NZ Spinal Cord Injury Registry
Te Rēhita Whara Aho Tuaiwi ā-Motu

New Zealand Spinal Cord Injury Registry

Annual Summary Report 2024

In partnership with
PRAXIS
Spinal Cord Institute

The **New Zealand Spinal Cord Injury Registry (NZSCIR)** team would like to thank the 3,349 people with spinal cord injuries who have contributed their time and experiences to the Registry. We would also like to acknowledge all the spinal service clinicians for their support and work inputting data, and the Praxis Spinal Cord Institute for their ongoing Registry assistance and expertise.

Thanks also to statisticians Arie Bates-Hermans and Asheel Ramanlal, for their specialist knowledge in developing this report, and Jo Kinley, from Hullaballoo Design, for bringing our vision to life.

And finally, a big thank you to the individuals who have allowed us to use their images. We ask that these images are not copied or used for any other purpose.

How to cite this document:

New Zealand Spinal Cord Injury Registry (2025). New Zealand Spinal Cord Injury Registry Annual Summary Report 2024.

Contents

Spinal Cord Injury and the Registry

Spinal cord injury and impairment (SCI) remains a rare but complex condition with life-altering implications. Approximately 220 to 270 adults are diagnosed in New Zealand each year with either a **traumatic spinal cord injury (tSCI)** or a **non-traumatic spinal cord impairment (ntSCI)**, along with **cauda equina injuries (CEI)**. These conditions may result from sudden trauma or develop over time due to illness or underlying medical conditions.

SCI can affect people at any stage of life. Thanks to advances in acute and rehabilitative care, most individuals now live to near-normal life expectancy with SCI. However, with increased longevity comes evolving needs and growing complexity in rehabilitation, long-term care and self-management.

To support better outcomes for people living with SCI, the New Zealand Spinal Cord Injury Registry (NZSCIR) was established in August 2016. The Registry plays a vital role in improving information sharing, informing service delivery and clinical practice, and contributing to national and international research efforts.

The NZSCIR is principally funded by the Accident Compensation Corporation (ACC) and supported by Health New Zealand | Te Whatu Ora, in partnership with the Praxis Spinal Cord Institute (Canada). Data is collected from adults who sustain a new tSCI or develop a new ntSCI and are admitted to one of New Zealand's two **supra-regional spinal services**: Auckland (Middlemore Hospital, Auckland Spinal Rehabilitation Unit [ASRU]) or Christchurch (Christchurch Hospital, Burwood Spinal Unit [BSU]). The Registry follows each participant's journey through their acute care, specialist rehabilitation (ASRU or BSU) and community-based follow-up. Some participants may not attend both acute and rehab spinal services but they will still be enrolled in the Registry.

This rich data source supports continuous quality improvement, drives research, and helps shape services to ensure they meet the needs of people living with SCI.

The NZSCIR is overseen by a governance group which represents consumers, clinicians, researchers, funders, and spinal service leaders. On-the-ground coordination is provided by four Registry Coordinators—two based at each spinal service—with administrative support from the NZ Spinal Trust. The NZSCIR operates with ethical approval from the Health and Disability Ethics Committee (HDEC). It enables the collection of a non-consented minimal data set, with additional data (including demographic information, complications, functional outcome measures and community follow-up) gathered through informed consent.

About this Report

The NZSCIR 2024 Annual Summary Report provides an overview of data collected from 264 participants who either sustained a new tSCI or developed a new ntSCI and were admitted to one of New Zealand's two spinal services between 1 January and 31 December 2024.

The NZSCIR captures data on the majority of individuals who sustain or develop a SCI in Aotearoa New Zealand. It does not include data from the small number of people who are solely treated in regional hospitals and are not admitted to a supra-regional spinal service.

The initial sections of this report provide insights into the overall SCI population, followed by separate analyses of tSCI and ntSCI cohorts.

This report includes descriptive data on participant demographics, types and causes of SCI, hospital stay durations, functional outcomes and secondary complications following SCI.

NZSCIR annual reports are designed to inform research, clinical practice, policy development, and programme planning across the SCI sector.

To ensure privacy and confidentiality, strict statistical disclosure rules have been applied. Raw numbers (n) are provided where appropriate; however, where subgroup counts are fewer than five, raw numbers have been withheld and only percentages reported. Due to rounding, percentage totals may not add to exactly 100%.

Bolded terms throughout the report are defined in the glossary on page 22.

The NZSCIR governance group welcomes feedback or questions on this report. Please contact NZSCIR Coordinators at either site:
NZSCIR@cdhb.health.nz or NZSCIR@middlemore.co.nz

More information and previous NZSCIR reports are available from www.nzscir.nz

New Zealand Spinal Trust
Te Tarahiti Manaaki Tuanui
Supporting Positive Futures

NZSCIR 2024 DATA AT A GLANCE

More participants in
CHRISTCHURCH
than Auckland
for the first time

SPORTS INJURIES
doubled from 2023

Those aged
61-75
years are at highest risk of SCI

47%
of participants were over 61 years old

40%
of participants had a ntSCI

Admissions with SCI due to
CANCER
increased by 130% in the past 2 years

71%
of all participants were male

FALLS
were the leading cause of tSCI and increase with age

The leading cause of non-traumatic SCI was
SPINAL COLUMN DETERIORATION

12 more
participants with ntSCI than in 2023

MOUNTAIN BIKING
was the leading cause of sports injuries

Steady increase of
ASIAN
participants over past 4 years

Total 2024 NZSCIR participants

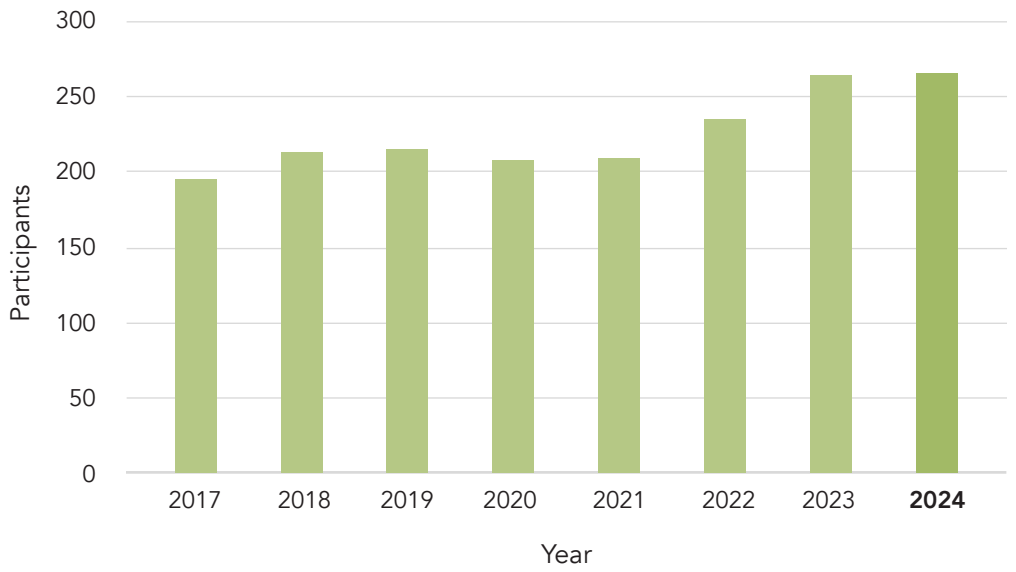
Prior to the NZSCIR's establishment, the SCI incidence in NZ was estimated at 30 per million, with approximately half related to a traumatic injury. Global SCI incidence is estimated to be between 24 to 80 cases per million[1,2]. In 2024, the incidence of those who attended either spinal service was close to 50 per million (based on NZ population in 2024 – 5,313,900)[3]. This does not include those with SCI who were not admitted to these services but does include those with cauda equina.

264
PARTICIPANTS 2024

The total number of individuals with SCI in 2024 was 264. This is the highest annual total since registry records began, as shown in Figure 1, but is only 1 greater than 2023.*

*Please note, 2023 numbers quoted in this report differ from those previously published due to participants discharging after data was extracted for publication.

Figure 1: Total participants by year (2017–2024)



Participants by facility

Historically, Auckland has consistently recorded higher numbers of people with SCI than Christchurch. However, 2024 saw a shift in this trend with Christchurch registering 20 more participants than Auckland. 23-24% of all participants who received acute care at Christchurch or Middlemore Hospital did not attend specialist rehabilitation. Both 2023 and 2024 have shown a sizable increase in the number of people treated at Christchurch Hospital and not attending specialist rehab . This increased 11% in 2024 compared with the 2017-2023 average.

28% of ntSCI participants did not attend specialist rehabilitation, compared to 20% of tSCI.

