Evaluation of Michigan’s Ticketing Aggressive Cars & Trucks (TACT) Program

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Background

- **Ticketing Aggressive Cars and Trucks (TACT) Program**
  - Combination of high visibility enforcement, public information & education (PI&E) program, and evaluation to decrease traffic deaths and injuries from light vehicle (LV)/truck crashes by making general driving public more aware of the safe ways to interact with large trucks
  - Funded (in part) through grants from Federal Motor Carrier Safety Administration (FMCSA)
- In 2004, Washington State conducted successful pilot program
- FMCSA encouraged more States to implement TACT programs
  - FMSCA funded a TACT program in Michigan in 2013
  - UMTRI conducted the evaluation
Michigan TACT Program Area & Comparison Sites
Michigan TACT Program

- Coordinated by Michigan’s Office of Highway Safety Planning
- 3 Waves: Oct 7-18, Nov 4-15, Dec 2-13
- High visibility enforcement on TACT Corridors
  - ~2,800 hours of enforcement planned
  - Six enforcement agencies
  - Monday-Friday, 7 AM – 7 PM
  - Targeting light vehicles and trucks
    - Improper lane use, careless and reckless driving, speeding
    - Following too closely, failure to yield right of way
  - Use of marked and unmarked cars, violators to be stopped & ticketed, given pamphlet on LV/truck safe driving

- Media and PI&E Campaigns
  - Kick-off press conference
  - Billboards, paid radio ads
  - Press releases → TV and radio news stories
  - Public media event at Walmart
UMTRI’s Evaluation – Two Parts

- **Process Evaluation**
  - How was the program conducted?
  - Summary of activities

- **Program Outcome Evaluation**
  - What changed in TACT sites after the program in comparison to similar sites where TACT was not implemented?
    - Knowledge and Awareness
    - Unsafe Driving Behaviors
    - Truck/LV Crashes
Process Evaluation

- Was the Michigan TACT program carried out as planned?
  - UMTRI collected and summarized enforcement and media outreach data from OHSP.

Results

- Yes, enforcement carried out as planned.
  - Total of 2,569 enforcement hours.
  - 3,000 vehicles stopped (2,574 LV, 426 trucks)
  - Citations (2,281 LV, 247 trucks)
  - 90 arrests

- Yes, PI&E campaign carried out as planned.
  - Kickoff press conference
  - Community event at Wal-Mart
  - Billboards in 16 locations
  - Radio ad aired 350 times
  - Print/online articles
  - TV/radio news stories
  - Freeway message signs
TACT Program Outcome Evaluation

- Three studies
- Each used before/after + comparison design

1. Surveys
   - A) General driving public and B) Truck drivers
     - Driving behavior of LV near large trucks
     - Awareness of TACT program
     - Perceptions of being stopped by police for unsafe driving actions
     - Knowledge of safe/unsafe driving practices around trucks

2. Direct observational study of unsafe driving actions of light vehicles near trucks

Survey of Motorists & Truck Drivers

- Separate surveys of motorists and truck drivers in both TACT & comparison areas
- **Survey Questions:** driving behaviors; awareness of TACT program; perceived threat of enforcement; knowledge and opinions of unsafe driving behaviors
- **Total Motorist respondents** – 402 before (200 TACT, 202 compare) and 404 after (200 TACT, 204 compare)
- **Total Truck Driver respondents** - Total respondents – 184 before, 132 after
Results of Motorist/Truck Driver Surveys

- TACT messages successfully received;
  - After TACT, about 40% of light vehicle and truck drivers aware of “Leave More Space for Trucks” slogan; significant increase.

- Both thought it unlikely a car would be stopped by police for unsafe actions near truck; more likely a truck would be stopped. TACT program did not change this perception.

- No change in the ratings of how likely unsafe driving actions (e.g. speed, tailgating, improper passing, inappropriate merging) would contribute to a crash.

