Accessibility for Everyone

Beth Tucker Long

Beth Tucker Long

- PHP Developer
- Stay-at-home Mom
- User Group Leader
- Mentor
- OSMI volunteer

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Open Sourcing Mental Illness
http://OSMIHelp.org

- Handbooks to help improve workplaces
- Research
- Resources

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Find Me

Beth@TreelineDesign.com

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TreelineDesign.com/slides

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WHAT IS ACCESSIBILITY?

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What is Accessibility?

The measure of a web page's usability by persons with one or more disabilities.

--Usability.gov
https://www.usability.gov/what-and-why/glossary/tag/accessibility/index.html

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What is Accessibility?

- Improving your usability
- Following government mandates
- Improve customer satisfaction
- Increase customer diversity
- Be fair

- Widening your audience

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How much bigger?

The United Nations estimates:

- 15% of the world's population has a disability

- https://www.who.int/teams/noncommunicable-diseases/sensory-functions-disability-and-rehabilitation/world-report-on-disability
- https://unstats.un.org/unsd/demographic-social/sconcerns/disability/statistics/#!/home

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All Age Issue

Regardless of age, disabled Americans are adopting tech at lower rates

% of U.S. adults who say they have ...

	Ages 65+			Ages 18-64		
	Any disability	No disability	Diff	Any disability	No disability	Diff
Desktop/laptop computer	50	66	-16	67	84	-17
Smartphone	32	45	-13	70	87	-17
Home broadband	36	57	-21	66	80	-14
Tablet	21	36	-15	44	57	-13

Source: Survey conducted Sept. 29-Nov. 6, 2016.

PEW RESEARCH CENTER

http://www.pewresearch.org/fact-tank/2017/04/07/disabled-americans-are-less-likely-to-use-technology/

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Main Areas of Difficulty

- Vision
- Mobility
- Hearing

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Vision

- Colorblindness
  http://www.colourblindawareness.org/colour-blindness/

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Vision

- Vision Impairment
  http://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment

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Mobility

- Movement

  https://ftp.cdc.gov/pub/Health_Statistics/NCHS/NHIS/SHS/2016_SHS_Table_A-10.pdf

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Hearing

- Hearing Trouble

https://www.cdc.gov/nchs/fastats/disability.htm

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Need More to Sell This?

- It's not just for people with disabilities.

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3280373/

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Need More to Sell This?

- It's the future.

- http://www.pewresearch.org/fact-tank/2017/12/12/nearly-half-of-americans-use-digital-voice-assistants-mostly-on-their-smartphones/
- https://www.statista.com/statistics/1029573/us-voice-assistant-users/

Need More to Sell This?

- Money: $1.2 trillion.

- https://www.perkins.org/access
- https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment

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WHAT CAN WE DO?

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Vision - Color

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Vision

- Here is some text that does not have high enough contrast.

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Vision

- Here is some text that does not have high enough contrast.
- High contrast is important.

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Vision

- Here is some text that does not have high enough contrast.
- High contrast is important.
- High contrast makes a difference.

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Vision

This is really important text on my site. You need to be able to read all of it, so make sure you can. This is really important text on my site. You need to be able to read all of it, so make sure you can. This is really important text on my site. You need to be able to read all of it, so make sure you can.

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Vision

This is really important text on my site. You need to be able to read all of it, so make sure you can. This is really important text on my site. You need to be able to read all of it, so make sure you can. This is really important text on my site. You need to be able to read all of it

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Vision

Vision

This is the great description of my website. You can click here to get to some great content or you could click here to get to our newsletter or you could click here to send us an email.

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Vision

Number of Users:	27
Number of Devices:	81
Top Usage Hour:	10am – 11am
Primary Entry Point:	Login

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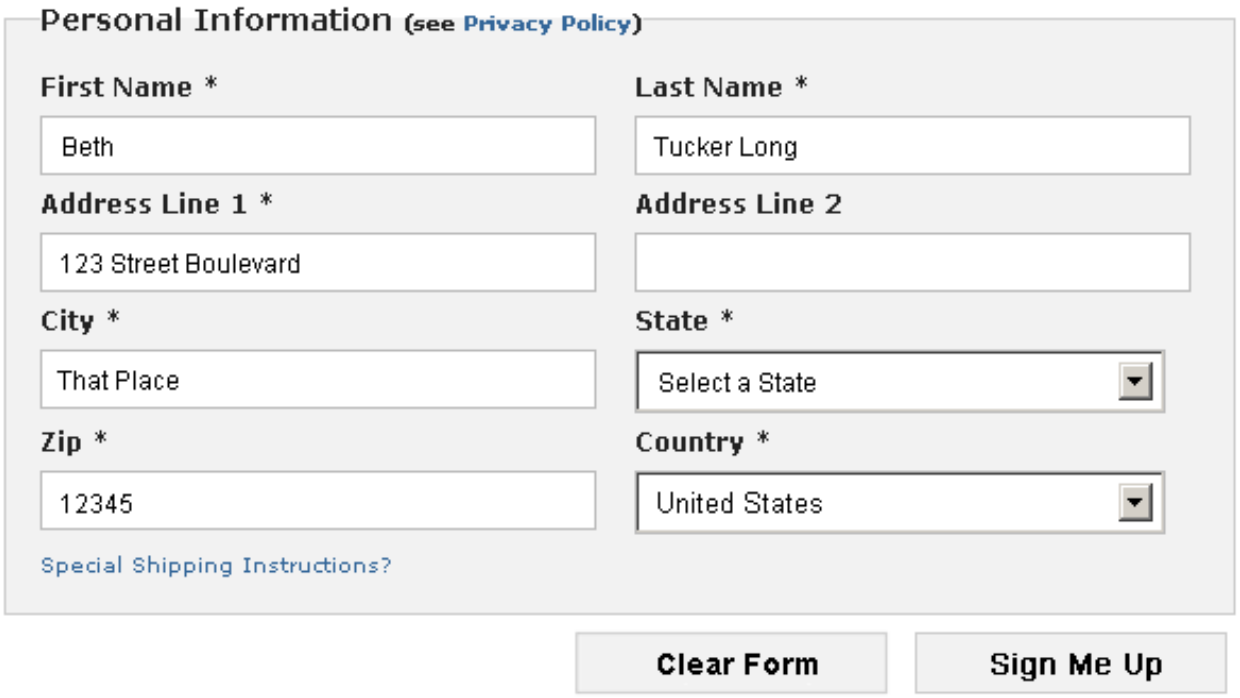
Mobility



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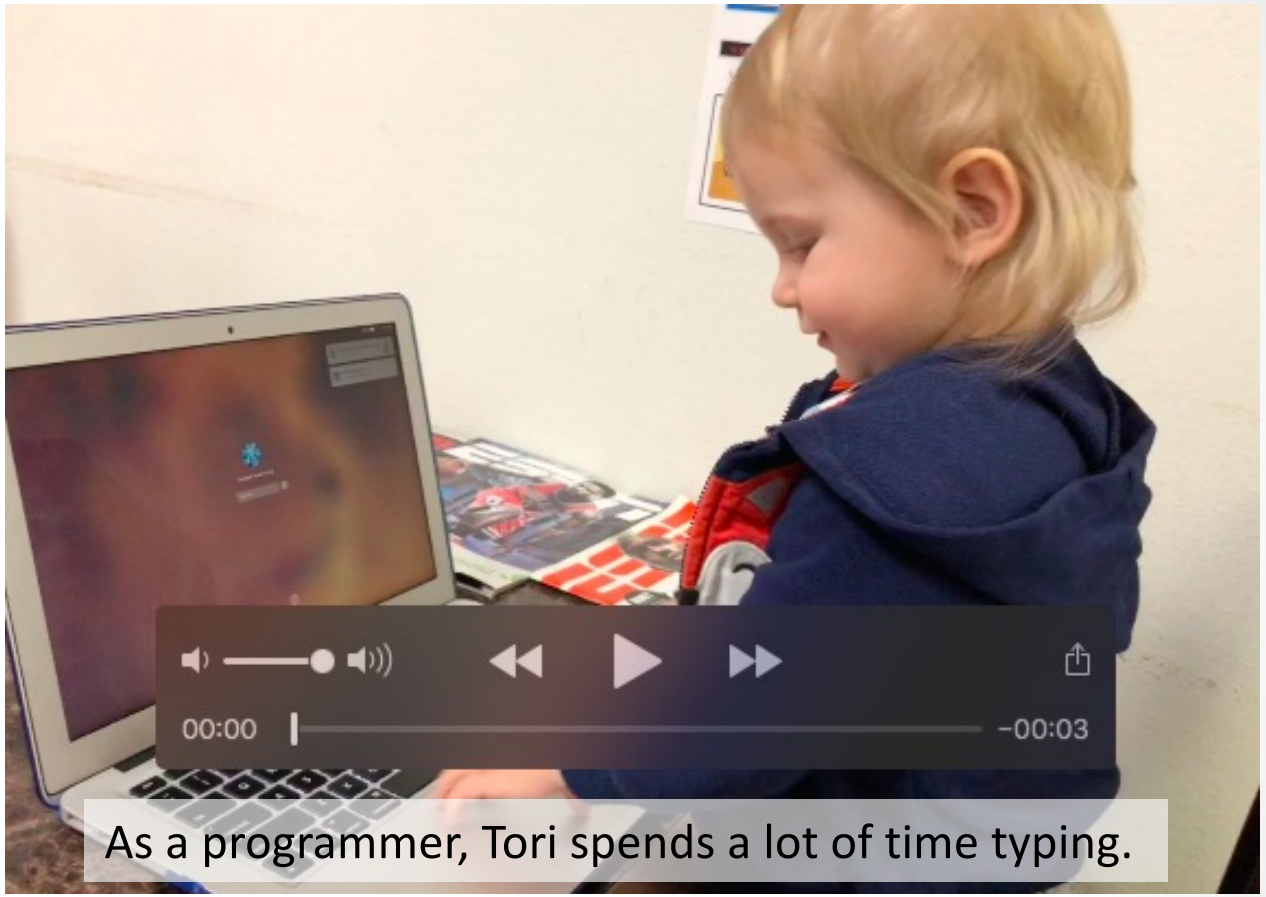
Hearing



As a programmer, Tori spends a lot of time typing.

