








OPEN ACCESS

Access to compensation for Aboriginal and Torres Strait Islander people after a road transport injury in New South Wales, Australia

Holger Möller ¹, Rebecca Q Ivers ¹, Brett Shannon,^{1,2} Jodi Gray ³, Kirsten Vallmuur ^{4,5}, Hossein Haji Ali Afzali,³ Sadia Hossain ^{6,7}, Patrick Sharpe,⁸ Marnie Campbell,⁹ Rebecca Kimlin,¹⁰ Bobby Porykali,¹¹ Courtney Ryder¹²

► Additional supplemental material is published online only. To view, please visit the journal online (<https://doi.org/10.1136/ip-2025-045759>).

For numbered affiliations see end of article.

Correspondence to

Dr Holger Möller; h.moeller@unsw.edu.au

Received 31 March 2025

Accepted 14 September 2025

ABSTRACT

Objective To describe the personal, crash and claim characteristics of Aboriginal and Torres Strait Islander people who submitted a claim under the New South Wales (NSW) Compulsory Third Party (CTP) scheme and explore the differences in characteristics of submitting a claim and associated factors.

Methods This linked data study used NSW police-reported crash data linked with NSW CTP claims data from 2018 to 2023. Descriptive statistics summarised claimant characteristics, and multivariable logistic regression models identified factors associated with lodging a claim.

Results From 2018 to 2023, 1954 Aboriginal and Torres Strait Islander people lodged a claim under the NSW CTP scheme. Most claimants were male (52.7%) and lived in areas of low socioeconomic status. Higher odds of claiming were associated with being female (OR 1.16, 95% CI 1.01 to 1.33), older age (OR 1.01, 95% CI 1.01 to 1.02, per 1-year increase) and living in metropolitan areas (OR 1.65, 95% CI 1.34 to 2.01) and holding a standard licence (OR 3.83, 95% CI 2.83 to 5.19). Sustaining moderate injuries (OR 0.27, 95% CI 0.23 to 0.31) was associated with lower odds of claiming compared with serious injuries.

Conclusions CTP claim rates among Aboriginal and Torres Strait Islander people in NSW are low relative to their burden of road transport injury, suggesting that they may face barriers in accessing CTP compensation. Improving support, especially for those in rural areas and young drivers, and simplifying the claims process could enhance access to compensation for Aboriginal and Torres Strait Islander people, potentially improving recovery outcomes and reducing disparities.

BACKGROUND

Third-party vehicle insurances are a mandatory component of vehicle registration in all Australian states and territories. In New South Wales (NSW), Compulsory Third Party (CTP) insurance provides coverage for medical expenses and income loss for individuals involved in motor vehicle crashes regardless of fault attribution. These insurance schemes assume that access to timely medical and financial support after a road transport injury can help with recovery, ease mental stress after injury and help return to work and other preinjury activities. However, systematic reviews reported mixed

WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Compulsory Third Party (CTP) insurance is mandatory for motor vehicle registration in Australia.
- ⇒ Aboriginal and Torres Strait Islander people have high rates of road transport injuries, but there is limited research on their access to compensation schemes.

WHAT THIS STUDY ADDS

- ⇒ This study identified personal, crash and geographical characteristics associated with higher odds of submitting a claim, thus identifying groups who might benefit from support navigating the CTP scheme.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ Improving support and simplifying the claims process could enhance access to compensation for Aboriginal and Torres Strait Islander people, particularly in rural areas, potentially improving recovery outcomes and reducing disparities.

findings on the effects of compensation schemes for both recovery and health outcomes,¹⁻³ with some studies reporting poorer health outcomes for individuals who claim compensation. Most studies in these reviews were limited by their design and could not establish a causal relationship. Reverse causality whereby more seriously injured people are more likely to claim compensation and therefore have worse outcomes has been discussed as a possible explanation for poorer health outcomes among those who claim compensation.⁴ This is supported by findings of a longitudinal cohort study from England on health outcomes after whiplash injury after a car crash.⁴ The study showed that not considering reverse causality leads to biased estimates whereby those who claim compensation have worse recovery than non-claimants; however, when reverse causality bias was addressed, claiming compensation had a beneficial effect on recovery.

Based on the underlying assumption of the CTP scheme that it has a positive effect on health outcomes, recovery and return to work, it is desirable that all those who are eligible can access it, especially the most vulnerable population groups. Aboriginal and Torres Strait Islander people have



© Author(s) (or their employer(s)) 2025. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ Group.

To cite: Möller H, Ivers RQ, Shannon B, et al. *Inj Prev* Epub ahead of print: [please include Day Month Year]. doi:10.1136/ip-2025-045759

some of the highest road transport injury rates in Australia,^{5 6} but to our knowledge to date no studies have looked at access to compensation for Aboriginal and Torres Strait Islander people after road transport injury in Australia. The NSW State Insurance Regulatory Authority routinely reports on CTP scheme key performance indicators covering the areas: effectiveness and efficiency, viability, affordability, customer experience and internal review and disputes,⁷ but these only report on high-level data and do not differentiate by population groups. Previous research studies have looked at the effect of compensation schemes on recovery and health outcomes,¹⁻³ return to work,⁸⁻¹⁰ duration of compensation,^{11 12} factors associated with health outcomes of people claiming under a compensation scheme¹³ in the general population, but there is limited evidence on factors associated with accessing the state and territory CTP schemes, especially among those who are potentially eligible to claim. A qualitative study from Australia found the complexity to be a key factor impacting on people's perceptions and experiences of the claims process.¹⁴ Similarly, findings from a systematic review on the relationship between compensation and recovery following a motor vehicle crash proposed that it is important to ensure that the compensation process is clear and simple and that clients are aware of their rights and entitlements.³ Although these studies did not look at the level of access to the scheme, complexity of the claims process might also be a barrier in accessing the scheme after a road transport injury.

