



Accessibility

A Samuel Pottinger
Stat 198: IDSV
April 15, 2025



Today

> Introduction

Visual Accessibility

Group Activity

Motor Accessibility

Additional Resources

Starting with games



When working in web, there are clear guidelines

The screenshot shows the W3C Web Accessibility Initiative (WAI) website. The header features the W3C logo and the text "Web Accessibility Initiative WAI". To the right, a tagline reads "Strategies, standards, resources to make the Web accessible to people with disabilities". On the far right, there are links for "Get Involved" and "About". Below the header is a navigation bar with five categories: "Accessibility Fundamentals", "Planning & Policies", "Design & Develop", "Test & Evaluate", and "Teach".

W3C® Web Accessibility Initiative WAI

Strategies, standards, resources to make the Web accessible to people with disabilities

Get Involved | About

Accessibility Fundamentals Planning & Policies Design & Develop Test & Evaluate Teach

[Home](#) / [Standards/Guidelines](#) / **Web Content – WCAG 2**

Standards/ Guidelines

[Web Content – WCAG 2](#)

How to Meet WCAG 2
(Quick Reference)

[At a Glance](#)

WCAG 2 Overview

Summary

This page introduces the Web Content Accessibility Guidelines (WCAG) including WCAG 2.0, WCAG 2.1, and WCAG 2.2. WCAG documents explain how to make web content more accessible to people with disabilities.

Accessibility is good for everyone

Civic Engagement

The Curb-Cut Effect

Laws and programs designed to benefit vulnerable groups, such as the disabled or people of color, often end up benefiting all of society.

CITE

SHARE

COMMENT

DOWNLOAD

PRINT

ORDER REPRINTS

By [Angela Glover Blackwell](#) | Winter 2017





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Introduction

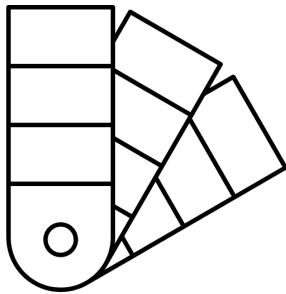
> **Visual Accessibility**

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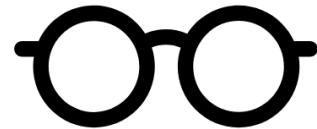
Additional Resources