Figure 2: Total participants by facility (%)

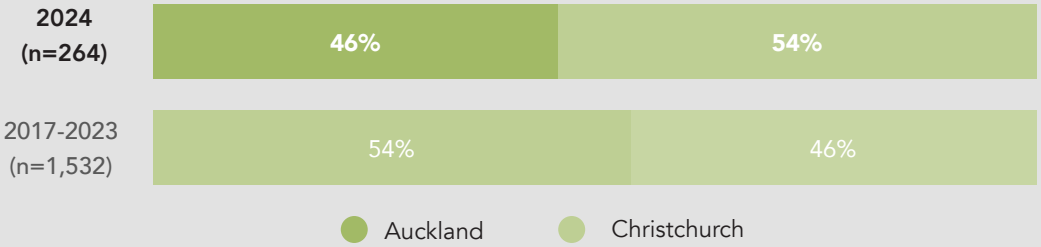


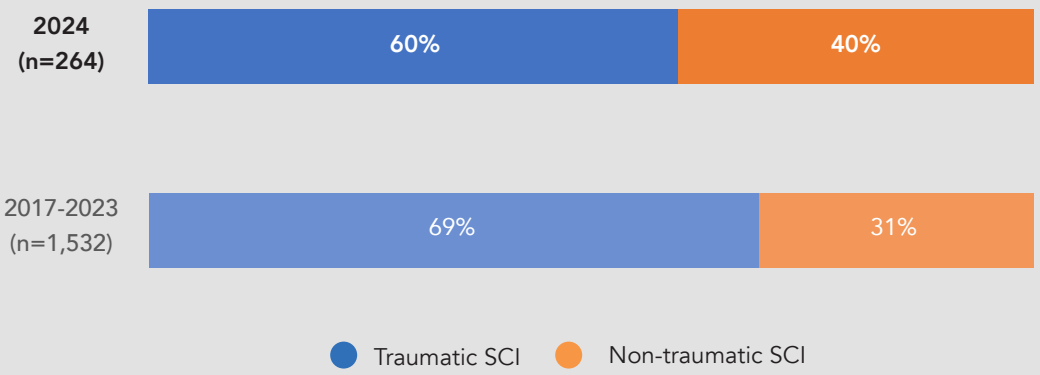
Table 1: Participants attending supra-spinal acute services only

	Middlemore Acute Only	Christchurch Acute Only
2024	**29 (24%)**	**33 (23%)**
2017-2023	171 (20%)	86 (12%)

Participants by SCI type

In 2024, 60% of participants had a tSCI and 40% had a ntSCI. While tSCI continues to make up the majority of cases, the proportion of ntSCI has increased in both 2023 and 2024 compared to earlier years, as demonstrated in Figure 3. This reflects global reports of increasing ntSCI incidence as a result of an aging population, leading to higher incidence of age-related degenerative conditions, tumours and vascular conditions[4].

Figure 3: Total participants by type (%)

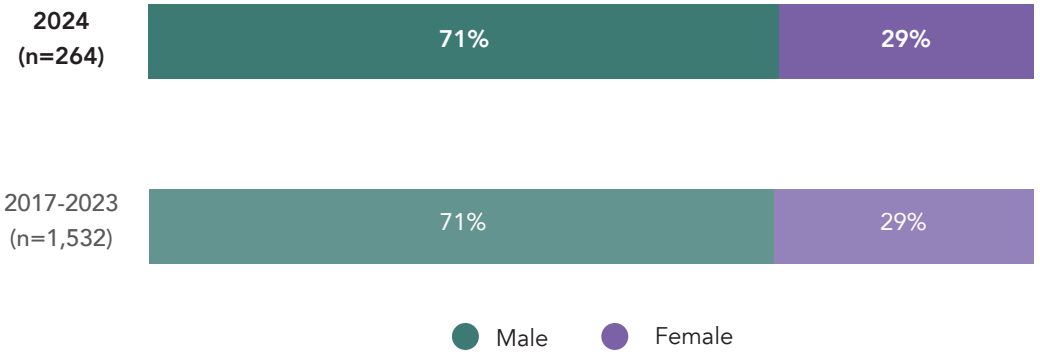


Participants by sex

In 2024, 71% of persons with SCI were male. This is consistent with historical registry data from 2017 to 2023 and aligns with well-established patterns showing that SCI occurs more commonly in males, often linked to risk exposure, injury mechanisms and healthcare behaviours[5].

This year we have changed our reporting from 'gender' to 'sex'. This refers to the sex assigned at birth, independent of the gender the participant may identify as at the time the data is collected. This change helps to provide a clear biological reference point and ensures information reported is non-identifiable due to the small numbers of individuals that identify as gender-diverse.

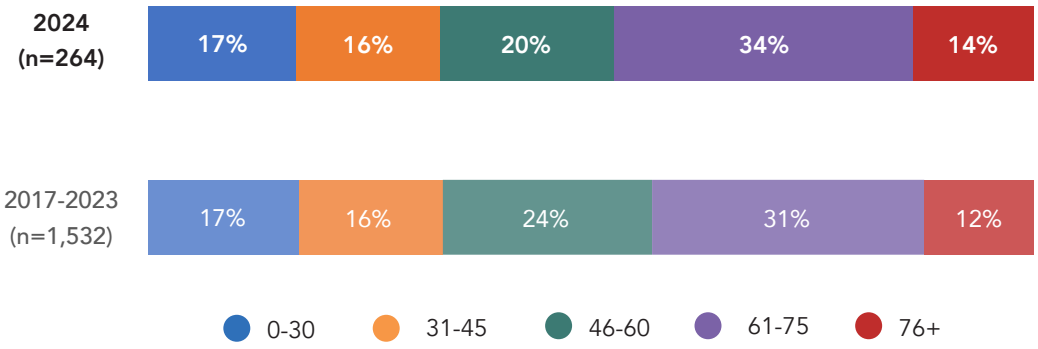
Figure 4: Total participants by sex (%)



Participants by age

NZSCIR is an adult registry but does capture participants as young as 14 years, if they are deemed appropriate to attend adult rehab. The age distribution shown in Figure 5 is fairly consistent with 2017-2023 data. This shows that SCI affects people across all ages, with the average age of people with a SCI in 2024 being 54.4 years. The highest proportion of participants are in the 61-75 age group. Causes of SCI, filtered by age, will be discussed on pages 11 and 13.

Figure 5: Total participants by age (%)



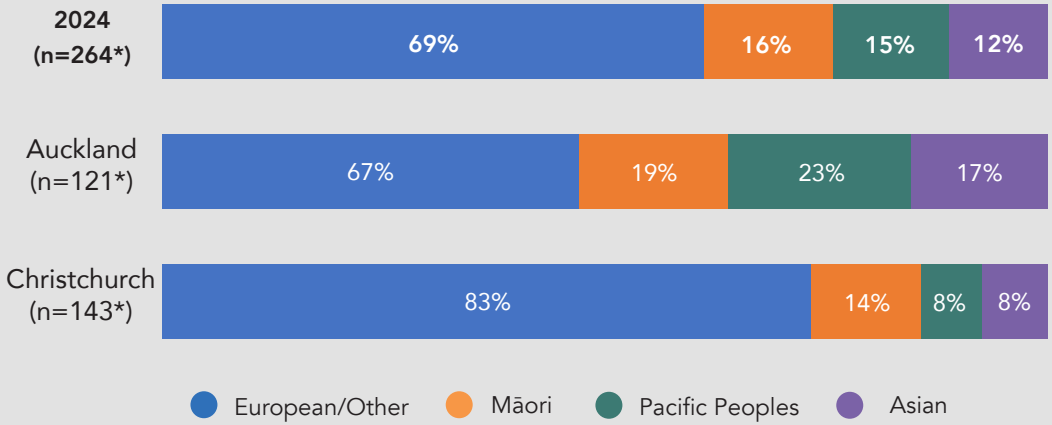
Participants by ethnicity

In accordance with the Ministry of Health's Ethnicity Data reporting protocols, NZSCIR reports total response ethnicity[6]. A person can belong to more than one ethnic group, and the NZSCIR caters for multiple responses. This method reports every ethnicity selected (i.e. in 2024, 264 participants recorded 297 responses). One single participant can have more than one 'ethnicity response' (e.g. Mr A identifies as Māori and Samoan, so records two ethnicity responses). Using this method, percentages do not total 100%.

In 2024, most participants identified as European, followed by Māori, Pacific Peoples, and Asian ethnicities (Figure 6). These align with the ethnic composition of New Zealand's population[7]. 2024 figures for Māori with a SCI have dropped by 5% from 2023. However, there has been a notable increase in Pacific Peoples at both sites. Asian ethnicities have previously been grouped into the 'Other' category. Due to increasing records over the past four years, numbers now support this group being reported separately.

Regional variation is evident, with Auckland having greater representation of Pacific Peoples, Asian and Māori compared with Christchurch, where the majority identified as European. These trends reflect regional population demographics with the Auckland catchment showing more ethnic diversity, while the Christchurch catchment has a predominantly European population[7].

Figure 6: Total response ethnicity (%) by facility



*Percentages do not total 100%. Refer to text for details.


KITTY FLANAGAN


U
GOT
THIS

Traumatic SCI

A SCI sustained from an accident or a surgery-related complication is referred to as a traumatic SCI. 158 tSCI were recorded in 2024, accounting for 60% of admissions. The total number of tSCI has decreased by 10 compared with 2023. The past two years have demonstrated a shift towards a relatively lower proportion of tSCI, with 2024 recording the lowest percentage of total tSCI since Registry records began. This year has also demonstrated the most even spread of all tSCI causes.

158
tSCI 2024

Table 2 shows the causes of tSCI sustained.

