Implementing Gang & Gun Violence Reduction Strategies in Las Vegas, Nevada:

Evaluation of Offender Notification Meetings

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EXECUTIVE SUMMARY

One of the most frequently used communication mechanisms associated with focused deterrence strategies are offender notification meetings, also referred to as "call-in" sessions. Typically, these meetings are used to communicate directly to offenders that their future violent behaviors (and those of their affiliated groups/gangs) will be responded to in a swift and predictable manner through a coordinated law enforcement effort to prioritize group violence, share information, and develop comprehensive group-focused responses (Engel, Tillyer & Corsaro, 2013). The purpose of sharing this information is to gain compliance through group pressure (Kennedy, 1997). The group/gang structure is believed to serve both as a communication vehicle, and a potential source of control, as the threat of group-focused enforcement encourages groups to police themselves (Tillyer & Kennedy, 2008). Additional messages regarding the availability of assistance, social services, and job opportunities are often conveyed. Finally, most meetings include some form of community messaging that describes the harm inflicted by violence to individual victims and the larger community, along with a plea to change their behavior. This type of "community moral voice" is designed to send clear messages of non-violence, and rejecting norms that promote violence (Brunson, 2015).

Offender notification sessions are designed to alert offenders and alter their decision-making by conveying possible sanctions while offering available services, contingent upon the path that the offender (typically on probation and/or parole) chooses, be it desistence or continued high-risk behavior. Initiatives built on call in sessions ultimately seek to change offender behavior by blending law enforcement, community mobilization, and social service provisions in a targeted and directed fashion. While initiatives such as focused deterrence strategies, which rely heavily on offender notification sessions, have often corresponded with reductions in citywide gun violence and gang homicides, the direct influence of call in sessions on individual-level behavior (for those called-in) is far less understood.

The following study examines the impact of offender notification meetings – with messaging heavily focused on compassion, support, and the harm inflicted by violence – on the likelihood of offender recidivism in Las Vegas, Nevada. Officials from the Las Vegas Metropolitan Police Department (LVMPD) and the Nevada Department of Public Safety, Division of Parole and Probation (NPP) worked collaboratively to conduct a series of offender notification meetings. Other components that typically accompany the implementation of focused deterrence strategies (e.g. targeted gang enforcement and social services provision) however, were not systematically implemented. Therefore, the following research represents a test solely of the impact of the offender notification meetings, answering the question of whether this form of communication with offenders has an impact on their individual likelihood of recidivism.

In order to better understand the influence of call in sessions on offender recidivism patterns, officials from LVMPD partnered with researchers from the International Association of Chiefs of Police (IACP) / University of Cincinnati (UC) *Center for Police Research and Policy*, along with academic partners from the University of Nevada Las Vegas (UNLV) to randomize and implement an experimental trial to assess the impact of call in sessions on probationers and parolees in Las Vegas in the Spring and Fall of 2018. Using a randomized controlled trial (RCT) research design, this study addresses the following specific research questions:

1) What impact does attendance of probationers/parolees at offender notification meetings have on individual likelihood of recidivism?

2) Can a simple risk classification be developed using offender criminal histories and associations with violent gangs to assess whether risk classification correlates with offender recidivism patterns?

3) Does the impact of offender notification meetings vary based on probationer/parolees' risk classification?

Within the randomization component, probationers/parolees were first stratified into one of four possible categories dependent upon their *prior violent criminal histories* and *current affiliation with a violent criminal gang in Las Vegas:* 1) Low-Risk (neither a violent criminal history nor affiliated with a violent gang), 2) Low/Moderate-Risk (no prior violent criminal history but affiliation with a violent gang), 3) Moderate-Risk (prior violent criminal history but no affiliation with a violent gang), and 4) High-Risk (both violent criminal history and affiliation with a violent gang). A random case-control selection occurred within each risk-level stratum, and various waves of probationers and parolees who were assigned to treatment were called-in to attend notification sessions in May 2018 and October 2018. In total, 216 probationer/parolees were randomly assigned to treatment, and 300 to control groups.

Probationer/parolee recidivism is the primary outcome of interest, operationalized in two forms: 1) a re-arrest of any type, and 2) an administrative failure (revocation) of probation/parole supervised by NPP. If either event occurred in the follow-up period (i.e., 12 months for May sessions, 9 months for October sessions) – the probationer/parolee (in either treatment or control condition) is classified as having recidivated.

Three analytic strategies are employed for the various strata (as well as overall treatment-to-control comparisons) and waves of probation/parolee participants. First, a set of bivariate chi-square analyses on recidivism patterns for each risk group to set the foundation regarding covariation in treatment assignment (and attendance) calibrated with recidivism across the risk groups and waves of participants during the study period. Second, a series of binary logistic regression models for our recidivism outcome (where yes = 1 or no = 0) for each risk group (including culling all strata into a single analysis) and each wave of probationers and parolees in the study are estimated (see Long, 1997). The use of the multivariate regression model on our dichotomous outcome of interest allows, where appropriate, to include control variables in the analyses. While the use of statistical controls in randomized controlled trials is subject to debate, where statistical controls are potentially necessary (e.g., unbalanced covariates of importance between treatment and control probationers/parolees within each strata), the multivariate regression framework (including the logistic regression model) allows for such controls to be included into a single regression estimation. Finally, a series of Cox proportional hazard models are estimated to assess the effect that randomized treatment had on individual recidivism (see Cox, 1972).

Findings from these statistical analyses are best summarized as follows:

- There was no evidence that attendance at a single 90-minute offender notification meeting had an *overall* impact on recidivism risk among treated Las Vegas probationers and parolees.

- There was evidence, however, of a specific impact of offender notification sessions within the Low/Moderate-Risk probationer/parolee group. **Specifically, attendance at one offender notification meeting by probationers/parolees who were affiliated with a violent group/gang but had no previous arrest for violence, were 26% to 44% less likely to recidivate compared to probationers/parolees at similar risk who did not attend an offender notification meeting.** Additionally, when offenders did recidivate, the time until recidivism was longer for those assigned and exposed to call-in sessions within this risk group compared to those who did not attend a notification meeting.

- Offender notification meetings vary greatly when conducted in different settings and among different criminal justice and social service actors. The call-in sessions in Las Vegas included a variety of components: an initial message of potential sanctions if continued offending occurred (without any specific details as to what recidivism pattern responses may look like), a number of social services available to desisting probationers and parolees, narratives of what a continued life of risky decision-making will likely entail, and the tragic impact of violence on families, parents, and loved ones. Thus, the Las Vegas model was not 'heavy handed' like many of the focused deterrence gang violence reduction call-ins used in other settings (see Engel et al., 2013), but rather more integrative, communicating support for desistance and reintegration. These findings suggest that individuals who are not prone to violence themselves and who are affiliates with groups who engage in violence may be particularly influenced by supportive, integrative, and collective offender notification meetings.

Based on these current study findings and previous research, the following policy implications and recommendations are provided to the LVMPD and NPP:

1) To enhance violence reduction opportunities within Las Vegas, full implementation of the focused deterrence model is necessary. While it remains unknown which specific mechanisms of the focused deterrence strategy have the most direct impact on violence reduction (Corsaro & Engel, 2015), it remains well-established that implementation with fidelity to the model has demonstrated significant reductions in violence across jurisdictions (Braga et al., 2018). Moving forward, the LVMPD should consider full implementation of focused deterrence that integrates offender notification meetings with specific gang enforcement activities, continuous law enforcement follow-up with would-be offenders, provision of social services, and coordinated community engagement.

2) If full implementation of a focused deterrence strategy is not operationally feasible, the LVMPD and NPP should still continue to work in partnership to host offender

notification meetings. These meetings represent a low-cost mechanism to communicate with offenders at risk for involvement (as victims and offenders) in future violence.

3) The LVMPD and NPP should focus specific call-in interventions on those offenders most likely to respond positively. This study shows that offenders identified as low/moderate-risk (that is, those who are affiliated with a violent gang, but no arrest history of violence) were significantly less likely to recidivate after attending a single 90-minute meeting containing a specifically tailored anti-violence message. Probationers/parolees at this risk level should be specifically identified and routinely required to attend offender notification meetings across the duration of their supervision as a condition of their continued release.

4) These findings also suggest that when managing limited resources, some probationers/parolees are not good candidates for inclusion in the sessions because of their limited return on investment. Specifically, offenders considered to be low-risk (that is, not affiliated with a violent gang, and no history of violent arrest) should not be included in this intervention. Likewise, high-risk offenders (affiliated with a violent gang and have a violent arrest history) were not impacted by attending a single offender notification meeting that was more heavily assistance- and community-focused. Rather, it is likely that individuals who are high-risk need, at a minimum, additional "dosages" of law enforcement-based anti-violence messaging, coupled with targeted gang enforcement, to have a meaningful impact on their likelihood of recidivism (for review, see Braga et al., 2018).

5) Additional research is needed to better identify the most effective tactics used within violence reduction strategies. Any future interventions designed to reduce violence that are implemented within the LVMPD and NPP should be studied with a similar level of scientific rigor to best inform agency leaders, and guide operationalization of violence reduction initiatives in Las Vegas.

INTRODUCTION

In the spring of 2017, researchers from the *IACP/UC Center for Police Research and Policy* (the "Center") met with the command staff from the Las Vegas Metropolitan Police Department (LVMPD) to discuss their concerns related to violent crime. After a review of LVMPD's historical and current methods of handling violent crime, it was decided that Center researchers would design, implement, and evaluate a strategy with the LVMPD to address gun and gang member involved (GMI) violence. Specifically, a three-prong approach was developed, including: (1) hot spots policing to reduce GMI street violence; (2) focused deterrence efforts to reduce GMI offending and victimization; and (3) place-based investigations (PNI) to identify and disrupt the infrastructures that support GMI violent activities. When used in combination, these interventions work to address all three elements of the crime triangle: offenders, victims, and places. This report provides the findings for the focused deterrence portion of this violence reduction project. Two additional, separate reports document the findings for the hot spots policing intervention, and the place-based investigations (PNI) pilot-test.

The Study Site

The City of Las Vegas is the most populated city in the State of Nevada with an estimated population of 644,000 people. The city has grown by about 10% since 2010, and has an estimated median household income of $53,000. In terms of the racial/ethnic composition of the population, approximately 62.7% are White, 12.2% are Black, 6.7% are Asian and 6.2% are two or more races or of other races; approximately 32.7% of the population are of Hispanic or Latino descent (US Census Bureau, 2019). Las Vegas is most well-known for its tourism attractions, and therefore has a fairly transient population in comparison to other large cities in the United States. The city experiences a tourist volume of approximately 42 million visitors each year (LVMPD, 2019).

The City of Las Vegas is situated within Clark County, Nevada, which has a population of approximately 2.23 million people. The county has grown by approximately 14% between 2010 to 2018, and has an estimated median household income of $56,000. In terms of racial/ethnic composition of the county's population, approximately 69.9% are White, 12.8% are Black, 10.4% are Asian and 6.9% are two or more races or of other races (US Census Bureau, 2019). In addition, approximately 31.4% of the population is of Hispanic or Latino descent. Overall, the City of Las Vegas and the larger surrounding Clark County have similar demographics.

The Las Vegas Metropolitan Police Department (LVMPD) provides all policing services for the City of Las Vegas and Clark County, Nevada (excluding the cities of Henderson, North Las Vegas, Boulder City, and Mesquite). The LVMPD was formed by the incorporation of separate police agencies in Clark County in July of 1973 and is led by the Sheriff of Clark County, who is publicly elected every four years. The LVMPD is currently led by Sheriff Joseph Lombardo, elected in 2015. The LVMPD is the largest police department in the State of Nevada, with 3,200 sworn police officers and 1,300 civilian employees. In addition, the LVMPD has approximately 1,200 personnel devoted to detention services. According to the most recent estimates (N=5,832), approximately 33.6% of the LVMPD is comprised of female employees and 66.4% of the agency is comprised of male employees (LVMPD, 2019). In terms of the LVMPD's ethnic composition, approximately 61.5% of employees are White, 16.9% are Hispanic, 10.0% are Black, 5.7% are Asian, and 5.9% are of mixed races or of other ethnicities.

