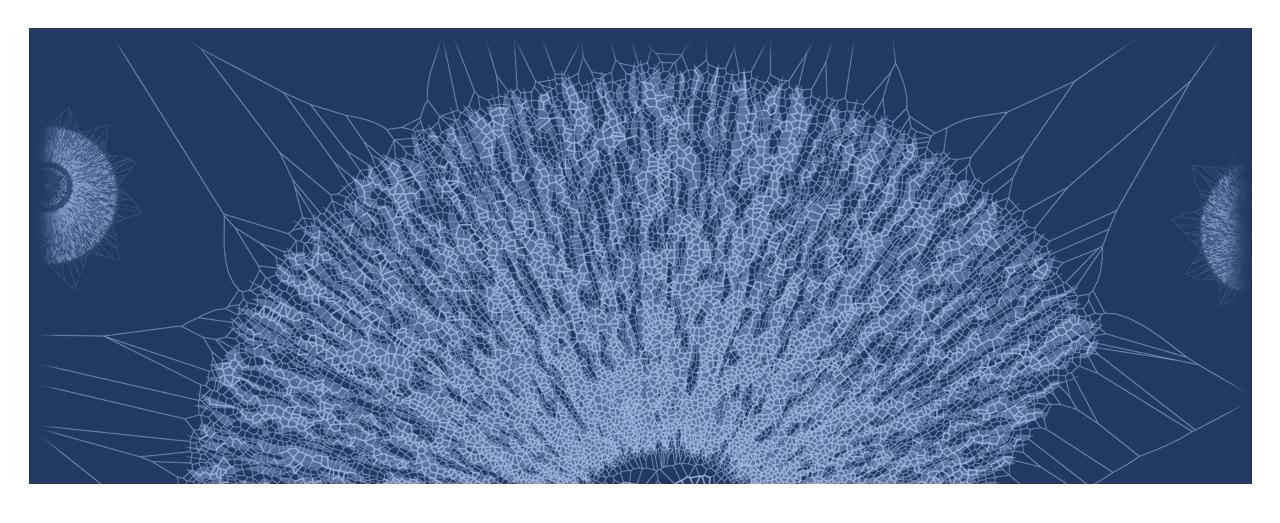




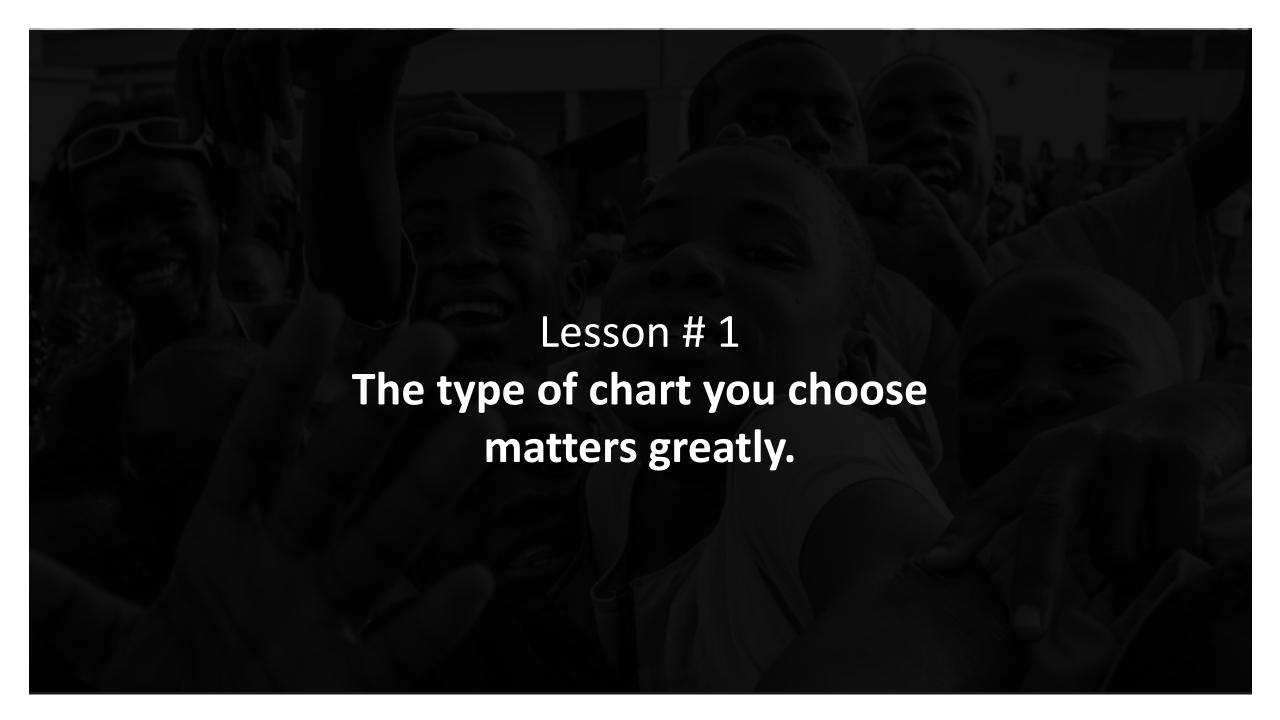
HILLCREST ADVISORY

Agenda

- Lessons learned in communicating with data (30 minutes)
- Data Storytelling Tools (10 minutes)
- Roll-up-Your-Sleeves Exercise to Practice Data Storytelling (45 minutes)

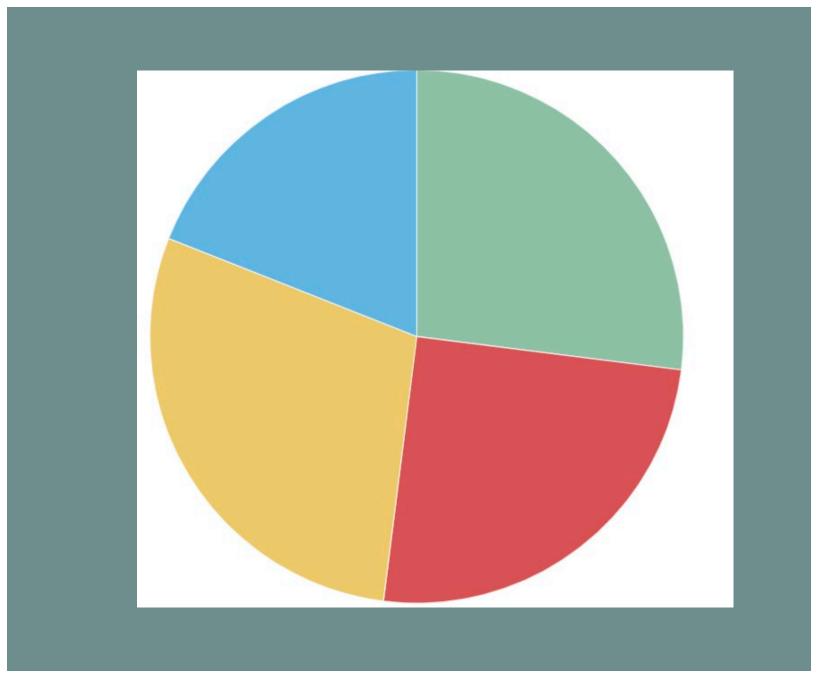


Lessons Learned: Building Visualizations



For example, be careful with the pie graph...

