

# Storytelling with InfoVis



CS 4460 – Intro. to Information Visualization  
October 25, 2017  
John Stasko

## Learning Objectives



- Define narrative visualization (vis for storytelling) and explain how it differs from analytic/exploratory visualization
- Name and describe different genres and approaches to narrative visualization
- Explain the style, content, and significance of Rosling's GapMinder video
- View and learn from designs of examples
  - Mariano Rivera, What's Warming World?, Home and Away, Bubble Bust to Recovery, Fallen of WWII, ...

# Purpose



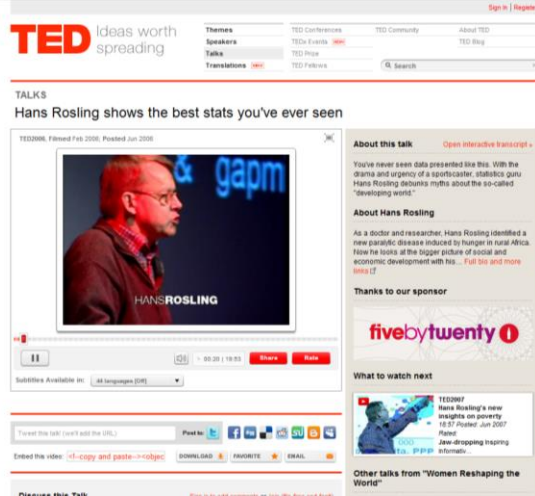
- Two main uses of infovis
  - Analysis – Understand your data better and act upon that understanding
  - Presentation – Communicate and inform others more effectively
- Today we look at that second one more

# Telling Stories



- Data visualization can help to communicate ideas, summarize, influence, unite, explain, persuade
- Visuals can serve as evidence or support

# A Famous Example



Hans Rosling  
Gapminder

2006

[http://www.ted.com/index.php/talks/hans\\_rosling\\_shows\\_the\\_best\\_stats\\_you\\_ve\\_ever\\_seen.html](http://www.ted.com/index.php/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html)

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# They Had Him Back



2007

[http://www.ted.com/index.php/talks/hans\\_rosling\\_reveals\\_new\\_insights\\_on\\_poverty.html](http://www.ted.com/index.php/talks/hans_rosling_reveals_new_insights_on_poverty.html)

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## Discuss

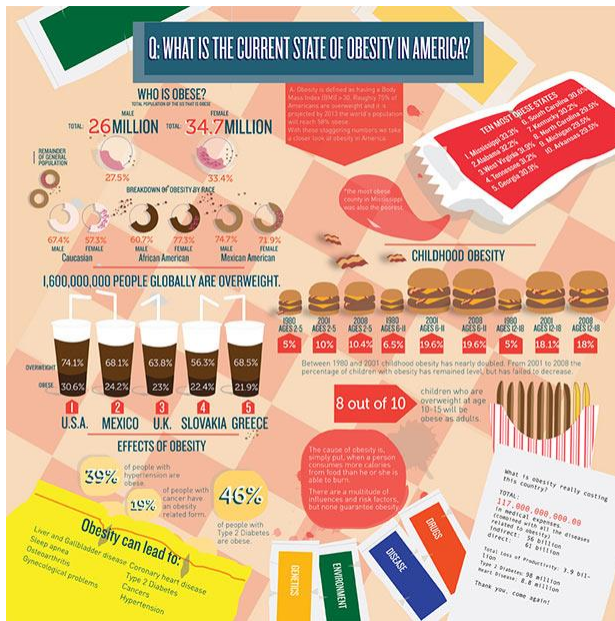


- Why has this had such a big impact?

## InfoGraphics



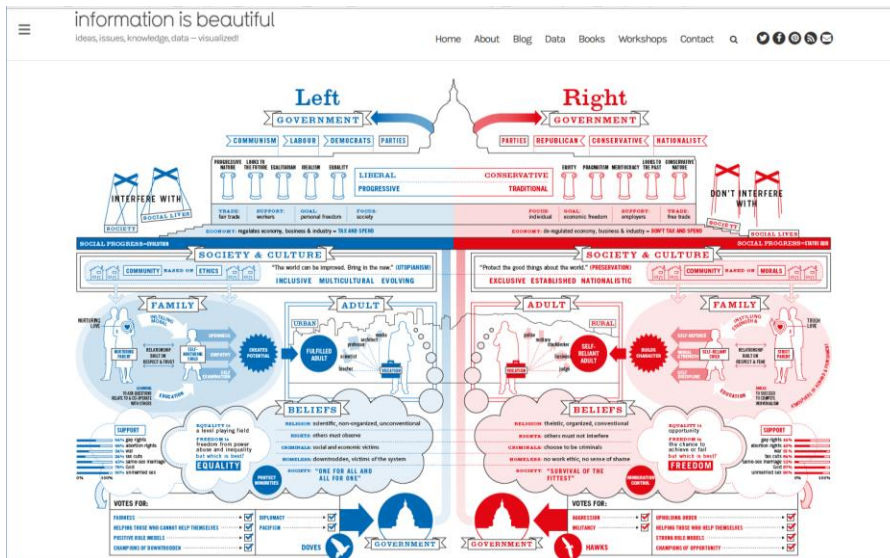
- See them everywhere today
- Perhaps a good example of infovis for presentation purposes
  - Typically not interactive though



