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Sarah L. Lathrop,¹ D.V.M., Ph.D.; Travis B. Dick,² Pharm.D.; and Kurt B. Nolte,¹ M.D.

Fatal Wrong-Way Collisions on New Mexico's Interstate Highways, 1990–2004

ABSTRACT: Medical examiner files from 1990 through 2004 were reviewed to identify fatalities caused by drivers traveling the wrong direction on interstate highways and identify risk factors and prevention strategies. Other fatal nonpedestrian interstate motor vehicle crashes served as a comparison group. Data abstracted included decedent demographics, driver/passenger status, seatbelt use, blood alcohol concentration, weather and light at time of occurrence and types of vehicles involved. Of 1171, 79 (6.7%) interstate motor vehicle fatalities were because of drivers traveling against the posted direction in 49 crashes, with one to five fatalities per crash. Wrong-way collisions were significantly more likely to occur during darkness ($p < 0.0001$) and involve legally intoxicated drivers ($p < 0.0001$). In 29/49 (60%) wrong-way crashes, alcohol was a factor. Prevention strategies aimed at reducing the incidence of driving while intoxicated, as well as improved lighting and signage at ramps, could help reduce the occurrence of fatal wrong-way collisions on interstates.

KEYWORDS: forensic science, motor vehicles, alcoholic intoxication, coroners and medical examiners

New Mexico consistently has one of the highest motor vehicle crash fatality rates of all states (1). In 2000, New Mexico had 418 motor vehicle crash fatalities or 24.3 deaths per 100,000 population, 55% higher than the national rate of 15.7 deaths per 100,000 (2). With a National Highway Traffic Safety Administration-estimated total state motor vehicle fatality cost of \$1.4 billion, the strictly financial costs of these deaths represent 3.5% of each New Mexico resident's per capita income for the year 2000 (2). Alcohol involvement in fatal traffic crashes is an ongoing problem in New Mexico; alcohol is involved in 46% of all fatal crashes, compared to 41% nationally (2).

The fifth largest state geographically, New Mexico is made up of 33 counties and 22 tribal governments. It is sparsely populated, with only 1,515,069 residents in 1990, at the beginning of this study period, and 1,929,713 in 2004, at the end of this study period (3). One-third of the state's population is located in and around Albuquerque (3). Three separate interstate highways traverse the state, the majority of which are rural and have posted speed limits of 65–75 miles per hour. Collisions on these interstates contribute an average of 75 fatalities to the annual state total. Following several high profile collisions caused by drivers entering interstates and proceeding against the posted direction of traffic, the authors analyzed information on deaths because of wrong-way collisions on interstates from January 1, 1990 through December 31, 2004 from the state's centralized medical examiner's office, the Office of the Medical Investigator (OMI).

The objectives of the analysis were to define the extent of this problem, identify the characteristics, seatbelt use, and alcohol

involvement of drivers and passengers in vehicles involved in wrong-way interstate collisions when compared to persons dying in other types of interstate motor vehicle collisions and identify, if possible, points of wrong-way access and other environmental factors that might have precipitated wrong-way driving, to help develop effective interventions.

Methods

The OMI is the statewide, centralized medical examiner agency for New Mexico. It investigates all deaths in the state that are sudden, unexpected, violent, or unnatural, including all motor vehicle-related fatalities. OMI's computerized database was queried to identify all nonpedestrian fatalities from motor vehicle collisions that occurred on New Mexico's interstate highways between January 1, 1990 and December 31, 2004. Included in the study were all OMI-investigated motor vehicle fatalities that occurred on the three interstate highways that traverse the state, including 160 miles of Interstate 10 (I-10) across the southwestern corner of the state, 368 miles of Interstate 40 (I-40) running east–west across the state, and 460 miles of Interstate 25 (I-25) traveling north–south the length of the state. Only 49 of 988 (5%) miles of interstate are considered urban (traversing areas with populations of >50,000) (4).

