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Identification of Alcohol-Pedestrian Crash Problems Among Selected Racial/Ethnic Groups

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16. Abstract

Pedestrians who had been drinking make up about half of all adult pedestrian crash fatalities. About one-third of all adult pedestrian victims were at BACs of .15% or more (NHTSA's Fatality Analysis Reporting System (FARS), 1984 - 1993). This study examined racial/ethnic patterns of involvement in fatal crashes, then conducted focus group testing with members of at-risk minority populations to study cultural factors which might affect the alcohol-pedestrian problem and to study how countermeasures should be targeted for greatest effectiveness. Racial data were obtained for all 1987-89 FARS data and for one to 12 years of FARS data for seven states or state subsets. Analyses showed three specific groups with pedestrian-alcohol fatality risks as high or higher than the population as a whole: Black adults ages 25 and older, Hispanic adult males ages 15 and older, and Native American adults ages 15 and older. Fourteen focus group discussions were conducted with blacks, Hispanics, and Native Americans. Results were analyzed for cultural patterns of alcohol use and abuse, likely countermeasure mechanisms, and comments and suggestions on 28 specific countermeasure themes. Alcohol-fatality rates and population values were calculated for 50 states, the District of Columbia, and 74 metropolitan areas. Recommendations were made for possible NHTSA follow-on countermeasure implementation tests.

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Identification of Alcohol-Pedestrian Crash Problems Among Selected Racial/Ethnic Groups	September 1997
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Pedestrians who had been drinking alcohol make up about half of all adult pedestrian crash fatalities. From 1984 through 1993, about one-third of all adult pedestrian victims had BACs of .15% or higher, well beyond the legal limit for drivers (FARS, NHTSA's Fatality Analysis Reporting System). Until now, most crash analysis and countermeasure development has looked at the U.S. population as a whole, which emphasized the majority white population, and did not explicitly address the representation of racial/ethnic minorities. The objective of this project was to estimate the magnitude of pedestrian alcohol involvement in crashes involving racial/ethnic minority pedestrians and to examine how general countermeasure approaches need to be tailored to meet the specific needs of racial/ethnic minorities.

This project consisted of three efforts: First, to examine the magnitude of pedestrian alcohol involvement in pedestrian crashes across the country and by racial/ethnic groups. Second, for any racial/ethnic minority groups found to be significantly involved in pedestrian alcohol crashes, to investigate cultural factors around alcohol use and abuse and cultural factors affecting countermeasure selection and development. Third, to develop recommendations for sites and target populations for possible subsequent pedestrian alcohol countermeasure tests.

Problem Magnitude

Alcohol-involvement of pedestrians in crashes was examined through fatal pedestrian crashes contained in NHTSA's FARS (Fatality Analysis Reporting System) data. Fatal crash records were selected because most victims (67 percent) have BAC test results available and because the FARS data cover all pedestrian victims around the country, essential for estimating overall incidence rates for specific areas of the country. FARS data for the years 1984 through 1993 were analyzed for this project, a total of 53,904 adult pedestrian victims.[1]

[1] Due to data processing limitations, pedestrians beyond the first two in any crash, about 0.6% of the pedestrian fatalities, were excluded from the analysis. Thus, figures reported here are slightly lower than complete FARS tallies.

(Continue on additional pages)

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Over the ten years covered by the FARS data, half of the adult pedestrians who were tested for alcohol had positive BACs. There was a gradual decrease over the ten-year period, from 53 percent in 1984 to 48 percent in 1993. Most of the pedestrians with positive BACs had very high levels of alcohol. More than one-third of all pedestrian fatalities (age 15+) had BACs at or above .15%; more than one-fourth had BACs at or above .20%.

States were ranked by the fatality rate for pedestrians with BACs at or above .15%, the level at which crash involvement rates begin sharply increasing over those for sober pedestrians (Preusser and Blomberg, 1981). The results indicated that alcohol involvement rates varied sharply in different areas of the country.

The states with the highest high-BAC rates were New Mexico (4.30 fatalities per 100,000 population per year) and Arizona (2.22). These are also states with high percentages of Native Americans within their populations. New Mexico and Arizona are also part of a band of states, running from approximately North Carolina along the southern tier of the United States to Arizona. This group of states (Arizona, Florida, Louisiana, New Mexico, South Carolina, North Carolina, Texas, and Georgia) all have very high pedestrian fatality rates. By contrast, northern states have uniformly lower high-BAC pedestrian fatality rates.

FARS data were supplemented with racial/ethnic information obtained from three types of sources. First, NHTSA had obtained primary racial coding from the Centers for Disease Control's Multiple Causes of Death (MCOD) data base, and they linked the race codes to FARS fatalities for 1987 - 1989. The result was primary racial coding (white, black, Native American, and Asian/Pacific Islander) for 94 percent of adult pedestrian fatalities.[2] Next, racial/ethnic data were obtained from a variety of state and local sources for six sites: Florida (1986 - 1993), Michigan (1984 - 1993), New York State (excluding New York City) (1984 - 1993), Pennsylvania (1989 - 1993), San Diego County, California (1990 - 1993), and Texas (major urban counties) (1993). The racial/ethnic data were compared with the FARS fatality records, and matches were found for 86 percent of the adult pedestrian victims covered in those samples. Each site included an Hispanic indicator; these sites were the primary sources of information on Hispanics. Finally, data analyses on pedestrian fatalities in New Mexico for 1982 - 1993 were obtained from the University of New Mexico's Center on Alcoholism, Substance Abuse, and Addictions (CASAA). Based on medical examiner records linked to FARS data, the CASAA data included 100% of the adult pedestrian fatalities who were Hispanic, Native American, or "Anglo" (non-Hispanic whites).

Tables 1 to 3 show results for the major racial/ethnic categories broken down by age and sex. The values are the percentages of all pedestrian victims (in the race-age-sex category and with known BACs) who had BACs above .10%, the most common per se level of impairment for drivers, and above .20%, levels most often reached only by people with significant drinking problems.

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[2] No Hispanic code was provided in the MCOD data from NHTSA. Based on patterns in Census data and the race + Hispanic coding of the other pedestrian fatality databases, it is likely that almost all Hispanic victims in the MCOD data were coded as "white" race. This is reflected in table labels and in report text, where "white" refers to whites excluding Hispanics and "white (including Hispanic)" refers to whites and nearly all Hispanics.

Table 1. High-BAC Pedestrian Fatalities by Age (All with Known BAC)
(FARS + MCOD, 1987 - 1989; Up to Two Pedestrians Only per Crash).

Pedestrian Age		White (incl. Hisp.)			Black			Native American			Wh(Hisp) + Blk + NA		
		Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
15 - 20	%.10+	37%	23%	34%	28%	8%	21%	93%	67%	88%	38%	22%	34%
	%.20+	14%	9%	13%	10%	0%	7%	56%	50%	55%	15%	9%	14%
	n	583	186	769	68	38	106	27	6	33	678	230	908
21-24	%.10+	59%	40%	55%	45%	29%	42%	94%	80%	93%	59%	39%	55%
	%.20+	34%	17%	30%	28%	18%	26%	64%	60%	63%	34%	18%	31%
	n	575	157	733	104	28	132	36	5	41	715	190	906
25-34	%.10+	61%	48%	58%	57%	47%	55%	89%	86%	88%	61%	49%	58%
	%.20+	37%	33%	36%	40%	30%	38%	73%	79%	74%	39%	33%	38%
	n	1,394	416	1,811	368	119	487	63	14	77	1,825	549	2,375
35-54	%.10+	53%	36%	49%	62%	44%	59%	83%	82%	83%	57%	39%	53%
	%.20+	36%	21%	33%	46%	26%	42%	69%	50%	65%	40%	23%	36%
	n	1,715	525	2,241	569	116	685	84	22	106	2,368	663	3,032
55 +	%.10+	25%	5%	17%	37%	15%	32%	70%	50%	65%	27%	6%	20%
	%.20+	14%	2%	10%	26%	7%	22%	52%	30%	47%	17%	3%	12%
	n	1,912	1,181	3,093	396	128	524	33	10	43	2,341	1,319	3,660
All Known	%.10+	45%	23%	39%	52%	32%	47%	86%	75%	84%	48%	25%	42%
	%.20+	27%	13%	23%	36%	19%	32%	65%	54%	63%	30%	15%	26%
	n	6,179	2,465	8,647	1,505	429	1,934	243	57	300	7,927	2,951	10,881

Table 2. High-BAC Pedestrian Fatalities by Age (All with Known BAC)
(Six State and County Sites).

Pedestrian Age		White			Black			Hispanic			Wh + Blk + Hisp		
		Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
15 - 20	%.10+	41%	28%	37%	32%	13%	25%	24%	0%	20%	38%	24%	35%
	%.20+	12%	8%	11%	16%	7%	13%	15%	0%	12%	12%	7%	11%
	n	294	98	392	25	15	40	33	8	41	352	121	473
21-24	%.10+	58%	47%	56%	40%	36%	39%	60%	33%	56%	56%	44%	54%
	%.20+	27%	22%	26%	21%	0%	17%	49%	11%	43%	29%	18%	27%
	n	267	59	326	43	11	54	45	9	54	355	79	434
25-34	%.10+	63%	56%	61%	60%	54%	59%	59%	35%	55%	62%	54%	60%
	%.20+	41%	37%	40%	35%	35%	35%	37%	20%	35%	40%	35%	39%
	n	615	205	820	148	48	196	99	20	119	862	273	1,135
35-54	%.10+	57%	42%	53%	65%	49%	61%	58%	15%	50%	58%	42%	54%
	%.20+	38%	26%	35%	47%	29%	43%	43%	12%	37%	40%	25%	37%
	n	859	302	1,161	226	68	294	121	26	147	1,206	396	1,602
55 +	%.10+	23%	6%	16%	35%	14%	30%	33%	4%	25%	25%	7%	18%
	%.20+	13%	2%	9%	24%	7%	20%	23%	0%	16%	15%	2%	10%
	n	916	585	1,501	140	44	184	52	23	76	1,108	652	1,761
All Known	%.10+	46%	27%	40%	53%	38%	49%	52%	17%	45%	48%	28%	42%
	%.20+	27%	15%	24%	35%	22%	32%	37%	9%	31%	29%	15%	25%
	n	2,951	1,249	4,200	582	186	768	350	86	437	3,883	1,521	5,405

FARS + MCOD data (Table 1) indicate that whites (including Hispanics), male and female, had BACs of .10% or more less frequently than blacks (39 percent vs. 47 percent). Native American males were about twice as likely to have high BAC levels as other males (86 percent vs. 43 percent); Native American females were three times as likely to have BAC levels of .10% or more as other females (75 percent vs. 23 percent). The incidence of elevated BAC levels was extremely low for pedestrians of Asian or Pacific Island heritage, and they are excluded from these tables. Six-state data are shown in Table 2. Results indicate relatively low rates for Hispanic females and much higher rates for Hispanic males.

Data provided by CASAA for New Mexico are shown in Table 3. New Mexico is second only to Alaska in the percentage of Native Americans in its population. It also has a substantial Hispanic population which includes recent immigrants as well as Hispanics whose families have lived there for generations. Native Americans were very much overrepresented in high-BAC fatalities, males and females. Hispanics show higher levels of alcohol involvement than did Anglos, for males and — unlike the other sites — for females.

Table 3. High-BAC Pedestrian Fatalities by Age
(New Mexico, 1982 - 1993).

Pedestrian		Anglo			Hispanic			Native American			Total		
Age		Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
15 - 20	*% .10+*	38%	14%	30%	34%	40%	35%	84%	73%	81%	58%	48%	56%
	%.20+	23%	14%	20%	17%	20%	17%	57%	45%	54%	37%	30%	35%
	n	13	7	20	29	5	34	37	11	48	79	23	102
21-24	*%.10+*	24%	33%	25%	67%	44%	60%	73%	67%	72%	59%	50%	58%
	%.20+	10%	33%	12%	33%	44%	37%	45%	50%	46%	34%	44%	36%
	n	21	3	24	21	9	30	44	6	50	86	18	104
25-34	*%.10+*	47%	47%	47%	61%	38%	58%	79%	61%	74%	66%	53%	63%
	%.20+	26%	33%	28%	39%	38%	39%	65%	48%	60%	48%	42%	46%
	n	38	15	53	72	13	85	85	31	116	195	59	254
35-54	*%.10+*	39%	33%	38%	61%	31%	57%	81%	50%	77%	64%	38%	60%
	%.20+	13%	0%	11%	49%	15%	45%	67%	36%	63%	48%	18%	43%
	n	54	12	66	85	13	98	91	14	105	230	39	269
55 +	*%.10+*	10%	3%	7%	39%	6%	31%	54%	42%	50%	31%	14%	25%
	%.20+	3%	0%	2%	25%	6%	20%	34%	26%	31%	18%	8%	15%
	n	61	35	96	57	17	74	35	19	54	153	71	224
All Known	*%.10+*	29%	19%	27%	54%	28%	49%	76%	57%	72%	57%	36%	52%
	%.20+	13%	10%	12%	36%	23%	34%	58%	41%	54%	39%	25%	36%
	n	187	72	259	264	57	321	292	81	373	743	210	953

As a result of these analyses, three racial/ethnic groups (in addition to whites) were identified as having very high levels of alcohol involvement:

- Black adults ages 25 and older,
- Hispanic males ages 21 and older, and

- Native American adults of all ages.

Cultural Factors

Focus group testing was conducted with groups made up of representatives of black, Hispanic, and Native American communities. Focus groups were recruited in two areas at opposite ends of the country to increase representativeness. Five were conducted with black participants in New Jersey and Connecticut, six with Hispanic participants in New Jersey and New Mexico, and three with Native American participants in New Mexico. Each focus group was made up of approximately 6-10 people. Where possible, participants were selected to be from the groups most at risk, from health care professionals who work with at-risk individuals, and from individuals particularly knowledgeable about their communities and the role of alcohol. The focus group testing included segments on problem perception, problem solving, and countermeasure evaluation. The discussions lasted between 75 minutes and two hours.

Only the Native Americans were well aware of the pedestrian alcohol crash problem when they arrived for their focus group testing. The Hispanic groups in New Mexico were somewhat aware of the problem. The groups in the New York metropolitan area were not aware beforehand that pedestrians with high levels of alcohol in their blood were frequent crash victims.

Blacks. Blacks as a group, and young adult blacks in particular, drink less than whites, so the drinking of pedestrian alcohol victims is quite inconsistent with black drinking norms. Focus group members suggested that the black pedestrian alcohol victims tend to drink alone and as an escape, and that they are part of society's unsuccessful fringe.

The focus groups felt that community activities could best be done by churches, social service organizations, schools, and black-oriented media. They felt that the focus should be toward the general public, friends, and families rather than the "drunks" themselves. Activities such as "Safe Rides" were viewed positively. The groups raised particular concerns about police countermeasures; they were worried about actual or perceived harassment unless programs were designed and implemented extremely carefully.

Hispanics. Heavy drinking by Hispanic males is an accepted part of the social fabric of the community, with a very real "machismo" component that emphasizes appearing able to function normally even if very drunk and refusing offers of help. Although many pedestrian alcohol victims may be problem drinkers and less well off socioeconomically, the problem exists for all ages and within supportive social norms.

The Hispanics in the east coast focus groups felt that the best ways to address the problem were through community organizations and Spanish-language media. More than the other groups, they said that extended families and Hispanic community groups were most likely to be accepted and successful and that external organizations, i.e., non-Hispanic ones, would be ignored and ineffective. They felt that education was a key, but that the at-risk drinkers would be particularly hard to reach because of social support for

their drinking and their denial of any alcohol-induced loss of alertness or competence. The Hispanic focus groups in New Mexico were in general agreement, though they placed more emphasis on lower income victims and ones with serious drinking problems. They felt also that government agencies could effectively educate.

Hispanics from both regions felt that police activities, including enforcement of existing laws, such as laws against serving intoxicated individuals and against public intoxication, could be effective. Hispanics residing on the east coast offered specific ways the police could be effective, but they also raised concerns about the appearance of selective enforcement and harassment.

Native Americans. For Native Americans, the large majority of fatally injured pedestrians have very high BACs. Focus group participants drew attention to the unique situations around some reservations where Native Americans went off the reservation to obtain alcohol and then drank large quantities very quickly for the purpose of getting very drunk. For those without vehicles, particularly those who were serious problem drinkers, they then had to get back to the reservation by walking along poorly lit, dangerous roads.

The Native American focus group participants strongly felt that the problem drinking was not socially acceptable, although individuals who were problem drinkers were tolerated and accommodated. Focus group members were able to list a number of ways the tribes and the nearby towns had attempted to minimize the risk to heavy drinkers, including traffic engineering, police patrols, tribal Safe Rides programs, and detoxification and treatment programs. While believing the problem drinkers should become more responsible for themselves, focus group members particularly singled out the bars and liquor stores as problem facilitators and as appropriate targets for restrictive regulation.

Recommendations

This project lays the groundwork for future NHTSA tests of pedestrian alcohol countermeasures tailored to specific racial/ethnic groups. Four recommendations for test sites were offered:

1. The area of the country with the largest concentration of pedestrian alcohol problems is the southern tier, ranging approximately from North Carolina to Arizona and southern parts of California (excluding the Los Angeles area). The national rate of high-BAC pedestrian-alcohol fatalities is approximately 1 fatality per 100,000 adult population per year. New Mexico has the nation's highest rate (4.30), and Arizona is second (2.22). North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas have rates between 1.10 and 1.97. Rates for the 29 metropolitan areas considered in those states average 1.56, fully 50 percent higher than the average for all selected metropolitan areas (1.04).

   Pilot tests in these areas, with the largest problems and with large numbers of the target racial/ethnic groups, should be considered first.

2. Native Americans, for whom the problem is most acute, should be strongly considered for pilot testing. Although most research has been done in the southwest, other states with large Native American populations also show high rates of pedestrian alcohol crashes in those populations. In terms of existing crash problems and significant Native American populations, likely sites are (in decreasing order of problem and population magnitude): New Mexico and Arizona; California and Oklahoma (there is a large Native American population within the Oklahoma City MSA); North Carolina, New York State, Texas, and Washington State; and Michigan, Minnesota, Montana, and Wisconsin. Specific urban areas with significant Native American populations and high pedestrian alcohol crash rates include Phoenix, Tucson, Minneapolis-St. Paul, and Seattle.

3. Hispanic populations should also be targeted. Educational and training countermeasures can be in Spanish or in both Spanish and English, but Hispanic-audience distribution channels, such as Spanish-language newspapers and radio and TV stations, can efficiently direct messages to Hispanic populations even in areas with much larger total populations. Particularly if the pilot test is limited to the Hispanic population in a densely-populated area, any enforcement should fit into the broad category of improving police presence and support for the Hispanic community.

   Based primarily on population and second on estimated fatality rates, the following metropolitan areas are likely targets for Hispanic field tests: El Paso, Houston, and San Antonio, Texas; Bakersfield, Fresno, San Diego, and San Jose, California; Albuquerque, New Mexico; Phoenix and Tucson, Arizona; and Ft. Lauderdale, Miami, Tampa, and West Palm Beach, Florida.

4. Finally, programs targeted toward black populations may be implemented. Areas with high black populations and high-BAC fatality rates include: Little Rock, Arkansas; Ft. Lauderdale, Jacksonville, Miami, Tampa, and West Palm Beach, Florida; Charleston, South Carolina; Charlotte and Raleigh-Durham, North Carolina; Birmingham, Alabama; Atlanta, Georgia; San Diego, California; Houston and Ft. Worth, Texas; Baton Rouge, Louisiana; Memphis, Tennessee; Columbus, Ohio; Norfolk and Richmond, Virginia; and Detroit, Michigan.

Twenty-eight possible countermeasures were considered. Each is described in the full report along with reactions and suggestions from the focus groups. In general, public education and culturally targeted media were viewed positively, as was providing alternative transportation. Enforcement-based countermeasures, particularly for blacks and Hispanics, must be implemented carefully so as to avoid the perception of harassment. Additional laws may be less useful than the effective use of existing laws (e.g., sales to minors or intoxicated individuals). Additional public funding for detoxification, screening, treatment, and holding facilities will likely be required.

ACKNOWLEDGEMENTS

The evaluation of crash data could not have been conducted without the contributions of health departments, medical examiners, and motor vehicle departments in five of the six state and county areas who provided racial/ethnic data for pedestrian fatalities in their areas. For the sixth, we are grateful to the Texas Transportation Institute for providing their 1993 data.

Critical assistance in assembling and conducting the northeastern focus groups was provided by Emilio S. Fandino, Director of the Hispanic Institute for Research and Development of Paramus, New Jersey, and by the Urban League chapters of Bergen County (New Jersey) and of Southwestern Connecticut.

In addition, we particularly appreciate the participation of Dr. Philip May, Paul Guerin, and Nadine Tafoya of the Center on Alcoholism, Substance Abuse, and Addictions at the University of New Mexico in conducting and analyzing the New Mexico focus groups and performing data analyses on the New Mexico pedestrian fatality database.

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I. INTRODUCTION

This document is the final report for NHTSA contract number DTNH22-94-C-05133 entitled "Identification of Alcohol-Pedestrian Crash Problems Among Selected Racial/Ethnic Groups."

Alcohol is a major contributing factor to adult pedestrian fatalities. About half of all adult pedestrians fatally injured in crashes had been drinking alcohol; about a third had blood alcohol concentrations (BACs) at or above .15%, well above the legal limit for drivers (FARS, Fatality Analysis Reporting System, 1984 - 1993). Until now, most crash analysis and countermeasure development has looked at the U.S. population as a whole, which emphasized the majority white population, and did not explicitly address the representation of racial/ethnic minorities. The goals of this project were to:

- Develop an accurate picture of the involvement of various racial/ethnic populations in alcohol-related pedestrian crashes,
- For minorities highly involved in alcohol-related pedestrian crashes, identify cultural barriers and facilitators for each group to address their crash problem, and
- Provide recommendations and strategies for future research aimed at reducing these crash problems.

Pedestrian Alcohol Problem

NHTSA addressed the pedestrian crash problem as one of the first priorities of the newly formed agency in the late 1960s. Confirming existing folklore, the research showed that, for all pedestrians except children and the elderly, alcohol was the single most important problem.

Basic research on the pedestrian alcohol problem was conducted by NHTSA in New Orleans (Blomberg et al., 1979; Preusser and Blomberg, 1981), followed by a consideration of possible countermeasures by the Transportation Systems Center (Huntley, 1984) and the publication of a series of informational pamphlets (NHTSA, 1989).

The New Orleans Study showed that the pedestrian alcohol problem involved extraordinarily high BACs (blood or breath alcohol concentrations). The typical victim was a "practiced drinker" who often had personal problems that went beyond pedestrian safety.

The New Orleans data are now about 20 years old, and one of the objectives of the current project was to revisit the problem as it exists today. Data from NHTSA's Fatality Analysis Reporting System (FARS), which will be examined in detail in this report, showed virtually the same percentage of pedestrians who "had been drinking" and the same percentage at high BACs as had been found in New Orleans. The problem is still here.

The FARS data analysis also indicated major regional and local differences in terms of the magnitude of the problem. Fatal injury rates for pedestrians with high BAC levels were highest for states in the southwest and south, up to three to ten times higher than the rates in northern states. These results will be discussed in detail later in this report.

Cultural Diversity

> *As early as 1645, the Connecticut Colony prohibited the sale of liquor to Indians. All other colonies passed similar provisions at various times in the 1600s. By 1832 the US Congress had passed a law that prohibited the sale of liquor to any and all American Indians. This law remained in effect, totally denying legal access to alcohol for Indians, until 1953. At that time, each tribe was given power to regulate alcohol traffic on its own reservation(s). By the end of 1974 only 92 reservations (31%) had passed laws making alcohol legal within their borders and few have been enacted since 1974. (May and Smith, 1988, pp. 324-325.)*

Each cultural group has had its own unique experience with alcohol. For large numbers of Native Americans, this experience has been based on prohibition. Various European, African, and Central and South American cultural groups have had substantially different experiences. It is not surprising, therefore, that alcohol consumption patterns vary substantially between cultural groups, nor would it be surprising to find that varying consumption patterns and cultural attitudes are reflected in varying consequences with respect to alcohol-related highway crashes.

Countermeasures

The earlier New Orleans project identified dozens of potential countermeasures for possible application to the pedestrian alcohol problem. That list was an extensive starting point for this project. Additional countermeasures, adapted from successes in other areas, were also considered. For instance, the Designated Driver concept yielded the Designated Walker (i.e., escorts for intoxicated pedestrians), and Safe Rides can apply to pedestrians as well as drivers. Many of the "traditional" pedestrian safety countermeasures are also directly applicable, particularly those that deal with Intersection Dash, the most common pedestrian alcohol crash type, and night conspicuity.

One of the best ways to deliver countermeasures, as well as to tailor them to local needs and conditions, is through a Community Traffic Safety Program. CTSPs are local community organizations, typically begun with the support of state Governor's Offices of Highway Safety, which initiate and coordinate the application of traffic safety programs and countermeasures within their communities. Where possible, the countermeasure strategies reviewed and recommended in this project have been evaluated for the way they relate to the framework of the resources normally found in CTSP types of organizations.

The next section of this report, Chapter II, provides background information on the pedestrian alcohol problem and historical countermeasure recommendations. Chapter III examines current data to quantify the magnitude of the problem and relate it to racial and ethnic groups. Focus group investigations into countermeasure approaches for target racial/ethnic groups are presented in Chapter IV, and the implications and suggestions for future directions are given in Chapter V.

II. BACKGROUND

Among adult pedestrians, alcohol is the largest single contributing factor in fatal crashes. Each year, approximately 50% of all adult (ages 15+) fatally injured pedestrians have been drinking. Many more are seriously injured. Just as for drivers, alcohol involvement for pedestrians has been extremely difficult to counter. Although a wide range of countermeasures has been offered, none has stood out as the best solution, and few have been developed and implemented. This state of affairs was summarized by Huntley (1984): "We have identified no magic cure-all solution ... however, actions can be taken that will nibble away at the problem."

This study has had the benefit of a number of advances in traffic safety over recent years. First, data sources are much better today than in the past, and thus the problem can be much more sharply defined and localized. Second, major advances were made in the 1980s against the drinking driver, and many of the driver programs can be applied to pedestrians. Third, many of the already developed child, adult, and elderly pedestrian countermeasures can be applied to the drinking pedestrian. Finally, a major NHTSA field effort has been underway in Baltimore that tests many of the countermeasure concepts suggested over the years.

The Baltimore study is testing countermeasures among, primarily, white and black pedestrians living in an east coast urban environment. However, this is only one environment covering only two racial/ethnic groups for which countermeasures are needed. The goal of the present study was to identify other groups and situations affected by pedestrian alcohol crashes and to recommend strategies appropriate for the cultural and situational factors relevant to these groups.

The following paragraphs discuss what previous work has revealed about the pedestrian alcohol problem. Also discussed is previous countermeasure research including countermeasures developed from other areas such as drinking drivers and non-drinking pedestrians.

The present section should be considered as "Background" covering general pedestrian and alcohol issues. Specific information on cultural diversity and data collection covering the needs of specific cultural groups will be included in the next section.

Previous Research

In the 1970s, there were bits and fragments of research indicating that the drinking pedestrian was a major highway safety problem. Coroners from different parts of the country were reporting extraordinarily high BACs for those fatally injured pedestrians who were tested for alcohol. Haddon et al. (1961) showed that drinking pedestrians in New York City were at greatly elevated crash risk, Clayton et al. (1977) showed essentially the same result in England, and Honkanen et al. (1975), working with pedestrian "falls" (including struck by car), showed the same result in Helsinki.

This early work established two important principles concerning the pedestrian alcohol problem. First, drinking pedestrians are much more likely to become victims in a pedestrian vehicle crash as compared with non-drinking pedestrians on the same street at the same time of day. Second, pedestrian victims are often found with extraordinarily high BACs. Some of these BACs are so high that persons who rarely drink or drink only socially could become unconscious before attaining these levels.

For drivers, BACs above .05% represent probable impairment and BACs above .10% represent definite impairment or intoxication. For pedestrians, such BAC levels are barely the beginning. BAC readings above .20% are common for pedestrian victims and readings above .30% are not atypical. Levels such as these can not be attained by the casual drinker. Rather, they are the result of practiced behavior in which the person has developed a tolerance for large amounts of the drug.

New Orleans Study

In 1974, NHTSA commissioned the first (and only) major epidemiological study of the pedestrian alcohol problem in the U.S. (Blomberg et al., 1979; Preusser and Blomberg, 1981). The study, done in New Orleans during 1975 and 1976, considered both fatal and non-fatal pedestrian victims. Data were collected from non-crash-involved matched controls, victim and driver interviews, and intensive crash analysis. Possible countermeasures were considered. This study has remained the single best source for detailed information on the pedestrian alcohol problem.

Figure 1 shows the relative risk curves for pedestrians at various BAC levels based on the New Orleans data. These curves were generated by comparing crash- and non-crash-involved pedestrians. They are conceptually identical to the relative risk curves that are typically shown for drivers. The three curves compare the crash group to:

- A random group of non-crash-involved pedestrians sampled throughout New Orleans,
- Site-matched controls sampled at the same time of the day, the same day of the week, and the same location as the victims, and
- An age/sex site-matched control group consisting of the one control from each site-matched group who was the same sex as the victim and closest in age.

The shape of these curves is virtually identical to risk curves found for drivers. However, while driver risk increases rapidly after .10% BAC, pedestrian risk does not begin its rapid rise until after .15%. Preusser and Blomberg (1981) concluded that the driving task is substantially more complex than walking and thus the impairing effects of alcohol can have a major impact on drivers with lower BACs. Walking, on the other hand, is a simpler task, and thus more of the drug is required before its impairing effects have a major effect on crash risk.

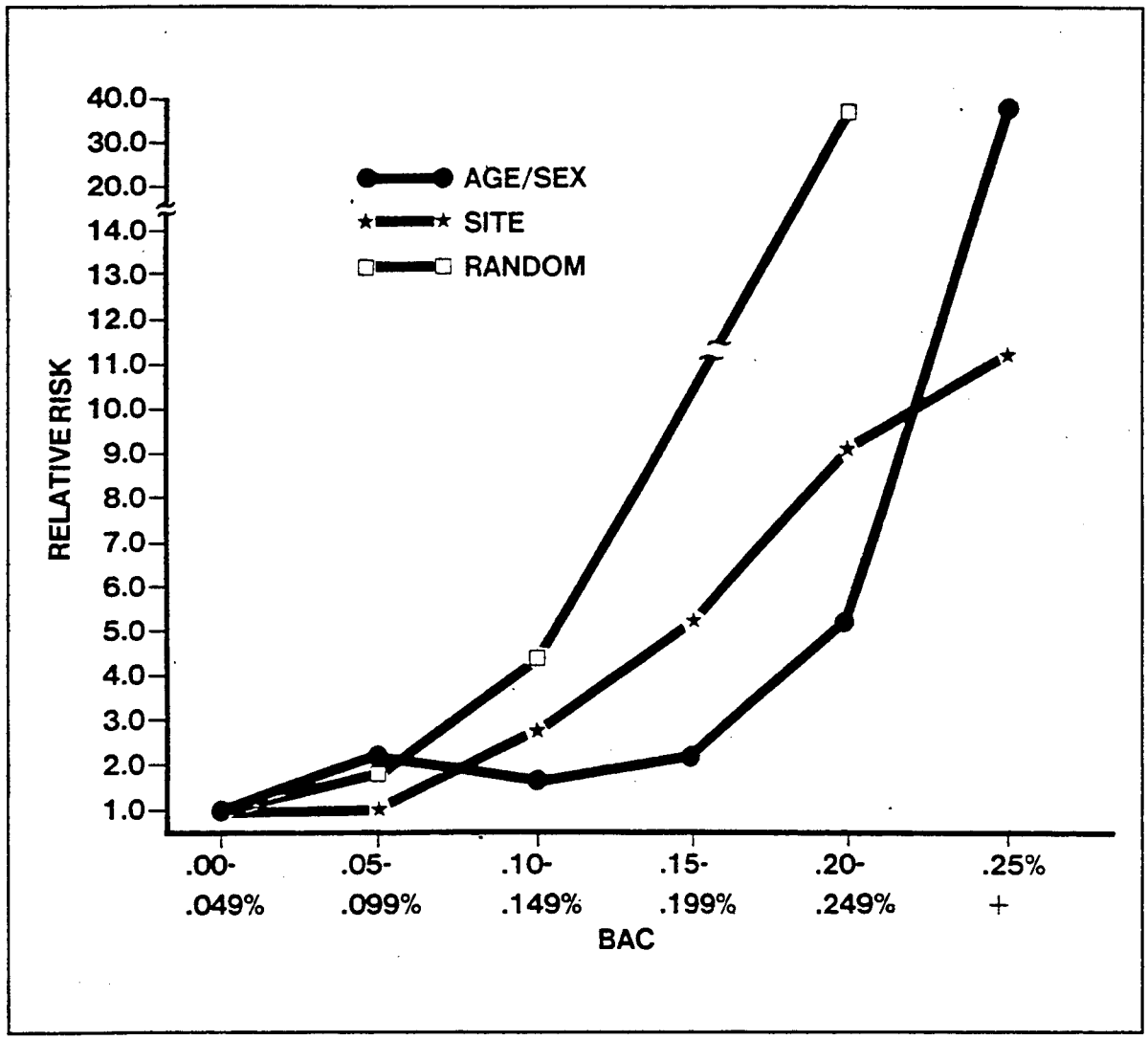

Figure 1. Relative Risk of New Orleans Pedestrian Accident Involvement by BAC as Determined by the Three Control Groups (from Preusser and Blomberg, 1981)

The similarities between the drinking and driving problem and the drinking and walking problem do not end with the risk curves. Both problems more often involve males, on weekends, late at night. Also, the drinking pedestrian more often made the critical error leading to the crash. This is similar to the finding in multiple vehicle crashes that it was the drinking driver, as opposed to the sober driver, who was most often at fault.

Another finding from driver research is that, at least statistically, drinking drivers often suffer other problems in their lives. Based on the New Orleans data, this finding is greatly magnified for the drinking pedestrian. In the New Orleans study, the high BAC victims often had criminal records and marital problems. They were also often unemployed and often had less than a high school education. Several times, victims' listed addresses were vacant lots.

Most available pedestrian safety countermeasures are based on eliminating one or more specific behavioral errors leading to specific crash types. For the New Orleans drinking pedestrian, course and location errors (e.g., lying in the roadway) were more common. The pedestrian crashes were coded according to crash types developed by Snyder and Knoblauch (1971), which were divided into three broad classes based on their characteristics and their relationship to alcohol involvement:

- Darts and Dashes (the typical child crash) were about as likely for the drinking and non-drinking pedestrian.

- Specific Situation crashes (specially defined high risk situations such as Vehicle Turn/Merge and Multiple Threat, in which you don't have to be drunk to find yourself in trouble) were much more likely for the non-drinking pedestrian.

- Other/Weird crashes (atypical or unclassifiable events) were much more likely for the drinking pedestrian.

This crash distribution does not lend itself well to the application of available countermeasures. "Other, Weird, and Unclassifiable" are crash types which, virtually by definition, are not countermeasure correctable at least in the traditional sense.

New Orleans Racial/Ethnic Data

The New Orleans study was conducted at a time when racial and ethnic information was generally not gathered in field research. Nevertheless, while little was said of it in Preusser and Blomberg (1981), racial information was collected in New Orleans for each experimental and control subject.

Overall, 89 (33%) of the pedestrian crash victims studied in New Orleans were white (including Hispanic), 132 were black (50%), and 45 (17%) were "other/unknown." BAC distributions for the white and black groups are shown in Table 1.

Table 1. BAC Distributions of New Orleans Pedestrian Fatalities (from Preusser and Blomberg, 1981).

	BAC Category				
	Refused/ Missing	**Zero**	**.001%- .099%**	**.100%- .199%**	**.200% +**
White	7%	49%	5%	18%	21%
Black	8%	45%	14%	11%	23%

These two distributions are remarkably similar. Mathematical models used by Preusser and Blomberg to predict BAC in the New Orleans data gained little explanatory power from the race variable. However, these same math models gained substantial power from the race-by-sex interaction. It was found that black females had high BACs similar to those of males (white or black), and white females had substantially lower BACs. At the time, this result suggested a different cultural role for black females within the black community than for white females within the white community.

Racial information was also available in New Orleans for the control or comparison subjects. Overall, 487 (40%) of the control subjects sampled in New Orleans were white (including Hispanic), 693 were black (57%), and 28 (2%) were "other/unknown." BAC distributions for the white and black groups are shown in Table 2.

Table 2. BAC Distributions of New Orleans Comparison Pedestrians (from Preusser and Blomberg, 1981).

	BAC Category			
	.000%-.049%	.050%-.099%	.100%-.199%	.200% +
White	88%	3%	5%	3%
Black	85%	6%	6%	3%

Pedestrian Alcohol Countermeasures

The original New Orleans study ended with a conference on countermeasure development. Technical experts and program level people from NHTSA and other organizations considered possible approaches for dealing with the problem. Countermeasures were identified and catalogued without regard to cost or feasibility. Many of the suggested individual countermeasures were obviously impractical or prohibitively expensive. Many other suggested approaches are currently being applied in Baltimore (e.g., Dunlap and Associates, 1994).

The specific countermeasure ideas from the New Orleans conference can be summarized into ten general content areas as follows:

- Community Mental Health — addressing the overall problem of alcoholism and the need for an approach aimed at curing the alcoholic.

- Adjudication — increasing the threat of legal sanctions, for example enacting per se laws for pedestrians.

- Economics — making products more expensive, increasing the cost of drinking the amount of alcohol needed to reach these high BACs.

- Product — lowering the proof of alcoholic beverages, particularly low-cost beverages.

- Case Finding/Detection — locating the high BAC pedestrian and removing him or her from the roadway.

- Symptoms — employing the symptoms of high BACs, such as decreased visual acuity or poor motor coordination, to identify potential victims, deny them service in bars, or deter them from entering the street.

- Engineering — using various approaches designed to enhance the safety of the roadway and/or make it more difficult for high BAC pedestrians to stagger in front of traffic.

- Education, Youth/School — starting alcohol pedestrian education at the school level.

- Education, Mass Media — using newspapers, television, radio, magazines, etc. to educate the public to the pedestrian alcohol problem.

- Education, Public Responsibility — urging all segments of the public to promote responsible drinking (including employer-based programs, promotion of pedestrian intoxication laws, and server responsibility/liability).

In the early 1980s, NHTSA requested that the Transportation Systems Center (TSC) review the possible countermeasures and make recommendations as to how to proceed. The result of this effort was the Huntley (1984) paper referenced above. Huntley focused on police "sweeper" squads and "support on call" involving taxis and escorts to get intoxicated persons home. Services of these types in the Boston area were surveyed. Both types of services appeared practical and effective, though the number of persons that could be reached by these services was relatively small. There was a problem related to the number of available detoxification beds in the community. The sweep squads wanted to deliver intoxicated pedestrians to the mental health community, not to police facilities, and they stopped the sweep when the beds were filled. There were also problems with the number of taxi drivers who wanted to deal with intoxicated persons and the availability of volunteer escorts.

Sweep operations, which involve picking up intoxicated persons from the street and letting them "sleep it off," are a typical method for dealing with the problem. Well-publicized programs of this type have been conducted in Puerto Rico and in Gallup, New Mexico. However, such programs typically reach only a fraction of those people who need the services. The sweeps typically deal with persons who are too drunk to walk or even know that they are being "swept." These same persons are at risk while they are becoming intoxicated, and, in all likelihood, will be at risk again in the near future as they start to "sober up." As described by Huntley, these individuals need intensive treatment for alcoholism.

In the late 1980s, NHTSA conducted a one-day conference in Washington on the problem. The focus of the conference was to develop public information materials covering the full range of the problem. The result was a fact sheet and a series of pamphlets (NHTSA, 1989) targeted for:

- young adults,
- senior citizens,
- drivers, and
- general audiences.

These materials describe the problem and ask for community involvement in reaching a solution. They also provide crash avoidance information for drivers and pedestrians.

Many of these countermeasure concepts are currently being developed and applied in NHTSA's Baltimore project. Racially, Baltimore has a population not unlike the population originally studied in New Orleans, that is, largely blacks and whites in an urban environment.

Other Pedestrian Safety Countermeasures

The pedestrian alcohol countermeasures discussed above are primarily concerned with either separating the drunk from the traffic environment or limiting the number of people who become intoxicated. A more traditional pedestrian safety approach to the problem would be to consider the crash types and behavioral errors leading to crash occurrence and to consider countermeasures designed to limit the potential hazards. In other words, rather than separating the drunk from traffic, find ways in which intoxicated persons will be safer when they are in or near the roadway.

Traditional countermeasures that require positive action on the part of the pedestrian may be difficult to implement. Intoxicated persons will not necessarily apply learned safe behaviors reliably. However, if the simple "stop and look left-right-left" behavior, which has been found successful with children, could be strongly ingrained, even intoxicated people might employ it often enough to increase their safety.

Fortunately, not all of the available traditional countermeasures rely on a positive action by the pedestrian. Several involve positive actions on the part of the driver, and others involve changes in the environment. For example, any of the available pedestrian awareness countermeasures directed toward drivers could possibly increase safety for intoxicated pedestrians. These include conditions such as backing up in parking lots, turning at intersections, and overtaking vehicles stopped in traffic; other driver countermeasures may also be appropriate.

Other countermeasure topics include environmental changes that could be implemented through regulations or ordinances that would be quite acceptable to a range of cultural groups. One such ordinance would limit on-street parking during the peak alcohol-consumption hours in high risk areas. Similarly, intersection parking setback ordinances could be strengthened and enforced. The practical effect of these countermeasures is to provide drivers with more time to perceive and respond to crossing pedestrians, which could reduce the incidence of dart-out crashes, which are a major problem for intoxicated pedestrians. Enforcement of jaywalking ordinances and other regulations related to pedestrian safety is also relevant.

Extending Drinking Driver Countermeasures

Drinking and driving among adults has seen dramatic reductions over the past decade. There is no question that the countermeasures developed to address this problem have been effective. Many of these countermeasures were considered in this study.

Part of the success with drivers has been derived from changes in the laws covering drinking, and drinking and driving. Possible ways these laws might be extended to pedestrians include a per se law for walking on a public street and alcohol prohibition, as found on many Native American reservations. A walking-while-intoxicated law allows for the identification of people who are most at risk, and it might lead to referring these people to the appropriate mental health setting. Alcohol prohibition is the most commonly debated alcohol/legal question among Native Americans, with strong arguments as to why it is both an effective and an ineffective policy.

Another concern involves societal attitudes toward public intoxication and the people who serve drinks to intoxicated persons. Dram shop liability and host responsibility issues have been considered in the present project. Also of interest were the designated driver programs in which one person in the party takes responsibility for getting everyone else home safely, whether by car, on foot, or both. Similarly, the Safe Rides concept, usually involving taxis or volunteers taking intoxicated drivers home, was expanded to include safe rides home for intoxicated pedestrians. Employer-based programs, whether for drug abuse or highway safety, also were considered. One of the goals of the present study was to consider these and similar options as they might apply to diverse cultural groups.

To the extent possible, it is appropriate to build on effective drinking driver efforts and extend these efforts to culturally diverse groups of pedestrians. Some of these efforts need only be expanded to include the intoxicated pedestrian, while others will need to be modified. Also considered were the community support systems that deal with drinking drivers such as alcohol assessment, alcohol school, and alcoholism treatment. Similarly, community groups concerned with drinking and driving should also be concerned with drinking and walking. Support of these groups, through the local Community Traffic Safety Program (CTSP), can be critical to the success of any field efforts which might develop from this study.

CTSPs

Drinking and driving programs are typically coordinated through the local CTSP in those communities that have such organizations. Ideally, pedestrian alcohol strategies will also become CTSP activities, either separately or as an extension or expansion of ongoing pedestrian or drinking and driving efforts. Placing first responsibility for the pedestrian alcohol countermeasures within CTSPs not only helps ensure that the countermeasures are properly adapted to the community, but would also provide for effective and efficient implementation while reinforcing the role of the CTSP.

While CTSPs vary, each is characterized by the following common elements:

- Established unit in the community,
- Sustained over time,
- Public and private support and guidance, and
- Action plan to solve one or more problems.

Nationally, there are more than 300 CTSPs serving more than 100 million people, and more are in the planning stages.[1] These organizations are designed for the implementation of community-based highway safety countermeasures, and their participation would be absolutely essential for the implementation of any community-based pedestrian alcohol program. A recent NHTSA project studied CTSPs across the country (Leaf and Preusser, 1994). One of the findings from this study was that CTSPs are culturally diverse in terms of the ethnic and racial composition of the populations they serve. For example, there are five CTSPs on U.S. island territories in the Pacific, all of which have targeted pedestrian safety programs. Several CTSPs serve Native American reservations, including a major Native American program in North Dakota. Several other CTSPs focus on inner city black and Hispanic populations, and several offer bilingual programs. One of the strengths of CTSPs for implementing pedestrian alcohol strategies developed for culturally diverse groups is their practice of coordinating their efforts with other community groups.

