



Seat Belt Observational Survey Protocol

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Background

American Indians/Alaska Natives (AI/AN) have the highest unintentional injury and suicide rates in the United States (National Center for Injury Prevention and Control [NCIPC], 1998). Motor vehicle crashes, which represented the eighth leading cause of death for all ages in 2002, are the third leading cause of death for American Indians/Alaska Natives. In addition, AI/AN mortality due to motor vehicle crashes is 3.3 times greater than that of the entire US population (*Regional Differences in Indian Health 1998-1999*).

Nationwide efforts to systematically address motor vehicle safety have been underway since the 1960s, when unintentional injuries caused 93,803 deaths with 41 percent associated with motor-vehicle crashes (Centers for Disease Control [CDC], 1999). Since 1981, the Indian Health Service has supported activities that assist in preventing injuries to American Indian/Alaska Natives (Smith & Robertson, 2000). The Centers for Disease Control and Prevention (2001) have outlined guidelines for addressing motor-vehicle occupant injury through the increased use of child safety seats, safety belts, and reducing alcohol-impaired driving.

Introduction

In April 2001, faculty and staff from the University of North Carolina (UNC) School of Public Health Department of Health Behavior and Health Education and the Injury Prevention Research Center were awarded a five-year contract from the Indian Health Service (IHS) Injury Prevention Program to provide on-going monitoring, technical assistance, and training services to Tribes/Tribal Organizations funded for five-year cooperative agreements as part of the IHS Tribal Injury Prevention Cooperative Agreements Program (TIPCAP). In Year II of UNC's contract (April 2002-2003), UNC staff developed site-specific technical assistance tools for several programs. Two of the tools developed included a seat belt observational survey form and accompanying Microsoft Excel spreadsheet files that enable coordinators to more easily enter, summarize, and chart seat belt observational survey results. By fall 2003, 75 percent (n=24) of the Tribal communities supported through the TIPCAP were conducting seat belt observational surveys.

UNC faculty and staff noted considerable variability in the methods used to collect seat belt use data by TIPCAP communities. In 2003 under contract to IHS, UNC faculty and staff pilot-tested a seat belt use observational survey protocol among several Tribal communities participating in TIPCAP to examine statistical and programmatic implications of observational location selection. The purpose of the project was to recommend valid procedures to estimate seatbelt use in American Indian Communities.

Based on findings from the Seat Belt Observational Survey Protocol Development Project, UNC revised the Protocol (in 2005, 2010, 2011). This document organizes the revised protocol into the following four phases:

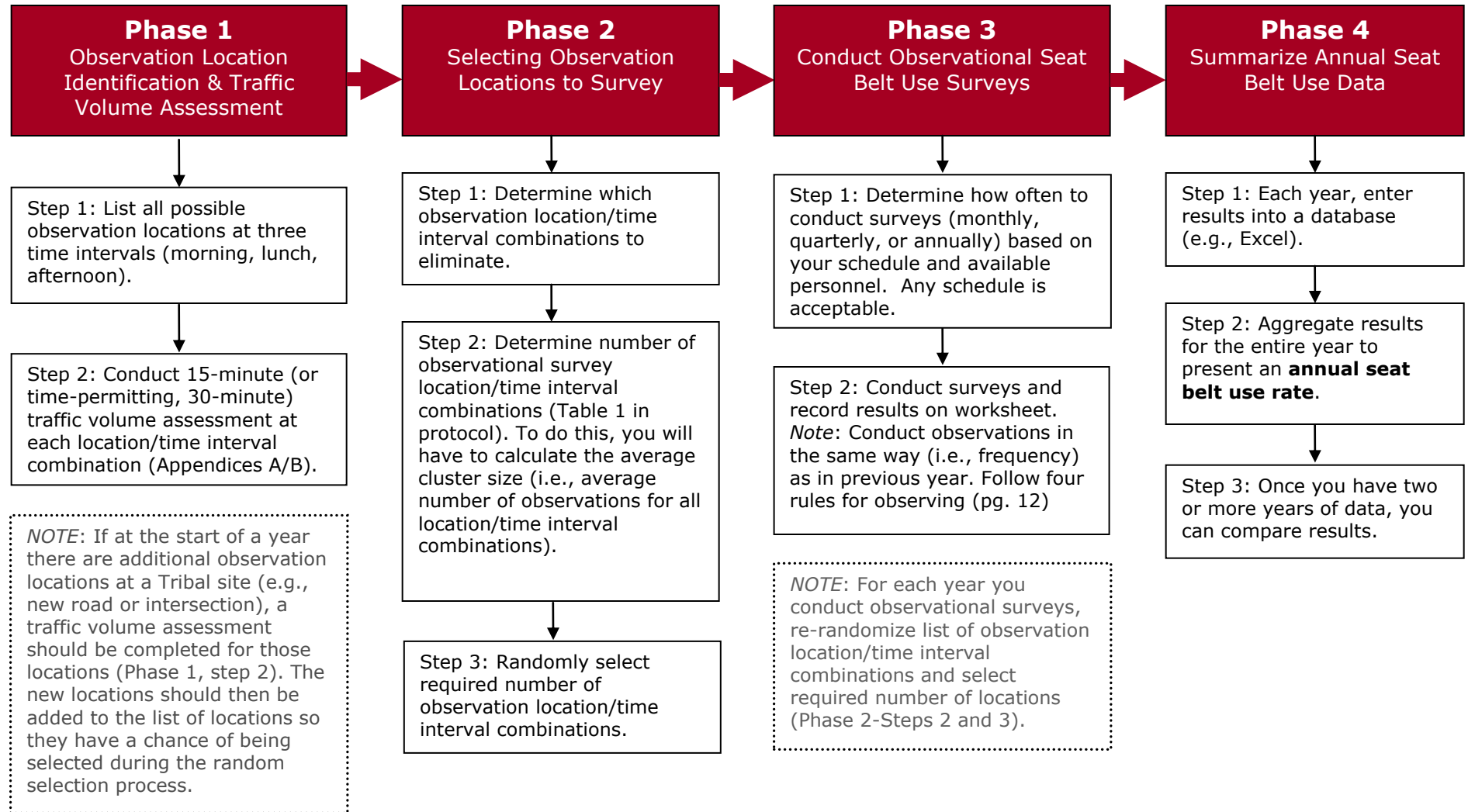
- 1. Observation Location Identification and Traffic Volume Assessment**
- 2. Selecting Observation Locations to Survey**
- 3. Conducting Observational Seat Belt Surveys**
- 4. Summarize Annual Seat Belt Use Data**

If you have any questions about how to use the protocol, a survey, or Excel file, please contact Robert Letourneau at 919-966-3920 (robert.letourneau@unc.edu).



Figure 1 outlines the four phases to complete an observational seatbelt survey based on the UNC-IHS protocol. This manual will walk you through each phase, step by step, to help you implement an observational seatbelt survey.