It can be hard to distinguish between "slices" of a pie chart.



Lesson # 1

It's easier for us to interpret the same information as bars.

Helpful Links:

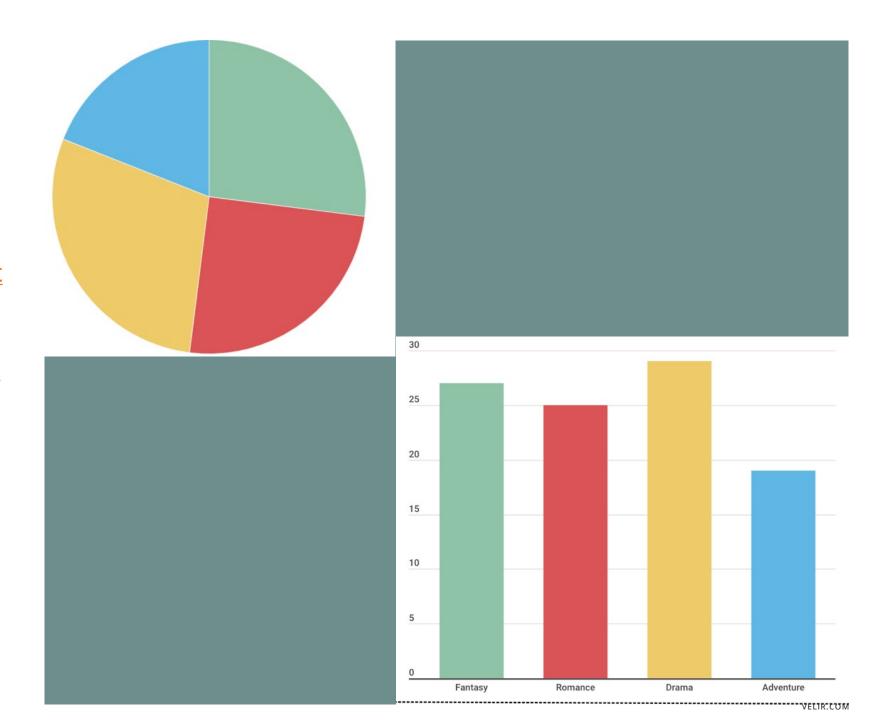
<u>Chart types: Choosing the right</u> <u>chart or map</u>

Financial Times' guide to graph options

A primer on table design

When to use pie charts

Lesson # 1



Speaking of choices, the colors you choose for visualizations also make a difference.

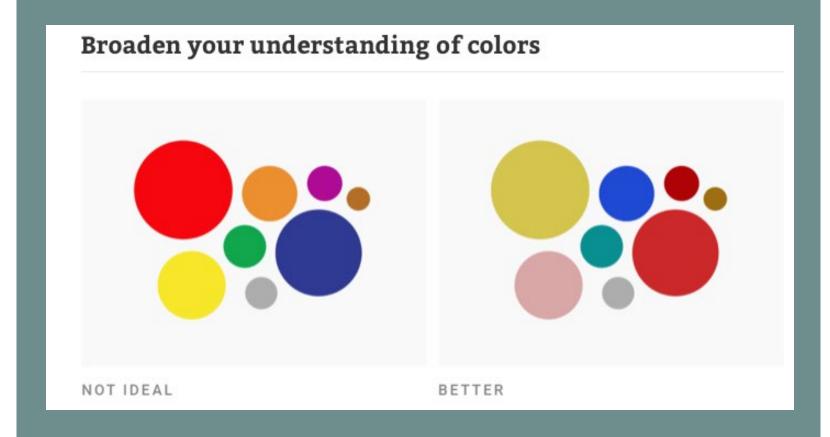
Helpful Links:

<u>Datawrapper: How to pick more</u> <u>beautiful colors</u>

Datawrapper: What to consider when choosing colors for data viz

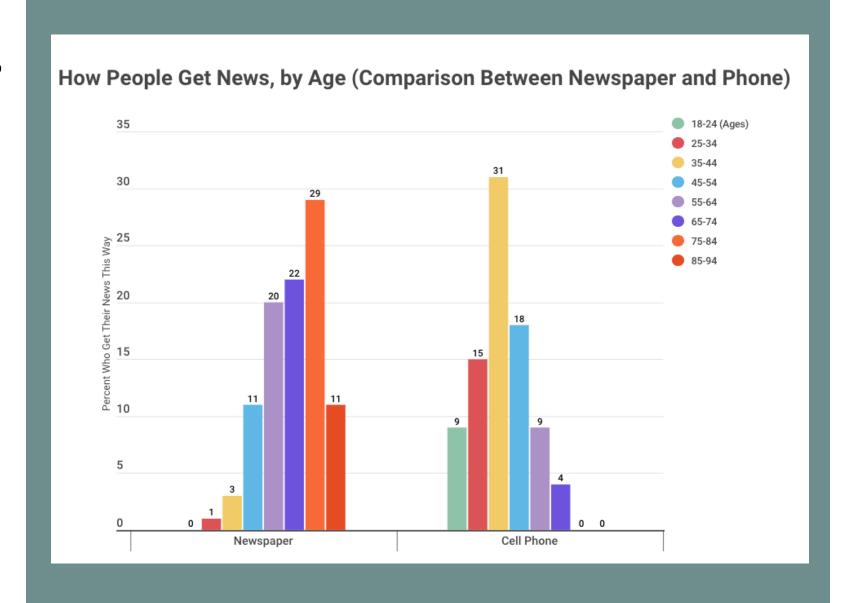
Nightingale: Your brand colors don't work for data viz

Lesson # 1





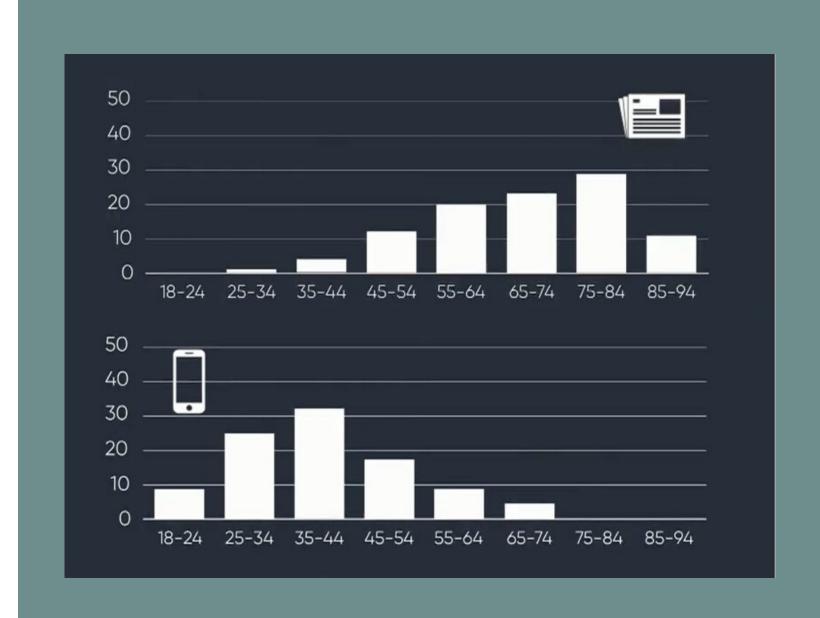
Any ideas what we can do to simplify this chart?



