Package ‘lucid’

March 3, 2026

Title Printing Floating Point Numbers in a Human-Friendly Format

Version 1.11

Description Print vectors (and data frames) of floating point numbers using a non-scientific format optimized for human readers. Vectors of numbers are rounded using significant digits, aligned at the decimal point, and all zeros trailing the decimal point are dropped. See: Wright (2016). Lucid: An R Package for Pretty-Printing Floating Point Numbers. In JSM Proceedings, Statistical Computing Section. Alexandria, VA: American Statistical Association. 2270-2279.

URL `https://kwstat.github.io/lucid/`, `http://kwstat.github.io/lucid/`

BugReports `https://github.com/kwstat/lucid/issues`

Imports nlme

Suggests broom, dplyr, knitr, lattice, lme4, rjags, rmarkdown, sommer, testthat

VignetteBuilder knitr

Encoding UTF-8

LazyData true

RoxygenNote 7.3.3

NeedsCompilation no

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Repository CRAN

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Contents

`antibiotic` *Effectiveness of 3 antibiotics against 16 bacterial species.*

Description

Effectiveness of 3 antibiotics against 16 bacterial species.

Format

A data frame with 16 observations on the following 5 variables.

`bacteria` bacterial species, 16 levels

`penicillin` MIC for penicillin

`streptomycin` MIC for streptomycin

`neomycin` MIC for neomycin

`gramstain` Gram staining (positive or negative)

Details

The values reported are the minimum inhibitory concentration (MIC) in micrograms/milliliter, which represents the concentration of antibiotic required to prevent growth in vitro.

Source

Will Burtin (1951). *Scope*. Fall, 1951.

References

Wainer, H. (2009). A Centenary Celebration for Will Burtin: A Pioneer of Scientific Visualization. *Chance*, 22(1), 51-55. https://chance.amstat.org/2009/02/visrev221/

Wainer, H. (2009). Visual Revelations: Pictures at an Exhibition. *Chance*, 22(2), 46–54. https://chance.amstat.org/2009/04/vi

Wainer, H. (2014). Medical Illuminations: Using Evidence, Visualization and Statistical Thinking to Improve Healthcare.

Examples

```
data(antibiotic)
lucid(antibiotic)

## Not run:
# Plot the data similar to Fig 2.14 of Wainer's book, "Medical Illuminations"

require(lattice)
require(reshape2)

# Use log10 transform
```

```
dat <- transform(antibiotic,
                 penicillin=log10(penicillin),
                 streptomycin=log10(streptomycin),
                 neomycin=log10(neomycin))
dat <- transform(dat, sgn = ifelse(dat$gramstain=="neg", "-", "+"))
dat <- transform(dat,
                 bacteria = paste(bacteria, sgn))
dat <- transform(dat, bacteria=reorder(bacteria, -penicillin))

dat <- melt(dat)

op <- tpg <- trellis.par.get()
tpg$superpose.symbol$pch <- toupper(substring(levels(dat$variable),1,1))
tpg$superpose.symbol$col <- c("darkgreen","purple","orange")
trellis.par.set(tpg)
dotplot(bacteria ~ value, data=dat, group=variable,
        cex=2,
        scales=list(x=list(at= -3:3,
                    labels=c('.001', '.01', '.1', '1', '10', '100', '1000'))),
        main="Bacterial response to Neomycin, Streptomycin, and Penicillin",
        xlab="Minimum Inhibitory Concentration (mg/L)")

trellis.par.set(op)


## End(Not run)
```

`lucid` *Lucid printing*

Description

Format a column of numbers in a way to make it easy to understand.

Usage

```
lucid(x, dig = 3, na.value = NULL, ...)

## Default S3 method:
lucid(x, dig = 3, na.value = NULL, ...)

## S3 method for class 'numeric'
lucid(x, dig = 3, na.value = NULL, ...)

## S3 method for class 'data.frame'
lucid(x, dig = 3, na.value = NULL, ...)
```

```
## S3 method for class 'matrix'
lucid(x, dig = 3, na.value = NULL, ...)

## S3 method for class 'list'
lucid(x, dig = 3, na.value = NULL, ...)

## S3 method for class 'tbl_df'
lucid(x, dig = 3, na.value = NULL, ...)
```

Arguments

`x`	Object to format.
`dig`	Number of significant digits to use in printing.
`na.value`	Character string to use instead of 'NA' for numeric missing values. Default is NULL, which does nothing.
`...`	Additional arguments passed to the data.frame method.

