

Outcome Evaluation of Bernalillo County's Mobile Crisis Teams (MCT) Program

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Introduction

Estimates from the National Survey on Drug Use and Health suggested that in 2019, approximately 206,000 New Mexicans experienced serious psychological distress, sixty-nine thousand New Mexicans seriously considered killing themselves, and 22,000 New Mexicans stayed in a hospital overnight for mental health treatment over the prior year (Substance Abuse and Mental Health Services Administration [SAMHSA], 2021). In Bernalillo County, New Mexico, estimates from 2019 suggested that 14% of county residents experienced frequent mental distress (Health Equity Council, 2019).

Individuals in crisis navigate a fragmented behavioral health ecology, interacting with several different groups while in crisis – from police to emergency department (ED) staff to crisis hotline operators – often without receiving appropriate behavioral health services along the way (i.e., mental health assessment; counselling; crisis de-escalation) (Normore et al., 2015; Strike et al., 2006; Wood & Watson, 2017; Macdonald et al., 2019). Police routinely encounter individuals in severe psychological distress during their policing work (Lexipol, 2019; Velasquez & Hernandez, 2019). The International Association of Chiefs of Police (IACP) identified elevated behavioral health call volume as a chief public health and safety concern (IACP, 2018). A 2015 survey of officers at the Albuquerque Police Department (APD) found that officers believed that 33% of total calls-for-service (CFS) involved mental illness as a primary factor (Tinney & Rosenbaum, 2015), and a 2019 news report by local news station KRQE suggested that APD officers encounter individuals suffering from mental illness up to 20 times a day (Wilham, 2019) (though see Lum, Koper, and Wu, 2021).

High-profile instances of police using force to respond to crisis calls have animated calls for alternative police responses to crisis events given elevated risk of force use and injury among persons with serious mental illness (SMI) and officers (Desmarais et al., 2014; Morabito & Socia, 2015; Rossler & Terrill, 2017). Consequently, specialized co-responder police responses including Mobile Crisis Teams (MCTs) have been proposed. MCTs can vary in structure, but most are composed of a crisis intervention trained (CIT) officer paired with a mental health clinician, though some MCT models also include an additional paraprofessional (i.e., peer support worker) (Geller et al., 1995; Puntis et al., 2018). MCTs are dispatched to 911 or crisis hotline calls involving mental health issues and are tasked primarily with crisis de-escalation and subsequently linking individuals to appropriate behavioral health services.

In February 2018, Bernalillo County started an MCT program with a partnership between APD, the Bernalillo County Sheriff's Office (BCSO), and HopeWorks as a community treatment provider. This partnership has expanded over time to include partners such as the Bernalillo County Fire Department (BCFD). Between February 2018 and October 2023, MCTs were dispatched to over 12,250 calls in Bernalillo County, and clinicians assessed individuals on approximately 44% of those calls. While we evaluated components of implementation fidelity (i.e., how well the program being implemented in practice reflected best practices and theory underlying crisis intervention responses) in a 2021 process evaluation (Murphy et al., 2021), the effectiveness of MCTs in Bernalillo County has not been assessed.

In this evaluation, we extend the work from our process evaluation by exploring (1) the individuallevel factors that predict MCT call dispositions (i.e., immediate detention, arrest, transport, issue resolved) and time on scene and (2) the relationship between receipt of MCT services¹ and criminal justice system involvement. One of our original study aims was to explore whether receipt of MCT services influenced

¹ We define receipt of MCT services as the act of an individual in crisis being evaluated by a clinician on scene. This definition of the MCT intervention is limited as it does not fold in follow-up by clinicians or connection to appropriate community-level resources related to a participant's needs.

whether or not an individual in crisis subsequently was less likely to make use of the emergency room for behavioral health or substance use related visits; however, for reasons we detail more in the *Study Limitations* section of the present report, we were unable to access this data, despite requesting access to multiple sources of emergency department data for over a year before the outcome evaluation was completed. We used a combination of quantitative data from MCT clinician reports, police agency administrative CFS data, court data from the New Mexico Administrative Office of the Courts (AOC) database as a proxy for arrests, and multivariate regression approaches to understand how MCT intervention impacts short term call dispositions and criminal justice system use.

In what follows, we review the academic literature on MCTs. We then review data sources. We proceed to present the results of our quantitative analysis of the data before concluding by noting study limitations and restating study conclusions.

Literature Review

MCTs are specialized behavioral health units that provide acute psychiatric emergency care to individuals experiencing a behavioral health crisis. Teams typically consist of a sworn law enforcement officer (LEO), usually an LEO with Crisis Intervention Team (CIT) training, and a licensed clinician or mental health professional with a master's degree. These teams are dispatched to crisis sites in response to 911 or crisis hotline calls, with the aim of providing crisis assessment, intervention and stabilization, and appropriate referrals to least-restrictive environments (Geller et al., 1995; Puntis et al., 2018).

Table 1 identifies essential functions of MCTs to illustrate the idealized workflow of MCT interventions in practice. Advocates of MCTs reason that, compared to police-only models of crisis intervention, MCTs are better equipped to triage, screen, assess, and divert those experiencing acute mental distress to appropriate service levels because members of MCTs have a more nuanced understanding of crisis and de-escalation techniques, a greater awareness of community-based behavioral health services, and because MCT services are delivered in more disarming environments given the training of the clinicians (*Crisis Response For Mental Health*. NAMI, 2020). Consequently, MCTs are theorized to reduce arrest rates, police use of force, officers' time on scene, ED and health system use and cost, overcrowding at EDs, and, through mechanisms of clinician follow-up and post-crisis case management, criminal justice system involvement.

Table 1.

Function	Description
Triage & Screening	MCTS evaluate the risk level of an individual in
	crisis and determines appropriate response.
Assessment	MCTs administer psychometrically-valid
	assessments to better understand the risks and
	needs of a given individual in crisis (e.g.,
	suicidality; strengths and resources).
De-Escalation & Resolution	MCTs attempt to deescalate crisis situations to
	prevent higher level of care.
Peer Support	Some MCTs use peer workers with similar
	experiences to promote continuity of care.
Coordination with Medical & Behavioral Health	MCTs connect individuals to needed services to
Services	resolve and prevent future crisis incidents.

