A descriptive study of bicycle helmet use in Montreal

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Background

- Traumatic brain injury (TBI) may occur as a result of a cyclist collision especially with cyclists not wearing helmets.
- In the 2009-2010, 78% of 665 Canadian cyclists who were hospitalized for a TBI were not wearing a helmet at the time of their injury. (1)
- It is well established that helmet use significantly reduces the risk of head and brain injuries by 63-88%. (2)
Purpose

- The purpose of this study was to describe helmet use among Montreal cyclists as a step in injury prevention planning.

- Questions:
  - What is the rate of helmet use in Montreal?
  - Who do we need to focus on?
  - Where should we focus our attention?
Methods

• Cyclists were observed from stationary locations throughout Montreal
• August – October, 2011.
• 22 locations
• 7 trained observers
• 60 minutes / observation period
• 1-3 observation periods / site
• 32 total observation periods
Methods

• Gender
• Age group:
  - Youth: Prepubescent
  - Young Adult: Post pubescent, youthful appearance
  - Adult: career age
  - Senior: retirement age
• Race: Caucasian (White) / Visible Minority (Other)
• Weekday and weekend
• Time of day: morning / afternoon
• Temperature
• Location: Central Montreal / Outskirts
• Route Type:
  - Commuter Route
  - Residential
  - Isolated Bike Path
  - Parks
  - Tourist
Methods
Comments:
• A total of 4789 cyclists were observed: 3102 males (65%)/ 1687 females (35%)
• Youth represented 2% of cyclists, 14 % were Young Adults, 76% were Adults, 8% were Senior
• The overall helmet use was 46%
• Females had a higher compliance than males in all age groups with an average of 50% for women and 44% for men.
• Youth had the highest compliance with 73%
• Young adults had the lowest compliance with 34%
Comments:
• BIXI riders represented a minority, 612 (13%) of the cyclists observed.
• Non-BIXI riders represented the majority, 4177 (87%) of the cyclists observed.
• BIXI riders had a lower helmet use with 12% than Non-BIXI riders with 51%.
Results

Comments:
• Almost ½ of the observations were done on commuter routes.
• ¼ were done on isolated bike paths.
• ¼ in residential, parks, or tourist areas.
• The highest use was on isolated bike paths and in parks: 54 and 50%.
• The CR and RA were comparable: 41% and 42%.
• The lowest use was in a tourist area: 34%.
• Cyclist had a higher helmet use on the commuter route with a significant incline (greater than 20 degrees), 81% of 53, while on other commuter routes the use was 40% of 2216.
Results

Helmet Use: Flat Commuter Route and Significant Downhill.

Comments:
• Almost ½ of the observations were done on commuter routes.
• Cyclist had a higher helmet use on the commuter route with a significant incline (greater than 20 degrees): 81%
• On other commuter routes the use was 40%.
Results

Comments:
• The large majority, 4378 cyclists (91%) were Caucasian (White), while 411 cyclists (9%) were Visible Minorities (Others).
• 47% of Caucasians (Whites) were wearing a helmet.
• 29% of Visible Minorities were wearing a helmet.
Results

Comments:
• Most of the observations were conducted in the downtown central area, 4515 (94%).
• The area outside of the core had a higher helmet use, 56%, while centrally it was 45%.
Other Results

- Weekday and weekend: 46% vs 41%
- Helmet Compliance was similar with respect to:
  - Time of day (morning & afternoon): 45% vs 46%
  - Temperature (0-14C & 15-29C): 47% vs 46%
Discussion

• Helmet use in Montreal was observed to be somewhat low, 46%.
• But consistent with other Canadian jurisdictions without helmet legislation (3-8)
• And is above the national average of 37% (9).
• There appears to be an increase use in Montreal since the 2008 SAAQ report which reported a helmet use of 37%. (10)
Discussion

- BIXI riders had a low helmet compliance, 12% compared 51% of cyclist with their own bikes. Some of the major challenges are riders tend to be commuters and sightseers who often do not plan their trips and therefore will not have a helmet readily available when they decide to use a BIXI. The bike dispensers do not provide helmets nor is there a helmet program in place.
Discussion

• Although visible minorities were much less likely to wear a helmet than Caucasian riders (29% vs 47%), they were under represented in this cohort as only 9% of the cyclists observed were visible minorities. While it was noted that there appeared to be a much higher proportion of visible minority pedestrians at the same observation sites and the Census results (2006) by Statistics Canada reveals that 26% of Montreal’s population are visible minorities (11).
Conclusion

• Injury Prevention Programs should target the entire cyclist population, but **special attention** may be warranted in specific areas:
  - males
  - young adults
  - visible minorities
  - BIXI riders
  - those riding on commuter routes, in residential and tourist areas, and downtown.
  - weekend warriors
1. L’Institut canadien d’information sur la santé


6. Bicycle Helmet use four years after the introduction of helmet legislation in Alberta, Canada. Accident Analysis and Prevention, 43:788-796.


Questions ?????