

**Examining the Impact of *Integrating Communications, Assessment, and Tactics (ICAT)* De-escalation Training for the Louisville Metro Police Department:
Report 2 - Supplemental Findings**



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EXECUTIVE SUMMARY

The spotlight on de-escalation training and its potential impacts on police-citizen encounters has grown dramatically in recent years. Several states now mandate this type of training for all law enforcement agencies within their states (see, e.g., New Jersey, Michigan, South Carolina, and others). Additionally, most large police departments in the United States already offer some form of de-escalation training to their officers (CBS, 2019). Despite the widespread implementation of de-escalation training across law enforcement agencies, its effects on police officers and their interactions with the public are not well researched (Engel et al., 2020a).

The University of Cincinnati (UC) research team initially partnered with the Louisville, KY Metro Police Department (LMPD) in late 2018 to evaluate their agency-wide de-escalation training. This partnership led to the implementation of a randomized controlled trial design (RCT) to evaluate the impact of the Integration of Communications Assessment and Tactics (ICAT) de-escalation training program. An initial report – *Examining the Impact of Integrating Communications, Assessment, and Tactics (ICAT) De-escalation Training for the Louisville Metro Police Department: Initial Findings* (hereafter referred to as the *Initial Findings Report*) – was produced by the UC research team and released to the LMPD in September 2020. The response from the policing field to the *Initial Findings Report* has been significant. Law enforcement executives and policymakers across the country have taken note as this work is the first known independent empirical study demonstrating reductions in police use of force related to de-escalation training. As police executives continue their search for effective methods to reduce the frequency and severity of violent encounters between the police and public, the findings from the LMPD study continue to generate extensive interest.

While the *Initial Findings Report* provides critical information, additional analyses are necessary to unpack the impacts of ICAT de-escalation training in a more comprehensive manner. As such, this report (referred to as the *Supplemental Findings Report*) is the second reporting of the evaluation results of the ICAT de-escalation training with the LMPD.

At the conclusion of the *Initial Findings Report*, it was noted that the *Supplemental Findings Report* would explore officer attitudinal and behavioral changes in a more precise and detailed manner to identify any changes in patterns and trends related to the ICAT training. Specifically, additional analyses were planned to:

1. Examine the types of officers and supervisors – including consideration of demographics, experience, attitudes, and training receptivity – who are more likely to report using de-escalation skills in the field.
2. Examine the types of supervisors who are more likely to reinforce the tenets of ICAT training with their subordinates.
3. Provide a more robust examination of individual officer and citizen characteristics that lead to use of force incidents.
4. Examine all arrest situations to predict the types of police-citizen encounters that are more likely to result in use of force.

The *Supplemental Findings Report* that follows provides a series of findings and recommendations related to the first two topics listed above – examinations of officer and

supervisor attitudes, perceptions, and self-reported use of skills in the field. Notably, this report only relies on survey data for the analyses and findings that are presented. If the LMPD is able to provide the appropriate data necessary for analyses (see recommendations, Section VI), a third report will examine LMPD arrest and use of force incidents related to topics three and four above.

A. Review of Engel et al. (2020) *Initial Findings Report*

This section of the report summarizes the *Initial Findings Report*, our first documentation of the findings from the ICAT training evaluation for the LMPD. The evaluation design included a multi-method approach to assess the impact of training on officers' and first-line supervisors' perceptions, self-reported experiences, and a stepped-wedge randomized control trial (RCT) design to examine training effects in the outcomes of police-citizen encounters.

The initial evaluation examined the effects of the ICAT training across the following outcomes:

- 1) Officers' knowledge of and attitudes toward persons in crisis
- 2) Officers' confidence in handling critical incidents
- 3) First-line supervisors' perceptions and self-reported activities related to their use and supervision of de-escalation skills
- 4) The frequency of officer use of force and the types/severity of force used during encounters with resistant suspects
- 5) The frequency of injuries to citizens and officers during use of force encounters
- 6) Changes in training impact over time

Primary findings include officers' positive perceptions and receptivity to the ICAT training. A majority of officers (more than 60%) self-reported the use of de-escalation tactics in their last 60 days of work. Officers also demonstrate several significant positive attitudinal changes in survey items measuring views on interactions with the public, attitudes towards persons in crisis, and attitudes towards the use of force. Importantly, the randomly assigned timing of de-escalation training was associated with a statistically significant decline in use of force (-28%), citizen injuries (-26%), and officer injuries (-36%). This work is the first known independent empirical study demonstrating reductions in police use of force related to de-escalation training. The full *Initial Findings Report* is available at theiacp.org/research.

B. Methodology

The methodology of this report is built upon the same research design and data sources as the *Initial Findings Report*. Three complimentary research designs are used to examine outcome measures, including: (1) a repeated measure survey design to assess officers' knowledge and attitudes; (2) a cross-sectional survey design to identify first-line supervisors' perceptions and self-reported activities; and (3) a stepped-wedge randomized control trial to coordinate the LMPD's training schedule and assess behavioral outcomes.

Repeated Measures Survey Design

Three training surveys (pre-training, post-training, and follow-up) were designed by the research team and administered by the LMPD Training Division staff to officers immediately before, immediately after, and approximately four to six months following officers' participation in the

training to examine the impact of de-escalation training on LMPD officers' knowledge and attitudes. These surveys allow for comparisons of officers' knowledge and attitudes over time. Specifically, statistical comparisons of pre-training to post-training survey responses assess changes in responses following officers' participation in the ICAT training program. Additionally, comparisons of the post-training and follow-up survey responses provide insight on training effects over time. Finally, comparisons of the pre-training and follow-up survey responses consider the ICAT training program's overall impact on LMPD officers' knowledge and attitudes.

Overall, officer training surveys had high response rates at all three waves of measurement (Wave 1, pre-training = 87% response rate; Wave 2, post-training = 100%; and Wave 3, follow-up = 73.8%). Of the 1,049 officers trained, 890 pre-training surveys and 1042 post-training surveys were able to be matched with officer demographic data from LMPD's employee database. The follow-up survey was provided to only those officers assigned to the Patrol Division ($n = 809$ patrol officers), and 591 of the 597 completed surveys were able to be matched with pre/post-training responses and officer demographic data from the LMPD's employee database. However, it is important to note that different sampling strategies are used across waves that lead to varying sample sizes across analyses.

Cross-Sectional Survey Design

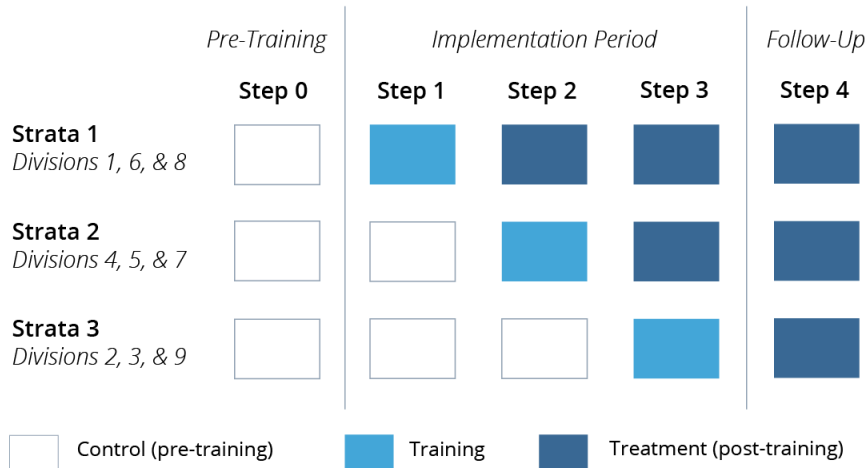
To supplement the evaluation of the training program, LMPD supervising officers (i.e., sergeants and lieutenants) were administered a survey in March of 2020, designed to assess their general perceptions of the role of supervisors, and more specifically, their views regarding how and when they supervise and/or reinforce the ICAT training. This cross-sectional design collected information from supervisors at a single point in time after implementation of the ICAT training. Multivariate analyses were conducted to examine the impact of supervisors' characteristics and attitudes on their involvement in supervisory activities that support ICAT training.

The supervisor survey had an 83.4% response rate, with 131 sergeants and lieutenants completing the survey. The supervisor demographic data from LMPD's employee database was matched to 118 surveys. These 118 supervisors are included in the analyses within this report.

Stepped-Wedge Randomized Control Trial Design

To examine the impact of ICAT training on LMPD officers' behavior, the research team developed a stepped-wedge randomized control trial (RCT) design and implemented by the LMPD Training Division (see Figure 1 below). The stepped-wedge cluster RCT is a crossover design in which clusters of subjects begin as no-intervention controls, crossing over permanently from the control group to the intervention group in sequence at randomized, pre-specified points in time (Hussey & Hughes, 2007). In the present study, a stepped-wedge cluster RCT crossover design allowed for clusters of LMPD officers to begin as non-intervention controls (i.e., untrained in ICAT). Individual clusters of officers were randomly selected in a sequence at pre-planned time points to cross over from the control group to the intervention group (i.e., trained in ICAT). At the end of the experiment, all officer clusters had crossed over to the intervention group. To implement the stepped-wedge RCT design, the nine LMPD Patrol Divisions, including eight geographic-based divisions and one mobile unit operating across the city of Louisville, were grouped into three strata, which were then randomly selected for training.

Figure 1: The Stepped-Wedge Design



Note: Step 0 = January 2019 to February 10, 2019; Steps 1 to 3 = February 11, 2019 to November 30, 2019; Step 4 = December 1, 2019 to February 2020

The UC research team’s examination of the LMPD training regimen was consistent with the randomly arranged stepped-wedge training plan, suggesting high fidelity between the treatment as delivered and treatment as intended. Additionally, sensitivity testing examining the potential movement of LMPD officers from one Patrol Division to another during the research period – creating a potential contamination effect of the treatment condition – demonstrated little concern for possible contamination during the evaluation period.

Using the research designs described above, the research team gathered quantitative data from three sources: (1) officer surveys, (2) field supervisor surveys, and (3) official reports of officer use of force.¹ All data collection and related research activities were reviewed and approved by the University of Cincinnati’s Institutional Review Board (IRB) in February 2019 (IRB# 2019-0118). The research questions for this study were assessed using a variety of analytic techniques to provide descriptive statistics. Two-wave and three-wave survey multivariate comparisons evaluate the impact of officer and supervisor demographics and pre-training attitudes to de-escalation training receptivity and use of skills. Changes in frequency and severity of LMPD uses of force, citizen injuries, and officer injuries are examined by race utilizing a series of panel regression analyses that corresponded to the stepped-wedge RCT design to determine changes in uses of force, by citizens’ race, that corresponded with the randomized timing of the training.

¹ The original research plan included a qualitative component that was not implemented. Four focus groups were scheduled with approximately 40-45 LMPD officers to be convened on March 20 and 27, 2020, but were canceled due to Ohio and Kentucky travel restrictions associated with COVID-19. Unfortunately, these focus groups were unable to be rescheduled during the study period due to the continued restrictions of group meetings. The intent of these focus groups was to gather additional context regarding the strengths and limitations of implementing de-escalation tactics in the field, comments regarding the ICAT training, and reactions to the study results specifically. If deemed appropriate and still of value, these sessions may be rescheduled sometime in 2021.

Expanding on the *Initial Findings Report*, the *Supplemental Findings Report* that follows relies upon more comprehensive and sophisticated analytic techniques to answer the following research questions:

1. Are officer characteristics predictive of reported receptivity to the ICAT training program?
2. Are officer characteristics associated with the frequency of self-reported use of ICAT de-escalation skills in the field?
3. Are officer characteristics associated with training-related attitudes and the change of those attitudes?
4. Are first-line supervisor characteristics associated with self-reported frequency of activities performed to reinforce subordinates' use of ICAT de-escalation skills?

C. Officer Survey Analyses

Building upon the *Initial Findings Report* results, this section considers what officer characteristics—including consideration of demographics, experience, and attitudes—contribute to differences in self-reported activities and attitudinal changes among officers. We examine two primary research questions for each of these topics: (1) what officer characteristics are associated with *initial attitudes* towards the tenets of ICAT training, and (2) what officer characteristics led to the most significant *changes in attitudes* (positive or negative) after 4-6 months in the field following ICAT training.

To assess what officer characteristics are the strongest predictors of officer attitudes and perceptions immediately after ICAT training, multivariate Ordinary Least Squares (OLS) linear regression models are estimated. An OLS regression model is an appropriate statistical technique to examine the association of an independent variable with a continuously measured outcome (Fox, 2016). Additionally, multivariate analysis is preferred because the association between a specific predictor can be observed while adjusting for the influence of all other predictor variables on the outcome. These models measure and control for officers' pre-training attitudes, experiences, and demographics. To address what officer characteristics led to the most significant *changes in attitudes* (positive or negative) after 4-6 months in the field following ICAT training, changes in attitudes are gauged by comparing the responses from the post-training and follow-up surveys by subtracting the two scores. This procedure created a new continuous measure that highlights officer changes in attitudes. Positive values indicate improvement in training-related attitudes, and negative values indicate decreases in training-related attitudes. These are also measured using OLS regression models.

Additionally, multivariate logistic regression models are estimated to predict the use of ICAT skills in the field. A logistic regression model is an appropriate statistical technique to examine the association of an independent variable with a dichotomous outcome—such as whether or not an officer reported the use of ICAT skills.

Ten separate multivariate models are estimated to assess the impact of officer characteristics across six topics: (1) receptivity to training, (2) self-reported use of de-escalation skills in the field, (3) attitudes toward persons in crisis, (4) reported confidence in handling situations

involving persons in crisis, (5) attitudes toward use of force, and (6) perceived utility of the Critical Decision-Making Model (CDM). The results from these sections are summarized below.

Training Receptivity

There are several officer characteristics that are significantly associated with officers' overall receptivity to the ICAT training program. Specifically, officers who reported being more open to training and aligned with a community-oriented policing view and female and minority officers are more receptive to the ICAT training program. Additionally, officers with less than seven years tenure with the LMPD and officers who are older are more receptive to ICAT than their more tenured or younger peers. Given that the ICAT training is an innovative approach that challenges some traditionally held beliefs regarding the use of force, it is not unexpected that receptivity to this training would vary somewhat across officers. Importantly, most officers are, on average (regardless of their demographics, experience, and views) highly receptive to ICAT training.

Self-reported Use of ICAT Skills in the Field

Analyses demonstrate two officer characteristics are significantly associated with greater self-reported use of ICAT skills in the past 60-days. Officers with less LMPD tenure and officers with greater receptivity to ICAT training are more likely to report using ICAT skills with higher frequency. When considering ICAT skill use during the officer's last encounter with a person in crisis, officers who demonstrate greater receptivity to ICAT training are significantly more likely to report using ICAT de-escalation skills. These findings reinforce that receptivity to training is critical for changing officer behavior in the field. It also underscores the importance of the previously reported findings that Nonwhite, female, less tenured officers, those who are more open to all trainings and have more community-oriented views of policing, are the most receptive to training.

Officer Attitudes Towards Persons in Crisis

Two officer characteristics are significantly associated with post-training attitudes towards persons in crisis after accounting for other factors. Officers who are more open to training and officers who align with a more community-oriented role reported, on average, more positive attitudes towards persons in crisis immediately following the ICAT training.

Examinations of the variation of *changes in attitudes* toward persons in crisis across officers show that four officer characteristics are associated with significant changes. First, respondents with supervisory rank experience greater positive changes in their attitudes toward persons in crisis, compared to officer rank. This may be related to the level and frequency of exposure that line-level officers have with persons in crisis compared to supervisors. It suggests that more contact in these situations may reduce positive attitudes at a greater rate – an important finding when considering the necessary dosage of training to continually reinforce positive attitudes.

Second, officers with greater initial receptivity to ICAT also demonstrate greater reductions in these attitudes over time, compared to those who were initially less receptive. Again, this speaks to the possible training decay at work, as officers with more receptivity start at a higher threshold, and therefore have a greater range for decreases in positive attitudes.

Importantly, the final two findings – that perceived support for ICAT from both the command staff and immediate supervisors are associated with an increase in more favorable attitudes towards persons in crisis – speaks to the importance of a holistic approach necessary to support de-escalation training in the field. As perceived support from supervisory ranks increases, so do individual officers’ positive attitudes towards persons in crisis. These officers may require greater reinforcement from agency leadership to more fully embrace ICAT principles.

Officer Confidence in Interacting with Persons in Crisis

The most important predictors of reported confidence in handling situations involving persons in crisis after receiving ICAT training are officers’ race and perceptions of their role. In the post-training period, Nonwhite officers and officers who view their role as more aligned to community policing principles report greater confidence in interacting with persons in crisis. Overall, the average scores across officers on confidence levels both pre- and post-training were very high, indicating that the vast majority of officers expressed a great degree of confidence interacting with persons in crisis.

Predicting Officer Attitudes Toward Use of Force

Several officer characteristics are significantly associated with immediate training impacts on officer attitudes toward use of force. Officers who reported being more open to training, those who align with a community-oriented policing view, female officers, and older officers are significantly more likely to report attitudes toward use of force that align with the tenets of ICAT immediately after training.

When considering what characteristics predict *changes* in use of force attitudes from post-training to the follow-up period, different findings emerge. First, officer attitudes regarding use of force supported by ICAT training experienced overall increases from the post-training to the follow-up period. Greater changes toward use of force attitudes that are aligned with ICAT training are experienced by nonwhite officers, officers with lower initial openness to training, less perception that their immediate supervisors support the use of ICAT skills, but greater perceptions that their supervisors engage in activities that reinforcement of ICAT training.

Together these findings reiterate how the receptivity to the tenets of ICAT training –including views on police use of force – varies somewhat across officers. Nonetheless, most officers demonstrate a change in reported attitudes toward the use of force that align with the goals of ICAT training, and these attitudes generally increased over time in the field. The findings also highlight the importance of supervisor activities to reinforce de-escalation principles and continue to shift officer attitudes on the use of force.

Perceptions of Utility of the Critical Decision-Making Model (CDM)

Officer perceptions of the utility of the CDM are the only attitudinal change that experienced overall declines during the follow-up period. Immediately following the training, the only significant predictors of positive views regarding the utility of the CDM are from officers who expressed being more open to *any* training and officers with a role identification that was more consistent with community-oriented policing principles.

Over time, officers' perceptions regarding CDM utility decreased, suggesting some training decay. To better understand the reduction in perceptions of CDM utility, regression models were estimated to examine the change in officer perceptions from post-training to the follow-up period. The findings show that those who reported views consistent with community-oriented policing principles and officers who were more receptive to ICAT initially, on average, experienced a greater decrease in their views of the utility of the CDM. While these findings may initially seem counter-intuitive, they suggest that starting with more positive views regarding the CDM's utility actually leads to larger reductions in that optimism.

Conversely, officers who perceive that their command staff, immediate supervisor, and peers support the tenets of ICAT demonstrated improvements in their views of the utility of the CDM from post-training to follow-up. It is possible that officers that expressed lower utility of the CDM initially changed that perception through administrative and supervisory reinforcement and support regarding de-escalation and the ICAT training. Again, this reinforces the importance of a holistic departmental approach necessary to support the ICAT training and reduce the likelihood of training decay.

Summary

The findings from these ten multivariate models are detailed in Section III, but also summarized in Table 1 below. Within the table, a plus (+) sign indicates positive statistically significant association between the predictor variable and outcome variable (highlighted in blue), whereas a negative (-) sign indicates a negative statistically significant association between variables (highlighted in yellow). Additionally, cells containing "o" indicate no statistically significant association, and cells containing "✓" indicate that the variable was not included in that particular analysis.²

² The statistical framework used in this report is based upon the null/alternative hypothesis counterfactual model that assesses whether there are differences that can be attributed to chance (supporting the null hypothesis) or beyond chance (supporting the alternative hypothesis). The corresponding p-value follows the conventional framework of .01 (or 99% confidence) and .05 (or 95% confidence). Thus, significant findings suggest the differences across categories or between groups is beyond chance at the 95% or 99% confidence levels.

Table 1. Summary of Models Predicting Officer Attitudes and Changes Related to the ICAT Training Program

| Variables | Receptivity to ICAT Training (W2) | Frequent Use of ICAT Skills =1 (W3) | Used ICAT Skills =1 (W3) | Attitudes Toward PIC (W2) | Change in Attitudes Toward PIC (W2→W3) | Confidence Handling PIC (W2) | Use of Force Attitudes (W2) | Change in Use of Force Attitudes (W2→W3) | Views of CDM Utility (W2) | Change in Views of CDM Utility (W2→W3) |
|---------------------------------------|-----------------------------------|-------------------------------------|--------------------------|---------------------------|--|------------------------------|-----------------------------|--|---------------------------|--|
| <i>Officer Demographics</i> | | | | | | | | | | |
| Officer Age | + | o | o | o | o | o | + | o | o | o |
| Male Officer | - | o | o | o | o | o | - | o | o | o |
| White Officer | - | o | o | o | o | - | o | - | o | o |
| LMPD Tenure | - | - | o | o | o | o | o | o | o | o |
| Rank = Officer | o | o | o | o | - | o | o | o | o | o |
| Bachelor's Degree or Higher | o | o | o | o | o | o | o | o | o | o |
| <i>Pre-Training Survey Variables</i> | | | | | | | | | | |
| Enforcement Orientation | o | o | o | o | o | o | - | o | o | o |
| Community Orientation | + | o | o | + | o | + | + | o | + | - |
| Previous Encounter with PIC | o | ✓ | ✓ | o | o | o | o | o | o | o |
| Previous Use of Deadly Force | o | ✓ | ✓ | o | o | o | o | o | o | o |
| Openness to Training | + | ✓ | ✓ | + | o | o | + | - | + | o |
| Attitudes Toward PIC | ✓ | ✓ | ✓ | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PIC Confidence | ✓ | ✓ | ✓ | ✓ | ✓ | + | ✓ | ✓ | ✓ | ✓ |
| Use of Force Attitudes | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | + | ✓ | ✓ | ✓ |
| <i>Post-Training Survey Variables</i> | | | | | | | | | | |
| Attitudes Toward PIC | ✓ | o | o | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PIC Confidence | ✓ | o | o | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Use of Force Attitudes | ✓ | o | o | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Views of CDM Utility | ✓ | o | o | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Receptivity to ICAT Training | ✓ | + | + | ✓ | - | o | o | o | ✓ | - |
| <i>Follow-Up Survey Variables</i> | | | | | | | | | | |
| Command Staff Support | ✓ | ✓ | ✓ | ✓ | + | ✓ | ✓ | o | ✓ | + |
| Supervisor Support | ✓ | ✓ | ✓ | ✓ | + | ✓ | ✓ | - | ✓ | + |
| Peer Support | ✓ | ✓ | ✓ | ✓ | o | ✓ | ✓ | o | ✓ | + |
| Supervisor Reinforcement | ✓ | ✓ | ✓ | ✓ | o | ✓ | ✓ | + | ✓ | o |
| Frequent Use of ICAT Skills | ✓ | ✓ | ✓ | ✓ | o | ✓ | ✓ | o | ✓ | o |

Notes: W1 = Wave 1, pre-training survey; W2 = Wave 2, post-training survey; W3 = Wave 3, follow-up survey; PIC = persons in crisis; CDM = Critical Decision-Making Model. ✓ = not used in analysis; o = non-significant relationship; + = significant, positive relationship; - = significant, negative relationship.

