Traffic Incident Management Training Post-Course Assessment Tool Final Evaluation Report

U.S. Department of Transportation
Federal Highway Administration

FOREWORD

The *Final Evaluation Report for the Traffic Incident Management (TIM) Training Post-Course Assessment Training Tool* provides State and local agencies, decision-makers, and other users an overview of the student learning and impact of the multidisciplinary, multiagency training curriculum on operations. The Final Evaluation Report provides a description of the course participants and their perceptions of the training's effectiveness.

Mark Kehrli, Director, Office of Transportation Operations

Technical Report Documentation Page

1. Report No. FHWA-HOP-17-057	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Traffic Incident Management Training Post-Course Assessment Tool Final Evaluation Report		5. Report Date August 2017	
		6. Performing Organization Code	
7. Author(s) Rebecca Brewster		8. Performing Organization Report No.	
9. Performing Organization Name and Address Battelle American Transportation Research Institute 505 King Avenue 2060 Franklin Way, SE, Suite 201 Columbus, OH 43201 Marietta, GA 30067		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTFH61-12-D-00034	
12. Sponsoring Agency Name and Address U.S. Department.of Transportation Federal Highway Administration (FHWA) Office of Operations 1200 New Jersey Avenue, SE Washington, DC 20590		13. Type of Report and Period Covered Assessment 10/1/2015- 8/15/17	
		14. Sponsoring Agency Code HOTO-1	
15. Supplementary Notes			

16. Abstract

This document serves as the Final Evaluation Report for the Interdisciplinary TIM Training as captured through use of the TIM Training Post-Course Assessment Tool. The tool is used to assist the Federal Highway Administration (FHWA), State and local agencies responsible for TIM operations, with the ability to assess student learning and the impacts TIM training has on operations. The document describes aggregated data from the tool from inception through August 15, 2017 and summarizes the findings from the individual quarterly reports produced in March 2016, July 2016, October 2016, April 2017, June 2017 and August 2017.

17. Key Words Training, surveys, TIM, evaluation		18. Distribution Statement No Restrictions	
19. Security Classif.(of this report) Unclassified	20. Security Classif.(of this page) Unclassified	21. No. of Pages 52	22. Price

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
LENGTH				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
AREA				
in²	square inches	645.2	square millimeters	mm²
ft²	square feet	0.093	square meters	m²
yd²	square yard	0.836	square meters	m²
ac	acres	0.405	hectares	ha
mi²	square miles	2.59	square kilometers	km²
VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft³	cubic feet	0.028	cubic meters	m³
yd³	cubic yards	0.765	cubic meters	m³
NOTE: volumes greater than 1000 L shall be shown in m³				
MASS				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
TEMPERATURE (exact degrees)				
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C
ILLUMINATION				
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m²	cd/m²
FORCE and PRESSURE or STRESS				
lbf	poundforce	4.45	newtons	N
lbf/in²	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
LENGTH				
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
AREA				
mm²	square millimeters	0.0016	square inches	in²
m²	square meters	10.764	square feet	ft²
m²	square meters	1.195	square yards	yd²
ha	hectares	2.47	acres	ac
km²	square kilometers	0.386	square miles	mi²
VOLUME				
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m³	cubic meters	35.314	cubic feet	ft³
m³	cubic meters	1.307	cubic yards	yd³
MASS				
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
TEMPERATURE (exact degrees)				
°C	Celsius	1.8C+32	Fahrenheit	°F
ILLUMINATION				
lx	lux	0.0929	foot-candles	fc
cd/m²	candela/m²	0.2919	foot-Lamberts	fl
FORCE and PRESSURE or STRESS				
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in²

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ABBREVIATIONS AND SYMBOLS

ANSI……………………………………….…………American National Standards Institute

DOT ....Department of Transportation

EMS ....Emergency Medical Services

EMT .... Emergency Medical Technician

FHWA..Federal Highway Administration

HAZMAT ....Hazardous Material

ICS………………………………………………………..Incident Command System

ISEA………………………………….……………International Safety Equipment Association

MUTCD…………………………………………..Manual on Uniform Traffic Control Devices

NHI ....National Highway Institute

SHRP2…………………………………...………….Strategic Highway Research Program 2

TIM .... Traffic Incident Management

TtT……………………………………………………………..…Train the Trainer

TMC……………………………………………………………..Traffic Management Center

EXECUTIVE SUMMARY

The Federal Highway Administration (FHWA) National Highway Institute (NHI) offers the National Traffic Incident Management (TIM) Responder Training Course. The course provides first responders with a shared understanding of the requirements for the safe, quick clearance of traffic incident scenes; prompt, reliable and open communication; and motorist and responder safeguards.

The FHWA Office of Operations sponsored the TIM Responder Training Program Post-Course Assessment Tool which provides FHWA, State, and local agencies responsible for TIM operations, the ability to assess student learning and the impacts TIM training has on operations.

This final evaluation report provides an analysis of the data entered into the tool by course participants and their respective supervisors, agency administrators and/or senior management from the date of inception through August 15, 2017 (when the data for the last quarterly report was exported from the tool). As described in this report, the data captured in the tool demonstrates a clear return-on-investment from the TIM training.

The participants in the training have consistently rated their training experience as positive since the inception of the tool. High marks are given to the trainers in the train-the-trainer (TtT) course and to the instructors in the responder course. Among TtT course participants, the instructors received an average **98.6 percent positive rating** across the six quarterly reports. Among responder course participants, the trainers received an average **96.4 percent positive ratings** across the six quarterly reports.

Post-training impacts also received high scores from both responders and their respective supervisors, agency administrators and senior management. Among responders and their supervisors, there was consistent agreement that this training has resulted in increased levels of safety when working incident scenes with an average positive rating of **78.0 percent** among responders and **77.0 percent** among supervisors. Similarly, responders (**85.3%**) and their supervisors (**72.6%**) concurred that the training has increased awareness of and efforts to minimize secondary crashes at traffic incident scenes.

One critical measure of success of the training is course participant perception of how the training links the responder and motorist safety element of TIM and how quick clearance promotes safety. TtT course participants consistently rated that aspect of the training high, with an average of **99.4 percent positive rating.** Among responder course participants, a similar average rating of **94.5 percent positive** was received across the six quarterly reports.

Very positive impacts of the training were consistently reported by agency administrators and senior management.

- On average, **97.5 percent** reported that overall safety at traffic incidents has been improved as a result of personnel attending the TIM Responder training.

- On average, **95.0 percent** reported that overall agency operations have been improved as a result of personnel attending the TIM Responder training.

- On average, **91.3 percent** reported that coordination among different agencies at traffic incident scenes has improved since the TIM Responder training.

CHAPTER 1. INTRODUCTION

The Federal Highway Administration (FHWA) National Highway Institute (NHI) offers the National Traffic Incident Management (TIM) Responder Training Course through a variety of delivery options including, instructor based, web-based, and web-conference based. This course provides first responders with a shared understanding of the requirements for safe, quick clearance of traffic incident scenes; prompt, reliable and open communication; and motorist and responder safeguards.

The FHWA Office of Operations sponsored the TIM Responder Training Program Post-Course Assessment Tool. The Tool provides FHWA, State, and local agencies responsible for TIM operations, the ability to assess student learning and the impacts TIM training has on operations along with hard metrics that show the return on investment in TIM training.

The tool has four levels of surveys designed to measure:

Level 1 – Reaction: Identifies whether the course materials and their delivery are effective, or if they need to be revised or enhanced.

Level 2 – Learning: Determines the effectiveness of the training in terms of how the student comprehends and retains the course information.

Level 3 - Behavior: Provides an understanding of whether or not students implement the TIM procedures and strategies provided in the training.

Level 4 - Results: Presents the operational benefits derived from the training programs.

To enable a comprehensive assessment of training activities that cover measures of reaction, learning, behavior, and results, the assessment tool has multiple survey instruments, including:

- **Pre-Training Assessments:** Prior to attending a TIM training session, participants are asked to complete the appropriate pre-test to assess their existing knowledge of TIM.

- **Post-Training Assessments:** Immediately following a training session, participants are requested to complete the appropriate post-test and course evaluation. The post-test estimates participants' TIM knowledge after receiving the training and the course evaluation captures the participant's feelings concerning the training and provides valuable feedback necessary to continually improve the program.

