AUSTRALIAN & NEW ZEALAND FRAGILITY FRACTURE REGISTRY

ANZFFR
ANNUAL REPORT 2026

Acknowledgements

Ehara taku toa i te toa takitahi, engari he toa takitini.

My strength is not that of an individual, but that of the collective.

This whakataukī reminds us that our achievements (near-universal coverage, demonstrated excellence, and our pursuit of equity) are the result of many hands, many minds, and many hearts working together. Behind every data point is a person: FLS coordinators, clinical leads, administrators, funders, and most importantly, patients trusting us with their care. This collective effort has brought us from startup to proven impact.

Now, as we focus on closing gaps and sustaining gains, we remember that equity is fundamentally about people: ensuring everyone, everywhere, has access to the same excellent care. To our sponsors, partners, and everyone who contributes to this work, your continued support enables us to fulfil this promise. Together, we continue preventing secondary fragility fractures and reducing suffering across all communities.

The Australian & New Zealand Fragility Fracture Registry (ANZFFR) acknowledges Māori as tāngata whenua and Treaty of Waitangi partners in Aotearoa New Zealand. Within Australia, we pay our respect to Elders, past and present, who are custodians of the land on which we live and work. We acknowledge Country as the foundation of health and well-being and, through all our activities, we are committed to improving health outcomes for First Nations Peoples.

Extracts from this report may be reproduced provided the source of the extract is acknowledged.

Suggested citation: Australian & New Zealand Fragility Fracture Registry. Annual Report of Fragility Fracture Registry data. April 2026. Available at: https://www.fragilityfracture.co.nz

Report prepared on behalf of the ANZFFR Steering Group by: Amanda Welch, NZFFR National Manager; Stewart Fleming, Webmaster; Dr Frazer Anderson, ANZFFR Clinical Lead for New Zealand; and Christine Gill, Osteoporosis New Zealand Clinical Programme Director. With special thanks to Dr Roger Harris, whose support, wisdom, and guidance remain invaluable even beyond 'retirement,' and to Adjunct Professor Paul Mitchell (University of Notre Dame Australia) for his continued support and expertise.

Interpretation of data: Performance against KPIs is reported using the target denominator as defined in our Clinical Standards for FLS in New Zealand. For descriptive metrics that are not formal KPIs, null or not recorded have been excluded from percentage calculations for that field or subset.

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Foreword:

Towards Excellence: **Improving Care and Building on Success**

When you are doing something really well, it's surprisingly hard to do it even better. All the easy wins have been claimed; further gains come at increasing cost. If people chase numbers, motivation flags and progress sags. Fracture Liaison Services must never lose sight that our targets are not numbers but people who have suffered painful, often debilitating injuries. Our job is preventing them going through the same, or worse, again. The evidence we're succeeding is growing stronger.

Most tables and figures describe our Key Performance Indicators, steps in the care pathway after fragility fracture. Quality improvement projects identify good care from Clinical Standards, benchmark individual services, then share lessons from high performers with those doing less well. This closes gaps without every team reinventing the wheel.

The purpose is reducing fragility fracture burden. Last year I introduced the Refracture Tracker, which scans FFR entries for people appearing more than once. This year's data confirms last year's trend: people known to our FLS have roughly half the refracture rate we would expect from international studies, in the absence of FLS. This is the best effectiveness we could hope for: osteoporosis specific treatment reduces fragility fractures by 40 to 60%, falls prevention by 15 to 30%, and the refracture tracker includes everyone, even those unsuitable for any treatment.

We've increased identification from 72% to 77%: of 22,313 predicted NZ fragility fractures annually, we've found, assessed, and usually intervened in 17,141. Major achievement, but who are the 23% still to be identified? By definition, we don't know, but can guess. Ethnicity, socioeconomic status, and geography affect healthcare access. Equity (ensuring people with disadvantages have fair access to public services) is central to our healthcare. Reaching these people can't be easy or it would be happening already, but our challenge is getting to them anyway, even requiring additional resources for incremental gains.

A Milestone Worth Celebrating

In November 2025 the NZ arm of the Registry reached 50,000 patient records. Nearly 1 in 100 New Zealanders has had their fragility fracture care recorded in the ANZFFR. Among older New Zealanders, nearly 9 in 10 know someone whose fragility fracture care has been supported by an FLS team. By percentage covered, no other healthcare QI project in the world has grown this quickly.

Looking Forward

Our goal is to embed high-quality FLS care so firmly into usual practice that not having access to it will seem obviously wrong. To do that, we have to prove that it works. In this and future reports we use ANZFFR data to show evidence of effect. Fifty thousand New Zealand patient journeys. Millions of connected New Zealanders. Hundreds of hospital beds freed up for people with other problems. Thousands of fragility fractures that, thanks to this project, never happened.

Making the First Fragility Fracture the Last

The ANZFFR would like to thank every team member in the twenty-two New Zealand and three Australian FLS teams, the Accident Compensation Corporation NZ, Health NZ Te Whatu Ora and Osteoporosis NZ for their ongoing dedication to improving fragility fracture care and prevention. Your passion and commitment, highlighted throughout this report, shows an unwavering focus on the outcomes that matter to real people.

Special thanks to the patients and whānau whose accounts of their experiences are at least as important as the tables and figures. Thank you for trusting us with your care.

Together, we are working to make the first fragility fracture the last and making that promise available to all.

Key Messages

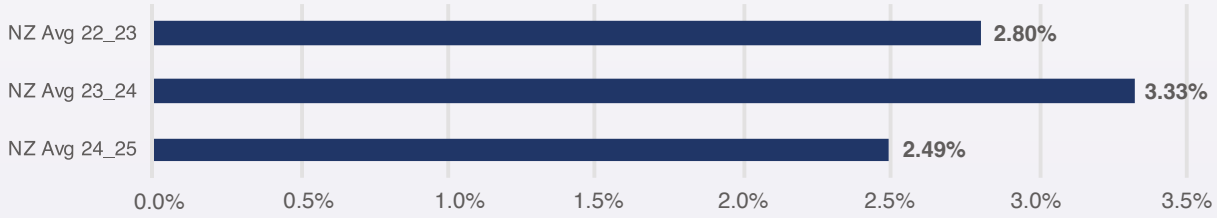
Dr Frazer Anderson

Co-Chair ANZFFR Steering Committee and Clinical Lead for New Zealand

- FLS teams achieve 98.9% population coverage, identifying 77% of expected fragility fractures in 2024/25 across New Zealand. Australia demonstrates growing momentum in registry participation and FLS coverage.
- Treatment adherence and refracture rates match or exceed international comparators.
- DXA access depends on local resources and varies across ethnic groups.
- The Registry is maturing into a world-leading quality improvement platform.
- Sustainable funding beyond ACC partnership is essential to embed secondary fracture prevention in core health operations.

Figure 1.1 – Refracture Events

The 2024/25 cohort had a **2.49% national refracture rate** (subsequent fractures occurring within the same reporting year), with median six months exposure time.



Fragility Fracture Refracture Analysis: Key Findings

Analysis of 43,779 patients since Registry inception until 30 June 2025 reveals critical insights into refracture timing and risk. Of all patients, 5.6% have experienced a second fracture, translating to approximately 3.5 to 4.5% per year given varying follow-up times.

Peak refracture incidence occurs at 6 to 12 months, establishing the first year as the critical therapeutic window. Among patients experiencing multiple refractures, a concerning acceleration pattern emerges: average (mean) time between fractures shrinks dramatically from 10.6 months (first to second), to 6.8 months (second to third), to just 5.1 months (third to fourth). Each fracture not prevented leads to increasingly rapid subsequent events, emphasising the critical importance of effective secondary fragility fracture prevention.

Our most mature data comes from the 2022/23 cohort with median 30 months follow-up, showing refracture rates of 4.5% at 1 year and 8.0% at 2 years. These rates compare favourably to international studies reporting 6.6% and 11.3% respectively in populations without Fracture Liaison Services.

While the first year is critical, refracture risk persists indefinitely. Strong partnerships with primary care are essential to integrate fragility fractures into Long-Term Conditions management, ensuring ongoing monitoring and support beyond initial intervention.

Metric	Overall Population (N=43,779)	2022/23 Cohort (N=11,641)
Median follow-up time	22.5 months (1.88 years)	30 months (2.5 years)
1 fracture	41,324 (94.4%)	10,559 (90.7%)
2 fractures	2,247 (5.1%)	966 (8.3%)
3+ fractures	208 (0.5%)	116 (1.0%)
Median time to refracture	9.0 months	14.5 months
Refracture by 1 year	3.5% (1,533 patients)*	4.5% (521 patients)*
Refracture by 2 years	5.2% (2,259 patients)*	8.0% (926 patients)*

*Represents observed refractures only—rates will increase as additional patients refracture

Professor Takeshi Sawaguchi

President, Fragility Fracture Network

It is a pleasure to endorse the 2026 Annual Report of the Australian & New Zealand Fragility Fracture Registry. This report reflects a system moving beyond establishment towards excellence, building on success to deliver more consistent, high-quality secondary fragility fracture prevention.

As articulated in Stronger Together, registries are essential enablers of better care. The ANZFFR provides the information needed to benchmark performance, reduce variation, and support continuous improvement aligned with international best practice. The progress described here demonstrates what collaboration, clinical leadership, and sustained commitment can achieve.

This report is both a record of achievement and a strong foundation for the next phase of improvement and will serve as a good example for countries that are planning to start a fragility fracture database or for countries that already have a fragility fracture database and are going to publish an annual report.

Paul (PK) Kennedy

Manager, Targeted Investment, Injury Prevention, ACC

Osteoporosis Prevention Can Materially Reduce Demand for Hospital and Aged Residential Care Bed Days

Osteoporosis continues to present a critical challenge to national health systems globally. The recent 2025 Asia Pacific Consortium on Osteoporosis (APCO) – International Osteoporosis Foundation (IOF) Asia Pacific Regional Audit of epidemiology, costs and burden of osteoporosis provides compelling evidence that osteoporosis and fragility fractures represent one of the most pressing health challenges for the coming decades in the Asia Pacific region.

ACC's investment in the prevention of older adult falls and fragility fractures means New Zealand is well placed to enable Kiwis to avoid injury, maintain their independence, and live longer in their own homes. New Zealand now has a world-leading Fracture Liaison Service and the ANZFFR which functions as both a fragility fracture registry and patient management system, but cannot optimise outcomes without cross-agency support.

ACC is committed to preventing injuries and sustaining investment in the prevention of older-adult falls. However, we need tangible and immediate support from health system stakeholders including the Ministry of Health, Health New Zealand (HNZ), and the Health Quality & Safety Commission (HQSC) to prevent osteoporosis; the preventable disease at the root of fragility fractures, and responsible for more days spent in hospital than breast cancer or heart disease.

By working and investing together, health system stakeholders including ACC can save thousands of hospital and aged residential care bed days, protect health system sustainability, and support less preventable and more complex health priorities such as cancer. We invite all health system stakeholders committed to effectively and sustainably reducing health system demand to proactively engage with us on this subject and look forward to establishing a sustainable cross-agency approach before the end of the year.

ACC
He Kaupare. He Manaaki. He Whakaora.
prevention. care. recovery.

LIVE STRONGER FOR LONGER
PREVENT FALLS & FRACTURES

Australian Component of ANZFFR Project Update

Dr Kirtan Ganda, Endocrinologist, Concord Hospital, NSW & Co-Chair ANZFFR Steering Committee

The Australian branch of the ANZFFR has been under the stewardship of the Australian Fragility Fracture Foundation (AFFF), a not-for-profit charitable trust. The initiation and development of the Registry in Australia has been initiated and funded by the Australian National Alliance for Secondary Fracture Prevention (SOSFA). During the first two years the registry also received an unencumbered educational grant from Amgen Australia.

The Registry has been functioning in Australia since 2022 and is currently being used at Concord Hospital, Sydney, NSW, and Western Health, Melbourne, Victoria as well as Sir Charles Gairdner Hospital, Perth, WA, out of an estimated 36 FLS in total in Australia. However, despite being freely available, easily integrated into clinical processes and serving as an excellent tool to assess KPI's for each Fracture Liaison Service (FLS) in real time, there has been limited uptake in Australia so far. The AFFF is working towards expanding the Registry to all FLS across Australia and to this aim is applying for funding for IT support and data entry personnel.

The Clinical Standards for Australian Secondary Fracture Prevention services was launched in November 2025. The Clinical Standards have been endorsed by numerous organisations in Australia, including ANZBMS, ANZHFR, ENSA, as well as RACP. The combination of Clinical Standards and a national Registry will help standardise outcome measures, providing benchmarking of care between FLS and thereby improve care of patients who suffer from minimal trauma fractures. Moreover, it will provide further impetus for existing Secondary Fracture Prevention Programs to join the registry.

The AFFF is currently in talks with other facilities across Australia about potential participation and encourages any facilities who would like to learn more to reach out to admin@fragilityfracture.com.au.

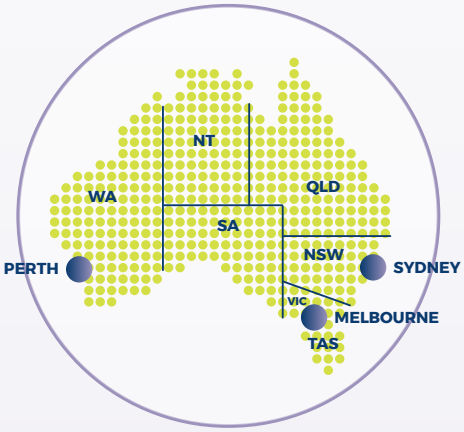
The AFFF has put together some online resources to promote the registry - firstly a general overview of the Registry Project and secondly a user demonstration which highlights the speed and ease of using the registry for patient management. https://fragilityfracture.com.au/

L to R: Professor Markus Seibel, Rebecca White MP (Assistant Minister for Health and Aged Care), Associate Professor Fiona Mackie, Carol Berry MP, and Dr Mike Freelander MP (Co-Chair of the Parliamentary Friends of Preventative & Public Health, and General Practice).

SOSFA Members at Parliament House, Canberra.

Participation

The analysis presented in the rest of this report does not include data from the three Australian FLS participating in the Registry as the small sample size makes it unlikely that they are representative of the Australian population overall.



Year FLS Established in NZ

New Zealand Fracture Liaison Services Participating in ANZFFR

New Zealand Total Patient Record Count for 2024/25

In 2025, we realigned our FLS naming conventions to reflect Health New Zealand district structures. Services are now identified by their Health NZ district name rather than hospital name, recognising that our services extend beyond hospital walls to include primary healthcare-based teams.

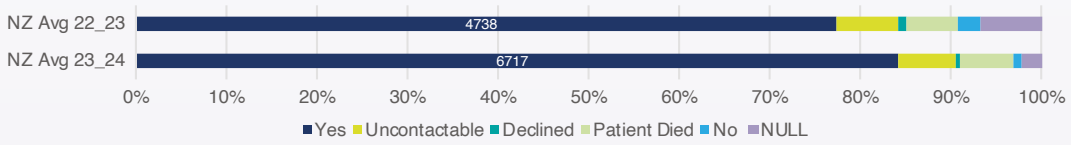
PREVIOUS NAMING	REGION	SERVICE – DISTRICT/PROVIDER	2022/23 PATIENT COUNT	2023/24 PATIENT COUNT	2024/25 PATIENT COUNT
Whangarei Hospital	Northland	Northland FLS	799	832	788
Waitemata		Waitematā FLS	1,796	1,856	1,800
Auckland City Hospital		Auckland FLS	959	1,065	1,279
Middlemore Hospital		Counties Manukau FLS	1,311	1,730	1,895
Waikato Hospital	Midland | Te Manawa Taki	Waikato FLS	894	1,360	1,079
Lakes FLS QE Health		Lakes FLS – QE Health	0	356	435
Tauranga Hospital		Tauranga FLS - Bay of Plenty	836	916	905
Whakatane Hospital		Whakatāne FLS - Bay of Plenty	189	182	190
Taranaki Base Hospital		Taranaki FLS	339	556	504
Gisborne Hospital		Tairāwhiti FLS	203	201	175
Whanganui Hospital	Central | Te Ikaroa	Whanganui FLS – Whanganui Regional Health Network	274	315	275
Hawkes Bay Hospital		Hawkes Bay FLS	577	596	692
Palmerston North Hospital		Mid Central FLS	220	434	570
Kapiti Region		Kapiti FLS – Capital, Coast and Hutt	0	87	309
Hutt Hospital		Hutt Valley FLS - Capital, Coast and Hutt	463	573	653
Wellington		Wellington FLS – Capital, Coast and Hutt	0	0	593
Nelson Hospital	South Island | Te Waipounamu	Nelson FLS - Nelson Marlborough	376	449	563
Wairau Hospital		Marlborough FLS - Nelson Marlborough	169	196	236
West Coast		West Coast FLS	74	153	128
Christchurch FLS		Canterbury FLS	1,289	2,083	1,772
Timaru Hospital		South Canterbury FLS	279	327	290
Wellsouth Primary Health Network		Southern FLS - WellSouth Primary Health Network	553	759	881
TOTAL PATIENT COUNT			**11,600**	**15,026**	**16,012**

One Year On: Follow-Up and Treatment

Patients recommended for osteoporosis specific treatment receive FLS follow-up contact one year after their index fracture. One-year outcomes for the 2023/24 cohort are presented below, covering 15,048 patients who experienced a fragility fracture between 1 July 2023 and 30 June 2024.

Of these patients, 52-week follow-up was clinically indicated for 7,990. Follow-up was not clinically indicated for 7,050 patients: 2,890 required no further assessment after initial screening, 3,361 were not appropriate for ongoing treatment, 505 declined recommended treatment, 228 had died by 16 weeks, and 66 were on planned drug holidays with adequate coverage from previous treatment.

Figure 2.1. Follow-Up 52 Weeks



Successful 52-week follow-up reached 84% nationally, a substantial improvement from 77% the previous year. FLS teams attempted contact with 90% of eligible patients, with 6% having died before follow-up occurred. Service variation (48% to 95%) has improved but highlights ongoing opportunities for shared learning about effective follow-up approaches. These contacts offer valuable opportunities to review medication management, troubleshoot issues or side effects, and reinforce adherence.

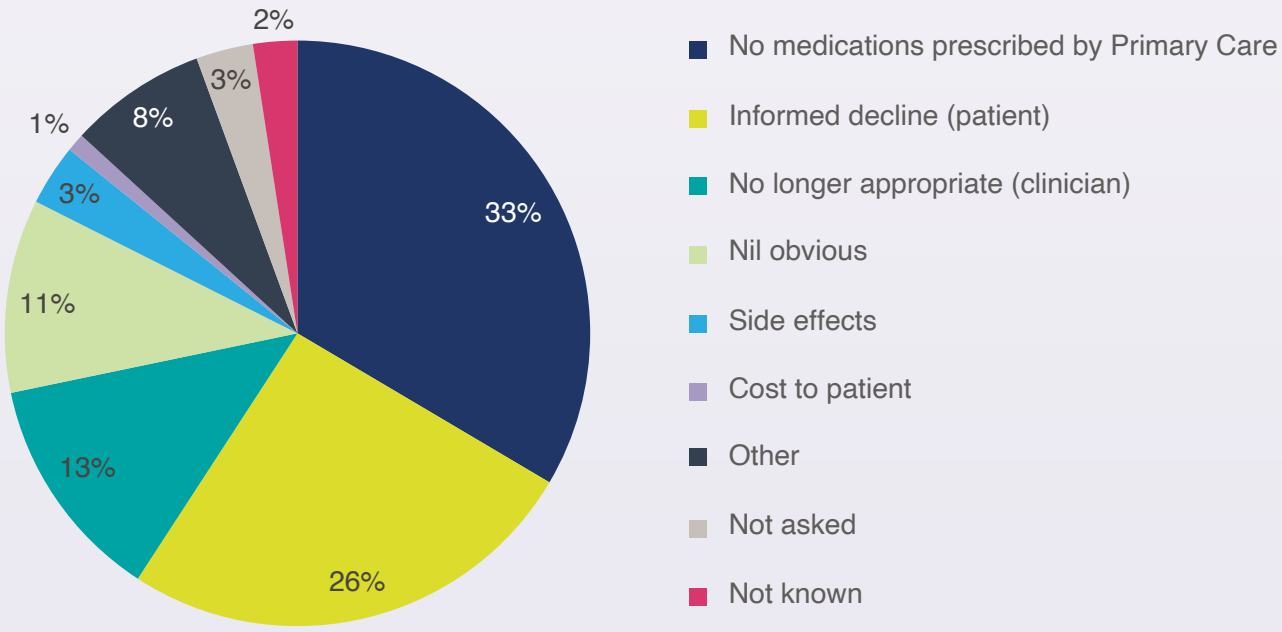
KPI 13
Osteoporosis Specific Treatment Commenced

69%

of People Referred For, or Recommended Osteoporosis Specific Treatment in the 2023/24 cohort

5,537 People on Osteoporosis Specific Treatment at 52 Weeks

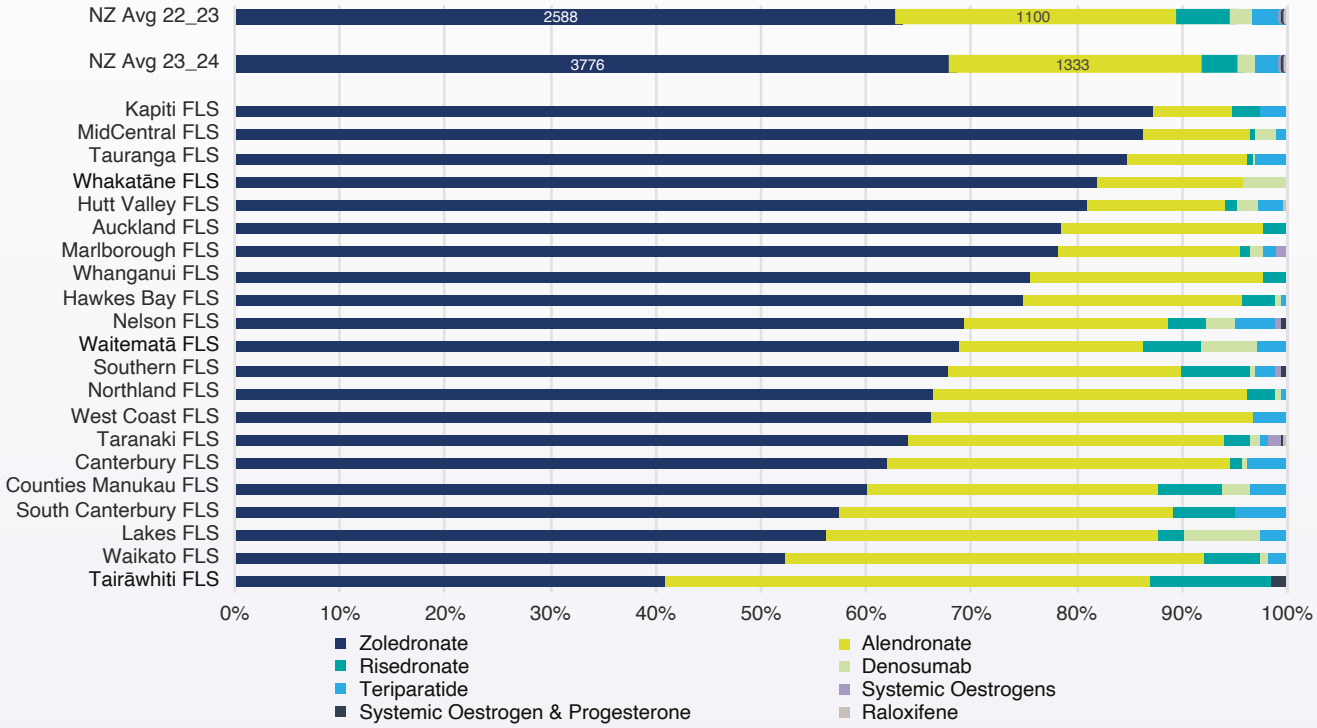
Figure 2.2. Reason for No Osteoporosis Specific Treatment at 52 Weeks



Among those not on osteoporosis specific treatment at 52 weeks, one-third (467 patients) required primary care action to progress FLS recommendations. While encouragingly few cited cost (1%) or side effects (3%) as barriers, this gap between FLS recommendation and primary care initiation highlights the critical need for sustainable workforce planning and adequate primary care resourcing as services mature and patient volumes grow.

Figure 2.3. **Osteoporosis Specific Treatment Recorded at 52 Week Follow-Up**

This year's 52-week cohort includes two additional services: Lakes FLS and Kapiti FLS.



The increasing use of zoledronic acid (zol) reflects growing recognition of its clinical advantages: 18 months of protection from a single infusion compared to weekly tablets, eliminating adherence concerns and improving patient experience. This shift has been enabled by the decision of PHARMAC in March 2023 to remove Special Authority restrictions for full subsidy of zol as a first-line agent. FLS teams have responded by reassessing treatment choices and prioritising zol where clinically appropriate. PHARMAC's action has thus directly enhanced fracture prevention efforts, and we owe them our gratitude for their responsiveness to clinical need. We continue in discussion with them over criteria for subsidy of denosumab and teriparatide but see these much more expensive treatments as "special circumstances" tools for the highest-risk patients.

Although zol itself is now cost-free to patients, IV (intravenous) administration costs are still chargeable in primary care, creating potential access barriers that some services are working to address. Beyond access, the shift toward zol presents an opportunity: successfully treated patients may lack documented 52-week follow-up, yet are effectively treated. With FLS teams managing growing workloads, we are using clinical shifts like this as catalysts for innovation, fundamentally rethinking how the Registry can capture outcomes without creating administration burden.

Treatment Initiation and Maintenance

One of the Registry's most important purposes is ensuring patients who need fracture prevention treatment actually get it, and stay on it. This section looks at what happens one year after a fracture, following the 2023/24 patient group to see how they're doing. (Note: the rest of this report focuses on the 2024/25 cohort.)

The results are encouraging: of patients who were recommended for treatment, 69% were actively taking their osteoporosis specific medication a year later, up from 67% the previous year. That might sound like a small increase, but it represents 1,451 more people protected from future fractures.

Yet when we step back and look at the full picture, we see how much further we could go. Treatment recommendations themselves reached 49% of all identified patients this year, up from 43% in 2023/24. That's progress, but it's still well short of what's clinically possible.

Access to DXA scans remains the main roadblock. Timely scanning is essential for FLS teams to make confident treatment recommendations. Even when they do make recommendations, ensuring those recommendations translate into actual prescriptions from GPs remains a challenge.

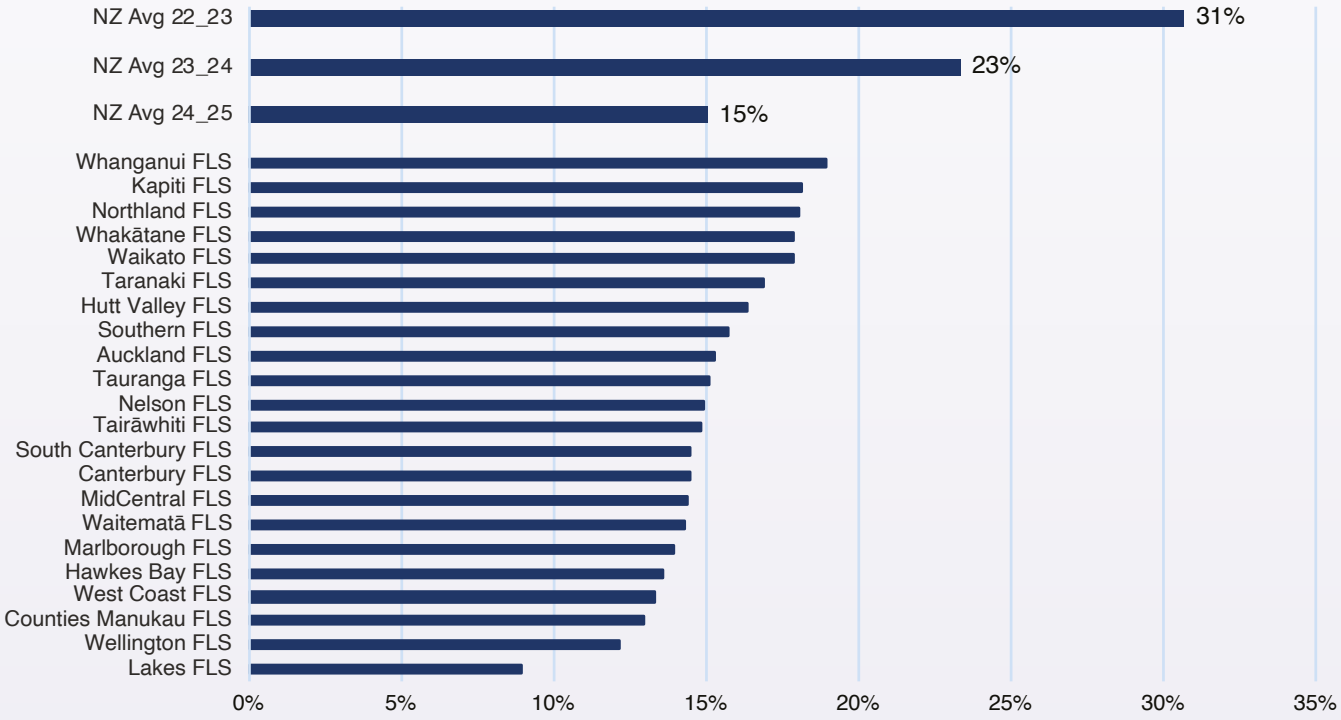
Two improvements would make the biggest difference for patients: getting people DXA scans when they need them, and strengthening the handover between FLS teams and primary care doctors to ensure recommendations don't fall through the cracks. Fix these two pathways, and we'd dramatically improve outcomes for the patients we serve.

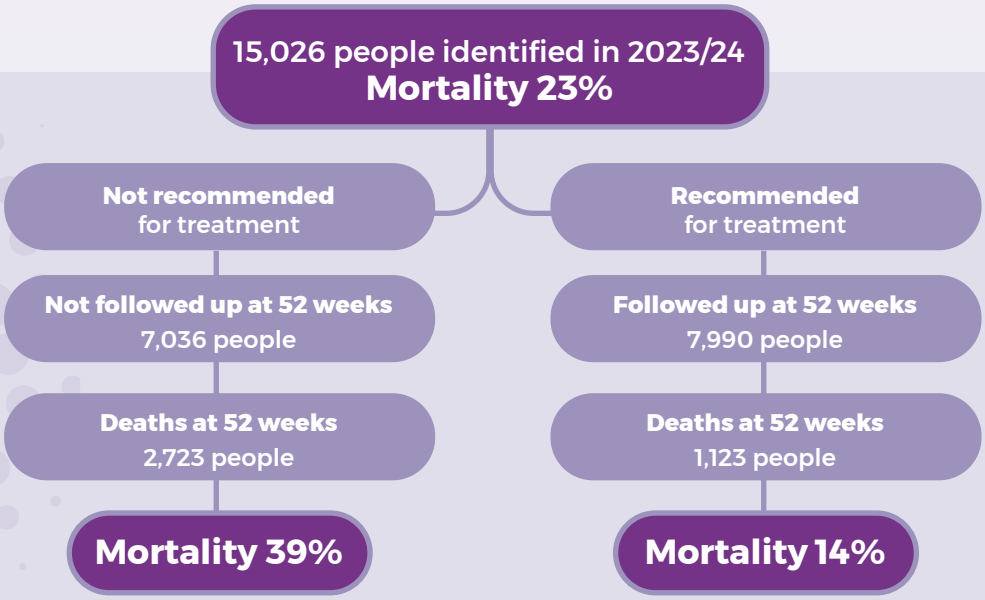
Mortality Data

Fragility fractures are serious injuries. Most occur in older people, many of whom are not in good overall health due to other medical conditions; this is known as frailty. Frailty increases the impact of a fracture on someone's health and fractures, in turn, increase frailty. Sadly, some people do not survive major fractures, and a major fracture can be a sign of someone approaching the end of their life. In this group, fracture prevention treatment is unlikely to do any good and we do not recommend osteoporosis specific treatment or follow them up.

Figure 3.1 **Mortality**

Death date is from recruitment to December 2025. Mortality percentages increased due to extended follow-up time: 2023/24 cohort from 15% to 23%, and 2022/23 cohort from 16% to 31%.





Ministry of Health mortality data shows that patients not recommended for treatment experienced 39% mortality at 52 weeks, compared to 16% among those recommended for treatment. This validates our frailty-based assessment model while suggesting opportunities to identify some individuals in the higher-risk group who might still benefit from osteoporosis specific treatment.

Working Towards National Coverage:
Expanding Secondary Fragility Fracture Prevention Across New Zealand

New Zealand is on the cusp of achieving complete national coverage for fracture liaison services. As of June 2025, 22 FLS teams across 18 out of 19 Health New Zealand districts are contributing data to the ANZFFR, covering 98.9% of the population and maintaining the near-universal population coverage achieved in the previous year. Wairarapa health services remain in discussion to establish an FLS, which would bring New Zealand to complete 100% population coverage.

Kapiti FLS: Bringing Care Closer to Home - Our Newest Regional Service

Natasha Nagar, FLS Coordinator and Pharmacist

Our Kapiti FLS was established in February 2024 as part of the wider Capital, Coast and Hutt Valley Fracture Liaison Service. The Kapiti Coast is located about 73 km north of Wellington City, with a population largely over 50 years of age, making it a priority for our service. Many patients have historically been required to travel into Wellington City for their specialist care, which presented access barriers for this community. The need for a dedicated Fracture Liaison Service for the residents of Kapiti Coast was clearly identified. The region has great health networks in place to provide care for patients closer to home, and we wanted to build on this existing infrastructure.

Our aims for the service on the coast were to:

1) identify and fill gaps in secondary fracture risk reduction,

2) increase access to DXA scans for residents, and

3) bring specialist bone health management care closer to home.

Our service in the Hutt region was already established, so we had processes such as patient identification methods and clinic workflows in place. We thought these would be directly transferrable, but we quickly discovered that wasn't the case! Although the foundations of our service model could be duplicated, we were stepping into a healthcare system that had established models in place, and for a long time had managed without services coming in from tertiary sources. Time was invested in establishing rapport with community providers and identifying the gaps specific to this region. We are now in a positive place with strong community relationships and are able to use the foundations of the Hutt FLS model in Kapiti. We have even worked to increase our identification rate.