Several officer demographics—including gender, race, age, and tenure—play a significant role in influencing initial receptivity to the ICAT training. Given that the ICAT training is an innovative approach that challenges some traditionally held beliefs regarding the use of force, it is not unexpected that receptivity to this training would vary somewhat across officers. Importantly, most officers are, on average (regardless of their demographics, experience, and views) highly receptive to ICAT training. Importantly, officers who are the most receptive to ICAT have a 49.5% probability of reporting use of de-escalation skills in their most recent encounter with a person in crisis, while officers who are the least receptive to ICAT training only have a probability of 4.5%. This section’s findings related to self-reported use of de-escalation in the field reinforce that receptivity to training is critical for changing officer behavior in the field.

Furthermore, this section's findings underscore the importance of a holistic approach to support de-escalation training in the field. Officers’ perceived support for ICAT from both the command staff and immediate supervisors is associated with an increase in more favorable attitudes towards crisis and more favorable attitudes towards the CDM.

D. Supervisor Survey Analyses

Many have noted the importance of field supervisors in the reinforcement and promotion of training objectives among their subordinates. For example, the PERF (2018) suggests actions of first-line supervisors are critical in reinforcing the tenets taught during any training and communicating the expectations for changes in practices, such as use of force (see also Van Craen & Skogan, 2017). Although other organizational support is needed to promote the use of de-escalation tactics (e.g., policies, procedures), prior research has demonstrated that first-line supervisors play a critical role in shaping subordinates’ behavior, including use of force (Engel, 2003). Recognizing the key position of supervisors in the reinforcement of de-escalation, the research team sought to examine LMPD sergeants' and lieutenants' activities as they relate to their own use of ICAT de-escalation skills, along with the supervision and reinforcement of these skills among their subordinates.

This section reports the findings from analyses examining supervisor characteristics directly associated with (1) Receptivity to training, (2) perceptions of use and supervisory support of ICAT skills, and (3) frequency of supervisory activities supporting ICAT. Again, multivariate regression modeling is used to estimate the effects of supervisor characteristics on reported attitudes and behaviors. Similar to the officer survey findings, analyses in this section highlight that supervisor receptivity to the ICAT training is critical. On average, supervisors who are more receptive to the ICAT training curriculum report engaging in supervisor activities related to ICAT de-escalation skills more often than supervisors who report less receptivity to the training.

Table 2 provides a summary of the four multivariate regression models presented in this section, where a plus (+) sign indicates a statistically significant, positive association between variables (highlighted in blue), and a negative (-) sign indicates a statistically significant, negative association between variables (highlighted in yellow).

Table 2. Summary of Models Predicting Supervisor Attitudes & Activities Related to the ICAT Training Program

| Variables | Receptivity to ICAT Training | Perceptions of Using ICAT Skills | Perceptions of Supervising ICAT Skills | ICAT Supervision Activities |
|------------------------------|------------------------------|----------------------------------|--|-----------------------------|
| Officer Age | o | - | o | o |
| Male Officer | o | o | o | o |
| White Officer | o | o | o | o |
| LMPD Tenure | o | o | o | o |
| Officer Rank | o | o | o | o |
| Bachelor's Degree or Higher | o | o | o | o |
| Enforcement Orientation | o | - | o | o |
| Community Orientation | o | o | o | o |
| Openness to Training | + | ✓ | ✓ | ✓ |
| Receptivity to ICAT Training | ✓ | o | + | + |

Notes: ✓ = not used in analysis; o = non-significant relationship; + = significant, positive relationship; - = significant, negative relationship.

Of importance in this summary – supervisor demographics do *not* play a significant role in most attitudes and activities related to ICAT training. For example, supervisors’ age, race, sex, education, role orientation, and years of supervisory experience do *not* significantly impact perceptions of supervising ICAT skills or the frequency which supervisors report engaging in these activities– only their receptivity to the training itself matters. This highlights the importance of reinforcing ICAT training to first-line supervisors during their initial ICAT training to establish a stronger likelihood of reinforcing ICAT principles to subordinate officers.

E. Recommendations

Based on the additional analyses provided in this *Supplemental Findings Report* regarding the impact of ICAT de-escalation training conducted by the LMPD, we provide the following six recommendations to the LMPD (further detailed in **Section VI**):

1. Continual improvement and testing of de-escalation training.

The LMPD responded to the findings and recommendations presented in the *Initial Findings Report* very positively, making adjustments to the training based directly on those findings. It is recommended, once more, that this *Supplemental Findings Report* be examined with the same level of intensity by the LMPD and used to continually improve de-escalation training. Based on the *Supplemental Findings Report*, LMPD trainers should be better able to identify and reinforce ICAT training to the types of officers who are shown to be less receptive to ICAT training initially and less likely to use de-escalation skills during their interactions with citizens. Further, LMPD executives can identify and prioritize the activities of first-line supervisors to reinforce the principles of de-escalation for their subordinates.

2. Systematic data collection of officer use of de-escalation tactics and skills.

It is again recommended that the LMPD develop a method to collect information when officers use de-escalation skills during their interactions with citizens, regardless of whether or not force is ultimately used. The purpose for collecting de-escalation data is two-fold: (1) it can provide a valuable source of information that can be analyzed to glean information regarding which tactics are the most/least effective; which are the most/least likely to be used; the situational contexts surrounding the frequency and effectiveness of their use; the officer characteristics (sex, race, age, experience, assignment, etc. associated with their use; (2) it provides an opportunity to continually reinforce to officers that the use of de-escalation tactics are supported – and expected (when possible) – by the LMPD.

3. Engage first-line supervisors, conduct supervisor training, and data collection to enhance ICAT training.

Our findings empirically demonstrate that supervisor engagement to support de-escalation principles is critical to improving officer attitudes and subsequent behavior. Further, our findings also show that supervisors' own receptivity to de-escalation training is essential to greater engagement in supervisory activities supporting ICAT de-escalation skills.

The LMPD Training Division is beginning work to develop a separate de-escalation course for first-line supervisors. It is recommended that this new supervisor curriculum be empirically validated using a rigorous research design and detailed statistical analyses. In addition, the LMPD should develop and implement a data process for the systematic collection of supervisor activities designed to reinforce the use of ICAT de-escalation principles and tactics by their subordinates in the field. Thereafter, the performance of these activities should be systematically captured and supervisors held accountable for conducting reviews of subordinate activities.

4. Conduct focus groups with officers.

It is recommended that LMPD consider conducting focus groups with officers to gather additional information about their use of ICAT tactics in the field and any potential barriers experienced. Focus groups allow for information capture that is not included in officer surveys or official agency data. This additional information may provide useful explanations and context for the current research findings.

5. Expand integration of de-escalation principles into other LMPD policies, practices, and trainings.

To further incorporate de-escalation principles into the culture of the LMPD, we recommend that LMPD executives consider how to expand the integration of these principles into LMPD policies, procedures, and other trainings. This inclusion is recommended not only for LMPD's use of force policy, but other policies and procedures designed to ensure accountability within the LMPD. Notably, the LMPD has already enhanced its use of force policy by directly explaining the agency's expectation for de-escalation. However, other agency policies may provide opportunities for the continued inclusion and reinforcement of core principles, including the sanctity of human life and proportionality of officer actions to citizen actions. Furthermore, these policies can help create a method for accountability that requires supervisors to review officer use or non-use of de-escalation in the field. Finally, de-escalation training should not be considered a separate, stand-alone curriculum that is provided during in-service training. Rather,

over time, components of this training should simply be integrated into other trainings, and also introduced during the initial training academy.

6. Engage in best practices for use of force data collection.

Use of force remains an urgent issue to police-community relations, and it is imperative that agencies understand use of force patterns within their own department. This requires agencies to know what data they are collecting, as well as how best to access, analyze, and use these data. During this study, several data issues emerged, including critical information that is not collected by the LMPD or could not be accessed by the LMPD crime analysts.

The LMPD data collection systems are limited and need to be upgraded. The inability to connect these databases through a unique case or incident number presents a major hurdle to identifying situational factors which predict the use of force. It is imperative that the LMPD dedicate the appropriate expertise and resources first to link these current data systems. Second, The LMPD needs to implement plans moving forward to significantly upgrade or replace these systems. To be a data-driven agency, the LMPD needs to have ready access to quality data that can be connected across databases. If the LMPD is able to connect these data sources, the UC research team is committed to conducting the additional analyses needed to thoroughly examine the factors that impact police use of force.

I. INTRODUCTION

The spotlight on de-escalation training and its potential impacts on police-citizen encounters has grown dramatically in recent years. Several states now mandate this type of training for all law enforcement agencies within their states (see, e.g., New Jersey, Michigan, South Carolina, and others). Additionally, most large police departments in the United States already offer some form of de-escalation training to their officers (CBS, 2019). Despite the widespread implementation of de-escalation training across law enforcement agencies, its effects on police officers and their interactions with the public are not well researched (Engel et al., 2020a).

We initially partnered with the LMPD in 2019 to evaluate their agency-wide de-escalation training to address this limitation. Since the publication of our first report, *Examining the Impact of Integrating Communications, Assessment, and Tactics (ICAT) De-escalation Training for the Louisville Metro Police Department: Initial Findings* (hereafter referred to as the *Initial Findings Report*), law enforcement executives and policymakers across the country have taken note, as this was the first documented independent empirical study demonstrating reductions in police use of force related to de-escalation training. As police executives continue their search for effective methods to reduce the frequency and severity of violent encounters between the police and public, the findings from the Louisville Metro Police Department (LMPD) study continue to generate extensive interest. While the *Initial Findings Report* provided critical information, additional analyses are necessary to unpack the impacts of ICAT de-escalation training in a more comprehensive manner. As such, this report (referred to as the *Supplemental Findings Report*) is the second in the two-part reporting of the evaluation results of the ICAT de-escalation training with the LMPD.

At the conclusion of the *Initial Findings Report*, it was noted that the *Supplemental Findings Report* would unpack the patterns of attitudinal and behavioral changes in a more precise and detailed manner in order to identify any changes in patterns and trends that may be related to the ICAT training. Specifically, it was suggested that additional analyses would be conducted to:

- Examine the types of officers and supervisors – including consideration of demographics, experience, attitudes, and ICAT training – who are more likely to report using de-escalation skills in the field.
- Examine the types of supervisors who are more likely to reinforce the tenets of ICAT training with their subordinates.
- Provide a more robust examination of individual officer and citizen characteristics that lead to use of force incidents.
- Examine all arrest situations to predict the types of police-citizen encounters that are more likely to result in use of force.

The purpose of these additional analyses is “to better understand and systematically assess the impact of changes in police policies and trainings and in particular use of force de-escalation training. (Engel et al., 2020: 85). In addition, these analyses are designed specifically to aid the LMPD Training Division as they continue to modify and refine their de-escalation training

curricula for optimal impact. Ultimately, it is critical to prioritize research that will determine which de-escalation skills are most often used in the field, during what types of encounters, by what types of officers, and document their resulting impact on officer/citizen injury.

In **Section II** of this report, the findings from the first report issued by the UC research team, *Examining the Impact of Integrating Communications, Assessment, and Tactics (ICAT) De-escalation Training for the Louisville Metro Police Department: Initial Findings* (see theiacp.org/research) are summarized. **Section III** reviews the methodology used for this study as previously described in the *Initial Findings Report* and presents the new research questions addressed in this current *Supplemental Findings* report. **Section IV** presents new findings from analyses of the post-training officer survey that are designed to assess the impact of officer demographics on receptivity to ICAT training and its reported use in the field. **Section V** reports the findings from a single supervisor survey that extends previous examinations of LMPD supervisors to include demographic and attitude differences across supervisors that impact their receptivity to performing supervisory activities to support ICAT training. The report concludes with **Section VI**, where the study findings are used to provide additional recommendations for policy, research, and practice.

II. REVIEW OF ENGEL ET AL. (2020) INITIAL FINDINGS REPORT

This section of the report summarizes the *Initial Findings Report*, our first documentation of the findings from the ICAT training evaluation for the LMPD. The evaluation design included a multi-method approach to assess the impact of training on officers and first-line supervisors' perceptions and self-reported experiences and a stepped-wedge randomized control trial (RCT) design to examine training effects in the outcomes of police-citizen encounters.

A. LMPD's Implementation of the ICAT Training

The *Integrating Communications, Assessment, and Tactics* (ICAT) training, initially developed by the Police Executive Research Forum (PERF) and adapted by the LMPD Training Division, instructs police officers in de-escalation tactics and critical thinking skills to manage potentially volatile police-citizen encounters. This training encourages the integration of crisis recognition and intervention, communication skills, and operational tactics in police responses. ICAT training is specifically designed for patrol officers responding to persons in crisis – that is, individuals that may be behaving erratically due to mental health concerns, substance use, situational stress, and/or intellectual/developmental disabilities. This training applies to situations where individuals are either unarmed or armed with anything less than a firearm (PERF, 2016). A full summary of the ICAT training can be accessed here: <https://www.policeforum.org/icat-training-guide>.

After attending a train-the-trainer course provided by PERF staff, the LMPD tailored the ICAT curriculum to fit within the local context and experiences of LMPD officers. The ICAT training program was delivered during two consecutive eight-hour training days (Wednesday and Thursday) within a 40-hour week block of in-service training required for all sworn officers. The LMPD engaged in ICAT training from February 2019 through November 2019, training a total of 1,049 officers of all ranks and assignments. Please refer to the *Initial Findings Report* for a more detailed review of the ICAT training development and delivery.

B. Methodology

The initial evaluation examined the effects of the ICAT training across the following outcomes:

- 1) Officers' knowledge of and attitudes toward persons in crisis
- 2) Officers' confidence in handling critical incidents
- 3) First-line supervisors' perceptions and self-reported activities related to their use and supervision of de-escalation skills
- 4) The frequency of officer use of force and the types/severity of force used during encounters with resistant suspects
- 5) The frequency of injuries to citizens and officers during use of force encounters
- 6) Changes in training impact over time

Three research designs were used to examine these outcomes, including: (1) a repeated measure survey design to assess officers' knowledge and attitudes; (2) a cross-sectional survey design to identify first-line supervisors' perceptions and self-reported activities; and (3) a stepped-wedge

randomized control trial to coordinate the LMPD's training schedule and assess behavioral outcomes.

Using the research designs listed above, the research team gathered quantitative data from three sources: (1) officer surveys, (2) field supervisor surveys, and (3) official use of force reports. A variety of analytic techniques were used to provide descriptive statistics, two-wave survey comparisons, and three-wave survey comparisons to assess officer attitudes and perceptions. Changes in frequency and severity of LMPD uses of force, citizen injuries, and officer injuries were assessed using a series of univariate statistics and panel regression analyses that corresponded to the stepped-wedge RCT design to assess the changes in uses of force that corresponded with the randomized timing of the training.

C. Officer Surveys

Officer training surveys (pre-training, post-training, and follow-up) were administered to LMPD officers immediately before, immediately after, and approximately four to six months following their participation in the ICAT training, all with high response rates (87, 100, and 74 percent, respectively). The *Initial Findings Report* examined officers' reactions to the ICAT training, their self-reported use of ICAT skills in the field, and changes in officers' views and attitudes impacted by de-escalation training.

Survey responses indicated that the ICAT training was well received by the LMPD, with over three-quarters of officers reporting positive reactions immediately after the training. However, these positive impressions appear to decline somewhat in the months after their initial training, highlighting the need for continual reinforcement of ICAT training for officers. Indeed, over 40% of officers agreed that they would benefit from a refresher ICAT course.

Officers were asked a series of questions designed to measure their attitudes regarding *Views on Interactions with the Public*, *Attitudes towards Persons in Crisis*, and *Attitudes Toward Use of Force*. Examining these various items and scales demonstrated statistically significant changes in officer attitudes in the expected direction following the training. For example, after the training, officers were more likely to strongly support the notion that force should be used as a last resort compared to scores before the training.

Finally, officers were asked to self-report their confidence in handling interactions with persons in crisis. The findings demonstrate that officers' confidence did not significantly improve immediately after or in the months following the ICAT training. This lack of reported change is likely because officers started with high levels of reported confidence in handling these situations pre-training. Nevertheless, when considering the self-reported use of ICAT skills in the field, most surveyed officers (over 60%) self-reported using ICAT skills during their previous 60 days of work, demonstrating officers indeed use these skills in the field.

One aspect of ICAT training, the Critical Decision-Making Model (CDM), was not perceived as positively by officers. The CDM represents an essential aspect of the ICAT training program; therefore, officers' reactions to this thinking framework are especially relevant to the training evaluation. Analyses of post-training scores compared to follow-up scores revealed that ten of the eleven items demonstrate statistically significant changes in the opposite direction than would be expected, indicating that officers reported finding the CDM less useful over time. This

is an area for reconsideration regarding how the training curricula are created and delivered by the LMPD Training Division.

D. Supervisor Surveys

A one-time survey was administered to first-line supervisors (sergeants and lieutenants) in March 2020. The supervisor survey was designed to examine supervisors' activities related to their use of ICAT de-escalation skills and the supervision and support of their subordinates' de-escalation skills. Analyses revealed that LMPD supervisors appear to hold positive attitudes regarding their use of the ICAT de-escalation skills. On average, supervisors expressed confidence in their ability to use the skills during interactions with the public and their subordinate officers. Additionally, supervisors indicated they could effectively supervise and coach subordinate officers in the use of these de-escalation skills, with nearly 90% indicating they did not require additional training or support from leadership to complete these tasks.

Despite supervisors' reported confidence in supervising and coaching the use of ICAT training, supervisors reported a low frequency of engagement in these activities. On average, supervisors suggested they seldom (i.e., once per month) or only sometimes (i.e., two to three times per month) communicate with their subordinate officers about the use of ICAT de-escalation skills in a general or incident-specific manner. Further, reporting documentation of officers' use of de-escalation skills and supervisors' observation of officers' de-escalation skill use (through video review or in the field) is uncommon. These low self-reports of supervisory activities associated with reinforcing de-escalation training content were echoed in the findings from the officer surveys. When officers were asked how frequently immediate supervisors reinforce ICAT training, over 40% indicated this happened seldom (once per month) or never. Collectively, the rarity of these types of supervisor-officer interactions suggests LMPD first-line supervisors may be missing important opportunities to support and reinforce the skills learned in the de-escalation training sessions among their subordinate officers.

E. Impact of ICAT Training on Officer Behavior

A critical aspect of this evaluation was the examination of ICAT de-escalation training on changes in officer behavior during interactions with the public. The UC research team focused specifically on uses of force, where force is measured as the number of individuals that had force used against them during a single encounter. Injuries were measured as those reported by individuals or officers during a use of force incident and documented on LMPD use of force reports.

The research team first considered the historical context of use of force incidents in Louisville between 2010 and 2020. Using time series analyses, three changes in the pattern of use of force counts over time were identified. Use of force events in Louisville were consistently stable for a six-year period (2010-2015), significant reductions and then stabilization of those reductions were identified for the next three-year period (2016-2018) prior to the implementation of the ICAT training—these changes in the pattern of use of force counts were roughly correlated with LMPD use of force policy changes. This analysis demonstrated that a stable and lengthy baseline in use of force incidents existed prior to the ICAT training that could be used for comparison purposes. During the training implementation and follow-up period (January 2018 and April 2020), the monthly average use of force counts declined in six of the eight Patrol Divisions,

ranging from a decrease of –16% to –52% among Divisions that experienced sizable and notable declines in use of force.

Examining the specific impact of ICAT training using the stepped wedge RCT design demonstrated three primary, consistent, and robust findings, net of controls and net of prior trends in the data. Of the utmost importance, the randomly assigned timing of de-escalation training in Louisville was associated with a statistically significant decline in use of force (28%), citizen injuries (–26%), and officer injuries (–36%). These significant reductions in force and injuries occurred above and beyond observed changes in arrest patterns and corresponded with the timing of the training across the various Police Divisions.