TESTING

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Vision

- Enlarge your fonts
- Turn down your screen brightness
- Adjust the color saturation on your screen
- Disable your stylesheets

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Vision

Turn your monitor off/around and use:

VoiceOver - https://help.apple.com/voiceover/info/guide/

Narrator - https://support.microsoft.com/en-us/help/17173/windows-10-hear-text-read-aloud

NVDA - https://www.nvaccess.org/

Orca - https://help.gnome.org/users/orca/stable/

TalkBack - https://support.google.com/accessibility/android/topic/3529932

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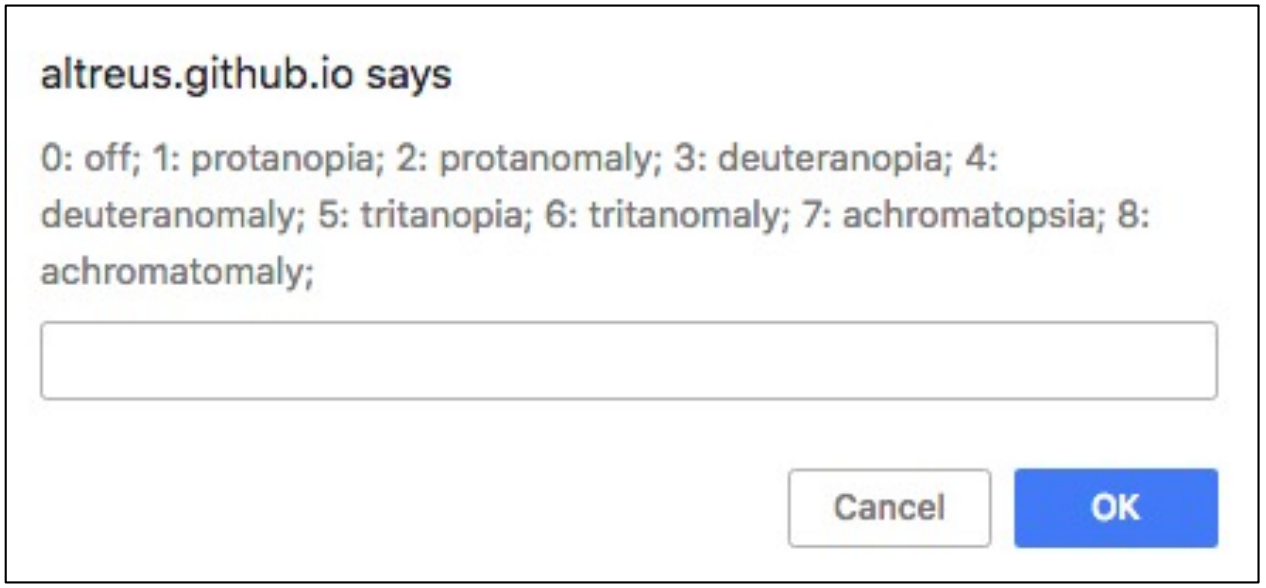
Simulate Colorblindness



Colour Blind
https://github.com/Altreus/colourblind

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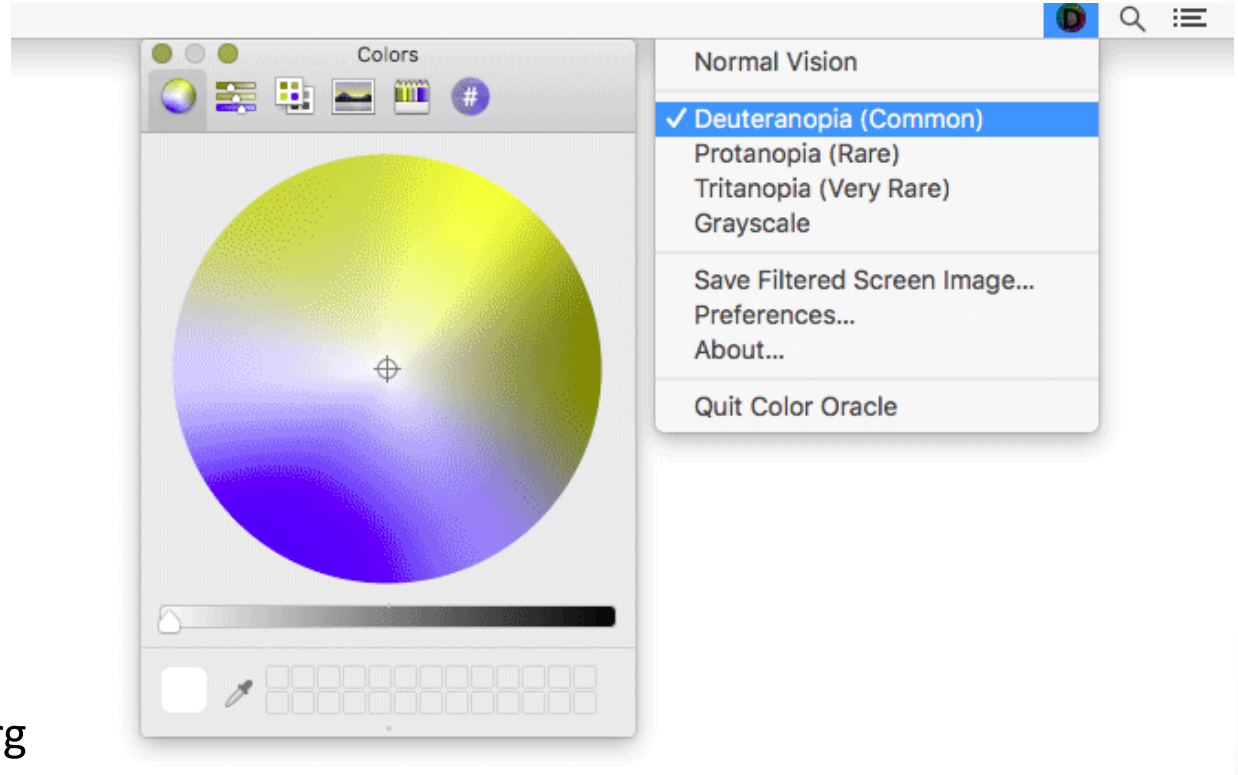
Simulate Colorblindness



Color Oracle
http://colororacle.org

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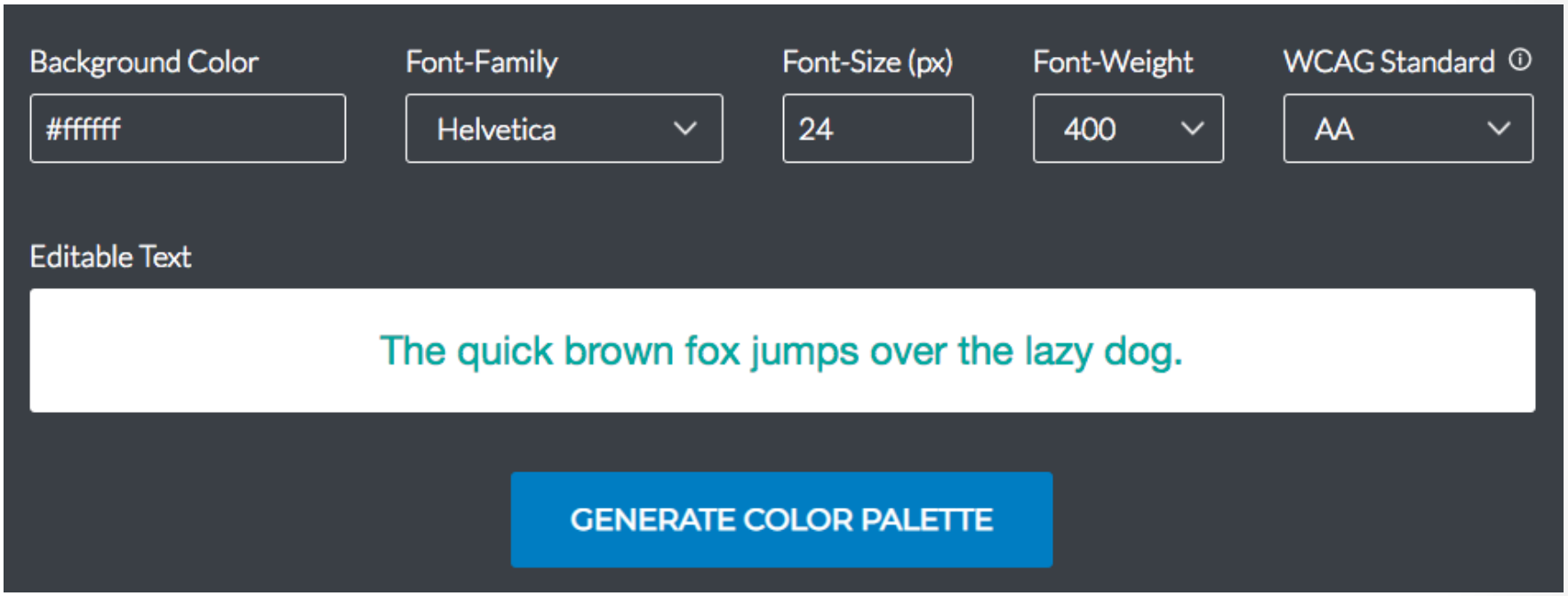
Generate a Color Palette