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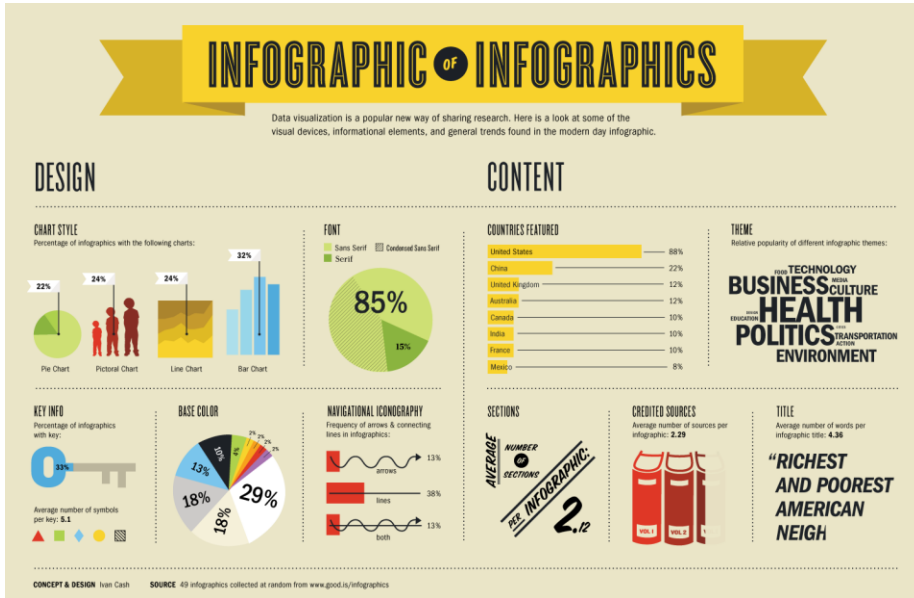
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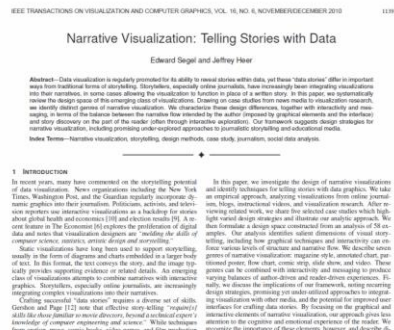
11

# A Lead Paper

Segel & Heer  
TVCG (InfoVis) '10



- Studied storytelling: Described topics as “Narrative Visualization”
  - How does this differ from traditional forms of storytelling
  - Reviews the design space
  - Characterizes genres
  - Describes a framework

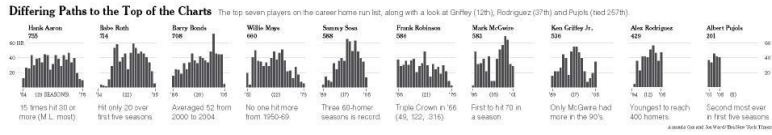
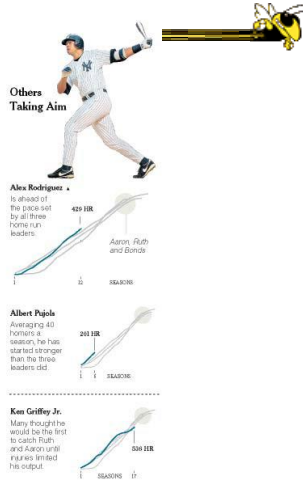
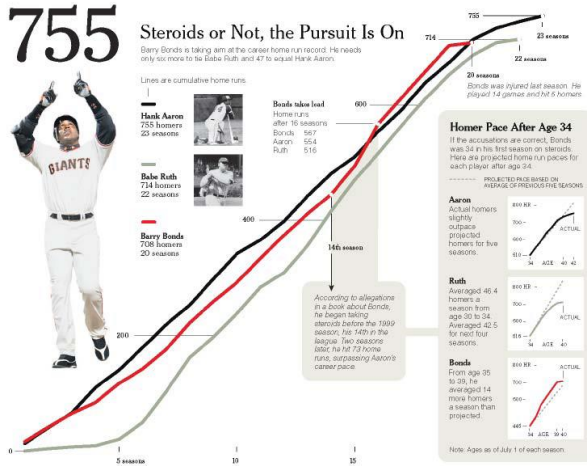


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# Case Studies



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# Genres

- Seven Genres**
- Magazine Style**
- Annotated Chart**
- Partitioned Poster**
- Flow Chart**
- Comic Strip**
- Slide Show**
- Film/Video/Animation**