Figure 7: Total tSCI participants by year

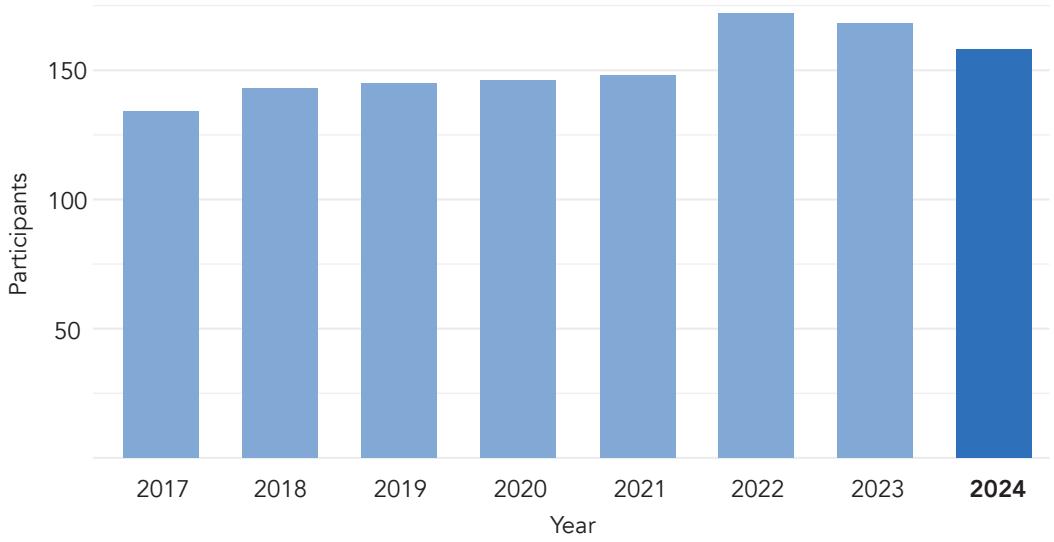


Table 2: tSCI Causes 2024 (n = 158)




Fall	Transport	Other	Sports
30%	24%	23%	22%
n=48	n=38	n=37	n=35

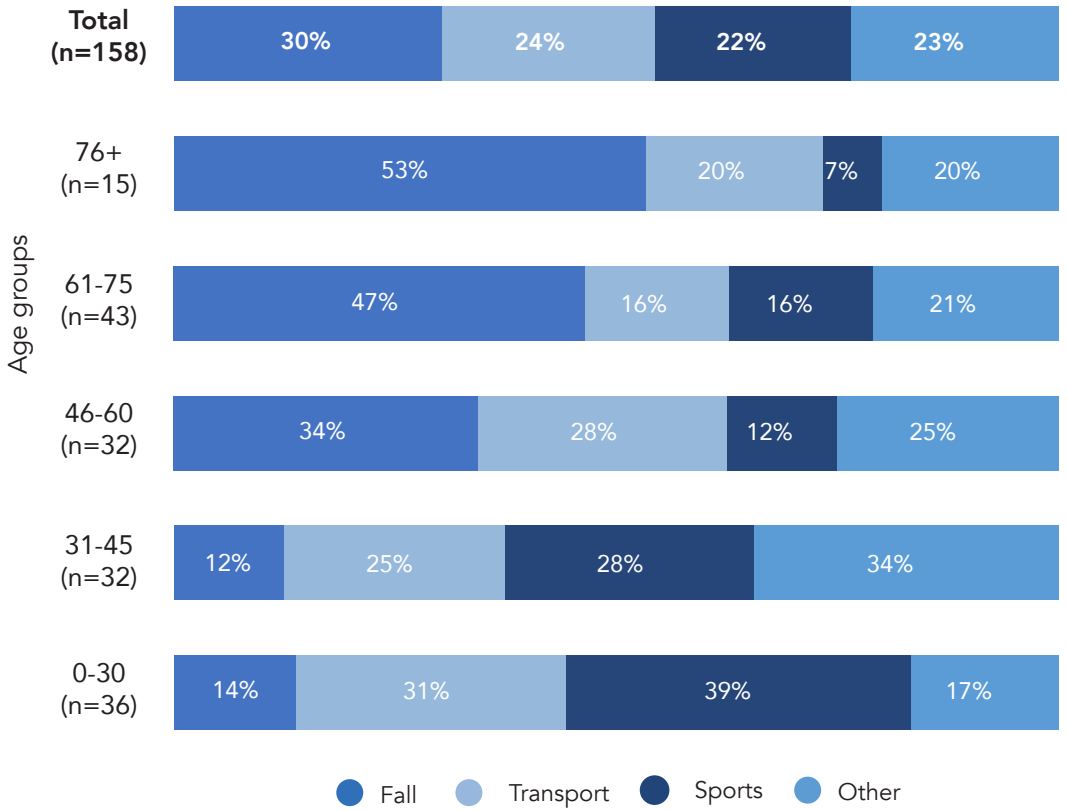
Fall – includes anything from a slip (on level ground) to a fall from a height.
Transport – any injury sustained while using a vehicle for transport (e.g. accident involving a motor vehicle, motor bike, electric scooter or commuter pushbike).
Other – includes assault, deterioration of function post-surgery, or other non-classifiable causes.
Sports – any sporting or leisure-related injury e.g. biking sports (e.g. mountain biking or road cycling), team ball sports (e.g. rugby), aero sports (e.g. paragliding), motor sports (e.g. motocross/dirt biking), water-related activities (e.g. accidents in the surf, pools or rivers), or power sports.

Traumatic SCI by age

Traumatic causes are shown by age in Figure 8. In 2024, the average age of persons with a tSCI was 49.3 years.

- Falls remained the leading cause of tSCI overall (30%), with their contribution steadily increasing with age and accounting for nearly 50% of cases in people aged 61 years and older.
- Sports injuries were the most common cause of tSCI in those 30 years and under. This is a change from the previous six years where transport has been the leading cause in this age group.
- Transport-related injuries remained a significant contributor across all ages, particularly in younger adults (31% in those aged 0-30 years).
- People aged 61-75 years were most likely to be affected by tSCI.
- Sports injuries doubled in 2024, compared with 2023. Biking sports (n=9) were the leading cause (26% of all sports injuries), more than doubling from 2023. Further investigation for this increase would be recommended, given the high number of mountain bike injuries being recorded in other centres internationally[8]. Motor sport injuries have also risen compared to recent years.

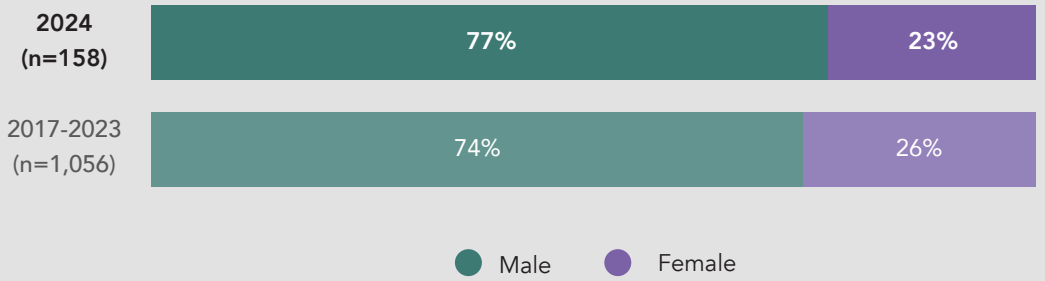
Figure 8: 2024 Cause of tSCI by age (%)



Traumatic SCI by sex

In 2024, more than three times as many males sustained a tSCI than females. This aligns with NZSCIR and international trends.[1,2,4]

Figure 9: tSCI by sex (%)



Non-Traumatic Spinal Cord Impairment (ntSCI)

A ntSCI occurs when the spinal cord is affected by an illness or medical cause. This can be through deterioration of the spinal column, infection, tumours, or blood supply issues affecting the spinal cord. Unlike tSCI, ntSCI often develops over time and can present with gradual onset of symptoms. NZSCIR includes conditions that lead to lasting impairment of spinal cord function without an external physical cause. 2023 saw a noticeable increase in ntSCI admitted to the Auckland and Christchurch spinal services. This trend continued in 2024, as can be seen in Figure 10.

106
ntSCI 2024

106 participants were admitted with a ntSCI in 2024, the highest number and proportion of any year since Registry records began.

