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Child Restraint Use: Workbook and Guide for Evaluating Community-based Programs

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Child Restraint Use:

**Workbook and Guide for Evaluating
Community-based Programs**

California Office of Traffic Safety

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To those who will be conducting these surveys: we invite you to contact us at any point with any questions that you have about conducting the observations and analyzing the results. You may reach us by phone or at the e-mail addresses below.

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Introduction and Purpose

The leading cause of injury and death for children in California is motor vehicle crashes. To prevent these needless tragedies, the California Office of Traffic Safety (OTS), through the Business, Transportation and Housing Agency, funds child passenger safety programs throughout the state. This workbook is designed to be used by these local programs to 1) evaluate the impact of their activities on child restraint use, 2) evaluate results to improve or modify the programs as needed, and 3) meet contractual evaluation requirements.

Program evaluations can be difficult for local programs due to high service demands and limited resources. We hope this guide supports local programs and agencies by providing the evaluation method and tools. A before-and-after study design is described that measures restraint use *before* the intervention occurs (to provide a baseline rate) and then *after* the intervention (to document any change). The UC Berkeley Traffic Safety Center will offer direct support and guidance to those programs using these instructions.

How to Use the Workbook

This workbook will help you measure current seat child safety seat use in your targeted area and to determine how much use changed after your program or enforcement activities. The workbook walks you through the basic steps necessary to conduct the before (or base) and after studies to evaluate the impact of your program. It starts with instructions for conducting observations that can be used in planning your program and in training observers. Then, you will find instructions for setting up your study, and for collecting and analyzing your data.

As you fill in the workbook, you can refer to, or click on, the corresponding sections of the Guide, which explains each section of the workbook step-by-step. It provides rationales, as well as some optional analyses you can conduct in order to better understand child safety seat use in your area.

**Child Restraint Use:
Evaluating Community-Based Programs**

Workbook

Child Restraint Use: Evaluating Community-based Programs

In order to conduct your *before/base* and *after* observations, complete Steps 1-9 below. As you work on each section, turn to or click on the corresponding sections of the Guide, which provides additional explanation of the steps.

1. Who or where is your target population? (See Guide, Step 1)

My target population is _____.

2. At what sites and times will you be conducting your observations? (See Guide, Step 2)

Site A: _____	Time 1: _____	Time 2: _____
	Date 1: _____	Date 2: _____
	Circle: M T W Th F	Circle: M T W Th F
Site B: _____	Time 1: _____	Time 2: _____
	Date 1: _____	Date 2: _____
	Circle: M T W Th F	Circle: M T W Th F
Site C: _____	Time 1: _____	Time 2: _____
	Date 1: _____	Date 2: _____
	Circle: M T W Th F	Circle: M T W Th F
Site D: _____	Time 1: _____	Time 2: _____
	Date 1: _____	Date 2: _____
	Circle: M T W Th F	Circle: M T W Th F
Site E: _____	Time 1: _____	Time 2: _____
	Date 1: _____	Date 2: _____
	Circle: M T W Th F	Circle: M T W Th F
Site F: _____	Time 1: _____	Time 2: _____
	Date 1: _____	Date 2: _____
	Circle: M T W Th F	Circle: M T W Th F

3. What is the current estimate of child restraint use in your area? (See Guide, Step 3)

- a. The current estimate is _____.
- b. What percentage point increase do you expect your program will have on restraint use? _____ . (To be determined with your OTS Regional Coordinator)

4. Refer to Table 1 below to determine the number of observations to make. (See Guide, Step 4)

- 4a. Number of observations _____ . (see Table 1 below)
- 4b. Number of observations at each site _____ .

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Table 1 – Determining the number of observations to conduct.

