



Welcome to CHNET-Works! Fireside Chats

Friday March 3rd 1:00 – 2:00 PM EST

Preventing falls in the community...

safe stairs and bathroom grab bars are part of the solution.

- research findings and implementation insights.
- potential changes to provincial building codes.

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Hosted by: University of Ottawa – Community Health Research Unit

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Focus

- Discuss the problem of falls on stairs
- Share current research findings
- Consider how can we work together to make a difference
 - Build the case for change
 - Support modifications to building codes
 - Advocacy work

Facts on Stair Falls

- ❖ **Between April 1, 2001 and March 31, 2002, a total of 6,224 Canadians fell on or from stairs or steps in their homes and were injured seriously enough to require a hospital visit.**
- ❖ **In the US, 1,000,000 injuries from stair falls per year**
- ❖ **61.4% of deaths related to falls are related to falls on stairs**

STAIR SAFETY FOR SENIORS

- ❖ **Between 10-15% of falls among seniors are on stairs.**
- ❖ **Stairs are leading site for serious injuries among older adults.**
- ❖ **The incidence of stair-related injuries, hospitalizations, and fatal falls increases with age - More than half of the 6,224 people hospitalized were seniors.**
- ❖ **In Canada, persons over 65 account for 70% of deaths resulting from stair accidents**

IT'S ALSO ABOUT QUALITY OF LIFE!!

- ❖ **55% of Canadians 55 and older have difficulty climbing stairs – in the top 5 “hard to do” ADLs**
- ❖ **Stairs are leading reasons for needing to move or restricting use to a single floor in the home, yet... 89% of seniors want to **AGE IN PLACE****

Risk Factors based on qualitative analysis of ~ 1000 falls (Lockett, Edwards, Willis, under review)

- ❖ **Transitions between two different environments**
- ❖ **Expectations of consistency**
- ❖ **Unfamiliarity with environment**
- ❖ **Inattention or distraction**
- ❖ **Risky behaviours**

WHAT WE KNOW ABOUT PREVENTING FALLS

- ❖ **Multi-disciplinary, multi-factorial health/ environmental risk factor screening/intervention programmes**
- ❖ **Exercise programs**
 - **muscle strength and balance retraining, Tai Chi**
- ❖ **Reduction of psychotropic medications**
- ❖ **Home hazard assessment and modification**

(Gillespie, Cochrane review 2003)

**Among the most modifiable risk factors are
physical activity and the reduction of
environmental hazards!!**

MOST COMMONLY REPORTED STAIR FEATURES IMPLICATED IN FALLS

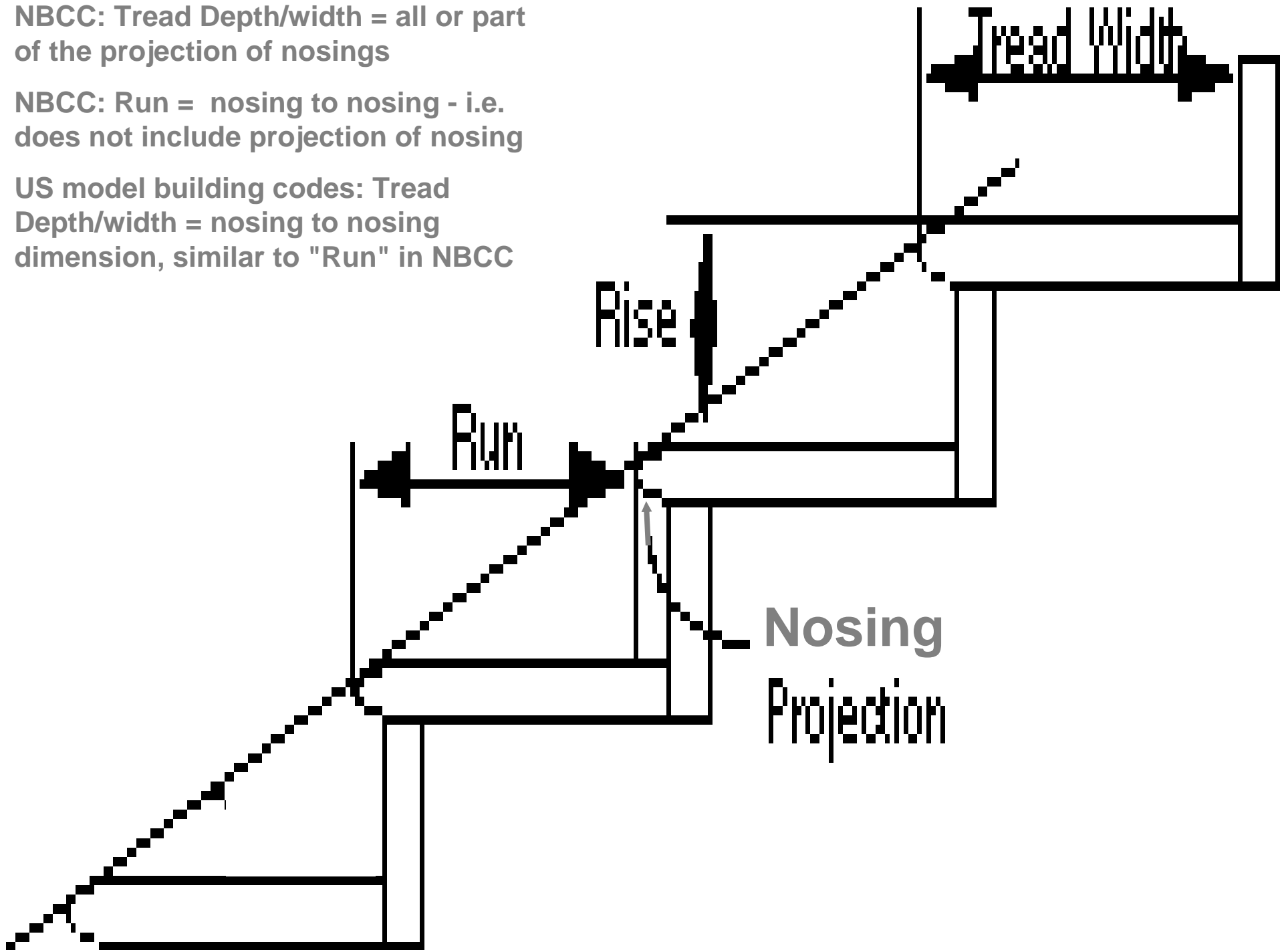
- ❖ **Lack of functional handrails**
- ❖ **Poor visibility:**
 - **poor lighting, lack of contrast marking**
- ❖ **Risers and treads that do not fit human gait**
- ❖ **Inconsistencies in risers and tread sizes**

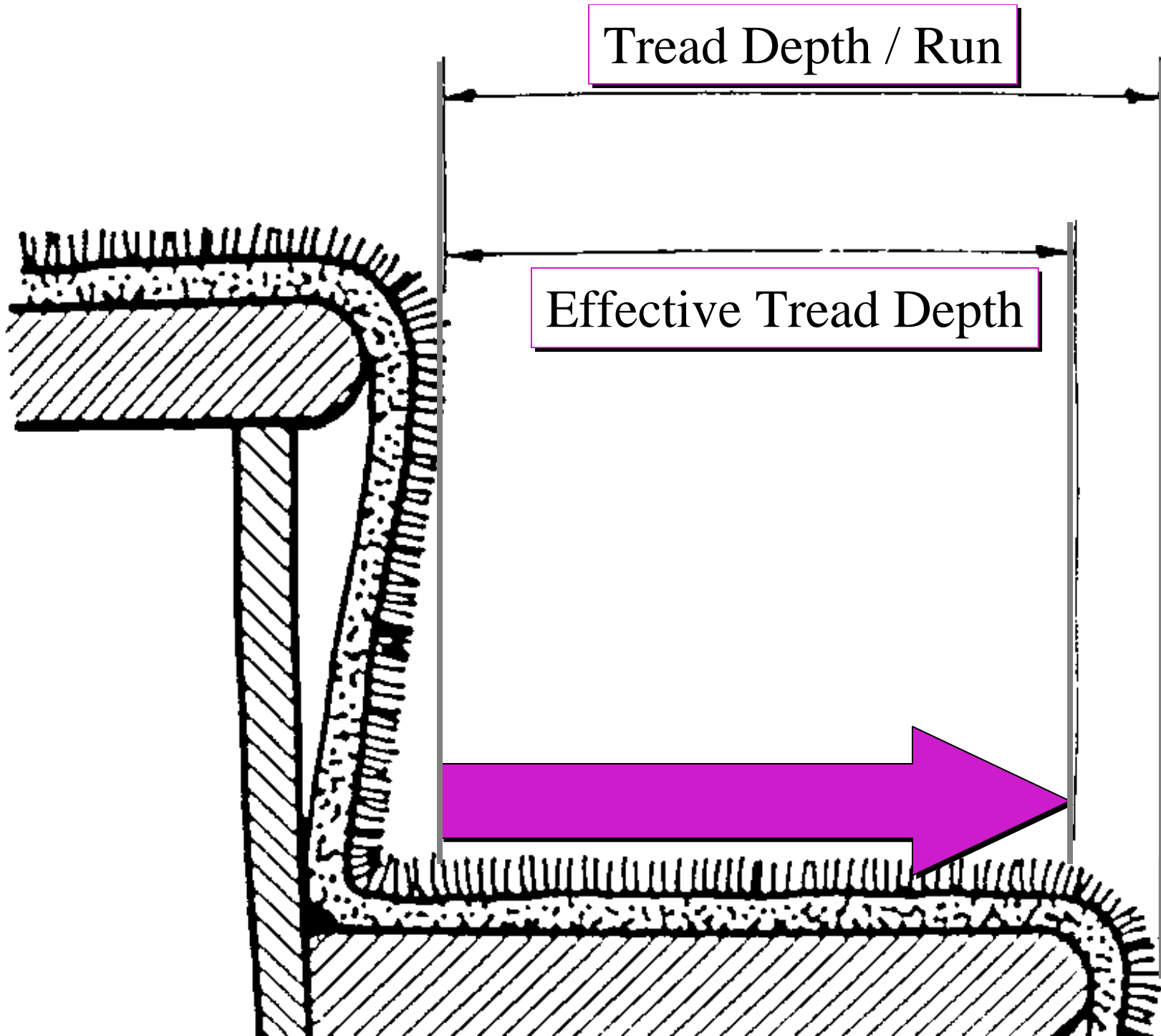
(Archea, 1985; Sjorgen & Bjornstig, 1991)

