

# **Affecting factors for Designing Geriatric Specialty Hospital**



**Parsazeh construction company**

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# Preferences



Planning and designing of the therapeutic environment today requires serious efforts because the crisis of the old -age people in health care centers in one way and the increase increasing senior population from the other, need the special factors for designing old-age specialty hospitals as socially vulnerable group

Questions:

- Why a new approach is essential in hospital design ?
- What are the important aspects in designing the physical environment of the geriatric specialty hospital?



# The world's Aging Population



2015

901 million

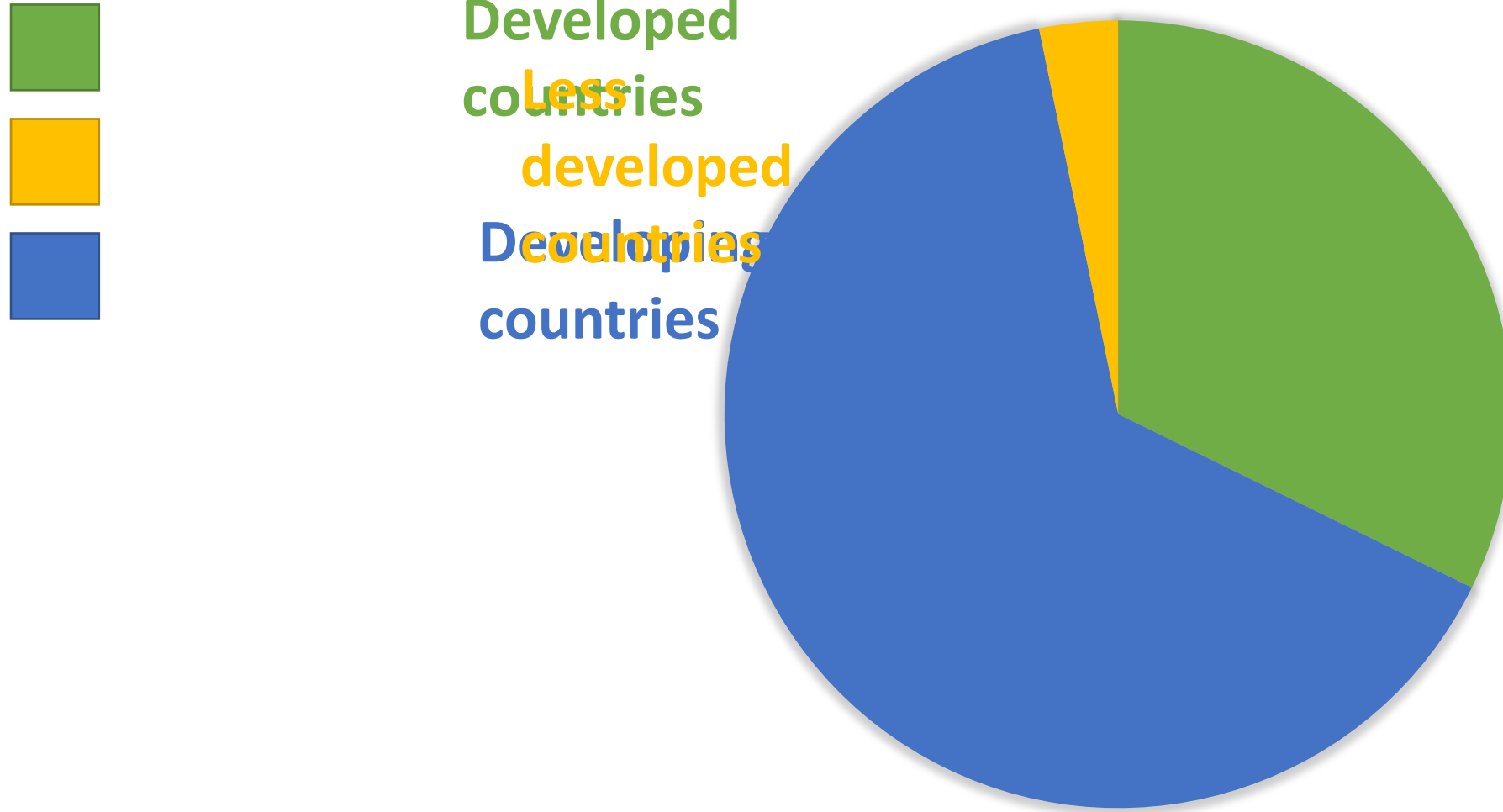
2030

1.4 billion

2050

2.1 billion

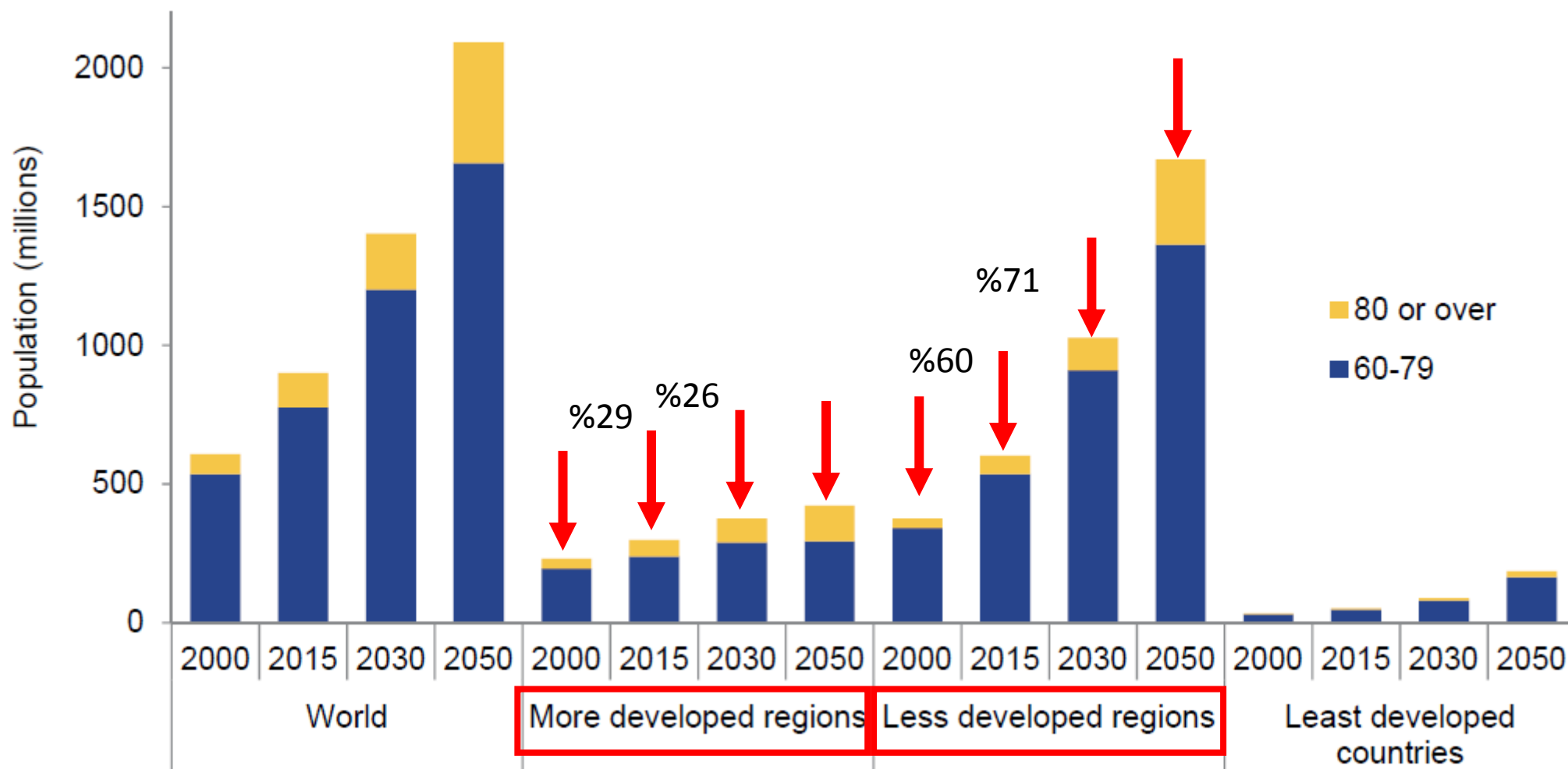
# The world's Aging Population



# The world's Aging Population



Population aged 60-79 years and aged 80 years or over by development group, 2000, 2015, 2030 and 2050



