BTSCRP Project BTS-17

Determining the Effectiveness of Combined High-Visibility Enforcement

Tech Brief: Implementation of Research Findings and Products

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1. PROJECT OBJECTIVES AND SUMMARY

The goal of this research was to develop an evaluation framework, which included methodologies to determine the effectiveness of high-visibility enforcement (HVE) campaigns. To accomplish this goal, the following objectives were proposed:

- Identify methods used by agencies to measure the effectiveness of HVE campaigns
- Identify agency practices and approaches for detecting road user behaviors to target HVE campaigns
- Develop and assess evaluation frameworks suitable to evaluate the effectiveness of HVE campaigns

The main outcome of this project was the development of frameworks that agencies can use to evaluate the impact of an HVE campaign. In particular, the frameworks will assist agencies in evaluating the impacts of combined HVE campaigns on chosen performance measures. A combined HVE campaign is usually a single HVE campaign that targets two or more behaviors, for instance, both impaired driving and seat belt use.

The team developed the frameworks to meet two objectives. The first objective was to select methods based on the resources agencies typically have available to assess impact. For instance, most agencies are law enforcement officials who may have little background in statistics and have few additional resources. The team developed two frameworks, which can be used in these situations (*Data Visualization* and *Simple Before and After*). The second objective was to provide more rigorous statistical frameworks for agencies who have the in-house skills or resources to use outside consultants to develop more robust analyses that are capable of identifying the impact of individual factors, which can contribute to campaign effectiveness. The team developed two additional frameworks with this objective in mind (Classical Statistical and Spatial/Temporal). The report provides a description for the methods outlined in each framework.

The project team demonstrated the feasibility of each framework in evaluating combined HVE (two or more themes) using several examples. All of the frameworks can also be used for evaluation of regular HVE (single theme), but the report includes the section specific to combined HVE to show how well the models can be adapted to evaluate the impact of combined HVE.

The framework also included an evaluation of several common HVE performance measures using the datasets described in the previous section. The frameworks included:

- Data Visualization Framework
- Simple Before-After Analysis Framework
- Classical Statistical Analysis Framework
- Spatial and/or Temporal Effects Framework

The research products developed include:
- Final report, which documents project tasks and the four evaluation frameworks

- A PowerPoint presentation which can be used to showcase project results
- A memo describing future research needs
- A memo describing an implementation plan (this document)

2. IMPLEMENTATION PLAN

2.1 Background

2.1.1 Likely Champions

The main champions who are likely to take leadership in deploying the research products are relevant state and national organizations/committees such as the Governors Highway Safety Association (GHSA), GTSB, National Transport and Safety Authority (NTSA), State Highway Safety Organization (SHSO) personnel, state traffic or safety engineers, and law enforcement organizations.

2.1.2 Research Products

Additional research products that could be developed with the outlined implementation plan include:
- Workshop material crafted to be utilized by other trainers
- Short report on data sources and examples of how these could be applied to evaluate HVE

2.1.3 Assumptions/Constraints/Risks

It is assumed that all resources needed to accomplish the implementation plan are readily available. It is also assumed that the information is of interest to national organizations, and they will be willing to work with the team to set up workshops.

No risks are foreseen since the proposed plan is reasonably straightforward and does not entail significant input from other groups.

The main constraints are the willingness of national organizations to coordinate with the team.

2.2 Implementation Description

2.2.1 Major Tasks

Further implementation includes several tasks as described below.

Task 1: Develop workshop material and host workshops: The first step for task 1 includes developing workshop material, which can be used to train safety professionals to conduct evaluations of HVE or combined HVE. Workshop material will be developed so it can be used by the team as well as used "off the shelf" for other trainers who are interested in utilizing the material to train other agencies. Workshop materials would include:
- PowerPoint presentations with comprehensive notes

- Supplementary trainer material (e.g. notes, additional examples)
- Handout material for attendees
- Recorded workshop

The workshop would consist of the following topics:
- Summary of how agencies currently evaluate HVE
- Descriptions of datasets that can be collected and utilized in evaluation of HVE
- Best practices in collecting and archiving campaign data for HVE
- Overview of simple statistical methods to evaluate HVE
- Overview of advanced statistical methods to evaluate HVE

The next step would be to deliver 2 to 3 workshops in conjunction with several national conferences attended by safety professionals. A list of potential meetings include the following:

- Governors Highway Safety Annual Meeting (GHSA)
  - Sept. 2024 – Indianapolis, IN
  - Aug. 2025 – Pittsburg, PA
- ITE International Annual Meeting and Exhibition
  - July 2024 – Philadelphia, PA
  - Aug. 2025 – Orlando, FL
- AASHTO Safety Summit
  - 2025 – not currently listed
  - 2026 – not currently listed
- Lifesavers Conference on Roadway Safety
  - March 2025 – Long Beach, CA
  - April 206 – Baltimore, MD

Task 2: Identify additional databases: The purpose of this task is to identify several types of existing datasets not typically considered by agencies to evaluate HVE and to provide examples of how these datasets can be used. The first step is to describe the types of large data sets that are commercially available which could be utilized to obtain sufficient data to conduct robust analyses. This includes but is not limited to Wejo, Inrix, Streetlight, and Michelin data. These datasets contain information such as speed, seatbelt use, and roadway sensor data. Large datasets also include those, which are already collected by agencies, which could be utilized to assess HVE. This includes stationary sensor (e.g. ATR, RWIS), camera, etc. which can also be used to assess HVE effectiveness. Additional processing is needed for use of any of the described datasets in order for them to be useful to agencies for evaluation of HVE. As a result, the next step for this task is to outline how to curate these datasets for them to be useful. The last step for this task is to demonstrate how these datasets can be utilized. For instance, Inrix data can be used to show changes in speed before, during, and after an HVE campaign.

Task 3: Develop decision tools: Task 3 will develop a set of decision support tools, which can be used by agencies to determine which data and analysis methods are best suited for evaluation of a particular HVE metric. This would include decision diagrams to select data metrics and

analysis methods and flow charts to demonstrate data needs and modeling considerations. Tools will be developed to be utilized by law enforcement and others who carry out HVE activities rather than for researchers.

2.2.2 Target Audience

Target audience	Benefits
Law enforcement officers/agencies	Better understanding of the effectiveness of HVE which will result in better utilization of resources
Traffic safety engineers/professionals	Tools to better assess effectiveness of HVE
Policy makers	The ability to better assess the effectiveness of HVE can provide better information about the benefits of allocating resources to enforcement activities

The main champions who are likely to take leadership in deploying the research products are relevant state and national organizations/committees such as the Governors Highway Safety Association (GHSA), GTSB, National Transport and Safety Authority (NTSA), State Highway Safety Organization (SHSO) personnel, state traffic or safety engineers, and law enforcement organizations.

2.2.3 Additional Support

The outlined implementation activities will require the following types of support:
- Coordination with organizations who plan and host national conferences (i.e. GTSB, ITE, AASHTO, Lifesavers) in order to secure space and ideally be included in their agenda
- Coordination with agencies who have large datasets

2.2.4 Evaluation and Monitoring

The main performance monitoring tool is short surveys administered at the end of workshops to determine whether attendees found the information useful and felt they would be able to apply it in their agencies.   Feedback from attendees can be used to update final workshop material.

2.2.5 Final Deliverables

The expected final deliverables include:
- Workshop material developed so it can be utilized by other trainers which may include:
  - PowerPoint presentations with comprehensive notes
  - Supplementary trainer material such as examples
  - Handout material for attendees
  - Recorded workshop
- Short report on data sources and examples of how these could be applied to evaluate HVE
- Decision support tools