Welcome to the Section 508 Training Webinar provided by the Transportation Research and Connectivity pooled fund!
I am Colleen Bos. I am a Research Program and Project Manager for CTC & Associates and I have both created Section 508 compliant reports and also remediated dozens of other people's final reports, so I have experience from a couple different perspectives that I will try to share.
We will be looking at how the features of Microsoft Word and Adobe Acrobat can help you create and deliver reports that are accessible to all readers and are Section 508 compliant.

I also want to thank Michael Molina and the members of the Transportation Research and Connectivity pooled fund (This includes AZDOT, CA, ID, IL, MO, MT, NC, NJ, NM, NV, NY, OK, OR, SD, TX, UT, WI, WY)

This is Part 1 of a 2-part Webinar series providing Section 508 Training. The recording of this Webinar and the PowerPoint will be

Section 508 Training: Webinar Overview

- What is Section 508 and what is accessibility?
- Microsoft Word
  - Using Word's accessibility checker
  - Fixing common accessibility issues in Word
    - Headings
    - Tables
    - Images and Alternate Text
    - Equations
    - Color Contrast

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Section 508 Training: Webinar Overview

- Adobe Acrobat/ PDFs
  - Using Adobe Acrobat's accessibility checker
  - Fixing common accessibility issues in Adobe Acrobat:
    - Document Properties
    - Page Content
    - Alternate Text
    - Tables
    - Headings
    - Resources
  - Q-and-A

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We are going to give you quick overview of how to fix the most common Adobe errors and then we are going to introduce you to resources you can refer to. It would be impossible to memorize all the picky little steps in some of these remediations for Adobe, so we'll give you a sense of how it works and then links to documents that can help you with those details when you need them.

There will be time at the end of the presentation for Questions.

And then for the second webinar, we are hoping you will go forth apply what you have learned and then come back to us with additional questions. Webinar 2 will be focused on answering questions you encounter as you apply what you have learned.

Introduction: Why we check accessibility?

- Why accessibility is important?
- Section 508 of the Rehabilitation Act of 1973
  - Amended in 1998, updated in 2017
- Americans with Disabilities Act (ADA)
- WCAG standards

There are a lot of reasons for why we create accessible documents, but in a nutshell: This helps get your research out to the broadest possible audience.

Also, we are complying with Section 508 of the Rehabilitation Act of 1973. It's the law to make federal documents accessible. Most states are following suit. It's necessary to have DOT research reports in Section 508 compliant formats in order to submit to the national databases such as TRID (which is the Transportation Research Boards international database of transportation research) and ROSA P (which is the federal government's national library of transportation research).

ADA is very broad and requires accommodations in physical spaces, websites, and more, but recently updated its standards for web content and mobile applications that Section 508 uses, which are based on WCAG.

WCAG: A set of guidelines for creating accessible web content, often referenced in discussions about digital accessibility. Developed by the international organization, the World Wide Web Consortium (W3C) and widely accepted as an accessibility standard.

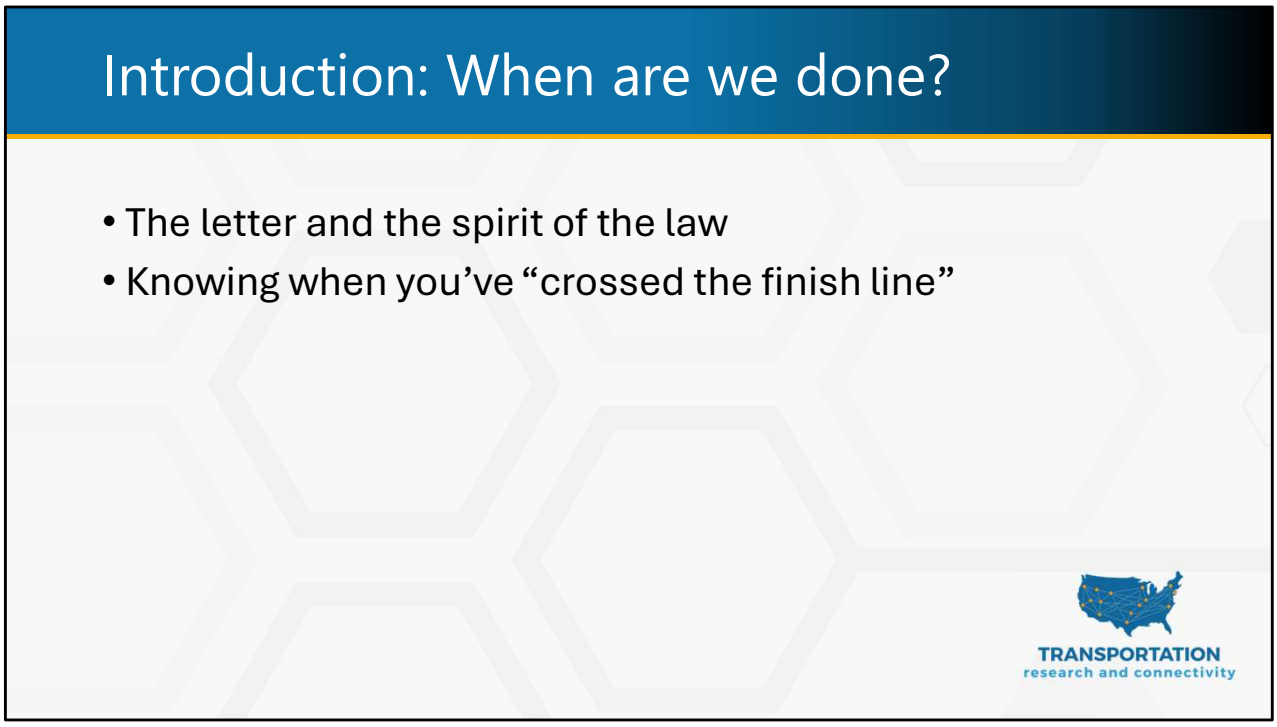
What is accessibility? Accessibility is the ability of all persons to independently obtain information and use products, services and facilities.

