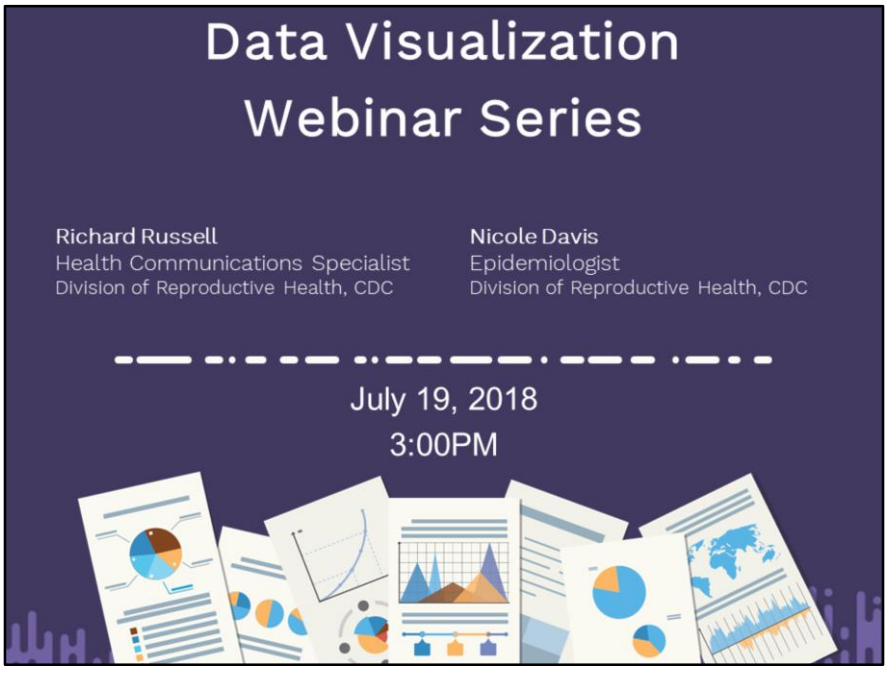
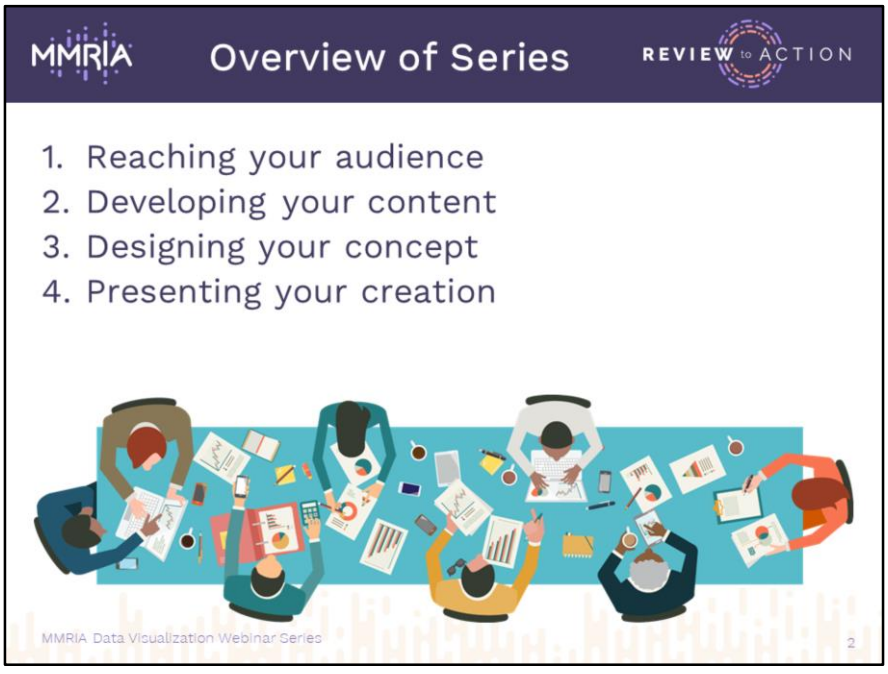


Thank you all for joining us as we kick off this data visualization webinar series. I am Nicole Davis, an Epidemiologist in the Division of Reproductive Health at CDC. I am very lucky to be joined by Richard Russell, a Health Communications Specialist here at CDC, who will be leading the webinar series with me. We had nearly 70 people accept the calendar invitation for this webinar, and we are very excited about the overwhelming interest.



Over the course of the next 4 webinars, we'll guide you through the basics of data story-telling and creating a basic infographic, and for our final session we'll ask volunteers to present their team's creation.

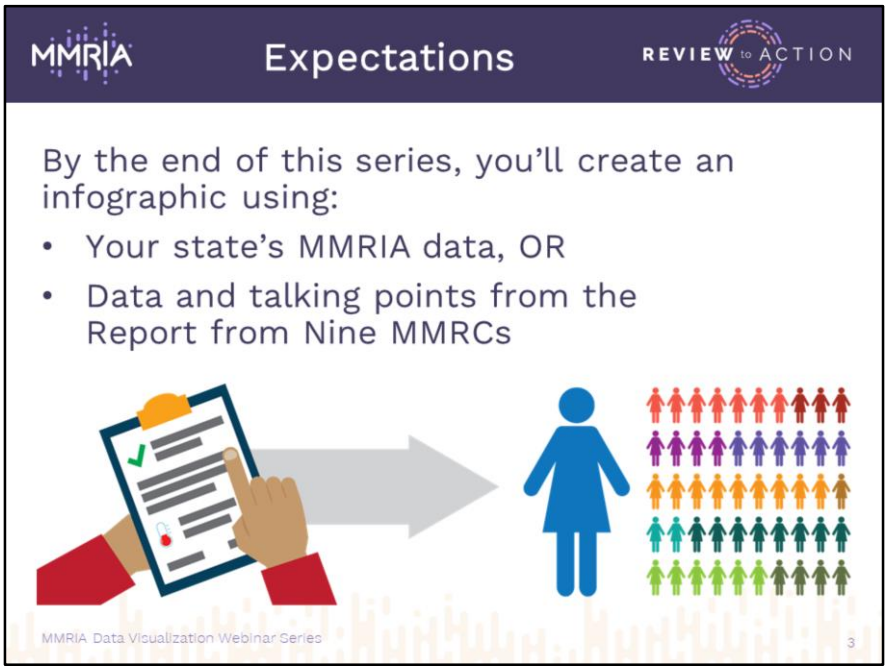
Today, we will talk about reaching your audience. This includes determining who your audience is, defining what you want to tell them, and determining the best way to share your data's story with them. We will also go over some best practices for relaying information to a lay audience.

On the second webinar, we will focus on developing your content and will go over how to decide between types of graphs or charts. We will also discuss some basic tips and tricks for using PowerPoint to create an infographic.

The third webinar will dive into designing your concept, including things to keep in mind when choosing colors and fonts, and where you can find free, and legal, image sources.

And the final webinar will be dedicated to sharing the infographics that you created as part of this series.

