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Examining the Effectiveness of Mental Health and Law Enforcement Partnerships in California

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Approval of the Dissertation Committee

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Domonique Hualani Rood as fulfilling the scope and quality requirements for meriting the degree of Doctor of Public Health.

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Abstract

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In California, many law enforcement agencies have partnered with local mental health services to manage situations that involve people with mental illness in crisis; much of the research on these programs has focused on the effectiveness and financial savings of implementing these programs (i.e. reductions in adjudications and hospitalizations). This study examined whether these programs are effectively managed mental health crises across California. This study implemented a sequential mixed methods design that used qualitative data to explain quantitative results to determine effectiveness. Quantitatively, effectiveness was defined as a reduction in injury (both in severity and frequency of injury), arrests, and use of firearms. Qualitatively, effectiveness was determined by the individual who was interviewed, which helped to provide context to the quantitative results. Additionally, qualitative findings will help to elucidate disparities seen in the quantitative results. Quantitative analysis involved the use of staggered difference in difference analysis of Use of Force data over a six year period

(2016-2021). There was no treatment effect found; none of the estimators were found to be significant; but an overall increase of incident of violence was found. Qualitative analysis found that these partnerships are not effective and the following trends were identified: there are long waits for the teams to arrive; law enforcement require more training and better protocols need to be established. A discussion of alternatives approaches to law enforcement intervention follows as well how few teams are present in each County.

Table of Contents

Introduction

The National Institute of Mental Health (NIMH) estimates that in 2019, approximately 51.5 million people in the US were diagnosed with a mental illness, and only about 44.8% received mental health treatment. Access to treatment is more common among people with serious mental illness (SMI), which the NIMH defines as a mental illness that greatly prevents or hinders a person from being able to engage in activities of daily living (work/school, hygiene, self-care, etc). People with SMI comprise 25% (13.1 million) of the people living with mental illness, and approximately 65.5% of people with SMI received treatment.[1]

Two reasons are attributed to why 28.5 million people with mental illness in the US are not receiving treatment: stigma and mental health literacy. Stigma, the fear of negative attribution because of a mental illness, has been shown to prevent people with mental illness from seeking treatment, ending treatment early, and having a lower quality of life.[2] Mental health literacy, which is a general understanding of what mental illness is and how to access treatment, has been found to be low in the general US public.[3]

The confluence of stigma and low mental health literacy has resulted in people with mental illness dying as a result of interactions with law enforcement. In a 2015 review of fatal police shootings that occurred that year, it was found that 23% of the 1099 fatal police shootings (that occurred in that time period) involved someone with mental illness.[4] These deaths are unintentional. They occur because law enforcement is called to manage a crisis situations involving people with mental illness, and the responding officer is not able to deescalate the situation.[5]

Literature Review

Specialized training focused on mental health literacy and crisis de-escalation tactics to help law enforcement better manage these crisis situations began in the late 1980's and has evolved into what is almost universally implemented, Crisis Intervention Team (CIT) training.[5] In a 2014 study of the Louisville (Kentucky) Metro Police Department, it was found that CIT cost the city $2.4million, but that spending was estimated to have saved the city $1 million by reducing hospitalization, in-patient referrals, and unnecessary bookings and jail time.[6] However not all studies of CIT have had favorable outcomes. In a 2018 review of CIT programs, people with mental illness continue to account for 25% (250 people) of police-involved deaths.[7]

Providing law enforcement training on how to manage crisis situations involving people with mental illness is publicly supported.[8] CIT, which is the most common form of this training, provides training on how to manage various types of crisis situations with the goal of reducing injury to both the officer and the person in crisis, and is jointly taught by experienced law enforcement officers and professionals from the mental health system.[9] Research on CIT purports to its effectiveness in increasing officer knowledge of de-escalation techniques,[10] confident in managing crisis situations,[11] and contributing to a decrease in discretionary arrests among people with mental illness.[12] However, the training for CIT is self-selected (officers sign up to take this training), and therefore only a small portion of officers attend this training; additionally, when officers implement CIT when interacting with people suffering from a mental health crisis, the main outcome is to divert arrest and provide referrals to mental health treatment.[13] More often than not, the person in crisis does NOT follow up with the referrals provided.[14] Most concerningly, there is little peer review research that shows a decrease in

citizen injury or use of force in CIT programs compared to the national average for citizen injury.[6]

The implementation of CIT has been met with barriers [such as insufficient training; lack of psychiatric treatment facilities (i.e hospital beds or treatment centers); and complexities in rural settings[15]], and qualitative analysis has found inconsistencies with training guidelines.[16] Dealing with mental health crises is time consuming; it has been found that it can take law enforcement anywhere from 30 minutes to 6.5 hours to manage a call with a person with mental illness (this includes responding, deescalating, and identifying resources).[17] Many of these crisis situations involve people who are not currently receiving mental health treatment and who, after a year following the police intervention, were still not receiving mental health treatment.[14]

As there is perceived value in collaboration between law enforcement and mental health services,[18] many municipalities have adopted intervention models which create a partnership between law enforcement and mental health services.[19] In general, there are 2 types of partnerships: the co-responder type of partnerships, in which a mental health professional accompanies law enforcement to a crisis call; or the control room support partnership, in which a mental health professional provides support to law enforcement remotely.[20] Moving forward, these types of programs will be called Mental Health-Law Enforcement Partnerships (MH-LEP).

Qualitative research on MH-LEP's have shown that they are beneficial for the city of Melbourne (Australian) and the person in crisis. An exploratory, qualitative study was conducted in Melbourne to understand if the crisis needs of consumers with mental illness were being met; from semi-structured interviews of consumers with mental illness who had experiences with law enforcement or mental health professional interventions, a major trend was found to be that

consumers preferred MH-LEP (called "Ride-A-Long's") teams as opposed to interventions by law enforcement alone.[21] To better understand the attitudes of consumers in Melbourne, who had received intervention by an MH-LEP team (Called Police Ambulance Clinical Early Response (PACER)), qualitative methods were used; from the Semi-structured interviews, of consumers, the main trends found were: these consumers had multiple interactions with law enforcement; and the intervention provided by the MH-LEP teams were quicker, more responsive, and able to de-escalate the situation without further incident.[22]

There have been several mixed-methods evaluations of MH-LEPs of different municipalities. In general studies find positive outcomes in support of the usefulness and effectiveness of MH-LEP's (as is described below). However, it is difficult to aggregate these studies to compare outcomes across municipalities, as different quantitative variables were used (contact criteria vs rates of injury) or use variables then require additional information to compared and obtain useful inferences, such as number of incidents (does it mean that an MH-LEP that intervened in more incidents than another is more efficient?) or time with consumer (does an MH-LEP that spends less time with a consumer mean they are more effective?). Three examples of mixed-method evaluations are as follows:

- To understand the impact of the MH-LEP (called Mental Health Mobile Crisis Team (MHMCT)) in Nova Scotia, Canada mixed methods were used in the evaluation of the partnership. [23] Quantitatively, the study compared the number of calls and the amount of time at each incident for the MH-LEP to a police force in a similar city (control group); over a 2 year period, found that the number of incidents referred to the MH-LEPs increased by 37%, the amount of time each team spent at an incident decreased by 26%, but there were not many differences in terms of number of incidents and time at each incident when compared

to the control group. [23] Qualitatively, the study conducted focus groups of consumers and their family members to assess the helpfulness, availability, and accessibility of the MH-LEP; and the main trends were found to be that the MH-LEP's were perceived to be beneficial in Nova Scotia, as well as being better engaged by the person in crisis.[23]

- To conduct a mixed-method evaluation of the MH-LEP team in Melbourne, Australia (Police Ambulance Crisis Emergency Response (PACER)) daily records of the team's efforts were reviewed and interviews were conducted. [24] From the review of daily records (which included referrals provided, contact criteria and nature of response), it was found that the team was able to manage 51% of the incidents without needing to The interviews(which asked for the respondent's professional background, relationship with MH-LEP, a Likert scale to rate perceived impact of MH-LEP, and open ended questions) the main trends found were that the Police had more favorable rating of the PACER program, then mental health professions, and the police reported that they valued the ability to have contact with a mental health professional.[24]
- A mixed method evaluation of the MH-LEP's (called Mobile Crisis Intervention Teams) in Toronto, Canada, used quantitative methods to compared rates of injury, arrest, response times, handover times/escort times to the emergency rooms of the MH-LEP's to Police only rates, and found that the MH-LEP's had lower rates of injury and arrest, escorted more people to the hospital (vs. involuntary detainment), and spent less time on the hospital handover comparted to police only. [25] The evaluators interviewed service users (those who received intervention by the MH-LEP) and found that overall service users valued the knowledge and skills of the MH-LEP teams.[25]

Quasi-experimental methods have also been used to evaluate MH-LEP's. For example, a study of the MH-LEP's of DeKalb County Georgia used quasi-experimental methods to estimate the cost effectiveness of the MH-LEP.[26] The existence of a single MH-LEP team in the DeKalb police force sets up an experiment where the MH-LEP outcomes can be comparted to the officer only; however, the study notes, it cannot be assumed that the calls are assigned perfectly randomly, and therefore is a quasi-experimental design.[26] The results of this study were that the MH-LEP had fewer psychiatric hospitalizations and fewer arrests compared to the officer only responses, but these results were not statistically significant. [26] Moreover, this study found that the Co Responder program in DeKalb had an overall cost savings (compared to officer only), which more than pays for the cost of the program.[26]

Most of the research on MH -LEPs have been evaluations of individual programs, but these individual studies have been aggregated and studied using a systematic review. A systematic review of English and Welsh MH-LEPs included 23 studies of both MH-LEPs and CIT programs, and generally the study found positive outcomes for both MH-LEPs and CIT; for MH-LEP's specifically, the study found that the MH-LEP's were faster to arrive at the incident and provided more appropriate interventions, and were able to divert people in crisis away for the criminal justice system.[19] Similarly to what is noted above, the authors of this study noted that there was a lack of quantitative studies and quantitative findings that they could include in their review; as a result, the authors were only able to use qualitative studies; interestingly, the authors also noted a lack of a comparison standard.[19] In another systematic review of UK MH-LEP's, the authors noted the lack of randomized control trials and, as a result, had to employ qualitative methods; they too found generally positive outcomes (decrease in involuntary psychiatric hospitalizations, more responsive, cost-effective), and noted that it was difficult to draw

conclusions regarding overall effectiveness because of the lack of consistent outcomes and quantitative findings.[20]

Both of these reviews suggest that, overall, MH-LEP's have positive outcomes. However, these reviews are more qualitative in nature, as the individual studies provide different outcome variables, which were not able to be aggregated in a quantitative way.[20,26] Being able to conduct quantitative research on MH-LEP's would have provided stronger, more robust conclusions as to effectiveness and usefulness; additionally, quantitative research would allow for findings that are generalizable.[27] Quantitative studies would help to disaggregate the uniqueness of individual programs; that is to say, when looking at the value that a MH-LEP has had in a community, with only qualitative methods, conclusions cannot be assumed to be true in other areas. The lack of quantitative research on MH-LEP's leaves a gap, which this study will attempt to fill by examining these partnerships across a state.

Methods

This study was a sequential mixed methods design that used qualitative data to explain quantitative results to answer the research question: When law enforcement and mental health services, in the state of California, partner to respond to incidents of mental health crises, are they effective in resolving these crises? Quantitative methods examined whether MH-LEP's have been effective in reducing violence, arrests, and unnecessary involuntary psychiatric hospitalizations for people with mental illness. To overcome the nuance that could be lost in aggregating large areas together, qualitative methods were used to examine the perspectives of

those with lived experiences of MH-LEP's, their opinions of the effectiveness of MH-LEP's, and their thoughts on the quantitative results.

Quantitative Research Proposal

The study used publicly available data of all incidents of violence, arrest and involuntary psychiatric hospitalizations that were reported and collected by the State of California. Specific variables from this dataset were selected and combined with other publicly available data, which is described in the variable section. These variables were analyzed using Difference -in - Difference Analysis, and statistical significance was calculated and used to determine the effectiveness of MH-LEP's.

