

Working with High Contrast Mode

Inclusive Design 23 (#ID24)

October 11, 2018

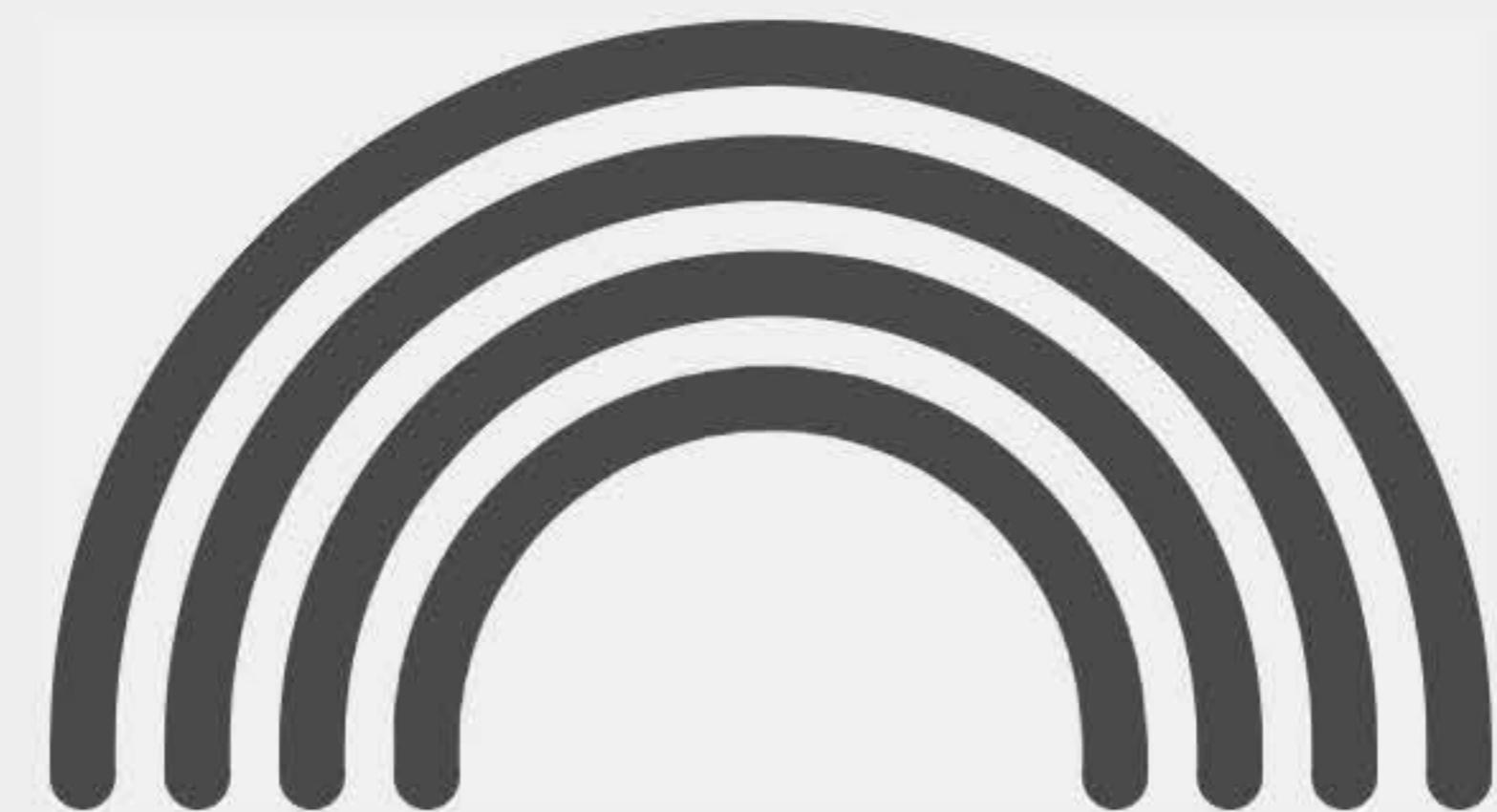
Hi there!

- Designer at thoughtbot in Boston, MA
- Occasional author at CSS-Tricks
- MDN contributor
- Janitor at the The A11Y Project

Head's up

- Video
- High contrast
- Mild strobing

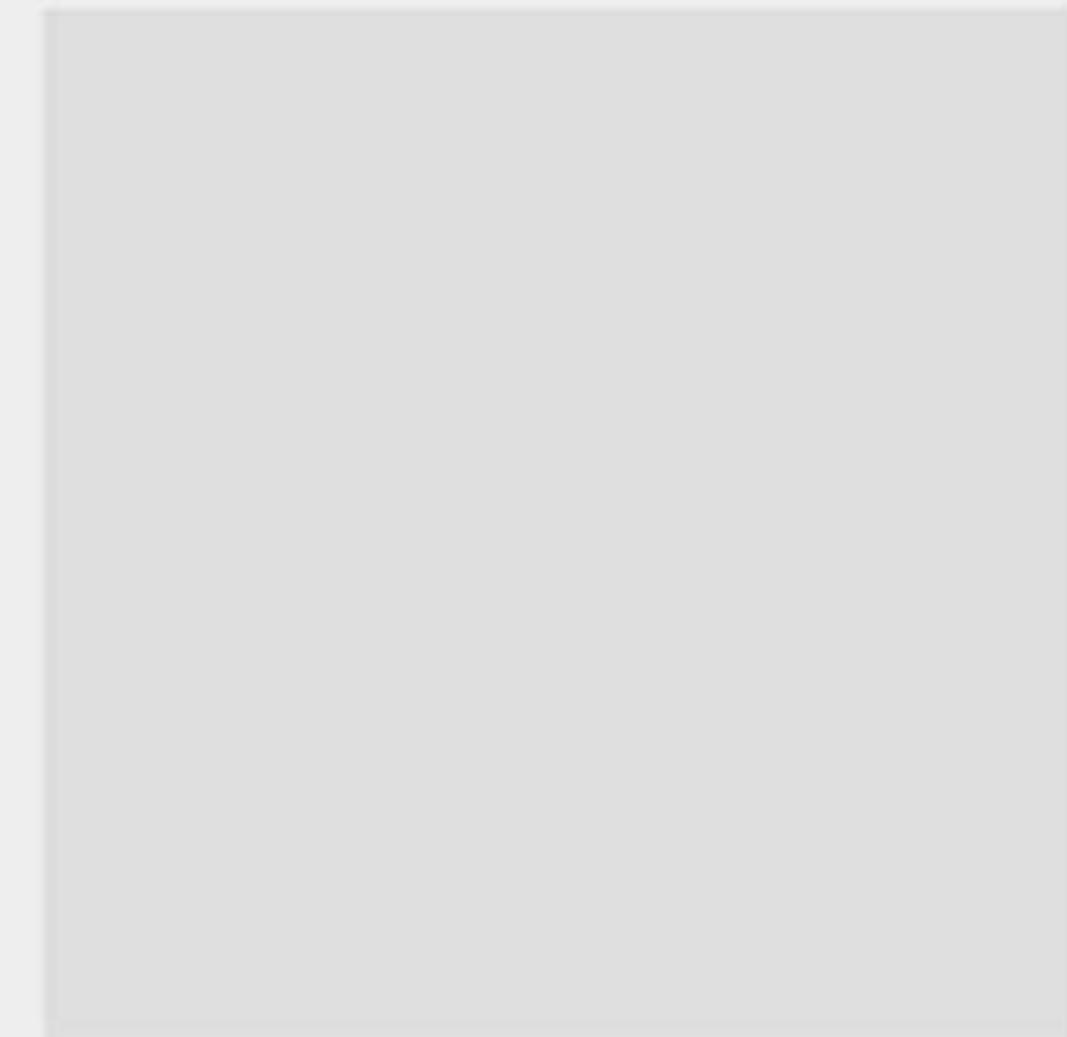
The ideal



WCAG AA

**We don't live in a
perfect world**

Grey (eh?) and gray (ah!)



x1.1



x2.8

The real world is
complicated

Irlen Syndrome

Scotopic sensitivity

You don't know what you don't know

**Keep your
content open and
interoperable**

It's important to recognise that experience is not a singular thing, our experience is not universal, not everyone accesses content the same way we do, on the same devices, on the same networks, in the same modalities we do.

And when we design the web in the way that we experience it, we actually limit the way that other people experience it. We actually exclude the people that are not like us, and that's not great.

