VICTORIAN ORTHOPAEDIC TRAUMA OUTCOMES REGISTRY

Annual Report 2021-22

MONASH University

TRANSPORT ACCIDENT COMMISSION

OVERVIEW OF THE VOTOR REGISTRY

BACKGROUND

The Victorian Orthopaedic Trauma Outcomes Registry (VOTOR) is a clinical quality registry managed through a collaboration of hospitals and academic institutions. The Registry documents the nature and extent of orthopaedic injuries, and resulting treatment, rehabilitation and complication rates and outcomes of admitted patients. It provides a robust monitoring system for orthopaedic trauma admitted to the participating hospitals in Victoria and is funded by the Transport Accident Commission (TAC). It allows a mechanism to apply evidence-based methods to priority research areas and to examine variations in clinical practice and their impact on the short and longer-term outcomes of injured patients.

The Registry started as a collaboration between The Alfred, the Royal Melbourne Hospital and the Department of Epidemiology and Preventive Medicine (DEPM) at Monash University in 2003 and expanded in 2007 to include University Hospital Geelong (UHG) and the Northern Hospital. From the start of 2021 Box Hill Hospital commenced data contribution whilst data collection from the Northern Hospital ceased.

ELIGIBILITY

VOTOR captures data about all patients with an emergency admission greater than 24 hours to the participating hospitals for an orthopaedic injury. Eligible patients are identified by the discharge diagnosis through ICD-10-AM reports, or from Abbreviated Injury Scale codes if ICD-10-AM reports are not available.

INCLUSION CRITERIA

- All patients admitted with a new orthopaedic (bone or soft tissue) injury with a length of stay > 24 hours
- Death after orthopaedic injury

EXCLUSION CRITERIA

- Pathological fracture related to metastatic disease, and/or
- Age <16 years
- Isolated soft tissue injury managed non-operatively
- Isolated soft tissue injury managed operatively from 1st Jan 2018

