

# Development, Implementation and Evaluation of a Countermeasure Program for Alcohol-Involved Pedestrian Crashes



## Holiday Traffic Safety Tips

Drunk Drivers Aren't The Only Ones Who Get **Smashed**



**Drunk Walkers Do Too!**



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16. Abstract <p>The objectives of this study were to analyze the pedestrian alcohol problem in a community and to develop and apply procedures to counter the problem. The City of Baltimore was selected as the test city. It was estimated that approximately 40% of the pedestrian crashes in the city involved alcohol. An interdepartmental task force developed and implemented a comprehensive countermeasure program. When possible, countermeasures were implemented in one of two "zones" in the center of the city selected to include 73% of the pedestrian alcohol crashes in 21% of the land area. Since "had been drinking" was not routinely checked on police crash reports in the city, a surrogate measure was developed to estimate the occurrence of a pedestrian alcohol crash. This surrogate group included males between the ages of 30 and 59 who had pedestrian crashes from 7:00 pm to 3:59 am on Thursday, Friday, Saturday and Sunday nights (ending at 3:59 am Monday morning). Substantial reductions for the surrogate group in total crashes, zone crashes and crashes on roads on which special signs were erected lead to the conclusion that the study made positive inroads into reducing the pedestrian alcohol problem in Baltimore. In addition, a statistically significant time series analysis of crashes on treated roads involving age 14+ males leads to the conclusion that this was an effective pedestrian crash countermeasure. Also, the process for forming and using a community task force developed as part of this study formed the basis for the development of a guide for communities considering mounting pedestrian alcohol programs.</p>					
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## TECHNICAL SUMMARY

Research sponsored by the National Highway Traffic Safety Administration (NHTSA) has shown that alcohol impairment is the single largest contributor to the adult pedestrian crash problem. Data from NHTSA's Fatality Analysis Reporting System (FARS) in 1997 showed that 34.6% of the fatally injured pedestrians had measurable alcohol in their systems at the time of the crash. For the same year, for those 16 and older, 32.7% were intoxicated, that is, had a blood alcohol concentration (BAC) of 0.10 grams per deciliter (g/dl) or greater.

In 1975, NHTSA initiated research on the problem through its landmark New Orleans study.<sup>1</sup> That study clearly indicated that alcohol was a major problem in pedestrian crashes. Positive BACs were obtained in 44% of the crashes involving pedestrians 14 years of age and older. The victim was typically a middle-aged male with a very high BAC level who was struck late at night on a weekend. In addition, it was learned that, when impaired by alcohol, the pedestrian typically made the critical errors that resulted in a crash.

In the interim, major efforts have been made to reduce drinking and driving, but little concern has been expressed for the drunk pedestrian who is involved in a crash. The victim is not one who typically gets sympathy from the public. However, since alcohol is the largest pedestrian problem, NHTSA recognized that further research was needed to counter the problem. Therefore, it funded the current study whose objective was to devise, develop and test a set of countermeasures designed to reduce alcohol-related pedestrian crashes. The study involved the following major tasks:

- Selection of a test city with a sufficiently large number of pedestrian crashes to support a crash-based test of the countermeasure program.
- Development of storyboards that describe typical pre-crash events of crash-victim drinkers and non-crash events of non-victim drinkers.
- Development of a data base of the test city pedestrian police crash reports.
- Identification of variables associated with alcohol crashes in the test city as well as areas (zones) of the city in which these crashes are prevalent.
- Development, implementation and evaluation of measures to counter the pedestrian alcohol problem.

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<sup>1</sup> Blomberg, R.D., Preusser, D. F., Hale, A. and Ulmer, R.G. *A comparison of alcohol involvement in pedestrians and pedestrian casualties*. U. S. Department of Transportation, National Highway Traffic Safety Administration, Washington, DC, Contract No. DOT-HS-4-00946, Final Report, October 1979.

- Preparation of a manual to serve as a guide for other communities in designing and implementing pedestrian alcohol countermeasure programs.

Baltimore (MD) was selected to be the test city. It was sufficiently large to support a crash-based evaluation. Local city representatives, including a Community Traffic Safety Program (CTSP), expressed interest in the study, and three years of police crash reports were made available for initial analysis of the problem. In addition, a physician associated with a Baltimore Shock Trauma Unit agreed to obtain the data needed to create storyboards for the crash victims.

In-depth discussions were held with 20 individuals who had been involved in crashes after drinking and with 10 individuals who walked extensively after drinking but were not involved in crashes. The crash victims were chosen from individuals treated at a Baltimore Shock Trauma Unit where blood alcohol concentrations (BACs) were routinely measured on all victims. All had high BACs (0.130 g/dl or more) at the time of their post-crash admission to the Shock Trauma Unit. The non-crash individuals were undergoing treatment for drugs and/or alcohol at various centers in Stamford (CT). The results of these interviews were translated into storyboards which showed each crash victim's and non-victim's day. These storyboards provided insights into the pedestrian's walking and drinking activities; in addition, they identified the individuals and organizations with whom the pedestrians interacted and who might have intervened to prevent a crash. These interviews and analyses of Shock Trauma Unit BAC data showed the following:

- Alcohol use on the part of the pedestrian was involved in approximately 40% of the 14+ pedestrian crashes in Baltimore.
- The drinking pedestrian who gets involved in a crash has a very high BAC--usually more than twice the legal limit for driving.
- Most crashes occur near the victim's home and when the victim is making a relatively short trip (for example, to go to a nearby store for food or cigarettes).
- High BAC victims and non-victims come in contact with people who could intervene and possibly prevent a pedestrian crash. In addition to relatives and friends, these include liquor sellers and servers, social service representatives, the police and others.
- Both victims and non-victims feel crashes could be avoided if pedestrians drank in moderation and paid better attention to safe pedestrian behavior.
- Victims and non-victims also feel that driver behavior could be improved (particularly driver speeds and knowledge of the cues of an impaired pedestrian) and that engineering improvements (e.g., improved lighting, installation of traffic and pedestrian signals) could make the city's streets safer.

Three years of Baltimore police crash reports provided initial data for describing the problem in Baltimore. These data showed that crash victims marked as "had been drinking" (HBD) by the

investigating officer were usually males in the age range 30 to 59. Crashes typically occurred from 6:00 pm to 3:00 am on weekends. The victim was often wearing dark clothing and was not crossing at an intersection or in a crosswalk.

The data base included a complete coding of the location of each crash. The location data for the HBD crashes were brought into a computerized mapping system and analyzed to determine where the HBD crashes occurred. The resultant map showed a heavy concentration of HBD crashes in the center of the city. Six circular "zones" with a radius of one mile were identified as heavy HBD zones. Since five of these zones were contiguous and there were large empty spaces in some of the zones, these five zones were combined into a polygon shape. The resultant one circular zone and the polygon included 73% of the total HBD crashes in 21% of Baltimore's land area. This suggested that certain localized countermeasures could be efficiently mounted by limiting their application to a relatively small area of the city. There was also evidence that numerous HBD crashes occurred on selected city corridors which could serve as the location for implementation of selected countermeasures. All of these corridors were located in the identified zones.

The countermeasure development process was initiated with a two-day workshop attended by experts in the pedestrian safety field. The storyboards and detailed analyses of the Baltimore pedestrian alcohol problem were reviewed, and a set of 52 countermeasures considered implementable was initially identified. Further study and analysis resulted in the refinement of 31 of the countermeasures and a recommendation that these countermeasures be submitted to Baltimore representatives for consideration.

In order to attack the problem from a variety of perspectives, the City of Baltimore established an interdepartmental task force. The Department of Public Works (DPW) agreed to be the lead organization. The resultant task force consisted of representatives from the following groups:

- DPW--Information Services
- DPW--Traffic Engineering
- DPW--Pedestrian Safety and CTSP Coordination
- Police Department
- Fire Department
- Health Department
- Board of Liquor License Commissioners

The task force met monthly for a period of 1-1/2 years. All program plans and procedures were developed and agreed to by the entire group.

The task force selected *Walk Smart Baltimore* as the program slogan and a footprint as its logo. The Mayor kicked off the program at one of his weekly press conferences. A press kit on the program was distributed to television and radio stations, the local newspaper and each police district. A video was produced and police officers were trained on appropriate responses to the pedestrian alcohol problem. Television and radio public service announcements were developed. Posters, brochures and flyers were developed and distributed by police, fire and liquor board representatives--

primarily to local organizations in the study zones. They were also displayed and distributed at fire prevention expos, city health fairs, safe and sober rides programs, and a major city hospital and its clinics. In addition, eleven fire stations in and near the zones were designated as central points for display and distribution of program materials. The liquor board included selected materials in their routine mailings to licensees. Information on the pedestrian alcohol problem was provided to state training organizations for inclusion in alcohol-related training programs. Retroreflective caps were designed and distributed to individuals who walked on the city's streets in the high crash zones at night. A set of 35 mm slides and overhead transparencies was produced that described the pedestrian alcohol problem and what various city groups could do to help solve the problem. Roadway signs warning of high pedestrian traffic were designed and mounted on roads where there were high HBD crashes. Banners displaying the program slogan were mounted on the same roads on a rotating basis. In addition, a review was made of high HBD roads in the zones and, where needed, lighting deficiencies were corrected, roadway items that might prevent drivers and pedestrians from seeing each other were removed, and crosswalks were refreshed.

For evaluating the program, 5-1/2 years of baseline data were collected in Baltimore as well as two years of data after *Walk Smart Baltimore* was initiated. Over the *entire* study (from the start of the baseline to the end of the program periods), both the city's population and its total pedestrian crashes declined--the city's population declined by 8.2% and annual pedestrian crashes declined by 11.1%. When *average* annual baseline and program data were examined, a reduction of 6.1% was found for *both* population and crash data. These data are not meant to imply that the study necessarily found a one-to-one relationship between population changes and crash changes. There was a good deal of variation in pedestrian crashes (both increases and decreases) from year to year in the baseline period while the population data steadily declined. In fact, the two years with the largest population reductions showed increases in pedestrian crashes. In addition, there were large differences in the crash data of various pedestrian subgroups over the study period. The crash experiences of several of these subgroups were examined further.

A breakdown of crash data by age revealed that the reduction in crashes was achieved largely by children under the age of 14--their average annual crashes between baseline and program periods declined 18.0% in contrast to a decline of 1.7% for individuals age 14 and over. In fact, the crash data for age 14+ individuals (a group of interest to the current study) were very stable over both the baseline and program time periods. However, when examined by gender, the data showed an *increase* of 9.8% for age 14+ females and a *decrease* of 7.1% for age 14+ males between the annual averages for the baseline and program period crashes. Therefore, there were substantial crash reductions in a subgroup (namely, 14+ males) whose crashes typically involve a high incidence of alcohol. It is apparent from these data that overall population changes cannot be used to predict crash changes in population subgroups.

It had been originally planned that an indication of HBD on the police crash report would serve as evidence of an alcohol-involved pedestrian. However, an analysis of the HBD crashes revealed that 22.6% were marked as HBD during the first year of the baseline period in contrast to 11.8% in the last year of the baseline period. This reduction took place *prior* to the start of the countermeasure program. It was, however, during the time that the Baltimore Police Department disbanded its dedicated traffic units. Therefore, it is likely that it was simply a reporting artifact.

In any case, the unexplained instability in the HBD indication made it unusable as a basis for program evaluation. In lieu of using the HBD indication, it was decided to identify a surrogate measure for alcohol involvement.

In defining a surrogate measure, a review was made of the entire 5-1/2 year baseline data to identify those variables associated highly with HBD and to compare these data with those obtained in the New Orleans study to ensure their consistency. The aim of the search was to maximize the likelihood that the pedestrian had been drinking as well as to obtain a reasonably-sized sample for the surrogate group. The analysis resulted in a surrogate measure defined as follows:

- The victim was male
- The victim was between the ages of 30 and 59
- The crash occurred from 7:00 pm to 3:59 am on Thursday, Friday, Saturday and Sunday nights (ending at 3:59 am on Monday morning)

The resulting surrogate measure sample consisted of 331 baseline and 101 program period cases.

An analysis of census estimates for Baltimore males aged 30 to 59 showed that the population of this subgroup remained very stable over the study time period. It decreased by 3.3% (in contrast to a decrease of 8.2% for the entire population). The average population decrease between baseline and program years was 2.8% (in contrast to a decrease of 6.1% for the entire population). It was concluded that, for this subgroup, population changes would have a minimal effect on pedestrian crashes. This conclusion was borne out by the crash data that showed essentially no change (an increase of 0.2%) in crashes for males of this age group over the study period.

Comparisons were made between the surrogate measure (age 30 to 59 males who had late-night crashes on weekends as described above) and the following:

- "Other age 14+ males," that is, all age 14+ males excluding the surrogate measure males.
- "Other age 30 to 59 males," that is, all males between the ages of 30 and 59 whose crashes occurred at any time other than when the surrogate measure crashes occurred (the crashes to this group occurred at all hours mid week and during the daytime on weekends).
- The total sample of crash cases.

The percentage changes from average annual baseline data to average annual program data for the four analysis groups follow:



	<u>Surrogate</u>	<u>Other Age 14+ Males</u>	<u>Other Age 30-59 Males</u>	<u>Total</u>
Total crashes	-16.1%	-6.0%	+10.0%	-6.1%
In-zone crashes	-22.3	-11.5	+0.1	-10.3
Out-of-zone crashes	+1.3	+8.0	+38.9	+3.8
Crashes on treated roads	-37.5	-17.3	+6.2	-10.8
Crashes on untreated roads	-9.7	-3.9	+10.9	-5.4
Serious (incapacitating or fatal) crashes	-43.9	-23.4	-25.4	-25.3

The data show that the surrogate measure had a 16.1% *decrease* in average annual crashes between the baseline and program time periods while crashes to other males in the same age group (age 30 to 59) *increased* 10.0% ( $\chi^2 = 4.55$  with 1 d.f.,  $p < .05$ ). It is probably not surprising that the "other age 30 to 59 male" group also differed statistically from "other age 14+ males" ( $\chi^2 = 5.10$  with 1 d.f.,  $p < .05$ ) and from the total sample ( $\chi^2 = 6.60$  with 1 d.f.,  $p < .05$ ) since its total crashes increased from baseline to program period while those for all other groups decreased.

The surrogate measure crashes decreased (by 22.3%) in the zones where the majority of countermeasures were focused while they remained essentially the same (an increase of 1.3%) outside the zones. Crashes to "other age 30 to 59 males" increased in the zones by 0.1% and outside the zones by 38.9%. The surrogate measure crashes decreased on the treated roads by 37.5% in contrast to a decrease of 9.7% on the untreated roads. Crashes to "other age 30 to 59 males" increased on both treated and untreated roads (6.2% and 10.9%, respectively).

The data were also analyzed using Box-Jenkins time series approaches. The analysis plan focused on the surrogate measure. An intervention series of 66 baseline months and 24 program months was used to determine if there was a significant transfer function. Initially, city-wide series were examined. These did not show a significant crash decline. Likewise, the series for the surrogate measure within the zones did not show a significant intervention effect.

The next step was to analyze the series for the several roadways that were singled out for maximum treatment because of their high crash history. Since there were insufficient cases in the surrogate measure group to support a time series analysis for these roads, all crashes involving males aged 14 and over were used. This time series analysis revealed a statistically significant reduction in crashes in excess of 16% on the treated roads after the implementation of the countermeasures.

In summary, the surrogate measure had large reductions in annual crashes between the baseline and the program periods for all crashes where reductions could be expected, namely, total crashes, in-zone crashes, crashes on treated roads, and serious (incapacitating and fatal) crashes. It also had the smallest increase in out-of-zone crashes where no change in crash data might have been expected for this group. The large percentage reductions for this group and the consistency in reductions where they might be expected as a result of the countermeasure program (e.g., in zones and on treated roads) lead to the conclusion that the study made positive inroads into the pedestrian

alcohol problem in Baltimore. The statistically significant time series data for treated roads for all age 14+ males point to the effectiveness of this countermeasure in reducing pedestrian crashes. Additional research is needed to determine whether a more intensive campaign, either in terms of breadth of countermeasures or the duration of their application, would be associated with more pervasive crash reductions.

A guide, based on key elements of the program, was prepared for use by jurisdictions that want to mount a program targeting alcohol impaired pedestrians. Based on the *Walk Smart Baltimore* program, the guide describes the following five steps:

- ***Assessing the local problem***--determining the magnitude of the problem, describing victim characteristics, identifying contributing factors and specifying when and where the crashes occur in the community.
- ***Establishing a community coalition***--obtaining the widespread public and private community support that is necessary for an effective program.
- ***Designing the program***--selecting or developing a variety of problem-specific and culturally-appropriate remedial actions to combat the problem.
- ***Implementing the program***--creating and carrying out a plan for implementing the selected approaches.
- ***Evaluating program results***--collecting and analyzing data to determine if the program achieved its objectives.

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- Mary Ellen Piekarski, Board of Liquor License Commissioners

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Although a study of this type would not have been possible without the support of those named above and many others who provided guidance, assistance and resources, the findings and conclusions contained herein are solely those of the authors.

# TABLE OF CONTENTS

I. INTRODUCTION .....	1
II. SITE SELECTION .....	4
III. THE PEDESTRIAN ALCOHOL PROBLEM .....	6
A. Discussions With Crash Victims and Non-Victims .....	6
B. Baltimore Police Crash Data .....	12
C. Data Implications .....	15
IV. THE COUNTERMEASURE PROGRAM .....	16
A. Countermeasure Workshop .....	16
B. Task Force Establishment .....	17
C. The <i>Walk Smart Baltimore</i> Countermeasure Program .....	20
V. PROGRAM EVALUATION .....	27
A. Pedestrian Crash Data and Population Changes .....	27
B. HBD Analysis and Selection of a Surrogate .....	31
C. Pedestrian Crash Data Comparisons .....	36
1. In-Zone Crashes .....	37
2. Crashes on Selected Study Roads .....	39
3. Pedestrian Injury Severity .....	40
4. NHTSA/FHWA Crash Type .....	42
5. Time Series Analyses .....	44
VI. DISCUSSION .....	48
APPENDICES:	
A. Crash Victim Data .....	A-1
B. Non-Victim Data .....	B-1
C. Recommended Countermeasures .....	C-1
D. Sample Task Force Meeting Agenda and Minutes .....	D-1
E. Program Posters and Flyers .....	E-1
F. Slide Series <i>Presenter's Guide</i> .....	F-1
G. Video Shooting Script .....	G-1
H. Television PSA Shooting Scripts and Radio PSA Copy .....	H-1
I. Guide for Designing and Implementing a Pedestrian Alcohol Program .....	I-1

## LIST OF TABLES

Table 1. List of cooperative tasks .....	19
Table 2. Baltimore population data .....	28
Table 3. Total pedestrian crashes .....	28
Table 4. Age 14+ pedestrian crashes .....	29
Table 5. Age 14+ pedestrian crashes by gender .....	30
Table 6. Age 14+ HBD pedestrian crashes .....	31
Table 7. Surrogate measure pedestrian crashes .....	34
Table 8. Baltimore male age 30 to 59 population data .....	35
Table 9. Male age 30 to 59 pedestrian crashes .....	35
Table 10. Male age 30 to 59 HBD pedestrian crashes .....	36
Table 11. Baseline and program pedestrian crash analysis group sizes .....	37
Table 12. In-zone pedestrian crashes for baseline and program .....	38
Table 13. Average number of in-zone and out-of-zone pedestrian crashes per year .....	38
Table 14. Average annual pedestrian crashes on treated and untreated roads .....	39
Table 15. Surrogate measure pedestrian injury severity .....	40
Table 16. Average total and serious pedestrian crashes per year .....	41
Table 17. Pedestrian injury severity for surrogate measure in- and out-of-zone crashes .....	41
Table 18. Average annual pedestrian crashes by NHTSA/FHWA crash type: surrogate measure and HBD age 14+ males .....	42
Table 19. Average annual baseline and program surrogate measure pedestrian crashes by NHTSA/FHWA crash type .....	43
Table 20. Crashes to males 14 years and older on treated roads by year .....	46

## LIST OF FIGURES

Figure 1. Percent of HBD and non-HBD crashes by hour of the day .....	13
Figure 2. Baltimore zones .....	14
Figure 3. Program logo .....	20
Figure 4. Schedule of countermeasure activities .....	21
Figure 5. Series of 14+ male crashes per month on treated roads .....	47

## I. INTRODUCTION

Research sponsored by the National Highway Traffic Safety Administration (NHTSA) has shown that alcohol impairment is the single largest contributor to the adult pedestrian crash problem. Data from NHTSA's Fatality Analysis Reporting System (FARS) in 1997 showed that 34.6% of the fatally injured pedestrians had measurable alcohol in their systems at the time of the crash. For the same year, for those 16 and older, 32.7% were intoxicated, that is, had a blood alcohol concentration (BAC) of 0.10 grams per deciliter (g/dl) or greater.

In 1975, NHTSA initiated research on the problem through its landmark New Orleans study.<sup>1</sup> That study clearly indicated that alcohol was a major problem in pedestrian crashes. Positive BACs were obtained from pedestrians in 44% of the crashes involving pedestrians 14 years of age and older. The victim was typically a middle-aged male with a very high BAC level who was struck late at night on a weekend. In addition, it was learned that, when impaired by alcohol, the pedestrian typically made the critical errors that resulted in a crash. Although the New Orleans study did result in some recommendations for remedial actions, no immediately compelling countermeasures were identified.

In the interim, major efforts have been made to reduce drinking and driving, but few countermeasure efforts have been focused on the drunk pedestrian who is involved in a crash. The victim, typically a "problem drinker" is not one who generates sympathy from the public in general. However, the very magnitude of the pedestrian alcohol problem suggested to NHTSA that further countermeasure research was needed. Also, attitudes towards excessive drinking have changed, and the population appears more receptive to remedial approaches that focus on limiting alcohol use.

The combination of the magnitude of the problem and the change in the perception of excessive drinking led NHTSA to sponsor new research on combating the pedestrian alcohol problem. In formulating the requirements for this research, NHTSA recognized that a multidisciplinary community-based approach might be needed to address the problem since it includes both highway safety and community mental health elements. Therefore, NHTSA funded the current study whose objective was to:

*Devise, develop and test a set of countermeasures designed to reduce alcohol-related pedestrian crashes.*

The study involved selection of a test city, analysis of the city's pedestrian alcohol problem and development, implementation and evaluation of a program to counter that problem. It consisted of the following major tasks:

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<sup>1</sup> Blomberg, R.D., Preusser, D. F., Hale, A. and Ulmer, R.G. *A comparison of alcohol involvement in pedestrians and pedestrian casualties*. U. S. Department of Transportation, National Highway Traffic Safety Administration, Washington, DC, Contract No. DOT-HS-4-00946, Final Report, October 1979.

- Selection of a test city with a sufficiently large number of pedestrian crashes to support a crash-based test of the countermeasure program.
- Development of scenarios and storyboards that describe typical pre-crash events of crash-victim drinkers and non-crash events of non-victim drinkers.
- Development of a database of the test city's pedestrian police crash reports.
- Identification of variables (victim age and gender, etc.) associated with alcohol crashes in the test city as well as areas (zones) of the city in which these crashes are prevalent.
- Development of measures to counter the pedestrian alcohol problem and a plan to implement the countermeasure program.
- Implementation and evaluation of the countermeasure program in the test city.
- Preparation of a manual that can serve as a guideline for other communities in designing and implementing pedestrian alcohol countermeasure programs.<sup>2</sup>

This report describes the study approach and presents the results and conclusions derived from the study. It includes the following sections:

- This first section (Section I) describes study objectives and approach and details how the report is organized.
- Section II describes program site selection.
- Section III describes the pedestrian alcohol problem. It includes information obtained from both crash victims and non-victims as well as descriptive data of the drinking crash victim obtained from Baltimore police crash reports. In addition, it identifies locations in the city where pedestrian alcohol crashes are prevalent and, therefore, where selected countermeasures to the problem can be efficiently mounted.
- Section IV describes results of a workshop conducted to identify possible countermeasures to the pedestrian alcohol problem, establishment of a task force in Baltimore to address the problem, and the resultant countermeasure program that was implemented in Baltimore.
- Section V describes program evaluation procedures and results.
- Section VI provides a discussion of the results obtained from the study.

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<sup>2</sup> *5 Steps to a Community Pedestrian Alcohol Program* (see Appendix I).



The following appendices are included in the report:

- Appendix A contains the guide used to conduct interviews with alcohol-involved crash victims, a profile of the victim, summary data tables, and storyboards of the crash victims' days.
- Appendix B contains the guide used to conduct interviews with non-victims, a profile of the non-victim, summary data tables, and storyboards of the non-victims' days.
- Appendix C contains countermeasures suggested by highway safety experts in a two-day workshop, an evaluation form used to describe design and implementation issues for each countermeasure, and the final list of 31 countermeasures presented to the test site.
- Appendix D contains a copy of an agenda and the minutes prepared for one of the task force meetings.
- Appendix E contains black and white copies of posters and flyers developed as part of the study.
- Appendix F contains the *Presenter's Guide* prepared for the program slide series.
- Appendix G contains a copy of the video shooting script developed for the *Walk Smart Baltimore* program.
- Appendix H contains the shooting scripts for the television PSAs and the copy for the radio PSAs.
- Appendix I contains a guide to aid communities in designing and implementing their own pedestrian alcohol countermeasure programs.

## II. SITE SELECTION

In coordination with NHTSA representatives, it was agreed that the test city for the pedestrian alcohol countermeasure program should meet the following requirements:

- There should be a sufficiently large number of pedestrian crashes annually to support the possibility of a crash-based test of the countermeasure program.
- A local Community Traffic Safety Program (CTSP) or its functional equivalent should be available and willing to assist with the project.
- Police crash reports should be available to the project for three years prior to the start of the study and throughout the conduct of the study.
- The site should be sufficiently close to both the Dunlap and Associates offices and NHTSA headquarters to facilitate coordination and examination of the countermeasure program.

Site selection for the study was initiated by a memorandum sent from NHTSA's Associate Administrator for State and Community Services to each of NHTSA's regional offices. That memorandum described the study and requested assistance in identifying a test city for the program. The first two of the above-listed requirements were listed as criteria, that is, a large enough city to support a crash-based evaluation and a city with an available CTSP to support the program.

Responses were received from five of the regions. Only Regions II and III reported that they had cities that met the stated requirements. The cities recommended by Region II were: New York (NY), Atlantic City (NJ), Newark (NJ) and San Juan (PR). The cities recommended by Region III were: Baltimore (MD), Harrisburg (PA), and Richmond (VA).

Of the cities recommended by the regional offices, Baltimore was selected to be the first site to be explored as a test city. It met the criteria specified in NHTSA's memorandum to the regions. In addition, at the initial planning meeting at NHTSA, the project staff had been informed that BAC tests are routinely performed on all severe trauma victims in Baltimore. Also, the project and NHTSA had contacts with researchers in Baltimore who could be helpful to the study. Finally, Baltimore is close to NHTSA headquarters and not too distant from Dunlap's facilities.

NHTSA's Region III therefore was notified and appropriate contacts at both the state and city levels were identified. An exploratory meeting was attended by representatives from NHTSA headquarters, NHTSA Region III, Maryland's Office of Traffic and Safety, the Baltimore City Department of Transportation (DOT) (including the local CTSP representative), the Governor's Drug and Alcohol Abuse Commission, and the Maryland Institute for Emergency Medical Services Systems (MIEMSS). The purpose and scope of the study as well as the general approach were described. All participants at the meeting were supportive of the program and eager to have Baltimore be the test city. At a subsequent meeting, the Commissioner of the Baltimore DOT was

briefed on the study. The Commissioner requested and received the mayor's approval to use Baltimore as the test city.

An examination of how well Baltimore met the requirements established for a test city revealed the following:

- It was sufficiently large (population of approximately 770,000 according to NHTSA data) to support a crash-based evaluation. The most recent police crash data available to the project at the time of site selection showed in excess of 1,000 pedestrian crashes for the year 1989.
- There was a CTSP with the Baltimore City DOT that supported pedestrian safety efforts and was willing to work with the project staff in defining appropriate countermeasures for the city and in recommending approaches for implementing the countermeasures.
- In meetings held with Police Department and City DOT representatives, the project staff was advised that three baseline years of police crash reports would be made available to the study and that continuing reports would be available throughout the study program.
- Carl Soderstrom, M.D. at MIEMSS agreed to support the study in obtaining the data needed to create scenarios for the drinking crash victim.
- The city was considered to be sufficiently close to both the Dunlap offices and NHTSA headquarters to ensure efficient coordination of study activities.

Since Baltimore satisfied all requirements established for the study and since a very positive response was received from all contacts in the city, the project staff recommended that Baltimore be selected as the test city for NHTSA's pedestrian alcohol study. The recommendation was approved by both NHTSA and the City of Baltimore.

### **III. THE PEDESTRIAN ALCOHOL PROBLEM**

The study was initiated with the following three activities that took place essentially concurrently:

- In-depth discussions with individuals who were involved in pedestrian crashes after drinking.
- In-depth discussions with individuals who could relate experiences in which they had walked after drinking but had not been involved in a pedestrian crash.
- Analysis of three years (1990 - 1992) of baseline police crash report data on Baltimore pedestrian crashes.

The approach was intended to identify any contrasts between the walking while intoxicated approaches used by crash victims and the strategies employed by those who avoided crashes under similar circumstances. Rather than producing any formal assessment of relative risk, these activities were simply designed to identify variables related to pedestrian alcohol crashes and to serve as an aid in the development of countermeasures to the pedestrian alcohol problem. Analysis of the police crash report data also resulted in the identification of pedestrian alcohol zones, that is, areas of the city where pedestrian alcohol crashes clustered and, therefore, where program countermeasure activities might be efficiently concentrated.

The discussions with high BAC pedestrian crash victims were arranged through the MIEMSS Shock Trauma Unit at the University of Maryland Hospital in Baltimore. Most of the crash victims were struck in Baltimore City. A few were struck just outside city limits. For convenience, the non-victim interviews took place in Stamford (CT) and covered "walking after drinking" experiences that occurred in Stamford and other Connecticut cities, New York City, Washington (DC) and Delaware. All police crash report analyses were based on Baltimore pedestrian crashes only.

#### **A. Discussions With Crash Victims and Non-Victims**

In-depth discussions were conducted with 20 individuals who had been involved in crashes after drinking and with 10 individuals who walked after drinking but were not involved in crashes. All of the crash victims except one were pedestrians; one interviewee was a bicyclist. The crash victims were all chosen from individuals treated at the MIEMSS Shock Trauma Unit in Baltimore where BAC testing is routinely performed on all victims. The non-crash individuals were undergoing treatment for drugs and/or alcohol at various centers in Stamford (CT).

The following criteria were established for selecting crash victims for the study:

- The victim's blood alcohol concentration was .15 (% weight/volume) or greater upon admission to the shock trauma unit. This was true for 18 of the 20 crash victims. For one victim, the BAC was .134. This victim was included in the study since the BAC measurement was made more than three hours after the crash. One additional victim accepted for the study had a BAC of .146. Previous research including the New Orleans Study had shown that BACs for adult pedestrian victims tend to be very high. Therefore, victims whose BAC was high at the time of their crash were sought.
- The crash occurred no more than one year prior to the interview date. It was believed that victims would have difficulty remembering the circumstances of their crash after a year or more had passed.
- The victim did not sustain any head trauma in the crash. It was reasoned that head trauma would have a high likelihood of interfering with recall of the crash events.

Therefore, all interviewees had substantial amounts of alcohol in their systems when they were involved in their crashes, their crashes were relatively recent, and they sustained no head trauma that might have affected their perception of events.

For crash victim discussions, the most recent MIEMSS Shock Trauma Unit victims who satisfied the criteria were invited first to participate in the study. They were telephoned by a physician at the hospital or his assistant and invited to participate in a discussion with the physician. The invitations continued until the quota of 20 was reached. For non-crash interviews, notices were posted in various alcohol/drug treatment centers in Stamford that a pedestrian alcohol study was being conducted and volunteers were solicited. A brief telephone screening was used to determine that the volunteer would qualify for the study, that is, be able to describe a day in which the individual drank heavily and walked but was not involved in a pedestrian crash. Again, individuals who qualified were accepted until the quota of 10 was reached.

The crash-victim interviews were conducted by a MIEMSS Shock Trauma physician after the patients had been released from the hospital. One patient was still in a rehabilitation hospital. The non-victim interviews were conducted by a clinical psychologist who provides counseling to drug- and alcohol-addicted patients. All interviewees were given an honorarium for participating in the program.

Standard protocols were followed for each victim and non-victim discussion (see Appendices A and B).<sup>3</sup> In the discussions, detailed information was obtained on each individual's background, walking habits and drinking habits. Then, each crash victim described the day on which the crash occurred. Non-victims described a day in which they had walked after drinking heavily.

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<sup>3</sup> All interview materials used in Baltimore were approved by an Institutional Review Board at the University of Maryland at Baltimore, and a *Certificate of Confidentiality* was obtained from the Department of Health and Human Services to safeguard the information provided.

Each discussion was videotaped (in the case of victims) or audiotaped (in the case of non-victims) and subjected to a standard review. Storyboards were then developed that showed each crash victim's and non-victim's day. These storyboards provided insights into the pedestrians' walking and drinking activities during the day as well as insights into the individuals and organizations with whom the pedestrians interacted and who might have intervened (or actually did intervene) to prevent the crash.

Detailed tables conveying a profile of the crash victim discussions are included in Appendix A along with storyboards that describe typical alcohol-involved pre-crash events that were identified by the crash victim volunteers. Detailed tables and storyboards for the non-victim volunteers are included in Appendix B. A summary of this information is presented below.

**Personal and residence data.** Both crash victims and non-victims were very similar. They were primarily males in their mid-thirties who had completed about 11 years of formal schooling. They were unmarried. Crash victims typically lived with relatives or friends. Many non-victims lived in rooming houses or halfway houses. Both groups reported their health as being good. They were either unemployed or employed in low skilled work. Most did not have a driver's license and therefore walked a lot on all days of the week. They usually walked alone and reported that they crossed the street anywhere, that is, they didn't concern themselves with using crossing aids such as signal lights.

**Alcohol data.** About a third of the crash victims reported receiving some form of treatment for alcohol. For the non-crash group (all of whom were in treatment programs for either alcohol or drugs), 60% were in alcohol treatment programs. Beer was the alcoholic beverage of choice for both groups. When they were drinking, the non-victims drank daily. The crash victims reported drinking primarily on weekends or days off. Both groups reported drinking at home, in bars and at friend's homes. The non-victims also frequently drank in the streets.

**Pedestrian alcohol crashes.** The pedestrian alcohol crashes occurred both midblock and at intersections. The roadway had one or two lanes in each direction, and there were no traffic aids. The vehicle was typically going straight. All 20 crashes occurred between 2:00 pm and 3:00 am, with most occurring between 5:00 pm and midnight. The day of the week was Thursday, Friday or Saturday, and all seasons of the year were represented. The victim BACs ranged from .134 to .346, with an average of .243. Fifteen of the victims had BACs in excess of .200, and three had BACs in excess of .300. In general, the victims were alone, and they were making relatively short trips--usually to run an errand or get home. The trip typically started at the victim's home or someone else's home. Brief summaries of each trip follow:

- Leaving someone else's home to go home (five cases)
  - With two brothers--walking to bus stop--victim tried to cross the street between parked cars midblock
  - Alone--argued with someone at party--was struck by that person while walking with traffic--hit and run
  - Bicyclist alone--did not notice stop sign at intersection

- Alone--tried to cross midblock
- Alone--walking with traffic
- Leaving someone else's home to run an errand (two cases)
  - Alone--had argued with father and walked to the corner to buy cigarettes--crossed at intersection
  - With friend who wanted to cash a check--one-way street
- Leaving one's own home to run an errand or visit someone (six cases)
  - Alone--to buy a sandwich--crossed at intersection
  - Alone--to lend sister money--crossed at intersection
  - With friend--to go to market--crossed midblock
  - Alone--to buy pizza--crossed at intersection
  - Alone--to spend the evening at a friend's--crossed at intersection
  - Alone--to browse in library--crossed midblock
- Leaving a bar (three cases)
  - Alone--to get food and go home--tripped and fell backward trying to step up onto center median near intersection--hit and run
  - Alone--to get food and go home--hit in first lane, knocked into second lane and hit again--crossed midblock
  - Alone--to go to another bar--bar tender told him he'd been drinking too much but continued to serve him--crossed midblock
- Leaving work to go home (two cases)
  - Alone--left work and was hit--walking facing traffic
  - Alone--had finished work earlier and hung around drinking with a friend--was crossing midblock so that he could walk facing traffic
- Wandering the streets--destination unknown (one case)
  - Alone but with others a good part of the time--very upset--police were called and spoke to her about her rowdiness at one point--didn't know how the crash occurred or where she was going
- Leaving the social service office for landlord's car and then home (one case)
  - Alone but landlord was in the car--very upset at the time--crossed midblock between parked cars

**Possible intervention contacts.** The following list indicates the people whom the victims and non-victims encountered during their drinking and walking experiences (multiple responses were possible). For the victims, one of these individuals might have been able to prevent the crash. For the non-victims some of their contacts likely did prevent a crash.

	<u>No. of victims</u>	<u>No. of non-victims</u>
Friends/companions	14	8
Bar/restaurant servers	7	5
Relatives	6	-
Liquor store clerk	2	5
Other store clerk	2	-
People at work	2	1
Landlord	1	-
Social service office	1	2
Police	1	3
No one (home alone all day)	1	-
Bank/check cashing service	-	2
Drug/recovery program	-	2
Hospital emergency room	-	1

The list shows that only one crash victim had no personal interactions during the day on which the crash occurred. Most victims had interacted with friends or family. Some victims had interacted with representatives of the hospitality community, including servers and sellers. Two victims had interacted with individuals providing municipal services, including social services and the police.

The primary contacts for the non-victims were friends and liquor sellers/servers. In two cases non-victims were picked up by the police--one (a male) was put in jail; the other (a female) was taken to the hospital emergency room. One non-victim realized she had consumed too much and called a friend for a ride home at the end of the day. One said that a friend pulled him back from a busy highway. One non-victim said that as many as three people offered to help him but he rejected all offers. In general, most non-victims did not want help from strangers and would have refused it if offered.

**Victim ideas for crash prevention.** Each crash victim was asked for ideas on how their crashes could have been prevented. Four were unable to make any suggestions. The preventive measures given by the remaining victims are as follows (there were multiple responses from some victims):



**No. of victims**

No ideas given	4
Better driver behavior	4
Better pedestrian behavior	7
Better roadway engineering	9
Different personal events	6
No pedestrian drinking	2

Only two victims indicated that the crash could have been prevented if they hadn't been drinking. Roadway engineering improvements were mentioned most frequently. These included improved lighting, installation of traffic and pedestrian signals, and installation of sidewalks. Improved pedestrian behavior included better route selection, crossing at intersections, walking facing traffic, and being more careful and observant on the street. Different personal events included staying home (avoiding the trip altogether), not running into friends, and not arguing with friends.

**Non-victim drinking and walking experiences.** All non-victims described a day in which they consumed large amounts of alcohol and walked on busy downtown streets without being in a pedestrian crash. Two reported that they had previously been hit by cars, but were not hurt. Two had previous close calls, and two had close calls on the days they described. Liquor stores and bars were the primary sources for the alcohol, although some interviewees received alcohol from friends. For most, the drinking was a social experience; only two reported drinking primarily alone. Only one reported that anyone tried to stop them from drinking. A liquor store refused to sell to one person but she went across the street where she was served at a bar. One reported that liquor store servers sometimes asked if he was alright or told him to take it easy but never refused to sell to him.

**Non-victim ideas for crash prevention.** Non-victims made several suggestions for preventing pedestrian alcohol crashes. Those directed to the drinker, including techniques that the non-victims have used themselves when they have walked after drinking, were as follows:

- Don't drink/drink in moderation/drink at home
- Drink caffeine to make you more alert
- Don't drink and walk/call a cab/stay with friends/use a Safe Rides program
- Don't walk alone
- Cross where there are traffic aids
- Hold onto street structures/buildings to maintain balance
- Use handicap ramps when getting on/off sidewalks
- Wear conspicuous clothing, especially at night

Suggestions for the community to adopt to reduce pedestrian alcohol crashes included the following:

- Provide a good mass transit system
- Maintain sidewalks (fix cracks, etc.)
- Make sidewalks and road shoulders wider

Slow traffic down/make drivers obey speed limits  
Make public and drivers aware of the problem and the clues that a pedestrian is intoxicated  
Remove/reduce alcoholic content of liquor  
Give walking while intoxicated tickets  
Spend time and money getting people sober  
Invent "drunk" sensors that would notify the drinker/others that too much alcohol has been consumed

## **B. Baltimore Police Crash Data**

A database was created of all information included on the Baltimore police crash report form for all pedestrian crashes occurring during three baseline years (1990 through 1992). The subset of crashes of interest for this study included all those occurring to pedestrians who were 14 years of age or older at the time of the crash. The baseline database included 2,424 pedestrian crashes to this age group.

The police crash report provides for an indication of whether the police officer felt that the pedestrian *Had Been Drinking* (HBD) at the time of the crash. In the database, 19.9% of the age 14+ pedestrians were marked as HBD by the investigating police officer. Research including the New Orleans study has shown that police officers typically mark as HBD only those individuals who are obviously very intoxicated and have extremely high BAC levels. Therefore, using the HBD indication on crash reports as an estimate of alcohol involvement in crashes typically underestimates the true involvement rate by as much as 50%. In fact, data obtained from MIEMSS showed that 42.4% of pedestrians admitted to the University of Maryland at Baltimore's Shock Trauma in the first six months of 1992 tested positive for alcohol. It was therefore concluded that the pedestrian alcohol problem in Baltimore is typical of that of other large cities in the United States and that in excess of 40% of the crashes occurring to those age 14 and over involve a pedestrian who has been drinking.

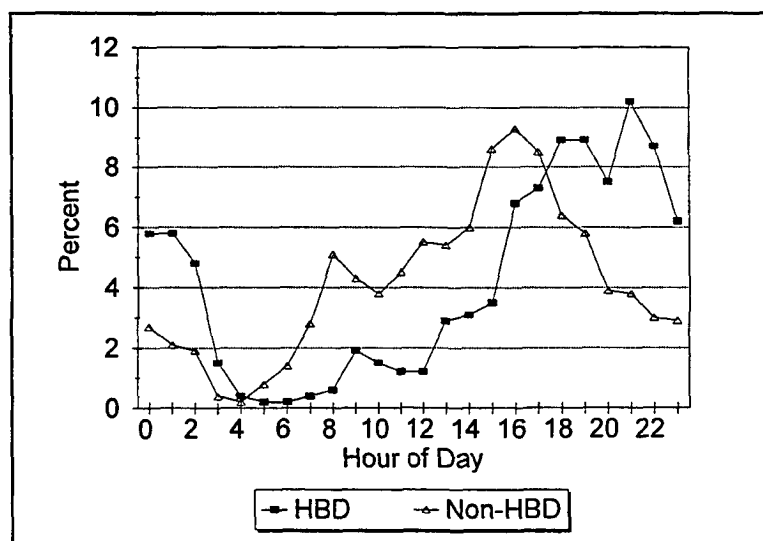
The HBD indication on the police crash report was believed to be a good indication of the presence of a high BAC level in the pedestrian victim even if, in aggregate, it would underestimate the involvement of alcohol in pedestrian crashes. It was therefore used to estimate crash and victim characteristics from the database.

**Comparison of HBD and non-HBD crashes.** A comparison was made between HBD and non-HBD data for crashes involving age 14+ pedestrians. The following information was obtained:

- Crashes to the HBD pedestrian were more common:
  - Among males
  - In the age range 30 to 59
  - Wearing dark clothing
  - From 6:00 pm to 3:00 am

- On weekends
- Not crossing at an intersection or in a crosswalk
- Crashes involving an HBD pedestrian were also more common:
  - When the speed limit was 30 mph
  - The vehicle was moving at a constant speed or slowing and stopping
  - The vehicle was in roadway lanes 1 or 2
  - Streets were dark and lights were on
- The first cause of the HBD crash was pedestrian-related.
- The HBD pedestrian was more likely to suffer an incapacitating injury than was the non-HBD pedestrian.
- There were *fewer* HBD than non-HBD crashes for the following conditions:
  - Backing vehicles
  - Turning vehicles
  - When the speed limit was 25 mph or less

Conspicuity was often implicated in the HBD crashes; that is, the pedestrian simply was not noticed by the driver. This appears to be a special problem for the high BAC pedestrian who often wears dark clothing and is on the street late at night. Figure 1 shows that the percentage of HBD crashes in the Baltimore baseline database starts to exceed that for non-HBD crashes at 6:00 pm and continues until 4:00 am when the percentages become essentially identical.