For each interstate fatality, the location, time, and circumstances of the collision, classification of the decedent as driver or passenger, age, sex, race, seatbelt use, drug screening results, and blood alcohol concentration (BAC) in gm/dL were abstracted from the electronic database. Also included in the study was information on the time of day of the crash and types of vehicles involved. Information not found in the database was abstracted from paper copies of the decedent's file. Antemortem toxicological findings superseded postmortem findings in the analysis when there was a significant survival interval. Data were entered into an Excel spreadsheet and then analyzed using SAS 9.1 (SAS Institute Inc., Cary, NC).

¹Office of the Medical Investigator, University of New Mexico, Albuquerque, NM

²Department of Pharmacy, Duke University Medical Center, Durham, NC
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Each decedent was classified into one of two groups: fatalities because of wrong-way collisions and fatalities because of all other types of interstate crashes. The fatalities resulting from wrong-way collisions were also separated into four categories for additional analysis: wrong-way drivers, right-way drivers, wrong-way passengers, and right-way passengers. Categorical variables were compared using chi-square tests or Fisher exact tests, and continuous variables were analyzed using Wilcoxon rank-sum tests or *t*-tests as appropriate. *p*-values of 0.05 or less were considered statistically significant.

Results

The OMI investigated 1171 fatalities as a result of 924 crashes on New Mexico's interstate highways between 1990 and 2004 (Table 1). Forty-nine collisions resulting from wrong-way driving on New Mexico's interstates caused 79 fatalities, 6.7% of all interstate fatalities in the 15 years studied. The remaining 1092 fatalities from 875 collisions on interstates were used as a comparison group. Although it comprises only 37% of the total miles of interstate highways in New Mexico, I-40 had the highest numbers of both crashes and fatalities for wrong-way and all other types of nonpedestrian collisions of all three New Mexico interstates (58% of all wrong-way fatalities and 57% of wrong-way crashes, 48% of other types of collision fatalities and 46% of other crashes). Most crashes and fatalities were clustered around Albuquerque and Gallup; however, lethal interstate collisions occurred along the lengths of all three highways.

Interestingly, while the highest number of interstate fatalities occurred in 1997 (96), none of these were because of wrong-way collisions. In 1990, OMI saw the fewest interstate fatalities (68), and 1992 brought the most wrong-way fatalities (11, 14% of the total, caused by five separate crashes). By month, the highest

numbers of interstate fatalities occurred during August (138, 12% of total), but the highest numbers of fatalities because of wrong-way collisions were in November (14, 18% of total). The fewest interstate fatalities were recorded in January (62, 5%), and the fewest wrong-way fatalities were observed in October (3, 4%).

Looking at the demographics of the people killed in interstate crashes in New Mexico (Table 2), the majority (59%) of decedents were male, with no significant differences in gender distribution by type of crash. Drivers were significantly more likely to be males in wrong-way and other types of crashes ($p = 0.006$ and $p < 0.0001$, respectively). The median ages and ranges were similar for both wrong-way and other types of crashes, with no statistically significant difference in age between these two groups. In both wrong-way and other types of collisions, the drivers were significantly older than passengers ($p < 0.02$ and $p < 0.0001$, respectively). In wrong-way collisions, eight children (18 years of age and younger) (10%) were killed, and in other interstate crashes, 151 (14%) children were killed. Considering race/ethnicity, there is a statistically significant difference in distribution between wrong-way and other types of interstate fatalities ($p = 0.004$). White non-Hispanics (hereafter referred to as whites) and Native Americans were over-represented in the wrong-way fatalities, with 53% and 19% of the total, respectively. In the 2000 census, whites comprised 45% of the New Mexico population, and Native Americans comprised 9.5%, with white Hispanics (hereafter referred to as Hispanics) comprising 42%, African Americans 1.9%, and Asian Pacific Islanders making up 1.1% of the state's population (3). Hispanics were under-represented in both wrong-way (24%) and other types of interstate fatalities (34%).

