# Cree Health Survey 2003

## Canadian Community Health Survey *Cycle 2.1*

## Iiyiyiu Aschii

# *Injuries and transportation safety*

*June 2008*

Conseil Cri de la santé et des services sociaux de la Baie James
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Cree Board of Health and Social Services of James Bay

Institut national de santé publique Québec

# Canadian Community Health Survey, Cycle 2.1
# Iiyiyiu Aschii, 2003

## *Injuries and transportation safety*

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## FOREWORD

This publication presents the findings of a health survey carried out in 2003 among households of Iiyiyiu Aschii[1]. A similar survey had been undertaken in the region by Santé Québec in 1991 (Santé Québec, 1994). Ten years later, the Public Health Department of the Cree Board of Health and Social Services of James Bay (CBHSSJB) urgently required a new picture of its population's state of health. The purpose of the 2003 survey was to gather up-to-date information on the region's main health problems and related factors in order to improve the planning, administration, and evaluation of various social and health programs.

According to the 2001 Public Health Act (*Loi sur la santé publique*), Quebec's public health departments must periodically assess the health of their respective populations. Since 2000-2001, the province's socio-sanitary regions – with the exception of Iiyiyiu Aschii and Nunavik – have participated in the Canadian Community Health Survey (CCHS) conducted by Statistics Canada.

In 2003 the Public Health Department of Iiyiyiu Aschii decided to take part in this vast project, which was already under way across Canada, and initiated a CCHS-type survey on its own territory (Statistics Canada, 2003). Because the CBHSSJB Public Health Department is connected to the network of Quebec's Department of Health and Social Services (*Ministère de la santé et des services sociaux*, MSSS), it was able to enlist the expert assistance of the *Institut national de santé publique du Québec* (INSPQ) in coordinating the analysis of the results. Professionals drawn from Quebec's health care community and the Public Health Department of Iiyiyiu Aschii, as well as academic experts in the field, were given the task of drafting the publications. The analyses include results on various aspects of health affecting residents of Iiyiyiu Aschii and they also provide comparisons with 1991 data from the region and 2003 data from the rest of Quebec (Santé Québec, 1994; Statistics Canada, 2003). These analyses are relevant for everyone concerned with the health of Iiyiyiu Aschii residents (professionals, administrators, planners, and researchers).

Ten publications were produced as part of this survey:

- *Demographic and social characteristics of the population living in Iiyiyiu Aschii*
- *Food habits, physical activity and body weight*
- *Cigarette consumption*
- *Lifestyles related to alcohol consumption, drugs and gambling*
- *Preventive practices and changes for improving health*
- *Health status, life expectancy and limitation of activities*
- *Injuries and transportation safety*
- *Mental health*
- *Use and perceptions of health services*
- *Survey methods*

A final publication, *Survey highlights*, offers a rapid overall view of the health study's results.

Many people contributed to this study at every stage in its progress. Particularly deserving of mention are the roles played by Jill Elaine Torrie, Director of Specialized Services, and Yv Bonnier-Viger, Director of Public Health of the Cree Board, throughout the planning phase and during operations on the field. Above all, we wish to thank the Cree population for its remarkable level of collaboration.

## METHODOLOGY OF THE CANADIAN COMMUNITY HEALTH SURVEY (CCHS), CYCLE 2.1, IIYIYIU ASCHII, 2003

The survey was conducted during the summer of 2003 using a representative sample of residents aged 12 and older from the nine communities in Iiyiyiu Aschii: Chisasibi, Eastmain, Mistissini, Nemaska, Oujé-Bougoumou, Waskaganish, Waswanipi, Wemindji, and Whapmagoostui.

The original 1,000-person sample was randomly selected from residents of private households in the region. The final sample thus included both Aboriginal and non-Aboriginal residents. Most interviews (85%) were conducted in person during the summer of 2003 using computer-assisted interview software. Individuals who were absent during the first data collection period were interviewed by telephone at the end of autumn 2003.

There was a high participation rate. Of the 646 households selected, 581 agreed to participate in the

[1] Please note that the socio-sanitary region for the James Bay Cree Territory is referred to by its Cree name, Iiyiyiu Aschii, throughout this text.

survey (90%). Within these households, 920 of the 1,074 eligible individuals (86%) agreed to answer the questionnaire, for a combined response rate of 78%. The survey results were then adjusted based on the number of people aged 12 and older from Iiyiyiu Aschii living in private households, excluding residents of institutions such as seniors' homes. This survey does not include children under the age of 12. All data presented in this document have been weighted to allow inferences to be made for the population as a whole.

However, it must be noted that the data are from a sample and are therefore subject to a sampling error, which must be taken into account. A coefficient of variation (CV) was used to quantify how precise the estimates were, and Statistics Canada's cut-off points were used to describe the precision of these estimates. An asterisk (*) next to an estimate indicates high sampling variability (CV between 16.6% and 33.3%). Estimates with unacceptable precision rates (CV > 33.3%) or based on fewer than ten respondents have been suppressed and replaced by the letter "U."

Statistical analyses of comparisons among the sexes, age groups and sub-regions were conducted at a threshold of $\alpha = 0.05$. Comparisons with the rest of Quebec were standardized to take into account the differences in age structure between the population of Iiyiyiu Aschii and that of the rest of Quebec, and were conducted at a threshold of $\alpha = 0.01$ (Statistics Canada, 2003).

When the questions asked were similar, the results were compared to those of a 1991 survey carried out in the region (Santé Québec, 1994). In light of differences in the samples between the two surveys, these comparisons are only made among Cree aged 15 and older and have been standardized to compensate for changes in the population's age structure. Only unadjusted rates are presented in the text in order to avoid possible confusion with the standardized rates.

More details on data processing are given in the above-mentioned *Survey methods* report.

