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Child Passenger Safety Promotion in Aboriginal Communities

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Table of Contents

Executive Summary

The aim of this project was to improve current child passenger safety practices in three Manitoba First Nations communities, focusing on the correct use of car seats, booster seats, and seat belts by children and their parents, riding in the rear seat for children 12 years and younger, and not riding in the back of pickup trucks.

Local injury prevention committees coordinated the project at the community level, and the overall project was coordinated by the provincial injury prevention centre. Select community members completed child restraint technician training and conducted baseline assessments of child passenger safety practices using roadside and parking lot surveys. Baseline focus groups were held to explore local beliefs, practices, barriers, and solutions and to tailor the interventions. A brief intervention (correction of errors, individual counselling, and replacement of defective seats) was completed at the time of the parking lot survey. A more comprehensive intervention was implemented in two of the three communities, with the third serving as the control group; these strategies were community-led and tailored to local needs, and both included education and hands-on car seat clinics with a multi-stage car seat available for a $20 fee. Three months following the intervention period, roadside and parking lot surveys and focus groups were repeated to evaluate the effectiveness of these interventions.

The communities embraced the project and plan to continue child passenger safety activities. Feedback was positive from parents, coordinators, community groups and health practitioners. Thirteen individuals from the three communities participated in child restraint technician training; these communities previously had no trained individuals. The overall penetration of the project was high. 90 car seats were distributed through the program for community and personal use; this represents a substantial proportion of the population of children less than 8 years of age.

Baseline restraint was very low, in comparison to other Canadian children, as was driver restraint. Child restraint use increased significantly in the largest community, but not in the other intervention community or the control community. Use increased substantially among infants and toddlers but did not improve for booster seat and seat belt use. Of note, the parents of young children were targeted, which may explain

the differential impact on younger children. Logistic regression and multilevel modelling identified driver restraint, child age, and the timing of the observation (pre- vs. post-intervention) as important predictors of restraint use. Predictors of correct use included driver restraint, child age, and rear seating position for children. There was not a significant change in seating position or riding in the back of pickup trucks after the intervention.

The roadside and parking lot surveys provide a very valuable summary of observed and reported child passenger safety practices in these communities. Of particular note are parental perceptions of lack of access to car seats and booster seats, as well as cost barriers, but also low perceived risk of injury and need for using car seats and booster seats. Incorrect use was notable for low chest clips and loose harnesses and placing the seat belt behind the back. Premature graduation to seat belts is common, as is placing children in the front seat.

The project and its evaluation were limited by a number of factors, particularly related to the project's remote location and other environmental factors. The intervention timing and duration was challenging, being in the middle of winter and only three months in duration; this limited recruitment of other community partners and the scope of activities. The original research plan to include methods to identify vehicles for before-after observations was not possible, and limited the potential to identify individual-level improvements in participating vehicles/families. Also, if seats had been distributed to non-users as part of the brief intervention, a more significant impact may have been observed.

There are a number of success factors important to this project that should be taken into consideration for programs in other communities. Future programs should investigate the potential for the "brief" intervention (checkstops with correction of errors "on the spot" and distribution of car seats to non-users). Interaction with individual families in their vehicles may be the most promising method, and is possible with small communities such as these. This project served to raise awareness of the importance of child passenger safety and build community capacity to address this problem. The local expertise and infrastructure that was developed by this project will be important to future success and essential for significant improvement in child passenger safety.

Introduction

Project Aim

The aim of this project was to improve current child passenger safety practices in three Manitoba First Nations communities, including the correct use of car seats, booster seats, and seat belts by children and their parents, riding in the rear seat for children 12 years and younger, and not riding in the back of pickup trucks.

Objectives and Hypotheses

The primary objectives of this project were:

I. To assess current child passenger safety practices in three Manitoba First Nations communities;

II. To better understand the child passenger safety needs of these communities, including barriers to proper and consistent use of car seats, booster seats, and seat belts; and

III. To compare the impact of a brief (parking lot) intervention and a more intensive community-based program on child passenger safety practices, including correct use of car seats, booster seats, and seat belts by children and their parents, riding in the rear seat for children 12 years and younger, and not riding in the back of pickup trucks.

Accordingly, the study hypotheses were that:

I. Low baseline levels of correct child restraint use would be observed;

II. Specific barriers to correct child restraint use will be identified and would be similar for the three communities, including barriers to selecting, purchasing, installing and using car seats and booster seats; and

III. Participation in a brief (parking lot) intervention would increase observed correct child restraint use compared to baseline rates, and participation in a more intensive community-based child passenger safety program would increase correct child restraint use more than the brief intervention.

This project had the support and guidance of the Manitoba First Nations Community Wellness Working Group (MFNCWWG) and First Nations & Inuit Health Branch, Health Canada. Project approval was obtained from the University of Manitoba's Health Research Ethics Board (H2006:181). Approval was also obtained from the Assembly of Manitoba Chiefs' Health Research and Information Committee.

Methods

Community Selection

The three participating Manitoba First Nations communities were Grand Rapids First Nation, Sandy Bay, and Tootinaowaziibeeng Treaty Reserve. These communities were selected by the MFNCWWG because of their recent participation in the Community Injury Prevention Demonstration project and their interest in participating in this project. One community (Sandy Bay) was chosen as the control community for evaluation purposes. Descriptive information regarding these communities is provided in Table 1.

Training of Coordinators & Technicians

Each community's Injury Prevention Committee and local project coordinators identified community members to be trained and certified as Child Restraint Technicians (CHRs). The technicians were then responsible for conducting observational surveys in their community as well as educating parents and/or caregivers and other professionals such as nurses and community health workers regarding proper use of child restraint systems. These individuals served as local "experts" on child restraint systems and as community-based and regional resource persons. The two-day training program was delivered by a certified Manitoba Public Insurance instructor and consisted of the national training curriculum as approved by Transport Canada (classroom and in-car components). While the training content was consistent with the standard curriculum, the format, pace, teaching methods and case examples were adapted for First Nations trainers. In general, the training was geared towards a more hands-on learning style and tailored to meet project goals. Weather conditions kept one community from attending the full session in one location so this site received a day-long orientation with hands-on practical car seat installation.

Table 1. Characteristics of Populations Living on Specified Reserves 2006 Census

	Grand Rapids	Sandy Bay	Tootinaowaziibeeng
Total	650	2,520	425
Population aged 14 and under	245	1,025	155
• Male	125	545	80
• Female	110	480	75

For confidentiality purposes, numbers are rounded. Adding subcategories may not equal the total.
Source: Statistics Canada, 2006 Census.

Baseline Community Assessment

Observational surveys of child passenger safety practices were conducted at pre-determined safe locations in daylight hours, and served to establish baseline child restraint use patterns for the selected communities. Surveys were conducted by the newly trained local CRS technicians who were assisted by the Project Manager, who also completed the training. The survey team determined the observational sites, using the principles outlined in the 2006 Transport Canada National Survey of child restraint use and their knowledge of local roads and driving patterns. A mix of community and community access (highway) roadside sites were observed, as well as parking lot sites.

At roadside sites, vehicles were observed from a safe distance without interaction with the driver or passengers. At the parking lot sites, a more detailed assessment was performed for each child. This required approximately 10 minutes to complete a survey for each child in the vehicle. Drivers were asked to provide informed consent prior to participation in the parking lot survey. Non-consenting drivers could receive the intervention without participating in the study. Baseline surveys were conducted in a brief (1-2 week) period to reduce double counting and the likelihood of behaviour changes related to the observations themselves.

The Transport Canada 2006 National Survey data collection tools were utilized for both observational surveys. A supplemental parent survey (for the parking lot sites) was also used. It was adapted from other measures for this project and included additional information regarding the car seat(s) in use (manufacturer name and model number, date of manufacture, presence of instructions, missing or damaged parts and labels), reported access to car seats and booster seats, perceived barriers to proper child restraint use, vehicle factors (vehicle age, make/model, number of seating positions and their restraint systems - lap, lap/shoulder, functioning or not, presence and number of universal anchorage system (UAS) positions, presence and number of tether anchor spots and hardware, etc.), and adult seat belt use in the vehicle (driver, passengers). This survey was used in all three communities before and after the program for evaluation purposes. It was designed in collaboration with the steering committee, project team members, and community leadership.

Focus group discussions with parents of children younger than 12 years of age were conducted in each community to determine barriers to the use of proper child restraint systems and seat belts, seating position knowledge and practice, and pickup truck bed riding practices. These were arranged by the local project coordinator and facilitated by the Project Manager (Mr. Feely). Sessions were tape recorded for accurate data capture, transcription, and analysis of the discussion content. The same pre-determined questions were posed in all three communities. These were approved by the project advisory group and project team members.

