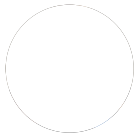


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# Improve Internet Accessibility for Individuals with Impaired Vision

✓ Fact Checked



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About 2.4 percent of Americans have a visual disability, according to [the National Federation of the Blind \(NFB\)](#). This rate may be much higher when you include people that are not

necessarily blind but have a vision issue.



[The 2018 National Health Interview Survey](#) found through estimating that more than 32 million adults nationwide have reported having some degree of vision loss. This figure includes people that cannot see at all and others that experience blurred vision despite using therapeutic eyewear.

The challenge for the millions of people with a visual impairment is how they can effectively use the internet for e-learning, shopping, remote working, business, and other key aspects of their everyday living.

So it's clear that optimal web accessibility for many of them is vital for everyday life.

## **What Are Web Content Accessibility Guidelines?**

The World Wide Web Consortium (W3C) developed the Web Content Accessibility Guidelines (WCAG). These standards stipulate technical website enhancements that designers and developers should incorporate to create meaningful user experiences for all, including the disabled.

Key [web accessibility principles](#) include:

- Perceivable content (video, audio, text, graphics, etc)
- Understandable content, user instructions, and functions
- Pages, functions, and commands that are easy to operate, invoke, and navigate
- Compatibility with third-party web resources such as browsers and screen readers

## What Vision Conditions Can Cause People to Struggle Using the Internet?

People with [vision issues](#) have more problems browsing the internet such as:

### FACT

#### **2.4 percent of Americans have a visual disability.**

– National Federation of the Blind

- **Color blindness:** When you have this condition, some distinctively colored website features look the same to you. It makes it difficult to navigate or spot different functions or parts of a page.
- **Total vision loss:** You cannot see what is on display and need assistance to access computer controls and accessories.
- **Poor visual acuity:** While you can use computer applications, you may experience difficulty reading small print.
- **Deaf-blindness:** With this condition, audio aids cannot help you perceive or navigate visual web content.

# What Can Make the Internet Challenging for Those with Impaired Vision?

The following issues can significantly compromise website experiences for individuals with a visual disability:

- Missing descriptive text alternatives for images, controls, and other visual components
- Not providing for content magnification or resizing
- Not providing auditory cues for orientation and navigation
- Lack of clear visual separation of page sections
- Videos without audio versions or an accompanying audio-description track
- Poor color contrast
- Inconsistent design or positioning of navigational icons or links
- Lack of support for web page color customizations
- Inaccessibility to some website functions though the keyboard

## Tips for Easier Internet Browsing

**“ There are different types of built-in web accessibility tools and adds-on available for the visually impaired. ”**

Activating these features makes your computer and applications easier to use, letting you make the most of your time on the internet.

You can enhance your web experience in ways such as:

- Increasing font size for the entire operating system
- Magnifying content for only a part of the user experience

Reading text and recognizing commands with built-in screen readers

- Activating or installing voice-based user interfaces
- Switching to full screen on your browser to hide distracting menus
- Customizing color and font options on your browser

## How to Use Screen Readers and Narrators

The most popular PC or smartphone screen readers are available for free. These applications can help people with low-vision or total blindness to browse the web in several ways, including:

- Text-to-speech feature reads aloud your on-screen information, such as blocks of text
- Converting on-screen information to Braille and relaying it to a refreshable Braille display
- Helping with browser navigation and operation by announcing highlighted commands or the icons you touch

### Activating **Narrator** in Windows

- Press Windows logo key + Ctrl + Enter, simultaneously
- Click “**Narrator**” on the windows’ right pane
- To deactivate the feature, flip the “**Narrator**” switch to Off

### Activating **VoiceOver** on a Mac computer

- Tap Command-F5 to activate or deactivate VoiceOver on your Mac computer.
- Use Siri voice commands
- Use “**Accessibility Options**”

### Activating **TalkBack** on a Google Android or Pixel Smartphone

- Locate “**Settings**” on your Android or Pixel phone
- Tap “**Accessibility**”

- Select “TalkBack”
- Tap the button next to Use “TalkBack”

## Activating VoiceOver on a iPhone or iPad

- Locate “Settings”
- Select “Accessibility”
- Select “VoiceOver”
- Tap the button next to “VoiceOver”

## How to Magnify Text and Images

Operating systems and browsers support zooming in and out. This feature lets you adjust the size of images and text on the screen for readability.

