# An ecological study to examine the fatalities, perpetrators, and survivor outcomes of Coward Punch Assaults in Queensland

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## Acknowledgement of Country

The design of this project occurred on the lands of the Wurundjeri people of the Kulin nation. We acknowledge them as the Traditional Owners and knowledge holders of these lands. We pay our respect to Elders past, present and emerging.

## Sensitivity Warning

Please be advised that this document clearly and openly discusses topics that may be traumatic and sensitive. No deaths of individual people are discussed or named, however, data variables and other content name circumstances in which deaths have occurred.

These are discussed here in the context of a broader body of work, and as a commitment to openness and truth, looking for patterns and factors to inform solutions, working collectively to share burdens and responsibilities, and ensuring the range of people, organisations and institutions with responsibilities about preventing and responding to Coward Punch Assaults (CPA) have quality information to inform their actions.

## Acknowledgements

This project is one element of a larger body of work led by practitioners and researchers at the Victorian Institute of Forensic Medicine, the Department of Forensic Medicine and the Health Economics Group at Monash University. The group has contributed to the design of this research since it began in 2012. The project team would like to acknowledge and thank these staff members for their assistance and support with the development of this project.

## Ethics

Ethics approval was obtained from the Monash University Human Research Ethics Committee and the Department of Justice Human Research Ethics Committee (JHREC).

## Glossary

| | |
|---|---|
| CPA | Coward Punch Assault |
| NCIS | National Coronial Information System |

## Definitions

| | |
|---|---|
| Coward punch assault (CPA) | A severe blow to the head causing the victim to lose consciousness, resulting in a secondary impact between the head and surrounding environment.[1] |
| Type 1 CPA | Where the perpetrator punched the victim's head/face and the head made subsequent contact with a static object. |
| Type 2 CPA | Where the perpetrator punched the victim to ground and followed up with subsequent blows to the head or body. |
| National Coronial Information System (NCIS) | Online repository for deaths reported to Coroners in Australia and New Zealand.[2] |
| Lexis Advance | Search platform/software of LexisNexis legal database, containing information from trials heard in Australian state Supreme Courts and Courts of Appeal, the High Court of Australia, District and County Courts, Magistrates' Courts, and the Administrative Appeals Tribunal.[3] |

[1] Schumann JL, Sarkar R, Grbic M, Drummer OH, Gerostamoulos D, Iles L, Bassed R. Changing trends and characteristics of one punch deaths in Australia (2012-2018). Forensic Sci Int. 2023 Apr;345:111621.

[2] National Coronial Information System (NCIS). www.ncis.org.au

[3] Lexis Advance Research. www.advance.lexis.com

# 1. Executive Summary

Coward punch assaults (CPA) are a preventable form of interpersonal violence that can result in catastrophic brain injury, permanent disability and death following a single strike to the head. This study represents the first comprehensive examination of CPA fatalities, survivor outcomes, perpetrator characteristics, criminal justice outcomes and economic impacts in Queensland.

Using data obtained from the National Coronial Information System (NCIS) and Lexis Advance judicial sentencing records, CPA incidents occurring in Queensland between 1990 and 2022 were identified and analysed.

## Key Findings

A total of 112 CPA incidents were identified, comprising 52 fatalities and 60 non-fatal assaults.

Victims and perpetrators were overwhelmingly male. Fatal victims had a median age of 39.5 years, while perpetrators were substantially younger, with a median age of 21 years. Similar patterns were observed among non-fatal assaults. Most incidents occurred at night and in public locations, highlighting the continued importance of public-space violence prevention strategies. Alcohol was frequently identified as a contributing factor in both fatal and non-fatal incidents.

The consequences for survivors were substantial. Almost one-third required hospitalisation, more than one-third required surgery, and many experienced ongoing neurological, sensory, psychological and employment impacts. These findings demonstrate that the burden of CPA extends far beyond fatalities and includes long-term disability and reduced quality of life.

The criminal justice analysis demonstrated that imprisonment was the most common sentencing outcome. However, the continued occurrence of CPA incidents suggests that existing legislative responses have not fully addressed the problem, particularly given the underutilisation and inconsistent implementation of CPA-specific offences across Australia.

## Economic Impact

The total healthcare cost associated with CPA in Queensland was estimated at A$2.1 million.

When productivity losses, carer costs and premature mortality were included, the total societal cost exceeded A$282.5 million.

Fatalities accounted for 97.4% of the total economic burden, primarily due to the loss of future life years. The average societal cost was estimated at A$5.5 million per fatality and A$152,612 per survivor. The findings demonstrate that the consequences of a coward punch assault extend

beyond victims alone, imposing long term burden to families, communities, and healthcare systems and substantial incarceration outcome for the perpetrators.

### Implications

The findings support continued investment in evidence-based prevention strategies targeting alcohol-related violence, public-place assaults and young male perpetrators. They also highlight the need for greater public awareness of the lifelong consequences associated with a single punch. Given the substantial human and economic costs identified, prevention of CPA should remain a priority for government, law enforcement agencies, public health organisations, sporting bodies, schools and community groups. Every CPA prevented represents not only the avoidance of significant healthcare and societal costs, but also the prevention of potentially lifelong harm to victims, families, perpetrators and communities. Since 2012, our research program has informed CPA prevention strategies or existing strategies and contributed to their evaluation by continued surveillance and measurable public health impact.

## 2. Key Findings

- 52 Queenslanders died as a result of a coward punch assault between 2001 and 2022.
- 60 non-fatal coward punch assaults were identified between 1990 and 2022, many resulting in serious and ongoing physical, neurological, psychological and occupational impacts.
- Victims and perpetrators were overwhelmingly male.
- Perpetrators were typically young men, with a median age of 21 years in fatal cases.
- Most incidents occurred at night and in public settings.
- Alcohol was frequently identified as a contributing factor in both fatal and non-fatal incidents. Alcohol was also frequently identified where offender substance use was documented.
- Almost one-third of survivors required hospitalisation, more than one-third required surgery, and many experienced ongoing psychological, neurological, sensory and employment-related impacts.
- The total healthcare cost associated with coward punch assault in Queensland was estimated at A$2.1 million. The total societal cost exceeded A$282.5 million.
- Fatalities accounted for 97.4% of the total economic burden.
- Coward punch assaults represent a significant but preventable source of death, disability and economic loss in Queensland.

## 3. Introduction

Coward punch assaults (CPA) are a specific form of social violence, which are characterised by a single punch strike to the head. This single severe blow to the head causes a victim to fall to the ground leading to a secondary impact to the head. The first or secondary head strike can result in catastrophic head and brain injuries that can lead to permanent cognitive and physical disability, or death.[4] The impacts of these tragic assaults are lifelong and far reaching, changing the lives of victims, perpetrators, families, friends, and communities. Despite being largely preventable, coward punch assaults continue to result in death and life-changing injury across Australia. Over the past decade in Australia, nationwide education and awareness campaigns to prevent one punch assaults have accompanied the introduction of legislation throughout numerous Australian jurisdictions, mandating minimum sentences for perpetrators. Despite increasing legal deterrents, CPA persists, requiring a deeper understanding of perpetrator risk factors, legal system interactions, and victim outcomes.

Our research underpins Australian public health policy and legislation as the only existing evidence-based research in the world on CPA. The proposed research aims to expand on this ground-breaking work to better understand the victims and perpetrators of CPA in Queensland, to enhance police strategies, community safety measures, and healthcare responses.

## 4. Objectives

The objective of this study was to examine the epidemiology, survivor outcomes, perpetrator characteristics, criminal justice outcomes and economic impacts associated with coward punch assaults in Queensland, Australia.

## 5. Method

### 5.1 Study design

An observational, descriptive study design was used to identify and examine coward punch assaults (CPAs) in Queensland. Consistent with the epidemiological study design framework proposed by Grimes et al.[5], the study was classified as a descriptive observational study,

[4] Pilgrim JL, Gerostamoulos D, Drummer OH. "King hit" fatalities in Australia, 2000-2012: the role of alcohol and other drugs. Drug Alcohol Depend. 2014 Feb 1;135:119-32.
[5] Grimes D, Schulz K. An overview of clinical research: the lay of the land. The Lancet, 359, 57-61

employing retrospective case-series methods to characterise the epidemiology, circumstances, and criminal justice outcomes of CPA incidents. Data were obtained from the National Coronial Information System (NCIS) and Lexis Advance. The study was designed and reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

### 5.2 Setting

Data was collected for CPAs that occurred in Queensland during the period January 1990 and 31 December 2022. The study period for the cohort of interest was dependent on the source dataset (for example NCIS data goes back to 2001 only).

### 5.3 CPA Definition

Incidents of CPA were included in the study according to the following eligibility criteria:

- person was assaulted with an unlawful strike to the head or neck, knocking them unconscious and creating a risk of significant risk of serious injury or death.
- person was convicted of an assault as described above.

Cases were excluded where a person's injuries were associated with contact with objects, neck compression, sharp force (knife, gunshot) injuries, bite marks, sexual assaults, thermal mechanisms or fall from heights.

Eligible CPA cases were identified using predefined inclusion criteria developed in previous research. Cases were classified as either Type 1 or Type 2 incidents.[6] Type 1 incidents involved a single punch or strike to the head, face or neck that directly resulted in injury or death. Type 2 incidents involved a single punch or strike followed by secondary impact of the victim's head against a hard surface, such as the ground, resulting in injury or death. (See Data Dictionary in Appendix 11.1 for details).

### 5.4 Bias

There are a number of inherent biases in observational studies relating to the study design and data sources that may have an impact on the utility of study findings. Cross-sectional study designs are at the lower end of the hierarchy of quantitative methodologies as they are limited in drawing causal inferences. In this study, a higher-level quantitative study design cannot be applied as the data sources are only available from specialist organisations and the outcome of interest can only be examined retrospectively.

[6] Sarkar R, Duncan H, Bassed R, Drummer OH, Roodenburg A, Schumann J. An analysis of offence patterns and legal response to one-punch fatalities in Australia. Medicine, Science and the Law. 2025 Oct;65(4):298-310.

The other major bias present in this study is measurement bias as the data sources relied on were generated for the purposes of criminal or death investigation and not for research. As these investigations have a basis in legislation and policy information relevant to a person's social and medical history, this is not systematically and comprehensively described. This was overcome to an extent by triangulating information from multiple data sources. Not all JSRs are available on Lexis Advance.