Focus groups were essential for determining the nature of the proposed promotional activities, which were designed to address community needs and identified barriers, such as access to purchasing low cost seats, specific vehicle barriers, and awareness and knowledge of proper use. A separate focus group (and selected interviews) was held with community leaders, health educators, and law enforcement, to identify additional barriers and needs that should be taken into account when planning for the promotional activities.

The Intervention: A Child Passenger Safety Program

All communities received a brief intervention as part of the parking lot survey with the two intervention communities implementing a more intensive community outreach program to improve child passenger safety practices. The brief intervention included a car seat inspection, parent survey, family-specific passenger safety recommendations, and problem-specific educational information (e.g. car seat selection/installation/use for each child in the car, seat belt use, seating position, etc).

The more intensive child passenger safety community outreach and educational program varied for the two intervention communities and involved locally determined community outreach activities which were selected to promote child passenger safety best practices. The specific nature of the program was determined by the local coordinator in consultation with the Injury Prevention Committee and other community stakeholders. Results of the baseline focus groups (needs and barriers) were shared and discussed, and a local child passenger safety program developed. Bulk purchase of a three-stage car seat capable of being used rear-facing, forward-

facing, and as a booster seat was coordinated by Transport Canada. This seat was offered to families at no charge with a $20 administration fee. The local distribution process was determined at the community level. The communities intended to apply the $20 administration fees collected to the purchase of more car seats. The purchasing of these seats has not yet been confirmed.

Public information materials were identified by the IMPACT project team and provided to community coordinators for distribution to program participants; communities determined the specific types of materials to be distributed (poster, booklet, video, card, or other media requested by focus groups and key informants). Efforts were made to locate appropriate Canadian resources with a First Nations focus.

Program Evaluation

The evaluation consisted of roadside and parking lot surveys of child passenger safety practices and content analysis of focus groups held with community members and interested groups before and after the intervention. The follow-up evaluation was completed three months after the end of the intervention period. Efforts were made to determine if a reduction in unrestrained/improperly restrained child passenger injuries occurred using a recently implemented community-level injury surveillance system; however data were not available because IMPACT did not receive any data as there were no child passenger injuries presenting to the health centres.

Community Procedures

Project plans and data collection tools were approved by each community prior to their implementation. Written consent was obtained from parents/caregivers participating in the parking lot survey and for each of the focus groups. Personal (name, date of birth, etc.), identifying (e.g. licence plate number), or health-related information was not collected. Safety concerns identified at car seat clinics and parking lot surveys were reported to the project team with assistance provided to correct any problems in a timely manner.

Data Analyses

For each community, the number of children 14 years of age and younger observed at parking lot sites and car seat clinics was divided by the community population of that age group to estimate the penetration of the project (i.e. the proportion of the target population participating in the project, for each community).

The prevalence of child restraint use/nonuse and adult seat belt use/nonuse for companion passengers and drivers was reported for each community, including rates by each Transport Canada child restraint stage. Child seating position (the proportion of children less than 12 years of age riding in the back seat) was recorded and compared over time. The prevalence of errors in selection, installation, and use was reported for each community for the baseline assessment and follow-up observational phases (age/stage mismatch, chest clip errors, missing hardware, etc.). The number and proportion of passengers observed riding in the beds of pickup trucks was recorded and compared between baseline and subsequent observational surveys (number of passengers in bed/total passengers in pickup trucks). For all comparisons of proportions between communities and before and after the intervention, analyses were performed using the Chi-square statistic.

Predictors of child restraint and correct child restraint use including child, parent, and vehicle factors were analyzed using logistic regression and multilevel models and included variables such as the child's age/stage, parent and driver seat belt use, and vehicle type. To ensure an adequate sample size, data from the three communities were combined for some analyses. In this case, a variable indicating control/intervention assignment was used. A variable was also created for baseline and follow-up observations.

The parent survey (obtained at the parking lot survey) was informative for designing the intervention, and was analyzed and reported to the communities and steering committee for this purpose. Parent survey data such as vehicle factors/barriers and car seat requirements were reported in descriptive fashion (e.g. number, mean, proportion). Similarly, the baseline focus groups were analyzed and reported to the communities and steering group to facilitate planning for the intervention. For each focus group, common themes were extracted from the discussions and summarized, and specific barriers and needs were identified and reported.

Results

1. Project Components

I. Child Restraint Technician training

Training was provided to Community Health Workers, Brighter Future Program Co-ordinators, a Medical Transportation worker, the Head Start Program van driver, the Maternal Health Program Co-ordinator, and the Prevention Program Co-ordinator. There were 13 individuals trained, including seven from Grand Rapids (who received the one-day orientation session only and therefore were not certified), two from Tootinaowaziibeeng, and four from Sandy Bay (control community).

II. Interventions

- In all three communities, Transport Canada's pamphlet Keep Kids Safe: Car Time 1-2-3-4 was handed out to participants of the parking lot surveys.
- The communities of Tootinaowaziibeeng and Grand Rapids both had the same underlying strategy of targeting the car seat message to those that had greatest chance for uptake. The intention was to build on messages and momentum from community programs such as Aboriginal Head Start.
- Parents with young children were targeted, as it was believed that it would be easier (less objections from the child) to influence younger children. "They would just see it as something they do when getting in the car… climb in the car seat". It was felt that older children that had not been in car seats previously would respond with too much resistance and therefore the likelihood of parents continuing trying would be diminished.
- The community representatives in both communities felt that it was important to set an example by having the health centre use the project car seats. Medical transport vehicles were provided with car seats and an Aboriginal Head Start van was outfitted with 12 car seats. Car seats were also made available for loan through the health centres.
- Orientations on how to use car seats were provided to the appropriate staff.

- Posters from Saskatchewan Institute on the Prevention of Handicaps *Through Life's Journey: Keeping your Children Safe* depicting the four stages of restraints were provided to the communities, as well as copies of the video *Mooshum's Gift*. These posters and pamphlets were selected by the community contacts based on feedback from the focus groups.
- Car seat clinics were held in both communities. The intent was to provide an opportunity to have older car seats checked and/or to provide new car seats for a small administrative fee. The clinics were advertised and participants were required to pre-register in pre-determined half-hour time slots. The clinic started with a brief orientation to car seats followed by the parent/caregiver observing the installation of the seat. If the child was present the car seat was adjusted to the appropriate size/fit. A pamphlet was given to the participant as well as information on where they could get help on car seat issues. In a few cases, the car seat was not installed, as some people did not have their own vehicle. These families intend to install and use the seat when they borrow a vehicle. Grand Rapids held three clinics and Tootinawaziibeeng held two.
- Tootinawaziibeeng coordinated brief injury prevention presentations that included information on car seats to parents in the community prior to the car seat clinics. They also made these presentations in the school to children in the younger grades.

The distribution of car seats in the intervention communities included:

- Tootinawaziibeeng received 38 car seats
  - 29 were distributed through a clinic to parents of a Maternal/Child health program, including grandparents and 6 parents that did not own a vehicle but intended to use the seats when borrowing a vehicle
  - Seven were assigned to families but not distributed as of the end of June 2007. and two were to be used for the health centre loan program which was to be free of charge and specific to

- borrower needs (i.e. any duration, any community member).
- Therefore, 23 car seats were likely in use at the time of the intervention.

- Grand Rapids received 52 car seats
  - Two were kept for a health centre loan program
  - 12 were installed in the Aboriginal Head Start Program van
  - 38 were distributed through three scheduled car seat clinics to parents of children in the Aboriginal Head Start Program (including four grandparents)
  - Therefore, 38 car seats were likely in use at the time of the intervention.

