U.S. DEPARTMENT OF LABOR

Creating Section 508 Compliant Microsoft 2016 Excel Documents

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Document Revision History

Version	Date	Author	Change Description
1.1	3/1/19	OCIO	Reviewed version
1.2	5/16/19	OCIO	Updated after OPA review
1.3	5/22/19	OCIO	Updated identification of row/column headers
1.4	5/31/19	OCIO	Added additional information about repeating header rows
1.5	6/19/19	OCIO	Updated DOL standards
1.6	8/12/19	OCIO	Updated after review
1.7	4/27/20	OCIO	Corrected naming convention

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Introduction

Creating accessible Excel documents allow persons with a disability the same functionality as persons without a disability. Creating accessible documents is not hard. Using the functionality built into Excel, it actually makes creating spreadsheets easier and more efficient.

Purpose

This guide is intended to help DOL employees and contractors create accessible Microsoft Excel documents that are compliant with Section 508 requirements and accessibility best practices.

Excel documents should be used for data tables, and not for forms or layout purposes. Data tables are those tables where the information in a cell requires information from a row and/or column header to adequately describe the cell's content.

Document Properties

The document title, author, and language must be set as part of the document properties.

Set Title and Author

1. Select **File** tab
2. Select **Properties**
3. Select **Advanced Properties**
4. Enter document **Title** (not the file name)
5. Enter document **Author** as “United States Department of Labor” or “AGENCY NAME, “United States Department of Labor.”
6. Select **Ok**

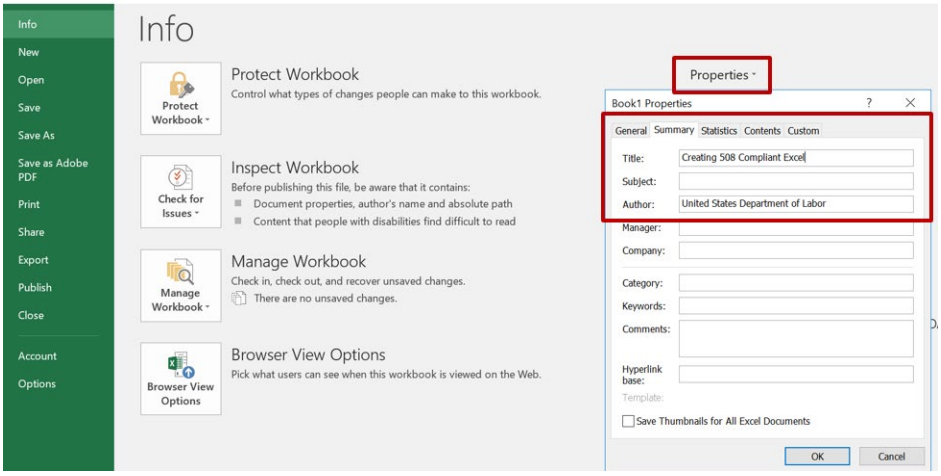

Figure 1. Properties window

Set Document Language

Note: If the language that is enabled is the one you want, you do not need to perform these steps.

1. Select **File** tab
2. Select **Options** (or press Alt key, then press T)
3. Select **Language** from list in the left of **Options** Word dialog
4. Under **Add Editing Languages**, select editing language you want to use
5. Select **Add**
6. Select **Set as Default**
7. Select **Ok**
8. Close Excel and reopen for changes to take effect

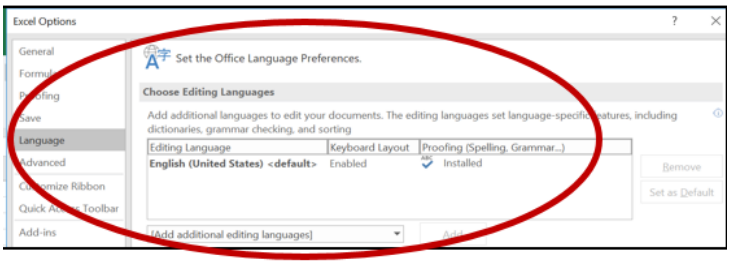

Figure 2. Set language window

Unique Sheet Names

Worksheets provide structure for the workbook. They group relevant information and users depend on unique sheet names to navigate the workbook. Avoid using the default sheet names such as “Sheet 1”, “Sheet 2”. The sheet names should be descriptive and provide sufficient information about the kind of data the spreadsheet contains. To name a sheet, either double click the tab text and begin typing, or right click > select **Rename**. Note that there is a limit of 31 characters for the sheet name.

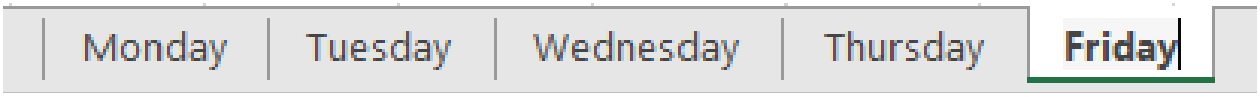

Figure 3. Sheet names

DOL Standards

The following DOL standards and best practices are required to increase accessibility, usability, and readability of information. Using underlines only on hyperlinks helps people find them and recognize them. Italics are hard for some people to read, and so is text that is smaller than 12 points. Left-aligning headings and text is easier for all people to read.