Reviewing the specific circumstances of interstate fatalities (Table 3), decedents from wrong-way collisions were significantly more likely to be drivers than in other types of motor vehicle-related interstate fatalities ($p = 0.03$). People who died in a wrong-way collision were also more likely to be wearing seatbelts at the time of the crash than decedents from other types of collisions ($p < 0.0001$). Overall, only 26% of interstate fatalities were reported to have been wearing seatbelts at the time of the collision, although in 20% of the cases no mention was made of seatbelt usage.

Decedents from wrong-way collisions were significantly more likely to have been over the legal limit for BAC (0.08 gm/dL in New Mexico) than fatalities from other types of interstate collisions ($p < 0.0001$) and had a significantly higher mean BAC (0.089 vs. 0.033, $p < 0.0001$). There was no significant difference in decedents with drugs (either prescription or illicit) present at the time of the collision between the two types of collisions. Overall, 11% of

TABLE 1—Numbers of crashes and resulting fatalities on New Mexico's interstate highways, 1990–2004.

	Other Interstate Crashes	Wrong-way Collisions	Total
Interstate Highway	Crashes (fatalities)	Crashes (fatalities)	Crashes (fatalities)
I-10	136 (163)	4 (10)	140 (173)
I-25	340 (405)	17 (23)	357 (428)
I-40	399 (524)	28 (46)	427 (570)
Total	875 (1092)	49 (79)	924 (1171)

TABLE 2—Demographics of decedents in nonpedestrian interstate crashes in New Mexico, 1990–2004.

Decedent Demographics	Other Interstate Fatalities (n = 1092)	Wrong-way Collision Fatalities (n = 79)	<i>p</i>	Total (n = 1171)
Gender				
Male	647 (59%)	48 (61%)	0.79	695 (59%)
Female	445 (41%)	31 (39%)		476 (41%)
Age				
Median	35	33	0.83	35
Range	0–99	5–81		0–99
Children	151 (14%)	8 (10%)		159 (13.6%)
Race/ethnicity				
White non-Hispanic	521 (48%)	42 (53%)	0.004	563 (48%)
White Hispanic	369 (34%)	19 (24%)		388 (33%)
Native American	88 (8%)	15 (19%)		103 (9%)
African American	72 (7%)	1 (1.3%)		73 (6%)
Asian/Pacific Islander	34 (3%)	1 (1.3%)		35 (3%)
Unknown	8 (0.7%)	1 (1.3%)		9 (0.8%)

TABLE 3—*Characteristics of decedents and crashes in fatal nonpedestrian interstate crashes in New Mexico, 1990–2004.*

Decedent/Crash Characteristics at Time of Death	Other Interstate Fatalities (n = 1092)	Wrong-way Collision Fatalities (n = 79)	p	OR (95% CI)	Total (n = 1171)
Location in vehicle					
Driver	589 (54%)	53 (67%)	0.03	1.68 (1.01, 2.8)	642 (55%)
Passenger	485 (44%)	26 (33%)			511 (44%)
Unknown	18 (2%)	0			18 (1%)
Wearing seatbelt					
Yes	267 (24%)	38 (48%)	<0.0001	3.20 (1.86, 5.53)	305 (26%)
No	608 (56%)	27 (34%)			635 (54%)
Unknown	217 (20%)	14 (18%)			231 (20%)
Blood alcohol concentration					
Mean (gm/dL)	0.034	0.089	<0.0001	2.8 (1.66, 4.7)	0.038
Range (gm/dL)	0–0.445	0–0.362			0–0.445
Number legally intoxicated	171 (22%)	27 (34%)			196 (17%)
Drugs present					
Decedents with one or more prescription drugs present	29 (2.5%)	2 (3%)	0.94		32 (2.7%)
Decedents with one or more illicit drugs present	96 (8.8%)	5 (6%)	0.45		101 (8.6%)
Occurred during daylight hours					
Yes	638 (59%)	27 (34%)	<0.001	2.75 (1.66, 4.57)	665 (57%)
No	447 (41%)	52 (66%)			499 (43%)
Unknown	7 (0.6%)	0			7 (0.6%)
Vehicle type (decedent's)					
Automobile (sedan, coupe, etc.)	419 (38%)	60 (76%)	<0.0001	3.06 (1.88, 5.01)	479 (41%)
Sport utility vehicle	135 (12%)	3 (4%)			138 (12%)
Pickup truck	259 (24%)	11 (14%)			270 (23%)
Minivan/van	161 (15%)	1 (1%)			162 (14%)
Semi truck	27 (2.5%)	2 (3%)			29 (2.5%)
Other	17 (1.5%)	1 (1%)			18 (1.5%)
Unknown	74 (7%)	1 (1%)			75 (6%)