NBCC: Tread Depth/width = all or part of the projection of nosings

NBCC: Run = nosing to nosing - i.e. does not include projection of nosing

US model building codes: Tread Depth/width = nosing to nosing dimension, similar to "Run" in NBCC





MINIMAL RECOMMENDATIONS FOR SAFE STAIRS

General recommendations

- Closed risers
- Uniform risers – < 178mm (7")
- Run uniform - > 279 mm (11")
- Contrast marking on riser
- No more than 10 steps per flight
- One handrail

(Archea et al., Pauls, 1981)

Recommendations for SENIORS

- Closed risers
- Uniform risers - < 152 mm (6")
- Run between 250-265 mm (10.4")
- Contrast marking on riser
- No more than 6 steps per flight
- Two handrails

(Finlay & Taylor, 1985)

CURRENT CODES VS RECOMMENDATIONS

| | Current Codes | General Recommendations | Recommendations for seniors |
|---|---------------|-------------------------|-----------------------------|
| Maximum riser height | 200 mm (7.9") | 178 mm (7.0") | 152 mm (6.0") |
| Minimum run Private homes | 210 mm (8.3) | 279 mm (11.0") | 265 mm (10.4") |
| Minimum run Public Buildings | 230 mm (9.1) | 279 mm (11.0") | 265 mm (10.4") |

CIHR STAIR STUDY: STAIR USE AND STAIR SAFETY AMONG COMMUNITY LIVING SENIORS

Donna Lockett, Nancy Edwards

Heidi Sveistrup, Brian Maki

Yvonne Robitaille, Francine Trickey

Elaine Gallagher, Vicky Scott

FUNDED BY CIHR

PRIMARY OBJECTIVES

To explore:

- ❖ **seniors' patterns of stair use and barriers to regular stair use;**
- ❖ **determinants of stair-related falls;**
- ❖ **priority stair hazards and location of hazards;**
- ❖ **priority changes to improve safety of stairs.**

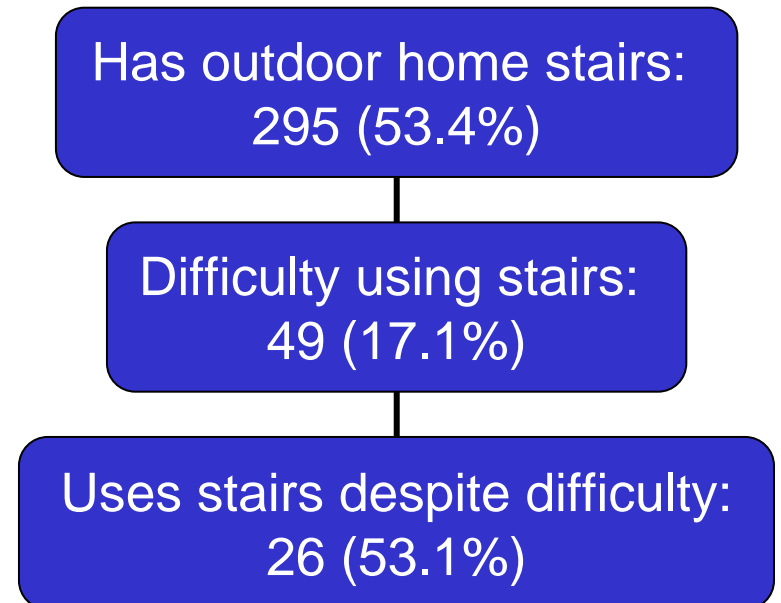
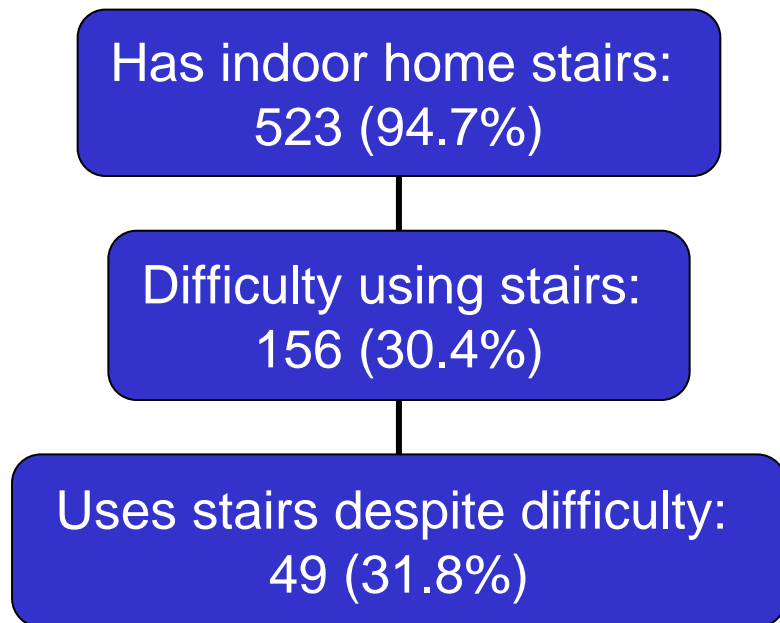
STUDY METHOD

- **549 seniors: face-to-face interviews x 2
: telephone interviews x 2**
- **22 non-profit apartment buildings in
Ottawa-Gatineau regions, 48 community
organizations**
- **621 home stairs and 512 community stairs
assessed (e.g. churches, stores)**

