



PROFESSIONAL &
CONTINUING EDUCATION
UNIVERSITY of WASHINGTON

I.

Theoretical:

Rules of Thumb

II.

Practical

Multiple
Quantities

Week 4
Nov 3, 2015



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Practical

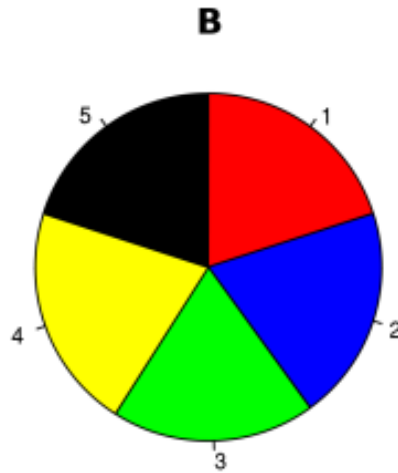
Multiple
Quantities

Week 4

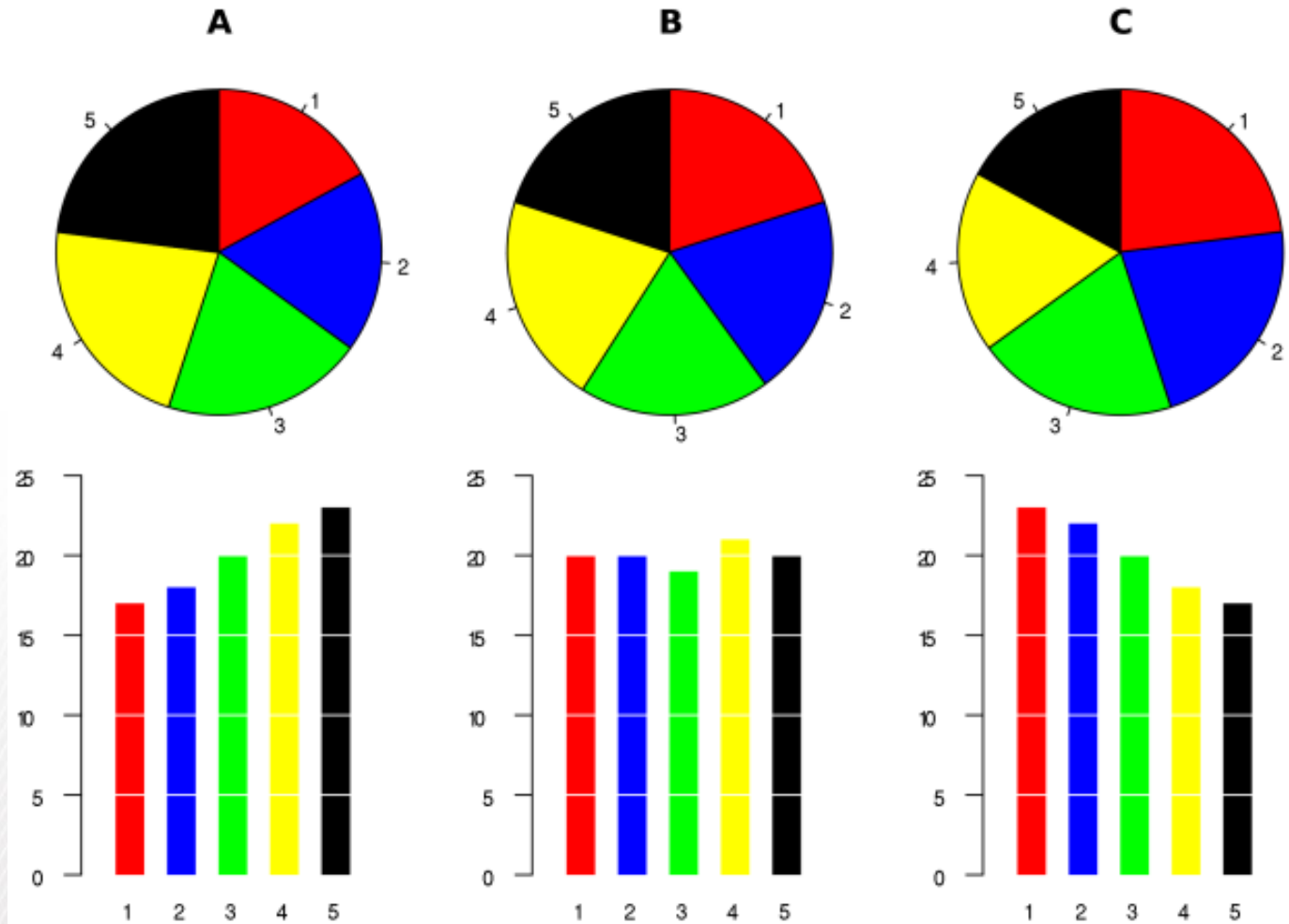
Nov 3, 2015

NOTHING
IS WRITTEN
IN STONE

Some say NEVER use pie charts...



Some say NEVER use pie charts...



I say "Never say Never"

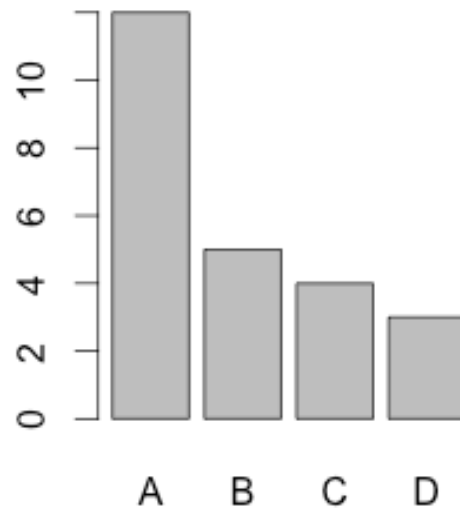


"Never say Never" part 2

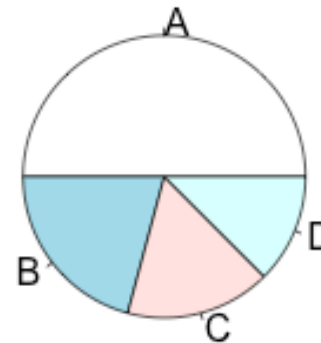


"Never say Never" part 3

'A' Might Be Half



'A' Is Half The Pie



Randy Olson @randal_olson · Nov 5

.@inivri Exactly, thank you! Pie charts are useful for showing simple proportions like this.



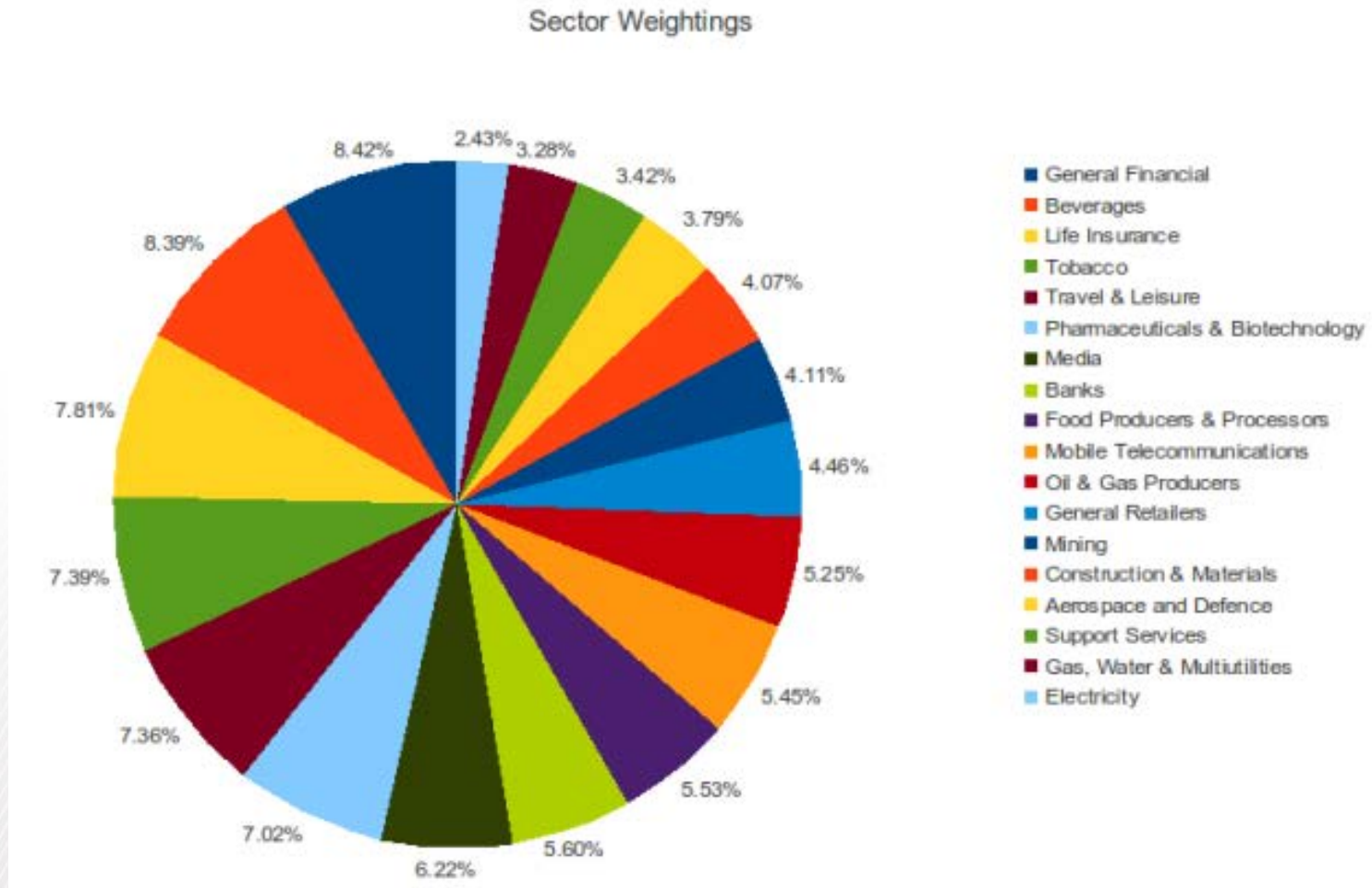
27



48



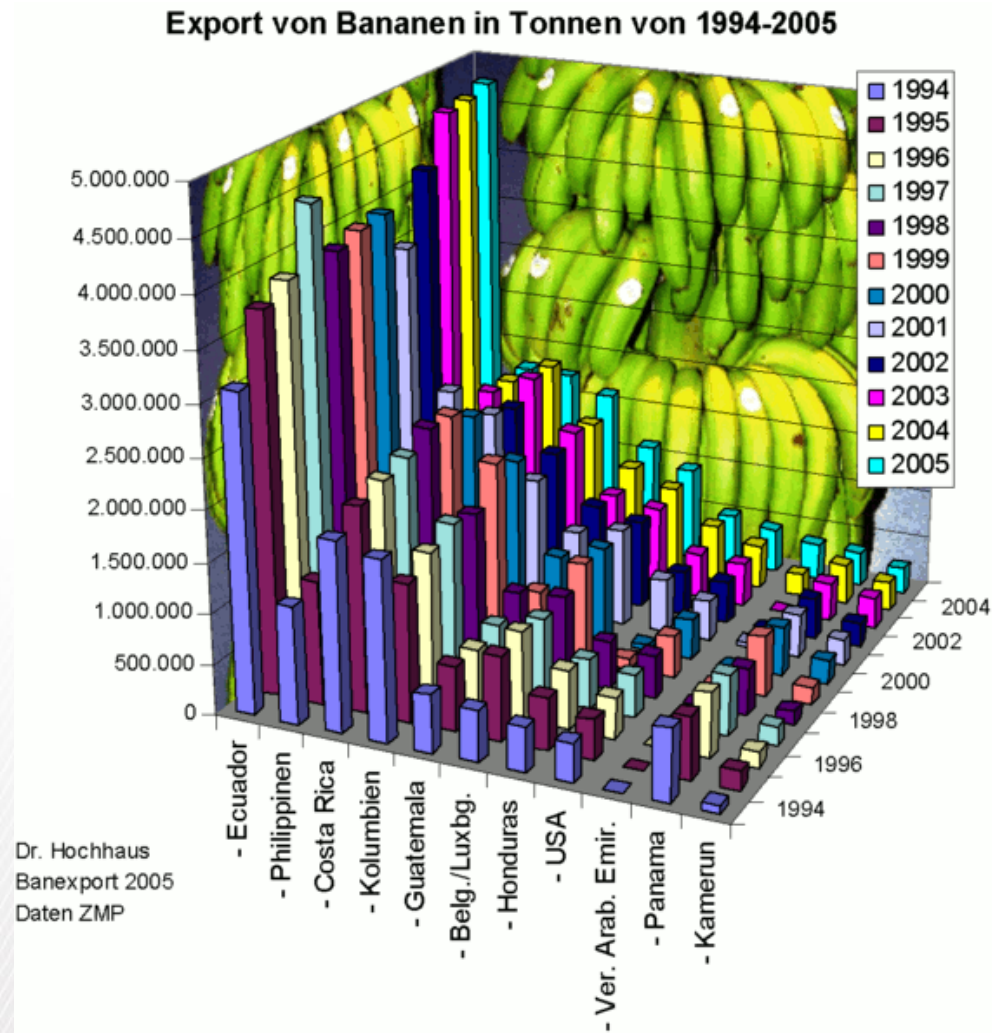
But seriously, don't ever do this...