What Section 508 specifically dictates is that information and communication technology (ICT) products—such as reports and websites—should always be accessible to those with visual or other impairments.

It applies to a broad array of electronic media – documents, software, websites, presentations – but in this case we are going to focus on Word and PDF documents.

Making sure that media are accessible to all users this is often focused on vision impaired (e.g., color blind or complete blindness). And by the way, color blindness is surprisingly common – 8% of men; .5% of women, so it's really something to keep in mind that folks don't always think of.

When you do things right and use the tools that Word and Adobe offer– It makes it easy for screen reading technologies to assist a low vision reader and ensure that your documents are more accessible to all readers regardless of whether they require a screen reader or not.



The letter of the law and the spirit of the law. You can get things to pass all the checkers and get submitted to ROSA P or other places. But if the goal is accessibility, I encourage you to embrace the spirit of the law and go the extra mile to check color contrast and make sure the Alt Text is really good.

How to know when you are done? When it passes the checkers, but also when it passes the "common sense" check. Or if all else fails, try the screen reader and see how it sounds.

The ultimate test of whether you are done is whether your report is accepted, either by the state or agency that funded the research or by ROSA P or TRID if your goal was to get your research into there.

Microsoft Word

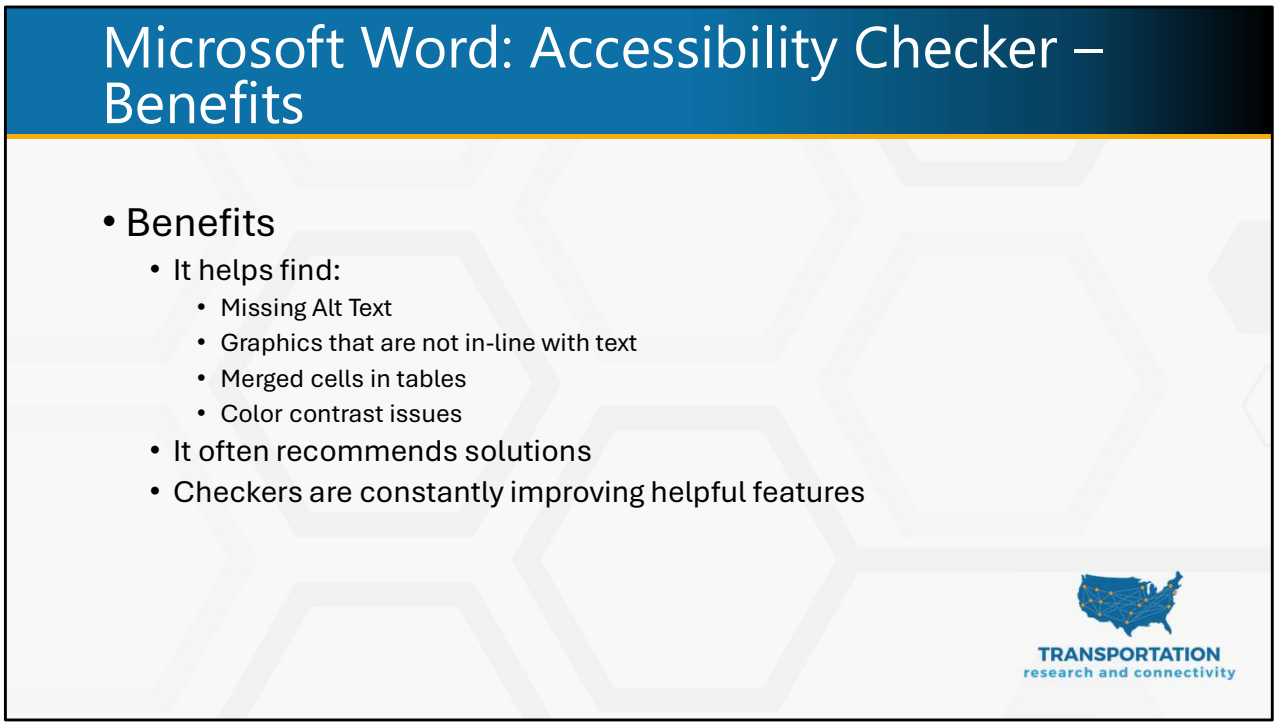
So let's dive in to Microsoft Word. But first, let me say that it is seldom the case that Word file remediated is the goal. The goal is a compliant PDF document, and you get there via a compliant Word file. You will do more work in Word than Adobe, but in the end it's typically the compliant PDF file that people want.

Microsoft Word: Templates

- Start with a good template
- We recommend the Transportation Research and Connectivity Pooled Fund's Section 508 Compliant Research Report Template

First things first -
You can make your whole job a lot easier if you start with a good template
We recommend the Transportation Research and Connectivity Pooled Fund's Section 508 Compliant Research Report Template
I will refer back to this over and over again as we discuss 508 compliance in Word, so I wanted to mention it up front.

