**Supplementary material**

*Table S1.* International Classification of Diseases, 10th Revision diagnosis codes used in selection of traumatic brain injury events and description of injury-related characteristics from NSW Department of Health hospitalisation data

|  |  |
| --- | --- |
| **ICD-10 Codes** | **Description** |
| **Selection criteria** |  |
| **TBI diagnosis codes #1** |  |
| ***Skull fracture*** |  |
| S02.0- S02.1 | Fracture of vault or base of the skull |
| S02.7- S02.9 | Fractures of skull and facial bones of other or unspecified nature |
| ***Intracranial injury*** |  |
| S06.00 | Concussion |
| S06.1 | Traumatic cerebral oedema |
| S06.20-S06.28 | Diffuse cerebral/cerebellar contusions or haematomas |
| S06.30- S06.38 | Focal cerebral/cerebellar contusion or haematoma |
| S06.4- S06.6 | Epidural/subarachnoid/subdural haemorrhage |
| S06.8- S06.9 | Intracranial injuries of other or unspecified nature |
| ***Crush injury of the head*** |  |
| S07.1 | Crushing injury of skull |
|  |  |
| **TBI diagnosis codes #2** |  |
| ***Loss of consciousness*** |  |
| S06.01 | LoC of unspecified duration |
| S06.02 | LoC < 30 min |
| S06.03 | LoC 30 min to 24 hours |
| S06.04-05 | LoC > 24 hours |
|  |  |
| **Injury-related characteristics** |  |
| **Other TBI severity codes**  F04.00  F04.01  F04.02  F04.03 | PTA of unspecified duration  PTA < 24 hours  PTA 24 hours to 2 weeks  PTA ≥ 2 weeks |
|  |  |
| **External cause codes (E-Codes)** |  |
| V01-V99 | Transport accidents |
| W00-W19 | Falls |
| X85-Y09 | Assaults |
| W20-W64, X60-X84 | Other accidents |
|  |  |
| **Associated factor codes** |  |
| F11-F16, F18-F19, X40-4, X60-4, Z72.2 | Drug use |
| F10.0-8, T51.0, T51.9, X45, X65, Y90.1-9, Z72.1 | Alcohol use |
| Y92.30-9 | Sport |
| U50-U72 | Recreation |
|  |  |
| **Associated injury codes** |  |
| S10-T14 | Other mechanical trauma |
| T80-88 | Complications |
| T15-T79, T89 | Other injuries |

*Table S2.* Associations between remoteness and socio-economic disadvantage in the NSW general population – 2006 Census (n= 6,463,300) and TBI sample (n=6720)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NSW 2006 Census | | | | Hospitalised TBI | | | |
|  | (n= 6,463,300)\* | | | | (n=6720)\* | | | |
|  | Metro | Rural | Remote | Total | Metro | Rural | Remote | Total |
|  | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) |
| Low disadvantage | 2014733 (31.2) | 126476 (2) | 399 (0.01) | 2141608 (33.1) | 1862 (27.7) | 74 (1.1) | 0 (0) | 2171 (33.1) |
| Moderate disadvantage | 1639838 (25.4) | 790711 (12.2) | 6743 (0.1) | 2437292 (37.7) | 1563 (23.3) | 1028 (15.3) | 22 (0.3) | 2613 (37.7) |
| High  disadvantage | 1066361 (16.5) | 789877 (12.2) | 28162 (0.4) | 1884400 (29.2) | 1056 (15.7) | 1021 (15.2) | 94 (1.4) | 1936 (29.2) |
| Total | 4720932 (73.1) | 1707064 (26.4) | 35304 (0.5) | 6463300 (100) | 4481 (66.7) | 2123 (31.6) | 116 (1.7) | 6720 (100) |

\*Subsamples based on available residential postcodes and ABS scores.

*Table S3.* Associations between remoteness and socio-economic disadvantage in the NSW Aboriginal and Torres Strait Islander population – 2006 Census (n= 135,299) and TBI Aboriginal and Torres Strait Islander subsample (n=255)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NSW Aboriginal and Torres Strait Islander 2006 Census | | | | TBI Aboriginal and Torres Strait Islander | | | |
|  | (n= 135,299)\* | | | | (n=255)\* | | | |
|  | Metro | Rural | Remote | Total | Metro | Rural | Remote | Total |
|  | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) |
| Low disadvantage | 10658 (7.9) | 1570 (1.2) | 110 (0.1) | 12338 (9.1) | 10 (3.9) | 0 (0) | 0 (0) | 10 (3.9) |
| Moderate disadvantage | 27043 (20) | 27829 (20.6) | 681 (0.5) | 55553 (41.1) | 44 (17.3) | 50 (19.6) | 3 (1.2) | 97 (38) |
| High  disadvantage | 20543 (15.2) | 40757 (30.1) | 6108 (4.5) | 67408 (49.8) | 28 (11) | 95 (37.3) | 25 (9.8) | 148 (58) |
| Total | 58244 (43) | 70156 (51.9) | 6899 (5.1) | 135299 (100) | 82 (32.2) | 145 (56.9) | 28 (11) | 255 (100) |

\*Subsamples based on available residential postcodes and ABS scores.

*Table S4.* Substance use by seasonality in first-time hospitalised TBI in NSW (n=6827)

|  | Substance use |
| --- | --- |
|  | (n=1269) |
|  | N (%) |
| Day of injury |  |
| Monday | 145 (11.4) |
| Tuesday | 101 (8) |
| Wednesday | 114 (9) |
| Thursday | 145 (11.4) |
| Friday | 199 (15.7) |
| Saturday | 306 (24.1) |
| Sunday | 259 (20.4) |
|  |  |
| Month of injury |  |
| Dec-Feb | 328 (25.8) |
| March-May | 331 (26.1) |
| June-August | 281 (22.1) |
| Sept-Nov | 329 (25.9) |
|  |  |