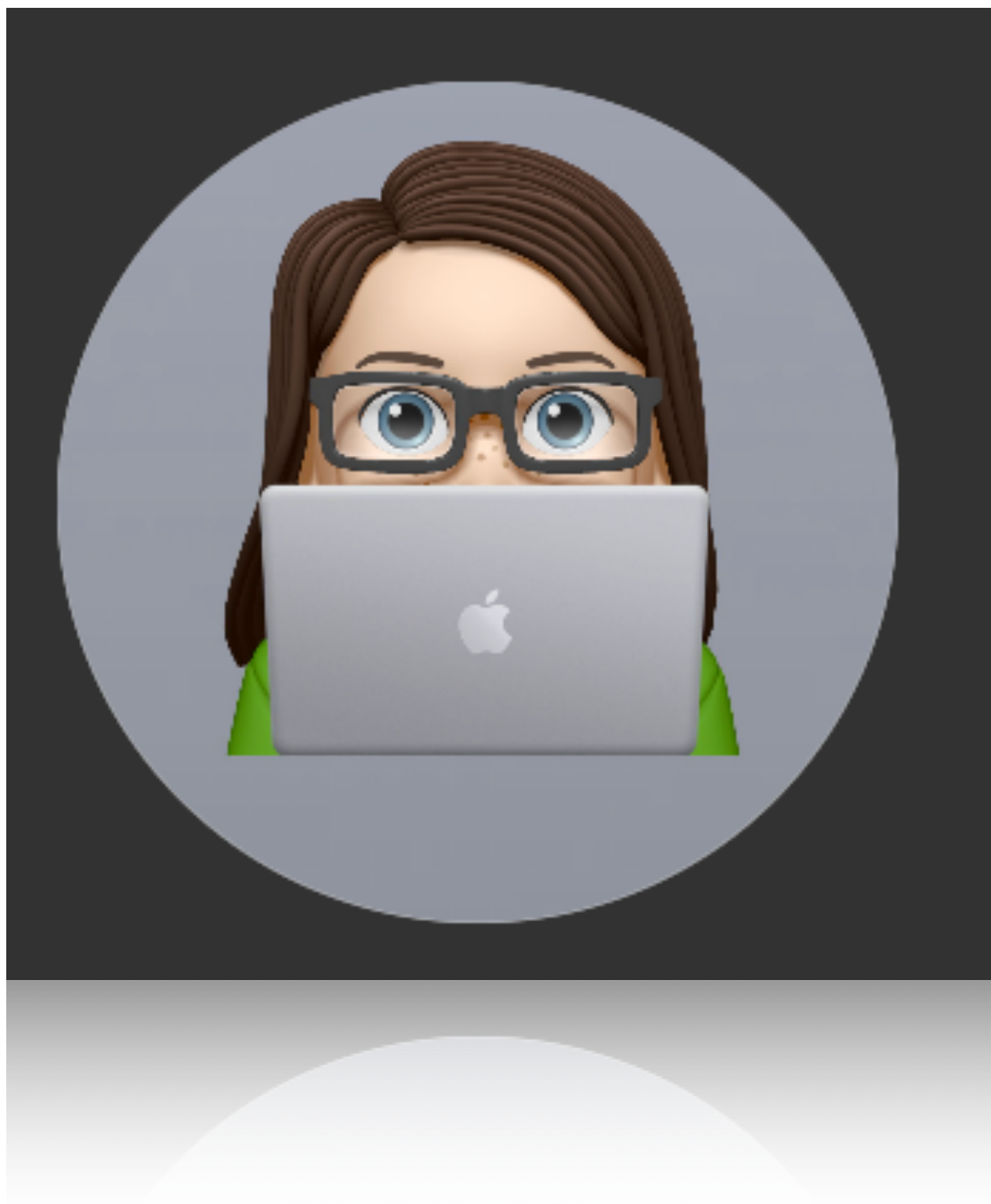


Research Visuals That Pop



Rachel Ramsay

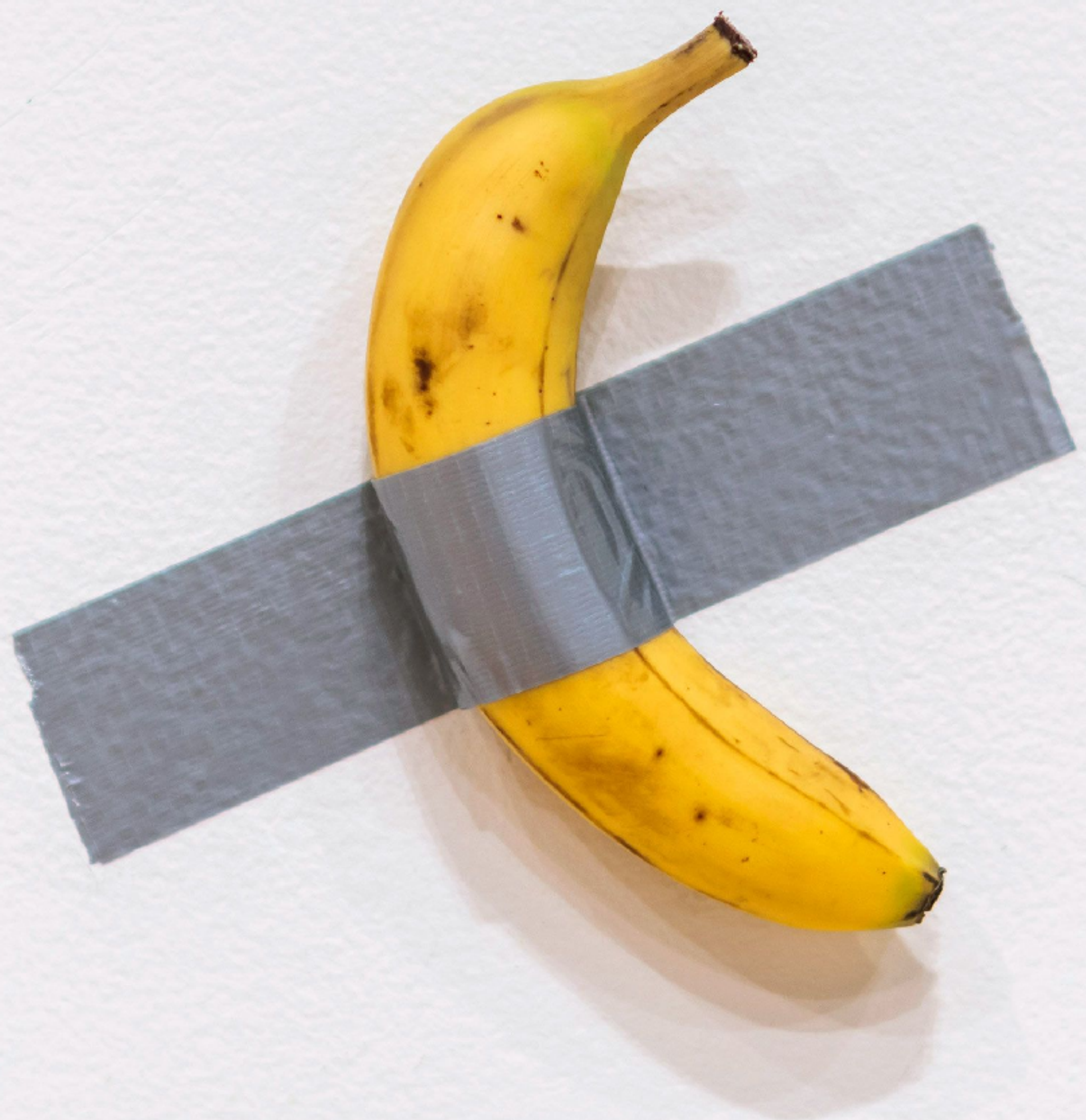
Associate Professor of Web & Digital Design

 Distinguished Educator

Rachel.Ramsay@utahtech.edu ||  [/rachelramsay](https://www.linkedin.com/in/rachelramsay)

UTAH TECH UNIVERSITY™ || ST. GEORGE, UTAH

RACHEL RAMSAY



More

Design isn't Decoration

It's how people find, understand, and trust your work.



Attention Grabbing

In a noisy session hall, clear titles, big type,
and clean layout make people stop.

No Attention = No Audience



Comprehension

Hierarchy, chunking, and whitespace lower cognitive load
so your main result pops instead of drowning in text.

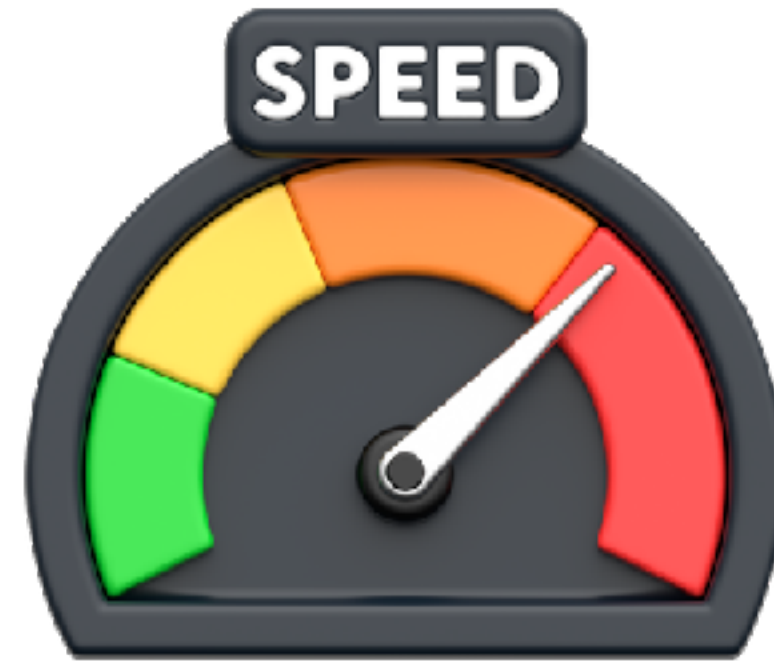
Lack of understanding is a project killer.



Memorable

Descriptive titles, labeled charts, and consistent cues
boost recall long after your talk ends.

Use elements that will help your audience remember.



Speed

Reviewers skim in seconds. Good design compresses your story so they get the point fast.

Short Attention Span = Forgettable Project



Credibility

Aligned axes, readable labels, and consistent styles
signal care and reliability.

Sloppy visuals undermine rigor.