http://colorsafe.co

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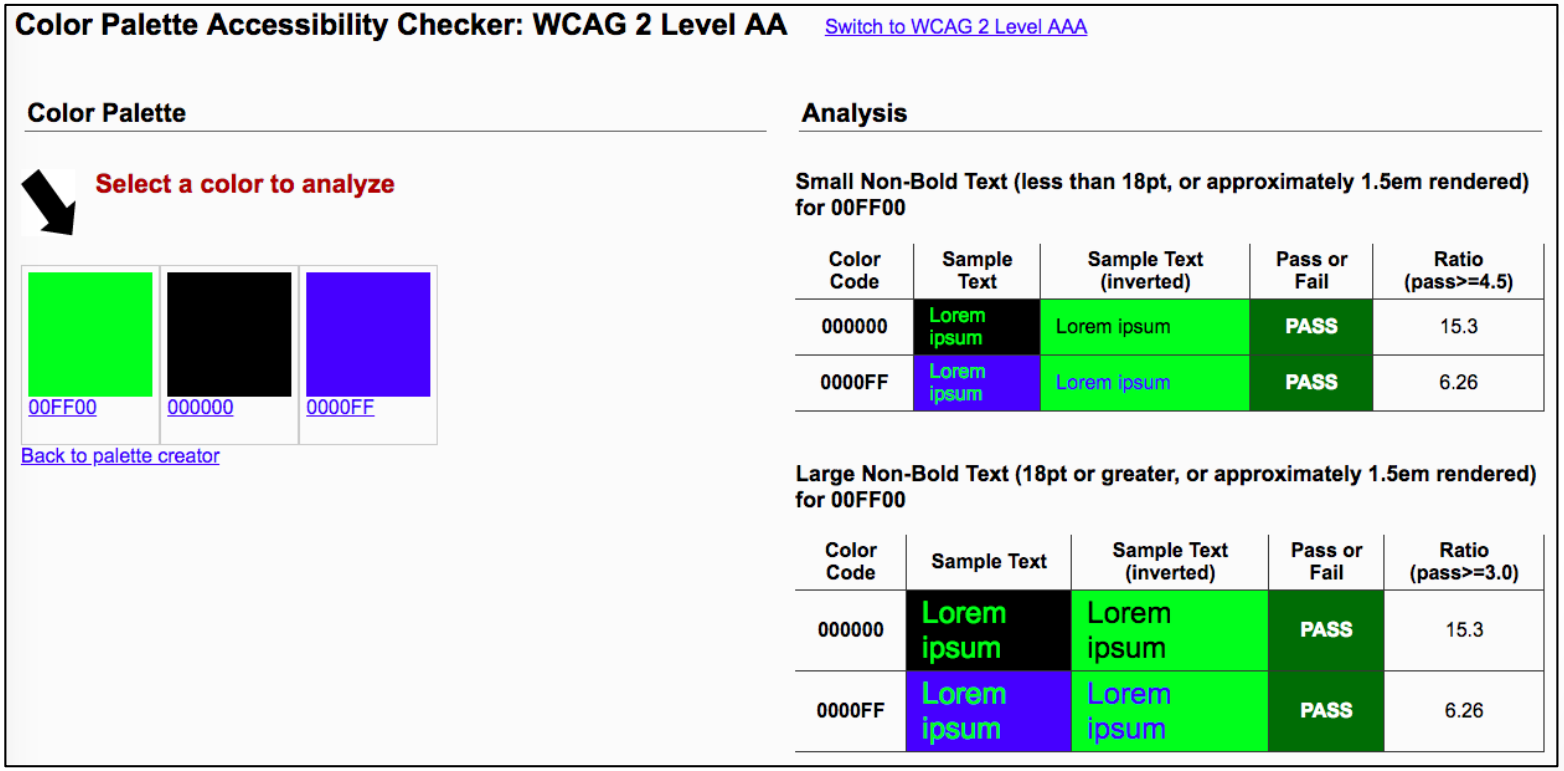
Color Palette Accessibility Evaluator



Color Palette Accessibility Checker: WCAG 2 Level AA Switch to WCAG 2 Level AAA

Color Palette

Select a color to analyze

00FF00 000000 0000FF

Back to palette creator

Analysis

Small Non-Bold Text (less than 18pt, or approximately 1.5em rendered) for 00FF00

Color Code	Sample Text	Sample Text (inverted)	Pass or Fail	Ratio (pass>=4.5)
000000	Lorem ipsum	Lorem ipsum	PASS	15.3
0000FF	Lorem ipsum	Lorem ipsum	PASS	6.26

Large Non-Bold Text (18pt or greater, or approximately 1.5em rendered) for 00FF00

Color Code	Sample Text	Sample Text (inverted)	Pass or Fail	Ratio (pass>=3.0)
000000	Lorem ipsum	Lorem ipsum	PASS	15.3
0000FF	Lorem ipsum	Lorem ipsum	PASS	6.26

https://accessibility.oit.ncsu.edu/tools/color-contrast/

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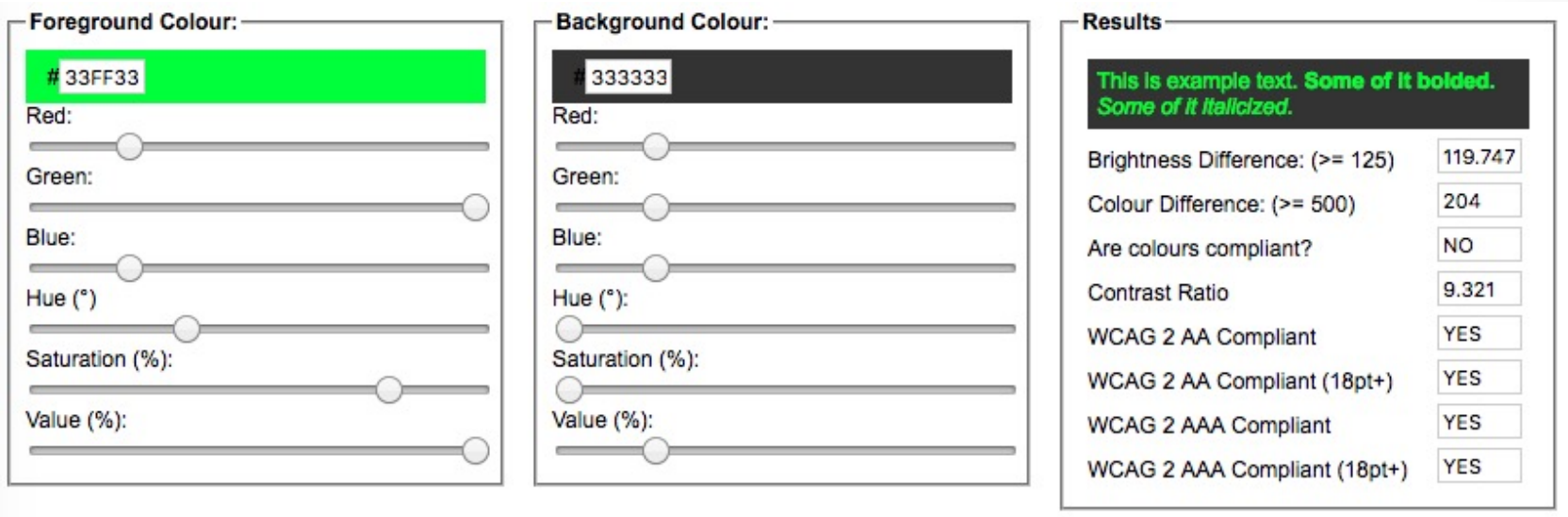
Snook.ca Color Contrast Check



https://snook.ca/technical/colour_contrast/colour.html

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WebAIM- Color Contrast Checker

https://webaim.org/resources/contrastchecker/

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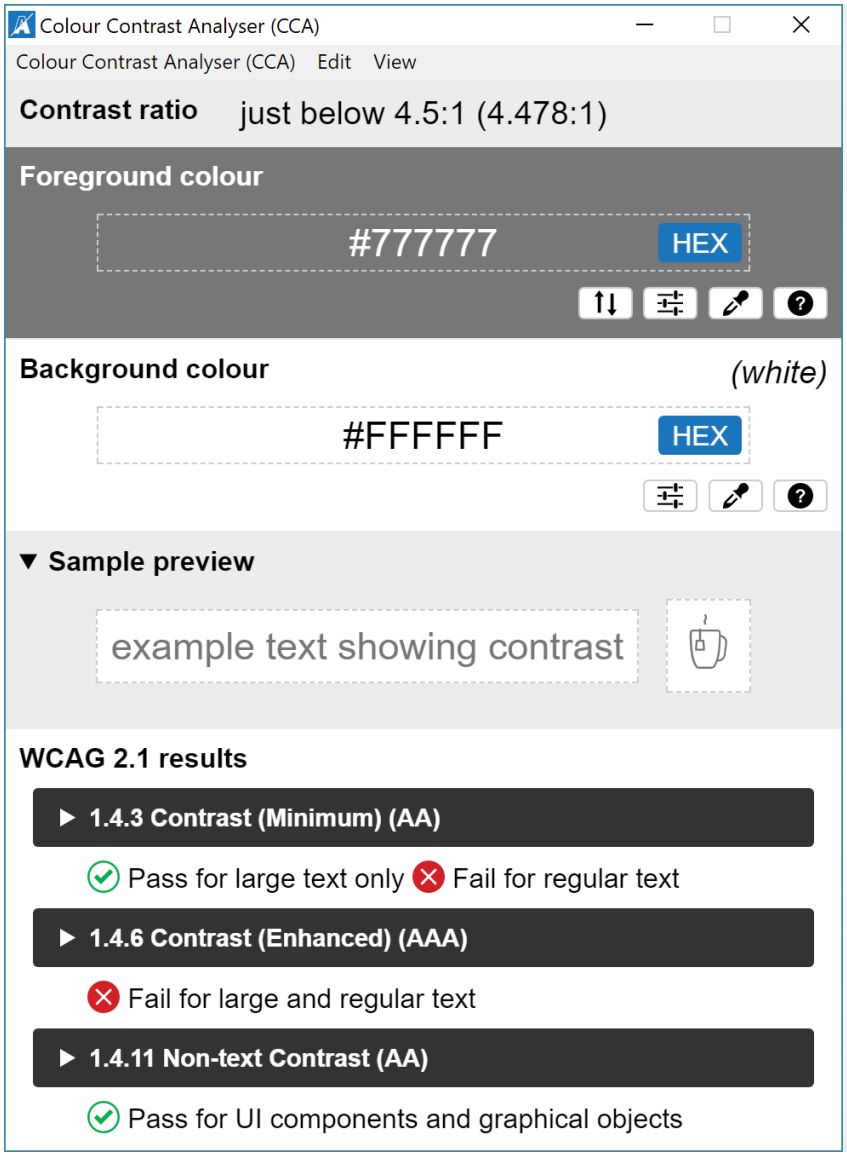
Vision - Colour Contrast Analyser



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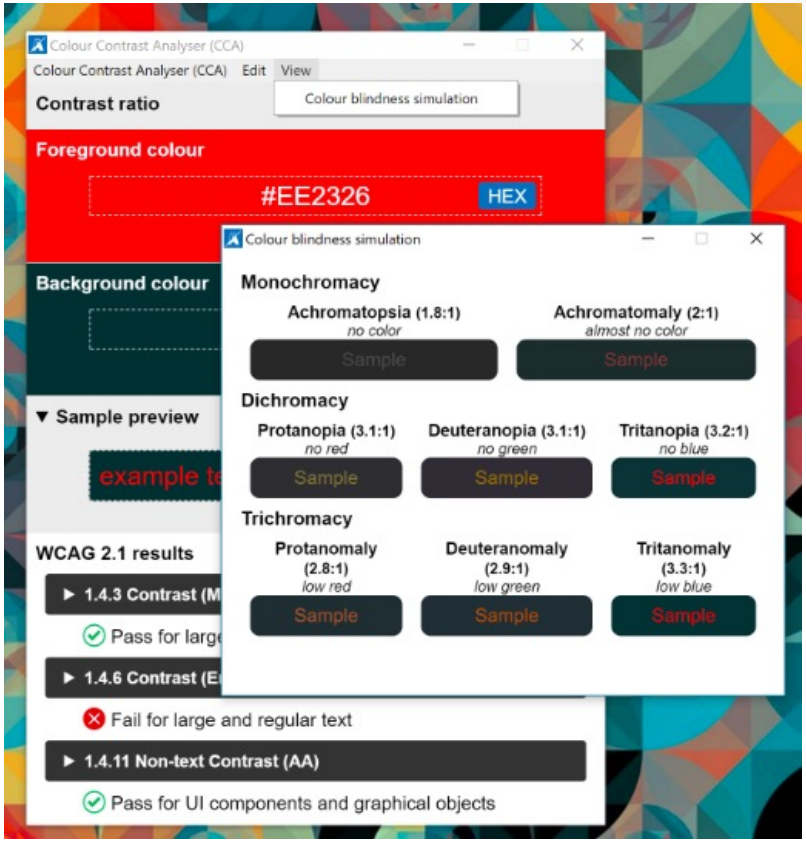
Vision