III. Survey Data

- Roadside and parking lot observational surveys of child passenger safety practices were conducted during the baseline assessment and three months after the end of the child passenger safety intervention.

a. Penetration of the Project

The proportion of the target population participating in the project in each community was calculated (Tables 2 & 3). The results

Table 2. Participation in Roadside Surveys (n=139 surveys, 215 children)

Phase	Grand Rapids	Tootinaowaziibeeng*	Sandy Bay (Control Community)
Pre-intervention	19.6% (48/245) (95%CI 15.1% - 25.0%)	9.0% (14/155) (95% CI 5.2% - 14.2%)	5.3% (54/1025) (95% CI 4.1% - 6.8%)
Post-intervention	13.9% (34/245) (95% CI 10.1% - 18.8%)	12.9% (20/155) (95% CI 8.3% -18.8%)	4.4% (45/1025) (95% CI 3.3% - 5.8%)

*Data for "Valley River, Indian Reserve" were used

Table 3. Participation in Checkstop Surveys (n=57 surveys, 79 children)

Phase	Grand Rapids	Tootinaowaziibeeng*	Sandy Bay
Pre-intervention	3.3% (8/245) (95% CI 1.7% - 6.3%)	7.1% (11/155) (95% CI 4.0% - 12.3%)	1.6% (16/1025) (95% CI 1.0% - 2.5%)
Post-intervention	6.1% (15/245) (95% CI 3.6% - 9.6%)	7.7% (12/155) (95% CI 4.5% - 13.1%)	1.7% (17/1025) (95% CI 1.0% - 2.6%)

*Data for "Valley River, Indian Reserve" were used

are described below, for roadside and checkstop survey participation of children ≤14 years.

b. Prevalence of Restraint Use/Non-Use for Passengers and Drivers

Children

ROADSIDE SURVEYS

Of the 215 children observed in the pre and post intervention, 197 had restraint information. When intervention groups were combined there was a significant difference between pre- and post-intervention restraint use. Here, child restraint use increased from 17% pre-intervention (n=53) to 50.9% post-intervention (n=53) [X^2 =13.63, p<.001]. In the control community, there was not a significant difference between children restraint use before and after the intervention (18% vs. 26%, respectively). At the community level, only Grand Rapids showed a significant change, and increased from 11.6% to 54.5% [X^2 =16.30, p<.0001]. In Tootinaowaziibeeng, cell sizes were less than five. Sandy Bay served as the control group and there was no significant change in usage rates. (see Table 4)

CHECKSTOP SURVEYS

Child restraint use did not change significantly after the intervention when intervention communities were combined and chi-square tests run for the combined group and the control group. Analyses were also completed by community and Transport Canada stage; however, cell sizes were very small and all results were non-significant. The Transport Canada Stage for each child was calculated using the month and year of birth and the date of data collection. See Appendix A for results.

Drivers

ROADSIDE SURVEYS

For drivers, 139 vehicles were observed. Driver restraint was coded as "unsure" for 19 drivers, and for three drivers, this variable was not completed. For the remaining 117 vehicles, 34% of drivers were restrained pre-intervention and 26% were restrained post-intervention (difference not statistically significant for combined data for all communities). Analysis by community is seen in Table 5; in Tootinaowaziibeeng the decline was

Table 4. Child Restraint Use Before and After the Intervention, Roadside Survey (197 children)

Phase	Intervention		Control
	Grand Rapids	**Tootinaowaziibeeng**	**Sandy Bay**
Pre-intervention	11.6% (5/43) (95% CI 5.2% - 24.6%)	40% (4/10) (95% CI 16.7% - 69.2%)	18.4% (9/49) (95% CI 10.0% - 31.4%)
Post-intervention	54.5% (18/33) (95% CI 37.9% - 70.2%)	45% (9/20) (95% CI 25.7% - 66.0%)	26.2% (11/42) (95% CI 15.3% - 41.2%)

statistically significant [X^2 = 4.43, p<.05], but the changes were not significant for the other two communities. Sample sizes were small for these sub-group analyses, and the results should be interpreted with caution. The overall low driver restraint use highlights the need to target adult seat belt use.

In both the pre-[X2 = 5.11, p<.05] and post-intervention [X2 = 4.10, p<.05] phases, a significant difference was found for restraint use and sex of driver, with males being restrained less often [pre 16%M, 40%F; post 9%M, 27%F]. This is consistent with results from the national seatbelt survey.

CHECKSTOP SURVEYS

The variable 'driver status' (i.e. belted/unbelted) was used for determining driver restraint use. Prior to the intervention 58% were unbelted; after the intervention this rose to 75%. This difference was not statistically significant. Analyses by community resulted in insufficient sample size for further analysis.

c. Child seating position

ROADSIDE SURVEYS

The proportion of children ≤14 years of age riding in the back seat was assessed using the Transport Canada survey form to facilitate comparisons between this subpopulation and other sites surveyed by Transport Canada. Data were available for 169 children (as for some this information was missing), of which two were reported as riding in the box of a pick-up truck (both were observed post-intervention in Tootinaowaziibeeng). For the remaining 167 children, 62% were seated in the back seat at baseline and 65% at follow-up. This difference was not significant. At the community level, only Tootinaowaziibeeng showed a significant and favourable change, increasing from 28.6% to 86.7% [see Table 6; X^2 =7.43, p<.01]. Again, small sample sizes limit these analyses.

Table 5. Driver Restraint Before and After the Intervention, Roadside Survey, 117 vehicles

Phase	Intervention		Control
	Grand Rapids	**Tootinaowaziibeeng**	**Sandy Bay**
Pre-intervention	42.9% (6/14) (95% CI 21.3% - 67.7%)	62.5% (5/8) (95% CI 29.9% - 86.3%)	24.3% (9/37) (95% CI 13.4% - 40.2%)
Post-intervention	30% (6/20) (95% CI 14.6% - 52.2%)	17% (2/12) (95% CI 5.0% - 45.4%)	26.9% (7/26) (95% CI 13.8% - 46.3%)

Table 6. Back Seat Seating Position for Children less than 14 years of age, Roadside Survey

Phase	Intervention		Control
	Grand Rapids	**Tootinaowaziibeeng**	**Sandy Bay**
Pre-intervention	61% (22/36) (95% CI 44.8% - 75.2%)	28.6% (2/7) (95% CI 8.5% to 65.1%)	69% (27/39) (95% CI 53.5% - 81.4%)
Post-intervention	58.6% (17/29) (95% CI 40.6% - 74.5%)	86.7% (13/15) (95%CI 61.7% - 96.0%)	61% (25/41) (95% CI 45.6% - 74.4%)

CHECKSTOP SURVEYS

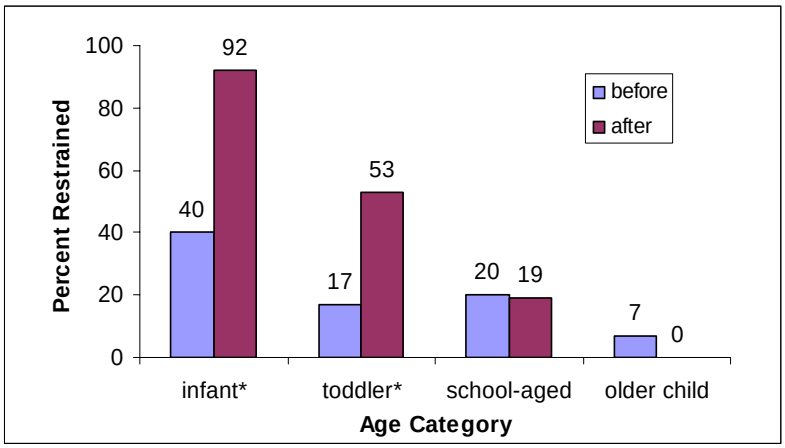
A new variable was calculated from seating position category depicted on the survey form. Here, position 2 (middle front passenger) and position 3 (right front passenger) were coded as 'front seating' while all other numbers (4-9) were coded as 'rear seating' Data for the communities was combined due to small numbers. At baseline 80% of children were seated in the back seat and 72% following the intervention. This difference was not significant.

d. Prevalence of error in selection, installation and use

ROADSIDE SURVEYS

Figure 1 shows restraint use and selection by child restraint stage for all children for whom restraint use was identifiable. Within the child restraint stages, differences in usage rates were significant only for infants [X^2 = 7.30, p<.01] and toddlers [X^2 = 8.71, p<.005]. Therefore, roadside data show that observations in the post-intervention phase (all communities combined) demonstrated higher restraint use among infants and young children. When the data were analyzed at the community level, the only significant difference was for infants in Sandy Bay [X^2 = 4.95, p<.05] where restraint use increased from 33% pre-intervention (3/9) to100% post intervention (4/4). Again, cell numbers

Figure 1. Presence of Child Restraint Use by Stage and Evaluation Phase



are low, so caution should be exercised. This increase may have resulted from a Hawthorne-type effect were the mere involvement in a research study increased attention to the issue. This increase involves small samples and while significant may not be replicated in future observations with larger sample sizes.

Table 7 illustrates this information separated for each community.

Table 8 illustrates the appropriate selection of child restraints by stage. Clearly, individuals using child restraints tended to select the correct type particularly in the younger age groups. Premature graduation was evident in both toddlers and school-aged children which highlights the need to promote best practices in child passenger safety. It is also important to recognize that this Table only includes those using a child restraint. Non-use was a significant issue.