- **Training Implementation Assessments:** Approximately three months after attending a training session, participants and their supervisors are asked to take a survey that assesses the impact the training has had on behavior.

- **Benefits Assessments:** Six months to a year after personnel attend a TIM training session, agency administrators or senior management and/or the State or regional points of contact, are asked to complete a results survey. The TIM training results survey assesses the impact on and operational benefits realized by an agency/organization that has sent their personnel through the TIM training.

CHAPTER 2. OVERVIEW

This final evaluation report provides an analysis of the data entered into the Tool by course participants and their respective agency administrators and/or senior management from date of inception through August 15, 2017 (when the data for the last quarterly report was exported from the Tool).

The Tool is designed to:

- Evaluate whether the course materials and delivery are effective, or perhaps need to be revised or enhanced.

- Determine the effectiveness of the training in terms of how the student comprehends and retains the course information.

- Provide an understanding of changes in policy and operational procedures precipitated by the training program that foster enhanced safety and mobility.

- Gain an understanding of the operational benefits derived from the training program.

Through August 15, 2017, a total of 1,160 Level 1, 3 and 4 assessment had been entered into the tool by training participants and their respective supervisors, agency administrators and/or senior management.

The Level 1 surveys, for both train-the-trainer (TtT) and responder participants, are designed to solicit training participant feedback regarding training content and the instructor. Among TtT course participants, the six questions regarding instructor performance received the highest average percentage (98.6%) of positive responses, with 72.3 percent Strongly Agree and 26.3 percent Agree across the six quarterly reports (Figure 1).
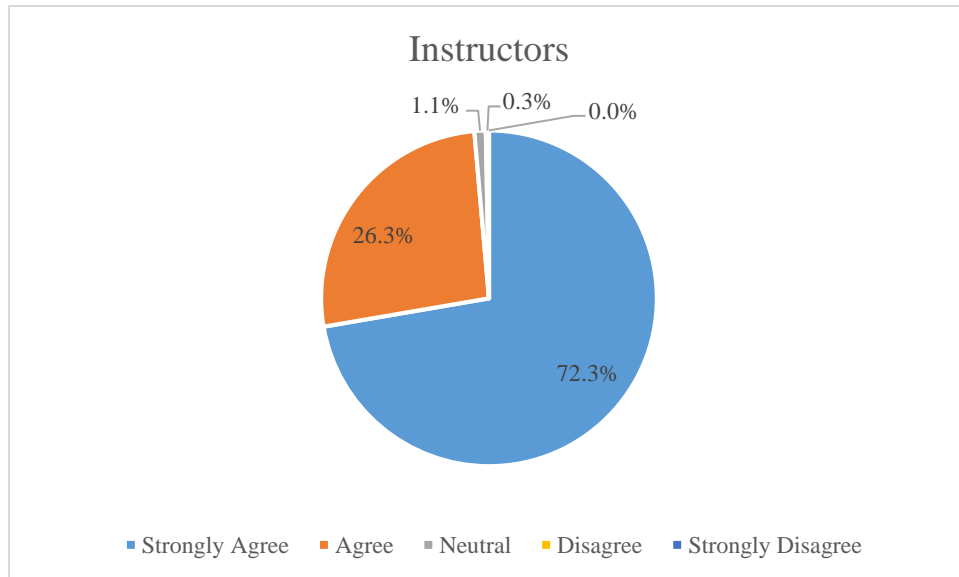
Figure 1. Graph. Train-the-trainer participant feedback on course instructors.

Among responder course participants, the six questions pertaining to trainers also received the highest average percentage (96.4%) of positive responses with 72.6 percent Strongly Agree and 23.8 percent Agree (Figure 2).

Trainers

0.1% · 0.8% · 2.7% · 23.8% · 72.6%

Legend: ■ Strongly Agree ■ Agree ■ Neutral ■ Disagree ■ Strongly Disagree
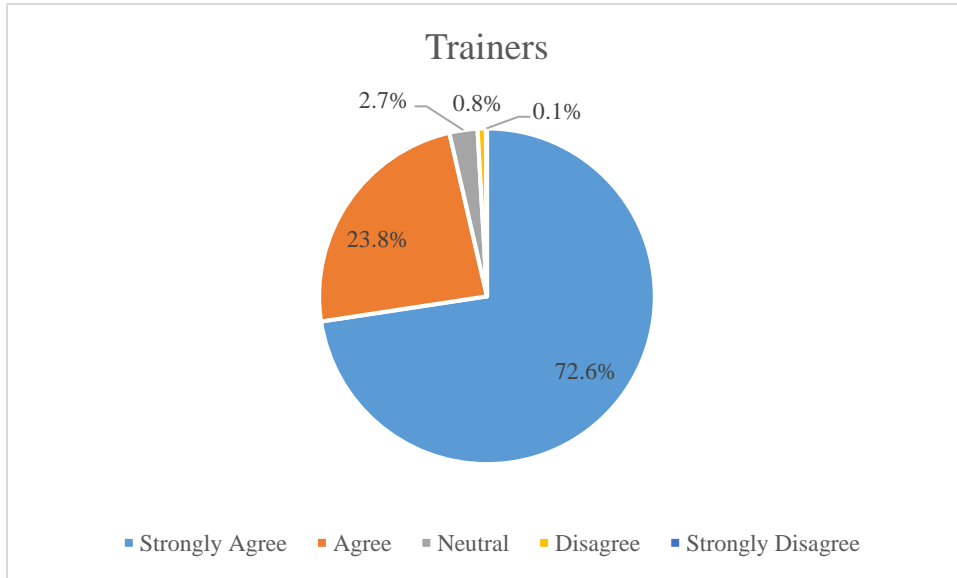
Figure 2. Graph. Responder participant feedback on trainers.

The Level 3 surveys for Responders and Supervisors are designed to solicit feedback on the impact of the training. As shown in Figure 3 below, several metrics consistently received high levels of agreement from both responders and supervisors on the positive impacts from the training across the six quarterly reports.

Level 3 Post-Training Assessment

Categories: Supervisor, Participant

X-axis: 0.0%, 10.0%, 20.0%, 30.0%, 40.0%, 50.0%, 60.0%, 70.0%, 80.0%, 90.0%

Legend: ■ More awareness and effort to minimize secondary crashes ■ More safe when working traffic at incident scenes
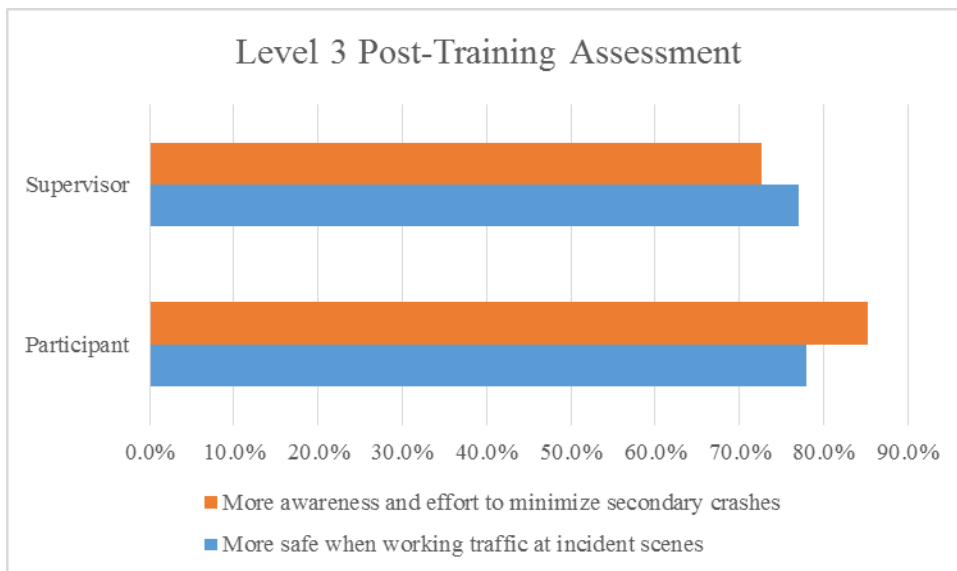
Figure 3. Graph. Level 3 Post-Training assessment of positive impacts.

