

UMTRI-2001-05

**The Effects of Standard Safety Belt
Enforcement on Police Harassment:
Year 1 Annual Report**

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June 2001

Technical Report Documentation Page

1. Report No. UMTRI-2001-05		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle The Effects of Standard Enforcement on Police Harassment: Year 1 Annual Report				5. Report Date June 2001	
				6. Performing Organization Code	
7. Author(s) David W. Eby, Lidia P. Kostyniuk, Lisa J. Molnar, Hans Joksch, Jonathon M. Vivoda				8. Performing Organization Report No. UMTRI-2001-05	
9. Performing Organization Name and Address The University of Michigan Transportation Research Institute 2901 Baxter Road Ann Arbor, MI 48109				10. Work Unit No. (TRAIS)	
				11. Contract or Grant No. 071B1001220	
12. Sponsoring Agency Name and Address Michigan Department of State 208 North Capital Ave., PO Box 30196 Lansing, MI 48909-7696				13. Type of Report Final	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>On January 25, 1999, Senate Bill 335 was introduced in the Michigan Senate to give police officers in Michigan the authority to stop and issue citations to drivers or passengers not using safety belts, even if no other violations have occurred (i.e., standard enforcement). This bill was passed into law as Public Act 29 of 1999 and was implemented on March 10, 2000. During the legislative debate on this law, concerns were raised about the increased potential for law enforcement officers to use standard enforcement of the safety-belt-use law as an opportunity to harass drivers in some way. The purpose of this research is to investigate the effects that standard enforcement of Michigan's safety belt law have on police harassment in a three year study. For the purposes of this study, harassment has been defined by the Department of State as "a driver being singled out for a safety-belt-related traffic stop or treated differently during the stop on the basis of race, sex, age, or other factors unrelated to the actual violation." This report presents the three-year work plan for the project.</p>					
17. Key Words Safety Belt Use, Race, Age, Sex, Harassment, Standard Enforcement			18. Distribution Statement Unlimited		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 21	22. Price

Reproduction of completed page authorized

INTRODUCTION

In 1985, Michigan implemented legislation making safety belt use mandatory for front-seat occupants of motor vehicles. Direct observation studies conducted for the state of Michigan by the University of Michigan Transportation Research Institute (UMTRI), showed that prior to implementation, only about 20 percent of drivers and 18 percent of passengers used safety belts. After implementation, UMTRI studies showed that safety belt use for both drivers and front-right passengers was about 61 percent during the month of implementation, followed by an abrupt decline to about 45-50 percent. During the 1980s, safety belt use statewide remained fairly constant at about 45-50 percent. UMTRI studies showed that during the 1990s, safety belt use gradually increased each year up to about 70 percent (see Eby, Molnar, & Olk, 2000, for a review of Michigan safety belt use from 1984 to 1998).

Although the mandatory safety belt law apparently had succeeded in encouraging drivers and passengers to more frequently use safety belts, the 70 percent use rate was still unacceptably low. Many traffic safety professionals attributed this low use to the fact that Michigan's mandatory safety belt use law allowed only secondary enforcement, where police officers could only ticket a driver in violation of the safety belt law if the driver was stopped for a separate offense. Several studies have shown that significantly greater compliance with a mandatory safety belt law can be achieved by changing enforcement of the law from secondary to standard (Campbell, 1987; Eby & Vivoda, 2001; NHTSA, 1997; Ulmer, Preusser, & Preusser, 1994). Under standard enforcement, a driver can be pulled over and cited by law enforcement solely for a violation of the safety belt law.

On January 25, 1999, Senate Bill 335 was introduced in the Michigan Senate to give police officers in Michigan the authority to stop and issue citations to drivers or passengers not using their safety belts, even if no other violations have occurred. This bill was passed into law as Public Act 29 of 1999 and was implemented on March 10, 2000. As intended, standard enforcement of Michigan's safety belt use law resulted in a dramatic 13.4 percentage point increase in safety belt use from Michigan's previously highest use rate

during the first month of implementation (Eby, Fordyce, & Vivoda, 2000; Eby & Vivoda, 2001).

During the legislative debate on this law, concerns were raised about the increased potential for law enforcement officers to use standard enforcement of the safety-belt-use law as an opportunity to harass drivers in some way. Indeed, newspapers in Michigan and from around the country have reported on studies that seem to have found evidence of harassment (typically called racial profiling in these studies). However, close analysis of these studies shows that the presence of harassment is either not supported scientifically or is only one of several possible conclusions. One major flaw found in many of these studies (see e.g., McGraw, 2000) is the utilization of racial population distributions as a comparison measure to the distribution of traffic stops by race. If one race is found to have traffic stops at a percentage that is greater than that race appears in the population, then one cannot conclude that harassment is either present or not present. Without knowing the racial distribution of people on the road, one cannot make claims about traffic-stop harassment as is done in many of these studies.