Figure 1. Seat Belt Observational Survey Protocol Phases





Phase 1

Observation Location Identification and Traffic Volume Assessment



The general principle of conducting observational seat belt surveys is to conduct enough observations so that the results are representative of seat belt use within the identified community.

You want your observed "use rate" to be valid and represent an accurate estimate of actual seat belt use in your community. It would take far too long and is almost impossible to observe the entire community. Therefore, the "sampling methodology" described in this protocol asks you to systematically observe a portion of the community to obtain results that represent the entire community's seat belt use.

Keep in Mind:
This phase is tedious and takes the most time. However, you only have to complete this phase one time and then you will know how many observation surveys you need to obtain an accurate estimate!

To capture seat belt usage from a variety of motorists, it is best to select multiple observation locations and conduct observations at those locations at different times of the day. Why? Selection of multiple locations and observations at different times of the day will reduce bias and provide a valid "snap-shot" of seat belt use throughout the community.

The following two steps will guide you through the process of identifying possible observational survey locations in your community. Please review these steps and use the Observation Location Identification Traffic Volume Assessment Worksheets (Appendix A or B) at the end of this manual to complete steps 1 and 2. For each of the steps outlined, an example is provided to highlight how to complete each step. We have also included and answered Frequently Asked Questions (FAQs) throughout the protocol. While our example only includes eight observation locations (two for each intersection), the number of observation locations you identify will vary (i.e., Tribal communities are expected to identify at least four and many larger Tribes have more than 100 locations).

When conducting the observation location identification and traffic volume assessment, be sure to conduct it during a 'typical' time of year for your community (e.g., not during peak tourist time or during the holiday season).

Step One – List All Possible Observation Locations

In this step, you will create a list of all possible road/street intersections in your community or communities that meet four criteria listed in Figure 1.



Figure 1. Criteria for Identifying Observation Locations

You should only choose intersections that meet **all** of the following criteria:

1. Locations where traffic comes to a stop (e.g., stop signs, traffic lights).
2. Locations that ensure the safety of an observer (e.g., **not** on a narrow road shoulder).
3. Locations where the observer may be located at an elevation equal to or higher than the vehicle being observed.
4. Locations where local residents (i.e., Tribal members), rather than tourists (i.e., non-Native community members), are likely to be observed.



We suggest that you use a map, if available, to identify all of the possible road/street intersections that fit these criteria in your community. When creating your list of observation locations, it is important to list the location for all directions of traffic. *Note:* It does not matter how you list the locations (e.g., alphabetically, from East to West, or randomly).

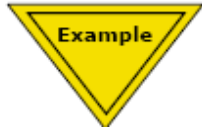


Table 1. *Phase 1, Step One Example*

Observation Locations and (Direction of Travel)
1. Rt. 1&7 Intersection (North)
2. Rt. 1&7 Intersection (South)
3. Post office & Rt. 6 (East)
4. Post Office & Rt. 6 (West)
5. Main St./Rt. 57 (South)
6. Main St./Rt. 57 (North)
7. Rt. 6 & 9 Intersections (West)
8. Rt. 6 & 9 Intersection (East)

Note: It is important that you list the intersection for each direction of travel. For example at the intersection of Rt. 1 & 7, traffic could flow both north and south (unless it is a one way street) therefore your list should include both. Table 1 shows an example of how your list might look.

Step Two – Determine Traffic Volume

In this step, you will determine the traffic volume for each observation location identified in step 1 using three pre-defined time intervals:

1. Morning (7:00 – 9:00 am)
2. Lunch (11:30 am – 1:30 pm)
3. Afternoon (4:30 – 6:30 pm)

Note: For the afternoon time interval, you may want to modify the end time (e.g., end at 5:45 pm) to ensure that it is still light enough to observe vehicles. Regardless of what end time you choose, try to be consistent with that time.



Remember to conduct the traffic volume assessment during a 'typical' time of year (e.g., not during peak tourist time or during the holiday season).

To determine traffic volume on a normal weekday, you will count the number of vehicles you observe at each location for each time interval for approximately 15 minutes. For each location and time interval, record the start time and end time for your observation period.

Note: During an interval, you should only count vehicles that are traveling in one direction at each location. This means you should observe traffic in one direction for 15 minutes and then the other direction for another 15 minutes. This is important because each location/direction of travel observed could be included, separately, in your eventual list of potential observation locations.

Note: Do not count service vehicles or large commercial trucks or other vehicles for which you would not want to include in your observational data collection.

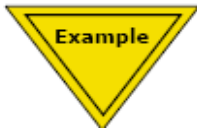


FAQ: What equipment is helpful to have when conducting volume assessments

It is helpful to have pencils with erasers, a clipboard (to make it easier to fill out the form).

FAQ: How do I calculate the anticipated traffic volume for 60 Minutes?

To calculate the anticipated traffic flow for a 60 minute period, you multiply the number of cars observed in 15 minutes by four because 15 minutes X 4=60 minutes.



For example: If 20 vehicles were observed in 15 minutes, multiply 20 by 4 to come up with 80 potential observations in a 60-minute period. Additional calculations shown in Table 2.

Table 2. Phase 1, Step Two Example (using Appendix A table)

Observation Locations and (Direction of Travel)	Time Interval	Assessing 15-minute Traffic Volume			60-minute Traffic Volume (15 minute traffic volume X 4)
		(# of vehicles observed in 15 minutes)	Start Time	End Time	
1. Rt. 1&7 Intersection (South)	Morning	10	7:00 am	7:15 am	40
	Lunch	20	11:30 am	11:45 am	80
	Afternoon	10	4:30 pm	4:45 pm	40
2. Post office & Rt. 6 (West)	Morning	15	7:40 am	7:55 am	60
	Lunch	25	12:10 pm	12:25 pm	100
	Afternoon	35	5:10 pm	5:25 pm	140
3. Main St./Rt.57 (North)	Morning	10	8:20 am	8:35 am	40
	Lunch	5	12:50 pm	1:05 pm	20
	Afternoon	4	5:50 pm	6:05 pm	16
4. Rt. 6 & 2 Intersection (East)	Morning	25	9:00 am	9:15 am	100
	Lunch	13	1:30 pm	1:45 pm	52
	Afternoon	20	6:30 pm	6:45 pm	80

Whenever possible, it is better to conduct the traffic volume assessment for 30 minutes and multiply it by two to obtain the 60-minute traffic volume. However, this may be unrealistic for communities with a lot of observation locations. If so, use Appendix A: Observation Location Identification Worksheet A for 15 minute observation periods. If your community has ten locations or less, it is better to conduct the assessment for 30 minutes. In this case, Use Appendix B: Observation Location Identification Worksheet B for 30 minute observation periods.

FAQ: Why do I need to calculate the traffic volume for 60 minutes?

By calculating the traffic volume for 60 minutes, you are setting a standard time for observation. The number of vehicles observed at each location will vary due to traffic volume. This step helps to estimate how many cars will be observed at each location for a 60-minute observation period. If we instead standardized observations by number of cars (e.g., you observe a location until you see 100 vehicles), you are not accurately sampling to account for variation in the traffic flow. Setting the criteria for observation by the number of vehicles observed does not allow an equal probability of observing any vehicle in the target area.