In total, the LVMPD serves a geographic jurisdiction of 7,500 square miles, with a population of approximately 1.6 million—more than half of the population of the state of Nevada (LVMPD, 2019). The LVMPD is divided into nine urban area commends: Bolden, Convention Center (which includes the Las Vegas Strip and Convention Center), Downtown, Northeast, Northwest, Southeast, Spring Valley, Enterprise and South Central. Additionally, the LVMPD has recentralized gang intelligence, investigations, and enforcement actions into a new bureau, the LVMPD Gang/Vice Bureau.

In April 2017, the Las Vegas Metropolitan Police Department (LVMPD) recentralized gang intelligence, investigations, and enforcement operations following the decentralization of most LVMPD investigative functions in July 2015. This recentralization effort resulted in the creation of a new bureau – the LVMPD Gang/Vice Bureau – designed to combine gang operations with vice-activity investigations, previously conducted by the Support Operations Bureau. The Gang/Vice Bureau was tasked with implementing strategies to reduce overall violent crime by focusing on Gang Member Involved (GMI) violence and associated crime in Las Vegas.

GMI homicides, or those homicides in which either the suspect or victim is a documented gang member, had increased by 13% in 2016 compared to the previous year. Specifically, in 2016 there were 62 homicides in LVMPD's jurisdiction classified as GMI (37% of all homicides). Of those GMI homicides, victims were determined to be members of 37 different gangs, and suspects were members of 29 different gangs. As a result, a concerted effort to reduce GMI violence was believed to result in a large impact on the overall level of crime and violence reported in Las Vegas.

The LVMPD works in partnership with the Nevada Division of Parole and Probation (NPP). NPP is housed within the Department of Public Safety in the State of Nevada, and supervises defendants placed on probation by a District Court, individuals released from prison on parole, inmates who are placed in transitional community programs, and offenders transferred to Nevada under the Adult Interstate Compact Agreement (Nevada Department of Public Safety, 2015). NPP is currently led by Chief Natalie Wood, who was elected in 2014. The Division has ten offices, located throughout the state of Nevada, but the cities of Reno and Las Vegas account for about 80 percent of their workload (Nevada Department of Public Safety, 2015).

Study Overview

GMI homicides, or those homicides in which either the suspect or victim is a documented gang member, increased by 13% in 2016 when compared to the previous year. In 2016, 62 homicides in LVMPD's jurisdiction (37% of all homicides) were classified as GMI. Of those GMI homicides, victims were determined to be members of 37 different gangs and suspects were members of 29 different gangs. As of April 4, 2017, LVMPD's GangNET intelligence database contains information concerning 578 gangs, 12,179 gang members, and 2,190 gang affiliates who have been identified within Las Vegas over the previous 5 years. Since the beginning of 2017, 66 GMI events have been documented: 12 homicides, 35 shootings, and 19 events

involving deadly weapons. As a result, a concerted effort to reduce GMI violence would have a large impact on the overall level of crime and violence reported in Las Vegas.

Focused deterrence strategies – sometimes referenced as Ceasefire, Group Violence Reduction strategy (GVRS), or "pulling levers" – are designed specifically to reduce GMI violence. These strategies aim to alter the behaviors of chronic violent offenders through: 1) direct communication regarding the consequences of involvement in violent crime, and 2) the strategic application of enforcement and social service resources to target violent social networks. Typically, focused deterrence initiatives follow a problem-oriented framework in which recurring violent crime problems are identified and analyzed, followed by the development of tailored responses based on the local context and operational capacities of law enforcement, social services, and community organizations (Braga & Weisburd, 2015). A growing body of empirical evaluations demonstrate that various focused deterrence approaches have been successful in reducing violence, at least in the short-term (for review, see Braga et al, 2018). Although not without limitations, this research base provides important guidance related to the implementation of effective focused deterrence strategies and the crime control benefits associated with such initiatives across different agency and community contexts.

One of the most frequently used communication mechanisms associated with focused deterrence strategies are offender notification meetings, also referred to as "call-in" sessions. Typically, these meetings are used to communicate directly to would-be violent offenders that their future violent behaviors (and those of their affiliated groups/gangs) will be responded to in a swift and predictable manner through a coordinated law enforcement effort to prioritize group violence, share information, and develop comprehensive group-focused responses (Engel, Tillyer & Corsaro, 2013). The purpose of sharing this information is to gain compliance through group pressure (Kennedy, 1997). The group/gang structure is believed to serve both as a communication vehicle, and a potential source of control, as the threat of group-focused enforcement encourages groups to police themselves (Tillyer & Kennedy, 2008). Additional messages regarding the availability of assistance, social services, and job opportunities are often conveyed. Finally, most meetings include some form of community messaging that describes the harm inflicted by violence to individual victims and the larger community, along with a plea to change their behavior. This type of "community moral voice" is designed to send clear messages of non-violence, and rejecting norms that promote violence (Brunson, 2015).

The following study examines the impact of offender notification meetings – with messaging heavily focused on compassion, support, and the harm inflicted by violence – on the likelihood of offender recidivism in Las Vegas, Nevada. The LVMPD and NPP officers and staff worked collaboratively to conduct a series of offender notification meetings. Other components that typically accompany the implementation of focused deterrence strategies (e.g. targeted gang enforcement and social services provision) however, were not systematically implemented. Therefore, the following research represents a test solely of the impact of the offender notification meetings, answering the question of whether this form of communication with offenders has an impact on their individual likelihood of recidivism.

FOCUSED DETERRENCE: A REVIEW OF THE EVIDENCE

Offender-based approaches for violence reduction focus police resources on a relatively small number of high-risk, chronic offenders to address violent crime (Weisburd & Majmundar, 2018). This type of approach is based upon empirical evidence demonstrating that a large proportion of crime is committed by a small number of offenders (Blumstein, Farrington, & Moitra, 1985; Wolfgang, Figlio, & Sellin, 1972). As such, the logic model underlying offender-based approaches for violence reduction suggests that police can be more effective in reducing violent crime if they focus their efforts on the criminal actions of the small group of individuals that drive violent crime rates within their jurisdiction. One such offender-based strategy, focused deterrence, has been demonstrated as an effective police-led strategy for violence reduction.

The focused deterrence approach for violence reduction was first developed in the mid-1990s to address serious youth violence in Boston, Massachusetts (Braga, Kennedy, Waring, & Piehl, 2001; Kennedy, Piehl, & Braga, 1996). Researchers found that less than one percent of youth (age 24 and under), in approximately 60 informal, neighborhood-based gangs, were responsible for at least 60% of all youth homicides in the city (Braga et al., 2001; Braga, Piehl, & Kennedy, 1999). In response, "Operation Ceasefire" was developed to disrupt the ongoing "vendetta-like" conflicts among youth gangs (Braga, Turchan, & Winship, 2019; Kennedy, Braga, & Piehl, 2001). Specifically, Operation Ceasefire aimed to prevent gun violence among offenders by reaching out to the gangs directly, explicitly stating that violence would not be tolerated within the community, and enforcing that message by "pulling every lever legally available" when violence occurred (Braga & Weisburd, 2015).

Critical to this violence reduction strategy was the "retail deterrence" message delivered directly and repeatedly in formal meetings with gang members (referred to as forums, offender notification meetings, or call-ins), as well as in police and probation contacts with gang members, meetings with inmates within secure juvenile facilities in the city, and through gang outreach workers (Kennedy et al., 2001). This message made clear the "cause-and-effect" connections between the behavior of the targeted population (i.e., violent offenders) and the behavior of the authorities – acting as a promise to gang members that violence would evoke an immediate and intense response by law enforcement (Braga et al., 2001). Additionally, within offender notification meetings, local representatives would provide the "moral voice" of the community to highlight the detrimental effects of violence on individuals, their families, and the larger community. In turn, advocates, probation and patrol officers, and clergy from the community offered gang members opportunities for social services (Braga et al., 2019). Following the implementation of Operation Ceasefire, a large reduction in the number of Boston youth homicides (victims 24 years or younger) was observed. Specifically, a quasi-experimental evaluation suggested the Operation Ceasefire intervention was associated with a 63% decrease in the monthly number of Boston youth homicides, a 32% decrease in the monthly number of calls for service for shots fired, and a 25% decrease in the monthly number of gun assaults (Braga et al., 2001). Other researchers, however, have observed that violent crime rates were decreasing across major cities in the United States in the mid-to-late 1990s (see, e.g. Rosenfeld, Fronango, & Baumer, 2005), and cautioned against attributing the reduction in Boston's youth homicides solely to Operation Ceasefire (Fagan, 2002; Levitt, 2004). Unfortunately, the methodological

limitations of the Operation Ceasefire evaluation – that is, the use of a non-randomized control group research design – prevents ruling out other explanations for the youth homicide decline.

Encouraged by the findings of Operation Ceasefire's violent crime control benefits, focused deterrence strategies are widely used, and have evolved into violence reduction models that: 1) used data to identify high-risk gangs and groups of chronic offenders responsible for a disproportionate amount of violence; 2) build network capacity between criminal justice agencies and social services within the community to address the violence problem; 3) channeled criminal justice resources and communication to alter offenders' perceptions of the certainty of punishment related to the continuation of violence; and 4) mobilized the community to generate a culture of intolerance towards violent behavior (Corsaro, 2018; Kennedy, 1997, 2011).

A recent systematic review and meta-analysis conducted by Braga and colleagues (2018), identified 24 quasi-experimental evaluations of focused deterrence strategies (produced from 2001 to 2015). Although no randomized controlled trial evaluations were identified, this systematic review reveals growing evidence based on increasingly more rigorous quasi-experimental evaluation designs with matched comparison groups (Braga et al., 2018). In 19 of the 24 studies identified, researchers reported the implementation of the focused deterrence program to be associated with statistically significant crime reduction effects on the targeted crime problem.

One of the limitations of this research, however, is the inability to disentangle the effects of various components of the focused deterrence strategies. Although a few studies have begun to unpack the "black box" of focused deterrence initiatives, uncertainty regarding which program elements are most significant in reducing violence remains (Braga et al., 2018; Corsaro & Engel, 2015; Kennedy, 2019; Weisburd & Majmundar, 2018). Further, the mechanisms by which it operates are less understood, and have not been tested with a high degree of precision and accuracy given real-world operational and data constraints.

Focused deterrence presumably operates at three levels: 1) macro-social level (e.g. citywide or within targeted neighborhoods); 2) group-level (where the deterrent-message is shared from called-in members to other members to curb violence); and 3) individual-level (where risk of recidivism changes once individuals are notified of the sanctions that will be leveraged against them should they re-offend). At the macro-social level, the immediate change in gun violence patterns that corresponds with the offender notification meetings are a cursory indication of their impact at higher macro-social levels. However, the precision by which the observed impacts are a direct product of the offender notification meetings are more presumed than confirmed.

In terms of the impact of offender notification meetings on gang-level violence, a number of studies have shown that the gangs of individuals that have attended notification sessions are significantly less likely to have members engage in shootings or be victimized by firearms when compared with matched-control gangs (Braga, Hureau, & Papachristos, 2014). Additionally, gangs in Boston that were associated with treated gangs (i.e., socially networked), but were not direct recipients of the offender notification meetings, also experienced significantly fewer shootings than matched-control gangs (Braga, Apel, & Welsh, 2013). Finally, research in Chicago demonstrated that gang factions that attended offender notification meetings experienced a 23% reduction in overall

shooting and a 32% reduction in firearm victimization in the year that followed the treatment (Papachristos & Kirk, 2015). Thus, the impact of offender notification meetings (coupled with other dimensions of focused deterrence) on gang activity is becoming more clearly understood.