Estimated current rate of child restraint use in your target area	Percentage point increase in child restraint use that you expect to make with your intervention					
	2%	3%	4%	5%	10%	15%
	Number of Observations					
50%	5,632	2,502	1,406	860	225	100
60%	5,362	2,371	1,327	810	205	95
70%	4,640	2,041	1,136	695	175	75
80%	3,468	1,520	831	515	120	50
90%	1,846	779	414	265	NA	NA

5. *Who are your observers?* (See Guide, Step 5)

Fill out observation schedule with observers' names:

Observer 1: _____
 Observer 2: _____
 Observer 3: _____
 Observer 4: _____
 Observer 5: _____
 Observer 6: _____
 Observer 7: _____
 Observer 8: _____
 Observer 9: _____
 Observer 10: _____

6. *Prepare for the Observations.* (See "Protocol for Conducting Observations" on page 5 and Guide, Step 6)

Review "Protocol for Conducting Observations" on page 5. Use this sheet when training observers.

To each site, bring 1 Site Form and a handful of Observation Forms. The Observation Forms are used to record each observation. The Site Form is used to tally the observation forms for one site. (See Appendix B for Data Collection Forms.)

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When you are finished making all of your observations at all of your sites, use the Summary Form to tally the Site Forms.

7. What is the “before” program or “base” use rate? (See Guide, Step 7)

7a. Total Restrained (*Before/Base* Summary Sheet) _____.

7b. Total Children Observed (*Before/Base* Summary Sheet) _____.

7c. “Before” Program /Base Use Rate ____% (per formula below)

$$\text{Percent(\%) restrained} = \frac{\text{TotalRestrained}}{\text{TotalChildrenObserved}}$$

8. Project Activities. (See Appendix B)

At this point, you will perform your project activities.

9. What is the “after” use rate? (See Guide, Step 9)

About a month after your intervention, measure child restraint use again according to 9a-9c below.

9a. Total Restrained (*After* Summary Sheet) _____.

9b. Total Children Observed (*After* Summary Sheet) _____.

9c. “After Program” Use Rate ____% (per formula below)

$$\text{Percent(\%) restrained} = \frac{\text{TotalRestrained}}{\text{TotalChildrenObserved}}$$

Protocol for Conducting Observations

1. Pick sites that are reasonably representative of the community you are targeting.
2. Choose specific days and time to match the peak hours of the observation sites. Conduct observations for before/after and after activities at the same sites and the same days/times.
3. Choose a clear, dry day with maximum visibility.
4. If there is not a lot of traffic volume, observe all vehicles with children between ages birth to age six inside. If there is a high vehicle volume, simply select the next eligible vehicle upon completion of the previous observation. Observe cars, pick-up trucks, SUVs, and vans. Pick a safe place to stand to conduct observations (e.g, a raised curb near a stop sign at an exit of a parking lot).
5. You should divide the number of children observed at each site approximately equally among the sites. For example, if your sample size is 120, and you have chosen to observe four sites, then you should observe about 30 children at each site. If you are not able to observe enough children at a site, you will need to re-assess the site. Perhaps there would be more observations at a different time of day when more vehicles are on the road, or you might need to identify a different site.
6. Because you will not be able to inquire about the age of the child passenger(s), it will be necessary to estimate the age of the child. As you look into the vehicle, notice and record whether the child(ren) are restrained.
7. Since these are restraint *use* observations, you should look to see only if children are restrained. You will not need to record whether children are correctly restrained for their age and weight. Note that there may be children under age 6 who are restrained correctly in a seat belt. If you suspect a child is correctly in a seat belt, there will be a place on the forms to record correct restraint in a seat belt.
8. For safety and security, observers should work in teams of two and wear orange vests, or similar safety clothing that makes it easy to be seen by moving vehicles.
9. Materials to bring to the observations:
 - Address of the observation site(s)
 - Orange vests or similar safety clothing to make the observers more visible and to identify the observer as having an official role
 - Site forms, observation forms, and summary forms
 - Clipboard (you might want to put “Traffic Survey” in bold letters on the back)
 - Pencils or pens for filling in forms
 - Watch
 - Cell phone

Appendix A—Sample letter about the study

(For use when people ask during the observation. You may put this letter on your agency's letterhead.)

