Resolution Confusion (Jan 08)

By Rick Altman

Are you ready to hear the most widely-circulated misunderstanding concerning photos in PowerPoint? Here it is: When imported to PowerPoint, a 300-dpi photo will look better than a 72-dpi photo. This is an incorrect statement. In fact, two photos of the same dimension (let's say 1024x768), one exported at 300 dpi, one exported at a lower resolution, will look exactly the same and will have the exact same file size.

One reason that you're probably shaking your head in the general direction of my book right now is because most software programs have misled you all these years. They have allowed you to speak the language of the print industry while working with display technology.

Get the dot out of here!

What exactly does it mean to have a photo appear on your screen that is 300 dots per inch? You might be able to explain to me the part about the dots, but an inch? What's an inch? On the monitor that's seated on my lap right now, an inch is over 7% of the total width. When this same image is projected before my audience, an inch would be less than .01% of the width. Same image, same computer, same photo...very different inch.

Measuring in inches has absolutely no meaning when discussing an image on screen, and therefore the term for resolution known as dots per inch is equally irrelevant. The dot refers to an actual placement of ink or toner on a printed page and that page has a measurable size. You really can measure how many dots of ink fit within one inch when you are printing.

We can do no such thing when we are discussing a photo that appears on screen, because there is no such thing as a dot and there is no such thing as an inch. There are only pixels—the basic unit of measure on a computer screen, the single grid point in an image, the abbreviation for Picture Element.

The only measurement that is relevant with respect to the quality of a photo being prepared for PowerPoint or some other screen-based project is its size in pixels—1024 pixels wide...800 pixels wide...600 pixels deep, etc. This is why software that implies otherwise, as we see in Figure 1 does us all a disservice.

We are picking on Corel PhotoPaint here, but it is just one of many programs that commits this error. If you were to adjust the dpi value in this dialog box, the software would compensate by changing the image size. This is tantamount to two wrongs making a right: when sizing a photo for PowerPoint, the only thing that matters is its size in pixels. If the image were destined for a magazine and was being measured in inches, that would be different.

Think Pixels

Let's start by making this really simple, so if you get fed up with this chapter right now, you'll already have the important part:

Size your photos for 1024 pixels of width or 768 pixels of height. Over 90% of all presentations delivered today are projected at XGA resolution—1024 pixels across by 768 pixels deep. If your landscape photo is sized at 1024 pixels wide or your portrait photo at 768 pixels high, you guarantee its fidelity when projected full-screen. You'll be exercising overkill for photos less than full screen, but the increase in the file's size is utterly insignificant. If you conscientiously decrease the size of your photo because you don't intend to use it full-screen, Murphy's Law will immediately activate, your design will change, and you'll need it full-screen. Just keep it at that size, even if you're using it smaller.

This discussion assumes that you have control over the size of the photo, but many times you don't. Like when you get sent a 150-pixel wide thumbnail and you're expected to do something with it. As soon as you take the dpi nonsense out of the equation, you can think rationally about this and reach an intuitive solution:
You must display it in PowerPoint at a small size!

And how do you know what size to make it? How can you size it to 150 pixels? That's difficult, because PowerPoint also insists (incorrectly) on measuring this photo in inches.

Fortunately, you are operating in a very forgiving medium. It really doesn't take a lot to make a photo look good on a computer display or out of a projector. You don't have to worry about color-matching, trapping, registration errors, CMYK conversions, or any of the issues that send those in the print business to early retirement. If it looks good on your screen, there's a good chance it will look good when projected or shown. If you can test it out on the ultimate output device, so much the better.

Welcome to the Better PPT Photo Lab

Figure 2 is a photo of my two daughters outside on a sunny fall day in San Francisco. It was taken with my Canon EOS XT, a digital camera that takes photos at 8.1 megapixels.

Dimension
  3456 pixels wide
  2304 pixels high

Filesize
  3.3MB

When imported into PowerPoint, it is such a large photo that my older daughter's head barely fits on the slide. In Figure 3, we have superimposed the size of the actual slide so you can get a sense of how large the photo is. The slide thumbnail on the left will give you the same indication.

With just this photo, the PowerPoint file is 3.5MB, but before you go on auto-pilot and conclude that it needs to be shrunk down before import, or by PowerPoint after import, consider this:

* You could use this photo in one of countless ways, including an extreme close-up.
* You could pan across the photo and maintain total fidelity

Are these things that you might want to do? If so, it would behoove you to consider keeping this photo at its ultra-high resolution. More on that later, but now, it's time to begin experimenting.

At 1024 pixels wide . . .
In order to follow our own advice above—size photos for 1024 pixels of width or 768 pixels of height—we have taken the photo into an image-editing program (Photoshop, PhotoPaint, Paint Shop Pro, ACDSee, et al) and reduced it in size to 1024 x 682 (we told it to size the width to 1024 and allow the height to adjust in proportion). The result is a photo that looks perfect when displayed at full-width and yet is a fraction of the size of the original: 254KB.

