Transforming data into knowledge

Big Data Visual Analytics

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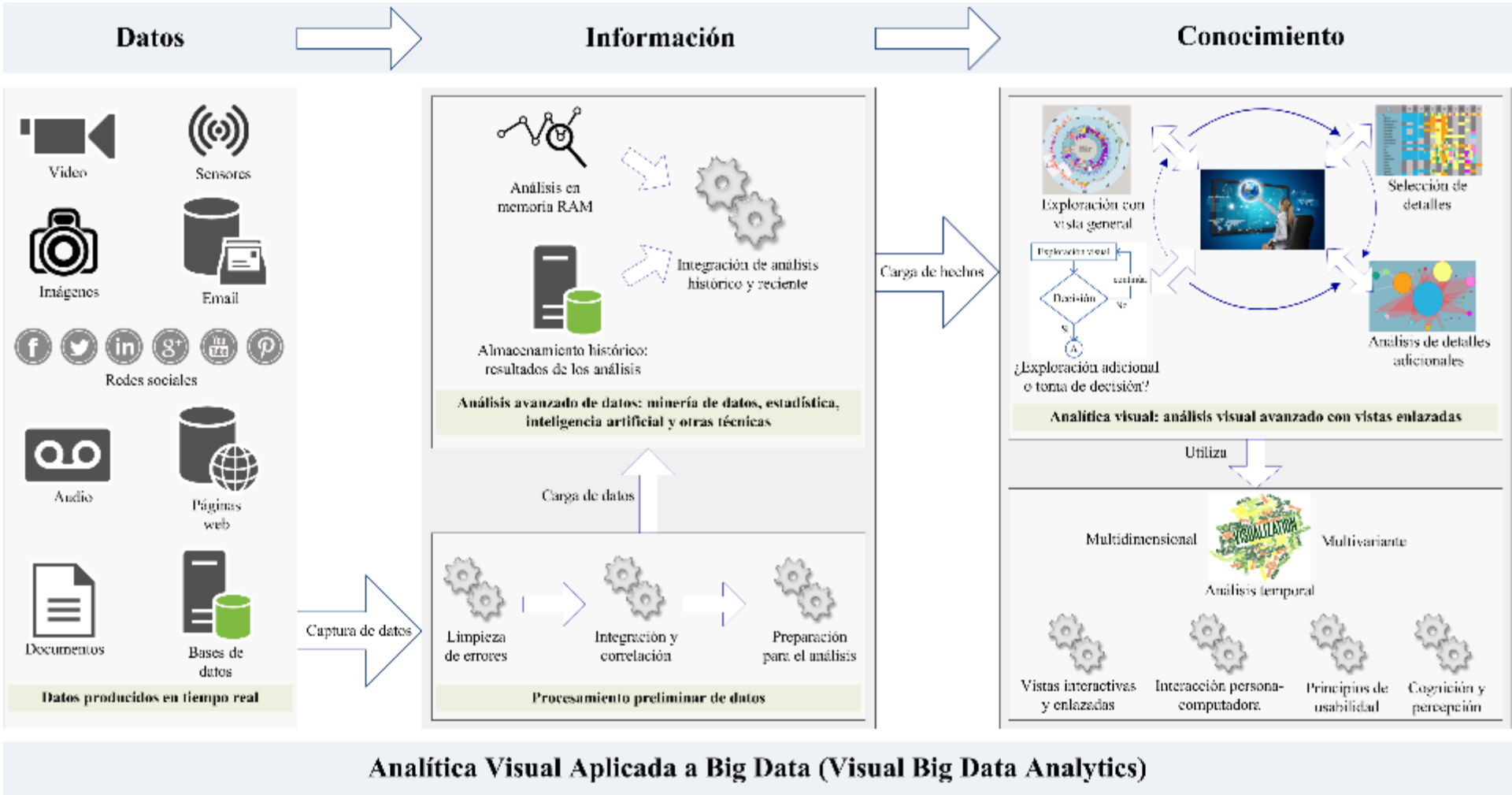
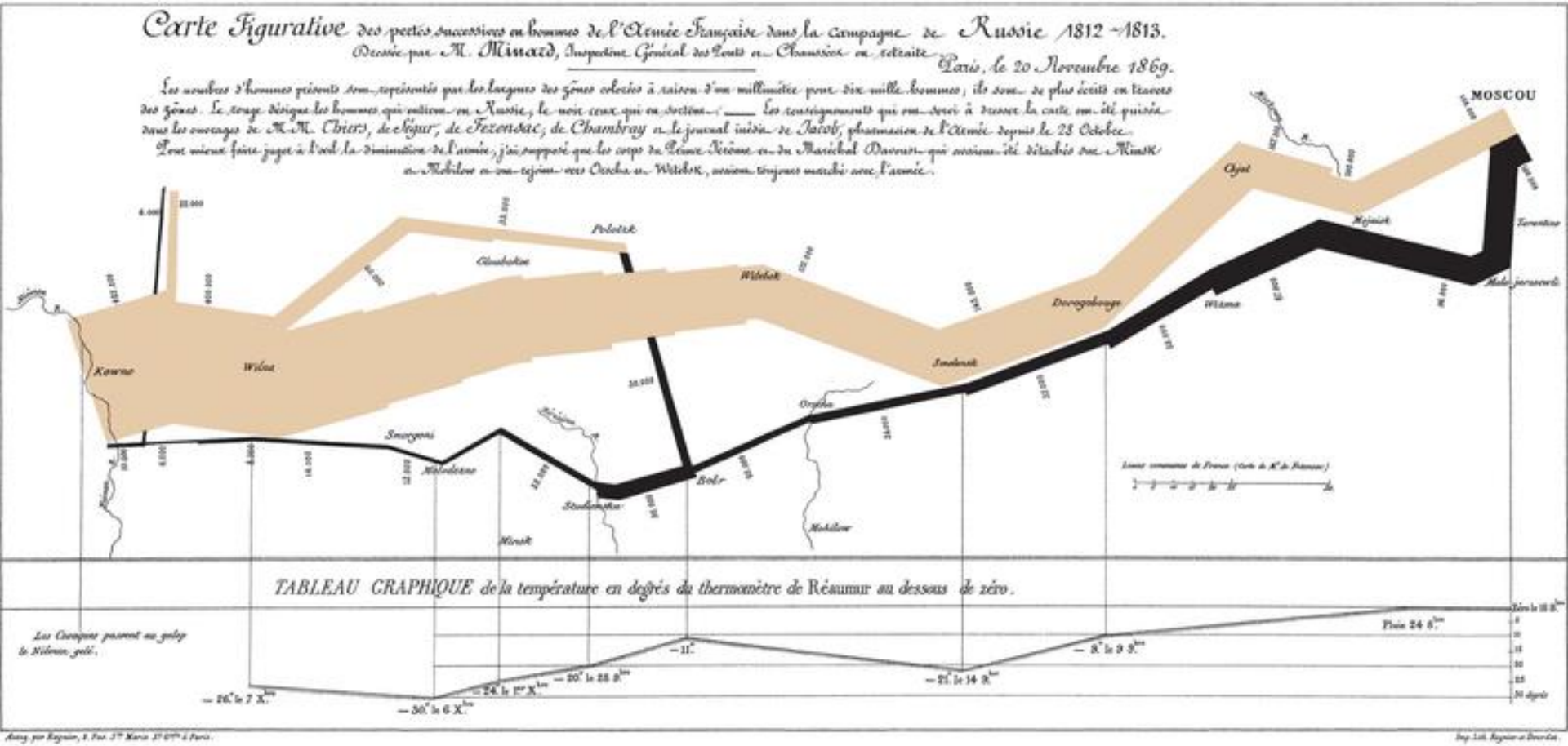
antonio.gonzalez@tec.ac.cr



Analítica Visual Aplicada a Big Data (Visual Big Data Analytics)

Motivation



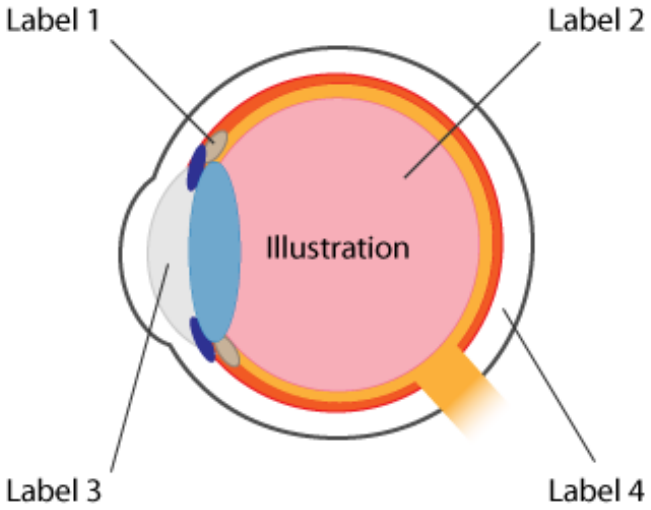
Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.
Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite.
Paris, le 20 Novembre 1869.
MOSCOU
Kowno
Wilna
Polotzk
Witebsk
Smolensk
Dorogobouge
Wizma
Mojaisk
Tarantino
Malo-jarosewli
Smorgoni
Molodezno
Studienska
Minsk
Bobr
Orscha
Mohilow
TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.
Les Cavaliers passent au galop le Niémen gelé.

