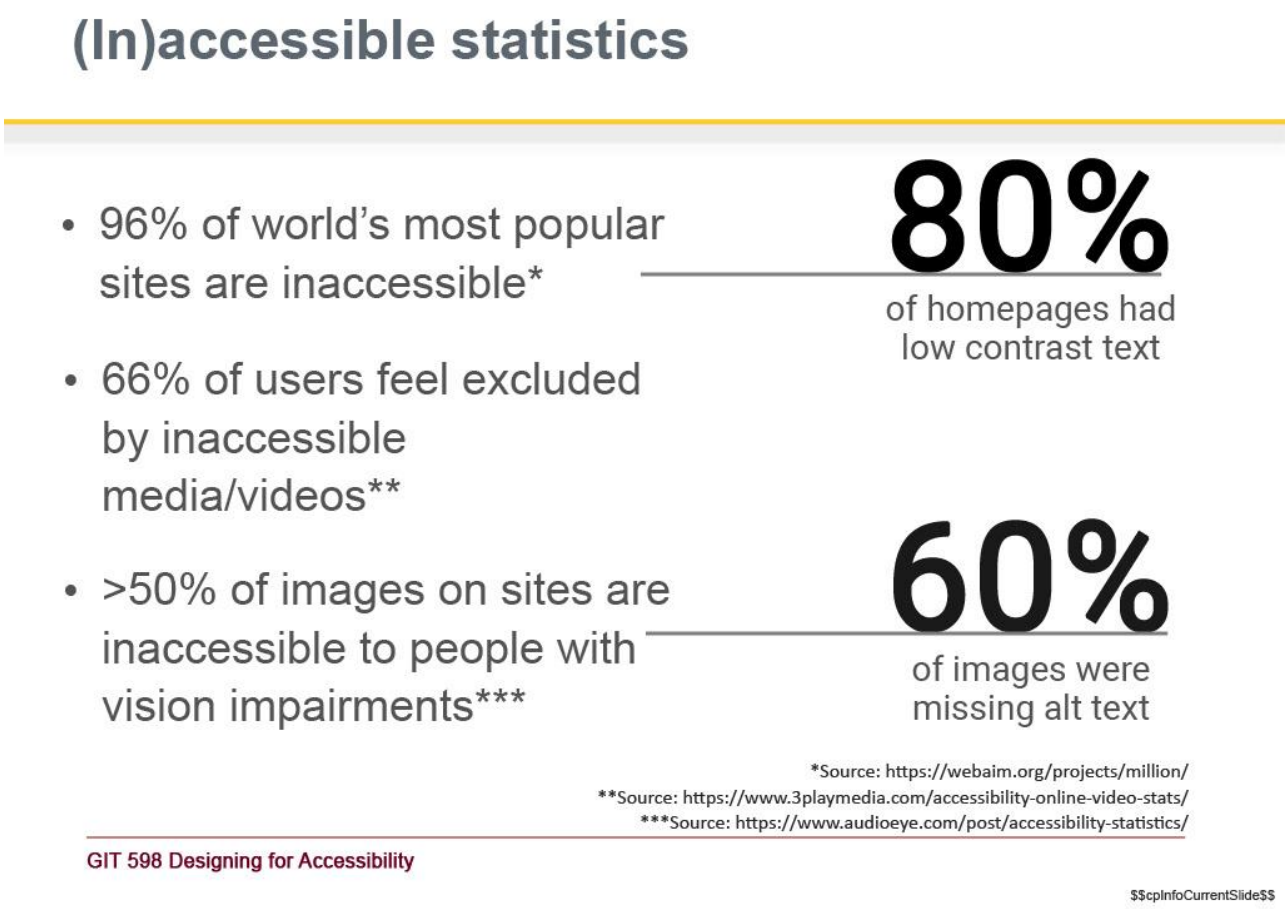
Slide 1 - Accessibility in Design Part 1

Welcome to the lecture on accessibility and design. In this lecture, I want to point out some accessibility concerns that overlap the different types of cross-media design. No matter if it's a website, video, magazine, kiosk, PDF, video game, poster, mobile app... these concerns are found and must be addressed.

Slide 2 - (In)accessible statistics



I could go on and on about accessibility statistics, but I'll practice restraint and point out just three major ones.

The first is the results of a study by WebAIM, and the company is Web Accessibility in Mind. It's going to be one of your resources for this course. The researchers there who reviewed the top one million home pages found that ninety... ninety six percent of the world's most popular websites are inaccessible.

They also found that eighty percent of those one million home pages had low contrast text, which is huge. This figure, the eighty percent, is shown large on the right side of the screen. Why? Because it means that eight out of ten home pages had text that could be challenging to people with low vision. Major area of exclusion.

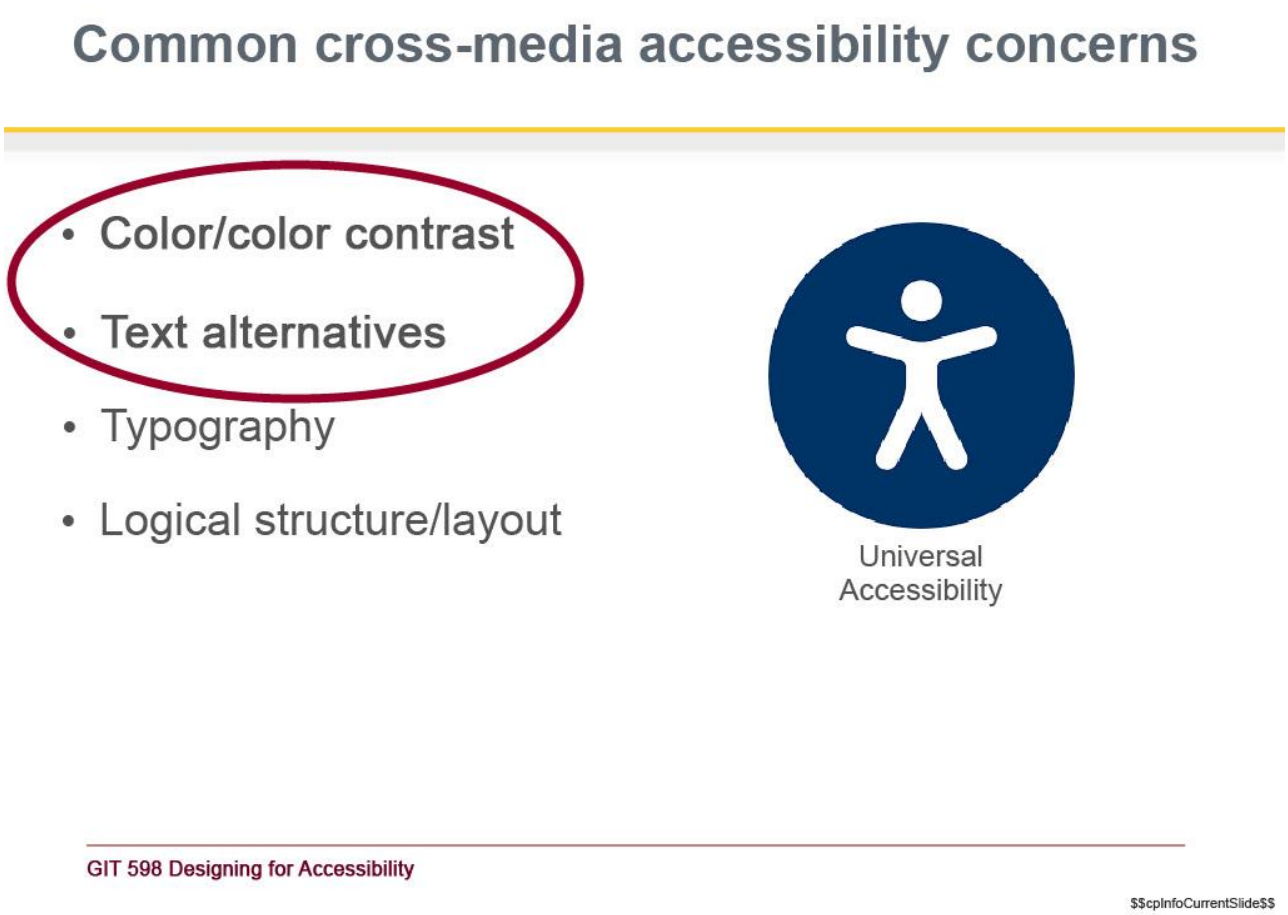
The closed captioning serve service company, 3Play, produced a study about the accessibility of videos and other media, which found that sixty six percent of users feel excluded when they come across inaccessible media. So two out of three users experience exclusion.

