Infographics and Data Visualization as a Communications Tool: Part One

Presenters:
Hiram Henriquez

Transcript for audio/video file on YouTube:
https://youtu.be/J8ACjBAgLZg

KATHLEEN MURPHY: My name is Kathleen Murphy, and I am the Director of the Center on Knowledge Translation for Disability and Rehabilitation Research, which is sponsoring this webcast. I'm a white woman with shoulder-length blonde hair. I've got some reading glasses around my neck. And I'm wearing a navy-blue scoop neck dress.

We want to thank a few people before we get going-- our funder, the National Institute on Disability, Independent Living, and Rehabilitation Research. I also want to thank the KTDRR staff who have been involved in this, especially Ashley Clark-Purnell, Felice Trirogoff, Joann Starks, and Okori Christopher. Okori is the one who is recording this session and providing tech support to us.

We will archive this event. So no worries, if you have colleagues who weren't able to make it, or if you have to drop off early, it'll be on our website in a few weeks.

So as I said, this session is part one of our Infographics and Data Visualization as a Communication Tool. Part two is on August 30. You're all already registered for it. And we will allow more registrants, as well, if you like this event. And we'll open up registration again to add them to the invite for August 30.

At the end of the session, we will have an evaluation, so if you have ideas about that session-- it's going to be more of a how-to, whereas today is giving more of an overview of concepts and design-- go ahead and fill that out and let us know. And even if you don't have ideas, please fill out our evaluation.

Another thing we're going to be dropping in the chat during this event, we welcome you to post on any social media accounts about the event either during the event or after. And we'll give you some language and some hashtags to help you do that. So that's really all I have to say.

I do want to let you know that we're going to be here with our presenter, Hiram Henriquez. He is-- you want to turn on your camera, Hiram?

HIRAM HENRIQUEZ: It should be here.

KATHLEEN MURPHY: All right.

CREW: Yes, Hiram's on camera.

KATHLEEN MURPHY: Great. So as Hiram knows, but I'll let you know, he is the Creative Director and Lead Graphic Designer for H2 Graphics & Design. He specializes in 3D illustrations, informational graphics, animation, brand identity, and web design. And he's had a super-illustrious career. We're really lucky to have him.

He's been at The Miami Herald, The South Florida Sun Sentinel, the National Geographic, has taught at the University of Miami, and also won two Pulitzer prizes. So without further ado, I am going to pass the mic over to you, Hiram. And thanks so much, we're excited.

HIRAM HENRIQUEZ: Yeah, hello, everyone. Welcome. I'm going to get started here pretty quickly because there is a lot to cover. Let me share my screen. And let's set this in view full screen mode. All righty, so yeah, there's a lot to cover today. So I'm going to go over the basics of infographics and data visualization. And then when we meet again on the 30th, I'll actually show you how those are created in Illustrator, which Adobe is one of the main tools that I use, although there are others as well.

I am Hispanic. I was born in Cuba, raised in South Florida. Live now in Roseville, North Carolina, just outside of Raleigh. I'm wearing glasses. I have really short hair. And I would say that I'm a little tanned, even for being up here in North Carolina. So with no further ado, let's get right into it.

So today we're going to talk about the items listed here on the screen. So first of all, what is an infographic or data visualization, and the difference between the two of those. All the different elements of an infographic or parts of an infographic. Understanding your audience when you're going to create a graphic. Choosing your graphic forms, whether it's a chart, a map, or an illustration.

Conceptualization and design, putting it all together. We'll talk a little bit about selecting color. Tools of the trade-- as I mentioned, Illustrator is one of those, but there are several others that are also very helpful. A little bit about 508 compliance, And then I'll go over a list of additional resources that you can take a look at to read up on and prepare yourself for when we do the August 30 presentation.

So what is an infographic or data visualization? So an infographic or data visualization is any visual display intended to reveal evidence making the invisible visible. So if it's a step-by-step graphic, it'll probably be some kind of report, or article, or research paper where you will go through, look at the information, figure out what needs to be illustrated to show that process, and then highlight that with a yellow marker. And then work-- create sketches and work on illustrations from that.

If it's numbers, or data that could be plotted on a chart or map, typically it's an Excel form-- an Excel file of some sort, that you can-- with different tabs, and you can copy that information into either Illustrator, or if you're using an app like Flourish, or Tableau, or amCharts, you can put the information in there, and it visualizes it for you.

So typically, an infographic has a little bit of an illustration component to it, along with charts and maps. When we talk about data visualization, it is mostly just numbers, like on a chart, or map. It doesn't really have illustration as part of it.

So good infographics and data visualizations show four things. They show good information correctly. Meaning that the information that you're using, you're going to put it in the proper chart form, whether it needs to be a donut chart, or pie chart, a line chart, or a bar chart, or any other type of device, or even a map. You're using the right kind of form for the information that you have. It attracts the reader's attention.