In contrast, there has been mixed evidence regarding the impact of offender notification meetings on rates of recidivism for those individuals receiving the message (i.e., impact at the individual-level). For example, Hamilton, Rosenfeld, and Levin (2018) found in their St. Louis study that individuals randomly assigned/attended offender notification meetings were significantly less likely to recidivate than the control group, lending credence that the offender notification meeting, or the crux of the focused deterrence intervention, had a significant deterrent effect on individual level offending patterns. Likewise, a strong quasi-experimental evaluation of Detroit Ceasefire indicated that individuals called-in to notification sessions had a significantly longer time to re-arrest than a matched comparison group (Circo et al., 2019). However, a randomized controlled trial in Massachusetts, randomized the highest-risk offenders into a case-control design showed no significant deterrent impact of the offender notification meetings on individual-level recidivism patterns, even when accounting for precise measures of time devoted to the individuals beyond the call-in sessions by administrative, case-management, and law enforcement teams (Uchida et al. 2018).

RESEARCH QUESTIONS

The LVMPD had previously considered deployment of a focused deterrence strategy in 2013. Law enforcement executives indicated that this initial project was not successfully implemented, and as a result, expressed some reluctance regarding the potential for violence reduction using this strategy. As documented in the Methods section below, an initial presentation given by members of the research team, and a follow-up gang audit were conducted with members of the LVMPD and NPP, along with local, state, and federal prosecutors.

At operational meetings conducted after this presentation, it was decided that offender notification meetings would be scheduled following a randomized controlled research design to best test the impact of these meetings. The LVMPD, however, did not engage in the additional components typically associated with the full implementation of a focused deterrence strategy. As a result, this study assesses the impact that offender notification meetings alone had on the likelihood of individual probationer/parolee recidivism. As noted above, the evidence regarding offender notification meetings shows somewhat mixed impact when examining individual-level patterns of re-arrest and reoffending, demonstrating the need for further evaluation to better understand their true impact.

The study addresses the following specific research questions:

1) What impact does attendance of probationers/parolees at offender notification meetings have on individual likelihood of recidivism?

2) Can a simple risk classification be developed using offender criminal histories and associations with violent gangs to assess whether risk classification correlates with offender recidivism patterns?

3) Does the impact of offender notification meetings vary based on probationer/parolees' risk classification?

A study designed to assess the impact of offender notification meetings on recidivism patterns is described in detail below.

METHODOLOGY

To assess the impact of offender notification meetings on recidivism patterns, a multi-phase, stratified randomized controlled trial study was designed and implemented. Randomized control trials (RCT) are considered the "gold standard" in research, due to their ability to maximize internal validity, which increases the confidence that findings did not occur by chance (Sherman et al., 1997). During an RCT, study subjects are randomly assigned to either the treatment (e.g. offender notification meetings) or control group. The "treatment group" receives the intervention being studied and the "control group" does not. The control group is often described as just "doing business as usual." This approach allows the researcher to control the delivery of the intervention and assume the only difference between the subjects in each group is whether or not they experienced the intervention. Findings regarding the effects of an intervention produced from research designs such as RCTs, with fewer threats to internal validity (e.g. causal direction, history, chance factors, and selection bias), can be interpreted with greater confidence compared to findings from designs with fewer protections (Shadish, Cook, & Campbell, 2002).

In addition, as noted by Kernan and colleagues (1999) stratification (i.e., randomizing cases within predefined strata of importance) helps prevent Type I (false positive) errors and improves statistical power for smaller experimental trials (i.e., where less than 400 individuals are assigned to treatment). Stratification also has an important effect on sample size for active control equivalence trials. Additional benefits include facilitation of subgroup analysis and interim analysis.

For probationers/parolees, it is important to consider their relative risk for engaging in violence. Two of the most widely used and readily available measures for law enforcement officials to assess risk is the individuals' prior arrest record (specifically for violence), and their current known affiliation with a violent group/gang. Therefore, given that the maximum desirable number of strata should be kept small, and that these measures are widely used and readily available to practitioners, we randomized probationers and parolees based on the following strata: 1) known affiliation with a violent group/gang, and 2) individual violent criminal arrest histories.

Risk of Violence (1): Group/Gang Audit

When our partnership with LVMPD began in April 2017, the LVMPD's GangNET intelligence database contained information concerning 578 gangs, 12,179 gang members, and 2,190 gang affiliates who have been identified within Las Vegas over the previous five years.

To further classify individual probationers and parolees as affiliated with violent gangs/groups for the intervention, the research team partnered with law enforcement officials to conduct a gang audit in October 2017. Specifically, law enforcement officials of various ranks and assignments from the LVMPD and NPP, along with UC and UNLV researchers, were present at the audit. Members from the recently re-established LVMPD Gang Unit provided historical context on the different levels of violence, territoriality, and transcendent nature of the violent groups and gangs in Las Vegas. The Analytical Section (ANSEC), which houses the crime analysis unit, created large printed maps of the LVMPD organization boundaries (e.g., area

commands and districts) with violent incidents from the previous year highlighted. Law enforcement officials were divided into groups based on their knowledge of the particular areas, and researchers guided them through a data collection process designed to systematically identify groups/gangs operating within these specific geographic areas. The data collection instrument used to gather information is included in Appendix A.

For the purposes of the gang audit, and later risk classification of probationers/parolees for participation in the study, a group/gang was defined as three or more individuals who were affiliated with one another and engaged in violence. The terms "groups" and "gangs" were used interchangeably in Las Vegas (and also in our evaluation). While Las Vegas is home to some highly organized, intergenerational gangs with national affiliations, there are also numerous loosely-knit social networks of individuals that socialize on the street and promote violence as a means of handling conflict (Engel, Tillyer & Corsaro, 2013). While these groups often do not rise to the status of "gang" as typically defined (e.g. they may not have hierarchical structures, initiation rituals, common tattoos, and colors; in fact, many do not even have a name, but are only identified by the territory where they congregate), they nevertheless contribute significantly to the violence problem in Las Vegas, and were the subjects for the violence reduction intervention. A primary theme at the onset of the gang audit was geographic concentration, including the groups/gangs that had an historic and recent presence in different areas within the city, the geographic locations where turf conflict had previously been problematic, and more specifically, which groups/gangs had recently been involved in firearms violence, homicide, and robberies.

The gang audit yielded 122 current and historically known groups/gangs within LVMPD's jurisdiction. The vast majority of these groups/gangs were believed by law enforcement personnel to be currently non-violent, merged or morphed into a different groups/gangs, or no longer existed. At the time of the audit, 11 active groups/gangs were classified as the highest-violence risk category based on official knowledge regarding current crime trends and law enforcement intelligence. Additionally, three groups/gangs were classified as being involved in medium/high levels of violence. [1] The remaining gangs were classified as low-violence, non-existent, or otherwise not currently problematic. The information used to classify medium and high-level violent groups/gangs included recorded histories of territorial violence, retaliation, and firearms-related crime. The names of individuals associated with these violent groups/gangs were gathered and maintained within a gang database by the LVMPD, in accordance with their associated policies. For the purposes of this intervention, affiliation with a group/gang includes actual gang/group membership, or association with known gang member affiliates. While researchers were not provided with the names of individuals in the gang database, LVMPD did cross-reference all of the individuals on probation/parolee with their gang database to determine known gang affiliation. This information – known gang affiliation of probationer/parolees – was then shared with the research team. Any probationer/parolee listed as affiliated with a group/gang classified as high or medium violence was assigned classification as high-risk based on that affiliation. Probationers/parolees affiliated with lower-risk (i.e., drug selling only) gangs, were categorized as low-risk for gang violence association.

[1] The 14 high-risk groups and gangs in Las Vegas were as follows: AFB, Grape Street Watts Crips, Wood, 18th Street, Donna Street Crips, Gerson Park Kingsmen, Hoodsmen, Hoover Crips, Hustlers Taking Over, Long Beach Insane Crips, Slutty Boi, and the Rollin 60s Crips.

Risk of Violence (2): Individual Criminal Histories

Probationer/parolees were also assessed based on their prior violent arrest histories, using a multi-phase classification approach. Individual criminal histories for each current probationer/parolee were examined across multiple data access platforms, including the Clark County criminal history database, as well as California, Nevada, Arizona, and a national arrest history database accessed by LVMPD officials. Probationers/parolees with a violent criminal arrest –including felony assault, robbery, rape, or homicide – in the 36-month period prior to the scheduled notification meeting, were identified.

Combining these two criteria – 1) affiliation with a violent group/gang and 2) violent arrest history – resulted in four risk groups, documented in Table 1 below. Probationers/parolees assigned to **Group 1 (Low-Risk)** included those with no violent arrest history in the past 36 months, and no currently known affiliation with a violent group/gang. **Group 2 (Low/Moderate-Risk)** included probationer/parolees with no violent arrest history in the past 36 months, but with currently known affiliation with a violent group/gang. **Group 3 (Moderate-Risk)** included probationer/parolees with a violent arrest history in the past 36 months, but no currently known violent group/gang affiliation. Finally, **Group 4 (High-Risk)** included probationer/parolees with both a violent arrest history in the past 36 months, and current affiliation with a violent group/gang.

Table 1. Randomized Controlled Trial Strata Classification Breakdown

Group Classification	Violent Criminal History?	Affiliated w/ Violent Gang?
Group 1: Low-Risk	No	No
Group 2: Low/Moderate-Risk	No	Yes
Group 3: Moderate-Risk	Yes	No
Group 4: High-Risk	Yes	Yes

Experimental Pools

Two distinct groups of probationers/parolees were assigned to stratified random assignment to maximize treatment opportunity, operate within the confines of resource availability, and to enhance statistical power of the initiative and the overall study. The first wave was identified in April 2018 (for the May 2018 offender notification meetings), and the second wave was identified in September 2018 (for the October 2018 offender notification meetings). The selection and matching approaches for the various strata were identical across both waves of probationers/parolees. Any participants in the offender notification meetings in Wave 1 were excluded from consideration in Wave 2.

In terms of counts, 379 eligible probationers/parolees were assigned into one of four strata (Low-Risk, Low/Moderate-Risk, Moderate-Risk, or High Risk) for randomization for the May offender notification meetings; 137 eligible probationers/parolees were assigned into one of the same four strata for randomization for the October 2018 call-ins. The vast majority of eligible probationers/parolees were classified as Low-Risk; that is, most individuals were uninvolved on

probation/parolee were not affiliated with violent gangs and did not have a prior violent arrest in the previous 36 months.

For this study, fewer probationers/parolees were assigned to treatment than controls to balance both operational limitations and experimental efficiencies. Specifically, given the agency partners resource constraints, a 1:1 randomization for all risk classification groups was simply not feasible. Therefore, the Low-Risk category was assigned a 1:2 (case-control) match, while the other three higher risk categories received a 1:1 match.[2] The number of probationers/parolees randomized for participation in offender notification meetings per wave are presented in Table 2 below. In summary, for the Wave 1 May 2018 offender notification meetings, 63 Low-Risk, 30 Low/Moderate-Risk, 45 Moderate-Risk, and 20 High-Risk probationers/parolees were randomly assigned to attend offender notifications. The Wave 2 (October 2018) offender notification meetings, had fewer attendees.