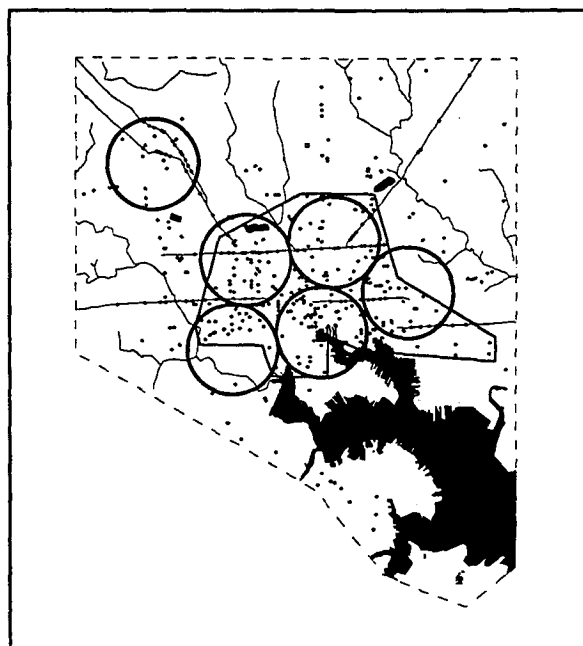


**Figure 1. Percent of HBD and non-HBD crashes by hour of day.**

**Identification of pedestrian alcohol zones.** The database included a complete coding of the location of each crash. The location data for each HBD crash were brought into a computerized mapping system and analyzed to determine where clusters of crashes may have occurred. From the resulting computerized map, it was apparent that, although the HBD crashes were spread throughout the city, there was a heavy concentration in the center of the city. A "zone" analysis was therefore conducted to determine where the majority of the pedestrian alcohol crashes occurred.

Prior NHTSA research resulted in an efficient definition of zones for elderly pedestrian crashes when a minimum of 10 such crashes occurred in a circular area with a radius of one mile.<sup>4</sup> Since there were 2.6 times as many alcohol-related crashes as older adult crashes in the city of Baltimore, an incidence rate of 26 was selected for identifying Baltimore circular zones using the previously developed zone identification procedures.

A search was therefore made for circular zones with a radius of one mile that contained a minimum of 26 HBD crashes. Six circular zones were identified; they contained between 30 and 66 HBD crashes each. The zones are shown in Figure 2. Examination of the figure showed large empty areas in the zones. In addition, since five of the six zones were contiguous, many crashes occurred in the spaces between the zones. Therefore, a polygon was created that combined five of the six zones. The polygon is also shown in Figure 2.



**Figure 2. Baltimore zones.**

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<sup>4</sup> Blomberg, R.D. and Cleven, A.M. *Development, implementation and evaluation of a pedestrian safety zone for elderly pedestrians*. U.S. Department of Transportation, National Highway Traffic Safety Administration and Federal Highway Administration, Washington, DC, Contract No. DTNH22-90-C-07223, Final Report No. DOT HS 808 692, February 1998.

The one circular zone and the polygon zone include 73% of the total HBD crashes in 21% of the Baltimore City land area. This analysis suggested that certain localized countermeasures, such as traffic engineering changes, could be efficiently mounted by limiting their application to a relatively small area of the city. There was also evidence from the map that numerous crashes occurred on selected city corridors which could serve as the location for implementation of selected countermeasures. All of these corridors occurred within the circular and polygonal zones except one, which occurred partly within the polygonal zone.

### **C. Data Implications**

The interviews and police crash reports served to confirm prior research on the pedestrian alcohol problem and provide data for development of program countermeasures in Baltimore. The results may be summarized as follows:

- It is estimated that alcohol use on the part of the pedestrian is involved in approximately 40% of the 14+ pedestrian crashes in Baltimore. The pedestrian alcohol problem in the city is therefore similar to that in other large cities in the United States.
- As in other cities, the problem in Baltimore is largely experienced by a middle-aged male who is walking in dark clothing on weekend nights.
- The HBD pedestrian who gets involved in a crash has a very high BAC--usually more than twice the legal limit for driving.
- The pedestrian alcohol problem in Baltimore occurs largely in the center of the city and on a few major city corridors.
- Most crashes occur near the victim's home and when the victim is making a relatively short trip (for example, to go to a nearby store for food or cigarettes).
- High BAC victims and non-victims who regularly drink to excess come in contact with people who could intervene and possibly prevent a pedestrian crash. In addition to relatives and friends, these include liquor sellers and servers, social service representatives, the police and others.
- Both victims and non-victims feel crashes could be avoided if pedestrians drank in moderation and paid better attention to safe pedestrian behavior. They also feel that driver behavior could be improved (particularly driver speeds and knowledge of the cues of an impaired pedestrian) and that engineering improvements (e.g., improved lighting, installation of traffic and pedestrian signals) could make the city's streets safer. The lack of knowledge by the general public of the pedestrian alcohol problem was also noted.

## IV. THE COUNTERMEASURE PROGRAM

The New Orleans study ended with the identification of potential countermeasures that might reduce the pedestrian alcohol crash problem. Since these approaches were defined, there has been a marked reduction in society's tolerance for excessive drinking. This opened the door to trying many new approaches in Baltimore. There also, however, was a dearth of actual experience to draw on to guide any efforts mounted in the Baltimore area. In an attempt to mount the best possible countermeasures program, effort was directed to the identification of potentially effective approaches and to the establishment of a task force that could lead the entire activity.

### A. Countermeasure Workshop

The countermeasure development process was initiated with a two-day workshop attended by experts in the pedestrian alcohol field. The objective of the workshop was to develop a basic list of practical, *implementable* pedestrian alcohol countermeasures which Baltimore representatives could refine (add to, delete, revise) in defining an appropriate countermeasure program for the city. It was considered necessary to develop some initial ideas before the program itself began operating. These ideas would form a foundation which the participants from Baltimore could expand and modify as desired to create a local program. The existence of the ideas would also avoid the possibility that the Baltimore participants would consider the problem intractable and therefore become discouraged.

The workshop was initiated with a review of the pedestrian alcohol problem, the data obtained from the discussions with victims and non-victims and the police crash report data. Detailed printouts of the study data were examined as were the location maps of the alcohol-involved crashes and the storyboards of crash and non-crash alcohol-involved interviewees. This review session was followed by an idea-generation session in which attendees identified possible countermeasures. It was agreed that all countermeasure ideas proposed by the group members would be considered appropriate unless one of the experts knew at the outset that the countermeasure would be impossible to implement or had previously been proven useless.

Fifty-two countermeasures were identified by this process. Listed in Appendix C, they can be broadly classified into the following groups:

- Changes to the roadway
- Visibility and conspicuity enhancement
- Enforcement activities and procedures
- Server/seller activities and procedures
- Case finding, protection and treatment
- Community sensitization
- PI&E--target group, friends and companions
- PI&E--drivers

Following the workshop, the 52 countermeasure ideas were compiled and subjected to further review and refinement. A detailed form was completed for each countermeasure. The form (see Appendix C) provided a description of the countermeasure, its purpose (e.g., reduce drinking, make walking safer), the target group addressed, groups that would need to be involved in its development and implementation, development and implementation needs, and the countermeasure's major pros and cons or restrictions.

A set of the forms (one for each countermeasure) was mailed to each workshop participant. The experts were asked *first* to provide an assessment of the "worthiness" of each countermeasure by assigning a letter rank as follows:

- A = possibly effective and implementable
- B = possibly effective but may be difficult to implement
- C = unlikely to be of any value and/or impossible/impractical to implement.

For those countermeasures for which they assigned an "A" rank, the experts were asked to expand the comments made on the form by providing any inputs that they felt would help in defining the design and use of the countermeasure.

From the information provided by the workshop experts, a set of 31 countermeasures was developed as a basic list for initial consideration by Baltimore representatives. The list included countermeasures directed toward the target group, drivers, the community at large, alcohol server/sellers, police and other municipal/community groups, traffic engineers, the hospital/medical community and schools. Each of the recommended countermeasures is described in Appendix C.

## **B. Task Force Establishment**

As mentioned in the section on site selection (Section II), original approvals for conducting the study in Baltimore were obtained from the director of the city DOT and the mayor. A reorganization of municipal departments in Baltimore after approval of the study resulted in the DOT being incorporated into the Department of Public Works (DPW). Therefore, the director of DPW was given a briefing on the study. Following his approval of the program, he asked and received the mayor's approval to form a task force. DPW agreed to be the lead organization of an interdepartmental task force consisting of the following city organizations:

- DPW--Information Services
- DPW--Traffic Engineering
- DPW--Pedestrian Safety and CTSP Coordinator
- Police Department
- Fire Department
- Health Department
- Liquor Board

It was decided that representatives from NHTSA and Dunlap and Associates, Inc. would support the activities of the task force, that is, they would attend task force meetings and respond to task force requests for assistance, as appropriate. However, all decisions regarding the countermeasure program or any specific countermeasures to be implemented in the city would be made by the task force as a group, not by NHTSA or Dunlap. On the one hand, this limited roll for "outsiders" did not compromise severely the realism of the test or the ability to generalize its results beyond Baltimore. On the other hand, some outside support beyond just evaluation was necessary for this initial attempt at dealing with the pedestrian alcohol problem.

At the first meeting, the group agreed that the primary goal of the task force was to reduce loss of life and injury due to the pedestrian alcohol problem in Baltimore. The specific objectives established for the task force were to:

- Refine their understanding of the pedestrian alcohol problem in the city.
- Design and implement approaches to counter the problem.
- Assess the impact of the countermeasure program.

A document called the *Baltimore Prospectus*<sup>5</sup> was prepared to aid the task force in accomplishing its objectives. It provided a summary of the pedestrian alcohol problem in Baltimore, described the initial countermeasures recommended for consideration by city representatives, identified the support organizations that could implement the countermeasures and listed specific tasks needed to design, implement and evaluate the program in Baltimore. Thus, it served as a basic resource document for the task force. The cooperative tasks listed in the *Baltimore Prospectus* and how they would be shared among the *sponsor* (NHTSA), the *project* staff (Dunlap and Associates), the *task force* and the various *community* groups and organizations are listed in Table 1.

The task force agreed to meet approximately every four weeks for the duration of the pedestrian alcohol program. In all, 26 meetings of the task force were held over a two-year period, from January of 1995 through January of 1997. The first six months were devoted to development of initial countermeasure plans in preparation for a program kickoff by the mayor in late June of 1995. The remaining time was devoted to planning and implementing each succeeding program countermeasure. The time frame over which countermeasures were actually *implemented*, therefore, spanned 1-1/2 years.

Each task force meeting lasted approximately two hours. All task force members were provided with an agenda prior to each meeting and with detailed minutes following the meeting. As an example, the agenda and minutes for the 11th meeting are included in Appendix D.

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<sup>5</sup> Dunlap and Associates, Inc. *Baltimore Prospectus: A countermeasure program for alcohol-involved pedestrian accidents*. Prepared for the City of Baltimore, August 1994.



**Table 1. List of cooperative tasks**

<b>Task</b>	<b>Lead</b>	<b>Assistance</b>	<b>Comments</b>
Select countermeasures for implementation	Task force	Project	Revision and selection of new countermeasures may be required.
Identify countermeasure sponsors	Task force	Community, project	Requirements for funding or in-kind services will need to be considered.
Ensure countermeasure funding	Task force	Community, project, sponsor	Limited sponsor/project funding is available. It must be supplemented with local resources.
Establish final community plan	Task force, community, project	Sponsor	Detailed procedures for accomplishing and documenting each activity need specification as well as start dates.
Design and reproduce PI&E materials	Task force, project	Community	PI&E materials will likely consist primarily of printed materials. Artwork will be required as well as printing resources.
Identify sites for engineering changes	Task force	Community, project	Engineering changes can be expensive and must be applied where they are most needed.
Arrange for enabling legislation, as necessary	Task force	Community, project	Adequate lead time will be necessary if legislation is required for any of the countermeasures.
Arrange for design, manufacture and distribution of materials	Task force	Community, project	Lead time will be required for the design and manufacture of materials.
Implement and monitor program progress and problems	Task force	Community, project	There needs to be a clearinghouse for program comments and suggestions and prompt resolution of problems.
Document process	Project	Task force, community	The model program will be captured for use by other communities.
Prepare community guideline manual	Project	Task force, community, sponsor	The final product will be a manual on application of the process to other communities.

### C. The *Walk Smart Baltimore* Countermeasure Program

After objectives and working procedures for the task force were established, the first activities involved selection of a slogan and design of a logo for the program. The slogan selected was *Walk Smart Baltimore*. The logo designed for the program was a footprint that incorporated the program slogan. It is shown in Figure 3. The task force agreed that the *Walk Smart Baltimore* program would be an ongoing pedestrian safety program in the city, with its first phase devoted to the pedestrian alcohol problem. The task force specifically decided to avoid making the pedestrian alcohol problem its sole focus in order to avoid the possibility of stigmatizing the victims with a resulting loss in effectiveness. For similar reasons, the task force name and logo were addressed to pedestrian safety in general rather than specifically to the pedestrian alcohol problem.



Figure 3. Program logo.

The countermeasure activities performed in support of the program are described in the remaining paragraphs of this section. The task force planned the countermeasure *program* as a group; individual countermeasure *activities* were carried out by those task force members or community organizations assuming responsibility for designing and/or implementing the specific countermeasure. Where appropriate, countermeasures were applied only (or primarily) in the city areas (zones) where the pedestrian alcohol problem was prevalent (see Figure 2).

The countermeasures are organized below by the task force group that assumed *primary* responsibility for implementation of the countermeasure or was the *primary* recipient of the countermeasure. Many countermeasures were implemented by more than one task force group. A schedule of when countermeasure activities were performed is given in Figure 4. All print countermeasures (posters and flyers) are reproduced in Appendix E. The *Presenter's Guide* prepared for the program slide series is reproduced in Appendix F, and the shooting script for the video is reproduced in Appendix G. The shooting scripts for the television PSAs and the copy for the radio PSAs are reproduced in Appendix H.

#### Enforcement

- Provide Institute for Police Technology and Management (IPTM) training for selected police personnel. This program provided training on the police role in pedestrian safety to approximately 30 police officers.

1995

<b>Jan-Jun</b>	Design of slogan and logo Design of street signs Production of television and radio PSAs Mounting of road signs and road evaluation and repair
<b>Jun 29</b>	Mayor's program kickoff Distribution of press kits and television and radio PSAs
<b>Jul-Sep</b>	EMS demonstration Cooperation of seller/server trade organizations received Selection of 11 fire stations as program distribution points Production of road banners Production of posters, flyers and die-cut logo Interview on city cable channel
<b>Oct-Dec</b>	Police IPTM training Production of police training video Mounting of road signs and road evaluation and repair Pedestrian alcohol information supplied to state training organizations Production and distribution of holiday radio PSAs

1996

<b>Jan-Mar</b>	Police roll call training with program video Police distribution of drinker's flyer and "smashed" poster EMS distribution of driver's flyer and "heavy drinking" poster Liquor Board mailing of die-cut logo to all licensees
<b>Apr-Jun</b>	Distribution of program materials to city health clinics Mounting of road signs and road evaluation and repair Distribution of program materials at university health fair
<b>Jul-Sep</b>	Distribution of driver flyer at motor vehicle offices Distribution of retroreflective caps Mounting of street banners
<b>Oct-Dec</b>	Distribution of program materials at social service offices and city health fair Distribution of driver's brochure to all city employees through payroll system Preparation of slide program Production and distribution of holiday flyer

**Figure 4. Schedule of countermeasure activities.**

- *Develop a video on the pedestrian alcohol problem and appropriate police responses.* The video was included in roll call or other police training for the Baltimore police force. It included the following actions:
  - Intervene and counsel intoxicated pedestrians.
  - Provide/arrange for transportation home or to a detoxification facility.
  - Confiscate open bottles of liquor.
  - Provide advice to motorists to slow down and watch for pedestrians.
  - If necessary, enforce public intoxication and disorderly conduct laws.
  - If necessary, take the intoxicated pedestrian into custody on an Emergency Petition.
  
- *Distribute retroreflective caps to problem drinkers and individuals who walk on the city's streets at night.* In all, 3,128 retroreflective caps were distributed by the police to individuals who walk on the city's streets at night. Distribution was made primarily in the study zones. A small supply was also given to a shelter for recovering alcoholics.
  
- *Distribute selected program posters and flyers to local organizations.* These materials were distributed during routine police patrols. Organizations were requested to display and distribute all materials. The distribution was concentrated largely in the study zones.

### **Emergency Medical Services (EMS)**

- *Put on demonstrations showing emergency care for drunk pedestrians injured in vehicle crashes.* These demonstrations showed emergency care for a drunk pedestrian who was injured in a crash with a motor vehicle.
  
- *Designate 11 fire stations as central points for display and distribution of program materials.* The Fire Department designated 11 stations (in and near the zones) for display and distribution of program materials. The program banner was displayed at each station. The project video was used to train facility staff to respond to visitor questions.
  
- *Distribute selected program posters and flyers to local organizations.* These materials were distributed during routine fire inspections. Organizations were encouraged to display and distribute all materials. The distribution was concentrated largely in the study zones.
  
- *Display/distribute program materials at fire prevention expos, city health fairs, safe and sober rides programs and a major city hospital and its clinics.* EMS personnel distributed program materials at all appropriate city activities in which they were asked to participate. They also distributed materials to a major hospital and its clinics.

## Public Information and Education

- *Design a slogan and logo for the program.* The slogan and logo have been described previously.
- *Arrange for the mayor to inaugurate the program and provide a press kit for the kickoff.* The press kit contained the following: a cover with the program logo, a description of the Baltimore pedestrian alcohol problem, a description of the planned *Walk Smart Baltimore* program, 1993 NHTSA traffic safety facts, a press release on the program, a slick of the program logo, four television public service announcements (PSAs) on videotape, scripts for four radio PSAs, and a photograph of the project road sign. Copies of the press kit were distributed to television and radio stations, the local newspaper, and each police district.
- *Produce television PSAs.* The following PSAs were produced:
  - *Walk Smart Baltimore*--mayor introduces the drinking and walking problem and encourages people to watch for and attend to program messages.
  - *A Sign of the Times*--director of DPW displays project street signs and advises drivers to slow down and watch for pedestrians.
  - *Troubles 1*--EMT advises people to stay home when they drink or to walk with a sober friend.
  - *Troubles 2*--Police officer advises people not to let friends walk alone after drinking.

These television PSAs were distributed to stations during and following the mayor's kickoff.

- *Create radio PSA scripts.* The following radio scripts were produced:
  - *They're out there*--Advises drivers to watch out for pedestrians at night.
  - *Promo*--Advises audience to listen to *Walk Smart Baltimore* messages and follow the advice.
  - *Lose your shoes*--Advises drinkers to stay home when they drink or to walk with a sober friend.
  - *Your serve*--Advises server/sellers to make sure that intoxicated pedestrians get home safely.

These radio PSAs were distributed to stations during and following the mayor's kickoff.

- *Create radio scripts for the year-end holidays.* The following scripts were produced for the year-end holidays:
  - *It's holiday time--*Advises pedestrians to stay off the street if drinking and not to get smashed twice in one night.
  - *Don't get smashed twice--*Advises pedestrians as above.

These radio scripts were distributed to stations prior to the first Christmas holiday of 1995.

- *Produce a die-cut logo as a flyer.* Copy for the logo advised heavy drinkers to stay home when they drink. The Health Department alcohol hot-line phone number was included. In all, 150,000 copies were printed.
- *Produce project posters.* The following posters were produced, and 5,000 copies of each were printed:
  - *Drunk drivers aren't the only ones who get smashed*
  - *Heavy drinking + walking = nearly ½ of all adults hit by cars*
- *Produce project flyers.* The following flyers were produced and 100,000 copies of each were printed:
  - *There's a fog in your future--*advises driver to be alert for drunk pedestrians.
  - *Psst! Want some free advice?--*advises drinkers not to walk after drinking.
- *Produce a flyer providing holiday safety tips for drinkers.* Multiple copies of the flyer were distributed to 36 city public information officers and approximately 1,500 organizations in the city and surrounding communities during the second Christmas holiday of the program (1996). They were accompanied by a letter from the director of DPW requesting that the flyers be posted in prominent places.
- *Develop slides and a Presenter's Guide for task force presentations.* Slides were produced in both 35mm and overhead formats for presentation to various groups in the city.
- *Distribute program posters and flyers.* Program materials were distributed to health clinics, hospitals, city social service agencies, mayor's hub program offices and motor vehicle offices. The driver brochure was distributed to city employees through the payroll system.

- *Provide project overview on the city cable television channel.* Interviews with task force members were aired on the city cable channel.

### **Traffic Engineering**

- *Design and mount special road signs.* These signs were mounted on high HBD roads in the zones. They served to warn drivers of high pedestrian traffic and the speed limits. The signs were mounted on different roads at selected times throughout the program.
- *Mount project road banners.* Project banners with the *Walk Smart Baltimore* logo were mounted on selected high HBD roads in the zones according to a planned schedule.
- *Correct roadway deficiencies.* A review was conducted of high HBD roads in the high HBD zones to assess and correct deficiencies in lighting, remove items that might be screening drivers and pedestrians from seeing each other, determine if crosswalks need refreshment and refresh them as needed.

### **Hospitality Community**

- *Provide information to state training organizations.* Information on the pedestrian alcohol problem was prepared and sent by the Liquor Board to state training organizations for inclusion in alcohol-related training programs.
- *Include information on the pedestrian alcohol problem in routine mailings to new licensees and transfers.* A brief description of the problem was included in all routine mailings made by the Liquor Board to all licensees and transfers.
- *Request seller/server trade organizations in the city to support program activities.* The Liquor Board requested and received cooperation of seller/server trade organizations in support of the program.
- *Include project materials in mass mailings made annually to all licensees.* The Liquor Board included the program logo in its annual mailing to all licensees.

In summary, the program involved a variety of enforcement, engineering and education countermeasures, and the countermeasures were directed to a variety of individuals. These included drinking pedestrians and their families, drivers, seller/servers and those who train them, and law enforcement personnel, as well as the public at large.

Although many countermeasures were directed to the entire city (e.g., public service announcements, mass distributions of holiday flyers), zones where pedestrian alcohol crashes were prominent were targeted whenever it was possible and practical to do so. This targeting occurred for all traffic engineering countermeasures, for the selection of fire stations for display and

distribution of project materials, for the distribution of retroreflective caps and for the distribution of program posters and flyers. Although not directed specifically to the zones, enforcement activities may well have been performed largely in the zones since that is where the pedestrian alcohol problem exists.



## V. PROGRAM EVALUATION

This study had as its ultimate objective the reduction of alcohol-related crashes in the city of Baltimore. Therefore, police crash reports describing each pedestrian crash that occurred throughout the study period were obtained for analysis. In all, data were collected for the following years:

- Baseline data--January 1990 through June 1995 (5-1/2 years)
- Program data--July 1995 through June 1997 (2 years)

Analyses of the pedestrian crash data are described in the following paragraphs. Presented first is a discussion of the pedestrian crash problem in Baltimore as it relates to changes in the city's population over the study time period. It is followed by a discussion of HBD crash data and selection of a surrogate measure for analysis of alcohol-related crashes. Finally, comparisons of crash data are presented as are time series analyses of these data.

### A. Pedestrian Crash Data and Population Changes

To set the stage for the analyses of crash data, raw population and crash numbers by year were reviewed. The population of Baltimore decreased during the study period. Although there is not necessarily a one-to-one relationship between population size and pedestrian crashes, it is reasonable to expect that some reduction in crashes might accompany a reduction in population. This was found to be the case.

Population estimates were available for almost the entire study time period--excluding only the first three months of 1990.<sup>6</sup> These estimates are shown in Table 2. Also shown in the table is the population reduction from the previous year and the percentage that each year's population represents of the 1990 population data.

The table shows a reduction in Baltimore population for each year covered by the study's data. For 1991, the reduction from the previous year was small (0.5% in all). Then, reductions from the prior years increased annually from 0.9% in 1992 to 1.8% in 1995. In all, the population decreased over the baseline period by 46,582, a reduction of 6.3%. Over the entire study period, the population decreased by 60,613, a reduction of 8.2%. There is a reduction of 6.1% when the average baseline and program populations are compared. Therefore, it is not unreasonable to expect that there might be some reduction in overall pedestrian crashes in the city during this time period due simply to the lowered number of people at risk.

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<sup>6</sup> Population estimates were obtained from a table prepared by the Maryland Office of Planning and based on data from the U.S. Bureau of the Census, Population Estimates Branch.

**Table 2. Baltimore population data**

<u>Study period</u>	<u>Date</u>	<u>Population</u>	<u>Population reduction</u>	<u>Percent of 1990</u>
<b>Baseline</b>	4/1/90	736,014	--	100.0%
	7/1/90	734,886	1,128	99.8
	7/1/91	732,493	2,393	99.5
	7/1/92	725,479	7,014	98.6
	7/1/93	715,807	9,672	97.3
	7/1/94	703,090	12,717	95.5
	7/1/95	689,432	13,658	93.7
<b>Program</b>	7/1/97	675,401	14,031	91.8

Total pedestrian crashes, average monthly crashes and the percentage of the 1990 crashes for each year are shown in Table 3. As with the population data, the table shows that the crashes for 1990 and 1991 were essentially the same; there was, in fact, a small increase of 10 crashes in 1991. Then, there were two baseline years (1992 and 1993) in which there were decreases in crashes from the prior years, followed by two baseline years (1994 and 1995) in which there were increases from the prior years. These *increases* occurred in the two baseline years with the largest population *decreases*. All of the program years showed decreases.

**Table 3. Total pedestrian crashes**

<u>Study period</u>	<u>Year</u>	<u>Total crashes</u>	<u>Avg/month</u>	<u>Percent of 1990</u>
<b>Baseline</b>	1990	1464	122.0	100.0%
	1991	1474	122.8	100.7
	1992	1396	116.3	95.4
	1993	1324	110.3	90.4
	1994	1366	113.8	93.3
	1995 (Jan-Jun)	702	117.0	95.9
<b>Program</b>	1995 (Jul-Dec)	678	113.0	92.6
	1996	1310	109.2	89.5
	1997 (Jan-Jun)	651	108.5	88.9

Over the course of the entire study database, the population declined 8.2% and all pedestrian crashes went down 11.1%. If the average for the years in the baseline period is compared with the average for the two program years, both the population and crashes went down 6.1%. Thus, it would appear that there are no major discontinuities in the population or crash series that would unreasonably bias the analyses presented below. It also must be remembered that it is not the total

pedestrian crash occurrence that is of primary interest to this study. More meaningful subsets related to the use of alcohol were also examined to determine if they showed different results over the life of the study.

The New Orleans study and the majority of previous work in the area of pedestrian alcohol crashes focused only on victims aged 14 and older. This is logical since there is no significant documented evidence of elevated BACs among child pedestrians killed and injured in crashes. Therefore, an analysis was made of age 14+ crashes over the time period of the study. These data are shown in Table 4.

**Table 4. Age 14+ pedestrian crashes**

<b>Study period</b>	<b>Year</b>	<b>Total</b>	<b>Avg/month</b>	<b>Percent of 1990</b>
<b>Baseline</b>	1990	844	70.3	100.0%
	1991	848	70.7	100.5
	1992	861	71.8	102.0
	1993	799	66.6	94.7
	1994	837	69.8	99.2
	1995 (Jan-Jun)	432	72.0	102.4
<b>Program</b>	1995 (Jul-Dec)	426	71.0	100.9
	1996	806	67.2	95.5
	1997 (Jan-Jun)	419	69.8	99.3

The table shows essentially identical crashes for the age 14+ pedestrians for the first two baseline years (1990 and 1991) and a slight increase for the next year. Then the table shows a reduction for one year followed by increases from the preceding years for the remaining two years of the baseline period. In fact, there is a 2.4% *increase* in crashes between the first and the last year of the baseline data for this age group. There was only a 0.7% reduction in crashes between the first (1990) and the last (1997) year of the entire study and a 1.7% reduction in average annual crashes *between* the baseline and program study periods.

From these data, it can be observed that the age 14+ crashes were relatively stable over the study time period. Hence, the *overall* decline in reported pedestrian crashes in Baltimore discussed above was obtained largely from those under the age of 14.

Since males are overrepresented in the pedestrian alcohol problem, an examination was made of the 14+ crashes by gender. These data are given in Table 5.

**Table 5. Age 14+ pedestrian crashes by gender**

<b>Study period</b>	<b>Year</b>	<b>Males</b>		<b>Females</b>	
		<b>Total</b>	<b>Percent of 1990</b>	<b>Total</b>	<b>Percent of 1990</b>
<b>Baseline</b>	1990	553	100.0%	285	100.0%
	1991	535	96.7	305	107.0
	1992	538	97.3	317	111.2
	1993	461	83.4	310	108.8
	1994	504	91.1	319	111.9
	1995 (Jan-Jun)	255	92.2	175	122.8
<b>Program</b>	1995 (Jul-Dec)	246	89.0	179	125.6
	1996	472	85.4	330	115.8
	1997 (Jan-Jun)	243	87.9	174	122.1

The table shows large differences between age 14+ male and female crashes during the study period. Male crashes decreased by 7.8% over the baseline period and by 12.1% over the entire study period. Average annual crashes between the baseline and program periods decreased by 7.1%. In contrast, crashes for the females increased. They increased 22.8% over the baseline period, 22.1% over the entire study period and 9.8% between baseline and program periods.

There is no apparent explanation for the increase in 14+ female crashes. However, it is apparent from these data that changes in population do not necessarily affect the crashes of all subgroups in the same manner. In addition, of course, the aim of the current study was to decrease crashes among a specific subgroup, that is, the pedestrian who drinks to excess. As discussed previously, a high proportion of the drinking pedestrian victims are male. Hence, the overall decline in male crashes is encouraging, particularly because the rate of decrease appears to become greater during the program period.

In summary, as a result of these analyses, the following observations are relevant regarding population changes and pedestrian crashes in Baltimore:

- In any single year, there was no relationship between pedestrian crashes and population reduction--the two years with the largest population reductions showed increases in pedestrian crashes.
- Over time, there appeared to be a relationship between total pedestrian crashes and population reduction--crashes were reduced as the population decreased.
- The observed reductions in total pedestrian crashes over the study period were achieved largely by individuals under the age of 14. Since the study was not focused on this age group, no rationale was uncovered for this decline.

- Crashes for age 14+ pedestrians were relatively stable over the study period. However, when analyzed by gender, male crashes decreased while those for females increased.
- Population changes did not affect the crashes of all pedestrian subgroups in the same manner. Possibly population changes themselves vary markedly by subgroup.

## B. HBD Analysis and Selection of a Surrogate

As indicated previously, police crash reports describing each crash that occurred throughout the study period were obtained for analysis. It had been originally planned that an indication of HBD (had been drinking) on the report would serve as evidence of an alcohol-involved pedestrian. However, early in the collection of baseline data, it became apparent that the number of HBD crashes in the age 14+ group was decreasing markedly. These data are shown in Table 6.

**Table 6. Age 14+ HBD pedestrian crashes**

<b>Study period</b>	<b>Year</b>	<b>Age 14+ HBD crashes</b>		
		<b>Total</b>	<b>Avg/month</b>	<b>% HBD</b>
<b>Baseline</b>	1990	191	15.9	22.6%
	1991	162	13.5	19.1
	1992	146	12.2	17.0
	1993	121	10.1	15.1
	1994	99	8.3	11.8
	1995 (Jan-Jun)	51	8.5	11.8
<b>Program</b>	1995 (Jul-Dec)	47	7.8	11.0
	1996	77	6.4	9.6
	1997 (Jan-Jun)	47	7.8	11.2

The table shows that, of the age 14+ crashes, 22.6% were marked as HBD in 1990 compared to 11.8% in January to June of 1995, a reduction of 47.8% for the baseline time period. In addition, on average, there were 15.9 age 14+ HBD crashes a month in 1990 compared to 8.5 a month in January to June of 1995, a decrease of 46.5%. Thus, there were reductions of close to 50% both in the percentages of crashes marked as HBD and in the average monthly number of crashes so marked. These reductions all took place prior to the start of the countermeasure program.

An examination of city programs revealed no unusual countermeasure activity during the baseline period that could be associated with a remarkable reduction in HBD crashes. There is no reason to expect a reduction in HBD crashes during the baseline period since there was essentially no reduction in pedestrian crashes during this period for individuals age 14 and over. It is thus reasonable to conclude that the observed decrease in HBD indications was simply a reporting

artifact. This interpretation is further supported by the changes in the Baltimore Police Department that were ongoing at the time. During this period, the department's dedicated traffic squads were disbanded. Crash reporting duties were then handled by normal patrol units rather than the more focused special details.

Because of the large amount of time required to process HBD cases, the police were likely even more reluctant than usual to mark a pedestrian as HBD after the traffic units ceased to operate. This is further suggested by the fact that the HBD case rate appears to have stabilized in 1994 after the police department reorganization was complete and the new operating posture became well understood.

Regardless of the reason for the reduction in crashes marked as HBD, it was apparent from these data that HBD was not a stable indicator for use in determining changes in the incidence of alcohol-involved pedestrian crashes in this study. As mentioned earlier, it was already acknowledged to be a significant underestimator of the true rate of these crashes. With the addition of the observed instability, it could not be used as a measure of program effectiveness. HBD might be used for making relative assessments within a particular time period, e.g., comparisons of crash data from different city areas or different age groups of the victims, since it was likely that any pedestrian marked HBD had, in fact, been drinking.

It was therefore concluded that an investigation should be made for a surrogate to serve as a more robust indicator of crashes involving an alcohol-involved pedestrian. The complete age 14+ baseline data (from January 1990 through June 1995) were analyzed to select a surrogate measure for the HBD crashes. The objectives of the search were to:

- Select a measure that would maximize the likelihood that the pedestrian had been drinking (based on the results of prior pedestrian alcohol research as well as on analysis of the HBD indications in the Baltimore baseline crash data).
- Maximize the number of cases available for inferential analyses.

As reported previously (see Section III.B), an analysis of the first three baseline years revealed that HBD cases were more common in crashes that occurred to males age 30 to 59 from 6:00 pm to 2:59 am on weekends. These variables (gender, age, day and time) also were excellent predictors of high alcohol involvement in the New Orleans pedestrian alcohol study.<sup>7</sup> That study reported higher pedestrian alcohol involvement in crashes that occurred to male pedestrians, age 30 to 59, at night (8:00 pm to 3:59 am) and on weekends. The New Orleans study also found higher alcohol involvement among victims with a prior arrest record--a variable that was not available to the current study.

Based on this reasoning, combinations of gender, age, day and time of day were manipulated in the entire baseline data (January 1990 through June 1995) in an attempt to identify the best surrogate measure. The percentages of HBD for each variable were determined and compared with

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<sup>7</sup> Blomberg et al, *Op. Cit.*

BAC data (BAC = .10+) obtained from the New Orleans study. The data for the New Orleans study are based on 223 victims for whom the BAC was known.

First, with regard to gender, the baseline data showed that adult males were marked as HBD more than twice as often as females. In the New Orleans data, males had a BAC of .10 or greater about 2-1/2 times as often as did females. The percentages were:

<u>Gender</u>	<u>Baltimore Baseline % HBD</u>	<u>New Orleans % BAC .10+</u>
Males	21.4%	49.3%
Females	9.1	19.5

Thus, restricting the surrogate to only males appeared reasonable.

With regard to age, 10 year age intervals of the crash data were examined to determine the percentage of male victims in each interval that were HBD (Baltimore baseline) or measured in excess of 0.10 BAC (New Orleans study). These analyses confirmed that male pedestrians age 30 to 59 were more likely to be involved in pedestrian-alcohol crashes than were those from other age groups.

With regard to day of the week, the Baltimore baseline data showed that an alcohol-involved pedestrian crash for males was most likely to take place on Thursday, Friday, Saturday or Sunday (with the two weekend days having the highest involvement). The New Orleans data also had high alcohol involvement on weekends (including Thursday and Friday) as well as on Mondays. It was concluded that the surrogate should include Thursdays through Sundays, and consideration should be given to including the early morning hours on Monday.

Finally, for hour of the day, the Baltimore baseline data for males and the New Orleans data showed heaviest alcohol involvement in the night hours (from 7:00 pm to 3:59 am). It was therefore concluded that the surrogate should include the hours between 7 pm and 3:59 am.

Aggregating all of these findings, the final surrogate measure consisted of crashes that occurred to:

- Males
- Between the ages of 30 and 59
- From 7:00 pm to 3:59 am
- On Thursday, Friday, Saturday and Sunday nights (ending at 3:59 am on Monday morning)

Applying this definition of a surrogate alcohol measure to the baseline data resulted in a total of 331 cases of which 49.5% were marked as HBD on the police crash report.

Data for the surrogate alcohol measure by year are shown in Table 7. The table gives the total and average monthly crashes for each year in both baseline and program periods as well as the percentage of 1990 data.

**Table 7. Surrogate measure pedestrian crashes**

<b>Study period</b>	<b>Year</b>	<b>Surrogate measure</b>		<b>Percent of 1990</b>
		<b>Total</b>	<b>Avg/month</b>	
<b>Baseline</b>	1990	69	5.8	100.0%
	1991	61	5.1	88.4
	1992	61	5.1	88.4
	1993	53	4.4	76.8
	1994	56	4.7	81.2
	1995 (Jan-Jun)	31	5.2	89.9
<b>Program</b>	1995 (Jul-Dec)	31	5.2	89.9
	1996	48	4.0	69.6
	1997 (Jan-Jun)	22	3.7	63.8

In general, the table shows a *pattern* of crashes that is similar to the pattern shown for total crashes although the percentage changes are larger. Thus, there are generally reductions in crashes over both the baseline and program periods. The average annual crash rate for the baseline period is 60.2 crashes per year. For the program period, it is 50.5 crashes per year. This represents an average annual crash reduction in the surrogate measure from the baseline to the program years of 16.1%.

Since the population analysis described previously showed marked differences in crash data among subgroups over the time period of the study, the population data for the male aged 30 to 59 subgroup were examined to determine if that subgroup had changed in size over the study period. The data, which were obtained from the Internet web site of the U.S. Bureau of the Census, Population Estimates Branch, are shown in Table 8. The table shows that the male age 30 to 59 population in Baltimore was very stable during the study time period, decreasing only 3.3% over the entire study period.

In order to ensure further that the cases selected represented a reasonable surrogate, two additional analyses were conducted. One was an examination of the total crashes to males aged 30 to 59 in order to be sure that the entire subgroup was not changing in an unusual manner. The second was an examination of the HBD crashes among the selected surrogate sample to ensure that the pattern for the baseline data did not differ markedly from the general HBD model shown in Table 6. These data are shown in Tables 9 and 10.



**Table 8. Baltimore male age 30 to 59 population data**

<b>Study period</b>	<b>Date*</b>	<b>Population</b>	<b>Change from prior year</b>	<b>Percent of 1990</b>
<b>Baseline</b>	7/1/90	127,271	--	100.0
	7/1/91	127,775	+504	100.4
	7/1/92	128,531	+756	101.0
	7/1/93	128,078	-453	100.6
	7/1/94	127,637	-441	100.3
	7/1/95	126,228	-1409	99.2
<b>Program</b>	7/1/96	124,898	-1330	98.1
	7/1/97	123,025	-1873	96.7

\*Data were *not* available for 4/1/90 as given in Table 2 for total Baltimore population data; they *were* available for 7/1/96.

**Table 9. Male age 30 to 59 pedestrian crashes**

<b>Study period</b>	<b>Year</b>	<b>Total</b>	<b>Avg/month</b>	<b>Percent of 1990</b>
<b>Baseline</b>	1990	258	21.5	100.0%
	1991	258	21.5	100.0
	1992	261	21.7	101.2
	1993	235	19.6	91.1
	1994	251	20.9	97.3
	1995 (Jan-Jun)	130	21.7	100.8
<b>Program</b>	1995 (Jul-Dec)	143	23.8	110.9
	1996	253	21.1	98.1
	1997 (Jan-Jun)	130	21.7	100.8

Table 9 shows that the *pattern* for all pedestrian crashes holds also for age 30 to 59 male crashes. There was a small (0.8%) increase in crashes from the first to the last years of both the baseline period and the entire study period for this group. There was a 3.7% increase in average annual crashes in the program period over the baseline period. It was concluded that the age 30 to 59 male victims undifferentiated by time of day or day of week had a very stable crash history over the entire study period.

The HBD data are shown in Table 10 that follows.

**Table 10. Male age 30 to 59 HBD pedestrian crashes**

<b>Study period</b>	<b>Year</b>	<b>Total HBD</b>	<b>Avg/month</b>	<b>Percent HBD*</b>
<b>Baseline</b>	1990	101	8.5	39.1%
	1991	89	7.4	34.5
	1992	81	6.8	31.0
	1993	64	5.3	27.2
	1994	61	5.1	24.3
	1995 (Jan-Jun)	29	4.8	22.3
<b>Program</b>	1995 (Jul-Dec)	32	5.3	22.4
	1996	44	3.7	17.4
	1997 (Jan-Jun)	27	4.5	20.8

\*Percentage of the HBD crashes to male pedestrians aged 30 to 59 of the total crashes for this age group shown in Table 9.

Although there is approximately twice the rate of HBD crashes in the male age 30 to 59 subgroup as in all of the age 14+ Baltimore crashes (see Table 6), the pattern of decreasing HBD is the same. This would be the expected result if the assumption were, in fact, operative that the reduction is a result of diminished reporting due to the withdrawal of the police traffic units.

The data in Tables 9 and 10 give no reason to suspect anything unusual in the annual pattern of crashes and HBD crashes for the age 30 to 59 male. Therefore, it was concluded that the subset of the total crashes as selected and described above could be used as a surrogate for an alcohol-involved pedestrian crash. That surrogate measure was selected to be indicative of high alcohol involvement on the part of the pedestrian.

### **C. Pedestrian Crash Data Comparisons**

This section presents first a discussion of pedestrian crashes in the study zones. It is followed by discussions of the crashes on selected study roads, the severity of the pedestrian injuries and the NHTSA/FHWA crash types involved. Pedestrian crash data for the surrogate measure are provided. In addition, in most instances, data for the following analysis groups are provided for comparison purposes:

- Other (non-surrogate) age 14+ males
- Other (non-surrogate) age 30 to 59 males
- The total sample

In the presentations that follow, the average number of crashes per year or per period (baseline and program) is generally used as the measure for display and discussion. This was done because of the unequal lengths of the baseline and program periods (5-1/2 vs. 2 years).

The number of pedestrian crashes in each analysis group for both baseline and program time periods is shown in Table 11 along with the percentage change from baseline to program years.

**Table 11. Baseline and program pedestrian crash analysis group sizes**

<u>Analysis group</u>	<u>Baseline</u>		<u>Program</u>		<u>Percent change</u>
	<u>Number</u>	<u>Avg/year</u>	<u>Number</u>	<u>Avg/year</u>	
Surrogate measure	331	60.2	101	50.5	-16.1%
Other age 14+ males	2515	457.3	860	430.0	-6.0
Other age 30-59 males	1062	193.1	425	212.5	+10.0
Total sample	7726	1404.7	2639	1319.5	-6.1

As has been indicated previously, the table shows reductions of 6.1% in total crashes and 16.1% in surrogate measure crashes from baseline to program periods. Crashes involving age 14+ males who were *not* included in the surrogate group were reduced by 6.0% from baseline to program periods. Crashes involving age 30 to 59 males who were *not* included in the surrogate group increased 10.0% from baseline to program periods.

Data for the surrogate measure group are statistically different from those for "other age 30 to 59 males" ( $\chi^2 = 4.55$  with 1 d.f.,  $p < .05$ ) but not from those for the other two analysis groups listed in the table. In fact, the "other age 30 to 59 male" analysis group is statistically different from each group listed in the table ("other age 14+ males"  $\chi^2 = 5.10$  with 1 d.f.,  $p < .05$ ; "total sample"  $\chi^2 = 6.60$  with 1 d.f.,  $p < .05$ ). No other analysis groups differ statistically on these data.

### 1. In-Zone Crashes

Section III.B described the process used for identifying study zones. The resultant zones were pictured in Figure 2. The baseline and program in-zone crashes for the various study analysis groups are shown in Table 12.

By comparing Table 12 with earlier tables for the entire city it is clear that, although the zones were selected to include a maximum number of HBD crashes, they also included the majority of *all* crashes as well as of all of the subgroups listed in the table. This is probably not surprising since the zones were located primarily in the center of the city. The table shows that 69.8% or more of the baseline crashes occurred in the zones.

Each analysis group shows smaller percentages of in-zone crashes during the program period than during the baseline period. Although all of these changes were in the direction desired, none reached a level of statistical significance by a simple chi-square test.

**Table 12. In-zone pedestrian crashes for baseline and program**

<u>Analysis group</u>	<u>Baseline</u>		<u>Program</u>		<u>Total</u>	
	<u>N</u>	<u>%*</u>	<u>N</u>	<u>%*</u>	<u>N</u>	<u>%*</u>
Surrogate measure	244	73.7	69	68.3	313	72.5
Other age 14+ males	1797	71.5	578	67.2	2375	70.4
Other age 30-59 males	791	74.5	288	67.8	1079	72.6
All in-zone crashes	5389	69.8	1757	66.6	7146	68.9

\*Percentages are of the total Baltimore crashes for each period as reported in Table 11.

Table 13 shows the average number of in-zone and out-of-zone crashes per year for the various analysis groups. It shows reductions in average annual in-zone crashes from baseline to program periods for each sample except for "other age 30 to 59 males" (those not part of the surrogate measure because of the day and/or time of their crash) where the average annual in-zone crashes remained essentially the same for both study periods. As reported previously, the "other age 30 to 59 males" citywide showed an overall increase of 10.0% in crashes between baseline and program periods. Table 13 suggests that this increase necessarily occurred outside the zones.