My name is _____ and I work/volunteer for _____.

We are working on a safety study with the California Office of Traffic Safety. The purpose of the study is to make sure our child safety programs are reaching our community. As you know, child safety seats and seat belts are the most important way to save lives in case of a traffic crash.

We are observing cars and small trucks (SUVs, vans) in order to see whether children are in child safety seats or seat belts. We are not recording your license plate number or any identifying information. If you are interested, we have a brochure about child safety seats for you.

If you have any further questions or concerns, please contact the study coordinator, _____, at _____.

Thank you very much.

Appendix B —Data Collection Forms

1. Site Form
2. Observation Form
3. Summary Form

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1. SITE FORM

INSTRUCTIONS

Fill in one of these forms for each observation period at each site, and for observations *before* and *after* the intervention.

Observation Site Name* _____

Agency Name _____

Project Name _____

OTS Project Number _____

Observer Name	
Site Location or Description	
Traffic Volume	
Date	
Day of the Week	
Time of Day	
Weather	
Total Restrained Children	
Total Unrestrained Children	
Total Children Observed	
Total Vehicles Observed	
Total Vehicles With Children Not Observed	
Comments	

* Name of store, name of shopping center, and street location or intersection

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2. **OBSERVATION FORM**

INSTRUCTIONS: *Fill in one (or more, if needed) of this form for each observation session.*

Agency Name _____

Page ____ of ____ for this Site & Time

OTS Project Number _____

DATE _____

DAY (Circle one): M Tu W Th F Sat Sun

START TIME ____:____ am/pm

Site Name _____

END TIME ____:____ am/pm

Name of Observer #1 _____

TOTAL TIME _____ (minutes)

Name of Observer #2 _____

Check one: ☐ Observation *Before/Base* Intervention ☐ Observation *After* Intervention

OBSERVATION #	Children 0-6 Restrained		Children 0-6 Unrestrained	Unable to Observe	
	Child in Safety Seat? (Give number restrained)	Child in seat belt?	Children unrestrained	TOO HIGH/TINT	OTHER (SPECIFY)
1	☐	☐	☐	☐	☐
2	☐	☐	☐	☐	☐
3	☐	☐	☐	☐	☐
4	☐	☐	☐	☐	☐
5	☐	☐	☐	☐	☐
6	☐	☐	☐	☐	☐
7	☐	☐	☐	☐	☐
8	☐	☐	☐	☐	☐
9	☐	☐	☐	☐	☐
10	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐
16	☐	☐	☐	☐	☐
17	☐	☐	☐	☐	☐
18	☐	☐	☐	☐	☐
19	☐	☐	☐	☐	☐
20	☐	☐	☐	☐	☐
TOTALS					

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Page _____ of _____ (print or copy as many as needed)

OBSERVATION #	Children 0-6 Restrained		Children 0-6 Unrestrained	Unable to Observe	
	Child in Safety Seat? (Give number restrained)	Child in seat belt?		TOO HIGH/ TINT	OTHER (SPECIFY)
1	☐	☐	☐	☐	☐
2	☐	☐	☐	☐	☐
3	☐	☐	☐	☐	☐
4	☐	☐	☐	☐	☐
5	☐	☐	☐	☐	☐
6	☐	☐	☐	☐	☐
7	☐	☐	☐	☐	☐
8	☐	☐	☐	☐	☐
9	☐	☐	☐	☐	☐
10	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐
16	☐	☐	☐	☐	☐
17	☐	☐	☐	☐	☐
18	☐	☐	☐	☐	☐
19	☐	☐	☐	☐	☐
20	☐	☐	☐	☐	☐
TOTALS					

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3. SUMMARY FORM

The purpose of this form is to summarize the information from your Site and Observation forms.

