

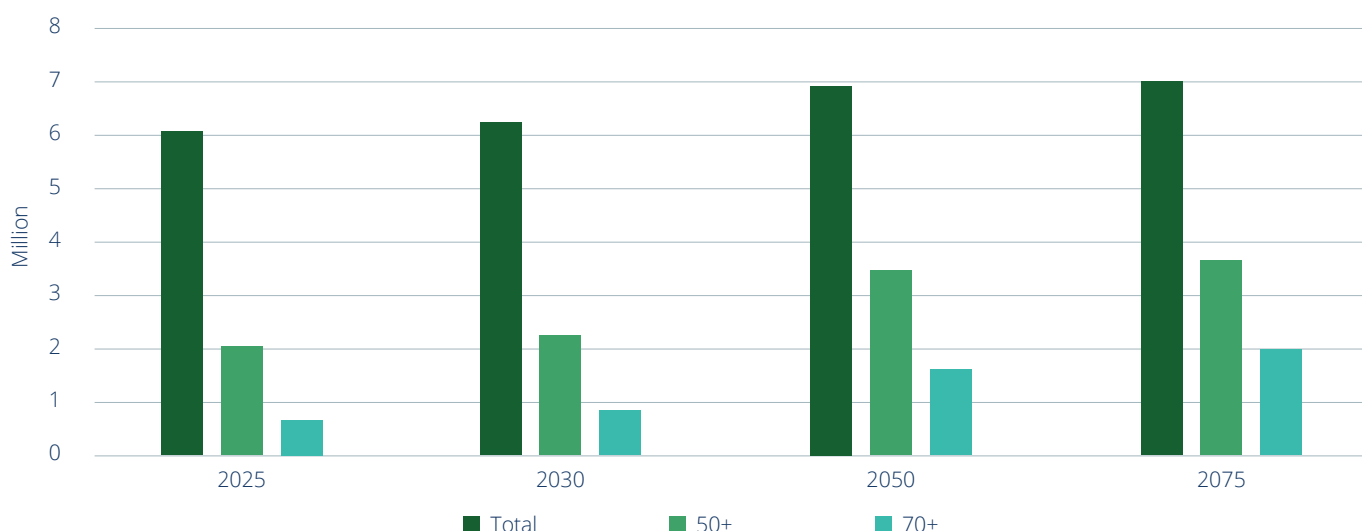
DEMOGRAPHIC TRENDS

Singapore's population is projected to grow steadily until the mid-21st century, increasing by 14% from 6.1 million in 2025 to more than 6.9 million by 2050. However, population growth is expected to slow significantly in the second half of the century, with only a marginal increase of less than 1% to 7.0 million by 2075 (*Figure 1*). Singaporeans currently have an average life expectancy of 86.8 years, which is expected to rise to 92.5 years by 2075, an increase of more than 6%.

The proportion of Singaporeans aged 50 years or older is set to rise significantly. In 2025, this group of almost 2.1 million people represents 34% of the total population. By 2075, this will increase to 51%, with numbers increasing to 3.6 million (*Figure 1*).

The most dramatic demographic shift in Singapore will be among those aged 70 years or older, whose numbers are projected to surge from 0.6 million in 2025 to more than 2.0 million in 2075, a 239% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for almost 10% of Singapore's 6.1 million people. By 2075, they will make up almost 29% of a larger 7.0 million population, reflecting a 193% relative increase in their proportion of the total population.

Figure 1. Population projections for Singapore from 2025 to 2075 ^[1]



HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

In 2019, Chandran et al.^[2] evaluated the projected health and economic burden of osteoporotic fractures in Singapore from 2017 to 2035 and assessed the potential impact of increasing treatment rates using pharmacological options such as denosumab.

To estimate future fracture incidence and associated costs, the study used population forecasts for adults aged 50 years and over in combination with osteoporosis prevalence data. Two scenarios were modelled: a status quo scenario assuming the treatment rate of 28% at the time remained unchanged, and an intervention scenario in

which treatment rates increased to 75%, primarily through the use of denosumab. The analysis included projections for fracture incidence as well as direct healthcare costs (e.g., hospitalisation and outpatient services) and indirect societal costs (e.g., productivity loss and caregiver burden) for hip, vertebral, and other osteoporotic fractures.

