New Mexico Helmet Use on Non-Motorized Vehicles 2007 - 2010

NEW MEXICO DEPARTMENT OF HEALTH

Prepared by Office of Injury Prevention,
Injury and Behavioral Epidemiology Bureau
February 2011

The Honorable Susana Martinez

NEW MEXICO DEPARTMENT OF HEALTH

New Mexico Department of Health

Cabinet Secretary Designate

Catherine D. Torres, MD

Epidemiology and Response Division

C. Mack Sewell, DrPH, MS, Director and State Epidemiologist
Michael Landen, MD, MPH, Deputy State Epidemiologist

Injury and Behavioral Epidemiology Bureau
Toby Rosenblatt, MPA, Chief

Report prepared by Office of Injury Prevention, Injury Epidemiology Unit
John McPhee, Childhood Safety Coordinator
Isaac Romero, B.A., Management Analyst

TABLE OF CONTENTS

NEW MEXICO CHILD HELMET USE OBSERVATION STUDY – 2010

Executive Summary

The New Mexico Child Helmet Safety Act became law in 2007, and is the most recent helmet law enacted for minors in the United States. Most of the other 20 states and the District of Columbia with helmet laws include only bicyclists. Some are only for youth under the age of 16 or even younger (Bicycle Helmet Safety Institute). Twenty nine states do not have any state helmet law to protect minors of any age on any non-motorized vehicles on public thoroughfares (BSI).

Helmet use has improved substantially in New Mexico since May 2007, when the NM Department of Health conducted its first survey of child helmet use. This was after the enactment of the new law, but before it became effective. At that time, overall compliance with the provisions of what was to become the new law was observed at 13.1% in five of the same communities state-wide. Later child helmet use surveys in the same 5 communities found that use increased to 23.1% in 2008 and 30.6% in 2010 for all categories of non-motorized vehicles, or a current rate of almost three times the percentage of compliance prior to the existence of the law.

A greater percentage of youth bicycle riders complied with the standards in the new law than riders of other non-motorized vehicles in 2007 at 25.6%, and this rate rose after the law went into effect, increasing to 35.3% in 2008 and 47.9% in 2010. Skate-boarders, by comparison, consistently complied below the overall average for all three observation studies, beginning at 6.7% helmet use prior to the implementation of the law, increasing to 10.4% in 2008, and increasing to 15.5% in 2010.

Helmet use by children and youth of both genders riding on all categories of vehicles increased during the three-year period, with use by male riders almost tripling between 2007 and 2010, from 10.0% to 28%, and female riders, doubling during same three year interval, from 31.3% to 63.6%. Male rider compliance was far more significant, however, as they accounted for 89.9% of the 2010 observations.

Of the three largest cities included in the observation study, Albuquerque bicycle helmet use increased from 21.3% in 2008 to 55.0% in 2010, and Las Cruces which had 42.1% in 2008, increased by 12% to 47.1% in 2010. Both Albuquerque and Las Cruces had consistent increases in helmet use compliance among bicycle riders in both 2008 and 2010. However, Santa Fe in 2008 bicycle helmet use was 46.3% but decreased to 12.9% in 2010.

Programs Make the Difference

Although no direct causal effect has been established, the record of success for Albuquerque and Las Cruces may be attributed to the existing helmet programs and periodic events, with the support of numerous nonprofits and public agencies.

The City of Albuquerque Parks and Recreation Department has consistently been the most active helmet distribution and bicycle safety program in the state for the past decade, developing and conducting workshops in collaboration with local schools during the school year as well as providing comprehensive courses for many children in their summer program. The Bernalillo County SAFE KIDS Coalition and University of New Mexico Hospital have also been active sponsors of helmet distribution and bicycle safety events of their own, in addition to regularly collaborating with the City of Albuquerque in citywide events.

The City of Las Cruces has also consistently supported and produced helmet distribution and bicycle safety events for the past five years particularly, with the contribution of both time and effort from a range of agencies and nonprofits, including EMS Region II, the City of Las Cruces Police Department and the Metropolitan Planning Board.

The Santa Fe SAFE KIDS Coalition helmet program, sponsored by Christus St. Vincent's Hospital, is the most active organization in that city, distributing helmets in conjunction with bicycle safety programs and events with the ongoing collaboration of the city fire department and some of the local bicycle retail and repair businesses.

In conclusion, child helmet use has increased in recent years, but much progress still needs to be made. The Department of Health continues to support the use of helmets to prevent child deaths and injuries via the SAFE KIDS network, with twelve regional coalitions and community chapters statewide, many of them sponsored by the network of designated trauma centers.