Tamara Munzner's 8 Rules of Thumb

1. No Unjustified 3D
2. No Unjustified 2D
3. Eyes Beat Memory
4. Resolution over Immersion
5. Over first, Zoom and Filter, Detail on Demand
6. Responsiveness Is Required
7. Get it Right in Black and White
8. Function First, Form Next

1. No Unjustified 3D

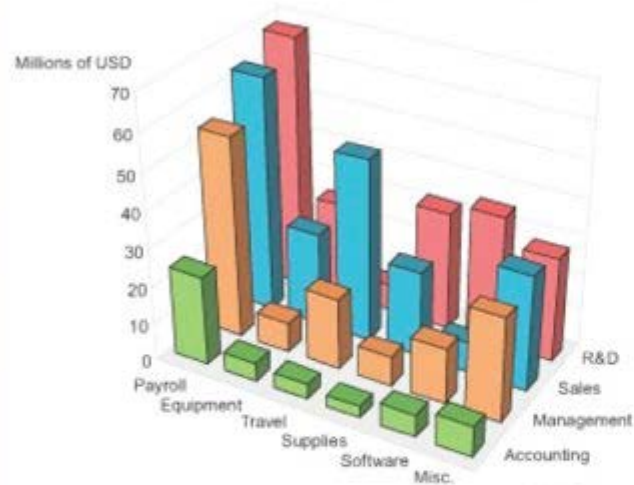


1. No Unjustified 3D

Graph Design I.Q. Test

Question 7: Which graph makes it easier to determine R&D's travel expense?

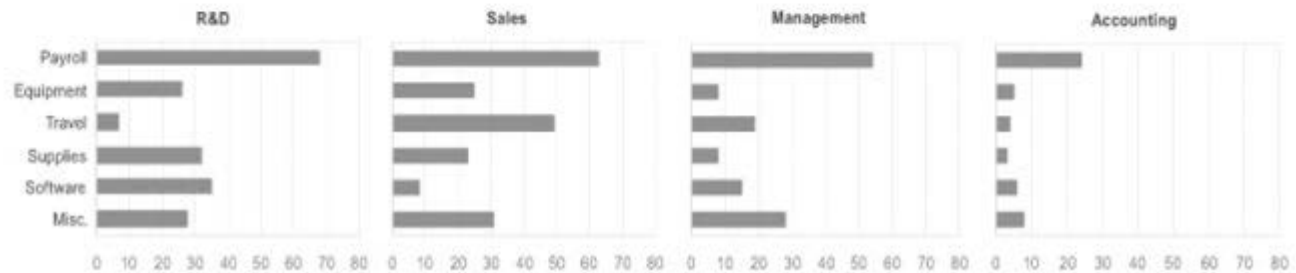
2006 Expenses by Department



☐ 3-D Bar Graph (left)

☒ 2-D Bar Graphs (below)

2006 Expenses by Department in Millions of USD



A 3-D View of a Chart That Predicts The Economic Future: The Yield Curve

By GREGOR AISCH and AMANDA COX MARCH 18, 2015

● ○ ○ ○ ○ ○ ○ ○ ○ ○

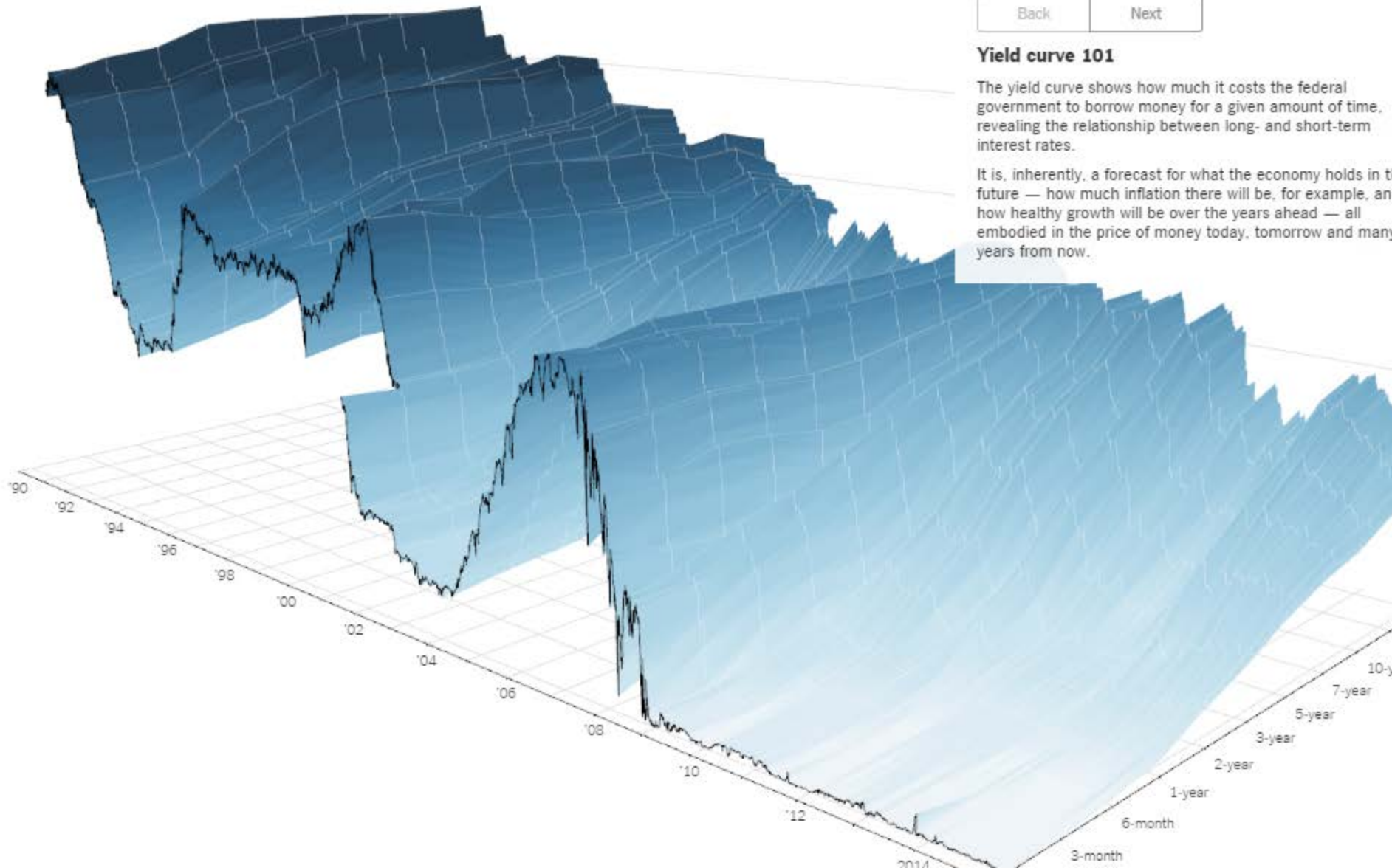
Back

Next

Yield curve 101

The yield curve shows how much it costs the federal government to borrow money for a given amount of time, revealing the relationship between long- and short-term interest rates.

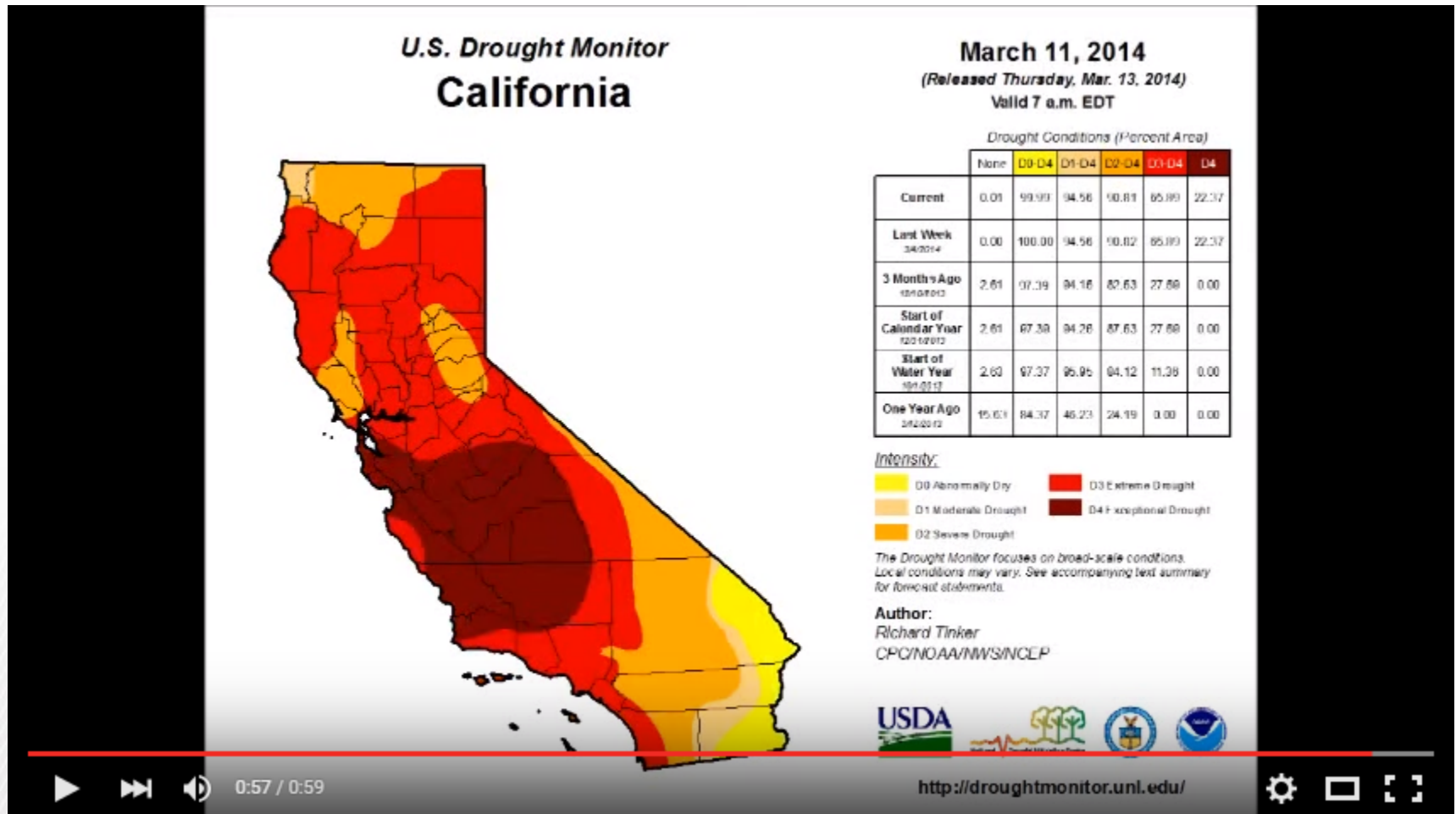
It is, inherently, a forecast for what the economy holds in the future — how much inflation there will be, for example, and how healthy growth will be over the years ahead — all embodied in the price of money today, tomorrow and many years from now.



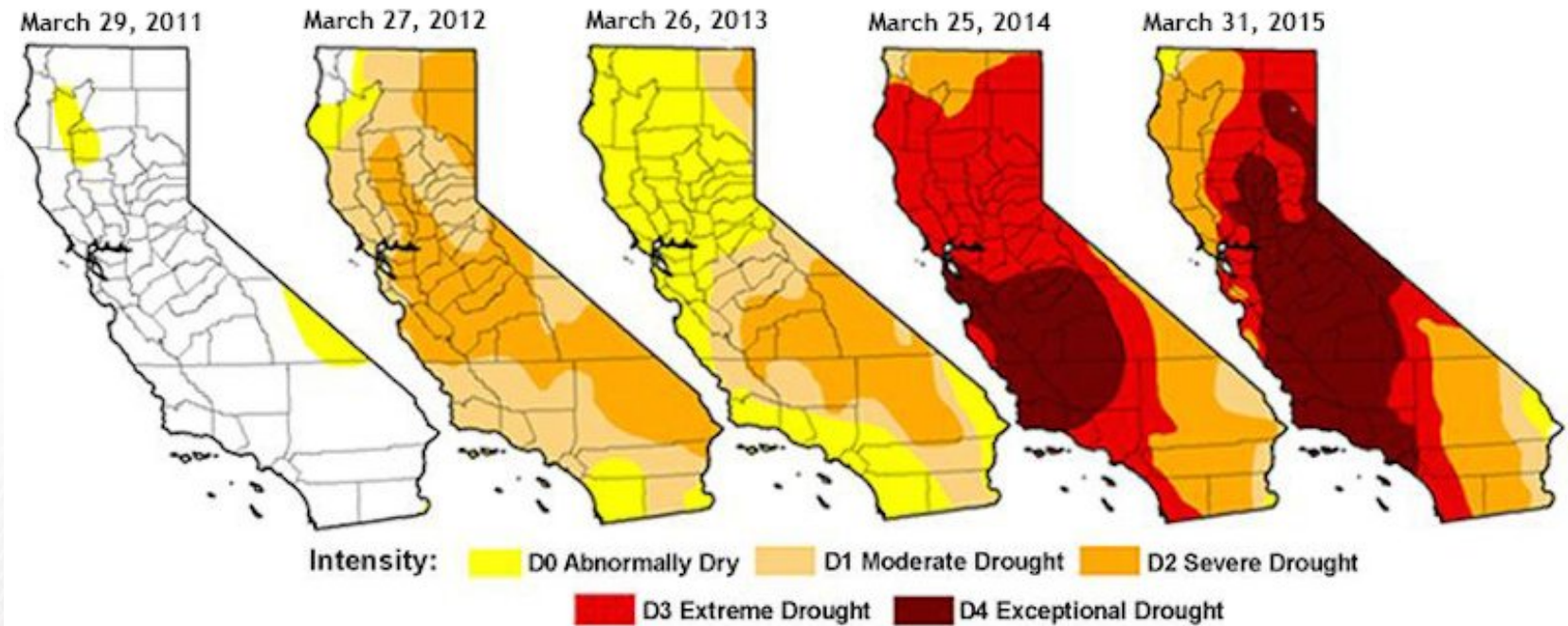
2. No Unjustified 2D



3. Eyes Beat Memory



3. Eyes Beat Memory





4. Resolution Over Immersion



"Pixels are precious: if you are faced with a trade-off between resolution and immersion, resolution usually is far more important

5. Over first, Zoom and Filter, Detail on Demand

Overview: Gain an overview of the entire collection.