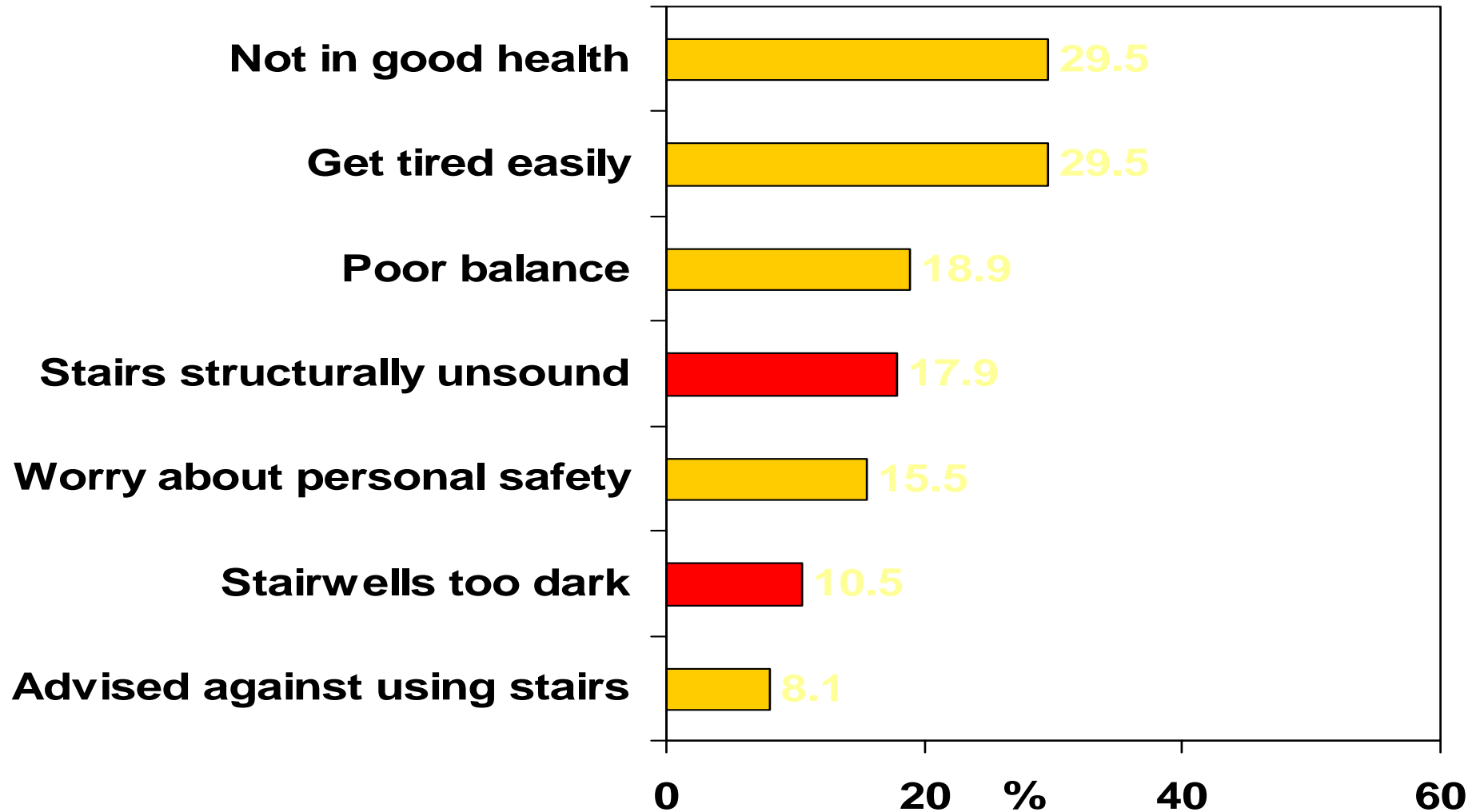
PARTICIPANT PROFILES

- Mean age: 73.9 \pm 7.5
- 76.0% female
- 57.7% live alone
- 61.6% apartments
- 90.0% self-report good health
- 37.2% balance difficulties
- 32.8% fell in year prior to study

