TOOLKIT for Making Written Material Clear and Effective

SECTION 2: Detailed guidelines for writing and design
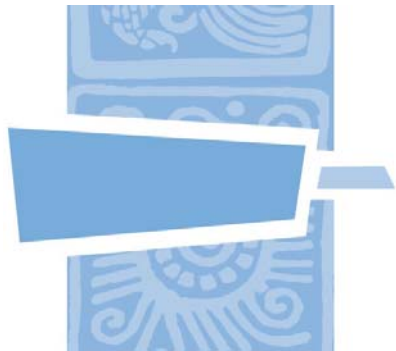
PART 5

Understanding and using the "Toolkit Guidelines for Graphic Design"

Chapter 5

Guidelines for use of color

TOOLKIT Part 5, Chapter 5

Guidelines for use of color

List of figures in this chapter:

This document is the fifth of eight chapters in Part 5 of the *Toolkit for Making Written Material Clear and Effective*. The Toolkit has 11 Parts. It was written for the Centers for Medicare & Medicaid Services (CMS) by Jeanne McGee, McGee & Evers Consulting, Inc. The guidelines and other parts of the Toolkit reflect the views of the writer. CMS offers this Toolkit as practical assistance to help you make your written material clear and effective (not as requirements from CMS).

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Introduction

About the Toolkit and its guidelines

The *Toolkit for Making Written Material Clear and Effective* is an 11-part health literacy resource from the Centers for Medicare & Medicaid Services (CMS). To help you develop or revise your written material, the *Toolkit for Making Written Material Clear and Effective* includes detailed guidelines for writing and design. There are 26 guidelines for writing and 46 for graphic design. For the full list, see Toolkit Part 3, *Summary List of the "Toolkit Guidelines for Writing and Design".*

About this part of the Toolkit

Part 5 of the Toolkit focuses on the guidelines for graphic design. These guidelines apply to designing various types of written material intended for use in printed formats (see Toolkit Part 1). (For discussion about material that is read on a computer screen, see Toolkit Part 8, *Will your written material be on a website?*)

What is this chapter about?

This is the fifth of the eight chapters on design in Toolkit Part 5. It explains how to apply the Toolkit Guidelines for use of color. As with all of the Toolkit chapters on design, this chapter assumes that you have not had formal training in design. For background on things to know about the Toolkit Guidelines for Design, see Toolkit Part 5, Chapter 2, *Guidelines for overall design and page layout*.

What aspects of design are covered in the other chapters?

The other chapters in Toolkit Part 5 cover the following topics: tips for learning about design and working with design professionals (Chapter 1); overall design and page layout (Chapter 2); fonts (typefaces), size of print, and contrast (Chapter 3); headings, bulleted lists, and emphasizing blocks of text (Chapter 4); use of photographs, illustrations, and clip art (Chapter 6); tables, charts, and diagrams (Chapter 7); and forms and questionnaires (Chapter 8).

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Using color in printed materials

Color is a powerful magnet for the eyes. Used carefully, it adds visual appeal and can draw your reader's attention and reinforce your main points. If you are able to add color, then do it. But don't feel that you must:

- **Color is helpful but not essential for effective materials**. It's great if you can add some color to your materials, but don't be too concerned if you can't. Well-designed materials can look good in black, white, and shades of gray. Moreover, adding color will not compensate for any weaknesses in design, and it may just make them worse.

- **For some materials, black and white may be the best choice**. For example, if materials will usually be reproduced by photocopying, they should be designed from the beginning to look good in black and white. Also, materials designed to be downloaded and printed should be designed to work well whether they are printed in black and white or in color (for more on this, see Toolkit Part 8, *Will your written material be on a website?*).

Two ways to add color

If your written materials are printed on a printing press, here are the two ways of adding color:

Spot color

A limited number of specified colors

- Uses ink that is premixed to match a specific color you choose from a sample book (such as Pantone or PMS colors)

- Typically is used for two-color or three-color jobs. Black is counted as one color.

- You can use your spot colors at their full strength ("100%") or in a full range of tints.

- Tints are lighter shades of the same color, given as a percentage of the full strength color, such as 20% or 65%.