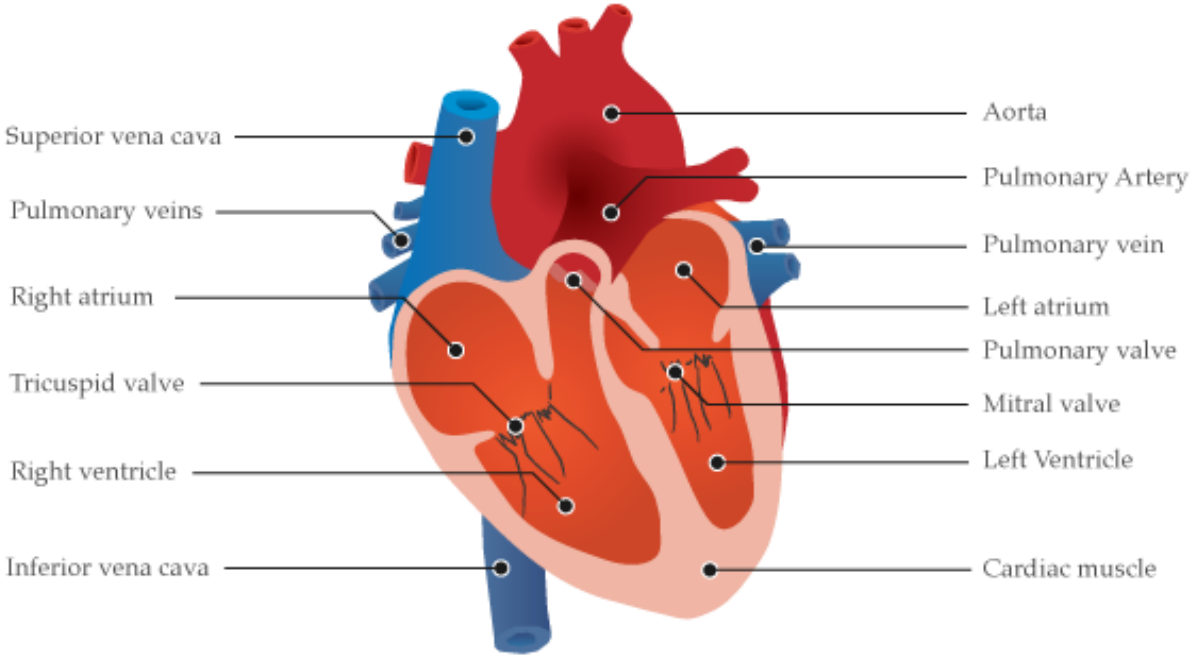
Tag Cloud

Word

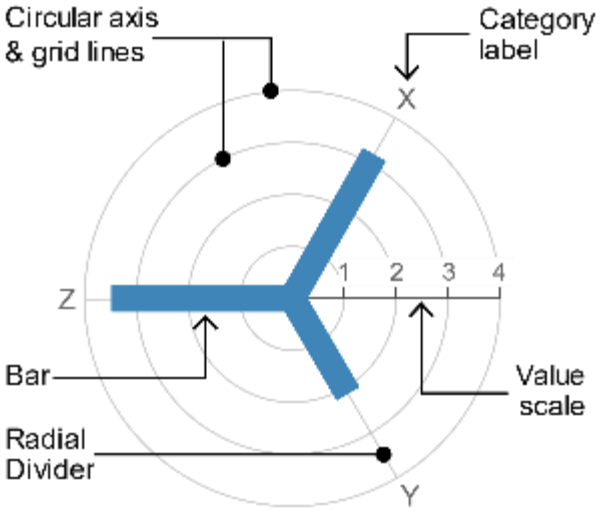
Word Size = Word Frequency

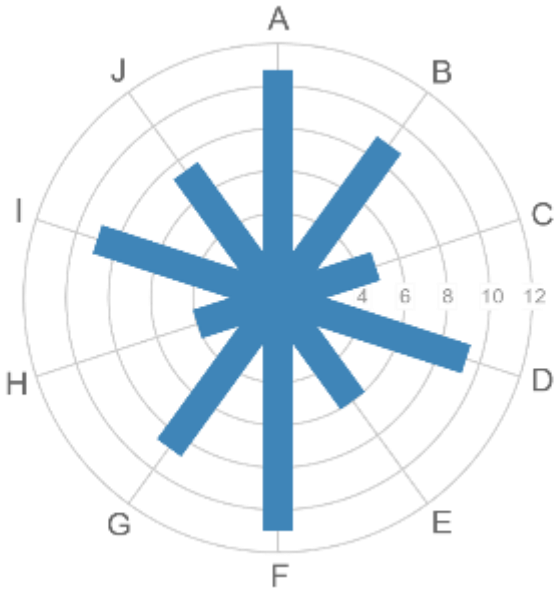
Illustration Diagram

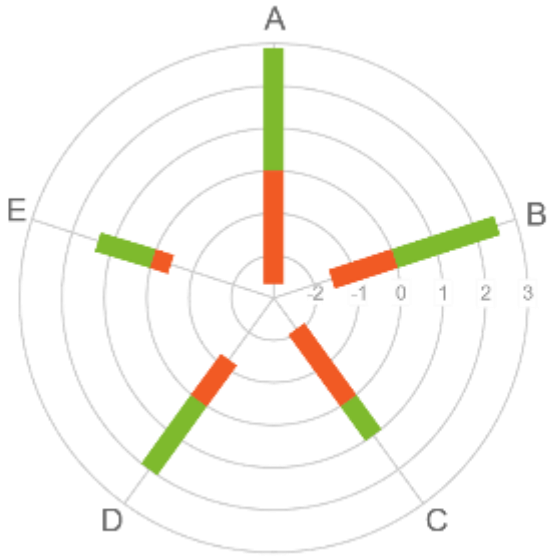




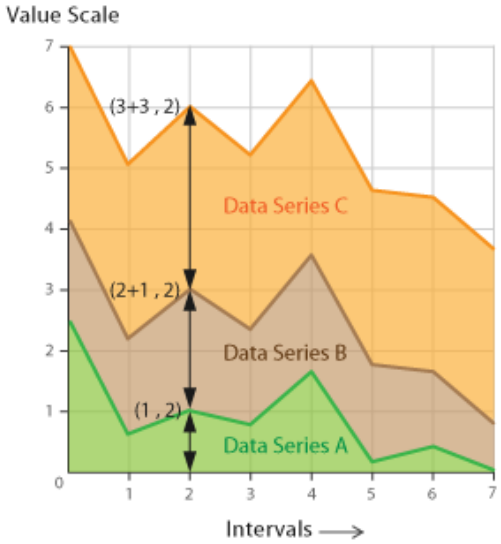
Radial

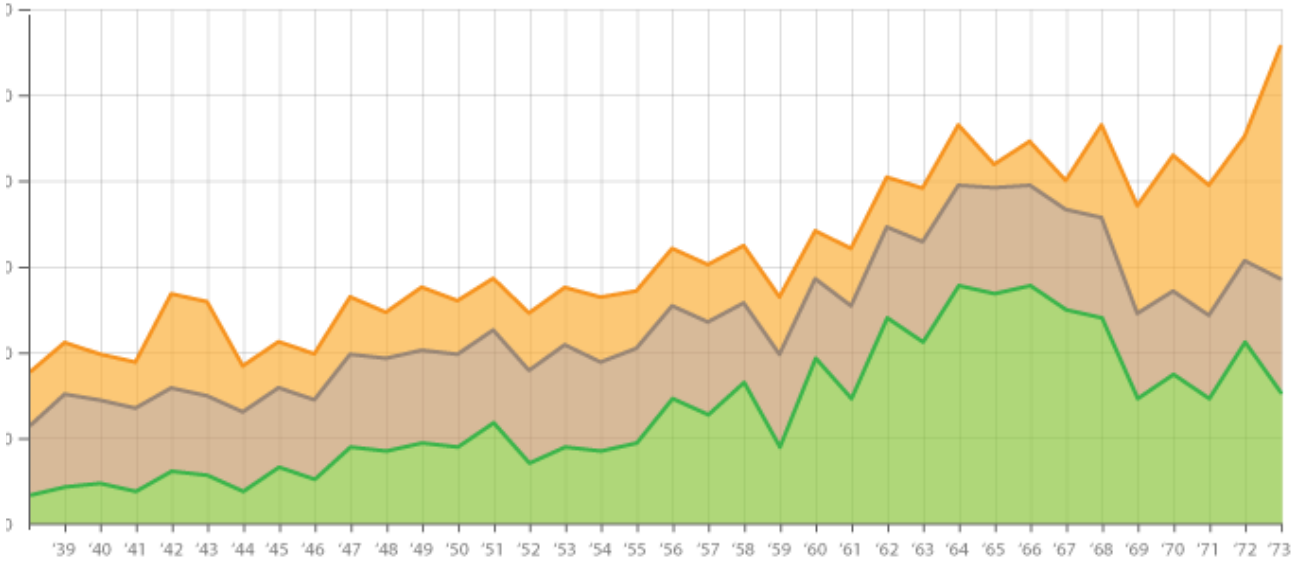

Circular axis
& grid lines
Category
label
X
Z
Y
1
2
3
4
Bar
Value
scale
Radial
Divider


