Package 'admiralpeds'

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Type Package

Title Pediatrics Extension Package for ADaM in 'R' Asset Library

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Description A toolbox for programming Clinical Data Standards Interchange Consortium (CDISC) compliant Analysis Data Model (ADaM) datasets in R. ADaM datasets are a mandatory part of any New Drug or Biologics License Application submitted to the United States Food and Drug Administration (FDA). Analysis derivations are implemented in accordance with the ``Analysis Data Model Implementation Guide'' (CDISC Analysis Data Model Team, 2021, <https://www.cdisc.org/standards/foundational/adam>). The package is an extension package of the 'admiral' package for pediatric clinical trials.

License Apache License (>= 2)

URL https://pharmaverse.github.io/admiralpeds/, https://github.com/pharmaverse/admiralpeds

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Contents

adsl_peds . . . 3
cdc_bmiage . . . 3
cdc_htage . . . 4
cdc_wtage . . . 5
derive_interp_records . . . 5
derive_params_growth_age . . . 7
derive_params_growth_height . . . 10
dm_peds . . . 14
vs_peds . . . 15
who_bmi_for_age_boys . . . 15
who_bmi_for_age_girls . . . 16
who_hc_for_age_boys . . . 16
who_hc_for_age_girls . . . 17
who_lgth_ht_for_age_boys . . . 18
who_lgth_ht_for_age_girls . . . 18
who_wt_for_age_boys . . . 19
who_wt_for_age_girls . . . 20
who_wt_for_lgth_boys . . . 20
who_wt_for_lgth_girls . . . 21

Index **22**

adsl_peds *Subject Level Analysis Dataset-pediatrics*

Description

An updated ADaM ADSL dataset with pediatric patients

Usage

```
adsl_peds
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 5 rows and 35 columns.

See Also

Datasets `dm_peds`, `vs_peds`

cdc_bmiage *CDC BMI-for-age-chart*

Description

BMI-for-age charts, 2 to 20.5 years

Usage

```
cdc_bmiage
```

Format

A data frame with 438 rows and 7 variables:

`SEX` Sex: 1 = male, 2 = female

`AGE` Age in months

`L` Box-Cox transformation for normality

`M` Median

`S` Coefficient of variation

`Sigma` Sigma

`P95` 95th Percentile

Source

https://www.cdc.gov/growthcharts/percentile_data_files.htm

See Also

Metadata cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

---

cdc_htage *CDC Height-for-age-chart*

Description

Height-for-age charts, 2 to 20 years

Usage

```
cdc_htage
```

Format

A data frame with 436 rows and 5 variables:

SEX Sex: 1 = male, 2 = female

AGE Age in months

L Box-Cox transformation for normality

M Median

S Coefficient of variation

Source

https://www.cdc.gov/growthcharts/percentile_data_files.htm

See Also

Metadata cdc_bmiage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

cdc_wtage *CDC Weight-for-age-chart*

Description

Weight-for-age charts, 2 to 20 years

Usage

```
cdc_wtage
```

Format

A data frame with 436 rows and 5 variables:

`SEX` Sex: 1 = male, 2 = female

`AGE` Age in months

`L` Box-Cox transformation for normality

`M` Median

`S` Coefficient of variation

Source

https://www.cdc.gov/growthcharts/percentile_data_files.htm

See Also

Metadata cdc_bmiage, cdc_htage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

derive_interp_records *Derive interpolated rows for the CDC charts (>=2 yrs old)*

Description

Derive a linear interpolation of rows for the CDC charts (>=2 yrs old) by age in days for the following parameters: HEIGHT, WEIGHT and BMI

Usage

```
derive_interp_records(dataset, by_vars = NULL, parameter)
```

Arguments

dataset	Input metadataset The variables AGE, AGEU, SEX, L, M, S are expected to be in the dataset For BMI the additional variables P95 and Sigma are expected to be in the dataset Note that AGE must be in days so that AGEU is equal to "DAYS"
by_vars	Grouping variables The variable from dataset which identifies the group of observations to interpolate separately.
parameter	CDC/WHO metadata parameter *Permitted Values*: "WEIGHT", "HEIGHT" or "BMI" only - Must not be NULL e.g. parameter = "WEIGHT", parameter = "HEIGHT", or parameter = "BMI".

Value

The input dataset plus additional interpolated records: a record for each day from the minimum age to the maximum age.

If any variables in addition to the expected ones are in the input dataset, LOCF (Last Observation Carried Forward) is applied to populate them for the new records.

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

Examples