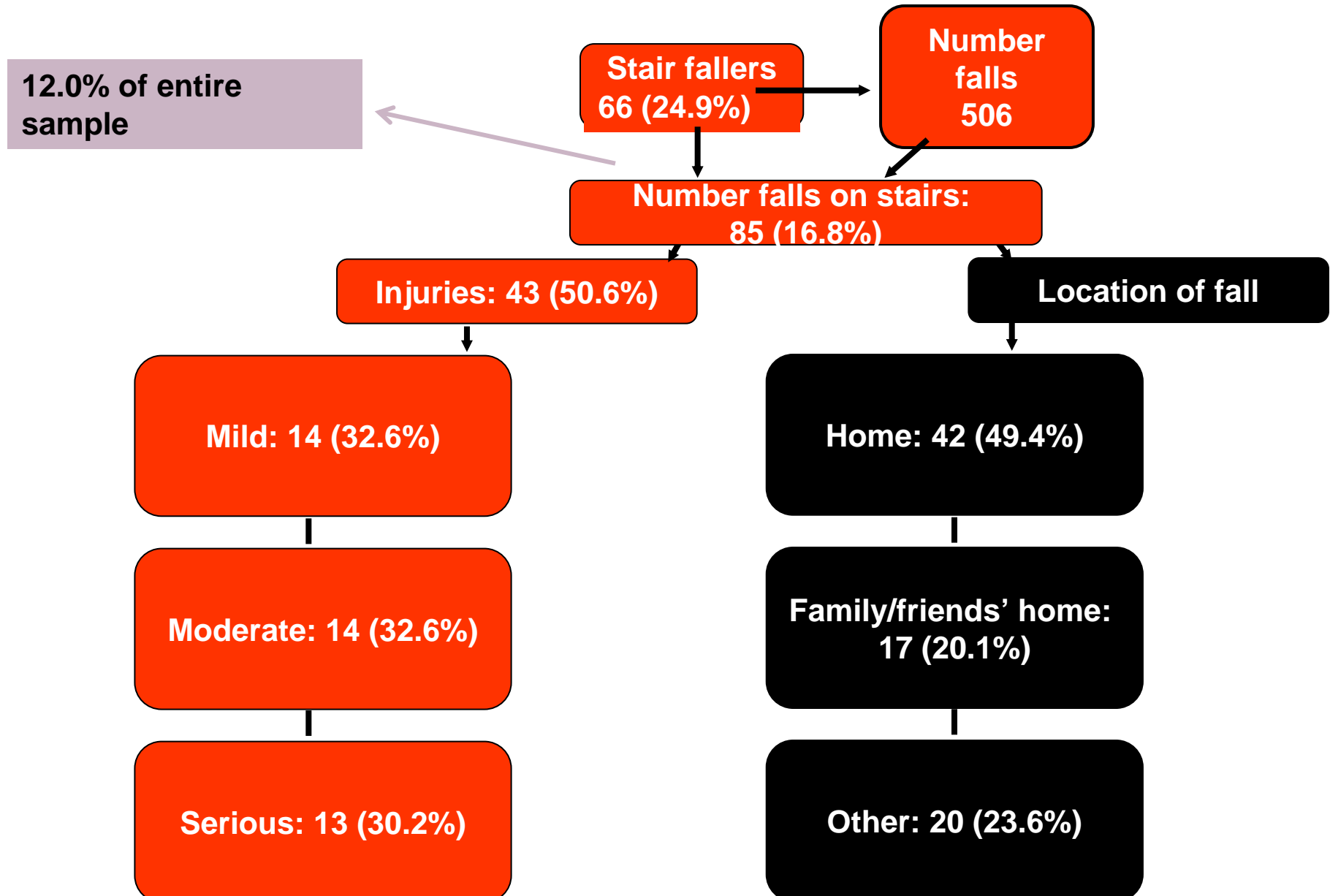
PATTERNS OF STAIR USE AT HOME



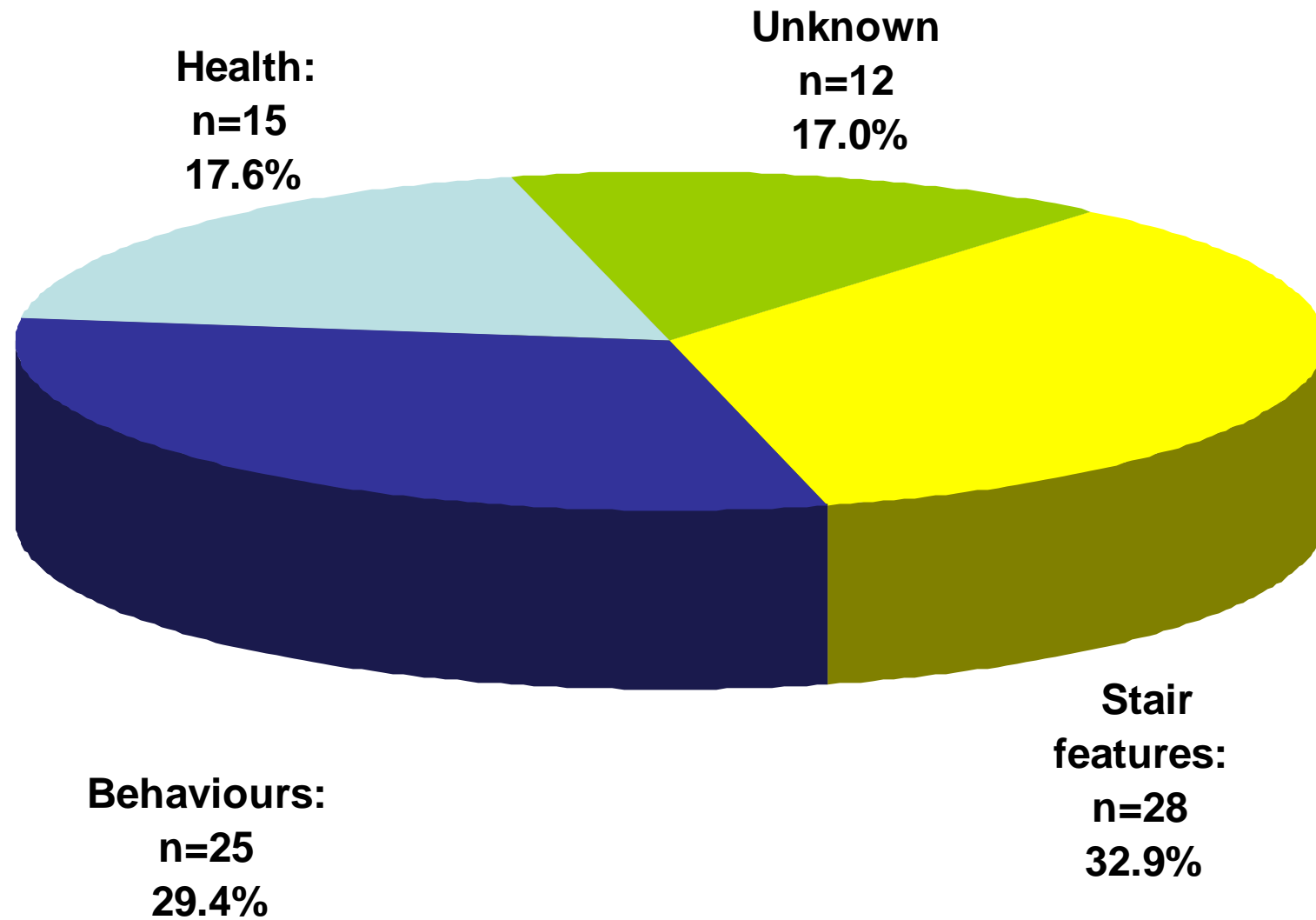
BARRIERS TO USING STAIRS



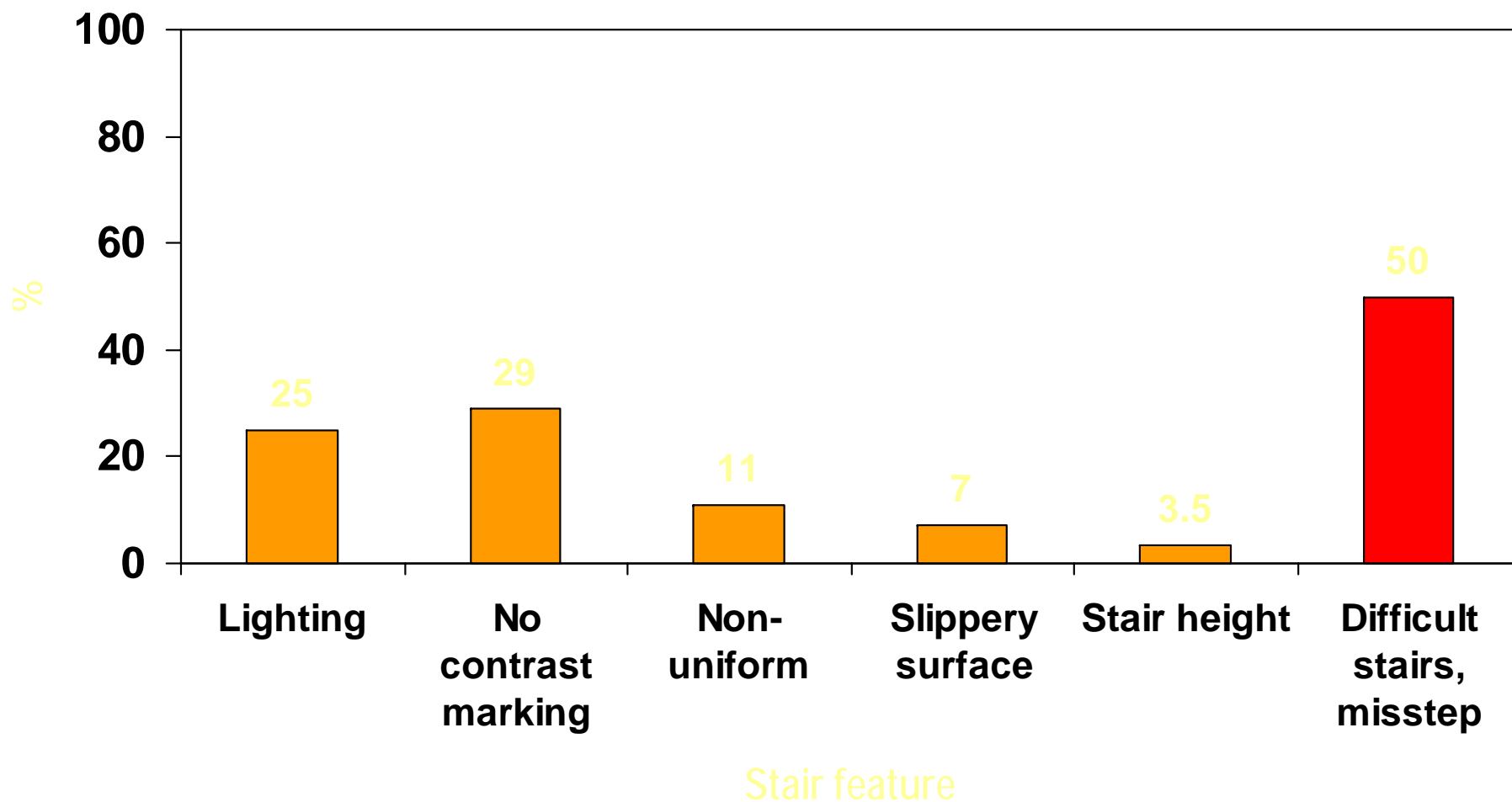
STAIR FALLS



DETERMINANTS OF STAIR FALLS: Self-reports

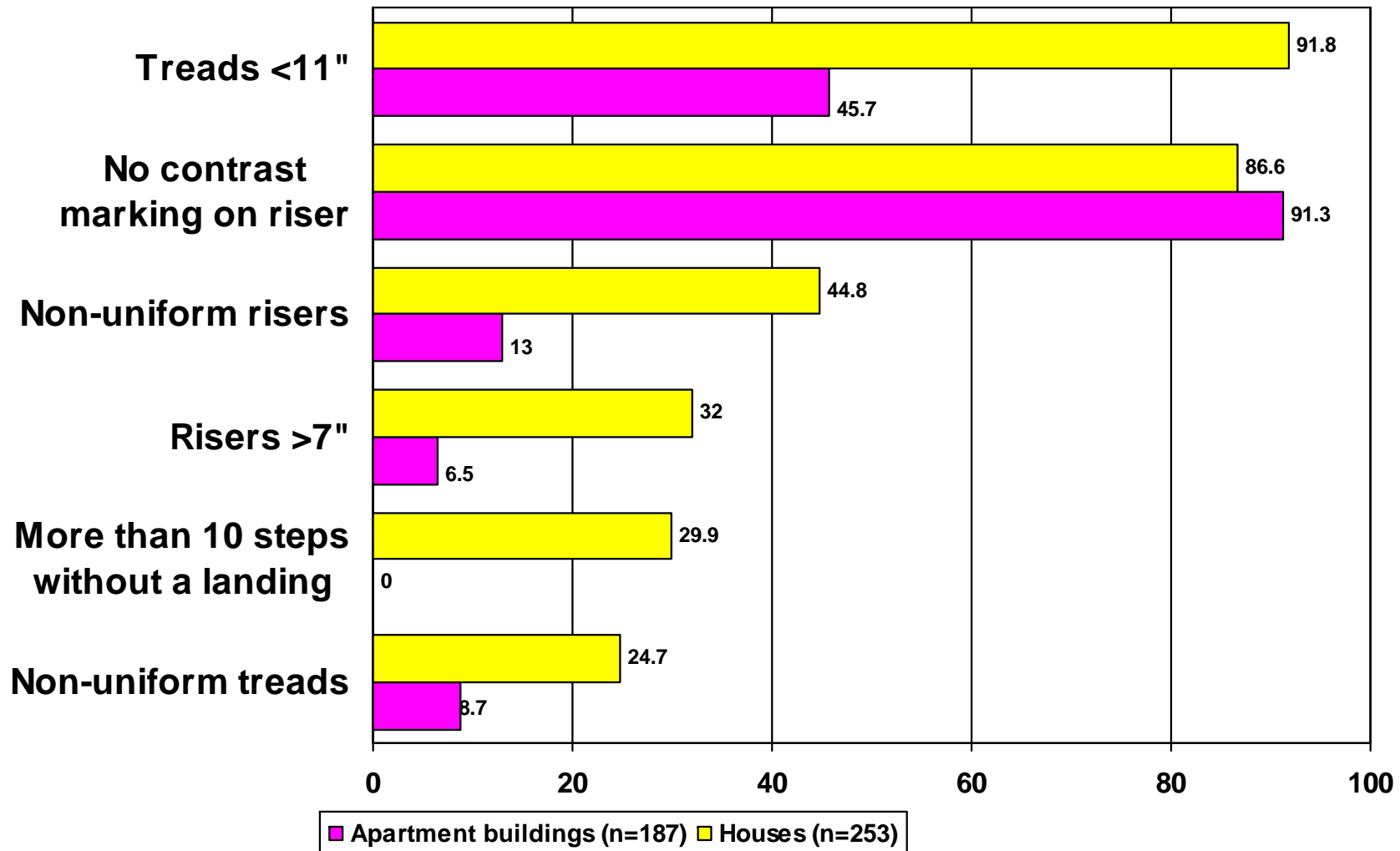


ENV'TAL FEATURES ASSOCIATED WITH FALLS AMONG SENIORS