# Approach



- Author-driven vs. reader-driven
- Common patterns

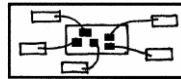
- Martini glass



- Interactive slideshow



- Drill-down story



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<http://datadrivenjournalism.net>

# Journalism Angle



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# Some Examples



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## News Stories

Tufte praises the work of Megan Jaegerman at NY Times



The collage features three distinct news graphics. The top-left graphic is a navigation menu with links like 'HOME', 'BOOKS', 'COURSES', and 'POSTERS AND GRAPHIC DESIGN'. Below it is a text block titled 'Megan Jaegerman's brilliant news graphics' with a quote from Edward Tufte dated July 2007. The middle-left graphic is a map titled 'From Montauk to Cape May: The State of the Beaches' showing coastal features and beach conditions. The top-right graphic is titled 'Sporting a hidden handgun' and uses a sequence of human figures to illustrate the location of a handgun. The bottom-right graphic is titled 'The Jumping Off Points: Moves That Will Be Made in the Freestyle Skiing Programs' and uses a sequence of human figures to show various skiing techniques.

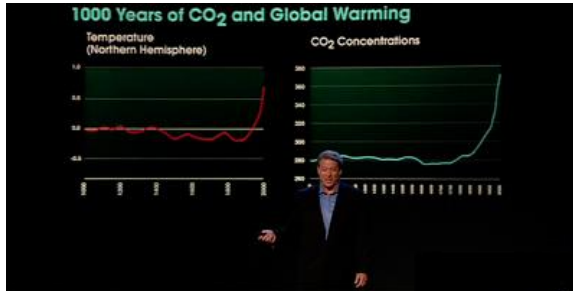
[http://www.edwardtufte.com/bboard/q-and-a-fetch-msg?msg\\_id=0002w4](http://www.edwardtufte.com/bboard/q-and-a-fetch-msg?msg_id=0002w4)

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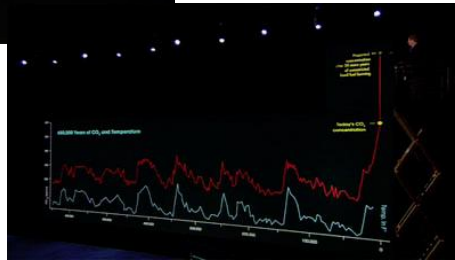
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# Films



*An Inconvenient Truth*

Gore made extensive use of data graphics

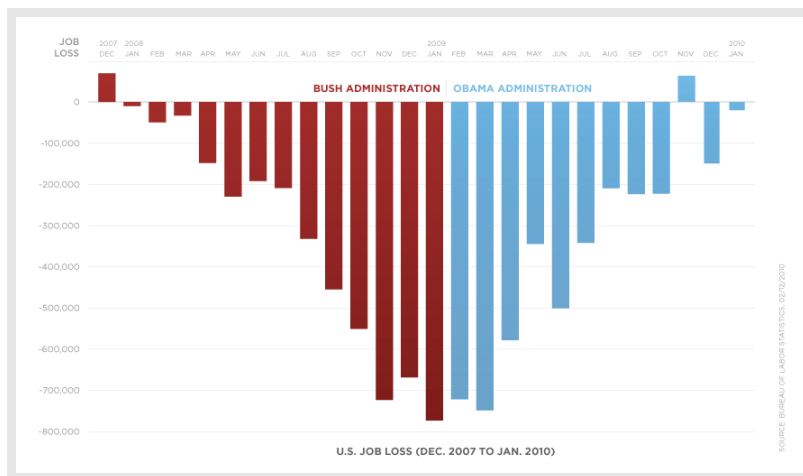


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# Infographics (with a message)



Controversial, see <http://soquelbythecreek.blogspot.com/2010/02/what-does-obama-job-chart-really-mean.html>

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http://www.nytimes.com/interactive/2010/06/29/magazine/rivera-pitches.html?ref=multimedia

The screenshot shows the New York Times Magazine website. At the top, there are navigation links for 'HOME PAGE', 'TODAY'S PAPER', 'VIDEO', 'MOST POPULAR', and 'TIMES TOPICS'. A search bar is present with the text 'Search All NYTimes.com'. Below the navigation is the 'Magazine' title and a search bar. A banner for 'The Grove Park Inn' is visible, advertising 'HISTORICALLY LOW RATES 800 438 5800 for reservations'. The main article is titled 'How Mariano Rivera Dominates Hitters' and is dated 'Published June 29, 2010'. The sub-headline reads 'The closer has confounded hitters with mostly one pitch: his signature cutter.' Below the headline is a video player showing Mariano Rivera in a Yankees uniform pitching a ball. To the right of the video is an advertisement for Audi A8. Below the video, the author information is listed as 'By GRAHAM ROBERTS, SHAN CARTER and JOE WARD'. There are social media sharing options for Twitter, Email, and Share. A 'Times Delivers E-Mail' sign-up box is also present. At the bottom right, a 'MOST POPULAR - MAGAZINE' list is shown, including 'Food: Cutters Slow Dance', 'Shaken-Baby Syndrome Faces New Questions in Court', 'Unhappy Meals', 'Recipes: Yuzu Chiffon Cake', 'The Medium: A Prescription for Fear', 'How Hef Got His Groove Back', and 'A Plan for Peace That Still Could Be'.