Zoom: Zoom in on items of interest

Filter: Filter out uninteresting items.

Details-on-demand: Select an item or group and get details when needed

Relate: View relationships among items.

History: Keep a history of actions to support undo, replay and progressive refinement

Extract: Allow extraction of sub-collections and of the query parameters.

For the Elderly, Diseases That Overlap

1 2 3 4 5 6 7 NEXT »

Researchers are beginning to focus more intently on the overlaps and possible interconnections, and some scientists argue that it may not be possible to treat dementia without treating vascular problems.

9% have all three

Treating these patients is extremely difficult because of complicated drug regimes and numerous side effects.

14%

only heart disease and high blood pressure

Heart disease

5%

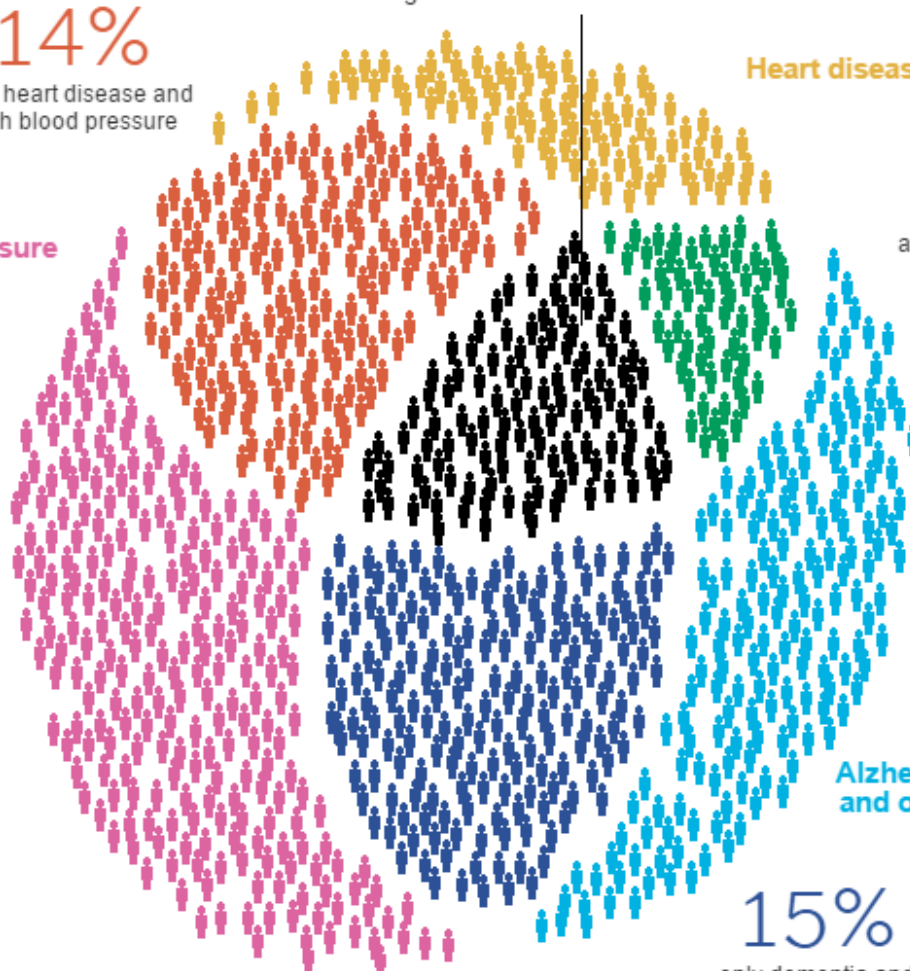
only dementia and heart disease

High blood pressure

Alzheimer's disease and other dementia

15%

only dementia and high blood pressure



Data Remixed Site Usage Dashboard, Year 2



42,270
Pageviews

35,780
Unique Pageviews

29,092
Visits

155
Countries

Stat to View

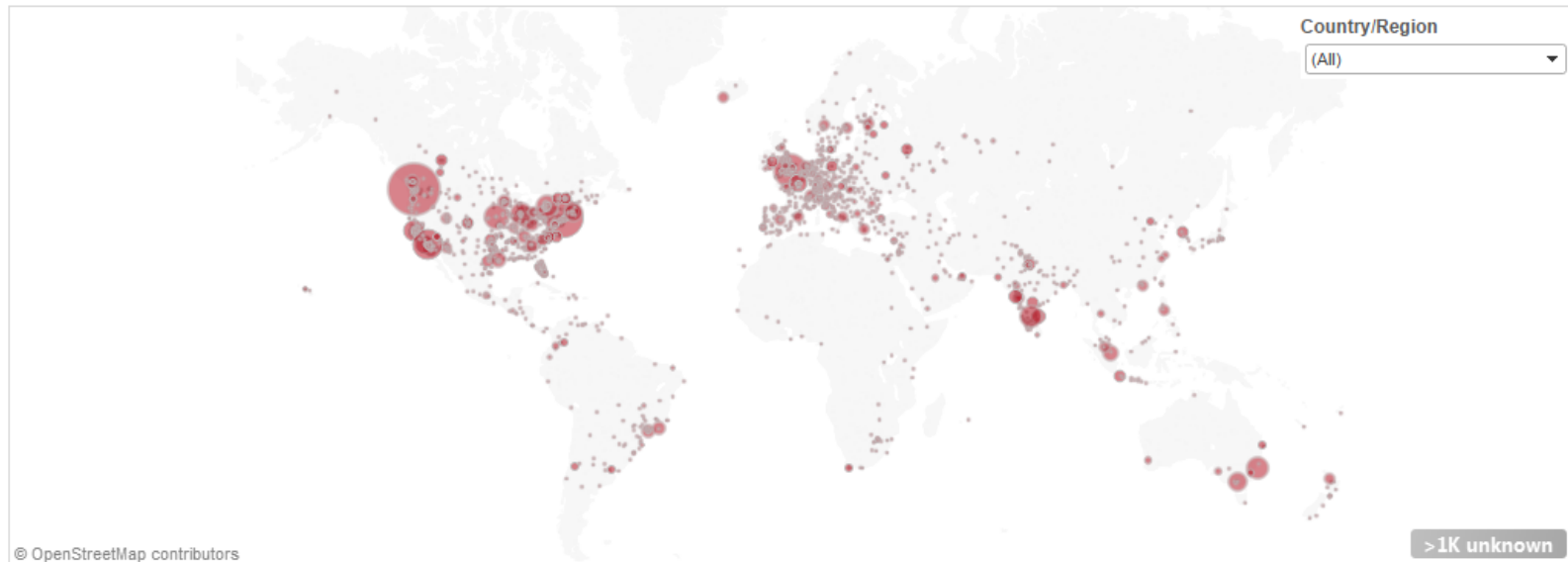
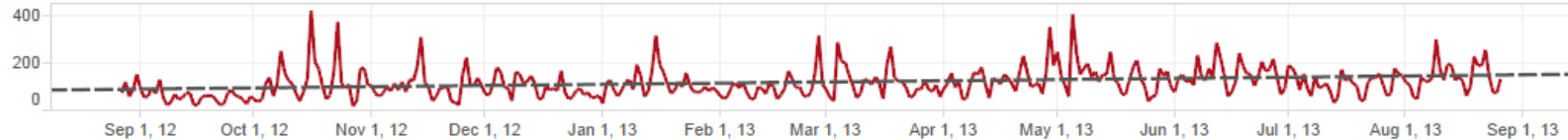
Pageviews

Date

8/27/2012

8/26/2013

Site Usage: Pageviews



Top Destinations

	Pageviews
/	8,640
/2012/07/the-best-chess-openings/	4,807
/2012/07/exploring-survey-data-with-excel/	1,898
/2012/03/how-to-create-a-tableau-waterfall-chart/	1,642
/2011/10/how-to-make-control-charts-with-tableau/	1,641
/2013/06/how-to-embed-a-google-map-in-tableau/	1,407
/2012/12/how-to-fight-forest-fires-with-data/	1,134
/2011/09/tom-brady-and-control-charts-with-table..	1,066
/2013/05/connected-scatterplots-and-strikeout/	1,009
/2013/06/residential-debate-used-courtesy/	1,000

Source

	Pageviews
google	13,389
(direct)	10,558
tableausoftware.com	3,158
t.co	2,887
public.tableausoftwa..	2,212
visualisingdata.com	1,227
google.com	851
reddit.com	754
facebook.com	575
sourcefire.com	550

Social

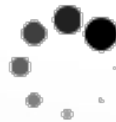
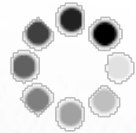
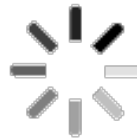
	Pageviews
Twitter	2,890
reddit	762
Facebook	694
LinkedIn	460
Blogger	251
Meetup	186
Google+	108
Pocket	67
HootSuite	43
Tumblr	30