Colour Contrast Analyser from The Paciello Group



https://developer.paciellogroup.com/resources/contrastanalyser/

Mobility

- Disable your mouse/trackpad
- Interact with a touch screen using a stylus you hold with tweezers, chopsticks, or in your mouth
- Use your website one-handed
- Use voice recognition software only to navigate your site

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Hearing

- Turn off the sound

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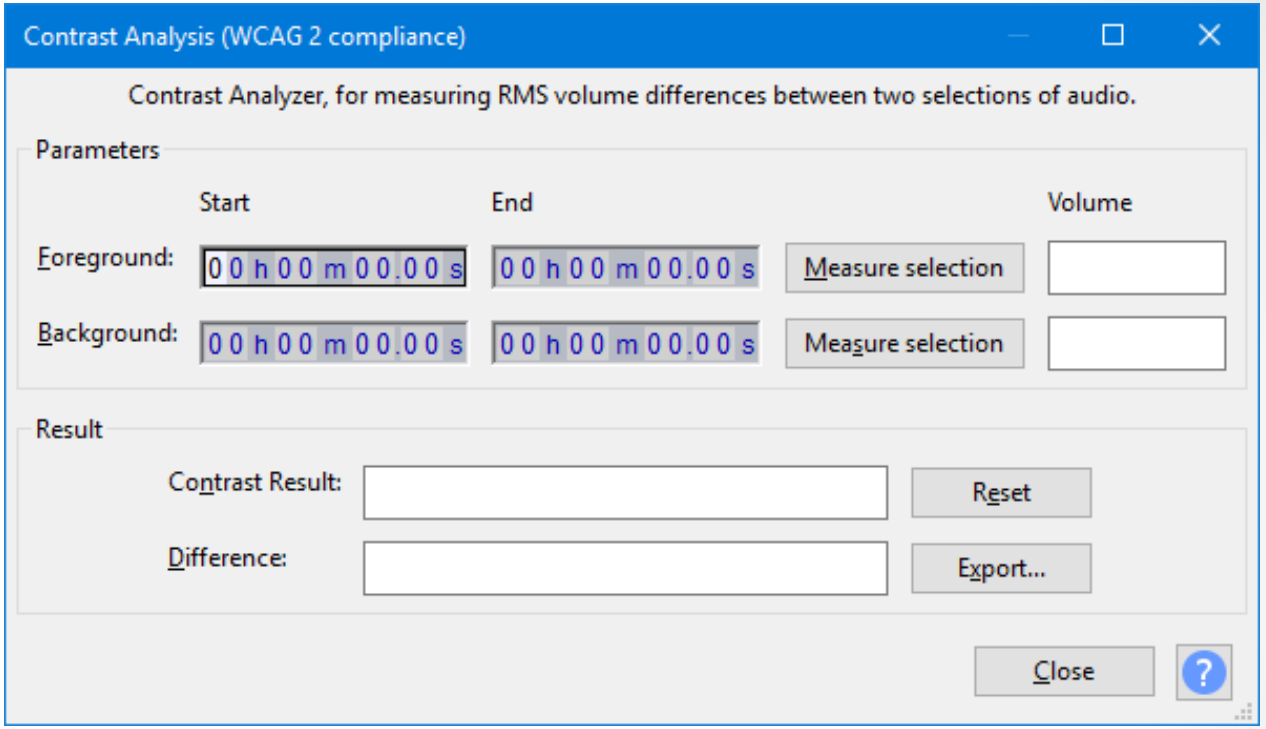
Hearing

- Test audio contrast



https://manual.audacityteam.org/man/contrast.html

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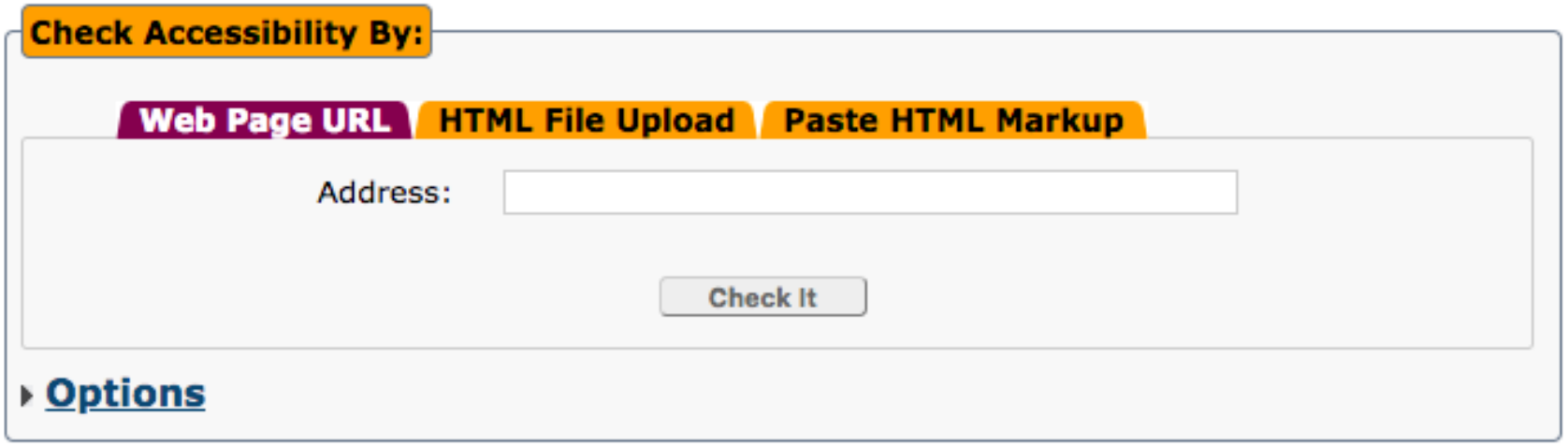
Whole Analysis

- AChecker



https://achecker.achecks.ca/checker/index.php

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Whole Analysis

- WAVE API
  http://wave.webaim.org/api/

  PopeTech for WAVE
  https://pope.tech/

  WAVE Accessibility Impact (AIM)
  https://wave.webaim.org/aim/

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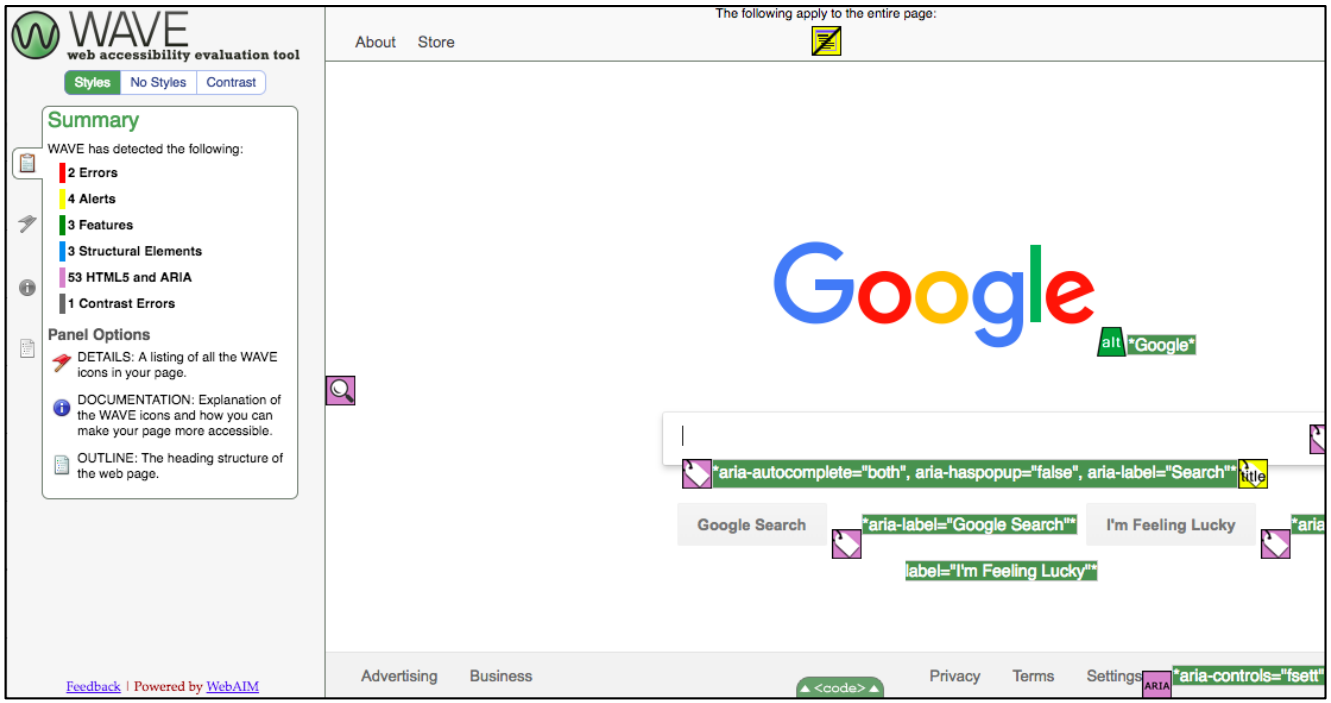
Whole Analysis

