Data Storytelling Studio

telling a story

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CMS.631/831
Rahul Bhargava

Agenda
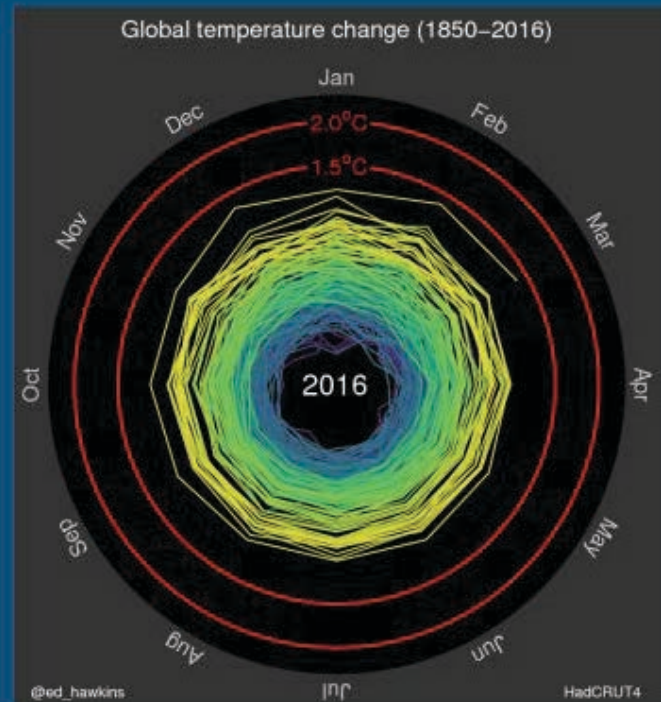
- [10] critique
- [10] readings review
- [10] grad reading presentation
- [30] a taxonomy of techniques
- [20] remix activity
- [5] homework prep

Ask folks these questions to help them read the chart and start to critique it.
- What datasets are being represented here?
  - Global temperature change (year, month)
  - Thresholds (1.5, 2)
- What visual mappings are used to show data?
  - Line:
    - Distance from center indicates temp change
    - Color indicates year (rainbow palette)
  - Red circles indicate important thresholds
- What is the one-sentence story here?
  - Temperature is increasing, moving towards dangerous thresholds
- Do you think this story is well told?
  - Is the rainbow color on the line a good choice? Why?
  - How important is the spiral animation for your understanding the story?
  - Imagine the same as a line chart over time… how different is that story than the one the spiral chart tells?

Readings

Mushon Zer-Aviv. 2014. Disinformation Visualization: How to lie with datavis. (January 2014).

Edward R. Tufte. 2001. Graphical Excellence. In The Visual Display of Quantitative Information. Cheshire, Conn: Graphics Pr.

How confident do you feel about your ability to assess a graphic? are you a critical reader? who is?

What's the difference Zer-Aviv's paints between "argument" and "evidence"?

Are Tufte's "principles of graphical excellence" always aligned with those of argumentative excellence?

About Crafting Narratives

Grad Student Presents

Colin Ware. 2008. Visual and Verbal Narrative. In Visual Thinking: for Design. Burlington, MA: Morgan Kaufmann.

Edward Segel and Jeffrey Heer. 2010. Narrative visualization: Telling stories with data. Visualization and Computer Graphics, IEEE Transactions on 16, 6 (2010), 1139–1148.

Have a grad student present their take-aways from these readings. Make sure they cover:
- Saying the same things in multiple ways
- Using channels appropriately to their strengths
- The question of optimizing for a balance between author- and reader-driven

