Information Visualization

Daniel Gonçalves, Sandra Gama

07

Multiple Views & Interaction

One Viz isn’t enough

Different points of view

Find different stuff

Large amounts of data

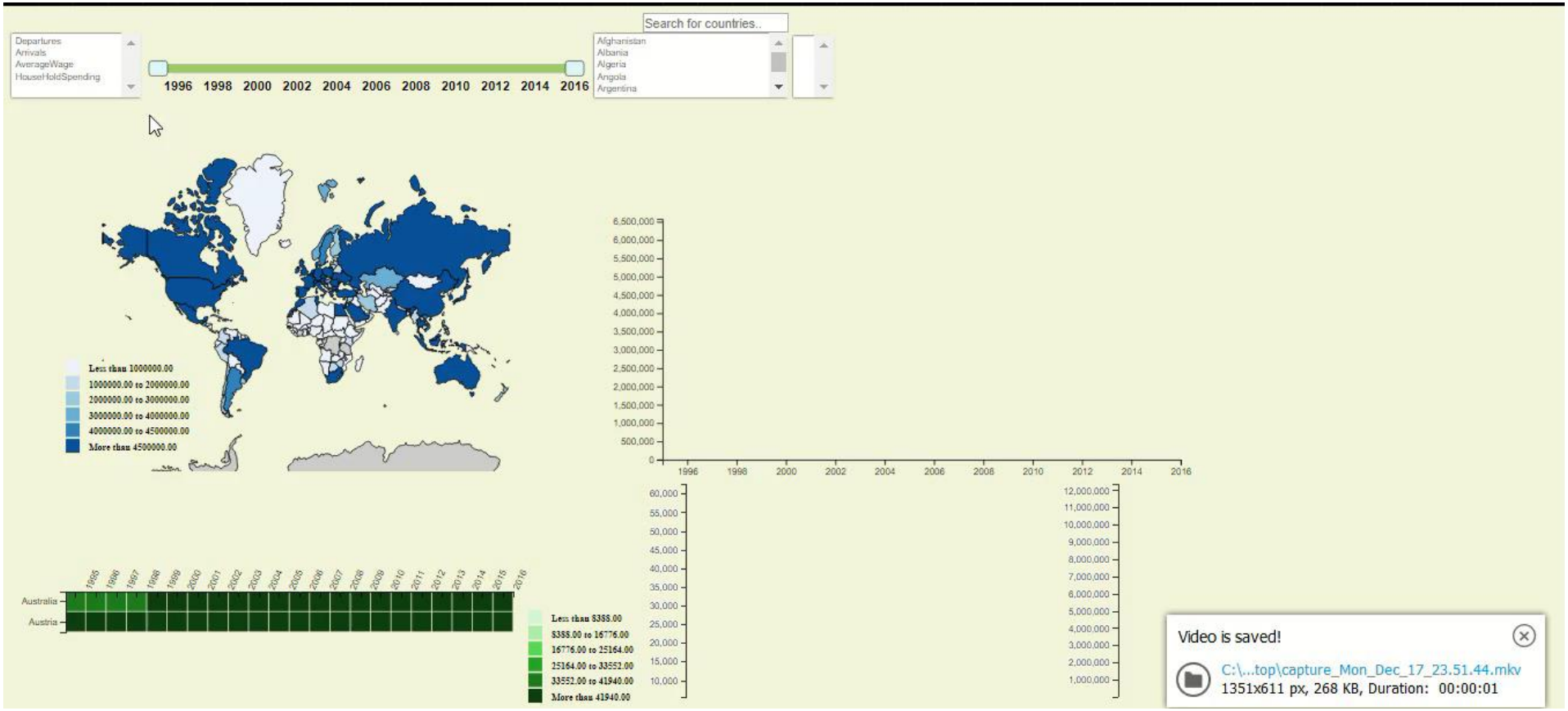
- Static views cannot handle the scale and complexity
- Trying to show everything leads to visual clutter

Taxonomy

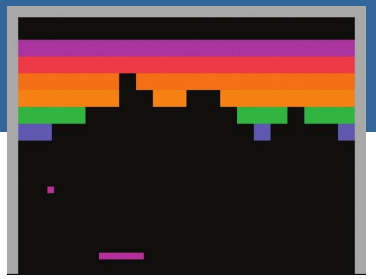
		Data		
		All	Subset	None
Encoding	Same	Redundant	Overview/ Detail	Small Multiples
	Different	Multiform	Multiform, Overview/ Detail	No Linkage

Breakout!

What is wrong here???



Time to Break Out



Discuss among yourselves

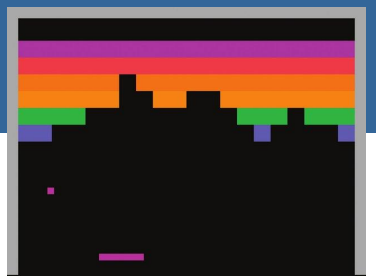
Fill in the questionnaire

Do it **ONCE PER BREAKOUT GROUP**

https://bit.ly/3M4Fefn

Meet you back in 5 minutes!

Time to Break Out



Discuss among yourselves

Fill in the questionnaire

Do it **ONCE PER BREAKOUT GROUP**

https://bit.ly/3M4Fefn

Meet you back in 5 minutes!

05:00

Breakout Over!

KEEP CALM

TELL ME WHAT TO DO

So, I want to know…

Rate of Tertiary education in European regions…

And I ALSO want to know…

Country GDP!

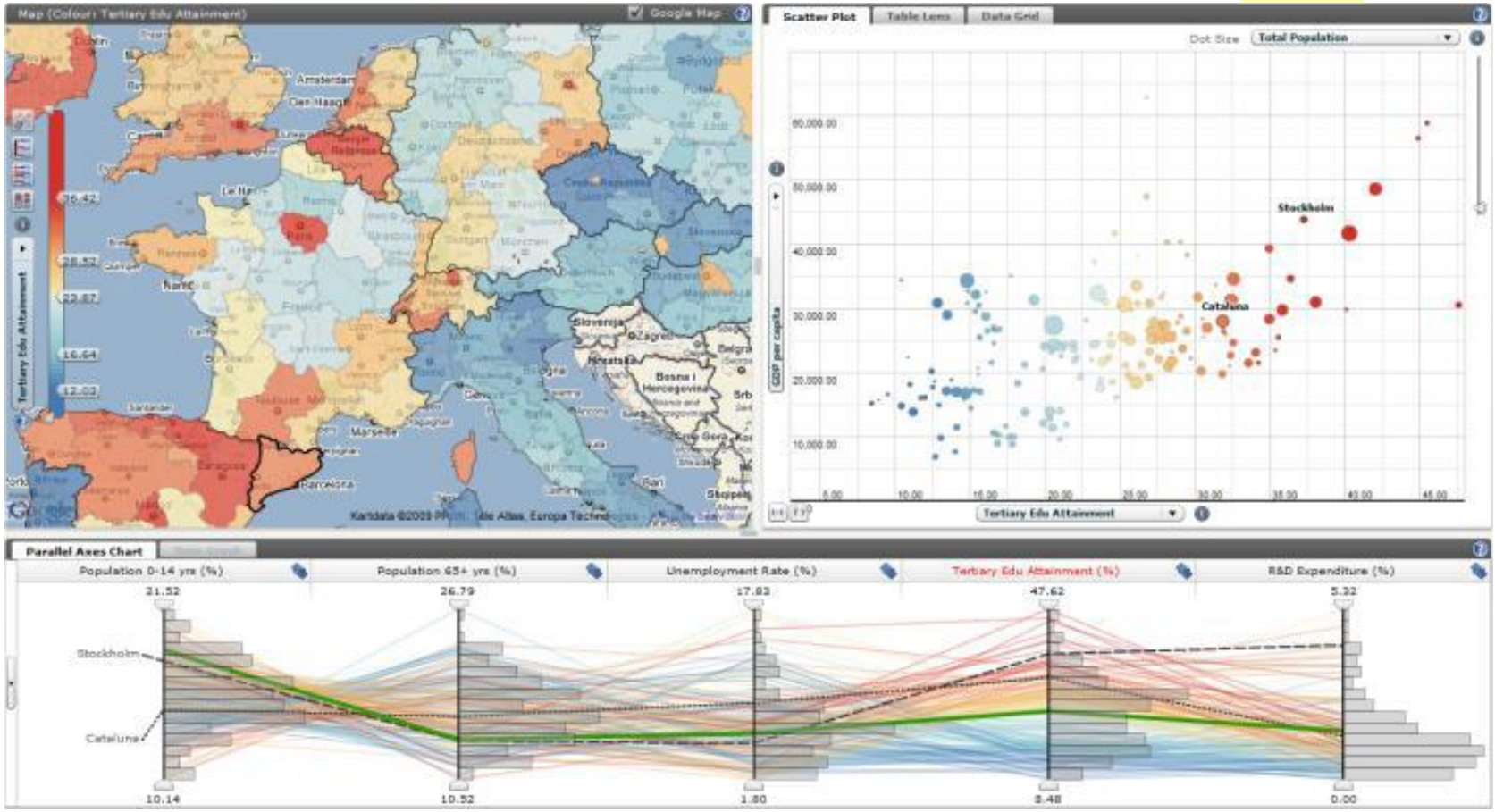
But I REALLY want to…

See if there is a correlation between the two!