Similar positive impacts of the training were also captured in the Level 4 survey which identified high levels of agreement from Agency Administrators and Senior Management on improvements resulting from personnel participating in the training.
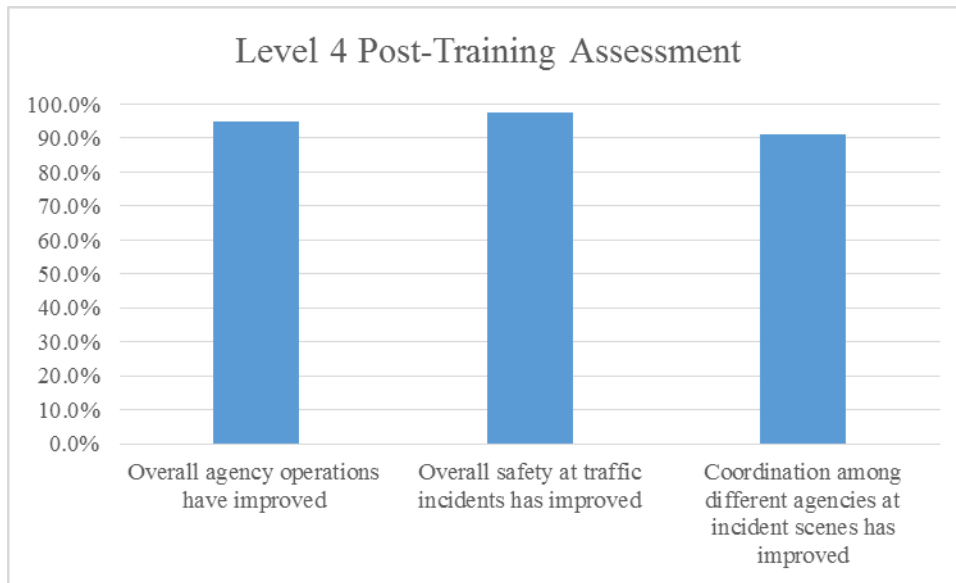
Figure 4. Graph. Level 4 post-training assessment of positive impacts.

The respondent disciplines of those submitting assessments from inception of the tool through August 15, 2017, by training type and evaluation level, is listed in Table 1 below.

Table 1. Assessment tool respondent discipline by training type and evaluation level.

	Law Enforcement	Fire/Rescue/ Emergency Medical Services	Towing & Recovery	Transportation	Other
Level 1 Train-the-Trainer course participants (381 total)	29.1%	45.0%	4.7%	12.6%	8.5%
Level 1 Responder course participants (290 total)	25.5%	54.4%	4.2%	8.0%	8.0%
Level 3 Responders (375 total)	30.0%	31.9%	4.1%	28.6%	5.4%
Level 3 Supervisors (59 total)	30.5%	35.6%	6.8%	15.3%	11.9%

	Law Enforcement	Fire/Rescue/ Emergency Medical Services	Towing & Recovery	Transportation	Other
Level 4 Agency Administrators/ Senior Management (55 total)	30.9%	27.3%	9.1%	27.3%	5.5%

CHAPTER 3. LEVEL 1 TRAIN-THE-TRAINER AND RESPONDER COURSE EVALUATIONS

From inception of the tool through August 15, 2017, a total of 381 individuals had completed the Train-the-Trainer (TtT) Course Level 1 survey and 290 individuals had completed the Responder Course Level 1 survey. The responder discipline mix for both the TtT and Responder courses is shown below in Figures 5 and 6.

Figure 5. Graph. Train-the-Trainer responder discipline mix.
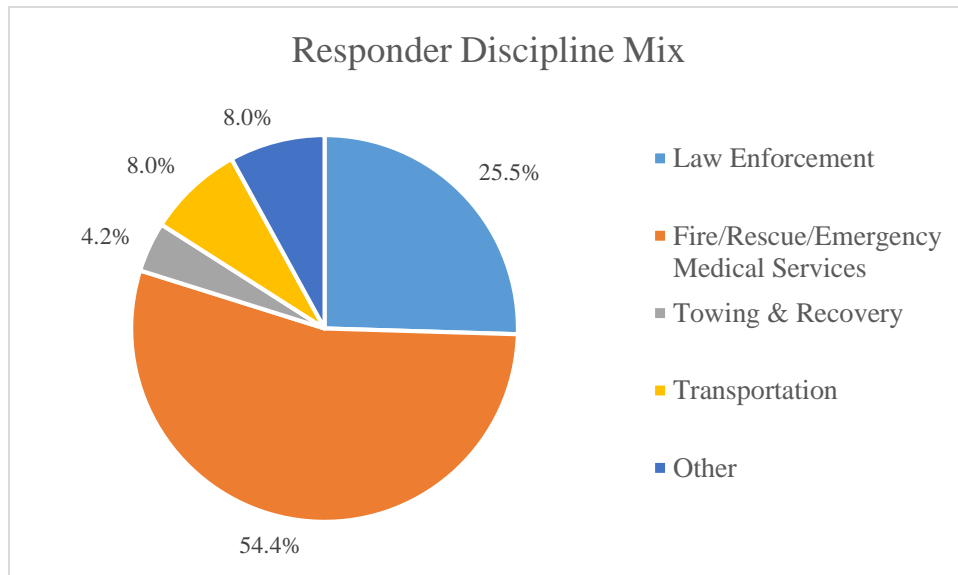
Figure 6. Graph. Responder discipline mix.

The States where training participants (both TtT and Responder) are based is shown in Figure 7 below.
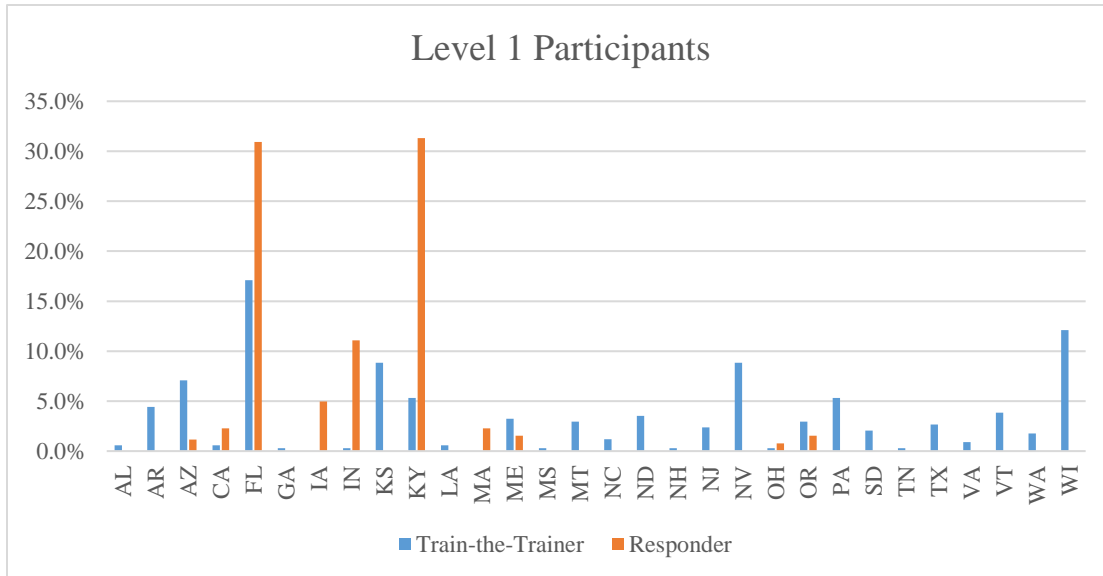
Figure 7. Graph. Level 1 participants base States.