techniques
you can use

The Usual Inspirations
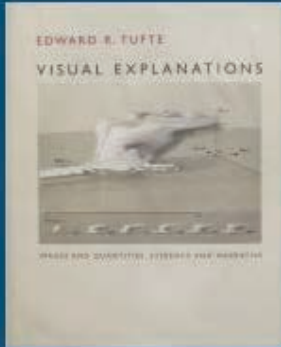
Visual Explanations, Edward Tufte
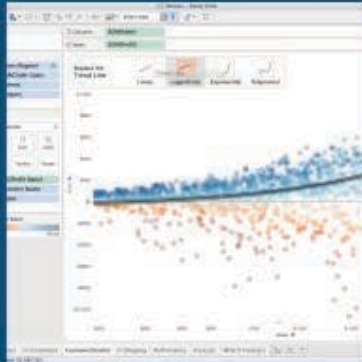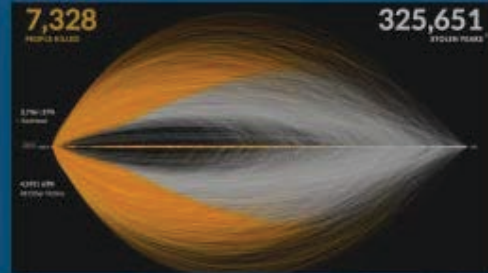© Graphics Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see http://ocw.mit.edu/help/faq-fair-use/

Tableau Software

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The usual inspirations are fancy, hard to parse graphics. These data-dense (ala Tufte) visuals have a place, but are often misused with audiences that don't know how to read them.

A Richer Set of Inspirations

Food security data on a cucumber, Rahul Bhargava, 2014

Prudential Ribbons Experiment, 2014

Black Cloud, WWF & Ogilvy, 2007

History Quilt, Elizabeth Peabody, 1856

We need a richer set of inspirations if we really want to have a strong toolbelt to draw from.

- Food Security: I needed to talk to an audience at a food festival about food security in their town. I laser cut qualitative and quantitative data onto vegetables to catch their attention. This bought me time to make my argument and get them interested in this serious topic.
- Prudential Ribbons: This add for retirement savings has people represent the data in a physical game.
- Black Cloud: This balloon represents the amount of pollution put out by the car in one day. Placed in front of the Beijing climate talks, it sought to create a public spectacle with this physical representation of the data.
- History Quilt: In the US during the mid 1800s Elizabeth Peabody created this abstract visualization of the interplay between nations during the American independence movement. She sewed a giant version into a big quilt that she would take on trains across the country. She'd gather people around it, using the object as a way to bring people together around data.

A Toolbelt of Techniques

- Personal Stories
- Traditional Charts
- Creative Charts
- Data Sculptures

- Traditional Maps
- Creative Maps
- Be the Data

We will review 7 techniques I highlight. These aren't a complete set of everything you can do, but serve as useful scaffolding for picking an appropriate technique to present your story. I'll give a real example for each technique and talk a little about when and why it might be the right one to choose.

The rest of our semester is devoted to making a quick sketch that practices one of these techniques, so these are very important to understand.

