

Supplemental Table 1: Studies specifically exploring wrTBI (n=18)

(Sample sizes are for entire study population unless otherwise specified)

Author & Year, Location [Period]	Design [sample size]	Study population	Data source	Case definition: TBI	Case definition: work	% wrTBI, Severity	Sex	Age (mean)	Industry/ Occupation *collapsed small groups	Mechanism of Injury	Return to Work Outcomes	Quality Asses.
Amodio et al. 2017 Toronto, Canada [2003]	Retrospective medical record review [N=98]	WSIB referrals to neurology rehabilitation centre	Chart review of medical records	Diagnosed with TBI	Insured workers (WSIB)	100%	74.5% male	41.46 ± 11.09 Male: 41.52 ± 11.39 Female: 41.28 ± 10.36	Managers/ professionals/ technicians & associate professionals: 21.4% (12.3% of males, 52% of females) Skilled agricultural, forestry & fishery workers/ plant machine operators and assemblers: 37.8% (45.2% of males, female percentage not reported) Remainder not reported due to small cell size.	-	-	23/28 (82%)
Chang et al. 2014 Victoria, Australia [2004-2011]	Cross-sectional study [N=4,186]	Insured workers in Victoria	Victorian WorkCover Authority; Australian Bureau of Statistics	TOOCs: "(1) 'intracranial injuries' and bodily location 'cranium' or 'brain'; or (2) 'fractures' and bodily location 'head' (not tooth/teeth), 'head and neck', or 'head and other'"	Compensation Research Database WC claims	100%, 1.8% of which were fatal	63.6% male	38.9 ± 13.2 Male: 38.5 ± 13.2 Female: 39.5 ± 13.2	Manufacturing: 13.2% (17.1% of males, 6.4% of females) Construction: 8.3% (12.7% of males, 0.7% of females) Wholesale trade: 5.7% (6.9% of males, 3.6% of females) Retail trade: 5.9% (5.3% of males, 7.0% of females) Transport, postal & warehousing: 9.4% (13.1% of males, 3.0% of females) Public admin. & safety: 8.1% (9.8% of males, 5.3% of females) Education & training: 13.9% (5.7% of males, 28.1% of females) Healthcare & social assistance: 9.3% (2.9% of males, 20.3% of females) Arts & recreation services: 5.4% (4.9% of males, 6.4% of females) *Other (< 5% each): 20.9% (21.8% of males, 18.8% of females)	Struck by/against: 53.1% (51.4% of males, 56.1% of females) Falls/trips/slips: 23.7% (21.0% of males, 28.4% of females) Assaults & violence: 12.5% (14.8% of males, 8.5% of females) MVC: 7.2% (9.1% of males, 3.9% of females) Other/unspecified: 3.5% (3.7% of males, 3.1% of females)	74.5% lost time from work (75.2% of males, 73.3% of females), 24.2% lost more than 10 days (27.7% of males, 18.2% of females)	30/34 (88%)
Colangelo et al. 2016 Edmonton, Canada [2007-2011]	Retrospective cohort study [N=218]	WC Board of Alberta rehabilitation facility	Workers' Compensation Board	Brain injury diagnosis referred for neuropsychologist assessment Severity: Loss of consciousness	WC Board rehabilitation facility patients receiving LOC at time-loss benefits	100%, 60.1% had time of injury	86.2% male	42.8 ± 12.6	-	MVC: 29.8% Blunt force head trauma: 29.4% Slip & fall: 13.8% Fall: 18.3% Assault: 4.6% Explosion: 3.2% Other: 0.9%	59.2% in brain injury program (110.0 ± 105.7 days); 17.1% not fit to work post-injury	23/28 (82%)
Colantonio et al. 2016 Ontario, Canada [2010]	Descriptive retrospective cohort study [N=50]	Participants discharged from a neurology services program	Medical records, self-report surveys	"Mild to moderate TBI"	WSIB reported injuries	100%, classified as mild-to-moderate TBI	Gender reported as 64% male	44.5 ± 11.9	-	-	50% able to return to work	26/28 (93%)