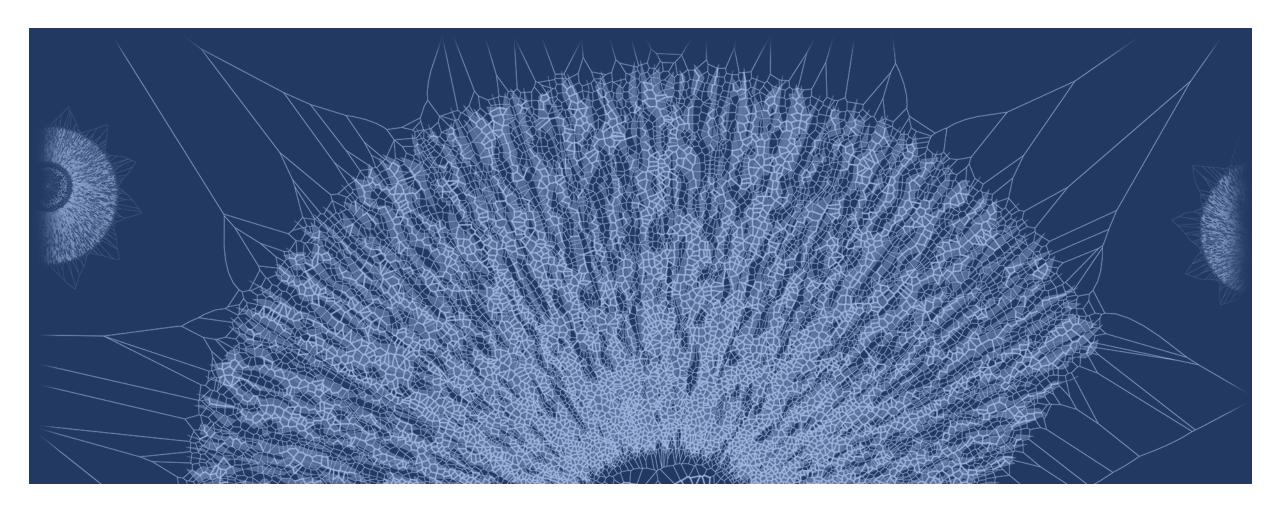
Lesson # 2

The simplest chart I've seen...

No bells and whistles (or for that matter, words), but it gets the point across.



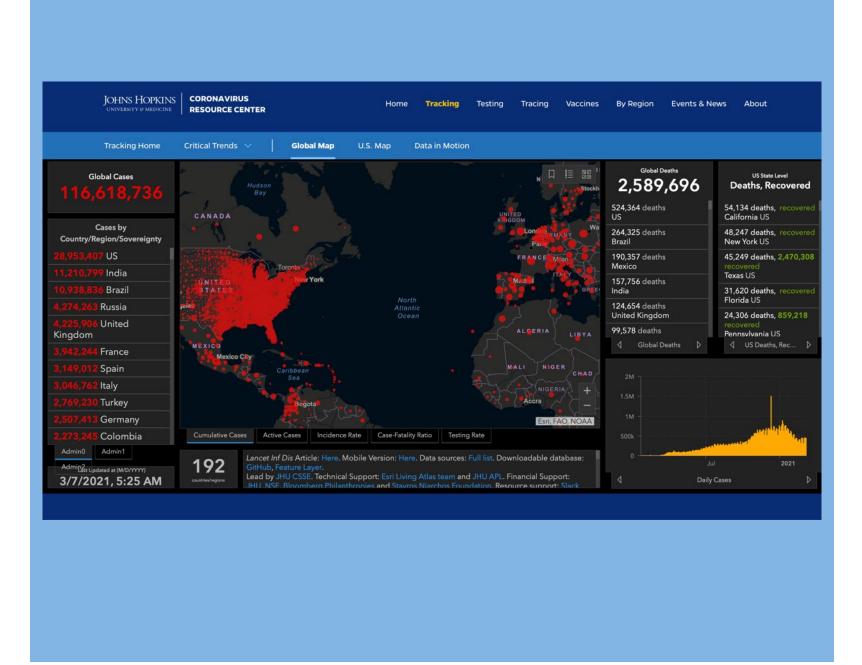
Lesson # 2



Lessons Learned: Data Storytelling

Lesson # 3 Leverage Other Display Formats Besides Dashboards

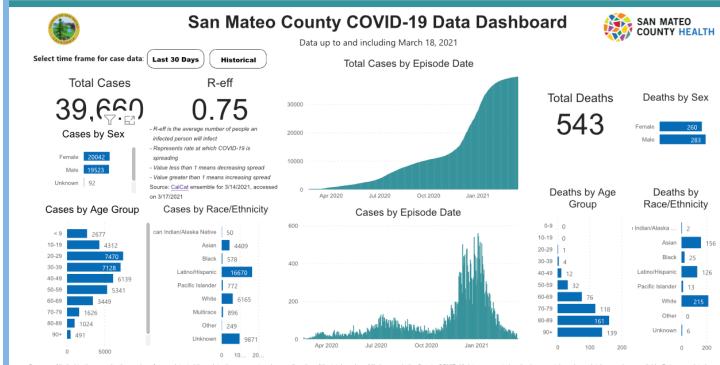
COVID-19 has made all of us very familiar with viewing data through dashboards.



With dashboards, it's all about the graphs.



COVID-19 HEALTH CARE SERVICES LIVE HEALTHY FORMS & PERMITS FOR PROVIDERS



Because of limited testing capacity, the number of cases detected through testing represents only a small portion of the total number of likely cases in the County, COVID-19 data are reported as timely, accurately, and completely as we have available. Data are updated as we receive information that is more complete and will change over time as we learn more. Cases are lab-confirmed COVID-19 cases reported to San Mateo County Public Health y providers, commercial laboratories, and academic laboratories, including reporting results through the California Reportable Disease Information Exchange. A lab-confirmed case is defined as detection of SARS-CoV-2 RNA in a clinical specimen using a molecular amplification detection test. Cases are counted by episode date; episode date; episode date is defined as the earliest of: case symptom onset date, sample collection date, date of laboratory result, or date of death. Deaths reported in this dashboard include only San Mateo County residents; death data last updated March 18, 2021.

Given the pervasiveness of COVID-19, we all quickly became familiar with its data terminology.

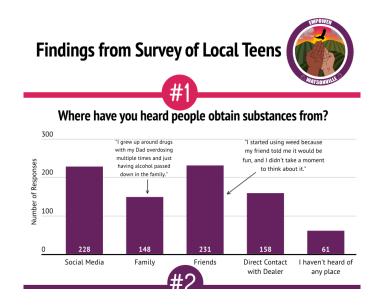
So dashboards work fine for communicating about COVID.

