



Enabling environments, and vulnerable people retrofit and renovation after disaster.

Never Stand Still

Built Environment

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Presentation Overview

- Introduction
- Changing Futures
- Glocalisation
- After the storm :The Sri Lankan post Tsunami story
- Value of a quality home: The home modification and retrofit story
- Role of the Home Modification Information Service
- Questions

Changing Futures

Population change

- By the year 2010 over a quarter of the total population will be aged 65 years or older (ABS, 1996).
- Chronic Disability, Obesity & co-morbidity ↑

Climate change

- Rainfall fluctuations (drought/flood)
- Temperature ↑
- Humidity fluctuations.
- Evaporation ↑
- Wind & mean sea level pressure ↑
- Sunshine & radiation ↑
- Cyclones & thunderstorms ↑

Source: <http://www.bom.gov.au/climate/averages/>



Aussie life in a land of extremes



Source: Neil Keene [The Daily Telegraph](#) May 18, 2012 12:00AM

HEATWAVES IMPACT



- **Human health**
 - Direct effects (eg heatstroke)
 - Indirect effect (eg respiratory, cardiovascular diseases, vector borne diseases such as malaria)

Health and care services

- Increase in service demands
- Change in demographics of consumers

Housing infrastructure

- Increase in pressure to deliver home care services
- Require an alignment with the change in demographics

Australia is amongst the most extreme countries on the planet for weather.

MOST INTENSE CYCLONE/HURRICANE/ TYPHOON TO MAKE LANDFALL

Rank	Country	Name	Speed*
1	USA	Hurricane Camille 1969	310km/h
=2	Taiwan	Super Typhoon Joan 1970	295km/h
=2	Philippines	Typhoon Megi 2010	295km/h
4	Australia	Tropical cyclone Monica 2006	285km/h
5	Mexico	Unnamed hurricane 1959	260km/h

*Based on average wind speed of cyclones/hurricanes/typhoons that crossed the coast



RAINFALL: WETTEST LOCATIONS

Rank	Country	Location	Rainfall per year*
1	Colombia	Lloro, Chocó Department	13,299mm*
2	India	Mawsynram, Meghalaya	11,872mm*
3	USA	Mount Waialeale, Hawaii	11,684mm*
4	Cameroon	Debundscha	10,287mm*
5	Australia	Bellenden Ker, Queensland	8352mm*

*Based on average annual rainfall



FLOODS, STORMS, TSUNAMIS IMPACT

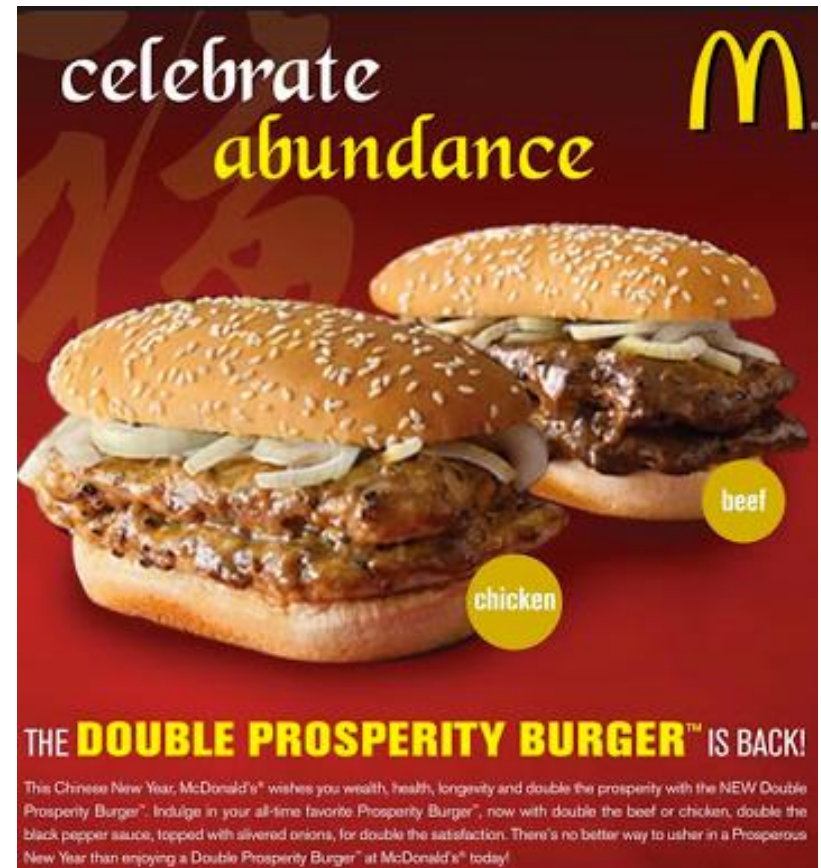


- **Human health**
 - Deaths and injuries
 - Infectious diseases
- **Health and care services**
 - Increased demand
 - Plans for emergency situations
- **Housing infrastructure**
 - Structural damage
 - Stretched capacity

Source: Cathey & Chandra, 2007

Glocalization (a portmanteau of globalization and localization)

- Happens when a product or service is adapted specifically to each locality, culture and or geophysical space in which it is to be deployed.
- It is the co-presence of both universalizing and particularizing tendencies

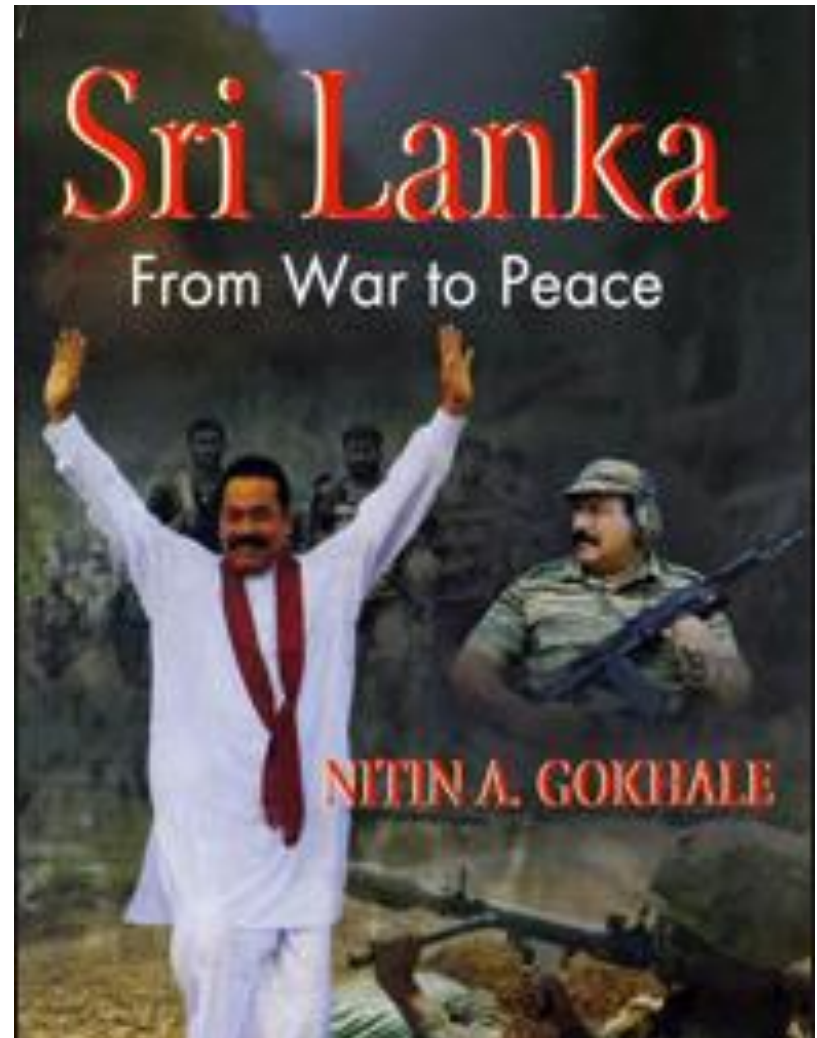


After the storm :The Sri
Lankan post Tsunami story

- Accessibility a critical
concern, a minimum
requirement or an
afterthought?