## INTRODUCTION

Among North American natives, the mortality rate and the rate of hospitalization for traumas are generally higher than for the rest of the population (Denny, Holtzman et al., 2003). This was also the case for the people of Iiyiyiu Aschii, where the rates of mortality, of loss of potential years of life, and of hospitalization for traumas (whether caused by accident or intentionally) were superior to the rates for Quebec in 1991-1993. In subsequent years, however, the mortality rate declined to a level almost equal to that of Quebec in 1997-1998 (Hamel, 2001). It must be pointed out that the number of relevant observations is quite small, the number of deaths due to traumas having declined from twelve to seven between 1991-1993 and 1997-1998. It should also be noted that four of the seven deaths recorded in 1997 and 1998 were in the "occupant of a motor vehicle" category. In the early 1990s coastal villages in Iiyiyiu Aschii were still isolated from the southern highway system; the advent of an infrastructure for road transportation connected them with the rest of Quebec and increased the use of road vehicles, the distances travelled, and the hours spent at the wheel (Kishchuk, 2003).

Aside from the number of deaths, on the other hand, residents of Iiyiyiu Aschii have a higher rate of hospitalization for trauma than do the people of Quebec as a whole. There is a prevalence of falls, highway accidents, and accidents involving off-road vehicles (Hamel, 2001). Rates of death and hospitalization for trauma, however, are comparable to those in some outlying regions of the province — for example Abitibi and the North Shore — while remaining lower than the rates observed in Nunavik (Choinière et al., 1993).

Injuries associated with falling have been the subject of a descriptive study undertaken in the Iiyiyiu Aschii region (Barss, 1998). It reveals that the greatest incidence involves sports (especially hockey); next come journeys on foot. It also reveals that the highest rates of hospitalization for falls involve infants and the elderly. Among the latter, falls occur mainly around the home, with the greatest portion happening during weekends. More recent studies mention that natives have a higher risk of injuries than other peoples. Summing up a study carried out among Canadian natives living off-reserve, Tjepkema (2005) estimates that the risk of suffering an injury is 1.4 times greater for these people than for other Canadians. The same study reveals that injuries resulting

in a reduced capacity to carry on activities are 1.7 times more frequent among natives. A study carried out among Manitoba Cree finds that fractures occur twice as often among those natives than among other Manitobans (Leslie et al., 2005). This study also notes that a low income, place of residence, and a diagnosis of diabetes are risk factors for fractures. In Canada as a whole, self-reporting data gathered for the CCHS survey point to men and adolescents as groups at risk of injuries; they also classify falls as a major cause of injury (Wilkins & Park, 2004; Tjepkema, 2005). When it comes to trauma, furthermore, one must mention seasonal variations: a peak is observed in winter while autumns are low periods (Wilkins & Park, 2004). The 1991 Santé Québec survey of the James Bay Cree (Santé Québec, 1994) not only allows one to estimate the prevalence of different types of trauma; it also makes one appreciate how important are the risk factors for certain trauma (Robitaille & Barss, 1994). Analysis of its results shows that transportation on water, by snowmobile, and by ATV are more common in the region than in the rest of Quebec. On the other hand, people in Iiyiyiu Aschii are less likely to use protective devices (lifejacket, helmet, or seat belt) than elsewhere.

Those responsible for public health on the Cree Council have noted a recent increase in the use of motor vehicles, apparently with an attendant increase in the frequency of road accident trauma. In connection with this, it has seemed worthwhile to take note of some high-risk behaviours — driving under the influence of alcohol, for instance — and how certain types of protection are used (seat belts and protective helmets). Preventive measures appropriate to boats and off-road vehicles must also be undertaken in this rural area. These modes of transportation serve useful purposes in Iiyiyiu Aschii (haulage, hunting, fishing, trapping) much more frequently than in the rest of Quebec. During the 1991 survey a significant difference between villages was observed as regards the means of transportation used (Robitaille & Barss, 1994).

The first aim of this publication is to present an account of the injuries reported by the residents of Iiyiyiu Aschii, and then to describe these injuries and the circumstances of the accidents identified in the course of the CCHS 2.1 study. The restrictions on normal activities associated with these injuries will also be dealt with in the first section. The use of different means of transportation, as well as behaviour related to security and the driving of motor vehicles, will be addressed in the second section of the present publication.

## METHODOLOGICAL ASPECTS

The survey carried out in Iiyiyiu Aschii borrowed the questionnaire developed by Statistics Canada in collaboration with other federal departments for the Canadian Community Health Survey (CCHS 2.1). For the purposes of this publication, two modules of the CCHS survey will be of particular interest. One of these, concerning injuries, documents injuries sustained by residents 12 years old and over during the previous twelve months. These injuries had to be serious enough to restrict the normal activities of the person concerned (for work, school, or play). All types of injuries were included except those associated with repetitive movements. When the most serious injury was noted, the next task was to find answers to certain questions: what type of injury it was, by what mechanism it was caused, what part of the body was affected, where the incident occurred, and what treatment was given within 48 hours. The time of year in which the interview occurred was taken into account so comparisons could be made with the rest of Quebec and any season-related bias eliminated.

The module on security and driving deals with the presence of protective measures and risk factors in road transportation, the use of helmets on all-terrain vehicles (ATVs), and driving motor vehicles under the influence of alcohol. The use of various means of transportation was quantified for residents 12 years of age and over, whether as drivers or passengers and whether involving a motor vehicle (car, truck, van) or another type of vehicle over the past twelve months. Other vehicles were placed in two categories: snowmobiles, motor boats, and seadoos[2] on one hand, ATVs on the other.

Questions about protective measures in transportation dealt with the use of seat belts by drivers or passengers in motor vehicles as well as with the wearing of helmets by users of ATVs. From the questions on driving behaviour it was possible to estimate the degree to which operators of motor vehicles (automobiles, trucks or vans, motorcycles) were driving in a state of fatigue, and how much faster they were driving than other operators.

[2] Since the Cree population makes practically no use of the seadoo, no further mention of this type of vehicle shall be made here.