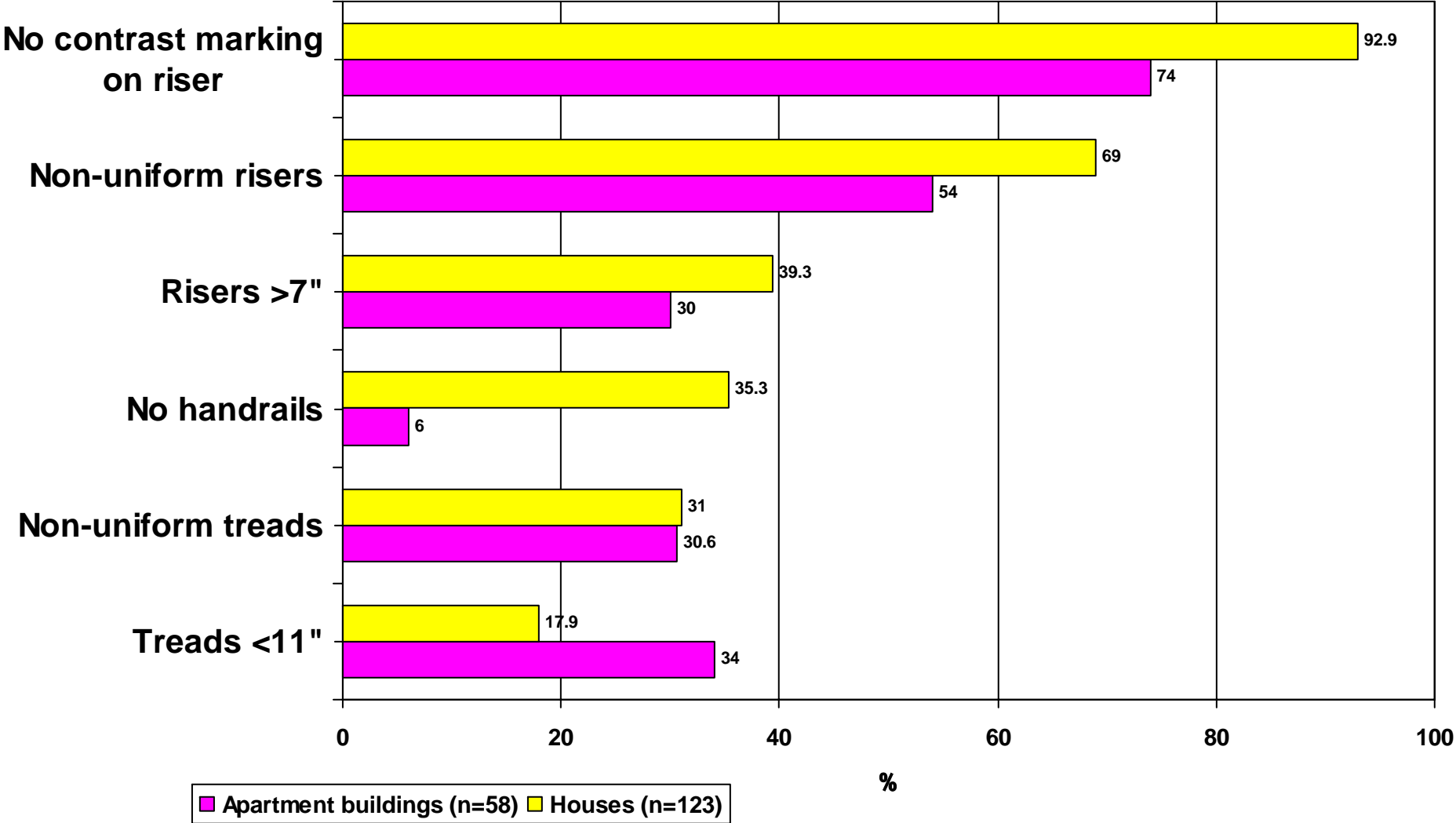


Note: Percentage based on 28 falls attributed to stair hazards

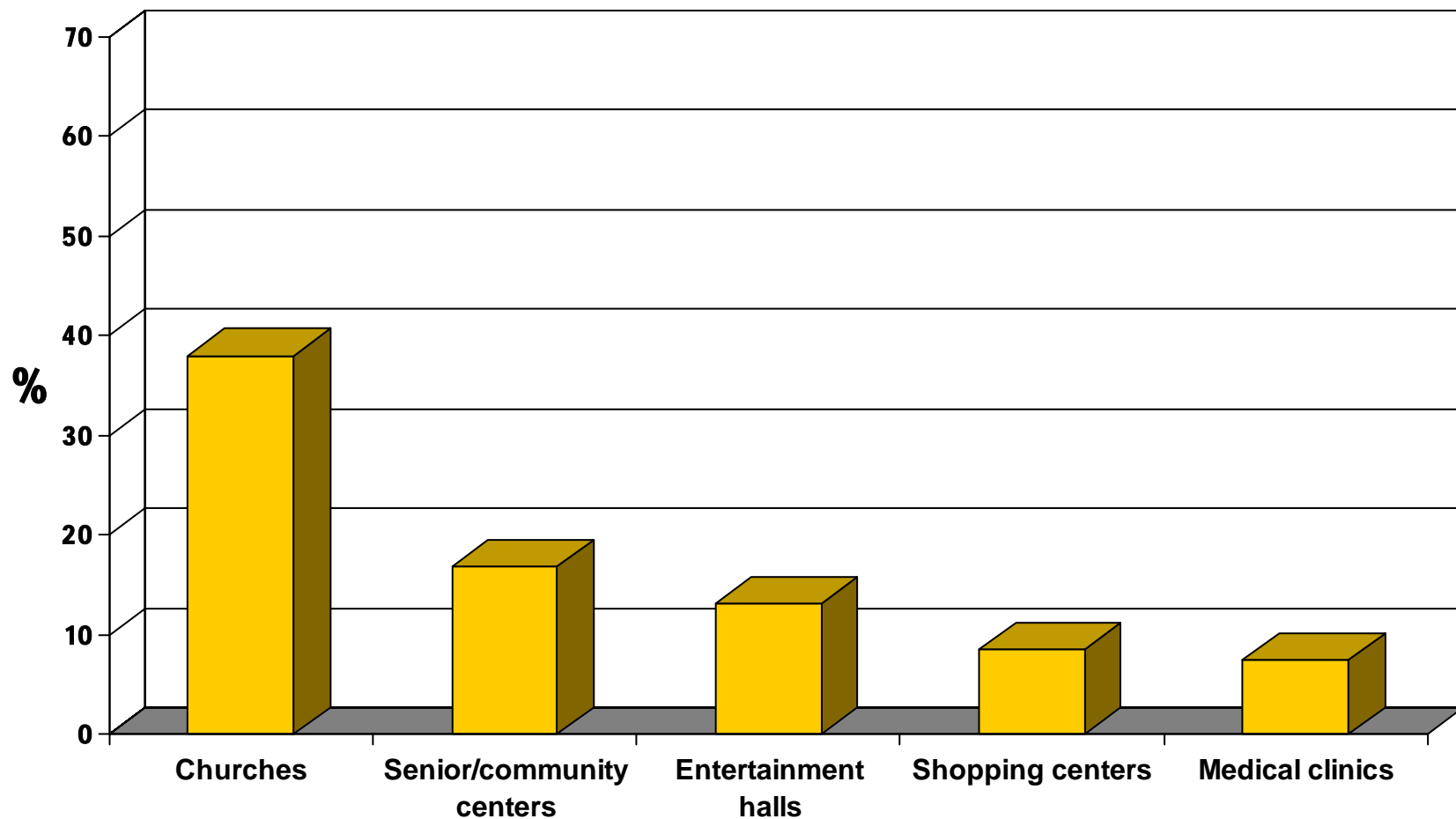
MOST COMMON STAIR HAZARDS INSIDE HOUSES AND APARTMENTS *(n=440)*



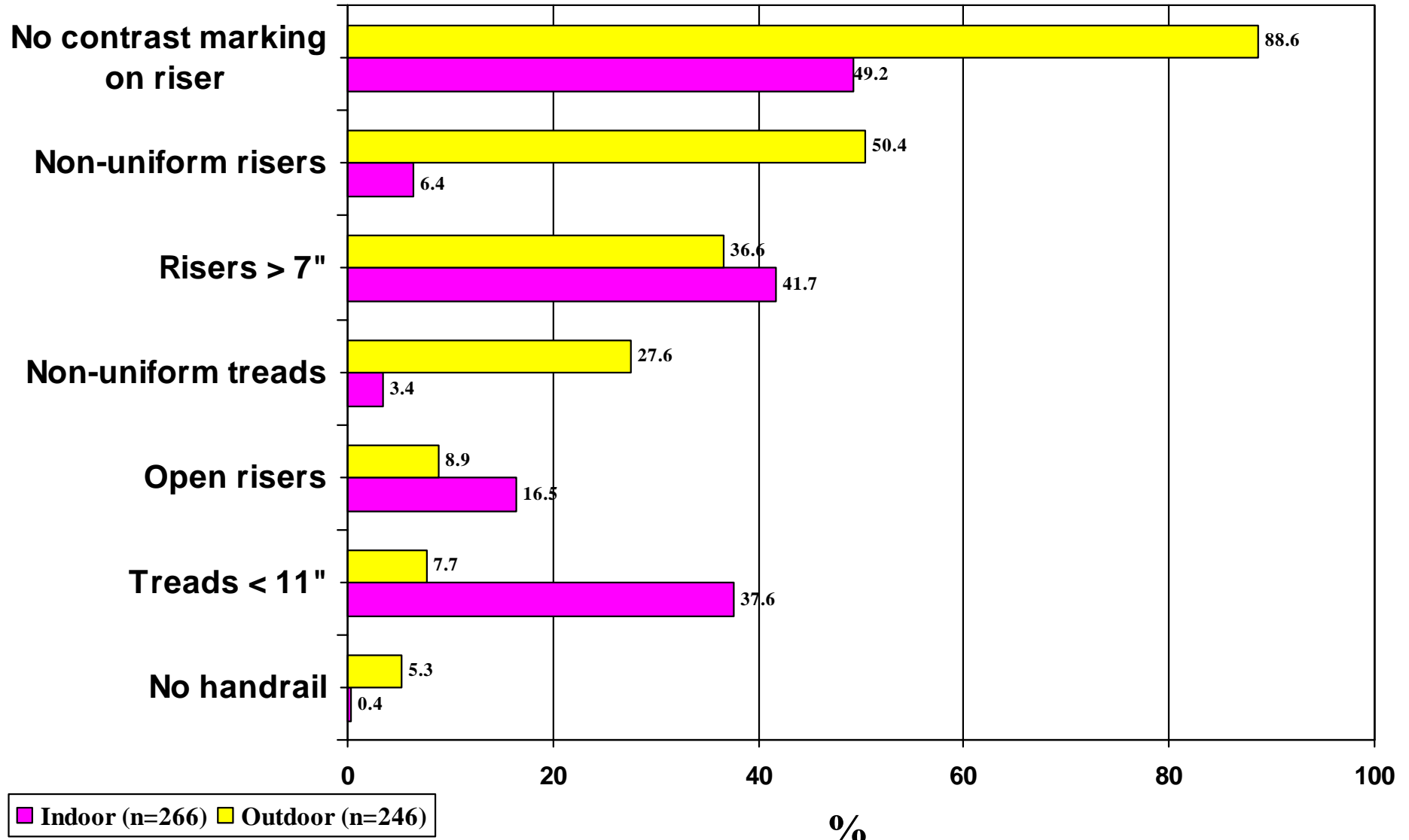
MOST COMMON (%) STAIR HAZARDS OUTSIDE HOUSES AND APARTMENTS (n=181)



