Australian Government
Australian Institute of Health and Welfare

Fall-related hospitalisations among older people

Sociocultural and regional aspects

Clare Bradley, James E Harrison

Flinders UNIVERSITY

AIHW INJURY RESEARCH AND STATISTICS SERIES № 33

Fall-related hospitalisations among older people

Sociocultural and regional aspects

The Australian Institute of Health and Welfare is Australia's national health and welfare statistics and information agency. The Institute's mission is *better health and wellbeing for Australians through better health and welfare statistics and information*.

Please note that as with all statistical reports there is the potential for minor revisions of data in *Fall-related hospitalisations among older people: sociocultural and regional aspects* over its life. Please refer to the online version at <www.nisu.flinders.edu.au>.

Injury Research and Statistics Series
Number 33

Fall-related hospitalisations among older people

Sociocultural and regional aspects

Clare Bradley
and
James E. Harrison

May 2007

Australian Institute of Health and Welfare
Canberra

AIHW cat. no. INJCAT 97

This publication is part of the Australian Institute of Health and Welfare's Injury Research and Statistics Series. A complete list of the Institute's publications is available from the Institute's website (www.aihw.gov.au). Electronic copies of publications in this series can be downloaded from the Research Centre for Injury Studies website (www.nisu.flinders.edu.au)

ISSN 1444-3791
ISBN 978 1 74024 681 1

Suggested citation

Bradley C and Harrison JE 2007. Fall-related hospitalisations among older people: sociocultural and regional aspects. Injury research and statistics series number 33. (AIHW cat. no. INJCAT 97). Adelaide: AIHW.

Any enquiries about or comments on this publication should be directed to:

Clare Bradley
Research Centre for Injury Studies
Flinders University of South Australia
GPO Box 2100,
Adelaide 5001, South Australia

Phone: (08) 8201 7602
email: clare.bradley@flinders.edu.au

Published by Australian Institute of Health and Welfare

Proofreading and Layout by Stacey Avefua

Contents

Executive summary

The ageing of the Australian population has enlarged the population at high risk of fall-related injury and population projections imply substantial increase in years to come (Moller 2003). In 2001, 12.4% of the Australian population was aged 65 years and older and population projections suggest that by 2051, this group will account for over 24% of the total population (Moller 2003).

A large proportion of the Australian population was born overseas, and this is also true of the older part of the population. About one in three Australians aged 65 years or over was born overseas (ABS 2002; ABS 2004a). Historically, people born in the United Kingdom have predominated in the overseas-born population (ABS 2005). Changed migration patterns since the Second World War have resulted in an older population that is highly diverse culturally and linguistically, and will remain so for at least several decades (Gibson et al. 2001; AIHW 2004b).

The proportion of the population aged 65 years and older from culturally and linguistically diverse backgrounds (that is, people whose country of birth is not Australia, New Zealand, the United Kingdom, Ireland, the United States of America, Canada or South Africa) is projected to increase to 22.5% (653,800 people) by 2011 and to number nearly one million by 2026 (Gibson et al. 2001). This part of the older population is not only growing more quickly than the Australian-born segment, but is also ageing more rapidly. In 1997, persons aged 80 years or older made up 16.3% of the culturally and linguistically diverse population aged 65 years and older. This proportion is projected to increase to 28.7% in 2026. The equivalent proportions for the Australian-born older population are 22.9% in 1997 decreasing, slightly, to 22.4% in 2026 (Gibson et al. 2001). By 2026, one in four Australians aged 80 years or over will be from a culturally and linguistically diverse background.

This study found that the rate of hospitalisation due to injurious falls in the older Australian population in the financial years 2000–01, 2001–02 and 2002–03 conforms to the 'healthy migrant' hypothesis: rates were highest in the Australian-born segment and lowest among older people from culturally and linguistically diverse backgrounds. Older people from predominantly English-speaking countries had higher rates of hospitalised fall injuries than other immigrants, though generally not as high as for Australian-born people of the same age. Rates differ considerably between immigrants born in different countries and regions. This variation, combined with the post WW2 pattern of waves of immigration of mainly young people from a succession of countries of origin, provides a basis for expecting a varying though generally downward effect of migration on rates of hospitalisation due to falls.

While there is reason to believe that overseas-born Australians are generally healthier than the Australian-born population (AIHW 2004a), increasing age is a risk-factor for serious falls irrespective of place of birth and the ageing of Australia's migrant population must be taken into account in falls prevention strategies. Rates of hospitalisation due to falls in these groups are still substantial and contribute to the nation's health care burden.

An implication of the large projected rise in the population of older Australians who were born in countries in which English is not the usual first language is an increasing requirement for falls prevention and treatment programs tailored to meet particular linguistic and cultural requirements and differences in health-seeking behaviours and attitudes. Since migrants from particular places tended to settle in particular parts of specific states (e.g. capital cities, or particular areas within capital cities), a regional approach will be necessary.

Introduction

Falls are common among older people and often result in fractures or other serious injuries. In Australia, approximately one in three older persons living at home experience a fall annually (Lord et al. 1993; Dolinis et al. 1997; Morris et al. 2004), with approximately 20% of these requiring hospitalisation (Hendrie et al. 2004). In the 2004–05 *National Health Survey* approximately 4% of people aged 75 years and older reported having suffered an injury as a result of a 'low fall' in the previous four week period (ABS 2006a). Falls account for over half of injury-related hospitalisations for people aged 65 years and older and more than 1,000 people in this age group die from a fall in a calendar year (Cripps et al. 2002; Bradley & Harrison forthcoming; Kreisfeld & Harrison forthcoming).

The cost to the heath system of serious fall related injuries is considerable, being estimated to account for 70% of injury related costs in older people (Lord et al. 2001). The direct cost to the health system (including hospitalisation, doctor visits, medications and institutional care) for falls in older people in Australia was estimated to be $406.4 million in the financial year 1993–94 (Mathers & Penm 1999). More recent calculations using a similar methodology estimated this cost to be $498.2 million in 2001 (Moller 2003). Analysis of the Australian Refined Diagnosis Related Groups of acute admissions for fall-related conditions by people aged 65 years and older estimated a direct cost to hospitals of $564.7 million in 2003–04 (Bradley & Harrison forthcoming). Estimates of the costs associated with falls which include 'lifetime' costs, that is indirect and/or informal costs (e.g. lost production due to incapacitation or premature death and costs borne by the family or community) exceed $1 billion per year (Moller 1998).

Risk factors for falls and fall-related injury include increasing age, gender, medication use and predisposing medical conditions including Parkinson's disease, osteoporosis and vision problems (Oxley et al. 1994; Lewis et al. 1997; Fuller 2000; Lord et al. 2001; Wood et al. 2002; Morris et al. 2004). Social factors can also affect the risk of falls in the elderly (Dolinis et al. 1997; Gill et al. 2005). For example, it has been demonstrated that older people of lower socio-economic status have a higher rate of hospitalisation due to falls (West et al. 2004) and that lower socio-economic status increases the risk of inappropriate use of medications, a risk factor for falls (Lechevallier-Michel et al. 2005). Further, high levels of social integration may be protective against falls (Faulkner et al. 2003) and country of birth can influence risk of osteoporotic fracture (Marquez et al. 2001; Lauderdale et al. 2003). As such, the social composition of a particular society will in part determine the rate at which the older population will sustain falls, and the health system costs associated with hospitalisation due to falls.

The Australian population

As in other developed nations, the ageing of the Australian population has enlarged the population at high risk of fall-related injury and population projections imply substantial increase in years to come (Moller 2003). In 2001, 12.4% of the Australian population was aged 65 years and older and population projections suggest that by 2051, this group will account for more than 24% of the total population (Moller 2003).

A large proportion of the Australian population were born overseas. Overseas-born Australians were estimated to represent nearly a quarter of the total population, numbering 4.8 million people, in June 2005 (ABS 2006b). People born in the United Kingdom, New Zealand, Italy, China and Viet Nam made up the largest groups in this overseas-born

population (ABS 2006b). Trends in migration flows, as well as the tendency for migrants to be young adults when migrating, impact on the diversity of cultural backgrounds in different age groups (ABS 2004a; AIHW 2004b; ABS 2006b). In June 2005, the median age of all overseas-born Australians was 47 years, however the median age for people born in the United Kingdom, Italy, Greece and Germany was substantially higher than this (>= 54 years, ABS 2006b). People born in Taiwan, Thailand, Afghanistan and Sudan had the lowest median ages (<= 30 years, ABS 2006b).

Of older Australians, aged 65 years and over, one third were born overseas (ABS 2002; ABS 2004a). Historically, the people born in the United Kingdom have dominated the overseas-born population (ABS 2005). Changing migration patterns following the Second World War (WW2), however, have resulted in an older population which is becoming highly culturally and linguistically diverse, and will be so for at least several decades (Gibson et al. 2001; AIHW 2004b). Currently, the largest group of overseas-born older Australians are people born in the United Kingdom (ABS 2002). Italians, Greeks, people from the Former Yugoslav Republics and Germans are the four next biggest groups of overseas-born older Australians, reflecting post-WW2 migration flows which peaked in the 1960s and 1970s (ABS 2002). By 2026, people from Viet Nam, China and the Philippines will also form a large proportion of the older population as a result of changes in Australian immigration policy from 1973 (Gibson et al. 2001; ABS 2002; AIHW 2004b).

The proportion of the population aged 65 years and older from culturally and linguistically diverse backgrounds (that is, people whose country of birth is not Australia and its external territories, New Zealand, the United Kingdom, Ireland, the United States of America, Canada or South Africa) is projected to increase to 22.5% (653,800 people) by 2011 and to number nearly one million by 2026 (Gibson et al. 2001). This cohort of the older population is not only increasing at a rate faster than that of the Australian-born, but is also ageing more rapidly. The proportion of the older population from culturally and linguistically diverse backgrounds aged 80 years or older is projected to increase from 16.3% in 1996 to 28.7% in 2026. This compares to the Australian-born population where those aged 80 years or older represented 22.9% of the older population in 1996 and will decrease slightly to 22.4% in 2026 (Gibson et al. 2001). As such, by 2026 one in four people aged 80 years and over will be from culturally and linguistically diverse backgrounds.

With such a culturally diverse older population, much thought needs to be put into health service planning in terms of culturally and linguistically appropriate aged care provisions and prophylactic programs. In addition to English, Italian, Greek and German were the three most common languages spoken at home by older Australians according to the 2001 Census (Prometheus Information Pty Ltd 2005). By 2026, Cantonese, Vietnamese and Arabic will also be among the most common languages spoken by the population aged 65 years and older. Projections also indicate large increases in the number of older people who speak Mandarin, Tagalog, Spanish or Croatian (Gibson et al. 2001). The degree to which ethno-specific services will be required is debateable, but nonetheless a small proportion of the older culturally and linguistically diverse population will require some specifically-targeted aged care services, principally those with limited English language skills (Rowland 1999; ABS 2002). Proficiency in English, however, is not the only inhibiting factor to consider in health service planning for the older culturally and linguistically diverse population. For example, health-seeking behaviours differ between cultural groups (Mathers 1996; Moxham & Pegg 1998; Pang et al. 2003) and health intervention programs must account for this.

The health status of the migrant population

While country of birth can influence the risk of osteoporotic fracture (Marquez et al. 2001; Lauderdale et al. 2003), there is reason to believe that overseas-born Australians are generally healthier than the Australian-born population (AIHW 2004a). The 'healthy migrant' hypothesis seeks to explain the frequent observation of better levels of health in migrant populations compared to the home country or the native-born population of the host country (Mathers & Merton 1994; Razum et al. 1998; Taylor et al. 1999; Kouris-Blazos 2002). The hypothesis suggests that a selection effect at the time of migration results in only the healthier members of the population succeeding in the formal migrant-selection process (Razum et al. 2000; Kandula et al. 2004; McDonald & Kennedy 2004).

While the 'healthy migrant' effect is known to persist even after decades of life in the host country, the effect may lessen over time due to the influence of the dominant culture (Kouris-Blazos 2002; McDonald & Kennedy 2004). However health status generally remains better than that of the dominant culture and the 'healthy migrant' effect may also confer benefits to the migrants' host country-born children (Razum et al. 1998).

Rates of hospitalisation and deaths from all causes are lower for overseas-born Australians (Young 1992; AIHW 2004a). Further, research has demonstrated that Australians who were born overseas are hospitalised for injury significantly less than the Australian-born population and that deaths due to injury, at least for men, are lower also (Mathers 1996; Strong et al. 1998; AIHW 2004a). Specific examination of the healthy migrant effect in terms of injuries sustained due to falls has not been undertaken in Australia. However, a population survey of community-dwelling older adults in South Australia suggests that people from a culturally and linguistically diverse background are at lower risk of falls than the Australian-born (Gill et al. 2005) and a study of people of Japanese ancestry living in Hawaii indicates that they have a lower rate of falls compared to the white United States population (Davis et al. 1997).

Policy and planning

Hospitalised fall-related injury of older persons in Australia is predicted to increase almost threefold in the next fifty years, requiring over three quarters of a million additional bed days and an estimated 3,320 residential care places in 2051 (Moller 2003). Public health policy will need to continue to include falls in the elderly as an injury prevention priority (Pointer et al. 2003).

Aside from any benefits that the 'healthy migrant' effect may confer, lower socio-economic status and low levels of social integration, both common features of migrant groups, are risk factors for injury (Cubbin et al. 2000; Laflamme & Eilert-Petersson 2001; Stokes et al. 2001; Brownell et al. 2002; Cubbin & Smith 2002; Lyons et al. 2003; Jones et al. 2004; Ferrando et al. 2005). As injuries due to falls make up a considerable component of the total injury burden, particularly at older ages, it is important to ensure that falls prevention programs are applicable to the rapidly-increasing older overseas-born population.

Certain forms of exercise reduce risk of falling; programs incorporating balance training and weight-bearing movements have demonstrated efficacy in reducing the rate of falls in older people (Day et al. 2002; Shigematsu et al. 2002; Chang et al. 2004; Suzuki et al. 2004). The concept of exercise, however, is open to cultural interpretation. Surveys of migrant health (not limited to older persons) have reported that many state that they do not undertake exercise, discounting the physical activity involved in completing domestic tasks or manual labour (Markovic et al. 2002; Kandula et al. 2004). Also, an Australian study directly observing older migrants' attitudes to a falls-prevention exercise program found that certain subgroups were more accepting of structured exercise programs and the location and spoken language of the

exercise programs were of importance to others (Lewis et al. 1997). Consequently, if prophylactic strategies, such as exercise-based falls prevention programs, are to adequately address the needs of older people, including those from culturally and linguistically diverse backgrounds, they will have to be appropriately targeted to incorporate the different interpretations of the core concepts of the prevention strategy.

Regional differences

Falls prevention programs and services also need to consider the regional differences in the older population's distribution. Migrants to Australia tend to settle in capital cities, and in particular areas within capital cities (ABS 2004b; AIHW 2004b). Currently, overseas-born people make up about 49% of the population in the Fairfield-Liverpool statistical subdivision (SSD), as compared to an average of 33% for the whole of Sydney, while 54% of the population in the Greater Dandenong City SSD were born overseas as compared to an average of 30% for all of Melbourne (ABS 2004b). What is more, overseas-born Australians represent over 60% of the total older population of these two SSDs (Prometheus Information Pty Ltd 2005). Further, different migrant groups also choose to settle in specific cities rather than cities per se. For example, there are larger concentrations of Chinese immigrants living in Sydney, Greeks in Melbourne, Italians in Adelaide and Indians in Perth (AIHW 2004b).

Differences such as these may impact on both the rate of falls experienced in different communities—the size of the problem—as well as the appropriateness and efficacy of different types of prevention programs.

Summary

This exploratory study highlights the diversity of the Australian population aged 65 years and older, now and in coming decades, and emphasizes the need for culturally-appropriate health promotion strategies, including those for falls prevention.

Analyses of national data describe the general pattern of falls related hospitalisation according to country of birth. Additional small area analyses go some way to describing the degree to which the diversity of the local population may influence both the level of falls related hospitalisation and the considerations required for designing appropriate falls prevention strategies within the community.

The older population of Australia is already highly culturally and linguistically diverse, and it will become more so during coming decades. This implies a need for increased emphasis on linguistically and culturally-appropriate falls prevention programs.

Methods

Separations data from the National Hospital Morbidity Database were provided by the Australian Institute for Health and Welfare (AIHW). This exploratory study combined three years of data for hospitalised episodes that concluded during the period from 1 July 2000 to 30 June 2003. Separations in the two years 2000–01 and 2001–02 were coded to the second edition of the Australian clinical modification of the 10th revision of the International Classification of Diseases (ICD-10-AM) while separations for the year 2002–03 were coded to the third edition of the ICD-10-AM (NCCH 2000; NCCH 2002). Changes in coding between the two editions of the ICD-10-AM (generally minor refinements to coding specificity) did not affect this analysis.

Separations meeting the following criteria were included in the analysis;

- Episodes of admitted (inpatient) care in any Australian acute-care hospital that ended during the period from 1 July 2000 to 30 June 2003; where
- The patient was aged 65 years or older;
- Had a principal diagnosis code in the range S00–T89; and
- Had a leftmost external cause code in the range W00–W19.

Population data

Australian hospital statistics are presented in financial year blocks. As such, annual rates of hospitalisation are usually calculated using 31 December population denominators, the mid-point of the financial year. However, population data by country of birth is only available for 30 June dates, the mid-point of the calendar year. In this study, the 30 June population by country of birth data for the endpoint of the relevant financial year have been used as population denominators for the calculation of rates. That is, rates for the financial years 2000–03 combined have been calculated using the aggregate estimated resident population for 30 June 2001, 30 June 2002 and 30 June 2003.