The aim of this study was twofold:

1. To describe the personal, crash and claim characteristics of Aboriginal and Torres Strait Islander people who submitted a claim under the NSW CTP scheme
2. To explore the differences in characteristics of submitting a claim and associated factors.

Towards these aims, the study explored NSW police-reported crash data linked with health and CTP claims data.

METHODS

Setting

According to the Census 2021, in NSW 278 000 people (3.4% of the population)¹⁵ identified as Aboriginal and Torres Strait Islander, representing 28.3% of the total Aboriginal and Torres Strait Islander population in Australia.¹⁶ One-third of Aboriginal and Torres Strait Islander people in NSW live in the state's capital cities,¹⁵ with the rest of the Aboriginal and Torres Strait Islander population living in different levels of remoteness across the state.

Datasets

This study used the population-based NSW Centre for Road Safety (CRS)-linked crash and health data resource (online supplemental figure 1). This links crash data with New South Wales and Australian Capital Territory hospital, emergency department, mortality, State Insurance Regulatory Authority Compulsory Third-Party claim and Workers Compensation, Lifetime Care, the New South Wales Ambulance and Institute of Trauma and Injury Management Minimum data. Data linkage is conducted by the Centre for Health Record Linkage.

The analysis was restricted to 2018–2023 because the new CTP scheme was introduced in December 2017 and 2023 was the latest full year of data available at the time of the study. In comparison to the previous scheme, the new scheme introduced no-fault benefits, meaning that all injured people, regardless of who was at fault, are entitled to benefits for up to 26 weeks. Moreover, it introduced immediate access to treatment and

income support and had a stronger focus on recovery, early intervention and return to work. The NSW CRS data include information on the person involved in the crash, the vehicle and the crash circumstances. The CTP data include information on the claimant, the injuries, the type of claim, the vehicle and the crash.

These datasets were linked with Socio-Economic Indexes for Areas (SEIFA) of relative socioeconomic advantage and disadvantage at the postcode level of the person's place of residence.¹⁷ SEIFA was grouped into quintiles for the analysis.

Identification of Aboriginal and Torres Strait Islander people in routinely collected data relies on self-report and under-reporting is a recognised problem.¹⁸⁻²³ Data linkage offers the opportunity to use more than one data source to identify Aboriginal and Torres Strait Islander people. This study adopted the approach used by the NSW Ministry of Health and the CRS²⁴ (online supplemental box 1).

Statistical analysis

We summarised characteristics of claimants, crash and injury from the State Insurance Regulatory Authority (SIRA) claims data using descriptive statistics (table 1). SIRA claims data include records of all claimants in NSW regardless of whether these are linked with the police-reported crash data.

The analysis of factors associated with lodging a claim was restricted to motorised vehicle users using the CRS linked crash data because most of the variables (online supplemental table 2) in the routinely collected police data are only relevant to motorised transport. Those eligible to claim were identified from the police-reported crash data defined as road users injured in a crash involving a motorised vehicle.²⁵ The outcome of interest was a claim for injury compensation during 2018–2023 defined as a record in the CTP data. This was identified through linking the CRS data of those potentially eligible to claim with the SIRA claims data. Variables in the analysis were person characteristics (gender, age, licence status, socioeconomic status of area of residence), crash and vehicle characteristics (level of urbanisation, speed limit, restraint use, status of registration, crash counterpart and year of crash) and severity of injury sustained in the crash. In the linked data, injury severity was identified from the different datasets, serious injuries were those requiring hospital treatment, moderate injuries were identified from the emergency department data and minor injuries from the police-reported crash data.

The analysis of factors associated with a claim after a crash was investigated in two multivariable logistic regression models. Model 1 was adjusted for potential confounder year of claim; this analysis can help identify groups with lower odds of claiming compensation. Model 2 was adjusted for all variables listed above to identify their potential impact on the differences between groups observed in model 1. Overall completeness of variables in the analysis was high, 99–100%. Records with missing values were excluded from the analysis (1.3% joint missingness in model 2). All statistical analyses were carried out using Stata SE V.17.0.

RESULTS

Claimants' characteristics

From 2018 to 2023, 1954 (52.7% male) Aboriginal and Torres Strait Islander people lodged a claim for an injury sustained in a road transport crash under the CTP scheme in NSW (table 1). Of these, 721 (36.9%) had no police crash record, potentially indicating data linkage issues between the datasets. More than

Table 1 Person, crash, injury and claim characteristics of CTP claimants NSW 2018–2023

Level	Variable	Category	Number (%)	
Claimant characteristics	Gender	Female	917 (46.9)	
		Male	1030 (52.7)	
		Non-specific	7 (0.4)	
	State of person	NSW	1907 (97.6)	
		Other	47 (2.4)	
	SEIFA quintile	Lowest	538 (27.5)	
		Second	553 (28.3)	
		Third	442 (22.6)	
		Fourth	233 (11.9)	
		Highest	185 (9.5)	
		Missing	3 (0.2)	
	Usual occupation	Clerical and administrative workers		74 (3.8)
			Community and personal service workers	75 (3.8)
		Labourers	295 (15.1)	
		Machinery operators and drivers	72 (3.7)	
Managers		53 (2.7)		
Professionals		107 (5.5)		
Sales workers		33 (1.7)		
Technicians and trades workers		118 (6.0)		
Missing		1127 (57.7)		
Crash characteristics		Year of crash	2018	322 (16.5)
			2019	307 (15.7)
			2020	311 (15.9)
	2021		320 (16.4)	
	2022		350 (17.9)	
	2023		344 (17.6)	
	Role of person	Motor vehicle driver	873 (44.7)	
		Motor vehicle passenger	401 (20.5)	
		Motorcycle pillion	12 (0.6)	
		Motorcycle rider	220 (11.3)	
		Other controller	23 (1.2)	
		Other passenger	38 (1.9)	
		Pedal cycle rider	43 (2.2)	
		Pedestrian	194 (9.9)	
	Ownership type description	Corporate	117 (6.0)	
		Government	12 (0.6)	
		Private	1183 (60.5)	
		Missing	642 (32.9)	
At least one CRS record is linked (police recorded)	Yes	1233 (63.1)		
	No	721 (36.9)		
Fault status code description	Mostly at fault	39 (2.0)		
	Not at fault	1254 (64.2)		
	Unknown	114 (5.8)		
	Yes, at fault	387 (19.8)		
	Missing	160 (8.2)		
Injury characteristics	Ambulance role at the crash	Ambulance attendance and treatment of claimant by ambulance officer but not transported	80 (4.1)	
		Ambulance attendance only with no treatment administered or transport of claimant	14 (0.7)	