California is an ideal state in which to compare these partnerships quantitatively because of how mental health services are funded and MH-LEP's have been created. The Mental Health Service Act (MHSA) was passed in the November 2004 election to increase income tax by 1% on earners of $1,000,000.00 or greater, to fund mental health programs focused on prevention and intervention in each California county.[28] Additionally, the state provides Medicaid dollars, which in California is called Medi-Cal, to fund mental health services for each of the 58 counties in California.[29] Each county has created a specific agency that oversees the spending of this money to either provide mental health services directly or to grant these funds to local agencies or hospitals and monitor their spending.[29]

The funding structure has allowed many of the county mental health departments to create partnerships with local law enforcement agencies (LEA). Typically, the county mental health department provides trained mental health staff (usually licensed mental health counselors or staff with master's degrees working toward licensure) that either accompany law enforcement

or are called upon to join officers during crisis situations involving people with mental illness. The county mental health staff provide crisis de-escalation services and direct avenues to treatment for the person in the mental health crisis.

Hypotheses

This study examined whether there is an overall effectiveness of the partnerships that have been created between various Law Enforcement Agencies and California counties' behavioral health departments with the hypothesis that these partnerships would result in a decrease in negative outcomes. In comparing California counties that have created such partnerships with counties that have not, this study examined whether these partnerships have been able to reduce incidents of force against people with mental illness, reduce injury or arrests of people with mental illness, and reduce involuntary psychiatric hospitalizations of people with mental illness with the hypothesis that these partnerships would.

- **ARRESTS** – This study looked at if there was a difference in the number of arrests of people with mental illness, in counties that have established partnerships between county mental health agencies and LEA, compared with California counties that have not established such partnerships, with the hypothesis that the establishment of partnerships would decrease the number of arrests in people with mental illness.
- **INJURY** – This study investigated if police encounters of people with mental illness resulted in a difference in the number of incidents of injury (of either the civilian or the officer) between California counties that have established partnerships between county mental health agencies and LEA, compared with California counties that have not

established such partnerships, with the hypothesis that the establishment of a partnership would reduce the number of injuries.

- **FIREARM** – The study examines if in police encounters with people with mental illness, there was a difference in the number of incidents that result in the discharge of a firearm (by law enforcement) in California counties that have established partnerships between county mental health agencies and LEA, compared with California counties that have not established such partnerships, with the hypothesis that the establishment of a partnership would decrease the use of firearms.
- **5150's** – This study examined in police encounters of people with mental illness, if there was a difference in the number of incidents that result in the person with mental illness being placed on an involuntary psychiatric hold (often called 5150's in reference to the WIC code under which this falls), in California counties that have established partnerships between county mental health agencies and LEA, compared with California counties that have not established such partnerships, with the expectation that there would be a hired number of psychiatric holds in counties that have established partnerships.

Dataset

In this study, data was used from the California Use of Force Incident Reporting dataset[30], which is a collection of use of force incidents between law enforcement and civilians. (The person who was involved in the incident is referred to as the "civilian" in the Use of Force Incident Reporting dataset.) Incidents in the Use of Force Incident Reporting dataset report on the severity of the bodily injury (of either the civilian or the officer), the discharge of a firearm (of either the civilian or the officer) during a police-civilian encounter, if the civilian was

arrested, among about 40 other variables. Not only are the number of incidents counted, but the location of the injury, the level of care provided, and the need for medical personnel is captured. The dataset does not include minor bodily injury, such as hits without bruising, scratches or falls without injury, and therefore not ALL instances of use of force are accounted for in this dataset.

Data collection for Use of Force Incident Reporting began in 2016 and is readily available on the CA DOJ website. There are roughly 8,000 observations for 2016-2021 and 52 variables for each observation providing data on age/race of the civilian/officer involved in each incident, suspected presence of mental illness in the civilian involved, types of injuries incurred, type of weapon(s) present, level of intoxication of civilian involved, as well as other variables. For this study, the variable of interest will be discussed next.

Variables

The independent variable was whether or not potential symptoms of mental illness are present in the civilian. In the Use of Force Incident Reporting dataset, there is an unordered categorical variable that notes erratic behavior, alcohol or drug impairments, mental disability or signs of physical disability; this variable was also used. Age, gender, and race variables of the civilian and officer were also used. Additionally, independent variables were added to the Use of Force Incident Reporting dataset. County population was added using California County census data 2016-2021.[31–33] The Month and year that the MH-LEP within the county became active were added, along with the number of teams and each team's membership (i.e. law enforcement and a licensed mental health clinician vs an EMT and a peer advocate).

The dependent variables were: Arrest – This variable describes whether or not the civilian was arrested as a result of intervention by the LEA; there is a binary variable in the Use

of Force Incident Reporting dataset that was used. Injury – This variable notes whether the civilian or the officer was injured; the injury level of the civilian (both of which are unordered, categorical variables), and whether the officer was assaulted (which is a binary variable) were used. Firearm use– This variable denotes whether the officer used their weapon while interacting with the civilian. This variable consisted of the variables from the Use of Force Incident Reporting dataset that describes whether a firearm was used and if it was by an officer or a civilian.

Analysis

Data was analyzed using Difference-in-Difference (DID) analysis, which is a quasi-experimental design. A common application of DID involves analysis of how (if any) policy changes or implementations impacted outcomes by comparing both the outcomes on the group in which the policy affected and a comparable group; this allows DID to account for any other effects that could cause changes in the group of interest. Specifically DID analysis compares the difference before and after the policy as well as trends between the 2 groups in before and after outcomes. Hence, the term "Difference-in-Difference" - the first difference being the difference over time and second is the difference between the groups. The assumption is that being that the effects of unmeasured covariates occur systematically between both groups and therefore do not change over the course of the time period of interest; this assumption is called the parallel trends assumption.[34]

The Canonical DID has 2 time periods, before the policy is implemented and after; this can be limiting. In the example of Medicaid expansion, many States expanded their Medicaid programs at the implementation of the Affordable Care Act, but since 2014, other States have expanded Medicaid (in 2019, 2020, 2021, 2023 and Kansas plans to expand in 2024).[35] New

iterations of DID have allowed for the variations in the implementation of the policy's timing. This variation of DID is called Staggered Implementation DID.[36,37] To illustrate this version using the Medicaid expansion example, the treatment group are States that have expanded Medicaid, and the composition of this group changes over time as other States expand Medicaid; the control group is comprised of States that have not expanded Medicaid; The group composition is flexible.[36] That is to say the control group could only include all States that have never expanded Medicaid or could include states before they expand Medicaid as well as States who have never expanded Medicaid; the same can be done with the treatment group.

In this study, Staggered Implementation DID will be used to study the implementation of a MH-LEP throughout California between 2016-2021; such that counties with active partnerships in place will be compared to countries without MH-LEP. Counties that have established MH-LEP prior to 2016 will be excluded. First, counties that do not have MH-LEP in operation by Dec 31, 2021 will served as the control group and counties that established MH-LEPs between Jan 1, 2016 and Dec 31, 2021 will be the treatment group. In a second analysis, counties that do not have MH-LEPs in operation by Dec 31, 2021 AND the Counties who do not have operational MH-LEPs were in the control group, and as counties begin MH-LEPS, they were moved to the control group. The dates when the MH-LEP became active can be found in Table 1. Individual incidents of violence were reported by day and will be grouped together by month as the unit of analysis. Additionally, 2200 observations of 0 were added to the 824 observations to create a balanced panel for month,[36] which did not work in the analysis. Thus, the unit of analysis was changed to year.

As discussed earlier, DID has a common trend assumption, which means that any unmeasured covariates are either time-invariant(unmeasured covariates do not change over time)

or group-invariant (unmeasured covariates do not change among or between the groups), this can be shown graphically with a plot showing parallel trends.[34] As different counties have implemented MH-LEPs at different times, individual graphs of counties have been generated which show total incidents of violence for a given year versus incidents of violence for people identified to have a mental disability (See Appendix A). Another assumption is that all groups experience the same policy; this is harder to test. As California has strict guidelines as to how mental health services are to be implemented using Medi-Cal dollars; this is done through the implementation of contracts that dictate what types of mental health services are to be implemented, the reimbursement of certain mental health services (and not others), and an oversight/ recoupment process,[29] which means that for a counties mental health department to be able to utilize Medi-Cal dollars to fund these programs, the county must adhere to these strict guidelines, thus ensuring consistency of programming. All of these partnerships are funded by county mental health services (See Table 1)

Table 1. Included counties, date the partnerships began and the Agency paying for the partnership.

County	Partnership Date	Agency Sponsor
ALAMEDA	10/2020[38]	*Alameda County Behavioral Health Services[39]
CONTRA COSTA	1/2019[40]	Contra Costa Behavioral Health Services [40]
EL DORADO	2/2018[41]	El Dorado County Mental Health [42]
FRESNO	3/2018[43]	Fresno County Department of Behavioral Health [43]
IMPERIAL	11/2020[44]	Imperial County Behavioral Health Services [45]
MERCED	10/2020[46]	Merced County Behavioral Health and Recovery Services [47]
MONTEREY	1/2016 [48]	Monterey County Behavioral Health[49]
NAPA	3/2021[50]	Napa County Behavioral Health [50]
NEVADA	11/2020[51]	Nevada County Health and Human Services Agency [52]
SAN FRANCISCO	12/2020[53]	Community Behavioral Health Services [54]

SANTA BARBARA	9/2018[55]	Behavioral Wellness [56]
SANTA CLARA	1/2018 [57,58]	County of Santa Clara Behavioral Health Services [59]
SANTA CRUZ	1/2016[60]	County of Santa Cruz Behavioral Health Services [60]
SHASTA	1/2019[61]	Behavioral Health [62]
SOLANO	5/2021 [63]	Solano County Behavioral Health [64]
*County funds non-profit to implement services		

To analyze the data, the Use of Force Incident Reporting dataset needed to be combined and some variables needed to be re-coded; additionally county data for counties not included in the analysis needed to be removed. The Ursus data set for each year comes in 2 excel spreadsheets, one containing location information and the other containing information on the demographics of the civilian and the officer; these spreadsheets were combined by the unique identifier each incident is assigned.

The following independent variables were recoded: Age was provided as a range (e.g.18-20, 21-25, etc.) and the categories were collapsed and recoded (0-9, and 10-17 =1; 18-20, 21-25 = 2; 26-30, 31-35 and 36-40= 3; 41-45, 46-50, 51-55, and 56-60 =4; 61-65, 66-70, 71-75, 76-80, 81-85, and 86-90 =5, and blanks =0.) Gender was presented categorically and recoded into numbers (male=3, transgendered =2, female=1 and blank =0). Racial categories were collapsed and recoded into numbers (American Indian; American Indian, Hispanic; American Indian, White = 1. Asian, Asian / Pacific Islander; Asian Indian; Asian Indian, Black; Asian Indian, Hispanic; Asian Indian, White; Hawaiian Islander =2. Black; Black, Hispanic; Black, Other; Black, White=3. Hispanic; Hispanic, other; Hispanic, White =4. Other = 5. White, White, Asian; White, Asian / Pacific Islander; White, Hawaiian Islander; White, Other=6. Blanks =0.)

The civilian mental status variable described if it is believed that the person is under the influence of drugs or alcohol, if they have a physical impairment, if they have a mental disability or if they are demonstrating erratic behavior; there is considerable overlap in the variable (e.g. a civilian was marked to have both erratic behavior and mental disability). To account for this overlap, this variable was recoded into 5 dichotomous variables (1=presences of; 0=not mentioned); "drug" represents if the civilian was deemed to be under the influence of drugs; "alcohol" represents if the civilian was deemed to be under the influence of alcohol; "physical" represents if the person presented with a physical impairment; "mental" represents if the person appeared to have a mental disability; and "erratic" represents if the civilian had erratic behavior.

