



The R Graph Gallery

Réunion Technique R, Montpellier, Dec 2016

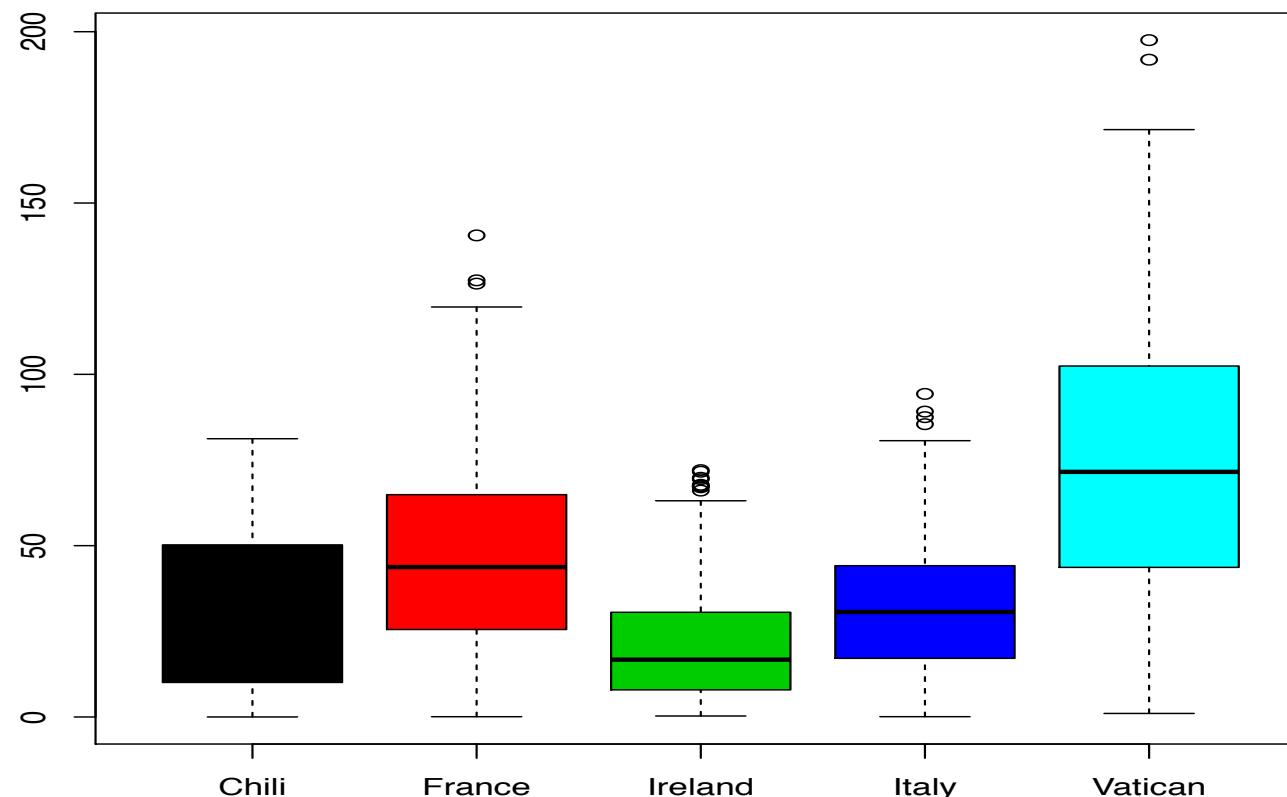
Yan Holtz, holtz@supagro.fr

A quick basic graph

names	country	drink
Chelsea	France	45.629739
Marissa	Ireland	5.906875
Mara	France	36.089158
A'Tiana	Chili	13.052119
...
Fardowsa	Ireland	5.573123
Makayla	Vatican	83.58251



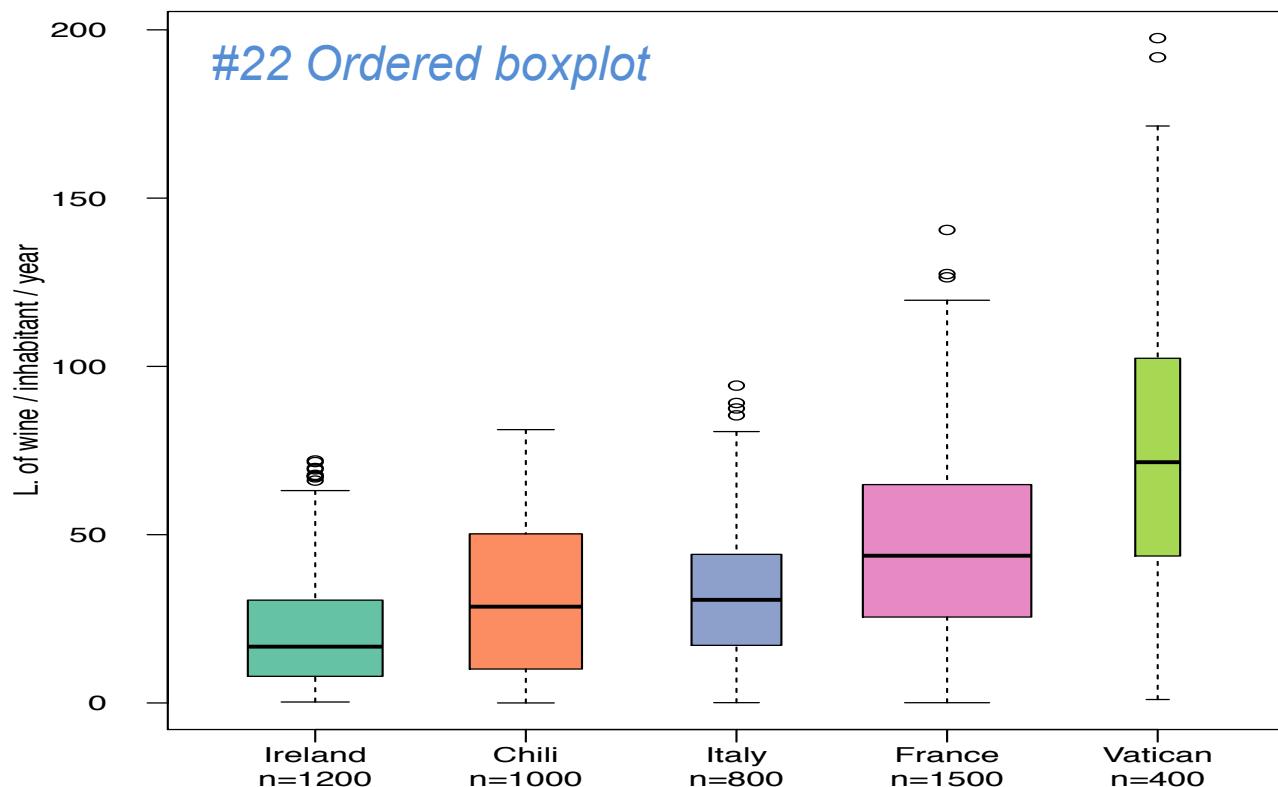
```
boxplot(data$drink ~ data$country, col=c(1:5) )
```



