

Visualización

Tratamiento Inteligente de Datos
Master Universitario en Ingeniería Informática



UNIVERSIDAD
DE GRANADA

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Motivación

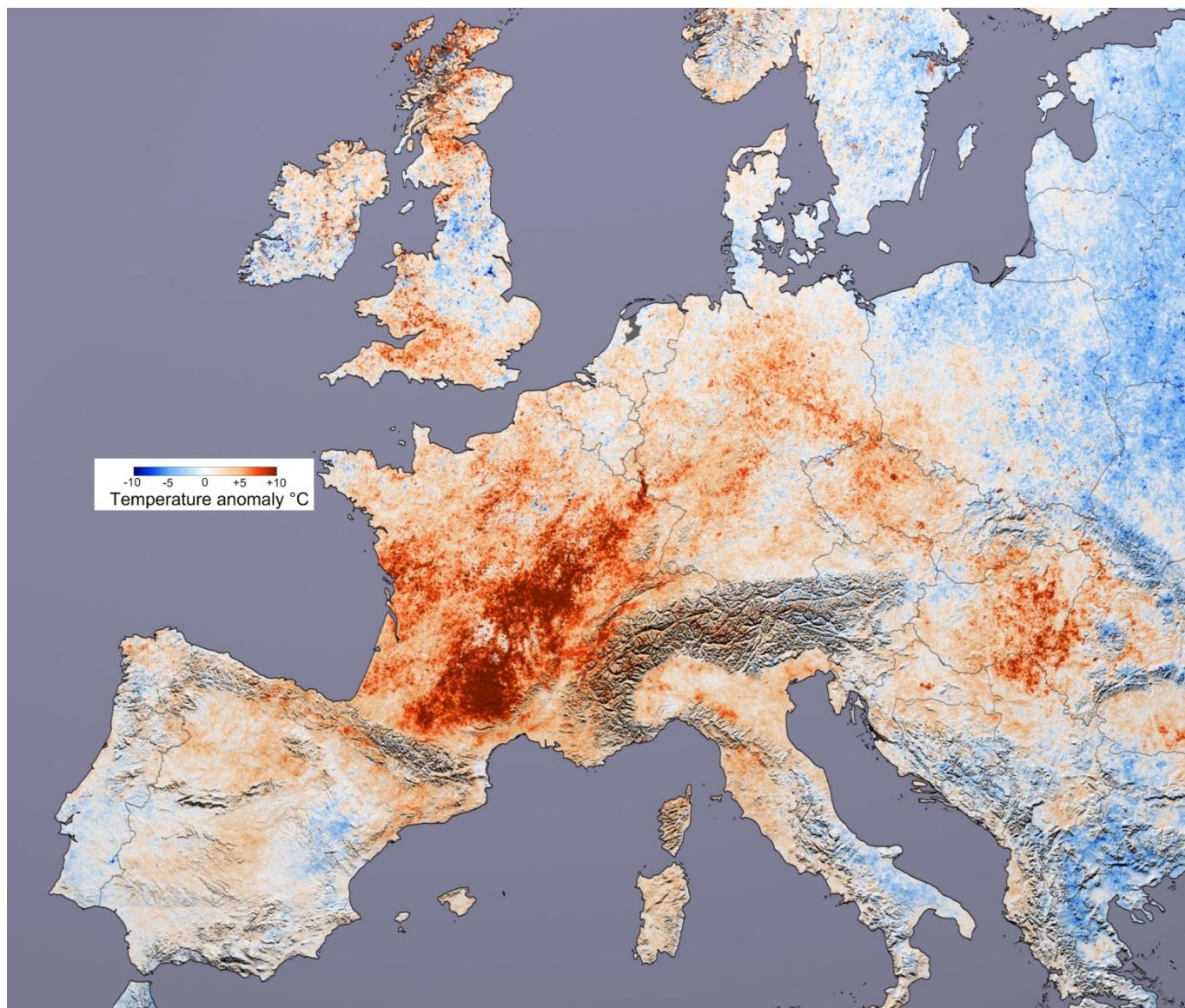
- ❑ Presentar los datos de un modo visual distinto al habitual nos permite ver tendencias, cambios, lagunas, relaciones, direcciones...
- ❑ Son aspectos difíciles (a veces imposibles) de tratar mediante minería de datos pero que se pueden captar de modo muy contundente mediante técnicas de visualización
- ❑ Estas técnicas no tienen generalmente una definición formal, ni poseen significancia estadística, quizás no expliquen las razones, quizás no den suficientes detalles... pero en cualquier caso ayudan a un ser humano a comprender de un vistazo una realidad compleja

Motivación

- ❑ Cuanto más compleja sea esa realidad, más necesario y útil resulta la exploración de los datos mediante visualización
- ❑ Cada vez disponemos de más y más datos, y cada vez tenemos sistemas de computación más potentes para procesarlos, de modo que cada vez está adquiriendo más importancia la visualización

Una imagen vale más que mil palabras

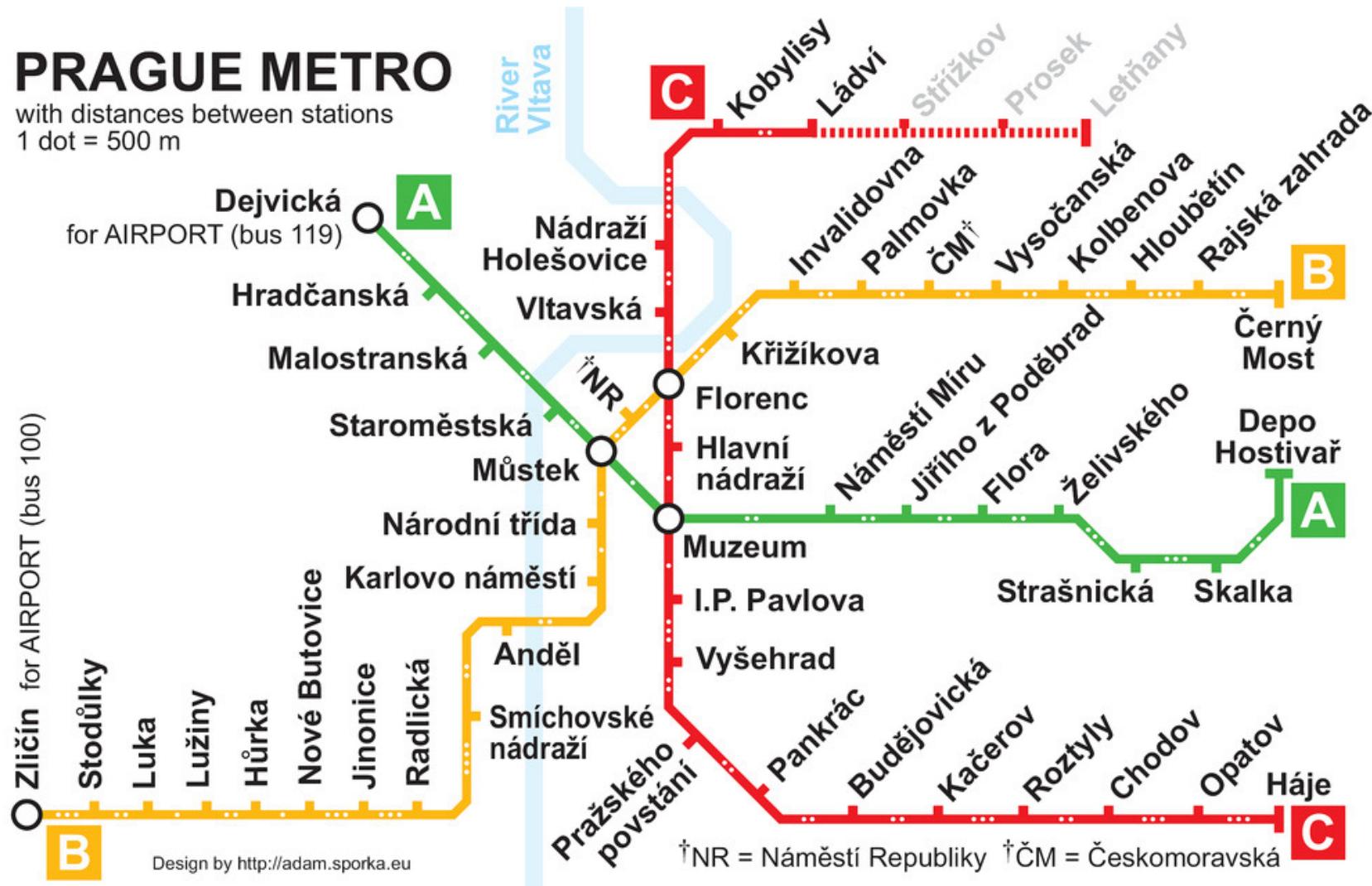
Motivación



Motivación

PRAGUE METRO

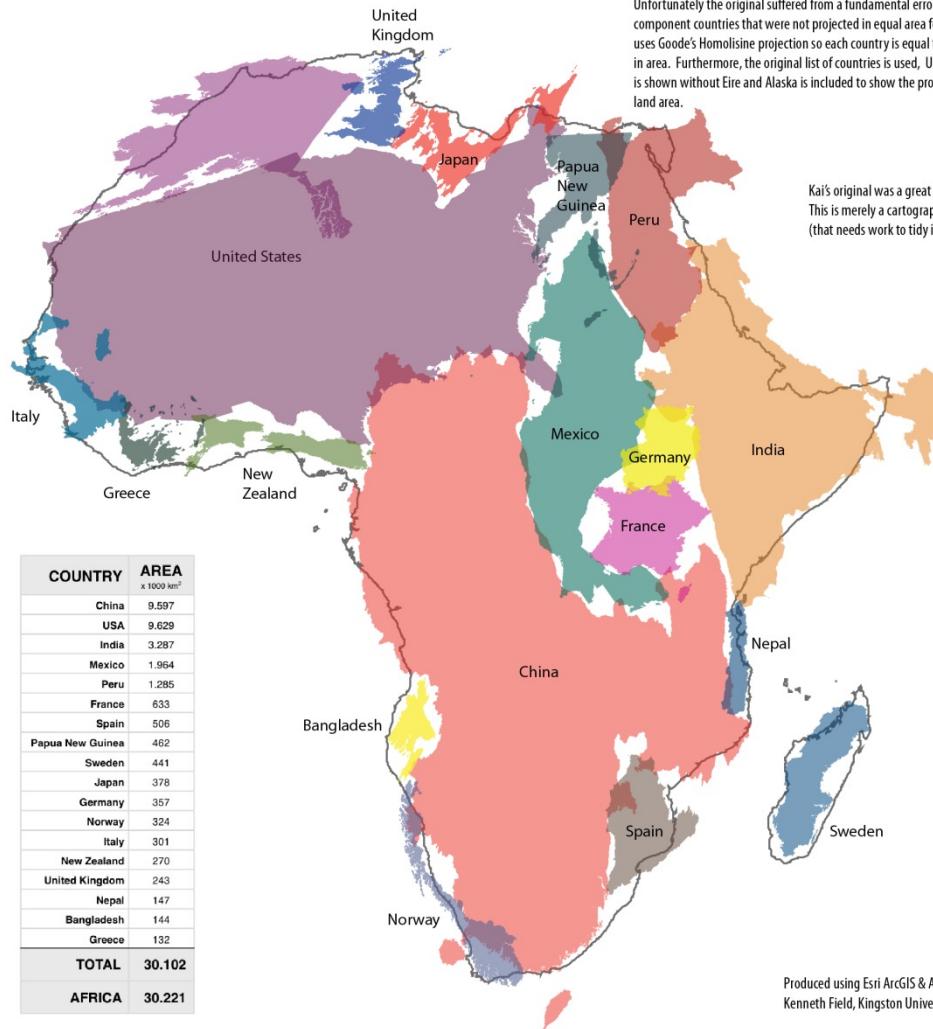
with distances between stations
1 dot = 500 m