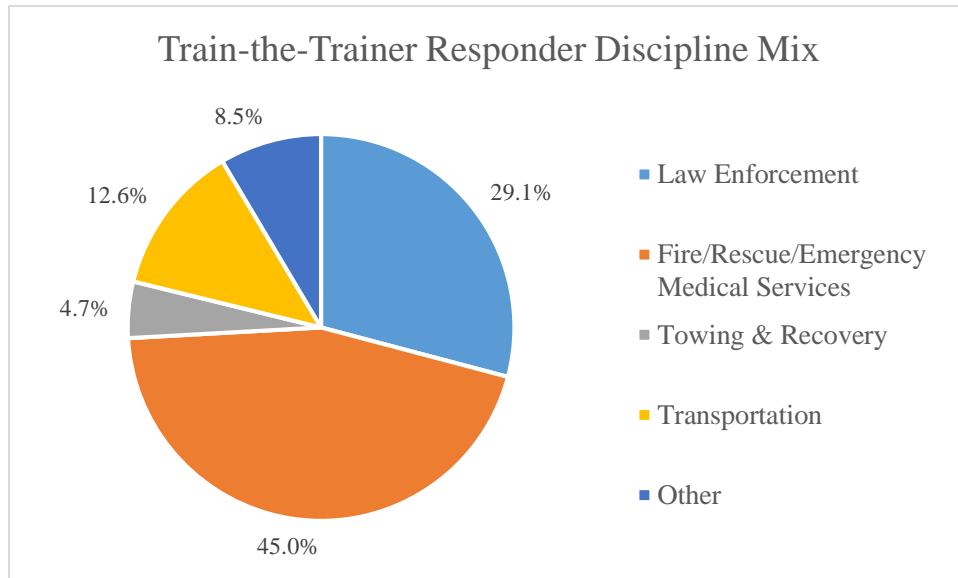The Level 1 surveys, for TtT and Responder participants, have open-ended responses which allow participants to provide additional feedback on the overall training and content, instructors and for the TtT participants, training materials are provided.

Train-the-Trainer Course Open-Ended Responses

The open-ended responses validated the choice of master instructors for the TtT course, both in terms of their subject matter expertise and their passion for traffic incident management. Of the three sections of questions in the TtT evaluation, the six questions pertaining to course instructor performance averaged the highest percentage of positive responses (98.6%), with 72.3 percent Strongly Agree.

A number of comments point to the value of the instructors keeping the class on time and not allowing too much deviation from the curriculum. Given the amount of content to cover, this is important for all instructors to keep in mind. Other comments highlight the value of student activities as well as tabletop exercises.

The two questions receiving the lowest average percentage of Strongly Agree responses relate to the ability of course participants to serve as trainers after taking the TtT course.

Question 4: I believe that the time dedicated to each lesson was appropriate (56.5% Strongly Agree).

Question 16: Based on the training and materials I received, I am confident that I can setup and conduct the National TIM Responder course (55.2% Strongly Agree).

These scores may reflect several of the open-ended responses which point to the need for more time to be spent on how to teach the course rather than the curriculum. Additionally, several comments focused on which lessons should be covered in less detail (Lesson 1, Lesson 8, content on Traffic Management Centers) while others specifically cite the need to spend more

time on the practical application of teaching the curriculum including more hands-on exercises. Comments were also focused on the value of having access to training materials and updated training content.

Despite receiving lower average percentages of strongly agree responses, both question 4 and question 16 averaged 95+ percent Strongly Agree and Agree responses respectively.

Appendix A contains the TtT Level 1 detailed responses from inception of the tool through August 15, 2017.

Responder Course Open-Ended Responses

Participants in the Responder Course are overwhelmingly positive about their course instructors (96.4% positive responses) with slightly less enthusiasm for the training content (92.8% positive responses). There were significantly fewer open-ended responses submitted by responder participants than by TtT participants, so identifying specific causes of the lower scores is challenging. However, the two questions receiving the lowest average percentage of positive responses by responder course participants may provide some indication.

Question 4: I believe that the time dedicated to the training was appropriate (86.9% positive responses).

Question 11: The trainer's pace of presenting the material was appropriate (91.7% positive responses).

Among the open-ended responses, responders corroborate the lower scores on the amount of time spent on the training:

"The course was too short to cover the information needed."

"Maybe a little more time, it was a lot of information for the amount of time allotted."

"I don't think going to one class is going to teach everything you need to know. It is too quick paced. If we had a manual of the slides and demo it would help us a lot."

Appendix B contains the Responder Level 1 detailed responses from inception of the tool through August 15, 2017.

CHAPTER 4. LEVEL 2 TRAIN-THE-TRAINER AND RESPONDER COURSE PRE- AND POST-TRAINING ASSESSMENTS

The Level 2 assessments are used to determine the effectiveness of the training in terms of how training participants comprehend and retain the course information. Prior to attending a Traffic Incident Management (TIM) training session, participants are asked to complete the appropriate pre-test to assess their existing knowledge of TIM. Then, immediately following a training session, participants are asked to complete the appropriate post-test. The post-test assesses participants' TIM knowledge after receiving the training.

The Train-the-Trainer pre-training Level 2 assessment consists of 20 questions and the post-training assessment consists of 40 questions. For the Responder course, the pre-training assessment contains 10 questions and the post-training assessment has 20 questions.

Table 2 below shows the average number and percentage correct questions pre- and post-training for both the TtT and Responder courses, along with the percentage of score improvement pre- to post-training. These represent averages across the six quarterly reports.

TtT participants went from an average of 60.2 percent correct answers pre-training to an average of 84.6 percent correct answers post-training, representing a 40.5 percent improvement post-training.

For Responder participants, the improvement was even more pronounced post-training, with an average 81.5 percent improvement in percentage of questions correct pre-training to post-training.

Table 2. Level 2 Assessment Results

	Pre-Training	Post-Training	Percent Improvement
TtT Average # Questions Correct	12.04	33.83	
TtT Average Percent Questions Correct	60.2%	84.6%	40.5%
Responder Average # Questions Correct	4.28	15.54	
Responder Average Percent Questions Correct	42.8%	77.7%	81.5%

CHAPTER 5. LEVEL 3 RESPONDER AND SUPERVISOR TRAINING IMPLEMENTATION ASSESSMENTS

Approximately three months after attending a training session, participants and their supervisors are asked to take a survey that assesses the impact the training has had on participant behavior. From inception of the tool through August 15, 2017, a total of 434 individuals had completed Level 3 online surveys. Of those, 375 were Responder participants and 59 were Supervisors.

The responder discipline mix for Responder participants and Supervisors is shown in Figures 8 and 9 below.
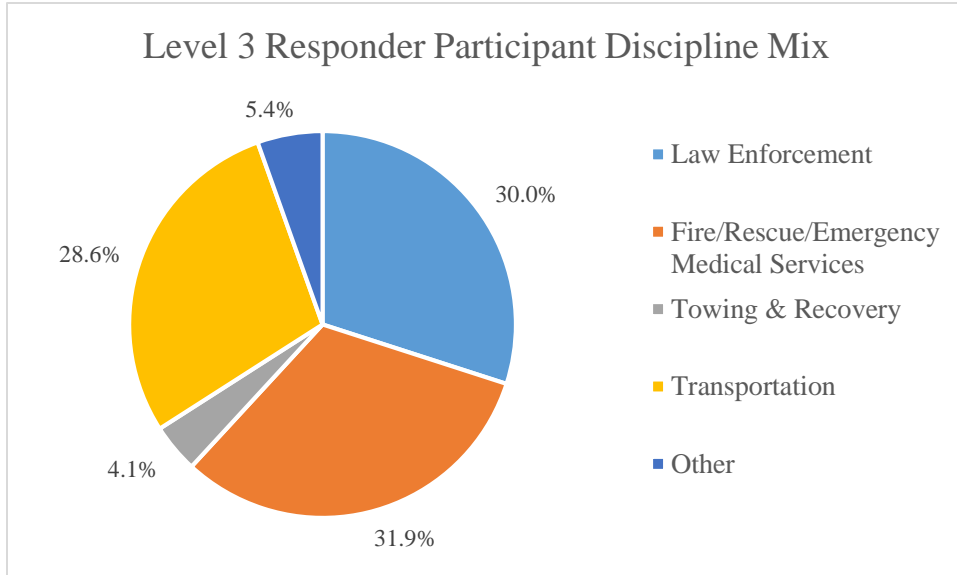
Figure 8. Graph. Level 3 responder participant discipline mix.
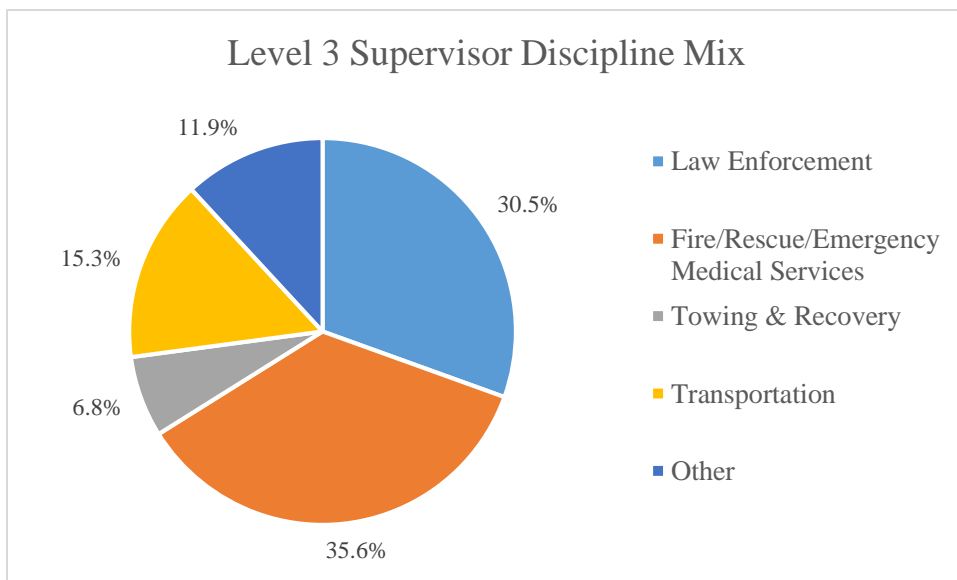
Figure 9. Graph. Level 3 supervisor discipline mix.