Personal Stories

Stacy Carruth

A local hospital was running a campaign to make "the healthy choice the easy choice", so they brough together various departments to brainstorm ways to do that. The audience was staff sent by their bosses, who didn't necessarily have interest in the topic. The presenters shared this image, which has a table with standard brochures about health on the left, and a robotic ice cream vending machine on the right(!). Everyone laughed at the juxtaposition and irony of the healthy messaging next to an ice cream machine. Then the presenters said it was on the 3rd floor of their hospital, and everyone got quiet. This punchline bought them 5 minutes of audience attention to present their story. Using this personal data (the photograph) proved very successful in this context.
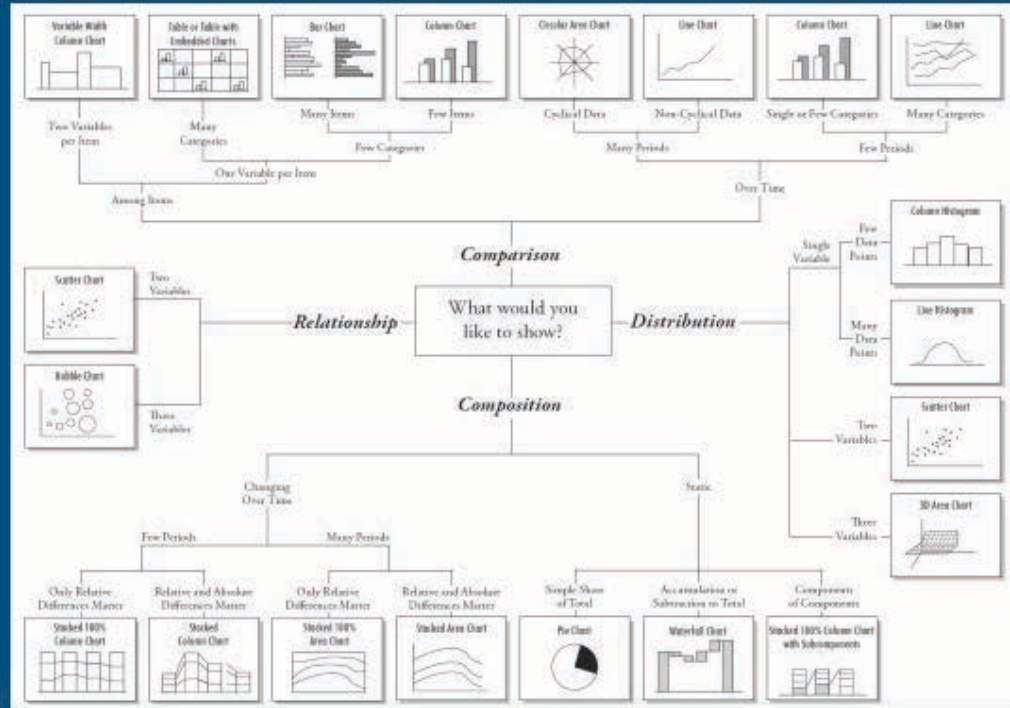
Traditional Charts
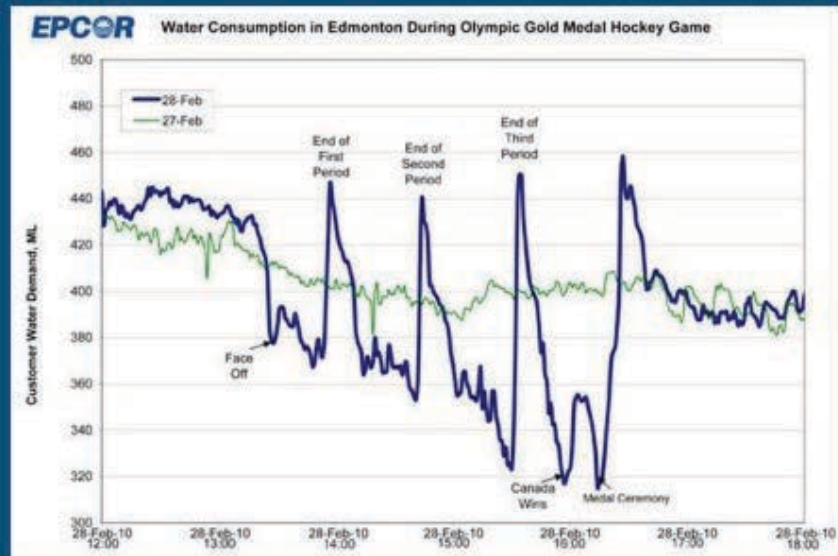
This chart shows water consumption in the city of Edmonton, Canada. The vertical axis is the amount of water used; the horizontal shows the time of day. The green line is a normal day; the blue line is the day of the 2010 olympic gold medal hockey final where Canada was playing the US national team. As you can see, water consumption dropped during the match, as everyone avoided going to the bathroom until in between periods! The simple arrows turned this chart into a story, and connecting this otherwise overlooked utility agency to a larger public event that lots of people were interested in. This simple chart went viral online and in print newspapers around the world.

Traditional charts can work for many audiences, but they are the default in most digital tools we use. Sadly those defaults don't help us choose the *right* chart to tell a story. Guides like this one can help you identify the best chart based on the type of story you can tell. So don't just click the "bar chart" button in MS Excel because it shows up first… carefully think about your story and what chart tells it best.

Creative Charts

Rahul Bhargava & Groundwork Somerville

Creative charts use the visual language of charts and graphs, but break some of the rules. This visual language include lines, symbols, text, bars, and so on. I include info- and explanatory graphics in this category. This example is one of the data murals we've painted. It looks like an infographic, and uses symbols and a flowchart to tell a story. Creative charts let you break the rules of a chart to make something that is visually more appealing, but still use a visual language that many audiences have been taught to understand.