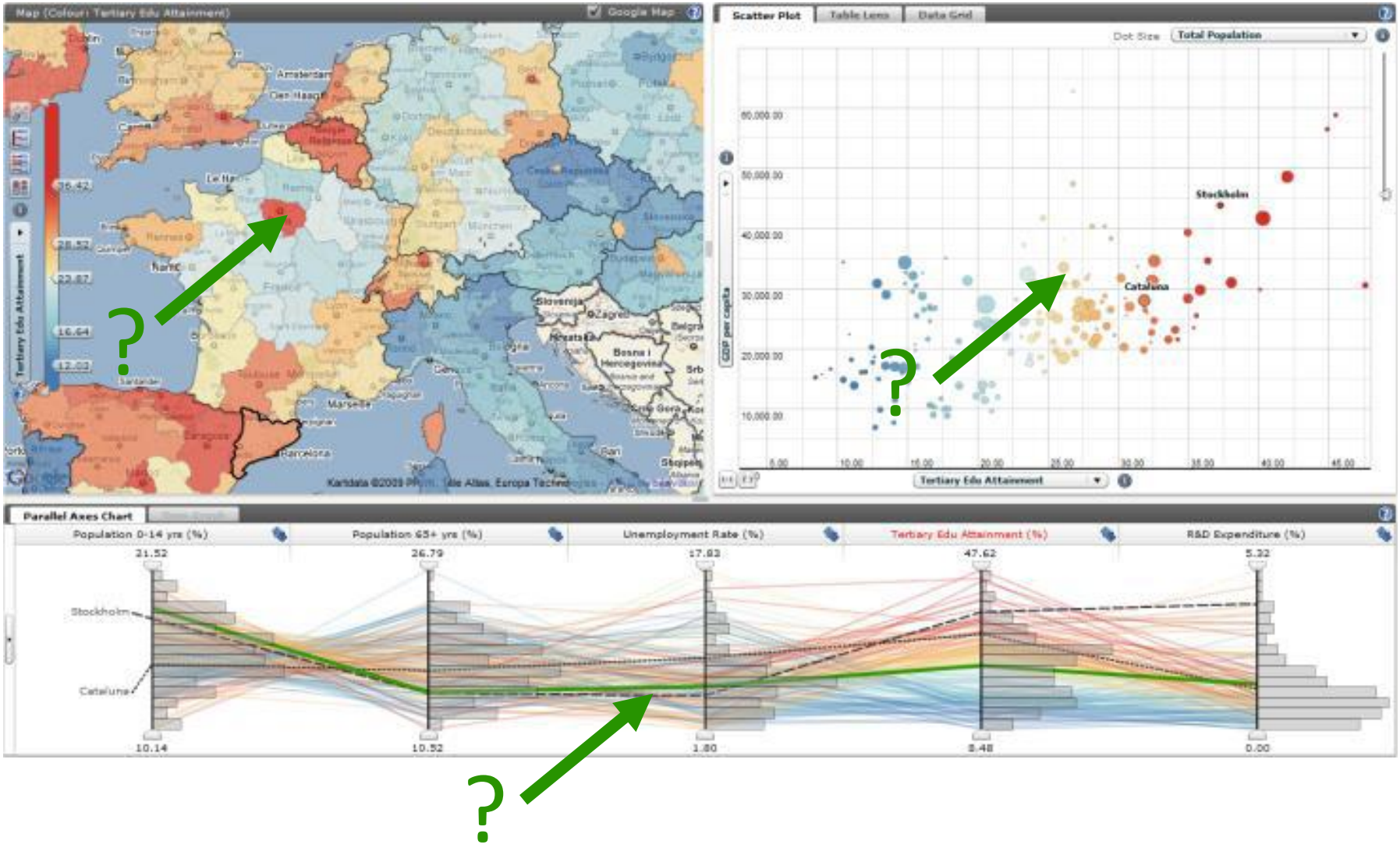
Linked Views

Multiple linked views of the same data, for better insights

Encoding	Data: All	Data: Subset	Data: None
Same	Redundant	Overview/ Detail	Small Multiples
Different	Multiform	Multiform, Overview/ Detail	No Linkage



No “Starting” or “End”Points



KEEP CALM

TELL ME WHAT TO DO

Overview + Detail

encoding: same

data: subset shared

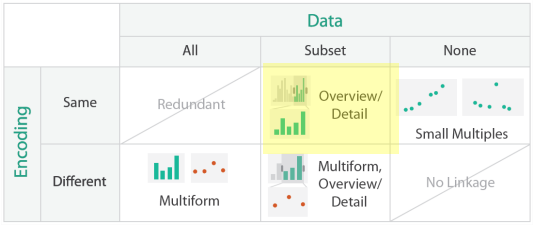
navigation: shared

bidirectional linking

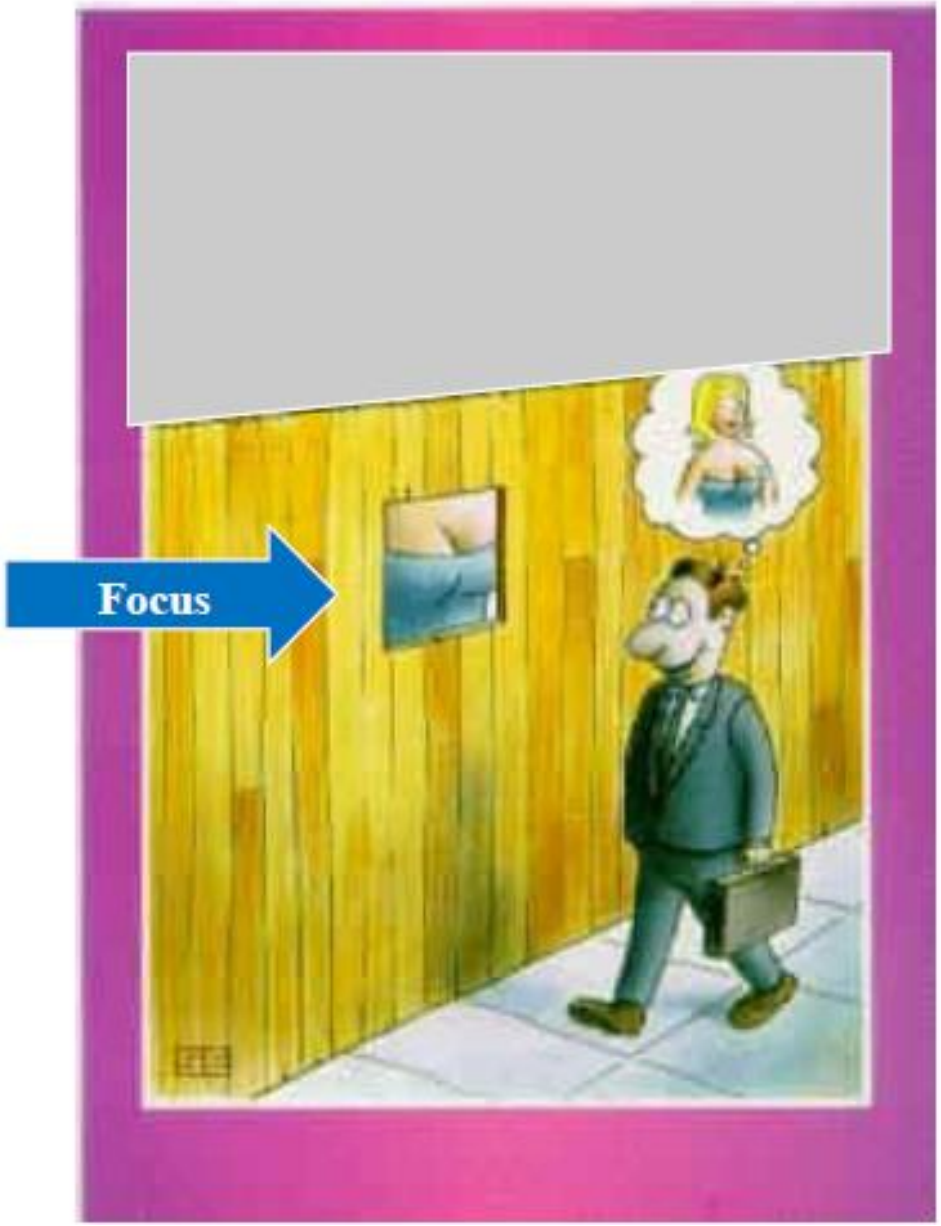
differences

viewpoint

(size)