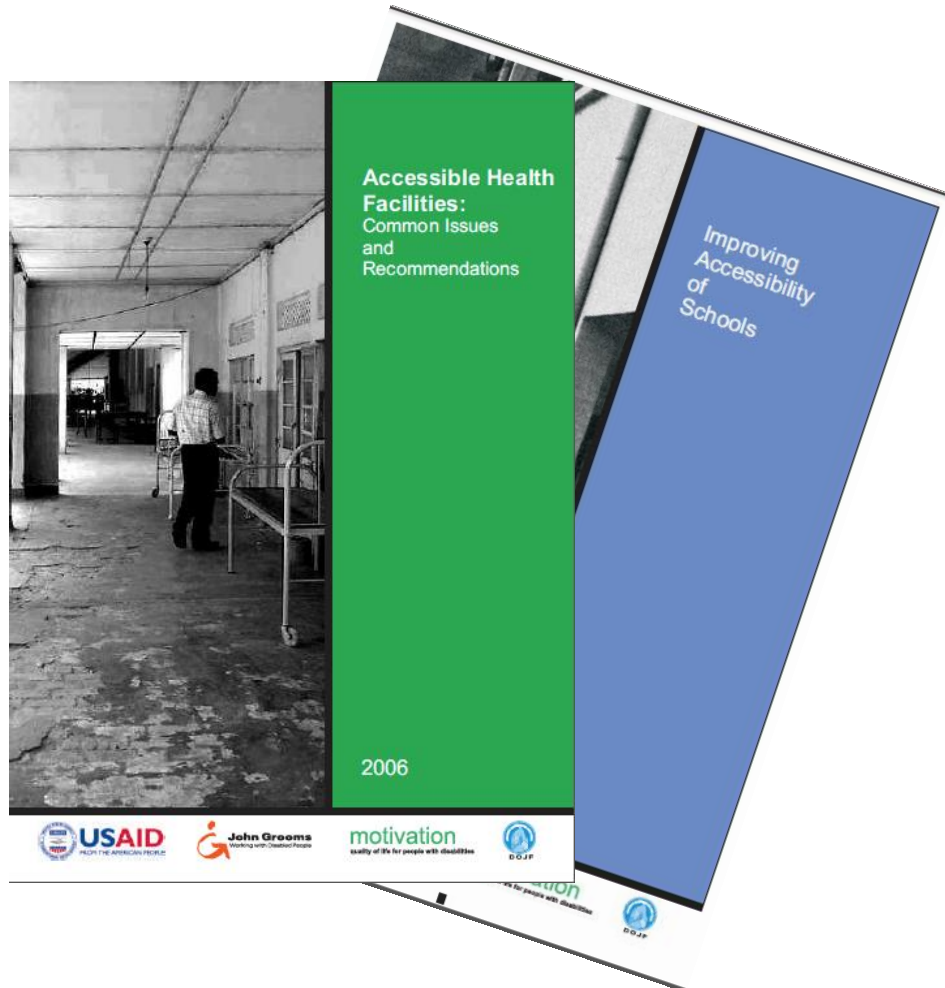
Sri Lankan Civil War

- An ethnic conflict beginning on 23 July 1983 between tamils and buddhists.
- After a 26-year military campaign ended in 2009, an estimated 80,000–100,000 people were killed during its course



