Package ‘apa’

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Title Format Outputs of Statistical Tests According to APA Guidelines
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Description Formatter functions in the ‘apa’ package take the return value of a statistical test function, e.g. a call to chisq.test() and return a string formatted according to the guidelines of the APA (American Psychological Association).

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R topics documented:

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# anova_apa

Report ANOVA in APA style

**Description**

Report ANOVA in APA style

**Usage**

```r
anova_apa(
  x,
  effect = NULL,
  sph_corr = c("greenhouse-geisser", "gg", "huynh-feldt", "hf", "none"),
  force_sph_corr = FALSE,
  es = c("petasq", "pes", "getasq", "ges"),
  format = c("text", "markdown", "rmarkdown", "html", "latex", "latex_math", "docx", "plotmath"),
  info = FALSE,
  print = TRUE
)
```

**Arguments**

- `x`: A call to `aov`, `ez::ezANOVA`, or `afex::afex_ez`, `afex::afex_car` or `afex::afex_4`
- `effect`: Character string indicating the name of the effect to display. If is `NULL`, all effects are reported (default).
- `sph_corr`: Character string indicating the method used for correction if the assumption of sphericity is violated (only applies to repeated-measures and mixed design ANOVA). Can be one of "greenhouse-geisser" (default), "huynh-feldt" or "none" (you may also use the abbreviations "gg" or "hf").
- `force_sph_corr`: Logical indicating if sphericity correction should be applied to all within factors regardless of what the result of Mauchly’s test of sphericity is (default is `FALSE`).
- `es`: Character string indicating the effect size to display in the output, one of "petasq" (partial eta squared) or "getasq" (generalized eta squared) (you may also use the abbreviations "pes" or "ges").
- `format`: Character string specifying the output format. One of "text", "markdown", "rmarkdown", "html", "latex", "latex_math", "docx" or "plotmath".
APA Formatting for RMarkdown Reports

Description

A wrapper around the *.apa functions, providing a convenient way to use the formatters in inline code in RMarkdown documents.

Usage

apa(x, effect = NULL, format = "rmarkdown", print = FALSE, ...)

Arguments

x An R object. Must be a call to one of afex::aov_4, afex::aov_car, afex::aov_ez, chisq.test, cor.test, ez::ezANOVA or t.test.

effect (only applicable if x is an ANOVA) Character string indicating the name of the effect to display. If is NULL, all effects are reported (default).

format Character string specifying the output format. One of "text", "markdown", "rmarkdown", html, "latex" or "docx".

print Logical indicating whether to return the result as an R object (FALSE) or print using cat (TRUE).

... Further arguments passed to other methods
chisq_apa

See Also

anova_apa, chisq_apa, cor_apa, t_apa

chisq_apa

Report Chi-squared test in APA style

Description

Report Chi-squared test in APA style

Usage

chisq_apa(
  x,
  print_n = FALSE,
  format = c("text", "markdown", "rmarkdown", "html", "latex", "latex_math", "docx", "plotmath"),
  info = FALSE,
  print = TRUE
)

Arguments

x A call to chisq.test
print_n Logical indicating whether to show sample size in text
format Character string specifying the output format. One of "text", "markdown", "rmarkdown", html, "latex", "latex_math", "docx" or "plotmath".
info Logical indicating whether to print a message on the used test (default is FALSE)
print Logical indicating whether to print the formatted output via cat (TRUE, default) or return as character string.

Examples

# Example data from ?chisq.test
m <- rbind(c(762, 327, 468), c(484, 239, 477))
chisq_apa(chisq.test(m))
Cohen's d

Description

Calculate Cohen's d from raw data or a call to t_test/t.test.

Usage

cohens_d(...)