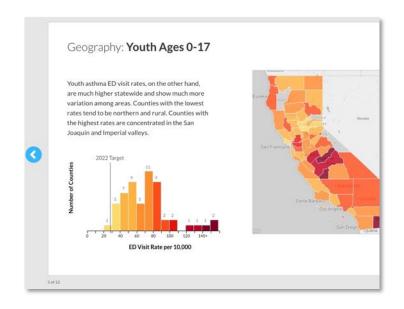
Dashboards, however, don't typically leave much room for context and explanation.

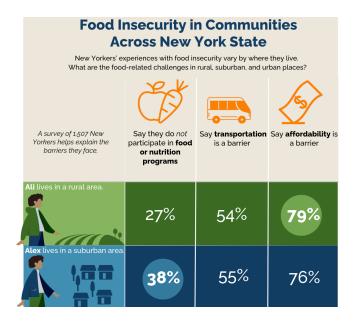
In most instances, audiences you need to reach may not be acquainted with the data, so you need to explain what you're sharing.

Which means dashboards may not be the best format in many instances.

There is another display format to consider: **Data Stories**







Fact Sheet Handout

Slideshow

Infographic

How Can We Display Data?

There are numerous data storytelling formats...

Year in Review: 2017 in 12 Charts



List

Learning to manage my asthma I love teaching. My students always lift my spirits. So you can imagine how hard it is to miss class when asthma knocks me out of commission. I've tried to soldier through, but it all came to a head a few months ago when I had a bad attack and had to be ambulanced to the emergency room. I don't know what was worse, the attack, or seeing the fear in my students' eyes. The same percentage of people had asthma in Imperial County as California in 2017... 14.8% ...But far more people in Imperial County than California go to the Emergency Department for asthma care.

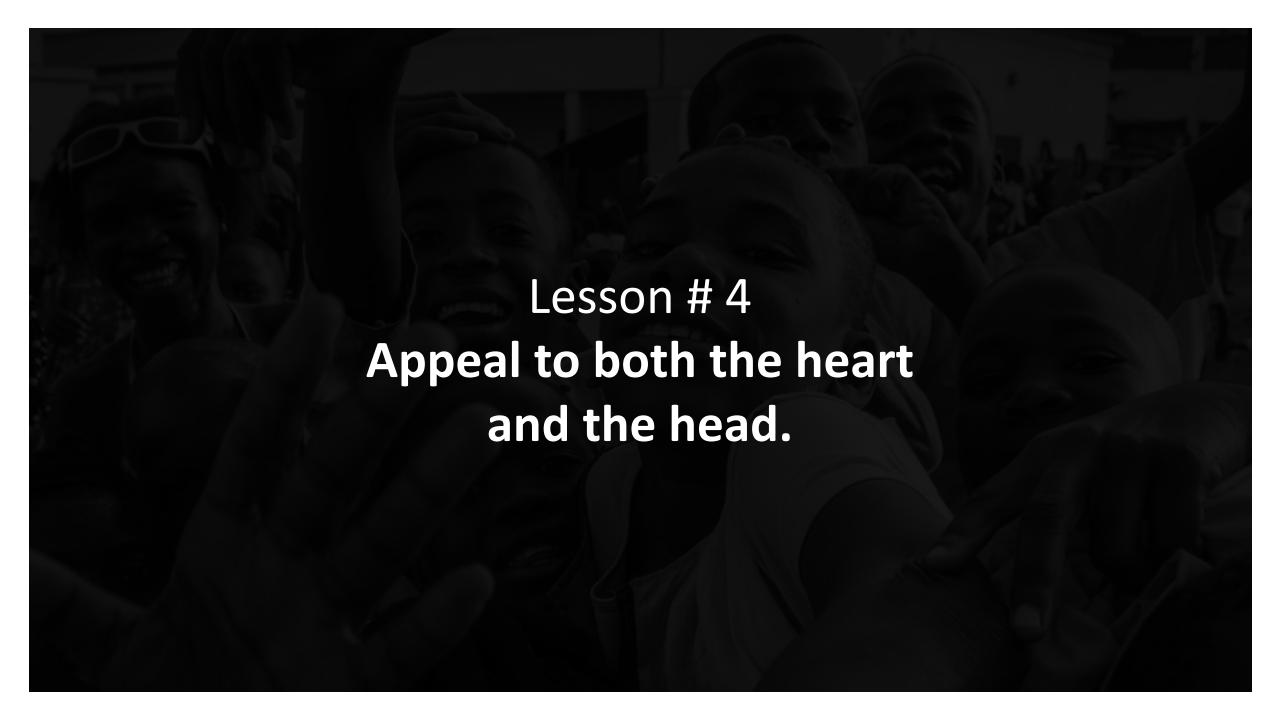
Persuasive Narrative

America's Health Care Crisis Why the United States Leads the World in Health Care Spending The U.S. leads the world in health care spending, but why is that alarming? It's no surprise that wealthier countries tend to spend more on health care. In fact, we see a strong linear relationship between GDP and relative health care spending per capita for most industrialized