Now, we've got to be a little bit careful here because we don't want to get over-creative. Whenever we create a graphic, you're trying to communicate a message, and you're trying to communicate a message pretty quickly. Because people's time, you're battling for their time. So you don't want to get so creative that it is hard for them to follow what it is that you're trying to tell them. So creativity is great, but let's just not think about that as the most important step.

You don't frustrate the readers. And this has a lot to do with what readers expect when they look at a graphic or what they're used to when they look at a graphic. Meaning readers who are accustomed to reading for, let's say The New York Times, or The LA Times, or The Washington Post might be used to more sophisticated, more in-depth, more dense infographics because they produce them on a more regular basis. They have a bigger art department and so forth.

If we think about smaller newspapers or smaller newspaper art departments, for example, The Miami Herald or The South Florida Sun Sentinel, where you only have a few artists, they're not producing very dense graphics. They're creating basic maps and charts. And so if someone from South Florida gets a really dense infographic, and they're not used to seeing it, they're not going to be able to get through it. So you have to be aware of what the expectations are.

And then the last one is show the right amount of data. So usually, when you research any kind of graphic or design, you get a lot of information. And you've got to whittle that down to what's the most important points that you need to make to get the point across. And anything else that's not needed, you just remove. You edit out and don't include.

So this is a good infographic. And the reason why I say this is because it has-- it's divided into three equal panels, three equal vertical panels. The main headline and main introduction is in the middle, at the top panel. And it's larger point size. So you know from looking at the text that, hey, this is where I need to start reading the graphic.

Each graphic throughout has its own subhead, which is a small headline related to each graphic that highlights to the reader what they're about to read in that particular spot. It has legends for keys for colors. It has some sub intros, so smaller introductory text for each one. So that kind of helps you follow along in terms of compartmentalizing and creating some sort of hierarchy from one graphic to the next.

So in the middle, we have the main headline, main intro. Below that, we have a horizontal bar in different colors. On the left, we have a donut chart, a half donut chart, which is pretty dominant. And then we've got a couple donut charts and a couple of bar charts. And on the far right, we've got a series of illustrations of the different kinds of devices that people use. This graphic is about how users search online. And those illustrations are placed into circles. And the circles represent the percentages of the

amount of time that people spend or use those devices. And we got a couple of different donut charts as well.

But we've got nice white space between each panel. The subheads are consistent from one to the next. So it's really easy to follow and know where you're going to go with this graphic.

On the next graphic is what I call a data dump, which means every different graphic is the same size within that whole design. No headline is larger than the next. There's no really introductory text to give you the main point of what the whole graphic is. Everything is color coded in different colors without any rhyme or reason. And so you're leaving the reader to figure out for themselves where they're going to start, where they're going to end, and what are the main, important parts.

And you don't want to do that to the reader. You want to guide them and let them know the flow of the graphic. And also, they can tell pretty quickly from reading it what the main message of the graphic is.

Here's another example of good versus bad. So on the left, we have a map in the middle, in this graphic. And we are highlighting in darker colors at the top some of the main countries that are related to the radial bar, a series of bars that radiate around the globe. And we have this map of Africa that the bottom part of the map almost shows the whole continent, but there's nothing of content. There's no number related to it or no data content related to it. So we're using a lot of space for that map without having any information on there.

And a lot of times what beginning artists do is that they immediately go to a map when they have numbers related to places. And usually, that's not really what you need. Location is not the important part. We're looking at statistics. But if you are going to focus on the location in this particular graphic, then you need to do what the graphic on the right is doing, where it highlights the key countries only in Africa. And that's enlarged a little bit bigger so that you can really see what you're looking at.

The example on the left also has two legends with it, one at the top and one at the bottom. Legends should usually go right after the main headline and main introduction so that the reader already knows what the colors or symbols represent in the graphic they're about to see. If you put it at the bottom, like a caption, that's an afterthought. So it's better to always have it at the top.

So if we look at the graphic on the right, the good example, that has the keys, both legends, at the top, right after the headline. And also, what's good about the one on the right is that it gets away from that circular, radiated graphic, which is interesting to look at, but really hard to make comparisons and contrast in terms of zero-based lines or where things equal to one or the other. As well as just looking at the different colors on the bars, it's hard to make connections between those.

If we look at the graphic on the right, it's set on a basic left to right horizontal bars, with little lollipop dots at the end. Easier to see where things start, where things end, and how they relate to each other-- a lot simpler. It also takes a little bit less space. So if space is at a premium, usually going with a more simple graphic is going to be better than looking at this really illustrative component on the left.

Elements of an infographic-- so you've heard me saying a little bit about headlines, and subheads, and intros. So this is a really simple diagram here, volume diagram, where the icons, different colored icons represent the amount of people associated with the Twitter community. So the graphics-- the headline says, "Let's Not Get Too Excited." And the intro says, "If the Twitter Community was 100 People." So we're looking at 100 icons here of little people. And we are color coding them to make different combinations and contrasts between them.

So at the top, we have the headline, "Let's Not Get Too Excited." Usually, it's the biggest point size in your graphic. And then below, we have the lead-in or intro, which usually is 10 or 12 point, a little bit larger than the rest of the text within the graphic, that kind of sets up for the reader what the main takeaway is.