F. Recommendations

The *Initial Findings Report* concluded with a series of recommendations for the LMPD to reinforce de-escalation through policies and direct field supervision, supported through an established managerial accountability system for using these tactics. Further, these systems should be tested to determine their effectiveness. The following eight recommendations were provided to the LMPD:

1. Continue, Refine, and Expand De-escalation Training with the LMPD
2. Include Louisville Residents in ICAT Training
3. Continue Use of Force Policy Changes and Updates
4. Examine the Availability and Use of Less Lethal Equipment by the LMPD
5. Revisit the Role of Supervisors to Reinforce ICAT Training
6. Implement Changes to LMPD Use of Force Data Collection
7. Examine the Impact of Changes to the LMPD Traffic Stop Policy
8. Continue and Expand External Review of Reported Use of Force Incidents and Training

In sum, these recommendations will enhance the LMPD’s understanding of the impact of ICAT de-escalation training on its officers. This knowledge, along with the expanded results in this second *Supplemental Findings Report*, is critical to building on the evidence base on what works in policing.

III. METHODOLOGY

The methodology used for the *Supplemental Findings Report* is based on the same research design and data sources as the *Initial Findings Report*. The various components of the original research methodology, including the study design, data sources, measures, and analytical techniques, are described again below. This section concludes with a list of new research questions to be addressed in this report.

A. Research Design

To assess the impact of ICAT training on (1) the knowledge and attitudes of officers, (2) the attitudes and self-reported behaviors of supervisors, (3) the behaviors of officers, the research team employed three distinct research designs. Specifically, the evaluation of training effects included (1) a repeated measure survey design, (2) a cross-sectional survey design, and (3) a stepped-wedge randomized control trial design. All data collection and related research activities were reviewed and approved by the University of Cincinnati's Institutional Review Board (IRB) in February 2019 (IRB# 2019-0118). Each of these designs is discussed in greater detail below.

Repeated Measures Survey Design

To examine the impact of de-escalation training on LMPD officers' knowledge and attitudes, three training surveys (pre-training, post-training, and follow-up) designed by the research team were administered by the LMPD Training Division staff to officers immediately before, immediately after, and approximately four to six months following officers' participation in the training. These surveys allow for comparisons of officers' knowledge and attitudes over time. Specifically, statistical comparisons of pre-training to post-training survey responses assess changes in responses following officers' participation in the ICAT training program. Additionally, comparisons of the post-training and follow-up survey responses provide insight on training effects over time. Finally, comparisons of the pre-training and follow-up survey responses consider the overall impact of the ICAT training program on LMPD officers' knowledge and attitudes.

Cross-Sectional Survey Design

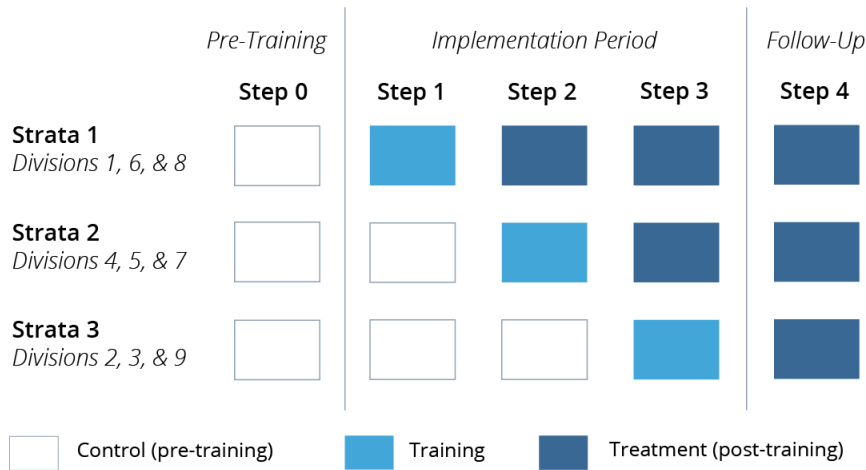
To supplement the evaluation of the training program, LMPD supervising officers (i.e., sergeants and lieutenants) were administered a survey in March of 2020, designed by the research team to assess their general perceptions of the role of supervisors, and more specifically, their views regarding how and when they supervise and/or reinforce the ICAT training. This cross-sectional design collected information from supervisors at a single point in time after the implementation of the ICAT training. Multivariate analyses are conducted to examine the impact of supervisors' characteristics and attitudes on their involvement in supervisory activities that support ICAT training.

Stepped-Wedge Randomized Control Trial Design

To examine the impact of ICAT training on LMPD officers' behavior, the research team developed a stepped-wedge randomized control trial (RCT) design that was implemented by the LMPD Training Division. The stepped-wedge cluster RCT is a crossover design in which clusters of subjects begin as no-intervention controls, crossing over permanently from the control

group to the intervention group in sequence at randomized, pre-specified points in time (Hussey & Hughes, 2007). In the present study, a stepped-wedge cluster RCT crossover design allowed for clusters of LMPD officers to begin as non-intervention controls (i.e., untrained in ICAT). Individual clusters of officers were then randomly selected in a sequence at pre-planned time points to cross over from the control group to the intervention group (i.e., trained in ICAT). At the end of the experiment, all officer clusters had crossed over to the intervention group. To implement the stepped-wedge RCT design, the nine LMPD Patrol Divisions, including eight geographic-based divisions and one mobile unit operating across the city of Louisville, were grouped into three strata, which were then randomly selected for training. This implementation of the stepped-wedge RCT design is displayed in Figure 2.

Figure 2: The Stepped-Wedge Design



Note: Step 0 = January 2019 to February 10, 2019; Steps 1 to 3 = February 11, 2019 to November 30, 2019; Step 4 = December 1, 2019 to February 2020

The research team’s examination of the LMPD training regimen was consistent with the randomly arranged stepped-wedge training plan, suggesting high fidelity between the treatment as delivered and treatment as intended. Additionally, sensitivity testing examining the potential movement of LMPD officers from one Patrol Division to another during the research period – creating a potential contamination effect of the treatment condition – demonstrated little concern for possible contamination during the evaluation period.

B. Data Sources

Using the research designs described above, the research team gathered quantitative data from three sources: (1) officer surveys, (2) field supervisor surveys, and (3) official reports of officer use of force.³ All data collection and related research activities were reviewed and approved by

³ The original research plan included a qualitative component that was not implemented. Four focus groups were scheduled with approximately 40-45 LMPD officers to be convened on March 20 and 27, 2020, but were canceled due to Ohio and Kentucky travel restrictions associated with COVID-19. Unfortunately, these focus groups were unable to be rescheduled during the study period due to the continued restrictions of group meetings. The intent of

the University of Cincinnati's Institutional Review Board (IRB) in February 2019 (IRB# 2019-0118). The research questions for this study were assessed using a variety of analytic techniques to provide descriptive statistics, two-wave, and three-wave survey multivariate comparisons to assess the impact of officer and supervisor demographics and pre-training attitudes on de-escalation training receptivity and use of skills. Changes in frequency and severity of LMPD uses of force, citizen injuries, and officer injuries are assessed by race using a series of panel regression analyses that corresponded to the stepped-wedge RCT design to determine changes in uses of force, by citizens' race, that corresponded with the randomized timing of the training.

C. Research Questions

This evaluation extends our initial examination of LMPD officers' and field supervisors' knowledge, attitudes, and self-reported behavior following their participation in a two-day de-escalation training program. These outcomes are examined using officer and supervisor training surveys designed by the UC research team and administered in partnership with the LMPD. A series of convergent analytical approaches are used to answer the following research questions:

1. Are officer characteristics predictive of reported receptivity to the ICAT training program?
2. Are officer characteristics associated with the frequency of self-reported use of ICAT de-escalation skills in the field?
3. Are officer characteristics associated with training-related attitudes and the change of those attitudes?
4. Are first-line supervisor characteristics associated with self-reported frequency of activities performed to reinforce subordinates' use of ICAT de-escalation skills?

Importantly, these research questions examine the characteristics of officers and supervisors who are more likely to use ICAT de-escalation skills so that the LMPD Training Division can modify and refine their training curricula for optimal impact. These research questions are explored in the remaining sections of this report.

these focus groups was to gather additional context regarding the strengths and limitations of implementing de-escalation tactics in the field, comments regarding the ICAT training, and reactions to the study results specifically. If deemed appropriate and still of value, these sessions may be rescheduled sometime in 2021.

IV. OFFICER SURVEY ANALYSES

Several important findings were gleaned from analyses and documented in the *Initial Findings Report* that identified changes in officers' attitudes and perceptions attributed to the ICAT training program. These findings demonstrated a need to better understand what factors contributed to differences in attitudinal and perceptual changes across officers. For instance, while initial results demonstrated that over three-fourths of respondents reported positive reactions to the ICAT training, it was unclear which types of officers were more receptive to ICAT training than others. The following section details more robust analyses designed to unpack the details of officer characteristics—including consideration of demographics, experience, and attitudes—that impact changes in reported attitudes and self-reported use of de-escalation skills in the field. This type of feedback is especially critical for the LMPD Training Division as they strive for continual improvement in their offerings.

Section IV is structured as follows. First, descriptions of the survey instrument and its administration are reiterated from the *Initial Findings Report*, followed by reporting of the sample demographics. Thereafter, this section reports the findings from analyses examining officer characteristics directly associated with: (1) receptivity to training, (2) self-reported use of de-escalation skills in the field, (3) changes in attitudes toward persons in crisis, (4) changes in reported confidence in handling situations involving persons in crisis, (5) changes in attitudes toward use of force, and (6) changes in perceived utility of the Critical Decision-Making Model (CDM).

Where possible, we examine two research questions for the topics noted above: (1) what officer characteristics are associated with *initial attitudes* towards the tenets of ICAT training, and (2) what officer characteristics led to the most significant *changes in attitudes* (positive or negative) after 4-6 months in the field following ICAT training.

A. Survey Description

To assess the ICAT training's impact on officers' attitudes and perceptions, the research team used a repeated measures survey design. Officers were administered three training surveys by the LMPD Training Division staff immediately before, immediately after, and four to six months following officers' participation in the ICAT training. Both the pre- and post-training surveys were administered in paper format to all training participants during the training session and placed into a collection box. Surveys were retrieved by the research team every two to three weeks. The online follow-up survey (provided to patrol officers only) was administered electronically using LMPD software (i.e., PowerDMS). The inclusion of a unique identifier for each officer allowed survey responses to be linked across measurement waves (i.e., pre, post-, and follow-up).

The LMPD officer training surveys included questions grouped within ten different conceptual areas. Although many of these items were designed to measure officer attitudes that might be affected by their participation in a use of force training program, other items serve as "control" measures and, as such, are not expected to change over time. The survey items presented to officers differed across the waves of the training survey. The inclusion of specific items across periods of measurement was determined by the need to collect specific information across

multiple points in time, as well as by the desire to shorten the follow-up survey to increase response rates. The analyses presented in this section include the following conceptual areas:

- (1) *Views on Interactions with the Public* – Included in pre- and post-training surveys, officers' general views on citizen interactions – including issues of officer safety and de-escalation – were measured using seven survey items. Officers were asked to indicate their level of agreement to each of the seven survey items on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). After the appropriate reverse coding, higher scores indicate a greater agreement to the tenets taught during ICAT training.
- (2) *Attitudes Towards Persons in Crisis* – Included in pre-, post-, and follow-up training surveys, 14 survey items were used to measure officers' attitudes toward interactions with persons in crisis. Based on the ICAT curriculum, a person in crisis refers to an individual that may be behaving erratically due to factors such as mental health concerns, substance use, situational stress, and/or intellectual/developmental disabilities. For each survey item, officers were asked to indicate their level of agreement on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Higher scores indicate a greater agreement with the tenets taught during the ICAT training.
- (3) *Views on Policing* – Included in pre- and post-training surveys, 15 survey items were used to assess officers' view of the role of police – including the importance of various job duties – and officers' perspectives regarding their peers and agency. Respondents were asked to indicate their level of agreement to each survey item on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree).
- (4) *Attitudes Toward Use of Force* – Included in pre-, post-, and follow-up training surveys, 11 items were asked to garner officers' attitudes toward using force, including their preference for using force and communication skills. Respondents were asked to indicate their level of agreement to each item on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Higher scores indicate a greater agreement with the tenets taught during the ICAT course.
- (5) *Officer Confidence in Interactions with Persons in Crisis* – Included in pre-, post-, and follow-up training surveys, officers were asked to indicate their level of confidence on a four-point scale (1 = Not Confident at All; 4 = Very Confident) to a series of actions when responding to a hypothetical person in crisis. Thirteen survey items measured respondents' confidence in managing the described situation. Item values are expected to increase as a result of the ICAT training.
- (6) *Utility of the Critical Decision-Making Model (CDM)* – Included in the post- and follow-up training surveys, 11 survey items were measured to determine the perceived utility of the Critical Decision-Making Model (CDM). Respondents were asked to indicate their level of agreement on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Higher scores indicate officers' greater agreement regarding the utility of the CDM.
- (7) *Receptivity to Training* – Included in the pre-training survey, survey respondents were asked to indicate their level of agreement with seven statements related to training in law enforcement using a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). These items were adapted from a study on employees' openness toward change

conducted by Miller, Johnson and Grau (1994). These items serve as control measures for the evaluation and were only asked on the pre-training survey.

- (8) *Receptivity to the ICAT Training Program* – Included in the post-training survey, officers' perceptions of the ICAT training program – including the content, delivery, and perceived outcomes – were assessed using eight items where respondents indicated how applicable they felt each statement was to them (1 = Not at All Applicable to Me to 7 = Very Applicable to Me).
- (9) *Use of ICAT Skills* – Included in the follow-up survey, 10 survey items assessed respondents' perceptions of ICAT training, based on their level of agreement on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Items also determined how often ICAT specific de-escalation skills were used by officers in the last 60 days, including their difficulty and effectiveness of use. An additional 20 questions were posed to respondents in a variety of formats to gather feedback on the use of ICAT de-escalation skills in the field.
- (10) *Demographics* – Included in pre-, post-, and follow-up training surveys, 14 survey items measured respondents' demographics, previous experiences with persons in crisis, and participation in specific training programs during the last three years.

The specific survey items asked in each of the three waves varies somewhat, with specific items appearing only once, twice, or in all three waves. As such, the data used in the analyses reported below vary in collection wave, based on the specific research questions addressed. Analyses of data from waves 1 and 2 examine what officer characteristics are associated with initial attitudes towards the tenets of ICAT training (before or immediately following training), while analyses of data from Wave 3 are compared to Wave 2 to examine what officer characteristics are associated with changes in attitudes over time. The former analyses are used to identify officer characteristics that support the use of de-escalation skills, while the later analyses address officer characteristics that may lead to positive or negative attitudinal changes in the field after 4-6 months. These analyses also help with identifying potential predictors of training decay.

Sample Description

Overall, officer training surveys received high response rates at all three waves of measurement (Wave 1 = 87% response rate, Wave 2 = 100%, and Wave 3 = 73.8%). It is important to note, however, that different sampling strategies were used across waves that lead to varying sample sizes across analyses. All officers who attended the ICAT training program were asked to complete both the pre-training and post-training surveys. Of the 1,049 officers trained, 907 completed the pre-training survey.⁴ Of these 907 surveys, 890 were able to be matched with officer demographic data from LMPD's employee database. All 1,049 trained officers completed the post-training survey. The 1,049 surveys were then matched to officer demographic data from LMPD's employee database, for a total of 1,042 post-training survey respondents.

The follow-up survey was provided only to officers assigned to the Patrol Division ($n = 809$ patrol officers). Of these 809 surveys, 597 were completed and provided to the research team. Of

⁴ The lower pre-training response rate was likely due to some officers arriving late to the 8:00 am training, after the pre-training survey had been administered.

these 597 surveys, 591 were able to be matched with pre-/post-training responses and officer demographic data from LMPD's employee database.

The statistical framework used throughout this report is based upon the null/alternative hypothesis counterfactual model that assesses whether there are differences that can be attributed to chance (supporting the null hypothesis) or beyond chance (supporting the alternative hypothesis). The corresponding p-value follows the conventional framework of .01 (or 99% confidence) and .05 (or 95% confidence). Thus, significant findings suggest the differences across categories or between groups are beyond chance at the 95% or 99% confidence levels. All analyses are performed using Stata, a general-purpose statistical software for data science.

B. Officer Demographics

Table 1 displays the descriptive statistics of all measured variables used in the analyses within this section. Means and standard deviations are presented for all continuously measured variables, and proportions are presented for all dichotomous measures. Detailed descriptions for all variables can be found in Appendix A. As can be seen in Table 1, the average age of officers included in the analyses is approximately 39 years old. Furthermore, the majority of officers are male, White, and have a bachelor's degree or higher. Additionally, the responses to the pre-and post-training survey attitudes appear to be quite consistent across the department, as can be seen when comparing the averages across all trained officers (Pre-/Post-Training column) to the averages of the patrol division only officers (Follow-up column).

Table 1. Descriptive Statistics for LMPD Officers Survey Responses by Wave

| | Pre-Training N = 890 | | Post-Training N = 1,042 | | Follow-up N = 591 | |
|---------------------------------------|-------------------------|-----|----------------------------|------|----------------------|-----|
| | Mean (SD) | N | Mean (SD) | n | Mean (SD) | n |
| <i>Office Demographics</i> | | | | | | |
| Officer Age | 39.37 (8.53) | 890 | 39.20 (8.69) | 1042 | 38.71 (8.88) | 591 |
| Male Officer | [0.87] | 890 | [0.86] | 1042 | [0.84] | 591 |
| White Officer | [0.83] | 890 | [0.83] | 1042 | [0.82] | 591 |
| LMPD Tenure | 9.81 (6.46) | 890 | 9.62 (6.63) | 1042 | 8.65 (6.15) | 591 |
| Officer Rank | [0.77] | 890 | [0.78] | 1042 | [0.77] | 591 |
| Bachelor's Degree or Higher | [0.54] | 888 | [0.54] | 1040 | [0.55] | 533 |
| <i>Pre-Training Survey Variables</i> | | | | | | |
| Enforcement Orientation | 10.93 (2.16) | 888 | 10.95 (2.17) | 866 | 10.91 (2.26) | 446 |
| Community Orientation | 27.43 (3.28) | 882 | 27.43 (3.26) | 860 | 27.36 (3.26) | 443 |
| Previous Encounter with PIC | [0.95] | 890 | [0.95] | 1040 | [0.95] | 532 |
| Previous Use of Deadly Force | [0.10] | 862 | [0.09] | 998 | [0.08] | 513 |
| Openness to Training | 26.03 (3.55) | 886 | 26.03 (3.54) | 864 | 26.05 (3.68) | 447 |
| Attitudes Toward PIC (W1) | 45.47 (4.20) | 873 | 45.51 (4.19) | 851 | 45.60 (4.18) | 441 |
| PIC Confidence (W1) | 45.59 (5.72) | 885 | 45.61 (5.72) | 863 | 46.03 (5.72) | 445 |
| Use of Force Attitudes (W1) | 23.06 (4.32) | 877 | 23.01 (4.30) | 855 | 22.99 (4.22) | 442 |
| <i>Post-Training Survey Variables</i> | | | | | | |
| Attitudes Toward PIC (W2) | — | — | 47.17 (4.34) | 1024 | 47.62 (4.32) | 519 |
| PIC Confidence (W2) | — | — | 45.93 (5.86) | 997 | 46.32 (5.81) | 508 |
| Use of Force Attitudes (W2) | — | — | 24.68 (4.21) | 1031 | 24.83 (4.29) | 524 |
| Views of CDM Utility (W2) | — | — | 31.43 (4.43) | 1031 | 31.72 (4.22) | 523 |
| Receptivity to ICAT Training | — | — | 33.59 (6.58) | 1027 | 34.18 (6.16) | 524 |
| <i>Follow-Up Survey Variables</i> | | | | | | |
| Command Staff Support | — | — | — | — | 3.65 (0.78) | 534 |
| Supervisor Support | — | — | — | — | 3.68 (0.74) | 537 |
| Peer Support | — | — | — | — | 3.39 (0.78) | 537 |
| Supervisor Reinforcement | — | — | — | — | 1.62 (1.17) | 527 |
| Frequent Use of ICAT Skills | — | — | — | — | [0.65] | 521 |
| Used ICAT Skills | — | — | — | — | [0.35] | 524 |
| Change in PIC Attitudes | — | — | — | — | -2.50 (5.50) | 480 |
| Change in Use of Force Attitudes | — | — | — | — | 0.63 (3.80) | 478 |
| Change in Views of CDM Utility | — | — | — | — | -3.35 (4.59) | 467 |

Notes: SD = standard deviation; PIC = persons in crisis; CDM = Critical Decision-Making Model; W1 = Wave 1, pre-training survey; W2 = Wave 2, post-training survey; W3 = Wave 3, follow-up survey.

C. Training Receptivity

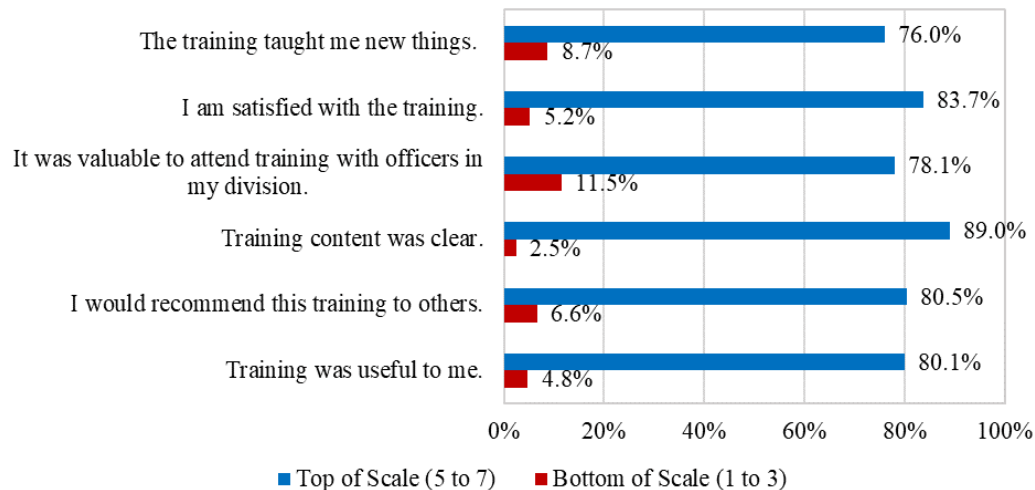
This section presents the findings for the multivariate analyses conducted to examine the officer characteristics that predict overall receptivity to the ICAT training curriculum immediately following completion of the ICAT training program (Wave 2: Post-training survey). At the end of the training, all officers who participated were asked to respond to six items designed to assess the perceived value of the ICAT training curriculum. These items included:

- The training was useful to me.
- I would recommend this training to others.
- The training content was clear.
- It was valuable to attend training with officers in my division.
- I am satisfied with the training.
- The training taught me new things.

