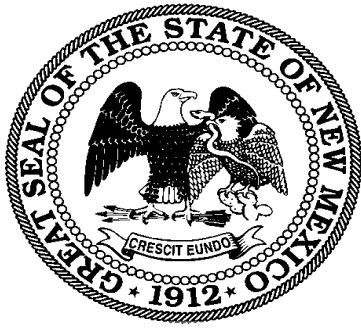




New Mexico Helmet Use on Non-Motorized Vehicles 2007 & 2008



Prepared by Office of Injury Prevention,
Injury and Behavioral Epidemiology Bureau
Epidemiology and Response Division
December 2008



State of New Mexico

Governor

The Honorable Bill Richardson



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CHILD RECREATIONAL HELMET USE IN NEW MEXICO OBSERVATION STUDY 2007-2008

Background: The New Mexico Child Helmet Safety Act of 2007

Background: Effective July 1, 2007 New Mexico implemented its new law, Child Helmet Safety Act of 2007 requiring all persons under age 18 years to wear a helmet when riding bicycles, skateboards, scooters, skates, and tricycles. This law complements the Off Highway Vehicle Safety Bill of 2005, which requires all minors under age 18 to wear helmets while riding on all terrain vehicles, off-road motorcycles, snowmobiles, and miniature “pocket bike” motorcycles. Both laws are also consistent with the on-road motorcycle helmet law amendment of 1978, which requires all minors under the age of 18 to comply as well. Consequently, New Mexico is now the only state in the United States that requires helmet use by all minors on virtually all recreational vehicles, motorized or non-motorized.

Twenty-two states, including New Mexico, and 149 municipalities have helmet laws for some or all minors (BHSA, 2007). In 2002, Injury Prevention reported an average improvement in helmet use among minors of 18.4% in all states with helmet laws (Rodgers, 2002).

California is the only other state to have previously established a law for most non-motorized vehicles for all minors under age 18 years. Oregon and Washington have followed suit to some degree by requiring helmets for minors under the age of 16 for a similar group of vehicles. Each of these states has compiled some helmet use data, and the results of the New Mexico study can add to the evidence regarding the public health impact of such legislation.

Purpose of the Study

In an effort to understand child helmet usage before and after the implementation of this law, the Office of Injury Prevention at the New Mexico Department of Health (NMDOH) conducted observation studies. The first was completed in June 2007 as a baseline measure. A followup in July-August 2008 was conducted to gauge the impact of law after one year.

Process and Fieldwork

The NMDOH Office of Injury Prevention (OIP) reviewed published reports of similar studies of helmet use in children. Other communities have conducted observational studies in connection with new helmet legislation, particularly for child bicycle riders. (Coté et al 1992; Cameron, et al 1994; Rivara F et al 1994; Harlos S et al 1999) These studies were similar in concept to the one designed for New Mexico in that trained observers were posted at designated locations to document helmet use. Some investigators also used mobile observation points, such as driving through neighborhoods on an established route to document helmet use, but these pose considerable time and

logistical challenges and were not feasible for the NM study (Schieber RA, Sacks JJ 2001).

The protocols of the well-established New Mexico Safety Belt Survey were used as the model for implementing this study (NMDOH, 2006). Site information and data collection forms from this study were modified for use in the youth helmet surveys. Training materials for observers were also based on the seatbelt work.

The selection of sites reflected both the recommendations from published studies and the practical experience in local communities. More successful examples had in common a cross-sectional approach, a single day of observation, and repetition of the same survey in subsequent years. Another key lesson from previous studies was that finding opportunities to observe riders is sometimes difficult, and that guidance from local officials and interested parties is valuable in choosing sites for observations (DiGuseppi CG et al 1989, Ni H et al 1997, Kanny D et al 2001; Hagel et al 2006). Final site selection in New Mexico was purposive to a) represent the geographic regions of the state, b) include larger and smaller communities in a state with many rural areas, and c) reflect the ethnic makeup of the state.

Community recreation programs combined with field assessments were conducted in May 2007 to determine the feasibility of collecting helmet use data at various community sites. School officials advised that very few students were known to ride to school, and direct observations by OIP staff confirmed this. Project staff consulted local experts working in youth recreation who advised that a) Bicycle paths, b) Public parks, and c) Skateboard parks were regarded as the most likely locations where children and youth would be riding non-motorized recreational vehicles.