Visual accessibility at a high level



Color
Deficiency

May have contrast
settings enabled



Low
Vision

May use magnifier
or scaled resolution



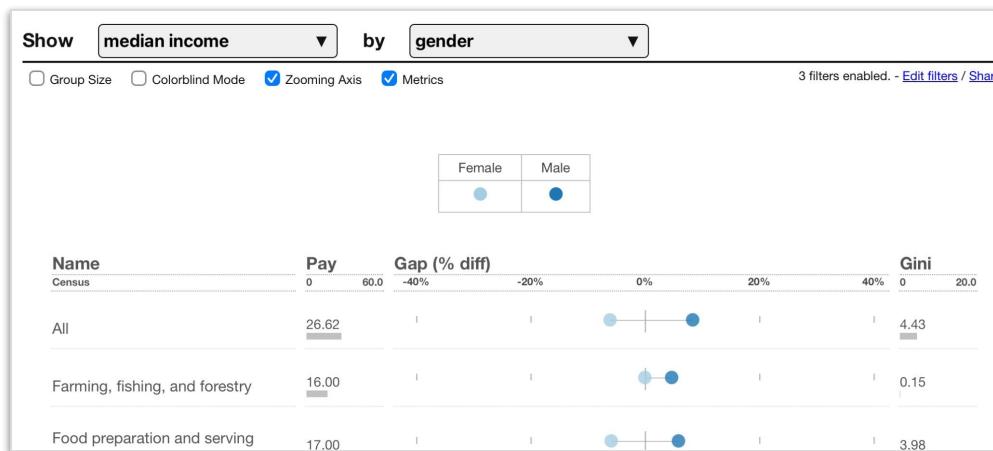
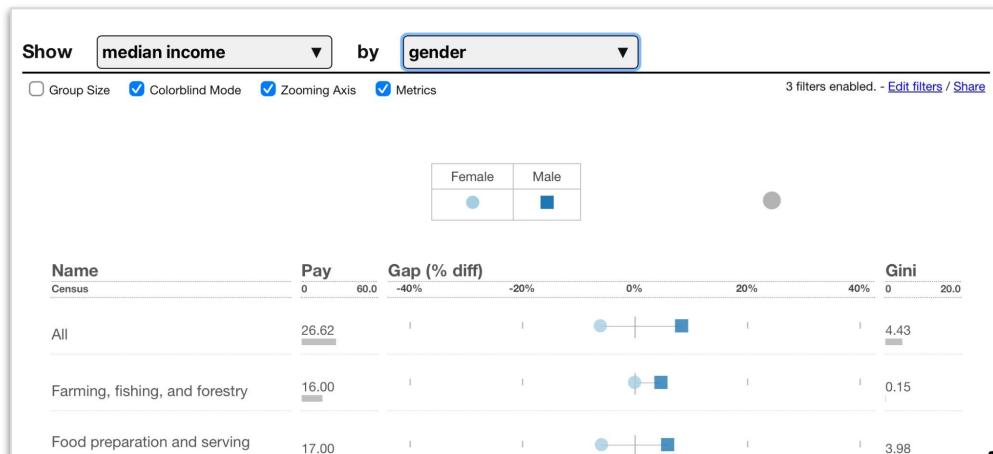
Blind or
Partially Blind

May use screen
reader / keyboard
only

Designing for Color Deficiency (WCAG 1.4.1)

Color should not be the only way that elements are visually distinguished from each other.

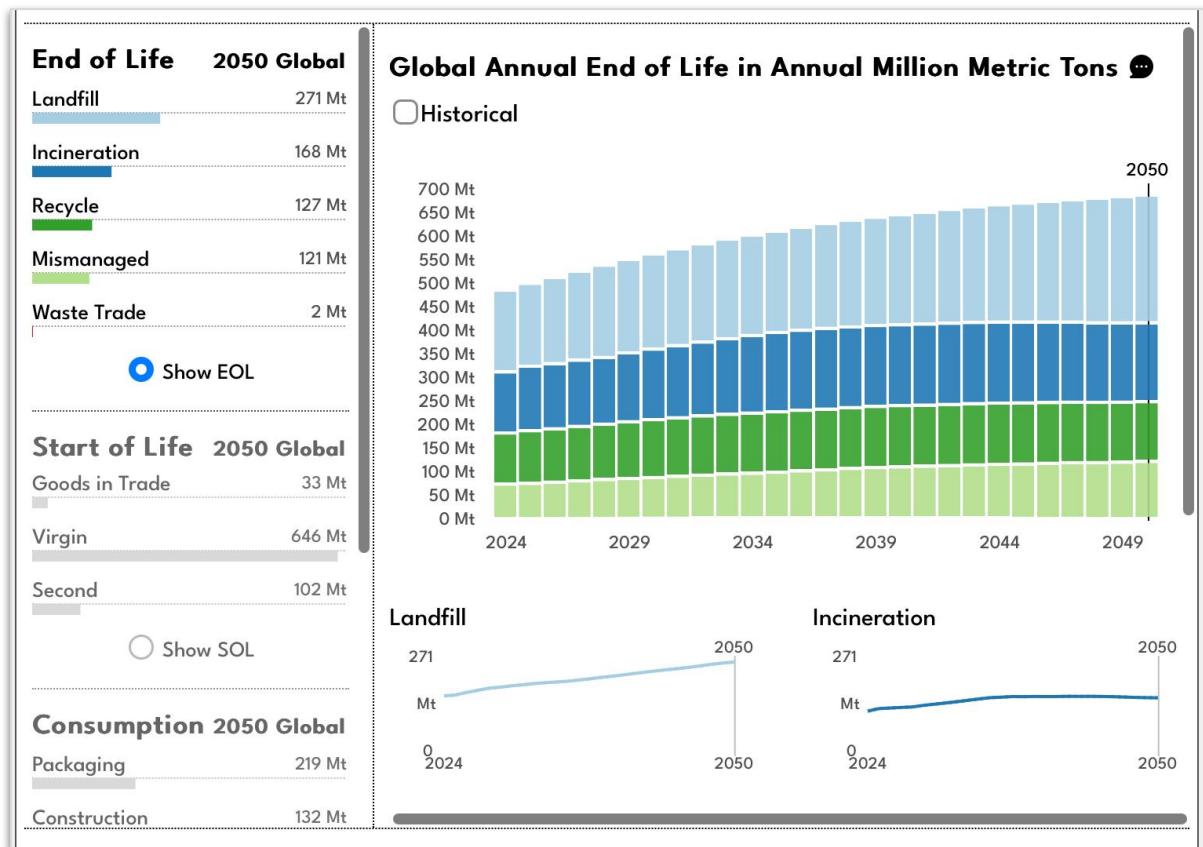
This is sometimes called “double encoding” as color is redundant.



