

VISUAL STORYTELLING

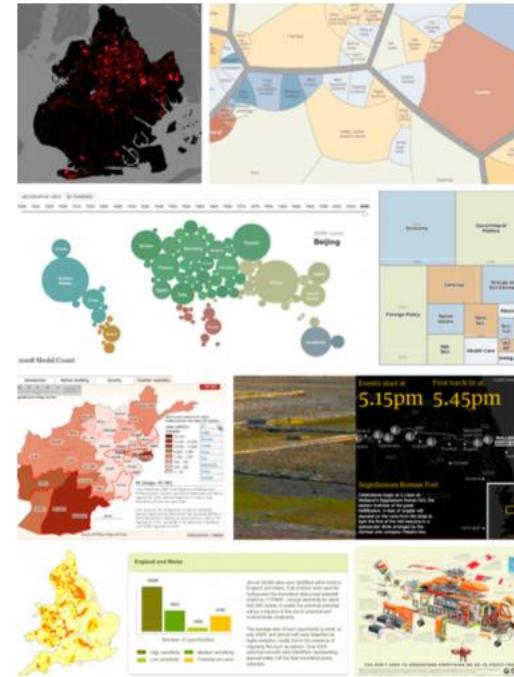
S. Rinzivillo – rinzivillo@isti.cnr.it

Adapted from “Narrative Visualization: Telling Stories with Data”
E. Segel and J Heer (DOI:10.1109/TVCG.2010.179)

