

Promoting Learning through Purposeful Imagery

Center for Teaching and Learning





JOHNS HOPKINS

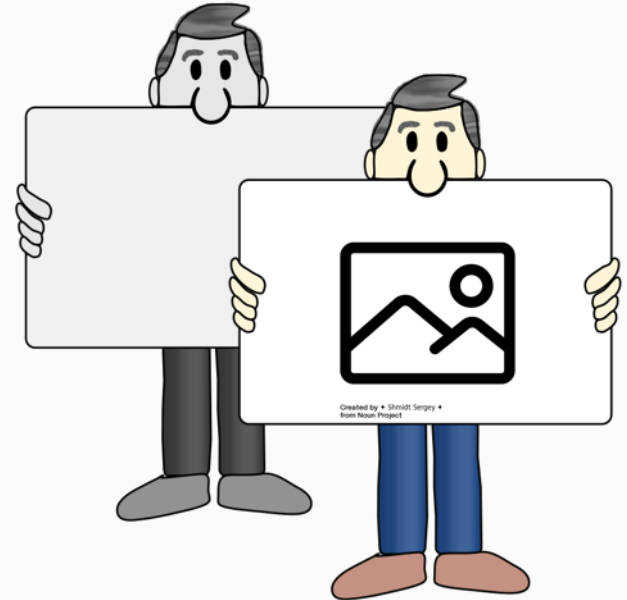
BLOOMBERG SCHOOL
of PUBLIC HEALTH



Pedagogy: Rationale and Implications

Promoting Learning

- ▶ Teaching with images enhances curriculum in a variety of ways:
 - ▶ Engagement
 - ▶ Reinforcement
 - ▶ Deeper (Sensory) Connections
 - ▶ Visual Literacy



The Many Roles of Images

▶ Intended

- ▶ Information
- ▶ Critical thinking
- ▶ Engagement
- ▶ Reinforcement
- ▶ Design

▶ Unintended

- ▶ Personal connections and separations
- ▶ Visual literacy
- ▶ Iconic

Purposeful Selection of an Image

- ▶ Does it demonstrate, add to, or reinforce a concept or objective?
 - ▶ Can it stand alone?
 - Consider context of surrounding text
 - Consider chronology in lecture
 - ▶ Is it a stimulus?
 - Consider all changes/reactions
- ▶ Is it an identifier/navigation aid?
 - ▶ Identifiers should be “low effort”

Purposeful Selection of an Image, cont.

- ▶ Is the media sensitive to:
 - ▶ Audience
 - Prior knowledge
 - Cultural responsiveness, etc.
 - ▶ Sustainability
 - Time (will it become dated?)
 - Design/Theme
 - Copyright vs. fair use