Officers provided their perceptions of the ICAT training for each item using a seven-point scale where 1= not at all applicable to me, 4= somewhat applicable to me, and 7= very applicable to me. The sum of all six items was used to generate a single measure that captures receptivity to ICAT training. This additive scale had a possible range of 6 to 42, and higher scores on the scale reflect that an officer was more receptive to the ICAT training program. The average receptivity score for the analytical sample used for this analysis was 33.39.

Figure 3 below (repeated from the *Initial Findings Report*) shows that 80.1% of officers reported the training was useful to them (reporting a score of 5 or higher). Further, 83.7% of officers expressed satisfaction with the training, and 78.1% suggested it was valuable to attend the training with officers in their division. Frequencies across the remaining survey items demonstrate that the majority of officers viewed the ICAT training program positively.

Figure 3: LMPD Officer Post-Training Perceptions of ICAT Training⁵



⁵ Neutral responses not included in Figure 3.

To examine the officer characteristics that predict overall officer receptivity to ICAT training, a multivariate Ordinary Least Squares (OLS) linear regression model is estimated for officer age, sex, race, LMPD tenure, rank, educational attainment, enforcement orientation, community orientation, general openness to training, previous encounters with persons in crisis, and previous use of deadly force.⁶ The results of the regression analysis predicting officer receptivity to ICAT training are presented in Table 2, demonstrating that while holding all remaining variables constant, several officer characteristics are significantly associated with overall receptivity to the ICAT training curriculum.

As would be expected, officers who expressed being more open to training (in general) before the start of the ICAT training program are, on average, more receptive to the ICAT training program specifically. Additionally, officers who view the role of the police as being consistent with the principles of community-oriented policing are more receptive to the ICAT training program. For officer demographic characteristics, officers' age, sex, race, and tenure with LMPD are all significantly associated with receptivity to ICAT training. After holding the remaining officer characteristics constant, officers who are female and Nonwhite are found to be, on average, more receptive to ICAT training compared to their male and White counterparts. Further, officers who are older and those with less experience with LMPD are, on average, more receptive to the ICAT training program.

Table 2. OLS Regression Results Predicting Receptivity to ICAT Training

| Variables | Receptivity to ICAT Training (W2) | |
|------------------------------|--------------------------------------|-----------|
| | Coefficient | St. Error |
| Officer Age | 0.065* | 0.032 |
| Male Officer | -2.001** | 0.655 |
| White Officer | -1.645** | 0.592 |
| LMPD Tenure | -0.097* | 0.046 |
| Officer Rank | -0.035 | 0.571 |
| Bachelor's Degree or Higher | -0.192 | 0.436 |
| Enforcement Orientation | -0.018 | 0.100 |
| Community Orientation | 0.308*** | 0.073 |
| Previous Encounter with PIC | -2.019 | 1.538 |
| Previous Use of Deadly Force | -1.249 | 0.714 |
| Openness to Training | 0.552*** | 0.066 |
| Intercept | 14.520 | 3.260 |
| <i>N</i> ⁺ | | 820 |
| <i>R</i> ² | | 0.196 |

Notes: PIC = persons in crisis; W2=Wave 2, post-training; ⁺ Reduction in sample size is due to use of listwise deletion.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

⁶ A multivariate analysis is preferred in this situation because the association between a specific predictor can be observed while adjusting for the influence of all other predictor variables on the outcome. Furthermore, an OLS regression model is an appropriate statistical technique to examine the association of an independent variable with a continuously measured outcome (Fox, 2016). In OLS linear regression, the regression coefficient (b) represents the estimated change in the outcome with a one-unit change in the independent variable of interest.

Spotlight on Officer Age and LMPD Tenure

At first glance, it may appear that the results for officer age and LMPD tenure have contradictory findings given that age and tenure are positively associated with one another, but age is positively associated with training receptivity, and tenure is negatively associated with receptivity. To better understand these findings, it is important to consider a fuller interpretation of these results. When the regression coefficient for the age variable is interpreted, the coefficient represents the effect of officer age on receptivity to ICAT training when all other predictors (including years with LMPD) are held constant. Therefore, these results show that if two officers with the same number of years of experience with LMPD but with different ages were compared, the older officer would, on average, be more receptive to the ICAT training curriculum than the younger officer. Alternatively, if two officers who were the same age but had different years of experience with LMPD were compared, the less tenured officer would, on average, be more receptive to the training than the more tenured officer.⁷

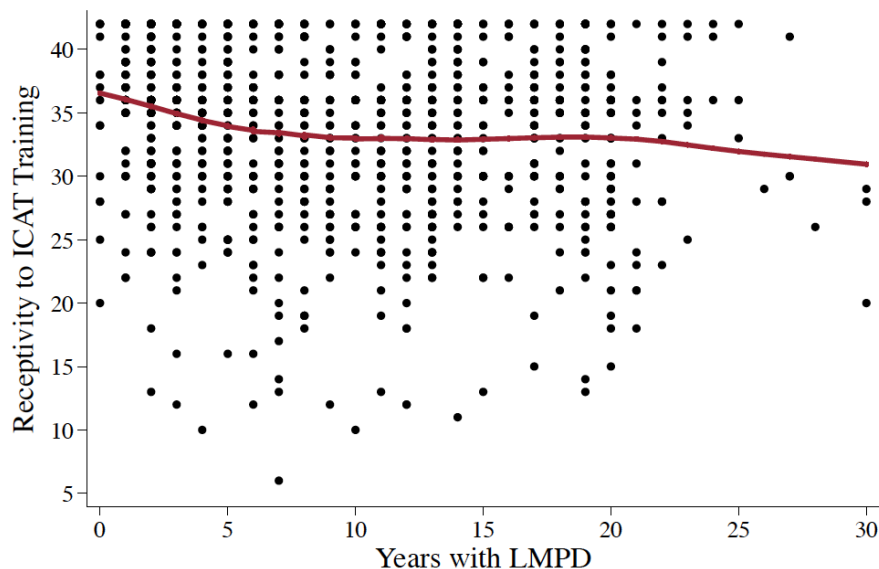
While these findings may initially appear counter-intuitive, the analyses actually provide some initial evidence for what many policing experts have long suspected. Police executives often note that officers who begin their careers at a later age bring a different level of maturity and life experiences to the job that positively impacts their attitudes and decision-making. These analyses support that notion by demonstrating there are differences in receptivity to de-escalation training between those officers who begin their law enforcement careers early (e.g., at 18 years old), compared to those who join later in life.

It is also important to better understand the impact of LMPD tenure on officers' receptivity to ICAT training at different career stages. The regression coefficient reported in Table 2 assumes that the relationship between LMPD tenure and receptivity to training is linear. However, Figure 4 presents a scatterplot of the relationship between receptivity to ICAT training and years of experience with LMPD allowing for a nonlinear relationship.⁸

⁷ In the presented statistical model, age and tenure are mutually suppressing irrelevant variance in the prediction of receptivity (Fox, 2016). By removing the irrelevant variance, the differential influence of age and tenure is enhanced.

⁸ To investigate the possibility of a nonlinear relationship, a scatterplot is presented in Figure 4 with a LOWESS line. LOWESS (Locally weighted scatterplot smoother) is a nonparametric strategy that computes fitted values based on a locally weighted line, where more weight is given to the observations closer to the focal data point than data points further away (Fox, 2016). As shown, the LOWESS line suggests the relationship might be nonlinear. To test for statistical evidence of nonlinearity, the linear model from Table 2 is estimated with a third order polynomial for tenure (a quadratic transformation [tenure²] and a cubic transformation [tenure³] of the LMPD tenure variable) (Fox, 2016). The results demonstrate that tenure, tenure², and tenure³ are all statistically significant predictors of receptivity to ICAT training ($p = .001$) and the inclusion of the third order polynomial improves model fit beyond the linear specification. This finding is also supported using a nonparametric bivariate kernel regression technique (Ferberda, Hainmueller, & Hazlett, 2017).

Figure 4. Nonlinear Functional Form of the Relationship Between Receptivity to ICAT Training and LMPD Tenure



The simplest interpretation of this analysis is that officers’ receptivity to ICAT training is initially highest among officers with the least LMPD seniority. The relationship between receptivity to ICAT training and LMPD tenure declines slightly as LMPD tenure increases from 0 to around 7 years. The relationship then levels off as LMPD tenure increases up to around 22 years. It is at around 22 years of experience with LMPD that a decrease in receptivity is once again observed.

To summarize, when considering the relationship between receptivity and tenure, the results show that the least tenured officers are the most receptive to ICAT training. Within this group of the least tenured officers, those who are older at the onset of their careers are the most receptive to training, compared to those officers who start their careers earlier. Receptivity in training declines slightly as tenure increases and appears to level out around seven years of service with the LMPD. Scores for receptivity to ICAT training then continue to remain stable across years of LMPD tenure until reaching around 22 years, when receptivity again decreases. It should be noted, however, that on average, officers with greater seniority never really become unresponsive to training.⁹ These officers are still fairly receptive to the training—they may just not be as enthusiastic about it as the officers with the least LMPD seniority. In other words, the best interpretation of this finding is not that more tenured officers are *less* receptive to ICAT training but rather that less tenured officers are *more* receptive to training. Furthermore, older officers with less LMPD tenure are the most receptive to ICAT training.

⁹ The overall average receptivity score for officers with more than 7 years of experience with LMPD is approximately 33. This overall score translates to a single-item average on the receptivity survey questions of 4.6 out of 7, where a value of 4 corresponds to “somewhat applicable to me.”

Summary

In conclusion, there are several officer characteristics that are significantly associated with officers' overall receptivity to the ICAT training program. Specifically, officers who reported being more open to training, those who align with a community-oriented policing view, female officers, and minority officers are more receptive to ICAT training program. Additionally, officers with less than seven years of tenure with the LMPD but older are more receptive to ICAT than their more tenured and younger peers. Given that the ICAT training is an innovative approach that challenges some traditionally held beliefs regarding the use of force, it is not unexpected that receptivity to this training would vary somewhat across officers. Importantly, most officers are, on average (regardless of their demographics, experience, and views) highly receptive to ICAT training.

D. Self-reported Use of ICAT Skills in the Field

Using multivariate analyses, officer characteristics associated with the self-reported use of ICAT de-escalation skills in the field are presented below. All LMPD officers who were part of the patrol division were asked to complete a follow-up survey approximately four to six months after participating in the ICAT training. In the questionnaire, officers were asked, "In the last 60 days, did you apply any strategies from the ICAT training in your work?" The available response options included: never, seldom (1 per month), sometimes (2-3 times per month), often (once a week), and frequently (more than 2-3 times per week). As documented in the *Initial Findings Report*, approximately a combined two-thirds (64.3%) of officers within the patrol division reported using ICAT skills sometimes, often, or frequently in the 60 days before completing the follow-up survey.

To examine the officer characteristics that predict the use of ICAT skills in the field, a multivariate logistic regression model is estimated.¹⁰ As such, the outcome of self-reported use of ICAT skills drawn from the survey question above was recoded into a dichotomous variable. The dichotomy was operationalized such that *never* and *seldom* were combined to reflect less frequent use of ICAT skills and *sometimes*, *often*, and *frequently* were combined to reflect more frequent use of ICAT skills.¹¹

The officer characteristics under examination in this analysis include age, sex, race, LMPD tenure, educational attainment, enforcement orientation, community orientation, attitudes toward persons in crisis, attitudes toward use of force, confidence in dealing with persons in crisis, and general receptivity to ICAT training. Given that patrol officers are often the first to respond to

¹⁰ A logistic regression model is an appropriate statistical technique to examine the association of an independent variable with a dichotomous outcome (Long and Freese, 2014). Frequency of using ICAT skills, however, is originally measured as an ordinal variable and results of the Brant test demonstrated that the parallel regression assumption is met in these data (Long and Freese, 2014). Therefore, an ordered logit model is also estimated. The conclusions drawn from the ordered logit model are substantively similar to those presented in the text using a logistic regression model.

¹¹ There are multiple ways in which the frequent use of ICAT skills variable could be operationalized and reduced from an ordinal measure to a dichotomous variable. To check whether the results are sensitive to selection of operationalization, the research team estimated additional models with alternative versions of the outcome. These alternatives included any self-reported use of ICAT skills (0= *never*; 1= *seldom*, *sometimes*, *often*, and *frequently*) and more frequent use of ICAT skills (0= *never*, *seldom*, and *sometimes*; 1= *often* and *frequently*). The conclusions drawn from these analyses are substantively the same as the results presented in the text.

calls for service and interact with citizens, they likely have the greatest opportunities to use ICAT skills (compared to those in supervisor positions or specialized assignments). Therefore, to present a more accurate picture of the officer characteristics that impact the use of de-escalation skills in the field, the following results are gleaned from an analytical sample that was restricted to only the LMPD officers identified at the rank of “police officer” in the LMPD employee database. Of these 291 officers included in the subsequent analysis, 67% reported they sometimes, often, or frequently used ICAT skills in the field during the 60 days prior to completing the follow-up surveys.

The logistic regression analysis results presented in Table 3, Model 1 show that only two officer characteristics are significantly associated with officer self-reported frequent use of ICAT skills in the field.¹² First, officers with shorter LMPD tenure are more likely to frequently use ICAT skills compared to officers with longer LMPD tenure. Specifically, with all other variables held constant, **officers with five years or less of LMPD experience had predicted probabilities of frequently using ICAT skills in the last 60 days of 76.1% to 83.3%, compared to 31.9% to 50.8% for officers with 15 or more years LMPD tenure** (see Figure 5, Model A).

Second, officers who reported a greater receptivity to ICAT training, in general, were more likely to report more frequent use of ICAT skills than officers who were less receptive. With all other officer characteristics held at their averages, **officers who were the most receptive to ICAT have an 81.7% probability of more frequent use of ICAT skills in the last 60 days, compared to a 22.4% probability for officers who were the least receptive** (see Figure 5, Model B).

¹² The key statistic presented in Table 3 is an odds ratio. An odds ratio represents the impact of a one-unit change in the independent variable of interest on the ratio of the probability of the outcome occurring to the probability of the outcome not occurring while adjusting for the influence of all other variables (Long and Freese, 2014). Odds ratios greater than 1 indicate that the odds of the outcome occurring increase as the independent variable increases. Odds ratios less than 1 indicate that the odds of the outcome occurring decrease as the independent variable increases.

Table 3. Logistic Regression Results for Self-reported Use of ICAT Skills in the Field by LMPD Patrol Officers

| Variables | Model 1: Frequent Use of ICAT Skills =1 (W3) | | Model 2: Used ICAT Skills =1 (W3) | |
|------------------------------|--|-----------|---|-----------|
| | Odds Ratio | St. Error | Odds Ratio | St. Error |
| Officer Age | 0.995 | 0.021 | 0.978 | 0.018 |
| Male Officer | 1.194 | 0.495 | 1.413 | 0.563 |
| White Officer | 1.334 | 0.488 | 1.256 | 0.425 |
| LMPD Tenure | 0.893*** | 0.028 | 0.942 | 0.030 |
| Bachelor's Degree or Higher | 0.946 | 0.267 | 1.093 | 0.298 |
| Enforcement Orientation | 0.983 | 0.068 | 0.980 | 0.062 |
| Community Orientation | 1.062 | 0.052 | 1.016 | 0.048 |
| Attitudes Toward PIC (W2) | 0.959 | 0.038 | 0.930 | 0.035 |
| PIC Confidence (W2) | 1.007 | 0.025 | 1.028 | 0.027 |
| Use of Force Attitudes (W2) | 0.993 | 0.035 | 0.948 | 0.032 |
| Views of CDM Utility (W2) | 1.007 | 0.047 | 1.052 | 0.049 |
| Receptivity to ICAT Training | 1.089** | 0.034 | 1.099** | 0.037 |
| Intercept | 0.278 | 0.616 | 0.200 | 0.419 |
| N^+ | 291 | | 297 | |
| Pseudo R^2 | 0.113 | | 0.088 | |

Notes: PIC = persons in crisis; W2 = Wave 2, post-training survey; W3= Wave 3, follow-up survey; CDM = Critical Decision-Making Model; + Reduction in sample sizes is due to use of listwise deletion
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

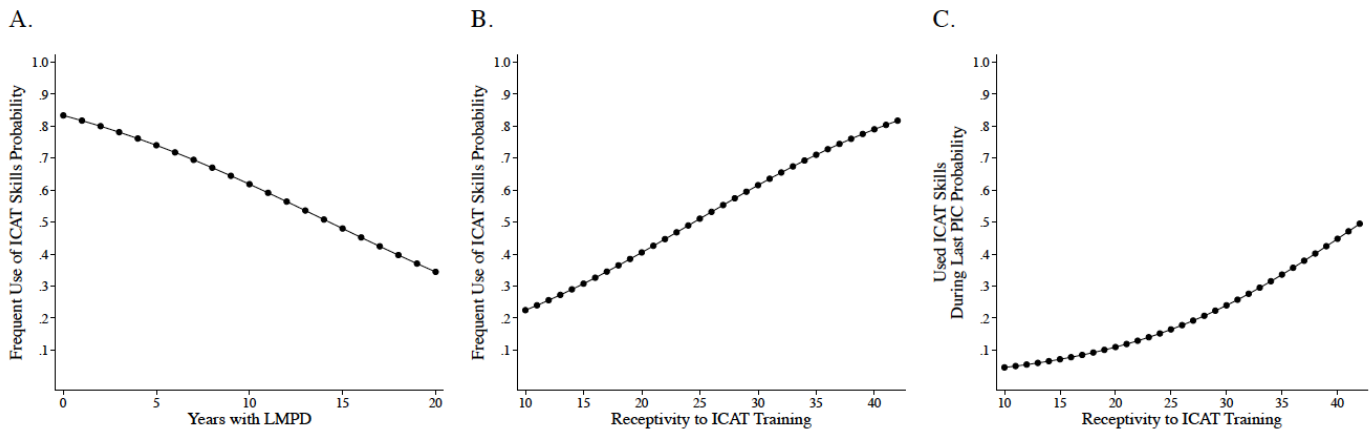
In addition to the frequency of using ICAT skills in the field, officers self-reported if they used any ICAT strategies during their most recent incident involving a person in crisis.¹³ Once again, this analysis was restricted to only the LMPD officers who have been identified at the rank of “police officer” in the LMPD employee database. Around one-third (34%) of the officers in this analytical sample reported using ICAT strategies during their most recent encounter with a person in crisis. As with the analysis above, a multivariate logistic regression model is estimated to examine the officer characteristics that predict officer use of ICAT strategies. Consistent with the previous analysis, the officer characteristics under examination include age, sex, race, LMPD tenure, educational attainment, enforcement orientation, community orientation, attitudes toward persons in crisis, attitudes toward use of force, confidence in dealing with persons in crisis, and general receptivity to ICAT training.

As reported in Table 3, Model 2, the only officer characteristic found to significantly predict the likelihood of an officer using ICAT skills during their most recent encounter with a person in crisis is an officer’s general receptivity to ICAT training. In particular, officers who report being more receptive to ICAT training are more likely to report using ICAT skills during their most recent encounter with a person in crisis. Considering the predicted probabilities, when all other officer characteristics were held at their averages, **officers who are the most receptive to ICAT**

¹³ A person in crisis refers to an individual that may be behaving erratically due to factors such as mental health concerns, substance abuse, situational stress, and/or intellectual/developmental disabilities.

have a **49.5% probability of reporting use of de-escalation skills in the most recent encounter with a person in crisis, while officers who are the least receptive to ICAT training only have a probability of 4.5%** (see Figure 5, Model C).

Figure 5. Predicted Probabilities of Self-Reported Use of ICAT Skills in the Field by Officer Characteristics¹⁴



Summary

Analyses demonstrate two officer characteristics are significantly associated with greater self-reported use of ICAT skills in the past 60 days. Officers with less LMPD tenure and officers with greater receptivity to ICAT training are more likely to report using ICAT skills with higher frequency. When considering ICAT skill use during the officer’s last encounter with a person in crisis, only officers who demonstrate greater receptivity to ICAT training are significantly more likely to report using ICAT de-escalation skills. These findings reinforce that receptivity to training is critical for changing officer behavior in the field. It also underscores the importance of the previously reported finding that Nonwhite, female, and less tenured officers, as well as those officers who are more open to training and have more community-oriented views of policing, are the most receptive to training.