Observation Site Name _____

Agency Name _____

Project Name _____

OTS Project Number _____

Name of Observer/s _____

SITE (specify location)	Children 0-6 Restrained?		Unable to Observe	
	Yes*	No	Too high/tint	Other (specify)
#1				
#2				
#3				
#4				
#5				
#6				
Total				

*Add the two restraint totals (“Child in Safety Seat” and “Child in Seat Belt”) from the Observation Form here.

Appendix C -- Guide

Child Restraint Use: Evaluating Community-Based Programs

Guide Step 1—Who or Where is Your Target Population?

The primary purpose of the evaluation is to determine the degree to which child restraint use changes after your program intervention. To conduct a successful program for increasing restraint use, it is necessary to establish goals, objectives and activities that match your available resources.

Get the most for your \$\$\$

First, in order to produce a program impact that can be measured, it is important to design your intervention program to match the resources that you have available for the intervention. If, for example, you have \$100,000 for your project and want to increase use in an entire urban or suburban county, you will have a difficult time showing results, since the resources will be spread over a large geographic area or population. We recommend focusing your efforts on populations that need your program the most. Does a *segment* of your community have lower than average restraint use rates? This could be due to factors such as language barriers, cultural beliefs about best ways to protect children in vehicles, or the cost of child safety seats.

Measure only the people reached by your program

Second, you want to design the evaluation to closely match the intervention. Because you want to capture any impact your program might have, you should conduct the observations for the evaluation *at the same site(s)* targeted by your program. Pick between 3-5 specific sites for program activities, *and then conduct the before and after observations for the evaluation at those same sites*. For example, you might decide to conduct your program at hospitals with pediatric patients, shopping areas that attract children, or daycare centers in your communities. To maximize the chance that your evaluation will focus on the people reached by your program, it is best to choose places for observation that are typically used by people living in the area, as opposed to places that attract people from outside the targeted area, such as regional shopping malls.

Determine your target population

Although interventions are aimed at parents, guardians, and caregivers who have responsibility for transporting children, the target population is infants and children aged 0-6. The target population is further defined by the focus of your program. If your program's activities are aimed at clinics or child care centers, then the target population is the children who attend those clinics or child care centers. If the intervention is aimed at a particular area or population segment of your community, then the target population consists of children from those areas or population groups.

Since these are restraint *use* observations, you should look to see only if children are restrained. You will not need to record whether children are correctly restrained for their age and weight. Note that there may be children under age 6 who are restrained correctly in a seat

belt. If you suspect a child is correctly in a seat belt, there will be a place on the forms to record correct restraint in a seat belt.

Guide Step 2—Sites and Times for Conducting Your Observations

Choose a Logical Observation Site

Often, the exits of parking lots of malls, schools, religious institutions, etc. where vehicles slow down or stop before exiting are ideal sites for observation. These sites are where we recommend you do your observations. The study sites must:

- Be frequented by the people that are targeted for project activities;
- Attract a fairly high number of the target population for efficiency of data collection; and
- Be comfortable and safe for observers.

Guide Step 3—Current Estimate of Child Restraint Use in Your Area

Estimate Current Child Restraint Use in Your Area

Note that even though you will be conducting observations to determine the baseline rate of child restraint use, you still need an estimate of baseline use to calculate the recommended sample size. If you need an estimate of the baseline rate for *your* community, please contact Raul Betancourt at California State University, Fresno at 559-297-8990 or through e-mail at raulb@csufresno.edu. Dr. Betancourt conducts the statewide observations of child restraint usage for the Office of Traffic Safety. If there is no estimate for your own city or county, then use an estimate for a city or county that is similar to yours (e.g., in size, urban vs. rural geography).

The Increase Your Program Will Have on Child Restraint Use

Before your program begins, you will be meeting with your OTS Regional Coordinator to discuss your goals and objectives and the change you want to see in restraint use.