## Default S3 method:
cohens_d(
  x,
  y = NULL,
  paired = FALSE,
  corr = c("none", "hedges_g", "glass_delta"),
  na.rm = FALSE,
  ...
)

## S3 method for class 'data.frame'
cohens_d(
  data,
  dv,
  iv,
  paired = FALSE,
  corr = c("none", "hedges_g", "glass_delta"),
  na.rm = FALSE,
  ...
)

## S3 method for class 'formula'
cohens_d(
  formula,
  data,
  paired = FALSE,
  corr = c("none", "hedges_g", "glass_delta"),
  na.rm = FALSE,
  ...
)

## S3 method for class 'htest'
cohens_d(ttest, corr = c("none", "hedges_g", "glass_delta"), ...)

Arguments

... Further arguments passed to methods.
cohens_d

x A (non-empty) numeric vector of data values.
y An optional (non-empty) numeric vector of data values.
paired A logical indicating whether Cohen's d should be calculated for a paired sample or two independent samples (default). Ignored when calculating Cohen's for one sample.
corr Character specifying the correction applied to calculation of the effect size: "none" (default) returns Cohen's d, "hedges_g" applies Hedges correction and "glass_delta" calculates Glass' Δ (uses the standard deviation of the second group).
na.rm Logical. Should missing values be removed?
data A data frame containing either the variables in the formula formula or the variables specified by dv and iv.
dv Character indicating the name of the column in data for the dependent variable
iv Character indicating the name of the column in data for the independent variable
formula A formula of the form lhs ~ rhs where lhs is a numeric variable giving the data values (dependent variable) and rhs a factor with two levels giving the corresponding groups (independent variable).
ttest An object of class htest (a call to either t.test (preferred) or t.test).

Details

To calculate Cohen’s d from summary statistics (M, SD, ..) use cohens_d_.

References


Examples

# Calculate from raw data
cohens_d(c(10, 15, 11, 14, 17), c(22, 18, 23, 25, 20))

# Methods when working with data frames
cohens_d(sleep, dv = extra, iv = group, paired = TRUE)
# or
cohens_d(sleep, dv = "extra", iv = "group", paired = TRUE)
# formula interface
cohens_d(extra ~ group, sleep, paired = TRUE)

# Or pass a call to t.test or t.test
cohens_d(t.test(extra ~ group, sleep, paired = TRUE))
Description

Calculate Cohens’ d from different statistics (see Details).

Usage

cohens_d_(
  m1 = NULL,
  m2 = NULL,
  sd1 = NULL,
  sd2 = NULL,
  n1 = NULL,
  n2 = NULL,
  t = NULL,
  n = NULL,
  paired = FALSE,
  corr = c("none", "hedges_g", "glass_delta")
)

Arguments

m1 Numeric, mean of the first group
m2 Numeric, mean of the second group
sd1 Numeric, standard deviation of the first group
sd2 Numeric, standard deviation of the second group
n1 Numeric, size of the first group
n2 Numeric, size of the second group
t Numeric, t-test statistic
n Numeric, total sample size
paired Logical indicating whether to calculate Cohen’s for independent samples or one sample (FALSE, default) or for dependent samples (TRUE).
corr Character specifying the correction applied to calculation of the effect size: "none" (default) returns Cohen’s d, "hedges_g" applies Hedges correction and "glass_delta" calculates Glass’ \( \Delta \) (uses the standard deviation of the second group).

Details

The following combinations of statistics are possible:

- m1, m2, sd1, sd2, n1 and n2
- t, n1 and n2
- t and n
References


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**cor_apa**  
*Report Correlation in APA style*

**Description**

Report Correlation in APA style

**Usage**

```r
cor_apa(
  x,
  r_ci = FALSE,
  format = c("text", "markdown", "rmarkdown", "html", "latex", "latex_math", "docx", "plotmath"),
  info = FALSE,
  print = TRUE
)
```

**Arguments**

- `x`  
  A call to `cor.test`

- `r_ci`  
  Logical indicating whether to display the confidence interval for the correlation coefficient (default is `FALSE`). Only available for Pearson’s product moment correlation (with n >= 4).

- `format`  
  Character string specifying the output format. One of "text", "markdown", "rmarkdown", html, "latex", "latex_math", "docx" or "plotmath".

- `info`  
  Logical indicating whether to print a message on the used test (default is `FALSE`).

- `print`  
  Logical indicating whether to print the formatted output via `cat` (TRUE, default) or return as character string.