Northern Health

YEAR IN REVIEW 2021-22 | SUMMARY

DEMOGRAPHICS

7071

from **6892** in 2020-21

MEDIAN AGE
64 years

54%
MALE

31% occurred on weekends

CAUSES OF INJURY

LOW FALLS
48%
from 45% in 2020-21

ROAD TRAFFIC CRASHES
29% Similar to 2020-21

HIGH FALLS
13%
Unchanged from 2020-21

LOCATIONS OF INJURY

HOME
41%
Unchanged from 2020-21

ROAD, STREET OR HIGHWAY
32%
Similar to 2020-21

TYPES OF INJURY

ISOLATED LOWER EXTREMITY
34%
Consistent with 2020-21

ONLY SPINAL INJURIES
22%
Comparable to 2020-21

ISOLATED UPPER EXTREMITY
17%
Minimally lower than 2020-21

HOSPITAL OUTCOMES

LENGTH OF STAY

MEDIAN STAY
5.1 days
Unchanged from 2020-21

ICU ADMIT

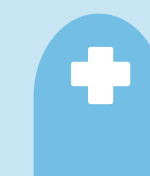
10%

from 12% in 2020-21

DISCHARGE DESTINATIONS

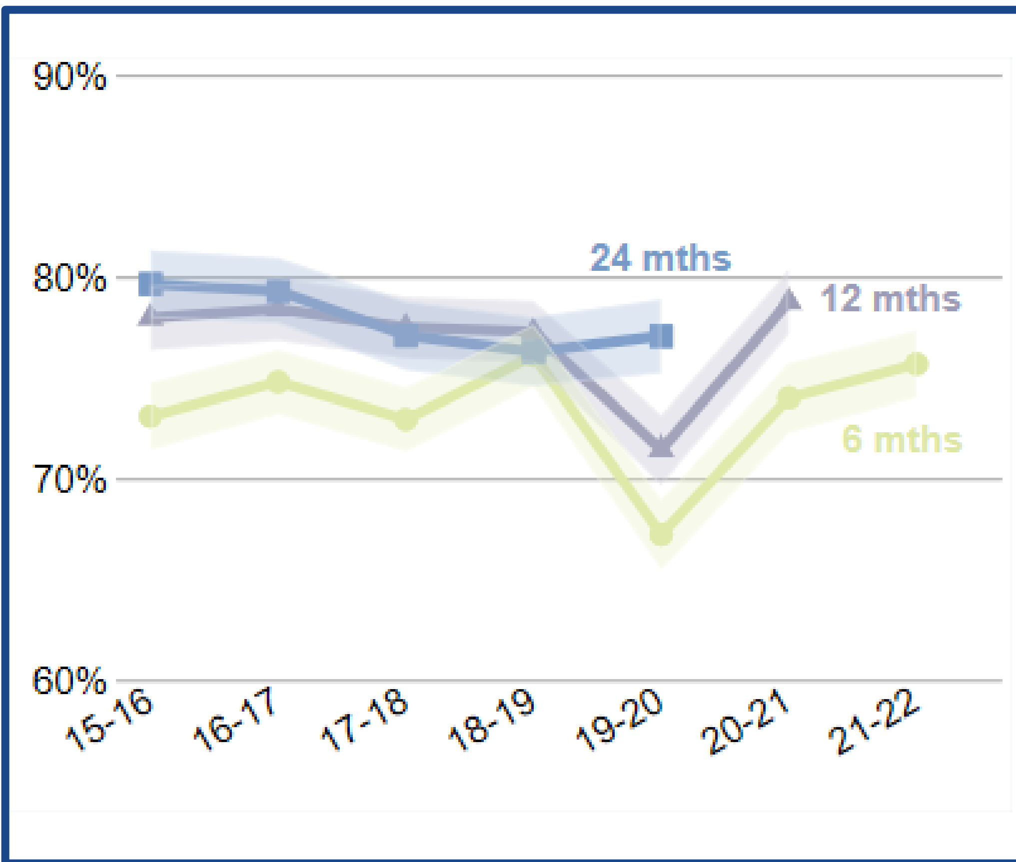
HOME **61%**
REHAB **26%**
In 2020-21, home 64%, rehab 24%

IN-HOSPITAL DEATHS



3% 60% male, mean age 75yrs
Unchanged from 2020-21

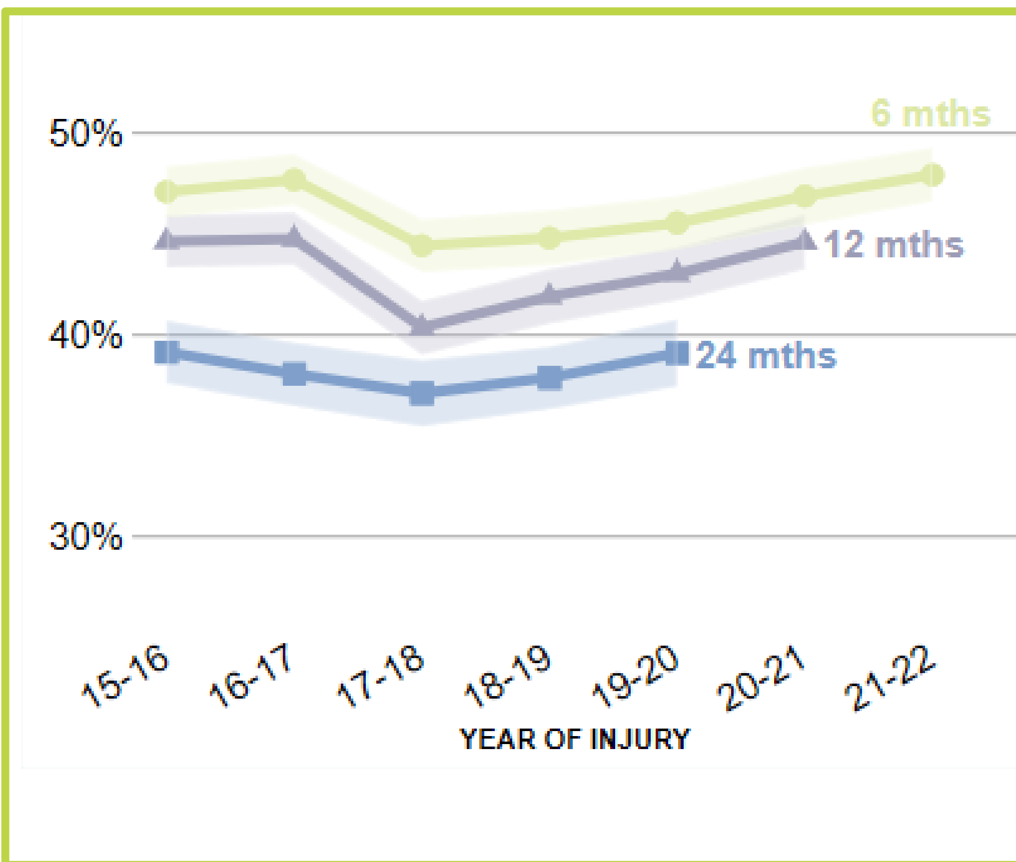
OUTCOMES ANALYSIS | 2015-16 TO 2021-22



PREDICTED PROBABILITY RETURNED TO WORK (95% CI)