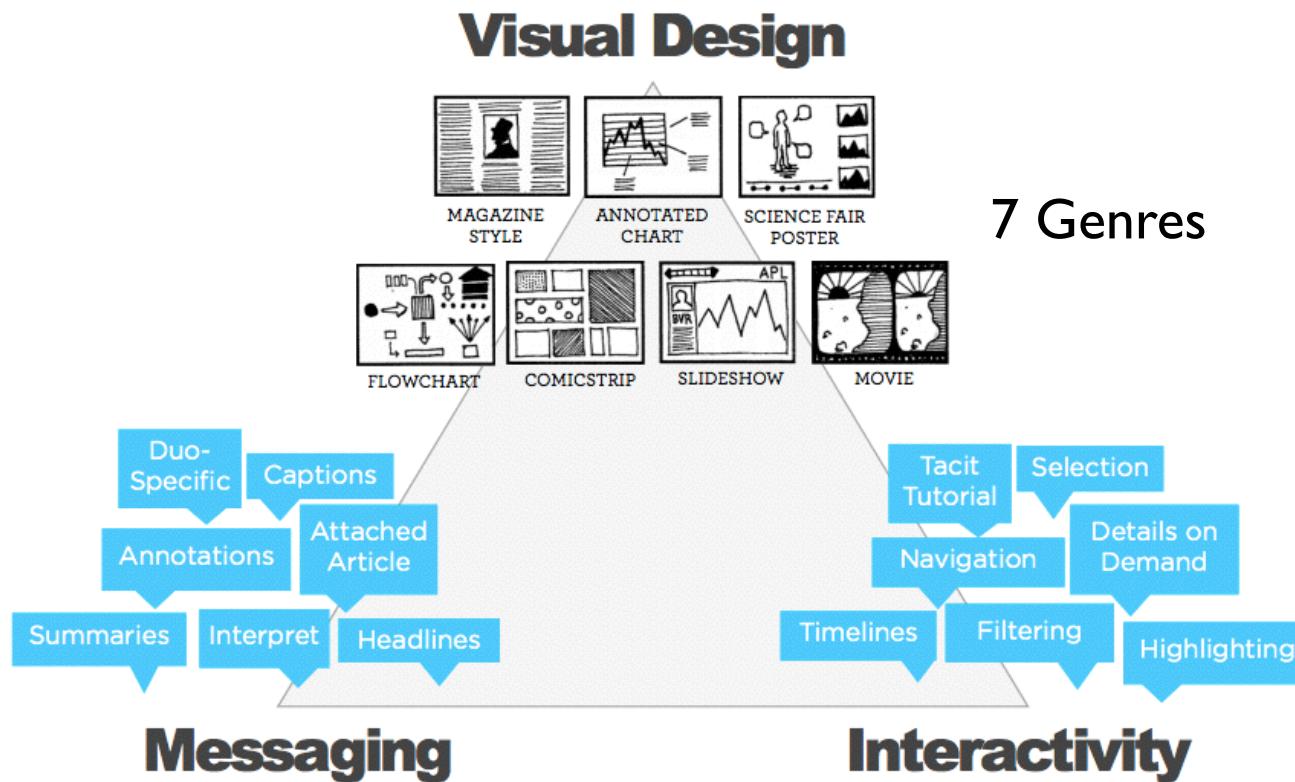


Visual Analytics
va602aa

- 58 Case Studies
 - 70% Journalism
 - 20% Business
 - 10% Research



DESIGN SPACE

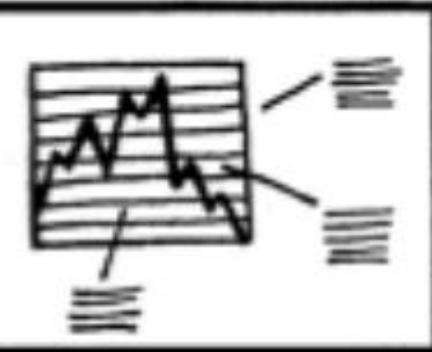


GENRES

Seven
Genres



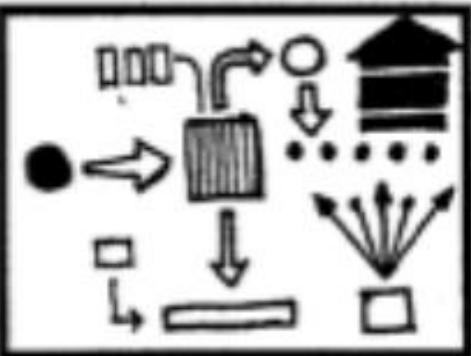
Magazine Style



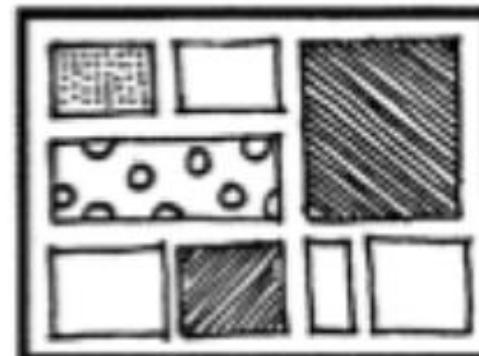
Annotated Chart



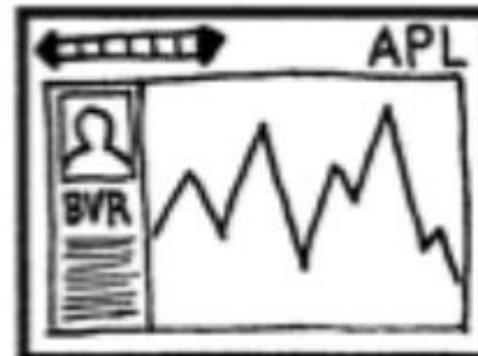
Partitioned Poster



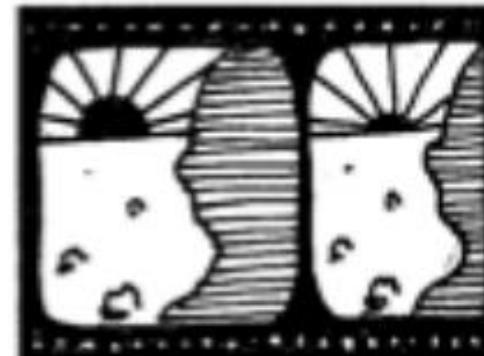
Flow Chart



Comic Strip



Slide Show



Film/Video/Animation

GENRES + INTERACTIVITY + MESSAGING

STORYTELLING
CLARITY
SPEED

Author Driven
strong ordering
heavy messaging
limited interactivity

Reader Driven
weak ordering
light messaging
free interactivity

ASK QUESTIONS
EXPLORE
FIND



martini
glass

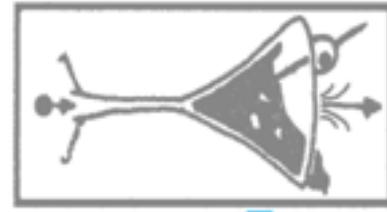


interactive
slideshow



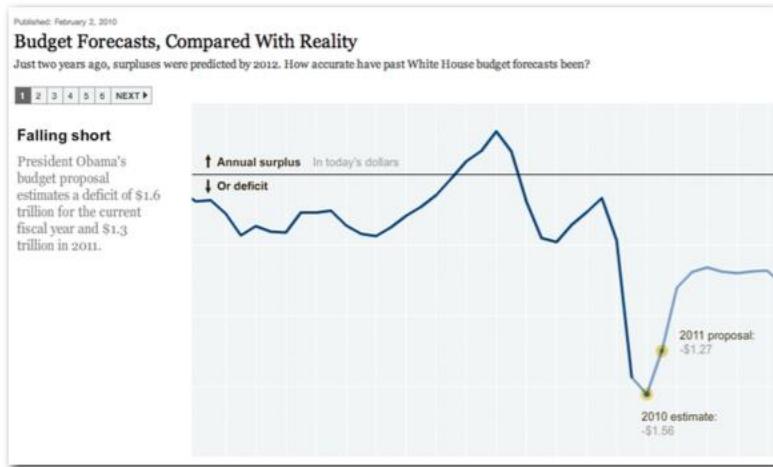
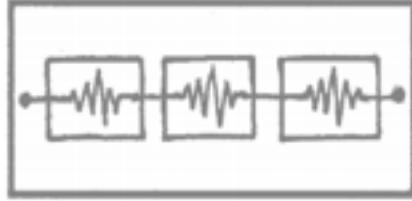
drill-down
story

MARTINI GLASS APPROACH



- Strongly Author-driven
 - First author narrative
 - Then reader may explore
- Different levels
 - Authoring
 - Short or long stem
 - Wide or narrow reader exploration

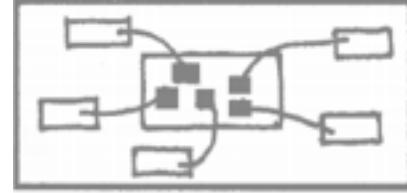
INTERACTIVE SLIDESHOW



- Slideshow with mid-narrative interactions confined in each slide
- A single slide may be organized as a Martini Glass style
- Efficient for complex data and narrative