Table 2. The Number of Probationers and Parolees per Strata for Wave 1 (May 2018 Meetings) and Wave 2 (October 2018 Meetings)

Wave 1: May 2018 Call-In Experimental and Control Group (Total N = 379)				
Group	1: Low-Risk	2: Low/Moderate-Risk	3: Moderate-Risk	4: High-Risk
Treatment	63	30	45	20
Control	126	30	45	20
Wave 2: October 2018 Call-In Experimental and Control Group (Total N = 137)				
Group	1: Low-Risk	2: Low/Moderate-Risk	3: Moderate-Risk	4: High-Risk
Treatment	21	15	14	8
Control	42	15	14	8

In addition, the demographics and criminal histories of probationers/parolees by risk group, for both waves, are reported in Table 3 below. As shown, the treatment and control groups were generally well-matched across treatment and controls within each risk group strata. The few statistically significant differences across treatment and control groups – criminal history for the low-risk group – are noted in Table 3. Given these differences, demographic and criminal history variables are included in later multivariate analyses as controls.

Table 3. Demographic and Criminal History Descriptive Analysis for the Four Classifications of Offender Risk, by Treatment Type (Intent to Treat), for Waves 1-2

	Low/Moderate-Risk

[2] Hennessy et al. (1999) noted that the use of 1:2 case-control matches is particularly useful to enhance statistical power, particularly when conducting stratified matching. However, there are not enough cases in the higher-strata (Groups 2, 3 & 4) to conduct matching beyond the standard 1:1 matching approach.

Control Measures	Low-Risk				Moderate-Risk		High-Risk	
	T	C	T	C	T	C	T	C
Average Age	26.3	28.8	26.1	25.8	24.6	25.2	28.9	29.8
% Male	92.1%	91.9%	80.0%	93.3%	93.3%	93.3%	85.0%	75.0%
% White	52.4%	50.4%	10.0%	13.3%	48.9%	53.3%	20.0%	15.0%
Total Prior Convictions	4.3*	5.9	3.5	4.7	5.2	4.0	3.8	5.9
Total Weapon Convictions	0.39*	0.61	0.56	0.70	0.56	0.42	0.40	0.55
Total Violent Convictions	0.38*	0.68	0.73	0.46	1.08	1.13	1.05	1.10

*Indicates Treatment-to-Control Within Strata Significant T-Test ($p < .05$)
T = Treatment; C = Control

Offender Notification Meetings

Once individuals were randomized within their defined strata (i.e., risk group), a list of those identified to receive the treatment condition was sent to the NPP officials, who in turn: 1) notified selected probationers/parolees that they were to attend a mandatory session as a condition of their probation/parole[3] and, 2) coordinated the administrative work associated with conducting an offender notification meeting (i.e., scheduling and outreach to various criminal justice and social service agencies). Two sessions were held per day on May 8, May 15, and Oct 4, 2018. The research team provided technical assistance and training for implementation, including the facilitation of a series of practice sessions for law enforcement personnel and volunteers assigned to speak during the notification sessions.

Attendance was recorded, with roughly 20-30 probationers/parolees in attendance at each individual session, which typically lasted roughly 90 to120 minutes and consisted of presentations by the director of probation and parole, representatives from the police department, local prosecutors, outreach and social service providers, as well as families of homicide victims to share their life-impacting stories. Consistent with prior initiatives, a three-prong message was shared with attendees represented by law enforcement, social services, and community members (Corsaro & Engel, 2015). First, they were told they had been identified as being at-risk for violence (as a victim or offender), and that any future involvement in violence would result in a group-response if they were associated with a violent gang. Second, that social services were available for those who wanted them. And finally, that the community harm they were causing was unacceptable, but they would be welcomed back if they desist from future offending patterns and improve the quality of life in their neighborhoods. Compared to other offender notification meetings (both those observed by the research team, and reported in the literature), the call-in sessions in Las Vegas had a more compassionate tone from NPP staff, rather than a more heavily-focused enforcement approach. Likewise, there was additional focus placed on the harm caused by violence, and the social service opportunities available for offenders. Finally, although the law enforcement message was delivered by LVMPD officials, the threat of *group sanction*

[3] While participation in the call-ins were deemed mandatory to the parolees, no one suffered an administrative failure for failure to attend the session – as this would have led to an experimental treatment confounder (treatment as delivered) that would have inevitably biased the study.

was less emphasized, in part because that specific component of the focused deterrence strategy was not operationalized.

Of the 158 treatment group individuals ordered to attend one of the May notification session, roughly 80% (N = 127) attended one of the sessions. Given the multiple sessions in May 2018, attendance at any session was deemed as high dosage compliant. The second wave in October had a lower compliance rate (53.4%, 31 of the 58 invited probationers and parolees attended). While the overall dosage-compliance across both waves was over 73%, the May sessions had a significantly higher compliance rate. It was reported to the research team that the invitation process conducted by NPP officials was similar across waves, so the reason for the fluctuation is response rates is unknown.[4]

Analytic Strategies

Three analytic strategies are employed for the various strata (as well as overall treatment-to-control comparisons) and waves of probation/parolee participants. First, a set of bivariate chi-square analyses on recidivism patterns for each strata and each wave of probationers/parolees is presented. These analyses set the foundation regarding covariation in treatment assignment (and attendance) calibrated with recidivism across the strata of probationers/parolees and over waves of participants during the study period.

Next, a series of binary logistic regression models for our recidivism outcome (where yes = 1 or no = 0) for each strata (including culling all strata into a single analysis) and each wave of probationers and parolees in the study are estimated (see Long, 1997). The use of the multivariate regression model on our dichotomous outcome of interest allows, where appropriate, to include control variables in the analyses. While the use of statistical controls in randomized controlled trials is subject to debate (more detail to follow), where statistical controls are potentially necessary (e.g., unbalanced covariates of importance between treatment and control probationers/parolees within each strata), the multivariate regression framework (including the logistic regression model) allows for such controls to be included into a single regression estimation.

Finally, a series of Cox proportional hazard models are estimated to assess the effect that randomized treatment had on individual recidivism (see Cox, 1972). Proportional hazard models are particularly useful for this type of analysis because they allow the combination of the results from Wave 1 and Wave 2 into a set of single analyses, allowing the models to censor (i.e., the absence of recidivism within the study period) times to vary for all probationer/parolees included in the study (i.e., 12-months follow-up for the Wave 1 group and 9-months follow-up for the Wave 2 group).

Dependent Variable

[4] It is possible that the lack of sanctions associated with non-attendance in Wave 1 may have impacted attendance rates in Wave 2. Note however, that this possibility was minimized because any probationers/parolees selected in Wave 1 (regardless of attendance) were excluded from participation as either treatment or controls in Wave 2.

Probationer/parolee recidivism is the primary outcome of interest, operationalized in two forms: 1) a re-arrest of any type, and 2) an administrative failure (revocation) of probation/parole supervised by NPP. If either event occurred in the follow-up period (i.e., 12 months for May sessions, 9 months for October sessions) – the probationer/parolee (in either treatment or control condition) is classified as having recidivated.

Table 4 displays the recidivism rates for probationers/parolees in Waves 1 and 2 for both treatment and control groups combined. For the Wave 1 group, 150 (39.9% of the total) recidivated. Of those, roughly 65% (n=72) failed as a result of a re-arrest during the 12-month follow-up period, while the remaining 35% (n=53) recidivated via an administrative failure. For Wave 2, 43 individuals (11.4% of the total) recidivated during the 9-month follow-up period, with 67.4% (n=29) failures as a result of a re-arrest versus 32.5% (n=14) due to an administrative failure.

Table 4. Recidivism Patterns for Wave 1 and Wave 2 Probationers and Parolees

Parolee Wave of Assignment	Recidivated	Did Not Recidivate
Wave 1 – May Call-In Group (12 month)	150 (39.9%)	226 (60.1%)
Wave 2- October Call-In Group (9 month)	43 (11.4%)	94 (25.0%)

Finally, before moving into any predictive, bivariate, or multivariate regression modeling (i.e., to assess whether treatment corresponded with recidivism), a simple face validity analysis is presented on recidivism for the four risk categories (see Table 5). As detailed by Lowenkamp, Latessa, & Holsinger (2006), assessment of offender risk is more complicated than our two-dimensional measure, and true offender risk is calibrated heavily with offender recidivism patterns. Therefore, a pooled analysis for Wave 1 and 2 probationers/parolees is included. The findings show evidence of statistically significant ($X^2 = 6.128$, $p < .10$) unique patterns of recidivism over the study period that corresponded with the different risk groups – or strata – used in the randomization process. High-Risk probationers/parolees had the highest rate of recidivism (56.2%), followed by the Moderate-Risk (44.1%), Low/Moderate-Risk (37.7%), and Low-Risk (32.5%). While this analysis is not confirmatory, it lends some credibility that the strata used in the randomization process was consistent with risk of recidivism for the groups examined.[5]

[5] Supplemental analyses on types of failure (parole violation versus official arrest) across the various strata are consistent with the pattern for overall recidivism.

Table 5. Recidivism Patterns Across Experimental Strata

Recidivated	Low-Risk	Low/Moderate-Risk	Moderate-Risk	High-Risk
Yes	81 (32.5%)	34 (37.7%)	52 (44.1%)	26 (56.2%)
No	168 (67.5%)	56 (62.3%)	66 (55.9%)	32 (43.8%)
		$X^2 = 6.128^{+}$ (df = 3)		

$^{+}$p < .10; * p<.05; **p<.01

Independent Variables and Analysis Partition (Intent to Treat vs. Treatment as Delivered)

Treatment, or assignment to the experimental condition (in this study, attendance at an offender notification meeting), is the key covariate in all analyses.[6] However, treatment assignment is more complicated than a single measure or focal point within any given analysis. Ideally, all individuals assigned to treatment would receive that treatment, resulting in a relatively simple analysis of treatment; however, there are multiple approaches to modeling treatment assignment, which either focus on the randomization process, or examines compliance to receiving treatment. When a sizable portion of a sample fails to comply with their treatment designation, there are multiple ways to model treatment. The first is "intent-to-treat" (ITT), which compares treatment to control individuals regardless of whether or not the individuals actually complied with treatment (Angrist, 2006). For this study, ITT analyses include those individuals randomly assigned to attend an offender notification meeting, regardless of whether or not they actually attended the meeting.

As noted by Hamilton, Rosenfeld, and Levin (2018), a major advantage of analyzing individuals via an ITT analysis is that the effect of the treatment on any outcome will not be affected by the heterogeneity within the sample. When random assignment is fully maintained, experimental equivalence can be assumed. However, because subjects who never received the treatment are considered part of the treatment, there is an opportunity for biased estimation, as the treatment estimation is diluted by noncompliance (see also Angrist, 2006). An alternative is to evaluate based on whether the subjects received the treatment condition, or treatment as delivered (TD). Unfortunately, analyzing TD against the control group creates an opportunity for self-selection bias rather than the pure effect of treatment, because individuals themselves determine compliance with the treatment, interfering with the randomization of the experiment. And, while both ITT and TD approaches have their inherent strengths, both are minimized by real-world constraints.

To enhance the overall analytical strategy, and provide a more likely estimate of a true treatment effect, both ITT and TD findings are conducted for each of the bivariate and multivariate analyses below. For simplicity however, we only present the TD findings in the main body of this report, while the identical analyses examining using ITT are included in Appendix B. Where there are differences in the findings, they are noted in the main body of the report.

[6] Additional control measures that capture officially recorded individual characteristics including age, race, gender, prior total arrests, prior violent arrests, and prior weapon-related arrests, are also used to assess covariate balance between treatment and control individuals and are included as statistical controls where imbalance is detected via strata-specific bivariate analyses.

FINDINGS

Step 1: Bivariate Results

Following Koch and Edwards (1988), an overall treatment effect for each of the two waves of study participants (given their unique 12-month and 9-month follow-up periods) are conducted to examine the association between treatment (offender notification meetings) and the outcome (offender recidivism). First, the samples are divided into the experimental strata (risk groups) that are relatively homogeneous with respect to the selected treatment covariate. The strata-specific treatment differences are for an aggregate significance test of the treatment effect across the strata (i.e., to detect potential overall treatment effects) in the two waves of probationers/parolees.