The States where the Level 3 participants (both Responder and Supervisor) are based is shown in Figure 10 below.
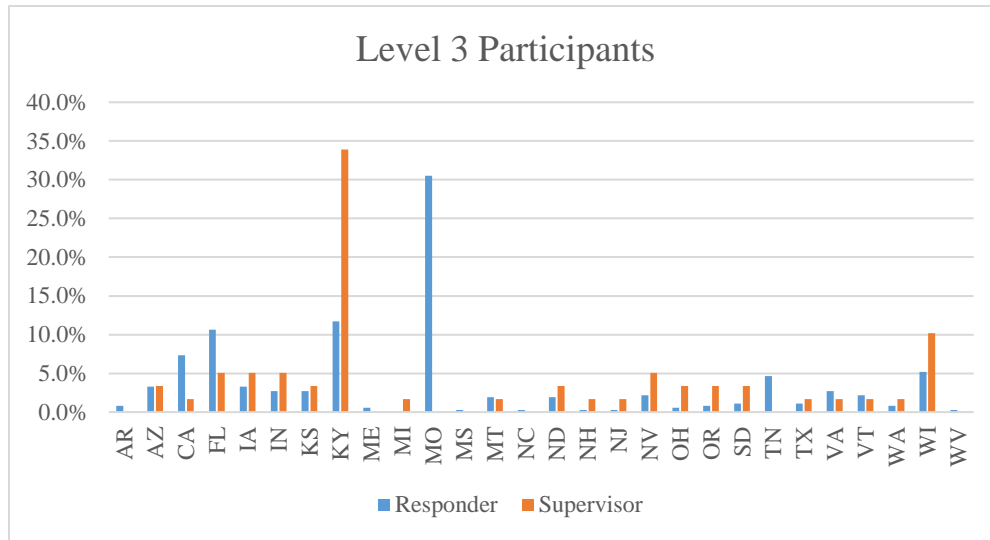
Figure 10. Graph. Level 3 participant base States.

Table 3 below contrasts the average responses of Responder participants and Supervisors for several key metrics in the Level 3 survey. The detailed survey responses for both Responder and Supervisors from inception of tool through August 15, 2017 are included in Appendix C.

Table 3. Average Level 3 key metrics.

Question	Responder	Supervisor
Since receiving the training, how would you describe your/your staff's awareness and efforts to minimize secondary crashes at traffic incident scenes?	**85.3%** more aware	**72.6%** more aware
Since receiving the training, how would you describe your/your staff's overall level of safety when working at traffic incident scenes?	**78.0%** more safe	**77.0%** more safe
Since receiving the training, how would you describe your/your staff's awareness and behavior when working around moving traffic and the "zero buffer"?	**73.8%** more aware	**51.1%** more aware
Since receiving the training, how would you describe your/your staff's safety practices when exiting your responder vehicle at traffic incidents?	**71.1%** more safe	**55.4%** more safe
Since receiving the training, how would you describe your safety awareness when working around vehicle fires?	**61.2%** more aware	**45.2%** more aware

Table 4 contrasts the average responses for participant respondents and supervisor respondents for areas where the training may have had less impact as the item in question was already fully implemented prior to training.

Table 4. Additional average Level 3 responder and supervisor metrics.

Question	Participant	Supervisor
Since receiving the training, how would you describe your/your staff's use of American National Standards Institute (ANSI)/ International Safety Equipment Association (ISEA) compliant high-visibility safety apparel, except for when Manual on Uniform Traffic Control Devices (MUTCD) -noted exceptions apply?	**63.1%** no change/fully implemented prior	**57.3%** no change/fully implemented prior
Since receiving the training, how would you describe your use of plain English in describing traffic incident scenes?	**57.0%** no change/fully implemented prior	**48.5%** no change/fully implemented prior
Since receiving the training, how would you describe your use of the Incident Command System (ICS) at traffic incidents?	**56.8%** no change/fully implemented prior	**40.2%** no change/fully implemented prior

CHAPTER 6. LEVEL 4 AGENCY ADMINISTRATOR AND SENIOR MANAGEMENT TRAINING IMPLEMENTATION ASSESSMENTS

Six months to a year after personnel attend a Traffic Incident Management (TIM) training session, Agency Administrators or Senior Management and/or the State or regional points of contact, are asked to complete a results survey. The TIM training results survey assesses the impact on and operational benefits realized by an agency/organization that has sent their personnel through the TIM training.

From inception of the tool through August 15, 2017, a total of 55 individuals had completed Level 4 online surveys. Figure 11 below shows the Agency Administrator/Senior Management discipline mix.
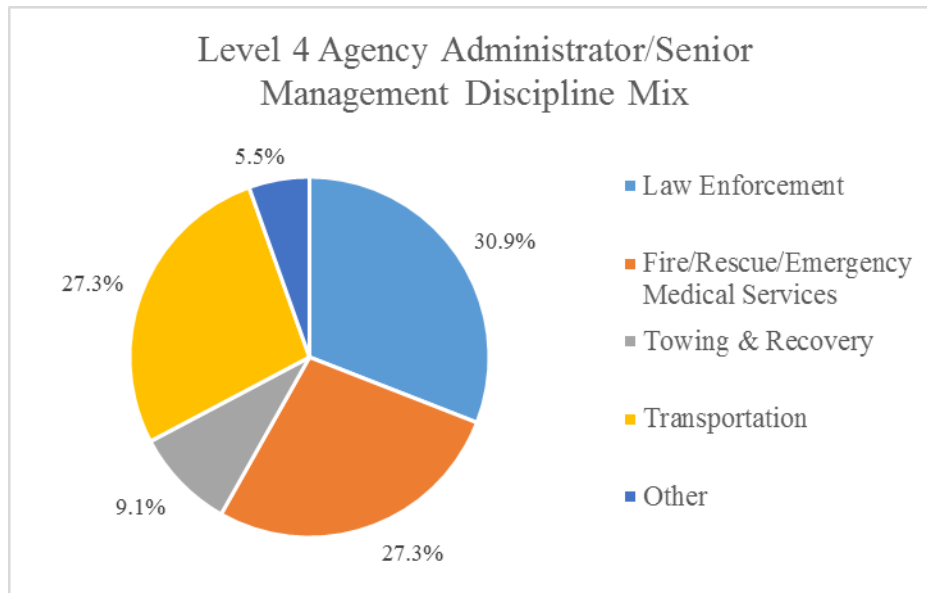
Figure 11. Graph. Level 4 Agency Administrator/Senior Management discipline mix.