AudioEye, a digital accessibility company, has done research for years. One study found that less than fifty percent, five-zero percent, of images on the forty thousand websites they reviewed were inaccessible to people with visual impairments. The researchers also found that sixty percent were missing alternate text or alt text. The sixty percent is shown large on the right side of the slide as well.

Users who rely on screen readers for image descriptions can't get any information on what the image represents. This also affects users with low vision. And, again, we're dealing with exclusion.

These statistics represent just a fraction of exclusion happening in cross media design. For the rest of this lecture and part two, we're going to go over some of the most common accessibility areas within cross-media design.

Slide 3 - Common cross-media concerns



The reason I visually pulled out those two statistics, the eighty percent of homepages having low contrast and the sixty percent of images missing alt text is because they apply to the first two most common cross media accessibility concerns.

Those are color and color contrast and text alternatives.

Additional concerns are typography and font usage and having a logical structure of digital systems and documents.

In this part of the lecture, we'll cover color and text alternatives. And you can see that color color contrast and text alternatives are circled in red and also bolded. And in part two will be typography and logical structure.

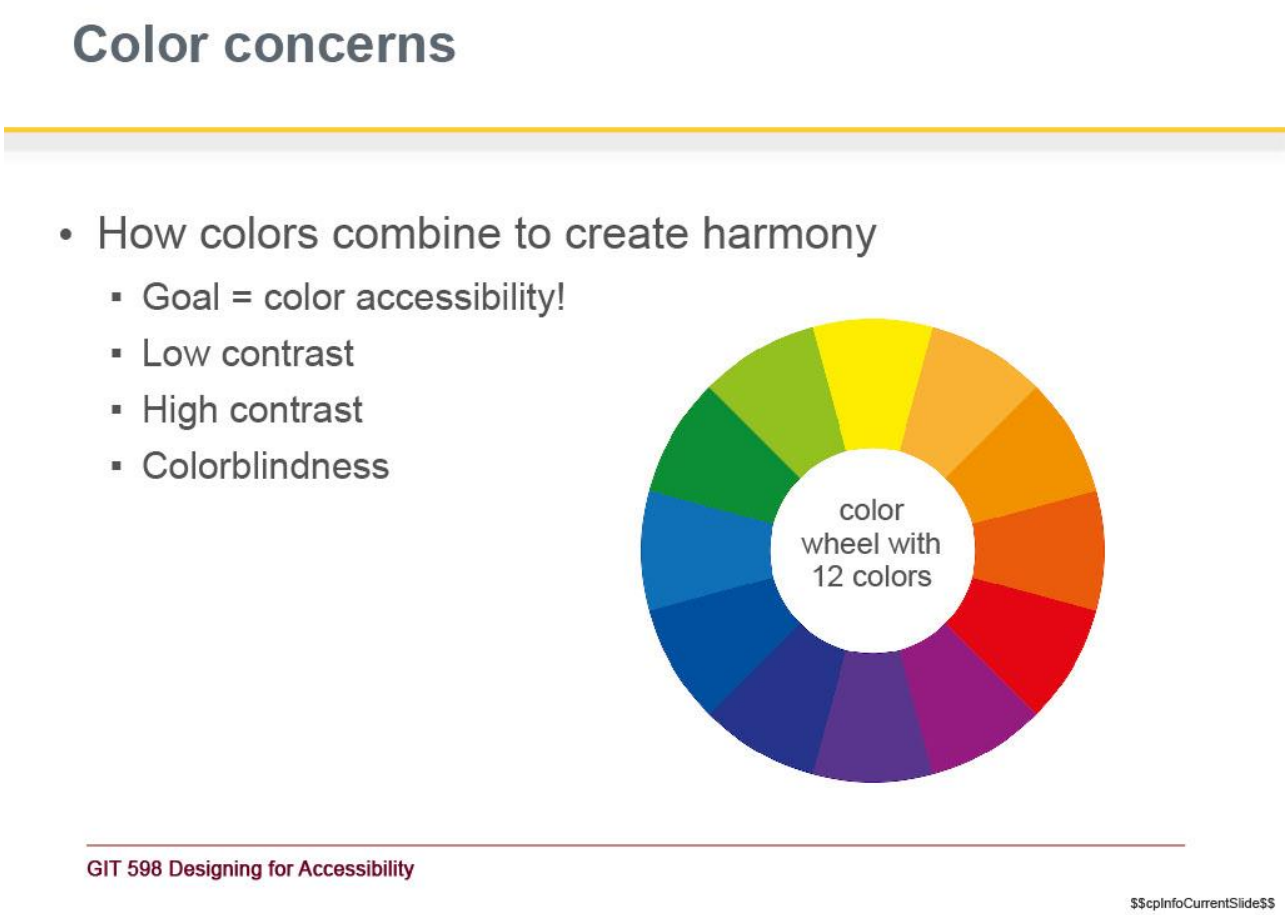
Note that this is not an exhaustive list. Many, many more accessibility issues in design are there, especially for websites and videos. But we'll focus on these four for now.

These are what I call the low-hanging fruit issues.

These span digital products, print, documents, websites, video, signage, design systems, all types of cross media design. These also are relatively easy to fix to increase accessibility. Fixing these four issues is a great start to making products more accessible, and the fixes can make a world of difference.

Let's look at each of these with some examples.