Guide Step 4— Determine the Number of Children to Observe

If you are star-gazing with a telescope, the smaller (farther) the star or planet you want to see, the more powerful telescope you will need. Likewise, the smaller the change in child restraint use you want to observe, the more powerful your study needs to be in terms of the numbers of observations. Use Table 1 below to select the recommended minimum number of children to observe before and after your intervention. Even though you will be conducting observations to determine the baseline rate of restraint use, you still need an *estimate* of baseline use to calculate the recommended sample size.

For example, if you have a starting use rate of around 70%, you need to make about 175 observations to detect an increase of 10 percentage points after the intervention, but only about 75 observations to detect an increase of 15 percentage points.

Table 1 – Determining the number of observations to conduct.

Estimated current rate of child restraint use in your target area	Percentage point increase in child restraint use that you expect to make with your intervention					
	2%	3%	4%	5%	10%	15%
	Number of Observations					
50%	5,632	2,502	1,406	860	225	100
60%	5,362	2,371	1,327	810	205	95
70%	4,640	2,041	1,136	695	175	75
80%	3,468	1,520	831	515	120	50
90%	1,846	779	414	265	NA	NA

But that's too many observations to make!

Does it seem like you need to make too many observations? In some rural communities, or communities with small populations, it may be difficult to make the necessary number of observations.

Note that the higher the current child restraint use rate, and the higher the increase you plan to make, the smaller the number of observations you need. Therefore, the best way to reduce the number of observations is to plan to make a higher increase in restraint use. This can be done by focusing (as mentioned in Step 1) on higher risk populations; i.e., populations with generally lower use rates. This may require a change in your project goals and/or objectives. In this case, you should contact your OTS Project Coordinator.

Perhaps the size of your target population is very small (for example less than 100), because you live in a rural area. If this is the case, sample slightly more than 50% of your population. For example, if there are only 40 children in your target population, sample at least 21 children; if your target population has 60 children, sample at least 31. This method should be reserved for extremely small target populations only.

How many observations should you make at each site?

You should aim to make the same number of observations at each site. For example, if you have chosen five sites, and Table 1 indicates that you should make 100 observations, you should try to make 20 observations at each site. ($100 / 5 = 20$).

Guide Step 5—Who Are Your Observers? Plan for Observations

Find Observers

The next task is to identify and train observers. Observers can be paid staff or volunteers from the community.

Train observers

To train observers, use the “Protocol for Conducting Observations” on page 5 of the Workbook.

Guide Step 6—Prepare for the Observations

Visit sites

You’ll need to follow several steps in preparing for the actual observation. First, visit the site to determine if there is a safe and convenient location from which to make observations before cars leave the site, preferably on a raised curb and at the exit of the parking lot where there is usually a stop sign.

Second, inform the manager of the site, whether the site is a shopping center, medical clinic, or school. This can be done through a phone call to the site manager, followed by a letter stating that you are funded by the California State Office of Traffic Safety to do a child safety intervention in the community and explaining briefly the nature of the observations that you wish to make.

Third, you should prepare a letter of explanation that you can give to people at the site if they ask what you are doing. (See Appendix A for a sample letter.)

Data Collection Forms

Review the data collection forms provided in Appendix B:

- A **Site Form** is used to record basic information about the observation at a particular site on a particular day. Recording this information will help document that the *before* and *after* observations will be done in the same locations, similar time and day of the week, and under similar environmental conditions (e.g., weather).
- An **Observation Form** is used to record each observation conducted during a particular observation session. If you observe more than 20 vehicles at a site, then you will need to use more than one observation form.
- A **Summary Form** is used to record the totals from each observation session.

Conduct Observations

Again, review the “*Protocol for Conducting Observations*” at the end of the Workbook.

Guide Step 7—Your “*Before Program*” or “*Base*” Use Rate

At this point, you have a number of Observation Forms filled out for each site, and you are ready to calculate the child restraint use rate *before* your intervention.