Designing for Color Deficiency (WCAG 1.4.1)

Another option is to offer alternative visualizations.

Be careful with semantic association.



Low Vision: Minimal Contrast (WCAG 1.4.3)

We should ensure that a color is sufficiently different from its background to be perceived.

Also, ensure sufficient contrast between elements as well.

Contrast Checker

[Home](#) > [Resources](#) > Contrast Checker

Foreground

Hex Value: #0000FF
Color Picker:  Alpha: 1
Lightness: 

Background

Hex Value: #FFFFFF
Color Picker:  Lightness: 

Contrast Ratio:
8.59:1

[permalink](#)

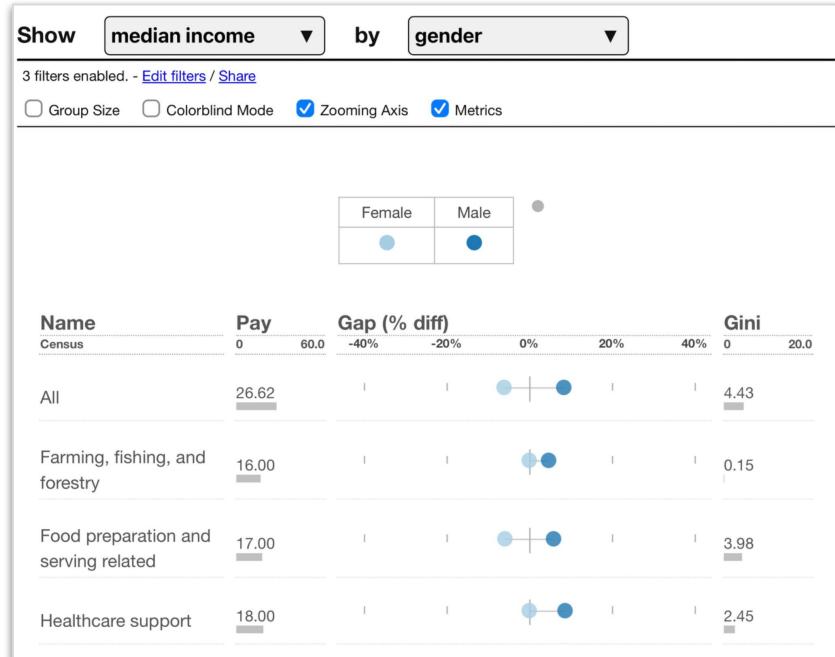
Normal Text

WCAG AA: **Pass**
WCAG AAA: **Pass**

The five boxing wizards jump quickly.