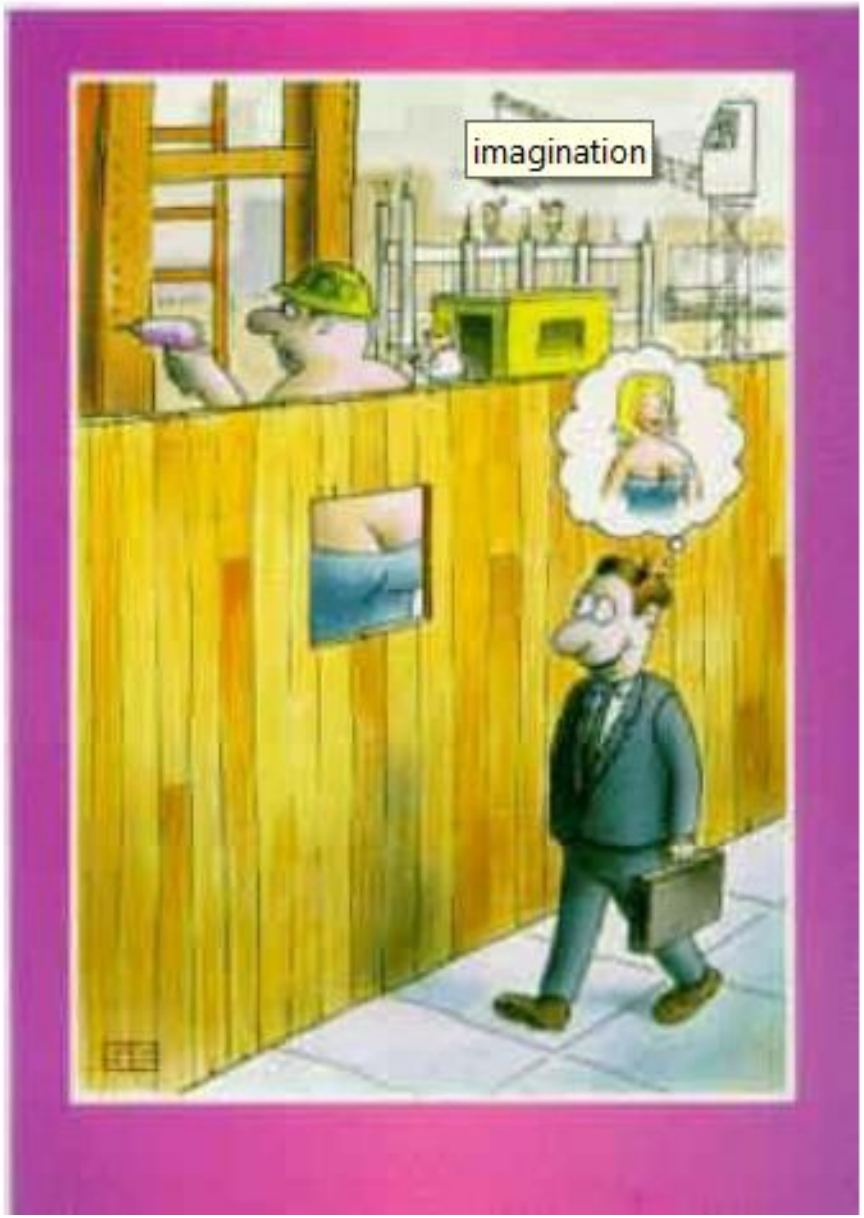


Context is Important!



Context is Important!

Context



Query / Filter using direct manipulation

Visual representation of objects and actions

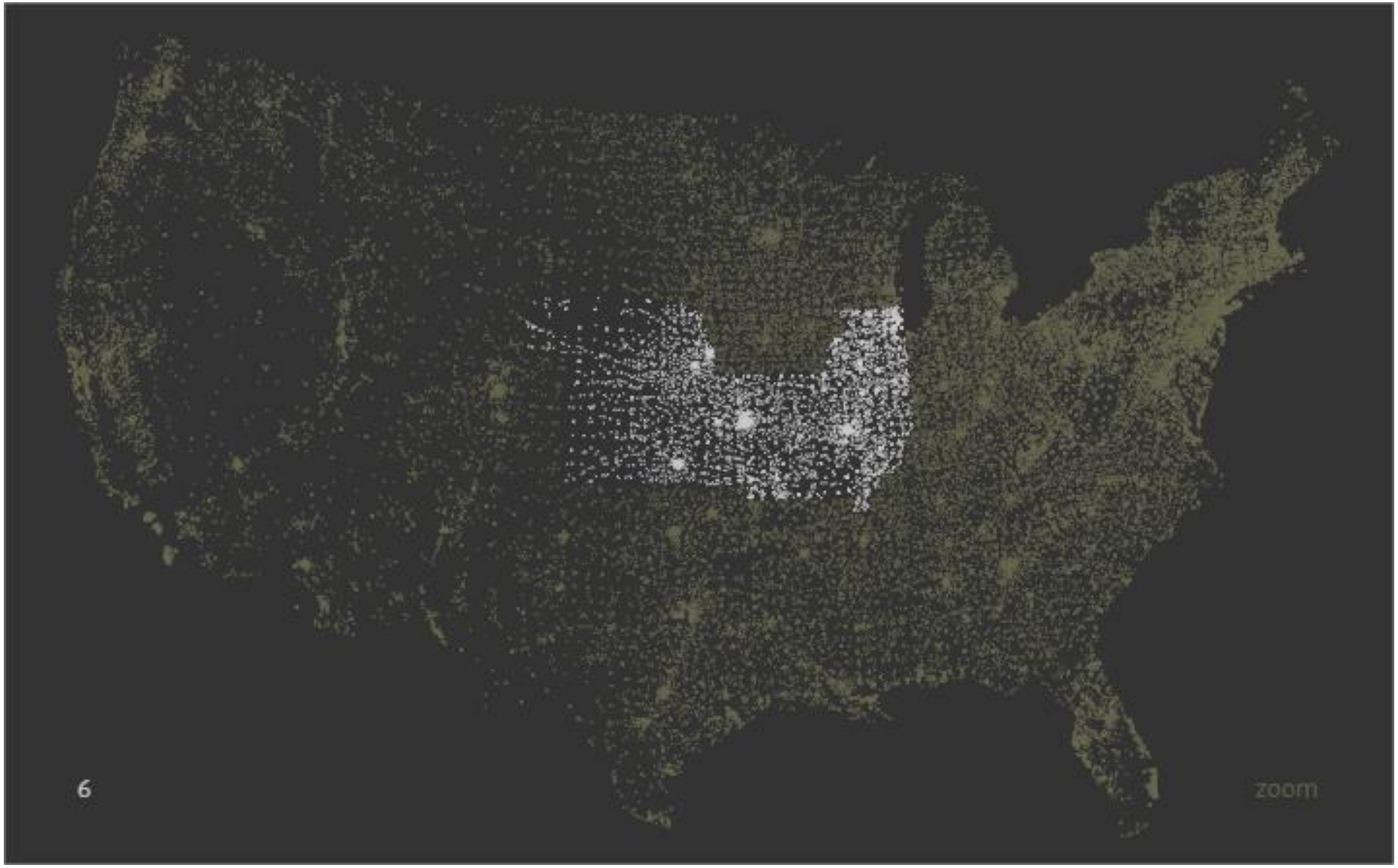
Rapid, incremental and reversible actions

Selection by pointing (not typing)