1. Only use underlines on hyperlink
2. Do not use italics (Make text bold instead)
3. Left-align headings and text
4. Do not use more than 2 fonts
5. Use text that is at least 12 points
6. Right-align numbers and dates

Tables

A few tips for developing Accessible Data Tables in Excel:

1. Use a simple table structure whenever possible
2. Do not use images of data tables, they are not accessible
3. Put headers into only first row and/or column, if possible
4. Avoid merged cells
5. Do not use split cells
6. Identify the header row (or column or both row and column)
7. Place data tables in-line so that assistive technology users can access the content

Creating a New Table

Use Excel's built-in function to create tables. You will need to name column and row headers. (See Naming Row and Column Headers).

1. Select cells to include in table
2. Select **Insert** tab
3. Select **Table**
4. Select **My table has headers** checkbox
5. Select **Ok**

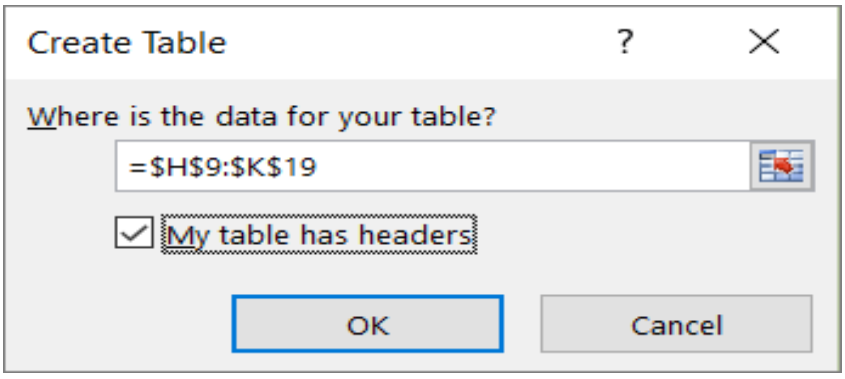

Figure 4. Create table headers

If you do not want the ability to filter the columns, uncheck the **Filter** checkbox.

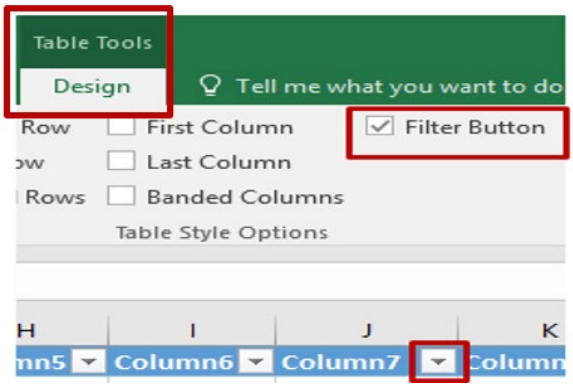

Figure 5. Column filter button

Naming Row or Column Headers (Single Table)

If you only have one table on the work sheet, use the following instructions. For multiple tables on the same work sheet, see Naming Row or Column Headers (Multiple Tables).

1. Enter headers into **ONLY** first row and/or column
2. Put focus in cell in first header (NOT title)
3. Select **Formulas** tab
4. Select **Define Name** button

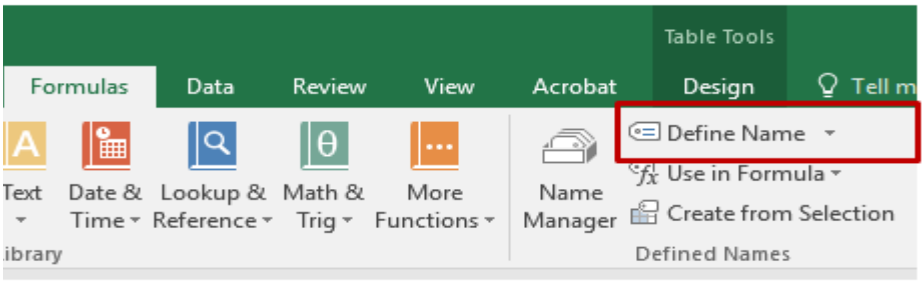

Figure 6. Define name

5. Within the window's **Name** field, replace the existing text with one of following three values, depending on the table's headers:
   - For **column headers only** (horizontal headers in lettered cells), enter **ColumnTitle**.
   - For **row headers only** (vertical headers in numbered cells), enter **RowTitle.**
   - For **both column** and **row** headers, enter **Title**.
6. Select **Ok**

Important: The header information only needs to be defined in the **first** cell for the data set. Do not repeat this step for other header cells within the same data set because this may cause conflicting information to be presented to users of assistive technology.