de Miranda et al. 2014 Brazil [2009]	Epidemiologic al cross-sectional study [N=2,006]	Employees who are hired according to Consolidation of Labor Laws	Ministry of Work and Employment datasets	ICD-10 (S06 to S06.9)	"employees receiving social security benefit due to work typical accidents"	100%	88% male in subset of 1074 (Table 2)	Occupation subgroups ranged from 32.7 ± 11.5 to 38.9 ± 14.6	Transport, Storage & Mail: 12.27% Water, Sewage & Waste Management: 1.63% Construction: 9.99% Commerce, Automobile & Motorcycle Repair: 26.11% Public Administration, Defense & Social Security: 2.62% Others: 46.59% Not located: 0.79%	-	-	27/32 (84%)
Guerriero et al. 2016 Victoria, Australia [2004-2012]	Retrospective cohort study [N=1,786]	Workers insured by WorkSafe Victoria	Compensation Research Database	Australian Standard Type of Occurrence Classification System: injury coded as "intracranial injury"	"A claim may be lodged once a worker is off work for more than ten days or medical expenses have surpassed a certain threshold amount"	100%	63.1% male	40.6 ± 13.5	Manufacturing: 11.1% (14.5% of men, 5.5% of women) Electricity, gas, water & waste services: 10.9% (not stratified) Construction: 9.8% (not stratified) Wholesale trade: 6.1% (7.0% of men, 4.4% of women) Retail trade: 6.4% (5.7% of men, 7.7% of women) Transport, postal & warehousing: 10.0% (14.4% of men, 2.6% of women) Public administration & safety: 7.5% (8.4% of men, 5.8% of women) Education and training: 12.4% (5.4% of men, 24.3% of women) Health care & social assistance: 9.2% (2.9% of men, 19.8% of women) Arts & recreation services: 6.6% (5.6% of men, 8.4% of women) *Other (< 5% each): 20% (not all stratified) <i>Study reported data stratified by sex, characterized as men and women</i>	-	-	30/32 (94%)
Kica and Rosenman 2014 Michigan, United States [2010-2012]	Descriptive secondary analysis of surveillance data [N=318]	Michigan's 134 hospitals	Hospital records, Michigan's Workers' Compensation Agency and death certificates	ICD-9 codes for skull fracture (800.0-.9, 801.0-.9, 802.0-.9, 803.0-.9, 804.0-.9); ICD-10 codes for skull fracture Severity: Loss of consciousness (y/n)	Workers' Compensation Agency records of wage replacement	100%, 4.72% of which were fatal (n=15); 44.97% had LOC, 22.44% missing LOC data	Gender reported as 84.6% male	Average age: 43, Range: 17-75	Construction: 13.3% Primary metal manufacturing: 11.5% Public administration: 8.2% Transportation & warehousing: 7.9% Health care & social assistance: 6.1% Wholesale trade: 6.1% Retail trade: 5.7% Administration & support & waste management and remediation services: 5.4% Educational services: 5.4% Agriculture, forestry, fishing & hunting: 5.0% *Other (<5% each): 24.0% <i>Only reported for a subset of 279 cases</i>	Fall: 48.2% Struck by: 34.3% MVA: 7.5% Assault: 5.0% Medical condition: 5.0% <i>Only reported for a subset of 280 cases</i>	-	30/34 (88%)