Several occupant restraint issues were identified on the form or added as comments. The following were relevant to the pre-intervention stage:

· An infant was riding forward-facing when they should have been rear-facing

· A rear-facing child was positioned in the front passenger seat

· 21 adult passengers were unrestrained and two passengers aged 15-18 years were unrestrained.

Post-intervention:

· A child with the shoulder belt behind her

· A child unrestrained and walking on the back seat

Table 7. Child Restraint Use by Age Category, Evaluation Phase and Community

	Infant		Toddler		School-Aged		Older Child	
Grand Rapids (I)	Pre	Post	Pre	Post	Pre	Post	Pre	Post
% Restrained	N/A	83%	0%	67%	20%	33%	0%	0%
Sample Size (n)		6	2	15	25	9	16	3
Tootinaowaziibeeng (I)								
% Restrained	100%	100%	20%	50%	67%	29%	N/A	0%
Sample Size (n)	1	3	5	8	3	7		2
Sandy Bay (C)								
% Restrained	33%	100%	18%	39%	0%	10%	18%	0%
Sample Size (n)	9	4	22	13	7	20	11	4

I = intervention group; C = control group

Table 8. Appropriate Selection of Child Restraint by Stage, Roadside Survey

	Pre-Intervention	Post-Intervention
Infant Age Group		
# stated rest. type	4	12
Infant Seat	4 (100%)	12 (100%)
Toddler Age Group		
# stated rest. type	4	18
Child Seat	3 (75%)	13 (72%)
Booster Seat	1 (25%)	3 (17%)
Seat Belt		2 (11%)
School-Aged		
# stated rest. type	4	7
Booster Seat	1 (25%)	1 (14%)
Seat Belt	3 (75%)	6 (86%)
Older Children		
# stated rest. type	1	0
Seat Belt	1 (100%)	N/A

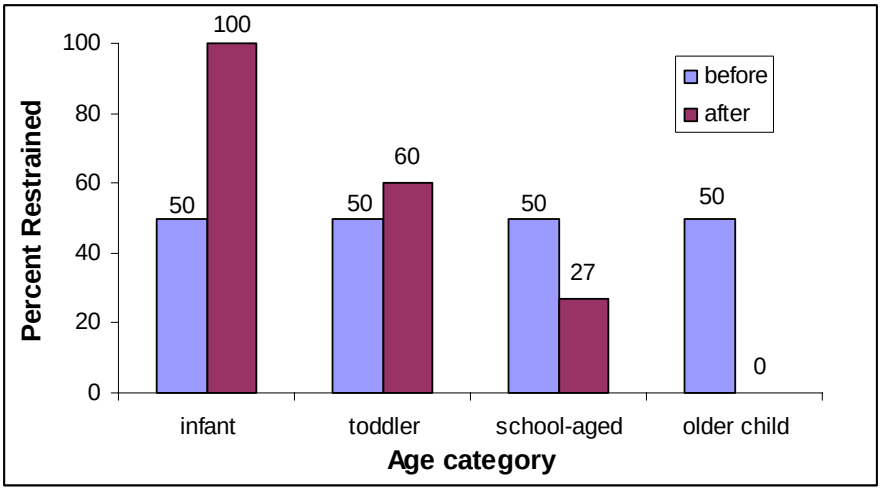
CHECKSTOP SURVEYS

Figure 2 shows restraint use and selection by child restraint stage for all children (N=78) for whom restraint use was identifiable. For the checkstop data, there were no significant within-stage differences.

Major errors detected at the checkstop surveys included not having the chest clip at armpit level (Infants - 100% pre-, 67% post-intervention; Toddlers - 100% pre- and 60% post-intervention) and loose harness straps (Infants - 0% pre- and 50% post-intervention; Toddlers - 50% pre-, 80% post-intervention). A major issue for the booster seat and seat belt stages was placing the shoulder belt behind the child (67% of pre-intervention phase booster seat users, but 0% in post-intervention, and 40% of seat belt users pre- and post-intervention). Positioning of the lap/shoulder belt across the chest and over the hips was also an issue in the seat belt stage. See Appendix A for further details. Sample sizes were too small to allow for testing for statistical significance between pre-intervention and post-intervention groups.

Age-appropriate restraint use was determined for each child using their age in months and the corresponding Transport Canada stage category. In total, there were 78 children with restraint use data and in 52 cases (67%),

Figure 2. Presence of Child Restraint Use by Stage and Evaluation Phase, Checkstop Survey



it could be determined if car seat use was appropriate for age and stage-related assessments. Of these, 45% of children were restrained, but only 17% were correctly restrained. Of note, anyone listed as unrestrained was coded as being incorrectly restrained and many had missing data. Further details regarding particular stage-related restraint elements derived from the Parking Lot and Roadside Surveys are summarized in Appendix A.

e. Passengers riding in beds of pick-up trucks

ROADSIDE SURVEYS

In the pre-intervention phase, no children were observed riding in the back of pick-up trucks. Post-intervention there were two children doing so; these were school-aged boys travelling in the same vehicle from Tootinaowaziibeeng.

f. Factors predicting Child Restraint Use and Correct Child Restraint Use

Modelling was conducted separately for the outcomes of child restraint use and correct child restraint use, both coded as a binary (yes/no) variable. As well, separate models were run on each dataset and additional linkage variables were employed. Main factors included:

ROADSIDE

Vehicle factors – time period (pre/post), group (intervention/control), location (3 communities), sex of the driver (M/F), driver restraint use (Y/N)

Child factors – age category, rear seating, restraint type

CHECKSTOP

Vehicle factors – time period (pre/post), group (intervention/control), location (3 communities), vehicle type (passenger car, minivan, SUV), # of children in the vehicle, sex of the driver (M/F), driver restraint use (Y/N), highest education of driver, yearly household income

Child factors – age category, rear seating, restraint type, sex of child

ROADSIDE SURVEYS

Child Restraint Use

Multilevel modelling revealed two major significant predictors of child restraint use. The timing of the observations, specifically being observed in the post-intervention phase, increased the likelihood of child restraint use 3.88 times (95%CI 1.53-9.90). Driver restraint use was found to increase the likelihood of child restraint use 22.9 times (95%CI 8.39-62.60). Here the likelihood of child restraint use decreased for each change in age category from infant

(Stage 1) to older child (Stage 4) [OR=0.62, 95%CI 0.35-1.11].

Correct Child Restraint Use

As with the use of child restraints, the correct use of child restraints was influenced by driver restraint use, with 18.8 times (95%CI 4.20-83.78) the likelihood of a child being correctly restrained when the driver is restrained. Also, the child being seated in the rear seat resulted in a 14.4X greater likelihood of correct restraint use (95%CI2.02-102.03) relative to front-seated children. Here the likelihood of child restraint use decreased for each change in age category from infant (Stage 1) to older child (Stage 4) [OR=0.63, 95%CI 0.33-1.20].

CHECKSTOP SURVEYS

Child Restraint Use

Initial tests of the need for multi-level modeling were not significant. Therefore, the linkage of children to the vehicles they were riding in did not impact child restraint results at checkstops. Age and driver restraint were identified as the only two significant predictors of child restraint use. The odds of a child being restrained increased 11 times [OR=10.9, 95%CI 2.93-40.25] if the driver was restrained and were reduced for age [OR=0.38, 95%CI 0.20-0.74] when moving from infant (Stage 1) to older child (Stage 4).

Correct Child Restraint Use

The likelihood of correct child restraint increased 11.5 times if the driver was restrained [OR=11.5, 95%CI 2.74 – 48.46]. Here, another age-related reduction in the likelihood of correct child restraint use was observed, when moving from infant (Stage 1) to older child (Stage 4) [OR=0.17, 95%CI 0.07-0.43].

g. Parent Survey Data (see also Appendix A)

Vehicles

Most vehicles were manufactured after 1999 (72%), with a range from 1988 to 2007. The majority (51%) seated five passengers or 6-8 (43%). Approximately half of all vehicles (51%, n=49) had tether anchors with 75% of 24 respondents having the appropriate hardware. A lap/shoulder belt was the primary method of attaching child restraints (64%).

