

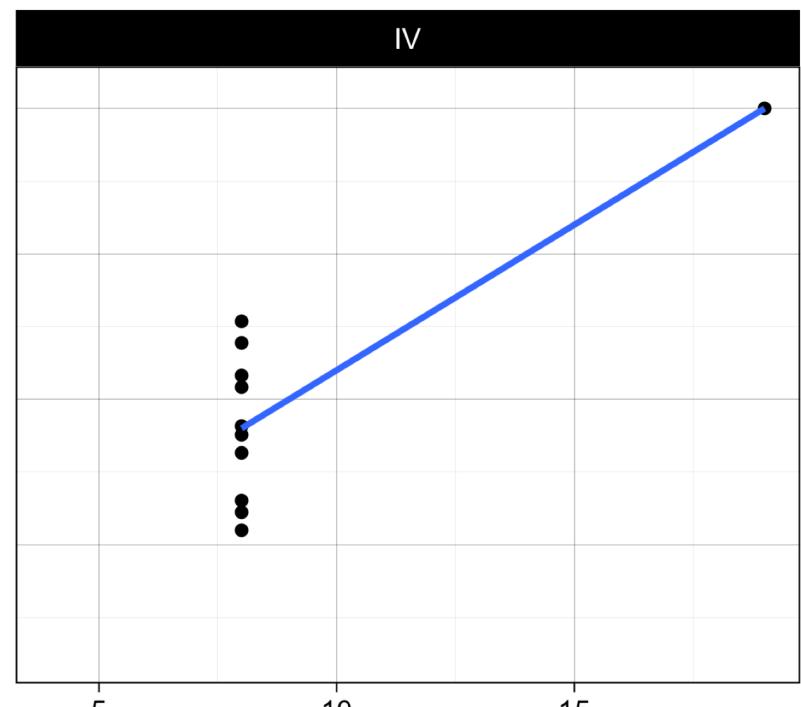
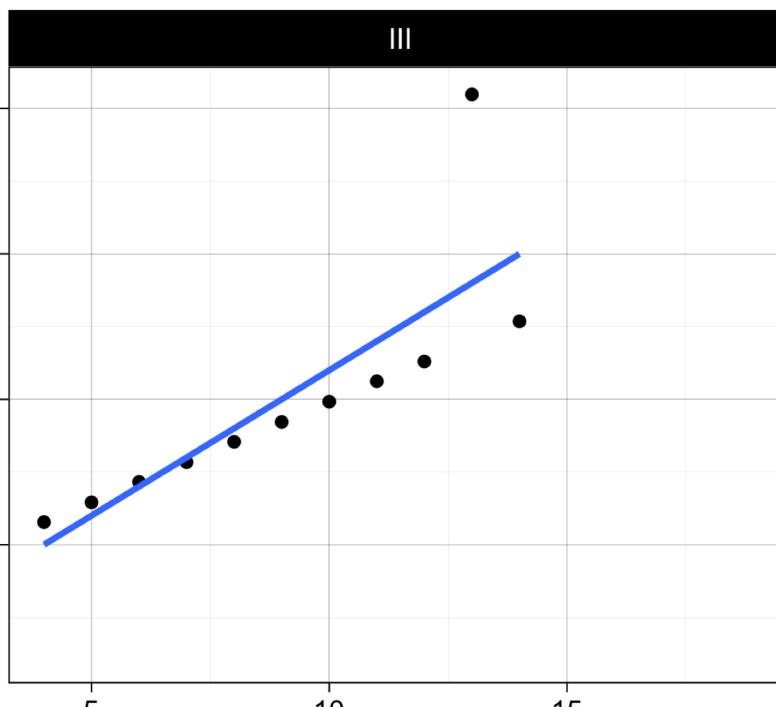
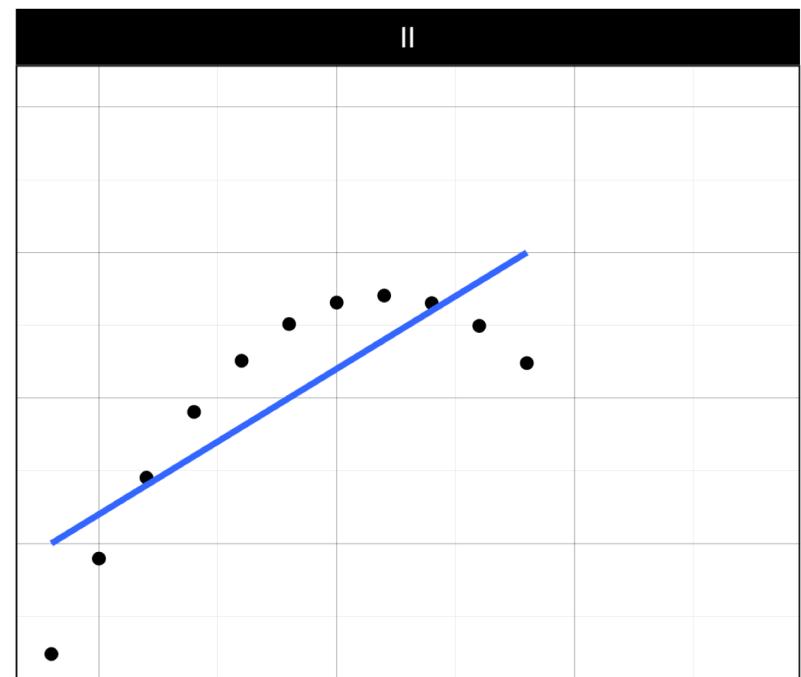
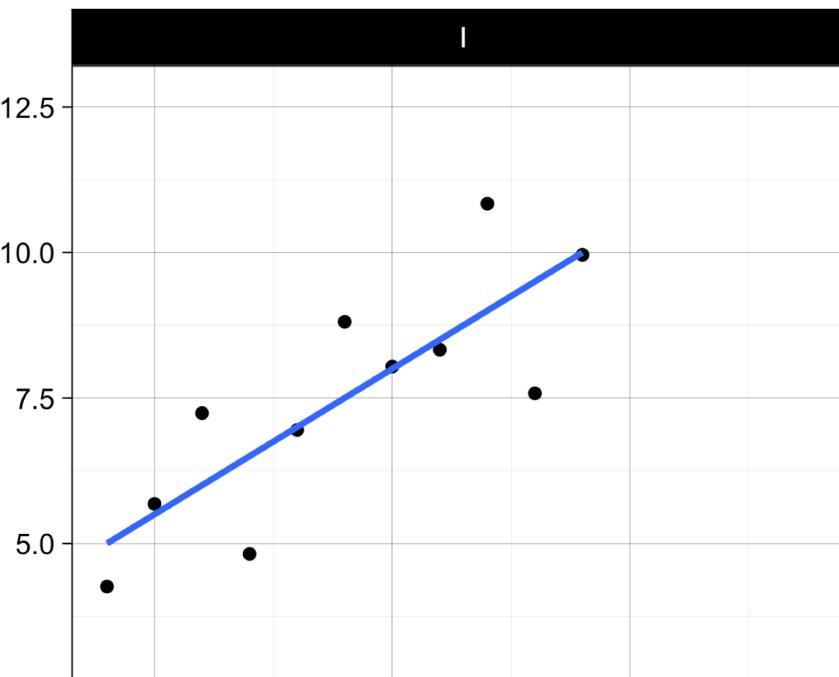
*A very brief overview of  
topics in data  
visualization*