Plan for Observations and Community Selection

Time and logistical constraints led to selection of six communities for the 2007 survey and five of these participated again in 2008. Final observation sites were selected within each community on bike paths, neighborhood parks and skate parks, and the surveys were conducted during the summer when school was not in session.

Table 1. Helmet Observation Cities, New Mexico, 2007

City	Selection criterion
Albuquerque	Large population center
Gallup*	Population center on west side of state
Las Cruces	Large population center
Las Vegas	First local bicycle helmet ordinance in state
Roswell	Population center on east side of state
Santa Fe	Large population center

*Gallup was unable to participate in 2008, therefore some analyses in this report are restricted to the other 5 cities.

To minimize the potential for counting the same children more than once during an observation period, distinct time windows were set up for data collection at each of the types of sites listed below:

1. Along bicycle paths and public parks the observer established a point at trail side that the rider must pass to be eligible for inclusion. Non-riders, that is children walking or carrying the vehicle, were not eligible.
2. At skate parks observations were conducted more often to assess helmet use by all active riders in up to four 5- minute periods.

Selection of Sites

All 2007 data were collected between May 31 and June 24, 2007. The 2008 surveys were conducted July 19 through August 3, 2008.

In each community one or two project coordinators were enlisted to oversee the study, engage and train additional volunteer observers, and submit the completed surveys to the NMDOH. The coordinator then trained additional volunteers to do observations in accordance with the observation protocols (See Appendix B). Training materials were also distributed to the coordinators.

In 2008, a review of procedures was held via a training telephone conference for all (new and returning) coordinators and any additional available observers prior to the beginning of the observation period.

Data Collection

Each site observation period was uniquely identified by the city, site, day, and time. Observers collected helmet use data on the Helmet Observation Form (See Appendix C) that identified the site type and number and observation date and time. Observers also drew a map showing the place and direction from which they observed. Each individual observation included vehicle type, gender, and helmet use status. In 2008, the maps from 2007 were distributed to the coordinators so they could observe from the same locations as the previous year.

Bicycle paths and public parks were observed for continuous 30-minute periods. Skateboard parks were observed on a point-in-time basis; that is, all the riders at the facility during an approximately 5 minute period were included.

Limitations

- Purposive sampling limits the opportunity to generalize from these findings to the state as a whole.
- The intensive sampling at skateboard parks during expected high activity hours a) may have introduced bias in the high number observations of these vehicles that does not accurately reflect their use proportion in the community and b) may have included the same riders in more than one observation period.

- Variability in the observer selection process, instruction for data collectors, and interpretation of how to select observation sites was possible and could not be measured.
- Observation periods when no eligible riders came through a site resulted in zero observations and may indicate design issues with the study protocol. These sites merit being examined in greater detail to determine if they are consistently non-contributing to the survey.
- Other potential sources of error involved estimating a rider's age as less than 18 years, and designating the rider as male or female.
- Differences in weather during the 2007 vs. 2008 observation periods may have influenced numbers of riders observed.

Results

This report describes the 2007 and 2008 helmet use observation studies and compares the findings for the cities [Albuquerque, Las Cruces, Las Vegas, Roswell, and Santa Fe] that participated in both years. Bicycles and skateboards were the most frequently observed vehicles, accounting for 600 observations in 2007 and 420 in 2008. The combined skate and scooter riders, with 20 observations (2007) and 25 observations (2008) in the five cities, were too few for reliable analysis; however, their data are included in some Appendix A tables, along with that for Gallup in 2007.