The results revealed that osteoporotic fractures in Singapore are expected to increase by 57.9%, rising from 15,267 cases in 2017 to 24,104 cases in 2035. The total economic burden is projected to grow from S\$183.5 million (USD 143.1 million) to S\$289.6 million (USD 225.9 million) over the same period. Enhancing treatment coverage could prevent up to 29,096 fractures and result in cumulative cost savings of S\$330.6 million (USD 257.9 million).

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
21,200 (comprehensive one-year cost) [3] 4,650 - 6,980*	No data	10 - 11 days [4]

*Estimated for direct within hospital cost

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

Table 1. Status of centralised fracture databases in Singapore

Is a centralised database established?	Yes
Level of database coverage	National
Hip fracture records documented per year	3,900
Percentage of hip fractures treated surgically	74
All fracture records documented per year	15,267
Percentage of all fractures treated surgically	60
Other fracture records documented per year	6,923
Percentage of other fractures treated surgically	75
Age range and gender of patients in database	40-75+ years for both males and females

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is primarily managed by primary care physicians, while specialist input is provided by rheumatologists, orthopaedic surgeons, gynaecologists, endocrinologists, geriatricians, rehabilitation medicine physicians, and internal medicine doctors. Osteoporosis is recognised as a standalone medical specialty and is a recognised component of specialty medical training, particularly for endocrinologists, rheumatologists, orthopaedic surgeons, geriatricians, rehabilitation medicine physicians, and internal medicine doctors.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis was officially documented as a National Health Priority (NHP) in 2008 [5]. The NHP is mandated by the government, but it is not governed or overseen by any additional regulatory or independent body. The NHP does not include any specific action plans or implementation strategies and there is no patient involvement outside of the NHP.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in [Table 2](#), a range of osteoporosis treatments are available and reimbursed in Singapore. Oral bisphosphonates are designated as first-line treatments in the country.

Treatment reimbursement in Singapore involves a combination of funding from the national health system, private insurance, and patient co-payments. Reimbursement is patient dependant and based on needs assessment by medical social workers. Reimbursement is subject to specific criteria, including prior fracture history, age, bone mineral density results, fracture risk threshold, first- or second-line treatment option, and whether authorisation is required.

Reimbursement policies may, at times, conflict with physicians' preferred treatment strategies. Access to treatment is also influenced by the specific terms and conditions of patients' private insurance plans. Public subsidies in Singapore cover older antiresorptives: oral bisphosphonates (alendronate, risedronate) and intravenous zoledronic acid. Denosumab was recommended for inclusion in the Medication Assistance Fund (MAF) list for defined high-risk osteoporosis indications with effect from 1 July 2022. Anabolic agents have limited subsidy availability, although a teriparatide biosimilar was recommended for MAF inclusion effective 1 August 2025.

Table 2. Availability and reimbursement of osteoporosis treatments in Singapore

Treatment	Available	Reimbursed	% Reimbursed*
Risedronate	X	X	50 - 75%
Alendronate	X	X	50 - 75%
Ibandronate			
Zoledronic acid	X	X	50 - 75%
Clodronate			
Pamidronate			
Raloxifene	X	X	50 - 75%
Bazedoxifene			
Denosumab	X	X	50 - 75%
Strontium Ranelate			
Teriparatide	X		
PTH (1-84)			
Abaloparatide			
Romosozumab	X		
Vitamin D/Calcium supplements	X	X	50 - 75%
Calcitonin	X		
Hormone Replacement Therapy	X	X	50 - 75%
Testosterone	X		
Alfacalcidol			
Calcidiol			
Calcitriol			
Tibolone	X		

* Osteoporosis medications are eligible for reimbursement in Singapore, typically covering 50 - 75% of the cost for standard drugs in public institutions for citizens and a smaller percentage (25%) for Permanent Residents, with additional financial assistance available for specific drugs such as denosumab via the Medication Assistance Fund (MAF), and through MediSave for outpatient care, subject to scheme limits and eligibility.

PATIENT SUPPORT ORGANISATIONS

The *Osteoporosis Society of Singapore (OSS)* is the national patient organisation dedicated to improving bone health and reducing the burden of osteoporosis across the country. As a disease-specific charity operating at the national level, OSS focuses on public awareness, policy advocacy, education, capacity building, and providing support for individuals affected by osteoporosis and fragility fractures. The society actively involves patient representatives in a range of initiatives aimed at raising awareness and empowering the community. One key initiative is the training of Bone Health Ambassadors, who offer peer support and contribute to community outreach efforts. While OSS plays a vital role in advocacy and support, it is not engaged in research and development activities.