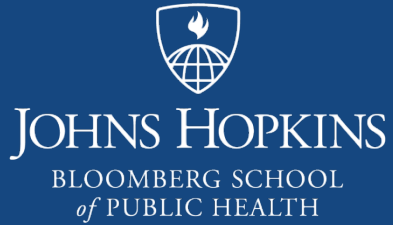


JOHNS HOPKINS

BLOOMBERG SCHOOL
of PUBLIC HEALTH



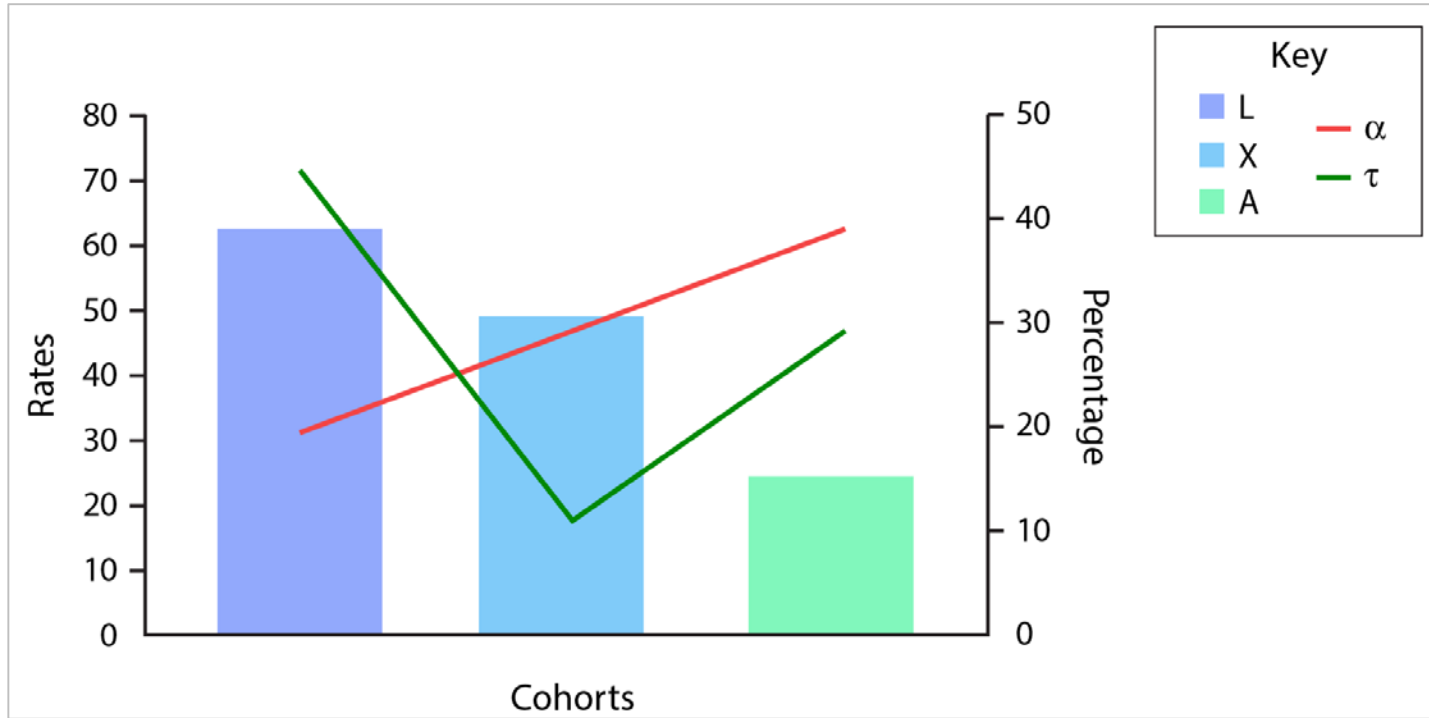
Design, Sources, and Knowing the Law



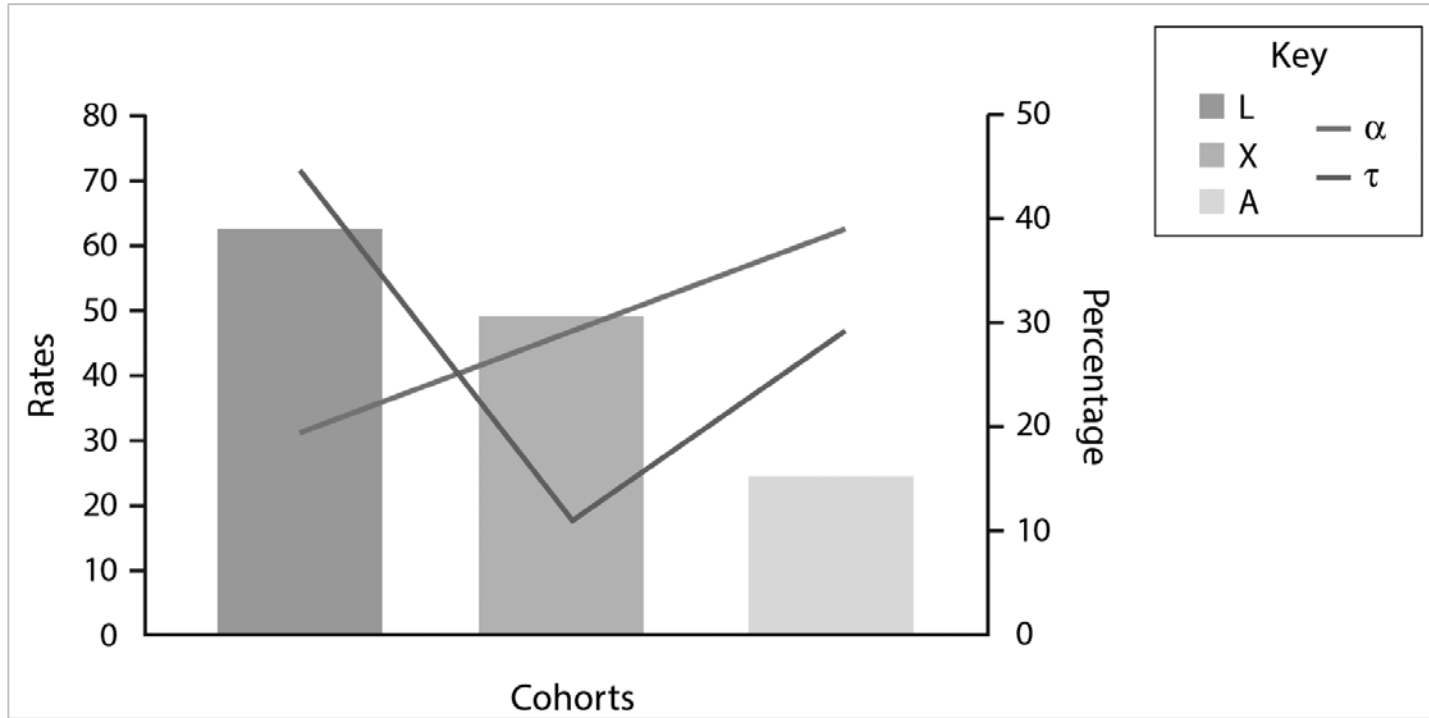
Selection of images

The material in this video is subject to the copyright of the owners of the material and is being provided for educational purposes under rules of fair use for registered students in this course only. No additional copies of the copyrighted work may be made or distributed.

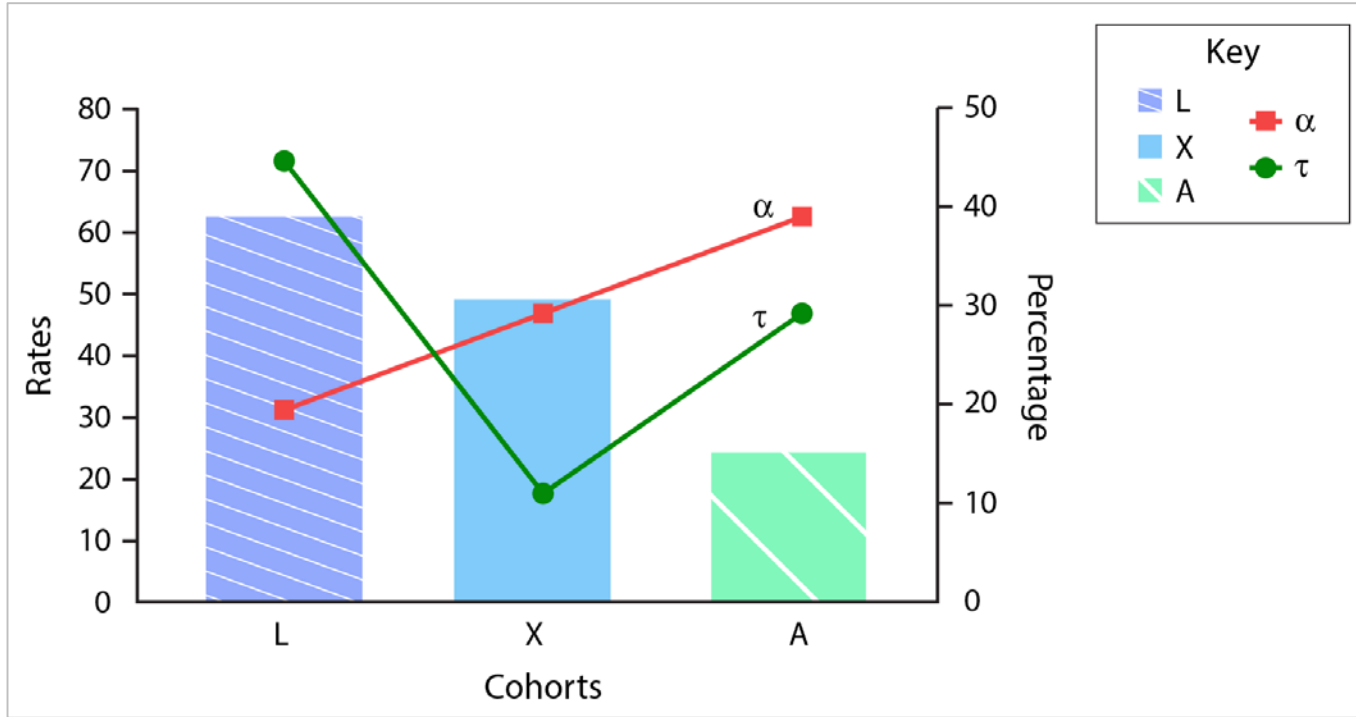
Color as the sole distinguishing characteristic



Try viewing it in black and white



Possible solution – 1



Accessible maps

► ColorBrewer – color advice for cartography

► <http://colorbrewer2.org>

The screenshot displays the ColorBrewer 2.0 web application interface. At the top right, the logo reads "COLORBREWER 2.0 color advice for cartography". The main interface is divided into several sections:

- Number of data classes:** A dropdown menu set to "3".
- Nature of your data:** Radio buttons for "sequential", "diverging" (selected), and "qualitative".
- Pick a color scheme:** A grid of color scheme thumbnails.
- Only show:** Checkboxes for "colorblind safe" (checked), "print friendly", and "photocopy safe".
- Context:** Checkboxes for "roads", "cities", and "borders" (checked).
- Background:** Radio buttons for "solid color" (selected) and "terrain". A "color transparency" slider is also present.
- 3-class RdBu:** A legend showing three color swatches: orange (#ef8a62), white (#f7f7f7), and blue (#67a9cf).
- EXPORT:** A button for exporting the map.

The main map area shows a map of Pennsylvania with a 3-class diverging color scheme applied to its counties. The colors used are orange, white, and blue. The interface also includes navigation links at the top: "how to use", "updates", "downloads", and "credits". At the bottom left, there is a copyright notice: "© Cynthia Brewer, Mark Harrower and The Pennsylvania State University" and links for "Source code and feedback", "Back to Flash version", and "Back to ColorBrewer 1.0". At the bottom right, the "axismaps" logo is visible.