Slide 4 - Color concerns



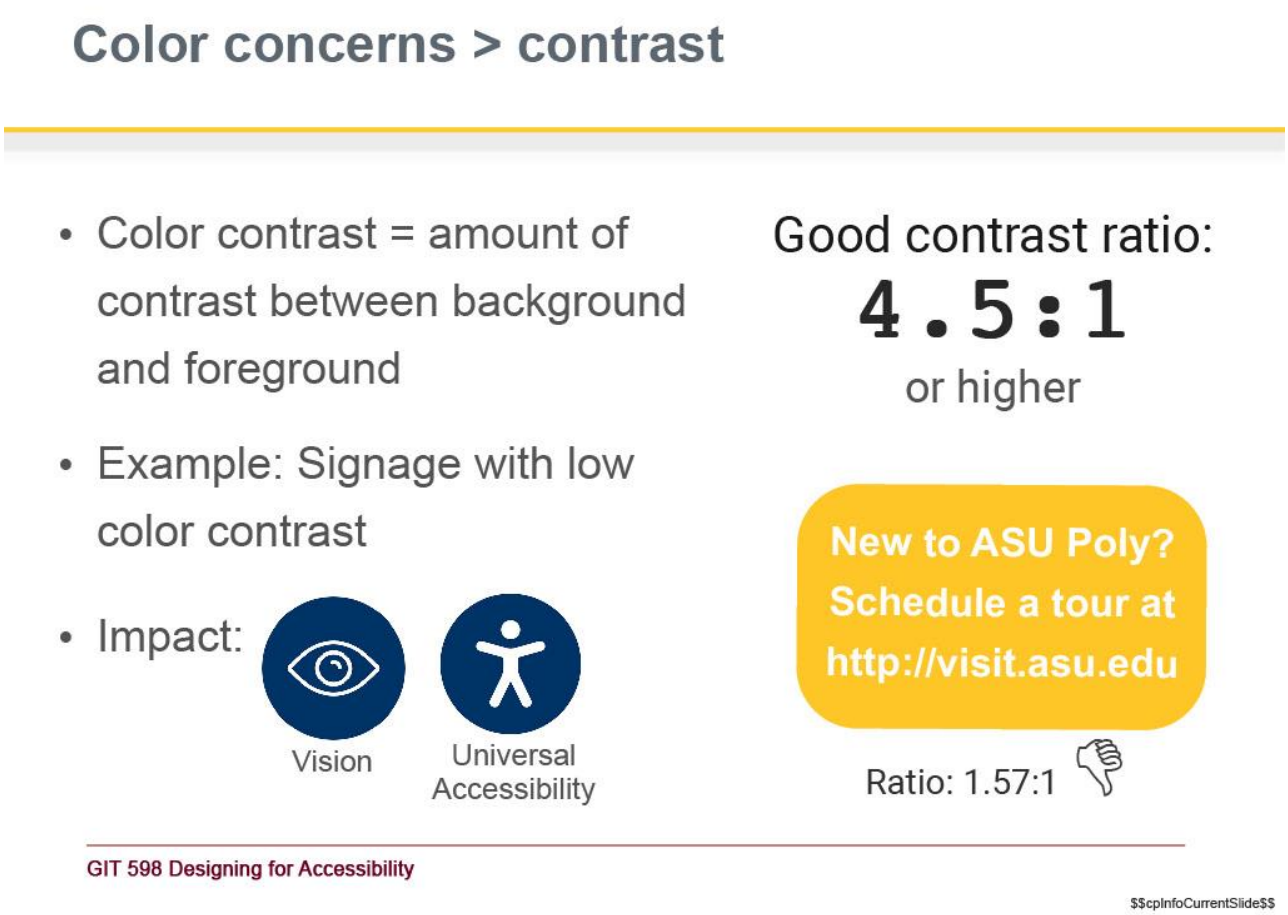
Color accessibility is creating color combinations visible to people with visual impairments. This can mean someone with low vision. It's difficult to see subtle color changes. This can mean someone who is colorblind. Deciphering the difference between red or green or other color elements in an image is a challenge.

I'll talk about that in a few slides.

The goal is color harmony, but it's also about color accessibility.

Low contrast are colors that are difficult or extremely difficult to see. High contrast are much easier to view, so the ideal is to find a higher con contrast color combination, and the way you do that is to determine the color contrast ratio.

Slide 5 - Color concerns > contrast



Color contrast is the amount of contrast between the background and foreground.

One example is signage, that has a low color contrast, such as what is on the lower right of the screen. White text on ASU Gold. You have likely seen something like this around campus or on ASU websites or even in emailed or Slack messages.

The sign reads, 'New to ASU Poly? Schedule a tour at https:visit.asu.edu'

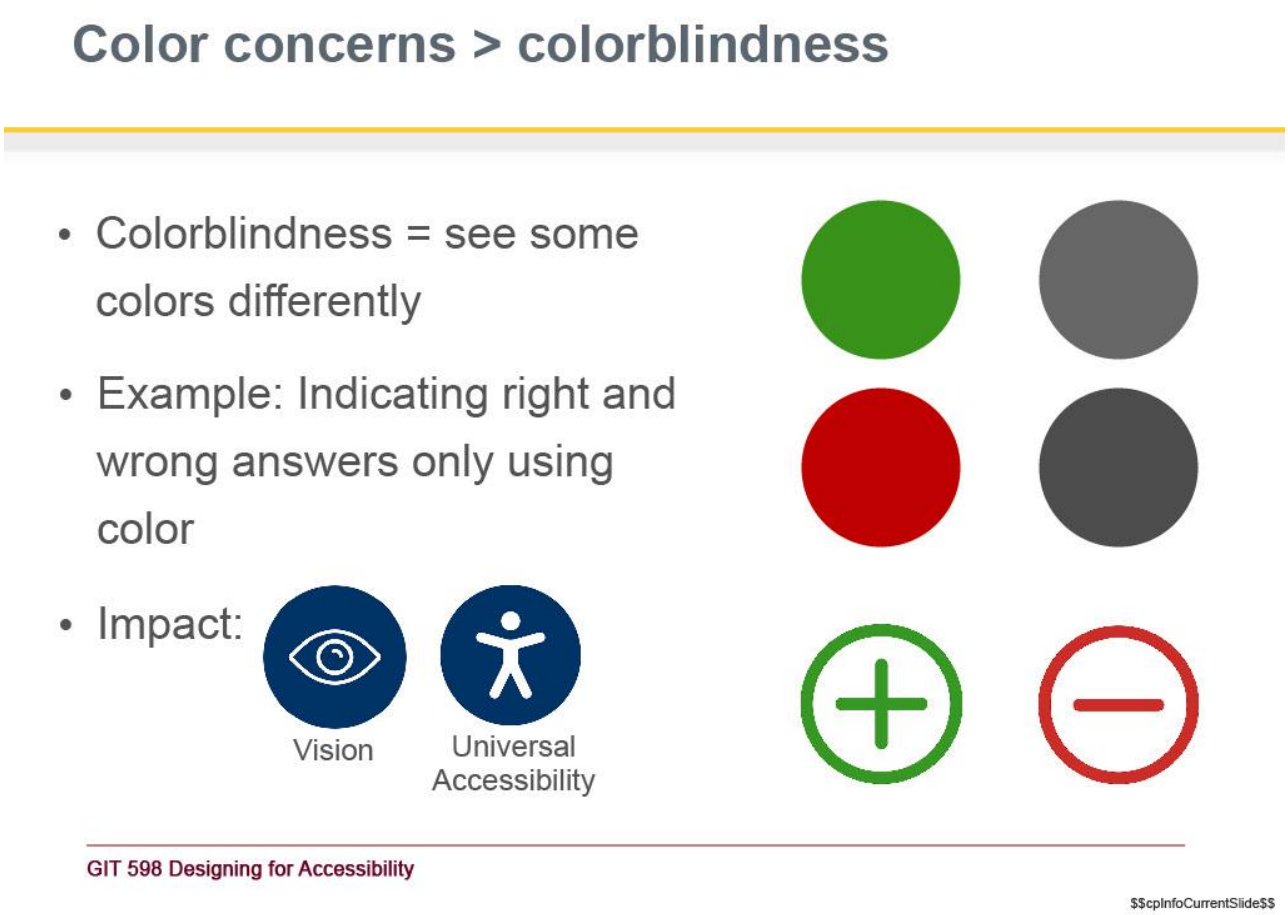
I've used the color contrast checker from WebAIM, which stands for Web Accessibility In Mind. This website is an outstanding resource for all things accessibility, especially but not exclusively for the web.

According to their color checker, the contrast on this ASU sign is one point five seven to one, which is far below what is considered good contrast, which is four point five to one. So the white text on gold background gets a big thumbs down.

Users with low vision, including those with cataracts, glaucoma, or age related macular degeneration, may struggle to read the text. Even users with normal vision might find it difficult to read the text under certain lighting conditions, as in bright sunlight or a dark room.

Contrast mainly affects those with vision impairments but also affects people in different situations, so the impact can be universal.

Slide 6 - Color concerns > colorblindness



As many as twelve percent of the male population worldwide are red or green colorblind. This means they have difficulty differentiating either red or green. And some people have a contrast sensitivity, meaning it's a challenge to see those colors that are similar as far as darkness or lightness.