Immediate and continuous display of results

Zipdecode

http://benfry.com/zipdecode/

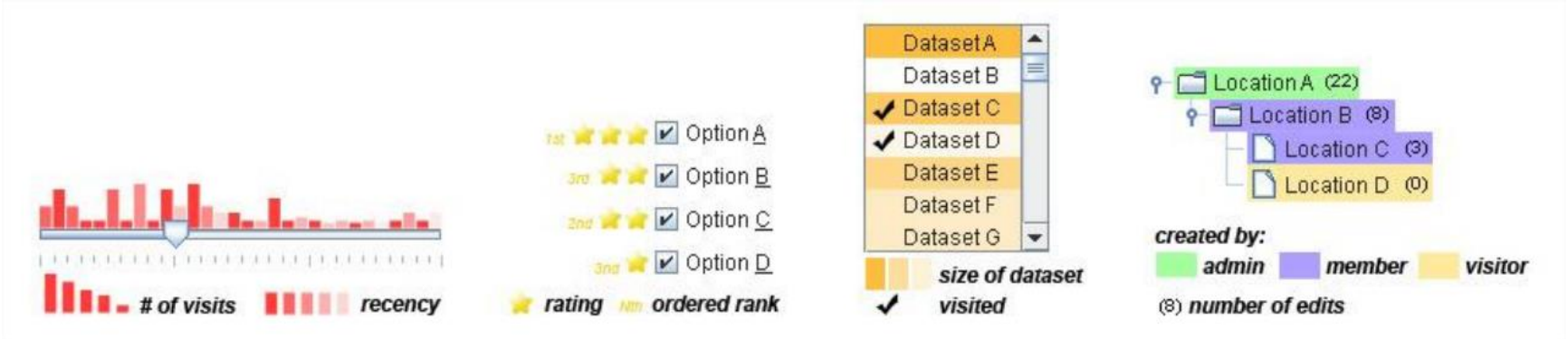


TimeSearcher

http://www.cs.umd.edu/hcil/timesearcher/

Scented Widgets

http://vis.stanford.edu/files/2007-ScentedWidgets-InfoVis.pdf



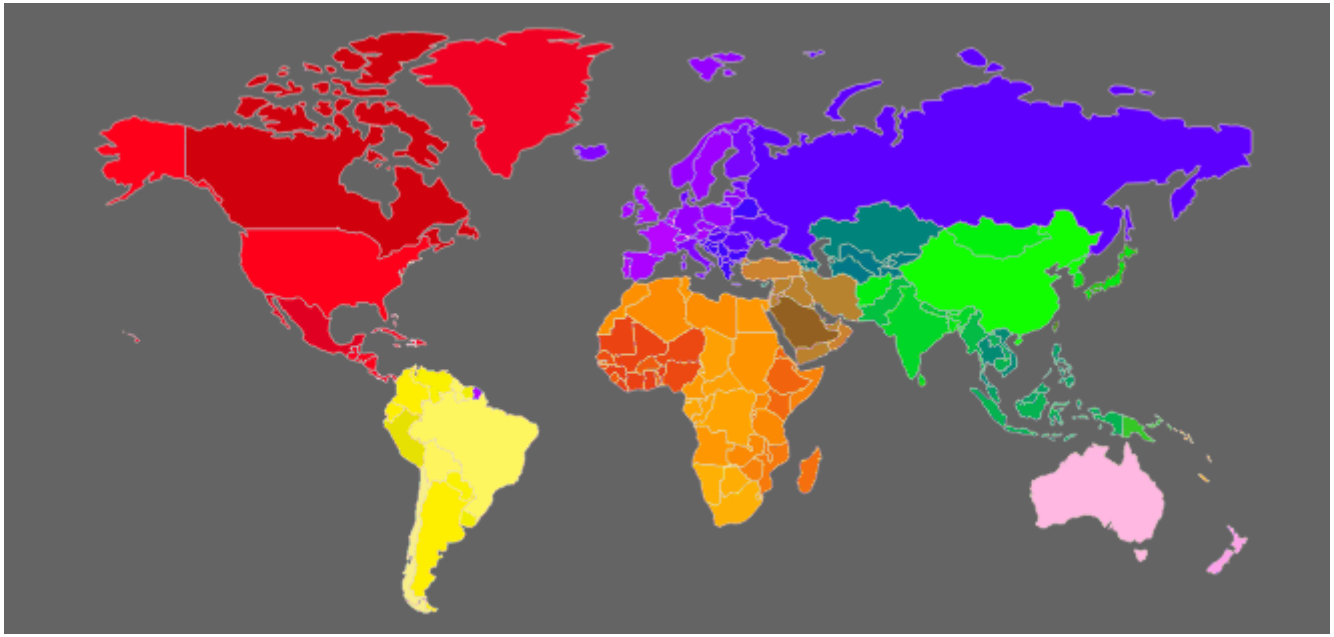
Animated Transitions

http://metrocosm.com/how-we-share-the-world/

Jump cuts are hard to follow

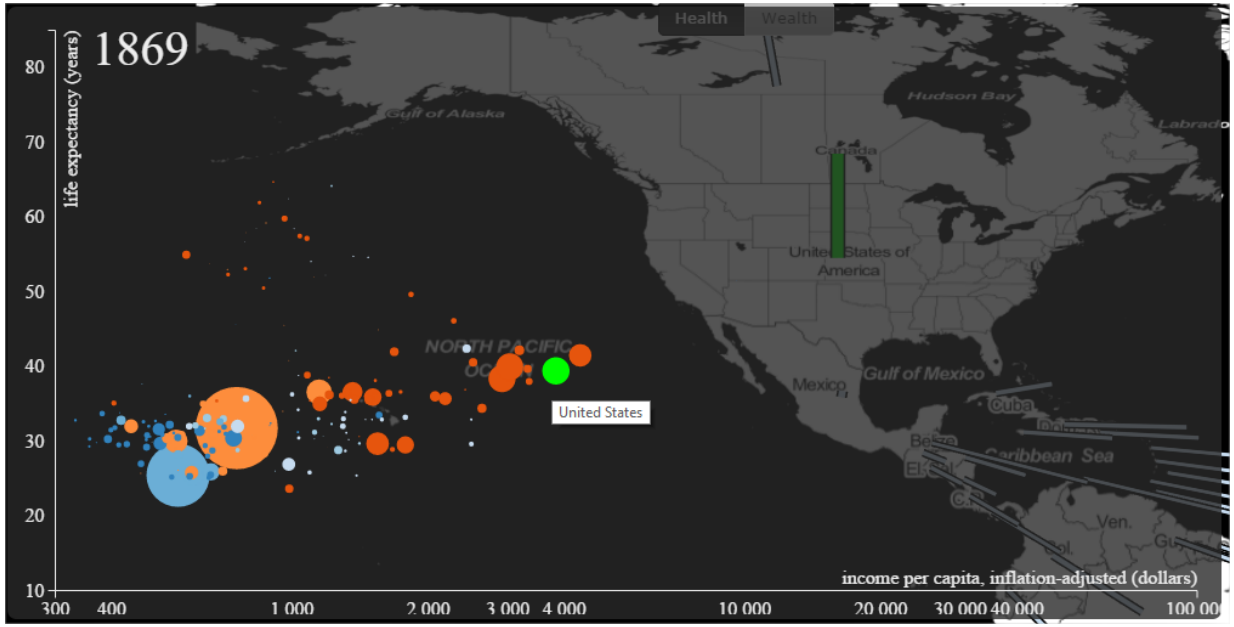
Animations help users maintain sense of context between two states

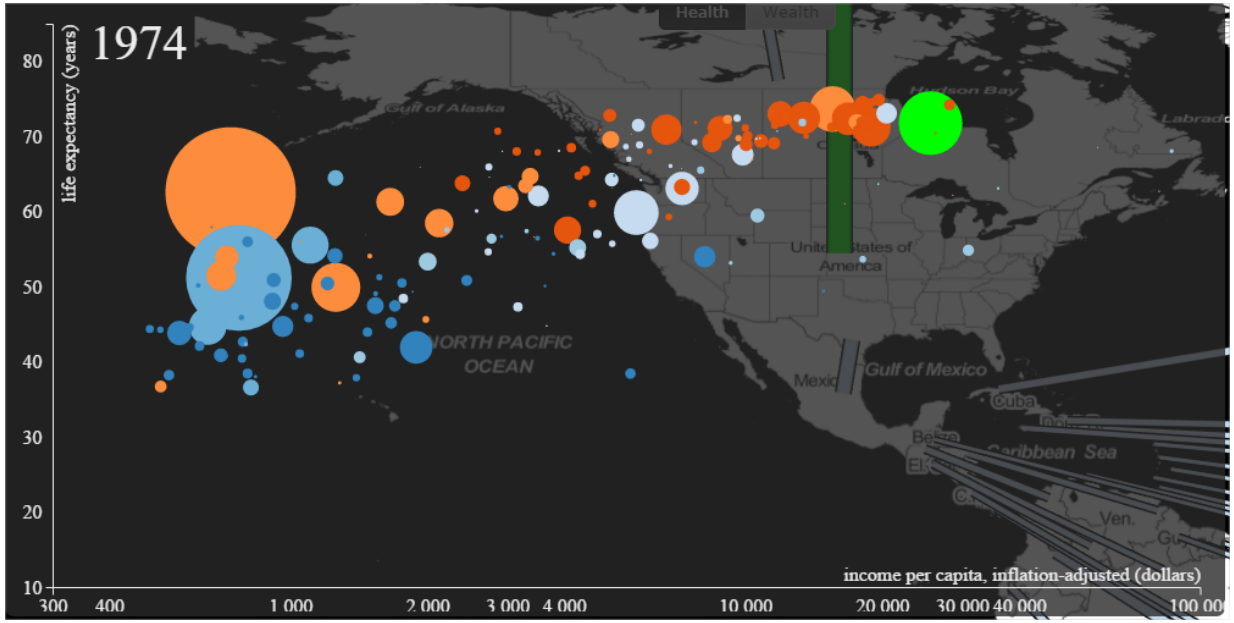
Beware change blindness



Preserve selection across views

http://cesiumjs.org/d3cesium/





Breakout!

ReConfigure / ReEncode

Know the Difference?

https://bit.ly/3ydMkIE

(answer *individually*)

ReConfigure / ReEncode

Know the Difference?

https://bit.ly/3ydMkIE

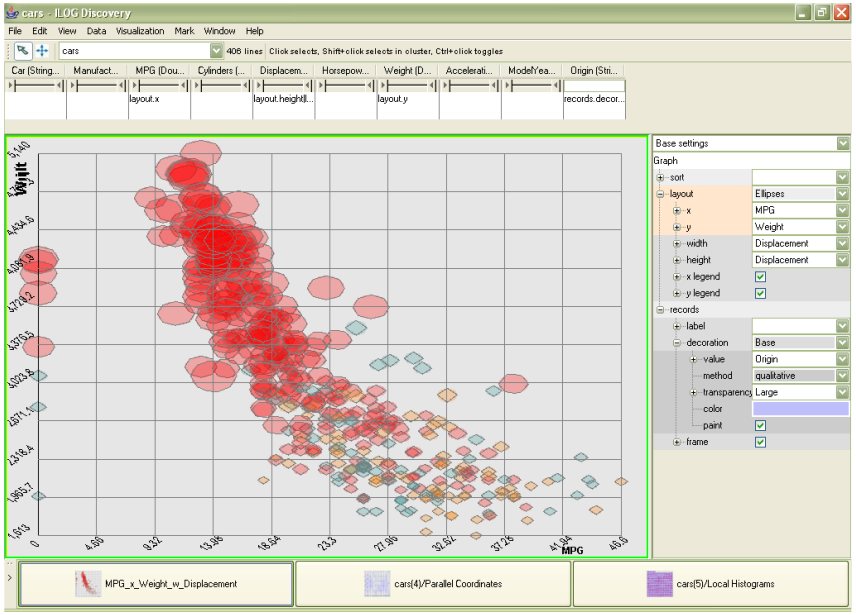
05:00

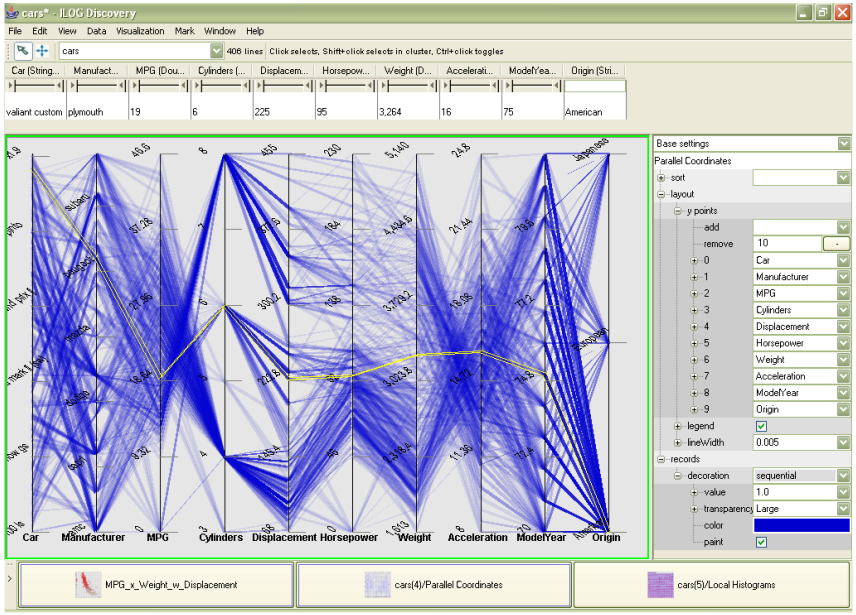
(answer *individually*)

