



UNSW
THE UNIVERSITY OF NEW SOUTH WALES



Costing & cost-effectiveness in falls prevention

NSW Falls Prevention Network Forum
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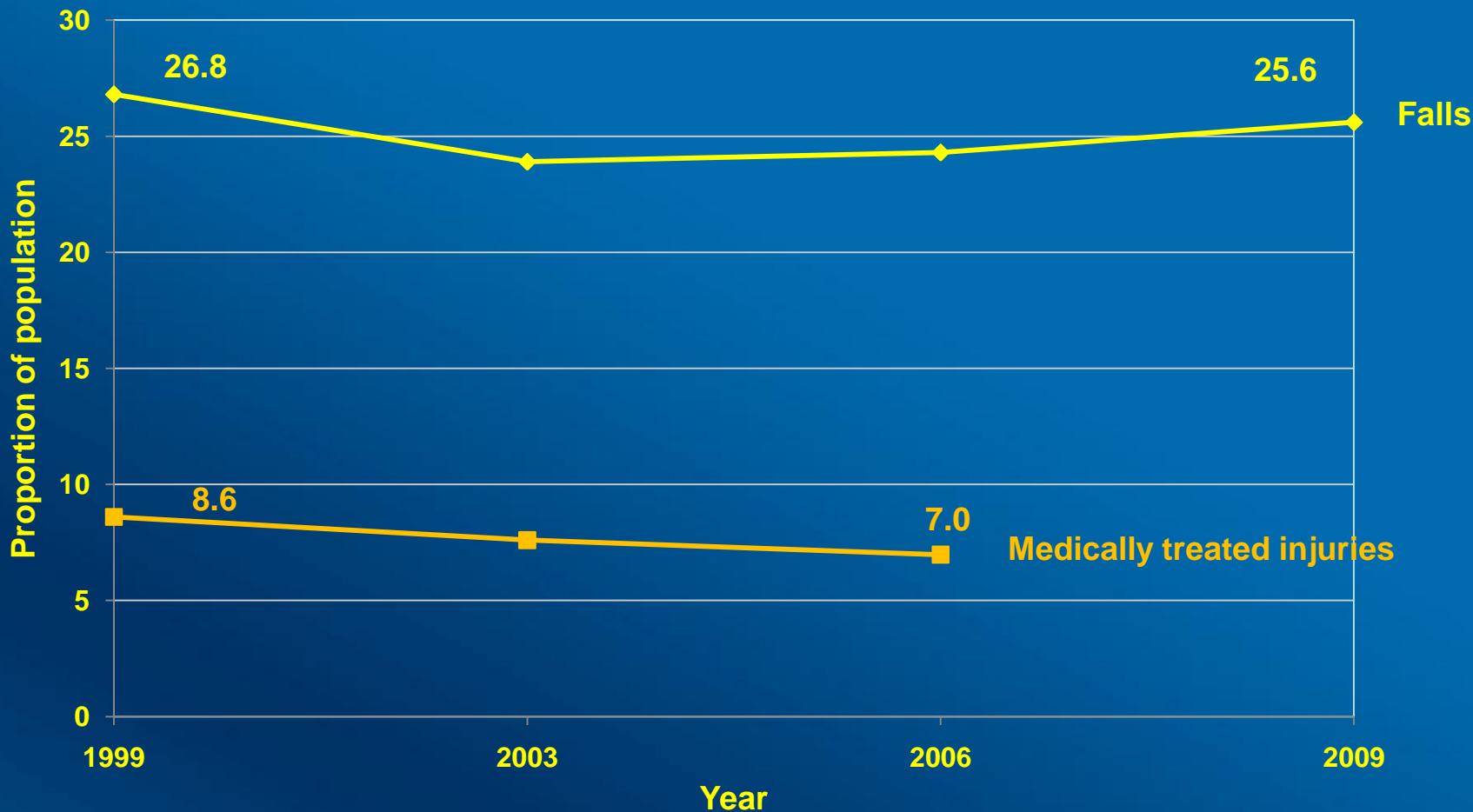
Surveillance, Monitoring & Costing