**Table 13. Average number of in-zone and out-of-zone pedestrian crashes per year**

<u>Analysis group</u>	<u>In-zone</u>			<u>Out-of-zone</u>		
	<u>Baseline</u>	<u>Program</u>	<u>% change</u>	<u>Baseline</u>	<u>Program</u>	<u>% change</u>
Surrogate measure	44.4	34.5	-22.3	15.8	16.0	+1.3
Other age 14+ males	326.7	289.0	-11.5	130.5	141.0	+8.0
Other age 30-59 males	143.8	144.0	+0.1	49.3	68.5	+38.9
Total sample	979.8	878.5	-10.3	424.9	441.0	+3.8

The table shows that the largest reduction (-22.3%) for in-zone crashes between baseline and program periods was observed for the surrogate measure. This measure showed a small increase (+1.3%) in out-of-zone crashes across the two study periods. With the exception of the "other age 30 to 59 males" (whose in-zone and out-of-zone crashes were essentially the same), all groups showed *decreases* in in-zone crashes from baseline to program periods. All groups showed *increases* in out-of-zone crashes from baseline to program period.

There are no statistically significant associations *between* the analysis groups listed in the table for either the in-zone or out-of-zone crash frequency data on which the annual crash averages were based. However, *within* each group, data for *all but* the surrogate group showed statistically significant differences between in-zone and out-of-zone crashes for the baseline and program periods as follows: "other age 14+ males"  $\chi^2 = 5.53$  with 1 d.f.,  $p < .02$ ; "other age 30 to 59 males"  $\chi^2 = 6.88$  with 1 d.f.,  $p < .01$ ; and "total sample"  $\chi^2 = 9.25$  with 1 d.f.,  $p < .01$ .

In summary, in-zone crashes represented a substantial percentage of both baseline and program crashes; the percentage was smaller for the program than for the baseline period. The surrogate measure experienced a 22.3% reduction of in-zone crashes between the baseline and program periods. All but one comparative group also achieved reductions of 10% or more in their in-zone crashes between the baseline and program periods.

## 2. Crashes on Selected Study Roads

Concurrent with the identification of study zones, certain Baltimore roads or road segments were noted that had high incidences of HBD pedestrian crashes. In all, six roads were identified and selected for implementation of engineering countermeasures in addition to the education approaches. These engineering countermeasures included the following:

- Mounting of road signs noting the speed limit and warning drivers of high pedestrian traffic.
- Correcting deficiencies in lighting.
- Removal of items from the roadway that might prevent drivers and pedestrians from seeing each other.
- Refreshment of crosswalks as needed.

In addition, project banners announcing the *Walk Smart Baltimore* program were mounted on these roads on a rotating basis.

The annual crashes per year on the treated and untreated roads for the baseline and program periods are shown in Table 14. Percentage changes from baseline to program time periods are also included.

**Table 14. Average annual pedestrian crashes on treated and untreated roads**

<u>Analysis group</u>	<u>Treated roads</u>			<u>Untreated roads</u>		
	<u>Baseline</u>	<u>Program</u>	<u>% change</u>	<u>Baseline</u>	<u>Program</u>	<u>% change</u>
Surrogate measure	13.6	8.5	-37.5	46.5	42.0	-9.7
Other age 14+ males	70.7	58.5	-17.3	386.5	371.5	-3.9
Other age 30-59 males	32.5	34.5	+6.2	160.5	178.0	+10.9
Total sample	179.3	160.0	-10.8	1225.5	1159.5	-5.4

The table shows that larger reductions between baseline and program crashes occurred on treated roads than on untreated roads. In fact, the percentage reduction on treated roads based on average annual crashes was two to four times that for untreated roads. Reductions occurred for all groups except for "other age 30 to 59 males" for whom crashes went up on both types of

roads. There was, however, a smaller increase in crashes on the treated than on the untreated roads for this analysis group.

When comparing baseline and program crash totals, there are no statistically significant differences between the analysis groups for either treated or untreated road frequency data on which the annual averages were based. In addition, there are no statistically significant differences within any of the groups for these data. Nevertheless, it is worth noting that, from baseline to program, the surrogate experienced a 37.5% decline in average annual crashes on the treated roads. It was the largest crash reduction achieved on the treated roads by any of the groups studied. On untreated roads, the similar baseline to program reduction for the surrogate was 9.7%, again the largest reduction observed on the untreated roads. Even though statistical significance could not be demonstrated for these drops, their magnitude and pattern are encouraging.

### 3. Pedestrian Injury Severity

The police crash report provides five categories for describing the severity of a pedestrian injury as follows: uninjured/unknown, possible injury, non-incapacitating injury, incapacitating injury and fatal injury. The average number of baseline and program crashes per year for each category and the percentage change from baseline to program periods are shown for the surrogate measure in Table 15.

**Table 15. Surrogate measure pedestrian injury severity**

<u>Injury severity</u>	<u>Average per year</u>		<u>Percent change</u>
	<u>Baseline</u>	<u>Program</u>	
None/unknown	7.5	8.0	+6.7
Possible	16.4	13.0	-20.7
Non-incapacitating	15.8	18.0	+13.9
Incapacitating	17.5	11.0	-37.1
Fatal	3.1	0.5	-83.9

The table shows large percentage reductions from baseline to program periods in both incapacitating and fatal average annual crashes. The frequency data on which the annual averages were based are not statistically significant. Again, however, the pattern of results is in the predicted direction and is encouraging.

The average annual number of serious (incapacitating and fatal) crashes for each analysis group is shown in Table 16 along with the percentage change from baseline to program time periods. For comparison purposes, the average number of crashes per year is also given.

**Table 16. Average total and serious pedestrian crashes per year**

<u>Analysis group</u>	<u>Total crashes</u>			<u>Serious crashes</u>		
	<u>Baseline</u>	<u>Program</u>	<u>% change</u>	<u>Baseline</u>	<u>Program</u>	<u>% change</u>
Surrogate measure	60.2	50.5	-16.1	20.5	11.5	-43.9
Other age 14+ males	457.3	430.0	-6.0	82.2	63.0	-23.4
Other age 30-59 males	193.1	212.5	+10.0	33.5	25.0	-25.4
Total sample	1404.7	1319.5	-6.1	240.4	179.5	-25.3

Table 16 shows that all the examined study groups experienced reductions in serious (incapacitating and fatal) crashes between the baseline and program periods. This was true for even the "other age 30 to 59 males" group which had an increase in overall crashes per year over the study period. The largest reductions in serious crashes were shown by the surrogate measure (43.9%). All others had reductions of approximately 25%. There are no statistically significant differences between the groups on the frequency data on which the annual averages for serious crashes were based. However, the pattern of results continues as would be predicted from a program effect.

Further analysis was performed on the surrogate measure to determine if there were differences in pedestrian injury severity between in-zone and out-of-zone crashes. The results of this analysis are shown in Table 17.

**Table 17. Pedestrian injury severity for surrogate measure in- and out-of-zone crashes**

<u>Injury severity</u>	<u>Avg in-zone crashes/year</u>			<u>Avg out-of-zone crashes/year</u>		
	<u>Baseline</u>	<u>Program</u>	<u>% change</u>	<u>Baseline</u>	<u>Program</u>	<u>% change</u>
None/unknown	5.1	6.0	+17.6	2.4	2.0	-16.7
Possible	12.5	8.5	-32.0	3.8	4.5	+18.4
Non-incapacitating	12.4	11.5	-7.3	3.5	6.5	+85.7
Incapacitating	12.5	8.0	-36.0	4.9	3.0	-38.8
Fatal	1.8	0.5	-72.2	1.3	0.0	-100.0

For the in-zone crashes, the table shows increases from baseline to program time periods only for the none/unknown category; all other categories show decreases. In contrast, the out-of-zone data show increases in crashes with possible injuries and crashes with non-incapacitating injuries. The average annual fatalities decreased markedly both in and out of the zones, but the numbers are extremely small thereby making it difficult to interpret percentage drops. However, when fatal crashes are combined with incapacitating crashes, the reductions between baseline and program time periods for in-zone and out-of-zone crashes were 41.0% and 51.6%, respectively. There are no statistically significant differences in the frequency data on which the annual in-zone

and out-of-zone averages were based (fatal and incapacitating crashes were combined for this calculation).

#### 4. NHTSA/FHWA Crash Type

Each police crash report was coded according to NHTSA's *Manual on Accident Typing for Pedestrian Accidents*.<sup>8</sup> The results for crashes of which the surrogate measure is composed and for HBD male age 14+ crashes are shown in Table 18.

**Table 18. Average annual pedestrian crashes by NHTSA/FHWA crash type: surrogate measure and HBD age 14+ males**

<u>Crash type</u>	<u>Surrogate</u>		<u>HBD 14+ males</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
<b>Intersection</b>				
Vehicle turn merge	5.3	9.2%	6.1	6.1%
Dash	5.6	9.7	13.7	13.8
Walk into vehicle	1.5	2.6	6.0	6.0
Driver violation	1.6	2.8	2.0	2.0
Other	21.5	37.3	35.6	35.9
<b>Midblock</b>				
Dart/dash	1.9	3.3	4.5	4.5
Walk into vehicle	0.8	1.4	1.7	1.7
Other	5.7	9.9	14.5	14.6
Walking in road	0.9	1.6	1.5	1.5
Standing at/near curb	0.7	1.2	1.1	1.1
Not in roadway	4.7	8.1	2.5	2.5
Backing	2.7	4.7	4.0	4.0
Other	4.8	8.3	6.0	6.0

Over 60% of both surrogate (61.6%) and HBD 14+ male (63.8%) crashes occurred at intersections. The HBD group had a larger proportion of crashes that occurred midblock than did the surrogate measure (20.8% vs. 14.6%). The percentage distributions of the two groups by intersection, midblock and other crashes were as follows:

	<u>Surrogate</u>	<u>HBD 14+ males</u>
Intersection	61.6%	63.8%
Midblock	14.6	20.8
Other	23.9	15.1

<sup>8</sup> *Manual on Accident Typing for Pedestrian Accidents: Coder's Handbook*. National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, DC.



Over one-third of the intersection crashes in both groups (35.9% for the 14+ HBD group and 37.3% for the surrogate measure) fell into the "intersection other" crash category. The largest group for midblock crashes also was the "midblock other" category. In most instances, these represent crashes in which there was insufficient information on the police crash report to permit them to be assigned to a more descriptive crash category.

Of the remaining crash types, the largest intersection crash type for both groups was the intersection dash which accounted for 13.8% of the 14+ HBD crashes and 9.7% of the surrogate measure crashes. It was followed by vehicle turn merge which accounted for 6.1% of the HBD crashes and 9.2% of the surrogate measure crashes. The HBD group had a larger proportion of crashes in which the victim walked into the vehicle at an intersection than did the surrogate measure (6.0% vs. 2.6%). Darts and dashes--both intersection and midblock--represented 13.0% of the surrogate measure crashes and 18.3% of the HBD crashes.

Table 19 provides average baseline and program crashes per year by NHTSA/FHWA crash types for the surrogate measure. Percentage change between baseline and program years is also given.

**Table 19. Average annual baseline and program surrogate measure pedestrian crashes by NHTSA/FHWA crash type**

<u>Crash type</u>	<u>Avg crashes per year</u>		<u>Percent change</u>
	<u>Baseline</u>	<u>Program</u>	
Intersection			
Vehicle turn merge	5.6	4.5	-19.6%
Dash	6.2	4.0	-35.5
Walk into vehicle	1.8	0.5	-72.2
Driver violation	2.2	--	-100.0
Other	20.0	25.5	+27.5
Midblock			
Dart/dash	2.5	--	-100.0
Walk into vehicle	0.7	1.0	+42.9
Other	6.7	3.0	-55.2
Walking in road	0.7	1.5	+114.3
Standing at/near curb	0.9	--	-100.0
Not in roadway	4.0	6.5	+62.5
Backing	2.9	2.0	-31.0
Other	5.8	2.0	-65.5

Because of the small number of cases, the table shows considerable variation in the percentage change from baseline to program period. For the intersection crashes, there were reductions in all crash types except for the "other" category. Midblock crashes showed increases only for the category "walk into vehicle." It is interesting to note that there were no program crashes

involving driver violations at intersections, midblock darts or dashes and crashes in which the victim is standing at or near the curb.

The distribution of the surrogate measure by major categories (intersection, midblock and other crashes) provides a better look at the differences between baseline and program data:

	<u>Avg per year</u>		<u>Percent change</u>
	<u>Baseline</u>	<u>Program</u>	
Intersection	35.8	34.5	-3.6%
Midblock	9.9	4.0	-59.6
Other	14.3	12.0	-16.1

This list shows that the incidence of intersection crashes was relatively stable between baseline and program periods. The major percentage reductions in crashes between baseline and program periods took place midblock and at other locations.

## 5. Time Series Analyses

The foregoing presentations of data focused on describing the crash effects during the baseline and program periods of the *Walk Smart Baltimore* as discrete values. In general, the average crashes per year for each measure were compared before and after the onset of the program because of the unequal length of the baseline and program periods. This approach is not sensitive to trends, particularly those which might not have commenced until well into the program period. It also does not account for seasonal or other cyclic variability in the data.

An alternative method for analyzing the data is as a time series. Using appropriate time series analysis techniques can account for and adjust for the dependent effects occurring among equally spaced observations. The time series approach can also identify trends that might not be apparent from a simple pre/post analysis or a visual inspection of the data.

The time series analysis techniques used in this study are based on Box-Jenkins theory for discrete time series in the time domain for either the prediction of future events or for evaluation of known interventions.<sup>9</sup> These interventions can take the form of specific outliers either due to unusual events, such as fires, strikes etc., or due to the introduction of planned changes in policy or programs as was the situation in Baltimore during this study. The software selected to perform the time series calculations and modeling of the impact and comparative times series in this study was *Autobox* Version 3.0.<sup>10</sup> All models were initially developed by the automatic modeling feature in *Autobox*, however final models were reviewed on an iterative basis with their specific autocorrelation functions (ACF), partial autocorrelation functions (PACF) and residual series analyses to ensure appropriate parameter selection and adherence to valid identification and estimation procedures.

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<sup>9</sup>Box, G.E.P. and Jenkins, G.M. *Time Series Analysis: Forecasting and Control*. San Francisco, CA: Holden-Day, Inc., 1976.

<sup>10</sup>Developed by Automatic Forecasting Systems, P.O. Box 563, Hatboro, PA. 19040.

Intervention Analysis, an adaptation of Box-Jenkins Time Series, was used to measure the effect of the pedestrian program on pedestrian crashes without the need to introduce explicit quantitative statistical measures representing any of the input or independent variables. The mathematical expression relating the output (dependent) and input (independent) variables is called a transfer function. The independent variable used to evaluate this program can be characterized as a step function consisting of 66 zeros (baseline) and 24 ones (program period). This step function in effect is used to determine whether a change in level of pedestrian crashes has occurred between the baseline and program periods. In addition, all other time series characteristics (trends, autocorrelation, outliers, etc.) are accounted for so that the true effect of the program, if any, can be quantified.

The data of primary interest for the time series analysis was the surrogate alcohol series discussed earlier (males, 30-59 years old, 7:00pm to 3:59am, Thursday, Friday, Saturday and Sunday nights). This series was considered to represent the major focus of the *Walk Smart Baltimore* countermeasure efforts.

The countermeasure program mounted by *Walk Smart Baltimore* was not a "blitz" type of intervention. Initial activities started on or about July 1, 1995. Incremental efforts were mounted throughout much of the period covered by the program data (July 1, 1995 through June 30, 1997). Some of the countermeasures such as the TV public service announcements, were targeted at the entire pedestrian alcohol problem. Others, such as the special signage and localized sight distance improvements were focused only on selected roadways. Still others, such as the distribution of posters, were focused at the pedestrian alcohol problem primarily within the defined zones. Thus, both the time and location dimensions were hypothesized to be potentially related to the effectiveness of the program. Therefore, separate time series analyses were defined that would look at both the phase-in of an effect and the possibility that any effect would be differential as a function of whether it was examined city-wide, in the defined zones or just on the treated roadways.

The approach adopted was to examine various series in ascending order of expected effect. That is, those series that would indicate the largest program effects if significant were analyzed first. Following this approach, the first series examined was for the city-wide surrogate measure. Although the time series analysis of this series produced a model with significant parameters, introduction of the intervention variable to measure the effectiveness of *Walk Smart Baltimore* did not produce a significant effect.

When no effect was found city-wide, attention turned to an examination of the surrogate measure within the defined zones. An effect within the zones would be postulated to be more likely than a city-wide drop because the zones were exposed to a much higher concentration of crashes than was the remainder of the city. Once again, a time series model with significant parameters was developed but no effect was found after introducing the intervention variable.

The series representing the response to what was believed to be the strongest intervention focused on crashes on the treated roads. These roads received all of the city-wide countermeasures plus the in-zone efforts plus special signage and localized public information. Hence, it was assumed that crashes on these roads would be most likely to show an effect.

The initial plan was to use the surrogate measure series for the treated roads. However, this series proved to be too sparse to support a valid time series analysis when only this subset was examined. Therefore, the surrogate definition was broadened by dropping its constraints sequentially until a sufficiently populated series was obtained. As a result, the analysis for treated roads was based on the series of crashes occurring to males 14 years of age and older. This series is shown in Table 20 and Figure 5. In Table 20, the shaded cells represent the program period.

As with the other analyses, a univariate model was developed to determine its time series characteristics in order to evaluate the parameters of an intervention model. In this instance, the final intervention model selected for the effect of the *Walk Smart Baltimore* program on crashes involving males, 14 years of age and older on treated roadways was:

$$Y(T) = 6.4969 + X1(T)[(-1.1252)] + X2(T)[(+10.5031)] + X3(T)[+6.5031] + X4(T)[(+2.5388)] + X5(T)[(+5.5031)] + A(T)$$

where:

X1 is the project effect per month

X2 is a single pulse at month 29 (May 1992)

X3 is a single pulse at month 17 (May 1991)

X4 is a seasonal pulse beginning with month 10 (October 1991) and for each 12 month period thereafter

X5 is a single pulse at month 64 (April 1995)

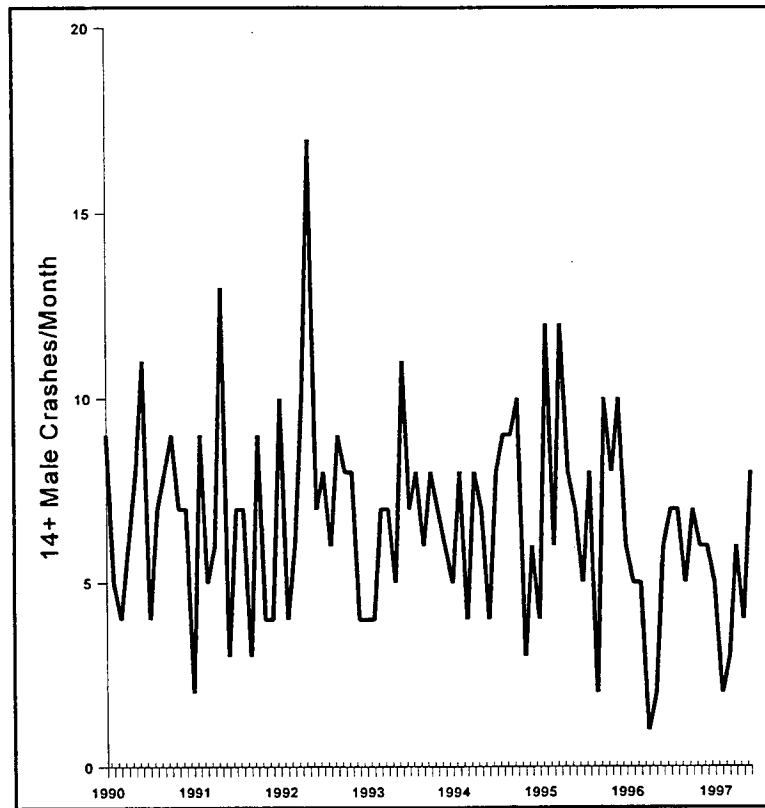
This model fits the data with an r-squared value of 0.377. Each of the parameters is significant at the 0.05 level or less.

**Table 20. Crashes to males 14 years and older on treated roads by year**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1990	9	5	4	6	8	11	4	7	8	9	7	7
1991	2	9	5	6	13	3	7	7	3	9	4	4
1992	10	4	6	10	17	7	8	6	9	8	8	4
1993	4	4	7	7	5	11	7	8	6	8	7	6
1994	5	8	4	8	7	4	8	9	9	10	3	6
1995	4	12	6	12	8	7	5	8	2	10	8	10
1996	6	5	5	1	2	6	7	7	5	7	6	6
1997	5	2	3	6	4	8						

There are several ways to assess the extent of the crash reduction estimated by the developed model. The first bases the reduction on the expected number of crashes versus the crashes

apparently avoided. As mentioned earlier, the project countermeasures began to be introduced on July 1, 1995 and were in effect for the succeeding 24 months. The monthly reduction in crashes of 1.1252 (represented by the coefficient of the  $X1(T)$  variable known as the Omega Factor) results in a total project effect of a 27 crash reduction ( $24 \times -1.1252$ ). The actual number of crashes occurring during the 24 month program period was 134. If the project were not in effect or had no impact, then the total number of crashes would have been 161, the sum of 134 and 27. The reduction of 27 crashes divided by the total expected crashes (27/161) yields a percent reduction of 16.8%.



**Figure 5. Series of 14+ male crashes per month on treated roads**

The second way to examine the decline in crashes predicted by the time series model for crashes to males 14 and over on treated roads is to consider the Omega Factor to be a predicted reduction in the mean of the series. The mean for the 66 baseline months was 7.0303 crashes per month. A reduction of 1.1252 crashes per month represents a 16.0% monthly decline.

Since these two methods result in essentially the same estimate of crash reduction, no further reconciliation is necessary. The time series analyses showed that for males aged 14 and over on the roads with the maximum extent of treatment, there was a significant crash reduction coincident with the program. The magnitude of this reduction was between 16.0% and 16.8%.

## VI. DISCUSSION

The present project set out to address a problem that had largely been intractable before the efforts reported herein. The extremely high BACs characteristic of the pedestrian alcohol crash victim strongly suggest that achieving a crash reduction is difficult and will require a multi-disciplinary undertaking extending beyond traditional traffic safety approaches. Based on the results reported herein, it can be concluded that the effort had some success with respect to both process and outcomes. As with any successful research effort, many important lessons were learned that should aid future implementations of programs addressed at the same problem.

Overall, this effort was designed to benchmark methods and countermeasures for the pedestrian alcohol problem. Its output was to be this report together with a guide to the implementation of a program based on *Walk Smart Baltimore* in other interested communities. Clearly, such a guide would only be valid if the present project could be considered an adequate model that meaningfully advanced the current state of knowledge on the problem. It is reasonable to conclude that such a model was, in fact, created. Not all of the processes implemented worked or can be recommended for universal application. Nevertheless, *Walk Smart Baltimore* did mobilize and sustain a city-wide countermeasure program that used a variety of intervention approaches. The various groups that participated in the program all appeared to benefit from their involvement. True synergism was achieved from the interactions among agencies that typically do not collaborate. Each participating organization likely institutionalized some aspect of *Walk Smart Baltimore* in their everyday activities even after the end of the project.

The guide produced by the present project (see Appendix I) is well supported by the results of the effort. It must be remembered, however, that it is a guide and not a rigid prescription for a community pedestrian alcohol program. Local differences, particularly in the focus of the various community agencies needed to make a program viable, will necessarily dictate adaptations. Overall, however, the multi-disciplinary approach and the various countermeasure themes used and documented in the appendices to this report appear worthy of emulation for any future program.

The process and outcomes of a project such as this should be inextricably linked as long as the hypotheses underlying the design of the process are sound. For *Walk Smart Baltimore*, the essential aspects of the countermeasure process were a multi-disciplinary, multi-agency approach making maximal use of intermediaries. This process was selected because of the extent of the drinking problem characteristic of the crash victims and, hence, their likely inability or reluctance to accept many direct countermeasure approaches. It was reasoned that intermediaries who understood the dangers involved in walking at extreme blood alcohol concentrations might be a better countermeasure target because of their ability to intervene to protect the drinking pedestrian.

The results presented herein suggest that the adopted approach was appropriate. The *Walk Smart Baltimore* coalition successfully developed and distributed a variety of countermeasures that the data suggest yielded positive outcomes. Unfortunately, the coalition itself did not continue after the present research project ended. Its demise, however, did not appear to be the result of a lack of commitment by the participants. Rather, it can be attributed to the withdrawal of the coalescing and administrative functions served by the research team and NHTSA representatives. It is both a

qualitatively and quantitatively different task for a city agency to participate in a coalition such as *Walk Smart Baltimore* than it is to serve as the leader of the effort. While the *Walk Smart Baltimore* coalition was successful in generating interest and concern about the problem in most participants, it was not sufficiently compelling to attract a champion. The failure of the coalition to generate a long-term leader may have been the result of the initial strong role of the “outsiders” from this project and NHTSA or simply an inevitable outcome of competing demands and high workload on understaffed municipal departments. Whatever the cause, future implementations should focus specifically on the coalescing function and devote attention to building their efforts around a partner that has long-term interests and the capability to sustain the program.

The present effort also dealt with assessing the impact on crashes of *Walk Smart Baltimore* as actually implemented. The results reported herein provide good evidence that the program produced a reduction in the targeted crashes. Substantial declines in the surrogate measure for total city-wide crashes, in-zone crashes and crashes on treated roads lead to the conclusion that the study made positive inroads into reducing the pedestrian alcohol problem in Baltimore. In addition, the significant decline of 16% shown by the time series analysis in crashes to males 14 and over on the treated roads was very encouraging.

These results support two conclusions with respect to outcomes. First, a demonstrable savings in crashes resulted from the program during the two year time period covered by the evaluation. Second, the pattern of results suggests that a further broadening of effects over time is possible. As the efforts directed at intermediaries have time to work and as more drivers, pedestrians and intermediaries are exposed to the treated roads and other sustaining countermeasures, it is not unreasonable to expect some expansion of the observed reductions. It cannot be emphasized too strongly, however, that the problem being addressed is resistant to countermeasures. It takes a long time for an individual to “learn” to drink to the levels characteristic of those seen among pedestrian alcohol victims. It is therefore not unreasonable to expect countermeasure efforts to take some time to bear fruit.

Finally, it is interesting to speculate on the extent of results that might have been forthcoming if *Walk Smart Baltimore* had persisted and been given additional resources. First, it is likely that some of the countermeasure efforts, such as the distribution of high visibility caps, would have been expanded. This would have reached a larger segment of the population and enhanced effectiveness. Second, many of the concepts and messages initially promoted by *Walk Smart Baltimore* to both the drinking pedestrian and intermediaries would have been reinforced. This might have further extended the effectiveness of the program. Third, feedback of effectiveness data and anecdotal information might have led to the derivation of new and different countermeasures to expand the program and increase its potency. The *Walk Smart Baltimore* coalition certainly had the talent and interest to derive these benefits if appropriate leadership and funding had emerged. Even without this continued and expanded effort, however, the current effort clearly expanded knowledge of the pedestrian alcohol problem and the processes that can lead to its reduction.

## **APPENDIX A**

### **CRASH VICTIM DATA**

This appendix contains the following crash victim materials:

- Interviewer's guide
- Profile of the crash victim
- Summary tables:
  - Table A-1. Personal/residence data
  - Table A-2. Alcohol/drug data
  - Table A-3. Pedestrian data
  - Table A-4. Crash data
- Storyboards of the crash victims' days



## CRASH VICTIM INTERVIEWER'S GUIDE

The purpose of the interviews is to collect data that will describe the physical time-courses taken by pedestrians who have been injured in pedestrian crashes after they had been drinking. The data will be used to develop scenarios of pedestrian behavior while drinking. These data will aid in identifying and selecting countermeasures for the drinking pedestrian. The entire interview will be recorded.

Prior to the start of the interview, the interviewer should record selected identifying data on the tape. These data should include:

- Sex of the subject
- Date of the crash
- Location of the crash
- Nature and severity of the patient's injuries

The session will start with the subject's review and signing of the Consent Form. The interview itself will be initiated by obtaining certain background information like age, residence, drinking habits and walking habits. The interview will then assume a "story-telling" format. The primary story will describe the course and events leading up to the pedestrian accident. Secondary stories will describe other time-courses that are commonly used by the pedestrian when drinking. Five types of information will be obtained from the interview:

- Background data on the respondent
- Time-line of events
- Map of routes traveled
- Description of each event on the time-line

The interviewer might introduce the session as follows:

*We are interested in obtaining information about the accident you had on (date). Our aim is to try to get information from several people who have had accidents while drinking to see if we can find ways to reduce these accidents. But first we would like you to read and sign this Consent Form.*

The interviewer will review the Consent Form with the subject and answer any of the subject's questions.

When the subject has read and signed the Consent Form, the interviewer might initiate the first part of the interview as follows:

*First, we would like to learn some things about you so I'm going to ask you some questions about your age, where you live, your drinking habits, and how much you walk. After that, we'll talk about your accident.*

The interviewer should then proceed to ask the questions listed below.

### **PERSONAL INFORMATION**

#### **Personal data**

- What is your age?
- What was your weight at the time of the accident?
- What is the highest grade of school you completed?
- Were you employed at the time of your accident? If yes:
  - Are you still employed?
  - How long have you worked there?
  - What do you do there?
- What is your religion?
- Do you have a driver's license? If yes, is it current (or suspended)?
- What is your general health?
- Where do you live?
- How long have you lived there?
- Is it a house or an apartment?
- Are you married?
- Do you have any children? How many?
- If married, do your wife and children (if any) live with you?
- Does anyone else live with you? Who?
- Where were you born?
- How long have you lived in the Baltimore area?

#### **Drinking habits**

(As alternatives to these questions, the interviewer may administer the CAGE, brief MASS, and additional instruments covering amount of alcohol consumed.)

- Have you ever been treated for drug or alcohol abuse? Which one? When?
- What type of alcohol do you consume most frequently?
- How often do you consume it?

- When do you consume it (days of the week, times of the day, all the time)?
- Where do you consume it (home, friends, bars, street)?
- What time do you spend consuming alcohol in each event?
- Are you usually alone or with company when drinking (alone, with friends, with family, in public places)?

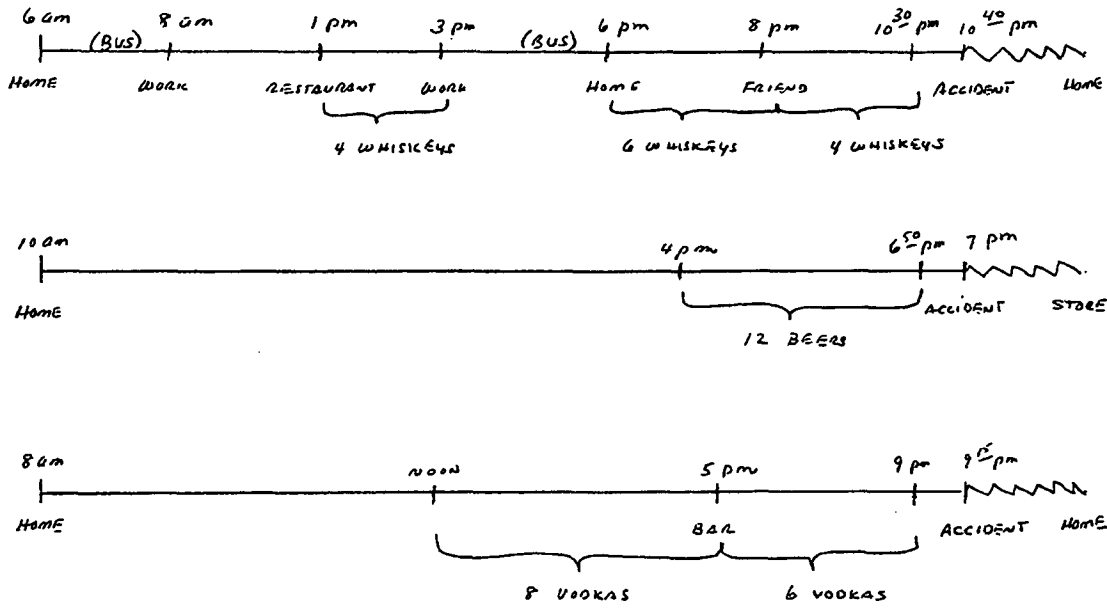
### **Pedestrian habits**

- How much do you walk (every day, every week)?
- What kind of walking do you do (to/from work, school, store, bus, visit friends, exercise)?
- How long are your walks (a few blocks, a mile or more)?
- Where do you usually walk (city streets, parks, country roads)?
- What time of day do you do your walking (morning, afternoon, evening, anytime)?
- What days of the week do you typically walk (weekdays, weekends, all days)?
- Do you usually have walking companions?
- On your walks, when are you in the street typically (midblock to cross, at intersection to cross, in road where there are no sidewalks)?
- When you cross the street, are there typically any crossing aids (crosswalks, traffic signals, pedestrian signals)?

When the interviewer has obtained the preceding background data, a time-line of events should be developed with the subject. The interviewer might introduce this part of the interview with the following:

*Now, I'd like to know what you did on the day you had your accident. Specifically, I'd like to know what you did from the time you got up on that day until you had your accident. And I'd like to know how much you had to drink, the type of beverage you drank, when you drank it, and where you drank it. Let's start with when you got up that day. Tell me what time you got up, what you did, and when and where you had your first drink.*

Working with the pedestrian, the interviewer should develop a time-line of events that begins when the pedestrian got up on the day of the accident and ends at the accident. Show all places the pedestrian went that day up to and including the pedestrian accident (and the intended destination) and show when and where the pedestrian had anything to drink all day. Identify any parts of the time-line in which the pedestrian was in a vehicle. Examples of some time-lines that might result from this effort are shown below. A form to capture the time-line is attached to this Interviewer's Guide.



Following development of the time-line, the interviewer should ask the pedestrian to describe each site (place) on the line *where the pedestrian had consumed at least one drink* and the route taken to the next site. The interviewer should begin with the site immediately *preceding* the accident and cover that site and the route taken up to and including the accident. The interviewer should then go backward in time covering as many sites and routes as time permits. All sites and routes should be drawn on a map. The pedestrian should be allowed to tell the story with prompts, as necessary, by the interviewer. The interviewer should attempt to obtain the information listed below and note appropriate information on the time-line as the interview progresses.

### SITE SPECIFIC DATA

#### Every site

- What is the site (home, bar, friend's place, work, store, restaurant, etc.)?
- Where is the site?
- How long did you stay there?
- Did you have anything to drink there? If yes:
  - How much did you have to drink?
  - What type of beverage did you drink?
  - How much time did you spend drinking (e.g., began at \_\_\_ and ended at \_\_\_)?

- Did anyone try to stop you from drinking (or refuse to serve or sell to you)? If yes, who were they and what did they do?
- Did anyone offer to help you when you left (that is, offer to walk with you, call a cab, etc.)? If yes, who were they and what did they do?
- How many people were there and what was going on? (Try to get an estimate of the quality of the person's recollection of time and the amount of detail remembered, for example, was there something on television that made the interviewee remember a specific time, does the interviewee remember specific things that people said or were doing, or does the interviewee remember specific music that was playing?)

## MOBILITY

### **Driving routes**

- Where were you going?
- Why were you going there?
- Who was driving?
- How many people were in the vehicle?
- Was anyone drinking in the vehicle? Who were they and what were they drinking?

### **Walking routes**

- Where were you going?
- Why were you going there?
- What route did you take?
- How often do you take this route?
- Are there other routes that you take for this trip? If yes, what are they? What makes you decide to take one route or another?
- Were you alone or with friends? If friends, how many? Were the friends drinking too?
- What streets did you cross? Where did you cross them? Why did you cross where you did? Were there crossing aids (traffic lights, stop signs, marked crosswalks)? Did you have any close encounters crossing any of these streets? What were they?
- Do you think you needed any help walking? Did anyone try to help you? Who and what did they do?

## The accident

- Where did the accident happen?
- What were you doing in the street at the time (crossing the road, getting in or out of a car, standing in road waiting to cross, lying in the road, sitting on the curb, etc.)?
- Just prior to the accident, were you running or walking (fast, normal or slow)?
- Was there a traffic light? Was it green? Was there a stop sign or any other type of traffic control?
- Did you see the car before it hit you? At what point did you see it?
- Did anything prevent you from seeing the vehicle or the driver from seeing you, for example, parked cars, stopped bus, telephone pole, mailbox, sun glare?
- Did you try to avoid the accident after you saw the striking vehicle? What did you do?
- Do you think there is anything you could have done to avoid the accident? What? (Note: If the answer is "don't drink," probe to see if the interviewee has any ideas of anything he or she could have done as a pedestrian to avoid the accident.)
- Did anyone try to help you avoid the accident? Who and what did they do?
- If you had friends with you, were they hit too? If not, why not?
- Did anything affect the way you reacted that day, for example, were you tired, or in a hurry, or upset about something?
- If you had the day to do over, would you do anything differently? What?
- Was there any point on the time-line that you think you could have done something that would have prevented the accident? Where and when? What could you have done?

## Subject's Assessment of Physical State Just Prior to the Accident

The interviewer might introduce this topic as follows:

*We would like to get some idea of how you felt just prior to the accident. For example, do you remember if you were seeing clearly? Did you feel unsteady? Were you stumbling or bumping into things? Let's start with your vision.*

The interviewer should then go through the topics listed below and attempt to get the subject's assessment of physical state *just prior to* the accident. For each topic, several questions are included that the interviewer might use to get the subject talking about the particular area.

- How was your vision just prior to the accident? For example, did you have trouble focusing? Was everything a blur? Could you judge distances and heights (like curbs)? Was there a lot of glare? Did you see double? Were cars going by very fast? Could you track objects? Was everything foggy?

- How was your balance? For example, were you stumbling? Did you have to spread your arms out to keep from falling? Did you bump into things or people? Did you stagger? Did you drift from side to side on the sidewalk? Did you have to focus on your feet to keep from falling? Did you have to stop walking if you wanted to look at something? Did you have to look at the sidewalk to know where to plant your feet?
- How aware were you of what was going on? For example, could you focus on only one thing at a time? Did you lose track of things (like people, your cigarettes, where you were in the city, what block you were on)? Did you feel foggy or out of it? Did you understand what people were saying to you? Did you just want to get where you were going without paying attention to what was around you? Did you know or care what the time was? Did you think about your personal safety?
- Did you feel hostile or angry? Were you cursing? Were you rude? Were you looking for a fight? Were you in a mean mood?
- How was your appearance? Were your clothes rumped or messy? Were your hands shaking or fumbling with things? Was your speech slurred?
- Finally, what is the best way for someone looking at you on the street to know that you have been drinking as much as you did the day you had your accident?

The interviewer should thank the subject and pay the subject for the interview.

**TIME-LINE OF EVENTS**

(Be sure to include time at each place and time spent drinking.)

A-9

<u>Time</u>	<u>Get Up</u>		<u>Accident</u>		<u>Final Destination</u>
<u>Site</u>					
<u>Beverage</u>					
<u>Time recollection quality*</u>					
<u>Detail recollection quality*</u>					
<u>Physical State*</u>					
<u>Comments</u>					

\*Good, fair, poor



## PROFILE OF THE CRASH VICTIM

The following information provides a profile (mostly mode or median) of the crash victim data. Also included are summaries of the data for each variable. All information is provided as of the time of the crash, that is, age at time of crash, employment at time of crash, etc.

### Personal and Residence Data

<u>Sex:</u>	Male	Male = 16, female = 4
<u>Age:</u>	33.5	Range = 27 to 46
<u>Education:</u>	Grade 11	Range = grade 7 to 1-2 years college
<u>Employment:</u>	None/unskilled	None = 9; unskilled = 8; skilled = 3
<u>Religion:</u>	Protestant (Baptist)	Baptist = 9, Lutheran = 2, Methodist = 1, Protestant = 2, Catholic = 5, none = 1
<u>Driver's license:</u>	None	None = 14, current = 6
<u>Health:</u>	Good	Good = 17, heart murmur = 1, depressed = 2
<u>Marital status:</u>	Unmarried	Unmarried = 13, divorced = 2, separated = 4, unknown = 1
<u>No. of children:</u>	None/not stated	None = 7, 2 = 3, 3 = 2, 6 = 1, unknown = 7
<u>Residence type:</u>	Apartment/house	Apartment = 10, house = 8, unknown = 2
<u>Time there:</u>	2 years or less	<1 year = 5, 1-2 years = 7, 4+ years = 4, unknown = 4
<u>Time in area:</u>	All/most of life	All/most of life = 16, 10 years = 2, 1-1/2 years or less = 2
<u>Residence companions:</u>	Relatives/ friends	Parent(s) = 5, other relative = 4, friend(s) = 7, landlady = 2, alone = 2

### Alcohol/Drug Data

<u>Alcohol treatment:</u>	Variable	Yes (alcohol) = 6, yes (drugs) = 1, AA = 1, has had eye opener = 1, never had eye opener = 7, no treatment = 4
<u>Preference: (1st mentioned substance)</u>	Beer	Beer = 13, rum = 3, wine = 3, brandy = 1
<u>When:</u>	Weekends/days off	Weekends/days off = 10, daily = 4, 1-4 days per week = 4, unknown = 2
<u>Where: (multiple mentions)</u>	Home/bars/friends	Home = 8, bars = 8, friends = 8, street = 2, unknown = 7
<u>Companions: (multiple mentions)</u>	With someone	With someone = 15, alone = 7, unknown = 4

### Pedestrian Data

<u>Frequency:</u>	Daily/a lot	Daily/a lot = 19, infrequently = 1
<u>Reason:</u>	Purpose	Purpose = 12, purpose and pleasure = 8
<u>Place:</u>	Residential/city streets	Residential/city streets = 13, everywhere = 1, unknown = 6
<u>Time:</u>	Variable	All times = 8, daytime = 5, evening = 2, unknown = 5
<u>Day of week:</u>	All days	Daily = 13, weekends = 1, unknown = 6
<u>Companions:</u>	Mostly alone	Mostly alone = 11, with people = 3, alone and with people = 6
<u>Where cross street:</u>	Anywhere	Anywhere = 11, corner = 6, midblock = 1, crosswalk = 1, unknown = 1

### Accident Data

<u>Location:</u>	Midblock/ intersection	Midblock = 11, intersection on left = 2, intersection on right = 4, near intersection = 1, unknown = 1, intersection (bicyclist) = 1
<u>Accident type:</u>	Variable	Midblock-other = 5, dart-out 1st half = 2, VTM = 1, intersection-other = 4, multiple threat = 1, driver violation = 1, intersection dash = 1, walk with traffic = 2, walk facing traffic = 1, unknown = 1, bicyclist = 1
<u>Vehicle direction:</u>	Straight	Straight = 15, RTOG = 2, unknown = 2, likely straight (bicyclist) = 1
<u>Parking permitted:</u>	Unknown	Unknown = 11, none = 4, both sides = 4, both sides (bicyclist) = 1
<u>Lanes:</u>	Variable	1 each direction = 8, 2 each direction = 5, 3 each direction = 2, one-way street = 2, unknown = 2, 1 each direction (bicyclist) = 1
<u>Traffic aids:</u>	None	Intersection-signal = 6, intersection-no signal = 1, midblock accident = 11, unknown = 1, stop sign (bicyclist) = 1
<u>Accident time:</u>	2 pm to 3 am	2:00 pm to 6:30 pm = 7 (including bicyclist), 8:00 pm to 10:00 pm = 5, 10:40 pm to midnight = 5, 1:00 am to 3:00 am = 3
<u>Day of week:</u>	Thur/Fri/Sat	Mon = 2, Tue = 3, Thur = 6, Fri = 4, Sat = 4, Sun = 1
<u>Month:</u>	Various	Jan = 2, Feb = 1, Mar = 2, Apr = 1, May = 2, Jun = 4, Jul = 2, Sep = 4, Oct = 1, Dec = 1
<u>Origin:</u>	Other's home/ home	Other's home = 7, home = 6, work = 2, soc serv office = 1, bar = 3, hanging around street = 1
<u>Destination:</u>	Store/home	Food/restaurant/store = 7, home (including bicyclist = 5, other's home = 2, bus stop = 2, bar = 1, parked car = 1, library = 1, unknown = 1
<u>Purpose:</u>	Get home/ buy food	Get home (including bicyclist) = 8, buy food = 5, visit = 2, buy cigarettes = 1, browse (library) = 1, cash money order = 1, buy a drink = 1, unknown = 1

Crossing half  
struck:

1st

1st = 9, 1st and 2nd (hit twice) = 1, 2nd = 4, when  
middle of road = 1, not crossing = 3, unknown =  
1, not applicable (bicyclist) = 1

BAC:

.243 (avg)

Range = .134 to .346

**Table A-1. Victim Summary Table--Personal/Residence Data**

Variable	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8	Subject 9	Subject 10
Sex	Male	Male	Female	Male	Male	Female	Male	Male	Male	Male
Age	33	40	46	30	31	38	32	27	38	34
Weight	128 lbs	135 lbs	148 lbs	145 lbs	145 lbs	135 lbs	170 lbs	185 lbs	145-150 lbs	134 lbs
Highest school grade	11	2 yrs college	11	12	10	1-1/2 years college	GED	11	GED	10
Employment	None--worked for landlord	None	Nursing technician	Gas station attendant	Trailer mechanic	Mail order sorting machine	Carpenter-laborer	None	Commercial cleaning	None
Religion	Catholic	Baptist	Catholic	Lutheran	Catholic	Baptist	Baptist	Baptist	Protestant	Baptist
Driver's license	None	Current	None	None--lost twice for DWI	Current	Current	Revoked for driving uninsured	Current	Lost previously for DUI	None
Health	Good	Fairly good	Good	Healthy	Good	Good	Good	Healthy	Alright	Good
Marital status	Single	Single	Separated	Not married	Single	Separated	Divorced	Not married	Divorced	Not married
No. of children	--	--	3	2	None	2 (live with father)	2	--	--	--
Current residence	Apartment	Apartment	Apartment	Apartment	--	Row house	Apartment	Apartment	Apartment	--
Time at residence	9 years	--	--	6 months	--	4 years	12 days	1-1/2 years	5 months	8 months
Time in this area	All his life	37 years	All her life	All his life	All his life	All her life	All life in the state	All his life	5 months	All his life
Residence companions	Father	Daughter & her mother	25-year old son	Girlfriend & her daughter	None	Mother & father	None	Male	Girlfriend	Cousin & her five children

**Table A-1. Victim Summary Table--Personal/Residence Data (Continued)**

Variable	Subject 11	Subject 12	Subject 13	Subject 14	Subject 15	Subject 16	Subject 17	Subject 18	Subject 19	Subject 20
Sex	Male	Male	Male	Male	Male	Male	Female	Male	Male	Female
Age	29	33	38	32	38	40	44	34	30	32
Weight	180 lbs	168 lbs	139 lbs	140 lbs	215 lbs	150 lbs	125 lbs	160 lbs	170 lbs	96 (?) lbs
Highest school grade	2 yrs college	GED	11	11	10	7	11	GED	12	9
Employment	Various--liquor distrib	None	Truck driver's helper	Off & on handyman	None--had one-day job	Church custodian--part time	None	None	Mason	None
Religion	Methodist	Catholic	Baptist	Protestant	Baptist	Catholic	Baptist	None	Lutheran	Baptist
Driver's license	Current	None	None	None	None--lost for DWI	None	None	None--expired	Current	None
Health	Excellent	Good	Good	Heart murmur	Good	Good	Good	Good	Taking anti-depressants	Stressed/depressed
Marital status	Not stated	Single	Single	Not married	Single	Not married	Separated	Not married	Separated	Not married
No. of children	--	None	3	--	None	None	6 (now adults)	None	None	None
Current residence	House	Apartment	House	Apartment	House	Apartment	House	House	House	House
Time at residence	1-1/2 years	1-1/2 years	9 months	1-1/2 years	5-6 years in area	--	2 years	1-1/2 to 2 years	1-1/2 years	5 years
Time in this area	All his life	All his life	30 years	1-1/2 years	All his life	10 years	All her life	Most of his life	10 years	All her life
Residence companions	Parents	Sister & nephew	Girlfriend, 2 kids, bro-in-law	Brother & mother	Male friend	Girlfriend + boy (17) & girl (12)	Sister & sister's grandkids	Mother	Landlady	Landlady

**Table A-2. Victim Summary Table--Alcohol/Drug Data**

Variable	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8	Subject 9	Subject 10
Alcohol/drug treatment	Alcohol--13 times	Alcohol	?--never had an eye opener	Both	?--never had an eye opener	Detox + AA	None	None	?--never had an eye opener	Has had 3 seizures
Alcohol preference	Beer, sometimes whiskey	Rum and coke	Rum, occasional beer	Beer	Beer	Rum & coke, beer, wine, vodka	Beer	Brandy	Beer	Wine
Frequency of drinking	Daily	Once per week	Mainly weekends & holidays	Mainly on days off	Days off	3-1/2 days a week	Friday & Saturday	Weekends	Weekends or no work next day	--
Place of drinking	Home mainly	--	--	Friends, bars	Home, bars	Home, parties, clubs	Tavern	--	--	Street, friends
Time of drinking	After 5 pm weekdays; anytime weekends	No particular time	Usually 4-5 pm	--	Evening	--	Evening	--	--	--
Drink alone/with people	With father	--	--	Always with friends	Alone & with people	Always with someone	With tavern patrons	With people	--	With people
Accident BAC	.290	.296	.235	.146	.256	.328	.152	.210	.134*	.346

\*Measured 3 to 3-1/2 hours after the accident.

