

The Taxi Driver Survey on Motor Vehicle Safety and Workplace Violence

Request for Office of Management and Budget Review and Approval for Federally Sponsored Data Collection

Section B

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B. Collections¹ of information Employing Statistical Methods

1. Respondent Universe and Sampling Methods

Licensed drivers frequent the airports for larger fares during the day. A systematic random sample of drivers will be obtained as drivers are waiting in line for a fare at the airport. With a random starting point each day, interviewers will approach every third driver for eligibility screening. If eligible and willing, drivers will be invited to participate in the study and, if verbal assent is provided, they will be given a copy of the consent form and the interviewer will administer the survey.

The target study population will be all licensed taxicab drivers in Houston and Los Angeles who meet the following criteria:

- (a) be licensed to a drive a taxicab in their city for at least 1 year,
- (b) work at least 30 hours per week driving a taxicab for the past 1 year in study city,
- (c) provide verbal assent to participate in study and be willing to complete survey
- (d) have not previously participated in the study

We anticipate approaching 550 drivers until we have interviewed at least 500 taxicab drivers in each city (1000 total). For the descriptive aspect of motor vehicle incidents (such as crashes) we assume the outcome rate for drivers is 20% experience motor vehicle collisions (nonfatal) (Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses, 2012); the precision of the estimate from the survey for the incident rate based on 95% confidence intervals and binomial error distribution will be $\pm 4\%$. Assuming the annual rate of the combination of physical and verbal assaults, robberies, and fare evasion is 15%, we will have a precision of $\pm 3\%$. There is no other research available to provide estimates and the motor vehicle objectives for this study are the first study (to our knowledge) to measure road safety and motor vehicle collisions among taxicab drivers.

The main comparisons in this study are proportion of non-fatal workplace violence events by presence of security camera installed in taxicab. A random, systematic sampling strategy will allow us to obtain a study sample with a distribution of safety equipment that reflects the population (in Houston: 70% respondents will have cameras, 30% will not; in Los Angeles: 50% will have cameras, 50% will have partitions, per city transportation regulators, 2014). To estimate the power to determine the effectiveness of the cameras in reducing the combination of physical and verbal assaults, robberies, and fare evasion, we made the following assumptions:

- a) The annual background crime rate without cameras is conservatively estimated at 15%,
- b) We are able to conduct 500 surveys per city,
- c) The analysis is done with logistic regression (dependent variable is experiencing a workplace violence incident in 12-month timeframe and independent variable is camera installation status),
- d) Alpha is set at 0.05.

Due to previous findings published by the Project Officer, safety ordinances are being updated and cities are adopting new types of safety equipment. For the study objectives relating to workplace violence, it's important we have a city whose drivers use either a camera or not, and a city whose drivers use either a partition or camera. There are no cities where drivers use both a partition and a camera, as this would incur costs of two major, expensive types of safety equipment on the driver.

The following table describes the sample universe and power calculations based on 10,000 simulated data sets by city for each outcome (MVI and violence):

Sample Universe:	Houston, TX	Los Angeles, CA
All Taxicab Drivers	4400	4000
Sample	500	500
80% Response	500	500
Camera users	350 (70%)	250 (50%)
Power		
33% violence reduction (15% to 10%)	0.36	0.38
50% violence reduction (15% to 7.5%)	0.71	0.76

2. Procedures for the Collection of Information

Survey Team recruitment: Led by the NIOSH Principal Investigator and co-project PIs, a competitive contract will be awarded to a company that provides data collection services in each city. It is proposed to employ a survey team of a study manager and 3-5 survey staff on-site in each city to complete the survey. The NIOSH Principle Investigators/Project Manager for the study will interview and approve all contract survey staff to confirm their competency to conduct interviews.