# The world's Aging Population



%80



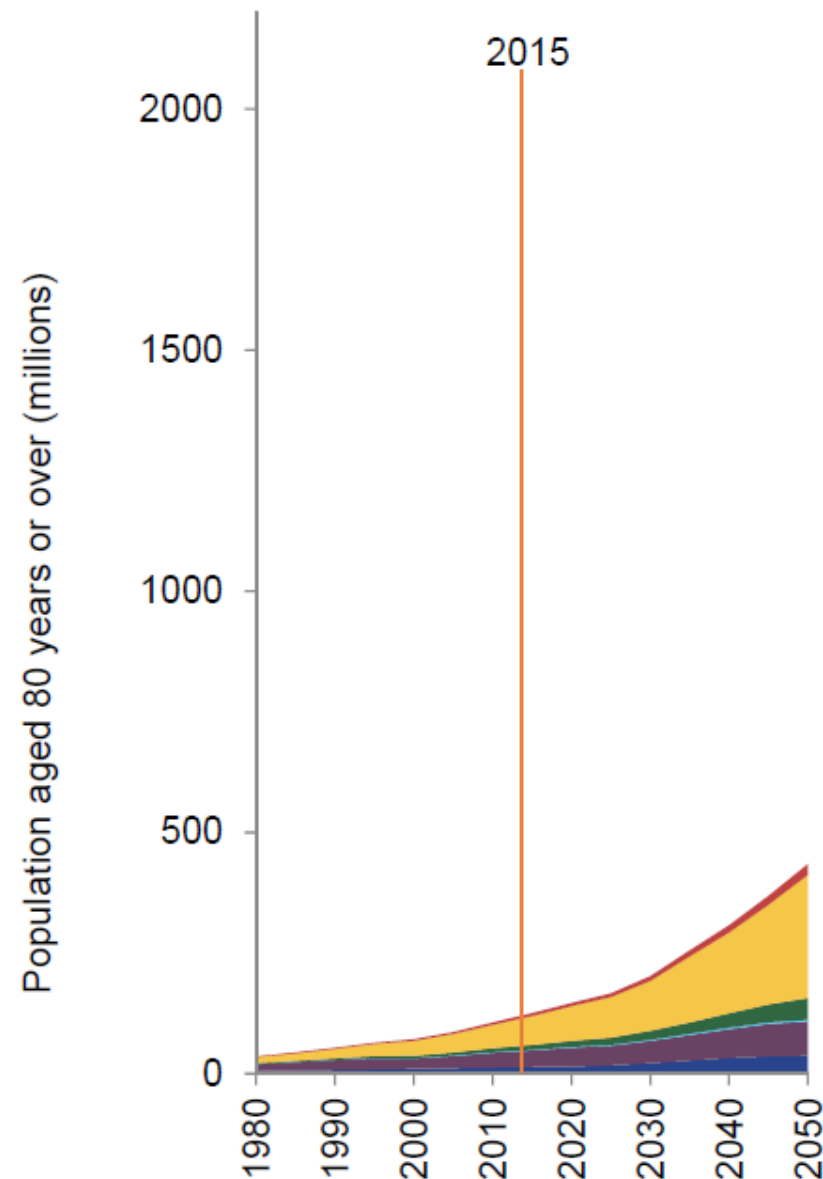
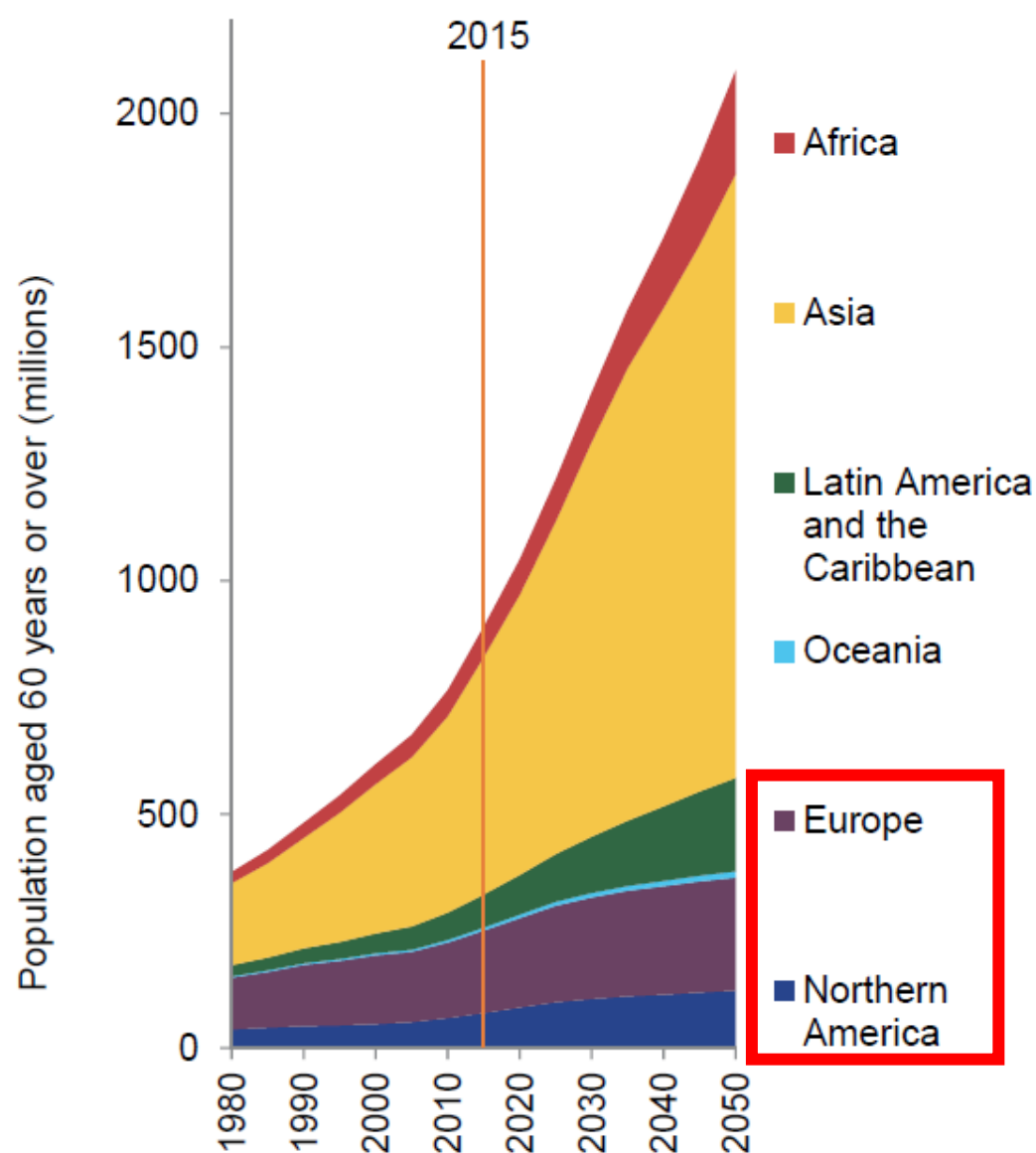
Less  
developed  
countries