### 5.5 Data collection

This study accessed Judicial Sentencing Reviews (JSRs) from the *Lexis Advance* database. *Lexis Advance is* a legal research software, and part of the LexisNexis suite of tools for lawyers. The legal research platform features a search module that uses natural language search or *Boolean* search for data on various legal issues. The judgements provide the sentencing outcome and incident circumstances in narrative format. Judgement documents were from cases heard in the Queensland Court System. JSRs consider and record victim impact statements relating to objective and subjective harm and have previously been used in research on offender characteristics and judicial practise.[7]

**CPA survivor** data were derived from a JSR database established as part of previous Australian research examining the impacts of coward punch assaults on victims and perpetrators. The database was developed through systematic searches of the Lexis Advance legal database using predefined eligibility criteria designed to identify CPA incidents involving a single punch or strike to the head, face or neck resulting in loss of consciousness and/or secondary impact injuries. The existing dataset contained eligible Australian cases occurring between 1990 and 2020 and was updated through additional Lexis Advance searches to identify Queensland CPA cases occurring between 2021 and 2022. Survivor injury severity was classified according to the World Health Organization framework for computing the cost of injury in interpersonal violence. Serious injuries were defined as those requiring inpatient hospital admission, while non-serious injuries were defined as those not requiring admission. Cases not meeting the study definition of CPA were excluded.

Data on **CPA fatality** data were accessed from the *National Coronial Information System (NCIS),* a centralised database of deaths reported to coroners in Australia and New Zealand. It contains

[7] Whittle M, Hall G. The Use of Alcohol and/or Drugs in Intimate Partner Homicide: Themes in Judges' Sentencing Remarks. Psychiatr Psychol Law. 2018 Jan 29;25(3):404-416; Butrus N. Judicial sentencing considerations in cases of violent offenders versus sexual offenders. Psychiatr Psychol Law. 2018 Jun 20;25(5):653-674; Clifford, S., & Griffiths, K. E. (2023). Identifying Aboriginal and Torres Strait Islander offenders and victims in judicial sentencing remarks. Journal of Criminology, 56(4), 396-415; Easteal, P., Bartels, L., & Mittal, R. (2018). The importance of understanding the victims' 'reality' of domestic violence. Alternative Law Journal, 44(1), 11-16.

detailed case information, including demographics, cause of death, toxicology results, and investigative findings. NCIS supports research, public health surveillance, and policy development by enabling the identification of trends in preventable deaths. This resource is widely used by forensic scientists, public health professionals, and policymakers to inform evidence-based interventions and improve safety outcomes (www.ncis.org.au). Only cases that were closed by the coroner were included. Fatality data collected as part of previous Australian research examining one-punch deaths were available up to 2018 and formed the basis of the current analysis.[8] To ensure the dataset was current, additional NCIS searches were undertaken (search conducted on 15 August 2025) using the same search strategies to identify Queensland CPA fatalities occurring between 2019 and 2022. The combined dataset was subsequently reviewed and updated for inclusion in the present study. Cases were included where a single punch or strike to the head directly resulted in death, either through primary injury or secondary impact injuries sustained following a fall. Cases involving prolonged assaults, weapons, or circumstances not consistent with the study definition of CPA were excluded.

**CPA perpetrator** characteristics and criminal justice outcomes were examined using JSRs identified from the Lexis Advance database. The JSR dataset included perpetrators involved in both fatal and non-fatal CPA incidents. A database of eligible CPA-related sentencing records established as part of previous Australian research was available up to 2020 and formed the basis of the current analysis.[6] Additional searches of the Lexis Advance database were undertaken to identify eligible Queensland CPA cases occurring between 2021 and 2022, and the dataset was subsequently reviewed and updated.

For fatal CPA incidents, perpetrators identified through JSRs were cross-referenced against fatal CPA cases identified through the National Coronial Information System (NCIS) to ensure complete case ascertainment and inclusion of all eligible fatal CPA incidents during the study period.

### 5.6 Data analysis

The analysis was performed in four stages to report a descriptive statistical overview of:

**Stage 1.** CPA fatalities in Queensland (2001-2022)

**Stage 2.** CPA survivor outcomes in Queensland (1990 to 2022)

**Stage 3.** CPA perpetrator outcomes in Queensland (1990 and 2022)

[8] Schumann JL, Sarkar R, Grbic M, Drummer OH, Gerostamoulos D, Iles L, Bassed R. Changing trends and characteristics of one punch deaths in Australia (2012–2018). Forensic science international. 2023 Apr 1;345:111621.

**Stage 4** Healthcare and societal costs associated with CPA fatalities and survivors in Queensland (1990-2022)

### 5.6.1 Methods for analysing CPA fatalities (Stage 1)

For each fatality, demographic, incident and outcome variables were extracted from coronial records. Variables included victim age and sex, relationship between victim and perpetrator, incident location, time of occurrence, substance use (where available), and cause of death.

Descriptive analyses were undertaken to characterise fatal CPA events. Continuous variables were summarised using means, medians and inter quartile ranges (IQR) where appropriate, while categorical variables were summarised using frequencies and percentages.

### 5.6.2 Methods for analysing CPA survivor outcomes (Stage 2)

Data extracted included victim demographics, injury characteristics, immediate neurological symptoms, hospitalisation status, surgical intervention, ongoing physical and psychological impacts, employment impacts, and other documented long-term consequences. Where available, information regarding incident location, relationship between victim and perpetrator, and substance use was also recorded. The survivor component of this study was descriptive in nature and did not involve formal comparisons between survivor groups. Although injury severity was recorded and categorised as serious or non-serious, these categories were used to describe the spectrum of outcomes among CPA survivors rather than to undertake comparative statistical analyses. Accordingly, the results are presented as descriptive summaries of survivor characteristics, injuries, treatment requirements, and outcomes.

Descriptive analyses were conducted to characterise survivor outcomes and identify the frequency of acute and long-term impacts associated with CPA. Results were reported as frequencies and percentages.

### 5.6.3 Methods for analysing perpetrator outcomes (Stage 3)

Variables extracted included offender age, sex, prior criminal history, relationship to the victim, substance use, offence type, sentence type and custodial sentence length.

Descriptive analyses were undertaken to characterise offender demographics, offence circumstances and criminal justice outcomes. Frequencies and percentages were calculated for categorical variables, while sentence lengths and other continuous variables were summarised using descriptive statistics including medians. Comparisons were made between perpetrators involved in fatal and non-fatal CPA incidents to identify differences in offender characteristics and sentencing outcomes.

### 5.6.4 Methods for estimating healthcare and societal costs (Stage 4)

This analysis estimated the healthcare and societal costs associated with CPA fatalities and survivors occurring in the State of Queensland, Australia between 1990 and 2022.

An activity-based costing approach was employed to calculate the economic impact of assault injuries among the 38 cases of CPA survivors in Queensland by considering the available range of costs incurred from the initial incident up to a year, as well as potential long-term costs. These costs included healthcare costs such as costs for the treatment of the initial injuries, rehabilitation and long-term care, as well as societal costs such as productivity losses and carer costs.

An activity-based costing approach for healthcare contacts plus the cost of lost life years among the 50 fatalities from CPA in Queensland were also included to represent the broader societal costs for people who die from CPAs.

To ensure consistency, historical unit costs were adjusted using the health price index from Australian Institute of Health and Welfare (AIHW), accounting for inflation over time.[9] Future costs were discounted to their present value using a discount rate of 3%.[10] This method allowed for an accurate assessment of the net present value (NPV) of the economic impact of CPA injuries over the survivor's lifetime and years of life lost for fatalities, with all costs presented in Australian dollars (A$) for the financial year 2020-21.

#### *5.6.4.1 Healthcare costs*

Healthcare costs comprised all health sector resources utilised following an assault injury, including ambulance services, emergency department (ED) visits, forensic examinations, inpatient hospital stays, and rehabilitation services.

#### *5.6.4.2 Ambulance cost*

Ambulance costs were applied to both survivors and fatalities and were estimated separately from emergency department and hospital costs. For survivors, ambulance costs were assigned only to individuals with recorded ambulance utilisation. For fatalities, ambulance attendance was assumed for all cases due to the severity of injuries resulting in death and the absence of detailed pre-hospital service utilisation data.

Although Queensland Ambulance Service publishes ambulance fees and charges, these represent patient charges rather than the full cost of service provision. Therefore, national data from the Productivity Commission's Report on Government Services were used to estimate ambulance

[9] Australian Institute of Health and Welfare (AIHW). Health Expenditure Australia 2020–21 [Available from: https://www.aihw.gov.au/reports/health-welfare-expenditure/health-expenditure-australia-2020-21/data.

[10] Department of the Prime Minister and Cabinet: Office of Best Practice Regulation. Cost-benefit analysis 2020 [Available from: https://oia.pmc.gov.au/sites/default/files/2021-09/cost-benefit-analysis.pdf.

costs.[11] A per-incident cost was calculated by dividing total national ambulance expenditure by the total number of ambulance incidents attended, resulting in an estimated average cost of A$1,101 per ambulance attendance.

#### *5.6.4.3 Emergency Department cost*

Emergency department (ED) costs were estimated separately for survivors and fatalities using cost data from the National Hospital Cost Data Collection (NHCDC).[12] For survivors, direct information on ED utilisation was not available. Therefore, ED presentations were identified using predefined criteria based on recorded ambulance use and diagnostic imaging, under the assumption that these services typically preceded or coincided with an ED visit in non-hospitalised patients. Survivors meeting these criteria were classified as having attended the ED. ED presentations were then assigned an Australian Emergency Classification (AECC) code, and corresponding NHCDC unit costs were applied based on the emergency care summary tables.[12,13]

For fatalities, ED costs were assigned according to the timing and location of death. Cases in which death occurred on the same day as the incident and outside a hospital setting were assigned the NHCDC "dead on arrival" ED cost (A$365 per presentation), while same-day deaths occurring within a hospital or medical setting were assigned the NHCDC "died in emergency department" average cost per episode (A$1,851).[14] For cases surviving beyond the incident date, an NHCDC "admitted to hospital" ED cost (A$1,176 per presentation) was applied in addition to inpatient hospital cost.[14]

#### *5.6.4.4 Forensic Examination cost*

For both survivors and fatalities identified as attending the ED, a forensic examination and medico-legal assessment cost was applied. A proxy forensic examination cost was derived from the NHCDC AECC forensic examination complexity categories.[15] A weighted average forensic

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[11] The Productivity Comission. Report on Government Services 2022 [Available from: https://www.pc.gov.au/ongoing/report-on-government-services/2022/health/ambulance-services.

[12] The Independent Health and Aged Care Pricing Authority. National Hospital Cost Data Collection: Public Sector Report Appendix Tables 2020–21 [Available from: https://www.ihacpa.gov.au/resources/national-hospital-cost-data-collection-nhcdc-public-sector-report-2020-21.

