Safety Benefits Framework



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Volpe The National Transportation Systems Center

Advancing transportation innovation for the public good



V2V Safety Framework

Maturing the V2V Research

> Initial Crash Problems

Performance <u>Measu</u>res

Testing Procedures

Interoperability Requirements

Initial Security
Models

Driver Vehicle Interface Guidance Model Deployment

Benefits Framework

Driver Clinics

Performance Testing

Model Deployment

Experimental Design

Evaluation

Evaluation Plan

Data

Conduct Evaluation

Run Simulations

Supporting Policy Elements

Implementation

Technical

Legal

Moving Towards a Decision

Safety Benefits

Performance Requirements

Test Procedures

Driver Acceptance

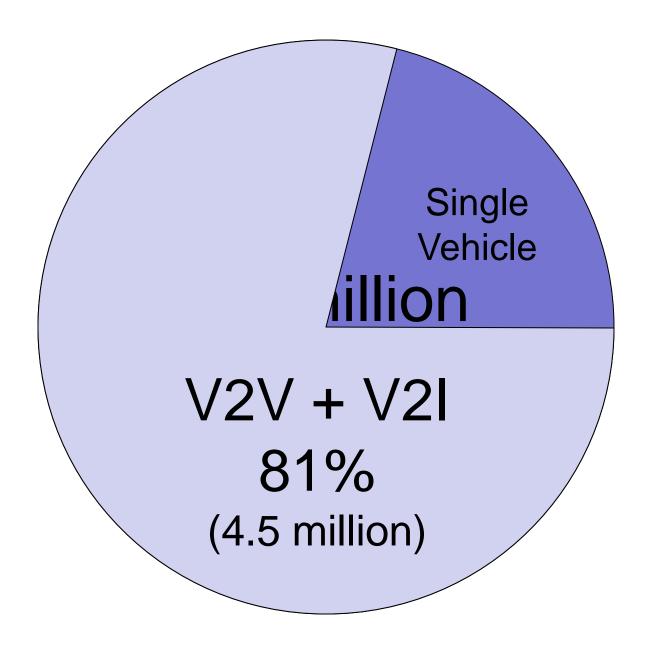
Moving Towards an Operation Model

Data Collection

Data Evaluation & Analysis

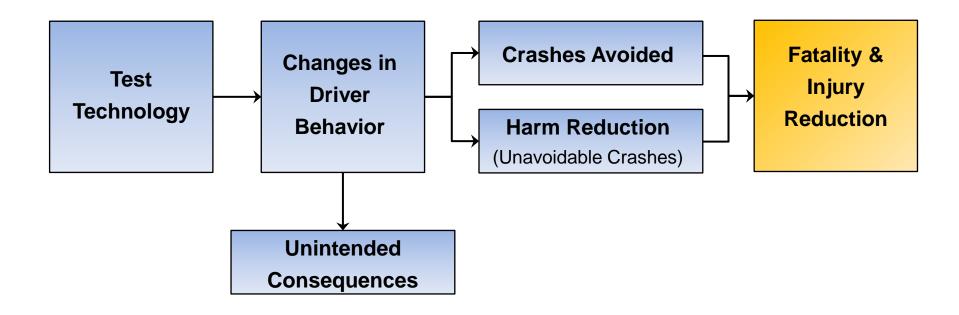
Establishing an Operational Environment

Results



*Frequency of Target Crashes for IntelliDrive Safety Systems, DOT HS 811 381, 2010

Safety Benefit Estimation Framework



Basic Equations

Crashes
Prevented = Crashes Crashes

without _ with

V2V V2V

Crash Harm Harm
Reduction = Without With
V2V V2V

Basic Equations

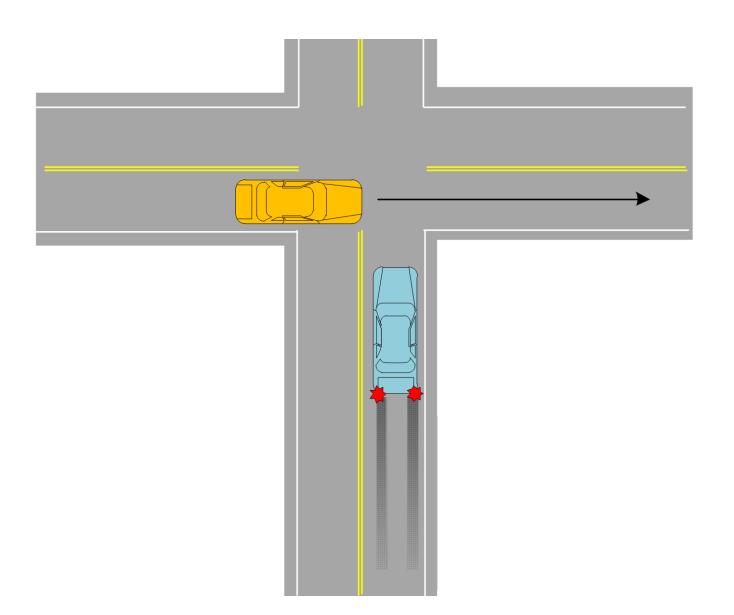
Crashes Prevented =
$$\frac{\text{Crashes with}}{\text{without}}$$
 $\frac{1}{\text{Crashes without}}$

Effectiveness = 1-

Crashes with Crashes without

National crash databases

Estimating Crashes: Conflicts



Estimating Crashes: Conflicts