National population data at 30 June (by age, sex and country of birth) was provided by the AIHW for each year of the study period, as described above. The 30 June 2001 estimated resident population (derived from the 2001 Census of Population and Housing) for individual states was also obtained from the AIHW. Population estimates for small areas (e.g. statistical divisions), again derived from the 2001 Census of Population and Housing, were extracted from *HealthWIZ* (Prometheus Information Pty Ltd 2005).

Country of birth

This analysis used the Australian Standard Classification of Countries ('SACC', ABS 2004d). The SACC codes 245 individual 'countries' (third-level units of the structure, including some 'not elsewhere classified' categories, ABS 2004d) and provides a number of possible aggregation groupings. The two aggregations used in this analysis were;

- major regions of origin (9 regions), and
- minor regions of origin (27 regions).

Many small cell-values occurred when these categorisations were applied to the study data. Consequently, a broader categorisation of country of birth was used for much of the analysis: Australia; other predominantly English-speaking countries; and non-English speaking countries. In recent years the term 'culturally and linguistically diverse' has been used in preference to 'non-English speaking background' as many migrants speak English well but

have cultural backgrounds very different to those of Anglo-Celtic Australians (see Gibson et al. 2001). However, this concept does not provide an easy equivalent term for English-speaking migrants. As such, in this report overseas-born Australians from (the predominantly English-speaking countries) New Zealand, the United Kingdom, Ireland, the United States of America, Canada or South Africa are referred to as Migrant Group 1 and overseas-born Australians from all other countries (i.e. culturally and linguistically diverse) are referred to as Migrant Group 2.

A full list of the SACC codes, countries of birth and their categorisations is provided in the end pages of this report.

Rates

Rates of hospitalisation for fall-related injuries per 100,000 population were calculated from case counts grouped by age, sex, birthplace and place of usual residence.

The age distribution of the population aged 65 years and older differs between jurisdictions, remoteness zones and genders, and is changing over time. In this report most rates for the whole age range 65 years and older have been adjusted using the direct method, in order to allow comparisons after accounting for differences in age-composition. The Australian population at 30 June 2001 has been used as the standard.

As state and small area population data were only available for 30 June 2001, annual average rates of hospitalisation for these topics were calculated for the two financial years 2000–01 and 2001–02 (combined).

Results

All Australia

Fall-related hospitalisations for people aged 65 years and older in the financial years 2000–01, 2001–02 and 2002–03 were combined for analysis. The age-standardised rate of hospitalisations for injuries due to falls for all people aged 65 years and older in 2000–03 was 2,422.0 per 100,000 population. The age-standardised rate of hospitalisation for falls for Australian-born people aged 65 years and older was 2,498.1 per 100,000 population, which was significantly higher than the rate for overseas-born Australians (see Figure 1). Further, overseas born Australians from Migrant Group 1 (New Zealand, the United Kingdom, Ireland, the United States of America, Canada and South Africa) had significantly higher rates of hospitalisation due to falls than those in Migrant Group 2 (all other countries). The age-standardised rate of hospitalisation for falls for older people in Migrant Group 1 was 2,070.3 per 100,000 population in 2000–03 while the age-standardised rate of hospitalisation for falls for older people in Migrant Group 2 was 1,788.6 per 100,000 population.

A similar pattern was observed for both males and females aged 65 years and older from the three broad country of birth categories (Figure 2). Further, the male:female ratio of age-standardised rates was lower for both Migrant Group 1 (0.55:1.00) and Migrant Group 2 (0.54:1.00) than for the Australian-born (0.60:1.00). The lower rate ratios for overseas-born males aged 65 years and older suggest that males have a lower risk of falls than Australian-born males, relative to the respective rates of falls by females.

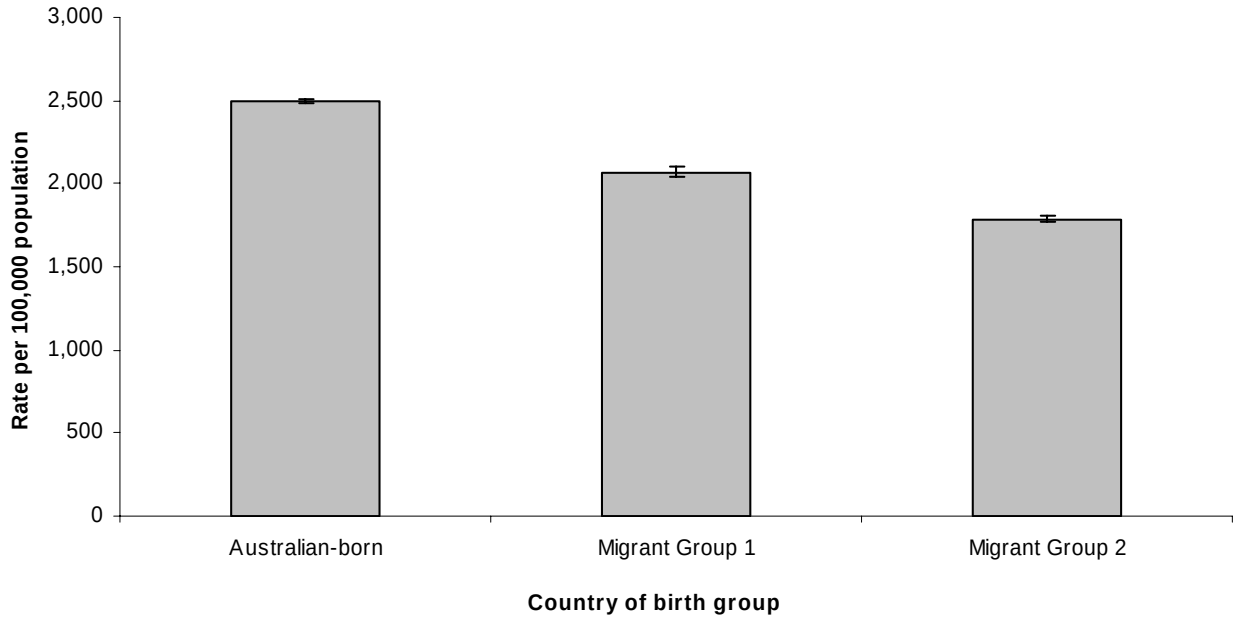


Figure 1: Age-standardised rates of hospitalisation due to falls by country of birth group, all persons aged 65+ years, Australia, 2000–03 (combined)

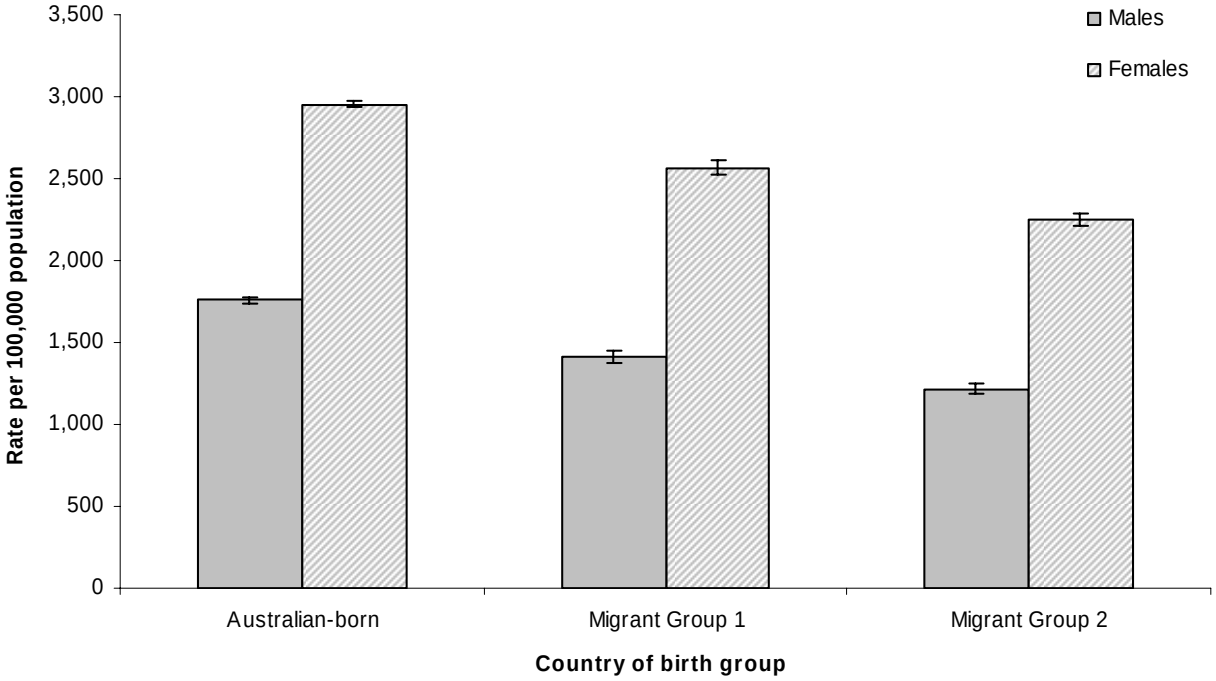


Figure 2: Age-standardised rates of hospitalisation due to falls by country of birth group, males and females aged 65+ years, Australia, 2000–03 (combined)

Age-specific rates of falls increased markedly after the age of 75 years for all country of birth groups. Figure 3 and Figure 4 describe the age-specific rates of hospitalised falls for males and females aged 65 years and older for the years 2000–03. For both males and females, the age-specific rates of hospitalised falls injuries are significantly higher for the Australian-born than for overseas-born Australians in each age group and again, higher rates were observed for overseas born Australians from Migrant Group 1 than for those in Migrant Group 2.

For males aged 65–69 years, the rate of hospitalised falls injuries for the Australian-born was 640.8 per 100,000. For males 65–69 years in Migrant Group 1 the rate was 464.9 per 100,000 and for males 65–69 years in Migrant Group 2 this rate was lower again, 452.8 per 100,000 population. At ages 85 years and older, the rate of falls injury hospitalisation was 5,702.8 per 100,000 for Australian-born males, 5,133.3 per 100,000 for Migrant Group 1 males and 4,121.4 per 100,000 for males in Migrant Group 2.

For females aged 65–69 years, the rate of hospitalised falls injuries was 927.7 per 100,000 population for the Australian-born, 849.8 per 100,000 for females in Migrant Group 1 and 741.4 per 100,000 population for females in Migrant Group 2. At ages 85 years and older, the rate of falls injury hospitalisation increased to 9,135.2 per 100,000 for Australian-born females, 7,981.4 per 100,000 for Migrant Group 1 females and 6,731.3 per 100,000 for females in Migrant Group 2.

It is also noteworthy that the difference in the rate of falls between the three country of birth groups widened with age, particularly for females aged 85 years and older.

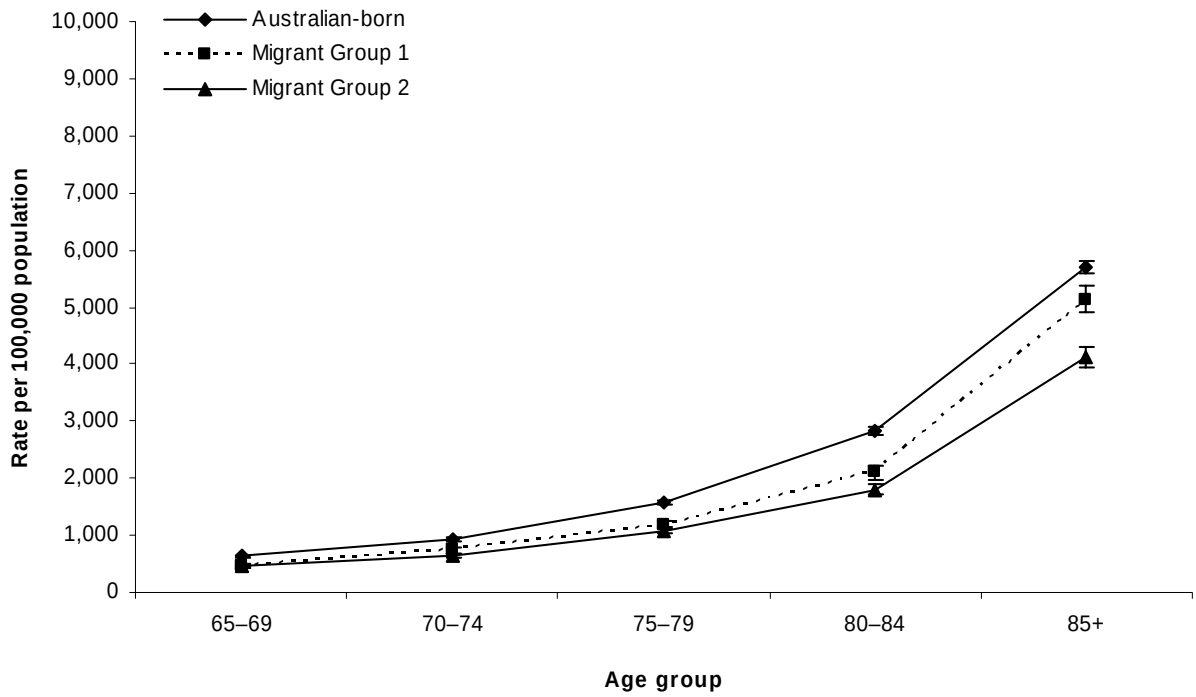


Figure 3: Age-specific rates of hospitalisation due to falls by age group, by country of birth group, males aged 65+ years, Australia, 2000–03

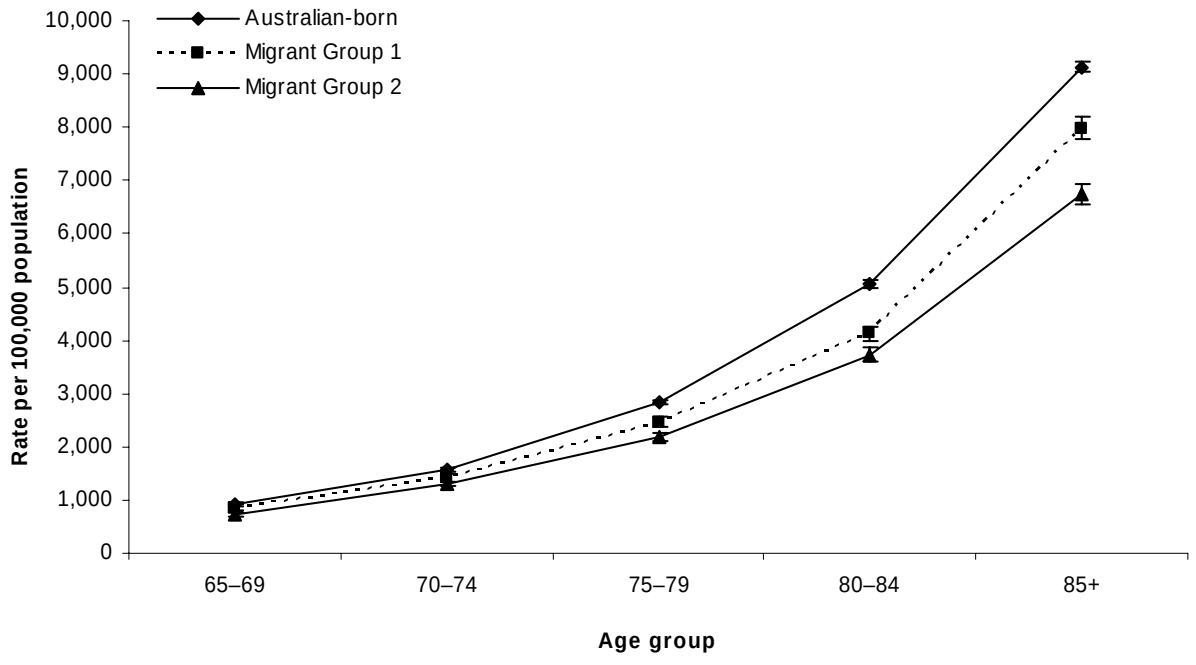


Figure 4: Age-specific rates of hospitalisation due to falls by age group, by country of birth group, females aged 65+ years, Australia, 2000–03

Regions of birth

Analyses were conducted for the rates of falls in older people according to the major and minor regions of birth classification (see ABS 2004d). Here, the Australian-born are included in the Oceania and Antarctica region (referred to as Oceania in this report).

Figure 5 presents the age-standardised rates of hospitalised falls for all persons aged 65 years and older by the country of birth major regions for the three years of this project. People born in any of the other major regions of birth had a significantly lower rate of falls injury than those born in Oceania (98.7% of who were born in Australia).