Low Vision: Resize (WCAG 1.4.4)

The application should still work when zoomed to 200%



Low Vision: Supporting Screen Readers (WCAG 1.1.1)

Typically this comes in the form of a non-visual alternative such as a table or data download.

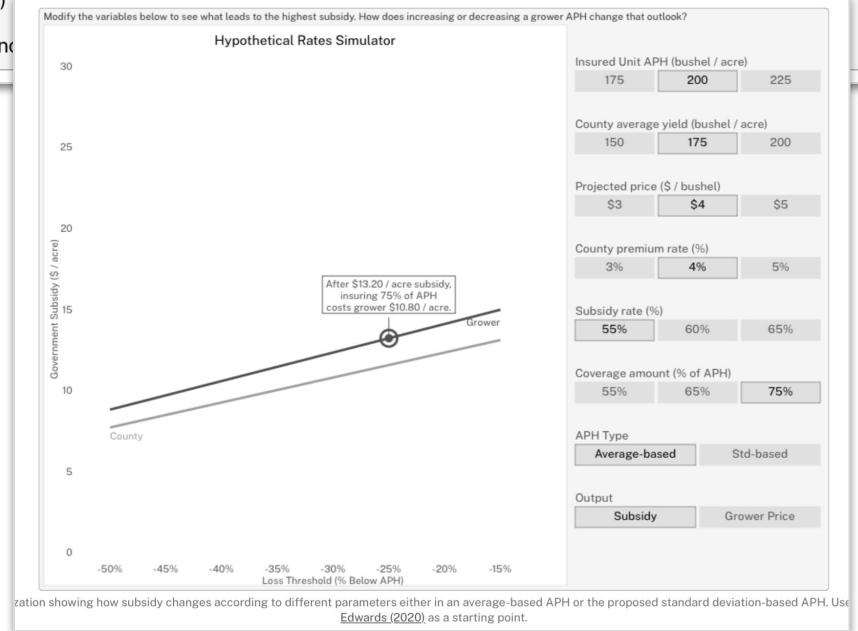
The formulas which can conceptually simulate rate setting:

- **overall price** = insured unit aph * projected price * county premium rate * coverage amount
- **subsidy** = subsidy rate * overall price
- **cost to grower** = (1 - subsidy rate) * overall price

This is an alternative to a visualization which evaluates these equations for some examples. One such set of examples:

- **overall price** = 200 bushel / acre * \$4 / bushel * 4% * 75% = \$24 / acre
- **subsidy** = 55% * \$24 / acre = \$13.20 / acre
- **cost to grower** = (1 - 55%) * \$24 / acre = \$10.80 / acre

The subsidy increases as APH inc





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Let's try some accessibility options

Try out the different accessibility options at:

<https://global-plastics-tool.org>

What kind of impairment might each option be trying to address?

Global Plastics AI Policy Tool
Countries are exploring ways to reduce the impact of plastic. This tool explores different policy interventions both regionally and globally.

Overview Details Simulation **Settings** Downloads Guide About Contents

Settings

This tab allows you to configure the behavior of the application. These choices are independent of both your policy selections and changes to financial and system assumptions. It intends to support ergonomic use of the application per user preference and, as appropriate, use of adaptive technology. Note that changes to these settings will be saved to a small text file on your machine called a cookie. If you return to the application later and the file is still present, you will be given the option to restore your settings a few seconds after the application finishes loading.

Layout

Some views like the details tab may show a policy panel next to visualization describing that policy. Some users may prefer a linear view where the visualization takes up the whole window width.

Side by side layout
 Linear layout

Colors

By default, the color scheme emphasizes color differences between series (example: to better differentiate end of life fates by color). This may benefit some color blind and low vision users. However, you may prefer a high contrast color scheme which emphasizes difference from colors to the background, helping other low vision users.