The only dedicated peer-to-peer osteoporosis support group in Singapore is the *WISHBONE (Women (and Men) In Support of Healthy Bones)* at *Singapore General Hospital (SGH)*, established in 2013 by the *Osteoporosis and Bone Metabolism Unit* at SGH. It provides a true support setting where patients share experiences, support one another, and learn from regular educational sessions with healthcare professionals.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY



GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2018, the Ministry of Health’s Agency for Care Effectiveness (ACE) published the *Appropriate Care Guideline for Osteoporosis Identification and Management in Primary Care* ^[5]. The guideline covers the management of osteoporosis in men and women in primary care.

This was followed in 2025 by the *ACE Clinical Guideline* ^[6] which focuses on simple recommendations for case finding and treatment initiation, with applicability largely confined to basic primary care.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1 - 2 days
% of hip fractures surgically managed	76 - 90%

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Singapore.

	Waiting time (d)	4 - 5 weeks (public) / 3-7 days (private)
	Cost (USD)	75 - 100
	Is it reimbursed?	Yes partially
	Is reimbursement a barrier to accessing treatment?	Yes

Calcaneal ultrasound is used in several medical centres primarily for screening and is also employed in community-based or mass screening initiatives. However, locally derived normative reference ranges are not available.

FRACTURE RISK ASSESSMENT TOOLS

FRAX®-based fixed intervention thresholds based on an in-house developed Markov model are included in the 2025 update of the *ACE Clinical guidelines* ^[6]. The intervention thresholds recommended in this guideline differ from the hybrid intervention thresholds recommended in an earlier published and peer-reviewed study by Chandran M et al ^[3]. Health Care Providers are encouraged by experts to apply clinical judgement in determining the most appropriate threshold for intervention, with due consideration of patient-specific factors and the broader clinical context.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Hip fracture database	Under Ministry of Health	Under Ministry of Health



OVERVIEW OF OSTEOPOROSIS IN SINGAPORE

Osteoporosis remains a national health priority in Singapore, with ongoing efforts aimed at promoting healthy aging and reducing the burden of fragility fractures. The forthcoming implementation of HealthierSG will further reinforce this focus, as osteoporosis is set to become one of the designated national health plans by 2025. This initiative is expected to enable systematic data collection on fractures at the national level and support cost-effectiveness analyses of various prevention strategies.

Singapore is actively strengthening primary care services and promoting “ageing in place” within the community as part of broader efforts to support the elderly population. Programmes under these initiatives aim to enhance early detection, prevention, and management of osteoporosis and its associated risks.

Key statistics commonly referenced include hip fracture incidence and DXA utilisation rates. Between 2017 and 2035, the incidence of osteoporotic fractures is projected to increase significantly, from 15,267 to 24,104 cases overall (a 57.9% increase), with female cases rising from 10,717 to 17,225 (a 60.7% increase), and male cases from 4,550 to 6,878 (a 51.2% increase^[2]). The total economic burden associated with these fractures, including both direct healthcare costs and indirect societal costs, is estimated to rise from S\$183.5 million in 2017 (USD 143.1 million) to S\$289.6 million (USD 225.9 million) in 2035.

Despite its prioritisation, osteoporosis management in Singapore faces many challenges. Large scale epidemiological studies are lacking. Fracture Liaison Services are confined to only the public teaching hospitals, and dedicated research funding in metabolic bone disorders remains insufficient.



However, ongoing public-education efforts, including annual public health forums run by the Osteoporosis Society of Singapore and hospitals such as Singapore General Hospital and high-quality research by individual investigators reflect a sustained commitment to preventing skeletal fragility and improving bone health at both clinical and population levels. In addition, partnerships with organisations such as the IOF, International Society for Clinical Densitometry (ISCD), the Asian Federation of Osteoporosis Societies (AFOS) and the Asia Pacific Consortium on Osteoporosis (APCO) to hold conferences dedicated to bone health and metabolic bone disorders, and the participation of all three medical universities in the International Osteoporosis Foundation University Network, provide recurring regional platforms for professional education, guideline development and cross-country collaboration.

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This document highlights the key findings for Singapore, published in “The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025”. View the complete report at: <https://www.osteoporosis.foundation/asia-pacific-audit-2025>

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APAC Audit Contributors based in Singapore

Singapore General Hospital
<https://sgh.com.sg>

National University of Singapore
<https://nus.edu.sg/>

Osteoporosis Society (Singapore) (OSS)
<http://www.osteoporosis.sg/>



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