Defining the magnitude of the problem & monitoring the impact of interventions

The public health approach

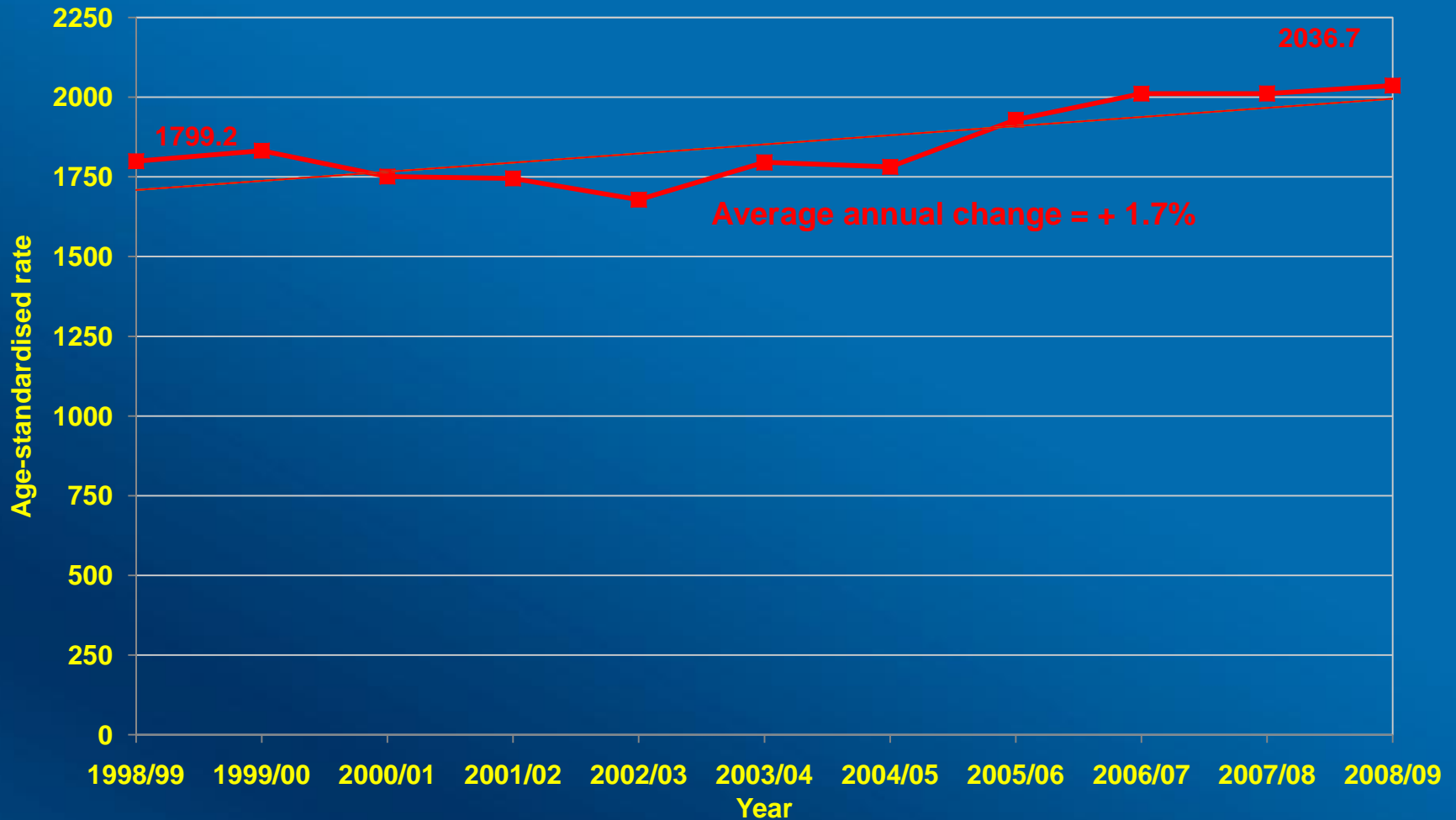


Falls & medically treated fall injuries, 65 years & older, NSW



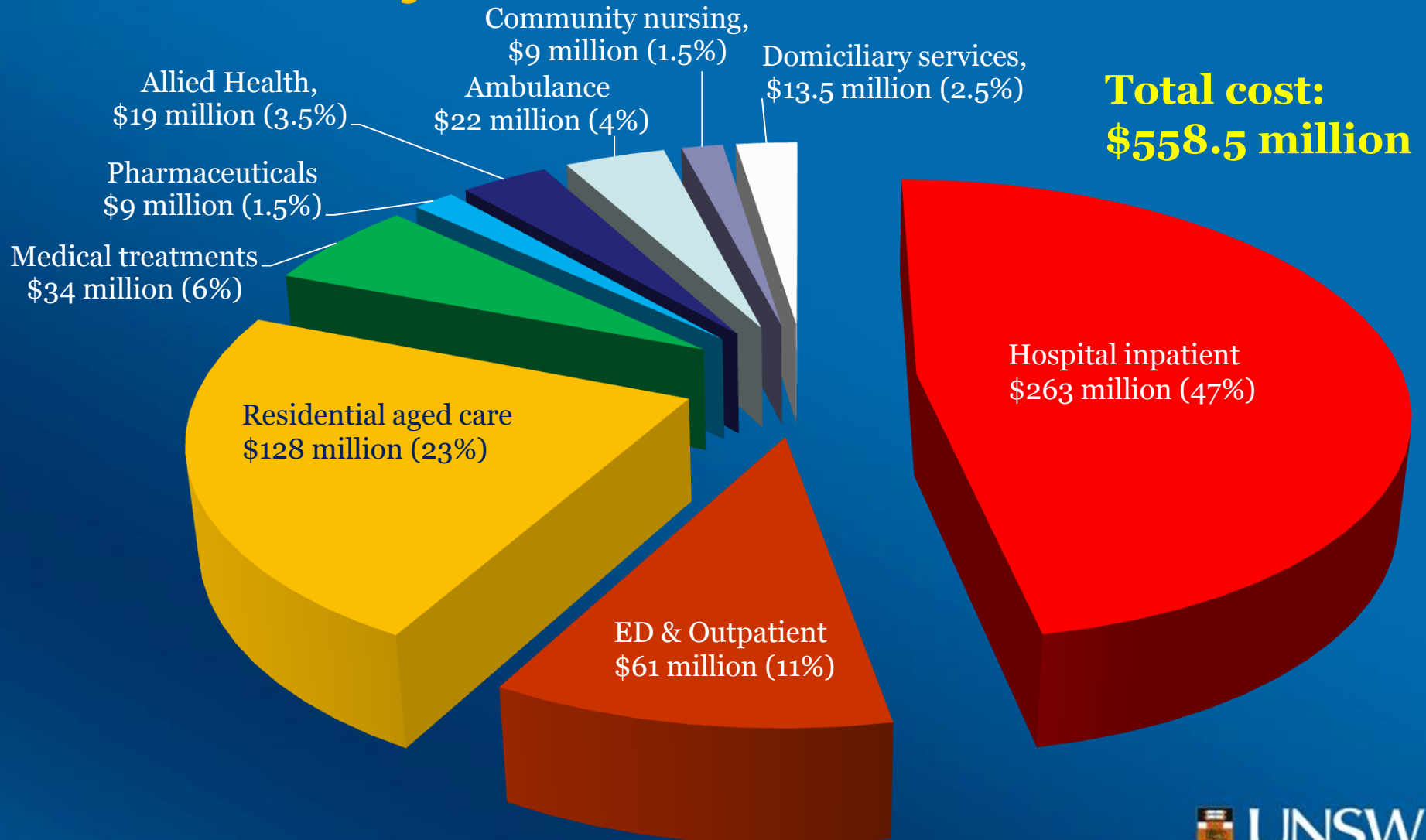
Sources: NSW Population Health Survey & 2009 Baseline Falls Prevention Survey