Process color

The full range of colors

- Uses four inks (CMYK) to produce any and all colors.

- "**CMYK**" is the abbreviation for the four inks: **C**yan (blue), **M**agenta (purplish-red), **Y**ellow, and Blac**k**. Colors are defined as percentages of CMYK. For example, 100% Magenta plus 100% Yellow makes a strong red.

- Many word processing and desktop publishing programs let you define "custom" colors this same way, as percentages of CMYK (or just CMY).

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How much does it cost to add color?

If you are concerned about how much it may cost to use color in your written materials, investigate your options. It may not cost as much as you think to add some color to your materials, depending on how you do it. Here are some factors that affect the cost of using color:

- **The type of color you choose**:

<table>
<tr>
<td>Spot color

Two spot colors can be a lower cost option.

Spot color using two colors (such as one accent color plus black) is the lowest cost way to add color to your printed materials.

The cost of using three or more spot colors can be significantly higher.</td>
<td>Process color

Process color tends to cost more.

Process color costs more than using two spot colors.

The cost of process color may be similar to the cost of using three spot colors, depending on the material and how printing is done.</td>
</tr>
</table>

- **The printer and printing press that you use**. There can be big variations in price from one printer to another. If possible, get several bids from printers with good reputations for doing quality work. It can cost less to run the same job on different printing presses, so getting a good match between the press that will be used and the needs of your printing job will help keep your costs under control. For more about this, see *Getting it Printed: How to Work with Printers & Graphic Imaging Services to Assure Quality, Stay on Schedule & Control Costs* (Kenly & Beach, 2004).

- **The nature of your materials, including how you will use color**. Check with your graphic designer to see if there will be a difference in the expense of designing if you add color to your materials.

What about use of color in this Toolkit?

This Toolkit has been designed to allow for two methods of possible distribution. The initial distribution will be by website; the various Parts of the Toolkit will be posted in PDF format so that you download and print them. Later on, printed versions may be made available. For overall economy and flexibility in distribution method, we have produced a single version of the Toolkit. To ensure economical printing, the Toolkit uses only two spot colors. We use black for nearly all of the text, because it offers the best contrast with the paper and makes the text easier to read. We also use an accent color. Typically, this

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accent color is either green or blue. In this chapter on color, our restriction to only one accent color limits the range of examples we can give about using color.

List of guidelines covered in this chapter

This chapter discusses the guidelines for use of color that are shown below in Figure 5-5-a. (For the full list of guidelines for design, see Toolkit Part 3, *Summary List of the "Toolkit Guidelines for Writing and Design".*)

Figure 5-5-a. Toolkit guidelines for use of color.

Use of color
Guideline
#8.1

Choose colors that are appealing to the intended readers and free from unwanted connotations or problematic cultural significance. Depending on your audience, there can be much variation in the appeal and cultural connotations of various colors and color combinations. To avoid possible problems, get audience reactions to your color choices.

Use of color
Guideline
#8.2

Use color sparingly, in a consistent and deliberate way that reinforces the meaning of your messages and enhances their impact. Resist the impulse to use color in decorative ways that may distract people from the text. For greatest impact, use color with restraint. Using too much color creates "color overload" that can overwhelm and distract your readers. Be cautious about using color coding as a device. If you use color coding, do it in a consistent way and make the meaning clear to readers. Get feedback from readers to verify that they understand the color coding and find it helpful.

Use of color
Guideline
#8.3

Verify that the color scheme and shades of color work well from a design standpoint (including when the material is photocopied or printed in black and white). While color selection is partly a matter of taste, certain colors are less effective than others for text, shaded areas, and other design purposes. Check to be sure that the colors reproduce well when photocopied. If material with color is downloadable from a website, it may work best to produce a separate version for users who will print it in black and white. If you are using two colors in your material, it works best to make one of them black and use it for the text.

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Take into account that some readers are likely to have diminished or limited color perception. Check to be sure that your color scheme works well for people who do not perceive the full range of colors, and for older adults who may perceive color less vividly. Be cautious about using color coding in your materials.