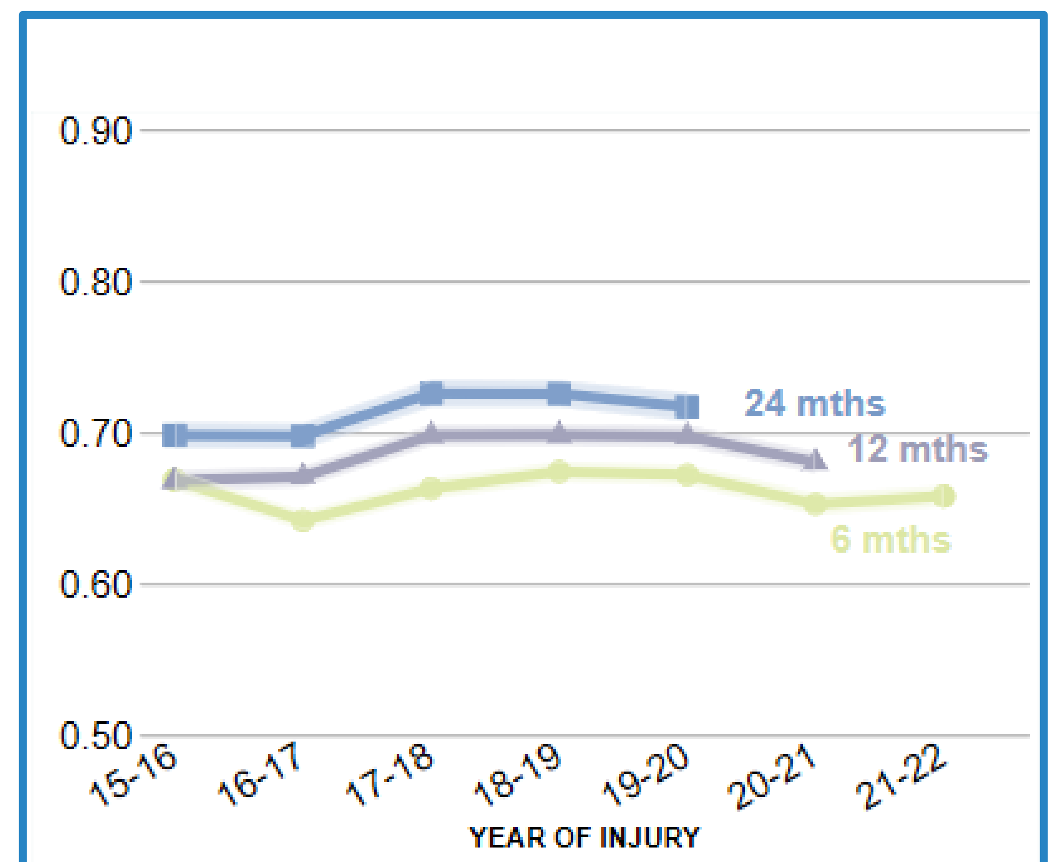
For patients working prior to their injury, the probability of returning to work (RTW), adjusted for demographic and injury factors is shown on the left.

The decrease in RTW at 6 months and 12 months during the COVID lockdown period for injuries that occurred in 2019-20 has returned to pre-COVID levels by 24 months.



PREDICTED PROBABILITY WHODAS 2.0 DISABILITY ≥10 (95%CI)

The WHODAS 2.0 measures disability due to six different health conditions covering physical, mental and drug/alcohol problems. A cut-off score of 10 or more has been used to assign disability status in normative data from an Australian population. The adjusted probability of reporting a WHODAS 2.0 score ≥10 decreases at each follow up, indicating reduction in disability.