 - Complex data: author may guide reader to different dimensions of data
 - Complex narrative: author may draw discrete boundaries

http://www.nytimes.com/interactive/2010/02/02/us/politics/20100201-budget-porcupine-graphic.html?_r=0

DRILL DOWN STORY



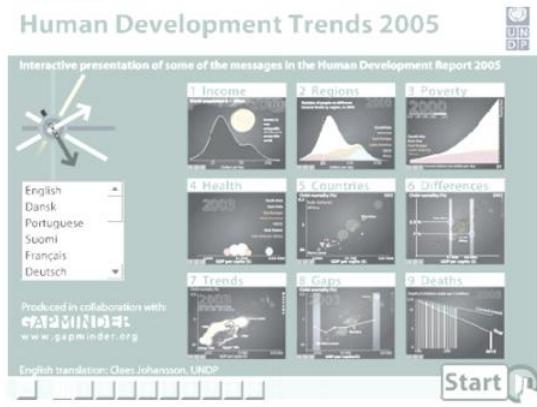
- Presents a general theme and allows to explore particular instances
- More emphasis to the reader
- Author should select which interactions are possible and which explorations are feasible

VISUAL DESIGN

Make it clear where to start.
Don't let readers defect.



where?



755



Steroids or Not, the Pursuit Is On

Berry Bonds is taking aim at the career home run record. He needs only six more to tie Babe Ruth and 47 to equal Hank Aaron.

Lines are cumulative home runs.

Hank Aaron
755 homers
23 seasons

Babe Ruth
714 homers
22 seasons

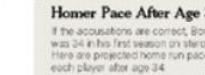
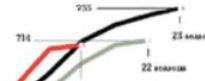
Barry Bonds
708 homers
20 seasons

Bonds takes lead
Having runs after 10 seasons:
Bonds 517
Aaron 554
Ruth 516

400

14½ seasons

According to allegations in a book by Barry Bonds, he began taking steroids before the 1999 season, his 14th in the league. Two seasons later, he hit 73 home runs, surpassing Aaron's career pace.



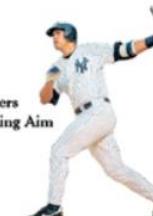
Aaron
Actual homers slightly exceed projected homers for five seasons.