Background: The New Mexico Child Helmet Safety Act of 2007

New Mexico implemented the Child Helmet Safety Act effective July 1, 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 wear helmets while riding motorcycles on public roads. 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, and the only state to explicitly include tricycles under a law.

Twenty-two states including New Mexico, and over 170 municipalities have helmet laws for some or all minors (BHSI, 2010). In 2002, *Injury Prevention* reported an average improvement in helmet use among minors of 18.4% in all states with helmet laws (Rodgers, 2002). However, only New Mexico and three other states, California, Oregon and Washington, have state laws including requiring that minors use helmets while using most non-motorized vehicles.

California is the only other state to have previously established a law for most non-motorized vehicles for all minors under the age of 18. 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.

Selection of Sites

The five original sites from the 2007 survey were used in both 2008 and 2010. Three medium-sized cities were added to establish a baseline for those communities and further surveillance. These communities are not included in the discussion of changes from previous years.

Purpose of the Study

The Office of Injury Prevention of the New Mexico Department of Health has conducted three child helmet use observation studies in an effort to understand child helmet usage before and after the implementation of this law. The first was completed in June 2007 as a baseline measure. A follow-up study in June 2008 was conducted to gauge the impact of the law after one year. A second follow-up survey was completed in September 2010 to continue to monitor the ongoing effect of the new law and the use of these important safety devices.

Process and Fieldwork

The 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 that 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 a cross-sectional approach in common, 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 (DiGuiseppi 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, which is diverse.

Community recreation program assessments 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 bicycles or skateboards 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 and 2010. 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 in 2007 and 2008. Surveys were conducted when school was in session in 2010.

Table 1 Helmet Observation Cities, New Mexico, 2010

City	Selection criterion
Albuquerque	Large population center in central NM
Las Cruces	Large population center in southern NM
Las Vegas	First local bicycle helmet ordinance in NM
Roswell	Population center in eastern NM
Santa Fe	Large population center in northern NM

Table 2 Helmet Observation Cities added in New Mexico in 2010

City	Selection criterion
Hobbs	Large population center in southeast NM
Silver City	Large population center in southwest NM
Taos	Large population center in northeast NM

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 bicycle or skateboard, were not included.
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

2007 and 2008 data were collected in the month of June. 2010 data were collected in the month of September. The volume of riders was significantly lower in September than in June, possibly because many of the youth and children were occupied with school athletic practices and events, other after school activities or homework.

One or two project coordinators were enlisted to oversee the study in each community, 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.

For all three surveys, 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. Those coordinators who were unable to participate in the conference call were consulted and trained individually.

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, the gender of the rider, and helmet use status. In 2008 and 2010, the maps from 2007 were distributed to the coordinators so they would observe from the same locations as the previous year. In general the same coordinators and locations were used.

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 b) may have included the same riders in more than one observation period and c) comparing surveys done when school was in session versus when school was not in session may result in bias.
- 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. We need to establish more control on this if we are going to continue to do the surveys.

- 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 observation periods may have influenced numbers of riders observed. The protocol should emphasize that if inclement weather is imminent, the observer should adapt the observation schedule accordingly. This would possibly include accomplishing a minimum of 70% or more of the observations in the first week in case inclement weather predominates during the second week of the two week study period.

Results

This report compares helmet use observations for 2010, 2008 and 2007 in the following cities: Albuquerque, Las Cruces, Las Vegas, Roswell, and Santa Fe. Bicycles and skateboards were the most frequently observed vehicles, accounting for 647 in 2007, 420 in 2008, and 503 in 2010. A total of 25 observations of in-line skaters and scooters were made in 2008 and 45 were made in 2010.

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. The five cities collected data in 2008 during 71 OPs and during 60 OPs, in 2010; however, zero riders under the age of 18 were observed during 16 OPs in 2008, and zero riders under the age of 18 were observed in 12 OPs in 2010. Therefore, the results were tabulated from 77% of the 2008 observations, and from 80% of the 2010 observations. (Table 1)

Key findings based on bicycles and skateboards only in the five original cities:

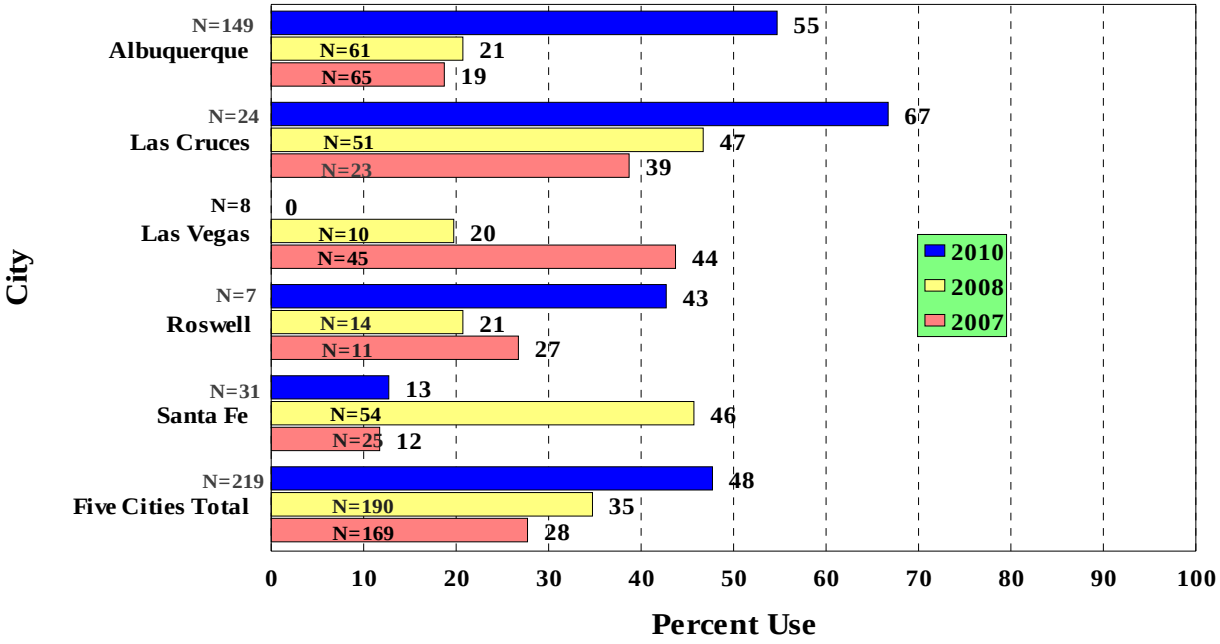
- Overall observed helmet usage in 2007 was 13.1%, in 2008 usage was 23.1% and in 2010 usage was 30.6% (Figures 1 and 2, and Tables A,B, and C).
- Helmet use by vehicle type:
    - Bicycle riders exhibited 25.6% helmet usage in 2007, 35.3% in 2008, and 47.9% in 2010.
    - Skateboarders exhibited 6.7% helmet usage in 2007, 10.4% in 2008, and 15.5% in 2010.
- Male riders accounted for 80.5% of all observations (n=671) in 2007, 86.5% (n= 385) in 2008, and 89.9% (n=545) in 2010.
    - Male helmet use increased from 10.0% in 2007 and 20.5% in 2008 to 28.0% observed usage in 2010.
    - Female helmet use increased from 31.3% in 2007 and 36.7% in 2008 to 63.6% observed in 2010.
- Helmet use by bicycle and skateboard riders: overall bicycle riders demonstrated compliance substantially more in all three years than skateboarders.
    - Bicycle riders:
        - The helmet use rate among bicyclists rose from 25.6% in 2007 to 35.3% in 2008 and 47.9% in 2010

- Skateboarders:
  - 66.7% of the observations involved skateboarders in 2007, 51.7% of the observations in 2008, and only 52.1% of the observations in 2010
  - Helmet use has been consistently poor for skateboarders, with only 6.7% compliance in 2007, 10.4% in 2008, and rising to 15.5% in 2010
- Skateboarding remains a predominately male activity, accounting for 87.1% in 2007, increasing to 96.5% in 2008, and 98.6% in 2010.
- Helmet use among male Skateboarders was observed at 6.7% in 2007, 10.4% in 2008, and 15.5% in 2010