AVERAGE EQ-5D HEALTH UTILITY SCORE (95% CI)

The health status of patients at follow up is measured using the EQ-5D scores covering 5 domains of life utility such as mobility, mood and pain levels. Scores of 0.0 or less are equivalent of a health state of death or worse, whilst a score of 1.0 reflects perfect health.

The adjusted average health utility scores consistently show improvement at each of the follow up times.

YEAR IN REVIEW 2021-22 | RESEARCH

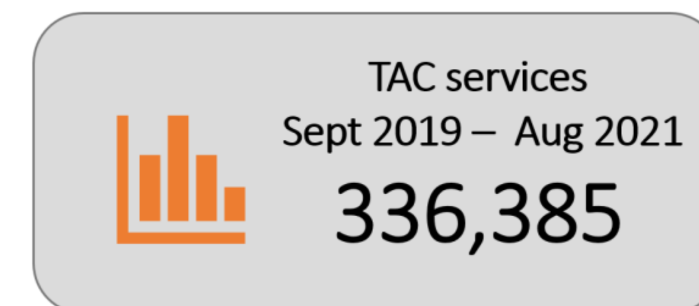
VOTOR
Victorian Orthopaedic Trauma Outcomes Registry

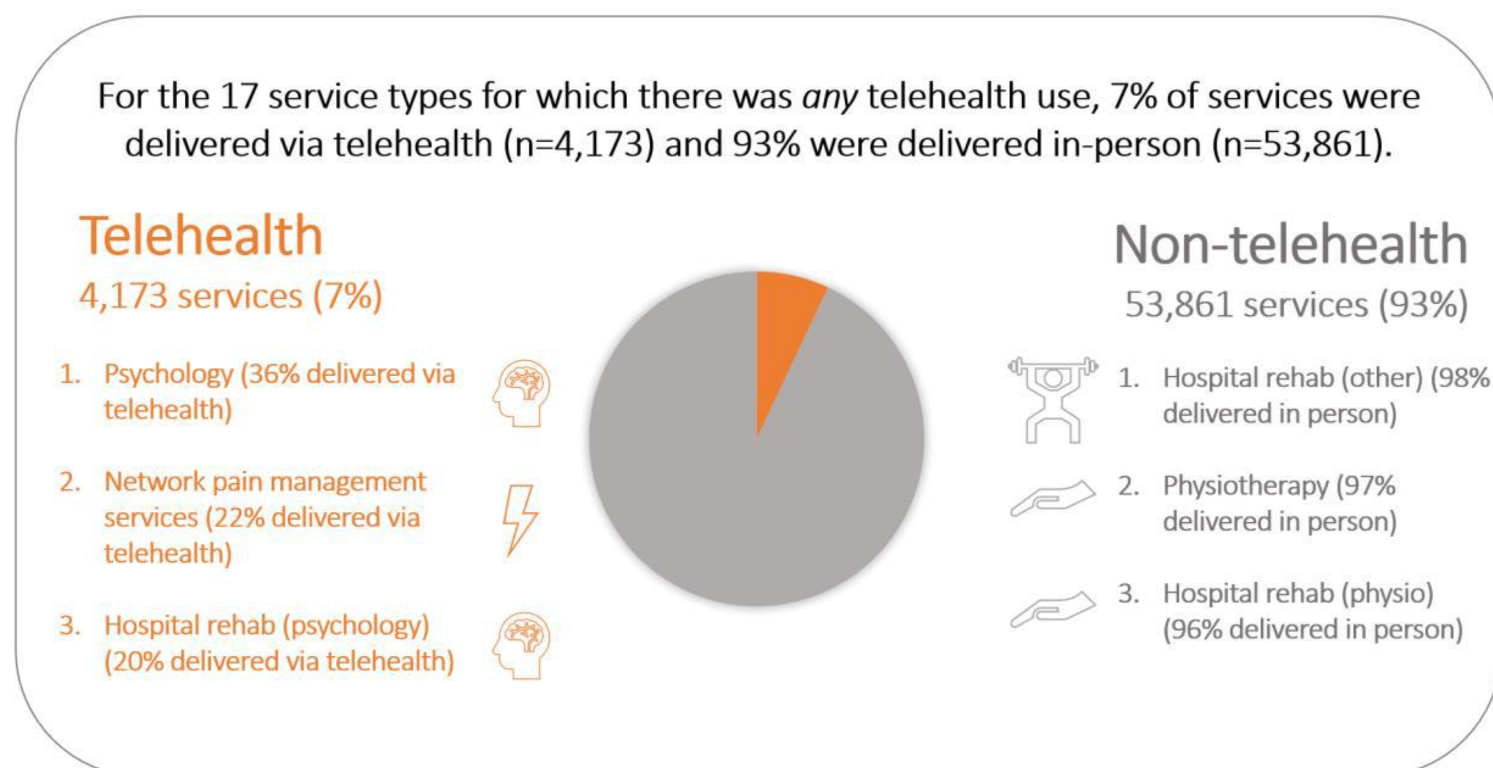
TELEHEALTH

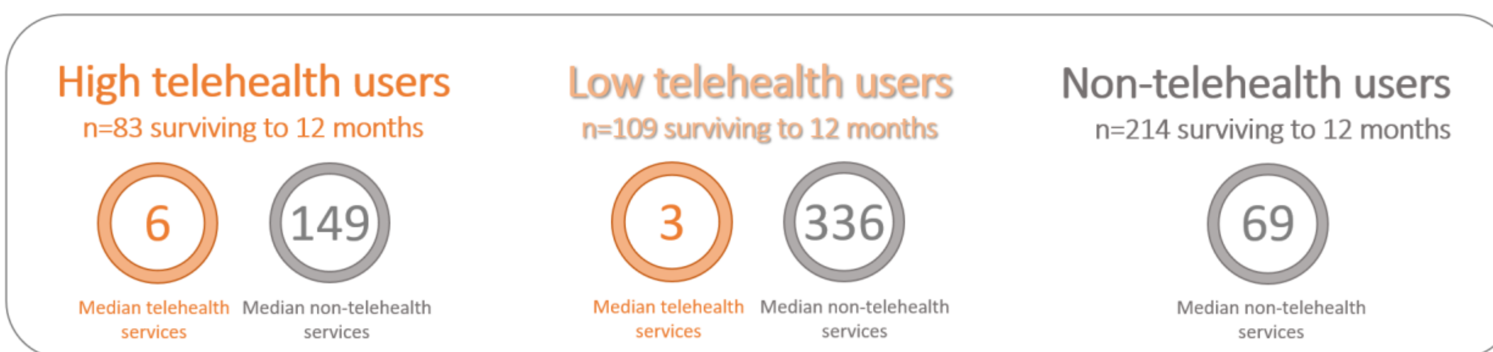
Telehealth billing codes were introduced by the TAC in March 2020. Two reports were commissioned by the TAC to understand the impact of telehealth services within transport-related injury cohorts. The evaluation took place during the COVID-19 pandemic which created both opportunities and challenges for clients, health care providers and the TAC.

Qualitative analyses were performed to understand the experience of seriously injured TAC clients and the barriers and facilitators to successful interactions. Telehealth was appreciated for its convenience and efficiency gains, flexibility in communication availability and improving access to allied health care.

Quantitative analyses determined that uptake of telehealth services was only 2% of the total service usage provided by the TAC but proportionally higher (7%) for services that could be most easily delivered via telehealth (e.g. psychology). Telehealth users were more likely have worked or studied prior to injury, be more seriously injured and have longer hospital stays and more complex rehabilitation requirements. Compared to non-users, at 12 months post-injury, telehealth users had higher odds of increased disability, reported experiencing more pain/discomfort and anxiety/depression and had incurred higher costs than non-users. These poorer outcomes are more likely reflective of the greater injury severity and rehabilitation needs of those accessing telehealth services in addition to usual health care services, rather than the telehealth service provision per se.







YEAR IN REVIEW 2021-22 | RESEARCH

TAC and Alfred Health collaboration to assess a new care model to address the rehabilitation needs of an increasingly complex patient cohort.

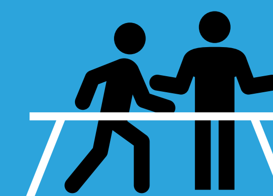
Promoting the Home First philosophy aims to improve hospital and patient outcomes.