```
library(dplyr, warn.conflicts = FALSE)
library(rlang, warn.conflicts = FALSE)

cdc_htage <- admiralpeds::cdc_htage %>%
  mutate(
    SEX = case_when(
      SEX == 1 ~ "M",
      SEX == 2 ~ "F",
      TRUE ~ NA_character_
    ),
    # Ensure first that Age unit is "DAYS"
    AGE = round(AGE * 30.4375),
    AGEU = "DAYS"
  )

# Interpolate the AGE by SEX
derive_interp_records(
  dataset = cdc_htage,
  by_vars = exprs(SEX),
  parameter = "HEIGHT"
)
```

`derive_params_growth_age` *Derive Anthropometric indicators (Z-Scores/Percentiles-for-Age) based on Standard Growth Charts*

Description

Derive Anthropometric indicators (Z-Scores/Percentiles-for-Age) based on Standard Growth Charts for Height/Weight/BMI/Head Circumference by Age

Usage

```
derive_params_growth_age(
  dataset,
  sex,
  age,
  age_unit,
  meta_criteria,
  parameter,
  analysis_var,
  bmi_cdc_correction = FALSE,
  who_correction = FALSE,
  set_values_to_sds = NULL,
  set_values_to_pctl = NULL
)
```

Arguments

`dataset`	Input dataset The variables specified in `sex`, `age`, `age_unit`, `parameter`, `analysis_var` are expected to be in the dataset.
`sex`	Sex A character vector is expected. Expected Values: `M`, `F`
`age`	Current Age A numeric vector is expected. Note that this is the actual age at the current visit.
`age_unit`	Age Unit A character vector is expected. Expected values: `days`, `weeks`, `months`
`meta_criteria`	Metadata dataset A metadata dataset with the following expected variables: `AGE`, `AGEU`, `SEX`, `L`, `M`, `S` The dataset can be derived from CDC/WHO or user-defined datasets. The CDC/WHO growth chart metadata datasets are available in the package and will require small modifications.

If the age value from dataset falls between two AGE values in meta_criteria, then the L/M/S values that are chosen/mapped will be the AGE that has the smaller absolute difference to the value in age. e.g. If dataset has a current age of 27.49 months, and the metadata contains records for 27 and 28 months, the L/M/S corresponding to the 27 months record will be used.

- AGE - Age
- AGEU - Age Unit
- SEX - Sex
- L - Power in the Box-Cox transformation to normality
- M - Median
- S - Coefficient of variation

parameter

Anthropometric measurement parameter to calculate z-score or percentile

A condition is expected with the input dataset VSTESTCD/PARAMCD for which we want growth derivations:

e.g. parameter = VSTESTCD == "WEIGHT".

There is CDC/WHO metadata available for Height, Weight, BMI, and Head Circumference available in the admiralpeds package.

analysis_var

Variable containing anthropometric measurement

A numeric vector is expected, e.g. AVAL, VSSTRESN

bmi_cdc_correction

Extended CDC BMI-for-age correction

A logical scalar, e.g. TRUE/FALSE is expected. CDC developed extended percentiles (>95%) to monitor high BMI values, if set to TRUE the CDC's correction is applied.

who_correction

WHO adjustment for weight-based indicators

A logical scalar, e.g. TRUE/FALSE is expected. WHO constructed a restricted application of the LMS method for weight-based indicators. More details on these exact rules applied can be found at the document page 302 of the WHO Child Growth Standards Guidelines. If set to TRUE the WHO correction is applied.

set_values_to_sds

Variables to be set for Z-Scores

The specified variables are set to the specified values for the new observations. For example, set_values_to_sds(exprs(PARAMCD = "BMIASDS", PARAM = "BMI-for-age z-score")) defines the parameter code and parameter.

The formula to calculate the Z-score is as follows:

$$\frac{((\frac{obs}{M})^L - 1)}{L * S}$$

where "obs" is the observed value for the respective anthropometric measure being calculated.

Permitted Values: List of variable-value pairs

If left as default value, NULL, then parameter not derived in output dataset

set_values_to_pctl

Variables to be set for Percentile

The specified variables are set to the specified values for the new observations. For example, `set_values_to_pctl(exprs(PARAMCD = "BMIAPCTL", PARAM = "BMI-for-age percentile"))` defines the parameter code and parameter.

Permitted Values: List of variable-value pair

If left as default value, `NULL`, then parameter not derived in output dataset

Value

The input dataset additional records with the new parameter added.

See Also

Vital Signs Functions for adding Parameters/Records `derive_params_growth_height()`

Examples