Questions about alcohol consumption by drivers were aimed at those who had consumed two alcoholic drinks or more in the hour before taking to the road; they were also intended to find out about the exposure of passengers to this type of behaviour on the part of drivers. The module on transport security was not used in the rest of Quebec, which makes it impossible to make any comparisons in this area.

#### SCOPE AND LIMITATIONS OF THE DATA

Fatal injuries and those requiring hospitalization were excluded from the section on injuries. Memory bias might cause the number of serious injuries to be overestimated: in other words, as has been shown elsewhere (Harel et al., 1994), time distortion might lead respondents to overlook minor injuries and to add more serious ones sustained before the beginning of the target period (the last twelve months). Motor vehicles are not used the same way in isolated regions as in urban areas. Although travel within a community usually involves very small distances, outside the community it entails very long trips. Motor boats, snowmobiles, and ATVs, moreover, essentially serve utilitarian purposes; they are not used for recreation as in most regions of Quebec. Furthermore, it must also be pointed out that off-road vehicles do not travel on paths that are well maintained and marked out. Because these vehicles often serve as the means of transportation in communities, it is important to consider how they are used and what protective measures are taken when people use them.

It should also be made clear that we cannot quantify the distances travelled or the time spent in these vehicles. Any such information would surely give us a better idea of the extent to which people in the region are exposed to the various risks. The questions on security measures in transportation — such as the use of seat belts or helmets on ATVs — are therefore subject to socially determined biases and might lead to conclusions substantially different from what could be observed on the ground. The same can be said about questions on alcohol consumption at the wheel; the answers probably underestimate the frequency of this socially deprecated behaviour. Furthermore, it must be noted that acts like these are specifically dealt with in Quebec's laws and regulations.

Modifications to the questions and changes between 1991 and 2003 in the way responses were obtained make comparisons on injuries problematic. Comparisons can be made, however, about the use of seat belts and ATV helmets between these two surveys.

## RESULTS

### 1. INJURIES RESULTING IN THE LIMITATION OF NORMAL ACTIVITIES

Injuries reported over the last twelve months had to be serious enough to limit the normal activities of the person sustaining them. In the following sections the frequency of the most serious injury, its description, the mechanisms or activities which caused it, and the attendant recourse to health services are detailed.

#### *Frequency*

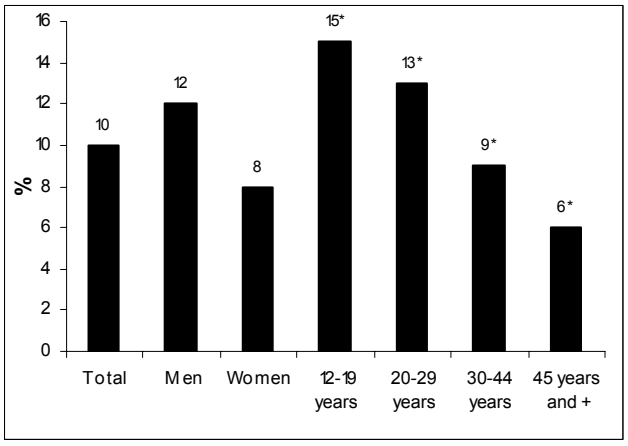
Injuries are relatively frequent occurrences. Those which limited a person's normal activities in the twelve months prior to the survey affected one resident in ten (10%) aged 12 or over, or approximately 1,020 persons in a one-year span. Men are generally more likely than women to sustain an injury and this tendency, while not statistically significant, appears to be borne out by proportions of 12% and 8% respectively (Figure 1, and Table A1 in Appendix). Adolescents are the most highly affected, with one in six residents aged 12 to 19 years (15%*)[3]; close behind are young adults aged 20 to 29 years (13%*). The proportion of injured individuals belonging to these two age groups is significantly different from that for residents aged 30 to 44 years (9%*) and for those aged 45 years and over (6%*). There are no significant discrepancies, as to proportions of injuries reported, between sub-regions[4] or communities[5].

[3] The asterisk (*) indicates a rough estimate (CV between 16.6% and 33.3%); these data are to be interpreted with caution

[4] The region of Iiyiyiu Aschii has been divided in two sub-regions for comparison. The coastal sub-region includes the villages of Chisasibi, Wemindji, Eastmain, Waskaganish and Whapmagoostui while the inland sub-region includes Nemiscau, Mistissini, Oujé-Bougoumou and Waswanipi.

[5] Four groups of communities were defined on the basis of each village's population at the time of the survey: (1) Chisasibi (more than 3,000 inhabitants); (2) Mistissini (2,000 to 3,000 inhabitants); (3) medium-sized communities (1,000 to 2,000 inhabitants), i.e. Waswanipi, Waskaganish, and Wemindji; (4) smaller communities (fewer than 1,000 inhabitants), i.e. Whapmagoostui, Eastmain, Nemiscau and Oujé-Bougoumou.

**Figure 1**
Proportion of individuals having sustained at least one injury which limited their normal activities over the twelve months preceding the survey according to sex, age group, and sub-region (%), population 12 years of age and over, Iiyiyiu Aschii, 2003




* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).

Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

The annual breakdown of injuries shows that one third (33%) of them occur in the summer, one quarter (25%*) in the autumn, and one fifth in each of the other two seasons: 21%* for winter, 22%* for spring (Table A1, Appendix). The frequency of injuries in Iiyiyiu Aschii is identical to that of the rest of Quebec as concerns sex, age groups, or season (data not provided).

**Description of the most serious injuries**

More precise description reveals that the most serious injuries involve sprains or wrenched extremities in one third of all cases (33%), fractures in a quarter of the cases (25%*), and cuts or bites in one fifth (19%*). Other injuries, such as scrapes, burns, dislocations, etc., make up 23%* of the total (Table A2, Appendix). Parts of the body most often involved, in decreasing order, are: shoulder, arm, or forearm (22%*), leg (21%*), ankle or foot (17%*), back (15%*), wrist or hand (12%*). There appears to be no significant difference between men and women as to type of injury or part of body involved.