Comparing two models of care

Study phases

1. Baseline VOTOR patients during 2019, n=1309

2. New allied health model on the new trauma ward during 2020*, n=1267
   - early intensive therapy
   - 7 days per week service



Outcomes of the new allied health model of care

Compared to baseline model of care

- no difference in median length of stay of 4 days
- 72% discharged directly to home up from 67%
- higher rate of return to work at 12 months of 77% compared to 71%

BeFIT

Intensive allied health therapy commenced early in the acute hospitalisation phase following orthopaedic injury could have a substantial impact on improving hospital and patient outcomes. The aim of this collaborative study between the TAC and Alfred Health was to assess the impact of a purpose-built environment and a new allied health model of care (AHMOC) on patient flow management, levels of health service utilisation and patient-reported return to work rates. Preliminary findings suggest that the new allied health model of care was found to reduce inpatient rehabilitation conversion rates with an increase in the number of patients begin discharged directly home and an improvement in the adjusted odds of return to work rates at 12 months. Uptake of this model of allied health care at other trauma centres has the potential to reduce the cost and burden of orthopaedic injuries.

*2020 – impacted by COVID lockdown periods

VOTOR
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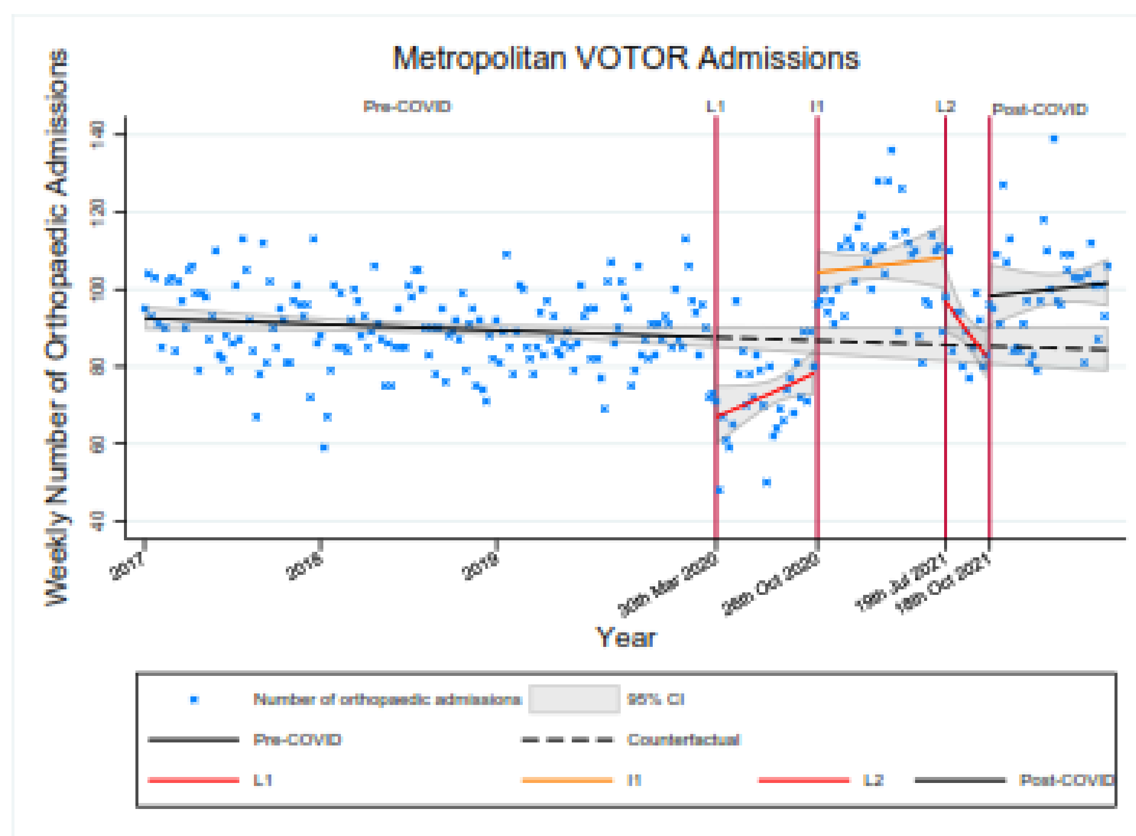