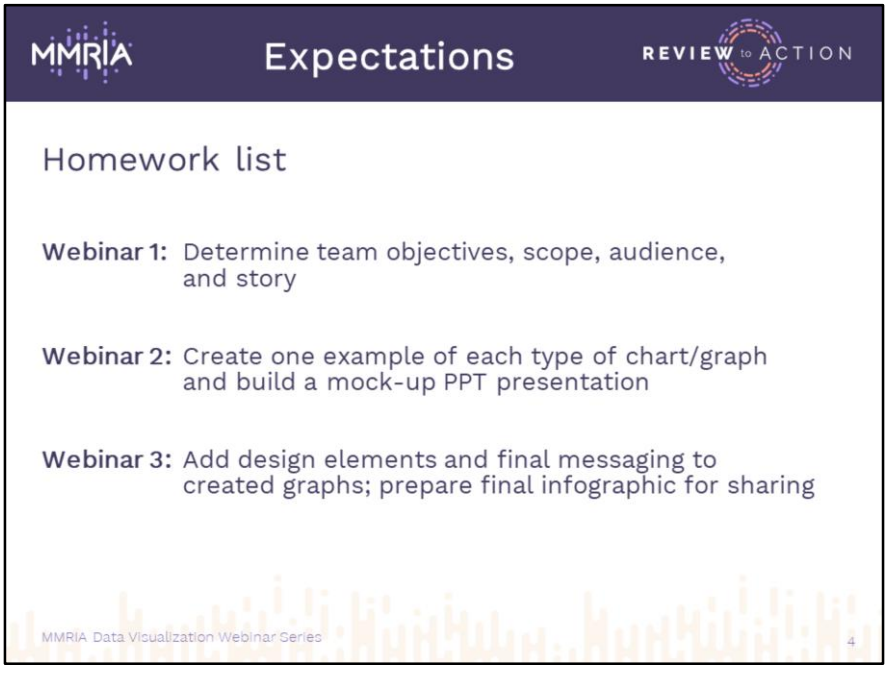
We'll open the floor for questions at the end of the session.



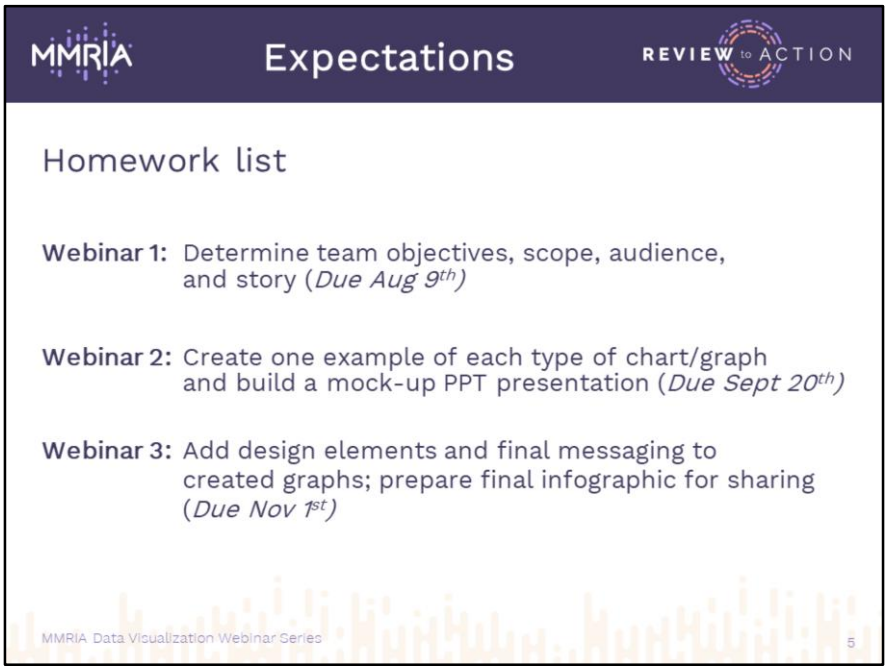
Each jurisdiction will work as a team to create an infographic that will be shared at the end of the webinar series. There will be homework assignments after each webinar to help walk you through developing the infographic over the next few months, and we will go over those on the next slide.

Your infographic should be based on your jurisdiction's MMRIA data, if it is available. If you are not able to use your state's or jurisdiction's MMRIA data, then you can use the data and talking points we created here at CDC for the Report from 9 MMRCs to develop your infographic.

In order to successfully complete the assignments, at least one member of your team should have access to, and basic knowledge of, Microsoft PowerPoint and Excel, and at least one member of your team should have basic data analysis skills.



We will break up the potentially daunting task of creating an infographic into 3 smaller pieces, or homework assignments. Again, these assignments are meant to help you prepare a final infographic for sharing by the end of the series. We will go over the assignment in more detail at the end of each corresponding webinar.



Each assignment will be due the Thursday before the next Webinar. You can email one entry per state (or jurisdiction) to Richard and I, and we will provide feedback to you within a week. Submitting the assignments is voluntary of course, but will help you to finish the series with a product that will hopefully be useful for you.

Now, I will turn it over to Richard, who will dive into the content you all came to learn about.

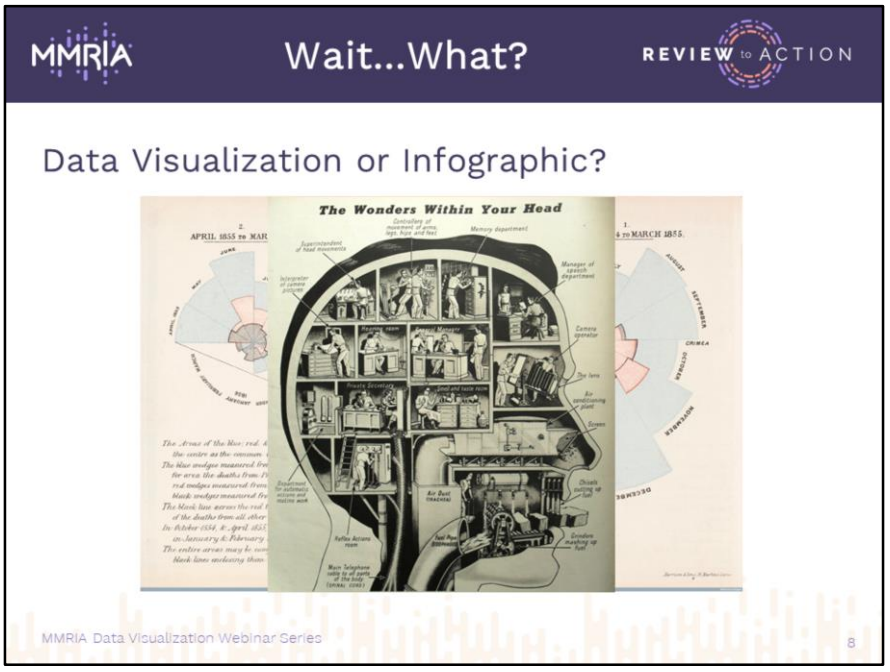

Webinar 1:
Reaching Your Audience:
goals and objectives of data
visualization

Our 3 big goals and objectives for today are:

Number 1: Matching your data to your audience. Who do you want to reach and what do you want them to know?