Table 6 below shows a comparison between all probationers/parolees in Wave 1 assigned to treatment and control conditions, regardless of their risk classification (i.e., pooled strata). As shown, there is virtually no difference between treatment compliant probationers/parolees and controls ($X^2 = 0.000$), indicating that assignment and attendance at the call-in sessions did not significantly impact the likelihood of individuals recidivism during the next 12-month period, compared to those who did not attend an offender notification meeting. In sum, the patterns for recidivism were nearly identical between treatment and controls for the overall Wave 1 population.

Table 6. Overall Treatment Analysis Wave 1 – Treatment as Delivered (TD) Chi-Square

Group	Did Not Recidivate	Recidivated	Total
Treatment	77 (60.6%)	50 (39.4%)	127
Control	132 (60.6%)	86 (39.4%)	218
Total	209	136	
	$X^2 = 0.000$		

It is possible, however, that the treatment effect differs across strata, or risk classification of the probationers/parolees. Table 7 below shows evidence of a statistically significant difference ($X^2 = 0.432$, $p < .05$) between the treatment and the control group in the Low/Moderate Risk strata. On average, 22.2% of the probationers/parolees in the Low/Moderate-Risk group (individuals with no violent history, but with affiliation to a violent gang) who attended an offender notification meeting recidivated within the next 12-months, while recidivism for the control probationer/parolees was significantly higher at 56.7%. For all other strata (risk classifications) there was no evidence of any significant association between treatment compliance and recidivism patterns.

Table 7. Stratification Analysis Wave 1 – Treatment as Delivered (TD) Chi-Square

	Low-Risk		Low/Moderate-Risk		Moderate-Risk		High-Risk	
	T	**C**	**T**	**C**	**T**	**C**	**T**	**C**
N	19	41	6	17	17	18	8	10
%	35.8	33.3	22.2	56.7	54.8	40.0	50.0	50.0
X^2	0.104		7.005**		1.627		0.000	

+p < .10; * p<.05; **p<.01
T=treatment, C=control

Moving to Wave 2 analyses (the October 2018 call-in sessions), the pooled strata analysis demonstrates there were no statistically significant differences in recidivism patterns in the 9-month follow-up for the October 2018 experimental group. As shown in Table 8 below, when examined without considering individual risk classification, probationers/parolees that attended an offender notification meeting recidivated at similar levels compared to controls.

Table 8. Overall Treatment Analysis Wave 2 – Treatment as Delivered (TD) Chi-Square

Group	Did Not Recidivate	Recidivated	Total
Treatment	24 (77.4%)	7 (22.6%)	31
Control	51 (64.6%)	28 (35.4%)	79
Total	75	35	
	$X^2 = 1.698$		

Table 9 below is a stratified analysis (based on risk group) demonstrating the impact of treatment as delivered (dosage compliant) when compared to controls. Again, the probationers/parolees in the Low/Moderate-Risk (no prior violent arrest, but affiliated with a violent group) who attend an offender notification meeting are significantly less likely to recidivate relative to controls ($X^2 = 4.200$, $p < .05$). No other strata (risk group) experienced any significant differences between treatment and controls.

Table 9. Stratification Analysis Wave 2 – Treatment as Delivered (TD) Chi-Square Results

	Low-Risk		Low/Moderate-Risk		Moderate-Risk		High-Risk	
	T	**C**	**T**	**C**	**T**	**C**	**T**	**C**
N	3	14	0	7	3	6	1	1
%	23.1	33.3	0.0	46.7	37.5	42.9	25.0	12.5
X^2	0.489		4.200*		0.060		0.300	

+p < .10; * p<.05; **p<.01
T=treatment, C=control

Summary of Bivariate Analyses

The bivariate chi-square analyses consistently indicated there was no evidence of an overall treatment (call-in sessions) effect on recidivism when examining the pooled population of treatment probationers/parolees relative to matched controls (across strata). The null overall finding was observed whether the analysis hinged on treatment as assigned or treatment as delivered (see Appendix B). These null overall findings on recidivism applied to the initial (May 2018) Wave 1 group as well as the second (October 2018) Wave 2 group.

Within strata analyses revealed a different consistent pattern, again regardless of whether the models focused on treatment as delivered or treatment as assigned (see Appendix B) relative to within-strata controls. Specifically, the Low/Moderate-Risk group of probationers/parolees who attended an offender notification meeting recidivate at a significantly lower rate relative to their within-strata counterparts in the control group. This group of individuals were specifically those who had not engaged in measurable violence (via a criminal arrest) themselves, but were affiliates, associates, and/or members of groups/gangs identified as violent by the LVMPD gang unit. No other risk group, Low, Moderate, or High demonstrated differences of any type between treatment and controls, in either the Wave 1 or Wave 2 group, and regardless of whether the models were treatment as delivered or treatment as assigned (see Appendix B).

In summary, the preliminary bivariate analyses suggest that for individual level recidivism, there is no measurable bivariate association between treatment and recidivism patterns. However, the strata that may have been influenced by the offender notification meetings were those classified as Low/Moderate-Risk (no violent arrest history, but current affiliation with a violent gang). The next step focuses on including control measures, when and where applicable, to assess if this pattern holds when more comprehensive analyses are conducted.

Step 2: Multivariate Binary Logistic Regression Analyses

A primary issue for all subsequent regression models is whether or not to include covariates (i.e., control measures) in the logistic regression analyses on the binary outcome of interest: recidivism (coded as yes = 1 or no = 0) within the follow-up period (Long, 1997). A positive coefficient in a logistic regression model would indicate a higher likelihood of having the event (i.e., recidivism) during the follow-up period, while a negative coefficient would indicate a lower likelihood of recidivism.

Including control variables within regression-based models of randomized controlled trials is a source of empirical and theoretical debate (Robinson & Jewell, 1991). On the one hand, adjusting for covariates, particularly when they are selected via post-hoc analyses, risks inflating Type I error. However, small sample sizes within randomization creates an opportunity for unequally balanced groups on important exogenous factors that may be correlated with treatment and the outcome of interest.

In an effort to balance the strengths and simultaneous limitations of including control measures, a series of bivariate analyses (chi-square and t-tests) were conducted on the demographics of probationers/parolees (age, race, and gender), and criminal history (the number of prior arrests, prior violent arrests, and prior weapons arrests) of individuals assigned to treatment and control conditions. These bivariate analyses are conducted for each of the various strata for the Wave 1 and Wave 2 analyses, as well as the overall sample in each wave.[7] In all subsequent analyses, we include control measures where there are statistically significant imbalances on covariates of interest between treatment and control probationers/parolees within each strata (or the overall samples) to minimize the impact of unequal balance on recidivism. As with the bivariate

[7] Results available upon request.

analyses, multivariate analyses examining treatment as delivered (TD) are presented in the text below, and corresponding analyses examining intent-to-treat (ITT) are included in Appendix B. Differences in the findings of these models are reported and discussed in the text below.

Wave 1 (May 2018) Analyses

Consistent with bivariate analyses, Table 10 below shows there is continued evidence of a treatment effect on recidivism for individuals in the Low/Moderate-Risk group, where the treatment estimate was statistically significant among those who were assigned to treatment and attended the call-in session, relative to controls ($b = -1.521$, $p < .05$). The odds ratio for the Low/Moderate-Risk treatment group was 0.218, which equates to a 78% lower rate of risk for recidivism for Low/Moderate-Risk individuals who attended an offender notification compared to those at Low/Moderate-Risk who did not attend. No other risk group demonstrated evidence of a treatment (as delivered) difference on recidivism relative to within-strata controls.

Table 10. Logistic Regression Analyses Across Randomization Wave 1 Strata – Treatment as Delivered (TD) Model

	Low-Risk	**Low/Moderate-Risk**	**Moderate-Risk**	**High-Risk**
	B	**B**	**B**	**B**
Estimate	**(SE)**	**(SE)**	**(SE)**	**(SE)**
Treatment	.111	-1.521*	.600	.000
	(.344)	(.592)	(.472)	(.671)
Constant	-.693	.268	-.405	.000
	(.191)	(.368)	(.304)	(.447)
Observations	176	57	76	36
-2 Log likelihood	225.75	69.65	103.25	49.90
Pseudo R-Square	.001	.161	.028	.000

+p < .10; * p<.05; **p<.01

Table 11 below includes control variables within strata where bivariate tests indicated there were imbalances between treatment and control groups. For example, the Low-Risk group had imbalances on prior criminal conviction (arrest with conviction) histories – where controls had a significantly higher number of prior arrest-convictions, as well as higher numbers of violent and weapon convictions than probationers/parolees randomly assigned to treatment. Thus, the impact of treatment (as delivered) was examined in the Wave 1 Low-Risk strata, controlling for where imbalances are present on prior conviction histories. The results indicated that the treatment assignment had no significant association on recidivism in the Low-Risk group, net of controlling for imbalances on prior histories. This suggests the imbalance between the treatment and control group did not explain the nonsignificant association of treatment assignment on recidivism. For the Low/Moderate- and Moderate-Risk groups, there are no imbalances present and therefore, no control measures are necessary. For the High-Risk group, the presence of imbalance of prior weapon arrests (where controls had a higher number of prior weapon arrests compared to treatment individuals) did not influence the nonsignificant association of treatment on recidivism.

Table 11. Logistic Regression Analyses Across Randomization Wave 1 Strata – Treatment as Delivered (TD) Model with Unbalanced Controls Included

Estimate	Low-Risk B (SE)	Low/Mod-Risk B (SE)	Moderate-Risk B (SE)	High-Risk B (SE)
Treatment	.108	-1.521*	.600	**.000**
	(.354)	(.592)	(.472)	**(.711)**
Controls				
Male		---	---	---
Age	---	---	---	---
White		---	---	---
Total Prior Convictions	-.042	---	---	---
	(.042)			
Total Weapon Convictions	.268	---	---	.000
	(.186)			(.653)
Total Violent Convictions	-.187	---	---	
	(.223)			
Constant	-.529	.268	-.405	.000
	(.307)	(.368)	(.304)	(.573)
Observations	176	57	76	36
-2 Log likelihood	222.52	69.65	103.25	49.97
Pseudo R-Square	.026	.161	.028	.000

--- = No significant difference between treatment and control group on measured covariate and thus control excluded from analysis
+p < .10; * p<.05; **p<.01

As shown in Table 12 below, there was no evidence of any overall treatment effect (as delivered) on recidivism for the entire group of probationers/parolees. This nonsignificant finding of treatment held in Model B, which included statistical controls for imbalances between the treatment and control probationers/parolees.

Table 12. Logistic Regression Analyses for All Probationers and Parolees in Wave 1 – Treatment as Delivered (TD) with Unbalanced Controls Included

Estimate	Model A: Combined Strata B (SE)	Model B: Combined Strata with Controls B (SE)
Treatment	-.003	-.055
	(.228)	(.233)
Controls		
Male	---	---
Age	---	---
White	---	---
Total Prior Convictions	---	-.012
		(.026)
Total Weapon Convictions	---	-.191
		(.149)
Total Violent Convictions	---	---
Constant	-.428	-.252
	(.139)	(.208)
Observations	345	345
-2 Log likelihood	462.70	460.48
Pseudo R-Square	.00	.009

--- = No significant difference between treatment and control group on measured covariate and thus control excluded from analysis
+p < .10; * p<.05; **p<.01

Wave 2 (October 2018) Analyses

For the Wave 2 analyses, no additional models including unbalanced covariates (between treatment and control groups) were included because none of the bivariate chi-square and t-tests indicated any evidence of covariate imbalance for the probationers and parolees across the randomization strata or in the overall pooled group. Thus, all treatment as delivered (TD) analyses and intent-to-treat (ITT, see Appendix B) focus solely on the impact of treatment.