Observations were made at three types of sites [Bike paths, Public Parks, and Skateboard parks] for 1 to 4 observation periods (OP) per site based on the study protocols. In 2007 the five cities collected data during a total of 79 OPs and in 2008 from 71 OPs; however zero eligible riders were seen during 13 OPs (2007) and 16 OPs (2008). Therefore all 2007 observations came from 83.5% of OPs, and from 77.5% of OPs in 2008. (Appendix A, Table 1)

Key findings--Based on bicycles and skateboards only in the study five cities:

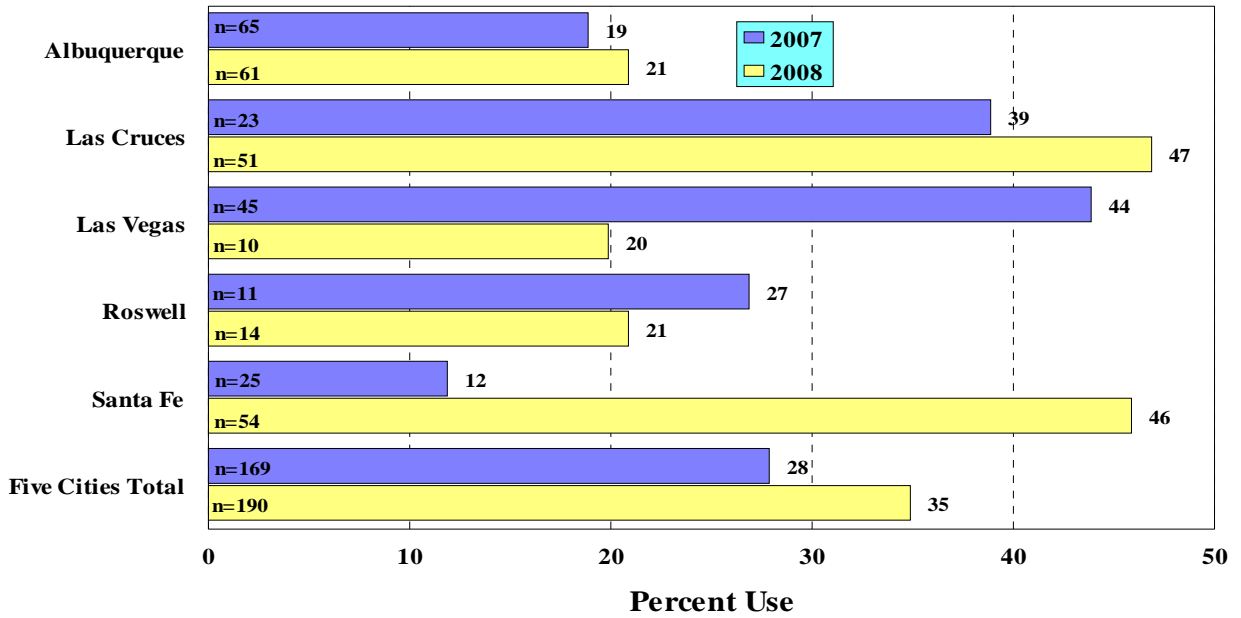
- Overall observed helmet usage in 2008 was 21.7%, an increase that is not quite double the previous year's 12.2% (Figures 1 and 2, and Table 2).
- Helmet use by vehicle type:
 - Bicycles had 35.3% helmet usage in 2008, compared to 27.8% in 2007
 - Skateboards had 10.4% helmet usage in 2008, compared to 6.0% in 2007
- Male riders accounted for 86.5% (n= 358) of overall observations (bicycles and skateboards) in 2008, compared to 80.5 % (n=671) in 2007.
 - Male helmet use at 20.4% in 2008 was double the 9.9% observed a year earlier.
 - In 2007 nearly a quarter of females used helmets (23.4%) and this increased to 29.8% in 2008
- Helmet by bicycle and skateboard riders: Overall bicycle riders showed substantially more helmet use in both years than skateboarders
 - Bicycles:
 - The helmet use rate among bicyclists rose from 27.8% in 2007 to 35.3% in 2008, indicating compliance by more than a third of riders.
 - Skateboards:
 - In 2007 71.8% of the observations were of skateboards, but in 2008 they comprised only half of the vehicles.
 - Generally helmet use was low on this vehicle, documented at 6% in 2007 and rising to 10.4% in 2008.
 - Males dominated this activity being 87% of the 448 observed riders in 2007 and 97% in 2008.
- Patterns by location (Figures 1 and 2):
 - The three largest cities, Albuquerque, Las Cruces and Santa Fe had increased helmet use by bicyclists in 2008 from the previous year. Of these, Las Cruces and Santa Fe both showed over 45% bicycle helmet usage. The declines seen in

Roswell and Las Vegas may also relate to the small numbers of observations collected in these communities.

