

Psychology 4036: Perceptual Issues in Visual Impairment

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Week 1: Introduction

List of Book Chapters

Solomon, A. *Far from the Tree: Parents, Children and the Search for Identity*. Scribner, 2012.

Contents:

I Son	1
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Three Approaches for Dealing with Low Vision

- Medical Model
- Rehabilitation
- Social Justice and Civil Rights

DEI (Diversity, Equity and Inclusion)

IDEA (Inclusion, Diversity, Equity and Accessibility)

Relevance to Daily Life

- Disability as a form of diversity.
- Your personal experience with disability.
- Think inclusively.

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Vision Terms

3 Categories of Sight – Normal, Low Vision, Blind

Terminology:

- **Visual Disorder:** Any deviation from normal in the status of the eyes, including diseases or chronic conditions.
- **Visual Impairment:** Consequences of an eye disease or disorder on a measure of visual function such as acuity or contrast sensitivity.
- **Visual Disability:** Restrictions on normal activities of daily life resulting from visual impairment, such as reading or mobility.
- **Visual Handicap:** A cultural, economic, or social disadvantage for a person resulting from visual impairment.

Definitions of Low Vision

- Any chronic visual impairment, not correctable by lenses, that affects everyday function.
- Inability to read newsprint (E.g., Times Roman 10pt) at a typical reading distance (40 cm, 16 inches) with best refractive correction.
- Visual acuity of less than 20/60 or a visual field of less than 20 degrees in the better eye with best possible correction (ICD-10).
- Acuity boundary shifting to 20/40.

Global Estimates of Visual Impairment by Acuity (2015)

Category Of Visual Impairment	# in Millions	% of World Population
Mild: 20/40 – 20/60	188.5	2.57
Moderate to Severe: 20/60 – 20/400	217	2.95
Blind: Worse than 20/400	36	0.48
Total	441.5	~ 6

Notes:

- World population 7.33 billion
- Based on Presenting visual acuities.
- Percentage female: ~ 55%

Source: Bourne, R.R.A. et al. (2017). Magnitude, temporal trends, and projections of the global prevalence of blindness and distance and near vision impairment: a systematic review and meta-analysis. *The Lancet Global Health*, 5(9): e888-e897. doi:10.1016/S2214-109X(17)30293-0

U.S. Estimates of Visual Impairment 2017 and 2050

Category of Visual Impairment	Prevalence in Millions (2017)	Prevalence in Millions (2050)
Worse than 20/40	5.7	9.6
20/200 Or Worse (legal blindness)	1.3	2.3

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Notes:

- U.S. population in 2017 = 325 M; in 2050 = 438 M (Pew Hispanic Center).
- Categories based on Best-Corrected Visual Acuity.
- Annual Incidence approx. 12.4% of the prevalence.

Source: Chan, T., Friedman, D. S., Bradley, C., & Massof, R. (2017). Estimates of incidence and prevalence of visual impairment, low vision, and blindness in the united states. *JAMA Ophthalmology*. doi:10.1001/jamaophthalmol.2017.4655