Phase 2

Selecting Observation Locations to Survey



Okay, you made it through Phase 1. Congratulations! One more phase to go and then we get to the fun stuff: doing the observations! It is important that you don't skip Phase 2 - it is a critical phase to making sure you collect accurate, unbiased data.

To determine the final list of observation locations from which to choose, you will follow three steps. Step one involves determining which observation locations to exclude. Step two involves determining the total number of observation locations required to obtain precise estimates of community seat belt use. Step three involves randomly selecting observation locations from the list of remaining possible locations. Please review these steps using the Selecting Observation Locations Worksheet (Appendix C) to complete steps 1 and 2.

Step One – Exclude Observation Locations

While it is important to conduct observations at all types of locations (e.g., with high and low traffic volume), it is recommended to exclude observation locations where traffic volume is very low.

Some Tips for When to Exclude Locations:

- As a starting point, you should consider excluding observation locations that have 50 or fewer observations in a 60-minute period (based on the traffic volume assessment).
- However, if excluding these locations eliminates more than 20% of all of the locations, then you should change your exclusion criteria to the next lowest category (i.e., 25 or fewer observations). Otherwise, you will be eliminating too many locations and the sample will not adequately reflect seat belt use in the population.



For example: In the *Phase 1, Step 2 example*, five location/time-interval combinations had less than 50 observations in a 60-minute period (i.e., 40, 40, 40, 20, and 16). This represents 41.6% of all the observation locations ($5 \text{ out of } 12 = .416 \text{ times } 100 = 41.6\%$). Since this would eliminate more than 20% of the locations, go to the next lowest category and eliminate those with 25 or fewer observations. This would eliminate only two location/time-frame combinations (i.e., Main St./Rt. 57 - Lunch and Main St./Rt. 57 - Afternoon) which represents 17% of all the observation locations ($2/12 = .166$). Much better!



If most/almost all of your observation location/time interval combinations have fewer than 25 observations, then do not exclude any of the combinations.



Step Two – Determine Required Number of Observation Locations

Step two involves determining the total number of locations to be observed on an annual basis.

FAQ: How do I calculate the number of locations I should observe?

To do this, calculate the average number of observations for all locations listed that were not excluded in step one.



In the example above, there were 40, 80, 40, 60, 100, 140, 40, 100, 52, and 80 observations (excluding the observations for Main St./Rt. 57 - Lunch and Main St./Rt. 57 - Afternoon since those had too few observations), giving an average of 73 observations per location (the average is calculated by the sum of all the observations divided by the total number of intervals used (e.g., 10 in this example).

Refer to Table 3 to determine the total number of observation locations required for annual seat belt surveys. With an average cluster size of 73 observations, you would need to conduct observations at 28 locations throughout the year.

Table 3. Number of Observation Location/Time Interval Combinations Needed by Average Cluster Size.

Average Cluster Size ^a	# of Observation Location/Time Interval Combinations	DEFF Range (Information for Statisticians)
20-29	41	2.1-2.7
30-39	35	2.8-3.2
40-49	32	3.3-3.8
50-59	30	3.9-4.4
60-79	28	4.5-5.5
80-99	27	5.6-6.7
100-129	26	6.8-8.4
130-199	25	8.5-12.5
200 and over	24	12.6 and over

Since in our example we have an average of 73, we find the average cluster size range that 73 falls into and see that we need to do 28 observation locations over the course of the year.



^a If you do not have a minimum average cluster size of 20, we recommend you follow the guidelines provided in the Appendix E for use in very small communities.

FAQ: What if I don't have enough locations/time intervals required?



If you do not have as many location/time interval combinations as required by Table 3, you should still conduct as many observations as the Table indicates, even though this will mean conducting observations at the same location more than once. To do this, it will be important for you to conduct at least one observation at all locations on your list (which has been randomized), and then *randomly* select the additional needed locations (to get to your required number from Table 3) from your list of all locations.

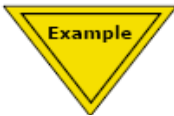


For example, if Table 3 indicates that you should conduct observations at 28 location/time interval combinations over the course of a year and you only have 21 observation location/time interval combinations identified during the traffic volume assessment (seven locations x three time intervals), you will need to conduct observations at all 21 of those locations, as well as at an additional seven locations. To identify your additional seven locations, you will randomly select the additional seven from a randomized list of all locations (Phase 2, Step 3 includes information on how to randomly select locations).



Step Three – Randomly Select Observation Locations¹

Step three involves randomly selecting which of the locations by time of day you will observe. Unfortunately you can't just pick the sites most convenient since that would not provide an accurate picture of seatbelt use in your community. The instructions will guide you through the random selection process - it is actually easier than you may imagine. It is recommended to use a spreadsheet program (e.g., Excel) to list each possible observation location by direction three times (once for each time interval). **Remember locations excluded due to low volume should not be listed.**



The spreadsheet for the example used in Phase 1, Step One would look like this (excluding the observations for Main St./Rt. 57- Lunch and Main St./Rt. 57 - Afternoon):

Table 4. Observation Locations List

	Location and Direction of Travel	Timeframe
1.	Route 1 and 7 Intersection (South)	Morning
2.	Route 1 and 7 Intersection (South)	Lunch
3.	Route 1 and 7 Intersection (South)	Afternoon
4.	Post Office and Route 6 (West)	Morning
5.	Post Office and Route 6 (West)	Lunch
6.	Post Office and Route 6 (West)	Afternoon
7.	Main Street and Route 57 (North)	Morning
8.	Route 6 and 2 Intersection (East)	Morning
9.	Route 6 and 2 Intersection (East)	Lunch
10.	Route 6 and 2 Intersection (East)	Afternoon

You are now ready to randomly select the observation locations required to survey for the year. It is necessary to use a random number table or generator to select these locations.

FAQ: How do I randomly select observation locations to survey?

There are three ways to randomize the observation locations, choose the one that is the most convenient for you:

- i. If a random number table is used, chose a random point in the table and pull numbers with sufficient digits to include the total number of locations in the traffic volume.



For example:

- a. If there are 72 traffic locations listed in the observations locations identification worksheet (Appendix A or B), then choose 2 digit numbers from the random number tables; if there are 125 traffic volume locations choose 3 digit numbers from random numbers table.
- b. Assign the first random number selected from the table to the first observation location and continue entering a random number until all locations have been assigned a random number.
- c. Select in order from the smallest to the largest random number the needed number of locations based upon Table 1.
 - In the event of a tie, select both locations if you have not selected the required number of locations. If the tie occurs on the last selected location, flip a coin to choose between the two locations.