An example of this is using just color to indicate the right and wrong answers on a test. On the right side of the slide, at the top is a green circle. To that circle's right is what it would look like for someone who is red or green colorblind.

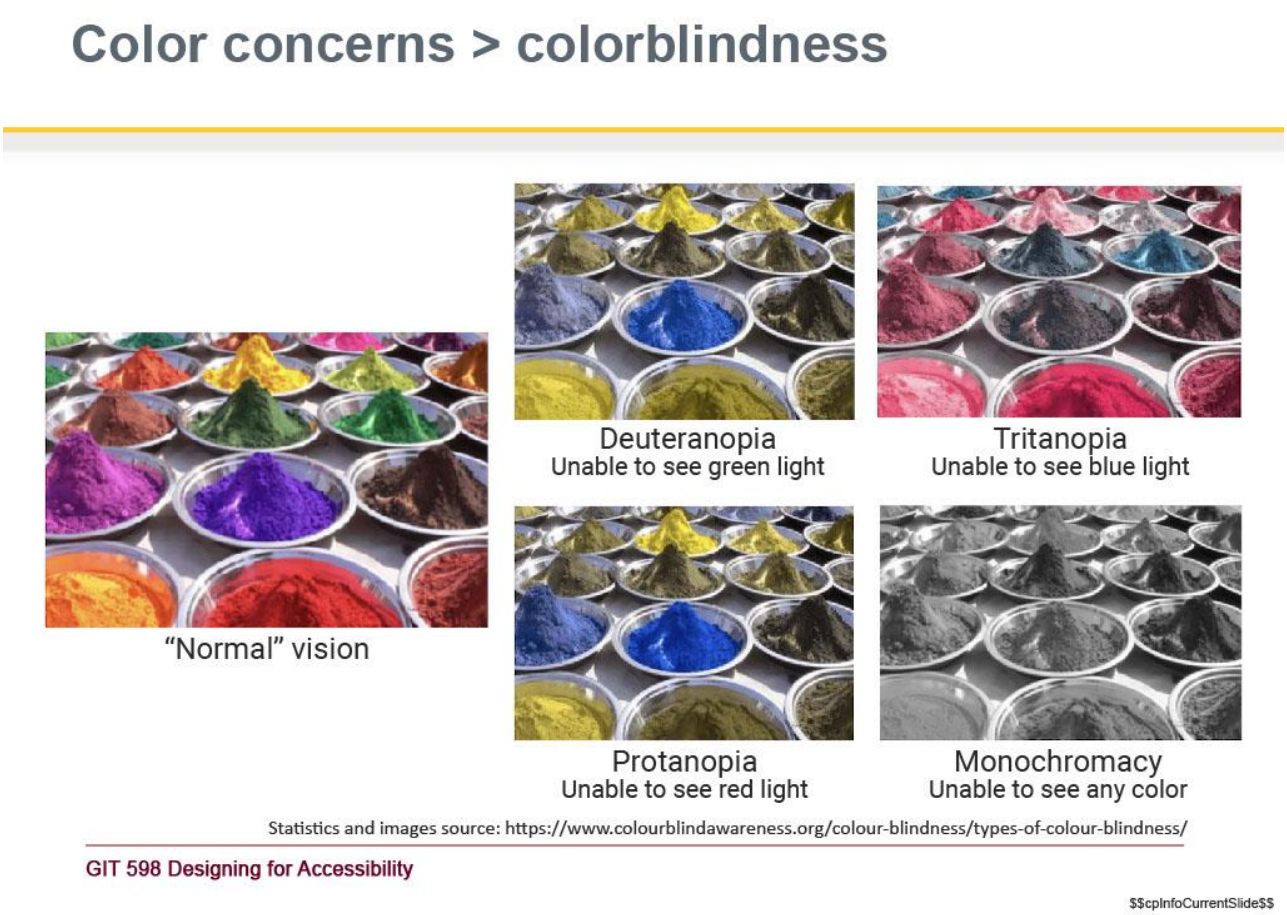
Under the green circle is a red one, and to the right of it is what it would look like to someone who is colorblind. They are both gray. There is little difference. People will see two gray circles.

It is best to have a symbol and or text to go with the color to avoid any confusion, which is what you see at the bottom right of this slide, which is a green plus symbol and a red minus symbol.

Just as the color contrast, a person does not need to be fully colorblind to experience this. My mom has a hard time telling the difference between black and blue. It's due to her aging eyes and cataracts.

So again, this is something that can affect many.

Slide 7 - Color concerns > colorblindness



On the left side of the screen is an image with powders in small, gray bowls, and the powders are in several different colors.

On the right side of the screen is how people with specific color blindness would see them.

Deuteranopia means an inability to see green light, and beneath it is protanopia, which is an inability to see red light. These two are related and often combined into red-slash-green color blindness. According to the Color Blindness Awareness Organization, this is a misnomer.

The images show the differences and similarities in these two. As long as you haven't been diagnosed with colorblindness, you'll be able to see a little bit of difference. People with either deuteranopia or protanopia

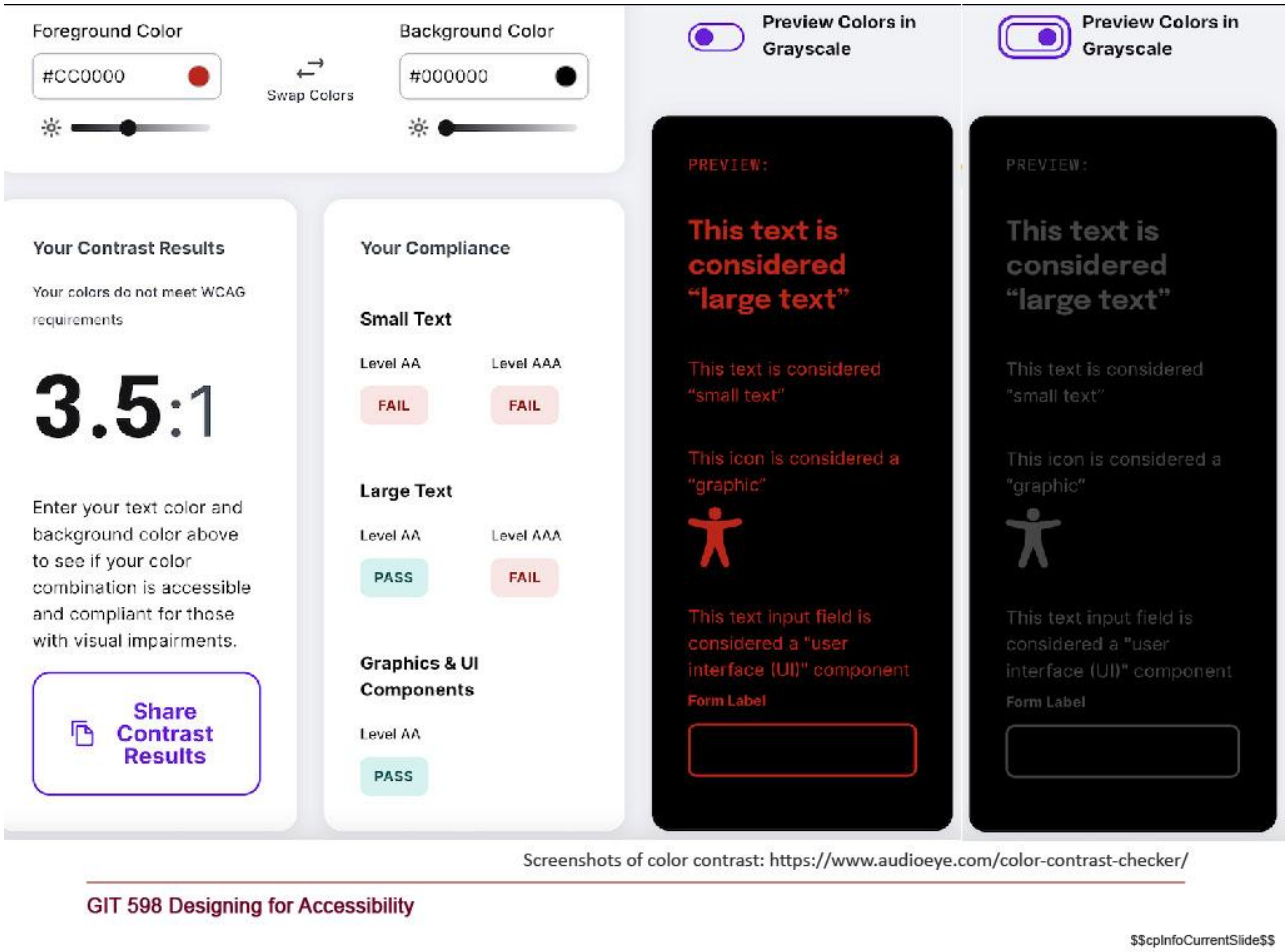
find it challenging not only seeing the difference between red and green, but also in the perception of browns and oranges.