[13] Health Policy Analysis. Australian Emergency Care Classification: Definitions manual: Independent Hospital Pricing Authority; 2019 [Available from: https://www.ihacpa.gov.au/sites/default/files/2022-08/aecc_definitions_manual_version_4_0.pdf.

[14] The Independent Hospital Pricing Authority. NHCDC 2018-19 to 2020-21 Emergency Department by jurisdiction 2021 [Available from: https://www.ihacpa.gov.au/resources/australian-national-subacute-and-non-acute-patient-classification-version-50.

[15] The Independent Health and Aged Care Pricing Authority. National Hospital Cost Data Collection: Emergency care summary table, AECC Version 1.0 2020-21 2020–21 [Available from:

examination cost calculated using the three forensic examination complexity levels and weighted according to national presentation volumes, resulting in an estimated average cost of A$831 per presentation.

#### *5.6.4.5 Hospital Admission Cost*

Hospital admission costs were estimated for both survivors and fatalities using Australian Refined Diagnosis-Related Group (AR-DRG) classifications and cost weights obtained from the NHCDC.[16] The NHCDC public sector AR-DRG cost weights incorporate the average costs associated with hospital care, including ward stays, pathology and imaging, operating theatres, critical care, specialised services, pharmacy, and other hospital resources.[16]

For survivors, injuries and procedures associated with each hospital admission were classified into the relevant AR-DRG and assigned the corresponding NHCDC cost weight to estimate total hospital admission costs.[16]

For fatalities, admitted hospital costs were applied only to cases where death occurred in a hospital or medical setting and where the individuals survived beyond the incident date. As hospital admission and discharge records were unavailable, the number of days between the incident and death dates was used as a proxy measure for delayed death rather than confirmed hospital length of stay. Hospitalisation costs were estimated using weighted injury related AR-DRGs based on X60A (Injuries, Major Complexity) and X60B (Injuries, Minor Complexity).[16] Costs were weighted according to national separation volumes to derive an average injury-related per-diem hospital cost. The estimated weighted average inpatient injury cost was A$1,332 per day and was multiplied by the number of survival days following the incident.

#### *5.6.4.6 Rehabilitation Cost*

Expenses associated with physical therapy, occupational therapy, speech therapy and other inpatient or outpatient rehabilitation interventions were accounted for in healthcare costs as part of the recovery process following CPA for survivors. Rehabilitation costs were calculated based on the assumption that all rehabilitation activities occurred within one year following the assault injury.

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https://www.ihacpa.gov.au/resources/australian-national-subacute-and-non-acute-patient-classification-version-50.

[16] The Independent Health and Aged Care Pricing Authority. Australian Refined Diagnosis Related Groups Version 11.0 Technical Specifications 2023 [Available from: https://www.ihacpa.gov.au/resources/ar-drg-version-110#:~:text=The%20Australian%20Refined%20Diagnosis%20Related,the%20resources%20required%20in%20treatment.

Injuries were categorised as either brain or orthopaedic injuries. The inpatient rehabilitation costs were calculated with reference to data sourced from the Independent Hospital Pricing Authority (IHPA).[17] For each Australian National Subacute Non-Acute Patient (AN-SNAP) classification related to brain injury and orthopaedic injury, the associated cost weights were identified and were averaged to determine the price for each admitted rehabilitation episode. The average cost weights were then multiplied by the IHPA National Efficient Price per single cost weight (A$5,320) to obtain the cost for each admitted rehabilitation episode.[18] Hence, the derived unit cost for brain injury and orthopaedic injury inpatient rehabilitation were A$44,661 and A$17,256 respectively.

Each survivor that used outpatient rehabilitation services was assigned a cost derived from the weighted average costs for non-admitted rehabilitation services from the NHCDC.[12] These costs include various outpatient therapies such as occupational therapy, physiotherapy and pulmonary rehabilitation. As the dataset did not capture the number, frequency, and type of rehabilitation services utilised by individual survivors, a proxy weighted average cost of A$253 per separation was applied for each reported outpatient rehabilitation episode.

Total rehabilitation costs were calculated as the sum of inpatient and outpatient rehabilitation costs incurred by each survivor and were reported as a single rehabilitation cost category in the results. Rehabilitation costs were not estimated for fatal assault cases, including those with delayed death, as rehabilitation service utilisation data were not available.

#### *5.6.4.7 Societal Cost*

Societal costs were estimated separately for survivors and fatalities and included productivity losses, informal care costs, and the monetised value of premature mortality where applicable. Total societal costs for survivors were calculated as the sum of healthcare costs, absenteeism costs, presenteeism costs, and carer costs. Total societal costs for fatalities were calculated as the sum of healthcare costs and monetised value of lost life years.

#### *5.6.4.8 Productivity losses for survivors*

Productivity losses represent the income foregone by survivors due to an inability to work or reduced work capacity during recovery periods. Absenteeism costs were calculated by multiplying the reported number of weeks absent from work by the average weekly wage rate

[17] The Independent Hospital Pricing Authority. Australian National Subacute and Non-Acute Patient Classification Version 5.0 Classification Manual 2021 [Available from: https://www.ihacpa.gov.au/resources/australian-national-subacute-and-non-acute-patient-classification-version-50.

[18] The Independent Hospital Pricing Authority (IHPA). National Efficient Price Determination 2020–2021 [Available from: https://www.ihacpa.gov.au/resources/national-efficient-price-determination-2020-21.

reported by the Australian Bureau of Statistics (ABS) (A$1,394), plus 30% on-costs.[19] It was assumed that all survivors reporting an employment impact were employed full-time. Long-term absenteeism costs were also estimated for survivors with permanent disabilities by calculating the difference between the survivor's age at the time of injury and the average retirement age in Australia (65 years).[20] For survivors with missing age data, the cohort average age of 30 years was assumed. Future productivity losses were discounted at an annual rate of 3%.[17]

Presenteeism costs were estimated for survivors who returned to work with reduced work capacity. As individual-level data on work capacity were unavailable, productivity loss estimates were sourced from literature. Specifically, Silverberg et al. used the Lam Employment Absence and Productivity Scale – Productivity subscale (LEAPS-P) among individuals returning to work following a major traumatic brain injury.[21,22] The study reported an average LEAPS-P score of 2.2 out of 12. To estimate the rate of lost work capacity, the average score was divided by the maximum possible score, resulting in an estimated productivity loss of 18%. This productivity loss rate was applied to the number of weeks worked with impairment reported by survivors and valued using the average weekly wage rate reported by the ABS, plus 30% on-costs.[19]

#### *5.6.4.9 Carer costs for survivors*

Carer costs were estimated for survivors requiring ongoing support following assault-related injuries. A human capital approach was adopted, whereby time spent providing care was valued at market wage rates. Residential care costs were estimated using average daily cost for permanent (A$334) and respite (A$357) residential aged care services derived from the Australian National Aged Care Classification (AN-ACC), sourced from the IHPA Residential Aged Care Costing Study Report.[23] Domestic care costs were based on average hourly rates for property maintenance services under the Victorian Home and Community Care Program for Younger People.[24] Reported caregiving time was valued using the relevant unit costs and

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[19] Australian Bureau of Statistics. Employee Earnings and Hours, Australia 2021 [Available from: https://www.abs.gov.au/statistics/labour/earnings-and-working-conditions/employee-earnings-and-hours-australia/may-2021.

[20] Australian Bureau of Statistics. Retirement and Retirement Intentions, Australia 2022–23 [Available from: https://www.abs.gov.au/statistics/labour/employment-and-unemployment/retirement-and-retirement-intentions-australia/sort#:~:text=There%20were%204.2%20million%20retirees,average%20age%20of%2064.8%20years

[21] Lam RW, Michalak EE, Yatham LN. A new clinical rating scale for work absence and productivity: validation in patients with major depressive disorder. BMC Psychiatry. 2009;9:78.

[22] Silverberg ND, Panenka WJ, Iverson GL. Work Productivity Loss After Mild Traumatic Brain Injury. Arch Phys Med Rehabil. 2018;99(2):250–6.

[23] The Independent Health and Aged Care Pricing Authority. The 2023 Residential Aged Care Costing Study 2024 [Available from: https://www.ihacpa.gov.au/resources/2023-residential-aged-care-costing-study-final-report.

[24] Department of Health Victoria. HACC PYP fees policy and schedule of fees 2019 [Available from: https://www.health.vic.gov.au/home-and-community-care/hacc-pyp-fees-policy-and-schedule-of-fees.

extrapolated to one year. For survivors with permanent disabilities requiring ongoing care, future costs were projected to the average Australian life expectancy of 83 years and discounted at an annual rate of 3%.[25]

#### *5.6.4.10 Cost of lost life years for fatalities*

Consistent with guidance from The Office of Best Practice Regulation, the cost of lost life years for fatalities of CPA were calculated and included in the total societal costs.[26] The method used was to calculate the remaining life expectancy based on the individual's age, sex, and state of residence at the time death based on the Australian Bureau of Statistics life tables.[27] The estimated remaining life expectancy was used to quantify years of life lost (YLL), and the Australian Value of a Statistical Life Year (VSLY) of A$222,000 was applied to each life year lost.[26] Future years of life lost beyond the first year were discounted at an annual rate of 3% in accordance with standard Australian health economic evaluation guidelines.