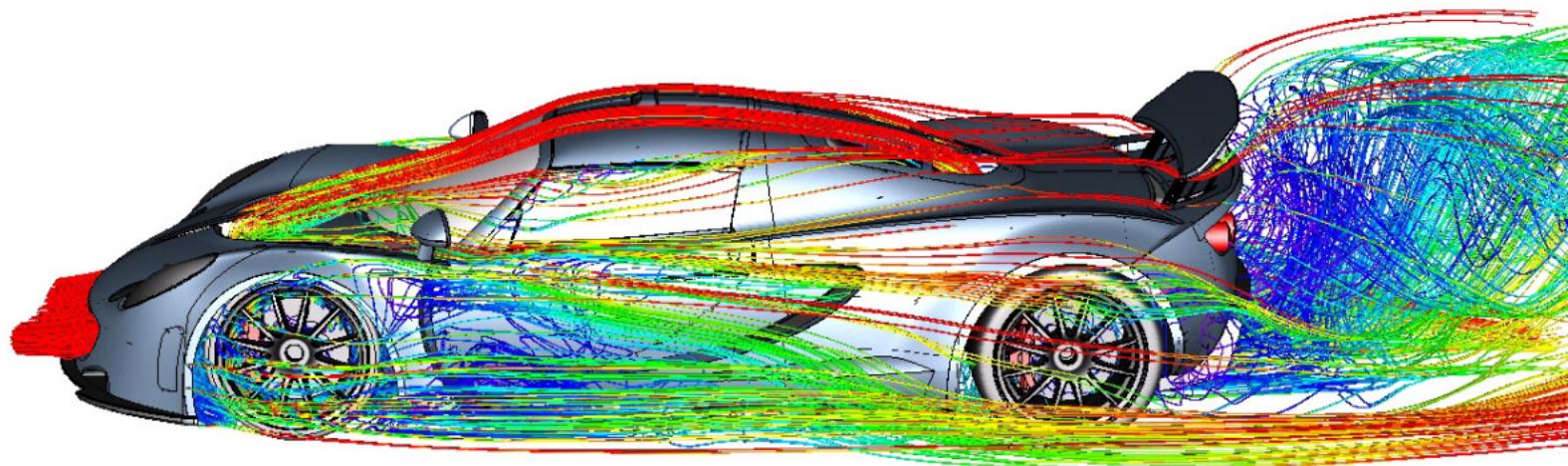
Motivación

The True Size of Africa

Correcting the fight against immappancy



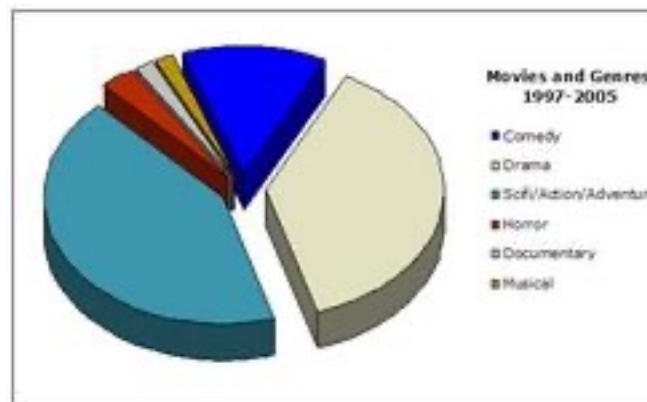
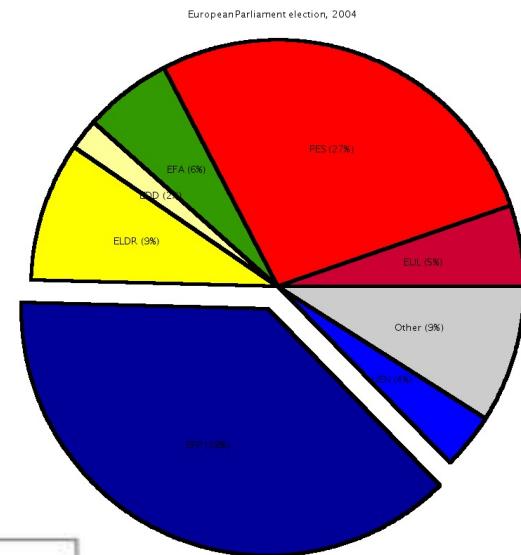
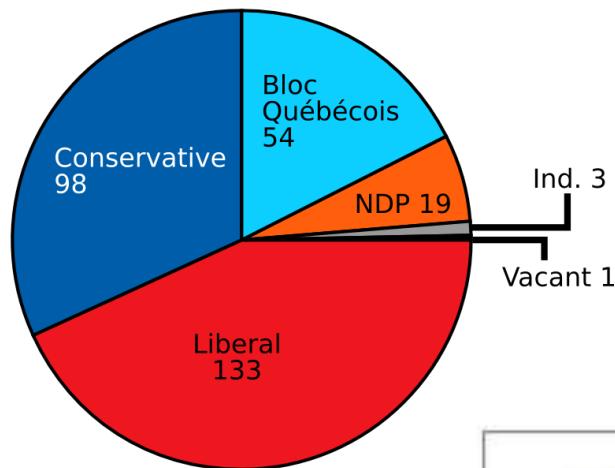
Motivación



Distribuciones de frecuencia

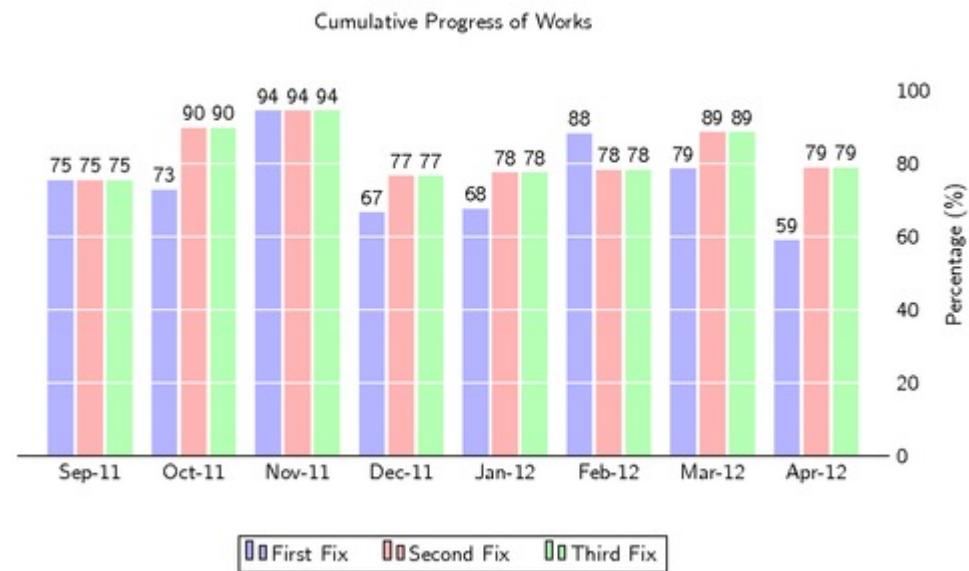
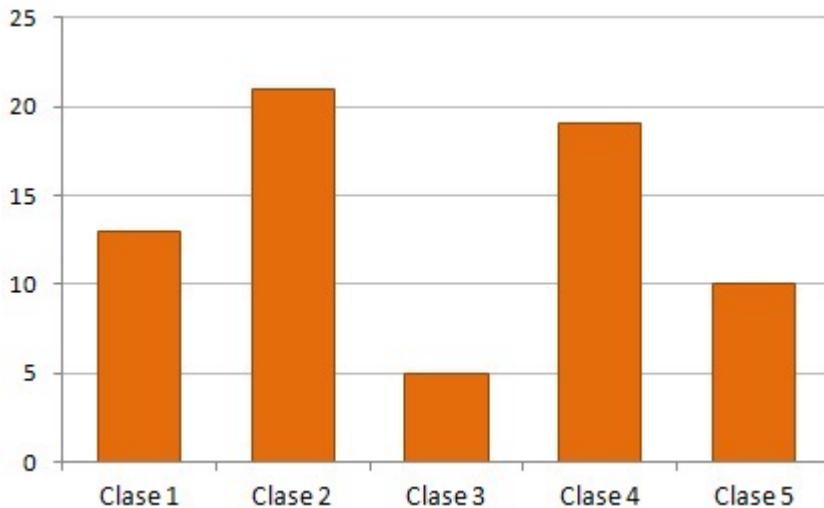
Caracteres cualitativos (sector circular)