Continued

Table 1 Continued

Level	Variable	Category	Number (%)	
		Ambulance attendance and transport of claimant to hospital	740 (37.9)	
		No ambulance attendance	365 (18.7)	
		Missing	755 (38.6)	
	Maximum Abbreviated Injury Score description based on claims data		Critical	13 (0.7)
			Minor	690 (35.3)
			Moderate	462 (23.6)
			Serious	240 (12.3)
			Severe	40 (2.0)
			Unknown	470 (24.1)
	At least one hospital record is linked		Yes	925 (47.3)
			No	1029 (52.7)
	Hospitalised crash injury severity indicator—worst Injury		Minimum severity	60 (3.1)
			Moderate severity	315 (16.1)
			High severity	360 (18.4)
			Maximum severity	179 (9.2)
Length of stay group		Not recorded	1040 (53.2)	
		0–1	219 (11.2)	
		2	117 (6.0)	
		3	86 (4.4)	
		4	58 (3.0)	
		5–7	106 (5.4)	
		8–14	118 (6.0)	
		15–21	50 (2.6)	
		22–28	52 (2.7)	
		29+	119 (6.1)	
Days of hospital stay		Not applicable	1029 (52.7)	
		Mean (SD)	10.7 (23.5)	
Claim outcomes*	Statutory benefit liability status description	Liability accepted for after 26 weeks	579 (29.6)	
		Liability accepted up to 26 weeks	125 (6.4)	
		Liability partially accepted with contributory negligence after 26 weeks	44 (2.3)	
		Liability rejected for after 26 weeks	977 (50.0)	
		Liability rejected up to 26 weeks	83 (4.2)	
		Not yet determined	74 (3.8)	
		Missing	72 (3.7)	
	Risk screening outcome description†		Good risk recovery	666 (34.1)
			Medium risk recovery	854 (43.7)
			Poor risk recovery	311 (15.9)
	Certificate of fitness status last description		Unknown	53 (2.7)
			Missing	70 (3.6)
			Fit for preinjury duties	263 (13.5)
Fit for reduced capacity			345 (17.7)	
At least one lifetime care record is linked		No capacity	555 (28.4)	
		Not applicable	56 (2.9)	
		Missing	735 (37.6)	
		Yes	102 (5.2)	
		No	1852 (94.8)	
		Total	1954 (100.0)	

Continued

Table 1 Continued

Level	Variable	Category	Number (%)
*Claim outcomes are impacted by the time of recording/progress of claim as they are updated in each review of the claim.			
†The Risk Screening Outcome Description in the SIRA Universal Claims Database is derived from validated risk screening tools used by healthcare providers during early stages of treatment. These tools are designed to assess an injured person's likelihood of experiencing long-term disability or delayed return to work.			
CRS, Centre for Road Safety; CTP, Compulsory Third Party; NSW, New South Wales; SEIFA, Socio-Economic Indexes for Areas.			

half of all claimants (1091, 55.8%) lived in areas of lowest and second lowest socioeconomic status, and most were private car owners (1183, 60.5%) and not at fault (1254, 64.2%). Almost half of the claimants (925, 47.3%) had a linked record for being admitted to hospital for treatment for an injury. The mean length of hospital stay was 10.7 days (SD: 23.5).

Claims status by road users involved in a crash potentially eligible to claim

From the NSW police-reported crash data, 4802 Aboriginal and Torres Strait Islander people were identified as potentially eligible to claim compensation under the NSW CTP scheme during 2018–2023 (table 2). Of these, 1133 (23.6%) had a claim recorded, indicating that of the 1954 Aboriginal and Torres Strait Islander people identified in the claims data 721 (36.9%) did not link to the police-reported crash data and an extra 100 (5.1%) were not identified as potentially eligible to claim in the police data. Most of those potentially eligible to claim were aged 17–29 (2378, 49.5%) or 30–59 (2073, 43.2%). Those living the lowest (297, 26.4%) and the second lowest (319, 28.4) socioeconomic status (SES) areas had the highest percentage of claims. Most claimants were in a registered vehicle (933, 82.3%), and in most cases the crash counterpart was another vehicle (584, 51.5%). More than half of all claimants (631, 55.7%) had serious and 340 (30.0%) moderate injuries.