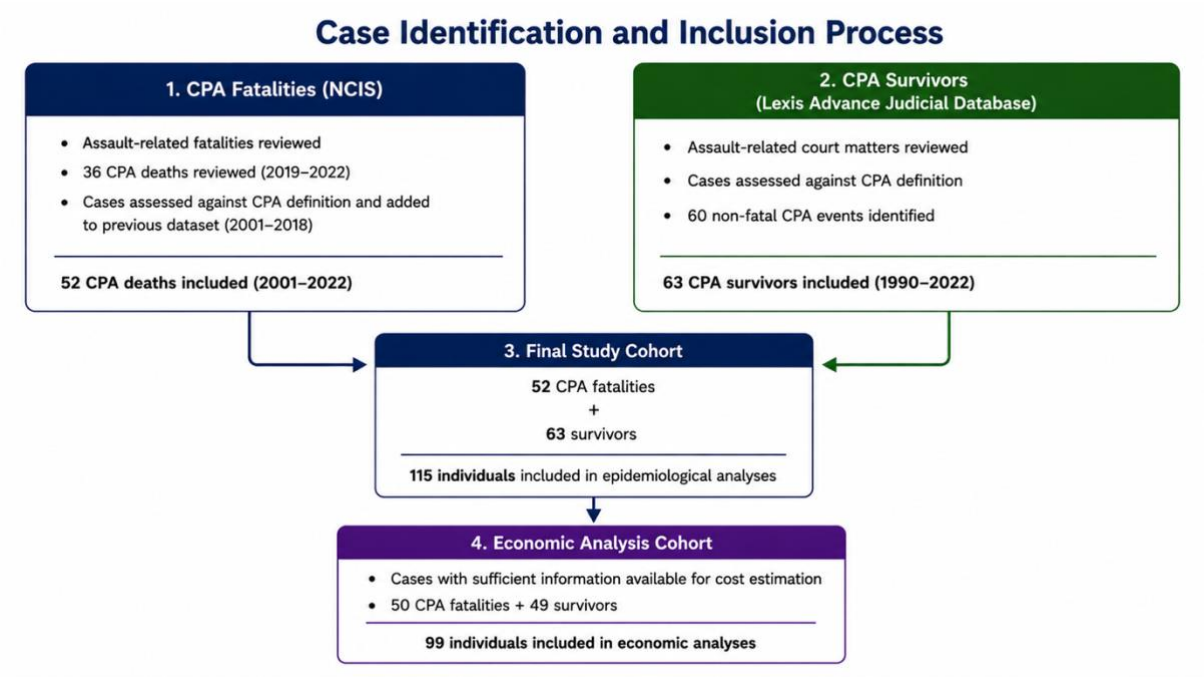



**Figure 1.** Identification, inclusion and analysis of coward punch assault cases in Queensland.

Abbreviations: NCIS; National Coronial Information System

[25] The Australian Institute of Health and Welfare. Deaths in Australia: Life expectancy 2023 [Available from: https://www.aihw.gov.au/reports/life-expectancy-deaths/deaths-in-australia/contents/life-expectancy.

[26] Office of Best Practice Regulation. Best practice regulation guidance note: value of statistical life. Canberra; 2021 25 May 2026.

[27] Australian Government Actuary. Australian life tables 2018–20. Canberra; 2018.

# 6 Results

## 6.1 Stage 1 – CPA fatalities in Queensland (2001-2022)

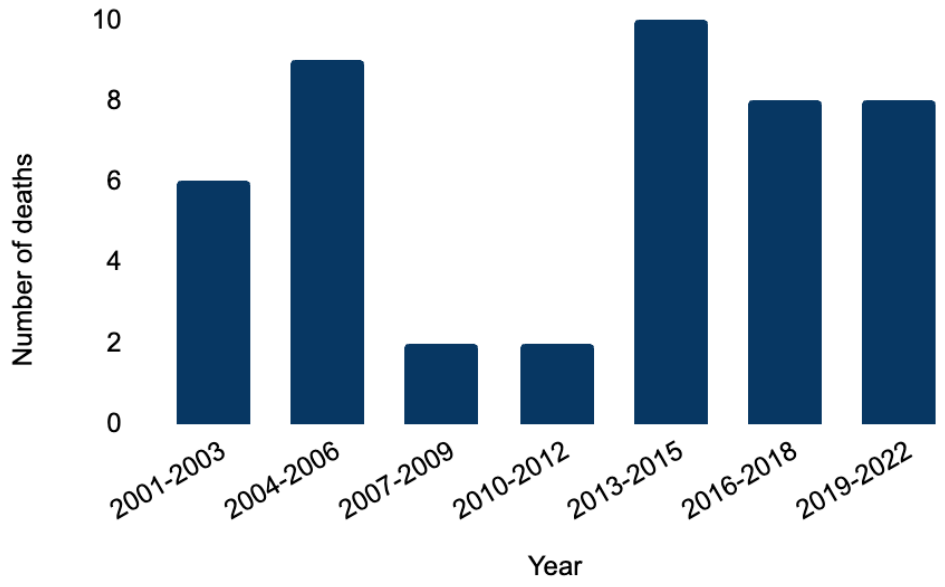



**Figure 2**. CPA fatalities between 2001 and 2022.

There were 52 fatal CPA events in Queensland between 2001 and 2022 (Figure 2). This included 56 offenders and 52 victims. Victim ages ranged from 15-65; the median age and IQR was 39.5(28-48) years. The victims were predominantly male (98.1%).

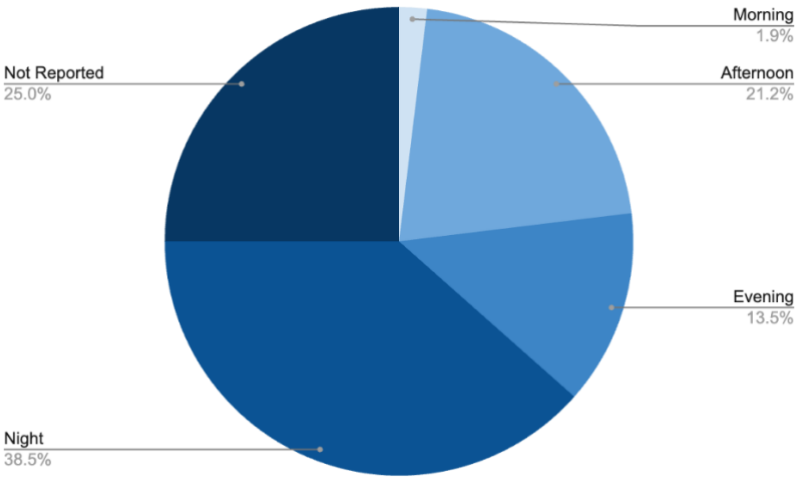



**Figure 3**. Time of the day the CPA fatality occurred.

Most events occurred at night (38.5%) or during the afternoon (21.2%) (Figure 3). The location of the event was categorised by the Remoteness Area code, with major cities (44.2%) demonstrating the highest number of cases, followed by outer regional locations (Figure 4). The highest proportions of CPA fatalities occurred in Brisbane (17.3%), Cairns (13.5%), the Gold Coast (9.6%), and Moreton Bay (7.7%). The remaining cases were distributed across almost 20 other local government areas.

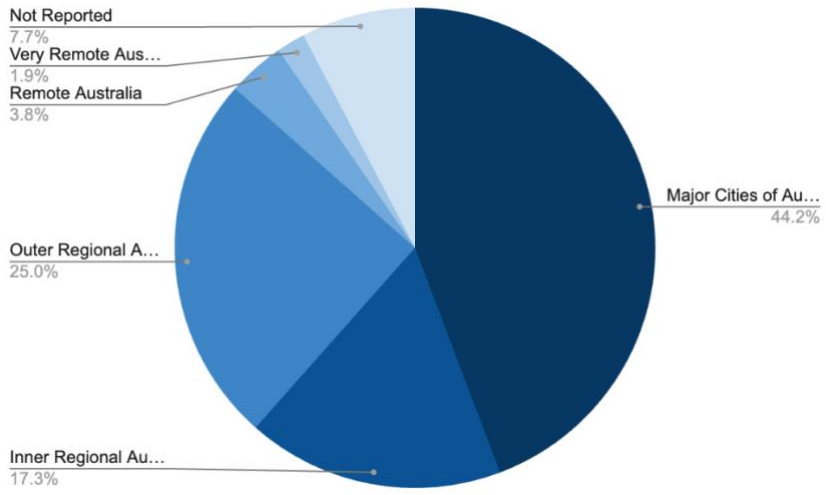



**Figure 4.** Remoteness Area code of CPA fatality in Queensland

The punch was categorised as Type 1 in 88.5% of cases. Neurological symptoms immediately after the event were common, occurring in 90.4% of cases. Of these, most (93.6%) involved immediate loss of consciousness. See further detail fatal CPA in Appendix 11.1.

### 6.2 Stage 2 – CPA survivor outcomes in Queensland (1990 to 2022)

There were 60 nonfatal CPA events in QLD between 1990 and 2022 (Figure 5). These cases included 66 offenders and 63 victims. Victim ages were only reported in 27 cases. Of those, the age ranged from 16-56, with a median age of 30 (21.75-41.25). Victims were predominantly male (79.4%).

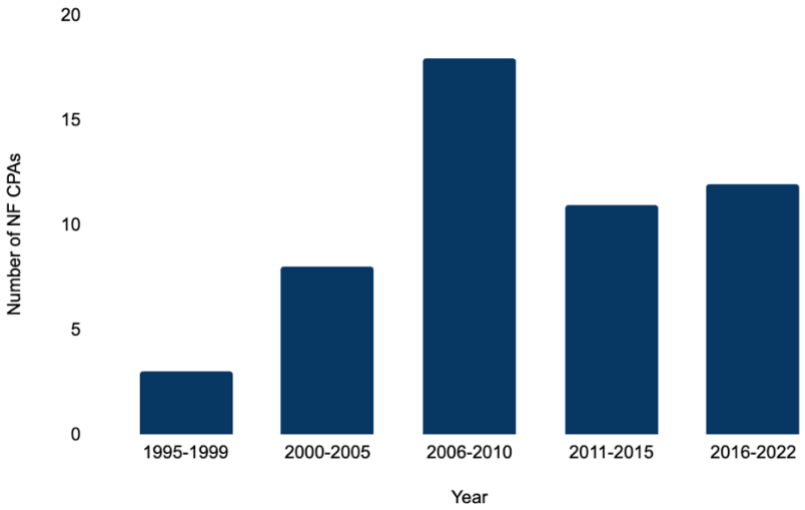



**Figure 5**. CPA survivors in Queensland between 1990 and 2022.

Most cases of nonfatal CPA occurred at night (50%), in a public place (75%) (Figure 6). The location of events was categorised by Remoteness Area Code; 25% of cases occurred in major cities followed by 15% in outer regional areas.