COLOR

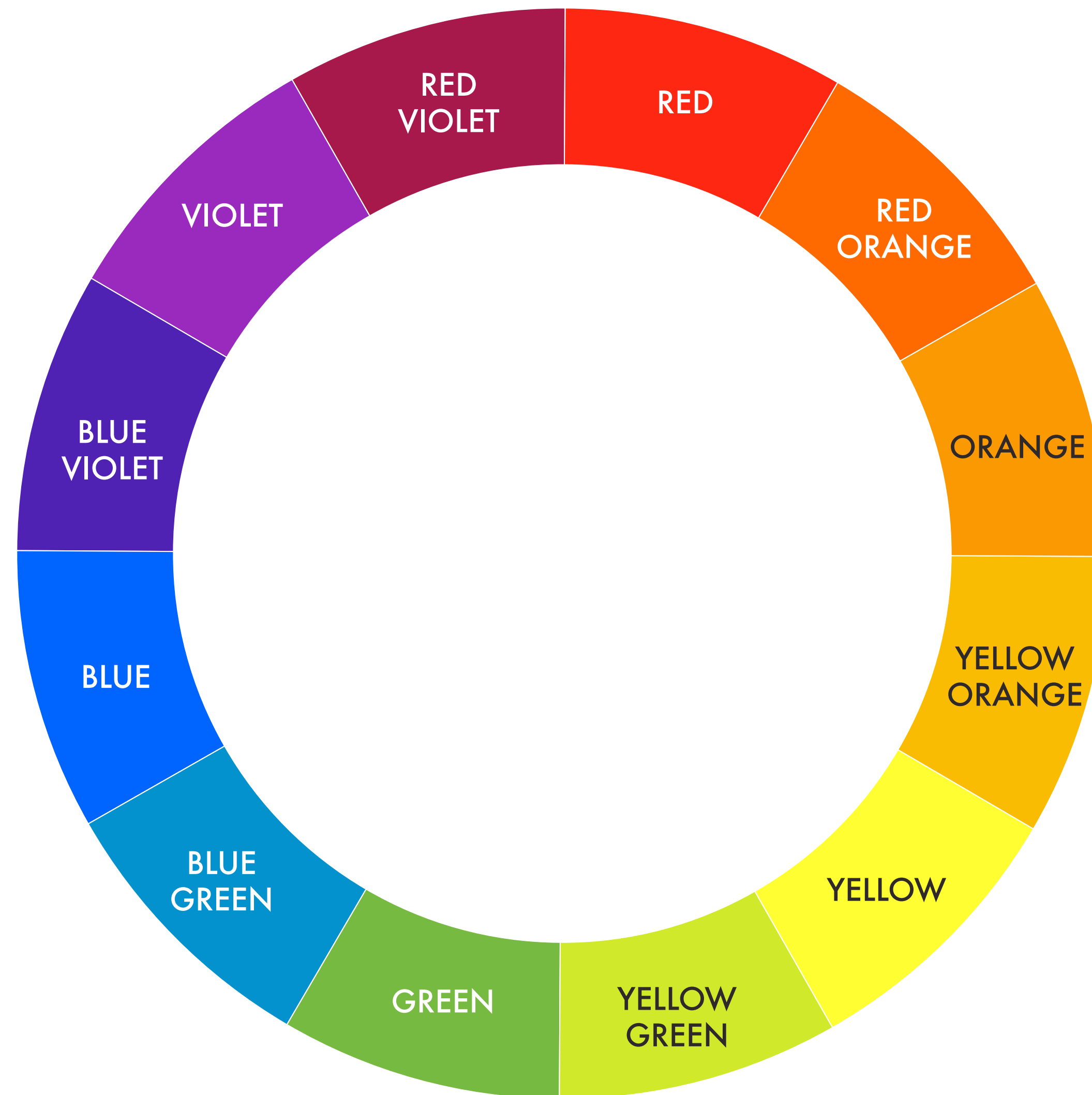


Color should support your message, not distract from it.

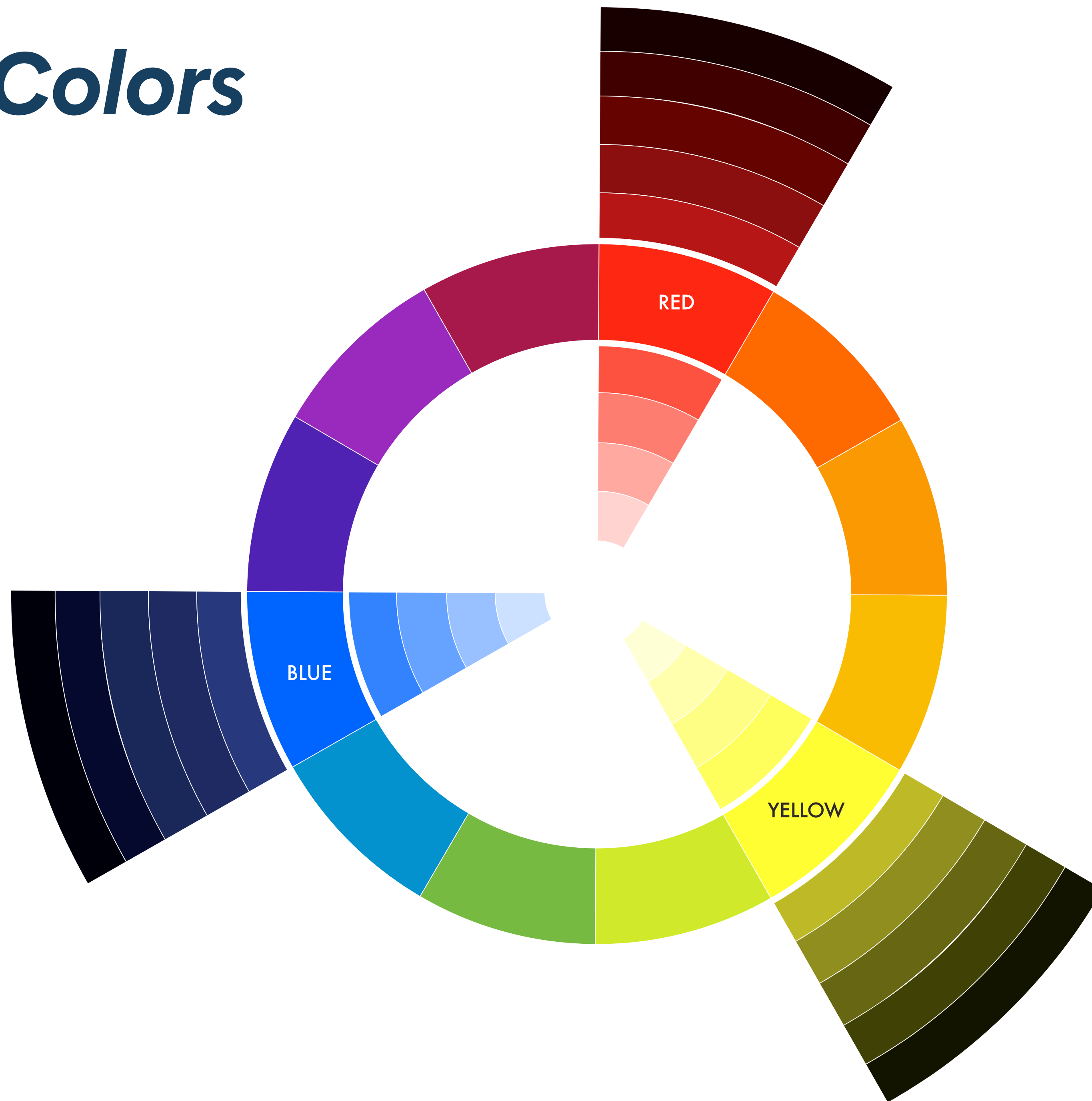
Color directs attention, encodes variables, and signals status.

HELP THE AUDIENCE ANSWER FAST: *What is important? What category is this? Is this value high/low or above/below baseline?*

Basic Color Theory



Primary Colors



Secondary Colors



Choosing Colors

Start with a color scheme.

coolors.co

paletton.com

*Make sure it's accessible,
check the contrast.*

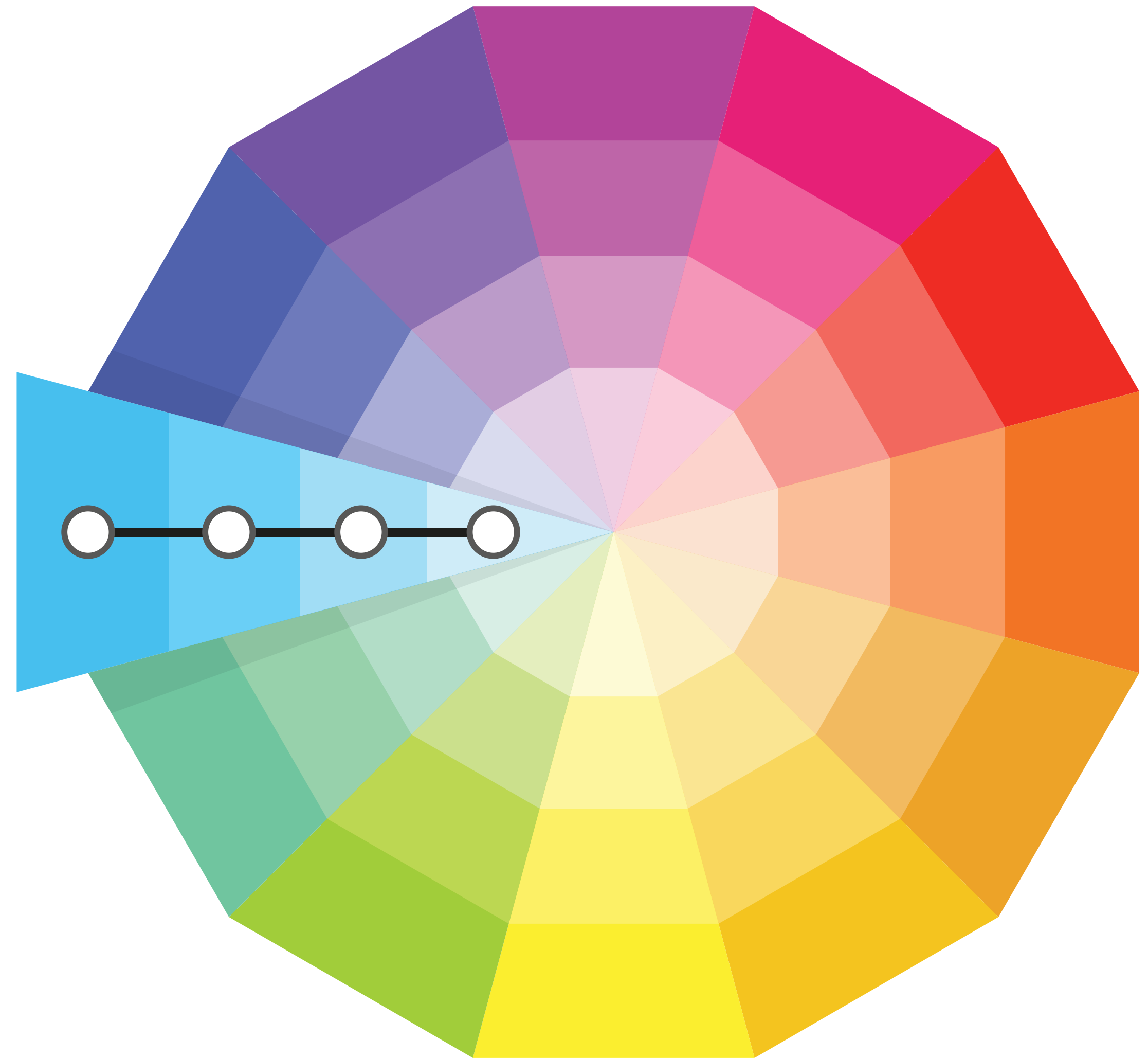
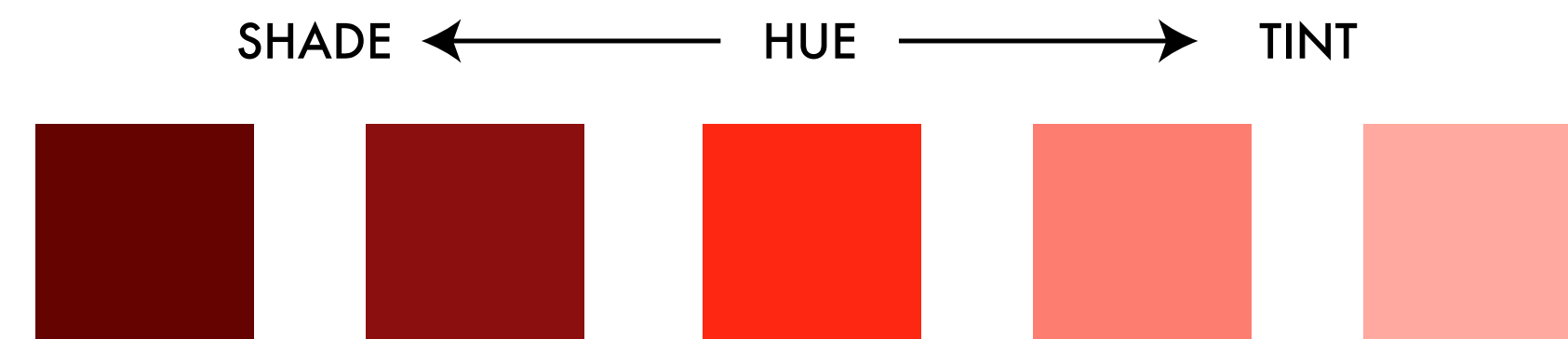
colorhunt.co

color.adobe.com

Keep it simple 2-3 colors.