# Why visualize data?

---

<i>Dependent variable:</i>	
	y1
x1	0.500*** (0.118)
Constant	3.000** (1.125)
Observations	11
R <sup>2</sup>	0.667
Adjusted R <sup>2</sup>	0.629
Residual Std. Error	1.237 (df = 9)
F Statistic	17.990*** (df = 1; 9)

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01



# We are visual creatures

frontiers in  
NEUROSCIENCE

REVIEW ARTICLE  
published: 22 August 2014  
doi: 10.3389/fnins.2014.00265

## Superior pattern processing is the essence of the evolved human brain

Mark P. Mattson<sup>1,2\*</sup>

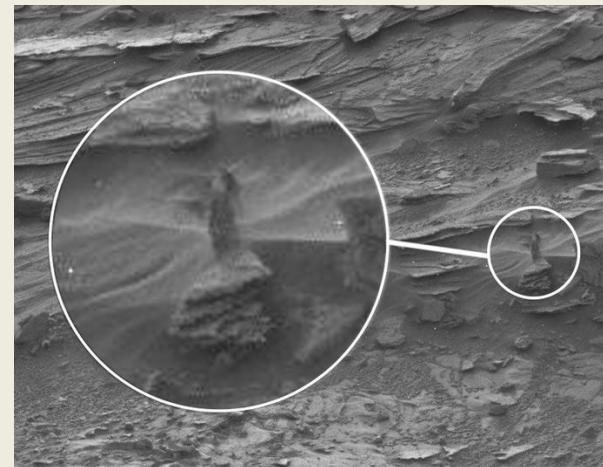
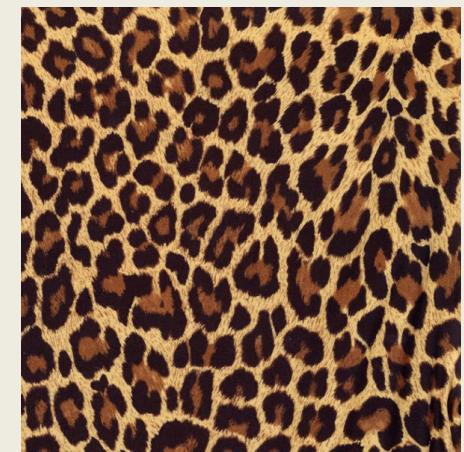
<sup>1</sup> Laboratory of Neurosciences, National Institute on Aging Intramural Research Program, Baltimore, MD, USA

<sup>2</sup> Department of Neuroscience, Johns Hopkins University School of Medicine, Baltimore, MD, USA

**Edited by:**

J. Michael Williams, Drexel University, USA

Humans have long pondered the nature of their mind/brain and, particularly why its capacities for reasoning, communication and abstract thought are far superior to other species, including closely related anthropoids. This article considers superior pattern



# General topics in visualization

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Types of visualization

Chart selection

Aesthetics and design

Technical know-how

# Two types of visualization

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**Exploratory**

(academic-ish)

Scatterplots, histograms, etc.

**Explanatory**

(publishable-ish)

Your MP, Vox, FiveThirtyEight, NYT

# Exploratory Data Analysis

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“Interocular  
traumatic impact”