*Use of color
Guideline
#8.4*

Source: Created for this Toolkit. For more about the guidelines and how to use them, see Toolkit Part 3, *Summary List of the "Toolkit Guidelines for Writing and Design".*

Choose colors that are appealing and culturally appropriate
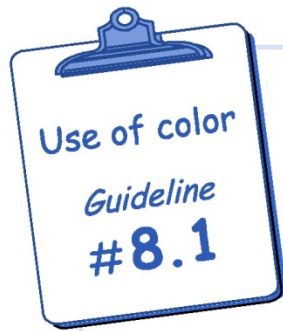
*Use of color
Guideline
#8.1*

Choose colors that are appealing to the intended readers and free from unwanted connotations or problematic cultural significance.

Depending on your audience, there can be much variation in the appeal and cultural connotations of various colors and color combinations. To avoid possible problems, get audience reactions to your color choices.

If you are using color in your materials, don't settle on a color scheme until you have checked on how your intended readers react to the colors. You'll want to be sure that they find the color scheme appealing, and that there are no problematic cultural meanings attached to the colors.

Choose colors that appeal to your readers

Remember that you are choosing colors for *your readers*, not for yourself. Your own personal preferences can be a poor guide. For example, if you favor subdued earth tones, you may find it hard to appreciate a bright and edgy color scheme that appeals to teenage readers. To be sure you are responding to your readers' taste rather than imposing your own, it's wise to get input on colors from your intended readers at an early stage.

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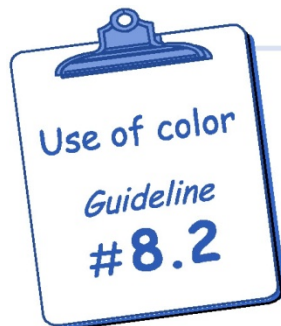CHAPTER 5: Guidelines for use of color   110

Choose colors that are free of problematic cultural meanings

Along with personal taste, culture has great impact on how people react to particular colors. When you are developing a color scheme, take care that you don't choose colors with problematic cultural meaning for your intended readers. To give just a few examples:

- In a discussion of color choices for materials written for Asians, a report about outreach to multicultural communities cautions against using colors associated with sickness or death or with particular nationalistic emblems. The report suggests using colors associated with pleasurable occasions instead (Washington State Health Care Authority, 1996:26).

- In some cultures, white may be associated with purity or it may be associated with death as well. For example, in many Central American cultures, white is the color of mourning. If you are developing materials for Central Americans, it is very important that health care providers not be portrayed in white lab coats. One hospital in Central America initially had most of their doctors wear white lab coats. Most of the local population refused to visit because they assumed that the doctors were wearing white because the hospital was a place to go to die, and/or that the doctors hastened death (personal communication, Donald Himes, 1999).

To learn about the cross-cultural connotations of colors, talk with your intended readers. Ask for their suggestions for good colors to use, and show them the colors you are considering. Reject any colors that seem likely to draw a negative or other unwanted reaction from members of your intended audience.

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Use color sparingly in a consistent and deliberate way

Use of color

Guideline

#8.2

Use color sparingly, in a consistent and deliberate way that reinforces the meaning of your messages and enhances their impact.
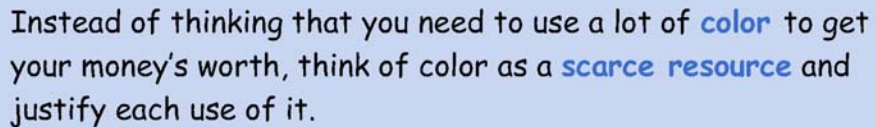
Resist the impulse to use color in decorative ways that may distract people from the text. For greatest impact, use color with restraint, since using too much color creates "color overload" that can overwhelm and distract your readers. Be cautious about using color coding as a device. If you use color coding, do it in a consistent way and make the meaning clear to readers. Get feedback from readers to verify that they understand the color coding and find it helpful.
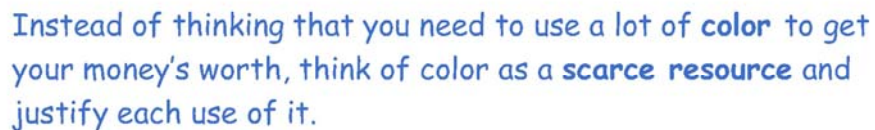
Use color with restraint

Just because you are using color in your print materials doesn't mean that you should use a *large amount* of color:

- **The more sparing you are in use of color, the more impact it will have.** Using color in one part of a page reduces the contrast available for using color elsewhere on the page. So the more you use color on a page, the less you notice each instance of color.