XXXConsider a short/small Animation of going to the page, reviewing the resources and opening the template



It streamlines the process of identifying the errors that keep your document from being fully accessible. I'll talk about each of these types of errors in greater depth later on, but I'll definte them a bit right now.

- Alt Text aka Alternative Text is information you can provide about images in your document that a screen reader can access to explain an image to a vision impaired person. Alt Text is hidden from the average read, but can be critical to those who use a screen reader.
- Graphics Not Inline is about setting the alignment of graphical elements so that screen readers know when to read them
- Merged cells in tables will make it hard for a screen read to know how to read information in a table in the right order
- Color contrast issues are about making sure that you use colors, you use them in a way that vision impaired people (like color blind folks) can properly interpret on the screen

The latest versions of word often offer suggestions on how to fix things. For example, if it flags alt text, it may suggest phrasing (although I almost always ending correcting or adding to it) or color contrast issues, it may suggest a new color for you to use. I often do use their suggested colors.

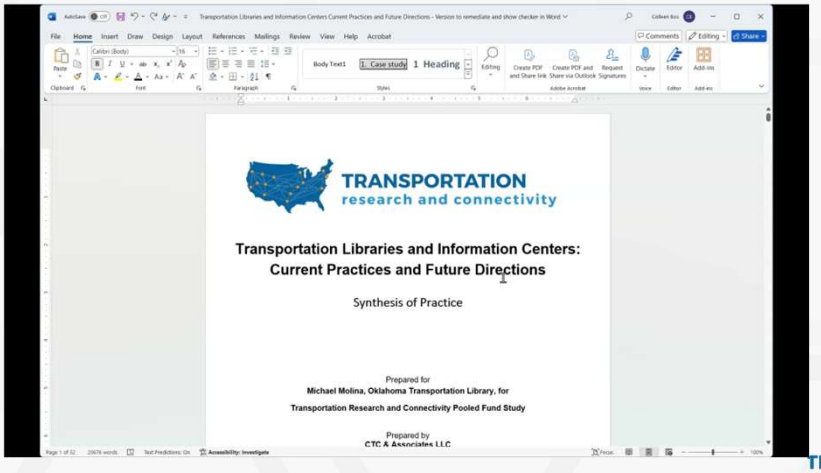
We will talk about all of the design elements that lead to an accessible document and how to address these issues as we continue.

Microsoft Word: Accessibility Checker - Pitfalls

- Pitfalls
  - Not perfect; it can miss things
  - You will need to manually check some issues

Maybe AI will make this perfect some day, but it hasn't yet. You still need to keep an eye out for issues yourself (like poorly worded alt text). For example, I was remediating a document and it didn't show any alt text errors, but I decided to check the Alt Text and discovered they were just file names of the images or just repeated captions, which didn't explain them at all. I will manually check some of the items it may or may not flag, like color contrast.

Microsoft Word: Accessibility Checker – How to Use



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We are about to look at the accessibility checker and I'm using some reports that CTC has developed for the Transportation Research and Connectivity Pooled Fund. So I want to be clear that we created a Section 508 Compliant document, however we have broken our accessible document in order to show you how to fix the most common errors.

Narrate running the checker and fixing the errors. Looks easy right? We'll dig into all of this in more depth and guide you through creating a document that passes the checker from the start. And that starts with using Styles and other formatting features built into Microsoft Word.

Microsoft Word: Styles – Why it's Important

- Help Screen Readers and Assistive Technology work effectively
- Help all readers with navigation
- Make formatting or changing formatting easy
- A good report template will give you the right Styles to start with.

The Styles feature in Word documents provides formatting instructions for headings, lists, captions and other components of a research report. Using this feature provides a consistently formatted document and also creates an accessible document structure that is recognized by screen readers and other assistive technology.

Use of these standard program features makes it easier for the document creator to organize content and ensures readability for the screen reader by establishing a logical reading order. Screen readers look for cues like Headings and captions to understand what order to read things in and even in some cases what emphasis to give them. Or where to add a pause.

And you don't have to figure this stuff out from scratch, you can use the Transportation Research and Connectivity Pooled Fund's 508 Compliance Research Report Template, which will give you a huge boost in using Style's effectively to start from the beginning creating a Section 508 compliant document.

It is so much easier to fix a few errors at the end, then to create a 100+ page report and have to remediate it after the fact.