Enhance probabilistic analysis

Check shape and assumptions

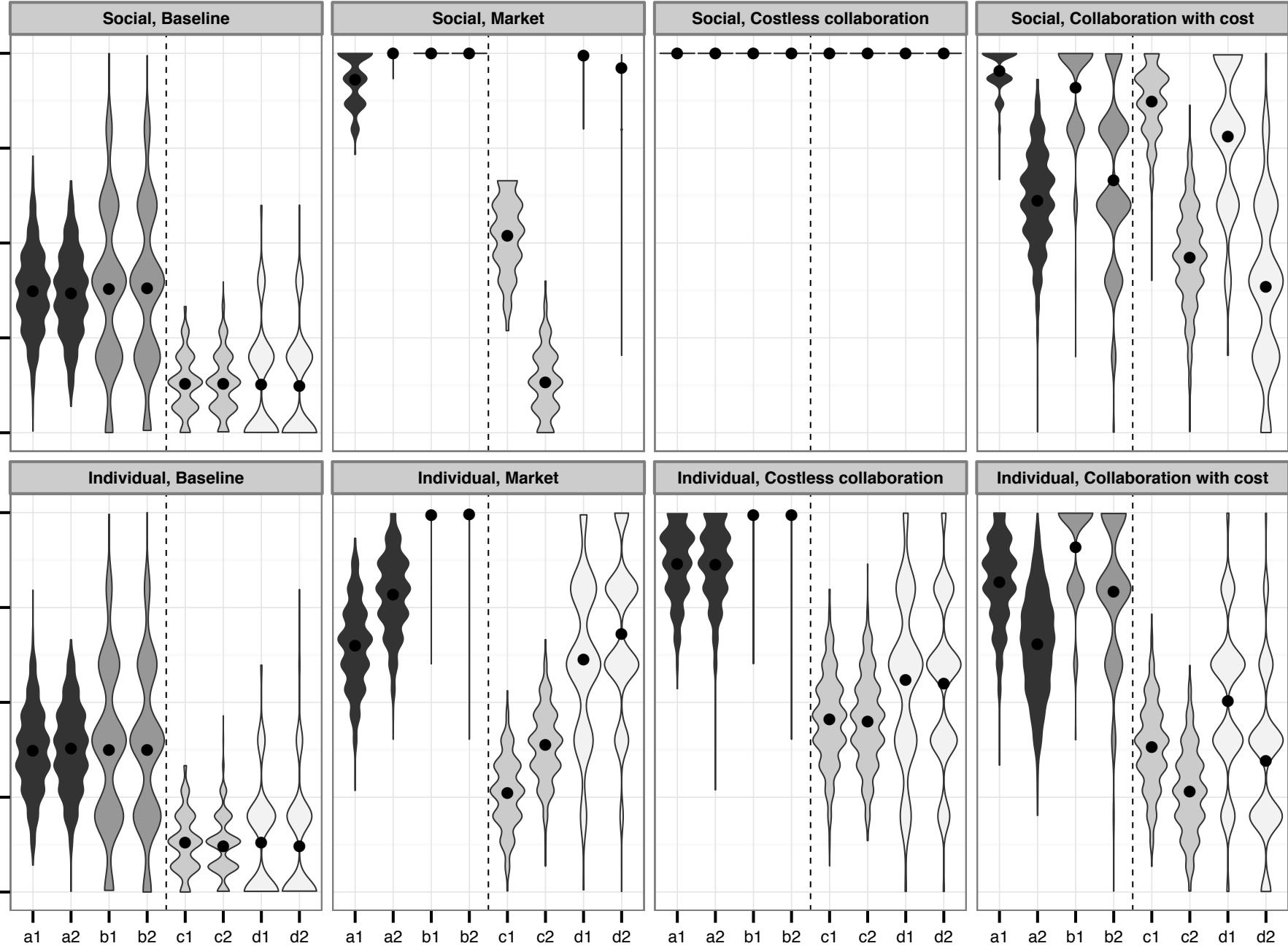
# EDA: Understand your data

---

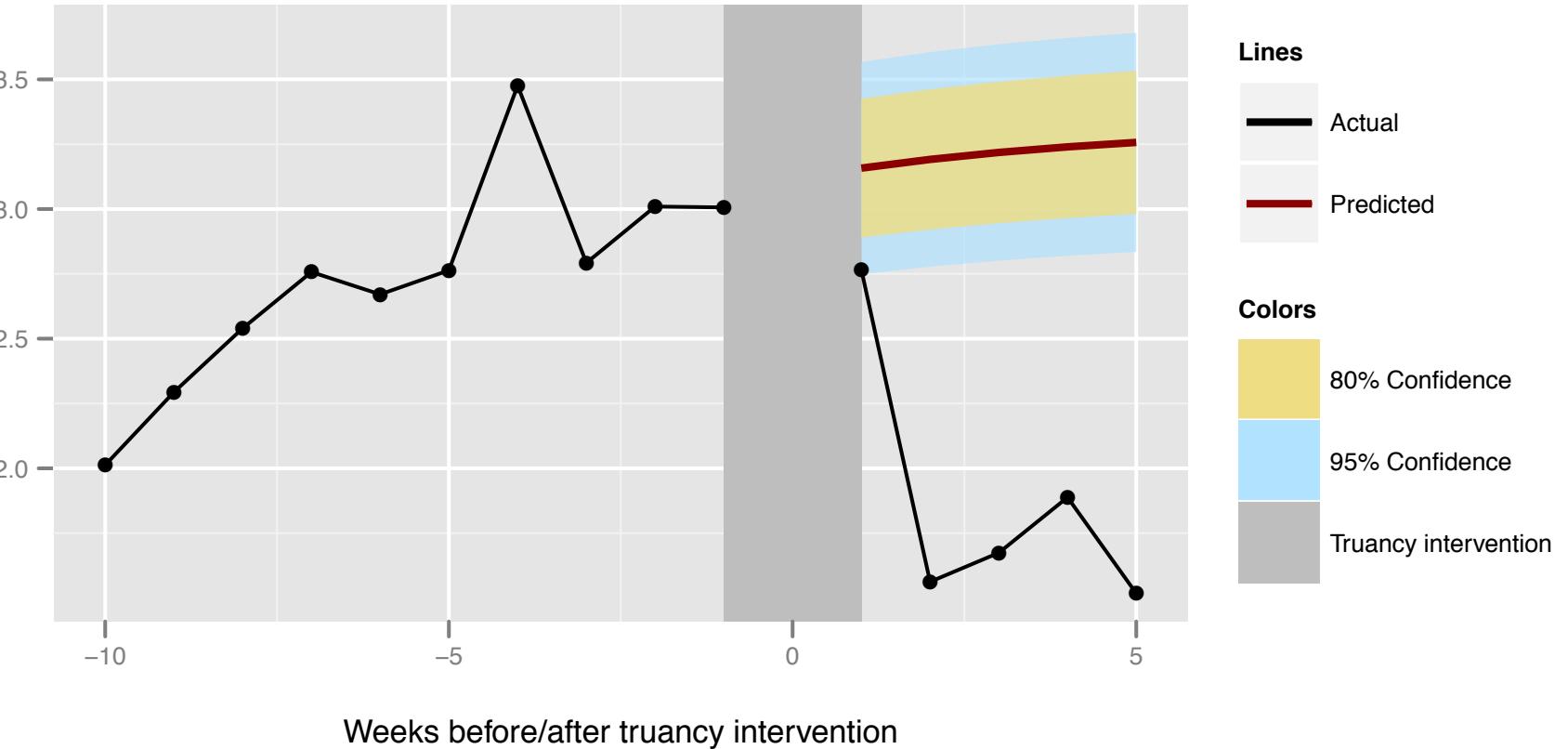
Visualize every  
variable individually

Visualize relationships  
between variables

Visualize models



Average number of absences



Lines

— Actual