- All five communities showed increase use of helmets by skateboarders.
- Las Cruces had the highest overall usage in each year: 27.3% in 2007 and increasing to 43.8% in 2008.
- The largest number of observations at nine skateboard parks with 66% of the observations collected on bicycle and skateboard riders. The high proportion collected at these sites may reflect the study protocol that called for 4 separate short observation periods at skateboard park..

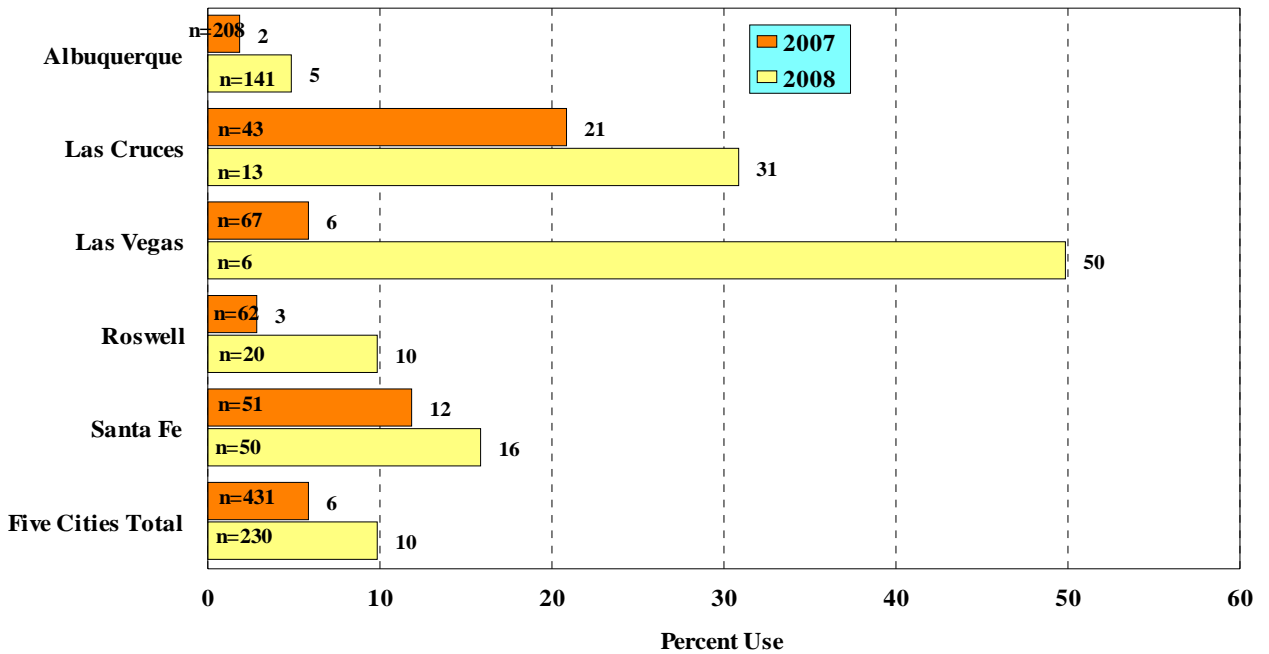
The 2007 data provide a set of benchmarks prior to implementation of the NM Child Recreational Helmet Use law on July 1, 2007. Beginning with 2008, comparisons can be made to monitor changes in helmet use by NM children and teenagers.

Figure 1. Percent of Observed Helmet Use by Bicycle Riders in Five Selected New Mexico Cities, 2007-2008



Source: New Mexico Helmet Use Observation Surveys, 2007 and 2008

Figure 2. Percent of Observed Helmet Use by Skateboard Riders in Five Selected New Mexico Cities, 2007-2008



Source: New Mexico Helmet Use Observation Surveys, 2007 and 2008

Table 2. Overall Observed Helmet Use by Bicycle and Skateboard Riders by City, New Mexico, 2007 - 2008