- For both bicycle riders and skateboarders, 23.4% of females used helmets in 2007. Eight females were observed wearing helmets while using skateboards in 2008 and none were using helmets. In 2010 female helmet use rose to 60.4%; again, female bicycle riders, like their male counterparts, demonstrated substantially more helmet use in all 3 survey years than skateboarders.
- Patterns by location (Figures 1 and 2):
  - Use of helmets by youth while riding bicycles in the three largest cities included in the observation study increased overall. In Albuquerque, use increased from 21.3% in 2008 to 55% in 2010, and in Las Cruces, it increased from 47.1% in 2008 to 66.7% in 2010, a 41.6% gain. However, helmet use by youth riding bicycles in Santa Fe declined from 46.3% in 2008 to 12.9% in 2010.
  - The declines indicated in Roswell and Las Vegas may relate to the small numbers of observations collected in these communities, and the contrast in observation periods, as the survey in 2010 was conducted during the school year, and the previous two surveys were conducted during the summer.
  - Las Cruces had the highest overall helmet usage in 2007 and 2008, 39.1% and 47.1% respectively. In 2010 only 11 skateboard riders were observed but none of the riders were using helmets. Again, this may very well be due to the contrast in observation periods.
  - 66% of observations at nine skateboard parks were 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 parks.

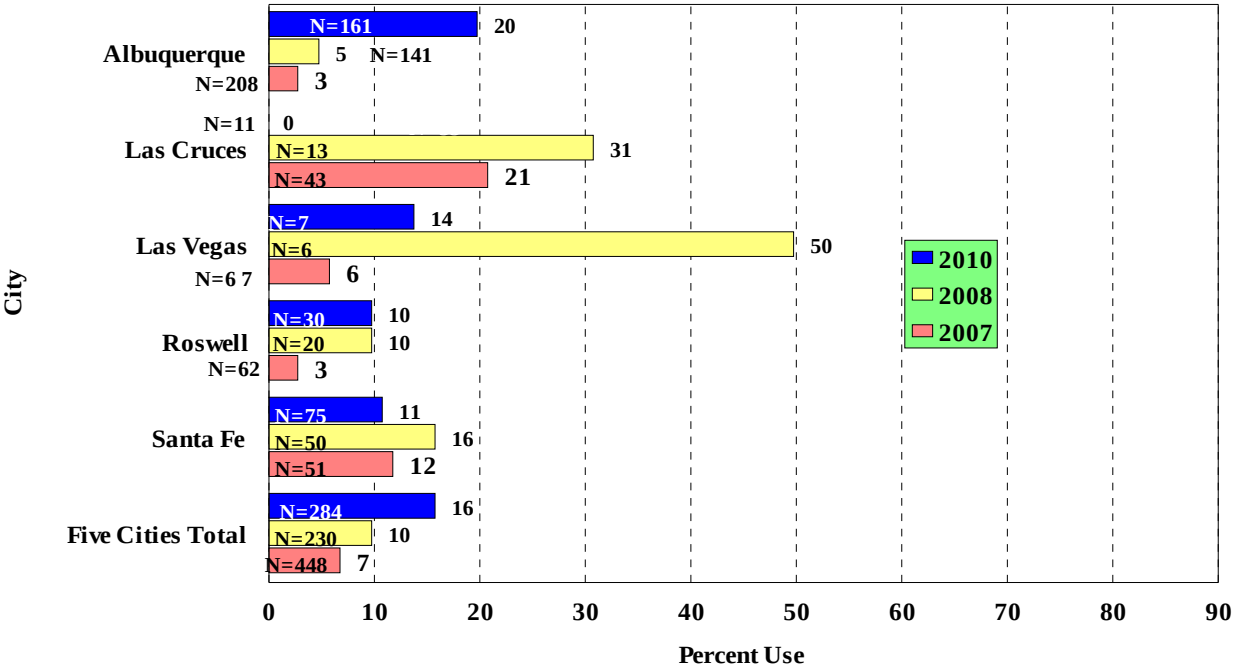
The 2007 data provides a set of benchmarks prior to implementation of the NM Child Recreational Helmet Use law on July 1, 2007. The data from 2008 and 2010 helps to establish trends in helmet use by NM children and teenagers. It also allows for understanding the direction and emphasis of future efforts specific to increasing helmet use.

Figure 1 Percent of Observed Helmet Use by Bicycle Riders in Five Selected New Mexico Cities, 2007-2010