**Table A-2. Victim Summary Table--Alcohol/Drug Data (Continued)**

Variable	Subject 11	Subject 12	Subject 13	Subject 14	Subject 15	Subject 16	Subject 17	Subject 18	Subject 19	Subject 20
Alcohol/drug treatment	None	?--never had an eye opener	History of IV heroin & cocaine use	?--never had eye opener	Heavy drinker, has been to AA	?--doesn't have an eye opener	Problem drinker--has had an eye opener	Social drinker, never had eye opener	Alcohol--goes to AA off and on	No formal treatment
Alcohol preference	Beer	Wine (winter), beer (summer)	Beer, wine	Beer	Beer, wine, mixed drinks in bars	Beer	Malt beer	Beer	Beer + occasional shot	Wine
Frequency of drinking	Daily (?)	Daily	Daily	--	3-4 days on, 2 days off	Weekends	On and toward weekends	Weekends	Weekends mostly	Every other day
Place of drinking	Bar mainly	--	Home & friends	--	--	Home + other places (?)	Home, friends, bars	Friend's, bars, home sometimes	Home & bars	On the street
Time of drinking	Mornings	--	Evening	--	--	--	--	--	--	--
Drink alone/with people	Bar patrons (?)	With people	With people	--	Alone & with people	Alone & with friends	Alone & with people	Alone & with people	Alone & with people	Prefers alone
Accident BAC	.245	.307	.283	.190	.236	.238	.157	.288	.256	.258

A-17



**Table A-3. Victim Summary Table--Pedestrian Data**

Variable	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8	Subject 9	Subject 10
Frequency of walking	Daily	A lot	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily
Destination	Every-where	Stores	Stores, bus stop, sister	Walked for a purpose	Walked for a purpose	Market, friends	Shopping, pleasure	Walked for a purpose	Purpose & pleasure	Purpose, pleasure
Place of walking	City streets	Nearby streets	Nearby streets	--	City streets	Streets, parks	Streets, parks	Streets	--	City streets
Time of walking	Daytime	--	--	--	Afternoons	10 to 5	Weekday evenings, weekend afternoons	--	All times	All times
Day of week of walking	--	--	--	--	Weekends	--	Daily	Daily	Daily	Daily
Walk alone/ with people	Walks with landlord	Usually alone	Mostly alone	Alone & with friends	Usually alone	Alone & with friends	Alone	Alone & with friends	Usually alone	Usually with people
Where crosses street	Anywhere	Corners	Anywhere	Corners	Anywhere	Anywhere*	Anywhere	Crosswalks	Anywhere	Anywhere
Are there crossing aids?	Yes	--	--	--	--	--	--	Yes	--	--

\*When alone; with children, uses corners to set a good example.

**Table A-3. Victim Summary Table--Pedestrian Data (Continued)**

Variable	Subject 11	Subject 12	Subject 13	Subject 14	Subject 15	Subject 16	Subject 17	Subject 18	Subject 19	Subject 20
Frequency of walking	Daily	Daily	All the time	Daily	Daily	Daily	Daily	Daily	Infrequent	Daily
Destination	Everywhere	Purpose & pleasure	Walked for a purpose	Walked for a purpose	Walked for a purpose	Walked for a purpose	Walked for a purpose	Purpose & pleasure	Usually for a purpose	Purpose & pleasure
Place of walking	Everywhere	--	--	City streets	--	--	City streets	Residential & city streets	Residential with sidewalks	City streets
Time of walking	--	All times	All times	Mostly daytime	All times	Mostly mornings	All times	All times	Mostly evenings	All times
Day of week of walking	--	Daily	Daily	Daily	Daily	Daily	Daily	Daily	All days	Daily
Walk alone/with people	Walks alone	Alone & with people	Mostly alone	With people	Alone & with people	Mostly alone	Mostly alone	Alone & with people	Mostly alone	Mostly alone
Where crosses street	Anywhere	Midblock	Corners	Corners	--	Corner with light	Anywhere	At corner when on sidewalk	Anywhere	Anywhere
Are there crossing aids?	Yes	Uses if there	Usually uses if there	--	--	Yes	--	Yes	--	--

**Table A-4. Victim Summary Table--Crash Data**

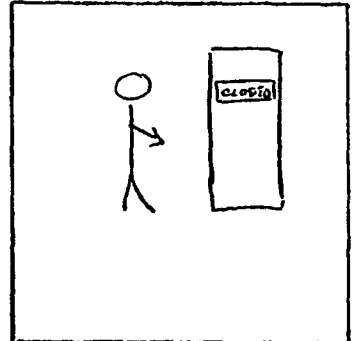
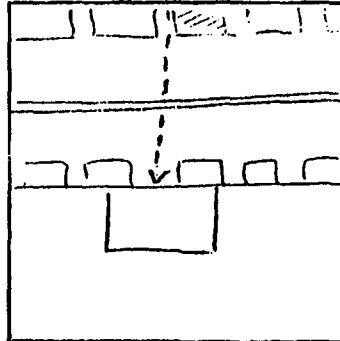
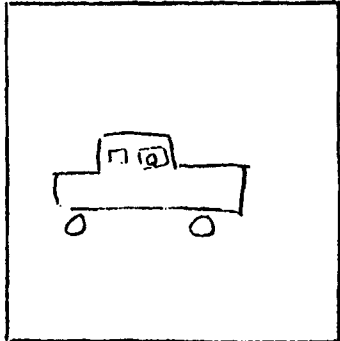
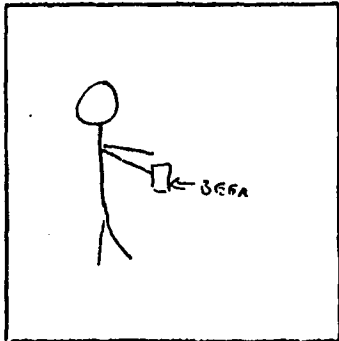
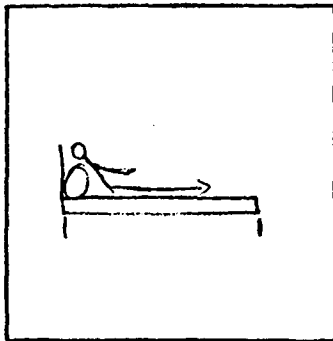
Variable	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8	Subject 9	Subject 10
Location	Midblock	Inter-section on left	Inter-section on right	Inter-section on right	Midblock crest of hill	Midblock	Near intersection	Midblock (?)	Midblock (rural)	Inter-section on left
Likely accident type	Dart-out 1st half	VTM	Inter-section--other	Inter-section--other	Midblock--other	Multiple threat	Inter-section--other	Dart-out 1st half	Walking with traffic	Inter-section--other
Vehicle direction	RTOG at corner	RTOG	Likely straight	Straight	Straight	Straight	Straight	Straight	Straight	Straight
Parking permitted	Both sides	--	Both sides	None	None	None	None	Both sides	Unknown-rural	Both sides
No. of lanes	2 each direction	--	1 each direction	2 each direction	1 each direction	2 each direction	3 each direction	1 each direction	1 each direction	2 (one-way street)
Traffic aids	--	Traffic signal	Traffic signal	Traffic & left turn signal	--	--	Traffic & ped signals	Traffic signal	None	None
Time of accident	2 pm	11-12 pm	5:15 pm	9:30 pm	10:40 pm	3-4 pm	1:45 am	6:30 pm	10:00 pm	8:00 pm (?)
Conditions	Sunny, dry	Well-lit, dry	Winter-unknown	Drizzly, visibility 20-30 ft	Mild, dry	Sunny, dry	Warm, dry	Clear, dry	Clear, dry	Clear, dry
Trip origin	Soc service office	Home	Home	Home	Bar	Home	Tavern	Friend's house	Friend's house	Father's house
Intended destination	Parked car	Sandwich shop	Sister's home	Friend's home	Bar	Market	Restaurant	Bus stop	Bus stop	Store
Purpose of trip	Get to landlord's car	Buy sandwich	Loan sister money	Visit-watch TV	Buy another drink	Buy food	Get food	Get ride home	Get ride home	Buy cigarettes
Crossing half when struck	1st	1st	Probably 1st	1st	2nd	1st	1st	1st	Not crossing	2nd

**Table A-4. Victim Summary Table--Crash Data (Continued)**

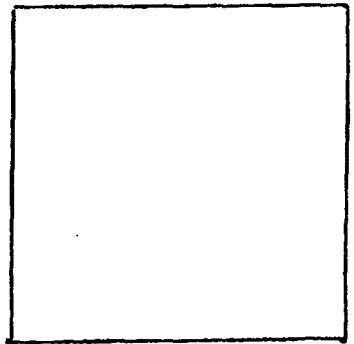
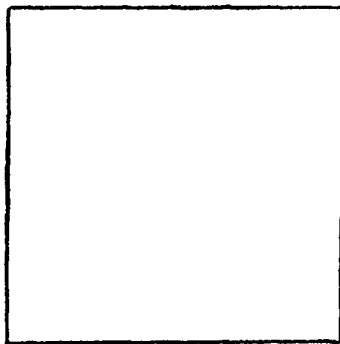
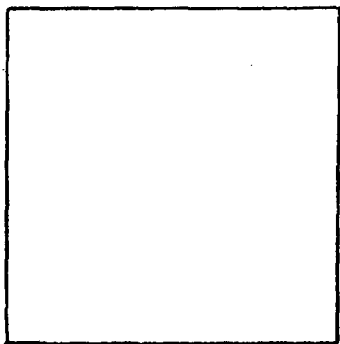
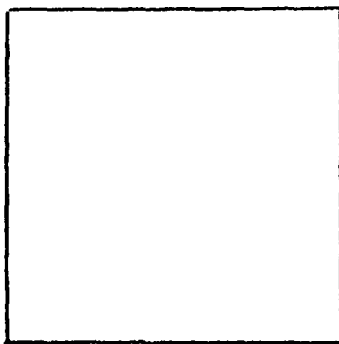
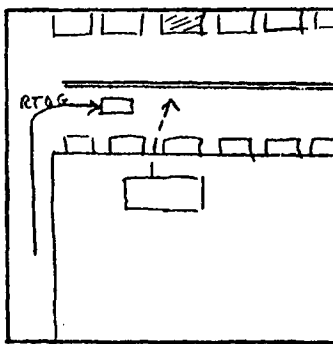
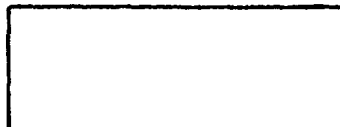
Variable	Subject 11	Subject 12	Subject 13	Subject 14	Subject 15	Subject 16	Subject 17	Subject 18	Subject 19	Subject 20
Location	Midblock	Inter-section on right	Bicyclist--intersection	Midblock	Midblock	Inter-section on right	Midblock	Midblock	Midblock	--
Likely accident type	Walking facing traffic	Driver violation (?)	Not applicable--bicyclist	Midblock--other	Midblock--other	Intersect dash or driver viol	Midblock--other	Walking with traffic	Midblock--other	--
Vehicle direction	Straight	Straight	Likely straight	Straight	Straight	Straight	Straight	Straight	Straight	--
Parking permitted	--	--	Both sides	--	--	--	No (?)	--	--	--
No. of lanes	1 each direction	2 (one-way street)	1 each direction	2 each direction	1 each direction	3 each direction	1 each direction	1 each direction	2 each direction	--
Traffic aids	--	Traffic signal	Stop sign	--	None	Traffic signal	--	--	--	--
Time of accident	11:30 pm	5:30 pm (?)	8:30 pm	4-5:00 pm (?)	10:00 pm	11:00 - 11:30 pm	3:00 am	10:00 pm	Midnight	1:00 am
Conditions	Dry, dark	Twilight, cold, dry	Dry	Daylight, dry	--	--	"Nice," no rain	Dry	Hot, humid	"Nice"
Trip origin	Work	Friend's house	Friend's house	Home	Store (day work)	Home	Friend's via closed bar	Friend's	Bar	Walking/hanging around
Intended destination	Home	Check casher	Home	Library	Home	Pizza place	Home	Home	Fast food	--
Purpose of trip	Get home from work (1 hr walk)	Cash friend's money order	Get home	Browse	Get home	Buy pizza	Pick up friend at bar & go home	Get home	Eat & then get taxi home	--
Crossing half when struck	Not crossing	2nd	Not applicable--bicyclist	1st (?)	Middle of road	2nd	1st	Not crossing	1st & 2nd (hit twice)	--

**Victim No. 1. Car passenger (daytime errand) (Male) (BAC=.290) (Monday, October)**

<p>"SHAKES" 7:30 AM</p>	<p>HOUSE REPAIRS (3 BEERS) 10 A.M.</p>	<p>CAR PASSENGER 1:00 PM</p>	<p>CROSSING FROM CAR 1:30 PM</p>	<p>ANGRY</p>
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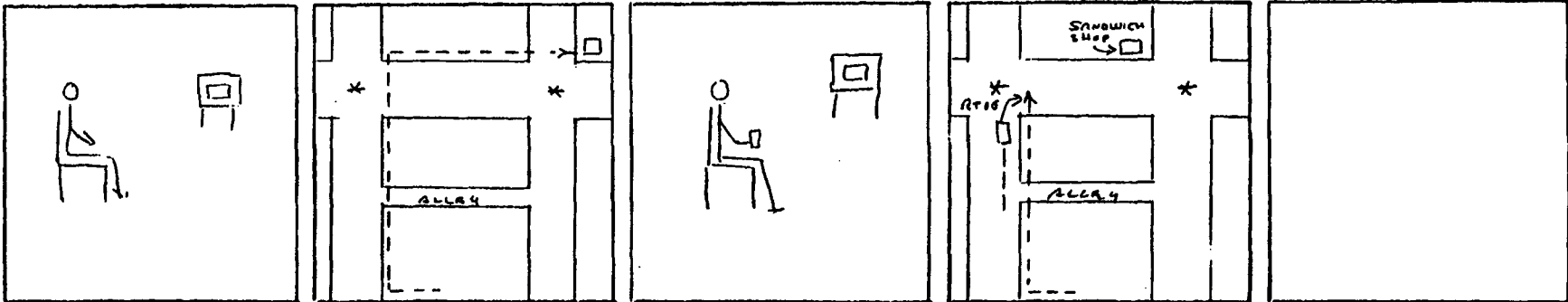


ANGRY - GET BACK  
TO CAR  
2:00 PM



Victim No. 2. Home alone (nighttime errand) (Male) (BAC=.296) (Thursday, September)

Read - TV 6:30 AM - 9:30 AM	Buy Rum	Drink - TV (1/2 pt Rum) 9:30 PM	Buy Sandwich	
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(ALLEY UNSAFE AT NIGHT)

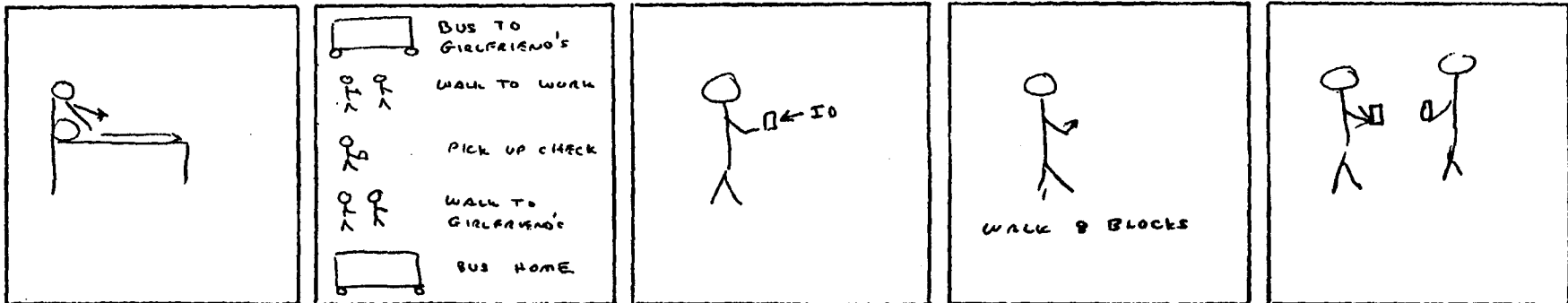
(ALLEY UNSAFE AT NIGHT)

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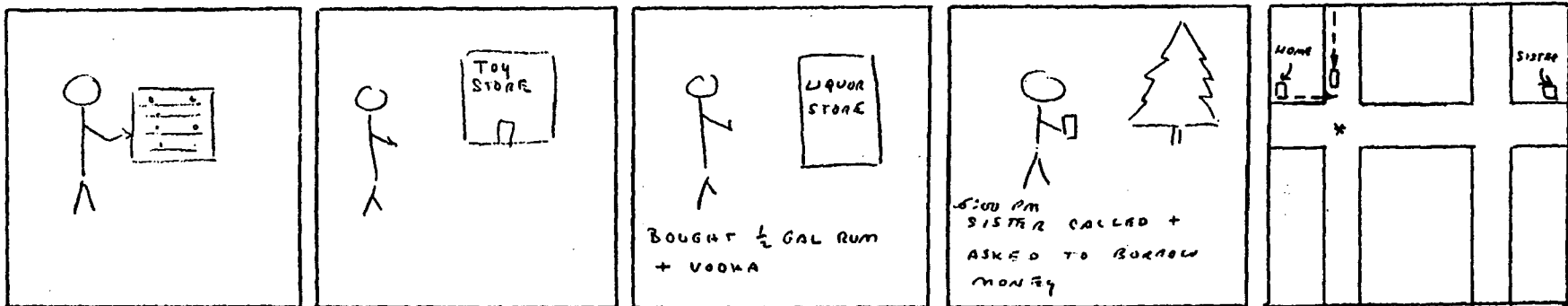
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Victim No. 3. Home alone (dusk errand) (Female) (BAC=.235) (Thursday, December)

AGGRAVATED - NEEDS MONEY + MUST PICK UP CHECK 8:00 AM	PICK UP CHECK 9:30 - 11:15 AM	PICK UP ID AT HOME 11:15 AM	WALK TO CHECK CASHING PLACE 11:30 AM	STOP AT SISTER'S ON WAY HOME (BBA + RUM BGGNOG) 11:45 AM
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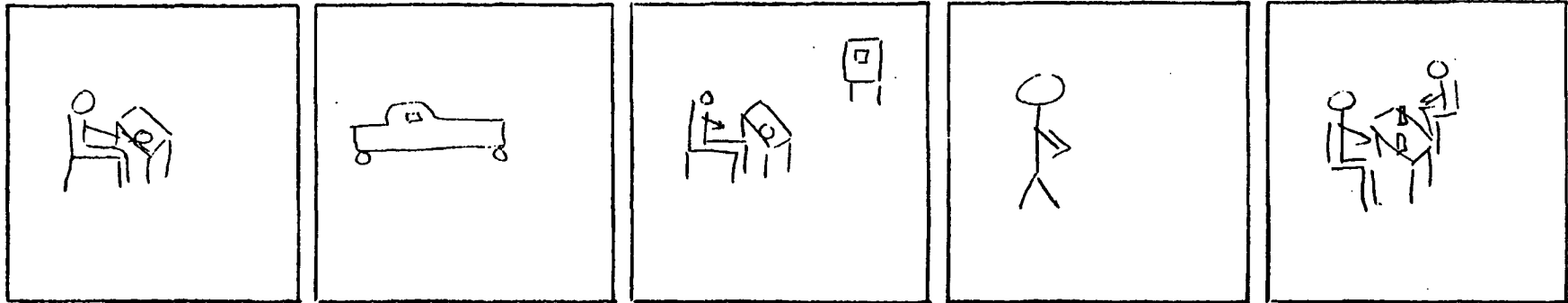


HOME - PUT AWAY SOME MONEY 1:00 PM	WALK TO STARS (1 TO 2 BLOCKS AWAY) 1:15 PM	STOP AT LIQUOR STORE ON WAY HOME 3:00 PM	CLEAN - PUT UP XMAS TREE - ATE LUNCH DRANK RUM 3:30 - 5:00	DRIVER WAS DWI TAKE MONEY TO SISTER 5:15 PM
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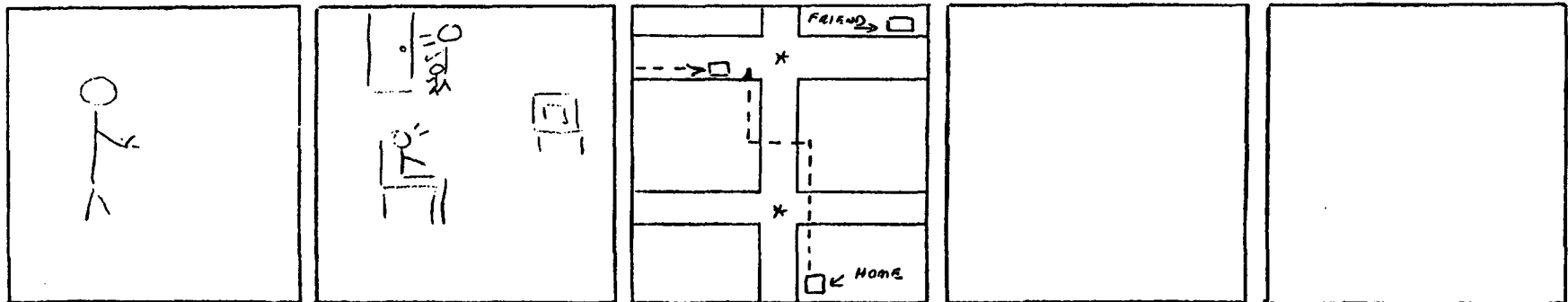
Victim No. 4. Home alone (nighttime visit) (Male) (BAC=.146) (Monday, January)

BREAKFAST 7:00 AM	CAR TRIP WITH GIRLFRIEND PASSENGER 8:00 - 10:00 AM	TV, LUNCH, FRIEND CALLED TO INVITE HIM TO BAR 10:00 - 1:30 PM	WALK TO BAR 1:30 PM	BAR 5 BEERS 1:30 PM - 5:00
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NO EXPLANATION FOR MIDBLOCK CROSSING → DRIVER HIT + RUN BUT WITNESS GOT LICENSE


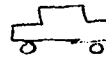
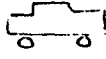
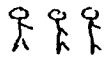
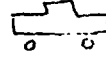
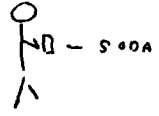
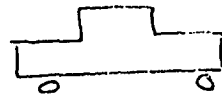

WALK HOME 5:00 PM	DINNER - CALL FROM FRIEND TO COME VISIT - ARGUMENT WITH GIRLFRIEND WHO LEFT - WATCH TV 6:00 TO 8:45 PM	LEFT FOR FRIEND'S 8:45 PM		
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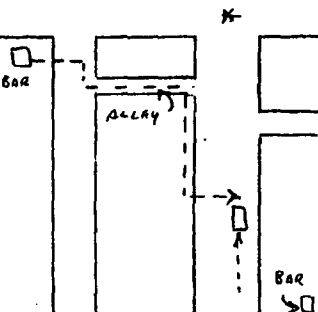
Victim No. 5. Bar (nighttime bar trip) (Male) (BAC=.256) (Friday, September)

COFFEE 7:30 AM	CAR PASSENGER 9:00 - NOON	HOME - HAD SODA NOON	CAR PASSENGER TO BAR 1:00 PM	AT BAR "35" BEERS 1:00 - 10:30 PM
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	 FRIEND DROVE HIM TO PICK UP HIS CHECK  FRIEND DROVE HIM TO FRIEND'S BROTHER-IN-LAW  VISIT FRIEND'S BROTHER-IN-LAW  DROVE AROUND DOWNTOWN			
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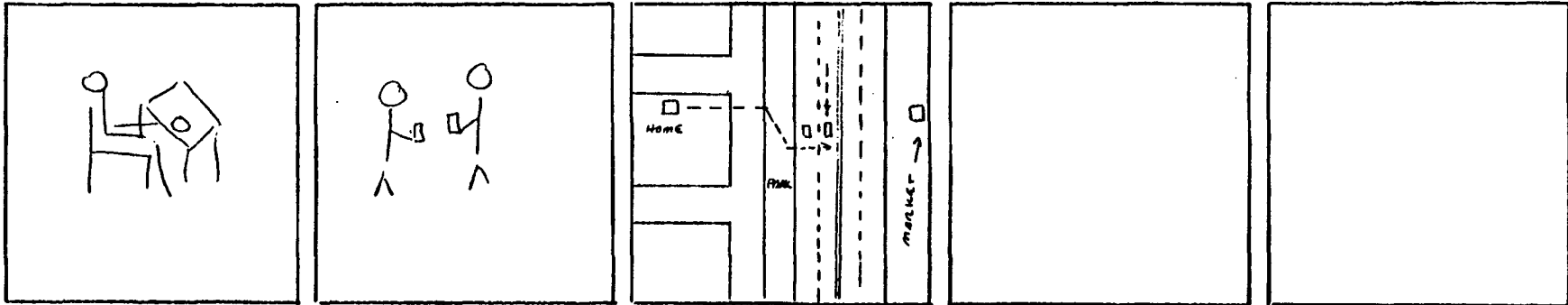
BARTENDER TOLD HIM HE'D BEEN DRINKING TOO MUCH BUT CONTINUED TO SERVE HIM

LEFT FOR OTHER BAR 10:20 PM				
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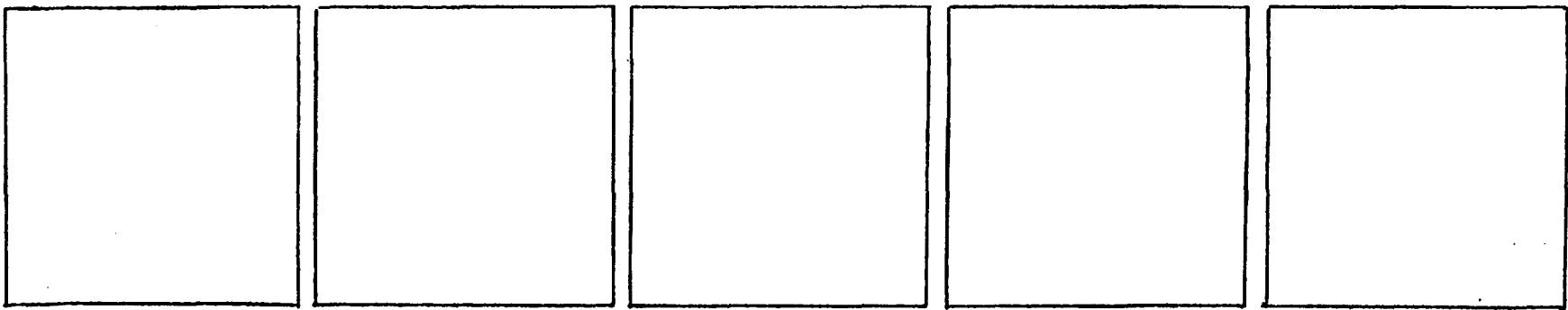
				
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Victim No. 6. Home with friends (daytime errand) (Female) (BAC=.328) (Tuesday, September)






<p>BIG BREAKFAST 8:00 AM</p>	<p>BOYFRIEND VISITS 2 RUM + COFFE 11:00 AM - 3:00 PM</p>	<p>WALK TO MARKET WITH FRIEND 3:00 PM</p>		
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BOYFRIEND MADE IT TO MEDIAN + TRIED TO STOP CAR FOR HER

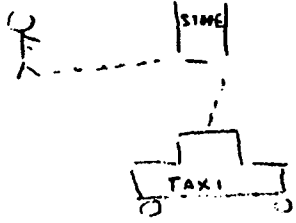

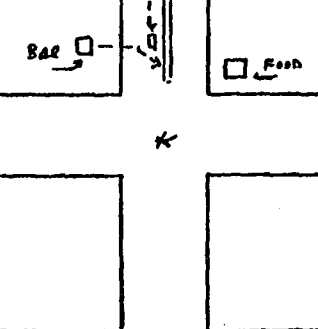


Victim No. 7. Bar (nighttime--get food and go home) (Male) (BAC=.152) (Friday/Saturday, September)

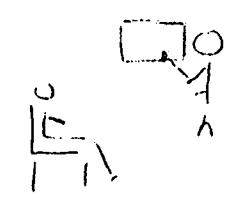
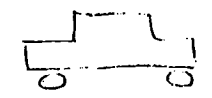


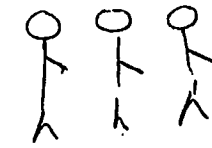
<p>BREAKFAST 6:00 AM</p>	<p>BICYCLE TO WORK (1/2 HR TRIP IN AM) 6:30 - 7:00</p>	<p>WORK CARPENTER - LABORER 7:30 - 7:00 PM</p>	<p>BICYCLE HOME (1 HR TRIP IN PM) 7:00 PM - 8:00 PM</p>	<p>HOME - SHOWER - DINNER - RADIO 8:00 PM - 10:30 PM</p>
				

A-28

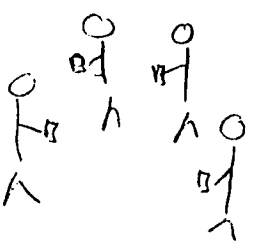
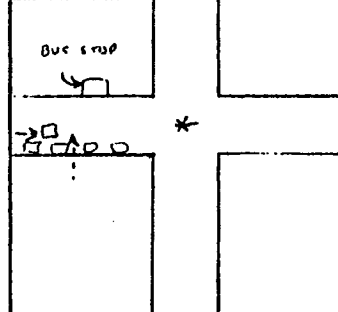
TRIPPED AND FELL BACKWARD AS HE TRIED TO STEP UP ON MEDIAN

<p>WALK TO STORE - CALL CAB 10:30 PM</p>	<p>BAR - POOL 2 1/2 BEERS 11:00 PM - 1:30 AM</p>	<p>GET FOOD + GO HOME (SISTER'S) 1:30 AM</p>		
				

**Victim No. 8. Friend's home (dusk--get bus home) (Male) (BAC=.210) (Tuesday, February)**

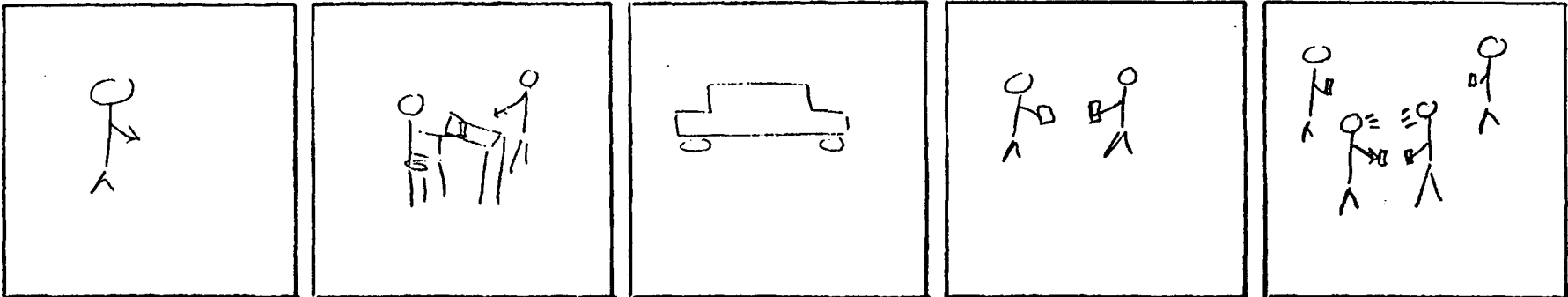
<p>GOT UP - SCHOOL - OT + POTATO CHIPS 7:00 - NOON</p>	<p>CLASSIFIED - RIDE TO MALL NOON</p>	<p>WAIT IN LINE AT TEL COMPANY (2 1/2 HRS) 1 PM - 3:30 PM</p>	<p>LUNCH + VISIT WITH BROTHERS 3:30 - 5:15 PM</p>	<p>WALK TO FRIEND'S HOUSE 5:15 PM</p>
				

BROTHERS WERE BEHIND HIM. DRIVER DROVE AWAY  
BUT BROTHERS RAN AFTER CAR

<p>VISIT FRIEND 2 BRANNIES 5:15 - 6:30 PM</p>	<p>WALK TO BUS TO GO HOME 6:30 PM</p>			
				

**Victim No. 9. Friend's home (nighttime--get bus home) (Male) (BAC=.134 measured 3-3.5 hours after accident) (Tuesday, March)**

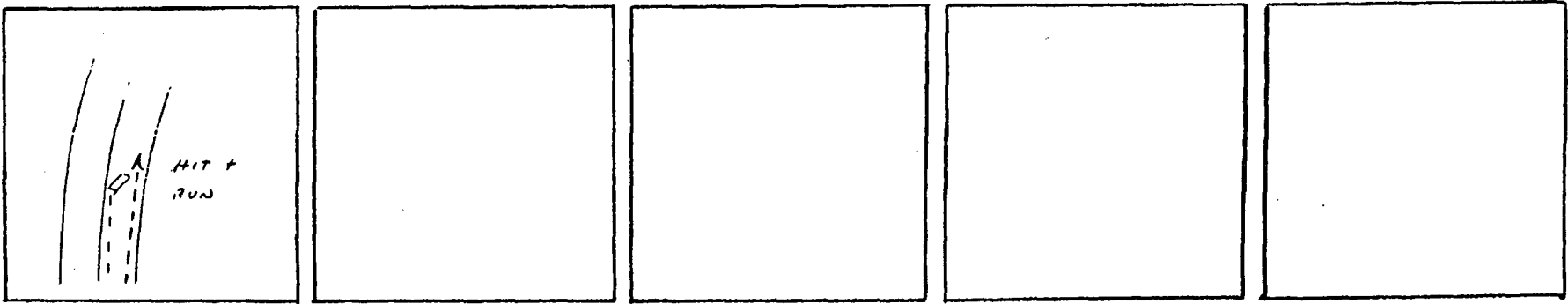
GET-UP - WORK COMMFACIAL CLEANING 7:00 AM - 6:00 PM	WALK TO NEIGHBORHOOD BAR (3 BEERS) 6:30 - 7:30 PM	PASSENGER IN CAR TO FRIEND'S HOUSE 7:30 PM	VISIT FRIEND (5 BEERS) 7:30 - 9:55 PM	ARGUMENT 9:55 PM
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A-30

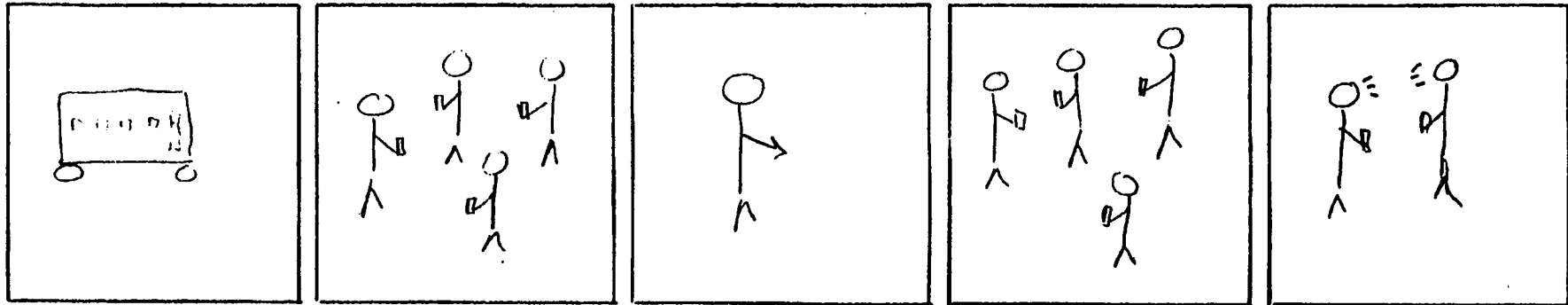
APPARENTLY DELIBERATE -- STRUCK BY PERSON WHO WAS SOURCE OF TENSION AT FRIEND'S HOME. HIT AND RUN BUT HE GOT LICENSE

GET BUS HOME 10:00 PM				
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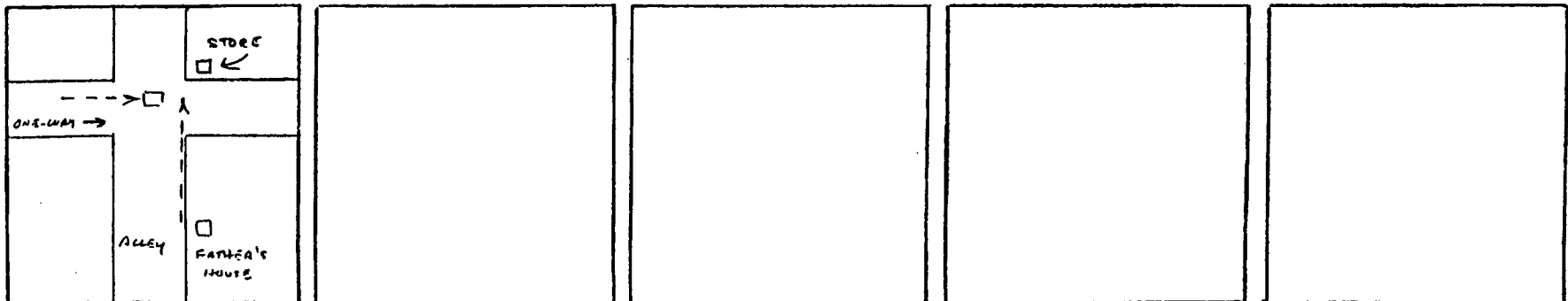
**Victim No. 10. Father's home (nighttime errand) (Male) (BAC=.346) (Thursday, April)**

NO BREAKFAST BUS TO AUNT'S HOUSE 10:00 AM	AUNT'S HOUSE (4 PEOPLE CONSUMED 1/2 GAL WINE) 11:00 AM - 2:00 PM	WALK TO FATHER'S HOUSE (3 BLOCKS) 2:00 PM	FATHER'S HOUSE (4 PEOPLE CONSUMED 1/2 GAL WINE) 2:00 PM - 8:00	ARGUMENT WITH FATHER 8:00
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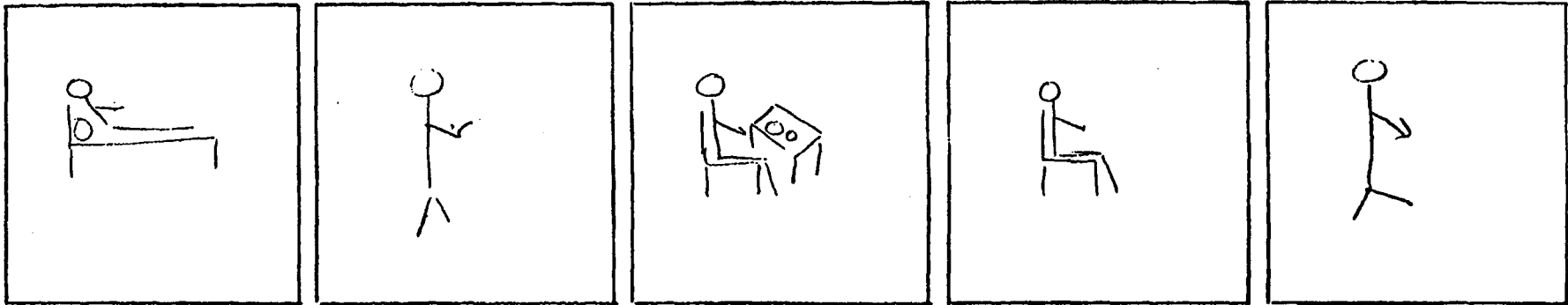
A-31

WALK TO CORNER TO BUY CIGARETTES 8:00				
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Victim No. 11. Work (nighttime walk home) (Male) (BAC=.245) (Thursday, March)

<p>GET UP (3:00 AT 2:00 AM) 8:00 AM</p>	<p>WALK TO LOCAL BAR (10 MIN) 9:00 AM</p>	<p>AT BAR (PIZZA, CRAB CAKES, 3 PITCHERS OF BEER) 9:00 AM - NOON</p>	<p>HOME NOON - 4:00 PM</p>	<p>WALK TO WORK (1 HOUR) 4:00 PM - 5:00 PM</p>
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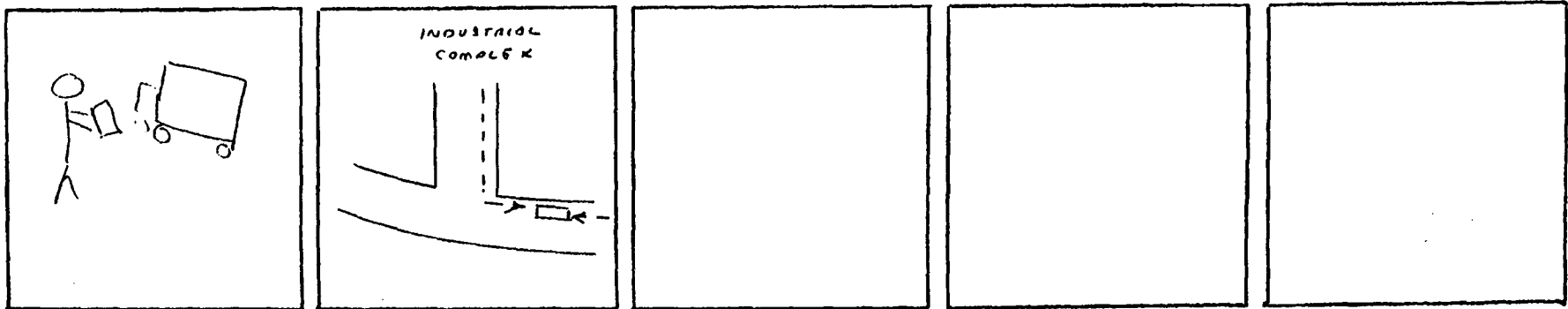


"TYPICAL" MORNING  
PATTERN - DRINK IN  
AM - WORKS IN PM

SHOWERED - "WUNG  
AROUND"

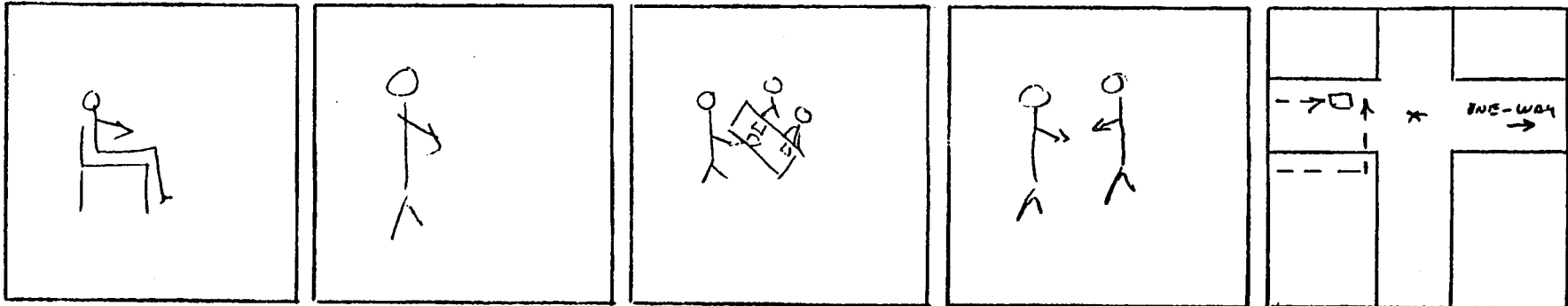
A-32

<p>AT WORK (LOADING TRUCKS) 5:00 - 11:00 PM</p>	<p>WALK HOME 11:00 - 11:30 PM</p>			
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**Victim No. 12. Friend's home (dusk--friend's errand) (Male) (BAC=.307) (Friday, January)**

<p>HOME NO BREAKFAST 7:30 AM - 11: AM</p>	<p>WALK TO LEXINGTON MARKET 11:00 AM</p>	<p>LUNCH + DRINKS WITH FRIENDS (3 AINTS OF WINE) 11:00 AM - 4:30 PM</p>	<p>WALK TO FRIEND'S HOUSE 4:30 - 5:30 PM</p>	<p>WALK TO CASH FRIEND'S CHECK 5:30 PM?</p>
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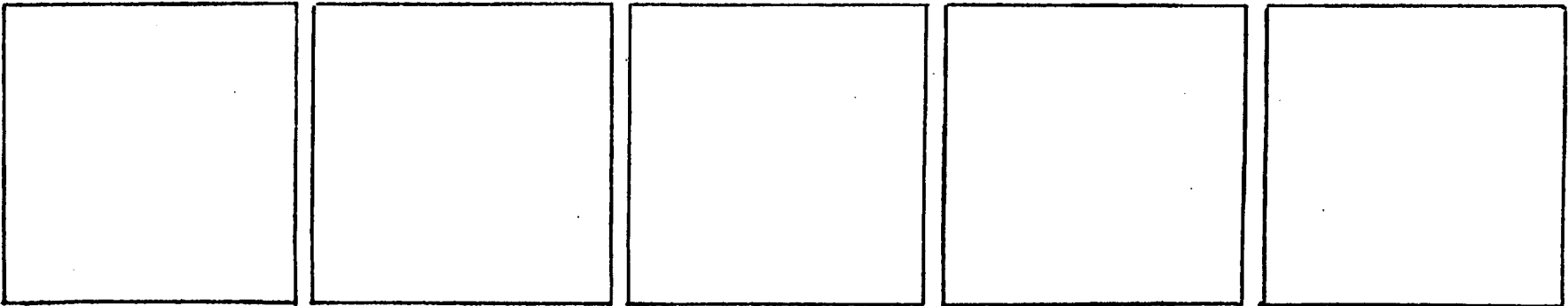


NOTE: FRIEND SAW  
APRIL CAR + TOLD  
POLICE

NOTE: FRIEND MADE IT  
ACROSS FIRST.