Percentage Prevalence of Causes of Severe Low Vision Worldwide and in the US

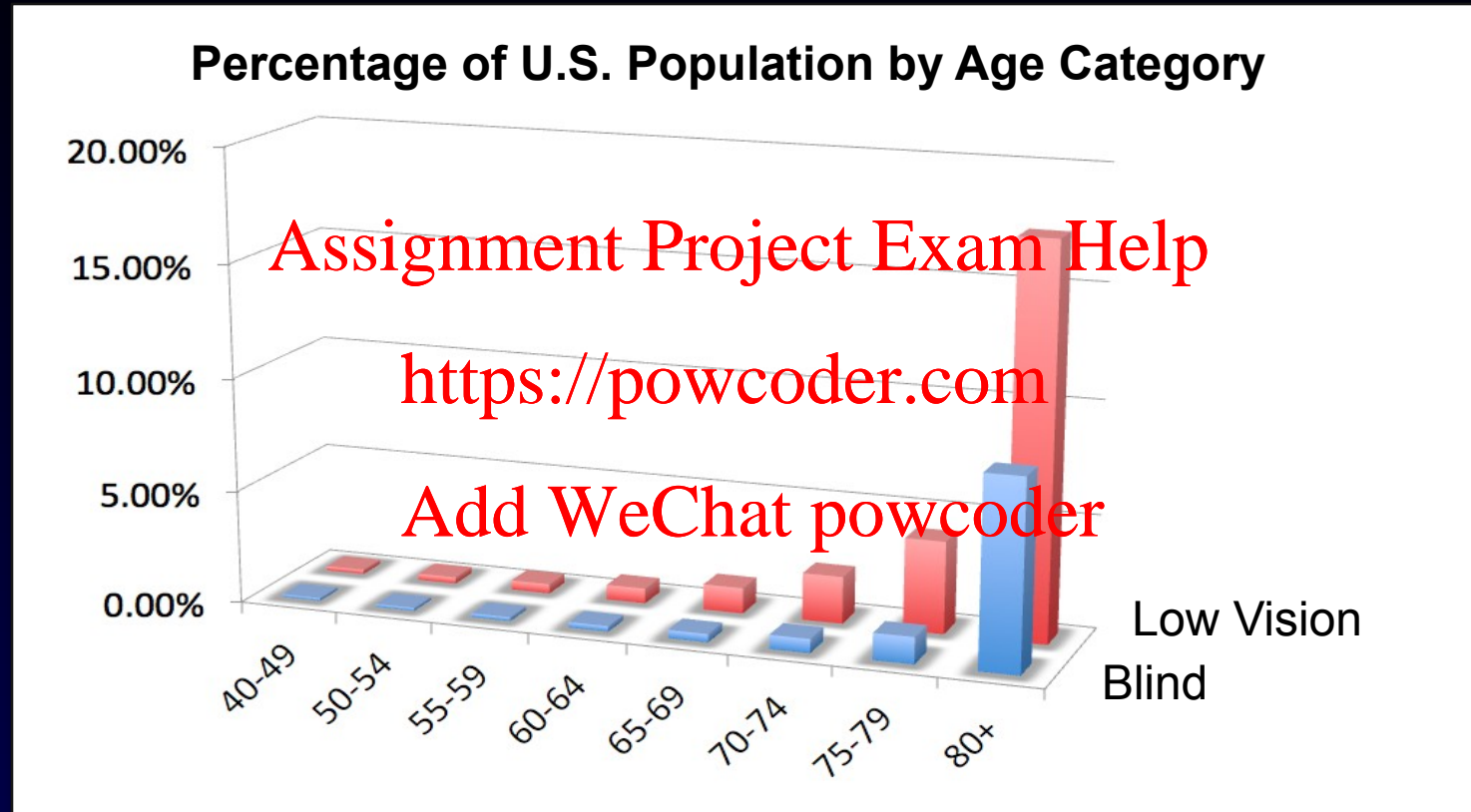
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	World < 20/400	U.S.A. Legally Blind
AMD	5.9	47.2
Cataract	35.1	12.6
Diabetic Retinopathy	1.1	5.9
Glaucoma	8.5	9.4
Other	29.1	25.2
Refractive Error	20.3	NA

Age Distribution of Low Vision & Blindness



Low Vision: the best-corrected visual acuity less than 6/12 (<20/40) in the better-seeing eye (excluding those who were categorized as being blind by the U.S. definition).

Blindness: the best-corrected visual acuity of 6/60 or worse (=20/200) in the better-seeing eye.

Mr. Magoo “Watching” TV



Time-Tradeoff Method for Estimating Quality of Life

- Suppose your life expectancy is 50 more years.
- Imagine losing all of your sight today and becoming totally blind for the remaining 50 years of your life.
- How many years of life N would you be willing to trade away to retain your current normal, healthy vision?
- Your estimate of Quality Of Life (QOL) with total blindness is $(50-N)/50$.
- Example. If you are willing to trade away 20 years, $QOL = 30/50 = .60$; your estimate of QOL with blindness is 60% of QOL with healthy sight.