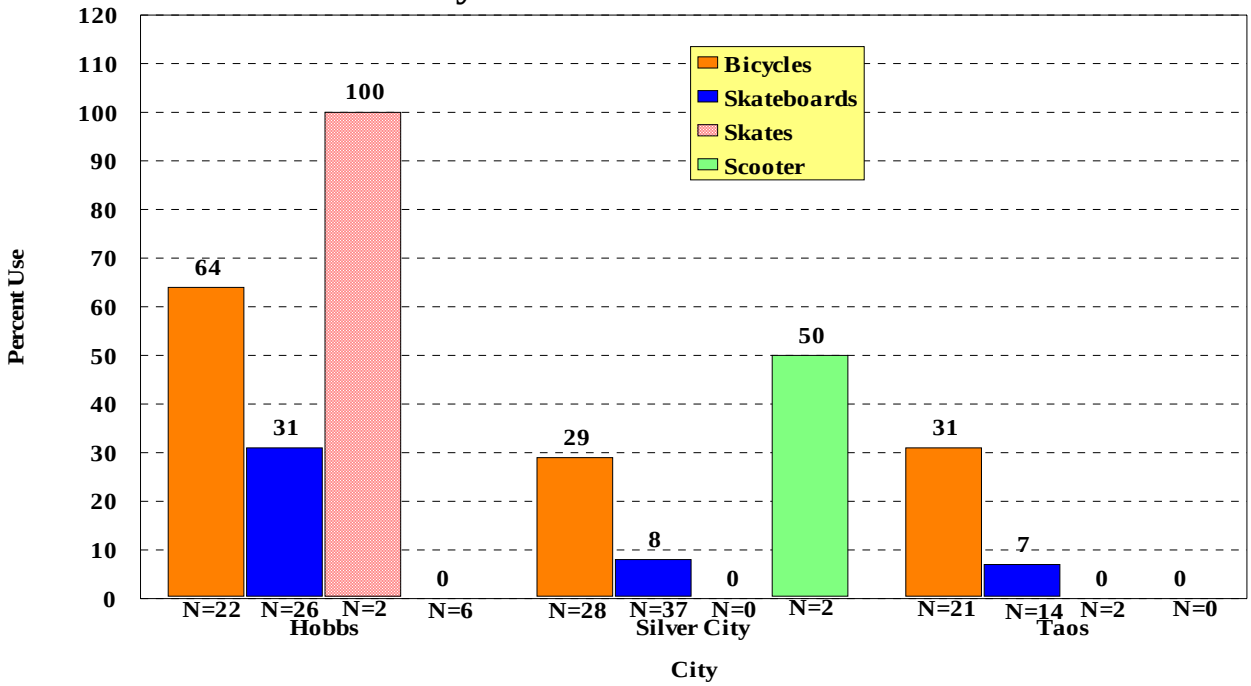
Source: New Mexico Helmet Use Observation Surveys, 2008 and 2010

Figure 2 Percent of Observed Helmet Use by Skateboard Riders in Five Selected New Mexico Cities, 2007-2010



Source: New Mexico Helmet Use Observation Surveys, 2008 and 2010

Figure 3 Percent of Observed Helmet Use by All Riders in Three Newly Selected New Mexico Cities in 2010



Source: New Mexico Helmet Use Observation Surveys 2010

Table 3 Observed Helmet Use by Bicycle and Skateboard Riders in 5 Selected Cities, New Mexico, 2008, 2010

City	2008*						2010**					
	Bicycle			Skateboards			Bicycle			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	61	13	21.3	141	7	5.0	149	82	55.0	161	32	20.0
Las Cruces	51	24	47.1	13	4	30.8	24	16	66.7	11	0	0
Las Vegas	10	2	20.0	6	3	50.0	8	0	0	7	1	14.2
Roswell	14	3	21.4	20	2	10.0	7	3	42.9	30	3	10.0
``												
Santa Fe	54	25	46.3	50	8	16.0	31	4	12.9	75	8	10.7
5 Cities Total	190	67	35.3	230	24	10.4	219	105	47.9	284	44	15.5

**The 2008 Helmet Observation study was conducted from late July through early August as a follow up 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.

Table 4 Overall Observed Helmet Use by Bicycle and Skateboard Riders by City, New Mexico, 2008, 2010

City	2008			2010		
	Total Observed	Number with Helmets	Percent with helmets	Total Observed	Number with Helmets	Percent with helmets
Albuquerque	202	20	9.9	310	114	36.8
Las Cruces	64	28	43.8	35	16	45.7
Las Vegas	16	5	31.3	15	1	6.7
Roswell	34	5	14.7	37	6	16.2
Santa Fe	104	33	31.7	106	12	11.3
5 Cities Total	420	91	21.7	503	149	29.6

Table 5 Overall Observed Helmet Use by Bicycle, Skateboard Riders, Skates and Scooters
First Year Cities Hobbs, Silver City and Taos, New Mexico, 2010*