NOTE: ADMITTED TO  
SHOCK TRAUMA AT  
10:30 AM.

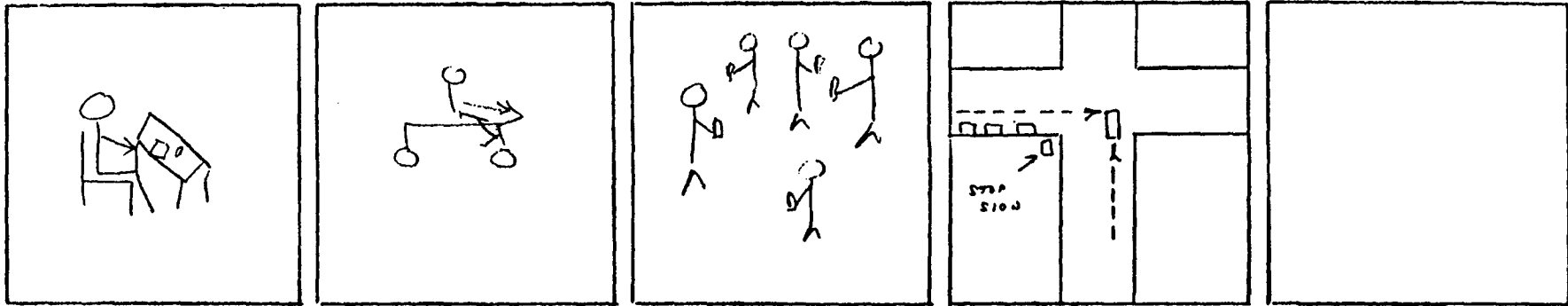
A-33





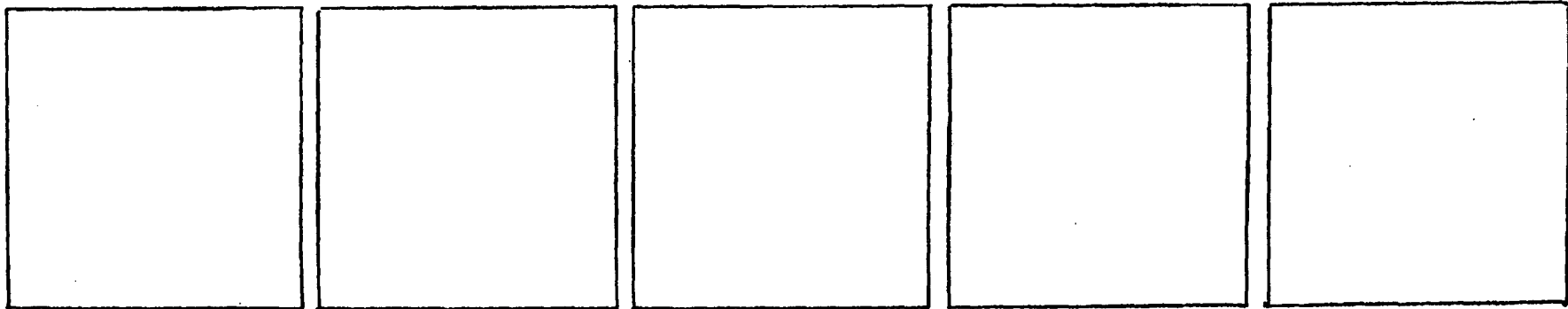
**Victim No. 13. Friend's home (dusk--bike home) (Male) (BAC=.283) (Sunday, June)**

<p>HOME - BREAKFAST 10 AM - 1 PM</p>	<p>BIKE TO FRIEND'S (15 BLOCKS AWAY) 1:00 PM</p>	<p>FRIEND'S COOKOUT (HAMBURGERS - 9 CANS BEER, 1/2 CUP WINE) 1:00 PM - 8:30 PM</p>	<p>BIKE HOME 8:30 PM</p>	
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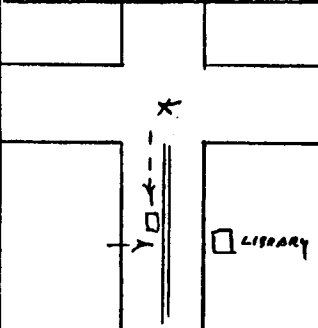


NOTE: DID NOT SEE STOP SIGN -  
OBSCURED BY TREES.

A-34



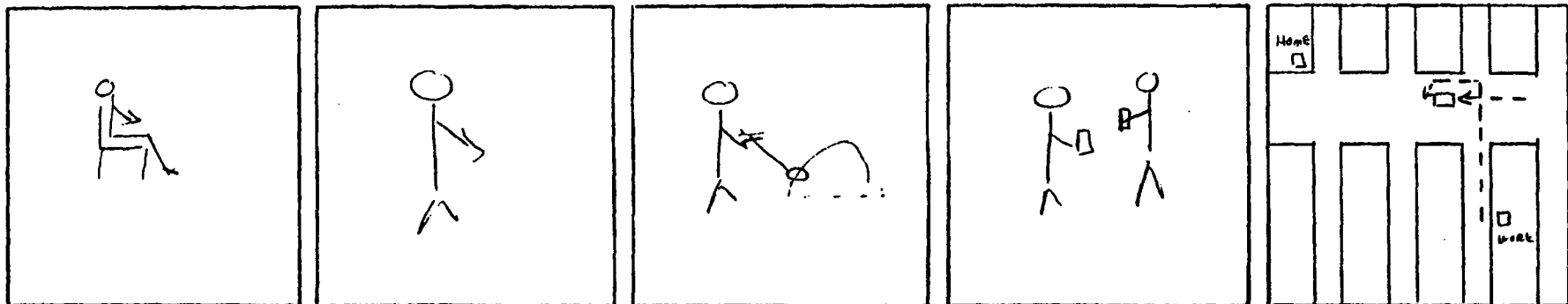
**Victim No. 14. Home (daytime--browse in library) (Male) (BAC=.190) (Thursday, May)**

<p>BREAKFAST</p> <p>12:20 PM</p>	<p>HOME</p> <p>(2 BEARS)</p> <p>12:20 PM - 4/5 PM?</p>	<p>WALK TO LIBRARY</p> <p>4/5 PM?</p>		
				
<p>NOTE: ADMITTED TO SHOULDER TRAUMA AT 10:46 PM</p> <p>NOTE: ALL INJURIES ON RIGHT SIDE</p> <p>NOTE: VICTIM HAS LITTLE MEMORY OF EVENT</p>				

A-35

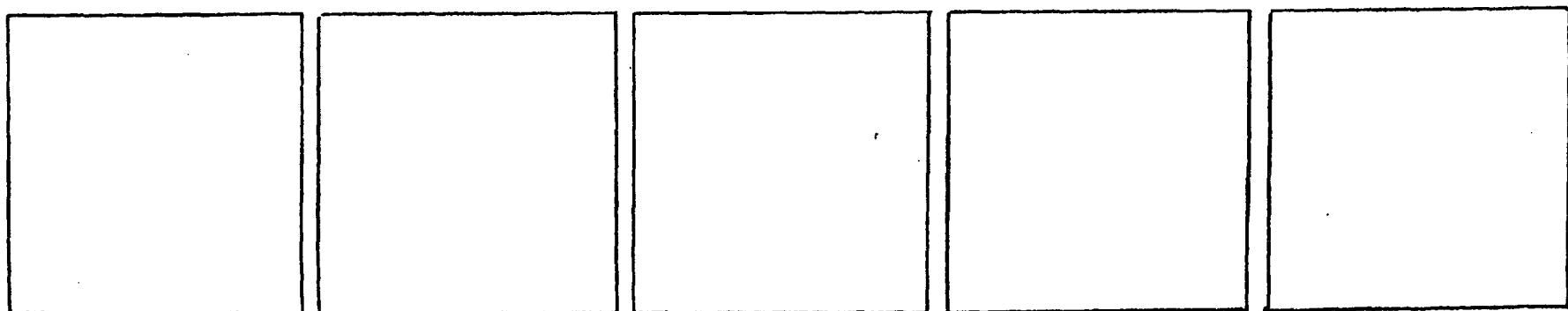
**Victim No. 15. Work--hanging around (nighttime walk home) (Male) (BAC=.236) (Thursday, May)**

<p>HOME NO BREAKFAST 10:00 AM - Noon</p>	<p>WALK TO WORK NOON - 12:10 PM</p>	<p>WORK (SHOVING DIRT) (12 + BEERS) 12:10 - 8:30 PM</p>	<p>HUNG AROUND (3/4 OF PINTH OF WINE) 8:30 - 10:00 PM</p>	<p>WALK HOME 10:00 PM</p>
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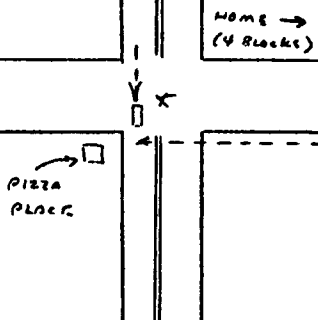


NOTE: WAS TRYING TO CROSS STREET TO WALK FACING TRAFFIC

A-36



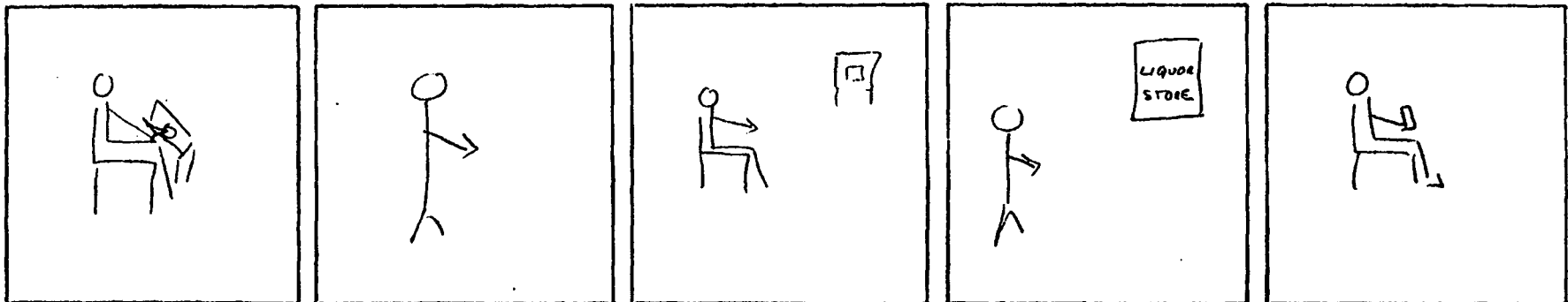
Victim No. 16. Home alone (nighttime errand) (Male) (BAC=.238) (Saturday, June)

<p>Home BREAKFAST + FRUIT 10:00 AM - 8:00 PM</p>	<p>Home 2 CANS BEER 8 PM - 11:00 PM</p>	<p>BUY PIZZA (10 MIN WALK)</p>		
				

A-37

Victim No. 17. Friend's home (nighttime--pick up friend and go home) (Female) (BAC=.157) (Friday/Saturday, June)

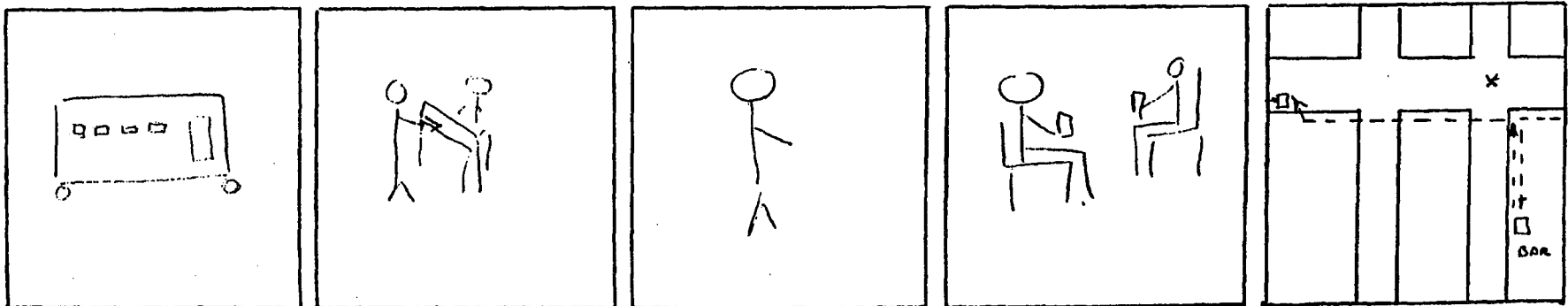
OVERNIGHT AT FRIENDS (DRINKING THE NIGHT BEFORE) BREAKFAST 9:00 AM - 10:30	WALK HOME (1 1/2 MILES) 10:30 - NOON	HOME LUNCH - CHORES - TV NOON - 3:30	BUY BEER 3:30 PM	HOME (1 QT MALT BEER) 3:20 PM - 5:00
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A-38

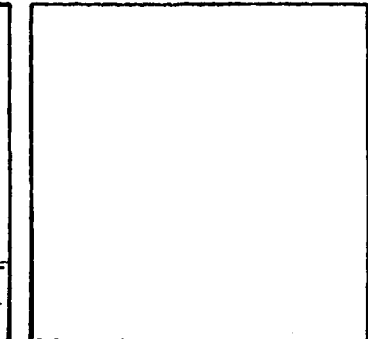
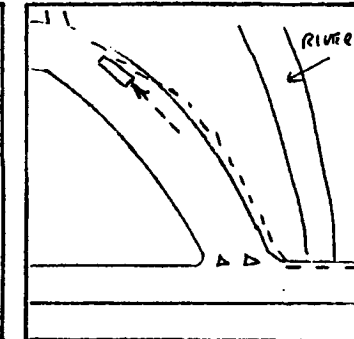
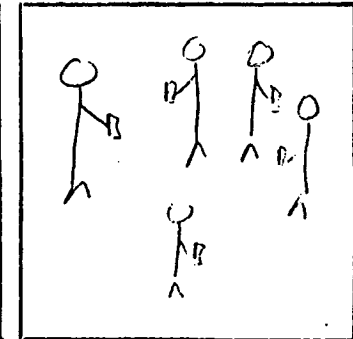
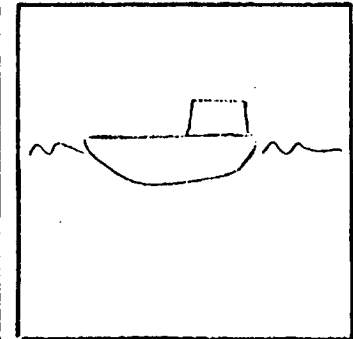
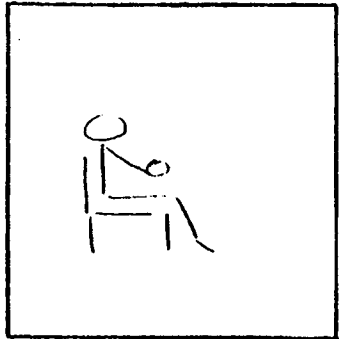
BUS TO BAR WITH GIRLFRIEND 5:00 PM	BAR (16 CANS BEER) 6:30 - 10:00 PM	WALK TO FRIENDS 10:00 - 11:00 PM	FRIENDS (2 WHISKYS + 2 BEERS) 11:00 PM - 1:45 AM	WALK TO BAR TO PICK UP FRIEND + GO HOME 1:45 AM - 3:00 AM
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BAR WAS CLOSED + GIRLFRIEND GONE. RAN INTO MALE FRIEND WHO WALKED TO CORNER WITH HER



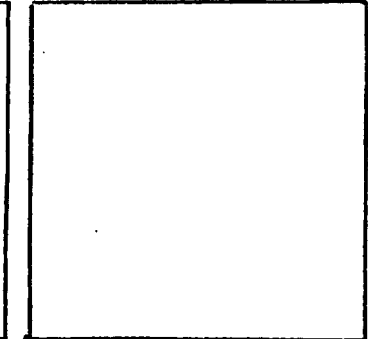
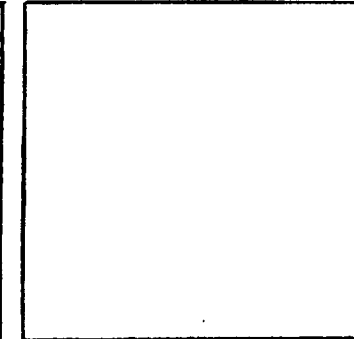
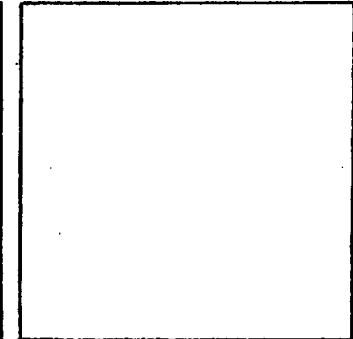
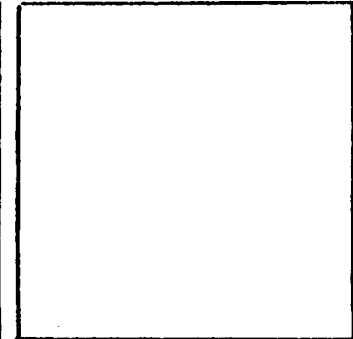
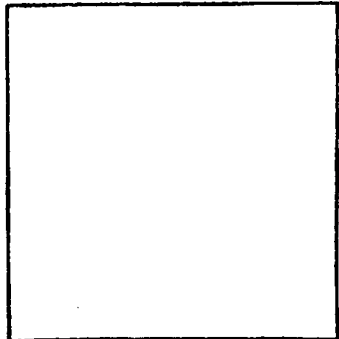
Victim No. 18. Friend's home (nighttime walk home) (Male) (BAC=.288) (Saturday, July)

<p>Home COFFEE 9:30 AM - 3:30 PM</p>	<p>PASSENGER - BOAT RIDE TO FRIENDS HOUSE (10 MIN RIDE) 3:30 PM</p>	<p>FRIENDS HOUSE (PIZZA + BEER) 8:30 PM - 10:00 PM</p>	<p>WALK HOME 10:00 PM</p>	
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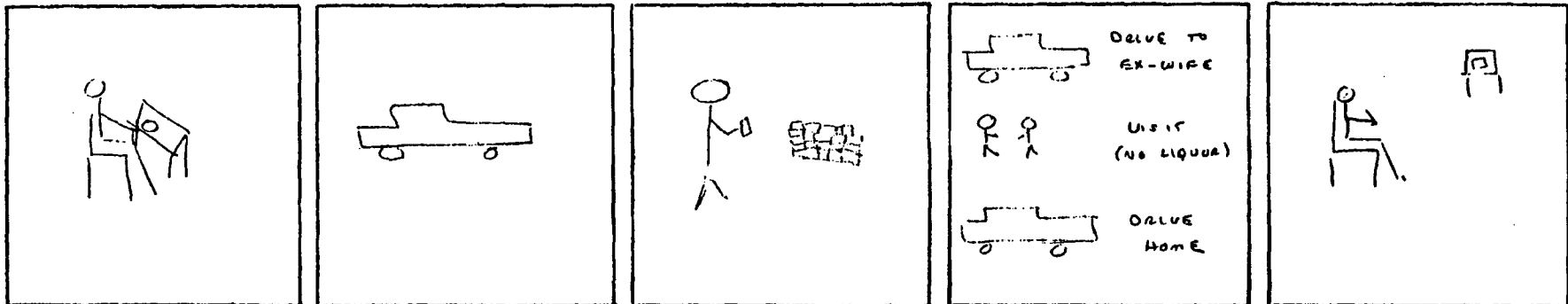
NOTE: "USUAL CASES"  
CONSUMED

NOTE: TWO PERSONS AT PARTY  
OFFERED HIM RIDE HOME  
BUT HE FELT THEY WERE  
TO INTOX TO DRIVE.



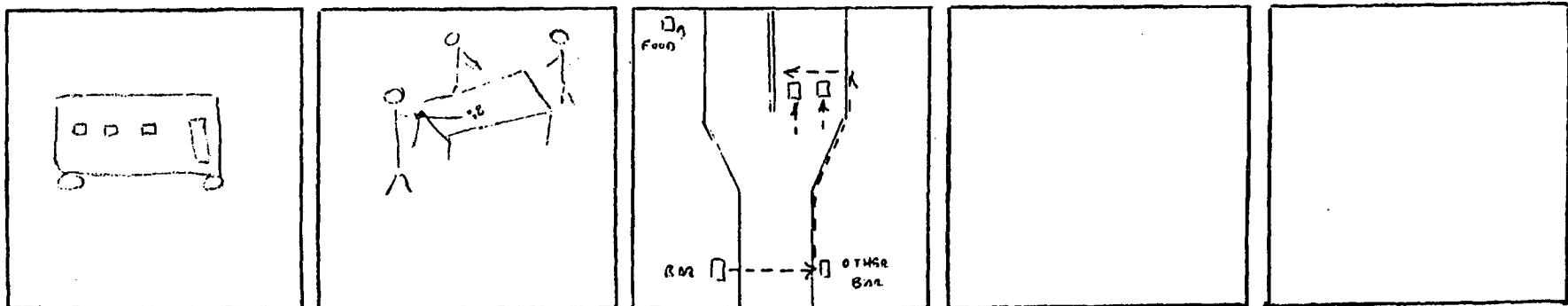
Victim No. 19. Bar (nighttime--get food and go home) (Male) (BAC=.256) (Friday, July)

<p>HOME LIGHT BREAKFAST 4:00 AM - 5:00 AM</p>	<p>DRIVE TO WORK 5:00 - 5:45 AM</p>	<p>WORK (MASON) SANDWICH FOR LUNCH 5:45 AM - 2:30 PM</p>	<p>VISIT/DRIVE HOME 2:30 - 4:30</p>	<p>HOME SHOWER - DINNER - TV 4:15 PM - 8:00 PM</p>
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A-40

<p>TAKE BUS TO BAR 8:00 - 9:00 PM</p>	<p>BAR (8 BEERS + A SHOT) PLAY TO POOL 9:00 PM - MIDNIGHT</p>	<p>HIT BY BOTH CARS → LOOK FOR FRIENDS IN OTHER BAR (NOT THERE), HEAD FOR HOME, GET FAST FOOD MIDN</p>		
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## **APPENDIX B**

### **NON-VICTIM DATA**

This appendix contains the following non-victim materials:

- Interviewer's guide
- Profile of the non-victim
- Summary tables:
  - Table B-1. Personal/Residence Data
  - Table B-2. Alcohol/Drug Data
  - Table B-3. Pedestrian Data
- Storyboards of the non-victim days

## NON-VICTIM INTERVIEWER'S GUIDE

The purpose of the interview is to collect data that will describe the physical time-courses taken by pedestrians who walk after they have been drinking. The data will be used to develop scenarios of pedestrian behavior while drinking. These data will aid in identifying and selecting countermeasures for the drinking pedestrian. The entire interview will be recorded.

Prior to the start of the interview, the interviewer should record the date of the interview and the sex of the subject on the tape.

The session will start with the subject's review and signing of the Consent Form. The interview itself will be initiated by obtaining certain background information like age, residence, drinking habits and walking habits. The interview will then assume a "story-telling" format. The primary story will describe the course and events that occur on a recent typical day when the subject has walked after drinking. Four types of information will be obtained from the interview:

- Background data on the respondent
- Time-line of events
- Map of routes traveled
- Description of each event on the time-line

The interviewer might introduce the session as follows:

*We are interested in obtaining information about when and where you walk after drinking. Our aim is to try to get information from several people who walk after drinking to see if we can find ways to make walking safer. But first we would like you to read and sign this Consent Form.*

The interviewer will review the Consent Form with the subject and answer any of the subject's questions. When the subject has signed the Consent Form indicating that the form has been read and explained, the interviewer might initiate the first part of the interview as follows:

*First, we would like to learn some things about you so I'm going to ask you some questions about your age, where you live, your drinking habits, and how much you walk. After that, we'll talk about when and where you walk after drinking.*

The interviewer should then proceed to ask the questions listed below.

## PERSONAL INFORMATION

### **Personal data**

- What is your age?
- What is your weight?
- What is the highest grade of school you completed?
- Are you employed? If yes:
  - How long have you worked there?
  - What do you do there?
- What is your religion?
- Do you have a driver's license? If yes, is it current (or suspended)?
- What is your general health?
- Where do you live?
- How long have you lived there?
- Is it a house or an apartment?
- Are you married?
- Do you have any children? How many?
- If married, do your wife and children (if any) live with you?
- Does anyone else live with you? Who?
- Where were you born?
- How long have you lived in the area?

### **Drinking habits**

(As alternatives to these questions, the interviewer may administer the CAGE, brief MASS, and additional instruments covering amount of alcohol consumed.)

- Have you ever been treated for drug or alcohol abuse? Which one? When?
- What type of alcohol do you consume most frequently?
- How often do you consume it?
- When do you consume it (days of the week, times of the day, all the time)?
- Where do you consume it (home, friends, bars, street)?
- What time do you spend consuming alcohol in each event?
- Are you usually alone or with company when drinking (alone, with friends, with family, in public places)?

### **Pedestrian habits**

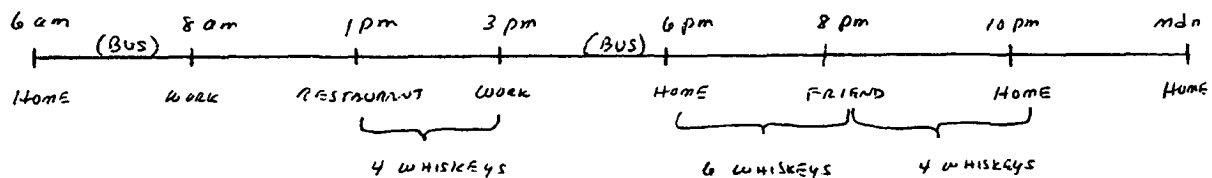
- How much do you walk (every day, every week)?
- What kind of walking do you do (to/from work, school, store, bus, visit friends, exercise)?

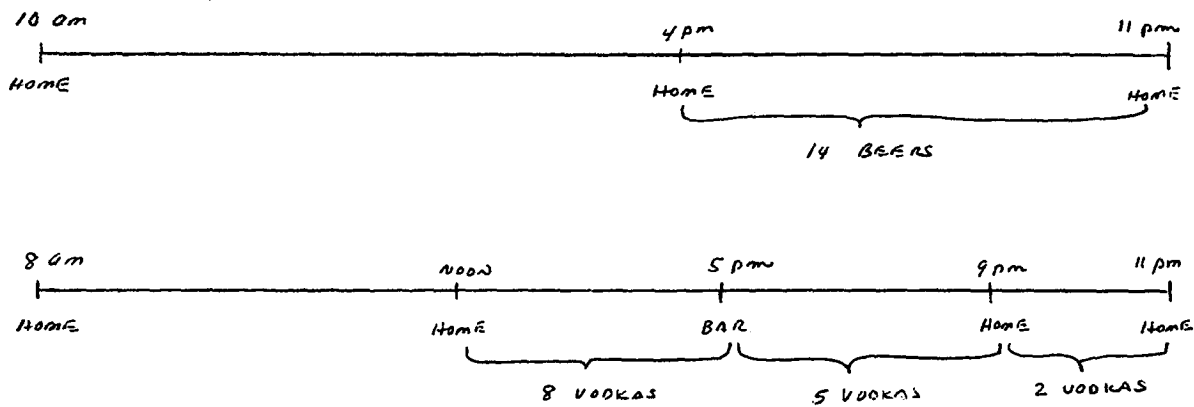
- How long are your walks (a few blocks, a mile or more)?
- Where do you usually walk (city streets, parks, country roads)?
- What time of day do you do your walking (morning, afternoon, evening, anytime)?
- What days of the week do you typically walk (weekdays, weekends, all days)?
- Do you usually have walking companions?
- On your walks, when are you in the street typically (midblock to cross, at intersection to cross, in road where there are no sidewalks)?
- When you cross the street, are there typically any crossing aids (crosswalks, traffic signals, pedestrian signals)?

When the interviewer has obtained the preceding background data, a time-line of events should be developed with the subject. The interviewer might introduce this part of the interview with the following:

*Now, I'd like to know what you do when you walk after drinking. I'd like you to describe a recent typical day in which you walked after drinking. If there is no typical day, I'd like you to describe the most recent day you walked after drinking. Specifically, I'd like to know what you did from the time you got up on that day until you went to bed. And I'd like to know how much you had to drink, the type of beverage you drank, when you drank it, and where you drank it. (Note: Make sure subject has settled on a specific day to be described before proceeding.) First, tell me what day of the week it was. Then, let's start with when you got up that day. Tell me what time you got up, what you did, and when and where you had your first drink.*

Working with the subject, the interviewer should develop a time-line of events that begins when the pedestrian got up on the day being described and ends when the subject went to bed. Show all places the pedestrian went that day and show when and where the pedestrian had anything to drink all day. Identify any parts of the time-line in which the pedestrian was in a vehicle. Examples of some time-lines that might result from this effort are shown below. A form to capture the time-line is attached to this Interviewer's Guide.





Following development of the time-line, the interviewer should ask the subject to describe each site (place) on the line *where the subject had consumed at least one drink* and the route taken to the next site. The interviewer should begin with the site where the subject had the last drink and work backward in time covering as many sites and routes as time permits. All sites and routes should be drawn on a map. The subject should be allowed to tell the story with prompts, as necessary, by the interviewer. The interviewer should attempt to obtain the information listed below and note appropriate information on the time-line as the interview progresses.

### SITE SPECIFIC DATA

#### Every site

- What is the site (home, bar, friend's place, work, store, restaurant, etc.)?
- Where is the site?
- How long did you stay there?
- Did you have anything to drink there? If yes:
  - How much did you have to drink?
  - What type of beverage did you drink?
  - How much time did you spend drinking (e.g., began at \_\_\_ and ended at \_\_\_)?
  - Did anyone try to stop you from drinking (or refuse to serve or sell to you)? If yes, who were they and what did they do?
  - Did anyone offer to help you when you left (that is, offer to walk with you, call a cab, etc.)? If yes, who were they and what did they do?

- How many people were there and what was going on? (Try to get an estimate of the quality of the person's recollection of time and the amount of detail remembered, for example, was there something on television that made the interviewee remember a specific time, does the interviewee remember specific things that people said or were doing, or does the interviewee remember specific music that was playing?)

## MOBILITY

### **Driving routes**

- Where were you going?
- Why were you going there?
- Who was driving?
- How many people were in the vehicle?
- Was anyone drinking in the vehicle? Who were they and what were they drinking?

### **Walking routes**

- Where were you going?
- Why were you going there?
- What route did you take?
- How often do you take this route?
- Are there other routes that you take for this trip? If yes, what are they? What makes you decide to take one route or another?
- Were you alone or with friends? If friends, how many? Were the friends drinking too?
- What streets did you cross? Where did you cross them? Why did you cross where you did? Were there crossing aids (traffic lights, stop signs, marked crosswalks)?
- Did you have any close encounters crossing any of these streets? What were they?
  - What were you doing in the street at the time (crossing the road, getting in or out of a car, standing in road waiting to cross, lying in the road, sitting on the curb, etc.)?
  - Were you running or walking (fast, normal or slow)?
  - Was there a traffic light? Was it green? Was there a stop sign or any other type of traffic control?
  - Did you see the car before it almost hit you? At what point did you see it?
  - Did anything prevent you from seeing the vehicle or the driver from seeing you, for example, parked cars, stopped bus, telephone pole, mailbox, sun glare?

- What did you do to avoid an accident?
  - Did anyone try to help you avoid an accident? Who and what did they do?
  - Did anyone with you get hit? What happened?
- Do you think you needed any help walking? Did anyone try to help you? Who and what did they do?

### **Subject's Assessment of Physical State During the Last Walk of the Day After Drinking**

The interviewer might introduce this topic as follows:

*We would like to get some idea of how you felt walking during the last trip of the day after drinking. For example, do you remember if you were seeing clearly? Did you feel unsteady? Were you stumbling or bumping into things? Let's start with your vision.*

The interviewer should then go through the topics listed below and attempt to get the subject's assessment of physical state during the last walk of the day after drinking. For each topic, several questions are included that the interviewer might use to get the subject talking about the particular area.

- How was your vision? For example, did you have trouble focusing? Was everything a blur? Could you judge distances and heights (like curbs)? Was there a lot of glare? Did you see double? Were cars going by very fast? Could you track objects? Was everything foggy?
- How was your balance? For example, were you stumbling? Did you have to spread your arms out to keep from falling? Did you bump into things or people? Did you stagger? Did you drift from side to side on the sidewalk? Did you have to focus on your feet to keep from falling? Did you have to stop walking if you wanted to look at something? Did you have to look at the sidewalk to know where to plant your feet?
- How aware were you of what was going on? For example, could you focus on only one thing at a time? Did you lose track of things (like people, your cigarettes, where you were in the city, what block you were on)? Did you feel foggy or out of it? Did you understand what people were saying to you? Did you just want to get where you were going without paying attention to what was around you? Did you know or care what the time was? Did you think about your personal safety?
- Did you feel hostile or angry? Were you cursing? Were you rude? Were you looking for a fight? Were you in a mean mood?

- How was your appearance? Were your clothes rumpled or messy? Were your hands shaking or fumbling with things? Was your speech slurred?
- Finally, what is the best way for someone looking at you on the street to know that you have been drinking as much as you did on the day you have described?

### **Subject's Advice**

- What advice would you give to people who walk after drinking to help them avoid pedestrian accidents?

The interviewer should thank the subject and pay the subject for the interview. The subject should sign the Consent Form again indicating receipt of payment.



**TIME-LINE OF EVENTS**

(Be sure to include time at each place and time spent drinking.)

B-9

<u>Time</u>	<u>Get Up</u> _____ <u>Bed</u>
<u>Site</u>	
<u>Beverage</u>	
<u>Time recollection quality*</u>	
<u>Detail recollection quality*</u>	
<u>Physical State*</u>	
<u>Comments</u>	

\*Good, fair, poor

## PROFILE OF THE NON-VICTIM

The following information provides a profile (mostly mode or median) of the non-victim. Also included are summaries of the data for each variable.

### Personal and Residence Data

<u>Sex:</u>	Male	Male = 6, female = 4
<u>Age:</u>	36.9 (Avg.)	Range = 21 to 52
<u>Education:</u>	Grade 11.5	Range = grade 9 to MBA
<u>Employment:</u>	None/unskilled	None = 7, unskilled = 3
<u>Religion:</u>	Catholic/ Protestant	Catholic = 5, Protestant = 4, none = 1
<u>Driver's license:</u>	None	None = 7, current = 3
<u>Health:</u>	Good	Fair = 3, fair to good = 1, good/normal = 6
<u>Marital status:</u>	Unmarried	Single = 7, widowed = 1, divorced = 1, married = 1
<u>No. children:</u>	None	None = 6, 1 = 1, 2 = 2, 3 = 1
<u>Residence:</u>	Multiple	Halfway house = 4, rooming house = 3, YMCA = 1, apartment = 2

### Alcohol and Drug Data

<u>Alcohol/drug treatment:</u>	Current	Drugs current = 3, alcohol current = 3, both current = 1, drugs formerly = 2, both formerly = 1
<u>Preference:</u>	Beer/wine	Beer = 5, wine = 2, whiskey = 1, vodka = 1, cognac = 1
<u>When:</u>	Daily	Daily = 8, 1-2 times per week = 1, 4-5 times per week = 1

Where:  
(multiple mentions)  
Street/home Street = 6, home = 5, bar = 4, friend/relative = 2, anywhere = 1, car = 1

Companions: Alone Alone = 6, with someone = 4

### Pedestrian Data

Frequency: Daily Daily = 9, twice weekly = 1

Place:  
(multiple mentions)  
City streets City streets = 10, parks = 5, neighborhood = 1, dirt roads = 1

Time: Variable Afternoon = 4, night = 3, 2 am to 4 am = 2, 9 am to 8 pm = 1

Day of week: All days Daily = 3, weekdays = 2, Mon - Sat = 2, others = 2, unknown = 1

Companions: Alone Alone = 8, with people = 2

When in street: To cross To cross = 8, when drinking = 1, unknown = 1

Crossing aids there?: Yes Yes = 6, sometimes = 1, no idea = 2, never use them = 1

**Table B-1. Non-Victim Summary Table--Personal/Residence Data**

Variable	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8	Subject 9	Subject 10
Sex	Female	Male	Male	Female	Male	Male	Female	Female	Male	Male
Age	44	39	34	40	52	36	40	23	40	21
Weight	130 lbs	185 lbs	129 lbs	130 lbs	200 lbs	145 lbs	160-165 lbs	160 lbs	157 lbs	140 lbs
Highest school grade	12	MBA	11	9	12	10	11	14 (2 years college)	11	10 (now has GED)
Employment	None	None	Caddy--seasonal	None	None	No	None	Receptionist	None	Grounds maintenance
Religion	Catholic	Catholic	Baptist	Protestant	Protestant	None	Catholic	Catholic	Catholic	Protestant
Driver's license	None	Yes	None	None	Suspended	None	None	Yes	None	Yes
Health	Normal	Good	Fair	So-so	Good	Fair	Fair to good	Good	Good	Good
Marital status	Single	Single	Single	Married	Widower	Single	Divorced	Single	Single	Single
No. of children	1	None	None	2	3	1--given up for adoption	2	None	None	None
Current residence	Rooming house	Apartment	Sister's apartment	Rooming house	YMCA	Rooming house	Halfway house	Halfway house	Halfway house	Halfway house
Time at residence	7 years	8 years	?	3 years	1-1/2 years	1 month	3 months	3 months	2 weeks	2 months
Time in this area	25 years	10 years	Approx 34 years	40 years	16 years	36 years	37 years	3 months	40 years	Approx 3 months
Residence companions	Boyfriend (away now)	Roommate	Sister, her boyfriend, 2 children	No one	No one	No one	Others	Others	Others	Others

B-12

**Table B-2. Non-Victim Summary Table--Alcohol/Drug Data**

Variable	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8	Subject 9	Subject 10
Alcohol/drug treatment	Drugs--current	Both--current	Drugs--current	Drugs--last year	Drugs--current	Drugs--formerly	Alcohol--current	Alcohol--current	Alcohol--current	Both--formerly
Alcohol preference	Wine, Cisco	Cognac	Malt beer, Southern Comfort	Wine, Cisco, beer	Whiskey, vodka, beer	Beer, Jack Daniels, Tequila Sunrise, Alabama Slammers	Beer	Beer	Vodka	Beer
Frequency of drinking	Daily	1 or 2 times per week*	Daily	Daily	Daily*	Daily*	Daily*	Daily*	Daily*	4 to 5 times per week*
Place of drinking	Streets, park	Streets	Home, streets, sister's	Home (winter), streets (summer)	Cabarets	Bar, home, park	Home, street, bar, friends	Bar, car	Anywhere	Home
Time of drinking	Afternoon till 8 pm	Evening	Evening	Afternoon, evening	Night	Evenings (weekdays), anytime (weekends)	All day	Evenings (weekdays), anytime (weekends)	All day	Evenings (weekdays), anytime (weekends)
Time spent drinking	6 hours	8 - 10 hours	3 - 4 hours	12 - 14 hours	5 hours +	--	--	4 - 5 hours	All day	6 hours
Drink alone/with people	With people	Alone	Prefer alone	Mostly alone	With people	Alone	Mostly alone	Mostly with people	Mostly alone	With people

\* Former drinking habits

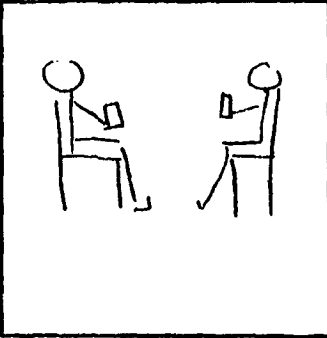
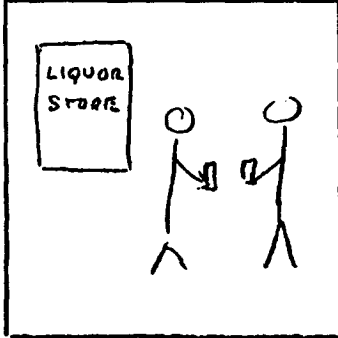
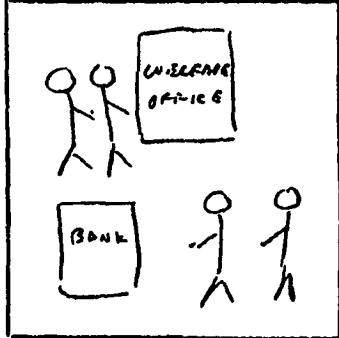
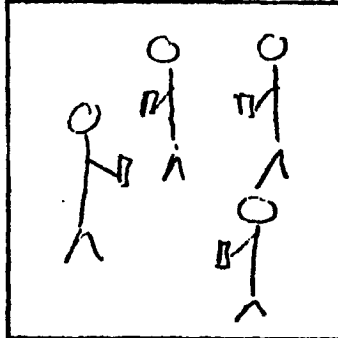
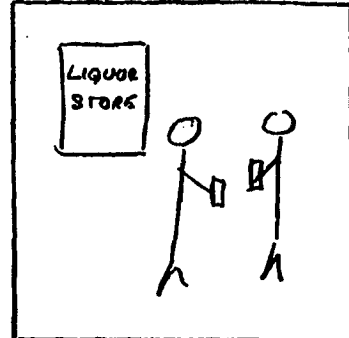
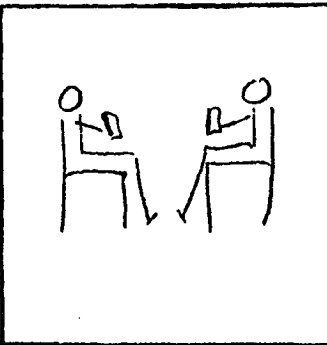
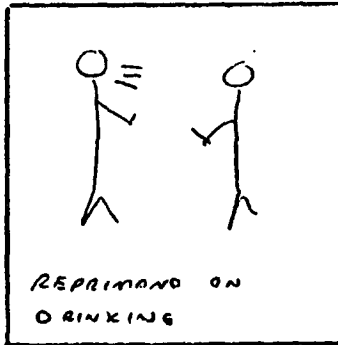
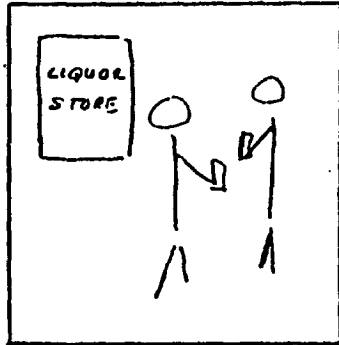
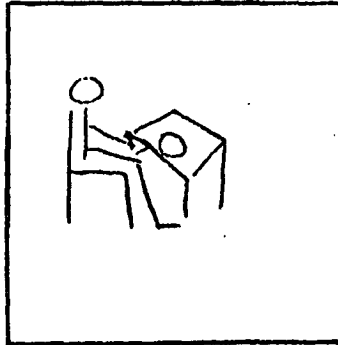
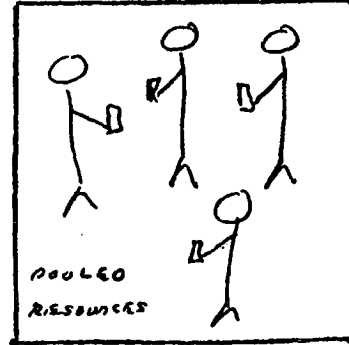
**Table B-3. Non-Victim Summary Table--Pedestrian Data\***

Variable	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8	Subject 9	Subject 10
Frequency of walking	Daily	Daily	Twice weekly**	Daily	Daily	Daily	Daily	Daily	Daily	Daily
Destination	Friends, program, phone company	Streets, park	Friends, relatives	Store, friends	Bar, friends	Friends, beach, downtown	Work, downtown, family, friends	Work, bus, shops	Work	Around city
Length of walks	1/2 to 2 miles	Several miles	Blocks to miles	Two blocks	1 mile	5 to 6 miles	Several miles	Blocks to miles	3-1/2 miles	5 blocks
Place of walking	City streets	City streets, parks	City streets, parks	City streets	City streets	Streets, parks	City streets	City streets, neighborhood	Streets, parks	Streets, dirt roads, parks
Time of walking	Afternoon	Evening	Night	Afternoon (winter), plus evening (summer)	2 am	3 to 4 am	--	Afternoon	9 am to 8 pm	Afternoon
Day of week of walking	Weekdays	Tuesdays and Fridays	Friday and Saturday	Daily	Weekdays	Daily	Monday to Saturday	--	Monday to Saturday	Daily
Walk alone/with people	Mostly alone	Alone	Mostly alone	Alone	With people	Alone	Alone	Alone	Alone	With people
When subject is in the street	To cross (crosses anywhere)	To cross (crosses anywhere)	To cross (jaywalks)	To cross (crosses at intersections)	To cross (crosses where convenient)	To cross (crosses anywhere)	To cross	Walked in road when drinking	--	To cross
Are there crossing aids?	Sometimes	Yes	Yes	Yes	Yes	No idea	Never use them	Stop lights only	Paid no attention	Yes

\*Many subjects had difficulty separating their walking habits from their walking-while-drinking habits. The table represents a mixture.