Factors associated with lodging a claim in users of motorised transport

Model 1 adjusted for reporting year

After adjusting for reporting year (model 1), females had 16% higher odds of claiming compensation under the NSW CTP scheme compared with males (table 3, online supplemental figure 2). Each year of increase in age increased the odds of issuing a compensation claim by 1%. Compared with those living in areas with the lowest SEIFA quintile, those in the fourth and highest had 1.5 and 1.6 times higher odds of raising a claim, respectively. Compared with unauthorised drivers, all other groups had had higher odds of claiming, learner drivers (OR 4.19, 95% CI 2.77 to 6.35) and those on a standard licence (OR 3.83, 95% CI 2.83 to 5.19) had the highest odds of claiming. Those injured in a road transport crash in metropolitan areas in Sydney (OR 1.65, 95% CI 1.34 to 2.01), Newcastle (OR 1.50, 95% CI 1.14 to 1.99) and Wollongong (OR 1.79, OR 1.22–2.63) had higher odds of raising a claim compared with those who crashed in non-urban country areas. Motorcycle riders wearing an open (OR 2.91, 95% CI 1.65 to 5.14) or full-face helmet (OR 2.42, 95% CI 1.65 to 3.56) had higher odds of claiming compensation compared with car occupants not wearing a seatbelt. Compared with those with a serious injury, those with moderate (OR 0.27, 95% CI 0.23 to 0.31) or minor/other injuries (OR 0.73, 95% CI 0.59 to 0.90) had lower odds of claiming. Compared with crashes where the counterpart was a fixed object, those where the counterpart

was a two-wheeled or three-wheeled vehicle (OR 2.28, 95% CI 1.17 to 4.42), car, pick-up or van (OR 2.26, 95% CI 1.90 to 2.70) or heavy vehicle or bus (OR 2.74, 95% CI 1.95 to 3.86) had higher odds of claiming compensation.

Model 2 fully adjusted analysis

In the fully adjusted analysis (gender, age, licence status, socioeconomic status of area of residence, level of urbanisation, speed limit, restraint use, status of registration, crash counterpart, year of crash and severity of injury), females had 25% higher odds (OR 1.25, 95% CI 1.06 to 1.47) of claiming compensation compared with men (table 3, online supplemental figure 3). Compared with those driving unauthorised, all other groups had higher odds of claiming compensation, the largest differences were observed for those with a standard licence (OR 3.48, 95% CI 2.45 to 4.96) and for those who were passengers recorded as 'not applicable' (OR 4.52, 95% CI 3.11 to 6.59). Motorcycle riders wearing an open-face helmet (OR 3.71, 95% CI 1.94 to 7.08) or a full-face helmet (OR 3.73, 95% CI 2.37 to 5.86) had higher odds of claiming compensation compared with those wearing no seat-belt. Compared with a serious injury, those with a minor/other (OR 0.57, 95% CI 0.45 to 0.72) and moderate injury (OR 0.22, 95% CI 0.19 to 0.26) had lower odds of claiming. Compared with crashes where the counterpart was a fixed or stationary object, crashes with cars, pick-ups or vans (OR 2.49, 95% CI 2.02 to 3.07) and heavy vehicles/bus (OR 2.66, 95% CI 1.82 to 3.89) had higher odds of claiming.

DISCUSSION

From 2018 to 2023, 1954 Aboriginal and Torres Strait Islander people were registered in the NSW CTP database to have lodged a claim for a road injury. This equals about 2.7% of all claims lodged under the CTP scheme during that period.²⁶ Considering that Aboriginal and Torres Strait Islander people have 1.5–2.5 times higher rates of road transport injuries compared with the rest of the population^{5 6 27} and that Aboriginal and Torres Strait Islander people make up around 3.4% of the population in NSW,¹⁵ this suggests that they might have lower CTP claim rates compared with the rest of the population. This is supported by our explorative analysis of all road users injured in a crash who are potentially eligible to claim, which showed that CTP claims rates for Aboriginal and Torres Strait Islander people potentially eligible to claim were half compared with non-Aboriginal and Torres Strait Islander people. Similarly, analysis of the impact of the 2017 CTP scheme on claim frequency showed a disproportionate reduction among vulnerable groups, especially those living in areas of lowest socioeconomic status and needing an interpreter after introduction of the new scheme.²⁸ However, Indigenous status in the CTP claims data was derived through data linkage from the other data sources and identification of Aboriginal and Torres Strait Islander people in the routinely collected data as well as linkage rates with CTP data might be incomplete.

A higher proportion of Aboriginal and Torres Strait Islander people living in areas of lowest compared with highest SES (27.5% vs 9.5%) submitted a claim, reflecting that a large proportion of Aboriginal and Torres Strait Islander people live in areas of low SES and rural and remote areas which are also often low SES. However, Aboriginal and Torres Strait Islander people in areas of high SES and in metropolitan areas had higher odds of issuing a claim compared with those in low SES and country areas, respectively. These differences did not persist after adjusting for person, crash and injury characteristics in

Table 2 Road users involved in a crash potentially eligible to claim under the NSW CTP scheme with and without a claim 2018–2023*