Composition of 38th Parliament
of Canada as of May 19, 2005



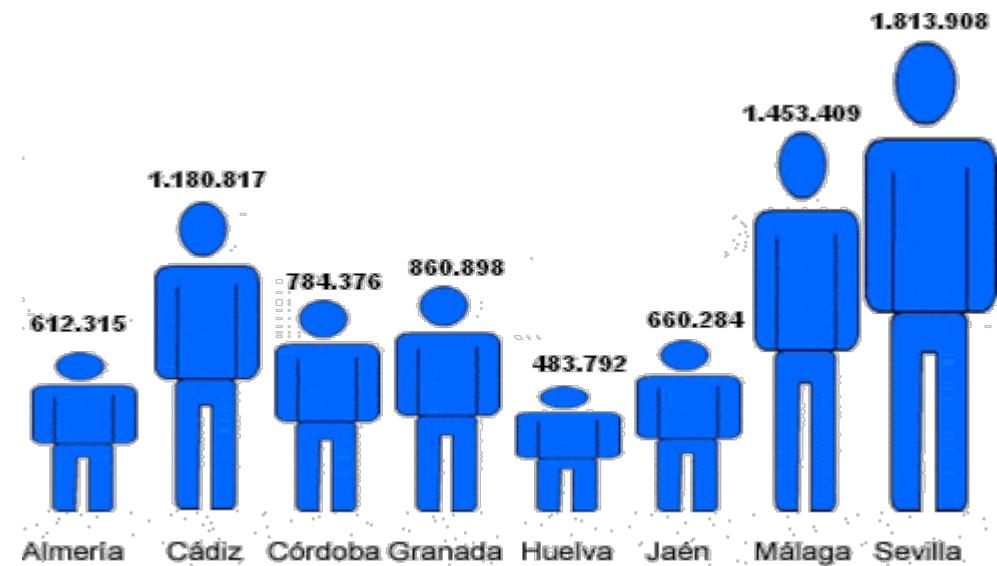
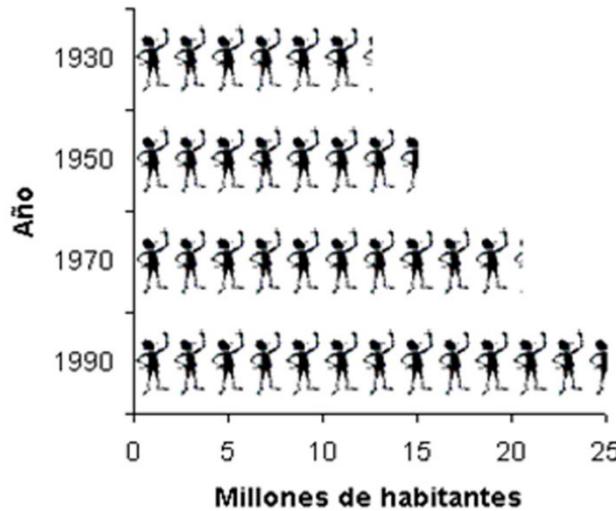
Distribuciones de frecuencia

Caracteres cualitativos (diagrama rectangular)



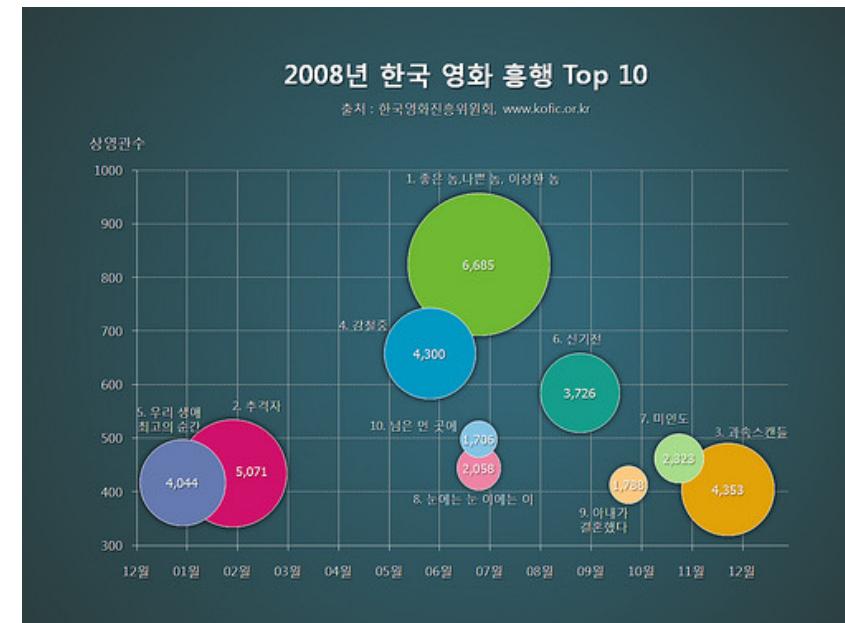
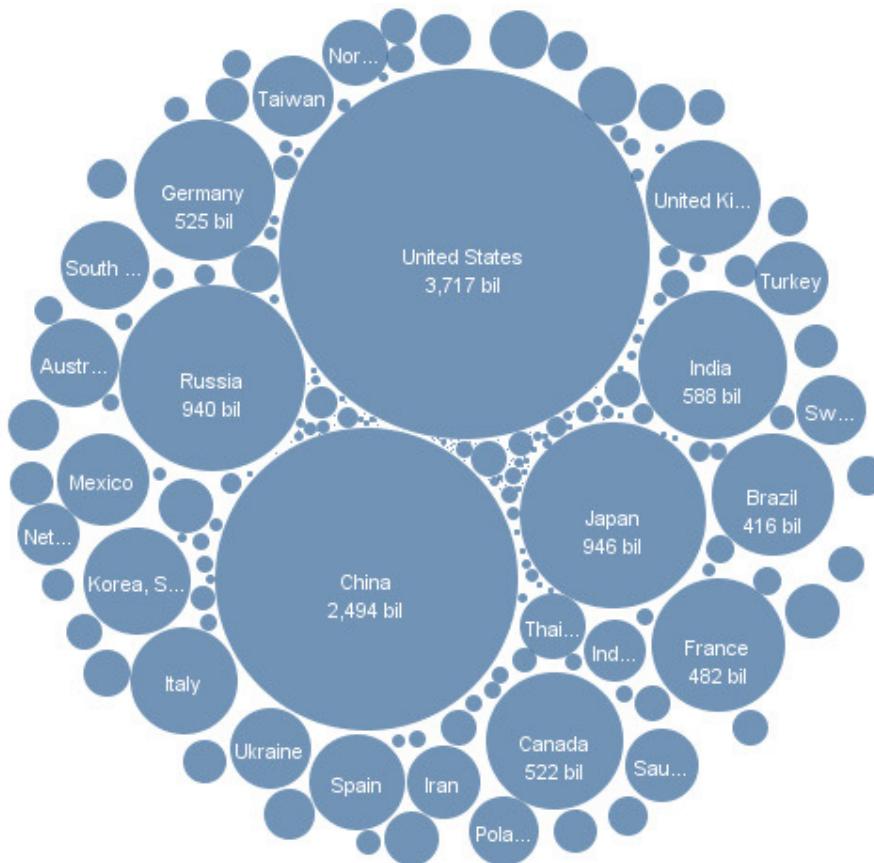
Distribuciones de frecuencia

Caracteres cualitativos (pictograma)



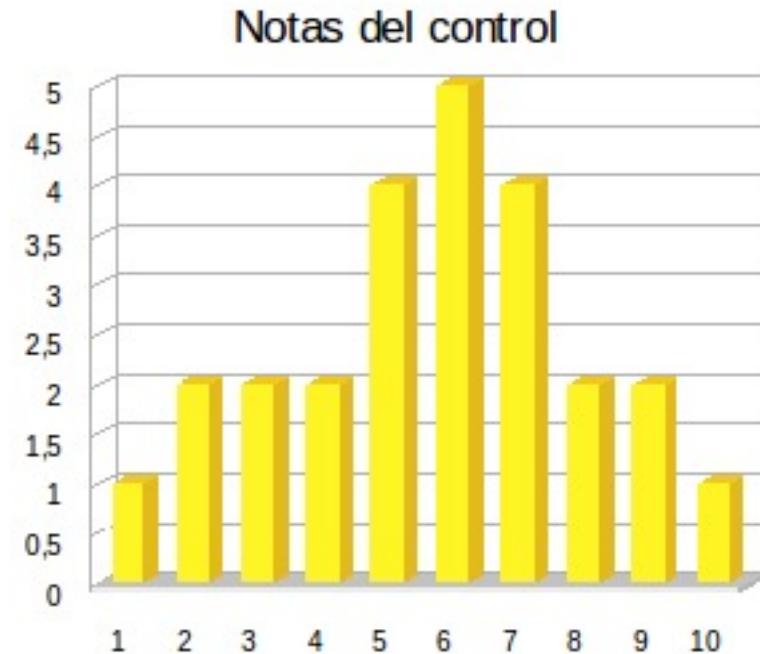
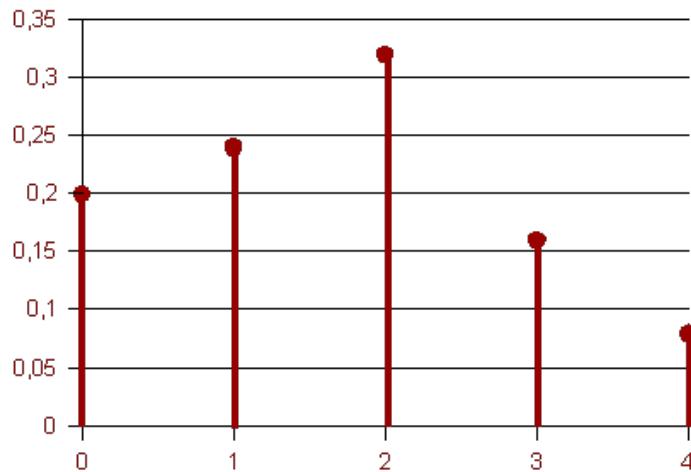
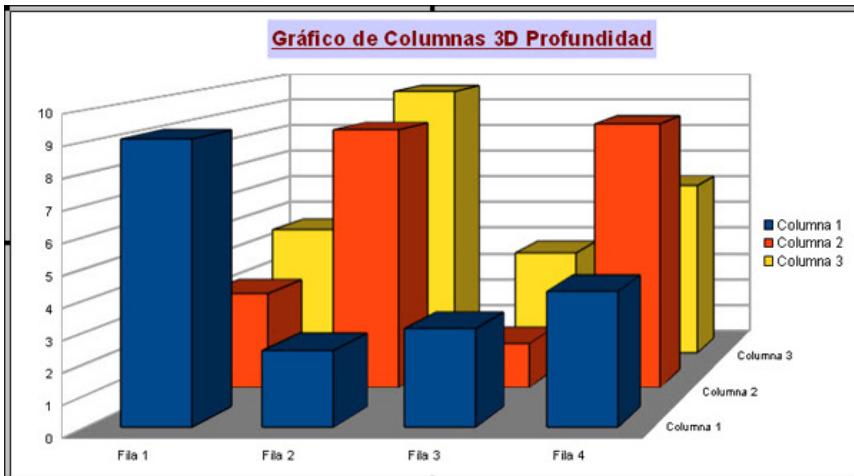
Distribuciones de frecuencia