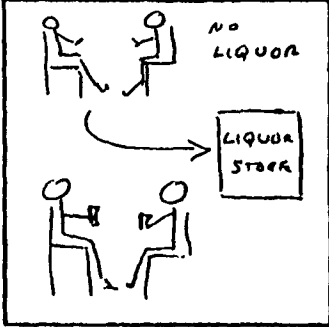
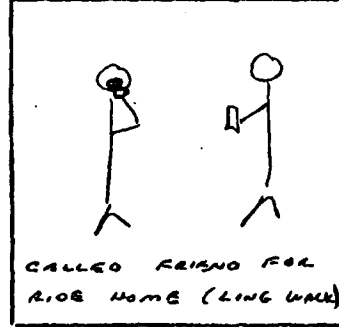
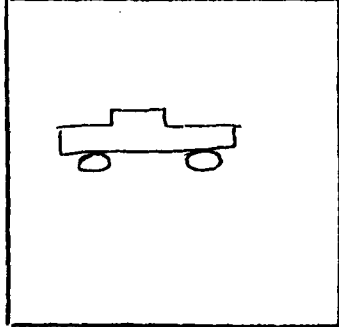
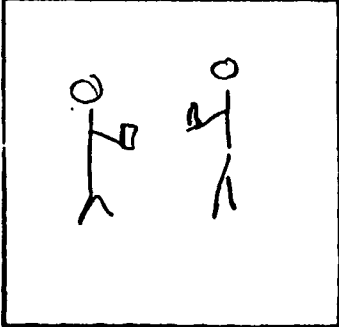
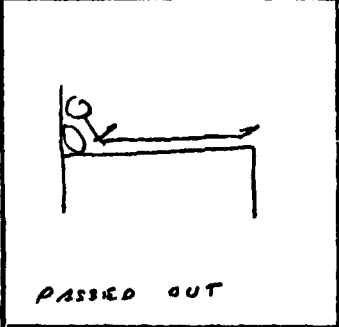
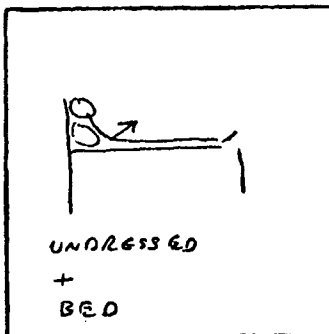
\*\*Caddy--walks 5 miles daily on the golf course in season.

Non-victim No. 1. (Female) (Monday)

<p>GET UP - FRIEND VISITS (<math>\frac{1}{2}</math> PINT WINE) 8:30</p>	<p>LIQUOR STORE AND STREET (1 PINT WINE) 9:30 AM</p>	<p>WELFARE OFFICE AND BANK 10:00 AM</p>	<p>PARK (2 BOURBOONS) 11:30</p>	<p>LIQUOR STORE AND STREET (<math>\frac{1}{2}</math> PINT WINE) 12:00 NOON</p>
				
<p>FRIENDS (<math>\frac{1}{2}</math> PINT WINE) 12:30 PM</p>	<p>DRUG PROGRAM TOXIMEFRA TEST 1:15 PM</p>	<p>LIQUOR STORE AND STREET (<math>\frac{1}{2}</math> PINT WINE) 1:45 PM</p>	<p>HOME - FOOD 3:00 PM</p>	<p>STREET (1 PINT WINE) 4:30 PM</p>
	 <p>REPRIMAND ON DRINKING</p>			 <p>POOLED RESOURCES</p>

B-15

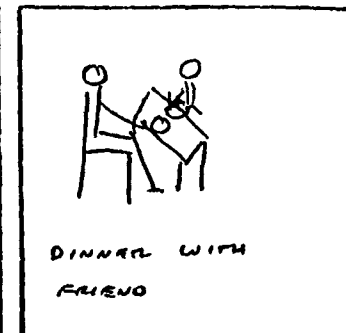
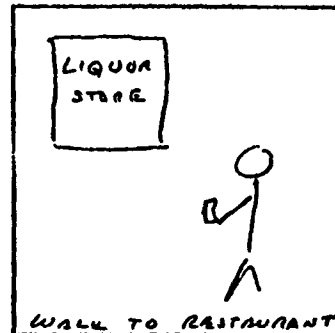
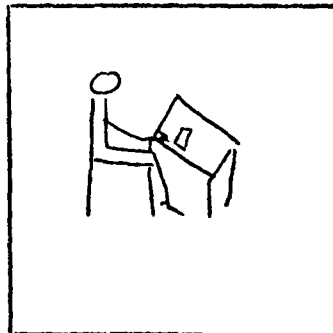
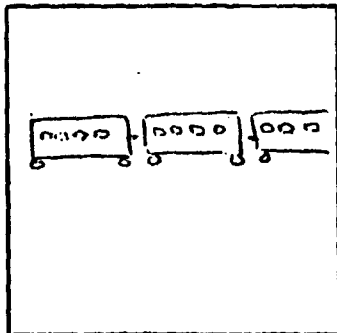
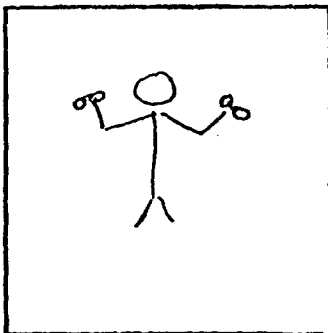
Non-victim No. 1. (Continued)

<p>FRIENDS (2 VODKAS, 1/2 PINT WINE) 5:30 PM</p>	<p>FRIENDS 7:00 PM</p>	<p>CAR PASSENGER 7:30 PM</p>	<p>HOME (1/2 PINT WINE, BEER) 8:30 PM</p>	<p>HOME 9:30 PM</p>
 <p>NO LIQUOR LIQUOR STORE</p>	 <p>CALLED FRIEND FOR RIDE HOME (LONG WALK)</p>			 <p>PASSED OUT</p>
<p>HOME 11:30 PM</p>				
 <p>UNDRESSED + BED</p>				



Non-victim No. 2. (Male) (Friday)

GET UP - GYM 5:30 AM	TRAIN TO WORK 8:00 AM	OFFICE 9:15 AM	LIQUOR STORE AND STREET ( $\frac{1}{2}$ PINT COGNAC) 5:00 PM	RESTAURANT (BEER) 6:15 PM
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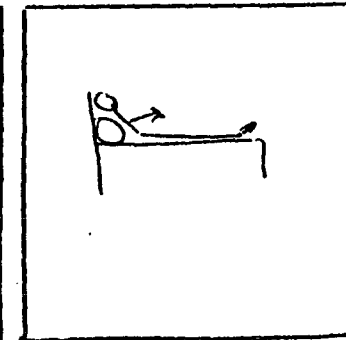
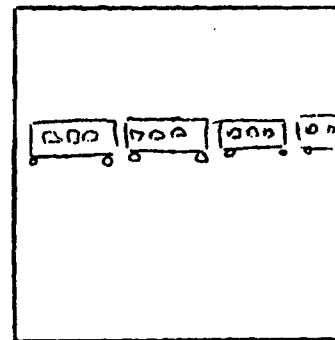
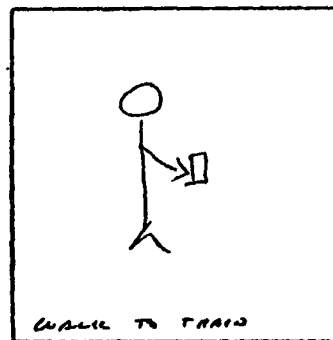
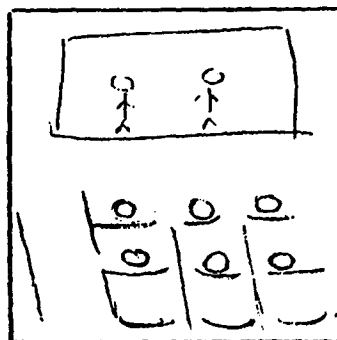
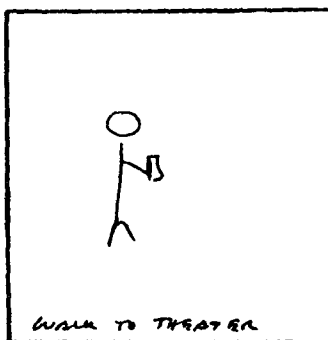
STREET  
( $\frac{1}{2}$  PINT COGNAC)  
7:15

THEATER  
( $\frac{1}{4}$  PINT COGNAC)  
8:00 PM

STREET  
( $\frac{1}{4}$  PINT COGNAC)  
10:00 PM

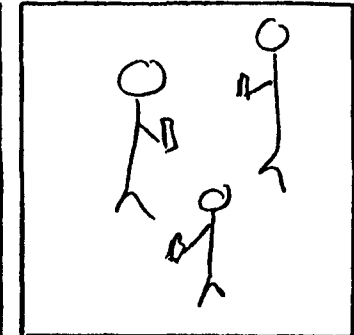
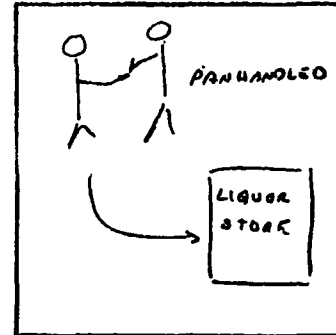
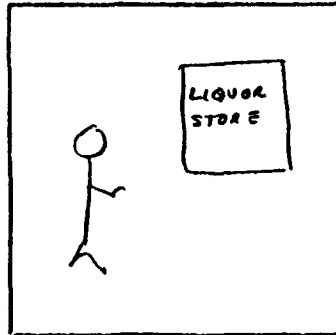
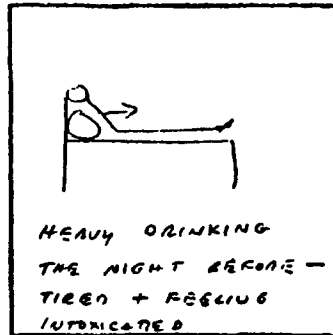
TRAIN HOME  
11:00 PM

HOME  
1:00 AM



Non-victim No. 3. (Male) (Day unknown)

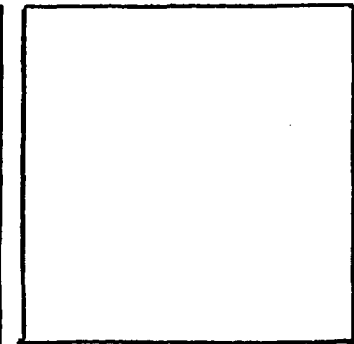
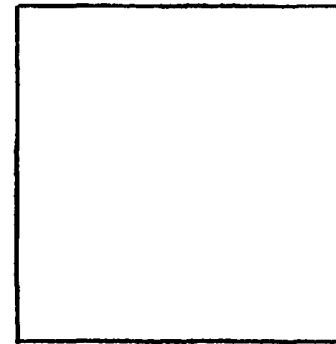
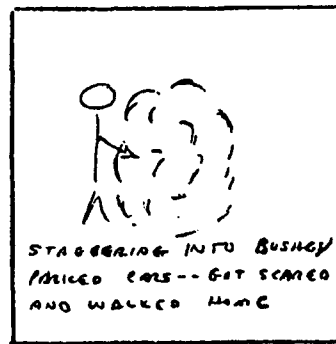
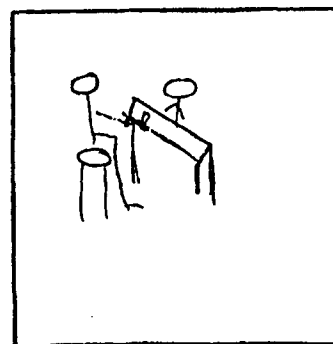
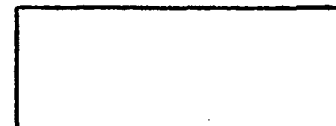
HOME -  11:00 AM	LIQUOR STORE  11:15 AM	HOME - BREAKFAST (64 OZ BEER)  11:30 AM	STREET (NEARBY CORNER)  12:00 PM	STREET (NEARBY CORNER) (16 OZ BEER)  1:15 PM
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BAR (NEARBY CORNER)  
(BEER, BRANDY, SOUTHERN  
COMFORT)  
2:00 PM

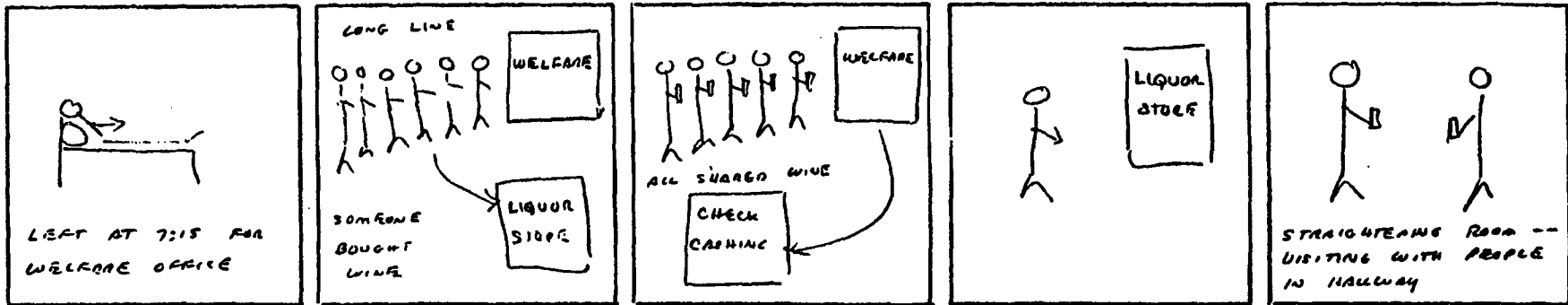
WALKING TO PARK  
(OPPOSITE DIRECTION FROM  
HOME)  
8:00 PM

HOME  
  
9:00 PM



Non-victim No. 4. (Female) (Day unknown)

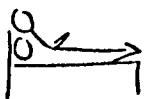
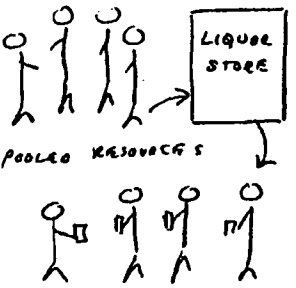

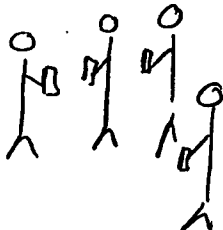


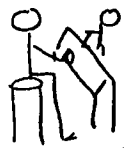

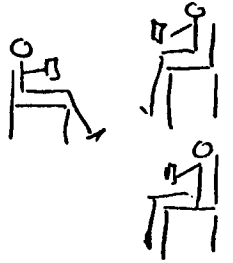

HOME 7:00 AM	WELFARE OFFICE 7:30 AM	WELFARE OFFICE (8 OZ WINE)	LIQUOR STORE (ON WAY HOME)	HOME (1 FIFTH WINE, 2 CANS BEER) 9:30 AM
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HOME (1 FIFTH WINE, 2 CANS BEER) 10:30 AM	HOME NOON	LIQUOR STORE AND HOME (1 FIFTH WINE, 2 CANS BEER) 2:00 PM	LIQUOR STORE AND HOME (1 FIFTH WINE, 2 CANS BEER) 7:30 PM	CORNER STORE AND HOME 10:00 PM
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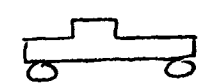
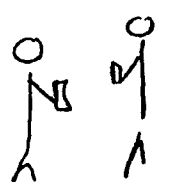

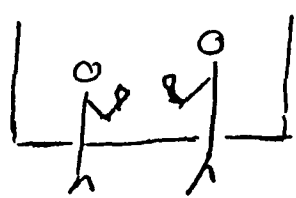


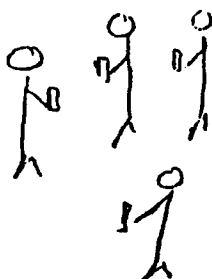




Non-victim No. 5. (Male) (Saturday)

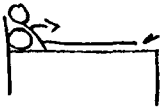


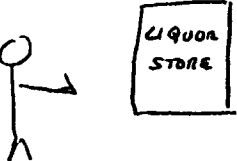






<p>HOME 8:00 AM</p>	<p>PARK (20 OZ WINE) 8:30 AM</p>	<p>HOME (2 CANS BEER) 2:00 PM</p>	<p>PARK (8 OZ WINE) 4:00 PM</p>	<p>HOME 7:00 AM</p>
	<p>LIQUEUR STORE</p> <p>POOLED RESOURCES</p> 			<p>SHOWER - CHANGE CLOTHES</p> 
<p>BAR (6 BEERS) 8:00 PM</p>	<p>HOTEL (5 MIXED DRINKS) MIDNIGHT</p>	<p>BOOTLEGGER 2:00 AM</p>	<p>HOME (2 SIPS WHISKEY) 3:00 AM</p>	<p>HOME 8:30 AM</p>
		<p>WALKED TO PURCHASE WHISKEY</p> 	<p>WITH FRIENDS</p> 	<p>FELL ASLEEP WATCHING TV</p> 

B-20



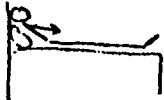

Non-victim No. 6. (Male) (Friday)

<p>HOME 9:00 AM</p>	<p>CAR PASSENGER 9:45 AM</p>	<p>WORK (1 BEER) 10:45 AM</p>	<p>LUNCH (3 BEERS) 1:00 PM</p>	<p>WORK 1:30 PM</p>
	 <p>FRIEND DROVE TO WORK (STOPPED FOR BREAKFAST AT DELI)</p>	 <p>PAINTING + ROOFING -- BROKE FOR CUP OF BEER WITH OTHER AT 11:45 AM</p>		
<p>BAR (3 TRAVELS, 4 BEERS) 4:00 PM</p>	<p>CAR PASSENGER 6:30 PM</p>	<p>FRIEND'S (64 OZ BEER; 16-20 OZ JACK DANIELS) 8:00 PM</p>	<p>WALKING 10:00 PM</p>	<p>GIRLFRIEND'S HOUSE 11:00 PM</p>
 <p>WITH FRIENDS -- GET "PLASTERED"</p>	 <p>TO FRIENDS (VIA HOME)</p>		 <p>STUMBLING -- RODE TO THOSE WHO OFFERED HELP -- LONG WALK</p>	 <p>ARRIVED + WENT DIRECTLY TO BED</p>

Non-victim No. 7. (Female) (Saturday/Sunday)


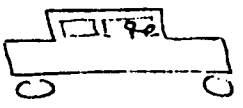
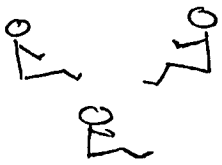
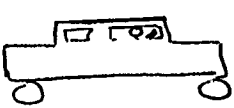
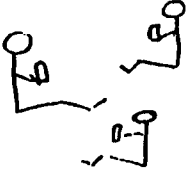
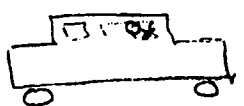

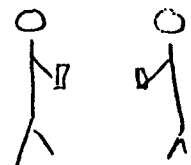
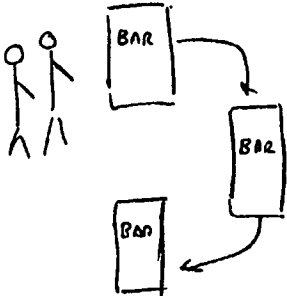

<p>HOME 8:00 AM</p>	<p>LIQUOR STORE 8:10 AM</p>	<p>BEHIND LIQUOR STORE (6 PACK BEER)</p>	<p>LIQUOR STORE</p>	<p>WALKING TO BEACH (4 BEERS + 1/2 PT BRANDY)</p>
 <p>BAD HANGOVER</p>	 <p>BOUGHT 6-PACK BEER</p>	 <p>DRAWN BEHIND STORE -- GOT RID OF SHAKES</p>	 <p>BOUGHT CASE OF BEER + PNT OF BRANDY</p>	 <p>LONG WALK</p>
<p>PARK AT BEACH (20 BEERS; 1/2 PT BRANDY) 10:00 AM</p>	<p>WALKING 1:00 PM</p>	<p>PROBATION OFFICE 2:00 PM</p>	<p>LIQUOR STORE 3:15 PM</p>	<p>BAR (24 BEERS; 3-4 MIXED DRINKS)</p>
 <p>CONSUMED REMAINING LIQUOR</p>	 <p>CARS TOOTED -- LONG WALK</p>	 <p>PROBATION OFFICER SAID NOTHING ABOUT HER DRINKING</p>	 <p>CLEAR REFUSED TO SERVE HER</p>	 <p>DRAWN WITH FRIENDS</p>

Non-victim No. 7. (Continued)

<p>WALKING HOME</p> <p>9:00 PM</p>	<p>CAR PASSENGER (POLICE CAR)</p>	<p>HOSPITAL</p> <p>1:00 AM</p>	<p>HOSPITAL</p> <p>6:00 AM</p>	
 <p>TOTALLY OUT OF IT -- WENT AROUND CORNER -- WENT IN WRONG DIRECTION</p>	 <p>PICKED UP BY POLICE -- DRIVEN TO HOSPITAL EMERGENCY ROOM</p>	 <p>PUT TO BED</p>	 <p>WAKE UP -- NO URINATION IN CLOTHES</p>	

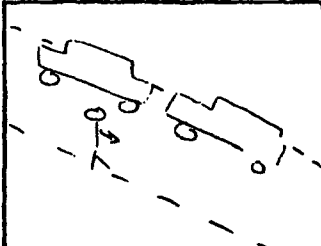

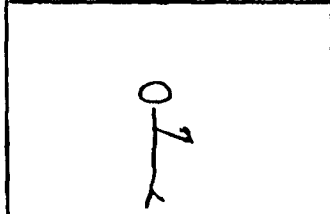
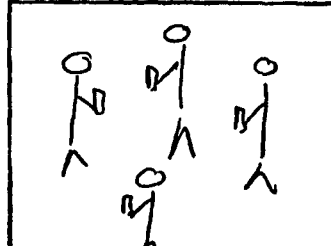
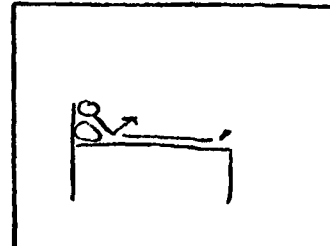
B-23

Non-victim No. 8. (Female) (Saturday/Sunday)

<p>HOME</p> <p>9:30 AM</p>	<p>DRIVING</p>	<p>BEACH</p> <p>10:00 AM</p>	<p>DRIVING</p> <p>11:30 AM</p>	<p>ANOTHER BEACH (4-5 BEERS)</p> <p>NOON</p>
 <p>GET UP</p>		 <p>WITH FAMILY</p>		 <p>WITH FRIENDS</p>
<p>DRIVING</p> <p>4:00 PM</p>	<p>FRIEND'S HOUSE</p> <p>4:15 PM</p>	<p>FRIEND'S HOUSE (5 BEERS)</p> <p>6:00 PM</p>	<p>BAR HOPPING (7-8 BEERS, 4 SMYS VOOKA)</p> <p>8:30 PM</p>	<p>WALKING</p> <p>12:30 AM</p>
	 <p>SHOWERED -- CHANGED CLOTHES</p>			 <p>LEFT WITHOUT TELLING ANYONE -- ALMOST HIT CROSSING STREET</p>



Non-victim No. 8. (Continued)

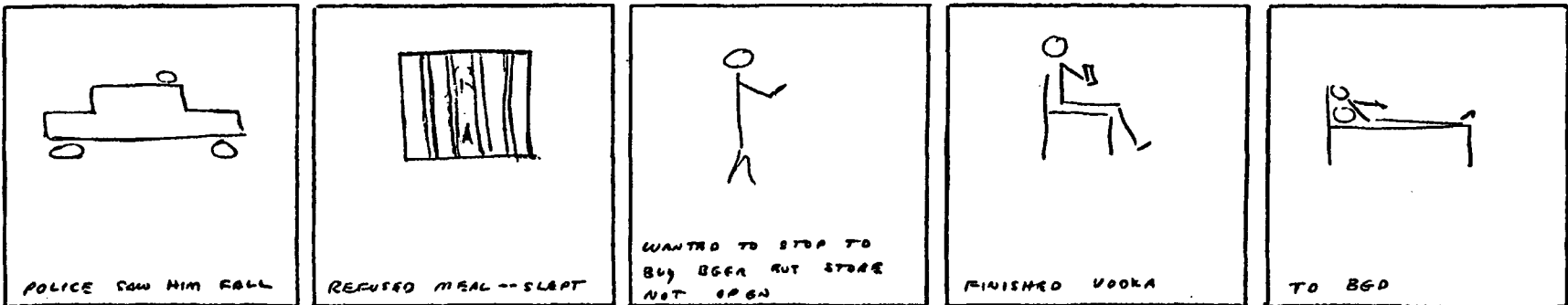
<p>LOOKING FOR CAR</p>	<p>WALKING TO PARENTS</p>	<p>WALKING TO FRIENDS 2:00 PM</p>	<p>FRIENDS HOUSE (2 BEERS) 3:30 PM</p>	<p>FRIENDS HOUSE 4:30 AM</p>
 <p>COULDN'T FIND CAR -- DECIDED TO WALK TO PARENTS' (20 MILES)</p>	 <p>WALKED 3 MILES ON SHOULDER FACING TRAILER -- WANDERED INTO STREET</p>	 <p>RETRACED STEPS</p>	 <p>STILL UP DRINKING</p>	 <p>TO BED</p>

Non-victim No. 9. (Male) (Saturday/Sunday)



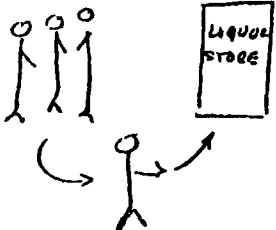
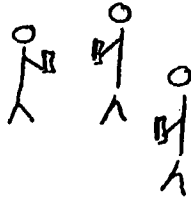

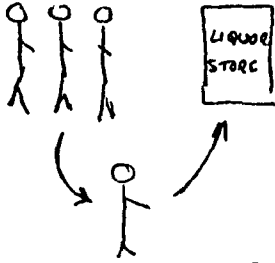
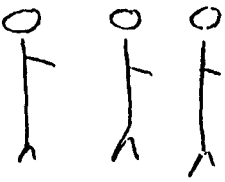
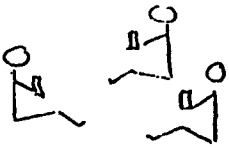
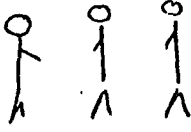

Home (20 oz VODKA) 5:30 AM	WALKING TO FATHER'S (8 oz VODKA) 9:30 AM	BAR (15 oz VODKA) 11:00 AM	WALKING TO FATHER'S (8 oz VODKA) 1:20 PM	LIQUOR STORE + WALKING (8 oz VODKA) 2:15 AM
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CAR PASSENGER (POLICE CAR)	JAIL	WALKING HOME	Home (12 oz VODKA) 4:30 AM	Home 7:00 AM
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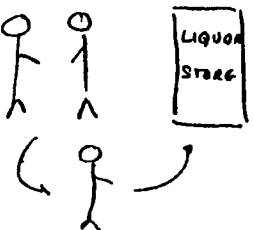

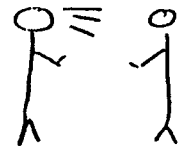
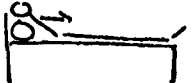


Non-victim No. 10. (Male) (Thursday)

<p>HOME 9:45 AM</p>	<p>HOUSING COMPLEX PARKING LOT 10:45 AM</p>	<p>LIQUOR 11:05 AM</p>	<p>HOUSING COMPLEX PARKING LOT (8 BEERS; 1 1/2 OR VODKA) 11:15 AM</p>	<p>WALKING STRAGERS 12:30 AM</p>
 <p>GOT UP -- BREAKFAST</p>	 <p>HE, BROTHER + FRIEND POOLED MONEY</p>	 <p>UNDERAGE -- GOT SOMEONE TO BUY FOR THEM</p>		 <p>BORROWED MONEY</p>
<p>LIQUOR STORE 2:10 PM</p>	<p>WALKING TO RIVER</p>	<p>RIVER (4 CANS BEER) 2:30 PM</p>	<p>PARK 3:50 PM</p>	<p>RIVER 4:30 PM</p>
 <p>GOT SOMEONE TO BUY FOR THEM</p>	 <p>STUMBLING</p>		 <p>STAINED BEER -- WALKED TO PARK -- "PEOPLE WATCHED"</p>	 <p>LIQUOR STASH WAS GONE</p>

B-27

Non-victim No. 10. (Continued)

<p>HOME</p> <p>5:05 PM</p>	<p>LIQUOR STORE</p>	<p>HOUSING COMPLEX PARKING LOT (2 BEERS)</p> <p>6:15 PM</p>	<p>HOME</p> <p>7:10 PM</p>	<p>HOME</p> <p>7:30 PM</p>
 <p>ATE CEREAL -- MOTHER REFUSED TO LEAVE -- BROTHER GAVE \$5.00</p>	 <p>LIQUOR STORE</p> <p>GOT SOMEONE TO BUY FOR HIM + FRIEND</p>		 <p>CHASSED OUT BY MOTHER</p>	 <p>PASSED OUT</p>

## **APPENDIX C**

### **RECOMMENDED COUNTERMEASURES**

This appendix contains the following materials:

- The 52 countermeasures that were suggested by highway safety experts at the two-day countermeasure workshop.
- A sample evaluation form that was created to describe design and implementation issues for each countermeasure. The form served as an aid in the evaluation by workshop attendees of the "worthiness" of including each countermeasure in the final list recommended to the city. As a result of this analysis, several countermeasures were deleted as being impractical or impossible to implement.
- The 31 countermeasures selected for the final list that was recommended to the City of Baltimore.

## **WORKSHOP COUNTERMEASURE LIST**

The 52 countermeasures suggested by highway safety experts at the two-day countermeasure workshop were as follows:

### **CHANGES TO THE ROADWAY**

1. Post "pedestrian crossing" signs with high night visibility in high pedestrian traffic areas to serve as warnings to drivers to watch out for pedestrians.
2. Post signs (e.g., "pedestrians killed here," "pedestrians injured here") with high night visibility in high pedestrian accident areas to warn pedestrians and/or drivers to be more vigilant.
3. Train municipal employees (e.g., traffic engineers) to act on pedestrian alcohol data.
4. Make certain high risk pedestrian alcohol areas "double fine" areas for drivers (include pedestrians if violations of pedestrian ordinances are routinely ticketed).
5. Reduce speed limits in the city at large or on selected high pedestrian alcohol corridors.
6. Prohibit RTOR or RTOR when pedestrians are present.
7. Post signs for pedestrians urging them to make eye contact with the driver before crossing the street.
8. Make crosswalks "one-way" so that pedestrians avoid crossing streets with intersections on their left. Alternatively, designate the preferred direction in crosswalks to encourage crossing with the intersection on the pedestrian's right.
9. Provide cut-throughs in street medians.
10. Add stop signs in high pedestrian alcohol accident locations to make drivers scan more.

### **VISIBILITY AND CONSPICUITY ENHANCEMENT**

11. Provide high visibility clothing or accessories for sale from liquor companies.
12. Give away brand name high visibility clothing.

13. Have liquor sellers provide hot dots, hot patches, "slap wraps" or other such high visibility handouts to their patrons. These could be separate items or a part of the packaging in which the alcohol purchase is placed.
14. Provide high visibility bags for carrying alcohol from the package store.
15. Establish and promote hand signals between pedestrians and drivers so that their intentions will be clear.
16. Have all shoes designed to include high visibility materials so that pedestrians at night would be more conspicuous.
17. Provide PI&E on the importance of being conspicuous.

### **ENFORCEMENT ACTIVITIES AND PROCEDURES**

18. Train police officers in pedestrian alcohol risks and appropriate police responses.
19. Have more police patrols check in at bars. Have police give bar managers/bar tenders ride-home chits for specific drunk pedestrians which entitle the pedestrians to a free ride *home*.
20. Have police distribute PI&E on pedestrian alcohol in bars. The regular patrol officers know the tavern owners and employees and likely are familiar with the "regulars."
21. Have police confiscate open bottles of liquor.

### **SERVER/SELLER ACTIVITIES AND PROCEDURES**

22. Train servers not to serve intoxicated customers--emphasize both pedestrian and driving risks. This is basically an extension of the existing server education efforts to encompass pedestrian considerations.
23. Establish an "unhappy" hour, i.e., add a drink (or per volume) surcharge after some set time (e.g., 8:00 pm).
24. Reduce the cost of a bar's license fees if there are no crashes to pedestrians who were served liquor at that establishment and raise the fees if any patrons are crash-involved.
25. Train package store (including convenience stores that sell beer, etc.) owners on the dangers of the pedestrian store/home trip.
26. Provide liquor in small packaging for the morning-after shakes.

27. Require liquor stores to provide street crossing guards.
28. Raise taxes on liquor or specific types of liquor commonly consumed by the target group (e.g., fortified wine and malt beer) and use the revenue for alcohol treatment programs.
29. Provide free liquor delivery, particularly in high risk areas.

#### **CASE FINDING, PROTECTION AND TREATMENT**

30. Train municipal employees (e.g., social services) to recognize individuals with an alcohol problem and to refer the problem drinker to the appropriate services.
31. Provide a detox pickup service with a quick response. The notion is that when a high BAC pedestrian feels the worst, he or she might be willing to follow treatment if it could be obtained quickly and at no cost.
32. Provide a "ped sweeper" program to locate high BAC pedestrians and remove them from the streets while they are in danger.
33. Require each person to have a drinker's license to purchase or consume liquor.
34. Require people to appear in person to receive a welfare check and take a breath test. This could be associated with sanctions for appearing with a high BAC such as refusing to give the check and requiring a return visit or varying the amount of the check from zero to the full amount depending on the BAC.
35. Identify/treat the problem drinker who has significant walking exposure through the normal hospital/medical system. The notion is to add pedestrian risks to other problems known to medical workers who treat problem drinkers and to pass on this awareness to the high BAC pedestrian.
36. Establish a presumptive limit for Walking While Intoxicated (WWI).
37. Provide cab vouchers to those who seek counseling/treatment.
38. Provide PI&E on the availability of detox services.
39. Target information on the problem to youth (prevention).

#### **COMMUNITY SENSITIZATION**

40. Target fraternal or public service organizations for pedestrian risk sensitization.



41. Provide information to community groups on the pedestrian alcohol problem generally and to specific problems in their neighborhoods.
42. Prepare and distribute a "white paper" on the pedestrian alcohol problem in the city.
43. Publish a "pin map" of the city's pedestrian and pedestrian alcohol danger zones.

#### **PI&E--TARGET GROUP, FRIENDS AND COMPANIONS**

44. Provide PI&E comparing the walking risk to the mugging risk.
45. Provide PI&E with the theme that there's no liquor in hospitals or jails.
46. Extend the anti-drunk driving PI&E campaign to include the message: "Friends don't let friends cross drunk." The basic idea is to inform people who are with high BAC individuals that simply keeping them from taking the wheel of a car may not be enough to ensure their safety.
47. Provide PI&E on the basic pedestrian alcohol message such as "Don't drink and walk" or "Don't drink enough to impair you and then walk."
48. Provide PI&E on the designated walker concept.
49. Obtain and publicize testimonials from citizens who have been involved in pedestrian alcohol accidents.
50. Provide PI&E with the theme that there is no fall back for the drinking pedestrian, e.g., the drunk driver can fall back on walking but pedestrian *must* walk unless a ride can be found.

#### **PI&E--DRIVER**

51. Provide PI&E on the drunk walker's unpredictable behavior--compare it to that of a squirrel.
52. Provide PI&E on the driver's responsibility to watch out for the pedestrian.

## SAMPLE COUNTERMEASURE EVALUATION FORM

**Description:**

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

**Purpose:**       Reduce drinking       Reduce walking       Make walking safer  
                  Lower BAC                       Other: \_\_\_\_\_

**Who is the target?**       Ped                       Family/friends                       Package store  
                                  Driver                       Health organization                       Public server  
                                  Police                       Transportation company                       Private host  
                                  Other \_\_\_\_\_

**Who would need to be involved?**

**In development:**      Traffic engineering.

**In implementation:**      Traffic engineering.

**Development needs:**

Select or design appropriate sign.

**Note:** Existing pedestrian crossing signs do not have the same impact on the driver as do existing deer crossing signs. There might be a need to create and promote a pedestrian crossing sign that would have a strong impact on the driver.

**Implementation needs:**

Conduct analysis of pedestrian traffic on corridors with high pedestrian alcohol accidents to determine where signs could best be posted.

**Note:** Would probably need to combine the signs with heavy PI&E to alert drivers to the new signs and remind them of their responsibilities re pedestrians.

**Major pros:**

Signs currently exist. New signs are relatively easy to design.

**Major cons/restrictions:**

Could contribute to visual clutter in urban environment. Could be ineffective unless promoted.

**Ability to be evaluated:**

?

## **COUNTERMEASURES RECOMMENDED TO THE CITY OF BALTIMORE**

Analysis of the 52 countermeasures for likely effectiveness and implementability resulted in 31 countermeasures being recommended for initial consideration by the City of Baltimore. The countermeasures are listed below as they were presented to the city. Listed first are public information and education (PI&E) countermeasures directed to the target group and the community at large, followed by those directed to the driver. The remaining countermeasures are organized by the group most likely to serve as the countermeasure implementer.

### **PI&E -- TARGET GROUP AND COMMUNITY AT LARGE**

- *Extend the anti-drunk driving PI&E to include the message: "Friends don't let friends cross drunk."*

The basic objective of this countermeasure is to inform people who are accompanying high BAC individuals that simply keeping them from the wheel of a car may not be enough to ensure their safety. It should be determined if a combined drunk driving/walking campaign should be used or if a new creative approach is needed to get across the message that it is irresponsible *not* to prevent a friend from walking near traffic at high BACs.

- *Provide PI&E on the importance of being conspicuous.*

An important safety objective for any pedestrian is to make sure that the pedestrian is seen by the driver. This countermeasure will advise the pedestrian regarding ways to be more conspicuous in traffic. This PI&E could be combined with a brand-name give-away program of a high visibility clothing item, such as a cap or t-shirt.

- *Provide PI&E on the basic pedestrian alcohol message "Don't drink and walk" or "Don't drink enough to impair you and then walk."*

Tying the pedestrian-alcohol problem to the better-known drinking and driving programs could create an awareness of the dangers of trying to maneuver in traffic either as a driver or as a pedestrian when impaired by alcohol.

- *Obtain and publicize testimonials from citizens who have been involved in pedestrian alcohol accidents.*

The objective of this countermeasure is to make the problem more "real" to the target group by presenting testimonials from citizens who have had pedestrian accidents after drinking. Such countermeasures have been very successful in other highway safety contexts (for example, safety belts). It is realized that it could be difficult to define the

necessary inducements to make victims come forward and permit their names/images to be used.

- ***Publish a "pin map" of the city's pedestrian and pedestrian alcohol danger zones.***

The objective of this countermeasure is to create an awareness of the pedestrian problem in general and of the pedestrian alcohol problem in particular. It might inspire action on the part of citizens and citizen's groups.

- ***Provide PI&E on the availability of detox services.***

People need to be informed of services that are available in their community. The countermeasure could be helpful to the drinker who is ready for the service as well as to the drinker's family and friends.

- ***Provide PI&E comparing the walking risk to mugging risk.***

The target group is very aware of and concerned about mugging risks. The notion that a high BAC simultaneously increases both mugging *and* crash risks might be motivating. Stories of friends, acquaintances or others like them who were involved in accidents might reach them.

- ***Provide PI&E on the designated walker concept.***

This PI&E could help create an awareness of the pedestrian alcohol problem by associating it with the well-publicized designated driver concept. The countermeasure would emphasize that it is irresponsible *not* to accompany a drunk friend who must cross the street. The countermeasure could also point out that walking in groups is safer for all pedestrians than walking alone.

### **PI&E -- DRIVERS**

- ***Provide PI&E on the driver's responsibility to watch out for the pedestrian.***

In an accident, the vehicle will likely damage the pedestrian, not vice versa. The objective of this countermeasure is to make drivers more alert to pedestrians in the roadway. It would emphasize the driver's responsibility to watch out for and avoid hitting *all* pedestrians at *all* times regardless of their age or condition. The specific pedestrian behaviors that could be expected would be pointed out to the driver.