decedents from interstate collisions were known to have drugs present at the time of death, with 8.6% having some type of illicit drug present, most commonly cocaine (47 decedents) or cannabinoids (47 decedents).

Wrong-way fatalities were significantly more likely to have occurred when it was dark (66% vs. 41%, $p < 0.001$) compared to other types of interstate fatalities. Significantly more fatalities from wrong-way collisions were either drivers or passengers in automobiles (coupes, sedans, etc., when compared to trucks, semis, or other vehicles) at the time of their death, compared to decedent's vehicles in other types of interstate fatalities (76% vs. 38%, $p < 0.0001$). In 16 of the 40 wrong-way collisions (resulting in 23 fatalities), one automobile struck another automobile head-on, while in ten wrong-way crashes (with 15 resulting fatalities), an automobile hit a semi truck head-on. Automobiles struck pickup trucks in seven instances (14 fatalities) and hit a sport utility vehicle (SUV) (one crash), a bus (one crash), or an unknown vehicle (three crashes) in the remaining collisions. Pickups struck semi trucks (three crashes), SUVs (two crashes), a camper (one), and another pickup (one crash). In one instance, two semi trucks collided, with both drivers perishing. In four of the 79 fatalities as a result of wrong-way collisions, the decedent had a survival interval, ranging from 1 h to 13 days past the time of injury. In comparison, 63/1092 (5.8%) fatalities from other types of interstate collisions survived, if only briefly, beyond the crash, ranging from 1 h to 7 months.

Examining the 49 wrong-way collisions more closely, Bernalillo County (the most populous county) was found to have the most crashes (11/49, with 17/79 fatalities), followed by McKinley County in the western part of the state (9/49 crashes, with 13/79 fatalities). None of the deaths of wrong-way drivers were determined to be suicide, although one was classified as an "undetermined" manner of death. All other deaths were ruled accidental.

The majority of wrong-way collisions (30/49, 61%) resulted in one fatality, but 25% of the crashes killed two people. Seven of the collisions (14%) resulted in the deaths of three or more people. In 29 crashes (59% of all wrong-way collisions), resulting in 48 fatalities, alcohol was determined to be the likely cause of the crash. In six crashes, one driver was most likely suffering a health problem, including stroke and diabetic complications. Reckless driving or overcorrection caused three of the cases, a driver falling asleep was at fault in two collisions, and strong gusts of winds contributed to one crash. In eight crashes, the cause of the driver proceeding the wrong way on an interstate highway was not determined. Poor weather was reported in only two (4%) of all of the wrong-way collisions.

Five of the wrong-way drivers entered the interstate in the wrong direction by driving up an exit ramp, while four were witnessed making a U-turn in the median before traveling the wrong way. Three of the drivers entered from an external highway/nonstandard entrance point and one drove the wrong way through a construction site. Ten of the drivers were witnessed to only drive a short distance against posted travel because of overcorrection or reckless driving at high speeds, and in the remaining cases, it was not known where the driver changed direction on the interstate.