data speaks

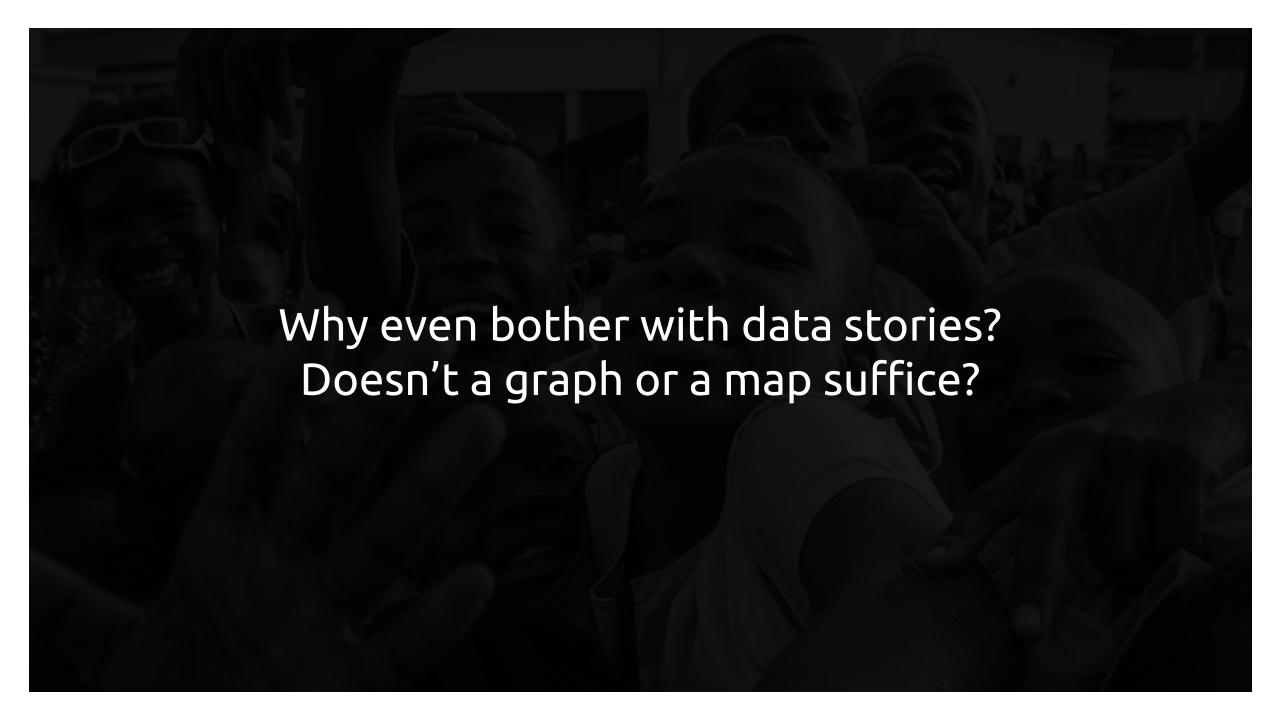
Q&A

How Else Can We Display Data? There are numerous data storytelling formats...



"Numbers are a poor substitute for the richness and color of the real world."

- Mathematician Hannah Fry, The New Yorker, March 22, 2021 <u>What Data Can't Do</u>



Why even bother with data stories? Doesn't a graph or a map suffice?

Because our brains are wired for stories.

Poignant quotes and personal stories to draw the reader in.

Example



Crowded Housing

Lucia is generally unstoppable. As the grandmother of a 4-yearold with special needs, she's done everything to help her granddaughter. But here in Long Beach, housing has become so costly that she's living in a rat-infested and small apartment, trying to help her granddaughter navigate mounting health, emotional, and social challenges, including an inability to speak. But where does she turn? Where can she find help?

Like many of us in Long Beach, Lucia faces challenges like this that make raising happy and healthy kids an uphill battle.

No single organization in Long Beach can hope to remedy this, but there's a new model, called **Accountable Communities for Health**, that transform systems by harnessing the power of a network of community-wide interventions.

Special Education Enrollment Increased 25% in Five Years in Long Beach Unified



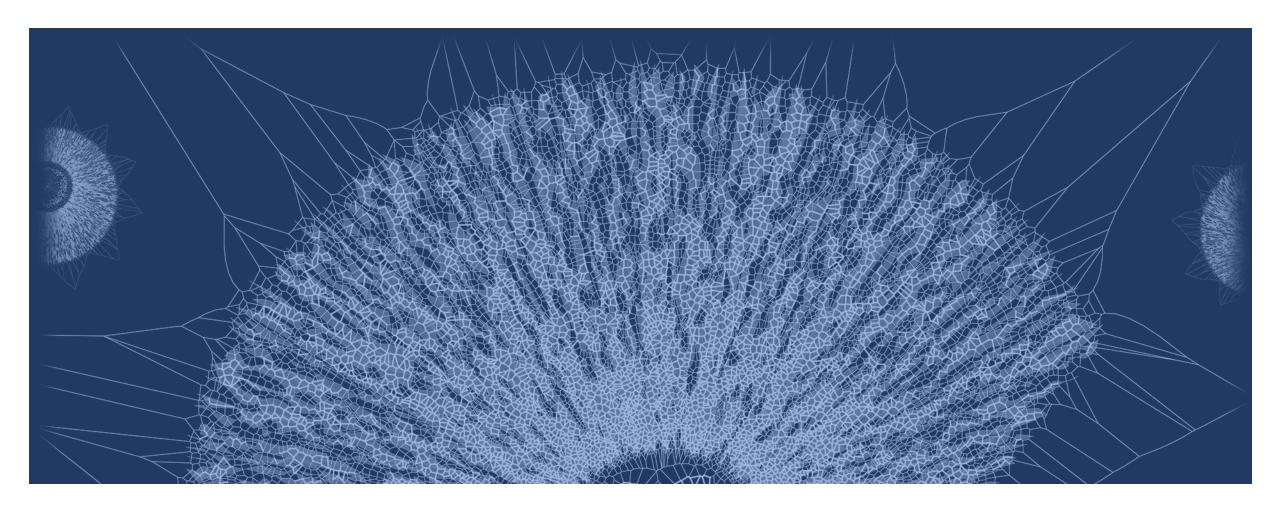
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Lesson #4

Introduce individuals to help you narrate your data findings.



Lesson #4



Lessons Learned: Process Matters



Talking to your constituents – early and often – is the best way to ensure that you build data tools that are useful and used.

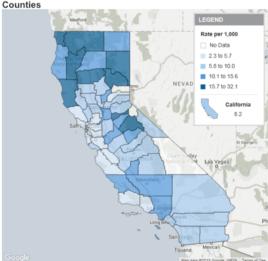
Example

kidsdata.org



Child Abuse and Neglect in California

Substantiated Cases of Child Abuse and Neglect: 2015; Showing Counties



Definition: Number of substantiated cases of abuse and neglect per 1,000 children under age 18 (e.g., in 2015, there were 8.2 substantiated cases of abuse and neglect per 1,000 California children).

What It Is

Child abuse and neglect indicators are broken into two broad categories: the incidence of child abuse and neglect reports and the incidence of substantiated cases. Generally speaking, most reports of child abuse/neglect are not substantiated by Child Protective Services after an investigation. Typically, as the public becomes more aware of child maltreatment and how to report it, the rate of reports goes up. The rate of substantiated cases is generally a more reliable measure of the prevalence of abuse and neglect because it reflects verified reports. On kidsdata.org, data on both reports and substantiated cases of abuse/neglect are provided overall, by age, by race/ethnicity, and by type of abuse.

Why This Topic Is Important

Child maltreatment can cause serious physical injuries and even death (1). Children who are abused or neglected, including those who witness domestic violence, also are more likely to experience cognitive, emotional, and behavioral problems, such as anxiety, depression, substance abuse, delinquency, difficulty in school, and early sexual activity (1, 2). In addition, child maltreatment can disrupt brain and physical development, particularly when experienced in early childhood, increasing the risk for health problems in adulthood, e.g., heart disease, cancer, obesity, depression, and

MacBook Air

Lesson # 5

Lesson #6 Don't start with the complete story.