—Aaron Gustafson

High Contrast Mode

A thing that exists

where it works

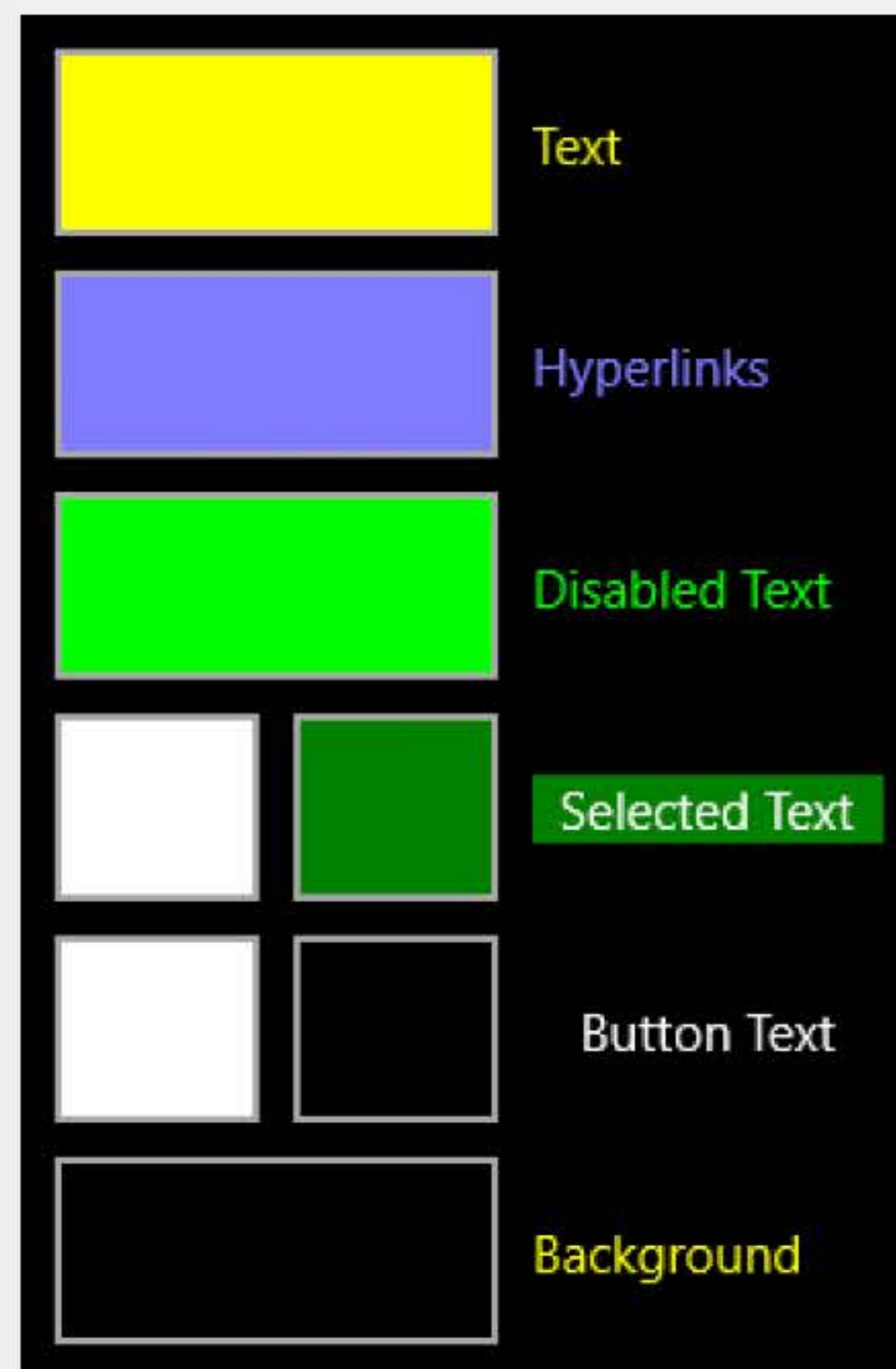
Windows 7+

Internet Explorer 10+

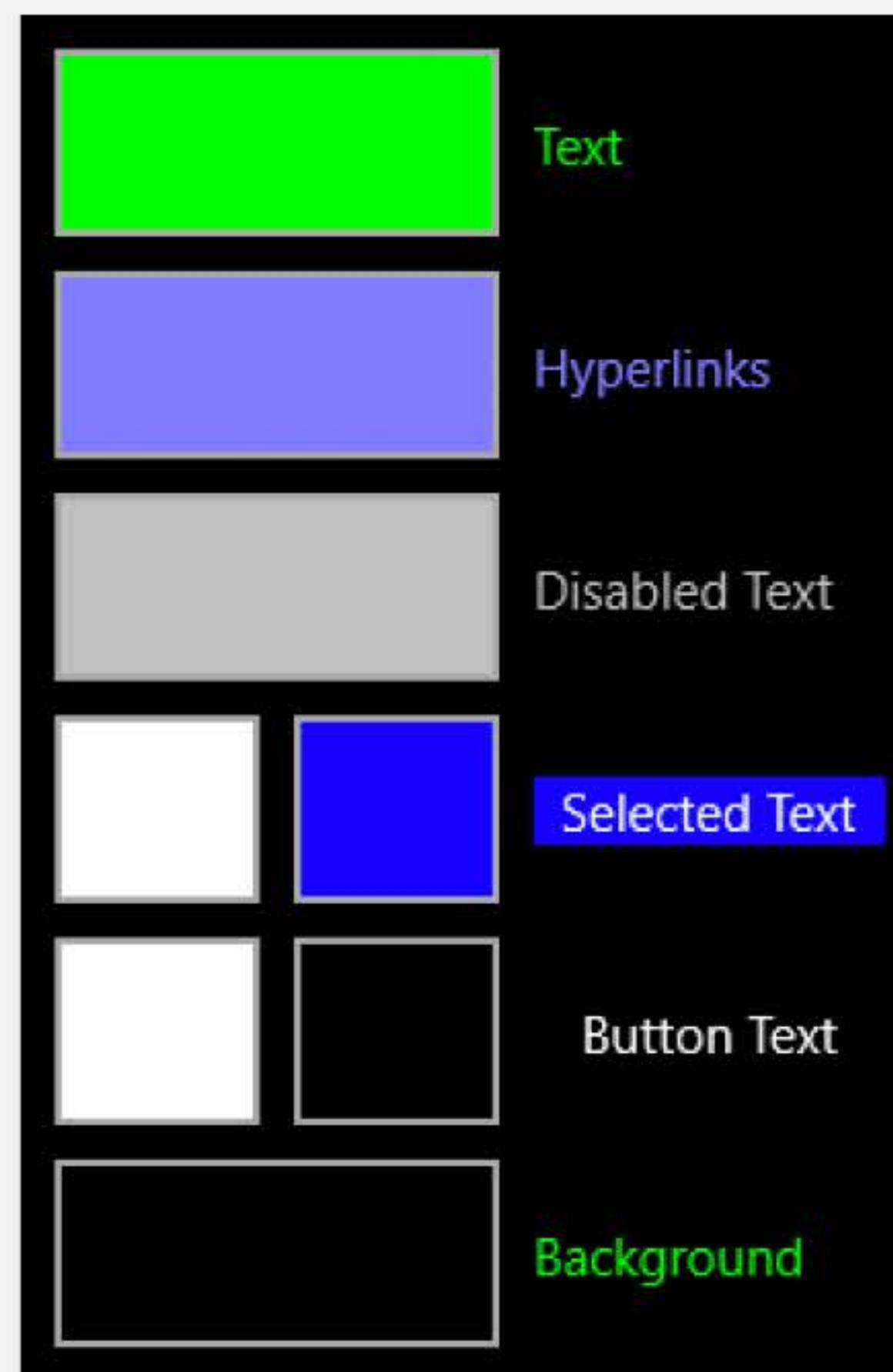
Microsoft Edge

Different themes

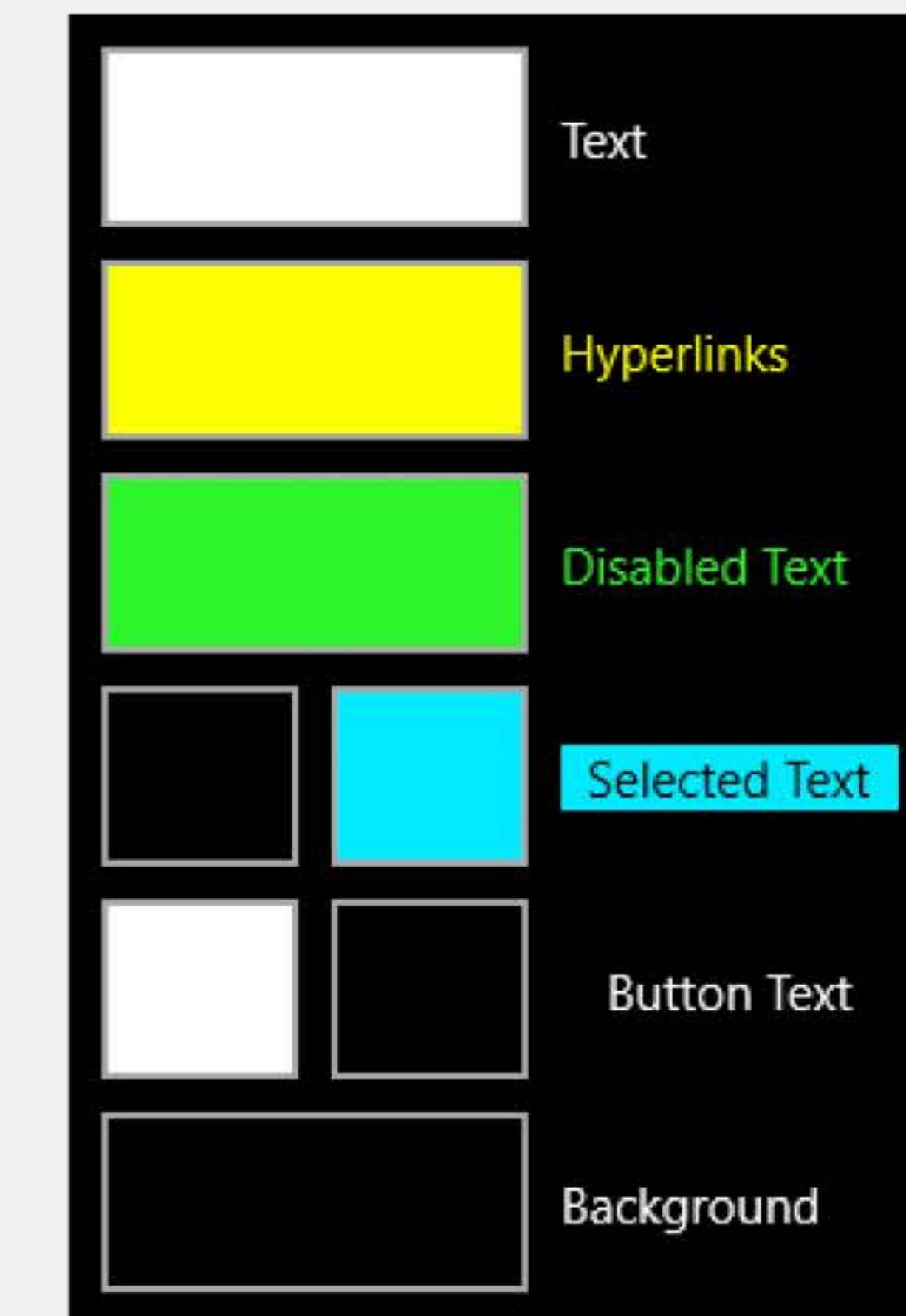
High Contrast 1



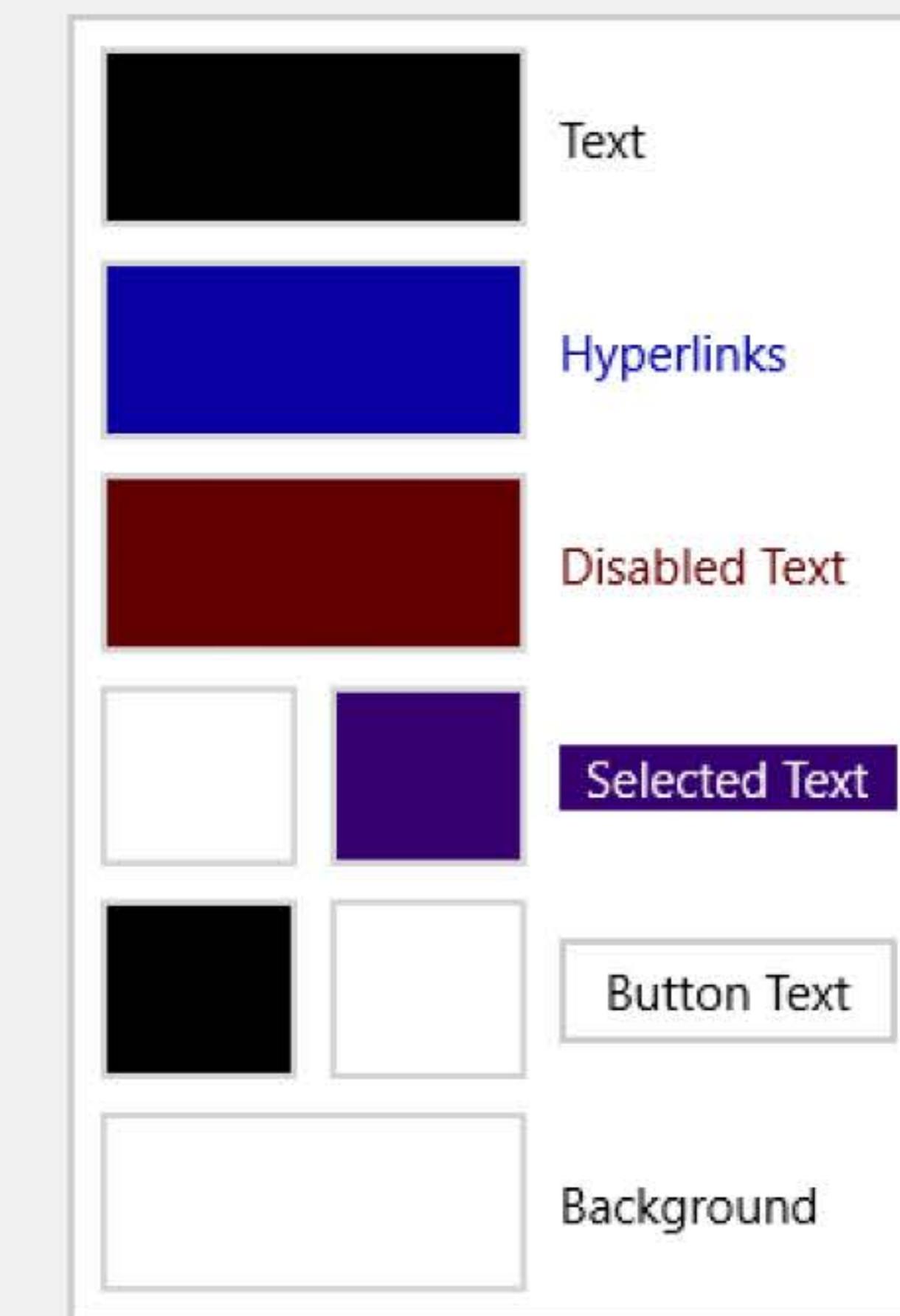
High Contrast 2



High Contrast Black

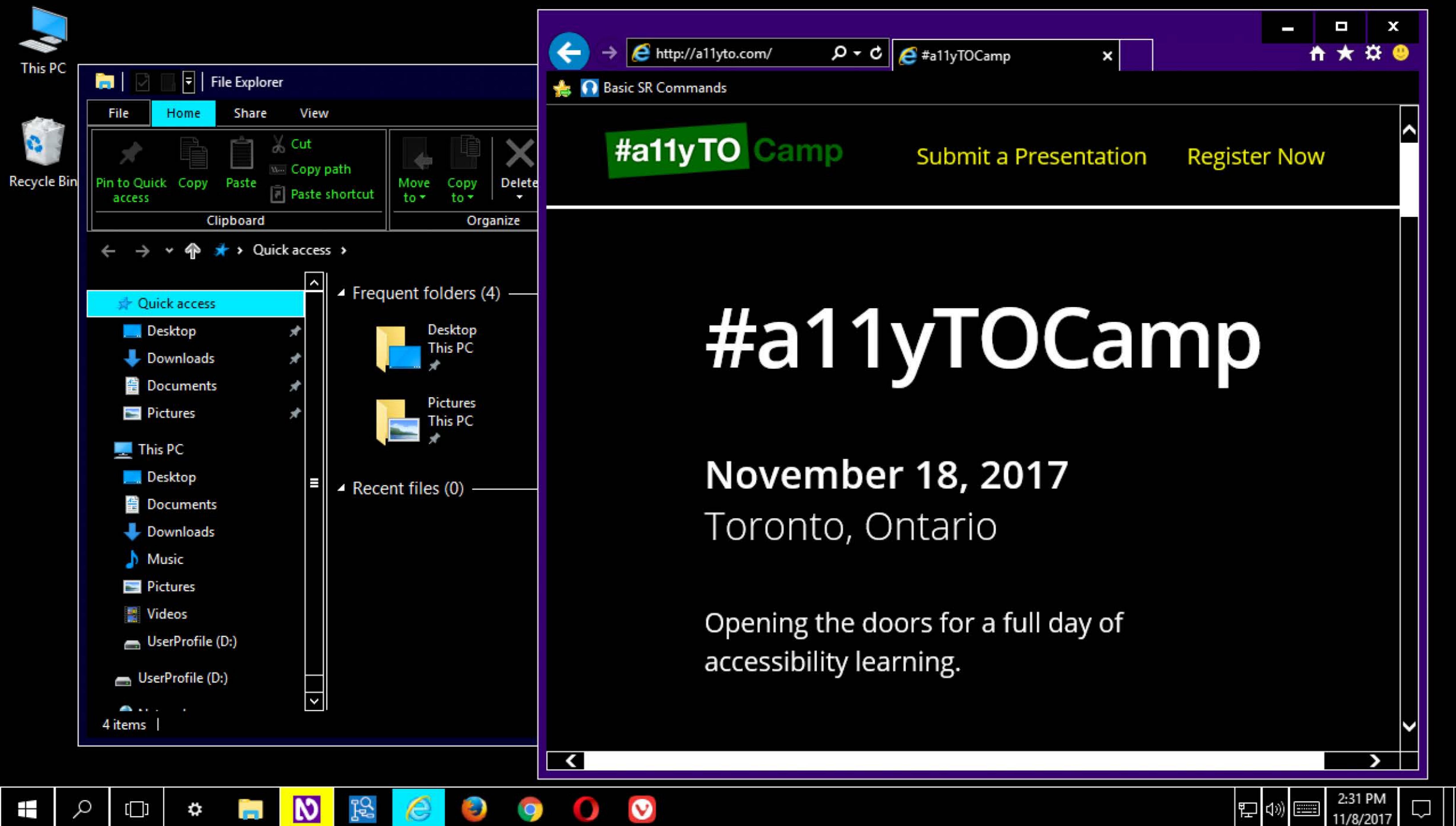


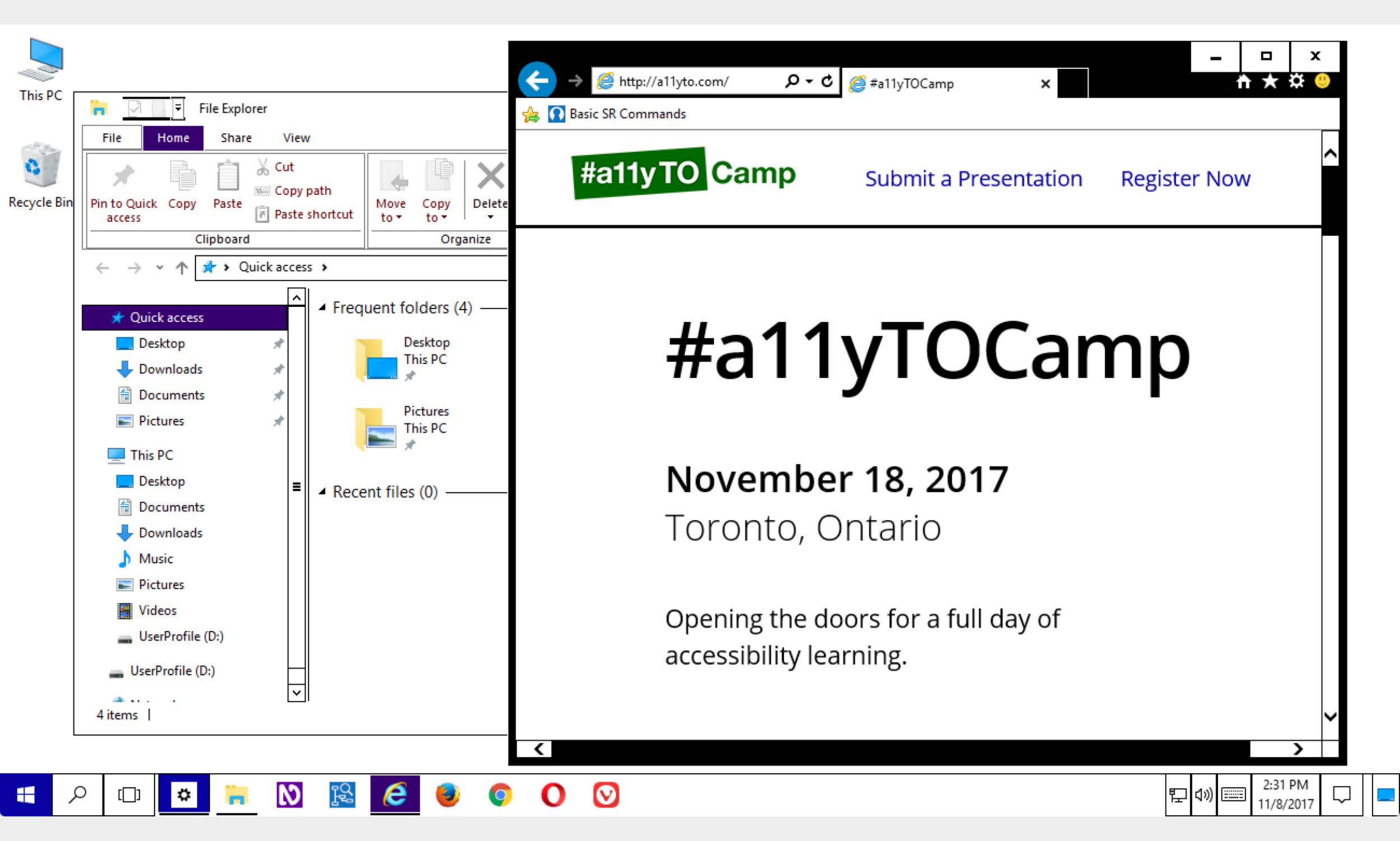
High Contrast White



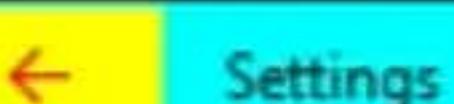




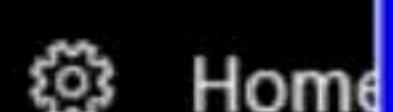




Custom themes



Settings



Find a se

Ease of Acc

Narrat

Magn

High

Close

Keyboard

Mouse

Other

This PC

File Computer View

Properties Open Rename

Access Map network Add a network media drive location

Uninstall or change a program
System properties
Open Settings Manage

Location

Network

System

← → ↑ This PC

▼ ↻

Search This PC



Quick access

Desktop

Downloads

Documents

Pictures

This PC

Desktop

Documents

Downloads

Music

Pictures

Videos

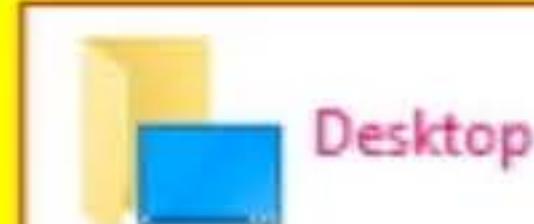
UserProfile (D:)

UserProfile (D:)

UserProfile (D:)

7 items

Folders (6)



Desktop



Documents



Downloads



Music



Pictures



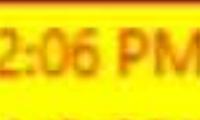
Videos

Devices and drives (1)

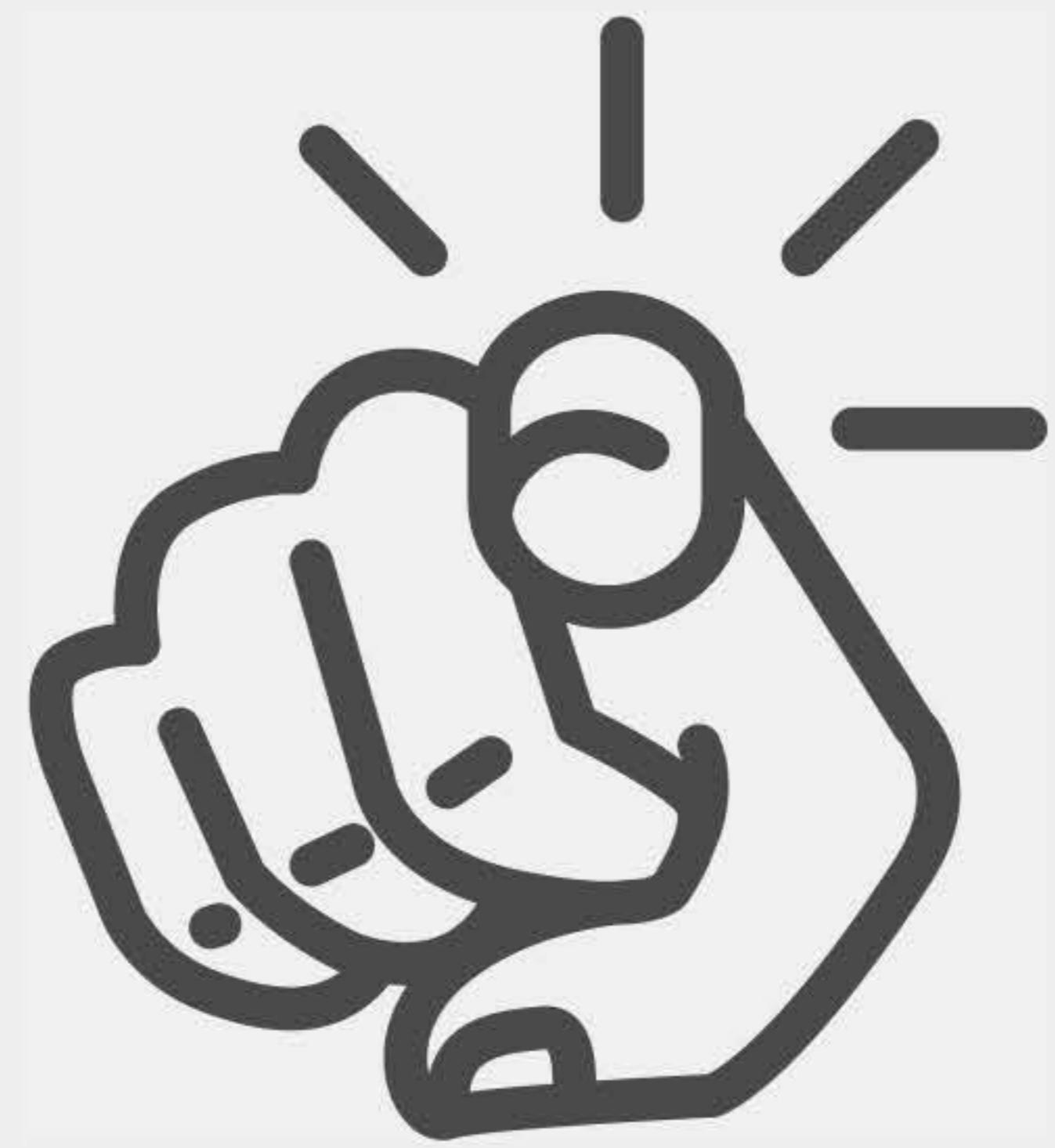


UserProfile (D:)

48.6 GB free of 49.9 GB

2:06 PM
11/8/2017

who uses it:



Everyone

**People
experiencing a
biological