E. Officer Attitudes towards Persons in Crisis

The ICAT training program should teach officers to view persons in crisis in a more understanding manner in an effort to make encounters with these individuals safer. Therefore,

¹⁴ The predicted probabilities of frequently using ICAT skills in the field within the last 60 days by years of experience with LMPD (Fig. 5, Panel A) and overall receptivity to ICAT training score (Fig. 5, Panel B) and the predicted probabilities of using ICAT skills during most recent encounter with a person in crisis by overall receptivity to ICAT training score (Fig. 5, Panel C). Predicted probabilities are generated based on the corresponding parameter estimates gleaned from the corresponding logistic regression equation after mean-centering all other covariates.

twelve items from the survey were used to measure and assess changes in attitudes towards persons in crisis. These items included:

- Recognizing the signs that a person is in crisis can improve the outcome of an interaction with the individual.
- Noncompliance should be viewed as a threat (reverse-coded).
- Unnecessary risks should be avoided in encounters.
- The most important role of an officer responding to a crisis is to stabilize the situation.
- In crisis situations, it is beneficial to keep a subject talking.
- In many cases, the use of force against a person in crisis can be avoided.
- As a person's emotions rise, their rational thinking declines.
- When responding as a team, it's important to designate roles in the crisis intervention.
- The majority of time spent communicating with a subject should be spent listening.
- An officer's nonverbal communication, such as body language, influences how a subject reacts.
- I know how to slow down an encounter with a person in crisis.
- Situational stress is no excuse for a person to act irrational (reverse-coded).

For each item, officers indicate their level of agreement on a five-point scale where 1= strongly disagree, 3= neutral, and 5= strongly agree. The sum of all twelve items is used to generate a single measure that captures officer attitudes towards persons in crisis. This additive scale has a possible range of 12 to 60, with higher scores reflecting attitudes towards persons in crisis that are in greater agreement with the tenets taught during the ICAT training program.

To assess the immediate impact of the ICAT training program on attitudes towards persons in crisis, officers completed pre-, post-, and follow-up training surveys that included the same questions regarding their attitudes towards persons in crisis. Two research questions are addressed below: (1) what officer characteristics are the strongest predictors of officer attitudes towards persons in crisis, and (2) what officer characteristics led to the most significant *changes in attitudes* (positive or negative) after 4-6 months in the field following ICAT training. To address the first research question, officers' pre-training attitudes, experiences, and demographics are measured and controlled in the statistical models. To address the second question, the change in survey responses between wave 2 (post-training) and wave 3 (follow-up survey) is measured.

The following analyses use multivariate Ordinary Least Squares (OLS) regression to examine the impact of officer age, sex, race, LMPD tenure, rank, educational attainment, enforcement orientation, community orientation, general openness to training, previous encounters with persons in crisis, and previous use of deadly force on attitudes toward persons in crisis.¹⁵ The results in Table 4 (Model 1) show that none of the officer demographic characteristics (e.g., age, sex, race) are significant predictors. However, general openness to training and views on the role of the police is positively associated with post-training attitudes towards persons in crisis. On

¹⁵ An OLS regression model is an appropriate statistical technique to examine the association of an independent variable with a continuously measured outcome (Fox, 2016). Additionally, multivariate analysis is preferred because the association between a specific predictor can be observed while adjusting for the influence of all other predictor variables on the outcome.

average, general openness to training before the start of the ICAT training program and viewing the police role as more community-oriented are both associated with more positive attitudes towards persons in crisis at post-training.

Table 4. Attitudes Towards Persons in Crisis Regression Results

| Variables | Model 1: Attitudes Toward PIC (W2) [†] | | Model 2: Change in Attitudes Toward PIC (W2→W3) [†] | |
|------------------------------|---|-----------|--|-----------|
| | Coefficient | St. Error | Coefficient | St. Error |
| Officer Age | -0.011 | 0.019 | 0.019 | 0.044 |
| Male Officer | -0.141 | 0.372 | -1.663 | 0.874 |
| White Officer | -0.206 | 0.341 | -0.100 | 0.786 |
| LMPD Tenure | -0.012 | 0.027 | -0.073 | 0.070 |
| Officer Rank | -0.445 | 0.326 | -1.803* | 0.816 |
| Bachelor's Degree or Higher | 0.007 | 0.248 | -0.185 | 0.600 |
| Pre-Training Attitude Score | 0.557*** | 0.034 | — | — |
| Enforcement Orientation | 0.051 | 0.058 | -0.142 | 0.136 |
| Community Orientation | 0.196*** | 0.045 | -0.169 | 0.105 |
| Previous Encounter with PIC | 0.658 | 0.892 | -0.021 | 2.784 |
| Previous Use of Deadly Force | -0.738 | 0.416 | -0.469 | 1.040 |
| Openness to Training | 0.081* | 0.038 | -0.093 | 0.095 |
| Receptivity to ICAT Training | — | — | -0.137* | 0.058 |
| Command Staff Support | — | — | 1.161* | 0.506 |
| Supervisor Support | — | — | 1.463* | 0.584 |
| Peer Support | — | — | 0.913 | 0.466 |
| Supervisor Reinforcement | — | — | -0.444 | 0.279 |
| Frequent Use of ICAT Skills | — | — | 0.036 | 0.693 |
| Intercept | 14.358*** | 2.008 | 1.617 | 4.828 |
| N ⁺ | | 801 | | 356 |
| R ² | | 0.416 | | 0.173 |

Notes: PIC = persons in crisis; W2 = Wave 2, post-training survey; W3 = Wave 3, follow-up survey; St. Error = standard error; [†] Sample for Model 1 is based on all trained officers; Model 2 includes only officers assigned to patrol; ⁺ Reduction in sample sizes is due to use of listwise deletion.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

Table 4 (Model 2) reports the *changes* in officers' attitudes towards persons in crisis from the post-training survey to the follow-up (4-6 months post-training) survey. Here, changes in the attitudes towards persons in crisis are gauged by comparing (subtracting the two scores) the responses from the post-training and follow-up surveys. This procedure created a new continuous measure that highlights officer changes in attitudes. Positive values indicate improvement in training-related attitudes, and negative values indicate decreases in training-related attitudes. Of the officers included in this analysis, the average change in attitudes towards persons in crisis from post-training to follow-up was -2.73 . On average, officers experienced decreases in their attitudes favorable to persons in crisis from post-training to follow-up. To observe the variables that predict changes in attitudes, a multivariate OLS regression model is

estimated that include officer age, sex, race, LMPD tenure, rank, educational attainment, enforcement orientation, community orientation, general openness to training, previous encounters with persons in crisis, previous use of deadly force, receptivity to ICAT training, supervisor reinforcement, perceived support from command staff, supervisors, and peers, and frequent use of ICAT skills.

As displayed in Table 4 (Model 2), four officer characteristics are significantly associated with changes in attitudes towards persons in crisis from post-training to follow-up. On average, supervisors and officers who are less receptive initially to ICAT training have more positive changes in their attitudes toward persons in crisis, compared to those at the rank of officer and officers who initially have more initial receptivity to ICAT training. In contrast, officer rank and greater receptivity to ICAT training are associated with a change in attitudes that were less favorable to persons in crisis in the follow-up period. Perceived support for ICAT from both the command staff and immediate supervisors is associated with increased attitudes more favorable to persons in crisis. Additionally, having an increased perception that command staff and immediate supervisors support the use of ICAT skills is associated with an increase in favorable attitudes towards persons in crisis from post-training to follow-up.

Summary

Two officer characteristics are significantly associated with post-training attitudes towards persons in crisis after accounting for other factors. Officers who are more open to training and officers who align with a more community-oriented role report, on average, more positive attitudes towards persons in crisis immediately following the ICAT training.

Examinations of the variation of *changes in attitudes* toward persons in crisis across officers show that four officer characteristics are associated with significant changes. First, respondents with supervisory rank experience greater positive changes in their attitudes toward persons in crisis, compared to officer rank. This may be related to the level and frequency of exposure that line-level officers have with persons in crisis compared to supervisors. It suggests that more contact in these situations may reduce positive attitudes at a greater rate – an important finding when considering the necessary dosage of training to continually reinforce positive attitudes.

Second, officers with greater initial receptivity to ICAT also demonstrate greater reductions in these attitudes over time, compared to those who were initially less receptive. Again, this speaks to the possible training decay at work, as officers with more receptivity start at a higher threshold, and therefore have a greater range for decreases in positive attitudes.

Importantly, the final two findings – that perceived support for ICAT from both the command staff and immediate supervisors are associated with an increase in more favorable attitudes towards persons in crisis – speaks to the importance of a holistic approach necessary to support de-escalation training in the field. As perceived support from supervisory ranks increases, so do individual officers' positive attitudes towards persons in crisis. These officers may require greater reinforcement from agency leadership to more fully embrace ICAT principles.

F. Officer Confidence in Interacting with Persons in Crisis

In addition to officer attitudes toward persons in crisis, the research team measured officers' reported confidence in interacting with persons in crisis. A total of thirteen items from the survey related to an officer's self-efficacy, or confidence, in handling various described actions were used to measure and assess changes in confidence. The described actions included questions that ask officers how confident they would feel in various situations. The situations included:

- Interacting with a person in crisis
- Ability to effectively communicate with someone in crisis
- Taking someone in crisis to a service agency
- Asking someone in crisis open-ended questions to gather information about what was going on
- Interacting with family members of a person in crisis
- Ability to summarize/paraphrase statements made by a person in crisis in your own words
- Calming down someone in crisis
- Helping someone in crisis call a social service agency
- De-escalating a situation involving a person in crisis
- Talking to a person in crisis about his/her medications
- Expressing understanding towards a person in crisis
- Getting someone in crisis to talk to you rather than acting out
- Talking to someone in crisis about whether or not he/she uses alcohol or drugs

For each item, officers were asked to indicate their level of confidence on a four-point scale where 1= not at all confident, 2= not confident, 3= somewhat confident, and 4= very confident. The sum of all thirteen items was used to generate a single measure that captures officer confidence in interacting with persons in crisis. This additive scale had a possible range of 13 to 52, with higher scores reflecting confidence interacting with persons in crisis that is in greater agreement with the tenets taught during the ICAT training program. The average confidence in interacting with persons in crisis score for the analytical sample used for this analysis was 45.93; overall, the level of confidence recorded across officers is high (an average of 3.5 across items — or ranging between somewhat to very confident).

As shown from the multivariate OLS regression model presented in Table 5, three officer characteristic variables (race, perceived police role, and prior attitudes) are significantly associated with post-training confidence in interacting with persons in crisis. On average, Nonwhite officers expressed more confidence in interacting with persons in crisis post-training compared to White officers. Additionally, having a view of the role of the police that is consistent with the principles of community-oriented policing is associated with more confidence in interacting with persons in crisis at post-training. As expected, the control variable (officer pre-training confidence in interacting with persons in crisis) is positively associated with post-training confidence.

Changes in officers' confidence in interacting with persons in crisis from the post-training survey to the follow-up (4-6 months post-training) survey are also assessed. These results, however, are not presented due to the lack of change in officer confidence over time. Officers started with a

very high level of reported confidence directly after the training, and this did not significantly change during the follow-up period. The average change in confidence score for the officers included in the analysis was only 0.18, and overall, confidence was high across both surveys. Additionally, none of the regression analysis variables were found to be associated with a change in confidence.

*Table 5. Confidence in Handling Situations Involving Persons in Crisis
Regression Results*

| Variables | PIC Confidence (W2) | |
|-------------------------------|---------------------|-----------|
| | Coefficient | St. Error |
| Officer Age | -0.001 | 0.023 |
| Male Officer | -0.060 | 0.476 |
| White Officer | -0.974* | 0.427 |
| LMPD Tenure | -0.022 | 0.033 |
| Officer Rank | -0.573 | 0.417 |
| Bachelor's Degree or Higher | -0.555 | 0.316 |
| Pre-Training Confidence Score | 0.678*** | 0.029 |
| Enforcement Orientation | -0.024 | 0.071 |
| Community Orientation | 0.126* | 0.054 |
| Previous Encounter with PIC | -0.859 | 1.104 |
| Previous Use of Deadly Force | -0.562 | 0.515 |
| Openness to Training | 0.034 | 0.048 |
| Intercept | 13.698*** | 2.468 |
| N^+ | | 809 |
| R^2 | | 0.481 |

Notes: PIC = persons in crisis; W2 = Wave 2 (post-training survey); + Reduction in sample sizes is due to use of listwise deletion.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

Summary

The most important predictors of reported confidence in handling situations involving persons in crisis after receiving ICAT training are officers' race and perceptions of their role. In the post-training period, Nonwhite officers and officers who view their role as more aligned to community policing principles report greater confidence in interacting with persons in crisis. Overall, the average scores across officers on confidence levels both pre-and post-training were very high, indicating that the vast majority of officers expressed a great degree of confidence interacting with persons in crisis.

G. Predicting Officer Attitudes Toward Use of Force

Officers' attitudes and perceptions towards the use of force are also captured across survey waves. The ICAT training program teaches officers that the use of force should be a last resort and that the sanctity of human life is the underlying philosophy of all decision-making. Eight items from the survey were used to measure and assess changes in officer attitudes toward use of force. These items include:

- Officers are not allowed to use as much force as is necessary to make suspects comply.
- It is sometimes necessary to use more force than is technically allowable (reverse-coded).
- Verbally disrespectful suspects sometimes deserve physical force (reverse-coded).
- Refraining from using force when you are legally able puts yourself and other officers at risk (reverse-coded).
- It is important to have a reputation that you are an officer willing to use force (reverse-coded).
- Not using force when you could have makes suspects more likely to resist in future interactions (reverse-coded).
- It is important that my fellow officers trust me to handle myself in a fight (reverse-coded).
- Generally speaking, if force has to be used, it is better to do so earlier in an interaction with a suspect, as opposed to later (reverse-coded).

For each item, officers were asked to indicate their level of agreement on a five-point scale where 1= strongly disagree, 3= neutral, and 5= strongly agree. The sum of all eight items was used to generate a single measure that captures officer attitudes toward use of force. This additive scale had a possible range of 8 to 40. Responses to survey items were coded such that higher scores reflect attitudes toward use of force that are in greater agreement with the tenets taught during the ICAT training program (i.e., attitudes less favorable to using force). The average attitude toward use of force score is 24.70 for this analytical sample.

The *Initial Findings Report* demonstrated several significant changes in the survey items from pre-training to post-training and post-training to follow-up, all in the direction of greater agreement with the ICAT curriculum's tenets. Additionally, these same positive changes in the summed attitudes toward the use of force scale indicate sustained changes in officers' attitudes toward use of force that do not appear to decay over time.

New analyses are provided below to address two additional research questions: (1) what officer characteristics are the strongest predictors of officer attitudes towards use of force, and (2) what officer characteristics led to the most significant *changes in attitudes* (positive or negative) after 4-6 months in the field following ICAT training. To address the first research question, officers' pre-training attitudes are measured and controlled in the statistical models. To address the second question, the change in survey responses between wave 2 (post-training) and wave 3 (follow-up survey) is measured. As with the analysis from the previous section, these analyses use multivariate OLS regression, and consider officer age, sex, race, LMPD tenure, rank, educational attainment, enforcement orientation, community orientation, general openness to training, previous encounters with persons in crisis, and previous use of deadly force.

The results, shown in Table 6 (Model 1), measure the factors that predict the immediate impact of the ICAT training program on attitudes towards use of force. After controlling for pre-training attitudes, both officer age and sex are found to be associated with post-training attitudes toward use of force. On average, the attitudes regarding use of force for older and female officers are more aligned with the tenets of ICAT training. In addition, the attitudes of officers more open to training before the start of the ICAT training program, and those that perceive the police role as more consistent with the principles of community-oriented policing, are on average, more aligned with ICAT principles taught about use of force and sanctity of life.

Table 6. Attitudes Towards Use of Force Regression Results

| Variables | Model 1: Use of Force Attitudes (W2) [†] | | Model 2: Change in Use of Force Attitudes (W2→W3) [†] | |
|------------------------------|---|-----------|---|-----------|
| | Coefficient | St. Error | Coefficient | St. Error |
| Officer Age | 0.074*** | 0.017 | 0.015 | 0.028 |
| Male Officer | -0.699* | 0.342 | -0.060 | 0.597 |
| White Officer | 0.330 | 0.308 | -1.334* | 0.533 |
| LMPD Tenure | -0.044 | 0.024 | 0.009 | 0.047 |
| Officer Rank | -0.117 | 0.297 | -0.224 | 0.567 |
| Bachelor's Degree or Higher | -0.135 | 0.226 | -0.138 | 0.411 |
| Pre-Training Attitude Score | 0.562*** | 0.028 | — | — |
| Enforcement Orientation | -0.162** | 0.056 | 0.138 | 0.093 |
| Community Orientation | 0.081* | 0.039 | 0.098 | 0.071 |
| Previous Encounter with PIC | -0.570 | 0.820 | 3.251 | 1.713 |
| Previous Use of Deadly Force | 0.154 | 0.374 | 0.310 | 0.712 |
| Openness to Training | 0.150*** | 0.036 | -0.158* | 0.066 |
| Receptivity to ICAT Training | — | — | -0.014 | 0.040 |
| Command Staff Support | — | — | 0.422 | 0.340 |
| Supervisor Support | — | — | -0.881* | 0.391 |
| Peer Support | — | — | -0.378 | 0.318 |
| Supervisor Reinforcement | — | — | 0.385* | 0.191 |
| Frequent Use of ICAT Skills | — | — | 0.489 | 0.474 |
| Intercept | 5.996*** | 1.806 | 0.726 | 3.200 |
| <i>N</i> ⁺ | | 814 | | 359 |
| <i>R</i> ² | | 0.472 | | 0.102 |

Notes: PIC = persons in crisis; W2 = wave 2, post-training survey; W3 = wave 3, follow-up survey; St. Error = standard error; [†] Sample for Model 1 is all trained officers; Model 2 includes only officers assigned to patrol; ⁺ Reduction in sample sizes is due to use of listwise deletion.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

The change in officer attitudes toward use of force are also examined by comparing responses from immediately after the training to those after four to six-months in the field. As with the regression analysis presented in the previous section, the changes in the attitudes towards use of force were measured by subtracting the responses from the post-training survey from those of the follow-up survey. This procedure created a new continuous measure that highlights officer changes in attitudes, where positive values indicate improvement in training-related attitudes and negative values indicate decreases in training-related attitudes. Of the officers included in this analysis, the average change in attitudes increased in alignment with the tenets taught in ICAT regarding use of force and sanctity of life.

As shown in Table 6 (Model 2), four officer characteristics are significantly associated with changes in attitudes toward use of force. The first significant association is officer race. Nonwhite officers experience a change in attitude towards use of force from post-training to follow-up that is higher, on average, than the attitudes reported by White officers. Additionally, officers less open to training, on average, experience a larger increase in attitudes toward use of force that support ICAT training.

Counter to expectations, officers who have a greater perception of their immediate supervisor supporting the use of ICAT skills, on average, experience attitude changes that are less aligned with the tenets taught during ICAT. However, when considering supervisor reinforcement, the results suggest that attitudes towards use of force become more aligned with the tenets taught during ICAT training when their supervisors reinforce ICAT training more frequently in the field. Together these findings suggest that just perceiving supervisors' support for de-escalation is not enough to guard against training decay; rather, supervisors need to demonstrate through their actions that de-escalation skills are supported and reinforced.

Summary

Several officer characteristics are significantly associated with immediate training impacts on officer attitudes toward use of force. Officers who reported being more open to training, those who align with a community-oriented policing view, female officers, and older officers are significantly more likely to report attitudes toward use of force that align with the tenets of ICAT immediately after training.

When considering what characteristics predict *changes* in use of force attitudes from post-training to the follow-up period, different findings emerge. First, officer attitudes regarding use of force that are supported by ICAT training experience overall increases from the post-training to the follow-up period. Greater changes toward use of force attitudes that are aligned with ICAT training are experienced by Nonwhite officers, officers with lower initial openness to training, less perception that their immediate supervisors support the use of ICAT skills, but greater perceptions that their supervisors engage in activities that reinforcement of ICAT training.

Together, these findings reiterate how the receptivity to the tenets of ICAT training –including views on police use of force – varies somewhat across officers. Nonetheless, most officers demonstrate a change in reported attitudes toward the use of force that align with the goals of ICAT training, and these attitudes generally increased over time in the field. The findings also highlight the importance of supervisor activities to reinforce de-escalation principles and continue to shift officer attitudes on the use of force.

H. Perceptions of Utility of the Critical Decision-Making Model (CDM)

An integral component of the ICAT training program is the use of the Critical Decision-Making Model (CDM). Nine items from the post-training survey were designed to gauge officer views on the utility of the CDM immediately following the ICAT training program. These items included:

- The CDM Model increases my decision-making skills during everyday situations.
- The CDM Model may make officers hesitate to take action when needed (reverse-coded).
- The CDM Model helps me to assess the risks in a situation.
- The CDM Model helps me identify my options for action in a situation.
- The CDM Model helps me select an option to resolve a situation.
- The CDM Model reminds me to continuously gather information during a situation.
- The CDM Model helps me review the actions I took during a situation.
- The CDM Model helps me to explain my decision-making after I act in a situation.
- I am confident using the CDM during an encounter with a person in crisis.

Officers were asked to indicate their level of agreement on a five-point scale where 1= strongly disagree, 3= neutral, and 5= strongly agree. The sum of all nine items was used to create a single measure that captures an officer's overall view on the utility of the CDM. The additive scale had a possible range from 9 to 45, and higher scores indicate greater agreement regarding the utility of the CDM.

While the CDM serves as a framework to guide officer decision-making as part of ICAT training, the *Initial Findings Report* demonstrated that the CDM was not perceived as positively by officers compared to other training components. Analyses of post-training scores compared to follow-up scores revealed that ten of the eleven items demonstrated statistically significant changes in the *opposite direction* than would be expected, indicating that officers reported finding the CDM *less* useful over time. Given these counter-intuitive findings, this section dives more specifically into describing what officer characteristics are associated with more positive perceptions of the CDM and which characteristics also predict changes in these views as officers use these skills in the field (comparing post-training to follow-up).