Essential Functions of Mobile Crisis Teams (SAMSHA, 2020)

Crisis Planning & Follow-Up	MCTs create safety plans and conduct follow up			
	with participants to ensure receipt of services.			

To date, the academic literature on MCTs has explored whether MCTs, when compared to general care models of crisis response and other CIT programs, are better able to improve clinical and behavioral health outcomes among those experiencing behavioral health crises (e.g., reduced suicidality), reduce arrest rates, reduce the amount of time officers spend at the scene of the crisis events, and reduce hospitalization burden including the overuse of emergency department facilities. While a substantial proportion of early research on MCTs made use of non-experimental descriptive methodologies, more recent, high-quality meta-analytic, experimental, and quasi-experimental research tentatively suggests that MCTs are a cost-effective intervention for reducing future emergency room usage and suicidality (Baess 2005; Kisely et al., 2010; Murphy et al., 2012; Fendrich et al., 2019).

It is important to note that the positive effects of MCTs can be influenced by organizational factors and community-level resources, and the magnitude of the positive effects of MCTs on behavioral health system and criminal justice system use varies depending on the specific outcome being examined (Shapiro et al., 2015; Heyman & McGeough, 2018). However, a 2022 systematic review suggests that corresponder models may be more effective than police-only responses, specifically finding that corresponder models were associated with lower arrest rates, higher rates of case management follow-up, and reduced emergency department wait-times, among other benefits (Marcus & Stergiopoulos, 2022). For a more detailed discussion of the background literature on MCTs as well as the implementation fidelity of the Bernalillo County MCT units through May 2021, we refer readers to <u>CARA's previous process</u> evaluation (Murphy et al., 2021).

Data Sources and Evaluation Approach

This report uses a quantitative approach to evaluate the effectiveness of the MCT program in Bernalillo County. We evaluate (1) the descriptive characteristics of MCT CFS (e.g., response times of MCTs; call clearance times; call dispositions; characteristics of MCT participants; the percent of MCT participants with completed safety plans), (2) efficiency metrics (e.g., the percent of MCT eligible call codes which are rerouted to MCTs, where this data is available), (3) linkage to community services [e.g.,; typical follow-up time; connection to community behavioral health providers like the Community Engagement Team (CET) intervention], (4) pressure on the criminal justice system (i.e., comparisons of the arrest count of MCT participants with and without clinician contact in the two years before and after MCT touchpoint), and (5) the geographic distribution of MCT CFS data to understand the spatial reach of MCTs within Bernalillo County. We explored these questions by merging agency CFS data with clinician records. For our primary analyses, we analyzed data using logistic and multinomial logistic regression and quasi-experimental approaches to evaluate which factors predict different call dispositions and analyze how intervention receipt correlates with criminal health system-use outcomes.

Review of Data Sources

We analyzed administrative data from thousands of computer-aided dispatch (CAD) CFS records from APD, BCSO, and BCFD which includes information on the time, location, and circumstances of the crisis event. After data cleaning and processing, we obtained CFS data on over 12,250 unique CFS from APD and BCSO, and data from BCFD from July 2021 through October 2023. Where available (i.e., March 2021 through July 2023), we matched CFS data with records logged by MCT clinicians using an exact matching procedure to pair records based on call date and dispatch time (n = 5,687). By linking CFS data with MCT clinician data, we were able to better understand whether and how contextual features of MCT calls (i.e., the number of responding field units; time of day) and service user characteristics (i.e., call code) predicted the amount of time MCTs spend on scene and call dispositions.

Analysis of CAD CFS Data

Figure 1 displays MCT CFS volume by month and year between February 2018 and October 2023 excluding BCFD due to noted limitations with the BCFD data. Between February 2018 and October 2023, MCTs were dispatched to 12,250 unique CFS. On average, MCT units were dispatched to 177 CFS per month. From Figure 1, we observe that there was a significant decline in CFS in the period spanning April 2020 through April 2021. This likely reflects the influence of the early stages of the Covid-19 pandemic and state-wide lockdown policy.

Figure 1.





In Table 2, we present the total number of dispatched CFS, the total number of enroute calls for service, the total number of MCT calls which arrived on scene, and the average time on scene for each agency from February 2018 through October 2023.

Table 2.

Calls	for	Service	for	February	2018 -	October 2023
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	APD	BCSO	BCFD ²	Total
Dispatched	10,135	2,115	125	12,250
Enroute	9.777	1,897		11,674

 $^{^{2}}$ BCFD data was originally reported by BCFD in non-processable file-formats (e.g., .pdfs) and omitted relevant information to calculate most of these metrics (i.e., percent of calls en route; time arrived on scene). For this reason, we exclude reporting on all factors except the number of dispatched calls from BCFD for the months where data was reported in a processable (e.g., .xlsx) file format (i.e., November 2022 – September 2023).

On Scene	8,945	1,211	 10,156
% Dispatched Enroute	96%	90%	 95%
% Dispatched on Scene	88%	57%	 83%
Average Time to Arrive on Scene	11	31	 14
(Minutes)			
Median Time to Arrive on Scene	11	16	
(Minutes)			
Average Time on Scene (Minutes)	61	79	 63
Median Time on Scene (Minutes)	42	55	

Table 2 shows that 83% of dispatched MCTs arrived on scene. There were statistically significant differences in call arrival times for MCT units by agency, with APD-affiliated MCTs arriving on scene approximately 11 minutes after being enroute and BCSO-affiliated MCTs arriving on scene approximately 31 minutes after being enroute [Paired-sample t-test: t-statistic = -5.8, (p-value < .01)]. MCTs for both agencies spent a little over one hour on scene. Figure 3 plots the distribution of call-code types within each month of the program's life, and Table 3 spotlights the unique call codes for MCT-dispatched calls. A plurality of CFS for which MCTs were dispatched involved suicide-related CFS (20%; n = 2,441).