MOST COMMON LOCATIONS OF PROBLEMATIC COMMUNITY STAIRS (n=213)



MOST COMMON STAIR HAZARDS IN THE COMMUNITY (n=512)

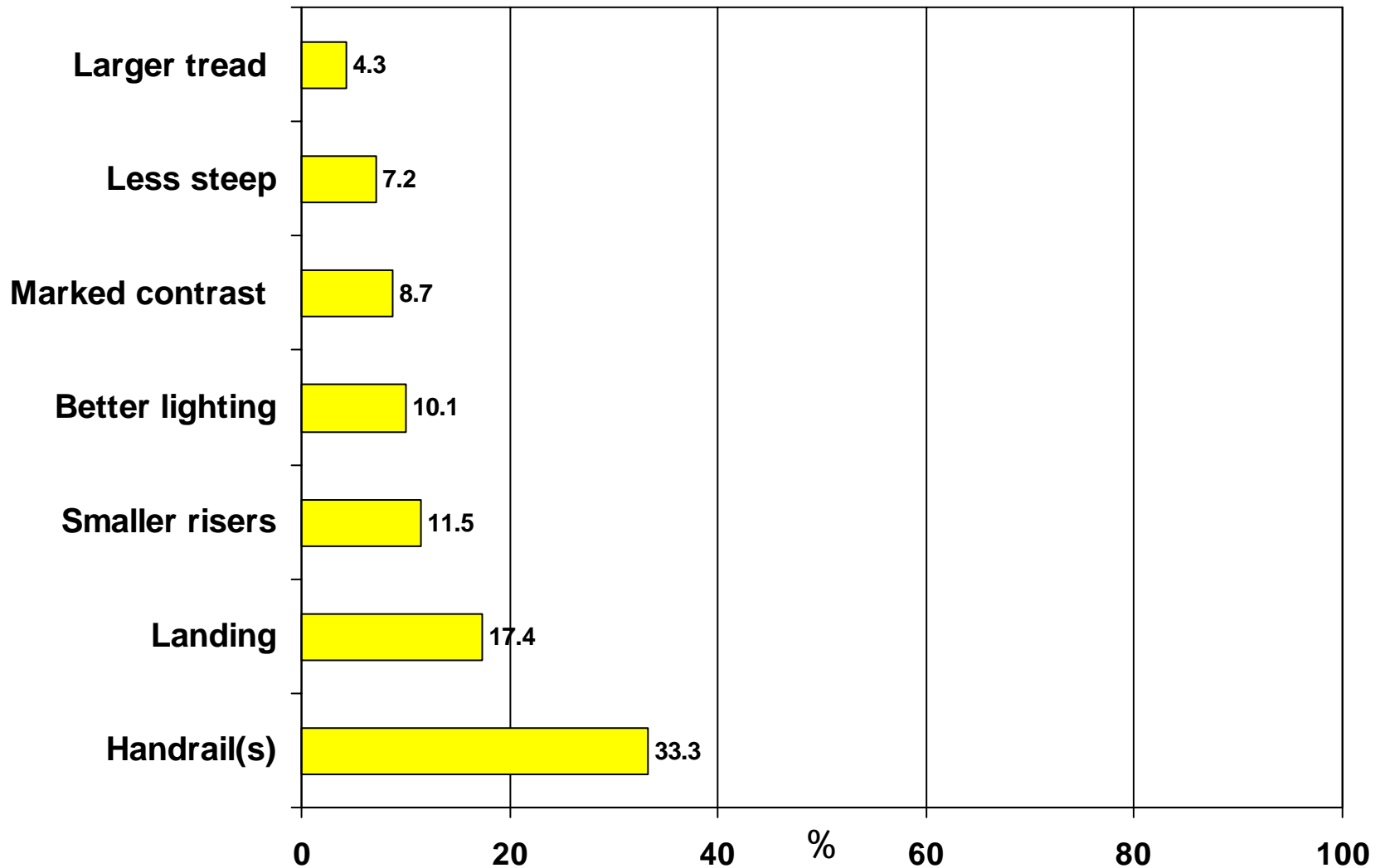


WHAT CAN BE DONE TO IMPROVE SAFETY OF HOME STAIRS (n = 102)

| | | |
|---------------------|------------|-------|
| • Nothing | 58 (56.9%) | |
| • Safer stairs * | 16 (15.7%) | |
| • 1-2 handrails : | | n = 9 |
| • Shorter risers: | | n = 4 |
| • Contrast marking: | | n = 3 |
| • Wider tread: | | n = 1 |
| • Better lighting: | | n = 1 |
| • Better / fitness | 15 (14.7%) | |
| • Don't know | 13 (12.7%) | |

* NOTE: sum of individual responses add to more than 16 because 2 people offered two solutions

SENIORS' SELF-REPORTS OF PRIORITY CHANGES COMMUNITY STAIRS (N=69)



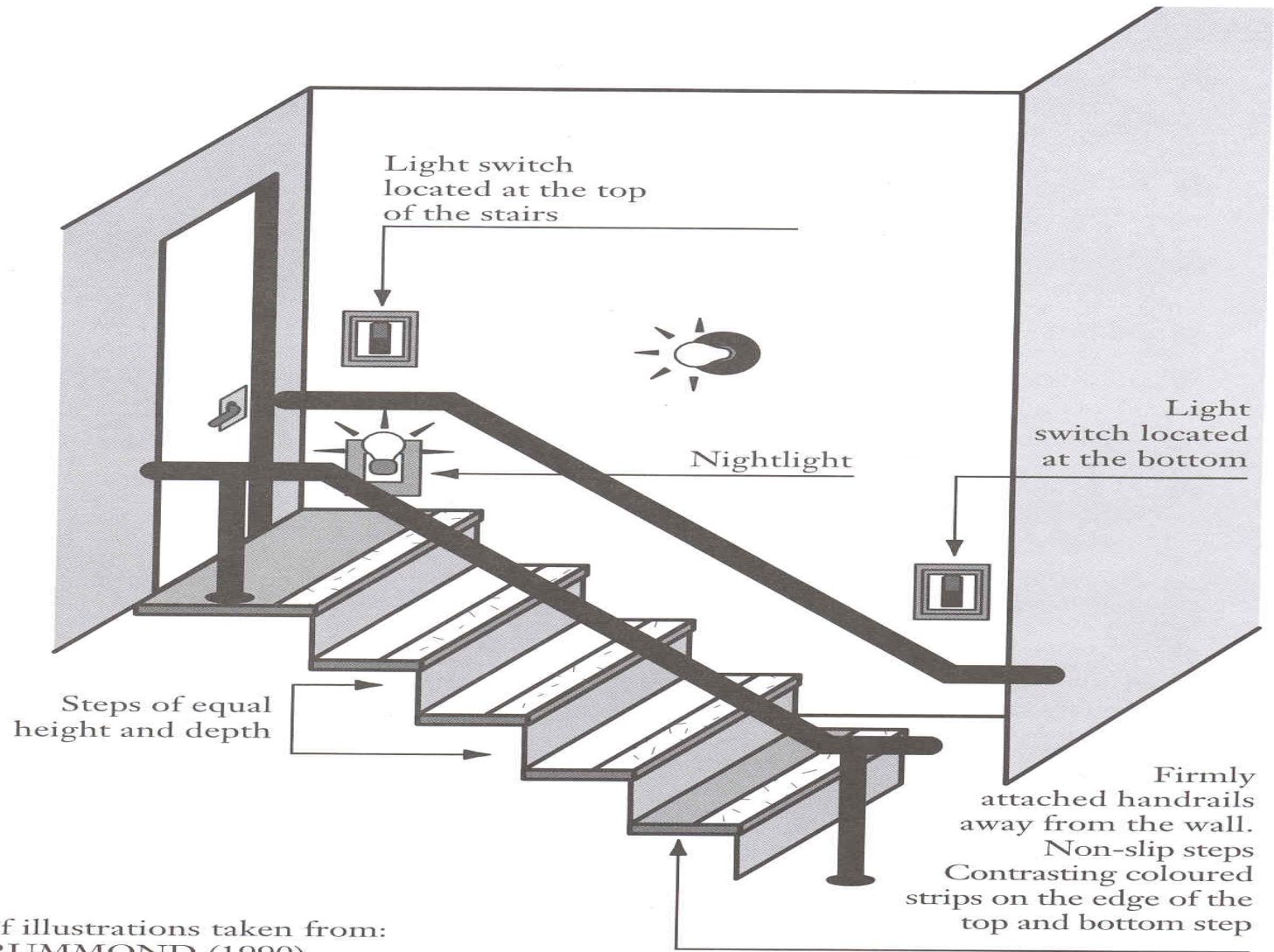
STAIR SAFETY SYMPOSIUM

Hosted by U Ottawa, 2005

Objectives

- ❖ To determine priority policy and programming recommendations to reduce stair falls and encourage safe stair use based on our findings.**
- ❖ To identify additional research needs and a strategic plan for follow-up research.**
- ❖ To identify effective knowledge translation strategies and priority audiences to address program and policy gaps.**