2: Defining your intention for your data. What actions do you want your data to promote? Why are you sharing it?

3. Determining best way to share your data's story: How do they want to hear or see your story? Should you spend money on printing and mailing, or would social media find them faster and more economically?



Before we go any further, let's stop and figure out what we're talking about here. These terms – data visualization and infographics – aren't new to most of us, but it wouldn't hurt to explain a little about them.

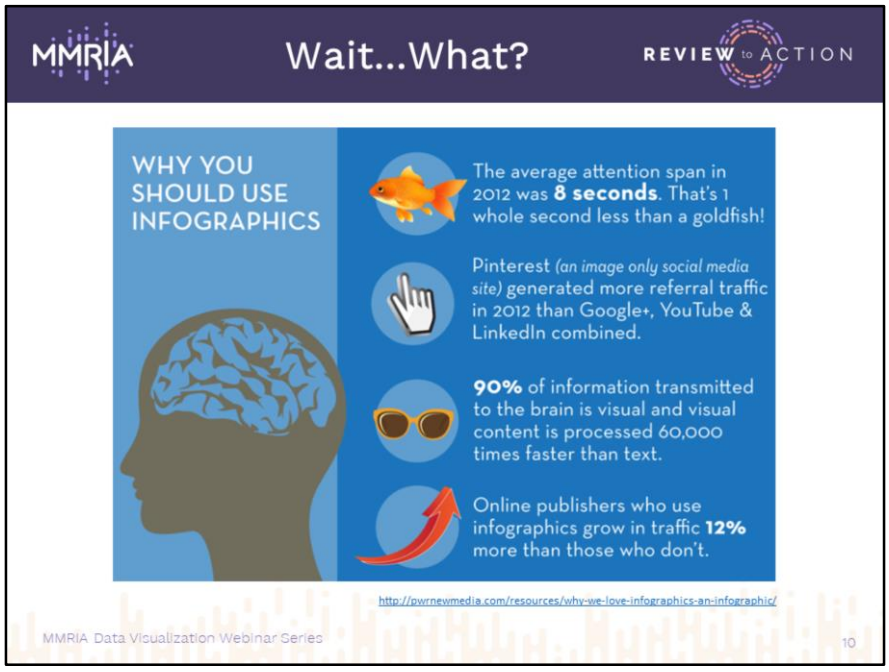
They are generally interchangeable, but there are a couple of subtle differences. Data visualization (or data viz) is a broad term describing a plethora of ways to present data in pictorial formats. Generally speaking, data viz takes words and numbers out of the static realm of flat data tables, helping viewers make connections within the data more obvious.

Technically speaking, data viz covers everything from ancient tomb paintings, family trees, maps, and simple pie charts, to powerful interactive infographics.

Several studies have found that humans process images faster and more easily than text or numbers. Once we moved beyond cave paintings, our earliest known systems of recording information – hieroglyphics and cuneiform - began as ideograms or pictograms, graphic symbols used to convey concepts. These have been used throughout time around the globe, and as languages formed, they morphed into systems to convey sounds: alphabets.

Coming back full-circle, “Infographic” is a relatively new-ish term coined for several formats of data viz that place data into easily assimilated “pictobytes”. Combining complex information with contextually-related images can help cross many language and literacy barriers, making large data more digestible to more people.

What we now know as Infographics started developing in the 1700s. Interestingly, when they started becoming regular staples in print media like Time and USA Today in the late 1970s they were ridiculed as gaudy and cartoonish. But since then they’ve been proven to be extremely effect and have exploded across the airwaves and internet.

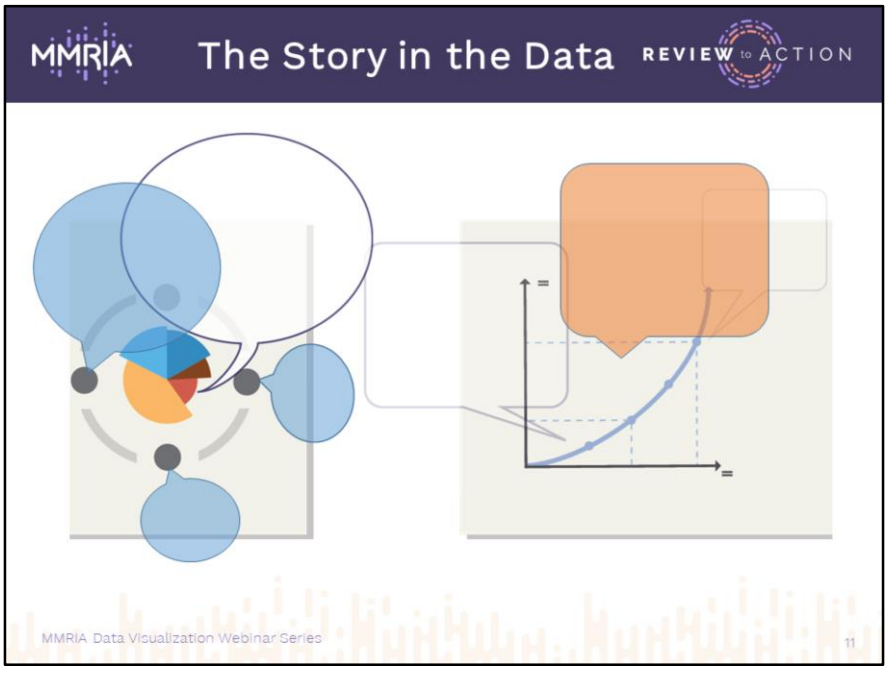


Here are some quick facts about infographics conveniently packaged in an infographic. At first glance these may not seem applicable to public health, but they highlight a few salient points to keep in mind.

- Attentions spans are short. We stay focused briefly and then I wonder what my cat is doing right now? Where's my grocery list?
- Today's average viewer prefers instant gratification. Information relayed via familiar terms or visual symbols connects with many viewers quickly.
- If your goal is to reach a broad population, certain platforms are a better vehicle than others. But remember that not everything needs to be posted on social media.

The idea of creating fancy, artistic infographics may be daunting, and they aren't always necessary, but there are a few general best practices when building and sharing any data visualizations that will help you get noticed by whoever you're trying to reach. The first rule of thumb is to find, understand, and develop the story in your data.

http://pwrnewmedia.com/resources/why-we-love-infographics-an-infographic/



The purpose of an infographSic is to present a high-level snapshot of the facts in terms that can be grasped by your audience. One key tool to help your audience gain better understanding of a topic is The Story.

Raw data can easily confound a public not trained to understand it. Instead of presenting just bare facts, it helps to coax a narrative from the data, to translate the information into a format that interests as many people as possible. Sort your findings into a framework that places the most compelling data at the top of the hierarchy.