**Examples**

```r
# Example data from ?cor.test
x <- c(44.4, 45.9, 41.9, 53.3, 44.7, 44.1, 50.7, 45.2, 60.1)
y <- c(2.6, 3.1, 2.5, 5.0, 3.6, 4.0, 5.2, 2.8, 3.8)

cor_apa(cor.test(x, y))

# Spearman’s rho
cor_apa(cor.test(x, y, method = "spearman"))

# Kendall’s tau
cor_apa(cor.test(x, y, method = "kendall"))
```
**petasq**

---

**Partial Eta Squared**

**Description**

Partial Eta Squared

**Usage**

```r
petasq(x, effect)
```

**Arguments**

- **x**
  - A call to `aov`, `ez::ezANOVA` or `afex::aov_ez` or `afex::aov_car` or `afex::aov_4`
- **effect**
  - Character string indicating the name of the effect for which the partial eta squared should be returned.

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**petasq_**

---

**Partial Eta Squared**

**Description**

Calculate the partial eta squared effect size from sum of squares.

\[
\eta_p^2 = \frac{SS_{effect}}{SS_{effect} + SS_{error}}
\]

**Usage**

```r
petasq_(ss_effect, ss_error)
```

**Arguments**

- **ss_effect**
  - numeric, sum of squares of the effect
- **ss_error**
  - numeric, sum of squares of the corresponding error
t_apa  Report t-Test in APA style

Description

Report t-Test in APA style

Usage

t_apa(
  x,
  es = "cohens_d",
  es_ci = FALSE,
  format = c("text", "markdown", "rmarkdown", "html", "latex", "latex_math", "docx", "plotmath"),
  info = FALSE,
  print = TRUE
)

Arguments

x  A call to t_test or t.test

es  Character specifying the effect size to report. One of "cohens_d" (default), "hedges_g" or "glass_delta" if x is an independent samples t-test. Ignored if x is a paired samples or one sample t-test (cohen's d is reported for these test).

es_ci  Logical indicating whether to add the 95 for Cohen's d (experimental; default is FALSE).

format  Character string specifying the output format. One of "text", "markdown", "rmarkdown", html, "latex", "latex_math", "docx" or "plotmath".

info  Logical indicating whether to print a message on the used test (default is FALSE).

print  Logical indicating whether to print the formatted output via cat (TRUE, default) or return as character string.

Examples

# Two independent samples t-test
t_apa(t_test(1:10, y = c(7:20)))

# Two dependent samples t-test
t_apa(t_test(extra ~ group, sleep, paired = TRUE))
Student's t-Test

Description

A wrapper for t.test which includes the original data in the returned object.

Usage

```r
t_test(x, ...)  

## Default S3 method:  
t_test(  
  x,  
  y = NULL,  
  alternative = c("two.sided", "less", "greater"),  
  mu = 0,  
  paired = FALSE,  
  var.equal = FALSE,  
  conf.level = 0.95,  
  ...  
)

## S3 method for class 'formula'  
t_test(formula, data, subset, na.action, ...)
```

Arguments

- `x`: a (non-empty) numeric vector of data values.
- `...`: further arguments to be passed to or from methods.
- `y`: an optional (non-empty) numeric vector of data values.
- `alternative`: a character string specifying the alternative hypothesis, must be one of "two.sided" (default), "greater" or "less". You can specify just the initial letter.
- `mu`: a number indicating the true value of the mean (or difference in means if you are performing a two sample test).
- `paired`: a logical indicating whether you want a paired t-test.
- `var.equal`: a logical variable indicating whether to treat the two variances as being equal. If TRUE then the pooled variance is used to estimate the variance otherwise the Welch (or Satterthwaite) approximation to the degrees of freedom is used.
- `conf.level`: confidence level of the interval.
- `formula`: a formula of the form `lhs ~ rhs` where `lhs` is a numeric variable giving the data values and `rhs` a factor with two levels giving the corresponding groups.
- `data`: an optional matrix or data frame (or similar: see `model.frame`) containing the variables in the formula `formula`. By default the variables are taken from `environment(formula)`.

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If you have any questions or need further assistance, feel free to ask! 😊
subset  an optional vector specifying a subset of observations to be used.
na.action  a function which indicates what should happen when the data contain NAs. Defaults to getOption("na.action").

See Also
t.test
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