So looking at this graphic here, we've got some labels that represent the different colors. And we have 20 are dead, 50 are lazy, only five with more than 100 followers. Five are loud mouths, creating 75% of the tweets. And then the gray here, which should be other-- we should really say what that other category is as well-- is set aside here in a gray color.

If we look at these pairings, we can see that the largest one is 50, for lazy. And it says, 50 are lazy, not tweeted in the last week. And the second biggest number is the dead, which is 20 dead or empty accounts. So if you're writing an intro for this graphic, you're not going to say the same exact information that's in-- that you're showing below. So I can see here that says 50 lazy people, 20 dead.

So my intro might say something like, although the Twitter-- although Twitter is a popular social media app, about half of its users do not tweet on a regular basis. So I'm not using the word 50 or lazy. I'm saying it in a different way, so I'm not redundant. I would add a period. And then I might say, and another fifth of its users are either dead or empty accounts. And that would be it. Those are the takeaways in that graphic. And that's all you have to say in an intro. Intros usually could be a sentence or two. You don't have to go any more than that.

KATHLEEN MURPHY: One second-- Hiram?

HIRAM HENRIQUEZ: Yes.

KATHLEEN MURPHY: We just had a little request from someone in the audience. If you could just slow down a little bit.

HIRAM HENRIQUEZ: We'll do.

KATHLEEN MURPHY: Awesome, thank you.

HIRAM HENRIQUEZ: Yep. We'll do. So beyond the labels that we have here, we've got the graphic is the actual body. So anything that's a chart or a map, that is referred to as the body of the graphic. Your sources and your credit are usually at seven or eight point, although that could change depending on your organization's brand identity. And sources, when you list sources, you don't have to put the whole URL in

there, especially when it's a really long URL of a website. You could just put in the name of the organization.

And you usually divide them by commas. Now if you have a report that includes the author, that's going to have a comma in it. So that means that then you divide them, or you separate them, with semicolon colons, just so that works that way. Now, it could go all the way across the bottom of the graphic, or it could go halfway across the bottom, or however you design that to be. But it's important to have the source because it lets the reader know that, hey, this is factual information. It's not something that I made up.

On the far right, we've got the credit, which is taking responsibility for the graphic. And this usually has the name of the artist and whatever organization they belong to, whether it's The New York Times, or National Geographic, or anything of the sort.

So here's an example of those components within a graphic. So we looked at this one here. And this previous graphic is just one graphic. Here are various graphics within one graphic. So we've got the main headline and the main intro are larger than the rest. Then we have fast facts as a subhead. History and ranges is a subhead. Two types is a subhead. A slow return is a subhead. Notice that they're all done the same way-- all caps, the same point size.

And then we have an intro with each one to further state what each of these components is highlighting. And that's a great thing to have because you don't want to put all the information in one intro, especially the first intro. You don't want to bog it down with a lot of text. So this is an overview introductory text. And then you have more specific introductory text below each subhead to further inform the reader.

On the bottom left, we have the sources. On the bottom right, we have the credit. And anything that's a body. For example, the illustration or any of the charts or the maps are your body, parts of your bodies.

Understanding your audience, so the complexity of your infographic or data visualization should be based on your audience experience. So I mentioned before, when you have graphics that-- when you have readership that understands or has been exposed to dense graphics or really large graphics, it's OK to go that route. If they're not, then you want to do something a little bit more simple. But always, you want to slowly educate your readers in terms of their visual acumen when it comes to infographics.

So it doesn't mean that because they're used to simpler graphics that you should always do simpler graphics. You should always try to elevate each few times that you do graphics and make them a little bit more interesting, a little bit more complicated, a little bit more dense. So that you educate them slowly, and you get them used to reading graphics. Because sometimes stories require really dense graphics. And if you can't go there, you're not going to be able to tell a story. So you do want to educate your readers as you go.

So examples, again, of complex graphic, where we have multiple graphics within one, with subheads, and sub intros, and so forth, which was that users search online graphic. Or this simple one here, that just

talks about state debt between governors Charlie Crist or Rick Scott for Florida in really color coded and simple vertical bars.

So also remember when you're creating your graphics that if you're going to create a Spanish version, it's going to take more text. So you're going to-- as you're working on your English version, you're going to have to leave a little bit more space, white space, so that you can then put that Spanish information in there, or your Spanish version is just going to have to be either deeper or wider, depending on what kind of a space you're working with. But it always is going to be a little bit longer. Not all Spanish and Latino cultures speak the same iteration of Spanish, so you want to try and use phrases that are common across all versions of language as much as possible.

And lastly, scientific words may need to be replaced by more common ones. So if it's not important for the graphic or for the reader to understand the scientific terms, try and use the more normal non-scientific form of that description so that you can help access more readers or more readers can access your graphic.