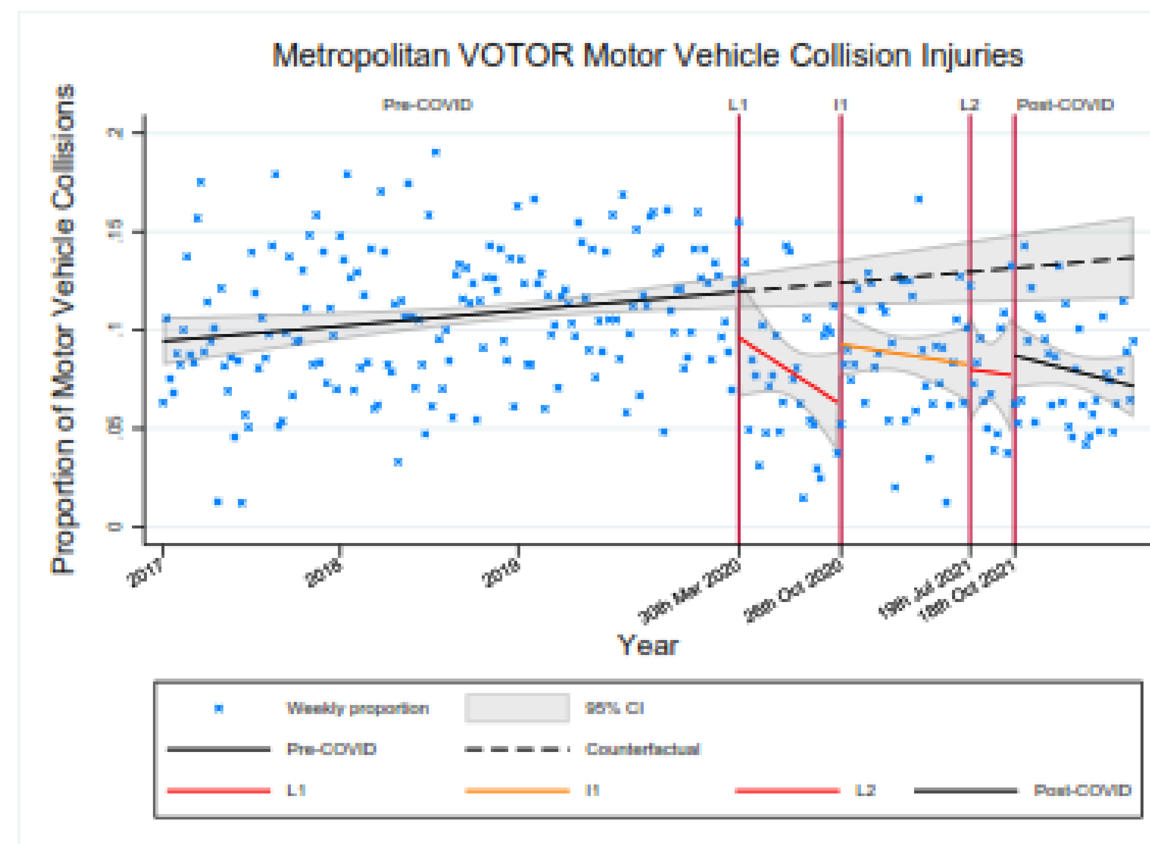

Impact of COVID-19 lockdowns

Whilst many centres globally have assessed how COVID-19 lockdowns impacted traumatic orthopaedic presentations, no studies have used robust statistical methods or analysed the unique Victorian lockdowns. We therefore conducted a registry cohort study with interrupted time series analysis which aimed to assess how the Victorian COVID-19 lockdowns influenced the number and characteristics of traumatic orthopaedic injuries in metropolitan and regional Victoria.

The initial lockdowns (L1) in Victoria reduced weekly orthopaedic trauma admissions; metropolitan admissions declined from 88 the week prior to the lockdown to 67 the first week of lockdown and regional admissions declined from 37 to 29. However, during the intermission (time between lockdowns; I1) and post-pandemic (post-COVID) periods in metropolitan Melbourne, weekly admission rebound and increased by 18 and 13 weekly admissions respectively, relative to before the pandemic. A greater proportion of admissions during the first (L1) and second (L2) metropolitan lockdowns were the result of low falls and fewer were due to road traffic collisions, corresponding with more injuries occurring in home and fewer on streets or highways. However, whilst falls returned to their pre-pandemic levels following the lockdowns, the proportion of admissions due to motor vehicle collisions remained consistently reduced until the conclusion of the study period in June 2022. Little to no differences were observed in the demographics of admissions, the severity of their injuries or their inpatient mortality.

VOTOR Registry, Monash University

Access to Registry data

Requests for information from the VOTOR Registry are welcome.

Applications should be made to:

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