As mentioned, it's estimated that twelve percent of men and even point five percent of women are colorblind.

On the very right of the screen is tritanopia, which is an inability to see blue light, and this is very rare. You can see that most of the colors are interpreted as either a pink or a bluish green.

Even rarer is the image underneath the tritanopia, which is monochromacy. Someone with monochromacy does not see color. They see black, white, and various shades of gray. One out of thirty-three thousand people have monochromacy.

Slide 8 - Color concerns > colorblindness



The screenshot on the slide shows how a color contrast checker works. This one is from AudioEye and I tested the contrast between a red foreground color, which has the HEX number of cc0000 with a black background which has the HEX color of 000000.

What I really like about this contrast checker is the ability to see the color in gray. This is great for testing for colorblind contrast.

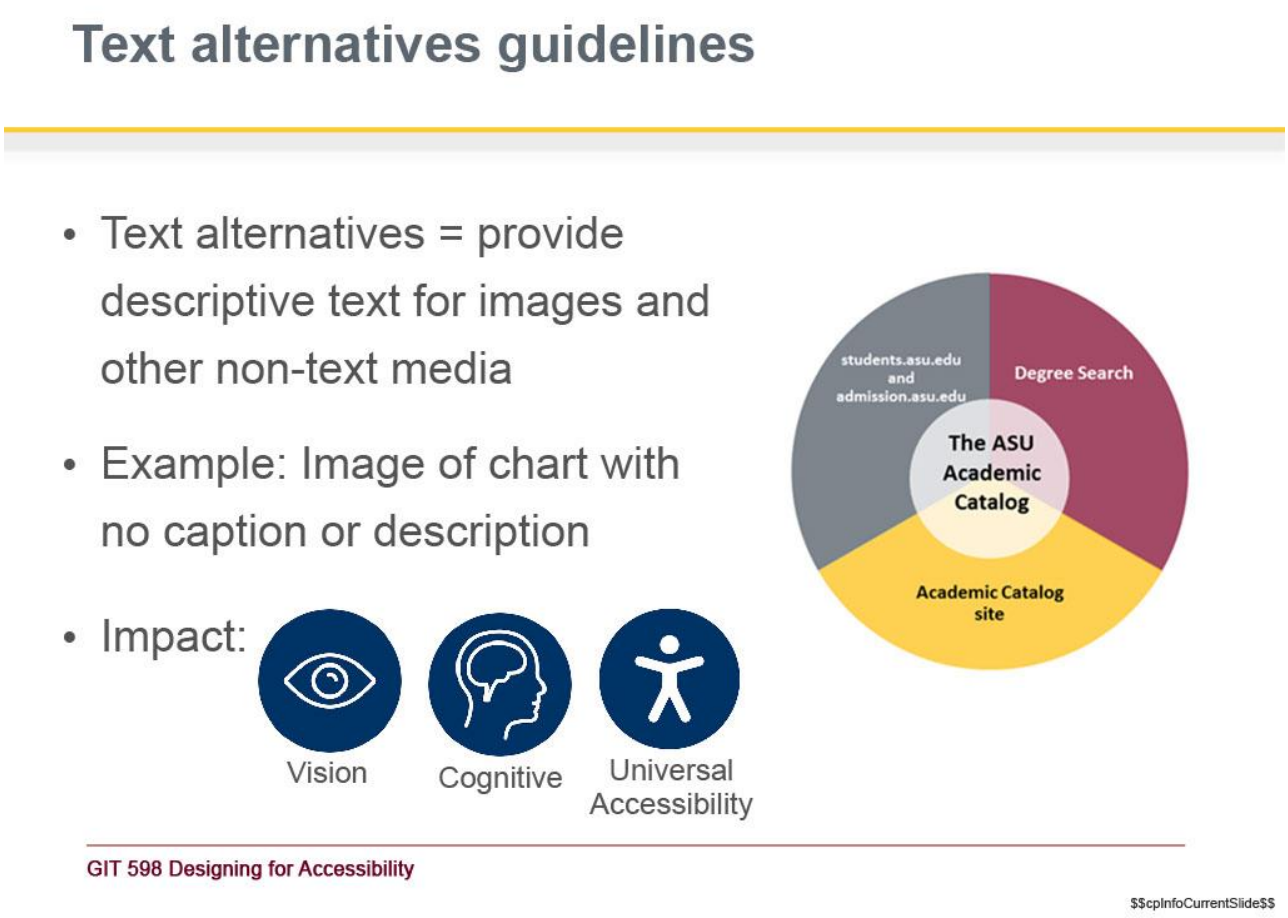
In the example, the bright red on black has a contrast ratio of three point five to one, which does not pass because it doesn't meet the four point five to one, and it fails in, several areas.

We'll talk about these compliance levels in a later lecture.

But the grayscale really tells the story for someone with protanopia. It's much more difficult to see the text, let alone read it, when it's the dark gray on black.

Note that this isn't just for checking websites. All colors have a HEX color, which is used for the web. You can find a color's HEX number by using Photoshop and the eyedropper tool. Just input the HEX number for the color you are using for the foreground and the one you are using for the background, and the checker will let you know.

Slide 9 - Text alternatives guidelines



In addition to color, text alternatives are a common issue with accessibility.

For example, you open a PDF document, and it has the image of a chart. However, there are no captions or descriptions of what is in the chart. Someone with blindness or low vision won't have the information they need to understand the chart.