Fall-related admission rates 65 years & older, NSW



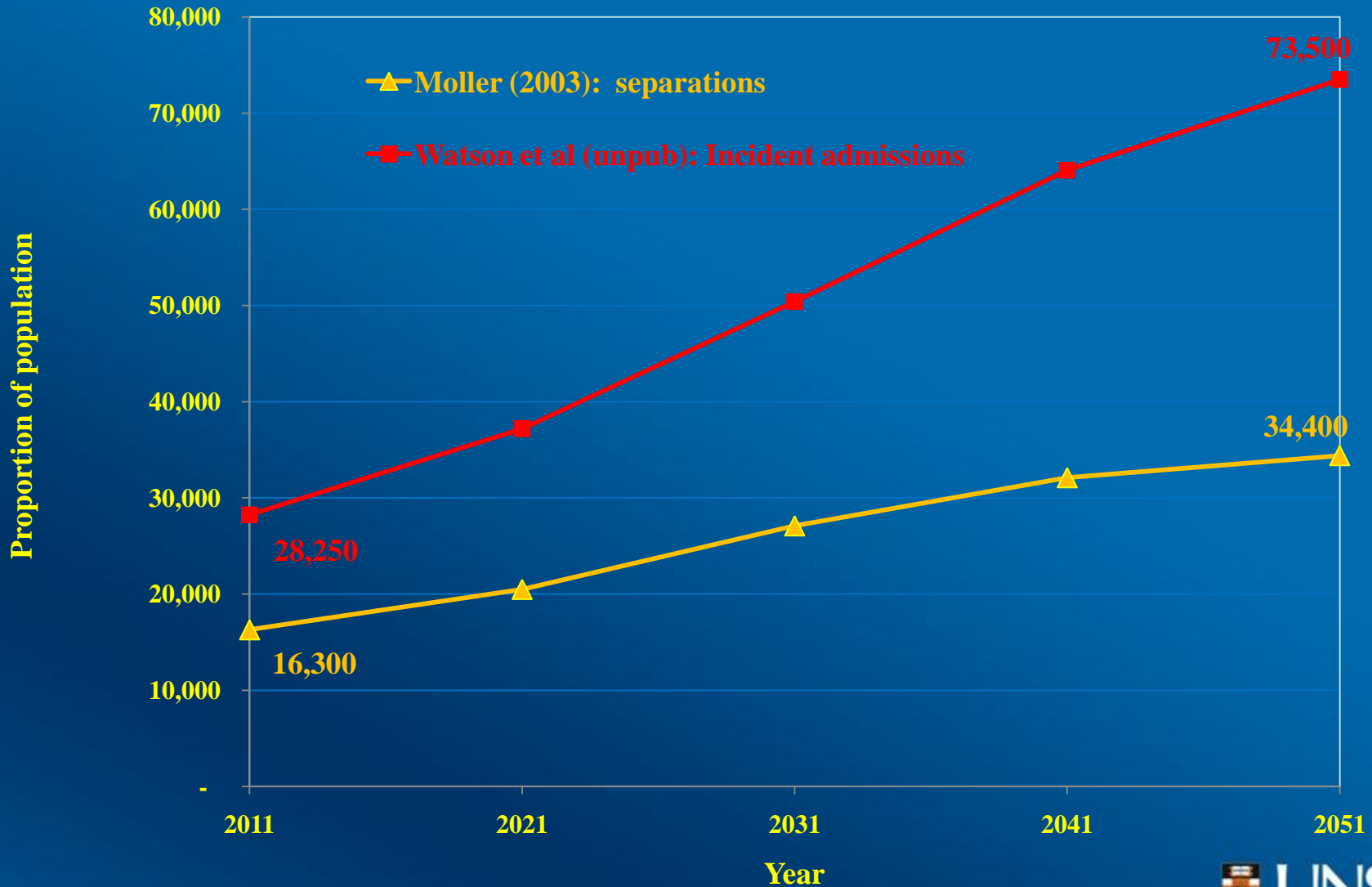
Source: Watson & Mitchell (2011, in press)

