

Digital Photography Basics: Reading Histograms

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With film, exposure always involves some guesswork—you can never be sure you made the correct exposure until you develop the film. But **with digital cameras you can tell immediately whether the right amount of light reached the sensor by looking at a histogram**. This ability to instantly evaluate exposure is a game changer—the single biggest advantage of digital photography over film.

But many photographers are still guessing about exposure because they're unable to decipher the histogram's cryptic messages. Instead they judge exposure by how bright the image looks on their camera's LCD screen. But while those little screens are extremely useful for many things, **evaluating exposure isn't one of them. There are too many variables: screen quality (usually bad), the LCD brightness setting in the camera, and the amount of ambient light**.

A histogram is a much better way to judge exposure—if you know how to read it. If you haven't figured out how to display a histogram on the back of your camera, you'll have to spend some quality time with that fascinating book, your camera's manual. Once you know how to view a histogram, what does it mean?

What Does It All Mean?

The most important parts of a histogram are the right and left edges. This histogram shows pixels pushed up against both edges, indicating overexposed highlights and underexposed shadows.

A histogram is a pixel map. It shows how dark and light pixels are distributed within your photograph—light pixels are on the right, dark pixels on the left. **The shape of the histogram doesn't matter**. In other words, don't worry if parts of the histogram shoot off the top, or whether there's a spike somewhere in the middle. **The only things that matter are the right and left edges**.

If any pixels are pushed up against the right edge, that means parts of the image are **overexposed—washed out**. If any pixels are pushed up against the left edge, that means **parts of the image are underexposed—black**. Most cameras also have an overexposure warning—technically known as the “blinkies”—where overexposed parts of the photograph flash or blink. Some cameras also have an underexposure warning, which shows underexposed, black shadows.

Handling High-Contrast Scenes

In most scenes you should be able to get detail in both highlights and shadows. That is, the histogram shouldn't touch either the right or left edge. But in some situations the contrast is too great for the camera's sensor to handle, so it's impossible to avoid either **washed-out highlights (a spike at the right edge of the histogram) or black shadows (a spike at the left edge of the histogram)**, or both. In these cases, it's usually better to retain detail in the highlights and sacrifice shadow detail. In looking at a histogram, it's better to have pixels pushed up against the left edge than the right edge.

Histogram for a high-contrast scene with pixels pushed up against the left edge, indicating underexposed shadows, but properly exposed highlights. In most cases this is preferable—if you can't get both, it's better retain detail in the highlights and let the shadows go black

Why are highlights usually more important than shadows? First, our eyes are drawn to bright areas, so viewers immediately notice if they're overexposed. Second, in real life we can always see detail in bright spots (except when looking at the sun itself, or the sun reflected in water or glass), but we can't always see detail in shadows. ***It seems unnatural to find washed-out highlights*** in a photograph, yet it feels perfectly normal to see regions of pure black.

So if you can't have both, 99 percent of the time you should sacrifice the shadows and keep the highlights. In most photographs, the ***lightest pixels should be close to the right edge of the histogram, but not touching it.***

The Short Answer

This bears repeating: most of the time, the lightest pixels should be close to the right edge of the histogram, but not touching it. If there's a large gap between the lightest pixels and the right edge of the histogram, the photograph is underexposed. If any pixels touch that right edge, the photograph is probably overexposed. For most photographs, all you have to do is make sure the lightest pixels don't touch the right edge, ***but are near it.***

The main exception, the instance when it's okay to see a spike at the right edge of the histogram, is when the photograph includes the sun itself, or bright sky next to the sun. Because small areas around the sun are too bright to see in real life, it's acceptable if such areas lack detail in photographs—it looks natural. The blinkies come in handy here: while the histogram tells you that something is overexposed, ***the blinkies show which parts of the image are washed out, and how large those areas are.***

Adjusting the Exposure

So now that you can read a histogram, what do you do? If you take a photo, but the histogram doesn't look right, how do you fix it? The short answer is that in automatic exposure modes like Program, Aperture Priority, or Shutter Priority, you need to use your exposure compensation dial to make the photograph lighter or darker. In Manual exposure mode you can change either the shutter speed or the aperture.