Understanding child pedestrian fatalities in British Columbia

Results of a collaborative study by the BC Coroners Service and BCIRPU

Meridith Sones
Injury Prevention Specialist
Child Death Review Unit
Ministry of Public Safety & Solicitor General
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Injury prevention in child death review - Child pedestrian fatalities (in press)

Collaborative study between the BC Coroners Service (BCCS) and BC Injury Research and Prevention Unit (BCIRPU)

Authors:
Ediriweera Desapriya, PhD, BCIRPU
Meridith Sones, MPH Candidate, BCCS
Tansey Ramanzin, R.N., B.Tech, BCCS
Sara Weinstein, PhD
Giulia Scime, MA, BCIRPU
Ian Pike, PhD, BCIRPU
The problem

- Child pedestrian incidents are a leading cause of injury-related death for Canadian children.
- Each year in Canada over 2,400 child pedestrians are seriously injured and approximately 30 are killed.
- Injury mortality is best understood from an ecological perspective.
- More detailed epidemiologic data on child pedestrian injury is needed to support evidence-based decision making concerning policy, program and environmental interventions.
What is child death review?

- A multi-agency process that systematically collects data concerning the biological, behavioural, environmental and social determinants of injury over the child’s life course.

- A powerful tool for both understanding the epidemiology of child deaths and catalyzing preventive action to reduce child mortality.
Child Death Review Unit of BC

Mandate
- To review, in an individual or aggregate basis, the facts and circumstances related to the deaths of all children 18 years and under in B.C.

Mission
- To better understand how and why children die, and to translate those findings into action to prevent future deaths and to improve the health, safety and well-being of all children in B.C.
To describe the epidemiology of child pedestrian fatalities in B.C. using data generated by the province’s Child Death Review Unit and demonstrate the unique capacity of child death review to provide an ecological understanding of child mortality and catalyze evidence-based, multi-level prevention strategies.
Methods

- Case identification (n=33)
- Case assignment to CDRU case review specialist
- Review of coroners file and collection of additional information
- Data collection through application of case review protocol
- Multi-disciplinary team review to ensure data accuracy and determine preventability
- Extraction of data on demographics, circumstances of injury and risk factors related to the child, driver, vehicle and physical environment
- Calculation of descriptive frequencies and statistical comparisons where population data were available
Variables

Demographic and socioeconomic factors
- Age
- Sex
- Involvement with MCFD
- Physical impairment
- Ethnicity
- Aboriginal ancestry
- Income assistance
- Parental unemployment
- Family structure

Time, location and physical environment
- Time and day
- Seasonality
- Road conditions and configuration
- Proximity to child’s home
- Area density and type
- Type of road
- Driver visibility
- Signage
- Speed limit
Variables

Child factors

- Activity at time of incident
- Risk behaviour
- Supervision
- Distraction
- Toxicology

Driver and vehicle factors

- Age
- Sex
- Time of licensure
- Type and status of license
- Vehicle occupancy
- Driver error
- Toxicology
- Driver violation history
Key findings

Demographic and socioeconomic factors

Analysis of child pedestrian fatalities in B.C. identified a significant overrepresentation of:

- Males (64%, p < .01)
- Aboriginal children (12.1%, p = .05)
- Children within low-income families (18.2%, p < .01)
Key findings

Time, location and physical environment

- Incidents were most common during daylight hours (57.6%), in dry conditions (69.7%) and on a straight section of road (85.8%).

- Approximately half of the incidents occurred within 1km of the child’s home (45.5%) and in a residential area (51.5%).

- Among incidents occurring on residential roadways, 85.7% occurred in areas with a posted speed limit of 50 kph or higher.
Key findings

Child factors

- Risky pedestrian behaviour was observed in 57.6% of fatalities, the most frequent actions being crossing or darting into oncoming traffic and walking or playing on the roadway.

- Only 33% of children below 10 years of age were under active supervision (i.e. within sight and reach) of an adult at the time of the fatal incident.
Key findings

Driver factors

- The majority of drivers were male (76%, $p < .01$).
- Driver error was identified in 36.4% of cases.
- On average, drivers involved in a child pedestrian fatality had 9.7 previous violations on their driving record, significantly more than the general BC population who had an average of 2.7 previous violations ($p < .01$). Half (51.5%) of the drivers had been previously suspended or prohibited from driving.
Key findings

Vehicle factors

- The most common vehicle types were cars (48.5%) and pick-up trucks (24.2%)

- All incidents taking place on driveways (aka. non-traffic fatalities) involved sport utility vehicles or pick-up trucks, where visibility was limited due to vehicle configuration
Key findings

Preventability

- Preventability is defined as a death in which, with retrospective analysis, it is determined that a reasonable intervention at the individual, community or system level may have prevented the death through modification of one or more risk factors.

- The majority (94%) of child pedestrian fatalities were determined to be preventable.
The Spectrum of Prevention

Influencing Policy and Legislation
Developing strategies to change laws and policies to influence outcomes
- Pursue policy solutions to address the socioeconomic inequalities of child pedestrian injury
- Reduce speed limits in residential areas to 30kph
- Improve regulatory frameworks for the management of high-risk drivers

Changing Organizational Practices
Adopting regulations and shaping norms to improve health and safety
- Modify vehicle design to minimize blind zones associated with non-traffic injuries among young children
- Further evaluate the effectiveness of aftermarket safety devices intended to eliminate vehicle blind zones

Fostering Coalitions and Networks
Convening groups and individuals for broader goals
- Form a local injury prevention coalition of cross-sector representatives (e.g. public health, medicine, law enforcement, education, city engineering) to develop community-based strategies for improving child pedestrian safety

Educating Providers
Informing providers who will transmit knowledge/skills to others
- Encourage paediatricians, educators and other front-line providers to discuss child pedestrian safety and other child injury prevention issues with parents and caregivers

Promoting Community Education
Reaching people with information and resources to promote health/safety
- Improve public awareness of pedestrian safety while continuing to promote physical activity
- Support Aboriginal communities in the development and delivery of local strategies to increase awareness and reduce risk factors associated with child pedestrian injury

Strengthening Individual Knowledge and Skills
Enhancing capacity of preventing injury and promoting safety
- Counsel parents and caregivers on the risks associated with child pedestrian injury and the need to actively supervise children around traffic
- Include strategies for child pedestrian crash avoidance in driver training programs and manuals
Take home points

- Previous driving violations may be associated with risk involvement in a fatal pedestrian incident in B.C.
- Aboriginal children and children within low-income families appear to be particularly vulnerable to pedestrian injury.
- Child pedestrian fatalities are largely preventable.
- Child death review generates an ecological understanding of preventable child mortality and is a powerful tool for advancing evidence-based, multi-level strategies to promote and protect child health and safety.
In closing

Next steps

- CDRU special report on child pedestrian fatalities

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THANK YOU.

Meridith Sones
Injury Prevention Specialist
Child Death Review Unit
BC Coroners Service
Phone: 604.660.2559
Email: Meridith.Sones@gov.bc.ca
Web: www.pssg.gov.bc.ca/coroners