Other studies have rightly considered the racial distribution of motorists in their analyses (see e.g., Arellano, 2000; Bullers, 2000). Unfortunately, these studies do not consider traffic-law-violation racial distributions. Again, without knowing the racial distribution of people who are violating traffic laws, one cannot make conclusions about the presence of harassment because one race may violate certain laws more frequently than another race.

One study included both the racial distribution of drivers and the racial distribution of speeding (Lambert, 1998). In this study, the distribution of both White and Black/African American drivers on the road and traveling more than 5 mph over the speed limit was determined by direct observation. These proportions were compared to the racial distribution of drivers pulled over by the police. Since 98 percent of the drivers in this

sample exceeded the speed limit by more than 5 mph, nearly every driver on the road was a candidate for a traffic stop. The study showed that Black/African American drivers were pulled over by law enforcement for any reason, not just speeding, at about four times the rate that would be expected from the presence of Black/African Americans on the road. Lambert (1998) incorrectly suggests that this finding demonstrates harassment. While the study provides good support that harassment may have been present, this conclusion is only one of several possible reasons for the difference between the proportions. If one wants to look at the effects of enforcement of a certain traffic law on police harassment, they must compare three racial distributions: presence on the road, rate of law violation, and police action for violation of the law (stops or citations). The Lambert (1998) study did not consider the reasons for the stops (only stops for speeding should have been considered), and, therefore, did not unambiguously demonstrate the presence of harassment.

None of these studies addressed the issue of harassment in relation to standard enforcement. The purpose of this research is to investigate the effects that standard enforcement of Michigan's safety belt law have on police harassment in a three-year study. For the purposes of this study, the Michigan Department of State (DOS) has defined harassment as "a driver being singled out for a safety-belt-related traffic citation or treated differently during the stop on the basis of race, sex, age, or other factors unrelated to the actual violation."

Technical Work Plan

As stated by the Michigan DOS, the prime consideration in the design of this research is to produce valid, reliable, and credible results for the public, law enforcement, and policy makers. The DOS listed five sets of questions to be addressed in the research. We also address a sixth question that was implied by the DOS but not stated explicitly. The questions and the methods we will use to answer them are presented below.

Are more safety belt and child restraint citations issued by law enforcement officers under the new law as compared with the old law?

This question will be addressed by contacting each of the 168 District and Municipal Courts in Michigan on a yearly basis to collect records of safety belt and child restraint citations reported to them by law enforcement agencies during the past year. Law enforcement agencies are required to report all traffic citations, including safety-belt and child restraint citations, to the District/Municipal Court that has jurisdiction over the area in which the violation occurred. Early in the first year of the project, all District and Municipal Courts will be contacted to collect the records of safety-belt and child-restraint citations written during the years prior to Michigan's change to standard enforcement.

We have worked with these courts in the past to collect drunk-driving citation information and anticipate few problems collecting safety-belt citation information. It is possible that a large number of courts will not have electronic record keeping systems, or the ability to give us electronic data, and all citations will be in paper form. In those cases, the courts will either send us copies of all citations or a research assistant will travel to the court and gather the information directly. Another challenge is that for those courts that have electronic systems in place, several different systems are in use. Thus, different methods will be necessary for extraction of the electronic information at different courts. Finally, we anticipate that some courts will be reluctant to participate or will refuse to participate. For these courts, we will attempt to address their concerns and elicit cooperation. Significant value will be lost for this project, if a large number of courts refuse to participate, or if certain key courts, such as those in Metro Detroit area, decline to take part in the study.

This question will be answered by comparing both the absolute numbers of citations and the yearly citation rates between the pre and post standard enforcement years. Since the absolute numbers should be based, at least in part, on the rate of compliance with Michigan's mandatory safety belt use law, we will also present these results as a function of safety belt use rates. Data will also be presented as a function of several demographic

variables, such as the time of day the citation was written.

How many incidents of harassment as a result of the enforcement of the law have been reported? How does this number compare with previous years? How does this number compare with other traffic violations?

Law enforcement agencies maintain records on all reported incidents of harassment. In addition, a section of Public Act 29 of 1999 (the Standard Enforcement Law), requires that all reported incidents of harassment resulting from the safety belt law be investigated. As such, good records on incidents of harassment should be available from law enforcement agencies. This question will be addressed by contacting each of the 610 law enforcement agencies in Michigan on a yearly basis to collect written records on each incident of police harassment resulting from a traffic stop for any reason during the past year. Early in the first year of the project, all law enforcement agencies will be contacted to collect records on incidents of traffic-stop-related police harassment during the year prior to Michigan's change to standard enforcement.