Child Restraints

In total, 21 child restraints were assessed at the check stops. The remaining 58 children were not restrained by a child restraint. This included seven from the pre-intervention phase and 14 post-intervention. In the pre-intervention phase, the child restraint models included Graco (43%), Evenflo (29%) and Cosco (14%), with one unknown (14%). In the post-intervention phase, 86% of child restraints were

Cosco brand, the manufacturer of the seat that was made available to participants, and among these, 8 of 12 (67%) stated 'Alpha Omega' as the model. For the remainder, no model was noted. None of the car seats had been recalled, most had the manual present (76%), the locking clip available (72%), and none had missing or damaged parts. Some of these variables had missing data, so responses were calculated out of numbers ranging from 14 to 18 as opposed to the full sample size of 21.

Front Seating

When examining the pre and post intervention results, front seating by children less than 12 years of age was reported as a common practice (76%), with few parents reporting rarely (15%) or never (9%) using the front seat. Reasons reported for front seating were most commonly identified as insufficient back seating positions (41%) and parents' opinions that the child was big enough to ride safety in the front (15%). This practice appears more prevalent (91%) for children less than eight years of age, with a wide variety of rationale for doing this. Further detail is provided in Appendix A.

Access and Factors Preventing Car Seat and Booster Seat Use

A significant proportion of families reported a lack of access to booster seats and car seats for their children (42% pre and 27% post-intervention). Respondents stated that the main reasons for not using car seats and booster seats was not seeing the need for them (32%), especially for booster seats (11/18 or 61%), being unable to afford (28%) or borrow them (14%) and use of a seat belt instead (9%). As reported below with the focus group data, highway travel (68%) and longer trips in the community (18%) were factors that increased use. Further detail is provided in Appendix A.

Criteria

The following responses (Table 9) pertain to when parents are willing to let children sit in the front and timing for transitioning from stage to stage by combining pre and post intervention phases. For front seating, responses were combined across stages due to small sample sizes, and for the graduation to a higher child restraint stage, responses were not separated by phase due to small numbers. Height criteria were only identified for eleven individuals and are not reported here. Age and weight criteria for transitioning from stage to stage were also provided.

While the observational data clearly document premature graduation from forward-facing seats to booster seats, parents reported a reasonable (mean) age for this transition (4.6 years). However, they overestimated the

required weight (54.3 kg). The observational data also document premature graduation to seat belt use; the parent survey documents an underestimation of the required age (mean 4.8 years) for this transition, with some parents reporting a much lower weight than recommended. Graduation from the rear- to forward-facing stage appeared to be more appropriate, as indicated in the observational data and also by parental report (Table 9).

Regarding stage selection, most parents (83%) of children in stage 1 identified stage two as the next step (1 of 6 skipped to stage 3, pre-intervention). For those with children in stage 2, 82% of respondents identified stage 3 as the next step (2 of 11 skipped to stage 4, both pre-intervention).

h. Other findings

Non-participants

Ten vehicles, all observed post-intervention, comprised the non-participant results. The surveyor's non-community member status may have been a factor in non-response rates, as none occurred when community members sought participation. Among non-participants, 20% of drivers (2/10, both females) and 22% (4/18) of children were restrained. This seatbelt usage rate is lower than drivers who participated (26%), although the difference was not significant.

Injury Data

It was not possible to determine whether there was a reduction in injuries resulting from unrestrained or improperly restrained child

Table 9. Ages Reported by Parents for Front Seat and Stage Transitions, Checkstop Survey

	Allow Child in Front			Stage 1 to 2	Stage 2 to 3/4	Stage 3 to 4
Study Phase	**All**	**Pre**	**Post**	**All**	**All**	**All**
Age (years)						
Mean	7.25	6.1	8.6	1.2	4.6	4.8
Range	2-14	2-14	5.25-12	1-2	4-6	3-5.7.5
#	50	26	24	6	6	3
Weight (lbs.)						
Mean	63.3	59.6	100	22.5	54.3	63.3
Range	25-100	25-100	0	20-25	40-90	40-75
#	22	20	2	2	6	3

passengers. IMPACT did not receive any data from the new injury surveillance systems that are in place in the participating communities.

IV. Focus Groups

Baseline focus groups were conducted with parents and health care workers to determine their knowledge and perceptions of child passenger safety and child restraint use. Barriers and needs for using these devices were also discussed. Following the intervention, a second set of focus groups was held in each of the three community groups. Respondents answered the same questions as the initial focus group sessions. Interviews were also conducted with intervention program organizers.

i. BASELINE DATA

Baseline focus groups were held between November 27th and December 6th, 2006. In Tootinawaziibeeng, the staff and parent focus groups were combined. For sessions where attendance was recorded, participants ranged from eight to seventeen people.

Child Restraint Use in the Communities

It is clear that car seats are not used "all the time" by individuals in First Nations communities. The focus groups indicated that some parents in the community use car seats but this tends to decrease as children progress through the four Transport Canada stages. Children tend not to use booster seats, and some are not restrained at all when riding in motor vehicles. Car seat and seat belt use is more common in children and adults when riding on the highway (i.e. long trips). This is influenced by the threat of fines as well as the fact that individuals are travelling at higher speeds. With regard to speed, all three communities have gravel roads that are generally in poor conditions, (i.e. washboard and large pot holes) for the most part speed limits are 50 km. Grand Rapids has a provincial highway cutting through it with a posted speed of 80 km then down to 50 km near and on the large bridge crossing the river. If any speeds within the community have limits of 30 km/h this was not sign posted. Some participants were aware that children should ride in the back seat, yet this was not reported as common practice.

Barriers to Using Car Seats, Booster Seats and Seat Belts

The focus groups identified the following barriers to using occupant restraints for children (listed in no particular order):

1. Cost – car seats and booster seats are expensive, especially for larger families

2. Lack of Awareness – individuals do not know enough about using car/booster seats

3. Availability – no loaner programs, they are not stocked in nearby stores

4. Lack of a Vehicle – those who rely on others for rides tend not to use child restraints

5. Perception of Low Risk – within the community travel is not far and at slow speeds

6. Over Capacity – traveling with more people in the car than there are seat belts does not facilitate car seat use

7. Conformity/Peer Pressure – low usage of car seats in the community

8. Discomfort – in pregnant women and young children using seat belts

9. Low Enforcement – tickets are not issued within the community

10. Older vehicles – do not have tether anchors, and this may be costly to rectify

Riding in the Back of Pick-up Trucks

In two communities, focus groups identified that riding in the back of pick-up trucks was a common practice (e.g. for swimming), while in one it was considered to be dangerous and rarely seen.

Posters

Positive feedback was received for the four-stage poster, yet some stated that it was difficult to see the booster seat. The growth chart was viewed positively as it provides a marker for determining when to move to a booster seat. It was suggested that a poster be developed for the three stage car seat that was part of this project.

Strategies:

LAW ENFORCEMENT

Within the communities, there was consensus that the RCMP does not enforce the use of car seats and booster seats. Conversely, on the highway, people are motivated by the threat of fines. More police enforcement could be beneficial; however participants favoured starting with warnings rather than tickets. This strategy may help prevent law enforcement from being viewed negatively and promotes safety/education over punishment. An incentive program was also suggested where participants demonstrating positive behaviours (i.e. restraint use) would receive a token gift, coupon, or ballot for a prize draw. Respondents favoured receiving warning tickets that give individuals the option of paying the fine or attending an educational session on child passenger safety.

EDUCATION

More education is required, particularly regarding the need to use car seats and booster seats, outlining the different stages, when to transition from stage to stage, and aiding with installation.

Awareness-raising could be accomplished by posting information in high traffic areas (e.g. at community centres, the general store, schools/daycares, Band office), putting information in the community newsletter, or inviting people to educational sessions via the local radio station. Testimonials were thought to be a good way to get the message across, especially through videos. Preference was for positive stories; however a few respondents felt that negative messages would have greater impact.

One-on-one hands-on training (e.g. by trained home visitors) is needed given the complexity of car seat installation. This could be provided at car seat clinics with appointment times or perhaps with installation demonstrations. Having community representatives (e.g. RCMP, nurses) speak at schools while in uniform was suggested as a good strategy for educating children.

ECONOMICS

Some felt it would be beneficial to have free car seat giveaways. One participant commented that individuals not committed to their child's safety would not benefit from receiving a free car seat.

Price reductions would likely help motivate people to buy seats, and that they would be more likely to use them. Subsidy programs (e.g. store coupons, $20 car seat for attending an educational session) were viewed very positively as many cannot afford to purchase car seats and booster seats for all of their children. A loan program was thought to be beneficial for casual users (e.g. grandparents, visitors) and those who cannot afford them even with a reduced price.

ii. FOLLOW-UP DATA

Summary of Parent Focus Groups

Parent Focus Groups were held between June 25th and July 5th, 2007 and responses were similar across all three groups. Unlike the pre-intervention focus groups, parent focus groups were held separately from the staff of the Aboriginal Heads Start program and community project coordinators. Some of the post-intervention participants were also participants in the baseline focus group. Focus groups were held in all three communities.