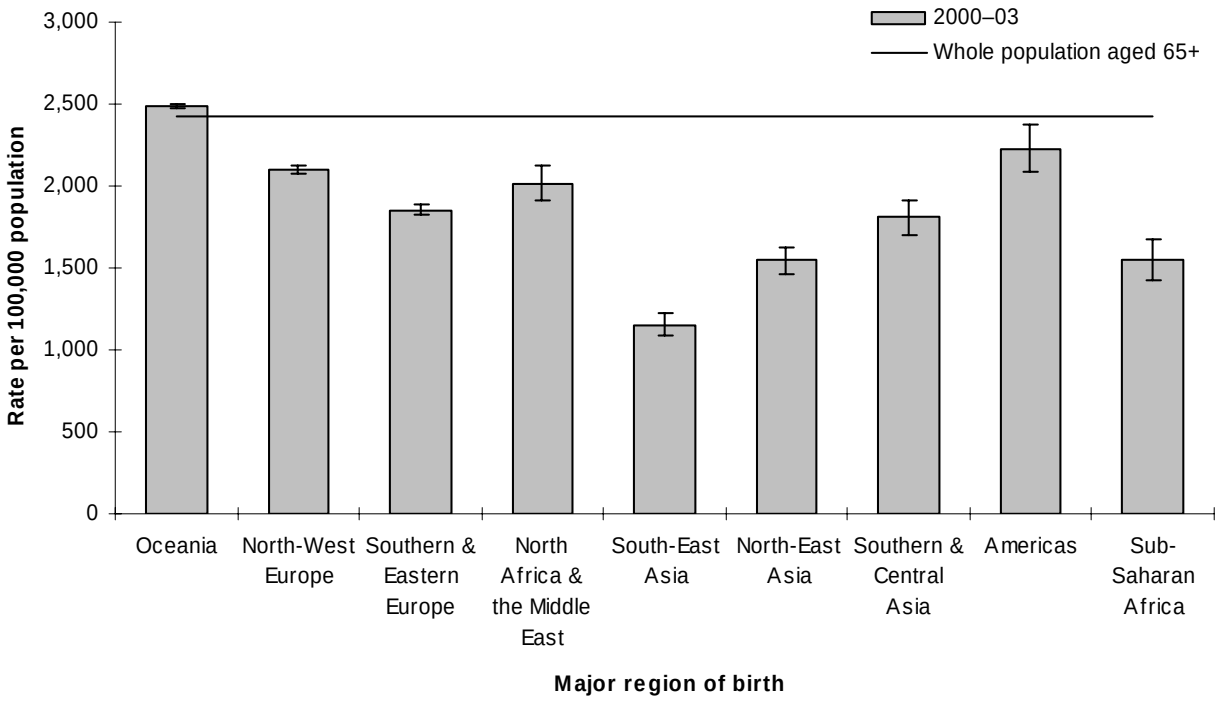


Figure 5: Age-standardised rates of hospitalisation due to falls by major region of birth, all persons aged 65+ years, Australia, 2000–03

Figure 6 describes the age-standardised rates of hospitalised falls for males and females according to the major region of birth for the years 2000–03. The highest rate of hospitalised falls for both males (1,750.9 per 100,000 population) and females (2,942.5 per 100,000) was for those born in Oceania. Rates were lowest for both males and females born in South-East Asia (736.3 and 1,414.4 per 100,000 population respectively).

Figure 7 describes the age-standardised rates for people aged 65 years and older for 2000–03, for the minor regions of birth which reported case numbers of at least 100 persons. Importantly, it can be seen that people born in Ireland or North America (English-speaking migrants) experienced higher rates of hospitalised falls than the Australian-born population. Rates of falls for all minor regions of birth which constitute Migrant Group 2 (culturally and linguistically diverse) are lower than those of the Australian-born. Those born in South-East Asian regions or Polynesia experienced the lowest rates of hospitalised falls.

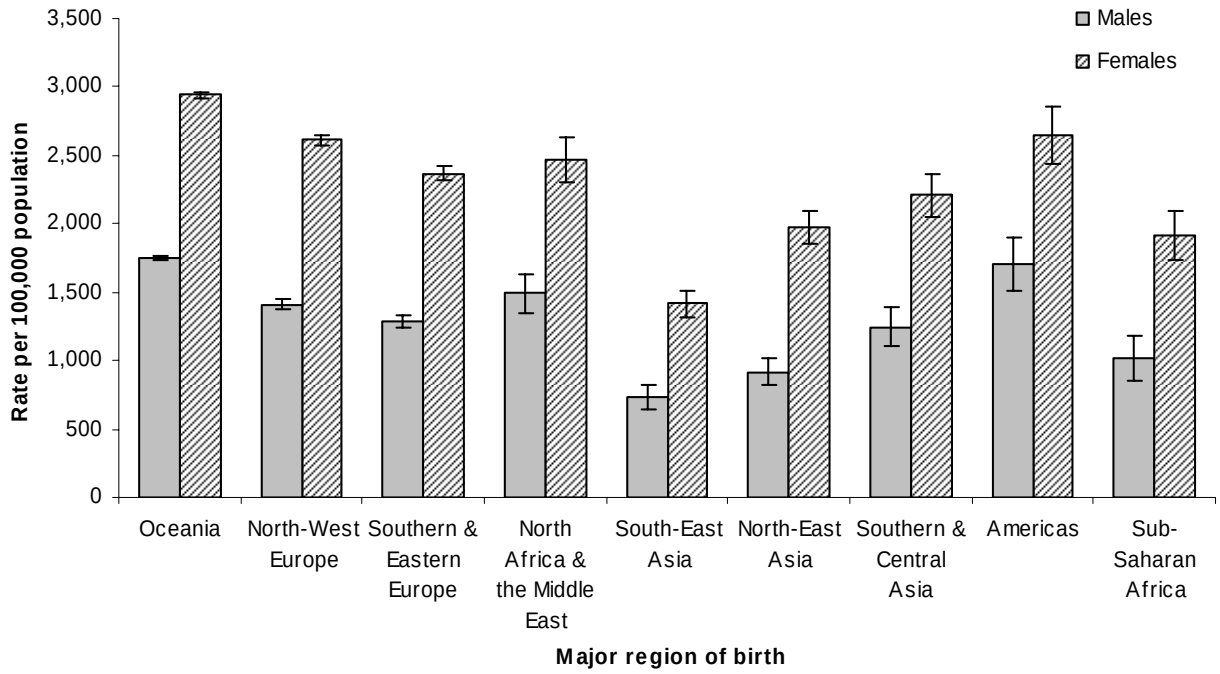
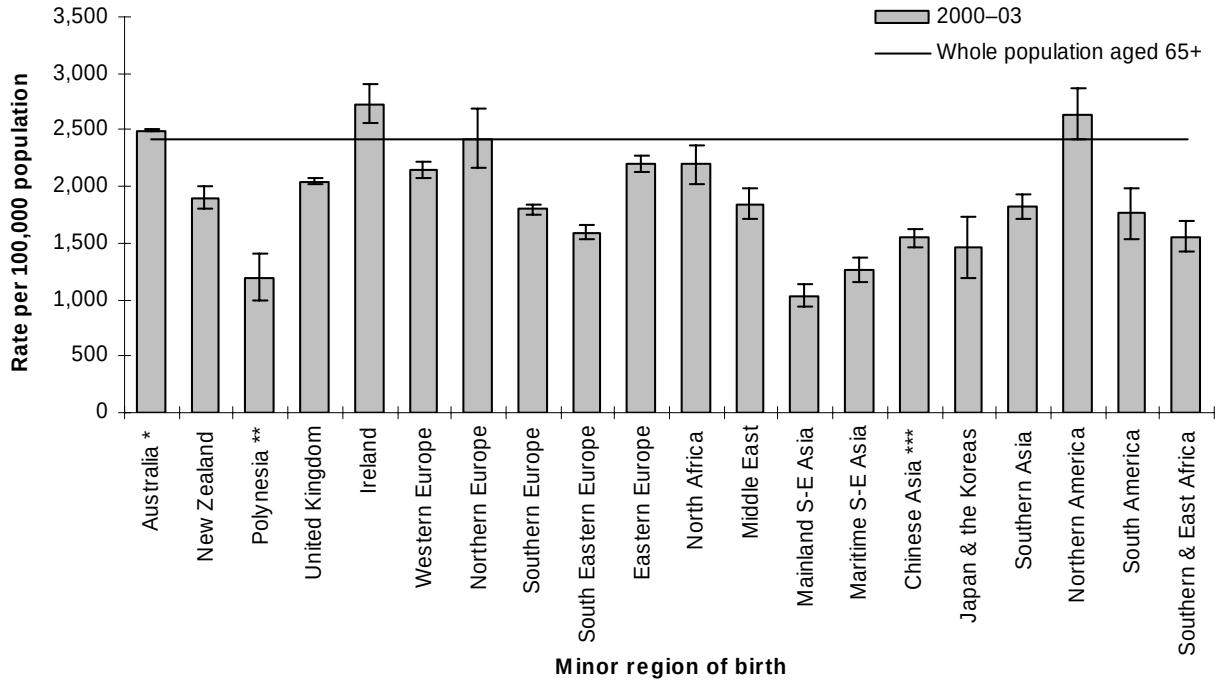


Figure 6: Age-standardised rates of hospitalisation due to falls by major region of birth, males and females aged 65+ years, Australia, 2000–03



* Australia includes external territories

** Polynesia excludes Hawaii

*** Chinese Asia includes Mongolia

Figure 7: Age-standardised rates of hospitalised falls in people aged 65+ years, for selected minor regions of birth (n>100), 2000–03

Table 1 describes the age-standardised rate of falls in those aged 65 years and older by minor region of birth for the three financial years of the project combined. For minor regions of birth with large total case counts (1,000+, shaded), the male:female ratio of age-standardised rates is lower than for the Australian-born for all but New Zealand.

Similar to the major region of birth analyses, rates for both Maritime and Mainland South-East Asia were some of the lowest reported for both males and females. Males aged 65 years and older that were born in Northern America had the highest rate of falls (2,044.6 per 100,000 population), followed by males born in Ireland (1,993.5 per 100,000). Similarly females aged 65 years and older that were born in Ireland had the highest rate of falls (3,335.7 per 100,000 population), followed by females born in North America (3,217.3 per 100,000). For both of these minor regions of birth, the male:female ratio of age-standardised rates were higher than for the Australian-born.

Table 1: Age-standardised rate of hospitalised falls in people age 65+ years, by minor region of birth, 2000–03

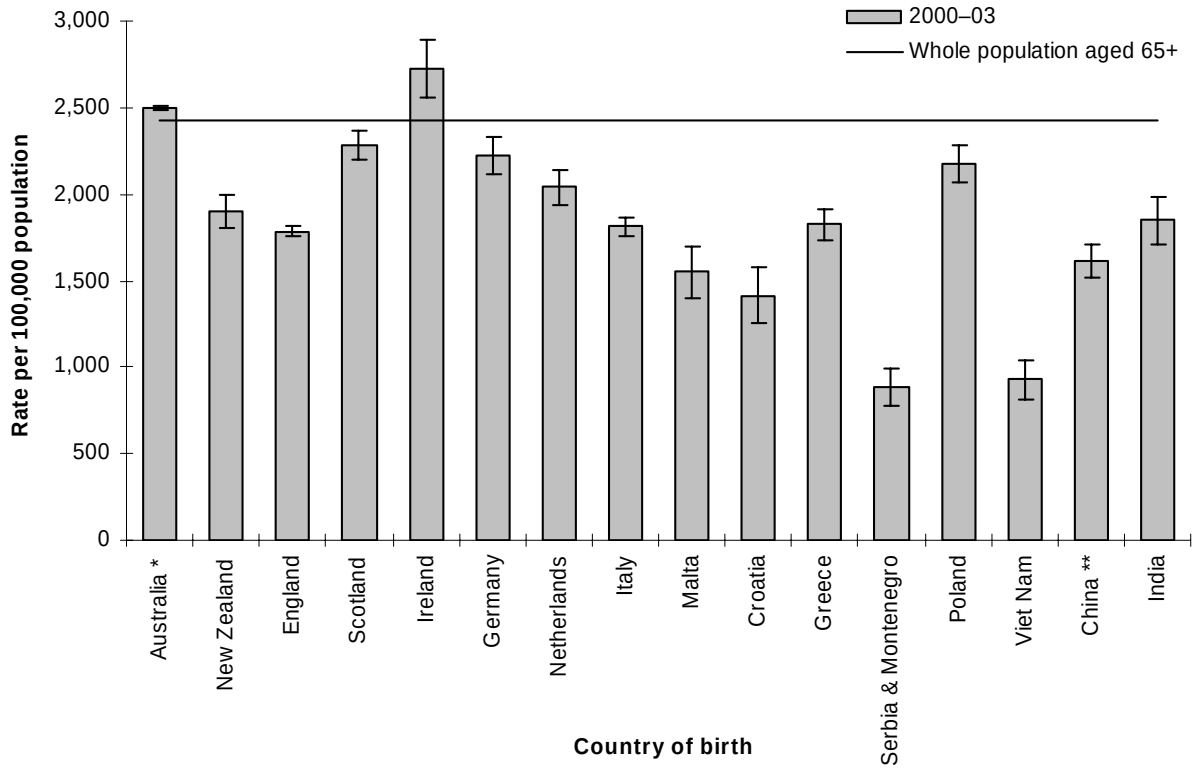
	Males		Females		M:F Rate Ratio
	Count	Rate	Count	Rate	
Australia (includes external territories)	34,708	1,758.9	96,546	2,955.2	0.60
New Zealand	455	1,409.3	992	2,270.2	0.62
Melanesia	13	944.0	56	2,229.1	0.42
Polynesia (excludes Hawaii)	41	811.3	96	1,449.1	0.56
United Kingdom	4,751	1,374.0	12,662	2,558.7	0.54
Ireland	320	1,993.5	656	3,335.7	0.60
Western Europe	1,151	1,398.0	3,202	2,652.4	0.53
Northern Europe	127	1,628.6	219	3,192.0	0.51
Southern Europe	1,742	1,212.8	3,636	2,334.9	0.52
South Eastern Europe	1,133	1,116.0	2,115	2,048.3	0.54
Eastern Europe	1,505	1,584.0	3,084	2,725.8	0.58
North Africa	217	1,686.2	422	2,621.7	0.64
Middle East	260	1,333.9	505	2,295.2	0.58
Mainland South-East Asia	96	511.7	378	1,390.1	0.37
Maritime South-East Asia	168	980.1	413	1,436.1	0.68
Chinese Asia (includes Mongolia)	307	904.4	913	1,995.8	0.45
Japan and the Koreas	32	1,037.2	92	1,673.0	0.62
Southern Asia	303	1,266.9	777	2,215.7	0.57
Central Asia	9	1,015.1	25	2,242.6	0.45
Northern America	225	2,044.6	342	3,217.3	0.64
South America	56	1,144.0	196	2,128.7	0.54
Central America	10	1,595.2	31	2,135.4	0.75
Caribbean	16	1,795.9	36	3,029.0	0.59
Southern and East Africa	147	1,072.1	414	1,875.9	0.57
Total *	**49,753**	**1,678.3**	**133,064**	**2,914.4**	**0.58**

*Total includes 6 male and 23 female cases from minor regions of birth with counts too small to publish (Micronesia, Antarctica, and Central & West Africa).

Notes:

1. Totals also include 1,955 separations for males and 5,233 separations for females for which country of birth was not adequately specified.
2. Shading denotes counts of over 1,000 persons.

Figure 8 presents the rate of falls for people born in the fifteen most numerous country of birth groups in the Australian population aged 65 years or older for 2000–03. Including Australia, these birthplaces account for over 91% of the total population aged 65 years and older. Similar to the observations above, only people born in Ireland had a higher rate of falls injury than the Australian-born. People born in Viet Nam (Mainland South-East Asia) and Serbia and Montenegro (South-eastern Europe) had the lowest rate of hospitalised falls injury.

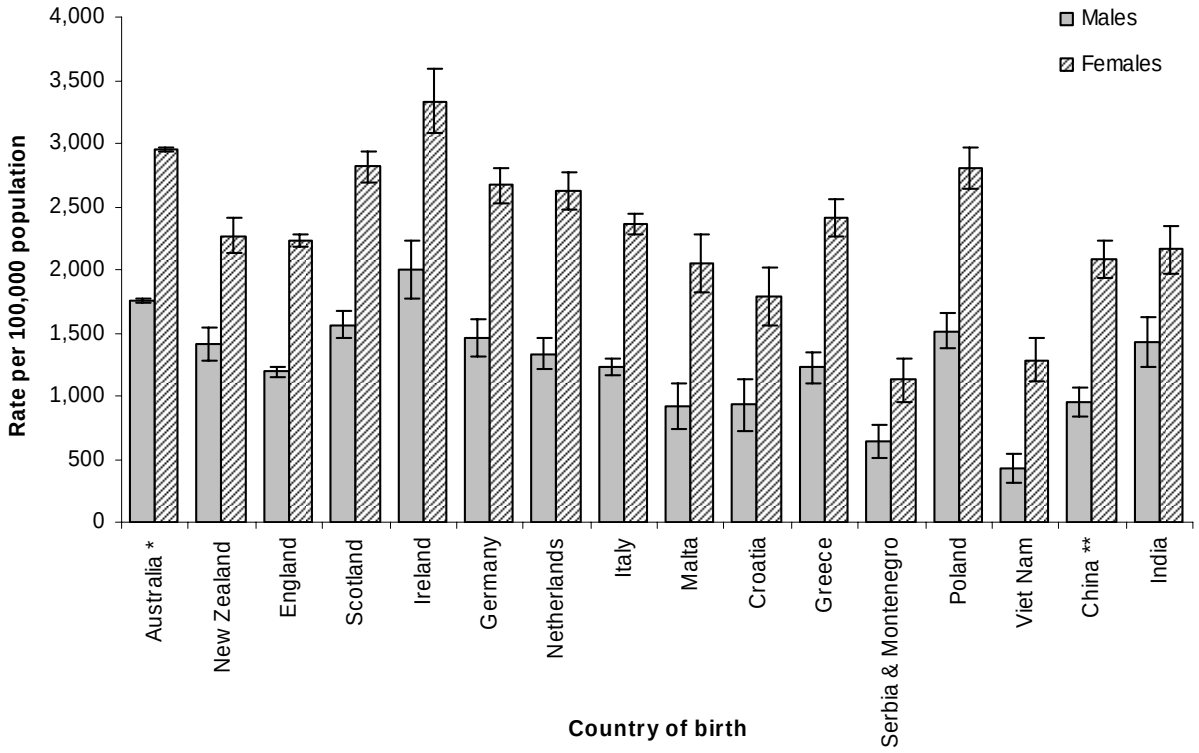


* Australia includes external territories

** China excludes SARs and Taiwan Province

Figure 8: Age-standardised rates of hospitalisation due to falls for the top 15 birthplace countries, total persons aged 65+ years, Australia, 2000–03

Figure 9 presents the age-standardised rate of hospitalised falls for males and females aged 65 years and older born in the top 15 birthplaces for 2000–03. While the rate of falls in older females is much higher than that of males for all countries of birth, the pattern of rates is similar for both sexes. Males from Viet Nam had a particularly low rate of falls injury and the male:female rate ratio for people born in Viet Nam was also particularly low, 0.33 falls in males for every 1.00 falls in females. The male:female rate ratio for the Australian-born was 0.60 falls in males for every 1.00 falls in females and only New Zealand-born and Indian-born had higher rate ratios (0.62 and 0.66, respectively). All other of the top fifteen birthplaces (except Ireland, which had a rate ratio equalling that for the Australian-born) had lower male:female rate ratios, suggesting that males from these countries have an even lower risk of falls, relative to that of females, than that observed in the general population.