Caracteres cualitativos (diagrama de burbujas)



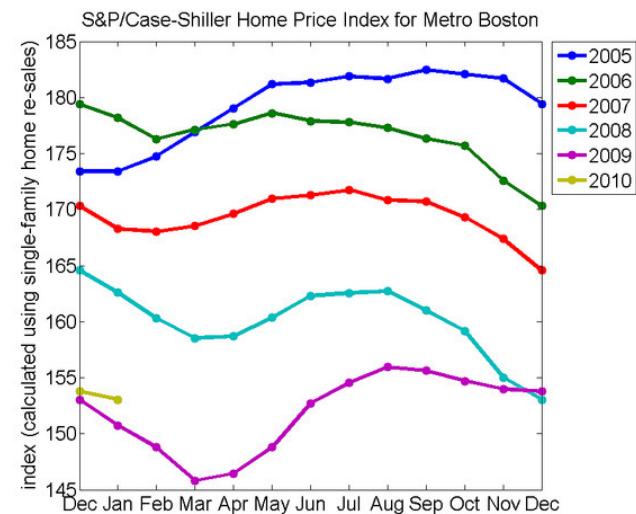
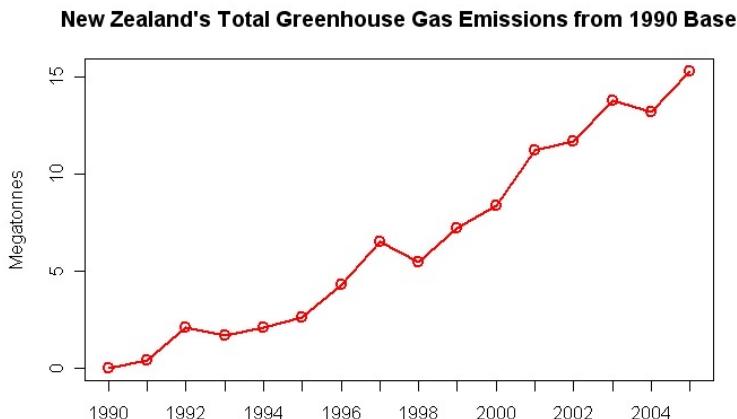
Distribuciones de frecuencia

Caracteres cuantitativos sin intervalos (diagrama de barras)

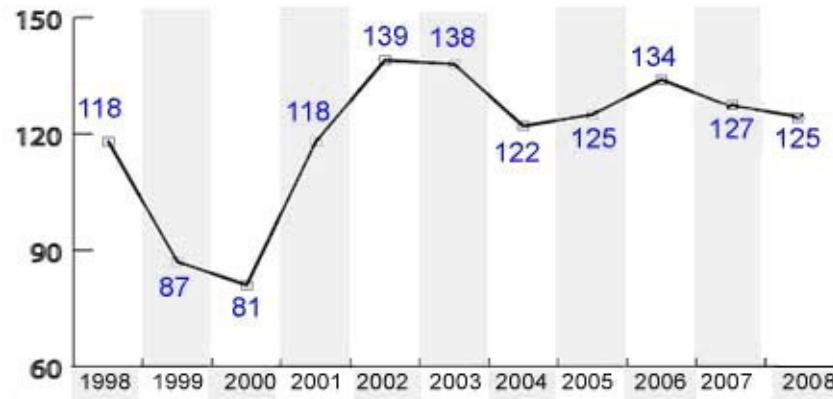


Distribuciones de frecuencia

Caracteres cuantitativos sin intervalos (polígono de frecuencias)

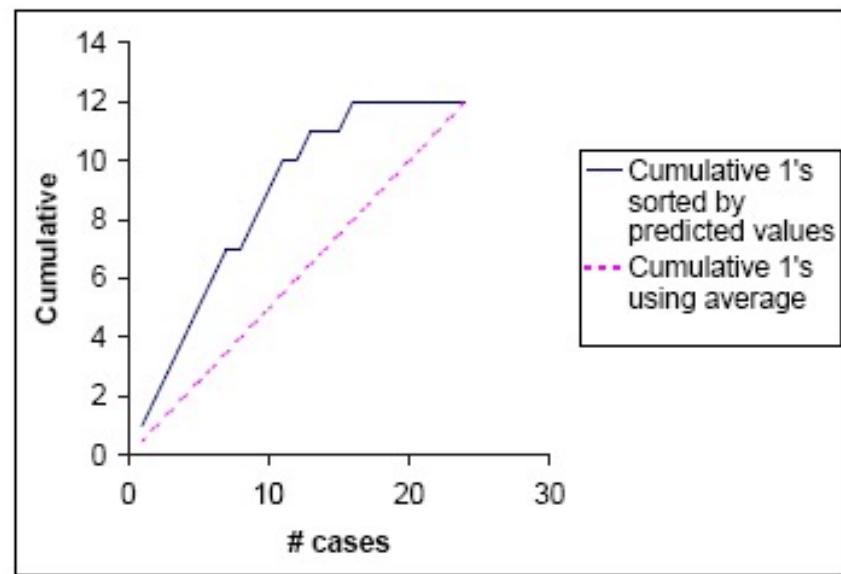
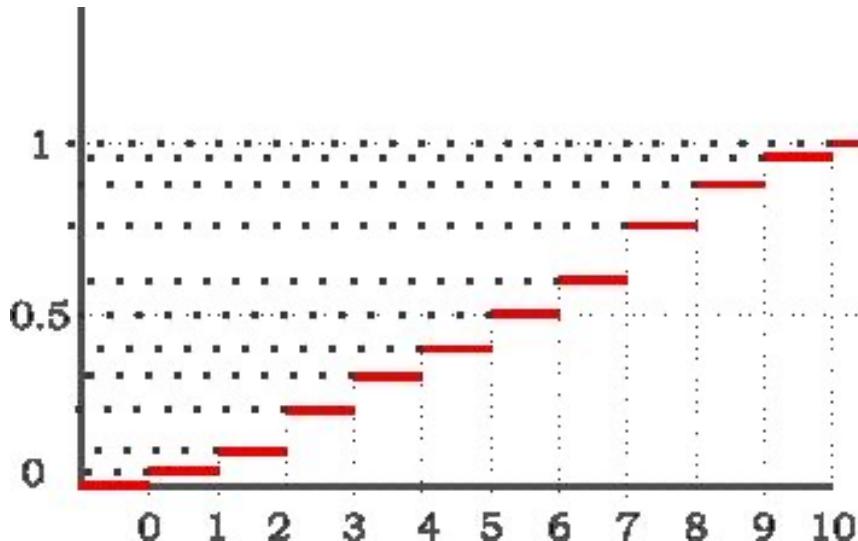


NUMBER OF JOURNALISTS IN PRISON EACH YEAR SINCE 1998



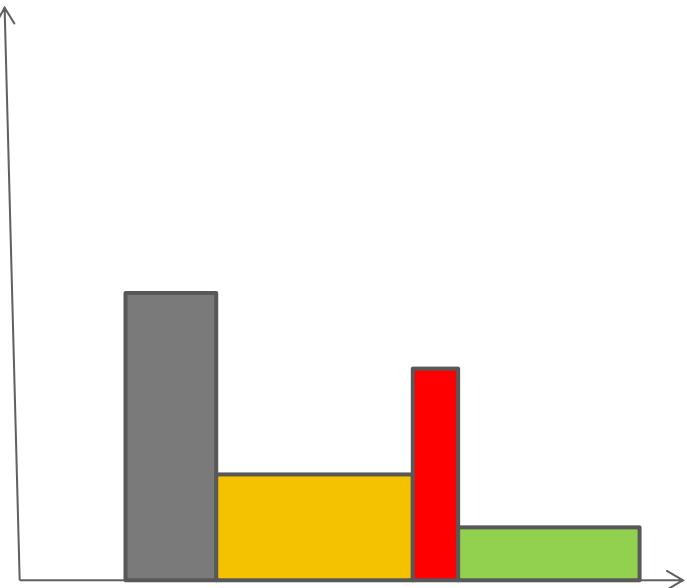
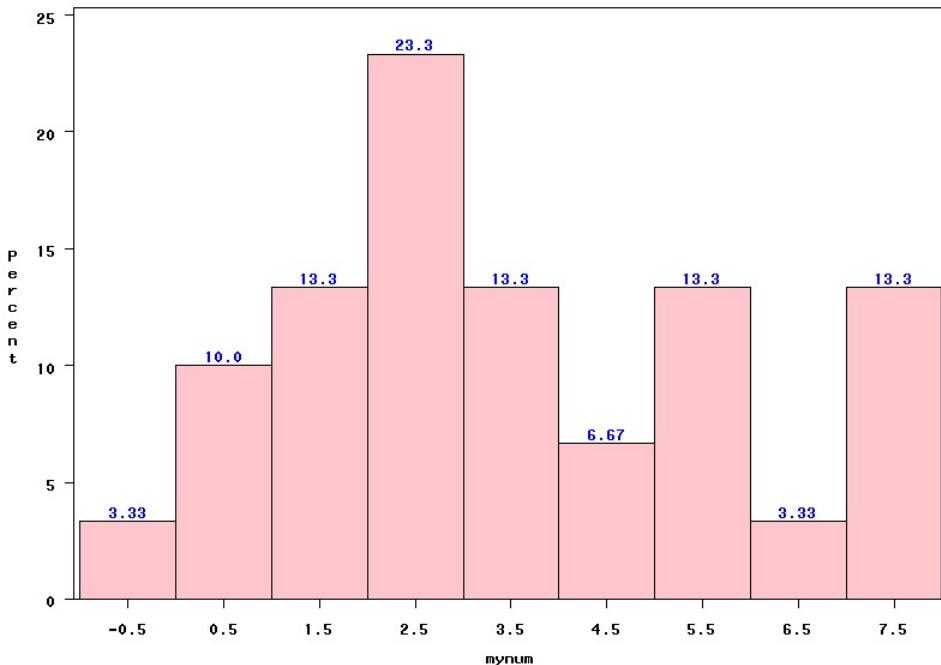
Distribuciones de frecuencia

Caracteres cuantitativos sin intervalos (curva de distribución)