As an example, on the right side of the slide is a pie chart with three equal parts. One part is gray with the white text of students.asu.edu and admission.asu.edu. A second part is ASU Maroon with degree search in

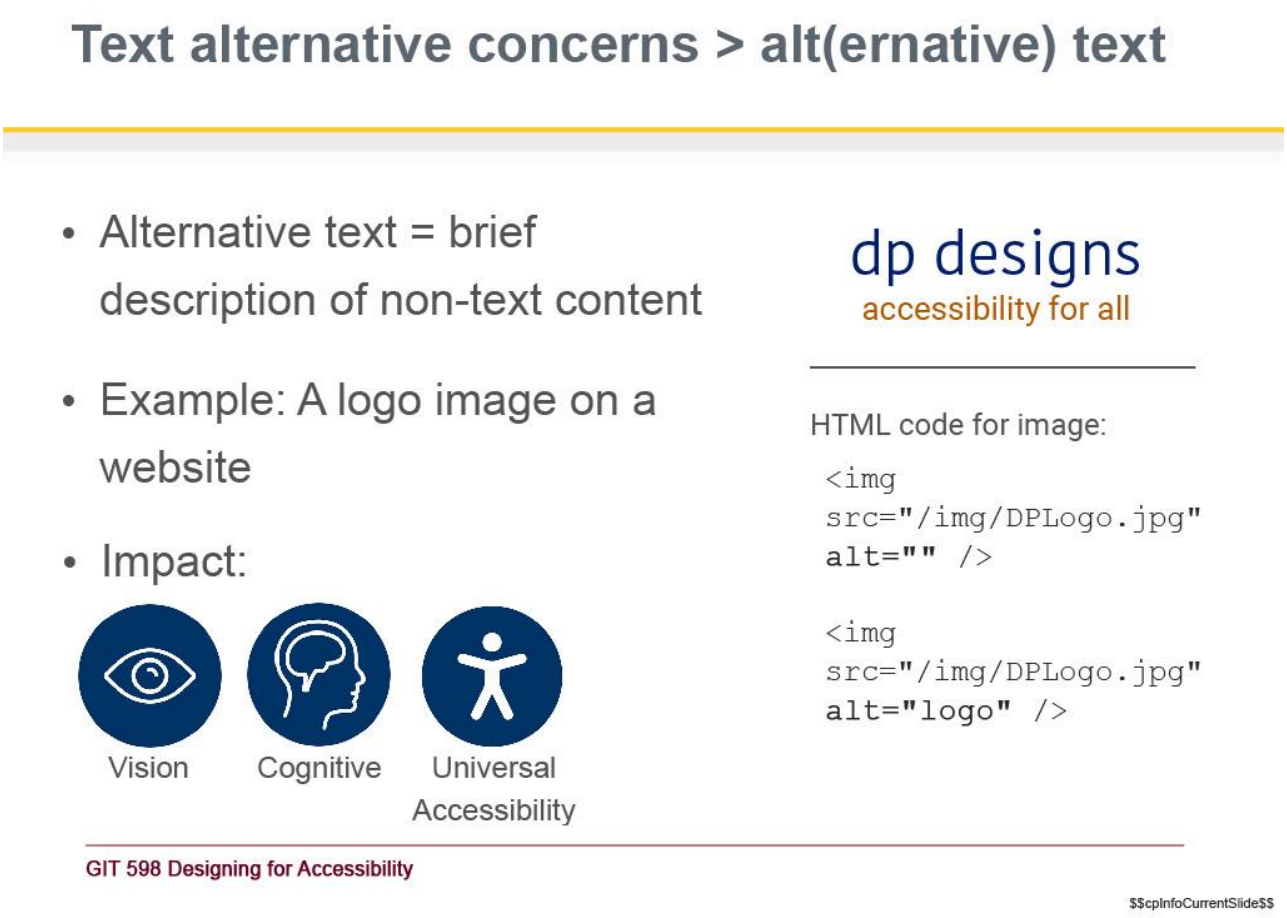
white text. And the last part is ASU Gold with black text of academic catalog site. In the middle is a partially transparent white circle with the text, The ASU Academic Catalog.

Images, whether they're charts, photos, or any non-text media, should have descriptive captions or explanations. This is true for digital and print material.

Descriptions provide context and understanding for individuals who may have difficulty interpreting visual content, including those with visual impairments but also cognitive impairments.

In addition, this has a universal accessibility impact for people who have low bandwidth or those who view websites or large digital documents with the images turned off.

Slide 10 - Text alternative concerns > alt(ernative) text



Text alternatives cover a few areas in cross-media design.

The first is alternative text from the standpoint of images and other non-text content. You may hear or read alternative, alternate, and its most common reference, alt text. I admit I've been calling it alternate text for years before I realized it's really alternative. So if you hear me slip up in a future lecture, I apologize in advance.

Alt text is a brief description of what is depicted in the image. Provide descriptions or summaries for images and charts and graphics to help users who have low vision, blindness, or color blindness, or even people with cognitive disabilities where too many images can be distracting, or they may struggle to interpret visual information.

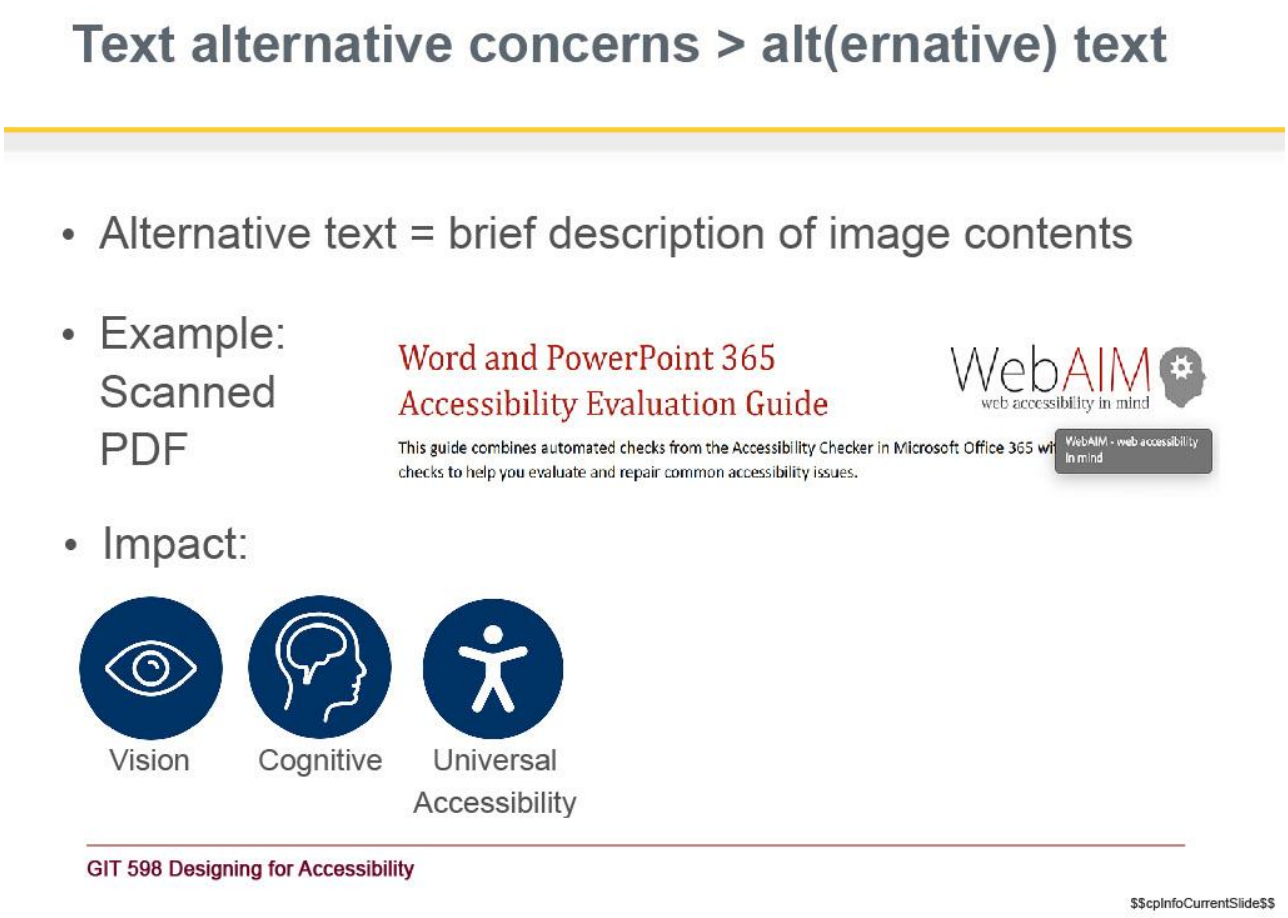
Also, those who have limited Internet connections such as in rural areas, and they view websites without images to save bandwidth. They can visit a web page with images turned off, but still know that what the images represent. Again, another great example of the curb-cut effect.