Figure 10: Total ntSCI participants by year

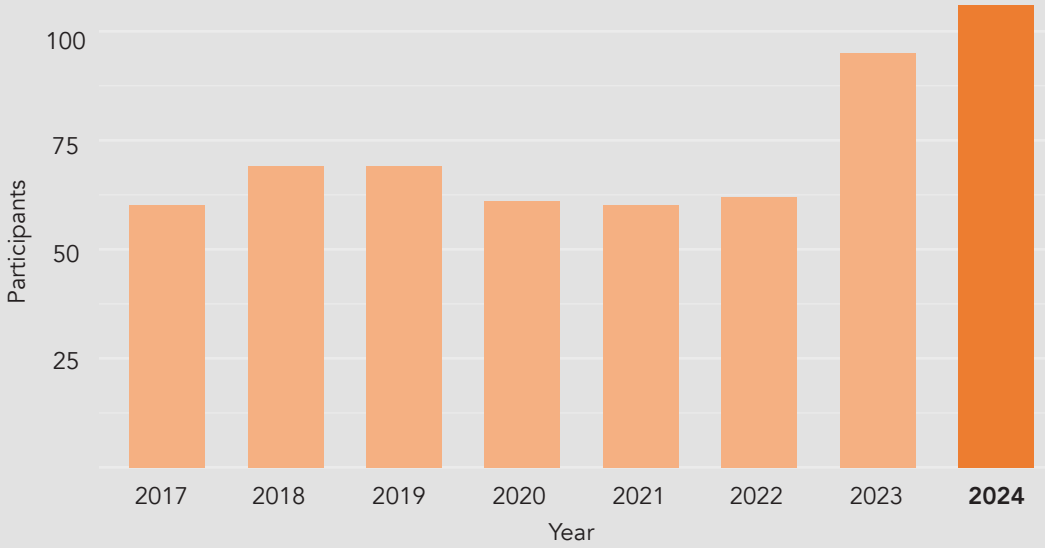


Table 3: ntSCI causes 2024 (n = 106)

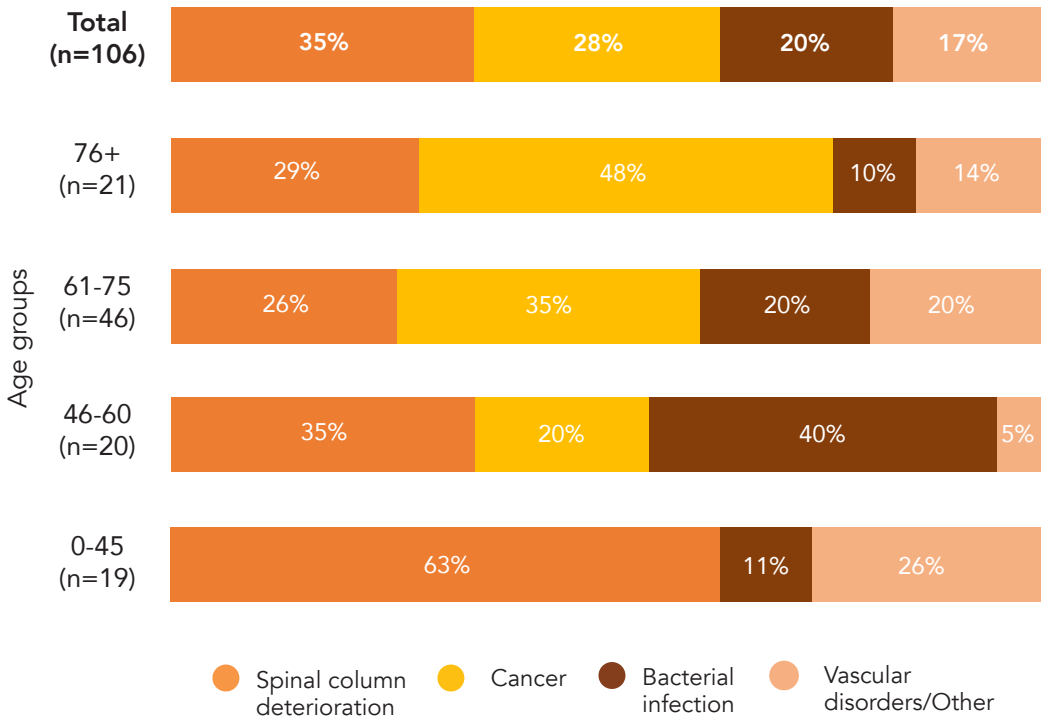
Spinal column deterioration	Cancer	Bacterial infection	Vascular disorders/Other
35%	**28%**	**20%**	**17%**
n=37	n=30	n=21	n=18

Spinal column deterioration – Any deterioration of the spinal column which protects the spinal cord can lead to spinal cord damage. This can include disc, ligament, joint or bony damage.
Cancer – any cancerous tumours or growths causing spinal cord compression
Bacterial infection – such as discitis or abscess
Vascular disorders – bleeds or lack of blood flow
Other – e.g. non-cancerous tumours, inflammatory/autoimmune disease, toxic causes

Non-traumatic SCI by age

- In 2024, the average age of persons with a ntSCI was 60.8 years.
- Deterioration of the spinal column was the leading cause of ntSCI in people under the age of 45.
- Cancer-related SCI was the leading cause in those in the 61-75 and 75+ age groups.
- 2024 recorded the highest number of cancer-related SCI since records began. There were 13 recorded in 2022, 24 in 2023 and 30 in 2024. This is an increase of 130% in a two year period. We do not know if there is an increase in community cases of cancer-related SCI or simply an increase in those being referred to the specialist services.
- Bacterial infections and deterioration of the spinal column were the predominant causes of ntSCI in 46-60 year olds.
- Vascular disorders represented 10% of total ntSCI and these were predominantly in the 61-75 age group.
- Due to low numbers in the 0-30 age group, data has been grouped with those aged 31-45 years.

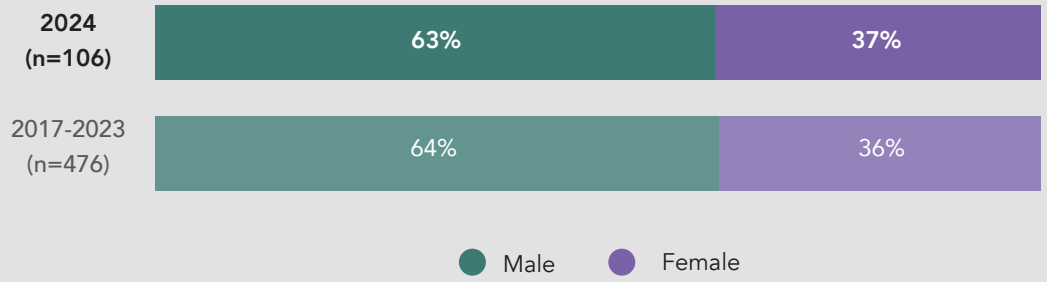
Figure 11: 2024 Cause of ntSCI by age



Non-traumatic SCI by sex

In 2024, 63% of ntSCI were male, demonstrating a similar male:female ratio to previous years. This represents a lower proportion of males compared with the tSCI group.

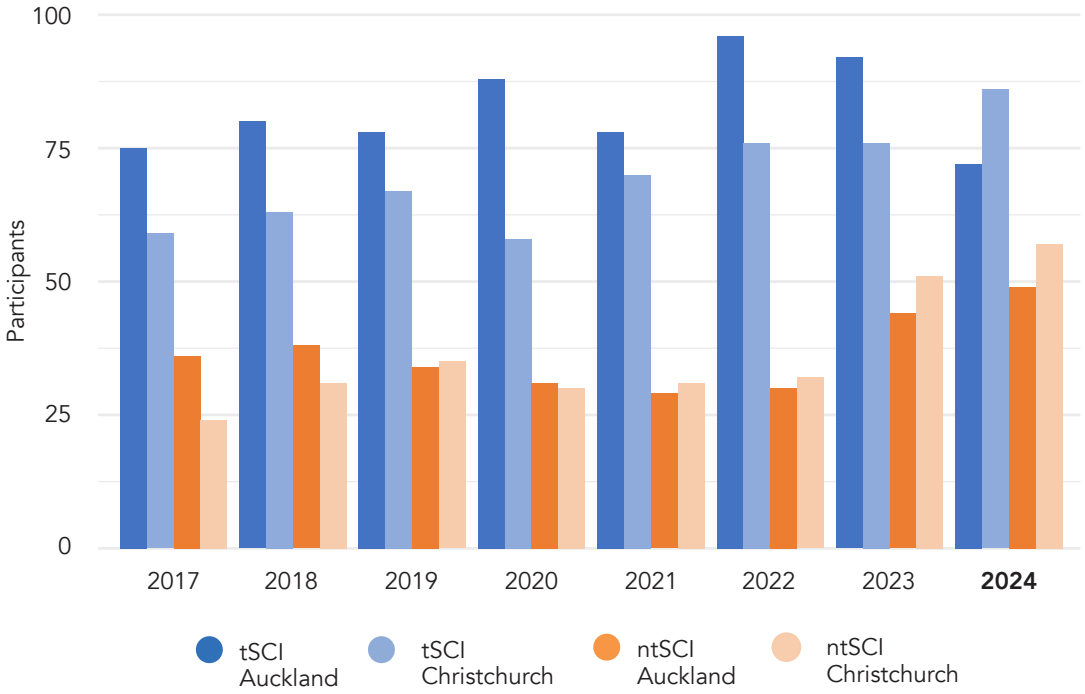
Figure 12: ntSCI by sex (%)



tSCI and ntSCI comparisons across services

- In 2024, Auckland had the lowest number of participants with tSCI since records began, decreasing by 19 compared with 2023.
- This is the first year Christchurch tSCI participant numbers are greater than Auckland.
- In Christchurch the ntSCI:tSCI ratio has remained the same between 2023 and 2024.
- There has been an increase in ntSCI percentage in 2024 across both sites.
- These differences will be reported to the specialist services for further investigation given increasing numbers and pressures on bed availability.