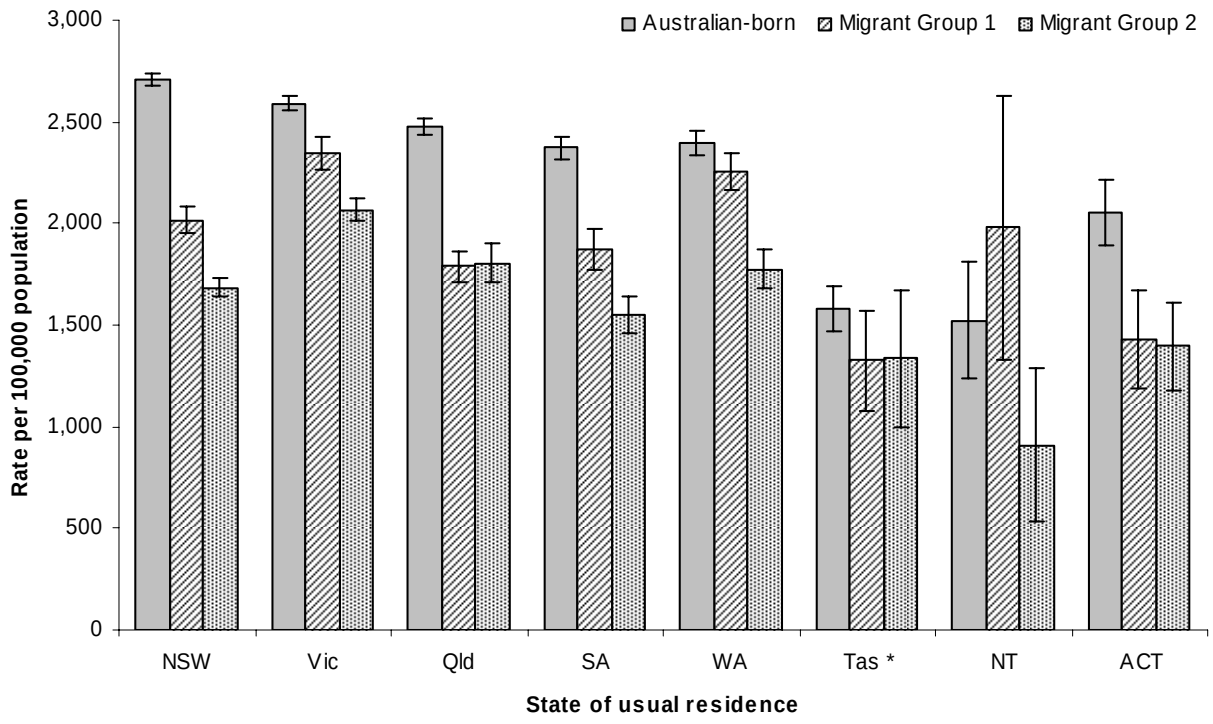
* Australia includes external territories

** China excludes SARs and Taiwan Province

Figure 9: Age-standardised rates of hospitalisation due to falls for the top 15 birthplace countries, males and females aged 65+ years, Australia, 2000–03

State-based rates

Rates of hospitalised falls by country of birth were analysed according to state or territory of usual residence. State-specific population data by country of birth were only available for 30 June 2001, derived from the 2001 Census of Population and Housing and provided by the AIHW. As such, only data pertaining to 2000–01 and 2001–02 were included in this analysis. Figure 10 describes the rates of falls by state, by the three broad country of birth groups, for the two years combined.



* Rates for Tasmania are for 2001–02 only, due to an inordinate number of hospital episodes (84%) coded as 'Inadequately Described' in 2000–01

Figure 10 Age-standardised rates of hospitalisation due to falls by country of birth group, by state of usual residence, total persons aged 65+ years, Australia, 2000–02

Similar to that for all Australia, in most states the Australian-born population has a higher rate of hospitalised falls than either Migrant Group 1 or Migrant Group 2. Also, rates for persons in Migrant Group 1 are generally higher than those in Migrant Group 2, which is consistent over time for the Australian population as a whole.

The state with the smallest populations of people aged 65 years and older, the Northern Territory, reports the biggest divergence from the national picture. The high proportion of Indigenous people in the state's total population may also be influencing these results. In Tasmania, data quality is an issue, with 83.8% of episodes of hospitalised care in 2000–01 due to falls in the population aged 65 years and older having country of birth coded as 'Inadequately Described'. As a result, this data has been excluded from this analysis. In 2001–02 the situation resolves (only 18.1% of cases are 'Inadequately Described') however Tasmanian data reports marginally higher rates of falls for Migrant Group 2 than for Migrant Group 1, unlike the more populous states.

Analysis of rates of hospitalised falls for people aged 65 years and older by SACC major regions of birth were conducted for some states. Small case counts precluded analyses for states with small population sizes (Tasmania, Northern Territory and Australian Capital Territory). Similarly, analyses were not conducted for minor regions of birth or by the fifteen most numerous birthplaces featured in Figures 8 and 9.

Age-standardised rates of hospitalised falls for people aged 65 years and older by major region of birth for the combined financial years 2000–02 are presented for selected states in Figures 11 through 15. People born in Oceania (predominantly Australian-born) generally had the highest rates of falls while people aged 65 years and older born in other regions had lower rates of hospitalised falls. People born in South-East Asia had the lowest rate of falls in all the jurisdictions analysed.

The wide confidence intervals for many regions of birth, particularly for the few cases where people born in other regions had higher rates of falls than those born in Oceania, give an indication of the effect of small sample sizes. For example, the rate of hospitalised falls for South Australians aged 65 years and older born in the Americas was calculated from 35 separations and the rate of falls for Western Australians born in North Africa and the Middle East was calculated from a total of 60 hospital separations. While caution is advised with regards to the robustness of these results, they nonetheless give some insight into the impact of regional variation in population structure and emphasise the need to consider this as it relates to fall-related hospitalisation.

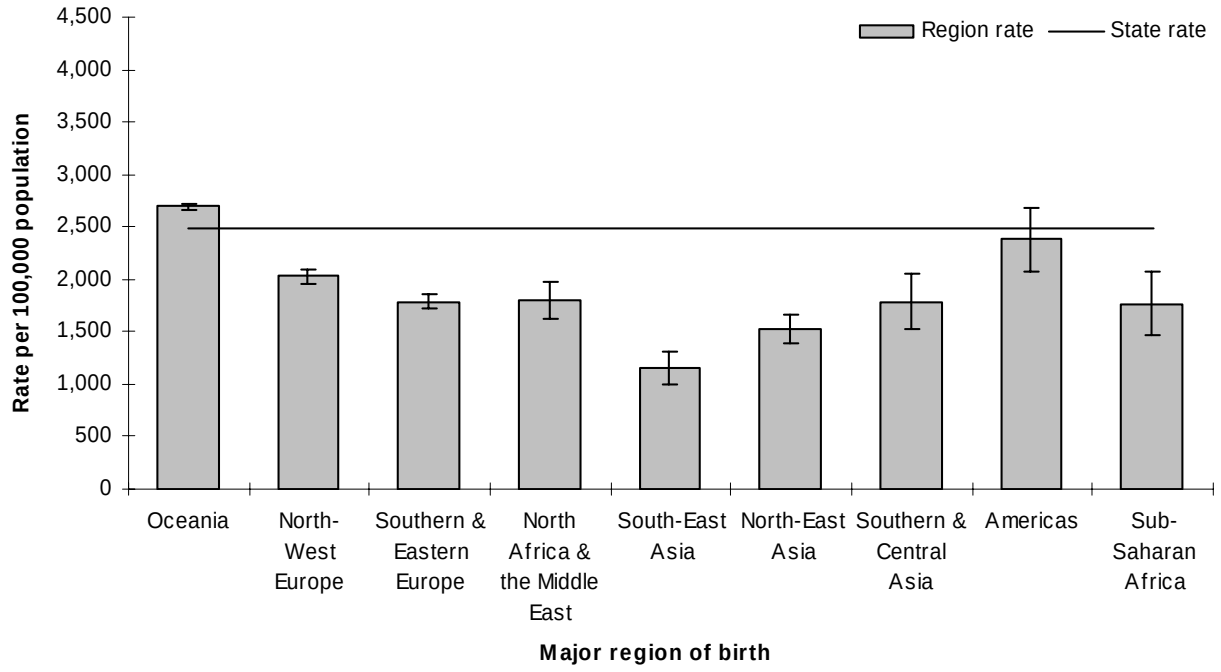


Figure 11: Age-standardised rates of hospitalised falls for all persons aged 65+ years according to major region of birth, New South Wales, 2000–02

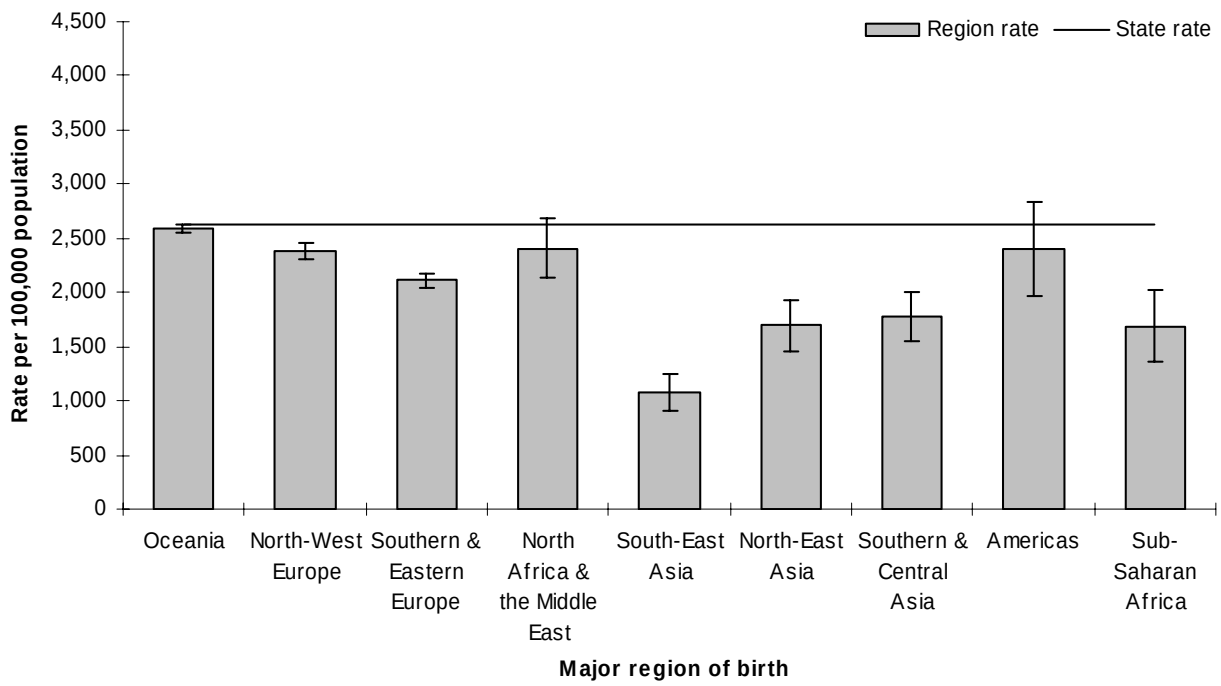


Figure 12: Age-standardised rates of hospitalised falls for all persons aged 65+ years according to major region of birth, Victoria, 2000–02

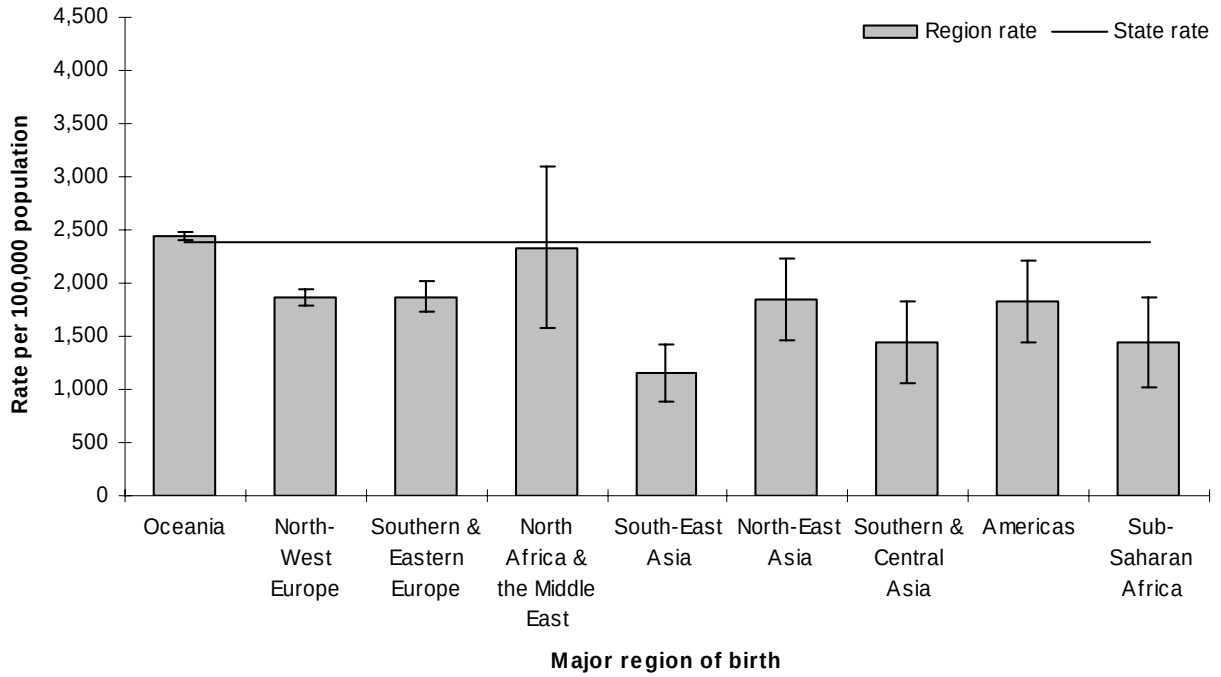


Figure 13: Age-standardised rates of hospitalised falls for all persons aged 65+ years according to major region of birth, Queensland, 2000–02

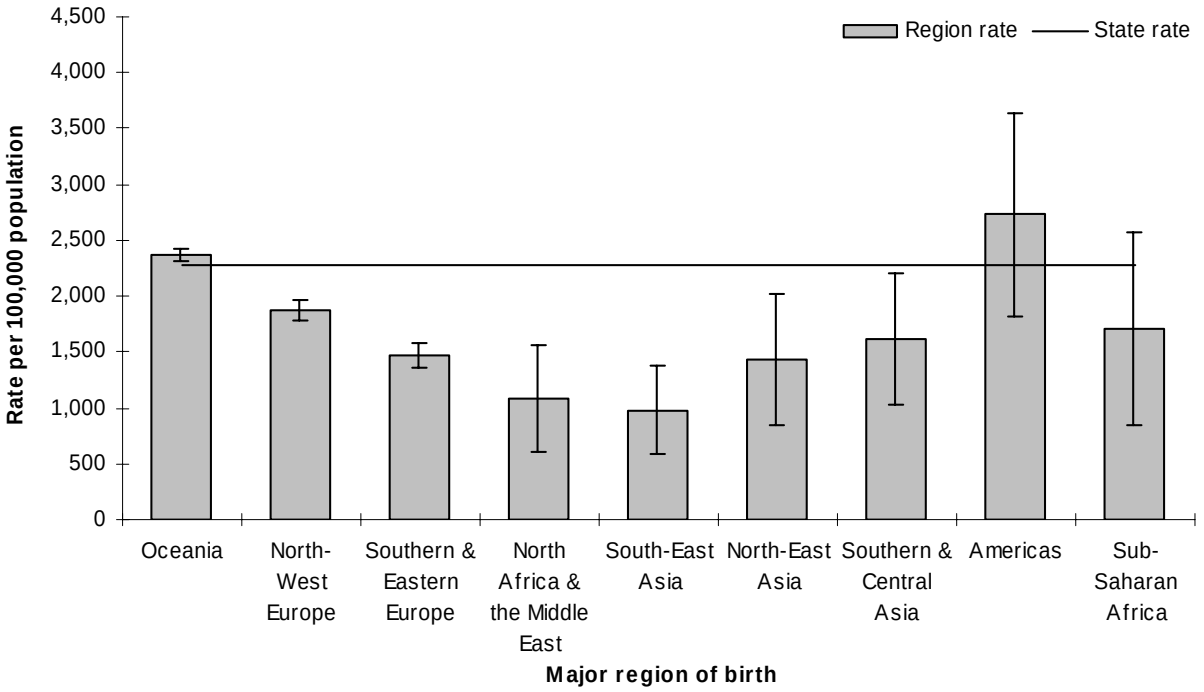


Figure 14: Age-standardised rates of hospitalised falls for all persons aged 65+ years according to major region of birth, South Australia, 2000–02

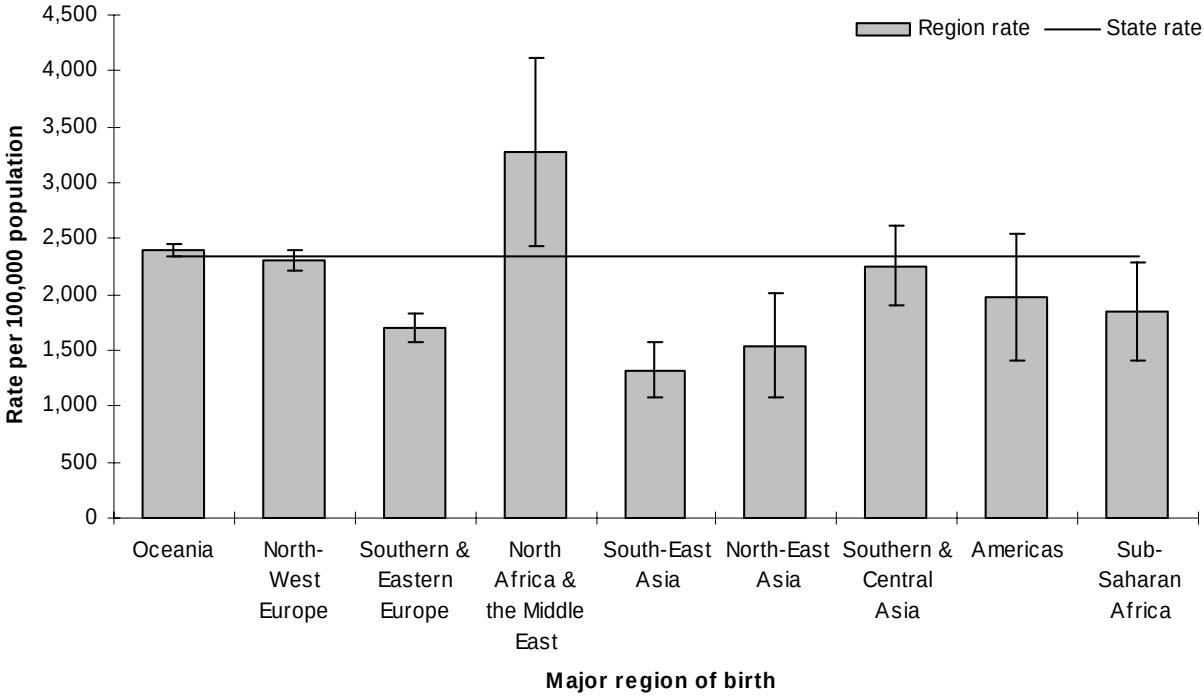


Figure 15: Age-standardised rates of hospitalised falls for all persons aged 65+ years according to major region of birth, Western Australia, 2000–02

Geographical variation

As well as state-based variation in migrant population groups, there is also substantial regional variation in migrant populations with migrants generally choosing to settle in capital cities or major urban areas (ABS 2004b). As such, rates of hospitalised falls for people aged 65 years and older were calculated according to the region of the state of usual residence.