Per Federal Wide Assurance requirements, the project manager and survey staff will be required to register for and undergo research ethics training that fully meets CDC’s minimum requirements and will be included as part of the contract requirements. Project managers and survey staff will be required to register for and complete the NIH course located at <http://phrp.nihtraining.com/users/login.php>. Once completed, the project manager will provide the certificates of completion to Srinivas Konda, NIOSH project manager, or Cammie Chaumont Menéndez, NIOSH project officer, who will provide hardcopies to Kathy Masterson at NIOSH HSRB per IRB requirements. Then training of contract project manager and survey staff will begin.

Survey Protocol: Study managers and survey staff will be trained in conducting surveys approximately 1-2 weeks before the interviews begin. Each surveyor will introduce the study to the driver, ask if they have already participated, invite them to participate, summarize the consent form, and once they have provided informed assent (Appendix 1) provide a copy of the consent form to the driver. Study participants will be surveyed near or inside their cab, for the convenience of the driver while still preserving privacy. The survey was pilot tested and is expected to take 30-40 minutes to complete (Appendix 2). Once completed, the driver will be issued a \$25 check card as an incentive for his participation.

It was our initial plan to approach drivers at inspection sites, however, not all drivers get inspected at the same rates and drivers are required to answer questions about the functioning of their cab while waiting, precluded the opportunity to have uninterrupted and completed interviews. Taxicab regulators highly recommended going to airport waiting lots.

Following completion of the interviews, the study manager will collect the surveys each week from surveyors. The study manager will do quality assurance checks on completion of forms and surveys, and FedEx documents to NIOSH weekly.

Pilot Test Survey: The survey was reviewed and revised with input from several staff members in the City of Houston Department of Administrative and Regulatory Affairs for clarity and relevance to taxicab drivers. Furthermore, a long time taxicab driver turned activist against violence directed at taxicab drivers and a long serving taxicab regulator were instrumental in the development phase of the survey.

Surveys were administered to 9 taxicab drivers. Questions on road safety behaviors were taken from previously validated surveys administered to workers who drive medium-sized vehicles for a living. The surveys were

pilot-tested by the NIOSH project officer (Dr. Cammie Chaumont Menéndez). The pilot test identified survey questions that drivers could or would not answer, questions which needed clarity, and the procedure to successfully complete a survey. Following completion of the pilot study, the taxicab driver survey was revised. For example, it is helpful to drivers to hold up a card listing the anchors for questions that are part of a scale and require the drivers to respond within a continuum (1 through 10); holding up the card while asking the question will help the driver with organizing his thoughts to provide the most accurate response.

We limited our responses to experiences occurring no earlier than 12 months in the past as recall bias for traumatic injury based on previous research suggests recall for more than 1 year becomes less valid (Landen & Hendricks, *Public Health Reports* 1995;110(3):350-4).

We checked the readability score of the survey using the following website, <https://readability-score.com>. Included are 5 different indices for readability: Flesch-Kincaid Grade Level, Gunning-Fog Score, Coleman-Liau Index, SMOG Index and Automated Readability Index. The average across all five indices was 3.5 – which is a third/fourth grade reading level. None of the indices scored the survey at a grade level higher than 6.

Surveyor Training: NIOSH PIs will train survey staff in each city on survey procedures. Training will include procedures for obtaining assent from drivers, texts for introduction to taxicab drivers, and survey administration procedures. Taxicab driver interviews at airport taxicab waiting lots will be conducted by the project officers and surveyors together to complete training for taxicab driver surveys. Training will also be given to study managers on QA procedures, security of records and submissions of forms and questionnaires to NIOSH. Surveyors will be trained to summarize the consent form and provide a hardcopy to each participant who agrees to be in the study.

Quality control and data editing: A NIOSH program manager will be available to help the survey team throughout the survey. Weekly conference calls will be held with the survey teams in each city to keep a log of problems and solutions. NIOSH data editing staff will receive forms, and check forms and surveys for completeness and errors. Survey staff will be asked to review each survey for administrative errors or missing fields before providing the driver with the compensation and thanking him for study participation. Any errors in application of the survey administration protocol will be discussed with survey staff to ensure adherence to the survey protocol.