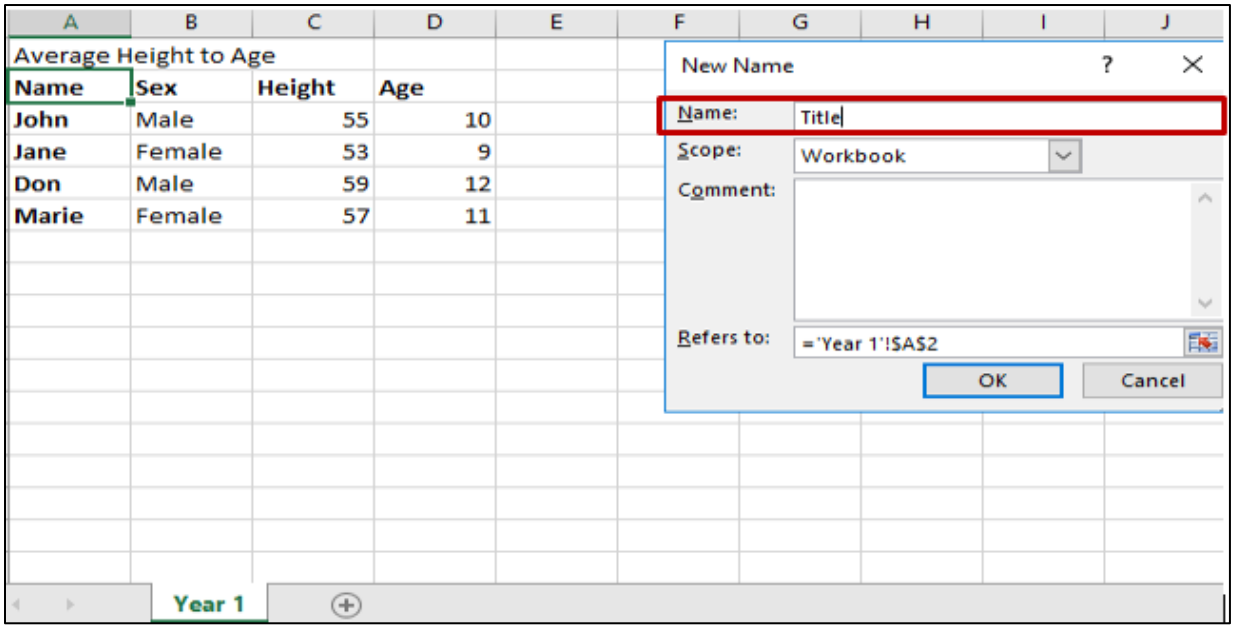

Figure 7. Enter column/row headers

Naming Row or Column Headers (Multiple Tables)

For worksheets with more than one table, repeat the following steps for each table.

Note: RowTitleRegion or **ColumnTitleRegion** can be used in place of **TileRegion** for tables that only have row or column headers.

1. Put focus in cell in first header in table (NOT title)
2. Select **Formulas** tab
3. Select **Define Name**
4. Enter **TitleRegion** in **Name** field
5. Apply following naming convention:
    - A unique number within the sheet
        - e.g., 1 for the first table, 2 for the second, etc., followed by a period (.)
    - The first (upper-left) cell in the table
        - e.g., A2, then a period (.)
    - The last (lower-right) cell in the table
        - e.g., D6, then a period (.)
    - The sheet number (1, 2, 3, etc)