Initially when looking at the Kapiti population, we thought our nurse practitioner would best spend most of her time with those residents, as the population is largely over 50 years of age and we were expecting to see high fracture numbers. What we have found since is that many residents on the Kapiti Coast are fit and able, actively engaging with strength and balance self-directed exercises. The numbers identified didn't require our nurse practitioner's full attention, allowing us to re-evaluate how we could best use our full-time equivalent (FTE) allocation across the wider region.

L to R: Tatiana Raevskaya (FLS Administrator), Mary Daly (FLS Nurse Practitioner), Radhika Patel (FLS CNS), Natasha Nagar (FLS Coordinator and Pharmacist), and Dr Jo Williams (FLS Clinical Lead).

Continuous Quality Improvement (CQI)
Why it Must Stay at the Heart of our FLS

The 2024 introduction of annual Continuous Quality Improvement Plans (CQIP) through the ACC Business Case 2024-2027 embedded continuous quality improvement as routine, structured activity across New Zealand FLS teams, moving beyond ad hoc responses to performance data. A sincere thankyou to Canterbury FLS for developing and sharing this quality improvement plan template with all services nationally.

In its first year, the CQIP shifted teams from viewing ANZFFR data as a reporting requirement to using it as a practical improvement tool. In practice, this meant that following Annual Report release, services used the template with reflective prompts to consider performance, causes, and next steps, translating registry data into clear, prioritised actions. System-wide thematic analysis of these plans identified common themes, informing targeted mentoring and national improvement priorities. This work then flowed into redesigned Quarterly Regional Quality Improvement Meetings, bringing teams together to share experience, learn collectively, accelerate adoption of effective practices, and spread successful solutions. Services reviewed their CQIPs quarterly, assessing progress and maintaining focus on continuous improvement throughout the year.

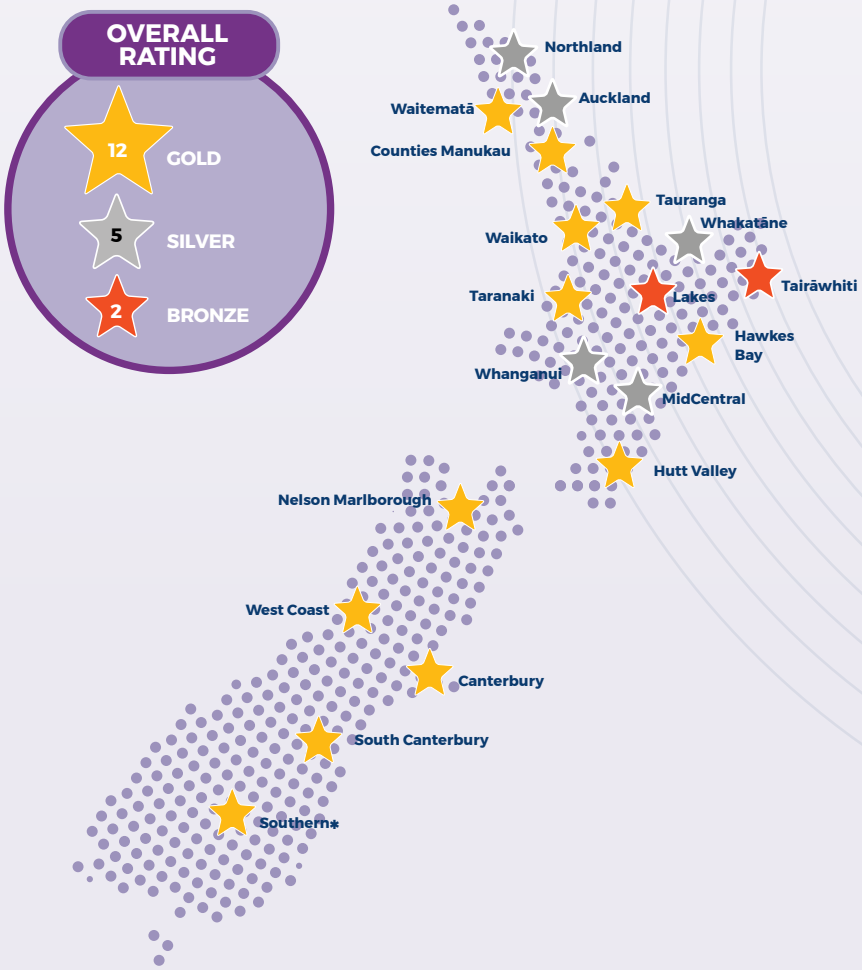
The first year demonstrated that sustained improvement requires data embedded within broader improvement infrastructure. ANZFFR data identifies gaps; national standards define excellence; quality improvement plans translate insight into action; ONZ mentoring builds capability; and regional collaboration enables shared learning. Together, these elements transform registry data from passive measurement into an active driver of continuous improvement, supporting every FLS service to learn from and match the performance of the best, raising the standard of secondary fragility fracture prevention across New Zealand.

International Osteoporosis Foundation
Capture the Fracture® Programme

The International Osteoporosis Foundation's Capture the Fracture® Programme recognises FLS excellence worldwide through its Best Practice Framework, celebrating services that implement effective secondary fracture prevention, the single most impactful intervention for improving patient outcomes and containing escalating fragility fracture-related healthcare costs globally.

This year brought outstanding achievements: Lakes FLS achieved Bronze, MidCentral FLS achieved Silver, and Tauranga FLS, Taranaki FLS, Nelson Marlborough FLS, and Southern FLS achieved Gold status. New Zealand now has **12 Gold, 5 Silver, and 2 Bronze** IOF CtF®-recognised sites, demonstrating sustained progress across our network.. **Learn more at www.capturethefracture.org**

*Achieved 2nd July 2025, immediately following the reporting year end of 30 June 2025.



Nelson Marlborough's FLS journey to Gold

Nelson Marlborough FLS is unique in its team composition—led by an orthopaedic surgeon as clinical lead, with occupational therapist and physiotherapist FLS coordinators, supported by administrative staff. Our service covers two sites—Nelson and Marlborough, encompassing the top of the South Island and a population of approximately 173,000.

Since starting in November 2021, we've progressed from a silver star rating in 2023 to gold in 2025. This achievement reflects our investment in engaging the wider team across secondary, primary, and community sectors from the outset. Gold star accreditation is a direct result of this network development and the integration of our multidisciplinary approach.

We prioritised stakeholder input early, seeking feedback from consumers and GPs to develop our communication templates and letters—ensuring our messages would be well received and actionable.

Despite demanding caseloads and time constraints, we've adopted a chronic condition management approach, utilising behaviour change principles, self-management support, and informed shared decision-making wherever possible.

The feedback has been overwhelmingly positive. Increasingly, we're seeing patients who present with their first fragility fracture having already had their bone health and future fracture prevention considered from the outset—evidence that our prevention messaging is taking hold.

Since inception, our identification numbers have steadily increased as we've refined our case-finding methods. In the last reporting year, we identified 800 people who experienced fragility fractures in our region.

There is still work to be done, but we're proud of what we've achieved for the people of our community.

L to R: Barbara Bentley (FLS Coordinator and Physiotherapist), Dr Kate Ball (FLS Clinical Lead and Orthopaedic Surgeon), Fiona Logan (FLS Administrator), Kim Fergusson (FLS Coordinator and Occupational Therapist).

A Decade of Excellence:
Tauranga FLS Achieves Gold

In March 2025, Tauranga Fracture Liaison Service (FLS) reached a significant milestone: Gold Star accreditation through the International Osteoporosis Foundation's Capture the Fracture® Programme. This achievement caps a ten-year journey of continuous quality improvement, progressing from bronze through two silver ratings to gold.

The IOF's quality benchmarking framework enabled the team to identify strengths and address weaknesses systematically. ACC support from 2021 and integration of the ANZFFR provided crucial tools to understand service identification rates, refine assessment processes, and track osteoporosis specific treatment outcomes. The team is now confident they are identifying osteoporosis earlier across the Bay of Plenty and providing effective support to primary care for ongoing treatment and management.

"We are extremely pleased with the result. The team has worked hard to improve service outcomes—this means we are delivering the right care, to the right people, at the right time," says Nicola Ward, Clinical Nurse Specialist and FLS Team Leader.

Whakatane FLS earned its second silver star in May 2025, sitting just 1% from gold. The team is working to improve treatment initiation rates in this rural community and aims for gold star status in 2026.

Dr Elizabeth Spellacy, FLS Clinical Lead for Bay of Plenty, reflects: "Gaining gold was not only recognition for the team's dedication but has increased our profile and strengthened confidence in our advice across the Bay."

L to R: Joanne Heaton (FLS CNS), Janice Barnard (FLS Administrator), Dr Elizabeth Spellacy (FLS Clinical Lead and Geriatrician), Nicola Ward (FLS CNS), Juanita Berridge (FLS CNS) and Katie Brake (FLS CNS).

Understanding the 2024/25 Cohort of our Secondary Fragility Fracture Prevention Programme in NZ

HOW MANY FRAGILITY FRACTURES DID WE IDENTIFY?

17,141 fragility fractures occurred

77% of predicted annual fractures in NZ

16,012 people identified in Registry

FLS TEAMS IDENTIFIED

69% of predicted non-spine fractures

99% of predicted spine fractures

OF WHICH 80% WERE TOP 5 FRACTURE SITES

- Hip **23%**
- Wrist **22%**
- Spine **18%**
- Humerus **10%**
- Pelvis **7.1%**

GETTING TO KNOW THE PEOPLE BEHIND THE NUMBERS

Three in four people were women (76%) consistent with 2023/24 cohort

- **76%** NZ European
- **4%** Māori
- **2%** Pacific Peoples
- **2%** Indian/SE Asian
- **3%** Chinese

Average age **76YEARS** nearly half (45%) were 80 or older

88% living in a private residence (including retirement village units)

65% were mobile without aids before their fracture, highlighting how fractures can suddenly impact independence

18% had known dementia or cognitive issues

THEIR JOURNEY THROUGH CARE

INVESTIGATION within 12 weeks of their fragility fracture

80%
of patients had a bone health assessment

32%
of target population had a DXA scan

80%
had a falls risk assessment

INFORMATION

over 71% of patients were sent written or digital **INFORMATION** about bone health and **Know Your Bones™** for family member self-assessment

INTERVENTION

49% of all patients received an osteoporosis specific treatment recommendation

2,043 patients were already taking osteoporosis specific treatment at time of index fracture

OVER 97%
had a 16-week follow-up (successful or attempted)

55%
of those recommended osteoporosis specific treatment were actively taking it

53%
of those recommended Strength and Balance classes had started them

INTEGRATION

63% of patients' primary healthcare provider received a long-term care plan about osteoporosis specific treatment

QUALITY

22
FLS TEAMS
covering 18 out of 19 Health New Zealand districts serving

98.9%
of the NZ population

FRACTURE FEST 2025

48
attendees

21
virtual education sessions

68
sessions accessible on demand

CPD enables knowledge sharing, networking, and best practice exchange between all FLS teams.

A Multigenerational Approach:
Why Family History Matters

For Dunedin mother Marilyn Chettleburgh (79) and her daughter Linda Dingley (58), osteoporosis is not just a diagnosis but a shared family experience that spans generations and highlights why Fracture Liaison Services (FLS) place such strong emphasis on family bone health education.

Marilyn was diagnosed with osteoporosis 15 years ago, following an unsuccessful knee arthroscopy that led to further investigation. Despite the diagnosis, she lived much of her life without breaking a bone. That changed at 78, when she tripped while walking with her grandson and fractured a bone in her neck. A second fall earlier this year, caused by catching her slipper while turning too quickly, resulted in a fractured pelvis.

After this second fracture, Marilyn was identified and supported by the WellSouth Fracture Liaison Service. As part of their follow-up, the FLS team checked in by phone, an interaction that would unexpectedly change Linda's life too.

"I was on the phone with them about Mum, and I happened to mention that I'd fallen and broken my wrist," Linda says. "It was just by chance."

Linda's injury had occurred months earlier while she was walking her dog. Despite ongoing pain and slow recovery, it wasn't until the FLS conversation that someone questioned why her wrist hadn't healed as expected. She was referred for a DXA scan, which confirmed she also had osteoporosis.

"I knew Mum and my aunty had it, but I never thought it would happen to me," Linda says. "If I'd known that having a family history put me in a higher-risk category, I might have taken more precautions."

Research shows that a parental history of fracture, particularly hip fracture, significantly increases fracture risk for adult children, independent of bone mineral density. That's why FLS teams routinely provide patients with information about the Know Your Bones™ self-assessment tool, encouraging them to share it with family members.

Osteoporosis is often called the "silent disease" because bone loss occurs without symptoms until a fracture happens. Known risk factors include age, genetics, menopause, and previous falls or fractures, factors that affected both Marilyn and Linda.

Today, both women are actively managing their bone health. Marilyn receives ACC-supported home care and follows prescribed exercise programmes. Linda has returned to her role as a sterile technician at Dunedin Hospital on modified duties.

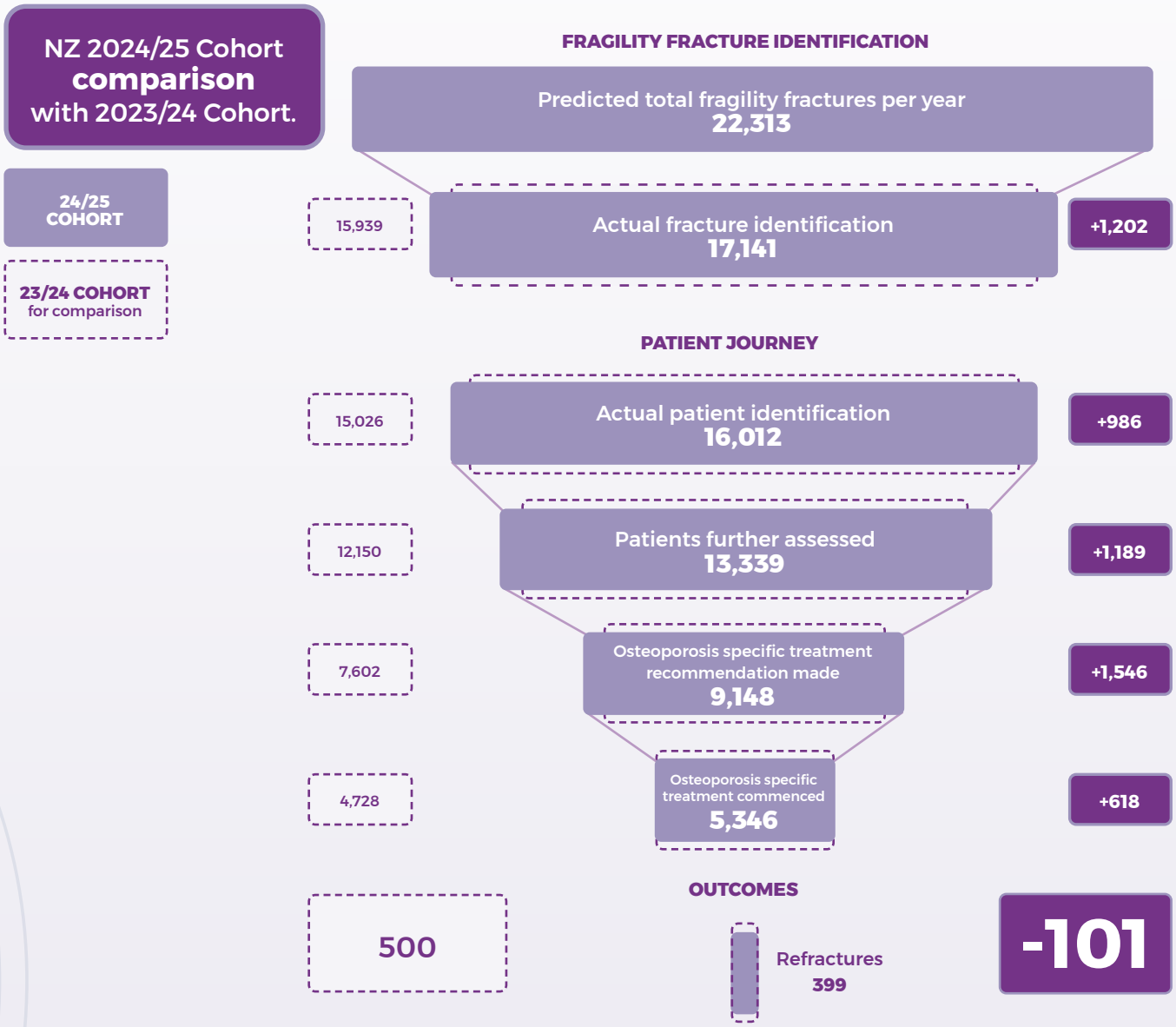
Their focus now is on family and the future. Linda is preparing to welcome her first grandchild, while Marilyn looks forward to celebrating her seventh great-grandchild in the new year.

"I'm very lucky to have Linda," Marilyn says. "She's my daughter, but also my friend."

Their story is a powerful reminder that fracture risk doesn't stop with one person, and that early awareness across generations can truly make all the difference.

Where we are after Year 3

This treatment cascade illustrates three key phases of the programme for the 2024/25 cohort, from fragility fracture identification through bone health assessment to commencement of osteoporosis specific treatment. Refracture outcomes are monitored using the Refracture Tracker, our primary outcome measure.



During the reporting year, 399 patients (2.49% of those enrolled) experienced a subsequent fracture. As patients are enrolled progressively throughout the year, the median follow-up time is approximately six months. Compared with the previous year, when 500 refractures (3.33%) were recorded, this represents a meaningful reduction during the period of highest refracture risk, while recognising that these findings reflect comparable six-month follow-up rather than full-year outcomes.

Launched at the 9th IOF Asia Pacific Regional Conference in Tokyo, the 2025 APCO–IOF Asia Pacific Regional Audit highlights New Zealand's systematic and coordinated approach to fragility fracture prevention alongside substantial regional progress. The audit provides international recognition of New Zealand's direction and consistency whilst acknowledging the shared challenges faced across Asia Pacific

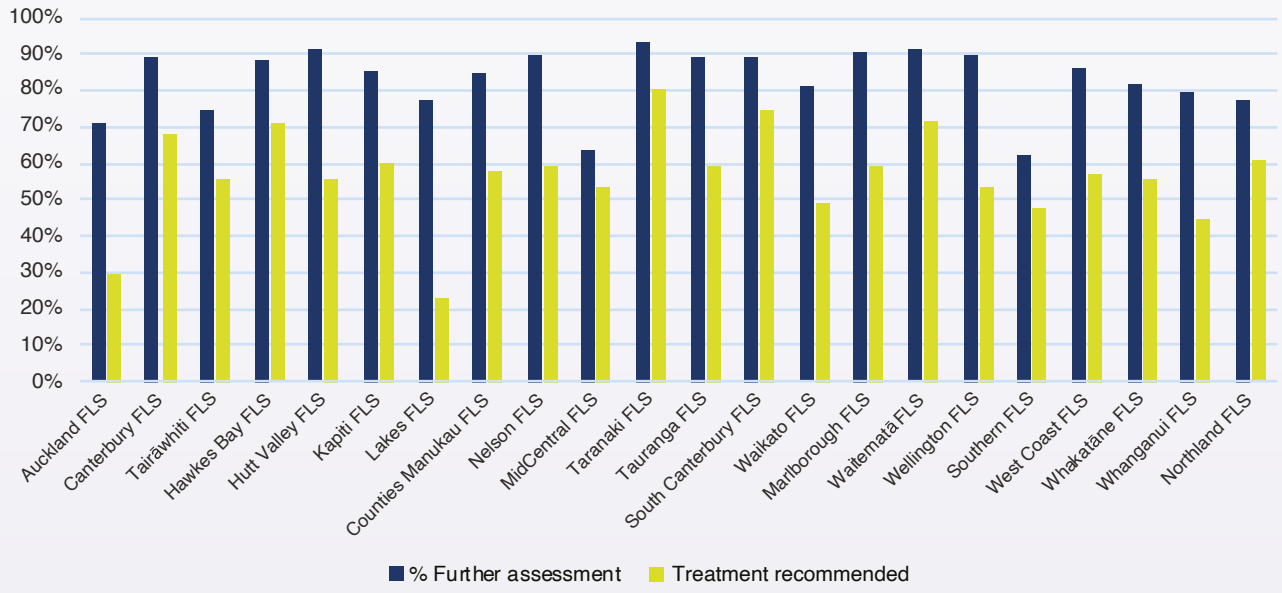
https://www.osteoporosis.foundation/sites/iofbonehealth/files/2025-12/APAC-Audit-2025-Summary-Reported-Data.pdf

Fracture Liaison Services in New Zealand

This report follows 16,012 patients through 22 New Zealand Fracture Liaison Services from 1 July 2024 to 30 June 2025, including 16-week follow-up data to 31 October 2025. Only 71 patients (0.44%) opted out of Registry participation.

We continue using the 5IQ-based Clinical Standards for Fracture Liaison Services in New Zealand, a framework proven to improve health outcomes by increasing adherence to evidence-based clinical standards across long-term conditions. Additional data is available in the electronic report.

Figure 4.1 **Patient Flow by Service**



Enhanced Data Variables and Methodology

The Registry undergoes annual review to ensure we collect clinically meaningful information that supports FLS teams. From 1 July 2024, improvements included patient engagement coding, inter-district transfer tracking, refined exclusions for advanced dementia and specialist care patients, clarified osteoporosis specific treatment tracking, and expanded falls referral pathways. Full details: www.fragilityfracture.co.nz

In August 2025, we enhanced KPI methodologies for consistency, clinical relevance, and accuracy, applying changes retrospectively on 13 October 2025. Previous year figures in this report may differ from earlier Annual Reports; however, all comparisons within this report use consistent methodology, ensuring reliable trends.

From Concept to Global Standard:
The Evolution of Fracture Liaison Services

At the turn of the 21st century, a quiet but profound shift began to take place in fragility fracture care and prevention. In hospitals separated by oceans - Glasgow, Geneva, Sydney, Toronto, and Southern California - clinicians were independently confronting the same uncomfortable truth: patients were surviving fragility fractures, only to return months or years later with another, often more devastating fracture. The science was clear, *fracture begets fracture*, but healthcare systems were failing to respond.

What emerged from these parallel efforts was a deceptively simple idea: **systematically identify every person aged 50 years or over who presents with a fragility fracture, assess their future fracture risk, and ensure they receive evidence-based care to prevent the next fracture.** From this idea, the Fracture Liaison Service (FLS) model was born.

One of the earliest formalised FLS took shape in Glasgow, Scotland in the late 1990s, *demonstrating that a coordinator-based, nurse-led service supported by specialist* oversight could close the secondary fracture prevention gap at scale. Within a decade, the model had proven itself clinically effective, cost-effective, and adaptable across health systems, from the UK National Health Service to North America, Europe, Asia Pacific and beyond.

By the early 2010s, the global challenge was no longer *whether* FLS worked, but how to *implement it reliably, equitably, and at national scale*. This catalysed a new phase of evolution: the development of **clinical standards, benchmarking frameworks, and registries** to ensure quality, consistency, and accountability. International initiatives such as the International Osteoporosis Foundation's *Capture the Fracture*® programme provided a common language and global standards, while national registries began to transform aspiration into measurable improvement.

In Australia and New Zealand, this journey accelerated through unprecedented collaboration. Hip fracture registries demonstrated what was possible when measurement, transparency, and clinical leadership aligned. The logical next step - capturing *all* fragility fractures - led to the establishment of the **Australian and New Zealand Fragility Fracture Registry (ANZFFR)**, enabling benchmarking of FLS performance across health systems for the first time.

Over the past decade, New Zealand has emerged as a living case study of a *systematic, life-course* approach to fragility fracture care and prevention - integrating policy, clinical standards, registries, professional education, and public awareness. What began as a response to secondary fracture prevention has matured into a broader framework spanning acute care, rehabilitation, falls prevention, and primary fracture prevention.

A Collective Achievement

This progress has never belonged to one discipline, organisation, or country. Orthopaedic surgeons, geriatricians, endocrinologists, nurses, primary care clinicians, policymakers, researchers, patient advocates, and industry partners have each carried part of the load. International collaborations, through organisations such as the Fragility Fracture Network, International Osteoporosis Foundation, and regional alliances, have transformed local innovation into global momentum.

What is perhaps most striking, looking back over three decades, is how consistently the same principles have held true: **collaboration beats silos; measurement drives improvement; and systems matter as much as science.** The brilliance lies not only in individual ideas, but in the sustained, collective effort to turn those ideas into routine care for millions of people worldwide.

Where We Go Next

As we look to the next phase in New Zealand, the foundations are strong - but the work is unfinished. Universal, high-quality access to Fracture Liaison Services must be achieved and sustained. Registry data must continue to be used not just for reporting, but for active quality improvement. Most importantly, the lens must widen further - from preventing second fractures to **preventing first fractures**, integrating falls risk assessment, bone health, and functional resilience across the life course.

The ANZFFR stands at the centre of this next chapter: not merely as a registry, but as an engine for learning, accountability, and system transformation. Building on the legacy of the past three decades, New Zealand now has the opportunity to lead again - demonstrating how a small country, working together, can deliver world-class falls and fragility fracture prevention at scale.

Adjunct Professor Paul Mitchell, Strategic Advisor to the ONZ Board and Management.

IDENTIFICATION – The first "i" describes which specific patient groups should be identified for clinical assessment.

Standard 1: IDENTIFICATION

All people aged 50 years or over who sustain a fragility fracture will be systematically and proactively identified by the FLS.

THREE YEAR TOTAL FRAGILITY FRACTURE IDENTIFICATION TREND

2022/23		2023/24		2024/25
55%	**+17%** →	**72%**	**+5%** →	**77%**

All 17,141 fracture events are new fragility fractures this reporting year, so Increasing fracture identification by the same number of teams reflects better case-finding and identification. The spine to non-spine ratio remains stable at approximately the predicted 1:5.

Figure 5.1 **Record Count Per Month in the New Zealand Fragility Fracture Registry**

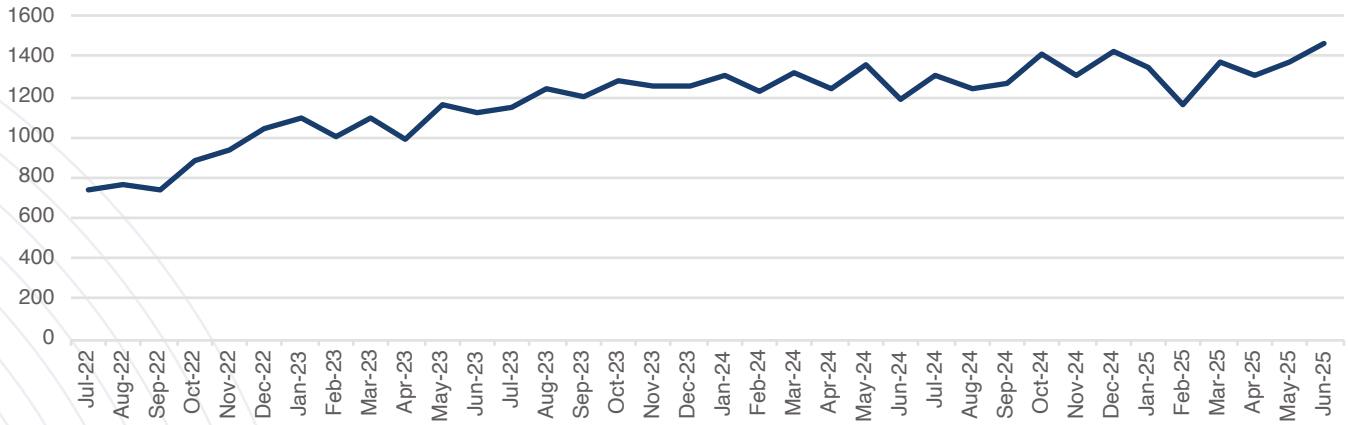
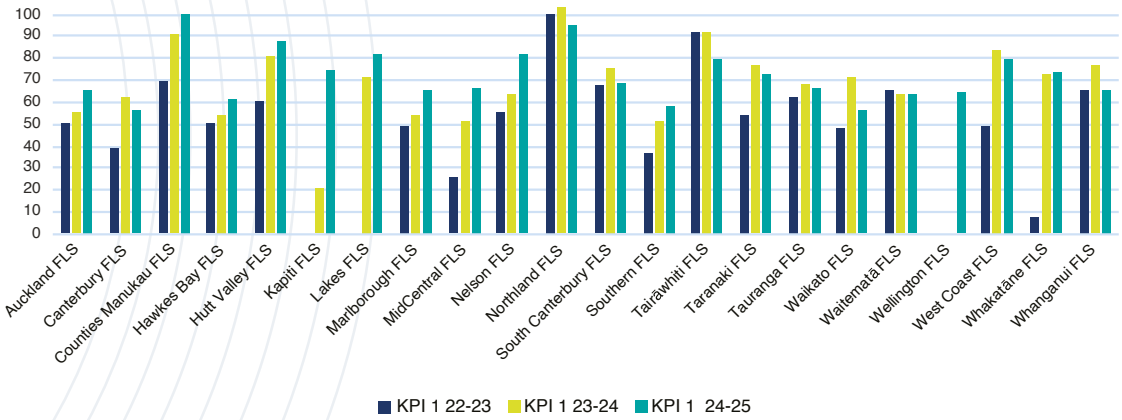


Figure 5.2 **IDENTIFICATION of Non-Spine Fragility Fractures by Service**



KPI 1

Non-spine fractures

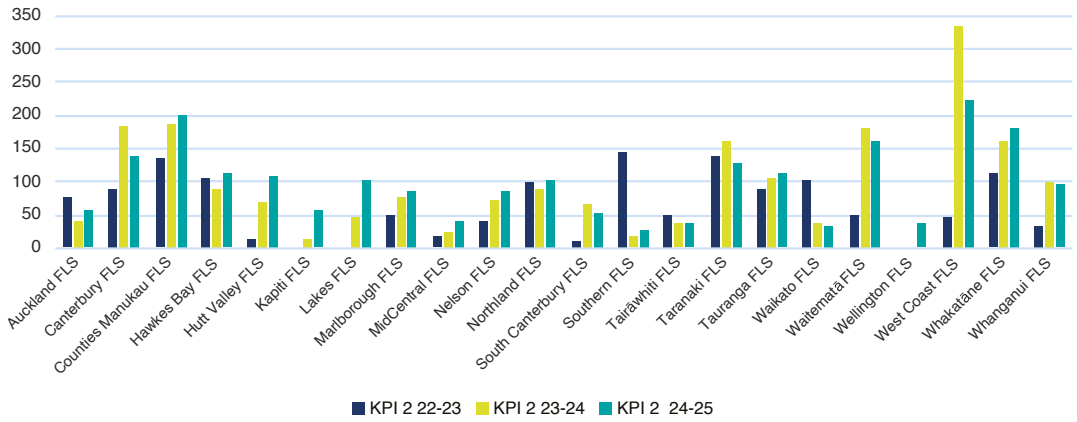
69%

of Expected Annual Total

14,104 Fractures Identified

Non-spine fragility fracture identification reached 69% of predicted target nationally, with variation across services. Comprehensive case finding requires integrating data from diverse sources: emergency and inpatient systems, Fracture Clinic records, multiple referral pathways (internal, GP, inter-service, out-of-area), ACC claims, discharge coding, and radiology reports. The variation between services reflects differing access to and integration of these data streams, highlighting opportunities for improvement. Continuing quality improvement efforts will focus on sharing successful identification strategies between teams to strengthen identification rates system-wide.

Figure 5.3 **IDENTIFICATION of Spine Fragility Fractures by Service**



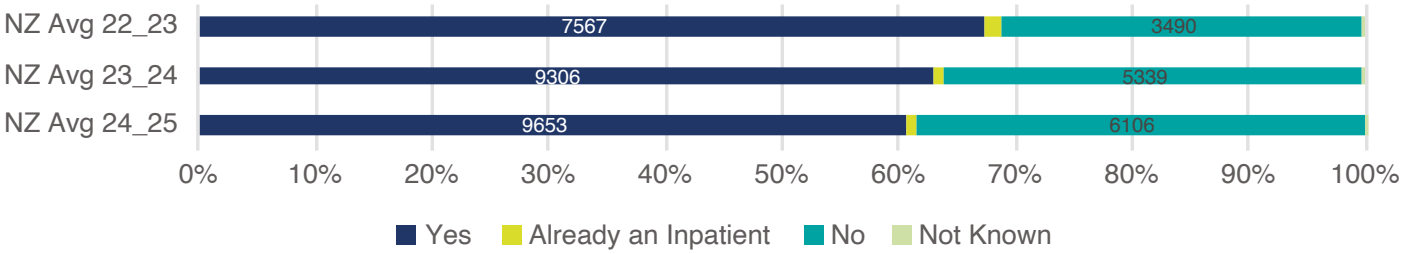
KPI 2
Spine fractures
99%
of Expected Annual Total
3,037 Fractures Identified

When vertebral (spine) fractures heal, they do not return to their original shape and are therefore visible on X-ray for decades afterwards. Distinguishing new from old spinal fractures is difficult. Services which systematically review images are seeing a mix of new and old fractures, which is why some FLSs are reporting fracture rates well above 100% of predicted.

Clinical distinction between new and old fractures is important because recent fractures carry higher refracture risk within 12 months than pre-existing fractures. While osteoporosis specific treatment is appropriate for both, our targets focus on clinically current fractures due to their more imminent risk.

From July 2025, the Registry distinguishes ***clinically acute*** fractures (occurring during identifiable events such as a fall with new or worsening back pain) from ***non-acute*** fractures (discovered incidentally, with no recalled causative event or one from years prior). This will improve outcome analysis by correctly classifying future fracture risk.