Distribuciones de frecuencia

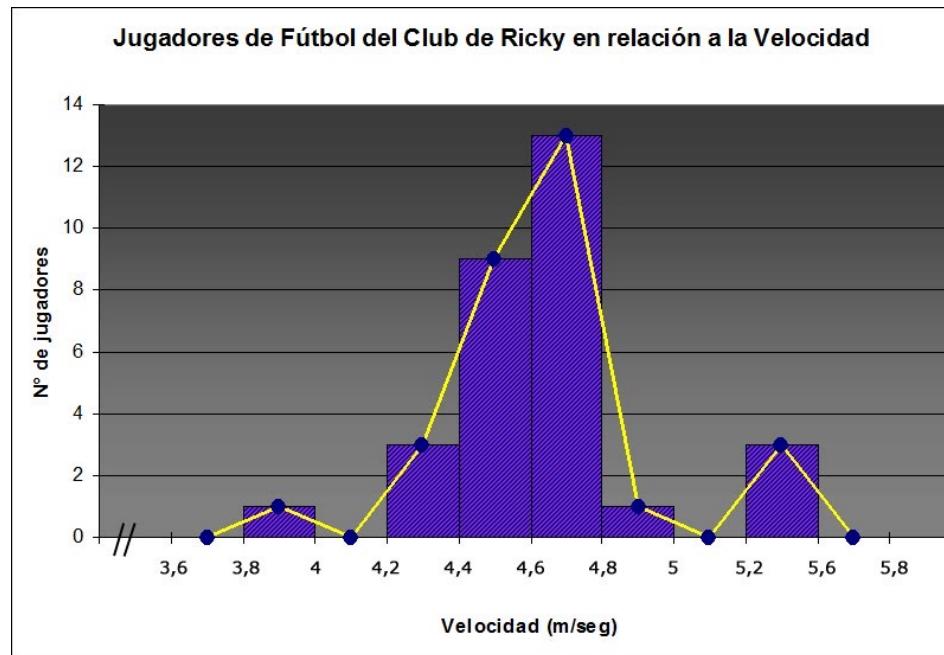
Caracteres cuantitativos con intervalos (histograma)



El área es proporcional a la frecuencia

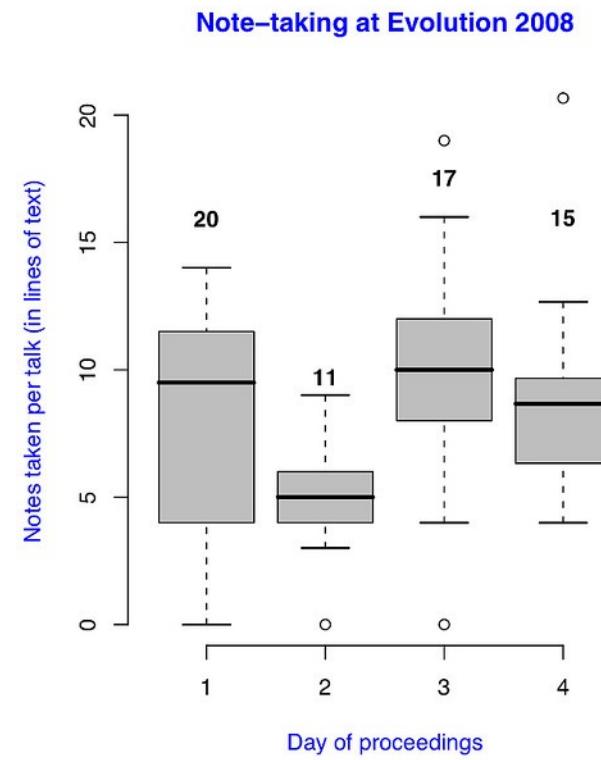
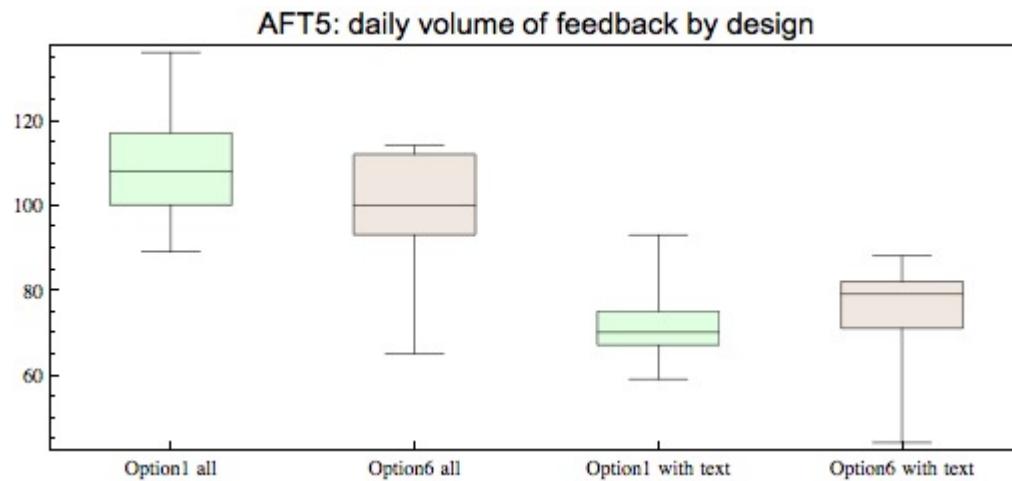
Distribuciones de frecuencia

Caracteres cuantitativos con intervalos (polígono de frecuencias)



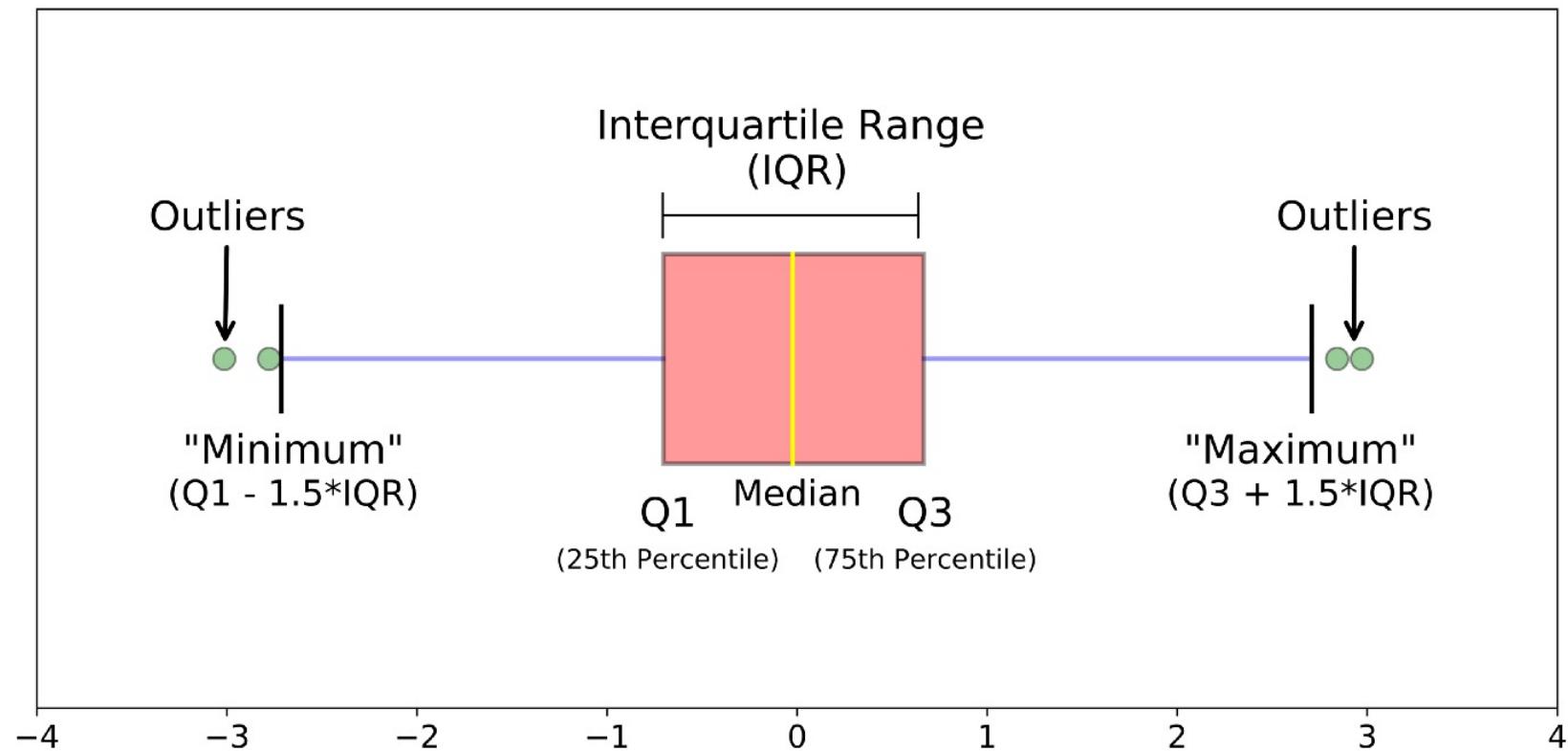
Distribuciones unidimensionales

Diagrama de caja (blox plot)



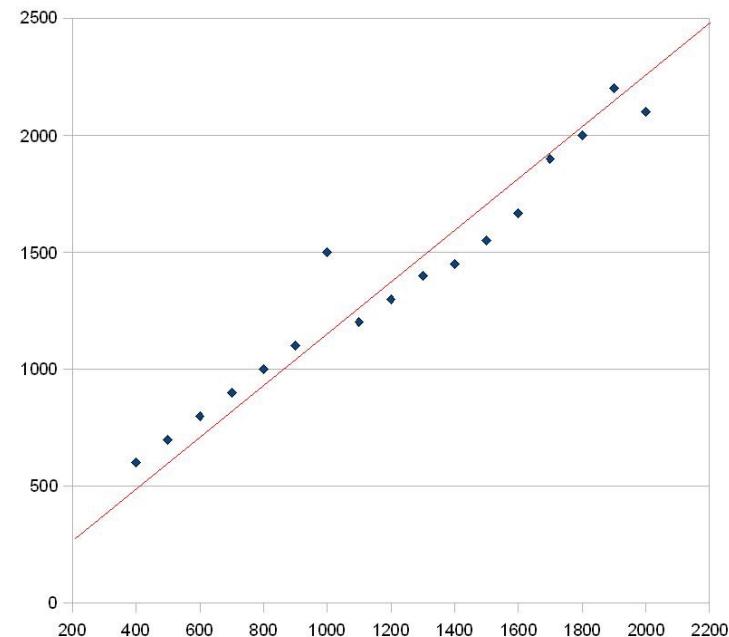
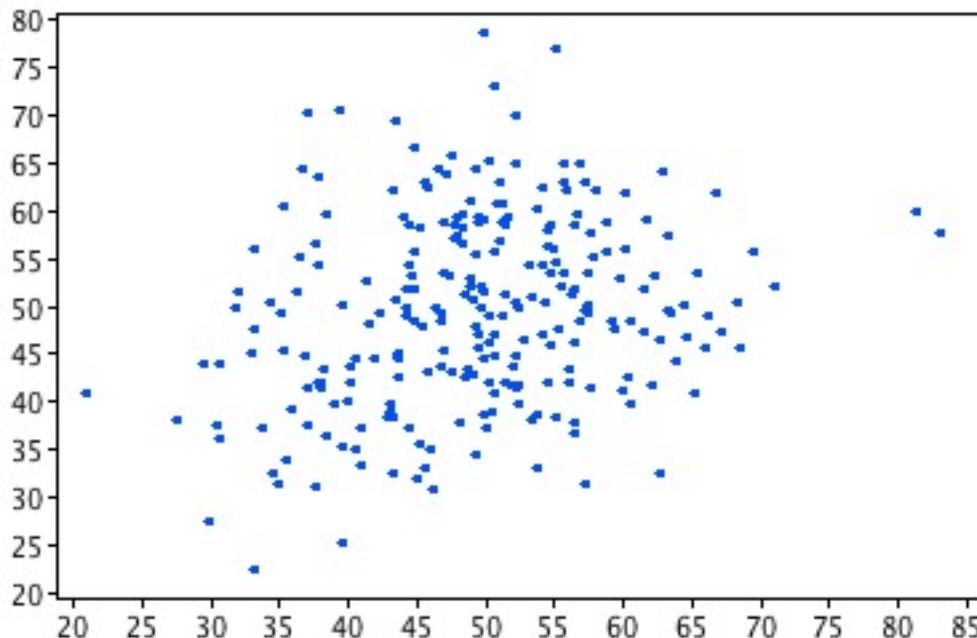
Distribuciones unidimensionales