**Mechanism, activity, and place of occurrence of the most serious injury**

Falls are the main mechanism of injury, accounting for somewhat less than half (42%) of all reported injuries (Table A2, Appendix). In this category, slipping or taking a misstep is the most frequent cause (data not provided). Overextension or strenuous movement constitutes the second most common mechanism (20%*), followed by injuries sustained in transportation (14%*). No difference between the sexes has been observed regarding mechanisms which cause the most serious injuries.

About half (48%) of injuries occur in the course of sport or leisure activities and one fifth at work[6] (20%*), while 17%* are associated with household chores. Here again, there is no difference between men and women when it comes to the activity which led to the injury. Injuries happened mainly at home (25%*); next came the street (21%*) and areas used for sports (12%*). Accidents in the bush account for 11%* of the most serious injuries, followed by those which occurred in commercial areas (10%*).

**Use of health services when an injury occurs**

In the year preceding the survey, more than half (56%) of the region's inhabitants who sustained a serious injury limiting their normal activity resorted to health services (Table A3, Appendix). This proportion does not vary according to sex or age, although adolescents from 12 to 19 years of age tended to consult health services more often (66%) than their elders when they were injured. There is also no variation among sub-regions. Out of the injured people who did consult health services, 42% said they went to a hospital emergency department[7], 35%* opted for the community Health Centre, and 34%* went elsewhere (physician's office or outpatient clinic[8]).

## 2. SECURITY IN TRANSPORTATION

The risk of sustaining injuries associated with transportation is generally a function of how much one is exposed to various means of transportation (frequency of use or distance travelled), of the use of safety measures appropriate to each type of vehicle, and of the driving habits — dangerous or otherwise — of the operators involved. The three following sections deal with these topics.

[6] In the survey all remunerated activity was considered to be work activity. Therefore it is possible that activities related to hunting and fishing, when not remunerated, were categorized as leisure activities.

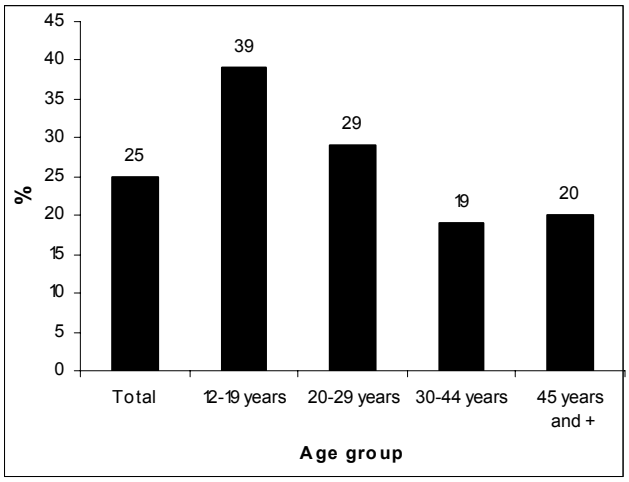
[7] The two hospital emergency rooms and the outpatient services in Chisasibi and Chibougamau are available only to residents of neighbouring communities.

[8] Respondents may have confused a private or outpatient clinic with the Community Health Centre but this cannot be verified.

**Use of means of transportation**

In the present survey, exposure to vehicles is recorded as a minimal exposure indicator: each respondent must have used the vehicle either as a driver or as a passenger at least once in the previous twelve months. The data show that men and young people use the means of transportation studied more often than do women or people 30 years of age and over. Adolescents notably make very little use of automobiles or trucks but use ATVs much more than their elders. In fact, 39% of the 12- to 19-year-olds used an ATV either as a driver or as a passenger, while the proportion for 20- to 29-year-olds is under 30% and that for older people even lower (Figure 2, and Table A4 in Appendix).

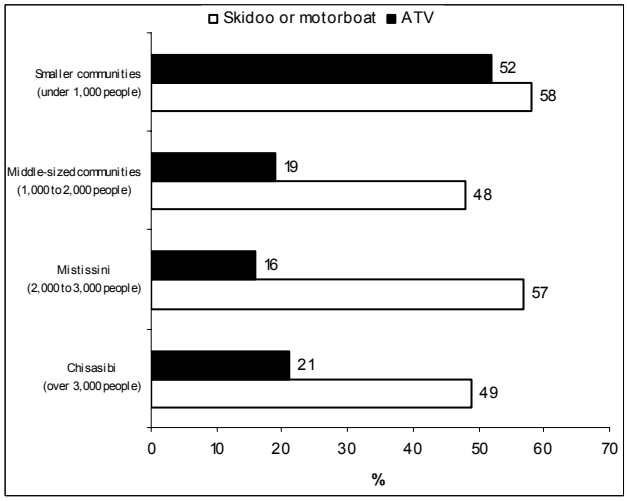
**Figure 2**
Proportion of individuals having used an ATV (as driver or passenger) in the 12-month period preceding the survey according to age group (%), population 12 years of age and over, Iiyiyiu Aschii, 2003.




Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

The smaller communities (Eastmain, Nemiscau, Oujé-Bougoumou, and Whapmagoostui) as a group contain the greatest proportion of ATV users (52%); this is much higher than the figure for Chisasibi (21%), Mistissini (16%), and the medium-sized communities of Waswanipi, Waskaganish, and Wemindji (19%). The smaller communities have a higher proportion of people who use other vehicles (snowmobile and motor boat) than do medium-sized communities (58% vs. 48%), but in this respect they are not markedly different from Chisasibi or Mistissini (Figure 3, and Table A4 in Appendix).

**Figure 3**
The proportion of people having used various modes of transportation during the 12 months prior to the survey (either as driver or passenger) as a function of community size, population 12 years of age and over (%), Iiyiyiu Aschii, 2003.




Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

A comparison of the coastal and inland sub-regions reveals that more people (57%) in the inland villages use snowmobiles or motor boats than do those in coastal villages (49% — Table A4, Appendix). Unfortunately, the question did not allow distinguishing users of these two types of transportation.

**Use of protective devices: ATVs, seat belts and helmets**

Seat belts seem to be more widely used among drivers (57%) than among passengers (48%) of cars and trucks (Table A5, Appendix). Trends related to sex and age seem more or less identical for drivers and passengers. The proportion of women who claim to use seat belts "always" or "most of the time" is not significantly different from that of men. On the other hand, observance of this safety precaution varies according to age: individuals 45 years of age or older buckle their seat belts more often than younger people, whether as drivers (70%) or passengers (64%). The survey indicates no clear differences between communities as to the use of seat belts in motor vehicles.

Among ATV users, 49% mentioned using a helmet "always" or "most of the time". When it comes to sex and age, however, this proportion does not break down in

the same way as for the use of seat belts. Men wear helmets in greater numbers (57%) than women (35%) when travelling on ATVs. Also, more members of the 20- to 29-year-old group (63%) wear helmets than do members of the 30- to 44-year-old group (42% — Table A5, Appendix). It may be that the low frequency of helmet use among women and adolescents is related to their status as passengers on ATVs, since only one helmet is usually available, and that is generally worn by the driver.

There is a major difference between communities as to the use of helmets on ATVs. This is very high in Mistissini (78%) and very low in Chisasibi (25%*), while other communities show intermediate figures (Table A5, Appendix). Note that small communities with a high degree of ATV use (52%) report less use of helmets than is the case for Iiyiyiu Aschii as a whole (42% vs. 49%) (Table A5, Appendix). Furthermore, the inland sub-region is noteworthy for its much higher frequency of helmet use (82%) than obtains in the coastal sub-region (27%) (Table A5, Appendix).

The 1991 survey contained two questions about ATV travel, and these were fairly similar in wording to the questions of the present survey. It was already observed in 1991 that a greater proportion of men than of women used ATVs (41% vs. 19%) and that a greater proportion of men than of women (46% vs. 22%) wore helmets (Table A6, Appendix). Results of the present survey seem to show that the use of helmets has increased since 1991 (49% vs. 38%). Since the order of questions was not the same in the two surveys, conclusions must be drawn with care. It may be simply that the social desirability of wearing helmets has climbed to a current high point; but the survey results could be indicating a genuine improvement.

### High-risk driving behaviour

A series of questions in the CCHS survey allows us to estimate the proportion of people riding in motor vehicles, boats, ATVs, or snowmobiles when the driver had consumed an alcoholic beverage. A distinction was made as to whether the respondent was a driver or a passenger and as to which of two types of vehicle was involved. The level of precision of the estimates given in Table A7 (Appendix) is low for each type of behaviour taken separately. The right-hand column indicates the proportion of people who were exposed to one or another type of the listed behaviours.

A higher proportion of men (24%) than of women (14%) reported having been exposed to driving associated with alcohol consumption. Exposure is higher among adolescents (30%) and young persons in their 20s (29%), while only 7%* of adults 45 years of age and over reported being in such a situation at least once during the past year (Table A7, Appendix).

The greatest proportion was found in Mistissini (24%) while the smallest was found in middle-sized communities (15%). It also appears that the residents of inland communities have a greater exposure (23%) than those of coastal communities (17%), mainly because of having been passengers in a motor vehicle under the control of a driver who had consumed alcohol (20%). On the other hand, the exposure is greater in coastal communities when boats, ATVs, or snowmobiles are involved (Table A7, Appendix).

Table A8 (Appendix) concerns two other dangerous behaviours associated with motor vehicles. A greater proportion of men (39%) than of women (21%) report that they "often" or "sometimes" drive when fatigued. Similarly, more men (31%) than women (17%) claim they habitually drive faster than other drivers.

## DISCUSSION AND CONCLUSION

The frequency of injuries reported in the course of this survey lies in the same range as that observed in the rest of Quebec and in Canada as a whole (Wilkins and Park, 2004). The same is true of the Yukon, the Northwest Territories, and Nunavut, where the frequency of injuries is identical to that observed in Iiyiyiu Aschii (Tjepkema, 2005). However, the frequency of injuries among Canadian natives living off reserves (20% for 20- to 64-year-olds) is higher than for residents of Iiyiyiu Aschii (Tjepkema, 2005). An increase in the frequency of injuries among people over 65 has also been observed in the rest of Canada (Wilkins and Park, 2004). Because of the small number of persons of this age in the Iiyiyiu Aschii region, it was difficult to determine if a like process is occurring there. As in the rest of Quebec and Canada, men and young persons formed the two groups most at risk of injury. Summer, and then autumn, were the seasons in which the most injuries ware sustained.

The residents of the region do not appear significantly different from others as to the type of injury reported (sprains, wrenches, and fractures). Differences appear,

however, when it comes to the part of the body involved: there are more injuries to the upper and lower limbs among the residents of Iiyiyiu Aschii, while injuries to the extremities (ankle, foot, wrist, hand) are more often reported in the rest of Canada and by natives living off reserve (Wilkins and Park, 2004; Tjepkema, 2005). The same mechanisms are involved everywhere, namely a fall most often caused by slipping. The home, the area close to home, and locales where leisure activities take place are the most frequently reported scenes of injury in every study cited here.

The majority of reported injuries are serious enough to require care. It is interesting to note, however, that Canadian natives living off reserve avail themselves more often of health services within 48 hours than do residents of Iiyiyiu Aschii or of the Northwest Territories (Tjepkema, 2005). The difference might be partly explained by differences in the availability of medical services.