— Predicted

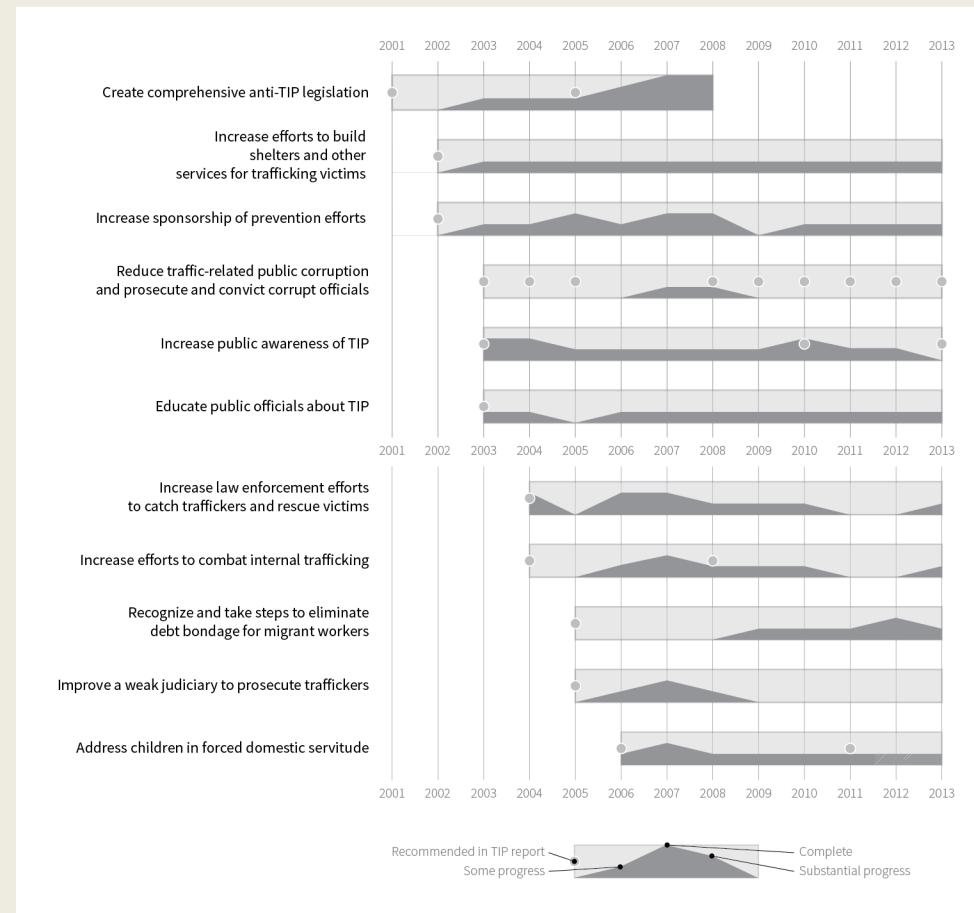
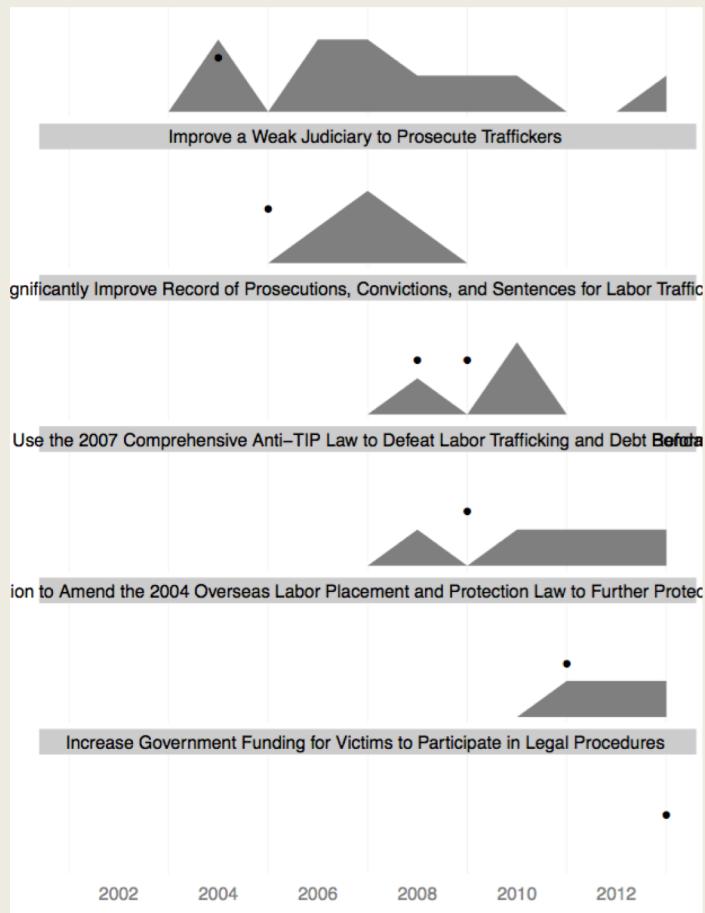
Colors

80% Confidence

95% Confidence

Truancy intervention

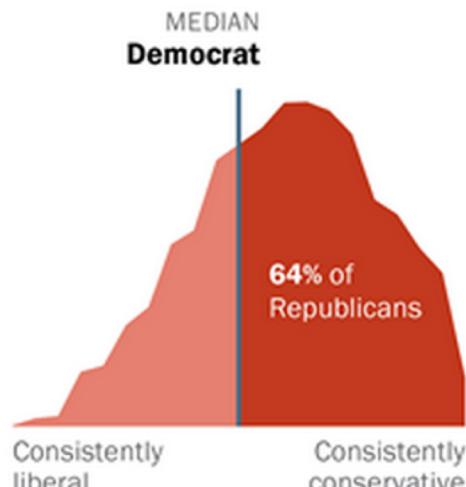
# Technical vs. publishable



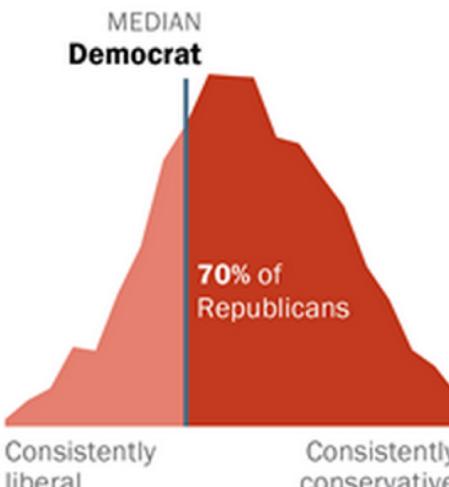
# Republicans Shift to the Right, Democrats to the Left