condition**

**People
experiencing an
environmental
condition**

**Tell me the
numbers**

Nah



Shaun Finglas
@ShaunFinglas

Follow



Protip - max brightness and high contrast mode enabled allows you to use your laptop in the garden. Looks ugly but functional.

9:03 AM - 28 May 2017



1.4.8

Visual Presentation

“Foreground and background colors
can be selected by the user.”



So close, and yet so far away

Getting Started New Tab

chrome

DOWNLOAD SET

You have High Contrast mode enabled. Would you like to install our High Contrast extension and a dark theme?

[High Contrast Extension](#) [Dark Theme](#) [Learn more](#) [Close](#)

Keep Chrome at your fingertips.

Make Chrome your default browser, so you can always get the best of the web on Windows 10.

Install Taskbar Default

YouTube

The image shows a Microsoft Edge browser window with a cyan-themed interface. The address bar displays the URL <https://www.google.com/intl/en/chrome/browser/welcome.html>. A prominent black overlay box is centered on the screen, containing white text that reads: "You have High Contrast mode enabled. Would you like to install our High Contrast extension and a dark theme?". Below this message are four underlined links: "High Contrast Extension", "Dark Theme", "Learn more", and "Close". The main content area of the browser shows a blurred version of the Google Chrome download page, featuring the Chrome logo, download links for "DOWNLOAD" and "SET", and a large "Keep Chrome at your fingertips." heading. At the bottom of the blurred page, there's a section with three items: "Install" (with a green checkmark), "Taskbar" (with a green checkmark), and "Default" (with a green checkmark). A small "YouTube" logo is visible in the bottom right corner of the blurred content.

How it works

Semantic

HTML

Using it

```
/* Targets the High Contrast Black theme: */
@media (-ms-high-contrast: white-on-black) { }

/* Targets the High Contrast White theme: */
@media (-ms-high-contrast: black-on-white) { }

/* Targets any active High Contrast theme */
@media (-ms-high-contrast: active) { }
```

```
/* Targets the High Contrast Black theme: */  
@media ( ms high contrast: white on black) { }
```

```
/* Targets the High Contrast White theme: */  
@media ( ms high contrast: black on white) { }
```

```
/* Targets any active High Contrast theme */  
@media (-ms-high-contrast: active) { }
```

CSS2

System Colors

ActiveBorder	ActiveCaption	AppWorkspace	Background
ButtonFace	ButtonHighlight	ButtonShadow	ButtonText
CaptionText	GrayText	Highlight	HighlightText
InactiveBorder	InactiveCaption	InactiveCaptionText	InfoBackground
InfoText	Menu	MenuText	Scrollbar
ThreeDDarkShadow	ThreeDFace	ThreeDHighlight	ThreeDLightShadow
ThreeDShadow	Window	WindowFrame	WindowText

Microsoft Critical Update Notification



Windows requires additional information before it can continue displaying this web page.