City	2007			2008		
	Total Observed	Number with Helmets	Percent with helmets	Total Observed	Number with Helmets	Percent with helmets
Albuquerque	273	17	6.2	202	20	9.9
Las Cruces	66	18	27.3	64	28	43.8
Las Vegas	112	24	21.4	16	5	31.3
Roswell	73	5	6.8	34	5	14.7
Santa Fe	76	9	11.8	104	33	31.7
5 Cities Total	600	73	12.2	420	91	21.7

Table 3. Observed Helmet Use by Bicycle and Skateboard Riders in 5 Selected Cities, New Mexico, 2007 - 2008

City	2007*						2008**					
	Bikes			Skateboards			Bikes			Skateboards		
	Total Observed	# with Helmet	% with Helmet	Total Observed	# with Helmet	% with Helmet	Total Observed	# with Helmet	% with Helmet	Total Observed	# with Helmet	% with Helmet
Albuquerque	65	12	18.5	208	5	2.4	61	13	21.3	141	7	5.0
Las Cruces	23	9	39.1	43	9	20.9	51	24	47.1	13	4	30.8
Las Vegas	45	20	44.4	67	4	6.0	10	2	20.0	6	3	50.0
Roswell	11	3	27.3	62	2	3.3	14	3	21.4	20	2	10.0
Santa Fe	25	3	12.0	51	6	11.8	54	25	46.3	50	8	16.0
5 Cities Total	169	47	27.8	431	26	6.0	190	67	35.3	230	24	10.4

*The 2007 Helmet Observation Study was conducted in June, prior to the implementation of the New Mexico Child Helmet Safety Act of 2007 to provide a baseline measure before the law went into effect on July 1.

**The 2008 Helmet Observation study was conducted from late July through early August as a followup to monitor the impact of the law. During the first year only a small amount of publicity occurred as more intense promotion was planned, but not yet implemented.

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Schieber RA, Sacks JJ **Measuring community bicycle helmet use among children.** *Public Health Rep Public Health Reports* 2001, March–April; 116: 113-21

Table A. Completed Sites and Total Sites in Five Selected Cities New Mexico, 2007 and 2008

Community	Total Number of Sites and Observation Periods (OP)					
	2007			2008		
	Total Sites	Total OPs	OPs With No Riders*	Total Sites	Total OPs	OPs With No Riders*
Albuquerque	7	29	0	7	25	3
Las Cruces	5	12	0	5	10	3
Las Vegas	4	10	0	5	8	2
Roswell	5	12	9	5	12	6
Santa Fe	6	16	4	6	16	2
5-City Total	34	88	13	28	71	16

*Identifies number of OPs during which no eligible riders came through the site.

Table B. Observed Helmet use by Vehicle Type, Sex, and City, New Mexico, 2008

<i>City</i>	Bikes			Skateboards			Skates			Scooters			Total
	Total Observed	# with Helmet	% with helmet	Total Observed	# with Helmet	% with helmet	Total Observed	# with Helmet	% with helmet	Total Observed	# with Helmet	% with helmet	Total Observed
Albuquerque													
Male	48	8	16.7	135	7	5.2	0	0	0	7	1	14.3	190
Female	13	5	38.5	6	0	0.0	1	1	100.0	0	0	0	20
Las Cruces													
Male	37	20	54.1	12	4	33.3	0	0	0	0	0	0	49
Female	14	4	28.6	1	0	0	0	0	0	0	0	0	15
Las Vegas													
Male	7	1	14.3	6	3	50.0	0	0	0	2	2	100.0	15
Female	3	1	33.3	0	0	0	0	0	0	0	0	0	3
Roswell													
Male	10	3	30.0	20	2	10.0	0	0	0	6	0	0.0	36
Female	4	0	0.0	0	0	0	0	0	0	1	1	100.0	5
Santa Fe													
Male	39	18	46.2	49	8	16.3	3	2	66.7	4	4	100.0	95
Female	15	7	46.7	1	0	0.0	0	0	0.0	1	1	100.0	17
All Cities	190	67	35.3	230	24	10.4	4	3	7.5	21	9	42.9	445
Male	141	50	35.5	222	24	10.8	3	2	66.7	19	3	15.8	385
Female	49	17	34.7	8	0	0.0	1	1	100.0	2	2	100.0	60

