Colour-blind Series: Protanopia

What is it for?

Protanopia is a form of colour blindness that affects the ability to see red. People with protanopia cannot distinguish between red and green, and red tones can appear very dark or almost black. It's one of two types of colour blindness that fall under the 'red-green colour blind' umbrella. The other, Deuteranopia, affects green-sensitive cells instead. Both cause difficulty telling red from green, but through different mechanisms.

This matters in digital products, because colour is often used to share important information. A form that highlights errors in red, or a chart using red and green bars side by side, becomes very difficult to interpret. For someone with protanopia, that colour information disappears entirely, and the meaning goes with it.

Protanopia is part of a broader family of colour vision deficiencies, and this Colour-blind Series looks at each of the main types, starting with Protanopia. Each type affects a different part of the colour range, but they all teach the same lesson: never rely on colour alone to share something important.

How to support it

The key principle is that colour should always be paired with another visual cue.

- Designers can add icons, labels, or patterns next to colour to show meaning. They can also use colour blind simulation tools to check designs before they are built.
- Developers can ensure interactive states like errors and warnings are distinguishable by more than just colour (e.g. by using icons or supporting text).
- Content writers can make sure any meaning shown through colour is also stated in words.

Useful links

- Web Content Accessibility Guidelines (WCAG) 1.4.1: Use of Colour
- Colour Blindness Simulator (Coblis)

- Colour and Accessibility (WebAIM)