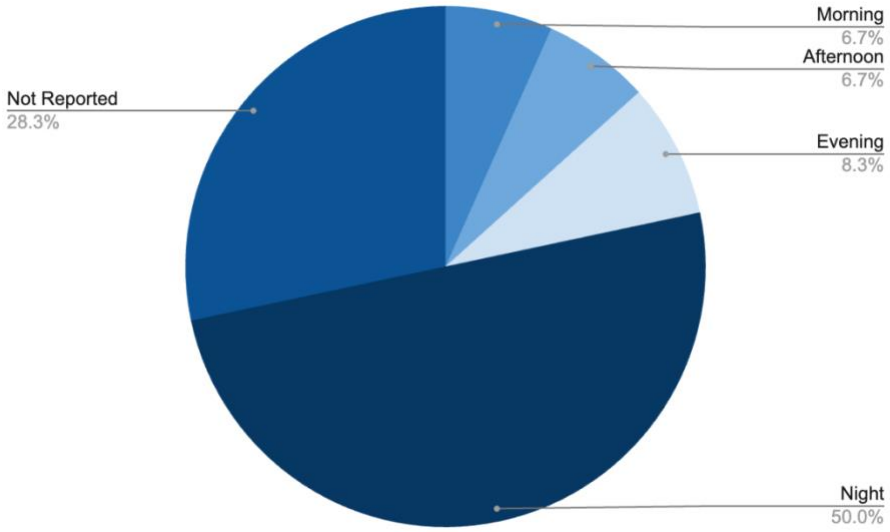



**Figure 6**. Time of day the nonfatal CPA occurred.

Ninety-five per cent of punches were Type 1 and 38 victims experienced immediate neurological symptoms at the time of the assault. In most of these cases (63.2%), this was loss of consciousness (Figure 7).

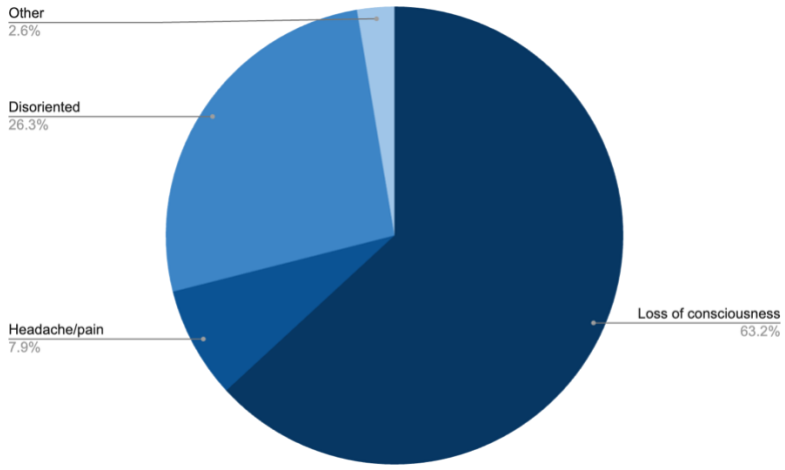



**Figure 7**. Neurological symptoms experienced by victim after the assault, n=38.

Nearly a third (30.2%) of victims were hospitalised. Of the 63 victims, 57 reported injuries. Half (n=28, 49.1%) had a fracture/break in the head region including 15 (26.3%) who had a fracture of the jaw. Over a third (n=21, 36.8%) of victims required surgery and 11 (19.3%) experienced a psychological impact or consulted a psychiatrist. One in five (n=11, 19.3%) victims reported the event impacting their employment. A further 8 (14.0%) developed sensory impairments such as double vision and 5 (8.8%) had sleep disturbances. See further detail non-fatal CPA in Appendix 11.2.

### 6.3 Stage 3 – CPA perpetrator outcomes in Queensland (1990 and 2022)

The age of the perpetrator in fatal cases was reported for 32 offenders, ranging from 16-40 years with a median and IQR of 21(18-29). In nonfatal cases offender age ranged from 16-45 years, with a median of 23 (20-29). The offenders were predominantly male in both fatal and nonfatal cases, 91.1% and 97.0% respectively.

In 32.1% of fatal cases, the offender reported the consumption of alcohol/drugs. Alcohol was the most common substance, reported in 88.89% of the 18 cases. In 19.7% of cases the victim was known to the perpetrator; of these, most were acquaintances only (54.6%). Prior criminal history was only reported in 15 cases, with 10 offenders having a criminal history. Of these, 7 were for violent offences.

Similarly, in nonfatal cases, 43.9% of the offenders reported having consumed alcohol/drugs and in 59.09% of cases the victim was not known to the offender. In cases where the offender and victim were known to each other (37.9%), the majority (36%) were a current/former partner. The

perpetrator had a prior criminal history in 40.9% of cases. Of these, 77.8% had a violent criminal history.

Of the 56 offenders in CPA fatal cases, the majority were charged with manslaughter (Table 1). In nonfatal cases (survivors), the majority were charged with grievous bodily harm (47.0%).

**Table 1. Offences charged against perpetrators in fatal and non-fatal CPA cases**.

| Charge | Fatal cases, n=56(%) | Nonfatal cases, n=66(%) | Total, n=122(%) |
|---|---|---|---|
| Murder | 2 (3.6) | 0 | 2 (1.6) |
| Manslaughter | 24 (42.9) | 0 | 24 (19.7) |
| Unlawful striking causing death | 12 (21.4) | 0 | 12 (9.8) |
| Assault/Assault occasioning bodily harm | 3 (5.4) | 17 (25.8) | 20 (16.3) |
| Grievous bodily harm | 0 | 31 (47.0) | 31 (25.4) |
| Multiple offences | 0 | 6 (9.1) | 6 (4.9) |
| Not charged/proceeding discontinued/not guilty | 3 (5.4) | 1 (1.5) | 4 (3.3) |
| Other* | 0 | 7 (10.6) | 7 (5.8) |
| Not Reported | 12 (21.4) | 4 (6.1) | 16 (13.1) |

*Other included public nuisance offences, assaulting or obstructing police, robbery with violence, and civil negligence proceedings against venue operators relating to alleged breaches of duty of care.

**Table 2. Criminal justice outcomes for fatal and nonfatal CPA cases**

| Outcome | Fatal cases, n=56(%) | Nonfatal cases, n=66(%) | Total, n=122(%) |
|---|---|---|---|
| Imprisonment | 27 (48.2) | 25(37.9) | 52 (42.6) |
| Community-based | 1 (1.8) | 3 (4.6) | 4 (3.3) |
| Monetary | 0 | 3 (4.6) | 3 (2.4) |
| Procedural | 2 (3.6) | 5 (7.6) | 7 (5.7) |
| Not Charged/proceeding discontinued | 3 (5.4) | 0 | 3 (2.5) |
| Combined | 0 | 13 (19.7) | 13 (10.7) |
| Unfit for trial | 1 (1.8) | 0 | 1 (0.8) |
| Not Reported | 15 (26.8) | 16 (24.2) | 31 (25.4) |

| | | | |
|---|---|---|---|
| Not Applicable (not guilty) | 7 (12.5) | 1 (1.5) | 8 (6.6) |

The most common criminal justice outcome for both fatal and nonfatal CPA cases was imprisonment, 48.2% and 37.9% of offenders respectfully (Table 2). The median time of imprisonment for fatal cases was 8 years and for nonfatal cases it was 2 years (excluding non-parole periods, suspended sentences and cumulative charges).

### 6.4 Stage 4 – Healthcare and societal costs associated with CPA fatalities and survivors in Queensland

The economic analysis was restricted to cases with sufficient information available to estimate healthcare utilisation, productivity losses and societal costs. Consequently, the economic cohort comprised 49 survivors and 50 fatalities. The Queensland cohort comprised 99 individuals involved in CPA incidents, including 49 survivors and 50 fatalities. Survivors had a mean age of 31.5 years, while fatalities had a mean age of 37.5 years. Males represented the majority of cases in both groups, accounting for 75.5% (37/49) of survivors and 96% (48/50) of fatalities. Among survivors, 22.4% (11/49) were recorded as employed at the time of incident. Among fatalities, 30% (15/50) were employed, 16% (8/5) were unemployed, and 12% (6/50) were classified as students, retired individuals, or pensioners. Employment status was unavailable or unknow for the remaining cases.

Total healthcare costs were estimated at A$2,144,731, of which A$1,768,650 (82.5%) were attributable to survivors and A$376,081 (17.5%) to fatalities. When productivity losses, carer costs, and premature mortality costs were included, the total societal cost increased substantially to A$282,502,907.

**Table 3. Health sector and societal costs associated with coward punch assault in Queensland.**

| | Survivors (N=49) | Fatalities (N=50) | Total (N=99) |
|---|---|---|---|
| **Ambulance** | $13,212 | $55,050 | $68,262 |
| **Emergency Department** | $4,146 | $57,037 | $61,453 |
| **Forensic** | $3,324 | $41,550 | $44,874 |
| **Hospital admissions** | $1,596,205 | $222,444 | $1,818,649 |
| **Rehabilitation** | $151,493 | - | $151,493 |
| **Total Health Sector Cost** | $1,768,650 | $376,081 | $2,144,731 |
| **Carer cost** | $2,897,003 | - | $2,897,003 |

| | | | |
|---|---|---|---|
| **Absenteeism** | $2,778,408 | - | $2,778,408 |
| **Presenteeism** | $33,927 | - | $33,927 |
| **Lost life years cost** | - | $274,648,838 | $274,648,838 |
| **Total Societal Cost** | $7,477,988 | $275,024,919 | $282,502,907 |

### 6.4.1 Healthcare costs

Table 3 presents the health sector costs by cost category for survivors and fatalities. Hospital admissions represented the largest component of health sector costs, accounting for A$1,818,649 (84.8%) of total health sector expenditure. Hospital admission costs were substantially higher among survivors (A$1,596,205) than fatalities (A$222,444). Ambulance, emergency department, and forensic examination costs contributed a further A$68,262, A$61,453, A$44,874, respectively. Rehabilitation costs were only available for survivors and totalled A$151,493.

### 6.4.2 Societal costs

The inclusion of productivity losses, informal care costs, and premature mortality substantially increased the estimated economic burden of CPA. Among survivors, societal costs totalled A$7,477,988, comprising healthcare costs, absenteeism costs (A$2,778,408), presenteeism costs (A$33,927), and carer costs (A$2,897,003). This equated to an average societal cost of A$152,612 per survivor.

For fatalities, societal costs totalled A$275,024,919. While healthcare costs accounted for only A$376,081, the monetised value of lost life years contributed to A$274,648,838, representing over 99% of total societal costs for fatalities. The average societal cost per fatality was A$5,500,498.

Overall, the total societal cost for the Queensland cohort was estimated at A$282,502,907, with fatalities accounting for 97.4% of the total economic burden (Table 3). Across all 99 cases, the average societal cost per incident was A$2,853,565.

### 6.4.3 Key cost drivers

The monetised value of lost life years was the largest contributor to societal costs, accounting for A$274.6 million (97.2% of total societal costs). Carer costs (A$2.9 million), absenteeism (A$2.8 million), and hospital admission costs (A$1.8 million) were the next largest contributors to the overall economic burden.