WAVE Browser Extension - http://wave.webaim.org/extension/



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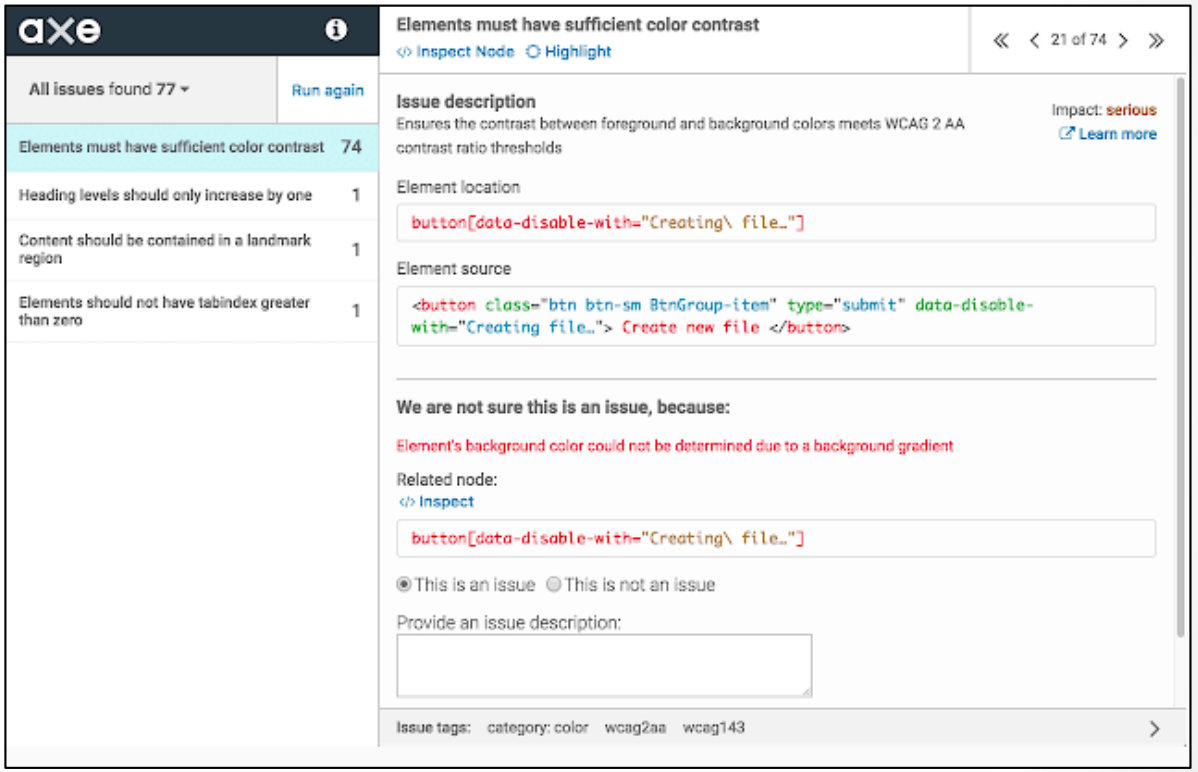
Whole Analysis

aXe

Browser Extension



https://accessibility.deque.com/free-axe-devtools-browser-extension

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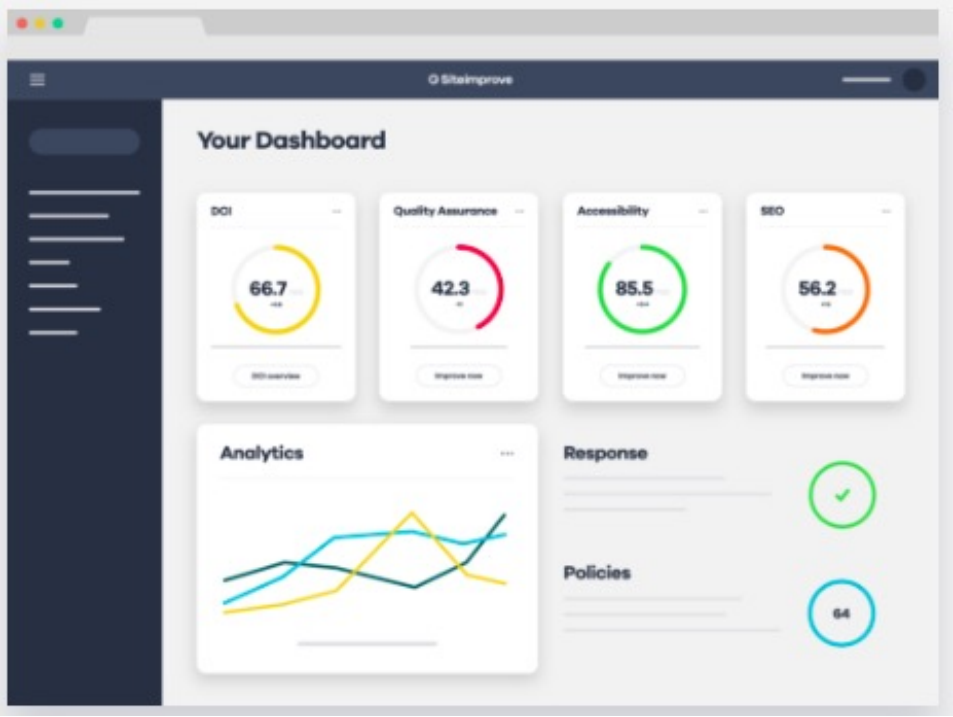
Whole Analysis

SiteImprove - https://siteimprove.com



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Whole Analysis

SiteImprove free report of your site:

https://siteimprove.com/en/accessibility/

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Automate Tests

- Unit Tests
- Integration Tests

Writing Automated Tests for Accessibility
https://www.deque.com/blog/writing-automated-tests-accessibility/

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Diverse Testers

Standard Usability Tests

- https://www.usability.gov/how-to-and-tools/methods/usability-evaluation/index.html
- https://digital.gov/topics/usability-testing/

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Live Accessibility Testing

- Allyant
  https://allyant.com/digital-accessibility-auditing/
- Perkins Access
  https://www.perkins.org/access
- AccessWorks
  https://access-works.com/

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Lots More Tools

Web Accessibility Evaluation Tools List
https://www.w3.org/WAI/ER/tools/

18F Accessibility Guide – Resources
https://accessibility.18f.gov/

18F Accessibility Guide – Tools
https://accessibility.18f.gov/tools/

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GAAD

The purpose of GAAD is to get everyone talking, thinking and learning about digital (web, software, mobile, etc.) access/inclusion and people with different disabilities.

http://www.globalaccessibilityawarenessday.org/

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At Treeline Design, LLC, we will build you a dynamic website or custom web application to fit your business needs. We program in HTML, PHP, and MySQL/SQL as well as create custom graphics to make your site stand out. It is our goal to maximize your efficiency while keeping your costs down. Let your website do the work!
How We Work
We will get to know you, your business, and your customers. We will sit down with you and talk through your vision, your goals, and your budget for the project. Then, we will come up with a plan to get you where you need to be and discuss each step of that plan with you. Our goal is not to just work for you, but to work with you. After completing the work, we will make sure that you are not only happy with the solution, but feel comfortable using it. We will always make sure that you receive a high-quality product that fits your business needs and personality.
Our site upholds the following standards:
W3C WAI-A WCAG 1.0
W3C CSS
W3C XHTML 1.0

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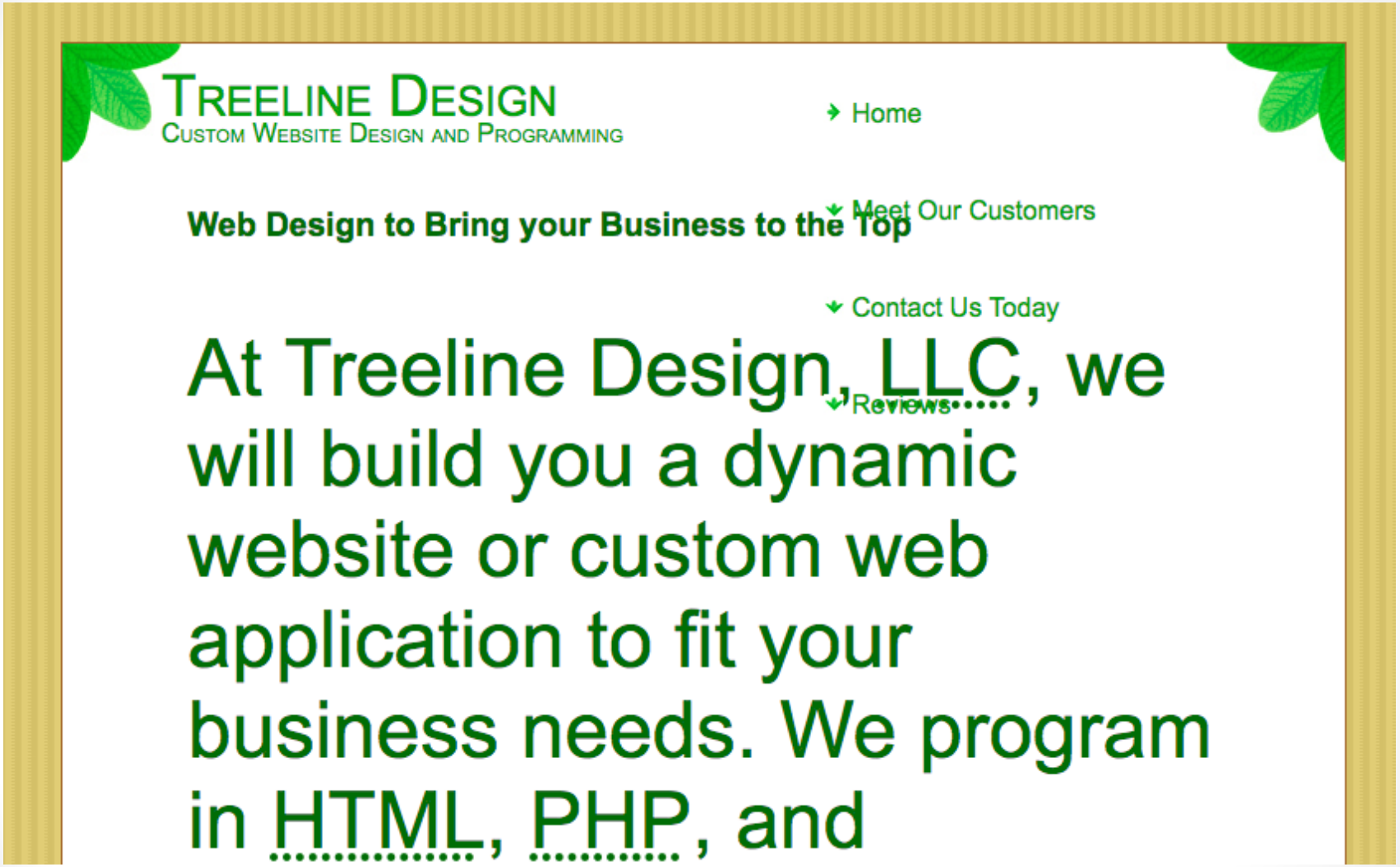
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Custom Website Design and Programming