Table C. Observed Helmet use by Vehicle Type, Sex, and City, New Mexico, 2007

City	Bikes			Skateboards			Skates			Scooters			Total
	Total Observed	# with Helmet	% with helmet	Total Observed	# with Helmet	% with helmet	Total Observed	# with Helmet	% with helmet	Total Observed	# with Helmet	% with helmet	Total Observed
Albuquerque													
Male	44	5	11.4	189	5	2.7	2	1	50.0	7	0	0.0	2425
Female	21	7	100.0	19	0	0.0	3	1	33.3	0	0	0.0	43
Gallup													
Male	19	3	15.8	15	3	20.0	2	0	0.0	2	0	0.0	38
Female	11	1	9.1	2	1	50.0	0	0	0.0	0	0	0.0	13
Las Cruces													
Male	15	7	46.7	40	8	20.0	1	0	0.0	3	1	33.3	59
Female	8	2	25.0	3	1	33.3	0	0	0.0	0	0	0.0	11
Las Vegas													
Male	26	10	38.5	39	0	0.0	0	0	0.0	0	0	0.0	65
Female	19	10	52.6	28	4	14.3	0	0	0.0	0	0	0.0	47
Roswell													
Male	6	2	33.3	60	2	3.4	0	0	0.0	0	0	0.0	66
Female	5	1	20.0	2	0	0.0	4	4	100.0	0	0	0.0	11
Santa Fe													
Male	23	3	13.0	47	4	8.5	0	0	0.0	0	0	0.0	70
Female	2	0	0.0	4	2	50.0	0	0	0.0	0	0	0.0	6
All Cities	199	51	25.6	448	30	6.7	12	6	50.0	12	1	8.3	671
Male	133	30	22.6	390	22	5.6	5	1	20.0	12	1	8.3	540
Female	66	21	31.8	58	8	13.8	7	5	71.4	0	0	-	131

Note: This chart includes 2007 data from Gallup, which was unable to participate in 2008

Protocols for Observation Sites and Times

Prior to implementation of New Mexico's Recreational Helmet Use law for persons under age 18 years that goes into effect on July 1, 2007, usage observation will be conducted in these six communities: Albuquerque, Gallup, Las Cruces, Las Vegas, Roswell, and Santa Fe. Observations will be made in high traffic areas at

1. Bicycle paths
2. Public parks
3. Skateboard parks

Observation period and date/time specifications:

STUDY PERIODS:

June 9 through June 24, 2007

July 19 through August 3, 2008

All observations must be conducted during the indicated study periods to be eligible for inclusion in the study. Two full weeks beginning and ending through the weekends are included to make sure volunteer observers can arrange their schedules to do these observation assignments.

An equal number of observation periods (OP) will be used on these days and times in each community:

1. Saturday 9 am – 12 noon
2. Sunday 4 – 7 pm
3. Tuesday-Wednesday-Thursday 9 am – 12 noon or 4 – 7 pm
4. Tuesday-Wednesday-Thursday 9 am – 12 noon or 4 – 7 pm

a. Each bicycle path and public park site will be observed twice, once on a weekday and once on a weekend. Also one will be a morning time and the other an afternoon. These will be alternate so all 4 time periods are covered for each site type.

b. Skateboard parks will be observed once in each of the 4 time periods, as explained below.

Length of observation period:

1. **Bicycle paths, Public parks (and Summer Recreation programs if included)** will be observed for a continuous 30-minute period at a designated high-traffic location (the check point). Helmet use on all eligible vehicles (bicycles, roller skates, skate boards, non-motorized scooters) passing the observation point during the 30 minutes will be recorded if the rider(s) is assessed to be under 18 years old regardless of direction she/he is moving past the check point.
2. **At skate parks only:** Observer will count all helmet usage by persons under age 18 years on eligible vehicles actively being ridden at the single point in time during each observation time period at the site. Observers will not wait for new arriving riders, but may count new arrivals if they come while the count is being made.

Recording of data:

All observations will be recorded on the Official study form that consists of

1. Face sheet: Describe and map location of site, all observation dates and times, and observer name(s)
2. Recording sheet on which each eligible rider will be marked by vehicle type and helmet use; each sheet has space for 25 riders. Use additional sheets if more than 25 riders in any one category pass the checkpoint.
3. All completed forms will be submitted to local survey coordinator who will forward them to the NM Department of Health, Office of Injury Prevention.