For example, the FACTS revealed by your data are related to mortality burden, causes, steps to mitigate causes, number of deaths potentially prevented, and the potential impact of reducing disparity. But, on further analysis, your data tells a narrative of disproportionate burden of cardiomyopathy in non-Hispanic Black populations; your committee has indicated that deaths due to cardiomyopathy could be reduced by maternal care providers doing screening and echoes (when appropriate), and implementation of these interventions could reduce maternal deaths.

Take a few seconds to jot down an example particular to your jurisdiction for discussion later in the webinar.

More often than not, your data will only speak to a few specific groups. These groups make up your audience.

Who's in your audience and how well will they understand your information?

How can you improve your chances of getting them to interact with the message you've taken from your data?

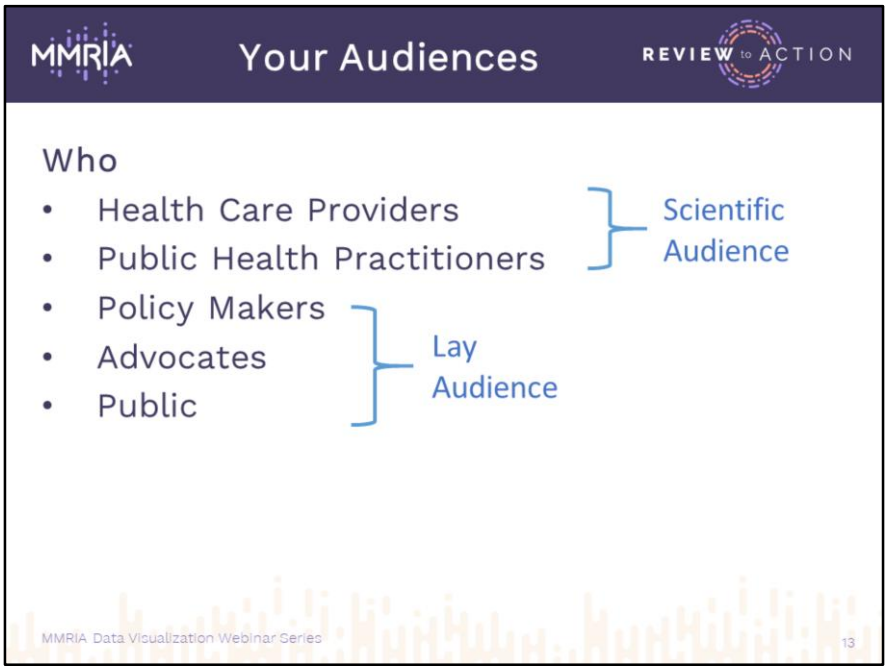
Charts, graphs, and maps can be very effective tools for communicating data, but use them appropriately, when they cater to your constituents. In Webinar 2 we'll discuss how to choose between these formats.

One way to help develop the story in the data is to find information about different demographics or target populations. There are many free resources online (e.g. U.S. Census data). Census data can help flesh out info about regional population age; levels of income, employment, and education; and languages spoken, among many other details. If a condition disproportionately affects a specific demographic, this data can be used to provide background and insight to your audience and advise potential interventions.

Find out if your organization or partners have access to any paid subscription services, (Pew Research, for example) which can help pinpoint your audience's behaviors. These services track

trends in a population's housing, healthcare habits, technology use, and other everyday patterns, so your team may be able to find detailed information about many different audiences' preferences and traits. We've listed several resources and links at the end of this presentation and we'll walk through a few of those when we get there.

Some recent headlines on the Pew Research's FactTank homepage have been "A third of U.S. adults say they have used fertility treatments or know someone who has", "7 Facts about U.S. Moms", and "U.S. women are postponing motherhood, but not as much as those in most other developed nations", all stories pulled from recent Pew surveys, and which use infographics beautifully to help illustrate their data.



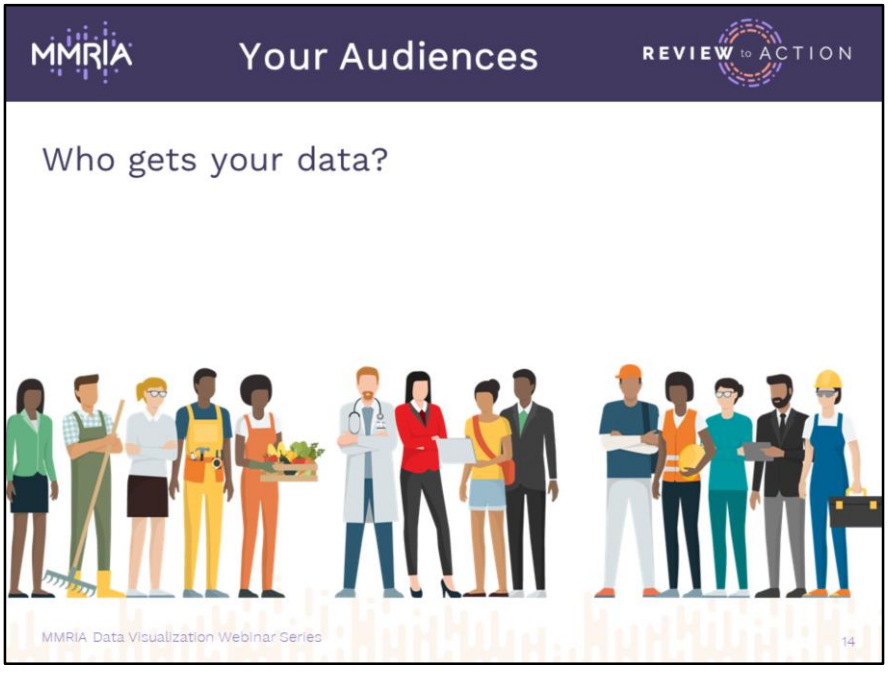
Targeting your data viz directly to the people you hope to reach helps ensure you have a better chance of delivering your findings to them.

Healthcare providers and policy makers like to see information streamlined to their needs. The same is true for all audiences.

You and your professional colleagues speak the same language and you usually don't lose much in translation, but if an audience can't understand you, they may not care what you're telling them.

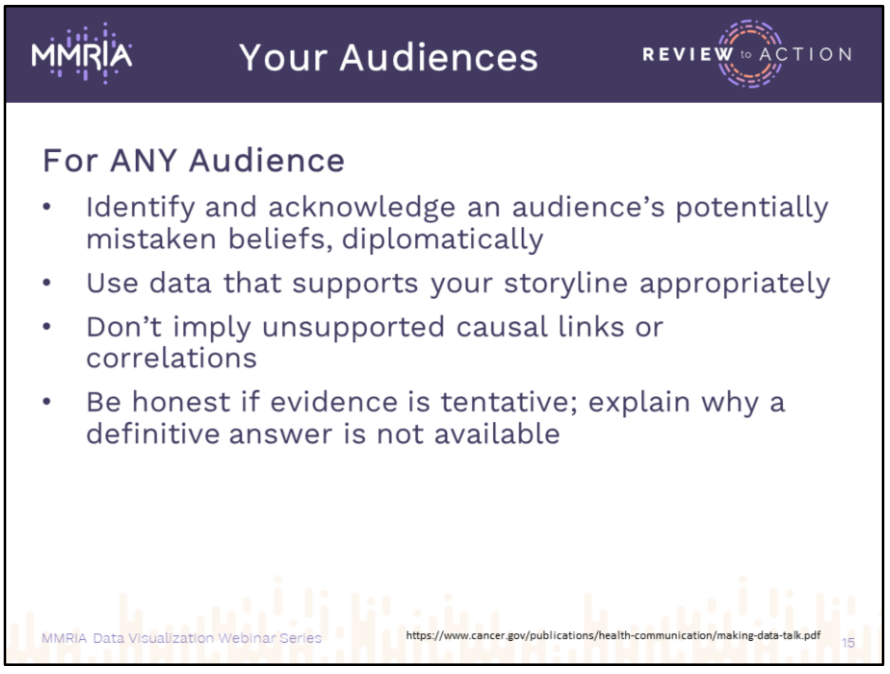
If you're providing information to the general public, are you educating them best by speaking Science-ese or in lay terms? If you present to your state or county legislature, are you providing data that informs or influences them, or that prompts them to take action?