Diagrama de caja (box plot)



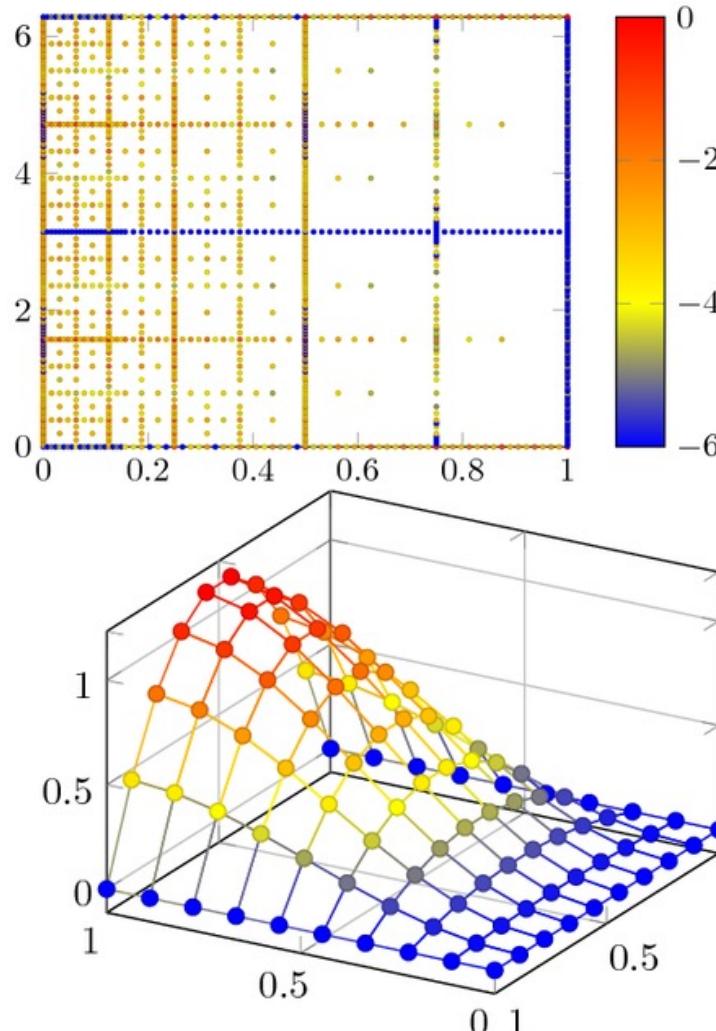
Distribuciones multidimensionales

Diagramas de dispersión

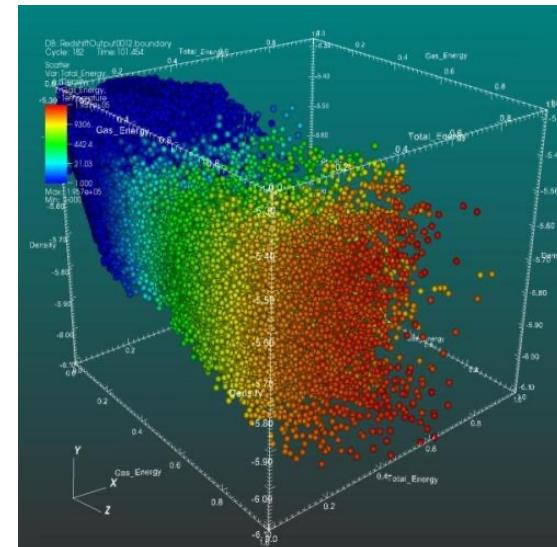
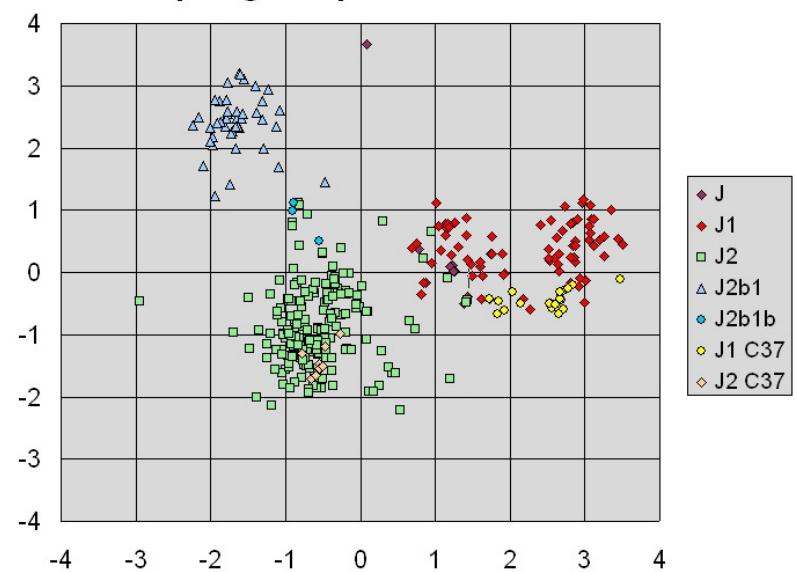