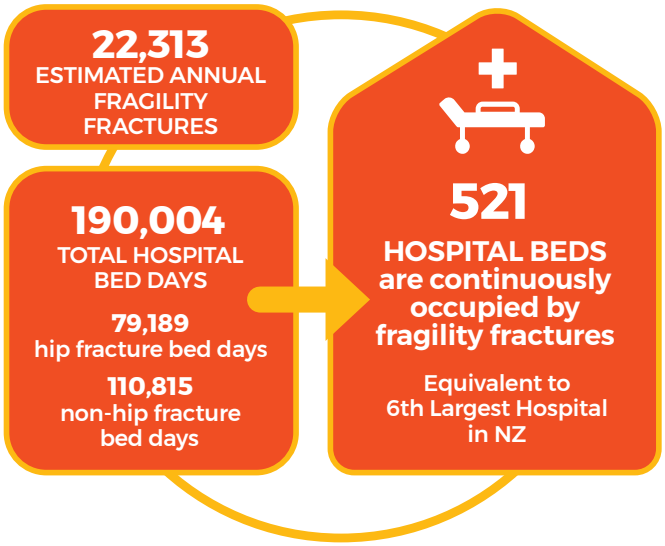
Figure 5.4 **Admission to Hospital**



Hospital Bed Days: **The hidden cost and FLS impact**

Last year, people with fragility fractures spent an estimated 191,000 bed days in hospital in NZ. Registry data demonstrates a positive shift in this burden: among all patients identified, hospital admission rates declined from 68% to 61% over three years. While seemingly modest, this represents several hundred admissions potentially avoided over two years, demonstrating FLS as both a clinical success for patients and a strategic investment in health system sustainability that protects capacity for less preventable, more complex health priorities.

Beyond hospital admissions, fragility fractures significantly affect living independence. By 52 weeks, 14% of the 2024/25 cohort had transitioned to Aged Residential Care Facilities, an increase from 9% in the previous cohort. This figure captures only formal residential care, not patients who moved in with family members requiring care support. Understanding the full impact on independence remains a priority for further investigation.



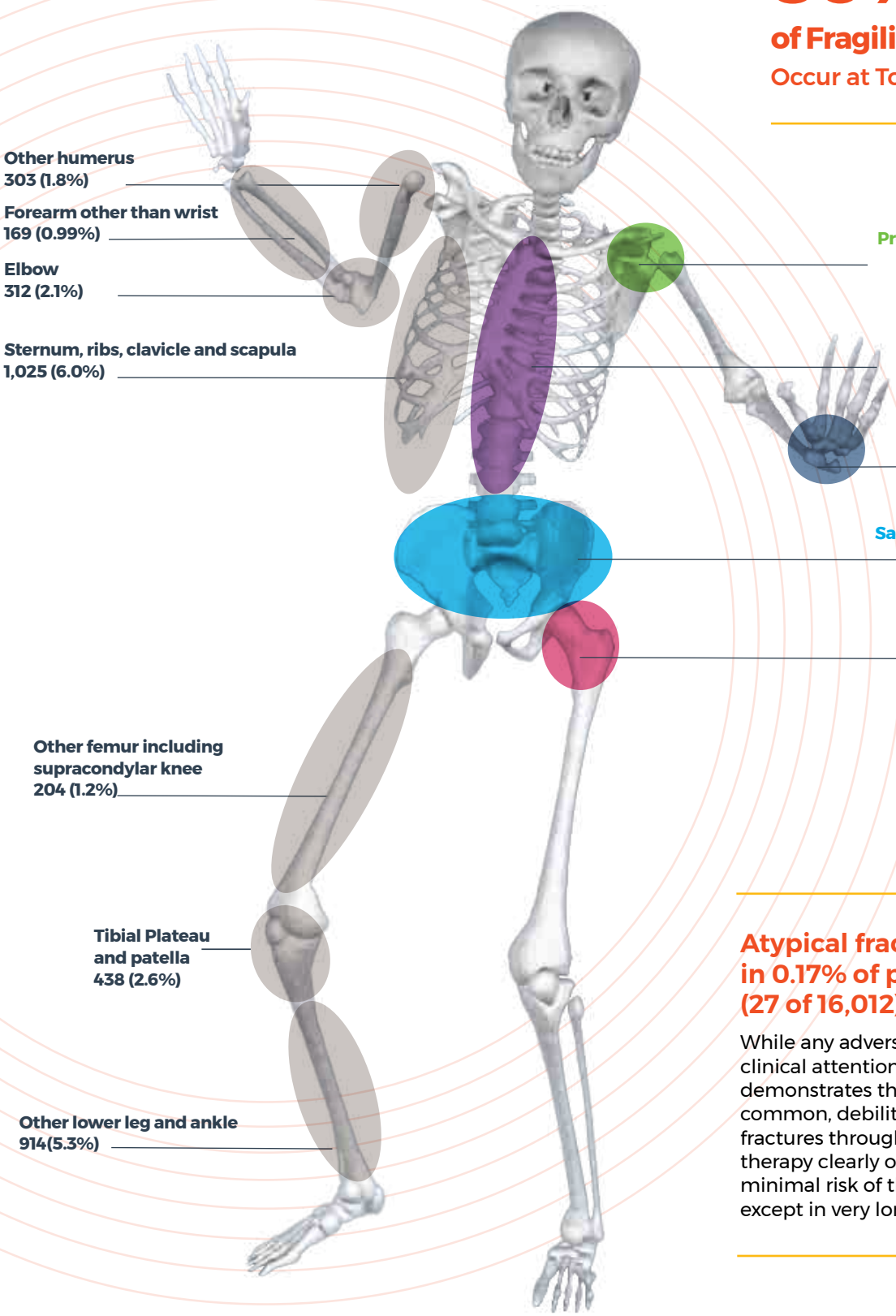
Fracture Sites at Presentation

Among the 16,012 patients, 17,141 separate fragility fractures were recorded. Approximately 6% (988) of patients sustained simultaneous fractures at two sites, and 1% (149) at three sites. These proportions remain largely unchanged from 2023/24 cohort, with only minor increases (1%) in other lower leg and ankle fractures, and sternum, ribs, clavicle, and scapula fractures.

80%

of Fragility Factures

Occur at Top 5 sites.



Atypical fractures occurred in 0.17% of patients (27 of 16,012) in 2024/25.

While any adverse event warrants clinical attention, this low rate demonstrates that preventing common, debilitating osteoporotic fractures through bisphosphonate therapy clearly outweighs the minimal risk of this rare complication, except in very long-term use.

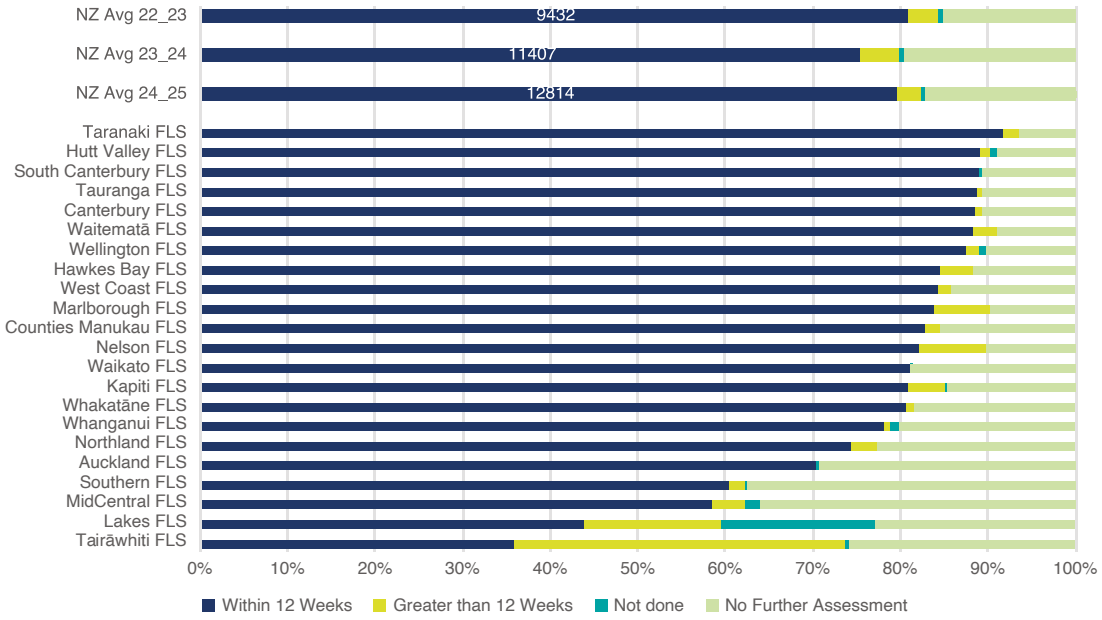
INVESTIGATION – The second **"i"** describes which **investigations** should be undertaken to characterise the patient's risk of sustaining subsequent events.

Standard 2: INVESTIGATION

People with a fragility fracture will undergo timely assessment for future fracture risk including bone health (i.e. osteoporosis) and falls risk.

Figure 6.1 //KPI 3: Initial INVESTIGATION including Fracture Risk Assessment within 12 Weeks

Of all identified patients, 13,339 (83%) proceeded to fracture risk assessment. This reflects appropriate and considered clinical decision-making, recognising that assessment is not clinically beneficial for every individual. Patients who were deceased, receiving palliative care, living with advanced frailty, end-stage renal failure, or advanced malignancy were appropriately excluded, as further investigation would not alter care or outcomes. Among those not taken forward for assessment, more than half were deceased, terminally ill, or frail with a life expectancy of less than one year. A further 9% declined assessment, 8% had end-stage renal failure, and 9% were not New Zealand residents.



KPI 3
Initial Investigation
80%
of Total 2024/25 Cohort
12,814 People with a Fracture Risk Assessment Completed ≤ 12 Weeks

MidCentral FLS has achieved substantial growth, increasing patient numbers from 220 to 570 over three years while strengthening performance in bone health assessment. Patients assessed within 12 weeks rose from 226 in 2023/24 to 334 in 2024/25.

Exceptional Care from Start to Finish:

Sue's Journey with Taranaki Fracture Liaison Service

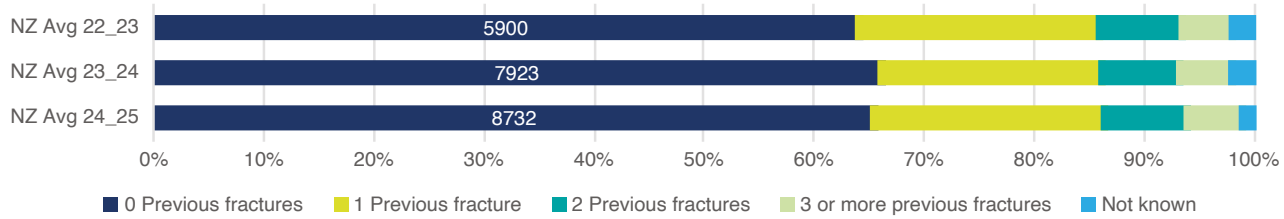
As Sue notes, "it's always easy to write about situations that have gone well," and her experience with the Taranaki Fracture Liaison Service is a clear example. After the frustration of falling and breaking her wrist, Sue's care became a model of coordinated, patient-centred recovery.

Her journey began in the Emergency Department at Taranaki Base Hospital, where she received prompt assessment including an X-ray, computed tomography (CT) scan, and temporary plaster, establishing a strong foundation for her care. The following day, ACC contacted Sue to begin the claims process, and within days she attended a specialist appointment where her plaster was replaced and a follow-up visit scheduled.

Sue was particularly impressed by the proactive focus on her long-term bone health. A Fracture Liaison Nurse Specialist arranged a bone scan, completed a thorough clinical history, and provided clear advice on reducing future fracture risk. The scan was completed promptly, with results communicated by phone, avoiding unnecessary delays or uncertainty. Reflecting on her experience, Sue says, "From start to finish, I felt well advised and cared for."

Bone Health Assessment

Figure 6.2 **Reported Previous Fragility Fractures**



First Fractures: **The Primary Prevention Imperative**

Year after year, approximately two-thirds of people assessed by Fracture Liaison Services (FLS) present with their first-ever fragility fracture. While this reflects the success of FLS in identifying and managing patients after fracture, it also exposes a fundamental limitation: even the most effective secondary fracture prevention systems cannot intervene before the first fragility fracture occurs.

New Zealand's world-leading Fracture Liaison Service (FLS) network has demonstrated that systematic secondary fragility fracture prevention can significantly reduce refracture risk. However, despite this success, around two-thirds of fragility fractures each year occur in people presenting with their first-ever fracture, beyond the scope of FLS to prevent. As population ageing accelerates, the number of first fragility fractures will continue to rise, and without complementary investment in primary fragility fracture prevention, the gains achieved through secondary prevention risk being diluted by the growing volume of first fractures entering the system.

RISK FACTORS: **Where we can Make a Difference**

of 13,083 patients with documented risk factors

NON-MODIFIABLE FACTORS 66%				MODIFIABLE FACTORS 34%	
EARLY MENOPAUSE	↑ 23%	PARENTAL HIP FRACTURE	↑ 16%	ALCOHOL USE	↓ 17%
GLUCOCORTICOID THERAPY	18%	RHEUMATOID ARTHRITIS	9%	CURRENT SMOKING	17%

Primary fracture prevention offers a clear opportunity to address this challenge. Targeted lifestyle interventions can reduce fracture risk among individuals with modifiable behaviours, while systematic fracture risk assessment and screening can identify those with non-modifiable risks such as early menopause or parental history of fracture, before their first fracture brings them to clinical attention. Earlier identification enables proactive intervention, shifting the system from reactive care to prevention-focused management.

The need for this shift is well recognised internationally. The World Osteoporosis Day 2016 report noted that while secondary fracture prevention is the most immediate and effective way to improve patient care and reduce fracture-related healthcare costs, "the ultimate goal in the longer term would be the prevention of the first fracture." Advances in fracture risk assessment over the past decade now provide a platform for population-level approaches that are both clinically effective and cost-effective.

Building on the success of FLS and the framework outlined in Stronger Together: A Collaborative Strategy for Bone Health in New Zealand, there is a clear opportunity to extend systematic prevention upstream. A coordinated national primary fracture prevention approach would focus on individuals aged 50 years and over who are at highest risk, including those with medical conditions or medications associated with bone loss, as well as people with established clinical risk factors such as low body weight, early menopause, family history of fracture, or recurrent falls.

Preventing first fractures is not an alternative to secondary prevention it is the necessary next step in the evolution of fracture prevention in New Zealand. By applying the same systematic, evidence-based approach that has transformed refracture prevention, New Zealand can reduce the growing burden of fragility fractures, protect the sustainability of FLS services, and improve long-term outcomes for older people. This progress would strengthen health system sustainability, support primary care integration, reduce avoidable hospitalisations, lower long-term costs, and ensure the benefits of fracture prevention are shared equitably as New Zealand's population continues to age.

Equity in Healthcare: Beyond Ethnicity

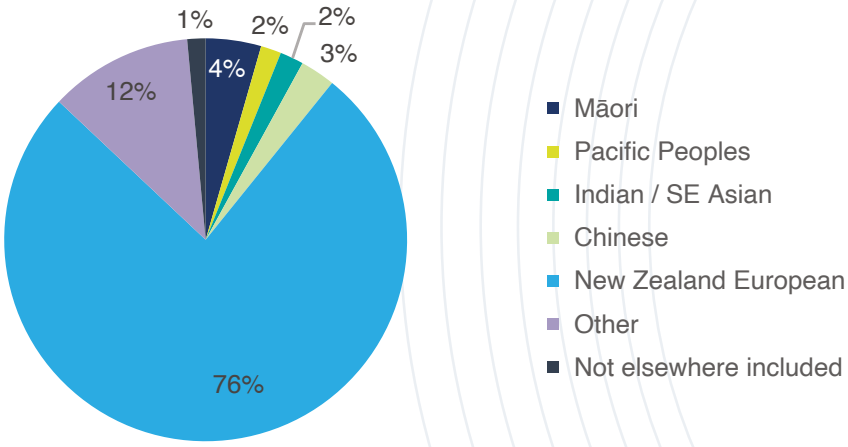
Equity in healthcare means everyone is entitled to the same outcomes regardless of factors that place them at a disadvantage. While much attention focuses on ethnicity, other types of disadvantage can be equally important.

Socioeconomic status and geography significantly affect access to care. Australia and New Zealand are sparsely populated by international standards, making specialist centre access challenging for rural residents. These factors often compound each other. For example, someone from the Far North of New Zealand requiring a DXA scan faces a six-hour round trip to Whangārei costing $75 in petrol. Residents of this area are more likely to be Māori and economically vulnerable.

Improving equity requires targeted resource allocation. Rural communities need enhanced patient transport support, mobile services, or alternative assessment pathways to overcome geographic barriers that disproportionately affect already disadvantaged populations.

Figure 7.1 **Ethnicity**

Cook Island Māori, Fijian, Niuean, Tongan, Samoan and Other Pacific People have been grouped into Pacific Peoples. Australian, Canadian and American have been grouped into Other European.



These below figures examine whether geography and ethnicity influence access to timely treatment, measured by 16-week osteoporosis specific treatment commencement rates.

Figure 7.2 **Does Population Density Affect Treatment?**

Percentage commencing osteoporosis specific treatment by 16 weeks across administrative districts mapped to FLS areas, grouped by population density (Stats NZ).

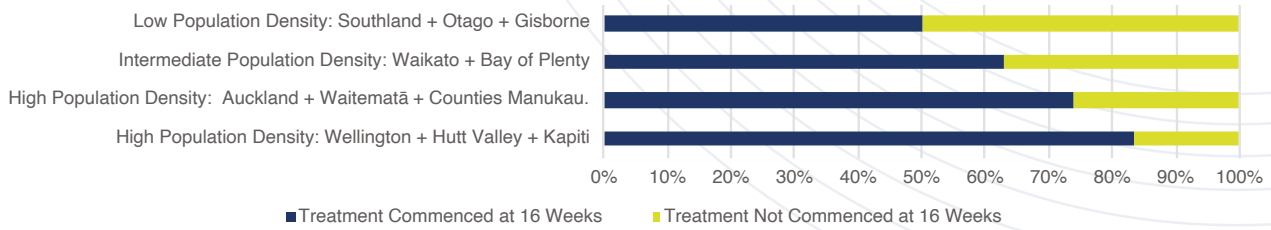


Figure 7.3 **Does Ethnicity Affect Treatment?**

Percentage commencing osteoporosis specific treatment by 16 weeks across administrative districts mapped to FLS areas, grouped by ethnic self-identification (Stats NZ).

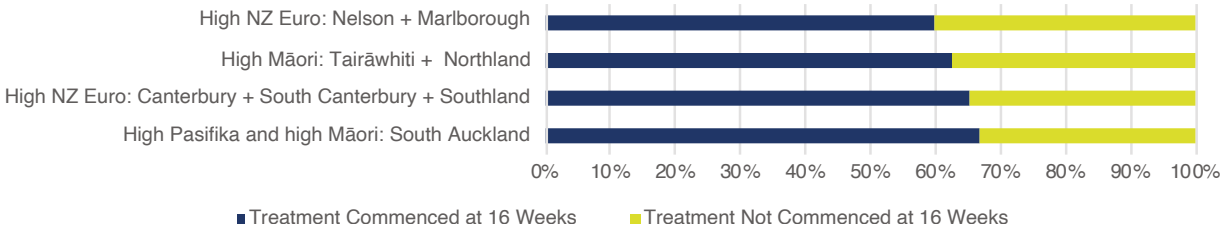
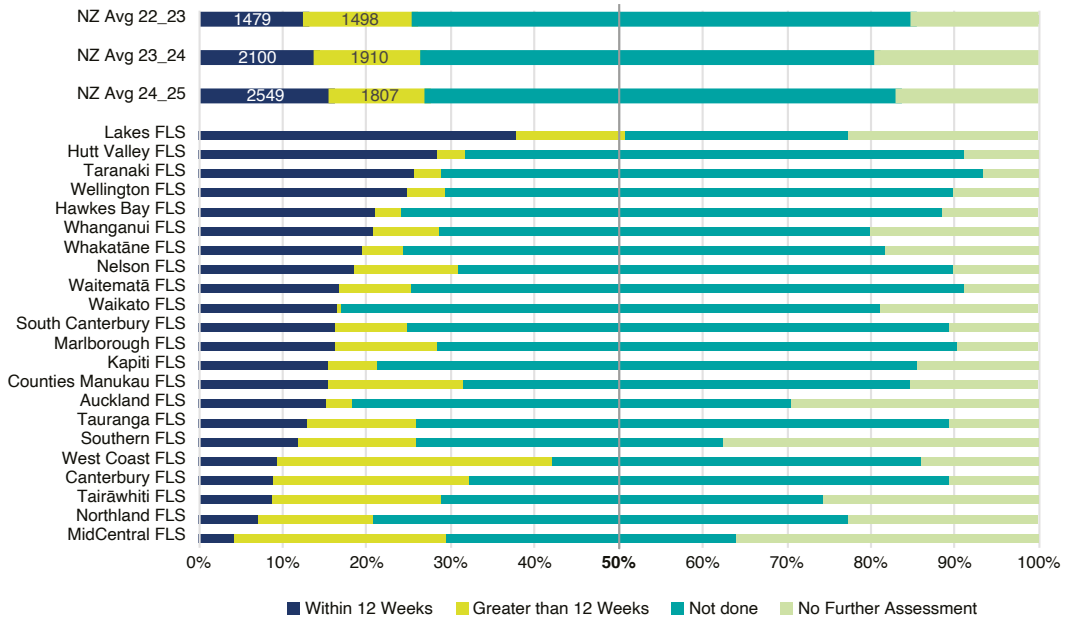


Figure 8.1 **//KPI 4: DXA within 12 Weeks**



KPI 4

DXA

32%

Target 50% of Total 2024/25 Cohort

2,549 People with a DXA Scan Completed ≤ 12 weeks

The DXA Access Challenge

Clinical Standards state that 50% of people with fragility fractures require DXA scans to inform management, making timely access critical. Delays affect treatment initiation when refracture risk peaks. Regional variation creates inequity, with urban-based scanners requiring lengthy travel for rural residents. Many scanning units operate below capacity due to staffing limitations rather than equipment shortages, so workforce development could substantially improve access.

Encouragingly, patients with recent DXA (within 24 months) increased from 1.3% to 14% (73 to 1,190 patients) across three years, potentially indicating proactive primary prevention with GPs identifying and scanning at-risk patients before fragility fractures occur. Understanding who these patients are and what prompted their scans could identify successful early intervention approaches to replicate systemwide.

Addressing DXA access requires multifaceted approaches: workforce development, capacity optimisation, and prioritisation protocols ensuring fragility fracture patients receive timely scanning.

It's the Small Things You Can't Do

Annette, Nelson Marlborough

At 66, I never expected to break my upper arm while looking after my granddaughter. You don't think it will happen to you, until it does.

Everyday things became impossible. I couldn't drive or lie down comfortably for weeks. I walked to the pharmacy with my pants not pulled up properly because I couldn't manage one-handed. A friend helped, though I was mortified. I had to decide whether my bra would be on or off for a few days at a time, depending on shower assistance. I relied completely on family for meals, unable to chop food or pull the seal off a microwave meal.

What I wish I'd known:

1. Get a smart watch that calls for help if you fall. You might not feel "old enough" for an alert bracelet, but I've used mine since and it was invaluable.

2. Check your bone health early. That two-hour journey for a DXA scan when you're well could include shopping and lunch. After my fracture, unable to drive, it meant $80 for a shuttle and four hours of painful travel.

Get checked before you need to: https://osteoporosis.org.nz/take-the-test/

Transforming DXA Access:

A Quality Improvement Initiative in Counties Manukau FLS

Analysis of our bone density scanning service in mid-2024 revealed significant access challenges. Only 21% of fragility fracture patients were receiving DXA scans within the recommended 12-week timeframe, with median wait times exceeding 20 weeks. This delay posed considerable risks for secondary fracture prevention.

Data review identified clear barriers: the DXA scanner operated at just 70% capacity, appointment scheduling was inefficient, and a 12% no-show rate compounded existing delays. Limited operating hours and inadequate patient communication systems further compromised timely access.

Strategic Interventions

A comprehensive quality improvement approach using Plan-Do-Study-Act methodology was implemented with support from ONZ Quality Improvement CNS. Key interventions included:

- Training two FLS nurses to perform DXA scanning, establishing a dedicated nurse-led service
- Optimising appointment duration from 30 to 20 minutes to increase capacity
- Implementing automated patient reminder systems (m-TXT)
- Introducing standardised triaging for high-risk patients
- Real-time performance monitoring through dashboards and weekly audits

Measurable Outcomes

Comparison of July-October 2025 data with the corresponding 2024 period demonstrated substantial improvements:

- 79% of patients now receive DXA within 12 weeks (versus 21% baseline)
- Median wait time reduced from 20 weeks to 8 weeks
- Scanner utilisation increased to 90%
- No-show rate declined to 3% (a 75% relative reduction)

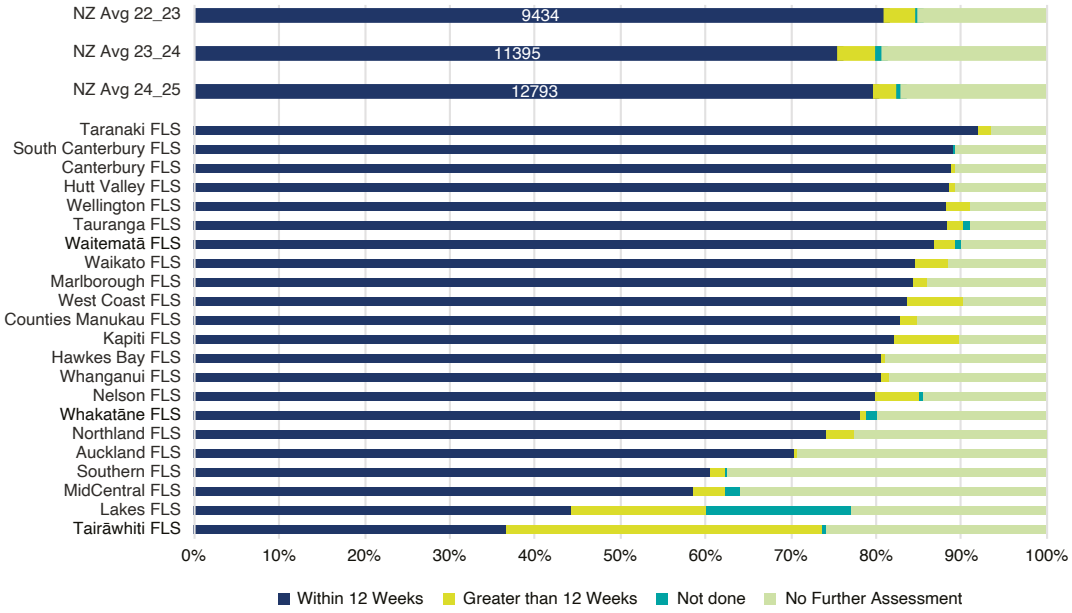
The nurse-led model has enhanced continuity of care, integrating osteoporosis education and rapid post-scan follow-up. This systematic approach has strengthened our secondary fracture prevention pathway and demonstrates the value of data-driven quality improvement in fragility fracture care.

L to R: Geethu Jose (FLS CNS), Susan Lawless (Operations Manager), Rashika Chandra (FLS Administrator), Elizabeth Prasad (FLS CNS), Dr Sunita Paul (FLS Clinical Lead and Geriatrician)

Looking Ahead: Innovations and Solutions

Emerging technologies may transform these access challenges. Artificial intelligence can now predict bone mineral density from plain X-rays with remarkable accuracy, potentially screening patients for DXA or providing definitive assessment without specialised equipment. International evidence is also clarifying which fracture types most reliably indicate treatment need, helping prioritise limited DXA utilisation. While implementation takes time, these innovations promise more accessible, efficient bone health assessment. Immediate gains are achievable through quality improvement initiatives, as demonstrated by Counties Manukau's success.

Figure 9.1 **//KPI 5: Falls Risk Assessment within 12 Weeks**



KPI 5
Falls Risk

80%
of Total 2024/25 Cohort

12,793 People with a Falls Risk Assessment Completed ≤ 12 weeks

Te Wai Pounamu Falls and Fragility Fracture Prevention Coalition

The Te Wai Pounamu Falls and Fragility Fracture Prevention Coalition brings together multidisciplinary health, community, and sector partners across Te Waipounamu to reduce falls and prevent injuries before they occur.

As the first coalition of its kind in the country, we are thrilled to see this work get off the ground. This initiative represents an important step forward, with the potential to inform similar approaches in other regions. It recognises the critical need to prevent falls that may lead to injury, including first fragility fractures, not just secondary ones, a vital evolution in comprehensive care.

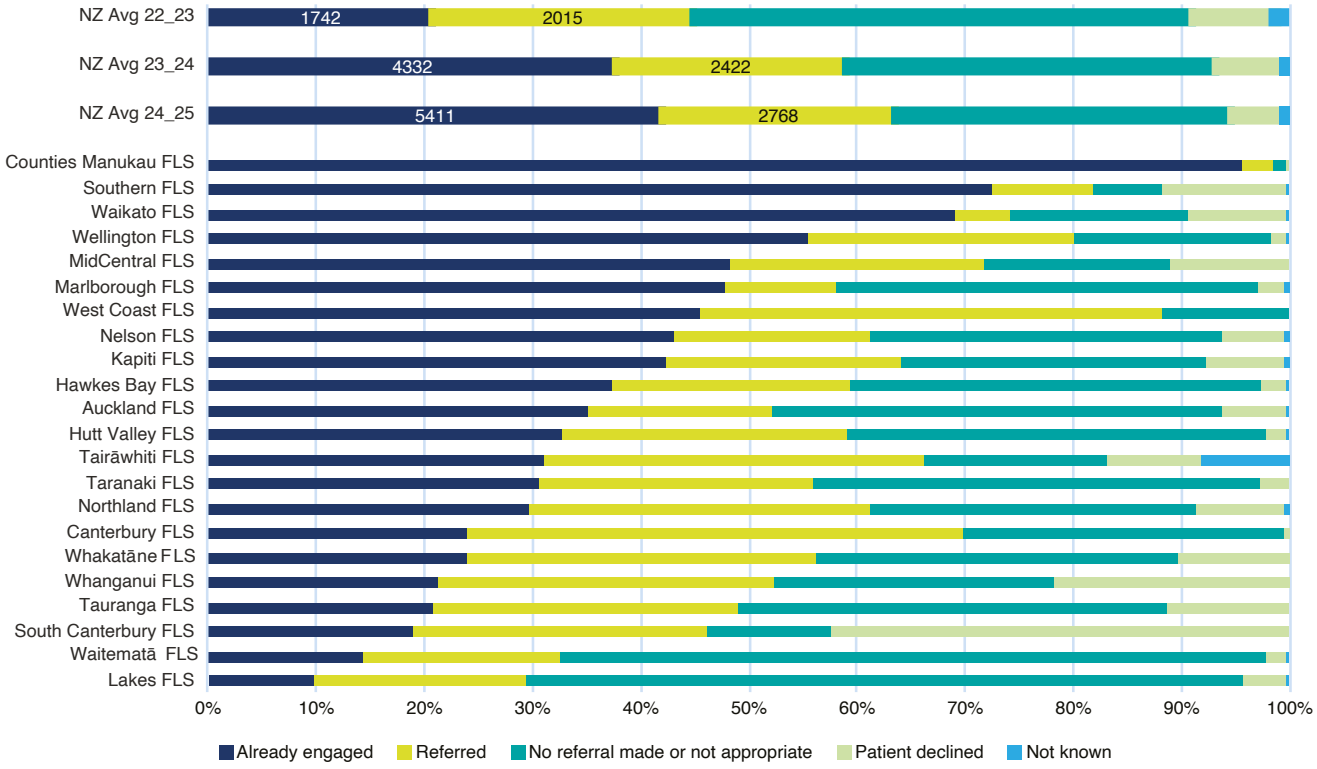
Dr Richard Macharg, GP and FLS Clinical Lead, Chair:

"Our purpose is to enhance and sustain a collaborative, evidence-based approach to falls and fragility fracture prevention across Te Waipounamu. We are committed to services that are co-designed, integrated, and responsive to best practice; that support people to live safely and independently; and that empower older people to take control of their falls risk and bone health.

Adopting the proven 5IQ framework, we are prioritising opportunities based on impact and effort. Current work focuses on understanding assessment practices and identifying gaps, leveraging existing resources to avoid duplication, ensuring cultural and demographic diversity in assessment approaches, addressing data integration and system challenges, and developing effective triage pathways.

We are establishing Key Performance Indicators to monitor critical outcomes, including fewer falls and fragility fractures, improved recovery, and integrated care. Our focus on equity, functional independence, and delivering the right care to the right person, at the right place and time, positions Te Waipounamu as a leader in reducing falls and preventing injuries before they occur through coordinated, people-centred prevention."

Figure 9.2 **Strength and Balance Referrals**



Building Strength Through Partnership:

Canterbury and West Coast Success

Canterbury FLS and West Coast FLS have seen remarkable improvements in Strength and Balance engagement in the past year. West Coast identified significantly more patients already engaged in classes when they sustained their fragility fracture (12% to 46%), reflecting growing community participation. Canterbury saw a smaller growth (13% to 24%), but impressively alongside this also referred 98 additional patients compared to the previous year.

Strategic collaboration between Cath Flain, Lynda Temomo, and Sports Canterbury's Lily Purdon streamlined referral pathways and improved referral success. FLS patients can now be referred via an electronic referral system that directly connects FLS patients to Sports Canterbury, who hold the regional Strength and Balance contract for Canterbury and the West Coast.

This approach delivers dual benefits: patients access clear pathways to appropriate classes, while Sports Canterbury's phone triage ensures optimal placement based on individual needs. The teams continue reviewing outcomes in planning meetings to further enhance this critical falls prevention connection.

L to R: Cath Flain (FLS CNS) and Lynda Temomo (FLS CNS).