In the Use of Force Incident Reporting dataset the 3 dependent variables were categorical variables and were coded as follows. Arrest is reported as true or false and will be re-coded into "arrests_made" (1-true, 0=false or blank). Firearm use is also reported as true or false and was re-coded into discharge_firearm_ incident (1-true, 0=false or blank). Injury is a categorical variable and will be re-coded (0= blank,3= death,1= injury, and everything else was re-coded as 2).

Additional variables were added. The presence of an MH-LEP will be added and called "Time" as such: counties that do not have MH-LEP's will be coded as 0 and counties that do have MH-LEP's will be coded as 1. An additionally MH-LEP variable called Treat will also be added such that all counties will be recorded at 0 until a county's partnership goes live, at which point it will be coded as 1; this coding will be based on the date that the partnership began and the date of the incidents in the Use of Force Incident Reporting dataset. The variable "# Teams" will be added to reflect the actual number of teams within a county. The compositions of each team will be recoded into a number (Teams that has a licensed mental health clinician were

coded as 4; teams that had a clinician who was pre licensed were coded as 3; teams that had an Emergency Medical Technician on the team were coded as 2; teams that had a peer specialist or Mental Health Rehabilitation Specialist were coded as 1; and all blanks were coded as 0.) Finally, the population for each county was added from Census Data.[33]

Qualitative Research

To understand how individuals experience the phenomenon of MH-LEP's, a qualitative research approach was undertaken. Qualitative methods were used to help understand the perspectives of those with lived experiences with MH-LEP's in order to evaluate these individuals' opinions regarding the effectiveness of MH-LEP's in managing crisis situations involving people with mental illness as well as their opinions of the quantitative findings.

As stated above, California was a great place to conduct this research because of how separated mental health services are from law enforcement. This separation allowed for subtle differences in the creation of these partnerships (i.e., partnerships at a city level, such as at Los Angeles Police Department, or at a county level, such as San Bernardino County). The qualitative approach also allows for the inclusion of those individuals who had experienced intervention from MH-LEP's.

Research Questions/ Researcher Biases

There are two broad areas that will be explored qualitatively. The study will examine the perceived effectiveness of MH-LEP's as well as thoughts and reactions to the quantitative

findings of those individuals with experience with MH-LEP's. The 2 main research questions that were:

1. Do people with lived experiences with MH-LEP's find them effective?

2. What do people with lived experience with MH-LEP's think of the results of the quantitative analysis of this study?

The primary investigator (PI) in this study has been trained as a mental health professional, has received an advanced degree in counseling, and is licensed to provide mental health treatment in California. Additionally, the PI has experience providing mental health assessment and treatment in outpatient, field based and inpatient settings and has been trained in and has provided crisis interventions services to people with mental illness. The PI has, on many occasions, interacted with law enforcement and people with mental illness in field based settings, schools, and residential treatment settings. Collectively, the researcher has a strong bias toward the effectiveness of mental health treatment, a generally positive regard for law enforcement, and an overall favorable view of the effectiveness of MH-LEPs.

Data Collection and Analysis

Phenomenological research methods were used because phenomenological research works to describe the lived experiences of those involved in the phenomenon studied (which in this case is MH-LEP's). Phenomenological research methods seek to find a general understanding of shared experiences among individuals that can best describe the phenomenon examined in the study, and do not require membership of a certain group.[68] In phenomenological research, interviews of individuals focus on understanding both subjective and objective

experiences and seek to find individuals with lived experiences from as many different perspectives as possible in order to understand how the context or situations surrounding the phenomenon influence the person's experience of the phenomenon. To undertake this type of research design, the researcher must suspend their judgment or understanding of the phenomenon in order to understand the phenomenon from the perspective of those who have lived experience with this phenomenon. [68]

Other qualitative approaches are not appropriate because they hold assumptions that are unclear to be true. For example, ethnographic research attempts to understand the culture of a group.[69] Using this approach would assume that individuals who have a lived experience of an MH-LEP are a group and have a shared culture, which may be true but is an assumption with little data or research to support this idea. Narrative research, for example, examines how participants tell stories to understand how the participant makes sense of their experiences.[69] This qualitative research was not appropriate as the focus of this study was on the experience of the MH-LEP and not the meaning or understanding the person has because of the MH-LEP.

After the quantitative analysis was completed, relevant stakeholders were interviewed to elicit their perspectives on the effectiveness of MH-LEP's and the findings from the quantitative research conducted. Participants will be recruited using snowball sampling. The only selection criteria was that the individual has at least one in-person experience with a MH-LEP; this experience did not necessarily need to as a member of an MH-LEP nor as a person in crisis, it can be as an observer or as part of their profession.

Relevant stakeholders were sampled from three groups: law enforcement professionals, mental health professionals, and consumers. Law enforcement agency professionals are people

who work in the public defender's office, the police/sheriff departments, or people involved in implementing law enforcement policy. Mental health professionals are counselors or therapists who work with people involved in the legal system, or professionals who oversee the implementation of diversion or treatment programs for arrested individuals. Consumers are individuals who have dealt with mental illness and the justice system. Additionally, other stakeholder groups, which differ from what is described above, may be identified as they emerge from sampling.

Recruitment occurred equally of all 3 target groups (law enforcement professionals, mental health professionals, and consumers). However, a significant amount of overlap may occur making it difficult to easily identify which group a participant belongs in; for example, a participant, who is now a counselor working with law enforcement, in the past had received interventions from a MH-LEP, would be both a mental health professional and a consumer.

Interviewees were contacted via email and will be sent the consent forms for the study. Once the consent forms are returned, an interview will be scheduled, and zoom information sent. Zoom allows for both virtual in person interviews, as well as phone interviews. The participants received instructions informing them how to change their name in zoom to a pseudonym ensuring their confidentiality. Interviews will last approximately 30 min, be conducted via zoom, so as the captioning function can be used to provide a transcript of the interview; additionally, Otter.AI was used to ensure accurate transcriptions. Interviews will be semi-structured following the interview questions below.

Upon completion of the interviews, confidentiality was ensured using the following parameters which were IRB approved. If any identifying information was given during the

interview, the interviewer removed this from the transcript. Interviewee's pseudonym was changed to a non-descript label, i.e., Interview 1. The interview transcript was saved in a password protected file in a password protected cloud based server at CGU. Interview consent forms are kept separate from de-identified interview transcripts. All analysis and discussion will refer to the non-descript label.

The following questions will be asked in each interview:

1. What is your experience with partnerships between mental health departments and Law Enforcement Agencies?

2. Do you think these partnerships are effective? Why/Why not?

3. What, if any, would you change about these partnerships?

4. In this study, data that is collected from all California Counties was analyzed to see if there are differences, in use of force, use of fire arms, 5150 & injury of people with vs those without mental illness when encountering police. It was found that 13% of incident of force involved people suspected to have mental illness and 15% of deaths were of people suspected to have mental illness. What are your thoughts/feelings of these results?

5. Most of the quantitative analysis between counties with mental health partnerships vs those without did not find any significant differences in use of force? What do you think about that result?

6. One of the limitations of this study is that there are so few mental health teams able to intervene within a county, that any potential effect would be quite small. Is this consistent with your experience?

7. Are there peers you know whom you think would be interested in being interviewed about these results to participate in the study?

These questions attempted to gather qualitative information about the effectiveness of MH-LEPs in California, based on the interviewee's experiences. Additionally, these questions attempted to understand the nuance of MH-LEP's across the State of California. The main variable of interest,

in this portion of the study, is to understand the perceived effectiveness of MH-LEPs by relevant stakeholders.

Interviews were transcribed using AI software; specifically, the automatic captioning offered in Zoom (which can be downloaded as a transcript) and verified through the note taking software Otter.AI (which generates a transcript of a conversations). At the end of each interview, transcripts were reviewed to ensure accuracy and to ensure any identifying information has been removed.

Morse et al[68] defines data verification for qualitative research as the process of systematically checking data to ensure accuracy and that work of analysis and interpretation is monitored and questioned to confirm consistency. For this study, data verification of interviews occurred in 2 forms of transcripts and the interviewer reviewed the transcripts for accuracy. Morse et al[68] encourage investigators to be transparent in their decisions to include or exclude information so as to allow the data to generate the findings and not the investigators ideas; this ensures the validity of analysis and interpretation. For this study, the investigator has described their bias (above) and has worked under the supervision of a committee to ensure openness.

Interviews were analyzed using NVivo data analysis software; once initial data saturation appears. This software will help to identify insights and trends from the interviews. These findings will be used to create overall findings from this portion of this study.

Data saturation is the point at which additional interviews do not add novel data.[70] Saunders et al[70] define this as the point at which "nothing new is apparent" or the research finds themselves at information redundancy with each additional interview; and goes on to provide 4 models to identify data saturation, 2 of which is applicable here (as the other 2 involved pre-

established theory or a priori knowledge): No new information is learned by the interviewer in interviews; and No new themes are added to the analysis. These 2 models were used to establish data saturation in this study.

Specifically, the researcher conducted interviews attempting to balance participation of relevant stakeholders for the 3 groups identified. Once the interviewer feels that no new information is added, a preliminary analysis began to identify and code significant statements that help to give a rich understanding of MH-LEPs. After this initial analysis, additional interviews will occur until the analysis is not able to identify any new or additional codes.

Coded significant statements generated clusters of meaning that was combined in NVivo to develop themes. The identified themes were used to create an essential structure that will help to provide an overall understanding of MH-LEP's from the perspective of those who were interviewed. NVivo assisted in identifying how these themes interplay into convergent ideas or diverge patterns, and how a participants group membership(s) or other experiences may account for these patterns.

Once patterns appeared, a review of previous published findings on similar concepts was conducted to help verify context and establish if anything is novel. The comparison of established findings and novel findings built understanding of the study results. Finally, this comparison provided direction for what types of structural descriptions were necessary to give context and orient the findings into a setting to provide understanding and lay the foundation for the discussion of the study.

Results

Quantitative Results

There was a total of 42 California Counties included in the analysis (see Table 4). During the 2016-2021 time period, 16 counties began operation of a MH-LEP, and were considered part of the treatment group; most teams consisted of law enforcement member and a mental health clinician (either licensed, licensed eligible (obtained experience hours) or masters level clinician working on hours of experience for licensure), but a few teams had rehabilitation specialists, who have relevant bachelor's degrees, or peer specialists, who have relevant lived experience). There were 26 California Counties that were included in the analysis as the control group, as they did not have established partnerships during or before 2016-2021. The remaining 16 California Counties either began partnerships before 2016, and were excluded from the analysis, or there was no data in the Use of Force data set for the County. There were a total of 2918 observations in the treatment counties and 2020 observations in the control counties.

There were 1518 incidents of violence that were included in the analysis. Each incident involved at least 1 civilian and 1 officer, but often included more than 1 officer; therefore, there were a total of 4938 observations. Of these observations, the total number of civilians included in the analysis was 1606; Of these civilians, results show that civilians tended to be Hispanic (40%), between the age of 26-40 years (46%) and overwhelmingly male (90%). The total number of officers included in the analysis was 3,332; Of these officers, they tended to be White (63%), between the ages of 26-40 years(69%), and overwhelmingly male (94%). The complete breakdown of Civilian/Officer gender, age and race/ethnicity is shown in Table 6.