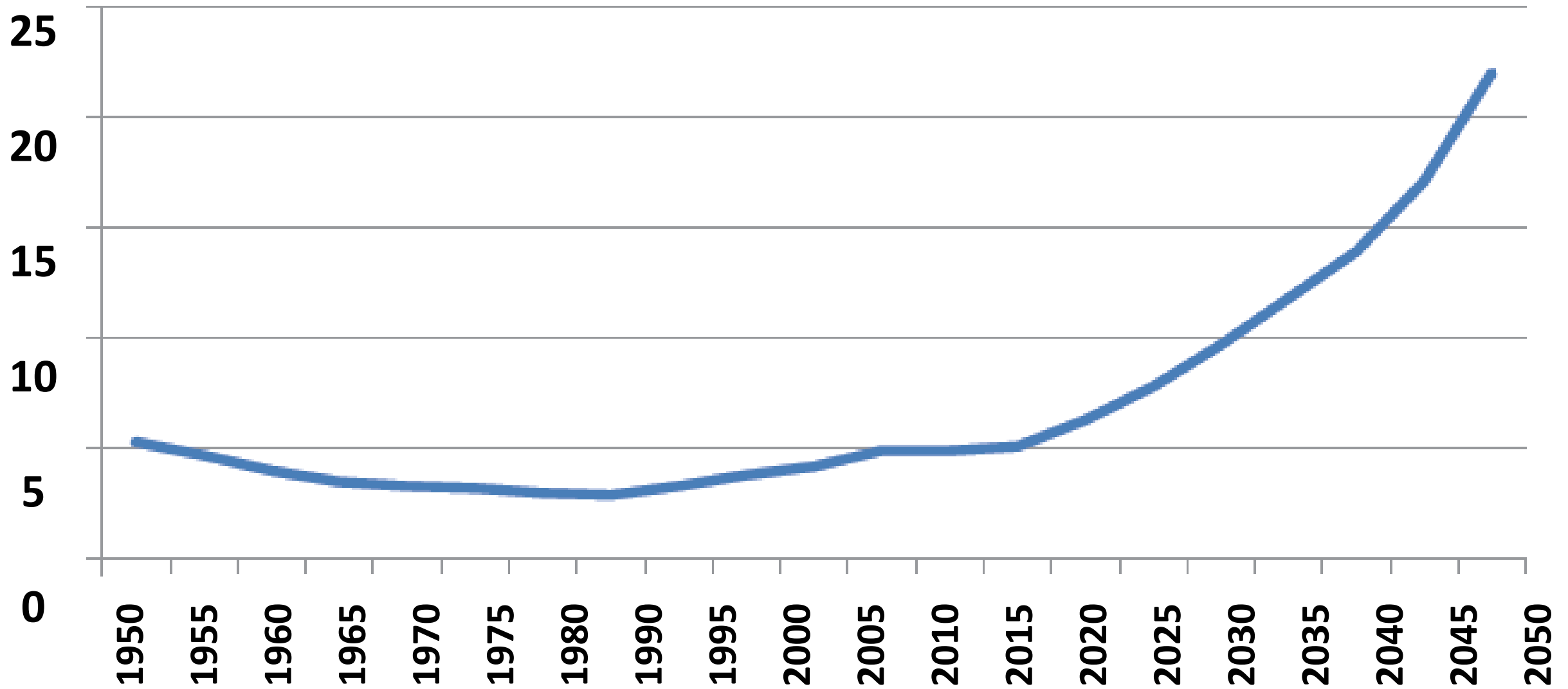
# The world's Aging Population



Population aged 60 years or over and aged 80 years or over, by region, 1980-2050

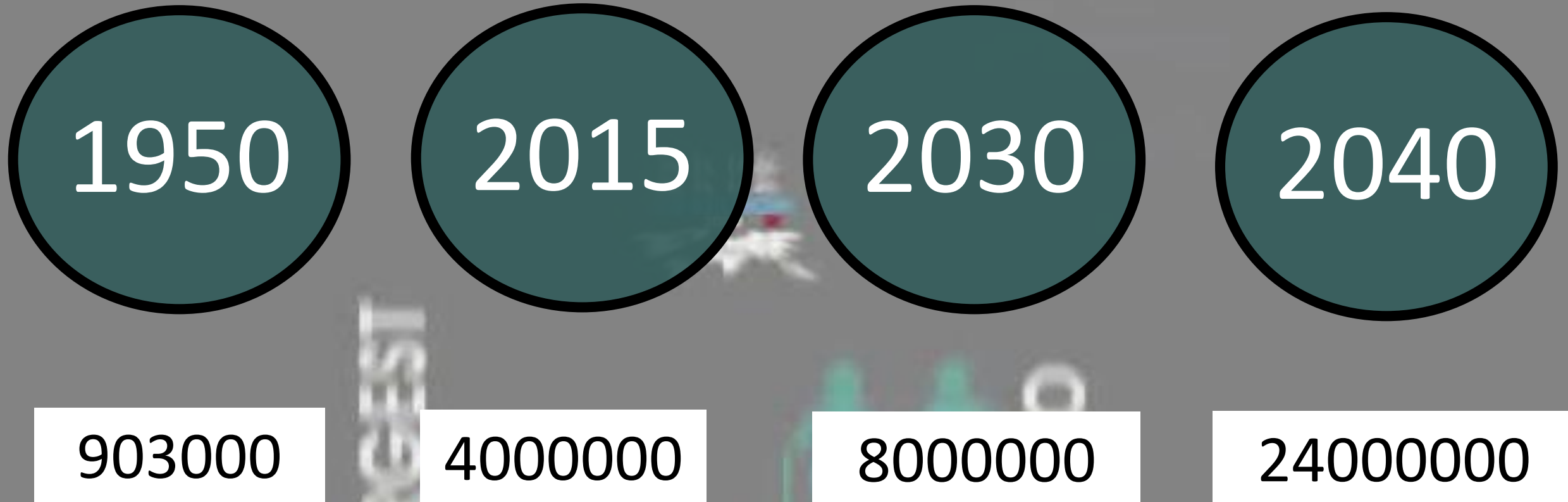


# The Iran's Aging Population





# The Iran's Aging Population





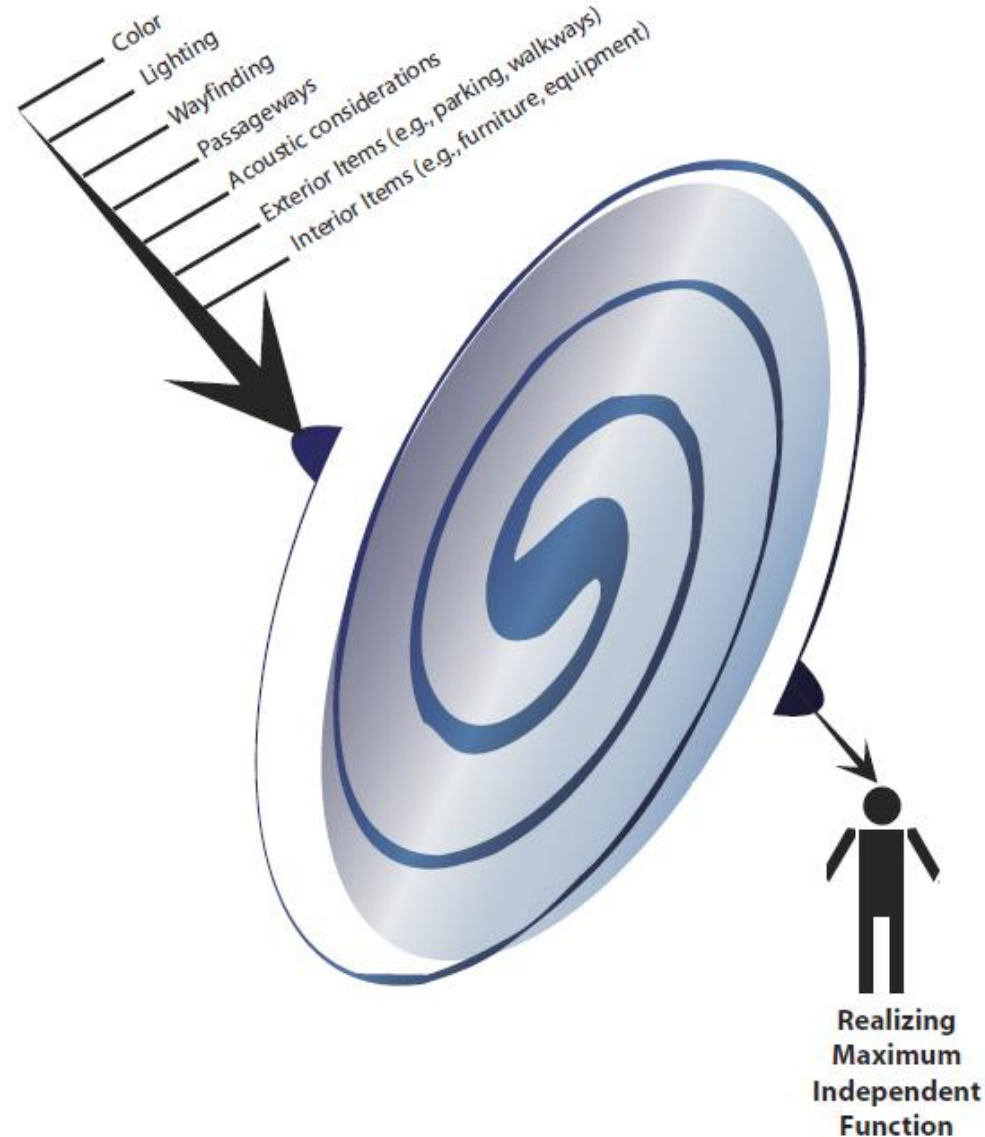
# Physical Dimension

Hospital

## Design Recommendations for An Elder Specialty



- ➔ Lighting
- ➔ Colour
- ➔ Flooring & Walls
- ➔ Hallways, Doors & Windows
- ➔ Handrails
- ➔ Wayfinding & Signage
- ➔ Walkways, Ramps & Stairways
- ➔ Acoustic Considerations
- ➔ Special Considerations
  - Elevators
  - Washrooms



# ▶ Lighting



## Visual Changes

- ▶ Decreased visual acuity – visual field reduced and peripheral vision reduced<sup>5; 16; 27</sup>
- ▶ Greater incidence of glaucoma, cataracts and macular degeneration<sup>16; 27</sup>
- ▶ Increased sensitivity to glare<sup>5; 16; 27</sup>
- ▶ Decreased field of vision<sup>5; 16; 27</sup>
- ▶ Distorted depth perception<sup>16</sup>
- ▶ Decreased vision in low light<sup>16; 27</sup>
- ▶ Eyes adjust to changing light levels with greater difficulty and more slowly<sup>16; 27</sup>
- ▶ Lenses 'yellow' with age<sup>16; 27</sup>
- ▶ Greater incidence of poor colour vision – decreased ability to distinguish blue-green colours<sup>5; 16</sup>
- ▶ Ability to differentiate between contrasting surfaces is lessened<sup>16</sup>