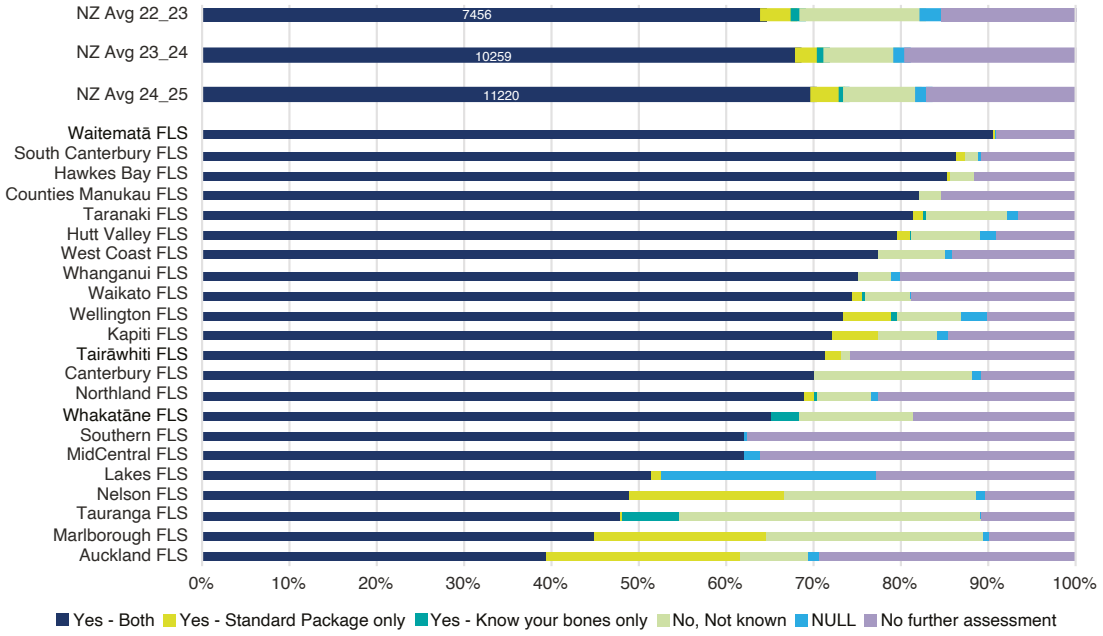
INFORMATION – The third **"i"** relates to what types of **information** the patient and their families and/or carers should be provided with to engage them in their care.

Standard 3: INFORMATION

People with fragility fracture, their family members and whānau or carers will be provided with information – in their own language and in plain language – on bone health, lifestyle measures (including exercise, alcohol and smoking), nutrition (including calcium and vitamin D intake), sun exposure and the relationship between osteoporosis and fracture risk.

Figure 10.1 Provision of INFORMATION Package and Know Your Bones™

Of the 16,012 patients in the 2024/25 cohort, this shows all who received information packages or Know Your Bones™ materials at any point. This is not broken down by whether the KPI 6 timeframe target was met



KPI 6
Information Package
73%
of Total 2024/25 Cohort
11,757 People Provided with an Information Package ≤ 12 weeks

KPI 7
Know Your Bones™
71%
of Total 2024/25 Cohort
11,295 People Provided Information for Family Member Self-Assessment

Simple Strategies, Steady Success

Whanganui FLS demonstrates that straightforward, consistent approaches deliver results. Information Package provision within 12 weeks improved from 28% to 72% over three years (2022/23 to 2024/25), while Know Your Bones™ provision rose from 67% to 75%. Their simple method provides bone health information during hospital stays with whānau discussion when possible, or posts information home with encouragement to share with family. This steady improvement shows that prioritising early, consistent information provision ensures patients and whānau have knowledge needed for bone health and fracture prevention across generations.

All patient factsheets are now available in one location on our website, making them easier to find. The newest addition focuses on nutrition for bone health.

https://osteoporosis.org.nz/individuals-families/fact-sheets/

Stronger Together: A Collaborative Strategy for Bone Health in New Zealand

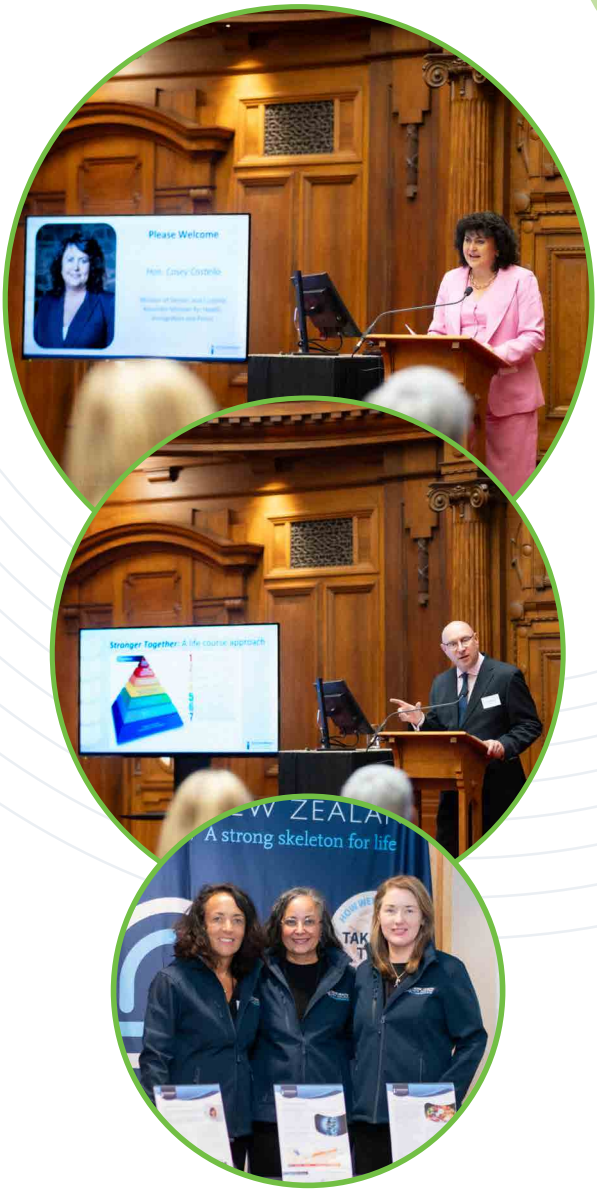
On 5 November, Osteoporosis New Zealand officially launched *Stronger Together: A Collaborative Strategy for Bone Health in New Zealand* at Parliament, hosted by the Hon. Casey Costello, Minister for Seniors, and Associate Minister of Health.

Stronger Together provides a coordinated national roadmap to improve bone health and prevent fragility fractures across New Zealand. With more than 40% of New Zealanders projected to be over 50 by 2050, the strategy responds to the significant and increasing burden of osteoporosis and fragility fractures on individuals, whānau, ACC, Health New Zealand, and the wider health system.

Building on BoneCare 2020, *Stronger Together* adopts a life-course approach spanning hip fracture care, secondary and primary prevention, bone health across all ages, youth bone development, and maternal nutrition. Evidence-based actions provide a coherent, systemwide framework for sustainable improvement.

Minister Costello acknowledged Osteoporosis New Zealand's leadership: "I commend the work Osteoporosis New Zealand have been doing through your programmes of awareness, advocacy, and education, and in particular, the work for fragility fracture care involving New Zealand's Fragility Fracture Registry and Fracture Liaison Service. Your achievements in such a short period of time are nothing short of remarkable. The work you have done has been recognised by peers across the globe as world leading."

This recognition is reflected in strong international endorsement of *Stronger Together* from organisations including the Fragility Fracture Network, International Osteoporosis Foundation, Australian and New Zealand Hip Fracture Registry, Australian and New Zealand Fragility Fracture Registry (ANZFFR), Healthy Bones Australia, Osteoporosis Canada, and the Royal Osteoporosis Society. Their support positions *Stronger Together* as both a national Call to Action and a global exemplar of cross-sector collaboration.



Central to the strategy is sustaining excellence in secondary fracture prevention through continued investment in New Zealand's Fracture Liaison Services. These multidisciplinary services are the backbone of the national response to repeat fracture risk, systematically identifying, assessing, and managing people who sustain fragility fractures. As Minister Costello noted, *"From the Government's perspective, the prevention of falls and fractures helps achieve key health priorities in the Government Policy Statement on Health."*

ACC has confirmed its commitment to continue funding for the ANZFFR programme, national FLS Network, and Osteoporosis New Zealand's sector-wide support through 2027, providing stability for ongoing quality improvement, alignment with *Stronger Together* objectives, and progress toward international benchmarks.

Programme performance is guided by the internationally recognised 90/90/50 standard for excellence in secondary fracture prevention: 90% population coverage, 90% fracture identification, and greater than 50% evidence-based osteoporosis treatment initiation. Achieving these standards would place New Zealand among the highest-performing countries globally.

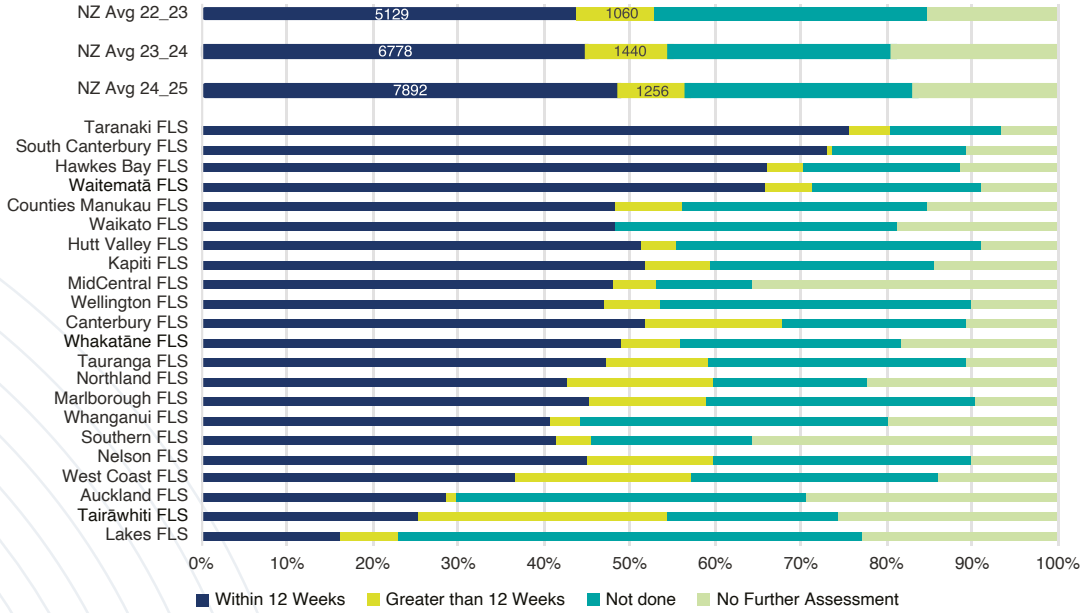
We will continue strengthening data quality and using ANZFFR insights to support consistent, evidence-based care nationwide, delivering lasting improvements in bone health and significantly reducing preventable fracture harm for individuals, whānau, and the health system.

INTERVENTION – The fourth **"i"** relates to the **interventions** that should be offered to the patient, including pharmacological interventions where indicated, non-pharmacological interventions – such as falls prevention programmes – and lifestyle advice relating to diet, exercise, alcohol consumption and so forth..

Standard 4: INTERVENTION

People with a fragility fracture determined to be at high risk of sustaining future falls and/or fractures will be offered appropriate osteoporosis treatment with PHARMAC subsidised medicines and be referred for interventions to reduce falls risk.

Figure 11.1 //KPI 8: Osteoporosis Specific Treatment Recommended as Appropriate Within 12 Weeks



KPI 8

Osteoporosis Specific Treatment

49%

of Total 2024/25 Cohort

7,892 People with a Treatment Recommendation Completed ≤ 12 weeks

Understanding "treatment recommendation" is important. Sometimes it's straightforward—a prescription. But it can also mean specialist referral for complex cases, continuing a planned medication break (often called a "drug holiday"), or documenting that treatment was offered but declined. What matters is that FLS teams have taken all clinically appropriate steps.

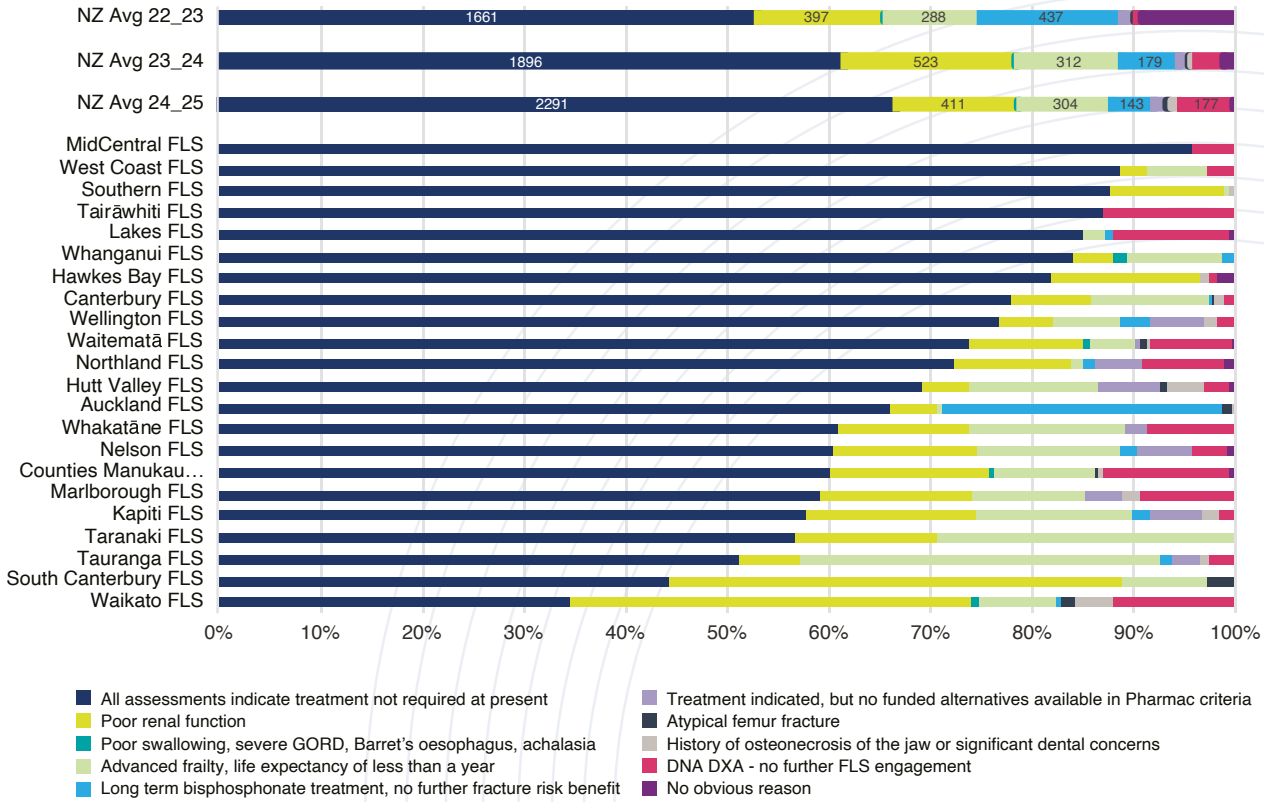
Osteoporosis specific treatment recommendations rose from 54% (2022/23) to 63% (2023/24) to 66% (2024/25), while those not requiring treatment decreased from 40% to 32% to 29%. This represents growth from 5,016 to 8,638 patients - over 3,600 additional people receiving treatment. About 5% of patients offered treatment choose not to take it, a rate that's remained remarkably stable. This suggests we're reaching more people without pushing treatment on those who aren't ready for it.

Most patients (94%) are prescribed bisphosphonates, with smaller numbers receiving denosumab (4%) or teriparatide (2%). Following Pharmac's expansion of funded access to denosumab in March 2025, Osteoporosis New Zealand and the Fracture Liaison Network New Zealand have developed joint guidance on when this treatment is most appropriate:https://osteoporosis.org.nz/redirection/onz-flnnz-denosumab-recommendations/

Dr David Kim, Consultant Endocrinologist at Health NZ Waitematā, authored "How to Treat Osteoporosis" for the New Zealand Doctor. This comprehensive guide addresses osteoporosis treatment within the New Zealand context, including funding, Fracture Liaison Services, and primary care pathways, while reflecting international best practice applicable to comparable health systems. The Royal New Zealand College of General Practitioners has endorsed it for 1 CPD credit, and the Nursing Council of New Zealand recognises it for 1 PD hour.

Access the article and assessment free at nzdoctor.co.nz/educate/osteop

Figure 11.2 **Reason Osteoporosis Specific Treatment Not Recommended**



Not everyone with an apparent fragility fracture requires treatment. Some are too medically compromised to benefit; others are healthy and simply unlucky with an awkward fall. As FLS teams mature, they're gaining confidence making considered decisions in complex situations.

Poor renal function and advanced frailty exclude relatively stable numbers, while exclusions for prior long-term treatment (benefit persisting years after stopping) have fallen. The category "All assessments indicate that treatment is not required" includes those with low Fracture Risk Assessment (FRAX) scores and/or a favourable DXA result. There may be ways to screen more of these people out at an earlier stage, sparing them the anxiety of waiting for a decision.

DXA access continues limiting timely treatment recommendations. When DXA is delayed and patients don't attend, decisions become difficult to finalise. This highlights the importance of all elements aligning to support timely decision-making. Strengthening standardised criteria to guide progression from identification to assessment, alongside improving DXA access where indicated, would support more efficient resource use. Overall, these trends suggest services are performing well and continuing to mature.

Getting My Ducks in a Row

How FLS Support Transformed Chris's Treatment Journey

When 76-year-old Chris fractured her sternum and vertebrae in April 2025, she'd been living with an osteoporosis diagnosis for over a year without clear guidance. Despite her spine T-score of -3.1, Chris hadn't understood what the number meant. Prescribed Alendronate, she hadn't started it due to concerns about osteonecrosis of the jaw and pending dental work. Like many on long-term corticosteroids, she'd never been warned about osteoporosis risk.

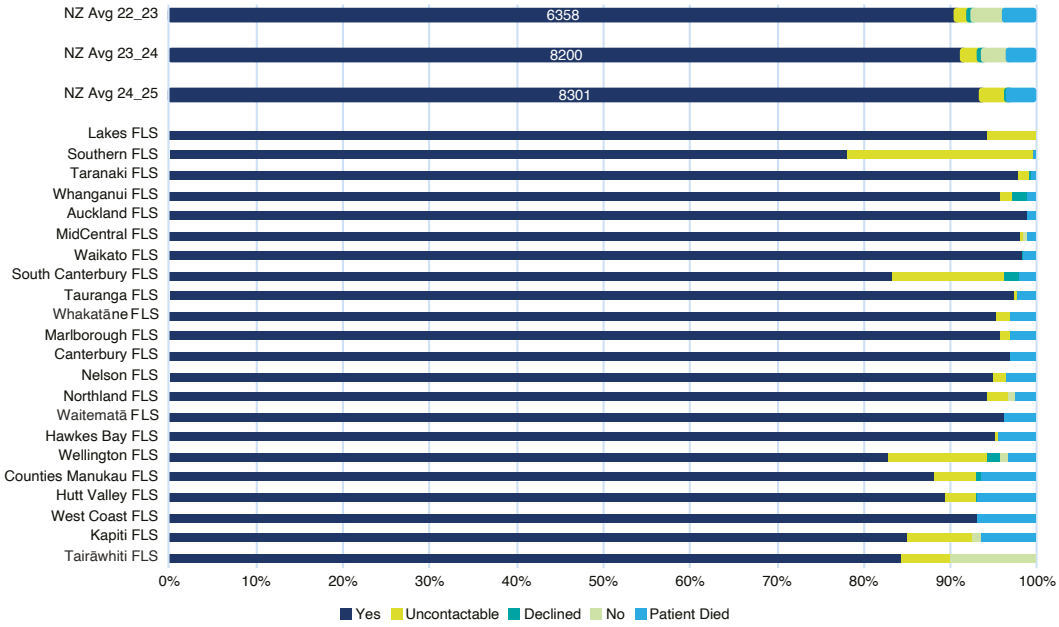
Everything changed with one phone call from Maree, her Fracture Liaison Coordinator.

"Maree listened. She talked me through every medication option—what they do, why they're used, and what the benefits are," Chris recalls. "For the first time, I knew what I actually needed to do."

Together, they created a plan: complete dental work first, then start treatment. Chris began teriparatide in September and will transition to zoledronic acid after 12 months.

"Before, I didn't understand my condition or treatment. Now I do. Now I can make decisions—not out of fear, but out of knowledge."

Figure 11.3 **Recorded 16 Week Follow-Up**



KPI 9
Follow-Up
97%
of Those Referred For, or Recommended Osteoporosis Specific Treatment

16-week Follow-Up was Successfully Completed for 8,301 Patients, Usually by Phone

The purpose of 16-week follow-up is to review what steps have been taken. Given that refracture risk is highest in the 6-12 months after first fracture, it is important to ensure something is actually being done about fracture risk. Ideally, by this time investigations are complete, treatment recommendations made (medication and falls prevention), and interventions started. This is a tight timescale, probably too much too soon for older patients with one of the major fractures.

With increasingly complex presentations and demanding workloads, achieving the 16-week benchmark consistently is challenging. Internationally there is a trend toward 20 weeks. Since the 16-week timeframe was an oversight in the 2021 Clinical Standards, this data supports extending to 20 weeks to better reflect practice and we are considering making that change.

Helen's Story: Getting Back on the Pickleball Court

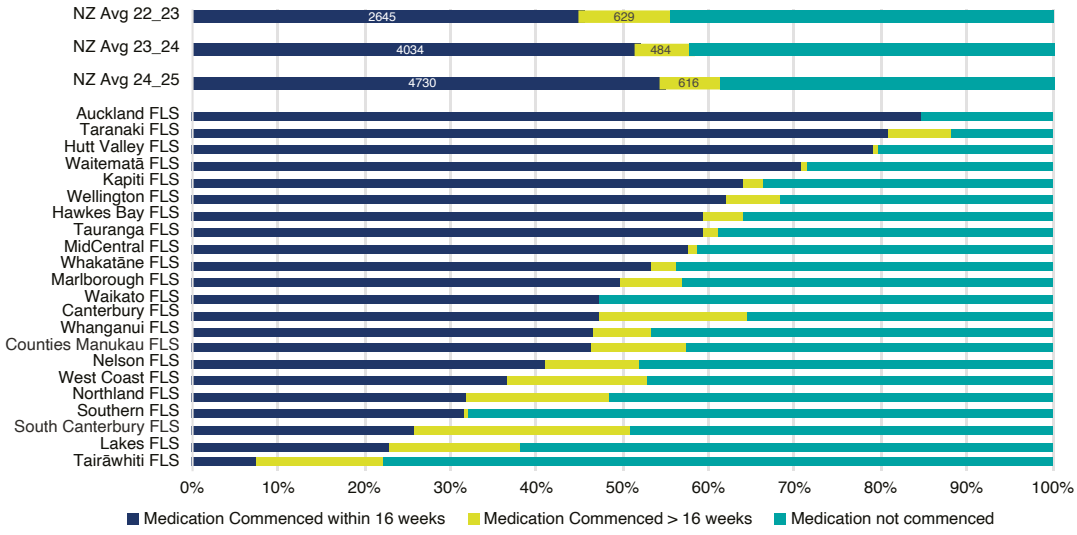
In May 2025, Helen, 74, was playing pickleball and anticipating an easy dink return shot when she stepped back, slipped on the court lines, and fell hard. This resulted in a hip fracture and total hip joint replacement. While Helen knew she had osteoporosis and understood the risks, this was her first fracture and being hospitalised came as a shock. She had never expected it would happen to her.

Helen has been having DXA scans since her mid-forties, having sadly watched her Mum suffer with broken bones and terrible pain until the end of her life. After her first DXA scan showed she had bones of a 60-year-old, Helen remained conscientious about not falling and stayed fit and active through pickleball, badminton, swimming, cycling, and walking. Regular DXA scans showed decreasing bone mineral density (BMD), prompting medications including hormone replacement therapy (HRT) alongside calcium and Vitamin D supplementation. Fosamax was started three years ago, and BMD began to increase.

Helen is now in the rehabilitation phase following her hip fracture and has returned to walking and cycling, ditching her walking frame after two weeks. She is planning to return to pickleball, though understandably nervous. Post-discharge, Helen visited her GP for an IV Zoledronate infusion after discussion with the Tauranga FLS team.

Helen's advice for any woman with a family history of osteoporosis or weak bones: "Get a DXA to see if you are vulnerable, just be mindful of your lowering BMD as you age and correct with lifestyle and good diet, always have calcium-enriched foods and get your Vitamin D, although harder these days with sunburn restriction times. If at risk, be mindful of your environment for falling and fracturing."

Figure 11.4 //KPI 10: Osteoporosis Specific Treatment Commenced within 16 Weeks



KPI 10

Osteoporosis Specific Treatment Commenced

55%

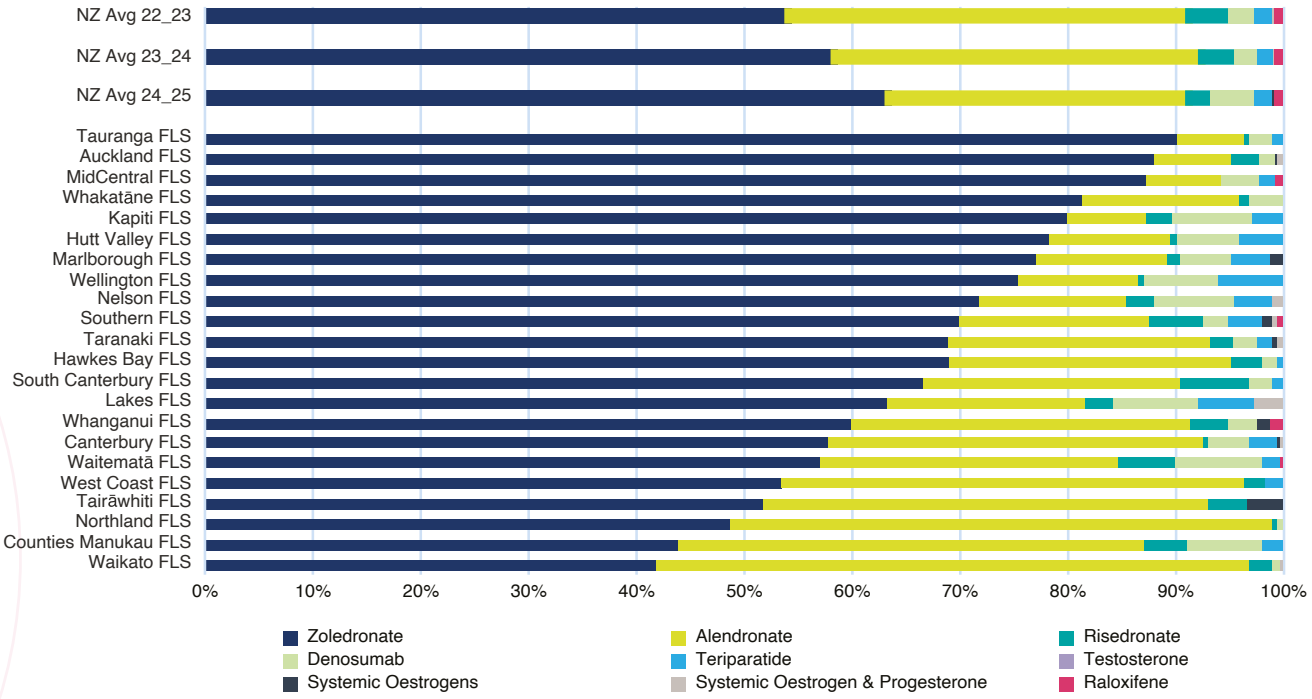
of Those Referred For, or Recommended Osteoporosis Specific Treatment

4,730 People who Commenced or Continued Osteoporosis Specific Treatment ≤ 16 Weeks

The prescribing challenge: Our FLS teams can recommend treatment, but few have prescribing authority. We therefore rely heavily on primary care colleagues to "write the (pre)script(ion)". Services like Auckland FLS that can initiate treatment show much higher rates. Primary care in NZ is in a tough place at the moment, and in many districts our recommendations aren't being actioned. Even when FLS teams initiate treatment, skeletal fragility is a long-term condition requiring primary care maintenance after FLS input ends at one year.

This is an equity issue: GP shortages concentrate in rural, impoverished and ethnic minority areas. Creative solutions like peripatetic "Bone Bus" services offer promise but require leadership, innovation appetite, and resources beyond the FLS/ANZFFR scope.

Figure 11.5 16 Week Osteoporosis Specific Treatment Type



The orthogeriatric advantage: Where services can initiate treatment, the impact is striking. Tauranga FLS increased zoledronic acid administration from between 2022/23 and 2024/25. This improvement reflects growing orthogeriatric services, where doctors specialising in older people's health provide regular input to orthopaedic wards.

Tauranga's experience demonstrates this impact clearly. Their orthogeriatrician position was vacant in early 2024 and covered ad hoc for several months. Since appointing a permanent orthogeriatrician in late 2024, zoledronic acid administration has improved significantly. Having a consistent consultant and team enables better staff and patient education, facilitating osteoporosis treatment before hospital discharge.

Keeping New Zealand On Its Feet

Strength and balance classes are a cornerstone of falls prevention and comprehensive fracture care. Regular participation reduces falls risk while improving muscle strength, balance, confidence, and quality of life.

FLS teams make the essential first step by referring patients to these programmes. The growth has been remarkable: patients already engaged in strength and balance classes increased from 1,742 (20%) in 2022/23 to 5,411 (42%) in 2024/25, while new referrals grew from 2,015 to 2,768. This year, 63% of patients assessed were either already engaged or newly referred to programmes, though significant regional variation highlights ongoing equity challenges.

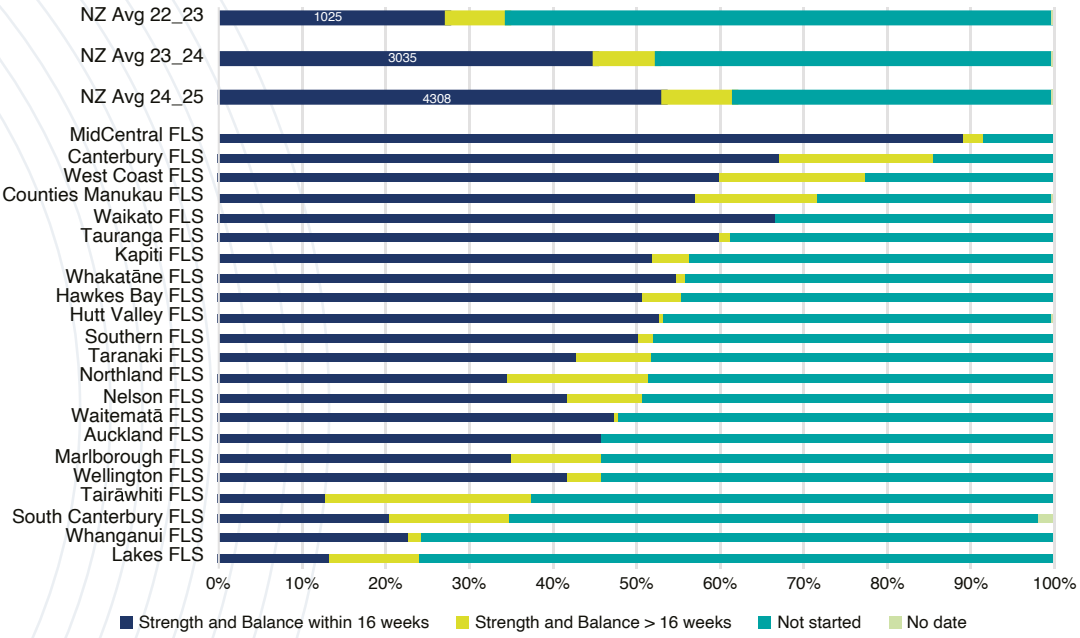
Many thanks to the following teams for sharing photos:

- Senior Swans - Dance Avenue, Tauranga
- Tūwharetoa ki Kawerau Hauora Strength and Balance class
- Keep on Your Feet - Shiloh Baptist Church, Papamoa

These classes represent vital community partnerships keeping older New Zealanders strong, active, and independent.

Thanks to ACC Live Stronger for Longer: Every older New Zealander can attend approved Community Strength and Balance classes.
Find a class near you: livestronger.org.nz

Figure 11.6 **//KPI 11: Strength and Balance Programme Commenced within 16 Weeks**



KPI 11

Strength and Balance

53%

of Those Recommended, Referred to, or Already Attending a Strength and Balance Programme

4,308 People Initiated or Resumed an Approved Strength and Balance Programme ≤ 16 Weeks

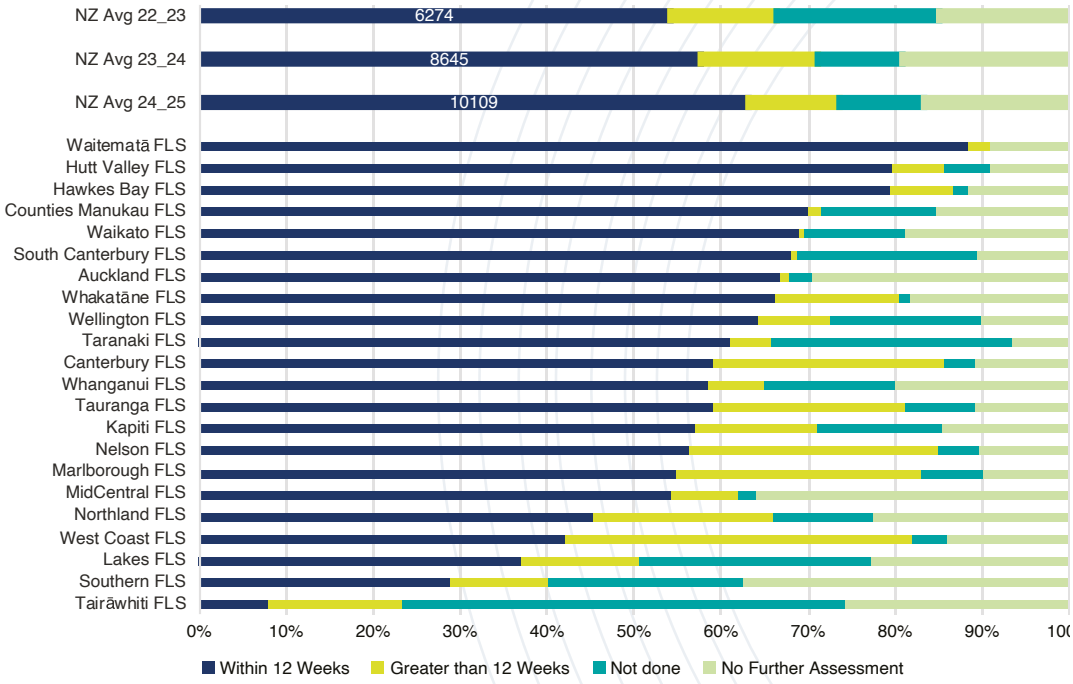
The measurement approach for KPI 11 has been updated. The denominator previously included all people who received a falls risk assessment. The denominator now includes only people already attending a strength and balance programme, people recommended to attend a programme, or people referred to a programme. This shifts what KPI 11 measures: rather than tracking all assessed patients (including those who don't need programmes), it now tracks how effectively services connect patients who need intervention with appropriate programmes, a true measure of clinical targeting and care coordination.