In comparing civilians and officers, there were a total of 976 civilians injured and 362 civilian deaths; there were a total of 253 officers injured and 4 officer deaths. In comparing counties with MH-LEP's to counties without, in counties with a MH-LEP there were 581 civilian injuries and 196 civilian deaths, and in counties without MH-LEPs there were 395 civilian injuries and 166 civilian deaths. In counties with a MH-LEP there were civilian injuries and 313 civilian deaths, and in counties without MH-LEPs there were 240 officer injuries and 2 civilian deaths. (See Table 7). Additional comparison of civilians and officers in terms of firearms, found that firearm use was involved in 44% (672) of the reported incidents. Specifically, in counties without MH-LEP's 45% of civilians and 46% of officers were reported to use firearms. In counties with MH-LEP's, 43% of civilians and 47% of officers were reported to use firearms. (See Table 7)

Overall mental disability was suspected in 15% of civilian deaths (see Table 8); in counties without MH-LEP's, civilians were suspected to have a mental disability in 14% of the civilian injuries and 6.5% of civilian deaths and in counties with MH-LEP's mental disability was suspected in 12% of civilian injury and 4.8% of civilian deaths. Overall alcohol was suspected in 12% of civilian deaths (see Table 8); Alcohol was suspected in 22% of the civilian injuries and 4% of civilian deaths in counties without MH-LEPs' and in 14% of civilian injuries and 4.6% of civilian deaths in counties with MH-LEPs. Overall the civilian was described to have erratic behavior in 36% of civilian death (see Table 8); Civilians were described as having erratic behavior in 17% of the civilian injuries and 17% of civilian deaths in counties without MH-LEPs; and in 16% and 11% of civilian deaths in counties with MH-LEPs. Overall, the civilian was suspected to be under the influence of a drug in 24% of the civilian deaths (see table 8); Drug use was suspected in 23% of the civilian injuries and 10% of civilian deaths in counties

without MH-LEPs; and in 21% and 7.7% of civilian deaths in counties with MH-LEPs. No incidents of civilian injury involved a civilian suspected to have a physical disability. Additionally, about 75% (1132)of the incidents resulted in the civilian being arrested. In counties without MH-LEP's about 72% of the civilians were arrested, in counties with MH-LEP's about 76% of civilians were arrested. (See Table 8). Lastly, there were only 50 civilians of the 1606 that were placed on a psychiatric hold (5150); There were a total of 17 psychiatric holds in counties without MH-LEP's, and 33 in counties with MH-LEP (see Table 9).

An initial DID analysis compared all of the counties with partnerships established to those without an established partnerships. Specifically, age, gender, race, as well as the date that the MH-LEP went live, county population, number of teams, and the 2 dummy variables (time and treat) were added into the model as the independent variables to predict the injury variable (the dependent variable). The model was not found to have a significant differences between the counties with partnerships and those without (T=1.21. 95%CI -1.78 – 2.40); this can also be seen in Graph 1, which depicts the number of incidents of violence each year and compares the counties with MHLEP's and those without. The resulting coefficient found that there was a 1.98% increase in incidents of violence. The only coefficient that was found to be significant was for the number of Teams (T=3.228, 95%CI=.003 - .013); although the coefficient was small, it does suggest that the number of teams in a county has an impact on the incidents of violence. All of the coefficients, T's and confidence interval is reported in Table 2.

Another 2 staggered DID analysis compared counties with partnerships and those without partnerships, but staggered the comparison based on the date that the partnership began in each county. Age, gender, race, county population, the team composition, and the 2 dummy variables were added into the model to predict injury. In the first analysis (Analysis 1), the control group

only consisted of counties that did not have MH-LEPs and in the second analysis (Analysis 2), the control consisted of counties that did not have MH-LEPs and counties before the MH-LEP began. Although there were several significant coefficients in both of these DID analysis in general the significant coefficients did not correspond to the implementation of a partnership, as will be explained further.

Tulare was the one county that had a significant result after implementation (T=12.89, 95% CI .988-2.91, which were the same in analysis 1 and 2). However, the result indicated that there was a 1.95% increase from 2020-2021 in incidents of violence. The reason that the results were the same, is because Tulare is the last County to implement a partnership; therefore the control groups and treatment groups are identical.

There were several other significant coefficients. Significant 2020-2021 coefficients were also found in the analysis of Santa Barara (Analysis 1: T=7.11 95%CI .113-2.04 / Analysis 2: 7.39, 95%CI .128-1.72) and El Dorado (Analysis 1: T=12.18, 95%CI .807-2.57 / Analysis 2:8.57, 95%CI .266-1.79) partnerships; and both estimators were about an increase of 1%. Another interesting finding, Monterey had a significant increase of 2% in 2018-2019 (Analysis 1:T=12.82, 95%CI 1.09-3.22/ Analysis 2: T=16.86, 95%CI 1.35-2.98); in Analysis 2, there were several significant results when Monterey County's partnership was implemented; that is there was a significant decrease of -1.24% from 2017 to 2018 (T=-10.23, 95%CI=(-2.02) – (-.472)), and in 2019-2020 a decrease of -1.65% (T=-12.25, 95%CI (-2.51) – (-.795). In Analysis 1, Alameda has a .95% increase in 2016 -2017 (T-6.59, 95%CI .035-1.87); and Solano has a 1.25% increase in 2018-2019 (T=7.41, 95%CI .177-2.32). All of the coefficients for Analysis 1 (all counties without MH-LEPs in the control) are in Table 2 and all of the coefficients for Analysis

2 (all of the counties without MH-LEPs and Counties that have not yet begun MH-LEPs in the control) are in Table 3.

Graph 1.

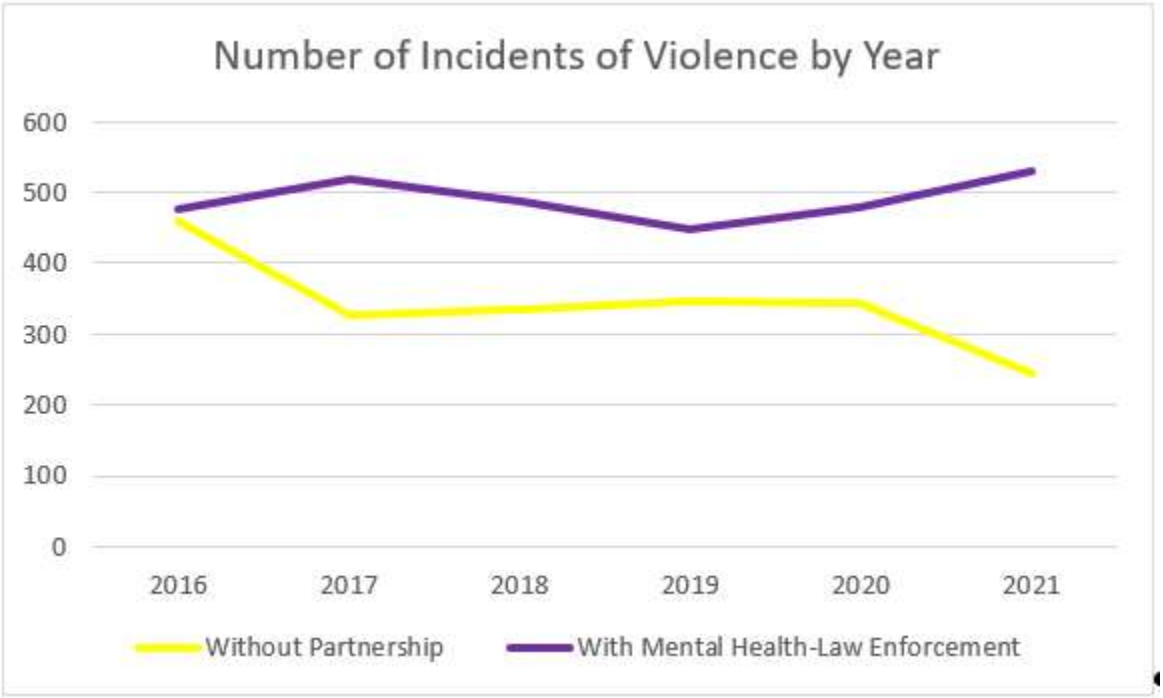

Table 2. Results from DID Analysis

	Coefficient	Standard Error	T	95% Confidence Interval
Constant	1.985	1.902	1.211	-1.777 2.4037
Population	1.398E-8	000	1.58	.000 000
Teams	.008	.002	3.228	.003 .013
Partnership Date	-5.650E-11	000	-.298	000 000
Gender	.010	.017	.569	-.023 .043
Race	-.015	.006	-2.372	-.027 .003
Age	.027	.013	2.065	.001 .052

Table 3. DID coefficients using all counties without MH-LEPs as the control group& counties with MH-LEPs as the treatment group

Santa Cruz / Partnership Date:1/2016				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.2106924	.1446583	1.46	-.7092586 1.130643
2017 - 2018	-.6796176	.1385097	-4.91	-1.560466 .2012311

2018 - 2019	-.5919178	.1681053	-3.52	-1.660979 .4771436
2019 - 2020	1.058373	.1856736	5.70	-.122413 2.23916
2020 - 2021	-.4398544	.1512891	-2.91	-1.401974 .5222651
Monterey / Partnership Date:3/2016				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.6702246	.1446583	4.63	-.2497263 1.590176
2017 - 2018	-1.033789	.1385097	-7.46	-1.914638 -.1529407
2018 - 2019	2.155353	.1681053	12.82	1.086292 3.224414*
2019 - 2020	-1.76894	.1856736	-9.53	-2.949726 -.5881537
2020 - 2021	.5156569	.1512891	3.41	-.4464626 1.477776
Santa Clara / Partnership Date: 1/2018				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-.0898934 .	1446583	-0.62	-1.009844 .8300576
2017 - 2018	.0178492	.1385097	0.13	-.8629995 .898698
2018 - 2019	.3312461	.1681053	1.97	-.7378153 1.400307
2019 - 2020	-.5240357	.1856736	-2.82	-1.704822 .6567506
2020 - 2021	.3302536	.1512891	2.18	-.6318659 1.292373
El Dorado / Partnership Date: 2/2018				
	Coefficient	Std Error	T	95% Confidence Interval
2016 – 2017	-1.175602	.1446583	-8.13	-2.095553 -.255651
2017 – 2018	1.687506	.1385097	12.18	.8066573 2.568355*
2018 – 2019	-.1864527	.1681053	-1.11	-1.255514 .8826087
2019 – 2020	-.1202815	.1856736	-0.65	-1.301068 1.060505
2020 – 2021	1.208804	.1512891	7.99	.2466846 2.170924
Fresno / Partnership Date: 3/2018				
	Coefficient	Std Error	T	95% Confidence Interval
2016 – 2017	-.5223008	.1446583	-3.61	-1.442252 .3976502
2017 – 2018	.5579315	.1385097	4.03	-.3229173 1.43878
2018 – 2019	-.342702	.1681053	-2.04	-1.411763 .7263594
2019 - 2020	.1087272	.1856736	0.59	-1.072059 1.289514
2020 - 2021	.2338059	.1512891	1.55	-.7283136 1.195925
Santa Barbara / Partnership Date: 9/2018				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-.7076164	.1446583	-4.89	-1.627567 .2123346
2017 - 2018	.5423737	.1385097	3.92	-.338475 1.423222
2018 - 2019	-.5453978	.1681053	-3.24	-1.614459 .5236636
2019 - 2020	-1.014099	.1856736	-5.46	-2.194886 .166687
2020 - 2021	1.075273	.1512891	7.11	.1131533 2.037392 *

Contra Costa & Shasta / Partnership Date: 1/2019				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-.6102517	.2520498 -	2.42	-2.213156 .9926525
2017 - 2018	.6066662	.2884689	2.10	-1.227845 2.441177
2018 - 2019	.2080163	.1762008	1.18	-.912528 1.328561
2019 - 2020	-.4172806	.2097921	-1.99	-1.751448 .9168868
2020 - 2021	.2038932	.2414237	0.84	-1.331435 1.739221
Alameda / Partnership Date: 1/2020				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.9526295	.1446583	6.59	.0326786 1.87258*
2017 - 2018	.06828	.1385097	0.49	-.8125687 .9491287
2018 - 2019	-.5439084	.1681053	-3.24	-1.61297 .525153
2019 - 2020	.1426837	.1856736	0.77	-1.038103 1.32347
2020 - 2021	.5768113	.1512891	3.81	-.3853082 1.538931
Merced / Partnership Date: 10/2020				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.6161575	.1446583	4.26	-.3037935 1.536108
2017 - 2018	.2366731	.1385097	1.71	-.6441756 1.117522
2018 - 2019	-.6609108	.1681053	-3.93	-1.729972 .4081506
2019 - 2020	-.5621142	.1856736	-3.03	-1.742901 .6186722
2020 - 2021	.6698075	.1512891	4.43	-.292312 1.631927
Imperial, Nevada & San Francisco / Partnership Date: 11/2020				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-1.197115	. 3705755	-3.23	-3.553781 1.159551
2017 - 2018	1.583173	.1982704	7.98	.3222774 2.844068*
2018 - 2019	-.0430231	.4457435	-0.10	-2.877718 2.791672
2019 - 2020	-.32278	.4636775	-0.70	-3.271526 2.625966
2020 - 2021	.3818597	.1615076	2.36	-.6452438 1.408963
Napa / Partnership Date: 03/2021				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.5208473	.1446583	3.60	-.3991037 1.440798
2017 - 2018	-.7486106	.1385097	-5.40	-1.629459 .1322381
2018 - 2019	.4579044	.1681053	2.72	-.6111569 1.526966
2019 - 2020	.1798231	.1856736	0.97	-1.000963 1.360609
2020 - 2021	.6210174	.1512891	4.10	-.3411021 1.583137
Solano / Partnership Date: 5/2021				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.3407454	.1446583	2.36	-.5792056 1.260696