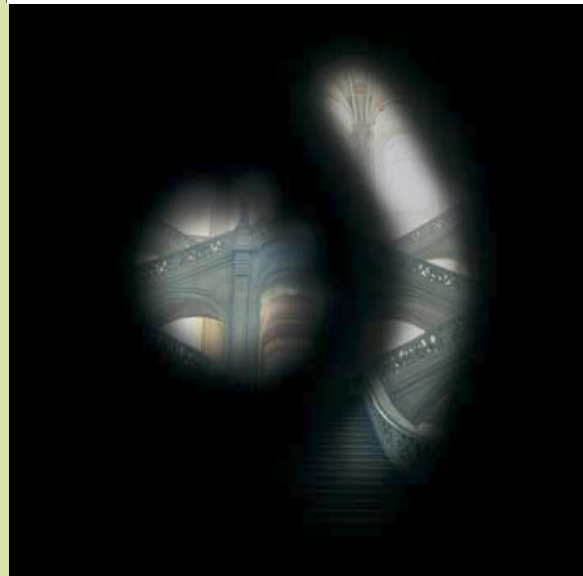
Macular degeneration



Cataracts



Diabetic retinopathy

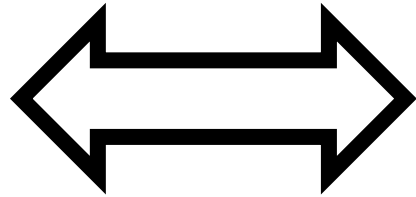
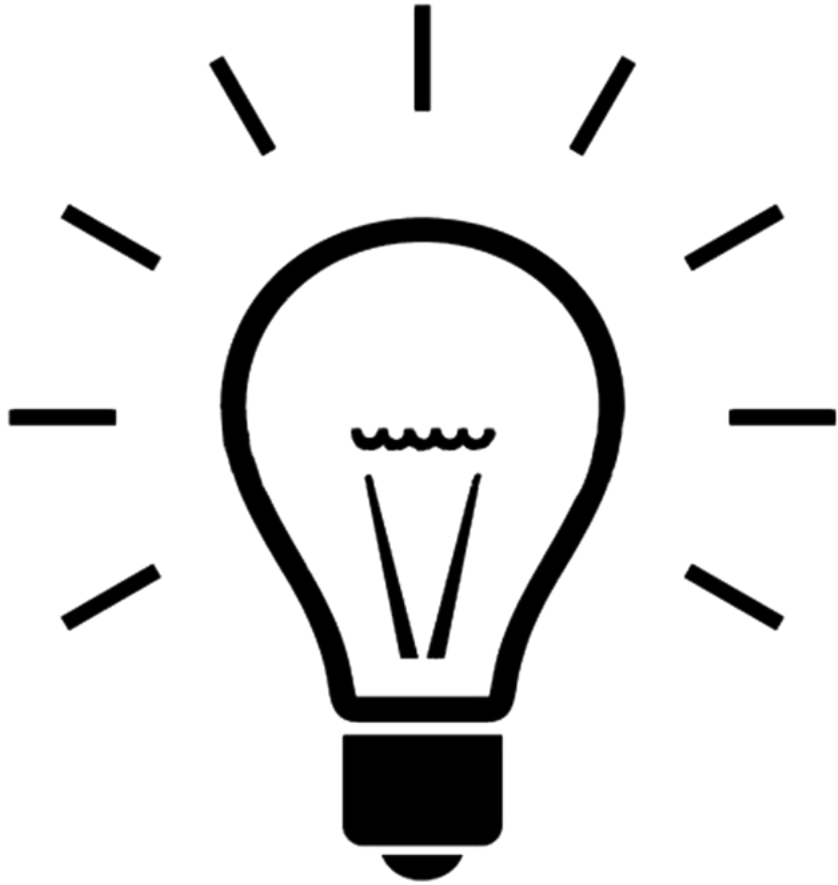


Glaucoma



Retinitis pigmentosa

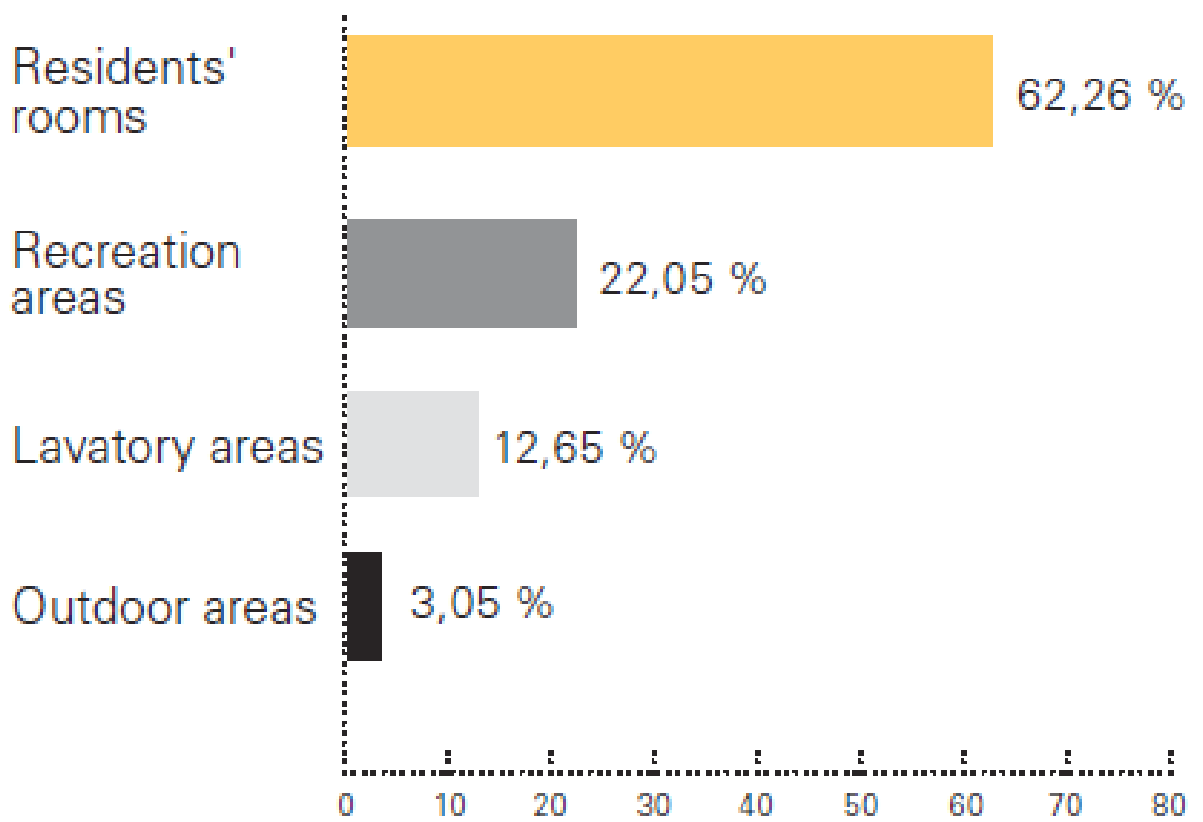
# ▶ Lighting



## Falls in senior care homes <sup>2</sup>

- Most hospital patients and senior living residents fall in their room
- Falls also occur in bathrooms and corridors
- Fall rates are high in hospitals and in rehabilitation and geriatric wards