Using this naming convention, the table's name would be **TitleRegion1.A2.D6.1**

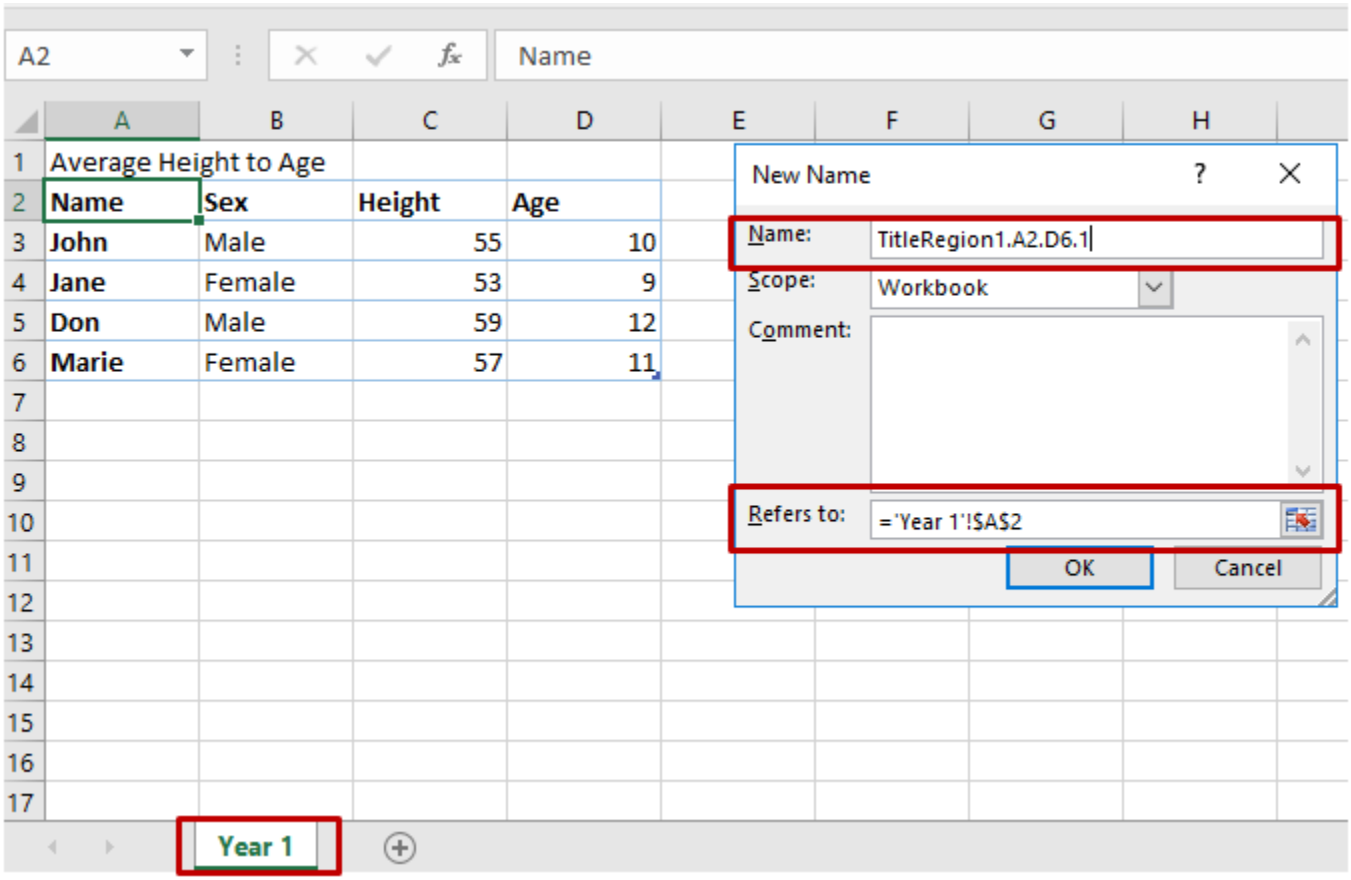

Figure 8. Enter column headers for multiple tables

Merged Cells

Merged cells should only be used for formatting purposes, i.e., within the **non-data** section of the table. For example, merging the cells within a header above a table as shown below would be acceptable, but would not be acceptable within the data area of the table.

Change Log			
Version	**Release Date**	**Summary of Changes**	**Name**
0.1	5/30/2008	First Release	Joe Smith
0.2	7/21/2008	Updated test ID #5 to include language from Pub 1075 on commingling. Added language to Test ID #8 note to clarify that GenTax is a stateless application.	Joe Smith

Figure 9. Example of a merged cell (Change Log)

Freezing Header Rows

Long lists of data are much easier to read if you freeze column or row headings to allow users to keep both the heading and the data visible. Freezing header rows doesn't interfere with a screen reader's ability to read the data.

Select the row below where you want the **Freeze** (or lock) to appear. To lock columns, select the column to the right of where you want the **Freeze** (or lock) to appear. (To lock both rows and columns, click the cell below and to the right of where you want the freeze to appear.)

1. On **View** tab, click **Freeze Panes**
2. To unfreeze rows or columns, select **Unfreeze Panes** in **View** menu
3. You can also use **Freeze Top Row** option, or **Freeze First Column** option to control row and column repeat function.

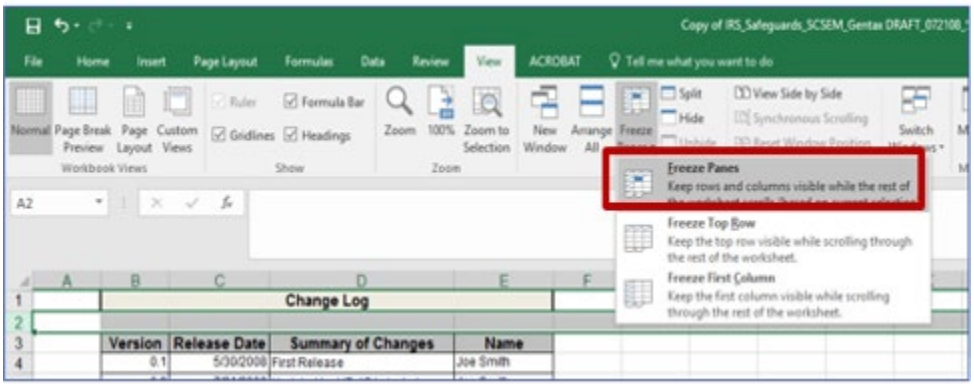

Figure 10. Freeze pane option

Repeating Header Rows Across Pages

It is not possible to have table header rows repeat across pages unless you are **printing** the workbook. For users who are using screen readers to access the file, a printed version will not be accessible. You can manually copy and paste the table header row into each worksheet.