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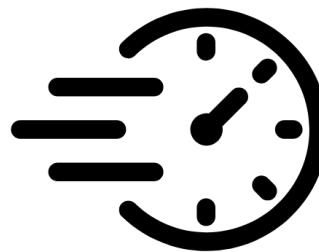
Additional Resources

Interactive visualization has some motor concerns



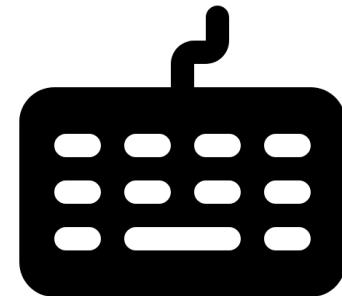
Fine Motor Control

May use alternative input devices.



Timed Inputs

May require additional time.

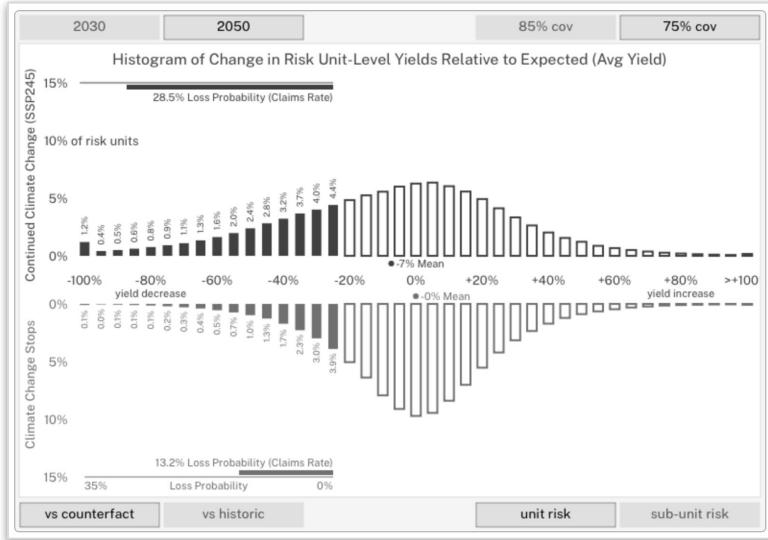


Keyboard-only

May not have a pointing device.

Provide non-keyboard controls (WCAG 2.1.1)

If doing custom drawing, consider adding keyboard alternatives to main controls.