- R = high efficiency to produce simple graphics.
- But more work is needed for an attractive communication

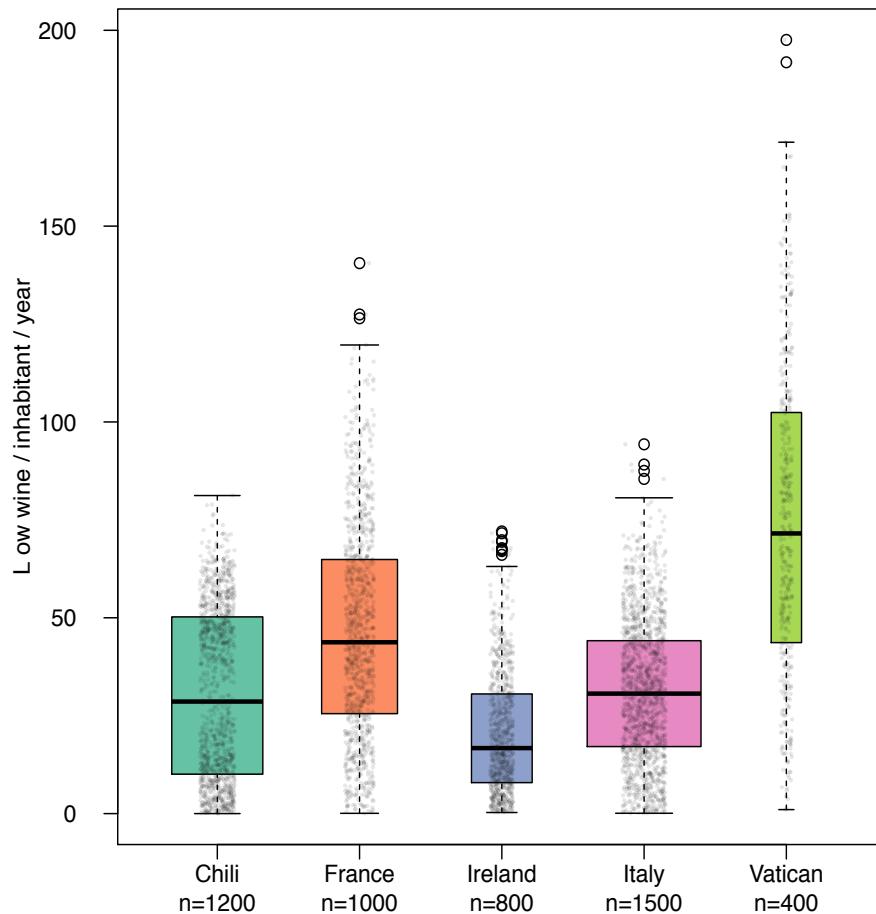
... the custom version!

```
library("RColorBrewer")
par(mgp=c(3,1.5,0) , mar=c(4,5,2,2) )
proportion=table(data$country)/nrow(data)
new_order <- with(data, reorder(country , drink, median))
boxplot(data$drink ~ new_order , ylab="L. of wine / inhabitant / year" , col=brewer.pal(5, "Set2") , las=1 ,
width=proportion, xaxt="n" )
axis(1, at=c(1:5) , labels=paste(levels(data$country),table(data$country),sep="\nn=") )
```

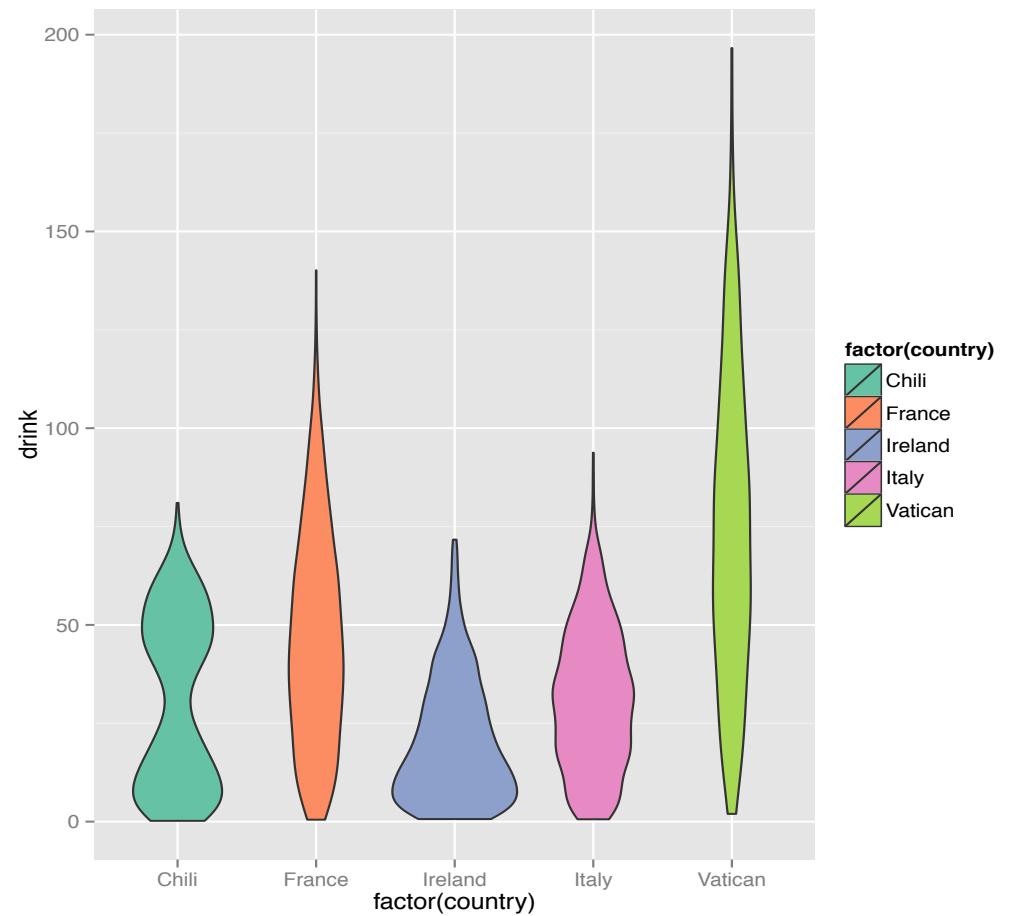


- Better graph=better understanding
- Hard to remember every option!