So choosing graphic forms-- at the core of data visualization lies the idea of visual encoding. Meaning that we are looking at numbers, and we're trying to visualize them in some way, whether it's charts or maps. There are different kinds of graphic forms. Charts, graphs or maps usually present statistical data or show a location, especially if it's a map. Infographics are usually illustrated. So that shows how something looks, or works, or depicts a process, or maybe it's a cross section of some sort of device. This is usually what we refer to as an infographic.

Data visualization or data-driven story, meaning that all that we're visualizing is statistical data numbers, and we're not using any sort of illustration. It's all statistics. And usually, you'll see this with The New York Times and The Washington Post, where online they will have a visual story, where it's interlaced with photos, and graphics, and maps, and articles. And this is how they create-- they show visual stories on their web page.

Now sometimes you can misuse a graphic form. Not meaning that it's wrong to use that form, but maybe it's not the most useful way to show the information. So here's an example of two pie charts looking at how music preferences have changed in two decades, from 1994 to 2014. They are side by side. They are looking at hard rock, samba, hip hop, reggaeton, country, and classic.

And looking at each of these pie charts, when we look at the different wedges, we really can't tell the differences between one or the other. Now, notice that on the one on the left, we have the actual numbers in there. On the one on the right, we don't. And this is because usually when you're looking at graphics, you shouldn't have to be able to-- you shouldn't have to read every little figure to understand what's going on right. So here, we're not showing the numbers on the one on the right.

But the differences between the wedges are a little bit too subtle. So it's not wrong to show these as pie charts. It would work better if it was only one pie chart. But now that we're trying to show contrast and a difference, it's hard to see those differences. If we do it as a slope chart, which is a line that starts on one point on the left and goes to the other point on the right, and we see the angles of these slopes-- of these

slope lines, we can see that little, subtle difference for hard rock, and samba, and hip hop. We can see that reggaeton is exactly the same. And we can see that country and classic have gone down.

So this is a better way to show this information, more easily accessible to the reader than to use the pie charts. Not that the pie charts were wrong, they just weren't the better way to do it.

And so when we think about looking at accurate representation of data, we're usually going to look at graphics, such as graphics that have positioning on a common scale, like vertical bars or the lollipop charts, which are the vertical lines with a little dot at the top, scatter plots, line charts, area charts, slope charts. Those are more useful to show accurate representation of data. Because remember that when we show these, we usually have those little access items on the side that have the actual numbers. And we can see by where those bars, or points, or lines end what those numbers are.

This is all based on William Cleveland and Robert McGill's research in terms of how people look at statistical data and how they interpret it. If we go further on down, so here's those examples again, accurate representation of data. You can see that with these little access numbers here on the left, we can pretty much tell what this bar is. It's about a 55, or this bar for US is about 52 or something like that. So we can look at those numbers, and we can look at those lines and those dots and pretty much tell where they fall.

As we go further down on their scale, we are using chart forms that are a little bit more general in nature. In terms of angles and pie charts, are not super specific, area charts, where you have circles over maps. If we look at thicknesses of lines to represent what those numbers are, if we're using shading or different hues, color hues, to represent data, we're starting to think in terms of more general information visually when we look at a graph.

So, for example, here we've got four different maps. We've got a chloropleth map, which is the map on the upper left, where you color code regions, for example with election maps. So we're showing here a map country, and we're showing all the different provinces or districts are color coded different ways.

And to the left, we have a range. And that range only has four keys in that legend-- 0% to 25%, 26% to 50%, 51% to 75%, and 76% to 100%. So it's a range of numbers. So when we're looking at the shading on that map, we're not getting accurate data. We're getting general data.

Dot maps, the one on the upper right, which has little dots, that's showing the density of dots. And that shows amounts. Again, we don't know exactly how much, but we can see where areas are heavier and other areas are lighter. On the lower left, we have a proportional symbol map, where the circles over the different regions represent the amounts.

And they basically have a legend with two amounts-- 250,000 are the size of this smaller circle or less. And a million is the size of the larger numbers. So we're not getting really specific numbers with these lines, but we're getting a general sense of what they are.

And the last one on the bottom right is your isopleth map, which is like a weather map or a habitat range map, where the lines are wiggly. They're different shades. They're darker in the middle of those shapes. And they get lighter as they extend out. And again, we have ranges. This is the temperature ranges. And we only have four. So again, not super accurate information, but general representation of that information.

Here's an infographic that are illustrated. So on the left, there's a graphic about peat soil and development and loss. So we have a cross section of how the soil looks like, and the water looks like, and the vegetation looks like when it's natural conditions. And on the right, we can see where how it looks differently when it's degraded. So we have less peat soil, very little water, different vegetation that's not-- that's not ideal for those conditions starting to grow. And below, we have a fever line chart showing how quickly that soil peat loss can occur.

And on the right, we've got a graphic that's an illustrated step-by-step graphic. This is a graphic for the Congressional Budget Office, which is looking at how they analyze major proposals that affect health insurance choices. And it's divided into different sections. It's also numbered one after the other, with text next to each number so you know in what order to follow.