- **If you use too much color in your material, you create "color overload" that overwhelms your reader** and essentially destroys the impact of having color.

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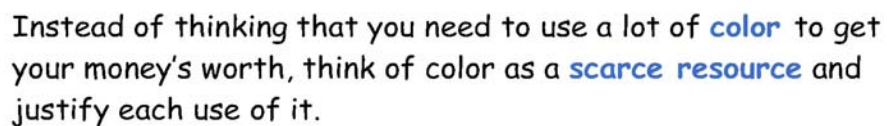CHAPTER 5: Guidelines for use of color   112

Compare the examples shown below. Which makes the most effective use of color?

Instead of thinking that you need to use a lot of **color** to get your money's worth, think of color as a **scarce resource** and justify each use of it.

Instead of thinking that you need to use a lot of **color** to get your money's worth, think of color as a **scarce resource** and justify each use of it.

Instead of thinking that you need to use a lot of **color** to get your money's worth, think of color as a **scarce resource** and justify each use of it.

The particular colors you use affect the threshold for color overload. For example, cool colors such as greens and blues tend to recede, compared to warm colors such as reds, oranges, and yellows. This means that you must be especially cautious about overuse of the warm colors, since it takes less of a warm color to catch the eye.

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Use color to emphasize what is important

To help readers understand your written material, use color in a thoughtful, deliberate way that reinforces the meaning of the information. To make effective use of color**, think of it as a magnet for the reader's eyes:**

- **Use color to pull your readers toward the most important parts of the material**. Add color to your document in a purposeful way, putting it where you want your readers to look. If you use color just to decorate, you will pull your readers toward less important parts of the material.

- **Use color in a concentrated way**. If you scatter color throughout a page, you will pull your readers in multiple directions. They will get distracted or overwhelmed. Instead, concentrate the use of color where you want to draw their attention.

- **Avoid using colored paper for your materials or colored backgrounds**. If the entire background is already in color, this weakens your ability to use concentrated doses of color in a deliberate way to draw the reader's eye. Moreover, colored backgrounds are a significant barrier to ease of reading. For more about this see Toolkit Part 5, Chapters 3, *Guidelines for fonts (typefaces), size of print, and contrast* (especially Figures 5-3-b and 5-3-c) and Toolkit Part 5, Chapter 4, *Guidelines for headings, bulleted lists, and emphasizing blocks of text* (especially Figure 5-4-d).

- **Be very cautious about using color for text**. For ease of reading, Guideline 6.7 advises using black (or very dark colored ink) for the regular text in your material (for discussion of this guideline, see Toolkit Part 5, Chapter 3, *Guidelines for fonts (typefaces), size of print, and contrast).* Using any color of ink other than black reduces contrast and makes text harder to read. If you want to use color to accent text in headings, choose the color with care. For more on this, see the next guideline in this chapter.

Tips for assessing the impact of color

When you are working with your layout, here are some tips for dealing with color:

- **Look through examples to get insights into use of color**. If you have collected a resource file with examples of written materials, it can be helpful to go through these examples to get ideas and help train your eye to notice how color is being used. People who are developing written materials sometimes disagree on how much color is too much color, and how to use color to emphasize what's important. You could go through the examples in your resource file as a group and discuss your reactions to how color is being used.

