_skin	years	subscapular(mm), triceps(mm)
brooks_gmfcs_1	years	bmi(kg/m2), height(cm), weight(kg)
brooks_gmfcs_2	years	bmi(kg/m2), height(cm), weight(kg)
brooks_gmfcs_3	years	bmi(kg/m2), height(cm), weight(kg)
brooks_gmfcs_4	years	bmi(kg/m2), height(cm), weight(kg)
brooks_gmfcs_5_nt	years	bmi(kg/m2), height(cm), weight(kg)
brooks_gmfcs_5_tf	years	bmi(kg/m2), height(cm), weight(kg)
cappa_2024	years	height_velocity(cm/year), height(cm), weight(kg)
cdc_2000_bmi	months	bmi(kg/m2)
cdc_2000_infant	months	head_circ(cm), length(cm), weight(kg)
cdc_2000_pedi	months	height(cm), weight(kg)
fenton_2003	weeks	head_circ(cm), length(cm), weight(kg)
mramba_2017	months	arm_circ(cm)
olsen_2010	weeks	head_circ(cm), length(cm), weight(g)
olsen_2015_bmi	weeks	bmi(g/cm2)
who_2006_infant	months	head_circ(cm), length(cm), weight(kg)
who_2007_skin_arm	months	arm_circ(cm), subscapular(mm), triceps(mm)
who_expanded	days	bmi(kg/m2), head_circ(cm), length_height(cm), weight(kg)
who_expanded_arm_skin	days	arm_circ(cm), subscapular(mm), triceps(mm)
who_wt_for_ht	cm	weight(kg)
who_wt_for_len	cm	weight(kg)
zemel_2015_infant	months	head_circ(cm), length(cm), weight(kg)
zemel_2015_pedi	years	bmi(kg/m2), head_circ(cm), height(cm), weight(kg)

Examples

```
# 3, 10, 50, 90, and 97%ile weight for 8.5 month old female on CDC 2000 infant chart
x_to_z(
    c(6.720327734, 7.197413532, 8.314178377, 9.573546299, 10.2153883),
    rep(8.5, 5),
    rep('f', 5),
    chart = 'cdc_2000_infant',
    measure = 'weight'
  )
round( pnorm( x_to_z(
    c(6.720327734, 7.197413532, 8.314178377, 9.573546299, 10.2153883),
    rep(8.5, 5),
    rep('f', 5),
    chart = 'cdc_2000_infant',
    measure = 'weight'
  ) ), 4)
```

---

z_lms_to_x *Z and LMS to X function*

Description

Vectorized function to convert Z + LMS parameters to a measurement. If Z, L, M, or S are vectors of different length, will recycle the shorter vectors.

Usage

```
z_lms_to_x(Z, L, M, S)
```

Arguments

Z	Z parameter(s)
L	lambda parameter(s)
M	mu parameter(s)
S	sigma parameter(s)

Examples

```
# z_lms_to_x()
```

Index