### Magnifying in Windows

- Click the Windows “Start” menu
- Go to “Settings”
- Click “Ease of Access”
- Click “Magnifier” on the left pane
- Click “Turn on Magnifier”

Alternatively, magnify any web page on your Windows PC by holding down **Ctrl + Alt** keys while moving the mouse wheel forward.

### Magnifying a Mac screen

- Click “Apple” menu
- Go to “System Preferences”  
Select “Accessibility”

- Select Zoom in the sidebar to the left of the screen
- Apply preferences, such as “Zoom style” and keyboard shortcuts

## Turning on Magnification in Android

- Launch the “[Settings](#)” feature on your Android smartphone or tablet
- Select “Accessibility”
- Select “Magnification”
- Activate “Magnification” shortcut

## Turning on magnification on an iPhone or iPad

- Launch “[Settings](#)” from your home screen
- Select “Accessibility”
- Tap “Zoom”
- Activate “Zoom”
- Customize “Zoom” settings, such as “Smart Typing” or “Keyboard Shortcuts”

## Activate Magnification on your Pixel smartphone

- Launch “[Settings](#)” on your Pixel phone
- Select “Accessibility”
- Tap “Magnification”

## How to Use Keyboard Shortcuts on Your Mac or Windows PC



Mastering common keyboard shortcuts can make your web browsing a breeze. While you are doing it, remember that the **Control (Ctrl)** button in Windows is the equivalent of Command in Mac.

Here are some key combinations you can press simultaneously to quickly change certain browser functions:

- **Launch a new browser window:** Ctrl/Command + n
- **Launch a new tab in your browser:** Ctrl/Command + t
- **Launch a new window in Incognito mode:** Ctrl/Command + Shift + n
- **Go to the first tab on your browser:** Ctrl/Command + 1 (press 2 for second tab, and so on)
- **Close current tab:** Ctrl/Command + w
- **Reopen last closed tab:** Ctrl/Command + Shift + t
- **Zoom in:** Ctrl/Command + "+"
- **Zoom out:** Ctrl/Command + "-"



- **Reset zoom level to 100 percent:** Ctrl/Command + 0
- **Reload page:** F5

## Using Voice Commands

You can accomplish a lot on your computer with voice commands. You need your headset plugged in to get started.

## Launching Speech Recognition in Windows

Type [Windows Speech Recognition](#) in “Windows Search” and press Enter

Select “**Start Speech Recognition**”

You may also choose “**Train your computer to understand you better**” and complete the next steps. Training improves the effectiveness of voice command in Windows.

## Launching Voice Control in MacOS Catalina

- Start “**Apple**” menu
- Go to “**System Preferences**”
- Select “**Accessibility**”
- Select “**Voice Control**” to the left
- Select “**Enable Voice Control**”

## Turning on Voice Access in Android

- Download the [Voice Access](#) app from Google Play
- Launch “**Settings**” on your device
- Tap “**Accessibility**”
- Tap “**Voice Access**”

Tap “**Use Voice Access**”

## Turning on Voice Control on your iPhone

- Launch “Settings”
- Tap “Accessibility”
- Select “Voice Control”
- To download the app, select “Set up Voice Control”

## Using Google Assistant on Pixel smartphone

To start a [conversation](#):

- Touch and hold the “Home” button on your Pixel
- Say a command, such as “Hey Google, open Assistant”

## Other Tools That Can Help

**// You can customize your computer for optimal low-vision use in several ways. //**

You can customize your computer for optimal low-vision use in several ways. These include:

- Changing your mouse pointer size or color scheme
- Applying high contrast
- Use freeware cross-platform screen readers for the web, such as [WebAnywhere](#)
- Install premium assistive technology for learners with impaired vision, such as [Kurzweil 3000](#)
- Install [KNFB Reader](#), a text-to-speech or Braille converter