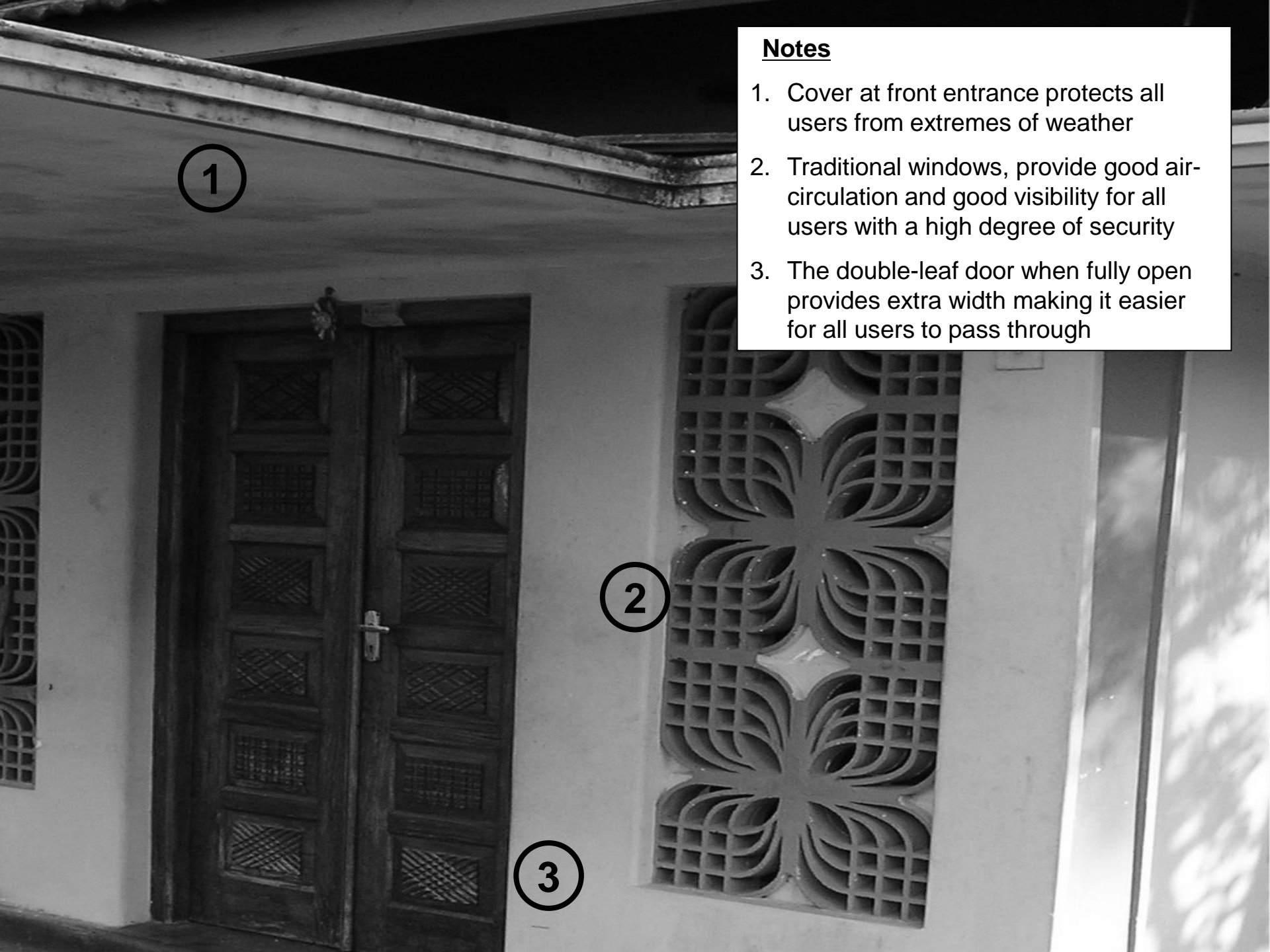
Access for All Campaign

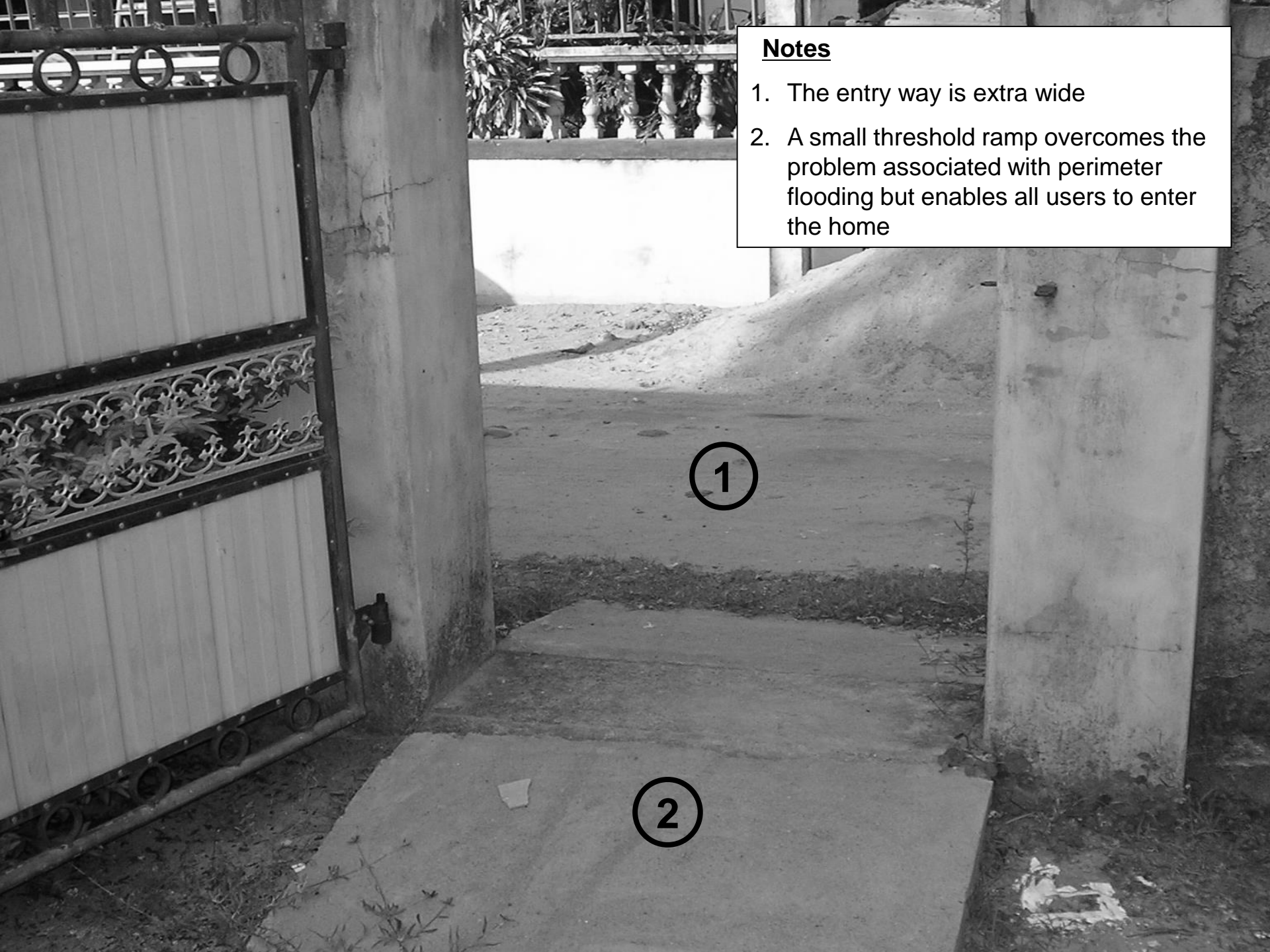
- The Consortium of Disability Organizations (CDO) comprising of 17 Disability Organizations
- Focus on inclusion people with disabilities in mainstream development activities ~ and plans for the nation.



Notes

1. Cover at front entrance protects all users from extremes of weather
2. Traditional windows, provide good air-circulation and good visibility for all users with a high degree of security
3. The double-leaf door when fully open provides extra width making it easier for all users to pass through





Notes

1. The entry way is extra wide
2. A small threshold ramp overcomes the problem associated with perimeter flooding but enables all users to enter the home

1

2



2004 Boxing day tsumani

- The 2004 tsunami left more than 31,000 dead, 4,000 people missing, and half a million displaced in Sri Lanka

(Nishikiori, Abe, Costa, Dharmaratne, Kuni, & Moji, 2006).

However rebuilding to a standard of accessibility, was thought to be too complicated for such a fast and furious response to a big international crisis

(Whybrow, Rahim, Sharma, Gupta, Millikan, & Bridge, 2010).



Camps not accessible

- Sri Lanka's auditor-general reported in September 2005 that only 1,100 of the nearly 50,000 homes damaged in the tsunami had been repaired. He cited "waste and corruption," including the payment of hundreds of thousands of dollars in relief to families in a coastal region not struck by the tsunami.
- Access to relief itself for people with disabilities was marginal at best. (Whybrow, et al, 2010).



Lack of accessible facilities within the camps

- Most camps the toilets were situated in a separate block and were shared by everyone.
- All were located above ground at a distance across uneven, sandy ground.



Variable accessibility outcomes in more permanent housing

According to the specifications stipulated by the Government each such temporary housing unit should have two rooms with a minimum floor area of 200 square feet. The cost of each should not exceed Rs. 40,000.



Lack of appropriate cooking facilities

Physical access barriers confined many people with disabilities to their homes, while, inside their homes many relied on family members for care. This in turn, placed increased demands on that family member.





Known Problems

- No access regulation for housing
- Poor coordination between Government Authorities responsible for Development and Building approvals. Water, Telecom, Electricity, Transport, Construction and Urban Planning.
- Little ongoing or systematic research into anthropometrics or disability practices.
- Limited understanding about outcomes
- No one-stop information resource

New build or retrofit – where is
the real action?

Home, hellish home for desperate elderly

By MELISSA MARINO

Two elderly friends living in a rented home described by the local council as a health risk are facing a two-year wait for public housing, despite being classified as a priority case.

The 75-year-old man and 80-year-old woman, who spoke to *The Sunday Age* on the condition of anonymity, have been living in the weatherboard cottage in Melbourne's inner northern suburbs for 23 years. They sought help last year after repeated requests to the landlord to repair and upgrade the property were ignored.

They also said the landlord treated the property as a tip, dumping junk, timber planks and old furniture in the backyard.

Inside the house, old lino covers a dirt floor and daylight streams through holes in the roof of the bathroom, which has no other light. The backyard floods when it rains, forcing the occupants to wade to the outside toilet.

A Moreland City Council report in January described the house as posing a health and safety risk to the occupants due to dampness, inadequate heating and exposed electrical wiring in the bathroom. It also said the bathroom and laundry were unlikely to meet the Building Code of Practice or the Plumbing and Drainage Code.

Jenny Stewart, who works for the Housing for the Aged Action Group (HAAG), has been trying to find the pair another property in the area since September last year, but rents are too high for the age pensioners.

In May they were put on the early housing waiting list of the Department of Human Services. They were told they faced a wait of at least two years for a public housing property in the area that suited their needs of two bedrooms and a backyard for their two dogs.

The pair want to stay in the area because they have restricted mobility, failing eyesight and are familiar with the suburb.

The most recent figures from the department's office of housing show there are 38,452 households waiting for public housing — more than half of the state's total public



An elderly pair get these facilities in their rented house: a bathroom, above, unlikely to pass building codes; an outside toilet, below; and a junkyard, below right, for a backyard. Pictures: CRAIG SILLITOE



FULL HOUSE

Victoria's top FIVE public housing waiting lists by region at March 2003

- **Southern Metro** (includes Dandenong, Frankston): 12,663 (1242 priority).
- **Northern Metro** (includes Broadmeadows, Collingwood, Richmond): 7773 (1232 priority).
- **Western Metro** (includes Sunshine, Footscray, Flemington, Ascot Vale): 6275, (981 priority).
- **Eastern Metro** (includes Box Hill, Ringwood): 4723, (498 priority).
- **Loddon Mallee** (includes Bendigo, Mildura, Swan Hill): 1733, (248 priority).