A
B
C
D
E
F
G
H
I
J
4
6
8
10
12

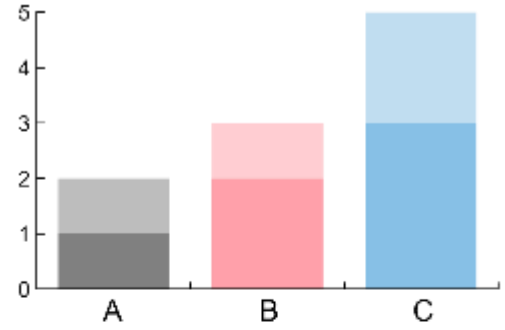

A
B
C
D
E
-2
-1
0
1
2
3

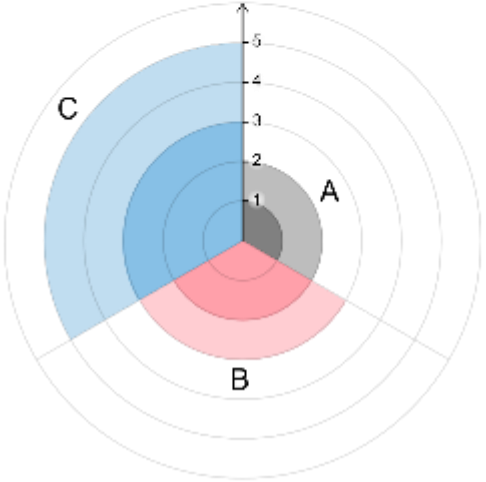
Stacked Area Graph

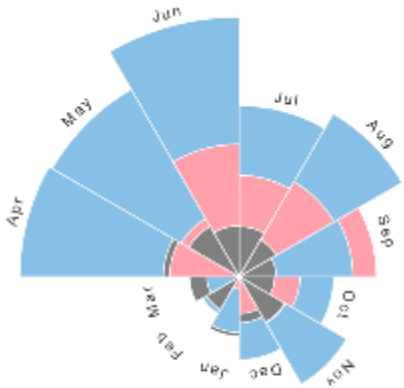


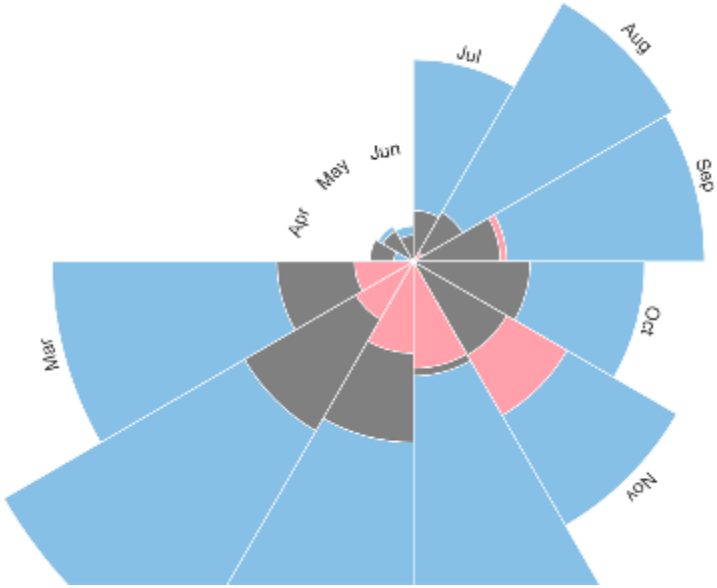


Nightingale Rose

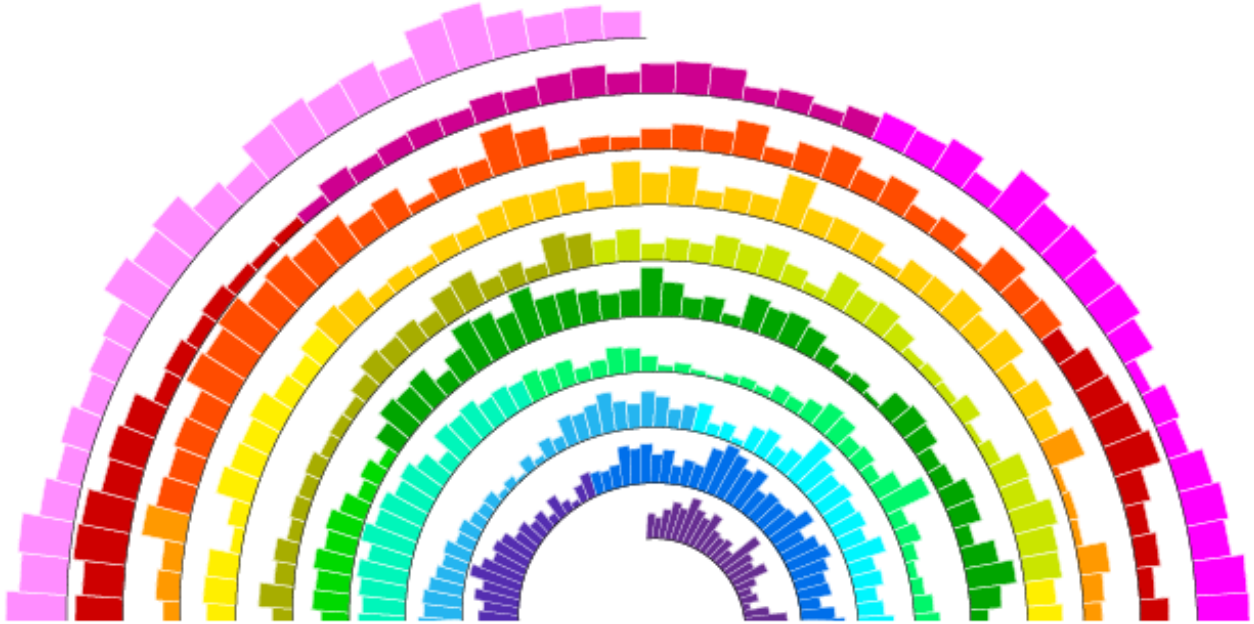




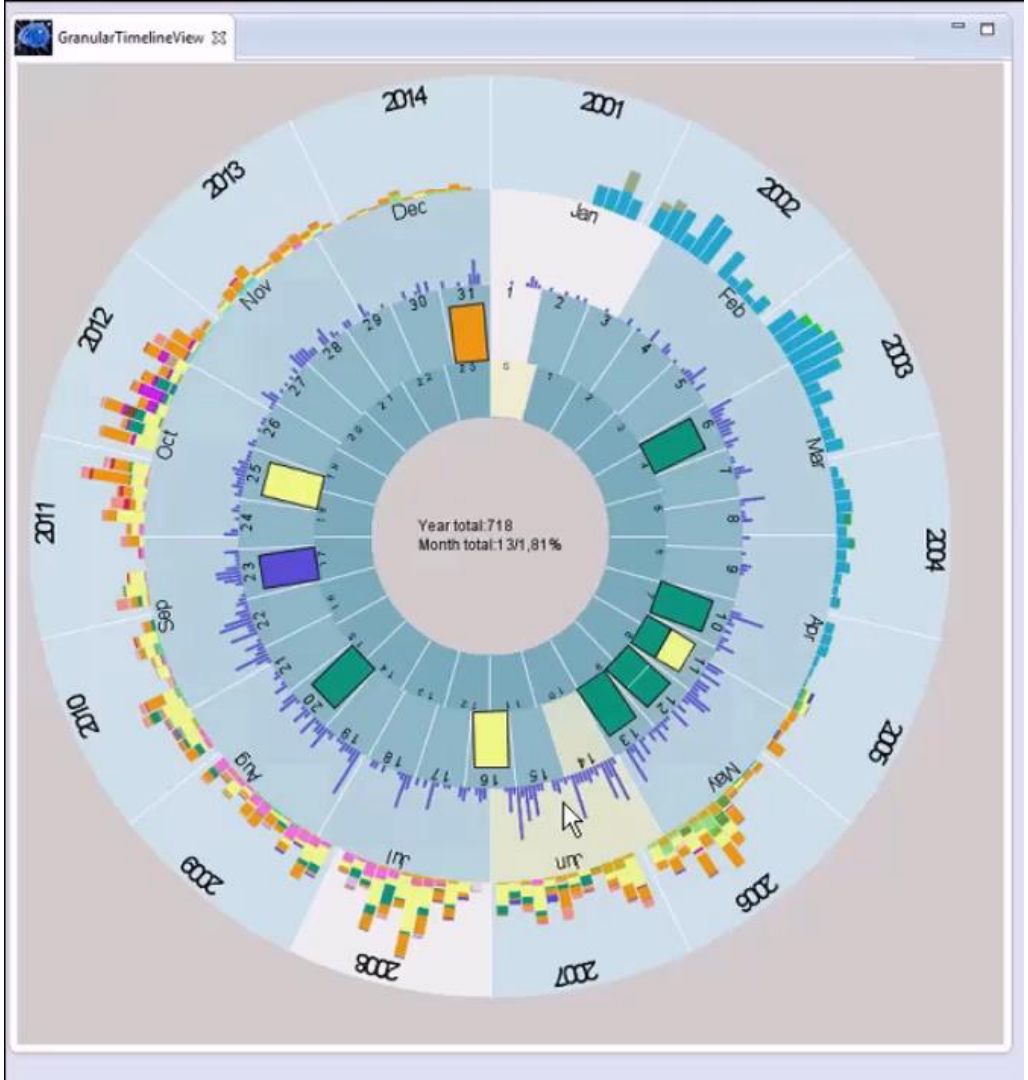




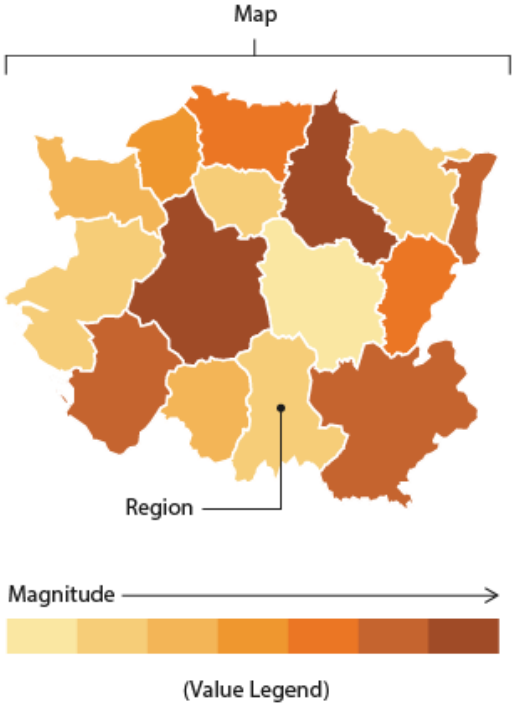
Spiral