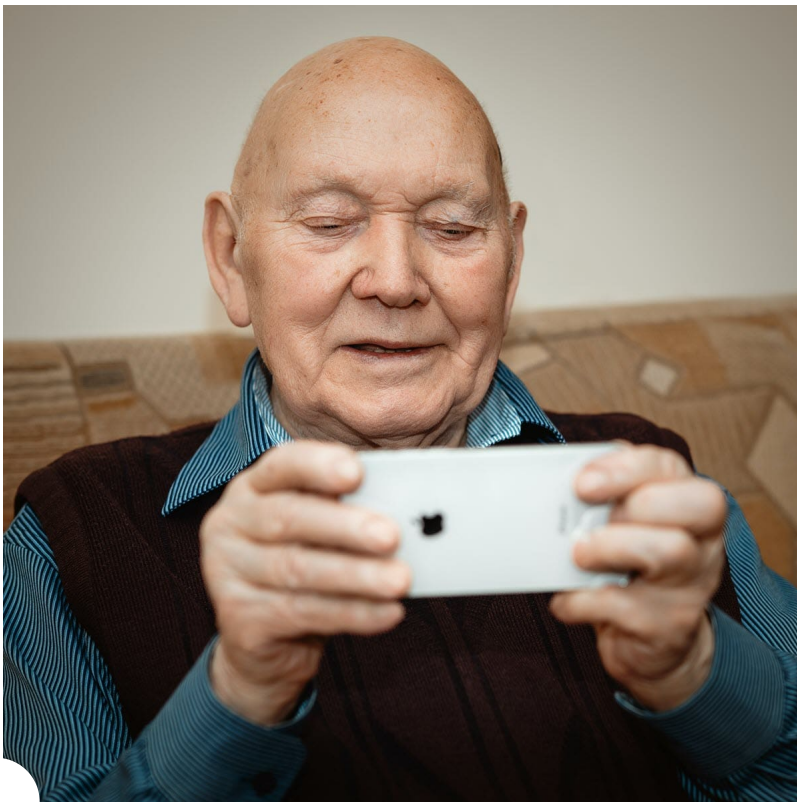
## Accessories That Can Help Those with Low Vision

Assistive technology for low-vision may sometimes incorporate specialized hardware. Feasible examples include:

- Portable digital video magnifiers
- Low-vision glasses/headsets
- Refreshable Braille displays that synthesize on-screen information
- Large-print keyboards
- Braille keyboards
- Large-screen monitors
- Anti-glare filters

## Why Accessibility Matters for the Visually Impaired

There are many reasons why you should address accessibility needs of the visually impaired when designing your web-based user interfaces. These include:



- Accessibility lets the blind or low-vision people use web technologies more effectively at school or work. It is practical for many visually-impaired individuals that do not read Braille.
- To avoid costly [lawsuits](#) for non-compliance with the Americans with Disabilities Act (ADA).
- To expand your online reach.

## How to Make Websites and Apps more Visually Accessible to the Visually Impaired

A website requires specific deliberate provisions to offer the visually impaired a smooth user experience and optimal access to web-based information. The W3C developed detailed [practical guidelines](#) for this, including:

- Creating audio alternatives or transcripts for video
- Using “alt text” descriptions for all images
- Enhancing web page readability by marking up all headings
- Allowing full-content access through the keyboard
- Designing for maximum compatibility with assistive technology
- Web browser developers should provide for change of web page color schemes, contrast, and font size, etc

## Moving Forward, What New Things May Help?

Thanks to modern technology, web accessibility for the visually challenged has increased appreciably. There is still plenty of room for improvement, and artificial intelligence (AI) can play a bigger role going forward.

Two potential AI-based accessibility solutions for people with visual impairments include image recognition and face detection

### Image Recognition

Screen readers mostly recognize images based on descriptions that web authors create. However, [Google](#) says that there are millions of images on the web without these key attributes.

Machine learning image analytics is a promising solution for this problem. The technology can automatically create image descriptions for screen readers where there is none.

## Face Detection

CAPTCHAs are a critical security measure for distinguishing human users and from bots on many websites. However, many existing versions of the verification feature are inaccessible or unfriendly to blind users.

To address this website access bottleneck for the visually impaired, multiple technology companies are experimenting with AI-powered [facial recognition](#) algorithms as a CAPTCHA replacement.

## References

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MyVision.org is an effort by a group of expert ophthalmologists and optometrists to provide trusted information on eye health and vision.

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