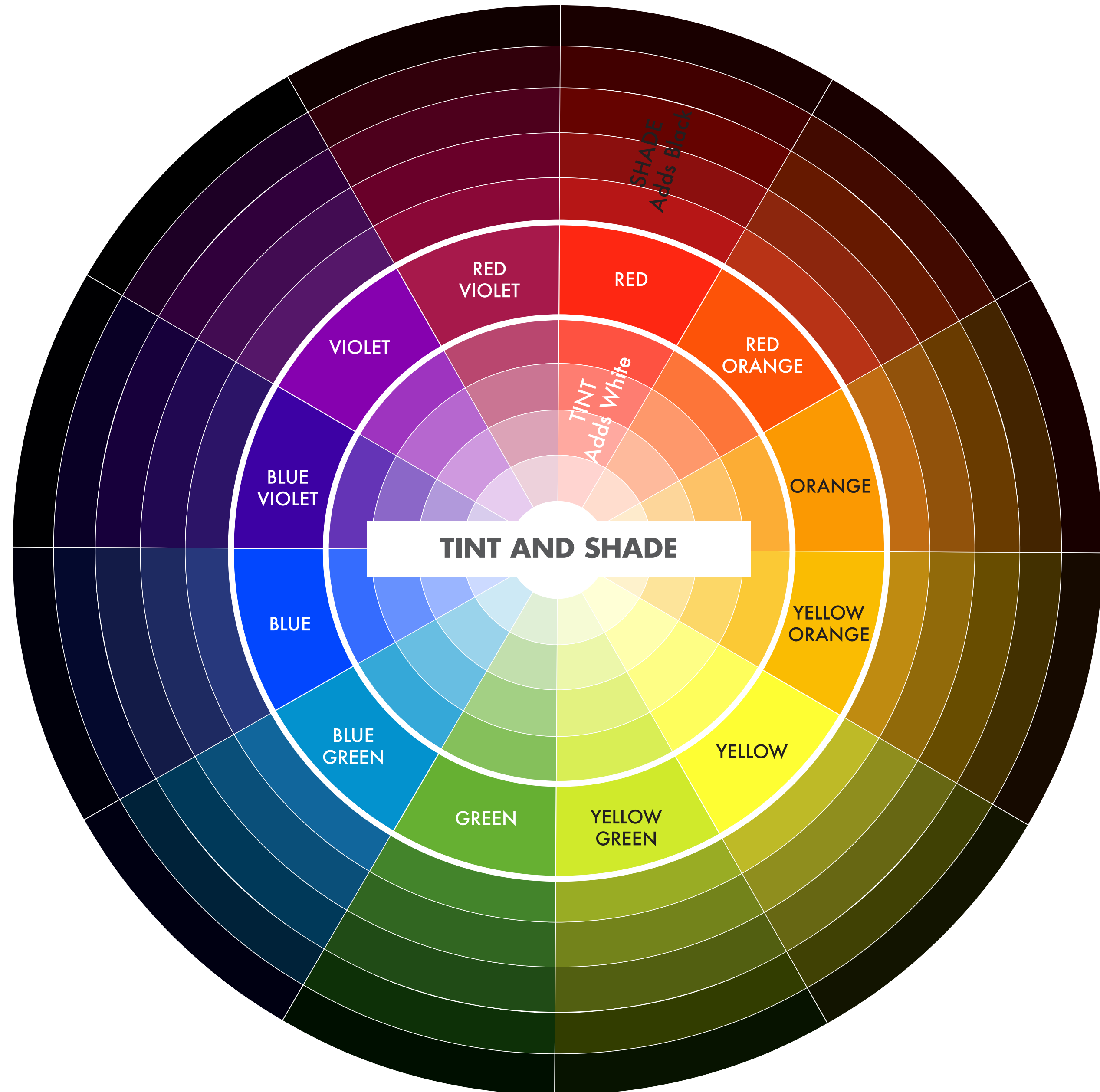
Monochromatic

All colors from the same hue
with tints, shades or tones.



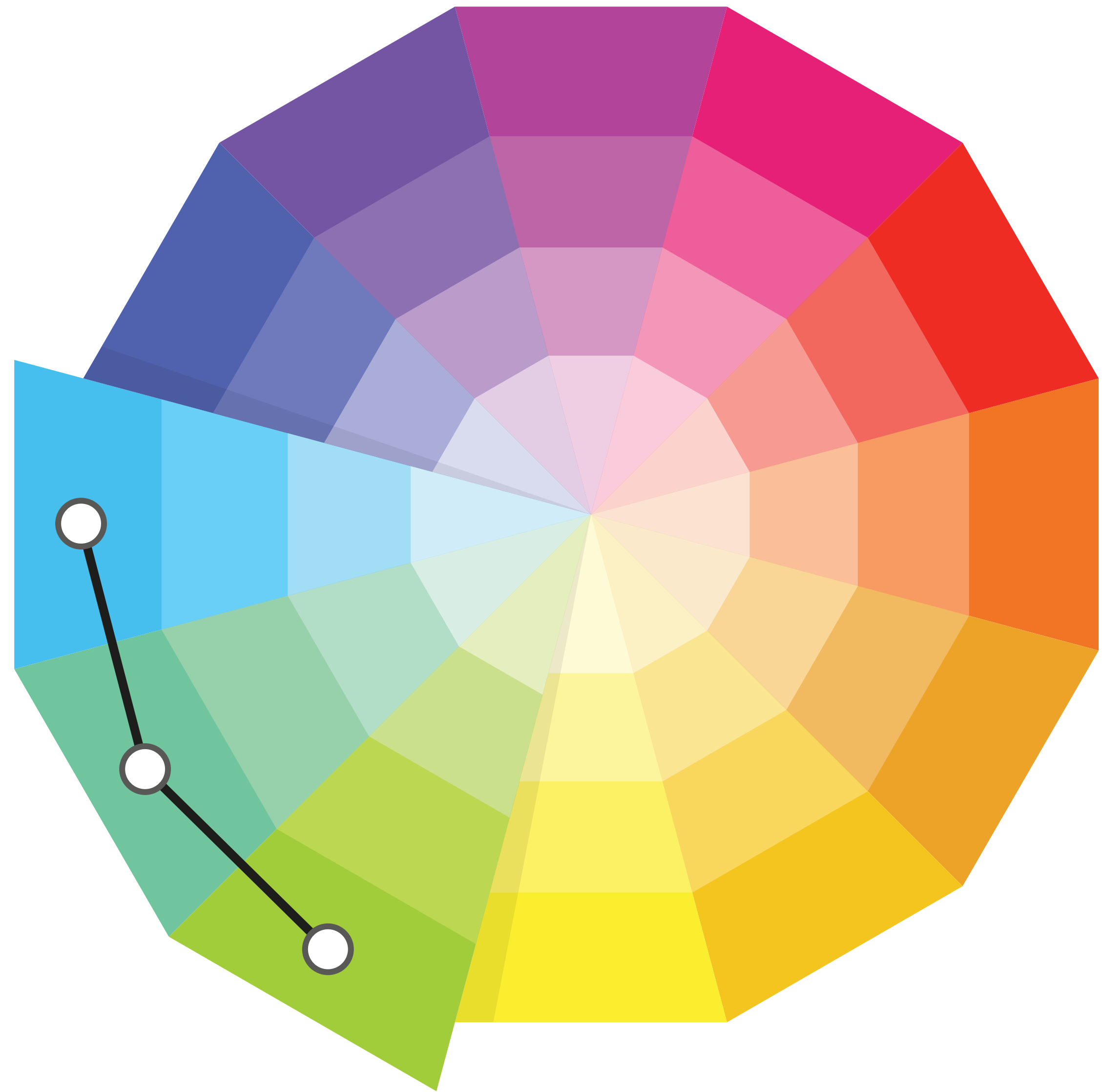
Tints & Shades

The main color or hue with either black (shade) or white (tint) added to the color.



Analogous

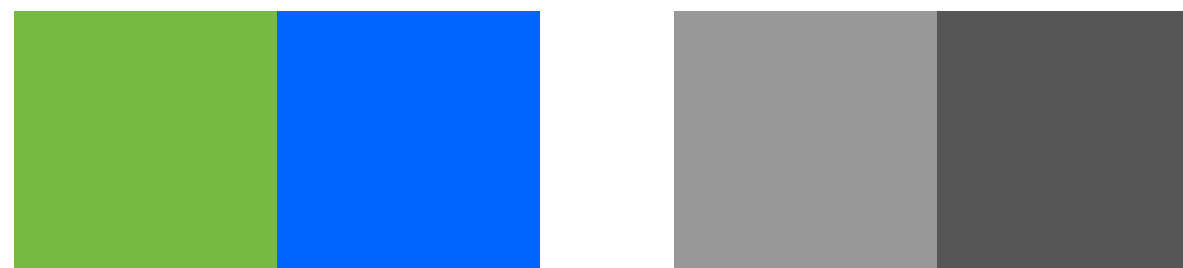
Colors adjacent to each other on the color wheel.