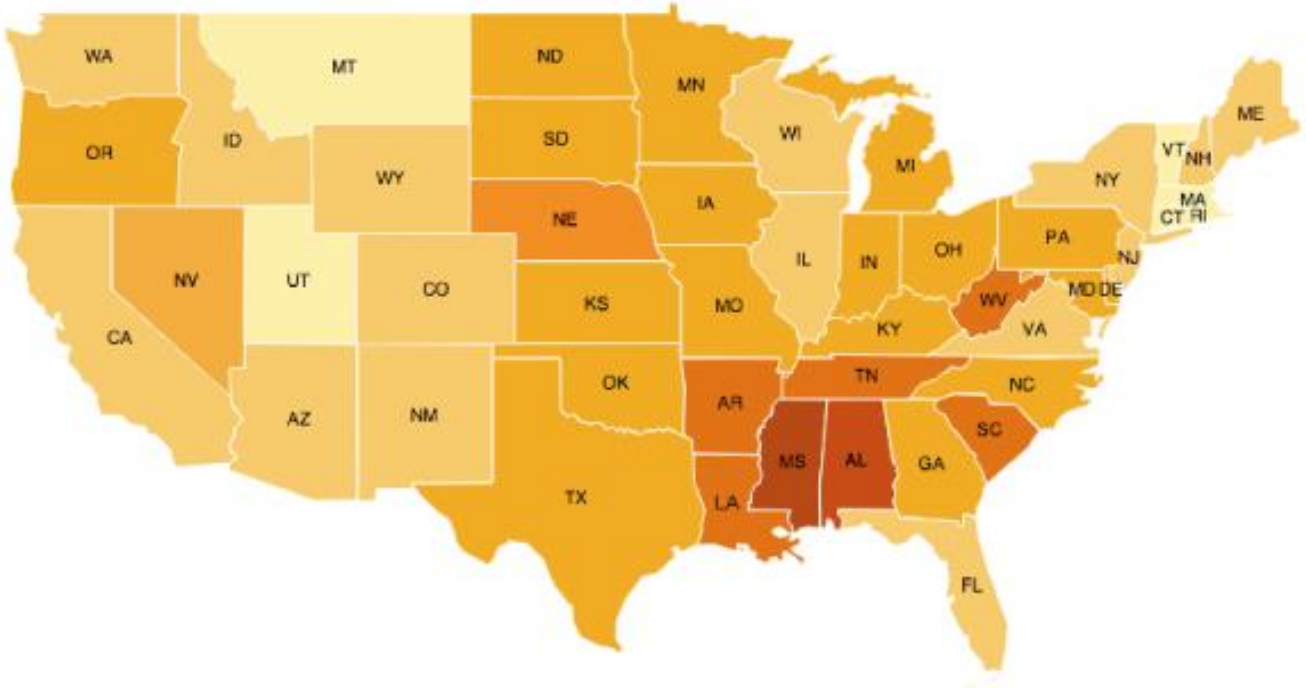


Granular Timeline

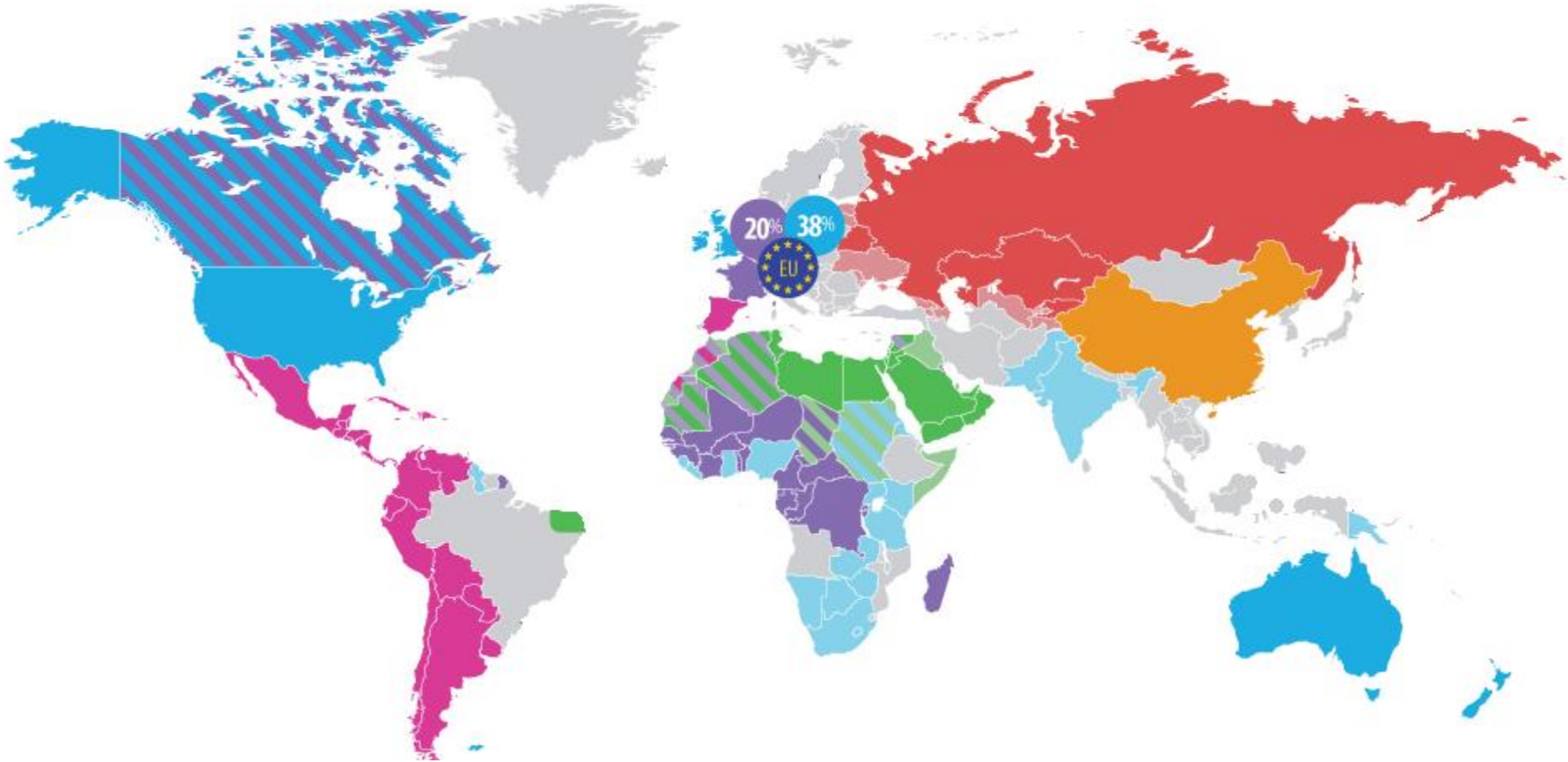


Choropleth

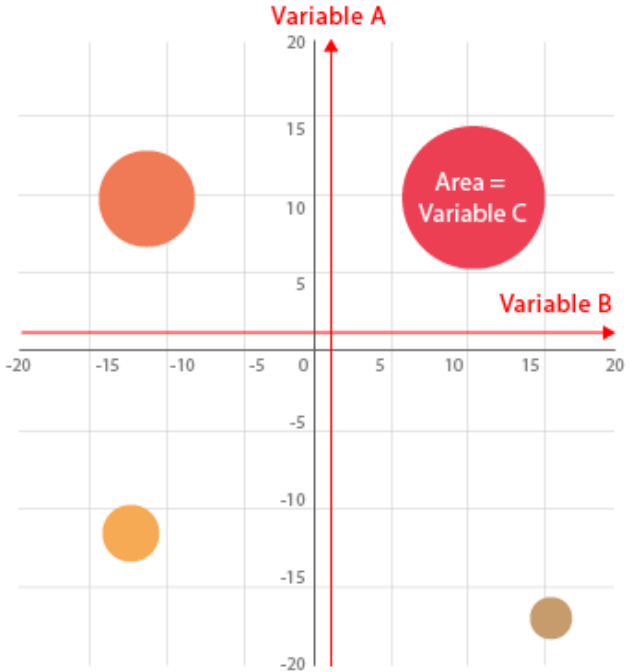

Map
Region
Magnitude
(Value Legend)

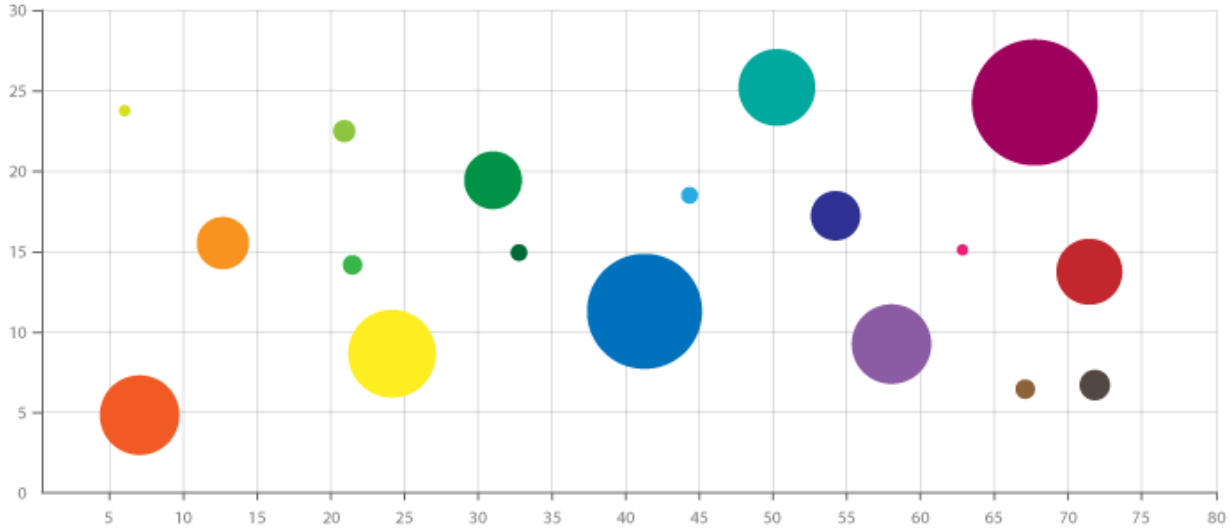

WA
MT
ND
MN
OR
ID
SD
WI
MI
WY
NY
ME
VT
NH
NE
IA
MA
CT
RI
NV
UT
CO
IL
IN
OH
PA
NJ
KS
MO
WV
MD
DE
CA
KY
VA
OK
TN
NC
AR
AZ
NM
SC
MS
AL
GA
TX
LA
FL

Arabic, Chinese, English, French, Russian, and Spanish.