Table 3.

*Call Code Types for All CFS (March 2018 – October 2023)*³

Call Code Type	Count	Percent
10-43-1 (Suicide Related)	2,441	20%
10-40 (Behavioral Health)	2,301	19%
10-39 (Disturbance)	1,465	12%
10-25 (Contact Requested)	1,463	12%
10-31 (Suspicious Person)	1,025	8%
10-0 (Welfare Check)	1,011	8%

After excluding addresses inclusive of police agency headquarters and substations and behavioral health service providers, the most common location MCT units were dispatched to was Coronado Center (6600 Menaul Blvd NE) with 57 total MCT dispatches across five years. The most common MCT residential dispatch site was a location that MCTs were dispatched to 27 times. There was a one-month period where MCTs were dispatched to the same residence 16 times between September 20, 2021, and October 20, 2021. We comment more on the geospatial distribution of MCT CFS and the unique properties of repeated MCT-dispatches in the *Geospatial Analysis* section of the present report.

Table 4 reports the distribution of MCT dispatched CFS by day of week, and Figure 3 reports on the specific time-slots during which MCTs were mostly commonly dispatched. MCT units were more likely to be deployed during weekdays than weekends, and MCT units were typically dispatched between 9 AM – 6 PM. It was relatively rare for MCTs to be dispatched between 9 PM – 9 AM due to a lack of available MCT clinicians to work night-shifts. The gap in coverage between 9 PM and 9 AM contrasts with SAMHSA's 2020 National Guidelines for Behavioral Health Crisis Care Best Practice Toolkit Executive Summary best practice recommendations for MCTs and state-wide guidance by the New Mexico Human Services Department, both of which argue that crisis services – including MCTS – should be operative 24/7.

³ Of the subset of agency call codes with over 1,000 CFS. Since APD and BCSO have slightly different variations on call-codes (i.e., APD's suicide-related CFS have call code 10-43-1 and BCSO has 10-43-1, 43-1A, 431TO), we combine both under the APD call code label above.

Table 4.

Most	MCT	CES	Were	Disn	atched	During	Weekda	vs	(n =	12.25	0)
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Day of Week	Frequency	Percent
Wednesday	2,464	20%
Thursday	2,142	18%
Tuesday	2,052	17%
Monday	1,972	16%
Friday	1,394	11%
Saturday	1,203	10%
Sunday	1,023	8%

Figure 3.





Analysis of Clinician Data

Data within the MCT Access clinician database was logged by MCT clinicians between March 2021 through July 2023 (n = 5,687)⁴. Of the 5,336 MCT unique CFS which arrived on scene between March 2021 and July 2023 for which clinician contact data was not missing, 44% of CFS resulted in clinician evaluation (n = 2,366). Of the subset of unique individuals with clinician contact, 80% were evaluated only one time. 1% of participants with at least one clinician contact were evaluated by a clinician five or more

⁴ We did not have access to MCT clinician data prior to March 2021.

times, with the most frequent user of MCT services receiving 22 MCT clinician evaluations in the evaluation timeframe (n = 22). Thirty-eight percent of CFS were dispatched from a field office, and 11% represented jumped calls (see Table 6).

Table 6.

MCT Referral Sources Between March 2021 – July 2023

Referral Source	Count	Frequency
Dispatch from Field Office	2,171	38%
Missing	1,931	34%
Jumped Call	612	11%
BCFR Rescue	363	6%
911 Dispatch	361	6%

In the Access database, clinicians could indicate whether contact occurred between the clinician and the individual in crisis. 94% of these records were complete (i.e., they either indicated contact did or did not occur) (n = 5,336). Of the 5,336 records where clinician contact was logged, 44% resulted in clinicians contacting the individual in crisis (n = 2,366), whereas 56% resulted in clinicians not contacting the individual in crisis (n = 2,366), whereas 56% resulted in clinicians not contacting the individual in crisis (n = 2,970). The three most common reasons why clinician contact did not occur were: (1) the outcome of the call was already determined upon MCT arrival (34%; n = 914), (2) MCT units were unable to locate the individual in crisis (19%; n = 500), and (3) the individual in crisis did not want help (6%; n = 313).

Table 3.

Call Dispositions by Clinician Contact (n = 5,336)

Call Disposition	Clinician Contact Did Not Occur	Clinician Contact Occurred
	[With NAs; Without NAs (n)]	[With NAs; Without NAs (n)]
Arrested	0%; 5% (6)	1%; 1% (16)
Left in Community	1%; 31% (41)	35%; 42% (835)
Transported – Medical	1%; 17% (22)	3%; 3% (60)
Transported – CofE	0%; 14% (11)	32%; 38% (758)
Transported – 43-1-10	1%; 16% (21)	5%;5%(107)
Transported – Voluntarily	0%; 8% (11)	8%;9% (183)
Missing	96% (2,858); 0% (0)	17% (407); 0% (0)
Total	2,970	2,366

On average, it took MCT units approximately 18 minutes to arrive on scene once dispatched which is consistent with the cumulative CFS data. Table 7 provides more detail on the average number of minutes it took MCT units to arrive on scene broken down by the chief call complaint identified by clinicians within the Access database. Notably, there was not much of a discrepancy between mean and median response times for different chief complaint calls, indicating similar variance distributions of response times by chief complaint.

Table 7.

Average Response Times to MCT Calls Conditioned by Chief Complaint

Chief Complaint	Average MCT Unit Response Time
Homicidal	22.3 minutes
Degenerative Disorders	21.9 minutes
Mood/Liability Restrictions	21.2 minutes
Disorder/Behavioral Issues	19.3 minutes
Suicidal	18.5 minutes
Substance Use	18.3 minutes
Psychosis	17.9 minutes
Development/Cognitive Issues	17.8 minutes
Homelessness	17.7 minutes
Aggressive/Threatening Behavioral	17.2 minutes
Medical	13.9 minutes

We present characteristics of the recipients of MCT services in Table 8. Among the individual MCT events between March 2021 and July 2023, most individuals involved were White – Non-Hispanic (24%; n = 1,293), males (54%; n = 2,573), between the ages of 25 and 44 (38%; n = 2,027) and were not experiencing homelessness (56%; n = 2,990). A plurality of CFS were suicide-related (28%; n = 1,503). Figure 4 presents a visualization of the chief complaints identified by clinicians within the clinician-level data.