Variable	Category	No claim	Claim submitted	Total
		Number (%)	Number (%)	Number (%)
Gender	Male	2162 (58.9)	635 (56.0)	2797 (58.2)
	Female	1507 (41.1)	498 (44.0)	2005 (41.8)
Age group	17–29	1934 (52.7)	444 (39.2)	2378 (49.5)
	30–59	1512 (41.2)	561 (49.5)	2073 (43.2)
	60+	223 (6.1)	127 (11.2)	350 (7.3)
SEIFA quintile	Lowest	1008 (27.9)	297 (26.4)	1305 (27.5)
	2	1153 (31.9)	319 (28.4)	1472 (31.1)
	3	886 (24.5)	261 (23.2)	1147 (24.2)
	4	320 (8.8)	131 (11.7)	451 (9.5)
	Highest	249 (6.9)	115 (10.2)	364 (7.7)
Reporting year	2018	616 (16.8)	174 (15.4)	790 (16.5)
	2019	555 (15.1)	198 (17.5)	753 (15.7)
	2020	629 (17.1)	194 (17.1)	823 (17.1)
	2021	608 (16.6)	158 (13.9)	766 (16.0)
	2022	623 (17.0)	195 (17.2)	818 (17.0)
	2023	638 (17.4)	214 (18.9)	852 (17.7)
	Licence status	Standard	1212 (33.0)	485 (42.8)
Learner		137 (3.7)	60 (5.3)	197 (4.1)
Provisional		640 (17.4)	121 (10.7)	761 (15.8)
Unauthorised		506 (13.8)	53 (4.7)	559 (11.6)
Other/unknown		497 (13.5)	142 (12.5)	639 (13.3)
Not applicable		677 (18.5)	272 (24.0)	949 (19.8)
Urbanisation		Sydney metropolitan area	691 (18.8)	292 (25.8)
	Newcastle metropolitan area	254 (6.9)	97 (8.6)	351 (7.3)
	Wollongong metropolitan area	103 (2.8)	49 (4.3)	152 (3.2)
	Country urban	1699 (46.3)	454 (40.1)	2153 (44.8)
	Country non-urban	922 (25.1)	241 (21.3)	1163 (24.2)
Status of registration	Registered	2806 (76.5)	933 (82.3)	3739 (77.9)
	Not registered	264 (7.2)	39 (3.4)	303 (6.3)
	Unknown	425 (11.6)	83 (7.3)	508 (10.6)
	Not applicable	174 (4.7)	78 (6.9)	252 (5.2)
Road user group†	Driver	2570 (70.1)	620 (54.7)	3190 (66.4)
	Motorcyclist	440 (12.0)	253 (22.3)	693 (14.4)
	Passenger	485 (13.2)	182 (16.1)	667 (13.9)
	Pedal cyclist	69 (1.9)	15 (1.3)	84 (1.7)
	Pedestrian	104 (2.8)	63 (5.6)	167 (3.5)
Crash counterpart	Car/pick-up/van	1384 (37.7)	584 (51.5)	1968 (41.0)
	Two/three wheeled vehicle	40 (1.1)	18 (1.6)	58 (1.2)
	Pedestrian/animal	103 (2.8)	17 (1.5)	120 (2.5)
	Heavy vehicle/bus	127 (3.5)	66 (5.8)	193 (4.0)
	Fixed/stationary object	1198 (32.7)	223 (19.7)	1421 (29.6)
	Non-collision	429 (11.7)	97 (8.6)	526 (11.0)
	Other/unspecified	388 (10.6)	128 (11.3)	516 (10.7)
Restraint	Belt worn	2352 (64.1)	655 (57.8)	3007 (62.6)
	Belt not worn/not fitted	160 (4.4)	43 (3.8)	203 (4.2)
	Open-face/bicycle helmet	65 (1.8)	41 (3.6)	106 (2.2)
	Full-face helmet worn	287 (7.8)	187 (16.5)	474 (9.9)
	Unknown	701 (19.1)	144 (12.7)	845 (17.6)
	Not applicable	104 (2.8)	63 (5.6)	167 (3.5)
Injury severity	Serious injury/death	1076 (29.3)	631 (55.7)	1707 (35.5)
	Moderate injury	2188 (59.6)	340 (30.0)	2528 (52.6)
	Minor/other injury	405 (11.0)	162 (14.3)	567 (11.8)
	Total	3669 (100.0)	1133 (100.0)	4802 (100.0)

*Missing values not shown.

†Other not shown.

CTP, Compulsory Third Party; NSW, New South Wales; SEIFA, Socio-Economic Indexes for Areas.

Table 3 Logistic regression of factors* associated with a CTP claim in users of motorised transport, NSW 2018–2023

Variable	Characteristic	Model 1		Model 2	
		Odds Ratio (95% CI)	P value	Odds Ratio (95% CI)	P value
Gender	Male	Reference		Reference	
	Female	1.16 (1.01 to 1.33)	0.04	1.25 (1.06 to 1.47)	0.01
Age	(per 1 year increase)	1.01 (1.01 to 1.02)	<0.01	1.01 (1.01 to 1.02)	<0.01
SEIFA quintile	Lowest	Reference		Reference	
	Second	0.92 (0.77 to 1.11)	0.39	0.96 (0.78 to 1.18)	0.70
	Third	0.98 (0.80 to 1.19)	0.82	0.96 (0.77 to 1.19)	0.72
	Fourth	1.46 (1.14 to 1.87)	<0.01	1.30 (0.99 to 1.72)	0.06
	Highest	1.63 (1.25 to 2.14)	<0.01	1.24 (0.90 to 1.71)	0.19
Urbanisation	Country non-urban	Reference		Reference	
	Sydney metropolitan area	1.65 (1.34 to 2.01)	<0.01	1.09 (0.84 to 1.41)	0.53
	Newcastle metropolitan area	1.50 (1.14 to 1.99)	<0.01	1.16 (0.84 to 1.61)	0.36
	Wollongong metropolitan area	1.79 (1.22 to 2.63)	<0.01	1.24 (0.80 to 1.93)	0.34
	Country urban	1.01 (0.84 to 1.20)	0.96	0.88 (0.71 to 1.08)	0.22
Licence status	Unauthorised	Reference		Reference	
	Learner	4.19 (2.77 to 6.35)	<0.01	2.12 (1.31 to 3.42)	<0.01
	Provisional	1.81 (1.28 to 2.55)	<0.01	2.35 (1.59 to 3.47)	<0.01
	Standard	3.83 (2.83 to 5.19)	<0.01	3.48 (2.45 to 4.96)	<0.01
	Other/unknown	2.71 (1.93 to 3.81)	<0.01	2.75 (1.89 to 4.00)	<0.01
	Not applicable	3.68 (2.65 to 5.11)	<0.01	4.52 (3.11 to 6.59)	<0.01
Status of registration	Not registered	Reference		Reference	
	Registered	2.25 (1.59 to 3.18)	<0.01	2.19 (1.47 to 3.28)	<0.01
	Unknown	1.32 (0.88 to 2.00)	0.18	1.40 (0.88 to 2.22)	0.16
Restraint	Belt not worn	Reference		Reference	
	Belt worn	1.04 (0.73 to 1.47)	0.84	1.14 (0.77 to 1.68)	0.53
	Open-face helmet	2.91 (1.65 to 5.14)	<0.01	3.71 (1.94 to 7.08)	<0.01
	Full-face helmet worn	2.42 (1.65 to 3.56)	<0.01	3.73 (2.37 to 5.86)	<0.01
	Unknown	0.78 (0.53 to 1.15)	0.21	1.08 (0.70 to 1.65)	0.73
Injury severity	Serious injury/death	Reference		Reference	
	Moderate injury	0.27 (0.23 to 0.31)	<0.01	0.22 (0.19 to 0.26)	<0.01
	Minor/other injury	0.73 (0.59 to 0.90)	<0.01	0.57 (0.45 to 0.72)	<0.01
Crash counterpart	Fixed/stationary object	Reference		Reference	
	Two-wheeled/three-wheeled vehicle	2.28 (1.17 to 4.42)	0.02	1.75 (0.83 to 3.69)	0.14
	Car/ pick-up/van	2.26 (1.90 to 2.70)	<0.01	2.49 (2.02 to 3.07)	<0.01
	Heavy vehicle/bus	2.74 (1.95 to 3.86)	<0.01	2.66 (1.82 to 3.89)	<0.01
	Pedestrian/animal	0.88 (0.52 to 1.50)	0.65	0.95 (0.53 to 1.70)	0.85
	Non-collision	1.21 (0.93 to 1.58)	0.15	1.01 (0.75 to 1.35)	0.96
	Other/unspecified	1.76 (1.37 to 2.25)	<0.01	2.00 (1.52 to 2.64)	<0.01