Font size and sufficient visual contrast

Investigate

Mauris neque erat, tristique a ornare eget, dapibus vitae lacus. Donec lorem dui, faucibus in tincidunt ut, pospuere ut ipsum. Aenean dignissim ut ex et ultrices. Praesent scelerisque mollis justo sed tincidunt. Mauris aliquam sagittis facilisis. Pellentesque pellentesque aliquet ex eu lacinia.

Decide

Suspendisse varius purus non erat accumsan cursus. Etiam convallis, dolor sit amet aliquam elementum, libero neque finibus turpis, et malesuada arcu ex in mi. Pellentesque at elit congue lorem fermentum aliquet. Duis efficitur dictum arcu, vitae congue quam tristique et. Suspendisse potenti. Quisque tempor quam vel magna venenatis, quis viverra ex varius. Etiam ut convallis mi. Nunc facilisis urna ac purus luctus sagittis. Vestibulum tristique elit consequat neque iaculis semper. Nam hendrerit sagittis magna sit amet venenatis.

Vivamus fermentum ante nec rhoncus luctus. Quisque et sodales lorem, euismod tempus metus. Donec cursus turpis in neque molestie viverra. Praesent rhoncus mauris at felis dictum egestas. Mauris ut diam vitae mauris tempus hendrerit. Aliquam suscipit id diam quis pretium. Integer tincidunt, nisi a varius lobortis, magna purus efficitur urna, at commodo nibh arcu ut leo. Mauris ac tempus metus. In non aliquet ligula. Suspendisse eget nisi ut nisl cursus volutpat. In volutpat auctor lacus, sit amet pellentesque ipsum.

Option 1

Mauris neque erat, tristique a ornare eget, dapibus vitae lacus. Donec lorem dui, faucibus in tincidunt ut, posuere ut ipsum. Aenean dignissim ut x et ultrices. Praesent scelerisque mollis justo sed tincidunt. Mauris iquam sagittis facilisis. Pellentesque pellentesque aliquet ex eu lacinia.

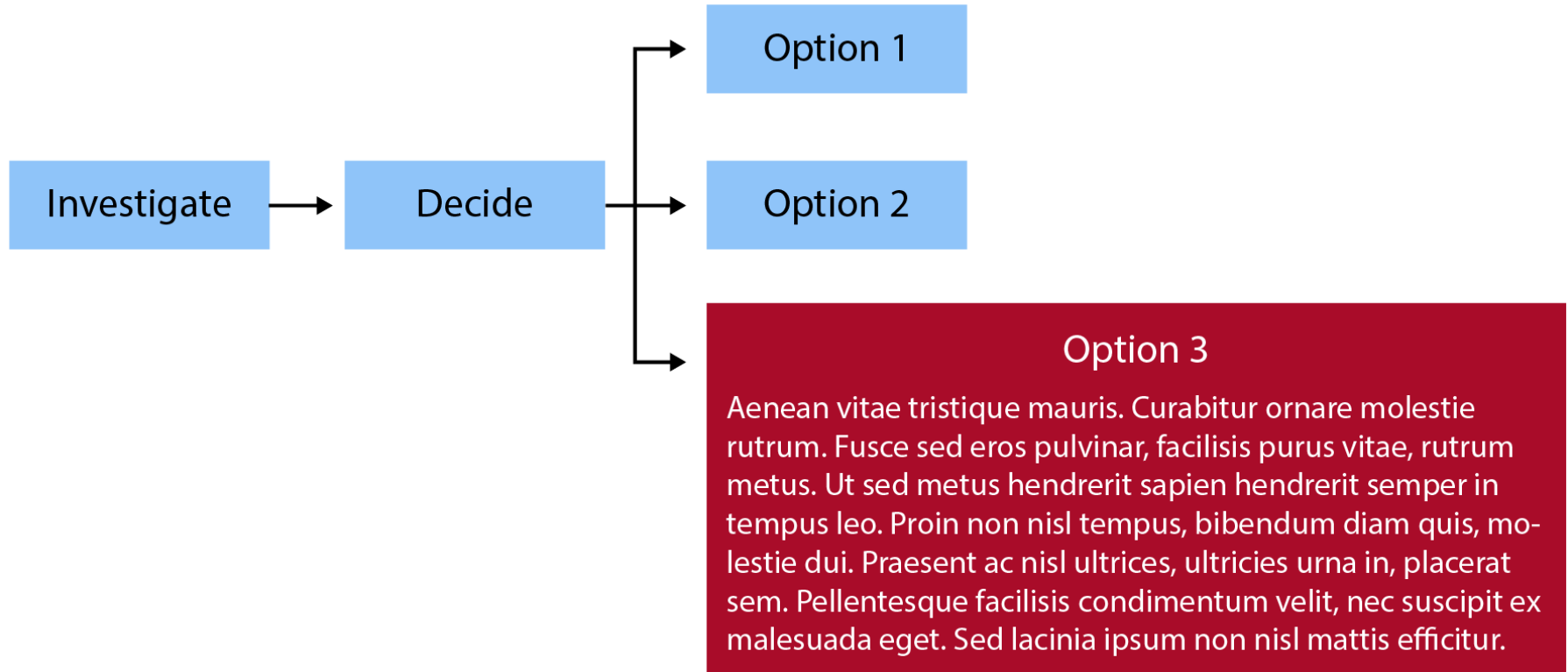
Option 2

uisque tempor quam vel magna venenatis, quis viverra ex varius. Etiam t convallis mi. Nunc facilisis urna ac purus luctus sagittis. Vestibulum istique elit consequat neque iaculis semper. Nam hendrerit sagittis magna sit amet venenatis. ivamus fermentum ante nec rhoncus luctus. Quisque et sodales lorem, uismod tempus metus. Donec cursus turpis in neque molestie viverra. raesent rhoncus mauris at felis dictum egestas. Mauris ut diam vitae mauris tempus hendrerit. Aliquam suscipit id diam quis pretium. Integer ncidunt, nisi a varius lobortis, magna purus efficitur urna, at commodo bh arcu ut leo. Mauris ac tempus metus. In non aliquet ligula. uspendisse eget nisi ut nisl cursus volutpat.

Option 3

enean vitae tristique mauris. Curabitur ornare molestie rutrum. Fusce ed eros pulvinar, facilisis purus vitae, rutrum metus. Ut sed metus hendrerit sapien hendrerit semper in tempus leo. Proin non nisl tempus, bibendum diam quis, molestie dui. Praesent ac nisl ultrices, ultricies urna in, placerat sem. Pellentesque facilisis condimentum velit, nec suscipit ex malesuada eget. Sed lacinia ipsum non nisl mattis efficitur.