Re-Encoding

“Show me a different representation”

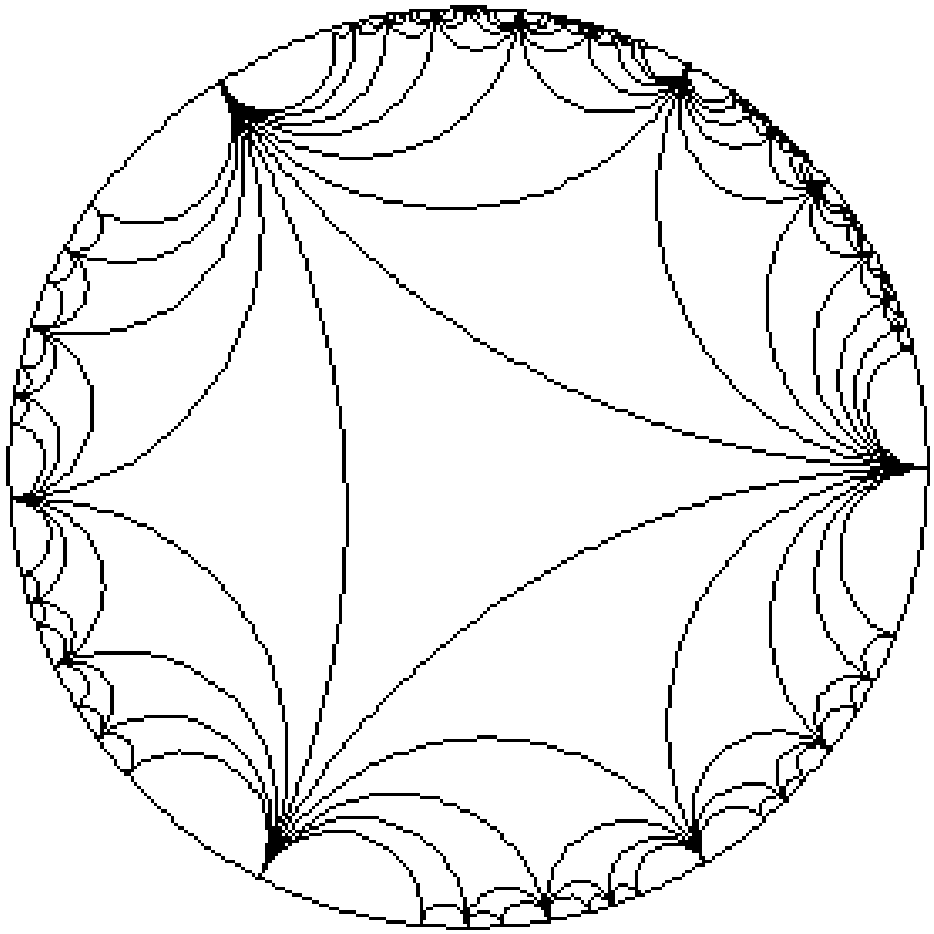
Change visual appearance





Reconfigure

“Show me a different arrangement”



Reconfigure: Sorting

http://www.johng.co.uk/2006/04/08/update/

Task: compare rankings

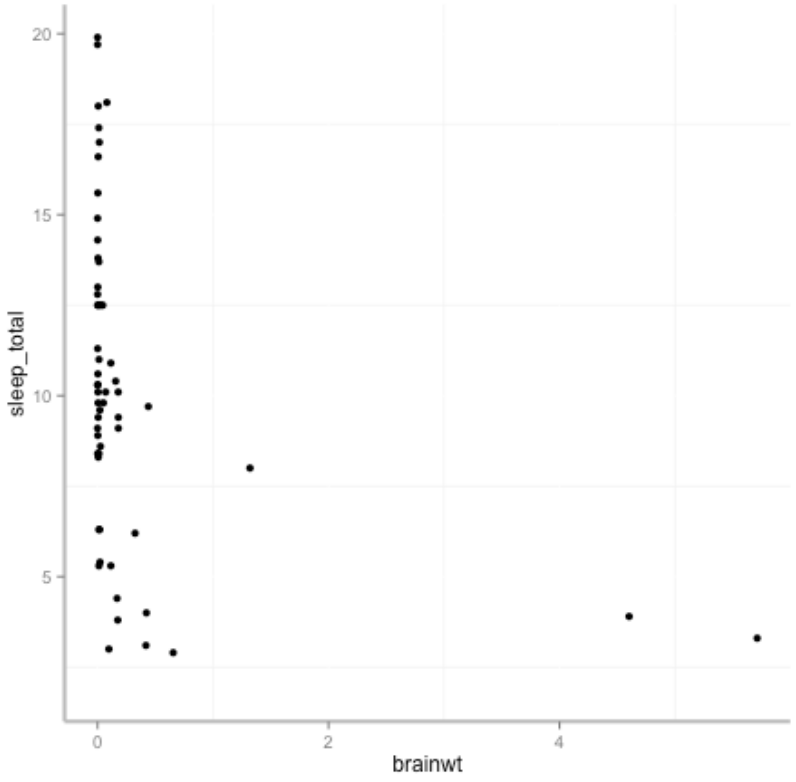
Allow user to find patterns by reordering data

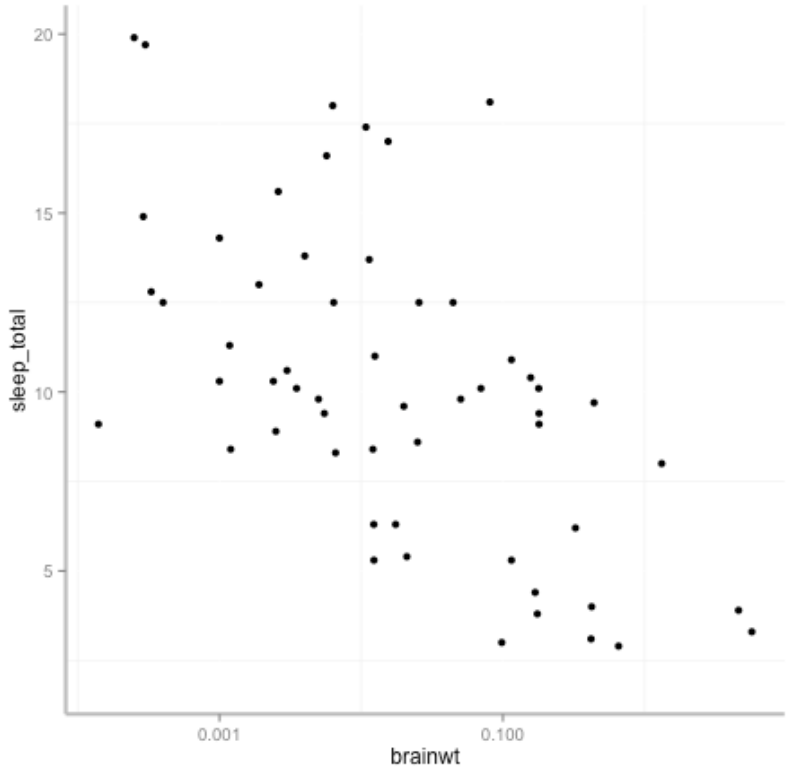
We do this with tabular data all the time

Ordered attributes don't really need sorting

RANK	PREV.RANK	MOVIE	RELEASE DATE
50	(40)	Messengers, The	03/01/2007
44	(39)	Barnyard: The Original Party Animals	03/01/2007
23	(38)	Leben der Anderen, Das	15/01/2007
48	(37)	Je Crois Que Je L'Aime	03/01/2007
43	(36)	Dance Avec Lui	03/01/2007