O

Z&F

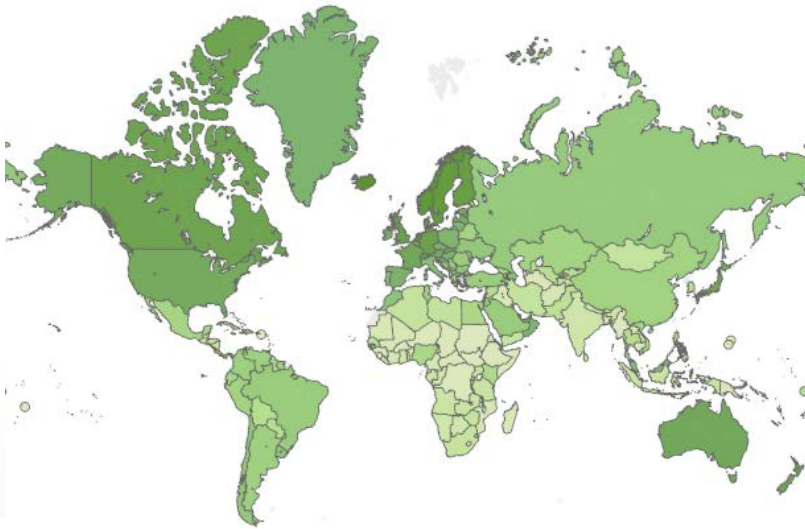
DoD

6. Responsiveness Is Required

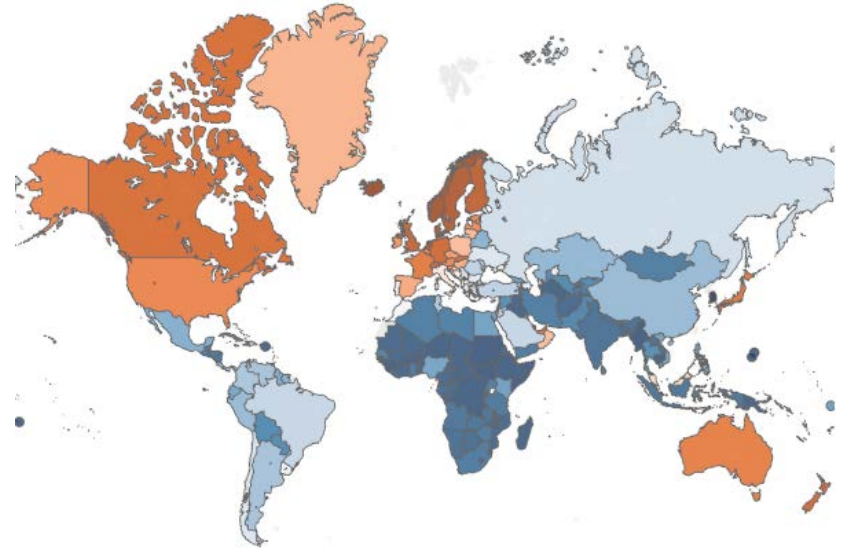


7. Get it Right in Black and White*

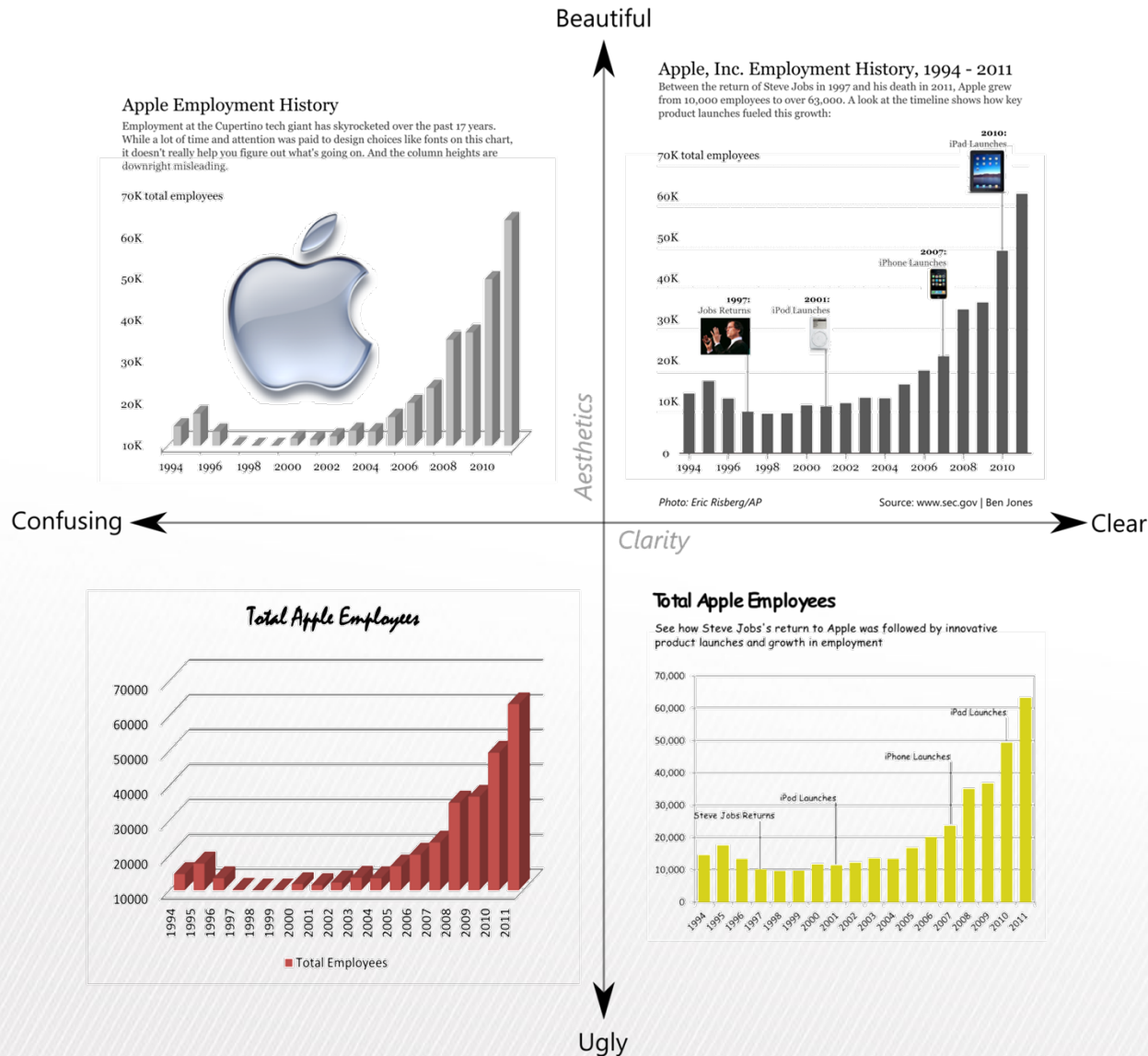
Sequential



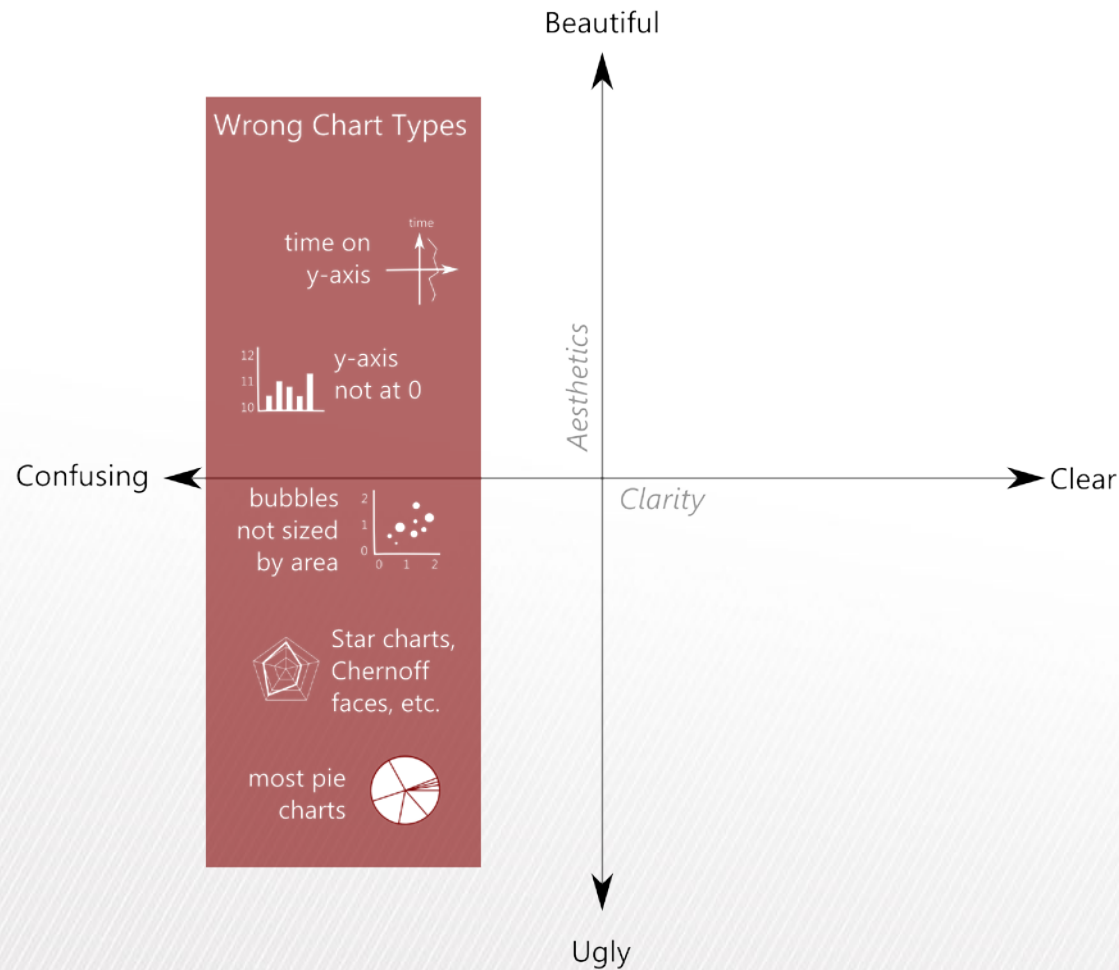
Diverging



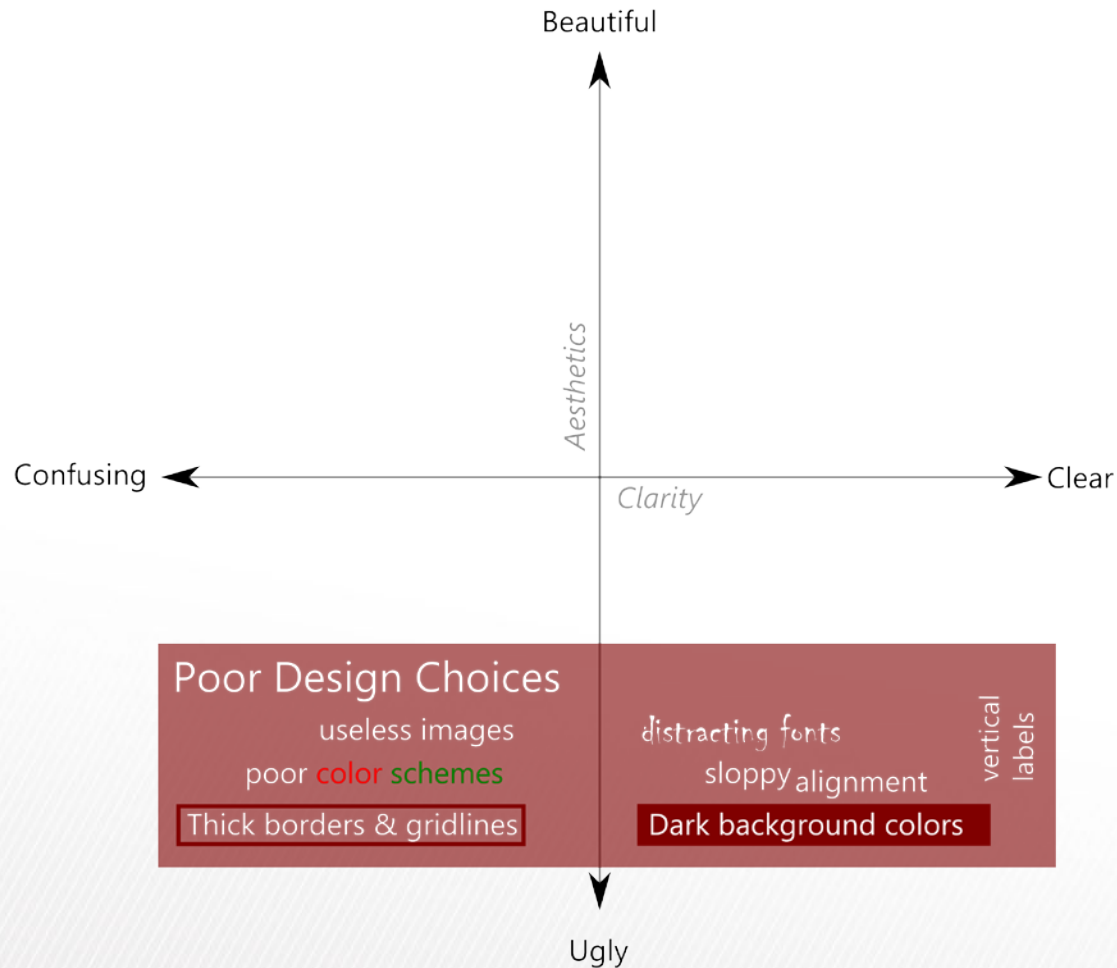
8. Function First, Form Next



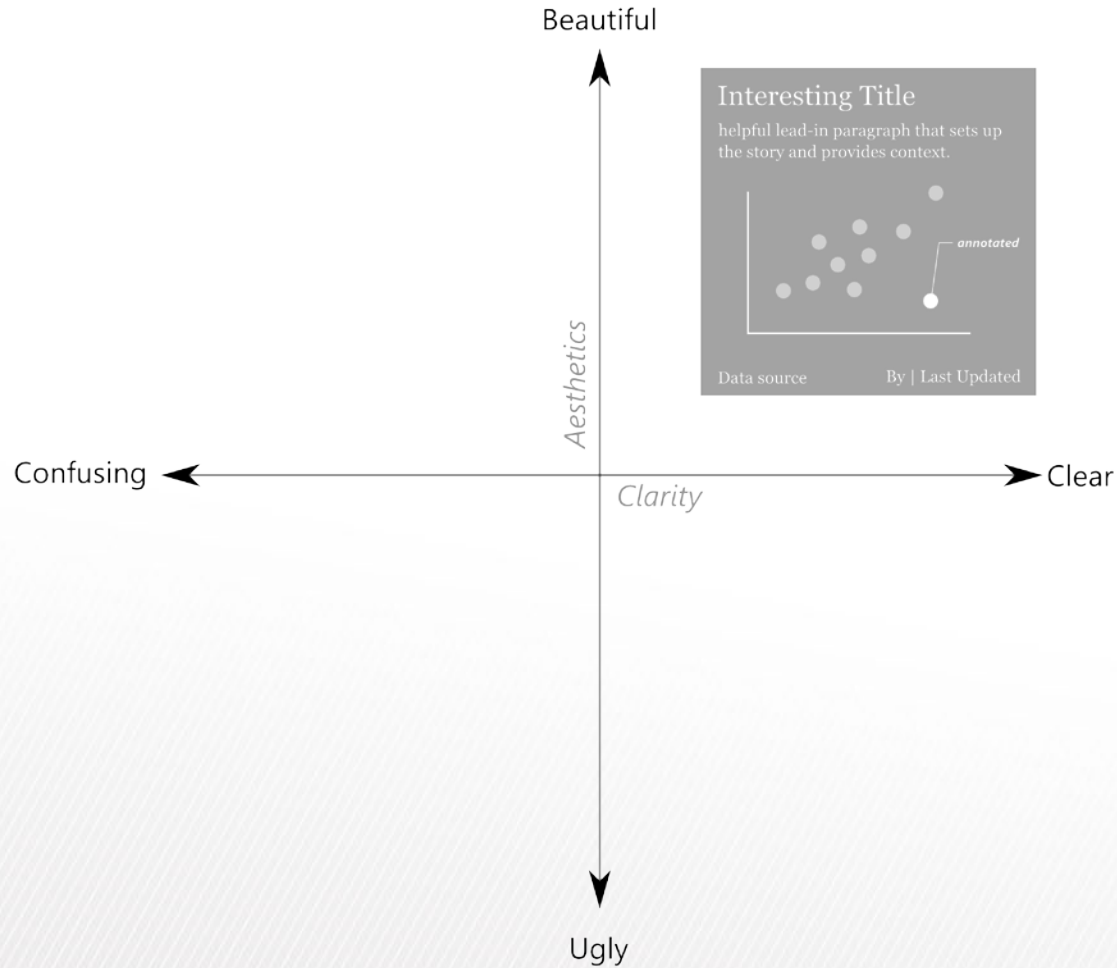
Tip 1: First, make it clear



Tip 2: Next, improve aesthetics