Table 8.

Variable	Value	Count	Percent
Age Group	0 - 5 Years Old	15	0%
	6 - 11 Years Old	71	1%
	12 - 18 Years Old	432	8%
	19 -24 Years Old	463	9%
	25 - 44 Years Old	2,027	38%
	45 - 64 Years Old	1,027	19%
	65 + Years	364	7%
	Not Reported	937	18%
Gender	Male	2,573	54%
	Female	2,092	44%
	Other	671	13%
Race-Ethnicity	White – Non-Hispanic	1,293	24%
	N/A	1,109	21%
	White – Hispanic	1,107	21%
	Black – Non-Hispanic	208	4%
	Not Reported	204	4%
	Other – Hispanic/Latino	175	3%
	White – Unknown	112	2%
	American Indian – Non-	87	2%
	Hispanic		
Homelessness	Yes	740	20%
	No	2,990	56%

Descriptive Event Characteristics (n = 5,336)

	Not Reported	1,606	30%
Chief Complaint	Suicide	1,503	28%
	Aggressive Behavior	892	17%
	Disorder/Behavioral	737	14%
	Psychosis	598	11%
	Other	527	10%
Disposition ⁵	Left in Community	876	41%
	Transported on	769	37%
	Certificate for		
	Evaluation		
	Transported Voluntarily	194	9%
	Transported on Statute	128	6%
	43-1-10		
	Transported Medical	82	4%
	Arrested	22	1%

Figure 4.

Frequency of Different Chief Complaints Between March 2021 – July 2023



Distribution of df1\$`Chief Complaint Text`

Call dispositions (i.e., the immediate resolutions to CFS) were logged by clinicians on 39% of CFS for which they were dispatched (n = 2,071). Of the crisis events in which MCT dispositions indicated a form of transport to a different location, 1,143 resulted in transport to a hospital and 15 to a community mental health provider. Of the 2,366 cases where clinician contact occurred, 15% of MCT contacts resulted in the creation of a safety plan (n = 343), 32% did not involve construction of a safety plan (n = 760), and 53% had missing data surrounding whether a safety plan was or was not created (n = 1,263).

⁵ Of the subset of 2,071 cases where event disposition was recorded. Percentages for this specific factor provided within the table are given of the percent of overall logged clinician records where a disposition was recorded.

MCT clinicians could also record information about the specific follow-up services and community behavioral health partners they connected participants to during their interactions on scene. However, this data was inconsistently recorded by clinicians. For instance, within the subset of 2,366 clinician records where a clinician evaluation of the individual in crisis occurred, 54% did not include any data on whether the individual was referred to service (n = 1,284). Of the subset of entries where referral data was logged, 37% (n = 397) were indicated as being referred to a community service whereas 63% (n = 685) were not referred to a community service. Of the 397 cases where MCT participants were referred to a community service, 21% of the time they were referred to Community Engagement Teams (CET) (n = 85). 69% of these clients were unique clients, referred only one time to CET (n = 59)⁶.

Because call dispositions were logged on only 39% of CFS within the clinician database and because data on what happened to MCT service users' post-disposition was largely missing (e.g., follow-up data; specific referral sources; information on what happened following transport), we were constrained in our capacity to evaluate the effectiveness of the MCT intervention on outcomes beyond call-resolution. Since the MCT intervention is theorized to have positive effects on outcomes such as (1) emergency department use and (2) criminal justice system involvement through the mechanisms of (1) on-scene crisis resolution at the least restrictive level and (2) post-disposition case management services, since we lack meaningful data on (1) use of force on scene, (2) longer-term participant outcomes (i.e., ED use), and (3) post-disposition program follow-up and referral engagement which should mediate the relationship between clinician evaluation and positive changes longer-term and have access to limited data (e.g., clinician files only span March 2021 – August 2023; case dispositions were inconsistently recorded), the capacity to draw clear inferences about program effectiveness is limited. We revisit these points in the *Limitations* section of the report.

Multivariate Analysis of Clinician Data

Outcome evaluations of the effectiveness of MCTs in the academic literature, among other things, explore the impact that MCTs have on immediate call dispositions and use-of-force by officers and, to date, have mostly been limited to analyzing the correlations between factors (i.e., characteristics of users in crisis) and short-term participant outcomes (e.g., call code dispositions; use of force) (Muehsam 2019; Lee et al., 2021).

Using an exact matching procedure in which we matched CFS and clinician data exactly by datetime form fields, we merged CAD CFS data with clinician reports to evaluate the relationship between the type of crisis an individual was experiencing, individual characteristics (e.g., demographics), situational characteristics (e.g., year fixed-effects; day of week fixed-effects) and event dispositions with "Left in Community" as the base reference category. The use of an exact matching procedure reduced the sample size by 56% (n = 2,371 clinician records retained). Additionally, following the dataset merger, 54% of records in the clinician database did not include any information on event disposition which further reduced the sample size for analysis from 2,371 records to 1,083 records. Given the non-trivial data loss associated with both the exact matching procedure and the lack of recorded disposition data within the clinician

⁶ Data on clinician referrals to other services is currently logged as an open text-form field. Clinicians often entered various acronyms for different organizations or sometimes listed multiple organizations (e.g., "Hospital and Community Engagement Team for Family members.") While we were able to filter referrals to CET using the *gsub* command in R to identify relevant textual strings for more commonly reported on referral linkages, we encourage designers of the next clinician database to implement a drop-down box of the 10-15 most frequently referred-to community providers to allow more efficient back-end data analysis.

records, we present results only for the larger clinician database, which excludes variables unique to the CFS dataset (e.g., call code; call priority) data in models (n = 2,071) since there are some similarities between the clinician level data and CFS data (e.g., call description and call code are roughly analogous).