Color

Color Contrast

Color contrast ratio between the text and the background is important. If it is too low, some people will not be able to read the text. The Section 508 color contrast standards require a minimum ratio of 4.5:1. Below is an example of low color contrast.

To test color contrast, you can use an on-line tool, such as the Color Contrast Checker. Just enter the foreground (text) and background colors in either hexadecimal or RGB format. The contrast ratio is displayed. To change the ratio, click on the slider bar.

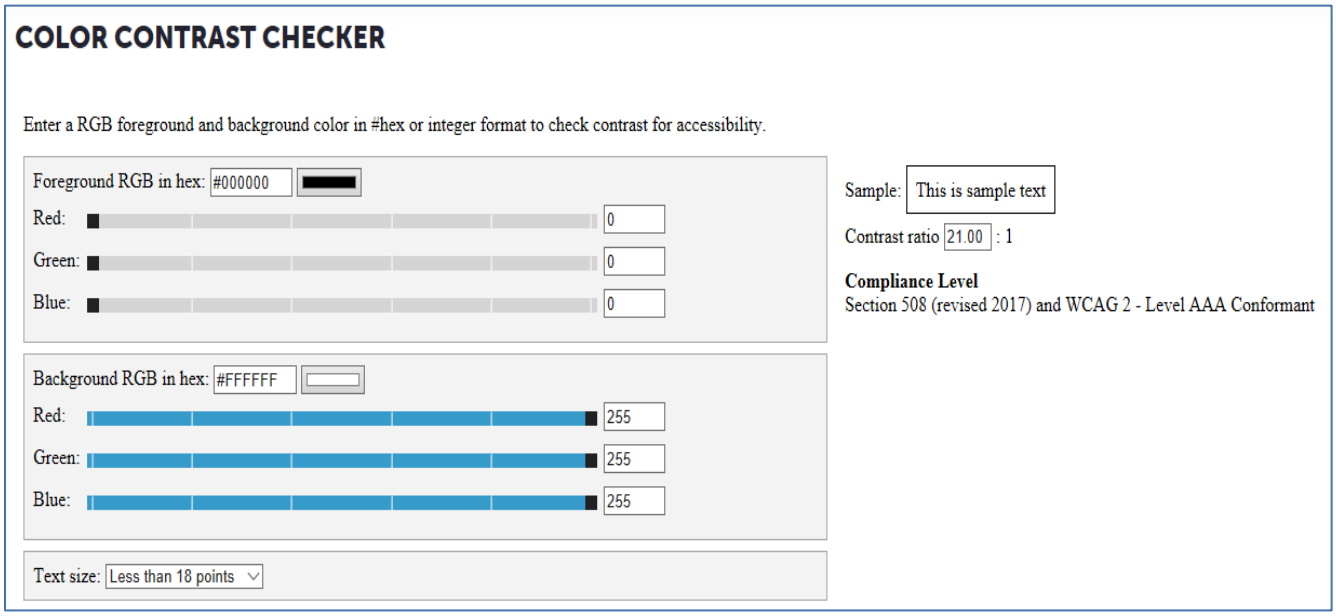

Figure 11. Color contrast checker

Another tool, which would need to be installed by your tech team, is the Color Contrast Analyzer. Enter a foreground (text) and background color in RGB or hexadecimal format (e.g., #FD3 or #F7DA39) or choose a color using the dropper tool to select the foreground and background.

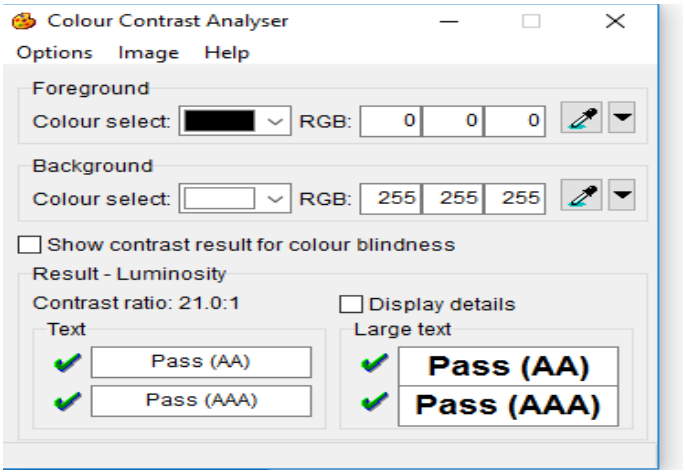

Figure 12. Color Contrast Analyzer

Color Conveying Information

Section 508 requires that when color is used to convey information, direction or other meaning; the same information must be provided in a way that does not use color. The form pictured below has three required fields. The required fields are in red. Someone who is colorblind (or blind) might not be able to tell which fields red. However, this form is Section 508 conformant: the required fields are also marked with an asterisk (*) – and the form instructions indicate that required fields are marked with an (*).