¹ If you have the same number of observation location/time interval combinations as required by Table 1, then you do not need to randomly select from the list. Instead, you will conduct observations at all of those location/time interval combinations. However, you are still encouraged to randomly order the list before you start your observations to reduce the chances of you going to one location at each of three timeframes on the same day.



FAQ continued

ii.

Another method uses a random number generator available on the Internet at <http://www.saccenti.com/randomnumber/randomnumber.htm>. This is a free random number generator that will provide you with a random number between 1 and a number that you enter.

- a. Enter the total number of locations on the first line and enter the random number on your first location. It does not really matter how your locations are initially ordered.
- b. Once all locations have a random number, select in order from the lowest random number to the highest until you have reached your desired number of locations.
 - In the event of a tie, select both locations until you reach the desired number of locations. If you encounter a tie on your last selection, flip a coin to choose between the last 2 locations.

iii.

The last (and potentially the easiest) method of selection uses Excel (Other spreadsheet packages may also have this function).

- a. As you conduct observations enter the details of each observation location into the Excel file.
 - You should have an excel document that numbers observation locations from 1 to whatever the total number of possible observation locations you have.
- b. In the next cell over from observation location 1 enter a formula by typing the equals sign =.
- c. Next to the equals sign (=) type "rand()" (no quotation marks) and hit enter. A random number will be generated.

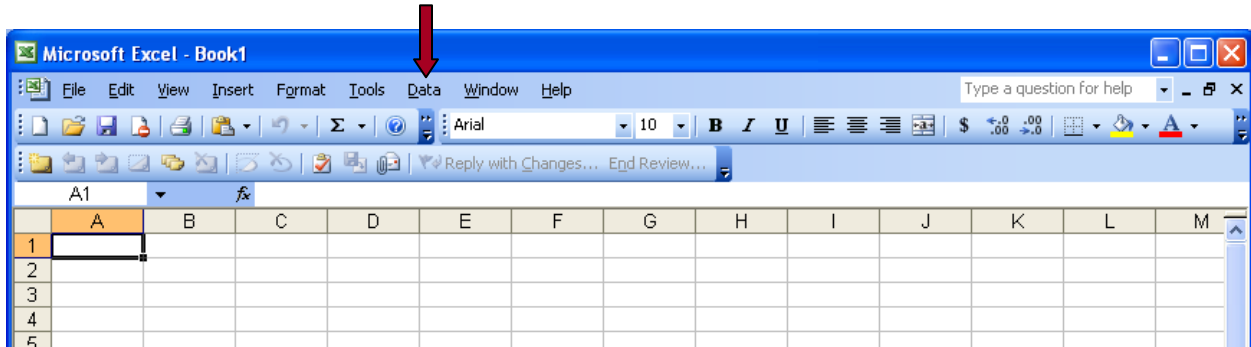
	Location and Direction of Travel	Timeframe	Formula
1.	Route 1 and 7 Intersection (South)	Morning	= rand()
2.	Route 1 and 7 Intersection (South)	Lunch	
3.	Route 1 and 7 Intersection (South)	Afternoon	
4.	Post Office and Route 6 (West)	Morning	
5.	etc.		

- d. Copy the formula [=rand()] into each row. To do this, move the cursor to the lower right hand corner of the cell that the random number was generated until you see a small square. The cursor will change to a solid + sign once you are in the right spot.
- e. Click and hold the right mouse button and pull the plus sign down over all cells below and let the mouse go at the end of the list. There should now be one random number on each row.

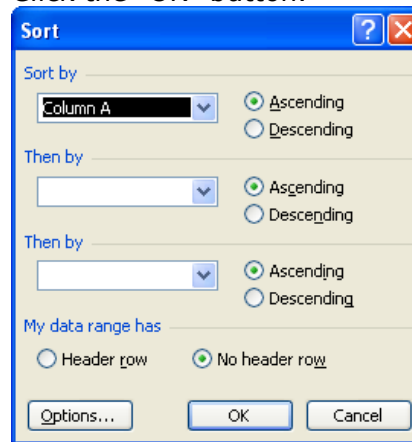
	Location	Timeframe	Formula
1.	Route 1 and 7 Intersection (South)	Morning	0.598352
2.	Route 1 and 7 Intersection (South)	Lunch	0.166114
3.	Route 1 and 7 Intersection (South)	Afternoon	0.723522
4.	Post Office and Route 6 (West)	Morning	0.418467



- f. Next, sort the list of observation locations by the random number.
 - Highlight all the entries on your spreadsheet by using the mouse to select all the cells.
 - Click the tab "Data" at the top of the spreadsheet and select "Sort" from the dropdown list.



- Once you select "Sort," a pop-up box like this will appear. In the "Sort by" drop-down list, select the Column letter that contains your list of random numbers. Click the "OK" button.



- The list will sort from the lowest to the highest random number. You should see that the order of the observational locations changed. The random numbers will change as well and that is okay - do not be alarmed.
- g. Conduct the seatbelt use observation at the locations in order in which they appear in your newly randomized list.



Phase 3 Conducting Observational Seat Belt Surveys

Now that the list of locations has been identified, you are ready to conduct observational seat belt surveys at those locations.



It is recommended that you conduct observations for exactly 60-minutes at each site. It is not recommended to set the criteria based on number of vehicles observed (e.g., observe until you see 100 vehicles). By using a time period (instead of number of vehicles) we are ensuring that there will be an equal probability of vehicles driven in the community being sampled.

Step One – Determine when and how often to conduct surveys

The first step is to determine when and how often to conduct the surveys. This is up to you to decide what works best.

Conduct observations over the course of a calendar year. The observations can be conducted over time (e.g., to conduct observations at 24 locations, you could conduct two observations per month). It is also possible to conduct observations at all locations once a year (e.g., all in January). However, this may not be realistic due to staffing and time constraints. Regardless of the method chosen, it is important that the observations be conducted in the same manner on an annual basis.

It is necessary to re-randomize the list of observation locations on an annual basis. However, you do not need to repeat the traffic volume assessments, as traffic volume is not likely to change substantially over a one year period.

NOTE: Tribes/Tribal Organizations should update the traffic volume assessment if they become aware of construction, new roads, added stop lights, or any other changes that would increase/decrease the number of potential observation locations. When the traffic volume assessment is revised, it would then be necessary to re-select observation locations (redo Phase 2, Step three), so newly added locations have an equal probability of being selected.



Project Coordinator Shannon White (Sisseton –Wahpeton) working with a local police officer during a seatbelt observational survey.

FAQ: What equipment is helpful to have when conducting observations?

It is helpful to have: multiple copies of observation forms (consider pre-completing the top portion about the location), a stapler (to attach 2nd page if you observe over 100 vehicles), pencils with erasers, a clipboard (to make it easier to fill out the form).

