



# Lighting and the Visual Environment for Seniors and the Low Vision Population



**Lighting and the Visual Environment for  
Seniors and the Low Vision Population**

Publication of this Standard  
has been approved by IES.  
Suggestions for revisions  
should be directed to IES.

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

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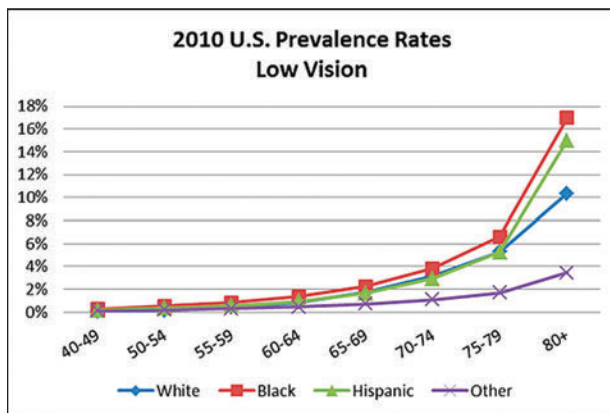
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## 1.0 INTRODUCTION

This update of *ANSI/IES RP-28-07 American National Standard for Lighting and the Visual Environment for Senior Living* includes major additions centered on the aging population and those with low vision. Seniors represent the fastest growing segment of the population with over 40 million Americans over 65.<sup>1</sup> With over 10,000 Baby Boomers turning 65 everyday, *ANSI/IES RP-28-07* has been expanded to include areas beyond housing and senior care facilities. New areas of interest are offices, hospital-ity, healthcare, commercial and places of assembly. The over 40 population represents approximately 89 million people and of those 63 percent have vision problems.<sup>2</sup> However, there is a prevalence of low vision in the general senior population which increases dramatically after the age of 70 (**Figure 1**).



**Figure 1: 2010 U.S. Age-Specific Prevalence Rates for Low Vision by Age, and Race/Ethnicity**  
(NEI [National Eye Institute] Low Vision 2010)

Low Vision is defined as vision impairment that is worse than 20/60 in the better eye, which cannot be correctable medically, surgically or with conventional eye glasses.<sup>3</sup> People rely on a supportive visual environment to maximize their independence and safety. Whereas people with mobility impairments are easily identified by their use of assistive devices, i.e., wheelchairs, canes or walkers, persons with low vision do not typically use assistive devices or trailing techniques. Sensory loss is common to the aging process; however, perception problems are not easily recognized by others.

As the work force ages the need for lighting guidance becomes more of a concern. It seems clear that the Baby Boomer generation (born in the years 1946 through 1964) will see aging very differently from their parents. They will take their current life styles and modify them slightly but will expect to continue contributing to society and be visible in day-to-day life. This group will represent more than one in four Americans.

Also note that according to the World Health Organization, the entire world, with a few exceptions, is aging, and governments are not prepared for the growth of seniors or how to care for them. A brief search of several industrialized countries determined that there are few regulations addressing senior vision and lighting needs and prior editions of *ANSI/IES RP-28-16* have been reported to be the document of choice by designers when seeking guidance in how to provide adequate light in senior communities.

The *IES Lighting for the Aged and Partially Sighted Committee* has worked to make this current Recommended Practice document inclusive of current research and design practice for the above population to help them maintain a quality of life into their third age. *Loss of independence* has been identified as the greatest fear of aging, so today's senior will be looking for answers to maximize their aging vision.

Current codes and standards are based on the needs of younger people. Steps have already been taken to begin the transition to recognizing the needs of older people. Of major importance to achieving higher lighting levels while still complying with energy restraints is the adoption of *ASHRAE/IES 90.1-2013*. Work by this committee's members along with the *ANSI/ASHRAE/IES Lighting Sub-Committee* has succeeded in getting the lighting levels described in **Table 1** adopted as an accepted compliance method for licensed senior living communities. This acknowledgement that senior populations have a high incidence of vision impairment and therefore require higher lighting levels was achieved by extensive investigations of 10 senior living environments. This research showed that the lighting levels in *ANSI/IES RP-28-07* are being followed in the test buildings and that a higher lighting power density (LPD) was justified to meet the needs of those with vision impairment.

It should be recognized that the *Americans with Disabilities Act 2010 (ADA)* and the *Architectural Barriers Act* inadequately accommodate the needs of people who are blind and those with low vision. The ADA includes Braille, but people who develop low vision later in life may not know Braille. This document is intended to increase the designers' understanding of age-related vision loss and the importance of their design decisions that could impact the safety and independence of this growing sector of the population.

This edition has a new section devoted to Light for Human Health (**Section 6**), including vitamin D synthesis and circadian rhythm. Recent research<sup>3b</sup>