*Model 1 adjusted for reporting year, model 2 adjusted for all variables in table plus reporting year. CTP, Compulsory Third Party; NSW, New South Wales; SEIFA, Socio-Economic Indexes for Areas.

the analysis, suggesting that these factors contribute to the differences by urbanisation and SES. Adjusting for urbanisation (rural vs metropolitan areas) had the greatest impact on the differences by SES. In NSW, a larger proportion of Aboriginal and Torres Strait Islander people live in rural and remote areas compared with the dominant population; these are also often areas of low SES. When adjusting for crash counterpart in the regression, we observed no difference in raising a claim between those living in urban and country areas. This can be explained by Aboriginal and Torres Strait Islander people living in country areas having higher rates of single-vehicle crashes (82% of all single-vehicle crashes) which were also shown to have up to 60% lower odds of submitting a claim in our study. This suggests that there are barriers to accessing compensation in rural and remote areas, especially among those involved in single-vehicle crashes. These could be related to knowledge of

eligibility to claim compensation as well as barriers in accessing relevant documents and information or submitting claims online and navigating the claims process.¹⁴ This is supported by findings of a previous qualitative NSW study which found the complexity to be a key factor impacting on people's perceptions and experiences of the claims process.¹⁴ Similarly, findings from a systematic review on the relationship between compensation and recovery following a motor vehicle crash proposed that it is important to ensure that the compensation process is clear and simple and that clients are aware of their rights and entitlements.³ This is an area where health services can act, be that emergency departments, trauma services or general practitioners, and it is highly likely these services will encounter road transport injury patients who are eligible to claim for compensation; for these services, it is an excellent opportunity for support and advocacy in this area.

Those with a serious injury had higher odds of claiming compensation compared with those with minor injuries. This might be likely due to longer recovery and loss of income times. However, those with moderate injuries had lower odds of claiming compensation compared with those with other or minor injury in our study. This seems counterintuitive and needs further investigation into other factors that might be associated with this. One possible explanation is the fact that injury severity was derived from different sources in the linked data which likely have different levels of accurately ascertaining the degree of injury after crash. This is supported by previous studies comparing police with hospital data which showed that police data underestimate the number of clinically significant road injury.²⁹

Strengths and limitations

The large, linked dataset and population-level coverage are particular strengths of this study. Data linkage across several relevant data sources in NSW allowed identification of Aboriginal and Torres Strait Islander people in the CTP claims data as well as analysis of factors associated with lodging a claim. However, there are likely limitations to data linkage with not all CTP claims records linking to the other data sources. Of those who lodged a claim under the CTP scheme, only 63% had a police-reported crash. Incomplete data linkage might be one factor contributing to this. This suggests that the true proportion of those submitting a claim who are potentially eligible to claim is likely higher. However, the estimates of the relative differences between groups should not be affected assuming they are equally impacted by the data linkage issues. Moreover, our analysis was restricted to those variables routinely collected in these data sources; other exposures might have been of interest in the analysis of factors associated with lodging a claim.

CONCLUSION

Overall rates of compensation claims in Aboriginal and Torres Strait Islander people in NSW are low relative to their population and crash frequency and among those eligible to claim rates were lower in rural and remote areas. This suggests that Aboriginal and Torres Strait Islander people and especially those living in rural and remote areas would benefit from additional support in navigating and submitting CTP claims. In NSW, SIRA recognised that it can be difficult to access the CTP insurance and established free personalised support helping navigate the CTP claims process.³⁰ Health providers can also contact this service, and Aboriginal community health services in rural and remote areas could help with this. Further qualitative research can also help understand the barriers to submitting a claim to better tailor support. Additional research could also investigate if the same rural/metropolitan differences also persist in the general population to determine if support should also focus on those living in rural and remote areas in general. While CTP insurance schemes vary across Australian jurisdictions and our findings are therefore not directly generalisable, the low claim rates observed among Aboriginal and Torres Strait Islander people in NSW are likely to reflect broader issues, and similar disparities are likely to be present in other states. These findings likely reflect broader systemic inequities in access to healthcare and compensation experienced by Aboriginal and Torres Strait Islander people in Australia, where institutional structures are predominantly shaped by white possessive logics.³¹

Along with findings from the other project studies,³² this study will inform a workshop with the Aboriginal and Torres Strait

Islander Governance Group. Workshop findings will be shared with the community which will be involved in the dissemination of the key messages. Policymakers, clinicians, lifetime support authorities and researchers who contributed to the study will be invited to review the findings and discuss the implications for policy development.