Microsoft Word: Images and Graphics

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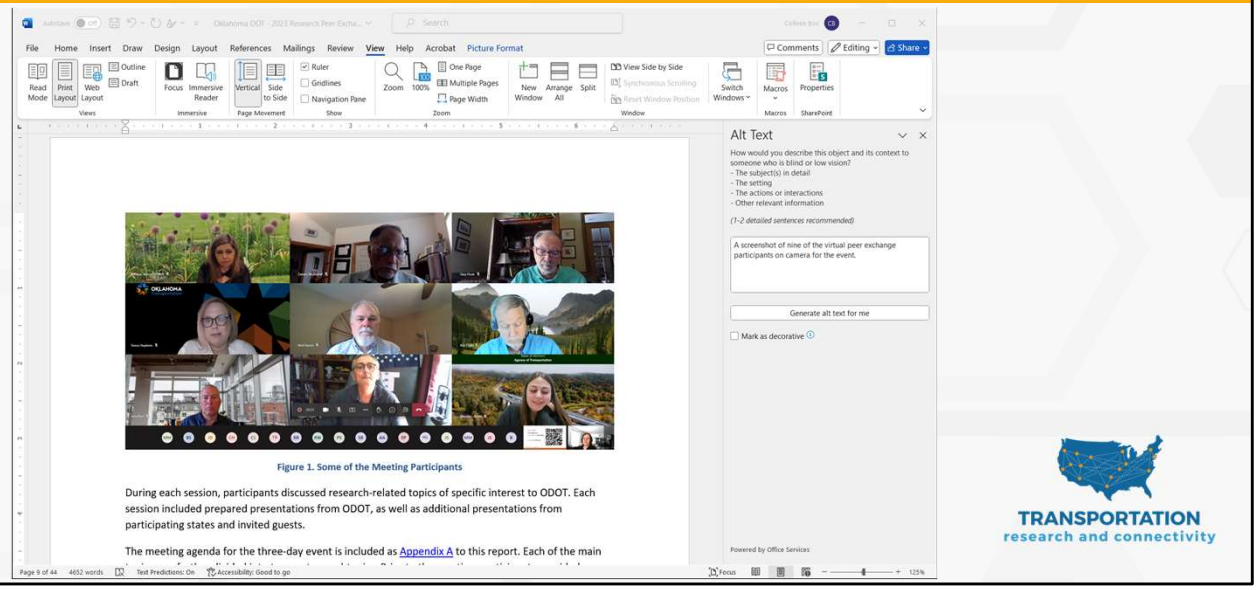
Charts, photos, graphics and other visual elements are a critical area for consideration when you are creating an accessible document.

They are often included in a research report to complement text and illustrate key points. The important thing as an author is to find ways to use visual elements that enhance a typical readers experience, but aren't the exclusive way to obtain the information you are trying to convey.

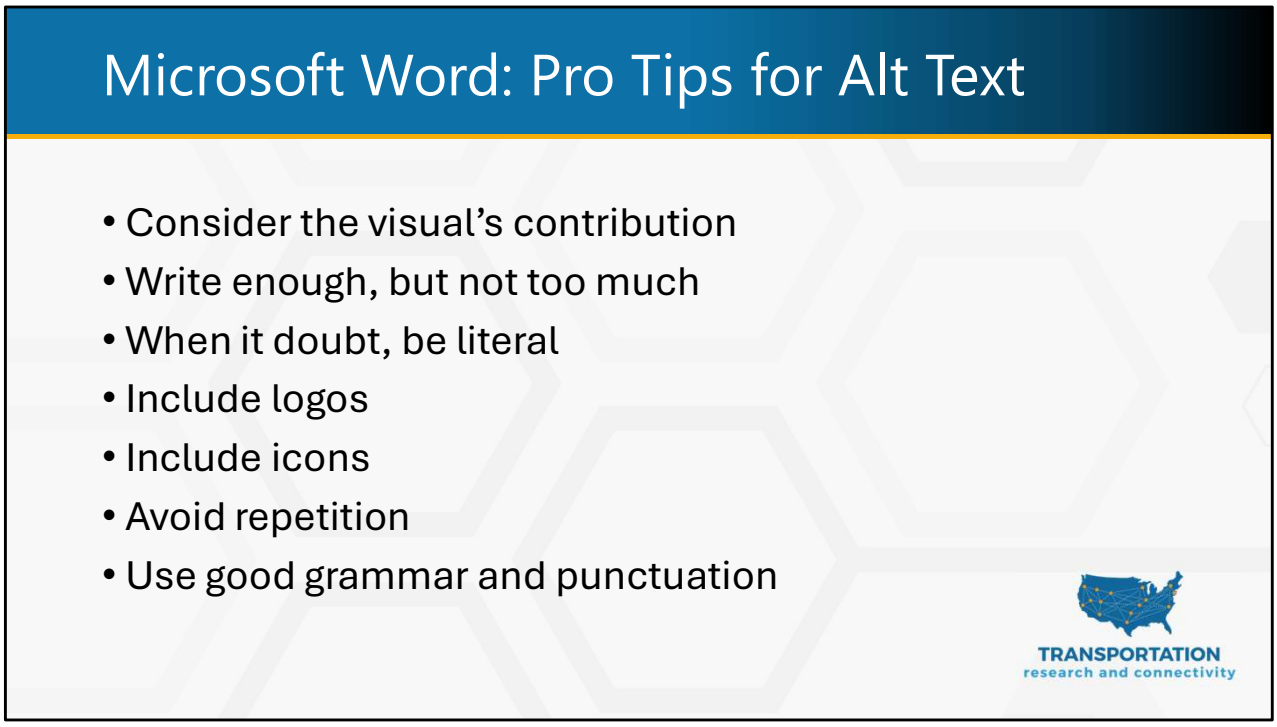
So, you might include an image like this if you were talking about highway congestion or safety to help your audience visualize the situation that your research is trying to explain. But visually impaired readers will not experience that visual emphasis, so you need to explain what the image shows. And how you explain any given image may depend on the context. If this was a study looking at the level of passenger car traffic vs bus and truck traffic, then we might give a different emphasis to the description.

Microsoft Word: Alt Text for Images



While screen readers and other text-to-speech tools can recognize that an image is present, they cannot tell users what the image is without help from alternative text (often referred to as “alt text”). Including alt text—a brief description of what is shown in an image—allows assistive technology tools (like screen readers) to describe the image to users with visual impairments, ensuring a more equitable reading experience for all users.
Note: Alt text is not visible in printed or electronic documents and won’t affect readers who don’t use assistive technology.

Alt Text explains what is going on in an image, so that a vision impaired person can understand the point it is trying to make. When the screen reader reaches an image, it will read both the caption of the image and the Alt Text. The goal of the Alt Text should be to build on the information in the caption and in the context of the document and not to duplicate it.