Wrong-way collisions killed 35 wrong-way drivers and 11 passengers traveling with them (Table 4). In the 49 wrong-way collisions, 18 of the drivers traveling in the correct direction but struck by a wrong-way driver were killed, as were 15 of their passengers. In the vehicles traveling the wrong way, drivers were significantly older than the passengers who died in the collisions ($p = 0.02$). Whites were over-represented as percentages of both wrong- and right-way drivers, and Native Americans were over-represented as wrong-way drivers (23%).

Deceased drivers from interstate collisions varied significantly by classification in the amount of alcohol present at the time of

TABLE 4—Decedent characteristics by location in vehicles at time of death.

Characteristics	Occupants of Vehicle Traveling Wrong Direction		Occupants of Vehicle Traveling Correct Direction		All Other Interstate Fatalities		
	Driver (n = 35)	Passenger (n = 11)	Driver (n = 18)	Passenger (n = 15)	Driver (n = 589)	Passenger (n = 485)	Unknown (n = 18)
Gender							
Male	27 (77%)	5 (45%)	12 (67%)	11 (73%)	403 (68%)	231 (48%)	13 (72%)
Female	8 (23%)	6 (55%)	6 (33%)	4 (27%)	186 (32%)	254 (52%)	5 (28%)
Age							
Median	41	23	28	31	37	29	NA
Range	19–81	5–68	16–71	5–61	14–87	0–95	NA
Race/ethnicity							
White non-Hispanic	17 (49%)	2 (18%)	11 (61%)	12 (80%)	324 (55%)	191 (39%)	4 (36%)
White Hispanic	8 (23%)	4 (36%)	5 (28%)	2 (13%)	178 (30%)	184 (38%)	3 (16%)
Native American	8 (23%)	4 (36%)	2 (11%)	1 (7%)	45 (7%)	40 (8%)	2 (11%)
African American	1 (3%)	0	0	0	29 (5%)	43 (9%)	0
Asian/Pacific Islander	1 (3%)	0	0	0	10 (2%)	24 (5%)	0
Unknown	0	1 (9%)	0	0	3 (0.5%)	3 (0.62%)	13 (72%)
Seatbelt in use							
Yes	14 (40%)	5 (45%)	10 (56%)	9 (60%)	173 (29%)	93 (13%)	1 (6%)
No	14 (40%)	5 (45%)	5 (28%)	3 (20%)	283 (45%)	317 (65%)	8 (44%)
Unknown	7 (20%)	1 (9%)	3 (16%)	3 (20%)	133 (23%)	75 (15%)	9 (50%)
Blood alcohol concentration (gm/dL)							
Mean	0.16	0.11	0.02	0	0.04	0.023	0.034
Range	0–0.362	0–0.348	0–0.198	0–0.062	0–0.382	0–0.445	0.0226
Number over the legal limit	20 (57%)	4 (36%)	1 (5.6%)	0	111 (27%)	55 (16%)	5 (28%)
Drugs present							
Illicit	4 (11%)	0	1 (6%)	0	55 (9.3%)	39 (8%)	2 (11%)
Prescription	2 (6%)	0	0	0	18 (3%)	11 (2.2%)	0

death (Table 4). The mean BAC of wrong-way drivers was significantly higher than that of the drivers they struck ($p = 0.008$). Not surprisingly, wrong-way drivers were also significantly more likely to have exceeded the legal BAC than the drivers they struck. Twenty-two of the 35 wrong-way drivers (63%) whose files included the results of tests for the presence of alcohol were found to have BACs exceeding New Mexico's current legal limit of 0.08 gm/dL, compared to 1/18 (5.6%) of the right-way drivers involved in these collisions. Twenty-one of the 22 wrong-way drivers who had alcohol present at the time of their death had BACs >0.16 gm/dL, the level used for charges of "aggravated driving while intoxicated" in New Mexico. One right-way driver and four wrong-way drivers had illicit drugs present in their blood (marijuana and/or cocaine). In drivers involved in other fatal interstate crashes, 111/589 (19%) drivers were over the legal limit for intoxication, a significant difference when comparing wrong-way drivers to all other drivers ($p < 0.0001$) and 52/589 other drivers (9%) had illicit substances present in their blood at the time of death, most commonly cocaine and cannabinoids.