Child Restraint Use in the Community

Respondents (i.e., parents) felt that child restraint use in the community was low (e.g. "some children", "not many children"). Infants were most likely to be restrained, yet individuals did not always ensure that the infant seat was secured to the vehicle. Toddlers were the next most likely group to use car seats, particularly those in one community's Head Start program. Car seats and booster seats were perceived as more likely to be used on the highway, with the motive to avoid fines. With seat belts, focus groups indicated that some parents buckle their children for every trip , while others do not use any restraint system, particularly for short trips.

Focus Group Practices

For longer trips and on highways, the focus groups indicated that car seats in general, seem to be regularly used for infants but are used less frequently for toddlers in the communities. Use of child restraints is even less common for school-aged children, as few parents use booster seats and some do not use any type of restraint for their children. The use of seat belts is sometimes left up to the child with some parents providing reminders, while others stated that their children "are always buckled up". Seat belt use is less common in the communities for both drivers and child passengers and is not generally enforced by police in the communities. When considering seat belt use on the highway, most parents mention the risk of receiving a ticket, while one acknowledged that speeds are much higher on the highway. Adult seat belt use is highly variable.

Parents in the focus groups indicated that their children generally ride in the back seat. In fact, some parents stated that they will not allow children in the front seat prior to 12 years of age.

Riding in the back of trucks was also discussed and some viewed the practice as illegal, which it is not in the province of Manitoba. Focus group participants in all communities indicated that children aged 5 to 6 years have been seen riding in the back of pickup trucks. Riding in the back of pickup trucks is fairly common in the communities To stop this practice, respondents recommend telling them "no, they can't ride there" or targeting drivers and providing more education.

Barriers to Use

Cost was the primary barrier to car seat use. In the booster age group (school-aged children), many parents did not see the need for them and for some parents, this view also extended to seat belt use, notably for

short trips. Installation complexity was also a barrier for car seat use (e.g. switching between vehicles). One parent mentioned the need for redesign to streamline the devices, so it is easier to fit three child restraints side-by-side in the back seat.

Best ways to encourage car seat and booster seat use:

The main suggestion was to inform community members of the benefits of using car seats and booster seats, and how to use them. It was suggested that this would be best achieved with car seat clinics with certified technicians. Participants were favourable to enforcement strategies, with a preference for positive (incentive) rather than negative (fine) consequences. Suggested positive incentives included a coupon for merchandise or a ballot for a draw. Positive testimonials were suggested. A loan program where a deposit is taken for the seat was suggested. One respondent raised the need to target children and youth aged 8-16 years regarding the benefits of seat belt use.

Parents' Comments on the Intervention from the Intervention Communities

Some parents provided additional feedback on the promotional program.

- Enforcement was encouraged; however one must be aware of the uneasy tension between the RCMP and First Nations people.
- The program was good in providing low-cost car seats; more of these are needed.
- The program should continue particularly the low-cost car seats and car seat clinics; it is important to ensure the car seats are used properly.
- Outfitting the Head Start van with a dozen car seats was very beneficial.
- It is perceived that more people in the community are using car seats.

Community Project Co-ordinators Interview Summary

Focus groups were held with the coordinators of the Aboriginal Head Start program of the intervention communities. Overall, they viewed the promotional program of car seats positively. The project will be continued beyond the end of this funded program in one community.

Benefits & Challenges

The coordinators identified the following benefits and challenges in implementing the intervention (listed in no particular order):

- Having an outside resource person was helpful, as was sharing information with other communities.
- The Community Advisory Committee was supportive and dedicated to the project; however scheduling meetings was sometimes a challenge.
- Providing nearby training to more individuals would be helpful.
- Winter was not an optimal time for data collection.
- In terms of the car seat clinics, having an experienced person onsite was beneficial, scheduling half hour slots proved to be a challenge with some clients (i.e., parents) arriving early/late, using the EMS building was positive, as was holding one clinic per month. Parents and grandparents appreciated the information and installation.
- The pamphlet and poster were fine; one community may develop a local one in the fall.
- The timeline for the project was short; however, momentum is building now.
- There is demand for more low-cost car seats.

Continuation of the Project

- Need for more trained technicians (for future clinics) and more community contacts
- Plans to give presentations to daycares, schools, and parents
- One community can purchase a few seats yet there is a need to fund more. The funds collected via the administrative fee are earmarked for this purpose.
- Plan to meet with RCMP re: enforcement issues and the fact people cannot afford fines. Here, coordinators wish to encourage enforcement with a positive rather than punitive approach.

Project Support

The Injury Prevention Committee, the Aboriginal Head Start, parents and staff are in favour of continuing with the project. The most significant issues include finding time to meet, training local technicians for car seat clinics, and the need for funds to purchase more car seats.

Note: Due to staffing changes, Tootinawaziibeeng was without a community lead during the last few weeks of the project. It was therefore not possible to continue efforts and follow-up in the absence of a coordinator so activities in this community were minimal.

Conclusions

Summary of Findings

- Community uptake of the project: The communities embraced the project and plan to continue child passenger safety activities, low-cost seat distribution and loan programs. Feedback was positive from parents, coordinators, community groups and health practitioners. The project has started to generate a lot of interest from parents/caregivers beyond the target group.
- Community capacity: Thirteen individuals from three communities participated in child restraint technician training; these communities previously had no trained individuals. Participation in roadside and parking lot surveys provided field experience for these individuals, and may have contributed to their acceptance by community members as local experts and resource persons. The communities coordinated car seat clinics (the first in their regions), gained valuable experience doing this, and plan to host clinics after the project is completed.
- Project Penetration: The overall penetration of the project was high (2-7%), in comparison to community-based programs in larger communities. The numbers of families participating in parking lot surveys and car seat clinics underestimates the number of families who were impacted by the program in other ways (focus groups, community awareness activities), and may not include some of the families receiving low-cost seats.
- Distribution of car seats: 90 car seats were distributed through the program for community and personal use; this represents a substantial proportion of the population of children less than 8 years of age. The uptake of seats for use by the medical van and Aboriginal Head Start program are particularly important, in terms of establishing local safety standards and role modelling for families.
- Child Restraint Use: Baseline restraint was very low, in comparison to other Canadian children, as was driver restraint. Child restraint use increased significantly in the intervention communities (combined, Roadside) yet not in the Roadside control community. Use increased substantially among infants and toddlers but did not change significantly for booster seat and seat belt use. Of note, the parents of young children were targeted, which may explain the differential impact on younger

- children. Logistic regression and multilevel modelling identified driver restraint, child age, and the timing of the observation (pre- vs. post-intervention) as important predictors of restraint use. Predictors of correct use included driver restraint use, child age, and rear seating position for children.
- Seating position: Community members report that it is common practice to seat children in the front seat (91% for children less than 8 years of age). There was not a significant change in seating position after the intervention.
- Riding in the back of pickup trucks: Some parents allow children to ride in the back of pickup trucks; this varies by community. Only two children were seen riding in the back of pickup trucks during roadside and parking lot observations (both post-intervention). It should be noted that this was not a major focus for either intervention community, as both targeted families with younger children.
- Local beliefs, knowledge, and practices: The roadside and parking lot surveys provide a very valuable detailed summary of observed and reported child passenger safety practices in these communities. Of particular note are parental perceptions of lack of availability and access to car seats and booster seats, as well as cost barriers, but also a rather low perceived risk of injury and need for using car seats and booster seats, except for highways and longer trips. Most community members can easily obtain a car seat as individuals are frequently traveling to the city and could obtain one for them. Incorrect use was notable for low chest clips and loose harnesses, as well as placing the seat belt behind the back, both for booster seats and seat belts. Premature graduation to seat belts is common, as is placing children in the front seat. There appears to be poor understanding of the "stages" of child restraint and the transition points for graduating from stage to stage, particularly for later stages.

Challenges and Limitations

The evaluation of the project was limited by a number of environmental factors. These limitations included the distance to travel for child restraint technician training, expenses incurred due to travel, limited internet and voicemail access, poor weather conditions (e.g. wind-chills of -35°C to -47°C), little traffic in Tootinaowaziibeeng due to their small population, and

Tootinaowaziibeeng's lack of stop signs requiring modification of the data collection procedure (using the only store for observations). Similarly, the intervention timing and duration was challenging, being in the middle of winter and only three months in duration, limiting the recruitment of other community partners and the number and extent of community outreach activities for families. In order to document sustained improvements longer term follow-up is needed (i.e. roadside and parking lot surveys).