The use of automobiles or trucks, which is a risk factor for serious injuries, is probably less common in the region than in other parts of the province. Data published by the SAAQ make it possible to calculate the percentage of the population possessing a driver's permit for passenger vehicles: it is 47% for the population of the James Bay region[9] and 63% in the whole of Quebec (SAAQ, 2005). Seat belts seem to be worn less often in Iiyiyiu Aschii than was observed by Transport Canada in Quebec as a whole (91%) or in Quebec's rural communities (89% — Transport Canada, 2006). In Iiyiyiu Aschii the percentage of those claiming to use seat belts is under 60%, whether the respondents are drivers (57%) or passengers (48%). Given that survey interviews tend to produce higher estimates of certain behaviours than studies where those behaviours are directly observed, there is every reason to believe that the results concerning the difference between Iiyiyiu Aschii and the rest of Quebec, in the matter of seat belts, is real. The smaller proportion of seat belt wearers might be due to the smaller size of the communities in which car rides occur, and to the fact that long-range travel outside a community is relatively rare.

On the other hand, a large part of the population in Iiyiyiu Aschii is involved with other means of transportation (snowmobile, boat, and ATV): half of the respondents used a snowmobile or a boat at least once in the course of the preceding year, and one quarter used an ATV. Although it is not possible to estimate the frequency of use of these means of transportation from the survey results, we tend to believe that it is higher than in the rest of Quebec. The 1991 survey found a weekly use of snowmobiles among more than 65% of respondents, of boats among more than 50%, and of ATVs among more than 15% during the time of year appropriate to each type of transportation (Robitaille and Barss, 1994).

During the five-year period from 1999 to 2003, there were 19 hospital admittances for injuries related to ATVs in the Cree population. This represents 0.5% of all admittances related to the same cause in Quebec, while the Cree population constitutes half this proportion (0.2% of the population of Quebec). Authors have noted that morbidity is lower for people who use ATVs in their work than for those who use them for recreation (Ingle, 2005). This might result in a lower morbidity in connection with ATVs among adult Crees if they use ATVs as work equipment. The high proportion of adolescents from 12 to 19 years of age who use ATVs, however, deserves special attention.

Finally, we must stress that most ATVs are not designed to carry passengers. Several medical associations, including the Canadian Paediatric Society (2004), are of the opinion that no-one under 16 years of age should use an ATV, whether as an operator or as a passenger. Other authors recommend compulsory training for operators, education for ATV salespeople and buyers, and observance of applicable regulations (Warda et al., 1998; Canadian Paediatric Society, 2004). At the time of the survey, the minimum age for ATV operators in Quebec was 14[10]; helmets are compulsory. While each population's geographic and cultural situation must certainly be considered when safety measures are applied, respecting Quebec's regulations on helmets would be an essential starting point. On this question Mistissini and the group of inland villages — where the rate of helmet use approaches or even surpasses 80% — deserve a favourable mention.

[9] The James Bay region includes Cree and non-Cree communities in Northern Quebec. This statistic reflects the high proportion of young persons who are not old enough to drive an automobile.

[10] In June 2006 the Quebec government raised the minimum age for drivers of off-road vehicles to 16.

## KEY ISSUES

### 1. INJURIES RESULTING IN THE LIMITATION OF NORMAL ACTIVITIES

- During a twelve-month period, 10% of the region's residents sustained an injury which limited their normal activities.
- Every year, more than 1,000 persons 12 years of age or older sustain at least one injury which limits their activities.
- Men and young persons constitute the groups reporting the greatest number of injuries.
- The region of Iiyiyiu Aschii does not differ from the rest of Quebec as to the prevalence of reported injuries.
- Sprains, wrenches, and fractures are the types of injury most often reported.
- Falls are the main cause of injuries (42%).
- 48% of all injuries occur in sports or leisure activities and 25%* occur in the home.
- 56% of injuries were followed by recourse to a health professional, usually in a hospital emergency room.

### 2. SECURITY IN TRANSPORTATION

- The prevalence of seat belt use is the same for women as for men: 57% for drivers and 48% for passengers. This is markedly less than the numbers for Quebec as a whole (91%) and for rural Quebec (89%).
- 52% of the population reports having used a snowmobile or a boat at least once during the year preceding the survey; 25% report having used an ATV.
- The use of ATVs is especially common among men and young persons, and in small communities.
- In Iiyiyiu Aschii as a whole, 49% of ATV users regularly wear a helmet; men (57%) do so more than women (35%).
- A few communities are noteworthy for the high proportion of ATV users who wear helmets: Mistissini (78%) and the inland communities as a whole (82%).

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## APPENDIX

**Table A1**
Proportion of people who, during the twelve months preceding the survey, sustained at least one injury which limited their normal activities (%), population aged 12 or over, Iiyiyiu Aschii, 2003

| | % | Estimated population |
|---|---|---|
| **Total** | 10,0 | 1 020 |
| **Gender** | | |
| Men | 11,7 | 620 |
| Women | 8,1 | 400 |
| **Age group** | | |
| 12-19 years | 15,1* [1,2] | 290 |
| 20-29 years | 12,5* [3] | 260 |
| 30-44 years | 8,8* [2] | 270 |
| 45 years and + | 6,3* [1,3] | 190 |
| **Sub-region** | | |
| Coastal | 8,6 | 530 |
| Inland | 12,0 | 490 |
| **Communities** | | |
| Chisasibi (over 3,000 people) | 7,6* | 200 |
| Mistissini (2,000 to 3,000 people) | 11,8* | 260 |
| Middle-sized communities (1,000 to 2,000 people) | 9,6* | 330 |
| Smaller communities (under 1,000 people) | 11,9 | 230 |
| **Season** | | |
| Summer | 32,9 | 336 |
| Autumn | 24,5* | 249 |
| Winter | 20,9* | 213 |
| Spring | 21,7* | 222 |

[1, 2, 3] Estimates with the same superscript are significantly different at a level of $\alpha = 0.05$.
* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).
Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