Analogous

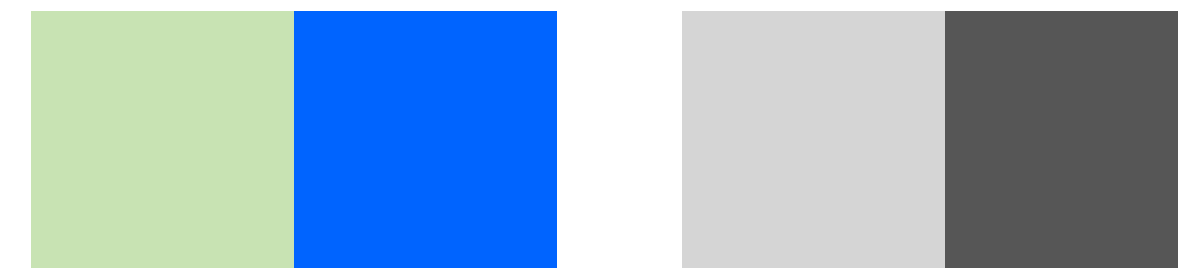
Highly Saturated

Blue type on
green background



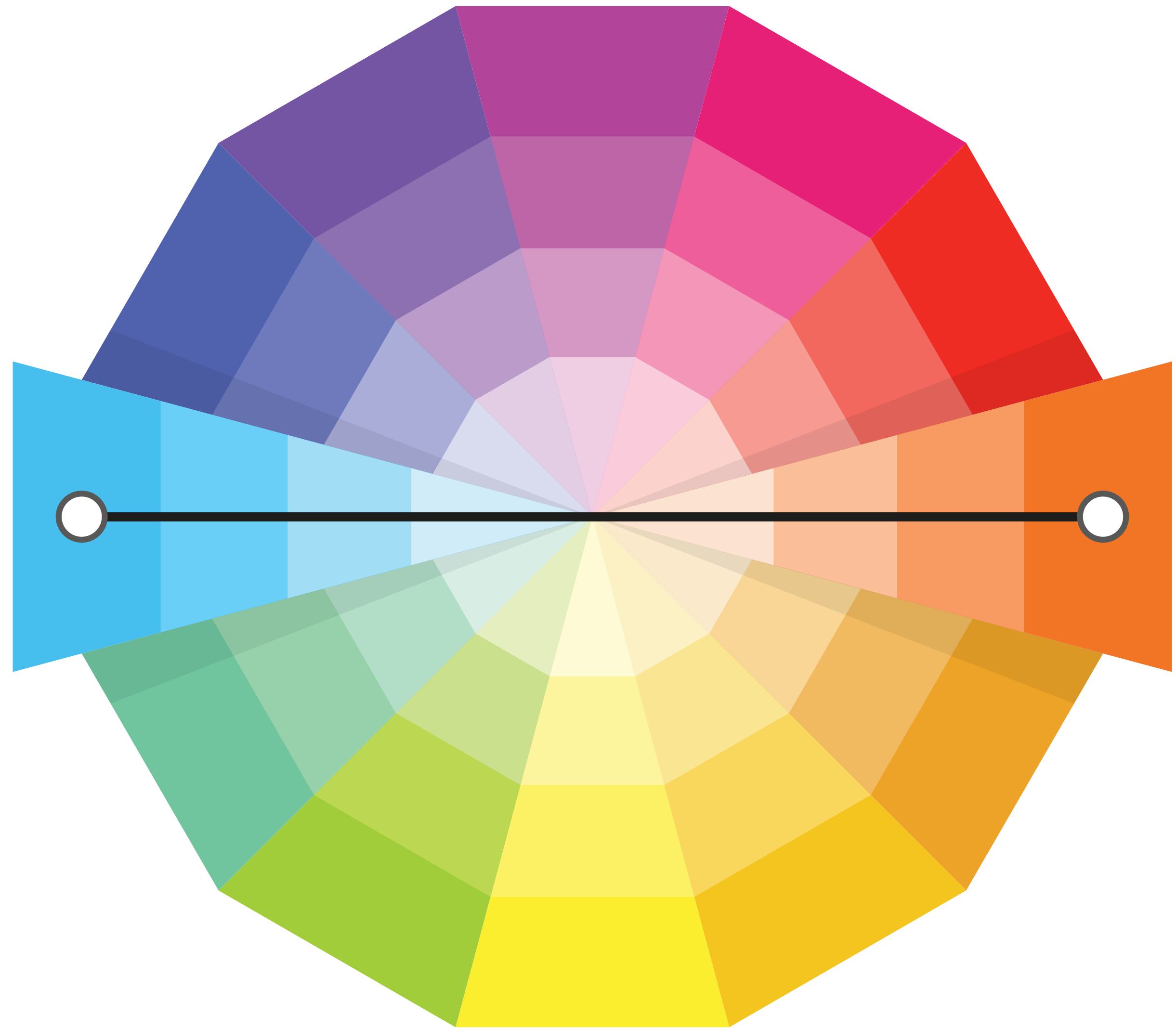
40% tint background

Blue type on
light green background



Complementary

Colors across from each other on the color wheel.



Complementary

Similar VALUE (lightness or darkness)



Blue type on
orange background

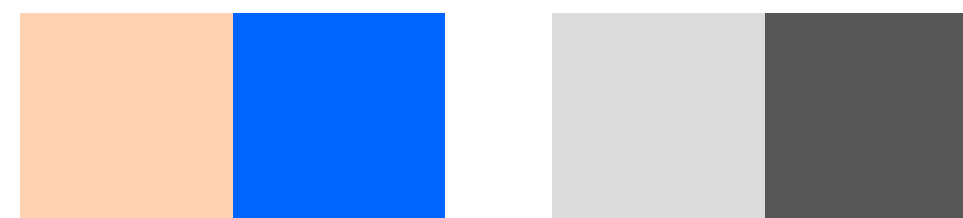
Orange type on
blue background

30% tint background

60% shade background

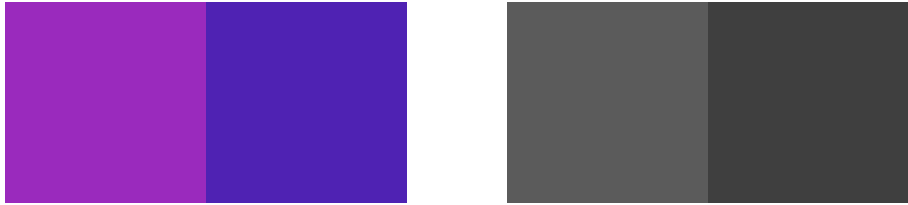
Blue type on
orange background

Orange type on
blue background

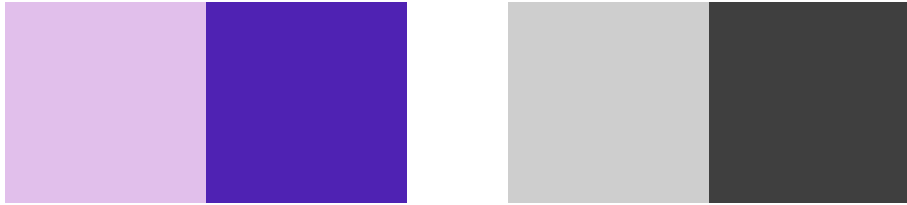
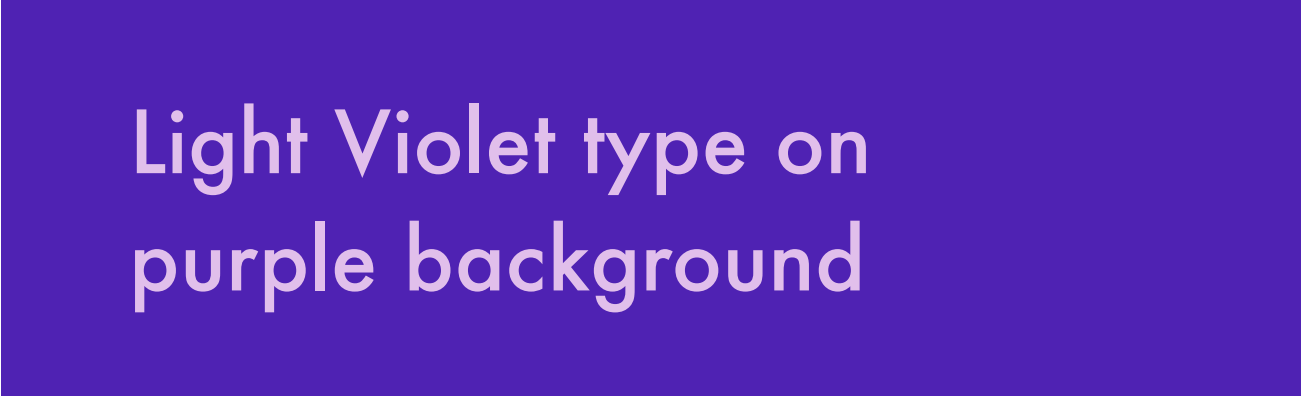


Similar Colors

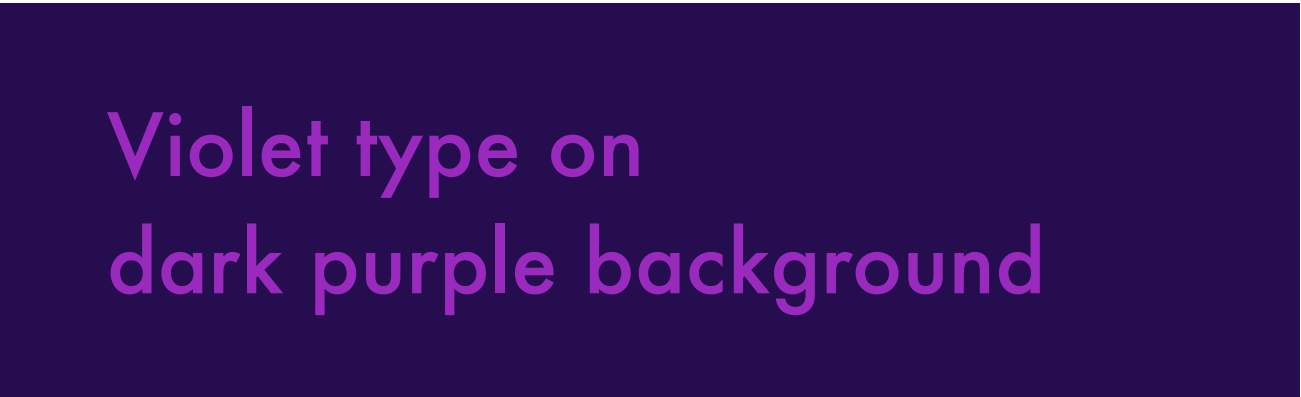
Hues (colors) close together



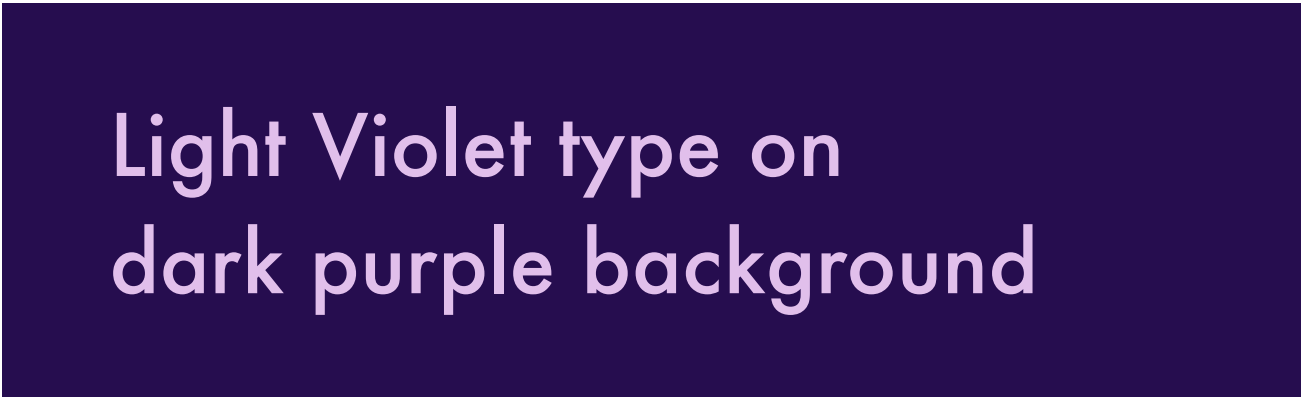
30% tint text



60% shade background



30% tint text & 60% shade background



Backgrounds

BEST OPTION



Black type on
white background



Black type on
light gray background



Black type on
dark gray background

White type on
light gray background



White type on
dark gray background



White type on
black background



Use light backgrounds for paragraphs/tables. Dark backgrounds can work for slides with few words—but check contrast and avoid saturated backdrops behind text.

Color Contrast

Think readability first: Keep text/background at $\geq 4.5:1$ contrast (aim for 7:1). Dark text on a light background is safest for dense content.

webaim.org/resources/contrastchecker

Accessibility

Don't rely on color alone.

About 1 in 12 people are color-blind. Always pair color with labels, line styles, shapes, or patterns so meaning survives. Run the grayscale test—does it still read?

Meaning & culture notes



Keep it simple

***Everyone loves a rainbow but it can
distract your audience.***

Consistency

Save your palette

Document the hex/RGB values to keep order consistent in legends and across slides/figures, and name colors directly in captions when it helps (e.g., "blue = treatment B").

TYPOGRAPHY

T

*Typography is more
than just fonts.*

CAPLINE
MIDLINE
X-HEIGHT
BASELINE
BEARDLINE

Handgloves

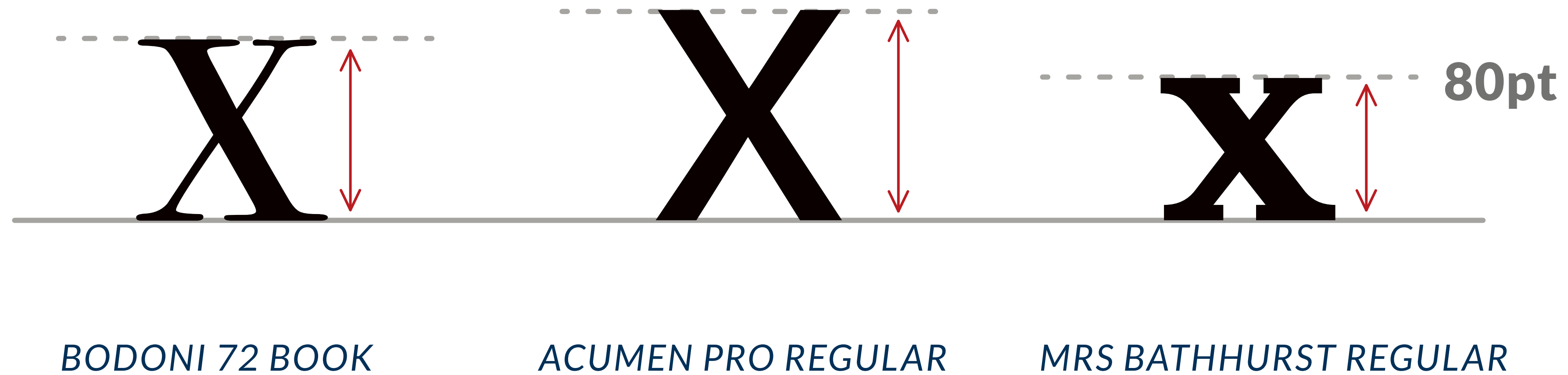


Sans serif



Serif

X-height



The x-height is a factor that affects legibility, and readability.

