

Cost Considerations of Converting to Digital Photography

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Objectives: To provide the practicing surgeon with data to make an informed economic decision regarding conversion from analog to digital photography.

Methods: A cost analysis of photography based on 35-mm vs digital platforms (low-, medium-, and high-cost hardware).

Results: Break-even thresholds for the investment in a

digital platform of low, medium, and high costs were 3674, 15 789, and 34 000 images, respectively.

Conclusion: Given the current excellent image quality and ongoing refinements in digital photography, a digital photography platform may be cost-effective for a busy facial plastic surgery practice.

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COST IS a significant factor in the decision to switch to digital from 35-mm photography. This was not addressed in our previous report on the subject.¹ The economic difference between the 2 photographic systems is that digital photography is associated with high fixed costs but zero variable costs and that 35-mm photography is associated with low fixed costs but additional ongoing variable costs. Once the digital camera and storage medium are purchased, there are no additional costs for film, processing, or storage. Thus, the total cost of photography as a function of volume will be constant for digital and increasing for 35-mm photography. This implies that the total costs for photography will be equal for both digital and 35-mm photography at some volume of photographs. Switching to digital photography may, therefore, be justified for some high-volume practices and not for some low-volume practices.

RESULTS

The cost functions for low-, medium-, and high-cost setups are presented in the **Figure**. Assuming a low-cost setup for both digital and 35-mm photography, digital photography will have a lower total cost if the number of pictures taken is greater than 3674. The medium- and high-cost set-

ups had threshold volumes of 15 789 and 34 000 pictures, respectively.

COMMENT

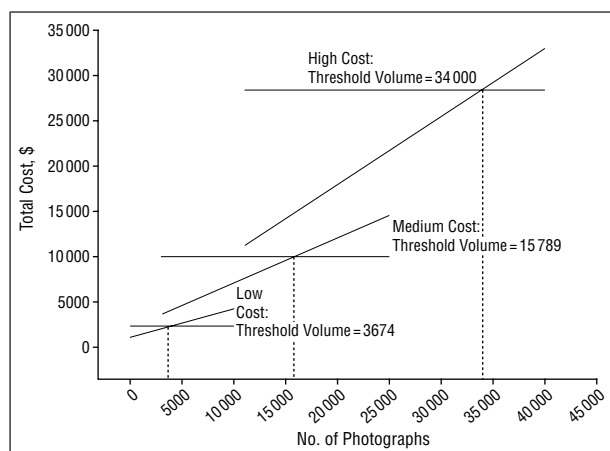
The decision to convert from conventional 35-mm photography must take into consideration the total cost of each method. Unlike 35-mm photography, digital photography has few costs beyond the purchase of the camera and storage equipment. There are no ongoing costs of purchasing film and processing. The start-up costs, however, can be considerable and variable depending on the type of camera, computer, and software purchased. For this reason, broad generalizations have been used to determine cost estimates and calculations; individual costs will vary.

Major photographic equipment, whether 35-mm or digital, becomes obsolete over time and requires replacement. This issue may be more pressing for a digital platform because enhancements will occur at a greater frequency than for 35 mm. The costs of upgrading digital equipment were not included in our cost analysis since these data are too variable (ie, based on an individual practitioner's needs, interests, and disposable income). Computerized equipment can be depreciated over a 3-year interval as a business-related deduction, which makes regular upgrading more attractive and cost-effective.

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METHODS

To demonstrate how the volume thresholds at which the switch to digital photography can be justified, we plotted cost as a function of volume for low-, medium-, and high-cost digital and 35-mm camera equipment packages. The costs for a hypothetical digital camera setup are contained in **Table 1**. We considered the cost of a wide range of digital cameras that are currently available and included the cost of purchasing a personal computer (PC), a storage device (eg, a hard drive or a writable CD-ROM), and the software for retrieving, viewing, and manipulating the digital images. In **Table 2** we present the costs for a traditional 35-mm camera setup, including the camera (lens included), a slide scanner to convert photographic images to digital for presentation purposes, a roll of film (36 exposures: low cost, \$5.00; medium cost, \$7.67; high cost, \$12.00), and film processing (36 exposures; low cost, \$6.00; medium cost, \$10.00; high cost, \$15.00). The cost function of 35-mm photography was set equal to the cost function of digital photography and solved for the threshold volume.



Threshold volumes for low-, medium-, and high-cost configurations for digital and 35-mm cameras and equipment. The horizontal line indicates the cost for a digital camera setup, and the upward-sloping line indicates the cost for a 35-mm camera setup. If a practice anticipates taking more than 3674 photographs, then the low-cost digital configuration is more cost-effective than the low-cost 35-mm configuration. If a practice anticipates taking more than 15789 photographs, then the medium-cost digital configuration is more cost-effective than the medium-cost 35-mm configuration. If a practice anticipates taking more than 34000 photographs, then the high-cost digital setup is more cost-effective than the high-cost 35-mm setup.

We have demonstrated a method by which a practice can determine whether the purchase of a particular digital camera setup can be justified; this is done by calculating the costs of ongoing film purchase and processing that can be avoided and by determining the number of photographs a practice takes. Using these parameters, we found the image volume threshold for a digital platform to be more cost-effective than 35 mm (3674, 15789, and 34000 for low-, medium-, and high-cost equipment, respectively). These threshold values in-

Table 1. Costs for Digital Cameras and Equipment Used in the Threshold Analysis

Camera and Equipment	Cost, \$		
	Low	Medium	High
Digital camera (professional)	900	5000	9000
Personal computer	1200	2500	3500
Electronic storage	250	500	1000
Software (image storage, enhancement, etc)	100	2000	15000
Total	2450	10 000	28 500

Table 2. Costs for 35-mm Cameras and Equipment Used in the Threshold Analysis

Camera	Cost, \$		
	Low	Medium	High
Camera (lens included)	600.00	1400.00	2000.00
Film (slide film, per photo)	0.14	0.21	0.33
Development (slide film, per photo)	0.17	0.28	0.42
Slide scanner	700.00	850.00	1000.00
Total	1300.31	2250.49	3000.75

clude the purchase of a dedicated PC for digital imaging. If the digital workstation is placed on an existing PC, the cost of a conversion to digital photography could be reduced by 8% to 50% (Table 1). This, of course, would result in a lower image volume threshold to reach a break-even point. Based on these threshold values, many practices could justify the purchase of low- to medium-cost digital camera equipment.

The purpose of this report was to provoke contemplation of conversion to digital photography among practicing facial plastic surgeons. Data presented in this article are generalizations intended only to illustrate the likely costs of conversion to a digital platform. Because of the rapid deflation of hardware prices combined with technological enhancements over short intervals, our data are relative and will change over time. These changes will likely make a digital conversion more economical. Any practice contemplating a conversion of photographic platforms should perform an analysis similar to that presented in this article using specific price quotes from preferred vendors.

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REFERENCE

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