Reconfigure

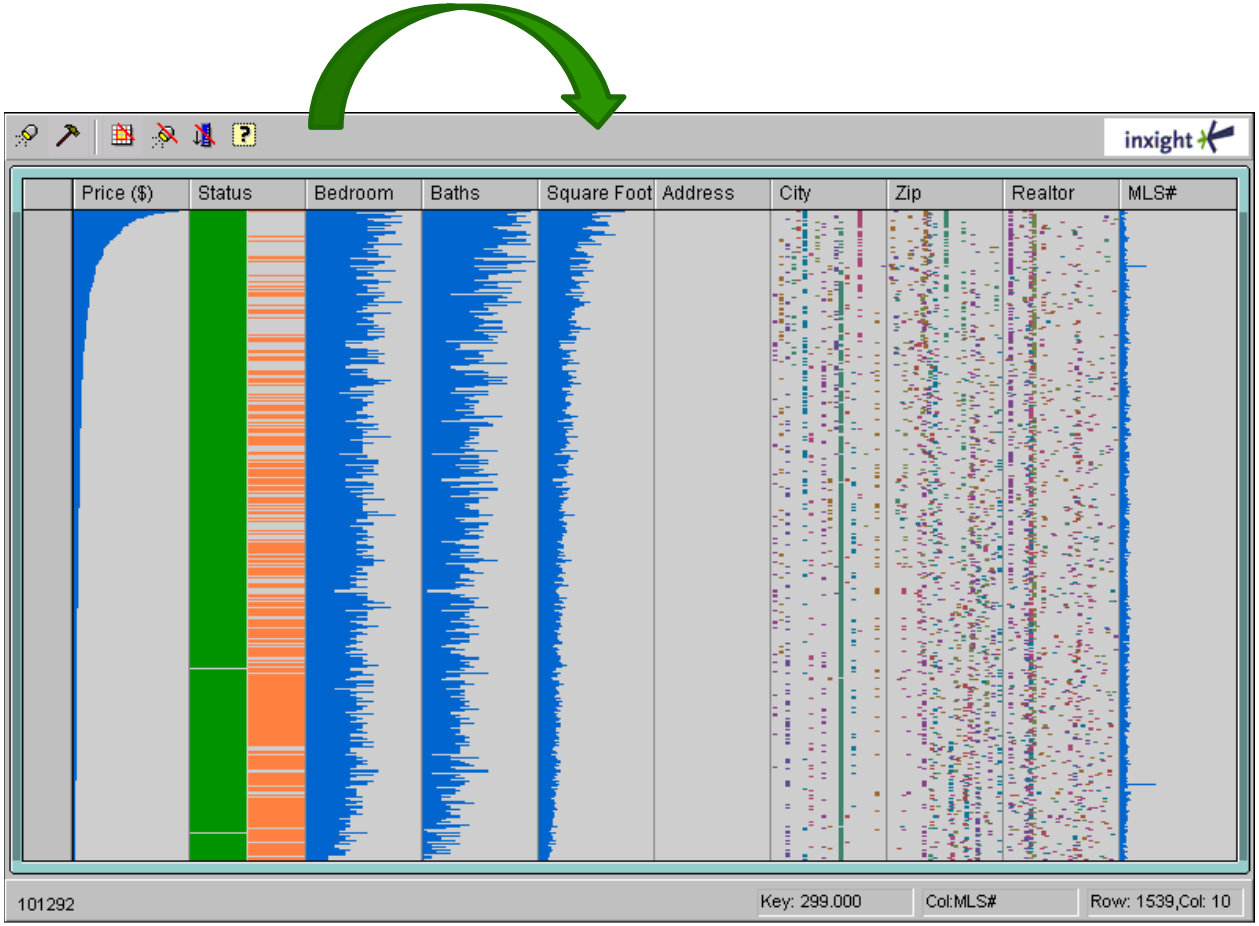




Reconfigure: Reorder

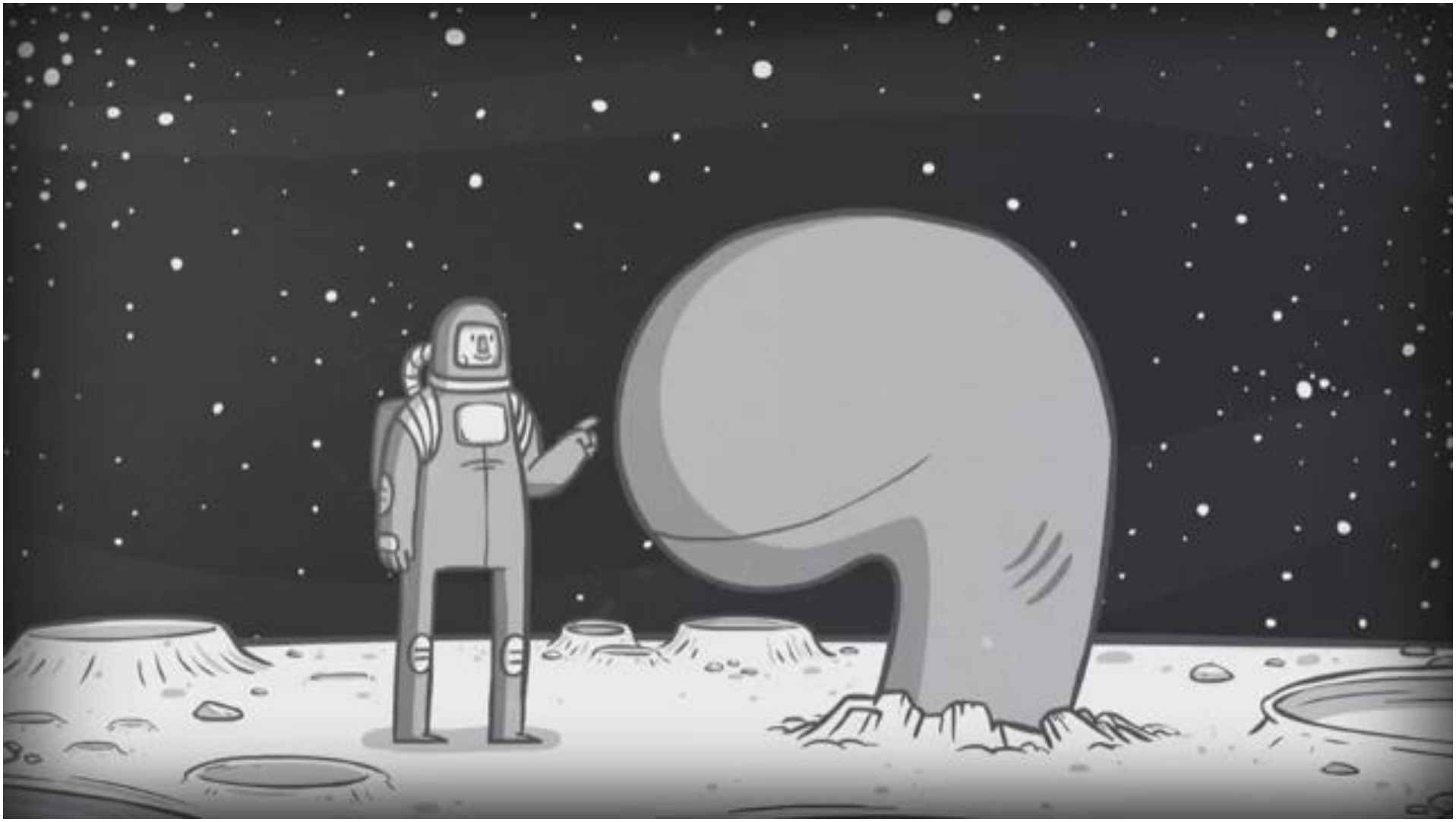
Reorder Columns:

New perspective



Breakout Over!