City	2010															
	Bicycle Observed				Skateboards Observed				Skates Observed				Scooters Observed			
	#	Using Helmet	No Helmet	Percent	#	Using Helmet	No Helmet	Percent	#	Using Helmet	No Helmet	Percent	#	Using Helmet	No Helmet	Percent
Hobbs	22	14	6	64	26	8	18	31	2	2	0	100	6	0	6	0
Silver City	28	8	20	29	37	3	34	8	0	0	0	0	2	1	1	50
Taos	16	5	11	31	14	1	13	7	1	0	1	0	0	0	0	0
Total	66	27	37	41	77	12	65	16	3	2	1	67	6	0	6	0
* These New First Year Cities were not included in the comparison of the original 5 Cities																

Table A. Completed Sites and Total Sites in Five Selected Cities, 2008 - 2010

Community	Total Number of Sites and Observation Periods (OP)					
	2008			2010		
	Total Sites	Total OPs	OPs With No Riders*	Total Sites	Total OPs	OPs With No Riders*
Albuquerque	7	25	3	7	22	1
Las Cruces	5	10	3	6	10	2
Las Vegas	5	8	2	1	2	0
Roswell	5	12	6	5	14	7
Santa Fe	6	16	2	7	12	2
5-City Total	**28**	**71**	**16**	**26**	**60**	**12**

*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, 2010

City	Bicycles			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	149	82	55.0	161	32	19.9	4	1	25	31	20	64.5	345
Male	121	62	51.2	158	31	19.6	2	0	0	26	15	57.7	307
Female	28	20	71.4	3	1	33.3	2	1	50.0	5	5	100.0	38
Las Cruces	24	16	66.7	11	0	0	0	0	0	1	1	100.0	36
Male	13	9	69.2	11	0	0	0	0	0	1	1	100.0	25
Female	11	7	63.6	0	0	0	0	0	0	0	0	0	11
Las Vegas	8	0	0	7	1	14.3	0	0	0	0	0	0	15
Male	7	0	0	7	1	14.4	0	0	0	0	0	0	14
Female	1	0	0	0	0	0	0	0	0	0	0	0	1
Roswell	7	3	42.9	30	3	10.0	0	0	0	0	0	0	37
Male	5	3	60.0	29	3	10.3	0	0	0	0	0	0	34
Female	2	0	0	1	0	0	0	0	0	0	0	0	3
Santa Fe	31	4	12.9	75	8	10.7	3	0	0	3	1	33.3	112
Male	29	3	10.3	75	8	10.7	3	3	100.0	3	1	33.3	110
Female	2	1	50.0	0	0	0	0	0	0	0	0	0	2
All Cities	**219**	**105**	**47.9**	**284**	**44**	**15.5**	**7**	**1**	**14.3**	**35**	**22**	**62.9**	**545**
Male	**175**	**77**	**44.0**	**280**	**43**	**15.4**	**5**	**0**	**0**	**30**	**17**	**56.7**	**490**
Female	**44**	**28**	**63.6**	**4**	**1**	**25.0**	**2**	**1**	**50.0**	**5**	**5**	**100.0**	**55**

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

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	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 D Observed Helmet use by Vehicle Type, Sex, and City, New Mexico, 2007

City	Bicycle			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	242
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**

APPENDIX A

References

Bicycle Helmet Safety Institute [BHSI] website; **Laws;** January, 2011

Coté TR, Sacks JJ, Kresnow M, Lambert-Huber DA, Schmidt ER, Dannenberg AL, Lipsitz CM **Bicycle Helmet Use Among Maryland Children: Effect of Legislation and Education.** Pediatrics 1992 Jun; 89(6):1216-1220

DiGuiseppi CG,. Rivara, FP Koepsell TD, Polissar L, **Bicycle helmet use by children. Evaluation of a community-wide helmet campaign.** JAMA 1989 262: 2256-2261

NM Department of Health, **New Mexico Seatbelt Survey 2006 Report**, September 2006.

Rodgers, GB,. **Effects of state helmet laws on bicycle helmet use by children and adolescents.** Injury Prevention 2002; 8:42-46.

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

APPENDIX B

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—*John McPhee*
NM Department of Health, ERD
1190 St. Francis Drive, Room N-1100
Santa Fe, NM 87501
Or FAX to h10 at: (505) 827-2796

APPENDIX C

Site

[*YEAR]* **Recreational Vehicle Helmet Survey**

HELMET OBSERVATION FORM

City_____ Date _____

Day of Week _____ Time _____

Observer_____ Location _____

Draw a map of Observation Location . Include Arrow indicating: North ↑

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, and 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**.

Helmet Survey 2010

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-W*rite 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.)*