Fill out the Summary Form

Copy the bottom “Total” figures on each Observation Form onto the Summary Form. If you have completed four observation forms, then just four lines of the Summary Form will be filled in. Add all the numbers in each column, and enter these totals in the bottom row.

The totals for the columns “Restrained” and “Unrestrained” can then be used to calculate the percent (%) of children who are restrained. This is done by the following calculation:

$$\text{Percent(\%) restrained} = \frac{\text{TotalRestrained}}{\text{TotalChildrenObserved}} \times 100$$

This number represents an estimate of the percent of your target population who are restrained. For example, if there were a total of 75 children restrained and a total of 40 unrestrained from all of your sites, the formula would be:

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$$65\% \text{ restrained} = \frac{75}{75 + 40} \times 100$$

OPTIONAL

Calculate the “Error” in Your Estimate

Often in the newspaper you will read a sentence like “56% support the poll, and this study had a margin of error of +/- 4%”. Do you want to write a news article about your program that says “We started with a child restraint use rate of 85% +/- 3%, then we implemented our intervention program and child restraint use increased”?

This can be done by calculating a “Margin of Error” (MOE) for your estimate. The MOE is a number range (e.g., “plus or minus 3”) that represents the degree to which the study results are “true” or happen due to “luck of the draw.” You can calculate a rough MOE by consulting Table 2. (This table offers the margin of error with a 90% confidence level.) To use Table 2 you first need the total number of children observed, and the percent that were in restraints.

Table 2 – Calculating the Margin of Error (MOE)

Num of Children Observed (#7b)	Observed % of Child Restraint Use (#7c)								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
50	7	9	11	11	12	11	11	9	7
100	5	7	8	8	8	8	8	7	5
150	4	5	6	7	7	7	6	5	4
200	4	5	5	6	6	6	5	5	4
250	3	4	5	5	5	5	5	4	3
300	3	4	4	5	5	5	4	4	3
350	3	4	4	4	4	4	4	4	3
400	2	3	4	4	4	4	4	3	2
450	2	3	4	4	4	4	4	3	2
500	2	3	3	4	4	4	3	3	2

Table 2. If you observed 100 children, and your observed rate of use was 80%, then the margin of error is 80 plus or minus 7%. Child restraint use at your project sites is between 73 (i.e., 80 – 7) and 87 (i.e., 80 + 7). In general, it is better to have a smaller range; a smaller range means that your estimate is more reliable.

To help you determine the margin of error in your base measurement, follow these steps:

- a. Number of Children Observed (#7b) _____.
- b. Percent of Children Restrained (#7c) _____.
- c. Baseline, or “Before Program” Margin of Error +/- (Table 2) _____.

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- d. “Before implementation of our program, (b) _____ % of children in this area were restrained. This finding has a margin of error of plus or minus (c) _____ %.”

Guide Step 8—Conduct Your Program Activities

At this point, you will perform your project activities.

OPTIONAL

Please comment on your intervention program.

1. What events are you planning for your intervention program (e.g., enforcement, car seat clinics, workshops, etc)? Please list the events, the data they will take place, the intended audience, and the size of the audience.

Event	Description	Date	Audience	Size
1				
2				
3				
4				

2. What surprises or difficulties were there in the implementation of your interventions?

Event	Description	Surprises/Difficulties/Challenges
1		
2		
3		
4		

3. Did any unintended results or activities occur? Please describe.

4. Please provide other comments or anecdotal information about your program.

Guide Step 9—Your “After” Use Rate

About a month after your intervention, measure child restraint use again.

Measuring child restraint use after the intervention is done exactly the same way as it was done before the intervention. Pick the same day of the week, the same time of day and the same location, and try to observe approximately the same number of children. There is no standard amount of time after the intervention for doing the after observation, but it would be advisable to try to conduct the after observations within a month of the conclusion of the intervention.

