Package 'dichromat'

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Title Color schemes for dichromats

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Version 1.2-4

Requires R (>= 1.9.0)

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Description Collapse red-green distinctions to simulate the effects of colour-blindness

License GPL-2

LazyLoad Yes

Depends R (>= 2.10)

Repository CRAN

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R topics documented:

`colorschemes` *Color schemes*

Description

17 color schemes suitable for people with deficient or anomalous red-green vision.

Usage

```
colorschemes
```

Format

- BrowntoBlue.10
- BrowntoBlue.12
- BluetoDarkOrange.12
- BluetoDarkOrange.18
- DarkRedtoBlue.12
- DarkRedtoBlue.18
- BluetoGreen.14
- BluetoGray.8
- BluetoOrangeRed.14
- BluetoOrange.10
- BluetoOrange.12
- BluetoOrange.8
- LightBluetoDarkBlue.10
- LightBluetoDarkBlue.7
- Categorical.12
- GreentoMagenta.16
- SteppedSequential.5

Author(s)

R code by Scott Waichler <scott.waichler@pnl.gov>

Source

Light A. and P.J. Bartlein, 2004. "The end of the rainbow? Color schemes for improved data graphics," EOS Transactions of the American Geophysical Union 85(40):385.

References

http://geography.uoregon.edu/datagraphics/color_scales.htm

Examples

```
opar <- par(mar=c(1,2,1,1))
layout(matrix(1:6,ncol=1))
image(1:10,1,matrix(1:10, ncol=1),col=colorschemes$BrowntoBlue.10,
    main="Brown to Blue (10)", axes=FALSE)
image(1:100,1,matrix(1:100 ,ncol=1),col=colorRampPalette(colorschemes$BrowntoBlue.10,space="Lab")(100),
    main="Brown to Blue Ramp", axes=FALSE)
image(1:10,1,matrix(1:10, ncol=1),col=dichromat(colorschemes$BrowntoBlue.10),
   main="Brown to Blue (10) -- deuteranopia", axes=FALSE)
image(1:12,1,matrix(1:12, ncol=1),col=colorschemes$Categorical.12,main="Categorical (12)", axes=FALSE)
image(1:12,1,matrix(1:12, ncol=1),col=dichromat(colorschemes$Categorical.12),
   main="Categorical (12) -- deuteranopia", axes=FALSE)
image(1:12,1,matrix(1:12,ncol=1),col=dichromat(colorschemes$Categorical.12, "protan"),
   main="Categorical (12) -- protanopia", axes=FALSE)
par(opar)
```

`dalton` *Effects of daltonism (red-green color blindness)*

Description

A 256-color palette as it would appear with normal vision, and with two types of red-green color-blindness: protanopia and deuteronopia.

Usage

```
data(dalton)
```

Format

`dalton` A 256x3x3 array. The columns index the red, green and blue color values, the layers index the vision type.

`dalton.colors`: A data frame of colors, with column names `normal`, `protan`, `deutan`.

Source

http://tsi.enst.fr/~brettel/CRA24/table2.html

References

F. Vienot, H. Brettel and J. D. Mollon (1999) Digital video colourmaps for checking the legibility of displays by dichromats. Color Research and Application 24, 243-252.

Examples

```
data(dalton)
 par(mfrow=c(3,1))
 image(matrix(1:256,128),col=dalton.colors$deutan)
 image(matrix(1:256,128),col=dalton.colors$protan)
 image(matrix(1:256,128),col=dalton.colors$normal)
```

`dichromat` *Remove red-green distinctions from colours*

Description

Collapses red-green color distinctions to approximate the effect of the two common forms of red-green colour blindness, protanopia and deuteranopia.

Usage

```
dichromat(colours, type = c("deutan", "protan"))
```

Arguments

`colours`	A vector of R colors, either color names or color hex strings
`type`	Type of color-blindness to simulate

Details

Someone with the specified form of red-green colour blindness will find that the transformation has little effect on the appearance of colours. Colours that are indistinguishable after transformation were likely indistinguishable to them before transformation. About 10% of men (and almost no women) have some degree of red-green colour blindness.

Value

A vector of R colors

Author(s)

Thomas Lumley

References

T. Lumley (2006) Color-coding and color blindness in statistical graphics. Statistical Computing and Graphics Newsletter. http://www.amstat-online.org/sections/graphics/newsletter/Volumes/v172.pdf

F. Vienot, H. Brettel and J. D. Mollon (1999) Digital video colourmaps for checking the legibility of displays by dichromats. Color Research and Application 24, 243-252.

Examples

```
## from example(pie)
 par(mfrow=c(2,2))
 pie.sales <- c(0.12, 0.3, 0.26, 0.16, 0.04, 0.12)
 names(pie.sales) <- c("Blueberry", "Cherry",
         "Apple", "Boston Cream", "Other", "Vanilla Cream")
 pie(pie.sales) # default colours
```

```
 pie(pie.sales,
       col = c("purple", "violetred1", "green3", "cornsilk", "cyan", "white"))
 pie(pie.sales,col=dichromat( c("white", "lightblue", "mistyrose", "lightcyan",
                "lavender", "cornsilk"))) # default colours
 pie(pie.sales,
       col =dichromat(c("purple", "violetred1", "green3", "cornsilk", "cyan", "white")))


## standard color schemes
pie(rep(1,10),col=heat.colors(10))
pie(rep(1,10),col=dichromat(heat.colors(10)))
pie(rep(1,8),col=palette())
pie(rep(1,8),col=dichromat(palette()))

pie(rep(1,15),col=topo.colors(15))
pie(rep(1,15),col=dichromat(topo.colors(15)))
pie(rep(1,15),col=terrain.colors(15))
pie(rep(1,15),col=dichromat(terrain.colors(15)))

pie(rep(1,15),col=cm.colors(15))
pie(rep(1,15),col=dichromat(cm.colors(15)))
bluescale<-colorRampPalette(c("#FFFFCC","#C7E9B4","#7FCDBB","#40B6C4","#2C7FB8" ,"#253494"))
pie(rep(1,15),col=bluescale(15))
pie(rep(1,15),col=dichromat(bluescale(15)))

par(mfrow=c(2,3))
x<-matrix(rnorm(10*10),10)
redgreen<-colorRampPalette(c("red","green3"))
image(1:10,1:10,x, col=bluescale(10),
main="blue-yellow scale")
image(1:10,1:10,x, col=dichromat(bluescale(10)), main="deutan")
image(1:10,1:10,x,col=dichromat(bluescale(10),"protan"), main="protan")

image(1:10,1:10,x, col=redgreen(10),
main="red-green scale")
image(1:10,1:10,x, col=dichromat(redgreen(10)), main="deutan")
image(1:10,1:10,x, col=dichromat(redgreen(10),"protan"), main="protan")
```

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