Cost of older persons' fall-related injuries, NSW, 2006/07

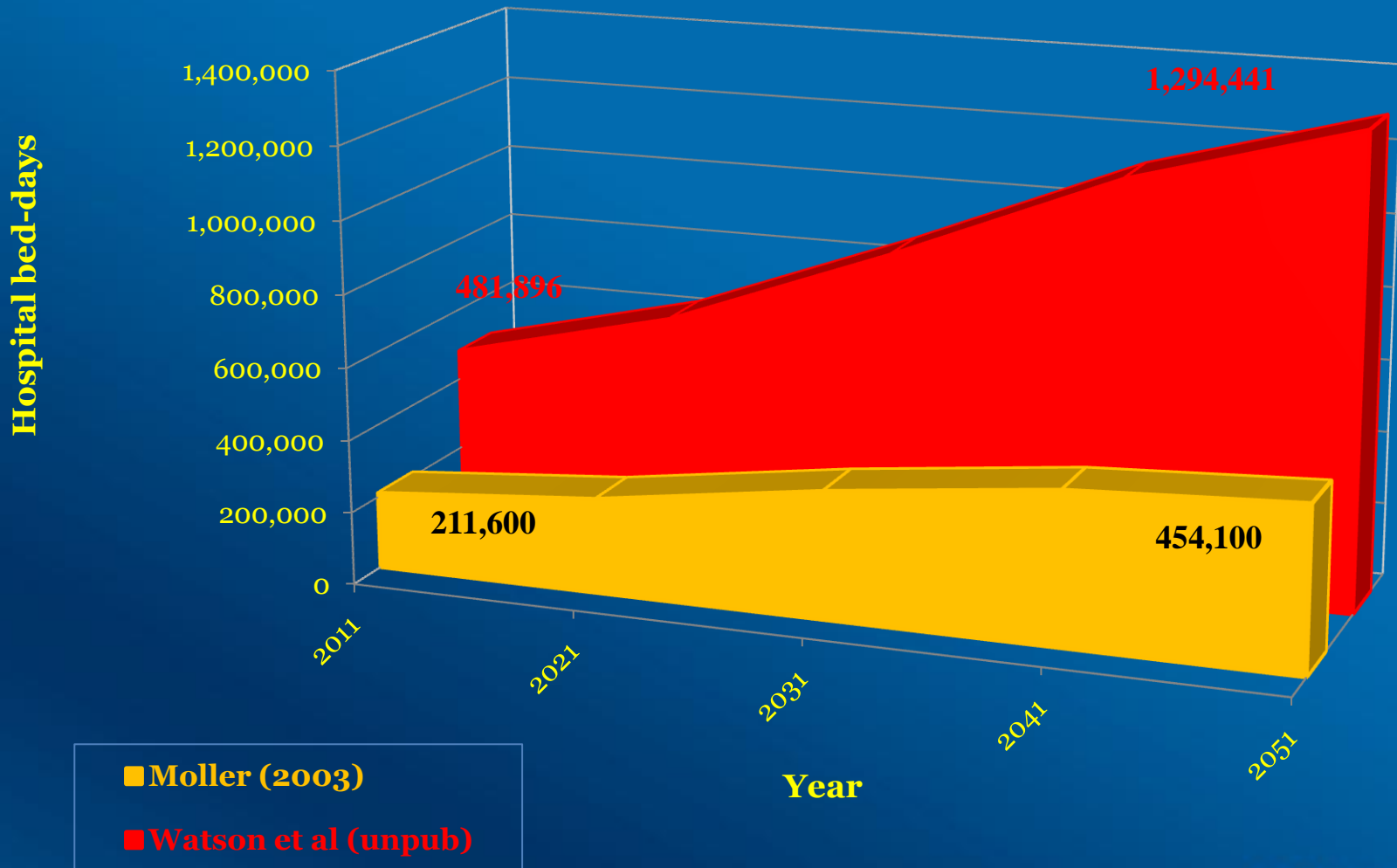


Source: Watson, Clapperton & Mitchell, 2010

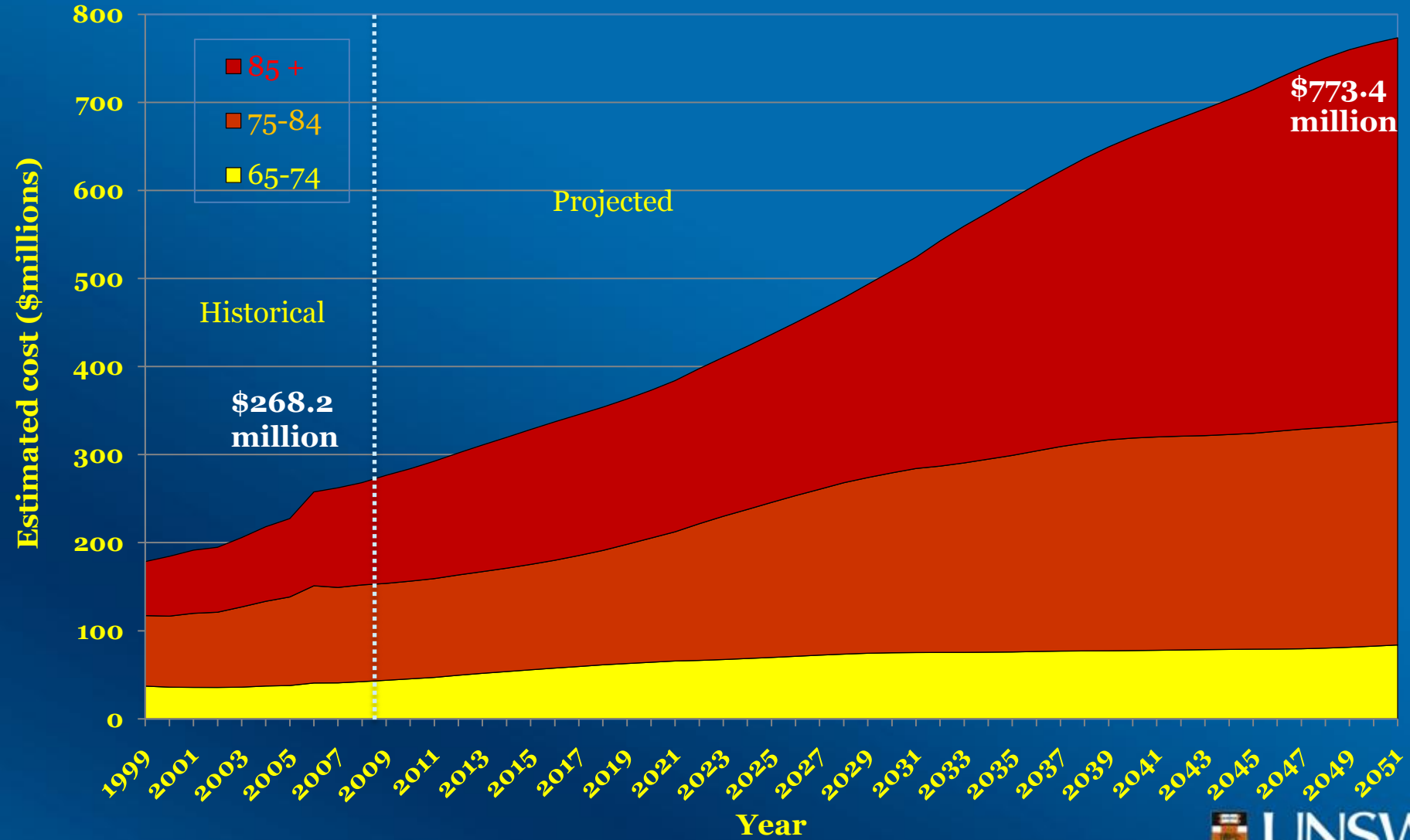
Current vs earlier projections: admissions



