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Emergency Department Surveillance
Injuries associated with
Wheeled, non-motorized devices

The Canadian Hospitals Injury Reporting and Prevention Program
(CHIRPP), All ages, 1990-2007

Injury and Child Maltreatment Section
Health Surveillance and Epidemiology Division



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Background and Methods

- The use of inline skates, skateboards and other wheeled devices is popular among Canadian children and youth
- The CHIRPP database was searched for cases involving the *use* of wheeled, non-motorized devices
- All ages (1,934,235 total records searched)
- 1990-2007

Results

- Figure 1 shows the adjusted proportion by year, as a moving average, for each activity
- Bicycling (N=83,890) has been the most frequent and the proportion has remained relatively constant
- The other, small-wheeled, activities display various trends
- Table 1 details various characteristics for each activity. Skateboarding incidents have the highest median age (13.5 yr) and the greatest proportion of males (89.4%)
- Wheeled shoes are the only activity where there are a preponderance of females
- The small-wheeled activities are associated with a higher proportion of fractures compared to bicycling; although bicycling injuries result in a higher proportion of admitted patients and are more frequently associated with a motor vehicle interaction

Emergency Department Surveillance

Injuries associated with wheeled, non-motorized devices CHIRPP, 1990-2007, all ages

Proportion of cases per 100,000 CHIRPP cases in the given year

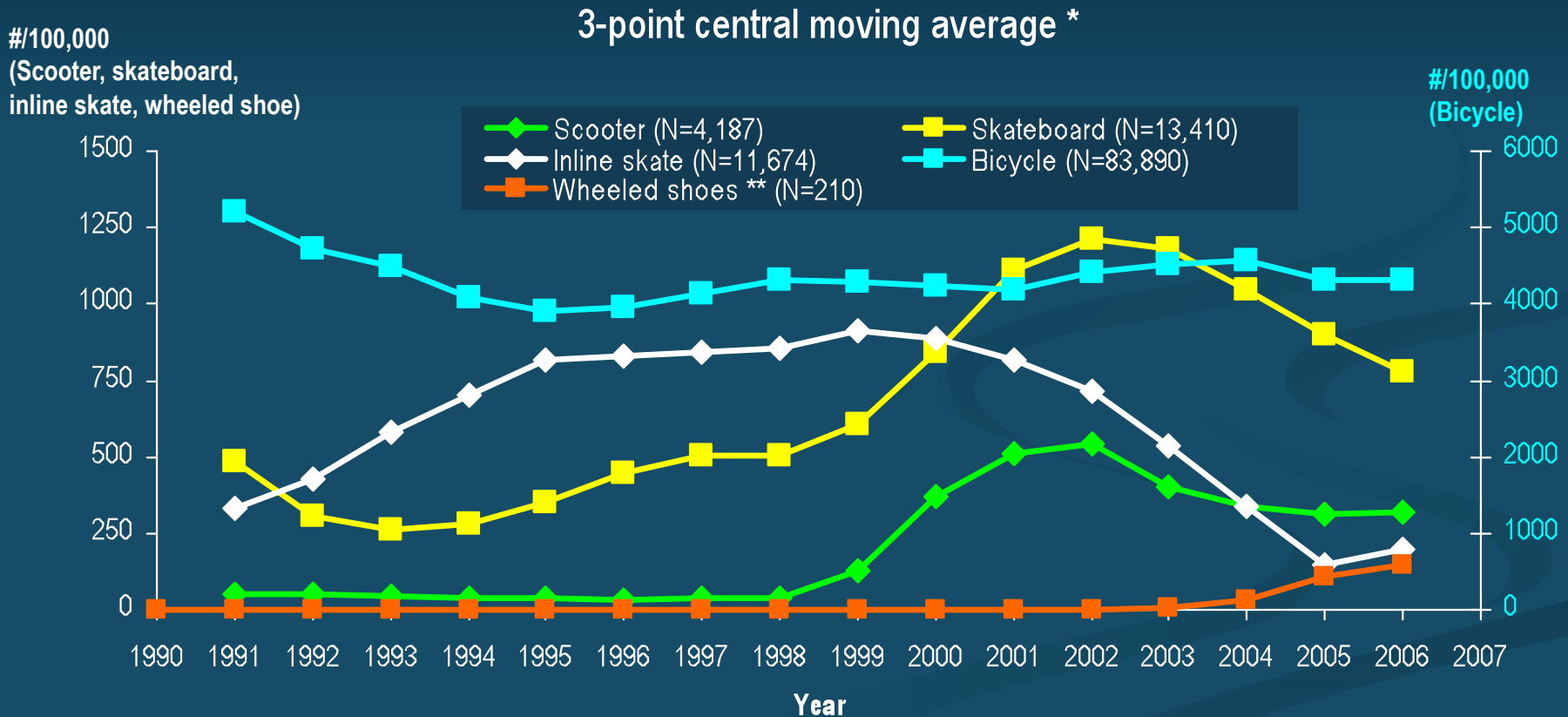


Figure 1. Three-point central moving average of ED presentations associated with wheeled, non-motorized devices, CHIRPP, 1990-2007, all ages

* By definition, the years 1990 and 2007 are undefined, except for wheel shoes since there were no cases 1990-2001

** Due to the small proportions, the cases per 100,000 for wheeled shoes have been multiplied by 10 (cases/million) to make the trend visible in the figure

Table 1. Emergency department surveillance of presentations due to injuries associated with wheeled, non-motorized devices, CHIRPP database, 1990-2007, all ages

Characteristic	Wheeled Device				
	Scooter ^A	Skateboard ^B	Inline Skates ^C	Bicycle ^D	Wheeled shoes ^E
N	4,187	13,410	11,674	83,890	210
Median age (yr)	10.1	13.5	11.9	11.0	9.8
IQR ⁶ (yr)	7.7 – 12.2	11.6 – 15.1	9.8 – 14.1	7.6 – 14.2	8.8 – 11.1
% males	59.5	89.4	57.9	70.1	43.8
CHI ⁷ (%)	5.8	4.4	3.8	8.4	3.8
Fractures ⁸ (%)	36.6	40.2	48.1	28.9	49.0
Admissions ⁹ (%)	7.3	6.7	6.9	10.7	2.9
%MVC ¹⁰	7.1	0.8	1.5	11.3	0.0
%Helmet use ¹¹	42.4	32.1	50.4	70.2	12.7
% reporting (n)	49.3 (2,066)	43.4 (5,824)	31.5 (3,680)	43.9 (36,845)	48.6 (102)

^A Small, fold-up “razor” scooters and other manual, foot-powered devices; excludes powered scooters and scooter boards

^B Includes skateboards of all lengths in skateparks and other locations; “streetboarding” (ripsticks, caster boards)

^C Includes roller blades and roller skates; *excludes* roller hockey (there were an additional 578 cases involving roller hockey)

^D Includes riders and passengers; *excludes* tricycles and toy bikes

^E Shoes with retractable wheels, “Heelys”

⁶ Interquartile range: 25th – 75th percentiles

⁷ Closed Head Injuries (minor closed head injuries, concussions, intracranial injuries; based on primary injury)

⁸ Percentage of all cases which are fractures (based on primary injury)

⁹ Percentage of all patients admitted to hospital

¹⁰ Percentage of all cases which involved a moving motor vehicle

¹¹ Percentage of patients wearing a helmet (where helmet status was reported)