Discussion

Collisions caused by a driver traveling the wrong direction accounted for 6.7% of all New Mexico interstate fatalities from January 1990 through December 2004, and 5% of all interstate crashes investigated by OMI during this time period. Compared to decedents from all other types of motor vehicle collisions on New Mexico's interstates during this time period, decedents from wrong-way collisions were significantly more likely to have been intoxicated, in an automobile at the time of the crash and have died following a nighttime collision. The drivers traveling the wrong way in these collisions tended to be intoxicated, male, and older than their passengers. The majority of wrong-way drivers died as a

result of the collisions, while the majority of right-way drivers survived.

Alcohol was a major contributing factor in collisions involving drivers traveling against the marked direction of travel on interstates, with 63% of the wrong-way drivers tested having BACs above the legal limit for driving, compared to 5.6% of right-way drivers and 19% of drivers from other types of fatal interstate crashes. In January 1994, the BAC considered to be the legal limit in New Mexico was lowered from 0.10 to 0.08 gm/dL (2). Even with this change, all wrong-way drivers found to have ethanol present at the time of death were still above the legal limit, as their BACs were all 0.10 gm/dL or higher, and 95% of these drivers had BACs high enough to have been charged with aggravated driving while intoxicated had they survived. Most adult passengers of vehicles traveling against traffic were also intoxicated. Similar types of high-risk behaviors have been observed in both intoxicated passengers and drivers (5,6). Intoxicated motor vehicle passengers were comparable to intoxicated drivers in terms of both recurrent emergency department visits and risk of death, based on a cohort of New Mexico residents 16 years of age or older (5). Impaired driving by some of the right-way drivers might also have played a role in the fatal collisions, as one who died tested above the legal BAC. The presence of alcohol would impair the right-way drivers' ability to evade the oncoming driver, by slowing reaction times and affecting both perceptions and appropriate responses (7–9). One right-way driver was found to have evidence of marijuana use, but this might not reflect impairment at the time of the crash (10,11).

Native Americans had a higher risk of being a deceased wrong-way driver in an interstate collision compared to drivers of other races and ethnicities. Similar trends in all types of motor vehicle crashes have been observed in other studies (6,12,13). Native Americans residing in both the northern plains and the southwest had increased morbidity and mortality because of unintentional

injuries sustained in motor vehicle crashes (6,12,13). Compared to other racial and ethnic groups, Native Americans had increased risks in all motor vehicle crash categories in assessments of motor vehicle crashes in Arizona (12) and Washington (14). Contributing to this excess morbidity and mortality were factors such as travel speed, seatbelt use, distance to health care, and alcohol abuse (12–16). Results from the 1997–2000 Behavioral Risk Factor Surveillance System for Native Americans and Alaska Natives throughout the United States found that self-report of binge drinking (more than five drinks on more than one occasion in the previous month) was highest among Native American and Alaska Native men in Alaska (30.7%) and the southwest (30.5%), and self-report of drinking and driving was highest among Native American and Alaska Native men in the southwest (9.5%) (16). It is likely these same factors contributed to the occurrence of several wrong-way collisions in New Mexico.

The prohibition of alcohol on Native American reservations is viewed by some as contributing to the excess morbidity and mortality from alcohol-impaired driving among Native Americans, because of the long distances traveled to obtain alcohol and the propensity to return home late at night, through remote areas on highways with high speed limits (15). However, no clear answers have been found in studies examining the relationship of alcohol-related motor vehicle crashes to distance to alcohol outlets in rural areas (17). Several interventions have been suggested which might also reduce the incidence of wrong-way collisions on interstates near reservations, including alternate transportation for heavy drinkers, enhanced law enforcement, and lower speed limits in high-risk areas, improved lighting, and limiting alcohol consumption in towns that border reservations (15,17).