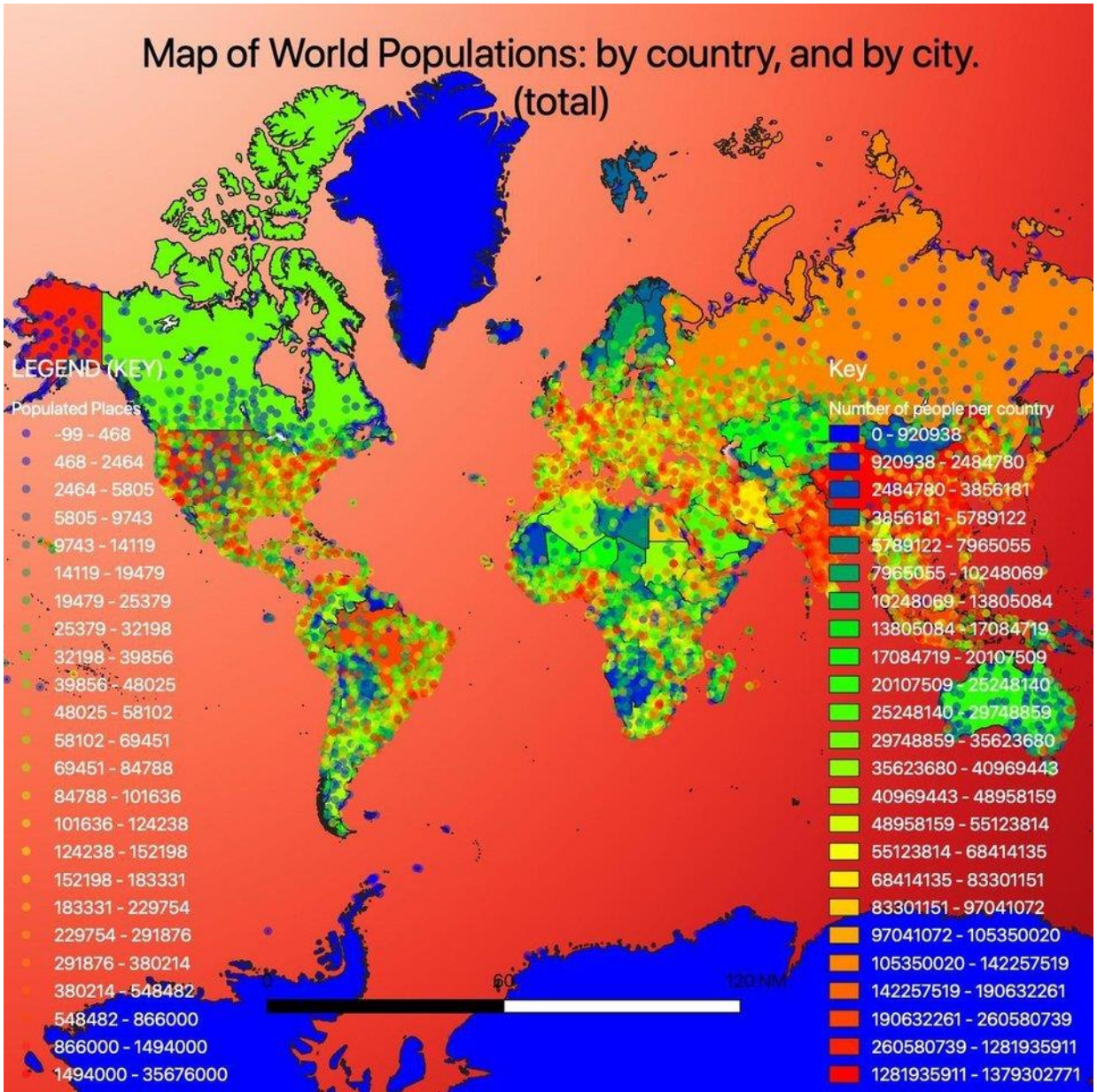
THERE WILL
NOW BE A
BRIEF
INTERMISSION



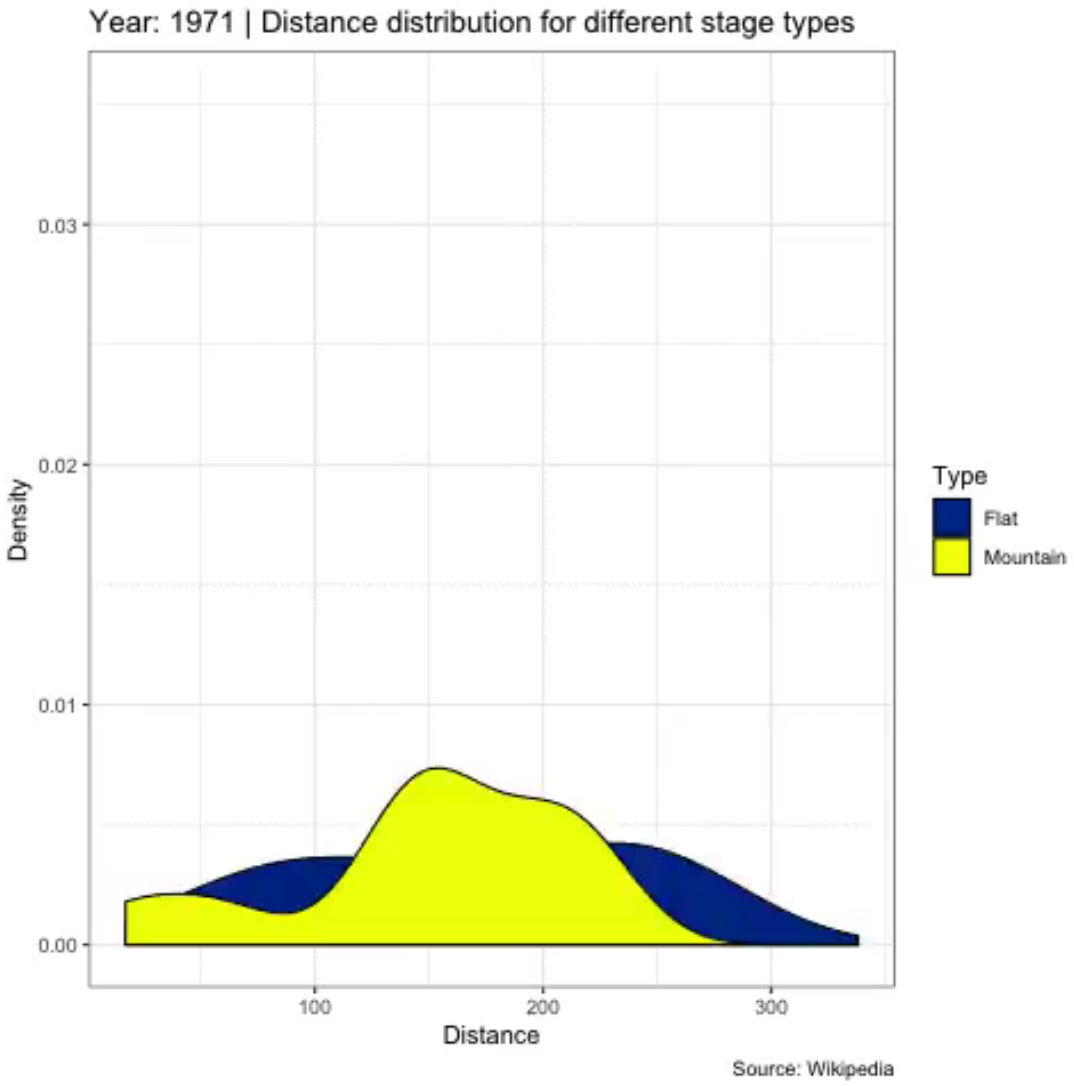
THERE WILL
NOW BE A
BRIEF
INTERMISSION

GOOD or EVIL?

Exibit A


Map of World Populations: by country, and by city.
(total)
LEGEND (KEY)
Populated Places
-99 - 468
468 - 2464
2464 - 5805
5805 - 9743
9743 - 14119
14119 - 19479
19479 - 25379
25379 - 32198
32198 - 39856
39856 - 48025
48025 - 58102
58102 - 69451
69451 - 84788
84788 - 101636
101636 - 124238
124238 - 152198
152198 - 183331
183331 - 229754
229754 - 291876
291876 - 380214
380214 - 548482
548482 - 866000
866000 - 1494000
1494000 - 35676000
Key
Number of people per country
0 - 920938
920938 - 2484780
2484780 - 3856181
3856181 - 5789122
5789122 - 7965055
7965055 - 10248069
10248069 - 13805084
13805084 - 17084719
17084719 - 20107509
20107509 - 25248140
25248140 - 29748859
29748859 - 35623680
35623680 - 40969443
40969443 - 48958159
48958159 - 55123814
55123814 - 68414135
68414135 - 83301151
83301151 - 97041072
97041072 - 105350020
105350020 - 142257519
142257519 - 190632261
190632261 - 260580739
260580739 - 1281935911
1281935911 - 1379302771
60
120 NM

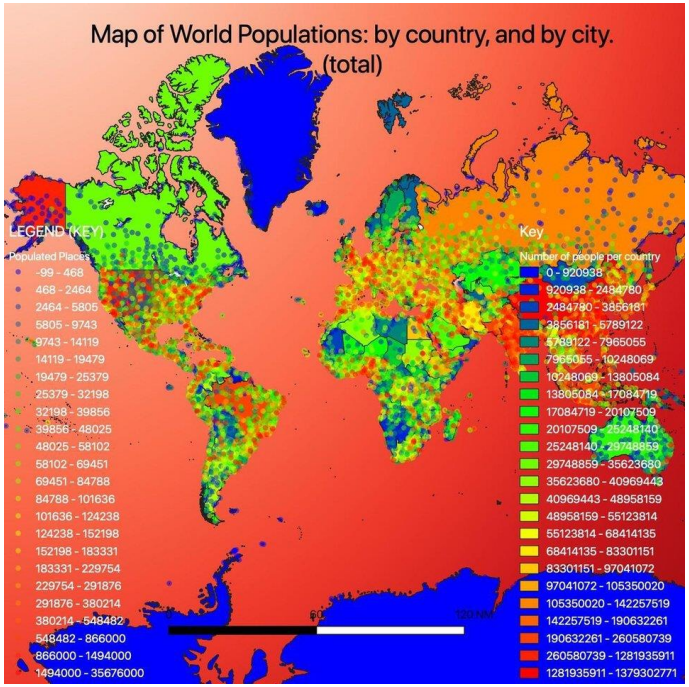
Exibit B


Year: 1971 | Distance distribution for different stage types
Density
0.03
0.02
0.01
0.00
100
200
300
Distance
Type
Flat
Mountain
Source: Wikipedia

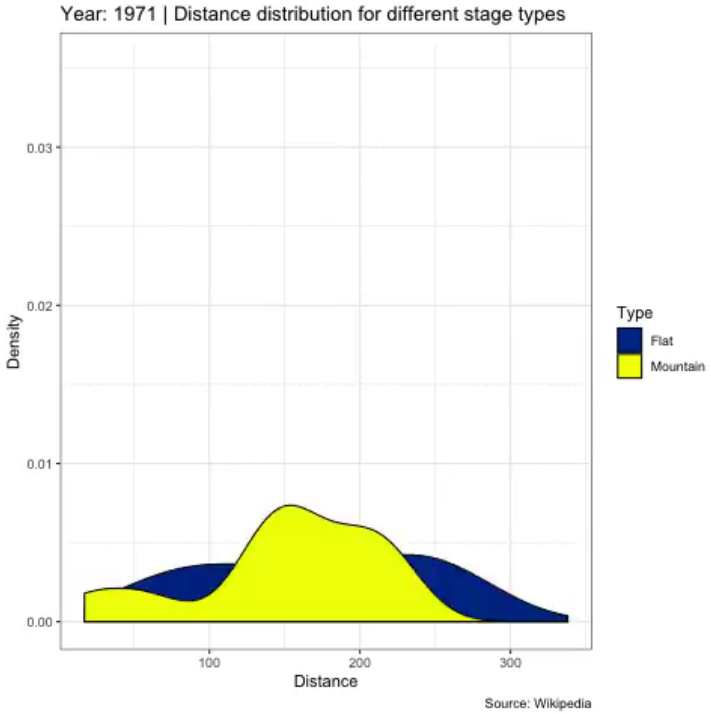
All Together Now!