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1 *Community Traffic Safety Program Directory, Summer 1994.* Community Traffic Safety Network, Washington, DC.

III. PROBLEM MAGNITUDE

The purpose of this section is to identify the number of drinking pedestrians involved in motor vehicle crashes. The analysis is based on data from NHTSA's FARS (Fatality Analysis Reporting System) data. Judgments of alcohol involvement were based on blood alcohol test results for fatally injured pedestrians. For general analyses, FARS data from 1984 through 1993 were used. For analyses which examined racial/ethnic patterns of pedestrian alcohol crash involvement, subsets of the full data set were used. FARS data do not contain racial/ethnic information, and supplemental information had to be acquired and merged with the FARS data. Racial/ethnic information could be acquired for only some of the years and some geographic areas.

Data sources used in these analyses are described first. This is followed by the geographic distribution of pedestrian alcohol fatalities, followed by racial/ethnic supplemental data procedures, samples, and analyses, followed by the identification and description of racial/ethnic subgroups with large pedestrian alcohol crash problems.

Data Sources

Fatality Analysis Reporting System

NHTSA's FARS data reporting system contains records of *all* traffic crashes on public roadways in which one or more persons dies within 30 days of the crash. For this project, national data for pedestrian crashes for the years 1984 through 1993 were analyzed. Due to data processing limitations, data for only the first two pedestrians in any crash were examined. This resulted in 358 fewer pedestrians entering the tables (vs. 63,906 tabulated) over the 10 years studied, approximately 0.6% of the total.

Table 3 shows the distribution of age categories of fatally injured pedestrians. Over the ten-year period, the total number of fatalities stayed relatively constant for the first five years, dropped by about 300 deaths/year for the next two years, and dropped by another 850 deaths/year for the last three years. Eighteen- to 24-year-olds went from 14 percent of the total in 1984 to only about 8.5 percent of the deaths in 1993, while 35- to 49-year-olds rose from about 15 percent of the 1984 total to more than 22 percent of the 1993 total. The percentage of all fatalities age 15 and older rose slightly over the ten years, from about 83 percent at the start to about 85 percent at the end.

Table 3. Age Distribution of Fatally Injured Pedestrians (FARS, 1984 - 1993; Up to Two Pedestrians Only per Crash).

Age Category	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	TOTAL
0 - 9 years old	752	791	757	722	733	643	627	555	510	517	**6,607**
% of known	11.0%	11.9%	11.4%	10.9%	10.9%	10.0%	9.9%	9.8%	9.3%	9.4%	**10.5%**
10 - 14 yrs old	296	238	259	270	260	219	222	222	197	237	**2,420**
% of known	4.3%	3.6%	3.9%	4.1%	3.9%	3.4%	3.5%	3.9%	3.6%	4.3%	**3.8%**
15 - 17 yrs old	226	270	262	217	214	164	168	179	165	150	**2,015**
% of known	3.3%	4.1%	4.0%	3.3%	3.2%	2.5%	2.6%	3.1%	3.0%	2.7%	**3.2%**
18 - 20 yrs old	408	325	326	300	279	258	246	250	206	181	**2,779**
% of known	6.0%	4.9%	4.9%	4.5%	4.1%	4.0%	3.9%	4.4%	3.8%	3.3%	**4.4%**
21 - 24 yrs old	546	519	514	476	449	385	371	361	301	286	**4,208**
% of known	8.0%	7.8%	7.8%	7.2%	6.7%	6.0%	5.8%	6.3%	5.5%	5.2%	**6.7%**
25 - 34 yrs old	1,117	1,036	1,102	1,067	1,131	1,162	1,107	979	888	937	**10,526**
% of known	16.3%	15.6%	16.6%	16.1%	16.8%	18.0%	17.4%	17.2%	16.3%	17.0%	**16.7%**
35 - 49 yrs old	1,024	1,026	1,093	1,167	1,178	1,204	1,239	1,102	1,171	1,226	**11,430**
% of known	14.9%	15.4%	16.5%	17.6%	17.5%	18.7%	19.5%	19.4%	21.5%	22.3%	**18.2%**
50 - 64 yrs old	1,021	989	882	937	893	937	877	754	753	726	**8,769**
% of known	14.9%	14.9%	13.3%	14.1%	13.3%	14.6%	13.8%	13.3%	13.8%	13.2%	**13.9%**
65+ yrs old	1,460	1,448	1,428	1,482	1,591	1,466	1,500	1,288	1,264	1,250	**14,177**
% of known	21.3%	21.8%	21.6%	22.3%	23.6%	22.8%	23.6%	22.6%	23.2%	22.7%	**22.5%**
Total Known	**6,850**	**6,642**	**6,623**	**6,638**	**6,728**	**6,438**	**6,357**	**5,690**	**5,455**	**5,510**	**62,931**
% of total	98.1%	98.1%	98.2%	98.8%	98.4%	98.6%	98.7%	98.7%	98.9%	98.3%	**98.5%**
Unknown	131	128	119	78	109	90	86	75	63	96	**975**
% of total	1.9%	1.9%	1.8%	1.2%	1.6%	1.4%	1.3%	1.3%	1.1%	1.7%	**1.5%**
TOTAL	**6,981**	**6,770**	**6,742**	**6,716**	**6,837**	**6,528**	**6,443**	**5,765**	**5,518**	**5,606**	**63,906**

Racial/Ethnic Coding

For the years 1987, 1988, and 1989, NHTSA linked race information to the fatalities in the FARS data bases. The race information was obtained from the Centers for Disease Control Multiple Cause of Death (MCOD) data. For these years, race data were captured on 16,957 fatally injured pedestrians ages 15 and older. Of these, 73 percent were white, 16 percent were black, 2 percent were Native American, and 2 percent were Asian. Race was coded as "other" for only about 0.1 percent of the cases. Race data could not be matched to about 6 percent of the pedestrian fatalities and was coded as "unknown." No code for Hispanic heritage was available. Because it is likely that the large majority of Hispanics were coded simply as white (see footnote, p. 15, and p. 17), the category for whites in FARS+MCOD data tables is titled "white (including Hispanic)." Of the 16,952 adult pedestrians for whom sex was known, 71 percent were male.

The FARS + MCOD distribution of pedestrian fatalities by race, sex, and age is shown in Table 4. Children age 14 and younger made up about 15 percent of all victims, 13 percent of

Table 4. Fatally Injured Pedestrians by Race, Sex, and Age (FARS + MCOD, 1987 - 1989; Up to Two Pedestrians Only per Crash).

	White (inc. Hisp.)		Black		Native American		Asian/Pac. Islndr		Other/Unkn Race		All Races		
Age Category	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**M + F**
0 - 9 years old	840	481	349	221	11	7	39	21	74	55	1,313	785	**2,098**
% of known	8.6%	10.9%	13.4%	25.1%	3.4%	8.5%	16.3%	11.2%	8.5%	13.9%	9.5%	13.2%	**10.6%**
10 - 14 yrs old	333	205	92	47	5		9	11	31	16	470	279	**749**
% of known	3.4%	4.7%	3.5%	5.3%	1.5%	0.0%	3.8%	5.9%	3.6%	4.0%	3.4%	4.7%	**3.8%**
15 - 17 yrs old	308	152	46	33	16	2	5	5	17	11	392	203	**595**
% of known	3.1%	3.5%	1.8%	3.7%	4.9%	2.4%	2.1%	2.7%	1.9%	2.8%	2.8%	3.4%	**3.0%**
18 - 20 yrs old	509	135	72	26	23	4	9	1	46	12	659	178	**837**
% of known	5.2%	3.1%	2.8%	2.9%	7.1%	4.9%	3.8%	0.5%	5.3%	3.0%	4.8%	3.0%	**4.2%**
21 - 24 yrs old	751	220	149	39	44	7	12	4	59	24	1,015	294	**1,309**
% of known	7.7%	5.0%	5.7%	4.4%	13.5%	8.5%	5.0%	2.1%	6.8%	6.0%	7.3%	4.9%	**6.6%**
25 - 34 yrs old	1,769	537	535	166	70	22	32	12	166	49	2,572	786	**3,358**
% of known	18.0%	12.2%	20.5%	18.8%	21.5%	26.8%	13.4%	6.4%	19.0%	12.3%	18.6%	13.2%	**17.0%**
35 - 49 yrs old	1,827	588	596	130	94	22	36	24	177	55	2,730	819	**3,549**
% of known	18.6%	13.4%	22.9%	14.7%	28.9%	26.8%	15.1%	12.8%	20.3%	13.9%	19.7%	13.8%	**17.9%**
50 - 64 yrs old	1,411	542	433	96	36	10	32	44	113	48	2,025	740	**2,765**
% of known	14.4%	12.3%	16.6%	10.9%	11.1%	12.2%	13.4%	23.4%	12.9%	12.1%	14.6%	12.4%	**14.0%**
65+ yrs old	2,056	1,542	335	124	26	8	65	66	190	127	2,672	1,867	**4,539**
% of known	21.0%	35.0%	12.9%	14.1%	8.0%	9.8%	27.2%	35.1%	21.8%	32.0%	19.3%	31.4%	**22.9%**
Total Known	**9,804**	**4,402**	**2,607**	**882**	**325**	**82**	**239**	**188**	**873**	**397**	**13,848**	**5,951**	**19,799**
% of total	98.5%	99.3%	98.6%	98.8%	99.4%	98.8%	99.2%	100.0%	96.5%	99.0%	98.4%	99.2%	**98.6%**
Unknown	154	31	36	11	2	1	2	0	32	4	226	47	**273**
% of total	1.5%	0.7%	1.4%	1.2%	0.6%	1.2%	0.8%	0.0%	3.5%	1.0%	1.6%	0.8%	**1.4%**
TOTAL	**9,958**	**4,433**	**2,643**	**893**	**327**	**83**	**241**	**188**	**905**	**401**	**14,074**	**5,998**	**20,072**

males and 18 percent of females. About 87 percent of white (including Hispanic[2]) victims were ages 15 and older, compared with just 80 percent of black victims, 94 percent of Native American victims, and 81 percent of the Asian victims. Of pedestrian victims aged 15 or older, Asians had the highest average age (55 years). Next were whites (including Hispanics) (48 years), then blacks (44 years), and youngest were Native Americans (38 years). White (+ Hispanic) females were older than white (+ Hispanic) males (on average, 54 years vs. 46 years), and Asian females were older than Asian males (58 years vs. 52 years). Black males and females had about the same average age, as did Native American males and females.

Efforts were made to identify additional sources of race information for pedestrian crash victims. Data were sought to match any of the FARS data files for the years 1984 through 1993, for pedestrians ages 15 and older. Medical examiners and health departments in most states were approached about providing racial/ethnic information on pedestrian crash fatalities. Data were actually obtained for six sites, including four states and sections of two additional states. The data and sources are described below:

- Florida. Data for 1986 through 1993 were provided from motor vehicle crash record data files by the Department of Highway Safety and Motor Vehicles.

- Michigan. Data were provided for 1984 through 1993 by the Department of Public Health, Division of Health Statistics.

- New York. Data were provided for 1984 through 1993 for all except New York City by the State Department of Health.

- Pennsylvania. Data for 1989 through 1993 were provided by the Department of Health.

- San Diego County, California. Data for four years, 1990 - 1993, were provided by the county's Office of the Medical Examiner.

- Texas. Data for 1993 for major urban counties were provided by the Texas Transportation Institute. Periodically, TTI collects the information by means of surveys to the county medical examiners.

Next, FARS records for the areas and time periods were separated from the main database and steps were taken to match the data from the states with the proper crashes and pedestrians in the FARS records.

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[2] No separate code was provided for Hispanic origin for the FARS + MCOD data. Based on the six-site data and the fact that almost none of the FARS + MCOD fatalities were coded as "other race," it is likely that virtually all of the Hispanic pedestrians were coded as "white" and that they made up about 10% of that category. The terminology "white (including Hispanic)" is used throughout for the FARS + MCOD data, to distinguish it from the six-site data, for which the "white" category included very few Hispanics.

Data provided by the states included fields which were used to match the FARS records. Fields available varied from state to state. The fields included some combination of crash date, time, and county; death date, time, and county; and pedestrian age and sex.

The matching process occurred in two main steps. First, a computer program matched records which had all identifier fields exactly the same. Next, printouts of the remaining FARS records and state-provided records were compared and matched manually. Records were considered to match if they were in "substantial agreement" on the key data items — for example, if age was one year different, or if dates were one day off, or if counties were different (victims of a crash in one county could be taken to another county for treatment). Data for each state were processed separately and then merged for analysis. Table 5 summarizes the data entering into the analysis.

Table 5. Study Sites and Numbers of Fatally Injured Pedestrians.

Site	Years of Data	Number of Pedestrians Age 15+	Number Matched	Percent Matched
California (San Diego County)	1990-93	362	316	84%
Florida	1986-93	4,362	3,681	86%
Michigan	1984-93	1,904	1,628	86%
New York (except NYC)	1984-93	2,272	1,956	83%
Pennsylvania	1989-93	1,074	889	87%
Texas (urban)	1993	296	186	63%
TOTAL		**10,270**	**8,683**	**85%**
New Mexico	1982-1993	953	953	100%

In addition to these data sources, data analyses on New Mexico pedestrian fatalities from 1982 through 1993 were provided by the University of New Mexico Center on Alcoholism, Substance Abuse, and Addictions (CASAA). Those data are also listed in Table 5. Through a number of projects over those years (see, e.g., May and Bergdahl, 1994), CASAA has linked medical examiner data with fatal crash results[3]; they have been able to obtain race information on nearly 100 percent of fatally injured pedestrians. The CASAA results are summarized later in this chapter. The CASAA data provide information on white, Hispanic, and Native American pedestrians.

[3] Data for 1992 and 1993 were developed and the analyses reported below were supported under this contract.

In subsequent analyses of the FARS and the six-site data, key questions were levels of alcohol-involvement for the pedestrians, overall, by race, and by race and sex. The first objective was to identify racial/ethnic groups or subgroups that had high involvement in pedestrian alcohol fatalities. Also investigated were differences in crash characteristics (including day of week, time, road system type, pedestrian behavior, etc.) by race (and sex) and alcohol involvement. States were examined individually to determine the kinds of differences and consistencies between them.

Race and Hispanic Codes Across Sites

It had been hoped that the racial/ethnic coding schemes used by the states would be sufficiently detailed, and data sufficiently plentiful, to allow statements to be made about racial/ethnic subgroups, specifically about Hispanics and Asian/Pacific Islanders from different places of origin. Such was not the case.

As noted above, the main FARS-provided race coding for 1987-1989 included only the major Census codes for race: White, Black, Native American, Asian/Pacific Islander, and Other Race. The individual states that provided data used a variety of coding schemes to represent race and ethnicity. Within race codes, all states except New Mexico had white and black categories. (In New Mexico data, the only codes were "Anglo," Native American, and Hispanic; blacks and Asians or Pacific Islanders occurred rarely and had been excluded from the data.) Beyond that, Table 6 below summarizes differences in the coding schemes, by state.

In the actual data as provided by the individual states, there were very few cases of racial/ethnic categories beyond the "big three" of white, black, and Hispanic. For Hispanics, secondary codes were provided for only 122 of 614 cases, all from New York and Pennsylvania (i.e., not including the states with larger Hispanic populations, Florida, Texas, and California). Of those 122 cases, 58 were Puerto Rican, 52 Central/South American, 8 Mexican, and 4 Cuban. In the state-provided data, there were only 56 total cases involving Asian/Pacific Islanders. Of them, only 27 had more distinct codes assigned (including 12 Chinese, 6 Filipino, and 4 Japanese). For all these subcategories, numbers were too small for a meaningful analysis.

There were also very few cases of Native Americans identified in the state-provided data — only 33 in all. The sample showed high BAC levels, with 68 percent (of those with known BACs) at or above .10% and 44 percent at or above .20%. These numbers were too small for further analyses; however, the 1987-1989 FARS data and the CASAA data provided information on much larger numbers of Native Americans.

Table 6. Race and Hispanic Coding Across Sites.

Site	Hispanic Indicator	Hispanic Subdivisions	Native American	Asian/Pacific Islander
California (San Diego Co.)	Option within Race	No	Yes	Yes; with subdivisions
Florida	Option within Race	No	Included in Race "Other"	Included in Race "Other"
Michigan	Not coded	n.a.	Yes	Yes; with subdivisions
New York (excl. NYC)	Separately coded	Yes	Yes	Yes; with subdivisions
Pennsylvania	Separately coded	Yes	Yes	Yes; with subdivisions
Texas (urban)	Option within Race	No	Included in Race "Other"	Included in Race "Other"
New Mexico	Option within Race	No	Yes	Not in database

For the main analyses involving state-provided data, cases were coded as white, black, Hispanic, or other. This corresponded to the primary coding scheme in three states. In New York and Pennsylvania, this coding was achieved by letting the Hispanic marker override the separate race code (which was, for all but two cases, "white"). Michigan does not have a Hispanic code or indicator, and cases were coded as white, black, or other. In practice, this likely meant that any Hispanic-origin pedestrians were coded as white. This should have had created few miscodings; for comparison, the nearby state of Pennsylvania coded less than three percent as many Hispanic as white crash victims.

For analyses based on the FARS + MCOD data for 1987 - 1989, preliminary tables were generated for all race categories and are reported below. The numbers of cases involving Asian/Pacific Islanders were small, and subsequent analyses focussed on whites (including Hispanics), blacks, and Native Americans.

Overall Pedestrian Alcohol Problem Magnitude

It had been about 20 years since the New Orleans data were collected and 15 years since they were published. The first objective of the present study was to confirm that the general problem still existed and to describe its prevalence across the country. Table 7 shows, for adult pedestrian fatalities, the distribution of BACs over the ten-year period. Measured BAC values are known for about 67 percent of all fatally injured pedestrians age 15 or older. Of those, half had positive

BACs. There was a gradual decrease over the ten-year period, from 53 percent in 1984 to 48 percent in 1993. The value was slightly over 50 percent in 1984, 1985, and 1986, and slightly under 50 percent in the remaining years. Most of the pedestrians with positive BACs had very high levels of alcohol. More than one-third of all pedestrians fatalities (age 15+) had BACs at or above .15%; more than one-fourth had BACs at or above .20%. These values stayed about the same over the ten-year period.

Table 7. Measured BACs for Fatally Injured Pedestrians Ages 15 and Older (FARS, 1984 - 1993; Up to Two Pedestrians Only per Crash).

BAC Range	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	TOTAL
0.00%	1,611	1,760	1,792	1,924	2,111	1,959	1,929	1,750	1,633	1,544	18,013
% of known	47.2%	48.5%	48.0%	50.1%	52.9%	50.1%	51.0%	51.7%	50.7%	51.8%	50.2%
.01-.04%	127	163	150	162	128	134	139	117	104	90	1,314
% of known	3.7%	4.5%	4.0%	4.2%	3.2%	3.4%	3.7%	3.5%	3.2%	3.0%	3.7%
.05-.09%	149	178	191	182	187	206	152	126	139	113	1,623
% of known	4.4%	4.9%	5.1%	4.7%	4.7%	5.3%	4.0%	3.7%	4.3%	3.8%	4.5%
.10-.14%	262	253	277	221	258	266	246	225	202	170	2,380
% of known	7.7%	7.0%	7.4%	5.8%	6.5%	6.8%	6.5%	6.6%	6.3%	5.7%	6.6%
.15-.19%	343	357	367	341	355	364	286	285	277	270	3,245
% of known	10.0%	9.8%	9.8%	8.9%	8.9%	9.3%	7.6%	8.4%	8.6%	9.1%	9.0%
.20% +	922	919	953	1,009	955	983	1,027	885	866	795	9,314
% of known	27.0%	25.3%	25.5%	26.3%	23.9%	25.1%	27.2%	26.1%	26.9%	26.7%	26.0%
Total Known	**3,414**	**3,630**	**3,730**	**3,839**	**3,994**	**3,912**	**3,779**	**3,388**	**3,221**	**2,982**	**35,889**
% of total	58.8%	64.7%	66.5%	68.0%	69.6%	70.2%	68.6%	69.0%	67.8%	62.7%	66.6%
Not tested	1,643	1,362	1,373	1,330	1,245	1,287	1,301	1,082	1,109	1,196	12,928
% of total	28.3%	24.3%	24.5%	23.6%	21.7%	23.1%	23.6%	22.0%	23.4%	25.1%	24.0%
Oth/Unkn	745	621	504	477	496	377	428	443	418	578	5,087
% of total	12.8%	11.1%	9.0%	8.4%	8.6%	6.8%	7.8%	9.0%	8.8%	12.2%	9.4%
TOTAL	**5,802**	**5,613**	**5,607**	**5,646**	**5,735**	**5,576**	**5,508**	**4,913**	**4,748**	**4,756**	**53,904**

Table 8 shows the same distribution of results for the six sites that provided data separately. These are subsets of the FARS data. The average distribution across the six sites is remarkably similar to the distribution across ten years of FARS results. Positive BACs were highest in Texas urban counties, Florida, and Michigan; lower in San Diego County and Pennsylvania; and lowest in the part of New York State excluding New York City. The percentage of pedestrian fatalities with known BACs who were at or above .10% ranged from 55 percent in urban Texas to 28 percent in outstate New York.

Table 8. Measured BACs for Fatally Injured Pedestrians Ages 15 and Older (Six State and County Sites).

BAC Range	San Diego Co., Calif.	Florida	Michigan	New York (exc. NYC)	Pennsyl-vania	Texas (ur-ban cnties)	TOTAL
0.00%	198	971	386	976	388	60	2,979
% of known	61.7%	40.2%	42.6%	63.1%	59.9%	39.5%	49.7%
.01-.04%	12	115	41	57	12	2	239
% of known	3.7%	4.8%	4.5%	3.7%	1.9%	1.3%	4.0%
.05-.09%	15	120	45	81	28	6	295
% of known	4.7%	5.0%	5.0%	5.2%	4.3%	3.9%	4.9%
.10-.14%	16	192	69	99	41	8	425
% of known	5.0%	8.0%	7.6%	6.4%	6.3%	5.3%	7.1%
.15-.19%	13	262	97	100	45	18	535
% of known	4.0%	10.8%	10.7%	6.5%	6.9%	11.8%	8.9%
.20% +	67	755	269	233	134	58	1,516
% of known	20.9%	31.3%	29.7%	15.1%	20.7%	38.2%	25.3%
Total Known	**321**	**2,415**	**907**	**1,546**	**648**	**152**	**5,989**
% of total	80.9%	49.9%	39.6%	59.4%	51.6%	45.5%	51.1%
Not tested	76	2,078	1,296	627	449	165	4,691
% of total	19.1%	42.9%	56.5%	24.1%	35.7%	49.4%	40.0%
Oth/Unkn	0	347	90	430	160	17	1,044
% of total	0.0%	7.2%	3.9%	16.5%	12.7%	5.1%	8.9%
TOTAL	**397**	**4,840**	**2,293**	**2,603**	**1,257**	**334**	**11,724**

These results clearly indicate that the pedestrian alcohol problem, as originally measured in New Orleans, still exists. For 1984 through 1993 for the entire country, half of the tested adult pedestrians had been drinking, and at least 25 percent had BACs of .20% or greater. These results are nearly identical to the results in New Orleans during the 1970s. There, half of the fatalities had been drinking and 24 percent were at .20% BAC or higher.

Table 9 shows the FARS pedestrian fatality data separately for the 50 states and the District of Columbia. Tabulations are shown for adults (i.e., ages 15 and older) for total fatalities, for all positive BACs (.01% or higher), and for high BACs of .15% or more. States are ordered in the table by decreasing values of the far-right column, the yearly fatality rate for pedestrians with BACs of .15% or higher.

The first and second columns, respectively, give the total number of adult pedestrians killed and the number of them for whom blood alcohol test results were included in the FARS data. Overall, two-thirds of all adult victims had known BAC test results. BAC reporting varied widely across states, from a high of more than 90% (New Mexico) to a low of only 25% (Arkansas).

The third column of Table 9 shows the percentage of those tested who were positive for alcohol, and the fourth column shows the percentage whose BAC was .15% or higher. The fifth column shows the 1990 U.S. Census values for the number of persons in the state ages 15 and

Table 9. Alcohol-Related Pedestrian Fatalities, for Ages 15 and Older (FARS, 1984 - 1993, Up to Two Pedestrians Only per Crash, and 1990 U.S. Census).

STATE	Total Number Killed	Pedestrians Killed, BAC Known			Populn Ages 15+ (000)	Fatality Rates (per 100K/yr) *		
		Total Number	Percent BAC .01%+	Percent BAC .15%+		All Fatalities	BAC .01% +	BAC .15% +
New Mexico	809	732	75%	60%	1,136.5	7.12	5.31	4.30
Arizona	1,266	715	61%	50%	2,832.3	4.47	2.74	2.22
Alaska	131	91	74%	65%	400.2	3.27	2.41	2.12
Florida	5,009	2,960	60%	41%	10,525.9	4.76	2.84	1.97
Louisiana	1,132	423	71%	49%	3,184.5	3.55	2.53	1.76
South Carolina	1,026	493	61%	45%	2,720.6	3.77	2.29	1.68
North Carolina	1,753	1,470	61%	48%	5,293.2	3.31	2.01	1.60
Texas	4,288	1,772	65%	48%	12,905.9	3.32	2.17	1.60
Georgia	1,624	1,119	60%	46%	5,032.1	3.23	1.95	1.48
Nevada	354	288	51%	40%	948.0	3.73	1.91	1.48
Delaware	178	166	58%	43%	527.3	3.38	1.97	1.46
Arkansas	456	114	75%	51%	1,834.9	2.49	1.85	1.26
Mississippi	528	139	59%	45%	1,952.6	2.70	1.60	1.23
Alabama	772	392	60%	45%	3,164.3	2.44	1.46	1.10
D.C.	199	133	43%	27%	508.2	3.92	1.68	1.06
Michigan	1,768	871	59%	42%	7,234.1	2.44	1.45	1.02
Montana	122	104	67%	50%	611.5	1.99	1.34	1.00
South Dakota	96	75	72%	55%	527.3	1.82	1.31	1.00
California	7,443	6,220	43%	30%	23,161.0	3.21	1.38	0.95
Ohio	1,482	473	72%	53%	8,500.0	1.74	1.26	0.93
West Virginia	318	237	59%	40%	1,432.1	2.22	1.30	0.88
Maryland	1,096	879	47%	29%	3,794.1	2.89	1.35	0.83
Kentucky	610	364	51%	40%	2,893.7	2.11	1.08	0.83
Oregon	546	468	49%	34%	2,229.8	2.45	1.19	0.83
Utah	302	198	41%	32%	1,185.7	2.55	1.04	0.82
New Jersey	1,903	1,486	40%	26%	6,223.5	3.06	1.22	0.81
Tennessee	898	642	51%	35%	3,867.3	2.32	1.18	0.80
Oklahoma	553	394	49%	35%	2,443.0	2.26	1.10	0.80
Missouri	805	490	52%	38%	4,008.5	2.01	1.04	0.76
Colorado	488	395	50%	39%	2,561.0	1.91	0.96	0.75
Virginia	1,124	904	45%	33%	4,921.3	2.28	1.03	0.74
Illinois	2,189	1,794	45%	29%	8,949.4	2.45	1.11	0.72
Iowa	274	96	77%	54%	2,170.0	1.26	0.97	0.68
Kansas	256	109	65%	50%	1,913.7	1.34	0.87	0.67
North Dakota	65	34	65%	50%	490.1	1.33	0.86	0.66
Pennsylvania	2,079	1,319	42%	29%	9,541.1	2.18	0.93	0.64
Maine	190	145	46%	32%	969.1	1.96	0.91	0.64
Washington	743	607	44%	31%	3,791.2	1.96	0.86	0.62
Connecticut	539	401	41%	29%	2,655.4	2.03	0.83	0.59
Wyoming	44	33	61%	45%	339.3	1.30	0.79	0.59
Idaho	114	66	47%	38%	746.3	1.53	0.72	0.58
Indiana	710	432	52%	35%	4,328.5	1.64	0.85	0.57
New York	4,688	3,417	32%	18%	14,416.5	3.25	1.06	0.57
Minnesota	497	357	49%	36%	3,379.2	1.47	0.72	0.54
Nebraska	172	111	56%	37%	1,215.0	1.42	0.79	0.52
New Hampshire	132	83	58%	34%	872.3	1.51	0.88	0.51
Wisconsin	524	402	50%	37%	3,801.1	1.38	0.69	0.50
Massachusetts	1,134	902	38%	21%	4,877.8	2.32	0.88	0.49
Hawaii	239	209	24%	17%	870.2	2.75	0.67	0.47
Rhode Island	162	114	35%	22%	813.4	1.99	0.70	0.44
Vermont	74	51	41%	24%	441.7	1.68	0.69	0.39
TOTAL	**53,904**	**35,889**	**50%**	**35%**	**195,142**	**2.76**	**1.38**	**0.97**

* Projected from "Known BAC" cases to Total Killed

older. The last three columns show fatality rates per 100,000 population per year: Total fatality rate, fatality rate for pedestrians with any positive blood alcohol level, and fatality rate for pedestrians with BACs .15% or higher. States are ordered in the table from highest high-BAC fatality rates to lowest.[4] For adults with BACs of .15% or higher, the fatality rates average 0.97 fatality per 100,000 adult population per year, and they range from a high of 4.30 in New Mexico to a low of 0.39 in Vermont. Zero-BAC fatality rates and high-BAC fatality rates are positively correlated (Pearson r=.31). The correlation is only moderate, however, suggesting that general pedestrian safety/hazard factors and alcohol-specific factors are largely independent of each other.

The states with the highest high-BAC rates are New Mexico and Arizona. These are also the states with the highest percentages of Native Americans within their populations. Based on previous research findings, it is likely that this factor may partially account for the high rates in these states. New Mexico and Arizona are also part of a band of states, running from approximately North Carolina along the southern tier of the United States to Arizona. This group of states (North Carolina, South Carolina, Florida, Georgia, Louisiana, Texas, New Mexico, and Arizona) all have very high pedestrian fatality rates. By contrast, northern states have uniformly lower high-BAC pedestrian fatality rates.

For most of the analyses that follow in this chapter, BAC involvement was identified at two levels: First, BAC levels of .10% and above, corresponding to the legal level of impairment for drivers in most states and representing objective impairment for most people; and, second, BAC levels of .20% and above, representing levels most often reached only by people with significant drinking problems.

Racial/Ethnic Patterns in Alcohol-Related Pedestrian Fatalities

Patterns of alcohol involvement for fatally injured pedestrians were tabulated for the racial and ethnic groups represented in the two main sources of data, the 1987-1989 FARS + MCOD data for the entire country and the six state and county datasets. The values, shown in Tables 10 and 11, are based on only pedestrians ages 15 and older for whom BAC was known.

Table 10 gives the distribution of BACs of pedestrians from the FARS + MCOD data, by race and sex. Overall values were consistent with FARS data for the entire 10-year period. Based on pedestrians with known BAC values, males were twice as likely as females to have BACs of .10% or higher (47 percent vs. 24 percent). Whites (including Hispanics), male and female, had BACs of .10% or more less frequently than blacks (41 percent vs. 47 percent). Native American males were about twice as likely to have high BAC levels as other males (86 percent vs. 43 percent); Native American females were three times as likely to have BAC levels of .10% or more as other females (75 percent vs. 23 percent). The incidence of elevated BAC levels was extremely low for pedestrians of Asian or Pacific Island heritage.

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[4] The alcohol-level fatality rates in the last two columns were calculated by multiplying the percent at .01%+ (col. three) or at .15%+ (col. four) by the total fatality rate (col. six).

Table 10. BAC Distribution by Race and Sex, Ages 15 and Older (Known-BAC Pedestrian Fatalities, FARS + MCOD data, 1987-1989, Up to Two Pedestrians Only per Crash).

BAC Range	White (incl. Hisp.) Male	White (incl. Hisp.) Female	Black Male	Black Female	Native American Male	Native American Female	Asian/Pac. Isl. Male	Asian/Pac. Isl. Female	TOTAL Male	TOTAL Female	TOTAL All
0.00%	2,845	1,744	582	243	22	8	105	121	3,554	2,116	5,670
	46.0%	70.8%	38.7%	56.6%	9.1%	14.0%	77.2%	93.1%	44.1%	68.7%	50.9%
.01-.09%	539	164	146	49	13	6	7	5	705	224	929
	8.7%	6.7%	9.7%	11.4%	5.3%	10.5%	5.1%	3.8%	8.7%	7.3%	8.3%
.10-.19%	1,120	237	230	57	49	12	16	1	1,415	307	1,722
	18.1%	9.6%	15.3%	13.3%	20.2%	21.1%	11.8%	0.8%	17.5%	10.0%	15.5%
.20% +	1,675	320	547	80	159	31	8	3	2,389	434	2,823
	27.1%	13.0%	36.3%	18.6%	65.4%	54.4%	5.9%	2.3%	29.6%	14.1%	25.3%
TOTAL	**6,179**	**2,465**	**1,505**	**429**	**243**	**57**	**136**	**130**	**8,063**	**3,081**	**11,144**

Table 11 shows comparable values for the six-site data. Hispanic males showed greater alcohol involvement than did white males (52 percent of Hispanic male victims had BACs of .10% or more vs. 46 percent of white males), but Hispanic females had much lower involvement (17 percent for Hispanic females at or above BACs of .10% vs. 27 percent for white females). Again, blacks had somewhat higher proportions of BACs at or above .10% than did whites.

Table 11. BAC Distribution by Race and Sex, Ages 15 and Older (Known-BAC Pedestrian Fatalities, Six State and County Sites).

BAC Range	White Male	White Female	Black Male	Black Female	Hispanic Male	Hispanic Female	TOTAL Male	TOTAL Female	TOTAL All
0.00%	1,298	815	214	100	134	68	1,646	983	2,629
	44.0%	65.3%	36.8%	53.8%	39.4%	79.1%	42.5%	64.6%	48.8%
.01-.09%	290	100	59	15	29	3	378	118	496
	9.8%	8.0%	10.1%	8.1%	8.5%	3.5%	9.8%	7.8%	9.2%
.10-.19%	553	149	104	30	50	7	707	186	893
	18.8%	11.9%	17.9%	16.1%	14.7%	8.1%	18.3%	12.2%	16.6%
.20% +	807	185	205	41	127	8	1,139	234	1,373
	27.4%	14.8%	35.2%	22.0%	37.4%	9.3%	29.4%	15.4%	25.5%
TOTAL	**2,948**	**1,249**	**582**	**186**	**340**	**86**	**3,870**	**1,521**	**5,391**

Tables 12 and 13 continue the analysis of race and sex differences in crash involvement by looking at age breakdowns as well. The tables look only at white, black, Native American, and Hispanic pedestrian fatalities. Each cell contains the percentage of pedestrian victims whose BAC was .10% or higher; the percentage whose BAC was .20% or higher; and the number of victims with known BAC measurements. Values were quite similar between the two samples.

Highest levels of alcohol involvement, by far, were for Native Americans. About 90 percent of males between 15 and 34 had BACs at or above .10%, with values dropping only slightly for older Native Americans. Nearly three-fourths (73 percent) of males 25-34 had BACs at .20% or higher; more than half of Native American males had BACs of .20% or more in every age category. Native American females (based on a small number of cases) showed similar high alcohol involvement. For them, maximum involvement was for ages 25-34, but levels of involvement stayed very high from ages 15 through 54 and possibly beyond. Over all ages, three-

Table 12. High-BAC Pedestrian Fatalities by Age (All with Known BAC)
(FARS + MCOD, 1987 - 1989; Up to Two Pedestrians Only per Crash).

Pedestrian Age		White (incl. Hisp.)			Black			Native American			Wh(Hisp) + Blk + NA		
		Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
15 - 20	%.10+	37%	23%	34%	28%	8%	21%	93%	67%	88%	38%	22%	34%
	%.20+	14%	9%	13%	10%	0%	7%	56%	50%	55%	15%	9%	14%
	n	583	186	769	68	38	106	27	6	33	678	230	908
21-24	%.10+	59%	40%	55%	45%	29%	42%	94%	80%	93%	59%	39%	55%
	%.20+	34%	17%	30%	28%	18%	26%	64%	60%	63%	34%	18%	31%
	n	575	157	733	104	28	132	36	5	41	715	190	906
25-34	%.10+	61%	48%	58%	57%	47%	55%	89%	86%	88%	61%	49%	58%
	%.20+	37%	33%	36%	40%	30%	38%	73%	79%	74%	39%	33%	38%
	n	1,394	416	1,811	368	119	487	63	14	77	1,825	549	2,375
35-54	%.10+	53%	36%	49%	62%	44%	59%	83%	82%	83%	57%	39%	53%
	%.20+	36%	21%	33%	46%	26%	42%	69%	50%	65%	40%	23%	36%
	n	1,715	525	2,241	569	116	685	84	22	106	2,368	663	3,032
55 +	%.10+	25%	5%	17%	37%	15%	32%	70%	50%	65%	27%	6%	20%
	%.20+	14%	2%	10%	26%	7%	22%	52%	30%	47%	17%	3%	12%
	n	1,912	1,181	3,093	396	128	524	33	10	43	2,341	1,319	3,660
All Known	%.10+	45%	23%	39%	52%	32%	47%	86%	75%	84%	48%	25%	42%
	%.20+	27%	13%	23%	36%	19%	32%	65%	54%	63%	30%	15%	26%
	n	6,179	2,465	8,647	1,505	429	1,934	243	57	300	7,927	2,951	10,881

Table 13. High-BAC Pedestrian Fatalities by Age (All with Known BAC)
(Six State and County Sites).

Pedestrian Age		White			Black			Hispanic			Wh + Blk + Hisp		
		Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
15 - 20	%.10+	41%	28%	37%	32%	13%	25%	24%	0%	20%	38%	24%	35%
	%.20+	12%	8%	11%	16%	7%	13%	15%	0%	12%	12%	7%	11%
	n	294	98	392	25	15	40	33	8	41	352	121	473
21-24	%.10+	58%	47%	56%	40%	36%	39%	60%	33%	56%	56%	44%	54%
	%.20+	27%	22%	26%	21%	0%	17%	49%	11%	43%	29%	18%	27%
	n	267	59	326	43	11	54	45	9	54	355	79	434
25-34	%.10+	63%	56%	61%	60%	54%	59%	59%	35%	55%	62%	54%	60%
	%.20+	41%	37%	40%	35%	35%	35%	37%	20%	35%	40%	35%	39%
	n	615	205	820	148	48	196	99	20	119	862	273	1,135
35-54	%.10+	57%	42%	53%	65%	49%	61%	58%	15%	50%	58%	42%	54%
	%.20+	38%	26%	35%	47%	29%	43%	43%	12%	37%	40%	25%	37%
	n	859	302	1,161	226	68	294	121	26	147	1,206	396	1,602
55 +	%.10+	23%	6%	16%	35%	14%	30%	33%	4%	25%	25%	7%	18%
	%.20+	13%	2%	9%	24%	7%	20%	23%	0%	16%	15%	2%	10%
	n	916	585	1,501	140	44	184	52	23	76	1,108	652	1,761
All Known	%.10+	46%	27%	40%	53%	38%	49%	52%	17%	45%	48%	28%	42%
	%.20+	27%	15%	24%	35%	22%	32%	37%	9%	31%	29%	15%	25%
	n	2,951	1,249	4,200	582	186	768	350	86	437	3,883	1,521	5,405

fourths of Native American females had BACs of .10% or more, and more than half (54 percent) had BACs of .20% or more.

For whites, blacks, and Hispanics, levels of alcohol involvement were lower, although still high, and generally similar. Highest BAC values were shown for males ages 25-54, where three out of five had BACs of .10% or higher and two out of five had BACs of .20% or higher. Close behind were males ages 21-24, who had nearly the same level of involvement at BACs of .10% or more but somewhat lower numbers at BACs at or above .20%. Males ages 15-20 had lower, but still large, levels of alcohol involvement: 38 percent had BACs of .10% or more, but only about one in eight (12-15 percent) had BACs of .20% or higher. Male pedestrians ages 55 and older had still lower levels of alcohol involvement: One-fourth had BACs of .10% or more, and a relatively high one-sixth had BACs of .20% or more.

Females showed similar distributions of BAC levels across ages, but the peak was narrower (reached only in the 25-34 age category), dropped off more sharply for younger and older women, and never quite reached the levels shown for males. Black females showed the greatest levels of alcohol involvement, followed by white females, followed by Hispanic females.

New Mexico Pedestrian Data

For a series of projects including this one, the Center on Alcoholism, Substance Abuse, and Addictions (CASAA) at the University of New Mexico compiled a database on traffic fatalities in New Mexico occurring from 1982 to 1993. In their database, CASAA supplemented the complete FARS data with race and other information from the New Mexico Office of the Medical Examiner. Race was defined as Anglo (i.e., white excluding Hispanic), Hispanic, and Native American. Blacks and Asian/Pacific Islanders were very rare in New Mexico pedestrian fatalities and were not included in this data set. There were a total of 953 pedestrian fatalities (ages 15 and older, race = Anglo, Hispanic, or Native American) during this period in the state. Results from the New Mexico analysis are summarized in this section.

New Mexico is second only to Alaska in the percentage of Native Americans in its population. It also has a substantial Hispanic population which includes recent immigrants as well as Hispanics whose families have lived there for generations (New Mexico was first colonized by Spaniards in the 1580s). The pedestrian fatality data, summarized in Table 14, therefore includes larger percentages of Hispanics and Native Americans than would be found in nearly any other area in the country.

In the New Mexico data, when Native Americans are involved in pedestrian alcohol crashes their BACs are extraordinarily high. Mean BACs for all Native American pedestrian fatalities who had been drinking was .232%, as compared to .202% for Hispanics and .154% for Anglos. Of all Native Americans for whom BAC was known (i.e., including zero BAC), 59 percent were at .20% BAC or higher and 78 percent were at .10% BAC or higher. The comparable figures for Hispanics were 35 percent and 50 percent; for Anglos, 12 percent and 27 percent.

Table 14. High-BAC Pedestrian Fatalities by Age
(New Mexico, 1982 - 1993).

Pedestrian Age		Anglo			Hispanic			Native American			Total		
		Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
15 - 20	%.10+	38%	14%	30%	34%	40%	35%	84%	73%	81%	58%	48%	56%
	%.20+	23%	14%	20%	17%	20%	17%	57%	45%	54%	37%	30%	35%
	n	13	7	20	29	5	34	37	11	48	79	23	102
21-24	%.10+	24%	33%	25%	67%	44%	60%	73%	67%	72%	59%	50%	58%
	%.20+	10%	33%	12%	33%	44%	37%	45%	50%	46%	34%	44%	36%
	n	21	3	24	21	9	30	44	6	50	86	18	104
25-34	%.10+	47%	47%	47%	61%	38%	58%	79%	61%	74%	66%	53%	63%
	%.20+	26%	33%	28%	39%	38%	39%	65%	48%	60%	48%	42%	46%
	n	38	15	53	72	13	85	85	31	116	195	59	254
35-54	%.10+	39%	33%	38%	61%	31%	57%	81%	50%	77%	64%	38%	60%
	%.20+	13%	0%	11%	49%	15%	45%	67%	36%	63%	48%	18%	43%
	n	54	12	66	85	13	98	91	14	105	230	39	269
55 +	%.10+	10%	3%	7%	39%	6%	31%	54%	42%	50%	31%	14%	25%
	%.20+	3%	0%	2%	25%	6%	20%	34%	26%	31%	18%	8%	15%
	n	61	35	96	57	17	74	35	19	54	153	71	224
All Known	%.10+	29%	19%	27%	54%	28%	49%	76%	57%	72%	57%	36%	52%
	%.20+	13%	10%	12%	36%	23%	34%	58%	41%	54%	39%	25%	36%
	n	187	72	259	264	57	321	292	81	373	743	210	953

Native Americans accounted for 8 percent of the adult population of New Mexico in 1990. From 1982 to 1993, they accounted for 23 percent of fatalities of pedestrians with BACs of zero to .099%, 44% of fatalities of pedestrians with BACs between .10% and .199%, and 59% of fatalities of pedestrians with BACs of .20% or higher. Clearly, Native Americans are overrepresented in alcohol-related pedestrian problems. For Native American males, the level of alcohol involvement is consistently very high between ages 15 and 54 and drops off only above that age. For Native American females, levels of alcohol involvement are high from ages 15 through 34, drop off between 35 and 54, and drop even farther beyond age 55.