Find out if plain language writing styles are a legal requirement in your state (they are federally). Customizing your messaging specifically for your audience will remove many of the barriers they face in processing and receiving your information. There's a link at the end of this deck to CDC's recommendations on health literacy and reading levels that can simplify health communication to different populations.

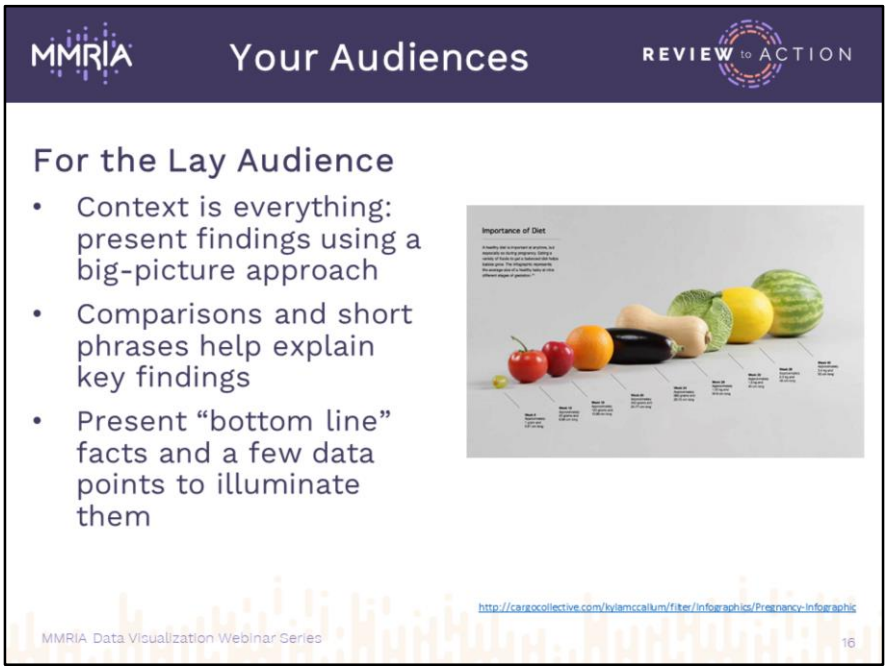


Your primary audience might not be the only one you're going to reach. You may initially craft your visualization for healthcare providers or policy makers, but it may in turn be shared with other audiences. For example, a data visualization may be created as part of a state report to policy makers, which may in turn be picked up by a health reporter at the local newspaper, who publishes it. Providers and practioners may want to incorporate or re-present your findings to other teams or their partners. Policy makers often need to collaborate with multiple committees or across offices. Health advocates may try to reach several audiences for different purposes. When preparing a data viz, be sure to save a version as a JPEG or PNG so it can easily be shared across multiple platforms if needed. We'll speak more about that in a later session.

Over the past 10 or 12 years, the public has come to rely heavily on social media for much of their news and health information. Social media channels make it easy to spread messages worldwide quickly and inexpensively. This has positive and negative implications: a message's original context can be easily misconstrued and go viral for all the wrong reasons.



So, intentionally or not, it's very possible you'll be providing your data to many audiences simultaneously. People have a tendency to fill in the blanks to help them make sense of incomplete or unclear information. Clarity and transparency help direct your audience away from filling vague gaps with assumptions. There's a lot of misinformation being shared across all those platforms and apps out there. Biases and pre-conceived notions weigh heavily on public perception, so if you're posting anything on social media, your assertions may be challenged in the comments, despite all the science behind them. Be prepared to counter bad information with good, but try to do so diplomatically.



By placing your data's story in familiar, personalized contexts, you can enhance its reach dramatically. This helps personalizes it, allowing viewers to feel more comfortable with it and connected to it. Throughout these slides we're showing examples of infographics that obviously used a creative services department or hired designers, but the idea of contextual data visualizations holds true no matter who's building the product. Any audience will better appreciate your data if it feels like you had them in mind when putting it together. We'll get into this idea more in a later session.

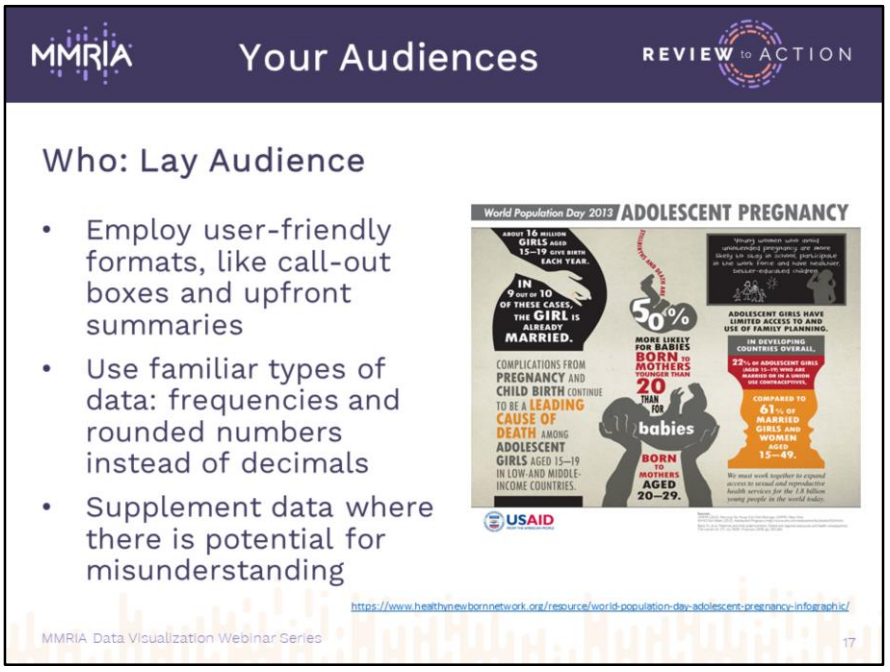
Using comparisons familiar to your audience also helps. "Big as a tractor trailer" or "small as the head of a pin", for two broad examples, give immediate visual clues to dimensions. These may sound cliché but this kind of language is extremely effective assuming your audience understands your reference. While you're pondering your homework in between these webinars, start noticing these kinds of comparisons specific to public health contexts and making a list of them.