#96 Boxplot with jitter

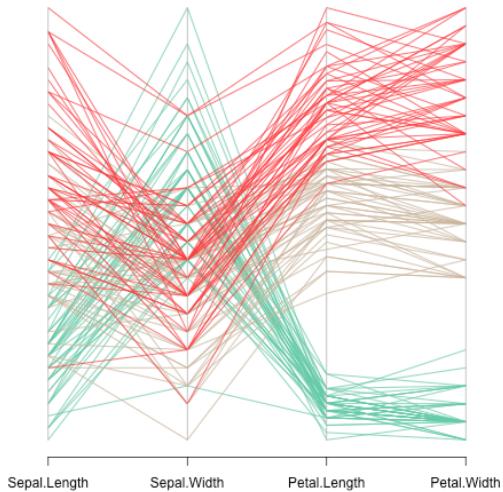


#95 Violin Plot

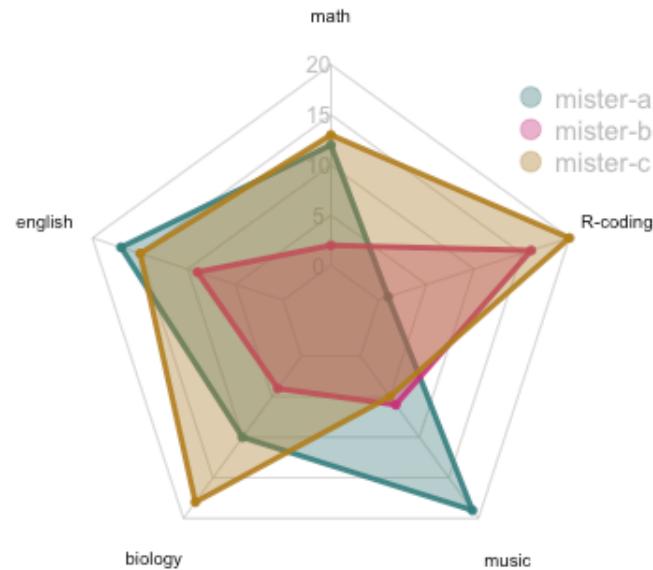


- DataViz is **not only aesthetic!**
- Do you know every **chart possibility?**

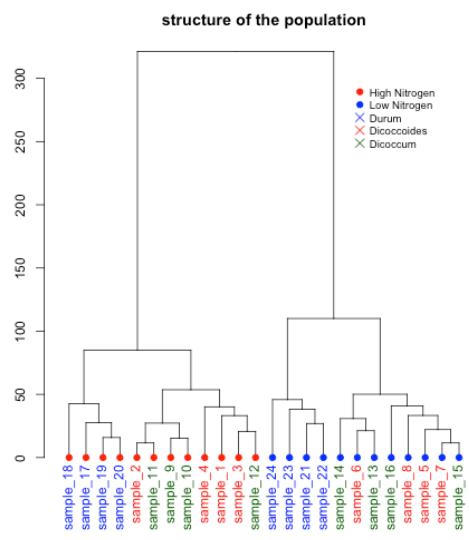
A world of possibilities



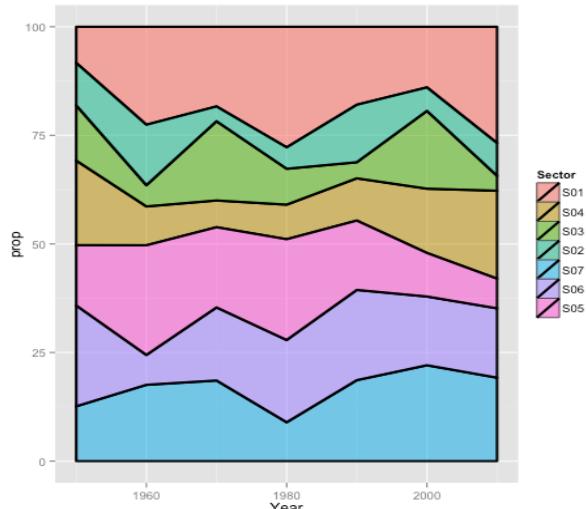
#93 Parallel plot



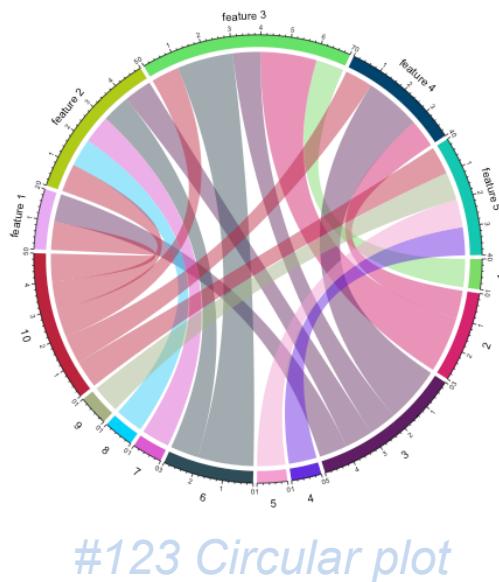
#143 Spider Graph



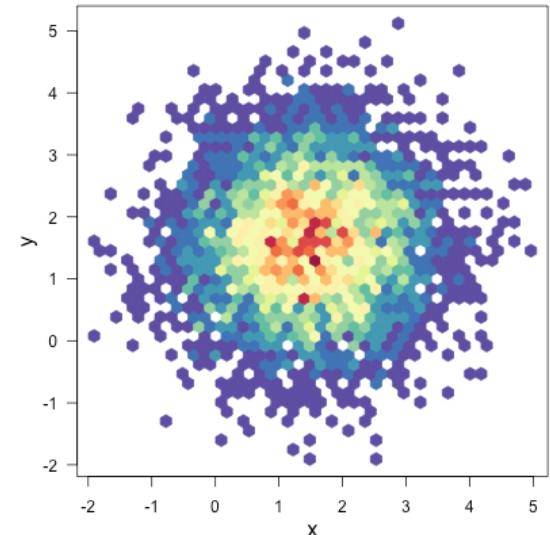
#31 Clustering tree



#136 Stacked area



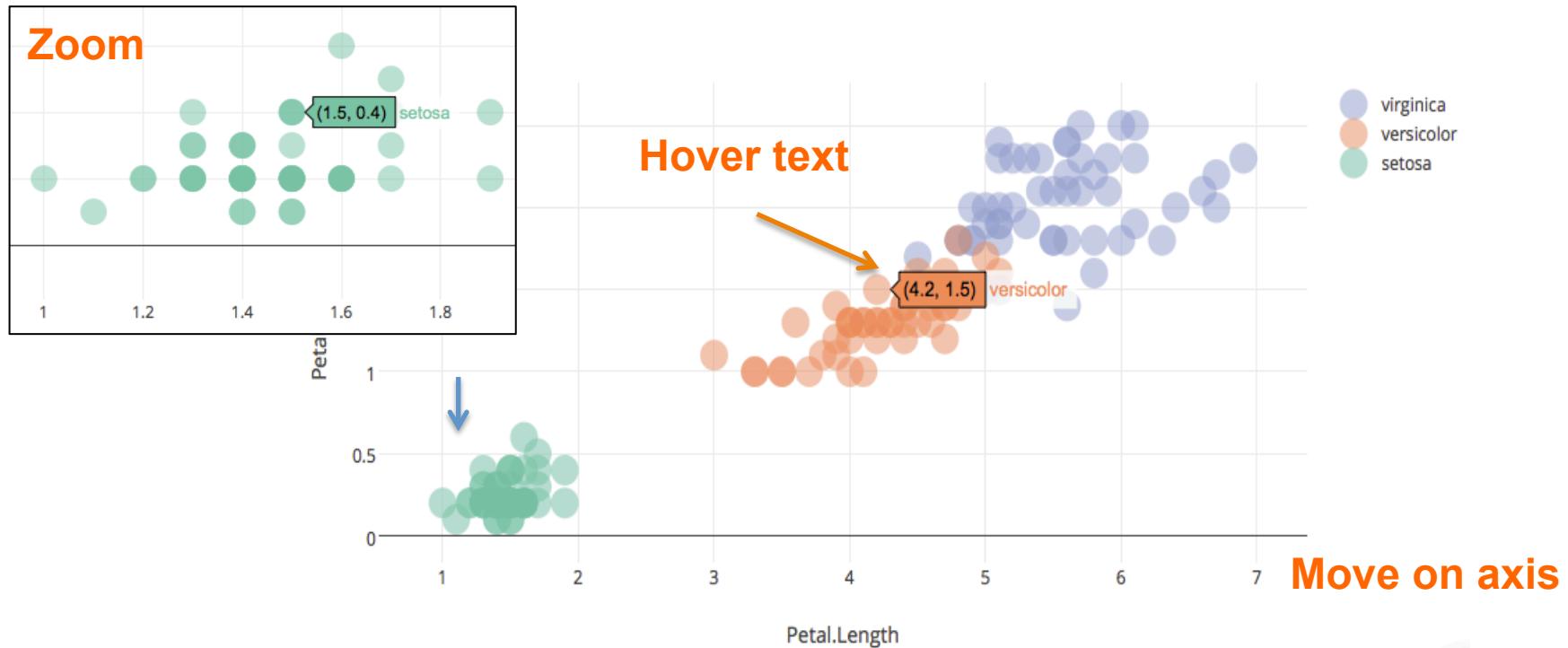
#123 Circular plot



#100 scatter & binning

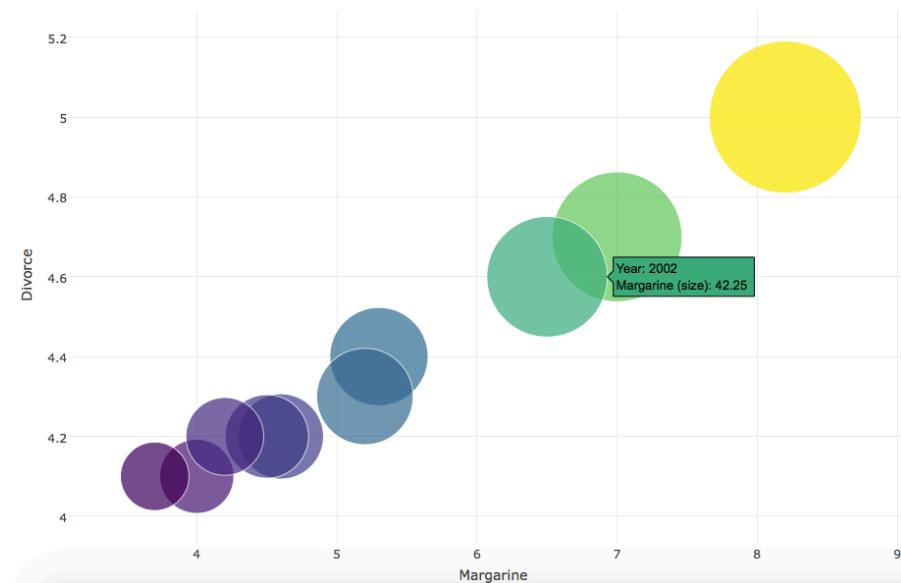
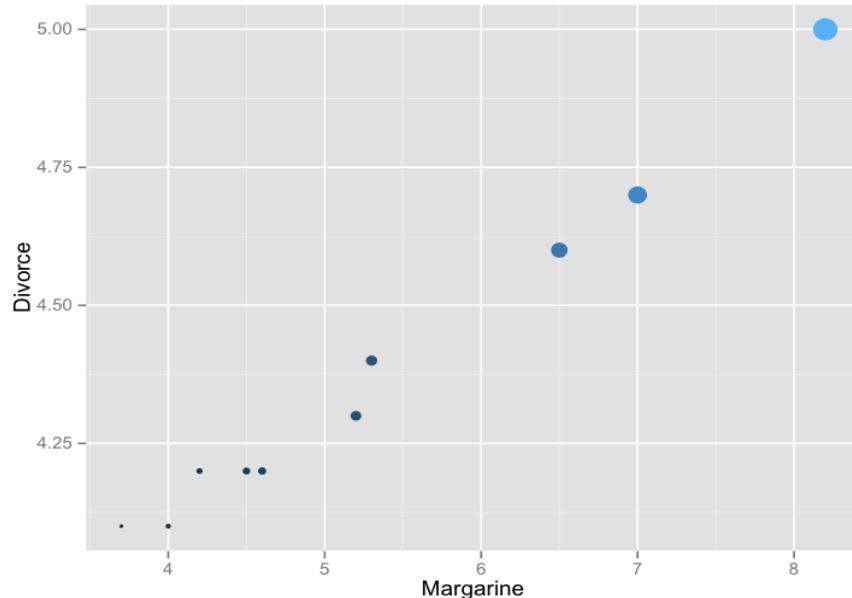
Next step: Interactive plots with the **HTML widgets**

HTML widgets: Dygraph - Leaflet - Plotly - rbokeh - visNetwork - networkD3 - DataTables - Threejs - Rglwidget - DiagrammeR - HighCharter - MetricsGraphics – www.htmlwidgets.org/



- Interactivity=better access to information
- Bring your **data to life!**
- Interactivity with R is **easy**

Plotly



```
qplot(  
  data=data, x=Margarine, y=Divorce,  
  colour = Margarine,  
  size=Margarine  
)
```

```
plot_ly(  
  data, x=Margarine , y=Divorce ,  
  size=Margarine,  
  color=Margarine,  
  mode="markers" ,  
  text=paste("Year: ",year,sep="") ,  
  hoverinfo="text"  
)
```

- Plotly : syntax is close to ggplot2
- Possibility to share your graphics

Shiny

- Shiny: Turn your R analyses into interactive web applications
- <http://shiny.rstudio.com/>
- Combine the functionality of shiny, the aesthetics of ggplot2 & the interactivity of plotly!