Hispanics made up nearly 36 percent of the adult population in New Mexico in 1990. Over the 12 years from 1982 through 1993, they made up 36 percent of pedestrian fatalities with BACs from zero to .099%, 32 percent of those with BACs from .10% to .199%, and 32 percent of those with BACs of .20% or higher. While these numbers are all very similar, the percentages at high BACs are much higher than figures for the Anglo population. For Anglos, who made up 78 percent of the adult population, comparable fatality numbers were 42 percent, 25 percent, and 9 percent.

On average, all Native American pedestrian victims, regardless of BAC, were somewhat younger than Anglos and Hispanics. Native American victims averaged 35.0 years of age as compared with 37.3 years for Hispanics and 41.6 years for Anglos.

Concerning gender, 20 percent of all Native American victims who had been drinking were female. Similarly, 20 percent of all Anglo victims who had been drinking were female. This compares with only 11 percent female among the Hispanic victims. For all three racial groups, the

mean BAC among female victims who had been drinking was slightly lower than the mean BAC among males who had been drinking.

In summary, the New Mexico results clearly confirm a substantial pedestrian alcohol problem among Native Americans. Extraordinarily high BACs are common. The New Mexico data also confirm a pedestrian alcohol problem among Hispanic males.

Census Comparisons

A major part of the evaluation of the relative risk of pedestrian fatalities for racial/ethnic groups is a comparison of their population-based rates of involvement. Census-based rates for pedestrian fatalities in all 50 states, based on the FARS and FARS + MCOD data, are presented in detail in Chapter V. This section compares Census population figures and pedestrian fatalities for the six state and county sites included separately in the study. Key values are shown in Table 15. Population figures are from the 1990 U.S. Census, and they include all age groups. Pedestrian fatalities exclude victims under the age of 15; thus comparisons are only approximate.

Table 15. Pedestrian Fatalities and Underlying Population, by Site and Race (Fatality Data, Ages 15 and Older; 1990 Census Data, All Ages).

Site		White		Black		Hispanic		Native American		Asian/Pac. Isl.		TOTAL	
		Populn (000)	Ped Fatal.	Populn (000)	Ped Fatal.	Populn (000)	Ped Fatal.	Populn (000)	Ped Fatal.	Populn (000)	Ped Fatal.	Populn (000)	Ped Fatal.
California (San Diego County)	*n*	1,633.3	136	149.9	14	510.8	151	15.1	1	185.1	10	2,494.2	312
	%	65.5%	43.6%	6.0%	4.5%	20.5%	48.4%	0.6%	0.3%	7.4%	3.2%	100.0%	100.0%
Florida	*n*	9,475.3	2,790	1,701.1	576	1,574.1	275	32.9	unkn	146.2	unkn	12,929.6	3,641
	%	73.3%	76.6%	13.2%	15.8%	12.2%	7.6%	0.3%		1.1%		100.0%	100.0%
Michigan	*n*	7,650.0	1,246	1,282.7	358	201.6	unkn	52.6	15	102.5	9	9,289.4	1,628
	%	82.4%	76.5%	13.8%	22.0%	2.2%		0.6%	0.9%	1.1%	0.6%	100.0%	100.0%
New York State (not incl. NYC)	*n*	9,297.1	1,635	722.1	165	430.5	116	32.7	17	177.0	23	10,659.3	1,956
	%	87.2%	83.6%	6.8%	8.4%	4.0%	5.9%	0.3%	0.9%	1.7%	1.2%	100.0%	100.0%
Pennsylvania	*n*	10,422.1	748	1,072.5	104	232.3	23	13.5	0	134.1	14	11,874.3	889
	%	87.8%	84.1%	9.0%	11.7%	2.0%	2.6%	0.1%	0.0%	1.1%	1.6%	100.0%	100.0%
Texas (11 Urban Counties)	*n*	5,203.0	107	1,264.8	28	2,442.1	49	28.0	unkn	235.4	unkn	9,173.3	184
	%	56.7%	58.2%	13.8%	15.2%	26.6%	26.6%	0.3%		2.6%		100.0%	100.0%
TOTAL	*n*	43,680.7	6,662	6,193.1	1,245	5,391.4	614	174.7	33	980.2	56	56,420.1	8,610
	%	77.4%	77.4%	11.0%	14.5%	9.6%	7.1%	0.3%	0.4%	1.7%	0.7%	100.0%	100.0%

In general, crash involvement for racial groups is proportional to their presence in the overall population. There are interesting differences by race, however. Blacks are overrepresented in fatalities by approximately 30 percent (14.5% vs. 11.0%). This is consistent across five of the six sites, with only San Diego County showing lesser crash involvement. On average, Hispanics are somewhat underrepresented in fatal crashes, but the pattern varies markedly from site to site. Hispanics are very much overrepresented in San Diego County, which represents a special case: Significant numbers of the Hispanic victims may be illegal aliens who are not included in base census figures. Hispanics are significantly underrepresented in Florida, where most Hispanics are Cuban in origin. Figures for the other sites are more closely matched to population baselines.

For these six sites, Native Americans are represented in fatalities roughly at the same rate that they appear in the underlying populations. Asian/Pacific Islanders, also based on a very small number of cases, appear to be represented in fatalities somewhat less often than their presence in the general population.

Target Group Specification

As shown above, three racial/ethnic minority groups show, for at least some of their members, significant pedestrian alcohol problems, and those groups were retained for analysis in the remainder of this report. Table 16 shows summary levels of alcohol involvement in pedestrian fatalities for whites, blacks, Hispanics, and Native Americans. (The values are composites of the values from the FARS + MCOD data, the six-site data, and the New Mexico data.)

Table 16. Approximate Levels of BAC Involvement by Major Racial/Ethnic Group for Fatally Injured Adult Pedestrians (Combined from FARS + MCOD, Six Other Sites, and New Mexico).

	White	Black	Hispanic	Native American
Percent at or above .10% BAC	39%	47%	45%	84%
Percent at or above .20% BAC	23%	32%	31%	63%

For whites, 39 percent of all adult pedestrian victims (for whom BAC was known) tested at .10% or above and 23 percent tested at .20% or above. Percent had-been-drinking was higher, at each level shown above, for blacks, for Hispanics, and particularly for Native Americans.

The patterns of pedestrian alcohol fatality levels, by age and sex and shown in Tables 12-14 above, were compared between each minority group and the white "baseline" group to further refine the description of the most at-risk subgroups:

- Blacks. As compared to whites, the black pedestrian alcohol problem showed a significantly different distribution by age. Younger blacks, those below age 25, had significantly lower levels of alcohol involvement in pedestrian fatalities than did whites. The rates were nearly equal for ages 25-34, and the involvement of alcohol in pedestrian fatalities was much higher for blacks ages 35 and older than for whites of the same ages. The pattern was similar for males and females. Therefore, one target group is black adults ages 25 and older.

- Hispanics. Overall, Hispanics show a somewhat higher percentage of pedestrian fatalities that are alcohol-involved than do whites. The differences are gender-specific, however. Male Hispanics have higher levels of alcohol involvement than white males. Female Hispanics have significantly lower rates of alcohol involvement than white females. Both patterns are consistent across age groups. Therefore, a second target group is Hispanic males ages 15 and older.

- Native Americans. Although representing relatively few pedestrian fatalities, Native Americans have an extremely high percentage that involve alcohol, often at very high BAC levels. The levels of alcohol involvement are consistently high for all ages from 15 to 54, dropping only slightly at higher ages. The problem is nearly as severe for Native American females as for Native American males; the rate of alcohol involvement in pedestrian fatalities is higher for Native American females than for any non-Native American male group. Therefore, a third target group is all Native Americans (ages 15 and older).

Target Group Crash Characteristics

The next step was to analyze available data to determine the characteristics of the pedestrian alcohol crashes involving each of these three target groups. First, available FARS data were tabulated for each target group to provide basic descriptions of the crashes and the circumstances under which they occurred. Next, similar tabulations were performed for crashes involving comparable groups of white victims. For black victims ages 25 and older, crash characteristics were tabulated for white victims ages 25 and older. To compare with Hispanic males, characteristics were tabulated for all crashes involving white male victims. For crashes involving Native American adults, tabulations were done for crashes involving all white adults. The purpose of these comparisons was to identify distinctive patterns of characteristics in the minority-group crashes.

Complete descriptive results for the black, Hispanic, and Native American target group analyses are shown in Appendix C, where they are shown alongside the results for comparable white pedestrian fatalities. The top half of each page of the Appendix shows the target group comparison for BACs of .10% or greater; the bottom half shows the comparison for BACs of .20% or greater. Results for blacks are shown in the first part of the Appendix, followed by results for Hispanics and then the results for Native Americans. Data for blacks and Native Americans are taken from the FARS + MCOD data, while tabulations for Hispanics are taken from the six-site data. Values for blacks tabulated from the six-site data, though not shown, are comparable.

Results cited in the next two pages describe characteristics which are more often associated with the minority-victim crashes than with crashes involving white pedestrians.

Characteristics particularly descriptive of crashes involving blacks ages 25 and older are summarized below (see also Appendix C, pp. C-1 to C-12). The percentages shown are for blacks at .10% BAC or greater and at .20% BAC or greater:

- Most crashes occur between 5 pm and 12:59 am (69%) (71%)
- About half on weekends (50%) (50%)
- With no adverse weather conditions (88%) (88%)
- On expressways or arterials (75%) (75%)
- On the roadway but not at an intersection (81%) (84%)
- Often involving "improper crossing" (41%) (40%)
- With a car as the striking vehicle (67%) (67%).

Blacks ages 25 and above, as compared to whites, tended to become involved more often during daytime or early in the evening. Also as compared with whites, blacks were more often in crashes on local streets with speed limits of 30 mph or lower. While few crashes occurred at intersections overall, blacks had more intersection-related crashes than whites. In general, the results suggested that the crashes involving blacks were somewhat more urban in character and the crashes involving whites were somewhat more rural.

Overall results for the crashes involving male Hispanics are summarized below (see also Appendix C, pp. C-13 to C-24). As above, the percentages shown are for male Hispanics at .10% BAC or greater and at .20% BAC or greater:

- Most crashes occur between 9 pm and 5:59 am (67%) (70%)
- Somewhat more on weekdays (55%) (52%)
- With no adverse weather conditions (89%) (89%)
- On expressways or arterials (76%) (73%)
- Not at, or related to, intersections (83%) (86%)
- Often involving "improper crossing" (55%) (52%)
- With a car as the striking vehicle (57%) (57%).

Hispanic males, as compared to whites males, tended to become involved more often earlier in the evening on weekday, as opposed to weekend, nights, and to extend into early morning hours. Also, as compared with whites, there were more crashes on local streets with lower speed limits. And, as compared with white males, the Hispanics were more often crossing the street as opposed to walking along the roadway. In general, as was found for blacks, the results suggested that the Hispanic male crashes were somewhat more urban in character and the white male crashes were somewhat more rural.

Overall results for crashes involving Native Americans are summarized below (see also Appendix C, pp. C-25 to C-36). The percentages in parentheses are for Native Americans at .10% BAC or greater and at .20% BAC or greater:

- Fatalities occurred broadly from 5 pm to 5:59 am (93%) (94%)
- Slightly more often on weekday nights than weekend nights (50% vs. 43%) (51% vs. 42%)
- On unlighted roads (67%) (67%)
- On expressways and arterials with speed limits of 55 mph or higher (54%) (54%)
- Not at, or related to, intersections (86%) (87%)
- Involving pedestrians who were walking in the roadway (not crossing) (47%) (48%)
- With cars as striking vehicles most often (44%) (46%), but also including large numbers struck by pickup trucks, other passenger vehicles, and tractor-trailers.

Native American victims were killed at about the same times of days and days of weeks as white pedestrians. Nighttime crashes were more often on unlighted roads than crashes with white pedestrians, more often on rural roads and local streets, and less often on "principal arterials." However, speed limits were higher on the roads where Native Americans were killed. Native Americans were less often cited for improper crossing, more often for walking in the roadway. Native American crashes nearly always involved a single motor vehicle, more often than for crashes involving white pedestrians. Native Americans were more often struck by pickup trucks, other passenger vehicles, and tractor trailers than were whites. Overall, then, crashes involving high-BAC Native Americans seemed to occur more often in rural areas and on smaller, high-speed roads, and the Native Americans were more often walking in or along the roads rather than trying to cross.

Summary

Racial/ethnic data were added to FARS records for fatally injured pedestrians. Race codes from CDC MCOD data were provided by NHTSA for all fatalities for 1987 through 1989. These data covered more than 16,000 pedestrian fatalities; for 94 percent of them, race could be identified, and for 67 percent, BAC was known. These data provided information on white, black, Native American, and Asian/Pacific Islander pedestrians. Several states also provided racial/ethnic data for pedestrian fatalities, and the data were matched with FARS cases. Sites included, for various numbers of years from about 1989 to 1993, were San Diego County (California), Florida, Michigan, New York State (excluding New York City), Pennsylvania, and Texas (11 large-city counties). Over 5,000 cases with known race and BAC test results were available for these sites. Information was analyzed for white, black, and Hispanic pedestrian victims. Results from the University of New Mexico's similar analysis of 12 years of New Mexico data were also examined. They added information on Native Americans and confirmed the primary findings for Hispanics.

Generally, all racial/ethnic groups studied have pedestrian fatality problems, and all have alcohol involvement problems. (Alcohol involvement rates were, however, much lower for Asian-origin pedestrians.) This means, first, that no group should be excluded from consideration when countermeasures are being devised and evaluated. Beyond this basic finding, there were patterns within racial/ethnic group crash data pointing to specific concerns.

Three groups were specifically identified as being overrepresented in alcohol-involved pedestrian fatalities. They were black adults (ages 25+), Hispanic males, and Native Americans. Each group showed a large percentage of their victims with BACs of .10% or higher and, comparatively, very large percentages with BACs of .20% or higher. For black and Hispanic groups, their rates were somewhat higher than comparable white victims. For Native Americans, the numbers of cases with extremely high BACs was much higher than seen for any other group.

As a first step toward further defining the characteristics of these target groups, analyses of certain FARS case descriptors were undertaken. For black adults and Hispanic males, crash data suggested a more urban, local-street concentration than for the white comparison groups. For Native Americans, the crash data described a rural environment with high-speed roads and pedestrians who were travelling along the roads more often than trying to cross.

Of the high-risk racial/ethnic groups, two subgroups stood out as having unusually low levels of alcohol-involved pedestrian fatalities. First were blacks between the ages of 15 and 24, consistent with other research showing that younger blacks drink less than young people of other races. Second were Hispanic females, who showed very low alcohol-crash involvement even as their Hispanic male counterparts showed very high involvement.

The next chapter describes the results of focus group testing conducted with members of the at-risk racial/ethnic populations. The goals of the focus group tests were to learn about specific cultural factors that might encourage drinking and walking and what kinds of countermeasure approaches would be most likely to be effective in reducing pedestrian alcohol crashes.

IV. FOCUS GROUP TESTING

In the previous section three cultural groups were identified which showed pedestrian alcohol problems at a rate greater than that of white adults: black adults ages 25 and older, Hispanic male adults ages 21 and older, and Native American adults of all ages. This chapter examines these groups more closely for factors related to the causes and prevention of such crashes. It begins with a brief review of the literature emphasizing racial and ethnic factors that might be involved in producing the conditions that facilitate pedestrian alcohol crashes. Next, in order to further explore related racial/ethnic factors and to develop and review possible crash countermeasures as they applied to the specific racial/ethnic groups, focus group testing was held with members of the at-risk racial/ethnic groups. The methods and findings for the focus group testing are also described in this chapter.

Racial/Ethnic Themes in Alcohol Literature

Blacks

As noted previously, black pedestrians ages 25 and above, both male and female, are more highly involved in fatal pedestrian alcohol crashes than their white counterparts. Studies (Blomberg et al., 1979; Preusser and Blomberg, 1981; Dunlap and Associates, 1994) of the characteristics of victims in urban pedestrian alcohol crashes have shown that black and white victims had very similar characteristics, including: adults over 25 or 30, primarily male, with relatively low education, unemployed or in poorly paying jobs, and unmarried. Dunlap and Associates (1994) also noted that pedestrian victims tended not to have driver's licenses and often walked to get around. This picture is consistent with data reported earlier on Native Americans involved in pedestrian alcohol crashes. That is, victims tend to be of lower socioeconomic status, they seriously abuse alcohol, and they are often in hazardous situations. Because pedestrian fatality rates are somewhat higher for black adults than for the general population, it is likely that people fitting all characteristics of the at-risk profile may be also somewhat more prevalent in the black population.

Overall, however, as noted by COSSMHO (1995), blacks are somewhat less likely to drink alcohol than white or Hispanic members of the general population. The patterns of alcohol abuse which contribute to the pedestrian alcohol problem, then, are likely to exist in the absence of any special black-society factors which encourage and support alcohol use or abuse, and it may be that blacks are a more ready audience for countermeasure acceptance than other segments of the population.

Hispanics

Hispanics in 1994 made up about ten percent of the U.S. population, and their numbers are growing about seven times faster than the general population (COSSMHO, 1995). About 64 percent are of Mexican heritage; 14 percent are from Central and South America (and this is currently the fastest growing segment of the population); 11 percent are Puerto Rican; and about 5 percent are of Cuban origin. The median age is 26.0 years, much lower than the average of 35.5 years for non-Hispanic whites. As compared to whites, Hispanics are more likely to be poor: 26.5 percent of Hispanic families live below the poverty line, compared to 10 percent of non-Hispanic families. Of those families with working householders, those still below the poverty threshold are 22 percent (Hispanic) vs. 21 percent (non-Hispanic blacks) and 7 percent (non-Hispanic whites).

Hispanic adolescents abuse alcohol and other drugs at rates as high as or higher than other youth. Survey results reported by COSSMHO (1995) for use of alcohol by adolescents in the previous month were: 16.2 percent for Hispanics vs. 13.2 percent non-Hispanic blacks and 16.7 percent non-Hispanic whites. Comparable figures for illicit drugs other than alcohol were higher for Hispanic adolescents: 9.3 percent (Hispanics) vs. 6.5 percent (non-Hispanic blacks) and 6.3 percent (non-Hispanic whites). The report went on to note that use of alcohol and other drugs was higher for more acculturated Hispanics (as indicated by degree of use of English) even with other sociodemographic factors taken into account.

COSSMHO (1995) also reported that adult Hispanics show significant signs of alcohol use and abuse. Hispanic adults used alcohol about as frequently as non-Hispanic whites (47 percent vs. 52 percent reported using alcohol in the previous month) and more than blacks (36 percent), yet liver disease was cited as the third leading cause of death for Hispanics between 45 and 64 and just the sixth leading cause of death for comparable non-Hispanic whites. (None of the figures in the report were provided separately for males and females. Evidence from our pedestrian fatality statistics and other sources suggests that alcohol use is more concentrated in male Hispanics than females, as compared to non-Hispanic male-female differences.)

The report (COSSMHO, 1995) described a number of cultural factors relevant to possible countermeasure approaches. First, Hispanic culture extends the general definition of "immediate family" to include people often categorized by other ethnic groups as extended family: parents, in-laws, aunts, uncles, and others. The concept of family, and one's place in it and contribution to it, are extremely important to even highly acculturated Hispanics. This also affects where Hispanics will go for help and from whom they will accept help. More than for the general population, Hispanics will look to family, friends, and Hispanic community groups for advice and help, and they will reject looking toward general-public agencies.

A recent study for NHTSA (Hamilton et al., 1995) looked specifically at highway safety in Hispanic communities. Although the surveyed Hispanics placed very low emphasis on pedestrian safety problems, alcohol (and driving) was the top concern, and it is likely that many of the factors behind drinking and driving are also applicable to the pedestrian alcohol problem. In their conclusions, Hamilton et al. cited five key issues around alcohol consumption and traffic safety: consumption of alcohol as proof of manhood; lack of knowledge of the effects of alcohol on driving ability; willingness of passengers to ride with a driver who has been drinking; the young

age at which many boys begin to drink; and drinking as a principal recreational activity for young people in rural and border communities. The first, fourth, and fifth factors are directly applicable to pedestrian alcohol, and the second is also relevant. Throughout the report, the emphasis was on males (not females) drinking too much, that alcohol is an integral part of family celebrations and parties, and that it is part of male machismo to be able to drink a lot and to "handle it."

Native Americans

The use of alcohol by Native Americans has been the subject of historical and popular literature for many, many years. In recent decades, careful research has sought to separate fact from fiction and look in detail at current alcohol use.

Between 1965 and 1980, Navajos increased in numbers from 88,700 to 162,300, according to Indian Health Service data reported by Broudy and May (1983). About 90 percent of registered Navajos live on the Navajo Indian Reservation in New Mexico, Arizona, and Utah. Describing the social and economic changes affecting the reservation over just ten years, Broudy and May observed:

> *That the Navajos are in the midst of rapid social and economic change seems indisputable. The 1970 census reported the per capita income of Navajos as $800. In 1980, the Navajo tribe reports the amount had risen to about $2,300. Coal trains, uranium mines, oil rigs, and giant excavating equipment attest to the economic activity around the reservation. Driving across the reservation, outsiders are often impressed by the number of new cars and pickup trucks on the roads. But this change is highly variable and only affects certain aspects of (and individuals in) Navajo society. Fewer than half of the homes on the reservation have piped water and about one in four has a telephone. (Broudy and May, 1983, p. 2)*

They concluded that, as of 1980, the Navajo Nation was in transition from a developing nation with high fertility and relatively low mortality rates to a more stable society with lower fertility and mortality rates such as seen in industrialized societies. As the reservation has moved from a subsistence economy toward a wage labor economy, the social and societal structures have had to change as well. Change has been uneven, resulting in a mixture of old customs and ways with new ones.

Alcohol use is equally complex. For the Navajo, as for Native Americans on many reservations, alcohol is officially prohibited but frequently used. May and Smith (1988) surveyed 174 Navajos on the Navajo reservation on their knowledge, attitudes, and personal behavior with regard to alcohol. They found that most understood the negative health and social consequences of alcohol abuse. The vast majority of those surveyed (81 percent) preferred prohibition of alcohol on the reservation. About 52 percent were current drinkers of alcohol, less than in the general U.S. population (about 67 percent). Many of the non-drinkers were previous drinkers who had become abstainers.

About 62 percent of those surveyed felt that Native Americans had a unique physiological weakness toward alcohol. May and Smith refuted this, summarizing a number of studies showing

that Native American males and females metabolize alcohol as well or better than non-Native Americans and that biopsy studies show that the livers of Native Americans and non-Native Americans are highly similar.

Although fewer Navajos may drink alcohol at all, of those who do, more drink to excess. Various epidemiological studies show that Native American death rates due to alcohol are much higher than in the general population. May and Bergdahl (1994) summarized research for the Navajo. They found that, of 470 motor vehicle fatalities on and around the New Mexico portion of the Navajo Indian Reservation from 1982 through 1986, alcohol was a major contributing factor for drivers and pedestrians, particularly for Navajo victims. For explanations, they looked to drinking prevalence and patterns among the Native Americans:

> *Among the Navajo and many other reservation Indians, the major problems with alcohol-related mortality, morbidity, and arrest come from particular subgroups and the mixing of alcohol with risky situations. Although many tribes, such as the Navajo, have more abstainers than the general U.S. population, among the drinkers there are a number of people who belong to abusive drinking peer clusters and live a life style which is characterized by heavy drinking. These heavy drinkers make up a proportion of the Indian drinkers which is 2-3 times as great as that of heavy drinkers among the mainstream U.S. population. Thus, it is a concentration of abusive drinkers which causes many of the alcohol-related problems in an Indian ... community. Such people tend to drink in a manner that mixes high blood alcohol levels with risky, rural environments and, therefore, death, injury, and arrest is very high for Indians. Further exacerbating this problem is the fact that the Navajo reservation is under prohibition which necessitates even greater risk from vehicle miles traveled and distance from home.*
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> *... Ferguson (1968) has described two major types of drinkers among the Navajo. The "recreational drinker" is typically a younger Navajo male who will drink with a group of friends on various weekends, special occasions, or for social events ... Drinking serves an important social cohesion and recreational function for this type of drinker. ... The drinking in these groups is generally forced ..., done in large amounts, consumed quickly, and the drinking may go on for an extended period of time ... The value of intoxication is encouraged. ... In most tribes, including the Navajo, recreational drinkers are predominant.*
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> *The other type of drinker, the "anxiety drinker," however, is much different, and the behavior of this type is considered quite unacceptable by most Indian tribes. Anxiety drinkers drink alone, regularly, and are physically and psychologically addicted to alcohol (Ferguson, 1968). ... Anxiety drinkers are the minority in most Indian groups, including the Navajo.*
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> *... in the single vehicle and multiple vehicle crashes among the Navajo, recreational drinkers are the most likely to be heavily represented. The pedestrian deaths, however, may represent those Navajos [who] ... are most likely anxiety drinkers. ... For the Navajos in this study, pedestrians consistently had the highest mean BACs. Of the Navajo pedestrians killed, 87.9% of them were at least legally intoxicated. More than half of those pedestrians had a BAC in excess of .240%. ...*

... Navajo pedestrian deaths probably represent the later stages of the Navajo drinking career. These unfortunate individuals no longer have a vehicle, but they are still getting around to drink with their friends. At the end of extended drinking episodes, they are heavily intoxicated and returning to their homes on the reservation. ... This is likely a later stage of a recreational alcoholic career, or perhaps a stage of anxiety drinking. (May and Bergdahl, 1994, pp. 15-19)

Similar factors and effects are likely to apply to many or most of the Native American populations in the U.S. For the Senecas of western New York State, for example, Mahoney (1991; Mahoney et al., 1989) found high rates of pedestrian fatalities and, of those for whom BAC values were reported, six of nine showed values of .18% or higher. Wallace et al. (1993) cited Native American pedestrian fatality rates in Indian Health Service service areas of from more than 3 times the national average to nearly 20 times the national average. (See also May, 1992.)

Studies of drinking prevalence in several Native American populations in addition to the Navajo showed wide variability, with most showing percentages of adults who currently drink to be lower than that of the general population but a few showing somewhat higher percentages (summarized in May, 1994). The very high numbers of deaths attributed directly or indirectly to alcohol, however, suggest that across many Native American populations the relatively modest numbers of people who drink at all include very large numbers of people who regularly drink to excess.

As the next step in this project, focus group testing was conducted with groups of blacks, Hispanics, and Native Americans to further explore the racial/ethnic factors underlying the pedestrian alcohol problem and possible solutions. The next sections of this report describe the procedures and results of the focus group testing.

Focus Group Test Methods and Subjects

As identified in Chapter III, there were three ethnic groups with large pedestrian alcohol crash problems. They were: Black (victims were male and female adults mostly over the age of 25); Hispanic (victims were males of all ages); and Native American (victims were male and female adults of all ages). Focus group testing was conducted with representatives of each ethnic group. There were four objectives addressed in the focus group tests:

1. To determine public perceptions of the nature and scope of the problem as it applied to their racial/ethnic group,

2. To learn about ethnic or cultural factors that might influence the extent of the problem or shape countermeasure approaches,

3. To hear suggested countermeasure ideas from members of the racial/ethnic groups, and

4. To obtain reactions to countermeasure approaches suggested in earlier NHTSA work.

A topical outline to guide the focus group discussions was developed and is reproduced in Appendix B. It began with an introduction to the scope of pedestrian alcohol fatalities, including the significant involvement of the appropriate ethnic group, and the general purposes and ground rules for participating in focus groups. The discussions then followed the three main topics developed in the topical outline:

1. Problem perceptions (15 - 30 minutes). The group's perception of the extent of the problem in their community; subgroups in their community they feel are most at risk; community factors, characteristics, or customs they feel affect the problem's impact and the effectiveness of possible solutions; activities they are aware of in their community currently addressing the problem.

2. Problem solving (30 - 45 minutes). Opportunity for group members to develop their own countermeasure themes, with prompting for the group to address the general public, at-risk individuals, drivers, alcohol servers and sellers, family members, community groups such as churches and service clubs, government, social service agencies; also, categories such as traffic engineering, law enforcement, and laws.

3. Countermeasure evaluation (30 - 45 minutes). The group's reaction to 28 specific countermeasure concepts selected from previous traffic safety research and programs. The emphasis was on how effective the countermeasures might be for the group's racial/ethnic group generally and their community in particular. The concepts were grouped as traffic engineering, law enforcement, alcohol vendors and servers, laws, and other government actions (e.g., PI&E and funding).

Each focus group discussion was intended to last up to two hours. In practice, they ran from about 75 minutes to about two hours. Sessions which ran short did so because of participant time conflicts. Each discussion generally followed the topical outline, although each was allowed to range according to the interests and knowledge of the group. Discussions which took significantly less than two hours tended to limit the time given to the evaluation of the pre-selected countermeasures.

Focus group tests were conducted in the northeast and in the southwest in order to increase the range and representativeness of sampled population groups. Focus group discussions in New Jersey and Connecticut were led by a PRG staff member. The proceedings were (audio) tape recorded and later transcribed. The New Mexico groups were led by staff members, who were members of the ethnic group making up each focus group, from the Center on Alcoholism, Substance Abuse, and Addictions (CASAA) of the University of New Mexico. Each group session was tape recorded, and written notes were taken during the group sessions. Results were written up based on the notes and the audio tapes.

A total of 14 focus group tests were conducted. Participants were recruited from the black, Hispanic, and Native American communities. The goal in selecting participants was to choose individuals who were knowledgeable about their communities and about the role of alcohol use and

abuse in their communities, and who could judge the likely effectiveness of certain kinds of interventions. For these focus groups, actual participants were recruited from the groups most at risk, from professionals who work with at-risk individuals, for example substance abuse counsellors, and from other individuals particularly well acquainted with the diverse segments within their communities, such as politicians, police, or teachers. The groups are briefly described below:

Blacks. Five focus group tests were conducted, two with the assistance of the Urban League of Bergen County (New Jersey) and three organized through the Urban League of Southwestern Connecticut (Stamford). Participants in the New Jersey groups were from suburban Teaneck and Englewood (except for one New York City resident). The first group included five females and two males ranging in age from about 35 to about 50; the second had nine females and five males, all members of a senior citizens group and aged 65+. Most of the participants in the Connecticut groups were residents of center-city Stamford; several lived in public housing projects. The first group was made up of five females (ages 27 to about 50); the second had four males (ages from 19 to about 45); and the third had five females and three males (ages about 25 to about 50).

Hispanics. Four Hispanic group discussions were conducted in Bergen County, New Jersey, and two more were conducted in New Mexico. The New Jersey discussions were conducted with the assistance of the Hispanic Institute for Research and Development in Paramus (all groups) and the Hispanic Association of Englewood (one group). The first group had about 15 second-level English students born in South America, Central America, and the Caribbean; ten were female and five male; they ranged in age from 19 to 40. The second group included four community leaders, including the Hispanic Institute Director, a Ph.D. public school psychologist, a city councilman, and an alcohol/substance abuse counselor; their ages were about 35 to about 65. The third group was made up of five male and five female members of a community group serving Spanish-speaking residents; most were of South American origin and spoke little English; their ages ranged from about 25 to about 65. The fourth group, six males and six females, was similar to the first group except they came from intermediate English classes; their ages were from 20 to 40.

Together, the New Jersey Hispanic groups represented Central and South Americans who had recently moved to this country and ones who had been in this country for more extended periods of time. Most were middle class.

Two focus group tests were conducted with Hispanics in New Mexico. The first, conducted around Las Cruces relatively close to the Mexican border, was in an area where most Hispanics are recent immigrants. There were nine participants, seven female and two male, ranging in age from 23 to 49. By occupation, two were in retail sales, three in social services, one police officer, one court education worker, one motor vehicle office director, and one unemployed. The second group discussion was conducted in Albuquerque with Hispanics who had been in this country for one or more generations. There were six participants, all but one male, ranging in age from 23 to 48. Four were DUI counselors, one was a private school teacher, and one was a university student.

The two groups were chosen to explore possible differences in opinions and perceptions related to how long they had lived in the United States and, presumably, how much they had assimilated the primary culture.

Native Americans. Three focus groups were conducted with Native Americans in New Mexico. The first was conducted in Albuquerque with Native Americans living in the Albuquerque urban environment and not on reservations. There were five females and two males in the group; three were Navajo, and one each was Paiute, Cherokee, Sioux, and Kiowa-Cheyenne. The next two were conducted with Native Americans living on reservations. One was done with six Navajos, four males and two females, who live on the Navajo Reservation near Gallup, New Mexico. The third Native American focus group was made up of Taos Pueblo Indians. There were six participants — three males and six females. Age distributions of participants were similar in all groups; nearly all participants were between 25 and 55 years old. Alcohol is prohibited on the Navajo Reservation and the Taos Pueblo (though somewhat available), so much drinking is done in the nearby towns. The Navajo Reservation is huge; towns adjacent to the reservation, such as Gallup and Farmington, have large numbers of bars and liquor stores located just over the reservation border. Taos Pueblo is located about 1 1/2 miles outside the town of Taos; alcohol is sold at many locations within the town.

Focus Group Test Results

Focus group results are presented in two main sections. First, responses to the questions of problem awareness and suggested countermeasures are described, separately for each racial/ethnic group — and, for Hispanics, separately for New Jersey and New Mexico. Next, responses to the specific countermeasures are summarized, by countermeasure, across racial/ethnic group.

Blacks in the New York Metropolitan Area

Problem Perceptions

1. Role of Drinking in Family and Community Life

Many blacks who participated in the focus group tests felt that there are few distinctions in the role played by alcohol in black culture as compared to mainstream Caucasian culture in America. If there is a difference in the amount of drinking between blacks and whites, most of the participants believed that blacks drink less than whites.

Few of the participants who had families did much, if any, drinking at home. They reported rarely drinking alcoholic beverages before or during meals. The few who did were generally older males.

Social drinking was considered normal. It takes place mostly on weekends, but sometimes on week nights. Many of the blacks who participated in the focus groups said their social drinking was done mostly in groups consisting of both blacks and whites, for example after business meetings or after work.

Participants seldom invite guests to their home. It seemed that those who did any entertaining at home tended to be older and better off economically. If anybody dropped in unexpectedly and wanted a drink, most of the participants said they had better bring it with them because a stock of liquor is very seldom kept in black homes. Typically, blacks appear to buy only as much alcohol as they need for a single session of drinking and run to the liquor store when they need more. The reason was perceived to be economic.

Several participants said they think there is a difference in motivation for drinking between blacks and whites. Their perception was that white people seem to drink to have a good time, especially younger whites. They tend to drink in large groups and often act stupid and get violent when they are drinking. They believed that blacks, however, generally drink to escape consciousness and tend to do it alone or in small groups. When drunk, they rarely get violent. They are more likely to go somewhere alone and lie down.

2. Problem Drinking

Problem drinking was perceived as affecting mostly older men, although one of the participants was a recovering alcoholic, and she was a female in her late twenties. One of the men said that younger people tend to drink beer if they drink at all, while older drinkers tend to drink hard liquor. A lot of younger people are more into other drugs. The young recovering alcoholic said that alcohol was only one of the drugs she used, but abstaining from drinking is important to her because every time she drinks, she ends up using other substances as well.

One woman said that she thought older and younger people drink for different reasons. It was more of a social thing with younger people. Older people who drink were either addicted or were drinking to get drunk and forget their problems. "That's why older people are more likely to drink alone," she noted.

Participants perceived that there is a difference between blacks and whites in what happens to alcoholics. Black alcoholics, according to one man, usually end up unemployed and in the streets, while many white alcoholics continue to work or are supported by their families.

One woman said that she often sees alcoholics on the street in her neighborhood. They are mostly black men, usually older. Sometimes they are weaving down the sidewalk or lying down on the sidewalk. Occasionally she sees them lying down in the street or trying to cross the street, completely unaware of traffic. She sees the same people day after day.

Another woman said she very rarely sees white drunks on the street, and she supposed that the reason was that white men drink in bars or at home, rather than buying alcohol from a package store and consuming it right there on the street. She said that black alcoholics tend to go to liquor stores to buy a pint, then stand around in groups drinking all day, right in front of the liquor store.

3. Awareness of Pedestrian Alcohol Problem

Few of the participants in the black focus groups had ever considered pedestrian alcohol as being a significant problem, and most were surprised that blacks were at greater than average risk of being victims. One of the women said, "I don't think people are aware that drinking and walking is a problem. I laughed when you told me what this group was about."

Some black participants, in fact, doubted the validity of our statistics. Others tried to rationalize the statistics, speculating that maybe the reason is that blacks tend to live in densely populated areas where people walk more and are less likely to own a car.

Even in light of the statistics, one woman said, "There are so many risks out there for black people that this one is hardly a risk at all." Although it was obviously a relatively low priority problem, the participants generally took the topic seriously and contributed some thoughtful suggestions toward solving it.

However, one woman in the Englewood, New Jersey, senior citizens group was very aware of the problem. Years ago, her husband was hit by a car while walking home from a bar. He was walking because he knew he was too drunk to drive. Although someone had offered to drive him home, he decided to walk because he didn't want to wait. He was hit while walking in a dark street. Fortunately, he was not fatally injured.

Problem Solving

1. Education

The need for education about the problem always came up early as a suggested solution. One woman said that people should be made aware of what can happen to them when they are drunk, even when they are walking. She worried about countermeasures that restrict people's freedom but felt it is government's job to inform us of the consequences of the things we do and make us responsible for the things we do. She reasoned that educational efforts have worked in other cases where there are health risks. "... For example, people now know not to abandon refrigerators in the street, not to use their oven to heat their houses, and not to smoke in bed. Deaths from those kinds of things are declining. Government could do the same thing in this situation, just by making people aware that it is dangerous."

Some participants had reservations about how effective educational efforts might be. An Urban League trainer said that, short of an extensive treatment program, nothing is going to change an alcoholic. Certainly, education can change the behavior of recreational, occasional drinkers. That has been shown by the effect of the public outcry about drunk driving. People who can control their drinking have responded. Pedestrian alcohol may be a different kind of problem entirely. If most of the victims are alcoholics, it would not be as easy to make inroads on this problem.

Although most black participants shared the view that making people aware of the problem would help, they felt that community action would help more. One woman suggested working through black churches. Other groups, such as the Urban League, corporations (who can reach their employees), MADD, and black-oriented cable programming, were also mentioned as being in a good position to reach and influence the black community.

One woman said it would be a good idea to teach children in schools about the problem. "Maybe you can help to keep some of them from becoming alcoholics." Another woman responded that we put too much burden on the schools. She thought the family should be responsible. Even though the kids are not in the at-risk population now, most participants thought that it is more effective to teach values and skills to the young, who are receptive, than to try to change behavior of adults who are not. Once these lessons are learned, they are carried forward to adulthood. One women said that her aversion to drugs goes back to attitudes she learned as a very young child in school. A young man, who does not drink, said he vividly remembers the activities of the Students Against Driving Drunk (SADD) group in his high school. The general thrust was that teaching children about the dangers of walking around drunk might not have immediate results but would be effective in the long run.

One of the participants suggested that movies or videos dramatizing tragedies resulting from pedestrian alcohol accidents (to be shown in church groups or in schools) would be very effective in making people aware of the problem.

Another woman suggested advertising to make people aware of the harm alcohol does. She said she has seen the designated driver commercials and thinks they must be quite effective. She thought that a modification of the same concept might be effective against drunk pedestrian accidents, but she was unable to help with a catch phrase like "designated driver" for promoting the concept as it applies to walking.

2. Self-Protection Strategies

When one group was asked what drinkers should be told to lessen their chances of becoming a pedestrian alcohol crash victim, the first answer was, "Don't drink and walk." Someone else said, "Wait a minute, we don't want to encourage them to drive when they are drunk." A third participant said, "Tell them to get a friend to drink with," leading to the comment, "Yeah, like a designated walker." Even though some participants thought the phrase (designated walker) is a little silly, it came up spontaneously in almost every New York-area focus group.

The recovering alcoholic said there is nothing you can say to alcoholics which will be effective in getting them to control their drinking. They need something disastrous to happen like getting in an accident or going to jail to make them believe they have a problem. The others agreed, saying that it doesn't seem realistic to teach strategies to avoid getting hit to drunks, because when they are drunk they are not going to be thinking about them.

In one of the groups, somebody said they heard recently about a pill which blocked the intoxicating effects of alcohol. Someone else said that it kind of defeats the purpose for drinking and nobody would voluntarily take one.

One woman said it might be more effective to just identify drunks so other people could watch out for them. She jokingly said, "Make them wear a yellow shirt or something, so drivers could see them coming down the street and avoid hitting them." This is not too far from the idea of promoting "Hot Spots" and other high visibility clothing as bar giveaways.

Most agreed it would be easier to influence people who occasionally get drunk than to influence alcoholics. One might actually be able to convince them to not have that last drink before leaving. An awareness that there is a danger might have some influence on their behavior.

3. Driver Strategies

One of the black women in New Jersey argued that drunk walkers should be held responsible for crashes they cause. She was under the impression that the driver is always held responsible in pedestrian crashes. Her point was that holding pedestrians responsible when they are at fault might make them act more responsibly.

All of the suggestions from the black focus groups came under the categories of generally raising driver awareness of the pedestrian alcohol problem, asking them to be alert for drunk walkers, and requesting better enforcement of traffic laws.

4. Vendors and Servers

In both Connecticut and New Jersey, participants said servers are trained not to serve people who have had too much to drink. According to the participants, many servers observe the law, but there are some who think only of the money and encourage customers to drink more than they should. Participants said that bartenders probably are no more aware than they were coming into this group that drunk walking is a major safety problem.

One woman said that she thought bartenders should take better care of their customers, not serving them when they have too much to drink and getting them rides home if they are too drunk to walk or drive safely. Some expressed doubts that liquor sellers would be motivated to do anything. Someone else argued that they were people too and are just as compassionate as anyone else. If they were made aware of the danger, many would help.

When asked specifically what a liquor server should do with a drunk customer, the first response in most of the groups was to offer to call a cab. As in the New Jersey Hispanic sessions, New Jersey blacks also complained that taxicabs were unavailable late at night. Someone suggested that perhaps there should be a taxi subsidy of some sort, to make cabs available when they are needed for this purpose.

In some of the groups, one type of Safe Rides concept, in which the server could offer a voucher for a free cab ride home, was explained. Although nearly everybody thought this was a good idea, some were dubious about who would pay. They were incredulous that a tavern keepers association would pay for a service like this. The thought occurred to somebody that this might be a good project for a group like MADD.

When another Safe Rides concept, in which a group of volunteers agreed to be on call to provide transportation, was explained, almost everybody thought it was a good idea. However, a woman in one of the Stamford, Connecticut, groups remarked that she thought it would be hard to get volunteers because they would worry about their own safety when picking up a drunk stranger. What was liked about this concept was that there is no question of infringement on anybody's rights if the drinker calls for help. If a bartender calls, however, the drunk might resist. You couldn't expect either volunteers or cab drivers to deal with a drunk who didn't want to go home. After one of the Stamford groups discussed the idea of starting a program like this, some group members said they would volunteer, but most felt it was too dangerous.

Generally, the black focus groups thought that providing reflective promotional items to liquor store or bar patrons to make them easier for drivers to see was a good idea if the liquor companies could be persuaded to do it.

The idea of distributing promotional materials about the pedestrian alcohol problem through bars and liquor stores was generally perceived as being unrealistic. "They won't do it voluntarily and shouldn't be required to do it," was the consensus. However, liquor companies might publish promotional materials that could be used by groups like Urban League or be distributed in schools.

5. Traffic Engineering Solutions

Improvements in traffic control systems came up spontaneously in one of the Stamford groups. The comment was that pedestrian crossing signals don't give even unimpaired pedestrians enough time to get across the street.

There was no negative reaction to putting up "Pedestrian Crossing" signs to warn motorists to be careful in areas where drunk pedestrians frequently are hit. However, there was a lot of cynicism that they would have any effect on drivers. One of the Stamford groups said that they have "Yield For Pedestrian" signs at downtown locations where there is a lot of pedestrian traffic, and the signs don't have any effect at all.

The idea of "Pedestrian Killed Here" signs got mixed reactions. Some people liked it, because it has shock value and would be noticed. Others thought it was too negative. They didn't think you should motivate people by fear. Some thought it would stigmatize a neighborhood and might be resisted by businesses and residents of the neighborhood.

Traffic-slowing strategies in areas where pedestrian alcohol crashes are likely to occur were generally liked. Some participants questioned how effective these strategies might be, because drivers don't observe speed limits. Overall, they felt that a stop light would work better than a stop sign, because people seldom run lights. Somebody suggested that speed bumps might work.

Although the men in one group noted that many bars have exits to narrow sidewalks next to the street, barriers or fences between street and sidewalk were not generally seen as a good solution. They were disliked by women because they worry about how to get away from muggers and rapists; the barriers would cut off avenues of escape. Also, there was concern about aesthetics, that barriers could destroy the look of the street.