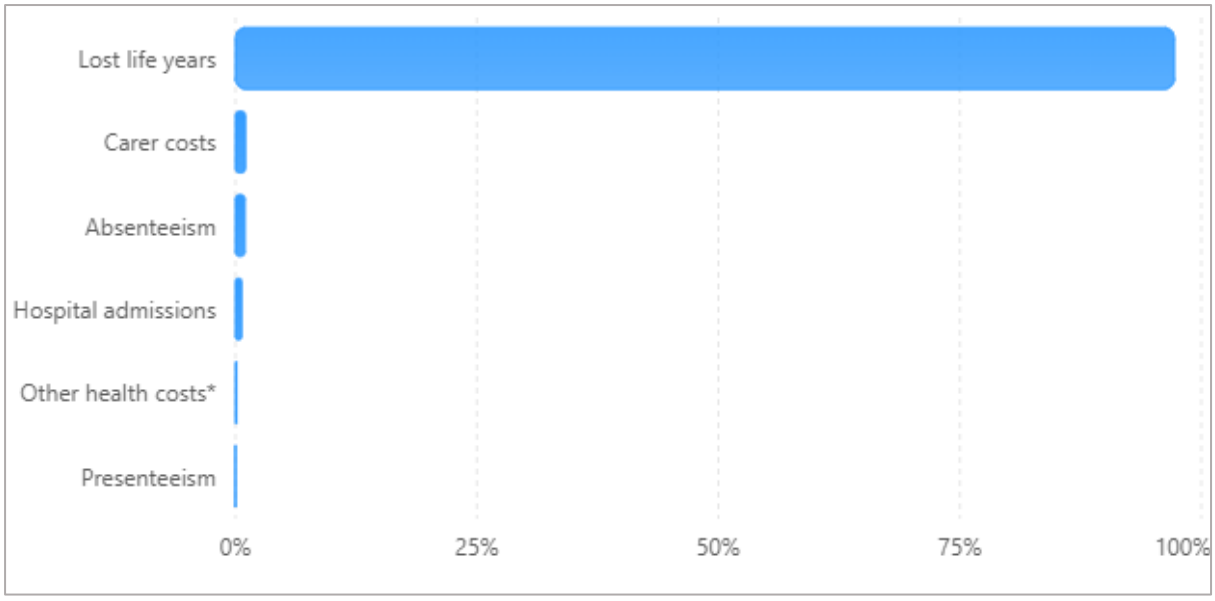



**Figure 8. Percentage contribution of major cost drivers to total societal costs associated with coward punch assault in Queensland.**

*Other health costs comprise ambulance, emergency department, forensic examination, and rehabilitation cost

As shown in Figure 8, premature mortality substantially exceeded all other cost categories, highlighting the significant societal burden associated with fatal CPA incidents.

## 7 Discussion

This study provides the first comprehensive examination of CPA in Queensland, including fatalities, survivor outcomes, perpetrator characteristics, criminal justice outcomes, and economic impacts. The findings demonstrate that CPA remains an important source of preventable death and serious injury in Queensland, with impacts extending well beyond the immediate event to affect victims, families, perpetrators, healthcare systems, and the broader community.

Consistent with previous Australian research, CPA events were overwhelmingly perpetrated by males and most victims were also male. Perpetrators were generally younger than victims, with the median age of fatal case offenders being 21 years. This pattern aligns with previous studies demonstrating that serious interpersonal violence is disproportionately concentrated among

young males and often occurs in settings characterised by risk-taking behaviour, alcohol consumption, and impulsive aggression.[28,29]

The finding that most fatal and non-fatal incidents occurred at night and in public settings is also consistent with our previous research. Night-time entertainment precincts and other public environments have long been recognised as high-risk settings for alcohol-related violence. Although substance use was not consistently reported across all cases, alcohol was frequently identified where offender intoxication was documented. This finding reinforces a strong association between alcohol consumption and serious interpersonal violence. Alcohol may contribute to impulsive decision-making, increased aggression and reduced capacity to de-escalate conflict, thereby increasing the risk of serious assault-related injury and death.[30]

An important finding of this study is that many CPA incidents occurred between individuals who were not previously known to one another. This suggests that spontaneous interpersonal conflict remains an important driver of CPA. However, the study also identified incidents involving acquaintances and current or former intimate partners, highlighting that these assaults are not restricted to nightlife environments and can occur across a range of social contexts.

The survivor outcomes identified in this study demonstrate that the consequences of CPA extend far beyond mortality. Injuries were often severe, with almost one-third of victims requiring hospitalisation and one-third undergoing surgery. Many survivors experienced ongoing neurological, sensory, psychological and employment-related consequences. While public discourse surrounding CPA often focuses on fatalities, these findings demonstrate that survivors frequently experience long-term disability and reduced quality of life. Previous research on traumatic brain injury has shown that even relatively brief periods of loss of consciousness can be associated with persistent cognitive, behavioural, emotional and functional impairment that may continue for years after the initial event.[31]

The high prevalence of immediate neurological symptoms observed in both fatal and non-fatal cases is particularly noteworthy. Loss of consciousness was the most common neurological presentation and reflects the significant force involved in these assaults. The findings reinforce

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[28] Schumann JL, Sarkar R, Grbic M, Drummer OH, Gerostamoulos D, Iles L, Bassed R. Changing trends and characteristics of one punch deaths in Australia (2012–2018). Forensic science international. 2023 Apr 1;345:111621.

[29] Pilgrim JL, Gerostamoulos D, Drummer OH. "King hit" fatalities in Australia, 2000–2012: The role of alcohol and other drugs. Drug and alcohol dependence. 2014 Feb 1;135:119-32.

[30] World Health Organization. Alcohol and interpersonal violence: policy briefing.

[31] Maas AI, Menon DK, Adelson PD, Andelic N, Bell MJ, Belli A, Bragge P, Brazinova A, Büki A, Chesnut RM, Citerio G. Traumatic brain injury: integrated approaches to improve prevention, clinical care, and research. The Lancet Neurology. 2017 Dec 1;16(12):987-1048.

that a single punch can produce catastrophic neurological injury, particularly when accompanied by secondary impact of the head against the ground or another surface. Public awareness campaigns have frequently emphasised the risk of death following a single punch; however, the current findings suggest equal attention should be given to the substantial burden of permanent disability among survivors. The frequency of immediate neurological impairment observed in this study reinforces that loss of consciousness following an assault should be regarded as a medical emergency, requiring urgent assessment and ongoing monitoring for potentially serious brain injury.

The criminal justice findings demonstrate that imprisonment was the most common sentencing outcome for both fatal and non-fatal CPA incidents. Fatal cases attracted substantially longer custodial sentences than non-fatal cases. Despite these legal consequences and increasing public awareness of coward punch assaults over recent decades, these incidents continue to occur. This suggests that criminal justice responses alone are unlikely to eliminate CPA and highlights the importance of complementary prevention strategies focused on violence reduction, alcohol harm minimisation and public education.

To the best of our knowledge this is the first analysis to quantify the healthcare and societal costs associated with coward punch assault in Queensland, and one of the first internationally to estimate the economic burden of both survivors and fatalities arising from these incidents. The total healthcare cost of CPA in Queensland was estimated at A$2.1 million, while the total societal cost exceeded A$282.5 million. The substantial difference between health sector and societal costs reflects the significant economic impact of premature mortality, with the monetised value of lost life years accounting for 97.2% of total societal costs.

Among survivors, societal costs were primarily driven by long-term carer costs, productivity losses due to absenteeism, and hospital admission cost. These findings highlight that the burden of CPA extends well beyond the immediate healthcare consequences and can result in substantial long-term impacts on workforce participation, and informal caregiving requirements. Survivors in the cohort were relatively young (mean age 31.5 years), suggesting that the consequences of assault-related injuries may affect employment, productivity, and the need for ongoing support over many years following injury.

Comparing these values to other prevalent health conditions may assist in putting these costs in context. The estimated average societal cost for a person experiencing a stroke during the first

12 months was A$34,562 and over a life time was A$81,005.[32] Both these costs are presented as 2020 Australian dollars, converted from 1997 Australian dollars using a cost converter.[33] The estimated societal cost attributed to chronic obstructive pulmonary disease (COPD) was estimated at A$9,200 per person with COPD per year.[34] Both the stroke and COPD costs are somewhat lower than our estimates for CPA survivors, potentially due to the greater impacts on work productivity for the CPA survivors. The CPA survivors have an average age of 31.5, while the population experiencing stroke had an average age of 73 and would be retired. For COPD, an estimated 62% of the population affected are aged over 60. Chronic pain is a condition noted as a leading cause of disease burden, with total societal costs in Australia estimated to be A$22,588 per person with chronic pain in 2018.[35] Although direct comparisons between cost-of-illness studies should be interpreted cautiously due to differences in methodology, included cost categories, and study populations, the findings demonstrate that CPA impose a substantial economic burden on Queensland. Importantly, these costs arise from incidents that are largely preventable and therefore represent a potential avoidable burden on individuals, families, healthcare services, and society.

For fatalities, healthcare costs represented only a small portion of the overall economic burden, with most costs attributable to the loss of future life years. Given the relatively young age at death (mean age 37.5 years), fatalities resulted in substantial years of life lost, consistent with previous Australian evidence showing that premature mortality from injuries among younger individuals generates significant societal costs.[36]

Together, these findings identify a consistent pattern of CPA in Queensland. Incidents most commonly involved young male perpetrators and victims, occurred at night and in public settings, and frequently involved alcohol (where substance use was documented). The immediate consequences were often severe, with many victims experiencing loss of consciousness, significant injury, hospitalisation, surgery, permanent disability or death.

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[32] Dewey HM, Thrift AG, Mihalopoulos C, Carter R, Macdonell RA, McNeil JJ, et al. Cost of stroke in Australia from a societal perspective: results from the North East Melbourne Stroke Incidence Study (NEMESIS). Stroke. 2001;32(10):2409–16.

[33] Shemilt I, James T, Marcello M. A web-based tool for adjusting costs to a specific target currency and price year. Evidence & Policy. 2010;6(1):51–9.

[34] Access Economic. Economic impact of COPD and cost effective solutions 2008 [Available from: https://rnig.org.au/docs/EconomicImpactofCOPDandCostEffectiveSolutions-226.pdf.

[35] Deloitte Access Economics. The cost of pain in Australia. 2019.

[36] Carter HE, Schofield D, Shrestha R. The long-term productivity impacts of all cause premature mortality in Australia. Australian and New Zealand Journal of Public Health. 2017;41(2):137–43.