SOURCE: DEPARTMENT OF HUMAN SERVICES, OFFICE OF HOUSING SERVICES



UD Housing in Australia

- There is a lack of accessible housing in Australia, with Universal Design principles only recently being recognised in the form of voluntary building design guidelines. (Livable Housing Australia, 2012)
- Less than 1.5 - 2% 2% of our current housing stock is newly built each year (National Housing Supply Council, 2010).
- Australia's ageing population is living in predominantly older, inaccessible housing. (Bridge, 2005)
- Home Modifications have an important role to play in bridging this gap between older inaccessible housing and ageing well in accessible environment. (Carnemolla and Bridge, 2011)

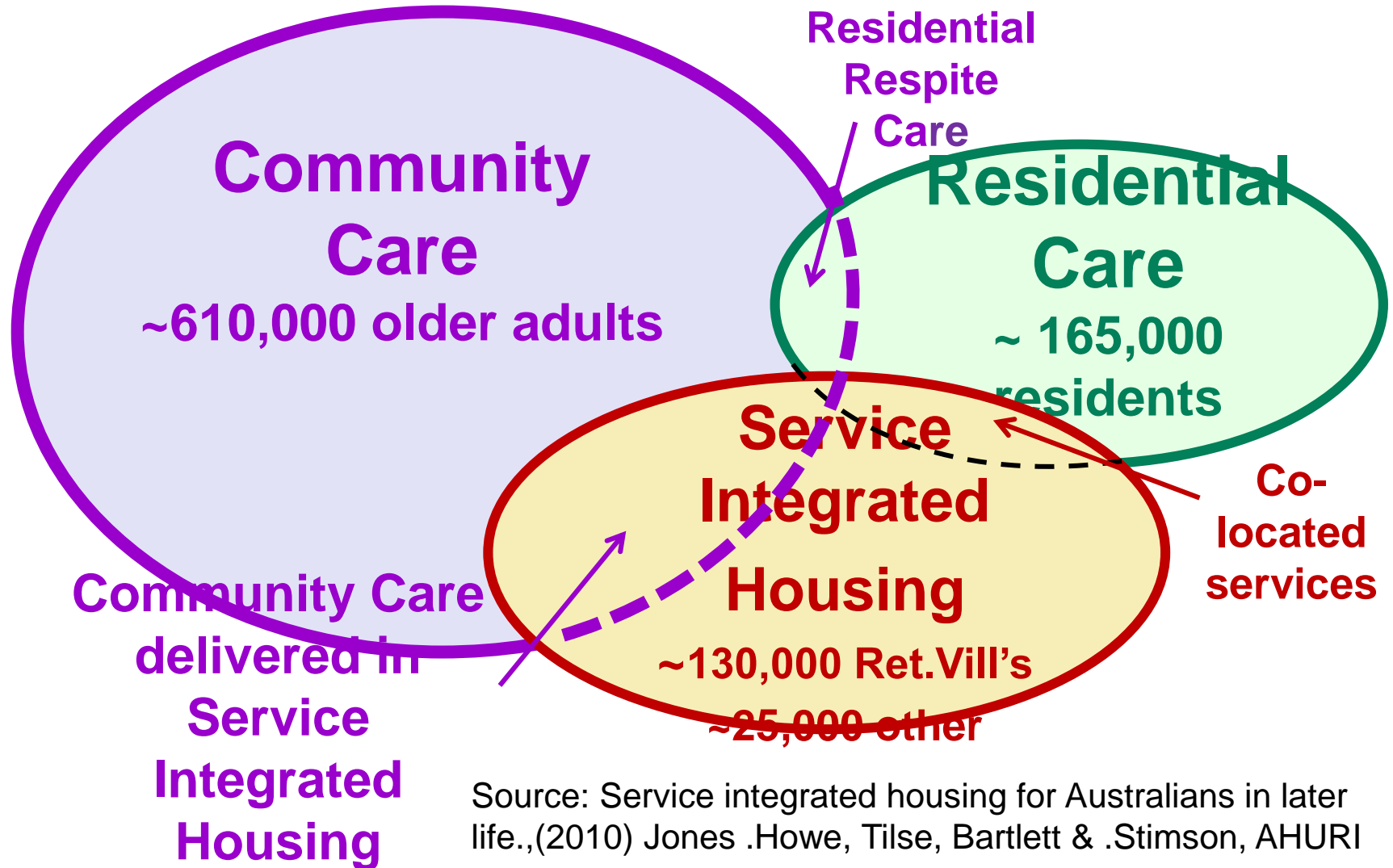


Social change

Social Indicators	Baby Boomers (1946-65)	Pre-war Generation (1927-35)
	%	%
Social Supports		
Entering later life without a partner	34	19
Childless	14	9
Living alone	11	6

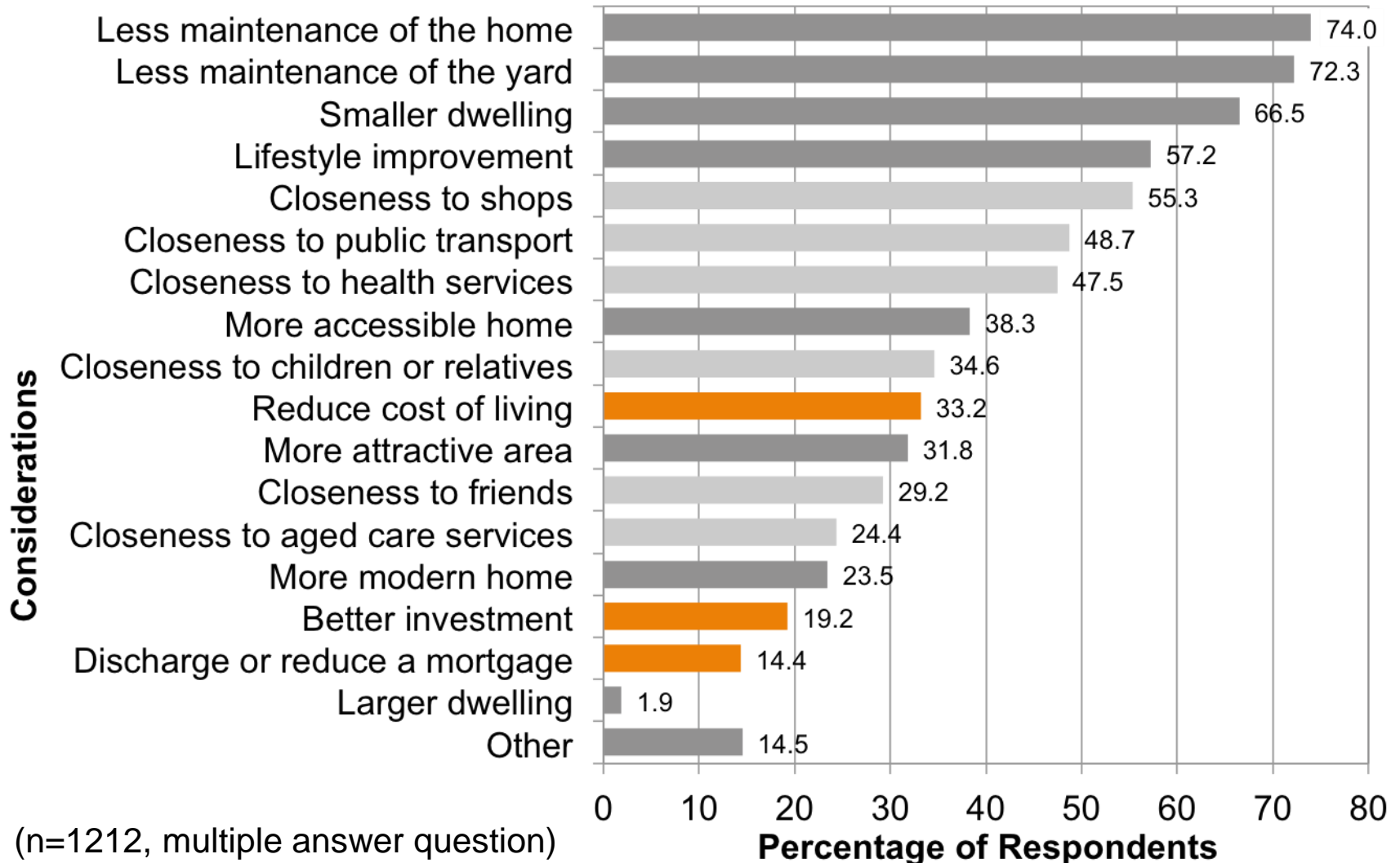
(Source Hugo 2012 The demography of baby boomers: implications for public administration, 2006 census)

Where do Older Australians live



Important Considerations in Moving

(important + very important)



Value of a quality home: The home modification and retrofit story

Home Modifications are at the intersect of care and housing

- Home modifications change the home environment to allow individuals to function with maximum independence (Law, Cooper, Strong, Stewart, Rigby, & Letts, 1997; Oswald et al 2003; Gitlin, Winter, Dennis, Corcoran, Schinfeld, & Hauck, 2006; Oswald et al 2007) and improve functional performance (Mann, et al., 1999; Straton, et al., 2003; Liu & Lapane, 2009, Chase, Mann, Wasek, Arbesman, 2012).
- The goals of home modifications are to make tasks easier, facilitate care giving, increase people's independence, improve safety, reduce the need for personal care services, and enable people to live in the place of their choice (Pynoos, Sanford & Rosenfelt, 2002; Hawkins & Stewart, 2002).