 Consider the visual's contribution. Recognizing why an image is included will help with writing thoughtful alt text that supplements the rest of the content without being repetitive.

 Write enough, but not too much. Too little alt text won't convey the meaning of the graphic, but too much may be burdensome. A good rule of thumb is to include what might be relayed over the phone.

 Describe the image literally. When describing a sign, consider its shape, color and words. Also describe the sign's orientation and placement if the

information is relevant.
- Include logos. Logos may seem decorative but they represent something meaningful. Providing alt text for these elements ensures that readers understand what's on the screen.
- Include icons. If a document displays a social media icon, for instance, write alt text that represents the icon's meaning. Such as "Visit MnDOT's Facebook page."
- Avoid repetition. Add alt text that's different from the information in the image caption or surrounding text.
- Use good grammar and punctuation. Capitalize and use commas, periods and other punctuation in alt text as you would for visible text so that screen readers pause in the appropriate places.
- Do your best. Not all screen readers are alike, and guidance that works well for one may not apply as well to another. In the end, effective alt text is simply a good-faith effort to supply comparable information to all readers.

Microsoft Word: How NOT to write Alt Text

- Don’t duplicate information in the caption
- Don’t say a “photo of” each time for a string of photos

Figure 3. Attendees' Responses to a Word Association Exercise

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It’s very important to think about the information that has already been provided by context of the narrative text surrounding the image, the caption and the Alt Text. They should work together to convey the critical information, especially information only available in the image.

If you have a report that includes 20 3D-rendered graphical images of an accident scene and one photograph of it, then it’s important to note that the one image is a photo. However, If the report has 200 photos of cracks in cement, then you don’t need to say

“This is a photo of…” each time.

We typically include images, such as charts or photos or 3-D renderings for a purpose. The Alt Text should explain what’s going on and what the purpose is without duplicating the caption or surrounding text. And here’s a good example of what I mean:

Here’s an example of a Word Cloud. The heading above explains that it was a question posed to a group of people to describe ODOT’s research program. The caption below indicates that the Words are from responses to a Word Association Exercise. So, the Alt Text doesn’t need to explain that background, it should just describe the content:

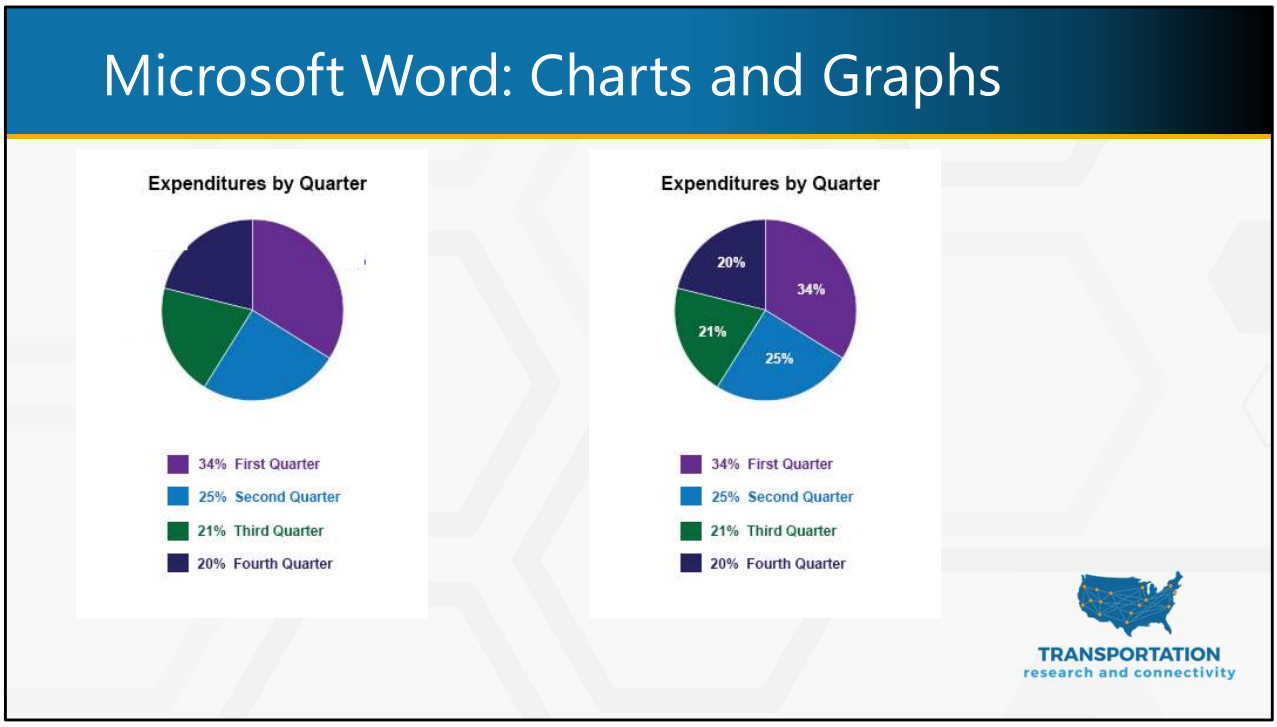
Bad Alt Text would be: “The results of a Word Association Exercise” Because it would duplicate the caption and not convey the words in the image.