Within the more complete clinician dataset, the most common event dispositions were for individuals in crisis to (1) be left in the community (41%; n = 876) or (2) be transported on a certificate for evaluation⁷) (37%; n = 769). Arrest was a comparatively rarer disposition for MCT CFS, only occurring in 1% of all CFS for which clinician data was recorded (n = 22). Of the 22 arrests, five were for outstanding warrants, 13 were for current behavior leading to arrest, and four did not have an arrest reason logged. If we exclude cases of arrests for outstanding warrants, the number of potential arrests which reflect the behavior of an individual in crisis escalating to be sufficiently criminal included only 16 cases (<1% of all clinician records). While we do not have a relevant comparison of baseline arrest rates for otherwise similar CFS for which an MCT unit was not dispatched within Bernalillo County during the evaluation timeframe given that disposition status was not logged within the monthly CFS data we received from APD or BCSO, the arrest rate was lower than or comparable to the arrest rates reported in previous studies of crisis intervention teams and MCT units in other municipalities, which, while not conclusive, is suggestive of a potentially positive effect of the use of MCTs, though the baseline rarity of an event like an arrest may complicate efforts to draw meaningful cross-study comparisons (Muehsam 2019; Lee et al., 2021).

To simplify analysis and to be consistent with recent work on MCT evaluations (<u>Muehsam 2019</u>; <u>Lee et al., 2021</u>), we combined disposition outcomes into four categories—arrest, immediate detention (i.e., transported on certificate for evaluation or New Mexico Statute 43-1-10⁸), transport (i.e., transported voluntarily; transported for medical reasons), and left in community. Within the larger clinician dataset, a plurality of MCT events resulted in detention (43%, n = 897). The remainder of MCT events were either resolved on scene (42%, n = 876), resulted in transport (13%; n = 276), or resulted in arrest (1%, n = 22).

To explore whether crisis type (0 = Aggressive Behavior; 1 = Disorder; 2 = Psychosis; 3 = Suicide; 4 = Other) influenced event disposition, we conducted a multinomial logistic regression⁹ controlling for sex (0 = Male; 1 = Female), race (0 = Non-White; 1 = White), ethnicity (0 = Hispanic; 1 = Non-Hispanic), physical disability status (0 = No Disability; 1 = Has Disability), whether contact between the MCT clinician and service user occurred (0 = No Contact; 1 = Contact), whether the individual in crisis was under the influence of substances during the crisis event (0 = Not Under Influence; 1 = Under Influence), and the

⁷ Per 2-85-3 APD procedural guidelines on certificates for evaluations <u>linked here</u>: A certificate for evaluation refers to, "A document completed by a qualified, mental health professional which certifies that a person, as a result of a mental disorder, presents a likelihood of harming themselves or others and that immediate detention is necessary to prevent such harm, which may include grave passive neglect. All Certificates for Evaluation will be considered expired seventy-two (72) hours after they are issued unless explicitly stated otherwise."

⁸ Per NM Stat § 43-1-10 (2021), "A peace officer may detain and transport a person for emergency mental health evaluation and care in the absence of a legally valid order from the court only if: (1) the person is otherwise subject to lawful arrest; (2) the peace officer has reasonable grounds to believe the person has just attempted suicide; (3) the peace officer, based upon the peace officer's own observation and investigation, has reasonable grounds to believe that the person, as a result of a mental disorder, presents a likelihood of serious harm to himself or herself or to others and that immediate detention is necessary to prevent such harm. Immediately upon arrival at the evaluation facility, the peace officer shall be interviewed by the admitting physician or the admitting physician's designee; or (4) a physician, a psychologist or a qualified mental health professional licensed for independent practice who is affiliated with a community mental health center or core service agency has certified that the person, as a result of a mental disorder, presents a likelihood of serious harm. Such certification shall constitute authority to transport the person."

⁹ Multinomial logit regression is a statistical method used to analyze and understand how different factors or variables influence a categorical outcome with more than two possible categories. Multinomial logit regression helps researchers examine the relationship between these factors and the likelihood of choosing one option over the others.

amount of time it took MCTs to arrive on scene. We also included within the model fixed-effects which statistically examined whether event dispositions were influenced by the day of the week an MCT was dispatched or the year of program implementation. We used informal resolution (Left in Community) as our base outcome for comparison. We present relative risk ratios (RRRs) in Table 9. An RRR tells us how much more or less likely one group is to experience an event compared to another group. For instance, the RRR for "Aggressive Behavior" of 1.4 means that, relative to individuals in crisis who had a suicide-related crisis, individuals with aggressive behavior-related crises had a 40% higher risk of being detained relative to being left in the community. The RRR helps one understand the impact of a factor on the likelihood of an event occurring, making it easier to compare risks between different groups.

Table 9.

		()	
	Arrest	Transport	Immediate Detention
Crisis Type: Aggression	3.1 [1.0, 10.0]*	0.8 [0.5, 1.3]	1.4 [1.1, 2.0]**
Crisis Type: Disorder	0.5 [0.1, 2.4]	0.9 [0.6, 1.3]	0.4 [0.3, 0.5]***
Crisis Type: Psychosis	0.5 [0.1, 2.1]	0.7 [0.4, 1.1]	1.2 [0.8, 1.6]
Crisis Type: Other	0.2 [0.0, 4]	0.5 [0.3, 0.8]	0.5 [0.4, 0.6]***
Sex: Male	2.1[0.7, 6.1]	1.1 [0.9, 1.5]	1.1 [0.9, 1.4]
Race: White	0.9[0.3, 2.6]	1.1 [0.8, 1.5]	1.0 [0.8, 1.3]
Ethnicity: Hispanic	1.8[0.7, 4.9]	1.0 [0.7, 1.4]	1.0 [0.8, 1.3]
Age	1.0 [1.0, 1.0]	1.0 [1.0, 1.0]**	1.0 [1.0, 1.0]***
Physical Disability	1.0 [0,]	1.2 [0.7, 2.0]	0.9 [0.6, 1.4]
Substance Use	1.3 [0.5, 3.8]	1.3 [0.9, 1.8]	1.6 [1.3, 2.0]***
Indicated			
Clinician Contact	0.5 [0.1, 2.7]	0.5 [0.3, 1.0]*	1.4 [1.1, 2.0]**
Response Time	1.0 [1.0, 1.0]	1.0 [1.0, 1.0]	1.0 [1.0, 1.0]
Fixed Effects: Day of	Yes	Yes	Yes
Week			
Fixed Effects: Year	Yes	Yes	Yes
# of Occurrences of	17	255	862
Disposition			