INTEGRATION – The fifth **"i"** is concerned with **integration** of care across the various sectors of the health system, including primary care, secondary care, and tertiary care, with a view to ensure seamless transitions of care and to ensure that long-term care plans are devised and adhered to, with clear delineation of where clinical responsibility for provision of care resides at various stages in the long-term management of the patient.

Standard 5: INTEGRATION

The FLS, in partnership with the person with the fracture and their general practitioner, develops a long-term care plan to reduce risk of falls and fractures, and promote long-term management.

Figure 12.1 //KPI 12: Provision of Long-Term Care Plan within 12 weeks



KPI 12
Long-Term Care Plan
63%
of Total 2024/25 Cohort
10,109 Long-Term Care Plans Completed ≤ 12 Weeks

The national trend shows steady improvement, yet wide service variation signals that this as a priority area requiring focused attention in the coming year. This variation reflects a fundamental question: What is the Long-Term Care Plan's purpose? Current practice suggests two distinct documents may be needed:

Treatment Plan: Communication to primary healthcare provider that either:

- Osteoporosis specific treatment has been initiated and requires monitoring for side effects and continued prescribing unless clinically indicated otherwise, or
- Bone protection is indicated per current guidelines and requires prompt prescription and commencement.

Long-Term Condition Management Plan: Transfer of care to primary healthcare provider for ongoing management as a chronic condition, detailing treatment monitoring requirements, follow-up scan schedules, and long-term management considerations beyond the 52-week FLS follow-up period.

Our Facility Level Audit revealed that all Fracture Liaison Services communicate care plans to primary care. Three services trialled the Registry's standardised template, while others developed effective custom templates integrated with their local clinical systems.

The challenge ahead is establishing a standardised yet flexible approach, ensuring every patient receives the right information at the right time regardless of which system delivers it.

QUALITY – The **"q"** of the 5IQ clinical standards relates to **quality**, which includes efforts to benchmark performance of FLS Teams against the 5IQ clinical standards, involving the use of registries or other information technology tools. The registries provide real-time feedback to FLS teams to enable continuous evaluation of their performance, and a continuous approach to quality improvement

Standard 6: QUALITY

The FLS will undertake ongoing performance review enabled by participation in the NZ arm of the Australian and New Zealand Fragility Fracture Registry and ensure appropriate Continuing Professional Development (CPD) for FLS staff.

//KPI 14: Continuing Professional Development for FLS Staff

Fracture Fest 2025, themed around Quality Improvement was held in Wellington on 15–16 May. Sessions included Quality Improvement, Annual Report review, osteoporosis specific treatment protocols, interactive case studies, consumer stories, live Q&A with WebMaster Stewart Fleming, and discipline-specific workshops.

The event reinforced the collaborative knowledge exchange essential to New Zealand's FLS success. Special thanks to all presenters and participants, and to Nicola Ward for arranging an excellent event and well-received event.

KPI 14

Continuing Professional Development

100%

of FLS Clinical Leads and Coordinators Completed at Least One FLS-Related CPD Activity During the Reporting Year

1. Ian Hutchby (Improvement and Innovation Training Manager, Te Whatu Ora Improve) and Harminder Gill (Quality Improvement CNS, ONZ) presenting on Quality Improvement at Fracture Fest.

2. 46 people attended Fracture Fest 2025: 30 FLS team members representing 90% of sites, alongside representatives from ACC, Health NZ, and Osteoporosis New Zealand (ONZ).

Monthly **FLS Continuing Professional Development Sessions**, delivered through the ONZ support model, connect FLS teams across New Zealand. Sessions target specific audiences: FLS Clinical Leads, Coordinators or Administration staff. FLS Coordinators are regularly invited to attend Clinical Lead sessions, which are co-chaired by the Chair of the FLNNZ Clinical Leads. While primarily for FLNNZ members, the programme welcomes all professionals working in secondary fragility fracture prevention, strengthening knowledge nationwide. These sessions deepen clinical expertise, ensure equitable world-class care across every community, and contribute to annual CPD requirements.

Twenty-one virtual sessions were delivered this year, structured under the 5IQ model of Clinical Standards for FLS in NZ. Sessions blend clinical presentations with case-based discussions, often sparking follow-on discussions that influence practice. Participants gain clinical best practice updates, share knowledge within the New Zealand context, and calibrate practice in a supportive environment, particularly valuable for those working in geographical isolation.

Sessions are recorded, with 68 now available in our library for new members and those unable to attend live. Survey feedback confirms high quality and relevant content, with comments including: "they help strengthen FLS credibility and visibility," "session changed our practice approach," and "clinically excellent and responsive to the changes and challenges our services face." Thank you to all presenters for the time donated in preparing, delivering, and sharing knowledge. Our community reaps the rewards of your generosity.

L to R: John Mulka (Executive Director, ONZ), Christine Gill (Clinical Programme Director, ONZ), Nicola Ward (Tauranga FLS CNS and former ANZFFR NZ Coordinator)

Figure 13.1 **//KPI 15: ANZ Fragility Fracture Registry Participation**

Facility Name	KPI 1	KPI 2	KPI 3	KPI 4	KPI 5	KPI 6	KPI 7	KPI 8	KPI 9	KPI 10	KPI 11	KPI 12	KPI 15
NZ Avg 22_23	91	126	85	60	86	70	67	54	100	68	36	62	68
NZ Avg 23_24	67	101	83	57	83	72	69	55	100	44	23	68	69
NZ Avg 24_25	72	72	84	55	85	73	70	63	100	73	54	71	73

KPI 15
Registry Participation

73%
of KPIs Achieved Greater than 80% Data Completeness Within NZ-Arm of the ANZ Fragility Fracture Registry

Completeness of Documentation for Key Performance Indicators (KPIs)

KPI 15 measures data quality and completeness in the ANZFFR, tracking how many KPIs (1-12) achieve over 80% complete data entry. The 5-percentage point increase over two years demonstrates FLS teams' growing proficiency and commitment to high-quality patient records. Data completeness remains a key focus for improvement in the year ahead.

Strategic programme evolution from percentages to trends: We are implementing a fundamental shift in performance measurement: from percentage scores at single points to trend-based analysis tracking improvement direction and pace of change.

Percentages provide point-in-time comparisons, whereas trends reveal change over time. Services on upward trajectories demonstrate active quality improvement; stable high performance reflects sustained excellence. Understanding each service's story, whether building capability or maintaining standards, matters more than comparing numbers alone. Trend analysis celebrates improvement journeys and respects vastly different contexts: rural versus urban, new versus established, varying resources and patient populations.

Moving Away from the 100% Mindset: We are reframing expectations around excellence, moving away from assuming services should aim for 100%. As the saying goes, perfection is the enemy of good, nowhere truer than in complex clinical care.

In real-world practice, 100% is neither realistic nor meaningful. Patient choice, clinical complexity, and system constraints make perfect scores rarely achievable. The gap between 85% and 100% often represents the most complex cases: patients with multiple comorbidities, those declining osteoporosis specific treatment, or situations requiring clinical judgement. Pursuing 100% can shift resources away from patients who could benefit most while causing staff burnout and frustration.

Connecting Process to Outcomes: Alongside trend-based measurement, we are deepening our focus on how key KPIs interact to influence patient outcomes. Treatment adherence at 16 weeks serves as a critical early outcome indicator, providing teams the opportunity to identify issues and adjust course before the 52-week checkpoint.

Advanced trend dashboards are planned as future work, with current dashboards displaying single percentage points against a national value rather than tracking performance over time. FLS teams' progress since the 2022 Registry inception has been exceptional, mastering complex data and transforming their approach to quarterly performance monitoring. As quarterly monitoring strengthens and evolves, annual reports serve to consolidate continuous insights rather than deliver new discoveries. Quarterly cycles enable timely responses while patient care pathways remain fresh and actionable.

Real-time outcome measurement through our Refracture Tracker, which continuously scans all new Registry records, provides the ultimate indicator of programme effectiveness across the entire patient population.

This evolution (from percentages to trends, from isolated annual reviews to continuous quarterly cycles, from delayed retrospective analysis to near-real-time feedback) creates a more responsive and effective national programme that honours the complex realities of patient care while maintaining high but achievable standards of sustainable excellence. **80% is our target for excellence, not a minimum**. This threshold aligns with international best practice, reflects realistic clinical constraints while maintaining high standards, acknowledges patient autonomy and clinical complexity, and creates sustainable expectations supporting long-term staff wellbeing.

Waikato FLS improved KPI 15 from 64% to 70% through regular data review sessions and embedding registry updates into daily workflows, ensuring complete, consistent real-time data entry.

Tairāwhiti FLS improved KPI 15 from 61% to 70%, enabled by a fully staffed period with administrative support. This allowed thorough data cleaning, demographic data verification, and systematic identification and completion of missing clinical fields.

An important consideration is that measuring "completeness" depends on accurate denominators (knowing how many events in each category would represent 100%), adding inherent complexity to data quality assessment. Annual denominator review and verification has consistently confirmed their accuracy, validating the observed improvement as genuine progress.

FLS Facility Level Audit

Responses were captured from all FLS teams across 18 Health NZ districts, exploring clinical governance, service integration, professional development, and resource utilisation. Thank you to all teams for input guiding priorities ahead.

Clinical Governance and Healthcare Integration: Strong clinical oversight exists nationwide, with 85% of services holding monthly or more frequent Coordinator and Clinical Lead meetings and 79% regularly engaging overlapping service providers to foster coordinated care. Falls referral patterns, however, revealed regional variation in service availability.

Leveraging Data For Service Development: Teams identified which Annual Report components they valued most. Comparative data rated highest (79%), enabling benchmarking. Teams also prioritised 52-week treatment adherence, refracture data, fracture site patterns, and strength and balance referral tracking. The Registry supports data collection and workflows. Teams value its usability and identified opportunities to improve functionality: greater flexibility for delayed DXA scheduling, year-on-year KPI comparisons, enhanced data export, and improved workflow integration. This feedback informs ongoing development.

Professional Development: All services engage actively in CPD through Fracture Fest, virtual sessions, and specialised training, demonstrating strong commitment to evidence-based practice. Community-based services noted isolation from hospital-based development opportunities, highlighting variation in professional learning environments.

Long-Term Care Plan Ongoing Development: Creating a standardised solution across 18 districts with distinct clinical systems proved complex. Three services trialled the Registry template; feedback revealed it attempted multiple purposes without meeting any fully. Remaining services use effective custom templates integrated with local systems. While services successfully communicate plans to primary care, patient engagement varies: 42% always share plans with patients, 21% sometimes. Most districts (95%) use telephone follow-up alongside clinical portal review for 16- and 52-week monitoring, supporting consistent data capture and ongoing patient connection. Streamlining LTCP to better support patient empowerment and primary care collaboration remains a priority.

Fracture Liaison Network New Zealand (FLNNZ)

Connects Fracture Liaison Service teams nationwide, creating a strong peer mentorship network for Clinical Leads, Coordinators, and Administrators.

Fracture Liaison Network New Zealand

Dr David Kim, **Chair FLNNZ Clinical Leads, Endocrinologist and FLS Clinical Lead at Waitematā FLS**

The role of an FLS Clinical Lead is both rewarding and complex, with a unique set of challenges. As a clinician group, we connect regularly through monthly virtual sessions and find that many challenges are shared regardless of geography or service size. Having a dedicated forum to discuss issues and learn from one another has been invaluable. Our engagement with FLS coordinators through Fracture Fest and virtual meetings provides insight into diverse regional realities. This shared understanding strengthens collaboration and supports our collective ability to deliver consistent, high-quality fracture prevention care nationwide.

Leon Penny, **Chair FLNNZ FLS Coordinators, Physiotherapist and FLS Coordinator at Hawkes Bay FLS**

Supporting the FLNNZ has been a privilege. A nationwide body of FLS is internationally rare, possible unique to this country. Wherever FLS Coordinators are located and whatever their team size, FLNNZ provides excellent network support. Whether in large metropolitan or smaller rural services, challenges often overlap. Having a forum to celebrate success and know they're not alone is invaluable. The collaborative spirit, where experienced Coordinators mentor newer services and everyone contributes expertise, strengthens secondary fragility fracture prevention across New Zealand.

Clinical Programme Director, ONZ

Christine Gill

I am proud to continue leading New Zealand's national quality improvement programme for best-practice fragility fracture care and prevention. The Registry remains central to this work, and as we move toward outcomes-focused reporting, we are strengthening data confidence, Health New Zealand engagement, and FLS teams' use of data to drive service level quality improvement.

Our success reflects strong partnerships. ACC and Live Stronger for Longer collaborators continue to play a vital role in expanding access to care while reducing health system demand and enabling ongoing maturation of FLS nationwide.

My thanks to the ONZ team and all FLS teams whose expertise, dedication and ongoing commitment make these achievements possible.

Most importantly, for New Zealanders who sustained a fragility fracture this year, our commitment remains clear: to ensure timely, evidence-based care that supports recovery and reduces future fracture risk.

NZFFR National Fragility Fracture Registry Manager, ONZ

Amanda Welch

I joined this programme as it continues exceptional growth while beginning to transition toward sustainable maintenance, a critical evolution requiring precision. Getting the "boring magic" right has been deeply satisfying ensuring every detail supports sustainable, high-quality care. I focus on data storytelling, transforming numbers into narratives that demonstrate real impact while keeping patients central to everything we do. The greatest reward is watching FLS teams master their data and use it to drive meaningful change in their communities.

ANZFFR WebMaster

Stewart Fleming

It has been amazing to see the Fragility Fracture Registry mature from a growing platform into a trusted national asset. This year's focus on data quality, stability, and outcomes-ready reporting reflects the collective commitment of clinical and operational teams to use data well, not just to measure performance, but to enable better decisions, stronger services, and improved patient outcomes. I am proud to support a programme where robust systems quietly underpin meaningful change with a team who inspire each other every day.

Clinical Nurse Specialist, Quality Improvement, ONZ

Harminder Gill

Stepping into this role in November 2024 allowed me to quickly engage with incredible work already underway across our FLS network and contribute to our shared focus on strengthening quality improvement. The introduction of a national annual Continuous Quality Improvement planning template was a step change in the last year. The CQIP ensures consistent approach and shared language across sites, driving national consistency and sustaining FLS performance. I am privileged to work alongside colleagues whose dedication remains focused on improving patient outcomes.

Occupational Therapist, FLS CPD Facilitator and Coordinator, ONZ and FLS Coordinator, Nelson Marlborough FLS

Kim Fergusson

It is a privilege to collaborate with FLS Teams, ONZ and FFR teams, knowledgeable presenters, and international links to deliver relevant CPD sessions. These sessions enable clinicians to network nationwide, access clinical best practice updates, and share knowledge in the New Zealand context. Witnessing FLS Teams grow in strength and confidence and carry this through to their day-to-day practice has been particularly rewarding. Working in tandem as an FLS Coordinator ensures I am aware of the day-to-day challenges of real-world clinical practice is front of mind in planning CPD sessions.

ANZFFR Structure:
Governance and Committees

The ANZFFR Team thanks all committee members for their time and commitment this year. As the Registry matures into its maintenance phase, our governance structure has evolved to reflect our sophisticated multi-national operation and enhanced data stewardship requirements. We extend our gratitude to all stakeholders and especially our consumer representatives who provide valuable insight to ensure patient-centred care remains at the heart of our work.

ANZFFR Bi-National Governance provides strategic direction and coordination across Australia and New Zealand for bi-national standards, international relations, and resource sharing.

Co-Chairs: Dr Frazer Anderson (NZ Clinical Lead) and Dr Kirtan Ganda (Australian Clinical Lead)

NZ Implementation Management Committee (NZIMC) delivers multi-stakeholder strategic oversight focused on maintaining excellence and advancing equity across established FLS services in New Zealand.

Chair: Dr Frazer Anderson, ANZFFR NZ Clinical Lead.

Data Management Committee (DMC) ensures robust technical governance for data security, privacy, quality, research access, and publication protocols.

Independent Chair: Dr Andrea Vujnovich (Assistant Vice Chancellor Corporate, Auckland University of Technology).

NZFFR Team provides day-to-day operational leadership comprising the National FFR Manager, NZ Clinical Lead, ONZ support staff and WebMaster.

For questions about this report or ANZFFR, please contact:

Dr Kirtan Ganda, Australian Clinical Lead: kirtan.ganda@sydney.edu.au

Dr Frazer Anderson, New Zealand Clinical Lead: frazer.anderson@tewhatuora.govt.nz

Amanda Welch, New Zealand National Fragility Fracture Registry Manager: amanda.welch@osteoporosis.org.nz

Unlocking Insights:
ANZFFR New Zealand Data Access

With more than 50,000 New Zealand patient journeys now recorded, the ANZFFR is a powerful national resource for research and health system improvement. We strongly encourage researchers, clinicians, and quality improvement teams to make use of this rich, de-identified dataset, supported by a robust Data Access Policy that prioritises patient privacy.

The scale and coverage of the Registry, reaching 98.9% of the New Zealand population, provides a unique opportunity to explore osteoporosis specific treatment effectiveness, equity gaps, cost-effectiveness, service delivery models, falls prevention strategies, and patient outcomes. These data enable meaningful, statistically robust analysis of regional variation and system performance that would not otherwise be possible.

All applications are reviewed by the Data Management Committee to ensure appropriate use and maximum impact. To explore how your work could benefit from ANZFFR data, visit https://fragilityfracture.co.nz/datarequest/ to learn more about the application process.

Abbreviations

ACC	Accident Compensation Corporation
AFFF	Australian Fragility Fracture Foundation
ANZBMS	Australian and New Zealand Bone and Mineral Society
ANZFFR	Australian & New Zealand Fragility Fracture Registry
ANZHFR	Australian & New Zealand Hip Fracture Registry
APAC	Asia Pacific
APCO	Asia Pacific Consortium on Osteoporosis
ARCF	Aged Residential Care Facility
BMD	Bone Mineral Density
BPF	Best Practice Framework
CNS	Clinical Nurse Specialist
CPD	Continuing Professional Development
CQI	Continuous Quality Improvement
CQIP	Continuous Quality Improvement Plan
DMC	Data Management Committee
DXA	Dual Energy X-ray Absorptiometry
ED	Emergency Department
ENSA	Endocrine Nurses' Society of Australasia
FFN	Fragility Fracture Network
FLA	Facility Level Audit
FLNNZ	Fracture Liaison Network New Zealand
FLS	Fracture Liaison Service(s)
FRAX	Fracture Risk Assessment Tool
GP	General Practitioner
HNZ	Health New Zealand (Te Whatu Ora)
HQSC	Health Quality and Safety Commission
HRT	Hormone Replacement Therapy
IMC	Implementation Management Committee
IOF	International Osteoporosis Foundation
IT	Information Technology
KPI	Key Performance Indicator
LTCP	Long-Term Care Plan
NSW	New South Wales
NT	Northern Territories
NZ	New Zealand
ONZ	Osteoporosis New Zealand
PHARMAC	Pharmaceutical Management Agency
QLD	Queensland
RACP	The Royal Australasian College of Physicians
SA	South Australia
SOSFA	The Australian National Stop Osteoporotic Secondary Fracture Alliance
TAS	Tasmania
VIC	Victoria
WA	Western Australia
Zol	Zoledronic Acid

Essential Reading

https://fragilityfracture.co.nz/

https://osteoporosis.org.nz

https://osteoporosis.org.nz/redirection/stronger-together-november-2025/

https://osteoporosis.org.nz/about-us/plans-and-reports/

https://osteoporosis.org.nz/healthcare-professionals/quality-improvement-and-cpd/clinical-publications/

https://osteoporosis.org.nz/healthcare-professionals/comprehensive-treatment-strategies-for-osteoporosis/medications-for-osteoporosis/

https://anzhfr.org/registry-reports/

https://www.capturethefracture.org/fracture-focus

https://www.osteoporosis.foundation/asia-pacific-audit-2025

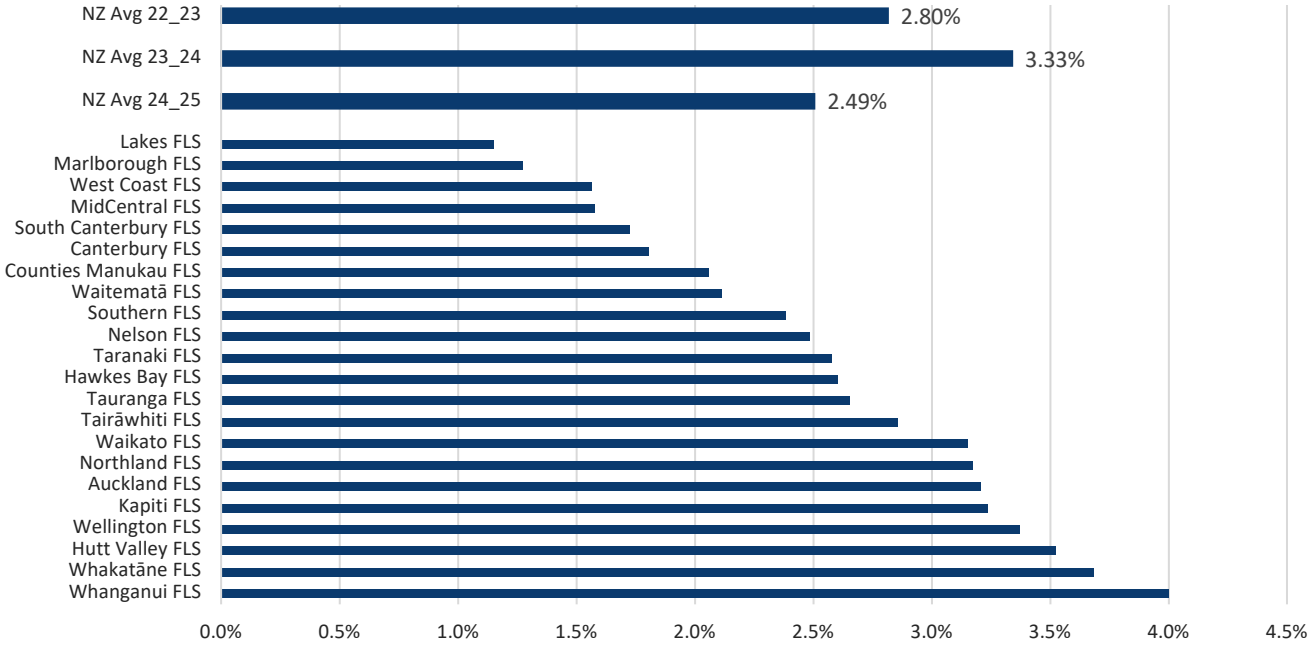
https://www.osteoporosis.foundation/sites/iofbonehealth/files/2025-11/New%20Zealand_Final.pdf

SUPPLEMENTARY REPORT

This electronic supplement expands on the printed ANZFFR Annual Report 2026, presenting additional charts and detailed data for the 2024/25 New Zealand cohort (1 July 2024 to 30 June 2025, with 16-week follow-up through 31 October 2025). These figures provide additional context for data variables presented in the main report and are organised using the same section numbers and sequence as the printed version for direct comparison.

Section 1 – Refracture Rates

Figure 1.1a – **Refracture Events**



Section 2 – 52 Week Follow-Up 22/23 Cohort

Integration - The FLS, in partnership with the person with fracture and their general practitioner, develops a long-term care plan to reduce risk of falls and fractures, and promote long-term management.

Figure 2.1a – **Follow-Up At 52 Weeks**

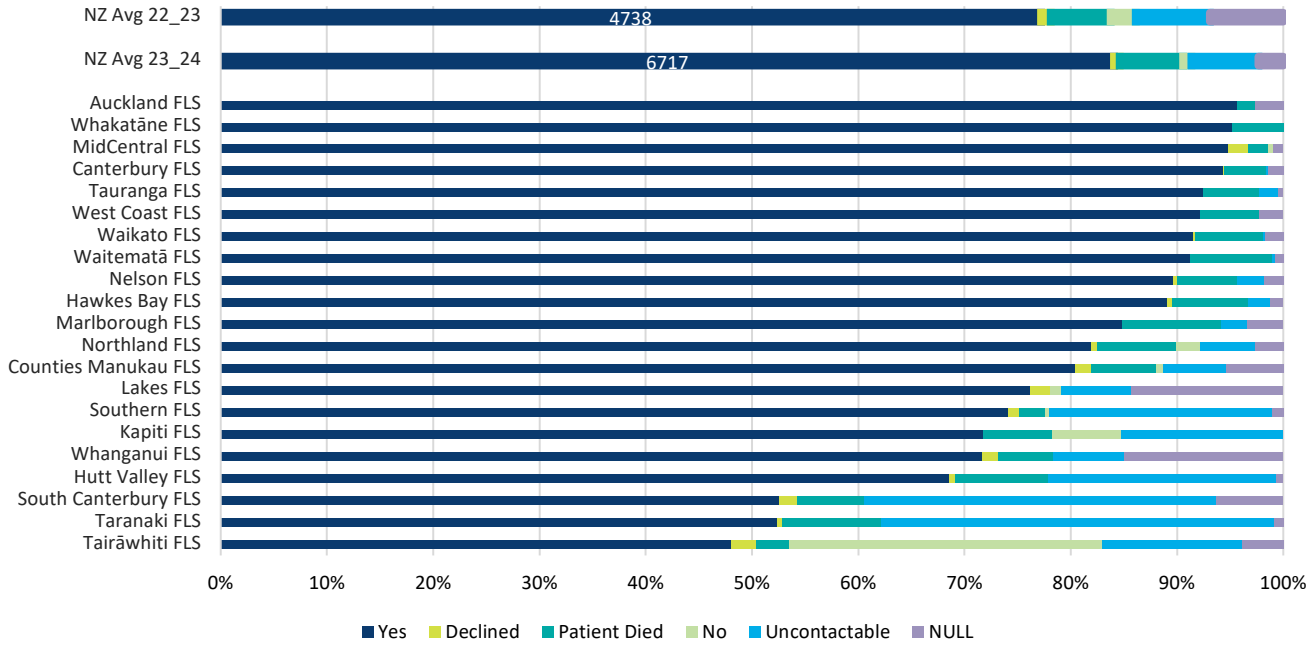


Figure 2.2a - **Reason for No Osteoporosis Specific Treatment at 52 Weeks**

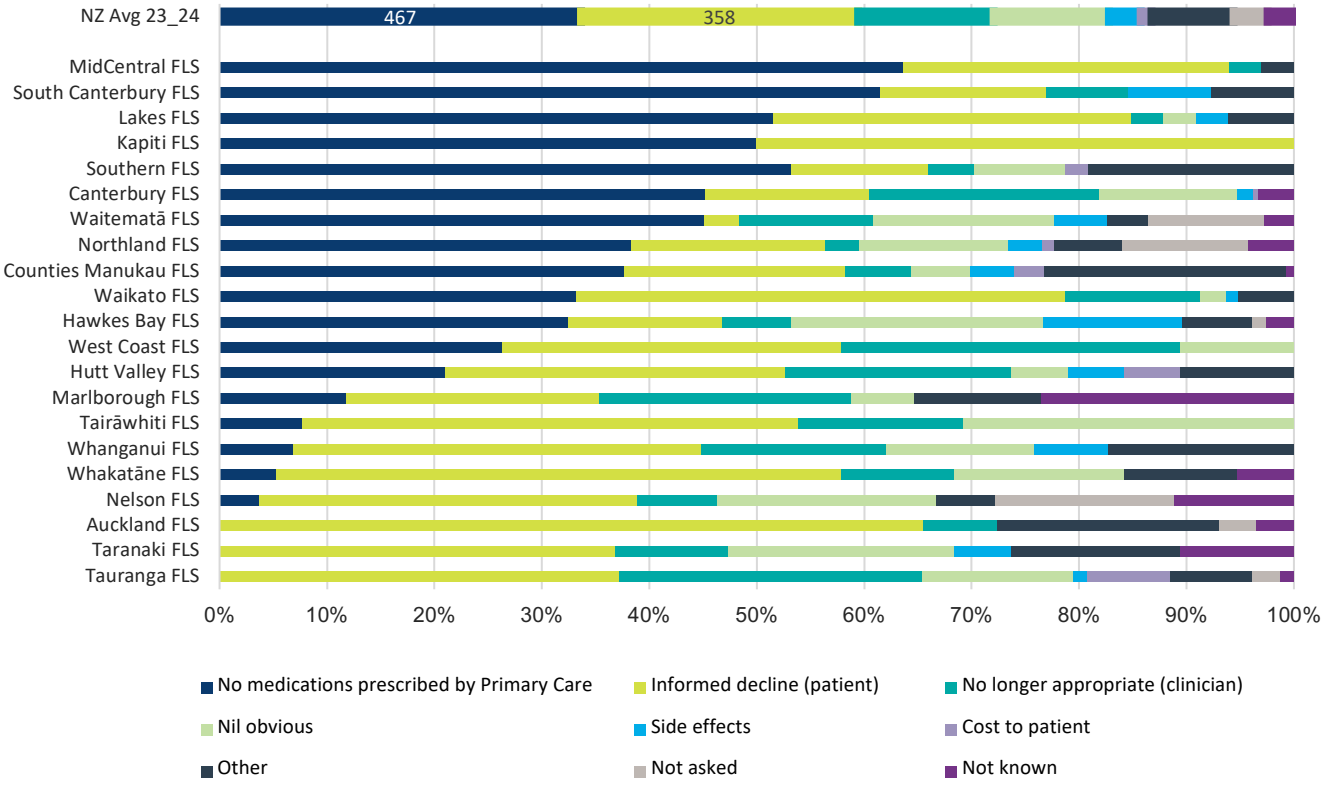
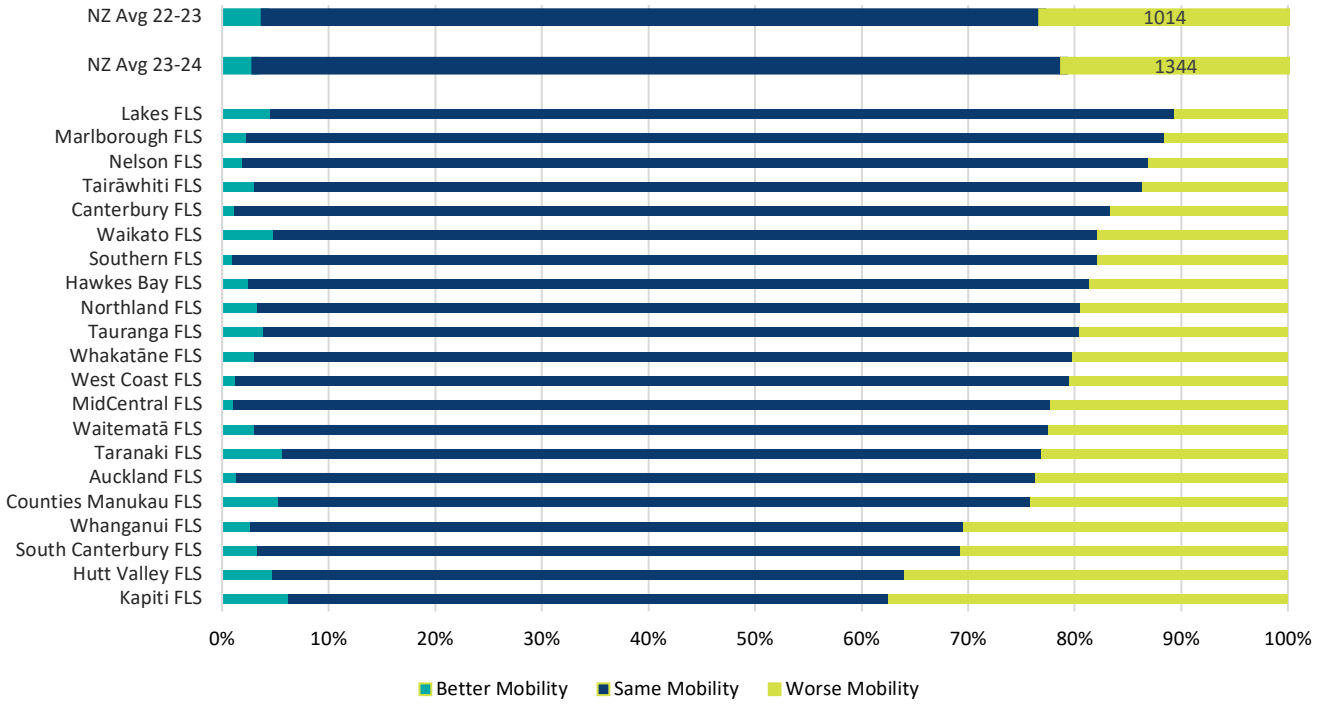


Figure 2.4a – **Mobility Change at 52 weeks**

Excludes incomplete, 'Not known' and 'Not done'



Section 3 – Mortality

No additional charts included in this supplementary report.

Section 4 – Patient Flow

No additional charts included in this supplementary report.

Section 5 – Identification

Identification: All people aged 50 years or over who sustain a fragility fracture will be systematically and proactively identified by the FLS.