Ruth
Averaged 46.4 homers a season from age 30 to 34.

Bonds
From age 35 to 39, he averaged 14 more homers a season than projected.

Note: Ages as of July 1 of each season.

Others Taking Aim



Alex Rodriguez

Is ahead of the pace set by all three home run leaders.

429 HR

12 SEASONS

Albert Pujols

Avg. 40+ homers a season; he has started stronger than the three leaders did.

201 HR

6 SEASONS

Ken Griffey Jr.

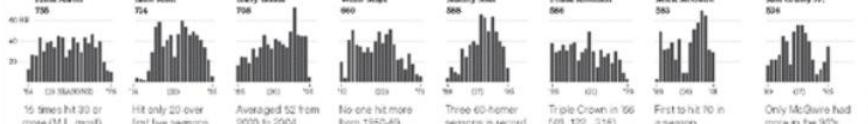
Many thought he would be the first to catch Ruth and Aaron until injuries limited his output.

326 HR

17 SEASONS

Differing Paths to the Top of the Charts

The top seven players on the career home run list, along with a look at Griffey (12th), Rodriguez (27th) and Pujols (46th).



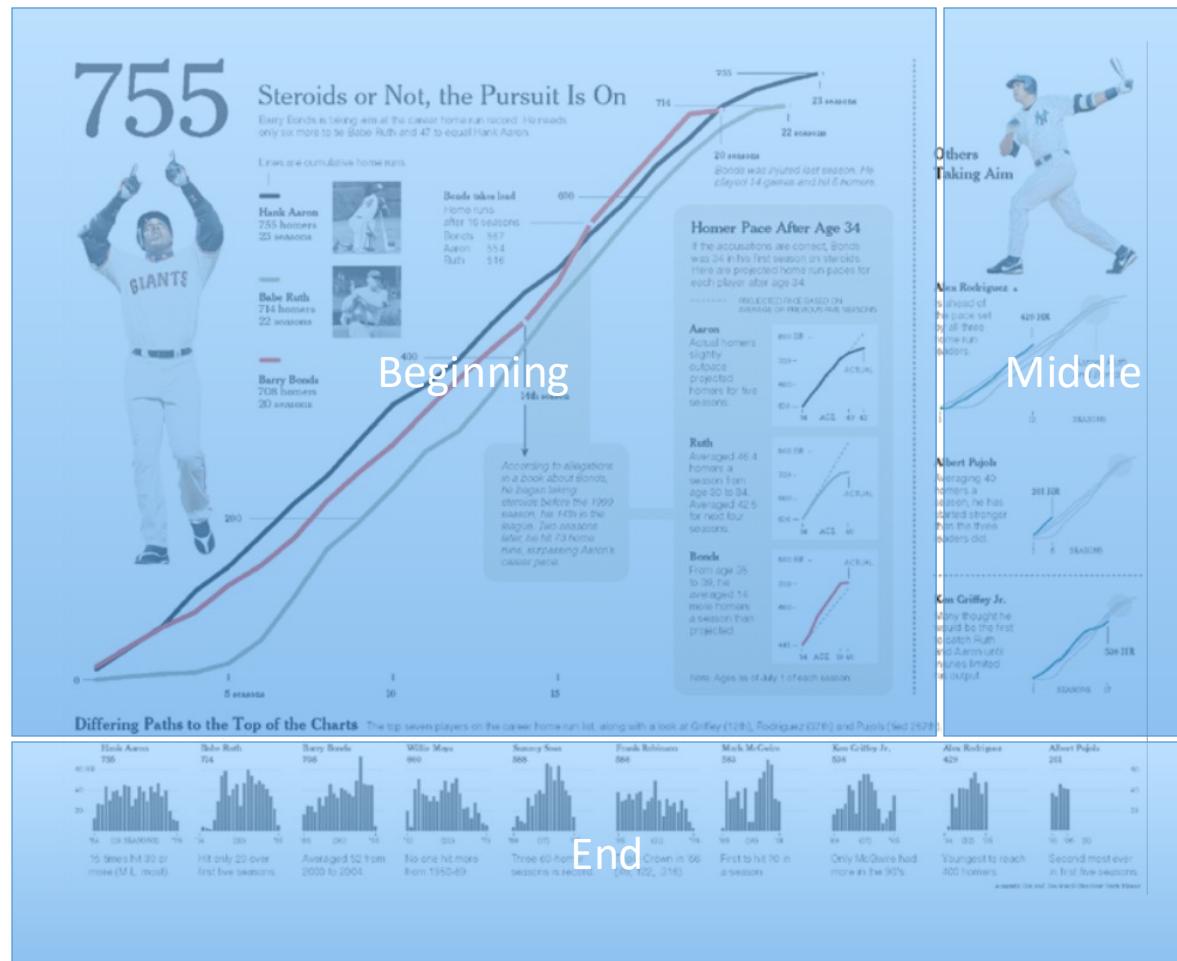
Source: Elias Sports Bureau



http://www.nytimes.com/2006/04/02/sports/20060402_BONDS_GRAPHIC.html

Visual Analytics
va602aa





THE DEFENSE OF THE NEIGHBORS

An overview of the armed forces of countries around Brazil