Population data by country of birth for small areas were only available for 30 June 2001. This information was derived from the 2001 Census of Population and Housing, and sourced from the health information software *HealthWIZ* (Prometheus Information Pty Ltd 2005). As for the previous state-based analyses, hospitalisations data for 2000–01 and 2001–02 were combined for analysis. Small populations and small case counts meant that analyses were limited to comparisons between state capitals and the balance of the state and between the three broad country of birth categories; Australian-born, Migrant Group 1 and Migrant Group 2.

Described in Figure 16, the rates of hospitalised falls for residents of capital cities, for all states and territories combined, conform to the familiar pattern of significant differences between all three birthplace groups. The rate for the Australian-born is highest while the rate for Migrant Group 2 is lowest. Outside capital cities, however, there appears to be little difference between the rates of falls for people in Migrant Group 1 and Migrant Group 2. Interestingly, the rates of falls for the Australian-born and people in Migrant Group 1 are significantly lower outside capital cities while the rate of falls for people in Migrant Group 2 are the same in both regions. Similar results are also observed for the rate of hospitalised falls for males and females separately, and as seen previously the rate of falls for females is higher than that of males for all birthplace and regional groups.

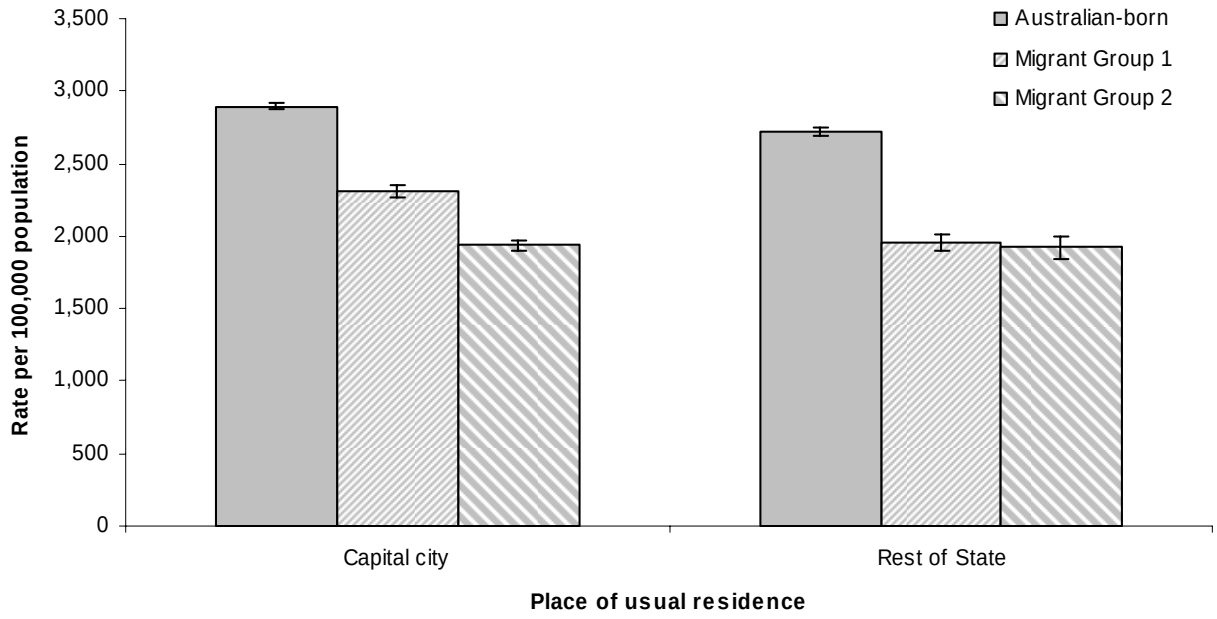


Figure 16: Age-standardised rates of hospitalised falls, all capital cities versus the rest of Australia, persons aged 65+ years, 2000–02

In individual states, however, marked variation is noted between the rates of hospitalised falls in people aged 65 years and older according to the region of the place of usual residence. In the larger states (New South Wales, Figure 17, and Victoria, Figure 18), a pattern similar to that observed for all Australia is apparent; rates of hospitalised falls are highest for the Australia-born, rates are lower outside capital cities and rates of falls for people in Migrant Group 1 and Migrant Group 2 are significantly different in capital cities but similar throughout the rest of the state.

In states with smaller populations, however, the rates of hospitalised falls for people aged 65 years and older are quite different to the national picture and that for New South Wales and Victoria. In Queensland (Figure 19), rates of falls are significantly higher for all birthplace regions outside of capital cities. Further, the difference between the rate of falls for people in Migrant Group 1 and Migrant Group 2 is not significant for residents of the capital city and the rate of falls for people in Migrant Group 2 outside of Brisbane is higher than that for Migrant Group 1. In South Australia (Figure 20), a similar observation is made, with rates of falls being higher for all birthplace groups outside the capital city. Rates of falls in Western Australia (Figure 21) differ from the national picture in a different way. Here, the rate of falls for Australian-born residents of the capital city is not significantly higher than that for people in Migrant Group 1 and rates of falls for all birthplace groups are very similar both in Perth and the remainder of the state. While the rate of hospitalised falls outside the capital cities for both South Australia and Western Australia appear to conform to the pattern of highest for the Australian-born and lowest for people in Migrant Group 2, wide confidence intervals suggest that these differences are not significant.

As for the previous state-based analyses, results for the smallest states (Tasmania, Northern Territory and the Australian Capital Territory) are not presented due to data quality issues. In addition to small case numbers, the size of the population, particularly outside of capital cities, is quite small for these states.

Further, these analyses are complicated by a reasonable proportion of records lacking adequate birthplace coding. For hospitalisation records, between 0.5% (New South Wales, outside Sydney) and 26.3% (Tasmania, capital city) of records are missing birthplace data. For population data derived from the 2001 Census and extracted from *HealthWIZ*, between 4.8% (Australian Capital Territory, capital city) and 13.6% (Northern Territory, outside Darwin) of the population has birthplace recorded as 'not stated'. Such limitations affect all of the analyses presented in this section to some degree. As such, and as previously, caution is advised regarding the robustness of the results presented and interpretations made. Nonetheless, the results presented for the larger states of Australia give some insight into the impact of geographical variation in population structure and emphasise the need to consider such differences in service provision and falls prevention intervention policy and planning.

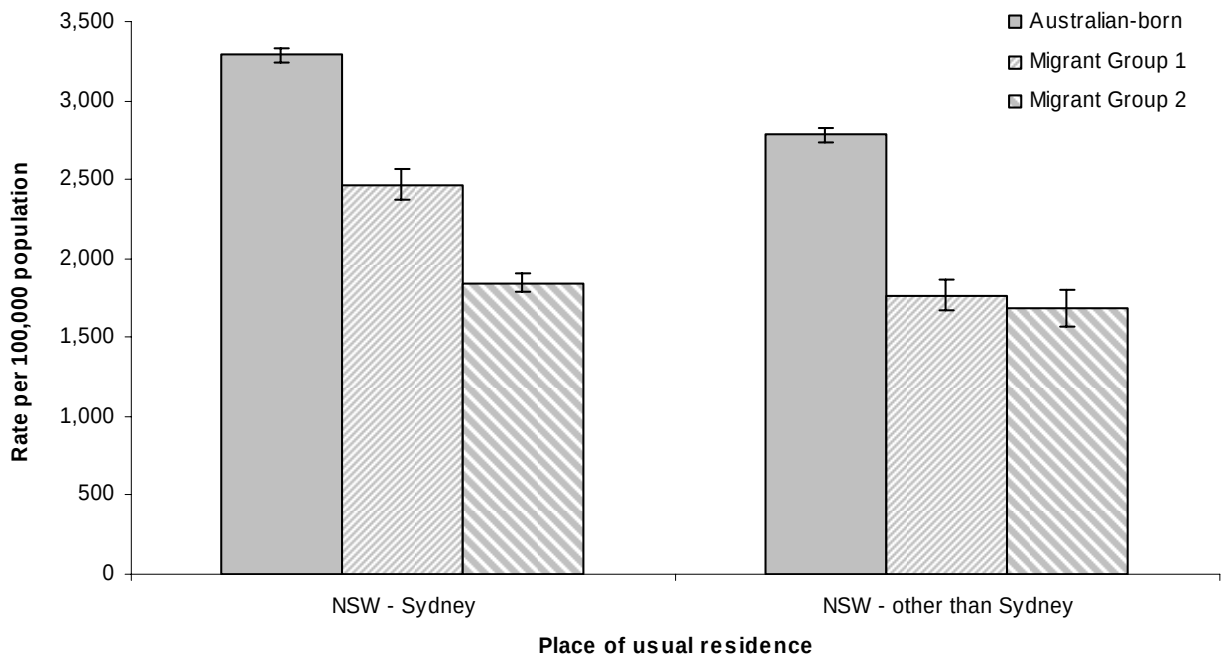


Figure 17: Age-standardised rates of hospitalised falls for persons aged 65+ years in New South Wales by place of usual residence: capital city or rest of state, 2000–02

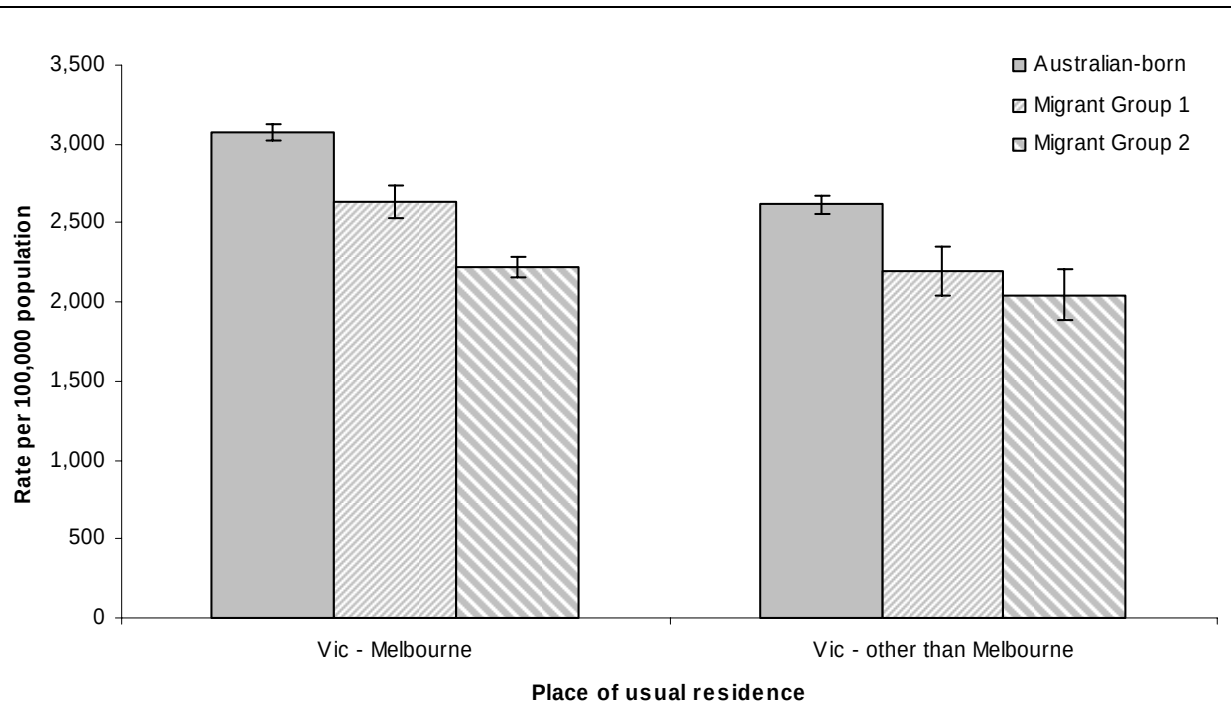


Figure 18: Age-standardised rates of hospitalised falls for persons aged 65+ years in Victoria by place of usual residence: capital city or rest of state, 2000–02

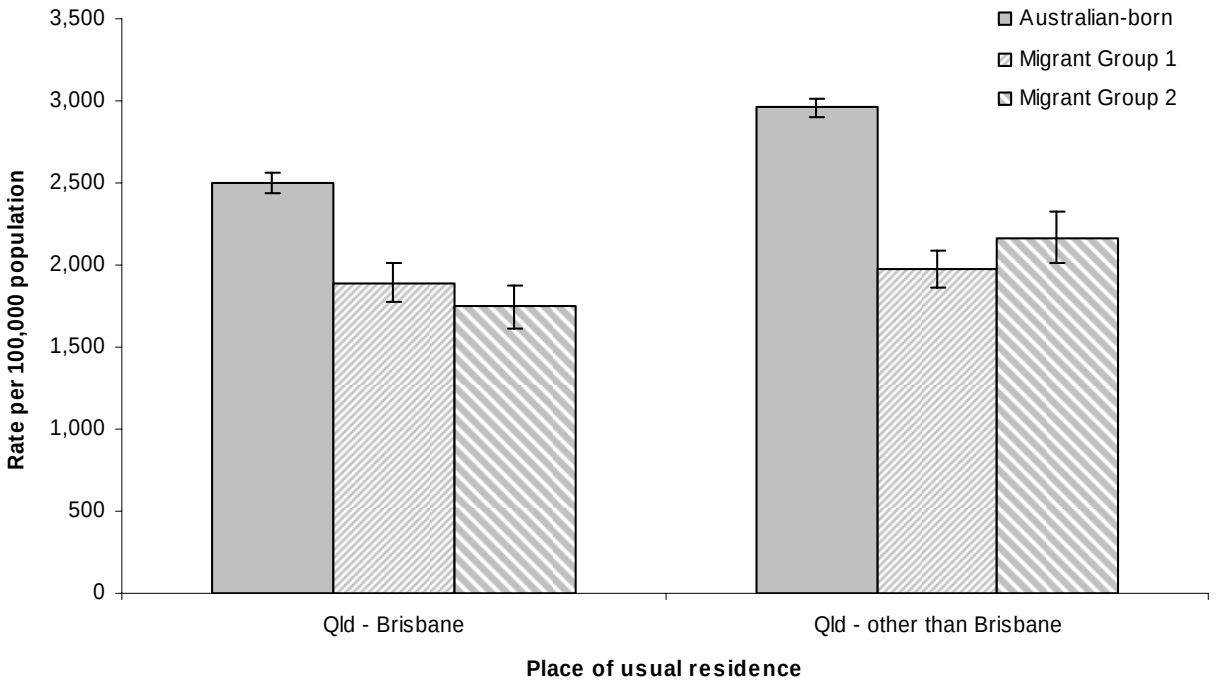


Figure 19: Age-standardised rates of hospitalised falls for persons aged 65+ years in Queensland by place of usual residence: capital city or rest of state, 2000–02