Researc

JAMA | Original Investigation

Effect of Opioid vs Nonopioid Medications on Pain-Related

Function in Patients With Chronic Back Pain or Hip or Knee Osteoarthritis Pain The SPACE Randomized Clinical Trial

Table 2. Patient-Reported Primary and Secondary Outcomes Among Patients With Erin E. Krebs, MD, MPH; Amy Gravely, MA; Sean Nugent, BA; Agnes C. Jensen, MPH; Beth DeRonne, PharmD; Elizat Kurt Kroenke, MD; Matthew J. Bair; Siamak Noorbaloochi, PhD or Hip or Knee Osteoarthritis Pain Randomized to Opioid vs Nonopioid Medication Opioid Group, Mean (SD) (n = 119) Between-Group Difference (95% CI)^a IMPORTANCE Limited evidence is available regarding long-term outcomes of opioids compared with nonopioid medications for chronic pain. 5.4 (1.8) 5.5 (2.0) -0.1 (-0.6 to 0.4) 3.7 (2.1) 3.7 (2.2) 0.0 (-0.6 to 0.6) function 3.4 (2.1) 3.6 (2.4) -0.2 (-0.8 to 0.4) 3.6 (2.2) 3.3 (2.4) 0.4 (-0.2 to 1.0) 3.4 (2.5) 3.3 (2.6) 0.1 (-0.5 to 0.7 DESIGN outcom June 20 had mo 5.4 (1.5) 5.4 (1.2) 0.0 (-0.4 to 0.3) Of 265 4.3 (1.8) 4.0 (1.7) 0.3 (-0.2 to 0.7) 4.1 (1.8) 4.1 (1.9) 0.0 (-0.5 to 0.5) INTERV 4.2 (1.7) 3.6 (1.7) 0.7 (0.2 to 1.2) treat-to 3.5 (1.9) 0.5 (0.0 to 1.0) prescrit the first Forthe anti-infl -1.0 (-3.6 to 1.6) treatme -0.3 (-2.8 to 2.2) 10.0 (4.2) MAINO 9.0 (4.2) 9.2 (3.9) Invento intensit or pain outcom 12.4 (4.3) DESILIT (97.5%) 12 mont 3.3 for t significa BPI sew [95% C commo sympto (differe nonopio support (\$3,9%) in the nonopioid group; difference, -12.8% (\$ osteoar Health-related quality of life did not significantly di tween the 2 groups (physical health overall: P = .23; ence at 12 months, -1.3 [95% CI, -3.8 to 1.3]; mental overall: P = .40; difference at 12 months, 0.7 [95% CI, 3.8]). Of the remaining secondary outcomes, only anxinificantly differed between groups (Table 2: eTable

Onioid vs Nonopioid Medications on Pain-Related Function

jama.com JAMA March 6, 2018 Volume 319, Number 9 877

ie opioid group vs 63 patients

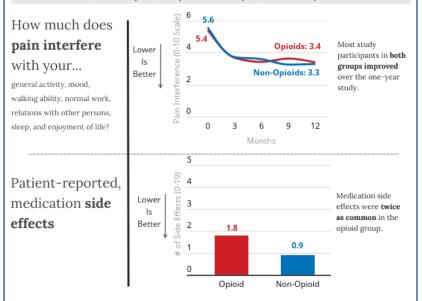
What works better for long-term pain?

Opioids or Non-Opioids?

What We Already Knew: We knew that opioids were more likely to cause serious harms such as injuries, breathing trouble, addiction, and even death. What We Didn't Know: Patients and doctors didn't know if opioids worked better for long-term pain than non-opioid pain medications.

What Was Studied

VA doctors and researchers recruited 240 VA patients with long-term back, hip, or knee pain. One group received opioids, such as morphine and oxycodone. The other group received non-opioids, such as lidocaine cream, acetaminophen, and naproxen. After one year, this is what they found:



VA doctors and researchers concluded that opioids did not work better than non-opioids for long-term pain

See the full study from the Journal of the American Medical Association:





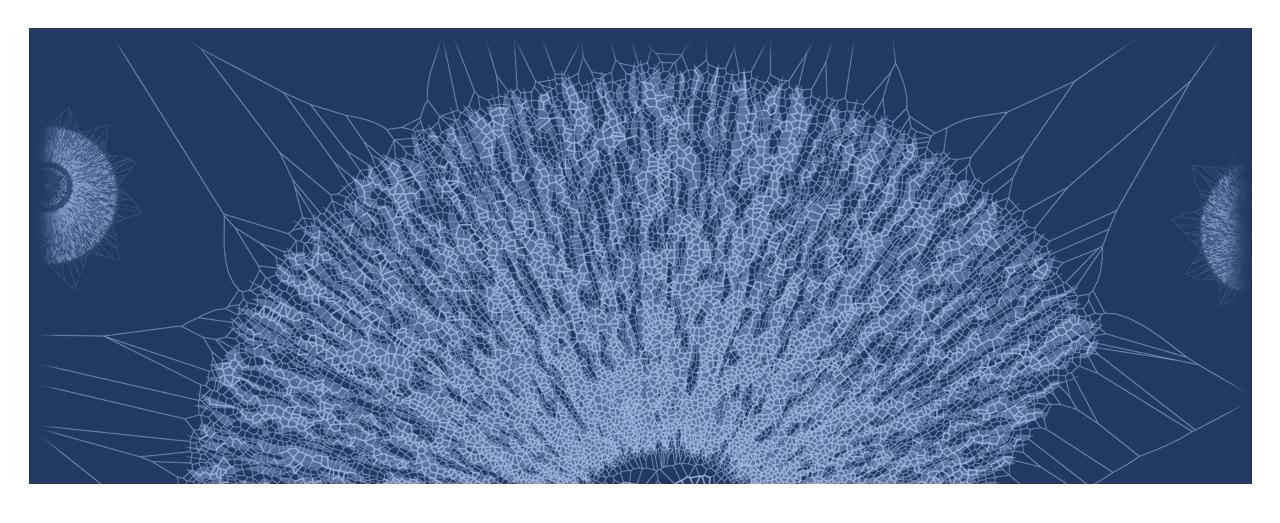
U.S. Department of Veterans Affairs

Veterans Health Administration

Office of Research & Development

https://jamanetwork.com/journals/jama/

fullarticle/2673971



Lessons Learned: Make Data Relatable

Lesson # 7 Be careful with large numbers. They can be abstractions.

"Our cognitive and perceptual systems seem to be designed to *sensitize us to small changes* in our environment, possibly at the expense of making us *less able to detect and respond to large changes.*"

- Paul Slovic, cognitive psychologist at the U. of Oregon

Non-digital representations of large numbers can be equally effective, too.

The New York Times

U.S. DEATHS NEAR 100,000, AN INCALCULABLE LOSS

U.S. DEATHS NEAR 100,000, AN INCALCULABLE LOSS

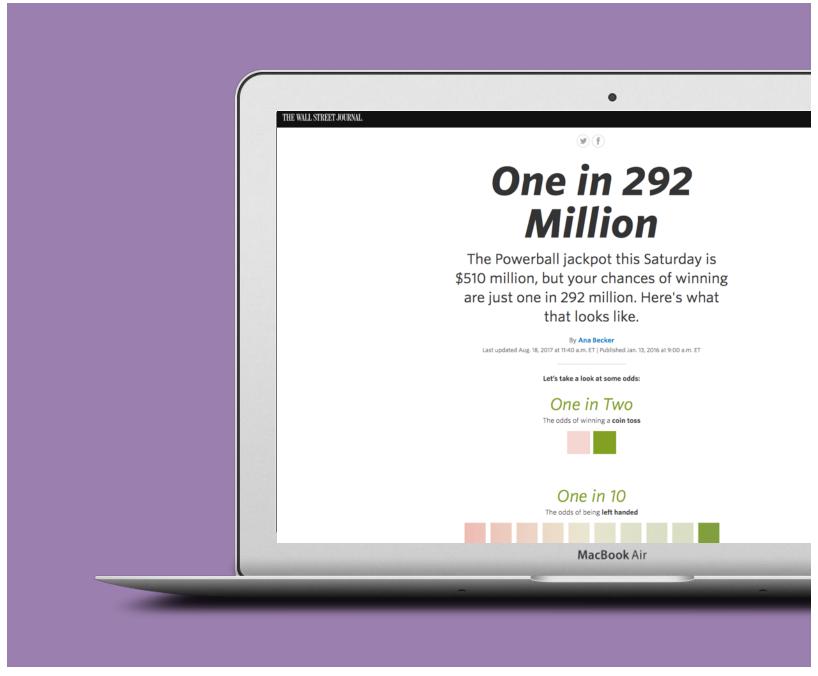
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Lesson # 7