You have a dominant element within each section so that you start there, and then you move on to the smaller elements. And then you go to the next one. You start with that bigger graphic, and you go to the smaller ones as well. So this is-- when we talk about infographics, we usually tend to assume that there's an illustration component within it.

This is a data visualization or data-driven story. So we have a two-page spread here on a magazine. It is about the exporting of PHARR-- and I believe this is in Texas-- for the United States. So we start with a main headline, main intro. We have looking at the number of exports over time. Then we have a volume chart, where we show with little squares, one on top of the other, the type of commodities and the amounts that represent the different values.

And then we have a lollipop chart. That lollipop chart goes from left to right across the spread. And it's showing the percentage change of export from one year to the next. And then at the end, at the top of each line of that lollipop chart, we have a circle that's colored depending on what kind of commodity it is. And the circles are in different sizes because each one represents the amount in terms of money. And so you get various degrees of information layered on top of each other to tell a story, not just one little chart, but an overall story visualization.

So I know I threw a lot at you in terms of different forms, But if you go to this website here, which is https://datavizcatalogue.com-- I'm going to show you what this looks like-- you guys can see it there. We can see that each of these circles here, if you go over any one of these, it's going to give you information about what kind of graphic form that is. So if you're new to graphics, this is a good website to look at and get into what each type of graphic, what it actually does.

So I'm just going to go to the bar chart because that's the most simple one. And you're going to get a visual of what it looks like. Now they've got two different bar charts. They've got a vertical bar chart that

overall, design wise, is a horizontal shape, but the bars are going vertical. And then at the bottom right, we've got one that is two bars, one on top of the other, and they're going in a horizontal format.

So when they go up and down, that is called a column bar chart. When they go left to right, they are just a straightforward bar chart. What's the difference between the two? When you're using the ones that go up and down vertically, those are when you're trying to show differences in numbers over time. Because you can easily fit years in here, or you can even skip a few years in between each one.

When you're trying to compare two different things, you use a chart that goes sideways so that you can put the information within the bar, what those bars represent, or you can put it off to the side here. You don't want to use a vertical graphic for-- a vertical bar chart for comparing things because the names of the things that you're comparing are going to bump into each other.

And this is when sometimes you see people rotate the text or put it at an angle. It looks really ugly. It takes a lot of space. So it's usually better to just stick to that format. If you're going to show numbers over time in a bar chart, you're using vertical bars-- or column bars. If you're going to compare two things, you're going to go horizontal with them. And then they are stacked vertically.

So this website is great. It tells you the description of it, the anatomy of it. And it also, down here at the bottom, has two little buttons that show you what the functions are. So bar charts are good for comparisons. It's also good to show patterns. Because you can color certain bars and create a pattern that way as well. Highly recommend that.

So conceptualization and design-- so the key to any visual design is the presentation of a cohesive, structured, readable, and understandable composition. So notice here that I don't say anything about being super-creative, or really pretty, or really cool. That's not what an infographic is supposed to be at first. It's supposed to really tell you the information, tell you the information quickly and easily. And what you really want is people to take in the information and then share it with others. Not that they have to show them the graphic, but they can just share the information that they've gathered.

So main things to consider when you're doing a graphics. Think about the audience and the publication, and that is the user experience, as I mentioned before. What are they used to seeing? How can you educate them further as you create more and more graphics? Always think of the questions your graphics should help readers answer, the what, when, the why, and the how. And usually, when you have that information, that's what you use to write your headline and your introduction. Because that should really say what the overall graphic is about.

And I always tell my students at the University of Miami that when you've finished gathering your research, always write your headline and your introductory text first before you create any kind of graphics. That usually will help you understand what graphics you're going to have to create. You don't want to jump in and do a lot of graphics, and then find out that you spent four hours working on graphics and there's only one hour's worth of graphics work that you're actually going to use.

The nature of the information can guide you in choosing the most appropriate ways of telling the story. You'll know based on the numbers whether it needs to be a fever line to show a trend, or a bar chart to show comparisons, or you need map to show patterns or locations. Or if it's how to explain how something works, it's going to be an illustration. Depending on the nature of the information, that'll help you understand what to create.

Visualization doesn't simplify, it clarifies. So never-- you never want to say, oh, I want to make a simple graphic because that means you might leave out information. What you want to say is you want to create a clear graphic.

And don't use too many different fonts. If you start using too many different fonts, and as well as too many different colors, it's going to start making it look like a coloring book. And the readers start getting a little bit confused. By nature, humans like to see patterns in things. And if you start drawing a bunch of different colors and different fonts, they're going to try to make connections with those, which you don't necessarily really want them to.

Steps in designing your graphics-- so number one is research, as in even when you're writing, there's always research involved. Step number two is once you've got that research is you write that main headline and main introduction first to help you figure out what your graphics are going to be. Always have a dominant element in your graphics to establish hierarchy, where the graph where the reader should read second after they read the headline and introduction. And then you make those graphics a little bit smaller as you go down the groupings so that they know that there's a logical progression when they're looking at that design.