6. Law Enforcement

In general, black participants were ambivalent about increased law enforcement as a solution to the problem. The laws would be okay if they were enforced and enforced equally against all violators. The problem sometimes was that the laws are selectively enforced against minority people.

The need for more vigorous enforcement of the liquor laws came up spontaneously in several groups, particularly enforcement of the laws against serving intoxicated patrons, adhering to closing hours, and serving minors.

Most blacks appeared to be in favor of increased police presence against impaired pedestrians because it would also work against crime and violence. One woman was enthusiastic about a police substation established in a storefront in her neighborhood. She said it was working very well; the police were paying attention to the neighborhood, and the people in it had a much better attitude toward the police. That was a federally subsidized program, and she said it was well worth it.

Increased patrols at high risk times and places were generally perceived as being desirable. One woman suggested that the sidewalks adjacent to liquor stores in black neighborhoods should be patrolled during the daytime. She said the men who hang around the liquor stores drinking all day should be told to go home or face a fine. She felt that these are the people who are in greatest danger of being victims.

Participants also saw a need to increase patrols around bars and clubs at night on weekends to target binge drinkers. Reaction was positive to the idea of NHTSA subsidizing police overtime for drunk pedestrian duties, similar to the grants for drunk driver saturation patrols.

Reaction to the concept of a "Sweeper Program" was generally favorable. Such a program would be acceptable as long as police picked up all the drunks, regardless of race. Focus group participants would get upset if it came to light that privileged people were let off the hook. Some of the New Jersey participants noted that this kind of program is not applicable to small towns like Englewood, where there are only three bars.

The controversial element of the sweeper concept is what police should do with the people they pick up. Some thought that arresting people or taking them to detoxification facilities might be too harsh. Others were concerned about false arrest, but were satisfied that this would not be a concern if the same standards and procedures were used as for drunk driving arrests.

The groups were all in favor of better police training to identify people who are at risk and to use effective intervention techniques. Again, the discussion centered on what interventions are appropriate to different situations. If people were just drunk, and not creating a nuisance, most participants felt the police should take them home. If the people were being obnoxious or were totally out of control, on the other hand, they should be taken to jail or a detoxification facility.

The participants viewed being taken involuntarily to a detoxification facility as being almost as harsh as going to jail, and they wanted assurance that people who were sent to such facilities have the benefit of due process of law. One participant said there should be a legal definition of blood alcohol level which constitutes being legally drunk (even though individuals vary in behavior at a given alcohol level). Most thought it should be higher than the minimum per se limit for drunk driving. Police procedure similar to that used for making drunk driver arrests was viewed by most as being appropriate.

The availability of a police "intoxicated pedestrian hot line" (other than 911) sounded good to most participants, because they sometimes see people who appear to be in danger but are afraid to approach them. Again, the concern was that police would need to have good sense about how they respond, and not "beat people up" when they could just give them a ride home. One woman objected to this idea because she is uncomfortable about encouraging citizens to inform on others.

7. Stronger Laws

Most black participants supported existing open container and public intoxication laws but were not sure they would like to see the laws changed to make it easier for police to pick up people who are not causing problems. One participant said, "I wouldn't want to get arrested for having a cold beer on my front stoop on a hot summer night."

There was no disagreement that dram shop laws should be extended to include pedestrians, if they don't already. One of the male participants who worked in a bar said that the laws are already there, and bar owners do pay attention, but they still are reluctant to cut drinkers off because of the confrontations that usually follow. Several people expressed reservations about the general principle of these laws. One woman said, "People should take responsibility for their own actions. The liquor store owner might have sold the drunk the booze, but he didn't force him to drink it."

Most also agreed that host liability laws should cover pedestrians as well as drivers and passengers if they don't already. The same reservations were expressed to host liability laws as the dram shop laws, only they were more personal. Some people felt that it is unreasonable to hold a host liable for what guests consume because the host has no way to control their drinking.

Several participants spontaneously brought up the idea of limiting alcohol content of beverages. There was a concern about cheap high-alcohol beverages which kids and alcohol abusers use to get drunk on a limited budget. They believed that high-alcohol malt beverages like Colt 45 are the beverage of choice for many blacks. However, most participants were not in favor of making these beverages more expensive by placing special taxes on them, because they felt it would have no effect on serious abusers. The participants felt that it would just cause the serious abusers to drink greater quantities of lower alcohol beverages, switch to more dangerous substances, or steal to get the money to drink.

Nobody objected to requiring warning labels on alcoholic beverage containers to raise awareness of alcohol's danger for pedestrians; after all, pregnancy warnings are already on them.

However, the general view was that it would be naive to believe that this would do anything at all to help solve the problem.

8. Other Government Actions

There was universal support for increased public funding for alcohol rehabilitation programs. Participants perceived that alcoholics are most likely to be victims in pedestrian alcohol crashes and acknowledged that nothing short of extensive rehabilitation would make them less vulnerable. There was also an awareness that getting hit by a car is just one of many tragedies associated with alcohol abuse, and improved treatment programs address all of the problems.

Reaction to a proposal to routinely test all adult crash victims for alcohol was generally favorable. Participants appreciated the need for good statistics, and one person suggested that if police investigated where victims had been drinking, it could help with enforcement of liquor laws against serving intoxicated individuals. However, a few people were concerned about violating the privacy rights of accident victims by subjecting them to a test in the absence of any indication that there was a crime.

In the group that talked about the issue, everyone thought it was a good idea to train people who work in alcohol treatment programs to identify people who are at risk of being pedestrian alcohol crash victims and to counsel them on how to minimize the risks.

Nobody had a problem with distributing public information and education materials through government agencies that come in contact with the public.

Hispanics in New Jersey

Problem Perceptions

1. Role of Drinking in Family and Community Life

This section summarizes perspectives on alcohol within the Hispanic community as described by these focus group participants.

Drinking, even heavy drinking, appeared to be accepted by Hispanic immigrants as normal behavior for males; it is not accepted as the norm for women and children.

According to the focus groups, little drinking is done at home. Families of Central American and South American origins do not normally drink alcoholic beverages with meals, and relatively little entertaining is done in the home. When there are guests, they are usually relatives, and they are celebrating an event like a wedding, funeral, birthday, or holiday. Often, guests will bring their own alcoholic beverages. Single adult males entertain fairly frequently, often inviting male friends over to drink and watch sporting events on television.

In general, Hispanic parents do not permit drinking by their children. Even in their native countries, where underage drinking might not necessarily be prohibited, parents do not condone drinking by children. Drinking generally starts earlier with boys than with girls, and fathers are more permissive when children drink than mothers are.

Women drink less than men. Most of the women in these groups said they drink only on social occasions such as family gatherings for holidays, weddings, funerals, and the like. Also, most of the women said they choose drinks with lower alcohol content than men do. Generally, they choose wine or beer (although some admitted liking cocktails like margaritas and piña coladas), and they try to pace their drinking to avoid becoming intoxicated.

In the countries from which the participants came, it is the woman's role to stay home and care for the family. Other than at family functions, these women don't have much social life outside the home. Many of the women are working now that they are in the United States, and some have developed non-family social contacts at work. However, most still view their primary role to be family-centered and spend little time socializing outside the home. The children of the immigrants have assimilated American culture very quickly. Many teenage girls want to socialize with the boys and drink just as much as the boys do.

Focus group participants reported that, in contrast to women, men are expected to socialize. It is important to men to have a lot of male friends and to be respected by them. Men often get together in groups, at sporting events like soccer matches or baseball games, or just in yards or on the sidewalk. Outdoor family gatherings at beaches and parks are also quite common. Customarily, adult men segregate themselves from women and children and spend the whole day engaged in sports activities, drinking, and talking among themselves.

Many of the participants thought that the fact that Hispanic males do more drinking outdoors in public places may be the main difference in drinking patterns between them and non-Hispanic males. The fact that these outdoor drinking events last for a prolonged period of time, often all day, can result in a large amount of alcohol being consumed. Some of the participants felt that this in itself might put Hispanic males at greater risk of being victims in alcohol related pedestrian crashes.

Some of the male participants were surprised, when they settled in New Jersey, that drinking on the sidewalk is prohibited. In countries from which they came, it is considered normal and sidewalks are the main place where drinking is done.

As mentioned, respect of other men is very important to male Hispanics. Of relevance to the current study, the ability to drink a lot and stay in control is a key element of "machismo," the strong male image that Hispanic men like to project to other men. The effect of this value is not only a motivation to drink as much as possible, but also to deny being intoxicated. Most of the male participants admitted to sometimes drinking large quantities of alcohol, but almost all denied that they frequently got drunk.

Some of the men said they drink more since they came to the U.S. and some said less. The men who said they drink more tended to be single, while those who said they drink less tended to

be married. The men who drank more said that the underlying reasons for drinking more were separation from their families and being able to afford the alcohol. Those who reported drinking less said that they are working longer hours and have less time to socialize or that they spend all their money trying to make a better home for their families.

The usual perception of participants was that Hispanic men tend to drink more than most other Americans and Hispanic women drink less. However, some of the men felt that Hispanic males drink less than most American men. They felt their drinking is more visible because most of it is done in public. They also felt that they are more likely to get arrested for being drunk in public because there is more police presence in the places where they drink and police tend to turn a blind eye to drunk non-Hispanic whites and always arrest blacks and Latinos.

2. Problem Drinking

Participants considered any drinking by children as problem drinking, both for its own sake and because it is illegal here. Excessive drinking by women was considered to be abnormal behavior, although participants acknowledged that it is becoming more common among the younger generation, which has assimilated American values.

Heavy drinking by men was considered normal. It is a problem only when the drinker loses control and appears drunk to the other men he is with (who also usually have been drinking heavily). It is safe to say that alcoholics are not respected in Hispanic society. Although some people are sympathetic to alcoholics, more often people regard them as weaklings.

3. Awareness of Pedestrian Alcohol Problem

Most participants were very aware of drunk driving as being dangerous, but no one had come to the New Jersey focus group sessions thinking that pedestrian alcohol is a significant problem. None of the participants personally knew anyone who had been hit by a car while drunk, and none could even remember hearing about it happening in the area in which they live. The risks of getting injured in a fight or getting hurt by falling while intoxicated were thought to be quite a bit higher than getting hit by a car.

The city councilman who participated in one of the sessions commented that Hispanic men seem to have less fear than others of getting hit by a car. They felt it is always the driver's responsibility to avoid hitting pedestrians. Another participant, a lawyer, said that many regard getting hit by a car as an opportunity to make some money by threatening a lawsuit.

According to Hispanic leaders who participated in the discussions, the level of awareness about the dangers of drinking and driving is so high that it might be the indirect cause of some pedestrian and bicycle crashes, because people are choosing to walk or ride a bike when they know they have consumed too much alcohol to drive safely. One of the panelists, who is a substance abuse counselor, said he sees many drunk bicyclists and some drunk pedestrians in the emergency room of the hospital in which he works, and he thought some of them would have been driving except for an awareness that it would have been dangerous and illegal to do so. In most cases, they thought they were doing the right thing by walking or riding a bike.

Most of the males in the sessions appeared to be reluctant to accept the idea that the amount of drinking they did personally was even enough to make them less safe as drivers, let alone to pose a danger when they are walking. One said, "I don't think it is dangerous for me to drive after drinking, but I worry about maybe getting into an accident which is not my fault and getting blamed for it because I have been drinking." Another said, "Sometimes I drink on the street, but it is not a problem because I can handle it. I agree that driving a car after drinking is a problem, but nobody gets drunk enough to be a problem on the street."

Some of the women acknowledged that their husbands or boyfriends sometimes drank too much to drive home safely, but they would not dare even ask to drive them home because it would be embarrassing to the man and he probably would resist.

There was a general perception in the groups that Hispanic victims in pedestrian alcohol crashes probably were mostly at the lower end of the socioeconomic scale. The reasoning was that in an area like Bergen County, New Jersey (suburban although very densely populated), most Latinos own cars. Those who don't have a car can't afford one. Indeed, the alcohol counselor said that most of the intoxicated pedestrian victims he sees in the hospital in which he works are unemployed homeless alcoholics.

Problem Solving

1. Education

When asked an open-ended question about what should be done to reduce pedestrian alcohol crashes and fatalities, both the Hispanic and black groups most commonly recommended education.

There was considerable discussion about how awareness could most effectively be raised in the adult Hispanic community. Both experts and citizens felt that much could be accomplished by using print and broadcast media targeted to Hispanic audiences. Bergen County, New Jersey, is rich in Spanish language media owing to its location in the metropolitan New York market. There are several television stations and many radio stations with full-time Spanish language programming. In addition, there are several newspapers oriented to Spanish speakers. Many Hispanic people also can be reached through mainstream media, but many (especially recent immigrants) would be missed without factoring Spanish language media into the mix.

According to a school psychologist who participated in one of the groups, public service announcements featuring celebrities have been proven very effective in communicating public health messages to the Spanish speaking community. Considering that the target group is adult male Hispanics, she suggested that the ideal spokesperson would be a well-known male athlete, either a soccer player or a baseball player. The men in the group agreed; they added that since machismo plays a role in this particular problem, the spokesperson certainly should not be a woman or even a "wimpy" male actor, no matter how well known.

There also was a lot of discussion in all the Hispanic groups that the language and context of any educational messages should be authentic. Several horror stories were related in which direct

translations from English to Spanish resulted in idioms which had unintended meanings. To be sure that messages communicate the intended meanings, they should be written by authors who speak Spanish as their primary language but have a good understanding of English. Although Spanish speaking people from different countries do speak variations of the language, the differences are mainly idiomatic and usually Spanish speakers from one country have no serious difficulties in communicating with Spanish speakers from a different part of the world. In particular, common wordings could be found that nearly all Hispanics would find appropriate.

The school psychologist reasoned that given the nature of the problem there would probably be a lot of denial. She suggested that a good approach might be a checklist or test that people could self-administer to determine the extent to which they are at risk. The items on the list might be the classic criteria for symptoms of substance abuse as well as circumstantial criteria for potential exposure (e.g., How often do you walk home after drinking?).

In addition to Spanish language media, participants identified other ways of reaching the Spanish speaking community, although none have nearly the reach. Groups like the Hispanic Institute (which arranged the New Jersey Hispanic focus groups) come in contact with upwardly mobile Latinos who speak limited English but are anxious to learn it to improve their employment opportunities. Some communities have clubs like the Hispanic Association of Englewood (which also participated in one of the focus groups), which serve Hispanic members of the community and represent their interests. Participants also acknowledged that many Hispanic people can be reached through their churches, but church attendance is far from universal. The Hispanic Institute uses direct mail to reach the target group. The organization compiles its own lists by searching Hispanic-sounding names in phone book listings.

Some of the suggestions as to how to increase awareness of the problem fit very well with existing activities of police departments and community traffic safety programs. For example, a Hispanic city councilman suggested that the police department has a speaker's bureau which is in demand for presentations to community groups. This subject might be added to their list of presentation topics. Health fairs also were noted as an opportunity to pass out literature on the subject.

2. Self-Protection Strategies

Participants were pessimistic that, short of extensive alcohol treatment programs, anything can be done to modify the behavior of alcoholics or habitual problem drinkers to make them safer. This view was supported by the alcohol/drug abuse counselor. He said, "There is only one real solution for the problem drinker, and it is abstinence. They say they will cut down, but they don't and they can't."

Strategies were suggested, however, for people who occasionally drink too much. Every group suggested that drinkers should find a friend who will make sure they get home safe if their drinking gets out of control. The principle is the same as Designated Driver; more than once the term "Designated Walker" was used, although everyone saying it felt a little foolish.

Somebody suggested that drinkers should plan for the possibility that they might drink too much. While they are sober and rational, they should think about whom they could ask for help. They should think about the options available to them to get home safely. One might be calling a cab. Another might be planning a route which avoids the need to walk in the street or crossing streets which have poor lighting or are difficult to cross because of high speed or heavy traffic.

Another strategy which was suggested was waiting for the effects of the alcohol to wear off before trying to walk home. One of the participants said he does this when he needs to drive after drinking. Although participants felt this probably would not work for a problem drinker, it might be appropriate for a normal drinker who recognizes that he is in trouble. Given that many of the occasions in which Hispanics drink heavily are all day events, it might be feasible for a person who still has some self control to quit drinking a couple of hours before leaving.

One participant suggested that drinkers should confine their drinking to lower alcohol content beverages. Obviously, this would not be an appropriate strategy for people who drink for effect, because they would only drink more. However, it might be helpful for an individual in a situation where there is social pressure to drink who wants to avoid getting intoxicated.

Participants saw some merit in encouraging drinkers to wear high visibility clothing, but some said they would feel stupid doing that and were not very hopeful that anybody would actually do it.

3. Driver Strategies

The Hispanic community leader group felt that there might be more potential for reducing pedestrian alcohol crashes if more emphasis were placed on educating drivers to avoid hitting drunk walkers than on educating drunk walkers on how to avoid being hit. The reasoning supporting this conclusion was that if most victims are problem drinkers, little can be done to change their behavior. On the other hand, drivers can be expected to act rationally, and maybe addressing them specifically would make them be more careful. Most Hispanics feel that the burden of responsibility is and should be on the driver anyway. Asking drivers to watch out for drunk pedestrians fits the existing culture.

When the groups were asked what drivers could do to lessen the possibility of being involved in a pedestrian alcohol accident, the responses were to: avoid driving in congested areas; know where the dangerous areas are; and avoid driving at times when there are likely to be drunks on the street.

4. Vendors and Servers

None of the participants had any problem with training vendors and servers to be aware of the dangers of serving walkers, but they were not very optimistic that it would make any difference.

The idea of encouraging bars and liquor stores to distribute reflective promotional items like tee shirts, caps, and bags to increase pedestrian visibility to drivers seemed silly to most participants. They would be embarrassed to use them.

They didn't think that barkeepers and liquor stores would be motivated to put up posters or distribute literature on the dangers of pedestrian alcohol. The comment was made that, even if they were required to do it, the material would disappear the minute the inspector left the premises.

The idea of asking barkeepers to participate in some sort of Safe Rides program in which the bartender could call someone (either a cab or a volunteer) to provide a free ride home for drunk patrons sounded like a good idea to the group in which it was discussed. They were not aware that any such programs existed in their communities and were pessimistic that anybody (especially liquor sellers) would get such a program started.

5. Traffic Engineering Solutions

Consistent with the general perception that greater progress might be made toward changing the behavior of drivers than drunk walkers (especially problem drinkers), the Hispanic groups were very positive to the general idea of controlling traffic to avoid dangerous situations.

Several participants identified specific dangerous locations in the cities they lived in. In one case, the suggested solution was a longer walk signal, to give pedestrians sufficient time to cross. In another case, where traffic was fast and jaywalking was common, the person who identified the site didn't think there was a good engineering solution, but suggested more enforcement against both speeders and jaywalkers.

Hispanics reacted positively to solutions which have the effect of slowing traffic down in areas where there is a high likelihood of contact between automobiles and intoxicated pedestrians. Speed limits, stop signs, and traffic signals all were perceived as having this kind of effect.

"Pedestrian Crossing" signs warning drivers of dangerous pedestrian crossing situations in areas were there are concentrations of intoxicated walkers also were perceived positively. The director of the Hispanic Institute jokingly suggested "drunk zones," similar to "school zones." A participant in a later session built on that thought, suggesting that, as with school zones, there should be lower speed limits during dangerous hours, with drivers alerted that the lower limit is in effect by flashing lights on the signs.

Posting "Pedestrian Killed Here" signs at the sites of fatal pedestrian crashes was perceived as an effective way to get the attention of both motorists and pedestrians. In some South American countries, this is standard procedure for the locations of all fatal accidents, so it is something already part of the culture of many Hispanic immigrants.

The idea of fences or barriers to segregate pedestrians and vehicles and to force pedestrians to cross at controlled locations was perceived as being appropriate in certain situations. One of the participants had seen this done in Spain. A comment was made that merchants might resist this in some situations, because they would perceive it as limiting access to their business.

There was no controversy regarding the need for adequate street lighting where there are frequent crossings by drunk pedestrians.

6. Law Enforcement

When the Hispanic groups were asked generally what could be done to reduce pedestrian alcohol crashes, law enforcement solutions always came up early in the discussion. Being immigrants, the participants had a great deal of natural interest in what the laws are, and they appeared to be more anxious than native born Americans to avoid getting in trouble by inadvertently breaking the laws.

Participants believed that laws already exist in Bergen County prohibiting open containers and public intoxication. However, most participants did not perceive them as being as vigorously enforced as drunk driving laws. Some of the participants felt that the most effective way to get people's attention is to enforce open container and public intoxication laws as aggressively as the drunk driving laws.

One participant suggested that local police should analyze the pedestrian accidents in their area and pay special attention to places where there is a problem. Then they could concentrate on specific areas at specific times, making their efforts more effective. A participant added that to be most effective in enforcing open container and intoxication laws, the police should be "beat cops" who know the people in the neighborhood and patrol on foot.

It was suggested that increased enforcement could be accomplished in a manner similar to the way extra DUI enforcement is done in the state, by bringing in extra manpower on overtime, and it could be funded by utilizing some of the funds generated by DUI fines.

The alcohol counselor commented that open container laws are difficult to enforce in Bergen County because the courts will not uphold arrests of people drinking from "brown bags" for lack of probable cause. Habitual drinkers know this and easily circumvent the law.

Nobody objected to the suggestion that training for police in recognizing intoxicated pedestrians and benign intervention techniques should be done. There was quite a bit of controversy, however, regarding what kind of intervention is appropriate. A large proportion of the Hispanic participants felt that police should only do what is necessary to get the drinker out of immediate danger. These people thought the police should just escort intoxicated pedestrians safely home or, if they have no home, to a shelter. Another large group thought there should be some kind of fine to act as a deterrent. Few felt that intoxicated pedestrians should be incarcerated, even overnight. While most felt that jail is an appropriate punishment for drunk drivers, they felt it is excessively harsh for drunk walkers, who are endangering nobody but themselves.

In each of the Hispanic focus groups, some people feared that increased pedestrian alcohol enforcement might lead to greater police harassment against Hispanics and blacks. One participant commented that if police increased enforcement against drinking on the sidewalks, he would expect most of the arrests to be Hispanic men because they are the ones who frequently are doing it. Another said that police already patrol bars and discotheques frequented by Hispanics more than they do places with a mainstream American clientele.

Reacting to the concept of sweeper patrols, focus group members had little objection to the principle as long as the patrols are not selective and they pick up all the drunks. The idea of taking the drunks to detoxification centers was objectionable to some of the participants because they felt it is incarceration. Their concern could be assuaged somewhat by procedures which would assure that the people who are picked up are really drunk. The police procedures currently used in making drunk driving arrests would be considered appropriate for a sweeper patrol.

There was favorable reaction to the idea of establishing a police "hot line" (distinct from 911) for reporting situations involving intoxicated pedestrians. The feeling was that people who would be reluctant to intervene themselves for fear that the individual might be violent, and also would be reluctant to use 911 because they are not sure it is a police emergency, might use the number and head off some bad situations.

7. Stronger Laws

Few of the participants were aware of the existing dram shop and host liability laws in New Jersey. According to the lawyer who participated, there were constitutional challenges to these laws when first enacted, but they have held up in court. He thought there would be little opposition in the legislature to extending these laws to specifically include intoxicated pedestrians as well as drunk drivers.

Many of the participants had seen liquor servers refuse service to drunks. They were not sure whether it was the fear of lawsuits under the dram shop laws or the fear that they would lose their license under the liquor laws that motivated the servers, but they agreed that the threat of a lawsuit is a powerful deterrent. One participant suggested that the existing law probably already deters bartenders from serving drunk pedestrians because it is difficult to tell whether a patron is driving, riding, or walking. However, the general feeling was that anything which would call the server's attention to the fact that walkers are also in danger couldn't hurt.

The alcohol counselor said that one Bergen County town recently passed an ordinance prohibiting liquor sales to anybody who enters after midnight, even though establishments can serve later than that under the state liquor laws. The intention of the law is to prevent intoxicated drinkers who have been refused service in one bar to go to another one to continue drinking. He felt that such a law should be enacted across the state to prevent drunks from just driving to the next town to get served.

Some of the participants were cynical about liquor sellers in general. One said that strengthening the dram shop laws wouldn't make any difference. He said, "They are not supposed to serve people who are drunk, but they do. They are not supposed to serve after hours either, but they do. ... Bars just want to make money and don't care how anybody leaves the bar."

While nobody objected to the dram shop laws, host liability laws were a bit more controversial. Some people didn't like the idea that they can be sued if one of their guests drinks too much and gets in a crash. The basis for the objection was that they can't really control what their guests drink. In Hispanic culture, the standard practice is for guests to bring their own drinks. This makes it very difficult for the host to control drinking by guests.

The ramifications of strengthening public intoxication laws to make it easier for police to get at-risk individuals off the street have been previously discussed. Many of the participants do worry about police harassment of Hispanics, and some don't like the notion of incarcerating people just because they are drunk.

8. Other Government Actions

The need for more alcohol treatment and detoxification programs almost always came up spontaneously in the groups, reflecting the perception that the victims probably are mostly problem drinkers. The alcohol counselor confirmed that providing the therapy necessary to maintain complete abstinence is the only hope for changing the dangerous behavior of alcoholics. Although one of his jobs is as an instructor for a court-mandated course for drivers convicted of DUI, he did not think the course makes much impact.

There was no controversy regarding the inclusion of education on the risks of drinking and walking in health and safety programs in public schools.

Relevant to the idea of distributing educational materials through government agencies in contact with the public, the alcohol counselor said, "... hand-outs ... are effective ways of raising general awareness of the problem. You hope for the best from these things, but I am not really optimistic."

Hispanics in New Mexico

Two focus groups, as described above, were conducted with Hispanics in New Mexico. One was conducted in the southern part of the state where most Hispanics are recent immigrants; the second was conducted in Albuquerque where most Hispanics have lived for generations. The two groups were chosen to explore possible differences in opinions and perceptions related to how long they had lived in the United States and, presumably, how much they had assimilated the primary culture. Most responses were consistent across the two groups; differences are pointed out.

Problem Perceptions

Most people, when prompted, believed pedestrian alcohol use is a problem. Their thoughts went immediately to drivers who had been drinking, but they could often recall publicized instances of drunk pedestrians who had been struck by vehicles. Consensus, however, was that they hadn't really been made aware of pedestrian-based traffic safety hazards, and the issue did not immediately get their imagination and enthusiasm. Participants couldn't really judge whether the problem is getting worse.

Within their communities, they believed lower income groups are more at risk. Reasons ranged from individual economic ones, like having no car and not being able to afford cabs, to community ones like poor/missing sidewalks and poor lighting. Participants believed males are more at risk because they drink more and drink away from their homes; women were believed

either to drink less, to drink at home, or to have cars available (in the narrow focus, driving after drinking was offered as one countermeasure to being struck as a drunk pedestrian). Younger adults, males particularly, were seen at most risk, with age estimates beginning at 15 or 20 and extending to 30, 40, or 60.

Reasons as to why Hispanics might be more at risk for pedestrian alcohol crashes centered on lower socioeconomic status with riskier environments and more walking. Some felt that the problem drinkers might be less able to deal with stress or might have higher stresses and more need to "relax." Someone had also noted the Hispanic "macho" theme and that males sometimes drink just because "it's the thing to do."

When questioned, no one could cite any programs or activities in their communities aimed at the pedestrian alcohol problem. They did volunteer information on anti-DUI programs, however.

Problem Solving

To a request for ideas about reducing pedestrian alcohol crashes, both groups started by suggesting more education about the problem. Other suggestions were increased media coverage, better lighting in specific areas and fixing "bizarre" intersections, and no selling of alcohol to already-intoxicated people. The Albuquerque group called for more law enforcement, believing that police ignore intoxicated pedestrians and that, even if arrested, pedestrians are treated too leniently by the legal system.

On how the target group can help themselves, one group focussed on light- or brightly-colored clothing. The other stressed lifestyle changes — starting to take personal responsibility, stopping drinking, getting work, etc. They wanted education in school, "prevention," and other efforts aimed at future problem drinkers. One theme was that the current at-risk people are already alcoholics or alcohol abusers and aren't likely to change their behavior.

Suggestions for drivers were general, aimed at respecting existing speed and intersection control laws, plus becoming more familiar with the risks of the neighborhoods through which they drove and remembering that pedestrians have the right of way. They also suggested "Watch for Pedestrians".signs and more police enforcement.

Respondents noted that alcohol servers were already being trained to recognize and handle intoxicated pedestrians. They called for more awareness of pedestrian problems (walking while drunk is not an innocuous activity), public service announcements paid for by the liquor industry, and total banning of advertising.

Several themes were offered for the families of at-risk pedestrians. It was suggested that they could offer rides to the drunk persons, or even help get them into detoxification/ rehabilitation programs, or just educate them about the risk of walking while drunk. The families were also seen as targets — refusing to recognize problems or even contributing to them. Both discussions came back to the theme that people who don't want help can't be helped, and that as long as drinking was "cool," crashes would keep happening.

Communities could help, either by being extended support groups or by providing more education. SADD and MADD were mentioned by name.

Government can enact and enforce laws, including convictions and real sanctions, specifically ones aimed at bars or public intoxication. They can also increase alcohol taxes and ban advertising. More public transportation, especially late at night, was recommended.

Engineering suggestions were for better lighting, sidewalks or wide shoulders with lined areas for pedestrians or bicyclists, crossover pedestrian bridges, and signs with flashing lights.

Participants felt that police should take drunk pedestrians to a shelter rather than jail. In general, law enforcement agencies were seen as overworked and understaffed, and their jails haven't enough space for arresting all drunk pedestrians. The DMV director noted that arrestees may lose their jobs, that it is their families who suffer most, and that this serves as a disincentive for police to actually arrest the drunks.

Existing agencies were seen as overloaded and costly. Suggestions were for government funding and for linking agencies (existing or new ones) with homeless shelters.

Suggested Countermeasures

These two groups reviewed most of the suggested countermeasures on the discussion outline. Their responses are summarized in the last part of this section. Noteworthy comments:

- "Pedestrian Killed Here" signs are morbid and may negatively affect families of victims; but in New Mexico families informally put crosses at the roadside, and one participant reported that Arizona already has such signs on the road from Kingman to Las Vegas.

- A general theme was that police could do little to address this issue because of limited resources and higher priorities; a corollary was that most of the suggested laws exist now, but are not emphasized or enforced.

- Alcohol servers are already trained and dram shop laws already exist, but specific pedestrian alcohol emphasis (and available Safe Rides programs) may help.

- Both groups felt that making the public aware of the problem is very necessary, and that school health and driver education programs are one good way to do this. They felt that another good form of outreach is having government agencies that are already in contact with people hand out relevant literature.

Problem Perceptions

Unlike participants in most other focus groups, the Native Americans were all familiar with pedestrian alcohol crashes and viewed it as a large problem. Both the Navajo and Taos Pueblo reservation focus groups knew of specific roads and areas with a history of pedestrian alcohol crashes. Awareness for the non-reservation Native Americans was less intense and was developed from a combination of Albuquerque and rural experience.

The reservation residents characterized the problem as one where Native Americans go into nearby towns to buy alcohol (alcohol is prohibited on many of the western reservations), drink a great deal, and then must make their way back to the reservation late at night over dangerous roads. Some walk erratically next to the road and some walk in the road. Others lie beside the road to sleep off the alcohol, and in winter months deaths from hypothermia are frequent. Taos participants also believe that the problem is shared by town residents and that crashes occur on town streets as well as the road between the town and reservation.

Many of the participants had personally witnessed pedestrians staggering along, in, or across the roads, and one (a recovering alcoholic) had been in such situations himself; he noted, "They don't care where they're going." One participant had seen pedestrians passed out next to the road. Later in the discussion, two participants noted that they themselves had been injured in such accidents.

Uniformly, the participants believed the problem is getting worse. One noted that people were getting arrested for DUI and that, as a result, they chose to walk — increasing their exposure as drunk pedestrians.

The Navajo group initially felt that it was a problem for both sexes, all ages. When pressed, they determined that men were more at risk, because they get mad and "take off" and drink. One emphasized loneliness as a contributing factor for homeless men. The urban group stressed both sexes; while mentioning all ages, they concluded that people below age 40 were most at risk. Mention was made specifically of people in their 20s, who tend to feel invincible, and homeless people. Graphic descriptions were provided about Native Americans, particularly young males, who had "Indian Rage," internalized feelings of oppression, and perceptions of victimization.

Taos participants also believed the problem was widespread, but eventually decided that males between 21 and 40 — young enough to be out on the roads — were the primary at-risk group.

The Navajos described drinking as routinely taking place at Squaw Dances and other social occasions (on the reservation although drinking is officially prohibited). Because the environment is largely rural, there is less awareness of or concern about roads and traffic. Others described drinking as often occurring in all-male gatherings. Taos participants noted that, although alcohol is prohibited in the Pueblo, the law is ignored and never enforced.

Police in many of the towns around the Navajo reservation routinely pick up drunk pedestrians and take them to jail, to a social detoxification center, or to a treatment facility so that they can sober up safely. In Taos, both town and tribal police pick up drunk pedestrians and either take them home or to a detoxification facility. Albuquerque has a Safe Rides program around holidays, and during holidays Farmington has a bus circulate, pick up drunk pedestrians, and take them to the detoxification facility.

Most of the participants were aware of efforts made to make people aware of the problem. They cited instances where police warned them (as they were being picked up) about the dangers. They also went through a list of referral agencies including the Navajo Behavioral Health Service, AA meetings and flyers, the Indian Center in Albuquerque, treatment facilities, and family members. The Taos group mentioned Designated Driver campaigns, a general Elder Protection Team which occasionally had been called to pick up Pueblo elders out on the roads, and the Community Substance Abuse Program (CSAP), which educates about drinking and other substance abuse although not pedestrian dangers.

Problem Solving

Recommendations on how drinkers could protect themselves followed three themes. Most broadly, there was the suggestion that drinkers should take responsibility for themselves, get help such as Alcoholics Anonymous, or just abstain. Around the drinking activity, people suggested planning ahead (e.g., arranging for a friend to care for him during/after drinking) and not drinking as much. Suggestions for the after-getting-drunk period included getting a friend to take care of him, getting a taxi or other safe ride, renting a hotel room (someone noted money would be a problem), or getting to a detoxification facility or shelter. Suggestions which would work for any pedestrian included wearing light (or retroreflective) clothing, using a flashlight, planning a less dangerous route, and walking on the correct side of the road.

Drivers were cautioned to be more careful, swerve to give hitchhikers more room, slow down, or call the police if they saw a staggering pedestrian.

There were many suggestions for alcohol servers and sellers. Most centered on reducing sales — shorter selling hours, closing the drive-up windows, not selling to teens (or anyone under 30!), and stopping service to intoxicated people. The Navajo group cited the practice of selling to teens at inflated prices. Another theme was making servers and owners more responsible for illegal sales and for consequences of letting patrons/buyers get drunk, and providing more training for bartenders. One group emphasized strengthening enforcement of existing dram shop laws.

There were mixed feelings about what family members and friends could or should do. Some felt family members should provide rides, arrange for designated drivers, have the drinkers wear reflectors or white clothing, make sure the drinkers get a room after drinking, or even buy liquor and make sure drinking is done at home. Respondents knew that family and friends try to directly influence drinkers to stop or to moderate, but felt this intervention isn't effective. One suggested targeting all adolescents, to head off drinking problems. Others felt that women drinkers were a serious problem but that the community was unwilling to acknowledge or deal with it. Some of

the focus group participants had been heavy drinkers, and they listed ways they had ignored or gotten around family efforts to help. One noted, "My family is against drinking; they try to help me; it's just me."

Questions about possible community responses revealed a list of existing services, particularly from the Navajo group. Respondents listed churches and chapter houses (local units of tribal government whose buildings and programs serve as all-purpose social and activity centers in villages) that provide transportation to and from town. Most comments centered on church, social service, and other organizations that offer help such as counseling for a wide range of problems. The Albuquerque group mentioned programs such as "Project Forward," child care, Medicaid, and family counseling services. Single persons cautioned that such programs, even one particular food bank, often are not available to individuals — specifically excluding some people at most risk for pedestrian alcohol crashes.

The Albuquerque group suggested creation of a city-run detoxification center, particularly one with sensitivity toward Native Americans, but doubted that this would be a city priority. (At that time, there was no such facility in the Albuquerque metropolitan area.)

Traffic engineering recommendations included pedestrian overpasses, street lights (city and rural), signs with flashing lights, and "safety lights." Taos participants had mixed responses to "Drunks on the Road" signs; one thought them impossible to consider, while another felt it was worth a try and should be a bright neon sign.

The Navajo group thought that law enforcement was doing well, already patrolling, picking up drunks, and taking them home. While they thought "more" would be good; they recognized the vastness of their territory and the limited number of officers available. One Taos participant was cautious about increasing police presence and authority, concerned about moving toward a "police state." Another suggested, however, that citizens could notify police to remove drunk pedestrians from harm's way. They also suggested that drunk pedestrians should be referred to a substance abuse evaluation and treatment program.

When asked about possible changes to existing laws, the Albuquerque group felt that people don't know the laws and need training — but also that the laws weren't the laws of their people. The Navajo interpreted the question to mean laws controlling sales of liquor, and they wanted liquor stores and bars to close earlier, to stop sales entirely at gas stations and grocery stores, and even to stop sales to people under 30. As noted, Taos participants felt that existing tribal prohibition laws went unenforced. They also felt that dram shop laws should be vigorously enforced.

Countermeasure Evaluations — Summary

A wide range of specific countermeasures was presented for responses. Not all groups responded specifically to each countermeasure idea, often because interviewers ran out of time. Results are summarized, across all focus groups, in Tables 17 - 21 on the following pages. Some responses were also discussed in the previous section which described the individual focus groups. In general, the black and Hispanic groups were most receptive to the specific countermeasures that were discussed. The Native American participants more often felt that the countermeasures did not accurately address conditions in their lives. Interventions on Native American reservations may need to be quite different in order to match the very different environment and social practices there.

Table 17. Responses to Traffic Engineering Countermeasures.

Countermeasure	Hispanics	Blacks	Native Americans
1a. Post "pedestrian crossing" signs with high night visibility in high pedestrian alcohol traffic areas to warn drivers	Approve; mention "drunk zone" text, adding flashing lights. NM caution drivers may not pay attention	Some favor, some feel unlikely to work	Most approve; suggest using "drunk pedestrians" text, flashing lights; some disapproval
1b. Post "pedestrian killed or injured here" signs to warn drivers	Most approve, cite use in South America and Arizona and family-posted crosses in NM; some feel morbid, painful to survivors	Mixed; cautions are too negative, stigma, shock to survivors; some feel shock value good	No response[5]
1c. Lower speed limits in areas w. many intoxicated pedestrians	Approve; warn of need for enforcement; suggest limit to high risk hours	Don't believe would be effective; cite drivers ignoring, no bar-cluster target area	Approve; suggest using "drunk pedestrian" text, flashing lights
1d. Add stop signs in areas w. many intoxicated pedestrians	Approve; some note signal lights more likely effective	Approve; emphasize signal lights	No response
1e. Better street lighting in areas w. many pedestrian alcohol crashes	Approve; note it should be done in selected areas	Approve; recommend targeting specific places	No response; approach has been used successfully in high-risk NM areas
1f. Change signal timing at night in high pedestrian alcohol crash areas to allow more time to cross	Approve; caution will only help sober ped, don't feel will benefit drunk ped (probably assume ignores signal when crossing)	Approve; feel existing timing needs improvement	Approve; note need to correct existing bad timing as well as extend for very slow pedestrians such as drunks or elderly
1g. Erect fences or barriers in dangerous areas to make it hard to cross except at intersections	Mixed; NJ raise concerns about impacting merchants' business or being generally ineffective; NM liked, cited local examples	Disliked; women likened effect to prison; disliked aesthetics, feel restrict ability to escape, e.g., from muggers	Suggested pedestrian overpasses
1h. Close some streets at night making "pedestrian malls" at high risk locations	Disliked; seen as generally disruptive, hard to do, needing policing, and interfering w. residents	No response	No response

[5] For all "no response" entries, the topic was raised in at least some groups but, whether for lack of time or useful contributions, the group participants made no comments.

Table 18. Responses to Law Enforcement Countermeasures.

Countermeasure	Hispanics	Blacks	Native Americans
2a. More police patrols in high risk areas at high risk times	Mixed; want more beat cops, target bad locations; caution need for personnel and money; feel police now unfairly target Hispanics, fear harassment; want DUI-funds for overtime	Mixed; caution need for "equal enforcement," avoid harassment; want neighborhood patrols; concern about cost, want NHTSA funds	Approve, but one noted cops now stretched to limit and feared tribal police officers
2b. Better police training to recognize drunk pedestrians, practice "benign intervention"	Mixed; one group approved, another felt skills obvious and not needing training	Approve; want to emphasize racial sensitivity, benign intervention	No response
2c. "Sweeper" programs, take to detoxification facilities	Mixed; see much work, little benefit; raise concerns of harassment, liability, need for place to take pick-ups	All concerned about harassment, civil liberties, esp. for repeat offenders; don't want in small town; see detoxification as punishment; may work for occasional drinkers	Approve; cite need for "sweeper van" and detoxification facility; want them taken to jail or home; want them referred to treatment; and cite need to be culturally sensitive to Native Americans
2d. Take open liquor containers from people drinking on streets, sidewalks	Mixed; some approve, others note law now exists but hard to enforce/not enforced	Approve, with discretion (e.g. target brown bags, rowdy people)	No response
2e. "Hot line" where servers, vendors, citizens can call for police help with drunk pedestrian	Mixed; most approve, one suggested police too busy/should call family, friends, Safe Rides	Mixed; good in theory but don't trust police, see opportunity for citizens to use to harm other citizens	Not specifically discussed; spontaneous recommendation for calling police to pick up drunks
2f. Police visit liquor stores, bars frequently to give educational material to vendors, servers	Mixed; feel servers already trained but ped focus may help; broaden idea to include speakers bureau, brochures	No response	No response

Table 19. Responses to Alcohol Vendor/Server Countermeasures.

Countermeasure	Hispanics	Blacks	Native Americans
3a. Train vendors, servers about risks to walkers (as well as drivers)	Approve, but: doubt practical effect, think already trained, recommended train to call cab	Approve, but: think already trained (need pedestrian emphasis), don't want to be mandatory	Approve
3b. Encourage vendors, servers to distribute hi-visibility promo items to walking patrons	Mixed; think may help; concern about looking silly and that servers are not willing to do it	Cite "yellow tee shirt," think okay but liquor companies should provide the items	Approve general concept, cite need for bright clothes, flashlights
3c. Encourage bars to refer drunk pedestrians to "Safe Rides" programs, or to start them	Mostly positive; question if bars would do; cite volunteers and cabs	Mostly positive; cite "designated walker," volunteers, cabs; costly, want subsidy, perhaps from MADD; think volunteers' or cabs' safety at risk from drunks	Approve, cite need for Safe Rides van; cite church or chapter house programs; note individuals may go with friends, provide rides; raise concerns about liability
3d. Encourage bars to post signs, hand out educational materials to drinkers on dangers of walking or driving after drinking	Wanted broad media PI&E	Disliked (only one group responded)	Cite general need for education, did not specify who or how

Table 20. Responses to Alcohol/Pedestrian Law Countermeasures.

Countermeasure	Hispanics	Blacks	Native Americans
4a. Pass/strengthen laws on all aspects of liquor sales and service, such as dram shop or host liability laws (covering pedestrians or drivers)	Mixed; laws exist, may need to extend to walkers, may lead to (lawsuit) abuse, needs PI&E and enforcement	Mixed; educate on current laws, want bars to lose license if violate, more enforcement; cite danger; negative: servers can't detect, society too litigious, need personal responsibility	Approve (focus only on commercial); want to enforce existing laws, increase bar owner responsibility (feel on server now); want to close some kinds of outlets, restrict hours
4b. Stronger public intoxification laws to make it easier to get at-risk pedestrians off the street	Mild approval	Approve, caution against harassment	No response
4c. Stronger laws against selling to obviously intoxicated people	Approve	Note hard to implement	Approve
4d. Special tax on hi-alcohol, low-cost beverages to make getting drunk more expensive	Mixed; feel won't make difference, or recommend high excise tax as a good idea	Some approve, some disapprove; cite fear it would drive drunks into theft or using dangerous substitutes	No response
4e. Require warnings about drinking and walking to be distributed with all packaged alcohol products	Mixed, why not try it; some doubt anyone would read, others cited pregnant women as positive example	Can't hurt (very low cost program) but nobody would read, wouldn't help	No response

Table 21. Responses to Government-Action Countermeasures.