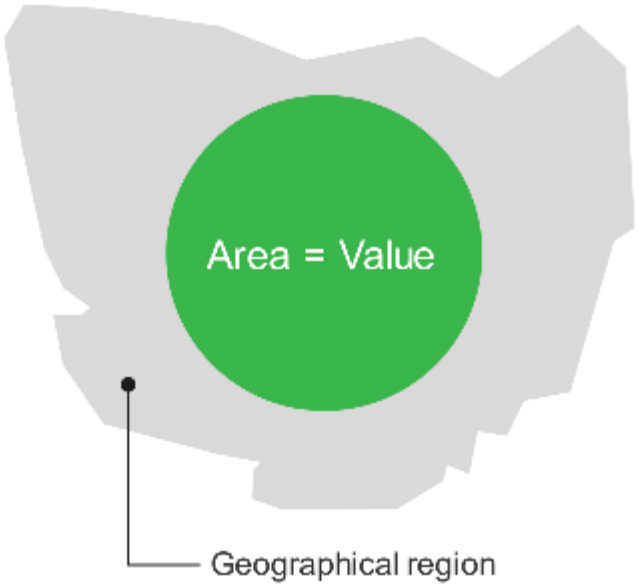
Bubble Chart

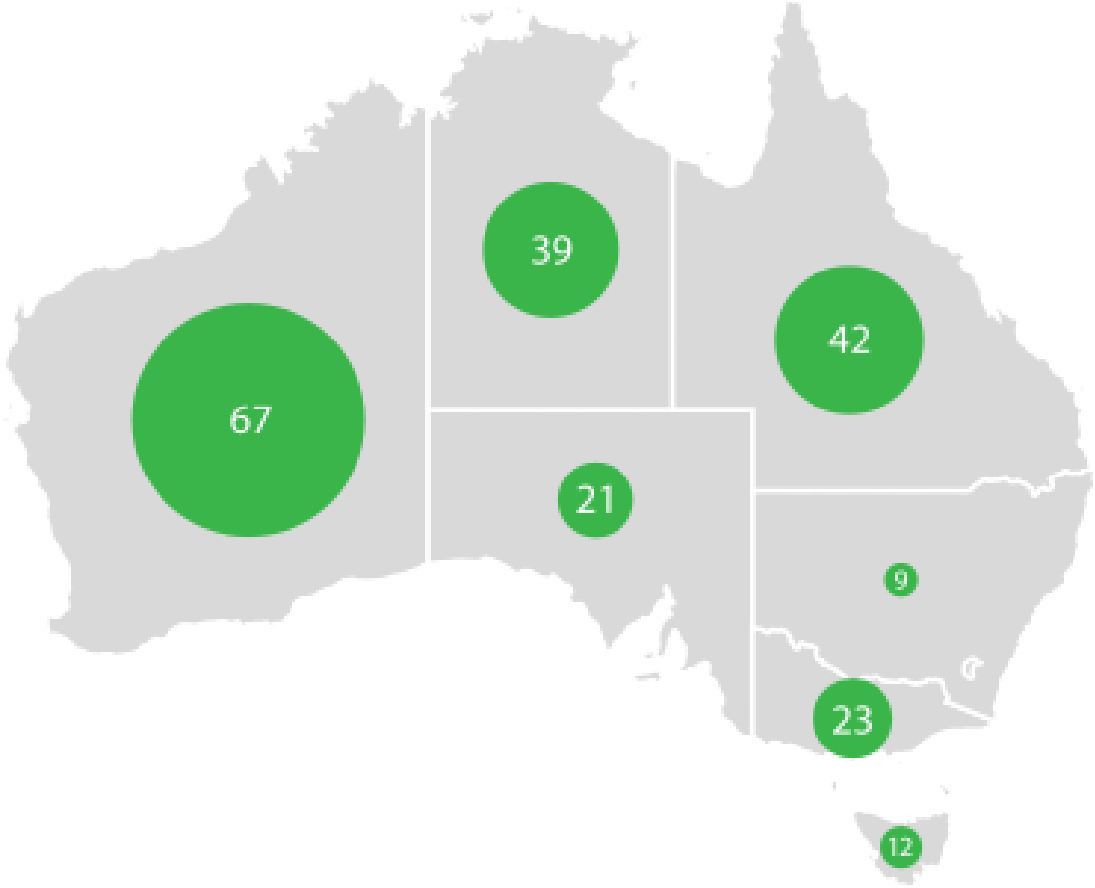




Circle Area = $\pi \times \text{Radius}^2$

Circle Diameter = (SQRT(Area / π)) x 2


Area = Value
Geographical region


39
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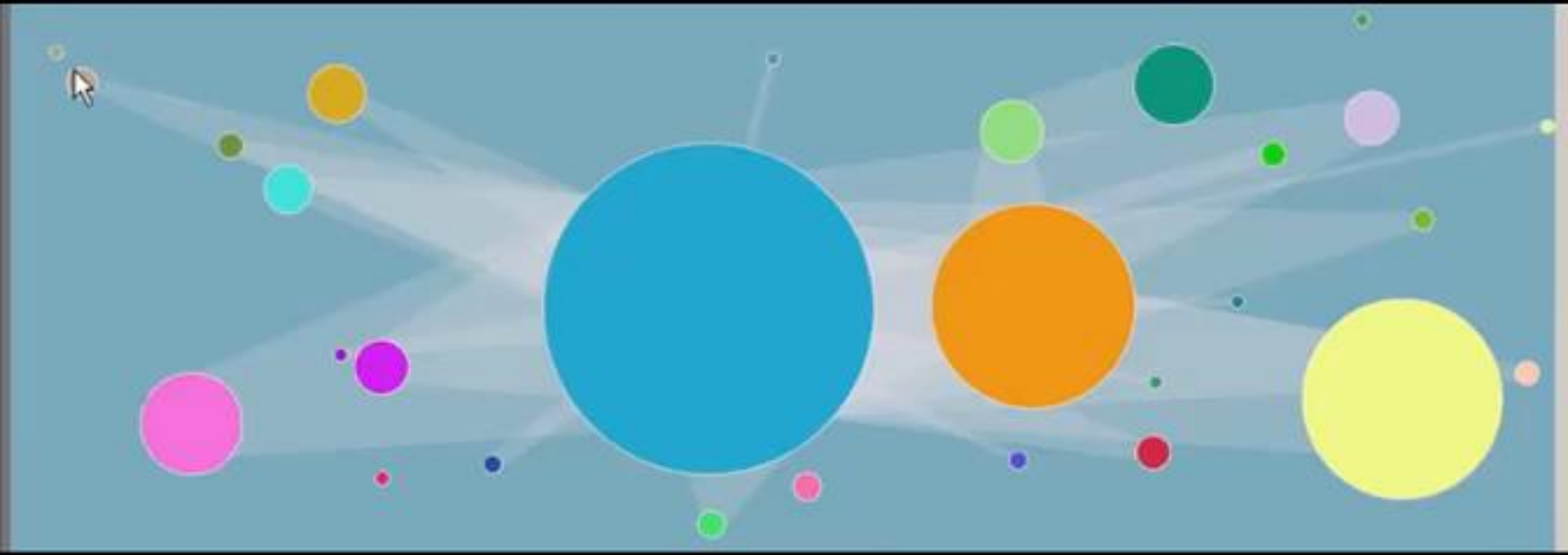
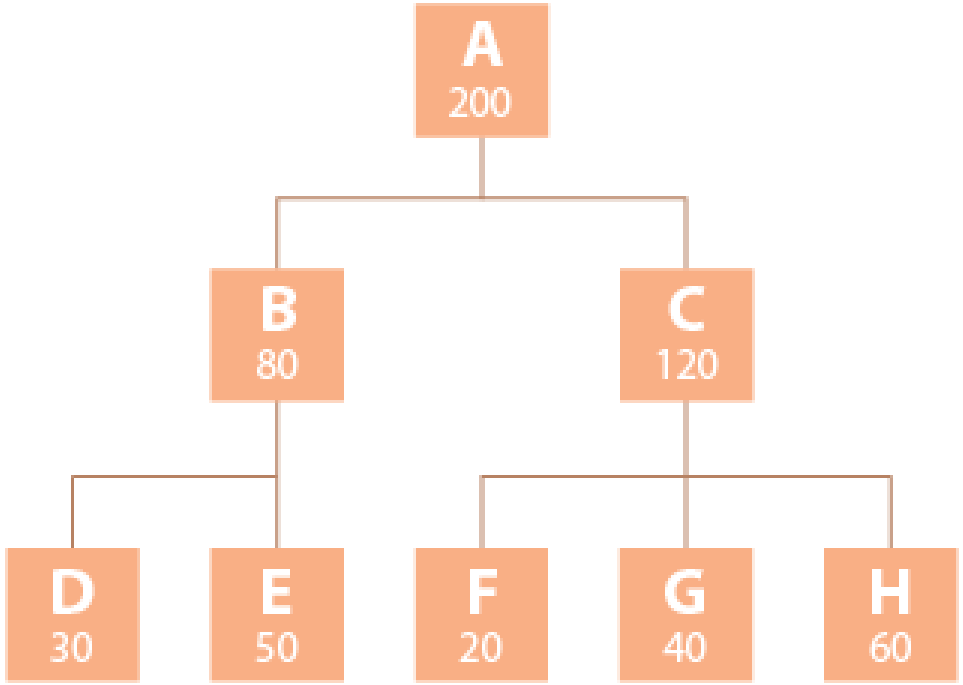
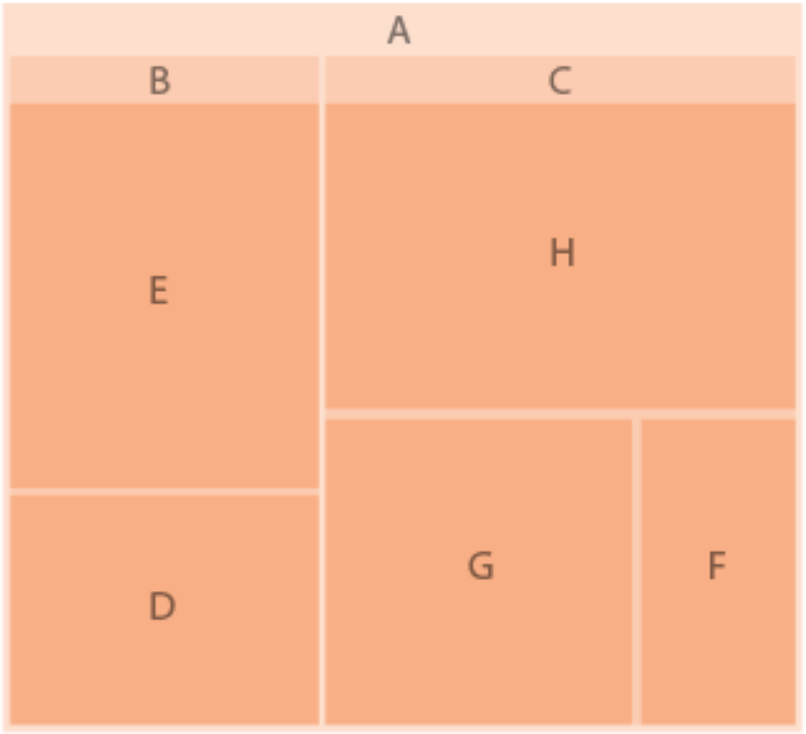
67
21
9
23
12