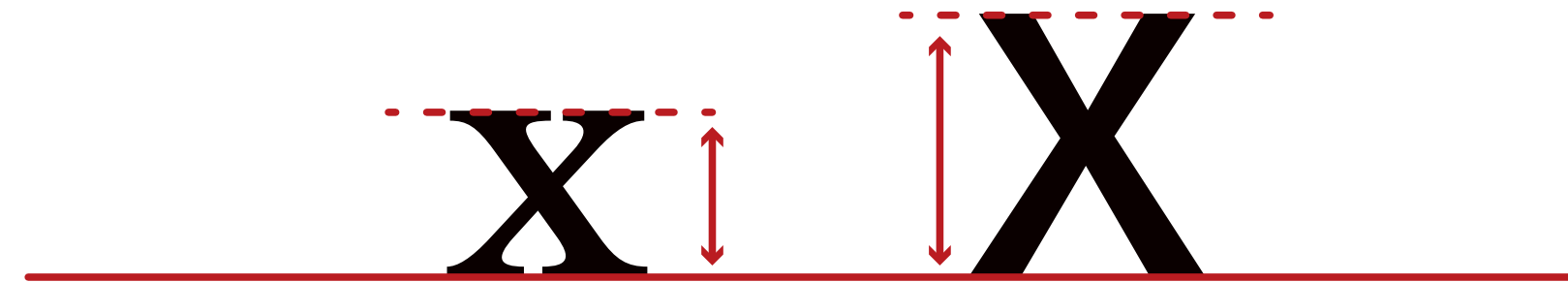
X-height

MRS EAVES

The x-height is the distance between the baseline and the meanline or the top of a lowercase letter. The x-height is a factor in typeface identification and legibility.

A typeface with a large x-height relative to the total height of the font has shorter ascenders and descenders, which creates less white space between the lines of type. Sans serif typefaces typically have large x-heights. In typefaces with small x-heights, ascenders and descenders may become more visually noticeable.

Typefaces with large x-heights may appear darker, heavier, crowded, and more challenging to read at body copy sizes.



FIRA SANS

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Typefaces with large x-heights may appear darker, heavier, crowded, and more challenging to read at body copy sizes.

A taller x-height increases legibility.

Line Spacing

16/16
SET SOLID

Line spacing is the vertical distance between lines of text. Most writers use either double-spaced lines or single-spaced lines—nothing in between—because those are the options presented by word processors.

16/19.2
DEFAULT

Line spacing is the vertical distance between lines of text. Most writers use either double-spaced lines or single-spaced lines—nothing in between—because those are the options presented by word processors.

16/24
150%

Line spacing is the vertical distance between lines of text. Most writers use either double-spaced lines or single-spaced lines—nothing in between—because those are the options presented by word processors.

FIRA SANS

To increase legibility when using a typeface with a smaller x-height, add more leading (line spacing), and do not use fully justified text.

12/14.4 120% 1.2

The default line spacing or leading in most design software is 120% of the size of the typeface or 1.2 times the size. For example, 12pt text has a default of (14.4pt) line spacing. To adjust line spacing, highlight the text and edit in the character menu.

BRIX SANS

↑ To increase legibility when using a typeface with a smaller x-height, add more leading (line spacing), and do not use fully justified text.
↓

12/18 150% 1.5

The default line spacing or leading in most design software is 120% of the size of the typeface or 1.2 times the size. For example, 12pt text has a default of (14.4pt) line spacing. To adjust line spacing, highlight the text and edit in the character menu.

NOT ENOUGH

 Bad lines pacing causes crashing between the ascenders and descenders.

TOO MUCH

 A paragraph of text with additional space can lighten the typographic texture. Avoid extremes, too tight causes crashing between the ascenders and defenders. On the other hand, too much space separates the lines of text and disrupts legibility.

Line Length

132 characters

In typography, line length is the width of a block of typeset text, usually measured in units of length like inches or points or in characters per line (in which case it is a measure). A block of text or paragraph has a maximum line length that fits a determined design. If the lines are too short then the text becomes disjointed; if they are too long, the content loses rhythm as the reader searches for the start of each line.

54 characters

In typography, line length is the width of a block of typeset text, usually measured in units of length like inches or points or in characters per line (in which case it is a measure). A block of text or paragraph has a maximum line length that fits a determined design. If the lines are too short then the text becomes disjointed; if they are too long, the content loses rhythm as the reader searches for the start of each line.

29 characters

In typography, line length is the width of a block of typeset text, usually measured in units of length like inches or points or in characters per line (in which case it is a measure). A block of text or paragraph has a maximum line length that fits a determined design. If the lines are too short then the text becomes disjointed; if they are too long, the content loses rhythm as the reader searches for the start of each line.

Text Type

BLACK

Avoid using a super bold font style for body copy. 

EXTRA LIGHT

Avoid using an extremely thin font style for body copy. 

REGULAR

Look for a font style named, regular, body or text. 

CONDENSED

Fonts that are condensed or compressed are not legible as body copy. 

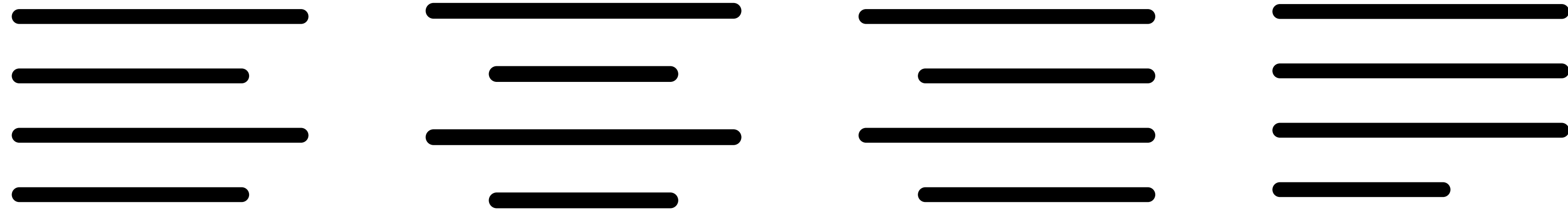
EXTENDED

Extended fonts are not legible as body copy. 

REGULAR

Fonts that are named regular, body or text are the most legible. 

Alignment



Centered

 Large blocks of text should not be centered. Centering makes text blocks challenging to read because both edges of the text block are uneven.

Large blocks of text should not be centered. Centering makes text blocks challenging to read because both edges of the text block are uneven.

Large blocks of text should not be centered.  Centering makes text blocks challenging to read because both edges of the text block are uneven.



Large blocks of text should not be centered. Centering makes text blocks challenging to read because both edges of the text block are uneven.

Left Aligned

Right alignment is the most uncommon alignment used,
and when it is used—~~it's~~ typically used in small
quantities.



Right alignment is
the most uncommon
alignment used, and when
it is used—it's typically
used in small quantities.

Increased line spacing.

Shorter line length.

Choosing Type

Gill Sans

LIGHT

A TYPE FAMILY includes styles such as italic, bold, and small caps.

LIGHT ITALIC

A TYPE FAMILY includes styles such as italic, bold, and small caps.

REGULAR

A TYPE FAMILY includes styles such as italic, bold, and small caps.

REGULAR ITALIC

A TYPE FAMILY includes styles such as italic, bold, and small caps.

SEMIBOLD

A TYPE FAMILY includes styles such as italic, bold, and small caps.

SEMIBOLD ITALIC

A TYPE FAMILY includes styles such as italic, bold, and small caps.

BOLD

A TYPE FAMILY includes styles such as italic, bold, and small caps.

BOLD ITALIC

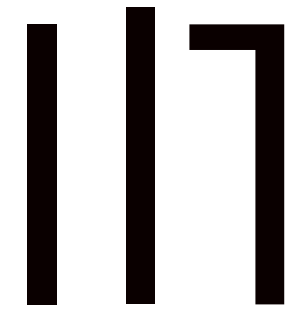
A TYPE FAMILY includes styles such as italic, bold, and small caps.

Choose a superfamily with different styles and optical sizes specific to use.

The Il1 Rule



MOSTRA NUOVA



MONTERRAT



MYRIAD



PT SANS



SPARTAN



PROXIMA NOVA



FUTURA



AILERON



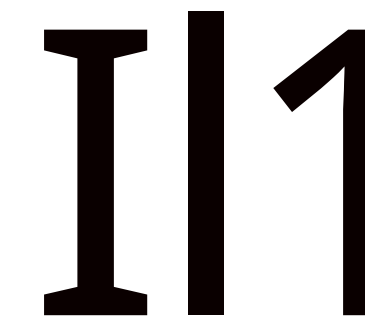
ALBERTUS



FRANKLIN GOTHIC



ROBOTO



NOTO SANS

Choosing a sans serif typeface, be sure it has a variety of letterforms. Can it pass the Il1 rule?

Il1

Il1

Calibri

Aptos

Regular italic

Bold italic

Light *italic*

Regular *italic*

SemiBold italic

Bold italic

ExtraBold italic

Black italic

fonts.google.com

www.fontshare.com

open-foundry.com

theleagueofmoveabletype.com

SANS-SERIF

Inter, Source Sans 3, Roboto, IBM Plex Sans, Calibri, Aptos

SERIF

Georgia, Source Serif 4, Charter, EB Garamond, Merriweather

MONOSPACE (CODE/LABELS)