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http://www.cnn.com/homeandaway

The screenshot shows the CNN 'Home and Away' interactive map. The top navigation bar includes 'Home', 'Video', 'NewsPulse', 'U.S.', 'World', 'Politics', 'Justice', 'Entertainment', 'Tech', 'Health', 'Living', 'Travel', 'Opinion', 'iReport', 'Money', and 'Sports'. The main heading is 'CASUALTIES: AFGHANISTAN IRAQ' with a search bar. Below the heading are two maps: 'Hometown Locations' showing the United States and 'Afghanistan' showing casualty locations. At the bottom, there are three bar charts: 'Age' (18-60), 'Location: (Countries & U.S. states)', and 'Date' (2001-2010).

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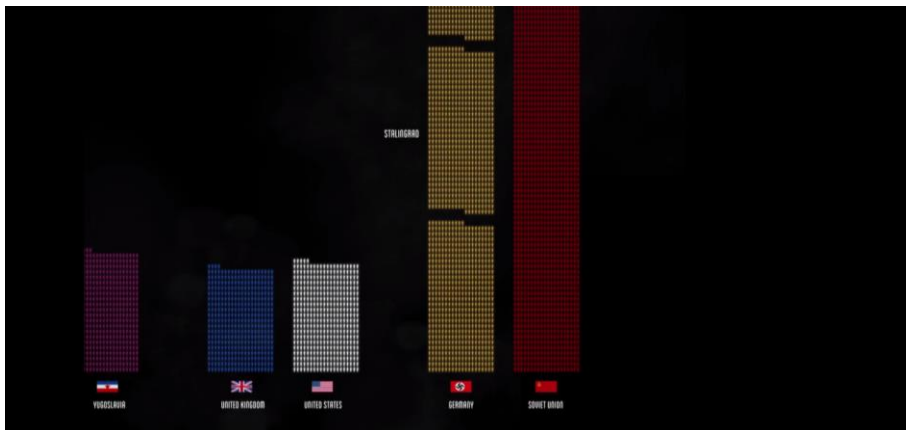
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<http://www.bloomberg.com/graphics/2015-whats-warming-the-world/>



**Discuss**

<http://www.fallen.io/ww2/>

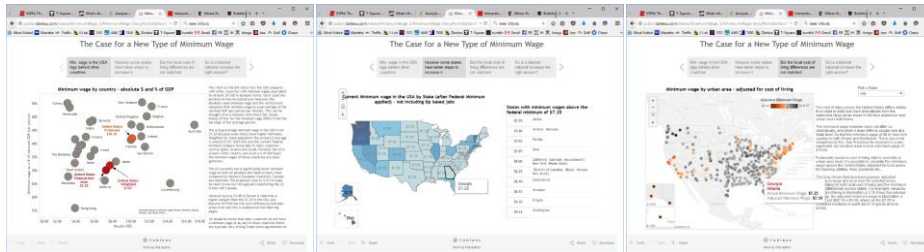


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[http://public.tableau.com/views/MinimumWage\\_3/MinimumWage-StoryPointsEdition?:showVizHome=no](http://public.tableau.com/views/MinimumWage_3/MinimumWage-StoryPointsEdition?:showVizHome=no)



### Tableau StoryPoints

Textual narrative, slides with titles as breadcrumbs, element highlighting, and textual annotation on the chart

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<http://www.bloomberg.com/dataview/2014-02-25/bubble-to-bust-to-recovery.html>



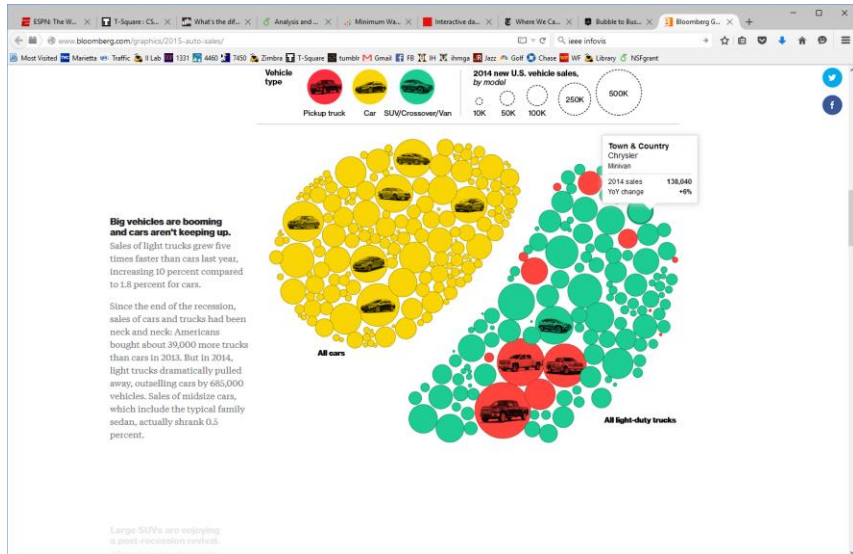
Dot breadcrumbs, interaction on charts, tooltips, ...