**Table A2**
Description of the most serious injury according to sex (%), population aged 12 or over who, during the twelve months preceding the survey, sustained at least one injury which limited their normal activities, Iiyiyiu Aschii, 2003

| | Men | Women | Total |
|---|---|---|---|
| **Type of injury** | | | |
| Sprain, wrench | 36,7* | 27,1* | 33,0 |
| Fracture | 21,4* | 32,5* | 25,8* |
| Cut | 21,8* | U | 18,8* |
| Other | 20,1* | 26,4* | 22,5* |
| **Part of body** | | | |
| Ankle, foot | U | 21,3* | 16,9* |
| Shoulder, arm, forearm | 20,2* | U | 21,6* |
| Wrist, hand | 16,9* | U | 11,5* |
| Back | 16,5* | U | 14,9* |
| Leg | 16,4* | 27,8* | 20,9* |
| Other | U | U | 14,2* |
| **Mechanism** | | | |
| Fall | 39,7* | 46,6* | 42,4 |
| Excessive effort | 19,6* | 20,5* | 20,0* |
| Transportation accident | U | U | 14,1* |
| Other | 33,5* | U | 23,5* |
| **Activity** | | | |
| Sports, leisure | 45,9 | 52,2 | 48,4 |
| Work | 21,3* | U | 19,9* |
| Domestic chores | U | U | 16,5* |
| Other | U | U | U |
| **Location** | | | |
| Home | 21,6* | 30,8* | 25,2* |
| Sports venue | 13,3* | U | 11,6* |
| Street, sidewalk | U | U | 20,9* |
| Woods, lake, mountain | U | U | 10,6* |
| Commercial area | U | U | 10,2* |
| Other | 27,4* | U | 21,6* |

* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).
U Unpublished data (CV > 33.3% or fewer than 10 respondents).
Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

**Table A3**
Proportion of persons whose injuries led to a request for medical care within 48 hours, according to certain characteristics and the place of consultation (%), population aged 12 or over who, during the twelve months preceding the survey, sustained at least one injury which limited their normal activities, Iiyiyiu Aschii, 2003

| | % |
|---|---|
| **Total** | 55,8 |
| **Gender** | |
| Men | 56,8 |
| Women | 54,2 |
| **Age group** | |
| 12-19 years | 66,0 |
| 20-29 years | 49,2* |
| 30-44 years | 53,7* |
| 45 years and + | 52,6* |
| **Sub-region** | |
| Coastal | 60,8 |
| Inland | 50,4 |
| **Where the most serious injury was treated** | |
| Emergency room | 42,4 |
| CLSC, Community Health Centre | 35,0* |
| Other | 33,5 * |

* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).
Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

**Table A4**
Proportion of persons having used various forms of transportation (as operators or passengers) during the twelve months preceding the survey (%), population aged 12 or over, Iiyiyiu Aschii, 2003

| | Has driven a motor vehicle (car/truck) | Has used a snowmobile or motor boat (as operator or passenger) | Has used an ATV (as operator or passenger) |
|---|---|---|---|
| **Total** | 52,5 | 51,8 | 25,3 |
| **Gender** | | | |
| Men | 64,6 [1] | 61,3 [1] | 32,2 [1] |
| Women | 39,6 [1] | 41,6 [1] | 17,9 [1] |
| **Age group** | | | |
| 12-19 years | 24,5 [1,2,3] | 64,4 [1,2] | 39,0 [1,2,3] |
| 20-29 years | 57,8 [1] | 56,2 [3] | 28,6 [1,4,5] |
| 30-44 years | 66,9 [2,4] | 48,5 [1] | 19,4 [2,4] |
| 45 years and + | 51,5 [3,4] | 44,2 [2,3] | 20,4 [3,5] |
| 15 years and + | 55,1 | 50,2 | 24,1 |
| **Sub-region** | | | |
| Coastal | 54,3 | 48,6 [1] | 24,9 |
| Inland | 49,8 | 56,7 [1] | 25,8 |
| **Communities** | | | |
| Chisasibi (over 3,000 people) | 64,0 [1,2,3] | 48,6 | 21,3 [1] |
| Mistissini (2,000 to 3,000 people) | 48,4 [1] | 56,7 | 16,2 [2] |
| Middle-sized communities (1,000 to 2,000 people) | 45,5 [2] | 47,7 [1] | 18,9 [3] |
| Smaller communities (under 1,000 people) | 53,9 [3] | 57,6 [1] | 51,7 [1,2,3] |

[1, 2, 3, 4, 5] Estimates with the same superscript are significantly different at a level of $\alpha = 0.05$.
* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).
Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

**Table A5**
Proportion of persons having reported using a seat belt or ATV helmet during the twelve months preceding the survey (%), population aged 12 or over, Iiyiyiu Aschii, 2003

| | Uses a seat belt[a] (car / truck) | | Wears ATV helmet[a] |
|---|---|---|---|
| | Driver | Passenger | |
| **Total** | 56,5 | 47,8 | 49,2 |
| **Gender** | | | |
| Men | 59,2 | 47,9 | 56,7 [1] |
| Women | 52,1 | 47,7 | 35,1 [1] |
| **Age group** | | | |
| 12-19 years | 49,7 [1] | 32,5 [1,2] | 48,0 |
| 20-29 years | 48,3 [2] | 34,5 [3,4,5] | 62,9 [1] |
| 30-44 years | 53,0 [3] | 50,6 [1,3,4,6] | 42,3 [1] |
| 45 years and + | 69,9 [1,2,3] | 64,0 [2,5,6] | 44,1* |
| **Sub-region** | | | |
| Coastal | 56,6 | 51,4 [1] | 27,0 [1] |
| Inland | 56,5 | 42,5 [1] | 81,9 [1] |
| **Communities** | | | |
| Chisasibi (over 3,000 people) | 47,8 [1] | 39,5 [1,2] | 25,2* [1,2,3] |
| Mistissini (2,000 to 3,000 people) | 54,4 | 38,8 [3,4] | 77,9 [1,4,] |
| Middle-sized communities (1,000 to 2,000 people) | 67,8 [1] | 55,0 [1,3] | 65,0 [2,5] |
| Smaller communities (under 1,000 people) | 55,8 | 56,5 [2,4] | 42,4 [3,4,5] |