In Michigan, incidents of traffic-stop-related harassment may also be reported to non-police agencies. Therefore, we will also contact the Michigan Department of Civil Rights (MDCR), the American Civil Liberties Union (ACLU), and the National Association for the Advancement of Colored People (NAACP) to request copies of any written traffic-stop-related complaints they have received in the year preceding standard enforcement and for the three years following standard enforcement. We anticipate that some complaints may be registered with multiple agencies leading to a potential problem of double-counting. Therefore, incident dates between agencies will be compared and those with identical dates will be analyzed to ensure that they are from separate incidents.

We anticipate that some agencies will be reluctant to furnish the researchers with this sensitive information. Therefore, no agency-specific information will be retained by the researchers for any purpose. The study protocols will be submitted to and approved by the

University of Michigan Institutional Review Board (IRB) which ensures that privacy rights are understood and anonymity procedures for handling sensitive records are adequate. In addition, protection of confidentiality of participants will be requested from the State of Michigan under the provisions of MCLA 257.624, otherwise known as Public Act No. 26 of 1980. This legislation allows the Michigan Office of Highway Safety Planning (OHSP) to include a scientific research study involving traffic safety within the coverage of the Act. The Act protects name-linked data collection in the study from being disclosed. Coverage of the study and its data under the Act has allowed the University in the past to deny subpoenas and FOIA requests. The practical effect is that provision of assurances that the data will be kept confidential gives institutions and individuals confidence that the University can in fact stand by its promise that the data will remain confidential. Finally, we will allow agencies to redact names and other identifying information from the written records they provide if they choose to do so. These assurances should convince most agencies to furnish the requested records for research purposes.

This set of questions will be answered by summing up all incidents of harassment by type of violation separately, including safety belt violations, and comparing the numbers from before and after implementation of standard enforcement. Since safety belt related complaints may be based on enforcement of the safety belt law, we will also analyze complaints as a function of safety belt use rates.

Is there a statistical over/under representation of safety belt stops in a group considering that group's size in the population and the rate of safety belt use of the particular group? How does this over/under representation compare with previous years?

This set of questions is the most important for understanding the effects of standard enforcement on police harassment. Unfortunately, of the law enforcement agencies that we contacted, only a few collect driver information for stops and none collected this information prior to implementation of standard enforcement. Therefore, comparison with

previous years is impossible. The only way to collect current information would be to convince law enforcement agencies around the state to begin collecting driver information during stops in which no citation is issued (stops in which citations are issued will be addressed in the next set of questions). However, this method has several flaws that makes it unfeasible for this project. Because law enforcement is not required to collect this information, its collection would require significantly more work, and because the information will be used to assess law enforcement harassment, many agencies will either be unable or unwilling to collect data on driver characteristic information during stops. Thus, the data collected on safety belt stops by those agencies willing and able to do so would not be generalizable to Michigan law enforcement and could be criticized on this basis. Of even greater concern would be the data's validity. Those agencies willing and able to cooperate may not accurately represent safety belt harassment in Michigan law enforcement agencies. Finally, in previous UMTRI projects in which research data were collected by agencies not involved in the research, the data quality has been poor, with considerable missing, incomplete, and inaccurate data. For these reasons collectively, addressing safety belt harassment by looking at safety belt stops is not possible in Michigan.

Is there a statistical over/under representation of safety belt citations in a group considering that group's size in the population and the rate of safety belt use of the particular group? How does this over/under representation compare with previous years?

We will address these questions with respect to race (White; Black/African American; all other races), sex (male; female), and age (16-to-22; 22-to-29; 30-to-64; 65-up). In order to answer these questions, three types of information need to be collected: safety belt use rates for each group to be considered in the project; the proportion of each group in the driving population; and the yearly number of citations written for each group.

Safety belt use by race will be assessed each year through direct observation at a randomly selected sample of intersections and freeway exit ramps in Michigan. This survey

will utilize designs and procedures similar to those developed by the researchers for Michigan's annual statewide safety belt study (Eby, Vivoda, & Fordyce, 1999, 2000; Streff, Eby, Molnar, Joksch, & Wallace, 1993), except that race, in addition to the other demographic information, and safety belt use information for drivers and front-outboard passengers will be collected. This survey methodology follows all NHTSA (1992, 1998) guidelines for the statewide assessment of safety belt use and has been reviewed and approved by NHTSA. In order to investigate safety belt harassment in years prior to standard enforcement, safety belt use by race in those years will be estimated using current data and weighting the use rates by overall rates from previous years. This method provides a conservative estimate of belt use by race, since research shows that standard enforcement laws have a greater impact on minority safety belt use than on nonminority safety belt use (NHTSA, 2000).