Current vs earlier projections: bed-days

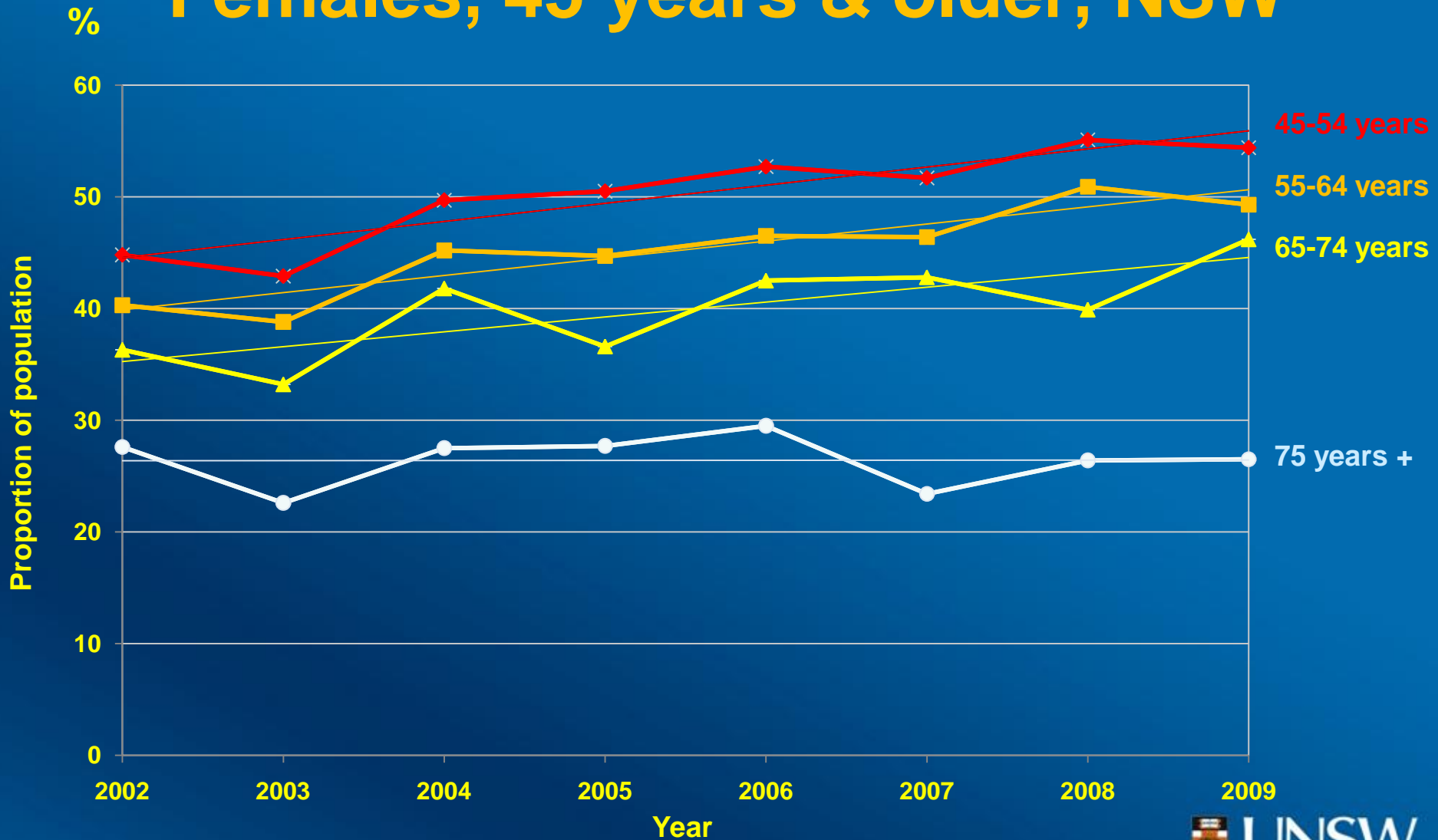


Projected cost of hospital inpatient care, 65 years & older, NSW (2006/07 \$AUD)