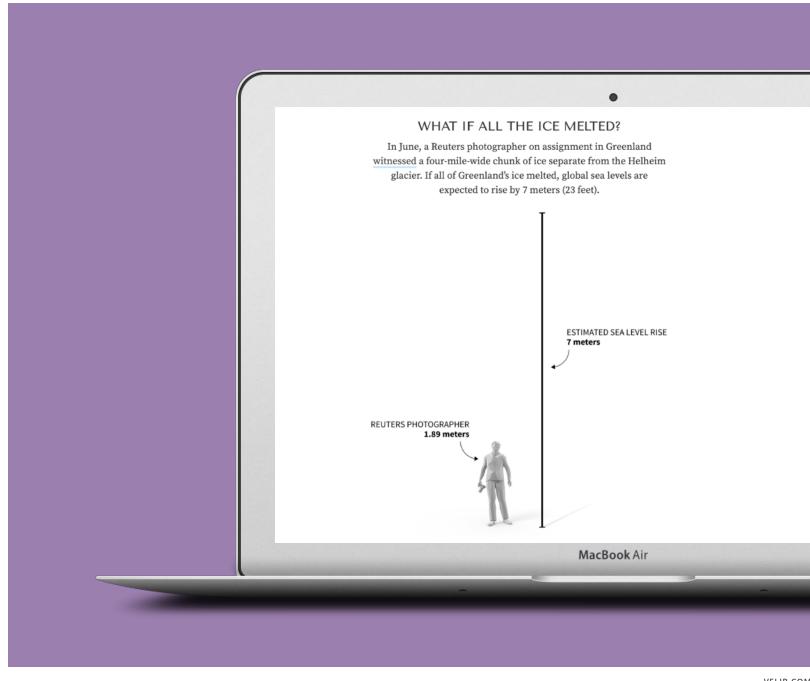
VELIR.COM PROPRIETARY AND CONFIDENTIAL

It's hard for humans to appreciate numbers that are larger than what we experience in our day-to-day lives.



Lesson # 7

To make large numbers relatable, you can compare data to known objects.

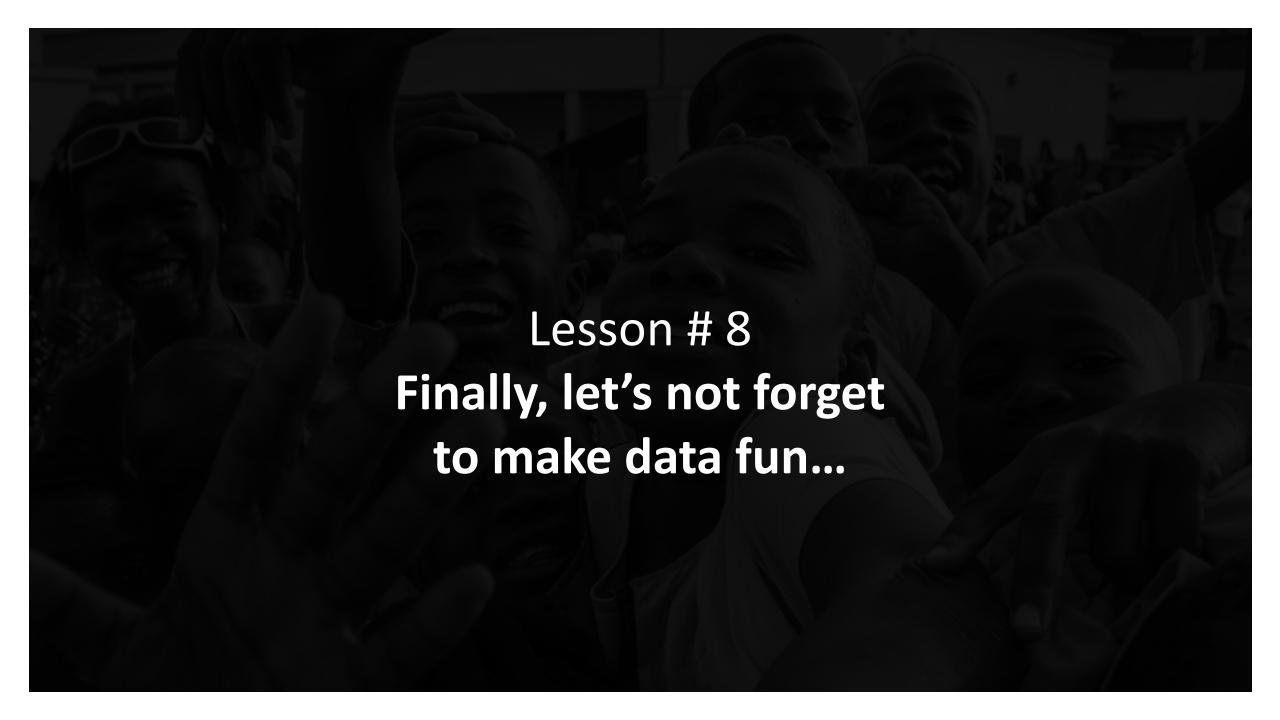


Lesson # 7

To make large numbers relatable, you can compare data to known objects.



Lesson # 7



Create intellectual exercises from data, in order to engage your users and encourage them to share what they're learning.

Example

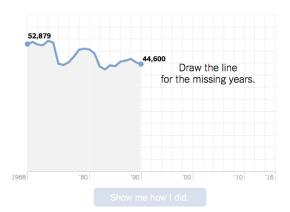
Lesson #8

You Draw It: Just How Bad Is the Drug Overdose Epidemic?

