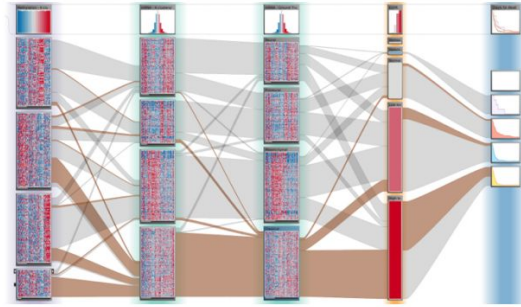


---

# Visualización



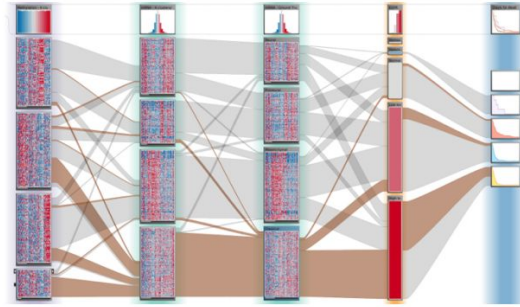
---

75.06 Organización de Datos

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# Visu



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75.06 Organización de Datos

---

## What is data visualisation?



The representation and presentation of data to facilitate understanding



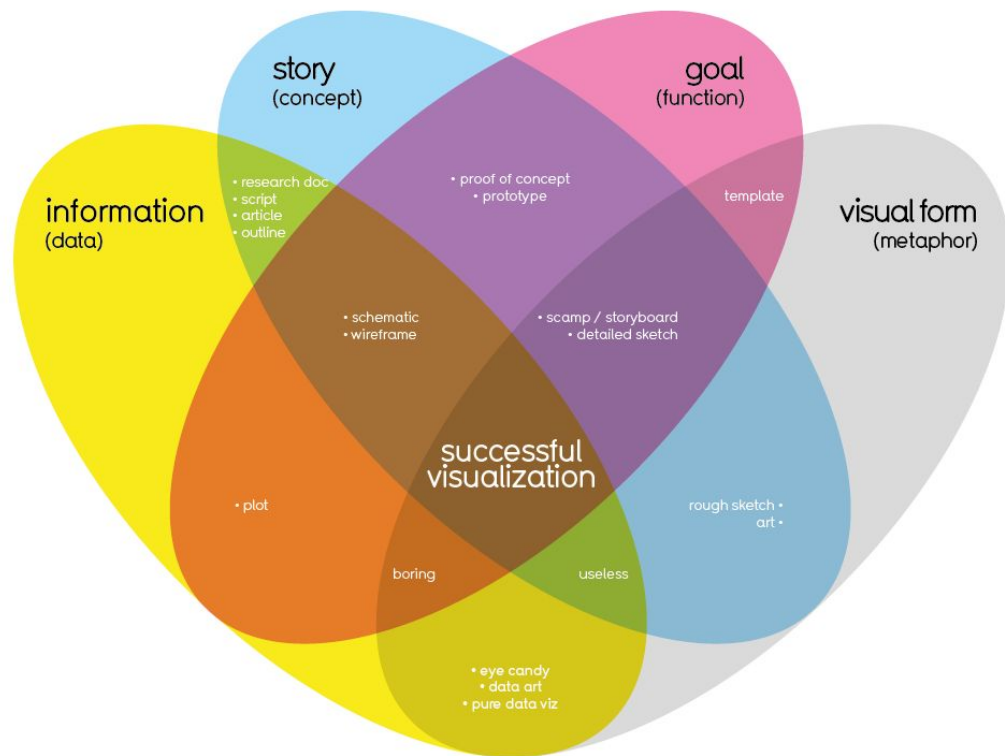
# Visu: 4 Elementos

- Datos
- Objetivo
- Metáfora Visual
- Historia

detail

What Makes a Good Visualization?

exp



# Objetivos

---

- Como parte del proceso de análisis de datos
  - Para comunicar resultados o conclusiones
-

# Visu: Principios Básicos

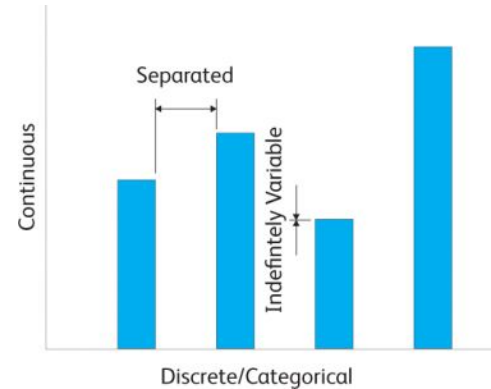
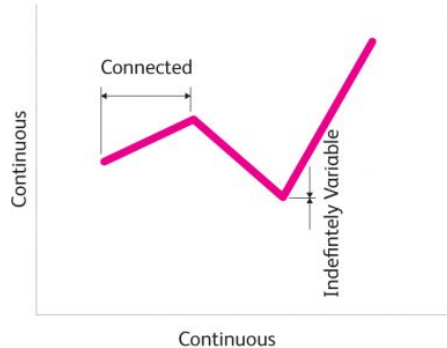
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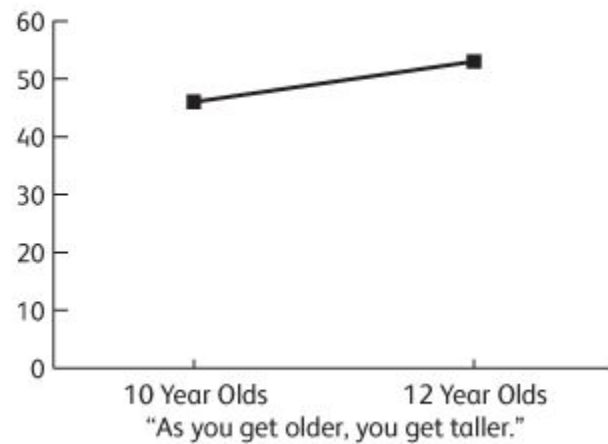
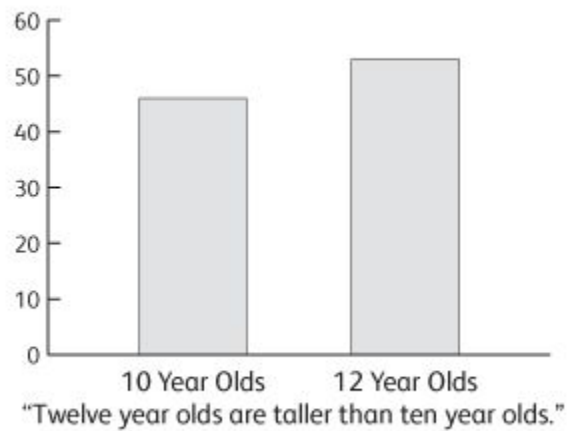
- Simple es mejor que complejo
  - Realizar una buena elección del color
  - Manejo de Planos (Oclusión)
  - Realizar un buen uso del plano
  - 7 +/- 2
  - Ceguera al cambio
  - Foco en la funcionalidad
-

# Visualización Principios Básicos

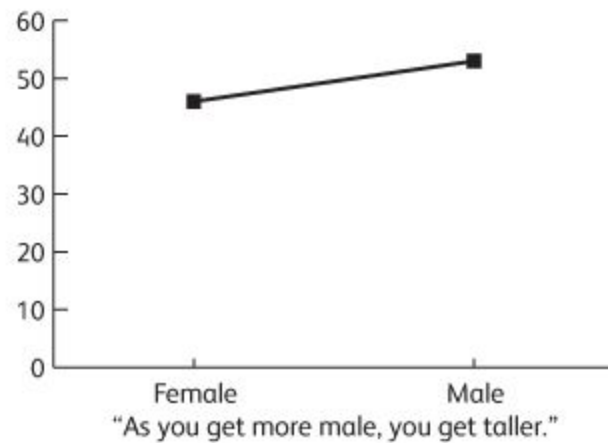
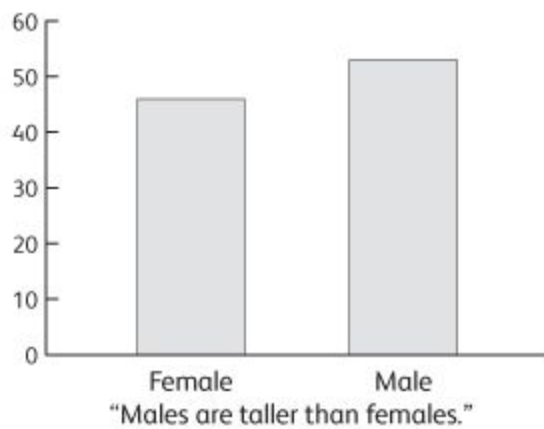
---

- Diferenciar atributos continuos de categóricos
  - Gráficos de líneas vs Gráficos de barras







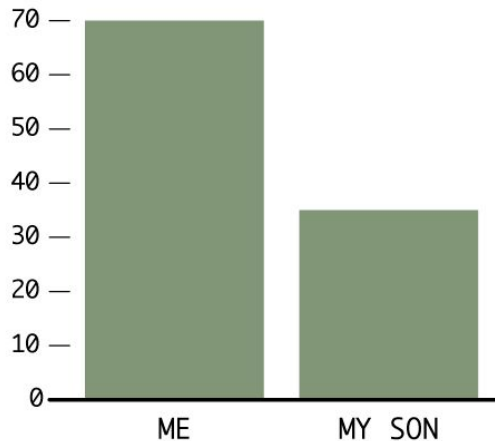


# Los Ejes Deben Comenzar en 0

---

Height

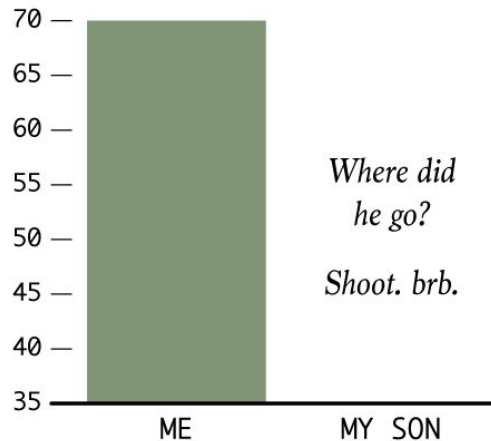
INCHES



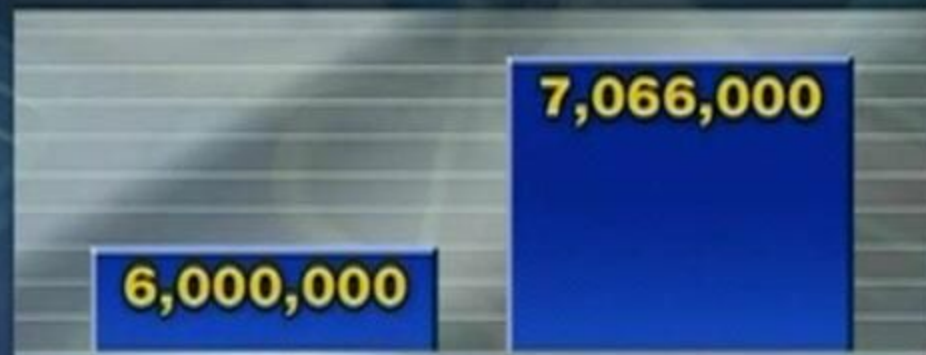
vs.