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- **To get a fresh perspective on use of color in your materials, try working first in black and white.** Make some photocopies of your material in black and white. Removing the color lets you focus first on the design, and then on use of color:

    o **Check first to see if the design is working well**. You can use this Toolkit's guidelines on design as an assessment tool (see Toolkit Part 3, *Summary List of the "Toolkit Guidelines for Writing and Design"*). If a layout is good, it should look good in black and white. If it is not looking good, make improvements before you go on to consider use of color. Adding color doesn't fix a layout that isn't working well, and can even make it worse.

    o **Using black and white copies as a tool, try out ways of adding color**. Study the material in black and white, and identify the areas that are most important for readers. Then think about possible ways to use color to accent those parts. Use colored markers to try out your ideas.

- **When you test the materials, watch for readers' reactions to the use of color**. Is it distracting them, or is it helping them use the material?

Be cautious about using color coding as a device

Sometimes, people who develop written material use color coding as a device to help readers see how the material is organized or help them find their way through it. For example, they might use one color to signal the first topic and a different color to signal the next topic.

It is challenging to use color coding in effective ways:

- **When you color code your material, you add an extra cognitive task for readers**. If color coding is to work well, readers must notice it, understand why it's there and what it means, and keep this in mind as they read the document. Sometimes this is easy for readers, and they find the color coding helpful. But the need to notice, learn, and remember a color-coding scheme can be burdensome, especially for less-skilled readers.

- **Some readers have trouble differentiating particular colors**. Depending on the colors you use, color coding can be problematic for some people because they have trouble seeing the differences between particular colors. Some people are unable to perceive the full range of colors from birth, and all of us tend to experience a decline in ability to perceive colors in later life. For more about taking into account your readers' ability to perceive colors, see the discussion of Guideline 8.4 later in this chapter.

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If you want to use color coding, do it with care. Here are some tips:

- **Choose colors that will be easy for people to distinguish, and use them consistently.** If you are color coding, a given color should always mean the same thing.

- **Try to reserve the colors** *only* **for color-coding purposes**. If you use a color in a coded way and also for other purposes, you will weaken the impact of the color coding and may confuse your readers.

- **Make the color coding clear to readers**. Take extra care to make the meaning and purpose of the color coding explicit.

- **Get feedback from readers to verify that the color coding is working as you intend.** Check to see whether readers are noticing the color coding, understanding its meaning, and finding it helpful.

Choose colors that work well for design purposes

Use of color

Guideline

#8.3

Verify that the color scheme and shades of color work well from a design standpoint (including when the material is photocopied or printed in black and white).

While color selection is partly a matter of taste, certain colors are less effective than others for text, shaded areas, and other design purposes. Check to be sure that the colors reproduce well when photocopied. If material with color is downloadable from a website, it may work best to produce a separate version for users who will print it in black and white. If you are using two spot colors in your material, it works best to make one of them black and use it for the text.

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While reactions to color are partly a matter a personal taste, some colors work better than others for particular purposes in a document. This section discusses ways to help ensure that your use of color enhances readability rather than reducing it.

Black is by far the best choice for text

Use black for all or nearly all of the text in your materials. Black is the best color for text because it offers the highest contrast with the paper and is therefore easiest to read (see Guideline 6.7 in Toolkit Part 5, Chapter 3, *Guidelines for fonts (typefaces), size of print, and contrast*). If your materials are for people with Medicare, keep in mind that the normal age-related decline in vision makes good contrast even more essential (see Toolkit Part 9, *Things to know if your written material is for older adults*). Using black for most or all of the text, including headings, is generally a good idea.

As we've seen, using two spot colors is the most cost-effective way to add color to your materials. **If you use two spot colors, make one of them black and use it for most or all of the text**.

Sometimes, materials that use two spot colors choose two colors that *don't* include black, as a way to expand the range of colors with least expense. For example, a piece might be printed in deep purple and forest green, or in navy blue and dark brown. Omitting black is not a good idea:

- **Color combinations such as purple and green or navy and brown expand the range of color, but lose a lot in ease of reading**. Printing *all* of your text, including blocks of regular text, in a color such as purple, green, navy blue, or dark brown makes it less legible. This colored text offers less contrast than black text, and is invariably harder for people to read.