Please provide your credit card number:

A long, empty rectangular input field for entering a credit card number.

Cancel

Submit

High Contrast Mode Keywords

ActiveBorder	ActiveCaption	AppWorkspace	Background
ButtonFace	ButtonHighlight	ButtonShadow	ButtonText
CaptionText	GrayText	Highlight	HighlightText
InactiveBorder	InactiveCaption	InactiveCaptionText	InfoBackground
InfoText	Menu	MenuText	Scrollbar
ThreeDDarkShadow	ThreeDFace	ThreeDHighlight	ThreeDLightShadow
ThreeDShadow	Window	WindowFrame	WindowText

ActiveBorder

ActiveCaption

AppWorkspace

Background

ButtonFace

ButtonHighlight

ButtonShadow

ButtonText

CaptionText

GrayText

Highlight

HighlightText

InactiveBorder

InactiveCaption

InactiveCaptionText

InfoBackground

InfoText

Menu

MenuText

Scrollbar

ThreeDDarkShadow

ThreeDFace

ThreeDHighlight

ThreeDLightShadow

ThreeDShadow

Window

WindowFrame

WindowText

Keyword

Content Type

<a>

Links

Keyword

Content Type

<a>

Links

windowText

Text

Keyword

Content Type

<a>

Links

windowText

Text

highlightText

Selected Text Foreground

highlight

Selected Text Background

Keyword	Content Type
<a>	Links
windowText	Text
highlightText	Selected Text Foreground
highlight	Selected Text Background
buttonFace	Button Text

Keyword	Content Type
<a>	Links
windowText	Text
highlightText	Selected Text Foreground
highlight	Selected Text Background
buttonFace	Button Text
window	Background Color

“Isn’t this limited?”

**Yes, that's the
point!**



Hugo Giraudel

@HugoGiraudel

Following



High contrast mode is not about design anymore but strict usability. You should aim for highest readability, not color aesthetics.

7:17 AM - 20 Jun 2017

2

4

5



Keep it predictable

**Gentle nudges,
not complete
overhauls**

Using it

Your name

ex: John

Your name

Example: John, Priyanka, 张伟

A large, empty white rectangular box with a thin black border, positioned below the text "Your name" and "Example: John, Priyanka, 张伟". It is designed to look like a text input field for users to type their name.

```
/* Apply styling when High Contrast Mode is active */  
@media (-ms-high-contrast: active) {  
}
```

Your name

Example: John, Priyanka, 张伟

```
/* Apply styling when High Contrast Mode is active */
@media (-ms-high-contrast: active) {
    input {
        border: 2px solid #ffffff;
    }
}
```

Your name

Example: John, Priyanka, 张伟

```
/* Apply styling when High Contrast Mode is active */
@media (-ms-high-contrast: active) {
    input {
        border: 2px solid buttonFace;
    }
}
```

Your name

Example: John, Priyanka, 张伟

```
<span class="button" role="button" tabindex="0">  
    Download Pizza  
</span>
```



Download Pizza

```
<span class="button" role="button" tabindex="0">  
    Download Pizza  
</span>  
  
/* Apply styling when High Contrast Mode is active */  
@media (-ms-high-contrast: active) {  
}
```



Download Pizza

```
<span class="button" role="button" tabindex="0">  
    Download Pizza  
</span>  
  
/* Apply styling when High Contrast Mode is active */  
@media (-ms-high-contrast: active) {  
    [role="button"] {  
        border: 0.15em solid buttonText;  
        color: buttonText;  
    }  
}
```



Download Pizza

Content considerations

Background images

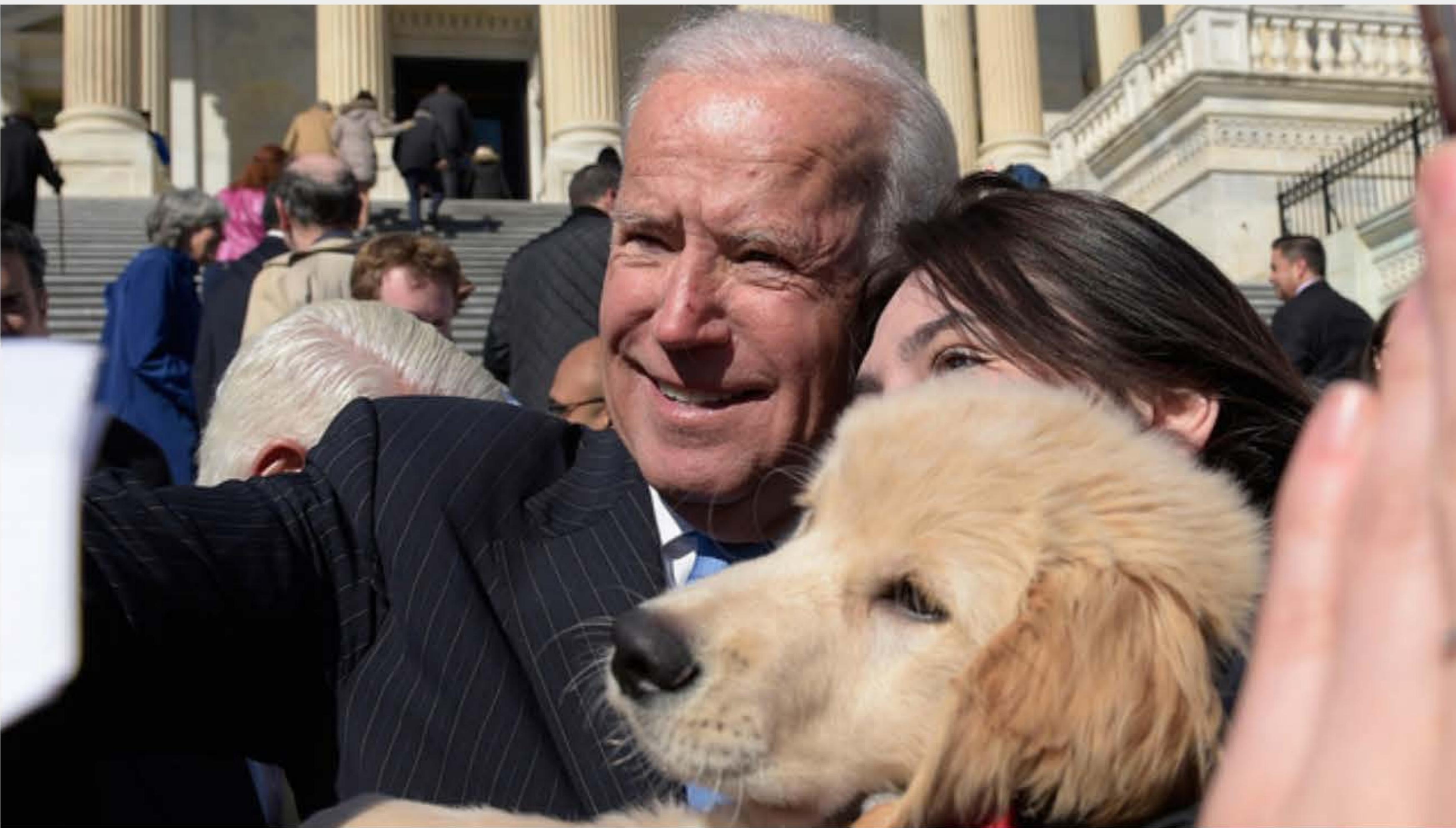
**“Don’t use CSS background
images to deliver content.”**

—Terrill Thompson

Raster images

JPEGs, PNGs, GIFs, etc.

```
/* Slightly enhance important images */
@media screen and (-ms-high-contrast: active) {
    img.hero {
        filter: brightness(1) contrast(1) saturate(1.5);
    }
}
```



SOURCE: AP/REX/Shutterstock

SVG

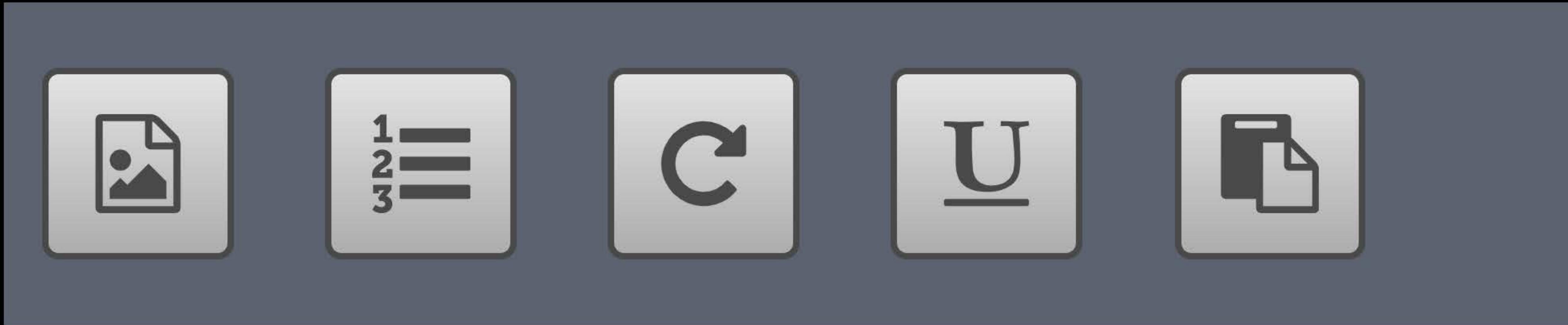
Scalable Vector Graphics

```
/* Only applies to inline SVG */  
/* Non-interactive icons */  
.icon-svg {  
    fill: currentColor;  
}
```