- ***Provide PI&E on the drunk walker's unpredictable behavior--compare it to that of a squirrel.***

Drivers have a duty to be careful and to be alert to *all* actions on the road--whether those of another driver or of a pedestrian. Comparing the erratic roadway behavior

of a drunk pedestrian to the erratic roadway behavior of a squirrel could sensitize the driver to be more aware of the behaviors to expect from a drunk walker.

## POLICE

- *Train police officers in pedestrian alcohol risks and appropriate police responses.*

Police are at "ground zero" for identifying the high BAC pedestrian. Benign interventions could put police in a positive protective role. Training materials exist that could be adapted to the pedestrian alcohol problem.

- *Have police distribute pedestrian alcohol PI&E in bars. Regular patrol officers know tavern owners and employees and likely are familiar with the "regulars."*

The police officer could present up-to-date information on pedestrian alcohol accidents (or problems) in each specific precinct so that bar patrons perceive the information as "real," that is, "This is what happened to so-and-so." The police officer would serve as an educator (not a hassler) in communicating the dangers of drinking and walking, which could put a positive "face" on the program. Reporting on real people would give patrons something to talk about among themselves and maybe pass on to their friends. If presentations are made during the daytime, they will likely be made to "happy drunks."

- *Have police confiscate open bottles of liquor.*

The objective of this countermeasure is to remove liquor from any pedestrian who is drinking on the street. If this countermeasure is not currently part of the local code, enabling legislation would be required. Most citizens would perceive this as a valid police activity. The countermeasure is also conducive to maintaining good public order.

- *Have police give bar managers/bar tenders chits which entitle specific drunk pedestrians to a free ride home.*

This countermeasure would provide visibly drunk pedestrians with a free ride home, and the total burden of convincing a high BAC pedestrian to accept a ride would not fall on tavern personnel. Bar managers would need to be made aware of their responsibility to make sure that the designated pedestrian actually uses the voucher. In addition, taxi drivers would need to take the designated rider home (and not to another bar).

## MUNICIPAL/COMMUNITY GROUPS

- *Train municipal employees to act on pedestrian alcohol data.*

The objective of this training would be to provide up-to-date consideration of the pedestrian alcohol problem by those professionals who know the city best and are

already working with the target population. It probably would be particularly effective for effecting changes in the roadway environment.

- *Provide information to community groups on the pedestrian alcohol problem generally and to specific problems in their neighborhoods.*

Community associations could be valuable resources for solving pedestrian alcohol problems in their own areas. They know their neighborhoods well and the appeals that will motivate local residents.

- *Prepare and distribute a "white paper" on the pedestrian alcohol problem in the city.*

The objective of the "white paper" would be to provide background information and summary data that members of the highway safety, medical and public interest communities could act on. Separate papers could be prepared to emphasize needs of different groups.

- *Train municipal employees to recognize individuals with an alcohol problem and to refer the problem drinker to the appropriate services.*

The target group population appears to be in regular contact with many municipal services, particularly social and health services. As professionals, these groups are likely to recognize or suspect an alcohol problem. They may not relate that problem to a pedestrian risk. Materials exist that could be adapted to the pedestrian alcohol problem.

- *Provide a "pedestrian sweeper" program to locate high BAC pedestrians and remove them from the streets while they are in danger.*

The objective of this countermeasure is to remove the drunk pedestrian from the streets before the pedestrian gets hurt. Adequate personnel and vehicles to provide the service would be needed as would adequate detox or other facilities for receiving the drunk pedestrian.

### **SERVER/SELLER**

- **Train package store owners/sellers (include convenience stores that sell beer, etc.) on the dangers of the pedestrian store/home trip.**

The objective of this countermeasure is to make the seller aware of the dangers facing a high BAC pedestrian. Materials currently exist that could be adapted to include pedestrian dangers. Approaches need to be included which deal with "responsible" ways of selling rather than foregoing a sale.

- ***Train servers not to serve intoxicated customers--emphasize both pedestrian and driving risks.***

This countermeasure is basically an extension of the existing server education efforts to include pedestrian considerations. Materials exist that could be readily adapted to include pedestrian dangers.

- ***Provide high visibility bags for carrying alcohol from the package store.***

The objective of this countermeasure is to make the purchaser highly visible on the trip from the package store to home (or other destination). It would not require the purchaser to cooperate actively.

- ***Have liquor sellers provide hot dots, hot patches, "slap wraps" or other such high visibility handouts to their patrons.***

The objective of this countermeasure is to make the purchaser highly visible on the trip from the package store without the need for the purchaser to cooperate actively. These materials could be separate hand-out items or they could be a part of the packaging in which the alcohol purchase is placed.

### **TRAFFIC ENGINEERING**

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

The objective of this countermeasure is to heighten a driver's awareness that a pedestrian may be making an unexpected street entry. There might be a need to create and promote a new pedestrian crossing sign that would have a strong impact on the driver. Such signs could be time-specific, such as internally-lighted signs that would be turned on only at night.

- ***Post signs with high night visibility in high pedestrian-alcohol accident areas to warn pedestrians and/or drivers to be more vigilant.***

The objective of this countermeasure is to warn pedestrians and/or drivers to be more vigilant. The sign might refer to recent accidents ("pedestrian injured/killed here") or to expectations ("pedestrian safety area--please cooperate").

- ***Reduce speed limits in the city or on selected high pedestrian alcohol corridors.***

Lowering the speed limit would give drivers more time to react to the unpredictable behavior of a drunk pedestrian. Adherence to lowered speed limits would

probably have a general crash and injury reduction benefit. "Time-related" signs could be used with flashers during danger hours.

- ***Provide cut-throughs in street medians in high pedestrian alcohol traffic areas.***

The drinking pedestrian sometimes has difficulty "climbing up" onto medians. Cut-throughs would ease the problem. They are also vital to accommodating the disabled and elderly.

- ***Install STOP signs in high pedestrian alcohol locations to force drivers to scan more.***

As stated, the objective of this countermeasure is to force the driver to scan more. The driver will have to stop to look for other vehicles and pedestrians before proceeding.

### **HOSPITAL/MEDICAL COMMUNITY**

- ***Identify/treat the problem drinker who has significant walking exposure through the normal hospital/medical system.***

The objective of this countermeasure is to add pedestrian risks to the other problems known to medical workers who treat problem drinkers and to pass this awareness on to the problem drinker. The drinker is a captive audience while in the hospital and may attend to advice from medical personnel.

### **SCHOOLS**

- ***Target information on the problem to youth.***

The objective of this countermeasure is to expand alcohol education in schools to include pedestrian issues. Currently existing alcohol/drug prevention programs and driver education programs could easily be adapted to include the pedestrian alcohol problem.

### **MULTIPLE/UNASSIGNED PROVIDER**

- ***Give away brand name high visibility clothing.***

The objective of this countermeasure is to make the pedestrian more visible to the driver. A well-recognized organization would be required to sponsor the manufacture and distribution of a high visibility item of clothing, such as a t-shirt or cap. For sustained use, a product that could be wearable winter and summer would be desirable.



## **APPENDIX D**

### **SAMPLE TASK FORCE MEETING AGENDA AND MINUTES**

This appendix contains the agenda and minutes prepared for the 11th meeting of the pedestrian alcohol task force.

**AGENDA FOR THE ELEVENTH MEETING  
BALTIMORE PEDESTRIAN ALCOHOL TASK FORCE  
October 11, 1995**

**Police Department**

1. Status of police video
2. Status of IPTM training
3. Plans following completion of IPTM training

**Fire Department**

1. Readiness for display/handout/distribution of project materials
2. Have banners been received at fire stations?

**Information Services**

1. Status of project posters and flyers
2. Status of notice on city pay stubs
3. Other PI&E activities?
4. Does Mayor's Office of Promotions have a contact with taxi companies? If so, will we pursue asking taxi companies to support the program and, if so, how?
5. Was the die-cut logo distributed at the city Health Fair?
6. Have street banners been mounted? If not, when will mounting commence?
7. What is the status of including project information on the City's pay stubs? Has the Mayor prepared a letter for inclusion with checks when the wording first appears?
8. Has the Health Department been contacted? How will they support the program?
9. Has a Baltimore Schools representative been contacted? Will the schools participate in the program or have we decided that their participation is not appropriate?
10. Has the Mayor's office of Promotions identified a sponsor for retroreflective caps?

**Traffic Engineering**

1. Results of "before" speed measurements on Park Heights
2. Status of new signs on Park Heights
3. Results of analysis of Park Heights nighttime lighting and crosswalk status
4. Plans for next activity?

**Liquor Board**

1. Contacts with alcohol training programs
2. Contacts with seller/server trade organizations

**REPORT OF THE ELEVENTH  
BALTIMORE PEDESTRIAN ALCOHOL TASK FORCE MEETING  
October 11, 1995-11:00 AM  
A. Wolman Municipal Building**

Attending the meeting were representatives from Traffic Engineering, Information Services, Police Department, and Fire Department. In addition, representatives from NHTSA and Dunlap and Associates were present.

Reports of the various task force groups follow:

Police Department. The police training video was produced and is ready for the IPTM training scheduled for October 16 and 17. It is expected that high visibility caps will be available for police officers who complete the program. Following completion of the program, police officers will use the video and other information obtained at the training program to train other officers in the Baltimore Police Department.

Fire Department. Fire Department representatives will review the police training video to determine whether it would be appropriate to have copies at the 12 fire stations that will serve to display/distribute project materials. The possibility of altering the video slightly to make it appropriate for EMS services will also be explored. Handouts available thus far have been received at the 12 fire stations and banners are in the process of being installed. On October 14, the Fire Department will conduct a fire prevention parade and expo. The parade will start at 11:30 am at Conkling and proceed westward on Eastern to Patterson Park where the expo will be held from noon until 4:00 pm. The possibility of erecting program street banners on Eastern Ave and of displaying the program banner at the expo will be explored. Program materials will be displayed/distributed at the expo.

Liquor Board. The seven seller/server organizations previously contacted by the Liquor Board were contacted by Dunlap representatives. Mr. Jerome Markoff of the Wholesalers/Retailers Association of Maryland indicated that his organization serves as an umbrella group for the remaining seller/server organizations. He is interested in supporting the study and will set up a meeting at which a task force representative can make a presentation within the next month.

Traffic Engineering. Traffic Engineering has not yet received a mockup of the new sign to alert motorists to the presence of pedestrians. Therefore, a work order was issued to mount the old signs on Park Heights. They are expected to be mounted soon. Traffic Engineering has not yet received a report from their Maintenance Department on nighttime lighting and crosswalk status on Greenmount, East North and Harford. This analysis has not yet been performed on Park Heights.

Information Services. The following activities were reported:

- The project die-cut logo was distributed to the Fire Department, Police Department and Liquor Board. It was also distributed, along with project

## **Baltimore Pedestrian Alcohol Task Force Meeting**

press kits, at the city Health Fair held at the Convention Center on September 28 and 29.

- The Health Department was informed that their alcohol hot-line number was being used on project materials. It was agreed that a brief presentation should be made to hot-line telephone operators to inform them of the purpose and activities of the *Walk Smart Baltimore* program. Dunlap representatives will prepare an outline for this presentation. Also, Health Department support in delivering project materials to hospitals and health centers is needed.
- A Baltimore Schools representative was contacted and made two suggestions for incorporating the program into school activities: 1) using crossing guides to hand out the die-cut logo at elementary middle schools and 2) making presentations at PTA meetings. All task force members agreed that the first suggestion should not be explored since the die-cut logo is not pertinent to school-age children and distributing materials to children on the street was not considered appropriate. All task force members agreed that presentations should be made to PTAs--police representatives could cover the program from a safety standpoint and EMS representatives from a health standpoint. Other suggestions included making up coloring materials for young children and book covers for older children, writing letters to teachers, designing parent-child activities, sponsoring a poster contest, and incorporating project materials in health and traffic safety programs. It was also noted that coverage for the program could be included in the Safety City program at Druid Hill Park from April through October and by school presentations by the pedestrian coordinator during the winter months. It was agreed that a school representative should be invited to the next task force meeting.
- It was recommended that the task force make presentations to neighborhood groups--particularly those in heavy HBD crash areas. Information services will develop a list of community associations. Dunlap representatives will draft a letter to be sent to the associations and develop an outline for a standard presentation to be made to the various groups. Project posters and flyers will be used at these presentations.
- Information Services has drafted a letter for the Mayor to sign and include when the project information first appears on city pay stubs. The letter and project notice will likely appear in the next few months.
- It was determined that the television PSAs are adequate for now, and that efforts should continue to promote them. Dunlap representatives will prepare two additional radio PSAs for the holiday season.

## **Baltimore Pedestrian Alcohol Task Force Meeting**

- There is no word yet from the Mayor's Office of Promotions regarding a sponsor for the retroreflective caps. NHTSA representatives noted that some funds may be available from that agency.
- Information Services reported that the Mayor's Office of Promotions has a contact with taxi companies, but the possibility of providing free or discounted rides for intoxicated walkers has not yet been explored.
- The city print shop experienced problems in preparing the program posters and flyers from the computer disc provided. NHTSA and Dunlap representatives met with print shop representatives following the meeting, and all problems were resolved. The posters are expected to be printed immediately, with the flyers to follow.

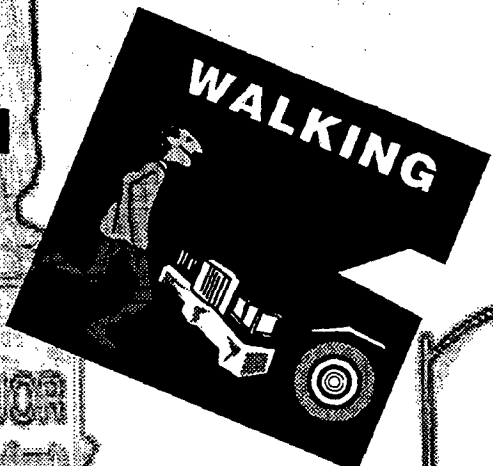
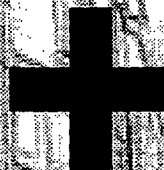
The next meeting of the task force was scheduled for Monday, November 6, 1995, at 11:00 am. It will be a luncheon meeting that will last until 1:00 pm. The meeting will take place in the A. Wolman Municipal Building 6th floor conference room.

## APPENDIX E

### PROGRAM POSTERS AND FLYERS

This appendix contains copies of the posters and flyers used by the *Walk Smart Baltimore* program. Included are the following:

- **Poster: Heavy drinking + walking = nearly 1/2 of all adults hit by cars!** This 16 x 20 poster was reproduced in red, green and black on white.
- **Poster: Drunk drivers aren't the only ones who get smashed--drunk walkers do too!** This 16 x 20 poster was reproduced in black and red on yellow.
- **Die-cut logo.** This 3-1/4 x 8-1/4 program logo was reproduced in black on white. Copy on the reverse side advised walkers of the pedestrian alcohol problem and recommended that they stay home or some other safe place when they drink.
- **Flyer: Psst! Want some free advice?** This 8-1/2 x 11 flyer was printed in red and black on white and folded into three sections. It advised heavy drinkers to stay in a safe place when they drink, get needed supplies before they drink and, if they have to go out, to go with other people.
- **Flyer: There's a fog in your future.** This 8-1/2 x 11 flyer was printed in red and black on white and folded into three sections. It advised drivers of the pedestrian alcohol problem and what they can do to avoid pedestrian alcohol crashes.
- **Flyer: Holiday traffic safety tips.** This 8-1/2 x 11 flyer was reproduced in red, green and black on white. It provided holiday safety tips for drinkers and drivers.



**■ Nearly 1/2 of all  
adults hit by cars!**

**Don't let it add up this way for you  
or your friends . . .**



**For treatment, call: 410-554-8111**

**DRUNK DRIVERS AREN'T THE  
ONLY ONES WHO GET**

**SMASHED**



**DRUNK WALKERS DO TOO!**

**Almost 50% of adults hit  
by cars are drunk.**



For treatment call: (410) 554-8111





# "Street Talk" for Heavy Drinkers

You know that heavy drinking can cause problems for you. But you may not realize that WALKING can too! And when you combine the two, the result may be deadly. Almost half of the adult pedestrians who are killed or injured by cars each year are drunk when they're hit.

## See the Problem?

Crossing streets is especially dangerous when you've been drinking. The odds of your getting hit by a car doubles with relatively few drinks. By the time you've had your typical amount, the odds of getting hit by a car can increase 37 times or more!

When you drink heavily BE STREET WISE. Stay home or in some other safe place. If you're at a friend's house, stay there. Store up supplies before you drink so you won't need to go out. If you have to go out, play it safe and go out with other people, especially those who haven't had as much to drink.

## REMEMBER:

"If you're gonna booze, don't use your shoes, cause your feet can really hurt you."

Wanna talk...?

**554-8111**



For treatment call:  
410-554-8111

**Psst!**



**Want some  
free advice?**



**No?**

**OK, but listen up.**

**There's a problem:**

**When you drink heavily  
and  
walk the streets ...**

**you're much more likely to  
get hit by a car. Last year  
in Baltimore 350 heavy  
drinkers were hit.**

**Getting hit smashes up  
your body ... and while  
you're recovering in the  
hospital ... there may be  
no alcohol.**

### **Some Free Advice**

**When you drink heavily, be street wise:**

- stay home or in some other safe place;
- get all the supplies you need before you drink so you won't need to go out;
- if you have to go out, play it safe, wear bright clothing and go with other people - especially those who haven't had as much to drink. There's safety in numbers.

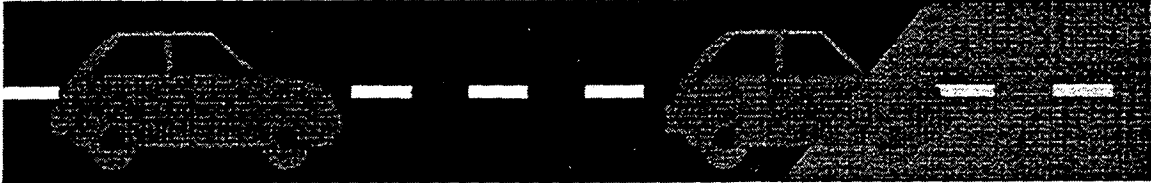


**In short --**

**If you're gonna booze,  
lose your shoes.**

# There's A Fog In Your Future

Drivers are an  
important part  
of



**Walk Smart  
Baltimore**

For more information:  
**410-396-5198**



Fog makes driving tough. It distorts the world. You strain to see ... maybe there's something out there, but you can't tell ... then suddenly ... **LOOK OUT!!!**

There are people walking around in their own personal fogs ... an alcohol fog.

They are involved in nearly half of the adult pedestrian accidents. Alcohol muddles their thinking, dulls their senses, affects their movements and reactions ... and puts them on a collision course with YOU.

### What You Should Know About "Drunk Walking"

First, understand what "drunk" means here:

- Drunk = unpredictable ...
- unaware of what's happening ...
- slow to comprehend ...
- not seeing the whole picture ...
- ... in a fog.

Then, know some facts about drunk walking crashes:

**Where?** Throughout the city, particularly where liquor stores, bars, fast food stores, and people come together.

**When?** Anytime, day or night, but mainly between 6:00 p.m. and 3:00 a.m., and on weekends.

**Who?** Anyone, but mostly males, age 25-54, wearing dark clothing.

### What Should You Do?

- Drive slower. It gives you more time to react to the unexpected.
- Assume all pedestrians are potentially impaired. They're not, of course, but it's safer for everybody if you think that way.
- Treat pedestrians near or in the roadway as you would a small child -- that is, very carefully and with full awareness that they can be unpredictable in traffic.
- Contact the police if you spot a person staggering around. They can remove the person from harm/traffic.



**Drunk drivers  
aren't  
your  
only  
concern ...**

**Pedestrians Drink Too!**

# Holiday Traffic Safety Tips

Drunk Drivers Aren't The  
Only Ones Who Get **Smashed**



## Drunk Walkers Do Too!

You Know About the Dangers of Drinking and Driving ...  
But Did You Know That Almost 1/2 of All Adult  
Pedestrians Hit by Cars Have Been Drinking?

### If You Drink a Lot:

- Stock up on Necessities and Stay Home
- Sleep Over at a Friend's or Take a Cab Home After a Party
- If You Must Go Out, Walk With People Who Are Sober

### If You Drive This Holiday Season:

- Don't Drink
- Drive Slower - Drinking Pedestrians May Suddenly Dart Out
- Be Especially Careful - Assume Adult Pedestrians Have Been Drinking
- Contact the Police If You Spot a Person Staggering Around



Walk Smart Baltimore  
(410) 396-5198



**APPENDIX F**

**SLIDE SERIES *PRESENTER'S GUIDE***

This appendix contains the *Presenter's Guide* for the slide series that was developed for the *Walk Smart Baltimore* program.

# **PRESENTER'S GUIDE TO SLIDES**

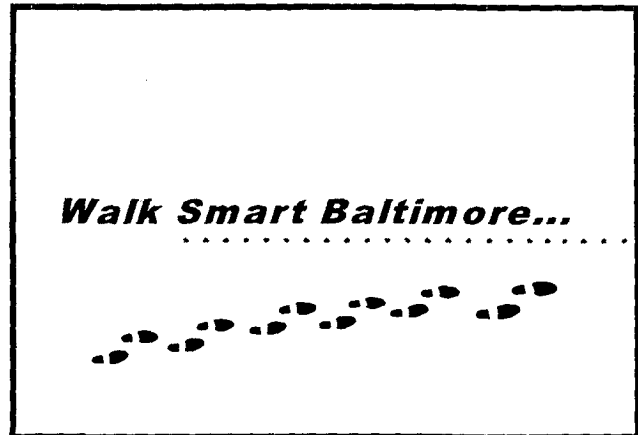
**for**

***WALK SMART BALTIMORE***



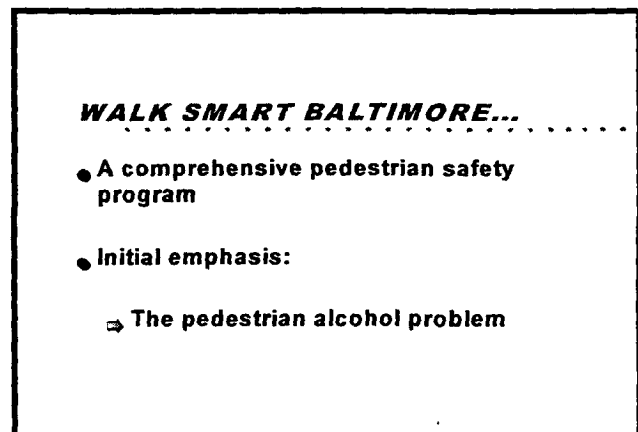
## 1. *Walk Smart Baltimore*

- This slide series is called *Walk Smart Baltimore*
- It describes a pedestrian safety program in Baltimore.



## 2. *Walk Smart Baltimore*

- The *Walk Smart Baltimore* program was introduced at the Mayor's press briefing on June 29, 1995.
- The purpose of the program is to reduce pedestrian accidents in Baltimore.
- The program is focusing initially on the pedestrian alcohol problem.



### 3. Background

- Alcohol impairment currently represents the single largest pedestrian problem.
- Research has shown that between 34 and 45% of all adult pedestrian crashes involve an alcohol-impaired pedestrian. An adult here is defined as someone aged 14 and older.
- Approximately 2,500 adult pedestrians who are killed each year are intoxicated.
- Many victims drink heavily. A blood alcohol concentration (BAC) of .25 is not uncommon. For comparison purposes, a BAC of .10 is considered by most states to be an indication of driving while intoxicated. So we are dealing here with people who have a serious alcohol problem.

**BACKGROUND** .....

- Alcohol is a major pedestrian problem:
  - ⇒ 34 - 45% of age 14+ pedestrians hit by cars have been drinking
  - ⇒ Many victims drink heavily -- a BAC of .25 is not uncommon

### 4. The Baltimore Study

- The current study is being sponsored by the National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation.
- NHTSA has conducted a great deal of research to determine the causes of pedestrian crashes and to develop countermeasures to the crash problem.

**THE BALTIMORE STUDY** .....

- NHTSA funded the current study to:
  - ⇒ Select a model city
  - ⇒ Develop countermeasures
  - ⇒ Test the countermeasures
  - ⇒ Prepare a "how-to" manual to serve as a national model
- Baltimore is the selected city



- The purposes of the current study are to:
  - Select a test city with a sufficiently large number of pedestrian crashes to support a crash-based test of the pedestrian alcohol problem.
  - Develop countermeasures for the problem.
  - Test the countermeasures.
  - Prepare a "how-to" manual that will serve as a national model for other communities interested in designing and implementing a similar program.
- Baltimore was selected as the test city, and the city agreed to serve as a model through its *Walk Smart Baltimore* program.

## 5. The Baltimore Problem

- An analysis of Baltimore pedestrian crash data for the years 1990 through 1992 revealed that the pedestrian alcohol problem in Baltimore is similar to that in other large cities in the United States.
- It is estimated that approximately 42% of the adult (age 14+) pedestrians who are hit by cars in Baltimore have been drinking. This estimate is based on data obtained on pedestrian crash victims admitted to Shock Trauma during the first six months of 1992.
- Crashes occur primarily in the center of the city and on selected city streets--particularly those where bars and fast food establishments are open late at night.

**THE BALTIMORE PROBLEM**

- Similar to that in other large cities:
  - ↳ Estimated at 42% of age 14+ pedestrian crashes
  - ↳ Many victims with very high BACs
- Crashes occur primarily:
  - ↳ In the center of the city
  - ↳ Especially on streets where businesses are open late at night

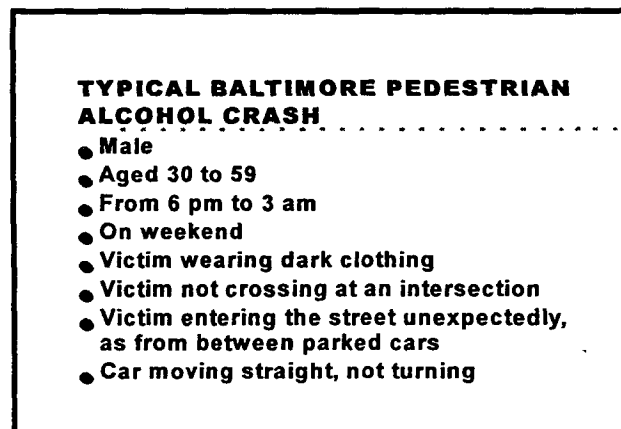
## 6. Map of Baltimore City Pedestrian Alcohol Crashes

- This map of Baltimore City shows crashes in which the pedestrian had been drinking.
- Heavy pedestrian alcohol crashes can be noted on Park Heights Avenue, North Avenue, Reisterstown Road, Greenmount Avenue, the lower part of Harford Road, Edmondson Avenue and Orleans Street, among others.
- The map shows a large cluster of pedestrian alcohol crashes in the city center.
- The two marked areas (the polygon and the circle) include 73% of the pedestrian alcohol crashes and represent 21% of the Baltimore City land area.



## 7. Typical Baltimore Pedestrian Alcohol Crashes

- The typical crash victim is a middle-aged male (aged 30 to 59).
- Although the crashes can occur at any time during the day, they are more frequent in the evening (when it's dark and the street lights are on) and on weekends.
- The victim often isn't seen by the driver because the victim typically:
  - Wears dark clothing.
  - Doesn't cross at an intersection.
  - Enters the road suddenly and unexpectedly, as from between parked cars.
- The car itself is typically moving at a constant speed or slowing and stopping. It is usually moving straight—not turning.



## 8. The *Walk Smart Baltimore* Program Development

- A little history on the *Walk Smart Baltimore* task force follows:
  - The Director of the Department of Public Works was briefed on the study in the fall of 1994 and agreed to allow DPW to serve as the lead organization for the study.
  - DPW asked for and received approval from the Mayor to establish a task force.
  - The task force was established in early 1995 and includes members of the following city groups:
    - . DPW Information Services
    - . DPW Traffic Engineering
    - . DPW Pedestrian Coordination
    - . Police Department
    - . Fire Department
    - . Liquor Board
    - . Health Department
  - Meetings of the task force are held every 3 to 4 weeks.

### **WALK SMART BALTIMORE PROGRAM DEVELOPMENT**

- Identification of lead organization--DPW
- Approval from Mayor
- Establishment of task force
  - DPW Information Services
  - DPW Traffic Engineering
  - DPW Pedestrian Safety Coordination
  - Police Department
  - Fire Department
  - Liquor Board
  - Health Department

## 9. Initial Program Activities

- Initial task force activities involved selecting a slogan and designing the program logo.
- The slogan selected was *Walk Smart Baltimore*.
- The logo shows the slogan on a shoe print.

### **INITIAL PROGRAM ACTIVITIES**

- Selecting the program slogan:

***Walk Smart Baltimore***

- Designing the program logo



## 10. Planned Countermeasure Approaches

- Countermeasures were planned in all the following areas. Some of the areas will be discussed subsequently in more detail.
  - Education on the problem for the victim, the driver and the public--through, for example, radio and TV public service announcements, posters, brochures and flyers.
  - Traffic engineering improvements to roadways that have heavy pedestrian alcohol crashes.
  - Improvement of pedestrian conspicuity.
  - Messages for drivers to watch out for the impaired pedestrian.
  - Enforcement of pedestrian safety laws and encouragement of good pedestrian safety habits.
  - Training on the pedestrian alcohol problem for servers and sellers.
  - Sensitization of school children to the problem.
  - Referral of the victim to treatment services.

### **PLANNED COUNTERMEASURE APPROACHES**

- *Education for victim, driver and public*
- *Traffic engineering improvements*
- *Improvement of pedestrian conspicuity*
- *Messages to drivers*
- *Enforcement of pedestrian safety laws and promotion of good pedestrian safety habits*
- *Training/education for servers and sellers*
- *Sensitization of school children*
- *Referral to treatment services*

## 11. Public Education

- Some of the ways in which we are trying to educate the community are through:
  - A press kit prepared for the Mayor's kickoff announcement of the program. (*Display and briefly describe contents.*)
  - Four radio public service announcements (PSAs) advising:
    - Drivers to watch out for pedestrians at night.

- . The audience to listen to the *Walk Smart Baltimore* messages and follow the advice.
- . Drinkers to stay home when they drink or walk with a sober friend.
- . Server/sellers to make sure intoxicated pedestrians get home safely.
- Four television PSAs, including the following: *(If a TV and VCR are available, note that the audience can view the PSAs at the end of the meeting if time permits and they are interested in doing so.)*

- . The Mayor introduces the pedestrian alcohol problem and advises people to watch for and attend to program messages.

**PUBLIC EDUCATION**

- Press kit for Mayor's program kickoff
- Radio and TV PSA's
- Print materials
  - Die-cut logo
  - Flyers
  - Posters
- EMS demonstrations
- Participation in city events
- Fire station promotion

- . Director of DPW displays the new street signs and advises drivers to slow down and watch for pedestrians.

- . An emergency medical technician advises the audience to stay home when they drink or walk with a sober friend.
- . A police officer advises the audience not to let friends walk alone after drinking.

- Distribution by the Police Department, Fire Department, Liquor Board and other task force representatives of the following print materials to organizations in the city and to the public at large: *(Display and briefly describe.)*

- . Die-cut logo advising heavy drinkers to stay home when they drink. It includes the Health Department alcohol hot-line number.
- . Poster: *Drunk drivers aren't the only ones who get smashed.*
- . Poster: *Heavy drinking + walking = almost 1/2 of all adults hit by cars.*
- . Flyer: *There's a fog in your future--* advises drivers to be alert for drunk pedestrians.

- Flyer: *Psst! Want some free advice?*--advises drinkers not to walk after drinking.
- EMS demonstrations--in which emergency medical technicians demonstrate emergency care for a drunk pedestrian who has been hit by a car.
- Participation in city events--displaying the program banner and program materials--including:
  - Fire Prevention Week.
  - The City Health Fair.
  - Others
- Designation by the Fire Department of 11 fire stations for display and distribution of program materials.
- Other promotional activities are in process or being planned.

## 12. Traffic Engineering Improvements

- As was shown in a previous slide, certain roads in Baltimore have many pedestrian alcohol crashes. A selection of segments of these roads has been made for traffic engineering improvements.
- First, the selected road segments are being analyzed as follows:
  - Nighttime lighting is assessed and improved if necessary.
  - Violations of parking setbacks are analyzed to ensure that crosswalks are available for walking.
  - Crosswalk status is examined and crosswalks are refreshed as necessary.
- Special overhead signs are being mounted to warn motorists to watch out for pedestrians and speed limit signs are being added to the road segment.
- Program banners are being mounted on selected roads throughout the city.

**TRAFFIC ENGINEERING IMPROVEMENTS**

---

- Identification of high pedestrian alcohol roads
- Review of nighttime lighting
- Analysis of parking setback violations
- Review of crosswalk status
- Special pedestrian alert signs
- Program banners

### 13. Pedestrian Alert Sign

- This slide shows the new road sign mounted at 39th Street and Greenmount.
- Ask participants if they have seen any of these signs and where they have seen them.



### 14. Enforcement Activities

- A training video was developed and presented to all police officers. The video describes the pedestrian alcohol problem and appropriate police responses. *(If a TV and VCR are available, note that the audience can view the video at the end of the meeting if time permits and they are interested in doing so.)*
- A special training program on pedestrian safety and law enforcement has been presented to approximately 30 police officers.
- Existing laws are being enforced as appropriate:
  - The person may be arrested for:
    - Carrying an open container of liquor, or
    - Being drunk and disorderly
  - If the person is unreasonable and in imminent danger near traffic, that person can be taken into custody on an emergency petition.
- Police have distributed program materials to local businesses along with EMS and hospitality representatives.

**ENFORCEMENT ACTIVITIES**

- Police training video
- Police pedestrian safety training program
- Enforcement of existing laws:
  - Open container
  - Drunk and disorderly
  - Emergency petition
- Distribution of promotional materials (with EMS and hospitality communities)
- Distribution of retroreflective caps

- Police have distributed retroreflective caps to people who walk on the city's streets at night. (*Display a cap and explain how it reflects the driver's headlights back to the driver.*)
- Police officers are promoting pedestrian safety and alcohol prevention.

### **15. Hospitality Activities**

- An information sheet on the pedestrian alcohol problem was prepared and sent to state training agencies for incorporation in their training programs.
- The Liquor Board included program materials in mailings to licensees.
- Individual sellers and servers have displayed and distributed program materials to their customers.

**HOSPITALITY ACTIVITIES**  
.....

- Pedestrian alcohol safety included in server/seller training programs
- Project information mailed to licensees
- Project materials distributed

### **16. Evaluation Plan**

- The project has now compiled 5 years of data from Baltimore police accident reports.
- At the completion of the study, pre/post changes will be examined for the following:
  - Crash measures
  - Geographic distribution of crashes

**EVALUATION PLAN**  
.....

- 5 years of police accident reports have been assembled
- Examine pre/post changes in:
  - ↳ Crash measures
  - ↳ Geographic distribution of crashes



**Notes:**

*The remaining slides provide ways in which various groups can support the objectives of the program. Separate slides are provided for the following:*

- *The hospitality community*
- *Health Department hot-line advisors*
- *Community groups, e.g., PTAs, neighborhood groups*
- *The judicial system*

*Review the listed ideas and ask members of the audience if they have additional suggestions for activities they could perform in support of the program objectives.*

## 17. How You Can Help (Hospitality)

- The next three slides suggest ways in which the hospitality community can support the program.
- Be aware that a drunk walker is at high risk of a pedestrian crash.
- Don't serve or sell to an impaired walker any more than you would to an impaired driver.


**HOW YOU CAN HELP  
(HOSPITALITY)**



- Be aware that a *drunk walker is at high risk* of a pedestrian crash
- *Don't serve or sell to an impaired walker any more than you would to an impaired driver*

## 18. How You Can Help (Hospitality)


- Remember that a designated walker may be as important as a designated driver.
- Try to have a non-drinking person escort the impaired walker home or call a cab.
- If there is no escort and a cab is not practical, at least accompany the impaired walker across nearby dangerous intersections.

**HOW YOU CAN HELP (HOSPITALITY)** 

- Remember that a *designated walker* may be as important as a designated driver
- Have a non-drinking person escort the impaired walker home or call a cab
- If there is no escort and a cab is not practical, *accompany the impaired walker* across nearby dangerous intersections

## 19. How You Can Help (Hospitality)


- Advise your customers of:
  - The dangers of drinking and walking.
  - The importance of wearing clothing that will make them easier for drivers to see.
- Display and distribute materials provided by the *Walk Smart Baltimore* program.

**HOW YOU CAN HELP (HOSPITALITY)** 

- Advise your customers of:
  - ↳ The dangers of drinking and walking
  - ↳ The importance of wearing clothing that will make them easier for drivers to see
- Display and distribute materials provided by the *Walk Smart Baltimore* program

## 20. Health Department Hot-Line Advisors

- Advise your callers of:
  - The dangers of drinking and walking.
  - The need to stay home after drinking or, if they must go out, to go with a sober friend.
  - The importance of wearing clothing that will make them easier for drivers to see.


**HOW YOU CAN HELP  
(HOT LINE)** 

● *Advise your callers of:*

- ↳ The dangers of drinking and walking
- ↳ The need to stay home after drinking or, if they must go out, to go with a sober friend
- ↳ The importance of wearing clothing that will make them easier for drivers to see

## 21. How You Can Help (Community)

- The next three slides suggest ways in which the community groups can support the program.
- Try to get program information out to people in your neighborhood, particularly families with alcohol problems.
- Advise families in your neighborhood of the importance of wearing clothing that will make them easier for drivers to see at night.

**HOW YOU CAN HELP  
(COMMUNITY)** 

● *Get program information out to people in your neighborhood, particularly families with alcohol problems*

● *Advise families in your neighborhood of the importance of wearing clothing that will make them easier for drivers to see at night*

## 22. How You Can Help (Community)

- Be a designated walker and accompany an impaired pedestrian in your neighborhood safely home.
- If you can't help an impaired pedestrian, notify the police so that they can come to the walker's assistance.

### **HOW YOU CAN HELP (COMMUNITY)**



- *Be a designated walker and accompany an impaired pedestrian in your neighborhood safely home*
- *If you can't help an impaired pedestrian, notify the police so that they can come to the walker's assistance*

## 23. How You Can Help (Community)

- When you're driving, particularly at night:
  - Be on the lookout for intoxicated pedestrians.
  - Assume that all pedestrians are potentially impaired.
  - Remember that an intoxicated pedestrian's behavior is likely to be erratic.
  - Drive slower so that you will have more time to react to the unexpected.


### **HOW YOU CAN HELP (COMMUNITY)**



- *When driving, particularly at night:*
  - ↳ *Watch for intoxicated pedestrians*
  - ↳ *Assume all pedestrians could be impaired*
  - ↳ *Remember: an intoxicated pedestrian's behavior is likely to be erratic*
  - ↳ *Drive slower so you'll have more time to react to the unexpected*

## 24. How You Can Help (Judicial System)

- The following two slides suggest ways in which the judicial system can support the program.
- Advise problem drinkers:
  - Of the dangers of drinking and walking.
  - To wear clothing that will make them easier for drivers to see.
  - To stay home after drinking.


**HOW YOU CAN HELP  
(JUDICIAL SYSTEM)** 

---

- **Advise problem drinkers:**
  - ⇒ Of the dangers of drinking and walking
  - ⇒ To wear clothing that will make them easier for drivers to see
  - ⇒ To stay home after drinking

## 25. How You Can Help (Judicial System)

- Require problem drinkers to:
  - Enter alcohol rehab programs.
  - Perform alcohol related community service, when appropriate.

**HOW YOU CAN HELP  
(JUDICIAL SYSTEM)** 

---

- **Require problem drinkers to:**
  - ⇒ Enter alcohol rehab programs
  - ⇒ Perform alcohol related community service, when appropriate

**APPENDIX G**

**VIDEO SHOOTING SCRIPT**

This appendix presents the shooting script developed for the *Walk Smart Baltimore* program. It was used to train police officers about the pedestrian alcohol problem in Baltimore and appropriate police responses. The video is 18:23 minutes in length and is titled: *A Guide to Dealing with the Intoxicated Pedestrian*.

## **A Guide to Dealing with the Intoxicated Pedestrian**

*Mayor Kurt L. Schmoke of the City of Baltimore appears on screen.*

**Mayor:** All of us in Baltimore are dedicated to the safety of our citizens. Pedestrian accidents are one of our major safety problems. That's why we've started the *Walk Smart Baltimore* Program.

Our goal is to make walking in our city as safe as possible by applying a variety of approaches based on research results.

One of the things we've learned is that excessive drinking by pedestrians is implicated in over 40% of all our adult pedestrian crashes. While this is not unusual for a large city, it is simply too high. We can and must apply our energies to reduce the terrible accident toll caused by drinking too much and then walking.

I've made a public service TV spot to alert people to this danger as part of *Walk Smart Baltimore*. The video you are about to see provides more background and some suggestions for you to use in your day-to-day activities. I urge you to get involved in *Walk Smart Baltimore* in general and, in particular, in our efforts to reduce pedestrian accidents due to excessive drinking.

*The title of the video appears: "A Guide to Dealing With the Intoxicated Pedestrian."*

*Carl A. Soderstrom, M.D., of the University of Maryland Shock Trauma Center is shown in a hospital setting. His name is supered over the picture as he starts to speak.*

**Soderstrom:** Each year thousands of badly injured people are treated here at our Shock Trauma Center of the University of Maryland and at others like it throughout the country. Many of those that we care for have been injured in motor vehicle crashes. You know that, because you're often the one who is first on the scene.

And, when you think of traffic crashes, you naturally tend to think of drunk drivers. They're certainly a major problem on our streets and highways. But I'm going to address another group of heavy drinkers who die and get injured in substantial numbers on our roads -- drunk pedestrians. For years we've told people "if you drink, don't drive," and that's certainly good advice. The implication, however, that it's OK to walk after drinking is simply not true. Just as alcohol impairs a person's ability to drive safely, an intoxicated walker runs a substantial risk of being struck. Drunk walking is implicated in almost half of all adult pedestrian crashes.

*As he speaks, the numbers appear in graphics and he goes voice over while they are up. First, "5,500/yr Die" is shown. Then, "90,000/yr Injured"; "43% Had Been Drinking"; "Average BAC Over .17"; "Average Ped BAC is More Than Twice the Legal Limit for Drivers."*

**Soderstrom:** Let's look at the numbers. Each year, about 5,500 pedestrians die and over 90,000 are injured in traffic crashes. About two-thirds of these injured pedestrians are 14 years of age or older. Among those in this age group, studies have shown that between 35 and 50 percent of all pedestrian victims had been drinking prior to being struck. In Baltimore, our best estimate is that 43 percent of all adult pedestrian victims had been drinking at the time of their crash.

Just finding alcohol in almost half of any population of injury victims is noteworthy, but when you deal with pedestrians there's an even more startling fact. The average blood alcohol concentration, or BAC, for these victims is in excess of .17, and about half of those who had been drinking have BACs over .20! When you think about drunk drivers and driving under the influence arrests, you generally think in terms of legal limits ranging from .08 to .10. The average alcohol-involved pedestrian casualty has a BAC of twice that when he is hit.

The good news, if you can call it that, is that research has shown that the crash risk for drinking pedestrians doesn't increase rapidly until a person's BAC gets above .15. As you know, that's an extremely high BAC. An average size adult can drink a lot over a period of hours and stay well under .15. The bad news is that many of these drinkers, probably most of them, drink frequently and drink large quantities of alcohol. So, they've become tolerant to the effects of alcohol. That means the drunk pedestrian may exhibit few of the classic symptoms of intoxication even though his BAC is well over .20. In short, he may be hard to spot unless you know the characteristics of the typical intoxicated pedestrian victim and the crash in which he gets involved.

First, let's look at the victim himself. You'll notice that I refer to the drinking pedestrian as "he." And that's on purpose. The majority of pedestrian crash victims with high BACs are men.

*As he speaks, the scene cuts back and forth to graphics which keep building. It opens saying, "Often Male"; then "Age 30-59"; "Some High School"; "Unemployed/Unskilled Jobs"; "Unmarried Not Living Alone"; "History of Alcohol Abuse"; "No Driver's License"; "Prefers Beer"; "Drinks Everywhere." The last board says "A Problem Drinker."*

**Soderstrom:** Recently, I interviewed a group of injured pedestrians who were treated at our trauma center and had BACs well above .15 when they were struck. These interviews, together with analyses of the crash data, give us a pretty good picture of the typical victim. In addition to being male, the injured intoxicated pedestrian is typically between the ages of 30 and 59. He has completed some



high school and is either unemployed or working in an unskilled job. Although usually single, these struck pedestrians generally don't live alone. They live with parents, relatives or friends or in a dwelling with other people.

As you might expect from the high blood alcohol levels, the victim usually has a history of problems with alcohol. Previous traffic crashes and prior participation in alcoholism treatment programs are quite common. Many don't have a driver's license. Some have lost it as a result of driving convictions, including drunk driving. Others let their license lapse or gave up driving because of their drinking. Still others never had a license at all.

The preferred alcoholic beverage for this group is usually beer. Contrary to popular belief, however, many of them do not get drunk by drinking in bars. It's simply too expensive to achieve a high BAC if you have to pay by the drink. Drinking at home and at friends' houses with an occasional stop at the local watering hole is the usual drinking pattern.

In short, the high BAC pedestrian crash victim is someone who has a serious problem with alcohol. Until he comes to grips with that problem and seeks treatment, we have to take steps to protect him.