Figure 13. Meaning with color and alternate method

Axis Labels on Charts

Charts are a collection of accessible objects and are not grouped. All charts should have a **Title**, **Legend** and **Axis** labels associated. This gives users a number of reference points to use in order to correctly interpret the information being presented.

All graphics (images, grouped images and non-text elements) that convey information should have captions associated.

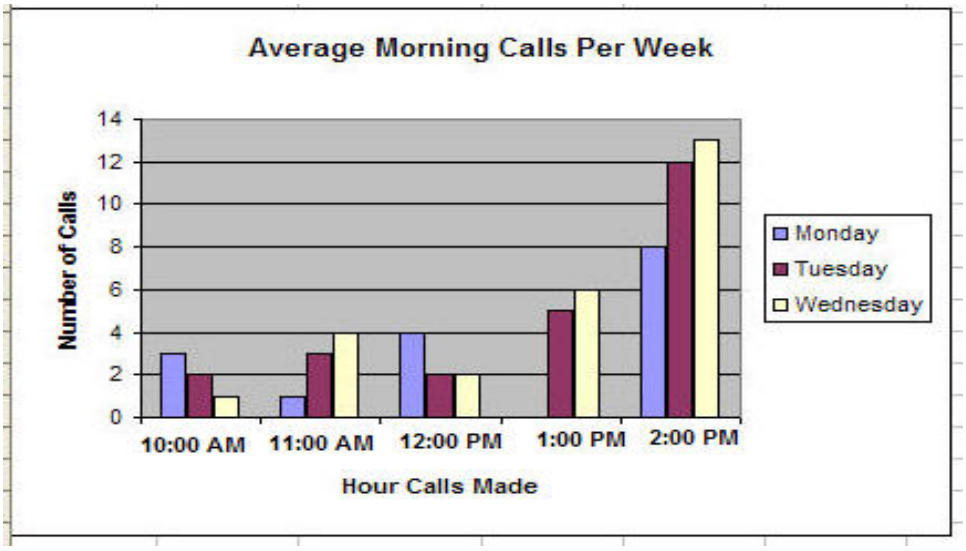

Figure 17. Chart with labelled axis

Grouping Multilayered Graphics

All worksheets with multi-layered objects must be flattened into one image and use one ALT text for the entire image. Use the instructions in the Add ALT text to Images chapter to add ALT text.

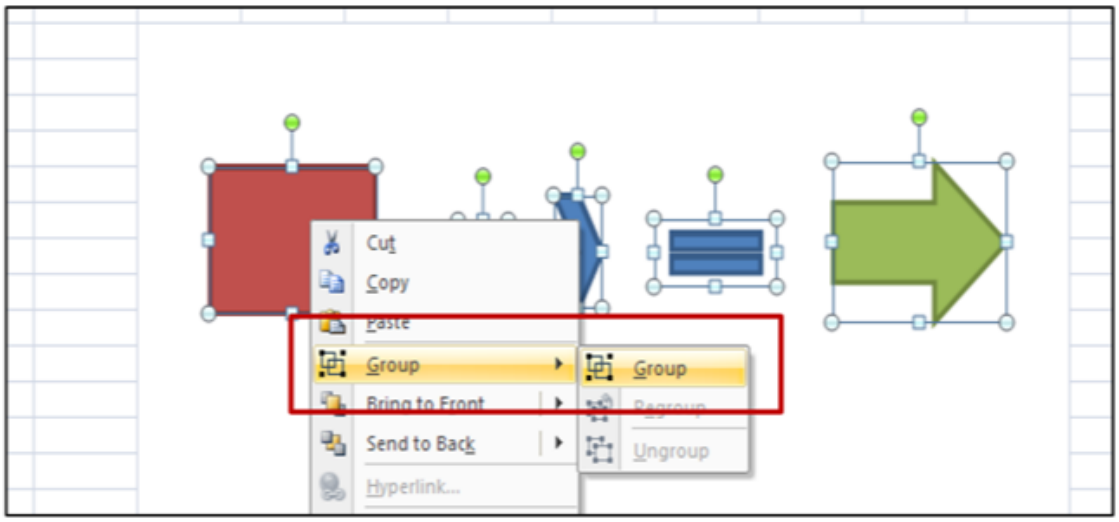

Figure 18.Example of multilayered graphic

Adding Alternative Text (ALT Text)

Adding alternative text (ALT text) is an important function to assure people with disabilities are able to effectively use the information contained in images within the document. ALT text allows Assistive Technology (AT) users to understand the images. All images that convey meaning need to be accompanied by ALT text, so that their purpose is communicated to people using AT.