Countermeasure	Hispanics	Blacks	Native Americans
5a. More public funding for alcohol treatment and detoxification programs	Approve; suggest AA-like; note that participating in programs requires money, and some who need the service can't afford it	Approve	Approve, note need for money; note that Albuquerque needs a detoxification center; need programs for people who are not in a family; need culturally sensitive facilities; and need (women's) support groups
5b. Public schools teach dangers of drinking and walking in health or driver ed	Easy to do, good idea	Mixed; most approve, believe kids now drink early and learning this in school would carry to adulthood; one wants as private initiative; one says schools have too much burden already	No response
5c. Expand treatment programs to identify and counsel problem drinkers with high walking exposure	Mixed; one group approved, one questioned how to identify at-risk walkers	Approve	Approve
5d. Routinely test all adult crash victims — drivers, pedestrians, or passengers	No response	Approve	No response
5e. Distribute PI&E materials through government agencies in regular contact with the public	Approve; emphasize Spanish radio/TV and newspapers, Hispanic Institute (one focus group sponsor); speakers bureau	Approve; cite church, Urban League (a focus group sponsor), and private initiative	No response

Focus Group Summary

The drinking patterns described by the focus group participants were generally consistent with the observed pedestrian crash problems. Blacks felt that the overall amount of drinking by blacks was less than that for whites. They were familiar with problem drinking, though, and described it as primarily involving older adults, usually male, often in lower socioeconomic conditions.

Hispanics felt that heavy drinking was usually a social activity engaged in by males, particularly young ones. Social drinking was seen as an integral part of Hispanic life, and men typically went off in a separate group at parties or celebrations and, over a period of hours, consumed large amounts of alcohol. The ability to drink large amounts without becoming obviously impaired is seen as a demonstration of manhood, and the macho image is very much sought after. Hispanic women tend to drink much less, but they do not intervene with their men's drinking nor do they insist that the men relinquish driving to ones more capable. Serious alcohol abuse and alcoholism were mentioned, in the focus groups, as extreme behavior outside the realm of social drinking.

The Native American focus groups felt that alcohol abuse was mostly a young adult male problem though some also felt it was a problem for females. Many Native American communities officially prohibit alcohol, including the Navajo and Taos Pueblo groups studied here. Although there is some social drinking, it is less a part of the social fabric than for whites, blacks, or Hispanics. The focus groups described heavy drinking by groups of males as differing from that shown by Hispanics in several respects: Native American males tend to go off the reservation for the primary purpose of drinking heavily; they drink very large amounts of alcohol in a short time and become very drunk; and they must then negotiate their way back to the reservation, by vehicle or on foot, often for long distances over poor and dangerous roads.

Only the Native American groups were well aware of pedestrian alcohol crash problems when they arrived for their focus groups. The Hispanic groups in New Mexico were somewhat aware of the problem. No groups in the New York metropolitan area were aware beforehand that pedestrians with high levels of alcohol in their blood were frequent crash victims.

All three racial/ethnic groups felt that the pedestrian alcohol problem was a combination of the heavy drinking patterns described above and low socioeconomic status. That is, heavy drinking patterns "set the stage" for possible crashes (and alcohol abuse and lower socioeconomic status seemed to be correlated), and drunks of lower socioeconomic status were more likely to be walking and to be in areas which "seemed riskier" because of more traffic, poorer roads, or fewer pedestrian facilities.

Nearly all groups felt that education was a necessary step in preventing such crashes. This included, variously, general media PI&E campaigns, in-school programs, and messages delivered by community organizations. Hispanics pointed to Spanish-language media as a channel for reaching large numbers of Hispanics. While they did not feel it necessary that all messages be in Spanish, they emphasized that Spanish messages should be composed and developed with very

significant input from their communities — to make sure that the message and the language were appropriate.

Most groups favored interventions to keep drunk pedestrians from becoming crash victims. Possible interventions were providing transportation or walking with them to keep them safe, with a variety of mechanisms suggested for providing the assistance.

Increased law enforcement activity was given mixed reviews. While police were seen as one good way to enforce laws against public intoxication or serving intoxicated people, east coast blacks, in particular, and Hispanics were concerned about selective enforcement against minorities and general "harassment." New Mexico groups shared some of this concern, but their main reservation was that the police were spread too thin to actually do this. In all groups, there was concern about what would be done with drunks once they were picked up. No one thought jail was a good idea, and people split between preferring detoxification facilities and simply taking them home.

Additional laws, or modifications to existing laws, were not seen as useful. Most people believed that there were existing laws to handle the situations, from open container/public intoxication laws to dram shop/host liability laws, and they favored the use of laws to moderate drinking to the point of intoxication as well as making drunk pedestrians safe. They felt that the weak link was effective enforcement and prosecution, though, and that improving these aspects were the first steps to be done.

Respondents were consistent in viewing two elements in the pedestrian alcohol equation as very unlikely to be helpful: the pedestrians themselves and alcohol servers and vendors. Participants felt that the at-risk pedestrians, when they are drunk, are unlikely to be able to do anything to keep themselves more safe. They also felt that these pedestrians would be unwilling or unable to plan in advance — e.g., pick better walking routes, moderate their drinking, or arrange for someone to keep them safe — in order to protect their own safety. Next, the focus groups did not feel that alcohol servers or vendors would do anything constructive. Several of the groups, in fact, viewed bars and liquor outlets as actively preying on citizens and needing greater regulation or outright closure.

Finally, all the groups were in favor of increased public (e.g., Federal) support for detoxification/screening/treatment facilities. They also thought that state or Federal support for increased policing and other programs was an excellent idea.

V. RECOMMENDATIONS

The goal in this chapter is to combine the problem magnitude data in Chapter III with the cultural insights information from Chapter IV to provide a set of recommendations to serve as guidance in the next phase of a possible NHTSA research program, i.e., to design and test countermeasure programs intended to reduce pedestrian alcohol crashes for diverse cultures.

Chapter III reviewed crash data based on pedestrian fatalities, the crash victims for whom alcohol involvement was most accurately measured. The analysis looked at pedestrians who were ages 15 and older. Overall pedestrian data were based on FARS (Fatality Analysis Reporting System) records for the 10 years from 1984 through 1993. Data for 53,904 adult (ages 15 and older) pedestrian fatalities were examined (the first and second pedestrians in crashes, representing 99.4 percent of all FARS pedestrian fatalities). Of those, BAC values were known for 67 percent, or 35,589. Fully half of those pedestrian fatalities had positive BACs. Many values were extremely high; of the pedestrians with known BACs, 8 percent had BACs between .01% and .09%, 16 percent had BACs between .10% and .19%, and 26 percent had BACs of .20% or higher. Thirty-five percent had BACs of .15% or higher, the point at which earlier research (Blomberg et al, 1979; Preusser and Blomberg, 1981) had found sharply increasing crash risk.

Racial/ethnic data were able to be linked to some of the FARS data, from the FARS group within NHTSA and from state sources as well. For the years 1987 through 1989, NHTSA linked the CDC's MCOD race coding to FARS fatalities. Those data included 16,957 fatally injured (first and second) pedestrians ages 15 and older; race could be linked to 94 percent of these pedestrians, and BAC test results were known for 68 percent. Race data were also obtained, typically from state medical examiner's offices, for six sites. The six sites included Florida (1986-1993), Michigan (1984-1993), New York State (excluding New York City) (1984-1993), Pennsylvania (1989-1993), Texas (urban counties) (1993), and San Diego County, California (1990-1993). Additionally, analyses for pedestrian fatality data for New Mexico (1982-1993) were obtained.

Together and separately, analyses on these data showed three specific racial/ethnic groups had high-BAC involvement. The high-risk groups were:

- Blacks, male and female, over the age of 25,
- Hispanic males (ages 21 and older), and
- Native Americans, male and female (all ages).

For the older black adults and Hispanic males, the alcohol involvement rates were somewhat higher than the rates for whites. For Native Americans, the alcohol involvement rates were much higher; in New Mexico, for example, 78 percent of males and 62 percent of females with known BACs had BACs of .15% or higher, about double the national average.

In Chapter IV, the results of focus group discussions with the target populations were reported. The focus groups were held with blacks, Hispanics, and Native Americans to learn their reactions to possible countermeasures and what they felt about possible mechanisms by which some members of their cultures were at high risk for pedestrian alcohol crashes.

Focus groups with Hispanics were held in the northeast (New Jersey) and the southwest (New Mexico). Focus groups with blacks were conducted in New Jersey and Connecticut, and focus groups with Native Americans were held in New Mexico.

The focus group testing covered three main topics: perceptions of the extent and nature of the pedestrian alcohol problem for their communities; suggestions on how to attack the problem in their communities; and evaluations of countermeasure approaches developed from earlier traffic safety research and programs. The prepared list of countermeasure approaches included traffic engineering, law enforcement, alcohol vendors/servers, alcohol/pedestrian laws, and other government actions.

The remainder of this chapter is divided into two sections. Target Sites examines possible areas for introducing test programs for pedestrian alcohol countermeasures. Two types of areas are considered: states, with urban and rural populations and the possibility of coordinated state-wide programs; and metropolitan areas, with mostly urban populations in single media markets. Possible site selection criteria are addressed and priorities for implementing test programs are suggested. Next, Countermeasure Approaches summarizes the countermeasure recommendations from the focus group discussions and suggests factors for countermeasure selection and development in specific situations.

Target Sites

A possible next stage of research following this project could be the field testing of racial/ethnic-specific countermeasure approaches for pedestrian alcohol problems. In this section, data are presented for 50 states, the District of Columbia, and 74 metropolitan areas. The goal of this section is to provide information which can be used in field test projects to quickly screen and select sites according to the field tests' specific requirements. Suggested selection and prioritization criteria and sites which meet the criteria are highlighted at the end of this section.

Site selection criteria that were recommended in this contract's Statement of Work included:

- Relatively large number of pedestrian crashes (e.g., 300+ per year),
- Accessible pedestrian crash data files (police accident reports) for three years prior to the next project,
- A source for pedestrian BAC information, and
- A Community Traffic Safety Program (CTSP) organization willing and able to assist in the project.

This section addresses the first criterion in detail. Nearly all sites have police accident reports available for several years, and that issue is not addressed here. For pedestrians in crashes, BAC data are available most frequently for ones who have been fatally injured. Recent information on its availability is presented in this section. This section also identifies the possible sites which had CTSP organizations listed in the summer 1994 *Community Traffic Safety Program Directory*.

Additionally, because a primary objective of this research is to address racial/ethnic groups with significant pedestrian alcohol problems, information is presented about the population base of each targeted racial/ethnic group and about their total incidence of pedestrian fatalities.

Data are presented for 50 states, the District of Columbia, and medium-to-large metropolitan areas. The metropolitan areas, with the exception of three New England sites[6], are defined according to 1990 U.S. Census definitions for Metropolitan Statistical Areas or Primary Metropolitan Statistical Areas. Criteria for selecting these metropolitan areas from the much larger number identified by the Census Bureau were intended to identify areas representative of the entire country and also likely to have large numbers of alcohol-related pedestrian fatalities. The 74 metropolitan areas included:

- All MSAs or PMSAs with total populations of 900,000 or more (n = 57),
- All MSAs based on a stand-alone central urban area of 700,000 or more (n = 6), and
- All MSAs based on a stand-alone central urban area of 500,000 or more which were in states with high pedestrian alcohol fatality rates (n = 11).

Data describing the states are shown in Tables 22 and 24; comparable data for the metropolitan areas are in Tables 23 and 25. Key information for evaluating possible sites are:[7]

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[6] The Census definitions for Boston, Hartford, and Providence MSAs contain portions of several counties. The definitions used in this report are shaped to full counties to correspond to the areas used in tabulating the fatal pedestrian data. The Boston "pseudo-MSA" includes the Massachusetts counties of Essex, Middlesex, Norfolk, Plymouth, and Suffolk. The Hartford pseudo-MSA includes Hartford, Middlesex, and Tolland counties in Connecticut. The Providence pseudo-MSA includes the Rhode Island counties of Bristol, Kent, Providence, and Washington.

[7] The tables show data for just one high-BAC level. The level used is .15%, which is midway between the levels shown in most Chapter III analyses and is the level at which Preusser and Blomberg (1981) found that pedestrian risk curves rose sharply. Some of the columns in the tables include estimates intended to compensate for missing or unknown data. In all tables, estimates of high-BAC (BAC = .15% or more) fatalities and rates are projected to all fatalities from known-BAC cases. In Tables 23 and 24, unknown-race victims are apportioned across race according to race proportions in the population (not in known-race fatalities, which are based on fewer cases and are more unreliable). The FARS + MCOD database on which these tables were based did not include a Hispanic yes/no code; single high-BAC fatality rates were estimated for whites and Hispanics, and the rates were projected to numbers of fatalities by separate white and Hispanic population values. Although by-state and by-MSA fatality rates used for whites and Hispanics were the same, the totals were different because of population distribution differences.

1. Magnitude of the pedestrian alcohol problem, measured by the absolute number of high-BAC deaths per year and the rate of high-BAC deaths (Tables 22 and 23). That is, the problem should be significant in the community, both to be credible as the target of any NHTSA pilot program and to offer the opportunity for significant crash reductions during a field test.

   Note that fatality data are combined over the period 1984 through 1993 although population figures are only for the year 1990. Actual population figures for each of the years 1984 - 1993 would be somewhat different, because of random fluctuations or consistent population growth or declines. Adjustments to the population figures would result in some differences in the calculated fatality rates. Most differences would likely be quite small, though they would be larger in areas showing significant increases or decreases in population in the ten year period, and the potential for differences is larger for smaller population groups.

2. Percentage of pedestrians for whom BAC testing has been done (Tables 22 and 23). In a field test, it would be critical to have BAC measurements for victims of pedestrian crashes. If the current practices in possible test jurisdictions provide BAC values for relatively few victims, it would be difficult for a field test contractor to establish robust baseline (pre-program) measures of high-BAC involvement and more difficult and expensive to obtain comprehensive program-period measures.

3. Overall population of the test area (Tables 22 and 23). For the purpose of a field test, it may be best to look for a site large enough to provide crash data for testing yet small enough to readily introduce the countermeasure interventions.

4. For each critical racial/ethnic group, the number of high-BAC pedestrian deaths per year and the size of the racial/ethnic population base (Tables 24 and 25). As above, if the field tests are to address individual racial/ethnic groups, it is important that they exist in significant numbers and that they suffer relatively large numbers of pedestrian alcohol crashes.

In these analyses, emphasis has been placed on test sites with large numbers of pedestrian alcohol fatalities. One way to increase the numbers of pedestrian alcohol crash victims who can enter into study statistics is to include victims with lesser injuries, such as including all pedestrians with incapacitating (A-level) injuries. According to the National Accident Sampling System's General Estimates Systems (GES) data for 1993, there are more than five times as many A injuries as fatalities (for pedestrians not age 14 or younger, an estimated 16,463 A injuries vs. an estimated 3,123 fatalities). A injuries are much more frequent in urban areas (or fatalities are less frequent); for areas of 25,000 population or larger, there were nearly 10 times as many A injuries as fatalities (10,086 vs. 1,129). In rural areas, the ratio was more nearly 3:1 (6,377 vs. 1,993).

See Appendix A for more on the calculation and estimation procedures used in these tables.

The GES data also draw attention to the difficulty of estimating alcohol involvement without comprehensive BAC testing. The GES database is based on police accident reports without supplemental data. In them, the best indicator of alcohol involvement is the reporting officer's judgment. For fatalities, pedestrian alcohol was cited as a contributing factor by police officers in only 11 percent of the cases (336 vs. 2,786); for A injuries, alcohol was cited for only 12 percent of the cases (1,923 vs. 14,540). Thus supplementary information, such as 100% testing for pedestrian crash victims who go to hospitals, would be highly desirable if non-fatalities were to be included in any field test. Alternatively, surrogate measures of alcohol involvement, such as night/weekend crashes, would need to be utilized.

In any subsequent field test, it may also be useful to obtain interim or surrogate measures of countermeasure effectiveness and increased safety. The surrogate measures chosen would depend on the countermeasures chosen for testing. They could include things like driver, at-risk pedestrian, and general public awareness of the problem and countermeasure campaign; vendor/server training activities, attitudes, and activities; visibility of giveaway materials; police public presentations and enforcement warnings and tickets; print media articles; radio and TV coverage; and social service and health care organization activities. "Process" measures may also be considered. These could include descriptions of the field test activities, such as how the community organized to describe and attack the pedestrian alcohol problem, what racial/ethnic groups and leaders participated in planning and implementation, how citizen and neighborhood organizations were involved, etc.

These kinds of measures are important to confirm how well the countermeasures were implemented, what their immediate effects were, and what kinds of impacts they had on the crash-causation chain. They can also be very important in showing positive results of the field test in cases where ultimate crash data aren't necessarily robust enough to show significant benefits.

Table 22. Alcohol-Related Pedestrian Fatalities/Year, Ages 15+, by State
(Based on 1984-1993 FARS, Up to Two Pedestrians Only per Crash, and 1990 Census).

STATE	Pedestrians Killed, Ages 15+					Population	Age 15+ Fatality Rates*	
	Total	Known BAC		BAC .15% +		Ages 15+	(per 100K/year)	
	No./Yr	No./Yr	Percent	No./Yr (est.)	Percent		Total	BAC .15%+
Alabama	77.2	39.2	51%	34.9	45%	3,164,292	2.44	1.10
Alaska	13.1	9.1	69%	8.5	65%	400,231	3.27	2.12
Arizona	126.6	71.5	56%	62.9	50%	2,832,272	4.47	2.22
Arkansas	45.6	11.4	25%	23.2	51%	1,834,910	2.49	1.26
California	744.3	622.0	84%	220.8	30%	23,160,981	3.21	0.95
Colorado	48.8	39.5	81%	19.3	39%	2,561,015	1.91	0.75
Connecticut	53.9	40.1	74%	15.7	29%	2,655,383	2.03	0.59
Delaware	17.8	16.6	93%	7.7	43%	508,234	3.50	1.52
D.C.	19.9	13.3	67%	5.4	27%	527,340	3.77	1.02
Florida	500.9	296.0	59%	207.8	41%	10,525,857	4.76	1.97
Georgia	162.4	111.9	69%	74.5	46%	5,032,115	3.23	1.48
Hawaii	23.9	20.9	87%	4.1	17%	870,203	2.75	0.47
Idaho	11.4	6.6	58%	4.3	38%	746,327	1.53	0.58
Illinois	218.9	179.4	82%	64.3	29%	8,949,374	2.45	0.72
Indiana	71.0	43.2	61%	24.8	35%	4,328,527	1.64	0.57
Iowa	27.4	9.6	35%	14.8	54%	2,169,997	1.26	0.68
Kansas	25.6	10.9	43%	12.9	50%	1,913,730	1.34	0.67
Kentucky	61.0	36.4	60%	24.1	40%	2,893,681	2.11	0.83
Louisiana	113.2	42.3	37%	55.9	49%	3,184,503	3.55	1.76
Maine	19.0	14.5	76%	6.2	32%	969,121	1.96	0.64
Maryland	109.6	87.9	80%	31.7	29%	3,794,113	2.89	0.83
Massachusetts	113.4	90.2	80%	23.9	21%	4,877,824	2.32	0.49
Michigan	176.8	87.1	49%	73.9	42%	7,234,126	2.44	1.02
Minnesota	49.7	35.7	72%	18.1	36%	3,379,162	1.47	0.54
Mississippi	52.8	13.9	26%	23.9	45%	1,952,628	2.70	1.23
Missouri	80.5	49.0	61%	30.4	38%	4,008,498	2.01	0.76
Montana	12.2	10.4	85%	6.1	50%	611,532	1.99	1.00
Nebraska	17.2	11.1	65%	6.4	37%	1,214,995	1.42	0.52
Nevada	35.4	28.8	81%	14.0	40%	948,046	3.73	1.48
New Hampshire	13.2	8.3	63%	4.5	34%	872,321	1.51	0.51
New Jersey	190.3	148.6	78%	50.2	26%	6,223,524	3.06	0.81
New Mexico	80.9	73.2	90%	48.8	60%	1,136,500	7.12	4.30
New York	468.8	341.7	73%	82.6	18%	14,416,508	3.25	0.57
North Carolina	175.3	147.0	84%	84.8	48%	5,293,221	3.31	1.60
North Dakota	6.5	3.4	52%	3.3	50%	490,103	1.33	0.66
Ohio	148.2	47.3	32%	79.0	53%	8,500,009	1.74	0.93
Oklahoma	55.3	39.4	71%	19.5	35%	2,443,048	2.26	0.80
Oregon	54.6	46.8	86%	18.4	34%	2,229,760	2.45	0.83
Pennsylvania	207.9	131.9	63%	60.8	29%	9,541,123	2.18	0.64
Rhode Island	16.2	11.4	70%	3.6	22%	813,358	1.99	0.44
South Carolina	102.6	49.3	48%	45.8	45%	2,720,571	3.77	1.68
South Dakota	9.6	7.5	78%	5.2	55%	527,268	1.82	1.00
Tennessee	89.8	64.2	71%	31.1	35%	3,867,304	2.32	0.80
Texas	428.8	177.2	41%	206.2	48%	12,905,930	3.32	1.60
Utah	30.2	19.8	66%	9.8	32%	1,185,697	2.55	0.82
Vermont	7.4	5.1	69%	1.7	24%	441,718	1.68	0.39
Virginia	112.4	90.4	80%	36.6	33%	4,921,311	2.28	0.74
Washington	74.3	60.7	82%	23.4	31%	3,791,157	1.96	0.62
West Virginia	31.8	23.7	75%	12.6	40%	1,432,131	2.22	0.88
Wisconsin	52.4	40.2	77%	19.2	37%	3,801,149	1.38	0.50
Wyoming	4.4	3.3	75%	2.0	45%	339,274	1.30	0.59
TOTAL	**5,390**	**3,589**	**67%**	**1,969**	**35%**	**195,142,002**	**2.76**	**0.97**

* BAC No./Year and rates projected from "Known BAC" cases to Total Killed

Table 23. Alcohol-Related Pedestrian Fatalities/Year, Ages 15+, by Selected MSA/PMSA
(based on 1984-1993 FARS, Up to Two Pedestrians Only per Crash, and 1990 Census).

Selected MSAs/PMSAs	Pedestrians Killed, Ages 15+					Population Ages 15+	Age 15+ Fatality Rates* (per 100K/year)	
	Total	Known BAC		BAC .15% +				
	No./Yr	No./Yr	Percent	No./Yr (est.)	Percent		Total	BAC .15%+
Albuquerque, NM MSA	20.5	18.2	89%	10.9	53%	373,537	5.49	2.92
Atlanta, GA MSA	68.3	47.2	69%	27.6	40%	2,215,595	3.08	1.25
Austin, TX MSA	16.8	6.4	38%	7.6	45%	612,931	2.74	1.24
Bakersfield, CA MSA	18.3	15.4	84%	7.0	38%	395,990	4.62	1.77
Baltimore, MD PMSA	56.1	47.3	84%	14.1	25%	1,892,817	2.96	0.75
Baton Rouge, LA MSA	11.8	4.6	39%	6.7	57%	400,427	2.95	1.67
Birmingham, AL MSA	14.8	7.1	48%	5.0	34%	715,377	2.07	0.70
Boston, MA Five-County pseudo-MSA	53.7	42.3	79%	10.0	19%	3,092,902	1.74	0.32
Buffalo, NY PMSA	18.0	14.5	81%	3.8	21%	778,863	2.31	0.49
Charleston, SC MSA	16.2	9.3	57%	7.7	47%	386,899	4.19	1.98
Charlotte-Gastonia-Rock Hill, NC-SC MSA	25.9	21.3	82%	11.8	46%	921,807	2.81	1.28
Chicago, IL PMSA	139.6	115.9	83%	33.6	24%	4,771,596	2.93	0.70
Cincinnati, OH-KY-IN PMSA	19.1	6.0	31%	9.6	50%	1,122,152	1.70	0.85
Cleveland, OH PMSA	31.2	11.4	37%	17.2	55%	1,452,344	2.15	1.19
Columbus, OH MSA	19.1	3.3	17%	7.5	39%	1,084,876	1.76	0.69
Dallas, TX PMSA	63.6	35.7	56%	26.7	42%	1,961,909	3.24	1.36
Fort Worth-Arlington TX PMSA	28.4	10.3	36%	13.5	48%	1,021,144	2.78	1.32
Dayton-Springfield, OH MSA	14.4	3.9	27%	10.3	72%	749,167	1.92	1.38
Denver, CO PMSA	24.1	19.3	80%	10.1	42%	1,264,020	1.91	0.80
Detroit, MI PMSA	99.4	47.8	48%	43.7	44%	3,427,354	2.90	1.27
El Paso, TX MSA	27.5	7.9	29%	15.7	57%	432,233	6.36	3.62
Fresno, CA MSA	21.5	16.7	78%	9.3	43%	488,114	4.40	1.90
Greensboro--Winston-Salem--High Point, NC MSA	18.9	15.2	80%	7.0	37%	762,480	2.48	0.91
Greenville-Spartanburg, SC MSA	14.0	7.7	55%	5.1	36%	511,677	2.74	0.99
Hartford, CT Three-County pseudo-MSA	16.4	12.2	74%	6.0	37%	911,225	1.80	0.66
Honolulu, HI MSA	19.3	17.5	91%	2.6	14%	662,551	2.91	0.40
Houston, TX PMSA	89.5	43.4	48%	43.3	48%	2,492,317	3.59	1.74
Indianapolis, IN MSA	17.6	10.9	62%	6.6	38%	972,521	1.81	0.68
Jacksonville, FL MSA	27.5	18.6	68%	11.2	41%	707,372	3.89	1.59
Kansas City, MO-KS MSA	22.7	13.2	58%	9.5	42%	1,215,686	1.87	0.78
Knoxville, TN MSA	9.6	5.6	58%	2.4	25%	490,315	1.96	0.49
Las Vegas, NV MSA	24.2	19.6	81%	9.1	38%	586,063	4.13	1.56
Little Rock-North Little Rock, AR MSA	9.8	1.4	14%	6.3	64%	399,391	2.45	1.58
Los Angeles, CA PMSA (LA County)	240.5	184.2	77%	59.8	25%	6,893,832	3.49	0.87
Louisville, KY-IN MSA	17.3	8.9	51%	7.4	43%	752,437	2.30	0.98
Memphis, TN-AR-MS MSA	27.8	18.6	67%	9.7	35%	751,623	3.70	1.29
Ft. Laud-Hollywd-PompnoBch FL PMSA	51.2	21.6	42%	16.4	32%	1,038,533	4.93	1.57
Miami, FL PMSA	82.4	23.5	29%	21.7	26%	1,545,464	5.33	1.41
Milwaukee, WI PMSA	15.0	13.7	91%	4.6	31%	1,112,993	1.35	0.41

Table 23. Alcohol-Related Pedestrian Fatalities/Year, Ages 15+, by Selected MSA/PMSA
(based on 1984-1993 FARS, Up to Two Pedestrians Only per Crash, and 1990 Census).

Selected MSAs/PMSAs	Pedestrians Killed, Ages 15+					Population Ages 15+	Age 15+ Fatality Rates* (per 100K/year)	
	Total	Known BAC		BAC .15% +				
	No./Yr	No./Yr	Percent	No./Yr (est.)	Percent		Total	BAC .15%+
Minneapolis-St. Paul, MN-WI MSA	28.1	21.7	77%	9.5	34%	1,907,837	1.47	0.50
Mobile, AL MSA	11.2	7.6	68%	4.3	38%	365,482	3.06	1.17
Nashville, TN MSA	16.9	13.2	78%	5.5	33%	777,109	2.17	0.71
New Orleans, LA MSA	37.2	13.7	37%	15.7	42%	947,946	3.92	1.66
Bergen-Passaic Counties NJ PMSA	31.5	23.7	75%	7.6	24%	1,047,806	3.01	0.72
Jersey City NJ PMSA	13.1	9.2	70%	1.6	12%	451,147	2.90	0.35
Middlesex-Somerset-Hunterdon Counties NJ PMSA	23.4	18.8	80%	6.8	29%	832,303	2.81	0.82
Monmouth-Ocean Counties NJ PMSA	20.8	17.3	83%	5.9	28%	790,816	2.63	0.74
Nassau-Suffolk Counties NY PMSA	74.0	59.3	80%	15.3	21%	2,107,893	3.51	0.73
New York City (only) NY sub-PMSA	258.0	198.0	77%	35.3	14%	5,905,275	4.37	0.60
Newark NJ PMSA	43.7	34.3	78%	9.7	22%	1,466,407	2.98	0.66
Norfolk-Virginia Beach-Newport News, VA-NC MSA	22.2	16.1	73%	8.5	39%	1,079,272	2.06	0.79
Oklahoma City, OK MSA	16.8	13.7	82%	5.9	35%	743,757	2.26	0.79
Orlando, FL MSA	38.2	28.9	76%	15.9	42%	852,034	4.48	1.86
Philadelphia, PA-NJ PMSA	106.7	61.5	58%	30.2	28%	3,856,955	2.77	0.78
Phoenix, AZ MSA	58.4	46.0	79%	24.0	41%	1,648,774	3.54	1.46
Pittsburgh, PA PMSA	28.4	21.5	76%	7.0	25%	1,683,379	1.69	0.42
Portland, OR PMSA	26.4	24.8	94%	8.2	31%	974,744	2.71	0.84
Providence, RI Four-County pseudo-MSA	14.1	10.3	73%	2.9	20%	742,762	1.90	0.39
Raleigh-Durham-Chapel Hill, NC MSA	8.7	8.1	93%	3.8	43%	595,136	1.46	0.63
Richmond-Petersburg, VA MSA	15.1	12.7	84%	4.9	32%	688,180	2.19	0.71
Rochester, NY MSA	12.9	9.9	77%	3.5	27%	789,409	1.63	0.45
Sacramento, CA MSA	32.0	28.2	88%	10.8	34%	1,148,719	2.79	0.94
St. Louis, MO-IL MSA (Modified)	44.8	33.4	75%	18.0	40%	1,901,126	2.36	0.95
Salt Lake City-Ogden, UT MSA	21.1	14.7	70%	6.9	33%	745,290	2.83	0.92
San Antonio, TX MSA	29.4	10.2	35%	15.0	51%	984,455	2.99	1.52
San Diego, CA MSA	79.3	69.8	88%	21.0	27%	1,975,285	4.01	1.06
Oakland, CA PMSA	41.8	34.0	81%	10.2	24%	1,652,042	2.53	0.62
San Francisco, CA PMSA	36.9	34.3	93%	8.3	22%	1,348,265	2.74	0.61
San Jose, CA PMSA	29.2	25.9	89%	8.9	31%	1,193,385	2.45	0.75
Seattle, WA PMSA	31.8	26.4	83%	9.5	30%	1,569,964	2.03	0.61
Tampa-St. Petersburg-Clearwater, FL MSA	77.0	48.4	63%	32.9	43%	1,713,300	4.49	1.92
Tucson, AZ MSA	22.8	9.6	42%	14.5	64%	525,824	4.34	2.76
Washington, DC-MD-VA-WV MSA	78.3	57.9	74%	19.7	25%	3,142,570	2.49	0.63
West Palm Beach-Boca Raton, FL MSA	29.9	14.4	48%	12.9	43%	719,262	4.16	1.79
Total Selected MSAs/PMSAs	**2,972**	**2,025**	**68%**	**1,040**	**35%**	**100,242,444**	**2.96**	**1.04**

Bold/Italic areas had CTSPs in Summer 1994 Directory

* BAC No./Year and rates projected from "Known BAC" cases to Total Killed

Table 24. Pedestrians (Ages 15+) Total and High-BAC Fatality Estimates and Population, by State (Based on 1987-1989 FARS + MCOD Data and 1990 Census).

STATE	White + Hispanic	White (excl. Hispanic) (estimated)			Hispanic Origin (estimated)		
	Est. BAC .15%+ /100Kpop/yr	Est. Avg. # Killed/yr	Est. #/yr BAC .15%+	Est. Age 15+ Population	Est. Avg. # Killed/yr	Est. #/yr BAC .15%+	Age 15+ Population
Alabama	0.73	50.0	17.4	2,381,092	0.4	0.1	17,870
Alaska	0.79	5.5	2.4	303,207	0.2	0.1	11,826
Arizona	1.13	73.7	23.9	2,119,448	16.2	5.2	462,094
Arkansas	0.52	25.4	8.1	1,542,215	0.2	0.1	13,524
California	1.14	487.3	157.9	13,811,704	192.2	61.8	5,360,377
Colorado	0.55	37.2	11.6	2,105,611	5.2	1.6	294,005
Connecticut	0.61	48.2	13.7	2,263,082	3.2	0.9	146,884
Delaware	2.03	15.9	8.7	425,673	0.4	0.2	10,993
District of Columbia	0.70	7.2	1.1	149,988	1.3	0.2	26,685
Florida	2.17	389.7	171.0	7,885,729	62.2	27.1	1,248,573
Georgia	1.16	100.9	41.9	3,623,287	2.3	0.9	80,988
Hawaii	0.86	5.1	2.2	255,862	1.1	0.5	54,387
Idaho	0.46	9.8	3.2	694,125	0.5	0.2	33,513
Illinois	0.64	164.8	43.9	6,859,595	15.0	4.0	623,076
Indiana	0.52	64.7	20.4	3,909,124	1.1	0.4	68,116
Iowa	0.61	27.0	12.8	2,092,245	0.3	0.1	21,566
Kansas	0.52	19.8	9.0	1,711,365	0.7	0.3	61,835
Kentucky	0.94	61.4	25.0	2,666,169	0.4	0.1	15,892
Louisiana	1.00	60.1	21.7	2,166,056	2.0	0.7	70,605
Maine	0.67	22.2	6.4	951,827	0.1	0.0	4,650
Maryland	0.70	81.5	18.7	2,681,189	2.9	0.7	94,185
Massachusetts	0.52	112.6	22.5	4,343,925	5.1	1.0	195,490
Michigan	0.98	141.0	58.9	6,037,222	3.2	1.3	136,082
Minnesota	0.43	44.4	13.9	3,202,013	0.5	0.1	34,330
Mississippi	0.00	26.3	0.0	1,291,776	0.2	0.0	11,482
Missouri	0.68	61.5	24.1	3,520,134	0.8	0.3	43,576
Montana	0.58	10.5	3.3	568,553	0.1	0.0	7,789
Nebraska	0.37	15.3	4.2	1,134,147	0.3	0.1	24,341
Nevada	1.50	30.0	11.4	759,493	3.5	1.3	87,934
New Hampshire	0.31	10.2	2.7	850,445	0.1	0.0	7,957
New Jersey	0.71	142.3	33.2	4,669,980	17.0	3.9	553,237
New Mexico	2.06	26.7	12.6	609,983	18.2	8.7	406,783
New York	0.50	350.5	50.6	10,018,811	58.2	8.4	1,641,985
North Carolina	0.92	105.7	37.1	4,055,528	1.5	0.5	55,669
North Dakota	0.23	6.3	1.1	466,440	0.0	0.0	2,850
Ohio	0.66	127.8	49.4	7,475,024	1.6	0.6	95,081
Oklahoma	0.48	38.1	9.7	2,022,212	1.1	0.3	56,198
Oregon	0.57	41.7	11.6	2,042,919	1.5	0.4	74,923
Pennsylvania	0.65	176.5	55.0	8,448,141	3.3	1.0	158,613
Rhode Island	0.35	13.9	2.6	737,900	0.6	0.1	31,926
South Carolina	0.66	48.8	12.7	1,925,868	0.6	0.1	22,126
South Dakota	0.36	5.9	1.8	489,285	0.0	0.0	3,246
Tennessee	0.58	66.0	18.8	3,244,665	0.5	0.1	23,940
Texas	1.31	246.1	107.1	8,175,100	91.1	39.2	2,974,419
Utah	0.41	28.8	4.5	1,084,924	1.4	0.2	54,238
Vermont	0.10	6.3	0.4	433,993	0.0	0.0	2,722
Virginia	0.45	72.6	17.2	3,791,493	2.3	0.5	120,167
Washington	0.63	64.3	20.9	3,331,207	2.7	0.9	139,840
West Virginia	0.90	35.1	12.3	1,375,146	0.2	0.1	6,370
Wisconsin	0.52	47.4	18.4	3,521,067	0.8	0.3	59,120
Wyoming	0.51	3.1	1.6	311,520	0.2	0.1	16,988
TOTAL	**0.82 (wh), 1.11 (hi)**	**3,863.1**	**1,240.3**	**150,537,507**	**524.5**	**175.3**	**15,771,066**

Note: Victims of unknown race apportioned according to population percentages

Table 24. Pedestrians (Ages 15+) Total and High-BAC Fatality Estimates and Population, by State (Based on 1987-1989 FARS + MCOD Data and 1990 Census) (cont'd).

STATE	Black				Native American/Eskimo/Aleut			
	Avg # Killed/yr	Est. #/yr BAC .15%+	Est. BAC .15%+ /100Kpop/yr	Age 15+ Population	Avg # Killed/yr	Est. #/yr BAC .15%+	Est. BAC .15%+ /100Kpop/yr	Age 15+ Population
Alabama	25.6	13.7	1.86	736,896	0.0	0.0	0.00	11,834
Alaska	0.4	0.4	2.32	15,469	6.7	5.2	9.31	55,409
Arizona	3.8	0.6	0.71	78,149	31.5	27.3	20.96	130,206
Arkansas	14.3	9.8	3.77	260,256	0.4	0.0	0.00	9,716
California	77.8	19.3	1.18	1,640,658	7.9	5.2	2.87	180,103
Colorado	2.1	0.8	0.84	96,731	1.3	1.3	6.67	20,018
Connecticut	5.8	3.4	1.69	201,853	0.3	0.3	6.45	5,221
Delaware	3.7	2.0	2.43	82,167	0.0	0.0	0.00	1,606
District of Columbia	15.2	4.8	1.50	320,378	0.0	0.0	0.00	1,267
Florida	92.3	33.2	2.67	1,244,230	2.4	1.4	4.97	28,323
Georgia	72.4	39.8	3.15	1,260,350	0.0	0.0	0.00	10,500
Hawaii	0.3	0.3	1.70	19,587	0.0	0.0	0.00	3,722
Idaho	0.0	0.0	0.00	2,287	0.3	0.3	3.51	9,505
Illinois	54.0	17.9	1.45	1,232,338	1.0	0.0	0.03	16,696
Indiana	5.5	2.5	0.80	312,324	0.0	0.0	0.00	9,707
Iowa	1.0	0.7	2.02	33,047	0.3	0.3	6.73	4,954
Kansas	2.4	1.9	1.88	101,306	0.7	0.7	4.24	15,837
Kentucky	5.2	2.2	1.13	193,666	0.0	0.0	0.00	4,619
Louisiana	45.4	24.3	2.68	905,565	0.0	0.0	0.00	13,008
Maine	0.0	0.0	0.00	3,622	0.0	0.0	0.00	4,201
Maryland	38.5	11.2	1.24	900,694	0.0	0.0	0.00	10,112
Massachusetts	6.6	3.1	1.39	220,875	0.4	0.3	3.65	9,230
Michigan	33.6	14.7	1.56	944,937	1.4	0.7	1.69	39,872
Minnesota	1.4	1.0	1.60	62,657	4.4	3.6	11.21	32,200
Mississippi	25.7	0.0	0.00	634,147	0.3	0.0	0.00	5,791
Missouri	12.4	4.6	1.17	397,979	0.0	0.0	0.00	15,214
Montana	0.0	0.0	0.00	1,600	4.4	3.4	11.02	30,580
Nebraska	0.0	0.0	0.00	39,526	1.7	1.7	21.03	7,935
Nevada	1.6	0.1	0.11	56,363	0.7	0.0	0.11	14,232
New Hampshire	0.0	0.0	0.00	5,230	0.0	0.0	0.00	1,666
New Jersey	31.7	9.2	1.17	783,555	0.0	0.0	0.00	11,777
New Mexico	2.4	1.7	7.94	21,295	31.1	23.8	27.03	87,998
New York	93.2	20.7	0.96	2,158,422	1.8	1.3	2.89	46,587
North Carolina	69.4	41.9	3.86	1,084,286	6.1	5.3	9.02	58,428
North Dakota	0.0	0.0	0.00	2,345	1.0	1.0	6.29	15,886
Ohio	19.1	11.5	1.36	844,465	0.0	0.0	0.00	15,935
Oklahoma	5.2	2.8	1.67	165,888	6.5	3.2	1.86	173,189
Oregon	2.0	1.2	3.71	32,373	2.4	2.0	7.32	27,318
Pennsylvania	26.5	9.3	1.13	820,077	0.0	0.0	0.00	11,585
Rhode Island	0.5	0.0	0.00	27,659	0.1	0.0	0.00	2,889
South Carolina	52.3	20.4	2.72	749,263	0.4	0.3	5.37	6,314
South Dakota	0.0	0.0	0.00	2,156	2.1	1.2	4.08	30,387
Tennessee	19.8	8.8	1.56	566,746	0.0	0.0	0.00	8,011
Texas	58.8	25.8	1.76	1,467,035	1.4	0.7	1.35	50,430
Utah	1.0	0.5	6.26	8,028	2.3	1.9	12.93	15,071
Vermont	0.0	0.0	0.00	1,355	0.0	0.0	0.00	1,275
Virginia	37.9	15.8	1.80	875,010	0.0	0.0	0.00	12,315
Washington	2.1	0.7	0.65	106,281	7.1	5.2	9.15	56,535
West Virginia	1.4	0.0	0.02	42,901	0.0	0.0	0.00	1,999
Wisconsin	4.1	2.7	1.67	160,907	1.3	1.0	3.78	26,508
Wyoming	0.0	0.0	0.00	2,525	0.3	0.0	0.00	6,117
TOTAL	974.2	385.0	1.76	21,927,459	130.3	98.7	7.21	1,369,838

Note: Victims of unknown race apportioned according to population percentages

Table 25. Pedestrians (Ages 15+) Total and High-BAC Fatality Estimates and Population, by Selected MSA/PMSA (Based on 1987-1989 FARS + MCOD Data and 1990 Census).