The original research design included methods to identify vehicles for before-after observations as well as to match vehicles participating in the car seat clinics. The baseline data were collected by community members who did not identify vehicles with a sticker or other means, and planned to keep a mental tally of who participated to ensure the same participants were included in the post-intervention phase. Scheduling conflicts resulted in an external observer collecting the post-intervention data; therefore it was not possible to assert that the same individuals participated, nor to match data collection sheets. Therefore, the two samples are distinct cross-sectional samples and not matched pairs. This limited the potential to identify improvements in participating vehicles/families. It is worth noting that in the pre-intervention parking lot surveys the response rate was 100% using community members as the observers.

The research design also included plans to compare the "brief" intervention to the more intensive community-based program. As many of the children observed in the baseline phases were not restrained at all, and car seats were not provided to these non-users (errors were corrected and seats requiring replacement were replaced), the brief intervention would not be expected to have a substantial effect, particularly for the intervention groups. If seats had been distributed to non-users as a brief intervention, a significant impact likely would have been observed.

Implications & Next Steps

Although this was a very time limited project, child restraint use increased significantly in the two age groups targeted by the communities. However, premature graduation to seat belts is common, and booster seat use and seat belt use are low. Driver restraint was also very low, and was found to be a major predictor of child restraint. Seating position and correct use of seat belts and booster seats were also identified as significant local issues. The lack of booster seat legislation in Manitoba,

however, should be noted, and could be a barrier for change in the near future (i.e. any soft or hard enforcement program cannot target lack of booster seat use, only lack of restraint). The project was successful in establishing local expertise and community resources to begin to address the issues that were identified; these findings will be useful for tailoring current and future interventions. For example, based on the survey data, four simple priority messages could be:

- everyone should always "buckle up" (drivers and children)
- all children should ride in the back seat
- children are safest if they follow the four stages (infant-toddler-booster-seat belt)
- always buckle up properly: for children in car seats, snug the harness and keep the chest clip at armpit level; for booster seats and seat belts always keep the seat belt in front of the body, never behind the back

There are a number of success factors important to this project that would need to be sustained, and also should be taken into consideration for programs in other communities. These include: strong community interest and motivation in injury prevention and child passenger safety, community-level coalition or committee representing relevant sectors and disciplines, sufficient trained child restraint technicians with ongoing support from an external expert, sufficient supply of low-cost car seats/booster seats, and infrastructure to run and sustain a checkstop/car seat clinic model of intervention. Future programs should investigate the potential for the "brief" intervention, combining checkstops with correction of errors "on the spot" and distribution of car seats to non-users who do not own an appropriate seat for the child. Individual interaction with individual families in their vehicles may be the most promising method, and is possible with small communities such as these.

In summary, this project served to raise awareness of the importance of child passenger safety and build community capacity to address this problem. These are the first steps towards more long-term and successful efforts in these communities. As stated by one organizer, these programs are beginning to gain momentum. Continuing efforts would be facilitated by more trained child restraint technicians, ongoing external support (expertise), and further distribution of low cost car seats and booster seats. Awareness and knowledge remain low;

improvement will require ongoing initiatives and incentives. Community enforcement with reinforcement of educational messages may be an important next step. The local expertise and infrastructure that was developed by this project will be important to future success and essential for significant improvement in child passenger safety.

APPENDIX A

Parking Lot & Supplemental Survey Variables

N = 79 children

Results are summarized for all participants and separated by pre- and post-intervention phases. For some categories the denominator is reduced due to missing data or non-response.

CHILD INFORMATION	**All Participants (n=79)**	**Pre-Intervention (n=35)**	**Post-Intervention (n=44)**
Seating Position			
Front 2	6 (8%)	2 (7%)	4 (9%)
Front 3	12 (16%)	4 (13%)	8 (18.5%)
4	10 (14%)	5 (17%)	5 (12%)
5	17 (23%)	9 (30%)	8 (18.5%)
6	28 (39%)	10 (33%)	18 (42%)
Child in Rear (yes)	55 (75%)	24 (80%)	31 (72%)
Child Restrained (yes)	35 (45%)	17 (50%)	18 (41%)
Airbags			
Female	31 (43%)	14 (44%)	17 (43%)
Male	41 (57%)	18 (56%)	23 (57%)
Caregiver Relationship			
Parent/Foster	39 (63%)	17 (65%)	22 (61%)
Grandparent	19 (31%)	8 (31%)	11 (31%)
Other Family	4 (6%)	1 (4%)	3 (8%)
Child Restraint Stages			
Infant Seat	11 (14%)	1 (14%)	6 (13.6%)
Child Seat	26 (33%)	16 (46%)	10 (22.8%)
Booster Seat	32 (40%)	10 (29%)	22 (50%)
Seat Belt	10 (13%)	4 (11%)	6 (13.6%)
Age by Stage (Ranges)			
Infant Seat	0.1-0.8 years (n=7)	0.1-0.7 years (n=2)	0.3-0.8 years (n=5)
Child Seat	1.5-4.2 years (n=20)	1.6-3.8 years (n=6)	1.5-4.2 years (n=14)
Booster Seat	4.6-7.8 years (n=28)	4.6-7.5 years (n=13)	6.0-7.8 years (n=15)
Seat Belt	8.3-12.5 years (n=8)	9.8-12.5 years (n=6)	8.3-9.8 years (n=2)
ESTIMATED Weight by Stage (Ranges)			
Infant Seat	11-30 lbs. (n=11)	11-30 lbs. (n=5)	15-25 lbs. (n=6)
Child Seat	28-75 lbs. (n=25)	30-59 lbs. (n=9)	28-75 lbs. (n=16)

Booster Seat	45-100 lbs. (n=26)	45-90 lbs. (n=11)	60-100 lbs. (n=15)
Seat Belt	60-110 lbs. (n=9)	60-110 lbs. (n=6)	80-100 lbs. (n=3)
INFANT SEATS	N=7	N=1	N=6
Orientation (rear-facing)	3 (75%) n=4	1 (100%)	2 (67%) n=3
Use of UAS	1(14%)	0	1 (17%)
Seat belt Fastened?	7 (100%)	1 (100%)	6 (100%)
Routed correctly	6 (86%)	1 (100%)	5 (83%)
Snug	5 (71%)	1 (100%)	4 (67%)
Use of Base	5 (71%)	0 (0%)	5 (83%)
Reclined to 45 degrees	6 (86%)	1 (100%)	5 (83%)
Harness Type (5-point)	7 (100%)	1 (100%)	6 (100%)
Fastened	7 (100%)	1 (100%)	6 (100%)
Passing over shoulders	7 (100%)	1 (100%)	6 (100%)
Snug	4 (57%)	1 (100%)	3 (50%)
Chest clip fastened	7 (100%)	1 (100%)	6 (100%)
Chest clip at armpit level	2 (28.5%)	0 (0%)	2 (33%)
CHILD SEATS	N=7	N=1	N=6
Orientation (forward-facing)	6 (100%), n=6	1 (100%)	5 (100%), n=5
Use of UAS	1 (17%)	1 (100%)	0 (0%), n=5
Seat Belt Fastened	6 (100%), n=6	1 (100%)	5 (100%), n=5
Routed correctly	6 (100%)	1 (100%)	5 (100%), n=5
Snug	5 (83%)	0 (0%)	5 (100%)
Harness Type 5-point (vs. shield)	6 (86%)	1 (50%), n=2	5 (100%)
Fastened	7 (100%)	2 (100%), n=2	5 (100%)
Passing over shoulders	7 (100%)	2 (100%), n=2	5 (100%)
Snug	2 (29%)	1 (50%), n=2	1 (20%)
Chest clip fastened	6 (86%)	1(50%), n=2	5 (100%)
Chest clip at armpit level	2 (29%)	0 (0%), n=2	2 (40%)
Tether Information			
Type - Strap Plate	5 (100%), n=5	N/A	5 (100%)
Doubled Back	2 (40%), n=5	N/A	2 (40%)
Anchored	5 (83%)	0 (0%)	5 (100%)
Tight	5 (83%)	0 (0%)	5 (100%)
Tethering (Parent Survey)	N=11	N=4	N=7
Always	8 (73%)	1 (25%)	7 (100%)
Never	2 (18%)	2 (50%)	
Rarely	1 (9%)	1 (25%)	
Why Not Used	Don't feel it's necessary	2 (67%)	
	No Anchor in vehicle	1 (33%)	
BOOSTER SEATS	N=8	N=6	N=2
Type - High Back (vs. No-Back)	6 (75%)	4 (67%)	2 (100%)
Seat Belt Fastened	7 (88%)	5 (83%)	2 (100%)
Lap belt snug + low on hips	6 (75%)	5 (100%)	1 (50%)
Shoulder belt in front	4 (40%)	2 (33%)	2 (100%)