JetBrains Mono, IBM Plex Mono

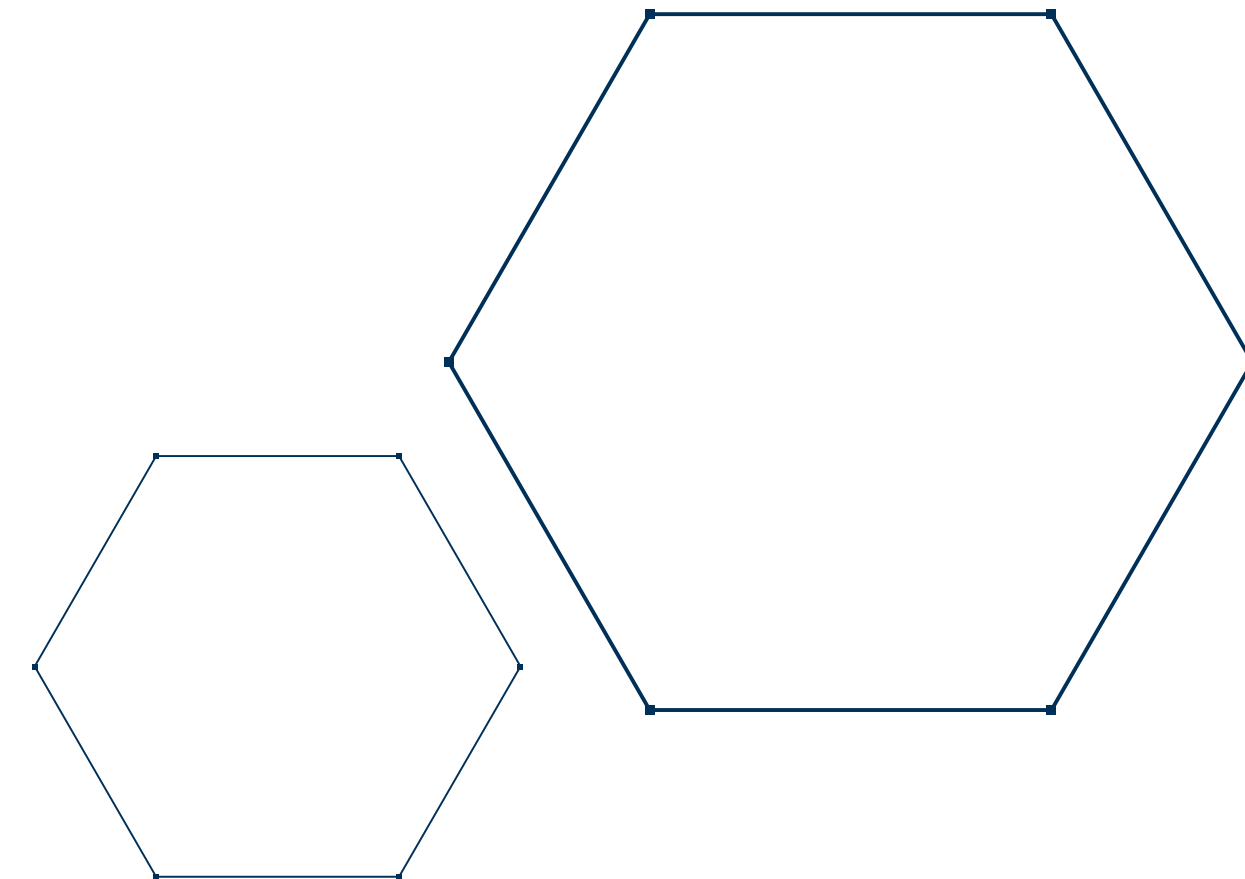
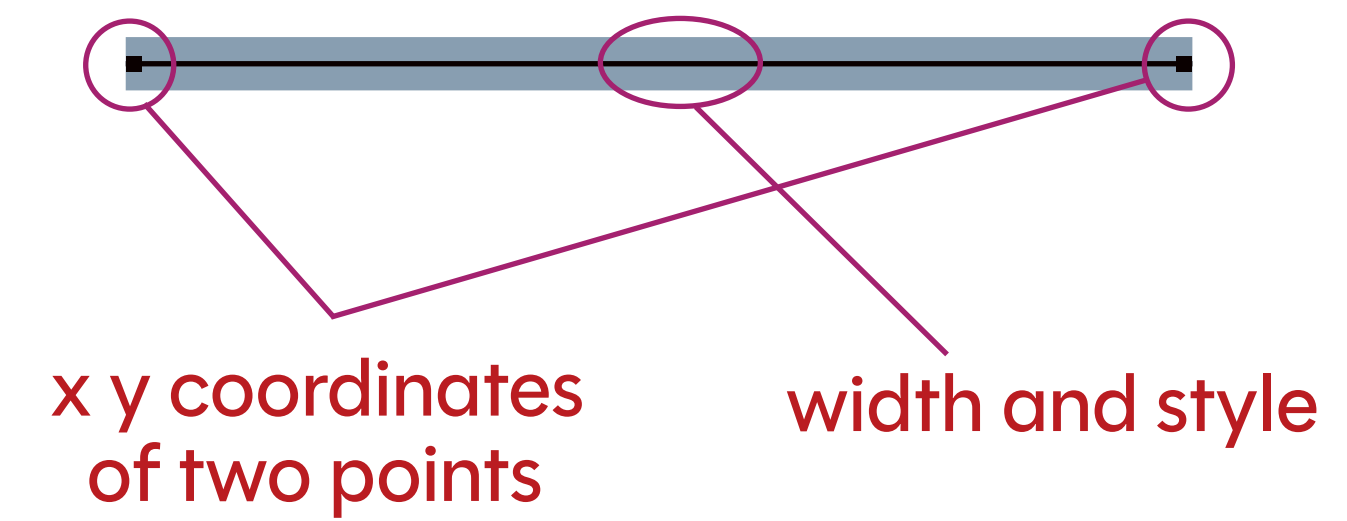
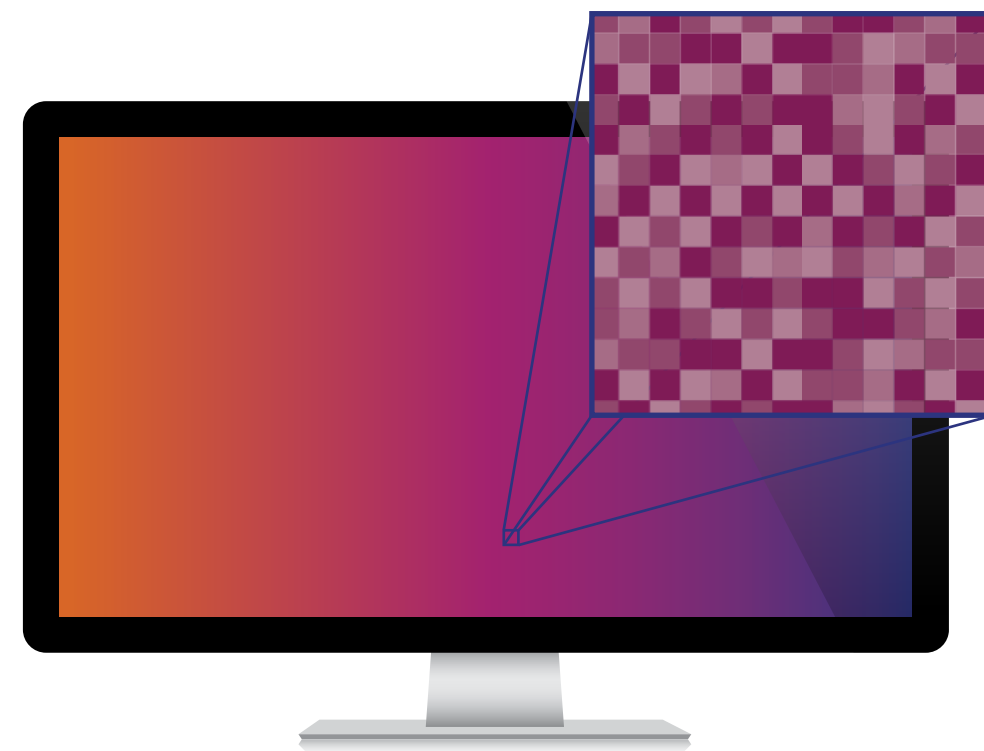
IMAGES



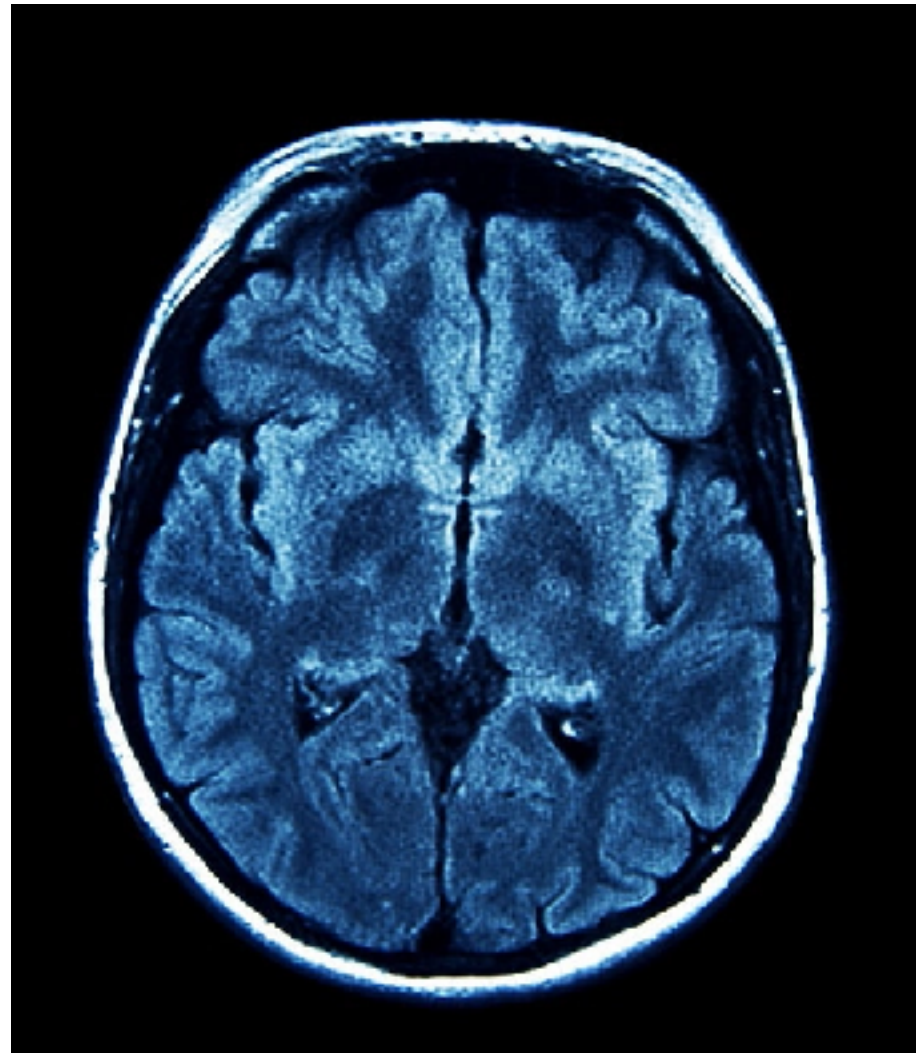
The RIGHT picture can be worth a lot more than a thousand words.

Images can convey information, legibility, and credibility. Good images help viewers parse structure, read small text, and trust that patterns are real—not artifacts. Help them answer, fast: *What am I looking at? What detail matters? Can I read it from here? Is this pattern true or noise?*