Below we consider what officer characteristics initially predicted perceptions of CDM utility, and the officer characteristics associated with *changes in perceptions* (positive or negative) after 4-6 months in the field following ICAT training. Using multivariate OLS linear regression models, the impact of officer characteristics –including age, sex, race, LMPD tenure, rank, educational attainment, enforcement orientation, community orientation, general openness to training, previous encounters with persons in crisis, and previous use of deadly force – on initial perceptions and changes in perceptions of the utility of the CDM are assessed.

As shown in Table 7 (Model 1), immediately following the training, two officer characteristics are significantly associated with positive views regarding the utility of the CDM model. First, general openness to training is positively associated with views on the utility of the CDM. As such, officers who expressed being more open to any training before starting ICAT training, on average, reported the CDM has greater utility. Second, a community-oriented view of the role of the police is positively associated with views on the utility of the CDM. This suggests that officers who view the role of the police as being consistent with the principles of community-oriented policing, on average, also believe the CDM has greater utility.

Table 7. Views of the Utility of the CDM Model Regression Results

| Variables | Model 1: Views of CDM Utility (W2) [†] | | Model 2: Change in Views of CDM Utility (W2→W3) [†] | |
|------------------------------|---|-----------|--|-----------|
| | Coefficient | St. Error | Coefficient | St. Error |
| Officer Age | 0.018 | 0.021 | 0.030 | 0.031 |
| Male Officer | -0.217 | 0.436 | -0.857 | 0.659 |
| White Officer | -0.192 | 0.394 | 0.136 | 0.575 |
| LMPD Tenure | -0.054 | 0.030 | 0.040 | 0.051 |
| Officer Rank | -0.554 | 0.380 | 0.638 | 0.617 |
| Bachelor's Degree or Higher | 0.021 | 0.290 | -0.465 | 0.448 |
| Enforcement Orientation | -0.082 | 0.066 | -0.080 | 0.101 |
| Community Orientation | 0.361*** | 0.049 | -0.171* | 0.077 |
| Previous Encounter with PIC | -1.286 | 1.023 | -0.871 | 1.859 |
| Previous Use of Deadly Force | 0.074 | 0.478 | -0.357 | 0.774 |
| Openness to Training | 0.302*** | 0.044 | -0.025 | 0.070 |
| Receptivity to ICAT Training | — | — | -0.161*** | 0.044 |
| Command Staff Support | — | — | 1.105** | 0.371 |
| Supervisor Support | — | — | 1.887*** | 0.423 |
| Peer Support | — | — | 0.961** | 0.347 |
| Supervisor Reinforcement | — | — | 0.029 | 0.209 |
| Frequent Use of ICAT Skills | — | — | 0.988 | 0.518 |
| Intercept | 16.331*** | 2.166 | -6.630 | 3.455 |
| <i>N</i> ⁺ | | 823 | | 355 |
| <i>R</i> ² | | 0.198 | | 0.299 |

Notes: PIC = persons in crisis; W2 = Wave 2, post-training survey; W3 = Wave 3, follow-up survey; St. Error = standard error; CDM = Critical Decision-Making Model; [†] Sample for Model 1 includes all trained officers; Model 2 includes only officers assigned to patrol; ⁺ Reduction in sample sizes is due to use of listwise deletion.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

Changes in officer views regarding the utility of the CDM model from post-training to follow-up (4-6 months post-training) are also reported in Table 7 (Model 2).¹⁶ The officers included in this analysis, on average, experience *decreases* in their views regarding CDM utility from post-training to follow-up. No officer demographic characteristics (e.g., age, sex, race) are found to be associated with changes in views of the CDM. The results do show that, on average, officers who view the role of the police as being consistent with the principles of community-oriented policing and officers who are more receptive to ICAT training experience significant *decreases* in their views regarding the utility of the CDM. In contrast, officers who perceive that the command staff, their immediate supervisor, and their peers support the tenets of ICAT training, and the use of de-escalation skills experience slight *improvements* in their views of the utility of the CDM from post-training to follow-up.

Summary

Officer perceptions of the utility of the CDM are the only attitudinal change that experienced overall declines during the follow-up period. Immediately following the training, the only

¹⁶ To assess change from post-training to follow-up, responses for view of the utility of the CDM from the post-training survey are subtracted from those of the follow-up survey. This creates a continuous measure that reflects officer changes in views of CDM utility, where positive values indicate views of the utility of the CDM increase and negative values indicate views of the utility of the CDM decrease from post-training to follow-up.

significant predictors of positive views regarding the utility of the CDM are from officers who expressed being more open to *any* training and officers with a role identification that was more consistent with community-oriented policing principles.

Over time, officers' perceptions regarding CDM utility decreased, suggesting some training decay. To better understand the reduction in perceptions of CDM utility, regression models were estimated to examine the change in officer perceptions from post-training to the follow-up period. The findings show that those who reported views consistent with community-oriented policing principles and officers who were more receptive to ICAT initially, on average, experienced a greater decrease in their views of the utility of the CDM. While these findings may initially seem counter-intuitive, they suggest that starting with more positive views regarding the CDM's utility actually leads to larger reductions in that optimism.

Conversely, officers who perceive that their command staff, immediate supervisor, and peers support the tenets of ICAT demonstrate improvements in their views of the utility of the CDM from post-training to follow-up. It is possible that officers that expressed lower utility of the CDM initially changed their perception through administrative and supervisory reinforcement and support regarding de-escalation and the ICAT training. Again, this reinforces the importance of a holistic departmental approach necessary to support the ICAT training and reduce the likelihood of training decay.

I. Conclusion – Officer Survey Analyses

Section IV provides a series of analyses designed to examine the details of officer characteristics (e.g., demographics, experience, and attitudes) that impact changes in reported attitudes and self-reported use of de-escalation skills in the field. Two research questions for each of the topics are considered: (1) what officer characteristics are associated with *initial attitudes* towards the tenets of ICAT training, and (2) what officer characteristics led to the most significant *changes in attitudes* (positive or negative) after 4-6 months in the field following ICAT training.

Table 8 below summarizes the findings from the ten statistical models assessing the impact of officer characteristics across six topics: (1) receptivity to training, (2) self-reported use of de-escalation skills in the field, (3) attitudes toward persons in crisis, (4) reported confidence in handling situations involving persons in crisis, (5) attitudes toward use of force, and (6) perceived utility of the Critical Decision-Making Model (CDM). A plus (+) sign indicates positive statistically significant association between the predictor variable and outcome variable (highlighted in blue), whereas a negative (-) sign indicates a negative statistically significant association between variables (highlighted in yellow). Additionally, cells containing “o” indicate no statistically significant association, and cells containing “✓” indicate the variable was not measured in that analysis.

Table 8. Summary of Models Predicting Officer Attitudes and Changes Related to the ICAT Training Program

| Variables | Receptivity to ICAT Training (W2) | Frequent Use of ICAT Skills =1 (W3) | Used ICAT Skills =1 (W3) | Attitudes Toward PIC (W2) | Change in Attitudes Toward PIC (W2→W3) | PIC Confidence (W2) | Use of Force Attitudes (W2) | Change in Use of Force Attitudes (W2→W3) | Views of CDM Utility (W2) | Change in Views of CDM Utility (W2→W3) |
|----------------------------------|-----------------------------------|-------------------------------------|--------------------------|---------------------------|--|---------------------|-----------------------------|--|---------------------------|--|
| <i>Officer Demographics</i> | | | | | | | | | | |
| Officer Age | + | o | o | o | o | o | + | o | o | o |
| Male Officer | - | o | o | o | o | o | - | o | o | o |
| White Officer | - | o | o | o | o | - | o | - | o | o |
| LMPD Tenure | - | - | o | o | o | o | o | o | o | o |
| Rank = Officer | o | o | o | o | - | o | o | o | o | o |
| Bachelor's Degree or Higher | o | o | o | o | o | o | o | o | o | o |
| <i>Pre-Training (W1) Survey</i> | | | | | | | | | | |
| Enforcement Orientation | o | o | o | o | o | o | - | o | o | o |
| Community Orientation | + | o | o | + | o | + | + | o | + | - |
| Previous Encounter with PIC | o | ✓ | ✓ | o | o | o | o | o | o | o |
| Previous Use of Deadly Force | o | ✓ | ✓ | o | o | o | o | o | o | o |
| Openness to Training | + | ✓ | ✓ | + | o | o | + | - | + | o |
| Attitudes Toward PIC | ✓ | ✓ | ✓ | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PIC Confidence | ✓ | ✓ | ✓ | ✓ | ✓ | + | ✓ | ✓ | ✓ | ✓ |
| Use of Force Attitudes | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | + | ✓ | ✓ | ✓ |
| <i>Post-Training (W2) Survey</i> | | | | | | | | | | |
| Attitudes Toward PIC | ✓ | o | o | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PIC Confidence | ✓ | o | o | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Use of Force Attitudes | ✓ | o | o | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Views of CDM Utility | ✓ | o | o | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Receptivity to ICAT Training | ✓ | + | + | ✓ | - | o | o | o | ✓ | - |
| <i>Follow-Up (W3) Survey</i> | | | | | | | | | | |
| Command Staff Support | ✓ | ✓ | ✓ | ✓ | + | ✓ | ✓ | o | ✓ | + |
| Supervisor Support | ✓ | ✓ | ✓ | ✓ | + | ✓ | ✓ | - | ✓ | + |
| Peer Support | ✓ | ✓ | ✓ | ✓ | o | ✓ | ✓ | o | ✓ | + |
| Supervisor Reinforcement | ✓ | ✓ | ✓ | ✓ | o | ✓ | ✓ | + | ✓ | o |
| Frequent Use of ICAT Skills | ✓ | ✓ | ✓ | ✓ | o | ✓ | ✓ | o | ✓ | o |

Notes: W1 = Wave 1, pre-training survey; W2 = Wave 2, post-training survey; W3 = Wave 3, follow-up survey; PIC = persons in crisis; CDM = Critical Decision-Making Model. ✓ = not used in analysis; o = non-significant relationship; + = significant, positive relationship; - = significant, negative relationship.

As shown, several officer demographics—including gender, race, age, and tenure—play a significant role in influencing initial receptivity to the ICAT training. Given that the ICAT training is an innovative approach that challenges some traditionally held beliefs regarding the use of force, it is not unexpected that receptivity to this training would vary somewhat across officers. Importantly, most officers are, on average (regardless of their demographics, experience, and views) highly receptive to ICAT training. Importantly, officers who are the most receptive to ICAT have a 49.5% probability of reporting use of de-escalation skills in their most recent encounter with a person in crisis, while officers who are the least receptive to ICAT training have a probability of 4.5%. This section’s findings related to self-reported use of de-escalation in the field reinforce that receptivity to training is critical for changing officer behavior in the field.

The findings from this section underscore the importance of a holistic approach to support de-escalation training in the field. Officers’ perceived support for ICAT from both the command staff and immediate supervisors is associated with an increase in more favorable attitudes towards persons in crisis and more favorable attitudes towards the CDM.

V. SUPERVISOR SURVEY ANALYSES

Many have noted the importance of field supervisors in the reinforcement and promotion of training objectives among their subordinates. For example, the PERF (2018) suggests actions of first-line supervisors are critical in reinforcing the tenets taught during any training and communicating the expectations for changes in practices, such as use of force (see also Van Craen & Skogan, 2017). Although other organizational support is needed to promote the use of de-escalation tactics (e.g., policies, procedures), prior research has demonstrated that first-line supervisors play a critical role in shaping subordinates' behavior, including use of force (Engel, 2000). Recognizing the key position of supervisors in the reinforcement of de-escalation, the research team sought to examine the activities of LMPD sergeants and lieutenants as they relate to their own use of ICAT de-escalation skills, along with the supervision and reinforcement of these skills among their subordinates.

The analyses conducted in the *Initial Findings Report* highlighted several important findings regarding supervisors' use and oversight of subordinates' use of ICAT de-escalation skills. These findings highlighted the need for additional inquiry into the supervisor characteristics that impacted positive attitudes regarding their own use of ICAT skills and their ability to supervise and coach subordinate officers to support their use of de-escalation tactics. For example, initial results demonstrated that while most supervisors suggest it is not difficult to supervise their subordinate officers' de-escalation skills, the average frequency of supervisors engaging in supervisory activities that help reinforce the use of de-escalation was fairly low. It is therefore important to understand the impact of supervisors' characteristics on their likelihood of reinforcing the use of ICAT de-escalation skills by their subordinate officers. The following section includes additional analyses designed to explore the details of supervisor characteristics—including consideration of demographics, experience, and attitudes—that impact the likelihood they will reinforce the use of de-escalation tactics in the field. This information will support the LMPD Training Division's current innovative work designing additional ICAT training for supervisors.

Section V is structured as follows. First, descriptions of the supervisor survey instrument and its administration are reiterated from the *Initial Findings Report*, followed by reporting of the sample demographics. Thereafter, this section reports the findings from analyses examining supervisor characteristics directly associated with: (1) Receptivity to training, (2) perceptions of use and supervisory support of ICAT skills, and (3) frequency of supervisory activities supporting ICAT.

A. Survey Description

LMPD field supervisors were administered a single survey in March 2020 (after all officers had been ICAT trained), which was designed to assess their general perceptions of the role of supervisors and, more specifically, their views regarding how and when they supervise and/or reinforce the ICAT training. Broadly speaking, the purpose of this survey—which was developed by the research team in consultation with LMPD administrators and Training Division staff—was to examine the role of first-line supervisors as part of the ICAT training program. To administer the survey, LMPD officials took advantage of supervisors' mandatory attendance for an unrelated inspection (i.e., annual gas mask fit testing). During the inspection check-in, 157

LMPD supervisors were provided a paper survey by LMPD Training Division staff; 131 surveys were completed, resulting in an 83.4% response rate. Completed surveys were placed by respondents in a sealed box that was mailed to the research team, where they were then entered into an electronic database.¹⁷

The ICAT supervisor survey included eight sections examining the following topics:

- (1) *Perceptions Related to Using ICAT De-escalation Skills.* Using nine survey items related to first-line supervisors' direct use of ICAT de-escalation skills, various concepts were examined, including confidence, agency support, and the perceptions of the utility and frequency of ICAT training. Respondents were asked to indicate their level of agreement to each item on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Higher scores indicate a more positive impression of supervisors' use of ICAT de-escalation skills.
- (2) *Perceptions Related to Supervising ICAT De-escalation Skills.* Seven items were included to assess supervisors' perceptions of their effectiveness in coaching, available resources for supervising, and the difficulties in directly supervising subordinate officers' use of de-escalation skills. Respondents were asked to indicate their level of agreement to each item on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). A higher or lower score will indicate a more positive attitude regarding the ability to supervise subordinates' use of de-escalation skills depending on the way each item is worded.
- (3) *Field Observations of Subordinates' ICAT De-escalation Skills.* Seven survey items assessed the frequency with which first-line supervisors engage in specific activities related to observing subordinate officers' use of de-escalation skills in the field. Supervisors are asked about general observations, as well as the observations of ICAT skills. Respondents were asked to indicate how frequently they observed particular activities according to the following parameters: Never (0 times), Seldom (1 per month), Sometimes (2-3 times per month), Often (1 per week), and Frequently (more than 2-3 times per week). Higher scores indicate respondents engaged in the activity more frequently.
- (4) *Video Observations of Subordinates' ICAT De-Escalation Skills.* Using seven items, the frequency with which first-line supervisors engage in specific activities related to observing subordinate officers' use of de-escalation skills through video recordings (e.g., review of body-worn camera footage) were assessed. Supervisors were asked about general observations as well as the observations of specific ICAT skills. Respondents were asked to indicate how frequently they observed particular activities according to the following parameters: Never (0 times), Seldom (1 per month), Sometimes (2-3 times per month), Often (1 per week), and Frequently (more than 2-3 times per week). Higher scores indicate respondents engaged in the activity more frequently.
- (5) *Supervision Activities Related to ICAT De-escalation Skills.* Six survey questions regarding the frequency with which first-line supervisors engage in specific activities related to supervising subordinate officers' use of de-escalation skills were asked. For example, questions assessed the frequency that supervisors document the use of ICAT de-escalation skills, counsel subordinates for not using ICAT de-escalation skills, or generally talk about the use of ICAT de-escalation skills. Respondents were asked to indicate how frequently they engaged in the specified activities according to the following parameters: Never (0 times), Seldom (1 per month), Sometimes (2-3 times per month), Often (1 per week), and Frequently (more than 2-3 times per week). Higher

¹⁷ Surveys could not be collected in person by the research team because of COVID-19 travel restrictions from the States of Ohio and Kentucky during the time of survey collection.

scores indicate respondents engaged in the activity more frequently. In addition to the multiple-choice survey items, two open response questions were posed to gather further information on how supervisors document the use of ICAT de-escalation skills and how they mentor or coach subordinates to improve the use of these skills.

- (6) *Self-Reported Supervisor Activities.* Six questions were used to assess the frequency that supervisors engage in general supervision activities, such as arriving to incidents being handled by subordinates, conducting video reviews, and talking about subordinate performance. Respondents were asked to indicate how frequently they engaged in the specified activities according to the following parameters: Never (0 times), Seldom (1 per month), Sometimes (2-3 times per month), Often (1 per week), and Frequently (more than 2-3 times per week). Higher scores indicate respondents engaged in the activity more frequently.
- (7) *Perceptions of Supervisor Functions.* Fourteen supervisor functions were listed, and supervisors were asked to assess the importance of each. For instance, supervisors were asked how important it is to disseminate departmental directors, ensure reports are properly completed, ensure the appropriate use of force, and ensure fair and equal treatment of citizens. Respondents were asked to indicate the level of importance of each function on a five-point Likert scale (1 = Very Important to 5 = Very Important).
- (8) *Demographics.* Eight items gathered the demographic characteristics of respondents, including age, sex, race/ethnicity, the highest level of education, years of experience in law enforcement, tenure as a supervisor, and their unique LMPD-assigned code number.

B. Supervisor Demographics

The research team was able to match supervisor survey responses and supervisor demographic data from LMPD's employee database for a total of 118 supervisors; 23 supervisors (19.5%) are removed due to missing data across multiple variables, leaving a sample of 95 supervisors eligible for analyses.¹⁸

Table 9 displays the descriptive statistics of all measured variables used in the analyses that follow. Means and standard deviations are presented for all continuously measured variables and proportions are presented for all dichotomous measures. Detailed descriptions for all variables can be found in Appendix B. As shown in Table 9, when it comes to supervisor demographic characteristics, the average age of supervisors included in the analyses is 43.61. Furthermore, the vast majority of supervisors included in these analyses are male (85%), White (93%), and have a bachelor's degree or higher (67%). Additionally, approximately 50% of the supervisors reported they had four or fewer years of supervisory experience and 50% reported they had five or more years of supervisory experience.

¹⁸ There are no differences between supervisors who were included or not included in the following analyses in terms of age ($t = .308, p = .769$), sex ($\chi^2 = .672, p = .412$), or years supervising ($\chi^2 = 4.107, p = .534$). Yet, Nonwhite supervisors (26% missing) were more likely than White supervisors (7% missing) to be excluded from the following analyses because of missingness ($\chi^2 = 6.618, p = .010$).

Table 9. Descriptive Statistics for LMPD Supervisors Included in Analyses

| | Mean [Proportion] | SD | N |
|--|----------------------|------|-----|
| <i>Supervisor Demographics</i> | | | |
| Officer Age | 43.53 | 6.07 | 118 |
| Male Officer | [0.84] | — | 118 |
| White Officer | [0.89] | — | 118 |
| Years Supervising | 1.63 | 1.04 | 118 |
| Bachelor's Degree or Higher | [0.64] | — | 113 |
| <i>Pre-Training Survey Variables</i> | | | |
| Enforcement Orientation | 1.53 | 2.11 | 97 |
| Community Orientation | 28.19 | 3.22 | 97 |
| Openness to Training | 26.63 | 3.87 | 97 |
| <i>Post-Training Survey Variables</i> | | | |
| Receptivity to ICAT Training | 33.98 | 5.83 | 111 |
| <i>Supervisor Survey Variables</i> | | | |
| Perceptions of Using ICAT Skills | 25.34 | 3.98 | 118 |
| Perceptions of Supervising ICAT Skills | 19.73 | 2.87 | 117 |
| Supervision Activities Related to ICAT | 8.61 | 4.95 | 115 |

Notes: SD = Standard Deviation; CDM = Critical Decision-Making Model.

C. Supervisor Receptivity to ICAT Training

This section presents the findings for the multivariate analyses conducted to examine the supervisor characteristics that predict reported receptivity to ICAT training immediately following completion of the ICAT training program. At the end of the training, all participants who participated in the training were asked to complete a post-training survey. Six items from the post-training survey are designed to assess the perceived value of the ICAT training curriculum. These items include:

- The training was useful to me.
- I would recommend this training to others.
- The training content was clear.
- It was valuable to attend training with officers in my division.
- I am satisfied with the training.
- The training taught me new things.

Officers provided their perceptions of the ICAT training for each item using a seven-point scale where 1= not at all applicable to me, 4= somewhat applicable to me, and 7= very applicable to me. The sum of all six items are used to generate a single measure that captures receptivity to ICAT training. This additive scale had a possible range of 6 to 42, and higher scores on the scale reflect that a supervisor was more receptive to the ICAT training program. All officers completed the survey immediately following their participation in the training. Supervisors were identified by linking their post-training survey responses to the responses from the supervisor-

only survey. The average receptivity score for supervisors in the analytical sample used for this analysis was 34.27.