Men were over-represented as drivers in this study (77% of wrong-way drivers, 67% of right-way drivers in wrong-way collisions, 68% of comparison drivers from other crashes). Similarly, male drivers accounted for 77% of the drivers in fatal crashes on divided highways in Canada (18) and were also found to be more likely to drive while impaired than women (19). Native American fatalities from motor vehicle collisions were also more likely to be men (74%) (13).

Fatal collisions because of wrong-way driving happened more frequently at night than other types of fatal interstate crashes. Ferguson et al. (20) also found an inverse relationship between light level and the number of fatal crashes when studying the effects of daylight savings time. Considering all fatal motor vehicle crashes each year in New Mexico from 1990 through 2004, those occurring between 06:00 PM and 06:00 AM represented 51–60% of the annual totals compared to 66% of wrong-way interstate collisions. As the majority of crashes occurred at night, reduced visibility appears to contribute to drivers entering interstates in the wrong direction. Given the role of alcohol in the majority of wrong-way collisions on New Mexico's interstates, the frequency of nighttime crashes might also be associated with alcohol consumption patterns.

People dying in wrong-way collisions were more likely to be in an automobile at the time of the crash than were fatalities from other types of interstate collisions. Occupants of cars have consistently been found to be at higher risk of death in head-on crashes than occupants of sport utility vehicles and trucks, given the weight differential of the vehicles as well as potential design mismatches (21,22).

Intervention strategies designed to reduce the prevalence of impaired driving would most likely reduce the number of fatalities because of wrong-way collisions. Proposed prevention strategies include lowering the legal limit for BAC to 0.05 gm/dL (23),

sobriety checkpoints (24), compulsory blood testing following injury from a traffic crash (25), swift suspension of driver's licenses from people driving while intoxicated and community traffic safety programs (26), in addition to previously mentioned programs for areas surrounding Native American reservations (15,17).

Physical barriers, including guardrails and treadles such as those found in secured parking areas, could be installed to prevent entry onto interstates from nonstandard entry points. Placing concrete barriers between lanes, particularly in areas with narrow medians, to prevent U-turns and crossovers could also reduce the number of drivers traveling against traffic on interstate highways (18). The National Highway Traffic Safety Administration is conducting research into collision avoidance systems, including methods to warn drivers of impending collisions, leaving the roadway, and drowsy or impaired performance (27). Improved lighting and signage at interstate entry points may assist drivers in choosing the correct entrance ramp, as the majority of fatalities occurred at night when visibility is reduced.

A limitation of this study was the absence of morbidity data for these types of motor vehicle collisions. By using only medical examiner data, information about nonfatal wrong-way collisions was lacking, including the number of these collisions and the number of survivors of fatal collisions. However, it is suspected that a high percentage of these collisions are lethal because of the dynamics involved in two vehicles striking each other head-on at a high rate of speed. The speed limit on New Mexico's rural interstates was increased from 55 miles per hour to 65 to in 1987, with a resulting increase from 1.5 fatal crashes per 100 million vehicle miles in the 5 years prior to 1987 to 2.9 fatal crashes per 100 million vehicle miles in 1987 (4).

Wrong-way collisions are only one type of catastrophe resulting from drinking and driving, but by better understanding these collisions, the argument for additional funding of drunk-driving prevention programs is further strengthened. New Mexico can only benefit from additional impaired driving prevention programs.

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Additional information and reprint requests:

Sarah L. Lathrop, D.V.M., Ph.D.
 New Mexico Office of the Medical Investigator
 MSC11 6030, 1 University of New Mexico
 Albuquerque, NM 87131-0001
 E-mail: SLathrop@salud.unm.edu