Distribuciones multidimensionales

Diagramas de dispersión

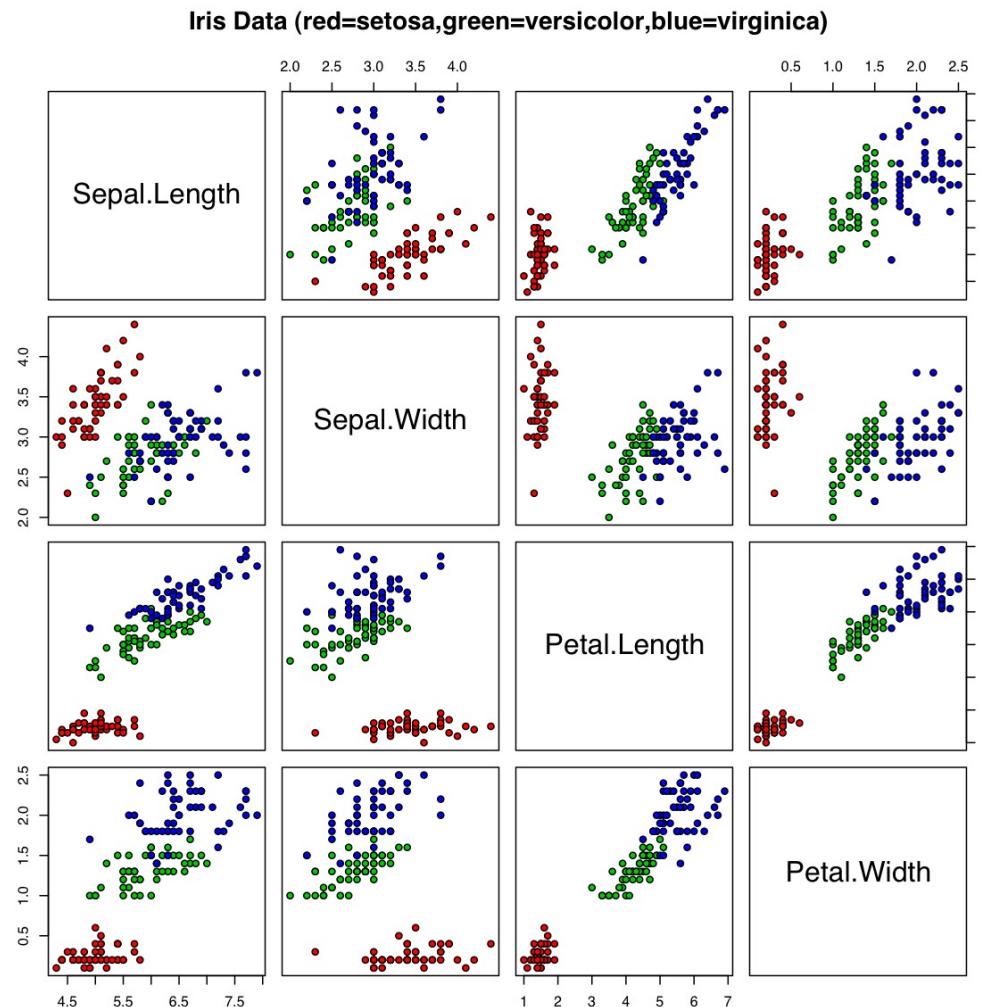


Haplogroup J - 37 STRs



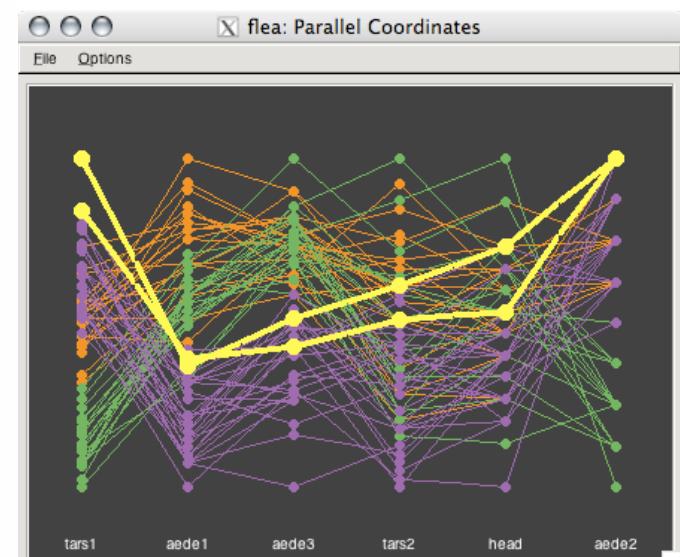
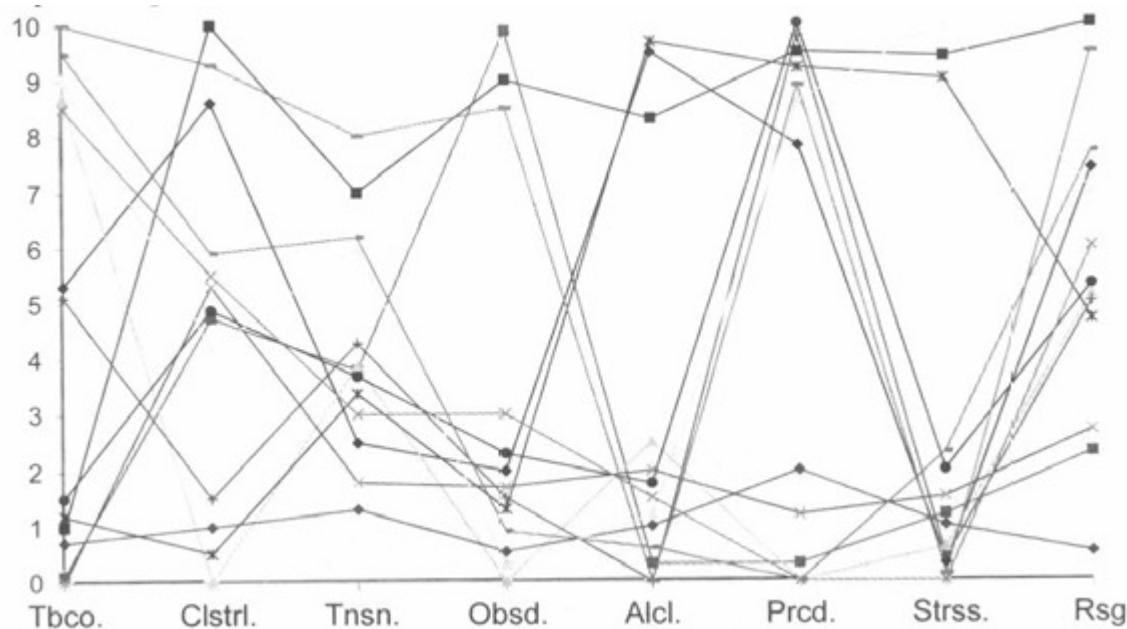
Distribuciones multidimensionales

Matriz de dispersión



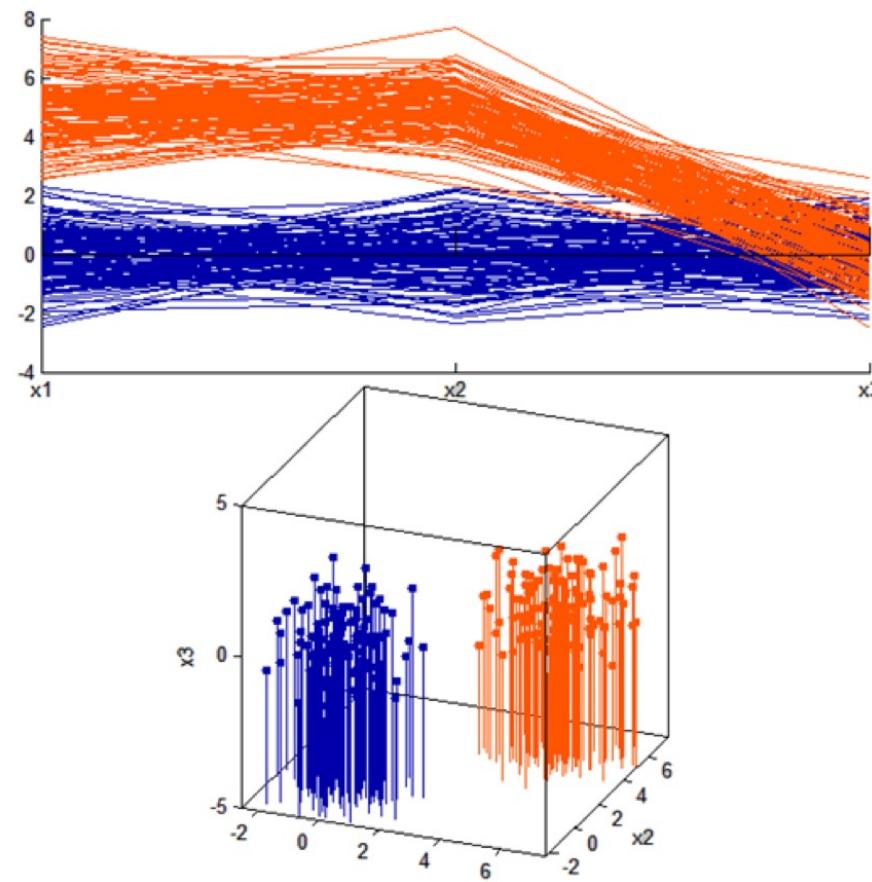
Distribuciones multidimensionales

Gráfica de coordenadas paralelas



Distribuciones multidimensionales

Gráfica de coordenadas paralelas



Distribuciones multidimensionales

Gráfica radial (radar chart)

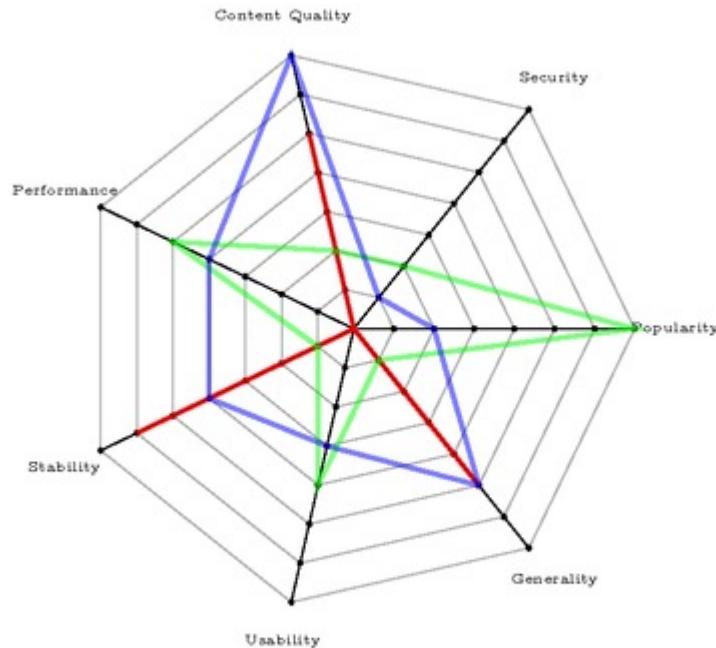
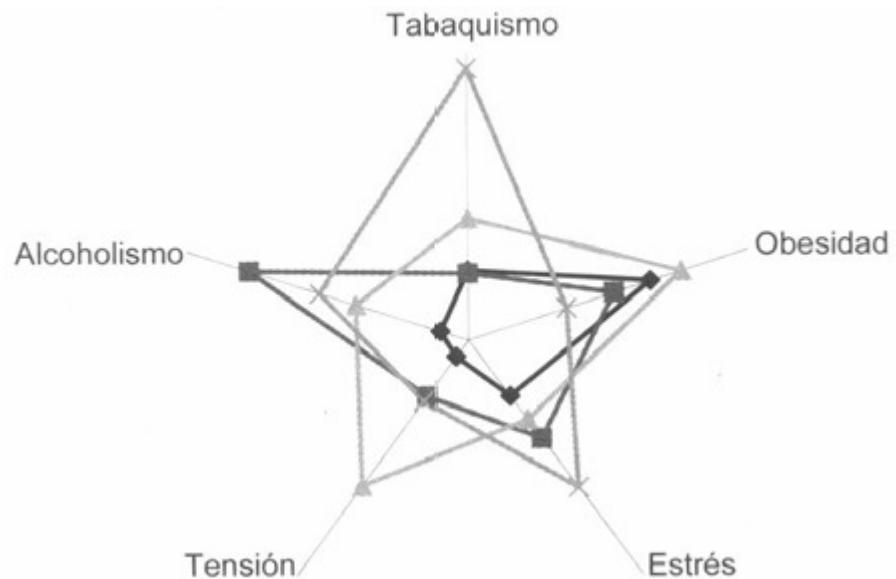
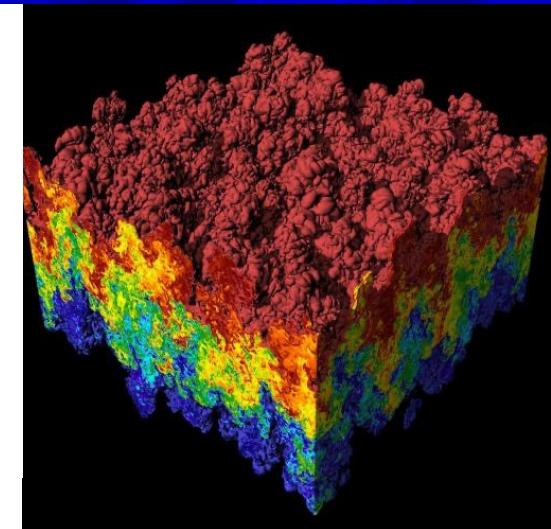
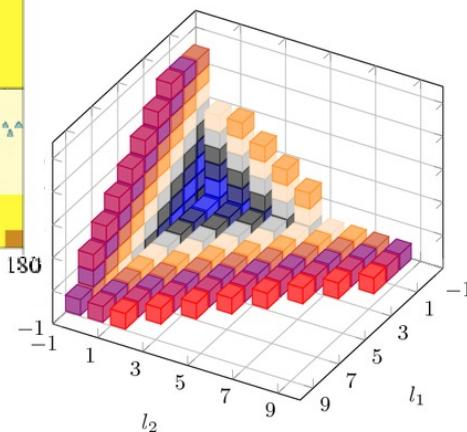
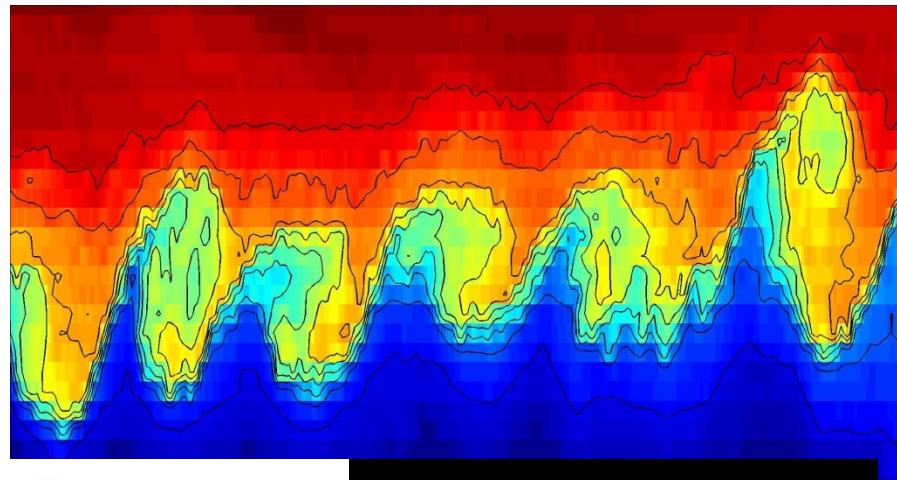
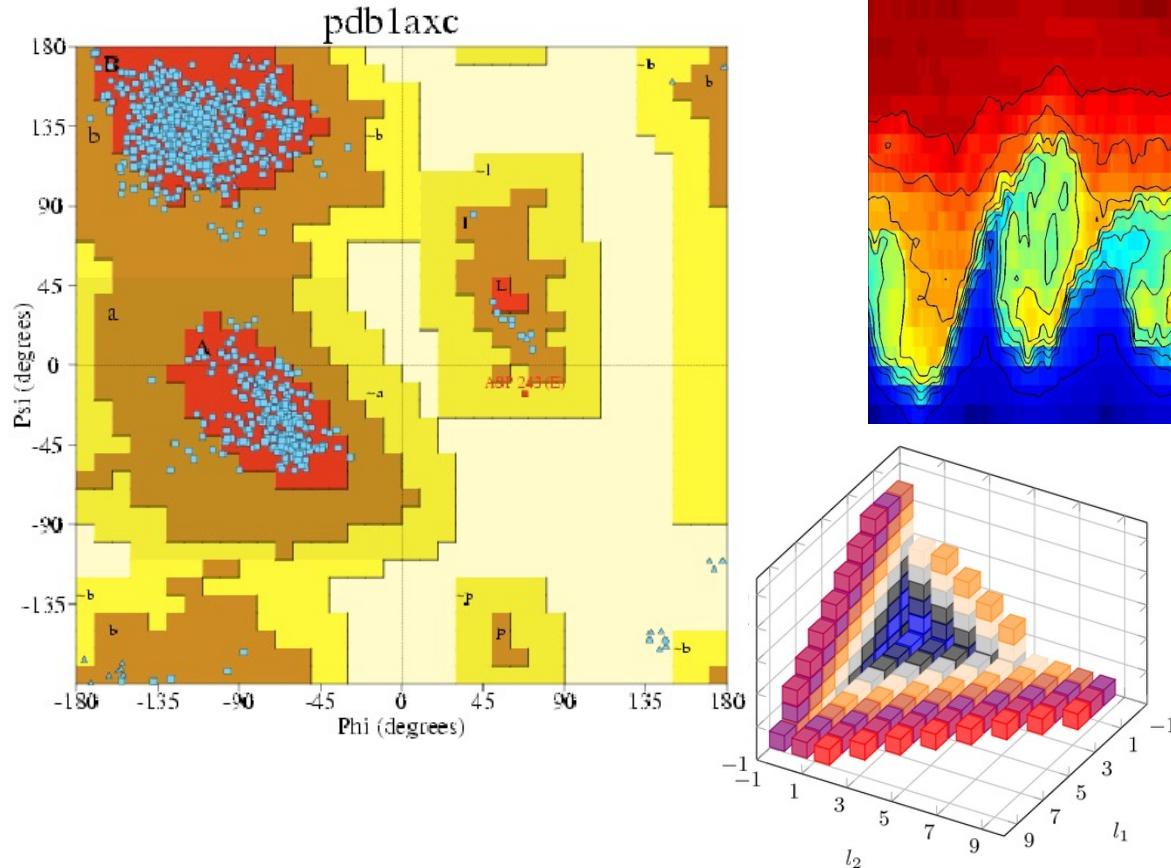