The proportion of each of these groups in the driving population will need to be assessed. Driver license records and census data are available, but do not allow us to determine who is actually on the road driving and therefore eligible for a possible harassment incident. A better measure of the proportion of a certain group in the driving population is to visually assess their presence on Michigan roadways. The methods used in the annual direct observation survey of Michigan safety belt use allow us to determine the proportion of Michigan drivers by age and sex. The method involves conducting a vehicle count at each observation site to estimate traffic volume at that site and then weighting by the sampled proportions by age and sex observed during data collection at that site. The proportion of drivers by race will be determined using this same method in the proposed survey of safety belt use by race to be conducted during each year of the study.

The third piece of information to answer these questions is the least straightforward to obtain. All safety belt citation information will be collected by contacting each of the 168 District and Municipal Courts in Michigan on a yearly basis to collect the date of each safety belt citation written in Michigan and the driver license number of the person cited. As discussed previously, law enforcement agencies are required to report all traffic citations,

including safety belt and child restraint citations, to the District or Municipal Court that has jurisdiction over the area in which the violation occurred. Early in the first year of the project, all District and Municipal Courts will be contacted to collect the number of safety-belt citations written during the years prior to Michigan's change to standard enforcement. Discussion with selected District and Municipal Courts showed that this information is saved for at least two years. Sex and age information for each citation will be obtained by matching the driver license number with the Master Driving Record (MDR) maintained by the Michigan Department of State. This record is a complete listing of all licensed drivers in Michigan and the researchers have worked extensively with this file on several projects. Sex can be directly obtained. The age of the driver will be calculated from the listed birth date to determine age at the time of the citation.

The determination of race is the most challenging problem in answering these questions. We will determine the race of each person receiving a safety belt citation by visually examining the electronic image of their face maintained in the MDR. Each image will be viewed independently by two researchers to determine if the image is of a White, Black/African American, or other-race person. Cases in which there is disagreement will be reviewed by additional researchers until a determination can be made. If consensus cannot be reached, the case will be discarded. This method for determining race is less biased than officer assessment of race during citation writing, since several researchers under controlled conditions will be making the assessment. Protection of confidentiality of records will be requested from the State of Michigan under the provisions of Public Act No. 26 of 1980, providing protection of highway safety project data from subpoena and FOIA requests.

Starting in April of 1998, Michigan switched to a new style of driver license. These new-style licenses contain a digital image of the driver on the front and driver information on a magnetic strip on the back. All people renewing or replacing their license after this date, must get the new-style license. We estimate that currently about 30 percent of people in the MDR have the new-style license and, therefore, a digital image in the MDR. Because

people in Michigan must renew their license document every 8 years, during the three-year course of the proposed study, approximately 65-70 percent of people in the MDR will have a digital image available. Since Michigan has no renewal policy based on age, sex, race, or number of safety belt violations, we should be able to determine the race of approximately 65-70 percent of the people cited for a safety-belt violation at the end of the study period in what would be a random sample of people receiving safety-belt citations. Thus, statistically, we can determine the race of people who are cited for a violation of Michigan's standard enforcement law. Using the same procedure, we can also determine the race of people receiving safety-belt or child restraint citations in previous years.

We will assess standard enforcement harassment statistically in two ways for each of the groups under consideration. The first method is shown graphically in Figure 1 using females as the group under consideration. The general method for this analysis is the same for each of the groups to be considered in the proposed research, including White, Black/African American, and other-race drivers. As shown in Figure 1, two ratios will be compared to see if they differ statistically. The first ratio is shown in the figure on the left and depicts the proportion of all people in the safety belt observational study that are in the group under consideration (in this example, female). Because these values will be estimated from the safety belt use rate for the group and their estimated presence in the driving population (both derived from data collected during the direct observation study), there will be variability associated with this ratio. The second ratio, shown on the right half of the figure, depicts the proportion of all people receiving a safety belt citation that are in the group under consideration. For the analysis for sex and age, we will know this ratio exactly. Because there are incomplete image records contained in the MDR, we will have to estimate the ratio for race based upon the sample of people that can be matched. This estimate will become more precise as each year of the project passes, since, as people renew their license, a greater proportion of people will have pictures contained in the MDR.

The two ratios will be compared using appropriate statistical tests. If these tests show that there is no statistical difference between the ratios, then we can conclude that no

safety belt harassment occurred. If the first ratio is statistically lower than the second, then the group under consideration is receiving more citations than would be expected, and we would conclude that safety belt harassment occurred for this group. The magnitude of the difference could be interpreted as the magnitude of safety belt harassment.