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2. Meet Our Customers
3. Contact Us Today
4. Reviews

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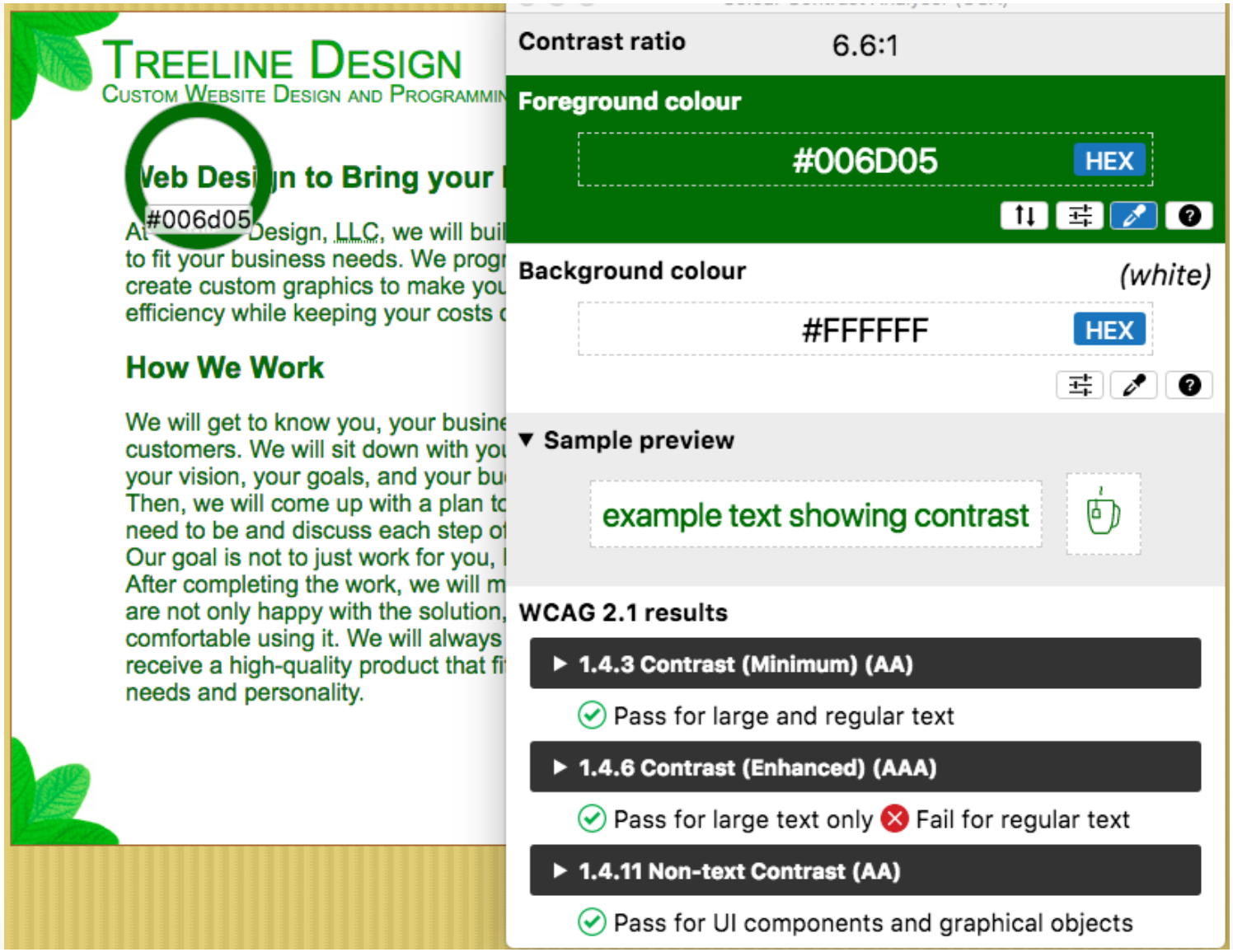
TREELINE DESIGN
CUSTOM WEBSITE DESIGN AND PROGRAMMIN
#006d05
Web Desi n to Bring your
At Design, LLC, we will buil
to fit your business needs. We progr
create custom graphics to make you
efficiency while keeping your costs
How We Work
We will get to know you, your busine
customers. We will sit down with yo
your vision, your goals, and your bu
Then, we will come up with a plan t
need to be and discuss each step o
Our goal is not to just work for you,
After completing the work, we will m
are not only happy with the solution,
comfortable using it. We will always
receive a high-quality product that fi
needs and personality.
Contrast ratio 6.6:1
Foreground colour
#006D05 HEX
Background colour (white)
#FFFFFF HEX
Sample preview
example text showing contrast
WCAG 2.1 results
1.4.3 Contrast (Minimum) (AA)
Pass for large and regular text
1.4.6 Contrast (Enhanced) (AAA)
Pass for large text only Fail for regular text
1.4.11 Non-text Contrast (AA)
Pass for UI components and graphical objects

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need to be and discuss each step of
Our goal is not to just work for you, b
After completing the work, we will m
are not only happy with the solution,
comfortable using it. We will always
receive a high-quality product that fit
needs and personality.
Colour blindness simulation
Monochromacy
Achromatopsia (8.3:1)
no color
Sample
Achromatomaly (8:1)
almost no color
Sample
Dichromacy
Protanopia (6.6:1)
no red
Sample
Deuteranopia (6.6:1)
no green
Sample
Tritanopia (6.6:1)
no blue
Sample
Trichromacy
Protanomaly (6.9:1)
low red
Sample
Deuteranomaly (7:1)
low green
Sample
Tritanomaly (6.7:1)
low blue
Sample

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Protanopia

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Deutanopia

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Tritanopia

@e3betht

Achromatopsia

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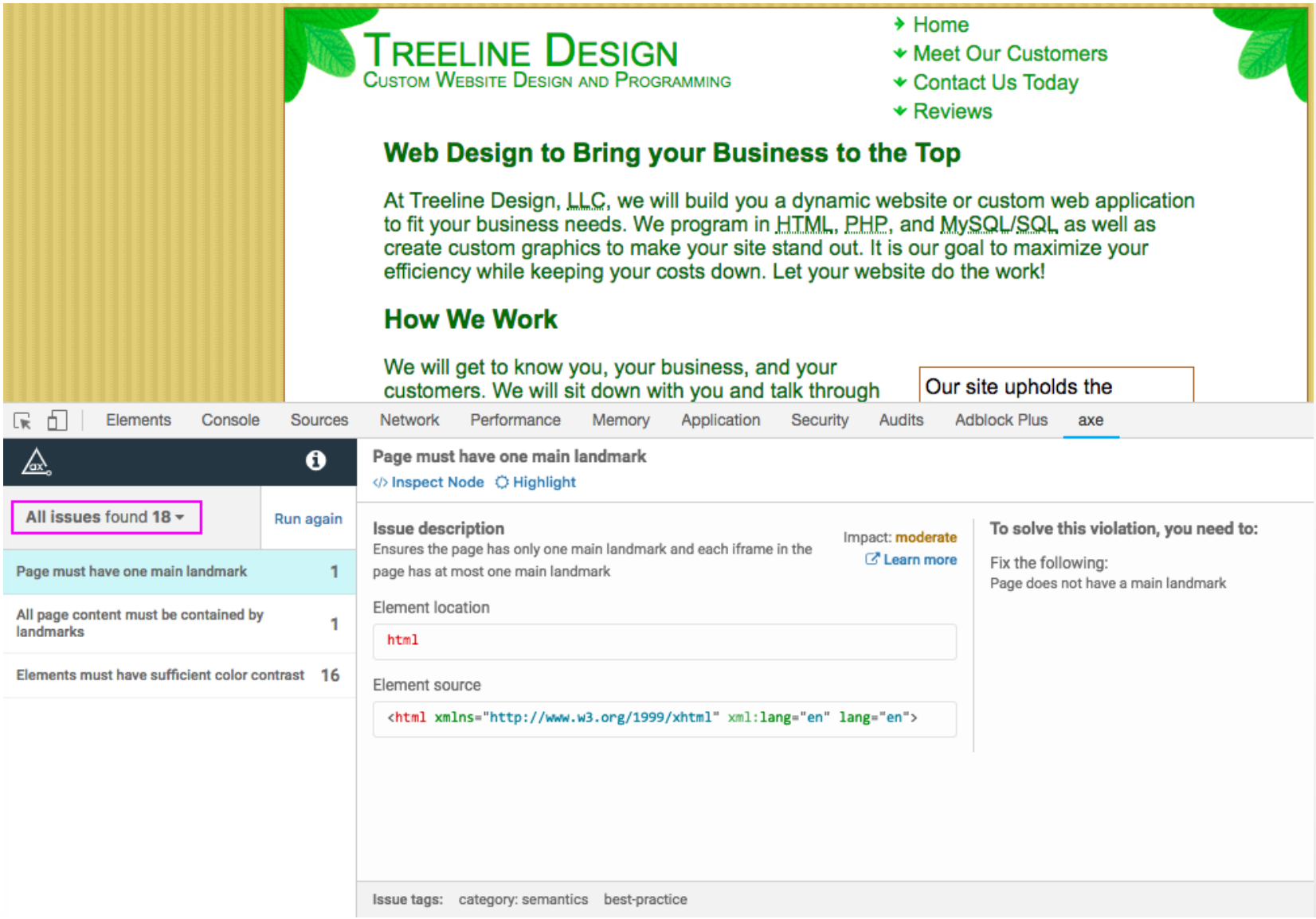
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Our site upholds the
Elements
Console
Sources
Network
Performance
Memory
Application
Security
Audits
Adblock Plus
axe
All issues found 18
Run again
Page must have one main landmark 1
All page content must be contained by landmarks 1
Elements must have sufficient color contrast 16
Page must have one main landmark
Inspect Node
Highlight
Issue description
Ensures the page has only one main landmark and each iframe in the page has at most one main landmark
Impact: moderate
Learn more
Element location
html
Element source
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
To solve this violation, you need to:
Fix the following:
Page does not have a main landmark
Issue tags: category: semantics best-practice