```
library(dplyr, warn.conflicts = FALSE)
library(lubridate, warn.conflicts = FALSE)
library(rlang, warn.conflicts = FALSE)
library(admiral, warn.conflicts = FALSE)

advs <- dm_peds %>%
  select(USUBJID, BRTHDTC, SEX) %>%
  right_join(., vs_peds, by = "USUBJID") %>%
  mutate(
    VSDT = ymd(VSDTC),
    BRTHDT = ymd(BRTHDTC)
  ) %>%
  derive_vars_duration(
    new_var = AGECUR_D,
    new_var_unit = CURU_D,
    start_date = BRTHDT,
    end_date = VSDT,
    out_unit = "days",
    trunc_out = FALSE
  ) %>%
  derive_vars_duration(
    new_var = AGECUR_M,
    new_var_unit = CURU_M,
    start_date = BRTHDT,
    end_date = VSDT,
    out_unit = "months",
    trunc_out = FALSE
  ) %>%
  mutate(
    AGECUR = ifelse(AGECUR_D >= 365.25 * 2, AGECUR_M, AGECUR_D),
    AGECURU = ifelse(AGECUR_D >= 365.25 * 2, CURU_M, CURU_D)
  )

# metadata is in months
```

```
cdc_meta_criteria <- admiralpeds::cdc_htage %>%
  mutate(
    age_unit = "months",
    SEX = ifelse(SEX == 1, "M", "F")
  )

# metadata is in days
who_meta_criteria <- bind_rows(
  (admiralpeds::who_lgth_ht_for_age_boys %>%
    mutate(
      SEX = "M",
      age_unit = "days"
    )
  ),
  (admiralpeds::who_lgth_ht_for_age_girls %>%
    mutate(
      SEX = "F",
      age_unit = "days"
    )
  )
) %>%
  rename(AGE = Day)

criteria <- bind_rows(
  cdc_meta_criteria,
  who_meta_criteria
) %>%
  rename(AGEU = age_unit)

derive_params_growth_age(
  advs,
  sex = SEX,
  age = AGECUR,
  age_unit = AGECURU,
  meta_criteria = criteria,
  parameter = VSTESTCD == "HEIGHT",
  analysis_var = VSSTRESN,
  set_values_to_sds = exprs(
    PARAMCD = "HGTSDS",
    PARAM = "Height-for-age z-score"
  ),
  set_values_to_pctl = exprs(
    PARAMCD = "HGTPCTL",
    PARAM = "Height-for-age percentile"
  )
)
```

---

derive_params_growth_height

Derive Anthropometric indicators (Z-Scores/Percentiles-for-Height/Length) based on Standard Growth Charts

---

Description

Derive Anthropometric indicators (Z-Scores/Percentiles-for-Height/Length) based on Standard Growth Charts for Weight by Height/Length

Usage