**Step Two – Conduct Surveys and Record Results****Four Rules to Follow While Conducting Observations****1. 60-minute Rule:**

You will base your observational period on time; not the number of vehicles that you observe. Due to the remoteness of some of the observation locations, it may not be possible to observe a large number of vehicles. **Even if you only observe a small number of vehicles at one location, you should observe the location for exactly 60 minutes.**

2. Single Direction Observation:

This protocol requires that you only observe vehicles traveling in one direction at the observation location. This is true even if you are observing at a “low volume” location. This will help you to minimize counting the same vehicles twice during the observation period. It will also make it easier for you to reliably collect/document the data at a location with high-traffic volume.

3. Observe shoulder-strap seat belt users only:

When conducting observations, count only **front seat drivers/passengers who are properly wearing shoulder straps** as ‘wearing a seat belt.’ Therefore, if you observe that the driver/passenger is wearing the shoulder strap behind his/her back (an improper use of the seat belt), count it as ‘not wearing seat belt’. If you have any difficulty or doubts about whether the driver/passenger is wearing a shoulder strap (e.g., you could not see because of tinted windows or because of the vehicle speed), mark a circle in the appropriate space on the observation form meaning that you could not determine usage (Appendix D).

4. Observe only passenger vehicles:

When conducting observations, observe passenger vehicles only. Do not count “service vehicles” or large commercial vehicles (e.g., Coca Cola truck). If you want to document whether a passenger vehicle is a Tribal employee vehicle, you may do so by putting a separate notation on the form.

Things to Keep in Mind

1. Be Inconspicuous: To obtain a valid, estimate of seat belt use in your community, you do not want your presence to cause drivers to buckle-up. Observers should strive to remain inconspicuous (i.e., not easily seen or noticed) to not bias (alter) survey results. For example, if drivers/passengers see in the distance that an observer is checking for seat belt use, they might put on their seat belt prior to the observation and the survey results may therefore report ‘inflated’ usage rate(s). If you are conducting an observation from within a parked vehicle, the best type of vehicle is an unmarked passenger vehicle (e.g., not a government vehicle). If an observer conducts a survey in a police vehicle, drivers/passengers are likely to buckle up in advance if a primary seat belt law applies and is enforced. This situation may also result in ‘inflated’ usage rates. We also recommend that observers conduct periodic observational surveys out of uniform, if applicable.

If you have concerns that your presence on a street corner/intersection may cause alarm among community members, consider contacting the local police department ahead of time to provide them details about the dates and locations you will be conducting observations just in case someone calls in.

2. Be Safe: Your safety should be your first priority while conducting observational surveys. Don’t do anything that may put you in any kind of danger, such as getting out of the vehicle, standing near the road, or parking your vehicle too close to the road. Consider informing your local police department of the times and locations of observation locations and times so that officers are aware of what you are doing.

3. Observation Variations:

The Observational Survey Form (Appendix D) used for this project does not collect information about the type of vehicle or gender of drivers/passengers. However, this information may be added at a later stage once you are skilled at documenting your observations.



Remember, this survey is **not** designed to observe child safety seat usage. However, keep the following in mind:

- If there is a child riding in the middle space of the front seat, do not count this as an observation, as it is not possible to identify if the child is restrained (i.e., no shoulder-strap).
- This survey does not ask you to document if you observe children/passengers riding in the bed of pick-up trucks. However, you could note this observation on the data collection form if you want this information.
- Children riding in the front outboard passenger seat of a vehicle and not in a child safety seat, should be observed and counted as any other front seat passenger (i.e., 'not wearing a seat belt').
- This survey does not ask you to document if you observe children riding in child safety seats (correctly or incorrectly installed) or if they are riding in child safety seats in improper locations (e.g., the front seat). However, you could note this observation on the data collection form if you want this information.

FAQ: Why is Child Safety Seat (CSS) seat use not included in this survey?

Data collection methods for Child Safety Seat (CSS) use are not included in this protocol for several reasons. First, without stopping a vehicle, it is difficult to assess the age of a child and to determine if a child is using the proper restraint system. Second, all children under the age of 12 should be in the backseat of a vehicle, where it is difficult to accurately observe lap and/or shoulder belt usage and car seat usage in a moving vehicle. Finally, it is not possible to calculate accurate usage rates for this population because it is difficult to identify the total number of children observed (i.e., the denominator).

Many Tribal communities are interested collecting some information about CSS use while conducting seat belt use surveys. Therefore, a "notes" section has been included on the Observational Survey Form (Appendix D), to provide a place to record information about unrestrained children. This information could be used to augment the front seat occupant use rates one. There are standardized guidelines for the conduct of a CSS use observational survey and protocols to conduct a child passenger safety check event. We recommend that you consider implementing separate observation periods to document use of and/or correct use of CSS. For more information about this, please visit the following website: <http://www.injprev.ihs.gov/index.cfm> and select 'Ride Safe Program' on the left margin toolbar under 'Programs'.

FAQ: How do I know that our seatbelt use educational/enforcement campaigns are working?

If you would like to evaluate a specific intervention activity (e.g., a media campaign that will take place over a six-month period), you would need to conduct the full set of observations (i.e., in the above example, all 24 locations) prior to and following the intervention. It is not possible to conduct observations at 12 locations prior to the intervention and at another 12 locations following the intervention, as there will be insufficient numbers to establish a valid estimate of seat belt use.





Two Rules to Follow When Completing the Observational Survey Form (Appendix D)

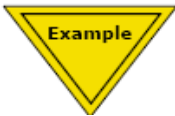
1. Indicate your name, and date, time, location, and direction of travel of the observation location:

Record the basic information about your observation period on the data collection form including: your name, the date, your location, the direction of travel, and the exact start and end times for your observation period. Remember, observations are to be conducted in the direction of travel that is indicated for that location (only one direction). Following this protocol, observations should also be conducted for 60 minutes at each location. Record your exact start and end time.

2. Record Results:

Use the attached Seat Belt Use Observation Form (Appendix D) to record seat belt use among drivers and front seat passengers sitting next to the window (i.e., outboard passengers).

- Mark a "Y" (for Yes) or an "N" (for No) for both driver and outboard passenger observed for each vehicle that passes in the direction you are observing.
• If no passenger was present in the vehicle observed, draw a line (—) across the Y/N Passenger Cells for that vehicle observed (row 2 in Table 5 below).
• If you are not able to determine if the driver and/or passenger is wearing a seat belt, place a circle in the appropriate cell where you could not determine usage (row 3 in Table 5).



Phase 3, Step 2 Example:

Table 5. Sample Observation form

Table with 5 columns: Observation ID, Driver (Y, N), and Pssngr (Y, N). Row 1: 1, Y, N, Y, N. Row 2: 2, blank, N, line, line. Row 3: 3, O, O, Y, blank.

Note: Placing a line or a circle as needed when recording observations ensures that you document something for each vehicle and driver/passenger that passes in the direction you are observing. This specifically defines each observation and eliminates the assumption about what 'blank spots' on the form means.



Phase 4

Summarize Annual Seat Belt Use Data



You made it to the final phase! You are almost ready to report your findings. Now you will have a chance to summarize and analyze the data you collected and identify the seatbelt use rates in your community.