Selected MSAs/PMSAs	White + Hispanic	White (excl. Hispanic) (estimated)			Hispanic Origin (estimated)		
	Est. BAC .15%+ /100Kpop/yr	Est. Avg. # Killed/yr	Est. #/yr BAC .15%+	Est. Age 15+ Population	Est. Avg. # Killed/yr	Est. #/yr BAC .15%+	Age 15+ Population
Albuquerque, NM MSA	2.19	8.6	4.8	218,577	5.1	2.8	128,694
Atlanta, GA MSA	1.12	44.3	17.7	1,588,503	1.2	0.5	43,433
Austin, TX MSA	0.81	10.5	3.5	429,452	2.8	0.9	112,738
Bakersfield, CA MSA	1.85	12.6	4.8	259,993	4.8	1.8	97,978
Baltimore, MD PMSA	0.69	42.7	9.4	1,367,224	0.7	0.2	22,374
Baton Rouge, LA MSA	0.95	6.2	2.7	279,218	0.1	0.1	5,835
Birmingham, AL MSA	0.35	10.3	1.8	526,922	0.1	0.0	2,945
Boston, MA Five-County pseudo-MSA	0.48	65.5	12.7	2,648,244	3.0	0.6	152,570
Buffalo, NY PMSA	0.30	16.5	2.0	670,802	0.4	0.0	14,981
Charleston, SC MSA	0.33	5.9	0.9	267,184	0.1	0.0	5,326
Charlotte-Gastonia-Rock Hill, NC-SC MSA	0.65	16.5	4.7	732,201	0.2	0.1	8,045
Chicago, IL PMSA	0.73	95.9	22.5	3,100,861	15.8	3.7	508,194
Cincinnati, OH-KY-IN PMSA	0.83	19.4	7.9	958,637	0.1	0.0	6,110
Cleveland, OH PMSA	0.87	23.4	10.0	1,147,062	0.5	0.2	23,123
Columbus, OH MSA	0.50	15.6	4.7	936,751	0.1	0.0	8,465
Dallas, TX PMSA	1.07	39.5	14.5	1,354,472	7.4	2.7	251,365
Fort Worth-Arlington TX PMSA	0.81	19.6	6.4	789,602	2.5	0.8	101,596
Dayton-Springfield, OH MSA	0.82	11.1	5.2	642,555	0.1	0.0	5,172
Denver, CO PMSA	0.62	18.6	6.2	1,011,476	2.7	0.9	146,358
Detroit, MI PMSA	1.26	70.1	32.8	2,616,501	1.6	0.7	59,385
El Paso, TX MSA	3.66	7.6	4.4	120,954	18.1	10.5	288,368
Fresno, CA MSA	2.27	12.0	6.1	268,527	7.1	3.6	157,635
Greensboro--Winston-Salem--High Point, NC MSA	0.93	16.4	5.7	610,566	0.1	0.0	5,203
Greenville-Spartanburg, SC MSA	0.54	9.7	2.3	421,580	0.1	0.0	3,771
Hartford, CT Three-County pseudo-MSA	0.84	16.0	6.9	755,720	1.2	0.5	62,176
Honolulu, HI MSA	0.75	3.7	1.4	184,846	0.8	0.3	38,530
Houston, TX PMSA	1.21	44.0	17.8	1,463,789	14.6	5.9	482,321
Indianapolis, IN MSA	0.74	16.8	6.1	829,449	0.2	0.1	7,818
Jacksonville, FL MSA	1.77	22.7	9.7	547,046	0.7	0.3	16,605
Kansas City, MO-KS MSA	0.80	16.7	8.2	1,021,350	0.5	0.3	31,634
Knoxville, TN MSA	0.50	8.6	2.3	455,917	0.0	0.0	2,366
Las Vegas, NV MSA	1.57	20.5	7.1	451,458	2.7	0.9	59,128
Little Rock-North Little Rock, AR MSA	0.00	4.8	0.0	321,516	0.0	0.0	2,909
Los Angeles, CA PMSA (LA County)	0.99	115.3	29.9	3,004,171	92.9	24.1	2,357,055
Louisville, KY-IN MSA	0.79	13.9	5.1	651,690	0.1	0.0	4,196
Memphis, TN-AR-MS MSA	0.21	7.8	1.0	453,704	0.1	0.0	6,068
Ft. Laud-Hollywd-PompnoBch FL PMSA	2.19	43.6	17.6	803,450	4.6	1.9	84,525
Miami, FL PMSA	1.61	24.0	7.4	460,591	44.7	12.6	779,966
Milwaukee, WI PMSA	0.43	12.5	4.0	933,199	0.4	0.1	32,488
Minneapolis-St. Paul, MN-WI MSA	0.46	25.9	8.2	1,769,027	0.4	0.1	24,281
Mobile, AL MSA	0.54	6.5	1.4	266,438	0.1	0.0	3,086
Nashville, TN MSA	0.79	15.9	5.1	649,475	0.1	0.0	5,564
New Orleans, LA MSA	1.55	19.3	9.1	585,503	1.4	0.6	41,159
Bergen-Passaic Counties NJ PMSA	0.80	24.6	6.4	804,635	3.4	0.9	110,933
Jersey City NJ PMSA	0.58	6.3	1.3	218,063	4.7	0.8	143,240
Middlesex-Somerset-Hunterdon Counties NJ PMSA	0.88	21.6	6.0	679,029	1.7	0.5	53,993
Monmouth-Ocean Counties NJ PMSA	0.42	15.7	2.9	705,382	0.6	0.1	26,121
Nassau-Suffolk Counties NY PMSA	0.73	66.3	13.1	1,785,420	4.7	0.9	125,464
New York City (only) NY sub-PMSA	0.64	140.2	14.7	2,335,711	61.5	6.5	1,438,311
Newark NJ PMSA	0.50	29.0	4.8	960,346	4.3	0.7	141,107
Norfolk-Virginia Beach-Newport News, VA-NC MSA	0.42	9.3	3.1	733,947	0.3	0.1	22,973
Oklahoma City, OK MSA	0.36	13.2	2.2	604,546	0.5	0.1	22,323
Orlando, FL MSA	1.60	30.6	10.7	668,249	3.3	1.2	71,818
Philadelphia, PA-NJ PMSA	0.64	73.7	18.8	2,950,939	3.0	0.8	119,841
Phoenix, AZ MSA	1.06	42.8	13.9	1,315,932	7.5	2.4	228,217
Pittsburgh, PA PMSA	0.35	23.3	5.4	1,534,583	0.1	0.0	8,929
Portland, OR PMSA	0.74	19.7	6.4	874,319	0.7	0.2	30,335
Providence, RI Four-County pseudo-MSA	0.48	13.4	2.3	661,303	0.6	0.1	35,700
Raleigh-Durham-Chapel Hill, NC MSA	0.78	8.8	3.4	434,746	0.1	0.1	6,908
Richmond-Petersburg, VA MSA	0.66	7.9	3.2	478,686	0.1	0.0	6,893
Rochester, NY MSA	0.32	11.9	2.2	691,469	0.4	0.1	20,751
Sacramento, CA MSA	1.08	24.9	9.3	861,398	3.5	1.3	119,347
St. Louis, MO-IL MSA (Modified)	0.62	30.3	9.6	1,555,175	0.4	0.1	18,698
Salt Lake City-Ogden, UT MSA	0.46	21.0	3.1	674,544	1.3	0.2	40,202
San Antonio, TX MSA	2.13	14.1	9.9	465,722	13.5	9.5	436,865
San Diego, CA MSA	1.38	66.3	18.4	1,335,537	17.9	5.0	359,403
Oakland, CA PMSA	0.64	25.4	6.5	1,011,326	5.1	1.3	196,836
San Francisco, CA PMSA	0.56	18.1	4.5	800,409	4.1	1.0	178,641
San Jose, CA PMSA	1.13	20.3	8.1	718,048	6.4	2.6	225,818
Seattle, WA PMSA	0.67	26.2	9.1	1,352,255	0.8	0.3	38,906
Tampa-St. Petersburg-Clearwater, FL MSA	2.09	66.8	30.4	1,453,316	5.0	2.3	107,686
Tucson, AZ MSA	1.29	11.3	4.8	375,389	3.4	1.4	112,404
Washington, DC-MD-VA-WV MSA	0.47	52.6	9.3	1,995,922	4.6	0.8	173,075
West Palm Beach-Boca Raton, FL MSA	2.19	26.3	12.9	585,668	2.3	1.1	50,719
Total Selected MSAs/PMSAs	**0.85 (wh), 1.12 (hi)**	**1,999.0**	**599.0**	**70,362,762**	**406.1**	**120.5**	**10,743,272**

Bold/Italic areas had CTSPs in Summer 1994 Directory Note: Victims of unknown race apportioned according to population percentages

Table 25. Pedestrians (Ages 15+) Total and High-BAC Fatality Estimates and Population, by Selected MSA/PMSA (Based on 1987-1989 FARS + MCOD Data and 1990 Census) (cont'd).

Selected MSAs/PMSAs	Black				Native American/Eskimo/Aleut			
	Avg # Killed/yr	Est. #/yr BAC .15%+	Est. BAC .15%+ /100Kpop/yr	Age 15+ Population	Avg # Killed/yr	Est. #/yr BAC .15%+	Est. BAC .15%+ /100Kpop/yr	Age 15+ Population
Albuquerque, NM MSA	1.7	1.0	10.63	9,408	2.7	2.7	23.47	11,362
Atlanta, GA MSA	31.2	15.5	2.87	540,804	0.0	0.0	0.00	4,367
Austin, TX MSA	1.8	0.0	0.00	53,119	0.0	0.0	0.00	2,222
Bakersfield, CA MSA	2.0	0.4	1.94	20,669	0.3	0.3	6.38	5,227
Baltimore, MD PMSA	18.8	5.8	1.26	465,413	0.0	0.0	0.00	4,935
Baton Rouge, LA MSA	4.7	2.3	2.12	110,289	0.0	0.0	0.00	719
Birmingham, AL MSA	9.6	5.5	3.03	181,241	0.0	0.0	0.00	1,212
Boston, MA Five-County pseudo-MSA	4.4	2.0	1.06	191,124	0.3	0.3	5.90	5,657
Buffalo, NY PMSA	2.4	0.8	0.96	81,216	0.7	0.7	16.81	3,967
Charleston, SC MSA	8.9	4.3	3.93	108,460	0.0	0.0	0.00	1,250
Charlotte-Gastonia-Rock Hill, NC-SC MSA	11.3	6.4	3.77	170,130	0.0	0.0	0.00	3,154
Chicago, IL PMSA	44.2	13.2	1.35	978,096	0.7	0.0	0.03	8,694
Cincinnati, OH-KY-IN PMSA	2.5	0.6	0.40	147,138	0.0	0.0	0.00	1,605
Cleveland, OH PMSA	7.0	4.2	1.57	264,187	0.0	0.0	0.00	2,291
Columbus, OH MSA	2.8	2.4	1.95	121,318	0.0	0.0	0.00	2,314
Dallas, TX PMSA	15.1	4.6	1.54	296,899	0.7	0.3	3.50	9,629
Fort Worth-Arlington TX PMSA	5.1	2.5	2.43	102,788	0.0	0.0	0.00	4,947
Dayton-Springfield, OH MSA	2.2	2.0	2.20	92,937	0.0	0.0	0.00	1,540
Denver, CO PMSA	1.7	0.8	1.19	69,796	1.0	1.0	11.03	9,066
Detroit, MI PMSA	27.5	11.6	1.67	697,396	0.0	0.0	0.00	12,672
El Paso, TX MSA	0.3	0.3	2.10	15,908	0.0	0.0	0.00	1,881
Fresno, CA MSA	1.0	0.5	2.21	22,610	0.0	0.0	0.00	5,066
Greensboro--Winston-Salem--High Point, NC MSA	4.5	2.2	1.60	139,422	0.0	0.0	0.00	2,498
Greenville-Spartanburg, SC MSA	4.9	1.4	1.75	82,131	0.0	0.0	0.00	754
Hartford, CT Three-County pseudo-MSA	2.6	1.3	1.63	77,752	0.3	0.3	22.03	1,521
Honolulu, HI MSA	0.4	0.3	1.79	18,635	0.0	0.0	0.00	2,612
Houston, TX PMSA	15.6	9.4	2.12	444,877	0.0	0.0	0.00	7,294
Indianapolis, IN MSA	1.7	0.4	0.33	125,567	0.0	0.0	0.00	2,002
Jacksonville, FL MSA	7.9	2.9	2.21	130,086	0.0	0.0	0.00	2,016
Kansas City, MO-KS MSA	3.8	1.4	0.98	144,173	0.0	0.0	0.00	5,790
Knoxville, TN MSA	0.7	0.0	0.00	27,353	0.0	0.0	0.00	1,229
Las Vegas, NV MSA	1.6	0.1	0.17	50,046	0.0	0.0	0.00	4,898
Little Rock-North Little Rock, AR MSA	4.2	4.0	5.64	70,975	0.3	0.0	0.00	1,498
Los Angeles, CA PMSA (LA County)	39.0	7.7	1.03	748,726	1.4	0.7	1.95	34,846
Louisville, KY-IN MSA	2.0	1.0	1.10	91,039	0.0	0.0	0.00	1,281
Memphis, TN-AR-MS MSA	15.0	5.7	2.00	284,266	0.0	0.0	0.00	1,418
Ft. Laud-Hollywd-PompnoBch FL PMSA	13.3	6.4	4.71	135,509	0.7	0.0	0.00	2,029
Miami, FL PMSA	18.2	6.5	2.31	281,698	1.0	0.7	28.69	2,324
Milwaukee, WI PMSA	3.7	2.5	1.92	129,322	0.0	0.0	0.00	5,480
Minneapolis-St. Paul, MN-WI MSA	1.4	1.0	1.70	58,907	2.3	1.6	9.91	15,698
Mobile, AL MSA	3.1	0.9	0.94	91,357	0.0	0.0	0.00	1,904
Nashville, TN MSA	3.3	1.7	1.48	112,940	0.0	0.0	0.00	1,712
New Orleans, LA MSA	12.9	3.6	1.20	303,655	0.0	0.0	0.00	2,699
Bergen-Passaic Counties NJ PMSA	3.5	0.9	1.06	81,262	0.0	0.0	0.00	1,716
Jersey City NJ PMSA	2.0	0.3	0.56	59,646	0.0	0.0	0.00	1,145
Middlesex-Somerset-Hunterdon Counties NJ PMSA	1.8	0.5	0.83	55,343	0.0	0.0	0.00	1,123
Monmouth-Ocean Counties NJ PMSA	2.0	1.0	2.26	44,267	0.0	0.0	0.00	1,040
Nassau-Suffolk Counties NY PMSA	9.8	4.3	2.90	146,972	0.0	0.0	0.00	3,534
New York City (only) NY sub-PMSA	71.9	12.8	0.76	1,695,569	0.1	0.0	0.00	22,202
Newark NJ PMSA	12.8	3.4	1.06	322,497	0.0	0.0	0.00	2,497
Norfolk-Virginia Beach-Newport News, VA-NC MSA	11.1	5.1	1.76	291,947	0.0	0.0	0.00	3,752
Oklahoma City, OK MSA	2.5	1.2	1.68	71,184	1.7	0.7	2.12	32,051
Orlando, FL MSA	5.2	1.6	1.72	93,712	0.3	0.0	0.08	2,535
Philadelphia, PA-NJ PMSA	20.6	2.2	0.32	701,261	0.0	0.0	0.00	6,604
Phoenix, AZ MSA	2.1	0.0	0.06	51,834	6.4	5.6	22.25	25,181
Pittsburgh, PA PMSA	4.2	2.0	1.63	126,092	0.0	0.0	0.00	1,617
Portland, OR PMSA	1.3	0.7	2.46	27,122	0.7	0.7	7.97	8,365
Providence, RI Four-County pseudo-MSA	0.6	0.0	0.00	28,749	0.1	0.0	0.00	3,015
Raleigh-Durham-Chapel Hill, NC MSA	6.4	4.3	3.07	141,111	0.0	0.0	0.00	1,577
Richmond-Petersburg, VA MSA	8.7	3.5	1.85	191,491	0.0	0.0	0.00	2,244
Rochester, NY MSA	1.1	0.0	0.00	65,046	0.0	0.0	0.00	2,166
Sacramento, CA MSA	2.5	1.2	1.71	72,037	0.4	0.3	2.73	12,629
St. Louis, MO-IL MSA (Modified)	10.3	4.9	1.59	305,303	0.0	0.0	0.00	3,919
Salt Lake City-Ogden, UT MSA	1.0	0.5	6.91	7,278	1.7	1.7	30.68	5,440
San Antonio, TX MSA	2.0	1.0	1.56	65,689	0.0	0.0	0.00	3,531
San Diego, CA MSA	7.7	3.2	2.78	116,232	1.0	1.0	6.58	15,204
Oakland, CA PMSA	10.6	2.7	1.21	227,168	0.7	0.3	3.13	11,019
San Francisco, CA PMSA	1.9	0.7	0.69	96,362	0.7	0.3	5.59	5,962
San Jose, CA PMSA	0.3	0.0	0.00	42,472	0.0	0.0	0.00	7,133
Seattle, WA PMSA	1.8	0.7	1.18	58,776	3.7	2.9	17.03	17,267
Tampa-St. Petersburg-Clearwater, FL MSA	7.3	3.2	2.48	130,366	0.0	0.0	0.00	4,318
Tucson, AZ MSA	0.3	0.3	2.21	15,097	5.0	3.6	26.44	13,506
Washington, DC-MD-VA-WV MSA	32.4	8.3	1.03	807,043	0.0	0.0	0.00	8,825
West Palm Beach-Boca Raton, FL MSA	5.2	2.2	2.91	74,938	0.0	0.0	0.00	962
Total Selected MSAs/PMSAs	**616.4**	**220.1**	**1.52**	**14,455,862**	**35.1**	**25.7**	**5.91**	**435,116**

Bold/Italic areas had CTSPs in Summer 1994 Directory Note: Victims of unknown race apportioned according to population percentages

A large number of possible test sites, including 50 states, the District of Columbia, and 74 metropolitan areas, have been reviewed. To better facilitate comparisons among them, Tables 26 and 27 draw together key information on pedestrian alcohol fatality rates and adult population bases, overall and for critical racial/ethnic groups. The states and metropolitan areas are sorted in the tables according to their overall high-BAC fatality rates. In general, the sites with the largest pedestrian alcohol problems can be found at the top of the tables.

In Table 26 (states) and Table 27 (metropolitan areas), the overall high-BAC fatality rates are based on 1984 through 1993 FARS data. The racial/ethnic high-BAC fatality rates are based on 1987 through 1989 FARS data plus MCOD racial designations. All population figures are from the 1990 Census. As described more completely earlier, because "Hispanic yes/no" information was not provided with the MCOD race information, the same high-BAC fatality rates are provided for both whites (excluding Hispanics) and Hispanics (of all races). While this may be generally accurate, based on the results shown from the six-sites data, it is likely to be more or less inaccurate in individual sites. For this reason, recommendations for Hispanic test sites depend more on population size than do recommendations for black and Native American test sites.

In terms of specific recommendations based on the work in this project and other pedestrian safety activities, we offer four:

1. The area of the country with the largest concentration of pedestrian alcohol problems is the southern tier, ranging approximately from North Carolina to Arizona and southern parts of California (excluding the Los Angeles area). The national rate of high-BAC pedestrian alcohol fatalities is approximately 1 fatality per 100,000 adult population per year. New Mexico has the nation's highest rate (4.30), and Arizona is second (2.22). North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas have rates between 1.10 and 1.97. Only California's overall rate (0.95) is about the national average. Rates for the 29 metropolitan areas considered in those states, from Fresno and Los Angeles California to Raleigh-Durham North Carolina, average 1.56, fully 50 percent higher than the average for all selected metropolitan areas (1.04).

   Locating pilot tests in these areas, with the largest problems and with large numbers of the target racial/ethnic groups, should be strongly considered.

2. The problem is most acute for Native Americans, and pilot tests addressing their needs should receive high priority. Although most research has been done in the southwest, other states with large Native American populations also show high rates of pedestrian alcohol crashes in those populations. In terms of existing crash problems and significant Native American populations, likely sites are: New Mexico and Arizona; California and Oklahoma (there is a large Native American population within the Oklahoma City MSA); North Carolina, New York State, Texas, and Washington State; and Michigan, Minnesota, Montana, and Wisconsin. Specific urban areas with significant Native American populations and high pedestrian alcohol crash rates are Phoenix, Tucson, Minneapolis-St. Paul, and Seattle. Any pilot tests with Native Americans should be coordinated with the Bureau of Indian Affairs, who have considerable knowledge of

Native American groups and conditions as well as experience dealing with pedestrian alcohol problems.

3. Hispanic populations, especially males, should also receive high priority when pilot test plans are formulated. Educational and training countermeasures can be in Spanish or both Spanish and English, but Hispanic-audience distribution channels can efficiently direct them to Hispanic populations even in areas with much larger total populations. Enforcement countermeasures, if implemented, should be done with local tailoring and full local support. Particularly if the pilot test is limited to the Hispanic population in a densely-populated area, any enforcement should fit into the broad category of improving police presence and support for the Hispanic community. Hispanic populations vary greatly in their national origins and traditions, the length of time they've lived in this country, the degree to which they have adopted mainstream American perspectives, and their socioeconomic levels. Field tests for Hispanic populations should choose groups and sites to appropriately represent this diversity.

   The states with the largest Hispanic populations include California, Texas, New York, and Florida; other states with large Hispanic populations include Illinois, New Jersey, Arizona, and New Mexico. State-wide countermeasure tests should be considered for these states first. Based primarily on population and secondly on estimated fatality rates, the following metropolitan areas are likely targets for Hispanic field tests: El Paso, Houston, and San Antonio, Texas; Bakersfield, Fresno, San Diego, and San Jose, California; Albuquerque, New Mexico; Phoenix and Tucson, Arizona; and Ft. Lauderdale, Miami, Tampa, and West Palm Beach, Florida.

4. Finally, programs dealing with blacks and pedestrian alcohol problems may be implemented. While the issue should receive high priority, NHTSA is currently completing a pedestrian alcohol project in Baltimore, where the largest minority group is blacks. It would seem reasonable to use the results of that study to guide any subsequent pedestrian alcohol field tests directed at black populations. When subsequent tests are planned, there are a large number of urban, rural, northern, southern, etc. areas which may be suitable sites. Those with high populations and high-BAC fatality rates include: Little Rock, Arkansas; Ft. Lauderdale, Jacksonville, Miami, Tampa, and West Palm Beach, Florida; Charleston, South Carolina; Charlotte and Raleigh-Durham, North Carolina; Birmingham, Alabama; Long Island, New York; Atlanta, Georgia; San Diego, California; Houston and Ft. Worth, Texas; Baton Rouge, Louisiana; Memphis, Tennessee; Columbus, Ohio; Norfolk and Richmond, Virginia; and Detroit, Michigan. If state-wide efforts are undertaken to reach large rural populations, emphasis should be first directed to the southern-border states as noted above.

Table 26. Ages 15+: State Pedestrian Fatality Rates (BAC .15% +; per 100K per Year) and Population (1990 Census Figures; Fatalities (from Up to Two Pedestrians/Crash): Total, FARS 1984-1993; By Race, FARS + MCOD 1987-1989)

STATE	Total, Ages 15+		White and Hispanic, Ages 15+			Black, Ages 15+		Native Am./Esk./Al., Ages 15+	
	Fatality Rate	Population	Est. Fat. Rate	White (exc. H) Popuin 15+	All Hispanic Popuin 15+	Fatality Rate	Population	Fatality Rate	Population
New Mexico	4.30	1,136,500	2.06	609,983	406,783	7.94	21,295	27.03	87,998
Arizona	2.22	2,832,272	1.13	2,119,448	462,094	0.71	78,149	20.96	130,206
Alaska	2.12	400,231	0.79	303,207	11,826	2.32	15,469	9.31	55,409
Florida	1.97	10,525,857	2.17	7,885,729	1,248,573	2.67	1,244,230	4.97	28,323
Louisiana	1.76	3,184,503	1.00	2,166,056	70,605	2.68	905,565	0.00	13,008
South Carolina	1.68	2,720,571	0.66	1,925,868	22,126	2.72	749,263	5.37	6,314
North Carolina	1.60	5,293,221	0.92	4,055,528	55,669	3.86	1,084,286	9.02	58,428
Texas	1.60	12,905,930	1.31	8,175,100	2,974,419	1.76	1,467,035	1.35	50,430
Delaware	1.52	508,234	2.03	425,673	10,993	2.43	82,167	0.00	1,606
Georgia	1.48	5,032,115	1.16	3,623,287	80,988	3.15	1,260,350	0.00	10,500
Nevada	1.48	948,046	1.50	759,493	87,934	0.11	56,363	0.11	14,232
Arkansas	1.26	1,834,910	0.52	1,542,215	13,524	3.77	260,256	0.00	9,716
Mississippi	1.23	1,952,628	0.00	1,291,776	11,482	0.00	634,147	0.00	5,791
Alabama	1.10	3,164,292	0.73	2,381,092	17,870	1.86	736,896	0.00	11,834
District of Columbia	1.02	527,340	0.70	149,988	26,685	1.50	320,378	0.00	1,267
Michigan	1.02	7,234,126	0.98	6,037,222	136,082	1.56	944,937	1.69	39,872
Montana	1.00	611,532	0.58	568,553	7,789	0.00	1,600	11.02	30,580
South Dakota	1.00	527,268	0.36	489,285	3,246	0.00	2,156	4.08	30,387
California	0.95	23,160,981	1.14	13,811,704	5,360,377	1.18	1,640,658	2.87	180,103
Ohio	0.93	8,500,009	0.66	7,475,024	95,081	1.36	844,465	0.00	15,935
West Virginia	0.88	1,432,131	0.90	1,375,146	6,370	0.02	42,901	0.00	1,999
Maryland	0.83	3,794,113	0.70	2,681,189	94,185	1.24	900,694	0.00	10,112
Kentucky	0.83	2,893,681	0.94	2,666,169	15,892	1.13	193,666	0.00	4,619
Oregon	0.83	2,229,760	0.57	2,042,919	74,923	3.71	32,373	7.32	27,318
Utah	0.82	1,185,697	0.41	1,084,924	54,238	6.26	8,028	12.93	15,071
New Jersey	0.81	6,223,524	0.71	4,669,980	553,237	1.17	783,555	0.00	11,777
Tennessee	0.80	3,867,304	0.58	3,244,665	23,940	1.56	566,746	0.00	8,011
Oklahoma	0.80	2,443,048	0.48	2,022,212	56,198	1.67	165,888	1.86	173,189
Missouri	0.76	4,008,498	0.68	3,520,134	43,576	1.17	397,979	0.00	15,214
Colorado	0.75	2,561,015	0.55	2,105,611	294,005	0.84	96,731	6.67	20,018
Virginia	0.74	4,921,311	0.45	3,791,493	120,167	1.80	875,010	0.00	12,315
Illinois	0.72	8,949,374	0.64	6,859,595	623,076	1.45	1,232,338	0.03	16,696
Iowa	0.68	2,169,997	0.61	2,092,245	21,566	2.02	33,047	6.73	4,954
Kansas	0.67	1,913,730	0.52	1,711,365	61,835	1.88	101,306	4.24	15,837
North Dakota	0.66	490,103	0.23	466,440	2,850	0.00	2,345	6.29	15,886
Pennsylvania	0.64	9,541,123	0.65	8,448,141	158,613	1.13	820,077	0.00	11,585
Maine	0.64	969,121	0.67	951,827	4,650	0.00	3,622	0.00	4,201
Washington	0.62	3,791,157	0.63	3,331,207	139,840	0.65	106,281	9.15	56,535
Connecticut	0.59	2,655,383	0.61	2,263,082	146,884	1.69	201,853	6.45	5,221
Wyoming	0.59	339,274	0.51	311,520	16,988	0.00	2,525	0.00	6,117
Idaho	0.58	746,327	0.46	694,125	33,513	0.00	2,287	3.51	9,505
Indiana	0.57	4,328,527	0.52	3,909,124	68,116	0.80	312,324	0.00	9,707
New York	0.57	14,416,508	0.50	10,018,811	1,641,985	0.96	2,158,422	2.89	46,587
Minnesota	0.54	3,379,162	0.43	3,202,013	34,330	1.60	62,657	11.21	32,200
Nebraska	0.52	1,214,995	0.37	1,134,147	24,341	0.00	39,526	21.03	7,935
New Hampshire	0.51	872,321	0.31	850,445	7,957	0.00	5,230	0.00	1,666
Wisconsin	0.50	3,801,149	0.52	3,521,067	59,120	1.67	160,907	3.78	26,508
Massachusetts	0.49	4,877,824	0.52	4,343,925	195,490	1.39	220,875	3.65	9,230
Hawaii	0.47	870,203	0.86	255,862	54,387	1.70	19,587	0.00	3,722
Rhode Island	0.44	813,358	0.35	737,900	31,926	0.00	27,659	0.00	2,889
Vermont	0.39	441,718	0.10	433,993	2,722	0.00	1,355	0.00	1,275
TOTAL	**0.97**	**195,142,002**	**0.82**	**150,537,507**	**15,771,066**	**1.76**	**21,927,459**	**7.21**	**1,369,838**

Note: Unknown-race victims included, distributed by population percentages

Table 27. Ages 15+: Metro Pedestrian Fatality Rates (BAC .15% +; per 100K per Year) and Population (1990 Census Figures; Fatalities (from Up to Two Pedestrians/Crash): Total, FARS 1984-1993; By Race, FARS + MCOD 1987-89)

Selected MSAs/PMSAs	Total, Ages 15+		White and Hispanic, Ages 15+			Black, Ages 15+		Native Am./Esk./Al., Ages 15+	
	Fatality Rate	Population	Est. Fat. Rate	White (exc. H) Population	All Hispanic Population	Fatality Rate	Population	Fatality Rate	Population
El Paso TX	3.62	432,233	3.66	120,954	288,368	2.10	15,908	0.00	1,881
Albuquerque NM	2.92	373,537	2.19	218,577	128,694	10.63	9,408	23.47	11,362
Tucson AZ	2.76	525,824	1.29	375,389	112,404	2.21	15,097	26.44	13,506
Charleston SC	1.98	386,899	0.33	267,184	5,326	3.93	108,460	0.00	1,250
Tampa etc. FL	1.92	1,713,300	2.09	1,453,316	107,686	2.48	130,366	0.00	4,318
Fresno CA	1.90	488,114	2.27	268,527	157,635	2.21	22,610	0.00	5,066
Orlando FL	1.86	852,034	1.60	668,249	71,818	1.72	93,712	0.08	2,535
W. Palm Beach etc. FL	1.79	719,262	2.19	585,668	50,719	2.91	74,938	0.00	962
Bakersfield CA	1.77	395,990	1.85	259,993	97,978	1.94	20,669	6.38	5,227
Houston TX	1.74	2,492,317	1.21	1,463,789	482,321	2.12	444,877	0.00	7,294
Baton Rouge LA	1.67	400,427	0.95	279,218	5,835	2.12	110,289	0.00	719
New Orleans LA	1.66	947,946	1.55	585,503	41,159	1.20	303,655	0.00	2,699
Jacksonville FL	1.59	707,372	1.77	547,046	16,605	2.21	130,086	0.00	2,016
Little Rock-NLR AR	1.58	399,391	0.00	321,516	2,909	5.64	70,975	0.00	1,498
Ft. Lauderdale etc. FL	1.57	1,038,533	2.19	803,450	84,525	4.71	135,509	0.00	2,029
Las Vegas NV	1.56	586,063	1.57	451,458	59,128	0.17	50,046	0.00	4,898
San Antonio TX	1.52	984,455	2.13	465,722	436,865	1.56	65,689	0.00	3,531
Phoenix AZ	1.46	1,648,774	1.06	1,315,932	228,217	0.06	51,834	22.25	25,181
Miami FL	1.41	1,545,464	1.61	460,591	779,966	2.31	281,698	28.69	2,324
Dayton-Springfield OH	1.38	749,167	0.82	642,555	5,172	2.20	92,937	0.00	1,540
Dallas TX	1.36	1,961,909	1.07	1,354,472	251,365	1.54	296,899	3.50	9,629
Ft. Worth-Arltn TX	1.32	1,021,144	0.81	789,602	101,596	2.43	102,788	0.00	4,947
Memphis TN-AR-MS	1.29	751,623	0.21	453,704	6,068	2.00	284,266	0.00	1,418
Charlotte etc. NC-SC	1.28	921,807	0.65	732,201	8,045	3.77	170,130	0.00	3,154
Detroit MI	1.27	3,427,354	1.26	2,616,501	59,385	1.67	697,396	0.00	12,672
Atlanta GA	1.25	2,215,595	1.12	1,588,503	43,433	2.87	540,804	0.00	4,367
Austin TX	1.24	612,931	0.81	429,452	112,738	0.00	53,119	0.00	2,222
Cleveland OH	1.19	1,452,344	0.87	1,147,062	23,123	1.57	264,187	0.00	2,291
Mobile AL	1.17	365,482	0.54	266,438	3,086	0.94	91,357	0.00	1,904
San Diego CA	1.06	1,975,285	1.38	1,335,537	359,403	2.78	116,232	6.58	15,204
Greenville etc. SC	0.99	511,677	0.54	421,580	3,771	1.75	82,131	0.00	754
Louisville KY-IN	0.98	752,437	0.79	651,690	4,196	1.10	91,039	0.00	1,281
St. Louis, MO-IL	0.95	1,901,126	0.62	1,555,175	18,698	1.59	305,303	0.00	3,919
Sacramento CA	0.94	1,148,719	1.08	861,398	119,347	1.71	72,037	2.73	12,629
Salt Lake City-Ogdn UT	0.92	745,290	0.46	674,544	40,202	6.91	7,278	30.68	5,440
Greensboro etc. NC	0.91	762,480	0.93	610,566	5,203	1.60	139,422	0.00	2,498
Los Angeles CA	0.87	6,893,832	0.99	3,004,171	2,357,055	1.03	748,726	1.95	34,846
Cincinnati OH-KY-IN	0.85	1,122,152	0.83	958,637	6,110	0.40	147,138	0.00	1,605
Portland OR	0.84	974,744	0.74	874,319	30,335	2.46	27,122	7.97	8,365
Middlsx-So-Hu Co. NJ	0.82	832,303	0.88	679,029	53,993	0.83	55,343	0.00	1,123
Denver CO	0.80	1,264,020	0.62	1,011,476	146,358	1.19	69,796	11.03	9,066
Norfolk etc. VA-NC	0.79	1,079,272	0.42	733,947	22,973	1.76	291,947	0.00	3,752
Oklahoma City OK	0.79	743,757	0.36	604,546	22,323	1.68	71,184	2.12	32,051
Philadelphia PA-NJ	0.78	3,856,955	0.64	2,950,939	119,841	0.32	701,261	0.00	6,604
Kansas City MO-KS	0.78	1,215,686	0.80	1,021,350	31,634	0.98	144,173	0.00	5,790
San Jose CA	0.75	1,193,385	1.13	718,048	225,818	0.00	42,472	0.00	7,133
Baltimore MD	0.75	1,892,817	0.69	1,367,224	22,374	1.26	465,413	0.00	4,935
Monmth-Ocean Co. NJ	0.74	790,816	0.42	705,382	26,121	2.26	44,267	0.00	1,040
Nassau-Suffolk Co. NY	0.73	2,107,893	0.73	1,785,420	125,464	2.90	146,972	0.00	3,534
Bergen-Passaic Co. NJ	0.72	1,047,806	0.80	804,635	110,933	1.06	81,262	0.00	1,716
Nashville TN	0.71	777,109	0.79	649,475	5,564	1.48	112,940	0.00	1,712
Richmond-Ptrsbrg VA	0.71	688,180	0.66	478,686	6,893	1.85	191,491	0.00	2,244
Chicago IL	0.70	4,771,596	0.73	3,100,861	508,194	1.35	978,096	0.03	8,694
Birmingham AL	0.70	715,377	0.35	526,922	2,945	3.03	181,241	0.00	1,212
Columbus OH	0.69	1,084,876	0.50	936,751	8,465	1.95	121,318	0.00	2,314
Indianapolis IN	0.68	972,521	0.74	829,449	7,818	0.33	125,567	0.00	2,002
Newark NJ	0.66	1,466,407	0.50	960,346	141,107	1.06	322,497	0.00	2,497
Hartford CT	0.66	911,225	0.84	755,720	62,176	1.63	77,752	22.03	1,521
Raleigh-Du-ChHill NC	0.63	595,136	0.78	434,746	6,908	3.07	141,111	0.00	1,577
Washtn DC-MD-VA-WV	0.63	3,142,570	0.47	1,995,922	173,075	1.03	807,043	0.00	8,825
Oakland CA	0.62	1,652,042	0.64	1,011,326	196,836	1.21	227,168	3.13	11,019
San Francisco CA	0.61	1,348,265	0.56	800,409	178,641	0.69	96,362	5.59	5,962
Seattle WA	0.61	1,569,964	0.67	1,352,255	38,906	1.18	58,776	17.03	17,267
New York City NY	0.60	5,905,275	0.64	2,335,711	1,438,311	0.76	1,695,569	0.00	22,202
Minn-St. Paul MN-WI	0.50	1,907,837	0.46	1,769,027	24,281	1.70	58,907	9.91	15,698
Buffalo NY	0.49	778,863	0.30	670,802	14,981	0.96	81,216	16.81	3,967
Knoxville TN	0.49	490,315	0.50	455,917	2,366	0.00	27,353	0.00	1,229
Rochester NY	0.45	789,409	0.32	691,469	20,751	0.00	65,046	0.00	2,166
Pittsburgh PA	0.42	1,683,379	0.35	1,534,583	8,929	1.63	126,092	0.00	1,617
Milwaukee WI	0.41	1,112,993	0.43	933,199	32,488	1.92	129,322	0.00	5,480
Honolulu HI	0.40	662,551	0.75	184,846	38,530	1.79	18,635	0.00	2,612
Providence RI	0.39	742,762	0.48	661,303	35,700	0.00	28,749	0.00	3,015
Jersey City NJ	0.35	451,147	0.58	218,063	143,240	0.56	59,646	0.00	1,145
Boston MA	0.32	3,092,902	0.48	2,648,244	152,570	1.06	191,124	5.90	5,657
Total Selected (P)MSAs	**1.04**	**100,233,552**	**0.85**	**70,362,762**	**10,743,272**	**1.52**	**14,455,862**	**5.91**	**435,116**

Bold/Italic areas had CTSPs in Summer 1994 Directory · *Note: Unknown-race victims included, distributed by population percentages*

Countermeasure Recommendations

Each of the focus groups responded to a range of countermeasure recommendations gathered from earlier pedestrian safety research and programs. The countermeasures were categorized as: traffic engineering; law enforcement; alcohol vendor/server; alcohol/pedestrian laws; and general government action.

The countermeasures considered in the focus group discussions are summarized below. They represent a starting point for the range of countermeasures that NHTSA could organize and offer for the field tests. The ones receiving positive or largely positive responses from specific racial/ethnic groups are indicated with an H, B, or NA at the end of the item.

1. Engineering

More than other countermeasure categories, engineering countermeasures can be responses to the unique conditions at proven high-risk sites. Although general types of countermeasures will provide the starting point, each community needs to carefully identify problem sites and analyze each for the nature of the risks and the best engineering approach. The engineering countermeasure categories considered were:

a. Post "pedestrian crossing" signs with high night visibility in high pedestrian alcohol traffic areas to serve as warnings to drivers to watch for pedestrians. *H B NA*

b. Post signs like "pedestrian killed or injured here" to make drivers more vigilant. *H*

c. Reduce speed limits in areas with high frequency of intoxicated pedestrians. *H NA*

d. Install stop signs in areas with high frequency of intoxicated pedestrians. *H B*

e. Upgrade street lighting in areas with high frequency of pedestrian alcohol crashes. *H B NA*

f. Change traffic signal timing at night in high pedestrian alcohol crash areas to allow more pedestrian crossing time. *H B NA*

g. Erect fences or barriers in dangerous areas to make it difficult to cross except at intersections or other controlled crossing locations. *H NA*

h. Close selected streets at night, creating "pedestrian malls" at high risk locations.

2. Law enforcement

Law enforcement countermeasures need to include PI&E components so that the enforcement is seen as a necessary response to an acknowledged problem. Focus groups also emphasized that enforcement countermeasures need to be part of a police service to the racial/ethnic communities, such as increased community policing for increased community security, and that it not be perceived as an enforcement focus on the racial/ethnic groups. Enforcement countermeasures considered were:

a. Increase police patrols in high risk areas during peak hours. *H B NA*

b. Provide better police training in recognizing intoxicated pedestrians and in "benign intervention" techniques. *B NA*

c. Conduct "sweeper" programs where police pick up intoxicated individuals and drive them to detoxification facilities. *B NA*

d. Confiscate open liquor containers from people drinking on the streets or sidewalks. *H B*

e. Establish a "hot line" where servers, vendors, and citizens can call to request police help when they see an intoxicated-pedestrian situation where police help is needed. *H B NA*

f. Have police visit liquor stores and bars frequently to provide informational and educational material to servers and vendors. *H*

3. Alcohol vendors/servers

Alcohol vendors and servers were seen as a last line of defense to deflect the pedestrian from getting drunk or walking after getting drunk; but they were also seen as contributing to the problem. Countermeasures included:

a. Train liquor vendors and servers to be aware of the dangers to walkers as well as drivers. *H B NA*

b. Encourage vendors and servers to distribute high visibility promotional items to patrons who are walking — for example, high visibility bags for packaged beverages, or retroreflective tee shirts or caps or other promotional items. *H B NA*

c. Encourage drinking establishments to refer drunk pedestrians as well as drivers to "safe rides" programs, or to start such programs if they don't exist. Other options include taxi vouchers, walking escorts, etc. *H B NA*

d. Encourage drinking establishments to post signs and distribute educational materials targeted at drinkers on the risks of driving and walking when intoxicated. *H NA*

4. Laws relating to alcohol and pedestrians

Possible areas for strengthening or adding laws regulating liquor marketing and public drinking included:

a. Pass or strengthen "dram shop" and "host liability" laws to require and motivate vendors and servers to refuse service to customers who have overindulged, whether they are driving or walking. *H NA*

b. Strengthen public intoxication laws in ways that would make it easier for police to get at-risk individuals off the street. *H B*

c. Strengthen laws making it illegal to sell alcoholic beverages to obviously intoxicated individuals. *H B NA*

d. Place a special tax on high-alcohol low-cost products, making it more difficult for alcoholics and alcohol abusers to achieve high levels of intoxication on limited money. *H*

e. Require warnings distributed with all packaged alcohol products which describe the dangers of drinking and walking. *H*

5. General government countermeasures

Other general countermeasures, ones proposed as depending on government support, were offered. They referred more to improving conditions for dealing with pedestrian alcohol dangers and future attitudes toward drinking:

a. Generally increase public funding for alcohol treatment and detoxification programs. *H B NA*

b. Encourage or require public schools to teach the dangers of drinking and walking as part of their health and driver education curricula. *H B*

c. Expand existing treatment programs to identify problem drinkers who have significant walking exposure and counsel them on how to minimize risks. *H B NA*

d. Establish routine alcohol testing for all adult crash victims, whether drivers, passengers, or pedestrians. *B*

e. Distribute public information and educational materials on pedestrian alcohol risks through government agencies in contact with the public. *H B*

A summary observation is that any specific community, racial/ethnic or otherwise defined, will find a unique set of countermeasures and approaches to be most appropriate. Particularly in

the eastern focus groups, where pedestrian alcohol dangers were not readily perceived to be a serious problem, participants stressed the need to bring awareness and understanding to their communities through publicity and education.

Beyond that, countermeasures in any field test will need to be selected and targeted for the specific nature and needs of each community. One important part of any countermeasure program has proven to be the local recognition of the problem and acceptance of ownership of responsibility for combatting it. One successful way to accomplish this has been through the leadership of local groups such as CTSPs. Sites with CTSPs in operation as of summer 1994 were indicated in Tables 23, 25, and 27.

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APPENDIX A. Age 15 and Older Population by Race and Hispanic Origin for States and Selected Metropolitan Areas

In Tables 22 to 25 and the summary Tables 26 and 27 in the main body of this report, most values were determined directly. Values in several columns have more complex derivations because some data were missing or not directly comparable. There are four main "calculated" values; their derivations are explained below.

1. Estimates of the numbers of fatalities involving peds with BACs of .15% or higher are projected from known-BAC cases (Tables 22-25). That is, if 45 percent of pedestrians whose BACs were reported had BACs of .15% or more, it was estimated that the same 45 percent of pedestrians whose BACs were not reported had BACs of 15% or more.

2. In Tables 24 and 25, the population estimates of whites-excluding-Hispanics were computed rather than taken directly from Census figures. The reason for this was to attempt to come up with underlying population figures which correspond to the race coding decisions made by the CDC in the MCOD data (for 1987 - 1989). (This was needed because the FARS + MCOD data did not include the separate Hispanic indicator variable.) In MCOD, virtually no victims were coded as "other race," implying that all Hispanic victims were coded into a specific race (and that race was almost always white) and identified in the separate-but-not-available Hispanic yes/no variable. This differs from 1990 Census figures, in which 52 percent of all Hispanics indicated race as "white" and 43 percent indicated race as "other race."

   In the 1990 Census, "other race" made up 4 percent of the total population, and more than 97 percent of all "other race" individuals were also Hispanic. In the MCOD data only 0.1 percent (25 people) were coded as "other race."

   Therefore, in Tables 24 and 25 the population values for Hispanics were the standard 1990 Census Hispanic values. For whites-excluding-Hispanics, the values were the Census values for whites plus the Census values for other-race minus the Census values for Hispanics.

3. Again in Tables 24 and 25, estimates of the numbers of Hispanics killed and their fatality rates were broadly estimated. Based on the logic in (2) above, it was assumed that the best estimate of white fatalities plus Hispanic fatalities was the number of fatalities attributed to whites in the MCOD data. These fatalities were split between whites-excluding-Hispanics and Hispanics in Tables 24 and 25 according to their relative population sizes. This is likely to be pretty close on average because, while Hispanic males have higher crash involvement than white males, the opposite is true for females, so taking the male + female totals as roughly the same, as is done in Tables 24 and 25, probably doesn't introduce much bias. However, there may be significant deviations

from this general rule in specific states and metropolitan areas, and these estimates are totally blind to such deviations.

4. Unknown-race pedestrian deaths were distributed among the races according to their relative population numbers (rather than according to the distribution of fatalities across the races). The distribution of fatalities was judged to be highly variable due to relatively small numbers of cases for some jurisdictions, and basing the distribution on population figures was a bit more conservative (i.e., it tended to introduce a slight underestimation in the fatality-rate differences between the racial/ethnic groups). There were relatively few unknown-race victims, except for Rhode Island which reported no race data and a few other sites, so this introduces little uncertainty and/or error to the tables.

The background tables in this Appendix provide 1990 Census-based figures for primary racial codes and for people of Hispanic origin (for ages 15 and older). When compared with Tables 24 and 25 in the main report, the tables show the size of the adjustment going from the Census values for all whites to the estimates of whites-excluding-Hispanics.

Table A-1. Race and Hispanic Origin for States (Ages 15 and Older; 1990 Census Figures).