Possible solution – 2

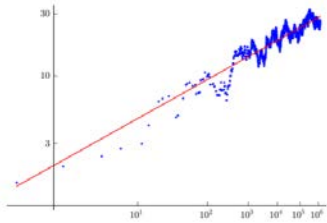


Contrast Checker

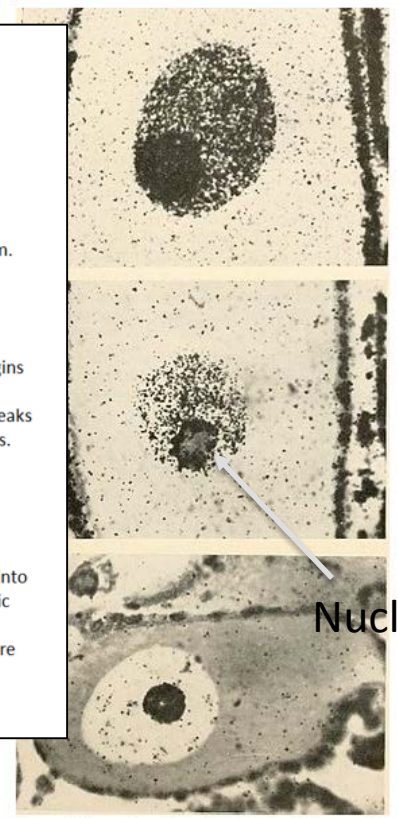
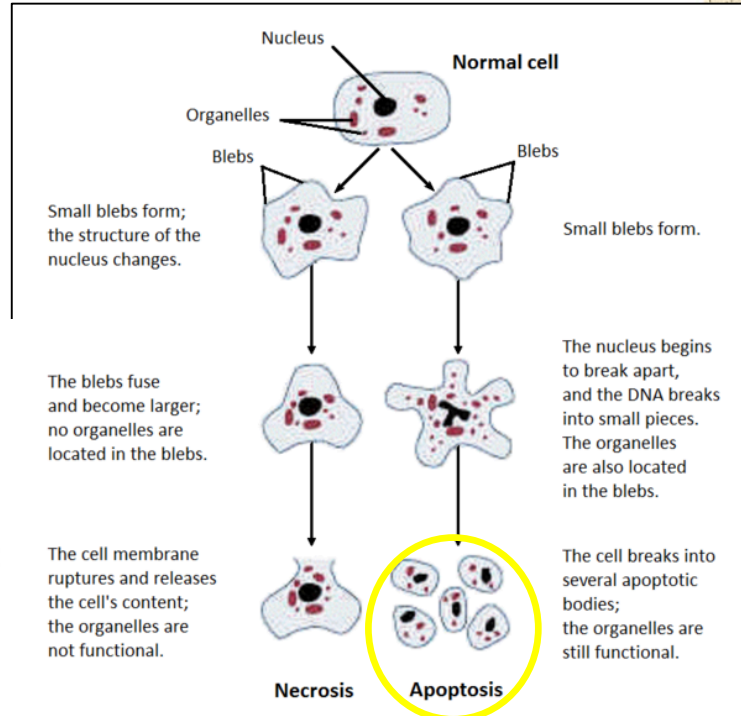
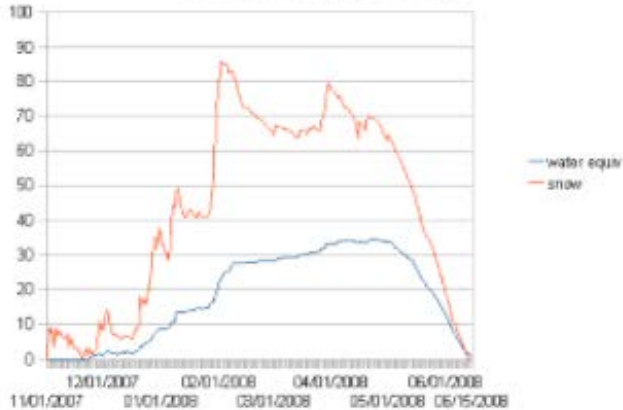
▶ <http://contrastchecker.com>

The screenshot shows the 'CONTRAST CHECKER' interface. At the top, it says 'COURTESY OF ACART COMMUNICATIONS, INC.' Below that is the 'COLOR SELECTION' section. On the left, there are two input fields: 'FOREGROUND' with the value '000000' and 'BACKGROUND' with the value '8FC4F9'. To the right of these fields are two sample boxes. The first is labeled 'Sample 12pt' and contains the text 'Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy eliusmod rom tempor incididunt ut lsbore et dolore magna aliquam erat volupat.'. The second is labeled 'Sample 18pt' and contains the text 'Lorem ipsum dolor sit amet, consectetur adipiscing elit'. Above the sample boxes are three buttons: 'SEE GRAYSCALE', 'SHARE SAMPLES', and 'RESET'. Below the sample boxes is a button labeled '+ ADD TO HISTORY'. At the bottom of the interface, there are six green circular buttons with white text and checkmarks: 'AA', 'AAA', 'AA_{18pt}', 'AAA_{18pt}', 'PASS', and '588'. The 'COLORS' and 'COLOR DIFF' labels are positioned above the 'PASS' and '588' buttons respectively.

Too busy

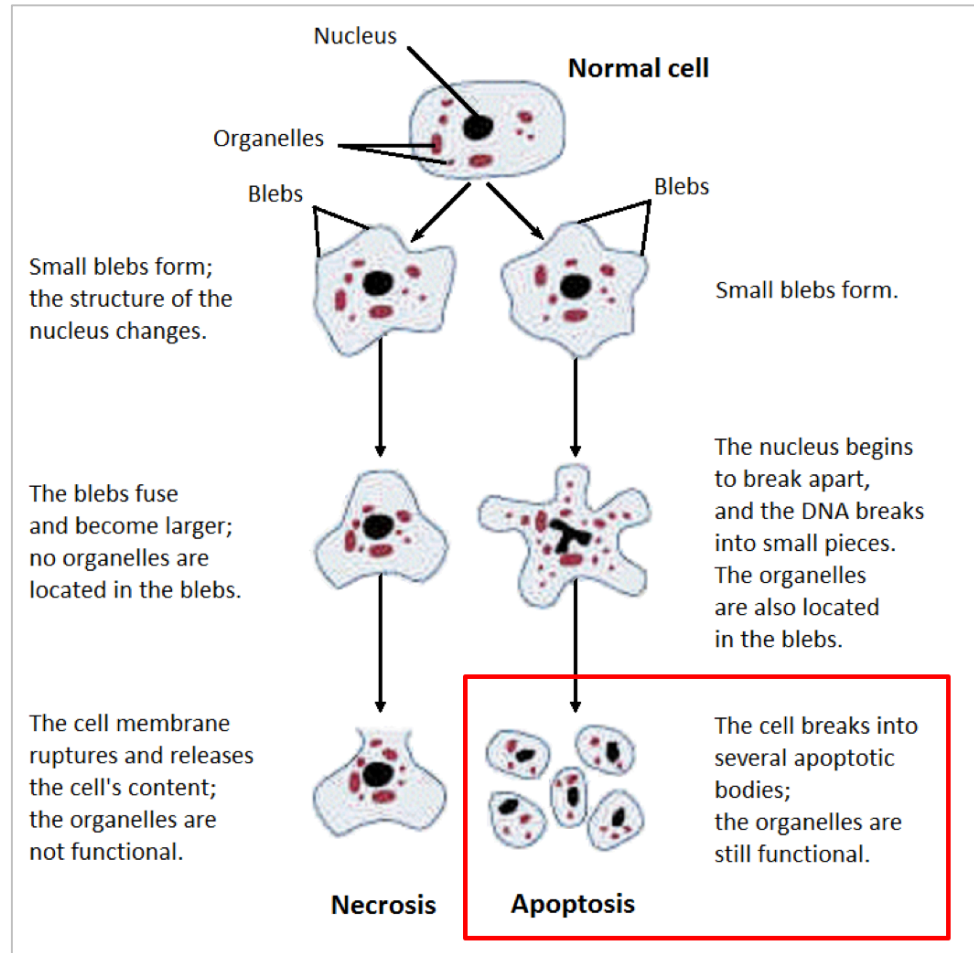


SNOTEL Data for Marion Forks, Oregon
2007-2008 water year (inches)