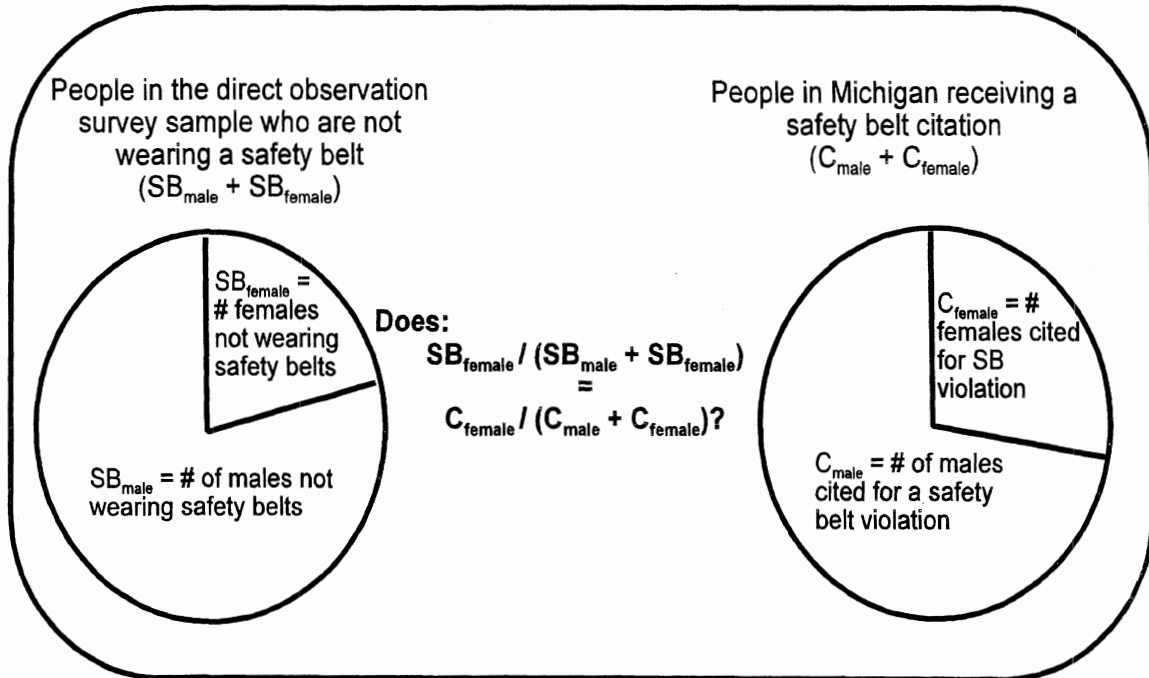


Figure 1: Graphical representation of Analysis 1.

The second analysis will compare the risk of receiving a safety belt citation for members in the group under consideration (for example, females) who are not using a safety belt to members of the complementary group (in this case, males) who are not using a safety belt. The analysis method is similar to the first method except that it allows us to compare among complementary groups (for example, White; Black/African American; all other races). This analysis method will also allow us to determine the risk of a group member receiving a safety belt citation by either miles driven or group population. This comparison will be made using appropriate statistical tests.

These analyses will consider data across the entire state of Michigan, allowing us to assess the issue of harassment on a statewide basis. However, some groups in the state may find value in an assessment of harassment on a regional basis. Our ability to study harassment regionally is dependent upon our ability to determine safety belt use in a region and the presence of groups on the roadways in that region. Wayne County, which includes the city of Detroit, contains about one quarter of Michigan's population and is responsible for about one-quarter of the state's vehicle miles traveled. Because of this, our statewide direct-observation of safety belt use survey design separates Wayne County from the rest of the state as its own region (see e.g. Eby & Vivoda, 2001 for a discussion). As previously discussed, a variation of this design will be used for the direct-observation study proposed in this work plan. Thus, we will be able to determine safety belt use by race in Wayne County as well as the presence of various racial groups on the roadways in this county. Therefore, we plan to analyze Wayne County separately and report regional harassment information for this county only.

Is there a statistical over/under representation of safety-belt convictions in a group considering that group's size in the population and the rate of safety belt use of the particular group? How does this over/under representation compare with previous years?

This set of questions will be investigated in the same way as described earlier, except that safety-belt convictions, rather than citations, will be considered. Conviction information will be collected by contacting each of the 168 District and Municipal Courts in Michigan on a yearly basis to collect the date and driver license number of each safety belt conviction in Michigan. Early in the first year of the project, all District and Municipal Courts will be contacted to collect information on safety-belt convictions during the years prior to Michigan's change to standard enforcement. Discussion with selected District and Municipal Courts showed that this information is saved for at least two years. Sex, age, and race information for each conviction will be obtained by matching the driver license number with the MDR. Age and race will be determined from these records in the same way

described for citations. The statistical analyses will be identical to those described for citations, except that conviction information will be utilized rather than citation information.