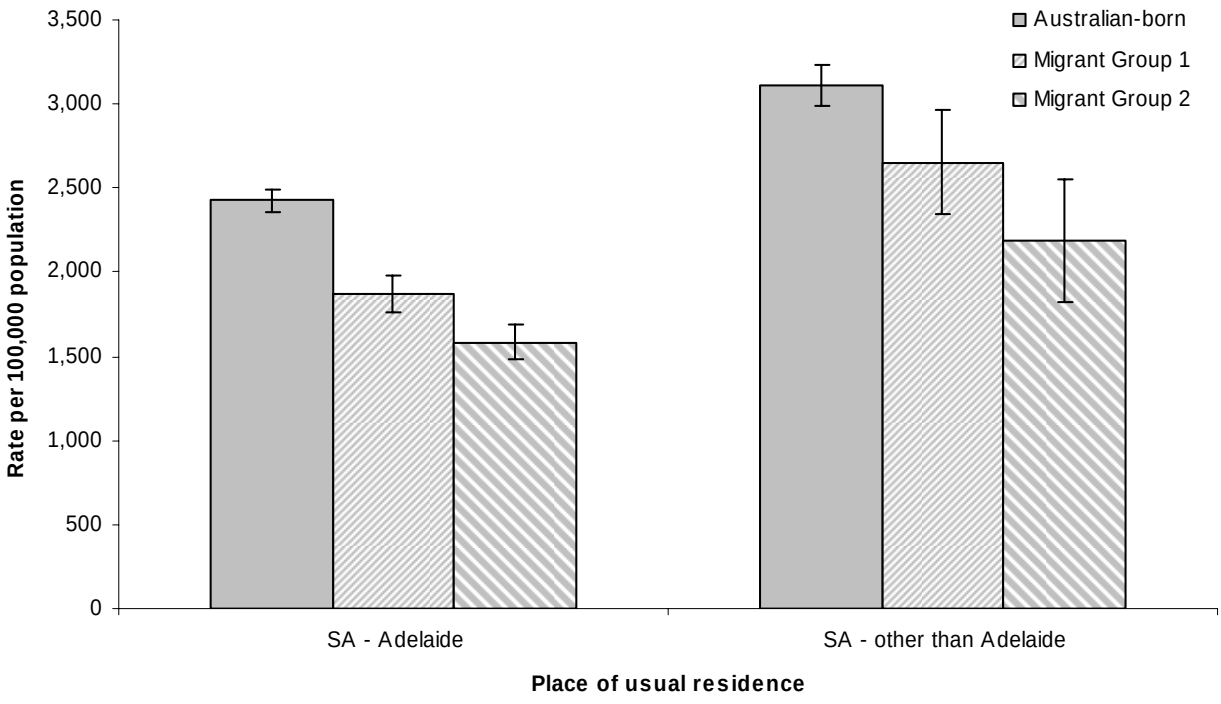


Figure 20: Age-standardised rates of hospitalised falls for persons aged 65+ years in South Australia by place of usual residence: capital city or rest of state, 2000–02

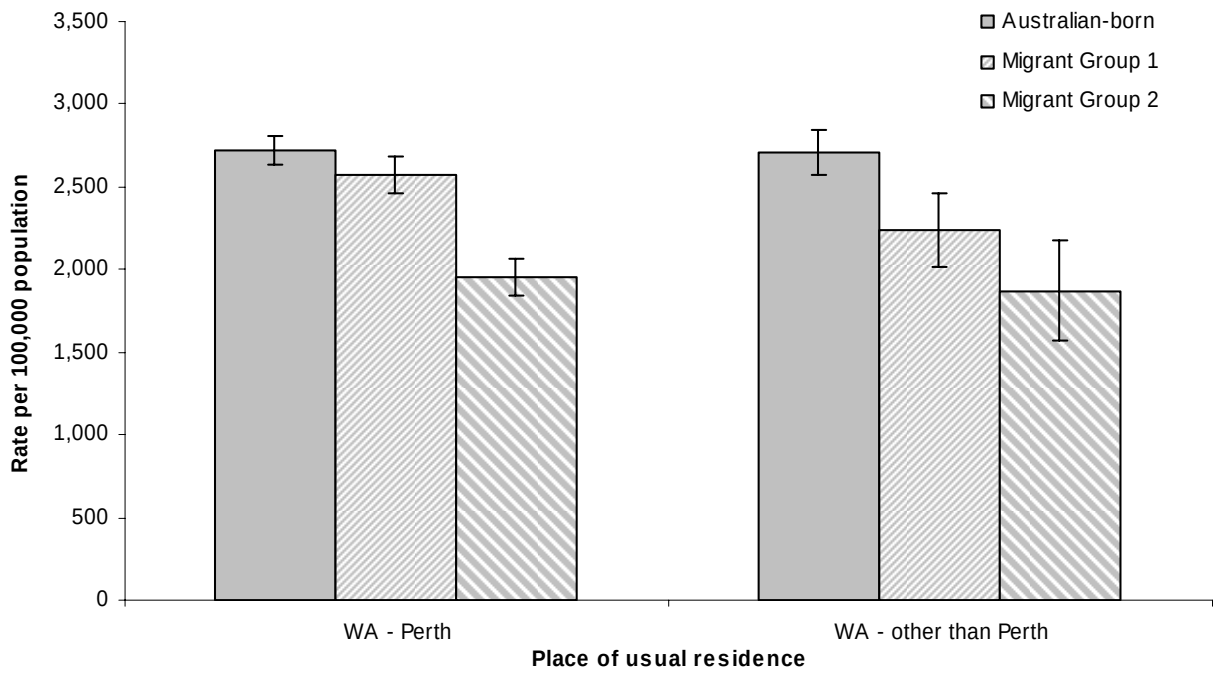


Figure 21: Age-standardised rates of hospitalised falls for persons aged 65+ years in Western Australia by place of usual residence: capital city or rest of state, 2000–02

Population projections

The scope and resolution of the analysis presented above is far from ideal, largely due to the limitations of available population data. To supplement these results, this section will present population projections data drawn from Gibson et al.'s work on culturally and linguistically diverse older people (Gibson et al. 2001).

In 2000–01 the fifteen most numerous country of birth groups in the population aged 65 years and older were (in descending order); Australia, England, Italy, Greece, Scotland, Germany, Netherlands, New Zealand, Poland, China, India, Malta, Serbia and Montenegro, Croatia, and Viet Nam (Prometheus Information Pty Ltd 2005). This short list demonstrates the diversity of the Australian population as well as the impact of migration 'waves'. The country of origin of older people in the current population principally reflects post-war migration from Europe, with an emerging population of older people born in Asia. For example, in the five year period 1998–03, Poland had the largest decrease as a birthplace of Australian residents, principally as a result of deaths of older Polish-born Australians, most of whom came to Australia soon after WW2 (ABS 2004a).

Table 2 describes the projected population increase of overseas-born migrant groups until 2026. As a percentage of the total population aged 65 years and older, the number of overseas-born Australians in Migrant Group 1 increases to a peak of 13.5% between 2011–2016 after which the population is projected to decrease to levels similar to those in 2001. Numerically, the population of people aged 65 years and older born in countries in Migrant Group 1 is projected to number more than 500,000 in 2026. The projected population increase for people born in countries in Migrant Group 2 displays a different pattern. While the number of older people in Migrant Group 2 also shows a projected peak level in 2016, by 2026, the end of the projected range, the population size of this group is proportionately higher than that seen in 2001. By 2026, the size of the older population born in the countries grouped as Migrant Group 2 is estimated to number nearly 1 million people.

Importantly, it must be noted that there are slight differences between the population sizes projected by Gibson et al. (2001) for 2001 and those actually collected from the 2001 Census. As such, revised projections on this basis may describe even higher proportions of people from Migrant Group 2 than presented here.

Table 2: Projected populations 2001–2026, persons aged 65 years and older by birthplace group, Australia

		2001[a]	2001 Census[b]	2006	2011	2016	2021	2026
Australian-born	Males	669,979	697,315	719,143	815,398	974,154	1,154,461	1,347,483
	Females	921,245	947,071	962,410	1,049,455	1,204,625	1,395,095	1,610,362
	Persons	1,591,224	1,644,386	1,681,553	1,864,853	2,178,779	2,549,556	2,957,845
	% total 65+	*67.0%*	67.5%	*65.0%*	*64.2%*	*63.7%*	*65.1%*	*66.7%*
Migrant Group 1	Males	142,332	136,982	159,065	185,687	220,674	237,510	252,594
	Females	162,849	155,555	177,554	202,404	238,012	260,170	282,761
	Persons	305,181	292,537	336,619	388,091	458,686	497,680	535,355
	% total 65+	*12.8%*	12.0%	*13.0%*	*13.4%*	*13.4%*	*12.7%*	*12.1%*
Migrant Group 2	Males	232,624	242,375	276,182	317,494	373,886	407,437	430,891
	Females	246,771	256,236	291,762	336,307	406,857	463,570	508,931
	Persons	479,395	498,611	567,944	653,801	780,743	871,007	939,822
	% total 65+	*20.2%*	20.5%	*22.0%*	*22.5%*	*22.8%*	*22.2%*	*21.2%*

Source: (Gibson et al. 2001).

Note: Shading denotes from Census (Prometheus Information Pty Ltd 2005).

Table 3 describes the populations and proportions of migrant groups aged 65 years and older by state of residence. The diversity of the Australian population is obvious, with large differences in the proportion of the Australian-born and those from Migrant Group 2 notable between states. New South Wales, Victoria, South Australia and the Northern Territory experience particularly large increases in the proportion of people from Migrant Group 2 in the older population between 1996 and 2011. While such increases appear to subside in most states by 2026, even returning to 1996 levels in some states, in New South Wales the increase in the proportion of the population from Migrant Group 2 is sustained. In all states, by 2026 the proportion of overseas-born older Australians from Migrant Group 1 (English-speaking countries) fall to levels lower than those observed in 1996.

It is important to remember however, that while proportions wax and wane, the actual numbers of people in these groups increase throughout the period—doubling and even tripling in some cases. Accordingly, the actual number of people who will require fall-related hospitalisation and prevention services will increase in the coming decades (Moller 2003). As such, it is vital to consider the cultural and linguistic composition of the older population.

Table 3: Projected populations 2001–2026, persons aged 65 years and older by birthplace group, states and territories

		1996		2011		2026	
NSW	Australian-born	559,086	*71.5%*	648,582	*65.3%*	929,150	*64.3%*
	Migrant Group 1	84,747	*10.8%*	104,991	*10.6%*	139,485	*9.7%*
	Migrant Group 2	138,358	*17.7%*	240,408	*24.2%*	376,138	*26.0%*
	Total 65+	782,191		993,981		1,444,773	
Vic	Australian-born	375,134	*65.9%*	428,794	*58.6%*	663,662	*62.5%*
	Migrant Group 1	62,691	*11.0%*	77,714	*10.6%*	98,093	*9.2%*
	Migrant Group 2	131,641	*23.1%*	225,214	*30.8%*	300,574	*28.3%*
	Total 65+	569,466		731,722		1,062,329	
Qld	Australian-born	281,256	*75.5%*	398,275	*73.8%*	707,342	*76.3%*
	Migrant Group 1	52,587	*14.1%*	78,769	*14.6%*	122,737	*13.2%*
	Migrant Group 2	38,858	*10.4%*	62,372	*11.6%*	97,120	*10.5%*
	Total 65+	372,701		539,416		927,199	
WA	Australian-born	104,501	*57.0%*	145,512	*54.9%*	264,007	*59.6%*
	Migrant Group 1	42,903	*23.4%*	64,775	*24.4%*	98,361	*22.2%*
	Migrant Group 2	35,946	*19.6%*	54,863	*20.7%*	80,612	*18.2%*
	Total 65+	183,350		265,150		442,980	
SA	Australian-born	135,819	*65.7%*	155,675	*61.4%*	247,442	*68.3%*
	Migrant Group 1	33,946	*16.4%*	45,524	*18.0%*	56,367	*15.6%*
	Migrant Group 2	36,872	*17.8%*	52,222	*20.6%*	58,460	*16.1%*
	Total 65+	206,637		253,421		362,269	
Tas	Australian-born	48,915	*81.0%*	59,801	*80.1%*	89,615	*84.8%*
	Migrant Group 1	7,124	*11.8%*	8,938	*12.0%*	9,694	*9.2%*
	Migrant Group 2	4,387	*7.3%*	5,908	*7.9%*	6,364	*6.0%*
	Total 65+	60,426		74,647		105,673	
ACT	Australian-born	12,891	*57.6%*	21,899	*57.8%*	41,555	*63.7%*
	Migrant Group 1	3,933	*17.6%*	5,918	*15.6%*	8,042	*12.3%*
	Migrant Group 2	5,554	*24.8%*	10,089	*26.6%*	15,598	*23.9%*
	Total 65+	22,378		37,906		65,195	
NT	Australian-born	3,843	*65.7%*	6,315	*60.1%*	15,072	*66.7%*
	Migrant Group 1	818	*14.0%*	1,462	*13.9%*	2,576	*11.4%*
	Migrant Group 2	1,184	*20.3%*	2,725	*25.9%*	4,956	*21.9%*
	Total 65+	5,845		10,502		22,604	

Source: (Gibson et al. 2001).

Table 4 describes the proportion of languages spoken at home for the population aged 65 years and older from Migrant Group 2. Tables 5 to 12, over the following pages, describe the projected largest language groups, in rank order, by state to 2026. There are significant differences in both the languages predominately spoken and the size of these groups according to location. While English is predominately the main language spoken by people in the overseas-born population, Italian and Greek speakers are large in number in all states. Large increases in the number of Arabic, Cantonese, Tagalog and Mandarin speakers by 2026 are also projected.

Table 4: Projected main languages spoken at home by people in Migrant Group 2 aged 65 years and older, Australia

1996		2011		2026	
English	83,239	English	151,270	English	243,948
Italian	79,100	Italian	111,124	Italian	82,163
Greek	30,435	Greek	73,951	Greek	68,278
German	29,965	German	33,788	Cantonese	59,454
Polish	17,890	Cantonese	26,449	Vietnamese	42,120
Dutch	15,638	Croatian	19,021	Arabic (including Lebanese)	38,646
Cantonese	14,792	Arabic (including Lebanese)	18,961	Tagalog (Filipino)	30,516
Arabic (including Lebanese)	7,809	Spanish	16,722	Mandarin	29,767
Hungarian	7,801	Dutch	15,709	Spanish	29,271
Maltese	7,698	Maltese	14,348	German	23,452

Source: (Gibson et al. 2001).

Table 5: Projected largest language groups for people in Migrant Group 2 aged 65 years and older, New South Wales, 2011 & 2026

2011		2026	
English	48,044	English	76,710
Italian	30,378	Cantonese	31,909
Greek	25,471	Arabic (including Lebanese)	27,118
Cantonese	14,163	Greek	23,362
Arabic (including Lebanese)	13,608	Italian	22,776
German	9,736	Vietnamese	16,482
Spanish	9,608	Tagalog (Filipino)	16,358
Croatian	7,152	Spanish	16,107
Macedonian	5,685	Mandarin	14,911
Maltese	5,681	Macedonian	9,029

Source: (Gibson et al. 2001).

Table 6: Projected largest language groups for people in Migrant Group 2 aged 65 years and older, Victoria, 2011 & 2026

2011		2026	
English	42,689	English	69,160
German	10,338	Italian	35,846
Greek	35,461	Greek	33,407
Italian	47,490	Cantonese	15,692
Maltese	7,329	Vietnamese	15,104
Croatian	7,074	Macedonian	9,807
Macedonian	6,228	Arabic (including Lebanese)	8,657
Cantonese	6,798	Mandarin	8,235
Vietnamese	4,672	Maltese	7,639
Dutch	4,653	Croatian	7,492

Source: (Gibson et al. 2001).

Table 7: Projected largest language groups people in Migrant Group 2 aged 65 years and older, Queensland, 2011 & 2026

2011		2026	
English	22,980	English	38,524
Italian	7,235	Cantonese	4,934
German	5,341	Italian	4,824
Greek	2,508	German	4,656
Cantonese	2,221	Tagalog (Filipino)	4,034

Source: (Gibson et al. 2001).

Table 8: Projected largest language groups for people in Migrant Group 2 aged 65 years and older, Western Australia, 2011 & 2026

2011		2026	
English	19,815	English	32,444
Italian	11,203	Italian	8,166
German	2,408	Cantonese	4,075
Dutch	2,026	Vietnamese	2,883
Cantonese	1,931	German	2,337

Source: (Gibson et al. 2001).

Table 9: Projected largest language groups for people in Migrant Group 2 aged 65 years and older, South Australia, 2011 & 2026

2011		2026	
Italian	13,112	English	17,421
English	11,583	Italian	9,238
Greek	7,633	Greek	6,454
German	4,404	Vietnamese	3,136
Polish	1,737	German	2,411

Source: (Gibson et al. 2001).

Table 10: Projected largest language groups for people in Migrant Group 2 aged 65 years and older, Tasmania, 2011 & 2026

2011		2026	
English	2,610	English	3,172
German	602	German	397
Italian	508	Dutch	372
Dutch	499	Italian	296
Greek	306	Greek	289

Source: (Gibson et al. 2001).

Table 11: Projected largest language groups for people in Migrant Group 2 aged 65 years and older, Australian Capital Territory, 2011 & 2026

2011		2026	
English	2,672	English	4,827
Italian	994	Italian	854
Greek	790	Croatian	841
German	760	Spanish	751
Croatian	733	Greek	698

Source: (Gibson et al. 2001).

Table 12: Projected largest language groups for people in Migrant Group 2 aged 65 years and older, Northern Territory, 2011 & 2026

2011		2026	
English	877	English	1,690
Greek	363	Greek	522
Italian	204	Tagalog (Filipino)	414
German	199	German	217
Tagalog (Filipino)	128	Cantonese	185

Source: (Gibson et al. 2001).

Discussion

As in other developed nations, the ageing of the Australian population has enlarged the population at high risk of fall-related injury and population projections imply substantial increase in years to come (Moller 2003). In 2001, 12.4% of the Australian population was aged 65 years and older and population projections suggest that by 2051, this group will account for over 24% of the total population (Moller 2003).

A large proportion of the Australian population was born overseas and changing migration patterns following WW2 have resulted in an older population which is becoming highly culturally and linguistically diverse (Gibson et al. 2001; AIHW 2004b). Further, this cohort of the older population is not only increasing at a rate faster than that of the Australian-born, but is also ageing more rapidly. The proportion of the older population from culturally and linguistically diverse backgrounds aged 80 years or older is projected to increase from 16.3% in 1996 to 28.7% in 2026. Also, migrants to Australia tend to settle in capital cities, and in particular areas within capital cities and different migrant groups also choose to settle in specific cities rather than cities per se (ABS 2004b; AIHW 2004b).