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<http://www.bloomberg.com/graphics/2015-auto-sales/>



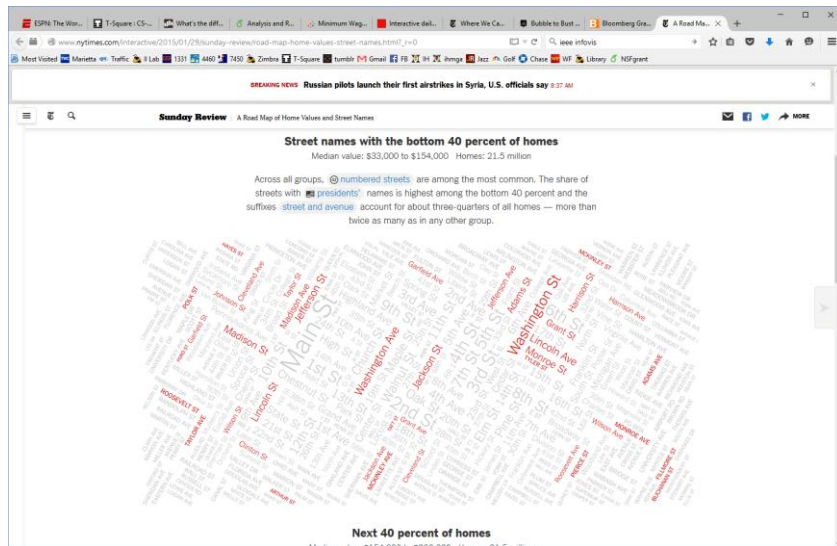
Page scroller, text annotations, rearranging glyphs

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[http://www.nytimes.com/interactive/2015/01/29/sunday-review/road-map-home-values-street-names.html?\\_r=0](http://www.nytimes.com/interactive/2015/01/29/sunday-review/road-map-home-values-street-names.html?_r=0)



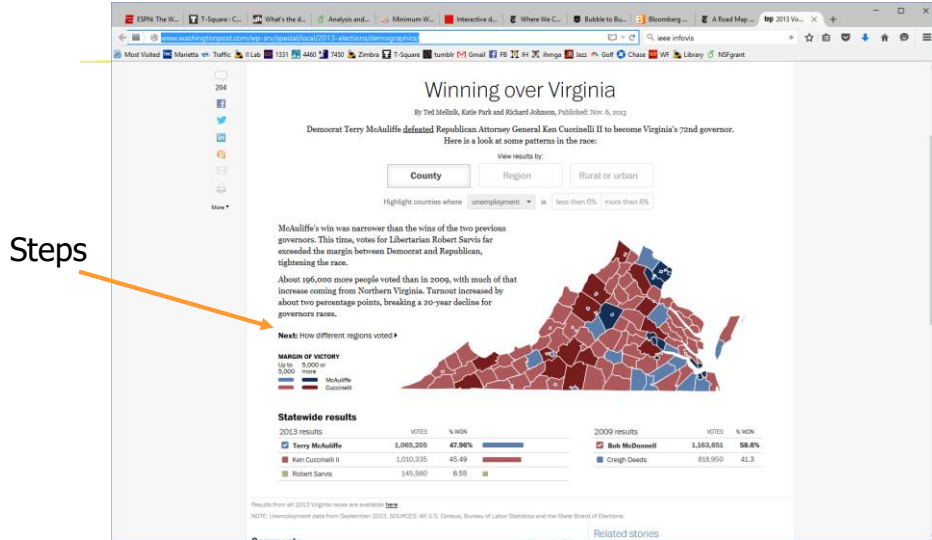
Dynamic query widget embedded in textual narrative

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http://www.washingtonpost.com/wp-srv/special/local/2013-elections/demographics/



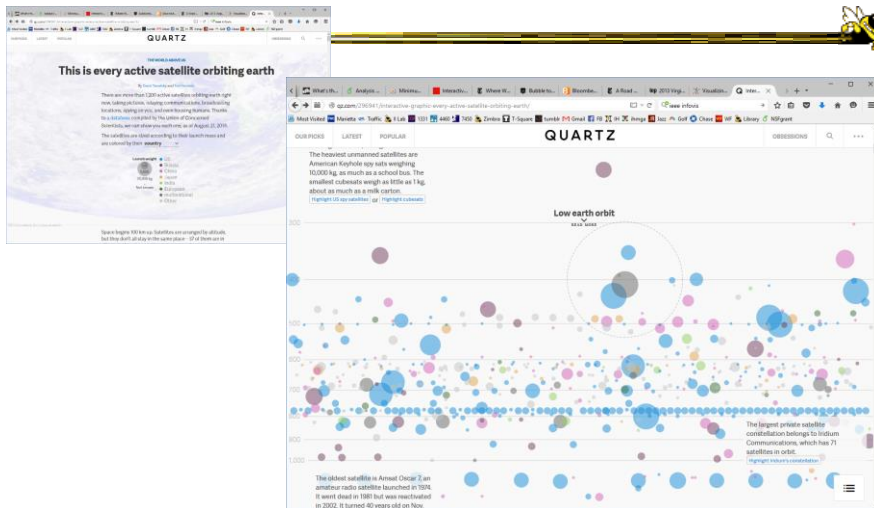
Linear steps with much interaction, comments

