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

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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.
Details

Ryder (1981) discusses the need to examine the layout of the experiment design, and not just the data. This function provides 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

Examples

```r
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 = "gray0", 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**

```r
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 compatibility.
- **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

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**RedGrayBlue**

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

**Description**

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

**Usage**

```r
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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