Observational seat belt survey results should be aggregated over the course of one year (i.e., combine data from all of the required locations to present one seat belt use rate for the Tribe/Tribal Organization). It is important not to present or compare individual results (i.e., month to month or round to round) because the sample size is too small to accurately reflect seat belt use for the whole population. The only way to obtain precise estimates is to aggregate (or combine) all of the results for the year. Once you have two or more years' worth of data, you can compare data from year to year.

Step One – Enter Results into a database

For each year, you will need to have a way to store your data overtime (e.g., a database like Excel). After each observational survey you conduct enter the results for that survey into your database (e.g., Excel file). Table 6 provides an example of how to enter your data into excel for one year. You may need multiple Excel 'worksheets' for each year of data collected .



Phase 4, Step Two Example

Table 6. Sample Spreadsheet for aggregating annual data

Observation Location and Direction of Travel	Timeframe	A	B	C	D
		# of Drivers Belted	# of Drivers Observed	# of Passengers Belted	# of Passengers Observed
James and Ivy Intersection. (North)	Morning	23	65	4	15
Rts 1 & 5 (West)	Lunch	75	120	20	60
Rts. 7 &14 (East)	Lunch	25	55	6	20
Main and P St. (South)	Lunch	95	200	22	85
Florida and Pacific (East)	Morning	88	250	15	60
Rocky Ridge and Desert Rd. (South)	Afternoon	72	100	18	55
Rts. 7 & 10 (West)	Afternoon	45	95	12	40
Iron Rd. and Post Office (North)	Afternoon	33	88	4	15
Total		456	973	101	350



Step Two – Aggregate results for the entire year

To obtain accurate estimates of seatbelt use, you must aggregate the observations from all locations for each year.



It is not appropriate to present or compare partial results (i.e., month to month or round to round) because the sample size is too small to accurately reflect seat belt use for the whole population. You can only compare annual rates calculated from the complete set of observation locations.

Instructions for how to summarize raw seat belt data can be found on the Observational Seat Belt Use Form (Appendix D).

FAQ: How do I aggregate the data for each year?

To aggregate all of the observational seat belt use data for one year, you will need to enter the raw data (i.e., total number of drivers and passengers observed (e.g., Column A in Table 6) and belted (e.g., Column B in Table 6)) into a spreadsheet. When you have completed all of the observations for the year, you can calculate the overall seat belt use rate for the Tribe/Tribal Organization and be confident that it is an accurate estimate (Table 6).

In Table 6, you can see the total number of drivers belted (column A) and observed (column B) and the total number of passengers belted (column C) and observed (column D). From these numbers you can:

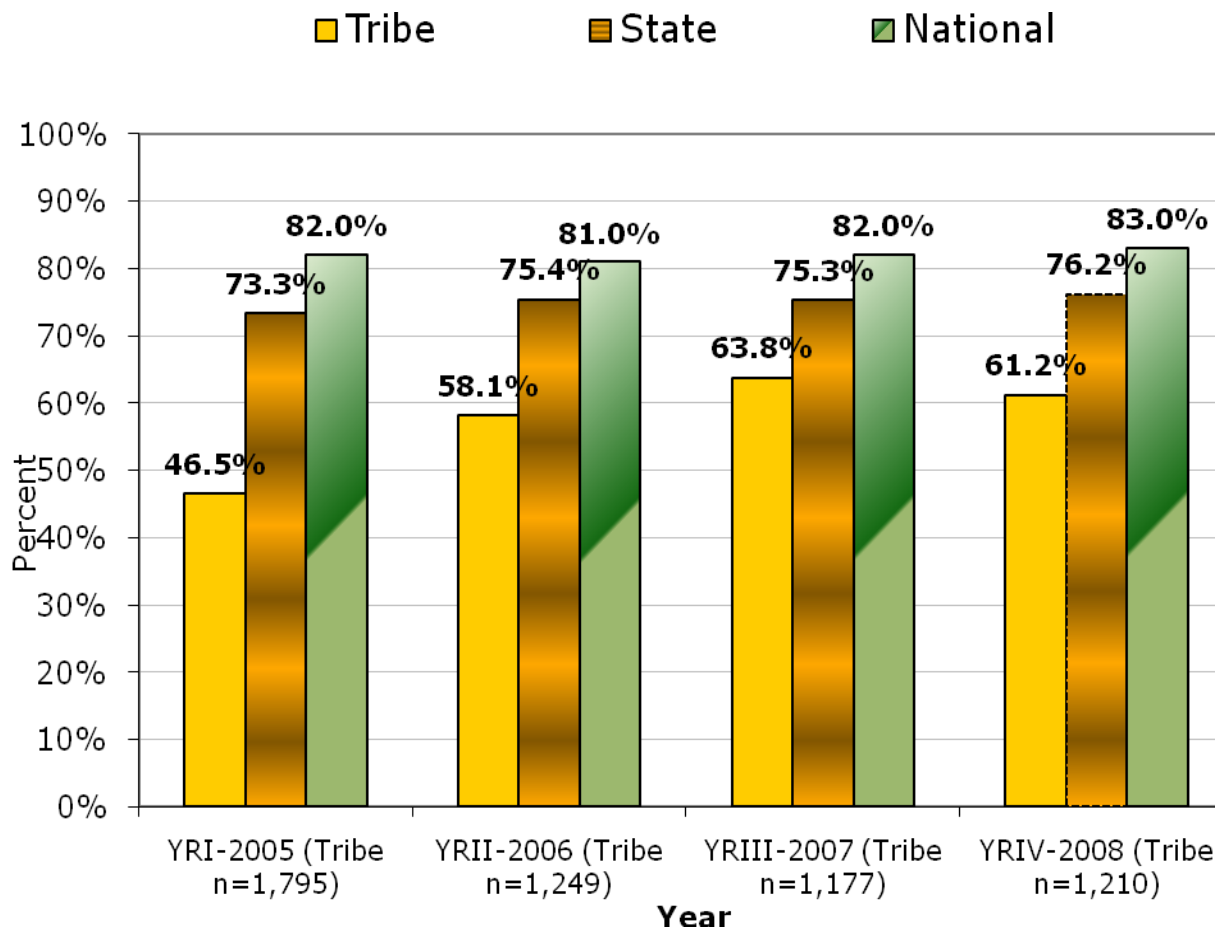
- a. Calculate the **annual Tribal driver seat belt use rate** (which is 46.9% in this example) by:
 - i. Dividing the total number of belted drivers (456) by the total number of observed drivers (973).
- b. Calculate the **annual Tribal passenger seat belt use rate** (which is 28.9% in this example) by:
 - i. Dividing the total number of belted passengers (101) by the total number of observed passengers (350).

Step Three – Compare results from year to year

Once you have conducted observations and recorded the aggregated results for two or more years, you can compare the data to see how successful your program has been in increasing seatbelt use among your community members. Compare the annual Tribal driver seat belt use rate and/or the annual Tribal passenger seat belt use rate over time. You can also compare the rates for your community to State and National use rates. For example, see Figure 2 showing four years of seatbelt use rates for a Tribe with comparison to state and national rates for the years 2004-2008.