Author affiliations

¹School of Population Health, UNSW, Sydney, New South Wales, Australia

²University of Illinois Chicago, Chicago, Illinois, USA

³Flinders Health and Medical Research Institute, College of Medicine and Public Health, Flinders University, Adelaide, South Australia, Australia

⁴Australian Centre for Health Services Innovation, Centre for Healthcare Transformation, Queensland University of Technology, Brisbane, Queensland, Australia

⁵Jamieson Trauma Institute, Royal Brisbane & Women's Hospital, Metro North Health, Brisbane, Queensland, Australia

⁶Western Sydney University - Campbelltown Campus, Campbelltown, New South Wales, Australia

⁷Injury Studies, Flinders University College of Medicine and Public Health, Adelaide, South Australia, Australia

⁸Far West Community Partnerships, Ceduna, South Australia, Australia

⁹Women's and Children's Health Network, North Adelaide, South Australia, Australia

¹⁰Barossa Hills Fleurieu Local Health Network, Mount Barker, South Australia, Australia

¹¹The George Institute for Global Health Injury Division, Newtown, New South Wales, Australia

¹²Injury Studies, Flinders University, Bedford Park, South Australia, Australia

Acknowledgements We acknowledge the traditional lands in which this research was conducted and where outcomes were created and pay respect to their Elders, past and present. Transport for NSW wishes to thank the following: NSW Police Force for supply of road crash data; Spinal Cord Injuries Australia for providing coding and data entry service; NSW Ministry of Health for providing access to information in the NSW Admitted Patient Data Collection, NSW Emergency Department Data Collection and the NSW Registry of Births, Deaths and Marriages—Death registrations; Centre for Health Record Linkage for conducting the record linkage; Aboriginal Health & Medical Research Council for supporting the ongoing data linkage project; Independent Hospital Pricing Authority for providing the International Classification of Diseases, 10th Revision, Australian Modification (ICD-10-AM) electronic code lists; The State Insurance Regulatory Authority (SIRA) for providing data on Compulsory Third Party insurance and Workers Compensation claims; The Lifetime Care and Support Authority for data on Lifetime Care participants; ACT Health Directorate for providing access to information in the ACT Admitted Patient Care and ACT; Emergency Department Information System data collections; The Cause of Death Unit Record File (COD URF) provided by the Australian Coordinating Registry for the COD URF on behalf of the NSW Registry of Births, Deaths and Marriages, NSW Coroner and the National Coronial Information System; The Ambulance Service of NSW for providing data from the Computer-Aided Dispatch, electronic Medical Record and Patient Health Care Record systems; Forensic and Analytical Science Service, NSW Health for providing alcohol and drug test results; Department of Justice and Community Safety for and on behalf of the State of Victoria, is the source organisation of the coronial information; and National Coronial Information System (NCIS) is the database source, used for verification of NSW road fatality information and the NSW Institute of Trauma and Injury Management for access to information on injury outcomes for road crash-related casualties that are considered seriously injured by Health.

Contributors Conceptualisation, methodology and writing—review and editing: all authors. Data curation: HM and JG. Formal analysis: HM. Funding acquisition: CR, HM and RQI. Supervision: CR and RQI. Writing—original draft: HM, RQI, BS, KV, JG, HA, SH and CR. HM is the guarantor.

Funding This work was supported by the Lifetime Support Authority (Grant Number R2214).

Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

Ethics approval This reporting of serious injury information forms part of the routine monitoring activity undertaken by Transport for NSW to improve road safety

for the community. It was approved by the following ethics committees: NSW Population & Health Services Research Ethics Committee on 19 December 2013 (ref no: 2013/10/484), the Aboriginal Health & Medical Research Council Ethics Committee on 24 January 2014 (ref no: 966/13), the ACT Health Human Research Ethics Committee on 13 November 2013 (ref no: ETH.10.13.284) and the Calvary Public Hospital Bruce Human Research Ethics Committee on 20 September 2017 (ref no: 42-2017). The project 'Ongoing Data Linkage of Health Datasets to CrashLink' has ethics approvals from the organisations listed in online supplemental table 3. This project was overseen by an Aboriginal and Torres Strait Islander Governance Group, who provided support surrounding overall project aims, analyses and interpretations of findings.

Provenance and peer review Part of a Topic Collection; Not commissioned; externally peer reviewed.