Tip 3: Finally, add finishing touches





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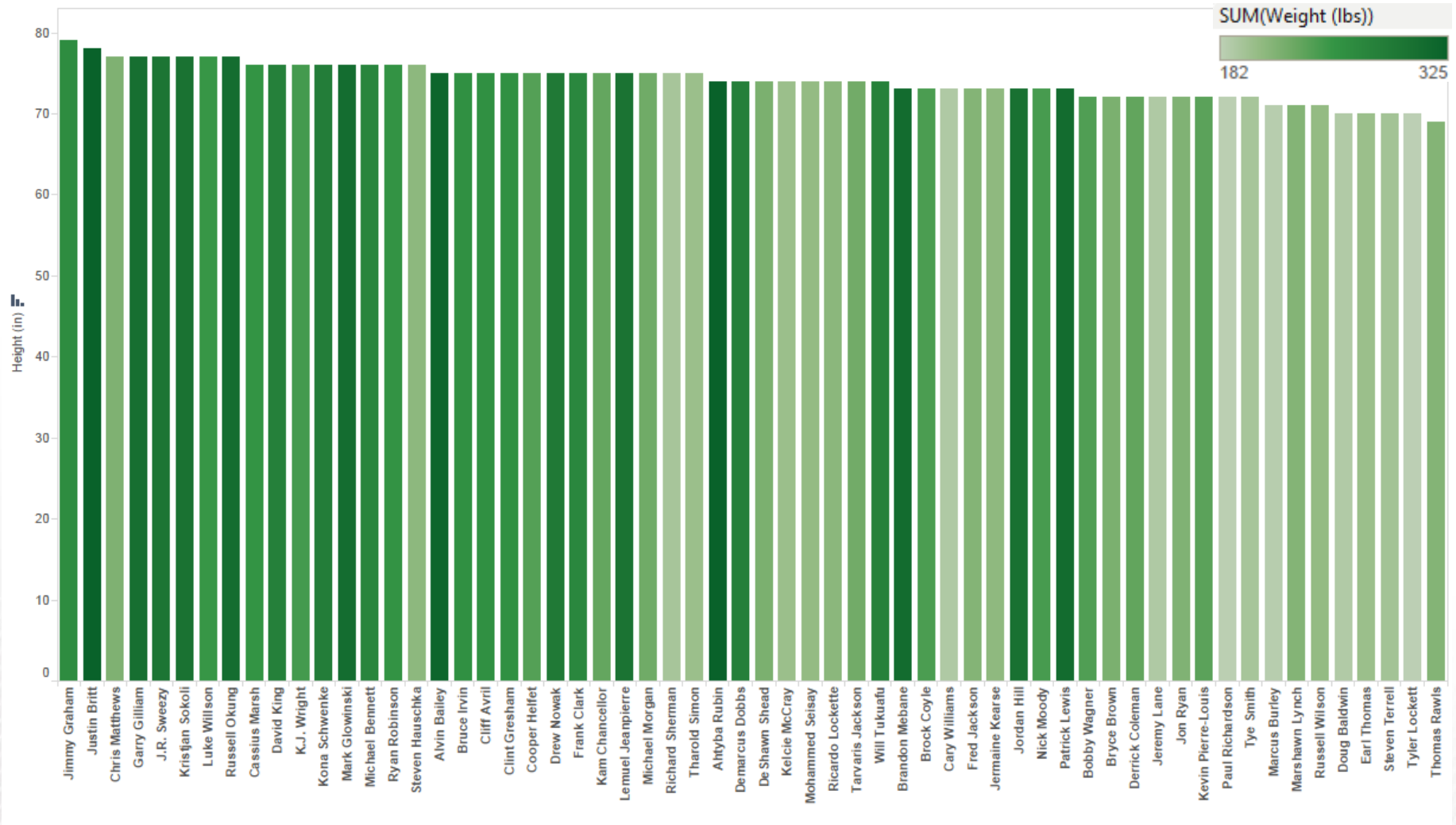
II.

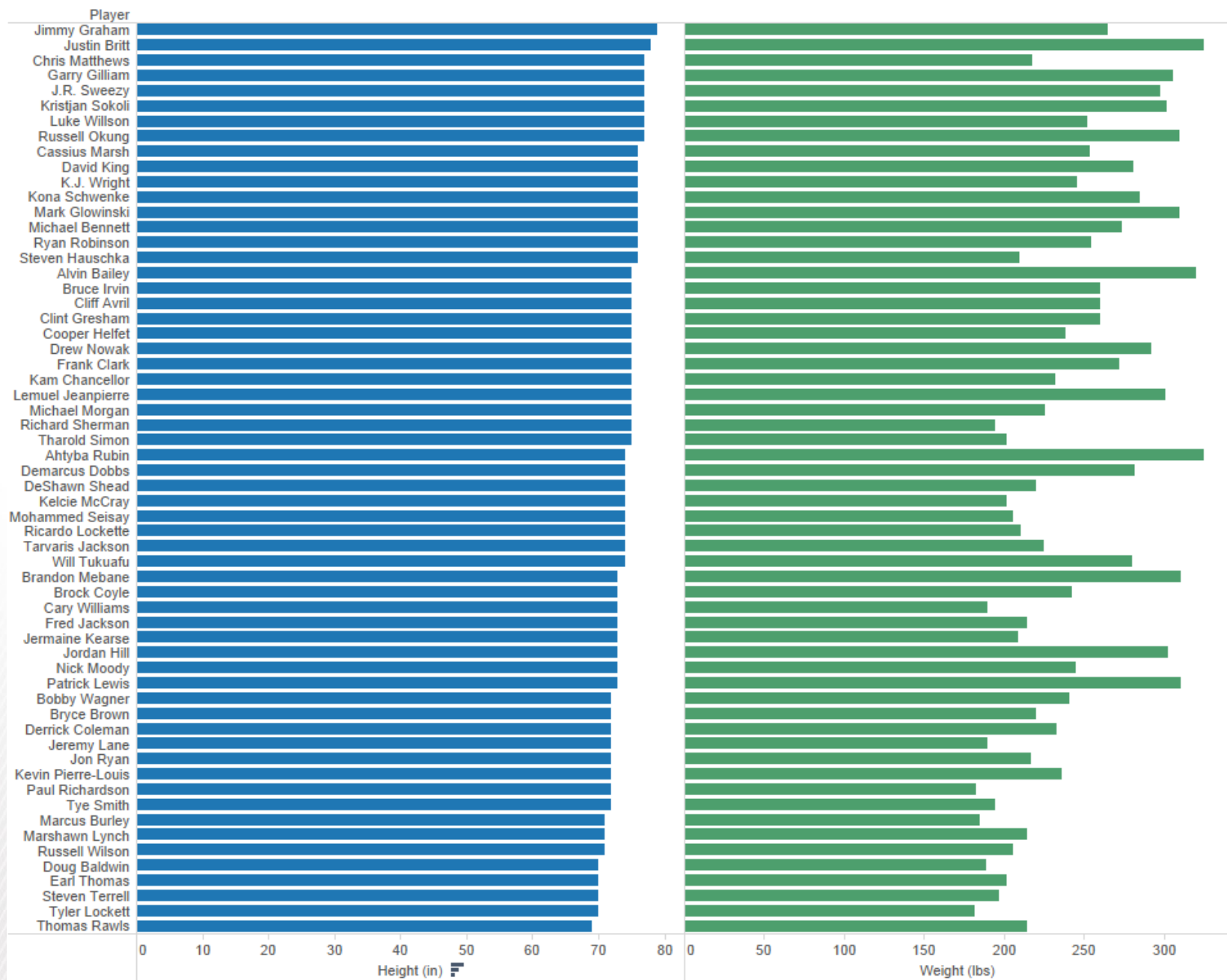
Practical

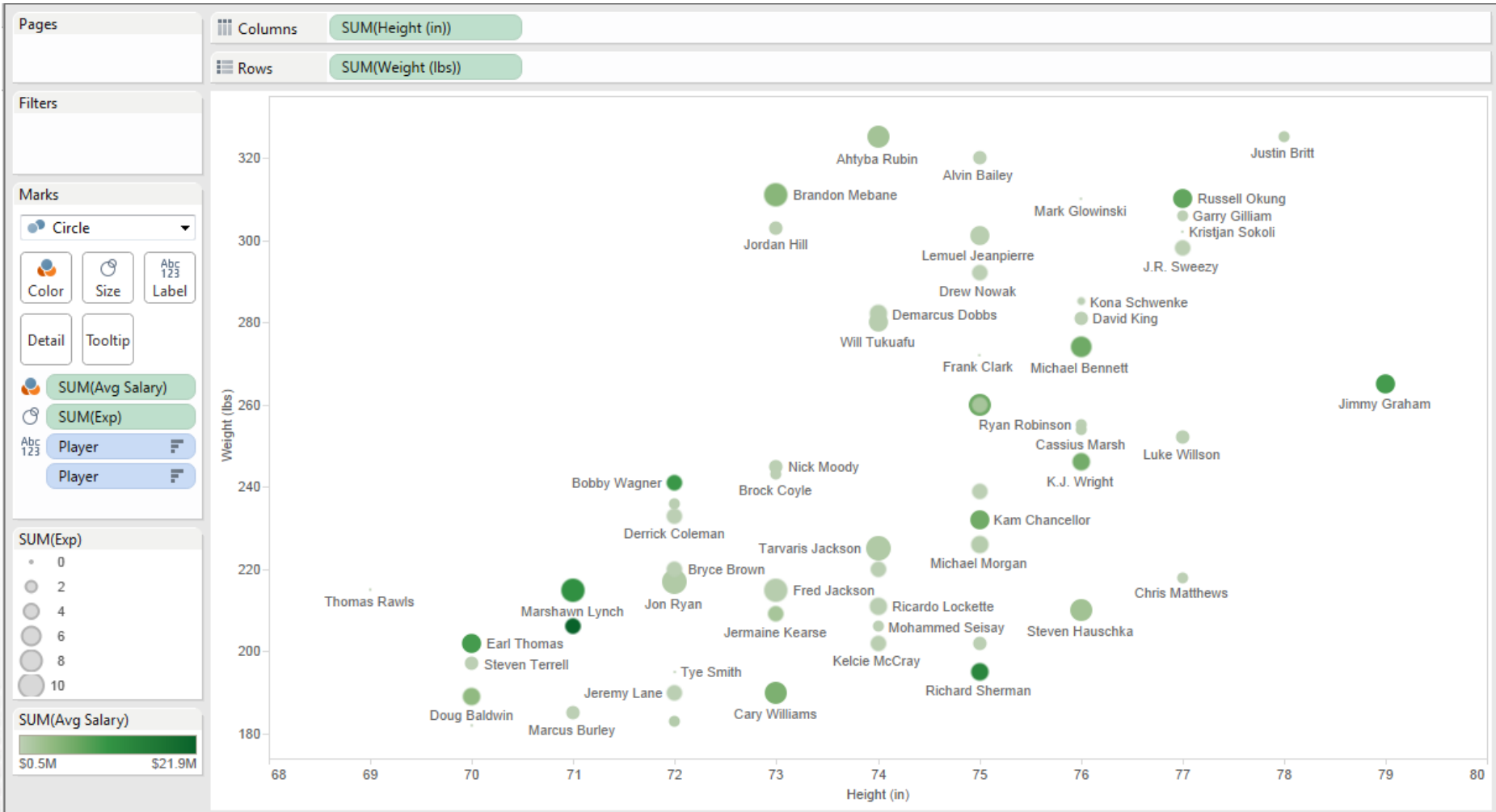
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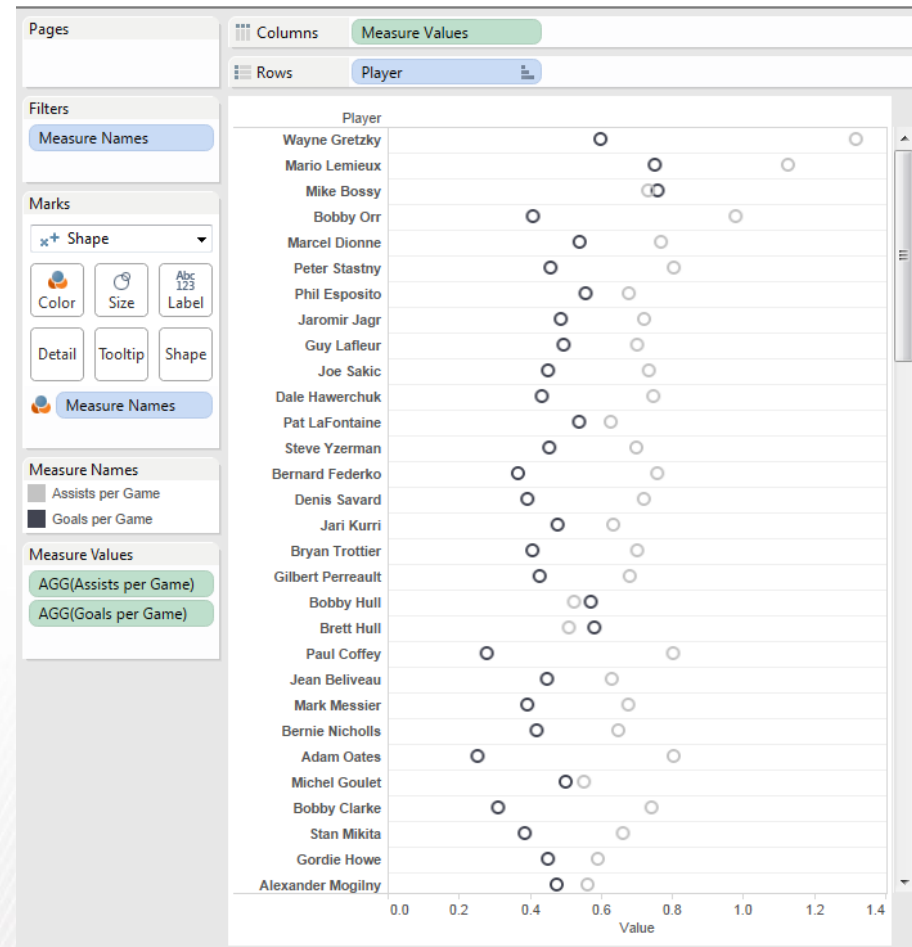
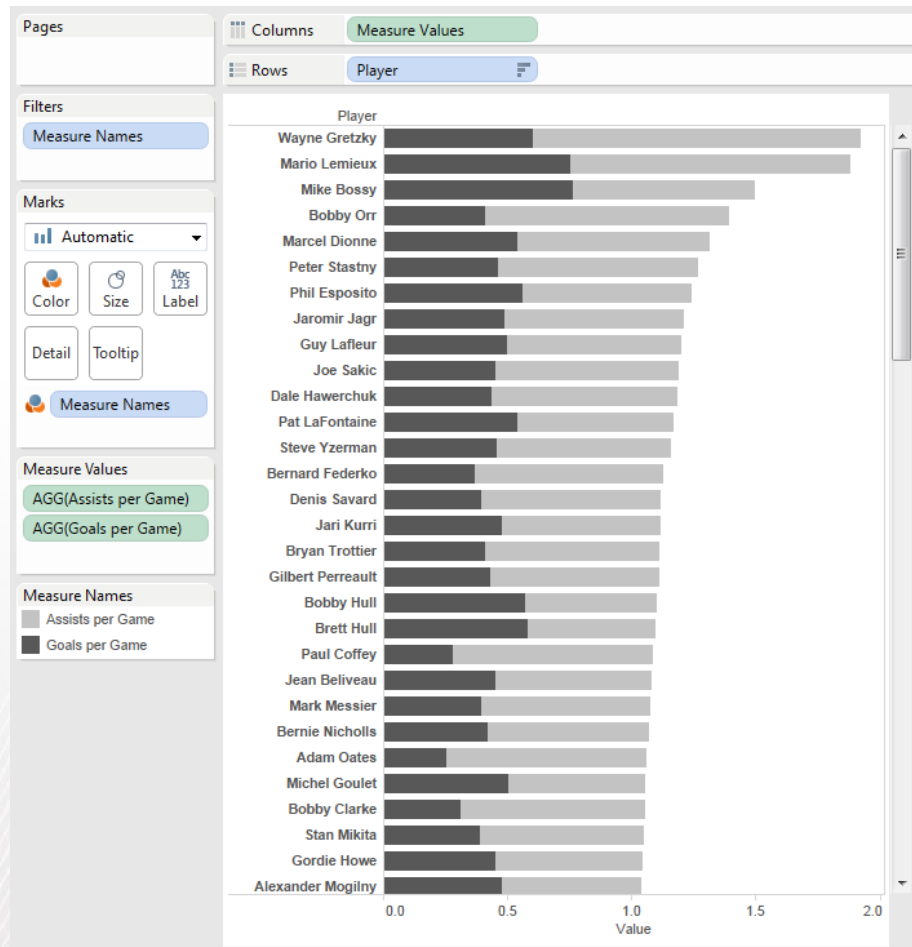
Effectiveness: Is it easier to tell relative **height** or **weight**?