```
derive_params_growth_height(
  dataset,
  sex,
  height,
  height_unit,
  meta_criteria,
  parameter,
  analysis_var,
  who_correction = FALSE,
  set_values_to_sds = NULL,
  set_values_to_pctl = NULL
)
```

Arguments

dataset	Input dataset The variables specified in sex, height, height_unit, parameter, analysis_var are expected to be in the dataset.
sex	Sex A character vector is expected. Expected Values: M, F
height	Current Height/length A numeric vector is expected. Note that this is the actual height/length at the current visit.
height_unit	Height/Length Unit A character vector is expected. Expected values: cm
meta_criteria	Metadata dataset A metadata dataset with the following expected variables: HEIGHT_LENGTH, HEIGHT_LENGTHU, SEX, L, M, S The dataset can be derived from WHO or user-defined datasets. The WHO growth chart metadata datasets are available in the package and will require small modifications. Datasets who_wt_for_lgth_boys/who_wt_for_lgth_girls are applicable for subject age < 730.5 days. If the height value from dataset falls between two HEIGHT_LENGTH values in meta_criteria, then the L/M/S values that are chosen/mapped will be the HEIGHT_LENGTH that has the smaller absolute difference to the value in height. e.g. If dataset has a current age of 50.49 cm, and the metadata contains records for 50 and 51 cm, the L/M/S corresponding to the 50 cm record will be used. • HEIGHT_LENGTH - Height/Length

- HEIGHT_LENGTHU - Height/Length Unit
- SEX - Sex
- L - Power in the Box-Cox transformation to normality
- M - Median
- S - Coefficient of variation

parameter

Anthropometric measurement parameter to calculate z-score or percentile

A condition is expected with the input dataset VSTESTCD/PARAMCD for which we want growth derivations:

e.g. parameter = VSTESTCD == "WEIGHT".

There is WHO metadata available for Weight available in the admiralpeds package. Weight measures are expected to be in the unit "kg".

analysis_var

Variable containing anthropometric measurement

A numeric vector is expected, e.g. AVAL, VSSTRESN

who_correction

WHO adjustment for weight-based indicators

A logical scalar, e.g. TRUE/FALSE is expected. WHO constructed a restricted application of the LMS method for weight-based indicators. More details on these exact rules applied can be found at the document page 302 of the WHO Child Growth Standards Guidelines. If set to TRUE the WHO correction is applied.

set_values_to_sds

Variables to be set for Z-Scores

The specified variables are set to the specified values for the new observations. For example, set_values_to_sds(exprs(PARAMCD = "WGTHSDS", PARAM = "Weight-for-height z-score")) defines the parameter code and parameter.

The formula to calculate the Z-score is as follows:

$$\frac{((\frac{obs}{M})^L - 1)}{L * S}$$

where "obs" is the observed value for the respective anthropometric measure being calculated.

Permitted Values: List of variable-value pairs

If left as default value, NULL, then parameter not derived in output dataset

set_values_to_pctl

Variables to be set for Percentile

The specified variables are set to the specified values for the new observations. For example, set_values_to_pctl(exprs(PARAMCD = "WGTHPCTL", PARAM = "Weight-for-height percentile")) defines the parameter code and parameter.

Permitted Values: List of variable-value pair

If left as default value, NULL, then parameter not derived in output dataset

Value

The input dataset additional records with the new parameter added.

See Also

Vital Signs Functions for adding Parameters/Records derive_params_growth_age()

Examples

```
library(dplyr, warn.conflicts = FALSE)
library(lubridate, warn.conflicts = FALSE)
library(rlang, warn.conflicts = FALSE)
library(admiral, warn.conflicts = FALSE)

# derive weight for height/length only for those under 2 years old using WHO
# weight for length reference file
advs <- dm_peds %>%
  select(USUBJID, BRTHDTC, SEX) %>%
  right_join(., vs_peds, by = "USUBJID") %>%
  mutate(
    VSDT = ymd(VSDTC),
    BRTHDT = ymd(BRTHDTC)
  ) %>%
  derive_vars_duration(
    new_var = AAGECUR,
    new_var_unit = AAGECURU,
    start_date = BRTHDT,
    end_date = VSDT,
    out_unit = "days"
  )

heights <- vs_peds %>%
  filter(VSTESTCD == "HEIGHT") %>%
  select(USUBJID, VSSTRESN, VSSTRESU, VSDTC) %>%
  rename(
    HGTTMP = VSSTRESN,
    HGTTMPU = VSSTRESU
  )

advs <- advs %>%
  right_join(., heights, by = c("USUBJID", "VSDTC"))

advs_under2 <- advs %>%
  filter(AAGECUR < 730.5)

who_under2 <- bind_rows(
  (admiralpeds::who_wt_for_lgth_boys %>%
    mutate(
      SEX = "M",
      height_unit = "cm"
    )
  ),
  (admiralpeds::who_wt_for_lgth_girls %>%
    mutate(
      SEX = "F",
      height_unit = "cm"
```

