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Type Package

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Calculations

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verification of precision and estimation of bias" CLSI (2014,
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bias_validation_interval

Calculate bias validation interval

Description

Calculate bias validation interval

Usage

```
bias_validation_interval(TV, m, se_c)
```

Arguments

TV	True value
m	factor
se_c	SE Combined

Value

named list with the interval

calculate_aov_infos *Calculate ANOVA Results and Imprecision Estimates*

Description

Calculate ANOVA Results and Imprecision Estimates

Usage

```
calculate_aov_infos(ep_15_table)
```

Arguments

ep_15_table table generated from create_table_ep_15()

Value

Named list with ANOVA Results and Imprecision Estimates

Examples

```
calculate_aov_infos(create_table_ep_15(CLSIEP15::ferritin_long, data_type = 'long'))
```

calculate_bias_interval
 Calculate bias interval from TV

Description

Calculate bias interval from TV

Usage

```
calculate_bias_interval(  
  scenario,  
  nrun,  
  nrep,  
  SWL,  
  SR,  
  nsamples,  
  expected_mean,  
  user_mean,  
  ...  
)
```

Arguments

scenario	Chooosed scenario from section 3.3 of EP15-A3
nrun	Number of runs
nrep	number of repetitions per run (n0)
SWL	S within laboratory (obtained from anova)
SR	S repetability (obtained from anova)
nsamples	total number of samples tested usual 1
expected_mean	Expected mean or TV
user_mean	Mean of all samples (obtained from anova)
...	additional parameters necessary for processing the choosed scenario

Value

a named list with the defined mean, the interval significance (user mean should be in for approval), and total bias (user mean - TV)

Examples

```
calculate_bias_interval(scenario = 'E',
nrun = 7,
nrep = 5,
SWL = .042,
SR = .032,
nsamples = 2,
expected_mean = 1,
user_mean = .94
)
```

calculate_dfWL

Calculate degres of freedom within-lab as specified in appendix B

Description

Calculate degres of freedom within-lab as specified in appendix B

Usage

```
calculate_dfWL(cvr_manufacture, cvwl_manufacture, k, n0, N)
```

Arguments

cvr_manufacture	CV repeatability informed by the manufacturer
cvwl_manufacture	CV within-lab informed by the manufacturer
k	the number of runs
n0	the “average” number of results per run
N	the total number of replicates

Value

dfwl

calculate_df_combined *Calculate degrees of freedom of SE C (SE combined) given a selected scenario and additional parameters necessary for the scenario*

Description

Calculate degrees of freedom of SE C (SE combined) given a selected scenario and additional parameters necessary for the scenario

Usage

```
calculate_df_combined(scenario, ...)
```

Arguments

scenario	Scenario (A, B, C, D, E)
...	additional parameters necessary for the scenario

Value

DF

calculate_F_uv1	<i>Calculate the UVL factor</i>
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Description

Calculate the UVL factor

Usage

```
calculate_F_uv1(nsamp = 1, df, alpha = 0.05)
```

Arguments

nsamp	n samples in the study
df	degrees of freedom
alpha	confidence level

Value

Uvl factor

calculate_m	<i>Calculate M</i>
-------------	--------------------

Description

Calculate M

Usage

```
calculate_m(df, conf.level = 95, nsamples = 1)
```

Arguments

df	degrees of freedom
conf.level	confidence interval
nsamples	number of samples

Value

m factor

calculate_n0	<i>Calculate n0</i>
--------------	---------------------

Description

Calculate n0

Usage

```
calculate_n0(long_result_table)
```

Arguments

long_result_table
table generated by create_table_ep_15 function

Value

The n0 number which refers to Number of Results per Run

calculate_se_c	<i>Calculate SE combined based on SE X and SE RM</i>
----------------	--

Description

Calculate SE combined based on SE X and SE RM

Usage

```
calculate_se_c(se_x, se_rm)
```

Arguments

se_x	SE X
se_rm	SE RM

Value

SE C

calculate_se_rm	<i>Calculate SE RM given a scenario and a list of additional args that can change based on the selected scenario or sub scenario</i>
-----------------	--

Description

Calculate SE RM given a scenario and a list of additional args that can change based on the selected scenario or sub scenario

Usage

```
calculate_se_rm(scenario, additional_args)
```

Arguments

scenario	scenario (A, B, C, D, E)
additional_args	additional arguments list

Value

SE RM

calculate_se_rm_a_lowerupper	<i>Calculate SE RM for scenario A when f the manufacturer supplies lower and upper limits and coverage confidence interval (95 or 99...)</i>
------------------------------	--

Description

Calculate SE RM for scenario A when f the manufacturer supplies lower and upper limits and coverage confidence interval (95 or 99...)