2017 - 2018	-.3678379	.1385097	-2.66	-1.248687 .5130108
2018 - 2019	1.246362	.1681053	7.41	.1773003 2.315423*
2019 - 2020	-.7909558	.1856736	-4.26	-1.971742 .3898305
2020 – 2021	.0411989	.1512891	0.27	-.9209206 1.003318
Tulare / Partnership Date: 10/2021				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-.6960288	.1446583	-4.81	-1.61598 .2239222
2017 - 2018	.5888937	.1385097	4.25	-.291955 1.469742
2018 - 2019	-.3977619	.1681053	-2.37	-1.466823 .6712995
2019 - 2020	-.2454446	.1856736	-1.32	-1.426231 .9353418
2020 - 2021	1.950741	.1512891	12.89	.9886218 2.912861*

Table 4. DID Coefficient - the control group evolves

Santa Cruz / Partnership Date:1/2016				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.33027	.1294162	2.55	-.4927488 1.153289
2017 - 2018	-.8628401	.1206672	-7.15	-1.63022 -.0954598**
2018 - 2019	-.6358372	.1372354	-4.63	-1.508582 .236908
2019 - 2020	1.214411	.1344847	9.03	.3591587 2.069663*
2020 - 2021	-.6539211	.1115208	-5.86	-1.363135 .0552923
Monterey / Partnership Date:3/2016				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.8095474	.1303244	6.21	-.0192477 1.638342
2017 - 2018	-1.247437	.1219476	-10.23	-2.02296 -.4719142 *
2018 - 2019	2.164219	.128378	16.86	1.347803 2.980636 *
2019 - 2020	-1.653225	.1349429	-12.25	-2.511391 -.7950593*
2020 - 2021	.30913	.1107104	2.79	-.3949301 1.01319
Santa Clara / Partnership Date: 1/2018				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.0506968	.1338305	0.38	-.8003951 .9017886
2017 - 2018	-.200819	.1243183	-1.62	-.9914179 .58978
2018 - 2019	.3488334	.1301985	2.68	-.4791606 1.176827
2019 - 2020	-.4187905	.1365462	-3.07	-1.287153 .4495718
2020 - 2021	.1268991	.1135517	1.12	-.5952302 .8490284
El Dorado / Partnership Date: 2/2018				
	Coefficient	Std Error	T	95% Confidence Interval
2016 – 2017	-1.062249	.1414431	-7.51	-1.961753 -.1627449
2017 – 2018	1.507491	.1276608	11.81	.6956357 2.319347 **
2018 – 2019	-.1733092	.1333135	-1.30	-1.021113 .6744947
2019 – 2020	-.015432	.1398293	-0.11	-.904673 .873809
2020 – 2021	1.031909	.1203752	8.57	.2663858 1.797432**

Fresno / Partnership Date: 3/2018				
	Coefficient	Std Error	T	95% Confidence Interval
2016 – 2017	-.4200004	.1403623	-2.99	-1.312631 .4726301
2017 – 2018	.3881308	.130724	2.97	-.4432051 1.219467
2018 – 2019	-.3384655	.1378575	-2.46	-1.215167 .5382359
2019 - 2020	.219349	.1415317	1.55	-.6807185 1.119417
2020 - 2021	.0584487	.1235838	0.47	-.7274796 .8443771
Santa Barbara / Partnership Date: 9/2018				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-.6221303	.1478728	-4.21	-1.562524 .3182632
2017 - 2018	3829223	.137923	2.78	-.4941958 1.26004
2018 - 2019	-.5561936	.1414581	-3.93	-1.455793 .3434059
2019 - 2020	-.9285742	.137199	-6.77	-1.801088 0560608
2020 - 2021	.9249133	.1251546	7.39	.1289959 1.720831**
Contra Costa & Shasta / Partnership Date: 1/2019				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-.5556343	.2472887	-2.25	-2.128261 1.016992
2017 - 2018	.4735216	.2924979	1.62	-1.386612 2.333655
2018 - 2019	.2088218	.1557631	1.34	-.7817501 1.199394
2019 - 2020	-.3512704	.1604374	-2.19	-1.371568 .6690273
2020 - 2021	.0566827	.2262893	0.25	-1.382399 1.495764
Alameda / Partnership Date: 1/2020				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	1.03777	.1545801	6.71	.0547213 2.020818**
2017 - 2018	-.0668302	.1449633	-0.46	-.9887207 .8550603
2018 - 2019	-.5595607	.1519714	-3.68	-1.526019 .4068976
2019 - 2020	.215018	.1478436	1.45	-.7251894 1.155225
2020 - 2021	.442619	.1301964	3.40	-.3853618 1.2706
Merced / Partnership Date: 10/2020				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.7232131	.1558813	4.64	-.2681101 1.714536
2017 - 2018	.1047368	.1494807	0.70	-.8458822 1.055356
2018 - 2019	-.6977056	.1534435	-4.55	-1.673526 .2781144
2019 - 2020	-.5050855	.1558858	-3.24	-1.496438 .4862665
2020 - 2021	.5523533	.13278	4.16	-.2920577 1.396764
Imperial, Nevada & San Francisco / Partnership Date: 11/2020				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-1.202824	.3637875	-3.31	-3.516322 1.110674
2017 - 2018	1.601364	.1892458	8.46	.3978606 2.804868**
2018 - 2019	-.0880749	.4099339	-0.21	-2.695039 2.51889
2019 - 2020	-.2932429	.4516675	-0.65	-3.165611 2.579125
2020 - 2021	.5498767	.1521317	3.61	-.417601 1.517354

Napa / Partnership Date: 03/2021				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.533536	.1384448	3.85	-.3469005 1.413972
2017 - 2018	-.7565054	.125097	6.05	-1.552057 .039046
2018 - 2019	.5498767	.1521317	3.61	-.417601 1.517354
2019 - 2020	.2168374	.1720483	1.26	-.8772994 1.310974
2020 - 2021	.5498767	.1521317	3.61	-.417601 1.517354
Solano / Partnership Date: 5/2021				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	.3665242	.1417137	2.59	-.5347006 1.267749
2017 - 2018	-.3896488	.1340062	-2.91	-1.241858 .4625605
2018 - 2019	1.261094	.1609409	7.84	.2375942 2.284593*
2019 - 2020	-.7818653	.179247	-4.36	-1.921782 .3580515
2020 - 2021	-.0310507	.1592973	-0.19	-1.044098 .9819967
Tulare / Partnership Date: 10/2021				
	Coefficient	Std Error	T	95% Confidence Interval
2016 - 2017	-.6960288	.1446583	4.81	-1.61598 .2239222
2017 - 2018	.5888937	.1385097	4.25	-.291955 1.469742
2018 - 2019	-.3977619	.1681053	2.37	-1.466823 .6712995
2019 - 2020	-.2454446	.1856736	1.32	-1.426231 .9353418
2020 - 2021	1.950741	1512891	12.89	.9886218 2.912861 **

Table 5. Treatment and Control Counties in analysis, the number of observation (#OBS) within each county, and partnership date and team membership for Counties with established MH-LEP

Counties With Mental Health Law Enforcement Partnerships (treatment)			
County	Team -Members	Partnership Date	#Observation
ALAMEDA	Licensed Clinician & Law Enforcement[71]	1/2020 [38]	618
CONTRA COSTA	Licensed Eligible/Licensed Clinician & Law Enforcement[40]	1/2019[40]	340
EL DORADO	Clinician & Law Enforcement[41,72]	2/2018[41]	17
FRESNO	Clinician , Program Staff, & Law Enforcement[43,73]	3/2018[42]	286
IMPERIAL	Mental Health Rehabilitation Staff & Law Enforcement[44,45,74]	11/2020[44,45,74]	26
MERCED	Behav. Health Rehabilitation Staff & Law Enforcement[46,47]	10/2020[47]	53
MONTEREY	Licensed/Licensed Eligible Clinician & Law Enforcement[48]	3/2016[48]	86

NAPA	Licensed/Licensed Eligible/Registered Clinician and Mental Health Worker [50]	3/2021[50]	80
NEVADA	Licensed Eligible/ Licensed Clinician and Law Enforcement[52]	11/2020 [52]	16
SAN FRANCISCO	Clinician, Emergency Medical Technician & Peer Specialist[53,54]	11/2020 [53,53]	230
SANTA BARBARA	EMT, Case Worker & Law Enforcement[55]	9/2018[55]	186
SANTA CLARA	Clinician and Law Enforcement[57–59]	1/2018[57–59]	399
SANTA CRUZ	Licensed/Licensed Eligible/Registered Clinician and Law Enforcement[60]	1/2016[60]	49
SHASTA	Clinician, Case Manager, and Law Enforcement[61,62]	1/2019[61,62]	107
SOLANO	Clinician, Case Manager, Peer Support Specialist, and Law Enforcement[63,64]	5/2021[63,64]	222
TULARE	Clinical Social Worker and Law Enforcement [65,66]	10/2021[65,66]	203
		Total	2918

Counties Without Mental Health Law Enforcement Partnerships (control)	
Counties	Observations
DEL NORTE	18
GLENN	24
INYO	11
KINGS	39
LAKE	41
LASSEN	6
MADERA	58
MARIN	6
MARIPOSA	8
MENDOCINO	38
MONO	4
ORANGE	830
PLUMAS	23
SAN BENITO	8
SAN JOAQUIN	237
SAN LUIS OBISPO	58
SAN MATEO	152
SIERRA	3

SISKIYOU	34
SONOMA	102
STANISLAUS	109
SUTTER	37
TEHAMA	115
TRINITY	4
TUOLUMNE	6
YUBA	49
total	2020

Table 6. Civilian/Officer Gender Breakdown

	Civilian	**Officer**
Gender		
Female	124	203
Male	1455	3129
Transgendered	3	0
Blank	24	0
Age		
0-17	50	
18-25	355	241
26-40	741	2297
41-60	391	787
61-90	45	7
Blank	24	0
Race/Ethnicity		
American Indian	16	4
Asian/Pacific Islander	80	208
Black	248	130
Hispanic	654	761
Other	43	109
White	541	2120
Blank	24	0

Table 7. The number of Civilians and Officers who used a Firearm and were injured.

	Civilian		Officer	
Fire Arm Use				
	Without	With MH-LEP	Without	With MH-LEP
NO Firearm Used	362	533	724	1036
Firearm Used	299	412	635	937

Injuries				
	Without	MH-LEP	Without	MH-LEP
None	100	168	1117	1658
Injury	51	61	133	174
Severy Injury	344	520	107	139
Death	166	196	2	2

Table 8. The Number of Civilian injuries that alcohol, drug use, erratic behavior or mental disability was suspected, and that were arrested.