```
    )
  )
) %>%
  rename(
    HEIGHT_LENGTH = Length,
    HEIGHT_LENGTHU = height_unit
  )

derive_params_growth_height(
  advs_under2,
  sex = SEX,
  height = HGTTMP,
  height_unit = HGTTMPU,
  meta_criteria = who_under2,
  parameter = VSTESTCD == "WEIGHT",
  analysis_var = VSSTRESN,
  who_correction = TRUE,
  set_values_to_sds = exprs(
    PARAMCD = "WGTHSDS",
    PARAM = "Weight-for-height/length z-score"
  ),
  set_values_to_pctl = exprs(
    PARAMCD = "WGTHPCTL",
    PARAM = "Weight-for-height/length percentile"
  )
)
```

`dm_peds` *Demographic Dataset-pediatrics*

Description

An updated SDTM DM dataset with pediatric patients

Usage

```
dm_peds
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 5 rows and 26 columns.

See Also

Datasets `adsl_peds`, `vs_peds`

vs_peds *Vital signs Dataset-pediatrics*

Description

An updated SDTM VS dataset with anthropometric measurements for pediatric patients

Usage

```
vs_peds
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 164 rows and 26 columns.

See Also

Datasets `adsl_peds`, `dm_peds`

who_bmi_for_age_boys *WHO BMI-for-age for boys*

Description

WHO BMI-for-age charts for boys from day 0 (birth) to day 1856

Usage

```
who_bmi_for_age_boys
```

Format

A data frame with 1857 rows and 4 variables:

`Day` integer Age in days
`L` double Box-Cox transformation for normality
`M` double Median
`S` double Coefficient of variation

Source

https://www.who.int/toolkits/child-growth-standards/standards/body-mass-index-for-age-bmi-for-age

See Also

Metadata `cdc_bmiage`, `cdc_htage`, `cdc_wtage`, `derive_interp_records()`, `who_bmi_for_age_girls`, `who_hc_for_age_boys`, `who_hc_for_age_girls`, `who_lgth_ht_for_age_boys`, `who_lgth_ht_for_age_girls`, `who_wt_for_age_boys`, `who_wt_for_age_girls`, `who_wt_for_lgth_boys`, `who_wt_for_lgth_girls`

who_bmi_for_age_girls *WHO BMI-for-age for girls*

Description

WHO BMI-for-age charts for girls from day 0 (birth) to day 1856

Usage

```
who_bmi_for_age_girls
```

Format

A data frame with 1857 rows and 4 variables:

`Day` integer Age in days

`L` double Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/toolkits/child-growth-standards/standards/body-mass-index-for-age-bmi-for-age

See Also

Metadata `cdc_bmiage`, `cdc_htage`, `cdc_wtage`, `derive_interp_records()`, `who_bmi_for_age_boys`, `who_hc_for_age_boys`, `who_hc_for_age_girls`, `who_lgth_ht_for_age_boys`, `who_lgth_ht_for_age_girls`, `who_wt_for_age_boys`, `who_wt_for_age_girls`, `who_wt_for_lgth_boys`, `who_wt_for_lgth_girls`

who_hc_for_age_boys *WHO Head circumference-for-age for boys*

Description

WHO Head circumference-for-age charts for boys from day 0 (birth) to day 1856

Usage

```
who_hc_for_age_boys
```

Format

A data frame with 1857 rows and 4 variables:

`Day` integer Age in days

`L` double Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/toolkits/child-growth-standards/standards/head-circumference-for-age

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

---

who_hc_for_age_girls *WHO Head circumference-for-age for girls*

Description

WHO Head circumference-for-age charts for girls from day 0 (birth) to day 1856

Usage

```
who_hc_for_age_girls
```

Format

A data frame with 1857 rows and 4 variables:

`Day` integer Age in days

`L` double Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/toolkits/child-growth-standards/standards/head-circumference-for-age

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

---

who_lgth_ht_for_age_boys

WHO Length/height-for-age for boys

Description

WHO Length/height-for-age charts for boys from day 0 (birth) to day 1856

Usage

```
who_lgth_ht_for_age_boys
```

Format

A data frame with 1857 rows and 4 variables:

`Day` integer Age in days

`L` integer Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/tools/child-growth-standards/standards/length-height-for-age

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

---

who_lgth_ht_for_age_girls

WHO Length/height-for-age for girls

Description

WHO Length/height-for-age charts for girls from day 0 (birth) to day 1856

Usage