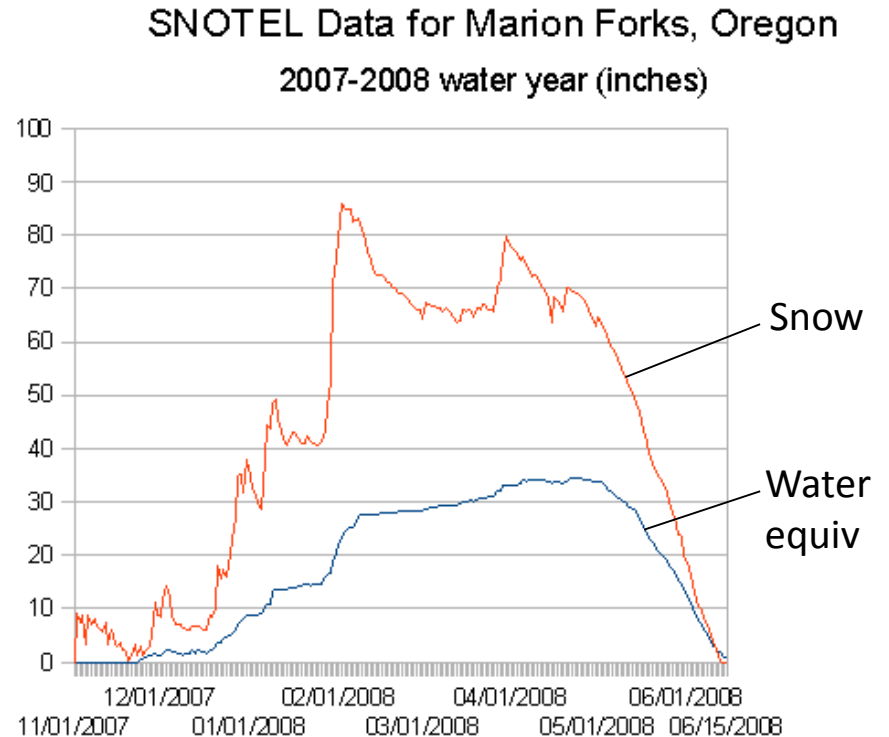
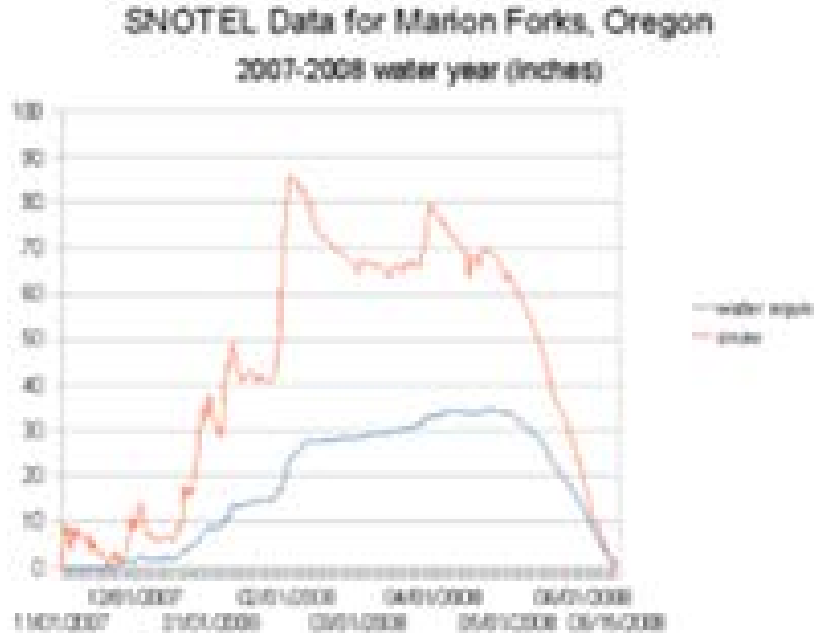
Nucleus

Split images onto different slides



Source: Wikimedia Commons, *Structural changes of cells undergoing necrosis or apoptosis*, NIAAA, Public Domain.

Fuzzy images and small screenshots



Text as image – do not screenshot DOI



The NEW ENGLAND
JOURNAL of MEDICINE

HOME ARTICLES & MULTIMEDIA ▾ ISSUES ▾ SPECIALTIES & TOPICS ▾ FOR AUTHORS ▾ CME >



Perspective

Medicaid and Insuring the Poor — Where Are We Heading?

Sara Rosenbaum, J.D.
N Engl J Med 2016; 375:1405-1407 | [October 13, 2016](#) | DOI: 10.1056/NEJMp1608552

Share: [f](#) [t](#) [+](#) [in](#) [+](#)

Article	References	Metrics
---------	------------	---------

As the principal source of health insurance for the poor, the dominant payer for long-term services and supports, the most important source of health care financing during public health crises, and the largest source of funding for the health care safety net, Medicaid occupies a central place in U.S. health policy. Medicaid will inevitably continue to evolve as the population ages, population health needs change, poverty persists, and rates of coverage by employer-sponsored insurance continue to decline, especially among workers at smaller, low-wage firms.

Avoid clipart and meaningless images



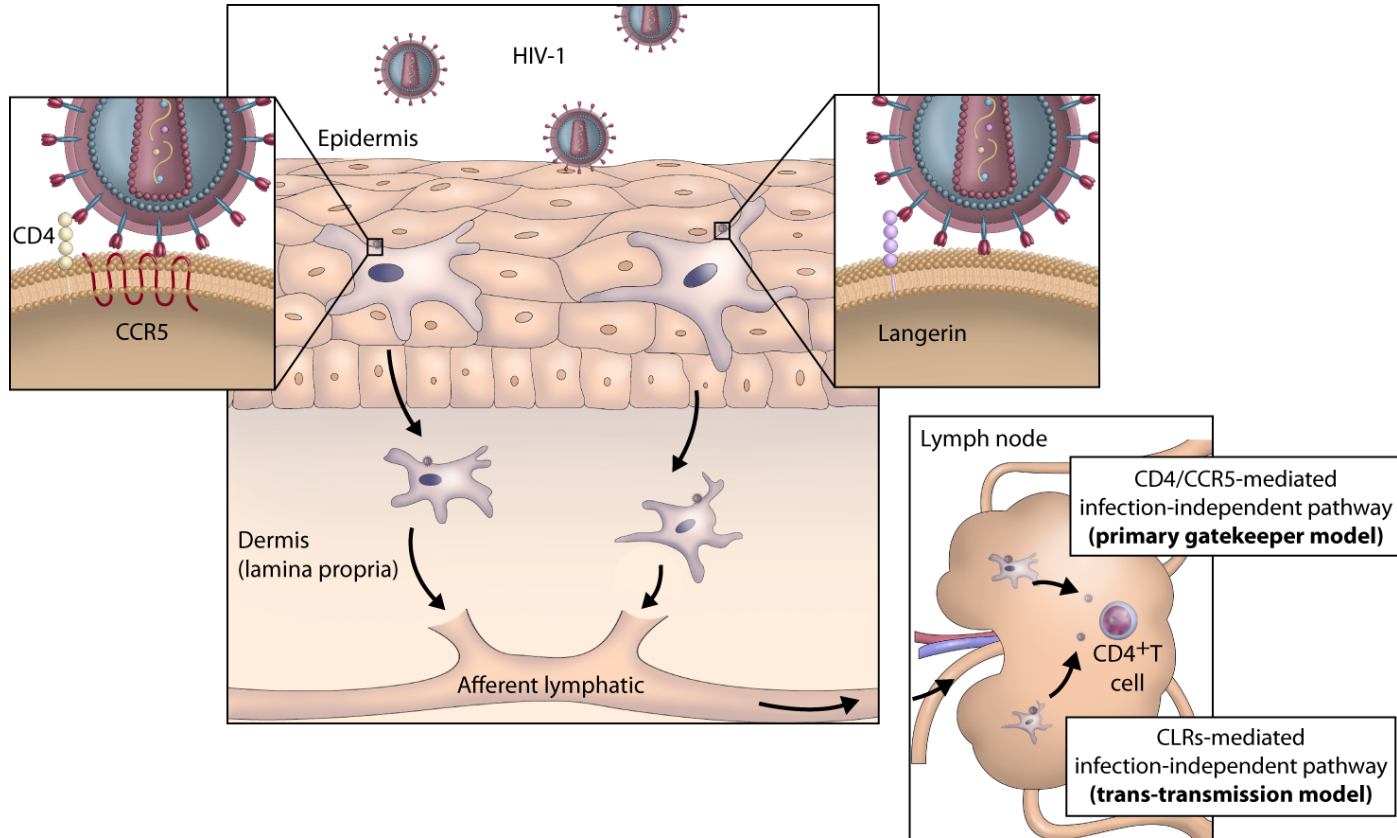
Meaningful photos. Consider diversity – 1