Raster vs Vector

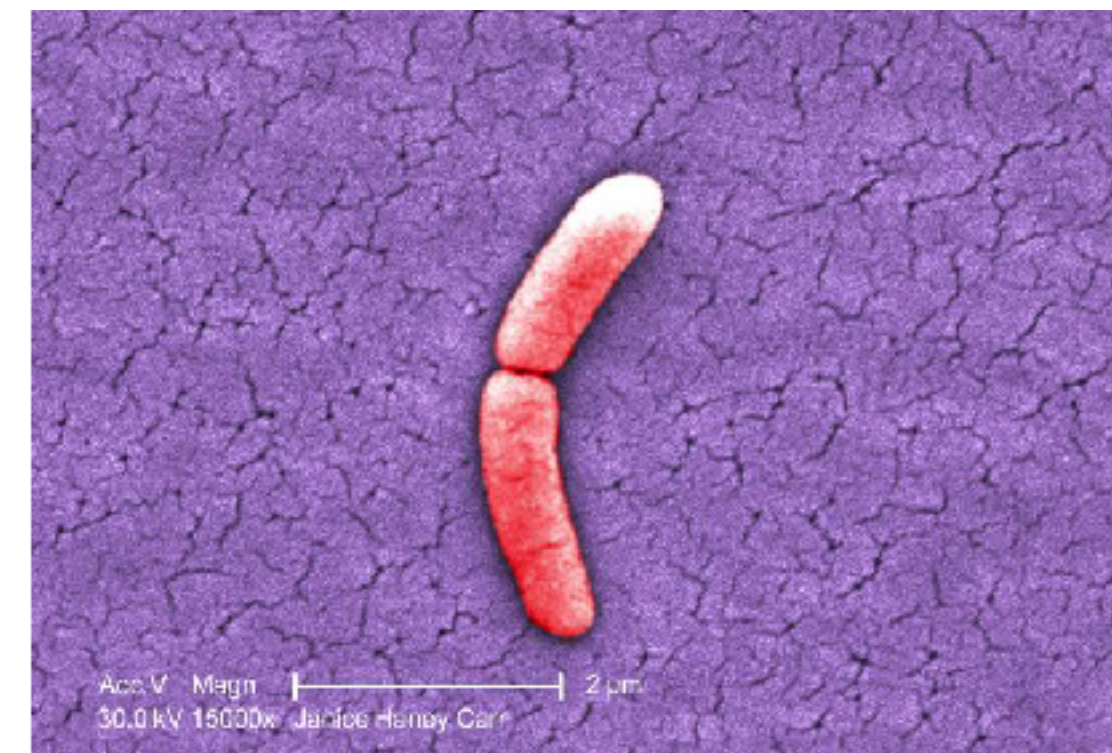


File Types



JPG/JPEG

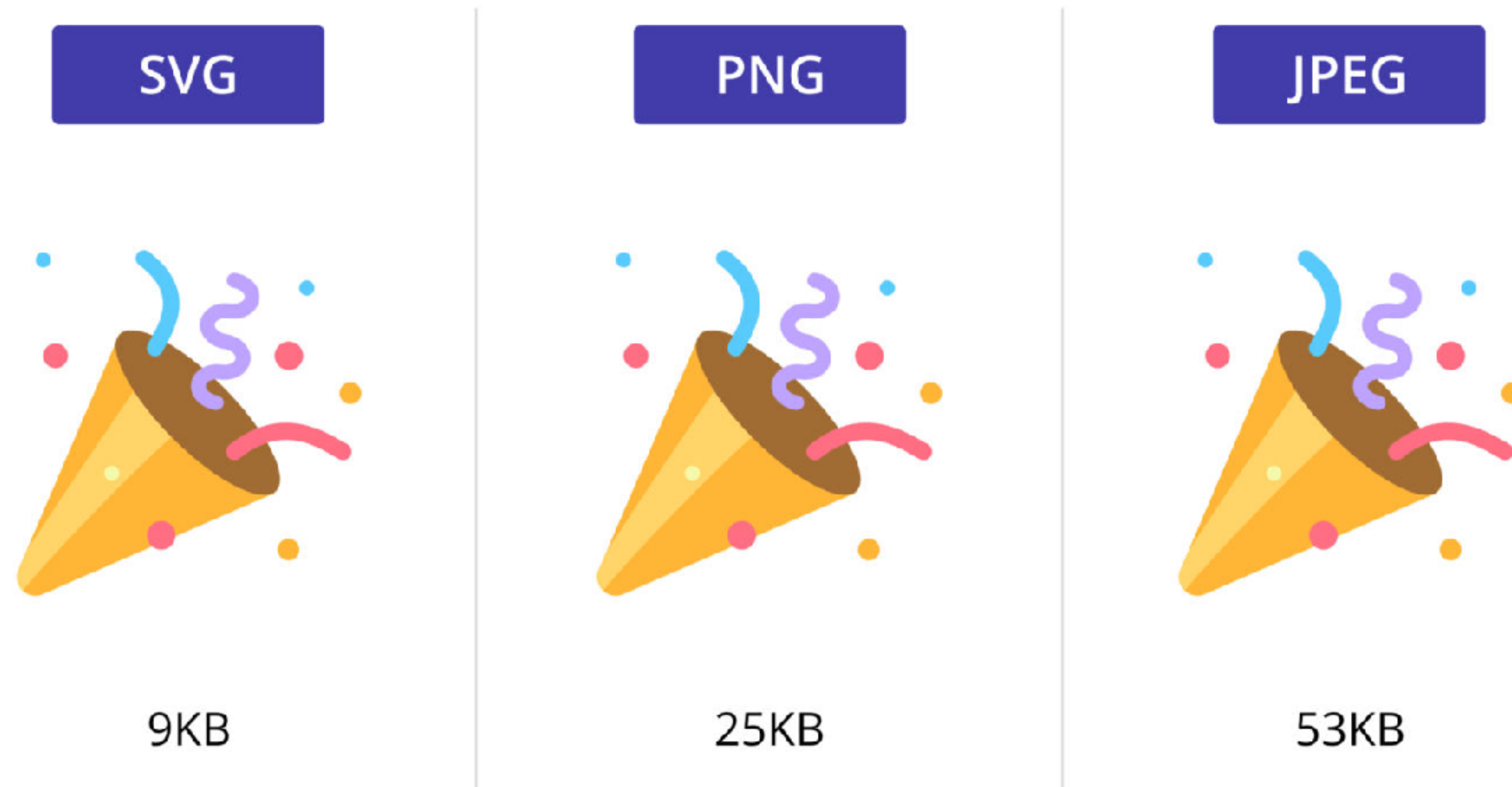
Raster images, best for photos.





PNG

Best for screenshots, anything with type, diagrams, charts with sharp lines, or when you need transparency. Larger file size than JPGs.



SVG

Vector based images Best (better than PNG) for charts, icons, line drawings on the web; stays sharp at any size. Small file sizes.

Screen Resolution

Presentations

Raster Images

Fullscreen HD is 1920×1080 px For very big displays: 3840×2160 px (4K)

If exporting figures as images, aim for at least 1600–1920 px on the long edge.

Vector Images (svg)

These can be scaled to any size.

Print Resolution

Posters and other printed materials

Raster Images

Aim for 300 pixels per inch at final print size (*150 can work for very large posters viewed from far away*).

QUICK MATH: required pixels = inches $\times$ 300.

6-inch-wide figure $\rightarrow 6 \times 300 = 1800$ px wide

Vector Images (svg)

These can be scaled to any size.

Export tips for charts/figures

Excel – R – Matlab – Python

Export as PDF or SVG if possible (keeps vector text/lines).

If you must export as an image, choose PNG at 2–3× the size you'll place it.

Image Resources

[pexels.com](https://www.pexels.com)

unsplash.com

pixabay.com

commons.wikimedia.org

search.creativecommons.org

si.edu/openaccess

digitalcollections.nypl.org

Use better images, remember to give credit!

HIERARCHY



Making the Important Stuff Look Important

Organize info by importance through size, weight, spacing, and position to direct the viewer through your information.

HELP THEM ANSWER, FAST: *Where do I start? What's primary vs. secondary?
What can I skim vs. study? How do pieces relate—and what comes next?*

Expressing Hierarchy

Size & Scale

Color

Typeface

Alignment

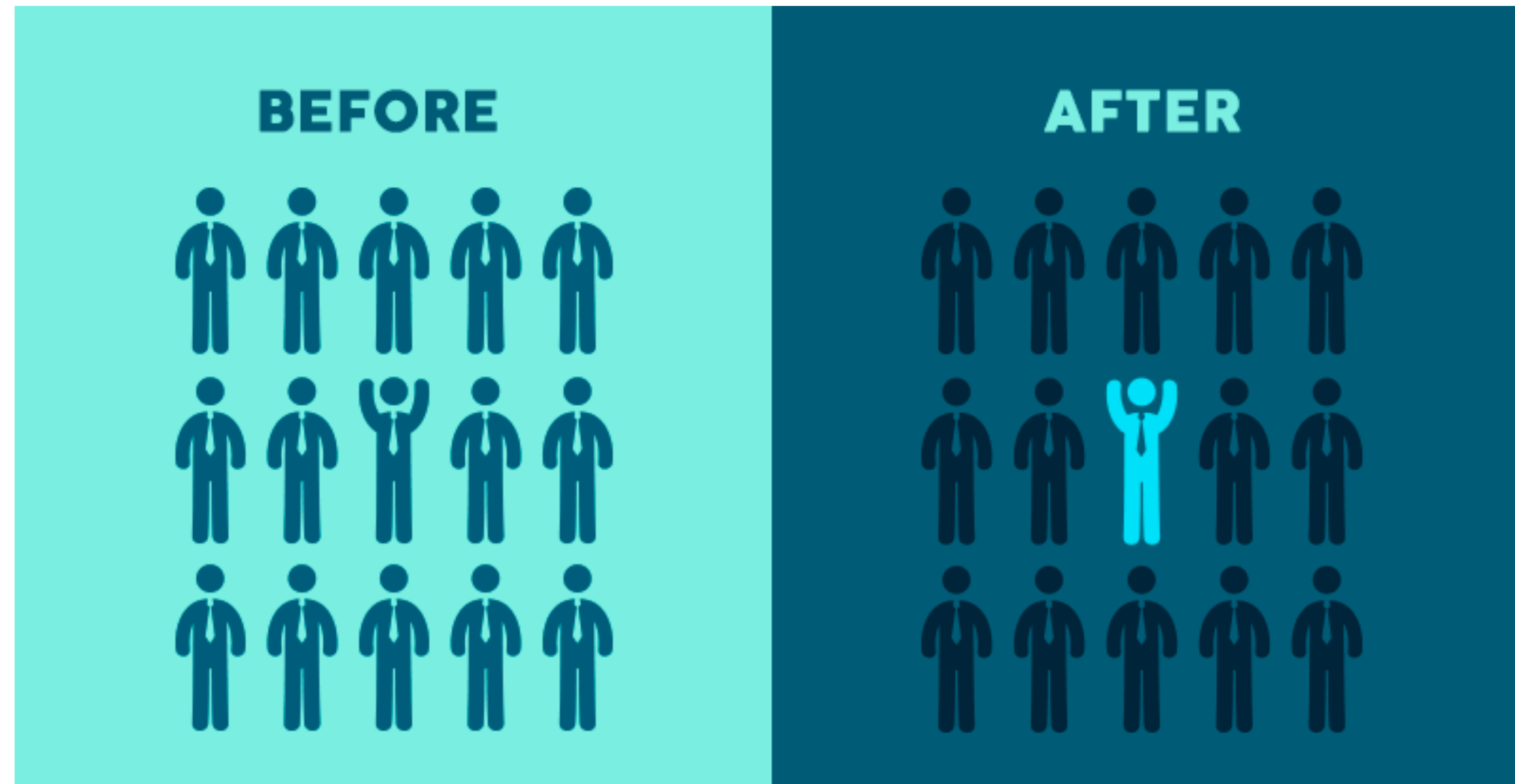
Space & Position (whitespace)

Size & Scale



The largest-sized text is usually seen first, by the viewer and then moves to lead them to other elements.

Color



Color can either draw attention to or de-emphasize an element.

Pairing Fonts

Selecting a secondary contrasting typeface can separate two lines of text from each other or separate two different types of text.

Merriweather

Aptos

fonts.google.com

www.fontpair.co

fonts.adobe.com

Styling: italics, case, underline

EMPHASIS

The emphasis within a body of text can be created by *italicizing* a word or words to set it apart from the rest of the text.

ALL CAPS

The use of all caps in small doses can be an effective way to draw attention and denote importance, particularly for headings or subheads.

UNDERLINE

The use of all caps in small doses can be an effective way to draw attention and denote importance, particularly for headings or subheads.

White space

WHITE SPACE

Is your friend

Libusam quatus assitat emodignis sitam res doluptate et a vendend aescimp oremquu ntotatu rendame nobit vellab ium erat omnimaxim fugiatio quasperro qui cus quid que odit odistis sa sam restio voluptatem harunt. Nequam re magnam dolora sintias ea doles nobit milOr re illest molupid ea ea estem sant. Dus dest ut molorem est quia consectia diosam re qui quatur ra. Libusam quatus assitat emodignis sitam res doluptate et a vendend aescimp oremquu ntotatu rendame nobit vellab ium erat omnimaxim fugiatio quasperro qui cus quid que odit odistis sa sam restio voluptatem harunt. Nequam re magnam dolora sintias ea doles nobit milOr re illest molupid ea ea estem sant. Dus dest ut molorem est quia consectia diosam re qui quatur ra. On cus ipsani non eos modit id magniet as sum que volorest voloreped quatio soluptatenim que sollorporepe necto eum aspisque ist que nem et volonibus anissus eiciliisci bea doluptatias reniendit in eidi con non nienihit, tem. Udit perio volorem voluptatum alibus. Et omni teniet la doluptas elur?