The example on the right side of the slide is a really bad logo I created. It's an image file with the file name of dpLogo.jpg. It's the text, 'd p designs' in dark blue, and beneath that is 'accessibility for all' in smaller orange text.

The first line of HTML code under the logo has no alt text, which is shown as alt equal quote quote. That means there is no alt text. It's empty.

In the second line of code, I added alt text, which you'd think is good, but it's useless information. It says 'logo'. Whoopie! What or who is the logo for? Are there words, images, drawings? What does the logo look like?

Slide 11 - Text alternative concerns > alt(ernative) text

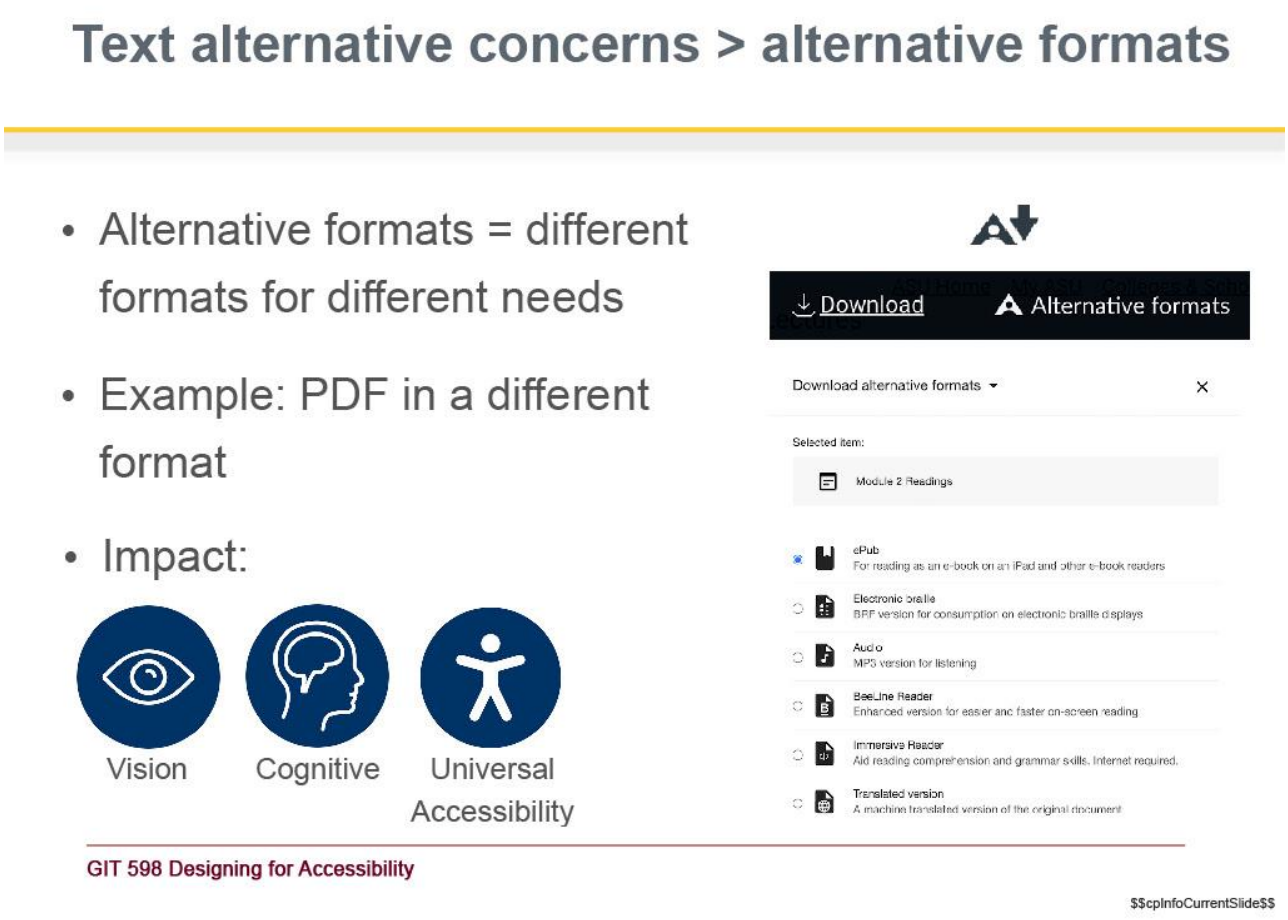


Most instances of needing alt text relates to websites, but it applies to any product or document that will be displayed digitally. Screen readers will read the alt text so the user can hear what the image depicts. The example on the right side of the slide is part of a PDF from WebAIM. When the user mouses over the logo, alt text appears. This text can be read by screen readers. Also, like the logo example on the last slide, having that alt text works for those with cognitive disabilities and for anyone viewing with images turned off.

Realize that by adding alt text, you're not providing the exact same experience for everyone. A person with low vision will not be able to see the image, and the alt text is just a description that is brief but as descriptive as possible. But accessibility, and UX for that matter, is about creating a similar experience, not the same. Again, it's about inclusion, not exclusion. Every user is worth the time you spend making products more usable. And as I've mentioned before and will mention several more times, accessibility for one is

accessibility for all. You'll never achieve 100% accessibility for 100% of the population, but that doesn't mean you can't try in include as many audience members as you can.

Slide 12 - Text alternative concerns > alternative formats



Another concern is not offering alternative formats for known accessibility issues.

For example, users with visual impairment impairments cannot read, and screen readers cannot read a scanned image. Provide alternative formats, such as large print or Braille versions, of published documents or published textbooks to accommodate users with different needs.

On the right side of the screen is an example that might look familiar to you. It's from Canvas. Canvas provides alternative formats for some non-text website pages.