*Distribution of Republicans and Democrats on a 10-item scale of political values*

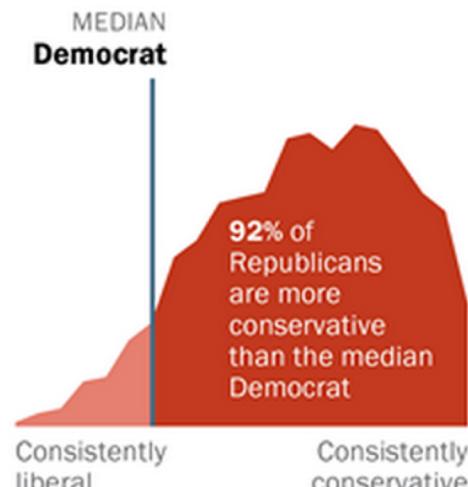
**1994**



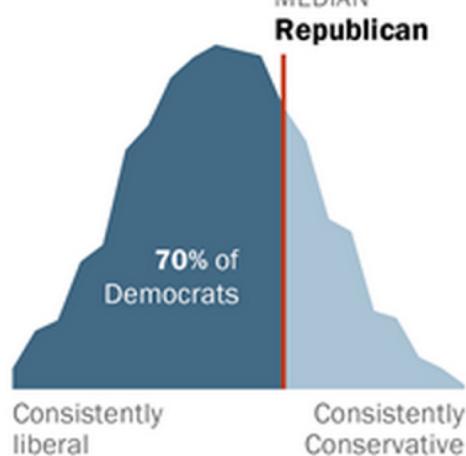
**2004**



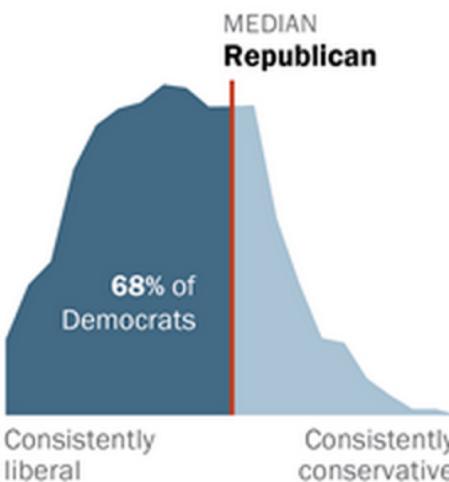
**2014**



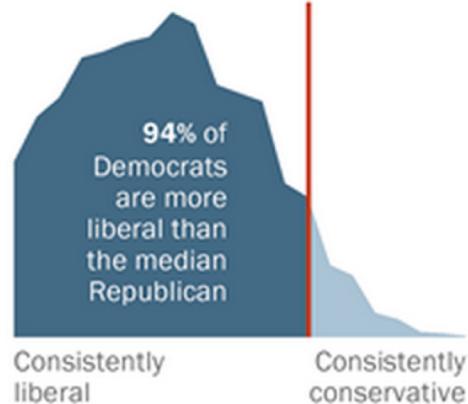
**MEDIAN Republican**



**MEDIAN Republican**



**MEDIAN Republican**

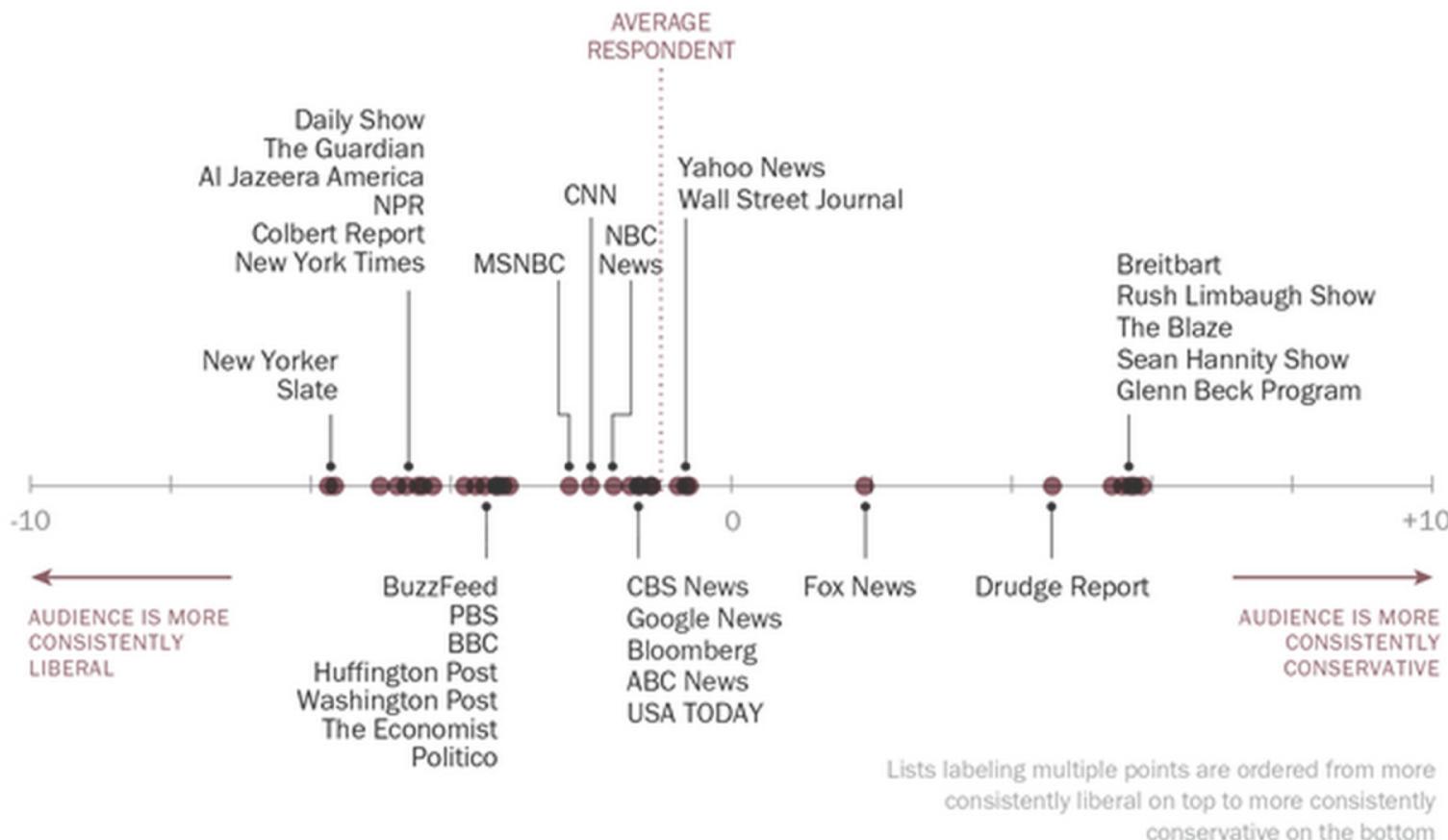


Source: 2014 Political Polarization in the American Public.

Notes: Ideological consistency based on a scale of 10 political values questions (see Appendix A). Republicans include Republican-leaning independents; Democrats include Democratic-leaning independents (see Appendix B).

## Ideological Placement of Each Source's Audience

Average ideological placement on a 10-point scale of ideological consistency of those who got news from each source in the past week...