A multivariate Ordinary Least Squares (OLS) linear regression model is estimated, examining officer age, sex, race, years supervising, educational attainment, enforcement orientation, community orientation, and general openness to training, to examine the supervisor characteristics that predict overall supervisor receptivity to ICAT training immediately following their participation in the training program. As shown in Table 10, only one supervisor characteristic (openness to all training) is significantly associated with supervisor receptivity to the ICAT training curriculum specifically. As would be expected, supervisors who expressed being more open to training before the start of the ICAT training program are, on average, more receptive to the ICAT training program. What is interesting to note, however, are the supervisor characteristics that *did not* impact receptivity to ICAT training. Unlike officers, supervisors do *not* vary on their reported receptivity by age, race, or sex.

Table 10. Supervisor Receptivity to ICAT Training Results

| Variables | Receptivity to ICAT Training | |
|-----------------------------|------------------------------|-----------|
| | Coefficient | St. Error |
| Officer Age | 0.017 | 0.102 |
| Male Officer | -2.281 | 1.597 |
| White Officer | -2.315 | 2.202 |
| Years Supervising | 1.146 | 0.607 |
| Bachelor's Degree or Higher | 0.058 | 1.198 |
| Enforcement Orientation | 0.010 | 0.291 |
| Community Orientation | 0.059 | 0.200 |
| Openness to Training | 0.465* | 0.187 |
| Intercept | 21.603** | 8.002 |
| N^+ | | 95 |
| R^2 | | 0.189 |

+ Reduction in sample size is due to the use of listwise deletion.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

In summary, only one supervisor characteristic (openness to training) is significantly associated with receptivity to the ICAT training program. In other words, supervisors who expressed being more open to training before the start of the ICAT training program are, on average, more receptive to the ICAT training program.

D. Supervisor Perceptions of Using and Supervising ICAT Skills

The multivariate analyses conducted to examine supervisor perceptions related to using and supervising ICAT de-escalation skills after participating in the ICAT training program are reported below. In the supervisor survey, first-line supervisors responded to the items associated with their perceptions of their own use of ICAT de-escalation skills, their effectiveness in coaching, available resources for supervising, and the difficulties in directly supervising subordinate officers' use of de-escalation skills.

Predicting Supervisor Perceptions of Using ICAT De-escalation Skills

Six items from the supervisor survey are used to assess front-line supervisor perceptions of direct use of ICAT de-escalation skills. The statements include:

- I am confident using ICAT de-escalation skills during my encounter with citizens.
- I am confident using ICAT de-escalation skills during interaction with my subordinate officers.
- I receive the necessary equipment from my department to de-escalate situations.
- I receive sufficient training in de-escalation.
- I receive the necessary support from my supervisors to use ICAT de-escalation skills.
- When officers use ICAT de-escalation skills properly, encounters with citizens will often result in a positive resolution.

For each item, respondents indicated how much they agreed with each statement (1 = Strongly Disagree; 5 = Strongly Agree). Responses to all items were summed to create a single additive scale that captures supervisor perceptions of using ICAT skills. The additive scale had a possible range of 6 to 30, and higher scores indicate more favorable perceptions of using ICAT skills. The average score for perceptions of using ICAT skills across the analytical sample of supervisors used for this analysis was 25.42. To examine the supervisor characteristics that predict perceptions of using ICAT skills, a multivariate regression model is used to explore the impact of officer age, sex, race, years supervising, educational attainment, enforcement orientation, community orientation, and receptivity to ICAT training.

The results in Table 11 (Model 1) reveal that two supervisor characteristics are significantly associated with supervisor perceptions of using ICAT skills. First, younger supervisors have perceptions of using ICAT skills that are more favorable to the training, on average, compared to older supervisors. Second, supervisors who view the role of police as emphasizing crime control and enforcement have, on average, *less positive* perceptions of using ICAT skills.

Predicting Supervising Perceptions of Supervising ICAT De-escalation Skills

Five items from the supervisor survey are used to assess front-line supervisor perceptions of their ability to supervise the ICAT de-escalation skills of their subordinate officers. The statements included:

- I am able to effectively supervise subordinates' use of ICAT de-escalation.
- I am able to effectively coach subordinates' use of ICAT de-escalation skills.
- I receive sufficient training to supervise my officers' use of ICAT de-escalation skills.
- I need more support from my supervisors to supervise my subordinates' use of ICAT de-escalation skills (reverse-coded).
- It is difficult to supervise the use of ICAT de-escalation skills by my subordinate officers (reverse-coded).

For each item, respondents indicated how much they agreed with each statement (1 = Strongly Disagree; 5 = Strongly Agree). Responses to all items were summed to create a single additive scale that captures supervisor perceptions of supervising ICAT skills. The additive scale had a possible range of 5 to 25, and higher scores indicate more favorable perceptions of supervising ICAT skills. The average score for perceptions of supervising ICAT skills across the supervisors

in this analytical sample was 19.72. Using a multivariate OLS linear regression model, the impact of supervisor age, sex, race, years supervising, educational attainment, enforcement orientation, community orientation, and receptivity to ICAT training are examined.

As shown in Table 11 (Model 2), only one supervisor characteristic (receptivity to ICAT training) is significantly associated with supervisor perceptions of supervising ICAT skills while adjusting for the influence of all other variables. On average, supervisors who were more receptive to ICAT training have more positive perceptions of supervising ICAT skills, compared to supervisors who were less receptive to the ICAT training program. It is important to note the absence of significance of any other supervisor's characteristics. That is, supervisors' age, race, sex, education, role orientation, and years of supervisory experience did not significantly impact their perceptions of supervising ICAT skills – only their receptivity to the training itself.

Table 11. Regression Results Demonstrating Supervisor Perceptions of Using and Supervising ICAT Skills

| Variables | Model 1: Perceptions of Using ICAT Skills | | Model 2: Perceptions of Supervising ICAT Skills | |
|------------------------------|---|-----------|---|-----------|
| | Coefficient | St. Error | Coefficient | St. Error |
| Officer Age | -0.165* | 0.072 | -0.060 | 0.051 |
| Male Officer | 2.127 | 1.161 | 1.184 | 0.823 |
| White Officer | -0.685 | 1.582 | -0.495 | 1.205 |
| Years Supervising | 0.703 | 0.428 | 0.146 | 0.304 |
| Bachelor's Degree or Higher | -0.088 | 0.860 | -0.158 | 0.610 |
| Enforcement Orientation | -0.575** | 0.193 | -0.245 | 0.137 |
| Community Orientation | 0.179 | 0.128 | 0.082 | 0.093 |
| Receptivity to ICAT Training | 0.066 | 0.075 | 0.170** | 0.053 |
| Intercept | 29.128 | 5.707 | 16.106 | 4.083 |
| <i>N</i> ⁺ | 95 | | 94 | |
| <i>R</i> ² | 0.208 | | 0.198 | |

⁺ Reduction in sample sizes is because of the use of listwise deletion.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

Summary

Analyses reveal that younger supervisors and supervisors who view the role of police as more community-oriented are more supportive of the ICAT training. And receptivity to ICAT training, in turn, is significantly associated with supervisor perceptions of supervising ICAT skills; supervisors who were more receptive to ICAT training have more positive perceptions of supervising ICAT skills. Interestingly, supervisors' age, race, sex, education, role orientation, and years of supervisory experience do not significantly impact perceptions of supervising ICAT skills – only their receptivity to the training itself. This highlights the importance of reinforcing ICAT training to first-line supervisors who, in turn, will be better able to reinforce ICAT training to their subordinate officers effectively.

E. Frequency of Supervisory Activities Supporting ICAT Training

This section presents the findings for the multivariate analyses conducted to assess supervisor frequency of engaging in activities supporting the use of ICAT de-escalation skills. On the survey, supervisors were asked to self-report the frequency of six activities that include:

- How frequently do you talk with your subordinate officers generally about the use of ICAT de-escalation skills?
- How often do you have discussions with subordinates about their use of ICAT de-escalation skills during a specific incident?
- How frequently do you counsel subordinates about not using ICAT de-escalation skills when they should have?
- How frequently do you document the use of ICAT de-escalation skills in use of force reports?
- How frequently do you document the use of ICAT de-escalation skills in letters of commendation for subordinate officers?
- How frequently do you document the use of ICAT de-escalation skills in some other way (excluding use of force reports and commendation letters?).

For each activity, supervisors indicated their frequency of engaging in each activity, where 0 = Never; 1 = Seldom (1 per month); 2 = Sometimes (2-3 times per month); 3 = Often (1 per week); 4 = Frequently (more than 2-3 times per week). Supervisor responses to all are summed together to create a single additive scale of frequency of using supervisor activities related to ICAT de-escalation skills. The possible values for the scale ranged from 0 to 24, with higher scores indicating a greater frequency of use of supervisor activities. The average frequency of use of supervisor activities related to ICAT in the analytical sample used for this analysis was 8.66.

A primary objective of the LMPD supervisor survey is to gain insights regarding the frequency of supervisor activities that directly support or reinforce their subordinate officers' use of the de-escalation skills presented within the ICAT training. Of the six activities presented above, the average frequency of LMPD supervisors' participation is quite low. Specifically, only 23.6% of supervisors report talking with their officers about the use of de-escalation skills often or frequently—rather, the majority (41.7%) reported they never or seldom spoke generally with their subordinates about these skills. Further, supervisors report that, on average, they seldom (once per month) document the use of ICAT de-escalation skills through a variety of methods (i.e., use of force reports, letters of commendations, or other ways).

To examine the supervisor characteristics that predict the additive scale of frequency of using supervisor activities, a multivariate OLS linear regression model is estimated. As shown in Table 12, only one supervisor characteristic (receptivity to ICAT training) is positively and significantly associated with the frequency of engaging in supervisor activities that would reinforce ICAT training to subordinates. Specifically, supervisors who are more receptive to the ICAT training curriculum report engaging in supervisor activities related to ICAT de-escalation skills more often, on average, than supervisors that are less receptive to the training. Again, we note the absence of any other supervisor characteristics with significant influence over the likelihood of engaging in activities that support or reinforce ICAT training for subordinates.

Table 12. Regression Results for Supervision Activities Related to ICAT

| Variables | ICAT Supervision Activities | |
|------------------------------|-----------------------------|-----------|
| | Coefficient | St. Error |
| Officer Age | -0.137 | 0.088 |
| Male Officer | 0.625 | 1.405 |
| White Officer | -0.108 | 1.914 |
| Years Supervising | -0.188 | 0.520 |
| Bachelor's Degree or Higher | 1.458 | 1.056 |
| Enforcement Orientation | -0.136 | 0.234 |
| Community Orientation | -0.127 | 0.156 |
| Receptivity to ICAT Training | 0.290** | 0.091 |
| Intercept | 8.577 | 6.987 |
| <i>N</i> ⁺ | | 92 |
| <i>R</i> ² | | 0.161 |

⁺ Reduction in sample size is because of the use of listwise deletion.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test)

Summary

Only one supervisor characteristic (receptivity to ICAT training) is significantly associated with more frequent engagement in supervisor activities to support de-escalation skills. Supervisors who are more receptive to ICAT training initially are more likely to engage in activities to support the use of ICAT skills by subordinate officers. Similar to the findings of the previous analyses of supervisor activities and perceptions related to ICAT, supervisors' reported receptivity to the ICAT training is a critical predictor.

F. Conclusion – Supervisor Survey Analyses

A primary objective of the LMPD supervisor survey is to gain insights regarding the frequency of supervisor activities that directly support or reinforce their subordinate officers' use of the de-escalation skills as presented within the ICAT training. Similar to the findings from the officer survey, analyses in this section highlight that supervisor receptivity to the ICAT training is critical. On average, supervisors who are more receptive to the ICAT training curriculum report engaging in supervisor activities related to ICAT de-escalation skills more often than supervisors who report less receptivity to the training.

Table 13 provides a summary of the four models presented in this section, where a plus (+) sign indicates a statistically significant, positive association between variables (highlighted in blue) and a negative (-) sign indicates a statistically significant, negative association between variables (highlighted in yellow). Additionally, cells containing "o" indicate no statistically significant association, and cells containing "✓" indicate the variable was not measured in that analysis.

Table 13. Summary of Models Predicting Supervisor Attitudes & Activities Related to the ICAT Training Program

| Variables | Receptivity to ICAT Training | Perceptions of Using ICAT Skills | Perceptions of Supervising ICAT Skills | ICAT Supervision Activities |
|------------------------------|------------------------------|----------------------------------|--|-----------------------------|
| Officer Age | o | - | o | o |
| Male Officer | o | o | o | o |
| White Officer | o | o | o | o |
| LMPD Tenure | o | o | o | o |
| Officer Rank | o | o | o | o |
| Bachelor's Degree or Higher | o | o | o | o |
| Enforcement Orientation | o | - | o | o |
| Community Orientation | o | o | o | o |
| Openness to Training | + | ✓ | ✓ | ✓ |
| Receptivity to ICAT Training | ✓ | o | + | + |

Notes: ✓ = not used in analysis; o = non-significant relationship; + = significant, positive relationship; - = significant, negative relationship.

Of importance in this summary – supervisor demographics do not play a significant role in most attitudes and activities related to ICAT training. For example, supervisors’ age, race, sex, education, role orientation, and years of supervisory experience do not significantly impact perceptions of supervising ICAT skills or the frequency which they report engaging in these activities– only their receptivity to the training itself matters. This highlights the importance of reinforcing ICAT training to first-line supervisors during their initial ICAT training to establish a stronger likelihood of reinforcing ICAT principles to subordinate officers.

VI. RECOMMENDATIONS

Based on the additional analyses provided in this *Supplemental Findings Report* regarding the impact of ICAT de-escalation training conducted by the LMPD, the following six additional recommendations are provided by the *IACP/UC Center for Police Research and Policy* team for consideration by LMPD Commanders.

1. *Continual improvement and testing of de-escalation training.*

The LMPD is one of the first agencies in the world to allow an external research team to evaluate their de-escalation training for its efficacy and impact. It remains the sole empirical study available that demonstrates reductions in uses of force, officer injuries, and citizen injuries that directly correspond to the delivery of de-escalation training. The results have been widely publicized by major national news organizations¹⁹, along with national and international policing organizations²⁰ (also see Engel et al., 2021).

In the *Initial Findings Report*, the UC research team recommended:

Continue, Refine, and Expand ICAT De-escalation Training within the LMPD

Based on the compelling benefits of LMPD's ICAT de-escalation training that were revealed in this evaluation, we strongly urge LMPD officials to continue and further expand training in this area. The modifications made by LMPD trainers to the original ICAT training for application in Louisville are associated with successful outcomes. There is always room for improvement in any training curriculum, however, and some changes have already been identified by the LMPD Training staff. This work needs to be supported and expanded.

The LMPD responded to the report findings and recommendations positively. Importantly, both the LMPD Training Division and the PERF national training staff are making adjustments to the training based directly on these empirical findings. The LMPD should be commended for this work, as this type of real-time feedback loop to continually improve training is rare in police organizations. Current changes to LMPD's de-escalation training include the development and delivery of ICAT 2.0, with more in-depth teaching principles and conversation to have a stronger impact on officers less receptive to initial ICAT training, and the continued, stressed importance of de-escalation for officer and citizen safety. This curriculum also adds more activities designed to emphasize sound decision-making through the CDM model and LMPD policy.

It is again recommended that this *Supplemental Findings Report* be examined with the same level of intensity by the LMPD and used to continually improve de-escalation training. It is further recommended that as the original curriculum is changed and new courses are developed, so that the LMPD continues to be a leader in the field of policing by engaging with external research teams to evaluate the efficacy and effectiveness of these modifications and additions. Continual testing will help the LMPD Training Division identify ways to better integrate de-escalation into the core of the LMPD culture.

¹⁹ See https://www.washingtonpost.com/local/deescalation-training-police/2020/10/27/3a345830-14a8-11eb-ad6f-36c93e6e94fb_story.html

²⁰ 2020 PERF Virtual Town Hall; 2020 IACP Annual Conference; 2021 IACP Officer Safety and Wellness Conference; *Police Chief Magazine*.

Based on the *Supplemental Findings Report*, LMPD trainers should be better able to identify and reinforce ICAT training to the types of officers who are shown to be less receptive to ICAT training initially and less likely to use de-escalation skills during their interactions with citizens. Further, LMPD executives can identify and prioritize the activities of first-line supervisors to reinforce the principles of de-escalation for their subordinates.

2. Systematic data collection of officer use of de-escalation tactics and skills.

It is again recommended that the LMPD develop a method to collect information when officers use de-escalation skills during their interactions with citizens, regardless of whether or not force is ultimately used. The purpose for collecting de-escalation data is two-fold: (1) it can provide a valuable source of information that can be analyzed to glean information regarding which tactics are the most/least effective; which are the most/least likely to be used; the situational contexts surrounding the frequency and effectiveness of their use; the officer characteristics (sex, race, age, experience, assignment, etc. associated with their use; (2) it provides an opportunity to continually reinforce to officers that the use of de-escalation tactics are supported – and expected (when possible) – by the LMPD.

There are a variety of ways to collect this type of data, such as the addition of questions and prompts in LMPD traffic stop, pedestrian stop, arrest, and use of force reporting forms. Information could be collected regarding what specific types of de-escalation tactics were attempted and whether or not they were perceived by officers to be successful. This type of data collection does not have to be overtaxing or burdensome to officers. Rather, these preexisting data forms could be revised to include 2-3 additional questions, with check-box responses that would capture the use and perceived effectiveness of de-escalation skills.

Additionally, supervisors could collect this type of information directly from their subordinates during post-incident reviews. This method might be especially effective in understanding the context around both successful and unsuccessful use of de-escalation skills. This information can also be used to enhance particular components of training, including scenarios used for role play.

Once de-escalation data is systematically collected, the LMPD can use the information as part of routine performance reviews, critical incident reviews, and award and disciplinary processes. In this manner, the LMPD will continually change the agency culture to one that supports the use of de-escalation, to ultimately, one that expects the use of de-escalation.

3. Engage first-line supervisors, conduct supervisor training and data collection to enhance ICAT training.

First-line supervisors play a critical role in the reinforcement and promotion of training objectives among their subordinates. First-line supervisors reinforce the tenets taught during any training and communicate the expectations for changes in practices, including for the use of force (PERF, 2018). These leaders play a key role in changing officer behavior.

In the *Initial Findings Report*, the UC research team recommended:

Revisit the Role of Supervisors to Reinforce ICAT Training

LMPD officials should develop a plan to support supervisors in their reinforcement of the ICAT de-escalation training – encouraging sergeants and lieutenants to speak more openly and directly to their subordinate officers regarding the value and application of the de-escalation skills in their day-to-day work. Specifically, the LMPD should identify opportunities when these messages can be communicated (e.g., roll call, post-incident reviews), discussing both successful use of de-escalation skills, as well as areas for improvement. In particular, incorporating the documentation of the use of de-escalation in use of force reports, letters of commendation, and other formal ways of positive recognition within the agency can further integrate the principles and application of ICAT de-escalation training into the agency.

Our current findings demonstrate that officers' perceptions of their first-line supervisors' and command staff's support of de-escalation training lead to more significant improvements in attitudes towards persons in crisis and views on the utility of the CDM. Similarly, officers with supervisors who reinforced ICAT training through their activities are also more likely to demonstrate improvements in their attitudes toward use of force that align more directly with the tenets of de-escalation training and sanctity of life. These findings empirically demonstrate that supervisor engagement to support de-escalation principles is critical to improving officer attitudes and subsequent behavior.

The findings also show that supervisors' own receptivity to de-escalation training is essential. On average, supervisors who are more receptive to the ICAT training curriculum report engaging in supervisor activities related to ICAT de-escalation skills more often than supervisors who report less receptivity to the training. And importantly, no other supervisor characteristics are significant predictors; across supervisors of varying age, sex, race, and LMPD experience, initial receptivity to training drives their engagement in activities that support the use of de-escalation by their subordinates. Getting first-line supervisors to support de-escalation training is the decisive element that can shape changes in agency culture.

The LMPD Training Division is beginning to develop a separate de-escalation course for first-line supervisors. It will be the first training of its kind in the country to provide supervisors with skills necessary to effectively reinforce and support the use of de-escalation tactics by subordinate officers. As with the other enhancements to the ICAT training noted above, it is recommended that this new supervisor curriculum be empirically validated using a rigorous research design and detailed statistical analyses.

In addition, the LMPD should develop and implement a data process for the systematic collection of supervisor activities designed to reinforce the use of ICAT de-escalation principles and tactics by their subordinates in the field. First, the specific activities that LMPD would like first-line supervisors to engage in to support ICAT training must be reinforced through policies, procedures, and training. Thereafter, the performance of these activities should be systematically captured and supervisors held accountable for conducting reviews of subordinate activities.

4. Conduct focus groups with officers.

This research study provides crucial quantitative information about the attitudinal and behavioral changes associated with the ICAT training program. However, qualitative research would

provide an additional layer of understanding for training impacts.²¹ This type of qualitative assessment was part of the original research plan for this study. However, the focus groups scheduled for mid-March 2020 were canceled due to travel and meeting restrictions due to the pandemic.

Despite the end of the initial study period, it is recommended that LMPD consider conducting focus groups with officers to gather additional information about their use of ICAT tactics in the field and any potential barriers experienced. Focus groups allow for information capture that is not included in officer surveys or official agency data. This additional information may provide useful explanations and context for the current research findings.

5. *Expand integration of de-escalation principles into other LMPD policies, practices, and trainings.*

To further incorporate de-escalation principles into the culture of the LMPD, we recommend that LMPD executives consider how to expand the integration of these principles into LMPD policies, procedures, and other trainings. This inclusion is recommended not only for LMPD's use of force policy, but other policies and procedures designed to ensure accountability within the LMPD. Notably, the LMPD has already enhanced its use of force policy by directly explaining the agency's expectation for de-escalation. However, other agency policies may provide opportunities for the continued inclusion and reinforcement of core principles, including the sanctity of human life and proportionality of officer actions to citizen actions. Furthermore, these policies can help create a method for accountability that requires supervisors to review officer use or non-use of de-escalation in the field. Finally, de-escalation training should not be considered a separate, stand-alone curriculum that is provided during in-service training. Rather, over time, components of this training should simply be integrated into other trainings, and also introduced during the initial training academy.