Do cited drivers perceive safety belt harassment?

As suggested by the Michigan Department of State, another way to assess safety belt harassment is to determine drivers' perceptions of harassment. While this measure should not be taken as a measure of actual harassment, it can be quite useful for state agencies in understanding the effects of standard enforcement legislation.

We will assess perceptions of safety belt harassment by conducting a yearly telephone questionnaire survey of a randomly-selected sample of drivers cited for safety belt violations during the preceding year. Based on the population of Michigan drivers, we estimate that 800 completed interviews per year will be adequate to differentiate perceived harassment by age group (16-to-22; 23-to-29; 30-to-64; 65-up), sex (male; female), and race (White; Black/African American; all other races). We will develop the questionnaire, analyze the data, and report results. The data collection (telephone interviews), however, will be conducted through the services of a professional survey-research firm. This firm will be selected using University of Michigan purchasing procedures, which include a competitive bidding process. As part of the development of the survey, we will submit the survey plan (including the questionnaire) to the University of Michigan Institutional Review Board (IRB) for human subject research approval as required by University and Federal procedures.

The sample for the telephone survey will be drawn from the citation information gathered from the courts as described earlier. Selection of the survey sample will take into account the fact that telephone numbers are not available on drivers' license records and will have to be obtained through a telephone matching process which typically results in about a 70 percent match rate.

The actual questions for the questionnaire will be developed after thorough review of appropriate literature and similar surveys of harassment. While the final list of topics will be determined during the project, we expect that questions will explore some of the following topics:

- ▶ General perceptions of safety belt use and importance of safety-belt use;
- ▶ Stated reasons for the stop;
- ▶ Police actions during the stop;
- ▶ Other citations issued;
- ▶ Police attitude during the stop;
- ▶ Number of previous stops;
- ▶ Perceptions of reason for the stop and citation;
- ▶ Respondent demographics, including race, age, and sex.

We will develop the wording for the questionnaire instrument with the survey-research firm. The survey-research firm will code the instrument for a Computer Assisted Telephone Interview (CATI) system and will pretest it on a sample of about 50 respondents (not included in the final set of 800) using professional interviewers from the survey research firm. After pilot-testing we will review the results from the pretest with the survey research firm and finalize the survey instrument.

The telephone interviews will be conducted by the survey-research firm using the CATI system. Although the survey-research firm will monitor the telephone interviews systematically, we will also monitor these interviews, particularly at the start of the study and periodically throughout. Special care will be taken that the demographics of the completed interviews are representative of the population of drivers from which the sample was drawn.

Once the telephone interviews are completed, the survey-research firm will check the CATI data for inconsistencies, develop a working data file, and give all data to us for analysis. We will analyze the data for perceptions of harassment for the total group and by

age, sex, and race. All analyses will be weighted so that the results of the survey can be generalized to population of Michigan drivers cited for a safety-belt violation. Results of the first year's survey will serve as a baseline against which any changes in the perceptions of harassment in Michigan's population of drivers cited for safety-belt violations can be assessed.

Project Time Line.

The time line for all research tasks is shown in Figures 2 and 3. As shown in this time line, tasks 1-3 will be completed during the first year of the project; tasks 4 and 5 will be completed during the second year; and tasks 6-8 will be completed during the third year of the project.

The first year tasks will commence with the development of a work plan (the present document). This work plan will be presented to the Technical Review Committee (TRC) and revised based upon TRC and Department of State feedback, with a final version finished by June 30, 2001. Prior to beginning research tasks for the project, the University of Michigan requires that we submit plans for all proposed research involving human subjects to the IRB for review and approval. In order to facilitate the acquisition of court and police records, we will obtain letters of support from the Michigan Secretary of State, as well as the directors of the Michigan State Police, the Michigan Association of Police Chiefs, the Michigan Sheriffs Association, the District Court Administrators Association, and others who are deemed appropriate.

Once letters are obtained, we will contact the enforcement and civil rights agencies and courts to begin the process of obtaining harassment incident records (from law enforcement agencies, MDCR, ACLU, NAACP) and citation and conviction information (District and Municipal Courts) from the year prior to the implementation of standard enforcement. At the same time, we will also collect the same information for the first year of standard enforcement. During this time we will be in contact with the Michigan Department of State to begin the process of obtaining Master Driving Record (MDR)

information for all people in Michigan convicted of a safety belt violation in the previous two years. These tasks will be repeated during the second and third years of the project.