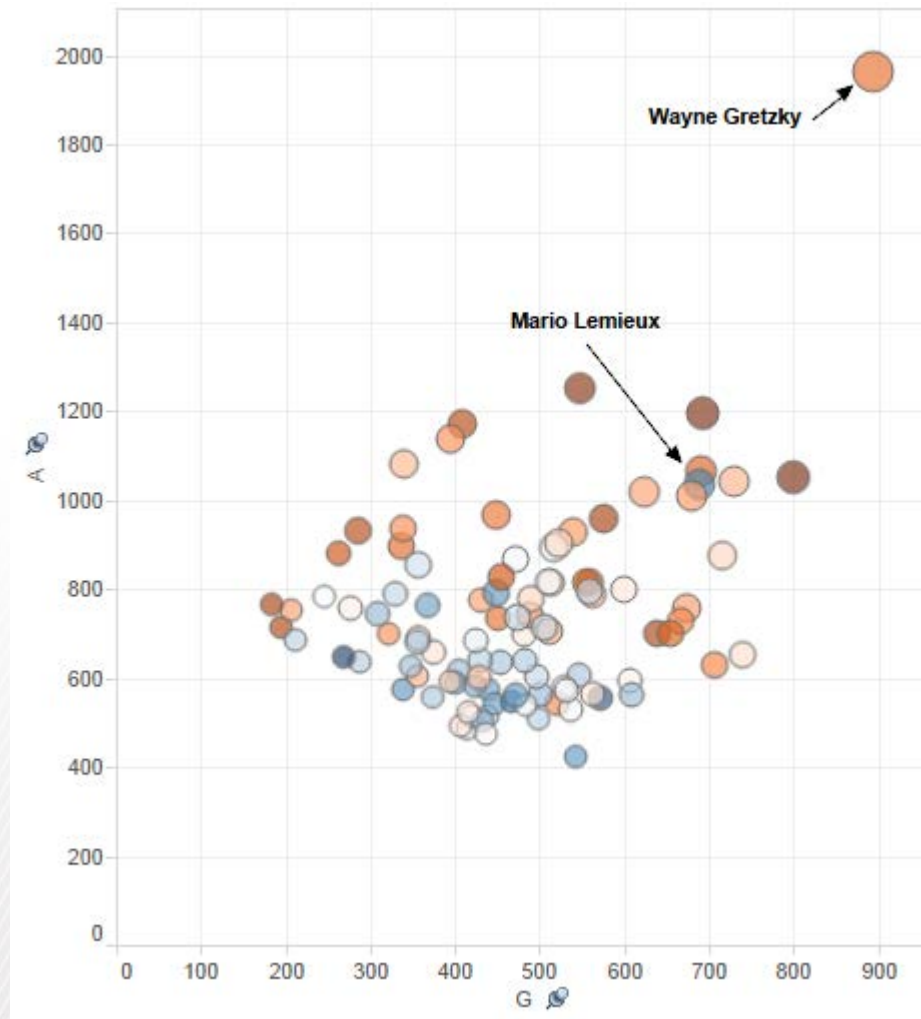




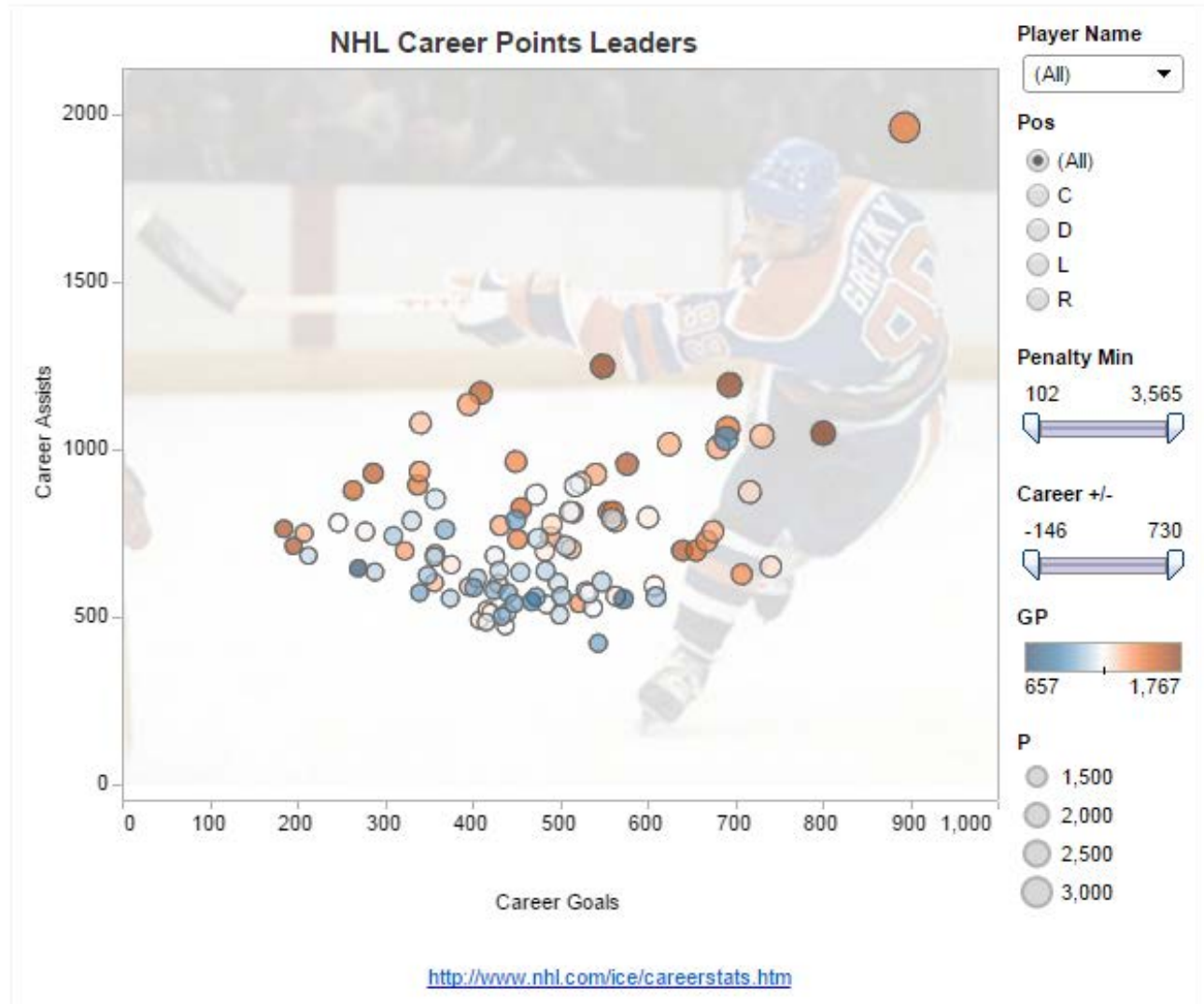
Stacked Bars or Dot Plots



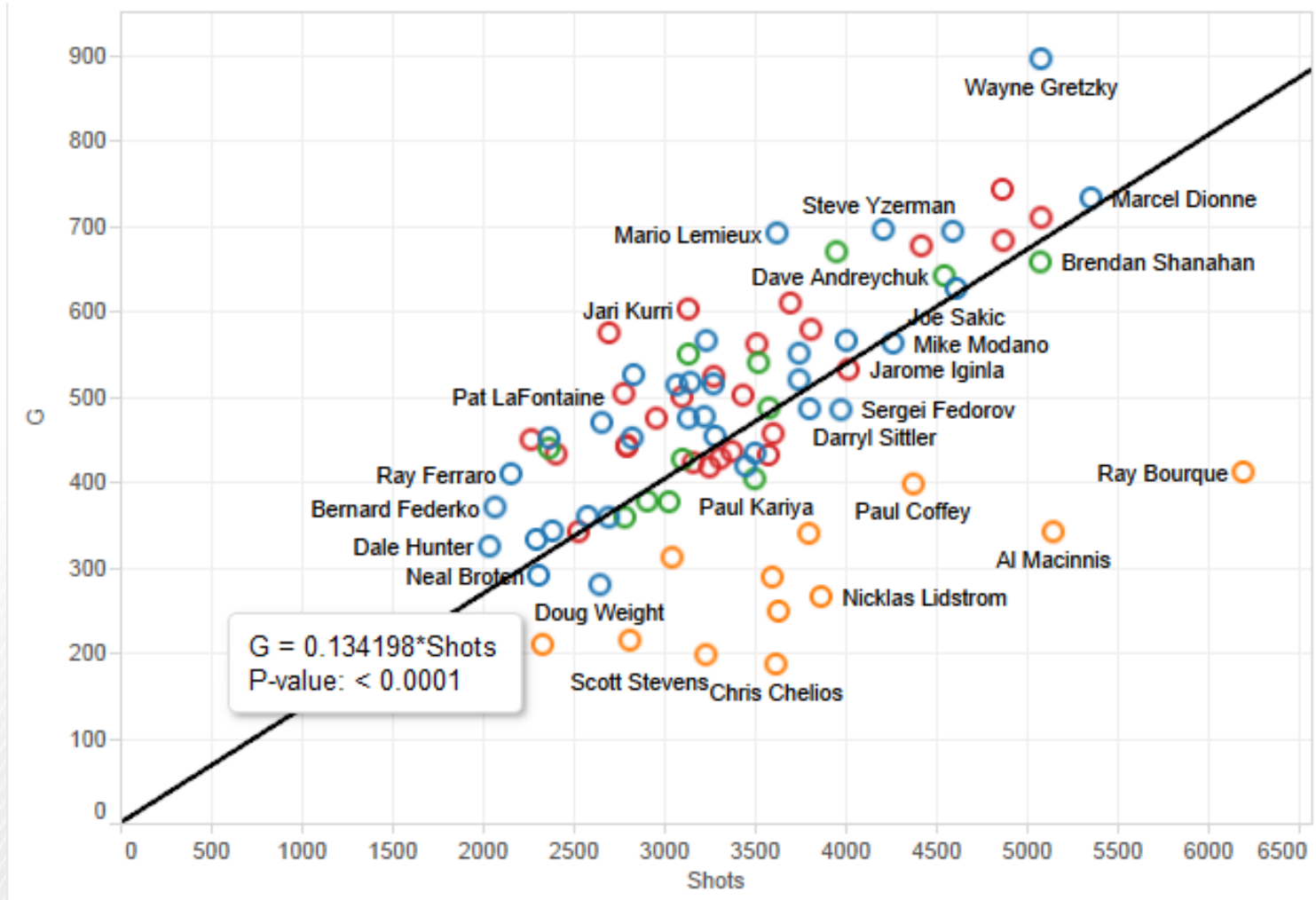
Scatterplots



Fully Formatted Scatterplots

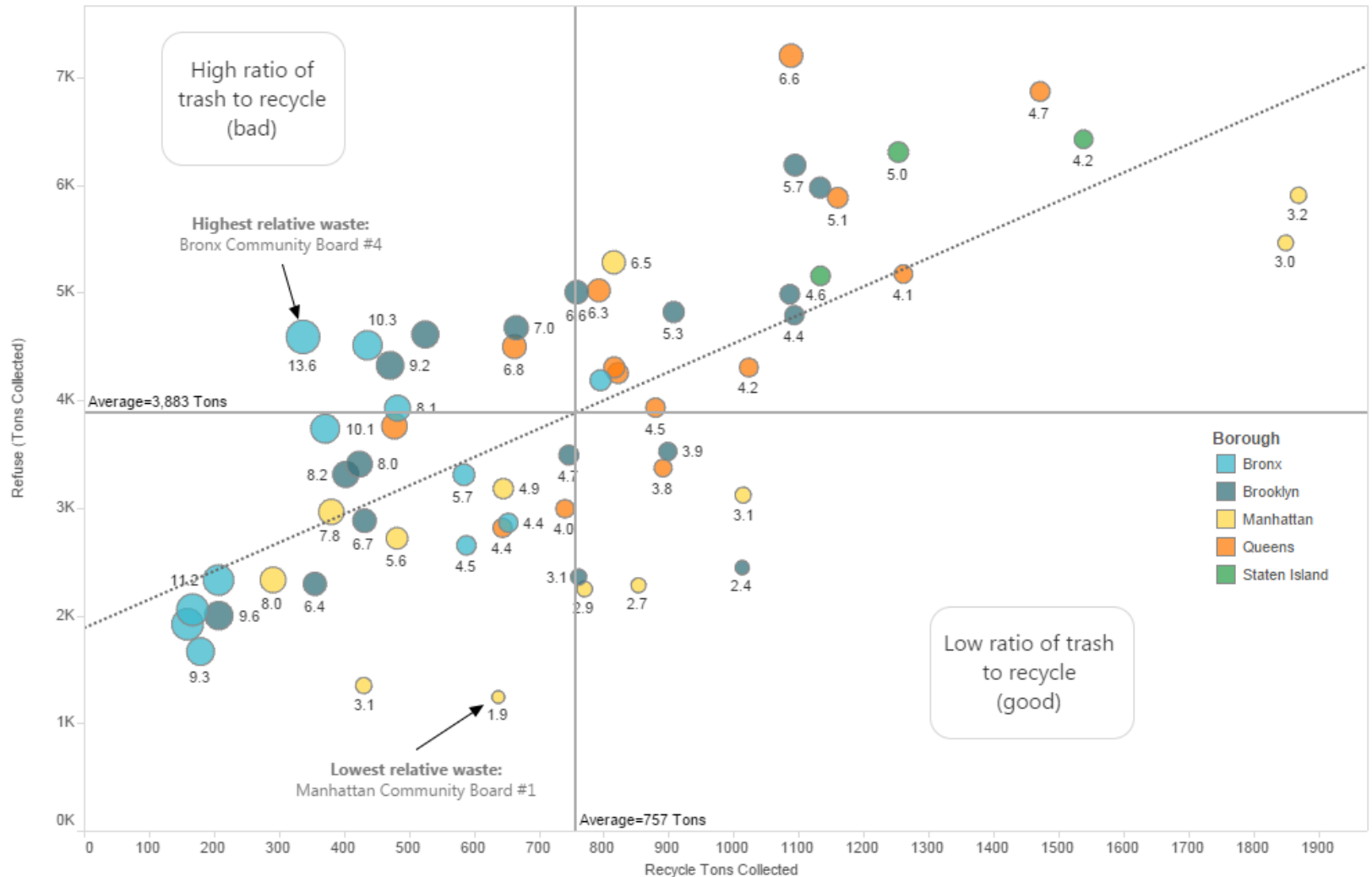


Linear Regression

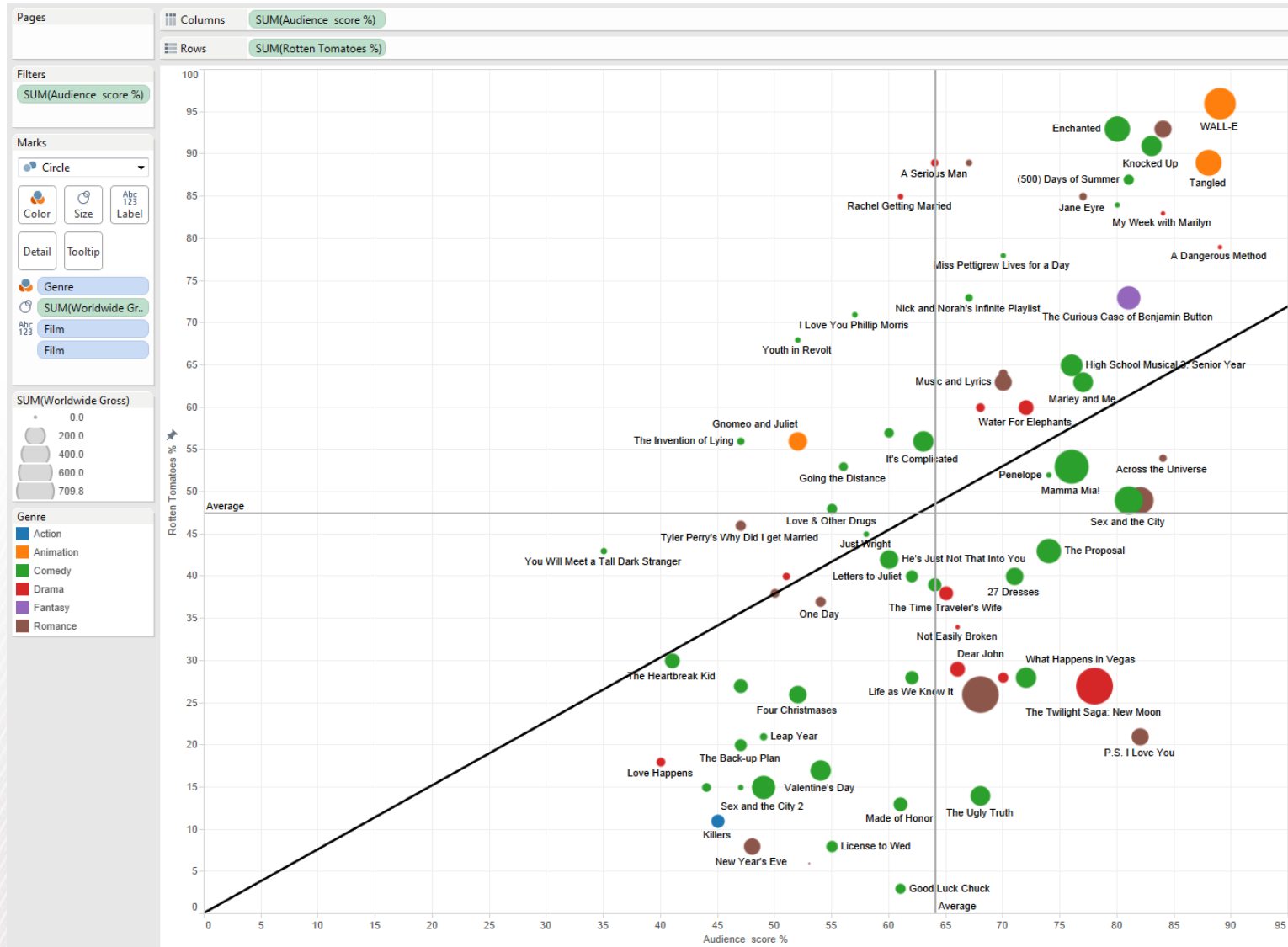


Trend Lines and 4-Blockers

Who are the best and worst recyclers in New York City?