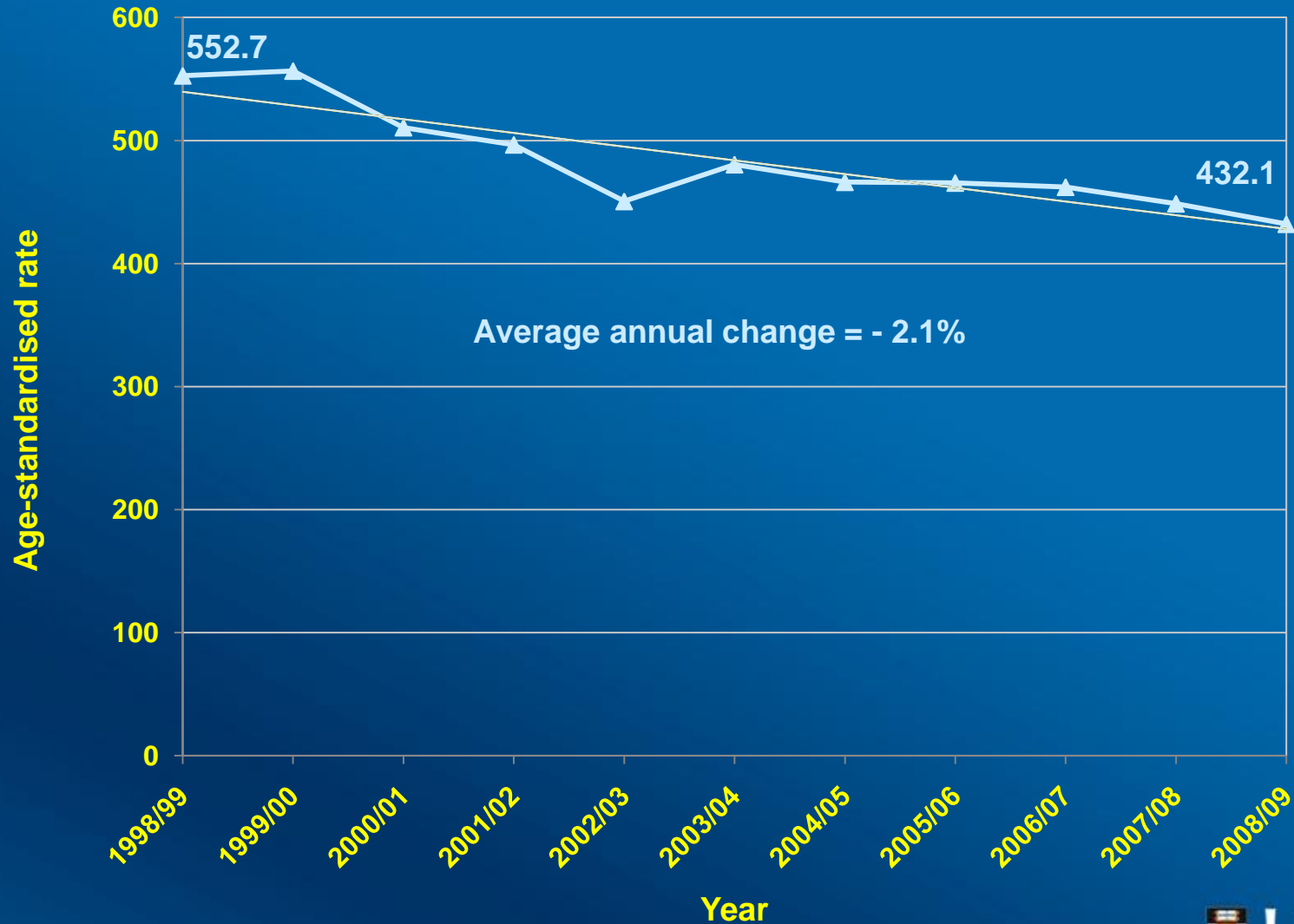
Source: Watson, Yang & Mitchell (unpublished data)

Adequate physical activity Females, 45 years & older, NSW



Source: NSW Population Health Surveys, 1999-2009.