Multinomial Regression Results – Relative Risk Ratios (RRR) with 95% Confidence Intervals (n = 1,880)

Note: Crisis types are not exclusive and were added separately. Reference disposition category is "Left in Community" (n = 770). Reference Crisis Type category is "Suicidal" (n = 631). * p < 0.10, ** p < 0.05, *** p < 0.01.

Results from Table 9 suggest that, after statistically adjusting for other factors, when a crisis CFS event was related to an individual exhibiting aggressive behaviors, individuals in crisis had a 3.1-time higher risk of being arrested compared to those whose crisis events were related to suicide-related CFS. However, specifically in the context of predicting arrest dispositions which are statistically rare events, there is a higher chance of false negative detection (i.e., Type II errors) where one may inaccurately conclude that a predictor variable is not significantly related to an outcome when it is. Similarly, small sample sizes which emerge in prediction of rare events can result in unstable parameter estimates in regression contexts.

However, we can draw more statistically-powered conclusions in the context of transport and detention dispositions. For instance, results from Table 9 suggest that age positively predicts an individual in crisis being transported versus being left in the community, though the magnitude of the RRR is substantively small in scale. The seemingly low substantive magnitude of the age RRR reflects the effects of the scale of the age variable since the regression results tell one what a one unit change in age (i.e., an increase in age of one year) has on the odds of a transport decision. To provide more substantive context to

the RRR on age, we find that for every decade increase in age, the relative risk of being transported versus being left in the community decreases by approximately 11% (p-value < 0.05). Similarly, we find that being evaluated by a clinician on scene significantly decreases the odds of a transport decision.

Finally, when exploring the RRRs for immediate detention, we find that individuals exhibiting aggressive behaviors were significantly more likely to be detained than left in the community, individuals who were using substances were significantly more likely to be detained than left in the community, individuals evaluated by a clinician were significantly more likely to be detained than left in the community, and older individuals were significantly less likely to be detained than left in the community. Conversely, individuals whose crisis types related to disorder or another crisis type category were significantly less likely to be detained than left in the community.

Notably, the amount of time it took MCT units to arrive on scene did not predict event dispositions. Additionally, when exploring the effect of implementation year on disposition outcomes, fixed effects results suggest that relative to 2021, detention dispositions have become increasingly less common in relation to the left in the community disposition for both 2022 (RRR: 0.8; p-value = 0.10) and to date in 2023 (RRR: 0.6; p-value < 0.01).

We also wanted to explore whether evaluation by a clinician on scene reduced the amount of time it took to clear a call. Results from an independent sample t-test using the merged CFS and clinician data between March 2021 and October 2023 indicated there were statistically significant differences in call clearance times based on whether clinician contact occurred (Average Call Clearance Time: 90 minutes) or did not occur (Average Call Clearance Time: 47 minutes) (p-value < 0.01). Stated differently, CFS where clinicians made contact with individuals in crisis took nearly double the amount of time to clear than calls where clinician contact did not occur. However, this may be a function of the fact that, in cases where clinicians did not contact an individual in crisis, a plurality of no-contact cases were cases where the contact did not occur because the outcome of the call was resolved before the MCT unit arrived on scene (34% of no contact cases; n = 914). Accordingly, we caution against using the disparity in call clearance times as evidence that MCTs necessarily result in longer CFS for LEOs since the comparison is not directly an apples-to-apples comparison. To address this issue, we used a multivariate ordinary least squares regression where we predicted call clearance time once on scene as a function of whether clinician contact occurred, age-group, race, ethnicity, gender, and chief complaint text. Results of the OLS model suggested that, after statistically adjusting for other factors and excluding cases where the call was resolved before an MCT unit arrived on scene, CFS where clinician contact occurred, relative to those where no such contact occurred, took, on average, 39 more minutes to clear (p-value < 0.01).

Spatial Analysis of MCT CFS

Understanding where and when MCT CFS are most frequent can help optimize resource allocation by allowing MCT teams to strategically place their resources in areas with higher demand, ensuring that help is readily available when and where it is needed most. This information can be used to target MCT efforts to specific neighborhoods or regions that are experiencing a higher prevalence of mental health crises and can also help identify areas with unmet needs.

For these reasons, we explored the spatial components of MCT calls. Address fields from MCT CAD data were cleaned and prepared for automated batch geocoding using the Google Maps API. We used existing APD city mapping layers for other features. The coordinate system is the State Plane for New Mexico Central (FIPS 3002). All geoprocessing and spatial analyses were performed using R's *ggmap*, *ggrepel*, *tidycensus*, and *tigris* packages in tandem with Carto software.

As part of our data cleaning, we noticed that some addresses generated a higher volume of MCT dispatch activity than others. In the raw data, 38% of MCT CFS involved repeated calls to the same incident site (n = 4,595). We removed from analysis incident sites of police agency area commands, hospitals, and community centers (i.e., CARE Campus; Domestic Violence Resource Center). This resulted in a net reduction of 9% of overall incident site locations from our analysis (n = 1,132) with remaining incident site locations being either residential or commercial properties or street intersections not clearly linked to a specific property.