Figure 5.2a – **Identification Method**

Wide variation exists in how FLS teams identify patients. High-performing teams in KPI 1 and 2 may offer valuable insights that other services can adopt to strengthen their identification processes

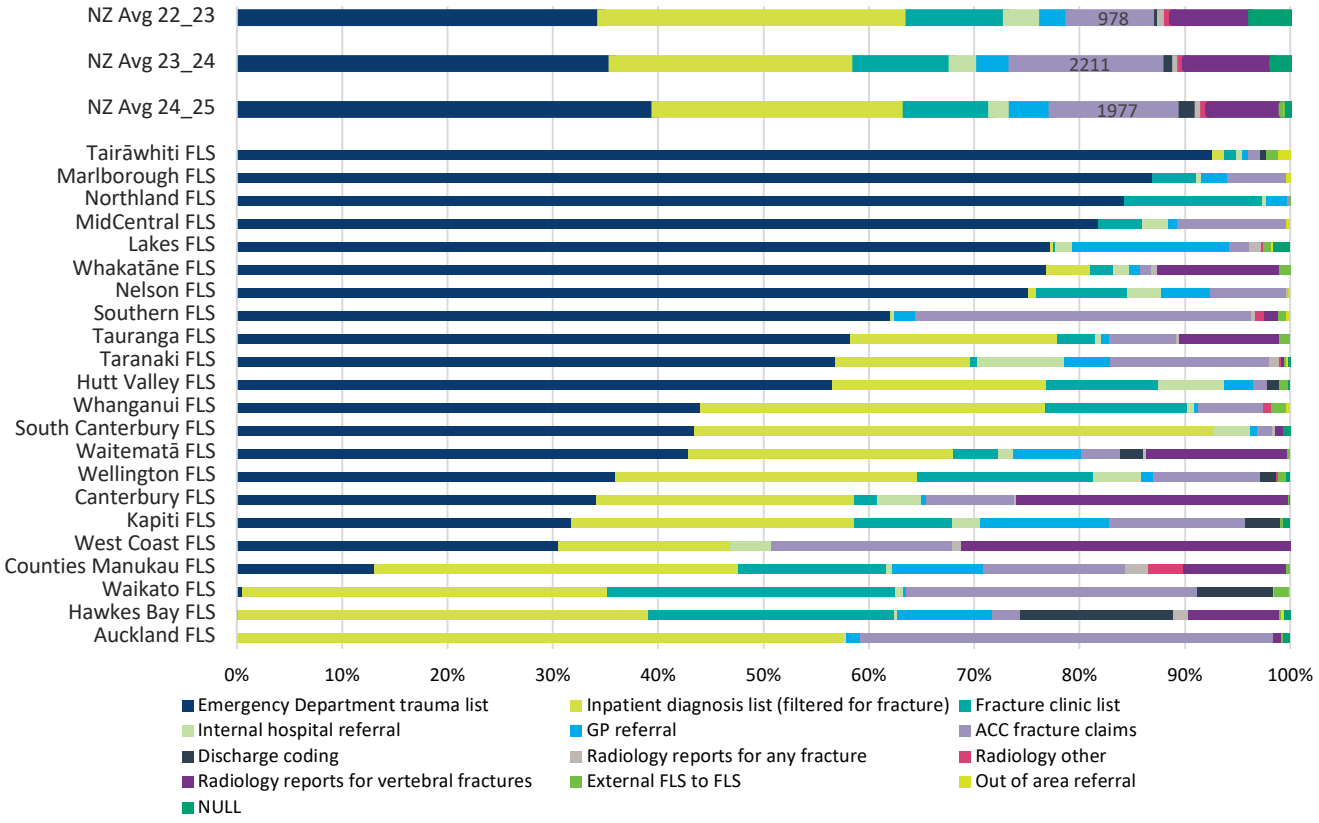


Figure 5.3a – **Spine Vs Non-Spine Fragility Fractures**

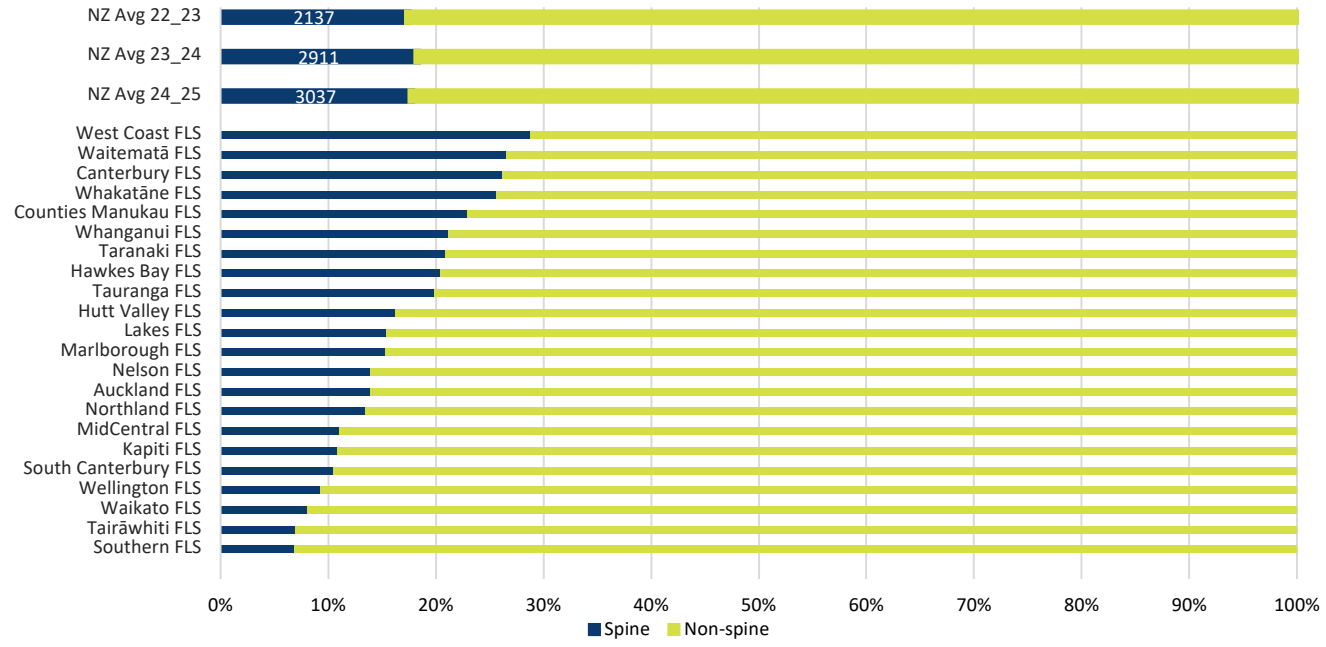


Figure 5.4a – **Admission to Hospital**

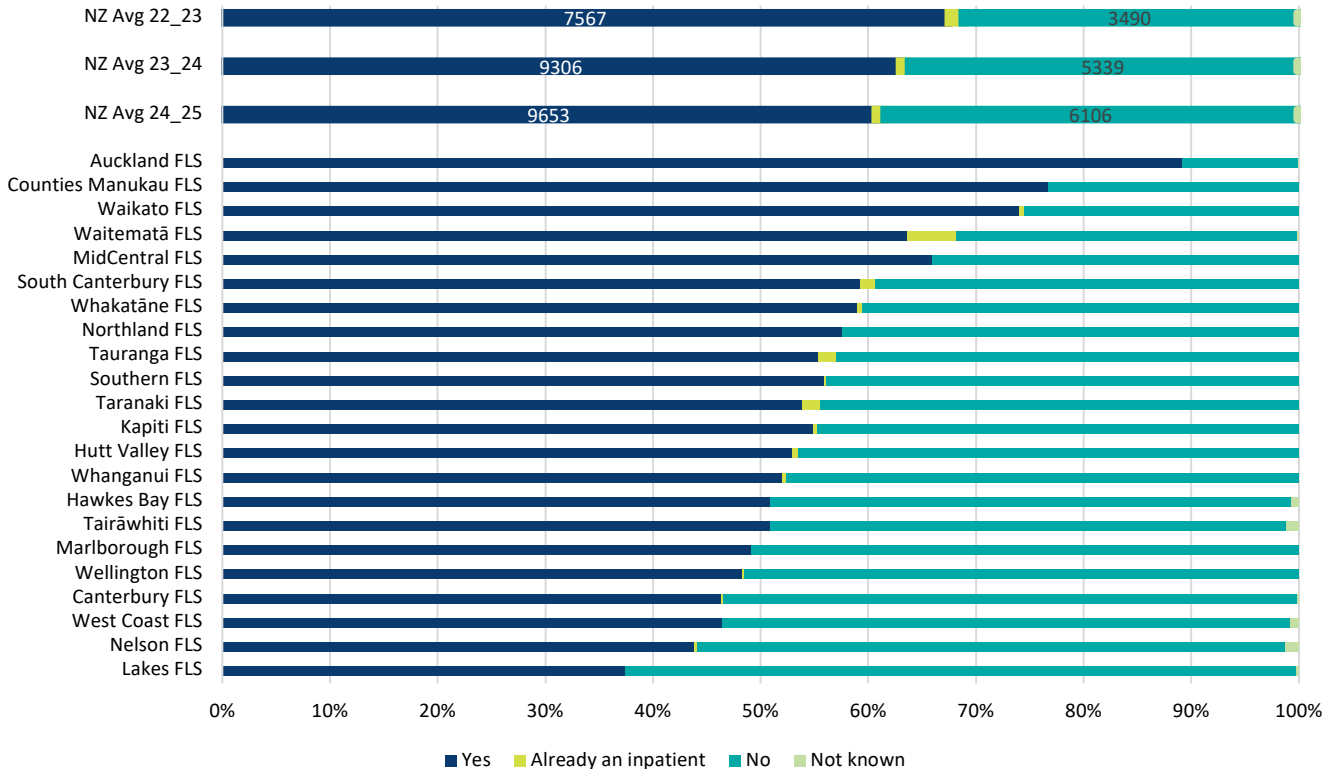


Figure 5.5a – **Pre-Fracture Residence**

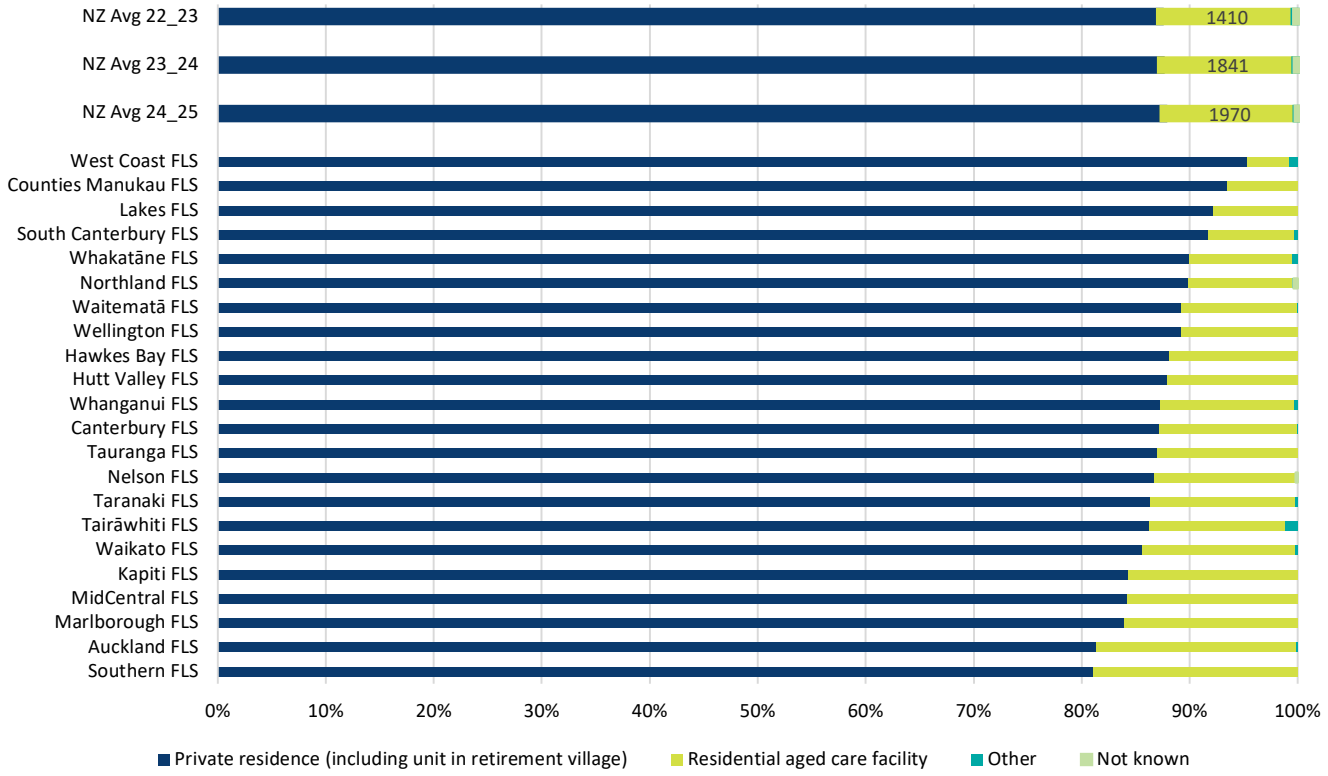


Figure 5.5b – **Pre-Fracture Mobility**

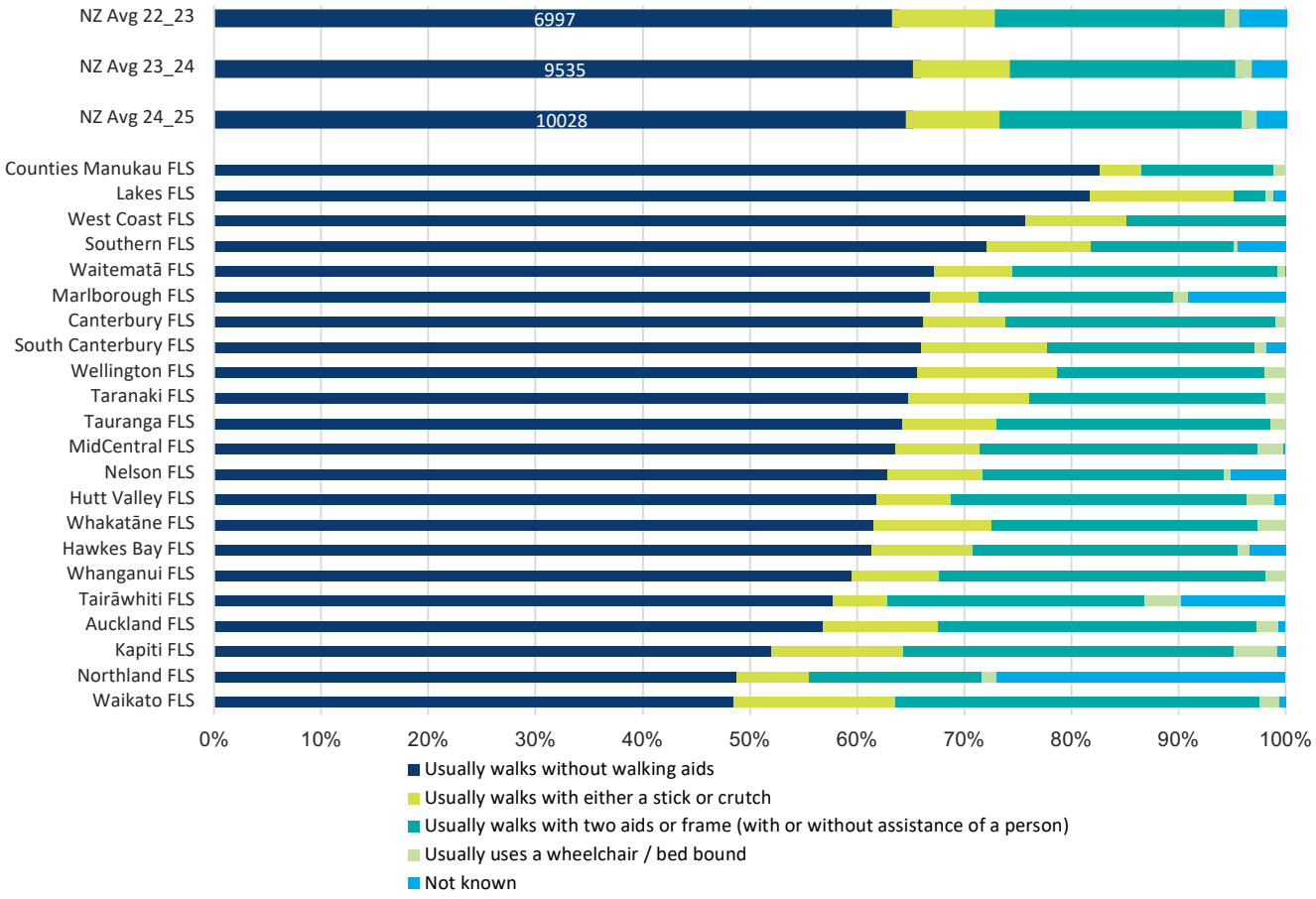


Figure 5.5c – **Pre-Fracture Cognitive Status**

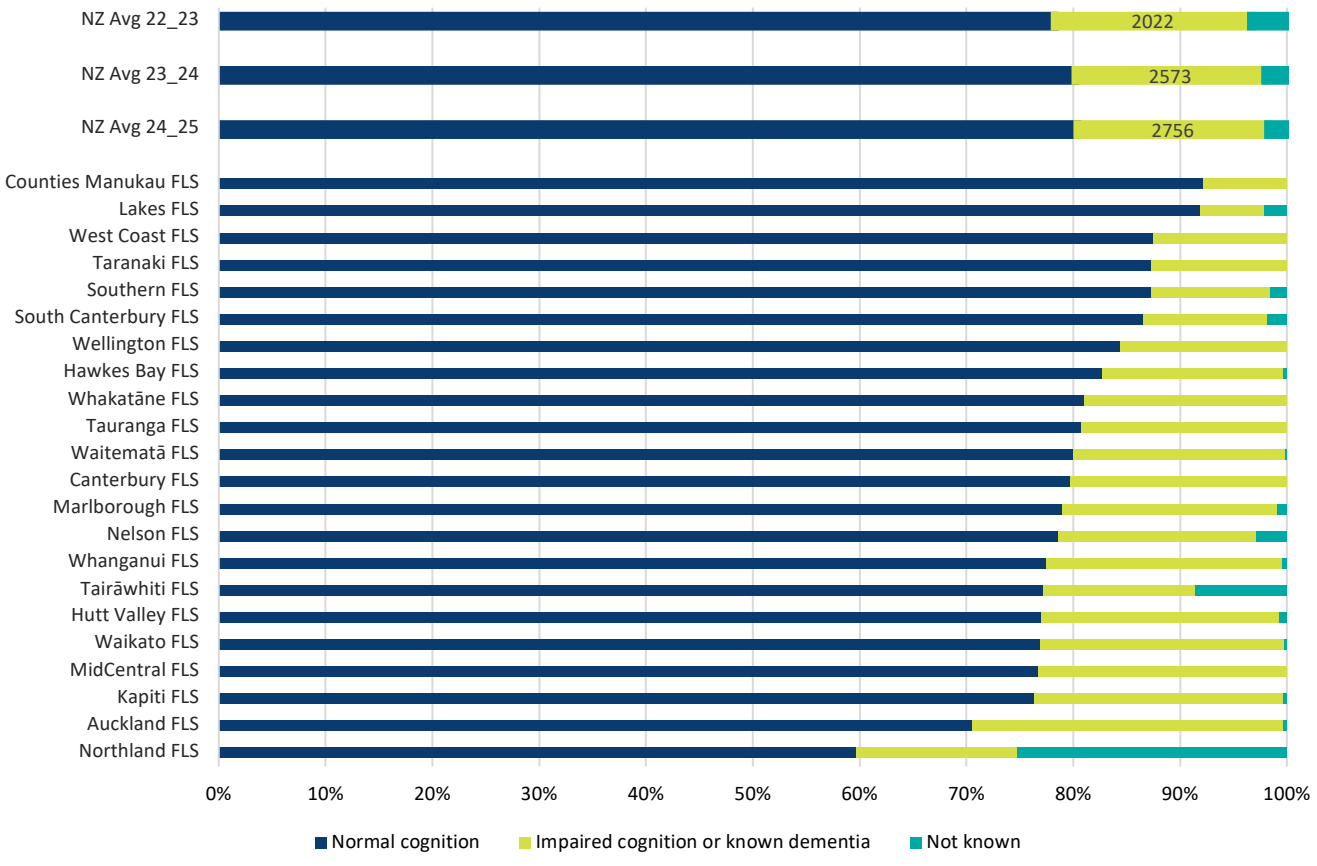
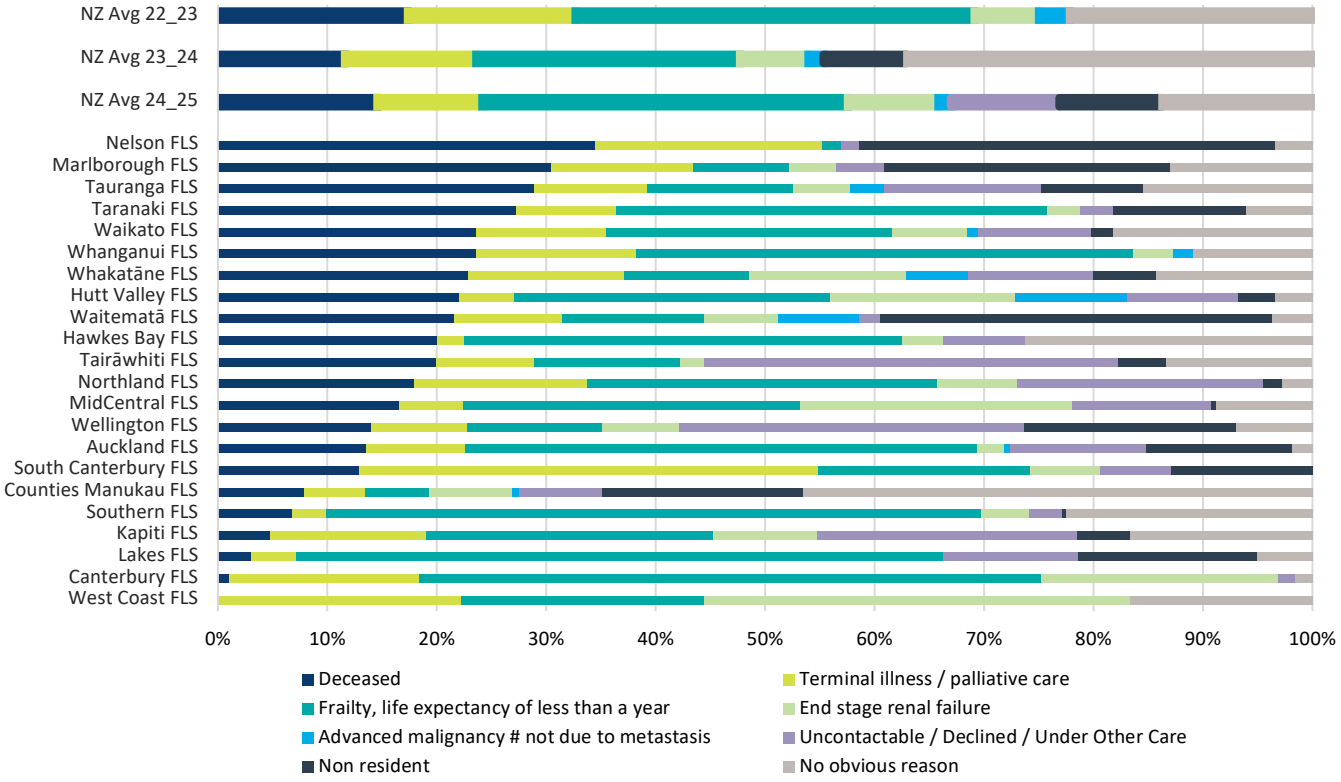


Figure 5.5d – **No Further Assessment Reason**



Section 6 – Bone Health Assessment

Investigation: People with a fragility fracture will undergo timely assessment for future fracture risk including bone health (i.e. osteoporosis) and falls risk.

Figure 6.2a – **Reported Previous Fragility Fractures**

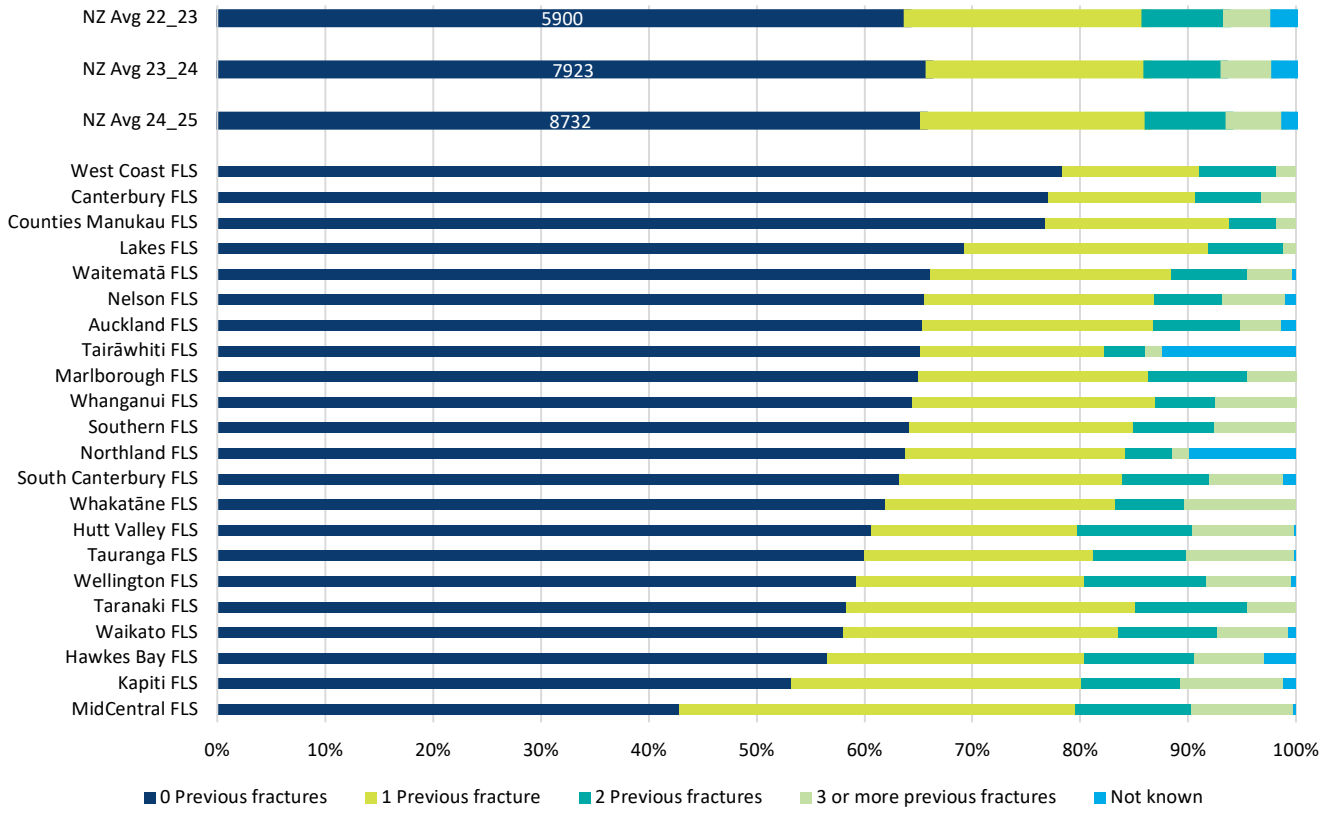


Figure 6.2b – **Risk Factors**

Overall, 98% of records marked for further assessment (13,083) had at least 1 Risk factor recorded, vs only 2% with no recorded risk factors recorded at all (256).

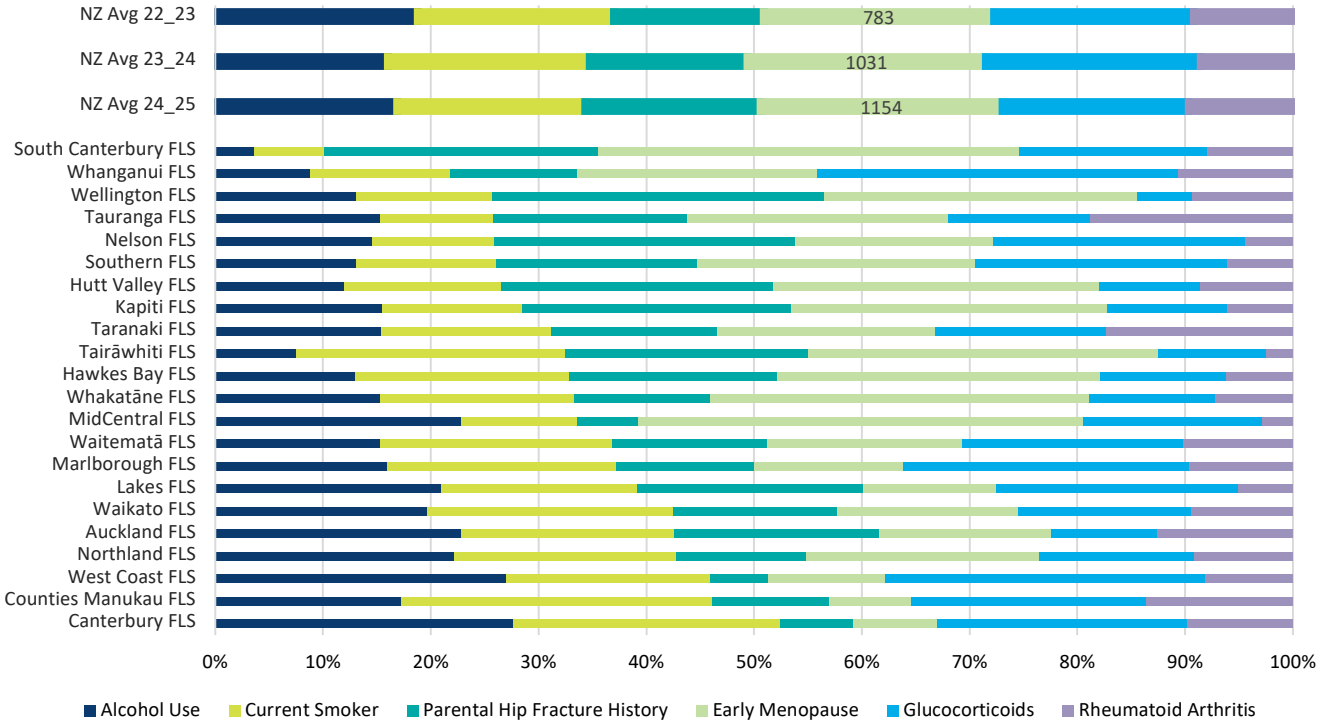


Figure 6.2c – **Previous Significant Osteoporosis Specific Treatment**

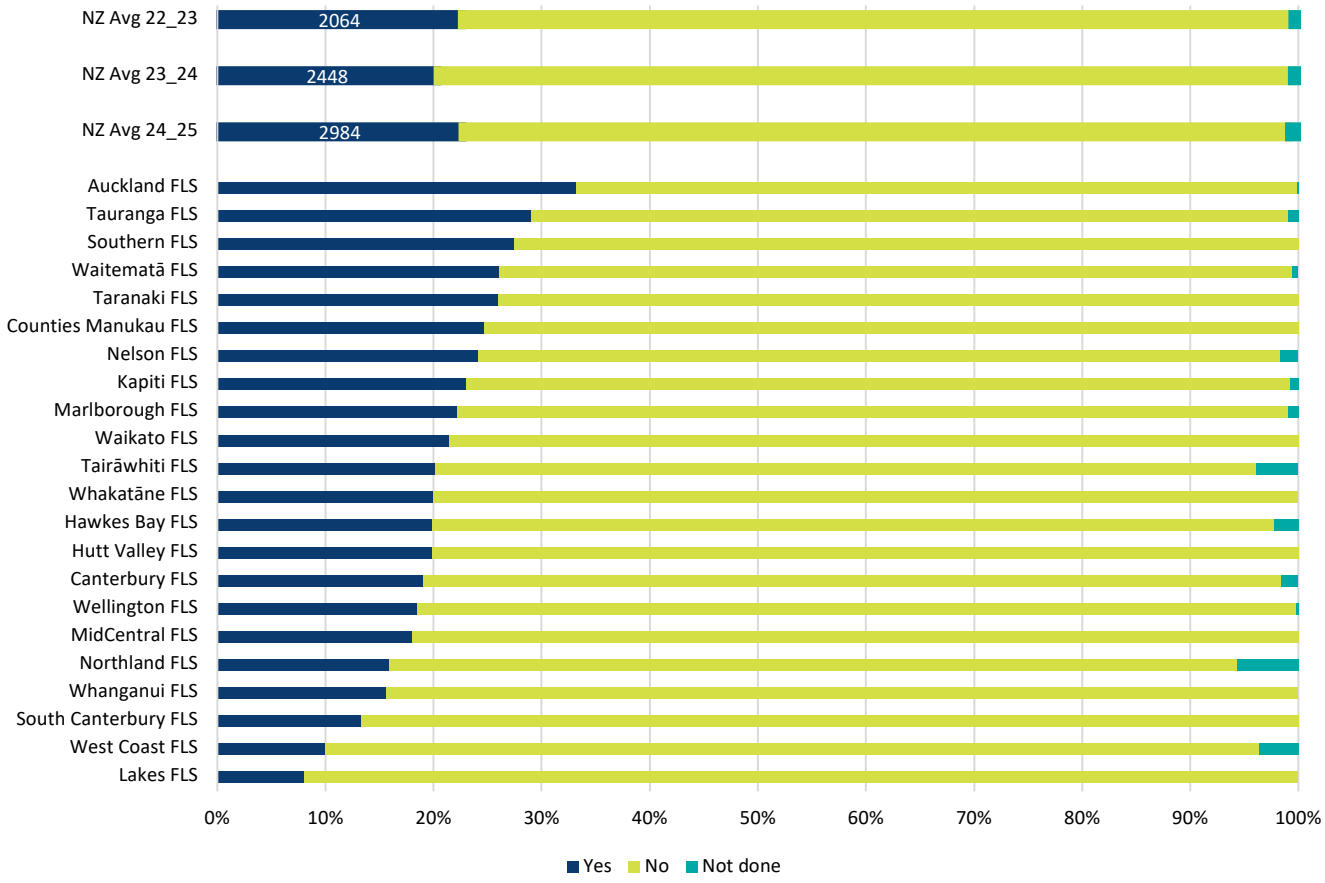


Figure 6.2d – **Current Osteoporosis Specific Treatment**

Pre-existing treatment status is determined during the bone health assessment by 12 weeks. This information is critical for identifying patients who fractured while on treatment (indicating possible treatment failure or inadequate protection) and for tracking which osteoporosis medications patients were using.