Our paper in the International Journal of Community Informatics has more discussion of the Data Murals.

Data Sculptures map the data on a physical variable. The act of externalizing the data into 3-dimensional form is incredibly impactful. We can hand it to others, react to it, and use it as a think to think with. These are very appropriate for more informal settings where you need to spark curiosity in the audience (like my laser-cut vegetables did).

This example is one from the public health world. They're emptied a bottle of soda, and filled it up with the amount of sugar that is actually dissolved in the soda. The visual echos a bar chart, but makes visible something that is otherwise hidden (ie. dissolved). Here they've added an element of gaming to it; asking people to guess how many packs of sugar are in it as well.

Read our Data Sculptures paper from the Data Physicalization workshop at DIS2017 for more details.
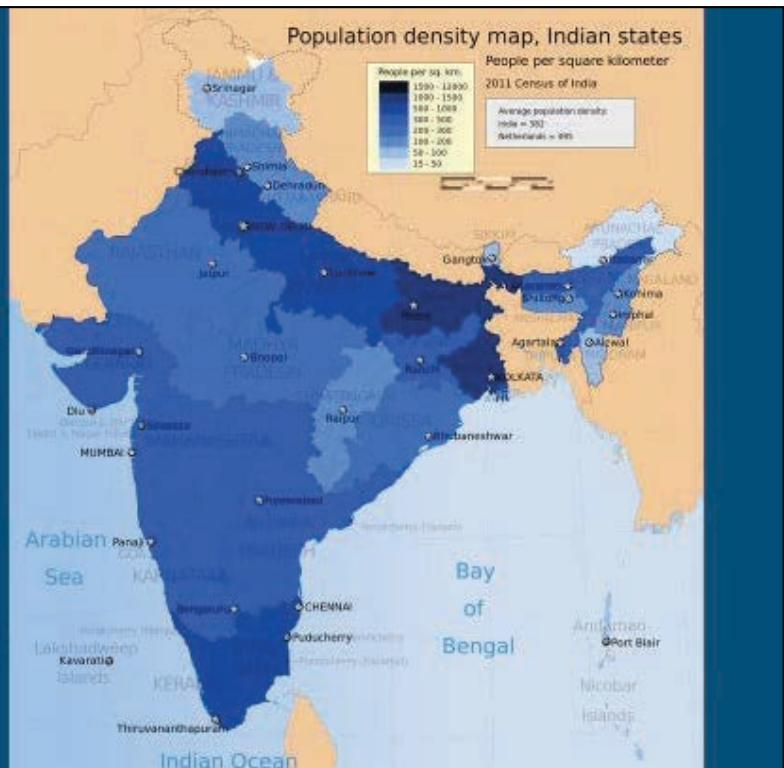
Traditional maps represent data in some way on the geography of the planet. This example is a choropleth (aka heat map) showing the population density of India by state. The darker a state is, the higher its population density.

Maps are super popular right now. The problem with maps is that they are overused. You should only use a map to tell a story when the story is geographic in nature.