A better Alt Text would be: “A colorful word cloud of terms attendees associate with ODOT's research program. Words include: Collaborative, Nimble, Solutions-oriented, Inspirational, Knowledgeable, Curious, Good Basement, Forward-thinking, Knowledgeable, Cohesive, Adaptable, Eager to learn more, Team, Experienced, Creative, Determined, Dedicated, Innovative, Comprehensive, Enlightening,

Informative, Productive, Goal Oriented, Balanced program, Teamwork, Focused.”

An even better approach might be to reorder the words from largest to smallest and say that.

Microsoft Word: Charts and Graphs



Clearly the image on the right is going to be easier for a person who is color blind to read and get information from. But it still requires Alt Text in order to make it accessible to an audience that is more completely visually impaired. I would say: This is a pie chart showing the percent of annual sales by quarter, as follows:
First Quarter = 34%
Second Quarter = 25%
Third Quarter = 21%
Fourth Quarter = 20%

However, I would note that if those same percentages had just been included in the paragraph above, I might not include the percentages in the Alt Text, because it's repetitious.

An example of bad alt text would be: "This is a chart of sales"
So this should give you an idea of how to write Alt Text and be considerate of low-vision readers when using images. But let's look at a more complex example.

Microsoft Word: Tables

- Understanding the difference between simple tables and complex tables.

- Simple = Accessible
  - One header row
  - No merged cells
  - Data in each cell

- Complex = Inaccessible

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Simple Tables – Header cells that directly relate to the cells below rather than multiple layers of headers. Simple tables are easy to follow with no merged cells and information in each cell.

Complex Tables – Often have merged cells or multiple headings; often missing information in cells. These aspects mess up the reading order from left to right. It's not that the data is complex. It's that the layout is complex. You can have very complicated data sets in a very simple table and vice versa.

Microsoft Word: Simple Tables

Table 1. Nonstandard Traffic Signs Used for Pedestrian and Cyclist Safety

District	Bike Lane Signs	Bus Stop Signs	Flashing Stop Signs	Hybrid Beacons	Parking/Biking Signs	Trail Signs
1	17	6	4	12	5	5
2	22	8	5	15	7	7
3	5	1	0	2	0	0
4	14	5	4	10	5	6
5	9	2	0	4	0	4

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Simple Tables – Header cells that directly relate to the cells below rather than multiple layers of headers. Simple tables are easy to follow with no merged cells and information in each cell.

Microsoft Word: Complex Tables

Table 1. Nonstandard Traffic Signs Used for Pedestrian and Cyclist Safety

Agency	Sign Type					
District	Bike Lane Signs	Bus Stop Signs	Flashing Stop Signs	Hybrid Beacons	Parking/Biking Signs	Trail Signs
1	17	6	4	12	5	5
2	22	8	5	15	7	7
3	5	1		2		
4	14	5	4	10	5	6
5	9	2		4		4

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Complex Tables – Often have merged cells or multiple headings; often missing information in cells. These aspects mess up the reading order from left to right

Side note: If anyone asks a question about Tables for Alt Text, remember that that is not the guidance. There is a place to do it, but screen readers often don't pick them up.

Microsoft Word: Simple Equations

Example:

X + 3 = 7

Equations can present some special challenges. Here's an example of a simple equation.

Most popular software applications can create simple equations and be read properly by assistive technologies as long as they are created correctly. This means making sure you are using a Unicode character that represents the mathematical symbol you want and not just a character on your keyboard that visually represents that symbol.

Microsoft Word: Complex Equations

$$\text{Annual Cost} = \frac{C \cdot R}{1 - (1 + R)^N}$$

Where:

C = treatment cost
R = discount rate (as a decimal)
N = expected service life (years)

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If it needs more than simple Unicode keyboard characters to convey, the best option is to insert it as an image and write alt text to explain the equation. You can use it in a separate file to create them, but Equation Editor doesn't allow Alt Text, which is why we recommend a screenshot.

Explanatory text in the body of your paper may also guide how much detail you need to provide in the Alt Text. For example the Alt Text for this equation would be as follows:

Equation defining the annualized cost of a pavement treatment. Equation reads: annual cost equals fraction numerator C multipled by R. The denominator is 1 minus begin parenthesis 1 plus R end parenthesis to the Nth power. Terms are defined in the report narrative.

And especially if the terms had not been described in the narrative above, I'd also include the following

Where:
C= treatment cost
R= discount rate (as a decimal)

N = expected service life (years)

Now, if C, R and N had been extensively defined above, I might not need to include that. With equations in particular, I often try to look at context to see the best way to describe it in context of the narrative.

Accessibility: Using Color

- Color can't be the only means of communicating information
- Use contrasting colors in design

Now we are going to talk about Color, this is the one issue where Read Aloud cannot help you determine if you are creating an accessible document. Color and visual cues such as size, shape or location on a page are used in documents to convey information or add aesthetic interest. But screen readers and other assistive technologies do not recognize colors or visual cues. If either of these methods is used in a document to convey meaningful information, descriptive text must also be used to make the document accessible.

The important points are:
Color can't be the only means of communicating information
Use contrasting colors in design

We will talk more about contrasting colors in a moment. First we'll look at different ways colors are used to convey information and how to make them accessible.