During each year of the project, a telephone questionnaire will be administered to a sample of people convicted of a safety belt violation during the previous year. During the first year of the project, we will design and pilot test the questionnaire, as well as hire a survey-research firm to administer the questionnaire. The questionnaire is scheduled to be administered in the month of June for the first year and in the month of May for the following two years. The May date is necessary for the last two years of the project so that we will have adequate time to complete the final report in the last year of the project.

An integral part of this project is the statewide determination of safety belt use rates in Michigan by sex, age, and race. A statewide direct observation survey of safety belt use will be conducted each year to obtain this information. During the first year of the project, the safety belt survey will be designed and conducted in April. The survey will then be conducted in April for the two subsequent years.

Data entry and analysis will take place throughout the latter half of each year. As data are collected, test analyses will be performed to check accuracy of data collection and analysis programs. Once all data for a project year are collected and entered electronically, final analyses will be performed. These tasks will be repeated during each project year.

For each project year, an annual report will be drafted and submitted to the DOS for review. The annual reports will be revised based upon feedback we receive. The first year's final report (year 2000) will be the work plan. The second year's annual report (year 2001) will contain results from the first year of the project. The third year's annual report (year 2002) will present the results of the second year of the project. Third year results will be presented in the final report for the entire project.

After the third year's research and annual report activities are completed, we will draft

a final project report. This report will include all results and conclusions from all years of the project. The report will be presented to the DOS and revised based upon their comments.