Details

Output from R is often in scientific notation, which makes it difficult to quickly glance at numbers and gain an understanding of the relative values. This function formats the numbers in a way that makes interpretation of the numbers _immediately_ apparent.

The sequence of steps in formatting the output is: (1) zap to zero (2) use significant digits (3) drop trailing zeros after decimal (4) align decimals.

Value

Text, formatted in a human-readable way. Standard R methods are used to print the value.

See Also

`signif`

Examples

```
x0 <- c(123, 12.3, 1.23, .123456) # From Finney, page 352
print(x0)
lucid(x0, dig=2)

x1 <- c(123, NA, 1.23, NA)
lucid(x1, na.value="--")

signif(mtcars[15:20,])
lucid(mtcars[15:20,])

x2 <- c(1/3, 5/3, 1, 1.5, 2, 11/6, 5/6, 8.43215652105343e-17)
print(x2)
lucid(x2)

# Which coef is 0 ? How large is the intercept?
```

```
df1 <- data.frame(effect=c(-13.5, 4.5,  24.5, 6.927792e-14, -1.75,
                    16.5, 113.5000))
rownames(df1) <- c("A","B","C","C1","C2","D","(Intercept)")
print(df1)
lucid(df1)

df2 <- data.frame(effect=c("hyb","region","region:loc","hyb:region",
                           "yr","hyb:yr","region:yr","R!variance"),
                  component=c(10.9,277,493,1.30E-04,126,22.3,481,268),
                  std.error=c(4.40,166,26.1,1.58E-06,119,4.50,108,3.25),
                  z.ratio=c(2.471,1.669,18.899,82.242,
                  1.060,4.951,4.442,82.242),
                  constraint=c("pos","pos","pos","bnd",
                  "pos","pos","pos","pos"))
print(df2)
lucid(df2)
```

`vc` *Extract variance components from mixed models*

Description

Extract the variance components from a fitted model. Currently supports `asreml`, `lme4`, `mmer`, `nlme` and `mcmc.list` objects.

Usage

```
vc(object, ...)

## Default S3 method:
vc(object, ...)

## S3 method for class 'asreml'
vc(object, gamma = FALSE, ...)

## S3 method for class 'lme'
vc(object, ...)

## S3 method for class 'glmerMod'
vc(object, ...)

## S3 method for class 'lmerMod'
vc(object, ...)

## S3 method for class 'mcmc.list'
vc(object, quantiles = c(0.025, 0.5, 0.975), ...)

## S3 method for class 'mmer'
vc(object, ...)
```

Arguments

`object`	A fitted model object
`...`	Not used. Extra arguments.
`gamma`	If gamma=FALSE, then the 'gamma' column is omitted from the results from asreml
`quantiles`	The quantiles to use for printing mcmc.list objects

Details

The extracted variance components are stored in a data frame with an additional 'vc.xxx' class that has an associated print method.

Value

A data frame or other object.

Examples

```
## Not run:

require("nlme")
data(Rail)
m3 <- lme(travel~1, random=~1|Rail, data=Rail)
vc(m3)
##       effect variance stddev
##  (Intercept)   615.3  24.81
##     Residual    16.17  4.021

require("lme4")
m4 <- lmer(travel~1 + (1|Rail), data=Rail)
vc(m4)
##      grp        var1 var2   vcov  sdcor
##     Rail (Intercept) <NA> 615.3  24.81
## Residual        <NA> <NA>  16.17  4.021

require("asreml")
ma <- asreml(travel~1, random=~Rail, data=Rail)
vc(ma)
##         effect component std.error z.ratio constr
##  Rail!Rail.var    615.3      392.6     1.6    pos
##     R!variance     16.17       6.6     2.4    pos

# See vignette for rjags example

# To change the number of digits, use the print function.
print(vc(m3), dig=5)


## End(Not run)
```

Index