Locations of falls <sup>2</sup>







# Lighting

Light-related causes of falls



- Reflections on the floor are confusing and are interpreted as water



- Shadows (sharp transitions between light and dark and shiny patches) are interpreted as obstacles





# Lighting

## Light-related causes of falls



- Shadows across a person's face caused by lighting trigger fear and change the appearance of the face



- Dark ceilings and recesses make areas feel confined and threatening





# ▶ Lighting

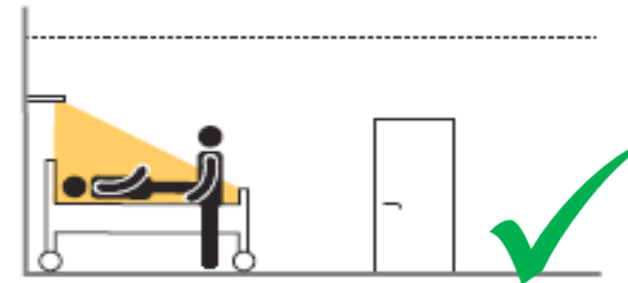
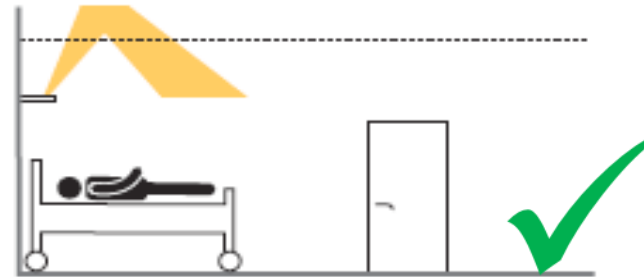
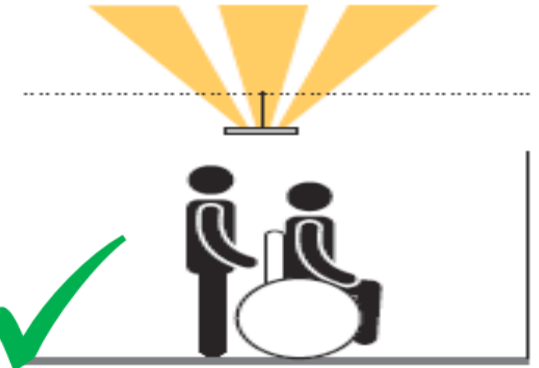


## Direct lighting

- Reflected glare and unfavorable shadows
- Confusing reflections on the floor
- Room appears dark and oppressive
- Poor glare limitation for people lying down

## Direct/indirect lighting

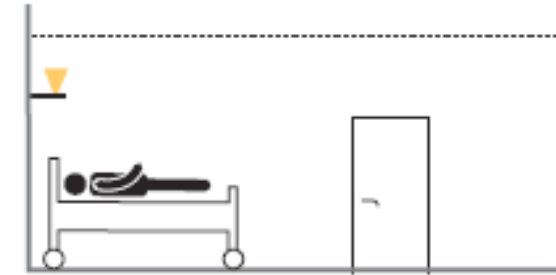
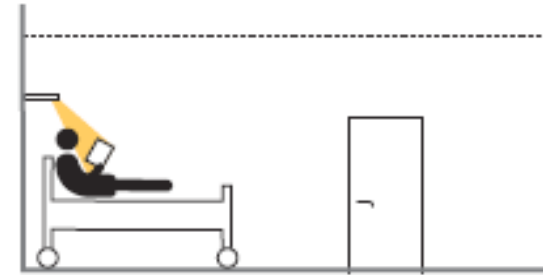
- Good energy efficiency
- Casts few shadows
- Low levels of reflection
- Good glare reduction
- Room appears bright Uniform lighting



# ▶ Lighting



- Reading and relaxing
- Optimal lighting conditions for reading and relaxing
  - Low heat generation to prevent burning or Discomfort
  - In rooms designed to provide special care for those with advanced dementia, the use of biologically effective lighting is recommended





# ▶ Lighting



At entrances maintain a gradual change in lighting as older adults enter the building.

- Install a skylight just inside each entrance
- Place awnings and other covers over each entrance;
- Place a brighter light inside each entrance



# ► Colour



- Decorate with warm colours which are easier for older adults to see than cooler tones.
- Avoid bold patterns, especially on floors and walls, as the visual over-stimulation can exacerbate confusion in older adults.
- Avoid placing blue and green colours together as older adults have difficulty distinguishing these colours



- Use contrasting colours to highlight doors in patient areas





-

# ▶ Hallways, Doors & Windows



- At entrances, install automatic doors; consider sliding doors equipped with an adjustable opening / closing delay
- Install doors equipped with lever-style handles that do not require twisting and can be opened with one hand
- Avoid long hallways which discourage older adults from moving around – break up long hallways with recessed rest
- In patient rooms, install side-hinged windows which are easier to open than lift-up styles.