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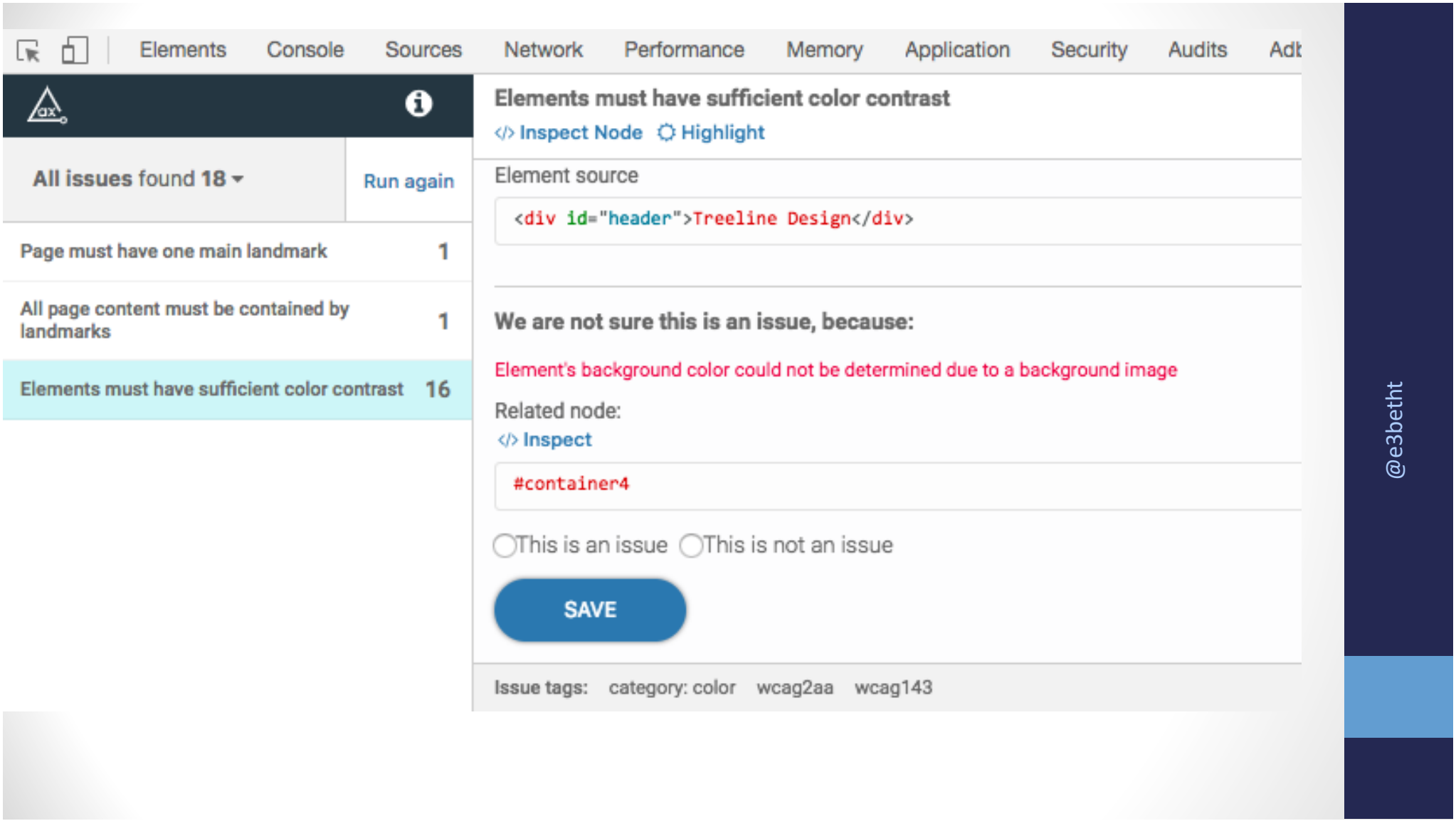
Elements
Console
Sources
Network
Performance
Memory
Application
Security
Audits
All issues found 18
Run again
Page must have one main landmark 1
All page content must be contained by landmarks 1
Elements must have sufficient color contrast 16
Elements must have sufficient color contrast
Inspect Node
Highlight
Element source
Treeline Design
We are not sure this is an issue, because:
Element's background color could not be determined due to a background image
Related node:
Inspect
#container4
This is an issue
This is not an issue
SAVE
Issue tags: category: color wcag2aa wcag143
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WAVE
web accessibility evaluation tool
powered by
WebAIM
Address: treelinedesign.com
Styles: OFF ON
Summary
Summary
Details
Reference
Structure
Contrast
0
Errors
5
Contrast Errors
1
Alerts
7
Features
3
Structural Elements
0
ARIA
View details ›
The following apply to the entire page:
TREELINE DESIGN
CUSTOM WEBSITE DESIGN AND PROGRAMMING
You are here - image: Leaf
Home
Web Design to Bring your Business to the Top
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Leaf
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Our site upholds the following standards:
WAI-A WCAG 1.0
Level A conformance icon, W3C-WAI Web Content Accessibility Guidelines 1.0
CSS
Valid CSS!
XHTML 1.0
Valid XHTML 1.0 Transitional
Code
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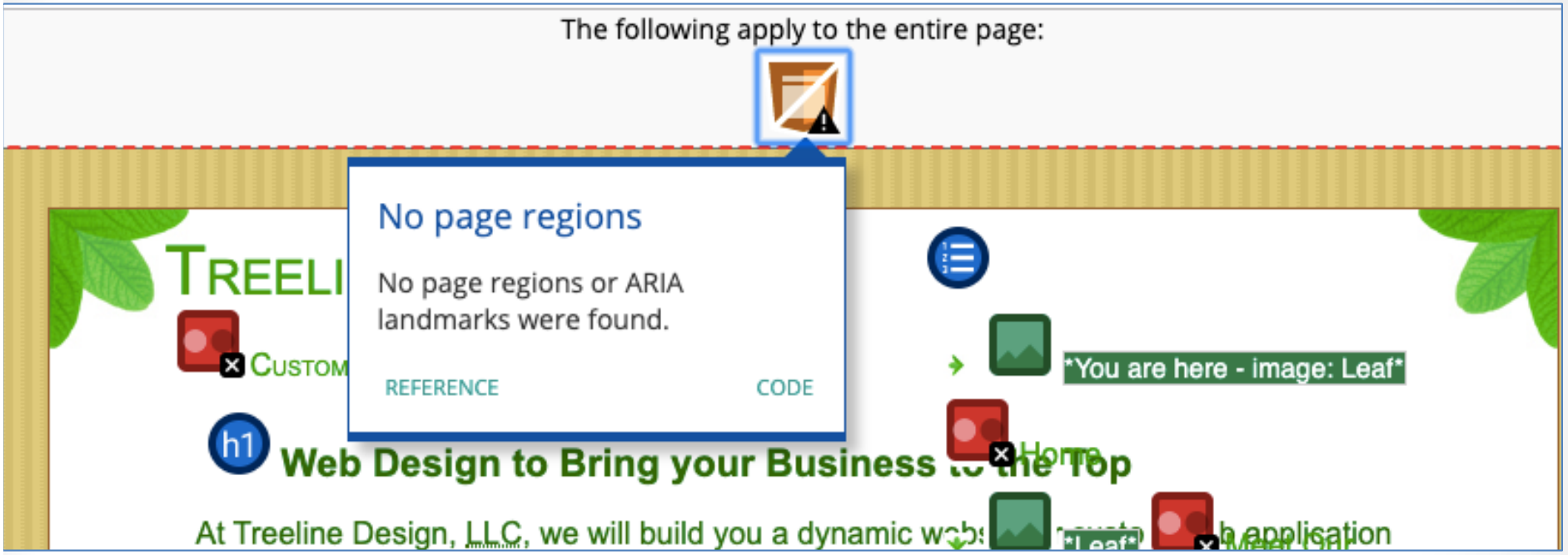
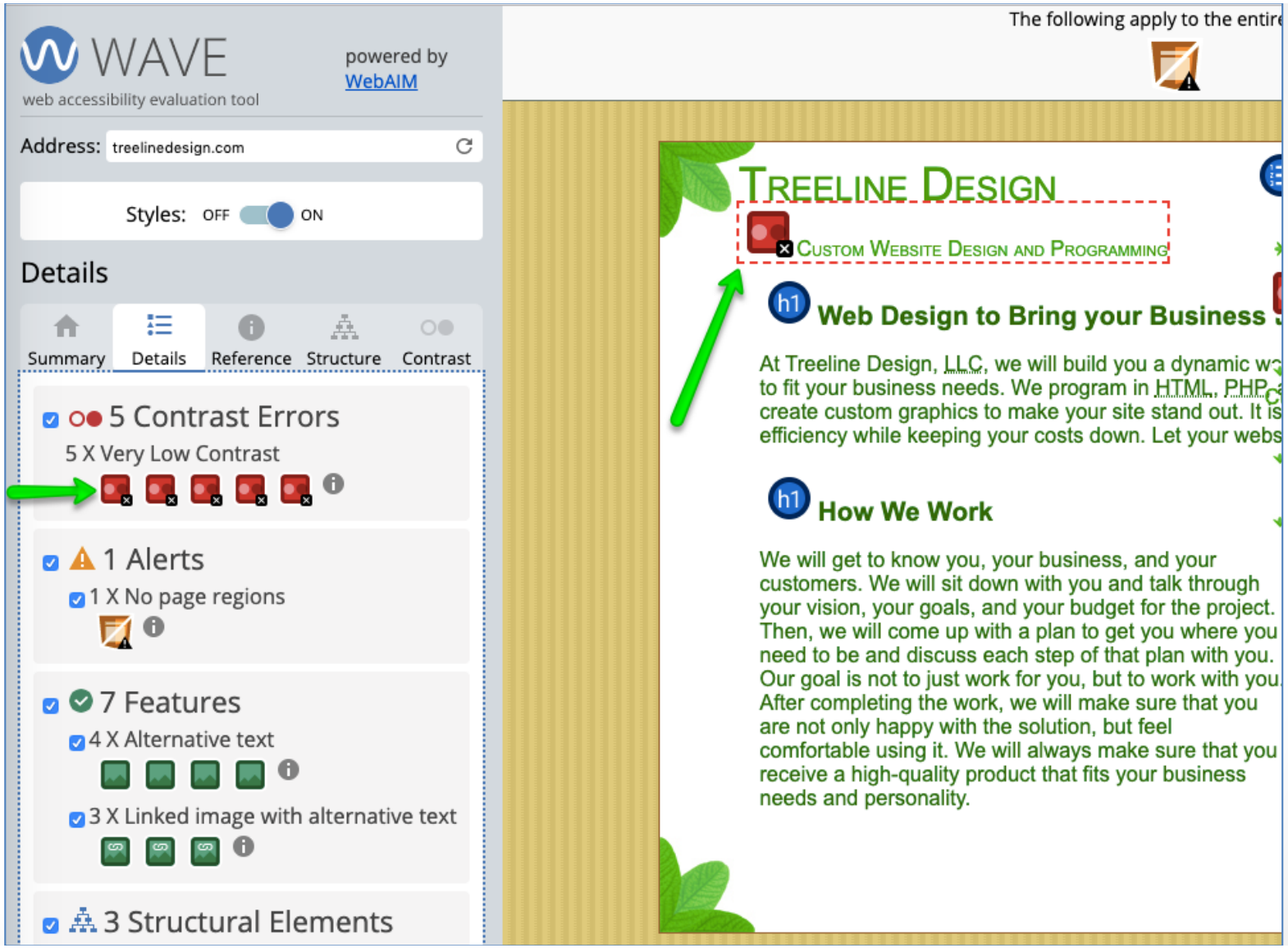
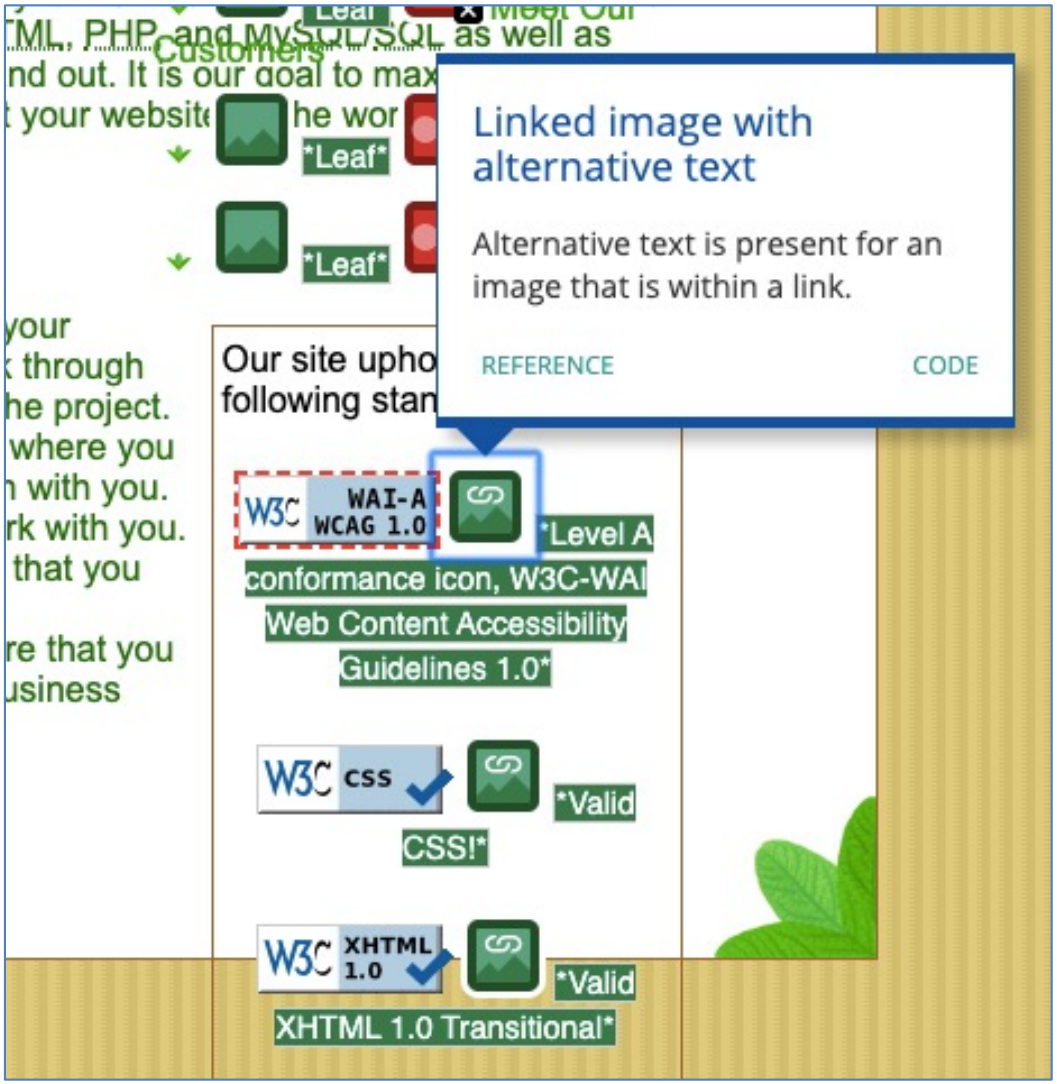