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http://qz.com/296941/interactive-graphic-every-active-satellite-orbiting-earth/



Animated interaction, tooltips, scrolling

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<http://www.facesoffracking.org/data-visualization/>



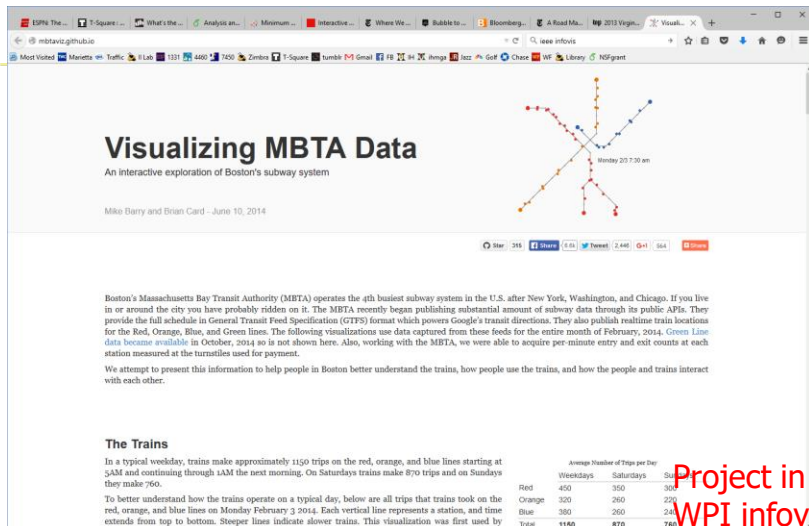
Scrolling page with geovis updates

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<http://mbtaviz.github.io/>



Project in  
WPI infovis  
class

Scrolling page with many visualizations, much interaction

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<http://www.r2d3.us/visual-intro-to-machine-learning-part-1/>

### A Visual Introduction to Machine Learning

In machine learning, computers apply statistical learning techniques to automatically identify patterns in data. These techniques can be used to make highly accurate predictions.

Keep scrolling. Using a data set about homes, we will create a machine learning model to distinguish homes in New York from homes in San Francisco.

SCROLL



## Design discussion



<https://www.youtube.com/watch?v=Z4tB6qyxHJA>

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### Film Dialogue

#### Methodology

Each screenplay has at least some of its lines categorized by gender. If you notice a missing character from the analysis, there may be in the

<http://polygraph.cool/films/>

<http://fivethirtyeight.com/features/gun-deaths/>

### FiveThirtyEight

We tend to focus on terrorism and mass shootings, police officers killed in the line of duty, and police shootings of civilians.

This interactive graphic is part of our project exploring the more than 33,000 annual gun deaths in America and what it would take to bring that number down. See our stories on [suicidal attacks](#), [domestic violence](#), [shootings of police officers](#), [fire and accidental deaths](#), or explore the menu for more coverage.

<http://www.georgelmurphy.com/berrics/>

### BATTLE AT THE BERRICS

Next, let's breakdown the tracks again, this time by studio:

QUOTES	MOTION PICTURES	MUSIC TRACKS	MUSIC TRACKS	MUSIC TRACKS

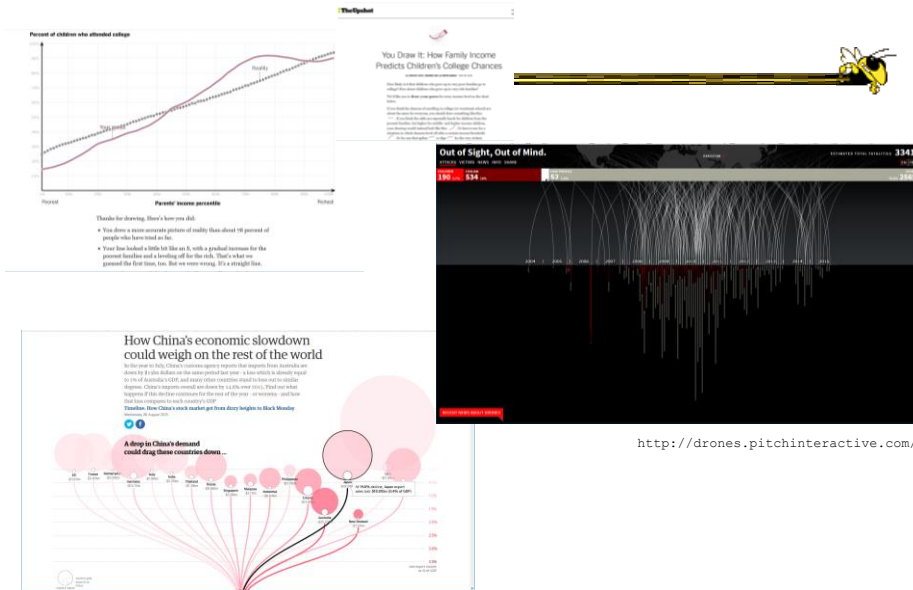
Finally, let's read up on the tracks and compare abilities.