	Counties Without MH-LEP		**Counties With MH-LEP**	
Alcohol				
	None	Suspected	None	Suspected
None	86	14	155	13
Injury	42	9	49	12
Severy Injury	266	78	446	74
Death	150	16	169	27
Mental Disability				
	None	Suspected	None	Suspected
None	91	9	151	17
Injury	49	2	49	12
Severy Injury	290	54	460	60
Death	140	26	168	28
Erratic Behavior				
	None	Behavior	None	Behavior
None	86	14	151	17
Injury	41	10	51	10
Severy Injury	287	57	436	84
Death	99	67	133	63
Drug Use				
	None	Suspected	None	Suspected
None	83	17	152	16
Injury	36	15	45	16
Severy Injury	268	76	414	106
Death	124	42	151	45
Arrests				
Not Arrested	181		226	
Arrested	480		719	

Table 9. Number of Civilians with 5150 holds

Without MH-LEP	Number	With MH-LEP	Number

Orange	7	Alameda	3
San Mateo	3	Contra Costa	8
San Joaquin	1	Fresno	2
Sonoma	1	Monterey	1
Stanislaus	1	Nevada	1
Sutter	1	San Francisco	6
Tulare	1	Santa Clara	4
Tuolumne	1	Santa Barbara	2
		Solano	7
TOTAL	32	TOTAL	18

Qualitative Results

A total of 64 people were contacted and asked if they had lived experience with an MH-LEP and were willing to be interviewed for this study. 13 people responded. Three of the respondents did not have the relevant lived experience, and 10 did and agreed to be interviewed. After the interview, 1 person contacted me and asked that the interview transcript be deleted and not included in the analysis.

Of the 9 interviews, 5 had lived experience with MH-LEPs that was a result of their employment as mental health professionals, and 4 had lived experience with MH-LEPs as consumers. There were 3 main themes that arose in the interviews: the need for more training, the need for better protocols, and the long amount of time it took for the MH-LEP to arrive. These three themes will be discussed, but information that could be identified was removed to ensure confidentiality. Specifically, as people mentioned the local MH-LEP by name, these have all been changed from the name of the program to “MH-LEP.” As people mentioned cities, these were changed to “City in CA.” Furthermore, as particular law enforcement agencies were named, these have been changed to “Law Enforcement.”

All of the interviews shared the sentiment that it takes a long time for the MH-LEP to arrive. These are the quotes from the interviews (in no particular order): (1) “They take their time coming; if they wanna come out there.” (2) “They took their time to respond to an emergency.” (3)“So usually, they take a long time to come when you call – like hours.” (4)“When I was in interim housing, we could call the [MH-LEP] and they might tell us 3 hours, 4 hours before we can get out there.” (5)“They take so long to get there.” (6) “I’d have to sit there with my client and wait for hours.” (7) “I mean, once they get there, they can be effective, but you could be waiting for hours.” (8) “It’s a long wait for them.” (9) I’ve experienced waiting hours for [MH-LEP] to arrive.”

All of the interviews also shared their opinion that law enforcement responding to mental health crises needed to be better trained: “You can't walk into that kind of world without having training.” Some “felt quite dismissed, like literally there was a lack of response” when trying to talk to law enforcement about a person in a mental health crisis. “When they came, they seemed bothered that they were there. Or dismissive of the people that needed the help.” Another shared concern: “They're like, ‘We've already been out here like 3 or 4 times this week for the same issue.’ You know they make comments like that. The comments are inappropriate, you know, to make to the client.” In another interview, it was shared that law enforcement often presume drug use and tell the interviewee to make their client stop using drugs: “But we're a harm reduction… we're… we're not gonna make them stop.” Other areas included better training in stigma reduction: “You know what, one thing you very much learn is that a lot of times, even the person having a super psychiatric crisis is more of a harm to themselves than to me.”

In many of the interviews, empathy for law enforcement was expressed; interviewees expressed an understanding of how hard these situations were: “How do you NOT become sort

of habituated to it? Kind of a little callous and be like, 'Oh, here's another one.'" Others expressed understanding of how frequently law enforcement is called upon to manage a mental health crisis: "But how many times do you really respond before you're on autopilot?" In both of these interviews, the respondents go on to state how they wish debriefings or supervision occurred to help officers process what they are experiencing. Another shared "Maybe, you know, officers being human, too, that if we reduce some of the fear that is surrounding mental health– you know, the stigma–we could erase all these things." The need for more training was best expressed: "You know, a lot of times we talk about implicit bias and talk about the need for more training to help reduce implicit bias. So that we can express and get an understanding of what we see that creates the expectation."

The last theme was summed up best by: "I mean, just really having a basic protocol, like across the board, would be so great." Such as what to do when "they don't fit that criteria, and I, I mean, that happens a lot, too." This referring to even when a mental health professional does accompany law enforcement, if the person who is in a mental health crisis is not at risk to harm themselves, someone else or unable to care for themselves, often times all the mental health professionals can do is provide resources.

That is to say, interviewees expressed the sentiment that better protocols would help as people are looking to for assistance when dealing with a mental health crisis; as is often the case, people call for assistance from the mental health team that works with law enforcement, but only law enforcement arrives. In an interview, when it was shared that they had called for the mental health team that works with law enforcement for assistance with a person in a mental health crisis, but only law enforcement arrived: "They tried talking to them, or something. And then come back to me and I'll get like a flat out. No!" - referring to Law Enforcement's decision not to

assist. In another interview, the person shared, “I recently did it [called for assistance with a person in a mental health crisis] in [a City in CA] and [law enforcement] was like ‘No, we don't come out for that, you know.’” In another interview it was shared that, “When I was in [a City in CA], it was [law enforcement], I believe, because they do have… a like… a unit, that's like specifically, they're called crisis intervention training, and they're supposed to be specially trained. Yeah, No, they don't come out, when I called.” Another shared, “Trying to get [law enforcement] to come on, and they're like, ‘Well, that's like a mental health issue and we can't. We're not gonna deal with that.’” These encounters highlight how often the mental health teams that work with law enforcement are not able to assist and so the response is law enforcement only.

This need for better protocols was exemplified by the story shared in an interview of a recent client they had worked with: “I was working with a participant who was living in the program with somebody that had severe mental illness; he would threaten them. He was paranoid that they'd break into his room. He felt very unsafe. They called the [MH-LEP] multiple times, and when they came out, they assessed him, and said, ‘Just take him to his doctor's appointment.’ – What do you know! But the person wasn't well enough to make it to their doctor’s appointments. Also, it was the [MH-LEP] that were called and they, too, when they came, they said, ‘there was nothing they could do’ and would leave without ever resolving the problem or ever hospitalizing him. So what ended up happening? – He ended up stabbing the roommate that lived at the house and murdering him.”

Discussion

The number of injuries among civilians exhibiting mental disability (15%) in the Use of Force data set in California appears consistent with other studies. Agee et al. found that approximately 9% of violent encounters involved a civilian with a mental illness; this is slightly smaller than the 15% in this study; however, the population in the Agee et al. study involved adjudicated cases and not just incidents of force.[75] Additionally, Livingston found that in a review of 49 studies, about 12% of violent encounters with police involved people with mental illness.[76] However, it is difficult to demonstrate much confidence for the 15% finding as there is no criteria for the identification of mental disability within the Use of Force Data; the quality of the data is discussed next, in the Limitations section.

Although the quantitative analysis did not find an overall effect for the implementation of MH-LEPs in each county, there were individual coefficients that were significant. All of these coefficients were positive and show an increase in incidents of violence. It is unclear why there was found to be a significant increase of force used over the course of this analysis.

In the initial regression of the overall model, the number of teams was found to be a significant variable. Although the coefficient was very small (.008) it does suggest that there is a relationship to incidents of violence and the number of mental health and law enforcement teams; however, this relationship may be mediated by other variables such as county wealth. This is an important finding as most counties had 1-3 teams.

In reviewing the graphs of incidents of violence for each county, (see Appendix A), some counties do appear to have a drop in incidents of violences in the year after the MH-LEP was established. However, the number of incidents of violence in some of these counties is very small and may just be an anomaly; for example, El Dorado County only had 17 incidents of

violence over the 6-year time period. These small numbers are one of the factors that may have contributed to the results found; this is discussed further in the Limitations section.

With the recent passage of the AB2054/CRISIS Act, the California Office of Justice Programs has been providing funds to support mobile crisis response teams. This may help to alleviate the long wait times described by 5 of the interviews; a finding that is consistent with other research.[77] This suggests that the greater the capacity for law enforcement to manage mental health crisis calls, the more law enforcement is called upon to do this; however, the mechanism for this relationship is unknown (improved reporting vs reliance on law enforcement vs funding allocations).[76]

The need for more training of all parties involved was discussed by all who were interviewed and a major theme of the interviews of this study; training could help to reduce the study finding that mental disability was suspected in 15% of civilian deaths. This need for properly trained law enforcement and staff is great due to the estimated number of calls for police intervention for someone in a mental health crisis. According to open source Los Angeles Police Department data, they received 1.69 million calls for service in 2020,[78] and, conservatively it is estimated that nationally 1 in 100 calls to law enforcement is for help with a person with mental illness.[76] Furthermore, police interactions with people with mental illness occur more often due to calls for assistance and not because the person with mental illness has committed a crime.[79]

The typical approaches Law Enforcement use can escalate a person with severe mental illness, which in turn necessitates more assertive responses from law enforcement.[75,80] This is illustrated by a finding in an Australian study. When officers were provided hypothetical situations of a person with obvious signs of mental illness, not necessarily violent or engaging in

crime, over half of the officers who participated reported their most likely course of action would be to detain the person.[81]

Tailoring training to the specific community in which law enforcement serves as well as training all personnel involved in managing the mental health crisis are two main suggestions of the Police Executive Research Forum (a policy organization) and the Bureau of Justice Assistance (part of Department of Justice).[80] This suggests that all personnel, including the responding officers, as well as phone operators, dispatchers, etc., should be trained to meet the specific needs of the community. These needs could include issues of race/ethnicity, trends in the community (i.e. the current rise of fentanyl) and identifying relevant partnerships to engage or refer people to.

Another area for further development is the creation of a standard criteria for the creation of alternative responder or co-responder teams. In surveying the various teams throughout California, these teams consisted of several different types of members. In Santa Clara, for example, a licensed mental health clinician or licensed eligible mental health clinician, family specialist and peer support specialist accompany a CIT trained law enforcement officer to suspected mental health crisis calls,[59] whereas in San Francisco, an Emergency Medical Technician, a Peer Support Specialist and a Mental Health Clinician intervene in suspected mental health crisis calls.[53]

Additionally, there are no standard protocols or policies for what teams of law and enforcement and mental health staff should do. These policies may mandate certain types of training, require debriefings to reduce vicarious trauma, and standardized documentation helping researchers to further study of these programs are in fact successful. The Biden Administration has issued an executive order directing the Attorney General and the Secretary of Health and

Human Services to "issue guidance on co-responder and alternative responder models, community-based crisis centers, and post-crisis care."[82] Hopefully, this guidance will include specific practices that can be implemented in California.