Konda et al. 2015 United States [1998-2007]	Descriptive secondary analysis of surveillance data [N=586,600 (weighted)]	67 US hospitals with 24 hour EDs	National Electronic Injury Surveillance System (NEISS)	NEISS-Work: 'concussion' (code 52), 'internal organ injury' (code 62) or 'fracture' (code 57) & 'head' (body part code 75) Severity: non-fatal injuries	National Electronic Injury Surveillance System - Occupational supplement	100%	68% male (weighted)	15-24: 21% 25-34: 26% 35-44: 23% 45-54: 18% 55+: 12% (weighted)	Agriculture, forestry, fishing & hunting: 5% Transportation & warehousing: 8% Construction: 12% Accommodation & food services: 8% Public administration: 5% Retail trade: 11% Healthcare & social assistance: 11% Manufacturing: 8% Educational services: 5% Professional & business services: %5 Unknown: 9% *Other (<5% each): 12% (weighted)	Contact with objects and equipment: 43% Falls: 36% All others (including assaults/violence, transportation, etc.): 21% (weighted)	-	22/32 (69%)
Konda et al. 2016 United States [2003-2010]	Descriptive secondary analysis of surveillance data [N=2,210]	Construction workers in the US	Bureau of Labor Statistics Census of Fatal Occupational Injuries	OIICS: TBIs: 060, 061, 062, 068, and 069. TBIs due to all firearm-related incidents Severity: Fatal	Bureau of Labor Statistics Census of Fatal Occupational Injuries	100%, all fatal	99% male	16-19: 3% 20-24: 9% 25-34: 21% 35-44: 23% 45-54: 24% 55-64: 13% 65+: 6%	Construction	Contact with objects and equipment: 16% Falls: 57% Transportation incidents: 21% All others (including assaults/violence, fires and explosions, etc.): 5%	-	27/32 (84%)
Kontos et al. 2017 Ontario, Canada [Not Reported] <i>*excluded from meta analysis</i>	Qualitative thematic analysis [N=32]	Neurology clinic funded by the WSIB	In-depth semi-structured qualitative interviews	Diagnosis of wTBI: "sustained a head injury and/or had a formal diagnosis of a work-related traumatic brain injury"	"workers who have been injured at work" referred to clinic	100%	47% male	35-44: 23.0% 45-54: 34.6% 55-64: 42.3% <i>Reported for a subset of 26 participants (6 participants without age information)</i>	Education: 17.9% Business & Administration, Sales & Service: 21.4% Healthcare: 17.9% Manufacturing, Primary Industry: 25.0% Security, Trades & Transportation: 17.9% <i>Reported for a subset of 28 participants (4 participants without industry/sector information)</i>	Assault: 14.3% Fall/slip: 32.1% MVC: 14.3% Struck by/against object: 39.3% <i>Reported for a subset of 28 participants (4 participants without mechanism of injury information)</i>	-	20/28 (71%)
Kristman et al. 2014 Ontario, Canada [1997-1998]	Retrospective cohort study [N=728]	Worker's compensation system	Administrative data from the WSIB, Ontario Health Insurance Plan	WSIB lost-claims data: brain part of body code (1100) and the concussion nature of injury code (6200). Severity: mild (method not specified)	Workplace Safety and Insurance Board lost-time claims	100%, all mTBI	65.8% male <i>Reported as sex (male/female), discussed as man/woman</i>	18-24: 13.6% 25-34: 28.2% 35-44: 24.5% 45-54: 21.0% 55+: 12.6%	-	-	-	30/32 (94%)
§ Mollayeva et al. 2016 Ontario, Canada [2004]	Cross-sectional study [N=66]	WSIB insured workers with lost time claims	Workplace Safety and Insurance Board	Diagnosis of 'concussion', 'closed head injury', 'contusion', or 'head injury with sequelae consistent with brain injury'	WSIB lost-time claims due to TBI caused by physical assaults	100%, 76% classified as [mTBI] or concussion	40.9% male	37 (median) 20-64 range	Health care/social service aids: 40.9% Law enforcement/public administration sector: 33.3% Education: 15.2% Transportation: 7.6% Other: 3.0% <i>Calculated from number of claims reported per sector</i>	Assault: 100%	22.7% (n=15) returned to work by the end of 2004 (ten females and five males)	23/32 (72%)

