

## Slides for Color Blind Audiences - Works in All PowerPoint Versions (Feb 09)

By Geetesh Bajaj

Color blindness is some sort of color vision deficiency which results in differences in the way that an affected person sees and distinguishes various colors. It is mostly inherited, but can also be caused due to damage in the eye, nerve, or brain. There is no proven way to change these vision deficiencies. More information on color blindness can be found on the [Wikipedia](#) site.

Plenty of research has gone into making web pages more accessible for color blind users. However, very little seems to have been done in the field of slides such as those created using Microsoft PowerPoint. When a color blind user looks at a PowerPoint slide, he or she might view it differently than other people, as I'll show you in **Figure 1** later. Even two color blind users may not see the same slide with the same vision -- there are three known varieties of color blind vision deficiencies:

1. **Deuteranope** is a form of red/green color deficit
2. **Protanope** is yet another form of red/green color deficit
3. **Tritanope** is a rare blue/yellow color deficit

**Figure 1** shows you an original slide with three variations -- one each for how a person affected with Deuteranope, Protanope, and Tritanope types of color vision deficits views the same slide. And of course, the first variation (top left) shows the original slide as it would be viewed by people who do not have color vision deficiencies.



Figure 1: Results for various types of color vision deficiencies

If you think the contrast between the background and text colors in **Figure 1** is not too bad, wait until you see **Figure 2**, in which we changed the text color from white to red while leaving the background the same. You can see that the results leave a lot less to be desired -- and the smaller text is either non-existent or unclear in this example.



Figure 2: More results for various types of color vision deficiencies using a red and green color combination

If you see the contrast values in the slide samples within **Figure 2**, you must have realized how important it is to make sure that your PowerPoint slide content has enough contrast so that it can be effectively viewed by those who have visual disabilities. It has been estimated that around 7% of men in the United States are color blind. In Australia, the figure is higher at 8%. Comparatively, in both countries 0.4% of women are color blind (Source: Wikipedia). Many more studies have been done on this subject.

Let me now show you how you can quickly make sure that all the slide content you create is suitable for color blind audiences.

You'll need your presentation slides saved to a graphic file format like PNG, and online access to the Internet. Follow these steps to get started:

1. Open the presentation in PowerPoint, and choose a slide that has most of the colors you have used in the presentation placed next to each other. With this slide active, export it to a graphic file format like PNG.

PowerPoint 2007 users can choose Office Button | Save As | Other Formats.

PowerPoint 2003 users (and users of previous versions) can choose File | Save As.

2. Either version then brings up the Save As dialog box that you can see in **Figure 3** . Choose PNG as the Save as type, and click Save.



Figure 3: Save as type

3. PowerPoint shows the dialog box that you can see in **Figure 4** , asking you if you want to export only the current slide, or all slides. At this point you can decide what works best for you -- if this is a small presentation, you might want to export all slides. For larger presentations, just export the current slide and repeat the process for slides that are representative of the rest of the slides in the presentation.

## Try Vischeck on Your Image Files

Select the type of color vision to simulate:

- Deuteranope (a form of red/green color deficit)
- Protanope (another form of red/green color deficit)
- Tritanope (a blue/yellow deficit- very rare)

Image file:

Figure 4: Export Slide

4. Thereafter, access the Vischeck site in your browser. A portion of that web page is shown in **Figure 5** .

## Try Vischeck on Your Image Files

Your Results:



Figure 5: Vischeck

5. Click the Browse button, and navigate to one of the PNG slides that you exported from within PowerPoint -- then choose one of the three color vision deficiencies, and click the **Run Vischeck!** button. Now wait a while for Vischeck to provide you with results.

6. Soon, you'll see the results in the layout that you can see in **Figure 6** . You can save the resulting image to your computer by right-clicking it and choosing Save Image As, Save Picture As, or a similar option.



Figure 6: Vischeck on Image

7. Repeat the process with the other color vision deficiencies, and any other PNG slides.

8. Once you have worked with your slide samples, make changes in color and contrast as required so that it is accessible to all audiences including color blind users.

**Note:** Vischeck also has a Photoshop compatible plug-in that allows you to run these tests on your local computer.

#### **About the author:**

Geetesh Bajaj is a Microsoft PowerPoint MVP. He has been designing PowerPoint presentations and templates for over a decade now, and heads Indezine, a presentation design studio based out of Hyderabad, India.

© 2009 Geetesh Bajaj