Figure 13: Comparison of tSCI & ntSCI participants by service 2017-2024

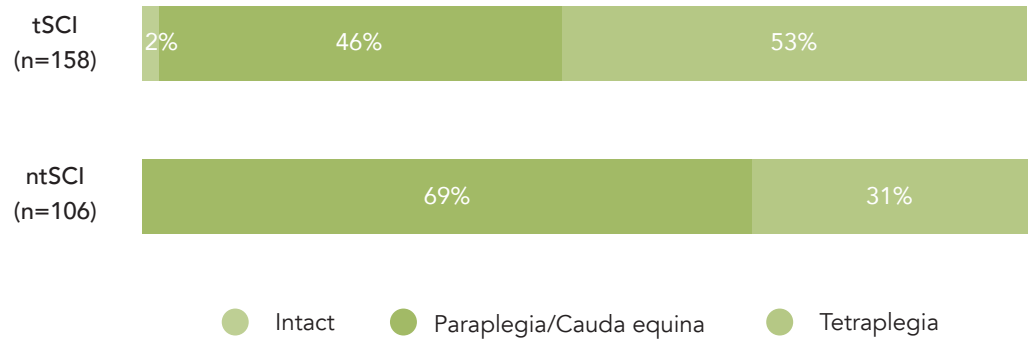


What is the severity and level of injury?

The spinal column has four regions: **cervical**, **thoracic**, **lumbar** and **sacral**. The level of injury identifies the lowest level of the spinal cord (from the head) that has normal movement and sensation. Figure 14 shows people grouped into those with tetraplegia and those with paraplegia (including cauda equina), based on their level of injury. **Tetraplegia** refers to partial or complete loss of movement and feeling in the arms, legs, body and breathing muscles as a result of a neck injury. **Paraplegia** indicates partial or complete loss of movement and feeling in the legs and lower body due to a spinal cord injury in the middle or lower back (thoracic, lumbar or sacral). All people with a SCI will likely have bowel, bladder and sexual function affected. People with incomplete injuries at any level may be able to stand or walk, depending on how their spinal cord was affected (see grades below).

In 2024, participants with a tSCI were more likely to have tetraplegia, whilst those with a ntSCI were more likely to have paraplegia.

Figure 14: Last known level of SCI (%)



A participant's severity and level of injury are routinely assessed throughout their recovery, using the American Spinal Injury Association Impairment Scale (AIS) standardised assessment[11]. The extent of the severity of the injury is defined below:

Grade A: Impairment is **complete**; no motor or sensory function below injury level.

Grade B: Impairment is **incomplete**; sensory function, but not motor function, is preserved below the neurologic level (the first normal level above the level of injury) and some sensation is preserved in the sacral segments S4 and S5.

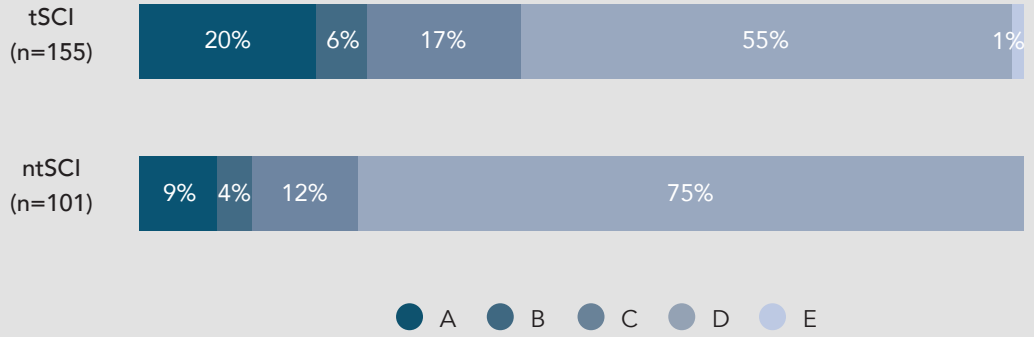
Grade C: Impairment is incomplete; motor function is preserved below the neurologic level, but more than half of the key muscles below the neurologic level have a muscle grade less than 3 (i.e. Insufficient strength to move against gravity).

Grade D: Impairment is incomplete; motor function is preserved below the neurologic level, and at least half of the key muscles below the neurologic level have a muscle grade of 3 or more (i.e. the joints can be moved against gravity).

Grade E: Participant's functions are normal; all motor and sensory functions are unhindered.

AIS D remains the most common SCI classification for both tSCI and ntSCI and has the highest predictability for people to achieve independent mobility one year postSCI[9,10]. Complete lesions are more common in those with tSCI. Three quarters of ntSCI participants are assessed as AIS D. Please note, data from 8 participants has been excluded from Figure 15 as the AIS was not able to be assessed.

Figure 15: Last known severity of SCI (%)



What are the length of hospital stays?

NZSCIR captures the length of stay (LOS) in acute and rehabilitation settings. Medians are one way to show the middle point of data lists, but it is important to look at the whole range to understand the full picture, as shown by the box and whisker graphs in Figure 16.

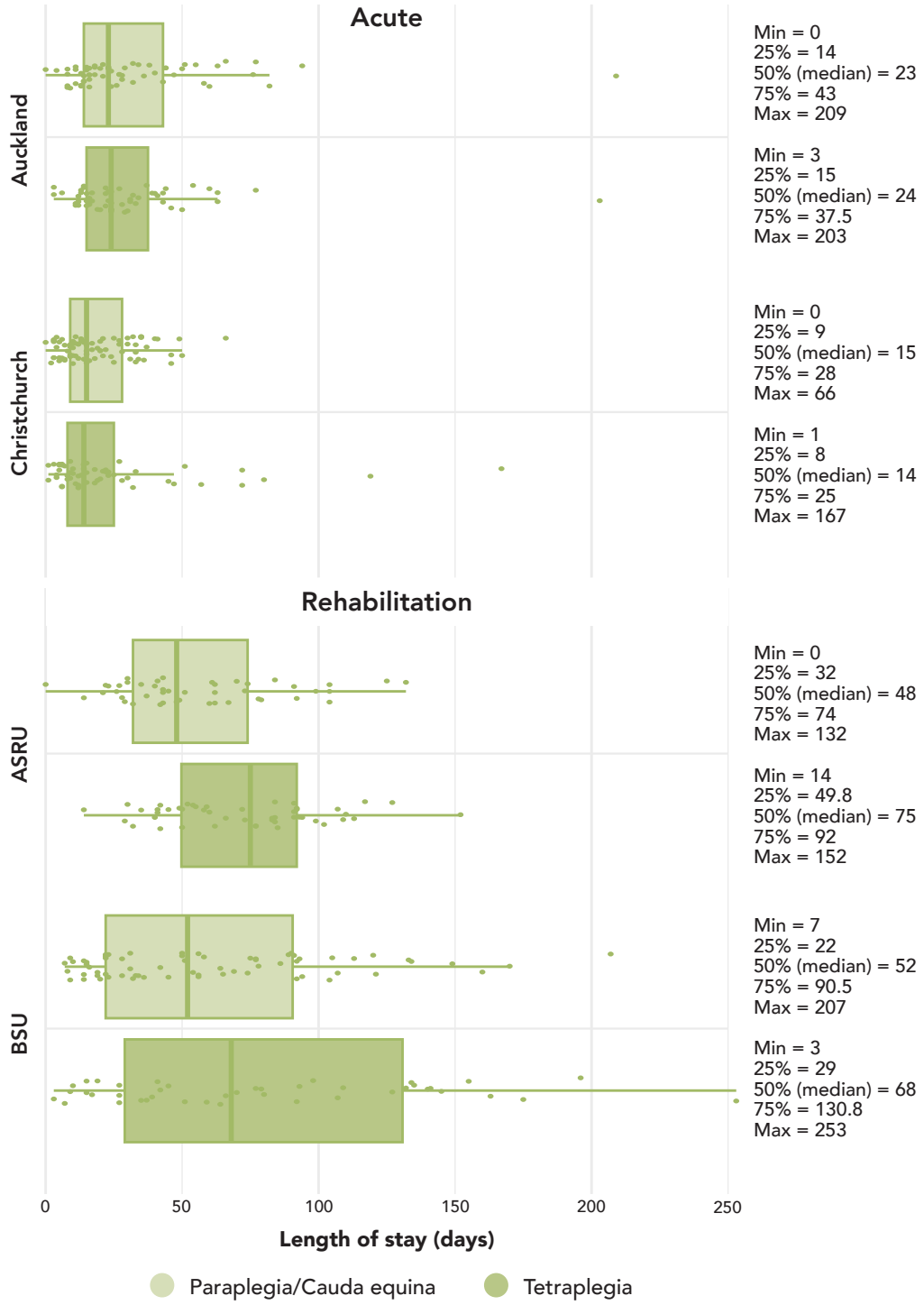
Table 4 shows the median LOS at each spinal service in 2024 compared with 2023.

Table 4: Median LOS comparison 2024 vs 2023 (days)

	Paraplegia		Tetraplegia	
	2024 median	Change	**2024 median**	Change
Auckland				
Acute	23	▼ 2	24	▼ 2
Rehab	48	▼ 3	75	▼ 1
Christchurch				
Acute	15	▼ 1	14	▼ 1
Rehab	52	▼ 11	68	▲ 24

- Median length of stay in the acute phase remained similar to durations seen in 2023 in both centres.
- In the rehab phase, there is a decrease in the median length of stay for all groups except tetraplegia in Christchurch, which increased by 24 days.
- The increase in Christchurch tetraplegia rehab length of stay looks substantial but follows on from a significant decrease of 34 days in 2023.
- Christchurch rehab for paraplegia decreased by 11 days.
- Across both regions, participants with tetraplegia consistently have longer rehab stays than paraplegia patients, reflecting the higher level of care and rehabilitation support typically needed for this group.