Streamlining and removing data-clutter delivers it faster and more efficiently without dumbing it down. The image in this slide is a beautiful example of all these points:

- Eating well is essential to a healthy pregnancy,
- each fruit or vegetable compares to the size of a healthy baby in utero,
- and the information can't get too much more streamlined than this.

This is also an extremely rare infographic in that it encapsulates all that in one frame.

http://cargocollective.com/kylamccallum/filter/Infographics/Pregnancy-Infographic



Keep it easy-access without making the reader/viewer feel talked-down to. Use bulleted lists or call-outs. Keep numbers simple and rounded. Use verbal modifiers that add meaning or context, and metaphors your audience can relate to.

Use numerals, rather than spelling out numbers (This goes against the requirements of many style guides, but infographics tend to blur a lot of lines like that.)

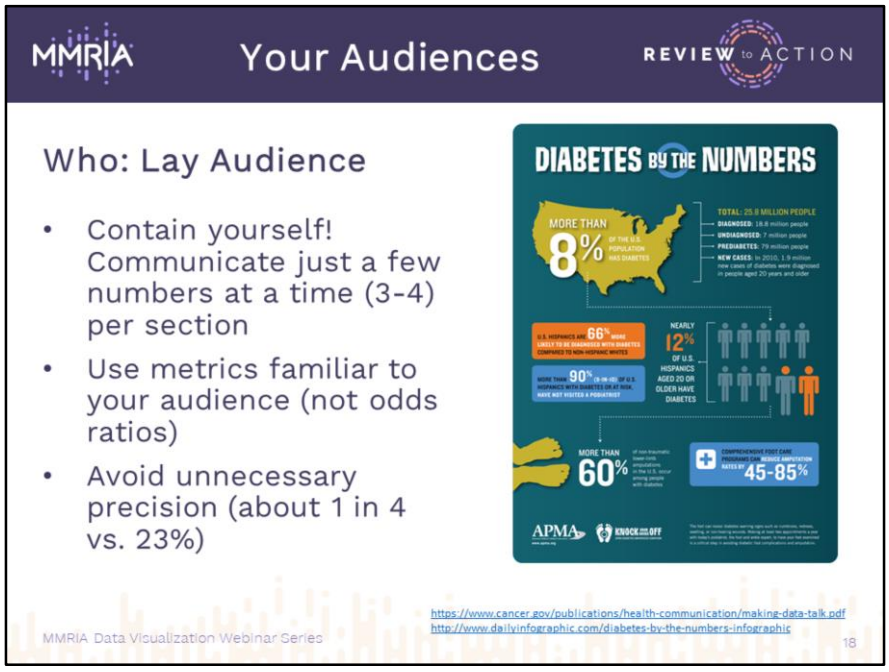
Avoid jargon! Don't use acronyms, professional slang, or codewords.

And as we said before, fill in the blanks as much as you can.

Whenever possible, identify whether your data illuminates an opportunity for your audience to take action, and what action you expect them to take. We'll talk about those possibilities shortly.

The image example here employs all these bullet points, though it isn't the most legible or easy-to-follow visualization I've seen recently*. The info is written for a fairly wide audience, they emphasize important info and break it out into specific blocks of content, but their story has been lost in the disorganized design.
*My personal opinion

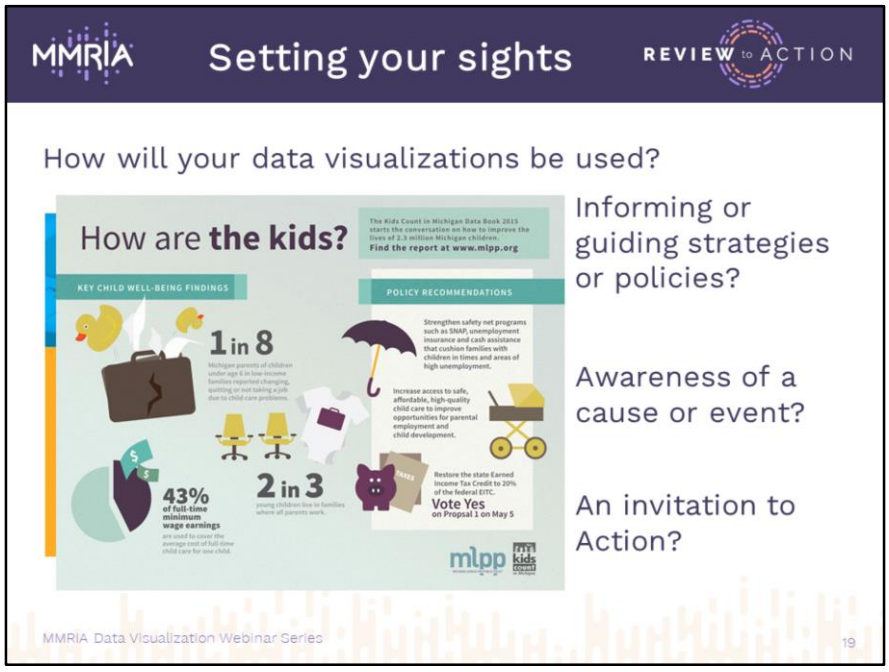
https://www.healthynewbornnetwork.org/resource/world-population-day-adolescent-pregnancy-infographic/



Numeracy is the numeric equivalent of literacy. Limit your quantity of information to 3 or 4 numbers at a time, if you can, and keep number-based data as easy-to-read as possible. An infographic should not take on the task of providing all the minutiae of your data; It's supposed to be a high-level snapshot. It should deliver answers to specific questions and pique the viewer's interest to search for more info if they're curious. To fill in any gaps, have some FAQs on hand and offer links directing viewers to more in-depth information from your background sources.

Design opinion time again: This example is very well organized into clearly delineated sections. But the colors make some of the info hard to read (white text can really be tricky) and what's up with one person having an orange head?

https://www.cancer.gov/publications/health-communication/making-data-talk.pdf
http://www.dailyinfographic.com/diabetes-by-the-numbers-infographic