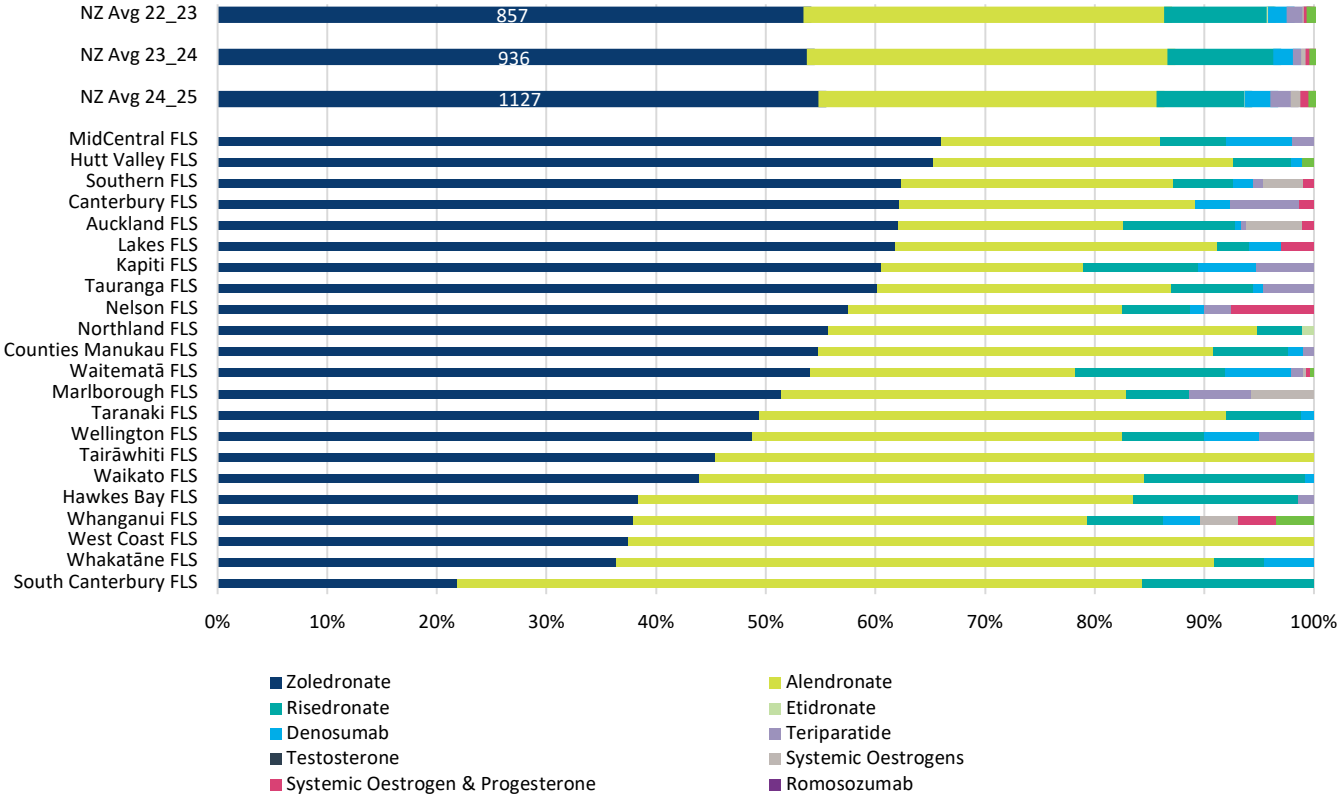


Figure 6.2e – **Secondary Cause Review**

The increasing rate of secondary cause reviews reflects the growing complexity of patients now entering the service.

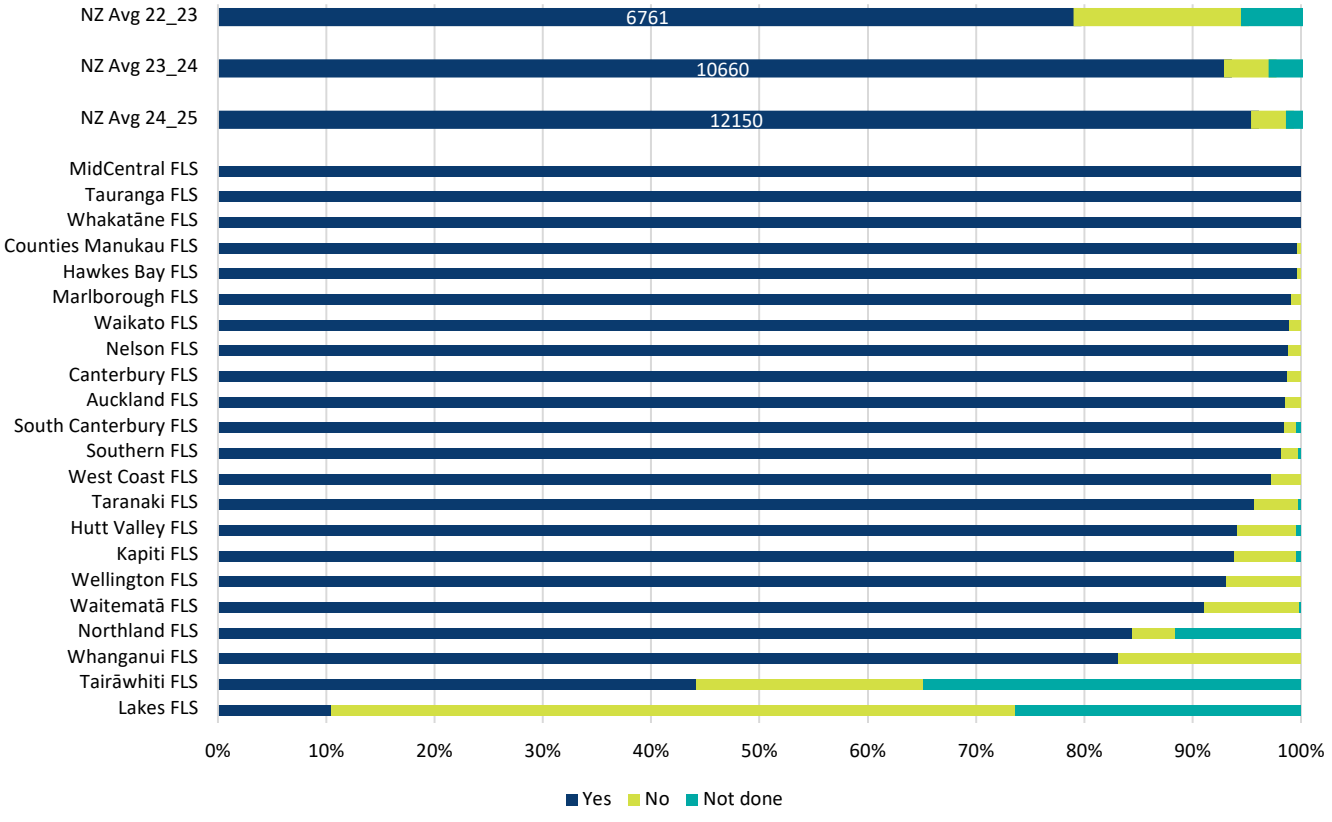


Figure 6.2f – **Secondary Cause Blood Tests**

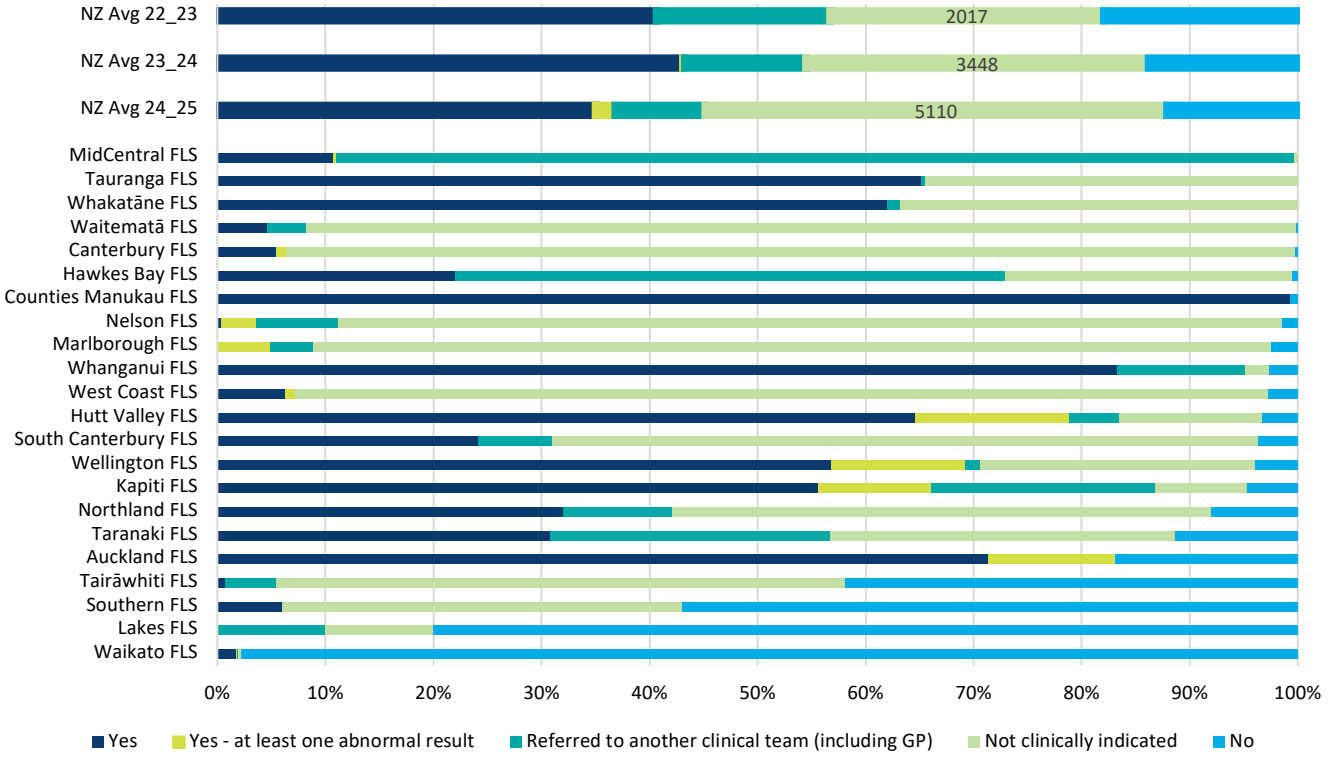
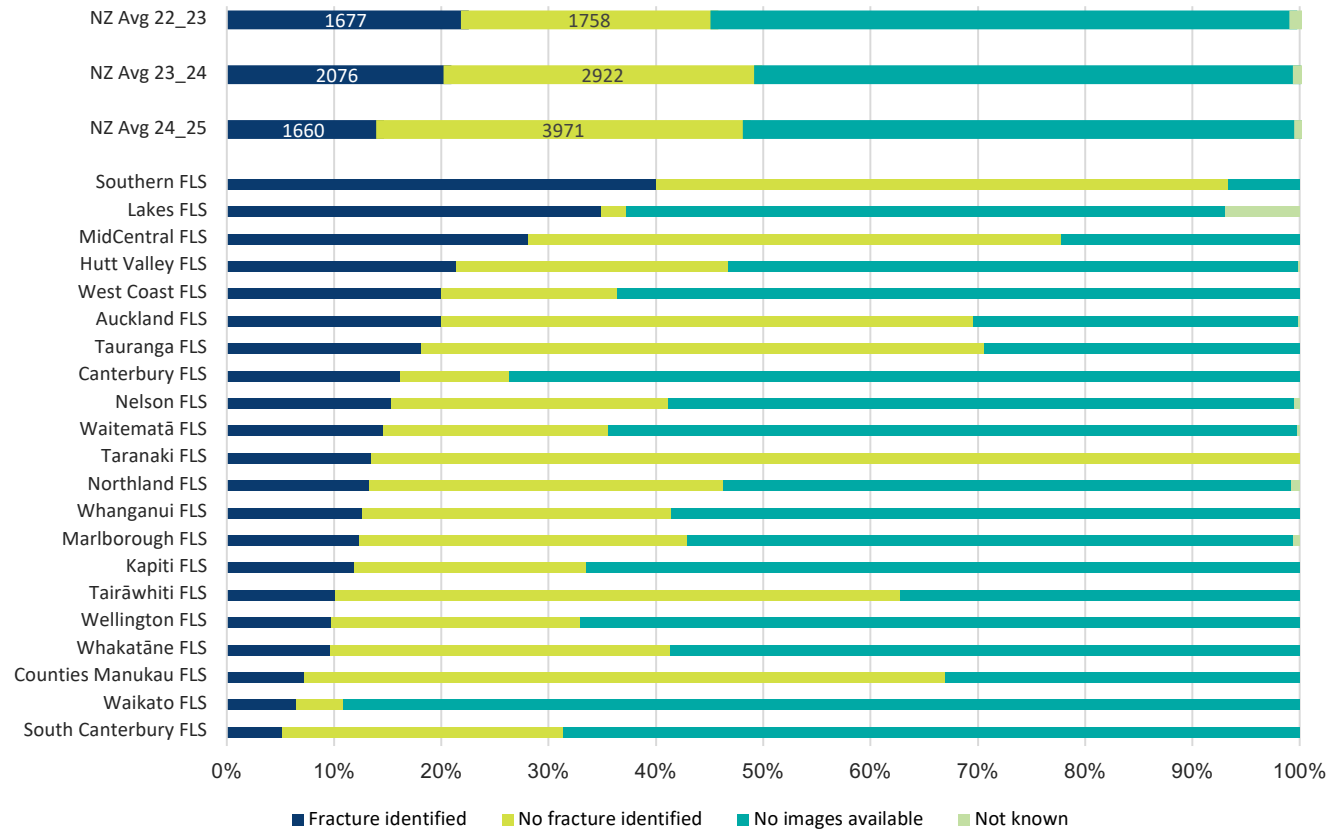


Figure 6.2g – **Thoraco-Lumbar Imaging during Bone Health Assessment**

The decreasing **identification** rate may reflect clearing of the backlog of pre-existing fractures, as discussed on page 21.



Section 7 – Patient Information / Demographics

Figure 7.1a – **Ethnicity**

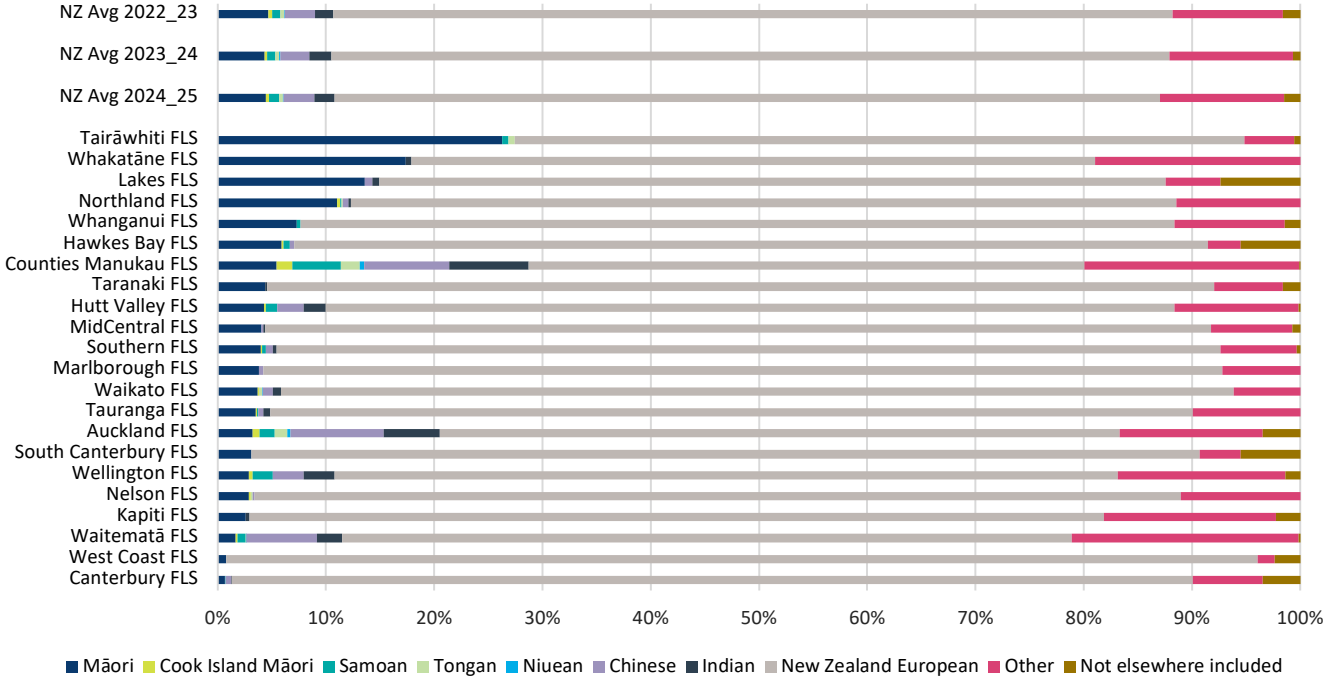


Figure 7.4a – **Sex**

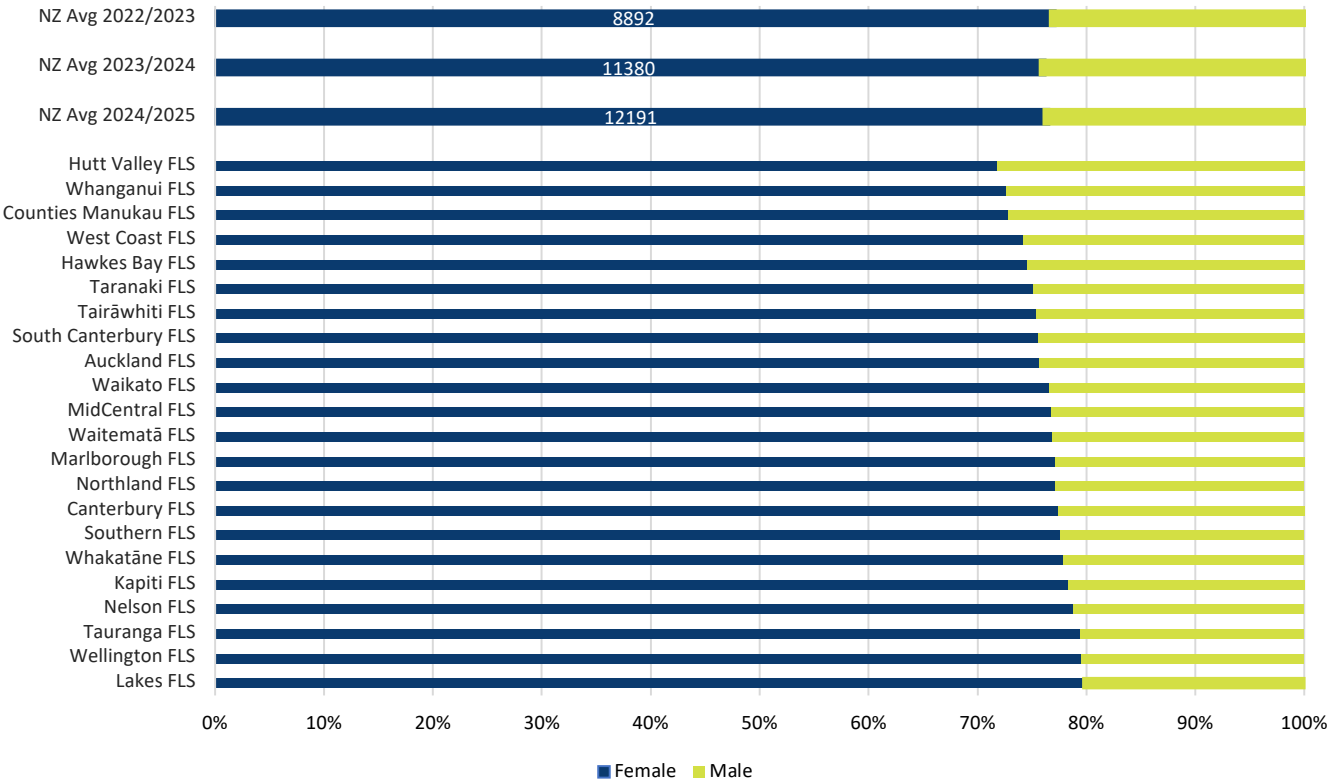
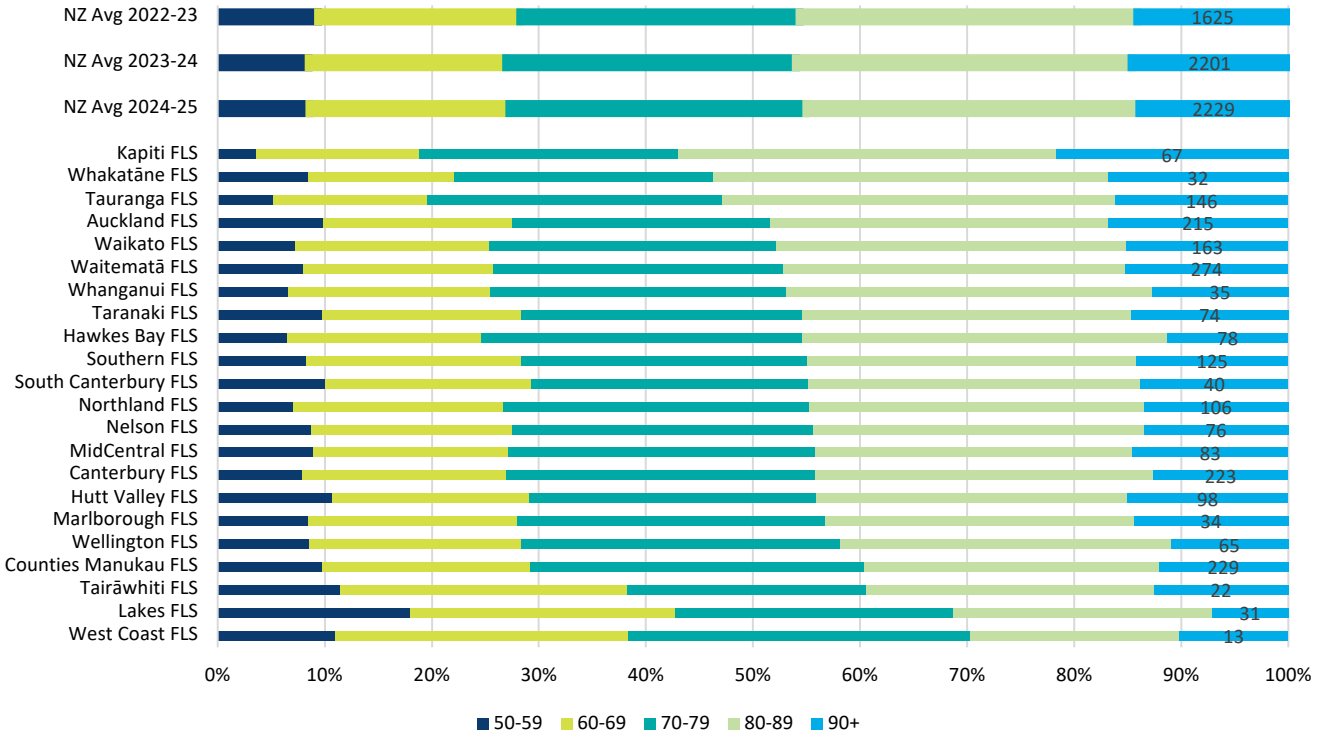


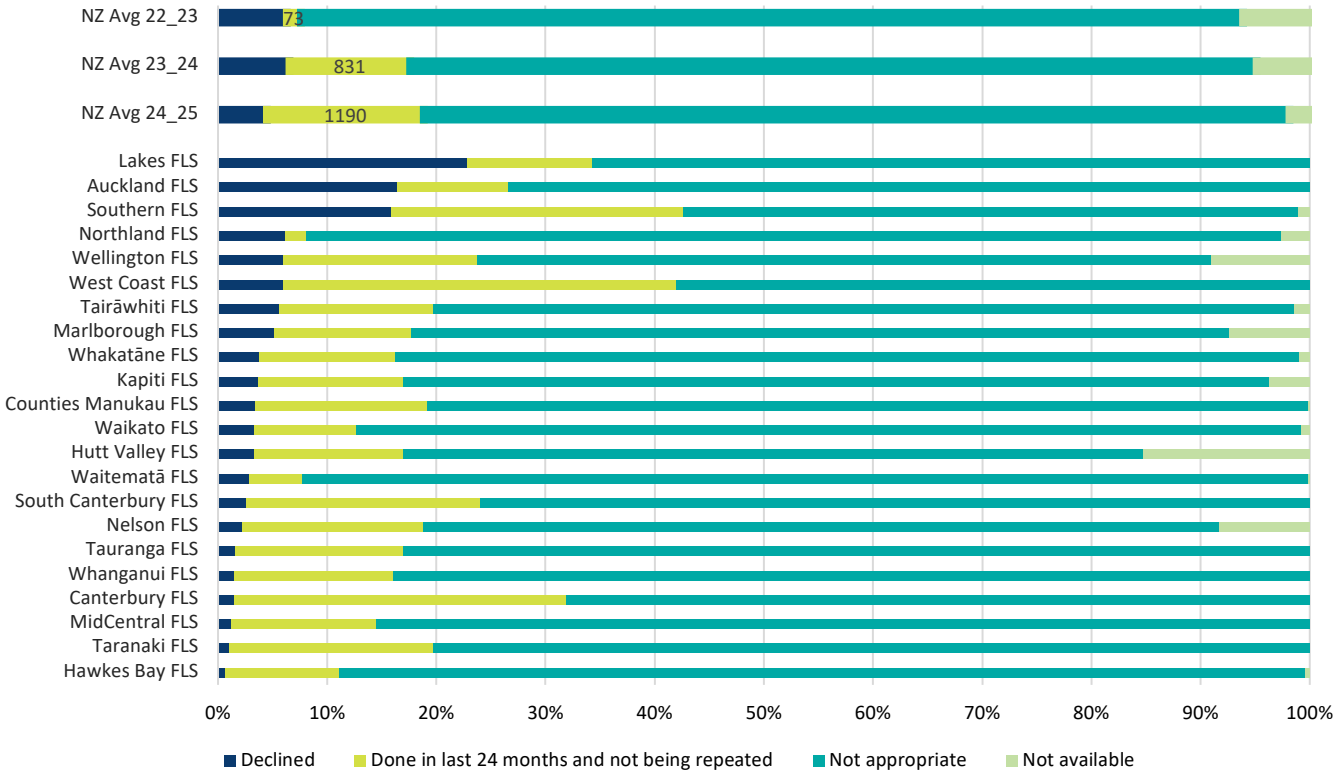
Figure 7.4b – **Age at Presentation**

National Median Age = 78; National Average Age = 76.



Section 8 – Investigation - DXA

Figure 8.2a – **Reasons DXA Not Completed**



Section 9 – Investigation - Falls Risk Assessment

Figure 9.3a – **Potential Cardiac Cause**

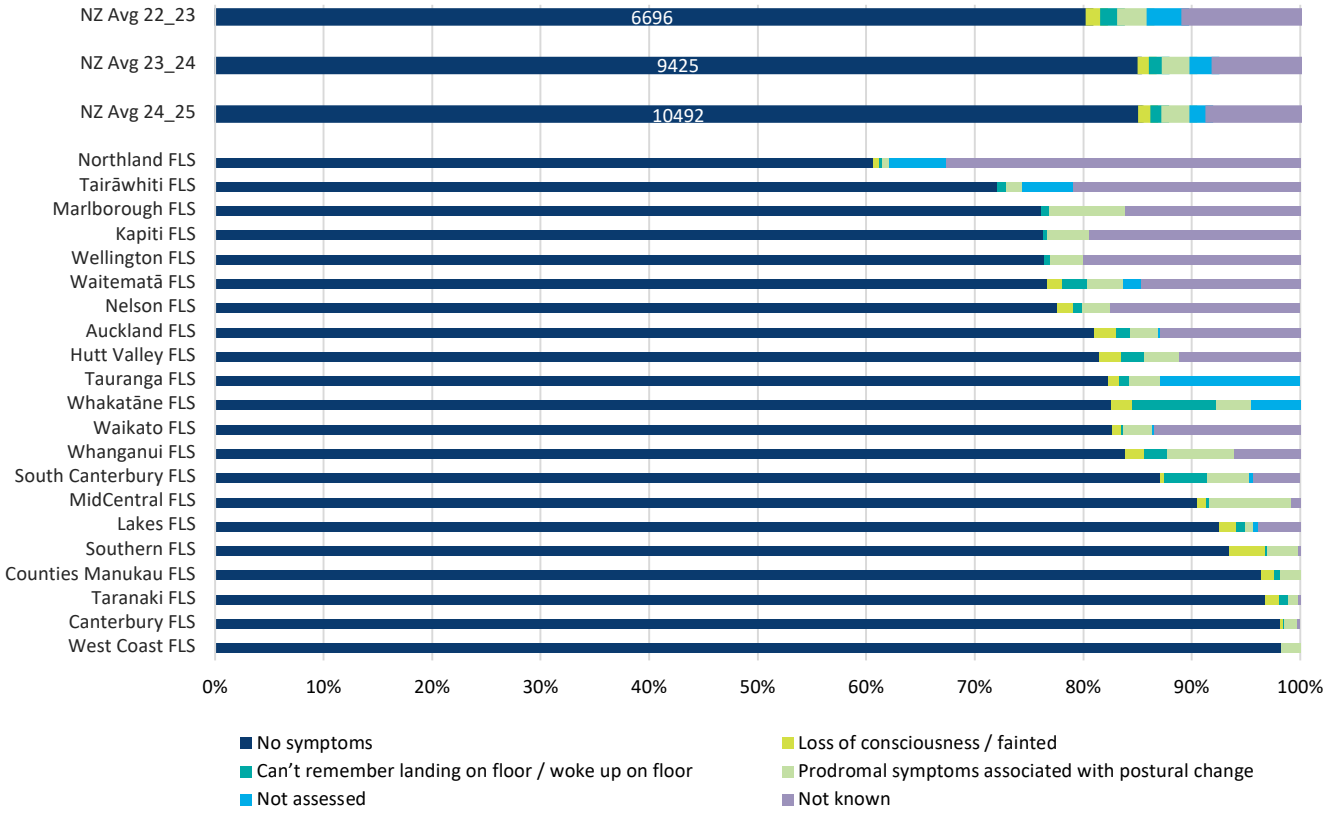
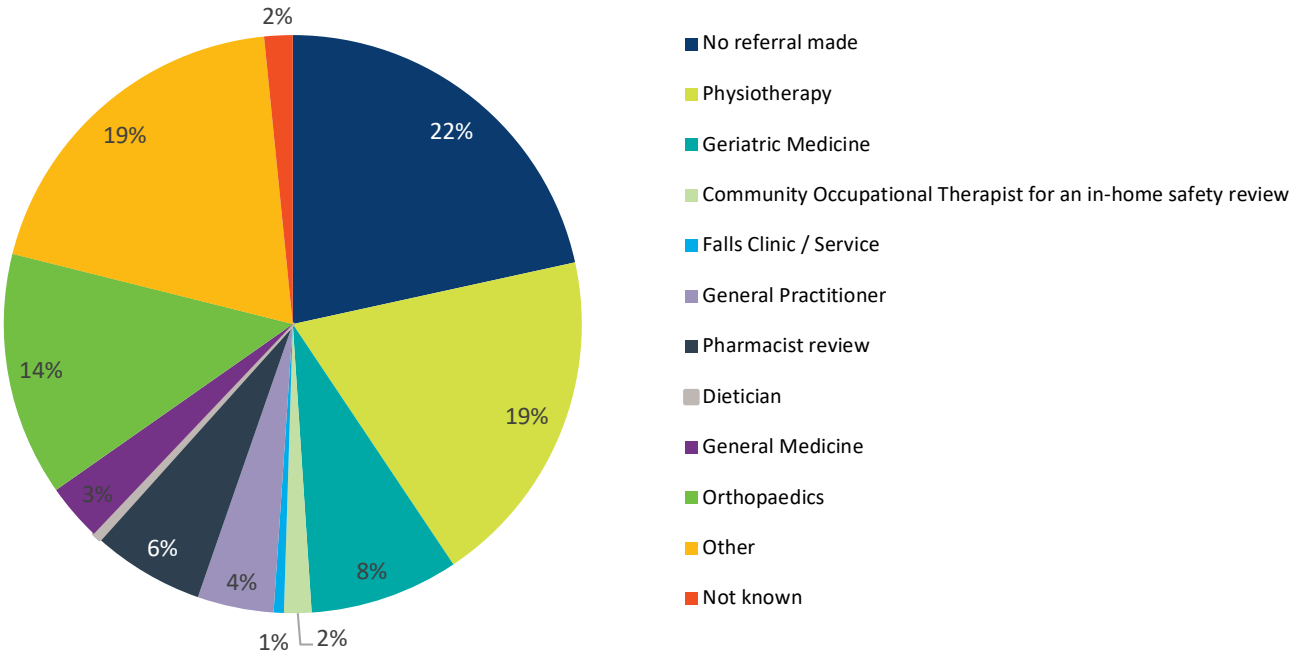


Figure 9.4a – **Falls Related Referral Types**

Among the 5,284 patients with recorded referral data, 2,075 (39%) had a single referral recorded and 3,209 (61%) had multiple referrals recorded.

Note: This data variable was discontinued from 1 July 2025.



Section 10 – Information

No additional charts included in this supplementary report.

Section 11 – Intervention

Intervention: People with a fragility fracture determined to be at high risk of sustaining future falls and/or fractures will be offered appropriate osteoporosis treatment with PHARMAC subsidised medicines and be referred for interventions to reduce falls risk.

Figure 11.1a – **Osteoporosis Treatment Recommendation vs No Recommendation**

By 12 weeks post index fracture, clinicians determine whether osteoporosis specific treatment is recommended for each patient who was deemed appropriate for further assessment.