- Maps comparison -

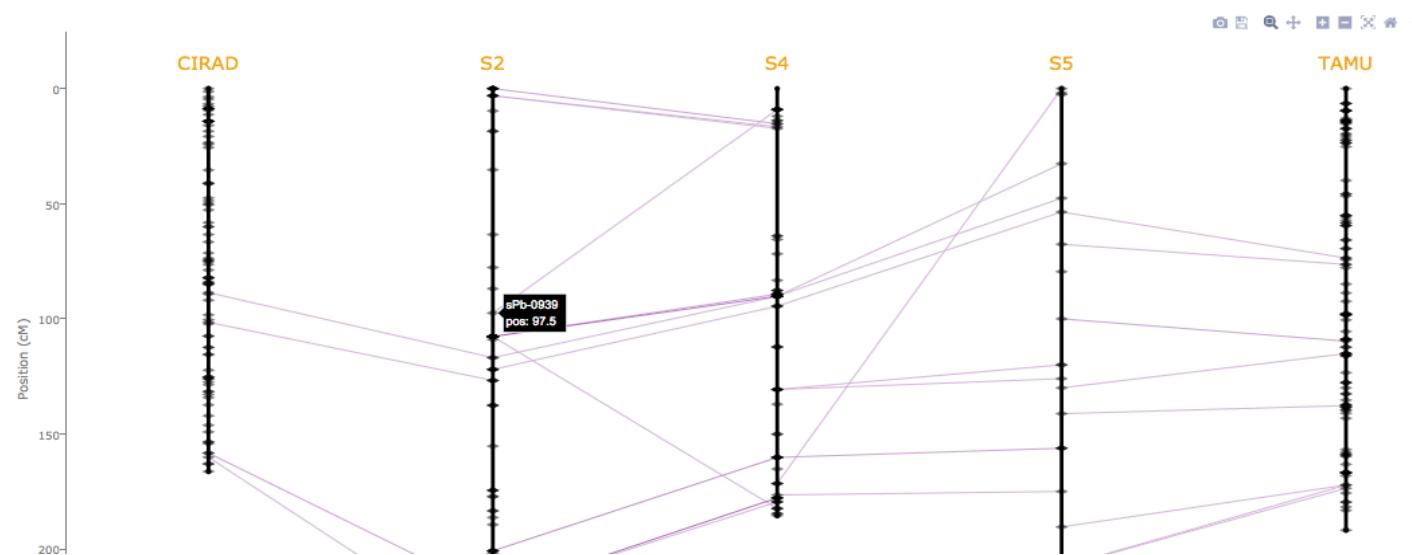
Ergo ego senator inimicus, si ita vultis, homini, amicus esse, sicut semper fui, rei publicae deboeo. Quid? si ipsas inimicitias, depono rei publicae causa, quis me tandem iure reprehendet, praesertim cum ego omnium meorum consiliorum atque factorum exempla semper ex summorum hominum consilii atque factis mihi censuerim petenda.

Choose chromosome!

1

Choose maps!