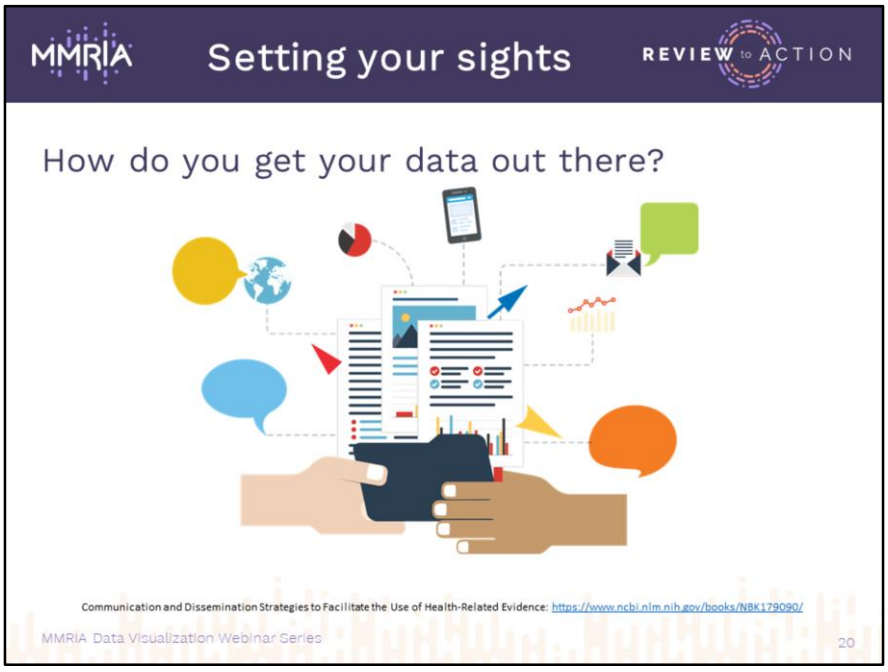


Now, what do you want your data TO DO? You're not collecting and analyzing all that information to gather dust.

Could your findings help determine new strategies or policies to help reduce a problem? When you're presenting to lawmakers or administrative officials, keep them out of the weeds by providing only the most important info and making it as obvious as possible. Reduce clutter: for example, if a meeting is about deaths due to preeclampsia, highlight intriguing or alarming findings related to your preeclampsia data first; feature only timeframes relevant or specific; and organize your talking points so they tell the data's story succinctly from beginning to end. Show your concerns precisely: make it very clear what you're asking for (is it a policy change, or budget increase for a new program?)

The audience and the purpose for which you're reaching them inform the goal for your data visualization, which in turn helps you determine how to reach them. Speaking to a budget committee, for example, requires a certain formality and they will probably appreciate take-away materials. But if you're trying to gain broad attention to a cause or draw a crowd to an awareness event, you have an opportunity to be more creative and somewhat more casual. Present the facts, but place them in a context that's going to be understood and pique interest to get people onboard.

Again, we'll revisit making some of these choices in a later session.



Once you've gathered your data, garnered its story, and garnished it for presentability, you need to select the most effective way to deliver it.

The article cited on this slide provides a lot of information that drills down into the formal processes and terms of effectively delivering health evidence. (Communication and Dissemination Strategies to Facilitate the Use of Health-Related Evidence: https://www.ncbi.nlm.nih.gov/books/NBK179090) I'm using the terms "active" and "passive" dissemination much more casually here. But generally speaking, dissemination is the active process of distributing information. This involves directly packaging and providing your information to your audiences, either face-to-face or electronically. Presentations, demonstrations, Google Hangouts, and webinars (etc.) are given every day around the world. Handouts or digital support materials aren't required but can be a great way to help give your data a longer life after you've spoken about it, and makes it easy for your audience to refer back to it later or share it.

To use today's webinar as an example:

A) our data revealed there's a desire to learn about data visualization;
B) our story consists of tips and tricks for presenting information;
C) our audience is MMRIA Users;
D) we determined the best way to deliver this information to our audience is to present a series of webinars; and

E) today, you're participating in the dissemination of the results of this process, and you'll receive an electronic copy of the content.

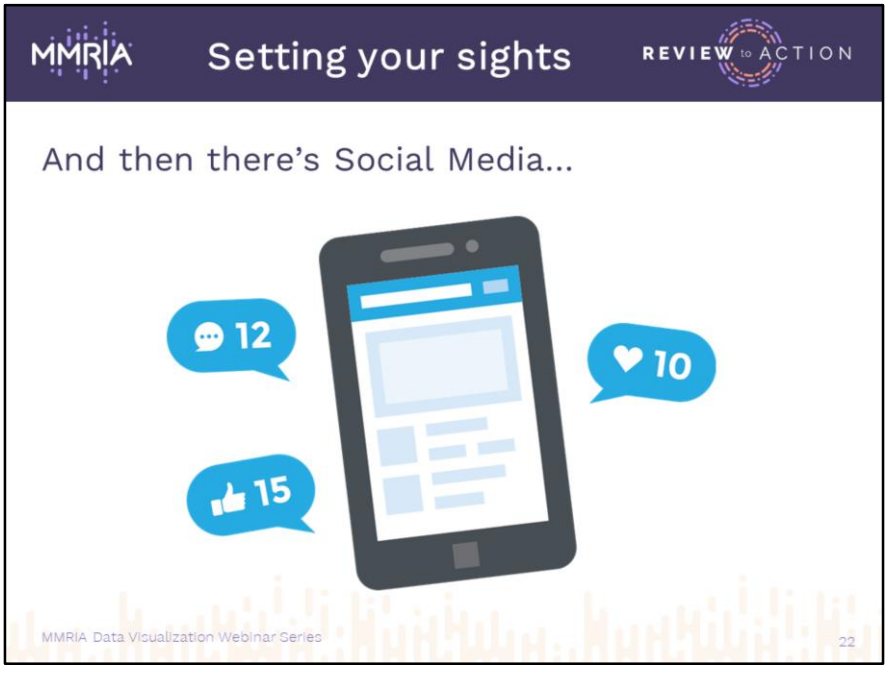
If you travel on the conference circuit, you've either given or taken plenty of materials. Poster sessions are prime small-scale examples for that arena. Snail mail and e-mail, whether individual or in blast form, are active, even though it's hard to be sure you've delivered the goods to the people you want to have them.

More passive techniques are those that allow your audience to take in the data on an as-needed or –wanted basis. Your state's website might require a ton of active time on your part, but you're providing information in a slightly less targeted way. You can count the number of page views and hits to the site, but you don't know who's taking it all in. Placing flyers or posters in doctors' offices, billboards, bus placards, and other printed ad spaces, and all other "static media", are other ways we "diffuse" information.

More traditional audiences, and those with limited wi-fi access, still prefer print materials. Handouts are good to send back with an audience after a presentation or briefing, and can be easily shared hand-to-hand later. But you're limited by in-person sharing: you have to be there or pay for shipping, and printing may not be budget- or eco-friendly. Many brochures don't make it out of a convention hall.