The States where the Level 4 Agency Administrators/Senior Managers are based is shown in Figure 12 below.
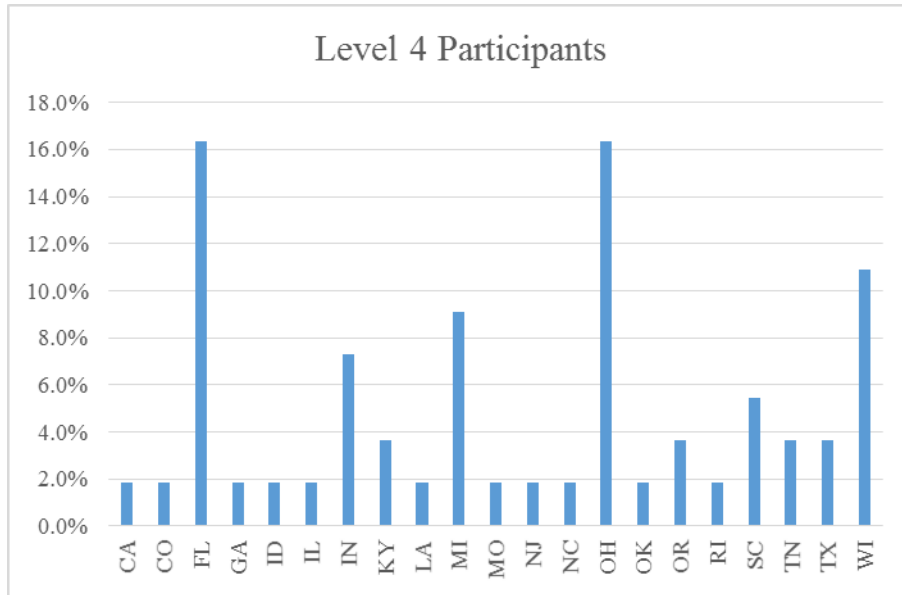
Figure 12. Graph. Level 4 participant base States.

Average Level 4 Key Metrics

- Percentage of personnel within respondent's agency/organization that have TIM-related duties/responsibilities have received the TIM training: **84 percent** (median).

- **47.7 percent** of respondents indicate that all or most of the other TIM responder agencies/organizations in their area/region have also implemented the TIM training.

- Average incident clearance time pre-training was **67.5 minutes**; average incident clearance time post-training was **54 minutes**; representing a **20.2 percent** reduction in incident clearance time among reporting agencies.

- Average roadway clearance time pre-training was **65 minutes**; average roadway clearance time post-training was **49 minutes**; representing a **24.8 percent** reduction in roadway clearance time among reporting agencies.

- **92.5 percent** of respondents believe that overall agency operations have been improved as a result of personnel attending the SHRP2 TIM training.

- **96.3 percent** of respondents believe that overall safety at traffic incidents has been improved as a result of personnel attending the SHRP2 TIM training.

- **87.0 percent** of respondents believe that coordination among different agencies at traffic incident scenes has improved since the SHRP2 TIM training.

- **96.3 percent** of respondents indicated that their agency/organization has a written policy/directive requiring all personnel to wear high-visibility safety apparel when responding to incidents.

- **90.7 percent** of respondents indicated that response vehicles are equipped with traffic cones, flares or other channelizing devices.

- **70.8 percent** of respondents indicated that there is a formal TIM program in their area/region supported by a multidiscipline, multi-agency team or task force which meets regularly to discuss and plan for TIM activities.

An additional measure of the success of the TIM training course in affecting change is the integration of the TIM policies and procedures taught as part of the curriculum into standard TIM practice by training participants. Question 11 asks respondents to rate the degree to which they agree or disagree that the law/concept has been integrated into the written policies/procedures/directives followed by their agency/organization (listed in rank order highest to lowest percent Strongly Agree/Agree).

- Safe-positioning of vehicles – **90.7 percent** Strongly Agree/Agree

- Move It or Work It – **85.1 percent** Strongly Agree/Agree

- Lane+1 Blocking – **81.3 percent** Strongly Agree/Agree

- Incident Command System (ICS) – **79.5 percent** Strongly Agree/Agree

- Use of common response terminology – **79.4 percent** Strongly Agree/Agree

- Use of tapers at traffic incident scenes – **75.7 percent** Strongly Agree/Agree

- Providing advance warning at traffic incident scenes – **73.8 percent** Strongly Agree/Agree

- Windshield size-up reports and regular progress reports – **66.3 percent** Strongly Agree/Agree

- Authority Removal Law – **66.3 percent** Strongly Agree/Agree
- Driver Removal Law – **59.8 percent** Strongly Agree/Agree

APPENDIX A. LEVEL 1 TRAIN-THE-TRAINER SURVEY DETAILED RESPONSES

Table 5. Level 1 Train-the-Trainer survey detailed responses.

Questions	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Total Responses
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Overall Training and Content											
1. The content of this training course was valuable to me in developing my knowledge of this subject matter and my ability to train others.	269	70.6%	107	28.1%	5	1.3%	0	0.0%	0	0.0%	381
2. The content of this training appropriately built on my existing knowledge of TIM.	240	63.0%	130	34.1%	10	2.6%	1	0.3%	0	0.0%	381
3. I am satisfied that the learning objectives for this training were met.	258	67.7%	115	30.2%	7	1.8%	0	0.0%	1	0.3%	381
4. I believe that the time dedicated to each lesson is appropriate.	221	58.0%	143	37.5%	16	4.2%	1	0.3%	0	0.0%	381
5. Based on the training I received, I am able to explain the subject matter and train other TIM responders.	233	61.2%	135	35.4%	13	3.4%	0	0.0%	0	0.0%	381

Table 5. Level 1 Train-the-Trainer survey detailed responses. (continuation)

Questions	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Total Responses
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
6. During the training I learned methods/practices that I can transfer/teach to responders to help mitigate incident impacts.	247	64.8%	129	33.9%	5	1.3%	0	0.0%	0	0.0%	381
7. The course helped me further appreciate the responder and motorist safety element of TIM and how quick clearance also promotes safety.	273	71.7%	104	27.3%	4	1.0%	0	0.0%	0	0.0%	381
Overall Training and Content Totals	**1,741**	**65.3%**	**863**	**32.4%**	**60**	**2.2%**	**2**	**0.1%**	**1**	**0.0%**	**2,667**

Table 5. Level 1 Train-the-Trainer survey detailed responses. (continuation)

Questions	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Total Responses
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Instructor(s)											
9. The instructor clearly explained the goals and objectives of the training.	288	75.6%	91	23.9%	2	0.5%	0	0.0%	0	0.0%	381
10. The instructor clearly conveyed the material to the audience.	292	76.6%	85	22.3%	4	1.0%	0	0.0%	0	0.0%	381
11. The instructor's knowledge of the subject matter was satisfactory.	315	82.7%	64	16.8%	2	0.5%	0	0.0%	0	0.0%	381
12. The instructor's pace of presenting the material was appropriate.	263	69.0%	107	28.1%	8	2.1%	3	0.8%	0	0.0%	381
13. The instructor satisfactorily answered participants' questions.	291	76.4%	87	22.8%	3	0.8%	0	0.0%	0	0.0%	381
14. The instructor satisfactorily used training aids (e.g., PowerPoint slides, activities, etc.) to help facilitate a clearer understanding of the topic.	291	76.4%	87	22.8%	3	0.8%	0	0.0%	0	0.0%	381
Instructor(s) Totals	**1,740**	**76.1%**	**521**	**22.8%**	**22**	**1.0%**	**3**	**0.1%**	**0**	**0.0%**	**2,286**

Table 5. Level 1 Train-the-Trainer survey detailed responses. (continuation)

Questions	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Total Responses
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Training Materials											
16. Based on the training and materials I received, I am confident that I can setup and conduct the National TIM Responder course.	213	55.9%	152	39.9%	14	3.7%	2	0.5%	0	0.0%	381
17. The Trainer Guides will help me facilitate/deliver the National TIM Responder course.	243	63.8%	128	33.6%	10	2.6%	0	0.0%	0	0.0%	381
18. I am satisfied that the slide presentations, videos, exercises, and other visual aids provide a good foundation for teaching the National TIM Responder course.	251	65.9%	124	32.5%	6	1.6%	0	0.0%	0	0.0%	381
Training Materials Totals	707	61.9%	404	35.3%	30	2.6%	2	0.2%	0	0.0%	1,143

APPENDIX B. LEVEL 1 RESPONDER SURVEY DETAILED RESPONSES

Table 6. Level 1 Responder survey detailed responses.