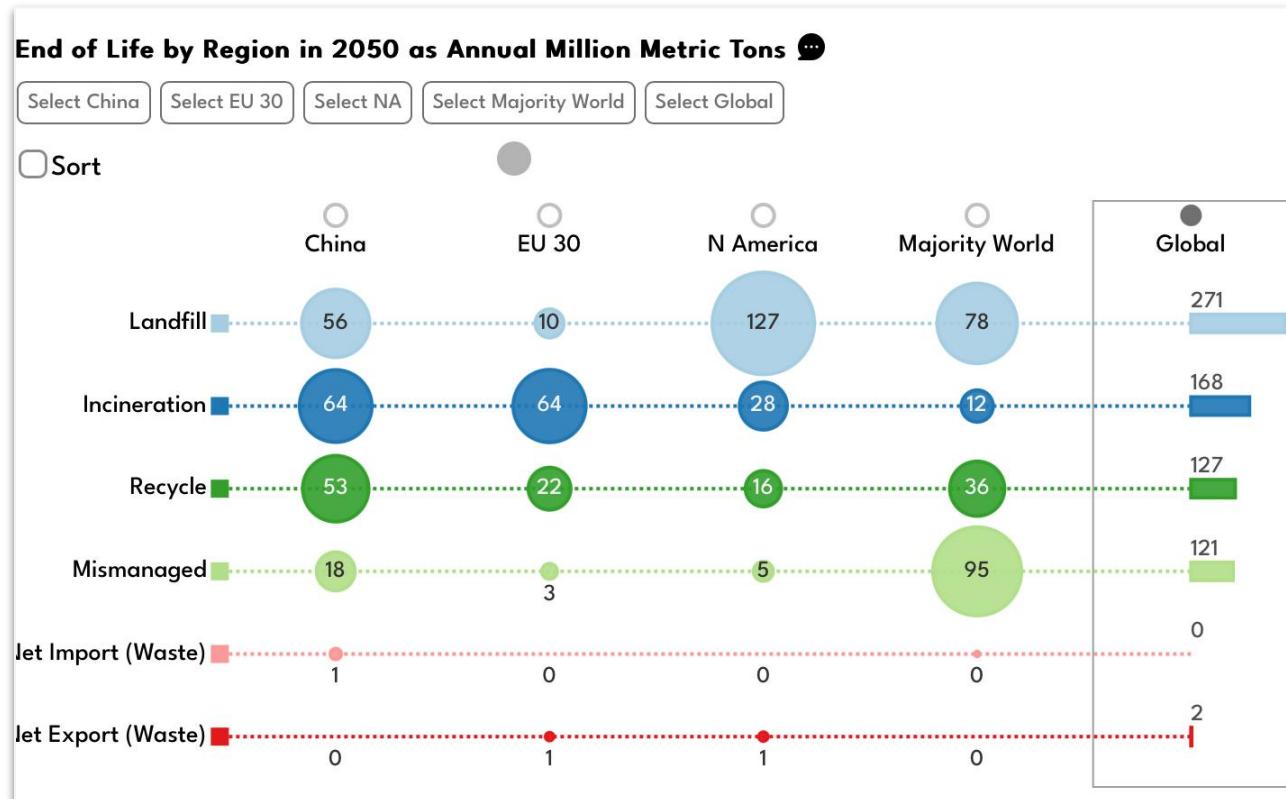
The [distribution visualization](#) has the following controls:

- **Esc**: Exit the visualization
- **y**: Change year
- **c**: Change coverage
- **v**: Change vs historic or counterfactual
- **u**: Change unit size

The visualization will need focus in order to receive keyboard commands.

Use tab order and focus (WCAG 1.3.2)

For those using standard HTML elements, consider tab and tab focus.



Adjustable timing (WCAG 2.2.1)

Allow modification of timing or pausing of timed actions.

The screenshot shows the Sketchingpy website. At the top, there is a dark banner with a yellow square icon and the text: "Image preloads for web are now available. Get your images faster! See [draw_image](#) for more details." Below this is the main header with the title "Sketchingpy" in a large, bold, sans-serif font. Underneath the title is a subtitle: "Creative coding and interactive science everywhere for everyone: [web](#), [desktop](#), [mobile](#), [Jupyter](#), and [more](#). [Open source!](#)". A navigation bar follows, featuring links for "Home" (which is highlighted in a dark grey box), "Guides", "Examples", "Reference", "Community", and "Editor". In the center of the page, there is a large text block: "Creative coding library for **simulations** in Python targeting **laptop**." At the bottom of the page, a small note says "Shuffling in 2 seconds... [Pause](#) / [Shuffle Now](#)".

Reading

The reading for this lecture will include more info about motor impairment.



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Accessibility is a deep topic

The screenshot shows the WebAIM homepage with a navigation bar at the top featuring links for services, articles, resources, projects, and community. A search bar and a sidebar with links for Introduction to Web Accessibility and WebAIM Training are also visible. The main content area displays a woman sitting on a bench reading a book, with the heading "WebAIM's WCAG 2 Checklist". Below this, a breadcrumb trail shows the path: Home > Articles > WCAG > WCAG 2 Checklist. The page includes an "Article Contents" sidebar with a list of four principles: Perceivable, Operable, Understandable, and Robust. To the right, there are sections for "Translations" (French, Dutch) and "Related Resources" (Web Content Accessibility Guidelines, Section 508 Checklist). A note indicates the page was last updated on June 20, 2024.