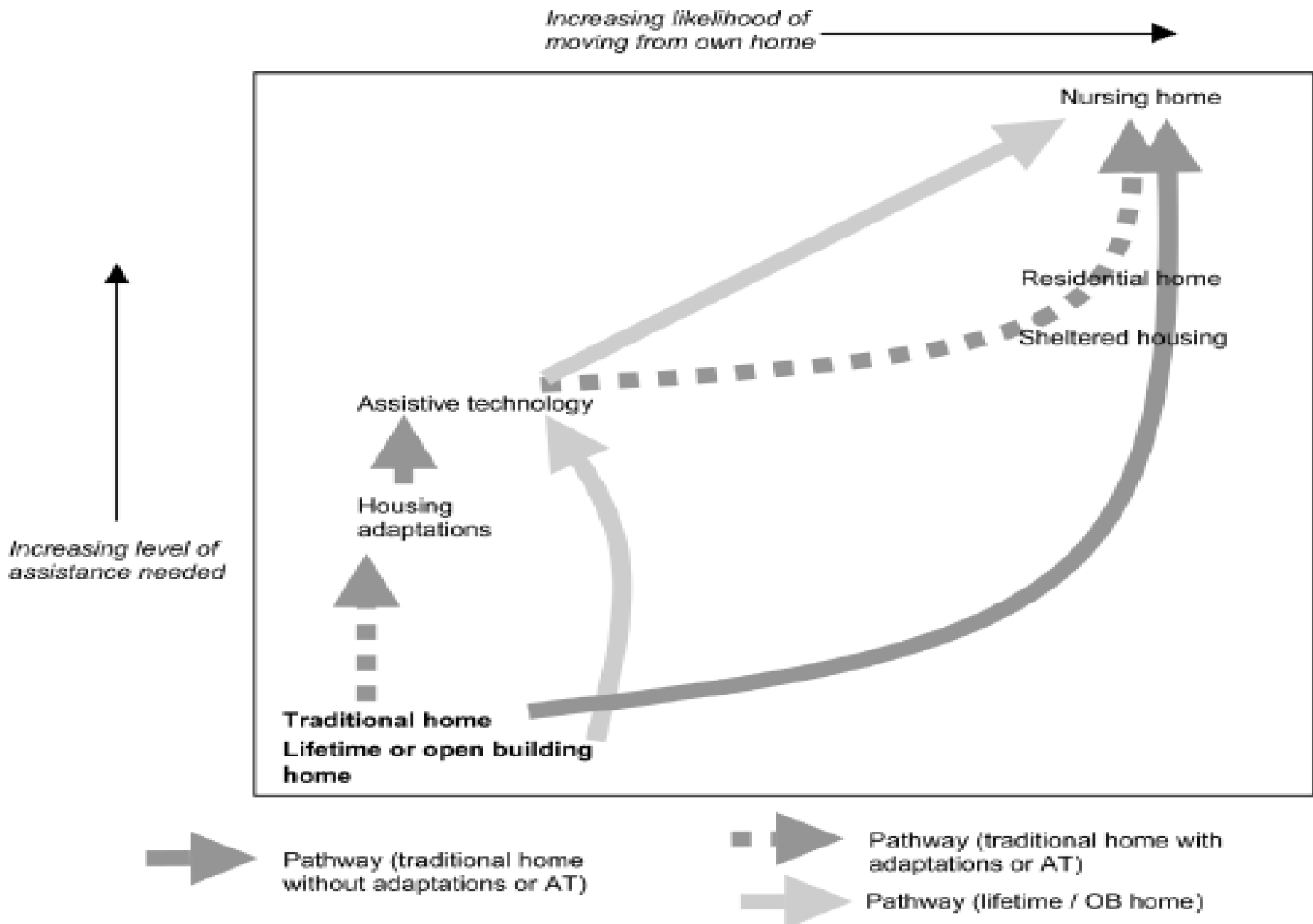
Home modifications

Home Modifications are defined as:

“....changes made to the home environment to help people to be more independent and safe in their own home and reduce any risk of injury to their carers and careworkers. Modifications to the home include changes to the structure of the dwelling e.g. widening doors, adding ramps, providing better accessibility etc. and the installation of assistive devices inside or outside the dwelling e.g. grabrails, handrails, lifts etc.”

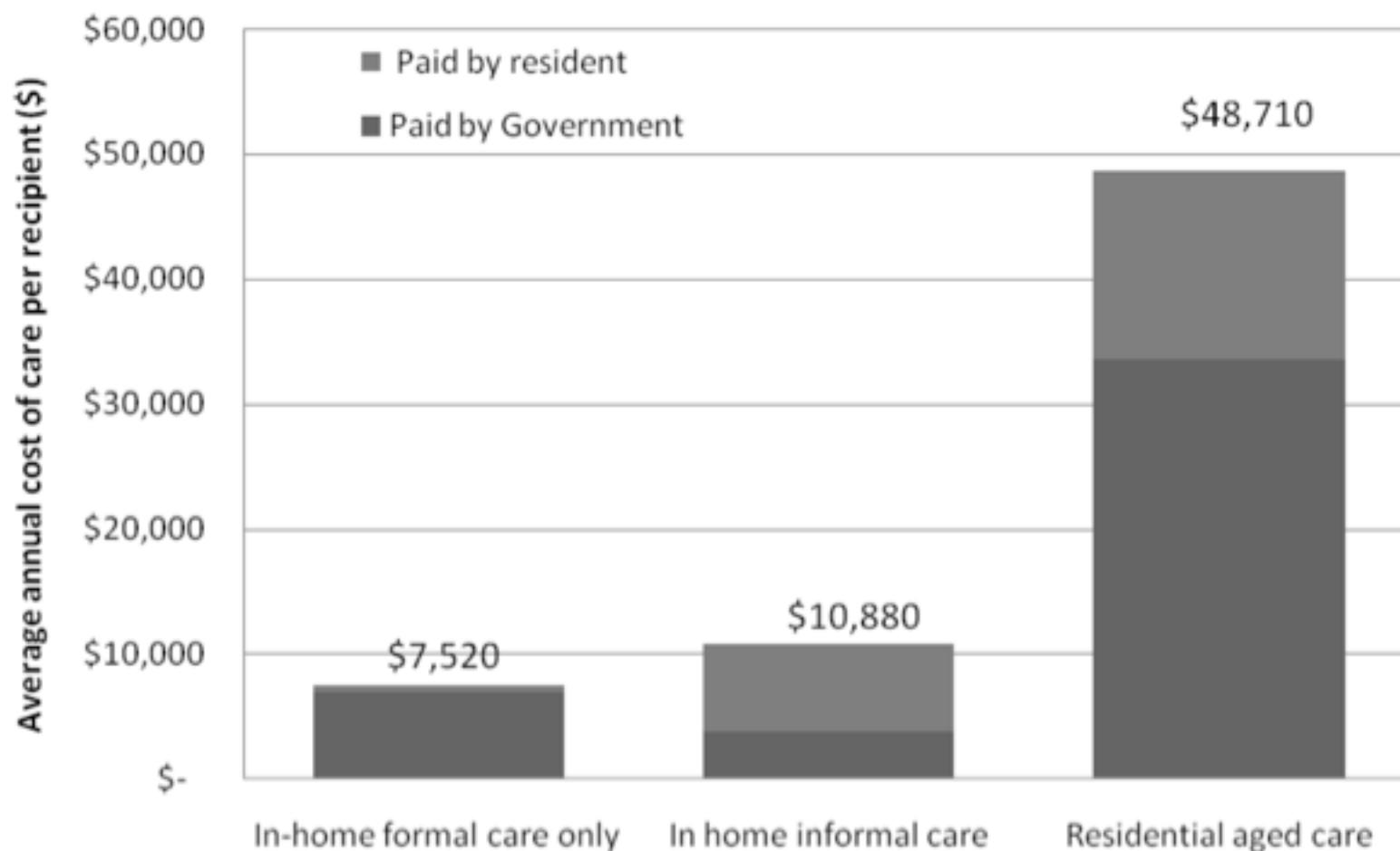
Home Modification Information Clearinghouse Website
(www.homemods.info)