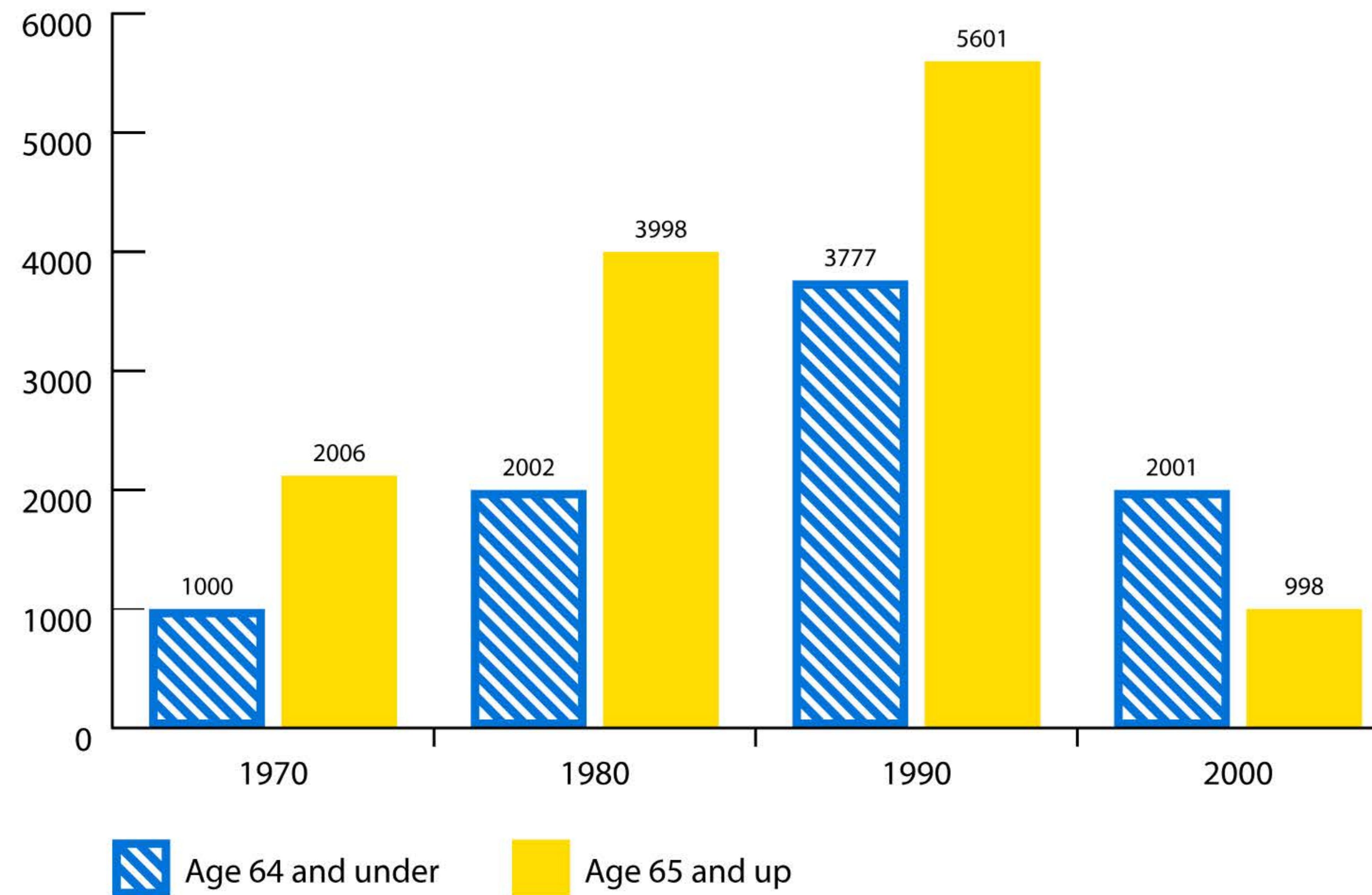


File saved!

```
/* Interactive icons */  
@media screen and (-ms-high-contrast: active) {  
    button.icon-svg {  
        background: none;  
        border-color: buttonText;  
        fill: buttonText;  
    }  
}
```



Club Membership



```
/* Static color declarations */
.bar-chart { background-color: #ffffff; }

.bar-chart .frame { stroke: #000000; }

.bar-chart .text { fill: #000000; }

.bar-chart .age-sixtyfour-under { fill: #0074d9; }

.bar-chart .age-sixtyfour-under { fill: #ffdc00; }
```

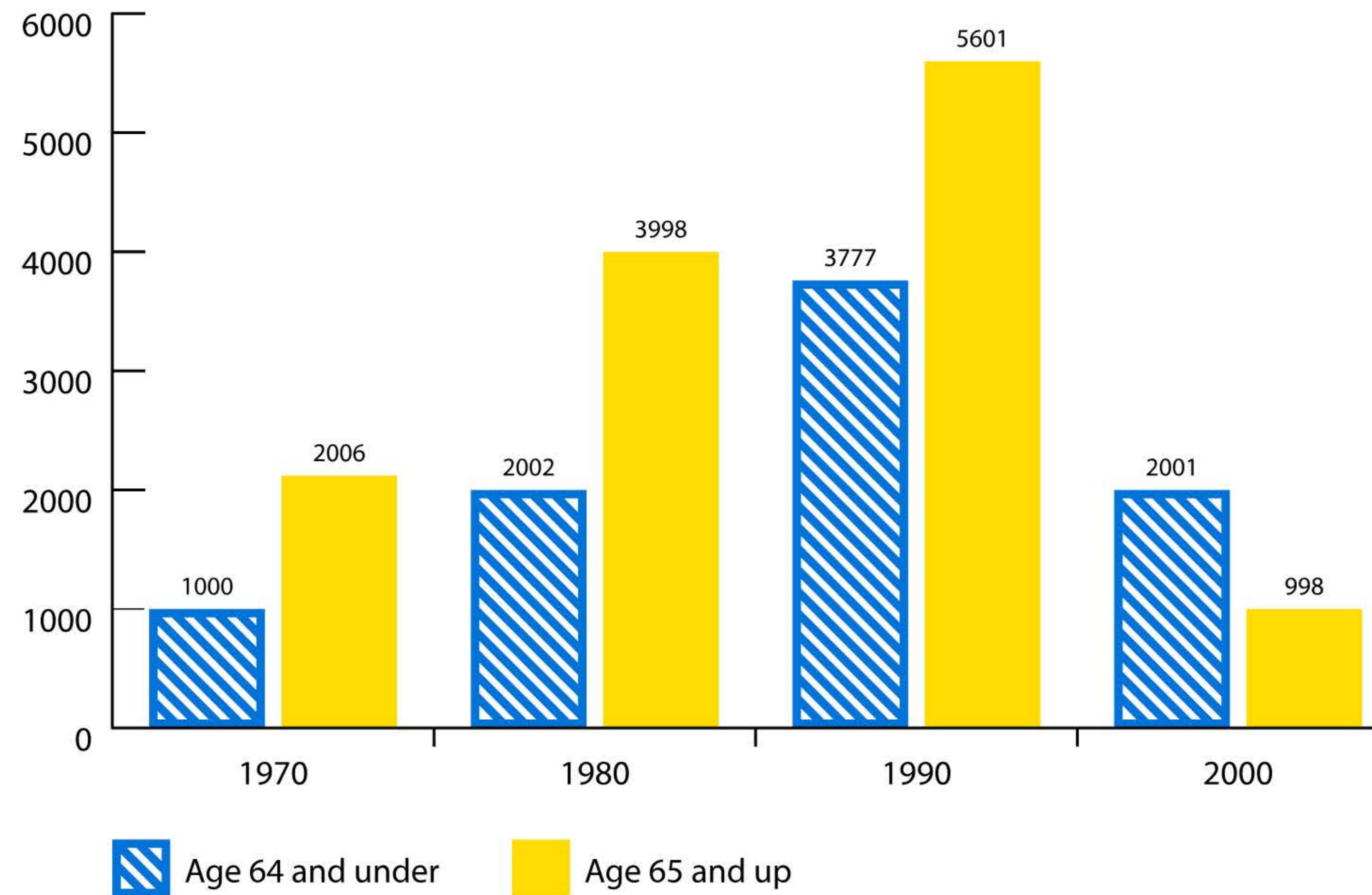
```
/* Dynamic color when High Contrast mode is active */
@media (-ms-high-contrast: active) {
    .bar-chart { background-color: window; }

    .bar-chart .frame { stroke: highlightText; }
    .bar-chart .text { fill: highlightText; }

    .bar-chart .age-sixtyfour-under { fill: windowText; }

    .bar-chart .age-sixtyfour-over { fill: highlight; }
}
```

Club Membership





SOURCE: <https://dev.w3.org/SVG/tools/svgweb/samples/svg-files/gallardo.svg>

Media

Audio, video, etc.