- **Omitting black makes color overload more likely**. Color combinations such as purple and green or navy and brown are more likely to produce color overload than the combination of black and an accent color. When black is used, shades of gray are available. Gray helps reduce color overload because it is softer and more subtle than shades of many other colors. Gray is a neutral color that provides a place for eyes to rest in the presence of other colors.

If you use color for text, use special care to make it as readable as possible

Printing text in a color other than black makes it harder to read. For examples that compare text in blue with text in black, see Figures 5-3-b and 5-3-c in Toolkit Part 5, Chapter 3, *Guidelines for fonts (typefaces), size of print, and contrast.*

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If you use color for text, here are tips to keep the material more readable:

- **Use colored text only as an accent for small amounts of text**. Printing text in a color other than black tends to reduce ease of reading and comprehension (Wheildon, 2005). If you want to use colored text, use it as an accent for words, short phrases, or headings. Don't print blocks of text in color.

- **Choose a color that offers good contrast**. For colored text, stick to deep, bright colors that offer enough contrast for ease of reading, such as rich shades of red or burgundy, green, blue, or purple. Do not use colors such as yellow, gold, orange, and light tan for text. Text in such light colors is extremely hard to read because it offers little contrast with the paper.

- **Choose a font that is heavy enough for good contrast**. In general, it's easier to read colored text that is printed in boldface rather than standard or lighter type. It may help to use a sans serif font rather than a serif font (Toolkit Part 5, Chapter 3 explains about serif and sans serif fonts).

- **If you use colored text, don't put it on a colored background.** It's hard enough to read most colored text when it's on a white or cream-colored background. If you print colored text on top of a colored background, you reduce the contrast even more.

Are there any all-around best colors to use?

The quick answer is no, there are no all-around "best" colors to use, because each color has tradeoffs depending on how it used. To help you judge how well a particular color might work for different purposes, there are reference books that show tints and text in color (ask your graphic designer).

To give just two examples of tradeoffs associated with particular colors:

- Deep yellow gold is great to use for design elements, but terrible to use for text. If you plan to put black text on a light shaded background, a very pale shade of yellow-gold is probably your best bet for ease of reading.

- Used in deep shades, red is a great accent color for design elements, but pale tints of red can be unappealing. Deep red can be okay for small amounts of text in headings, depending on the font.

If you are using full color, you can use any given color selectively for the applications where it works best. If you are using spot color, choosing a color is more complicated. If you are using black plus one other color (the most economical choice), what should you choose as your other color? Here are some things to consider:

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- Is the color culturally acceptable and generally pleasing to members of your audience?

- If you plan to use the color to accent an occasional heading, does it offer enough depth and contrast to work well for this purpose?

- Does the accent color look good in the full range of shadings that you need? For example, some shades of violet look good at full strength but quite unpleasant in a pale tint.

- And finally, does the accent color have enough contrast for people who have limitations in color perception? (For more about this, see the next guideline in this chapter.)

It may be hard to find a single color with all of the characteristics you need. Perhaps some of the characteristics are less important to your materials than others. In general, shades of blue and green are the most versatile for use in combination with black. Some shades of purple are also flexible enough for a range of applications.

If you are using full color in your materials, emphasize a group of colors that look pleasing in combination

Instead of using the full range of colors, it often works better to pick a smaller group of colors that look good in combination (a color palette). Since a given color can be good for some design uses but not others, your color palette should include at least one color that will work well for each way in which you plan to use color in your material.

Using a limited group of colors as the dominant ones in your material will help give it unity, encouraging readers to focus on your messages rather than how the colors keep changing. If you are using clip art, you can often alter the colors to fit with your color palette (there is more about editing clip art in Toolkit Part 5, Chapter 6, *Guidelines for photographs, illustrations, and clip art).*

Will the materials be photocopied or downloaded and printed?

If you are preparing material in color, it's always wise to check on how well your color scheme holds up when the material is photocopied.

If you are distributing the material by posting it to a website, you will need to design the material with this distribution method in mind. For example, the size should be 8 ½ by 11 inches, to match the paper that people will be using to print the downloaded document. Also, for convenience to users, you may want to provide two versions of PDFs, one in color and one in black and white that is optimized for photocopying.