By JOSH KATZ UPDATED October 26, 2017

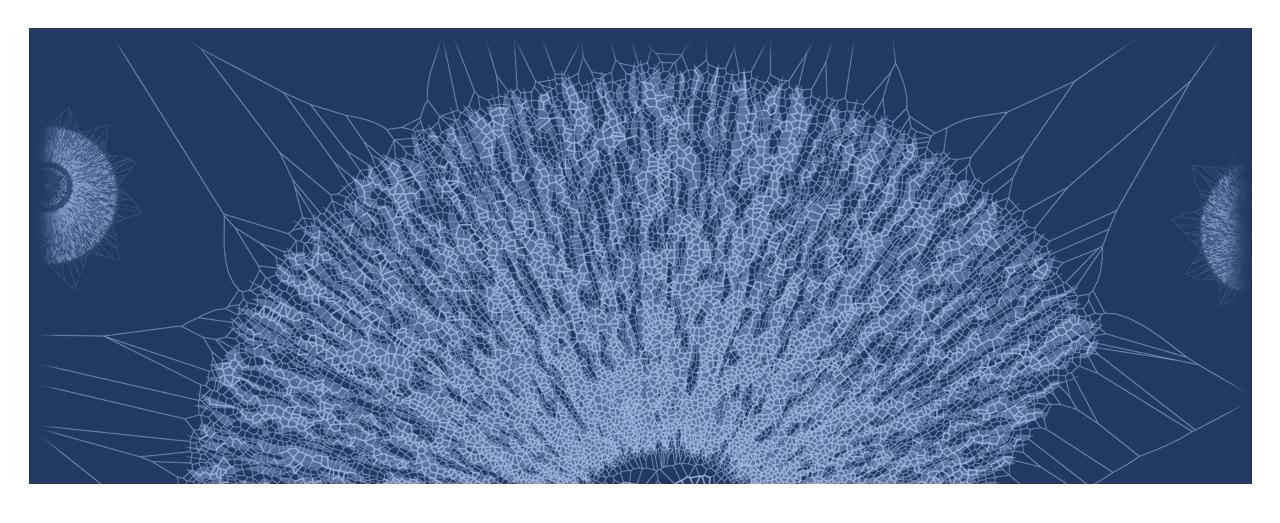
How does the surge in drug overdoses compare with other causes of death in the U.S.? Draw your guesses on the charts below.

Since 1990, the number of Americans who have died every year from **car accidents**...



I don't want to play; just tell me the answers

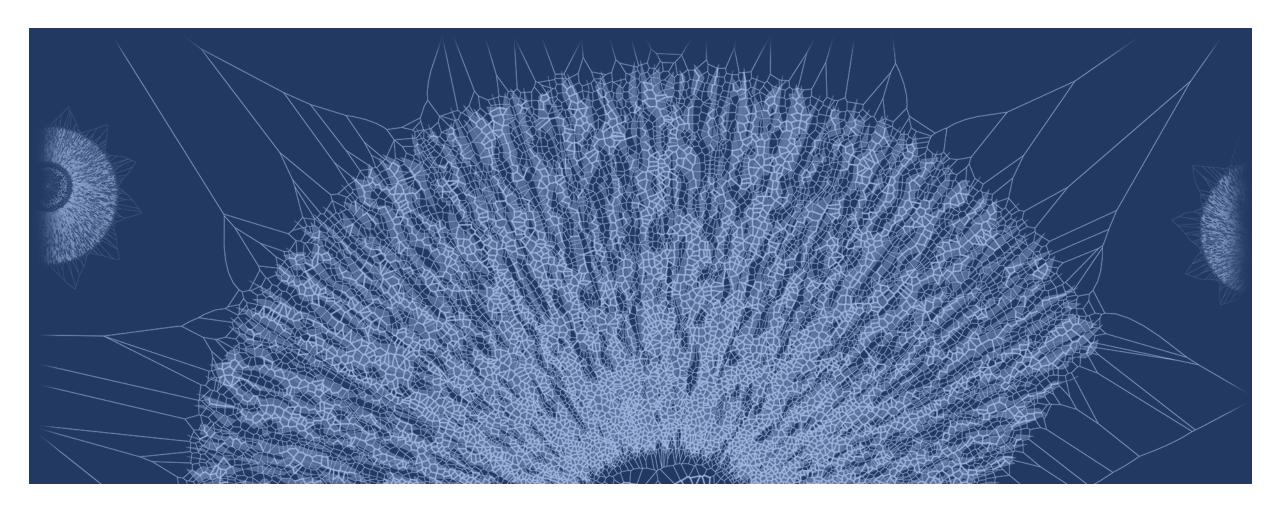
MacBook Air



Data Tools

Free Tools you can use to create maps, graphs, and stories (in addition to Excel, Google Sheets, PowerBI or Tableau):

- ✓ Infogram (see tutorial)
- ✓ Datawrapper (see tutorial)
- Flourish (see tutorial)



Practice Building a Data Story

Now it's your turn...

We'll break into groups to think through a data story.

We'll supply the data.
You'll come up with the story.

Your Group's Goal

- Choose an audience/action
- Determine ways to visualize data
- Consider the content to include in a data story and a presentation format

- For which of the above measures are the data most compelling? That is, what do you think is most important to share with others (choose one or two measures)?
- Audience: What specific audience do you most need to reach with these data?
- Action: What do you need that audience to do with the information you're presenting?
- What kinds of graphs or maps would you use to summarize these data? In other words, how would you visualize the data you want to share?
- How would you bolster these data with a story?
- What format would work best for presenting this content to your audience?

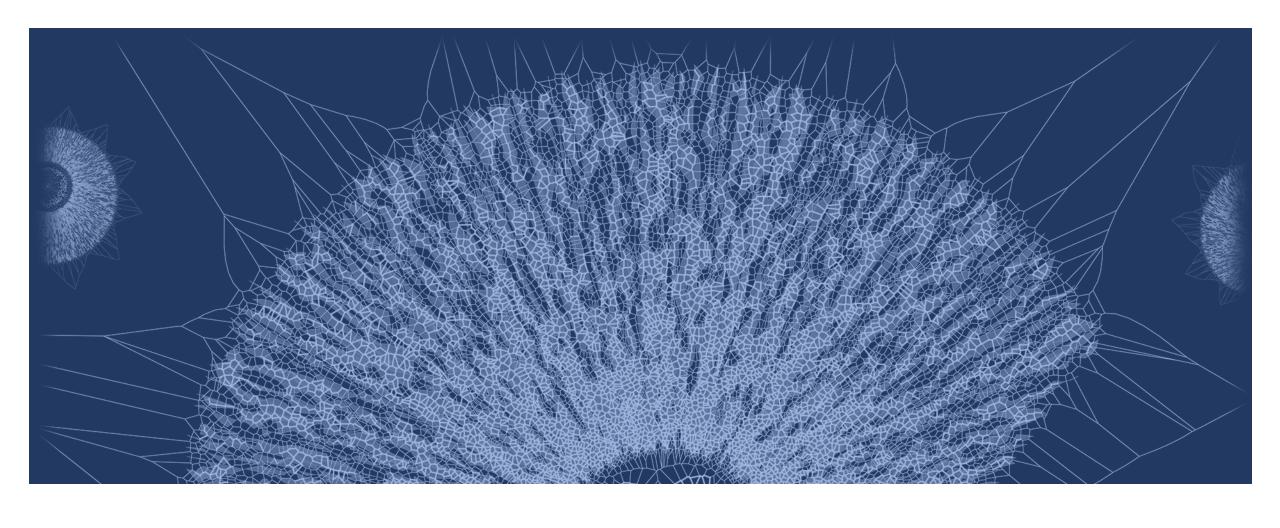
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Data Story Report Out

Let's see what you came up with...

Thank you.

andy@hillcrestadvisory.com (if you have a question)

www.hillcrestadvisory.com (more resources)