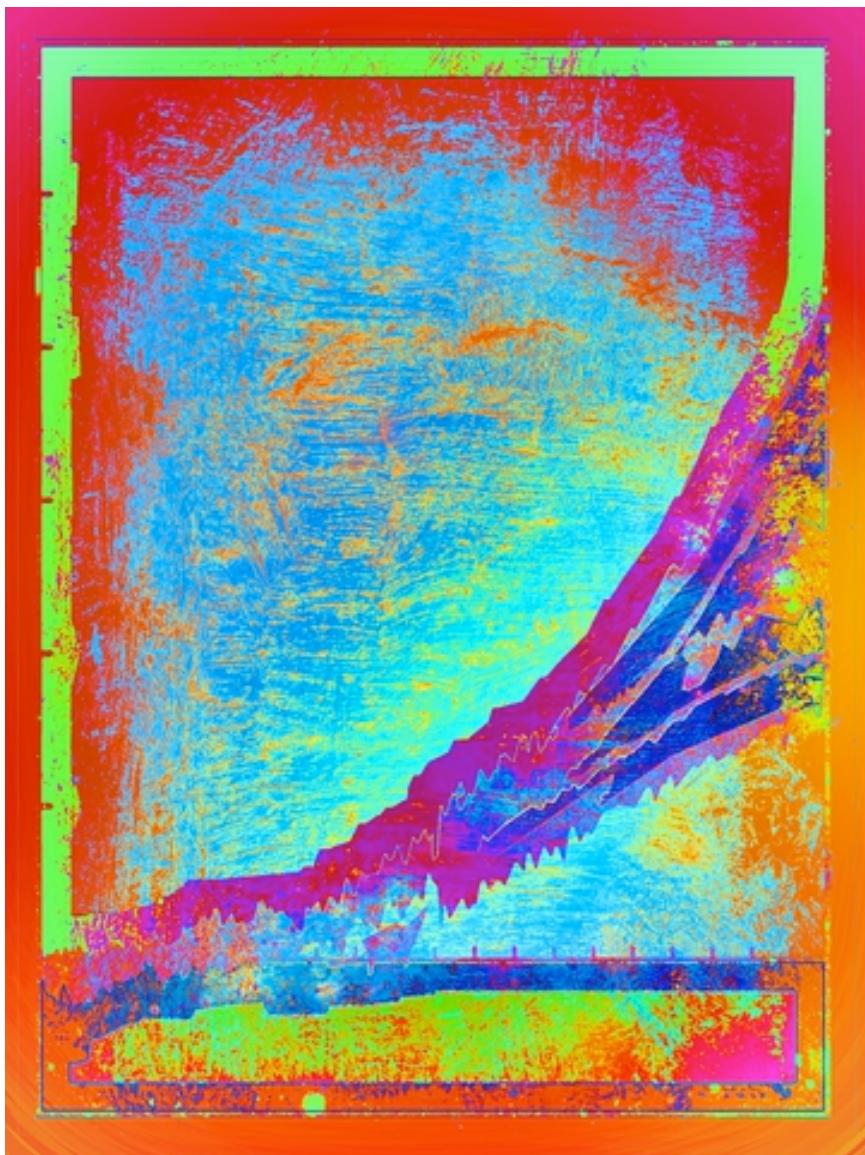
CIRAD S2 S4 S5 S6 TAMU



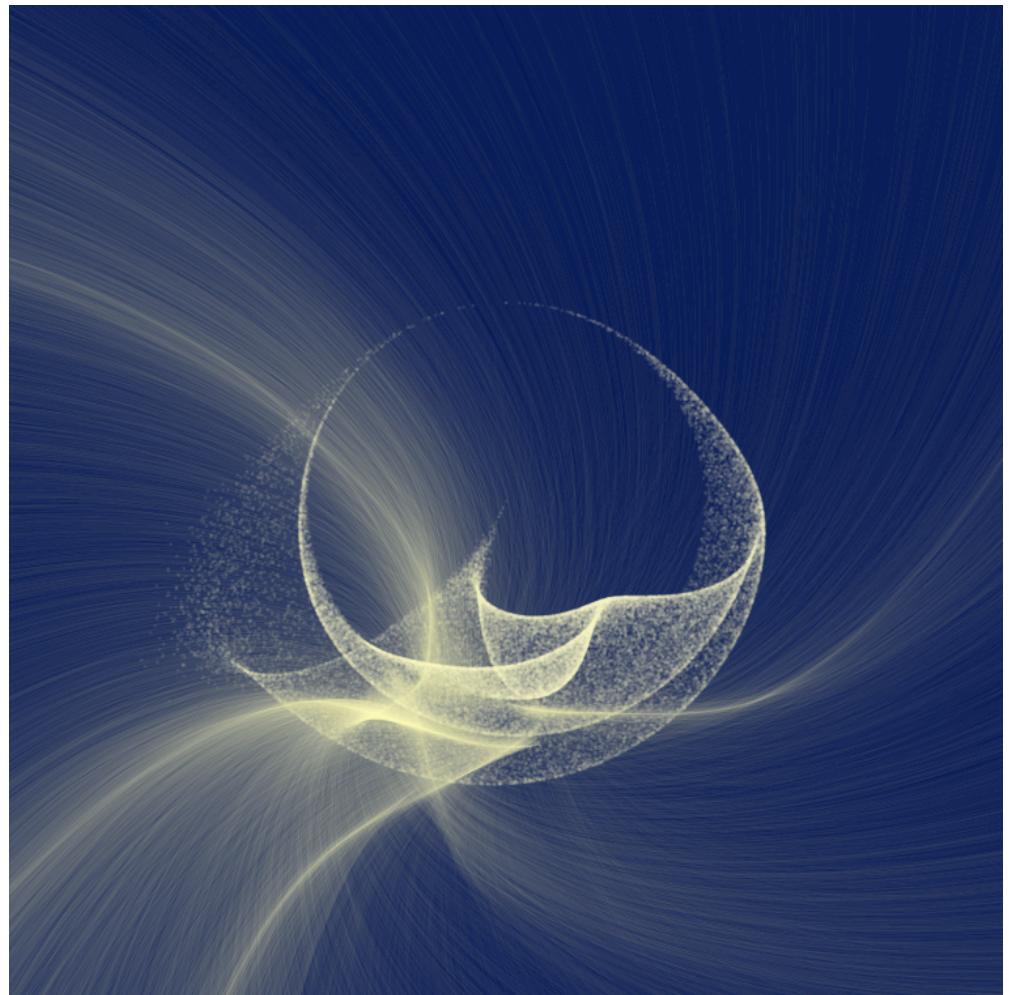
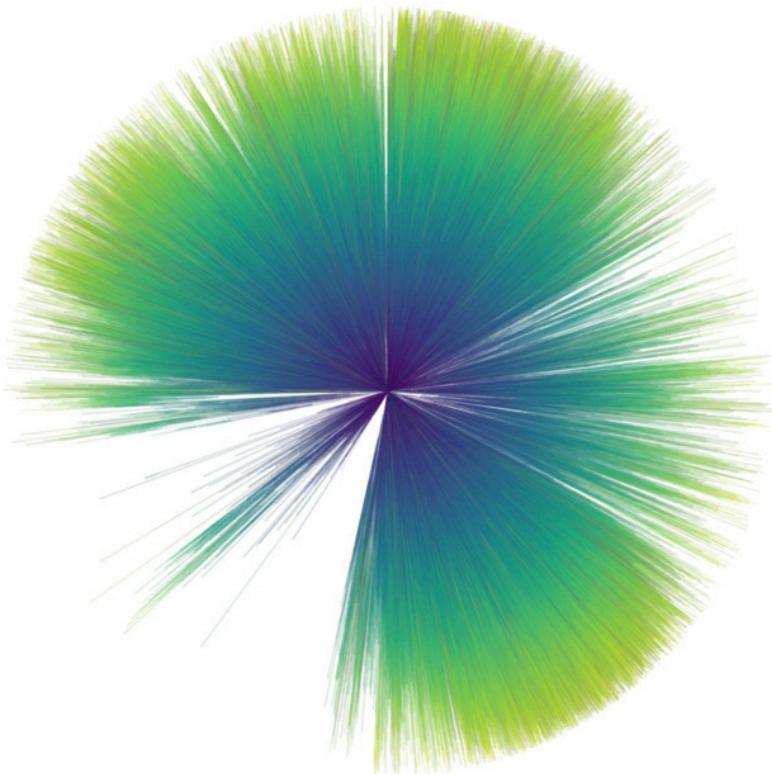
Science