Separate graphics into block sections. This is true when you're sketching. Separate those so you can figure out what's going to be your dominant element and where they're going to be. And then line up elements and use unity and variety, which I'm going to get into in a moment here.

So here's having a dominant element and establish hierarchy. So the audience reads the content in the order you want. So dominant element here with this illustration. This component here is part of that illustration. So we're looking at-- dominant element number one is that illustration of the skull of this female volleyball player that got injured while playing. And we can see it's done in a 3D illustration, lightly colored gray color, and a couple of spots highlighted in orange to show where the damage occurred in the neck.

Number two talks a little bit about loss of hearing, and neurons in the brain, and the spinal area of the neck, itself. So those two are placed together as one dominant element. Number three is the time series of four illustrations across the bottom that are drawn in vector line drawing. Really simple drawing, getting rid of a lot of background color and texture, and just highlighting that highlighting that one player on the court, and showing the other players around them, and what occurred. And those are done in four steps.

And then number four is other injuries that occur. So we have an illustration of a player jumping in the air about to hit the ball. And we have these little circles colored. Their size represents the percentage of the time that those injuries occurred to those different body parts. We have a-- we have a little graphic at the

bottom that shows those numbers as well in terms of bars. And then the last one is in the bottom right is just different other ways that players can get injured, done in three small, little illustrations. So there is a hierarchy here in terms of how the reader is supposed to read this.

So when they were sketching this out, separated graphics into block sections, knowing that this first block on the left is going to be your headline and introductory text. In the middle is going to be your illustration of the head and the three different components related to that injury. On the bottom left, towards the middle, is that series of four steps that show how the injury occurred. On the upper right is the graphic of the player jumping in the air, that shows the different kinds of injuries. And then on the bottom right, different ways that you can get injured.

And you'll notice that the graphic on the bottom left doesn't quite line up with a graphic on the bottom right. And that is intentional. So that as the person reads this, they might see that these things don't line up at the bottom, and they would maybe go and read the bottom graphic first to help them navigate it. Now an easier way is to also number them. If you feel like they might go into this graphic on the right, you can number them as well.

Line up the elements, so everything should line up in some proper form. And also create spaces between them. So we could see that the top of all the elements at the top of this graphic all line up across the top, for the most part. We could see that all the different four series of illustrations related to how it occurred all have the same width, all have the same spacing between them, all line up at the top and bottom.

The text below each one of those lines up as well. So everything's really consistent from one element to the next in terms of how they're placed. And that helps the reader navigate a little bit easier through the graphic then if you just willy-nilly put stuff at different levels throughout your graphic.

Then you use unity and variety in your colors, your text, and your imagery. So looking at this graphic here that we've been talking about, anytime that something-- so we'll talk first about colors. So anytime that something needs to be highlighted, it's in the same orange color. So notice in the main illustration here, by the neck, those two little dots are talking about different parts of the neck there. The little lines around the ear, a little break in neurons, a little piece of the neck vertebrae as well, those are all in orange.

The different parts of the different types of injuries for those circles are in orange. At the bottom, that series of steps showing how the injury occurred, each time they're showing the player that got hurt, that's the only one that's in orange. So using that consistency in the color, in terms of using it as a highlight color.

And then all the other illustrations, whether it's 3D or just vector line drawings, are just kind of muted in that same taupe gray color. So they recede and only the highlight orange colors come to the forefront.

If we look at text in terms of unity, we can say that the text that's being used here, or the font that's being used here, it's all the same font. It's all the same font name. But the variety comes in the different weights and sizes of their use. So some are light, some are black or bold, some are in orange, some are all caps,

some are upper and lower. Some of the text has bold at the beginning, and then it goes to regular. And they're used consistently throughout.

So if everything was the same bold weight, this would be really hard to read. If everything was the same lightweight, then we wouldn't have any idea where to go from one to the next, especially when we're talking about point sizes. Your headlines and subheads should be larger than your body copy so that they stand out as different components or different sections of your graphic.

And if we look at the imagery, anytime we're showing how something looks, it's in 3D illustrated form so it looks more realistic. Anytime we're showing how something works, it's drawn in vector line format, the same color, the same style from one to the next. So the idea is to not rethink your images, or your graphics, and your text every time. Have a certain way that you-- a branding that you use, and just keep consistent with that. The only thing that might really change is your illustration style and maybe the colors you use, depending on what the content is about.

Stick to three fonts at most. And usually, what I mean by that is just pick one font for your text and then use two to three different styles. So you might have bold or black. You might have regular. You might have italic. You might have bold, italic. Don't do too many. I would say probably five at most, but I usually try and keep it to three.

So, for example, my headline and my subheads might be one particular font style. And then my body copy is going to be a different one. And then my labels might be one other different one. So I'm using three varieties there. Again, to not confuse the reader, keep it pretty consistent.

Selecting color, so one of the ways you can select color is that if you're using a photo in your infographic, see the two or three colors that are most important in that photo and then use that for your graphic, especially if you're doing charts or maps. So in this illustration here, this infographic here, about DACA, which is the Deferred Action for Childhood-- sorry about that. One of my dogs freaked out.