Evidence suggests that the health-seeking behaviours of migrant groups differ and that people from different backgrounds may be more or less receptive to some preventative strategies (Parsons 1990; Lewis et al. 1997; Jirojwong & Manderson 1999; Markovic et al. 2002; Pang et al. 2003; Kandula et al. 2004). The cultural and linguistic diversity of the older Australian population, the geographic distribution of this population and the changing age-structure of different groups within the older population, in addition to the older population's sheer size, will impact upon the efficacy of falls-prevention programs, policies and planning in the short-term and continue to do so for at least the next four decades.

The analyses presented here report that the rates of hospitalised falls in people aged 65 years and older follow the pattern predicted by the 'healthy migrant' hypothesis and observed in population surveys (Razum et al. 2000; Kandula et al. 2004; McDonald & Kennedy 2004; Gill et al. 2005). Rates of hospitalised falls are generally highest in the Australian-born and lowest in those with culturally and linguistically diverse backgrounds (Migrant Group 2). This pattern appears to be consistent over time and becomes more apparent at older ages. Migrants from predominantly English-speaking cultures (Migrant Group 1) are observed to have rates of hospitalised falls approaching those of the Australian-born population and higher than those of Migrant Group 2. Migrants from particular English-speaking countries (e.g. Ireland, the United States of America and Canada) sometimes show higher rates of hospitalised falls than the Australian-born and may reflect an older age-structure for particular 'waves' of migration. Similarly, lower rates of hospitalised falls observed for migrants of Asian descent may reflect a lower median age for this later migration wave (ABS 2002; ABS 2004c). However, the rate of hospitalised falls presented in this report have been age-standardised (to the Australian population at 30 June 2001), and as such it appears that the differences noted reflect real differences in the risk of injurious falls. These findings provide a basis for expecting a varying, though generally downward, effect of migration on rates of hospitalisation due to falls in years to come as the proportion of older people from culturally and linguistically diverse backgrounds increases.

Analysis of state-based rates of hospitalised falls suggests that even at this broad level, the geographical diversity of migrant populations is influential. In most states, the pattern of highest rates of falls in the Australian-born and lowest in those with culturally and linguistically diverse backgrounds is apparent. However, in states with smaller populations, age structures divergent from the norm and different compositions of migrants in the population, such a pattern is not evident and rates are subject to greater annual fluctuations

than the rest of the country. Analyses of the rates of hospitalised falls for specific countries of birth by state also describe the geographic diversity of migrant populations and suggest that different sections of the older population are at higher risk of falls than others in particular areas.

Further, state-based analyses of place of usual residence in terms of capital cities versus the rest of the state suggest that different migrant groups in different regions have differing propensities to suffer serious falls, emphasising a need for regional approaches for fall-prevention strategies.

Population projections for older culturally and linguistically diverse Australians suggest that the predominance of particular language groups will alter quite significantly in the next few decades. European languages currently spoken by a large proportion of the older population will decrease in prevalence by 2026, while Asian languages, principally Vietnamese, Tagalog and Mandarin, will increase in prevalence. Also, different languages will predominate in different states. For example, a large proportion of older people in the Australian Capital Territory will speak Spanish in 2026 while the large proportions of Vietnamese and Cantonese speakers seen in other states will not be mirrored here. As such, in addition to addressing the substantial increase in the size of the older population at risk of falls and the regional diversity of migrant groups, falls prevention programs will have to incorporate the language preferences of different populations within their regional approach.

A limitation for the scope of this project was the paucity of population data subdivided by age and sex as well as country of birth. While national figures are available for recent years, population data for smaller area geographies are limited to dates near those which the Census of Population and Housing has been conducted by the ABS, that is every five years. Moreover, this information only appears to be readily available via the *HealthWIZ* platform (Prometheus Information Pty Ltd 2005), limiting the ways this information can be utilised (e.g. *HealthWIZ* automatically collapses categories to avoid small-number issues and provides only a limited array of age-bands). Further, a non-significant proportion of the Census data available from *HealthWIZ*, as it relates to country of birth, is classed as 'not stated', reducing the validity of rates derived from these denominators. Given the increasing size and relevance of migrants in the Australian population, increasing the availability of such population data should be considered to improve future research and planning.

Another aspect of migrant health as it relates to hospitalised falls which could not be considered here due to data limitations is that of socioeconomic status and falls injury. Socioeconomic status is a known contributor to injury risk and migrant populations are commonly socioeconomically disadvantaged (Cubbin et al. 2000; Laflamme & Eilert-Petersson 2001; Stokes et al. 2001; Brownell et al. 2002; Cubbin & Smith 2002; Lyons et al. 2003; Jones et al. 2004; Ferrando et al. 2005). It is reasonable to expect, then, that socioeconomic status may differentially influence the risk of falls in the older Australian population. Again, while proxies for socioeconomic status are available in hospital separations records, the equivalent denominator data to allow the production of rates is not readily accessible. In the future, researchers may be able to examine this issue, providing that a socioeconomic index appropriate for older populations becomes available.

While falls in the older population appear to conform to the healthy migrant hypothesis, in that current rates of falls in migrant groups are lower than that of the Australian population, these rates of hospitalisation are still substantial and contribute to an important proportion of the nation's health care burden. The changing age- and cultural- structure of the migrant population will ensure that this burden will increase considerably in the near future, requiring preventative approaches which are inclusive of diverse migrant groups. In addition to having different language requirements, different cultural groups have disparate health-seeking behaviours and attitudes regarding falls prevention activities and falls prevention strategies must be tailored to these needs.

Appendix–Birthplace categories

Table 13: Countries of birth classifications used in this report, following the Standard Australian Classification of Countries, Revision 2.02 (ABS 2004d)

SACC code	Country name	Migrant group	Major region	Minor region
1101	Australia	Australian-born	Oceania	Australia
1102	Norfolk Island	Australian-born	Oceania	Australia
1199	Australian External Territories, nec	Australian-born	Oceania	Australia
1201	New Zealand	Migrant Group 1	Oceania	New Zealand
2101	Channel Islands	Migrant Group 1	North-West Europe	United Kingdom
2102	England	Migrant Group 1	North-West Europe	United Kingdom
2103	Isle of Man	Migrant Group 1	North-West Europe	United Kingdom
2104	Northern Ireland	Migrant Group 1	North-West Europe	United Kingdom
2105	Scotland	Migrant Group 1	North-West Europe	United Kingdom
2106	Wales	Migrant Group 1	North-West Europe	United Kingdom
2201	Ireland	Migrant Group 1	North-West Europe	Ireland
8102	Canada	Migrant Group 1	Americas	Northern America
8104	United States of America	Migrant Group 1	Americas	Northern America
9225	South Africa	Migrant Group 1	Sub-Saharan Africa	Southern & East Africa
1301	New Caledonia	Migrant Group 2	Oceania	Melanesia
1302	Papua New Guinea	Migrant Group 2	Oceania	Melanesia
1303	Solomon Islands	Migrant Group 2	Oceania	Melanesia
1304	Vanuatu	Migrant Group 2	Oceania	Melanesia
1401	Guam	Migrant Group 2	Oceania	Micronesia
1402	Kiribati	Migrant Group 2	Oceania	Micronesia
1403	Marshall Islands	Migrant Group 2	Oceania	Micronesia
1404	Micronesia, Federated States of	Migrant Group 2	Oceania	Micronesia
1405	Nauru	Migrant Group 2	Oceania	Micronesia
1406	Northern Mariana Islands	Migrant Group 2	Oceania	Micronesia
1407	Palau	Migrant Group 2	Oceania	Micronesia
1501	Cook Islands	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1502	Fiji	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1503	French Polynesia	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1504	Niue	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1505	Samoa	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1506	Samoa, American	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)

(continued)

Table 13 (continued): Countries of birth classifications used in this report, following the Standard Australian Classification of Countries, Revision 2.02 (ABS 2004d)

SACC code	Country name	Migrant group	Major region	Minor region
1507	Tokelau	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1508	Tonga	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1511	Tuvalu	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1512	Wallis & Futuna	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1599	Polynesia (excludes Hawaii), nec	Migrant Group 2	Oceania	Polynesia (excludes Hawaii)
1601	Adelie Land (France)	Migrant Group 2	Oceania	Antarctica
1602	Argentinean Antarctic Territory	Migrant Group 2	Oceania	Antarctica
1603	Australian Antarctic Territory	Migrant Group 2	Oceania	Antarctica
1604	British Antarctic Territory	Migrant Group 2	Oceania	Antarctica
1605	Chilean Antarctic Territory	Migrant Group 2	Oceania	Antarctica
1606	Queen Maud Land (Norway)	Migrant Group 2	Oceania	Antarctica
1607	Ross Dependency (New Zealand)	Migrant Group 2	Oceania	Antarctica
2301	Austria	Migrant Group 2	North-West Europe	Western Europe
2302	Belgium	Migrant Group 2	North-West Europe	Western Europe
2303	France	Migrant Group 2	North-West Europe	Western Europe
2304	Germany	Migrant Group 2	North-West Europe	Western Europe
2305	Liechtenstein	Migrant Group 2	North-West Europe	Western Europe
2306	Luxembourg	Migrant Group 2	North-West Europe	Western Europe
2307	Monaco	Migrant Group 2	North-West Europe	Western Europe
2308	Netherlands	Migrant Group 2	North-West Europe	Western Europe
2311	Switzerland	Migrant Group 2	North-West Europe	Western Europe
2401	Denmark	Migrant Group 2	North-West Europe	Northern Europe
2402	Faeroe Islands	Migrant Group 2	North-West Europe	Northern Europe
2403	Finland	Migrant Group 2	North-West Europe	Northern Europe
2404	Greenland	Migrant Group 2	North-West Europe	Northern Europe
2405	Iceland	Migrant Group 2	North-West Europe	Northern Europe
2406	Norway	Migrant Group 2	North-West Europe	Northern Europe
2407	Sweden	Migrant Group 2	North-West Europe	Northern Europe
3101	Andorra	Migrant Group 2	Southern & Eastern Europe	Southern Europe
3102	Gibraltar	Migrant Group 2	Southern & Eastern Europe	Southern Europe
3103	Holy See	Migrant Group 2	Southern & Eastern Europe	Southern Europe
3104	Italy	Migrant Group 2	Southern & Eastern Europe	Southern Europe
3105	Malta	Migrant Group 2	Southern & Eastern Europe	Southern Europe
3106	Portugal	Migrant Group 2	Southern & Eastern Europe	Southern Europe

(continued)

Table 13 (continued): Countries of birth classifications used in this report, following the Standard Australian Classification of Countries, Revision 2.02 (ABS 2004d)

SACC code	Country name	Migrant group	Major region	Minor region
3107	San Marino	Migrant Group 2	Southern & Eastern Europe	Southern Europe
3108	Spain	Migrant Group 2	Southern & Eastern Europe	Southern Europe
3201	Albania	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3202	Bosnia & Herzegovina	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3203	Bulgaria	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3204	Croatia	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3205	Cyprus	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3206	Former Yugoslav Republic of Macedonia (FYROM)	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3207	Greece	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3208	Moldova	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3211	Romania	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3212	Slovenia	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3213	Serbia & Montenegro	Migrant Group 2	Southern & Eastern Europe	South Eastern Europe
3301	Belarus	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3302	Czech Republic	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3303	Estonia	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3304	Hungary	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3305	Latvia	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3306	Lithuania	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3307	Poland	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3308	Russian Federation	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3311	Slovakia	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
3312	Ukraine	Migrant Group 2	Southern & Eastern Europe	Eastern Europe
4101	Algeria	Migrant Group 2	North Africa & Middle East	North Africa
4102	Egypt	Migrant Group 2	North Africa & Middle East	North Africa
4103	Libya	Migrant Group 2	North Africa & Middle East	North Africa
4104	Morocco	Migrant Group 2	North Africa & Middle East	North Africa
4105	Sudan	Migrant Group 2	North Africa & Middle East	North Africa
4106	Tunisia	Migrant Group 2	North Africa & Middle East	North Africa
4107	Western Sahara	Migrant Group 2	North Africa & Middle East	North Africa
4199	North Africa, nec	Migrant Group 2	North Africa & Middle East	North Africa
4201	Bahrain	Migrant Group 2	North Africa & Middle East	Middle East
4202	Gaza Strip & West Bank	Migrant Group 2	North Africa & Middle East	Middle East
4203	Iran	Migrant Group 2	North Africa & Middle East	Middle East
4204	Iraq	Migrant Group 2	North Africa & Middle East	Middle East

(continued)

Table 13 (continued): Countries of birth classifications used in this report, following the Standard Australian Classification of Countries, Revision 2.02 (ABS 2004d)

SACC code	Country name	Migrant group	Major region	Minor region
4205	Israel	Migrant Group 2	North Africa & Middle East	Middle East
4206	Jordan	Migrant Group 2	North Africa & Middle East	Middle East
4207	Kuwait	Migrant Group 2	North Africa & Middle East	Middle East
4208	Lebanon	Migrant Group 2	North Africa & Middle East	Middle East
4211	Oman	Migrant Group 2	North Africa & Middle East	Middle East
4212	Qatar	Migrant Group 2	North Africa & Middle East	Middle East
4213	Saudi Arabia	Migrant Group 2	North Africa & Middle East	Middle East
4214	Syria	Migrant Group 2	North Africa & Middle East	Middle East
4215	Turkey	Migrant Group 2	North Africa & Middle East	Middle East
4216	United Arab Emirates	Migrant Group 2	North Africa & Middle East	Middle East
4217	Yemen	Migrant Group 2	North Africa & Middle East	Middle East
5101	Burma (Myanmar)	Migrant Group 2	South-East Asia	Mainland South-East Asia
5102	Cambodia	Migrant Group 2	South-East Asia	Mainland South-East Asia
5103	Laos	Migrant Group 2	South-East Asia	Mainland South-East Asia
5104	Thailand	Migrant Group 2	South-East Asia	Mainland South-East Asia
5105	Viet Nam	Migrant Group 2	South-East Asia	Mainland South-East Asia
5201	Brunei Darussalam	Migrant Group 2	South-East Asia	Maritime South-East Asia
5202	Indonesia	Migrant Group 2	South-East Asia	Maritime South-East Asia
5203	Malaysia	Migrant Group 2	South-East Asia	Maritime South-East Asia
5204	Philippines	Migrant Group 2	South-East Asia	Maritime South-East Asia
5205	Singapore	Migrant Group 2	South-East Asia	Maritime South-East Asia
5206	East Timor	Migrant Group 2	South-East Asia	Maritime South-East Asia
6101	China	Migrant Group 2	North-East Asia	Chinese Asia
6102	Hong Kong (SAR of China)	Migrant Group 2	North-East Asia	Chinese Asia
6103	Macau (SAR of China)	Migrant Group 2	North-East Asia	Chinese Asia
6104	Mongolia	Migrant Group 2	North-East Asia	Chinese Asia
6105	Taiwan	Migrant Group 2	North-East Asia	Chinese Asia
6201	Japan	Migrant Group 2	North-East Asia	Japan & the Koreas
6202	Korea, Democratic People's Republic of (North)	Migrant Group 2	North-East Asia	Japan & the Koreas
6203	Korea, Republic of (South)	Migrant Group 2	North-East Asia	Japan & the Koreas
7101	Bangladesh	Migrant Group 2	Southern & Central Asia	Southern Asia
7102	Bhutan	Migrant Group 2	Southern & Central Asia	Southern Asia
7103	India	Migrant Group 2	Southern & Central Asia	Southern Asia
7104	Maldives	Migrant Group 2	Southern & Central Asia	Southern Asia
7105	Nepal	Migrant Group 2	Southern & Central Asia	Southern Asia

(continued)

Table 13 (continued): Countries of birth classifications used in this report, following the Standard Australian Classification of Countries, Revision 2.02 (ABS 2004d)

SACC code	Country name	Migrant group	Major region	Minor region
7106	Pakistan	Migrant Group 2	Southern & Central Asia	Southern Asia
7107	Sri Lanka	Migrant Group 2	Southern & Central Asia	Southern Asia
7201	Afghanistan	Migrant Group 2	Southern & Central Asia	Central Asia
7202	Armenia	Migrant Group 2	Southern & Central Asia	Central Asia
7203	Azerbaijan	Migrant Group 2	Southern & Central Asia	Central Asia
7204	Georgia	Migrant Group 2	Southern & Central Asia	Central Asia
7205	Kazakhstan	Migrant Group 2	Southern & Central Asia	Central Asia
7206	Kyrgyz Republic	Migrant Group 2	Southern & Central Asia	Central Asia
7207	Tajikistan	Migrant Group 2	Southern & Central Asia	Central Asia
7208	Turkmenistan	Migrant Group 2	Southern & Central Asia	Central Asia
7211	Uzbekistan	Migrant Group 2	Southern & Central Asia	Central Asia
8101	Bermuda	Migrant Group 2	Americas	Northern America
8103	St Pierre & Miquelon	Migrant Group 2	Americas	Northern America
8201	Argentina	Migrant Group 2	Americas	South America
8202	Bolivia	Migrant Group 2	Americas	South America
8203	Brazil	Migrant Group 2	Americas	South America
8204	Chile	Migrant Group 2	Americas	South America
8205	Colombia	Migrant Group 2	Americas	South America
8206	Ecuador	Migrant Group 2	Americas	South America
8207	Falkland Islands	Migrant Group 2	Americas	South America
8208	French Guiana	Migrant Group 2	Americas	South America
8211	Guyana	Migrant Group 2	Americas	South America
8212	Paraguay	Migrant Group 2	Americas	South America
8213	Peru	Migrant Group 2	Americas	South America
8214	Suriname	Migrant Group 2	Americas	South America
8215	Uruguay	Migrant Group 2	Americas	South America
8216	Venezuela	Migrant Group 2	Americas	South America
8299	South America, nec	Migrant Group 2	Americas	South America
8301	Belize	Migrant Group 2	Americas	Central America
8302	Costa Rica	Migrant Group 2	Americas	Central America
8303	El Salvador	Migrant Group 2	Americas	Central America
8304	Guatemala	Migrant Group 2	Americas	Central America
8305	Honduras	Migrant Group 2	Americas	Central America
8306	Mexico	Migrant Group 2	Americas	Central America
8307	Nicaragua	Migrant Group 2	Americas	Central America