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<http://www.nytimes.com/interactive/2015/05/28/upshot/you-draw-it-how-family-income-affects-childrens-college-chances.html>



<https://www.theguardian.com/world/ng-interactive/2015/aug/26/china-economic-slowdown-world-imports>

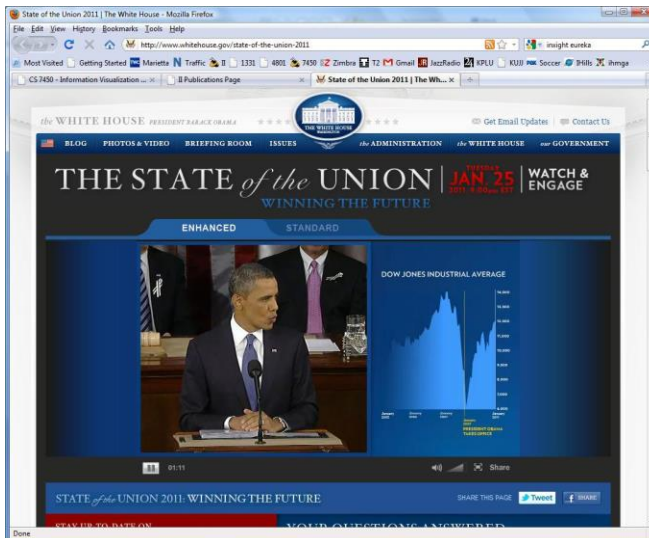
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## Even President Obama Went Interactive

2011 State of Union Address

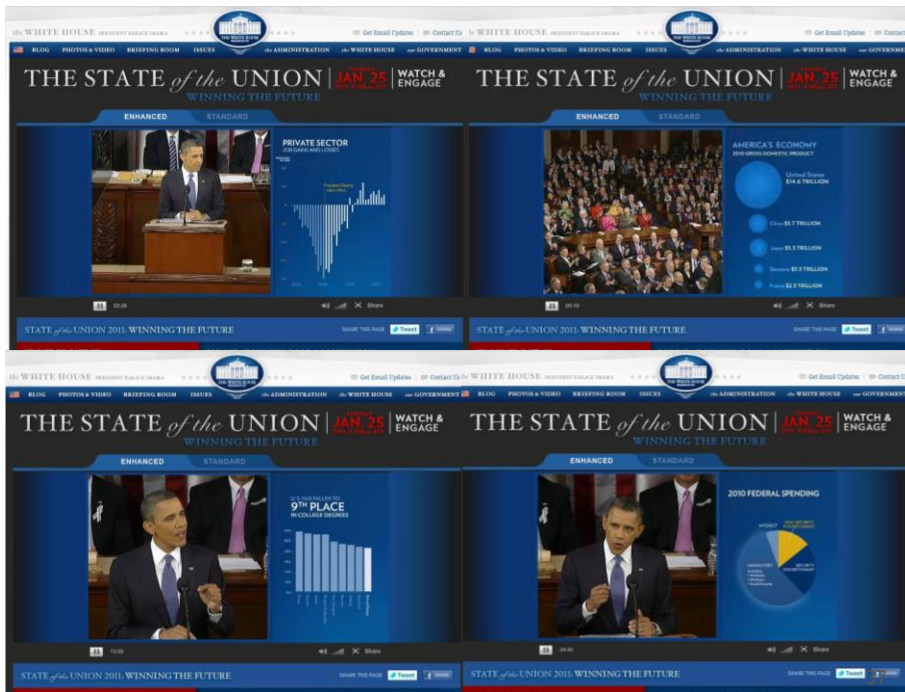


Side channel data visualizations accompanied speech

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## Storytelling Scenarios



- Self-running presentations for a large audience
- Live presentations
- Individual or small group presentations