Figure 16: 2024 Length of stay



Where do people go after discharge from the spinal service?

Figure 17 shows where participants went on discharge. NZSCIR captures the discharge destination from the spinal service but does not report on whether this is a temporary or final discharge destination.

The discharge destination options are:

Private residence – owned or rented house, flat, or apartment.

Hospital – ongoing rehabilitation and discharge planning at a regional hospital. As data collection stops on discharge from either spinal service, the NZSCIR does not collect the participants' discharge destination post-regional hospital discharge.

Residential care homes (RCH)/assisted living residence (ALR)/private hospital (PH) – includes nursing homes/rest homes (i.e. home where care is provided for those who require it) or private hospitals for long term hospital level care.

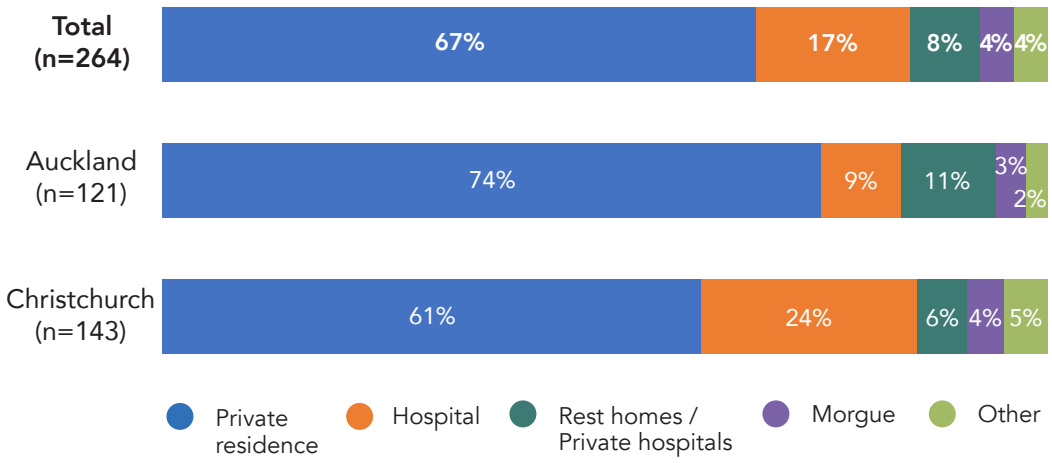
Morgue – those participants who died during spinal service admission.

Other – includes groups with numbers too small to report on, such as those discharged to a hotel/motel or a correctional institute and those with no permanent discharge destination.

In 2024:

- Participants discharging to a private residence in the community remained the most common discharge location since registry records began in 2016.
- Participants discharged from the Christchurch spinal service were almost three times more likely to go to a regional hospital for ongoing rehabilitation or discharge planning, compared to those in Auckland.
- Discharge to a residential care home was almost twice as likely in Auckland, in keeping with trends seen in 2023.
- 4% of participants discharged to the morgue, the majority of whom of were persons with high level, complete tetraplegia.

Figure 17: Discharge destinations (%)



How many people have spinal surgery?

Surgery can be performed to decompress the spinal cord and stabilise the bony spine. Surgical rates for 2024 are shown in Figures 18 and 19:

- The overall ratio for surgical versus non-surgical management is 3:1, with 73% of the total participants undergoing surgery in 2024.
- Participants with a tSCI had a higher rate of surgery (76%) compared to ntSCI (69%)
- Auckland had a slightly higher surgical intervention rate (76%) compared to Christchurch (71%)
- These figures are consistent with those reported in 2023 and reflect expected patterns, as tSCI often requires urgent surgical decompression and stabilisation, whilst ntSCI may involve more varied management, depending on underlying pathology and progression.

Figure 18: tSCI v ntSCI surgery rates (%)

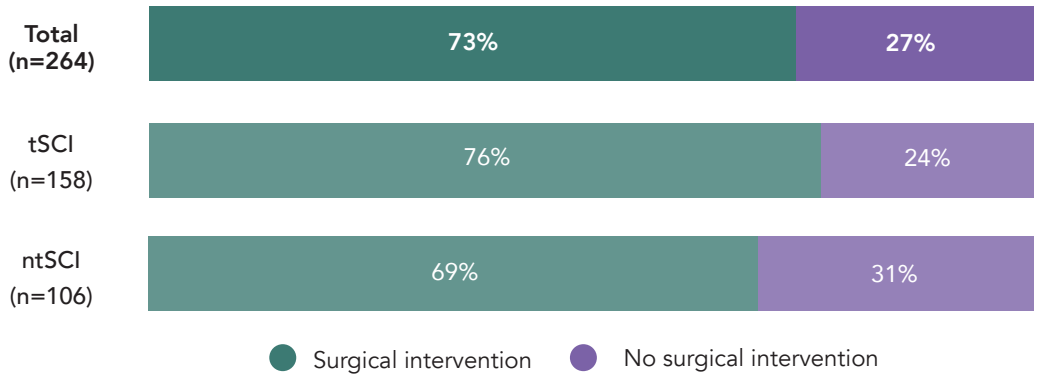
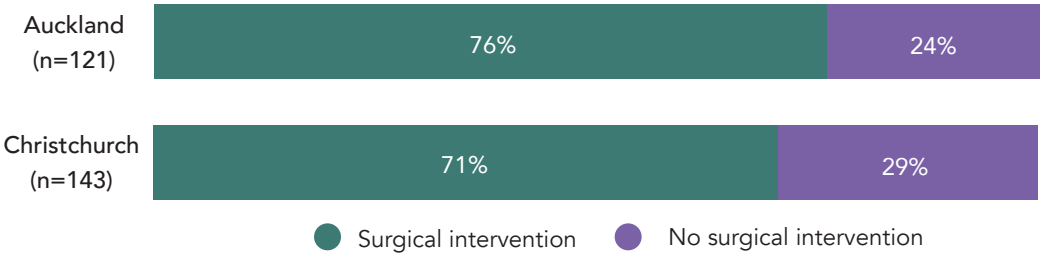


Figure 19: Auckland v Christchurch surgery rates

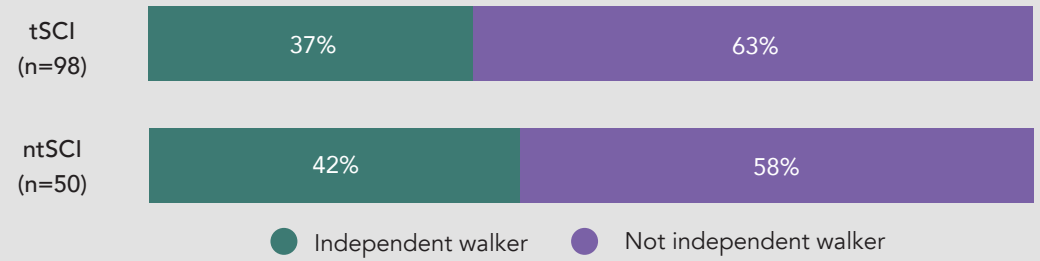


How many people walk on discharge?

NZSCIR defines an 'independent walker' as someone who can walk 100m outdoors unsupervised, with or without a mobility aid.

Based on records of 148 participants (combined tSCI and ntSCI), 39% were independently walking on discharge from rehabilitation. This is slightly increased from 32% in 2023. 2024 saw an increase in the rate of ntSCI participants who walked on discharge (42%) compared with 2023 (29%). Those with ntSCI also had a slightly higher rate of independent walking compared to those with tSCI – a trend that has been reversed since 2023.

Figure 20: tSCI v ntSCI mobility on rehab discharge (%)



How often do secondary complications occur in acute and/or rehabilitation care?