The screenshot shows the W3C Web Accessibility Initiative (WAI) homepage with a navigation bar at the top featuring links for Accessibility Fundamentals, Planning & Policies, Design & Develop, Test & Evaluate, and Teach. A sidebar on the left lists "Strategies, standards, resources to make the Web accessible to people with disabilities". The main content area features a large "WCAG 2 Overview" section with a "Standards/Guidelines" sub-section containing links for "Web Content - WCAG 2" and "How to Meet WCAG 2 (Quick Reference)". Below this is a "Summary" section which begins with the text: "This page introduces the Web Content Accessibility Guidelines (WCAG) including WCAG 2.0, WCAG 2.1, and WCAG 2.2. WCAG documents explain how to make web content more accessible to people with disabilities."

Works cited

- A. Shatov, "White Digital Device at 12 00," Unsplash, 2021. Available: <https://unsplash.com/photos/white-digital-device-at-12-00-DHI49oyrn7Y>
- M. Brown, "Making Games Better for Gamers with Colourblindness & Low Vision | Designing for Disability," Game Maker's Toolkit, 2018. Available: <https://www.youtube.com/watch?v=xrqedU4cZaLw>
- WAI, "WCAG 2 Overview," W3C, 2025. Available: <https://www.w3.org/WAI/standards-guidelines/wcag/>
- A. Blackwell, "The Curb-Cut Effect," SSIR, 2017. Available: https://ssir.org/articles/entry/the_curb_cut_effect
- Larea, "Color," The Noun Project, 2024. Available: <https://thenounproject.com/icon/color-7309833/>
- Alvida, "Glasses," The Noun Project, 2025. Available: <https://thenounproject.com/icon/glasses-7656753/>
- R. Romadoni, "Blind," The Noun Project, 2025. Available: <https://thenounproject.com/icon/blind-7616838/>
- A. Pottinger, "Income Gaps," Income Gaps Project, 2025. Available: <https://incomegaps.com/>
- A. Pottinger, R. Geyer, N. Biyani, C. Martinez, N. Nathan, M. Morse, M. de Bruyn, C. Boettiger, E. Baker, K. Koy, and D. McCauley, "Global Plastics AI Policy Tool," University of California, 2024. Available: <https://global-plastics-tool.org/>
- A. Pottinger, R. Geyer, N. Biyani, C. Martinez, N. Nathan, M. Morse, C. Liu, S. Hu, M. de Bruyn, C. Boettiger, E. Baker, and D. McCauley, "Pathways to reduce global plastic waste mismanagement and greenhouse gas emissions by 2050," Science, 2024. doi: [10.1126/science.adr3837](https://doi.org/10.1126/science.adr3837)
- WebAIM, "Contrast Checker," Utah State University. Available: <https://webaim.org/resources/contrastchecker/>
- A. Pottinger, L. Connor, B. Guzder-Williams, M. Weltman-Fahs, N. Gondek, and T. Bowles, "Climate-driven doubling of U.S. maize loss probability: Interactive simulation with neural network Monte Carlo," JDSSV, 2025. doi: [10.52933/jdssv.v5i3.134](https://doi.org/10.52933/jdssv.v5i3.134)
- E. Purnomo, "Target," The Noun Project, 2022. Available: <https://thenounproject.com/icon/target-4642615/>
- P. Octaviani, "Keyboard," The Noun Project, 2023. Available: <https://thenounproject.com/icon/keyboard-5600882/>
- Alzam, "Speed," The Noun Project, 2022. Available: <https://thenounproject.com/icon/speed-4573076/>
- A. Pottinger and Sketchingpy Contributors, "Sketchingpy," Sketchingpy Project, 2025. Available: <https://sketchingpy.org/>
- WebAIM, "WebAIM's WCAG 2 Checklist," Utah State University. Available: <https://webaim.org/resources/contrastchecker/>



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