Figure 2. Tribe, State, National Seatbelt Use Rates, 2005-2008





Appendix A

Observation Location Identification Worksheet A

The table included in this appendix is to help you assess traffic volume at each of your identified observation points for **15** minute intervals. Additional information on how and why to use this table can be found in Phase 1, step 2.



Observation Location Identification Worksheet A

Instructions:

1. In the **1st column**, list all possible road/street intersections in your community or communities (selecting only those intersections that meet **all** the criteria in Phase 1, Step 1) and the direction of travel.
2. In the **3rd column**, identify the number of vehicles you observed at each location for approximately 15 minutes.
3. In the **4th and 5th columns**, identify a start and end time for each traffic volume assessment you conducted for all of the locations you identified in the first column.
4. In the **6th column**, multiply the 15 minute traffic volume (column #3) by four.

Observation Locations and Direction of Travel	Time Interval	Assessing Traffic Volume			60-minute Traffic Flow (15 minute traffic volume X four)
		(# of vehicles observed in 15 minutes)	Start Time	End Time	
1.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
2.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
3.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
4.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
5.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
6.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
7.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
8.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
9.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
10.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
11.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
12.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
13.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
14.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				



Appendix A: Observation Location Identification Worksheet A

Observation Locations and Direction of Travel	Time Interval	Assessing Traffic Volume			60-minute Traffic Flow (15 minute traffic volume X four)
		(# of vehicles observed in 15 minutes)	Start Time	End Time	
15.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
16.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
17.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
18.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
19.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
20.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
21.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
22.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
23.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
24.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
25.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
26.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
27.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
28.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
29.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
30.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				



Appendix B

Observation Location Identification Worksheet B

The table included in this appendix is to help you assess traffic volume at each of your identified observation points for **30** minute intervals. Additional information on how and why to use this table can be found in Phase 1, step 2.

Observation Location Identification Worksheet B

Instructions:

1. In **the 1st column**, list all possible road/street intersections in your community or communities (selecting only those intersections that meet **all** the criteria in Phase 1, Step 1) and the direction of travel.
2. In **the 3rd column**, identify the number of vehicles you observed at each location for approximately 15 minutes.
3. In **the 4th and 5th columns**, identify a start and end time for each traffic volume assessment you conducted for all of the locations you identified in the first column.
4. In **the 6th column**, multiply the 15 minute traffic volume (column #3) by two.

Observation Locations and Direction of Travel	Time Interval	Assessing Traffic Volume			60-minute Traffic Flow (30 minute traffic volume X 2)
		(# of vehicles observed in 30 minutes)	Start Time	End Time	
1.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
2.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
3.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
4.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
5.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
6.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
7.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
8.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
9.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
10.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
11.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
12.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
13.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
14.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				

UNC-IHS Observational Seat Belt Survey Protocol

Appendix B: Observation Location Identification Worksheet B

Observation Locations and Direction of Travel	Time Interval	Assessing Traffic Volume			60-minute Traffic Flow (30 minute traffic volume X 2)
		(# of vehicles observed in 30 minutes)	Start Time	End Time	
15.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
16.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
17.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
18.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
19.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
20.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
21.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
22.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
23.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
24.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
25.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
26.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
27.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
28.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
29.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				
30.	Morning (7:00 - 9:00 am)				
	Lunch (11:30 am-1:30 pm)				
	Afternoon (4:30 - 6:30 pm)				

Appendix C

Selecting Observation Locations Worksheet

The worksheet is designed to help you calculate how many observation locations you will need to accurately assess the seatbelt use rate in your community. Additional information on how/why this worksheet should be used is included in Phase 2, Step 2.

Selecting Observation Locations Worksheet

I. Determining which Observation Locations to Exclude

Instructions:

- Once you have completed the observation location identification worksheet, review the last column on that worksheet ("60-minute Traffic Flow").
- In the **1st column** below, list all of the observation location/time-interval combinations where there were less than 50 observations in the 60-minute period. You may need to add rows in the table below.
- In **Box A**, calculate the percent of all observation locations that would be eliminated with the 50 or less observations on the 60-minute period.
- If the percent is 20% or less, then eliminate those locations from being selected. If the percent is greater than 20%, start these instructions over, but eliminate the observation location/time-interval combinations where there were less than 25 observations in the 60-minute period (use the **2nd column** below).
- Continue this process until only 20% or less of the observation location/time-interval combinations have been eliminated.

50 or less observations	25 or less observations
Location/Time Interval	Location/Time Interval
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.
11.	11.
12.	12.
13.	13.
14.	14.
15.	15.

Box A – Formula to identify % of observation location/time-interval combinations to be excluded.

% of observation location/time-interval combinations to be excluded =	Total # of observation location/time-interval combinations to be excluded = _____ Divided by Total # of observation location/time-interval combinations = _____	Multiply answer by 100 to obtain percentage
---	---	---

Box A – Example (from page 6)

If % of observation location/time-interval combinations to be excluded = 41.6%	If Total # of observation location/time-interval combinations to be excluded = 5 Divided by If Total # of observation location/time-interval combinations = 12	5/12 = .416x100 = 41.6% Multiply answer by 100 to obtain percentage
---	--	---


II. Determining the Required Number of Observation Locations to Survey

Instructions:

- a. After you have determined which observation locations/time-interval combinations to eliminate, list all of the remaining locations/time-interval combinations and the 60-minute traffic volume into two columns in a spreadsheet such as Excel [you can also just list it into two columns on a piece of paper, if necessary].
- b. Calculate the average number of observations for the list of observation locations.
To do this in Excel, follow these steps:
 - In the 60-minute traffic volume column that you created, put your cursor in the cell just beneath the last number listed.
 - From the menu click "Insert" and then choose "function". From the functions available, select "average" and click "ok".
 - Check that the range of cells listed corresponds to all of the cells for which you want the average to be calculated and click "ok". If the range of cells is incorrect, insert your cursor into the text box and change it to reflect which cells you want the function to include.
 - The program will then calculate the average number of observations for you.

To do this by hand, follow these steps:

- Add up all of the numbers listed in the column "60-minute traffic volume" (from the example on page 7 of the protocol, this would be $40+80+40+60+100+140+40+100+52+80 = 732$).
 - Divide that number by the total number of observation location/time-interval combinations (e.g., $732/10=73.2$)
 - This will give you the average number of observations for all of the observation location/time interval combinations (e.g., around 73).
- c. Refer to the table below to determine the number of observation locations required (for example above, 28 observation locations would be required).

Average Number of Observations/Location	# of Observation Locations	DEFF Range (information for statistician)
20-29	41	2.1-2.7
30-39	35	2.8-3.2
40-49	32	3.3-3.8
50-59	30	3.9-4.4
 60-79	28	4.5-5.5
80-99	27	5.6-6.7
100-129	26	6.8-8.4
130-199	25	8.5-12.5
200 and over	24	12.6 and over

Appendix D

Observation Form

The observation form is to help you capture the data you will need to calculate the seatbelt use rate for your community. Important additional information about how to conduct an observation is included in Phase 3.