RECOMMENDATIONS FOR SAFE STAIRS



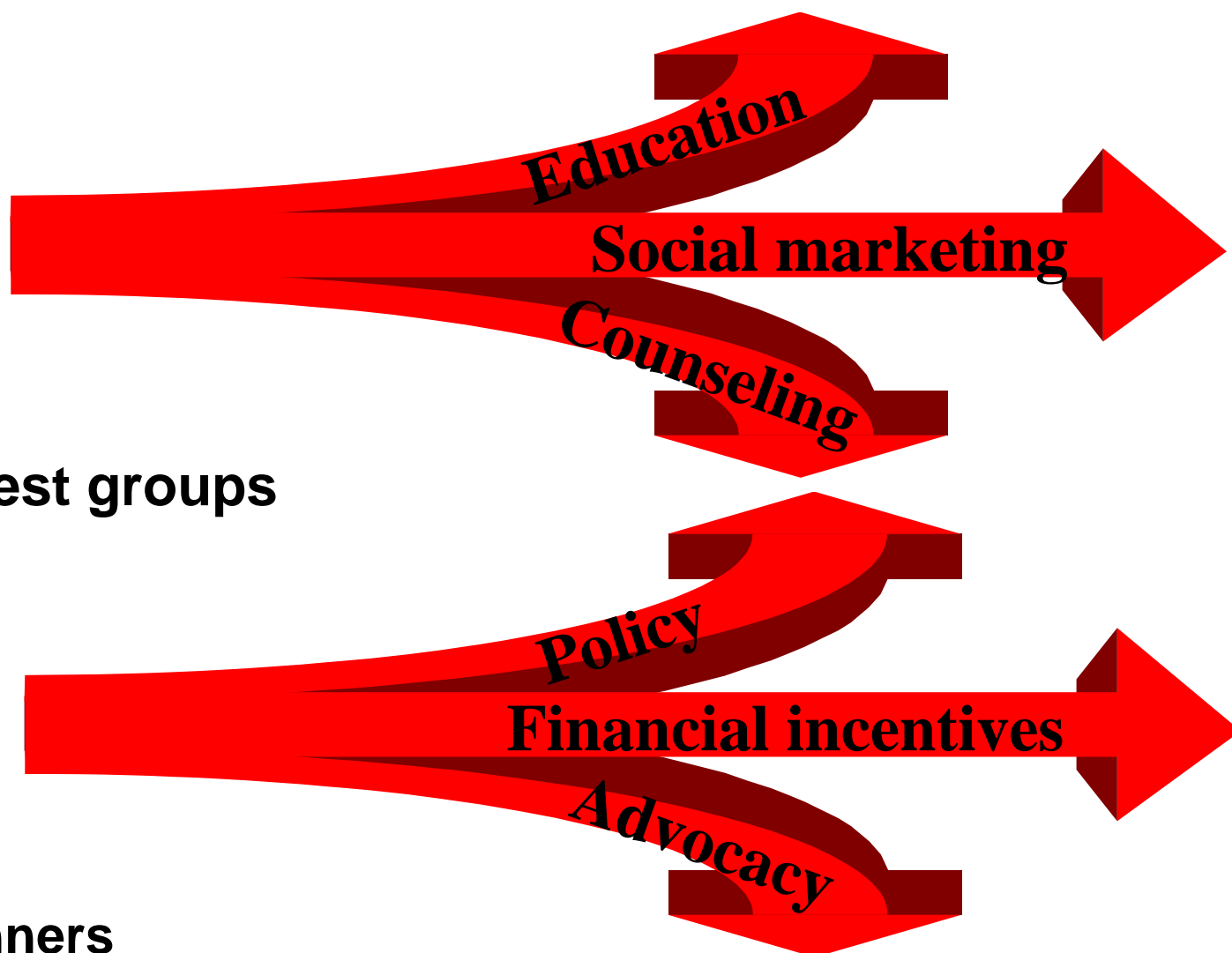
Adaptation of illustrations taken from:
1) CLSC DRUMMOND (1990).
«*Mieux vivre à domicile sans chute.*»
2) CLSC VALLEE DES FORTS
and HÔPITAL DU HAUT-RICHELIEU (1994).
«*Laissez-vous guider pour ne pas tomber.*»

MULTIPLE INTERVENTIONS FOR SAFE STAIRS

WHO?

- Public health
- Media
- Primary care
- Coalitions
- Seniors interest groups
- Insurance
- Homebuilders
- NBCC
- Municipal planners

WHAT? HOW?



STAIR SAFETY SYMPOSIUM

Outcomes: research needs

- ❖ **Tracking stair falls and precipitants of stair falls using video.**
- ❖ **Cost effectiveness of making stairs safer and reducing fall risks.**
- ❖ **Assessing risks (i.e. of falling) and benefits (i.e. of improved fitness) of promoting *safe* stair use.**
- ❖ **MIPs RCT that includes education, awareness, capacity building, and environmental modifications**

National Building Code

- National Building Code (NBC)
 - Prepared by National Research Council (NRC)
 - Revised over five year periods
 - Distributed to all provinces upon completion as a model
 - Governance for the model NBC is provided by an NRC appointed committee called the Canadian Commission on Building and Fire Codes.

Provincial Building Codes

- Provincial Building Codes
 - British Columbia, Alberta and Ontario adopt their own building codes – usually very similar to NBC
 - Remaining provinces adopt the NBC making only minor province-specific amendments
 - Note: P.E.I. and NFLD do not have province-wide building codes, but incorporated municipalities use NBC

Public Consultation Process for Revisions to Building Codes

- General Submission Process for Public Input
 - The NRC welcomes public input regarding the NBC
 - Provincial building code authorities also welcome public input
 - Feedback can be in the form of letters, emails, and/or submissions through their websites
 - Supporting documents and research evidence is encouraged to back-up public claims
 - Input can be submitted on an on-going basis

Tracking Public Input

- Public input is:
 - Reviewed by the provincial building code authority and either approved/rejected for incorporation into the Provincial Building Codeor
 - Reviewed and forwarded to the NRC for further review
 - Input and/or suggested changes are then sent to the Provincial/Territorial Policy Advisory Committee on Codes (PTPACC).
 - The PTPACC then advises the Governing Commission of the NBC on what they need in the National Building Code

Provincial Building Code Authorities Contact Information

British Columbia

Ministry of Community, Aboriginal and
Women's Services
Housing and Building Policy
(250)-356-9011
www.housing.gov.bc.ca/building

Alberta

Municipal Affairs, Public Safety Division
1-866-421-6929
www.municipalaffairs.gov.ab.ca/

Saskatchewan

Building Standards - SBC
(306)-787-4113
www.cps.gov.sk.ca/safety/building

Manitoba

Manitoba Labour & Immigration
Office of the Fire Commissioner
(204)-945-3322
<http://www.firecomm.gov.mb.ca/home.html>

Ontario

Municipal Affairs and Housing
Building and Development Branch
(416)-585-6666
www.obc.mah.gov.on.ca/

Québec

Régie du Bâtiment du Québec
418-643-0067
www.rbq.gouv.qc.ca/

New Brunswick

Public Safety - Safety Services
506-453-3992
www.gnb.ca/0276/index-e.asp

Nova Scotia

Environment and Labour
Public Safety Division
902-424-5721
www.gov.ns.ca/enla/buildingcode/

Provincial Building Code Authorities Contact Information

Prince Edward Island - Rural Areas

Department of Community and Cultural Affairs
Planning and inspection Services,
902-368-5280

City of Charlottetown & Summerside

Planning and Development
902-629-4158

www.gov.pe.ca/commcul/

Newfoundland & Labrador

Government Services and Lands
Securities Commission
(709)-729-4189

<http://www.gs.gov.nl.ca/>

NRC - www.nrc-cnrc.gc.ca/

NBC - http://irc.nrc-cnrc.gc.ca/pubs/codes/nrcc47666_e.html

Northwest Territories

Municipal and Community Affairs
Office of the Fire Marshal
(867)-873-0260

www.maca.gov.nt.ca/

Yukon

Community Services
Consumer and Safety Services
(867)-667-5811

<http://www.community.gov.yk.ca/>

Nunavut

Community Government and Transportation
Office of the Fire Marshal
(867)-975-5300

www.gov.nu.ca/cgt.htm

Questions From Participants

- Did the latest round of feedback/input into the provincial building codes result in any changes to the building code?
- Who is working on the issue of changes to building codes?
- How do you spread the message?
- What about people who can't afford to make changes but are at risk for falls?
- What is the latest research on hip protectors for seniors living in the community?