Data availability statement Data may be obtained from a third party and are not publicly available. The data used in this study are anonymised routinely collected administrative records and are not publicly available due to privacy and confidentiality agreements. Access to the data requires approval from the relevant data custodians and ethics committees.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Holger Möller <http://orcid.org/0000-0003-0675-8712>

Rebecca Q Ivers <http://orcid.org/0000-0003-3448-662X>

Jodi Gray <http://orcid.org/0000-0002-1119-7078>

Kirsten Vallmuur <http://orcid.org/0000-0002-3760-0822>

Sadia Hossain <http://orcid.org/0000-0003-4034-5911>

REFERENCES

- Giummarra MJ, Lau G, Grant G, *et al*. A systematic review of the association between fault or blame-related attributions and procedures after transport injury and health and work-related outcomes. *Accid Anal Prev* 2020;135:105333.
- Murgatroyd DF, Casey PP, Cameron ID, *et al*. The effect of financial compensation on health outcomes following musculoskeletal injury: systematic review. *PLoS One* 2015;10:e0117597.
- Giummarra M, Ioannou L, Gibson S, *et al*. The relationship between compensation and recovery following a motor vehicle accident: a systematic review. 2013.
- Spearing NM, Connelly LB, Nghiem HS, *et al*. Research on injury compensation and health outcomes: ignoring the problem of reverse causality led to a biased conclusion. *J Clin Epidemiol* 2012;65:1219–26.
- Australian Institute of Health and Welfare (AIHW). Injury in Australia: transport accidents. 2023. Available: <https://www.aihw.gov.au/reports/injury/transport-accidents>
- Henley G, Harrison JE. Injury of Aboriginal and Torres Strait Islander people due to transport; 2010–2011 to 2014–15. Canberra, Australia AIHW; 2019.
- State Insurance Regulatory Authority NSWG. Motor accident (CTP) reports. 2017 CTP scheme performance report to 30 June 2022. SIRA; 2023.
- Giummarra MJ, Murgatroyd D, Tran Y, *et al*. Health and return to work in the first two years following road traffic injury: a comparison of outcomes between compensation claimants in Victoria and New South Wales, Australia. *Injury* 2020;51:2199–208.
- Gray SE, Hassani-Mahmooei B, Cameron ID, *et al*. Patterns and Predictors of Failed and Sustained Return-to-Work in Transport Injury Insurance Claimants. *J Occup Rehabil* 2018;28:740–8.
- Papic C, Kifley A, Craig A, *et al*. Factors associated with long term work incapacity following a non-catastrophic road traffic injury: analysis of a two-year prospective cohort study. *BMC Public Health* 2022;22:1498.
- Casey PP, Feyer AM, Cameron ID. Associations with duration of compensation following whiplash sustained in a motor vehicle crash. *Injury* 2015;46:1848–55.
- Brown K, Cameron ID, Keay L, *et al*. Factors influencing duration of compensation following road traffic crash injury in older vs younger adults. *Australas J Ageing* 2021;40:e13–21.
- Elbers NA, Akkermans AJ, Lockwood K, *et al*. Factors that challenge health for people involved in the compensation process following a motor vehicle crash: a longitudinal study. *BMC Public Health* 2015;15:339.
- Murgatroyd D, Lockwood K, Garth B, *et al*. The perceptions and experiences of people injured in motor vehicle crashes in a compensation scheme setting: a qualitative study. *BMC Public Health* 2015;15:423.
- Australian Bureau of Statistics. New South Wales: Aboriginal and Torres Strait Islander population summary. 2022.
- Australian Bureau of Statistics. Aboriginal and Torres Strait Islander people: Census. 2022.
- Australian Bureau of Statistics. Socio-economic indexes for areas. 2023. Available: <https://www.abs.gov.au/websitedbs/censushome.nsf/home/seifa>
- Australian Institute of Health and Welfare. National best practice guidelines for collecting indigenous status in health data sets. Canberra, 2010.
- Briffa TG, Sanfilippo FM, Hobbs MST, *et al*. Under-ascertainment of Aboriginality in records of cardiovascular disease in hospital morbidity and mortality data in Western Australia: a record linkage study. *BMC Med Res Methodol* 2010;10:111.
- Randall DA, Lujic S, Leyland AH, *et al*. Statistical methods to enhance reporting of Aboriginal Australians in routine hospital records using data linkage affect estimates of health disparities. *Aust N Z J Public Health* 2013;37:442–9.
- Freemantle J, Ring I, Arambula Solomon TG, *et al*. Indigenous mortality (revealed): the invisible illuminated. *Am J Public Health* 2015;105:644–52.
- Peiris D, Mohsin M, Jenkins A, *et al*. Robust data to close the gap: current vascular and maternal/newborn indicators as measures of progress in Aboriginal health in New South Wales. *Aust N Z J Public Health* 2010;34:563–71.
- Australian Bureau of Statistics. Perspectives on Aboriginal and Torres Strait Islander identification in selected data collection contexts. 2012.
- Population and Public Health Division. Improved reporting of Aboriginal and Torres Strait Islander peoples on population datasets in New South Wales using record linkage—a feasibility study. Sydney, 2012.
- State Insurance Regulatory Authority NSWG. The accident happened between 1 December 2017 and 31 March 2023. 2023. Available: <https://www.sira.nsw.gov.au/claiming-compensation/motor-accidents-injury-claims/the-accident-happened-before-1-april-2023>
- Ernst & Young Australia. 2017 CTP scheme quarterly actuarial monitoring 31 December 2022 data. 2023.
- Transport for NSW. Road trauma amongst Aboriginal and Torres Strait Islander people in NSW 2005–2015. NSW Government; 2017.
- Pearson E, Mobbs T, Jeaitani J, *et al*. The vanishing – where did the NSW CTP claims go? Actuaries institute injury and disability schemes seminar. Sydney, Australia Institute of Actuaries of Australia; 2019.
- Soltani A, Edward Harrison J, Ryder C, *et al*. Police and hospital data linkage for traffic injury surveillance: A systematic review. *Accid Anal Prev* 2024;197:107426.
- State Insurance Regulatory Authority. Support from CTP assist. 2025. Available: <https://www.sira.nsw.gov.au/claims-assistance/support-from-ctp-assist>
- Moreton-Robinson A. *The White possessive: property, power, and indigenous sovereignty*. University of Minnesota Press, 2015.
- Hossain S, Moeller H, Sharpe P, *et al*. Characterising the Aboriginal and Torres Strait Islander patient journey after a serious road traffic injury and barriers to access to compensation: a protocol. *Inj Prev* 2024;30:75–80.