American Trends Panel (wave 1). Survey conducted March 19-April 29, 2014. Q22. Based on all web respondents. Ideological consistency based on a scale of 10 political values questions (see About the Survey for more details.) ThinkProgress, DailyKos, Mother Jones, and The Ed Schultz Show are not included in this graphic because audience sample sizes are too small to analyze.

# Regional Support for Same-Sex Marriage

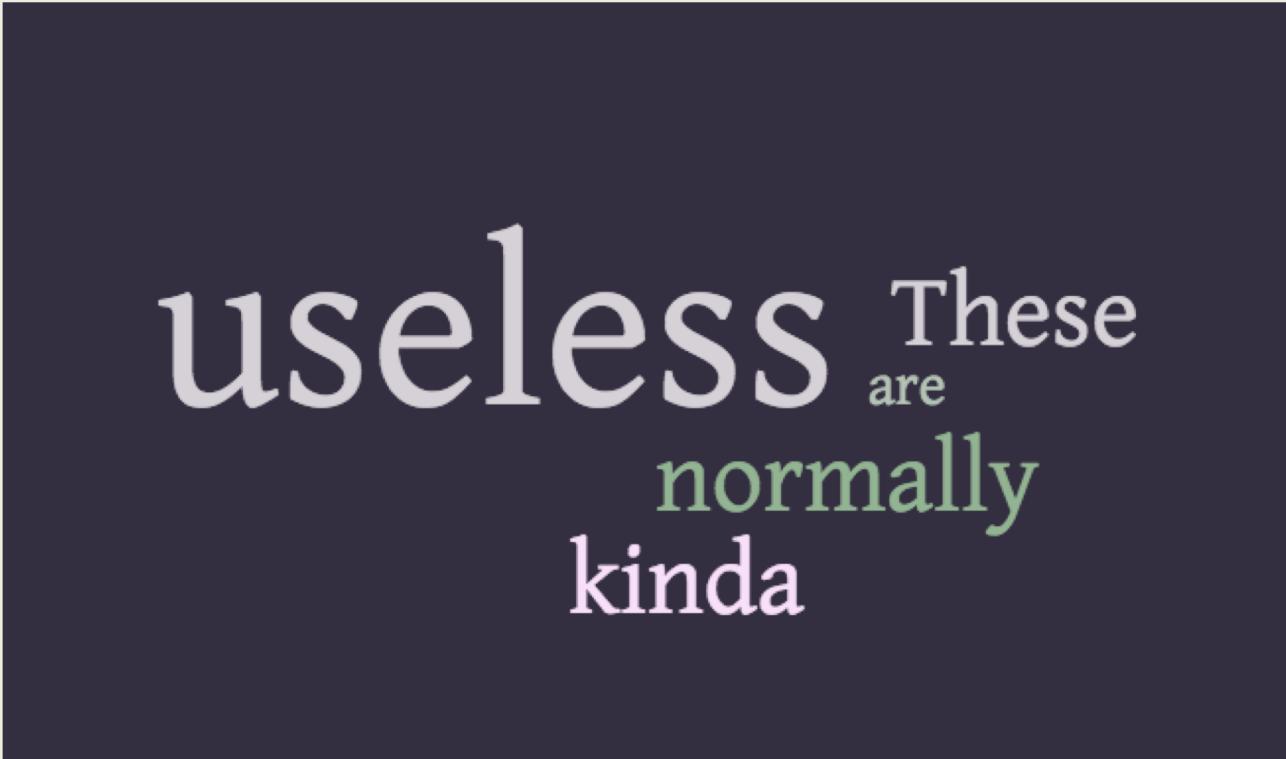
% favoring same-sex marriage, 2003-2014



Note: Regional breakdowns are based on the U.S. Census regions and divisions, with three exceptions. Maryland, Delaware and D.C. are grouped in the mid-Atlantic with New York, New Jersey and Pennsylvania, instead of in the South Atlantic. The census divisions of East South Central and West South Central are combined into a single South Central designation.