Height

INCHES



# OBAMACARE ENROLLMENT



AS OF  
MARCH 27

MARCH 31  
GOAL



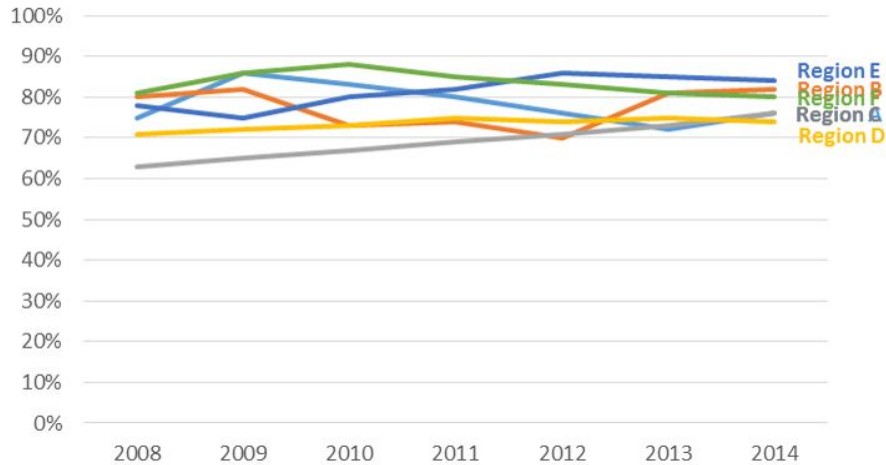
SOURCE: HHS

[mediamatters.org](http://mediamatters.org)

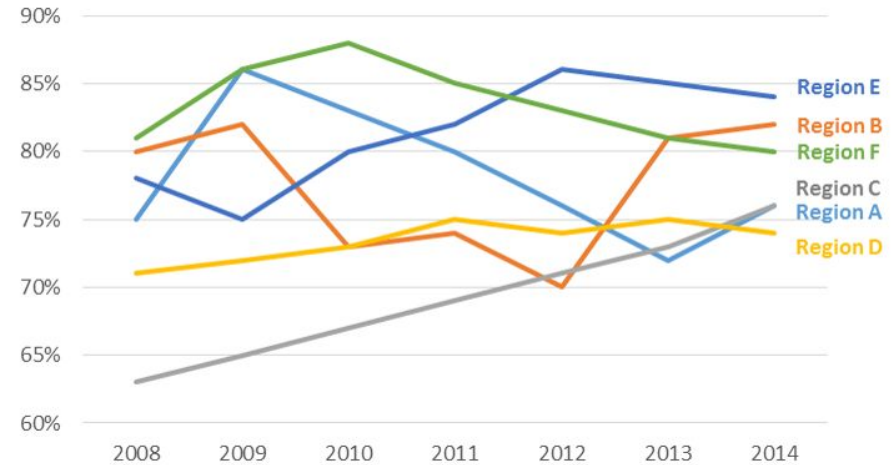
IE IN SECOND PLACE WITH \$26.5 MIL, WHILE "MUPP DOW FUT 16,325.00

# Como en todo, hay excepciones...

Region progress since 2008

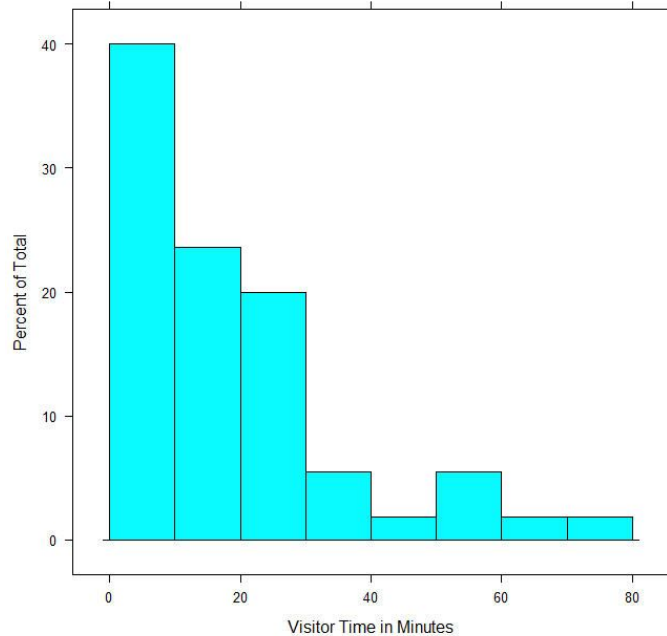


Region progress since 2008

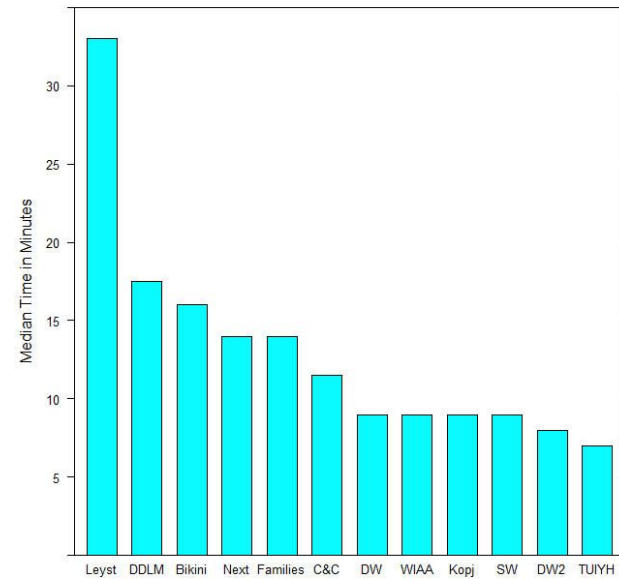


# Histograma vs Bar Chart

Histogram of "Next Stop Westchester"



Bar Chart of Visitor Times in Minutes



# Histograma vs Bar Chart

---

## Histograma

- Muestran la distribución de una variable.
- Eje x: Variable numérica discretizada en buckets (bins)
- Eje y: Cantidad / Porcentaje
- No se puede reordenar el eje X
- No hay espacios entre la barras

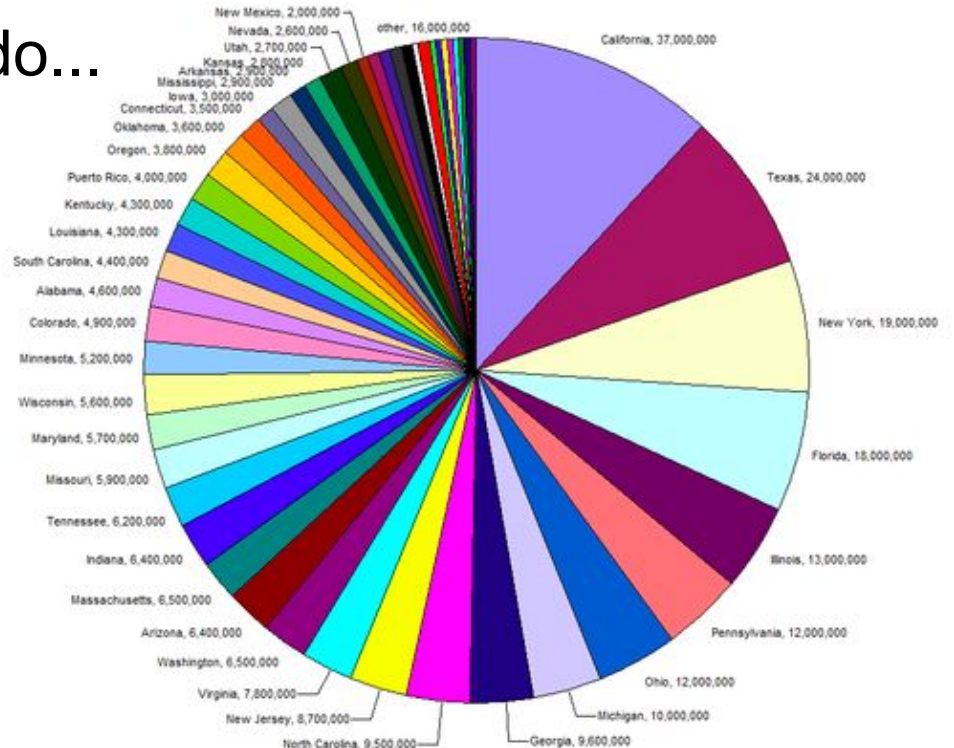
## Bar Chart

- Comparación entre variables
  - Eje x: Variable categórica
  - Eje y: Variable numérica
  - El eje x puede tener cualquier orden
  - Barras espaciadas
-

# Pie charts

Por qué usarlos con cuidado...

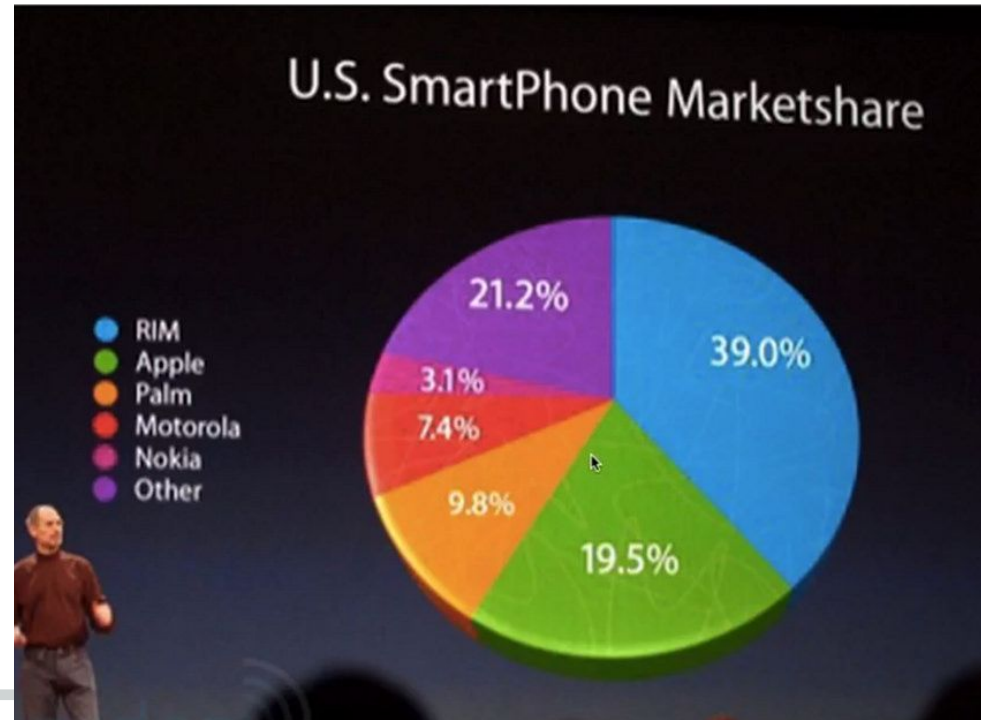
- Con muchos datos se vuelve difícil (o imposible) de interpretar



# Pie charts

Por qué usarlos con cuidado...

- Cuando incluimos 3D modificamos las áreas, cambiando las proporciones



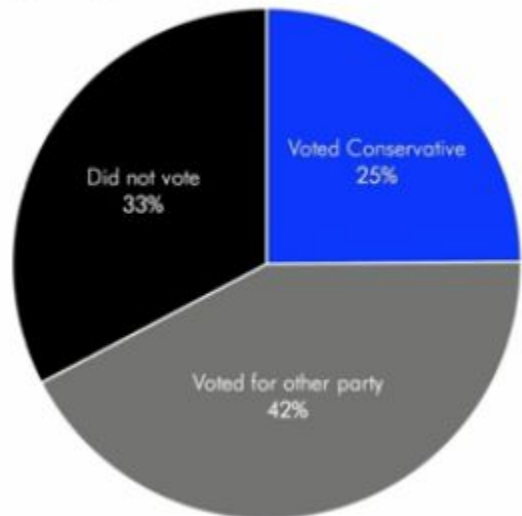


# Pero como todo, tienen una función

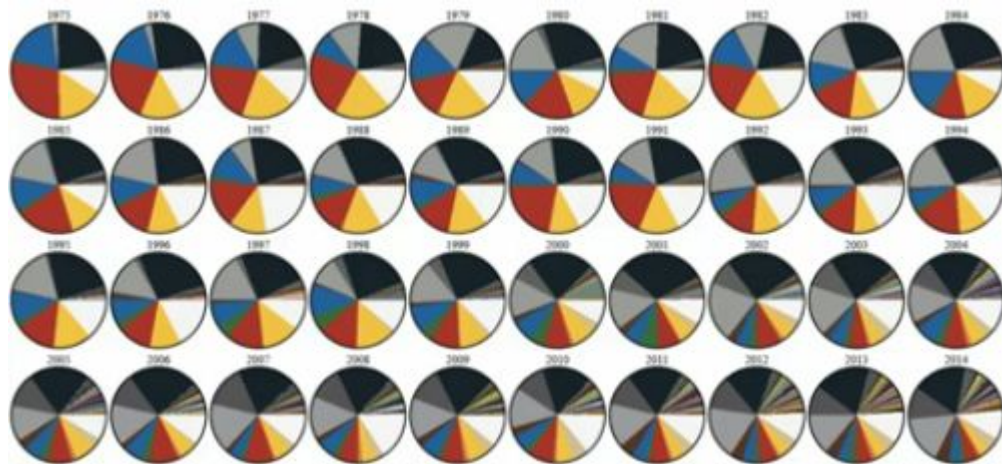
---

Para mostrar una distribución  
entre 2 o 3 valores

Summary of eligible voters in the UK General Election 2015



Para mostrar la evolución de un  
set de valores

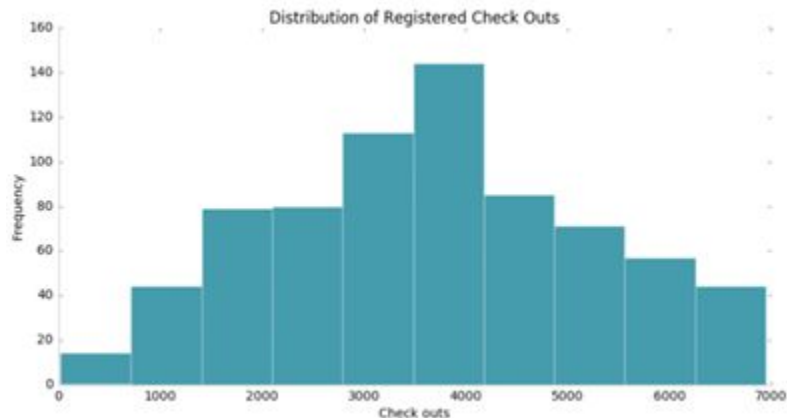


# Algunas visualizaciones comunes

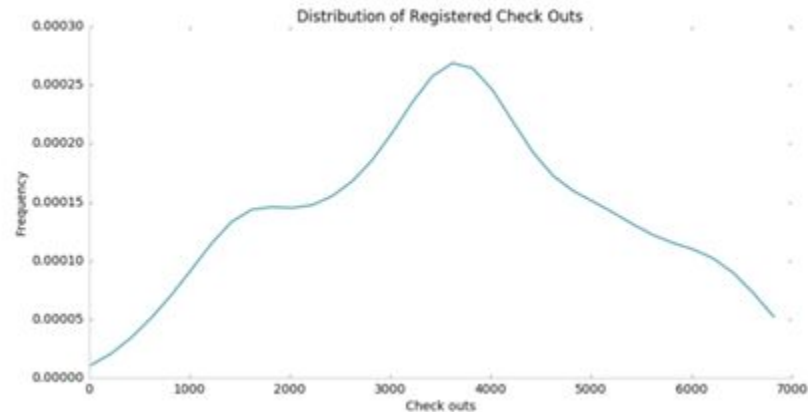
---

Para analizar la distribución de una variable:

Histograma



Density Plot

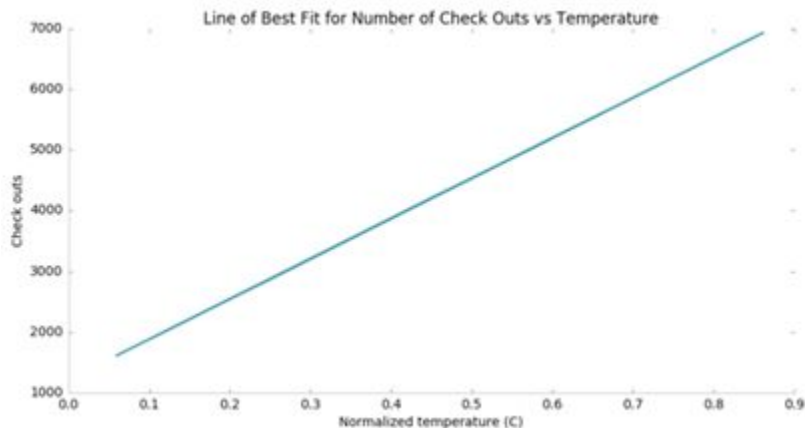


# Algunas visualizaciones comunes

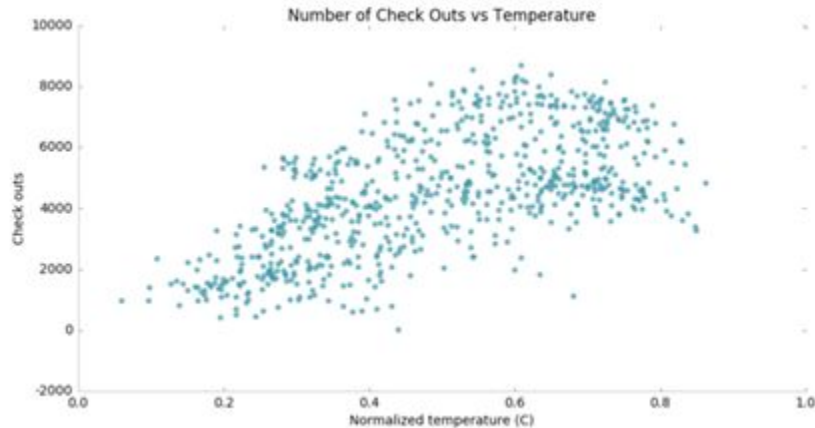
---

Para explorar la relación entre distintas variables:

Line Plot



Scatter Plot



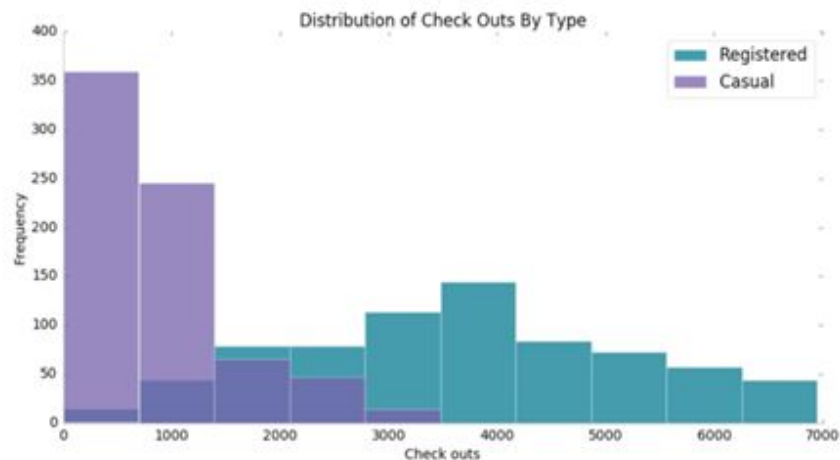
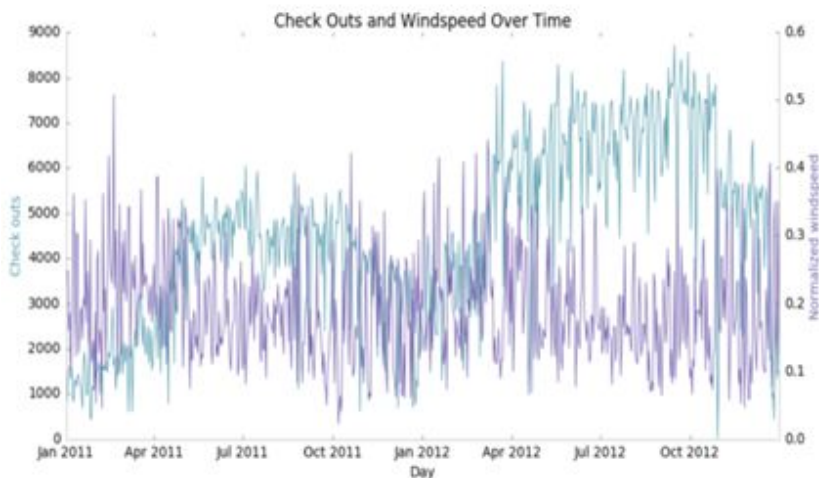
# Algunas visualizaciones comunes

---

Para explorar la relación entre distintas variables:

Line Plot con dos ejes y

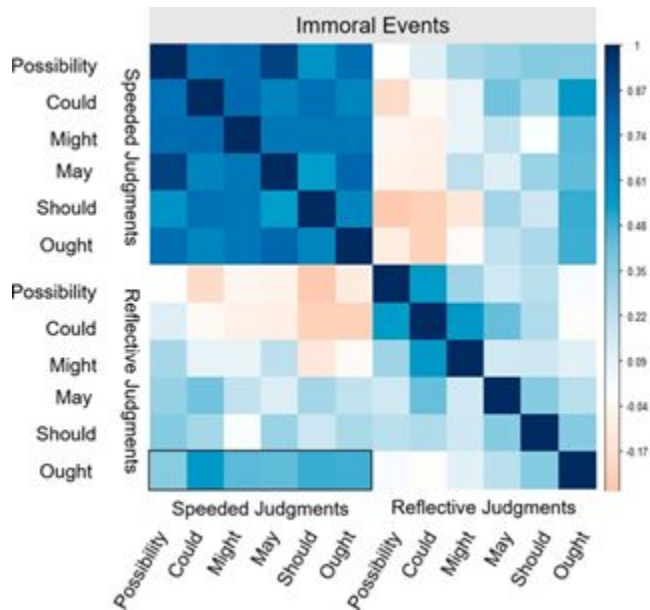
Histogramas superpuestos



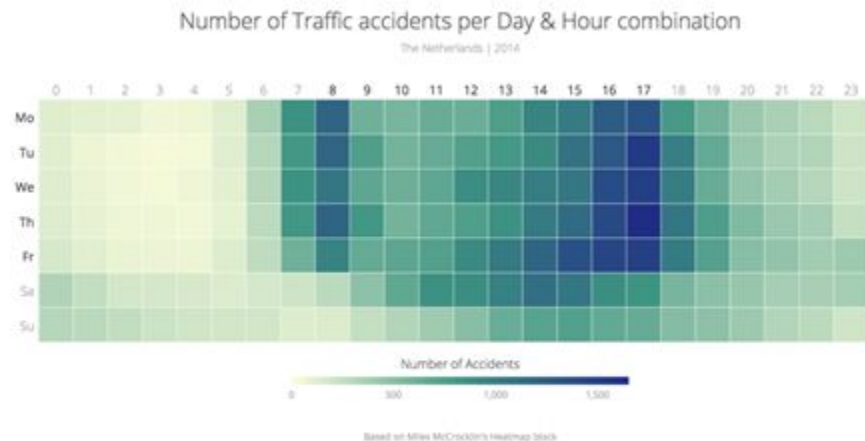
# Algunas visualizaciones comunes

Para explorar la relación entre distintas variables:

Matriz de correlación



Heat Map



# Algunas visualizaciones comunes

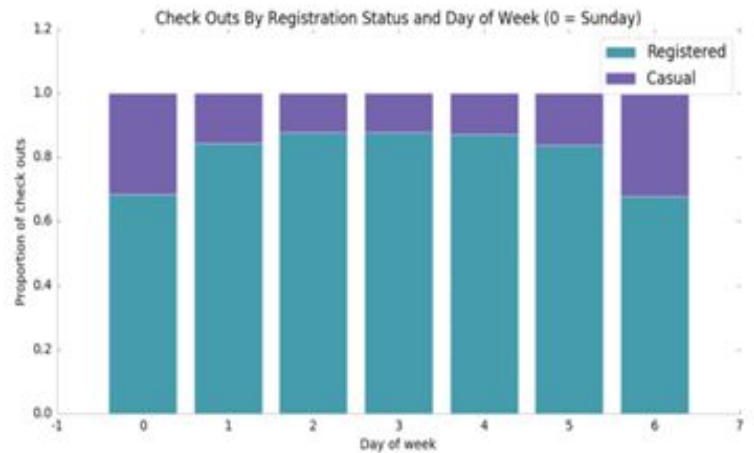
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Comparando grupos o categorías:

Bar Plot



Stacked Bar Plot

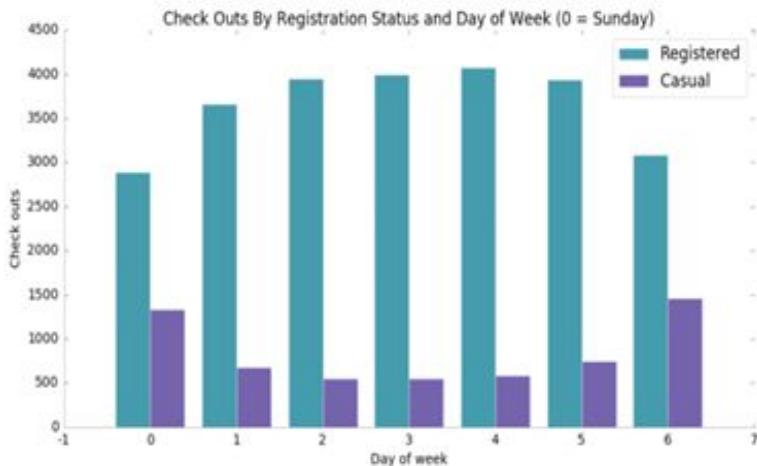


# Algunas visualizaciones comunes

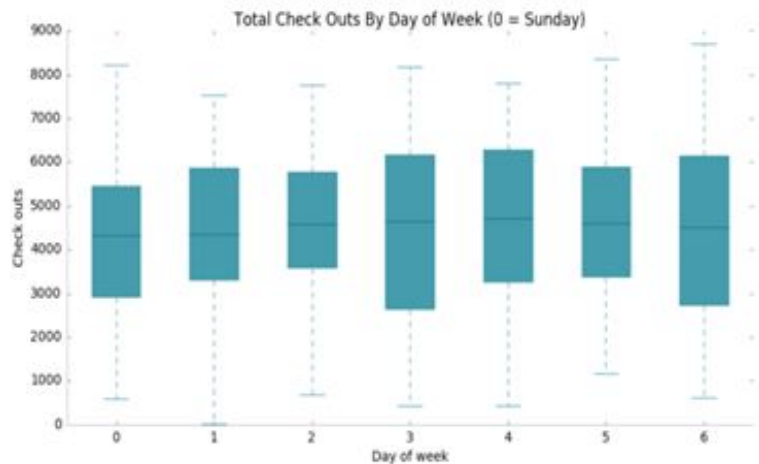
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Comparando grupos o categorías:

Grouped Bar Plot

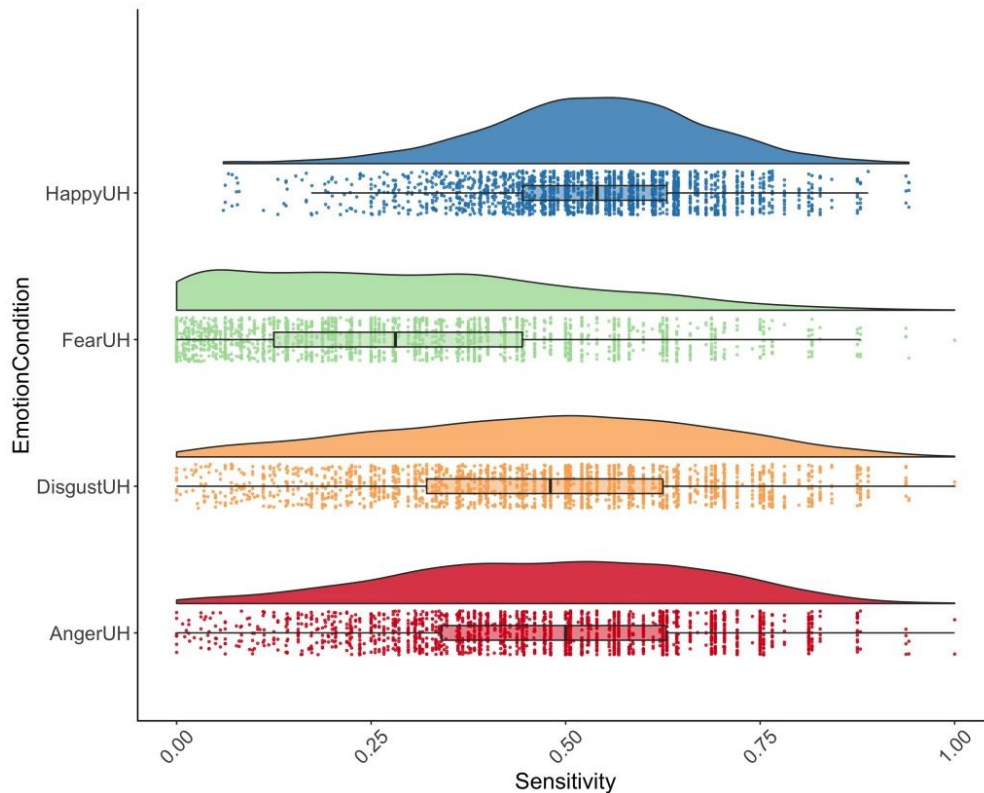


Box Plot



# Explorando otras opciones

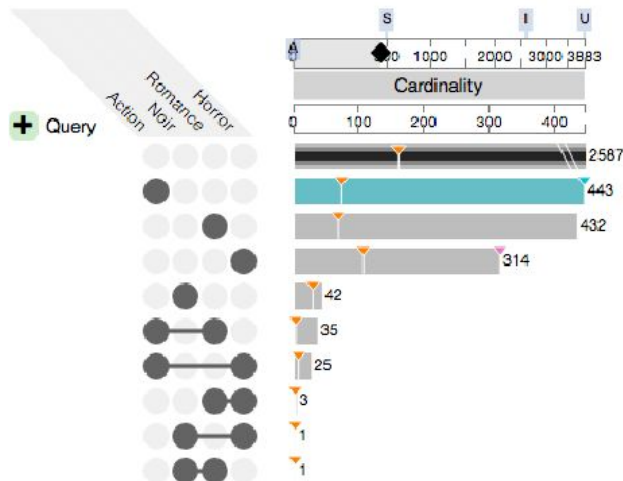
## Raincloud Plot



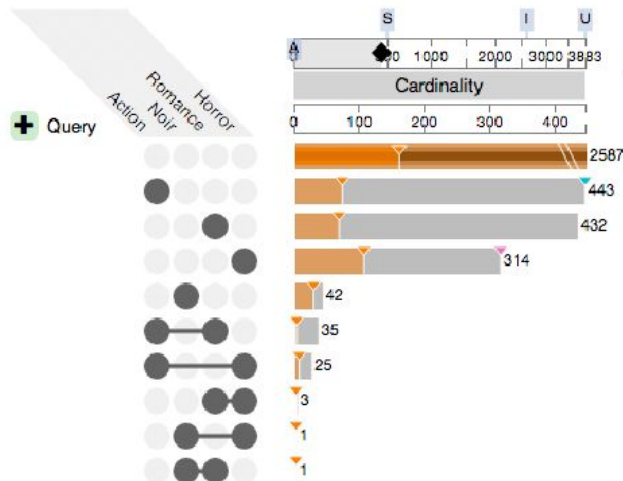


# Explorando otras opciones

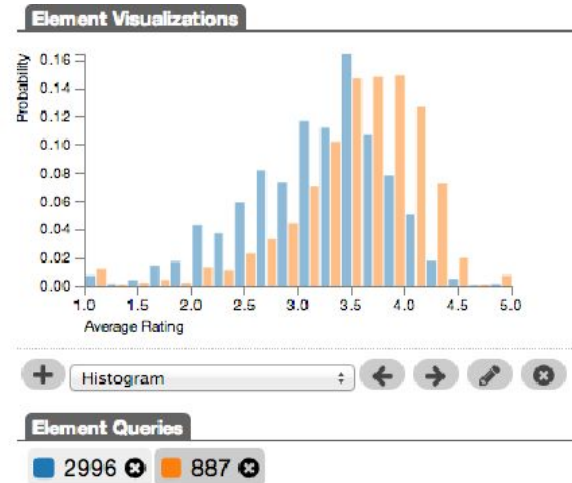
## UpSet



(a) Element query in set space



(b) Element query in element space

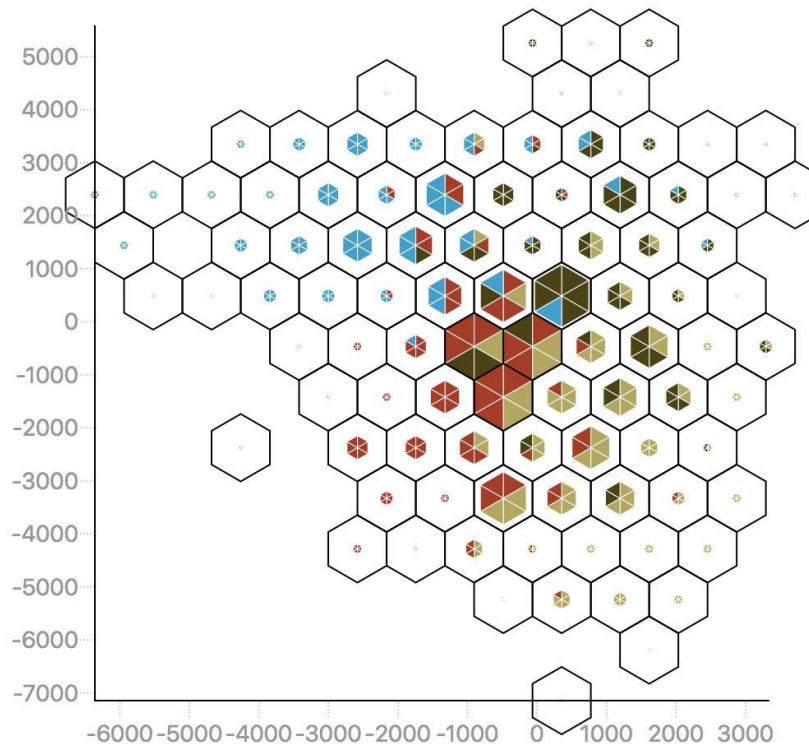


(c) Element visualization

# Explorando otras opciones

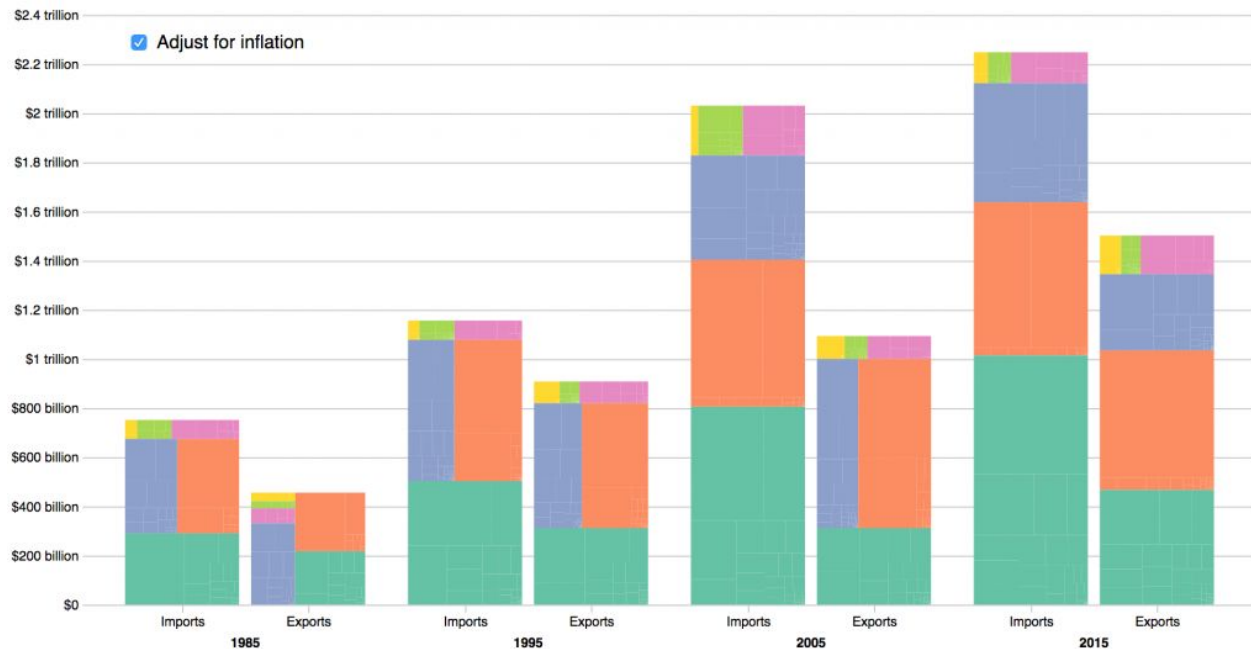
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## Multi-Class Hexbin

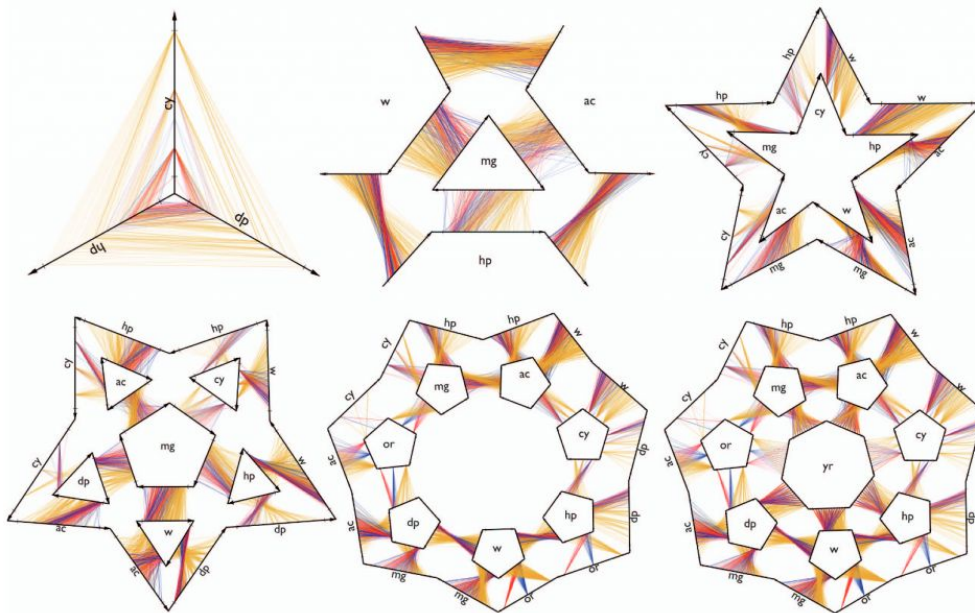


# Explorando otras opciones

## Tree map bar chart



## Many-to-many relational parallel coordinate plot



# Carte Figurative des pectés successifs 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.

Les nombres d'hommes présents sont représentés par les longueurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en lettres des zones. La rouge désigne les hommes qui entrent en Russie; le noir ceux qui en sortent. Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de M. M. Chiers, de Ségur, de Fozensac, de Chambray et le journal inédit de Jacob, observateur de l'Armée depuis le 23 Octobre.

Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Némo et du Maréchal Davoust qui avaient été détachés sur Minsk et Mielnoe n'en rejoignent pas Orsha et Wilna, occasion toujours marche avec l'armée.

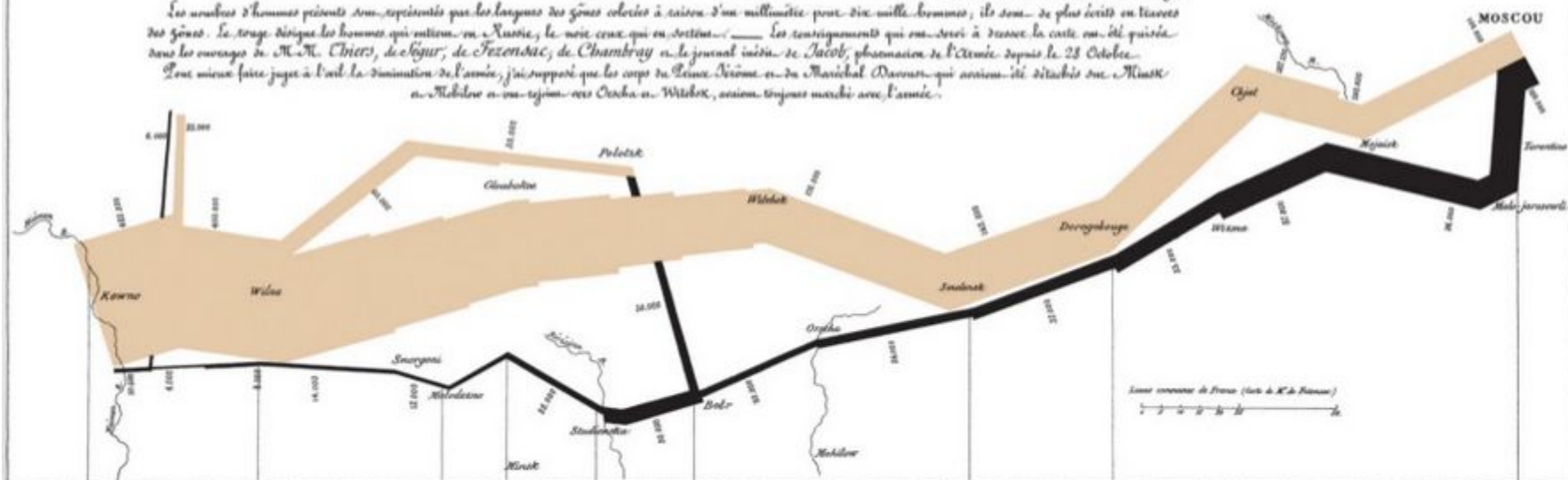
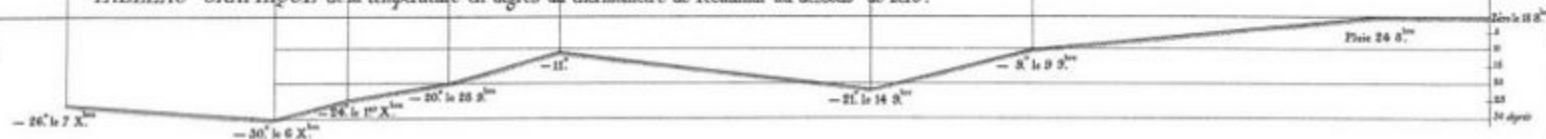


TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.

Les Cosaques passent au galop le Nilman gelé.



# Best in Show

The ultimate data-dog

INTELLIGENCE SIZE TYPE

dumb clever sml med lrg Herding Hound Non-sporting Sporting Terrier Toy Working

public popularity

Inexplicably overrated



Hot dog!



OUR DATA SCORE

intelligence + longevity + ailments + costs - grooming - appetite = data score

Rightly ignored

Overlooked treasures

our data score



# What is the world's biggest cash crop?

## MOST PLANTED

Area Harvested (million km<sup>2</sup>)

## MOST FECUND

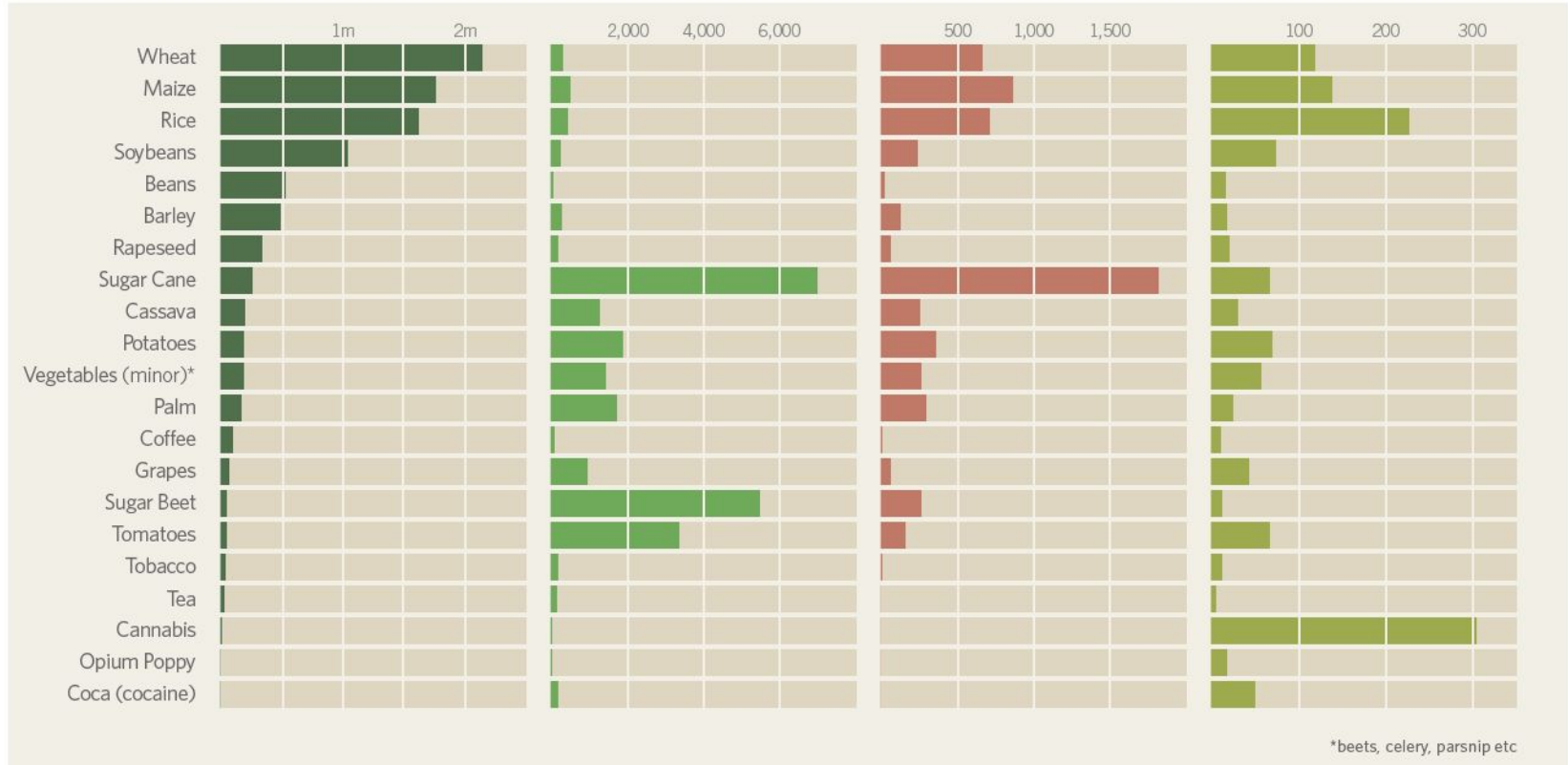
Yield per km<sup>2</sup> (tonnes)

## MOST POPULAR

Gross yearly production (mtonnes)

## MOST REVENUE

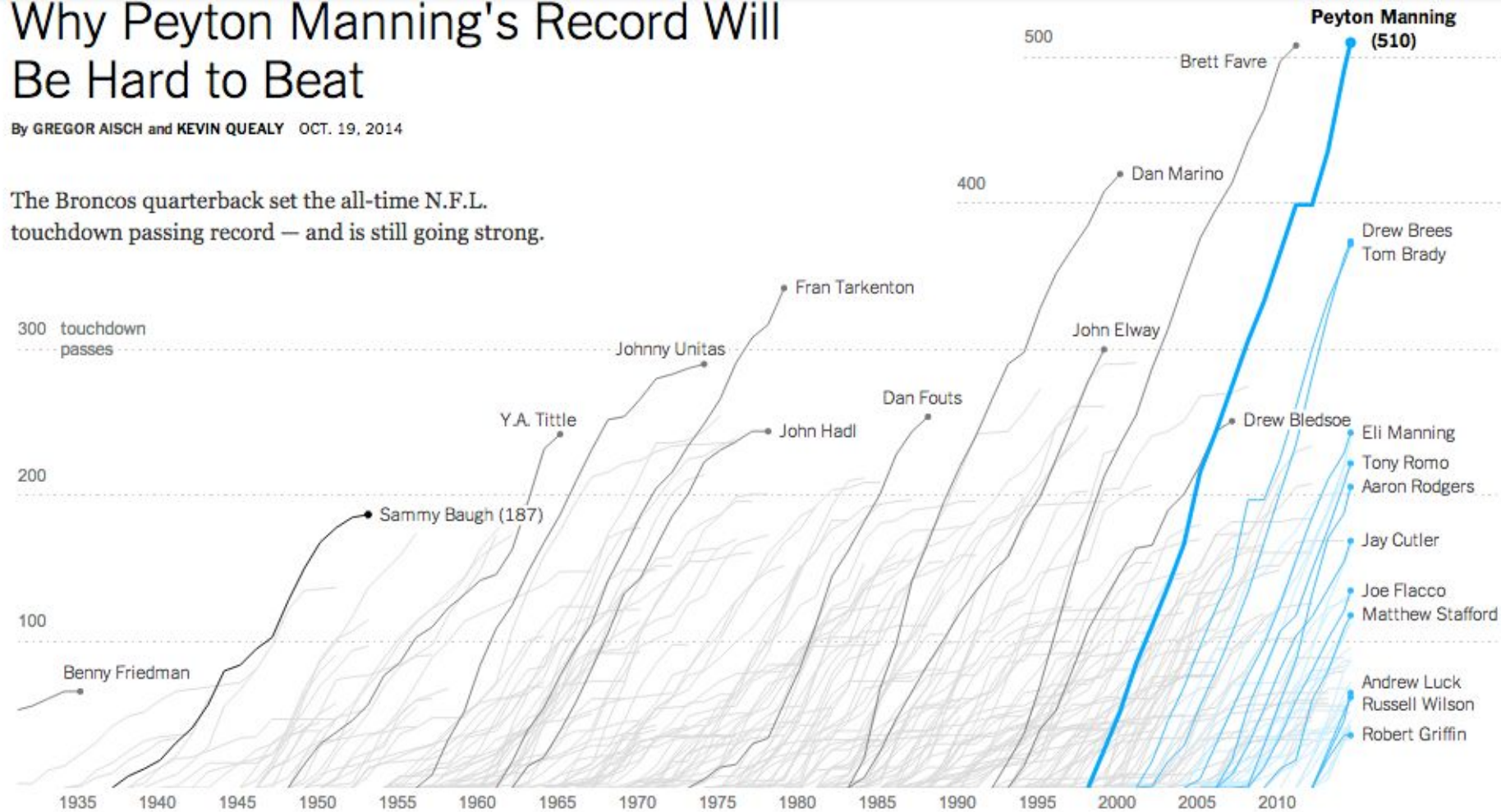
Gross production value (\$bn)



# Why Peyton Manning's Record Will Be Hard to Beat

By GREGOR AISCH and KEVIN QUEALY OCT. 19, 2014

The Broncos quarterback set the all-time N.F.L. touchdown passing record — and is still going strong.