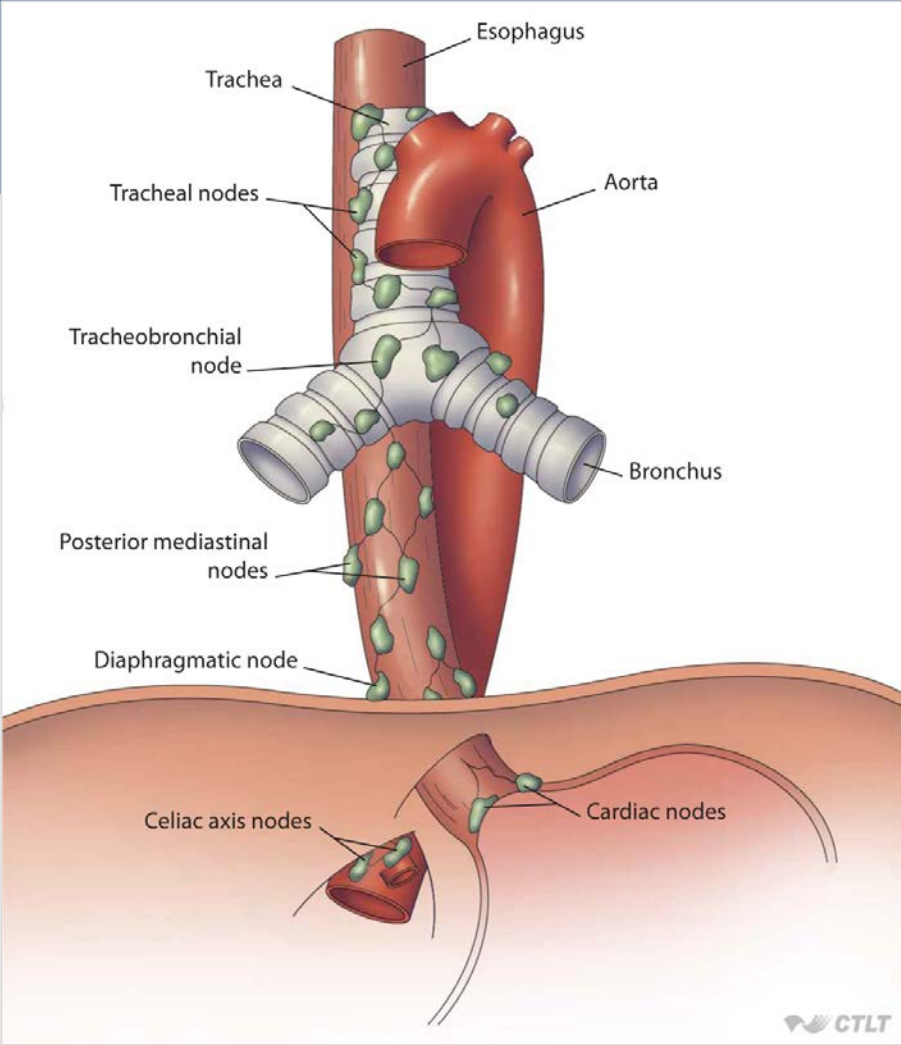
Meaningful photos. Consider diversity – 2



Complex process



Medical illustration

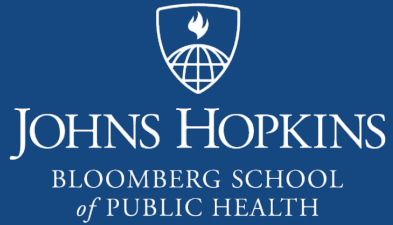


Source: CTL

Visual timeline

- 1530—Europeans begin cultivation in Santo Domingo
- 1556-59—Introduced in France, Spain, Portugal, and Japan





Finding open source images

The material in this video is subject to the copyright of the owners of the material and is being provided for educational purposes under rules of fair use for registered students in this course only. No additional copies of the copyrighted work may be made or distributed.

Creative commons license

- ▶ <https://creativecommons.org>
- ▶ Search by license (google image search, <https://www.flickr.com>, etc.)
- ▶ Go to original page to download full resolution file, and get original source and licensing information



Creative commons – Attribution

- ▶ Title, Author, Source, License
- ▶ Or, at least, author and license

Government websites

- ▶ <https://phil.cdc.gov>
- ▶ <https://search.usa.gov>
- ▶ Can also search government images through sites like flickr and google image search
- ▶ Be aware that not all images on a government site are copyright free. Try to use image banks instead of screenshots.

Free creative sites

- ▶ <https://morguefile.com>
- ▶ <https://pixabay.com>
 - ▶ Search ex.: Illustration, heart disease
- ▶ Keep in mind that these may have different licensing agreements than Creative Commons.
- ▶ Always cite your sources, even if they are in the Public Domain

Using someone's likeness

- ▶ “Other rights such as **publicity, privacy, or moral rights** may limit how you use the material.”
- ▶ Creative Commons photo of child with pneumonia



Photoshare

- ▶ <http://www.photoshare.org>
- ▶ Johns Hopkins photo collection for nonprofit and educational use
- ▶ Documentary use – images must be used “in a context that fairly represents the real situation, subject identity, and physical location of the image”.

JHSPH CTL Teaching Toolkit Resource Compilation

- ▶ <http://tinyurl.com/jhsphtoolkit/>
- ▶ [Image Sources](#)



JOHNS HOPKINS

BLOOMBERG SCHOOL
of PUBLIC HEALTH



Legal concerns

The material in this video is subject to the copyright of the owners of the material and is being provided for educational purposes under rules of fair use for registered students in this course only. No additional copies of the copyrighted work may be made or distributed.