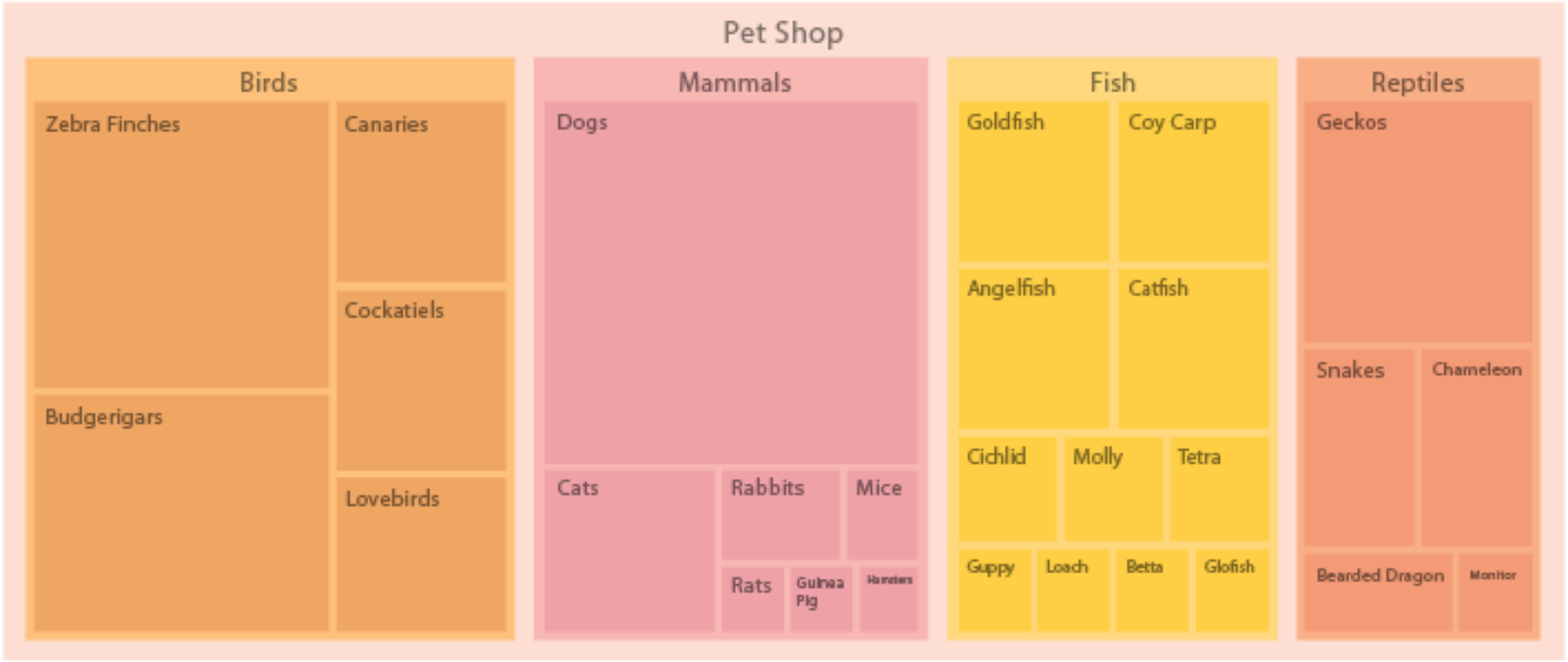


Treemap



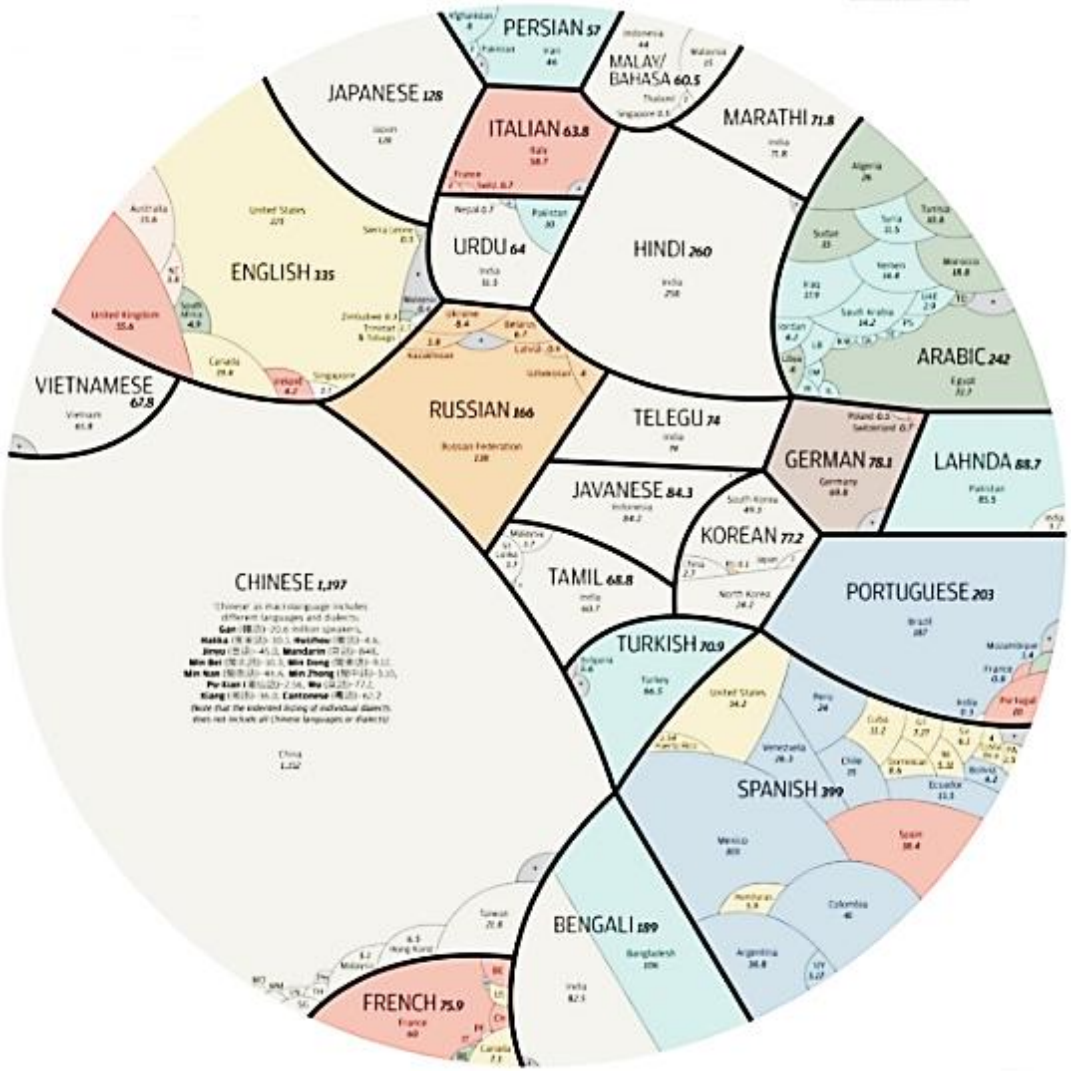


Tomado de https://datavizcatalogue.com/methods/treemap.html

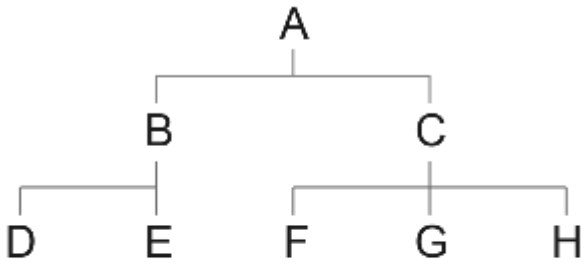


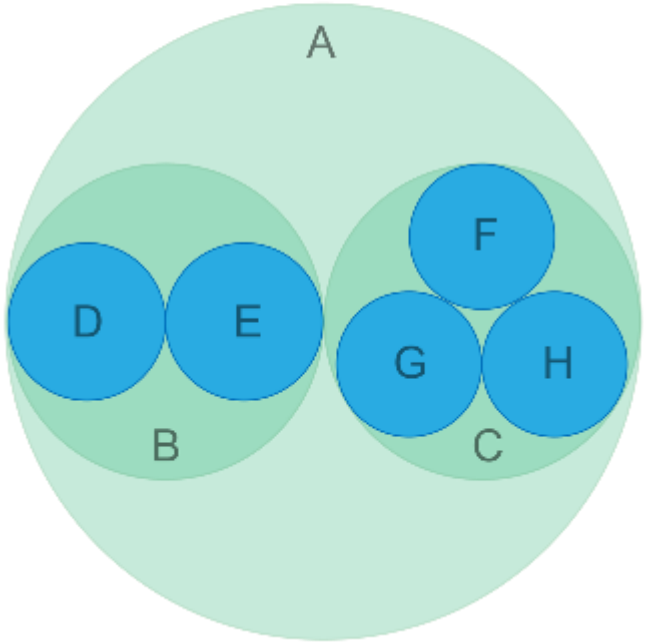
Tomado de https://datavizcatalogue.com/methods/treemap.html