Fall-related hip fractures



Source: Watson WL & Mitchell RJ. (in press, 2011)

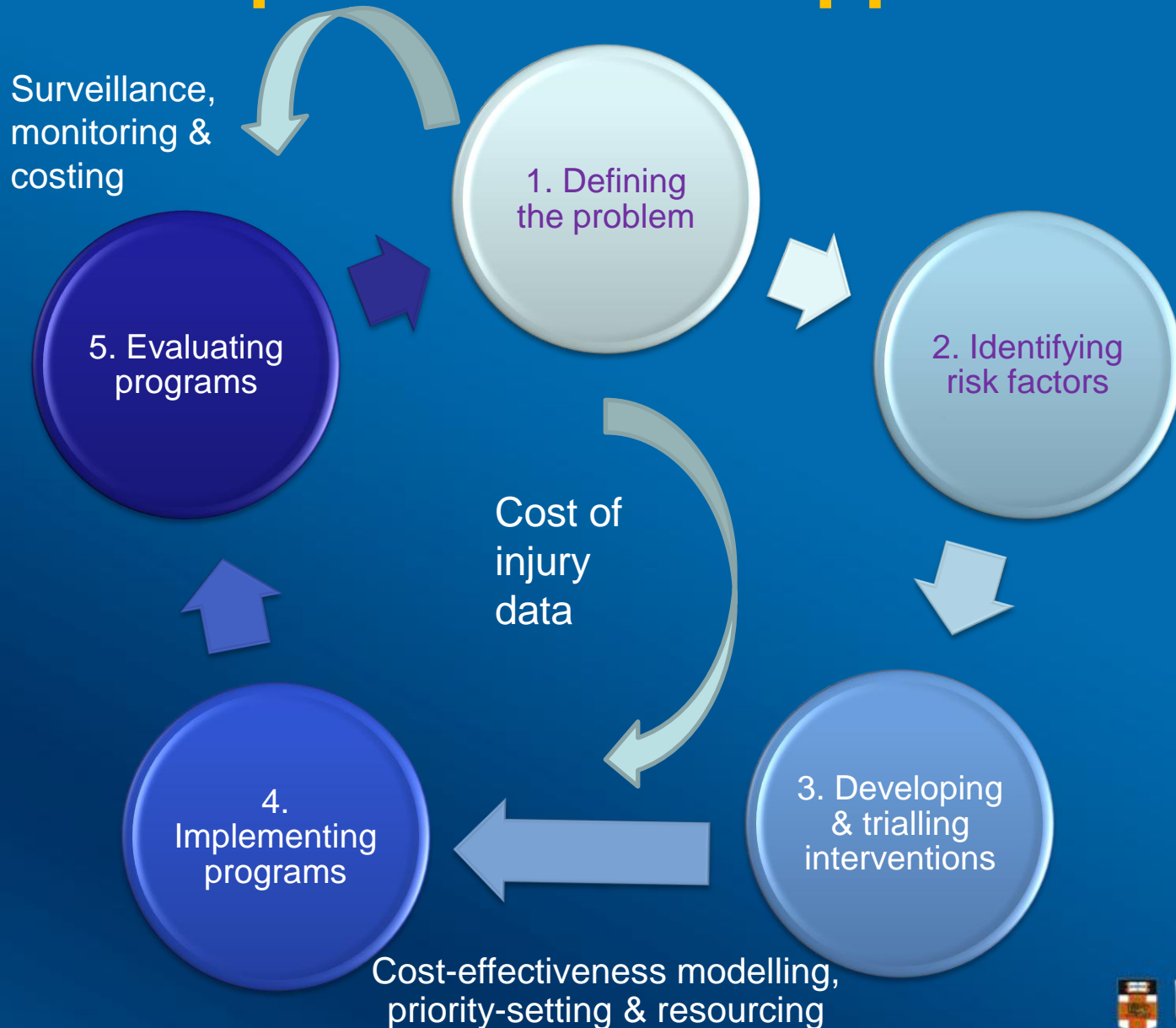
Summary

- Over the past decade:
 - Rate of self-reported falls has remained relatively stable
 - Falls hospitalisations number & rate continued to increase significantly
- Projections suggest:
 - Major impact on hospital services even if falls hospitalisation rate contained at 2008 level
- Trends which may ameliorate these impacts:
 - Proportion of older women undertaking adequate exercise increasing significantly (except 75 years +)
 - Rate of hip fracture decreasing significantly




Economic evaluation

Cost-effectiveness modelling,
priority-setting & resourcing

The public health approach







Population modelling of C-E, NSW

Intervention	Efficacy	Church et al (2011)	Day et al (2009)	Priority
General population				
• Tai chi	+++	Most cost-effective of general interventions	Maybe C-E if cost per participant can be reduced	
High risk groups (recent falls history)				
• OT delivered home hazard assessment & modification	++	Included in active multi-factorial intervention (not cost-effective)	Most cost-effective of all interventions modelled	
• Multi-factorial risk management*	++	Not cost-effective	Good clinical practice but not for widespread implementation	

* A study by Wu et al (2010) modelled a “falls rehabilitation program” (multi-factorial risk assessment with a supervised exercise program) for the U.S. Medicare population and found it to be cost-effective.