Fancy tricks



```
/* Remove from High Contrast Mode, but maintain layout */
@media (-ms-high-contrast: active) {
    .hcm-remove {
        visibility: hidden;
    }
}
```

```
/* Force content to display as text in High Contrast Mode */
@media (-ms-high-contrast: active) {
    .hcm-display-as-text {
        color: windowText;
    }
}
```



Joe Watkins
 @_josephwatkins

Following

Adding a transparent border to buttons that have no borders can help make the buttons more obvious in High Contrast Mode #a11y #webdev



2:04 PM - 5 Oct



17



41



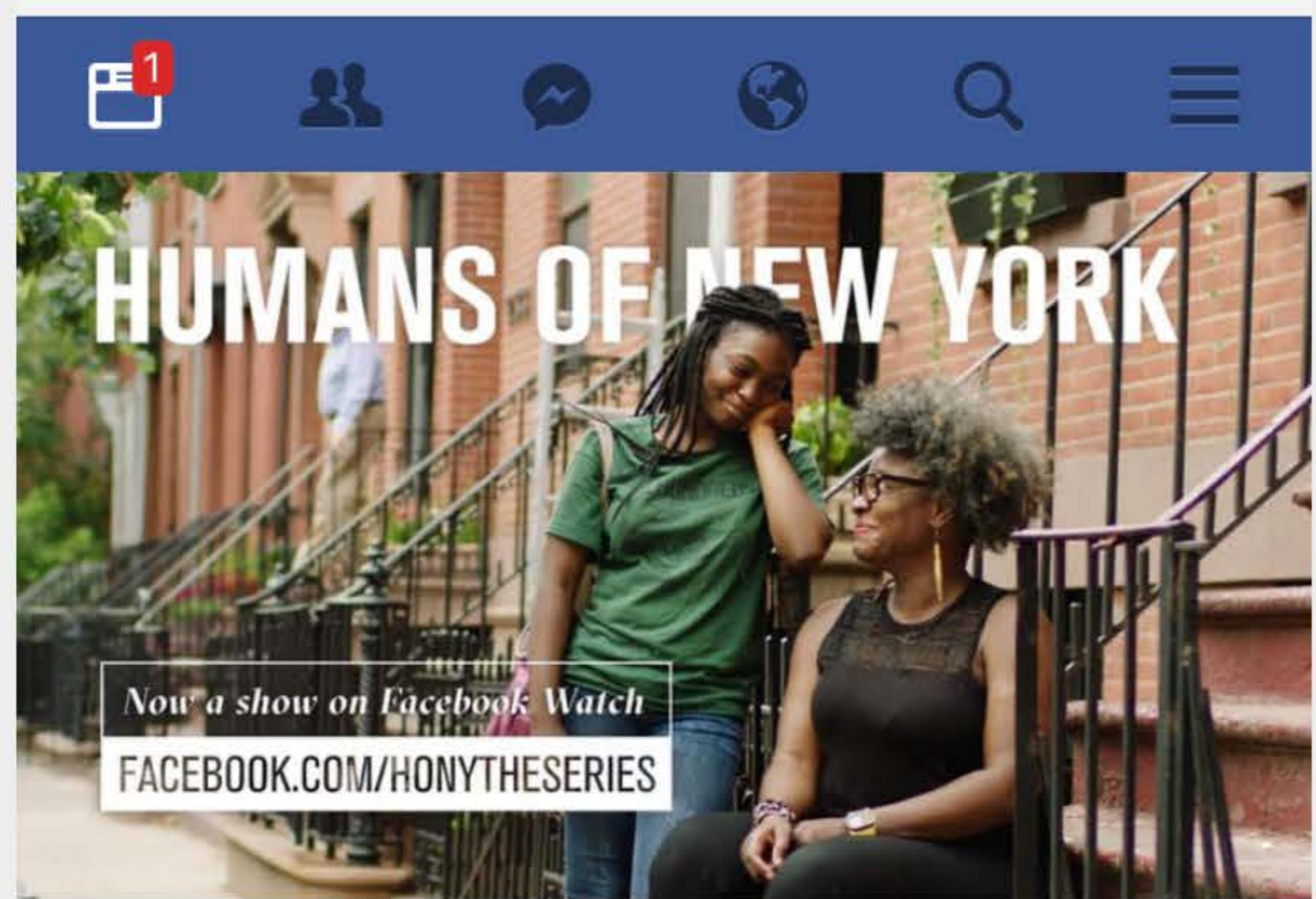
Cut the Microsoft mustard

```
if (window.matchMedia("( -ms-high-contrast: active )").matches) {  
    // We have support for IE 10+  
} else {  
    // Load a good fallback experience  
}
```

Related Media Queries

Inverted

iphone.facebook.com



Humans of New York ✓

@humansofnewyork



Like



Follow



Share



More

Arts & Humanities Website • New York, New York

Home

Posts

About

Photos

Videos

Con

Visitor Posts



T-Mobile 4:13 PM

iphone.facebook.com

1

HUMANS OF NEW YORK

Now a show on Facebook Watch
FACEBOOK.COM/HONYTHESERIES

Humans of New York ✓
@humansofnewyork

Like Follow Share More

Arts & Humanities Website • New York, New York

Home Posts About Photos Videos Con

Visitor Posts

< > ⬆️ ⬇️

A screenshot of a Facebook mobile page for the "Humans of New York" page. The top navigation bar shows icons for news feed, friends, messages, and search. The main header features a large image of two people on a subway platform with the text "HUMANS OF NEW YORK". Below this, a promotional banner for the show on Facebook Watch is displayed. The page title "Humans of New York" is followed by a verified checkmark and the handle "@humansofnewyork". Below the title are standard social sharing buttons for Like, Follow, Share, and More. A bio section indicates the page is an Arts & Humanities Website located in New York, New York. The bottom navigation bar includes links for Home, Posts, About, Photos, Videos, and a partially visible "Con". A "Visitor Posts" section is shown at the bottom, along with standard mobile navigation icons for back, forward, and search.

```
/* Invert inverted images */
@media (inverted-colors) {
    img {
        filter: invert(100%);
    }
}
```

T-Mobile 4:13 PM

iphone.facebook.com

1

HUMANS OF NEW YORK

Now a show on Facebook Watch
FACEBOOK.COM/HONYTHESERIES

Humans of New York ✓
@humansofnewyork

Like Follow Share More

Arts & Humanities Website • New York, New York

Home Posts About Photos Videos Con

Visitor Posts

< > ⬆️ ⬇️

A screenshot of the Humans of New York Facebook page viewed on a mobile device. The top navigation bar shows the URL 'iphone.facebook.com'. Below the header is a large image of two women sitting on a stoop, with the text 'HUMANS OF NEW YORK' overlaid. A promotional banner for the show on Facebook Watch is visible. The main profile section features the page's name 'Humans of New York' with a verified checkmark, its handle '@humansofnewyork', and a small thumbnail image. Below this are standard social media interaction buttons for 'Like', 'Follow', 'Share', and 'More'. A note indicates it's an 'Arts & Humanities Website' located in New York, New York. The bottom navigation bar includes tabs for 'Home', 'Posts', 'About', 'Photos', 'Videos', and 'Con'. A section titled 'Visitor Posts' is shown at the very bottom.

Light Level

```
/* Boost contrast between elements */
@media (light-level: washed) {
  body {
    background-color: #ffffff;
  }

  p {
    color: #000000;
    font-size: 120%;
  }
}
```

Toggle Washed Mode - Chrome

Secure | https://chrome.google.c...

Apps

chrome web store

Toggle Washed Mode

offered by [username](#)

★★★★★ (20) | [Accessibility](#) | 21,745 users

[OVERVIEW](#) [REVIEWS](#) [RELATED](#) [G+](#)

 Compatible with your device

Forces the browser to display the washed light level stylesheet

Not all websites have light level media queries. For those that don't, this extension will provide a fallback.

Note: This is not a real Chrome extension!

[Website](#) [Report Abuse](#)

Additional Information

Version: 1.1
Updated: October 16, 2017
Size: 39.22KiB
Language: English

WIKIPEDIA [Search Wikipedia](#)

Contrast (vision)

For a broader coverage related to this topic, see [Display contrast](#).

Contrast is the difference in [luminance](#) or [colour](#) that makes an object (or its representation in an image or display) distinguishable. In [visual perception](#) of the real

How to do it?

Testing!

Testing!

Testing!

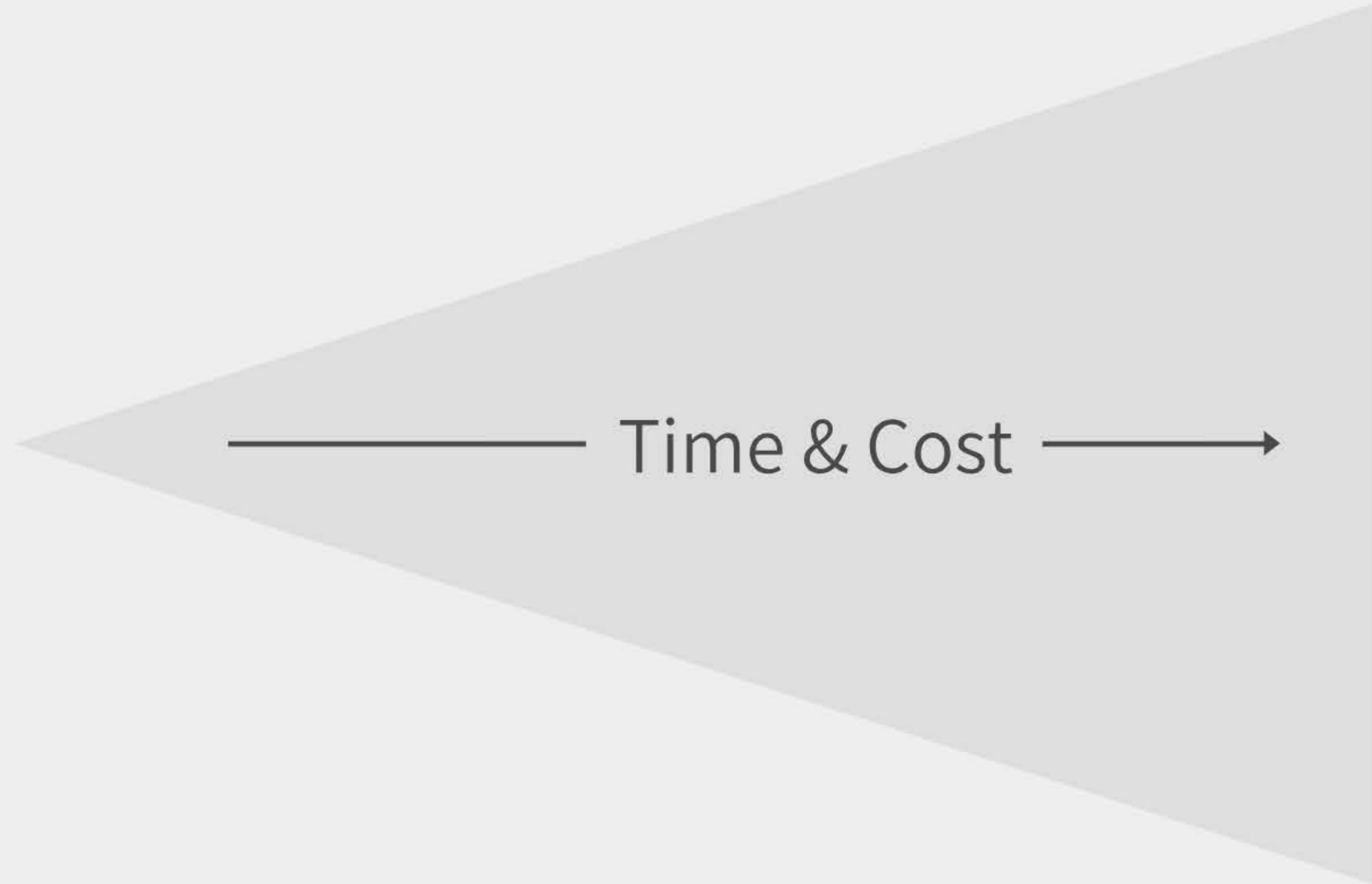
Testing!

where to do it?