Importantly, the burden of CPA extends beyond victims alone. Families may assume long-term caregiving responsibilities, perpetrators face significant criminal justice consequences, and healthcare and community services bear considerable costs associated with treatment, rehabilitation and ongoing support. The economic findings further demonstrate that the societal burden of CPA is substantial, exceeding A$282 million across the identified Queensland cohort. A single impulsive act can result in lifelong disability, premature death, imprisonment, and millions of dollars in societal costs.

The demographic and situational patterns identified in this study provide clear opportunities for targeted prevention initiatives. Continued public education, alcohol harm reduction strategies, violence prevention programs and community awareness campaigns remain important approaches for reducing the incidence and impact of coward punch assaults. Ultimately, a single impulsive act can result in catastrophic brain injury, lifelong disability, premature death, imprisonment, and millions of dollars in societal costs. Our findings reinforce the significant human, social and economic costs imposed by CPA on Queensland communities. Reducing the occurrence of these assaults represents an opportunity to improve community safety, reduce avoidable harm, and protect future victims, families and communities from lifelong consequences.

# 8 Policy and Prevention implications

The demographic and situational characteristics identified in this study suggest that prevention efforts should continue to focus on young males, public settings and alcohol-related violence. Given that many incidents occurred at night and in public locations, targeted interventions within entertainment precincts and other high-risk environments remain warranted.

The substantial health and economic burden associated with both fatal and non-fatal CPA highlights the importance of maintaining public awareness campaigns that communicate the potentially catastrophic consequences of a single punch. These campaigns should continue to emphasise that a single impulsive act can result in lifelong disability, death, imprisonment and significant impacts on families and communities. The findings also support ongoing investment in violence prevention programs, bystander intervention initiatives and education programs-particularly targeting young people.

The substantial burden observed among survivors also highlights the importance of ensuring access to appropriate rehabilitation, psychological support and community services. Early intervention following CPA may reduce long-term disability and improve recovery outcomes for

affected individuals and families. Future surveillance and monitoring of CPA incidents would further assist in evaluating prevention initiatives and informing evidence-based policy responses.

# 9 Limitations

Several limitations relating to the epidemiological analyses must be acknowledged. The fatality, survivor and perpetrator analyses relied on information available within coronial and judicial records, which varied in the level of detail reported across cases. Consequently, some variables contained missing or incomplete information and may not fully reflect the circumstances and outcomes associated with all incidents. In addition, survivor outcomes were derived from information documented during legal proceedings and therefore may not comprehensively capture all medical, psychological, social and occupational consequences experienced following a coward punch assault. As a result, the burden associated with non-fatal incidents is likely to be underestimated.

While this analysis provided a conservative estimate of the health care and societal costs associated with CPA in Queensland, Australia, this analysis relied on information extracted from legal and coronial records, which were not collected for economic evaluation purposes. Consequently, healthcare utilisation, productivity impacts, carer requirements, and rehabilitation service use were not consistently reported across cases, requiring a number of assumptions to be made when estimating costs.

Direct hospital admission, discharge, and rehabilitation utilisation data were unavailable for fatal assault cases. For fatalities with delayed death, the number of days between the incident and death was used as a proxy for hospitalisation duration, and rehabilitation costs could not be estimated due to the absence of rehabilitation utilisation data. As a result, healthcare costs for some fatal cases may have been underestimated. In addition, several healthcare resource use estimates relied on proxy measures and national average unit costs. For example, emergency department presentations among survivors were identified using predefined criteria rather than directly observed ED utilisation, and ambulance costs were estimated using national expenditure data. While these approaches were considered appropriate in the absence of Queensland-specific resource utilisation data, they introduce uncertainty into the cost estimates.

Finally, the monetised value of premature mortality represented the largest component of societal costs. Although the Value of Statistical Life Year approach is recommended by the Office of Best

Practice Regulation and widely used in Australian economic evaluations, estimates are sensitive to assumptions regarding life expectancy, discount rates, and the valuation of life years.

Despite these limitations, this study provides the first comprehensive estimate of the economic burden of CPA in Queensland and highlights the substantial societal costs associated with these preventable injuries. Future work to collect this type of data through a survey of CPA survivors or a method to standardise reporting in legal records would greatly improve the cost estimates.

## 10 Conclusion

Coward punch assaults continue to impose substantial human, social and economic costs across Queensland. While fatalities represent the most visible consequence, this study demonstrates that many survivors also experience significant and lasting physical, neurological, psychological and occupational impacts.

The estimated societal cost exceeding A$282 million highlights the far-reaching consequences of these assaults for victims, families, communities and government systems. Ultimately, a single impulsive act can result in catastrophic brain injury, lifelong disability, premature death, imprisonment and millions of dollars in societal costs.

These findings reinforce the importance of continued investment in education, awareness and evidence-based prevention strategies to reduce avoidable harm and improve community safety in Queensland.

# 11 Appendix

## 11.1 Data dictionary

| | Definition | Field type | Types/choices |
|---|---|---|---|
| **Trial name** | Name of the parties involved in the trial | Text | XXX v XXX |
| **Date of incident** DD-MM-YYYY | The date that the incident occurred on | Text | DD-MM-YYYY |
| **Time of incident** | The time that the incident occurred | Text | hh:mm |
| **Time** | The time that the incident occurred:<br>Morning 6am-12pm<br>Afternoon 12pm-5pm<br>Evening 5pm-9pm<br>Night 9pm-6am<br>Not Reported | Categorical | Morning<br>Afternoon<br>Evening<br>Night<br>Not Reported |
| **State** | The state in Australia in which the incident occurred | Categorical | QLD |
| **Venue** | Whether the incident occurred in a public area (e.g. street, pub, shops, station) or in a private area (home, detention centre) | Categorical | Public<br>Private<br>Not Reported |
| **Venue (Specify)** | The type of location where the incident occurred | Text | e.g. residence, bar, street |
| **Location in SR** | The specific location given in the SR | Text | e.g nightclub at Townsville |
| **2021 RA code** | The remoteness area code for the location of the incident | Categorical | Major Cities of Australia<br>Inner Regional Australia<br>Outer Regional Australia<br>Remote Australia<br>Very Remote Australia<br>Not Reported |
| **2021 LGA code** | The LGA code for the location of the incident | Categorical | e.g. Cairns, Townsville, Noosa |
| **Licensed venue** | Whether the event occurred at a licensed venue, or if the offender had been at a licenced venue preceding the event | Categorical | Yes<br>No<br>Not Reported<br>Not Applicable |
| **# Offenders** Number of offenders | How many offenders were involved in the incident | Numerical | 1+ |
| **# Victims** | How many victims were involved in the incident | Numerical | 1+ |

| | | | |
|---|---|---|---|
| **Index or Related Case** | Is this the only row of the event (multiple perpetrators of victims have multiple rows) | Categorical | Index<br>Related |
| **Type 1/2/3/4**<br>Type of punch | 1. The victim was punched to the head/face +/- made contact with the surface +/- neurological changes present<br>2. The victim was punched to the head/face + made contact with a surface/object + was further struck +/- neurological changes | Categorical | 1<br>2 |
| **Offender Name** | The name of the offender | Text | e.g. John Smith<br>Not Reported |
| **Age**<br>Offender | The age of the offender at the time of the incident | Numerical | 1+<br>Not Reported |
| **Sex**<br>Offender | The sex of the offender | Categorical | Female (F) or Male (M)<br>Not Reported |
| **Alcohol/drug intake**<br>Offender | Was the offender under the influence of any substances at the time of the incident (alcohol or illicit drugs) | Categorical | Yes/No<br>Not Reported |
| **Describe substance** | What was the substance that the offender had consumed at the time of the incident | Text | e.g. Alcohol<br>Not Reported |
| **Relation** | Were the victim and offender known to each other | Categorical | Known/None |
| **Specify known relation** | What was the relationship between the offender and the victim | Text | e.g. Former partner<br>None<br>Not Reported<br>Not Applicable |
| **Known relationship code** | Categorisation of the relationship into categories | Categorical | Acquaintance<br>Partner (current or former)<br>Other<br>Not Reported<br>Not Applicable |
| **Criminal history** | Has to offender been convicted of crimes prior to the incident (does not included cases where the offender is being sentenced for multiple offences at once) | Categorical | Yes<br>No<br>Not Reported |
| **Prior criminal history** | Specific criminal history documented in the sentencing remarks | Text | e.g. Previous convictions for assault |
| **Criminal history code** | If the prior criminal history was for violent or non-violent offences | Categorical | Violent<br>Not violent<br>Not Applicable |
| **Victim's Name** | The name of the victim | Text | e.g. John Smith |

| | | | |
|---|---|---|---|
| **Age**<br>Victim | The age of the victim at the time of the incident | Numerical | 1+<br>Not Reported |
| **Sex**<br>Victim | The sex of the victim | Categorical | Female (F) or Male (M)<br>Not Reported |
| **Presence and onset of neurological signs**<br>Yes/No/Not Reported | Did the victim experience any neurological changes at the time of the incident | Categorical | Yes/No<br>Not Reported |
| **Neurologic changes** | What were the neurological changes experienced by the victim at the time of the incident | Text | e.g. pain, headache, nausea, dizziness, loss of consciousness |
| **Neurological coding** | Categorisation of neurological change | Categorical | Loss of consciousness<br>Disoriented<br>Headache/pain<br>Other<br>Not Applicable |
| **Describe injuries** | What were the injuries the victim experienced from the incident | Text | e.g. haematoma, orbital fracture |
| **Charge** | What was the offender charged with | Text | e.g. grievous bodily harm |
| **Charge Code** | Categorisation of the charge | Categorical | Assault occasioning bodily harm<br>GBH<br>Multiple<br>Other<br>Not Reported |
| **Outcome category: 1-6** | What was the outcome of the trial was:<br>1. Imprisonment (term and non-parole period)<br>2. Community-based sentence (e.g. CCO, bail, home detention, good behaviour bond)<br>3. Monetary damages (fine)<br>4. Procedural (re-trial, acquitted, successful appeal)<br>5. Combined (e.g. imprisonment and damages)<br>6. Not Reported | Categorical | 1-6 |
| **Judicial Outcome (years)** | How long does the offender have to serve if imprisonment of community based. If monetary damages, then how much was the offender required to pay. | Text | e.g. 2 years, 6 month<br>NPP<br>Not Reported |
| **Imprisonment time** | Number of years offender was sentenced to prison not included non-parole period | Numerical | e.g. 4 |
| **Notes** | Any notes on the case | Text | |

| | | | |
|---|---|---|---|
| **AO coded** | What date did AO finish coding | Text | DD-MM-YYYY |
| **AO notes to RS** | Does AO have any questions for RS | Text | |
| **AO to RS discussed** | What was the outcome of the discussion between Reena and Adele regarding the questions in the notes column | Text | DD-MM-YYYY |
| **RS Coded** | What date did RS finish coding | Text | DD-MM-YYYY |
| **Check cited cases** | Were there cases cited within the sentencing remarks that are relevant to the study | Text | e.g. XXX v XXX |
| **RS to check** | Did RS Cross check that cases are cited are in the database | Categorical | Yes/No |