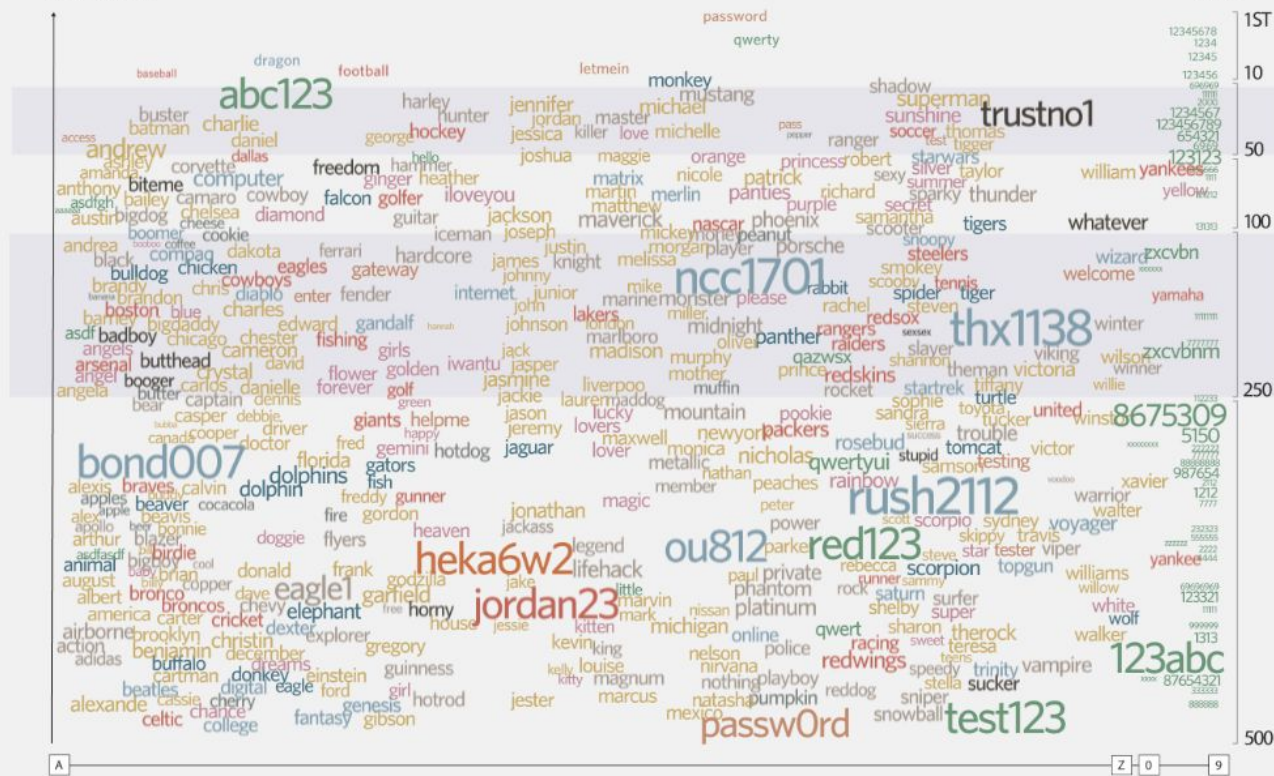


Is yours here?

Clear All

Rebellious/Rude Simple Alphanumeric Sport Truly Random

RANK

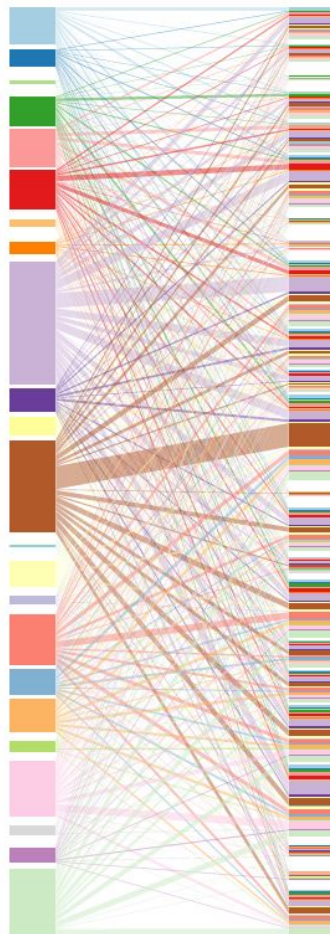


## Father-son occupation pairs

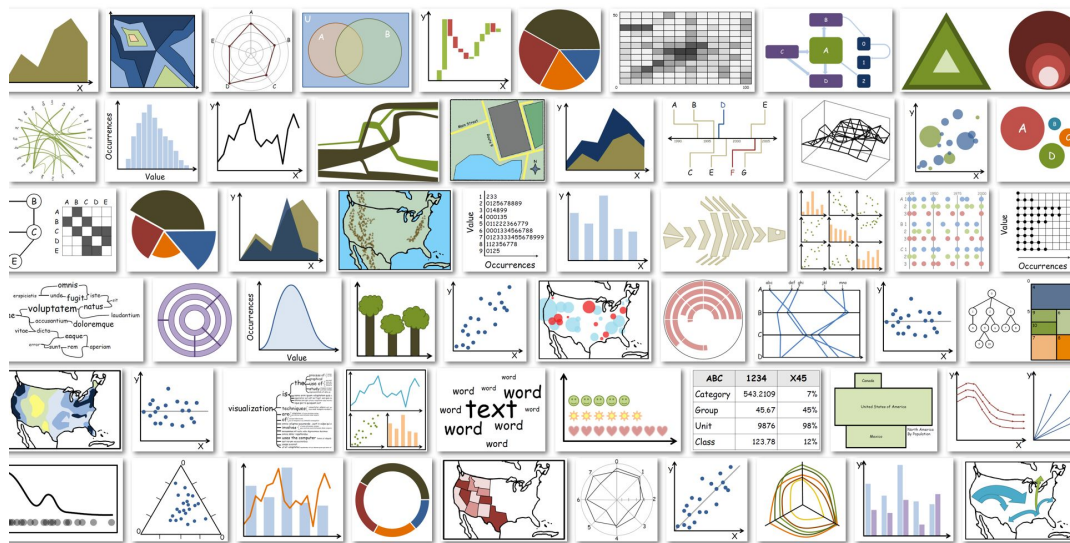
Father

Son

architecture\_engineering  
business\_finance  
cleaning\_maintenance  
construction  
education  
entertainment  
farming  
legal  
  
management  
  
math\_CS  
medicine  
  
military  
  
nursing  
office  
personal\_care  
production  
protective\_service  
repair  
restaurant  
sales  
science  
social\_service  
transportation

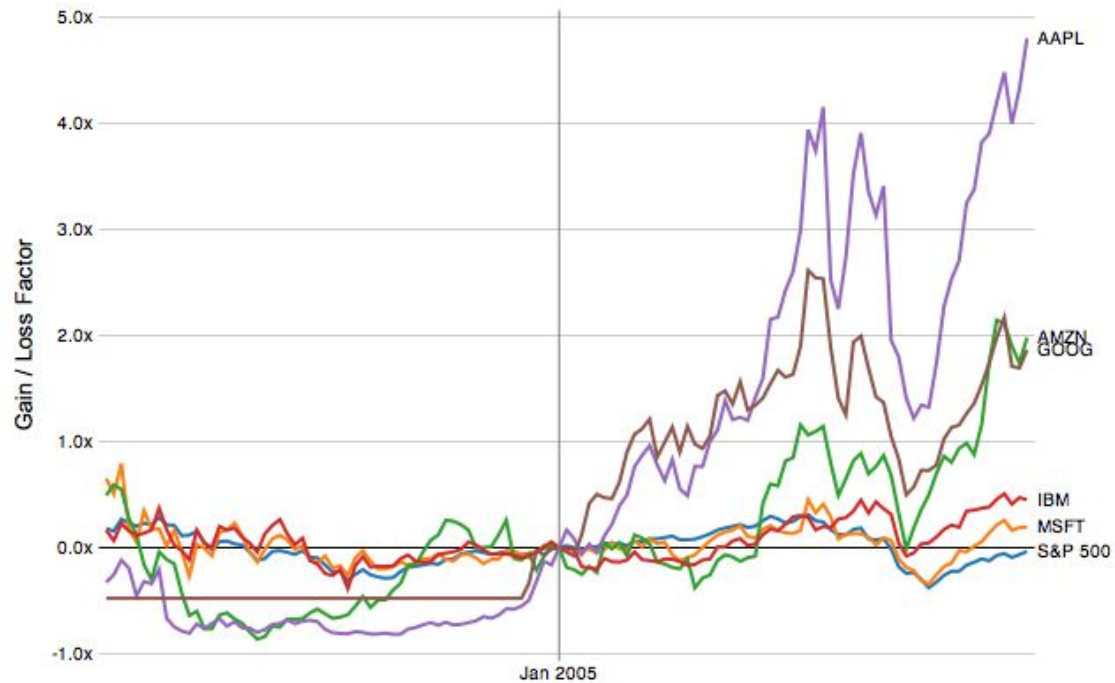


architecture\_engineering  
business\_finance  
cleaning\_maintenance  
construction  
education  
entertainment  
farming  
legal  
  
management  
  
math\_CS  
medicine  
  
military  
  
nursing  
office  
personal\_care  
production  
protective\_service  
repair  
restaurant  
sales  
science  
social\_service  
transportation



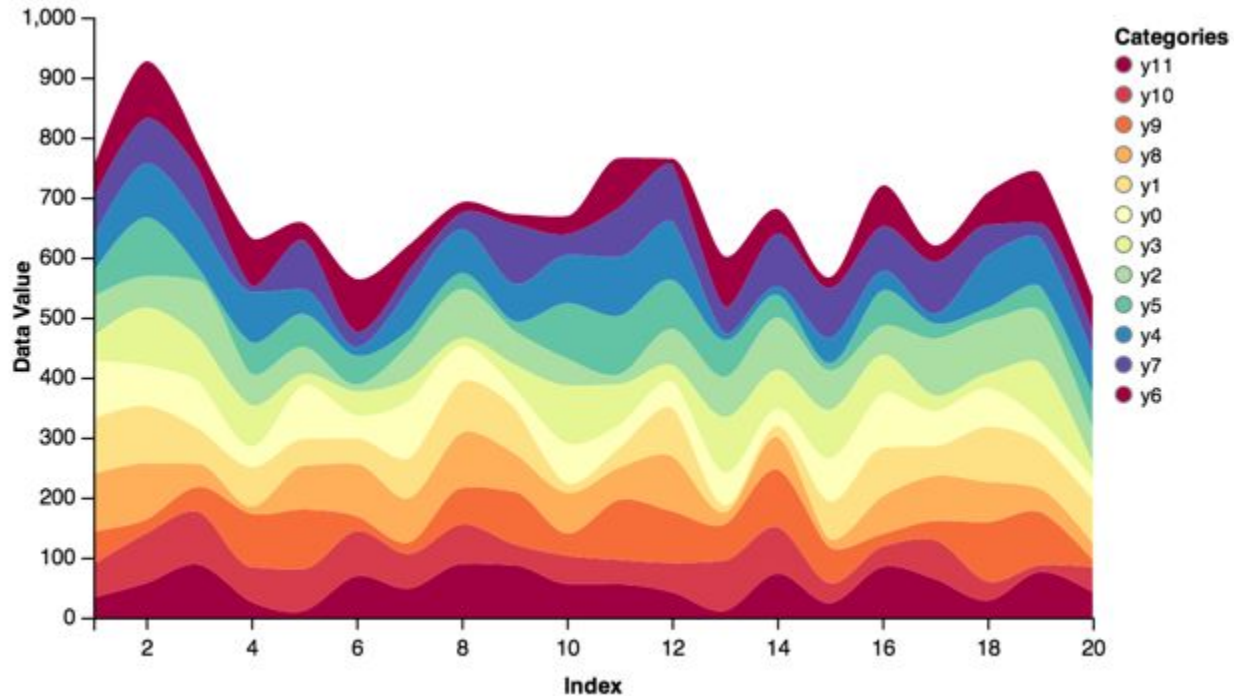
# Line Chart

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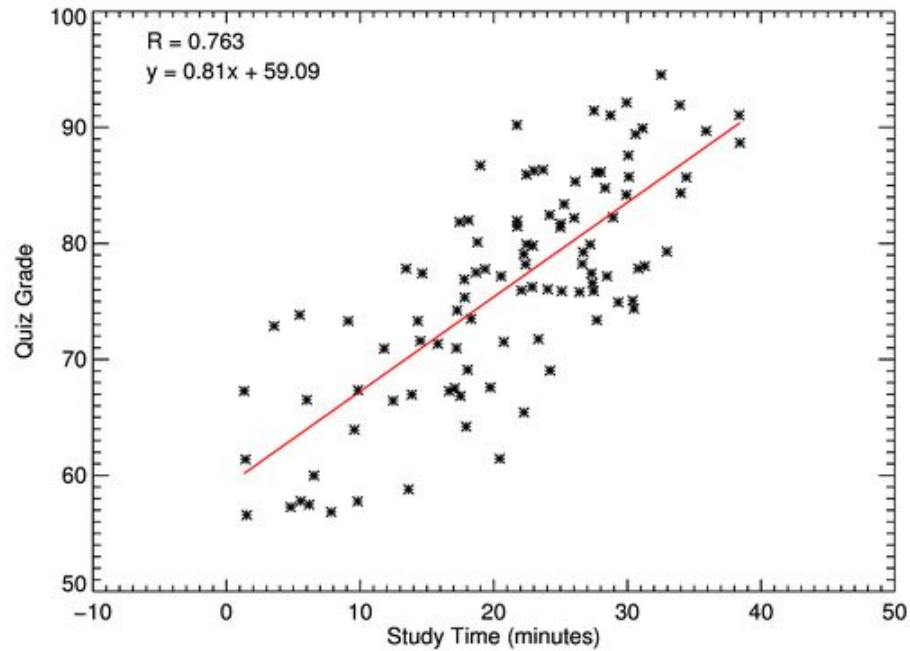
# Stacked Area