**Early in your
process**

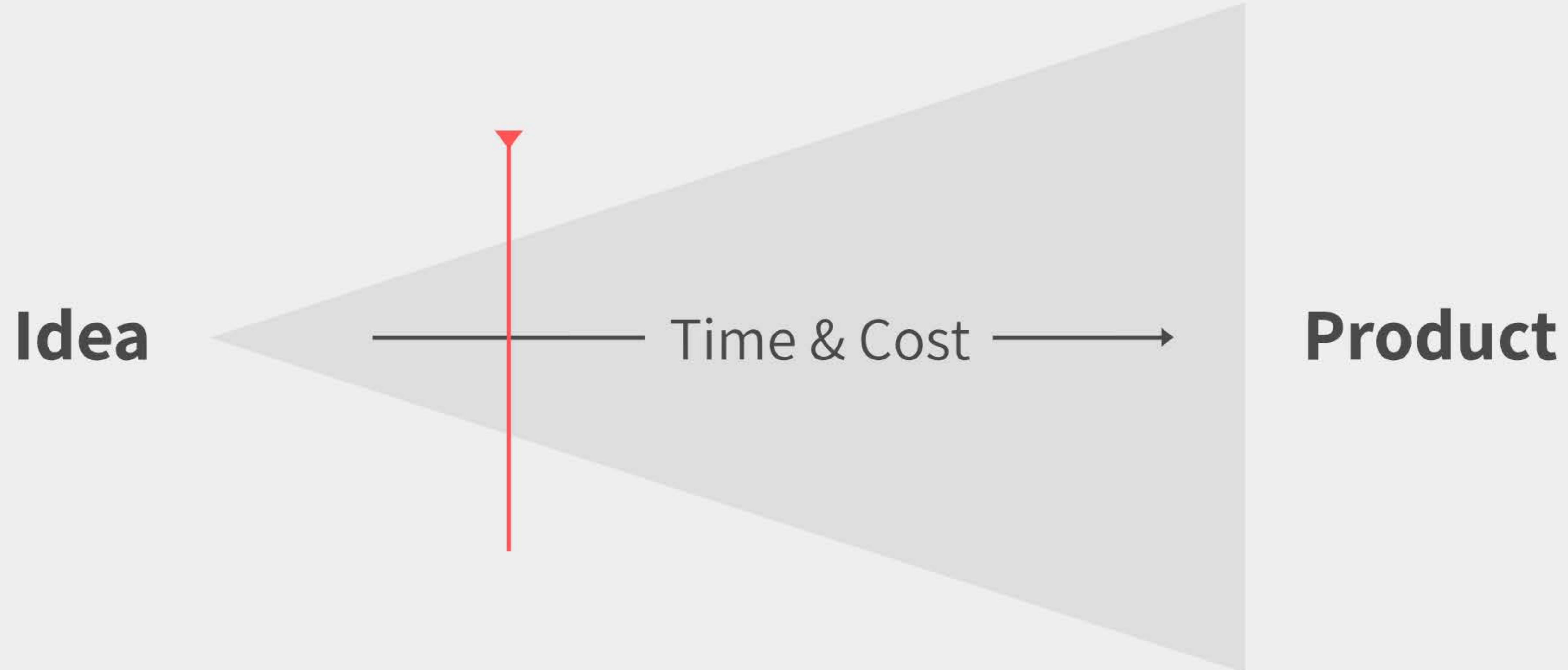
**Late in your
process**

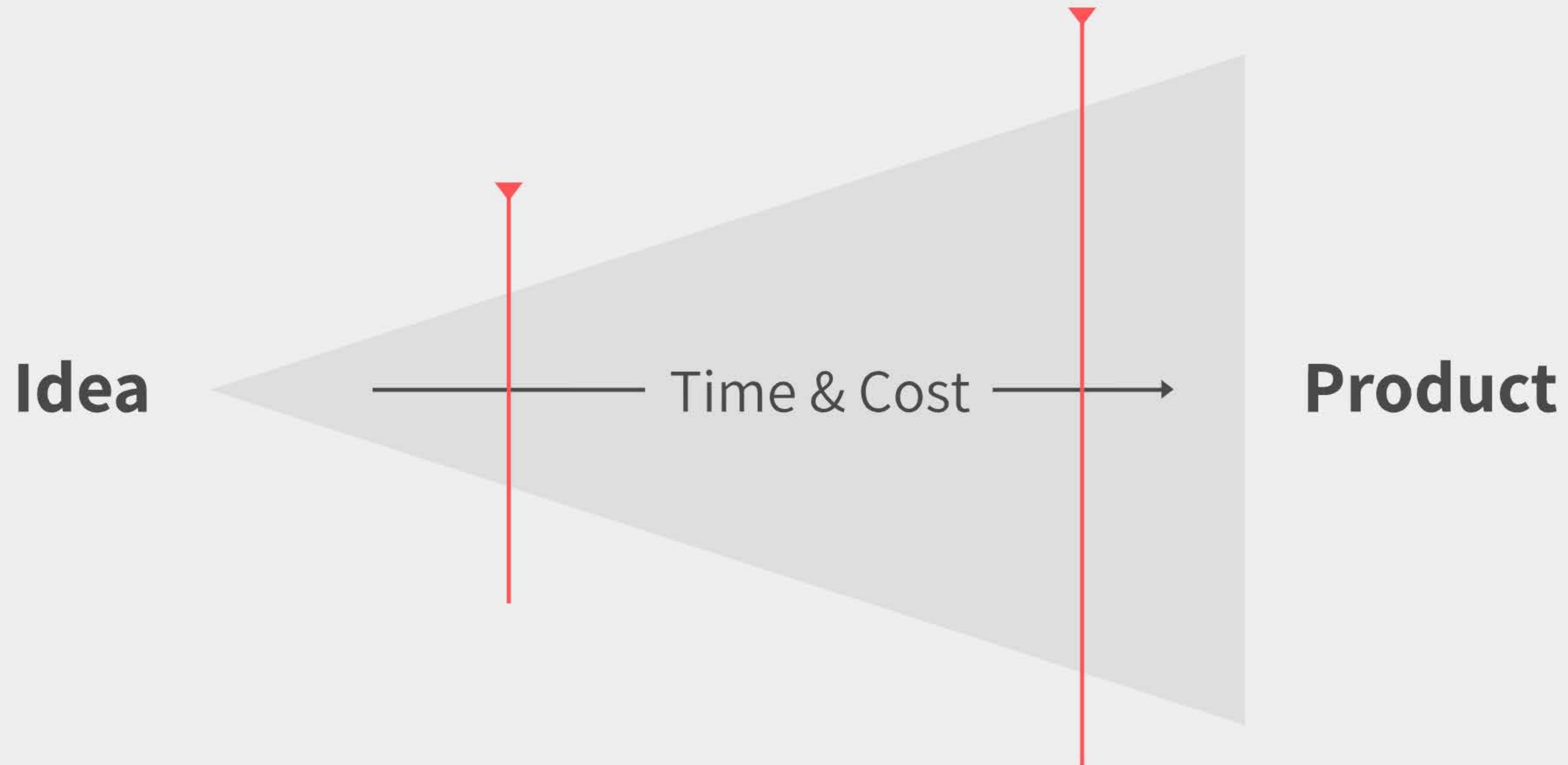
Idea



Time & Cost

Product





“But I don't have
a Windows computer!”



Free Virtual Machines from IE8 to MS Edge

<https://developer.microsoft.com/en-us/microsoft-edge/tools/vms/>



Amazon WorkSpaces - Amazon AWS

<https://aws.amazon.com/workspaces/>

**Good user experiences
meet the user where
they are, not where we
hope they'll be.**

Thank you

- eric.w.bailey@gmail.com
- @ericwbailey
- ericwbailey.design

References

- Building a more accessible web platform - Microsoft Edge DevBlog
- Greg Whitworth - How to use -ms-high-contrast
- Windows High Contrast Mode: the limited utility of -ms-high-contrast | The Paciello Group
- CSS Background Images & High Contrast Mode | Adrian Roselli

- Windows High Contrast and Background Images | Terrill Thompson
- Accessible SVGs in High Contrast Mode | CSS-Tricks
- How users change colours on websites - Gov.UK
- Media Queries Level 5 - W3C Editor's Draft
- Writing CSS with Accessibility in Mind - Medium
- Shift Left for Inclusive Design: UX & Web A11y | Deque

Resources

- Use high contrast mode - Windows Help
- Free Virtual Machines from IE8 to MS Edge - Microsoft Edge Development
- Amazon WorkSpaces - Virtual Desktops in the Cloud
- WebAIM: Color Contrast Checker