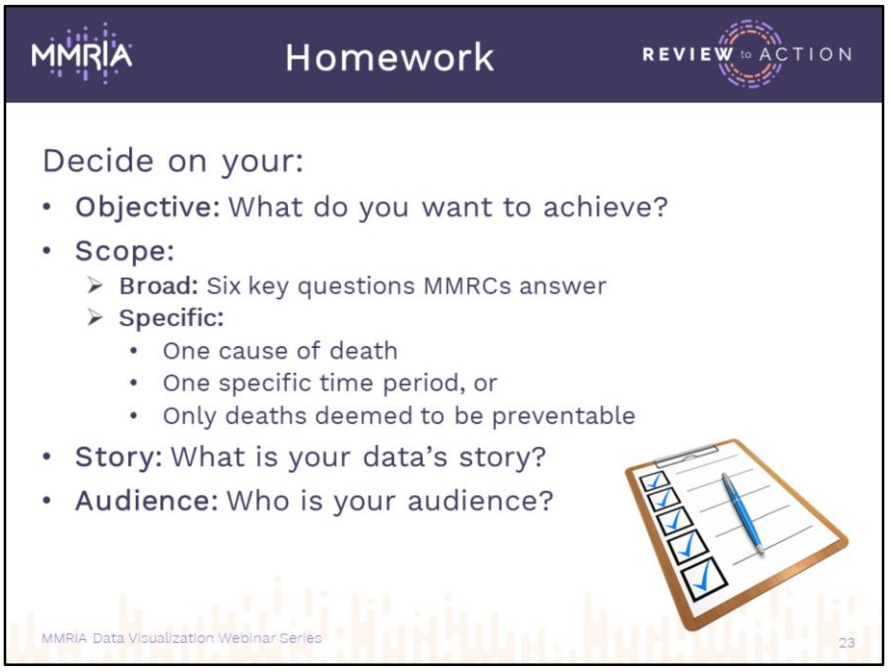
Digital dissemination is where it's at these days, but print isn't dead yet.

The web and e-mail make sharing documents fast, cheap, and simple. Your organization's website may be the perfect repository for your data visualizations.



Social media blurs the ideas of active and passive because you're providing materials, but kind of blindly. One great benefit is the sharing factor. Your data can take on a whole new life once you put it out there. We mentioned earlier that it's a good practice to save your visualizations in specific file types, and this is especially true for social media purposes. This will pop up again in the design session later.

And when you use social media, you have to be prepared to address questions and comments or you risk losing your audience. Make sure someone is checking your comments section frequently! If you let unanswered questions or concerns sit for too long, you lose a big opportunity to keep folks informed and involved. We talked about other social media issues a few slides ago, and we'll come back to that in a future session.



Your first homework assignment is dedicated to deciding the direction you want to take with your infographic. More specifically, we want you to think about what you want to achieve with your infographic. For example, are you trying to raise awareness on a specific condition…or are you trying to inform policy.

Then decide on the scope of your infographic. Do you want to have a broader scope, and for example, include all of the data available on the 6 key questions MMRCs answer. These include questions on what percent of pregnancy-associated deaths were pregnancy-related, what percent of pregnancy-related deaths were determined to be preventable, etc.

Or do you want your scope to be more specific. For example, maybe you are going to focus on one specific cause of death in your infographic. Or perhaps you want to focus on one specific time period, such as deaths that occurred between 43 days and 1 year of pregnancy. Or maybe you only want to focus on deaths that were determined to be preventable.

We also want you to think about the story you want to tell with the data. And lastly, we want you to think about who your audience will be.

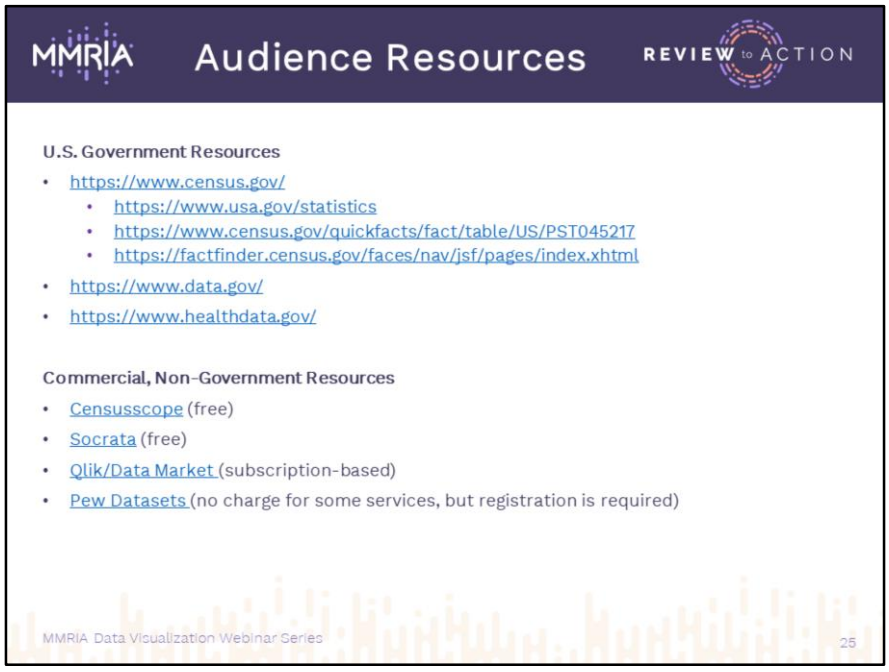
Deciding each of these may be the hardest part of creating your infographic, but having these clearly thought out will help to ensure your infographic and message remain clear and focused.

Again, you can email a summary of these decisions to Richard and I for feedback one week before the second webinar, which would be August 6th. To be able to support you all and provide feedback, we will only be able to provide feedback on one submission per state or jurisdiction. We have included our emails on the last slide, and we look forward to hearing what you come up with! And feel free to ask questions about today's content.

Making Data Talk is an incredible resource for understanding how to effectively speak to an audience at their level. Though its topic is largely cancer-specific, the information is applicable in any science-to-public situation.
https://www.cancer.gov/publications/health-communication/making-data-talk.pdf

CDC Health Literacy Recommendations cover a huge array of communications topics and tools. They focus on plain language skills and health literacy, with formulas for assessing your writing and graphics for clarity and correct reading levels. Also covers usability for digital products and websites.
https://www.cdc.gov/healthliteracy/developmaterials/guidancestandards.html

The design tools listed are all online good resources for making basic data viz and more "graphic" infographics. They're all relatively fool-proof and offer ready-made icons and graphic elements to let you build great visuals just by copying and pasting your information. Be warned, though, that signing up for some of these puts you into the e-mail centrifuge, but you can unsubscribe later.
Caneva
Piktochart
Venngage



- https://www.usa.gov/statistics: 5- and 10-year household and business surveys to help you find quick facts about national and state populations and demographics.
- https://www.data.gov/ houses a wide range of data, along with data visualization design tools that can help you build your infographics and presentations
- https://www.healthdata.gov/ A clearinghouse for datasets from federal, state, and city agencies (HRSA, Indian Health Service, HHS, and CDC included among many others)
- https://www.census.gov/
    - https://www.usa.gov/statistics
    - https://www.census.gov/quickfacts/fact/table/US/PST045217
    - https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
- https://www.data.gov/
- https://www.healthdata.gov/

- CensusScope is a tool from the University of Michigan's Social Science Data Analysis Network (SSDAN), using recent Census data. Great exportable graphics and maps for use.
- Socrata operates a huge data resource pulling from federal, state, city and county government organizations, and host community-of-practice events for idea-sharing among government agencies and employees
- Qlik offers data analytics and visualization tools, primarily for businesses but may have wider uses as well, and they show some great examples of visualizations
- Pew Databases offer non-partisan public opinion polling, demographic research, media

content analysis, and other empirical social science research

- Censusscope
- Socrata
- Qlik/Data Market
- Pew Datasets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Thank you!