Source: Barlow & Venables, 2004, 'Will technological innovation create the true lifetime home?', *Housing Studies*, 19:5, 795 - 810

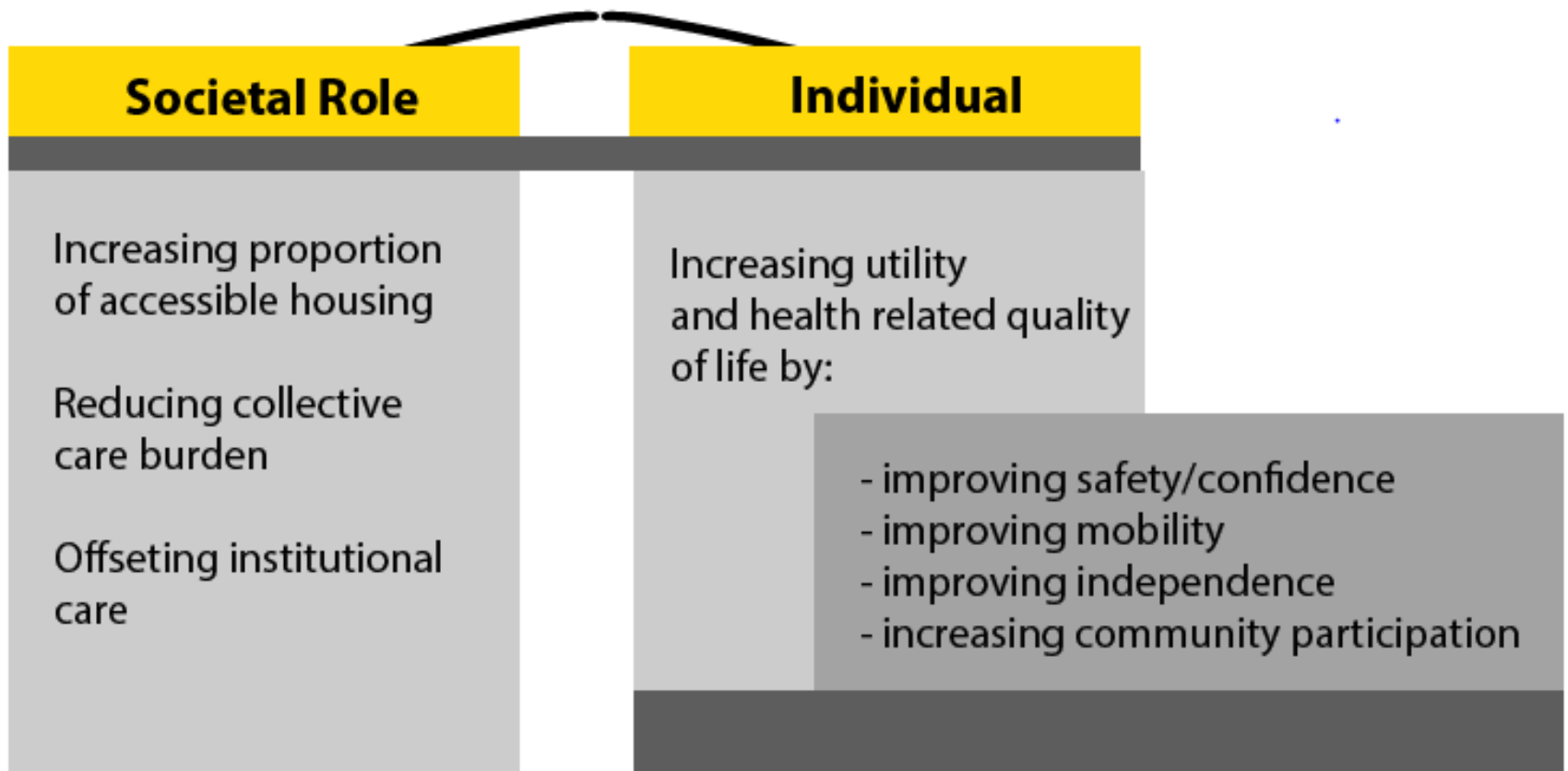
Costs of in-home care are cheaper than institutional care