Art

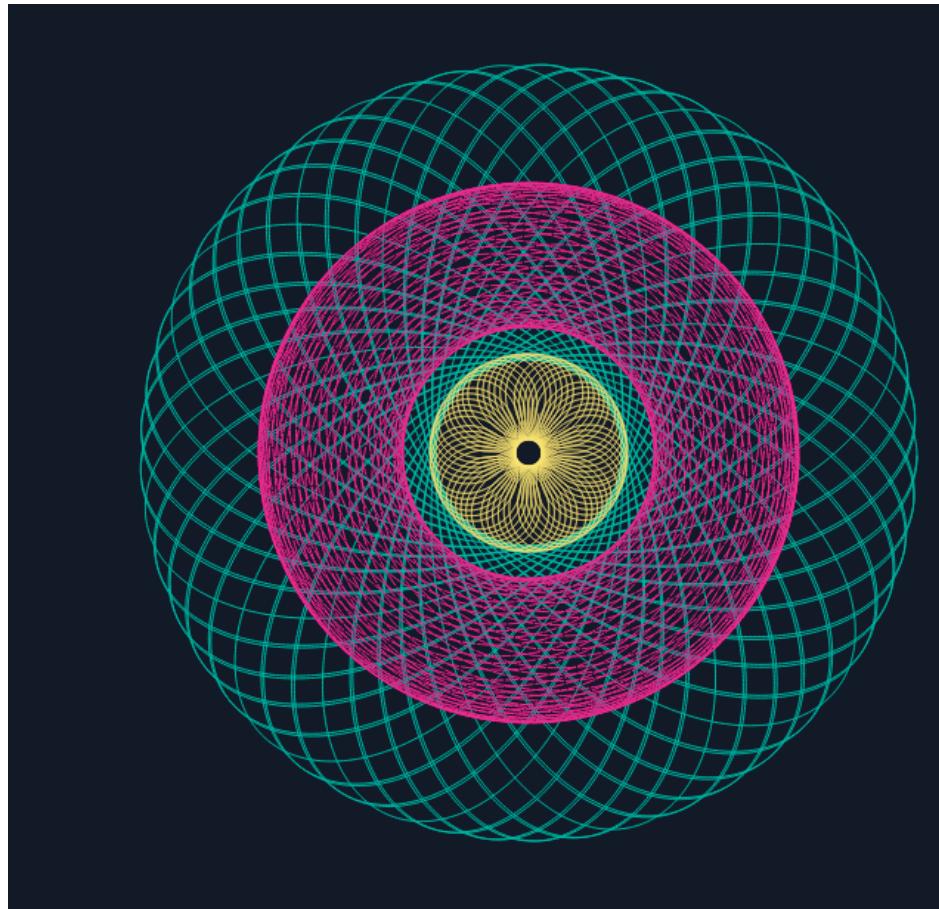




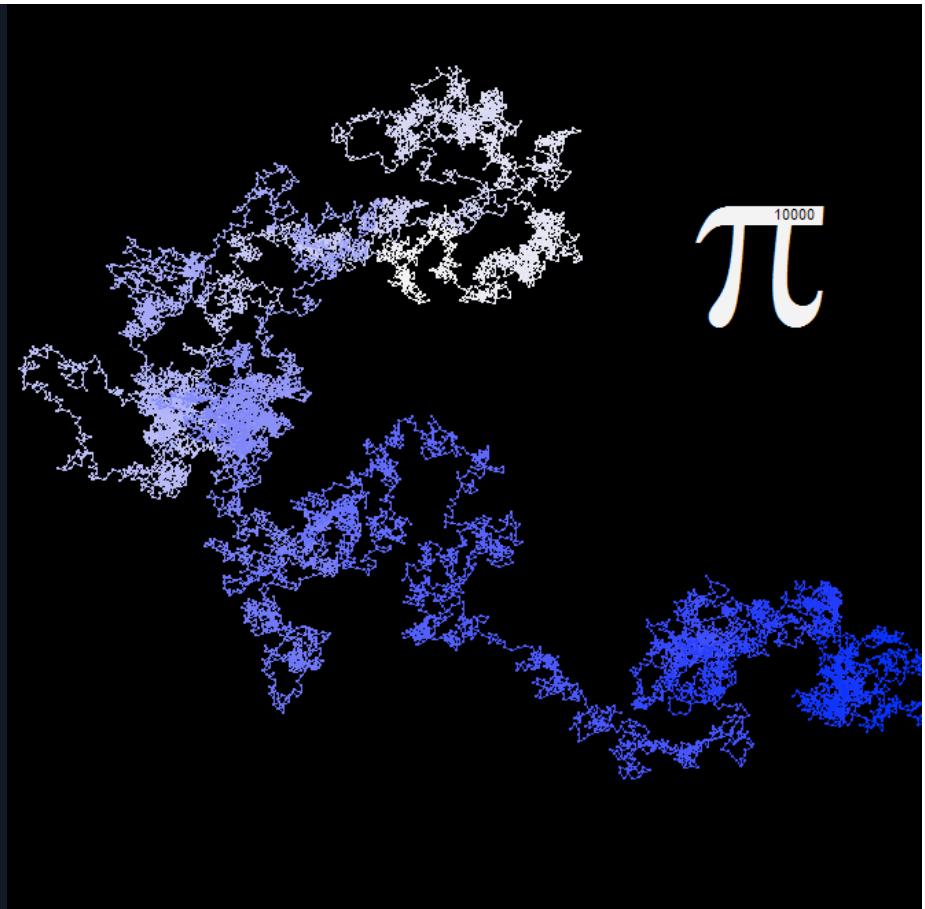
Alisa Singer- USA



Marcus Volz - Australia

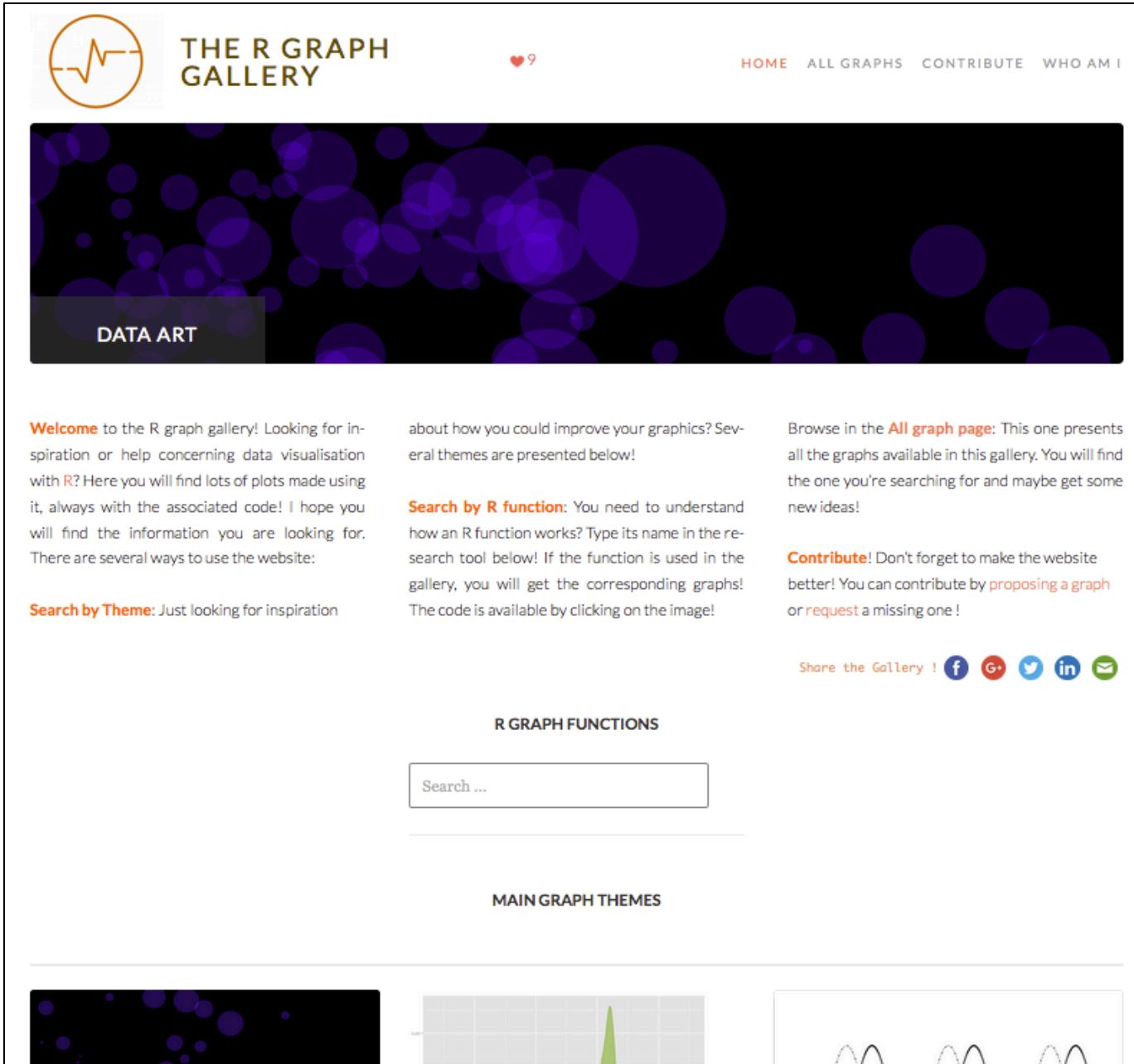


Nadieh Bremer - Netherland



Päivi Julin - Finland

Welcome page of the gallery

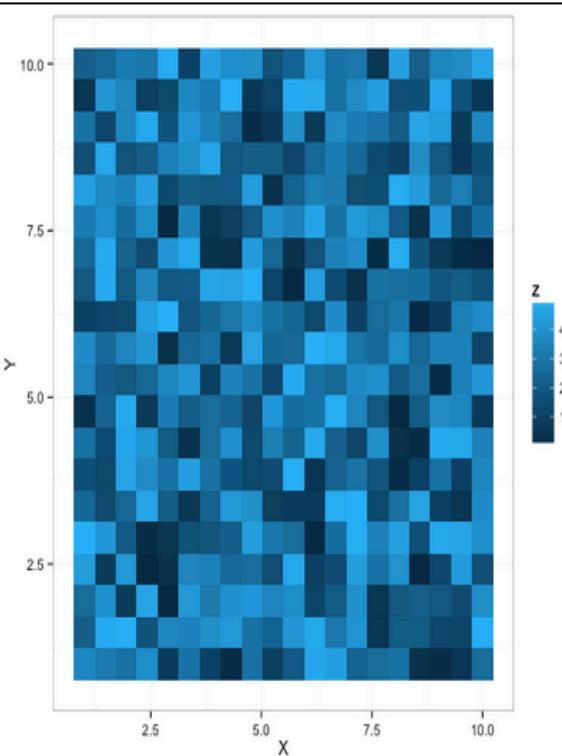


The screenshot shows the homepage of The R Graph Gallery. At the top left is a logo of a yellow circle containing a stylized orange line graph. To its right is the text "THE R GRAPH GALLERY". In the top right corner are links for "HOME", "ALL GRAPHS", "CONTRIBUTE", and "WHO AM I". A small red heart icon with the number "9" is positioned between the logo and the menu. Below the header is a large, dark purple circular graphic. On the left side of this graphic, there is a black rectangular overlay with the white text "DATA ART". The main content area contains several paragraphs of text. One paragraph welcomes visitors to the gallery and mentions using R for data visualization. Another paragraph discusses improving graphics through themes. A third paragraph explains how to search by R function. A fourth paragraph encourages contribution. At the bottom of the page is a search bar labeled "Search ...", followed by sections for "R GRAPH FUNCTIONS" and "MAIN GRAPH THEMES", each featuring a small preview image.

- >250 charts
- Organized by theme
- Search bar for function or graph type

Example of a graphic page

- Reproducible code
- Link to relevant libraries, functions and related graphics
- Each graph targets a specific topic



This is a [levelplot](#) made using the `ggplot2` library. Each square represents a value of the input matrix.

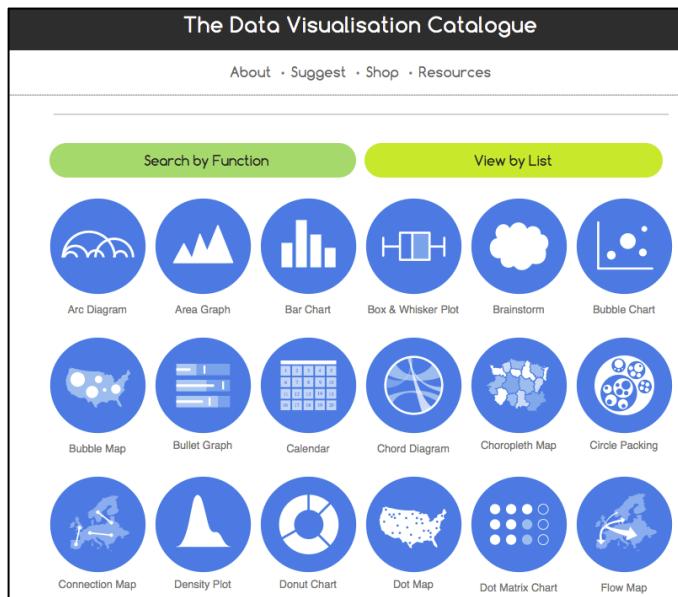
You can also draw levelplot without `ggplot2`. Have a look to [graph #78](#) if you have a square matrix, or to [graph #27](#) if your data are organized in 3 columns !