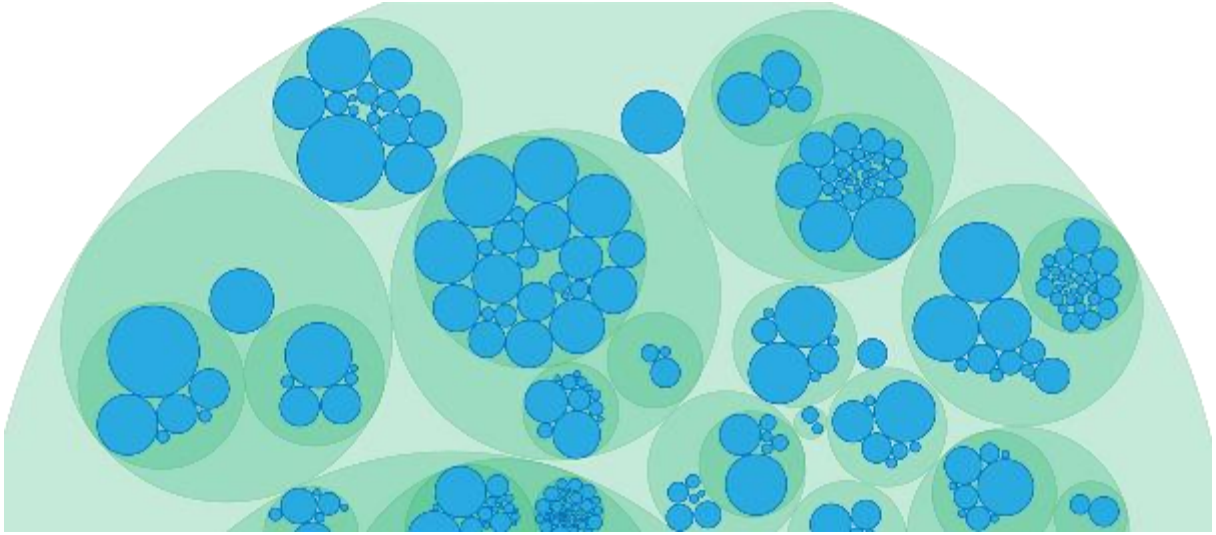
Voronoi Treemap



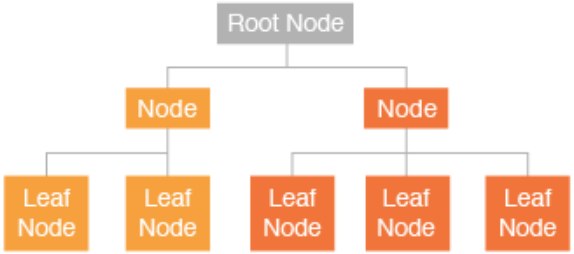
Circle Packing

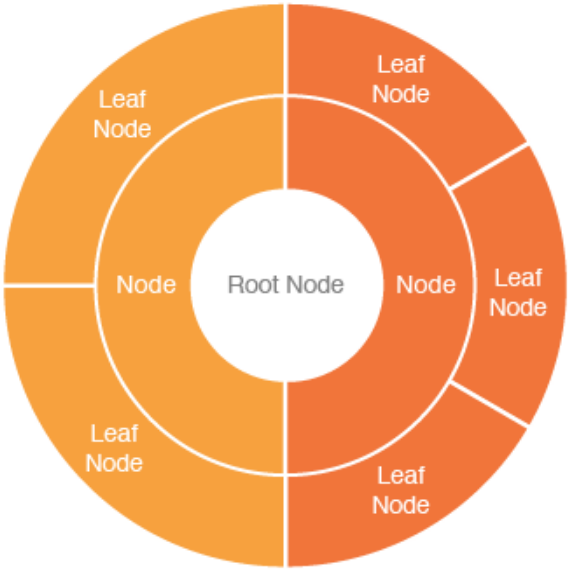




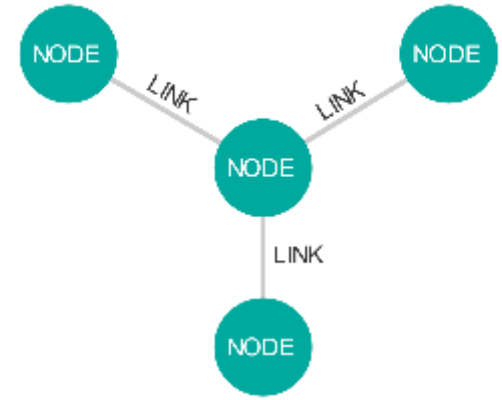


Sunburst Diagram



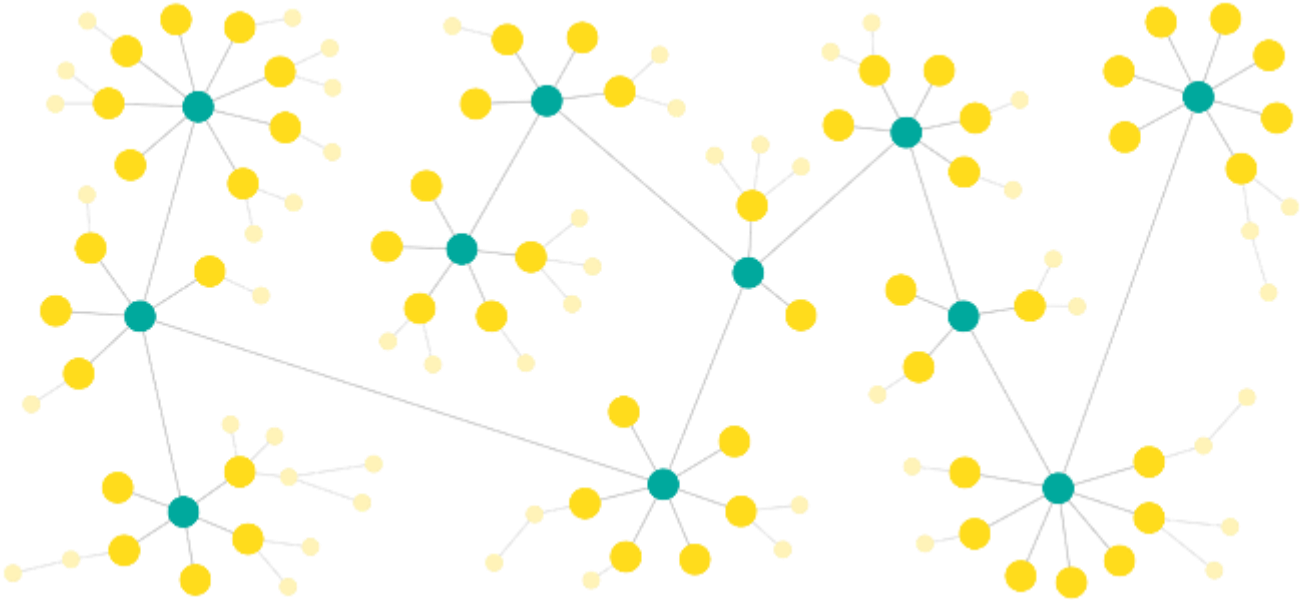


Network Diagram

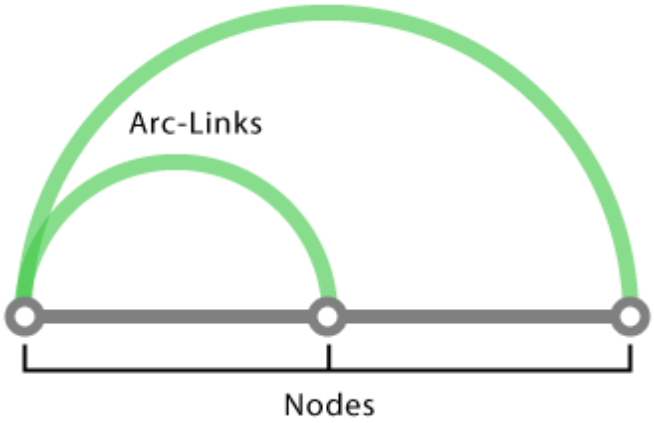


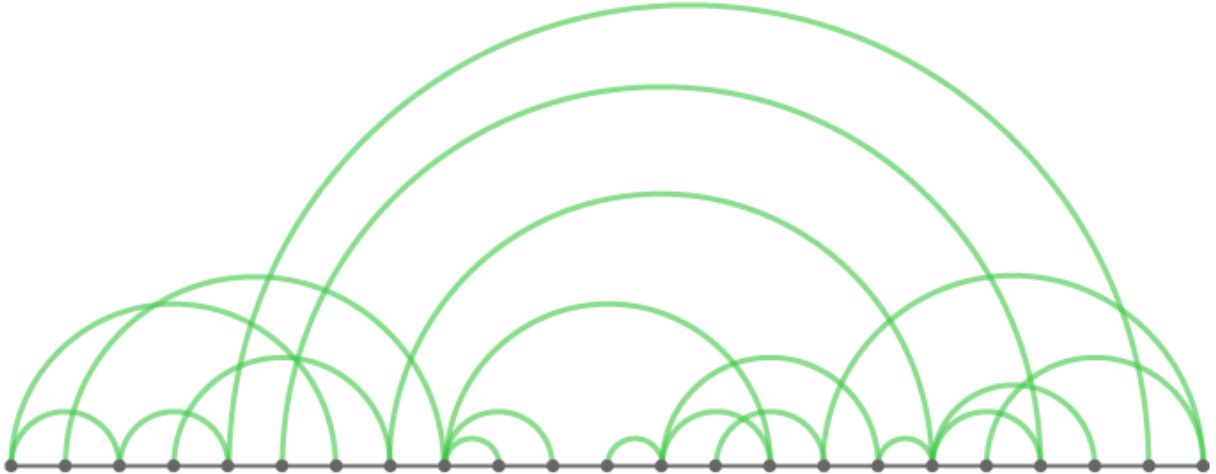
Undirected network

Directed network

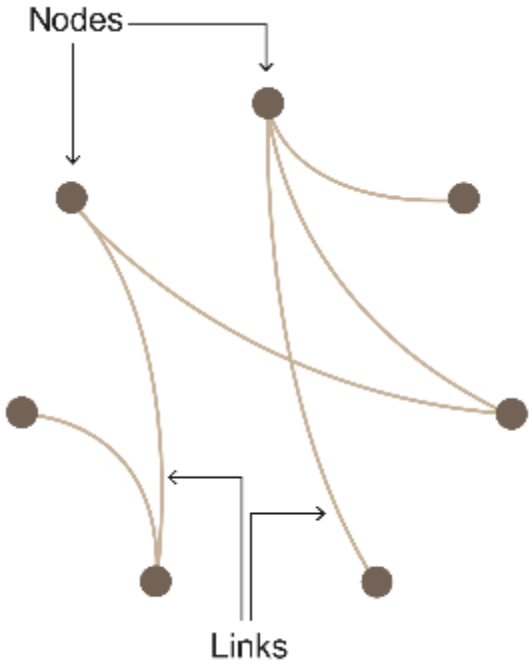


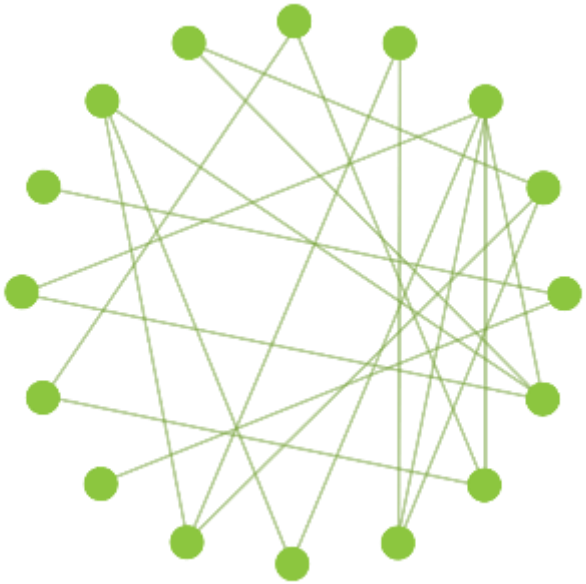
Arc Diagram



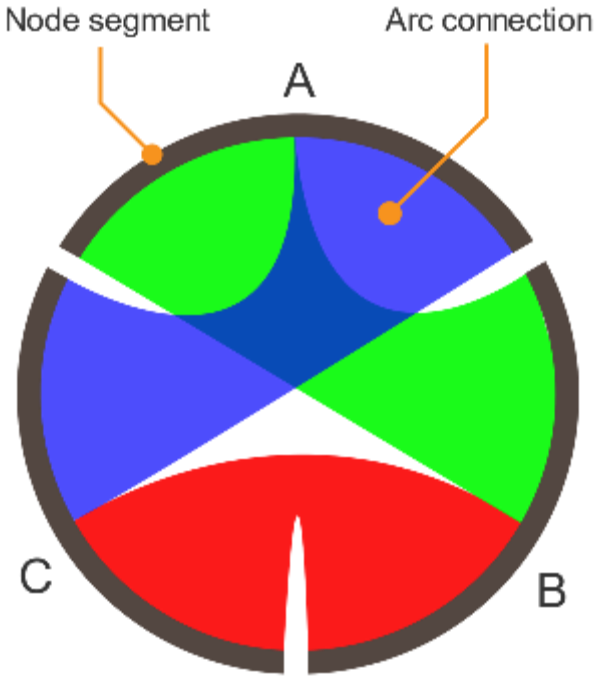


Non-ribbon Chord Diagram





Chord Diagram



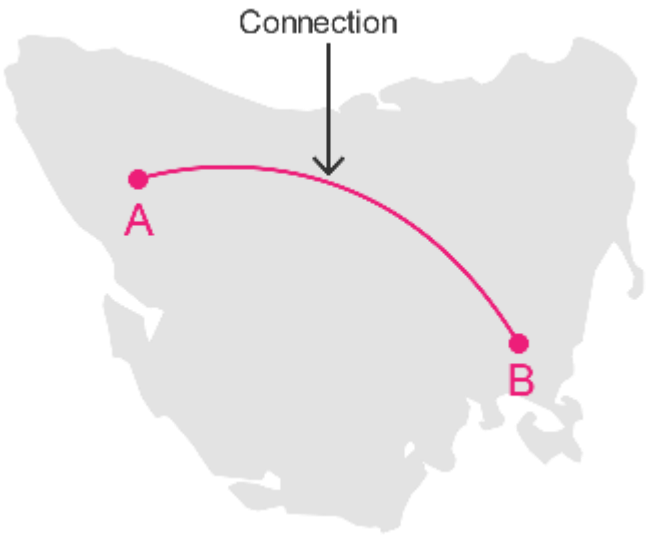
	A	B	C
A		10	10
B	10		10
C	10	10	

A $\xrightarrow{10}$ B

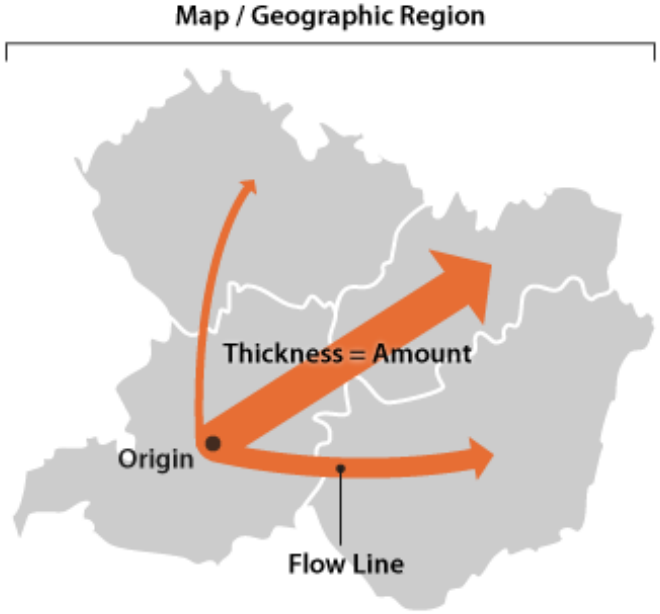
B $\xrightarrow{10}$ C

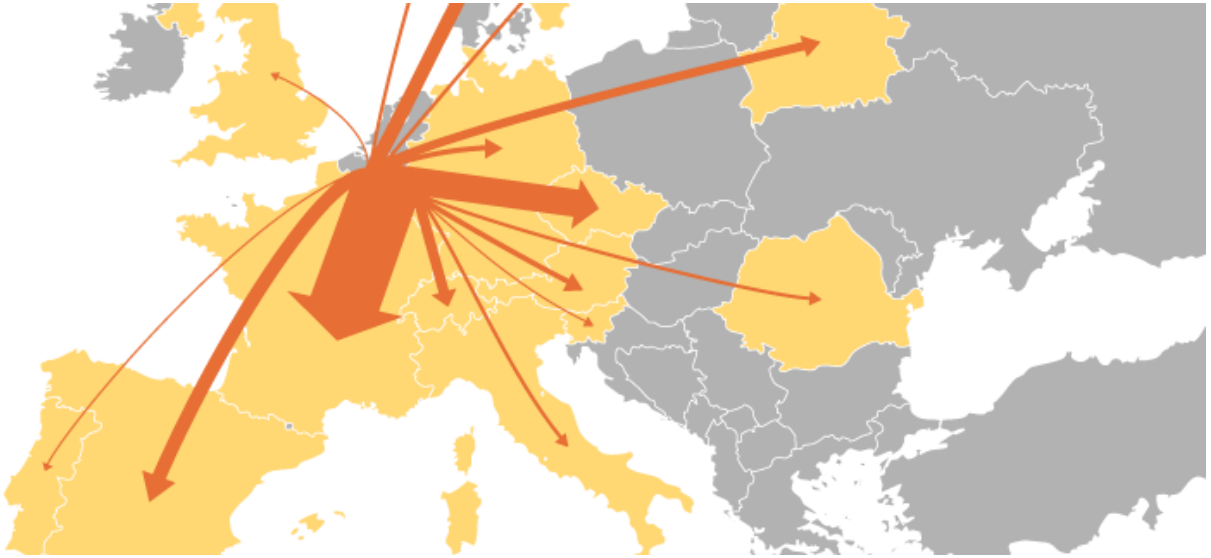
C $\xrightarrow{10}$ A

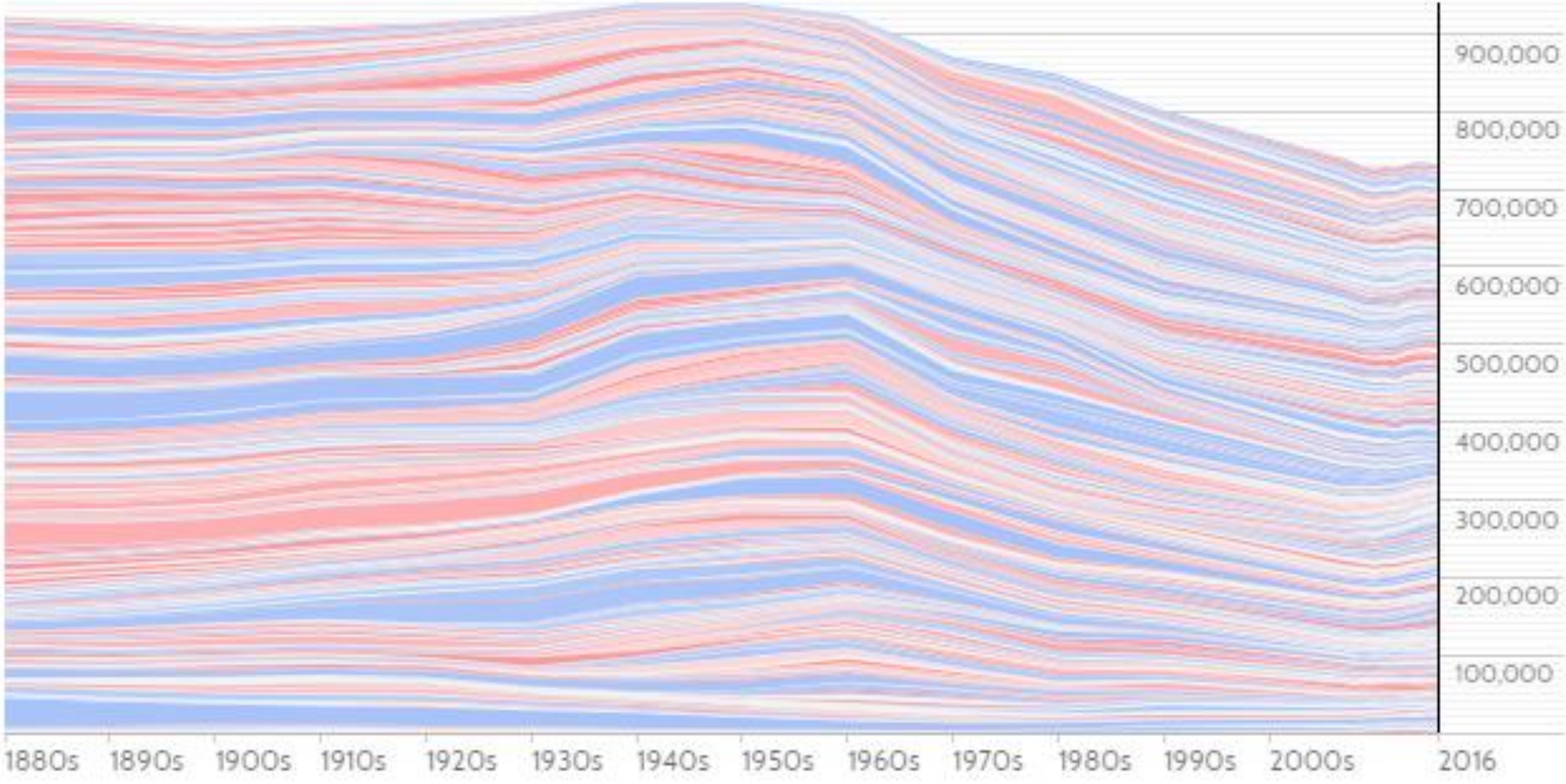
Connection Map