There is a need to create an alternative approach to what is currently being done. Typically, when a person is experiencing a mental health crisis, they are evaluated to determine whether they are a danger to themselves / others or if they are gravely disabled (not able to attend to basic functions), which is set forth by California law.[83] If a person does not fall within one of those two parameters, mental health professionals can only offer assistance if the person is willing to comply. If the person is not willing, such as in the tragic case of Marco Vasquez Jr, who was killed by law enforcement several hours after he was evaluated by mental health professionals and found to be neither a danger to himself or others nor gravely disabled, [84] there is little assistance mental health professionals can offer. In situations like Mr. Vasquez, law enforcement may take more aggressive actions, which was upheld as constitutional and not a violation of the ADA by the Supreme Court.[85]

To avoid such results, alternative approaches could capitalize on the engagement of community partnerships, such as peer professionals or advocacy organizations such as NAMI (National Alliance for Mental Illness) which are staffed by peer professionals. The value of peer professionals has been shown to increase the initial engagement in program participation of people with untreated mental illness.[86] The use of peer professionals is not new, many of the law enforcement and mental health teams have peer support staff on their outreach teams (see Table 1). What might be different is how peer professionals are employed to address people with mental illness preventatively. NAMI is a National, non-profit organization that promotes wellbeing in people with mental illness, and provides a warmline for people with mental illness

staff by peer professionals; the warmline allows people who are struggling to call in and speak with a peer to help them identify resources before the caller is undergoing a mental health crisis.[87] Additionally, peer professionals have been employed to work with individuals as they are being discharged from psychiatric care; this has been shown to reduce incidents of Emergency Room returns (compared to those without a peer professional) and provide emotional support (such as encouragement, reassurance and role modeling). [88] Additionally, the use of peer professionals have been shown to increase psychotherapy compliance, but did not show improvement in other domains of functioning (independence, homelessness).[89]

Peer professionals have also been used in the staffing of respite centers. Respite centers are facilities (often homes) that provide care for a person in a mental health crisis who does not meet the parameters for hospitalization; in a National Survey from 2020, only 32 centers were identified in the US.[90] Oklahoma City has such a crisis center, called Pavilion 23, where people in mental health crisis can stay for up to 23 hours, where they are monitored, evaluated, and provided with treatment as needed.[91] One of the biggest critiques of peer run respite centers is the lack of evidence that shows these centers are effective in reducing in-patient psychiatric hospitalizations.[90]

More formal alternative approaches to involuntary hospitalization have been created. Some California counties, such as Humboldt, have begun to implement Crisis Stabilization Units which provide stabilization for a person in crisis through 24 hour supervision, and set up aftercare appointments at outpatient programs.[92] Crisis Stabilization Units provide an alternative to emergency room visits and could lower incarceration of people with mental illness.[93] It is hypothesized that the reduction in incarceration is due to law enforcement bringing people in a mental health crisis to a Crisis Stabilization Unit, rather than arresting them.[93] Another possible

reason for the reduction in incarceration might be due to the fact that when people leave the Crisis Stabilization Unit, they have an appointment to receive outpatient care. A study of the adjudicated cases in Virginia found that 10% of the cases involved people who were 14 days from psychiatric treatment (before or after).[75]

Perhaps alternative approaches are needed within the judicial system. People with mental illness are cited by law enforcement three times more when compared to non-mentally ill groups;[94] this effect is called the criminalization of mental illness and is compounded by the correlation with other factors such as housing insecurity and race.[76] There has been a shift away from criminalization of people who are committing crimes due to mental illness, through the implementation of diversion programs, this has been seen extensively with minors. In Cambridge, MA, a diversion program was created to help train officers so that they were able to direct minors with mental illness into treatment or supportive programs and away from the juvenile justice system; and this program has been shown to have successful outcomes.[95] In Miami-Dade County, Florida, a diversion program has been implemented to allow first time minors to receive a deferred entry of judgment in order to complete treatment and if they successfully complete treatment the charges are dropped; this too has been shown to be a successful program. [96]

California has successfully implemented a deferred entry of judgment program for juveniles (Prop 21) [97] and for adults with substance use disorder (Prop 36)[98]. The soon to be implemented Community Assistance, Recovery and Empowerment (CARE) Act (California Senate Bill 1338), may be another alternative to police intervention. The CARE Act will allow people with mental illness to be referred (by clinicians, family members among others) to the CARE Court, a civil-court system that will supervise individuals to ensure that they undergo

mandated treatment for up to 2 years or move toward conservatorship.[99] The CARE Act is very controversial; critics point out that compulsory treatment is ineffective and highlight the need for individual autonomy, while proponents maintain that some individuals with severe mental illness cannot make rational decisions for themselves.[100] The Care Act is estimated to impact 12,000 homeless residents of California.[99]

As the new Care Courts are developed, it will be interesting to see how they are different from Mental Health Courts. Mental Health Courts are criminal courts where people with mental illness are adjudicated and allowed to complete mental health treatment in lieu of jail time; Mental Health Courts take a team approach where lawyers (both defense and prosecutors), social workers, the judge, and all other supports work together to help ensure the person with mental illness complies with treatment.[101] Mental Health Court has shown some success in the UK.[102] The longer a person participated in Mental Health Court, the fewer days they spent in jail,[103] and those who completed Mental Health Court(compared to those who did not) spent longer before recidivism (17 months vs 12 months).[104] Mental Health Courts have come under criticism for the amount of time individuals remain under court supervision (often 4-5 years) and for how ineffective they are at moving people out of homelessness.[101]

Perhaps the necessary alternative approach to helping people in mental health crises would involve circumventing law enforcement and the court system altogether, by establishing an alternative to 911 and an alternative place to turn. The New 988 Suicide and Crisis Lifeline implemented on July 16, 2022 connects the people who call the lifeline to a certified counselor, who will attempt to help the person navigate their crisis or dispatch a team of peer professionals (who have their own lived experience with mental illness), who can navigate the person to a crisis center for treatment.[105] However, dispatch teams may engage emergency services if the

person in crisis is behaving violently.[106] Additionally, mental health urgent care centers have been created so that people can take loved ones to these urgent cares for treatment. For example, in Iowa, many of the Magellan Wellness Centers have been converted to mental health urgent care centers, which are open 24/7 and provide counseling, medications, and crisis intervention, and management.[107]

Outside of California, partnerships between mental health and law enforcement have proliferated. The oldest such collaboration is the CAHOOTS (Crisis Assistance Helping out on the Streets) program that has operated since 1989 in Eugene, Oregon.[108] The CAHOOTS team consists of a mental health crisis worker and an emergency medical technician, who are trained to listen and encourage the civilian to de-escalate crisis rather that force. [108] This model has been adopted in other cities, such as Denver, which created STAR (Support Team Assisted Response) consisting of a social worker and a paramedic; evaluations of STAR found that in its pilot year (2020), not one call that was handled by STAR resulted in an injury or call to law enforcement for support. [109] In Pima County, Arizona MHIST (Mental Health Investigative Support Team) was created to take a proactive approach to mental health crises; statistics from the program show that in 2015 MHIST did not have any incidents that force was used, the need to manage incidents of "suicidal barricade subjects" decreased by almost 80%, and MHIST has been able to resolve all threats of violence without incident.[110]

Internationally, partnerships between mental health and law enforcement have shown benefits. In an evaluation of partnerships in New Zealand and Australia, outcomes from days when the CRT (Co-Response Team) were in operation, were compared to days when the CRT was not there to respond to crises (207 days with CRT vs 158 days without).[111] It was found that when the CRT were in operation, there was a reduction in the number of people who were

psychiatrically hospitalized and admitted to the emergency room at the local hospital; however, they too did not find a significant lower frequency of arrests, use of force or restraint.[111] In a secondary review of Canadian MH-LEPs, it was found that there was a consistent decrease in involuntary hospital transports and shorter stays in the emergency room, as well as more community referrals for people in crisis; the authors noted that the studies reviewed did not suggest that MH-LEPs reduced use of force. [112]

Limitations

There are three main limitations to this study. The first is the quality of the data from the Use of Force Dataset. The second is the violations of the assumptions of the difference-in-difference analysis. The third is the lack of responses to requests to be interviewed.

There are limitations to the interpretation of findings from the Use of Force data due to questions of data fidelity and quality assurance. The Use of Force data is generated by local law enforcement, and many of the variables are subject to officer perception. Of the many dimensions of data quality, [113] data accuracy, data consistency, data conformance and data completeness will be discussed as concerns for the Use of Force data.

- There are concerns with the accuracy of the data that is collected in the Use of Force data set. Data accuracy, which is defined as "a lack of error between recorded and real-world values" [113] is a concern in the variable of race. Data inaccuracies could be introduced as it has been found that law enforcement officers have been found to misclassify race in civilians.[114]
- There may also be concerns with data consistency, or the idea that all law enforcement officers are coding all of the variables the same. There may be data inconsistency in how the variables of mental disability, alcohol use, and drug use, are coded, as substance use disorder

co-occurs with mental illness, with rates of co-occurrence estimated at 10%-30% of cases. [115] It is unclear if officers are able to determine if a civilian has a co-occurring and if they are coding the civilian in that way; or if there are broad inconsistencies in this.

- Data conformance is when "data values comply with prescribed requirements."[113] In the Use of Force data, there was no definition for what behaviors a civilian would display that constitutes erratic behavior. Newer officers may perceive different behaviors as erratic than a more experienced officer; this would introduce disagreement in the erratic behavior variable. A clearer definition of erratic behavior would be important to understand why erratic behavior comprises a high percentage of civilian death (36% overall, 40% in counties without partnerships).
- There is missing data, or incomplete data, in the Use of Force dataset; there were 24 civilians that did not have demographic variables. There were also several blanks for different variables; it was assumed that this indicated none, but it could have indicated missing data.

The second major limitation of this study is the violation of the parallel trends assumption in the DID analysis, and treatment effect heterogeneity. As discussed earlier, the parallel trends assumptions holds that the effects of unmeasured covariates occur systematically between both groups and therefore do not change over the course of the time period of interest.[37] As can be seen in Graph 1, the line that represents incidents of violence in counties with partnerships does not appear to be parallel to the line representing counties without partnerships. Additionally, the data showed great variability; for example, some counties had 0 incidents of violence for an entire year. As the overall DID treatment effect comes from an average of all individual treatment effects, it has been shown that in Staggard DID estimates there is an increased

likelihood of Type I error (False-Positive) with treatment effect heterogeneity (variability in the direction and magnitude of treatment effects).[116]

Lastly, there was a low response rate in request for interviews. This can be partially attributed to my removing large counties from the dataset, and therefore only focusing on smaller counties which have few teams and few consumers to interview. Another factor that is harder to quantify is the media's attention upon those involved in police shootings of people with mental illness. Although this scrutiny is helping to illuminate a problem, it has caused a reluctance of those involved to speak about these incidents. One of the law enforcement officers who responded to my request, stated that it was not the policy of his department to grant interviews.

Future Research/Conclusion

The impact of the partnerships between law enforcement and mental health services is still unclear. One of the main assumptions of the DID analysis was a common policy implementation, which was argued was consistent since California Medicaid funds were used to fund the mental health services for the partnerships (and the use of Medicaid funds requires consistent standards for mental health services). However, the qualifications of the mental health team members varied greatly; as is shown in Table 5, some teams had a licensed mental health clinician whereas other teams had an emergency medical technician. Future research may find more significant results using deidentified Medicaid billing records to ascertain the level of crisis and how the call was managed, as well as 911 call records to compare the number of calls directed to MH-LEPs and those managed by law enforcement alone.

Future research on mental health and law enforcement partnerships could also look at how participating in these teams can change the perspectives of the law enforcement officers who do so. Civilians with mental illness are often perceived as resistant against law

enforcement,[117] and police perspectives (especially of disrespect and non-compliance) directly predict whether a person with mental illness will be cited or arrested.[94] It would be interesting to examine whether these partnerships have an impact on the officers' perspectives on resistance as they gain a more nuanced understanding of mental illness. Additionally, it has been demonstrated that building a professional relationship between law enforcement and the mental health professional is important to their success as a team.[102] It would be interesting to study how these partnerships impact the officers' abilities to implement CIT training skills such as active listening and other de-escalation techniques (which are taught as components of CIT).[118]

Additionally, future analysis could take into account county wealth, as presumably the wealthier a county, the more money is spent on these types of services. A way to explore this would involve looking at the county's behavioral health departments expenditures on the actual cost to implement these services, as they are paying for the mental health professionals on the teams. This could be done by looking at Mental Health Services Act (MHSA) funds, or Prevention and Early Intervention funds, as these were the 2 most common ways to pay for this type of crisis intervention services.

There is little research that compares the use of alternative responder teams to co-responder teams. This type of research would be important to understand what types of skills are most useful for team members. For example, should the team members be licensed mental health professionals with Masters degrees, or would peer professionals be just as effective in a crisis situation? Most importantly, it would be important to determine whether teams that intervene in a mental health crisis are more or less successful with law enforcement accompaniment. Understanding which team members are necessary is vital if there is to be a creation of national or state standards for crisis intervention teams.