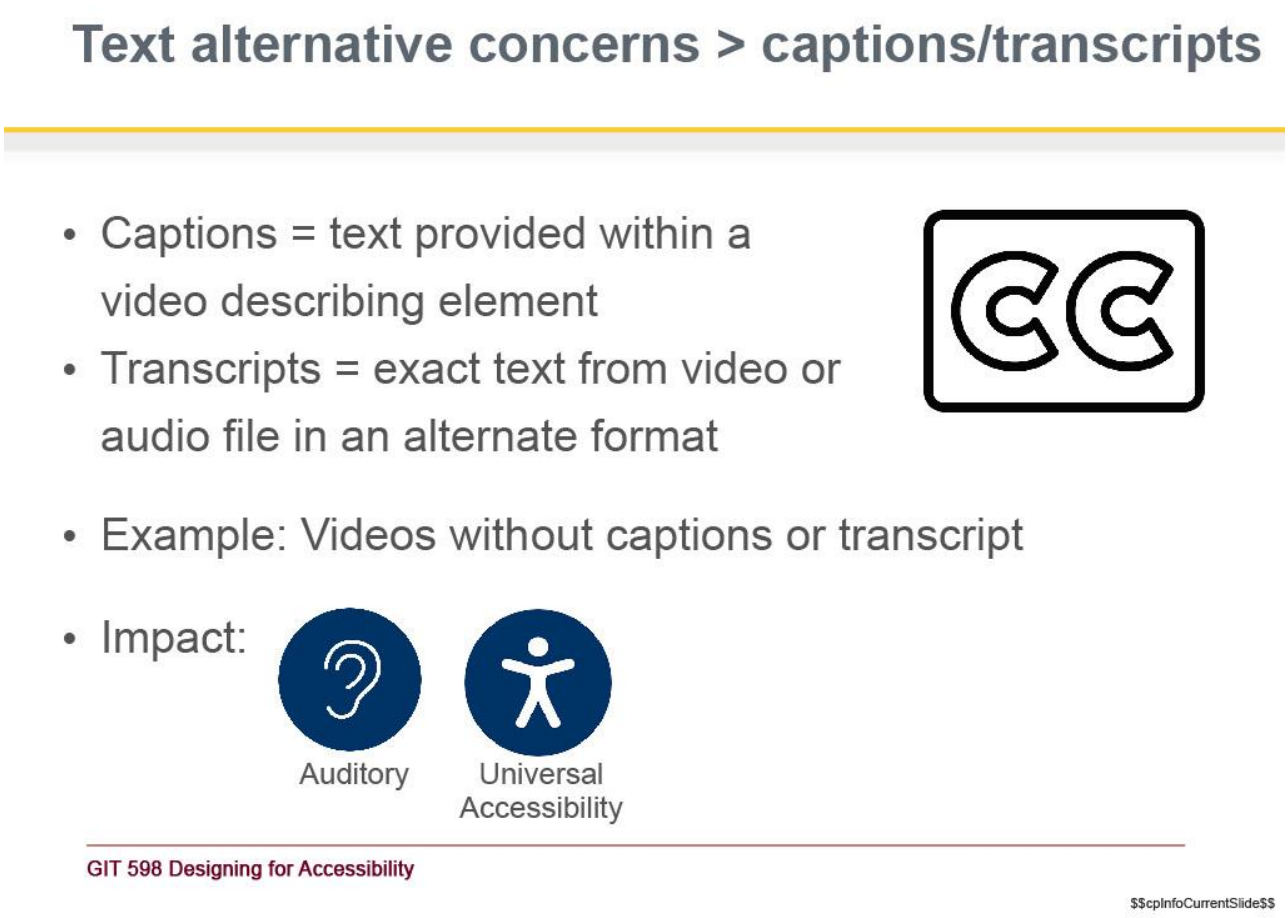
Check Canvas and click on a PDF. Then you'll see the letter A with a down arrow, which indicates alternative formats. When you click on alternative formats, it gives you a list of what is available, such as HTML, EPUB, etc.

One caveat with this: The document must have a logical structure in order to be interpreted to an alternative format. We'll discuss logical structure in part two of the lecture.

Another example: If you have a video with sound and captions, that will work for people with vision and hearing disabilities. But what about someone with deaf blindness, such as our one of our guest lecturers from module zero? I'm sorry, from module one.

Having a transcript of the video would allow this user to run it through braille software. And what about those who need larger text, such as someone with dyslexia or those who prefer large text? This is a curb cut effect. By making it accessible to people with visual or cognitive disabilities, it makes it more accessible to everyone.

Slide 13 - Text alternative concerns > captions/transcripts



Another text alternative concern is captions and transcripts. This affects mostly video and audio files.

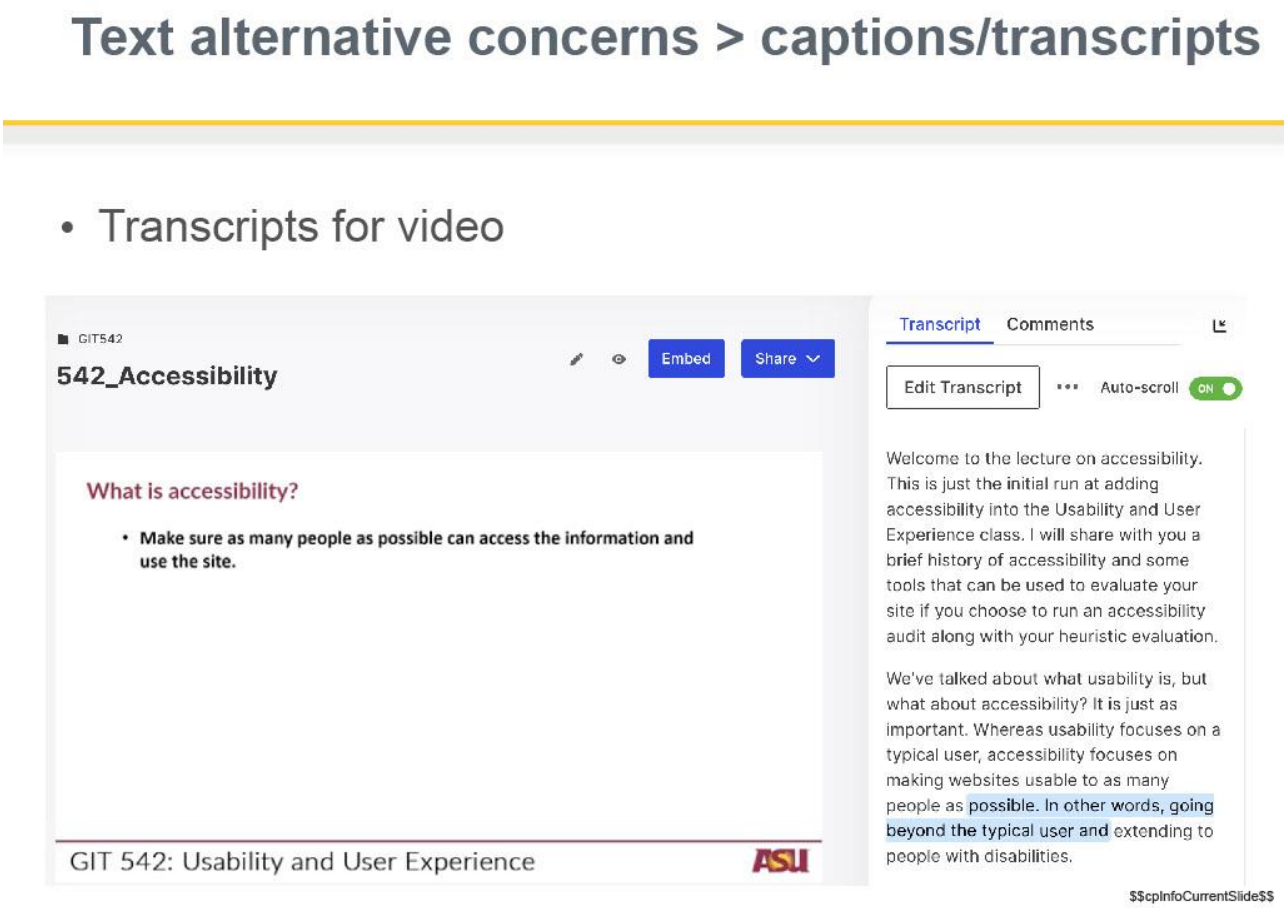
Captions are more associated with videos, and transcripts normally are for videos and audio files. Text alternatives include having captions or transcripts for videos, audio, and motion graphics.

I say both captions and transcripts because, while captions cover users who are deaf or hard of hearing while watching a video, What about an audio file, such as a podcast? Providing a transcript would allow for a screen reader to read the exact text.

Without captions or transcripts, people who are deaf or hard of hearing are excluded from the video, audio, and other time based media.

Also, think about situational issues. We discussed that in the introduction to accessibility lecture. What if someone is at the library or on a bus? This would be considered universal accessibility due to the curb cut effect. Adding captions or a transcript provides auditory accessibility but benefits people beyond the intended audience.

Slide 14 - Text alternative concerns > captions/transcripts



I mentioned transcripts on the last slide.

The example on the slide is a screenshot from a GIT lecture. Actually, it's from a lecture about accessibility! The video file is housed in Wistia, a video hosting company. Their software has the capabilities to produce captions within the lecture file and transcripts outside that follows along as the video plays.

You have the ability to set the transcript to highlight the words being spoken on the video. You will notice this feature on all of the instructor lectures in this course.

Slide 15 - Watch the Accessibility in Design Part 2 lecture!

Thanks for watching the first half of the lecture. Make sure to watch Part 2!