State	Population, Ages 15 and Older						
	White	Black	Nat. Am./ Esk/Aleut	Asian/ Pac. Isl.	Other Race	Hispanic Origin	Total 15+ Population
Alabama	2,394,776	736,896	11,834	16,600	4,186	17,870	3,164,292
Alaska	310,359	15,469	55,409	14,320	4,674	11,826	400,231
Arizona	2,360,715	78,149	130,206	42,375	220,827	462,094	2,832,272
Arkansas	1,551,117	260,256	9,716	9,199	4,622	13,524	1,834,910
California	16,461,700	1,640,658	180,103	2,168,139	2,710,381	5,360,377	23,160,981
Colorado	2,284,784	96,731	20,018	44,650	114,832	294,005	2,561,015
Connecticut	2,346,223	201,853	5,221	38,343	63,743	146,884	2,655,383
Delaware	431,578	82,167	1,606	6,901	5,088	10,993	527,340
District of Columbia	164,866	320,378	1,267	9,916	11,807	26,685	508,234
Florida	8,957,392	1,244,230	28,323	119,002	176,910	1,248,573	10,525,857
Georgia	3,673,255	1,260,350	10,500	56,990	31,020	80,988	5,032,115
Hawaii	295,410	19,587	3,722	536,645	14,839	54,387	870,203
Idaho	708,567	2,287	9,505	6,897	19,071	33,513	746,327
Illinois	7,158,413	1,232,338	16,696	217,669	324,258	623,076	8,949,374
Indiana	3,949,837	312,324	9,707	29,256	27,403	68,116	4,328,527
Iowa	2,105,607	33,047	4,954	18,185	8,204	21,566	2,169,997
Kansas	1,740,891	101,306	15,837	23,387	32,309	61,835	1,913,730
Kentucky	2,677,660	193,666	4,619	13,335	4,401	15,892	2,893,681
Louisiana	2,220,120	905,565	13,008	29,269	16,541	70,605	3,184,503
Maine	955,391	3,622	4,201	4,821	1,086	4,650	969,121
Maryland	2,742,251	900,694	10,112	107,933	33,123	94,185	3,794,113
Massachusetts	4,437,062	220,875	9,230	108,304	102,353	195,490	4,877,824
Michigan	6,116,082	944,937	39,872	76,013	57,222	136,082	7,234,126
Minnesota	3,222,870	62,657	32,200	47,962	13,473	34,330	3,379,162
Mississippi	1,300,972	634,147	5,791	9,432	2,286	11,482	1,952,628
Missouri	3,549,128	397,979	15,214	31,595	14,582	43,576	4,008,498
Montana	573,873	1,600	30,580	3,010	2,469	7,789	611,532
Nebraska	1,148,262	39,526	7,935	9,046	10,226	24,341	1,214,995
Nevada	810,562	56,363	14,232	30,024	36,865	87,934	948,046
New Hampshire	856,317	5,230	1,666	7,023	2,085	7,957	872,321
New Jersey	5,024,964	783,555	11,777	204,975	198,253	553,237	6,223,524
New Mexico	884,486	21,295	87,998	10,441	132,280	406,783	1,136,500
New York	10,951,575	2,158,422	46,587	550,703	709,221	1,641,985	14,416,508
North Carolina	4,088,435	1,084,286	58,428	39,310	22,762	55,669	5,293,221
North Dakota	468,186	2,345	15,886	2,582	1,104	2,850	490,103
Ohio	7,532,603	844,465	15,935	69,504	37,502	95,081	8,500,009
Oklahoma	2,050,445	165,888	173,189	25,561	27,965	56,198	2,443,048
Oregon	2,083,444	32,373	27,318	52,227	34,398	74,923	2,229,760
Pennsylvania	8,530,639	820,077	11,585	102,707	76,115	158,613	9,541,123
Rhode Island	752,646	27,659	2,889	12,984	17,180	31,926	813,358
South Carolina	1,941,317	749,263	6,314	17,000	6,677	22,126	2,720,571
South Dakota	491,497	2,156	30,387	2,194	1,034	3,246	527,268
Tennessee	3,262,166	566,746	8,011	23,942	6,439	23,940	3,867,304
Texas	9,925,730	1,467,035	50,430	238,946	1,223,789	2,974,419	12,905,930
Utah	1,114,602	8,028	15,071	23,436	24,560	54,238	1,185,697
Vermont	436,187	1,355	1,275	2,373	528	2,722	441,718
Virginia	3,868,812	875,010	12,315	122,326	42,848	120,167	4,921,311
Washington	3,397,046	106,281	56,535	157,294	74,001	139,840	3,791,157
West Virginia	1,380,393	42,901	1,999	5,715	1,123	6,370	1,432,131
Wisconsin	3,554,318	160,907	26,508	33,547	25,869	59,120	3,801,149
Wyoming	321,223	2,525	6,117	2,124	7,285	16,988	339,274
TOTAL, All USA	**159,566,754**	**21,927,459**	**1,369,838**	**5,536,132**	**6,741,819**	**15,771,066**	**195,142,002**
Percent of Total	**81.77%**	**11.24%**	**0.70%**	**2.84%**	**3.45%**	**8.08%**	

Table A-2. Race and Hispanic Origin for Selected MSAs/PMSAs (Ages 15 and Older; 1990 Census Figures).

Selected MSA/PMSA Name	Population, Ages 15 and Older						
	White	Black	Nat. Am./ Esk/Aleut	Asian/ Pac. Isl.	Other Race	Hispanic Origin	Total 15+ Population
Albuquerque, NM MSA	294,671	9,408	11,362	5,496	52,600	128,694	373,537
Atlanta, GA MSA	1,616,657	540,804	4,367	38,488	15,279	43,433	2,215,595
Austin, TX MSA	480,792	53,119	2,222	15,400	61,398	112,738	612,931
Bakersfield, CA MSA	286,787	20,669	5,227	12,123	71,184	97,978	395,990
Baltimore, MD PMSA	1,384,142	465,413	4,935	32,871	5,456	22,374	1,892,817
Baton Rouge, LA MSA	283,895	110,289	719	4,366	1,158	5,835	400,427
Birmingham, AL MSA	529,178	181,241	1,212	3,057	689	2,945	715,377
Boston, MA Five-County pseudo-MSA	2,723,450	191,124	5,657	95,307	77,364	152,570	3,092,902
Buffalo, NY PMSA	678,762	81,216	3,967	7,897	7,021	14,981	778,863
Charleston, SC MSA	270,951	108,460	1,250	4,679	1,559	5,326	386,899
Charlotte-Gastonia-Rock Hill, NC-SC MSA	737,980	170,130	3,154	8,277	2,266	8,045	921,807
Chicago, IL PMSA	3,338,045	978,096	8,694	175,751	271,010	508,194	4,771,596
Cincinnati, OH-KY-IN PMSA	962,652	147,138	1,605	8,962	1,795	6,110	1,122,152
Cleveland, OH PMSA	1,159,620	264,187	2,291	15,681	10,565	23,123	1,452,344
Columbus, OH MSA	942,576	121,318	2,314	16,028	2,640	8,465	1,084,876
Dallas, TX PMSA	1,464,951	296,899	9,629	49,544	140,886	251,365	1,961,909
Fort Worth-Arlington TX PMSA	836,150	102,788	4,947	22,211	55,048	101,596	1,021,144
Dayton-Springfield, OH MSA	646,253	92,937	1,540	6,963	1,474	5,172	749,167
Denver, CO PMSA	1,097,839	69,796	9,066	27,324	59,995	146,358	1,264,020
Detroit, MI PMSA	2,654,838	697,396	12,672	41,400	21,048	59,385	3,427,354
El Paso, TX MSA	334,082	15,908	1,881	5,122	75,240	288,368	432,233
Fresno, CA MSA	328,907	22,610	5,066	34,276	97,255	157,635	488,114
Greensboro--Winston-Salem--High Point, NC MSA	614,119	139,422	2,498	4,791	1,650	5,203	762,480
Greenville-Spartanburg, SC MSA	424,411	82,131	754	3,441	940	3,771	511,677
Hartford, CT Three-County pseudo-MSA	785,459	77,752	1,521	14,054	32,437	62,176	911,225
Honolulu, HI MSA	212,176	18,635	2,612	417,928	11,200	38,530	662,551
Houston, TX PMSA	1,698,859	444,877	7,294	94,036	247,251	482,321	2,492,317
Indianapolis, IN MSA	834,833	125,567	2,002	7,685	2,434	7,818	972,521
Jacksonville, FL MSA	559,664	130,086	2,016	11,619	3,987	16,605	707,372
Kansas City, MO-KS MSA	1,039,105	144,173	5,790	12,739	13,879	31,634	1,215,686
Knoxville, TN MSA	457,746	27,353	1,229	3,450	537	2,366	490,315
Las Vegas, NV MSA	485,589	50,046	4,898	20,533	24,997	59,128	586,063
Little Rock-North Little Rock, AR MSA	323,601	70,975	1,498	2,493	824	2,909	399,391
Los Angeles, CA PMSA (LA County)	4,086,820	748,726	34,846	749,034	1,274,406	2,357,055	6,893,832
Louisville, KY-IN MSA	654,854	91,039	1,281	4,231	1,032	4,196	752,437
Memphis, TN-AR-MS MSA	458,145	284,266	1,418	6,167	1,627	6,068	751,623
Ft. Laud-Hollywd-PompnoBch FL PMSA	875,360	135,509	2,029	13,020	12,615	84,525	1,038,533
Miami, FL PMSA	1,164,807	281,698	2,324	20,885	75,750	779,966	1,545,464
Milwaukee, WI PMSA	950,440	129,322	5,480	12,504	15,247	32,488	1,112,993
Minneapolis-St. Paul, MN-WI MSA	1,784,105	58,907	15,698	39,924	9,203	24,281	1,907,837

Table A-2. Race and Hispanic Origin for Selected MSAs/PMSAs (Ages 15 and Older; 1990 Census Figures).

Selected MSA/PMSA Name	Population, Ages 15 and Older						
	White	Black	Nat. Am./ Esk/Aleut	Asian/ Pac. Isl.	Other Race	Hispanic Origin	Total 15+ Population
Mobile, AL MSA	268,942	91,357	1,904	2,697	582	3,086	**365,482**
Nashville, TN MSA	653,555	112,940	1,712	7,418	1,484	5,564	**777,109**
New Orleans, LA MSA	616,791	303,655	2,699	14,930	9,871	41,159	**947,946**
Bergen-Passaic Counties NJ PMSA	871,998	81,262	1,716	49,260	43,570	110,933	**1,047,806**
Jersey City NJ PMSA	320,238	59,646	1,145	29,053	41,065	143,240	**451,147**
Middlesex-Somerset-Hunterdon Counties NJ PMSA	713,887	55,343	1,123	42,815	19,135	53,993	**832,303**
Monmouth-Ocean Counties NJ PMSA	724,088	44,267	1,040	14,006	7,415	26,121	**790,816**
Nassau-Suffolk Counties NY PMSA	1,879,028	146,972	3,534	46,503	31,856	125,464	**2,107,893**
New York City (only) NY sub-PMSA	3,086,352	1,695,569	22,202	413,482	687,670	1,438,311	**5,905,275**
Newark NJ PMSA	1,054,131	322,497	2,497	39,960	47,322	141,107	**1,466,407**
Norfolk-Virginia Beach-Newport News, VA-NC MS	749,296	291,947	3,752	26,653	7,624	22,973	**1,079,272**
Oklahoma City, OK MSA	615,876	71,184	32,051	13,653	10,993	22,323	**743,757**
Orlando, FL MSA	720,686	93,712	2,535	15,720	19,381	71,818	**852,034**
Philadelphia, PA-NJ PMSA	3,007,528	701,261	6,604	78,310	63,252	119,841	**3,856,955**
Phoenix, AZ MSA	1,430,511	51,834	25,181	27,610	113,638	228,217	**1,648,774**
Pittsburgh, PA PMSA	1,541,784	126,092	1,617	12,158	1,728	8,929	**1,683,379**
Portland, OR PMSA	891,943	27,122	8,365	34,603	12,711	30,335	**974,744**
Providence, RI Four-County pseudo-MSA	677,317	28,749	3,015	13,995	19,686	35,700	**742,762**
Raleigh-Durham-Chapel Hill, NC MSA	439,254	141,111	1,577	10,794	2,400	6,908	**595,136**
Richmond-Petersburg, VA MSA	483,531	191,491	2,244	8,866	2,048	6,893	**688,180**
Rochester, NY MSA	702,125	65,046	2,166	9,977	10,095	20,751	**789,409**
Sacramento, CA MSA	928,077	72,037	12,629	83,308	52,668	119,347	**1,148,719**
St. Louis, MO-IL MSA (Modified)	1,569,428	305,303	3,919	18,031	4,445	18,698	**1,901,126**
Salt Lake City-Ogden, UT MSA	696,647	7,278	5,440	17,826	18,099	40,202	**745,290**
San Antonio, TX MSA	755,292	65,689	3,531	12,648	147,295	436,865	**984,455**
San Diego, CA MSA	1,523,126	116,232	15,204	148,909	171,814	359,403	**1,975,285**
Oakland, CA PMSA	1,121,033	227,168	11,019	205,693	87,129	196,836	**1,652,042**
San Francisco, CA PMSA	913,622	96,362	5,962	266,891	65,428	178,641	**1,348,265**
San Jose, CA PMSA	847,424	42,472	7,133	199,914	96,442	225,818	**1,193,385**
Seattle, WA PMSA	1,377,315	58,776	17,267	102,760	13,846	38,906	**1,569,964**
Tampa-St. Petersburg-Clearwater, FL MSA	1,542,054	130,366	4,318	17,614	18,948	107,686	**1,713,300**
Tucson, AZ MSA	428,114	15,097	13,506	9,428	59,679	112,404	**525,824**
Washington, DC-MD-VA-WV MSA	2,100,497	807,043	8,825	157,705	68,500	173,075	**3,142,570**
West Palm Beach-Boca Raton, FL MSA	626,673	74,938	962	6,975	9,714	50,719	**719,262**
TOTAL, Selected MSAs/PMSAs	**76,341,434**	**14,503,248**	**437,359**	**4,229,922**	**4,730,479**	**10,873,996**	**100,242,444**
Percent of Total	**76.16%**	**14.47%**	**0.44%**	**4.22%**	**4.72%**	**10.85%**	

APPENDIX B. Pedestrian Alcohol Discussion Guide

The discussion guide below was used in all focus groups. Minor adjustments were made according to the makeup of specific groups, and discussions were allowed to flow rather than constrained rigidly to the content and sequence of the guide.

Introduction

1. Background

My name is -----, and I work for PRG, a highway safety research firm. We are conducting a series of discussions like this on the issue of pedestrian alcohol for the National Highway Traffic Safety Administration, a federal government agency with responsibility for reducing motor vehicle-related injuries and deaths on streets and highways.

When I talk about pedestrian alcohol as an issue, what I mean is injuries or deaths caused by vehicles colliding with intoxicated pedestrians. The statistics show that these pedestrians have usually been drinking a great deal, and that they are often problem drinkers, binge drinkers, or alcoholics. Nationally, about 3,000 intoxicated pedestrians are killed each year by motor vehicles.

The purpose of this discussion is to get your thoughts on how serious a problem you believe pedestrian alcohol to be in your community and your ideas about what can be done to help solve the problem.

2. Focus Group Ground Rules

This kind of discussion is often called a focus group. It is called that because it starts out discussing an issue broadly and ends up focusing on more specific, narrowly defined aspects of the issue.

My experience has been that the most productive groups are spontaneous, where all members of the group get a chance to express their thoughts on an issue at the time the thoughts pop into their minds. With this in mind, I'll try to ask as few questions as possible. As moderator, my job will be to make sure everyone feels free to participate and to make sure that we get around to all of the specific issues we need to discuss.

The discussion will be tape recorded, to help me write a report on what was said and to free me from the task of taking notes as you talk. I would appreciate it if you would speak up and if only one person will speak at a time, so I will able to hear what was said when I listen to the tape.

I'd like to start by asking each of you to tell me your name and a sentence or two about yourself.. Let's start to my right and go around the table.

Problem Perceptions (15 to 30 Minutes)

1. Let's start out by talking about how important a problem you perceive pedestrian alcohol to be. How important is it compared to other preventable health risks in your community? Why? Anyone else?

2. Do you feel that the problem of pedestrian alcohol in your community is getting better or worse? Why? Does anyone disagree? Why?

3. What groups of people within your community do you feel are at greatest risk of getting hit by a car while intoxicated? Why? Are men at greater risk than women? What age groups are at greatest risk? What other risk factors can you think of?

4. Can you think of any widespread circumstances, customs, or beliefs which would tend to put members of your community at either greater or lesser risk of being victims in alcohol-related pedestrian crashes than members of other groups? Why? What else?

5. What activities or programs are you aware of in your community that are working toward reducing the problem? Any others?

Problem Solving (30 to 45 Minutes)

1. What kinds of actions do you suggest to help reduce the number of crashes involving intoxicated pedestrians? What else?

2. What steps can the people who are at risk take to help themselves to avoid getting hit? What else?

3. What steps can drivers take to avoid these kinds of crashes. What else?

4. How about alcohol servers and sellers, or the liquor industry in general; what can they do to help minimize the problem? What else?

5. What do you feel family members can do reduce the risk for someone else in the family who drinks heavily?

6. What can community groups like churches and service clubs do? What else? What groups are there in your community that are well-positioned to have an impact on the problem?

7. How about government? What actions can federal, state, and local governments take to help solve the problem? What else?

8. What social service agencies are there which are in a position to help, and what should they be doing? Any others? What else?

9. What general traffic engineering solutions can you think of which might help? What else?

10. What can law enforcement agencies do to help? What else?

11. What changes, if any, do you feel should be made in liquor laws that would help with this problem? Any others?

12. We need to move on to the next section of the discussion, where we will be evaluating some ideas suggested by other people. but before we do, does any one have any ideas that we didn't talk about? What else?

Countermeasure Evaluation (30 to 45 Minutes)

At this point, I'd like your evaluation of some measures against the pedestrian alcohol problem which have been proposed by other groups. I'm interested in your general comments about their feasibility and effectiveness, but I am particularly interested in your comments about their appropriateness for your community. [Discuss the pro's and con's of each item, how it can be improved, and before going on to the next, get a show of hands on how many think the proposal is good, so-so, or a bad idea.]

1. Let's start out evaluating some proposed traffic engineering solutions to the pedestrian alcohol problem:

    a. Post "pedestrian crossing" signs with high night visibility in high pedestrian alcohol traffic areas to serve as warnings to drivers to watch for pedestrians.

    b. Post signs like "pedestrian killed or injured here" to make drivers more vigilant.

    c. Reduce speed limits in areas with high frequency of intoxicated pedestrians.

    d. Install stop signs in areas with high frequency of intoxicated pedestrians.

    e. Upgrade street lighting in areas with high frequency of pedestrian alcohol crashes.

    f. Change traffic signal timing at night in high pedestrian alcohol crash areas to allow more pedestrian crossing time.

    g. Erect fences or barriers in dangerous areas to make it difficult to cross except at intersections.

    h. Close selected streets at night, creating "pedestrian malls" at high risk locations.

2. Now, let's talk about some law enforcement measures that have been proposed.

    a. Increase police patrols in high risk areas during peak hours.

b. Better police training in recognizing intoxicated pedestrians and in "benign intervention" techniques.

c. So-called "sweeper" programs where police pick up intoxicated individuals and drive them to detoxification facilities.

d. Confiscate open liquor containers from people drinking on the streets or sidewalks.

e. Establish a "hot line" where servers, vendors, and citizens can call to get police help when they see an intoxicated-pedestrian situation where police help is needed.

f. Have police visit liquor stores and bars frequently to provide informational and educational material to servers and vendors.

3. I'd like to shift your focus to alcohol vendors and servers. What do you think about the following measures that they could be involved in?

   a. Train liquor vendors and servers to be aware of the dangers to walkers as well as drivers.

   b. Encourage vendors and servers to distribute high visibility promotional items to patrons who are walking — for example, high visibility bags for packaged beverages, light or reflective tee shirts, or caps or other promotional items.

   c. Encourage drinking establishments to refer drunk pedestrians as well as drivers to "safe rides" type programs, or if they don't exist, to start them. [Discuss variations on safe rides, such as taxi vouchers, walking escorts, etc. Discuss who should pay. Get preferences.]

   d. Encourage drinking establishments to post signs and distribute educational materials targeted at drinkers on the risks of driving and walking when intoxicated.

4. Now I'd like you to shift your attention to laws relating to alcohol and pedestrians.

   a. Passing or strengthening "dram shop" and "host liability" laws to force vendors and servers to refuse service to customers who have overindulged, whether they are driving or walking.

   b. Strengthening public intoxication laws in ways that would make it easier for police to get at-risk individuals off the street.

   c. Strengthening laws making it illegal to sell alcoholic beverages to obviously intoxicated individuals.

   d. Placing a special tax on high-alcohol, low-cost products, making it more difficult for alcoholics and alcohol abusers to achieve high levels of intoxication on limited money.

e. Requiring warnings distributed with all packaged alcohol products which describe the dangers of drinking and walking.

5. Let's discuss some other ways which have been suggested involving government actions relating to the problem.

   a. Generally increasing public funding for alcohol treatment and detoxification programs.

   b. Encouraging or requiring public schools to teach the dangers of drinking and walking as part of their health and driver education curricula.

   c. Expand existing treatment programs to identify problem drinkers who have significant walking exposure and counsel them on how to minimize risks.

   d. Establish routine alcohol testing for all adult crash victims, whether drivers, passengers, or pedestrians.

   e. Distribute public information and educational materials on pedestrian alcohol risks through government agencies in contact with the public.

Close

[Thank participants for their input. Before closing, ask if there is anything anyone wants to add, any ideas they had and didn't get a chance to talk about, or any issues they feel have been overlooked ...]

APPENDIX C. Fatal Crash Characteristics of Three Racial/Ethnic Target Groups vs. Baseline Whites

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Appendix C. Fatal Crash Characteristics of Three Racial/Ethnic Target Groups vs. Baseline Whites

Tables in this section compare, first, black adults (ages 25 and higher) with white adults (ages 25 and higher); second, Hispanic males with white males; and third, Native American adults (all ages) with white adults. Each page looks at the distribution of the two groups across a variable describing when and where the crash occurred, weather and roadway conditions, the type of crash, and operator and vehicle factors. Each table appears twice, first for all pedestrians whose BAC value was .10% or higher (all "impaired" pedestrians), and second for all pedestrians whose BAC value was .20% or higher (likely all "problem drinkers"). Tables comparing whites and blacks and whites and Native Americans are based on FARS + MCOD (1987-1989; up to two pedestrians per crash) data, and "whites" in those tables include about 10 percent Hispanics. Tables comparing whites and Hispanics are based on data from six state and county sites.

WHITE AGE 25+ VS. BLACK AGE 25+ BY BROAD HOUR-OF-DAY CATEGORIES FOR PED BAC >= .10%

	HOURCATS					
Count / Row Pct / Col Pct	6am-11:59	Noon-4:59	5pm-8:59	9pm-12:59	1am-5:59	Row
W25XXB25	1	2	3	4	5	Total
1 WhiteIncHisp 25+	56 2.1 73.7	71 2.7 64.5	724 27.1 73.8	1153 43.1 78.4	672 25.1 77.2	2676 76.3
2 Black, Age 25+	20 2.4 26.3	39 4.7 35.5	257 30.9 26.2	317 38.1 21.6	199 23.9 22.8	832 23.7
Column Total	76 2.2	110 3.1	981 28.0	1470 41.9	871 24.8	3508 100.0

Chi-Square	Value	DF	Significance
Pearson	16.12528	4	.00286
Likelihood Ratio	15.38739	4	.00396
Mantel-Haenszel test for linear association	7.75546	1	.00535

Minimum Expected Frequency - 18.025; Number of Missing Observations: 16573

WHITE AGE 25+ VS. BLACK AGE 25+ BY BROAD HOUR-OF-DAY CATEGORIES FOR PED BAC >= .20%

	HOURCATS					
Count / Row Pct / Col Pct	6am-11:59	Noon-4:59	5pm-8:59	9pm-12:59	1am-5:59	Row
W25XXB25	1	2	3	4	5	Total
1 WhiteIncHisp 25+	27 1.6 65.9	46 2.8 63.0	469 28.2 71.6	722 43.3 76.3	402 24.1 75.4	1666 74.1
2 Black, Age 25+	14 2.4 34.1	27 4.6 37.0	186 32.0 28.4	224 38.5 23.7	131 22.5 24.6	582 25.9
Column Total	41 1.8	73 3.2	655 29.1	946 42.1	533 23.7	2248 100.0

Chi-Square	Value	DF	Significance
Pearson	11.17605	4	.02466
Likelihood Ratio	10.75583	4	.02945
Mantel-Haenszel test for linear association	7.24600	1	.00711

Minimum Expected Frequency - 10.615; Number of Missing Observations: 17833

WHITE AGE 25+ VS. BLACK AGE 25+ BY TIME OF DAY X DAY OF WEEK (CATS) FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	DAYTIME: Weekday daytime 1	Weekend daytime 2	Weekday night 3	Weekend night 4	Row Total
1 WhiteIncHisp 25+		100 3.7 70.9	27 1.0 60.0	1280 47.8 77.2	1269 47.4 76.3	2676 76.3
2 Black, Age 25+		41 4.9 29.1	18 2.2 40.0	378 45.4 22.8	395 47.5 23.7	832 23.7
Column Total		141 4.0	45 1.3	1658 47.3	1664 47.4	3508 100.0

Chi-Square	Value	DF	Significance
Pearson	9.60796	3	.02221
Likelihood Ratio	8.76846	3	.03253
Mantel-Haenszel test for linear association	1.53031	1	.21607

Minimum Expected Frequency - 10.673
Number of Missing Observations: 16573

WHITE AGE 25+ VS. BLACK AGE 25+ BY TIME OF DAY X DAY OF WEEK (CATS) FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	DAYTIME: Weekday daytime 1	Weekend daytime 2	Weekday night 3	Weekend night 4	Row Total
1 WhiteIncHisp 25+		61 3.7 67.8	12 .7 50.0	802 48.1 75.2	791 47.5 74.1	1666 74.1
2 Black, Age 25+		29 5.0 32.2	12 2.1 50.0	264 45.4 24.8	277 47.6 25.9	582 25.9
Column Total		90 4.0	24 1.1	1066 47.4	1068 47.5	2248 100.0

Chi-Square	Value	DF	Significance
Pearson	9.85569	3	.01983
Likelihood Ratio	8.85578	3	.03127
Mantel-Haenszel test for linear association	1.29527	1	.25508

Minimum Expected Frequency - 6.214
Number of Missing Observations: 17833

WHITE AGE 25+ VS. BLACK AGE 25+ BY LIGHT CONDITIONS FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	LIGHT3: Daylight	Dark/unlighted	Dark/lighted	Dawn/dusk	Row Total
		1	2	3	4	
1 WhiteIncHisp 25+		140	1369	1127	47	2683
		5.2	51.0	42.0	1.8	76.2
		65.7	78.1	75.6	74.6	
2 Black, Age 25+		73	384	363	16	836
		8.7	45.9	43.4	1.9	23.8
		34.3	21.9	24.4	25.4	
Column Total		213	1753	1490	63	3519
		6.1	49.8	42.3	1.8	100.0

Chi-Square	Value	DF	Significance
Pearson	16.71620	3	.00081
Likelihood Ratio	15.72229	3	.00129
Mantel-Haenszel test for linear association	.50562	1	.47704

Minimum Expected Frequency - 14.967
Number of Missing Observations: 16562

WHITE AGE 25+ VS. BLACK AGE 25+ BY LIGHT CONDITIONS FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	LIGHT3: Daylight	Dark/unlighted	Dark/lighted	Dawn/dusk	Row Total
		1	2	3	4	
1 WhiteIncHisp 25+		85	830	727	26	1668
		5.1	49.8	43.6	1.6	74.0
		62.5	74.1	75.6	72.2	
2 Black, Age 25+		51	290	235	10	586
		8.7	49.5	40.1	1.7	26.0
		37.5	25.9	24.4	27.8	
Column Total		136	1120	962	36	2254
		6.0	49.7	42.7	1.6	100.0

Chi-Square	Value	DF	Significance
Pearson	10.64968	3	.01378
Likelihood Ratio	9.96094	3	.01890
Mantel-Haenszel test for linear association	5.10081	1	.02391

Minimum Expected Frequency - 9.359
Number of Missing Observations: 17827

WHITE AGE 25+ VS. BLACK AGE 25+ BY WEATHER CONDITIONS FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	WEATHER3: No adverse 1	Rain 2	Other adverse 3	Row Total
1 WhiteIncHisp 25+		2368	235	78	2681
		88.3	8.8	2.9	76.2
		76.3	73.4	84.8	
2 Black, Age 25+		737	85	14	836
		88.2	10.2	1.7	23.8
		23.7	26.6	15.2	
Column Total		3105	320	92	3517
		88.3	9.1	2.6	100.0

Chi-Square	Value	DF	Significance
Pearson	5.09300	2	.07836
Likelihood Ratio	5.44515	2	.06571
Mantel-Haenszel test for linear association	.41456	1	.51967

Minimum Expected Frequency - 21.869
Number of Missing Observations: 16564

WHITE AGE 25+ VS. BLACK AGE 25+ BY WEATHER CONDITIONS FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	WEATHER3: No adverse 1	Rain 2	Other adverse 3	Row Total
1 WhiteIncHisp 25+		1467	153	46	1666
		88.1	9.2	2.8	74.0
		74.0	72.2	82.1	
2 Black, Age 25+		516	59	10	585
		88.2	10.1	1.7	26.0
		26.0	27.8	17.9	
Column Total		1983	212	56	2251
		88.1	9.4	2.5	100.0

Chi-Square	Value	DF	Significance
Pearson	2.29996	2	.31664
Likelihood Ratio	2.45458	2	.29309
Mantel-Haenszel test for linear association	.36125	1	.54781

Minimum Expected Frequency - 14.554
Number of Missing Observations: 17830

WHITE AGE 25+ VS. BLACK AGE 25+ BY RDWY SURFACE "WEATHER" CONDITION FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	SURFCON3 Dry 1	Wet 2	Other adverse 3	Row Total
1 WhiteIncHisp 25+		2274	370	40	2684
		84.7	13.8	1.5	76.3
		76.2	76.1	83.3	
2 Black, Age 25+		710	116	8	834
		85.1	13.9	1.0	23.7
		23.8	23.9	16.7	
Column Total		2984	486	48	3518
		84.8	13.8	1.4	100.0

Chi-Square	Value	DF	Significance
Pearson	1.33479	2	.51304
Likelihood Ratio	1.44281	2	.48607
Mantel-Haenszel test for linear association	.33896	1	.56043

Minimum Expected Frequency - 11.379
Number of Missing Observations: 16563

WHITE AGE 25+ VS. BLACK AGE 25+ BY RDWY SURFACE "WEATHER" CONDITION FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	SURFCON3 Dry 1	Wet 2	Other adverse 3	Row Total
1 WhiteIncHisp 25+		1400	246	23	1669
		83.9	14.7	1.4	74.1
		73.8	75.5	79.3	
2 Black, Age 25+		498	80	6	584
		85.3	13.7	1.0	25.9
		26.2	24.5	20.7	
Column Total		1898	326	29	2253
		84.2	14.5	1.3	100.0

Chi-Square	Value	DF	Significance
Pearson	.83657	2	.65817
Likelihood Ratio	.86062	2	.65031
Mantel-Haenszel test for linear association	.78522	1	.37555

Minimum Expected Frequency - 7.517
Number of Missing Observations: 17828

WHITE AGE 25+ VS. BLACK AGE 25+ BY ROADWAY FUNCTNL CLASS II FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	RDFCTN3 All xprs swys 1	Princpl arterial 2	Minor arterial 3	Urban collector 4	Rural collector 5	Local street/road 6	Row Total
1 WhiteIncHisp 25+		499	985	590	90	235	276	2675
		18.7	36.8	22.1	3.4	8.8	10.3	76.5
		79.0	80.5	78.8	70.3	72.8	62.9	
2 Black, Age 25+		133	239	159	38	88	163	820
		16.2	29.1	19.4	4.6	10.7	19.9	23.5
		21.0	19.5	21.2	29.7	27.2	37.1	
Column Total		632	1224	749	128	323	439	3495
		18.1	35.0	21.4	3.7	9.2	12.6	100.0

Chi-Square	Value	DF	Significance
Pearson	65.70223	5	.00000
Likelihood Ratio	61.41091	5	.00000
Mantel-Haenszel test for linear association	51.98332	1	.00000

Minimum Expected Frequency - 30.031
Number of Missing Observations: 16586

WHITE AGE 25+ VS. BLACK AGE 25+ BY ROADWAY FUNCTNL CLASS II FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	RDFCTN3 All xprs swys 1	Princpl arterial 2	Minor arterial 3	Urban collector 4	Rural collector 5	Local street/road 6	Row Total
1 WhiteIncHisp 25+		307	621	384	53	140	162	1667
		18.4	37.3	23.0	3.2	8.4	9.7	74.5
		76.8	79.0	77.0	68.8	69.0	59.3	
2 Black, Age 25+		93	165	115	24	63	111	571
		16.3	28.9	20.1	4.2	11.0	19.4	25.5
		23.3	21.0	23.0	31.2	31.0	40.7	
Column Total		400	786	499	77	203	273	2238
		17.9	35.1	22.3	3.4	9.1	12.2	100.0

Chi-Square	Value	DF	Significance
Pearson	48.63603	5	.00000
Likelihood Ratio	45.71898	5	.00000
Mantel-Haenszel test for linear association	38.60124	1	.00000

Minimum Expected Frequency - 19.646
Number of Missing Observations: 17843

WHITE AGE 25+ VS. BLACK AGE 25+ BY SPEED LIMIT (BROAD CATS) FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	SPEEDLM3 <=30 mph (1)	35-50mph (2)	55+ mph (3)	Row Total
1 WhiteIncHisp 25+		435	1264	933	2632
		16.5	48.0	35.4	76.3
		67.4	78.5	78.1	
2 Black, Age 25+		210	346	262	818
		25.7	42.3	32.0	23.7
		32.6	21.5	21.9	
Column Total		645	1610	1195	3450
		18.7	46.7	34.6	100.0

Chi-Square	Value	DF	Significance
Pearson	34.40624	2	.00000
Likelihood Ratio	32.57187	2	.00000
Mantel-Haenszel test for linear association	19.38904	1	.00001

Minimum Expected Frequency - 152.930
Number of Missing Observations: 16631

WHITE AGE 25+ VS. BLACK AGE 25+ BY SPEED LIMIT (BROAD CATS) FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	SPEEDLM3 <=30 mph (1)	35-50mph (2)	55+ mph (3)	Row Total
1 WhiteIncHisp 25+		265	815	558	1638
		16.2	49.8	34.1	74.0
		65.6	76.5	75.0	
2 Black, Age 25+		139	250	186	575
		24.2	43.5	32.3	26.0
		34.4	23.5	25.0	
Column Total		404	1065	744	2213
		18.3	48.1	33.6	100.0

Chi-Square	Value	DF	Significance
Pearson	18.76291	2	.00008
Likelihood Ratio	17.96920	2	.00013
Mantel-Haenszel test for linear association	8.10668	1	.00441

Minimum Expected Frequency - 104.971
Number of Missing Observations: 17868

WHITE AGE 25+ VS. BLACK AGE 25+ BY PED PRE-CRASH LOCATION (CATS) FOR PED BAC >= .10%

W25XXB25	PEDLOC3 Count / Row Pct / Col Pct	Intsctn-related 1	Non-ints ctn 2	Not on roadway 3	Row Total
1 WhiteIncHisp 25+		330	2277	75	2682
		12.3	84.9	2.8	76.3
		71.0	77.0	78.1	
2 Black, Age 25+		135	679	21	835
		16.2	81.3	2.5	23.7
		29.0	23.0	21.9	
Column Total		465	2956	96	3517
		13.2	84.0	2.7	100.0

Chi-Square	Value	DF	Significance
Pearson	8.34527	2	.01541
Likelihood Ratio	8.03018	2	.01804
Mantel-Haenszel test for linear association	7.36436	1	.00665

Minimum Expected Frequency - 22.792
Number of Missing Observations: 16564

WHITE AGE 25+ VS. BLACK AGE 25+ BY PED PRE-CRASH LOCATION (CATS) FOR PED BAC >= .20%

W25XXB25	PEDLOC3 Count / Row Pct / Col Pct	Intsctn-related 1	Non-ints ctn 2	Not on roadway 3	Row Total
1 WhiteIncHisp 25+		191	1442	34	1667
		11.5	86.5	2.0	74.0
		69.2	74.7	75.6	
2 Black, Age 25+		85	489	11	585
		14.5	83.6	1.9	26.0
		30.8	25.3	24.4	
Column Total		276	1931	45	2252
		12.3	85.7	2.0	100.0

Chi-Square	Value	DF	Significance
Pearson	3.81839	2	.14820
Likelihood Ratio	3.70090	2	.15717
Mantel-Haenszel test for linear association	3.42368	1	.06427

Minimum Expected Frequency - 11.690
Number of Missing Observations: 17829

WHITE AGE 25+ VS. BLACK AGE 25+ BY PED1 RELATED FACTOR1 (CATS) FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	PDF1CAT3: None/na 1	Improper crossing 2	Walk etc. in rdw 3	Other 4	Row Total
1 WhiteIncHisp 25+		317	1218	825	278	2638
		12.0	46.2	31.3	10.5	76.6
		70.4	78.8	72.8	88.0	
2 Black, Age 25+		133	328	309	38	808
		16.5	40.6	38.2	4.7	23.4
		29.6	21.2	27.2	12.0	
Column Total		450	1546	1134	316	3446
		13.1	44.9	32.9	9.2	100.0

Chi-Square	Value	DF	Significance
Pearson	45.73874	3	.00000
Likelihood Ratio	48.64119	3	.00000
Mantel-Haenszel test for linear association	7.59888	1	.00584

Minimum Expected Frequency - 74.094
Number of Missing Observations: 16635

WHITE AGE 25+ VS. BLACK AGE 25+ BY PED1 RELATED FACTOR1 (CATS) FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	PDF1CAT3: None/na 1	Improper crossing 2	Walk etc. in rdw 3	Other 4	Row Total
1 WhiteIncHisp 25+		182	773	509	175	1639
		11.1	47.2	31.1	10.7	74.4
		69.5	77.4	68.7	87.5	
2 Black, Age 25+		80	226	232	25	563
		14.2	40.1	41.2	4.4	25.6
		30.5	22.6	31.3	12.5	
Column Total		262	999	741	200	2202
		11.9	45.4	33.7	9.1	100.0

Chi-Square	Value	DF	Significance
Pearson	38.73037	3	.00000
Likelihood Ratio	41.05321	3	.00000
Mantel-Haenszel test for linear association	1.87034	1	.17144

Minimum Expected Frequency - 51.135
Number of Missing Observations: 17879

WHITE AGE 25+ VS. BLACK AGE 25+ BY NUMBER OF VEHICLES (1 VS. 2+) FOR PED BAC >= .10%

W25XXB25	NUMVEH3 One 1	Two or more 2	Row Total
1 WhiteIncHisp 25+	2457	234	2691
	91.3	8.7	76.3
	76.1	77.7	
2 Black, Age 25+	770	67	837
	92.0	8.0	23.7
	23.9	22.3	
Column Total	3227	301	3528
	91.5	8.5	100.0

Chi-Square	Value	DF	Significance
Pearson	.39048	1	.53205
Continuity Correction	.30697	1	.57955
Likelihood Ratio	.39590	1	.52922
Mantel-Haenszel test for linear association	.39037	1	.53211

Minimum Expected Frequency - 71.411
Number of Missing Observations: 16553

WHITE AGE 25+ VS. BLACK AGE 25+ BY NUMBER OF VEHICLES (1 VS. 2+) FOR PED BAC >= .20%

W25XXB25	NUMVEH3 One 1	Two or more 2	Row Total
1 WhiteIncHisp 25+	1526	149	1675
	91.1	8.9	74.1
	73.6	79.7	
2 Black, Age 25+	548	38	586
	93.5	6.5	25.9
	26.4	20.3	
Column Total	2074	187	2261
	91.7	8.3	100.0

Chi-Square	Value	DF	Significance
Pearson	3.32594	1	.06820
Continuity Correction	3.01575	1	.08246
Likelihood Ratio	3.48848	1	.06180
Mantel-Haenszel test for linear association	3.32447	1	.06826

Minimum Expected Frequency - 48.466
Number of Missing Observations: 17820

WHITE AGE 25+ VS. BLACK AGE 25+ BY OPER1 ALCOHOL, COP-REPORTED FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	O1ALC3: Reported "No" rep Unknown td 1	2	3	Row Total
1 WhiteIncHisp 25+		445	1406	840	2691
		16.5	52.2	31.2	76.3
		78.9	76.9	73.9	
2 Black, Age 25+		119	422	296	837
		14.2	50.4	35.4	23.7
		21.1	23.1	26.1	
Column Total		564	1828	1136	3528
		16.0	51.8	32.2	100.0

Chi-Square	Value	DF	Significance
Pearson	5.97409	2	.05044
Likelihood Ratio	5.96210	2	.05074
Mantel-Haenszel test for linear association	5.86169	1	.01547

Minimum Expected Frequency - 133.806
Number of Missing Observations: 16553

WHITE AGE 25+ VS. BLACK AGE 25+ BY OPER1 ALCOHOL, COP-REPORTED FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	O1ALC3: Reported "No" rep Unknown td 1	2	3	Row Total
1 WhiteIncHisp 25+		260	886	529	1675
		15.5	52.9	31.6	74.1
		75.1	74.3	73.3	
2 Black, Age 25+		86	307	193	586
		14.7	52.4	32.9	25.9
		24.9	25.7	26.7	
Column Total		346	1193	722	2261
		15.3	52.8	31.9	100.0

Chi-Square	Value	DF	Significance
Pearson	.47333	2	.78926
Likelihood Ratio	.47348	2	.78920
Mantel-Haenszel test for linear association	.47214	1	.49200

Minimum Expected Frequency - 89.675
Number of Missing Observations: 17820

WHITE AGE 25+ VS. BLACK AGE 25+ BY VEH1 TYPE FOR PED BAC >= .10%

W25XXB25	Count / Row Pct / Col Pct	V1TYPE3 1 Auto-like	2 Pickup	3 Other passenger	4 Truck	5 Tractor-trailer	6 Motorcycle	7 Other	Row Total
1 WhiteIncHisp 25+		1648	422	192	52	68	15	285	2682
		61.4	15.7	7.2	1.9	2.5	.6	10.6	76.2
		74.7	80.5	87.7	83.9	73.9	55.6	73.3	
2 Black, Age 25+		557	102	27	10	24	12	104	836
		66.6	12.2	3.2	1.2	2.9	1.4	12.4	23.8
		25.3	19.5	12.3	16.1	26.1	44.4	26.7	
Column Total		2205	524	219	62	92	27	389	3518
		62.7	14.9	6.2	1.8	2.6	.8	11.1	100.0

Chi-Square	Value	DF	Significance
Pearson	34.41665	6	.00001
Likelihood Ratio	36.33153	6	.00000
Mantel-Haenszel test for linear association	.14691	1	.70151

Minimum Expected Frequency - 6.416
Number of Missing Observations: 16563

WHITE AGE 25+ VS. BLACK AGE 25+ BY VEH1 TYPE FOR PED BAC >= .20%

W25XXB25	Count / Row Pct / Col Pct	V1TYPE3 1 Auto-like	2 Pickup	3 Other passenger	4 Truck	5 Tractor-trailer	6 Motorcycle	7 Other	Row Total
1 WhiteIncHisp 25+		1013	256	129	39	36	10	189	1672
		60.6	15.3	7.7	2.3	2.2	.6	11.3	74.0
		72.1	78.5	86.6	84.8	65.5	58.8	72.7	
2 Black, Age 25+		392	70	20	7	19	7	71	586
		66.9	11.9	3.4	1.2	3.2	1.2	12.1	26.0
		27.9	21.5	13.4	15.2	34.5	41.2	27.3	
Column Total		1405	326	149	46	55	17	260	2258
		62.2	14.4	6.6	2.0	2.4	.8	11.5	100.0

Chi-Square	Value	DF	Significance
Pearson	25.52209	6	.00027
Likelihood Ratio	27.41612	6	.00012
Mantel-Haenszel test for linear association	.11016	1	.73996

Minimum Expected Frequency - 4.412
Cells with Expected Frequency < 5 - 1 OF 14 (7.1%)
Number of Missing Observations: 17823

Crosstabulations: White Males vs. Hispanic Males, by ...[1]

WHITE MALES VS. HISPANIC MALES BY BROAD HOUR-OF-DAY CATEGORIES ... FOR PED BAC >= .10%

WMXXHM	Count / Row Pct / Col Pct	HOURCATS 1 (6am-11:59)	2 (Noon-4:59)	3 (5pm-8:59)	4 (9pm-12:59am)	5 (1am-5:59)	Row Total
1 White males		16	17	295	579	447	1354
		1.2	1.3	21.8	42.8	33.0	88.0
		72.7	85.0	85.0	88.1	90.7	
2 Hispanic males		6	3	52	78	46	185
		3.2	1.6	28.1	42.2	24.9	12.0
		27.3	15.0	15.0	11.9	9.3	
Column Total		22	20	347	657	493	1539
		1.4	1.3	22.5	42.7	32.0	100.0

Chi-Square	Value	DF	Significance
Pearson	11.27827	4	.02361
Likelihood Ratio	10.23121	4	.03671
Mantel-Haenszel test for linear association	10.25021	1	.00137

Minimum Expected Frequency - 2.404
Cells with Expected Frequency < 5 - 2 OF 10 (20.0%)
Number of Missing Observations: 10185

WHITE MALES VS. HISPANIC MALES BY BROAD HOUR-OF-DAY CATEGORIES ... FOR PED BAC >= .20%

WMXXHM	Count / Row Pct / Col Pct	HOURCATS 1 (6am-11:59)	2 (Noon-4:59)	3 (5pm-8:59)	4 (9pm-12:59am)	5 (1am-5:59)	Row Total
1 White males		8	9	181	378	233	809
		1.0	1.1	22.4	46.7	28.8	86.2
		66.7	75.0	85.0	87.3	86.6	
2 Hispanic males		4	3	32	55	36	130
		3.1	2.3	24.6	42.3	27.7	13.8
		33.3	25.0	15.0	12.7	13.4	
Column Total		12	12	213	433	269	939
		1.3	1.3	22.7	46.1	28.6	100.0

Chi-Square	Value	DF	Significance
Pearson	5.84317	4	.21117
Likelihood Ratio	4.75238	4	.31366
Mantel-Haenszel test for linear association	2.37338	1	.12342

Minimum Expected Frequency - 1.661
Cells with Expected Frequency < 5 - 2 OF 10 (20.0%)
Number of Missing Observations: 10785

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1 Data from six state and county sites.