# What about qualitative data?

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useless These  
are normally  
kinda

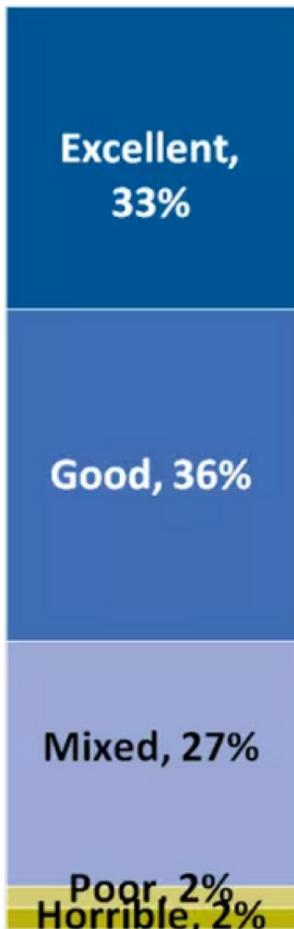
A dense collage of various "I love you" lyrics in different colors (orange, brown, red, purple, blue, green) and sizes, arranged in a grid-like pattern. The lyrics include:  
- Top row: "i love babe i love you" (orange), "have a wonderful day" (yellow), "too i love you" (brown).  
- Second row: "i love you too" (orange), "i love you too" (brown), "i love you too" (brown).  
- Third row: "i love you baby" (orange), "i love you baby" (brown), "i love you babe" (brown).  
- Fourth row: "i love you so" (orange), "i love you so" (brown), "i love you more" (brown).  
- Fifth row: "i love you more" (brown), "i love you more" (brown), "you i love you" (brown).  
- Sixth row: "i love you i" (brown), "i love you i" (brown), "i cant wait to see" (brown).  
- Bottom row: "i cant wait to see" (brown), "i cant wait to see" (brown), "i cant wait to" (red).  
The lyrics are overlaid on a light gray background with small, semi-transparent text labels such as "i wish i could", "i miss my baby", "i have the best", "the best boyfriend ever", "i have my baby", "i miss you too", "i will to see you", "you too i love", and "i have my boyfriend".

(a)

A dense word cloud centered around the theme of love and relationships, featuring words like "shut the", "i hate", "when you", "i wish i could", "i just want", "i miss you so", "hope you have a", "the end of the", "nothing to do with", "i love you", and "i hate him". The words are in various sizes and colors (black, red, orange, yellow) against a dark background.

(b)

**17. If your organization worked with an external evaluator in 2011, what was your experience?**



**18/19. Why do you think the experience was/wasn't positive?**

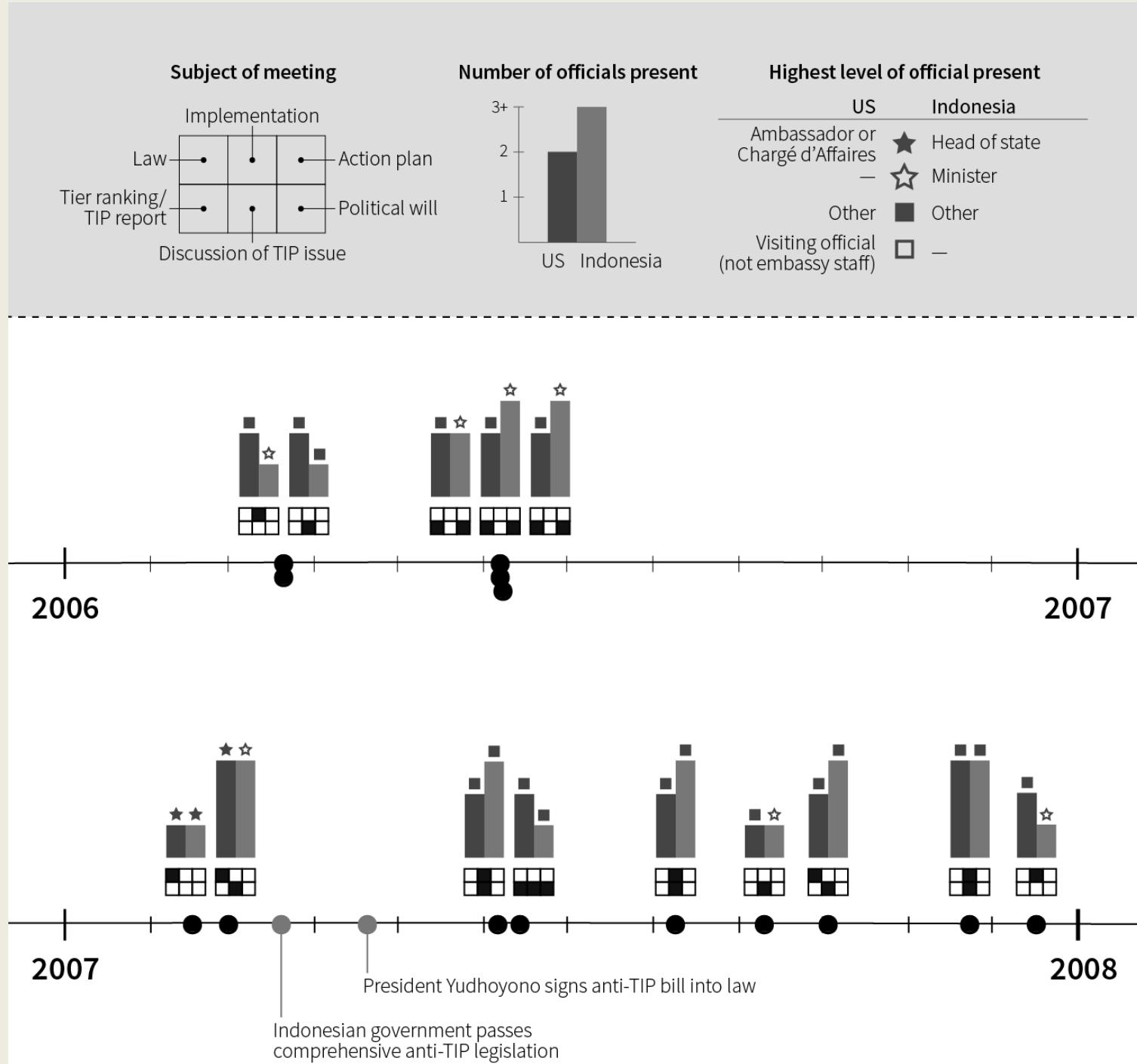
"[The external evaluator] was very involved, great listener, knowledgeable about evaluations, very willing to change and edit evaluation tool so that it worked for our programs. She met with us whenever necessary."

"Our external evaluators increased our capacity to do in-depth case studies on strategies and provided a valuable independent perspective."