ALT text needs to be manually entered, and the amount of information and detail given depends on the intended impact and purpose of the image.

For example, you are trying to demonstrate a technique to use during a storm, and you have an image of a single-family home with plywood over the windows. In your ALT text, the words "Boarded up house" convey more meaning and get to the intended purpose of the image more than just having the word "House."

ALT text **must** be used for all images, including grouped images, and all non-text elements that convey information.

Some best practices to keep in mind when writing ALT text include:

- Keep the text short while still being meaningful and informative. Ask yourself if the text can stand alone—that is, it should act as an equivalent for the image if the image were to be removed.
- Do not enter text in the **Title** field. Not all AT reads the **Title**, and if it does, the information will be read twice. If the document is converted to PDF, only the text in the **Description** field is retained.
- Don't use "photo of", "image of", or "picture of" in the ALT text because AT users are told it's an image.
- ALT text for the Department of Labor seal should be: "**United States Department of Labor seal**".

Add Alternative Text to Images

1. Select image
2. Right-click (or press Menu key)
3. Select **Format Picture**
4. Select **Size & Properties** icon (third image from left)
5. Enter text in **Description** field

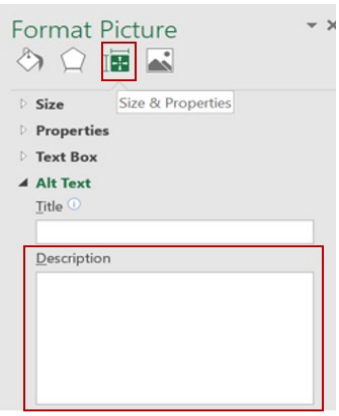

Figure 14. ALT text field for picture

Add Alternative Text to Charts

1. Select chart
2. Right-click (or press Menu key)
3. Select **Format Chart Area**
4. Select **Size & Properties** icon (third image from left)
5. Enter text in **Description** field

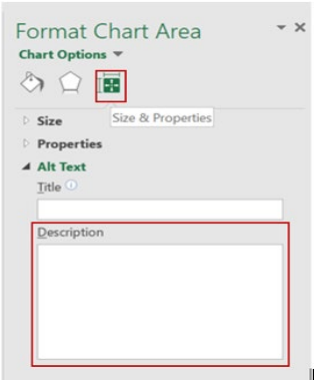

Figure 15. ALT text field for chart

Add Alternative Text to Pivot Tables

1. Select pivot table
2. Right-click (or press Menu key)
3. Select **Pivot Table Options**
4. Select **Alt Text** tab
5. Enter text in **Description** field

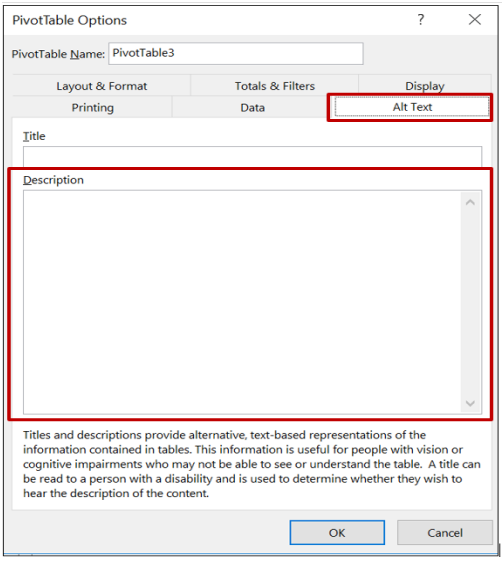

Figure 16. Add alt text field for pivot tables

What about Decorative Images?

Decorative images are lines, or rectangles, or anything used for layout. To determine if an image is decorative, decide if information or meaning would be lost if the image were removed. For decorative images, the ALT text should be: "**decorative**" (without quotes).

Fonts

Currently, Section 508 does not specify the requirements for choosing an accessible typeface. However, the following fonts are unofficially recommended:

- **Helvetica (Microsoft Sans Serif)**
- **Arial**
- **Verdana**
- **Franklin Gothic Book** (OCIO One Voice standard)

Using these fonts will promote ease of reading for most users. Sans-serif fonts are especially easy to read because they are generally more legible.

The Accessibility Checker

Use the built-in **Accessibility Checker** in Microsoft Excel as the first way to check accessibility. The **Accessibility Checker** helps you find and fix accessibility issues, just like **Spell Check** lets you know about potential spelling errors. The **Accessibility Checker** is available in Microsoft Word, Excel, and PowerPoint. It displays a report of the issues, explains why each issue might create a problem for someone with a disability, and recommends how to fix the issue.