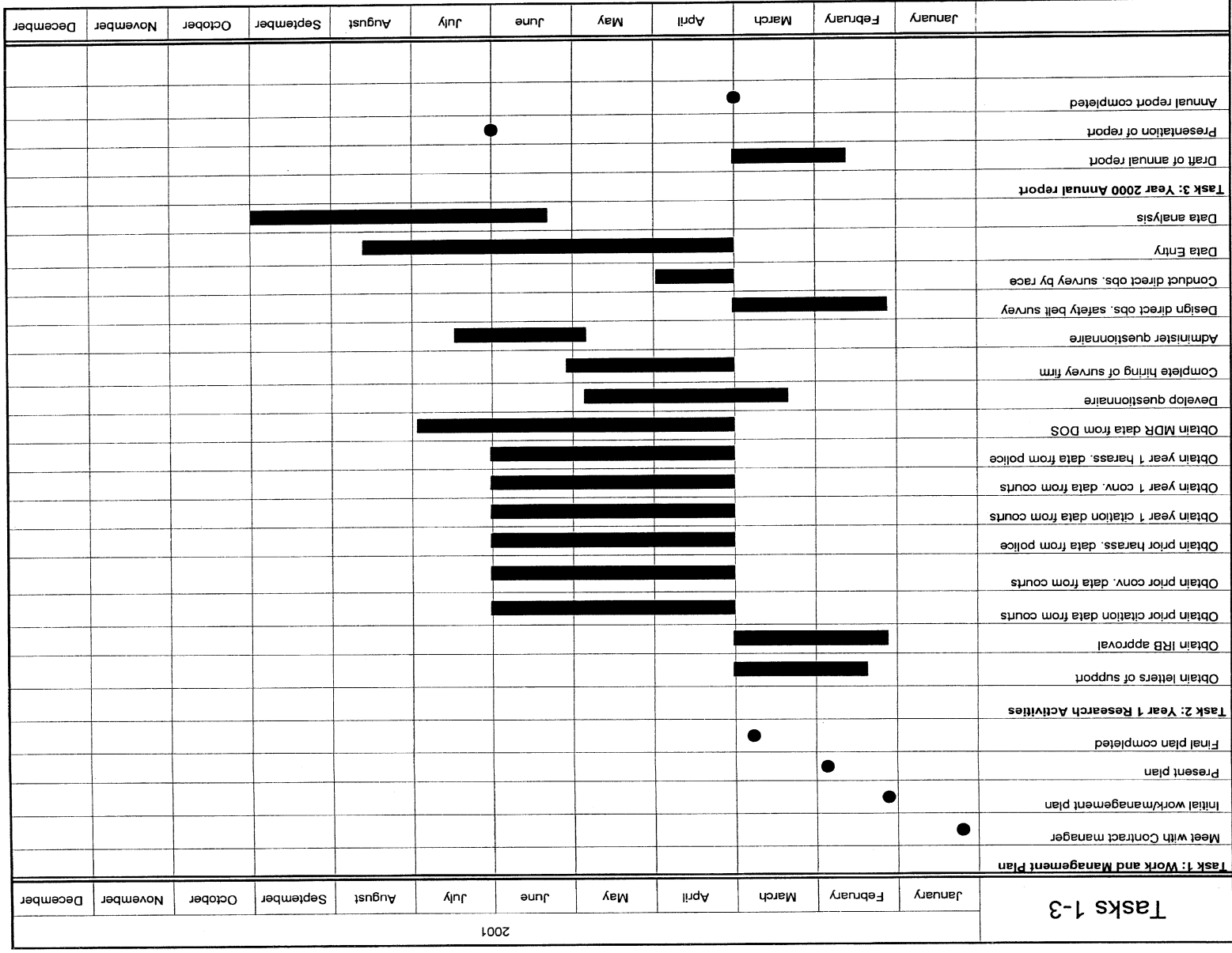


Figure 1.

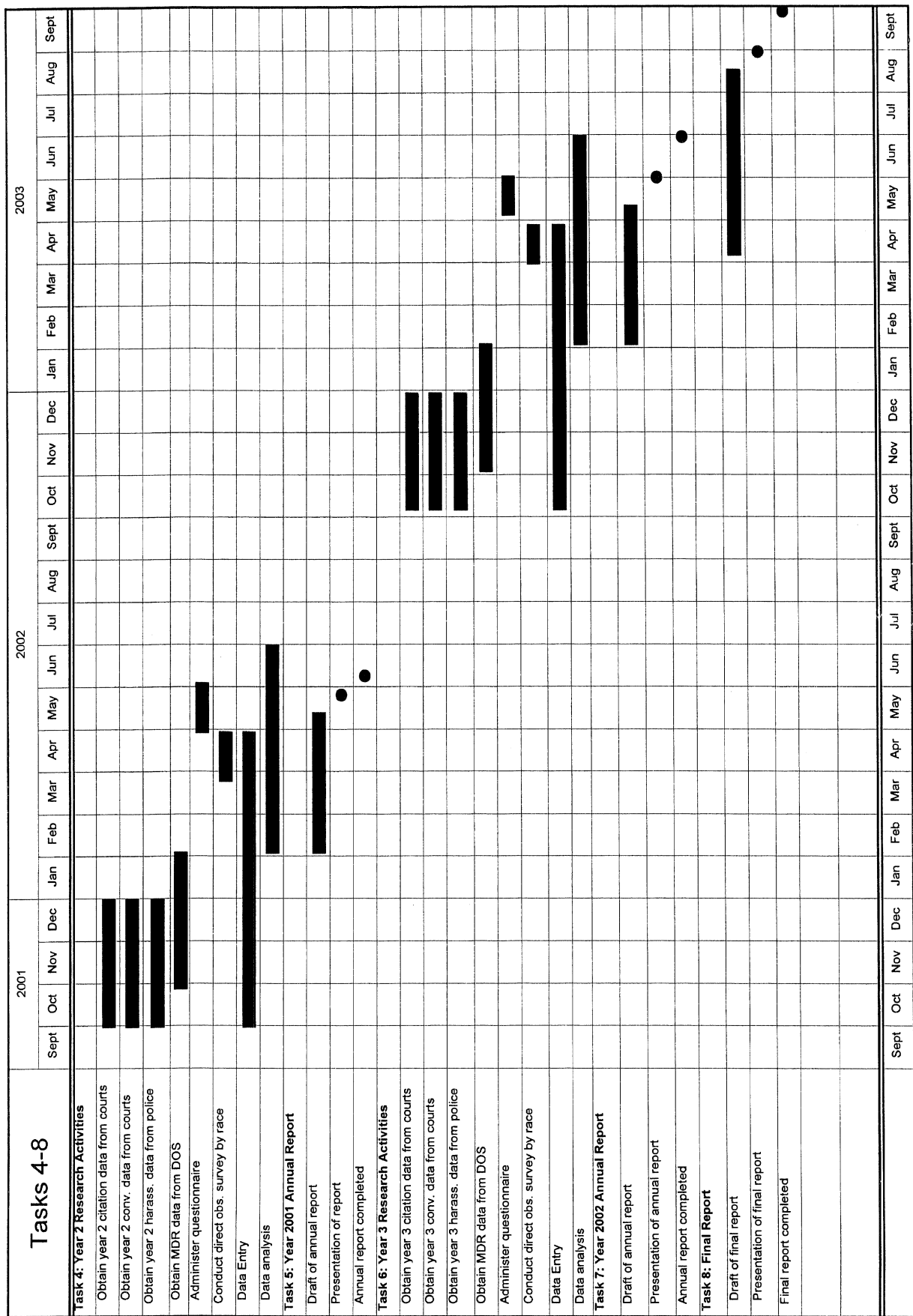


Figure 2.

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