6. *Engage in best practices for use of force data collection.*

Use of force remains an urgent issue to police-community relations, requiring police executives to continue identifying improvements on this topic. Police executives can rely, in part, on research findings from other departments, but it is critical that they also understand use of force patterns within their own agency. This requires agencies to know what data they are collecting, as well as how best to access, analyze, and use that data. To aid in this endeavor, the Police Research Executive Forum (PERF) recently released an evidence-based, comprehensive use of force data framework to guide agencies on the collection of use of force information. Specifically, PERF recommends that agencies use a searchable, digital database that should ideally contain more than 150 officer, subject, situational, and environmental/neighborhood factors (PERF, 2021). Further, PERF recommends agencies identify comparison groups to use in their analyses, rather than relying upon a simple count of incidents. They suggest collaborating with researchers to form police-academic partnerships to assist with the development and implementation use of force data collection and analysis. Many of these partnerships come at little to no cost to agencies who seek research assistance.

²¹ Note that the UC research team scheduled focus groups with LMPD officers in March 2020, but those sessions were canceled due to COVID-19 restrictions and were unable to be rescheduled before the study concluded.

Relatedly, in the *Initial Findings Report*, the UC research team recommended:

Implement Changes to LMPD Use of Force Data Collection

The LMPD should begin systematically documenting the frequency, type, and circumstances surrounding the use of de-escalation tactics. This information will be critical to identify patterns and trends in the use of de-escalation skills that reduce uses of force. Regarding current practices in data collection on use of force incidents, we recommend that when narrative-based incident details are collected, it is done in a manner that will make data culling and analyses more readily available to LMPD officials. Further, the LMPD may consider a change in the reporting system to accommodate all uses of force into a single database that may be more easily analyzed.

This recommendation was based on a number of data anomalies and critical information that was not systematically collected for use of force incidents uncovered as part of the initial analyses. Additional examinations of the LMPD data for this report demonstrate even greater limitations of LMPD data. For example, it is clear that crime incident, arrest, and use of force data collection systems used by the LMPD are limited and need to be upgraded. Further, these separate databases do not easily link to one another. The inability to connect these databases through a unique case or incident number presents a major hurdle to accurately analyzing use of force patterns within arrest situations.

To better understand these racial patterns in reductions in uses of force and citizen injuries after de-escalation training, an examination of all arrest situations is needed to determine what factors lead to the use of force (Fryer, 2016; Tregle et al., 2019). Unfortunately, these analyses cannot be conducted based on the data provided by the LMPD. As specified in greater detail below, LMPD incidents involving an arrest cannot be definitively connected to reported uses of force during those incidents.

Some have attempted to interpret rates of police use of force by comparing the percent of various racial/ethnic groups who experience force to the same groups' representation in population statistics, known as benchmark comparisons (Cesario et al., 2019; Geller et al., 2020; MacDonald & Braga, 2019). The comparison groups, however, are supposed to represent similarly situated people at risk of experiencing force, assuming no officer bias exists. The difficulty with this type of comparison is that Census data (the most readily available and commonly used benchmark) do not measure the types of characteristics that research shows put individuals at risk of experiencing force – including a number of legal and extra-legal characteristics, but especially civilians' legally relevant behaviors including displays of resistance, presence of a weapon, and criminal behavior.

A more appropriate comparison is to examine all arrest situations and explore the factors that impact the likelihood of use of force during these at-risk situations. Studies have shown that approximately 3-5% of arrest situations involve the use of force (MacDonald & Braga, 2019; Tregle et al., 2019). Exploring what makes these situations different from the vast majority of arrest encounters where no force is used can be especially instructive to inform the selection and investment in reform efforts that have a realistic opportunity to reduce these disparities. For example, when analyses begin with a pool of citizens at risk for use of force (i.e., people who are arrested), it is possible to determine what factors impacted the likelihood of force while controlling for officer training in de-escalation.

A body of evidence is accumulating that uses more rigorous methods to examine the impact that multiple factors have on use of force during officer-civilian interactions, including situational/legal factors, along with citizen, officer, organizational, and community characteristics (Stroshine & Brandl, 2019). Across varied study designs and measures of officer use of force, civilians' resistance and other legal factors (e.g., presence or use of a weapon, evidence of criminal behavior) are consistently the most important factors explaining whether force is used and the severity of that force; however, these factors are not included in simple benchmark comparisons that use residential census population (Garner et al., 2002; Fridell & Lim, 2016).

The UC research team is attempting to conduct additional analyses to specifically examine the multiple factors (including officer de-escalation training) that might predict LMPD uses of force. These types of analyses require two data sources to be linked – arrest and use of force data. Typically, these databases can be connected through a unique case or incident number that is the same in both databases. Unfortunately, there is no unique identifier that could be identified in both databases to link these information sources. LMPD analysts attempted to manually merge thousands of records using other information (e.g., arrestee's name, date of birth, location, date of incident, etc.), this process only resulted in approximately 58.7% (N = 540/919 Use of Force IDs) of cases that could be merged, and further, there was little confidence that the merger process was accurate. Given the importance of these analyses, the UC research team will continue to work with LMPD analysts to attempt to merge these data. At the time of the release of this report, that data merger is not yet possible.

It is imperative that the LMPD dedicate the appropriate expertise and resources first to link these current data systems; and, second, to implement plans moving forward to significantly upgrade or replace these systems. To be a data-driven agency, the LMPD needs to have ready access to quality data that can be connected across databases. If the LMPD is able to connect these data sources, the UC research team is committed to conducting the additional analyses needed to thoroughly examine the factors that impact police use of force.

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VIII. APPENDICES

APPENDIX A: TRAINING SURVEY VARIABLES

| Variable/Scale | Description | α |
|-------------------------|--|----------|
| Officer Age | Officer age is measured as years and was captured from the LMPD employee database. | — |
| Officer Sex | Officer sex was captured from the LMPD employee database and was coded such that, 1= <i>Male</i> and 0= <i>Female</i> . | — |
| Officer Race | Officer race was captured from the LMPD employee database. The variable was dummy coded where 1 = <i>White/Caucasian</i> and 0 = <i>Non-White/Caucasian</i> . | — |
| LMPD Tenure | During the supervisor survey, officers were asked, “How many years have you been a supervising officer?” Response options included, <i>Less than 1 year</i> (=0), <i>1-4 years</i> (=1), <i>5-9 years</i> (=2), <i>10-14 years</i> (=3), <i>15-19 years</i> (=4), and <i>20 years or more</i> (=5). | — |
| Officer Rank | Officer rank was captured from the LMPD employee database. Rank categories were dummy coded where 1 = <i>Police Officer</i> and 0 = <i>Higher than Police Officer</i> . | — |
| Officer Education | During pre- and post-training surveys, officers were asked to identify their highest level of education. Response options included, “High School,” “Less than two years of college,” “Associate’s Degree,” “Professional Degree,” “Bachelor’s Degree,” and “Graduate Degree.” The variable was dichotomized where 1 = <i>Bachelor’s Degree or Higher</i> and 0 = <i>Less than a Bachelor’s Degree</i> . | — |
| Enforcement Orientation | Included in pre-training survey, 3 survey items were used to assess officers’ agreement with an enforcement-oriented view of the role of the police. Survey items included statements such as, “Enforcing the law is a patrol officer’s most important responsibility,” “My primary responsibility as a patrol officer is to fight crime,” and “My primary role is to control predatory suspects who threaten members of the public.” Respondents were asked to indicate their level of agreement to each survey item on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). The scale has a possible range of 3 to 15 and higher scores indicate more of an enforcement-oriented view of the role of police. | .74 |
| Community Orientation | Included in pre-training survey, 7 survey items were used to assess officers’ agreement with a community-oriented view of the role of the police. Survey items included statements such as, “Law enforcement and community members must | .74 |

work together to solve local problems,” “As a police officer, I have a primary responsibility to protect the constitutional rights of residents,” and “A primary responsibility of a police officer is to build trust between the department and community.” Respondents were asked to indicate their level of agreement to each survey item on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). The scale has a possible range of 7 to 35 and higher scores indicate more of a community-oriented view of the role of police.

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| Previous Encounter with PIC | During pre- and post-training surveys, officers were asked, “During your law enforcement career, have you encountered a person in crisis armed with a knife, baseball bat or other weapon(s) besides a firearm?” Responses were coded where 1 = <i>Yes</i> and 0 = <i>No</i> . | — |
| Previous Use of Deadly Force | During pre- and post-training surveys, officers were asked, “During your law enforcement career, have you encountered a person in crisis armed with a knife, baseball bat or other weapon(s) besides a firearm?” The respondents were answered “yes” to this question were subsequently asked the follow-up question, “... did any situation result in deadly force?” Responses were coded where 1 = <i>Yes</i> and 0 = <i>No</i> . | — |
| Openness to Training | Included in pre-training survey, survey respondents were asked to indicate their level of agreement with 7 statements related to training in law enforcement using a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). These items were adapted from a study on employees’ openness toward change conducted by Miller, Johnson and Grau (1994). The scale has a possible range of 7 to 35 and higher scores indicate a greater openness to training. | .72 |
| Attitudes Toward PIC | Included in pre-, post-, and follow-up training surveys, 12 survey items were used to measure officers’ attitudes toward interactions with persons in crisis. Based on the ICAT curriculum, a person in crisis refers to an individual that may be behaving erratically due to factors such as mental health concerns, substance use, situational stress, and/or intellectual/developmental disabilities. For each survey item, officers were asked to indicate their level of agreement on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Responses to all items were summed to create a single additive scale. The scale has a possible range of 12 to 60 and higher scores indicate a greater agreement to the tenets taught during the ICAT training. | W1: .70 W2: .69 W3: .80 |
| PIC Confidence | Included in pre-, post-, and follow-up training surveys, officers were asked to indicate their level of confidence on a four-point scale (1 = Not Confident at All; 4 = Very | W1: .95 W2: .96 |

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| | Confident) to a series of actions when responding to a hypothetical person in crisis. Thirteen survey items measured respondents' confidence, in managing the described situation. Responses to all items were then summed together to create a single additive scale. Higher scores indicate a greater agreement to the tenets taught during the ICAT training. | W3: .95 |
| Use of Force Attitudes | Included in pre-, post-, and follow-up training surveys, 8 items were asked to garner officers' attitudes toward using force, including their preference for using force and communication skills. Respondents were asked to indicate their level of agreement to each item on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Responses to all items were summed together to create a single additive scale. The scale has a possible range of 8 to 40. The scale was reverse coded such that higher scores reflect less acceptance towards use of force, which indicates a greater agreement to the tenets taught during the ICAT training. | W1: .70 W2: .73 W3: .71 |
| Views of CDM Utility | Included in post- and follow-up training surveys, 9 survey items were measured to determine the perceived utility of the Critical Decision-Making Model (CDM). Respondents were asked to indicate their level of agreement on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Responses to all items were then summed together to create a single additive scale. The scale has a possible range from 9 to 45 and higher scores indicate officers' greater agreement regarding the utility of the CDM. | W2: .95 W3: .95 |
| Receptivity to ICAT Training | Included in the post-training survey, officers' perceptions of the ICAT training program—including the content, delivery, and perceived outcomes—were assessed using 6 items. Items included statements such as, "The training was useful to me," "I would recommend this training to others," "The training content was clear," "It was valuable to attend training with officers in my division," "I am satisfied with the training," and "The training taught me new things." For each item, respondents indicated how applicable they felt each statement was to them (1 = Not At All Applicable to Me to 7 = Very Applicable to Me). Responses to all items were summed to create a single additive scale. The scale has a possible range of 6 to 42 and higher scores indicate a greater receptivity to the training. | .90 |
| Command Staff Support | During the follow-up survey, officers were asked how much they agree or disagree with the statement, "LMPD command staff support the use of skills taught in ICAT training." Response options included, and were coded such that, 1= <i>Strongly Disagree</i> , 2= <i>Disagree</i> , 3= <i>Neutral</i> , 4= <i>Agree</i> , and 5= <i>Strongly Agree</i> . As such, higher scores | — |

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|---------------------------------|---|---|
| | correspond to greater perceptions of command staff support. | |
| Supervisor Support | During the follow-up survey, officers were asked how much they agree or disagree with the statement, “My immediate supervisor supports the use of ICAT training.” Response options included, and were coded such that, 1= <i>Strongly Disagree</i> , 2= <i>Disagree</i> , 3= <i>Neutral</i> , 4= <i>Agree</i> , and 5= <i>Strongly Agree</i> . As such, higher scores correspond to greater perceptions of immediate supervisor support. | — |
| Peer Support | During the follow-up survey, officers were asked how much they agree or disagree with the statement, “My peers support the use of ICAT training.” Response options included, and were coded such that, 1= <i>Strongly Disagree</i> , 2= <i>Disagree</i> , 3= <i>Neutral</i> , 4= <i>Agree</i> , and 5= <i>Strongly Agree</i> . As such, higher scores correspond to greater perceptions of peer support. | — |
| Supervisor Reinforcement | During the follow-up survey, officers were asked about how frequently their immediate supervisor reinforces ICAT training. Response options included, and were coded such that, 0= <i>Never</i> , 1= <i>Seldom (1 per month)</i> , 2= <i>Sometimes (2–3 times per month)</i> , 3= <i>Often (once a week)</i> , and 4= <i>Frequently (more than 2–3 times per week)</i> . | — |
| Frequent Use of ICAT Skills | During the follow-up survey, officers were asked, “In the last 60 days, did you apply any strategies from the ICAT training in your work?” Response options identified the frequency at which the skills were applied and included “Frequently (more than 2–3 times per week),” “Often (once a week),” “Sometimes (2–3 times per month),” “Seldom (1 per month),” and “Never.” Responses were dummy coded, where 1= <i>Sometimes</i> , <i>Frequently</i> , and <i>Often</i> and 0= <i>Seldom</i> and <i>Never</i> . | — |
| Used ICAT Skills | During the follow-up survey, officers were asked if they had responded to an incident involving a person in crisis since they were trained in ICAT. The officers who responded “yes” to this question were then asked a follow-up question where they were asked, “During your most recent incident involving a person in crisis, did you use ICAT strategies?” Responses were coded where 1 = <i>Yes</i> and 0 = <i>No</i> . | — |
| Change in PIC Attitudes (W2-W3) | A continuous measure that represents an officer’s change in attitudes toward persons in crisis from the post-training survey to the follow-up survey four to six months later. The measure was generated by subtracting an officer’s follow-up survey score from their post-training survey score. | — |

Negative values correspond to training decay while positive values reflect improvement in attitudes after training.

Change in Use of Force Attitudes (W2-W3)

A continuous measure that represents an officer's change in attitudes toward use of force from the post-training survey to the follow-up survey four to six months later. The measure was generated by subtracting an officer's follow-up survey score from their post-training survey score. Negative values correspond to training decay while positive values reflect improvement in attitudes after training.

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Change in Views of CDM Utility (W2-W3)

A continuous measure that represents an officer's change in views of the critical decision-making model from the post-training survey to the follow-up survey four to six months later. The measure was generated by subtracting an officer's follow-up survey score from their post-training survey score. Negative values correspond to training decay while positive values reflect improvement in attitudes after training.

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APPENDIX B. SUPERVISOR SURVEY VARIABLES

| Variable/Scale | Description | α |
|-------------------------|--|----------|
| Supervisor Age | Officer age is measured as years and was captured from the LMPD employee database. | — |
| Supervisor Sex | Officer sex was captured from the LMPD employee database and was coded such that, 1= <i>Male</i> and 0= <i>Female</i> . | — |
| Supervisor Race | Officer race was captured from the LMPD employee database. The variable was dummy coded where 1 = <i>White/Caucasian</i> and 0 = <i>Non-White/Caucasian</i> . | — |
| Years Supervising | During the supervisor survey, officers were asked, “How many years have you been a supervising officer?” Response options included, <i>Less than 1 year</i> (=0), <i>1-4 years</i> (=1), <i>5-9 years</i> (=2), <i>10-14 years</i> (=3), <i>15-19 years</i> (=4), and <i>20 years or more</i> (=5). | — |
| Supervisor Education | During pre- and post-training surveys, officers were asked to identify their highest level of education. Response options included, “High School,” “Less than two years of college,” “Associate’s Degree,” “Professional Degree,” “Bachelor’s Degree,” and “Graduate Degree.” The variable was dichotomized where 1 = <i>Bachelor’s Degree or Higher</i> and 0 = <i>Less than a Bachelor’s Degree</i> . | — |
| Enforcement Orientation | Included in pre-training survey, 3 survey items were used to assess officers’ agreement with an enforcement-oriented view of the role of the police. Survey items included statements such as, “Enforcing the law is a patrol officer’s most important responsibility,” “My primary responsibility as a patrol officer is to fight crime,” and “My primary role is to control predatory suspects who threaten members of the public.” Respondents were asked to indicate their level of agreement to each survey item on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). The scale ranges from 3 to 15, with higher scores indicating a stronger enforcement-oriented view of the role of police. | .74 |
| Community Orientation | Included in pre-training survey, 7 survey items were used to assess officers’ agreement with a community-oriented view of the role of the police. Survey items included statements such as, “Law enforcement and community members must work together to solve local problems,” “As a police officer, I have a primary responsibility to protect the constitutional rights of residents,” and “A primary responsibility of a police officer is to build trust between the department and community.” Respondents were asked to indicate their level of agreement to each survey item on a | .74 |

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| | <p>five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). The scale ranges from 7 to 35, with higher scores indicate more of a community-oriented view of the role of police.</p> | |
| Openness to Training | <p>Included in pre-training survey, survey respondents were asked to indicate their level of agreement with 7 statements related to training in law enforcement using a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). These items were adapted from a study on employees' openness toward change conducted by Miller, Johnson and Grau (1994). The scale ranges from 7 to 35, with higher scores indicating a greater openness to training.</p> | .72 |
| Receptivity to ICAT Training | <p>Included in the post-training survey, officers' perceptions of the ICAT training program—including the content, delivery, and perceived outcomes—were assessed using 6 items. Items included statements such as, “The training was useful to me,” “I would recommend this training to others,” “The training content was clear,” “It was valuable to attend training with officers in my division,” “I am satisfied with the training,” and “The training taught me new things.” For each item, respondents indicated how applicable they felt each statement was to them (1 = Not At All Applicable to Me to 7 = Very Applicable to Me). Responses to all items were summed to create a single additive scale; scale ranges from 6 – 42, with higher scores indicating greater receptivity to training.</p> | .90 |
| Views of CDM Utility | <p>Included in post- and follow-up training surveys, 9 survey items were measured to determine the perceived utility of the Critical Decision-Making Model (CDM). Respondents were asked to indicate their level of agreement on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Responses to all items were then summed together to create a single additive scale; scale ranges from 9 – 45, with higher scores indicating officers' greater agreement regarding the utility of the CDM.</p> | .95 |
| Perceptions of Using ICAT Skills | <p>During the supervisor survey, officers' perceptions related to using ICAT de-escalation skills were assessed using 6 items. Items included statements such as, “I am confident using ICAT de-escalation skills during my encounter with citizens,” “I am confident using ICAT de-escalation skills during interaction with my subordinate officers,” “I receive the necessary equipment from my department to de-escalate situations,” “I receive sufficient training in de-escalation,” “I receive the necessary support from my supervisors to use ICAT de-escalation skills,” and “When officers use ICAT de-escalation skills properly, encounters with citizens will often result in a positive resolution.” For each item, respondents indicated how much they agreed with each statement (1 = Strongly Disagree; 5 = Strongly Agree). Responses to all items were summed to create a single</p> | .91 |

additive scale; scale ranges from 6 – 30, with higher scores indicating greater agreement with the perception of using ICAT skills.

Perception of
Supervising ICAT
Skills

During the supervisor survey, officers' perceptions related to supervising ICAT de-escalation skills were assessed using 5 items. Items included statements such as, "I am able to effectively supervise subordinates' use of ICAT de-escalation," "I am able to effectively coach subordinates' use of ICAT de-escalation skills," "I receive the necessary equipment from my department to supervise my subordinates' use of ICAT de-escalation skills," "I receive sufficient training to supervise my officers' use of ICAT de-escalation," and "It is difficult to supervise the use of ICAT de-escalation skills by my subordinate officers (reverse-coded). For each item, respondents indicated how much they agreed with each statement (1 = Strongly Disagree; 5 = Strongly Agree). Responses to all items were summed to create a single additive scale; scale range = 5 – 25, with higher scores indicating greater agreement with the perception of supervising ICAT skills.

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Supervision Activities
Related to ICAT

Officers' frequency of six supervision activities related to ICAT de-escalation skills were assessed. The six activities included, "How frequently do you talk with your subordinate officers generally about the use of ICAT de-escalation skills?" "How often do you have discussions with subordinates about their use of ICAT de-escalation skills during a specific incident?" "How frequently do you counsel subordinates about not using ICAT de-escalation skills when they should have?" "How frequently do you document the use of ICAT de-escalation skills in use of force reports?" "How frequently do you document the use of ICAT de-escalation skills in letters of commendation for subordinate officers?" and "How frequently do you document the use of ICAT de-escalation skills in some other way (excluding use of force reports and commendation letters?)." For each item, respondents indicated their frequency of engaging in each activity, where 0 = Never; 1 = Seldom (1 per month); 2 = Sometimes (2-3 times per month); 3 = Often (1 per week); 4 = Frequently (more than 2-3 times per week). Responses to all activities were summed to create a single additive scale of frequency of using supervisor activities related to ICAT de-escalation skills; scale range = 0 – 24 , with higher scores indicating greater frequency of use.

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