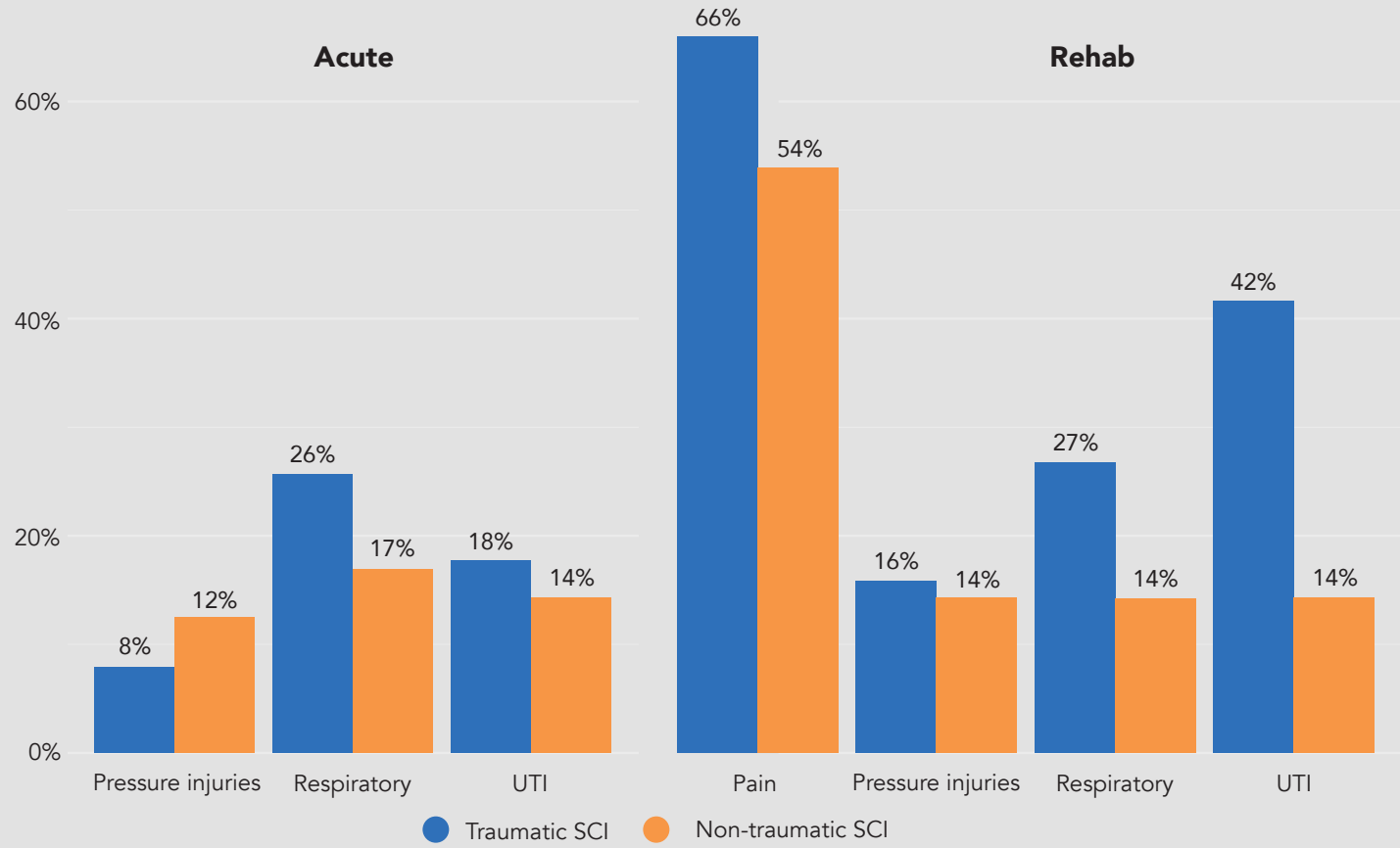
Pain on discharge from rehabilitation remains the most commonly reported secondary complication in both tSCI and ntSCI groups. Reported pain rates were increased compared to 2023 in the tSCI group.

Acute **pressure injuries** have risen in both tSCI and ntSCI groups compared with 2023 data.

Respiratory complications were more common for those with tSCI across both acute and rehabilitation phases. Multiple respiratory complications were recorded including pneumonia, pulmonary emboli/deep vein thrombosis (DVT), and pneumothoraces. Obstructive sleep apnoea (OSA) was the most common complication reported in rehab.

Urinary tract infections (UTI) as a complication of SCI were slightly reduced in the acute phase compared with 2023. There were more than double the number of UTIs in rehabilitation for those with tSCI compared to the acute phase.

Figure 21: 2024 Complications

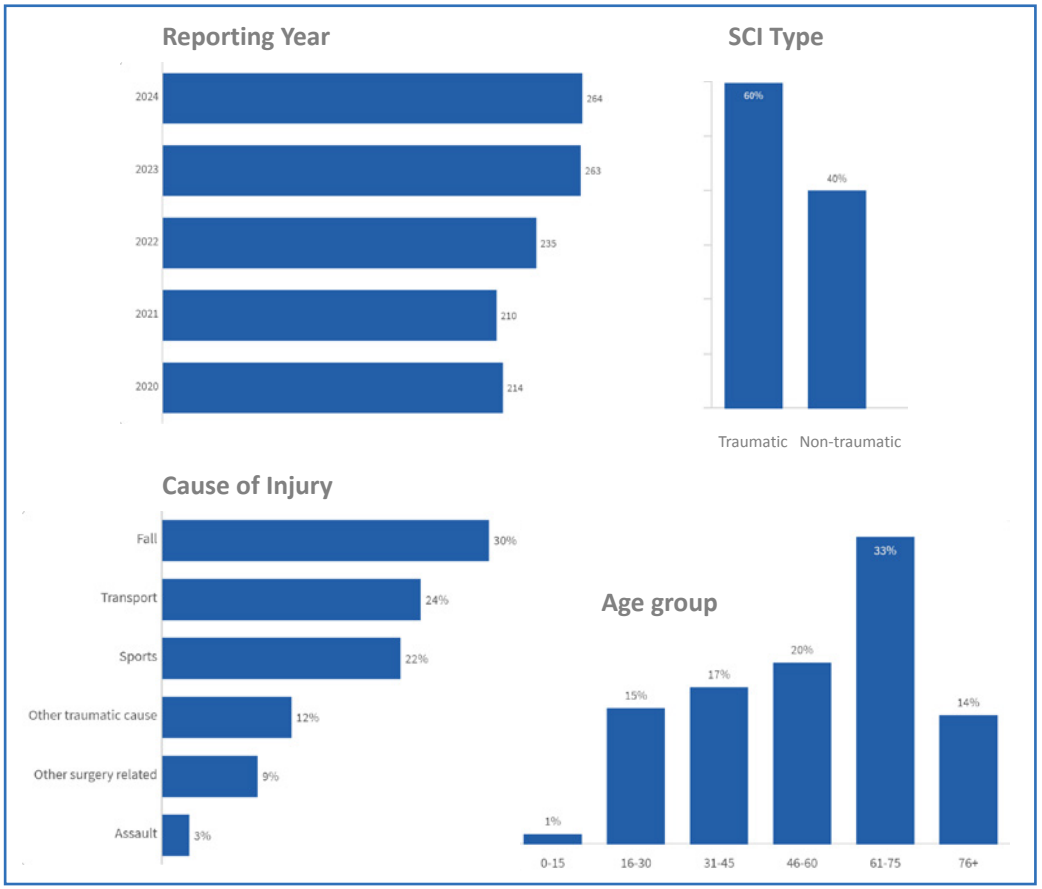


NZSCIR provides important information

NZSCIR Data use

The NZSCIR is a powerful source of information and helps connect service management, clinicians, researchers, and people living with SCI. The data is used regularly by both spinal services for clinical and service support, as well as promoting research into SCI.

In 2024, the Registry provided data for two large urology service audits, one at each site. In Auckland, the management of neurogenic bladders is being reviewed (specifically intermittent catheterisation rates on discharge) with the results being compared to recommendations from the European Association of Urology guidelines. Christchurch is investigating UTIs, compliance to bladder management guidelines and ensuring discharge bladder management strategies align with established clinical protocols. The results of both audits are pending.



Community follow-up data looking at quality of life was requested for a PhD paper and has since turned into a research project. It is positive seeing a request specifically reviewing community data and will hopefully lead to further work in this area.

The comparison paper with Canada's national Rick Hansen SCI Registry is progressing, aiming to publish in 2025. This is an important piece of work, as NZSCIR data will be benchmarked against an international centre for the first time.

Data has been used for numerous presentations. This includes poster presentations at the National Trauma Symposium in Wellington and the Australia and New Zealand Spinal Cord Society (ANZSCoS) in Perth, Australia. Education in-services, both in house and to the wider SCI community, are held frequently. The NZSCIR was also able to substantiate trends identified by the Australasian Rehabilitation Outcomes Centre (AROC), which nationally reported an increase of ntSCI in 2023.

NZSCIR limitations

NZSCIR attempts to capture the majority of people with new SCI in NZ, but there are some exceptions. The NZSCIR inclusion criteria stipulates only those people admitted to one of the specialist spinal centres will be enrolled on the Registry. The two NZ spinal service rehabilitation facilities are limited to 50 beds (20 beds in ASRU and 30 beds in BSU), therefore, strict admission criteria apply and waiting lists are in place. Inclusion criteria varies between the units due to differences in admission criteria, service delivery models, regional demands and fluctuations in occupancy rates, making direct comparison difficult.

With an increasing number of people with SCIs annually and increased pressure on specialised rehabilitation beds, some people may be treated and discharged from their regional hospital. Despite potentially having in-reach support from spinal service clinical staff, those who are not admitted to one of the four specialist hospitals will not be captured on the Registry.

As discussed earlier, the NZSCIR is primarily an adult Registry, with inclusion of individuals usually from 16 years of age. This means the majority of paediatric SCI are not captured within the NZSCIR. There is the occasional younger individual admitted to the service, and in this instance, they will be included in the Registry. Because these numbers are low, they are combined with the next age bracket up, creating a 0-30 year age category.

Finally, there are some people diagnosed with chronic or congenital impairments affecting the spinal cord (e.g. multiple sclerosis/spina bifida) who are generally treated under other services and wouldn't be admitted to the specialised spinal services. These people are not captured by the NZSCIR.

Future direction and opportunities for the NZSCIR

Following on from the 2023 Burwood Academy Trust (BAT) data point review, NZSCIR and the Praxis Institute have been developing NZSCIR Version 2. The new version incorporates recommendations made by BAT, as well as feedback received from stakeholders, consumers, and clinicians. It is an important piece of work, ensuring the data collected remains current, accurate and useful. It aims to decrease extraneous data and answer the updated Registry *a priori* questions. Version 2 will be released in 2025. Key data points and annual reporting will remain mostly unchanged, however administrative duties for clinicians will decrease. Streamlined data collection will increase completeness and accuracy of data, further supporting clinical review and research.