Minimizing nonparticipation: Taxicab drivers are a difficult population to reach and generally choose this occupation because of its independence and autonomy. Because the drivers will be compensated for their time and, based on many conversations between the project officer and taxicab drivers in the past, the topic of workplace violence is of interest to them, there is expected to be minimal nonparticipation. The compensation is considered necessary because the time spent waiting is usually used to line up fares later on in the day or network with other taxicab drivers regarding work-related issues. Furthermore, due to time constraints and wariness of drivers to be linked to any data, drivers will not be asked to provide their names.

3. Methods to Maximize Response Rates and Deal with Nonresponse

Several procedures will be implemented to maximize response rates. First, we have the support of the transportation regulators for each city. The regulators will encourage the taxicab drivers to be responsive to survey interviewers who will explain the study. Second, taxicab drivers who participate will be offered (\$25) in appreciation for their time and interest. Third, site visits will be made by the interviewer to the taxicab airport waiting lots to examine the premises to determine how to approach the taxicab drivers in a least intrusive setting.

Compliance rates are expected to be over 80% due to offering \$25 in appreciation for their time and interest. First, support from support from transportation regulators will maximize participation. Second, the proposed survey methodology was successful in the past in a survey of chronic health problems in taxicab drivers in

NYC. It was suggested by the researchers of the NYC study that offering remuneration for time and interest would be invaluable for participation. Third, a pilot test among 9 taxicab drivers was completed, which provided insight into maximizing participation.

We are limited in our ability to measure nonresponse bias as this population is very difficult to reach (akin to migrant farm workers). In order to allow us to address some issue of non-response bias, we will add questions to our participation log that documents how many drivers are approached and how many agree to participate. For each driver approached (whether they participate or not) we will document the time (to measure non-response bias by time of day), the taxicab business (to measure non-response bias by business) and response to screening question asking if driver has been licensed to drive in current city for 12 months (to measure non-response bias by experience). While not a comprehensive measure of non-response bias, it will provide a measure of bias due to non-response that can be reported with study findings.

4. Tests of Procedures of Methods to be Undertaken

The survey protocol including the Taxi Driver Survey was pilot tested among 9 taxicab drivers. Since this is the first study, to our knowledge, to evaluate safety features in taxicabs as they relate to workplace violence events among taxicab drivers there are no surveys to borrow from or compare ours to. The surveys were examined by transportation regulators, interested taxicab drivers and other stakeholders. Regarding the motor vehicle safety behavior questions, they were borrowed from leading researchers in Australia who developed and validated an Occupational Driving Behavior Questionnaire designed for nurses who drove as a part of their job. Specifically, the constructs for role overload, distracted driving, rule adherence and aggressive driving were modified for taxicab drivers and used in the design of our survey. The questions on safety climate were taken from the short-form scale of safety climate designed, tested and validated by an occupational safety and health researcher and modified for taxicab drivers.

A NIOSH protocol for the full study has been peer-reviewed by a committee of grant proposal reviewers and is in the process of receiving NIOSH HSRB review and approval. There are no plans for changing the survey methods or instruments prior to the survey. In the event that any changes need to be made, OMB will be informed of these changes and NIOSH HSRB will review and approve changes.

5. Individuals consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

Key personnel providing statistical consulting, data collection, and study design are provided below.

Statistician consulting: Completed the power calculations and developed the sampling methodology:

Scott Hendricks, M.S.

Statistician

Analysis and Field Evaluations Branch

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Data collection: Taxi Driver Survey will be done by contract employees: Contract to be awarded in FY13. OMB will be notified upon contract award. If contract cannot be awarded then data collection will be done by project officer and trained interviewers.

Study design, data collection, and analysis: The principle investigator (NIOSH project officer) is responsible for the study design, management of the data collection, management of the system of records, and analysis of the data:

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