```
who_lgth_ht_for_age_girls
```

Format

A data frame with 1857 rows and 4 variables:

`Day` integer Age in days

`L` integer Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/tools/child-growth-standards/standards/length-height-for-age

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

---

who_wt_for_age_boys *WHO Weight-for-age for boys*

Description

WHO Weight-for-age charts for boys from day 0 (birth) to day 1856

Usage

```
who_wt_for_age_boys
```

Format

A data frame with 1857 rows and 4 variables:

`Day` integer Age in days

`L` double Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/tools/child-growth-standards/standards/weight-for-age

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_girls, who_wt_for_lgth_boys, who_wt_for_lgth_girls

who_wt_for_age_girls *WHO Weight-for-age for girls*

Description

WHO Weight-for-age charts for girls from day 0 (birth) to day 1856

Usage

```
who_wt_for_age_girls
```

Format

A data frame with 1857 rows and 4 variables:

`Day` integer Age in days

`L` double Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/tools/child-growth-standards/standards/weight-for-age

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_lgth_boys, who_wt_for_lgth_girls

who_wt_for_lgth_boys *WHO Weight-for-length for boys*

Description

WHO Weight-for-length charts for boys from 45cm to 110cm

Usage

```
who_wt_for_lgth_boys
```

Format

A data frame with 651 rows and 4 variables:

`Length` double Length in cm

`L` double Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/tools/child-growth-standards/standards/weight-for-length-height

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_girls

---

who_wt_for_lgth_girls *WHO Weight-for-length for girls*

Description

WHO Weight-for-length charts for girls from 45cm to 110cm

Usage

```
who_wt_for_lgth_girls
```

Format

A data frame with 651 rows and 4 variables:

`Length` double Length in cm

`L` double Box-Cox transformation for normality

`M` double Median

`S` double Coefficient of variation

Source

https://www.who.int/tools/child-growth-standards/standards/weight-for-length-height

See Also

Metadata cdc_bmiage, cdc_htage, cdc_wtage, derive_interp_records(), who_bmi_for_age_boys, who_bmi_for_age_girls, who_hc_for_age_boys, who_hc_for_age_girls, who_lgth_ht_for_age_boys, who_lgth_ht_for_age_girls, who_wt_for_age_boys, who_wt_for_age_girls, who_wt_for_lgth_boys

Index

∗ **datasets**
adsl_peds, 3
dm_peds, 14
vs_peds, 15
∗ **der_prm_bds_vs**
derive_params_growth_age, 7
derive_params_growth_height, 10
∗ **metadata**
cdc_bmiage, 3
cdc_htage, 4
cdc_wtage, 5
derive_interp_records, 5
who_bmi_for_age_boys, 15
who_bmi_for_age_girls, 16
who_hc_for_age_boys, 16
who_hc_for_age_girls, 17
who_lgth_ht_for_age_boys, 18
who_lgth_ht_for_age_girls, 18
who_wt_for_age_boys, 19
who_wt_for_age_girls, 20
who_wt_for_lgth_boys, 20
who_wt_for_lgth_girls, 21

adsl_peds, 3, *14, 15*

cdc_bmiage, 3, *4–6*, *15–21*
cdc_htage, *4*, 4, *5, 6*, *15–21*
cdc_wtage, *4*, 5, *6*, *15–21*

derive_interp_records, *4, 5*, 5, *15–21*
derive_params_growth_age, 7, *13*
derive_params_growth_height, *9*, 10
dm_peds, *3*, 14, *15*

vs_peds, *3*, *14*, 15

who_bmi_for_age_boys, *4–6*, 15, *16–21*
who_bmi_for_age_girls, *4–6*, *15*, 16, *17–21*
who_hc_for_age_boys, *4–6*, *15, 16*, 16, *17–21*
who_hc_for_age_girls, *4–6*, *15–17*, 17, *18–21*
who_lgth_ht_for_age_boys, *4–6*, *15–17*, 18, *19–21*
who_lgth_ht_for_age_girls, *4–6*, *15–18*, 18, *19–21*
who_wt_for_age_boys, *4–6*, *15–19*, 19, *20, 21*
who_wt_for_age_girls, *4–6*, *15–19*, 20, *21*
who_wt_for_lgth_boys, *4–6*, *15–20*, 20, *21*
who_wt_for_lgth_girls, *4–6*, *15–21*, 21