Source: Disability Aged Carers Survey 2003

Roles of Home modifications

Dual Role of Home Modifications



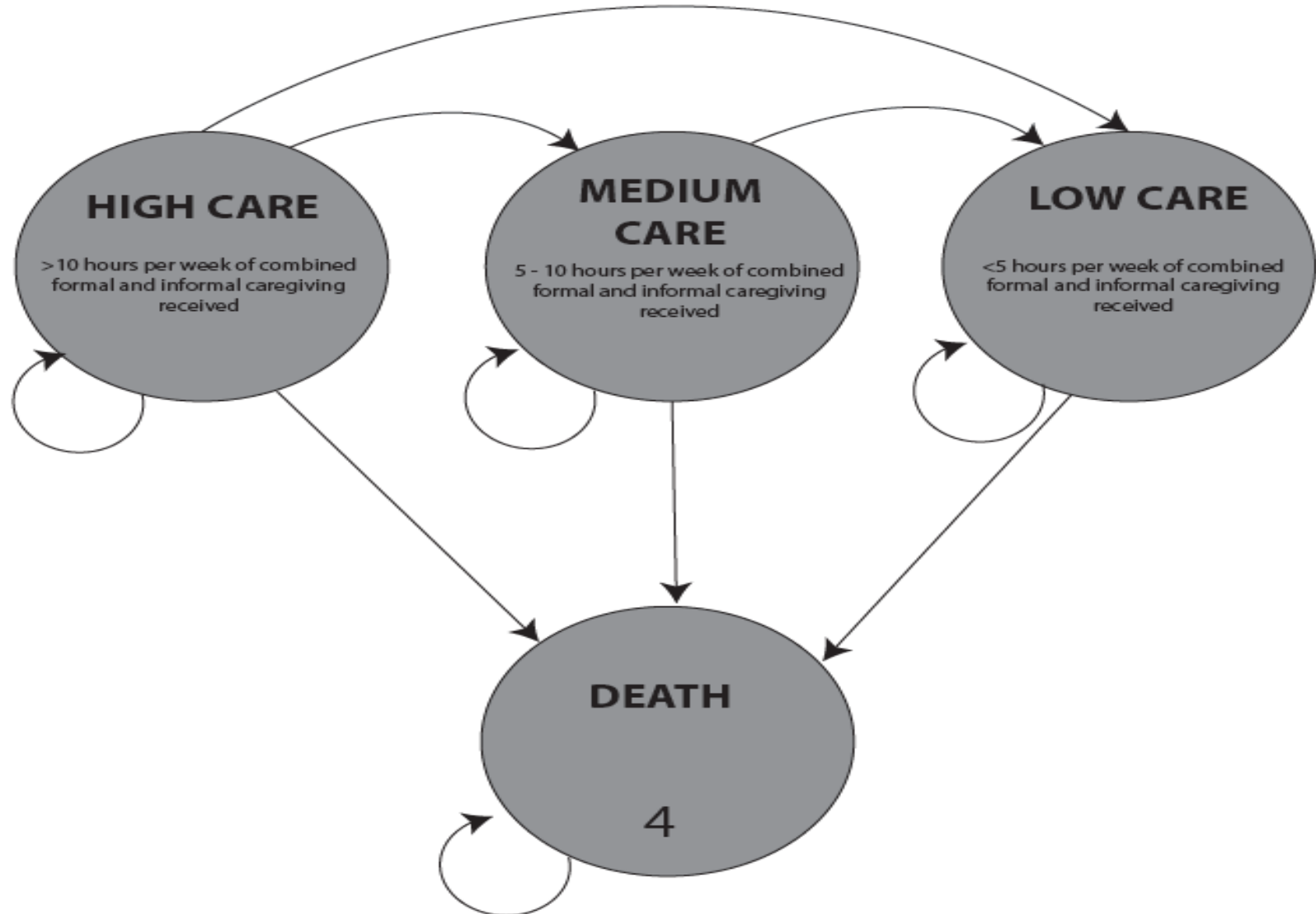
Evidence base

Outcomes of home modification

Home modification Outcome	Evidence
Support self-care	Liu & Lapane, 2009 Mann, Ottenbacher Fraas Tomita and Granger, 1999; Chase, Mann, Wasek, Arbesman, 2012, Gitlin, Miller, & Boyd, 1999
Independence and autonomy	Oswald et al 2003 Gitlin, Winter, Dennis, Corcoran, Schinfeld, & Hauck, 2006; Oswald et al 2007
Improves functional performance	Mann, et al., 1999; Straton, et al., 2003; Liu & Lapane, 2009, Chase, Mann, Wasek, Arbesman, 2012
Well being	Ayyangar, 2002; Adams, 2006; Bonney, et al, 2004
Supports community participation	Nygard 2007
Supports formal community care giving	Trickey, Maltais, Gosselin, & Robitaille, 1994; Andrich, Ferrario & Moi, 1998; Cantu, 2003; Agree, Freedman, Cornman, Wolf & Marcotte, 2005
Supports informal community caregiving	Cantu, 2003; Trickey, Maltais, Gosselin, & Robitaille, 1994
Offsets institutional care	Newman, Struyk, Wright, & Rice, 1990; Iwarsson, Isacson, & Lanke, 1998; O'Leary et al, 2010 Hwang, Cummings, Sixsmith & Sixsmith, 2012
Supports respite care	DeKlerk & Huijsman Lansley, McCreadie & Tinker, 2004 Mann, Ottenbacher Fraas Tomita and Granger, 1999 Nygård, 2004
Support ageing in place	Huang, Cummings, Sixsmith (2011); Safran-Norton (2010)
Modified house – decreases value	Nunn et al (2009); Saville-Smith et al. (2007); Smith et al. (2008)
Improves safety – reduces falls	Plautz, Beck, Selmar & Radetsky, 1996; Van Haastregt, et al, 2000; Ambrose, 2001;

Markov model state transitions

Preamble to economic model



Longitudinal changes in everyday life after home modifications

Home modifications are **effective** in decreasing difficulty in performing everyday life tasks **up to six months after the installation.**

BUT

to be effective **home modifications need to be installed in a timely fashion** eg. for each consecutive month the person waited for their home modification the difficulty of performing everyday life tasks increased (Petersson, Kottorp, Bergström & Lilja, 2009)

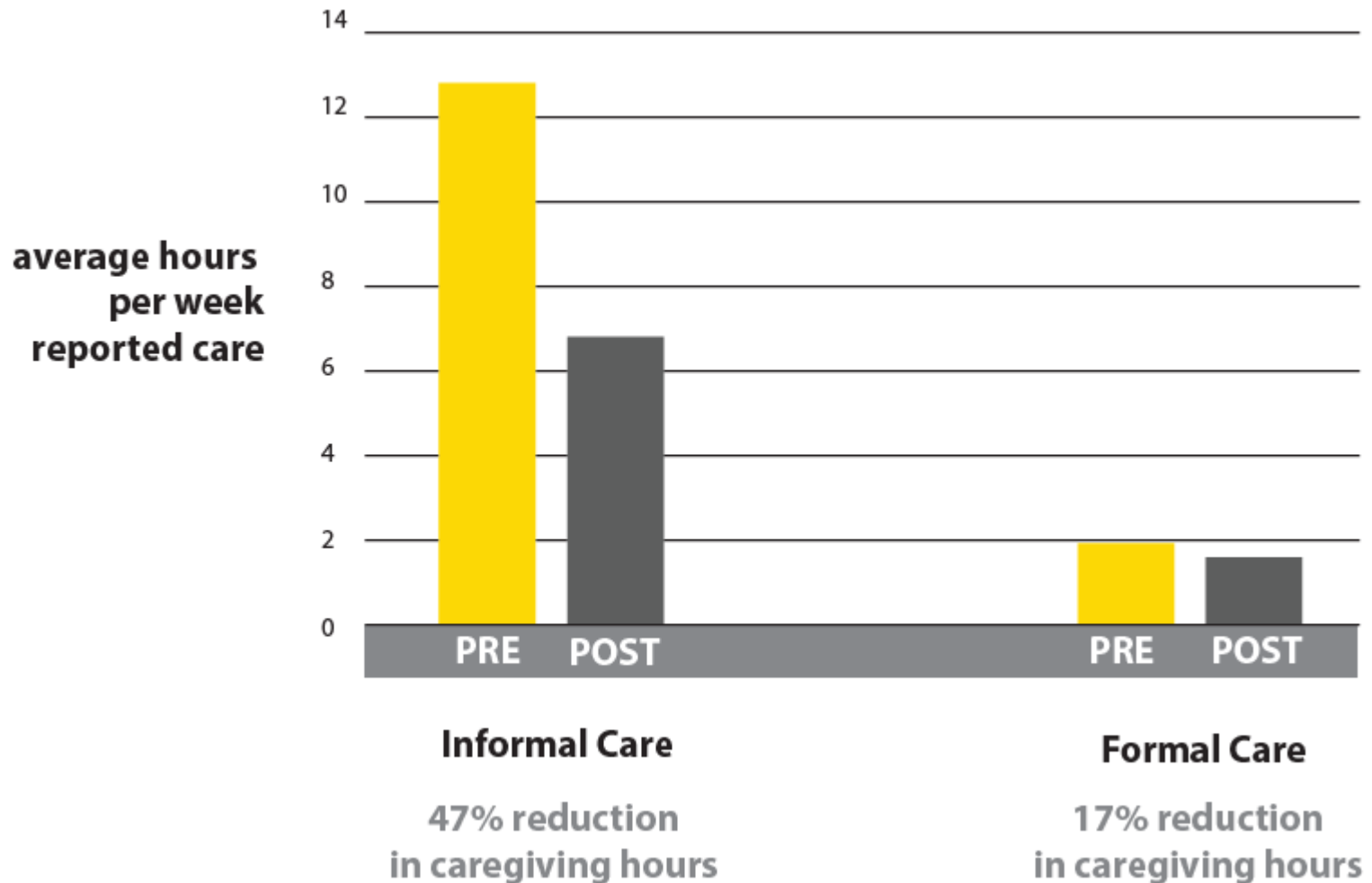
Fiscal saving by reducing care

Two key savings under this heading:

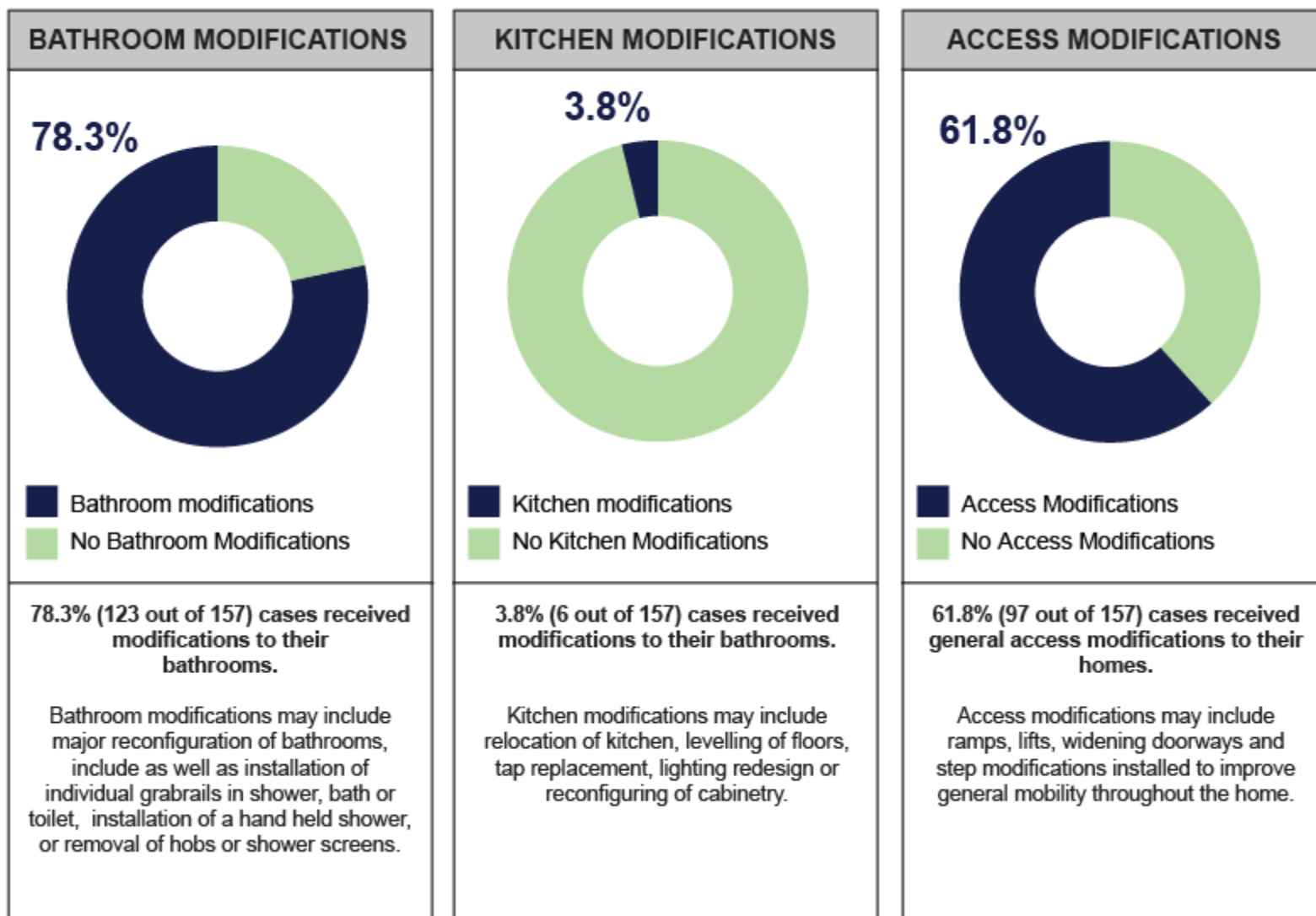
- The cost of **residential care**; and
- The cost of **intensive home-care**.

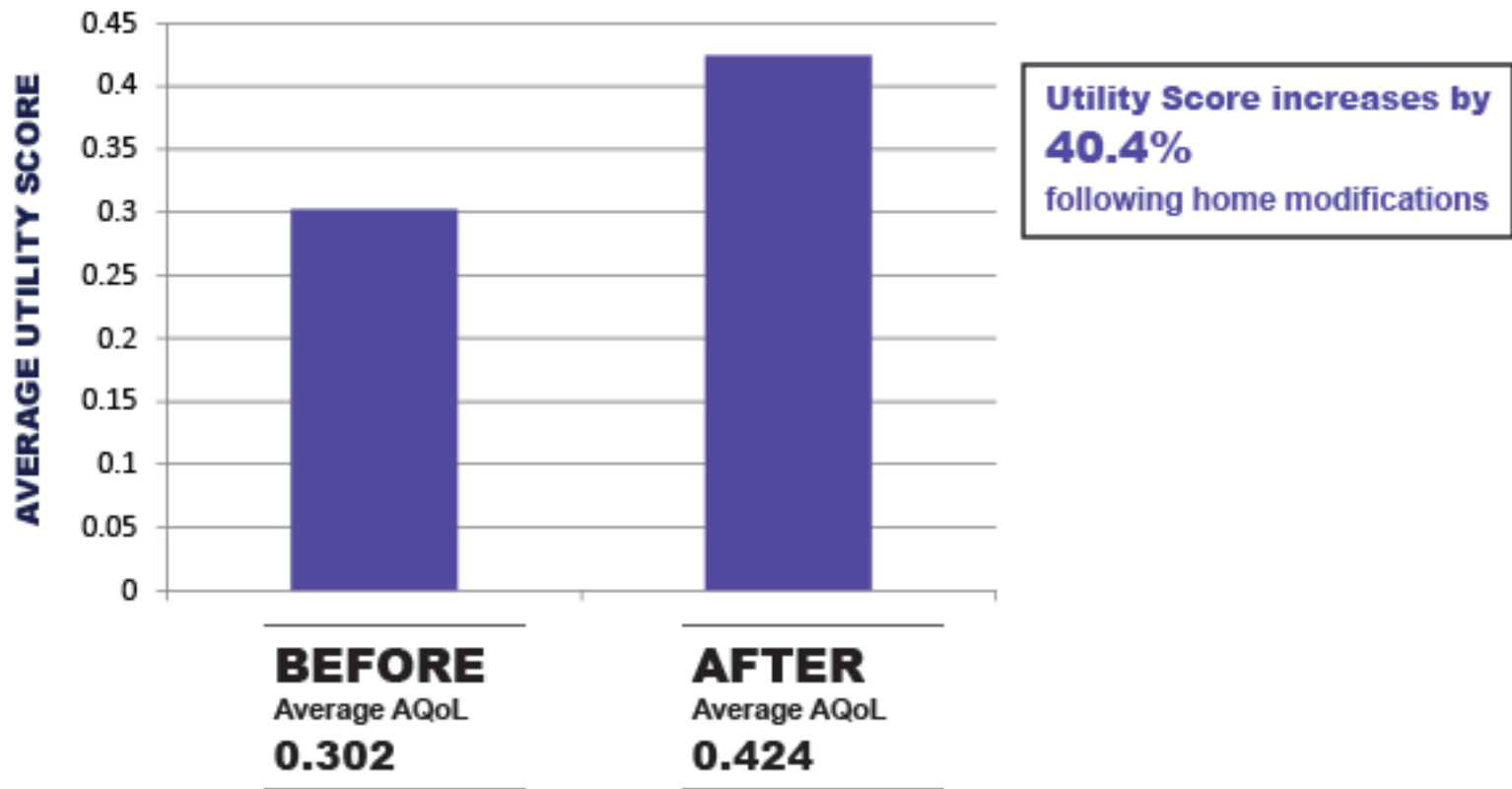
Both care costs are major expenses to all government and consumer budgets.

Self reported care levels PRE and POST home



WHERE ARE MODIFICATIONS BEING CARRIED OUT IN THE HOME?





Comparisons of average utility (HRQoL) scores - both BEFORE and AFTER home modifications.

Role of the Home Modification Information Service

Objectives of the Home Modification Clearinghouse

- a) Review existing and emerging research that contribute to enabling home environments for older people and their carers.
- b) Build the capacity and competency of aged care service providers to provide enabling environments
- c) Provide strategic advice and promote co-operative
- d) Provide resources and information
- e) Disseminate research findings.



www.homemods.info

Home Modification Information Stakeholders