http://www.prooffreader.com/2014/07/comparison-of-letter-positions-in-eight.html

A



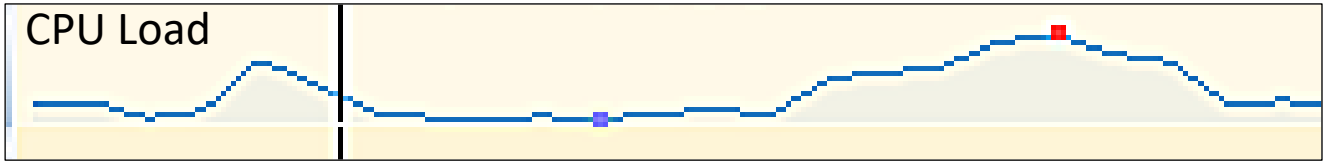
B



KEEP CALM

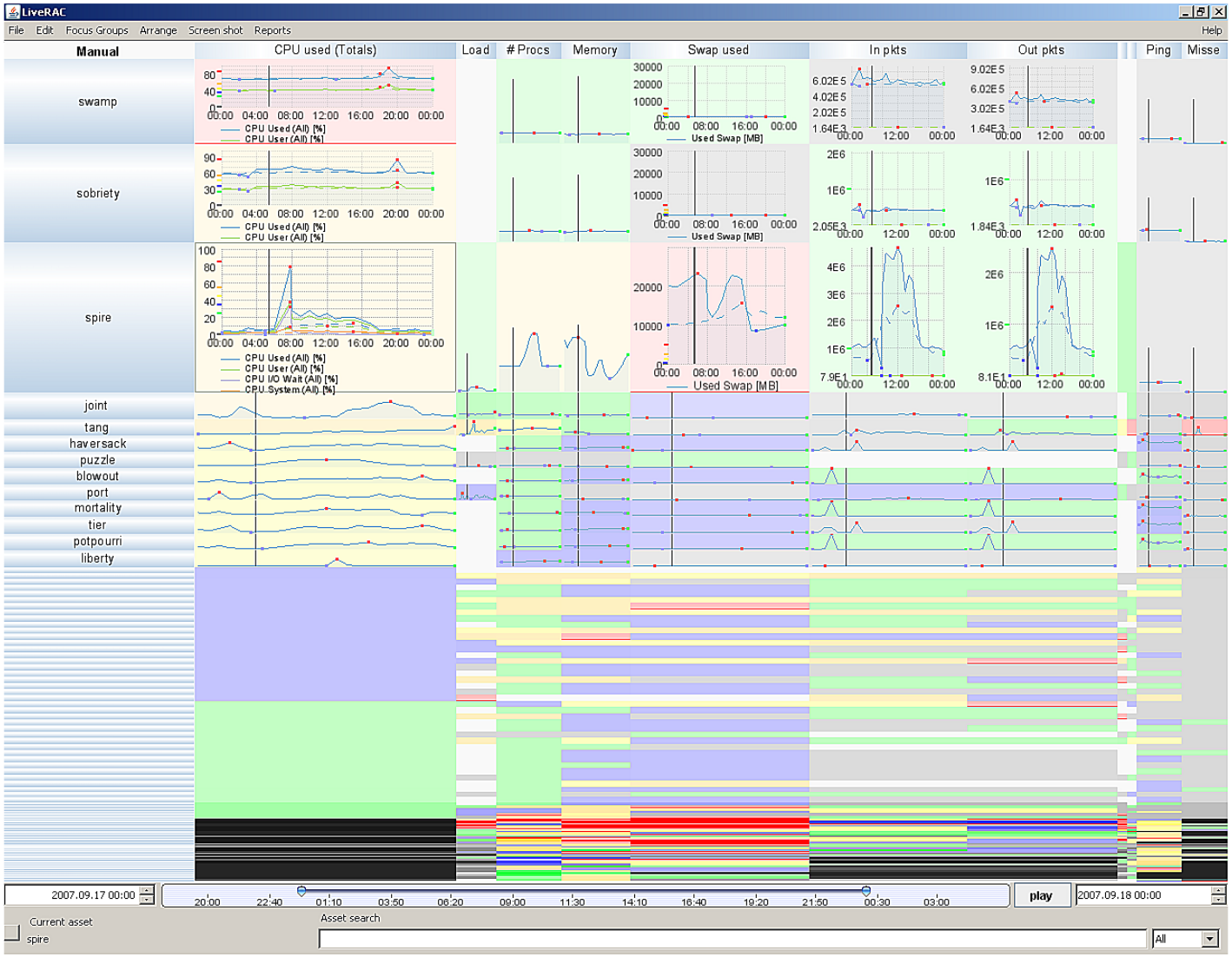
TELL ME WHAT TO DO

This is a sparkline… Zoom It!

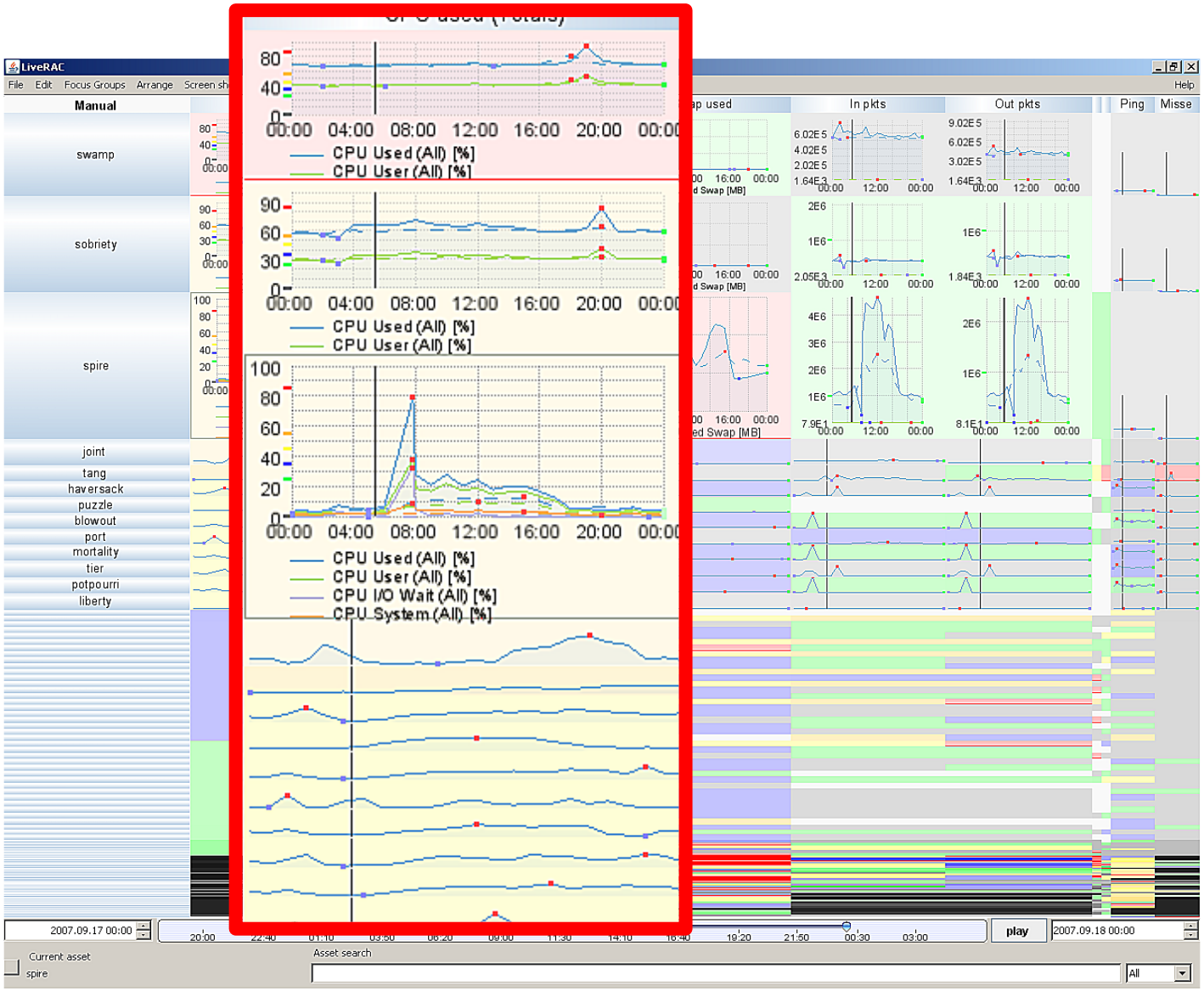


(but we want *semantic zoom!*)

Semantic Zooming



Semantic Zooming



KEEP CALM

TELL ME WHAT TO DO

QUESTIONS?