MPC-371

January 1, 2012 – December 31, 2012

Project Title:
Decision Support for Strategic Truck Safety and Weight Enforcement Planning

University:
North Dakota State University

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Research Needs:

Trucks are critical in rural-economy market connectivity in where natural resource based goods are delivered to processors and consumer markets. The role of trucks in oil development is evident in the rapidly expanding fleet that operates within and serves western North Dakota. A fixed capacity public road system, has greatly increased large truck-passenger vehicle interaction in the region. The associated increasing crash risk is evident in recent trends (Figures). Seventy percent of fatal and serious injury crashes occur on rural non-interstate roads.

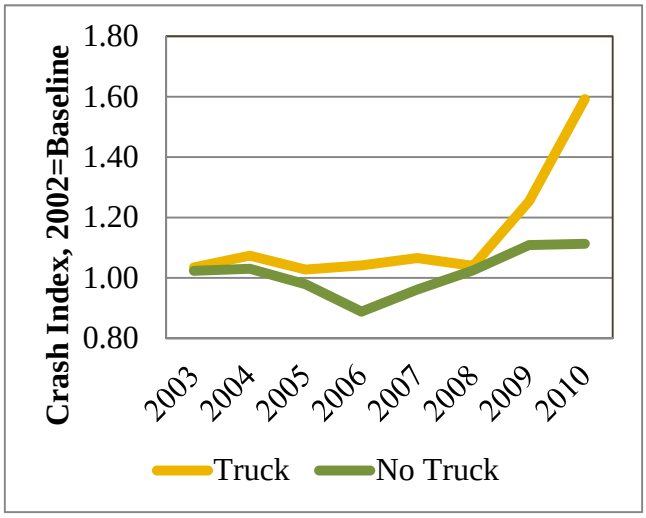

Figure1. Crash Trends, ND Crashes with Truck Involvement and with No Truck Involvement

Two critical aspects in minimizing potential crash risk associated with the interaction are education and enforcement.

Education can be offered through public information releases and media campaigns. These campaigns can be used to create greater awareness of the risks and needs for defensive driving. Coupling this education with enforcement is essential in providing sustainable traffic safety programs (Shults et. al 2004, Houston and Richardson 2006, Hedlund et. al 2008, and Nichols et. al 2008). Education efforts can be broad in nature such as encouraging drivers to respect right-of-

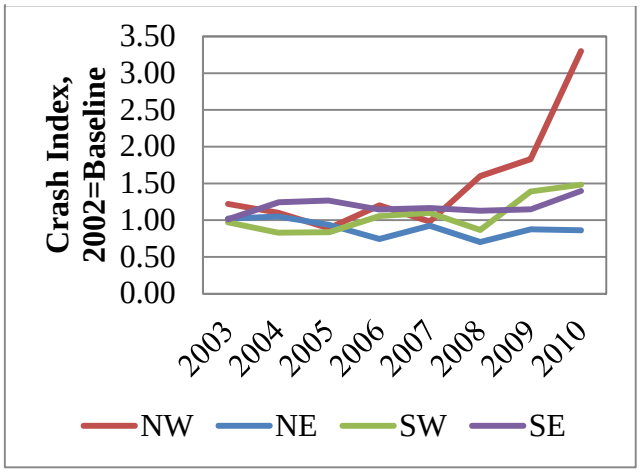

Figure 2. ND Regional Truck Crash Trends

way rules, stay out of the "no-zone" and promoting seat belt use by all occupants. Enforcement, however, is more complex given that the influence is determined by law enforcements' ability to appear ubiquitous given a fixed level of patrol resources. While data is always used in law enforcement planning, the ability to fully utilize multiple datasets and geospatial information may strengthen processes for shorter-term programs and longer-term strategies used to promote safety and responsibility in a dynamic truck market.

Research Objectives:
Provide quantitative and geospatial decision support material for the NDHP motor carrier unit to use in allocating limited resources for traffic safety, especially in a rapidly growing oil development region.

Research Methods:
Explore existing data sets to help enforcement allocate resources in an effective manner. Use descriptive statistics, means testing, and geospatial mapping of traffic safety and weight permit information in planning and concentrating enforcement.

Expected Outcomes:
The research will provide knowledge to industry and regulators for increasing traffic safety and infrastructure sustainability related to large truck operations. Additional knowledge may be used to further leverage current traffic safety efforts for targeting issues in safe car-truck interaction and safe truck operation. It should also contribute to increased local productivity through improved mobility and rural community health.

Relevance to Strategic Goals:
1. Safety
2. Human Factors
3. Heavy Vehicles & Commercial Trucks
4. Infrastructure Longevity
5. Traffic Operations & Management

Educational Benefits: NA

Work Plan:
1. Meet with local subject matter experts, including NDHP, FMCSA, industry, and local officials. (Month 1)
2. Identify potential data sets to be utilized in the research. (Month 1 and 2)
3. Explore datasets and potential for periodic and ongoing analysis for enforcement planning and program metrics. (Months 3&4)
4. Conduct statistical analysis to identify trends, norms, high-risk, etc. (Months 4&5)
5. Geospatial data creation/cluster analysis. (Months 5&6)
6. High-risk metric identification and monitoring process (eg. speed, weight, safety compliance failures, etc). (Months 7 thru 10)

7. Identify potential for systemic activities related to program assessment such as longer-term planning and shorter-term saturation or sustained patrols or other enforcement programs. (Months10 thru 12).
8. Draft report and TLN presentation. (Months 11 & 12).

Project Cost:
Total Project Costs: $ 64,000
MPC Funds Requested: $ 32,000
Matching Funds: $ 32,000
Source of Matching Funds: NDHP NDDOT In-kind
Waived indirect costs of $14,240
NDDOT driver and crash record retrieval at $2 per record $10,298
NDHP in-kind contribution of $5,962 for guidance, support, testing and implementation.

TRB Keywords:
Motor Carrier Safety, Commercial Vehicle Safety, Commercial Vehicle Operations, Enforcement, Longer Combination Vehicles, Combination Unit Trucks, Single Unit Trucks.

References:
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