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# Scatter Plot

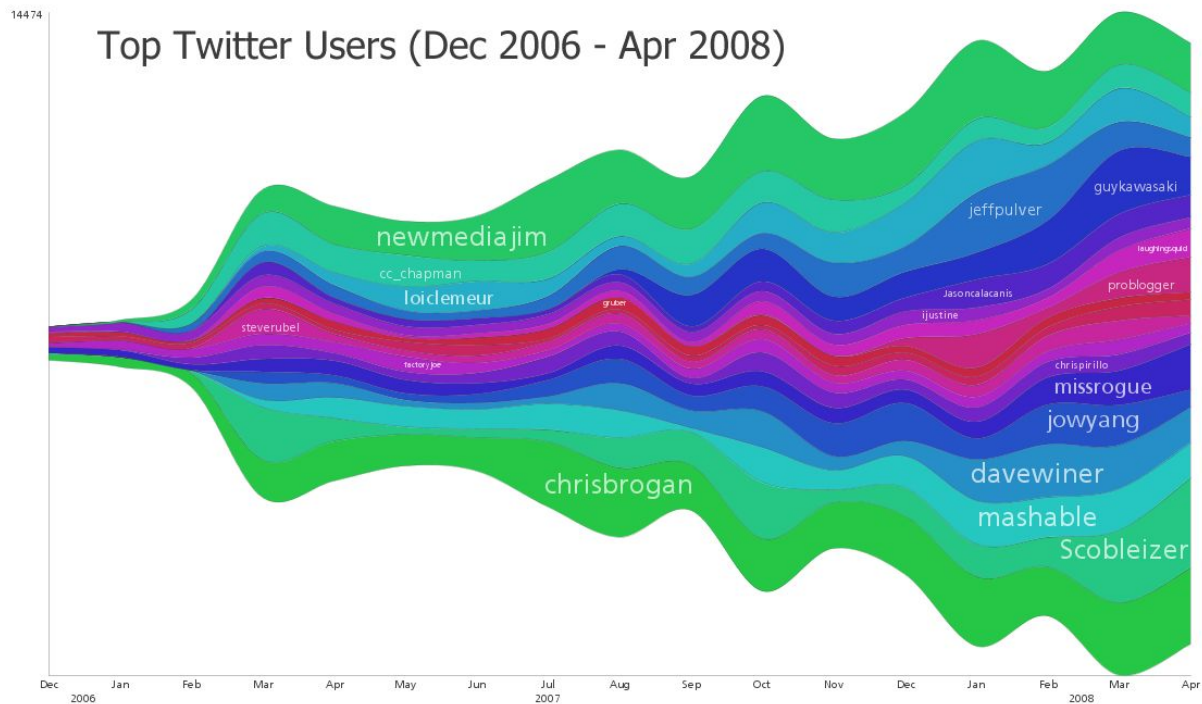
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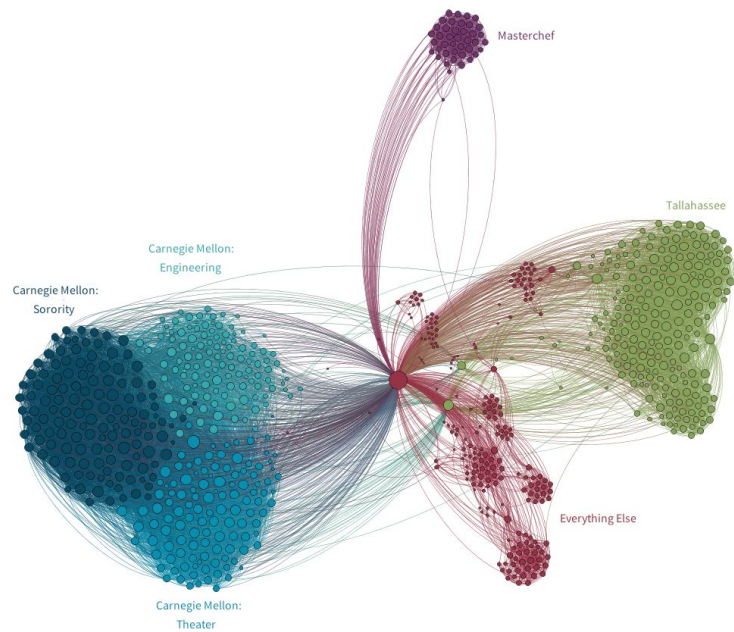
# Streamgraph

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# Network Graph

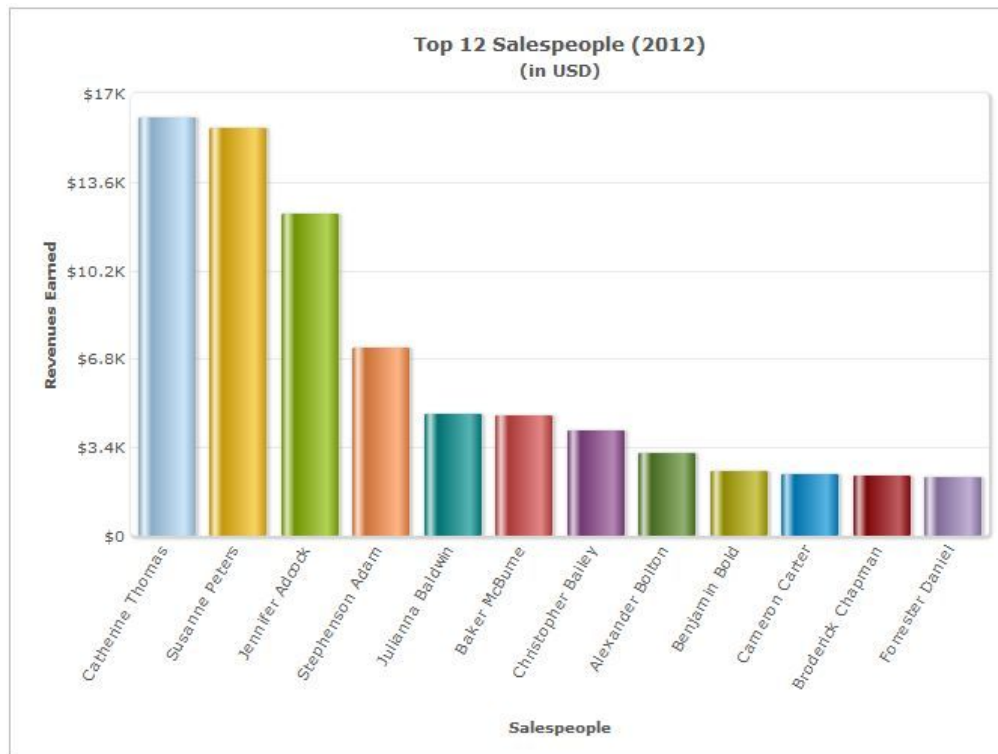
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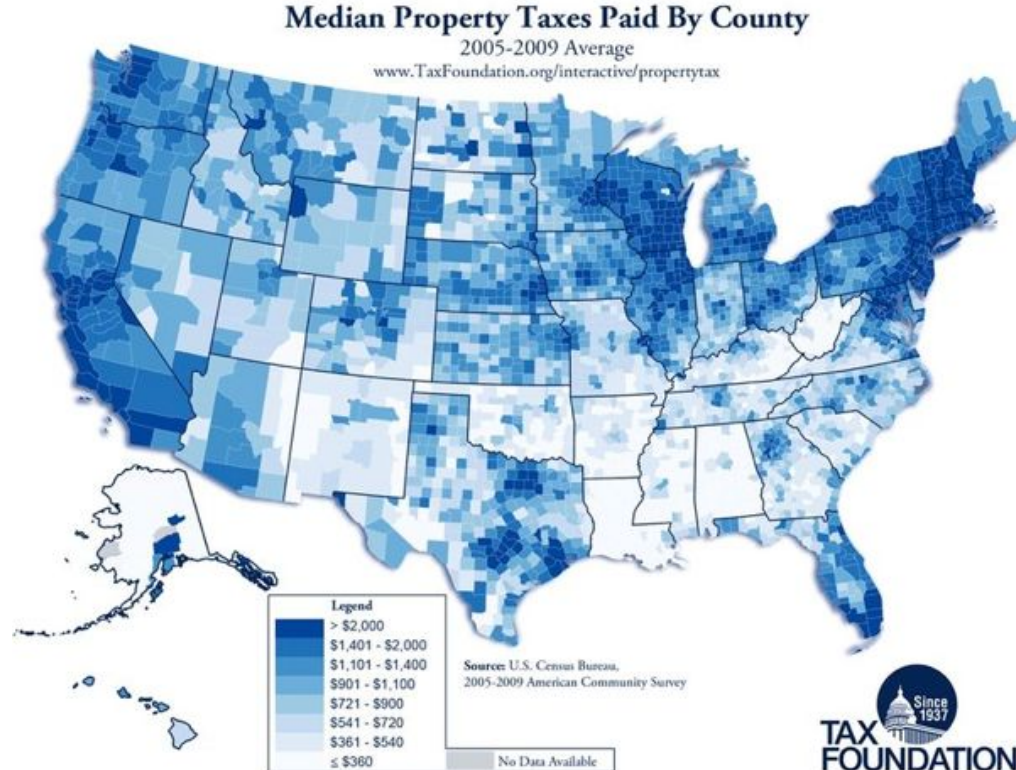
# Bar Chart

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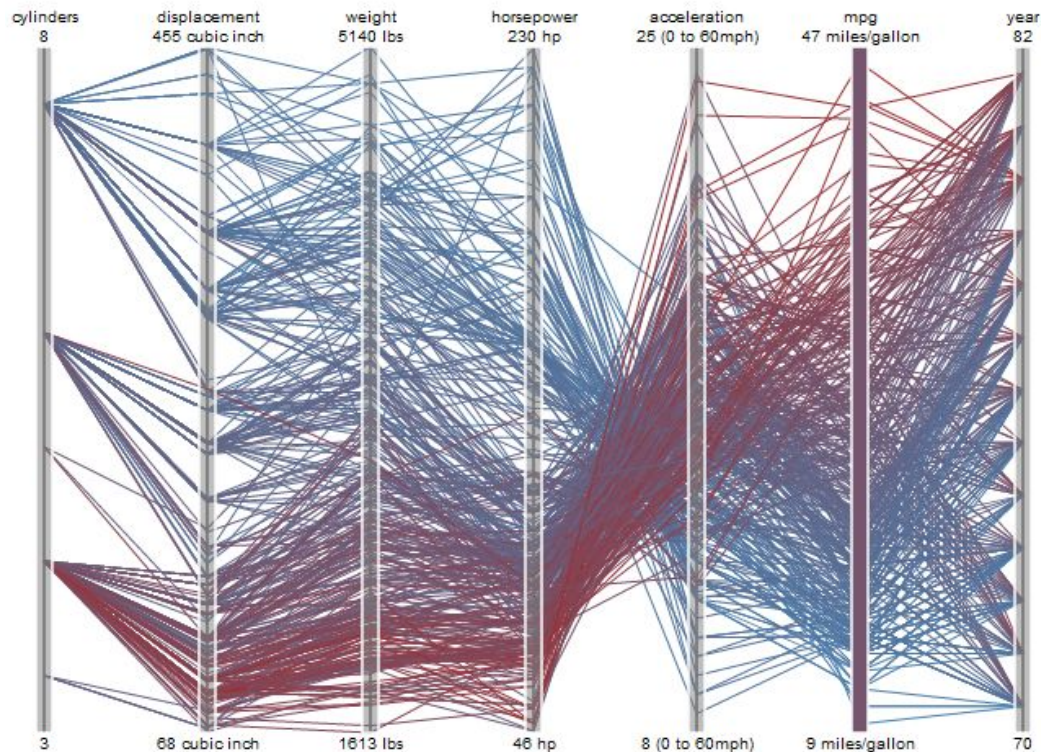
# Choropleth