In Figures 5 - 7, we provide a point map, heatmap, and cluster map of MCT dispatch locations to visually assess the spatial reach of MCT CFS within Bernalillo County. We then conducted local statistical tests for clustering, which provide an empirical basis of confidence for local clustering (i.e., "hotspots") but also provide greater confidence in the validity of our final spatial technique, hot-spot mapping of behavioral crisis incidents using kernel density estimation. From Figures 5-7, we observe that MCT CFS have been widely distributed across Bernalillo County yet that there are pockets of visible clustering in the downtown core part of the city as well as denser pockets alongside Central Avenue within the International District.

Figure 5.



Point Map of MCT Incident Locations (March 2018 – October 2023)

Figure 6.





Figure 7.

Cluster Map of MCT Incident Locations (March 2018 – October 2023)



We also reviewed patterns of spatial clustering at the Census-tract level to increase precision. We present a choropleth map of incident site location by census-tracts in Bernalillo County in Figure 8 below. We computed a global Moran's I statistic: from this test, we can reject the null hypothesis that there is zero spatial autocorrelation present (*p*-value = 0.00); this means that the incident locations tend to cluster together.

Figure 8.



Spatial Clustering of MCT Incident Locations by Census Tract (March 2018 – October 2023)

Analysis of Arrests

Individuals with severe mental illness, inclusive of individuals who have behavioral health crises, are disproportionately represented within the criminal justice system. An expanding number of law enforcement officers have been trained in methods to identify and manage situations involving individuals with serious mental illness, often through programs such as crisis intervention training. Thus, it is important to see whether the MCT intervention has any effect on patterns of criminal justice system involvement. We used court data from the New Mexico Administrative Office of the Courts (AOC) database as a proxy for arrests and counted the number of arrests MCT participants had in the two years prior to their first MCT clinician evaluation.

We conducted a two-sample test for equality of proportions to see whether there were significant differences in the proportion of individuals with no arrests between two conditions (i.e., whether a participant was or was not evaluated by a clinician on-scene). The first analysis compared the proportion of participants who had arrests in the two-year pre-intervention period with clinician contact (n = 805) to the proportion of participants who had arrests in the two-year pre-intervention period who were not evaluated by a clinician (n = 639), revealing a significant difference in the proportions between groups ($\hat{p}_1 = 80\%$, $\hat{p}_2 = 61\%$, $\chi^2(1) = 64.9$; p < 0.01). The 95% confidence interval for the difference in proportion of individuals

who had any arrests in the non-evaluated group in the pre-intervention period compared to the proportion of individuals who had any arrests in the clinician-evaluated group in the pre-intervention period.

Similarly, we conducted a two-sample test for equality of proportions exploring differences in the proportion of participants with charges in the post-period (e.g., where a participant was or was not evaluated by a clinician) ($\hat{p}_1 = 80.2\%$, $\hat{p}_2 = 61.3\%$, $\chi^2(1) = 60.9$; p < 0.001). The 95% confidence interval for the difference in proportions ranged from 14% to 24 %, indicating a statistically significant higher proportion of individuals who had any arrests in the non-evaluated group in the post-intervention period compared to the proportion of individuals who had any arrests in the clinician-evaluated group in the post-intervention period.

Taken together, these findings provide suggestive evidence that unlike other BHI programs – such as the Law Enforcement Assisted Diversion (LEAD) program – individuals who had MCTs dispatched to them were not frequently engaged within the criminal justice system. However, it is worth noting that this analysis is limited. The two proportions z-test does not account for any pre-existing differences between groups (i.e., those evaluated by a clinician versus those not evaluated by a clinician) that could influence the outcome. In the absence of random assignment, there may be baseline differences between the clinician-evaluated groups that influence the proportion of individuals with arrests, which the analysis does not control for. Additionally, the measure of "no arrests" is a binary outcome that does not capture severity or frequency of charges. Therefore, this analysis does not provide information on the extent or nature of criminal justice system involvement, which could be relevant to understanding the full impact of the intervention. Finally, while a significant difference in proportions was found, this statistical result does not imply causation. Other factors not accounted for in the analysis may be responsible for the observed differences.

To more strongly address the causation question, we used quasi-experimental propensity score matching to compare arrest counts for a random sample of 1,021 individuals enrolled in MCT prior to January 1, 2021 contacted by an MCT in the two years before and after initial MCT contact conditional on whether an MCT clinician evaluated the individual in crisis. We used clinician contact (0 = Not Contact Occurred; 1 = Contact Occurred) as a proxy for treatment assignment since the theorized positive outcomes of MCTs are expected to be transmitted through the mechanisms of clinician evaluation. Matching was performed using the *Matching* package (Sekhon 2011), and covariate balance was assessed using the *cobalt* package (Greifer 2022), both in *R* (R Core Team 2022).

Specifically, we used a set of matching procedures designed to estimate the average effect of MCT clinician contact and evaluation on arrest counts in the two years following MCT contact accounting for confounding by including covariates for an individual's age, sex, race, ethnicity, and their arrest count within the two-year pre-intervention period. To avoid the issue of duplication (i.e., repeated MCT calls out to the same individual), we randomly sampled one row of data for duplicated cases and restricted duplicated cases to only include cases where individuals were either exclusively contacted or not contacted by a clinician (e.g., excluding cases where individuals may have had clinician contact during their first MCT CFS and then did not have MCT contact during their second MCT CFS).

To estimate propensity scores, we used logistic regression to predict whether an individual was or was not evaluated by a clinician as a function of their sex, race, ethnicity, age, and two-year pre-intervention arrest history. From this, we were able to generate predicted probabilities of treatment assignment (i.e., their likelihood of being evaluated by a clinician) for everyone within the initial sample (i.e., propensity scores). We then used propensity score matching techniques to pair individuals who did and did not receive clinician evaluation together based on similar-enough propensity scores (i.e., predicted probabilities of treatment). Following matching, we conducted a set of covariate balance tests designed to see whether the matching procedure resulted in a dataset where the treated and control groups looked like one another on observed characteristics. Results of covariate balance testing (see Figure 6) before and after matching suggested that only the two-year pre-intervention arrest history variable was sufficiently balanced across groups using the 10% standardized mean difference rule of thumb for evaluating covariate balance.