- Light vehicle drivers reported no change in their driving behaviors around large trucks. Truck drivers agreed.

- No change in how often motorists and truck drivers see unsafe driving actions by cars and trucks on the road.
Direct Observational Study

- Changes in Unsafe Driving Behaviors
  - Direct observational study of selected driving behaviors: passing and merging maneuvers near large trucks
  - TACT and Comparison corridors
  - Before TACT program: September 2013
  - After TACT program: January – March 2014
  - Protocols
    - UMTRI observers ride in large trucks
    - Identify and classify passing and merging maneuvers (safe/unsafe)
Results – Direct Observational Study

Lane change maneuver rate

- Safe lane change: TACT 97% → 95%; Comparison 91% → 94%
- Signal use: TACT 57% → 60%; Comparison 62% → 70%

Merge maneuver rate

- Safe merge: TACT 91% → 88%; Comparison 88% → 95%
- Signal use: TACT 72% → 72%; Comparison 49% → 48%

Some statistical differences – however

No practical differences in percentage of safe lane changes or percentage of safe merges near truck; no differences in signal use at TACT program sites
Crash Data Analysis

- **Hypothesis**: TACT Program reduced crashes related to aggressive driving by cars or trucks.
- **Crash data**: from January 2008 – April 2014 extracted from police crash reports
- **Target crashes**: Crashes involving trucks with a hazardous action by either the truck driver or the other driver.
- **Challenge**: Separate the effect of the TACT Program from all other factors that affect crash rates.
Method

- Control for top factors that affect crash rates:
  - Exposure—amount of travel by trucks and other vehicles.
  - State of the economy—can affect who drives and why, including discretionary travel.
  - Environment—primarily weather, affecting visibility and roadway friction.

- TACT program area and comparison area with no TACT program.

- Approach: Normal regression model
Results

- Effect of TACT program not detectible in crash data
- Timing with respect to the winter was particularly unfortunate, since the major factor on truck crash rates in December & January is snow.
- Better seasonal timing of TACT program, over more road mileage, and longer periods of time may produce different results.
Truck Crash Rate and Snow/precipitation

![Graph showing truck crash rates and snow/precipitation over time. The graph includes data from January 2008 to January 2014. Peaks indicate high crash rates, and the x-axis represents months with corresponding years.

The graph compares crashes per 1000 ADT with inches of rain+snow.

TACT waves are highlighted, indicating significant increases in crash rates during certain periods.

Crash rate (TACT): 
Snow+precipitation:

Inches of rain+snow

Crashes per 1000 ADT

Jan-08, May-08, Sep-08, Jan-09, May-09, Sep-09, Jan-10, May-10, Sep-10, Jan-11, May-11, Sep-11, Jan-12, May-12, Sep-12, Jan-13, May-13, Sep-13, Jan-14

0 0.5 1 1.5 2 2.5 3 3.5 4 4.5

0 10 20 30 40 50 60 70

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Structured interviews with LE who participated in TACT

- All agencies invited – three local agencies participated
- Themes of interviews – training, enforcement tactics, how was TACT enforcement different than other programs, what worked, challenges, effectiveness, suggestions for future

**Summary**

- Training: informal; not familiar with large truck violations
- Enforcement tactics: each agency assigned locations and hours, not much interagency coordination, lack of patch radio
- How different: not much different than other enhanced enforcement programs
- What worked: innovative use of orange traffic cones for judging following too closely
- Challenges: traffic congestion, peak period not good for enforcement, need space to pull violator over; snow
- Effectiveness: motorists obey laws when police present – revert back to old behavior when police not present
- Suggestions: would like to have more guidance on specific vehicle code violations, more formal training, more coordination between agencies
Conclusions

- TACT public awareness campaign worked well
- Could not detect effects on driving behavior
  - Possible reasons: timing and snow
- Lessons learned for future programs
  - Better timing
  - Better interagency coordination and training
  - Longer corridors, possibly I-94
Final Report

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Questions?
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