(continued)

Table 13 (continued): Countries of birth classifications used in this report, following the Standard Australian Classification of Countries, Revision 2.02 (ABS 2004d)

SACC code	Country name	Migrant group	Major region	Minor region
8308	Panama	Migrant Group 2	Americas	Central America
8401	Anguilla	Migrant Group 2	Americas	Caribbean
8402	Antigua & Barbuda	Migrant Group 2	Americas	Caribbean
8403	Aruba	Migrant Group 2	Americas	Caribbean
8404	Bahamas	Migrant Group 2	Americas	Caribbean
8405	Barbados	Migrant Group 2	Americas	Caribbean
8406	Cayman Islands	Migrant Group 2	Americas	Caribbean
8407	Cuba	Migrant Group 2	Americas	Caribbean
8408	Dominica	Migrant Group 2	Americas	Caribbean
8411	Dominican Republic	Migrant Group 2	Americas	Caribbean
8412	Grenada	Migrant Group 2	Americas	Caribbean
8413	Guadeloupe	Migrant Group 2	Americas	Caribbean
8414	Haiti	Migrant Group 2	Americas	Caribbean
8415	Jamaica	Migrant Group 2	Americas	Caribbean
8416	Martinique	Migrant Group 2	Americas	Caribbean
8417	Montserrat	Migrant Group 2	Americas	Caribbean
8418	Netherlands Antilles	Migrant Group 2	Americas	Caribbean
8421	Puerto Rico	Migrant Group 2	Americas	Caribbean
8422	St Kitts & Nevis	Migrant Group 2	Americas	Caribbean
8423	St Lucia	Migrant Group 2	Americas	Caribbean
8424	St Vincent & the Grenadines	Migrant Group 2	Americas	Caribbean
8425	Trinidad & Tobago	Migrant Group 2	Americas	Caribbean
8426	Turks & Caicos Islands	Migrant Group 2	Americas	Caribbean
8427	Virgin Islands, British	Migrant Group 2	Americas	Caribbean
8428	Virgin Islands, United States	Migrant Group 2	Americas	Caribbean
9101	Benin	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9102	Burkina Faso	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9103	Cameroon	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9104	Cape Verde	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9105	Central African Republic	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9106	Chad	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9107	Congo	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9108	Congo, Democratic Republic of	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9111	Cote d'Ivoire	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9112	Equatorial Guinea	Migrant Group 2	Sub-Saharan Africa	Central & West Africa

(continued)

Table 13 (continued): Countries of birth classifications used in this report, following the Standard Australian Classification of Countries, Revision 2.02 (ABS 2004d)

SACC code	Country name	Migrant group	Major region	Minor region
9113	Gabon	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9114	Gambia	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9115	Ghana	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9116	Guinea	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9117	Guinea-Bissau	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9118	Liberia	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9121	Mali	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9122	Mauritania	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9123	Niger	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9124	Nigeria	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9125	Sao Tome & Principe	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9126	Senegal	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9127	Sierra Leone	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9128	Togo	Migrant Group 2	Sub-Saharan Africa	Central & West Africa
9201	Angola	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9202	Botswana	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9203	Burundi	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9204	Comoros	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9205	Djibouti	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9206	Eritrea	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9207	Ethiopia	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9208	Kenya	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9211	Lesotho	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9212	Madagascar	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9213	Malawi	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9214	Mauritius	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9215	Mayotte	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9216	Mozambique	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9217	Namibia	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9218	Reunion	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9221	Rwanda	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9222	St Helena	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9223	Seychelles	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9224	Somalia	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9226	Swaziland	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa

(continued)

Table 13 (continued): Countries of birth classifications used in this report, following the Standard Australian Classification of Countries, Revision 2.02 (ABS 2004d)

SACC code	Country name	Migrant group	Major region	Minor region
9227	Tanzania	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9228	Uganda	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9231	Zambia	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9232	Zimbabwe	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa
9299	Southern & East Africa, nec	Migrant Group 2	Sub-Saharan Africa	Southern & East Africa

References

ABS (Australian Bureau of Statistics) 2002. Australian social trends 2002. Population— population composition: Older overseas-born Australians. Cat. no. 4102.0. Canberra: ABS. <http://www.abs.gov.au/ausstats/abs@.nsf/0/4CF582717C12D9D0CA256BCD008272EE?Open> Date accessed: 19 Feb 2003. Last updated: 18 Nov 2002.

ABS 2004a. Australian demographic statistics, Sep 2004. Feature article: Population by country of birth. Cat. no. 3101.0. Canberra: ABS. <http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/1B33F459180090D5CA256FCD0072ADA7/$File/31010_sep%202004.pdf> Date accessed: 11 Apr 2006. Last updated: 8 Feb 2006.

ABS 2004b. Australian social trends 2004. Population—Population: Where do the overseas-born population live? Canberra: ABS. <http://www.abs.gov.au/Ausstats/abs@.nsf/0/999B9257FAE07DF5CA256E9E00263527?Open> Date accessed: 17 June 2005. Last updated: 18 March 2005.

ABS 2004c. Migration, Australia. 2002–03. Cat. no. 3412.0. Canberra: ABS.

ABS 2004d. Standard Australian Classification of Countries (SACC). Revision 2.02. Cat. no. 1269.0. Canberra: ABS.

ABS 2005. Year book Australia, 2005. Australia's top four overseas birthplace groups. Cat. no. 1301.0. Canberra: ABS. >http://www.abs.gov.au/ausstats/abs@.nsf/Previousproducts/1301.0Feature%20Article72005?opendocument&tabname=Summary&prodno=1301.0&issue=2005&num=&view=> Date accessed: 28 April 2006.

ABS 2006a. National health survey: Summary of results, 2004–05. Cat. no. 4364.0. Canberra: ABS. <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.02004-05?OpenDocument> Date accessed: 28 September 2006. Last updated: 20 June 2006.

ABS 2006b. Migration, Australia. 2004–05. Cat. no. 3412.0. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2004a. Australia's health 2004: the ninth biennial health report of the Australian Institute of Health and Welfare. Canberra, ACT: AIHW.

AIHW 2004b. Diversity among older Australians in capital cities 1996–2011. AIHW Bulletin 18.

Bradley C & Harrison J (forthcoming) Hospitalisations due to falls in older people, Australia, 2003–04. Adelaide: AIHW.

Brownell M, Friesen D & Mayer T 2002. Childhood injury rates in Manitoba—Socioeconomic influences. Canadian Journal of Public Health-Revue Canadienne De Sante Publique 93:S50–S6.

Chang JT, Morton SC, Rubenstein LZ, Mojica WA, Maglione M, Suttorp MJ, Roth EA & Shekelle PG 2004. Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomised clinical trials. British Medical Journal 328 (7441):680–3.

Cripps R, Steenkamp M & Harrison J 2002. Hospital separations due to injury and poisoning, Australia 1998–99. AIHW cat. no. INJCAT 46. Adelaide: AIHW.

Cubbin C, LeClere FB & Smith GS 2000. Socioeconomic status and the occurrence of fatal and nonfatal injury in the United States. American Journal of Public Health 90 (1):70–7.

Cubbin C & Smith GS 2002. Socioeconomic inequalities in injury: Critical issues in design and analysis. Annual Review of Public Health 23:349–75.

Davis JW, Ross PD, Nevitt MC & Wasnich RD 1997. Incidence rates of falls among Japanese men and women living in Hawaii. Journal of Clinical Epidemiology 50 (5):589–94.

Day L, Fildes B, Gordon I, Fitzharris M, Flamer H & Lord S 2002. Randomised factorial trial of falls prevention among older people living in their own homes. British Medical Journal 325 (7356):128–31.

Dolinis J, Harrison JE & Andrews GR 1997. Factors associated with falling in older Adelaide residents. Australian and New Zealand Journal of Public Health 21 (5):462–8.

Faulkner KA, Cauley JA, Zmuda JA, Griffin JA & Nevitt MC 2003. Is social integration associated with the risk of falling in older community-dwelling women? Journals of Gerontology Series a-Biological Sciences and Medical Sciences 58 (10):954–9.

Ferrando J, Rodriguez-Sanz M, Borrell C, Martinez V & Plasencia A 2005. Individual and contextual effects in injury morbidity in Barcelona (Spain). Accident Analysis and Prevention 37 (1):85–92.

Fuller GF 2000. Falls in the elderly. American Family Physician 61 (7):2159–68.

Gibson D, Braun P, Benham C & Mason F 2001. Projections of older immigrants: people from culturally and linguistically diverse backgrounds, 1996–2026, Australia. AIHW cat. no. AGE 18. Canberra: AIHW.

Gill T, Taylor AW & Pengelly A 2005. A population-based survey of factors relating to the prevalence of falls in older people. Gerontology 51 (5):340–5.

Hendrie D, Hall S, Arena G & Legge M (2004) Health system costs of falls of older adults in Western Australia. Australian Health Review 28 (3):363–73.

Jirojwong S & Manderson L 1999. Physical health, lifestyles and preventive health behaviours: what are the implications for health care for immigrants? In: Rice PL Living in a new country: understanding migrants' health. Ascot Vale, Vic: Ausmed Publications: 79–102.

Jones S, Johansen A, Brennan J, Butler J & Lyons RA 2004. The effect of socioeconomic deprivation on fracture incidence in the United Kingdom. Osteoporosis International 15 (7):520–4.

Kandula NR, Kersey M & Lurie N 2004. Assuring the health of immigrants: What the leading health indicators tell us. Annual Review of Public Health 25:357–76.

Kouris-Blazos A 2002. Morbidity mortality paradox of 1st generation Greek Australians. Asia Pacific Journal of Clinical Nutrition 11 (S3):S569–75.

Kreisfeld R & Harrison J (forthcoming). Use of multiple causes of death data for identifying and reporting injury mortality. Adelaide: AIHW.

Laflamme L & Eilert-Petersson E 2001. Injury risks and socioeconomic groups in different settings—Differences in morbidity between men and between women at working ages. European Journal of Public Health 11 (3):309–13.

Lauderdale DS, Kuohung V, Chang SL & Chin MH 2003. Identifying older Chinese immigrants at high risk for osteoporosis. Journal of General Internal Medicine 18 (7):508–15.

Lechevallier-Michel N, Gautier-Bertrand M, Alperovitch A, Berr C, Belmin J, Legrain S, Saint-Jean O, Tavernier B, Dartigues JF, Fourrier-Reglat A & Grp CS 2005. Frequency and risk factors of potentially inappropriate medication use in a community-dwelling elderly population: results from the 3C Study. European Journal of Clinical Pharmacology 60 (11):813–9.

Lewis MV, Szabo RA, Weiner KR, McCall L & Piterman L 1997. Cultural barriers to exercise amongst the ethnic elderly. Internet J Health Promot 20 (4).

Lord SR, Sherrington C & Menz HB 2001. Falls in older people: risk factors and strategies for prevention. Cambridge, UK: Cambridge University Press.

Lord SR, Ward JA, Williams P & Anstey KJ 1993. An epidemiologic-study of falls in older community-dwelling women—The Randwick falls and fractures study. Australian Journal of Public Health 17 (3):240–5.

Lyons RA, Jones SJ, Deacon T & Heaven M 2003. Socioeconomic variation in injury in children and older people: a population based study. Injury Prevention 9 (1):33–7.

Markovic M, Manderson L & Kelaher M 2002. The health of immigrant women: Queensland women from the Former Yugoslavia. Journal of Immigrant Health 4 (1):5–15.

Marquez MA, Melton LJ, Muhs JM, Crowson CS, Tosomeen A, O'Connor MK, O'Fallon WM & Riggs BL 2001. Bone density in an immigrant population from Southeast Asia. Osteoporosis International 12 (7):595–604.

Mathers C 1996. Health patterns of immigrants in Australia. People and Place 4 (1):8–18.

Mathers C & Merton C 1994. Health differentials among adult Australians aged 25–64 years. Canberra, ACT: AGPS (Australian Government Publishing Service) (1).

Mathers C & Penm R 1999. Health system costs of injury, poisoning and musculoskeletal disorders in Australia 1993–94. AIHW cat. no. HWE 12. Canberra: AIHW.

McDonald JT & Kennedy S 2004. Insights into the 'healthy immigrant effect': health status and health service use of immigrants to Canada. Social Science & Medicine 59 (8):1613–27.

Moller J 1998. Cost of injury. AIHW.
<http://www.nisu.flinders.edu.au/pubs/injcost/injcost.html> Date accessed: 27 April 2006.

Moller J 2003. Projected costs of fall related injury to older persons due to demographic change in Australia: report to the Commonwealth Department of Health and Ageing. Canberra: New Directions in Health and Safety.

Morris M, Osborne D, Hill K, Kendig H, Lundgren-Lindquist B, Browning C & Reid J 2004. Predisposing factors for occasional and multiple falls in older Australians who live at home. Australian Journal of Physiotherapy 50 (3):153–9.

Moxham L & Pegg S 1998. Delivering health services for ethnic minorities in regional Australia. Australian Journal of Primary Health Interchange 4 (1):72–7.

NCCH (National Centre for Classification in Health) 2000. The international classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM). Second edition. Sydney, Australia: NCCH.

NCCH 2002. The international classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM). Third edition. Sydney, Australia: NCCH.

Oxley J, Fildes B, Ozanne-Smith J & Day L 1994. Injuries and falls among older people. In: Fildes B Injuries among older people. Victoria: Collins Dove.

Pang EC, Jordan-Marsh M, Silverstein M & Cody M 2003. Health-seeking behaviors of elderly Chinese Americans: Shifts in expectations. Gerontologist 43 (6):864–74.

Parsons C 1990. Cross/cultural issues in health care. In: Reid J & Trompf P(eds). The health of immigrant Australia: A social perspective. Marrickville, NSW: Harcourt Brace Jovanich: 108–53.

Pointer S, Harrison J & Bradley C 2003. National injury prevention plan priorities for 2003 and beyond: Discussion paper. AIHW cat. no. INJCAT 55. Adelaide: AIHW.

Prometheus Information Pty Ltd 2005. HealthWIZ. Canberra, ACT. Viewed.

Razum O, Zeeb H, Akgun HS & Yilmaz S 1998. Low overall mortality of Turkish residents in Germany persists and extends into a second generation: merely a healthy migrant effect? Tropical Medicine & International Health 3 (4):297–303.

Razum O, Zeeb H & Rohrmann S 2000 The 'healthy migrant effect'—not merely a fallacy of inaccurate denominator figures. International Journal of Epidemiology 29 (1):191–2.

Rowland D 1999. The ethnic aged population and the likelihood of special needs. Australasian Journal on Ageing 18 (3 Suppl):50–4.

Shigematsu R, Chang ML, Yabushita N, Sakai T, Nakagaichi M, Nho H & Tanaka K 2002. Dance-based aerobic exercise may improve indices of falling risk in older women. Age and Ageing 31 (4):261–6.

Stokes M, Ashby K & Clapperton A 2001. The effect of socioeconomic status on injury among Victorians. Hazard 49 (2001–2002 Summer):1–12, 5–7.

Strong K, Trickett PJ & Bhatia K 1998. The health of overseas born Australians, 1994/1996. Australian Health Review 21 (2):124–33.

Suzuki T, Kim H, Yoshida H & Ishizaki T 2004. Randomized controlled trial of exercise intervention for the prevention of falls in community-dwelling elderly Japanese women. Journal of Bone and Mineral Metabolism 22 (6):602–11.

Taylor R, Chey T, Bauman A & Webster I 1999. Socio-economic, migrant and geographic differentials in coronary heart disease occurrence in New South Wales. Australian and New Zealand Journal of Public Health 23 (1):20–6.

West J, Hippisley-Cox J, Coupland CAC, Price GM, Groom LM, Kendrick D & Webber E 2004. Do rates of hospital admission for falls and hip fracture in elderly people vary by socio-economic status? Public Health 118 (8):576–81.

Wood BH, Bilclough JA, Bowron A & Walker RW 2002. Incidence and prediction of falls in Parkinson's disease: a prospective multidisciplinary study. Journal of Neurology Neurosurgery and Psychiatry 72 (6):721–5.

Young C 1992. Mortality: the ultimate indicator of survival: the differential experience between birthplace groups. In: Donovan J, d'Espaignet E, Merton C & van Ommeren M(eds). Immigrants in Australia: a health profile. Canberra, ACT: AIHW.

List of figures

List of tables

AIHW

The ageing of the Australian population has enlarged the population at high risk of fall-related injury and population projections imply substantial increase in years to come. A large proportion of Australia's older population were born overseas and changing migration patterns following the Second World War have resulted in an older population which is becoming highly culturally and linguistically diverse. This report examines fall-related hospitalisations for people aged 65 years and older in 2000–03 according to country of birth and place of usual residence.

The rates of falls in the older Australian population over the study period conform to the 'healthy migrant' hypothesis: rates of falls are highest in the Australian-born and lowest in older people from culturally and linguistically diverse backgrounds. While current rates of falls in migrant groups are lower than that of the Australian-born population these rates of hospitalisation are still substantial and contribute to an important proportion of the nation's health care burden. The changing age- and cultural- structure of the migrant population will ensure that this burden will increase considerably in the near future, requiring preventative approaches which are inclusive of diverse migrant groups. Regional analyses also suggest that local sociocultural population profiles should be taken into account in future falls prevention planning.

ISBN 978 1 74024 681 1