The best thing to do is-- so you see this illustration here we've got a passport. It's got some mauve colors. It's got some purples in here, as well, and this beige background. So you can see that in the map, I have those colors that are represented in that stamp there. They're being used there as well.

Variations of that color within the horizontal stacked bar. Variations of the colors within the donut charts, the horizontal bar charts below those, and the volume charts, as well. And even the timeline bar at the very bottom, that line is also picking up variations of that color. And we can also use black as a color as well. If you make it bold enough, black can be used as a color, as a highlight color or as a labeling color.

Color should be mostly used for charts, maps, and illustrations. Only use colors in text for main headlines, subheads, or for highlighting words and body copy. So I usually like to keep my color use for the charts. Because that's where you're going to need to establish contrasts, or patterns, or highlight elements. The rest of my text, I'll usually try to keep it in black so it doesn't try to compete with the color in the graphics.

Black can be a color as well if used boldly. So you can see in this graphic here of the passport, that those bold black subheads in all caps really stand out. And even in some of the areas in the graphics, the black really stands out as well.

There are six basic color schemes. Those six color schemes come from that color wheel that we're seeing here on the left, where we're looking at your red, blue, orange, and green, and then violet, and yellow, and those combinations of colors, like red-orange, yellow-orange, yellow and green, that are next to each other on that color wheel. The six color schemes are monochromatic. This is a good way for illustration sometimes. You pick one color, and then you follow the different shades of the color from one to the next.

Analogous are colors that are next to each other on the color wheel. And those work well together. Complementary are across from each other on the color wheel, so like that purple and that yellow. A lot of the sport teams use complementary colors. Triadic are monochromatic colors, and they're based in a triangular shape within the color wheel. Split complementary are complementary colors across from each other and the ones that are next to those as well, to try to create a rectangular shape. So it's basically saying that you look at those four different points, those are colors that you can use together as well.

Now one of the things that I like to use is Adobe's color wheel. If I'm not going to pick a color from the photo that I'm using or I don't have a photo that I'm using in the graphic, then I'm going to use Adobe's color wheel. And here, what I'm going to do is-- you can go to that website. You tell it what kind of color you want. And then you move these around, and it'll give you all the variations of the different colors you want. And it also will give you the hex number, so you can just put that into your Illustrator file, and it'll create that version for you as well. So it's a really good graphic.

Now, in terms of 508, that, you would probably need a color picker, through 508, to make sure that the colors work together. But in general, there's five colors here. And really, when I'm doing graphics, I try not to use too many colors, five or less. And if it looks like I need more than that, I will go to a monochromatic variation, where I'll use black as a color, gray as a color, and then monochromatic forms of one color-- for example, blue, different shades of blue, to represent all the different numbers, whether it's a pie chart, any different wedges, or if it's bar charts.

Tools of the trade-- so I use a lot of Illustrator for charts, maps, and vector illustrations. Adobe InDesign is usually used for publication design, so your flyers, fact sheets, reports. Adobe Photoshop is used for color correction for photography or sizing of images for photography, once you're going to place them into InDesign. Photo illustrations, if you're going to create photo collages or make a photo look like an illustration, you can use Photoshop for that.

Adobe Acrobat is another component for your 508. So you can do 508 with InDesign and even PowerPoint, where you create the tagging for your headlines. And you can sort of do a numbering order. But the problem with InDesign is that when you design, you don't really put things together in the order that they appear. Sometimes things come in at different parts when you're designing. And so when you

create your PDF, it's going to throw off the numbering order of what the automatic reader is supposed to read.

And that's where Adobe Acrobat comes in handy. Because you can go in and slide the positioning of those elements in a PDF to the order that you want them to be. And that's how you finalize the graphic. If you're doing something really simple, like a one-page flyer, you can probably cut-- design it, and then create a new file. And cut and paste the elements onto that new file in the order that you want them to appear. And when you create the PDF, it'll be in the right order. But a big report, multi-page design, that's really hard to accomplish.

If you're looking for other options to create more interesting and more diverse graphics, I would look at Flourish, or Tableau, or even amCharts. Because not only do they have templates, where you just put the information, and it draws them for you-- and I'll be speaking a little bit more about these when we do the August 30th presentation, but they also have on their website actual training videos that you can get for free. Once you sign up, you don't really have to pay for it. And it'll show you, basically, how to input the information and how to create the visuals. And then you can export them as an SVG, and you can open that in Illustrator and do more stylizing if you want.

For 508 compliance, I've created this link here, which is a brief tutorial on how to use Adobe InDesign and Acrobat for accessibility design. So it's a two-page fact sheet that I show in this video. I think it's a series of four videos. And it shows you how to do it step by step. So how do you design it, how you add name tags, and alt text to all your images. How you make elements that you don't want to show up be hidden, so they're not read by the automatic reader. How to create that PDF, and then how to go into Acrobat and fix the numbering order of those elements. So those four videos walk you step by step on one of those.