Table 13 shows that when we compared treatment as delivered (probationers/parolees who attended offender notification meetings) across all strata controls, there is no significant evidence of impact for the October 2018 call-in. This null finding was applicable to all groups and risk strata in the 9-month follow-up period when examining treatment as delivered.

Table 13. Wave 2 Logistic Regression Analyses Across Randomization Strata – Treatment as Delivered (TD) Model

Estimate	Low-Risk B (SE)	Low/Mod-Risk B (SE)	Moderate-Risk B (SE)	High-Risk B (SE)
Treatment	-.511	-.223	-.211	.847
	(.735)	(.908)	(.564)	(1.574)
Constant	-.693*	-.288	-.680	-1.946
	(.327)	(.540)	(.594)	(1.069)
Observations	55	21	22	12
-2 Log likelihood	67.51	16.53	.22.45	10.52
Pseudo R-Square	.013	.023	.003	.040

XX = Model failed to converge because no one recidivated in either treatment or control group.
+p < .10; * p<.05; **p<.01

Note that these findings are not replicated with the intent-to-treat (ITT) analyses presented in Appendix B. Specifically, for Wave 2, the intent-to-treat (ITT) analysis indicates the Low/Moderate-Risk treatment (as assigned) group had significantly lower rates of recidivism than within-strata controls (b = -2.506, p < .05). The odds ratio for the Low/Moderate-Risk treatment (as assigned) was 0.081, or a 91.9% lower level of risk of recidivism relative to the within-strata controls in the 9-month follow-up period. No other treatment estimates significantly varied across any of the remaining strata.

Continuing with the treatment as delivered (TD) analyses, not surprisingly given the null findings for each of the strata groups, the pooled estimated effect of treatment as delivered on the pooled probationers/parolees indicated no significant association between treatment attendance and recidivism relative to controls. The null findings are evident in Table 14 below.

Table 14. Logistic Regression Analyses Across the Pooled Wave 2 Probationers and Parolees –Treatment as Delivered (TD) Model

Estimate	Combined Strata B (SE)
Treatment	-.633
	(.490)
Constant	-.600
	(.235)
Observations	110
-2 Log likelihood	135.84
Pseudo R-Square	.022

+p < .10; * p<.05; **p<.01

Summary for Logistic Regression Models and Predicted Probabilities for Low-Moderate Risk Groups

The multivariate logistic regression models provide two clear and consistent patterns of evidence in this randomized controlled trial. First, regardless of waves of participants, statistical controls, and whether the models examined intent-to-treat or treatment-as-delivered methods – there was no evidence of an overall treatment effect on recidivism in either the 9-month or 12-month follow-up periods.[8] Additionally, three of the four risk groups (Low-Risk, Moderate-Risk, and High-Risk) exhibited no significant estimates of treatment – suggesting the Las Vegas offender notification meetings alone had no significant impact on the likelihood of recidivism for the vast majority of participants.

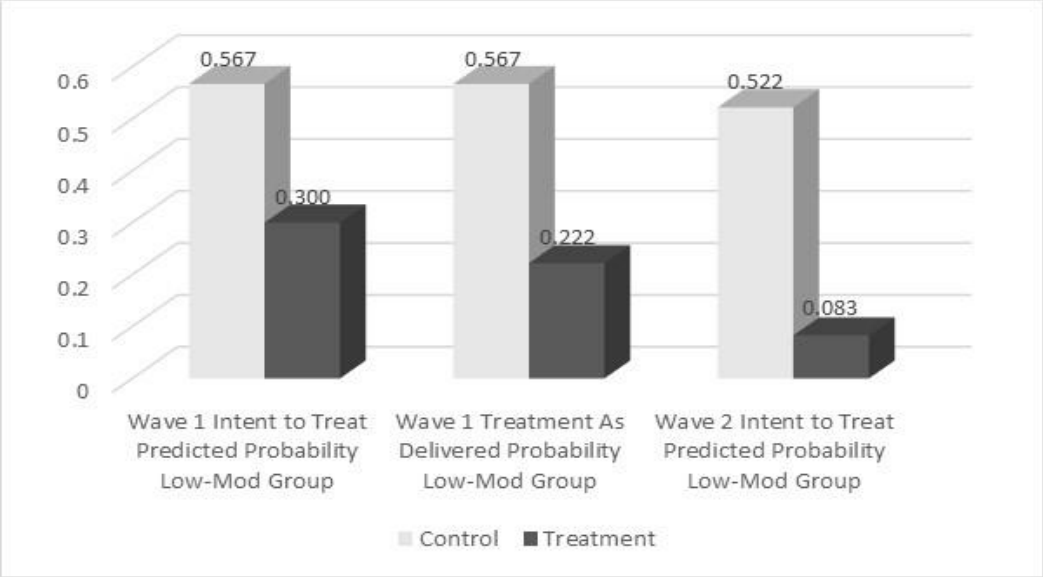
However, there was clear, largely consistent, and promising evidence that attending offender notification meetings may have positively impacted individuals in the Low/Moderate Risk group. This pattern of findings was observed for the Wave 1 treatment-as delivered (TD) and intent-to-treat (ITT) models, and the Wave 2 intent-to-treat (ITT) models. Additionally, no statistical controls were necessary in any of the models for the Low/Moderate Risk strata because there was no evidence of statistical imbalance between treatment and control assignment – suggesting that empirical as well as theoretical balance between the groups was retained during the study period.

The lack of findings in Wave 2 treatment-as-delivered (TD) models is more likely a product of limited statistical power than a counter-finding. None of the 15 probationers/parolees who were assigned to treatment and attended the notification meeting recidivated in the 9-month follow-up period; whereas seven of the 15 controls recidivated during this period. Thus, the low statistical power (and the absence of any observations of failure for the treatment group) within this analysis is the likely reason for the lack of a significant empirical finding.

A key strength of logistic regression models is the ability to provide predicted probabilities of recidivism for both treatment and control groups. Predicted probabilities are the regression predictions of recidivism, given the values of the independent variables modeled. Based on the consistent pattern found in the Low-Moderate Risk group, Figure 1 below provides the predicted probabilities of recidivism for each of the treatment and control groups in Wave 1 and Wave 2 where significant treatment estimates were observed. When comparing the probabilities, the true treatment effect within the Wave 1 strata is likely between .222 (when examining treatment for those who attended the call-ins) and .300 (for those assigned to treatment, whether or not they attended the call-in session). The probability of recidivism for the Wave 2 treatment (as assigned) group is much lower (.083); however, the less than optimal 9-month follow-up period for this group should temper the interpretation of this highly substantively divergent finding.

[8] The findings here are consistent with Hamilton et al.'s (2018) similar randomized controlled trial of probationers and parolees invited to offender notification meetings in St. Louis, MO.

Figure 1. Predicted Probabilities of Recidivism for the Low-Moderate Risk Groups



The predicted probabilities displayed in Figure 1 provide the likelihood of an event (in this case recidivism) for both treatment and control groups, with all regression predictors in the models set to their average values. In summary, the predicted probabilities show that the likelihood of recidivism is 26% to 44% lower for the treatment group within the Low/Moderate-Risk group than the control group. Thus, the impact of the offender notification meetings appears both statistically and substantively significant in reducing risk of recidivism for individuals in the Low/Moderate-Risk group.

Step 3: Survival Analyses

The previous set of analyses focus on recidivism (measured as yes or no) during the study period. Survival analyses focus on the model of time until an event (in this case, recidivism), among the treatment and control probationers/parolees. These analyses are sometimes described as time-to-failure, or for our study, the amount of time until the probationer/parolee is re-arrested. Survival analysis offers a distinct analytical advantage because it does not require that the follow-up periods of study participants match. As a result, the May and October call-in attendees can be included into the same models despite varying follow-up periods, because the censoring measure (i.e., time at which the follow-up period ended) is allowed to vary for each probationer/parolee. Overall, roughly 50 to 68% (depending on the risk strata) of all individuals were not rearrested in their respective 9-month and 12-month follow-up periods.

Cox proportional hazard models are estimated to assess the effect that randomized offender notification meetings had on probationer/parolee recidivism (Cox, 1972). Cox proportional hazard model coefficients should be interpreted in reference to the hazard rate, which is an estimate of the probability of failure, or recidivism, at time "t", given the individual is assigned to the treatment group or not (see Cox, 1972; Singer & Willett, 2003). A positive coefficient

indicates that an individual assigned to the treatment condition recidivates more quickly, whereas a negative coefficient would signal a longer time to recidivism.

For parsimony, only the treatment effect models without controls are presented below.[9] A similar pattern as the recidivism analyses also emerged in the analysis of time: 1) no overall estimated treatment effect for the pooled participants (results not displayed); 2) no treatment effect for Low-Risk, Moderate-Risk, and High-Risk groups; and 3) a consistent pattern of treatment impact for the Low/Moderate Risk group. Specifically, the Low/Moderate-Risk group had a longer time until recidivism across both the intent-to-treat (ITT) and treatment-as-delivered (TD) analyses.

As a first step in interpreting the analyses, the Omnibus X^2 test of model parameters indicates that for the Low, Moderate, and High-Risk groups, including the treatment covariate does not enhance the models' predictive ability in any discernable way. The lone analysis that shows model fit enhancement when including the treatment measure was the Low/Moderate-Risk group.

Table 15 below focuses on the impact of treatment for those individuals who attended the offender notification meetings (TD). Individuals in the Low-Moderate Risk group who attended an offender notification meeting had a significantly ($b = -1.176$, $p < .01$) longer time until recidivism, relative to control individuals. That is, Low-Moderate Risk individuals attending offender notification meetings experienced a 70% longer period until failure (re-arrest) when compared to matched controls within the same risk group.

Table 15. Cox Proportional Hazard Treatment as Delivered (TD) Regression Models

	Low	**Low-Moderate**	**Mid-Moderate**	**High**
	B	**B**	**B**	**B**
Estimate	**(SE)**	**(SE)**	**(SE)**	**(SE)**
Treatment	.187	-1.176**	.440	.302
	(.261)	(.433)	(.318)	(.486)
Cases Recidivated (%)	68	31	42	17
	(29.7%)	(39.1%)	(42.9%)	(35.4%)
Cases Censored (%)	154	47	54	28
	(67.2%)	(59.8%)	(55.1%)	(58.3%)
Missing Cases (%)	7	1	2	3
	(3.1%)	(1.2%)	(2.0%)	(6.3%)
Total # of Cases	229	79	98	48
Omnibus Test of Model	0.501	8.712	1.889	0.386
Coefficients X^2 (df)	(1 df)	(1 df)	(1 df)	(1 df)

+p < .10; * p<.05; **p<.01

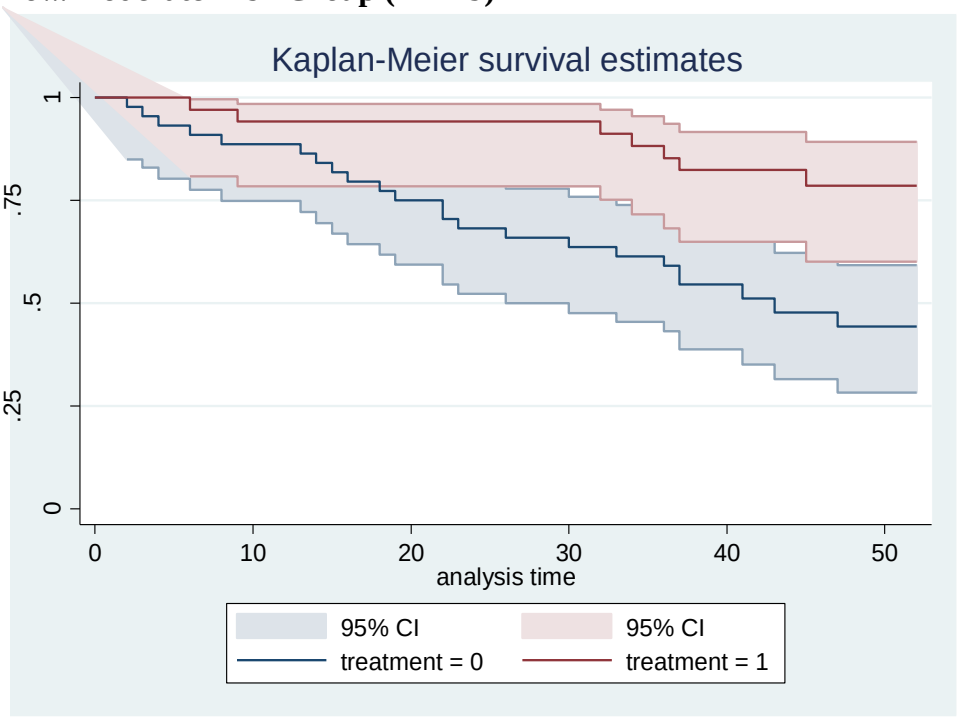
[9] A series of additional models (with controls, where imbalances between strata were evident) provide nearly identical results to those presented in Table 15, and are available from the authors upon request.