Questions	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Total Responses
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Overall Training and Content											
1. The content of this training course was valuable to me in developing my knowledge of TIM.	170	58.6%	103	35.3%	13	4.5%	2	0.7%	2	0.7%	290
2. The content of this training appropriately built on my existing knowledge of TIM.	149	51.4%	122	42.1%	14	4.8%	4	1.4%	0	0.0%	290
3. I am satisfied that the learning objectives for this training were met.	161	55.5%	116	40.0%	12	4.1%	0	0.0%	1	0.3%	290
4. I believe that the time dedicated to the training was appropriate.	145	50.0%	108	37.2%	23	7.9%	10	3.4%	4	1.4%	290
5. During the training I learned methods/practices that I can apply to help mitigate incident impacts.	170	58.6%	102	35.2%	14	4.8%	3	1.0%	1	0.3%	290
6. The course helped me further appreciate the responder and motorist safety element of TIM and how quick clearance also promotes safety.	183	63.1%	93	32.1%	12	4.1%	0	0.0%	2	0.7%	290
Overall Training and Content Totals	**978**	**56.2%**	**644**	**37.0%**	**88**	**5.1%**	**19**	**1.1%**	**11**	**0.6%**	**1740**

Table 6. Level 1 Responder survey detailed responses. (continuation)

Questions	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Total Responses
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Trainer(s)											
8. The trainer clearly explained the goals and objectives of the training.	201	69.3%	79	27.2%	7	2.4%	2	0.7%	1	0.3%	290
9. The trainer clearly conveyed the material to the audience.	199	68.6%	80	27.6%	9	3.1%	1	0.3%	1	0.3%	290
10. The trainer's knowledge of the subject matter was satisfactory.	212	73.1%	69	23.8%	8	2.8%	0	0.0%	1	0.3%	290
11. The trainer's pace of presenting the material was appropriate.	192	66.2%	74	25.5%	14	4.8%	8	2.8%	2	0.7%	290
12. The trainer satisfactorily answered participants' questions.	197	67.9%	79	27.2%	11	3.8%	2	0.7%	1	0.3%	290
13. The trainer satisfactorily used training aids (e.g., PowerPoint slides, activities, etc.) to help facilitate a clearer understanding of the topic.	200	69.0%	81	27.9%	7	2.4%	1	0.3%	1	0.3%	290
Trainer(s) Totals	**1,201**	**69.0%**	**462**	**26.6%**	**56**	**3.2%**	**14**	**0.8%**	**7**	**0.4%**	**1,740**

APPENDIX C. LEVEL 3 SURVEY DETAILED RESPONSES

Table 7. Level 3 Participant survey detailed responses.

		Lesson 1: Introduction							
1	Since receiving the training, how would you describe your overall level of safety when working at traffic incident scenes?	**Less Safe**		**More Safe**		**About the Same**		**--**	375
		2	0.5%	302	80.5%	71	18.9%	--	--	
2	Since receiving the training, how would you describe your awareness and efforts to minimize secondary crashes at traffic incident scenes?	**Less Aware**		**More Aware**		**About the Same**		**--**	375
		2	0.5%	326	86.9%	47	12.5%	--	--	
		Lesson 2: TIM Fundamentals and Terminology							
3	Since receiving the training, how would you rate the sense of urgency that you personally use to quickly clear traffic incidents from the roadway?	**Less Urgency**		**More Urgency**		**About the Same**		**--**	375
		2	0.5%	226	60.3%	147	39.2%	--	--	
		Less Used		**More Used**		**No Change - Fully Implemented Prior**		**No Change - Not in Practice**	
4	Since receiving the training, how would you describe your use of plain English in describing traffic incident scenes?	4	1.1%	129	34.4%	223	59.5%	19	5.1%	375
5	Since receiving the training, how would you describe your use of lane numbering to describe traffic incident scenes?	3	0.8%	170	45.3%	133	35.5%	69	18.4%	375
		Lesson 3: Notification and Scene Size-Up							
		Less Used		**More Used**		**No Change - Fully Implemented Prior**		**No Change - Not in Practice**	
6	Since receiving the training, how would you rate your use of windshield size-up reports to pass important information back to dispatch upon arrival?	4	1.1%	179	48.0%	164	44.0%	26	7.0%	373
7	Since receiving the training, how would you rate your use of progress reports to regularly provide updates and important information to dispatch, or the Traffic Management Center (TMC), while on-scene?	4	1.1%	170	45.5%	149	39.8%	51	13.6%	374

Table 7. Level 3 Participant survey detailed responses. (continuation)

		Less Used		More Used		No Change - Fully Implemented Prior		No Change - Not in Practice		
8	Since receiving the training, how would you describe your use of the Move It or Work It concept, which gives consideration to relocating incident vehicles out of travel lanes prior to working the incident?	3	0.8%	209	55.9%	127	34.0%	35	9.4%	374
9	Since receiving the training, how would you describe your use of the safe-positioning guidance provided by the MUTCD when positioning your vehicle at incident scenes?	4	1.1%	216	57.8%	139	37.2%	15	4.0%	374
10	Since receiving the training, how would you describe your use of vehicle blocking to protect incident scenes?	3	0.8%	194	51.9%	162	43.3%	15	4.0%	374
11	Since receiving the training, how would you describe your use of Lane +1 blocking to protect incident responders who require additional lateral space for safety?	5	1.4%	203	55.5%	131	35.8%	27	7.4%	366
12	Since receiving the training, how would you describe your use of the critical wheel angle when positioning your vehicle at incident scenes?	6	1.6%	202	55.2%	130	35.5%	28	7.7%	366
13	Since receiving the training, how would you describe your awareness and behavior when working around moving traffic and the "zero buffer"?	Less Aware		More Aware		About the Same		--		366
		2	0.5%	272	74.3%	92	25.1%	--	--	

Table 7. Level 3 Participant survey detailed responses. (continuation)

	Lesson 5: Scene Safety									
		Less Used		More Used		No Change - Fully Implemented Prior		No Change - Not in Practice		
14	Since receiving the training, how would you describe your use of the practice of reducing forward facing emergency-vehicle lights at incident scenes when conditions allow?	8	2.2%	208	56.8%	99	27.0%	51	13.9%	366
15	Since receiving the training, how would you describe your use of ANSI/ISEA compliant high-visibility safety apparel, except for when MUTCD-noted exceptions apply?	3	0.8%	121	33.1%	230	62.8%	12	3.3%	366
16	Since receiving the training, how would you describe your safety practices when exiting your responder vehicle at traffic incidents?	Less Safe		More Safe		About the Same		--		366
		2	0.5%	226	61.7%	138	37.7%	--	--	

	Lesson 6: Command Responsibilities									
		Less Used		More Used		No Change - Fully Implemented Prior		No Change - Not in Practice		
17	Since receiving the training, how would you describe your use of the Incident Command System (ICS) at traffic incidents?	9	2.5%	111	30.3%	215	58.7%	31	8.5%	366

Table 7. Level 3 Participant survey detailed responses. (continuation)

		Less Used		More Used		No Change - Fully Implemented Prior		No Change - Not in Practice		
18	Since receiving the training, how would you describe your use of advance warning at traffic incident scenes?	5	1.4%	171	46.7%	140	38.3%	50	13.7%	366
19	Since receiving the training, how would you describe your use of enhanced/additional advance warning at traffic incident scenes where hills, curves, fog, rain, or other conditions require?	5	1.4%	183	50.1%	132	36.2%	45	12.3%	365
20	Since receiving the training, how would you describe your use of channelizing devices, such as cones or flares, at traffic incident scenes?	7	1.9%	163	44.7%	149	40.8%	46	12.6%	365
		Less Safe		More Safe		About the Same		N/A		
21	Since receiving the training, how would you describe the technique you use to setup tapers?	3	0.8%	157	43.5%	131	36.3%	70	19.4%	361
22	Since receiving the training, how would you describe the technique you use to dismantle tapers when breaking down traffic incident scenes?	2	0.6%	146	40.4%	138	38.2%	75	20.8%	361

Table 7. Level 3 Participant survey detailed responses. (continuation)

		Less Aware		More Aware		About the Same		--		
	Lesson 8: Special Circumstances									
23	Since receiving the training, how would you describe your safety awareness when working around vehicle fires?	3	0.8%	219	60.8%	138	38.3%	--	--	360
24	Since receiving the training, how would you describe your safety awareness when working around hazardous materials at roadway incidents?	2	0.6%	214	59.3%	145	40.2%	--	--	361
25	Since receiving the training, how would you describe your awareness of evidence preservation and investigative functions at traffic incident scenes?	2	0.6%	187	51.8%	172	47.6%	--	--	361

		Less Used		More Used		No Change - Fully Implemented Prior		No Change - Not in Practice		
	Lesson 9: Clearance and Termination									
26	Since receiving the training, how would you describe your use of push bumpers at roadway incidents?	3	0.8%	57	15.8%	45	12.5%	53	14.7%	361
		N/A – vehicle not equipped with a push bumper						203	56.2%	

Table 8. Level 3 Supervisor survey detailed responses.