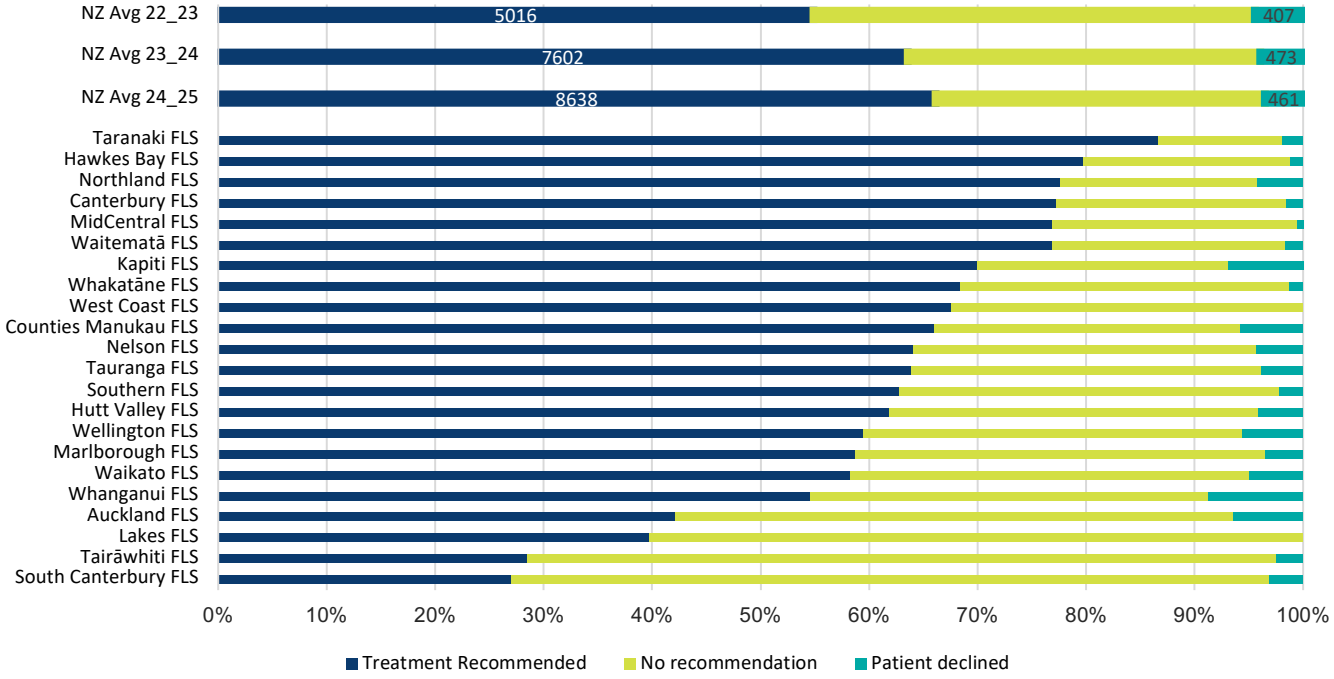


Figure 11.1b – **Osteoporosis Specific Treatment Recommendation**

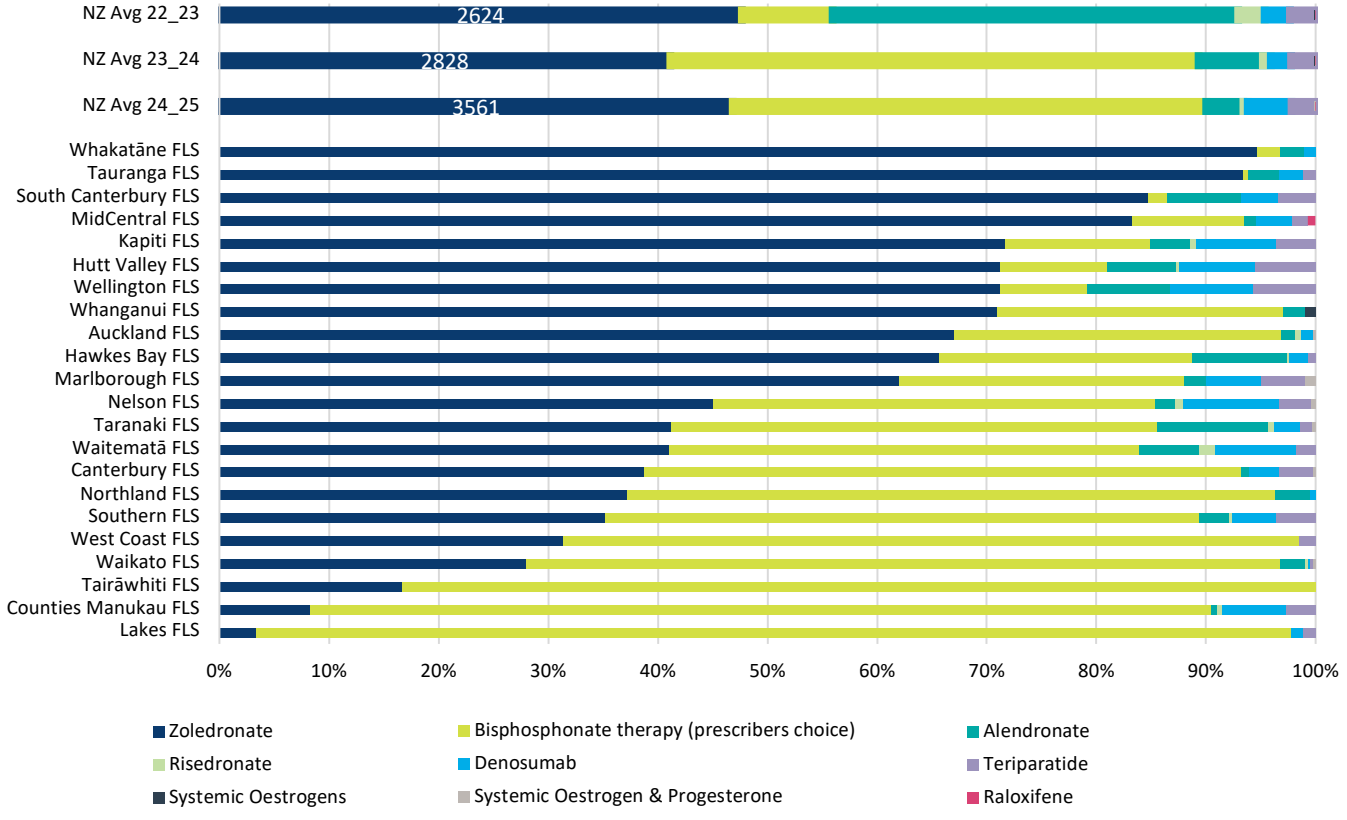


Figure 11.5a – **Osteoporosis Specific Treatment Commenced**

FLS follow-up at 16 weeks post-fracture assesses whether osteoporosis-specific treatment has been initiated.

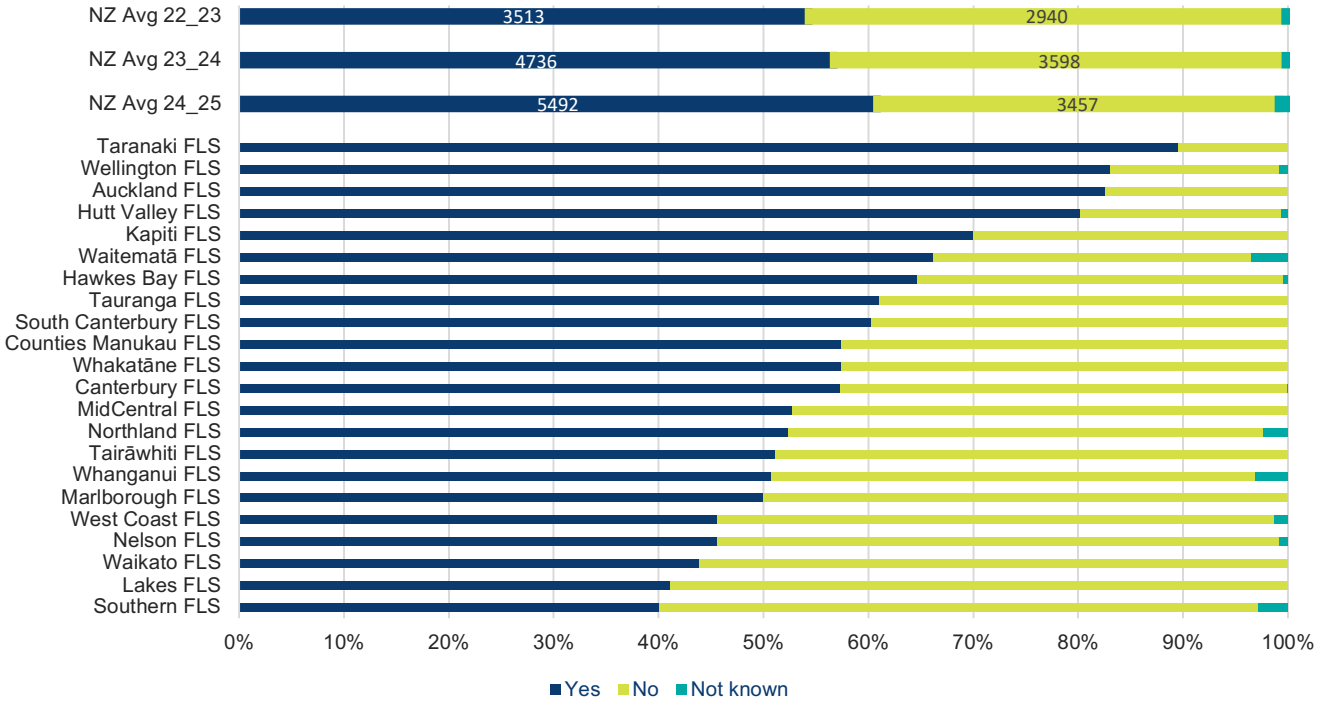


Figure 11.5b – **Medication Commenced or Why Not, Recorded at the 16 Week Follow-Up**

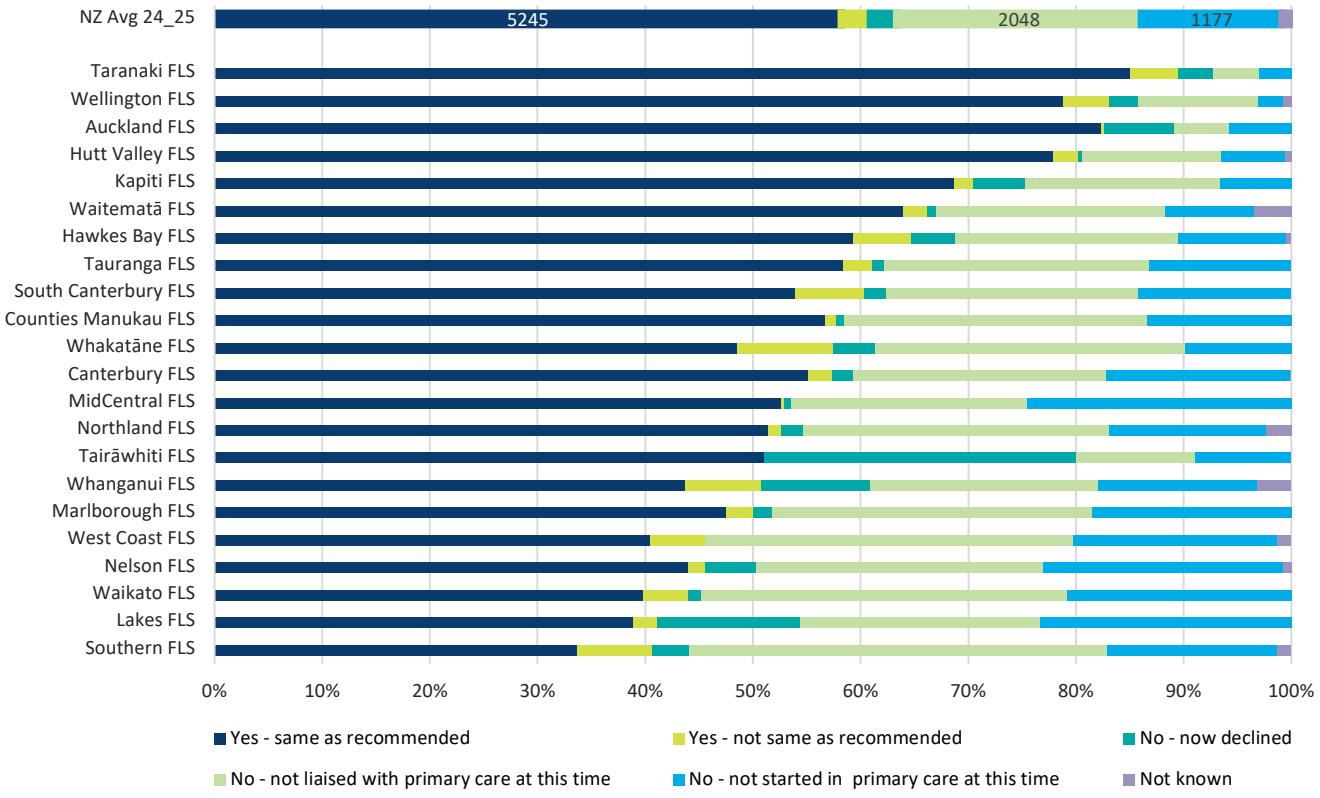


Figure 11.7a – **16 Week Residence**

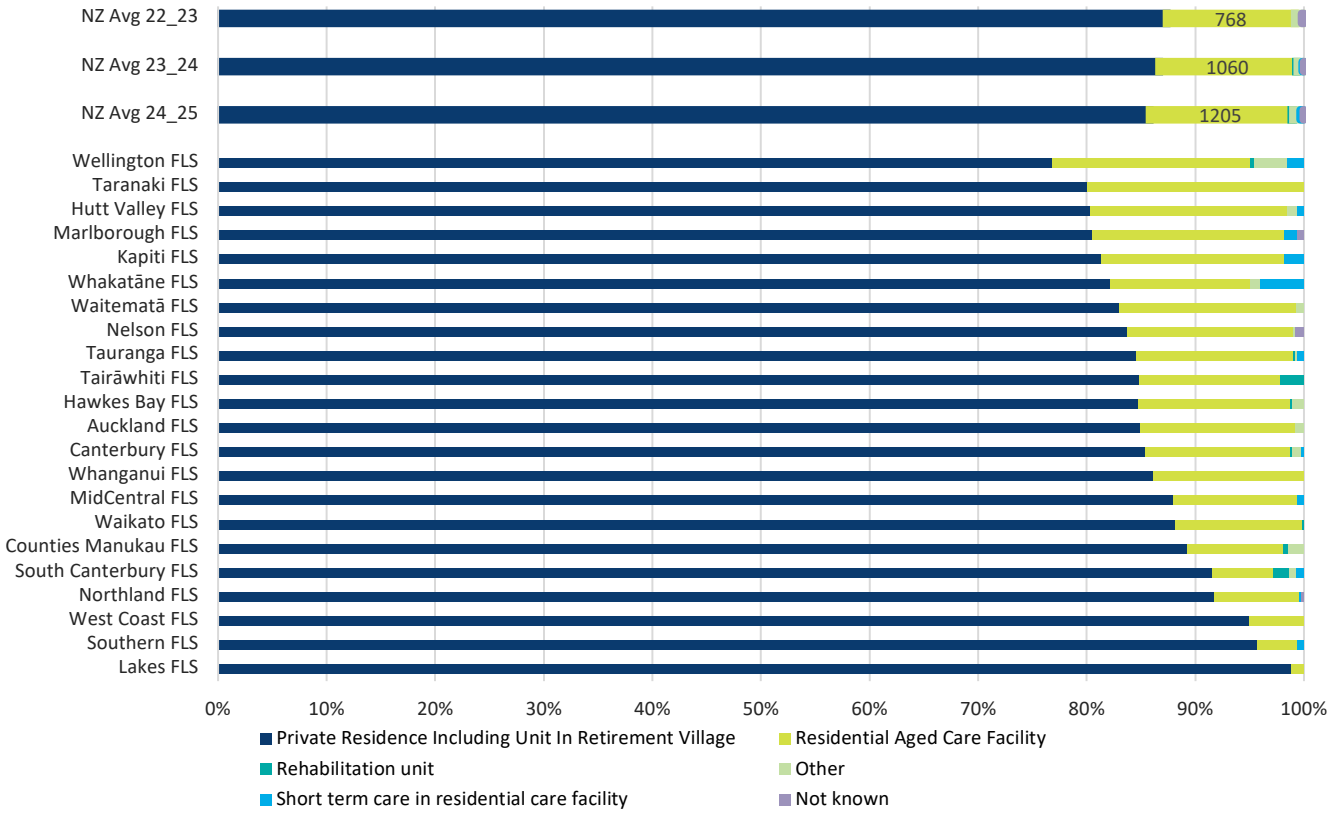
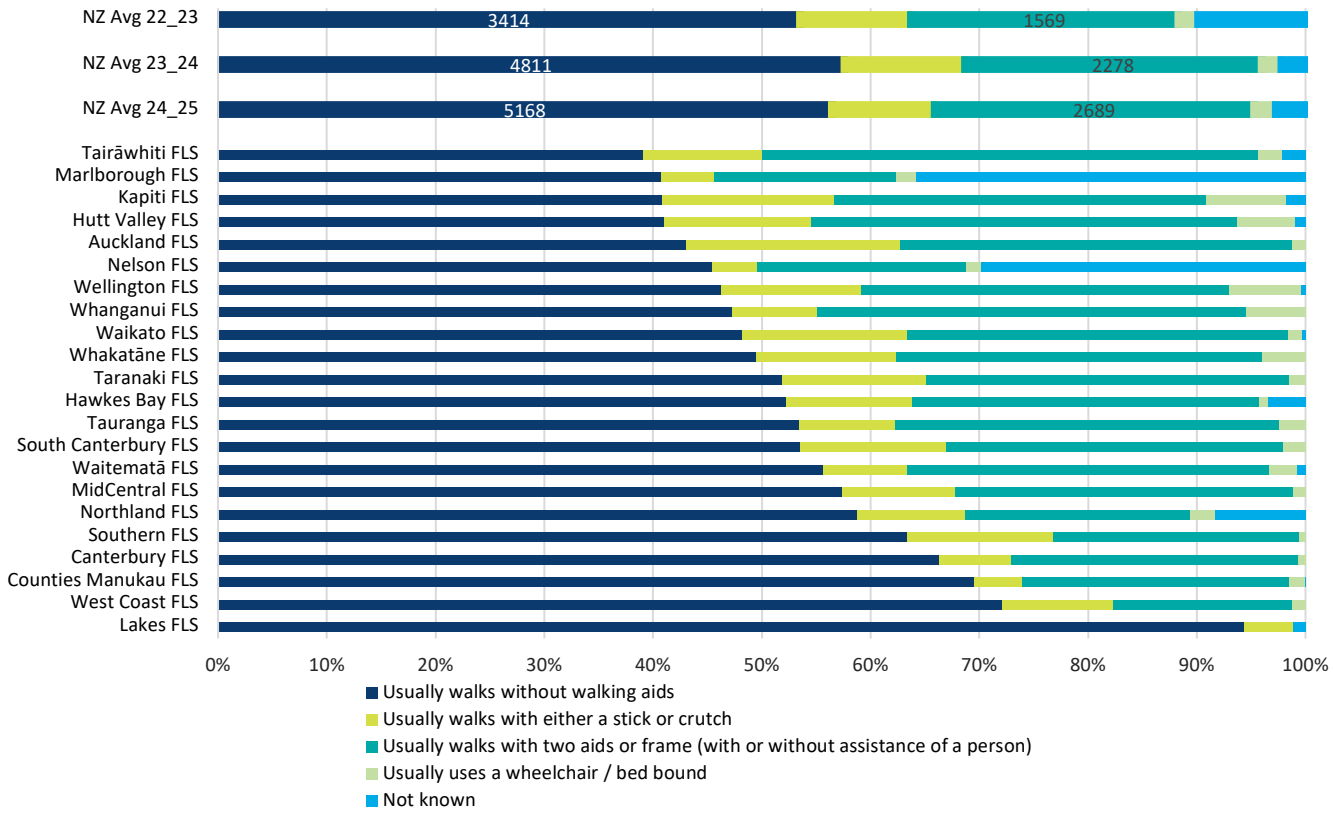


Figure 11.7b – **16 Week Mobility**



Section 12 – Integration

No additional charts included in this supplementary report.

Section 13 – Data Completeness

Quality: The FLS will undertake ongoing performance review enabled by participation in the NZ-arm of the Australian and New Zealand Fragility Fracture Registry and ensure appropriate Continuing Professional Development (CPD) for FLS staff.

Figure 13.1a – //KPI 15: ANZ Fragility Fracture Registry Participation

	KPI 1	KPI 2	KPI 3	KPI 4	KPI 5	KPI 6	KPI 7	KPI 8	KPI 9	KPI 10	KPI 11	KPI 12	KPI 15
NZ Avg 22_23	91	126	**85**	**60**	**86**	**70**	**67**	**54**	**100**	**68**	**36**	**62**	**68**
NZ Avg 23_24	67	101	**83**	**57**	**83**	**72**	**69**	**55**	**100**	**44**	**23**	**68**	**69**
NZ Avg 24_25	**72**	**72**	**84**	**55**	**85**	**73**	**70**	**63**	**100**	**73**	**54**	**71**	**73**
Counties Manukau FLS	101	101	88	64	88	85	85	71	100	60	79	74	**83**
Hutt Valley FLS	88	88	92	61	92	82	80	62	100	88	68	86	**82**
South Canterbury FLS	69	69	92	52	92	89	88	77	100	144	32	69	**81**
West Coast FLS	80	80	88	92	88	77	77	61	100	54	79	82	**80**
Taranaki FLS	72	72	94	61	94	83	82	82	100	104	44	66	**79**
Waitematā FLS	63	63	91	55	92	91	91	75	100	82	44	91	**78**
Canterbury FLS	57	57	91	71	91	71	70	74	100	80	86	86	**78**
Wellington FLS	65	65	92	57	92	80	75	63	100	81	65	73	**76**
Hawkes Bay FLS	62	62	89	49	89	86	86	73	100	72	52	87	**75**
Kapiti FLS	75	75	91	43	91	79	74	66	100	70	63	72	**75**
Nelson FLS	81	81	92	61	92	67	49	65	100	64	36	85	**73**
Northland FLS	95	95	81	46	81	73	72	71	100	51	36	67	**72**
Marlborough FLS	66	66	94	58	94	66	45	68	100	80	43	83	**72**
Whakatāne FLS	74	74	82	53	82	68	68	61	100	61	56	81	**72**
Tauranga FLS	67	67	89	53	90	55	55	66	100	68	62	81	**71**
Tairāwhiti FLS	80	80	74	62	74	73	71	67	100	96	46	23	**70**
Waikato FLS	56	56	88	40	88	77	76	57	100	57	76	71	**70**
MidCentral FLS	66	66	64	65	64	63	63	61	100	65	89	63	**69**
Whanganui FLS	65	65	85	59	85	76	76	52	100	63	18	65	**67**
Auckland FLS	66	66	72	38	72	62	40	39	99	84	59	68	**64**
Southern FLS	59	59	68	56	68	67	67	52	100	39	42	40	**60**
Lakes FLS	82	82	60	3	60	48	47	32	99	40	16	51	**52**

APPENDIX 1

NZ Fragility Fracture Registry - Patient Level Audit Form

Highlighted yellow areas show the changes made in both data dictionary and data variables for 2024/25.

NZ FRAGILITY FRACTURE REGISTRY - PATIENT LEVEL AUDIT

Facility Name: _____

Headings in italics // ***Heading****

These boxes relate to KPIs of the FLS Clinical Standards * These boxes are required to save a record

PATIENT DEMOGRAPHICS

First Name	Last Name	*National Health Index**
Date of birth (dd/mm/yyyy)	**Sex**	**NZ Ethnic Status**
_ _ /_ _ /_ _ _ _	☐ Male ☐ Intersex or indeterminate ☐ Female ☐ Not stated/inadequately described	☐ New Zealand European ☐ Niuean ☐ Māori ☐ Chinese ☐ Cook Island Māori ☐ Indian ☐ Samoan ☐ Not elsewhere included ☐ Tongan ☐ Other
Contact Phone Number	**Post Code**	
Email		
Opt out ☐	Non Contactable ☐	Declined FLS ☐

IDENTIFICATION

*Index Fracture Date** //	Index Type of Fracture	Admission to Hospital
_ _ /_ _ /_ _ _ _	☐ Fragility ☐ Atypical	☐ Yes ☐ No ☐ Already an inpatient ☐ Not known

Fracture Sites (1 = index fracture. Mark as numbers, up to 3 fractures) //

☐ Wrist	☐ Sacrum and pelvis	☐ Sternum, ribs, clavicle, and scapula
☐ Proximal humerus	☐ Other humerus	☐ Other femur including supracondylar knee
☐ Hip	☐ Elbow	☐ Tibial plateau and patella
☐ Thoraco-lumbar spine	☐ Forearm other than wrist	☐ Other lower leg and ankle

Pre-fracture Residence	Pre-fracture Mobility	Pre-fracture Cognitive Status
☐ Private residence (including unit in retirement village) ☐ Residential aged care facility ☐ Other ☐ Not known	☐ Usually walks without walking aids ☐ Usually walks with either a stick or crutch ☐ Usually walks with two aids or frame (with or without assistance of a person) ☐ Usually uses a wheelchair / bed bound ☐ Not known	☐ Normal cognition ☐ Impaired cognition or known dementia ☐ Not known **Appropriate for Further Assessment** ☐ Yes ☐ No

Method of Identification		Reason Not Appropriate for Further Assessment
☐ Emergency Department trauma list ☐ Inpatient diagnosis list (filtered for fracture) ☐ Fracture clinic list ☐ Internal hospital referral ☐ GP referral ☐ External FLS to FLS ☐ Out of area referral	☐ ACC fracture claims ☐ Discharge coding ☐ Radiology reports for any fracture ☐ Radiology other ☐ Radiology reports for vertebral fractures ("wedge, compression etc")	☐ Deceased ☐ Terminal illness / palliative care ☐ Frail - life expectancy of less than a year / advanced dementia ☐ End stage renal failure ☐ Advanced malignancy # not due to metastasis ☐ Usual residence not in New Zealand or Australia ☐ Other ☐ Under care of other specialist service Date of decision _ _ /_ _ /_ _ _ _

NOTES

First Name	Last Name	*National Health Index**

INVESTIGATION - BONE HEALTH ASSESSMENT

Bone Health Assessment Date //
_ _ /_ _ /_ _ _ _

Reported Previous Fragility Fractures
☐ 0 ☐ 1 ☐ 2 ☐ 3 or more ☐ Not known

Parental history of hip fracture
☐ Yes ☐ No ☐ Not done

Early Menopause
☐ Yes ☐ No ☐ Not done

Current Smoker
☐ Yes ☐ No ☐ Not done

Glucocorticoids
☐ Yes ☐ No ☐ Not done

Rheumatoid Arthritis
☐ Yes ☐ No ☐ Not done

Alcohol Use
☐ Yes ☐ No ☐ Not done

Previous Significant Osteoporosis Specific Treatment
☐ Yes ☐ No ☐ Not done

Current Osteoporosis Specific Treatment
☐ None at time of index fracture
☐ None: planned "drug holiday"
☐ Alendronate
☐ Risedronate
☐ Etidronate
☐ Zoledronate
☐ Denosumab
☐ Teriparatide
☐ Testosterone
☐ Systemic Oestrogens
☐ Systemic Oestrogen & Progesterone
☐ Romosozumab
☐ Raloxifene
☐ Not known

Secondary Cause Review
☐ Yes ☐ No ☐ Not done

Secondary Cause Blood Tests
☐ Yes ☐ No ☐ Not clinically indicated
☐ Referred to another clinical team (including GP)
☐ Yes, at least one result reported as abnormal

Thoraco-Lumbar Imaging
☐ Fracture identified ☐ No fracture identified
☐ No imaging of thoraco-lumbar spine performed or report not available
☐ Not known

Thoraco-Lumbar Imaging date
_ _ /_ _ /_ _ _ _

Creatinine Clearance (Cockcroft Gault)
_ _ _ ml/min

Patient Weight
_ _ _ kg

Patient Height
_ _ _ cm

Body Mass Index
_ _ . _

FRAX Score
_ _ %

Garvan Score
_ _ %

INVESTIGATION - FALLS RISK ASSESSMENT AND REFERRALS

Falls Risk Assessment Date //
_ _ /_ _ /_ _ _ _

What happened?

2+ Slips, Trips, Falls in Previous 12 months
☐ Yes ☐ No ☐ Not known

Fear of Falling
☐ Yes ☐ No ☐ Not known

Potential Cardiac Cause
☐ Can't remember landing on floor / woke up on floor
☐ Loss of consciousness / fainted
☐ Prodromal symptoms associated with postural change (dizziness, light headedness, nausea, diaphoresis, palpitations, chest pain)
☐ No symptoms
☐ Not known
☐ Not assessed

Pre-fracture Strength
Standing from chair without using hands
☐ Yes ☐ No ☐ Not known

Strength and Balance Referral Date
_ _ /_ _ /_ _ _ _

Strength and Balance Referrals
☐ Already attending a recognised strength and balance programme
☐ Already engaged in a self-directed exercise programme
☐ Referred to a community strength and balance programme
☐ Referred to an in-home strength and balance programme
☐ Referred to the "Training for Independence" programme
☐ No referral made or not appropriate for a strength and balance training programme
☐ Patient declined Nymbl information provided ☐ Yes ☐ No
☐ Not known

Referral for Specialist Falls Intervention (Tick all that apply)
☐ No referral made
☐ Physiotherapy
☐ Geriatric Medicine
☐ Community Occupational Therapist for an in-home safety review
☐ Falls Clinic / Service
☐ General Practitioner
☐ Pharmacist review
☐ Dietician
☐ General Medicine / Surgery
☐ Orthopaedics
☐ Rehabilitation in short-term residential care
☐ ED/Out of hours services
☐ Other

First Name	Last Name	*National Health Index**

DXA

DXA Ordered or Not //

☐ Ordered ☐ Declined ☐ Ordered - did not attend ☐ Done in last 24 months and not being repeated at this time
☐ Not appropriate ☐ Not available

Previous DXA Date	Previous DXA Spine T-score	Previous DXA Hip T-score	Previous DXA Wrist T -Score
_ _ /_ _ /_ _ _ _	+/-_ . _ _	+/-_ . _ _	+/- _ . _ _

Date DXA Ordered	*DXA Date* //	DXA Spine T-score	DXA Hip T-score	DXA Wrist T-score
_ _ /_ _ /_ _ _ _	_ _ /_ _ /_ _ _ _	+/-_ . _ _	+/- _ . _ _	+/- _ . _ _

INTERVENTION

Osteoporosis Specific Treatment Recommendation

☐ Not clinically indicated
☐ Recommended but declined
☐ Referred to specialist
☐ Continue current treatment
☐ Continue current planned drug holiday
☐ Bisphosphonate therapy (prescribers choice)
☐ Alendronate
☐ Risedronate
☐ Zoledronate
☐ Denosumab
☐ Teriparatide
☐ Testosterone
☐ Systemic Oestrogens
☐ Systemic Oestrogen & Progesterone
☐ Romosozumab
☐ Raloxifene
☐ Not known

Reason Treatment Not Recommended

☐ All assessments indicate treatment not required at present
☐ Poor renal function
☐ Poor swallowing, severe GORD, Barrett's oesophagus, achalasia
☐ Advanced frailty, life expectancy of less than a year
☐ Long term bisphosphonate treatment, so no further fracture risk benefit.
☐ Treatment indicated, but no funded alternatives available within Pharmac (NZ) or PBS (Aust) criteria
☐ Atypical femur fracture
☐ History of Osteonecrosis of the Jaw or significant active dental disease or planned dental treatment
☐ No obvious reason
☐ DNA DXA - No further FLS engagement

Date of Osteoporosis Treatment Recommendation //	Vitamin D (ARCF)	*Long Term Plan* //
_ _ /_ _ /_ _ _ _	☐ Yes ☐ No ☐ Not known	☐ Yes ☐ No ☐ Not known

Long Term Plan Date //	*Information Package (Tick all that apply)* //
_ _ /_ _ /_ _ _ _	☐ Yes – Standard package ☐ Yes – Know Your Bones ☐ No ☐ Not known Date sent _ _ /_ _ /_ _ _ _

PATIENT NOTES

First Name	Last Name	*National Health Index**

16 WEEK FOLLOW UP

Follow up //

☐ Yes ☐ No ☐ Uncontactable
☐ Declined ☐ Patient died

Follow up Date //

_ _ /_ _ /_ _ _ _

Medication Commenced

☐ Yes, same as recommended
☐ Yes, not same as recommended
☐ No, not liaised with primary care at this time
☐ No, now declined
☐ Not known

Strength and Balance Started

☐ Yes, same as referred
☐ Yes, not same as referred
☐ No, not started yet
☐ No, now declined
☐ Not known

Residence

☐ Private residence (including unit in retirement village)
☐ Residential aged care facility
☐ Rehabilitation unit public
☐ Rehabilitation unit private
☐ Other hospital / ward / specialty
☐ Deceased
☐ Short term care in residential care facility (New Zealand only)
☐ Other
☐ Not known

Mobility

☐ Usually walks without walking aids
☐ Usually walks with either a stick or crutch
☐ Usually walks with two aids or frame (with or without assistance of a person)
☐ Usually uses a wheelchair / bed bound
☐ Not relevant
☐ Not known

Medication //

☐ Recommended but declined
☐ Awaiting specialist opinion
☐ Clinical assessment not yet completed
☐ Alendronate
☐ Risedronate
☐ Zoledronate
☐ Denosumab
☐ Teriparatide
☐ Testosterone
☐ Systemic Oestrogens
☐ Systemic Oestrogen & Progesterone
☐ Romosozumab
☐ Raloxifene
☐ Not known

52 WEEK FOLLOW UP

Follow up //

☐ Yes ☐ No ☐ Uncontactable
☐ Declined ☐ Patient died

Follow up Date //

_ _ /_ _ /_ _ _ _

Residence

☐ Private residence (including unit in retirement village)
☐ Residential aged care facility
☐ Other
☐ Not done
☐ Not known

Mobility

☐ Usually walks without walking aids
☐ Usually walks with either a stick or crutch
☐ Usually walks with two aids or frame (with or without assistance of a person)
☐ Usually uses a wheelchair / bed bound
☐ Not done
☐ Not known

Further Fragility Fractures

☐ Yes
☐ No
☐ Not asked
☐ Not known

Further Falls

☐ None
☐ One
☐ Two
☐ Three or more
☐ Not asked
☐ Not known

Medication //

☐ Never started osteoporosis specific treatment
☐ No longer taking osteoporosis specific treatment
☐ Alendronate
☐ Risedronate
☐ Zoledronate
☐ Denosumab
☐ Teriparatide
☐ Testosterone
☐ Systemic Oestrogens
☐ Systemic Oestrogen & Progesterone
☐ Romosozumab
☐ Raloxifene

Strength and Balance

☐ Yes, same as referred
☐ Yes, not same as referred
☐ No, now declined
☐ Not asked
☐ Not known

Reason for no medication

☐ No longer appropriate (clinician)
☐ Informed decline (patient)
☐ Side effects
☐ Cost to patient
☐ Nil obvious
☐ Other
☐ Not asked
☐ No medications given - primary care not prescribed
☐ Not known

PATIENT NOTES

We’re proud to continue our role in this internationally acclaimed fragility fracture care and secondary prevention programme.

Our sincere thanks go to every member of our Fracture Liaison Service teams and to our funders, whose dedication and passion make a real difference in improving patient outcomes.