2024 saw a focus on the community follow-up data collection. More resource was put into contacting participants in the community to prompt questionnaire completion at 18 months and 5-year time frames. Whilst this is a very resource-heavy process, it has generated enough community data to be studied. We aim to improve questionnaire return rates by increasing awareness through education sessions with participants and stakeholder groups. NZSCIR plans to review and simplify the community follow-up questionnaires, with a focus on capturing more quality of life information.

The NZSCIR dashboards remain an invaluable tool. Improvements have seen data in the dashboards updated daily (previously monthly) allowing quick access to up-to-date aggregate data. This data is used on an almost daily basis at each service. New processes now allow dashboard data to be accessible for support services and outside organisations, and determine feasibility for research.

There is a wealth of data within the NZSCIR, offering exciting opportunities for services, clinicians and researchers to investigate further. As engagement grows and new avenues of inquiry open, particularly in community outcomes and international benchmarking, this data has potential to drive real change. This may be through informing quality improvement initiatives, refining clinical practice, or shaping accident prevention policies.

Denominators for report summaries

Note: The NZSCIR collects a full data set for consented participants (n = 168) and a minimal data set for those who were not consented (n = 96). NZSCIR data used for this report was last updated and extracted on 30 August 2025.

Data collected from 264 new injuries between 1 January and 31 December 2024 (or ntSCI admission to rehabilitation between these dates).

Number of participants represented in each data summary:

Total participants: **264**
Mechanism and cause of injury: **264**
Gender/Ethnicity/Age: **264**
Traumatic SCI: **158**
Non-Traumatic SCI: **106**
Pre-existing conditions: **168**
Severity and level of injury: AIS **256** and level of injury **264**
Length of stay: **264**
Discharge destination: **264**
Surgical intervention rates: **264**

Full consented data set: 168
Minimal data set: 96

Walking in the community: **148**

Complications during acute care:
UTI: **163**
Respiratory: **168**
Pressure Injuries: **157**

Complications during rehabilitation:
Pain: **149**
UTI: **157**
Respiratory: **160**
Pressure Injuries: **157**

Glossary

Cauda equina injury (CEI) – an injury or compression of nerve roots exiting the lumbar spine at the bottom of the spinal cord. Whilst not officially a spinal cord injury, this nerve injury does impact on bowel, bladder, sexual function and/or leg sensation and strength.

Cervical spine – The upper seven vertebrae located in the neck (C1 – C7). The nerves from this area control head and neck movement, the diaphragm, deltoids, biceps and muscles controlling the wrist and hands.

Complete injury – An injury where there is no sensory and motor function (inability to feel or move) preserved in the last nerves leaving the spinal cord (sacral 4th and 5th nerves). This usually results in a total lack of sensory and motor function below the level of the injury.

Incomplete injury – An injury where there is some sensory or motor function (ability to feel, touch or move) below the level of the injury. This must include the last nerves leaving the spinal cord (sacral 4th and 5th nerves).

Lumbar spine – The five vertebrae in the lower back (L1 – L5). Injury to this area damages the very lower-most tip of the spinal cord (known as the conus medullaris) or the cauda equina, which results in decreased control of hips and legs, as well as bladder, bowel and sexual function.

Non-traumatic spinal cord injury/impairment (ntSCI) – A spinal cord injury that occurs as a result of a medical cause or illness such as vertebral degeneration, infection or cancer.

Pain – Includes self-reported generic (nociceptive) pain and neuropathic pain (pain that is often ongoing and intense that occurs spontaneously or by light touching and is characterized by feelings of burning, shooting, tingling, etc.)

Paraplegia – Complete or partial loss of sensation and/or movement in the legs and often in part of, or the entire trunk. Can affect breathing muscles. It is caused by an injury to the spinal cord in the thoracic (trunk) region or below including cauda equina. May have bowel, bladder and sexual function affected.

Pressure injuries – Tissue injured by pressure and/or shear forces.

Respiratory complications – Includes pneumonia, venothromboembolic events (including pulmonary embolus [PE] and deep vein thrombosis [DVT]), obstructive sleep apnoea and other respiratory complications.

Sacral spine – The five vertebrae located in the pelvic area (S1 – S5). As with lumbar injuries, damage to the sacral nerves can result in decreased control of hips, legs, bladder, bowel and sexual function.

Supra-regional spinal service (spinal service) – NZ has two supra-regional spinal services and four facilities. Waitaha Canterbury District: Christchurch Hospital (acute) and Burwood Spinal Unit (acute/rehabilitation). Counties Manukau District: Middlemore Hospital (acute) and Auckland Spinal Rehabilitation Unit (rehabilitation).

Spinal cord injury/impairment (SCI) – Damage to the spinal cord resulting in impairment of muscle function, sensation and/or autonomic function (bowel, bladder and sexual function).

Tetraplegia or Quadriplegia – Complete or partial loss of sensation and/or movement in the arms, and typically in the trunk and legs. Usually affects breathing muscles. May have bowel bladder and sexual function affected. It is caused by an injury to the spinal cord in the neck.

Thoracic spine – The twelve vertebrae that extend through the chest area (T1 – T12). The nerves from this area control chest and abdominal muscles.

Traumatic spinal cord injury (tSCI) – A spinal cord injury that occurs as a result of trauma such as a fall, a motor vehicle crash, or a sporting accident.

Urinary Tract Infection (UTI) – A bacterial infection of the urinary tract, treated with antibiotics.

References

1. Bickenbach, J., Officer, A., Shakespeare, T., et al (2013). International perspectives on spinal cord injury. World Health Organization. iris.who.int/handle/10665/94190
2. Lu, Y., Shang, Z., Zhang, W. et al. (2004). Global incidence and characteristics of spinal cord injury since 2000–2021: a systematic review and meta-analysis. BMC Med 22, 285. doi.org/10.1186/s12916-024-03514-9
3. Stats NZ, 16 April 2025, Population, www.stats.govt.nz/topics/population. Retrieved August 2025.
4. World Health Organisation, 16 April 2024, Spinal Cord Injury, www.who.int/news-room/fact-sheets/detail/spinal-cord-injury. Retrieved August 2024.
5. Cross, C. P., Copping, L. T., & Campbell, A. (2011). Sex differences in impulsivity: A meta-analysis. *Psychological Bulletin, 137*(1), 97–130. doi.org/10.1037/a0021591
6. Ministry of Health HISO 10001:2017 Ethnicity Data Protocols. September 2017. Ministry of Health. www.tewhatuora.govt.nz/assets/Our-health-system/Digital-health/Health-information-standards/HISO-10001-2017-Ethnicity-Data-Protocols.pdf. Retrieved August 2024.
7. Te Pou o te Whakaaro Nui (2019). DHB population profiles, 2019-2029: Statistics New Zealand projections 2018 update. Auckland: Te Pou o te Whakaaro Nui. www.tepou.co.nz/resources/dhb-population-profiles-2019-2029
8. Chu Kwan, W., Laghaei, P., Kahlon, H. et al (2024). Spinal cord injuries secondary to mountain biking accidents — a cause for national alarm. *Neurotrauma Reports, 5*(1), 1069–1078. doi.org/10.1089/neur.2024.0103
9. Burns, S. P., Golding, D. G., Rolle, W. A. et al (1997). Recovery of ambulation in motor-incomplete tetraplegia. *Archives of Physical Medicine and Rehabilitation*, *78*(11), 1169–1172. doi.org/10.1016/s0003-9993(97)90326-9
10. van Middendorp, J. J., Goss, B., Urquhart, S. et al (2011). Diagnosis and prognosis of traumatic spinal cord injury. *Global spine journal*, *1*(1), 1–8. doi.org/10.1055/s-0031-1296049
11. Rupp, R., Biering-Sorensen, F., Burns, S.H. et al (2021). International Standards for Neurological Classification of Spinal Cord Injury: Revised 2019. *Topics in spinal cord injury rehabilitation, 27*(2), 1-22. doi.org/10.46292/sci2702-1

NZSCIR is principally funded by the Accident Compensation Corporation and supported by Health New Zealand | Te Whatu Ora.

Tracey Croot
Waitaha Canterbury NZSCIR Coordinator
Burwood Spinal Unit, Christchurch
Phone: 03 383 7559
Mobile: 021 594 291
tracey.croot@cdhb.health.nz
NZSCIR@cdhb.health.nz

Alana Lash
Waitaha Canterbury NZSCIR Coordinator
Burwood Spinal Unit, Christchurch
Phone: 03 383 7559
Mobile: 021 594 291
alana.lash@cdhb.health.nz

Greta Minty
Counties Manukau NZSCIR Coordinator
Auckland Spinal Rehabilitation Unit
Mobile: 021 192 0377
greta.minty@middlemore.co.nz
NZSCIR@middlemore.co.nz

Christine Mangold
Counties Manukau NZSCIR Coordinator
Auckland Spinal Rehabilitation Unit
Mobile: 021 678 106
christine.mangold@middlemore.co.nz

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

Health New Zealand
Te Whatu Ora