Use the checker more as a guide rather than a hard-and-fast rule; just because the checker says the spread sheet is accessible, doesn't mean the spread sheet is fully accessible. The **Accessibility Checker** cannot find all the issues. Some issues can only be found by a person. For instance, it can tell if there is no ALT text, but it cannot tell if the ALT text makes sense. It's important to remember a few tips involving the **Accessibility Checker:**

- Some things like color contrast can only be checked manually. See the Color Contrast chapter for instructions.

- Review reminders about such as "Missing alternative text" for your charts and graphs.

To access the **Accessibility Checker**:

1. Select **File** tab
2. Press **Check for Issues**
3. Press **Check Accessibility**

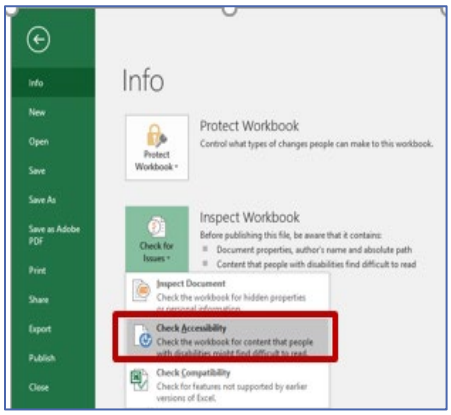

Figure 19. Check Accessibility option

Converting to PDF Format

Many documents are converted from Microsoft Word to PDF format. If you have created your Microsoft Word document accessibly, you will not have to do a lot to make the PDF version accessible.

1. Select **Acrobat** tab
2. Select **Preferences** tab
3. Select **Settings** tab
4. Check **Enable Accessibility and Reflow with Tagged PDF** checkbox
5. Select **Ok**
6. Select **Create PDF**
7. Select **Convert to PDF**

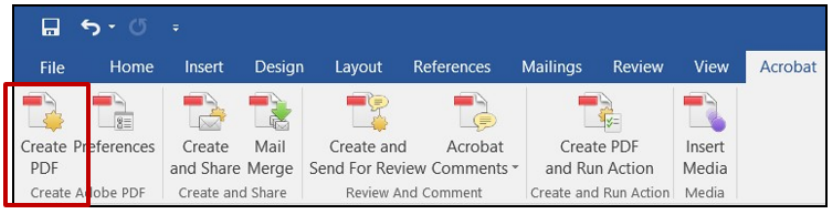

Figure 20. PDF options

Note: Do **NOT** check the Enable Advanced Tagging checkbox.

Adding Acrobat tab

If the Acrobat tab is not displayed:

1. Select **File** tab
2. Select **Options**
3. Select **Add-ins**
4. Select **COM Add-ins** from **Manage:** drop-down list
5. Select **Go**
6. If check box for **Acrobat PDFMaker Office Com Addin** is unchecked, check it
7. Select **Ok**

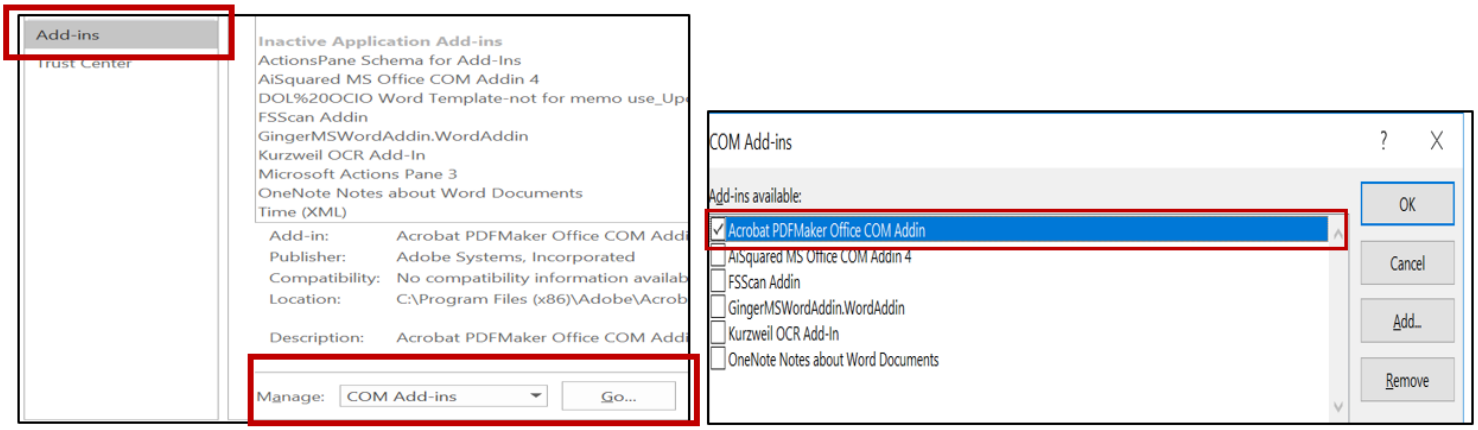

Figure 21. Adding Acrobat tab