Data submission:

Submit the originals of all completed survey forms to the NM Department of Health at

Attention: Office of Injury Prevention—*Designated Staff*
 NM Department of Health, ERD
 1190 St. Francis Drive, Room N-1400
 Santa Fe, NM 87501
 Or FAX to her at: (505) 827-0013


Site

HELMET OBSERVATION FORM

City _____ Date _____

Day of Week _____ Time _____

Observer _____ Location _____

Draw a map of Observation Location . Include Arrow indicating: 

KEY: Y = HELMET N = NO HELMET
 Gender: Male = M Female = F

Observer instructions: *Read and follow these carefully!*

1. Set up form on a clip board and fill in all information at top of this page. Draw map of location showing name of location (school, park, etc), all streets and intersections around the spot where you stand, and put an "X" at the spot.
2. **Observation point:** This is the place that each vehicle (bicycle, skateboard, skates, scooter) must pass to be counted in the study. This could be the driveway into a school yard across the street from you, or the place you are standing along a bike trail or in a park, or the vantage point in a skateboard park. **Very important: The vehicle must pass that point**, not nearby or around. If you see the same person passing you several times, count them each time but make a note in the comments section at end about it and the approximate number of repeat passes.
3. Please **mark with a pen** gender and usage or non-usage on form. Use **1 line for each vehicle observed**.

Location _____ Observer _____ Date _____ Time _____
 Site Number _____

#	Gender			Bicycle		Skateboard		Skates		Scooter	
	M	F	U								
1				Y	N	Y	N	Y	N	Y	N
2				Y	N	Y	N	Y	N	Y	N
3				Y	N	Y	N	Y	N	Y	N
4				Y	N	Y	N	Y	N	Y	N
5				Y	N	Y	N	Y	N	Y	N
6				Y	N	Y	N	Y	N	Y	N
7				Y	N	Y	N	Y	N	Y	N
8				Y	N	Y	N	Y	N	Y	N
9				Y	N	Y	N	Y	N	Y	N
10				Y	N	Y	N	Y	N	Y	N
11				Y	N	Y	N	Y	N	Y	N
12				Y	N	Y	N	Y	N	Y	N
13				Y	N	Y	N	Y	N	Y	N
14				Y	N	Y	N	Y	N	Y	N
15				Y	N	Y	N	Y	N	Y	N
16				Y	N	Y	N	Y	N	Y	N
17				Y	N	Y	N	Y	N	Y	N
18				Y	N	Y	N	Y	N	Y	N
19				Y	N	Y	N	Y	N	Y	N
20				Y	N	Y	N	Y	N	Y	N
21				Y	N	Y	N	Y	N	Y	N
22				Y	N	Y	N	Y	N	Y	N
23				Y	N	Y	N	Y	N	Y	N
24				Y	N	Y	N	Y	N	Y	N
25				Y	N	Y	N	Y	N	Y	N
Total											

Comments-Write here or on back: (Include other things noted, e.g., Proportion of younger vs. older children and differences in helmet use if any, Adults riding with children & helmet use, Adult w/trailer” etc.)

2007 and 2008 ACKNOWLEDGMENTS

The authors wish to thank the following Individuals for volunteering their Time and Efforts in collecting Helmet Use Data In the following New Mexico Cities:

Albuquerque: Sarah Baglee, Claire Baglee,
Alex Mocuelski, and Liz Jones

Gallup: Karl Lohmann, Maria Lohmann and Erik Westerhoff

Las Cruces: Andy Hume, Daniel Galvan, Carl Lukesh,
Bryce Herbert, Caeri Thomas, Ryan Holcomb,
Andrew Wray and Tom Murphy

Las Vegas: Michell Aragon, Rosita Ellis, Kristi Tapia,
Lacy Houdek, Captain Eugene Garcia,
Tanya Gonzales, and Yolanda Cruz

Roswell: Tracey Luna, Bobby Sanchez, Sara Hall, Jeff Lara,
Julie Morrow, Alissa Orozco, and Dyan Ellington

Santa Fe: Geraldo Rivera, Monica Roybal,
Ciaran Clark and Valery Henderson

On the Cover:
Charlie Romero-Lucero