UNC-IHS Observational Seat Belt Survey Protocol

Appendix D: Observation Form

Survey Date: _____ Start/End Time: _____ Direction of Travel: _____

Name of Observer: _____ Location of Observation: _____

Instructions:

Mark a "Y" (for Yes) or an "N" (for No) for both drivers and outboard passengers observed for each vehicle that passes in the direction you are observing (See Example 1 to the right).

If no passenger was present in the vehicle observed, draw a line (—) across the Y/N Passenger Cells for that vehicle observed (See Example 2 to the right).

If you are not able to determine if the driver and/or passenger is wearing a seat belt, place a circle ○ in the appropriate cell for which you could not determine usage (See example 3 to the right).

Examples:

	Driver		Pssngr	
	Y	N	Y	N
1.	Y			N
2.	Y		—	—
3.	○	○	Y	

Note: If more than 100 vehicles pass by during your 60-minute observation for this date/time/location, use a second observation form.

	Driver		Pssngr			Driver		Pssngr			Driver		Pssngr			Driver		Pssngr	
	Y	N	Y	N		Y	N	Y	N		Y	N	Y	N		Y	N	Y	N
1.					26.					51.					76.				
2.					27.					52.					77.				
3.					28.					53.					78.				
4.					29.					54.					79.				
5.					30.					55.					80.				
6.					31.					56.					81.				
7.					32.					57.					82.				
8.					33.					58.					83.				
9.					34.					59.					84.				
10.					35.					60.					85.				
11.					36.					61.					86.				
12.					37.					62.					87.				
13.					38.					63.					88.				
14.					39.					64.					89.				
15.					40.					65.					90.				
16.					41.					66.					91.				
17.					42.					67.					92.				
18.					43.					68.					93.				
19.					44.					69.					94.				
20.					45.					70.					95.				
21.					46.					71.					96.				
22.					47.					72.					97.				
23.					48.					73.					98.				
24.					49.					74.					99.				
25.					50.					75.					100.				
T					T					T					T				
	D1	D2	P1	P2		D3	D4	P3	P4		D5	D6	P5	P6		D7	D8	P7	P8

If you desire to collect additional information about the cars you observe (e.g., use of car seats, whether you observed tribal employee vehicles, passengers in back of pick-up trucks) use this blank space below.

Box A: Formula to identify raw data to enter into spreadsheet:

Drivers	Passengers
Total # of Drivers Wearing a Seat Belt = _____ (D1+D3+D5+D7)	Total # of Passengers Wearing a Seat Belt = _____ (P1+P3+P5+P7)
Total # of Drivers Observed = _____ (D1+D3+D5+D7) + (D2+D4+D6+D8)	Total # of Passengers Observed = _____ (P1+P3+P5+P7) + (P2+P4+P6+P8)

To calculate annual Tribal/Tribal Organization seat belt use rates, follow the instructions located below.

Remember, when you calculate percentage use for drivers and passengers, the denominator you use for your calculations will probably be different because some vehicles will not have passengers. The formulas provided take this difference into account.

Instructions:

- a. In the Total row (shaded) at the bottom of the Seat Belt Use Observation Form, add up the number of ‘yes’ and ‘no’ responses for both drivers and passengers. Note: Only count ‘yes’ and ‘no’ markings and do not count spaces that have a line or a circle in them.
- b. In Box A on the second page of the survey, add up the total number of drivers wearing a seat belt (i.e., columns D1+D3+D5+D7).
- c. Also in Box A, add up the total number of drivers observed. Example: (D1+D3+D5+D7) + (D2+D4+D6+D8)
- d. In Box A, add up the total number of passengers wearing a seat belt. (i.e., P1+P3+P5+P7).
- e. In Box A, add up the total number of passengers observed (it will likely be less than the total number of vehicles). Example: (P1+P3+P5+P7) + (P2+P4+P6+P8).
- f. For each observation location, enter the numbers identified for steps b-e in the spreadsheet.

Drivers

- a. To determine the total number of drivers wearing a seat belt for the year, add up all the numbers of belted drivers at each observation location.
- b. To determine the total number of drivers observed for the year, add up all the numbers of drivers observed at each observation location.
- c. To determine the percentage of drivers wearing their seat belt, divide the total number of drivers wearing a seat belt by the total number of drivers observed. Multiply the response by 100.

Passengers

- a. To determine the total number of passengers wearing a seat belt for the year, add up all the numbers of belted passengers at each observation location.
- b. To determine the total number of passengers observed for the year, add up all the numbers of passengers observed at each observation location.
- c. To determine the percentage of passengers wearing their seat belt, divide the total number of drivers wearing a seat belt by the total number of passengers observed. Multiply the response by 100.

Appendix E

Recommendations for Surveys in Small Communities

UNC-IHS Observational Seat Belt Survey Protocol

Appendix E: Recommendations for Surveys in Small Communities

Very small communities are defined as those with a small number of people, fewer number of roads, and/or fewer number of intersections at which observations can be conducted (i.e., between only 15 and 20 intersections).

When a Tribe/Tribal Organization has only a few sites from which to choose to conduct observational surveys, there is no need to sample, as the site will conduct observations at every site available in its master list, which will be generated by following the first few steps already outlined in the protocol, including:

1. Identify all the sites that meet the key requirements outlined in step one of the protocol (e.g., where traffic comes to a stop, where you are likely to see Tribal member). Selection criteria are listed in Figure 1 on page 3.
2. Conduct the traffic volume assessment as outlined in the protocol, eliminating the very low to no-volume sites.
3. Conduct observations at all of the remaining locations on your list.

After the first few days of data collection (i.e, once you reach approximately 150 observations), we recommend that you assess your preliminary seatbelt use rate. *Note: If you go through your list of locations and don't reach 150, re-order the list and conduct additional observations until you get to 150.* Once you get to 150, you can determine the total number of observations needed to obtain an accurate estimate of seatbelt use (*note: add the observations conducted to assess your preliminary use rate to the remaining number needed to get the total needed*).

The closer to 50% that your preliminary seatbelt use is, the more observations are needed to obtain smaller confidence intervals (i.e., greater accuracy). Use the table below to identify the total number of observations you are advised to collect based on your 'preliminary' use rate:

<i>If your preliminary use rate is...</i>	<i>Collect the following total number of observations...</i>
10%	130
20%	220
30%	300
40%	350
50%	380 ^a
60%	350
70%	300
80%	220
90%	130

^a Most conservative estimate

Each year, you should re-determine the number of observations that are needed for an accurate estimate of seatbelt use (i.e., determine your preliminary use rate after a few days of data collection and use the table above). You will note that as the overall seatbelt use rate increases from 10% to 50%, the total number of observations needed increases.