The following apply to the entire page:
No page regions
No page regions or ARIA landmarks were found.
REFERENCE
CODE
TREELI
CUSTOM
You are here - image: Leaf
Home
h1
Web Design to Bring your Business to the Top
At Treeline Design, LLC, we will build you a dynamic


WAVE
web accessibility evaluation tool
powered by
WebAIM
Address: treelinedesign.com
Styles: OFF ON
Details
Summary
Details
Reference
Structure
Contrast
5 Contrast Errors
5 X Very Low Contrast
1 Alerts
1 X No page regions
7 Features
4 X Alternative text
3 X Linked image with alternative text
3 Structural Elements
The following apply to the entire
TREELINE DESIGN
CUSTOM WEBSITE DESIGN AND PROGRAMMING
h1
Web Design to Bring your Business
At Treeline Design, LLC, we will build you a dynamic w
to fit your business needs. We program in HTML, PHP,
create custom graphics to make your site stand out. It is
efficiency while keeping your costs down. Let your webs
h1
How We Work
We will get to know you, your business, and your customers. We will sit down with you and talk through your vision, your goals, and your budget for the project. Then, we will come up with a plan to get you where you need to be and discuss each step of that plan with you. Our goal is not to just work for you, but to work with you. After completing the work, we will make sure that you are not only happy with the solution, but feel comfortable using it. We will always make sure that you receive a high-quality product that fits your business needs and personality.


Linked image with alternative text
Alternative text is present for an image that is within a link.
REFERENCE
CODE
Leaf
Leaf
Our site upho
following stan
WAI-A WCAG 1.0
Level A conformance icon, W3C-WAI Web Content Accessibility Guidelines 1.0
W3C CSS
Valid CSS!
W3C XHTML 1.0
Valid XHTML 1.0 Transitional

Learn More - Design

- Inclusive Design Principles
  https://inclusivedesignprinciples.org/
- Inclusive Design 24
  https://inclusivedesign24.org/
- The Paciello Group: cupper
  https://github.com/ThePaicielloGroup/cupper
- Nutrition Cards for Accessible Components
  https://davatron5000.github.io/a11y-nutrition-cards/

Learn More - Tools

- An Introduction to Screen Readers (Webinar) https://accessibility.deque.com/live-webinar-introduction-to-screen-readers
- Facebook's Alt Tag AI https://newsroom.fb.com/news/2016/04/using-artificial-intelligence-to-help-blind-people-see-facebook/

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Ironic?

Using Artificial Intelligence to Help Blind People ‘See’ Facebook

Read more about the development of automatic alt text here and here.

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Status of Platforms

- HTML5 Accessibility
  https://www.html5accessibility.com/
- HTML5 Implementation Status
  http://stevefaulkner.github.io/html-mapping-tests/
- Android and iOS Mobile Testing Guide
  https://developer.paciellogroup.com/downloads/TPG_Mobile_Testing_Guide.pdf
- Windows Accessibility Options
  https://www.microsoft.com/en-us/windows/accessibility-features
  Apple Accessibility Options
  https://www.apple.com/accessibility/

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Standards

- Section 508 Guidelines and Resources
  https://www.section508.gov/
- United States Laws relating to 508 Standards
  https://www.w3.org/WAI/policies/united-states/
- VFO Standards
  https://github.com/FreedomScientific/VFO-standards-support
- Web Content Accessibility Guidelines
  https://www.w3.org/WAI/standards-guidelines/wcag/
- ADA Standards for Accessible Design
  https://www.ada.gov/2010ADAstandards_index.htm

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Standards Help

- Use Assistive Technology to Comply with Section 508 https://www.youtube.com/watch?v=4XJcswWmmAw
- HTML 508 Process and Checklist https://www.hhs.gov/web/building-and-managing-websites/development-process-and-milestones/index.html

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Resources - Tools

- W3C WAI Web Accessibility Evaluation Tools List https://www.w3.org/WAI/ER/tools/
- Juicy Studio Accessibility Resources: http://juicystudio.com/services.php
- Top 25 Awesome Accessibility Testing Tools for Websites https://dynomapper.com/blog/27-accessibility-testing/246-top-25-awesome-accessibility-testing-tools-for-websites
- TPGi: Accessibility Testing Tools https://www.tpgi.com/accessibility-testing-tools-we-use/

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Resources - Persuasion

- Stories of Web Users
  https://www.w3.org/WAI/people-use-web/user-stories/
- WAI Tools & Techniques
  https://www.w3.org/WAI/people-use-web/tools-techniques/
- Mythbuster's Guide to Accessibility
  https://medium.com/the-u-s-digital-service/mythbusters-guide-to-accessibility-92ccd88655c6
- Usability.gov's Accessibility Page
  https://accessibility.digital.gov/product/accessibility-basics/

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Additional Articles

- "Not All Screen Reader Users Are Blind" by Adrian Roselli http://adrianroselli.com/2017/02/not-all-screen-reader-users-are-blind.html
- "The Accessibility of Styled Form Controls & Friends" https://scottaohara.github.io/a11y_styled_form_controls/
- "Lessons in iOS Voiceover Accessibility" https://medium.com/aaptiv-engineering/lessons-in-ios-voiceover-accessibility-834c5ed9a374
- "The Importance Of Manual Accessibility Testing" https://www.smashingmagazine.com/2018/09/importance-manual-accessibility-testing/
- "Involving Users in Evaluating Web Accessibility" https://www.w3.org/WAI/test-evaluate/involving-users/

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More Additional Articles

- "5 accessibility tests you can do in 5 minutes" https://openinclusion.com/blog/5-accessibility-tests/
- "The 6 Simplest Web Accessibility Tests Anyone Can Do" http://www.karlgroves.com/2013/09/05/the-6-simplest-web-accessibility-tests-anyone-can-do/
- "Easy Checks - A First Review of Web Accessibility" https://www.w3.org/WAI/test-evaluate/preliminary/
- "Handling common accessibility problems" https://developer.mozilla.org/en-US/docs/Learn/Tools_and_testing/Cross_browser_testing/Accessibility

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Takeaways

- Accessibility testing doesn't have to be expensive.
- A diverse testing group means better testing.
- Improving accessibility helps everyone.

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