## 11.2 Nonfatal outcome tables

### 11.2.1 Event factors

| Time of the day | n=60 events | % |
|---|---|---|
| Morning | 4 | 6.67 |
| Afternoon | 4 | 6.67 |
| Evening | 5 | 8.33 |
| Night | 30 | 50.00 |
| Not Reported | 17 | 28.33 |

| Venue | n=60 events | % |
|---|---|---|
| Public | 45 | 75.00 |
| Private | 10 | 16.67 |
| Not Reported | 5 | 8.33 |

| 2021 RA Code | n=60 events | % |
|---|---|---|
| Major Cities of Australia | 15 | 25.00 |
| Inner Regional Australia | 7 | 11.67 |
| Outer Regional Australia | 9 | 15.00 |
| Remote Australia | 1 | 1.67 |
| Very Remote Australia | 1 | 1.67 |
| Not Reported | 27 | 45.00 |

| Number of offenders | n=60 events | % |
|---|---|---|
| 1 | 51 | 85.00 |
| 2 | 7 | 11.67 |

| | | |
|---|---|---|
| 3 | 0 | 0.00 |
| 4 | 1 | 1.67 |
| Not Reported (multiple) | 1 | 1.67 |

| Number of victims | n=60 events | % |
|---|---|---|
| 1 | 55 | 91.67 |
| 2 | 4 | 6.67 |
| 3 | 1 | 1.67 |

| Punch type | n=60 events | % |
|---|---|---|
| 1 | 57 | 95.00 |
| 2 | 3 | 5.00 |

### 11.2.2 Offender factors

| Age | n=66 offenders | % |
|---|---|---|
| 0-20 | 12 | 18.18 |
| 21-25 | 12 | 18.18 |
| 26-30 | 8 | 12.12 |
| 31-35 | 3 | 4.55 |
| 36-40 | 2 | 3.03 |
| 41-45 | 4 | 6.06 |
| Not Reported | 25 | 37.88 |

| Sex | n=66 offenders | % |
|---|---|---|
| Male | 64 | 96.97 |
| Female | 2 | 3.03 |
| Not Reported | 0 | 0.00 |

| Alcohol/drug intake | n=66 offenders | % |
|---|---|---|
| Yes | 29 | 43.94 |
| No | 9 | 13.64 |
| Not Reported | 28 | 42.42 |

| Victim known to offender | n=66 offenders | % |
|---|---|---|
| Yes | 25 | 37.88 |
| No | 39 | 59.09 |
| Not Reported | 2 | 3.03 |

| Victim/offender relationship | n=25 offenders | % |
|---|---|---|
| Partner (current or former) | 9 | 36 |
| Acquaintance | 5 | 20 |
| Other | 4 | 16 |
| Not Reported | 7 | 28 |

| Prior criminal history | n=66 offenders | % |
|---|---|---|
| Yes | 27 | 40.91 |
| No | 13 | 19.70 |
| Not Reported | 26 | 39.39 |

| Prior criminal history | n=27 offenders | % |
|---|---|---|
| Violent | 21 | 77.78 |
| Not violent | 6 | 22.22 |

### 11.2.3 Victim factors

| Age | n=63 victims | % |
|---|---|---|
| 0-20 | 4 | 6.35 |
| 21-25 | 6 | 9.52 |
| 26-30 | 3 | 4.76 |
| 31-35 | 2 | 3.17 |
| 36-40 | 2 | 3.17 |
| 41-45 | 3 | 4.76 |
| 46-50 | 2 | 3.17 |
| 51-55 | 1 | 1.59 |
| 56-60 | 1 | 1.59 |
| Not Reported | 39 | 61.90 |

| Sex | n=63 victims | % |
|---|---|---|
| Male | 50 | 79.37 |
| Female | 12 | 19.05 |
| Not Reported | 1 | 1.59 |

| Immediate neurological symptoms | n=63 victims | % |
|---|---|---|
| Yes | 38 | 60.32 |
| No | 7 | 11.11 |
| Not Reported | 18 | 28.57 |

| Immediate neurological symptoms | n=38 victims | % |
|---|---|---|
| Loss of consciousness | 24 | 63.16 |
| Headache/pain | 3 | 7.89 |
| Disoriented (Dizzy/photopsia/dazed/ groggy/disoriented/stunned) | 10 | 26.32 |
| Other | 1 | 2.63 |

### 11.2.4 Criminal Justice outcomes

| Charge | n=66 offenders | % |
|---|---|---|
| Grievous bodily harm | 31 | 46.97 |
| Assault occasioning bodily harm | 17 | 25.76 |
| Multiple | 6 | 9.09 |
| Other | 7 | 10.61 |
| Not Reported | 4 | 6.06 |
| Not Applicable (not guilty) | 1 | 1.52 |

| Outcome | n=66 offenders | % |
|---|---|---|
| Imprisonment | 25 | 37.88 |
| Community-based | 3 | 4.55 |
| Monetary | 3 | 4.55 |
| Procedural | 5 | 7.58 |
| Combined | 13 | 19.70 |
| Not Reported | 16 | 24.24 |
| Not Applicable (not guilty) | 1 | 1.52 |

## 11.3 Fatal outcome tables

### 11.3.1 Event factors

| Time of the day | n=52 events | % |
|---|---|---|
| Morning | 1 | 1.92 |
| Afternoon | 11 | 21.15 |
| Evening | 7 | 13.46 |
| Night | 20 | 38.46 |
| Not Reported | 13 | 25.00 |

| Venue | n=52 events | % |
|---|---|---|
| Public | 40 | 76.92 |
| Private | 10 | 19.23 |

| | | |
|---|---|---|
| Not Reported | 2 | 3.85 |

| Venue licenced | n=52 events | % |
|---|---|---|
| Yes | 15 | 28.85 |
| No | 31 | 59.62 |
| Not Reported | 6 | 11.54 |

| 2021 RA Code | n=52 events | % |
|---|---|---|
| Major Cities of Australia | 23 | 44.23 |
| Inner Regional Australia | 9 | 17.31 |
| Outer Regional Australia | 13 | 25.00 |
| Remote Australia | 2 | 3.85 |
| Very Remote Australia | 1 | 1.92 |
| Not Reported | 4 | 7.69 |

| Number of offenders | n= events | % |
|---|---|---|
| 1 | 46 | 88.46 |
| 2 | 2 | 3.85 |
| 3 | 1 | 1.92 |
| Not Reported | 3 | 5.77 |

| Punch type | n=52 events | % |
|---|---|---|
| 1 | 46 | 88.46 |
| 2 | 6 | 11.54 |

### 11.3.2 Offender factors

| Age | n=56 offenders | % |
|---|---|---|
| 0-20 | 10 | 17.86 |
| 21-25 | 8 | 14.29 |
| 26-30 | 6 | 10.71 |
| 31-35 | 1 | 1.79 |
| 36-40 | 4 | 7.14 |
| Not Reported | 27 | 48.21 |

| Sex | n=56 offenders | % |
|---|---|---|
| Male | 51 | 91.07 |
| Female | 5 | 8.93 |

| Alcohol/drug intake | n=56 offenders | % |
|---|---|---|
| Yes | 18 | 32.14 |
| No | 1 | 1.79 |
| Not Reported | 37 | 66.07 |

| Alcohol/drug intake | n=18 offenders | % |
|---|---|---|
| Alcohol | 16 | 88.89 |
| Alcohol + THC | 1 | 5.56 |
| Drug (methylamphetamine) | 1 | 5.56 |

| Victim known to offender | n=56 offenders | % |
|---|---|---|
| Yes | 11 | 19.64 |
| No | 22 | 39.29 |
| Not Reported | 23 | 41.07 |

| Victim/offender relationship | n=11 offenders | % |
|---|---|---|
| Acquaintance | 6 | 54.55 |
| Familial | 3 | 27.27 |
| Other | 2 | 18.18 |

| Prior criminal history | n=56 offenders | % |
|---|---|---|
| Yes | 10 | 17.86 |
| No | 5 | 8.93 |
| Not Reported | 41 | 73.21 |

| Prior criminal history | n=10 offenders | % |
|---|---|---|
| Violent | 7 | 70.00 |
| Not violent | 0 | 0.00 |
| Not Reported | 3 | 30.00 |

### 11.3.3 Victim factors

| Age | n=52 victims | % |
|---|---|---|
| 0-20 | 5 | 9.62 |
| 21-25 | 3 | 5.77 |
| 26-30 | 9 | 17.31 |
| 31-35 | 5 | 9.62 |
| 36-40 | 7 | 13.46 |
| 41-45 | 7 | 13.46 |
| 46-50 | 9 | 17.31 |

| | | |
|---|---|---|
| 51-55 | 6 | 11.54 |
| 56-60 | 0 | 0.00 |
| 61-65 | 1 | 1.92 |

| Sex | n=52 victims | % |
|---|---|---|
| Male | 51 | 98.08 |
| Female | 1 | 1.92 |

| Immediate neurological symptoms | n=52 victims | % |
|---|---|---|
| Yes | 47 | 90.38 |
| No | 1 | 1.92 |
| Not Reported | 4 | 7.69 |

| Immediate neurological symptoms | n=47 victims | % |
|---|---|---|
| Loss of consciousness | 44 | 93.62 |
| Other | 3 | 6.38 |

### 11.3.4 Criminal Justice outcomes

| Charge | n=56 offenders | % |
|---|---|---|
| Murder | 2 | 3.57 |
| Manslaughter | 24 | 42.86 |
| Unlawful striking causing death | 12 | 21.43 |
| Assault/Assault occasioning bodily harm | 3 | 5.36 |
| Not Charged/proceeding discontinued | 3 | 5.36 |
| Not Reported | 12 | 21.43 |

| Outcome | n=56 offenders | % |
|---|---|---|
| Imprisonment | 27 | 48.21 |
| Community based sentence | 1 | 1.79 |
| Procedural (re-trial ordered) | 2 | 3.57 |
| Not Charged/proceeding discontinued | 3 | 5.36 |
| Unfit for trial | 1 | 1.79 |
| Not Reported | 15 | 26.79 |
| Not Applicable (not guilty) | 7 | 12.50 |