*As he speaks, the scene cuts away to graphics which illustrate what he is saying. "6:00 pm - 3:00 am"; "Weekends"; "All Year"; "Center City & Corridors"; "Close to Home"; "Dark Clothes/Visual Screens."*

**Soderstrom:** Now, let's focus on the characteristics of the crash in which the intoxicated pedestrian is involved. As you would expect, they most commonly occur at night and on weekends, although they can happen at any time. There does not appear to be a season for these crashes. This is not surprising given the extent of the chronic drinking done by the victims.

Crashes involving intoxicated pedestrians happen almost anywhere. Someone with a high BAC is in danger whenever and wherever he walks. But, as you might expect, the crashes tend to occur more frequently on streets in the center city and along corridors where people can walk from home to shops, fast food restaurants or bars late at night. Most of the victims we studied were struck relatively close to home. They had gone out to get a snack, buy a drink, visit a friend, or just run an errand.

When struck, intoxicated pedestrians are often wearing dark clothes. They often enter the street away from an intersection. Parked cars may block the driver's view of the pedestrian making it even more difficult for the pedestrian to be seen. He may be stumbling or walking with an uncertain gait. On the other hand, the intoxicated pedestrian may be walking in a normal manner, which disguises his intoxication. The driver proceeds to the impact point without any real warning of the impending crash.

What can we do about avoiding the deaths and injuries that drinking too much and then going out walking can cause? At the Shock Trauma Center we repair the damage and try to save lives. And many are saved. But, the medical bills for acute care and the extended rehabilitation therapy which is often needed are enormous. Even with the best of care, long term permanent disabilities are often unavoidable. That's where you come into the picture because you have the ability to intervene earlier when it's possible to prevent these serious crashes.

*Sgt. Robert Frisch of the Baltimore Police Department appears in a classroom setting. His name and rank are supered. As he goes over the concepts of "Identify," "Assess" and "Intervene," graphics build up a simple flow chart. The following words appear as he speaks: "Dark Clothing"; "Poor Street Lighting"; "High Vehicle Speeds"; and "Visual Obstruction."*

**Frisch:** Our best role with respect to the intoxicated pedestrian goes well beyond traditional enforcement and control activities. As professionals trained to detect and deal with the problems caused by excessive drinking, we are in an ideal position to make a positive contribution to *Walk Smart Baltimore* through a three step process in which we identify risky situations, assess the dangers and intervene with appropriate actions.

In order to have maximum effect, we first have to learn to identify the conditions under which these high alcohol crashes occur. Dr. Soderstrom has already outlined the typical characteristics of the victim--a middle aged male, walking at night and often in dark clothing. Obviously, the ready availability of alcohol, particularly beer, from establishments open late at night also plays a role.

We also have to be sensitive to anything in addition to dark clothing which may make a driver's task of seeing a pedestrian more difficult. This could be poor or inoperative street lighting, excessive vehicle speeds or other visual obstructions such as parked cars, overgrown foliage, mail boxes or unusually low traffic signs. Some of these things you can deal with yourself. Others you have to refer to the appropriate City department for correction.

*During the next dialogue, the scene cuts to an exterior of one of the signs in place.*

**Frisch:** Because the critical factors in these accidents are diverse, an effective prevention program must include more than the police. That's why *Walk Smart Baltimore* is being led by a Task Force which includes the Department of Public Works, the Fire and Health Departments, the Liquor Board and the schools as well as the Police. As one of the first activities of the Task Force, the Department of Public Works is installing specially designed information signs along selected corridors which have experienced a high rate of alcohol-related pedestrian crashes. They are intended to slow motorists down and alert them to the need to look more carefully for pedestrians. They also tell you in which areas you should pay special attention because there's a greater

chance of a pedestrian alcohol crash. But, remember, these accidents can and do happen anywhere. All it takes is a pedestrian at a high BAC and a driver who doesn't see him or misjudges his intentions.

*The flow chart graphic is built by adding "Assess" to the word "Identify."*

**Frisch:** After you spot a potentially risky situation, your next move is to assess what's going on. Is the pedestrian really intoxicated? Where does he appear to be going? Is he carrying an open container or something like a paper bag which might be concealing an alcoholic beverage? Is he alone or with others? If he's with others, do they appear sober and capable of safeguarding the group? Questions such as these are pertinent to both your decision to take action and your selection of an intervention strategy. In some cases, you may be able to make a confident judgment based on observations alone. In others, you may have to stop and talk with the individual or group.

*During this talk, the following graphics are shown: "Is the Person at Risk?" and "What is the Transportation Situation?"*

**Frisch:** Remember, you are trying to determine two things. First, is the individual really at risk of a pedestrian accident? This will depend on factors such as his sobriety, intended trip, the local environment and the person's appearance. For example, if he's really hard for you to see, imagine how difficult it will be for a driver who's not really looking for him.

The second thing you want to clarify is the transportation situation. If the person is on his way home, and home is on the same block, there's likely no problem. On the other hand, if the person is on an extended walk or about to drive a car and is clearly intoxicated, you know you have to do something.

Once you've assessed the risks to a particular individual you must decide what to do. This is where you must bring to bear all of your training and experience to choose an effective course of action. Your primary goal has to be to get him through the traffic environment at that moment to a place of safety.

*The word "Advise" is supered at the start of a list titled "Actions With Pedestrians" while the following dialogue is initiated. The following items of advice appear as they are mentioned: "Stay Home When Drinking"; "Get Supplies Before Drinking"; "Wear Bright Clothing"; and "Go With Other People."*

**Frisch:** Okay, let's look at your options. The simplest thing you can do is to give the person appropriate advice. This is particularly valuable when the immediate risk isn't very high. Suppose the person is obviously intoxicated, and you encounter him just as he's about to enter his home. The immediate risk is low, but you have a great opportunity to pass along some good information.

This is the time when you should tell the person the basics he needs to know to keep out of trouble. He should:

- Stay home when he drinks heavily;
- Get all the supplies he needs *before* he starts drinking so he won't have to go out;
- Wear bright clothing and go with other people, especially more sober ones, if he must go out.

Ideally, we'd like to keep people off the streets entirely when their BACs are high. But, if that doesn't work, we'd like them to go with others who can see to their safety or at least form a group which will be as conspicuous as possible to an oncoming motorist. By the way, encouraging anyone who is walking late at night, whether drunk or sober, to be as conspicuous to motorists as possible and to walk in groups is good safety advice.

*During this dialogue, the advice: "Slow Down"; "Assume Impairment"; "Treat Pedestrian Like Child"; "Contact Police" appear as spoken on a screen titled "Advice for Drivers."*

**Frisch:** You can also give advice to motorists you encounter at times and places typical of accidents to intoxicated pedestrians. Even though drivers may not be the primary cause of the crash, they can do several things to improve safety including:

- Slow down. By giving up some speed, a driver buys more time to search for a pedestrian who may be difficult to see.
- Assume all pedestrians on the street late at night are impaired. They're not, of course, but it's a good strategy to think that way.
- Treat all pedestrians in or near the roadway late at night as if they were children. The behavior of an intoxicated adult is often childlike and almost always highly unpredictable.
- Contact us if they see someone who is an obvious danger to himself. We're the ones trained and experienced in dealing with intoxicated individuals.

*As the dialogue proceeds, the word "Assist" is added to the list that starts with the word "Advise."*

**Frisch:** Now, let's suppose the risk level is significant. Perhaps the intoxicated person has a few blocks to travel or must cross one or more really busy roadways. In situations such as these, your instincts will tell you that advice alone is not

enough. The person simply can't cope. You therefore must assist the intoxicated person in reaching his destination safely.

*The following words are shown as they are mentioned: "Call Taxi"; "Ask a Sober Companion"; "Walk/Drive Him Yourself."*

**Frisch:** There are several ways you can do this. You can:

- Call a taxi;
- Ask a more sober companion to escort the intoxicated person; or if necessary
- Walk or drive the person to a place of safety yourself.

The important thing is not to let an intoxicated pedestrian loose near traffic when your judgment says he can't handle it. If the person has no place to go or lives really far away, consider getting him to a Detox Center where he can be properly cared for.

*As the dialogue proceeds, the word "Enforce" is added to the list that was started with "Advise" and "Assist."*

**Frisch:** If advice and assistance are inappropriate or rejected, you may have no choice but to exercise your enforcement powers. While it's certainly best to handle most of these situations without an official action, sometimes authority is the only thing which will avoid a high risk predicament.

*The following advice is displayed as it is mentioned: "Open Container"; "Public Intoxication"; "Disorderly Conduct"; "Emergency Petition" on a screen titled "Pedestrian Enforcement."*

**Frisch:** Obviously, if the person has committed an offense such as carrying an open container of alcohol or engaging in obviously disorderly conduct, you can arrest him for that. But, sometimes you'll just be facing an unreasonable person who you know is in imminent danger if he walks near traffic. If that happens and justification exists, you should consider taking him into custody on an Emergency Petition. That's better than having to come back later to do an accident investigation.

One last point. Your ability to help the problem of intoxicated pedestrians extends beyond dealing with the drinker himself. Every day you talk with people who have a role to play in avoiding these crashes. We already mentioned drivers. *Walk Smart Baltimore* has a pamphlet you can give drivers entitled *There's a Fog in Your Future* which alerts them to the problem and gives them some safety tips. There are posters which you can give to convenience and liquor stores as well as to fast food outlets in areas where you know there are a lot of people walking late at night. These materials are

coordinated with radio and TV public service announcements such as the ones you're about to see.

*The scene cuts to two Walk Smart Baltimore television PSAs:*

- *In the first PSA, a Baltimore Fire Department emergency medical technician notes that pedestrians who drink heavily and walk alone are involved in almost one-half of all adult pedestrian accidents. He advises people who know heavy drinkers not to let them walk alone. He recommends urging the drinker to stay home or walking with the drinker to keep him out of trouble.*
- *In the second PSA, Mayor Schmoke notes that hundreds of Baltimore citizens are killed or seriously injured each year in pedestrian accidents because they drink too much. He notes that the Walk Smart Baltimore program has been started so that everyone can learn to get around the city safely on foot. He urges everyone to look for the program messages and to follow their advice.*

*The scene cuts back to Sgt. Frisch in the classroom setting. During the recap, the completed flow chart "Identify - Assess - Intervene" is reprised.*

**Frisch:** Even beyond the literature, though, you can help by alerting those you meet on patrol, such as store owners and bartenders, to the particular dangers of walking after drinking a lot. You've got to stress to them that their safety responsibility, and liability, extends beyond just keeping these people from getting behind the wheel.

So, we've learned that excessive use of alcohol by adult pedestrians is implicated in over 40% of their traffic accidents. We also know that it takes a very high BAC--on the order of .15 or more--for a walker's risk of a crash to increase significantly. With this kind of heavy drinking population, we recommend a three step approach in which you identify people at risk, assess the degree of danger and the relevant transportation situation and intervene with appropriate advice, assistance or enforcement. *Walk Smart Baltimore* has materials you can use, but overall, it's your professionalism that will make the difference and reduce the toll caused by excessive drinking by pedestrians.

**APPENDIX H**

**TELEVISION PSA SHOOTING SCRIPTS  
AND RADIO PSA COPY**

This appendix contains the shooting scripts for the four television PSAs prepared for the study and the copy for the six radio PSAs.

## Television PSAs

### 1. *Walk Smart Baltimore* (TV :30)

The mayor introduces the drinking and walking problem and encourages people to watch for and attend to program messages.

Video	Audio
CLOSE-UP of Mayor Schmoke	<b>MAYOR:</b> Each year, hundreds of Baltimore's citizens are killed or seriously injured in pedestrian accidents because they
CUT to scene of male drinker finishing a drink at home	<b>MAYOR (V.O.):</b> drink too much and
DISSOLVE to scene of drinker leaving the front door	<b>MAYOR (V.O.):</b> then go out walking.
CUT to Baltimore road scene. Zoom out to reveal <i>Walk Smart Baltimore</i> banner strung across the road.	<b>MAYOR:</b> We want everyone to learn the safe way to get around our wonderful city on foot. That's why we've started the <i>Walk Smart Baltimore</i> program. Please look for its messages and then listen to what they say.
DISSOLVE to close-up of the mayor.	<b>MAYOR:</b> There will be tips for drivers and lots of helpful information as a reminder to <i>Walk Smart Baltimore!</i>



2. *A Sign of the Times* (TV :30)

The director of DPW displays project street signs and advises drivers to slow down and watch for pedestrians.

Video	Audio
WIDE SHOT of downtown Baltimore with lots of pedestrians moving around	ANNOUNCER (V.O.): People walk around Baltimore each day for work and recreation.
MEDIUM SHOT of group of pedestrians in bright jogging suits walking on the sidewalk	ANNOUNCER (V.O.): When lots of people are on the street, it's easy for drivers to see them. But...
WIDE SHOT of one of our zones at night	ANNOUNCER (V.O.): when it's dark and the streets are quiet, it's hard to spot someone crossing the street.
PAN UP to new street sign and ZOOM-IN on it.	ANNOUNCER (V.O.): That's why Baltimore is putting up these new signs in areas where we know people are walking at night.
CUT to DPW Director Balog with his name and title supered	DIRECTOR BALOG: When you see these signs, remember to slow down and look very carefully for pedestrians.
CUT to a full screen of the <i>Walk Smart Baltimore</i> logo.	ANNOUNCER (V.O.): Because drivers are an important part of <i>Walk Smart Baltimore</i> .

**3. Troubles 1 (TV :30)**

An emergency medical technician advises people to stay home when they drink or walk with a sober friend.

**Video**

FADE UP on pictures of various alcoholic beverages (shot glass, wine glass, beer mug)

CUT to medium shot of a desk in an office. The chair is empty.

DISSOLVE to scene of husband and wife yelling at each other. Their fight is heard in the background under the announcer (WIFE: I don't care what you say, we can't go on if you keep drinking so much).

DISSOLVE to front of a hospital as an ambulance arrives.

CUT to medium shot of Baltimore Fire Department EMT next to an ambulance.

**Audio**

**MALE ANNOUNCER (V.O.):** If you drink a lot, you probably already know about many of the troubles it causes.

**ANNOUNCER (V.O.):** Troubles at work...

**ANNOUNCER (V.O.):** Troubles at home...

**ANNOUNCER (V.O.):** and all kinds of health problems. (SFX of ambulance siren)

**EMT:** Pedestrians who walk after drinking heavily are involved in almost *half* of all adult pedestrian accidents. If you drink a lot, don't let it knock you off your feet. Stay home if you drink or do your walking with a sober friend.

#### 4. Troubles 2 (TV :30)

A police officer advises people not to let friends walk alone after drinking.

##### Video

FADE UP on a woman sitting at a kitchen table staring out the window. She is alone and pensive.

SLOW DISSOLVE to medium shot of a desk in an office. The chair is empty.

SLOW DISSOLVE to scene of woman and a man, obviously her husband yelling at each other. Their fight is heard in the background under the announcer (WIFE: I don't care what you say, we can't go on if you keep drinking so much).

SLOW DISSOLVE to front of a hospital as an ambulance arrives.

CUT to medium shot of Baltimore Police Officer at night in one of the "zones."

Cut to LOGO

##### Audio

**FEMALE ANNOUNCER (V.O.):** If you have a friend or a loved one with a drinking problem...you already know about many of the troubles it causes.

**ANNOUNCER (V.O.):** Troubles at work...

**ANNOUNCER (V.O.):** Troubles at home...

**ANNOUNCER (V.O.):** and all kinds of health problems. (SFX of ambulance siren)

**OFFICER:** Pedestrians who drink heavily and walk alone are involved in almost *half* of all adult pedestrian accidents. If you know someone who drinks heavily, don't let them walk alone. Urge them to stay at home or walk along with them to keep them out of trouble.

**ANNOUNCER (V.O.):** It's another way to *Walk Smart Baltimore!*

## Radio PSAs

### 1. **They're Out There!**

The announcer advises drivers to watch out for pedestrians at night.

#### ***WALK SMART BALTIMORE***

*(Walk Smart Baltimore is a program to reduce pedestrian accidents. It is being guided by a Task Force of City agencies led by the Department of Public Works. The initial focus of the Task Force is on accidents related to excessive drinking by the pedestrian. Please help by using this live copy spot as often as possible. Since these accidents happen frequently at night, particularly late, those hours constitute "drive time" for the intended audience for these messages).*

**Announcer:** Are you in your car now? If you are, I bet you think that it's great driving when the streets are quiet. Traffic's light and you can really make time. The road is yours! Well, we want you to remember that at times like these it's particularly tough for a driver to see pedestrians. But, believe me, they're out there and some of them have even been drinking a lot. So while you're driving along and listening to us, remember to think about the people who walk along Baltimore's streets at night. If you think about them, you'll be more likely to see them and less likely to hit them. Remember, drivers are an important part of Walk Smart Baltimore!

## 2. Promo

The announcer advises the audience to listen to the *Walk Smart Baltimore* messages and follow their advice.

### **WALK SMART BALTIMORE**

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**Announcer:** Each year, hundreds of Baltimore's citizens are killed or seriously injured in pedestrian crashes because they drink too much and then go out walking. In fact, almost half of all adults hit by cars have been drinking to excess. We want everyone to learn the safe way to get around our wonderful city on foot. That's why we're supporting the *Walk Smart Baltimore* program. Please listen for its messages and follow what they say. Walking after drinking a lot can increase your risk of being hit by a car by 30 times or more. So, [if you drink a lot] [if you booze], lose your shoes! Stay home or stay with a friend.

### 3. Lose Your Shoes

The announcer advises drinkers to stay home when they drink or walk with a sober friend.

#### ***WALK SMART BALTIMORE***

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**Announcer:** If you drink a lot, you probably already know many of the troubles it causes. Troubles at work, troubles at school and troubles at home. And, you certainly know that driving after drinking is dangerous and can get you in a lot of trouble. But, you may not know that people who walk after drinking heavily increase their risk of being hit by a car by 3,000 percent or more. If you drink a lot, don't let it knock you off your feet. Stay home when you drink or do your walking with a sober friend. Remember, if you booze, lose your shoes. Stay put after drinking or walk with a sober friend. It's another way to Walk Smart Baltimore.

#### 4. Your Serve

The announcer advises server/sellers to make sure that intoxicated pedestrians get home safely.

#### **WALK SMART BALTIMORE**

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**Announcer:** Are you in the business of selling or serving alcoholic beverages? If you are, I'm sure you're aware of the dangers of driving after drinking. You've been trained to notice the signs of intoxication, and you know it's against the law to serve someone who's drunk. I'll also bet that you breathe a sigh of relief when a customer who's had too much to drink assures you that he's walking and not driving. Well don't! Almost half of all adults hit by cars while walking had been drinking heavily. So, get them a cab or have someone sober walk them home. You'll keep a good customer safe and be an important contributor to Walk Smart Baltimore.

## 5. It's holiday time

The announcer advises pedestrians to stay off the street if drinking and not to get smashed twice in one night.

### ***WALK SMART BALTIMORE***

*(Walk Smart Baltimore is a program to reduce pedestrian accidents. It is being guided by a Task Force of City agencies led by the Department of Public Works. The initial focus of the Task Force is on accidents related to excessive drinking by the pedestrian. Please help by using this live copy spot as often as possible. Since these accidents happen frequently at night, particularly late, those hours constitute "drive time" for the intended audience for these messages).*

**Announcer:** The holidays are here again. It's a time for family and friends, for gifts and good cheer. You probably already know it's unsafe to drive a car when you overdo the good cheer. But, you may not know that walking can be dangerous too when you've been drinking to excess. Almost half of the adult pedestrians hit by cars are drunk. *Walk Smart Baltimore* wants you to have a healthy, safe and happy holiday season. If you must drink a lot, stay off the streets. Or, walk with a sober friend. The last thing you need is to *get smashed twice in one night!*



## 6. Don't Get Smashed Twice

The announcer advises pedestrians to stay off the street if drinking and not to get smashed twice in one night.

### WALK SMART BALTIMORE

*(Walk Smart Baltimore is a program to reduce pedestrian accidents. It is being guided by a Task Force of City agencies led by the Department of Public Works. The initial focus of the Task Force is on accidents related to excessive drinking by the pedestrian. Please help by using this live copy spot as often as possible. Since these accidents happen frequently at night, particularly late, those hours constitute "drive time" for the intended audience for these messages).*

**Announcer:** Many of us like to drink. Some of us like to drink a lot, particularly during the holiday season. Many things can happen if we drink heavily, and none of them are very good. [This station] [Wxxx] and *Walk Smart Baltimore* want you to know that almost half of all adult pedestrian accidents involve a walker who has been drinking to excess. It's bad enough to get smashed once, but it really hurts to get smashed twice in one night! Stay off the streets if you've had a lot to drink. Or, walk with a sober friend.

**APPENDIX I**

**GUIDE FOR DESIGNING  
AND IMPLEMENTING  
A PEDESTRIAN ALCOHOL PROGRAM**

This appendix contains a guide titled *5 steps to a community pedestrian alcohol program*. It was prepared to assist communities in designing and implementing their own pedestrian alcohol countermeasure programs.

# 5 Steps to a Community Pedestrian Alcohol Program



U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

## Introduction

Research sponsored by the National Highway Traffic Safety Administration (NHTSA) has shown that alcohol impairment is the single largest contributor to the adult pedestrian crash problem. Data from NHTSA's Fatality Analysis Reporting System (FARS) in 1997 showed that 34.6% of the fatally injured pedestrians (5,307) had measurable alcohol in their systems at the time of the crash. This represents more than 10% of the overall (driver and pedestrian) alcohol-related crash problem. For the same year, for those 16 and older, 32.7% were intoxicated, that is, had a blood alcohol concentration (BAC) of 0.10 grams per deciliter (g/dl) or greater.

Although great strides have been made in recent years to remove drunk drivers from the nation's roadways, relatively little attention has been paid to the drinking pedestrian. In fact, "don't drink and drive" can easily be interpreted as an endorsement for walking as a preferred transportation mode if a person has been drinking to excess. Since alcohol use by the pedestrian appears to be the largest single contributor to adult pedestrian crashes, there was a clear need to determine how a community can realistically approach the reduction of this problem.

This guide describes five simple steps that explain how your community can develop and implement a local program designed to reduce its own pedestrian alcohol problem. These steps are:

- ***Assessing the local problem***--determining the magnitude of the problem, describing victim characteristics, identifying contributing factors and specifying when and where the crashes occur in the community.
- ***Establishing a community coalition***--obtaining the widespread public and private community support that is necessary for an effective program.
- ***Designing the program***--selecting or developing a variety of problem-specific and culturally-appropriate remedial actions to combat the problem.
- ***Implementing the program***--creating and carrying out a plan for implementing the selected approaches.
- ***Evaluating program results***--collecting and analyzing data to determine if the program achieved its objectives.

Examples are taken from the experience of the *Walk Smart Baltimore* program in Baltimore, Maryland. That program was assisted by a NHTSA-sponsored research effort that focused on identifying ways to address the pedestrian alcohol problem.

### Step 1: Assessing the Local Problem

The nature of the pedestrian alcohol problem may vary somewhat from place to place. Although these crashes seem to be universally associated with high BACs on the part of the

pedestrian, they can vary substantially in factors such as the extent to which they cluster geographically and the demographics of the victims. Therefore, the first step in any community-based effort should be assessing the magnitude and nature of the local problem. A description of the typical victim and a distribution of the physical location of the crashes should be prepared. This information is invaluable not only for defining the specific target locations for countermeasure implementation but also for eliciting local neighborhood and community support for the planned pedestrian alcohol program.

## **Magnitude of the Problem**

It is likely that almost all communities will show a high incidence of pedestrian crashes in which the pedestrian victim had been drinking to excess. Nevertheless, it is important to develop an accurate picture of the local problem. Local crash statistics are among the most compelling "sales" tools a program has for securing cooperation and support.

### **Questions on Magnitude of the Problem**

- *What % of adult pedestrian crashes are marked by the police as "had been drinking?"*
- *What % of adult pedestrian victims tested at local hospitals have positive BACs?*

Determining the magnitude of the local problem is probably most easily accomplished through an analysis of police crash reports. The police report usually provides an indication of whether the officer felt that the pedestrian *had been drinking* (HBD) at the time of the crash. This information can be used to give a rough picture of the extent and nature of the problem your community program will be trying to reduce.

The picture provided by using the HBD indication on the police reports will typically underestimate the extent of your community's pedestrian alcohol problem. Research has shown that police officers usually mark as HBD only those pedestrians who are obviously *very* intoxicated. This can eliminate an HBD indication for pedestrians who have been drinking but are not obviously drunk and for pedestrian victims that the police officer does not see at the crash scene because they have already been taken to a hospital when the officer arrives. In fact, previous NHTSA research on the drinking pedestrian has shown that using the HBD indication on the police crash report can underestimate the true rate of pedestrian alcohol crashes by 50% or more (*A Comparison of Alcohol Involvement in Pedestrians and Pedestrian Casualties*, DOT HS 805 249). Therefore, the rate at which HBD for a pedestrian victim appears on crash reports should be thought of as the lower end of the true extent of the pedestrian alcohol problem in your community.

In addition to HBD data from crash reports, it's also useful to obtain actual BAC data on pedestrians if BAC tests are conducted in your community. Hospitals are the best source of these data since many routinely test the blood of all seriously injured crash and other trauma victims who enter the facility through the emergency room. Although hospital data exclude those victims who did not seek emergency treatment, they provide another estimate of the pedestrian alcohol problem in the community. In addition, they provide the best indication of the *severity* of the problem, that is, they can be used to estimate not only the number and percent of victims with positive BACs but also the specific BAC levels involved in local crashes.

For example, in Baltimore, a three-year (1990-1992) database of police reports had 19.9% of the victims aged 14 and over marked as HBD. Data from a major trauma unit in the city showed that 42.4% of the pedestrian victims admitted to the unit in the first six months of 1992 tested positive for alcohol. Thus approximately half of the HBD cases were not reported on the police crash report. These data are consistent with the 50% underreporting factor obtained from previous research.

### **Nature of the Problem**

A description of the nature of the problem will permit remedial activities to be designed with the appropriate focus and applied where and when the problem exists. Certain basic questions regarding the victim and the time and place of each crash need to be asked in order to categorize the total pedestrian alcohol problem. These questions include:

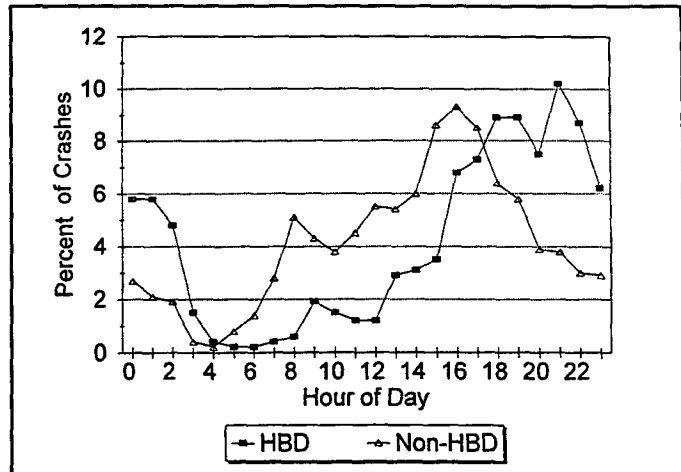
- *Who* is the victim (age, gender, ethnicity, socioeconomics)?
- *When* does the problem occur (time of day, day of week, month, season)?
- *Where* does the problem occur (parts of town, types of roads, types of neighborhoods, specific roads, specific neighborhoods)?

Again, the police crash report serves as the primary source for data to answer these questions. A computerized database of these reports may be available in your community. If not, plans can be made to obtain copies of the crash reports and to enter them into a database. A new software product called the Pedestrian and Bicyclist Crash Analysis Tool (PBCAT) is being developed by the Federal Highway Administration and NHTSA to support the entry, categorization, storage and reporting of pedestrian (and bicyclist) crash data.

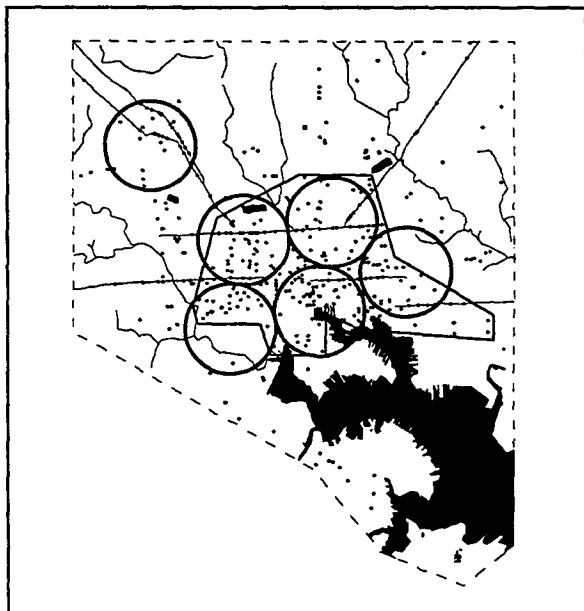
It is also useful to map your pedestrian alcohol crashes either manually or by means of a computerized mapping system, often called a geographic information system (GIS). If one is available, a GIS program can prove invaluable in determining the precise locations of the crashes of HBD victims and whether these crashes cluster in certain parts of your community. If the entire police crash report is stored with the GIS data, the locations of any desired subgroups, for example, late-night HBD crashes or male HBD crashes, can be identified and plotted easily.

In Baltimore, it was learned from an analysis of crash reports that the HBD crashes were more common:

- Among males
- In the age range 30 to 59
- Among pedestrians wearing dark clothing
- Between 7:00 pm and 3:59 am
- On weekends



In addition, conspicuity factors other than the use of dark clothing by the victim often appeared to be implicated in the HBD crashes. The streets were dark and, even though street lights may have been on, the pedestrian simply was reported as not being seen by the driver.



Computerized mapping of the HBD crashes in Baltimore showed that most occurred in the center of the city and on certain major corridor routes. A polygon and circle were created on the electronic "pin map" that included 73% of the total HBD crashes in only 21% of the Baltimore city land area. Concentrating countermeasures in these "zones" whenever it was possible and practical to do so permitted the limited program resources to be used more effectively.

Detailed information on the process of defining and using zones for pedestrian safety programs can be found in NHTSA's *Zone Guide for Pedestrian Safety* (DOT HS 808 742).

## Step 2: Establishing a Community Coalition (Safe Community)

Because of the complexity of crashes involving pedestrians who have been drinking, they are best addressed by a multidisciplinary approach. Experience has shown that a coalition consisting of the major community organizations that can influence the pedestrian alcohol problem is needed. A specific individual or one of these organizations must take the lead and accept responsibility for scheduling meetings, creating agendas, preparing meeting minutes and providing staff support.

### Coalition Needs

- *Clearly stated problem*
- *Community mandate*
- *Strong lead organization*
- *Detailed knowledge of the local pedestrian alcohol problem*
- *Active and diverse community participation*
- *Measurable objectives*
- *Regularly scheduled meetings*
- *Detailed agenda and minutes*

The coalition itself and its leadership must be given a mandate by your community to proceed with a "team" approach to reducing the pedestrian alcohol problem. Unless the effort is officially sanctioned and made part of the job responsibilities of each of the participating groups, it may be difficult to mount and sustain an effective effort. The importance of obtaining initial approvals and support for the coalition from those community individuals who can ultimately affect the program's activities cannot be stressed too strongly. Early approval from these individuals (mayor, police chief, head of traffic department, etc.) is needed to assure that the program receives ongoing support throughout its planned lifetime. Also, the higher the level of support and the more visible the support is, the more "clout" the coalition will have.

### **Selecting Coalition Members**

After the necessary initial approvals are obtained, other organizations that can be helpful to the success of the coalition should be identified and invited to join. All coalition members will look at the problem from their own perspectives and attempt to find both individual and joint solutions. By working together, the coalition members can see the problem in a broader perspective than can any individual organization.

A coalition also provides the opportunity to extend resources by embedding efforts focused on the pedestrian alcohol problem in the day-to-day activities of each coalition member. This makes it possible to reach people with both the special efforts of the coalition and the routine operations of its members. It is also beneficial to the credibility of the coalition and the problem itself to have as broad a range of participant organizations as possible.

The pedestrian alcohol problem is complex and must be addressed as both a highway safety and community health issue. Therefore, at a minimum, the following community organizations should be invited to participate in any pedestrian alcohol coalition:



- Law enforcement
- Traffic engineering
- Traffic operations
- Media, including neighborhood newspapers and health reporters
- Community highway safety personnel, e.g., pedestrian-bicycle coordinators, safe community or community traffic safety program (CTSP) coordinators
- Organized pedestrian safety efforts if they exist in the community, e.g., activist groups, walking clubs, safety councils
- Emergency medical services (EMS)
- Health services, including substance abuse outreach organizations
- Hospitality industry (alcohol sellers, servers and their regulatory agencies)
- Religious, community and neighborhood organizations

### **Conducting Coalition Meetings**

It is important for the coalition to hold regular meetings. This "keeps the ball rolling" and ensures continuous crosstalk among the members of the group. Without this scheduled interaction, the synergy for which the coalition was formed may not develop.

At the first meeting, it is desirable for coalition representatives to be given an overview of the pedestrian safety problem in the community, including the alcohol problem. Thus, at least a preliminary crash analysis as discussed above should be developed by the coalition leadership prior to the initial meeting. It is especially important that all members be made aware of the critical nature of the problem. There is rarely much sympathy for the alcoholic victim. Many of the coalition members may consider alcoholism to be a disease and have difficulty perceiving it as a pedestrian safety problem. Thus, the overview must provide solid evidence of the magnitude of the problem in your community with suggestions for how the group, working together, can help to solve it.

At an early meeting, the program goals and objectives as well as the working procedures for the coalition should be established. The length and frequency of meetings as well as the specific initial goals of the program should be discussed and agreed upon. Procedures for accomplishing coalition objectives, including responsibilities of the individual coalition members and the group as a whole, have to be specified.

As an example, at the first meeting of the pedestrian alcohol coalition in Baltimore the members were provided with a detailed briefing on the nature of the pedestrian alcohol problem in

the city. They were also provided with a brief report that summarized the city's problem, outlined possible approaches to counter the problem, and listed proposed major tasks and the cooperative inputs needed from groups in Baltimore if the program was to be successful. In response, the group debated alternative objectives and finally agreed that the primary goal of the coalition was to reduce loss of life and injury due to the pedestrian alcohol problem in Baltimore. The specific objectives were to:

- Refine the group's understanding of the pedestrian problem in the city
- Adapt, design and implement approaches to counter the problem
- Assess the impact of the countermeasure program

These are good initial objectives for any new pedestrian alcohol coalition.

To accomplish these objectives, the Baltimore coalition agreed that it needed continuing data on the problem to foster increased understanding and form the basis for evaluating progress. It was also agreed that individual members should identify program activities appropriate for their organizations and should be primarily responsible for implementing any of these that were accepted by the group as part of the pedestrian alcohol program. Thus, all countermeasures used by the program would have input from and be approved by the coalition as a group, but individual efforts did not necessarily require the participation of the entire membership.

The Baltimore coalition agreed to meet approximately every four weeks. Before the close of each meeting, a firm date was established for the next meeting. All coalition members were provided with a detailed agenda prior to each meeting and with detailed minutes following the meeting.

### **Step 3: Designing the Program**

Each site should design its own localized program based to the extent possible on previously proven approaches and on lessons learned from other locales. It is best to start with an "idea generating" session in which any and all suggestions for applying previously-used approaches are presented for consideration regardless of their ability to be implemented locally. Someone should be tasked to moderate the idea generating session to make sure that the driver, the pedestrian, the alcohol sales organizations, intermediaries who might come into contact with the high BAC pedestrian (e.g., family, friends, retailers) and the environment are all addressed. These have been shown to be the critical components of a successful crash-reduction effort.

Once initial ideas are on the table, it is useful to organize them by type of countermeasure as a prelude to dividing assignments among coalition members. One useful categorization is:

- ***Education***--materials that can be distributed/displayed and activities that can be performed to inform the public or specific groups about the problem and what they can do to help.

- **Enforcement**--activities that police or other law enforcement and adjudication groups can conduct to help solve the problem.
- **Engineering**--changes that can be made to the roadway or the environment (e.g., sight distance or lighting improvements) to help solve the problem.
- **Legislation**--changes in existing laws or the enactment of new legislation to help solve the problem.

An initial selection of countermeasures for the start of the program is then made. This is the point at which consideration is first given to the practicality of each activity. For example, are there adequate funds, personnel, materials, etc., to carry out the activity? Is there adequate time to perform the activity? How will the activity be received by the local population? Certain educational approaches may be inappropriate for the background of the local population. For example, materials may need to be developed for certain segments of the community, e.g., for specific racial/ethnic groups or specific age groups. There also may be inadequate resources to mount a particular countermeasure at a level of effort that is sufficient to have a reasonable chance of success. There may be a need to locate additional resources for promising countermeasures. Finally, some of the ideas may be excellent but considered better to defer until after the program is off and running. The timing of implementation for some remedial actions can be an important determinant of success.

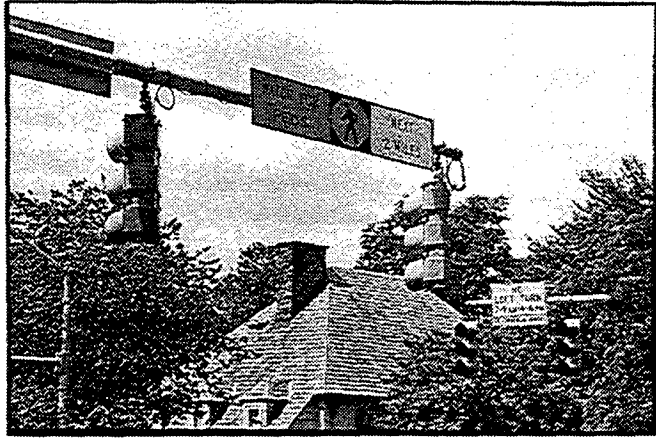
One good starting activity because it builds "ownership" and an identity for the program is the development of a slogan and logo. These then help provide for a uniform identification of activities and materials as part of a cohesive *program*. In Baltimore, the developed logo was a footprint surrounding the slogan "*Walk Smart Baltimore*." The thinking of the Baltimore coalition was that it would be better to embed the pedestrian alcohol effort into a larger pedestrian safety effort than to risk stigmatizing the high BAC pedestrian with a more narrowly focused slogan that included mentioning alcohol.



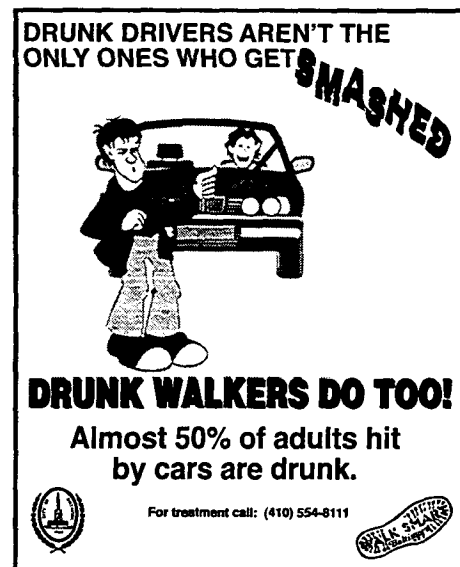
The *Walk Smart Baltimore* coalition selected the following program activities:

- Repair of lighting and refurbishment of crosswalks on high HBD roads.
- Installation of special signs to alert drivers to watch for pedestrians on roadways with high pedestrian alcohol crashes.
- Mounting of project banners on high HBD roads.

- Development and presentation of a low-cost police training video on the nature of the pedestrian alcohol problem and appropriate police responses.
- Production and distribution of radio and television public service announcements (PSAs) to educate potential victims, drivers, families and the general public.



- Education on the problem through distribution of posters, brochures and flyers to bars and small businesses in the zones, motor vehicle offices, city departments, hospitals and health centers.
- EMS demonstrations on caring for a drunk pedestrian involved in a crash.
- Designation of 11 local fire stations as information distribution points.
- Development of a module on the pedestrian alcohol problem for inclusion in the state's responsible alcohol seller and server training.
- Distribution of high-visibility (retroreflective) materials to make it easier for drivers to detect people who walk on the streets at night in the areas where HBD crashes were common.
- Development of a slide series describing the problem and how health, hospitality, judicial and community groups can help.



## Step 4: Implementing the Program

It is beneficial to have the program initiated with an activity that will generate wide publicity to help "put the effort on the map." It is also usually desirable not to unveil all of the program activities at the same time. When programs distribute their activities over time, interest in the program is maintained and coalition participants are better able to share their program activities with their routine duties. Defining a schedule for at least the first year or so of the program will help support objectives and provide coalition members with measurable goals.

### **Implementation Needs**

- *Strong "kick off"*
- *Continuing reinforcement*

For example, in Baltimore the program kicked off at a mayor's press briefing. The slogan and logo were unveiled. In addition, traffic engineering improvements had been completed on one high pedestrian alcohol road. A press kit containing information on the program was distributed along with copies of the PSAs. Interviews were given to radio and television press representatives.

In Baltimore, a schedule was developed for implementation of the countermeasures. The schedule was initially designed so that at least one new activity would take place each month. In addition, where possible and practical, countermeasures were implemented only in the areas ("zones") of the city where the pedestrian alcohol problem had the highest incidence to conserve resources while still addressing the majority of the problem.

## **Step 5: Evaluating Program Results**

Evaluating a program is an essential part of taking action. Rather than viewing evaluation as a "scorecard," it is best to think of it as an important feedback mechanism for fine tuning the effort. Both a "process" and an "impact" evaluation can help. The process evaluation assesses the procedures used by your coalition to accomplish program objectives. Procedures that work smoothly can be emphasized and those that are problematic can be corrected. The impact evaluation can help determine the effectiveness of the program and its elements so that future resources can be allocated appropriately. Demonstrating results is also an excellent "convincer" to keep the flow of funding coming.

For the process evaluation, questions such as the following should be explored:

- ***The coalition***--Is the composition of membership appropriate? Should additional members be included? If so, why? Are there sufficient meetings to accomplish program objectives? Are there too many? What would make the coalition more effective?
- ***The countermeasure program***--Was it possible to implement activities as intended? If not, can procedures be improved? Are any of the remedial actions too difficult to implement? Did activities adequately target the alcohol-involved pedestrian? Should they have been scheduled differently? How? Did the activities generate adequate publicity in the community for the program? Should any be dropped because of implementation problems? How many street lights were repaired? How many police saw the video? How many PSAs were aired? How many posters were displayed?

For the impact evaluation, it would be helpful if one of the coalition members was knowledgeable in program evaluation. It should focus on questions such as:

- **Overall program effectiveness--**Were community-wide alcohol-related crashes reduced after the coalition started? Were crashes reduced in the zones? Were there changes in other program objectives, for example, were there increases in individuals enrolled in alcohol abuse programs?

As indicated previously, if measured BAC data are not available in your community, a notation of HBD on the police report will likely serve as an indicator of alcohol involvement. However, HBD crashes must be reasonably stable over the study baseline period if HBD is to be used as an indicator of an intoxicated pedestrian. In Baltimore, for example, there was a large decrease in crashes involving an HBD pedestrian over a five-year baseline period during which there were no unusual community alcohol activities underway. It was determined that the decrease represented a decrease in the use of the HBD code on the crash report, not an actual decrease in intoxicated pedestrians. Regardless of the reason, it was apparent that a surrogate measure needed to be developed for the intoxicated pedestrian. The resultant measure consisted of key attributes of Baltimore pedestrians who had been drinking. Characteristics involved were gender (male), age (30 to 59), time of day (7:00 pm to 3:59 am), and day of week (Thursday through Sunday).

When examining program "impact" (usually crash reduction) it is essential to have a realistic expectation and a lot of patience. Few pedestrian alcohol countermeasures are likely to produce an immediate, dramatic reduction in crashes. The problem is a difficult one, and it may take time for the program activities to build to a measurable effect. Even if the process evaluation indicates that things are getting done, it may take a while for a meaningful crash reduction. It's important to make this clear to the sponsoring and supporting groups too. Expectations shouldn't be raised unreasonably, particularly those involving changes in behavior. It probably took most of the pedestrian alcohol victims quite a while to develop their drinking habits so any remedial actions focused on changing their drinking and walking habits will also likely take some time to be effective. Likewise, efforts to change motorist behavior can take time because driving habits are ingrained.

The experience in Baltimore showed that a coalition concept can work smoothly and effectively to address the pedestrian alcohol problem. Monthly meetings proved adequate with subcommittees getting together between scheduled meetings as necessary to accomplish specific program objectives. Most, but not all, of the processes implemented by *Walk Smart Baltimore* worked as expected. Examination of crash trends after the first 24 months of the program showed some significant localized crash reductions. Overall, these process and impact results produced confidence that, over time, a more widespread crash reduction might be forthcoming.

The situation in your community may be different and may require an adaptation of the approach discussed above. Therefore, the information presented here should be viewed as guidelines and not as a "cookbook" for a successful approach. The important thing is to put together a viable and durable coalition to take action against the problem. Crashes due to drinking by pedestrians are difficult but *far from impossible to deal with*. The potential benefits in saved lives and reduced injury and suffering are large and well worth embarking on these five straightforward steps.

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