Brazil has the strongest armed forces in South America in absolute terms—

ARMED FORCES
(Thousands of people)

Brazil	367.9
Colombia	254.2
Venezuela	115.0
Peru	114.0
Argentina	76.0
Chile	65.0
Ecuador	57.1
Bolivia	46.1

DEFENSE BUDGET
(Billions of US\$ a year)

Brazil	21.6
Colombia	7.1
Chile	4.6
Venezuela	2.6
Argentina	2.1
Peru	1.2
Ecuador	0.9
Bolivia	0.2

POPULATION
(Millions of people)

Brazil	190.0
Colombia	44.2
Argentina	40.3
Peru	28.6
Venezuela	26.0
Chile	16.3
Ecuador	13.7
Bolivia	9.1

—but not in relative terms

ARMED FORCES EMPLOYEES
PER 1,000 PEOPLE

Colombia	5.8
Bolivia	5.1
Venezuela	4.4
Ecuador	4.2
Chile	4.0
Peru	4.0
Brazil	1.9
Argentina	1.9

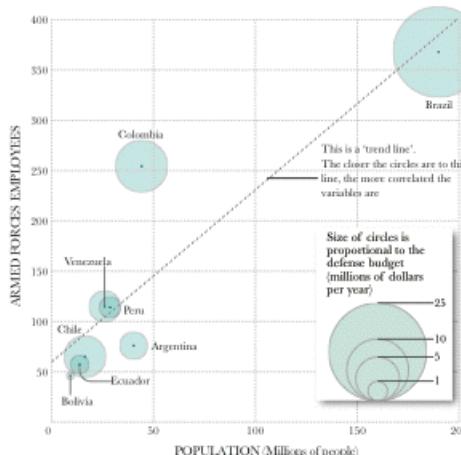
PER CAPITA SPENDING
IN ARMED FORCES (in US dollars a year)

Chile	282.2
Colombia	161.5
Brazil	113.7
Venezuela	100.0
Ecuador	61.2
Argentina	50.9
Peru	41.9
Bolivia	17.6

MONEY SPENT ON EACH ARMED
FORCES EMPLOYEE (in US dollars a year)

Chile	70.8
Brazil	58.7
Colombia	28.1
Argentina	27.0
Venezuela	22.6
Ecuador	16.1
Peru	10.5
Bolivia	3.5