You should use the same (blank) data forms for the after observations. Calculate totals for each observation form and calculate overall totals using exactly the same steps as for the before observations. The percent restrained in the after observation is calculated as before (see Step 7).

$$\text{Percent(\%) restrained} = \frac{\text{TotalRestrained}}{\text{TotalChildrenObserved}} \times 100$$

OPTIONAL

Statistically Comparing “Before/Base” and “After” Child Restraint Use

You might also decide that you want to compare *before/base* and *after* intervention seat belt use. This is an optional step that will help to determine the degree to which any change you notice occurred as a result of your intervention vs. whether it was due, for example, to chance.

To conduct this analysis, review your data. You should now have an estimate of the percent (%) restrained before the intervention (“% Before”) and an estimate of the percent restrained after the intervention (“% After”). The task now is to compare the difference between the two and get a “Difference Score” (or, the percentage point difference). The Difference Score represents any change that occurred as a result of your intervention and is determined by subtracting the percent before (% Before) from the percent restrained after (% After), or:

$$\text{Difference Score} = (\% \text{ After}) - (\% \text{ Before}).$$

For example, suppose that the percent restrained before the intervention was 70% and the percent restrained after the intervention was 76%. The Difference Score (percentage point difference) would be 6% (e.g., 76-70=6).

Child Restraint Use: Evaluating Community-based Programs

Here is the calculation:

- a. % Use *After* Program (#9c) _____ %.
- b. % Use *Before* Program (#7c) _____ %.
- c. Percentage Point Difference _____ = (a) _____ – (b) _____

Is it a big difference?

It is important to know if the difference in restraint use rates before and after your program is a “true” difference; that is, would you get the same difference if you did this whole study and your program all over again? This can also be done calculating a margin of error (MOE) using Table 3. This MOE describes the statistical error in the difference between the restraint use rates before and after your intervention. In other words, it is the margin of error for the impact of the intervention.

Table 3 looks like Table 2, but its use is slightly different. First, the number of children observed should be the ***average number of children*** observed in the “% Before” and “% After” observations (calculated below). Second, it uses the restraint use rate *before* the intervention (the rate you calculated in #7c).

First, determine the average number of children. Using the *Before* Summary sheet and the *After* Summary sheet, the average number of children can be computed like this:

$$\text{Average \# of children observed} = \frac{\text{TotalChildren}(\text{before}) + \text{TotalChildren}(\text{after})}{2}$$

Here is the calculation:

- a. Total Children Observed *After* (#9b) _____.
- b. Total Children Observed *Before* (#7b) _____.
- c. Average Number of Children _____ = $\frac{(a) \text{_____} + (b) \text{_____}}{2}$

Child Restraint Use: Evaluating Community-based Programs

Now you are ready to use the Table 3 to look up the Difference MOE.

Table 3 - Calculating the Margin of Error (MOE) of the Difference

	Child Restraint Use Rate <i>Before</i> Intervention (#7c)								
AvgNum of Children Observed (see above)	10%	20%	30%	40%	50%	60%	70%	80%	90%
50	11	14	15	16	16	16	15	13	9
100	8	10	11	12	12	11	10	9	6
150	6	8	9	9	10	9	8	7	5
200	5	7	8	8	8	8	7	6	4
250	5	6	7	7	7	7	7	6	4
300	4	6	6	7	7	7	6	5	4
350	4	5	6	6	6	6	6	5	3
400	4	5	5	6	6	6	5	4	3
450	4	5	5	5	5	5	5	4	3
500	3	4	5	5	5	5	5	4	3

What is the MOE corresponding to the average number of children and the before/base program child restraint use rate? (Table 3) _____.

So what does this difference MOE tell you?