In Class Example: Movie Ratings



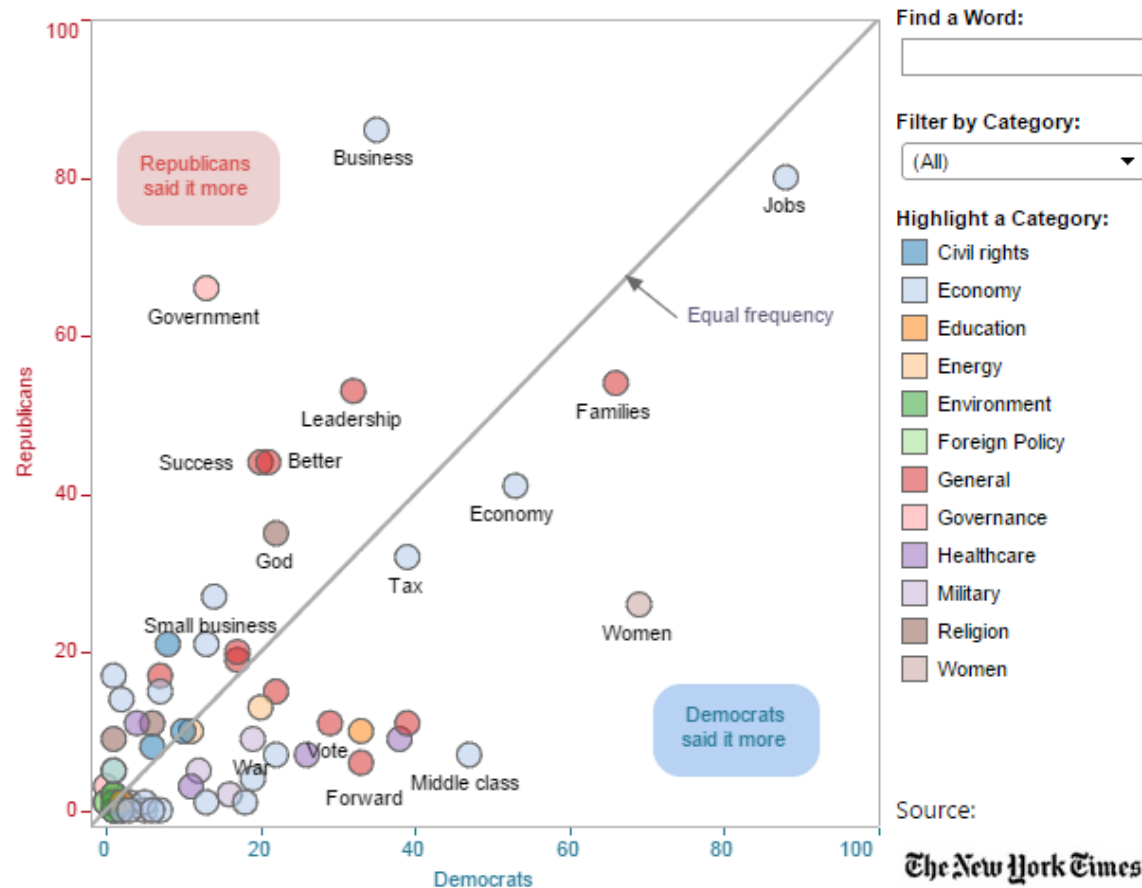
Diagonal Reference Line $x=y$

Ye Shall Know Them By Their Words...

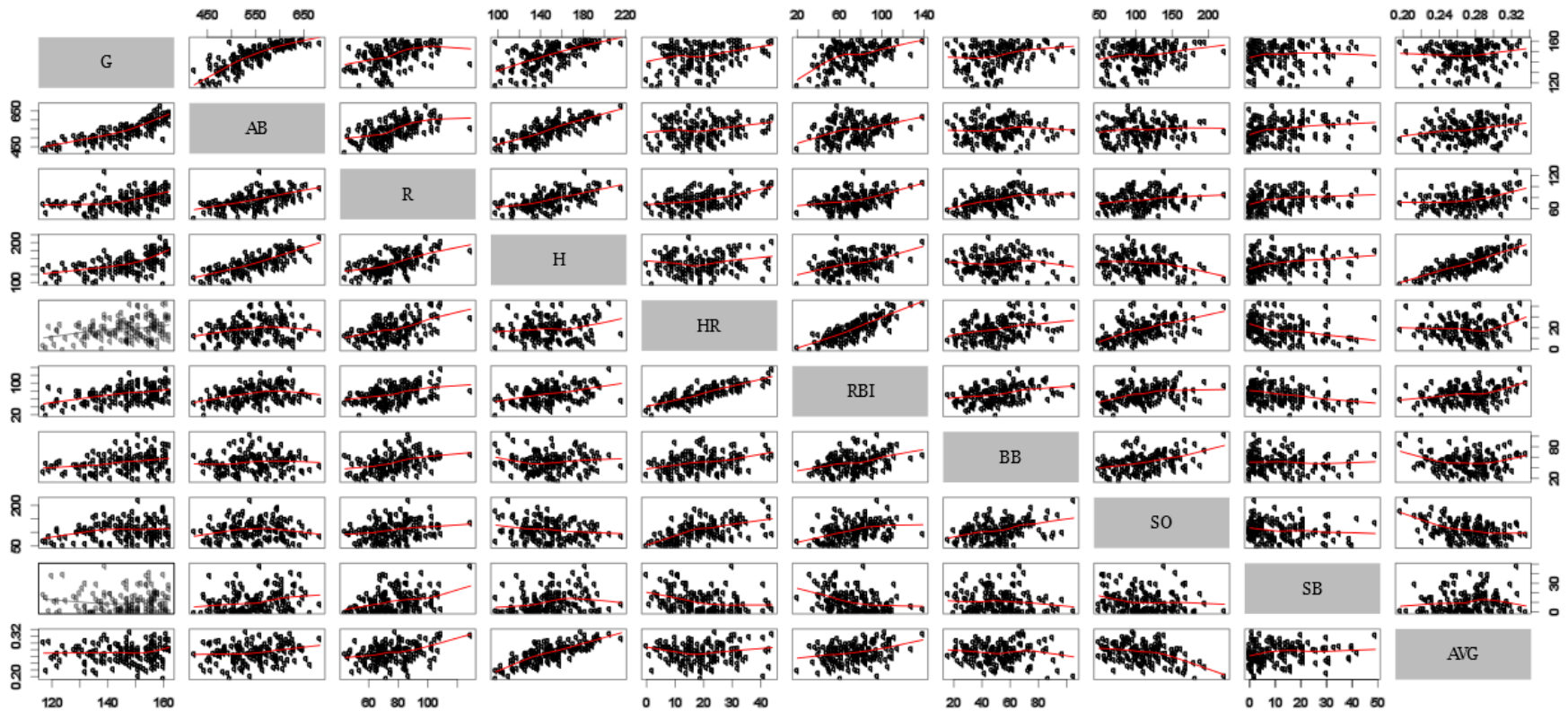


Compare how often speakers from the different parties used select words and phrases at their respective 2012 presidential nominating conventions. On each axis is plotted the count per 25,000 words.