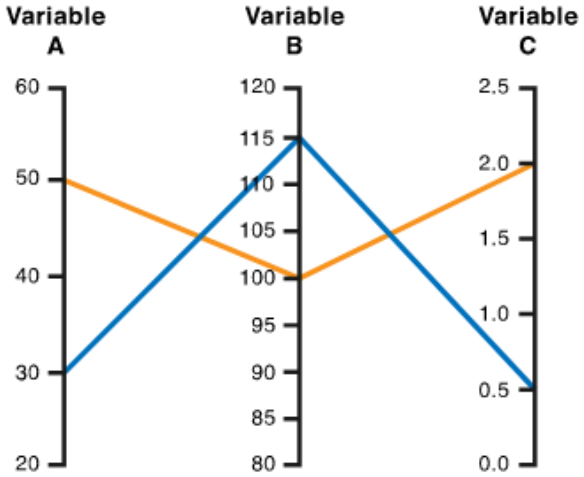
Flow Map



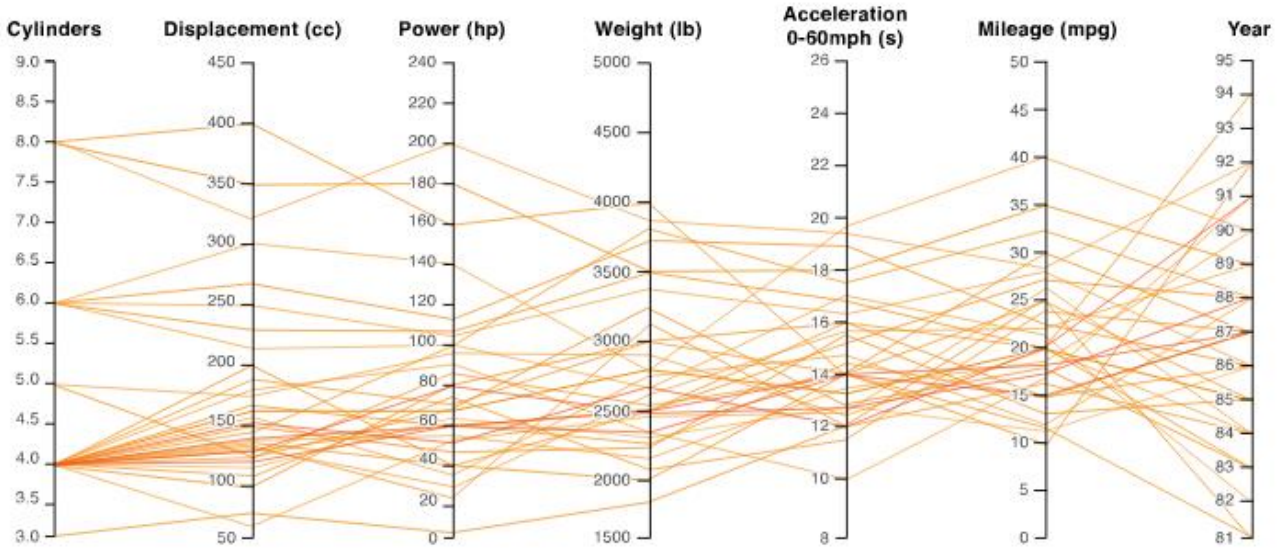



900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
1880s
1890s
1900s
1910s
1920s
1930s
1940s
1950s
1960s
1970s
1980s
1990s
2000s
2016

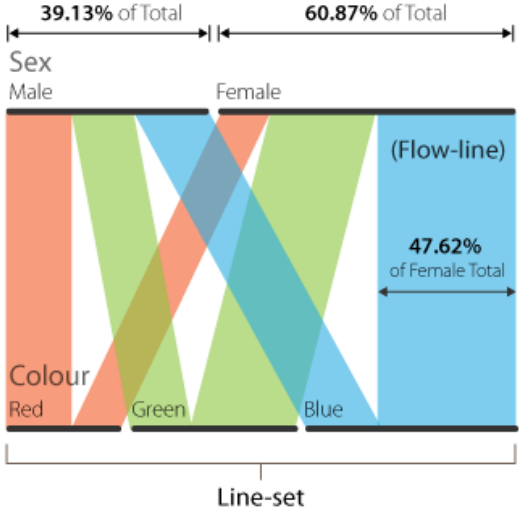
Parallel Coordinates



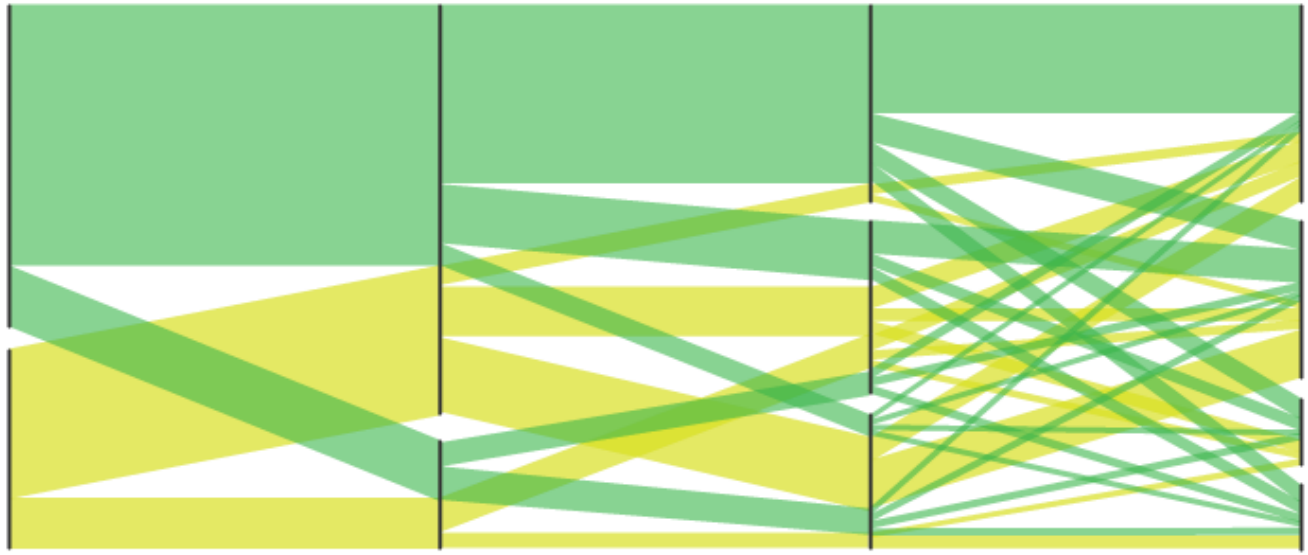
Data			
	Variable A	Variable B	Variable C
Item 1	50	100	2.0
Item 2	30	115	0.5



Parallel Sets



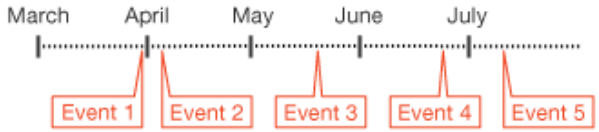
Sex	Colour	Count	% of Sex TOTAL
Male	Red	35	32.41
	Green	33	30.56
	Blue	40	37.04
Female	Red	28	16.67
	Green	60	35.71
	Blue	80	47.62

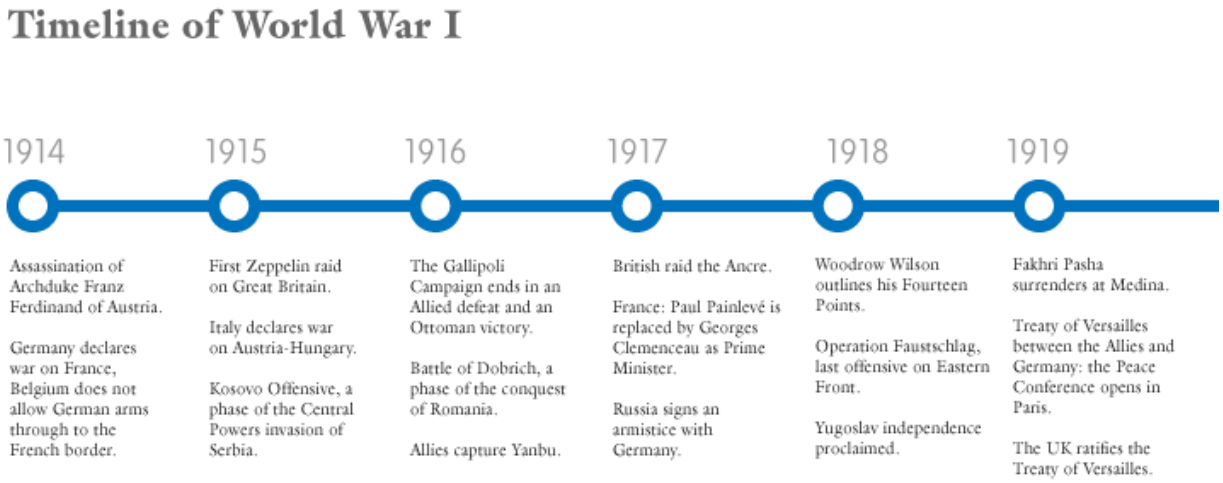


Timeline

Sequential Timeline:

Scaled Timeline:





Questions and answers

Thanks!

Transforming data into knowledge

Big Data Visual Analytics

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antonio.gonzalez@tec.ac.cr