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Take into account how your readers perceive colors

Use of color

Guideline #8.4

Take into account that some readers are likely to have diminished or limited color perception.

Check to be sure that your color scheme works well for people who do not perceive the full range of colors, and for older adults who may perceive color less vividly. Be cautious about using color-coding in your materials.

Whatever color scheme you use, check to see if there is sufficient contrast among all of the text and visual elements of your design. Good contrast is especially important for readers who have limitations in their perception of color:

- **If your materials are for people with Medicare, take into account the normal age-related changes in perception of colors**. Aging affects people's ability to perceive colors. As we grow older, colors of green, blue, and violet tend to look a little grayer and may be harder to see. In general, to make a color scheme work well for older readers, you may need to sharpen the contrast and pump up the colors a bit to make them brighter. A color scheme that looks a little harsh or garish to some people may not be perceived that way by older readers who have experienced a loss in color perception.

- **Think about how well the colors you are considering will work for readers who cannot perceive the full range of colors.** Some people are born with limited ability to perceive certain colors. This is much more common among males (about 1 in 12) than among females (about 1 in 200). The term "color blind" is often used to describe this limitation in color perception, but the term is misleading (and some find it culturally inappropriate). People born with this condition do not see the world in shades of gray. Almost all (99%) only have trouble distinguishing between reds and greens. See McIntyre (2002) and the website **http://webexhibits.org/ causesofcolor/2.html** for good introductions to the topic. If you are developing material for the web, the website **http://www.vischeck.com** gives a computer simulation that shows how things look to people who cannot perceive the full range of colors.

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End notes

References cited in this chapter

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> 2004 *Getting it printed: How to work with printers & graphic imaging services to assure quality, stay on schedule & control costs.* Fourth edition. Revised by Eric Kenly. Cincinnati, OH: How Design Books.

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> 1996 *Washington State: Increasing health coverage in ethnic and racial minority communities. Summary Report — African American, Asian/Pacific Islander, Hispanic/Latino, Native American/Alaskan Native, and Russian-Speaking Communities*. Olympia, Washington: State of Washington Health Care Authority. December.

Wheildon, Colin

> 2005 *Type & layout: Are you communicating or just making pretty shapes*. With additional material by Geoffrey Heard. Hastings, Victoria, Australia: The Worsley Press. (Note: This is the second edition of this book. The first edition was published in 1996 and titled *Type & layout: How typography and design can get your message across—or get in the way.*)

Resources

For good resources on using color in written material, see the books listed in Figure 5-1-a of Toolkit Part 5, Chapter 1, *Tips for learning about design and working with design professionals*.

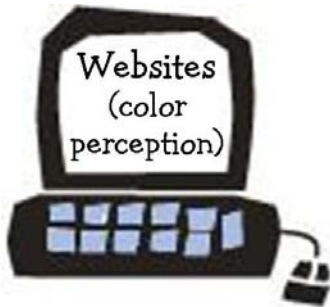Here are references on color perception:

Books about color perception
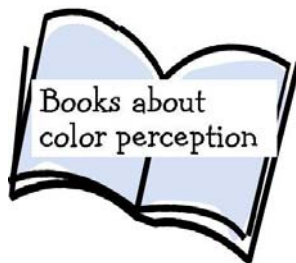
McIntyre, Donald

> 2002 *Colour blindness: Causes and effects*. Dalton Publishing, 33 Eaton Road, CH4 7EW, UK: Dalton Publishing. http://www.daltonism.org.uk/. In the U.S., this book can be ordered from The Color Vision Store, http://www.colorblind.to/index.html.

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> 2001 *The physics and chemistry of color: The fifteen causes of color*. Second edition. New York: John Wiley & Sons.

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If you are developing material for the web, the website **http://www.vischeck.com** gives a computer simulation that shows how things look to people who cannot perceive the full range of colors. It was developed by scientists Robert Dougherty and Alex Wade at Stanford University.

For a detailed discussion of limited color perception, see the website **http://webexhibits.org/causesofcolor/2.html**. This website is part of a larger website that discusses color, how and why we perceive it. The material on this website is based on Nassau (2001), listed above under books.

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