Democrats had more to say about *healthcare, military and women*, while Republicans mentioned *religion and governance* more frequently:

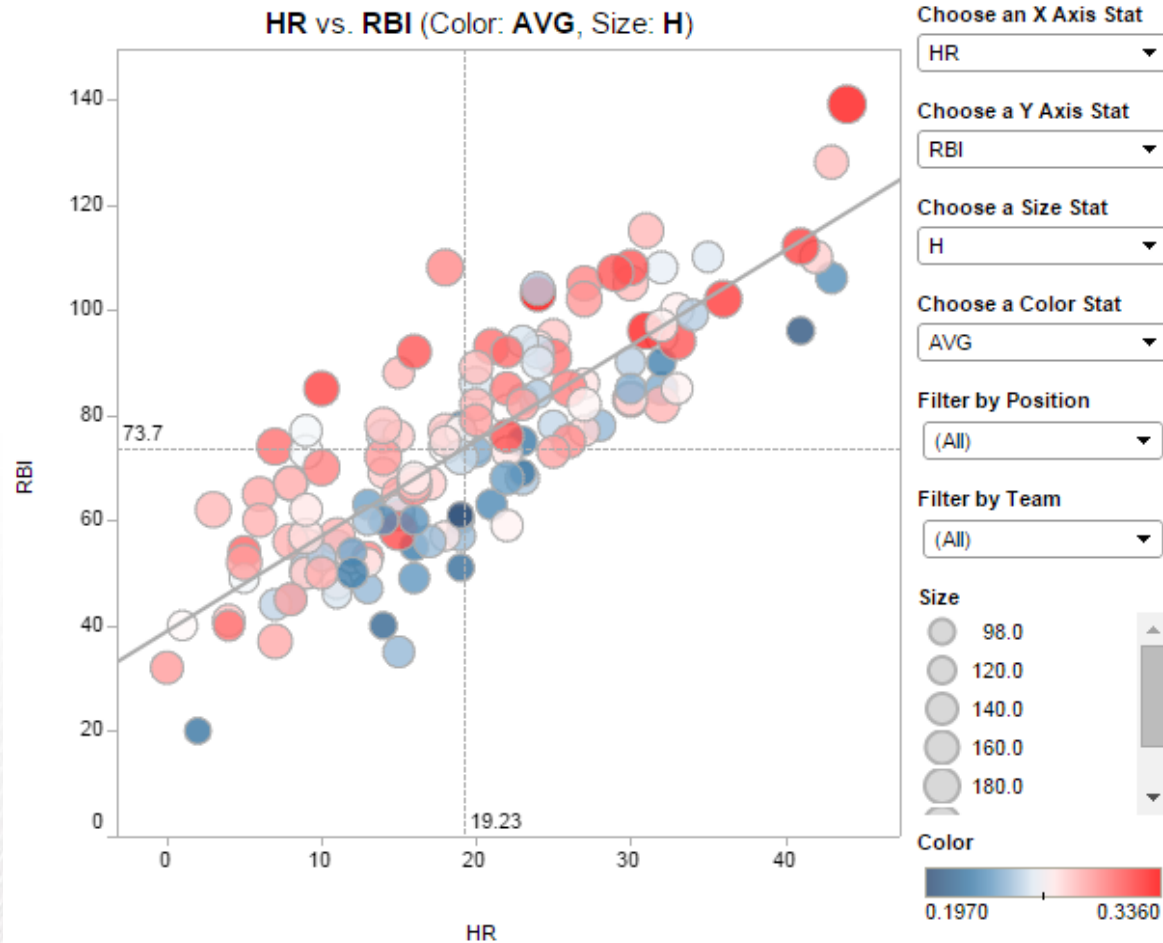


Small Multiples



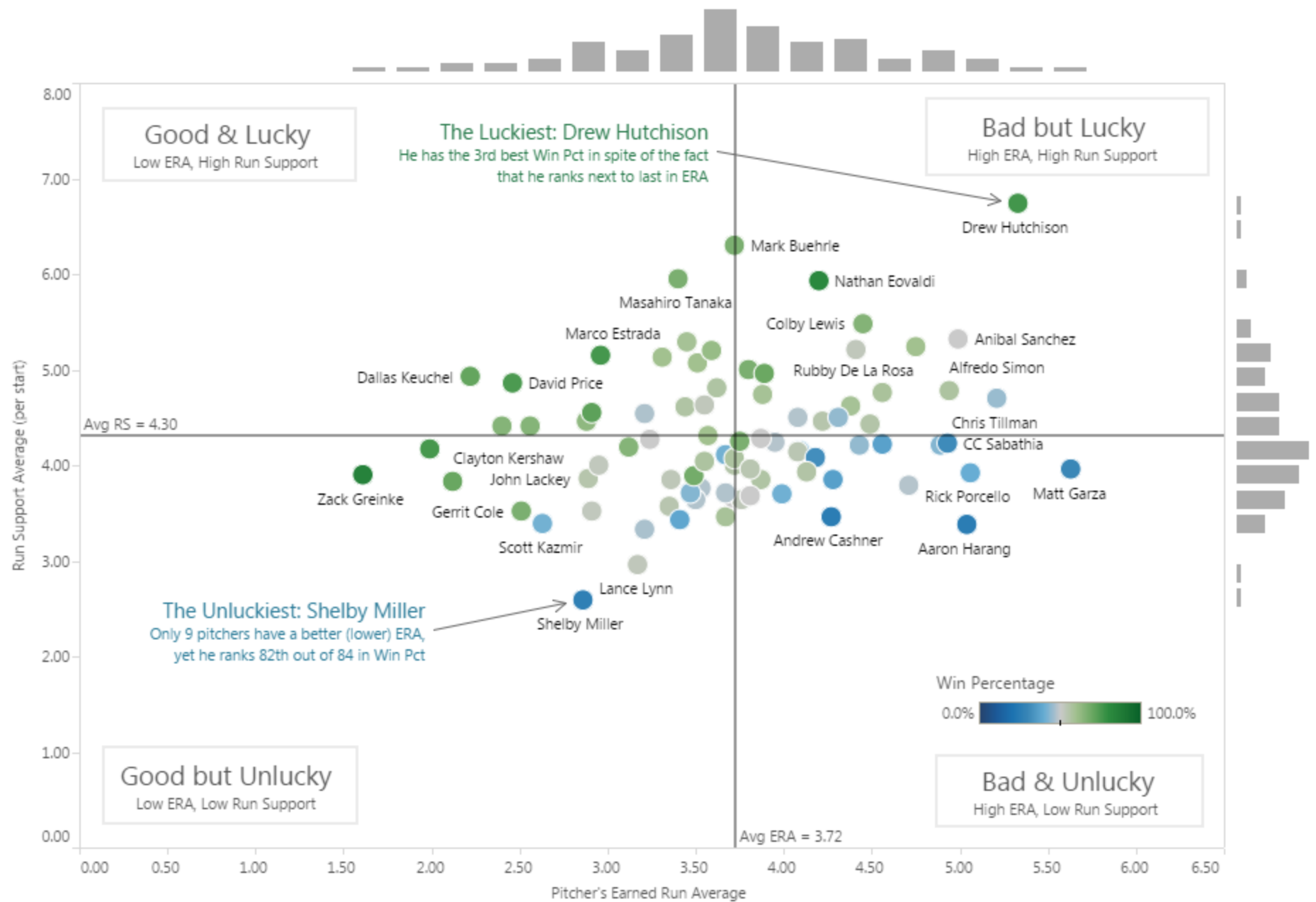
Interactive Visualizations

2012 MLB Regular Season Player Stats

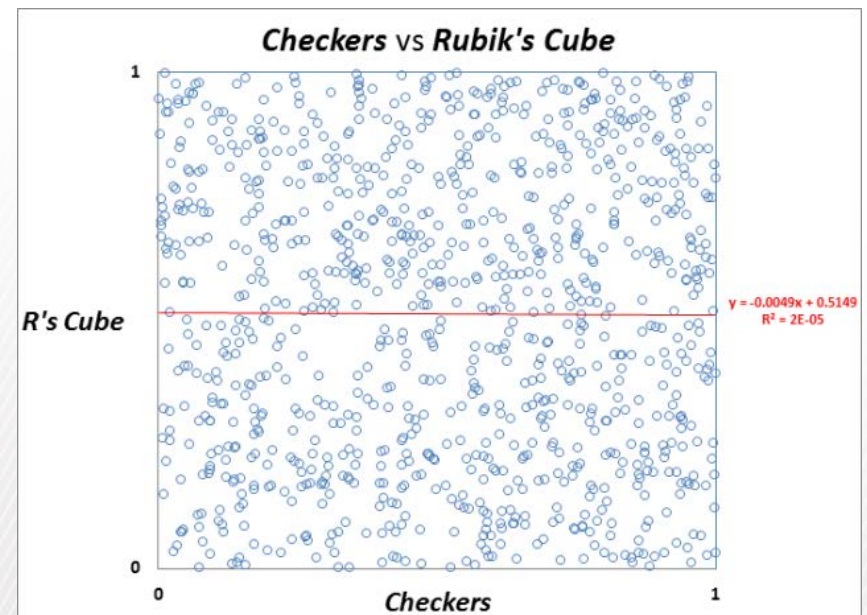
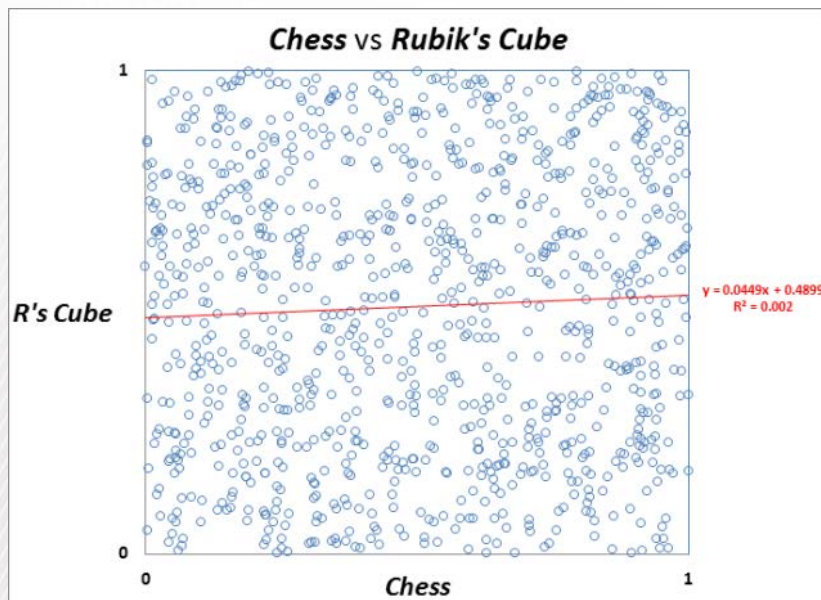
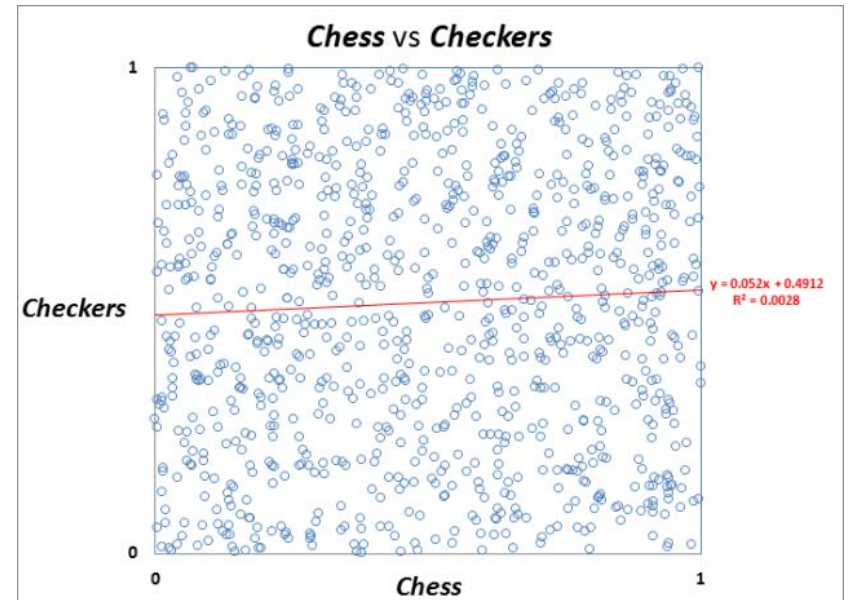
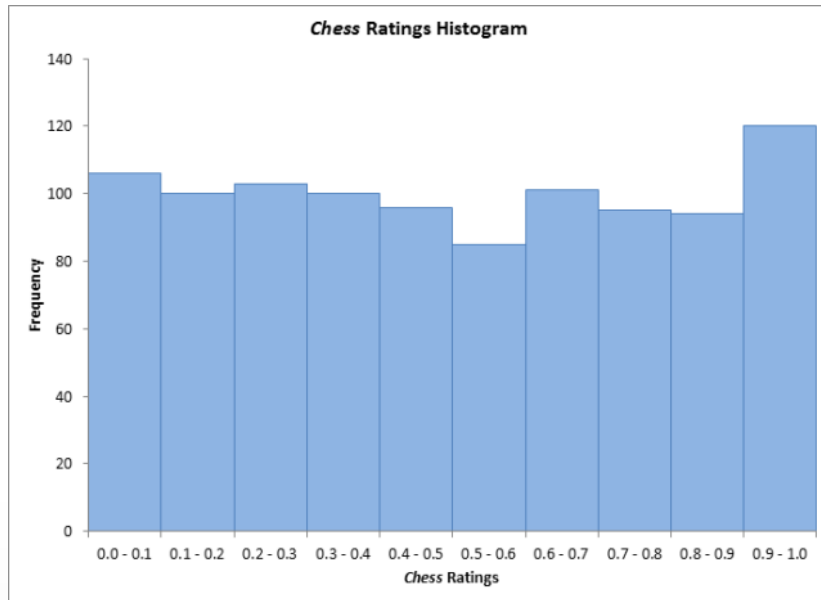


Qualifying Players | Source: mlb.mlb.com/stats/sortable.jsp





Group Exercise: Island of Games Puzzle



Week 5 Homework

- Read the chapters for the Week 6 Lecture:
 - Munzner, *Visualization Analysis & Design*, Ch. 7
 - Jones, *Communicating Data with Tableau*, Ch. 9
- Visualization
 - Find (or create) a data set that includes at least 3 different measures and create a data visualization that shows each of these measures clearly