Summary of Survival Analyses and Kaplan Meyer Curves Low-Moderate Groups

The survival analyses, designed to assess time until an event or failure (recidivism), indicated the following: 1) no overall treatment effect for the pooled participants; 2) no treatment effect for Low, Moderate, and High-Risk groups; and 3) a consistent pattern of treatment impact for the Low/Moderate-Risk group. More specifically, individuals assigned to treatment in the Low/Moderate Risk group had a 62% longer period until failure, on average, than their control counterparts (see Appendix B). And, individuals assigned to treatment and who attended the offender notification meetings (i.e., dosage-compliant individuals) had a 70% longer period of time until failure, on average, relative to others in the Low/Moderate Risk group that did not attend an offender notification meeting.

To highlight these findings, the Kaplan Meier survival function estimates are presented below. The impact of the offender notification sessions for either treatment-as-delivered (TD, Figure 2 below) or treatment-as-intended (ITT, Appendix B, Figure 3) shows a similar set of results. After roughly 20 weeks, individuals in the treatment group had a significantly longer period of time until recidivism compared to controls within the same risk group, and this difference was retained up to the 39th week (for both Wave 1 and Wave 2 probationers/ parolees), and up to 52-weeks of follow-up for the Wave 1 probationers/parolees.

Figure 2. Treatment as Delivered (TD0 Kaplan Meier Survival Function Estimate Low/Moderate-Risk Group (N = 79)



SUMMARY & RECOMMENDATIONS

These findings present clear opportunities for LVMPD and NPP moving forward. First, it is important to reiterate that the only component of a focused deterrence violence reduction strategy that was implemented in Las Vegas during the study period was the offender notification meeting. It is also relevant to note that unlike most offender notification meetings where attendance is limited to known members of violent gangs, attendance at the call-in sessions conducted in Las Vegas could include lower-risk offenders. This unique set of operational circumstances created a rare opportunity to systematically assess the *independent* impact of offender notification meetings on individuals' likelihood of recidivism *at varying levels of risk* for future violence. The findings from this study, summarized below, have clear implications for future violence reduction strategies.

Summary of Study Findings

- Regardless of analytic approach, wave of participants, accounting for different types of treatment (ITT vs. TD), there was no evidence that offender notification meetings had an overall impact on recidivism risk among gang-affiliated Las Vegas probationers and parolees.

- There was evidence, however, of a specific impact of offender notification sessions within the Low/Moderate-Risk probationer/parolee group. Specifically, attendance at one offender notification meeting by probationers/parolees who are currently affiliated with a violent group/gang but have no previous arrest for violence, were 26% to 44% less likely to recidivate compared to probationers/parolees at similar risk who did not attend an offender notification meeting. Additionally, when offenders did recidivate, the time until recidivism was longer for those assigned and exposed to call-in sessions within this risk group compared to those who did not attend a notification meeting.

- Offender notification meetings vary greatly when conducted in different settings and among different criminal justice and social service actors. The call-in sessions in Las Vegas included a variety of components: an initial message of potential sanctions if continued offending occurred (without any specific details as to what recidivism pattern responses may look like), a number of social services available to desisting probationers and parolees, narratives of what a continued life of risky decision-making will likely entail, and the tragic impact of violence on families, parents, and loved ones. Thus, the Las Vegas model was not 'heavy handed' like many of the focused deterrence gang violence reduction call-ins used in other settings (see Engel et al., 2013), but rather more integrative, communicating support for desistance and reintegration. These findings suggest that individuals who are not prone to violence themselves and who are affiliates with groups who engage in violence may be particularly influenced by supportive, integrative, and collective offender notification meetings.

When comparing this study with other initiatives, the evidence likewise suggests that individuals within the other risk groups (low, moderate, and high) were much less likely to be influenced by the more service-oriented call-in sessions used in Las Vegas. While the more heavily focused enforcement and deterrent-based call-in sessions (including strategic channeled criminal justice responses to violence) have been shown to reduce overall firearms violence and homicide among violent groups (Braga et al., 2018), there has not been an assessment of these types of offender notification meetings on individual-level risk of recidivism. Future studies of offender notification sessions that adhere to offender attendance compliance (as was the case in this study), as well as strategic responses to gang and firearms violence (which was less the case here) would enhance our understanding of the influence of call-in sessions on risk of recidivism for higher-risk individuals.

Policy Implications and Recommendations

Based on the current study findings and previous research, the policy implications and resulting five recommendations for the LVMPD and NPP are described in below.

1) To enhance violence reduction opportunities within Las Vegas, full implementation of the focused deterrence model is necessary. While it remains unknown which specific mechanisms of the focused deterrence strategy have the most direct impact on violence reduction (Corsaro & Engel, 2015), it remains well-established that implementation with fidelity to the model has demonstrated significant reductions in violence across jurisdictions (Braga et al., 2018). Moving forward, the LVMPD should consider full implementation of focused deterrence that integrates offender notification meetings with specific gang enforcement activities, continuous law enforcement follow-up with would-be offenders, provision of social services, and coordinated community engagement.

2) If full implementation of a focused deterrence strategy is not operationally feasible, the LVMPD and NPP should still continue to work in partnership to host offender notification meetings. These meetings represent a low-cost mechanism to communicate with offenders at risk for involvement (as victims and offenders) in future violence.

3) The LVMPD and NPP should focus specific call-in interventions on those offenders most likely to respond positively. This study shows that offenders identified as low/moderate-risk (that is, those who are affiliated with a violent gang, but no arrest history of violence) were significantly less likely to recidivate after attending a single 90-minute meeting containing a specifically tailored anti-violence message. Probationers/parolees at this level of risk should be specifically identified, and routinely required to attend offender notification meetings across the duration of their supervision as a condition of their continued release.

4) These findings also suggest that when managing limited resources, some probationers/parolees are not good candidates for inclusion in the sessions because of their limited return on investment. Specifically, offenders considered to be low-risk (that is, not affiliated with a violent gang, and no history of violent arrest) should not be

included in this intervention. Likewise, high-risk offenders (affiliated with a violent gang and have a violent arrest history) were not impacted by attending a single offender notification meeting that was more heavily assistance and community-focused. Rather, it is likely that individuals who are high-risk need, at a minimum, additional "dosages" of law enforcement-based anti-violence messaging, coupled with targeted gang enforcement, to have a meaningful impact on their likelihood of recidivism (for review, see Braga et al., 2018).

5) Additional research is needed to better identify the most effective tactics used within violence reduction strategies. Any future interventions designed to reduce violence that are implemented within the LVMPD and NPP should be studied with a similar level of scientific rigor to best inform agency leaders, and guide operationalization of violence reduction initiatives in Las Vegas.

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APPENDIX A: GANG INTELLIGENCE DATA COLLECTION FORM

Las Vegas
Intelligence Gathering Session

CENTER FOR POLICE RESEARCH AND POLICY

Area Com. _____ **Gang #:** _____

☐ New ☐ Inactive

Gang Name: _____ ☐ Previously identified

Gang Type: ☐ Adult ☐ Juvenile ☐ Both Age Range: _____

Estimated # of Members: _____ **Violence Level** **City:** ☐ High ☐ Med ☐ Low

Area C.: ☐ High ☐ Med ☐ Low

Gang Affiliations:

_____ ☐ Alliance ☐ Feud ☐ Volatile

_____ ☐ Alliance ☐ Feud ☐ Volatile

_____ ☐ Alliance ☐ Feud ☐ Volatile

_____ ☐ Alliance ☐ Feud ☐ Volatile

_____ ☐ Alliance ☐ Feud ☐ Volatile

☐ Alliance ☐ Feud ☐ Volatile

GANG ILLEGAL ACTIVITIES:

☐ Robberies: ☐ Drug-related ☐ Street robbery Victims: _____

Area: ☐ Res. ☐ Comm. Weapon: ☐ Yes ☐ No

☐ Homicide ☐ Shootings ☐ Assault ☐ DV

☐ Guns: ☐ Use ☐ Sale ☐ Trafficking ☐ Other _____

☐ Drugs: ☐ Street sales ☐ Trafficking | ☐ Weed ☐ Heroin ☐ Crack ☐ LSD ☐ Powder ☐ Meth ☐ Ecstasy ☐ PCP ☐ Prescription ☐ Designer

Other Info/Changes from Prior Year:

Violence Level: ☐ Increasing ☐ Decreasing ☐ Same level

Territory: ☐ Expanding ☐ Decreasing ☐ Same area

# of Members: ☐ Increasing ☐ Decreasing ☐ Same number

Social Media Presence: ☐ Yes / ☐ No/Unknown

Network(s): _____

Apprx. Year of Origin: _____

Organization (Low, Med., or High): _____

Gang in Housing Project (Y or N): _____

Gang colors/signs/tattoos: _____

Additional Info:

HOT SPOTS

Location: _____ Type: _____

Address: _____

Activities: _____

Other location information:

Location: _____ Type: _____

Address: _____

Activities: _____

Other location information:

Location: _____ Type: _____

Address: _____

Activities: _____

Other location information:

Location: _____ Type: _____

Address: _____

Activities: _____

Other location information:

Location: _____ Type: _____

Address: _____

Activities: _____

Other location information:

Other general information:

APPENDIX B: ADDITIONAL STATISTICAL ANALYSES

ADDITIONAL STATISTICAL ANALYSES

Appendix B includes additional statistical analyses conducted for the intent-to-treat (ITT) models. Each of the tables and figures below correspond to the treatment-as-delivered (TD) models included in the text.

Table 16 below show a comparison between all probationers/parolees in Wave 1 assigned to treatment and control conditions, regardless of their risk classification. As shown, there is no evidence of an association between treatment and recidivism ($X^2 = 0.432$), indicating that the assignment to treatment – regardless of whether or not an individual received that treatment – did not significantly impact the likelihood of recidivism during the next 12-month period compared to those who were not randomly selected to attend an offender notification meeting.