Let's say that the restraint use rate after your intervention was 80%, and your margin of error is 5. This MOE means that if you were to repeat these measurement instructions and your intervention all over again, you would probably measure anywhere from 75% to 85% restraint use after your intervention.

$$(\text{after rate} - \text{MOE}) = 80 - 5 = 75$$

$$(\text{after rate} + \text{MOE}) = 80 + 5 = 85$$

In another scenario, let's say the restraint use rate after your intervention was 90%, and your margin of error you found in Table 3 is 9. That means that if you were to measure the after-intervention restraint use rates again, you would find anywhere from 81% to 99% of children restrained.

$$(\text{after rate} - \text{MOE}) = 90 - 9 = 81$$

$$(\text{after rate} + \text{MOE}) = 90 + 9 = 99$$

Child Restraint Use: Evaluating Community-based Programs

Suppose that in this example, you had measured the before intervention restraint use rate as 85%. You know that restraint use after your intervention is anywhere between 81% and 99%. Uh-oh! 81 is less than 85! Does this mean that your program decreased restraint use? This finding just means that your data are not statistically very strong. ***Does this mean we didn't do a good job?*** Not at all. It's very difficult to make observations and there are lots of sources of error in measuring use. In addition, you just measured a "random" sample -- maybe you had "strange luck", like rolling 5 dice and having a "6" appear on each of the dice. In your report, you might want to mention the difficulties you encountered while making observations -- this would provide invaluable lessons to you and to other programs.

What are your conclusions?

- a. Before Program/Base Child Restraint Use Rate (#7c) _____.
- b. After Program Child Restraint Use Rate (#9c) _____.
- c. Margin of Error in the Difference (MOE, from Step 9 Optional Calculations) _____.
- d. (after rate – MOE) = (b) _____ - (c) _____ = _____.
- e. (after rate + MOE) = (b) _____ + (c) _____ = _____.

Conclusion: Before your child passenger safety program, the restraint use rate in your (target population) _____, was (a) _____. After your program, the use rate was (b) _____ plus or minus (c) _____. Note: If (d) are (e) are greater than (a), then you are confident that your program increased restraint use. Congratulations! If (d) or (e) increased restraint use; if this is the case, in your written summary to OTS, please describe the difficulties you encountered while conducting your program or making your observations.

Here are some examples:

Case A:

Child Passenger Safety Program A proposed to increase restraint use in their city by providing a series of child safety seat clinics at a shopping center frequented by residents of the city. Because there were not sufficient resources to evaluate the impact on the entire community, a particular section of the city with relatively low child restraint use was selected for the intervention and the observations. The survey taken *before* the intervention showed a restraint use rate of 80%. The survey taken *after* the intervention showed a child restraint use rate of 92%. About 150 children were observed before the intervention, and about the same number of children were observed after the intervention.

Interpretation of Case A:

The restraint use rate increased from 80% before the intervention to 92% after the intervention, i.e., a percentage point difference in the use rate of 12%. With about 150 children observed, and with a baseline rate of 80%, the MOE is plus or minus 7% (Table 3). In other words, the child restraint use after the intervention program was greater than 85% ($92\% - 7\% = 85\%$) and less than 99% ($92\% + 7\% = 99\%$). You can conclude that "*Restraint usage at the selected sites increased since the implementation of project activities.*"

Case B:

Child Passenger Safety Program B proposed to increase restraint usage by 5% at 5 local schools. *Before* observations, intervention activities, and *after* observations were conducted at the same five schools. About 40 children were observed at each school (for a total of 200) before the intervention, and about the same number were observed after the intervention. The child restraint use rate was 85% before the intervention and 87% after the intervention.

Interpretation of Case B:

With about 200 children observed (about 40 at each of five schools), and a baseline rate of 85%, the MOE is plus or minus 6% (see Table 3). In other words, child restraint use after the intervention program is greater than or equal to 81% ($87\% - 6\% = 81\%$) and less than or equal to 93% ($(87\% + 6\% = 93\%)$). This is a fairly weak finding—a net increase in use was observed, but the increase could have come about by chance, i.e., not due to the intervention. Claims about the impact of the program should be made with caution.

OPTIONAL

Multiple Observation Periods

If you wish to do multiple “observations”, simply repeat steps 6, 7, 8, 9, and 10.