Usage

```
calculate_se_rm_a_lowerupper(upper, lower, coverage)
```

Arguments

upper	upper limit
lower	lower limit
coverage	coverage

Value

SE RM

calculate_se_rm_a_u *Calculate SE RM for scenario A when “standard error” or “standard uncertainty” (abbreviated by lowercase “u”) or “combined standard uncertainty” (often denoted by “uC ”)*

Description

Calculate SE RM for scenario A when “standard error” or “standard uncertainty” (abbreviated by lowercase “u”) or “combined standard uncertainty” (often denoted by “uC ”)

Usage

calculate_se_rm_a_u(u)

Arguments

u “standard error” or “standard uncertainty” (abbreviated by lowercase “u”) or “combined standard uncertainty” (often denoted by “uC ”)

Value

SE RM

calculate_se_rm_a_Ucoverage *Calculate SE RM for scenario A when f the manufacturer supplies an “expanded uncertainty” (abbreviated by uppercase “U”) for the TV and coverage e.g. 95 or 99,*

Description

Calculate SE RM for scenario A when f the manufacturer supplies an “expanded uncertainty” (abbreviated by uppercase “U”) for the TV and coverage e.g. 95 or 99,

Usage

calculate_se_rm_a_Ucoverage(U, coverage)

Arguments

U expanded uncertainty
 coverage coverage

Value

SE RM

calculate_se_rm_a_Uk *Calculate SE RM for scenario A when f the manufacturer supplies an “expanded uncertainty” (abbreviated by uppercase “U”) for the TV and the “coverage factor” (abbreviated by “k”)*

Description

Calculate SE RM for scenario A when f the manufacturer supplies an “expanded uncertainty” (abbreviated by uppercase “U”) for the TV and the “coverage factor” (abbreviated by “k”)

Usage

calculate_se_rm_a_Uk(U, k)

Arguments

U	expanded uncertainty
k	coverage factor

Value

SE RM

calculate_se_rm_scenario_b_c
Calculate SE RM for scenario B or C If the reference material has a TV determined by PT or peer group results

Description

Calculate SE RM for scenario B or C If the reference material has a TV determined by PT or peer group results

Usage

calculate_se_rm_scenario_b_c(sd_rm, nlab)

Arguments

sd_rm	SD RM
nlab	number of lab or peer group results

Value

SE RM

 calculate_se_rm_scenario_d_e

Calculate SE RM for scenario D or E If the TV represents a conventional quantity value or When working with a commercial QC material supplied with a TV for which the standard error cannot be estimated

Description

Calculate SE RM for scenario D or E If the TV represents a conventional quantity value or When working with a commercial QC material supplied with a TV for which the standard error cannot be estimated

Usage

calculate_se_rm_scenario_d_e()

Value

SE RM

calculate_se_x

Calculate SE x

Description

Calculate SE x

Usage

calculate_se_x(nrun, nrep, SWL, SR)

Arguments

nrun	Run number
nrep	Number of repetitions per run n0
SWL	SWL from aov table
SR	SR from aov table

Value

SE X

calculate_uv1_info *Calculate upper verification limit*

Description

Generic function for calculating UVL the return is a named list and cv_uv1_r and cv_uv1_wl depends on what is the input (S or CV) if the input is SR and SWL the returns is S

Usage

```
calculate_uv1_info(aov_return, nsamp = 1, cvr_or_sr, cvwl_or_swl)
```

Arguments

aov_return	Return of calculate_aov_info()
nsamp	number of samples in the experiment
cvr_or_sr	Desirable CV or S repeatability
cvwl_or_swl	Desirable CV or S within-lab

Value

Named list with UVL params

Examples

```
data <- create_table_ep_15(ferritin_wider)
aov_t <- calculate_aov_infos(data)
calculate_uv1_info(aov_t, nsamp = 5, cvr_or_sr = .43, cvwl_or_swl = .7)
```

create_table_ep_15 *Create table for precision calculations*

Description

Create table for precision calculations

Usage

```
create_table_ep_15(data, data_type = "wider")
```

Arguments

data	a long or a wider data.frame with the same structure of CLSIEP15::ferritin_long or CLSIEP15::ferritin_wider
data_type	c('wider', 'long')

Value

a data.frame with renamed columns and structure adjustments

Examples

```
data <- create_table_ep_15(ferritin_long, data_type = "longer")
```

dfc_references	<i>Reference of degrees of freedom based on tau given in the CLSI Manual</i>
----------------	--

Description

Reference of degrees of freedom based on tau given in the CLSI Manual

Usage

```
dfc_references
```

Format

‘dfc_references’ A data frame with 390 rows and 4 columns:

tau tau

df degrees of freedom

labs number of labs or peers

runs number of runs ...

Source

CLSI EP15-A3

ferritin_long	<i>Ferritin data used in CLSI document examples in wide format</i>
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Description

Ferritin data used in CLSI document examples in wide format

Usage

```
ferritin_long
```

Format

'ferritin_long' A data frame with 25 rows and 3 columns:

rep Repetition of sample

name Run of the Runs obtained from 5 distinct days

value result of the observation ...

Source

CLSI EP15-A3

ferritin_wider

Ferritin data used in CLSI document examples in wide format

Description

Ferritin data used in CLSI document examples in wide format

Usage

ferritin_wider

Format

'ferritin_wider' A data frame with 5 rows and 6 columns:

rep Repetition of sample

Run_1, Run_2, Run_3, Run_4, Run_5 Runs from 5 distinct days ...

Source

CLSI EP15-A3

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