# Data Matters



David McCandless

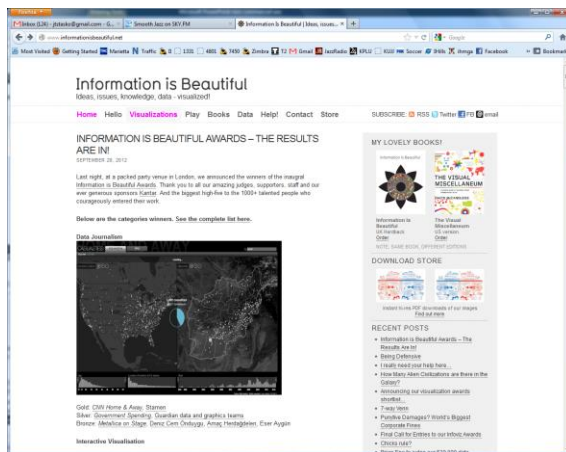
[http://www.ted.com/talks/david\\_mccandless\\_the\\_beauty\\_of\\_data\\_visualization.html](http://www.ted.com/talks/david_mccandless_the_beauty_of_data_visualization.html)

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# McCandless Website



<http://www.informationisbeautiful.net/>

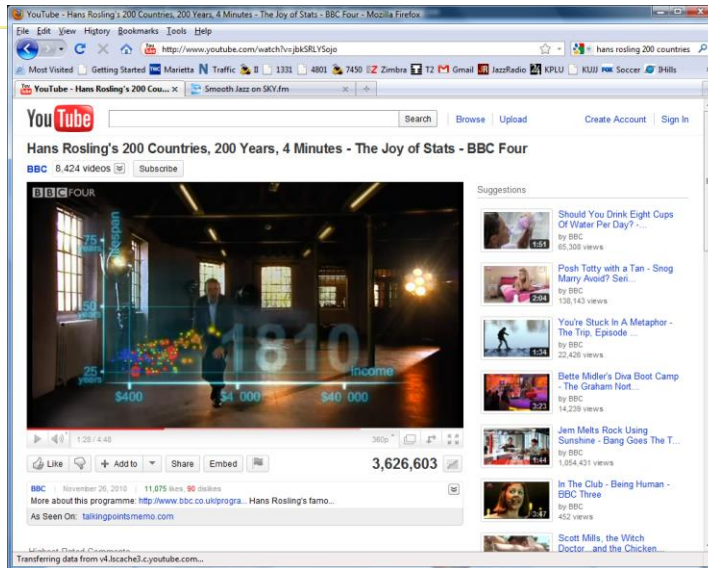
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http://www.youtube.com/watch?v=jbkSRLYSojo

# Back to Where We Started



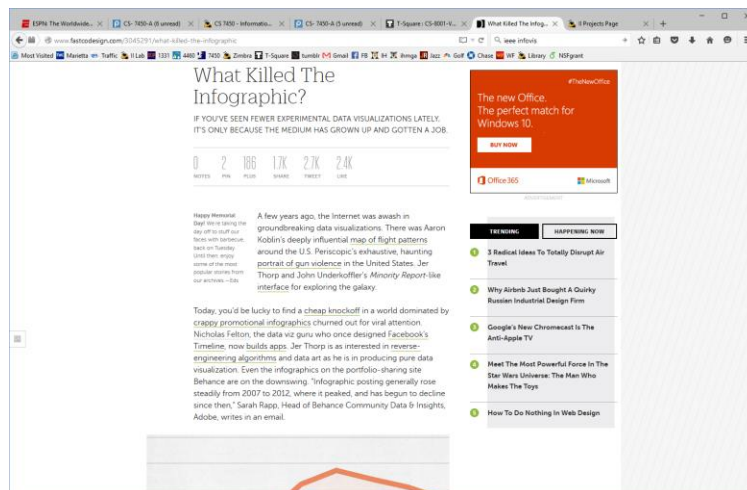
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http://www.fastcodesign.com/3045291/what-killed-the-infographic

# Changing Trends



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## Questions



- How do these types of visualizations differ from “traditional” infovis?

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## Questions



- Would you characterize all of these as information visualizations?
  - Consider some of the different examples

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# My Reflections



- InfoVis for analysis and presentation are different
  - Apples & oranges (both fruit though)
- How?

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<http://www.juiceanalytics.com/writing/the-ultimate-collection-of-data-storytelling-resources>

# Resources



The screenshot shows a web browser window displaying a blog post on the Juicebox website. The page title is "Data Storytelling: The Ultimate Collection of Resources" by Zach Gornigant, dated April 19, 2013. The article features a line graph with multiple colored lines and a search bar. Below the graph, there is a section titled "Featured Design Principles" with the text "Consider data comfort and expertise". The page also includes a "Recent Posts" section with links to "The Last Mile of Business Intelligence (Revisited)", "Statisticians & Storytellers", "The End of the One-Page Dashboard", and "The Consequence of Using Visualization Inconceivably".

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- Explain the style, content, and significance of Rosling's GapMinder video
- View and learn from designs of examples
  - Mariano Rivera, What's Warming World?, Home and Away, Bubble Bust to Recovery, Fallen of WWII, ...

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# Upcoming



- Lab: D3 – Enter, Update, & Exit
  - Prep: Murray chapter 9
  - Implementation change: Turn in code at end
- Hierarchies & Trees 1

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