WHITE SPACE

Is your friend

Libusam quatus assitat emodignis sitam res doluptate et a vendend aescimp oremquu ntotatu rendame nobit vellab ium erat omnimaxim fugiatio quasperro qui cus quid que odit odistis sa sam restio voluptatem harunt.

Nequam re magnam dolora sintias ea doles nobit milOr re illest molupid ea ea estem sant. Dus dest ut molorem.



Libusam quatus assitat emodignis sitam res doluptate et a vendend aescimp oremquu ntotatu rendame nobit vellab ium erat omnimaxim fugiatio quasperro qui cus quid que odit odistis sa sam restio voluptatem harunt. Nequam re magnam dolora illest sant.

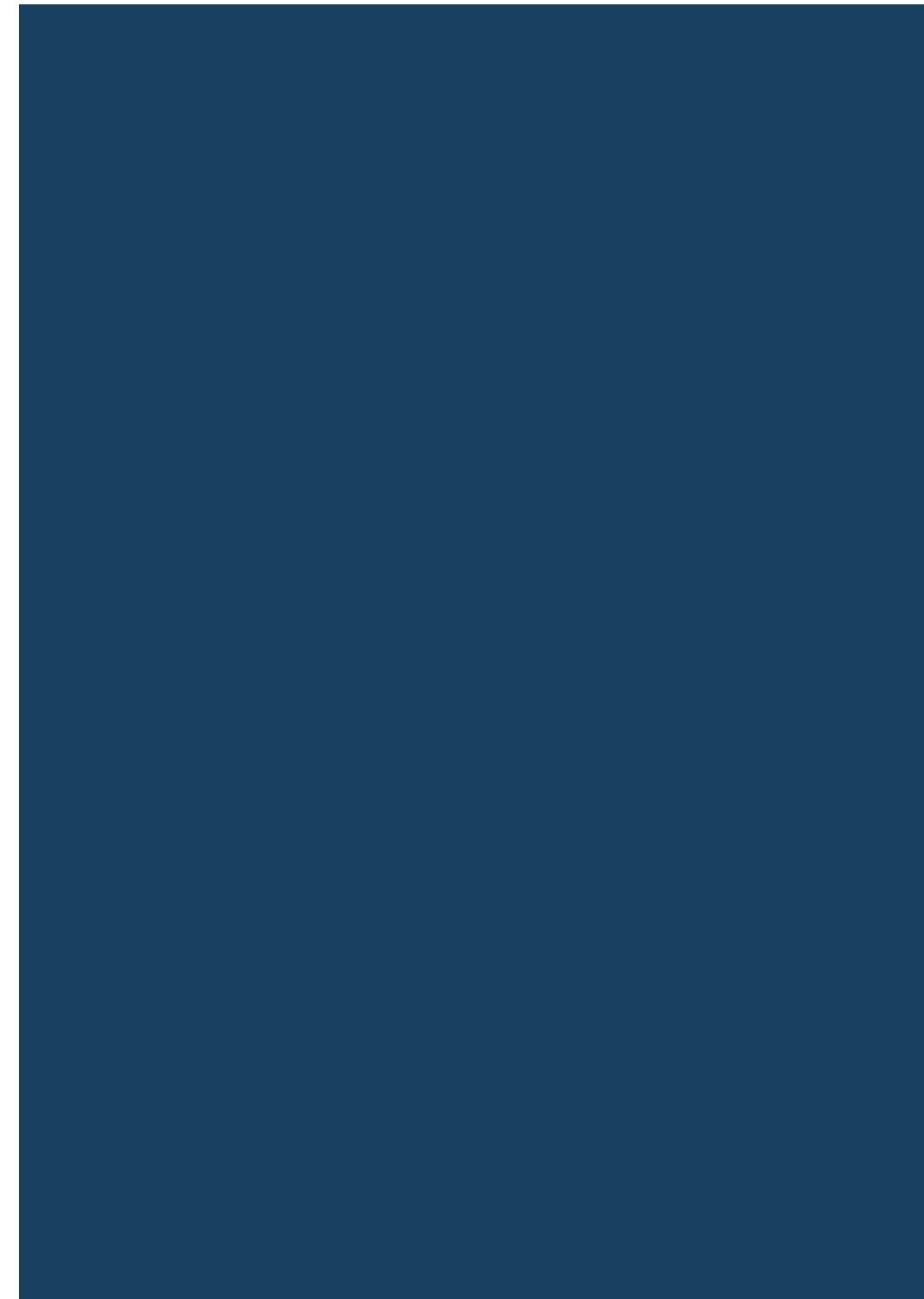
Et omni teniet la doluptas elur?

Alignment

When in doubt, line things up.



Chunking



Before



After

Recovering and restoring deleted files or folders

Here's how to restore a deleted file or folder. To restore a deleted file or folder, sign in to [dropbox.com](#). Click Files in the left sidebar. Click Deleted files in the left sidebar. Locate the deleted file or folder you want to recover, and click on the name. Click Restore. You can restore files that you had edit access to. Files that you have view-only access to are visible on the Deleted files page, but you can't restore them.

Here's how to recover multiple files or folders. If you have a Dropbox Basic (free) or Plus account, you can recover any file or folder deleted in the last 30 days. If you have a Dropbox Professional or Business account, you have 120 days to recover deleted files. Sign in to [dropbox.com](#). Click Files in the left sidebar. Click Deleted files in the left sidebar. Locate the deleted files or folders you want to recover. Hover over the name of the deleted file or folder you want to recover and click the checkbox icon for every item you want to recover. Click the Restore button to restore the deleted file or folder.

Recovering and restoring deleted files or folders

Restoring a deleted file or folder

1. Sign in to [dropbox.com](#).
2. Click Files in the left sidebar.
3. Click Deleted files in the left sidebar.
4. Locate the deleted file or folder you want to recover, and click on the name.
5. Click Restore.

You can restore files that you had edit access to. Files that you have view-only access to are visible on the Deleted files page, but you can't restore them.

Recovering multiple files or folders

If you have a Dropbox Basic (free) or Plus account, you can recover any file or folder deleted in the last 30 days. If you have a Dropbox Professional or Business account, you have 120 days to recover deleted files.

1. Sign in to [dropbox.com](#).
2. Click Files in the left sidebar.
3. Click Deleted files in the left sidebar.
4. Locate the deleted files or folders you want to recover. Hover over the name of the deleted file or folder you want to recover and click the checkbox icon for every item you want to recover.
5. Click the Restore button to restore the deleted file or folder.

POSTERS

Science Fair, But For Adults

Poster sizes vary, but a common one is 36" × 48"

TITLE: 180–240 pt (readable at 6–10 ft).

HEADINGS: 72–120 pt.

BODY: 28–36 pt.

Intro → Methods → Results (mostly visuals) → Conclusion (bullets) → Contact/QR

Use images/diagrams for results, not long paragraphs.

Slides (Talks, Lab Meetings, Defenses)

Title with a point: "X increases Y under Z conditions," not "Results."

Big readable text: Body 24–32 pt minimum.

One graphic per slide when possible.

Margins: don't let text touch edges—keep a visual frame.

Presenter note: Read your titles out loud—they should form the story.

SOFTWARE

VECTOR

Adobe Illustrator

Inkscape

RASTER

Adobe Photoshop

Affinity Photo

Gimp

Canva

Figma

Adobe Express

LAYOUT

Apple

Keynote

Pages

Microsoft

Powerpoint

Word

Google Slides

Material Design by Google

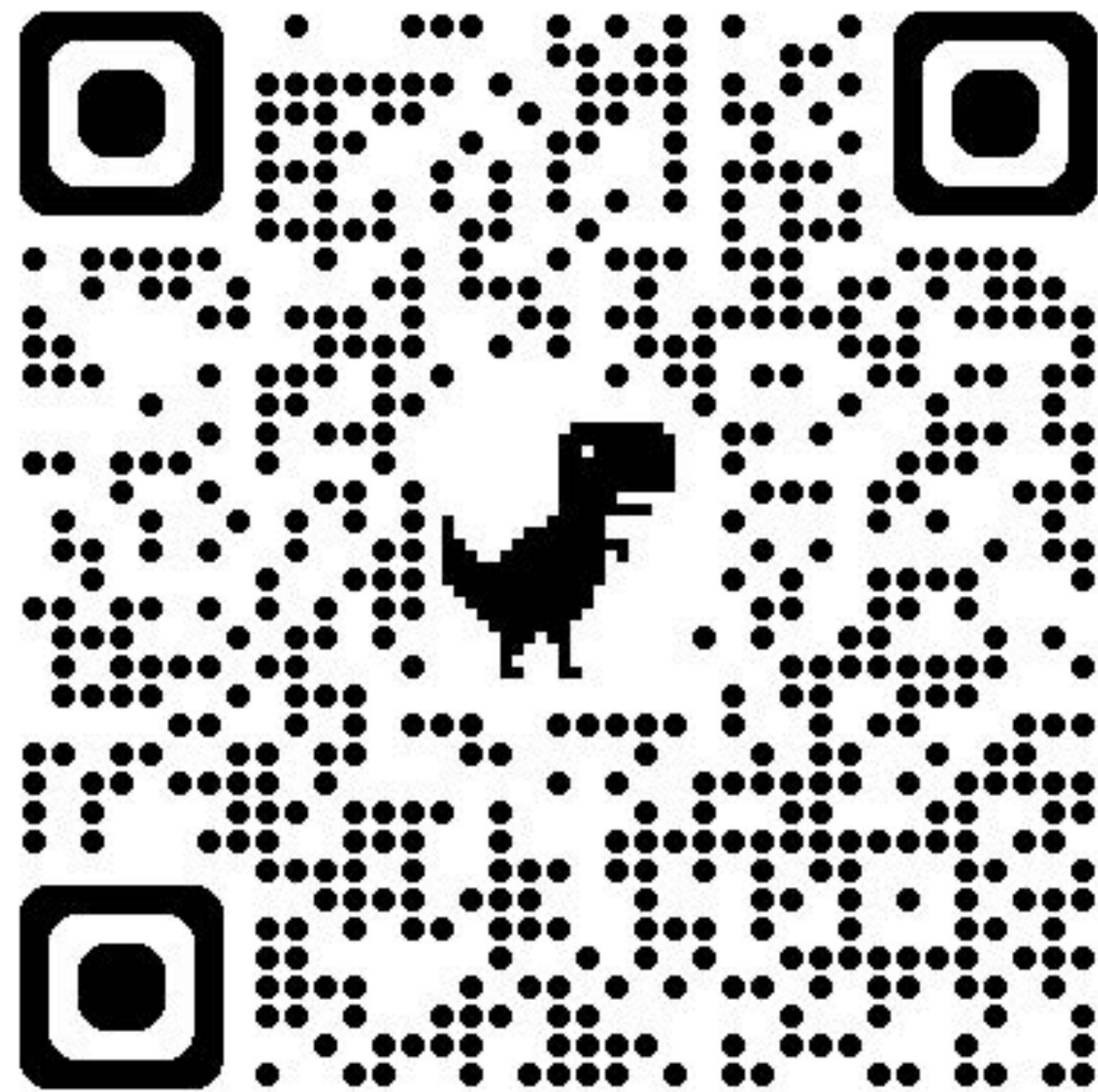
**Human Interface
Guidelines by Apple**

QUICK TEST

Can a friend generally describe what your project is after five-seconds?

PROVIDE YOUR FEEDBACK

Design Hacks for STEM Students: Making Your Research Pop!



Rachel Ramsay

Associate Professor of Web & Digital Design



Distinguished Educator

Rachel.Ramsay@utahtech.edu ||  [/rachelramsay](https://www.linkedin.com/in/rachelramsay)

<https://airtable.com/appMqgBJxZT21jAQH/pagF4zDZpNLBxtiaJ/form>