# ▶ Handrails



- Install handrails 850 mm (3 f t) from the ground.
- Handrails should be between 40mm and 45mm in diameter with a non-slip texture.
- Install handrails on both sides of stairways and hallways and on at least one side of ramps.
- In stairways, continue handrails through and around landings, especially in long stairways.
- In elevators, provide handrails on both sides of the cabin





# Wayfinding & Signage



- Include simple, explanatory graphics on signs
- Place maps, including “you are here” maps
- Use colour coding to facilitate wayfinding and to indicate safe older adult routes
- Provide minimal information on all signs
- Use high contrast colour combinations on signs: AVOID the following combinations which are difficult for many older adults to

- differentiate black
- yellow on green
- green on blue
- red on green

A

A

A

A





# ► Acoustic Considerations



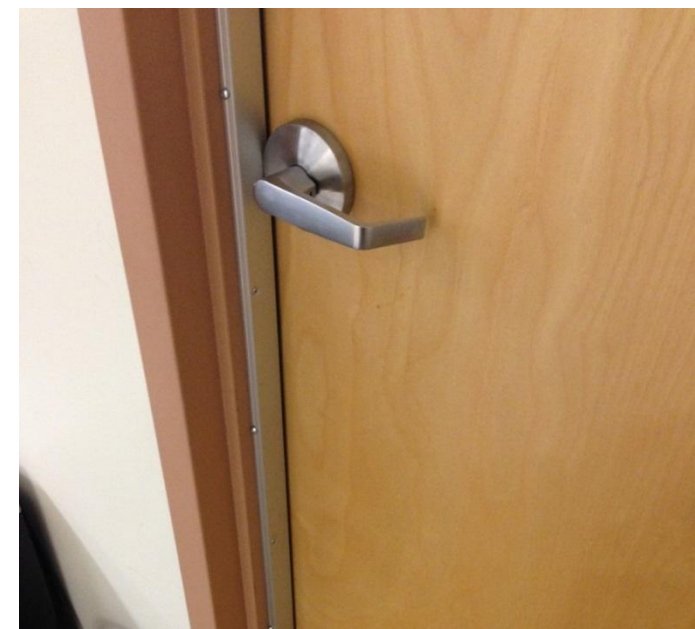
- Use Acoustic Ceiling Tiles (ACT) to enhance the ability to understand speech and sound quality in the environment.
- Using a hanging suspended ceiling system with sound absorbing coatings to reduce ambient noise



# ► Acoustic Considerations



- Reduce environmental noise to recommended signal-to-noise ratio of +10
  - Solid-core doors with sound stripping
- Install:
  - Silent or quiet type switches;
  - Quiet heating and ventilation systems
  - Double-glazed windows
- Single occupant patient rooms are preferable to multi-occupant rooms
- install voice-paging systems with volume controls that can be turned off in geriatric units





# ► Walkways, Ramps & Stairways



- Avoid abrupt changes in ground levels keeping any surface
- Walkway and ramp surfaces should be firm and slip-resistant
- Clearly identify the edges of ramps and stair risers (steps) with a yellow strip or contrastive colour
- Avoid long or winding stairways, keeping to a maximum of 10 risers per flight



# ▶ Washrooms



- Washroom doors must open outward
- Provide space for full wheelchair turning
- In each public washroom, provide at least one wheelchair/walker accessible modesty vestibule with enough space for a caregiver and room for mobility devices to be turned around



# ▶ Top 10 Hospitals For Geriatric Care



1

## Mayo Clinic

Rochester, MN 55902-1906

**#1 in Adult Geriatrics Hospitals**

Mayo Clinic in Rochester, MN is nationally ranked in 15 adult specialties and 9 pediatric specialties.

**100.0/100** Geriatrics Score



4

## UCLA Medical Center-Santa Monica

Santa Monica, CA 90404-1249

**#4 in Adult Geriatrics Hospitals**

UCLA Medical Center-Santa Monica in Santa Monica, CA is not nationally ranked in any specialty.

**89.0/100** Geriatrics Score



2

## Johns Hopkins Hospital

Baltimore, MD 21205-1832

**#2 in Adult Geriatrics Hospitals**

Johns Hopkins Hospital in Baltimore, MD is nationally ranked in 15 adult specialties and 10 pediatric specialties.

**96.1/100** Geriatrics Score



5

## Cleveland Clinic

Cleveland, OH 44195-5108

**#5 in Adult Geriatrics Hospitals**

Cleveland Clinic in Cleveland, OH is nationally ranked in 14 adult specialties and 9 pediatric specialties.

**87.1/100** Geriatrics Score



3

## Mount Sinai Hospital

New York, NY 10029-0310

**#3 in Adult Geriatrics Hospitals**

Mount Sinai Hospital in New York, NY is nationally ranked in 10 adult specialties and 6 pediatric specialties.

**94.3/100** Geriatrics Score



6

## New York-Presbyterian Hospital

New York, NY 10065-4870

**#6 in Adult Geriatrics Hospitals**

New York-Presbyterian Hospital in New York, NY is nationally ranked in 14 adult specialties and 10 pediatric specialties.

**85.4/100** Geriatrics Score





# Top 10 Hospitals For Geriatric Care



## 7 University of Michigan Hospitals and Health Centers

Ann Arbor, MI 48109

**#7 in Adult Geriatrics Hospitals**

University of Michigan Hospitals and Health Centers in Ann Arbor, MI is nationally ranked in 15 adult specialties and 10 pediatric specialties.

**85.3/100** Geriatrics Score



## 10 UCSF Medical Center

San Francisco, CA 94143-0296

**#10 in Adult Geriatrics Hospitals**

UCSF Medical Center in San Francisco, CA is nationally ranked in 15 adult specialties and 9 pediatric specialties.

**83.8/100** Geriatrics Score



## 8 Massachusetts General Hospital

Boston, MA 02114-2696

**#8 in Adult Geriatrics Hospitals**

Massachusetts General Hospital in Boston, MA is nationally ranked in 16 adult specialties and 3 pediatric specialties.

**85.1/100** Geriatrics Score



## 9 Northwestern Memorial Hospital

Chicago, IL 60611-2908

**#9 in Adult Geriatrics Hospitals**

Northwestern Memorial Hospital in Chicago, IL is nationally ranked in 11 adult specialties.

**84.0/100** Geriatrics Score





Thank You  
For  
Your Consideration