[1, 2, 3, 4, 5, 6] Estimates with the same superscript are significantly different at a level of $\alpha = 0.05$.
[a] "Always" or "Most of the time".
* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).
Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

**Table A6**
Proportion of people having used an ATV (as driver or passenger) and having worn an ATV helmet during the twelve months preceding the survey according to age group (%), Cree population aged 15 or over, Iiyiyiu Aschii, 1991 and 2003

| | Use of ATV | | Use of ATV helmets (always or most of the time) | |
|---|---|---|---|---|
| **Survey year** | **1991** | **2003** | **1991** | **2003** |
| **Total** | 29,3 | 24,1 | 38,0 [1] | 48,6 [1] |
| **Gender** | | | | |
| Men | 41,1 | 32,2 | 45,5 [1] | 54,1 [1] |
| Women | 18,8 | 17,9 | 22,3 [1] | 35,8 [1] |
| **Age group** | | | | |
| 15-24 years | 40,8 [1] | 31,5 [1] | 41,7 [1] | 56,8 [1] |
| 25-44 years | 25,4 | 23,0 | 35,3 [1] | 45,6 [1] |
| 45-64 years | 20,2 | 18,8* | 31,2 | 59,5* |
| 65 years and + | U | 25,0* | U | U |

[1] Estimates with the same superscript are significantly different at a level of $\alpha = 0.05$.
* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).
U Unpublished data (CV > 33.3% or fewer than 10 respondents).
Source: CCHS 2.1 - Iiyiyiu Aschii, 2003 and Santé Québec Health Survey of the James Bay Cree, 1991.

**Table A7**
Proportion of persons having reported behaviour associated with motor vehicles and alcohol during the twelve months preceding the survey (%), population aged 12 or over, Iiyiyiu Aschii, 2003

| | Motor vehicle | | Motor boat, ATV, or snowmobile | | Exposure to at least one of the preceding behaviours |
|---|---|---|---|---|---|
| | Drove after 2 or more drinks | Was a passenger with a driver who had 2 or more drinks | Was the operator after 2 or more drinks | Was a passenger with an operator who had 2 or more drinks | |
| **Total** | 11,4 | 15,3 | 10,1* | 8,5 | 19,5 |
| **Gender** | | | | | |
| Men | 13,5* | 18,6 [1] | 11,9* | 9,5* | 24,4 [1] |
| Women | U | 11,7 [1] | 6,7* | 7,1* | 14,4 [1] |
| **Age group** | | | | | |
| 12-19 years | U | 22,2 [1] | 20,0* | 14,2* | 30,0 [1,4] |
| 20-29 years | 14,0* | 23,3 [2,3] | 8,5* | 9,2* | 28,7 [2,5] |
| 30-44 years | 14,7* | 14,7 [3,4] | U | 9,3* | 19,8 [3,4,5] |
| 45 years and + | U | 6,0* [1,2,4] | - | U | 6,6* [1,2,3] |
| **Sub-region** | | | | | |
| Coastal | 12,4* | 12,0 [1] | 14,8* [1] | 9,8* | 17,3 [1] |
| Inland | 9,5* | 20,3 [1] | 5,4* [1] | 6,9* | 22,9 [1] |
| **Communities** | | | | | |
| Chisasibi (over 3,000 people) | 14,4* | 15,9* | 20,3* [1,2] | 8,4* | 21,9 |
| Mistissini (2,000 to 3,000 people) | 10,2 | 20,9 [1,2] | 5,1* [1,3] | 8,1* | 23,8 [1] |
| Middle-sized communities (1,000 to 2,000 people) | 9,7* | 13,1 [2] | 6,7* [2] | 5,8* [1] | 15,1 [1] |
| Smaller communities (under 1,000 people) | 12,0* | 12,2* [1] | 12,5* [3] | 14,8* [1] | 19,6 |

[1, 2, 3, 4, 5] Estimates with the same superscript are significantly different at a level of $\alpha = 0.05$.
* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).
U Unpublished data (CV > 33.3% or fewer than 10 respondents).
Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.

**Table A8**
Proportion of persons having reported certain behaviours associated with motor vehicle operation during the twelve months preceding the survey (%), population aged 12 or over, Iiyiyiu Aschii, 2003

| | Has driven in a state of fatigue[a] | Has driven faster than other drivers[b] |
|---|---|---|
| **Total** | 32,4 | 25,7 |
| **Gender** | | |
| Men | 38,8[1] | 30,5[1] |
| Women | 21,4[1] | 17,2[1] |
| **Age group** | | |
| 12-19 years | U | 28,9* |
| 20-29 years | 28,5 | 26,4 |
| 30-44 years | 34,9 | 24,5 |
| 45 years and + | 38,9 | 25,7* |
| **Sub-region** | | |
| Coastal | 30,4 | 24,6 |
| Inland | 35,7 | 27,4 |
| **Communities** | | |
| Chisasibi (over 3,000 people) | 29,2 | 24,5* |
| Mistissini (2,000 to 3,000 people) | 33,0 | 23,0* |
| Middle-sized communities (1,000 to 2,000 people) | 29,5 | 23,7* |
| Smaller communities (under 1,000 people) | 41,0 | 32,6 |

[1] Estimates with the same superscript are significantly different at a level of $\alpha = 0.05$.
[a] "Often" or "sometimes".
[b] "Much faster" or "A little faster".
* Imprecise estimate. Interpret with caution (CV between 16.6% and 33.3%).
U Unpublished data (CV > 33.3% or fewer than 10 respondents).
Source: CCHS 2.1 - Iiyiyiu Aschii, 2003.