A different look at the data

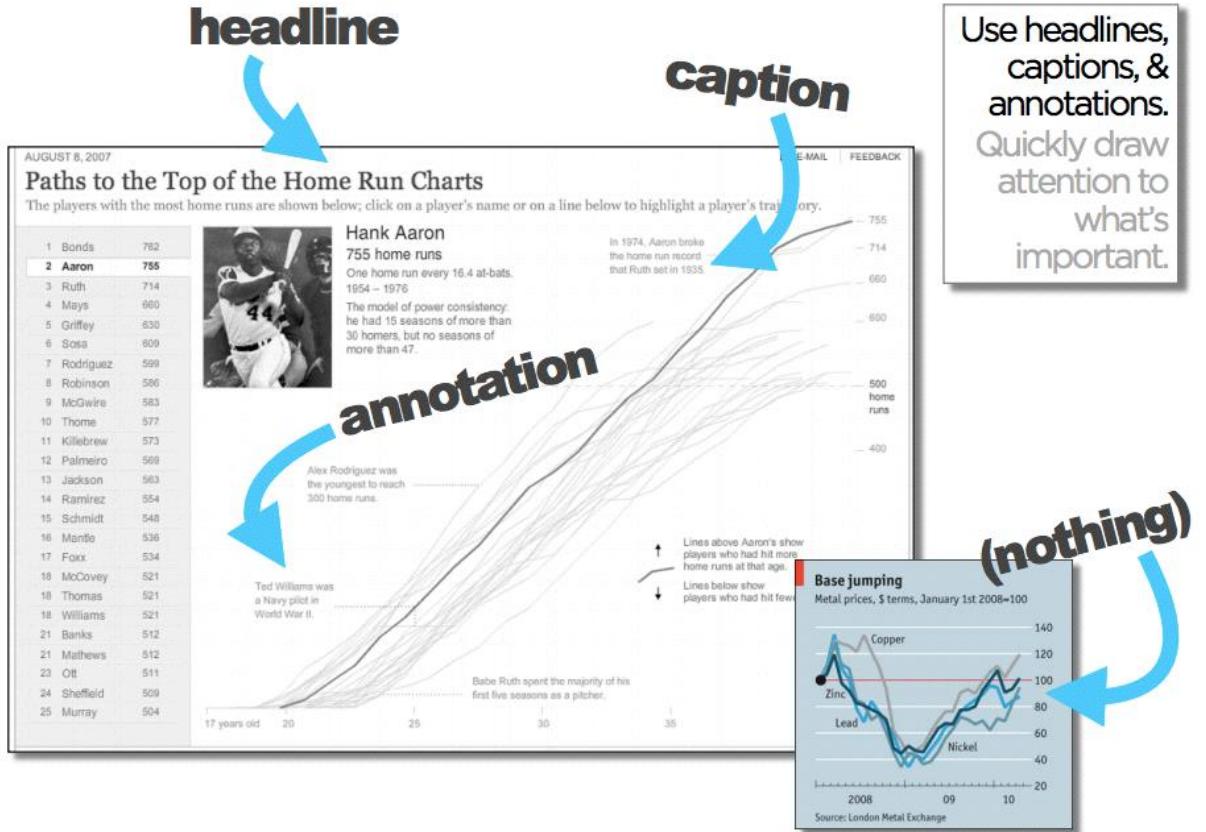


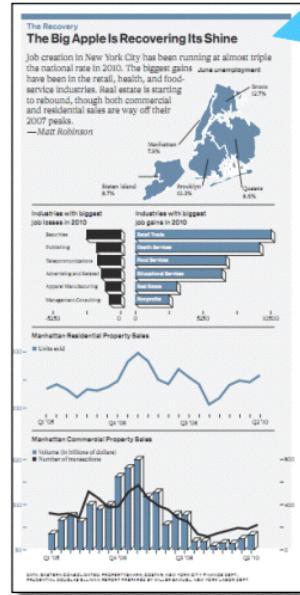
Future investments



SOURCES: FOLHA DE SÃO PAULO, BRAZILIAN CENTER FOR STRATEGIC STUDIES

MESSAGING





isolated

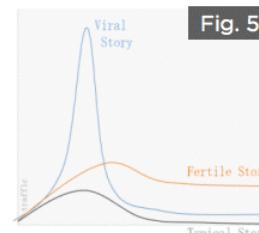
Weave text into the graphic—not just at the beginning.
Text and graphics work better together than apart.

Connect the text to the relevant graphics.
See Fig. 5

quite significantly to work than traditional
ics. To make this v
economical, visualizations
d to stories that are either persistent or viral in order
ue-generating traffic. **Persistent stories** cover
matic themes" that maintain relevance over time
crisis, food economics, the housing market).

fattens and elongates"
eady fatter and longer
n, these visualizations
several months and
a heavy traffi
y. These stories tend
ology, personalities, or sensational news. To get the
buck, produce visualizations for editorial content
istent or viral

Fig. 5

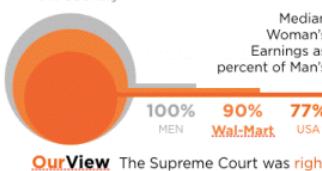


integrated

1.5 million women sued **Wal-Mart** for discriminatory pay & promotion practices, using mostly statistics to make their case.