Population modelling of C-E, NSW

Intervention	Efficacy	Church et al (2011)	Day et al (2009)	Priority
Specific populations				
• Expedited cataract surgery	+	Cost-effective	Limited potential to impact falls rates	
• Psychotropic medication withdrawal	+	Cost-effective	High relative C-E but issues with implementation need to be addressed	
Residential aged care				
• Medication review	+	Highly cost-effective		
• Vitamin D	+++	Cost-effective		

Resourcing - Return On Investment

- CEAs do not inform policy-makers of the size a program needs to be, and therefore the threshold of investment required, to be cost-saving
- Need to establish potential ROI for community-based falls prevention programs
- To be efficient, it is important to know the:
 - number of clients that a program needs to service to break-even
 - ideal type of client the program should target

Examples of “break-even” analyses

- Comans et al (2009)
 - A break-even analysis of a community rehabilitation falls prevention service (*ANZJPH*)
 - Program: 2 variations of multi-disciplinary falls prevention service (group-based & individual home-based)
- Miller et al (2011)
 - Assessing the cost and potential returns of evidence-based programs for seniors (*Evaluation & the Health Professions*)
 - Program: “A Matter of Balance/Volunteer Lay Leader Model”

Conducting a "break-even" analysis

- Step 1: Review literature & estimate potential benefits of the intervention
- Step 2: Develop a cost model to estimate:
 - Fixed costs of program
 - Variable costs (per additional client)
 - Savings (medical costs averted)
- Step 3: Determine the required effect size to achieve a specified ROI
 - Number of Falls Needed to be Averted (NFNA)
 - Number of clients needed to achieve the NFNA
- Step 4: Establish the threshold of funding required

Relevant data for cost savings

Place of residence by level of care	Average cost (\$)		
	Male	Female	Persons
Community			
Hospital admissions	19,478	21,081	20,563
ED attendances	4,119	2,607	3,169
Non-hospital treatments	327	549	462
Total Community	4,147	5,290	4,722
Residential Aged Care			
Hospital admissions	11,808	10,999	11,196
ED attendances	2,826	1,762	1,985
Non-hospital treatments	241	175	196
Total Residential Aged Care	1,864	2,025	1,979
All NSW			
Hospital admissions	18,100	18,609	18,454
ED attendances	3,789	2,241	2,721
Non-hospital treatments	280	424	369
TOTAL NSW	3,366	4,211	3,906

Source: Watson, Clapperton & Mitchell, 2010

http://www.health.nsw.gov.au/pubs/2010/pdf/Incidence_Cost_of_Falls.pdf

Summary

- Strong evidence for effective interventions to prevent falls in older people
- CEAs have identified interventions that are likely to be cost-effective
- The next step requires the translation of these interventions into community-based/population level programs
- The use of break-even analysis in this process can assist in:
 - informing intervention priorities in this area,
 - providing an estimate of the threshold of investment
 - ensuring that finite resources are efficiently allocated.

Conclusion

- Population level planning a priority
- Need for coordinated implementation of high intensity prevention programs
 - Population health resources directed at reducing generic distal risk factors (generating a “low risk” population)
 - Clinical resources directed at reducing proximal risk factors (the “high risk” groups)
- *NSW Health Plan for Prevention of Falls and Harm from Falls among Older People: 2011-2015*

References:

- Church J, Goodall S, Norman R, Haas M. An economic evaluation of community and residential aged care falls prevention strategies in NSW. NSW Public Health Bulletin. in press;22(3-4).
- Comans T, Brauer S, Haines T. A break even analysis of a community rehabilitation falls prevention service. Australian and New Zealand Journal of Public Health. 2009;33(3):240-5.
- Day L, Hoareau M, Finch C, Harrison J, Segal L, Bolton T, et al. Modelling the impact, costs and benefits of falls prevention to support policy-makers and program planners. Melbourne: Monash University Accident Research Centre 2009. Report No. 286.
- Hall, S.C. Phillips L. Dubois N. Follett and N. Pancaningtyas (2010). Preventing Falls, Promoting Health, Engaging Community: Evaluation Report of the Greater Southern Area Health Service Physical Activity Leaders Network Tai Chi Program. Canberra, ANU Medical School.
- McClure RJ, Hughes K, Ren C, McKenzie K, Dietrich U, Vardon P, et al. The population approach to falls injury prevention in older people: findings of a two community trial. BMC Public Health. 2010;10(1):79.
- Miller TR, Dickerson JB, Smith ML, Ory MG. Assessing Costs and Potential Returns of Evidence-Based Programs for Seniors. Evaluation & the Health Professions. 2010.
- Watson W, Mitchell R. Conflicting trends in fall-related injury hospitalisations among older people: Variations by injury type. Osteoporosis International. 2011 (in press) (*Online First*TM 16/12/2010).
- Watson W, Clapperton A, Mitchell R. The incidence and cost of falls injury among older people in New South Wales, 2006/07. Sydney: NSW Department of Health. 2010.
- Wu S, Keeler EB, Rubenstein LZ, Maglione MA, Shekelle PG. A Cost-Effectiveness Analysis of a Proposed National Falls Prevention Program. Clinics in Geriatric Medicine. 2010;26(4):751-66.