SEAT BELT	N=18	N=13	N=5
Seat Belt Fastened	9 (50%)	4 (31%)	5 (100%)
Lap belt snug + low on hips	5 (50%)	3 (60%), n=5	2 (40%), n=5
Shoulder belt in front	6 (60%)	3 (60%), n=5	3 (60%), n=5
GENERAL RESPONSES	N=56	N=28	N=28
Access to Car/Booster Seats (multiple children)	31 (40%), n=77	13 (42%), n=31	17 (37%), n=46
Prevents Use	57 responses, 38 people	28 responses, 18 people	29 responses, 20 people
Don't see the need (e.g. older children, 6+ years)	18 (31.5%)	3 (11%)	15 (52%)
Can't afford or borrow	24 (42%)	12 (43%)	12 (42%)
Always use a seat belt	5 (9%)	4 (14%)	1 (3%)
Borrow one if going out of town	2 (3.5%)	2 (7%)	
Travel locally with kids	2 (3.5%)	2 (7%)	
Use all but this time	2 (3.5%)	1 (4%)	1 (3%)
No vehicle	1 (1.75%)	1 (4%)	
A pain moving it from car to car	1 (1.75%)	1 (4%)	
Uncomfortable for the child	1 (1.75%)	1 (4%)	
Child not nearby	1 (1.75%)	1 (4%)	
Unrestrained Child Ever in a CRS	19 (63%), n=30	14 (88%), n=16	5 (36%), n=14
When Unrestr. Child Uses CRS	22 responses, 20 people	16 responses, 15 people	6 responses, 5 people
Highway travel only	15 (68%)	10 (62.5%)	5 (83%)
Longer trips in the community	4 (18%)	4 (25%)	
All but this time	2 (9%)	2 (17.5%)	
Other family vehicles with CRS	1 (5%)		1 (17%)
Child <12 years in the front	N=54	N=26	N=28
Sometimes	15 (28%)	11 (42%)	4 (14%)
Often	12 (22%)	2 (8%)	10 (36%)
Rarely	8(15%)	4 (15%)	4 (14%)
Single	7 (13%)	3 (12%)	4 (14%)
Always	7 (13%)	1 (4%)	6 (22%)
Never	5 (9%)	5 (19%)	
Rationale <12 years in the front	84 responses, 46 people	30 responses, 18 people	54 responses, 28 people
Not enough back seats	34 (41%)	2 (7%)	32 (59%)
Child big enough, safe	13 (15%)	3 (10%)	10 (19%)
Like having child next to me	10 (12%)	7 (23%)	3 (6%)
As a reward	8 (10%)	4 (14%)	4 (7%)
Like seeing child	7 (8%)	7 (23%)	
Child won't sit anywhere else	6 (7%)	6 (20%)	
One row of seats	4 (5%)		4 (7%)
Short distances	2 (2%)	1 (3%)	1 (2%)

Child <8 years in the front (yes)	48 (91%), n=53	21 (81%), n=26	27 (100%), n=27
Rationale <8 years in the front	95 responses, 49 people	39 responses, 22 people	56 responses, 27 people
On highway	26 (27%)	6 (15%)	20 (35.5%)
Transporting kids other than mine	23 (24%)	7 (18%)	16 (28.5%)
Transporting children 4-5 yrs.	16 (17%)	3 (7.5%)	13 (23%)
Short trips in neighbourhood	15 (16%)	10 (26%)	5 (9%)
Short trips in city	11 (12%)	10 (26%)	1 (2%)
No car seats	2 (2%)	1 (2.5%)	1 (2%)
"Just because"/"whenever"	2 (2%)	2 (5%)	
Frequency Transport Children	N=54	N=26	N=28
2-3 times per week	18 (33%)	7 (27%)	11 (39%)
Daily	14 (26%)	8 (31%)	6 (21%)
4-6 times per week	13 (24%)	4 (15%)	9 (32%)
1 per week	5 (9%)	4 (15%)	1 (4%)
<1 per week	4 (8%)	3 (12%)	1 (4%)
Information Sources	67 responses, 53 people	29 responses, 25 people	38 responses, 28 people
None received	17 (25.5%)	8 (28%)	9 (24%)
Car seat clinic	9 (13%)		9 (24%)
Friends, family neighbours	9 (13.5%)	3 (11%)	6 (16%)
Car seat instruction manual	8 (12%)	2 (7%)	6 (16%)
Hospital	8 (12%)	6 (21%)	2 (5%)
Car seat box	7 (10.5%)	6 (21%)	1 (2.5%)
Health Centre	3 (4.5%)		3 (7.5%)
Manitoba Public Insurance	2 (3%)	1 (3%)	1 (2.5%)
Prenatal classes	1 (1.5%)		1 (2.5%)
Vehicle stickers on visors	1 (1.5%)	1 (3%)	
Not entirely aware of car seats	1 (1.5%)	1 (3%)	
Word of mouth	1 (1.5%)	1 (3%)	
PARENT DEMOGRAPHICS			
Driver's Belt Status (belted)	18 (33%), n=54	11 (42%), n=26	7 (25%), n=28
% Unbelted Adults (Supplem.)	N=53	N=27	N=26
0%	29 (55%)	14 (52%)	15 (58%)
100%	23 (43%)	13 (48%)	10 (38%)
50%	1 (2%)		1 (4%)
Driving Habits Changed	N=47	N=22	N=25
Somewhat more cautious	22 (47%)	5 (23%)	17 (68%)
Definitely more cautious	13 (27%)	7 (32%)	6 (24%)
Perhaps a little more cautious	6 (13%)	4 (18%)	2 (8%)
Always cautious	6 (13%)	6 (27%)	
Driver Age	N=54	N=26	N=28
20-29	21 (39%)	8 (31%)	13 (46%)
30-39	17 (31.5%)	9 (34.5%)	8 (29%)
40-49	8 (14.75%)	6 (23%)	2 (7%)
50-59	8 (14.75%)	3 (11.5%)	5 (18%)

Gender (F)	36 (67%), n=52	20 (77%), n=26	16 (57%), n=28
Marital Status	N=52	N=24	N=28
Married/common law	40 (77%)	18 (75%)	22 (78.5%)
Separated/divorced	10 (19%)	4 (17%)	6 (21.5%)
Widowed	1 (2%)	1 (4%)	
Single	1 (2%)	1 (4%)	
Race/Ethnicity	N=54	N=26	N=28
First Nations	51 (94%)	24 (92%)	27 (96%)
First Nations & Métis	1 (2%)	1 (4%)	
Métis	2 (4%)	1 (4%)	1 (4%)
Language Spoken at Home	N=53	N=26	N=27
Cree	1 (2%)	1 (4%)	
English	46 (87%)	20 (77%)	26 (96%)
English & Ojibway	6 (11%)	5 (19%)	1 (4%)
Highest Education	N=51	N=23	N=28
Some high school	22 (43%)	10 (44%)	12 (43%)
High school graduate	16 (31%)	6 (26%)	10 (36%)
Some college/univ.	12 (24%)	6 (26%)	6 (21%)
University graduate	1 (2%)	1 (4%)	
Yearly Household Income	N=47	N=20	N=27
<40,000	36 (77%)	16 (80%)	20 (74%)
40,000-80,000	11 (23%)	4 (20%)	7 (26%)
VEHICLE INFORMATION			
Vehicle Type	N=55	N=27	N=28
Minivan/SUV	20 (36%)	13 (48%)	7 (25%)
Passenger Car	18 (33%)	7 (26%)	11 (39%)
Pick-up Truck	17 (31%)	7 (26%)	10 (36%)
Top Vehicle Types			
Ford (e.g. F-150)	12 (35%)	5 (28%)	7 (44%)
Chevrolet	10 (29%)	5 (28%)	5 (31%)
# Seating Rows	N=55	N=27	N=28
One	5 (9%)	1 (4%)	4 (14%)
Two	35 (64%)	16 (59%)	19 (68%)
Three	15 (27%)	10 (37%)	5 (18%)
Airbags	N=54	N=27	N=27
Yes	52 (96%)	25 (93%)	27 (100%)
No	2 (4%)	2 (7%)	