		Lesson 1: Introduction									
1	Since receiving the training, how would you describe your staff's overall level of safety when working at traffic incident scenes?	**Less Safe**		**More Safe**		**About the Same**		**Not Observed**		59	
		0	0.0%	44	74.6%	8	13.6%	5	8.5%		
2	Since receiving the training, how would you describe your staff's awareness and efforts to minimize secondary crashes at traffic incident scenes?	**Less Aware**		**More Aware**		**About the Same**		**Not Observed**		59	
		2	3.4%	43	72.9%	7	11.9%	7	11.9%		

		Lesson 2: TIM Fundamentals and Terminology									
3	Since receiving the training, how would you rate the sense of urgency that your staff uses to quickly clear traffic incidents from the roadway?	**Less Urgency**		**More Urgency**		**About the Same**		**Not Observed**		59	
		4	6.8%	26	44.1%	21	35.6%	8	13.6%		

		Less Used		**More Used**		**No Change - Fully Implemented Prior**		**No Change - Not in Practice**		**Not Observed**		**Total Responses**
4	Since receiving the training, how would you describe your staff's use of plain English in describing traffic incident scenes?	2	3.4%	15	25.4%	29	49.2%	4	6.8%	9	15.3%	59
5	Since receiving the training, how would you describe your staff's use of lane numbering to describe traffic incident scenes?	4	6.8%	18	30.5%	16	27.1%	7	11.9%	14	23.7%	59

Table 8. Level 3 Supervisor survey detailed responses. (continuation)

		Less Used		More Used		No Change - Fully Implemented Prior		No Change - Not in Practice		Not Observed		Total Responses
Lesson 3: Notification and Scene Size-Up
6	Since receiving the training, how would you rate your staff's use of windshield size-up reports to pass important information back to dispatch upon arrival?	1	1.7%	21	35.6%	19	32.2%	8	13.6%	10	16.9%	59
7	Since receiving the training, how would you rate your staff's use of progress reports to regularly provide updates and important information to dispatch, or the Traffic Management Center (TMC), while on-scene?	1	1.7%	21	35.6%	18	30.5%	9	15.3%	10	16.9%	59
Lesson 4: Safe Vehicle Positioning
8	Since receiving the training, how would you describe your staff's use of the Move It or Work It concept, which gives consideration to relocating incident vehicles out of travel lanes prior to working the incident?	1	1.7%	28	47.5%	16	27.1%	6	10.2%	8	13.6%	59
9	Since receiving the training, how would you describe your staff's use of the safe-positioning guidance provided by the MUTCD when positioning your vehicle at incident scenes?	0	0.0%	33	55.9%	14	23.7%	4	6.8%	8	13.6%	59
10	Since receiving the training, how would you describe your staff's use of vehicle blocking to protect incident scenes?	2	3.4%	25	42.4%	22	37.3%	2	3.4%	8	13.6%	59

Table 8. Level 3 Supervisor survey detailed responses. (continuation)

	Lesson 4: Safe Vehicle Positioning										
		Less Used		**More Used**		**No Change - Fully Implemented Prior**		**No Change - Not in Practice**		**Not Observed**		**Total Responses**
11	Since receiving the training, how would you describe your staff's use of Lane +1 blocking to protect incident responders who require additional lateral space for safety?	0	0.0%	23	39.0%	20	33.9%	3	5.1%	13	22.0%	59
12	Since receiving the training, how would you describe your staff's use of the critical wheel angle when positioning your vehicle at incident scenes?	0	0.0%	26	44.1%	16	27.1%	4	6.8%	13	22.0%	59
		Less Aware		**More Aware**		**About the Same**		**Not Observed**			
13	Since receiving the training, how would you describe your staff's awareness and behavior when working around moving traffic and the "zero buffer"?	1	1.7%	31	52.5%	13	22.0%	14	23.7%	59	

	Lesson 5: Scene Safety										
		Less Used		**More Used**		**No Change - Fully Implemented Prior**		**No Change - Not in Practice**		**Not Observed**		**Total Responses**
14	Since receiving the training, how would you describe your staff's use of the practice of reducing forward facing emergency-vehicle lights at incident scenes when conditions allow?	4	6.8%	22	37.3%	15	25.4%	6	10.2%	12	20.3%	59
15	Since receiving the training, how would you describe your staff's use of ANSI/ISEA compliant high-visibility safety apparel, except for when MUTCD-noted exceptions apply?	2	3.4%	17	28.8%	32	54.2%	3	5.1%	5	8.5%	59
		Less Safe		**More Safe**		**About the Same**		**Not Observed**			
16	Since receiving the training, how would you describe your staff's safety practices when exiting your responder vehicle at traffic incidents?	1	1.7%	33	55.9%	16	27.1%	9	15.3%	59	

Table 8. Level 3 Supervisor survey detailed responses. (continuation)

		Lesson 6: Command Responsibilities									
		Less Used		**More Used**		**No Change - Fully Implemented Prior**		**No Change - Not in Practice**		**Not Observed**		**Total Responses**
17	Since receiving the training, how would you describe your staff's use of the Incident Command System (ICS) at traffic incidents?	2	3.4%	14	23.7%	27	45.8%	6	10.2%	10	16.9%	59
		Lesson 7: Traffic Management									
		Less Used		**More Used**		**No Change - Fully Implemented Prior**		**No Change - Not in Practice**		**Not Observed**		**Total Responses**
18	Since receiving the training, how would you describe your staff's use of advance warning at traffic incident scenes?	1	1.7%	23	39.0%	19	32.2%	4	6.8%	12	20.3%	59
19	Since receiving the training, how would you describe your staff's use of enhanced/additional advance warning at traffic incident scenes where hills, curves, fog, rain, or other conditions require?	2	3.4%	24	40.7%	16	27.1%	3	5.1%	14	23.7%	59
20	Since receiving the training, how would you describe your staff's use of channelizing devices, such as cones or flares, at traffic incident scenes?	1	1.7%	23	39.0%	17	28.8%	6	10.2%	12	20.3%	59
		Less Safe		**More Safe**		**About the Same**		**N/A**		**Not Observed**		**Total Responses**
21	Since receiving the training, how would you describe the technique your staff uses to setup tapers?	2	3.6%	20	35.7%	15	26.8%	14	25.0%	5	8.9%	56
22	Since receiving the training, how would you describe the technique your staff uses to dismantle tapers when breaking down traffic incident scenes?	0	0.0%	21	37.5%	16	28.6%	15	26.8%	4	7.1%	56

Table 8. Level 3 Supervisor survey detailed responses. (continuation)

	Lesson 8: Special Circumstances									
		Less Aware		**More Aware**		**About the Same**		**Not Observed**		
23	Since receiving the training, how would you describe your staff's safety awareness when working around vehicle fires?	2	3.6%	26	46.4%	12	21.4%	16	28.6%	56
24	Since receiving the training, how would you describe your staff's safety awareness when working around hazardous materials at roadway incidents?	1	1.8%	22	39.3%	13	23.2%	20	35.7%	56
25	Since receiving the training, how would you describe your staff's awareness of evidence preservation and investigative functions at traffic incident scenes?	1	1.8%	23	41.1%	19	33.9%	12	21.4%	56

	Lesson 9: Clearance and Termination											
		Less Used		**More Used**		**No Change - Fully Implemented Prior**		**No Change - Not in Practice**		**Not Observed**		**Total Responses**
26	Since receiving the training, how would you describe your staff's use of push bumpers at roadway incidents?	0	0.0%	8	14.3%	9	16.1%	9	16.1%	9	16.1%	56
		N/A – vehicle not equipped with a push bumper						21	37.5%			