Women filled 70% of hourly jobs...
...but only 33% of management.

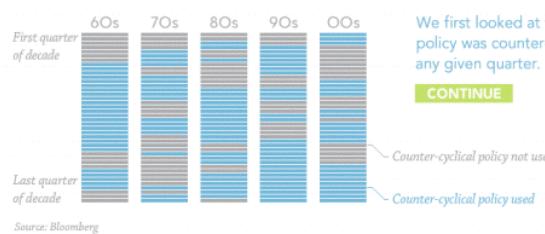
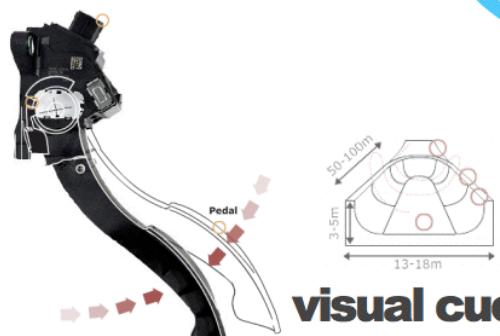
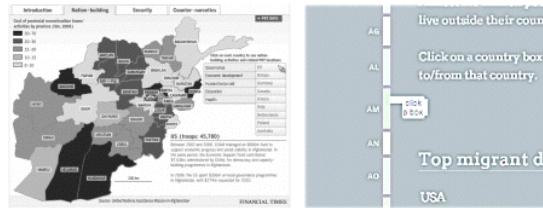
Women were paid less than men in every region, even when they had higher ratings and seniority.



INTERACTIVITY

Interactive features should scream interactivity.
Avoid a click-and-seek experience.

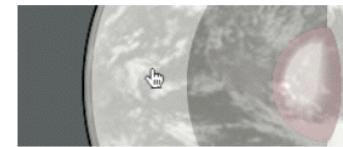
Be explicit.
Click here.



We first looked at whether policy was counter-cyclical in any given quarter.

CONTINUE

suggested actions

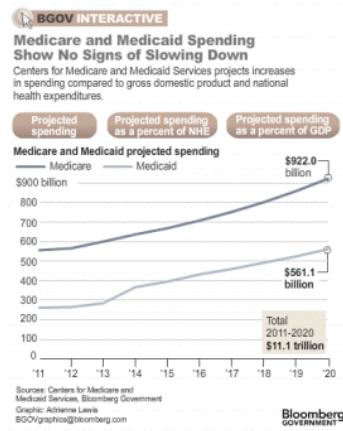


A screenshot of a web-based calculator for U.S. spending. It shows a list of items with checkboxes and numerical values. A summary at the bottom states: "The U.S. will take in \$172.4 billion from Aug. 3 to 31".

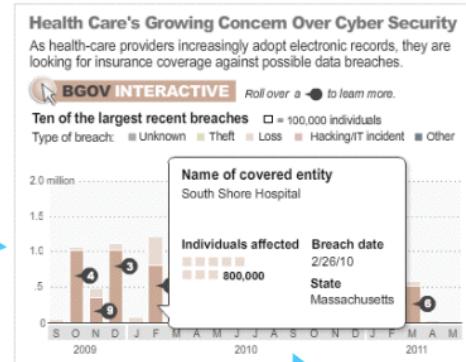
Category	Value
Interest on Treasury securities	\$29.0 billion
Social Security benefits	49.2
Medicare	28.6
Medicaid	21.4
Defense vendor payments	31.7
Unemployment Insurance benefits	12.8

familiar widgets

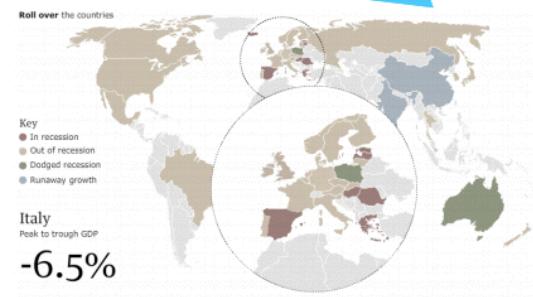
LINKED DISPLAYS - BRUSHING



Interactive features should react to the user.
Depress buttons, highlight items, animate widgets.



Don't obscure data.
Avoid letting pop-ups obscure data.



EXAMPLE - CROSSFILTER.JS