```
## Example data
x <- seq(1,10, length.out=20)
y <- seq(1,10, length.out=20)
data <- expand.grid(X=x, Y=y)
data$Z <- runif(400, 0, 5)

# Levelplot with ggplot2
library(ggplot2)
ggplot(data, aes(X, Y, z= Z)) + geom_tile(aes(fill = Z)) + theme_bw()

# To change the color of the gradation :
ggplot(data, aes(X, Y, z= Z)) + geom_tile(aes(fill = Z)) +
  theme_bw() +
  scale_fill_gradient(low="white", high="blue")
```

Other resources



<http://www.datavizcatalogue.com/>

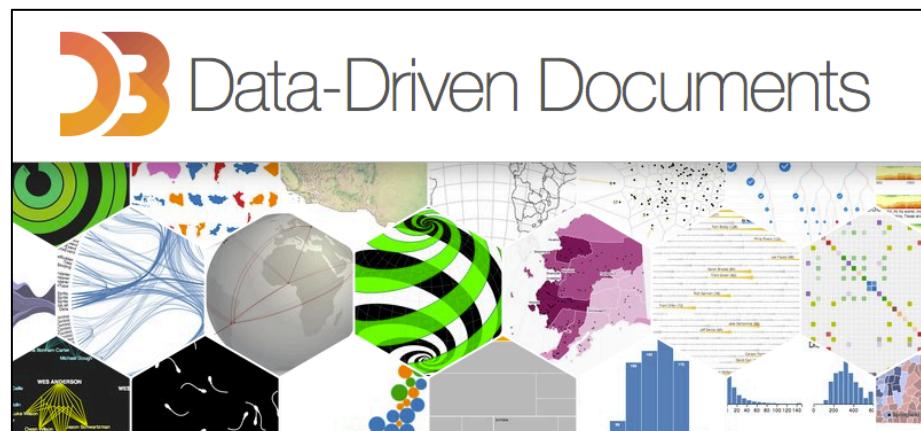
R graph gallery

The blog is a collection of script examples with example data and output plots. R produce excellent quality graphs for data analysis, science and business presentation, publications and other purposes. Self-help codes and examples are provided. Enjoy nice graphs !!



2d (1) 3 variable plots (5) 3D plots (8) arch (1) area (1) association plot (4) bar (1) barchart (13) bean plot (1) beeswarm (1) binomial (1) bipartite (1) box-percentile (2) box-whisker plot (1) boxplot (10) bubble plot (5) calendar (1) categorical data (6) centipede plot (1) circle (2) circular (1) cluster (4) color (2) colour (1) combination plot (10) contour (1) cross bar (1) cumulative (1) curve (3) dendrogram (3) density (13) diagram (2) distribution (9) dotplot (1) dot plot (1) double axis (1) ellipse (2) error bar (6) factor plot (3) fluctuation diagram (1) google (1) grid plot (1) heatmap (20) hexbin plot (1) histogram (11) hive (1) kernel density (4) ladder plot (2) large data points (4) level plot (1) line plot (3) line range (1)

<http://rgraphgallery.blogspot.fr/>



<https://d3js.org/>



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DataViz is a key step in data science

Dataviz is not trivial

R = amazing graphing tool

Get inspired & contribute!