Questions From Participants

- Will you address safe stairs from a young child's perspective?
- We have a volunteer peer home visiting program that hasn't received any referrals. How can we reach older adults in their homes to educate about home safety without seeming intrusive?
- Best screening questions for detecting people at risk for falls
- It is difficult in these busy times, to ensure that nurses are compliant when filling out safety assessments in the home setting - do you have any articles, or stats that would emphasize to them the importance of these forms?

Questions From Participants

- "what is the key public health nursing role with respect to stair safety in the home? Should the role be education and if so what are the key points to be made with older adults and caregivers (both formal and informal)? Or should our focus be more on advocacy or working with policy and if so, what are the key points to be made and with whom?"
- It is an opportunities to link with practitioners in the field of injury & substance abuse prevention with respect to older adults; I am interested in:
 - receiving a general update and emerging issues;
 - info about the progress of the Falls Prevention training course;
 - national/provincial investments and strategies;
 - any information on the incidence and screening of seniors falls resulting from abuse (pushing and shoving) or neglect;
 - policy development incl. effectiveness of implementation RNAO Falls Prevention best practice guideline & number of sites; and,
 - victim blaming - is it an issue? What are rights and liability issues when a fall-related injury occurs?

Questions From Participants

- How are Municipalities collaborating?
- Is there something very recent in best practices?
- Is Vicky Scott's Project finished?
- Which would you focus on if you had to choose--environmental modifications or increasing activity levels in older adults?
- I want to know particularly what municipalities are doing to prevent falls: ie streets, lighting, sidewalks, ice and snow removal, etc

How can we work together to make a difference?

- Building the case for change
- Supporting modifications to building codes
- Advocacy work
 - Canadian Federation of Municipalities
 - Insurance Bureau of Canada
 - Resolutions for changes to building codes
 - Continue the discussion, plan action steps
 - Others?



Checklist for Stairways (Sample items)

Handrails

- Provide at least one handrail on each stair regardless of the number of steps.
- On wide monumental stairs provide at least one handrail at the normal path of travel. If used by crowds, space handrails 1525 mm (60 inches) apart.
- Continue handrails between flights at the shortest path of travel.
- Extend the handrail, without a break, the full length of the stair between floors.
- Augment any decorative stair railing system with a functional handrail.



Checklist for Stairways

Handrails (con't)

- Install a handrail around which ones fingers and thumb can encircle and lock.
- Maintain adequate hand clearance between the handrail and nearby surfaces.
- Position handrails at about adult elbow height, 900-1000mm or 36-39”.
- Provide handrails that are visually prominent.
- Repair or replace broken handrails.
- Fix handrails securely to walls and posts.

Resources

- ❖ **Community Health Research Unit:** <http://www.falls-chutes.com/>
- ❖ **Health Canada:** <http://www.hc-sc.gc.ca/seniors-aines>
- ❖ **Canadian Centre for Activity and Aging – Home Support Exercise Program:** <http://www.uwo.ca/actage>
- ❖ **Active Living Coalition for Older Adults:** <http://www.alcoa.ca/>
- ❖ **Canada Mortgage and Housing Corporation:**
- ❖ <http://www.cmhc-schl.gc.ca>
- ❖ **Best Practice Guidelines on Fall Prevention:** www.rnao.org

References and Bibliography (1)

- AARP (1996). *Understanding Senior Housing into the Next Century: Survey of consumer preferences, concerns, and needs*. American Association of Retired Persons, Washington, DC.
- AARP (2000). *Fixing to Stay: A national survey of housing and home modification issues*. AARP, Washington, DC
- Aminzadeh, F. (1996). *Stair falls among seniors: Hazards, safety recommendations, and building codes*. CHRU Publication No. DP96-2: Ottawa Carleton Health Dept., Ottawa.
- Archea J, Collings B, Stahl F. *Guidelines for stair safety*. Vol. series 120. Washington, DC: U.S. Government Printing Office, 1979.
- Archea JC. Environmental factors associated with stair accidents by the elderly. *Clin Geriatr Med* 1985;1:555-69.
- Canada Mortgage and Housing Corporation. *Focus groups to examine barrier-free and adaptable housing design*. Ottawa: Hichling Corporation RBO Architecture, 1994.
- Canada Safety Council. *Fatal accidental falls, by age and sex*. Ottawa, 1991.
- Cayless SM. Slip, trip and fall accidents: relationship to building features and use of coroners' reports in ascribing cause. *Appl. Ergonomics* 2001;32:155-162.
- Finlay OE, & Taylor IC. Practice stairs for the elderly. *Physiotherapy* 1985;71(5):213-215.
- Health Canada. (1999). *Statistical Report on the Health of Canadians (No. H39-467/1999E)*. Ottawa: Minister of Supply and Services.
- Hemenway D, Solnick SJ, Koeck C, Kytir J. The incidence of stairway injuries in Austria. *Accid Analy Prev* 1994;26:675-9.
- Lawrence BA et al. (1999). *Estimating the costs of nonfatal consumer product injuries in the United States.*" Proceedings of 7th International Conference on Product Safety Research, September 30 - October 1, 1999, Washington, DC, pp. 48-68.

References and Bibliography (2)

- Maki, B., Perry, S.D. and McIlroy, W.E. (1998). Efficacy of handrails in preventing stairway falls: A new experimental approach. *Safety Science*, 28(3) 189-206.
- Nagurney J, Borczuk P, Thomas S. Elderly patients with closed head trauma after a fall: mechanisms and outcomes, *J Emerg Med* 1998;16:709-713.
- O'Loughlin J. *The incidence and risk factors for falls and fall-related injury among elderly persons living in the community.* (Unpublished doctoral dissertation) Montreal, Quebec: McGill University, 1991.
- Pauls, J. (1998). Stair safety and accessibility: Standards development in the building and housing industry. In: G.M. Gutman (Ed.) *Technology Innovation for an Aging Society: Blending Research, Public and Private Sectors.* Simon Fraser University, Gerontology Research Centre, Vancouver, 111-129.
- Pauls, J. (2001). Life safety standards and guidelines focused on stairways. In: W.F.E. Preiser and E. Ostroff (Ed.) *Universal Design Handbook.* McGraw Hill.
- Pauls, J.L. (1991). Safety standards, requirements, and litigation in relation to building use and safety, especially from falls involving stairs. *Safety Science* 14, 125-154.
- Pauls, J. (1999) Pauls' Checklist for Stair Safety. Report of Adult Injury Management (AIM) Conference (Eds). E.M. Gallagher, V. Scott, & M. Mills, (p.52). University of Victoria. B.C.
- Quinlan KP et al., (1999). Expanding the National Electronic Injury Surveillance System to Monitor All Nonfatal Injuries Treated in US Hospital Emergency Departments, *Annals of Emergency Medicine*, November 1999, Table 4, p. 641.
- Shipp, K.M., & Branch, L.G. (1999). The physical environment as a determinant of the health status of older people. *Canadian Journal on Aging*, 18 (3), 313-327.
- Sjorgen H, Bjornstig U. Injuries among the elderly in the home environment. *J Aging Health* 1991;3:107

References and Bibliography (3)

Smith, D.W., Brett, A.W., Straker, J.K., Snell, J., Jackson, F.W., & Ulmer, M.E. (1994). A study of stairs in the housing of independent-living elderly people. *International Journal on Aging and Human Development*, 39, 247-256.

Speechley, M., & Tinetti, M. (1991). Falls and injuries in frail and vigorous community elderly persons. *Journal of America Geriatric Society*, 39 (1), 46-52.

Startzell JK, Owens DA, Mulfinger LM, & Cavanagh PR. Stair negotiation in older people: a review. *JAGS* 2000;48:567-580.

Svanstrom L. *Falls on stairs: an epidemiological study*. Lund, Sweden: Department of Social and Preventive Medicine and Architecture, Lund Institute of Technology, 1973.

Templer J, Archea J. *Stairway design for reducing fall injuries in industry*. Georgia Institute of Technology, Pedestrian Research Lab, 1983.

Templer J. *The staircase. Studies of hazards, falls, and safer design*. Cambridge, MA: the MIT Press, 1992.

Tinetti M, Speechley M, Ginter S. Risk factors for falls among elderly persons living in the community. *N Engl J Med* 1988;319:1701-1707.

Webber GM. Accidental falls on stairs or steps in England and Wales: a study of time trends of fatalities. *J Occup Accid* 1985;7:83-99.

Williamson J, Fried L. Characterization of older adults who attribute functional decrements to "old age". *J Am Geriatr Soc* 1996;44:1429-1434.

Wyatt, J.P., Beard, D., & Busuttill, A. (1999). Fatal falls down stairs. *Injury*, 30 (1), 31-34.



Thanks everyone!

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