Accessibility: Using Color - Hyperlinks

Bad hyperlink:
https://transportation.libguides.com/ld.php?content_id=72846162

Bad hyperlink:
link here

Accessible hyperlink:
Read the Article on Guidelines for Preparing 508 Compliant Research Reports

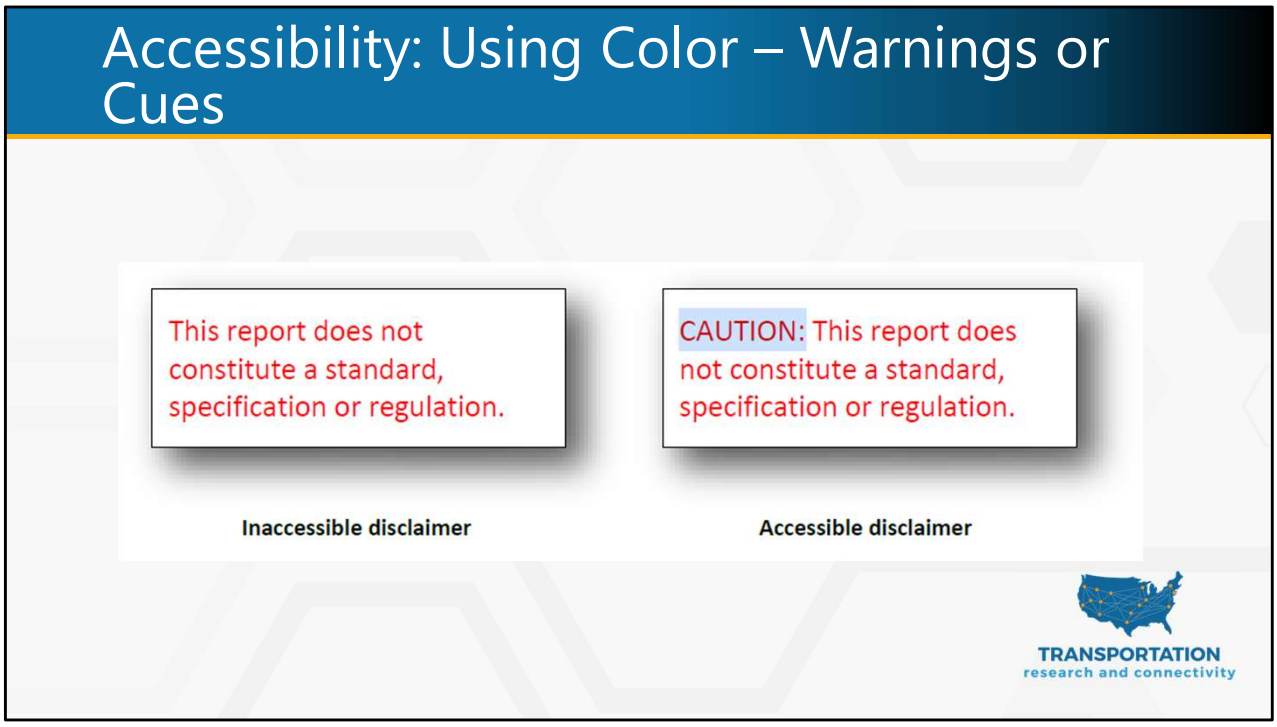
For assistive technology to correctly identify hyperlinks, you need to ensure the context surrounding the link or the link name adequately describes one of the following:

- Destination
- Function
- Purpose

Hyperlinks need to describe what you are accessing and use something other than color to convey that it's a Hyperlink. Such as underlining.

Here's a few examples of not accessible and accessible links. The last one is both a nice visual cue and also works well when read aloud. It tells you what it is and why to go there.

Accessibility: Using Color – Warnings or Cues



Color can't be the only way you convey a warning. Red text doesn't look like a warning if you are color blind. And the Reader would not read it with any special emphasis. Adding the Word Caution and using ALL CAPS is a way to really call it out for everyone in your audience.

Accessibility: Using Color - Contrast

Traffic Mode	Percentage
Automobile	42%
Pedestrian	15%
Transit	18%
Truck	25%

Inaccessible Color Contrast

Traffic Mode	Percentage
Automobile	42%
Pedestrian	15%
Transit	18%
Truck	25%

Accessible Color Contrast

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I appreciate this more as I age and require Reading glasses. It's harder to read text with low contrast, especially if it's in a small font. Easy to adjust contrast to make it easier to read. This probably seems fairly subjective, but that leads me to my next topic. Which is to point you to a few resources – there are free color contrast checkers available online. The Color Contrast Analyser and the WebAIM contrast checker.

Adobe Acrobat

The accessible Word file is seldom the end goal. It's usually the PDF that you are turning in that is the end goal, so we want to look at common errors that are found in PDFs and how to fix them using the Adobe software tools.

Adobe Acrobat: Accessibility Checker

- Advantages
  - Easy to use
  - May suggest fixes
- Limitations
  - Many errors originate in Word
  - Fixing those is an iterative process

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Advantages

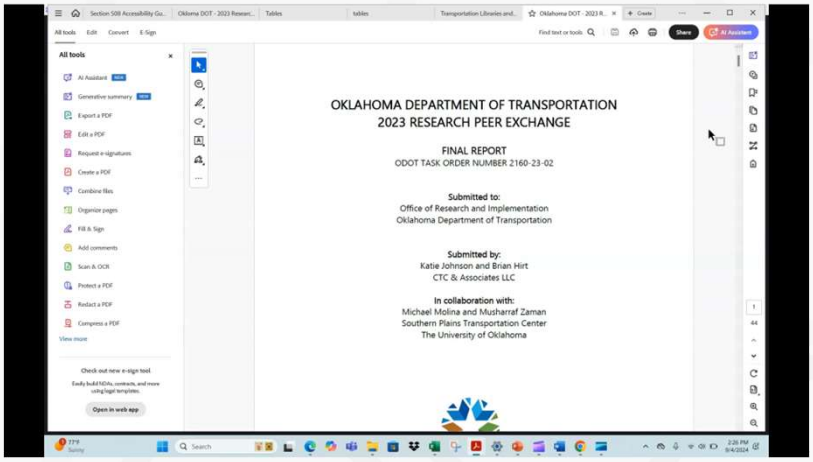
Easy to use and quickly identifies errors in PDF. Occasionally it even makes it easy to fix them.