Table 16. Overall Treatment Analysis Wave 1 – Intent to Treat (ITT) Model Chi-Square

Group	Did Not Recidivate	Recidivated	Total
Treatment	94 (59.5%)	64 (40.5%)	218
Control	132 (60.6%)	86 (39.4%)	158
Total	226	150	
	$X^2 = 0.432$		

It is possible, however, that the treatment effect differed across strata, or risk classification of the probationers/parolees. Table 17 below shows evidence of a statistically significant ITT difference ($X^2 = 4.34$, $p < .05$) between the treatment and the control group in the Low/Moderate Risk strata. On average, 30% of the probationers/parolees assigned to treatment in the Low/Moderate-Risk group (individuals with no violent history, but affiliation with a violent gang) recidivated within the next 12-months, while the control probationers and parolees recidivate at a significantly higher 56.7%. No significant differences emerge, however, for any other risk group, suggesting the treatment and control probationers/parolees were at similar risk for recidivism in the 12-month follow-up period in Wave 1.

Table 17. Stratification Analysis Wave 1 – Intent to Treat (ITT) Model Chi-Square

	Low-Risk		Low/Moderate-Risk		Moderate-Risk		High-Risk	
	T	**C**	**T**	**C**	**T**	**C**	**T**	**C**
N	20	41	9	17	23	18	12	10
%	31.7	33.3	30.0	56.7	51.1	40.0	60.0	50.0
X^2	0.48		4.343*		1.120		0.404	

+p < .10; * p<.05; **p<.01
T=treatment, C=control

Moving to the Wave 2 analyses (the October 2018 call-in sessions), the pooled strata single analysis demonstrates there were no statistically significant differences in recidivism. Table 18 below shows that recidivism patterns for the 9-month follow-up were very similar for treatment as assigned probationers and parolees relative to controls ($X^2 = 1.426$) overall.

Table 18. Overall Treatment Analysis Wave 2 – Intent to Treat (ITT) Model Chi-Square

Group	Did Not Recidivate	Recidivated	Total
Treatment	43 (74.1%)	15 (25.9%)	58
Control	51 (64.6%)	28 (35.4%)	79
Total	94	43	
	$X^2 = 1.426$		

As shown in Table 19, examining these effects by risk group demonstrated statically significant evidence of an association between treatment assignment and recidivism patterns relative to the controls ($X^2 = 6.136$, $p < .05$) for Wave 2. Only one of fifteen treatment individuals in the treatment (as assigned) Low-Moderate Risk group recidivated (6.7%) compared to seven of the fifteen controls (46.7%). For the remaining three risk groups, there was no significant difference between treatment and control recidivism patterns.

Table 19. Stratification Analysis Wave 2 – Intent to Treat (ITT) Model Chi-Square

	Low-Risk		Low/Moderate-Risk		Moderate-Risk		High-Risk	
	T	C	T	C	T	C	T	C
N	6	14	1	7	5	6	3	1
%	28.6	33.3	6.7	46.7	35.7	42.9	37.5	12.5
X^2	0.147		6.136*		0.150		1.333	

+p < .10; * p<.05; **p<.01
T=treatment, C=control

Multivariate

Consistent with bivariate analyses, Table 20 below shows the individuals in the Low/Moderate Risk treatment group are significantly less likely to recidivate ($b = -1.116$, $p < .05$) within the 12-month follow-up period compared to their matched strata controls. More specifically, the treatment group had an odds ratio of 0.327, which roughly equates to a 67% lower risk of recidivism than controls in the treatment as assigned analysis. No other strata experienced any divergent differences between treatment and control probationers and parolees.

Table 20. Wave 1 Logistic Regression Analyses Across Randomization Strata – Intent to Treat (ITT) Model

Estimate	Low-Risk B (SE)	Low/ Mod-Risk B (SE)	Moderate-Risk B (SE)	High-Risk B (SE)
Treatment	-.072	-1.116*	.450	.405
	(.331)	(.543)	(.426)	(.639)
Constant	-.693**	.268	-.405	0.00
	(.191)	(.368)	(.304)	(.447)
Observations	186	60	90	40

-2 Log likelihood	235.32	77.70	122.93	54.64
Pseudo R-Square	.000	.095	.017	.013

+p < .10; * p<.05; **p<.01

Table 21 below provides treatment (intent-to-treat) estimates on recidivism, net of controls where bivariate analyses indicated imbalances between treatment and control individuals. Again, the Low/Moderate-Risk and Moderate-Risk groups are statistically balanced on control measures, and thus no controls were needed for further inclusion. The Low- and High-Risk groups had imbalances on prior arrest-convictions, but the inclusion of these controls did not have any meaningful association on recidivism – and the treatment estimates in the Low-and High-Risk groups did not change in any substantive manner with their inclusion.

Table 21. Logistic Regression Analyses Across Randomization Wave 1 Strata – Intent to Treat (ITT) Model with Unbalanced Controls Included

Estimate	**Low-Risk B (SE)**	**Low/Mod-Risk B (SE)**	**Moderate-Risk B (SE)**	**High-Risk B (SE)**
Treatment	-.092	-1.116*	.450	.419
	(.342)	(.543)	(.426)	(.677)
Controls				
Male	---	---	---	---
Age	---	---	---	---
White	---	---	---	---
Total Prior Convictions	-.038	---	---	---
	(.041)			
Total Weapon Convictions	-.188	---	---	.040
	(.221)			(.632)
Total Violent Convictions	-.248	---	---	---
	(.185			
Constant	-.535*	.268	-.405	-.022
	(.304)	(.368)	(.304)	(.567)
Observations	186	60	90	40
-2 Log likelihood	232.41	77.70	122.93	54.64
Pseudo R-Square	.022	.095	.017	.014

--- = No significant difference between treatment and control group on measured covariate and thus control measure was excluded from analysis

+p < .10; * p<.05; **p<.01

Table 22 below includes the pooled strata into a single analysis, where there was no evidence of any treatment effect on recidivism for the overall treatment group relative to the overall controls. And, Model B included controls where statistical imbalances were present – and the nonsignificant treatment effect was likewise observed. Thus, there was no evidence of a treatment effect (Model A) nor that the nonsignificant treatment effect was influenced by statistical imbalances between treatment and control probationers and parolees.

Table 22. Logistic Regression Analyses for All Wave 1 Treatment and Control Probationers/Parolees Pooled: Intent to Treat (ITT) Model with Unbalanced Controls Included

Estimate	Model A: Combined Strata B (SE)	Model B: Combined Strata with Controls B (SE)
Treatment	.044	.000
	(.213)	(.218)
Controls		
Male	---	---
Age	---	---
White	---	---
Total Prior Convictions	---	-.003
		(.025)
Total Weapon Convictions	---	-.232
		(.144)
Total Violent Convictions	---	---
Constant	-.428**	-.284
	(.139)	(.204)
Observations	376	376
-2 Log likelihood	505.73	502.78
Pseudo R-Square	.000	.011

--- = No significant difference between treatment and control group on measured covariate and thus control excluded from analysis
+p < .10; * p<.05; **p<.01

Turning to Wave 2 (October meetings), in Table 23, the intent-to-treat (ITT) analysis indicates that the Low/Moderate-Risk treatment group had significantly lower rates of recidivism than within-strata controls (b = -2.506, p < .05). The odds ratio for the Low/Moderate-Risk treatment was 0.081, or a 91.9% lower level of risk of recidivism relative to the within-strata controls in the 9-month follow-up period. No other treatment estimates significantly varied across any of the remaining strata.

Table 23. Wave 2 Logistic Regression Analyses Across Randomization Strata – Intent to Treat (ITT) Model

Estimate	Low-Risk B (SE)	Low/Mod-Risk B (SE)	Moderate-Risk B (SE)	High-Risk B (SE)
Treatment	-.233	-2.506*	-.300	1.435
	(.584)	(1.157)	(.776)	(1.295)
Constant	-.693*	-.134	-.288	-1.964
	(.327)	(.518)	(.540)	(1.069)
Observations	63	30	28	16

-2 Log likelihood	78.59	28.07	37.37	16.61
Pseudo R-Square	.003	.292	.007	.122

+p < .10; * p<.05; **p<.01

The overall estimated impact of treatment in the Wave 2 group was not evident. Table 24 shows there was no significant difference between the pooled treatment group relative to the pooled control group from the October 2018 offender notification meetings.

Table 24. Logistic Regression Analyses Across the Pooled Wave 2 Probationers/Parolees – Intent to Treat (ITT) Model

	Combined Strata
	B
Estimate	**(SE)**
Treatment	-.454
	(.381)
Constant	-.600
	(.235)
Observations	137
-2 Log likelihood	169.03
Pseudo R-Square	.015

+p < .10; * p<.05; **p<.01

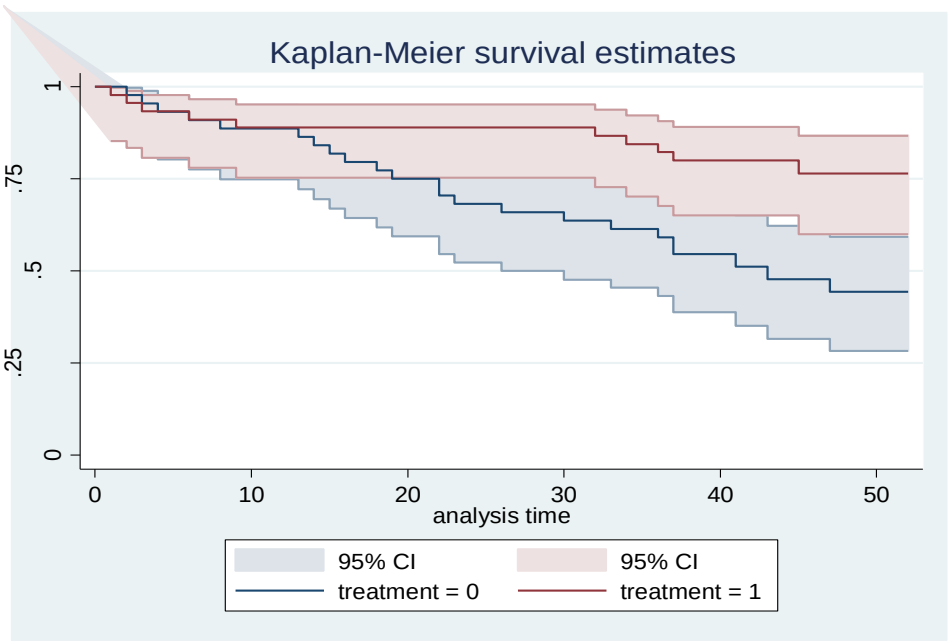
Finally, examining the Cox proportional hazard models, individuals assigned to treatment (ITT) had a significantly (b = -.994, p < .01) longer time until recidivism relative to control individuals (see Table 25 below). Individuals assigned to treatment experienced a 62% longer period until failure (recidivism) when compared to matched controls within the Low/Moderate-Risk strata.

Table 25. Cox Proportional Hazard Intent to Treat (ITT) Regression Models

	Low-Risk	**Low-Mod-Risk**	**Moderate-Risk**	**High-Risk**
	B	**B**	**B**	**B**
Estimate	**(SE)**	**(SE)**	**(SE)**	**(SE)**
Treatment	.033	-.994**	.273	.596
	(.249)	(.380)	(.299)	(.438)
Cases Recidivated (%)	73	34	47	23
	(29.3%)	(37.7%)	(39.8%)	(41.1%)
Cases Censored (%)	168	56	66	30
	(67.5%)	(61.2%)	(55.9%)	(53.6%)
Missing Cases (%)	8	1	5	2
	(3.2%)	(1.1%)	(4.2%)	(5.4%)
Total # of Cases	249	90	118	56
Omnibus Test of Model	0.018	7.539**	0.835	1.936
Coefficients X^2 (df)	(1 df)	(1 df)	(1 df)	(1 df)

+p < .10; * p<.05; **p<.01

Figure 3. Intent-to-Treat (ITT) Kaplan Meier Survival Function Estimate Low/Moderate-Risk Group (N = 90)


Kaplan-Meier survival estimates
1
.75
.5
.25
0
0
10
20
30
40
50
analysis time
95% CI
95% CI
treatment = 0
treatment = 1