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ANSI/IES RP-28-07

Lighting and the visual environment for senior living



ANSI/IESNA RP-28-07

Recommended Practice for Lighting and the Visual Environment for Senior Living

Publication of this Recommended Practice has been approved by the IESNA. Suggestions for revisions should be directed to the IESNA

Prepared by:
The IESNA Lighting for the Aged and Partially Sighted Committee

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Recommend Practice for Lighting and the Visual Environment for Senior Living

1.0 INTRODUCTION

The Illuminating Engineering Society of North America (IESNA) has made lighting recommendations since the publication of the first lighting handbook in 1947 to the present edition. Those recommendations have been based on a variety of considerations and have been derived from experience with “what works,” as well as from more scientifically determined models of visual performance. By and large, where data have been utilized either to design a specification system or to validate a particular recommendation, these data have represented a relatively young (20-30 year-old) population group.

This recommended practice is the authority for lighting recommendations for older people. The current IESNA recommendations do not make allowances for older persons. Generally, the visual requirements of older persons are different from younger persons. Advanced age is accompanied by changes in the eye, and visual nervous system. Recognizing these

changes and their effects is essential to mitigating their impact. With advancing age the total light transmittance of the eye decreases (see **Figure 1**). The pupil, for example, becomes smaller and reduces the amount of light entering the eye. The loss of lenticular transparency scatters light and reduces the apparent contrast between objects. The change from pale to deep yellowing of the lens changes the colors of objects in the visual field. The reduced ability to focus on objects results in increased blur. An increase in the prevalence of ocular disease with increasing age contributes to the need for special attention to the lighting requirements of older persons. As the population ages, it is increasingly important that these requirements be addressed to assure the comfort, productivity, and quality of life for the elderly.

The lighting environment affects more than vision. There are photobiological effects as well. These include effects upon circadian rhythm and vitamin D synthesis. Direct exposure to the intensity of daylight declines dramatically as the mobility of a person decreases. This restricts the person to the interior environment where lighting conditions are often less than adequate.

While the daytime visible light levels needed to drive circadian rhythms can be found outside even on a

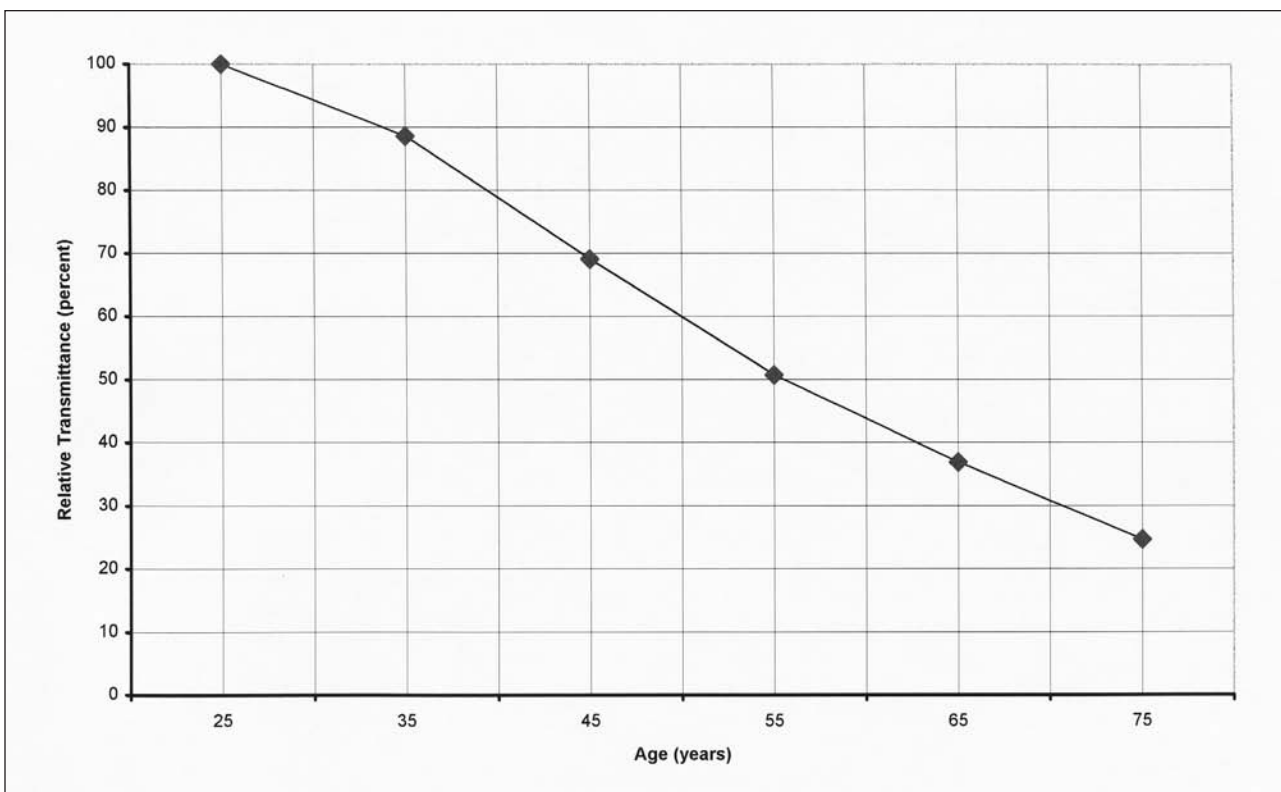


Figure 1. The transmittance of the human eye plotted as a function of age.⁹ As people get older, they may require greater illuminance to offset the reduction in the amount of light reaching the retinas of their eyes.