WHITE MALES VS. HISPANIC MALES BY TIME OF DAY X DAY OF WEEK (CATS) ... FOR PED BAC >= .10%

WMXXHM	Count / Row Pct / Col Pct	DAYTIME: Weekday daytime 1	Weekend daytime 2	Weekday night 3	Weekend night 4	Row Total
1		21	12	626	695	1354
White males		1.6	.9	46.2	51.3	88.0
		87.5	66.7	86.5	89.9	
2		3	6	98	78	185
Hispanic males		1.6	3.2	53.0	42.2	12.0
		12.5	33.3	13.5	10.1	
Column Total		24	18	724	773	1539
		1.6	1.2	47.0	50.2	100.0

Chi-Square	Value	DF	Significance
Pearson	12.03087	3	.00728
Likelihood Ratio	9.96500	3	.01887
Mantel-Haenszel test for linear association	6.05923	1	.01383

Minimum Expected Frequency - 2.164
Cells with Expected Frequency < 5 - 2 OF 8 (25.0%)
Number of Missing Observations: 10185

WHITE MALES VS. HISPANIC MALES BY TIME OF DAY X DAY OF WEEK (CATS) ... FOR PED BAC >= .20%

WMXXHM	Count / Row Pct / Col Pct	DAYTIME: Weekday daytime 1	Weekend daytime 2	Weekday night 3	Weekend night 4	Row Total
1		11	6	375	417	809
White males		1.4	.7	46.4	51.5	86.2
		91.7	50.0	85.0	88.0	
2		1	6	66	57	130
Hispanic males		.8	4.6	50.8	43.8	13.8
		8.3	50.0	15.0	12.0	
Column Total		12	12	441	474	939
		1.3	1.3	47.0	50.5	100.0

Chi-Square	Value	DF	Significance
Pearson	15.23704	3	.00163
Likelihood Ratio	11.05086	3	.01145
Mantel-Haenszel test for linear association	3.44109	1	.06359

Minimum Expected Frequency - 1.661
Cells with Expected Frequency < 5 - 2 OF 8 (25.0%)
Number of Missing Observations: 10785

WHITE MALES VS. HISPANIC MALES BY LIGHT CONDITIONS ... FOR PED BAC >= .10%

WMXXHM	Count / Row Pct / Col Pct	LIGHT3: Daylight (1)	Dark/unlighted (2)	Dark/lighted (3)	Dawn/dusk (4)	Row Total
1		50	800	499	14	1363
White males		3.7	58.7	36.6	1.0	88.0
		84.7	89.0	87.2	73.7	
2		9	99	73	5	186
Hispanic males		4.8	53.2	39.2	2.7	12.0
		15.3	11.0	12.8	26.3	
Column Total		59	899	572	19	1549
		3.8	58.0	36.9	1.2	100.0

Chi-Square	Value	DF	Significance
Pearson	5.42130	3	.14342
Likelihood Ratio	4.59261	3	.20418
Mantel-Haenszel test for linear association	1.13691	1	.28631

Minimum Expected Frequency - 2.281
Cells with Expected Frequency < 5 - 1 OF 8 (12.5%)
Number of Missing Observations: 10175

WHITE MALES VS. HISPANIC MALES BY LIGHT CONDITIONS ... FOR PED BAC >= .20%

WMXXHM	Count / Row Pct / Col Pct	LIGHT3: Daylight (1)	Dark/unlighted (2)	Dark/lighted (3)	Dawn/dusk (4)	Row Total
1		21	469	311	9	810
White males		2.6	57.9	38.4	1.1	86.1
		75.0	86.5	86.6	75.0	
2		7	73	48	3	131
Hispanic males		5.3	55.7	36.6	2.3	13.9
		25.0	13.5	13.4	25.0	
Column Total		28	542	359	12	941
		3.0	57.6	38.2	1.3	100.0

Chi-Square	Value	DF	Significance
Pearson	4.28052	3	.23272
Likelihood Ratio	3.62813	3	.30452
Mantel-Haenszel test for linear association	.16226	1	.68708

Minimum Expected Frequency - 1.671
Cells with Expected Frequency < 5 - 2 OF 8 (25.0%)
Number of Missing Observations: 10783

WHITE MALES VS. HISPANIC MALES BY WEATHER CONDITIONS ... FOR PED BAC >= .10%

WMXXHM	WEATHER3			
Count / Row Pct / Col Pct	No adverse 1	Rain 2	Other adverse 3	Row Total
1 White males	1182 86.9 87.7	129 9.5 88.4	49 3.6 92.5	1360 87.9
2 Hispanic males	166 88.8 12.3	17 9.1 11.6	4 2.1 7.5	187 12.1
Column Total	1348 87.1	146 9.4	53 3.4	1547 100.0

Chi-Square	Value	DF	Significance
Pearson	1.12057	2	.57105
Likelihood Ratio	1.25930	2	.53278
Mantel-Haenszel test for linear association	.88503	1	.34683

Minimum Expected Frequency - 6.407
Number of Missing Observations: 10177

WHITE MALES VS. HISPANIC MALES BY WEATHER CONDITIONS ... FOR PED BAC >= .20%

WMXXHM	WEATHER3			
Count / Row Pct / Col Pct	No adverse 1	Rain 2	Other adverse 3	Row Total
1 White males	697 86.2 85.7	84 10.4 88.4	28 3.5 87.5	809 86.1
2 Hispanic males	116 88.5 14.3	11 8.4 11.6	4 3.1 12.5	131 13.9
Column Total	813 86.5	95 10.1	32 3.4	940 100.0

Chi-Square	Value	DF	Significance
Pearson	.56984	2	.75207
Likelihood Ratio	.59388	2	.74309
Mantel-Haenszel test for linear association	.42369	1	.51510

Minimum Expected Frequency - 4.460
Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)
Number of Missing Observations: 10784

WHITE MALES VS. HISPANIC MALES BY RDWY SURFACE "WEATHER" CONDITION ... FOR PED BAC >= .10%

WMXXHM	SURFCON3 Count / Row Pct / Col Pct	Dry 1	Wet 2	Other adverse 3	Row Total
1 White males		1116 82.0 87.2	217 15.9 90.4	28 2.1 100.0	1361 87.9
2 Hispanic males		164 87.7 12.8	23 12.3 9.6		187 12.1
Column Total		1280 82.7	240 15.5	28 1.8	1548 100.0

Chi-Square	Value	DF	Significance
Pearson	5.90231	2	.05228
Likelihood Ratio	9.34784	2	.00934
Mantel-Haenszel test for linear association	5.18388	1	.02280

Minimum Expected Frequency - 3.382
Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)
Number of Missing Observations: 10176

WHITE MALES VS. HISPANIC MALES BY RDWY SURFACE "WEATHER" CONDITION ... FOR PED BAC >= .20%

WMXXHM	SURFCON3 Count / Row Pct / Col Pct	Dry 1	Wet 2	Other adverse 3	Row Total
1 White males		650 80.3 85.0	141 17.4 89.8	18 2.2 100.0	809 86.1
2 Hispanic males		115 87.8 15.0	16 12.2 10.2		131 13.9
Column Total		765 81.4	157 16.7	18 1.9	940 100.0

Chi-Square	Value	DF	Significance
Pearson	5.51752	2	.06337
Likelihood Ratio	8.15018	2	.01699
Mantel-Haenszel test for linear association	5.22220	1	.02230

Minimum Expected Frequency - 2.509
Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)
Number of Missing Observations: 10784

WHITE MALES VS. HISPANIC MALES BY ROADWAY FUNCTNL CLASS II ... FOR PED BAC >= .10%

WMXXHM	Count / Row Pct / Col Pct	RDFCTN3: All xprs swys 1	Princpl arterial 2	Minor ar terial 3	Urban co llector 4	Rural co llector 5	Local st reet/roa 6	Row Total
1 White males		353	409	292	26	135	135	1350
		26.1	30.3	21.6	1.9	10.0	10.0	87.9
		87.8	88.5	88.2	86.7	93.8	80.8	
2 Hispanic males		49	53	39	4	9	32	186
		26.3	28.5	21.0	2.2	4.8	17.2	12.1
		12.2	11.5	11.8	13.3	6.3	19.2	
Column Total		402	462	331	30	144	167	1536
		26.2	30.1	21.5	2.0	9.4	10.9	100.0

Chi-Square	Value	DF	Significance
Pearson	12.70338	5	.02632
Likelihood Ratio	12.56469	5	.02782
Mantel-Haenszel test for linear association	1.03530	1	.30892

Minimum Expected Frequency - 3.633
Cells with Expected Frequency < 5 - 1 OF 12 (8.3%)
Number of Missing Observations: 10188

WHITE MALES VS. HISPANIC MALES BY ROADWAY FUNCTNL CLASS II ... FOR PED BAC >= .20%

WMXXHM	Count / Row Pct / Col Pct	RDFCTN3: All xprs swys 1	Princpl arterial 2	Minor ar terial. 3	Urban co llector 4	Rural co llector 5	Local st reet/roa 6	Row Total
1 White males		203	251	182	18	69	77	800
		25.4	31.4	22.8	2.3	8.6	9.6	85.9
		87.1	87.2	86.7	90.0	89.6	74.8	
2 Hispanic males		30	37	28	2	8	26	131
		22.9	28.2	21.4	1.5	6.1	19.8	14.1
		12.9	12.8	13.3	10.0	10.4	25.2	
Column Total		233	288	210	20	77	103	931
		25.0	30.9	22.6	2.1	8.3	11.1	100.0

Chi-Square	Value	DF	Significance
Pearson	12.49587	5	.02859
Likelihood Ratio	10.92195	5	.05295
Mantel-Haenszel test for linear association	4.75404	1	.02923

Minimum Expected Frequency - 2.814
Cells with Expected Frequency < 5 - 1 OF 12 (8.3%)
Number of Missing Observations: 10793

WHITE MALES VS. HISPANIC MALES BY SPEED LIMIT (BROAD CATS) ... FOR PED BAC >= .10%

WMXXHM	SPEEDLM3 <=30 mph	35-50mph	55+ mph	Row Total
1 White males	133	697	455	1285
	10.4	54.2	35.4	88.1
	83.1	89.4	87.7	
2 Hispanic males	27	83	64	174
	15.5	47.7	36.8	11.9
	16.9	10.6	12.3	
Column Total	160	780	519	1459
	11.0	53.5	35.6	100.0

Chi-Square	Value	DF	Significance
Pearson	5.03825	2	.08053
Likelihood Ratio	4.70759	2	.09501
Mantel-Haenszel test for linear association	.54451	1	.46057

Minimum Expected Frequency - 19.082
Number of Missing Observations: 10265

WHITE MALES VS. HISPANIC MALES BY SPEED LIMIT (BROAD CATS) ... FOR PED BAC >= .20%

WMXXHM	SPEEDLM3 <=30 mph	35-50mph	55+ mph	Row Total
1 White males	68	462	240	770
	8.8	60.0	31.2	86.5
	81.0	88.8	83.9	
2 Hispanic males	16	58	46	120
	13.3	48.3	38.3	13.5
	19.0	11.2	16.1	
Column Total	84	520	286	890
	9.4	58.4	32.1	100.0

Chi-Square	Value	DF	Significance
Pearson	6.30659	2	.04271
Likelihood Ratio	6.13922	2	.04644
Mantel-Haenszel test for linear association	.20182	1	.65326

Minimum Expected Frequency - 11.326
Number of Missing Observations: 10834

WHITE MALES VS. HISPANIC MALES BY PED PRE-CRASH LOCATION (CATS) ... FOR PED BAC >= .10%

WMXXHM	Count / Row Pct / Col Pct	PEDLOC3: Intsctn-related 1	Non-ints ctn 2	Not on roadway 3	Row Total
1 White males		141 10.4 85.5	1192 87.5 88.4	29 2.1 82.9	1362 88.0
2 Hispanic males		24 12.9 14.5	156 83.9 11.6	6 3.2 17.1	186 12.0
Column Total		165 10.7	1348 87.1	35 2.3	1548 100.0

Chi-Square	Value	DF	Significance
Pearson	2.11938	2	.34656
Likelihood Ratio	1.97915	2	.37174
Mantel-Haenszel test for linear association	.28315	1	.59464

Minimum Expected Frequency - 4.205
Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)
Number of Missing Observations: 10176

WHITE MALES VS. HISPANIC MALES BY PED PRE-CRASH LOCATION (CATS) ... FOR PED BAC >= .20%

WMXXHM	Count / Row Pct / Col Pct	PEDLOC3: Intsctn-related 1	Non-ints ctn 2	Not on roadway 3	Row Total
1 White males		82 10.1 87.2	719 88.8 86.2	9 1.1 75.0	810 86.2
2 Hispanic males		12 9.2 12.8	115 88.5 13.8	3 2.3 25.0	130 13.8
Column Total		94 10.0	834 88.7	12 1.3	940 100.0

Chi-Square	Value	DF	Significance
Pearson	1.34684	2	.50996
Likelihood Ratio	1.14576	2	.56390
Mantel-Haenszel test for linear association	.46451	1	.49553

Minimum Expected Frequency - 1.660
Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)
Number of Missing Observations: 10784

WHITE MALES VS. HISPANIC MALES BY PED1 RELATED FACTOR1 (CATS) ... FOR PED BAC >= .10%

WMXXHM	Count / Row Pct / Col Pct	PDF1CAT3 1 None/na	2 Imprpr crossing	3 Walk etc in rdw	4 Other	Row Total
1 White males		137	558	510	120	1325
		10.3	42.1	38.5	9.1	87.9
		90.7	84.7	91.7	85.1	
2 Hispanic males		14	101	46	21	182
		7.7	55.5	25.3	11.5	12.1
		9.3	15.3	8.3	14.9	
Column Total		151	659	556	141	1507
		10.0	43.7	36.9	9.4	100.0

Chi-Square	Value	DF	Significance
Pearson	16.30041	3	.00098
Likelihood Ratio	16.69841	3	.00082
Mantel-Haenszel test for linear association	.79039	1	.37398

Minimum Expected Frequency - 17.029
Number of Missing Observations: 10217

WHITE MALES VS. HISPANIC MALES BY PED1 RELATED FACTOR1 (CATS) ... FOR PED BAC >= .20%

WMXXHM	Count / Row Pct / Col Pct	PDF1CAT3 1 None/na	2 Imprpr crossing	3 Walk etc in rdw	4 Other	Row Total
1 White males		79	335	292	87	793
		10.0	42.2	36.8	11.0	86.1
		88.8	83.5	89.0	84.5	
2 Hispanic males		10	66	36	16	128
		7.8	51.6	28.1	12.5	13.9
		11.2	16.5	11.0	15.5	
Column Total		89	401	328	103	921
		9.7	43.5	35.6	11.2	100.0

Chi-Square	Value	DF	Significance
Pearson	5.29595	3	.15137
Likelihood Ratio	5.37134	3	.14654
Mantel-Haenszel test for linear association	.20109	1	.65385

Minimum Expected Frequency - 12.369
Number of Missing Observations: 10803

WHITE MALES VS. HISPANIC MALES BY NUMBER OF VEHICLES (1 VS. 2+) ... FOR PED BAC >= .10%

WMXXHM	NUMVEH3 One 1	NUMVEH3 Two or more 2	Row Total
1 White males	1235 90.3 88.4	133 9.7 84.2	1368 88.0
2 Hispanic males	162 86.6 11.6	25 13.4 15.8	187 12.0
Column Total	1397 89.8	158 10.2	1555 100.0

Chi-Square	Value	DF	Significance
Pearson	2.39673	1	.12159
Continuity Correction	2.01388	1	.15587
Likelihood Ratio	2.23027	1	.13533
Mantel-Haenszel test for linear association	2.39519	1	.12171

Minimum Expected Frequency - 19.001
Number of Missing Observations: 10169

WHITE MALES VS. HISPANIC MALES BY NUMBER OF VEHICLES (1 VS. 2+) ... FOR PED BAC >= .20%

WMXXHM	NUMVEH3 One 1	NUMVEH3 Two or more 2	Row Total
1 White males	741 91.1 86.6	72 8.9 81.8	813 86.1
2 Hispanic males	115 87.8 13.4	16 12.2 18.2	131 13.9
Column Total	856 90.7	88 9.3	944 100.0

Chi-Square	Value	DF	Significance
Pearson	1.50470	1	.21995
Continuity Correction	1.13370	1	.28699
Likelihood Ratio	1.40371	1	.23610
Mantel-Haenszel test for linear association	1.50310	1	.22019

Minimum Expected Frequency - 12.212
Number of Missing Observations: 10780

WHITE MALES VS. HISPANIC MALES BY OPER1 ALCOHOL, COP-REPORTED ... FOR PED BAC >= .10%

WMXXHM	O1ALC3 Reported "No" rep Unknown td 1	2	3	Row Total
1 White males	275	810	283	1368
	20.1	59.2	20.7	88.0
	91.4	89.6	80.9	
2 Hispanic males	26	94	67	187
	13.9	50.3	35.8	12.0
	8.6	10.4	19.1	
Column Total	301	904	350	1555
	19.4	58.1	22.5	100.0

Chi-Square	Value	DF	Significance
Pearson	22.28636	2	.00001
Likelihood Ratio	20.48030	2	.00004
Mantel-Haenszel test for linear association	17.92674	1	.00002

Minimum Expected Frequency - 36.197
Number of Missing Observations: 10169

WHITE MALES VS. HISPANIC MALES BY OPER1 ALCOHOL, COP-REPORTED ... FOR PED BAC >= .20%

WMXXHM	O1ALC3 Reported "No" rep Unknown td 1	2	3	Row Total
1 White males	150	499	164	813
	18.5	61.4	20.2	86.1
	88.8	88.5	77.7	
2 Hispanic males	19	65	47	131
	14.5	49.6	35.9	13.9
	11.2	11.5	22.3	
Column Total	169	564	211	944
	17.9	59.7	22.4	100.0

Chi-Square	Value	DF	Significance
Pearson	16.04333	2	.00033
Likelihood Ratio	14.61716	2	.00067
Mantel-Haenszel test for linear association	10.86610	1	.00098

Minimum Expected Frequency - 23.452
Number of Missing Observations: 10780

WHITE MALES VS. HISPANIC MALES BY VEH1 TYPE ... FOR PED BAC >= .10%

WMXXHM	Count / Row Pct / Col Pct	V1TYPE3 1 Auto-lik e	2 Pickup	3 Other pa ssenger	4 Truck	5 Tractor- trailer	6 Motorcyc le	7 Other	Row Total
1 White males		888	178	96	18	33	5	124	1342
		66.2	13.3	7.2	1.3	2.5	.4	9.2	88.2
		89.7	86.4	85.7	100.0	97.1	83.3	79.5	
2 Hispanic males		102	28	16		1	1	32	180
		56.7	15.6	8.9		.6	.6	17.8	11.8
		10.3	13.6	14.3		2.9	16.7	20.5	
Column Total		990	206	112	18	34	6	156	1522
		65.0	13.5	7.4	1.2	2.2	.4	10.2	100.0

Chi-Square	Value	DF	Significance
Pearson	19.87972	6	.00291
Likelihood Ratio	21.22796	6	.00167
Mantel-Haenszel test for linear association	9.44122	1	.00212

Minimum Expected Frequency - .710
Cells with Expected Frequency < 5 - 3 OF 14 (21.4%)
Number of Missing Observations: 10202

WHITE MALES VS. HISPANIC MALES BY VEH1 TYPE ... FOR PED BAC >= .20%

WMXXHM	Count / Row Pct / Col Pct	V1TYPE3 1 Auto-lik e	2 Pickup	3 Other pa ssenger	4 Truck	5 Tractor- trailer	6 Motorcyc le	7 Other	Row Total
1 White males		523	115	61	12	19	2	71	803
		65.1	14.3	7.6	1.5	2.4	.2	8.8	86.4
		87.9	85.2	85.9	100.0	100.0	100.0	74.7	
2 Hispanic males		72	20	10				24	126
		57.1	15.9	7.9				19.0	13.6
		12.1	14.8	14.1				25.3	
Column Total		595	135	71	12	19	2	95	929
		64.0	14.5	7.6	1.3	2.0	.2	10.2	100.0

Chi-Square	Value	DF	Significance
Pearson	17.55317	6	.00745
Likelihood Ratio	20.13517	6	.00262
Mantel-Haenszel test for linear association	7.15815	1	.00746

Minimum Expected Frequency - .271
Cells with Expected Frequency < 5 - 4 OF 14 (28.6%)
Number of Missing Observations: 10795

Crosstabulations: White Adults vs. Native American Adults, by ...[2]

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY BROAD HOUR-OF-DAY CATEGORIES FOR PED BAC >= .10%

WHXXIN	Count / Row Pct / Col Pct	HOURCATS 1 (6am-11:59)	2 (Noon-4:59)	3 (5pm-8:59)	4 (9pm-12:59am)	5 (1am-5:59)	Row Total
1 WhiteInclHisp 15+		66	81	796	1426	961	3330
		2.0	2.4	23.9	42.8	28.9	93.0
		90.4	89.0	91.8	93.8	93.4	
2 NatvAmer,Age 15+		7	10	71	94	68	250
		2.8	4.0	28.4	37.6	27.2	7.0
		9.6	11.0	8.2	6.2	6.6	
Column Total		73	91	867	1520	1029	3580
		2.0	2.5	24.2	42.5	28.7	100.0

Chi-Square	Value	DF	Significance
Pearson	6.66879	4	.15446
Likelihood Ratio	6.24754	4	.18141
Mantel-Haenszel test for linear association	3.95687	1	.04668

Minimum Expected Frequency - 5.098
Number of Missing Observations: 16501

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY BROAD HOUR-OF-DAY CATEGORIES FOR PED BAC >= .20%

WHXXIN	Count / Row Pct / Col Pct	HOURCATS 1 (6am-11:59)	2 (Noon-4:59)	3 (5pm-8:59)	4 (9pm-12:59am)	5 (1am-5:59)	Row Total
1 WhiteInclHisp 15+		32	52	505	859	533	1981
		1.6	2.6	25.5	43.4	26.9	91.3
		86.5	88.1	89.9	92.0	92.2	
2 NatvAmer,Age 15+		5	7	57	75	45	189
		2.6	3.7	30.2	39.7	23.8	8.7
		13.5	11.9	10.1	8.0	7.8	
Column Total		37	59	562	934	578	2170
		1.7	2.7	25.9	43.0	26.6	100.0

Chi-Square	Value	DF	Significance
Pearson	4.42677	4	.35132
Likelihood Ratio	4.18507	4	.38154
Mantel-Haenszel test for linear association	3.75273	1	.05272

Minimum Expected Frequency - 3.223
Cells with Expected Frequency < 5 - 1 OF 10 (10.0%)
Number of Missing Observations: 17911

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2 Data from 1987 - 1989 FARS + MCOD, up to two pedestrians per crash.

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY TIME OF DAY X DAY OF WEEK (CATS) FOR PED BAC >= .10%

	DAYTIME				
Count / Row Pct / Col Pct	Weekday daytime 1	Weekend daytime 2	Weekday night 3	Weekend night 4	Row Total
WHXXIN					
1 WhiteIncHisp 15+	109 3.3 90.1	38 1.1 88.4	1545 46.4 92.5	1638 49.2 93.8	3330 93.0
2 NatvAmer,Age 15+	12 4.8 9.9	5 2.0 11.6	125 50.0 7.5	108 43.2 6.2	250 7.0
Column Total	121 3.4	43 1.2	1670 46.6	1746 48.8	3580 100.0

Chi-Square	Value	DF	Significance
Pearson	5.38947	3	.14540
Likelihood Ratio	5.04477	3	.16855
Mantel-Haenszel test for linear association	4.86623	1	.02739

Minimum Expected Frequency - 3.003
Cells with Expected Frequency < 5 - 1 OF 8 (12.5%)
Number of Missing Observations: 16501

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY TIME OF DAY X DAY OF WEEK (CATS) FOR PED BAC >= .20%

	DAYTIME				
Count / Row Pct / Col Pct	Weekday daytime 1	Weekend daytime 2	Weekday night 3	Weekend night 4	Row Total
WHXXIN					
1 WhiteIncHisp 15+	66 3.3 89.2	18 .9 81.8	930 46.9 90.6	967 48.8 92.4	1981 91.3
2 NatvAmer,Age 15+	8 4.2 10.8	4 2.1 18.2	97 51.3 9.4	80 42.3 7.6	189 8.7
Column Total	74 3.4	22 1.0	1027 47.3	1047 48.2	2170 100.0

Chi-Square	Value	DF	Significance
Pearson	5.09598	3	.16490
Likelihood Ratio	4.57330	3	.20584
Mantel-Haenszel test for linear association	3.33920	1	.06765

Minimum Expected Frequency - 1.916
Cells with Expected Frequency < 5 - 1 OF 8 (12.5%)
Number of Missing Observations: 17911

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY LIGHT CONDITIONS FOR PED BAC >= .10%

WHXXIN	LIGHT3 Daylight 1	Dark/unlighted 2	Dark/lighted 3	Dawn/dusk 4	Row Total
1 WhiteIncHisp 15+	163	1815	1309	56	3343
Row Pct	4.9	54.3	39.2	1.7	93.0
Col Pct	91.6	91.5	95.4	91.8	
2 NatvAmer,Age 15+	15	168	63	5	251
Row Pct	6.0	66.9	25.1	2.0	7.0
Col Pct	8.4	8.5	4.6	8.2	
Column Total	178	1983	1372	61	3594
	5.0	55.2	38.2	1.7	100.0

Chi-Square	Value	DF	Significance
Pearson	19.55360	3	.00021
Likelihood Ratio	20.66696	3	.00012
Mantel-Haenszel test for linear association	13.48480	1	.00024

Minimum Expected Frequency - 4.260
Cells with Expected Frequency < 5 - 1 OF 8 (12.5%)
Number of Missing Observations: 16487

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY LIGHT CONDITIONS FOR PED BAC >= .20%

WHXXIN	LIGHT3 Daylight 1	Dark/unlighted 2	Dark/lighted 3	Dawn/dusk 4	Row Total
1 WhiteIncHisp 15+	94	1046	819	30	1989
Row Pct	4.7	52.6	41.2	1.5	91.3
Col Pct	89.5	89.1	94.7	85.7	
2 NatvAmer,Age 15+	11	128	46	5	190
Row Pct	5.8	67.4	24.2	2.6	8.7
Col Pct	10.5	10.9	5.3	14.3	
Column Total	105	1174	865	35	2179
	4.8	53.9	39.7	1.6	100.0

Chi-Square	Value	DF	Significance
Pearson	21.37610	3	.00009
Likelihood Ratio	22.54423	3	.00005
Mantel-Haenszel test for linear association	11.85289	1	.00058

Minimum Expected Frequency - 3.052
Cells with Expected Frequency < 5 - 1 OF 8 (12.5%)
Number of Missing Observations: 17902

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY WEATHER CONDITIONS FOR PED BAC >= .10%

WHXXIN	WEATHER3			
Count / Row Pct / Col Pct	No adverse 1	Rain 2	Other adverse 3	Row Total
1 WhiteIncHisp 15+	2964 88.7 93.0	273 8.2 93.5	104 3.1 93.7	3341 93.0
2 NatvAmer,Age 15+	224 89.6 7.0	19 7.6 6.5	7 2.8 6.3	250 7.0
Column Total	3188 88.8	292 8.1	111 3.1	3591 100.0

Chi-Square	Value	DF	Significance
Pearson	.18745	2	.91053
Likelihood Ratio	.19203	2	.90845
Mantel-Haenszel test for linear association	.18058	1	.67088

Minimum Expected Frequency - 7.728
Number of Missing Observations: 16490

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY WEATHER CONDITIONS FOR PED BAC >= .20%

WHXXIN	WEATHER3			
Count / Row Pct / Col Pct	No adverse 1	Rain 2	Other adverse 3	Row Total
1 WhiteIncHisp 15+	1758 88.6 91.3	170 8.6 91.9	57 2.9 89.1	1985 91.3
2 NatvAmer,Age 15+	167 88.4 8.7	15 7.9 8.1	7 3.7 10.9	189 8.7
Column Total	1925 88.5	185 8.5	64 2.9	2174 100.0

Chi-Square	Value	DF	Significance
Pearson	.48666	2	.78401
Likelihood Ratio	.46043	2	.79436
Mantel-Haenszel test for linear association	.10177	1	.74971

Minimum Expected Frequency - 5.564
Number of Missing Observations: 17907

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY RDWY SURFACE "WEATHER" CONDITION FOR PED BAC >= .10%

WHXXIN	Count / Row Pct / Col Pct	SURFCON3 Dry 1	Wet 2	Other adverse 3	Row Total
1 WhiteIncHisp 15+		2854 85.3 93.2	444 13.3 93.1	46 1.4 85.2	3344 93.0
2 NatvAmer,Age 15+		209 83.6 6.8	33 13.2 6.9	8 3.2 14.8	250 7.0
Column Total		3063 85.2	477 13.3	54 1.5	3594 100.0

Chi-Square	Value	DF	Significance
Pearson	5.23726	2	.07290
Likelihood Ratio	4.06298	2	.13114
Mantel-Haenszel test for linear association	1.78318	1	.18176

Minimum Expected Frequency - 3.756
Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)
Number of Missing Observations: 16487

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY RDWY SURFACE "WEATHER" CONDITION FOR PED BAC >= .20%

WHXXIN	Count / Row Pct / Col Pct	SURFCON3 Dry 1	Wet 2	Other adverse 3	Row Total
1 WhiteIncHisp 15+		1683 84.6 91.5	280 14.1 91.8	26 1.3 78.8	1989 91.3
2 NatvAmer,Age 15+		157 83.1 8.5	25 13.2 8.2	7 3.7 21.2	189 8.7
Column Total		1840 84.5	305 14.0	33 1.5	2178 100.0

Chi-Square	Value	DF	Significance
Pearson	6.68039	2	.03543
Likelihood Ratio	4.97591	2	.08308
Mantel-Haenszel test for linear association	1.56290	1	.21124

Minimum Expected Frequency - 2.864
Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)
Number of Missing Observations: 17903

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY ROADWAY FUNCTNL CLASS II FOR PED BAC >= .10%

WHXXIN	Count / Row Pct / Col Pct	RDFCTN3: All xprs swys 1	Princpl arterial 2	Minor arterial 3	Urban collector 4	Rural collector 5	Local street/road 6	Row Total
1 WhiteIncHisp 15+		679	1170	703	103	344	331	3330
		20.4	35.1	21.1	3.1	10.3	9.9	93.0
		93.7	95.3	92.6	93.6	90.8	87.1	
2 NatvAmer,Age 15+		46	58	56	7	35	49	251
		18.3	23.1	22.3	2.8	13.9	19.5	7.0
		6.3	4.7	7.4	6.4	9.2	12.9	
Column Total		725	1228	759	110	379	380	3581
		20.2	34.3	21.2	3.1	10.6	10.6	100.0

Chi-Square	Value	DF	Significance
Pearson	33.64142	5	.00000
Likelihood Ratio	30.86643	5	.00001
Mantel-Haenszel test for linear association	24.80173	1	.00000

Minimum Expected Frequency - 7.710
Number of Missing Observations: 16500

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY ROADWAY FUNCTNL CLASS II FOR PED BAC >= .20%

WHXXIN	Count / Row Pct / Col Pct	RDFCTN3: All xprs swys 1	Princpl arterial 2	Minor arterial 3	Urban collector 4	Rural collector 5	Local street/road 6	Row Total
1 WhiteIncHisp 15+		400	729	434	56	181	186	1986
		20.1	36.7	21.9	2.8	9.1	9.4	91.3
		92.8	94.4	90.6	90.3	87.0	83.0	
2 NatvAmer,Age 15+		31	43	45	6	27	38	190
		16.3	22.6	23.7	3.2	14.2	20.0	8.7
		7.2	5.6	9.4	9.7	13.0	17.0	
Column Total		431	772	479	62	208	224	2176
		19.8	35.5	22.0	2.8	9.6	10.3	100.0

Chi-Square	Value	DF	Significance
Pearson	35.06173	5	.00000
Likelihood Ratio	32.13432	5	.00001
Mantel-Haenszel test for linear association	29.30429	1	.00000

Minimum Expected Frequency - 5.414
Number of Missing Observations: 17905

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY SPEED LIMIT (BROAD CATS) FOR PED BAC >= .10%

WHXXIN	Count / Row Pct / Col Pct	SPEEDLM3 <=30 mph (1)	35-50mph (2)	55+ mph (3)	Row Total
1 WhiteIncHisp 15+		475	1522	1280	3277
		14.5	46.4	39.1	93.1
		94.6	94.7	90.8	
2 NatvAmer,Age 15+		27	85	129	241
		11.2	35.3	53.5	6.9
		5.4	5.3	9.2	
Column Total		502	1607	1409	3518
		14.3	45.7	40.1	100.0

Chi-Square	Value	DF	Significance
Pearson	19.57292	2	.00006
Likelihood Ratio	19.14298	2	.00007
Mantel-Haenszel test for linear association	14.84595	1	.00012

Minimum Expected Frequency - 34.389
Number of Missing Observations: 16563

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY SPEED LIMIT (BROAD CATS) FOR PED BAC >= .20%

WHXXIN	Count / Row Pct / Col Pct	SPEEDLM3 <=30 mph (1)	35-50mph (2)	55+ mph (3)	Row Total
1 WhiteIncHisp 15+		280	942	728	1950
		14.4	48.3	37.3	91.4
		92.1	93.9	88.1	
2 NatvAmer,Age 15+		24	61	98	183
		13.1	33.3	53.6	8.6
		7.9	6.1	11.9	
Column Total		304	1003	826	2133
		14.3	47.0	38.7	100.0

Chi-Square	Value	DF	Significance
Pearson	19.52349	2	.00006
Likelihood Ratio	19.24834	2	.00007
Mantel-Haenszel test for linear association	10.85256	1	.00099

Minimum Expected Frequency - 26.082
Number of Missing Observations: 17948

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY PED PRE-CRASH LOCATION (CATS) FOR PED BAC >= .10%

WHXXIN	Count / Row Pct / Col Pct	PEDLOC3 Intsctn-related 1	Non-ints ctn 2	Not on r oadway 3	Row Total
1 WhiteIncHisp 15+		364 10.9 92.9	2881 86.2 93.0	96 2.9 94.1	3341 93.0
2 NatvAmer,Age 15+		28 11.2 7.1	217 86.5 7.0	6 2.4 5.9	251 7.0
Column Total		392 10.9	3098 86.2	102 2.8	3592 100.0

Chi-Square	Value	DF	Significance
Pearson	.20761	2	.90140
Likelihood Ratio	.21754	2	.89694
Mantel-Haenszel test for linear association	.09845	1	.75370

Minimum Expected Frequency - 7.128
Number of Missing Observations: 16489

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY PED PRE-CRASH LOCATION (CATS) FOR PED BAC >= .20%

WHXXIN	Count / Row Pct / Col Pct	PEDLOC3 Intsctn-related 1	Non-ints ctn 2	Not on r oadway 3	Row Total
1 WhiteIncHisp 15+		207 10.4 90.4	1744 87.7 91.4	37 1.9 92.5	1988 91.3
2 NatvAmer,Age 15+		22 11.6 9.6	165 86.8 8.6	3 1.6 7.5	190 8.7
Column Total		229 10.5	1909 87.6	40 1.8	2178 100.0

Chi-Square	Value	DF	Significance
Pearson	.31511	2	.85423
Likelihood Ratio	.31220	2	.85548
Mantel-Haenszel test for linear association	.31368	1	.57543

Minimum Expected Frequency - 3.489
Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)
Number of Missing Observations: 17903

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY PED1 RELATED FACTOR1 (CATS) FOR PED BAC >= .10%

WHXXIN	Count / Row Pct / Col Pct	PDF1CAT3: None/na 1	Imprpr c rossing 2	Walk etc . in rdw 3	Other 4	Row Total
1 WhiteIncHisp 15+		381	1448	1110	349	3288
		11.6	44.0	33.8	10.6	93.0
		95.0	94.3	90.5	93.6	
2 NatvAmer,Age 15+		20	88	116	24	248
		8.1	35.5	46.8	9.7	7.0
		5.0	5.7	9.5	6.4	
Column Total		401	1536	1226	373	3536
		11.3	43.4	34.7	10.5	100.0

Chi-Square	Value	DF	Significance
Pearson	17.86771	3	.00047
Likelihood Ratio	17.34402	3	.00060
Mantel-Haenszel test for linear association	7.24073	1	.00713

Minimum Expected Frequency - 26.161
Number of Missing Observations: 16545

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY PED1 RELATED FACTOR1 (CATS) FOR PED BAC >= .20%

WHXXIN	Count / Row Pct / Col Pct	PDF1CAT3: None/na 1	Imprpr c rossing 2	Walk etc . in rdw 3	Other 4	Row Total
1 WhiteIncHisp 15+		203	887	650	213	1953
		10.4	45.4	33.3	10.9	91.3
		94.0	93.0	87.8	92.6	
2 NatvAmer,Age 15+		13	67	90	17	187
		7.0	35.8	48.1	9.1	8.7
		6.0	7.0	12.2	7.4	
Column Total		216	954	740	230	2140
		10.1	44.6	34.6	10.7	100.0

Chi-Square	Value	DF	Significance
Pearson	16.92434	3	.00073
Likelihood Ratio	16.32894	3	.00097
Mantel-Haenszel test for linear association	5.50946	1	.01891

Minimum Expected Frequency - 18.875
Number of Missing Observations: 17941

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY NUMBER OF VEHICLES (1 VS. 2+) FOR PED BAC >= .10%

		NUMVEH3	
	Count / Row Pct / Col Pct	One 1	Two or more 2	Row Total
WHXXIN				
1 WhiteIncHisp 15+		3035 90.5 92.8	319 9.5 95.5	3354 93.0
2 NatvAmer,Age 15+		236 94.0 7.2	15 6.0 4.5	251 7.0
Column Total		3271 90.7	334 9.3	3605 100.0

Chi-Square	Value	DF	Significance
Pearson	3.47119	1	.06245
Continuity Correction	3.06342	1	.08007
Likelihood Ratio	3.89155	1	.04853
Mantel-Haenszel test for linear association	3.47023	1	.06248

Minimum Expected Frequency - 23.255
Number of Missing Observations: 16476

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY NUMBER OF VEHICLES (1 VS. 2+) FOR PED BAC >= .20%

		NUMVEH3	
	Count / Row Pct / Col Pct	One 1	Two or more 2	Row Total
WHXXIN				
1 WhiteIncHisp 15+		1803 90.3 90.8	194 9.7 96.0	1997 91.3
2 NatvAmer,Age 15+		182 95.8 9.2	8 4.2 4.0	190 8.7
Column Total		1985 90.8	202 9.2	2187 100.0

Chi-Square	Value	DF	Significance
Pearson	6.26950	1	.01228
Continuity Correction	5.63013	1	.01765
Likelihood Ratio	7.58484	1	.00589
Mantel-Haenszel test for linear association	6.26663	1	.01230

Minimum Expected Frequency - 17.549
Number of Missing Observations: 17894

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY OPER1 ALCOHOL, COP-REPORTED FOR PED BAC >= .10%

WHXXIN	Count / Row Pct / Col Pct	O1ALC3 Reported "No" rep Unknown td 1	2	3	Row Total
1 WhiteIncHisp 15+		597	1698	1059	3354
		17.8	50.6	31.6	93.0
		94.3	91.7	94.6	
2 NatvAmer,Age 15+		36	154	61	251
		14.3	61.4	24.3	7.0
		5.7	8.3	5.4	
Column Total		633	1852	1120	3605
		17.6	51.4	31.1	100.0

Chi-Square	Value	DF	Significance
Pearson	10.79575	2	.00453
Likelihood Ratio	10.90910	2	.00428
Mantel-Haenszel test for linear association	.72579	1	.39425

Minimum Expected Frequency - 44.073
Number of Missing Observations: 16476

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY OPER1 ALCOHOL, COP-REPORTED FOR PED BAC >= .20%

WHXXIN	Count / Row Pct / Col Pct	O1ALC3 Reported "No" rep Unknown td 1	2	3	Row Total
1 WhiteIncHisp 15+		317	1023	657	1997
		15.9	51.2	32.9	91.3
		91.9	89.6	93.9	
2 NatvAmer,Age 15+		28	119	43	190
		14.7	62.6	22.6	8.7
		8.1	10.4	6.1	
Column Total		345	1142	700	2187
		15.8	52.2	32.0	100.0

Chi-Square	Value	DF	Significance
Pearson	10.17829	2	.00616
Likelihood Ratio	10.54059	2	.00514
Mantel-Haenszel test for linear association	3.20235	1	.07353

Minimum Expected Frequency - 29.973
Number of Missing Observations: 17894

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY VEH1 TYPE FOR PED BAC >= .10%

WHXXIN	Count / Row Pct / Col Pct	V1TYPE3 1 Auto-like	2 Pickup	3 Other passenger	4 Truck	5 Tractor-trailer	6 Motorcycle	7 Other	Row Total
1 WhiteIncHisp 15+		2050	516	230	65	98	21	364	3344
		61.3	15.4	6.9	1.9	2.9	.6	10.9	93.0
		94.9	91.2	88.5	97.0	81.7	95.5	91.0	
2 NatvAmer,Age 15+		110	50	30	2	22	1	36	251
		43.8	19.9	12.0	.8	8.8	.4	14.3	7.0
		5.1	8.8	11.5	3.0	18.3	4.5	9.0	
Column Total		2160	566	260	67	120	22	400	3595
		60.1	15.7	7.2	1.9	3.3	.6	11.1	100.0

Chi-Square	Value	DF	Significance
Pearson	51.33960	6	.00000
Likelihood Ratio	44.41373	6	.00000
Mantel-Haenszel test for linear association	17.57436	1	.00003

Minimum Expected Frequency - 1.536
Cells with Expected Frequency < 5 - 2 OF 14 (14.3%)
Number of Missing Observations: 16486

WHITE ADULTS VS. NATIVE AMERICAN ADULTS BY VEH1 TYPE FOR PED BAC >= .20%

WHXXIN	Count / Row Pct / Col Pct	V1TYPE3 1 Auto-like	2 Pickup	3 Other passenger	4 Truck	5 Tractor-trailer	6 Motorcycle	7 Other	Row Total
1 WhiteIncHisp 15+		1192	301	149	49	51	12	239	1993
		59.8	15.1	7.5	2.5	2.6	.6	12.0	91.3
		93.2	89.1	86.1	96.1	78.5	92.3	90.5	
2 NatvAmer,Age 15+		87	37	24	2	14	1	25	190
		45.8	19.5	12.6	1.1	7.4	.5	13.2	8.7
		6.8	10.9	13.9	3.9	21.5	7.7	9.5	
Column Total		1279	338	173	51	65	13	264	2183
		58.6	15.5	7.9	2.3	3.0	.6	12.1	100.0

Chi-Square	Value	DF	Significance
Pearson	28.93206	6	.00006
Likelihood Ratio	25.19168	6	.00031
Mantel-Haenszel test for linear association	5.60705	1	.01789

Minimum Expected Frequency - 1.131
Cells with Expected Frequency < 5 - 2 OF 14 (14.3%)
Number of Missing Observations: 17898