Limitations

Most of your errors in PDF will have originated in Word, so it's an iterative process. Find an error in PDF, fix it in Word, check it again. There are some errors that originate in the Word to PDF conversion process and we'll address those too.

Let's look at each major category of errors and how to fix them.

Adobe Acrobat: How to run a check



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But first let's see how the Accessibility Checker works. Then we'll look at some of the most common errors.

Adobe Acrobat: Common Errors

- Document Properties
- Alternate Text
- Tables
- Page Content
- Headings

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There are a variety of errors.
Document Properties can be fixed in Adobe. These are things like making sure the document properties list a title and the language that the report is written in.
Page Content errors can also be fixed in Adobe, they related to how items like links or captions are tagged.
Alt Text goes back to Word and if you want an Accessible Word document, you should fix it there, but you can fix Alt Text in PDF if you need to.
Tables almost always have to be fixed in Word. I think the issue of identifying a Header row can often be missed by the Word checker, but the PDF checker

usually catches it.
Headings are using a conversion error and can be fixed in Adobe.

I typically run the checker, figure out what my errors are and fix all the Word errors first. Then once the only errors that are left are conversion errors, I focus on those. Otherwise, if you fix all the conversion errors in the PDF, then go fix your headers in Word and re-create the PDF, you'll have lost your work fixing conversion errors.

But before we get to strategies like that, let's just look at these different types of errors.

Adobe Acrobat: Page Content Errors

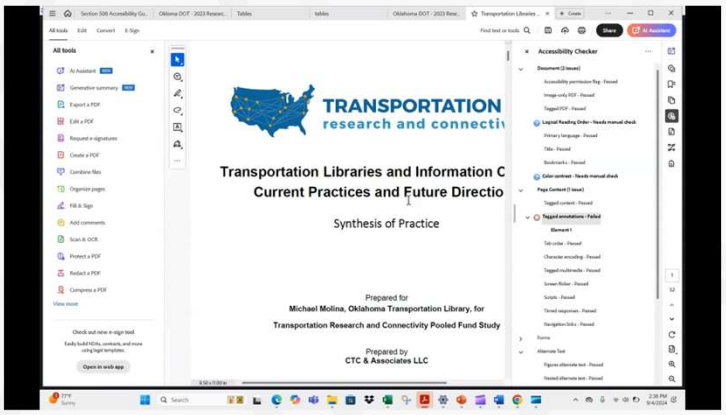
- Tagged annotations
- Tagged content

These errors seem to occur when a document is converted from Word to PDF. If there is a way to fix this in Word, I've not learned it, but it's easy to do in PDF.

This is a good time to say that there are tons of different kinds of errors that CAN crop up in Adobe. I'm going to share some resource at the end, so you can look up how to fix some of these things for yourself. Because the details are so specific and there are so many different ones that it is better to give you an overview here and then show you some guides that will help you to recall the detailed steps when you need them.

Adobe Acrobat: Page Content Fixes

- Tagged annotations



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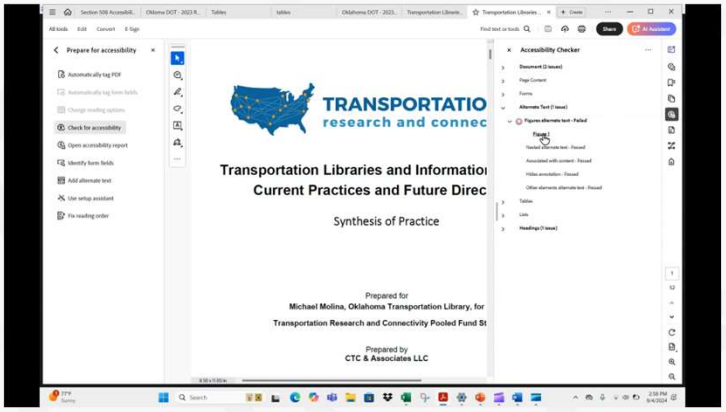
  - Narrate fixing Tagged annotations –going to content panel, find untagged and tagging.

Adobe Acrobat: Alternate Text



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- Figures alternate text failed – This goes back to Word. And you may or may not recall that we actually fixed this in the Word document. I made a point of taking that out before I converted to PDF, so we can see what an Alt Text error is in PDF and talk about fixing it.

- If you want your Word document to be accessible, correct that and then reconvert to PDF and the errors will be resolved in both documents. If you are only concerned, about the PDF, you can address the alternative text in

the PDF file.

- And here’s how you would do it.

Adobe Acrobat: List of Resources

- Section 508 LibGuide developed by CTC for the Transportation Research and Connectivity Pooled Fund Study, including
  - 508-Compliant Research Report Template (Word file)
  - Guidelines for Preparing 508-Compliant Research Reports
  - Section 508 Accessibility Guidance
- Common Adobe Accessibility Errors and How to Fix Them from the New York City Department of Education

Describe these resources

Questions?

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We'll have another session on October 22nd at 11:00 am central time. Try this guidance out and email me your questions and I'll make sure that I address them in Webinar 2, OR bring your questions to Webinar 2 and we'll get to as many as we can.