Package 'desplot'

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Title Plotting Field Plans for Agricultural Experiments

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Type Package

Description A function for plotting maps of agricultural field experiments that are laid out in grids.

Imports grid, lattice, reshape2,

Suggests agridat, knitr, testthat

License GPL-3

LazyData yes

URL https://github.com/kwstat/desplot

BugReports https://github.com/kwstat/desplot/issues

VignetteBuilder knitr

RoxygenNote 6.0.1

NeedsCompilation no

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R topics documented:

desplot *Plot the layout/data of a field experiment.*

Description

Note, not all lattice parameters are passed down to xyplot, but it is possible to make almost any change to the plot by assigning the desplot object to a variable and then edit the object by hand or use update to modify the object. Then print it manually. See the first example below.

Usage

```
desplot(form = formula(NULL ~ x + y), data, num = NULL, col = NULL,
  text = NULL, out1 = NULL, out2 = NULL, col.regions = RedGrayBlue,
  col.text = NULL, text.levels = NULL, out1.gpar = list(col = "black", lwd
  = 3), out2.gpar = list(col = "yellow", lwd = 1, lty = 1), at,
  midpoint = "median", ticks = FALSE, flip = FALSE, main = NULL, xlab,
  ylab, shorten = "abb", show.key = TRUE, key.cex, cex = 0.4,
  strip.cex = 0.75, subset = TRUE, ...)
```

Arguments

form	A formula like yield~x*y|location. Note x,y are numeric.
data	A data frame.
num	The name of the column of the data to use for plotting numbers.
col	Column of the data for the color of the number shown in each cell.
text	Column of the data to use for text labels shown in each cell.
out1	Column of the data to use for outlining around blocks of cells.
out2	Column of the data to use for outlining around blocks of cells.
col.regions	Colors for the fill color of cells.
col.text	Vector of colors for text strings.
text.levels	Character strings to use instead of default 'levels'.
out1.gpar	A list of graphics parameters for outlining. Can either be an ordinary list() or A call to gpar() from the grid package.
out2.gpar	Graphics parameters for the second level of outlining.
at	Breakpoints for the color ribbon. Use this instead of 'zlim'. Note: using at causes midpoint to be set to NULL.
midpoint	Method to find midpoint of the color ribbon. One of 'midrange', 'median, or a numeric value.
ticks	If TRUE, show tick marks along the bottom and left sides.
flip	If TRUE, vertically flip the image.
main	Main title.
xlab	Label for x axis.

ylab	Label for y axis.
shorten	Method for shortening text in the key, either 'abb', 'sub', 'no', or FALSE.
show.key	If TRUE, show the key on the left side. (This is not the ribbon.)
key.cex	Left legend cex.
cex	Expansion factor for text/number in each cell.
strip.cex	Strip cex.
subset	An expression that evaluates to logical index vector for subsetting the data.
...	Other.

Details

Ryder (1981) discusses the need to examine the layout of the experiment design, and not just the data. This function provides a a tool for plotting the layout of a field experiment and also the observed data.

Use `col.regions` to specify fill colors. This can either be a vector of colors or a function that produces a vector of colors. If the response variable is a factor and `col.regions` is a *function*, it will be ignored and the cells are filled with default light-colored backgrounds and a key is placed on the left. If the response variable is *numeric*, the cells are colored according to `col.regions`, and a ribbon key is placed on the right.

The default argument `shorten='abb'` will shorten the cell text using the `abbreviate` function. Use `shorten='sub'` to use a 3-character substring. Use `shorten='no'` or `shorten=FALSE` for no shortening.

Note that two sub-plots with identical levels of the split-plot factor can be adjacent to each other by virtue of appearing in different whole-plots. To correctly outline the split-plot factor, simply concatenate the whole-plot factor and sub-plot factor together.

To get a map of a field with a true aspect ratio, include 'aspect=ylen/xlen' in the call, where 'ylen' is the vertical length of the field and 'xlen' is the horizontal length of the field.

To call this function inside another function, you can hack like this: vr <- "yield"; vx <- "x"; vy <- "y"; eval(parse(text=paste("desplot(", vr, "~", vx, "*", vy, ", data=yates.oats)")))

Value

A lattice object

Author(s)

Kevin Wright

References

K. Ryder (1981). Field plans: why the biometrician finds them useful. *Experimental Agriculture*, 17, 243–256.

Examples

```
if(require(agridat)){

# Show how to customize any feature.  Here: make the strips bigger.
data(besag.met)
dat <- besag.met
d1 <- desplot(yield ~ col*row|county, dat, main="besag.met",
              out1=rep, out2=block, out2.gpar=list(col="white"), strip.cex=2)
d1 <- update(d1, par.settings = list(layout.heights=list(strip=2)))
print(d1)

# Show experiment layout
data(yates.oats)
# agridat version 1.12 used x/y here instead of col/row
if(is.element("x",names(yates.oats)))
  yates.oats <- transform(yates.oats, col=x, row=y)
desplot(yield ~ col+row, yates.oats, out1=block, out2=gen)

desplot(block ~ col+row, yates.oats, col=nitro, text=gen, cex=1, out1=block,
        out2=gen, out2.gpar=list(col = "gray50", lwd = 1, lty = 1))


# Example from Ryder.
data(ryder.groundnut)
gnut <- ryder.groundnut
m1 <- lm(dry~block+gen, gnut)
gnut$res <- resid(m1)
# Note largest positive/negative residuals are adjacent
desplot(res ~ col + row, gnut, text=gen, cex=1,
        main="ryder.groundnut residuals from RCB model")
}
```

`panel.outlinelevelplot` *Panel Function for desplot*

Description

This is a panel function for `desplot` which fills cells with a background color and adds outlines around blocks of cells.

Usage

```
panel.outlinelevelplot(x, y, z, subscripts, at, ..., alpha.regions = 1, out1f,
  out1g, out2f, out2g)
```

Arguments

x	Coordinates
y	Coordinates
z	Value for filling each cell.
subscripts	For compatability.
at	Breakpoints for the colors.
...	Other
alpha.regions	Transparency for fill colors. Not well tested.
out1f	Factors to use for outlining.
out1g	Factors to use for outlining.
out2f	Graphics parameters to use for outlining.
out2g	Graphics parameters to use for outlining.

Details

It does not add the text labels, numbers, or colors.

The rule for determining where to draw outlines is to compare the levels of the factor used for outlining. If bordering cells have different levels of the factor, then a border is drawn. 'NA' values are ignored (otherwise, too many lines would be drawn).

The code works, but is probably overkill and has not been streamlined.

References

Derived from lattice::panel.levelplot

RedGrayBlue *Function to create a Red-Gray-Blue palette*

Description

A function to create a Red-Gray-Blue palette.

Usage

```
RedGrayBlue(n)
```

Arguments

n	Number of colors to create

Details

Using gray instead of white allows missing values to appear as white (actually, transparent).

Value

A vector of n colors.

Author(s)

Kevin Wright

Examples

```
pie(rep(1,11), col=RedGrayBlue(11))
title("RedGrayBlue(11)")
```

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