Additional resources that I am providing for you all-- if you go to this link here-- and I'm going to show you real quick-- there are a series of four folders in here. How To Charts has 13 to 15 different videos on how to do all different types of charts in Illustrator. And they walk you from beginning to end on how to input the data-- which is something I'm going to show you on August 30th-- how to stylize them for use.

The How To Fact Sheets is that one that talks about 508. Four videos in there. How To Illustrations, I have various videos in there on how to illustrate people, animals, and things. And How To Maps Video, there's three videos on how to create different kinds of maps. So those will be helpful to you. and they'll always be in this link forever and ever.

Freevectormaps.com is a great resource for downloading already made maps. You just have to either source them, or if you pay $5, you can use it without sourcing them. And they are editable in Illustrator. And you can download them. They're all in layered format. And you can change colors, and lines, and everything you want for them. So they are really already done. You have all sorts of maps in there.

As I mentioned before, Flourish is great. This is their main link. And this is their video training. There's about 12 or 13 videos there that are free before you have to pay for any of it. Tableau Public is another one. In between the two, I find Flourish a little bit easier to understand and go through. Someone recently

introduced me to amCharts. That one's good as well. So that might be one that you might want to look at as well. And they have training videos for that as well.

And so with that, I'll leave it up to questions. Let me-- I'm going to leave that up there in case I need to show anything related to questions.

KATHLEEN MURPHY: Well, thanks, Hiram. So we've been harvesting the questions, so you don't have to go ahead and look around in the chat for you. And we do only have five minutes. So I want to reiterate to everybody, we do have a how-to event on August 30th. And we will be creating a tip sheet with a lot of these resources, and also archiving this event. And the slides are already on the website.

So I looked through all the questions, and since this presentation is primarily focused on really concepts and design, I pulled out one question that I think is most germane to that. So what are your recommendations for creating infographics for print versus digital?

HIRAM HENRIQUEZ: So if you're going to do digital, I would probably use Flourish or Tableau. Because what they do is that they will provide-- well, I can show you. Let me--

KATHLEEN MURPHY: But I think the person is wondering what are the pros and cons of print versus digital?

HIRAM HENRIQUEZ: OK, so I would say, it just depends on who you're trying to reach.

KATHLEEN MURPHY: OK.

HIRAM HENRIQUEZ: Size is the biggest issue. Most people are used to looking at data on the phone. So the idea that what you would create as a two-page spread in a magazine or a report and then try to show that on a phone is going to be really hard. And so what happens is that if you create a version in print, and you're going to create a version for mobile, you're going to have to rethink how that is designed.

So things that are really big and are really dense in a print version, you're going to have to layer them in a different way. And my students always run into this because they think they can just scale down stuff from the print version and put it online. Well, in a print version, your body copy usually is like 10 to 12 point for readability. In a web version, it's 30 points.

So-- yes, because it's in pixels. And it's on 72 DPI. So when you reduce a print version to fit into a 72 DPI file, the text is going to be super, super, super tiny. And it's not going to read. So you got to enlarge everything. So it's not as simple as just copying and pasting. You're going to have to rethink that.

And if you have-- let's say that you have a timeline that works at a horizontal design, that's not going to work on the web unless you're going to have a device that helps you scroll on. So you're going to have to rotate the graphic and have the information go vertically down the phone. If you have a map that has a lot of information, you might have to scrap the map for online for the phone and just do bar charts for that information, as opposed to actually showing the map. So you do have to rethink it.

So usually, it's a matter of size and space that you're dealing with. Some people think, yeah, I'll just design my magazine spread for somebody to look at it on the computer, on their monitor on their laptop, or on their iPad, but really, the truth is a lot of people like to just look at their phones. And so you do have to create a whole different look for that.

KATHLEEN MURPHY: Great. And I think we can maybe squeeze in one more, because it might just be-- it's almost like a yes/no. There's a lot of interest in accessibility and color. We're going to share all these questions with you, Hiram. For accessibility, is it best to do dark background with white font, or dark font with light background?

HIRAM HENRIQUEZ: Dark font with light background. If you're going to do-- if you're going to do a reverse text, it needs to be usually a really dark background and about 14 point type. And you're probably going to have to go bold with it, not regular or light face, in order to do that.

But I know that design wise, sometimes you need that. So just if you need that break, that visual break, just realize it's got to be bold. It's got to be about 14 point. And that background color needs to be really dark. You're much safer if you're just using black type over a really light color.

KATHLEEN MURPHY: OK, well, thank you so much, Hiram. This is a wealth of information. So we really appreciate it. And we know that there's going to be a lot more to talk about on August 30th. And I think the evaluation link is there in the chat, so if you could help us out to plan for that August 30th event that would be fantastic.

HIRAM HENRIQUEZ: And I know that I went a little bit fast to get all the information in there, but the tip sheet is going to have a lot of this information on there, as well, to help those of you in the future.

KATHLEEN MURPHY: Sure. Thanks, all.

HIRAM HENRIQUEZ: Thanks, everybody.