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# Paralell Coordinates

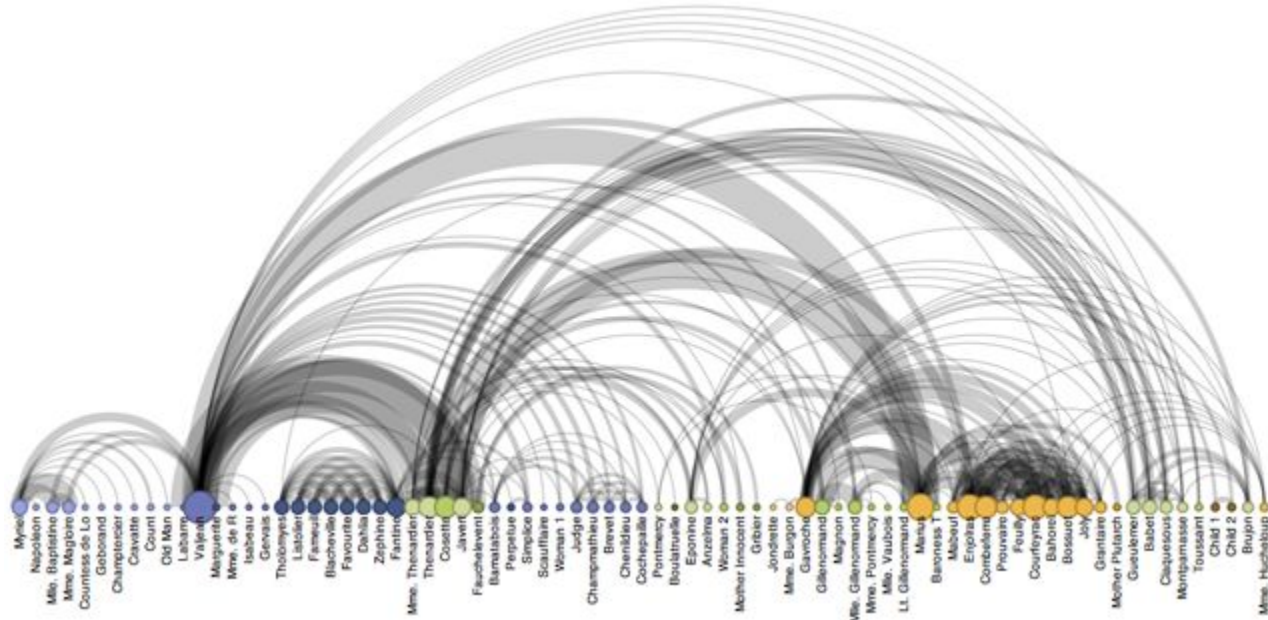
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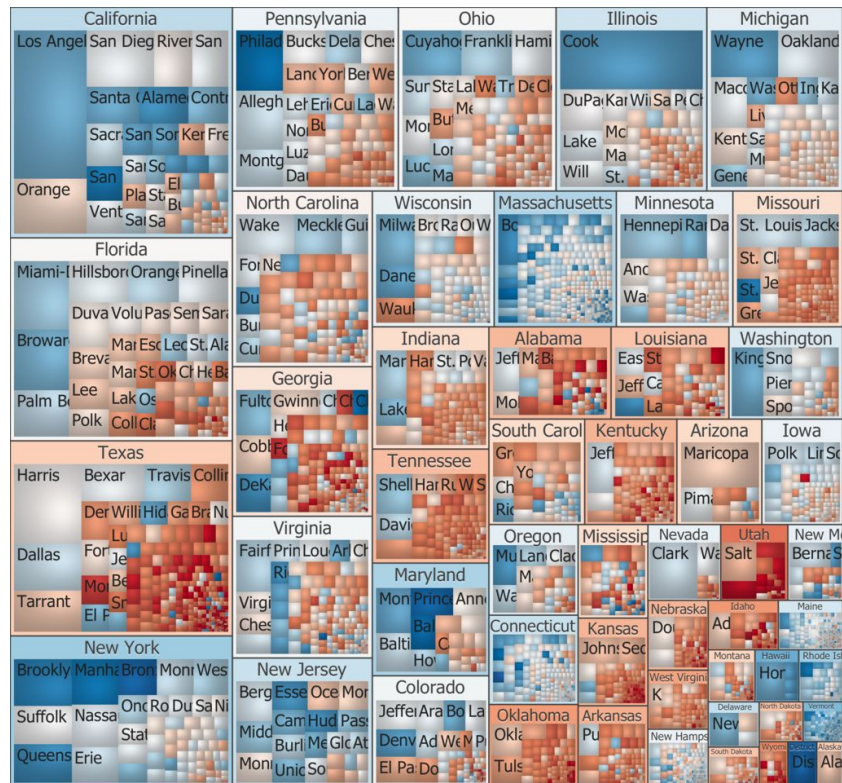
# Arc Diagram

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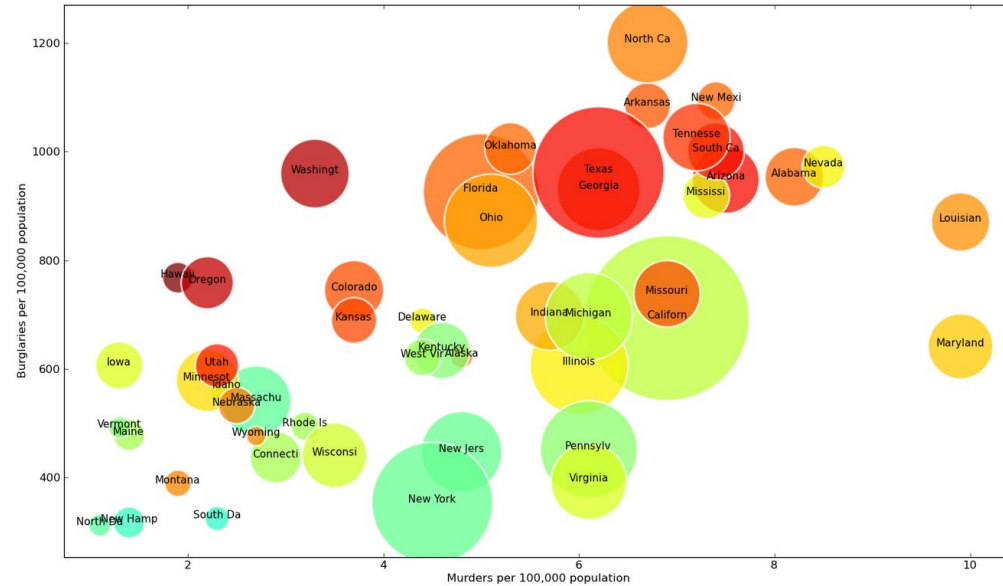






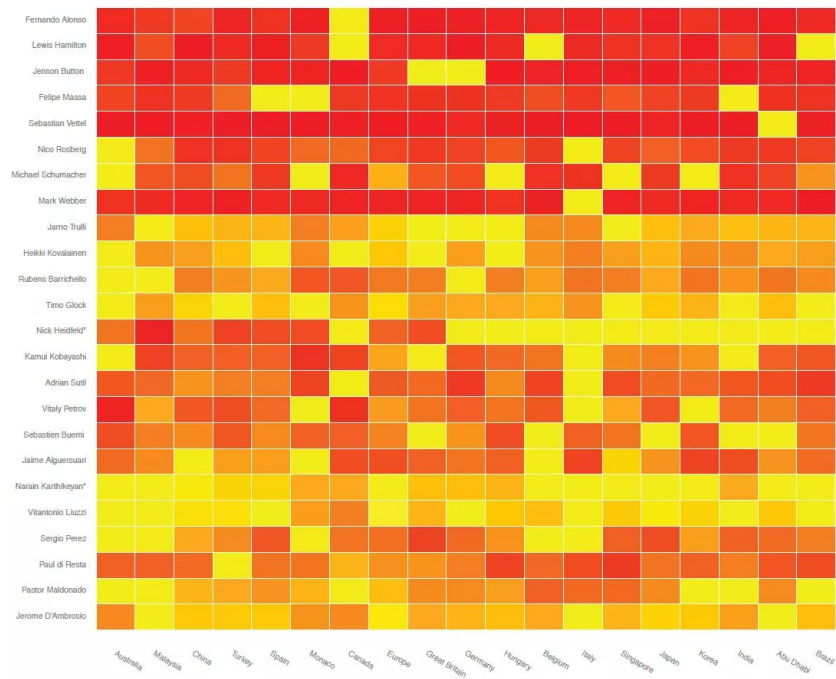
# Bubble Charts

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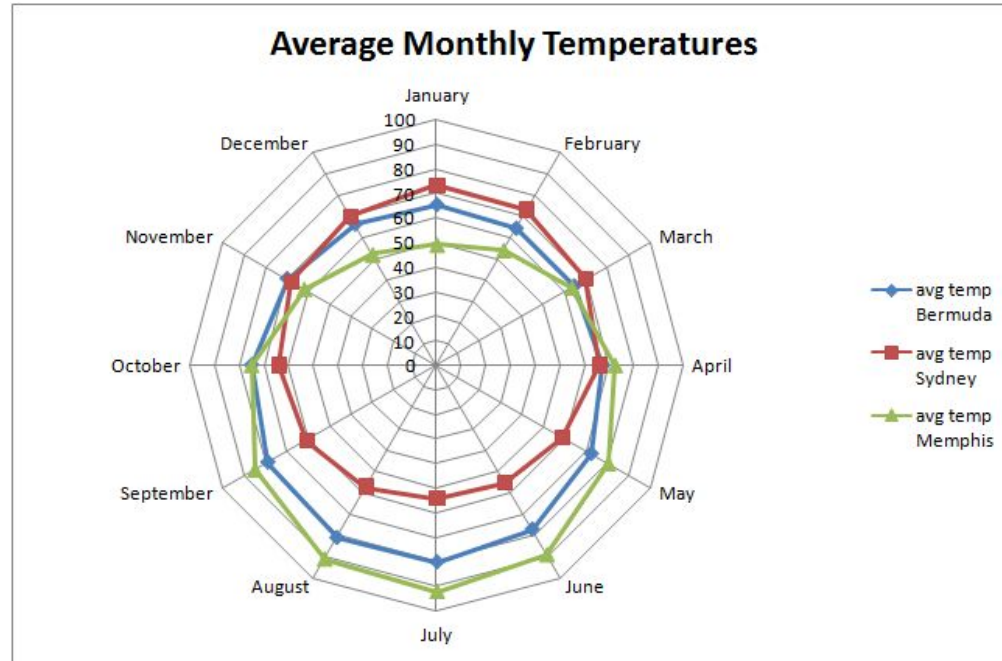


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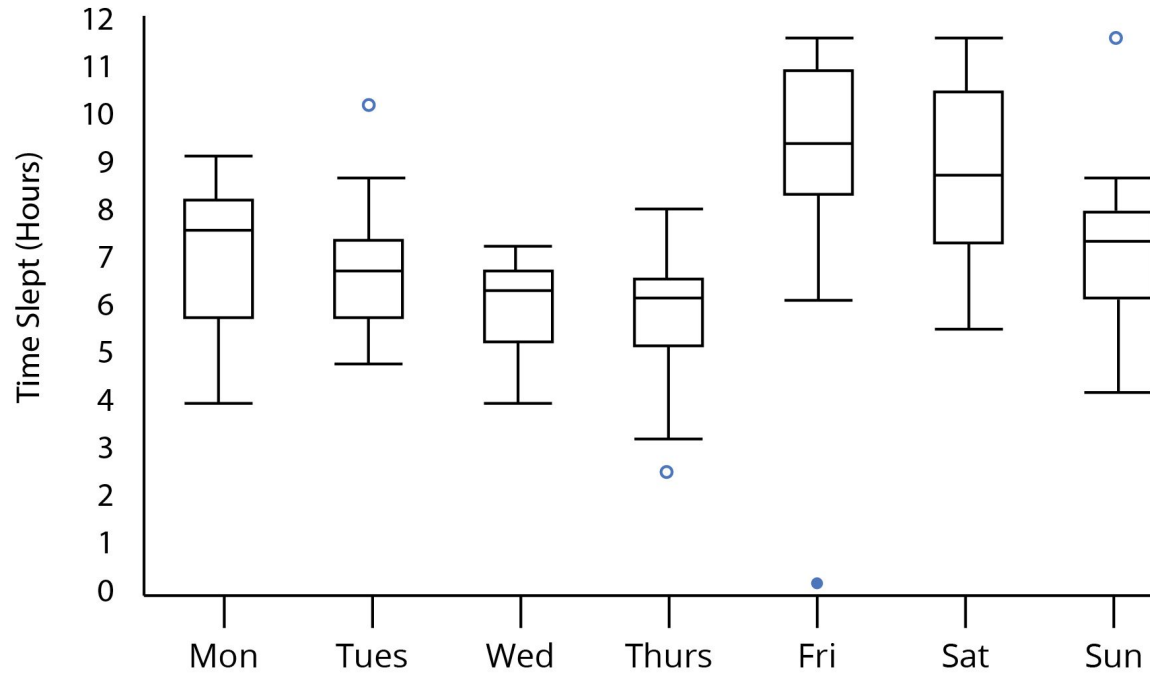
# Radar Chart

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# Box Plot

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# Violin Plot

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