Paci et al. 2017 Quebec, Canada [2000-2014]	Cross-sectional study [N=285]	Montreal General Hospital	Traumatic Brain Injury Database and the Trauma Registry Database	World Health Organization Task Force: mild TBI diagnosis Severity: GCS	"Occurred at the workplace... or performing work duties" as identified in the Trauma Registry Database	100%; 8.1% were fatal. GCS: 76.8% 13-15, 7.7% 9-12, 15.4% 3-8	94.7% male	43.62 16-76 range	Construction/trades: 42.5% Vehicle driver/operator: 14.2% Retail/sales: 11.5% Manufacturing: 7.1% City worker (including maintenance, police, & firefighters): 6.2% Mechanic: 4.0% *Others (<5% each): 14.6% <i>Reported for a subset of 226</i>	Falls: 64.1% MVC: 17.8% Falling object/ projectile: 15.8% Electrocution: 1.2% Assault: 1.2% <i>Reported for a subset of 259</i>	-	28/34 (82%)
Shafi et al. 2019 Victoria, Australia [2004-2012]	Population-based, retrospective cohort study [N=3,129]	WorkSafe Victoria claimants	Compensation Research Database	TOOCs: 'affliction nature group' was coded as 'intracranial injuries' Severity: post-injury hospitalization	Workers' compensation claims	100%, all mTBI	58.0% male	15-24: 15.0% 25-34: 25.0% 35-44: 21.5% 45-54: 23.2% 55<: 15.2%	Healthcare & social assistance: 11.00% (3.14% of males, 21.75% of females) Education & training: 16.0% (7.28% of males, 27.98% of females) Public administration & safety: 6.5% (7.66% of males, 4.87% of females) Others: 66.7% (81.92% of males, 45.40% of females) <i>Sex stratified reporting calculated from table 2</i>	Hit by moving objects: 32.1% Falls, trips & slips: 26.1% Hitting objects with body: 24.9% Assault: 8.8% MVA & other: 8.1%	18.40% took time off work (within a 3-month time frame) (21.00% of males, 14.75% of females)	30/32 (94%)
Sharma et al. 2019 Ontario, Canada [2014-2016]	Prospective cohort study [N=102]	neurology services clinic	Self-report questionnaires	"head and/or brain injury"	WSIB assessment referral	100%	53.9% male	54% aged 45-64	Education: 21.6% Healthcare: 11.4% Construction & landscaping: 11.4% Other: 55.6%	Struck by/against an object or person: 55% [14% were assaults] Falls: 30.3% MVC: 11% Other: 3.7%	63.3% returned to work, 42.1% on modified duties	21/28 (75%)
Slavova and Bunn 2015 Kentucky, United States [2011]	Descriptive secondary analysis of surveillance data [N=596]	Kentucky EDs or hospital facilities	ED visits, hospital discharge data, and workers' compensation first report of injury data)	ICD-9-CM diagnosis code of 850 (ED and hospital); WC data: (i) nature of injury "concussion" (code 07) or (ii) a case narrative text search for "concussion."	Workers' compensation designated payer	100%	Gender reported as 63.6% male	Median: 39 16-24: 18.3% 25-34: 22.1% 35-44: 23.3% 45-54: 19.6% 55-64: 13.3% 65≤: 3.4%	Only available for 339 cases linked with WC data, % of that total: Services industry (n=104; 30.7%) Transportation/public utilities (n= 50; 14.7%) Whole sale and retail (n= 50; 14.7%) Manufacturing (n= 32; 9.4%)	MVC: 10.7% Fall: 36.2% Struck by/against: 43.8% Other: 9.2% <i>Reported for a subset of 552, 44 cases missing information</i>	-	26/32 (81%)
§ Terry et al. 2018 Vancouver, Canada [2015-2017]	Case-control study [wrTBI subset N=46]	Four outpatient rehabilitation clinics for TBI	Standardized questionnaires during initial assessment (2-26 weeks post injury) and follow up (21-47 weeks post injury)	World Health Organization Neurotrauma Task Force definition of mild TBI	Workers' compensation claims	45.10%	60.9% male	39.0 ± 11.8	Manual Labor: 28.3% Skilled craft or trade: 19.6% Transport: 2.2% Sales and service: 15.2% Management or professional: 8.7% Other: 26.1%	Struck by object: 43.5% MVC: 6.5% Fall: 30.4% Assault: 10.9% Other: 8.7%	Initial Assessment: 2.2% full return to work, 8.7% had partial return, 87.0% on leave. Follow up (n=38): 44.7% full return to work, 18.4% partial return to work, 36.8% no return to work. <i>8 wrTBI participants lost to follow up</i>	27/28 (96%)

Xiong et al. 2016 Ontario, Canada [2003]	Retrospective medical record review [N=209]	Toronto Rehabilitation Institute	Medical records	TBI diagnosis Severity: mild, ≤ 30 min LOC, GCS score of 13-15, and PTA ≤ 24 h	WSIB referral to the neurology service at a mild hospital	100%, all mild	Sex reported as 71.3% men	40.2 \pm 11.1	Managers/ professionals/ technicians or - associate professionals: 12.9% (5.4% of men, 31.7% of women) Clerical support workers/service and sales workers: 13.9% (7.4% of men, 30% of women) Skilled agricultural, forestry and fishery workers/ plant and machine operators and assemblers: 35.9% (46.3% of men, 10% of women) Elementary occupations (laborers): 26.8% (32.2% of men, 13.3% of women) Missing: 10.5% <i>Study reported data stratified by sex, characterized as men and women</i>	22% working, full- or part-time (18.1% of men, 31.7% of women), 78% not working (disability benefit) (81.2% of men, 68.3% of women)	25/28 (89%)
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Acronyms: AIS - Abbreviated Injury Score, ED - Emergency Department, GCS - Glasgow Coma Scale, ICD - International Classification of Diseases (versions 9 or 10), ISS - Injury Severity Scale, LOC - loss of consciousness, mTBI - mild traumatic brain injury, MVA/C - motor vehicle accident/collision, OIICS - Occupational Injury and Illness Classification System, PTA - posttraumatic amnesia, TOOCS - Type of Occurrence Classification System, WC - Workers' Compensation, WSIB - Workplace Safety and Insurance Board (Ontario)

§ indicates studies in multiple summary tables