We typically map data onto things like size, shape, location, and color. On a traditional map you can't the size, shape, or location of something. So if you're making a map like this you better know for sure that it is the best way to tell the story!
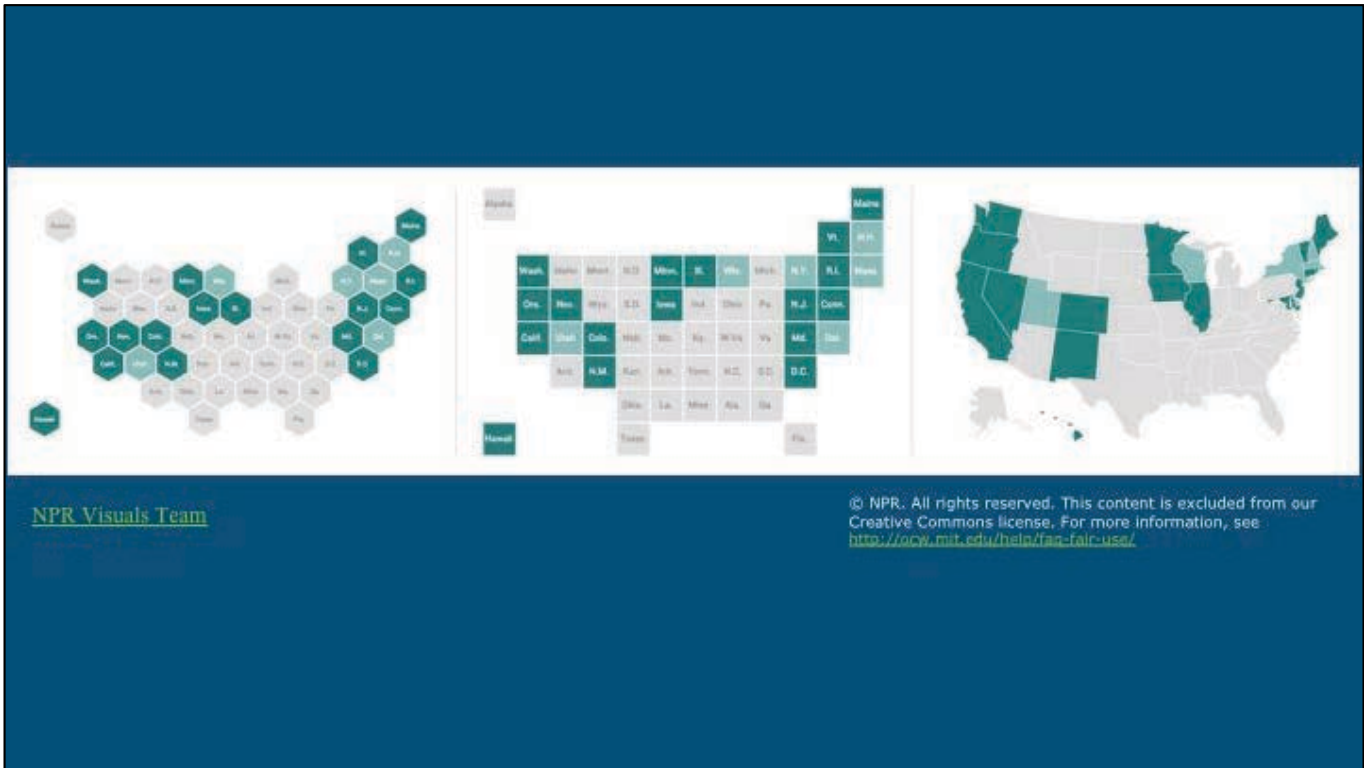
There are some tweaks to maps. Here are two examples NPR explored to address the size problem (by discarding shape).

This brings us to creative maps. This includes cartograms (where objects on the map are rescaled to change their size based on the data). As with creative charts, a creative map uses the visual language of maps but breaks some of the rules.

This example draws the Palestinian territories as an archipelago of islands, separated by water. Bus routes between them are drawn as ferries. The author is clearly making an argument that the separation threatens social connectivity, causes displacement, and is intentionally fracturing. This creative map effectively breaks some rules of maps to tell a story.

Be the Data

Prudential
Ribbon
Experiment

The final technique is about "being" the data - representing the data with your body in some way. Returning to the Prudential Ribbons example, we see how they began with having each person measure out a ribbon whose length was determined by how much money they thought they needed for retirement. The act of walking with the ribbon and seeing it run out when they get to a certain age is incredibly impactful. They can look up and see how far away the age of 100 is, and instantly feel the gap they need to fill… presumably with help from Prudential!

This "body syntonicity" can be very helpful to bring data home to people that are otherwise not thinking about the seriousness of it, or the relevance of it to their lives. The public spectacle it creates can also be incredibly advantageous for drawing attention to a topic.

Time to practice!

With these 7 techniques in mind, let's do a remix activity.

let's do a remix

- form teams
- I'll assign each of you a technique
- grab big paper and crayons
- sketch out a remix with the technique I assigned you

Run my remix activity

homework

- read stuff

CMS.631 Data Storytelling Studio: Climate Change
Spring 2017