Understanding Legal Concerns

- ▶ “Copyright on Campus”
- ▶ Not everything is Fair Use
- ▶ Getting permission (Stanford University)

Fair use

1. the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
2. the nature of the copyrighted work;
3. the amount and substantiality of the portion used in relation to the copyrighted work as a whole;
4. the effect of the use upon the potential market for or value of the copyrighted work

Fair Use: Summary

- ▶ In summary – “it is best to attempt to identify rights-holders, to analyze your intended use and its potential impact on a rights-holder, and to seek permissions as needed for any work **that is not unquestionably in the public domain.**” (my emphasis)



JOHNS HOPKINS

BLOOMBERG SCHOOL
of PUBLIC HEALTH



Best Practices (the “How”)

Accessibility at JHU

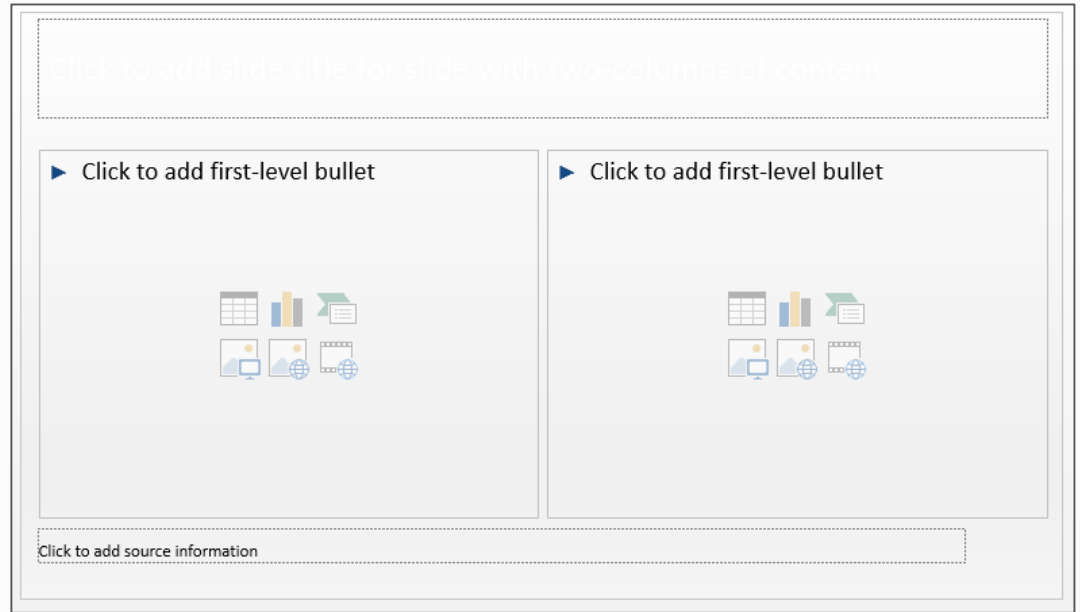
- ▶ Complements – does not replace – Support Services’ accommodations and modifications
- ▶ Accessibility suggested standards (*e-accessibility*) and practices
 - ▶ WCAG 2.0 (2008) AA Guidelines: Perceivable, Operable, Understandable, and Robust
 - ▶ Universal Design for Instruction & Universal Design for Learning
- ▶ Design learning environments, employ communication, & author activities considering:
 - sensory, physical, cognition and neurological experiences
 - how the content translates to AT such as screen readers, speech recognition software, and alternative input devices (e.g., head pointers, puff switches)
 - *all* learners – thinking about a social, not medical, model
 - sustainability

Editing with Accessibility in Mind

- ▶ Consider:
 - ▶ Document Properties (meta data)
 - ▶ **Structure** (The way the parts of a document are organized in relation to each other)
 - ▶ Navigation Aids (page/slide numbers, slide titles, table of contents)
 - ▶ Reading Order
 - ▶ **Text Alternatives** to media
 - ▶ **Color and Font attributes**
 - ▶ Data Elements

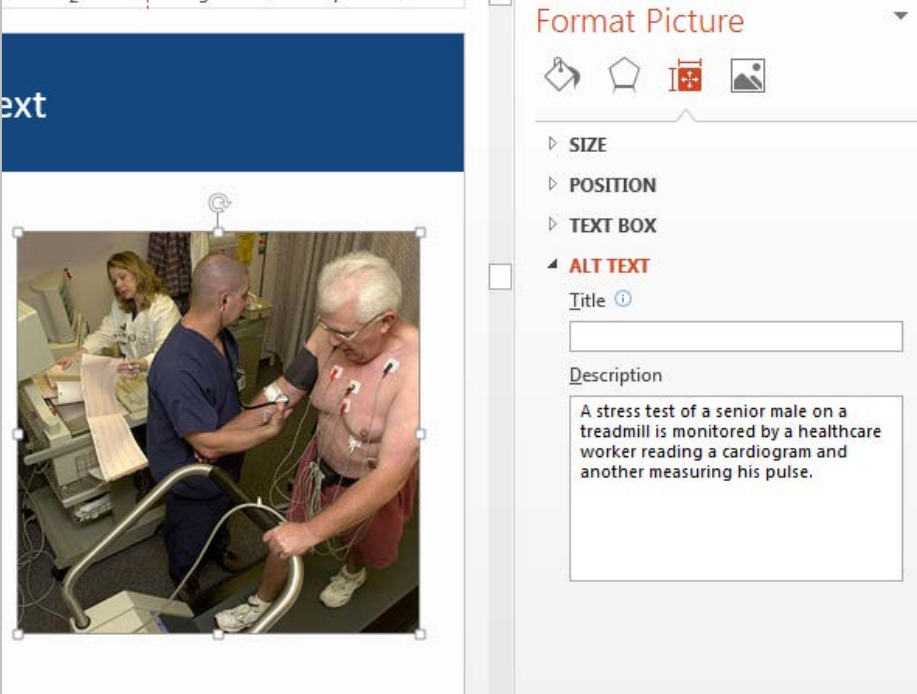
Best Practices – Microsoft Office: Structure

- ▶ Microsoft PowerPoint Structure
 - ▶ Use templates and only rely on a Slide Master layout's **placeholders**



Best Practices – Format Picture: Alternative Text

- ▶ Simple, succinct text to describe any non-decorative image or summarize any complex element (table, chart, embedded multimedia, etc.)
- ▶ Alt text should convey the meaning of the object
 - ▶ Images should avoid including text if possible; if not, mention it in alt text
 - ▶ Do not state the obvious
 - ▶ Use appropriate language



The screenshot shows a 'Format Picture' dialog box with a preview of an image on the left and a configuration panel on the right. The image shows a healthcare worker monitoring a senior male on a treadmill while another person reads a cardiogram. The configuration panel includes sections for SIZE, POSITION, TEXT BOX, and ALT TEXT. The ALT TEXT section is expanded, showing a 'Title' field and a 'Description' field containing the following text:

A stress test of a senior male on a treadmill is monitored by a healthcare worker reading a cardiogram and another measuring his pulse.