Lastly, the use of difference in difference (DID) analysis has become very popular, especially staggered DID,[114] which was used in the study. To recap: DID analysis is used to generate an average treatment effect when comparing a group that received a one-time treatment to a groups that did not.[34] However, it is often the case that the treatment happens over several time periods to several groups; to estimate the average treatment effect in this case, a weighted average of all of the two-way fixed effects is generated.[37] The use of the two-way fixed effect has become quite controversial as bias is introduced when the individual treatment effects are heterogenous, and when the treatment effect is at the beginning or end of the time period.[116] As Use of Force data continues to be gathered, and with the continued implementation of partnerships, future research could use DID analysis over a time period in which the implementation of the MH-LEP is within the center of the time period, to generate less biased results.

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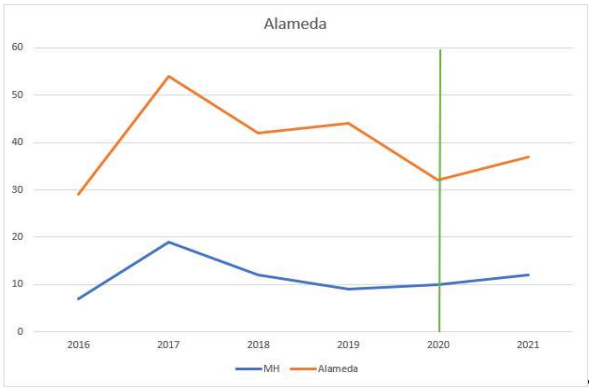
Appendix A.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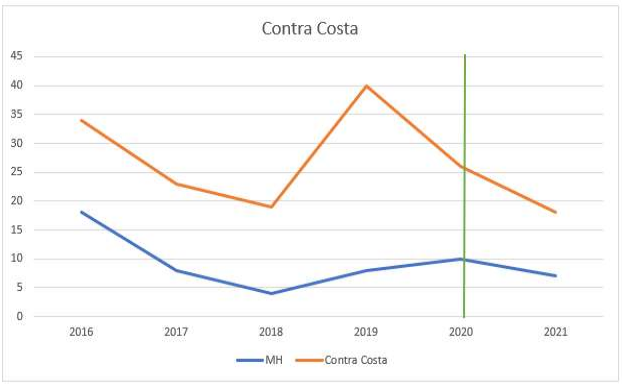
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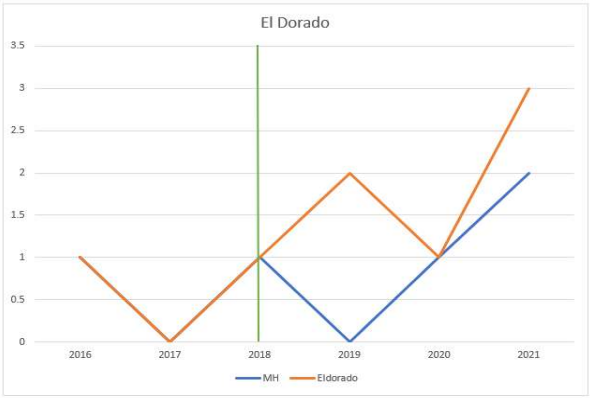
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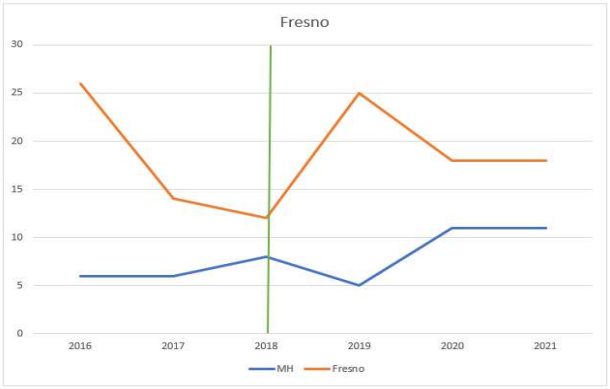
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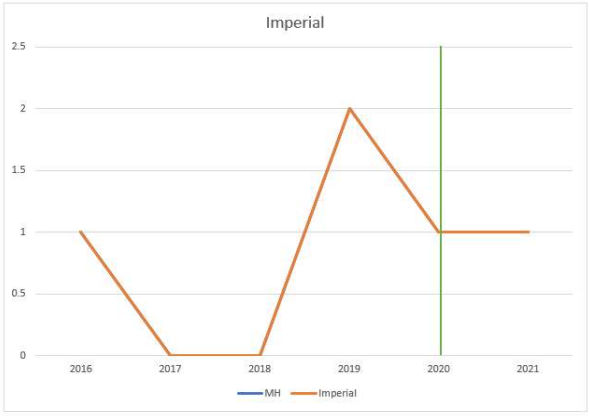
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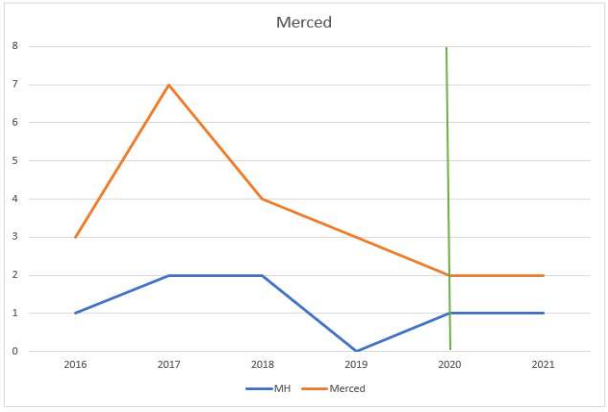
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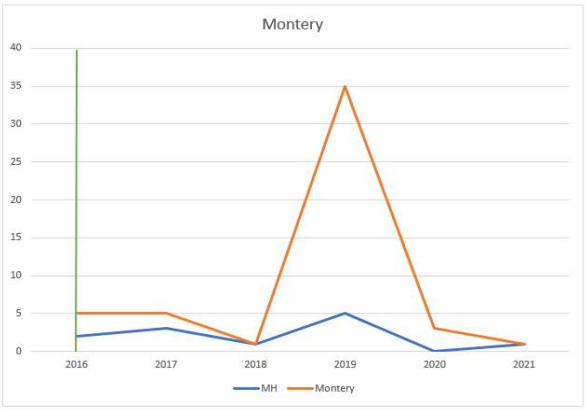
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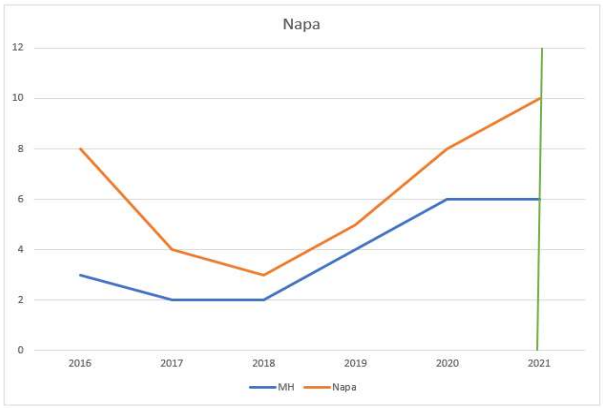
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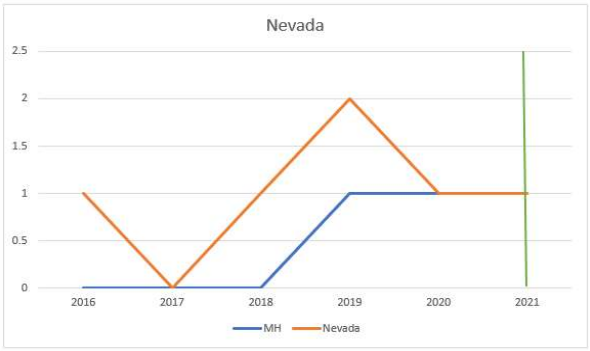
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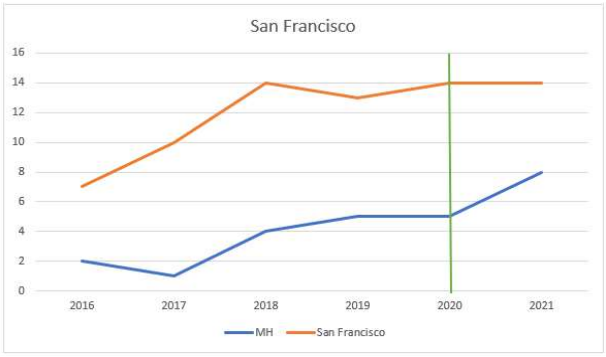
San Francisco
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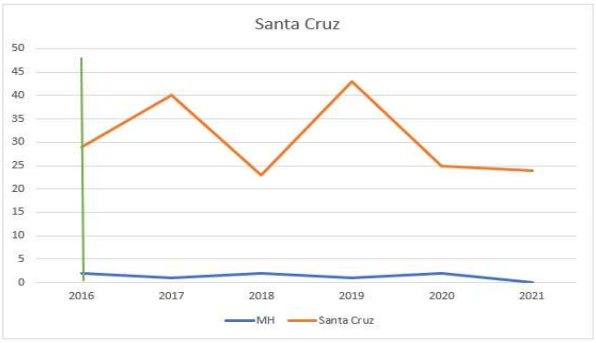
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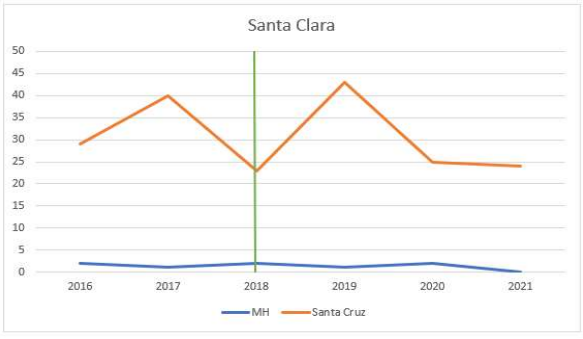
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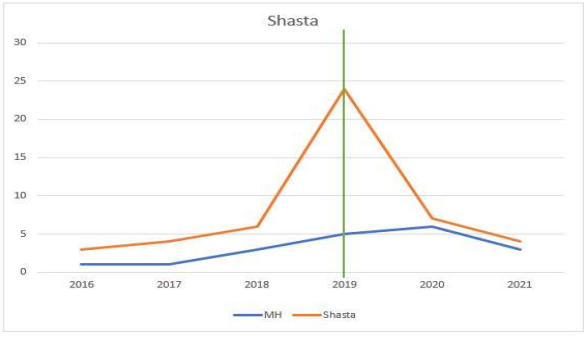
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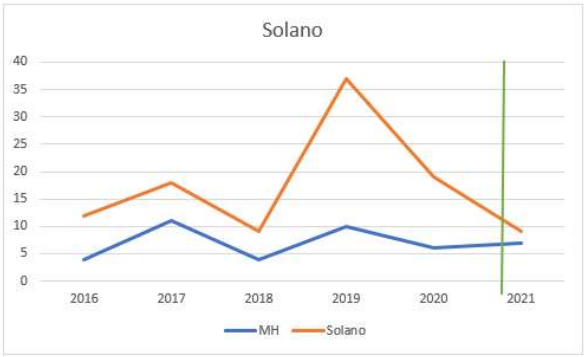
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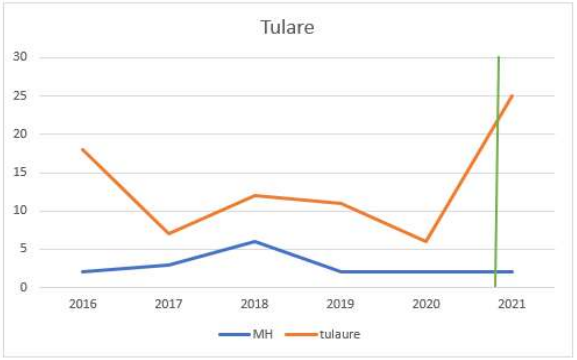
Tulare
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