Figure 1: Spiderweb Diagram (7 Dimensions, 7-Notch Scale, 3 Samples)



Distribuciones multidimensionales

Otras



En R

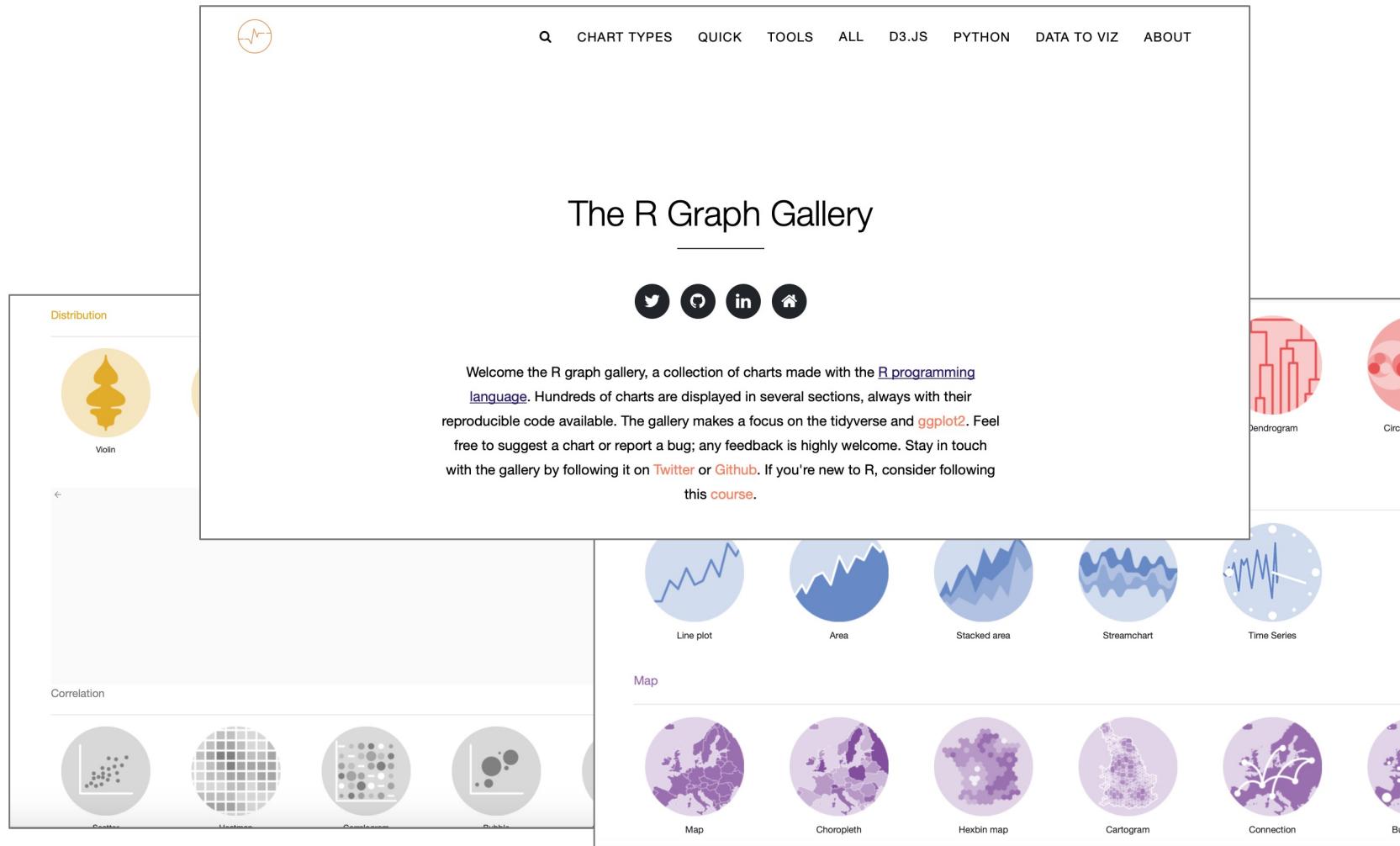
<https://www.rdocumentation.org/packages/graphics/versions/3.6.2>

The screenshot shows the RDocumentation website for the 'graphics' package version 3.6.2. The page title is 'graphics v3.6.2'. It includes a search bar, a link to 'View Source', and a direct link to the page at <https://www.rdocumentation.org>. The main content is titled 'The R Graphics Package' and describes it as 'R functions for base graphics.' Below this, there is a section titled 'Functions in graphics' with a search bar, listing several functions with their descriptions:

Name	Description
assocplot	Association Plots
axis.POSIXct	Date and Date-time Plotting Functions
abline	Add Straight Lines to a Plot
boxplot	Box Plots
axTicks	Compute Axis Tickmark Locations

En R

The R Graph Gallery, <https://www.r-graph-gallery.com>



The screenshot shows the homepage of The R Graph Gallery. At the top, there is a navigation bar with a search icon, chart types (Quick, Tools, All, D3.js, Python), data visualization (Data to Viz), and an about section. Below the navigation is the main title "The R Graph Gallery". To the left, there is a sidebar with sections for "Distribution" (Violin plot) and "Correlation" (Correlation matrix). The main content area features a welcome message and social media links (Twitter, GitHub, LinkedIn, Home). Below the message, there are five circular thumbnails for "Line plot", "Area", "Stacked area", "Streamchart", and "Time Series". Further down, there is a "Map" section with thumbnails for "Map", "Choropleth", "Hexbin map", "Cartogram", "Connection", and "Bubble". On the right side, there are two large circular thumbnails for "Dendrogram" and "Circular".

Welcome the R graph gallery, a collection of charts made with the [R programming language](#). Hundreds of charts are displayed in several sections, always with their reproducible code available. The gallery makes a focus on the tidyverse and `ggplot2`. Feel free to suggest a chart or report a bug; any feedback is highly welcome. Stay in touch with the gallery by following it on [Twitter](#) or [Github](#). If you're new to R, consider following this [course](#).

Violin

Line plot

Area

Stacked area

Streamchart

Time Series

Map

Choropleth

Hexbin map

Cartogram

Connection

Bubble