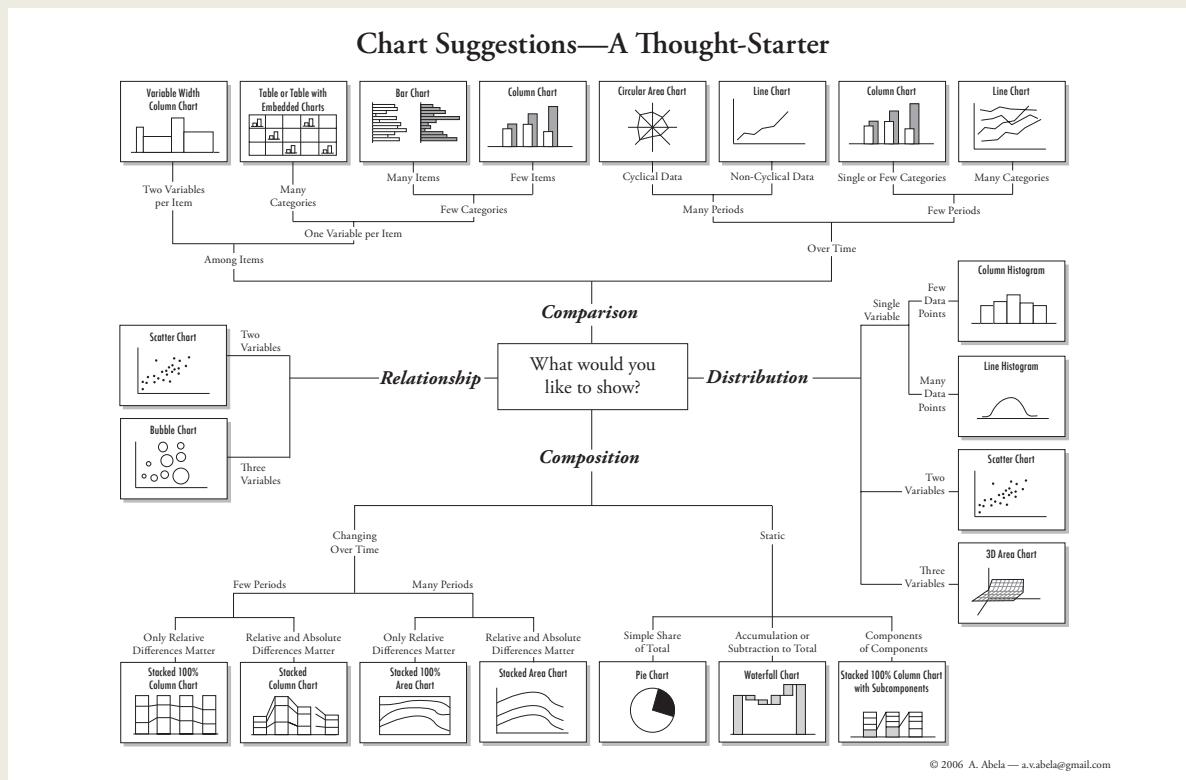
"While we knew we needed a 'makeover' and major staff changes, it was stressful to open up to outsiders and admit the need."

"Backed out because of the amount of work involved as compared to the payment."

"Need more \$ to pay them."



# When do I use which kind of chart?



# datavizcatalogue.com

# What makes good design?

---

**Your Attitude  
is Your Life**

Lessons from  
raising three children  
as a single mom

**Robin Williams**  
October 9

**Your Attitude  
is Your Life**

Lessons from  
raising three children  
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October 9

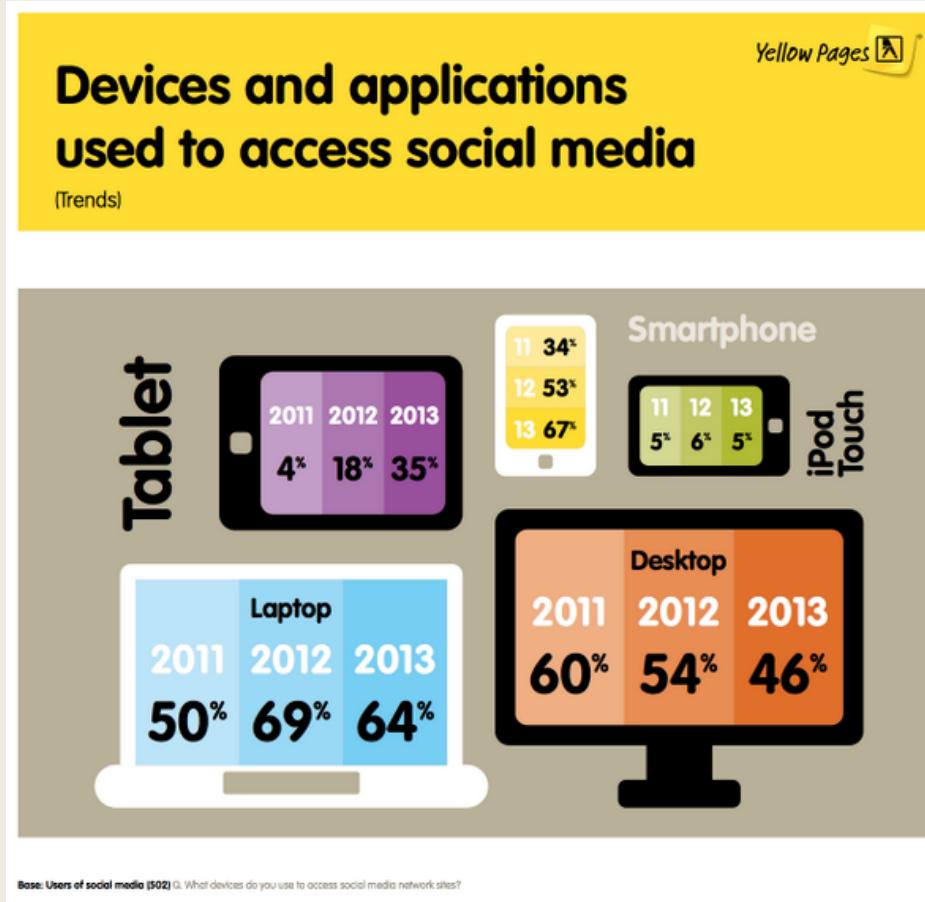
**Contrast**

**Repetition**

**Alignment**

**Proximity**

# Infographics and chart porn



# How do I do all this?

---

Excel / Tableau

R

Illustrator / Inkscape

Stata / SPSS / SAS

Let's make a  
pretty picture

<http://andhs.co/807excel>