Example: Alternative Text

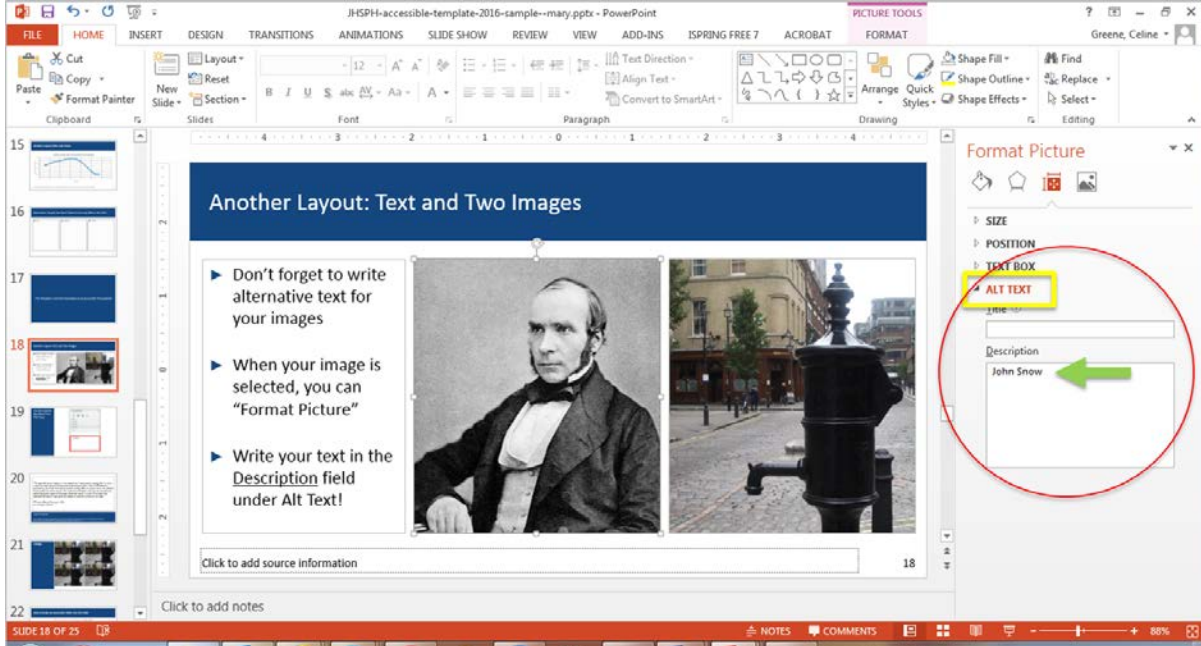
- ▶ Alternative text (alt text) is required when the image is contributing information to the reader. The alt text should relay the same content & function as the image in CONTEXT.
- ▶ The alt text for this image might be:
 - ▶ *"" – Null (empty), if it is purely decorative*
 - ▶ *"Microscope close-up"*
 - ▶ *"Close-up of compound microscope objective lenses and mechanical stage"*



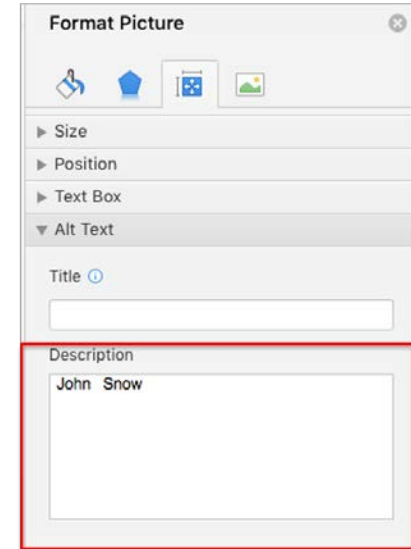
Alternative Text, cont.

- ▶ Alt text should use appropriate language and level of detail for the audience
- ▶ Alt text is not needed for decorative images and is not read for background images
- ▶ Alt text for any background images in a PowerPoint template (Slide Master View) should be repeated in the Normal view

Where to Enter Alternative Text for Images



Format Picture: PowerPoint 2013 (Windows)



Format Picture (Mac)

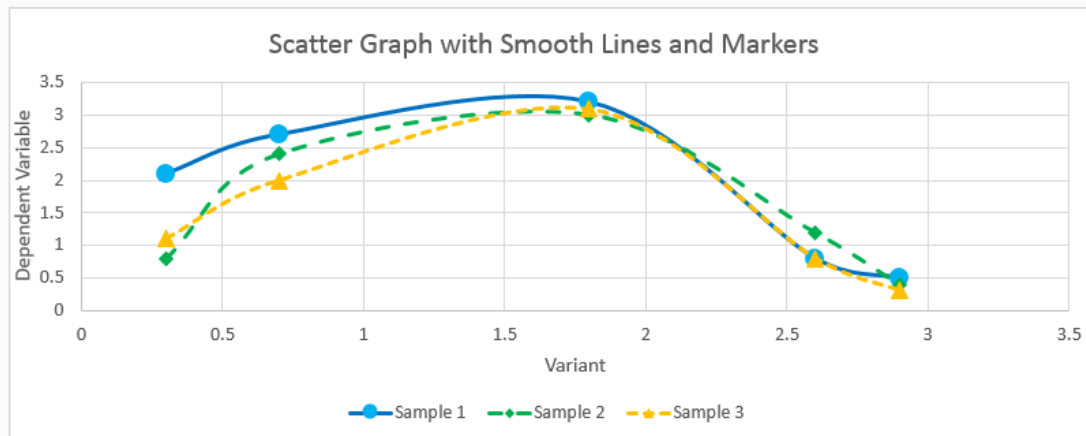
More Alternative Text Examples

- ▶ Keep in mind that Alt text will be read after a prompt that flags there is an object
 - ▶ Do not state the obvious
 - ▶ Use appropriate language

Image	Poor Alt Text	Better Alt Text
http://tinyurl.com/zdympzq	Image of road construction workers	Three construction workers in safety vests and hardhats operate large drill attached to truck
http://tinyurl.com/jyx43gg	An senior citizen is pictured on a treadmill	A stress test of a senior male on a treadmill is monitored by a healthcare worker reading a cardiogram and another measuring his pulse
http://tinyurl.com/jjdzgsa	A multicolored global map shows age dependency ratio	A world map is color-coded with an accompanying legend showing age dependency ratio by percentage. Details are provided in lecture audio and transcript.

Best Practices – All Documents: Color

- ▶ Do not use color alone to convey meaning
 - ▶ Alternatives: shapes, line types, emphasis (underline, bold, italics), etc.
- ▶ The contrast (light to dark) of objects next to or overlaying each other must be sufficient
 - ▶ Text over background images
 - ▶ Text inside a table with cell shading
 - ▶ Color-coded maps



Heading 1	Heading 2
Item 1	Item 2
Item 3	Item 4

Images Containing Text

- ▶ Avoid images of text except if the text in the graphic is essential to the information (including text that is part of a logo or part of a screenshot or graph).
- ▶ If an image contains only text, the text itself can usually be used as its alternative text.
- ▶ An image of text can also be used if it can be visually customizable (e.g. resizable and/or can be recolored). If using an image of text that conveys information (e.g., the graphic is not a logo nor simply decorative), it must have a **color contrast ratio of at least 4.5:1**.

All Documents: Data Elements

- ▶ Avoid using only images of a chart, graph, or table, especially if it needs a long descriptor (Perceivable, Understandable)
 - ▶ Original data sets (usually in a spreadsheet display) attached to a visual representation can be accessed by AT
- ▶ Include alt text for the object summarizing its content, especially if the object is complex

Best Practices – All Documents: Font Attributes

- ▶ Font should be clear and easy to read
- ▶ Font size should not go lower than 11 point for most fonts
- ▶ Font color needs to take contrast ratio into consideration (text to background)
- ▶ If text *must* be included as a part of an image (with the exception of logos), it must be clear so it retains quality when customized; e.g. resized by zoom level or filtered by color

A Culture of Accessibility...

- ▶ Affords multiple learning styles and intelligences
- ▶ Affords productivity and efficiency
- ▶ Is “better for all”
- ▶ And is required