For 90% of you, this photo will now be completely usable in every scenario you might think of, from full-slide down to thumbnail. Our unofficial surveys show that about 10% of you might want to go with a tight shot, like an extreme close-up, and it is those people who will be disappointed with the results:

Notice how the skin tones and the eyelashes are sharper on the image at left. Once you size the photo down to 1024 pixels of width, you close the door on close-ups like this. There are no longer enough pixels in the photo to provide the detail needed.

At 800 pixels wide . . .
We see almost no difference than if we were looking at the 1024-pixel wide image. That suggests to us that the relationship between resolution and filesize is not linear. We saved a bundle of file space in the first decrease in size, but not nearly so much this time: only 70K, down to about 185K. Even sized up full-slide, this one looks almost identical to the 1024-pixel-wide photo.

At 640 pixels wide . . .
When displayed at full-slide width, you can clearly see that this photo does not have as much detail. Given that you're only saving about 40K (file size of 144K), sizing down to 640 pixels or lower seems pointless.

Figure 6 shows the four resolutions that we worked with in this little experiment, and displayed at this small size, I'll defy you to see a difference. On my 24-inch display, I have to practically touch

my nose to the screen to discern the subtle differences in Erica's lashes.

But in Figure 7, it's a different story altogether, as once again, the demands of such a tight zoom are too much for the versions of this photo that have been reduced in size. The other scenario in which lack of resolution shows up is with a sweeping pan across a photo. An effective pan requires that the photo start out significantly larger than the slide itself, and that spells trouble for photos that are only the size of the slide or smaller.

Am I recommending that you not downsize your photos? If so, I'm sure it wouldn't be the first time that I have contradicted my own advice across the pages of this book, but it would probably be some sort of record to have done it within the same chapter.

No, I'm not necessarily advising you to become a glutton with your photos, and there is no question that if you needed to distribute a presentation or make it available for download, you would want to do everything possible to keep the size down.

I can only speak for myself. When I have a rich presentation to prepare that I know will be run on my own computer, I do not resize my photos. I don't care how large my PowerPoint file becomes, but I do care about having every possible creative option available to me. Pans and zooms are standard operating procedure when I'm hoping to evoke emotion with a photo montage and for those two maneuvers, I need every last pixel.

On some computers, there might be a drop in performance with photos this large, but on any of the desktops or notebooks that I have purchased since 2003, I notice none whatsoever.

Managing the Move

Should you choose to get aggressive with the size of your rich presentation files, there are three courses of action available to you:

* Resize your photos with image-editing software before importing them to PowerPoint.

* Let PowerPoint do it for you, with the Compress Pictures command.

* Use third-party software that compresses the entire PowerPoint file.

If you have a preferred image-editing application, you not only know how to size a photo, you've probably done it countless times already. For those with less experience, I recommend picking up a copy of ACDSee, the versatile image viewing, organizing, and editing tool from www.acdsystems.com. With a buy-in starting at $40, you get a handy array of tools and a friendly interface.

I own Photoshop, PaintShop Pro, and PhotoPaint, and yet I often reach for ACDSee for quick crops, format conversion, and changes in size, thanks to the program's quickness and accuracy.

PowerPoint has its own built-in compression function, available for any selected photo (via the Picture toolbar or the Format Picture dialog) or for every photo (using the Tools drop-down in the Save As dialog).

This procedure works according to algorithms that nobody has satisfactorily explained to me. Sometimes it reduces the size of a file by many factors and other times it does nothing. Notice anything else discomfiting about it?

Yup, it too muddles the whole dot-per-inch/pixel situation, associating Web quality with 96 dpi. Still, it doesn't hurt anything and is worth trying when you need to keep file sizes down and don't anticipate using photos that are larger than the slide itself.

As for after-market tools for file compression, we like NXPowerLite from the London-based Neuxpower company. For $45, you get an easy-to-use utility that takes care of business with no backtalk. And wow, does it work—our photo_lab file went from 3.9MB to 850K with zero discernible picture loss.

Steve Rindsberg and his PPTools suite of programs offer an optimizer, among many other useful PowerPoint utilities, and you can find out about them at www.pptools.com.

We also like Microsoft MVP Bill Dillworth's SizeMe utility, which reports in detail on what might be responsible for your file bloat. http://billdilworth.mvps.org.

Protect Originals

The most important part of this whole process is insuring against your reducing the heck out of your photos without having originals tucked safely away. If you find yourself in Photoshop about to downsize an image, take a moment and save the file in native .psd format. Ditto for PhotoPaint and a .cpt file. Once you do that, then size it down and export it to whatever format you want.

We know how easy it is to forget to save photos in native formats, and that's why we like the post-production compression tools such as NXPowerLite. Reducing images once they are already in PowerPoint removes all risk to the original photos.

About the Author

Rick Altman is the host of "PowerPoint Live" and the author of "Why Most PowerPoint Presentations Suck...and how you can make them better".

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