Figure 6.





We added imbalanced variables to regression models to estimate the average treatment effect (ATE) of clinician evaluation on arrest outcomes. We estimated regression models predicting both the count of arrests and the presence/absence of arrest in the two-year post-intervention period. Across both models, after conditioning for imbalanced covariates, we found that there were neither statistically nor substantively significant effects of clinician contact on subsequent arrest history.



Table 7.

Difference in Average Number of Arrests Between Pre-Post Intervention Periods

	Two Years Before	Two Years After	Difference
No Clinician Evaluation ($n = 646$)	0.66	0.87	+0.21
Clinician Evaluation ($n = 805$)	0.18	0.34	+0.16

There were not statistically significant or substantively significant effects of clinician contact on subsequent arrest outcomes.

Study Limitations

In their 2020 *Psychiatric Services* article, "Meeting the Needs of Justice-Involved People with Serious Mental Illness within Community Behavioral Health Systems", Bonfine et al., (2020) state:

Although crisis services are an important piece of a comprehensive mental health system, they are only one element of the ultimate intercept as originally conceptualized, which also identified the need for evidence-based interventions, including community support services, medications, and vocational and housing services. (pp. 359)

One of the limitations to the Bernalillo County MCT program we identified within our 2021 process evaluation was that data on the follow-up to on-scene crisis services was not consistently logged by MCT clinicians and that the scope of participants' connection to case management services was unknown. We elevated this as a concern because the use of MCTs as an intervention is designed not only impact short-term on-scene outcomes (e.g., call dispositions; use of force) but also to influence individuals' longer-term stabilization via connection to other services. Not only was disposition data not recorded in 46% of clinician records so significant missingness existed in the measurement of short-term outcomes primarily for cases where no contact occurred, but the clinician data on connection to services and follow-up was similarly limited. Within the subset of 2,366 clinician records where a clinician

evaluation of the individual in crisis occurred, 54% did not include any data on whether the individual was referred to service (n = 1,284). Of the subset of entries where referral data was logged, 37% (n = 397) indicated referral to a community service whereas 63% (n = 685) did not indicate referral to a community service. Relatedly, of the 2,071 crisis events where an event disposition was logged, 15% of MCT contacts resulted in the creation of a safety plan (n = 316), 37% did not involve construction of a safety plan (n = 764), and 48% had missing data surrounding whether a safety plan was or was not created (n = 991). Thus, the back-end of MCT's essential functions post-disposition, as articulated by SAMHSA in Table 1 (i.e., peer support; coordination with medical and behavioral health services; crisis planning and follow-up), have not been adequately recorded by the MCT program in a consistent way and for these reasons we cannot evaluate the effectiveness of the Bernalillo County MCT program on these outcomes. Our 2021 process evaluation noted:

The intended follow up and case management aspects of this program were nascent and not evaluable. Observers reported that referrals tended to be CoEs with occasional referrals to HopeWorks offered to client families or friends. They heard little reference to tasks associated with case management or MCT client follow-up during time periods between calls for service. Until this part of the program is in place we are limited to evaluating the short-term outcomes focused on call resolution aspects of MCTs...APD SOP 2-19-9 5 Services states that the MCT clinician shall provide referral services to individuals in crisis and those referrals should be structured in a way that facilitates follow-up by the clinician. This did not seem to be the case, even with referrals for psychiatric evaluation. A person could enter and exit the hospital in a matter of minutes or hours, throw away a resource card, or develop a relationship with a local service provider; without follow-up there is no way to know what effect a referral might have on the current or future status of the client. Integration of best practices for referrals might increase client access to services. – Murphy et al., 2021 (pp. 44-45)

Similarly, because post-disposition data was not recorded in a consistent fashion (e.g., peer support connections; engagement with community providers following MCT touchpoints), we had to use clinician contact as a proxy variable to evaluate whether otherwise similar individuals who were or were not evaluated by an MCT had different levels of post-MCT criminal justice system involvement. In our quasi-experimental matching analysis, we did not find a causal effect of clinician evaluation on the count of arrests in the post-intervention period. However, the use of clinician contact as a proxy for the broader MCT intervention is a suboptimal way of measuring the intervention given data sparsity which suggests that evaluation by an MCT clinician does not typically result in the establishment of service linkages or safety plan development. While we recognize that not every individual in crisis for whom MCT units get dispatched will need the same scope or intensity of follow-up services or will need safety plans developed, the scope of data missingness and the negative direction of the data that does exist (i.e., safety plans are rare) makes it difficult to evaluate the effectiveness of the clinician contact on downstream intermediate and long-term post-disposition outcomes. Moreover, the relative rarity of pre-intervention criminal justice involvement among the MCT target population made it statistically harder to detect any meaningful pre-post change in arrest counts (i.e., if most people in the MCT program were not criminaljustice system involved in either the pre-intervention or post-intervention period, then it is harder to estimate whether the program exerts a meaningful arrest-reducing effect because the high volume of zero arrest counts for both the pre-post intervention reduces variability in average treatment effect estimates).

Similarly, another limitation of the present evaluation centers on the fact that we were unable to secure data from the University of New Mexico Health Sciences Center (HSC) on MCT participants' health system use (i.e., the number of visitations MCT clients had to the emergency room or other

inpatient and outpatient services) before and after an individual's MCT touchpoint. While we obtained UNM Main Campus approval to access Syncronys' Health Information Exchange (HIE) data in September 2022 [IRB Protocol #: 2250030219], we were subsequently informed that UNMH was renegotiating a data use agreement (DUA) with Syncronys in October 2022 and that we would need to submit a separate IRB to the UNM - North Campus to secure access to data on emergency department utilization through the UNMH system. However, we were advised by UNMH legal counsel and their IRB that we would not be allowed to submit an IRB to North Campus until the DUA between UNMH and Syncronys was finalized. Despite being informed that the DUA would be executed earlier at multiple time points, unfortunately, through November 2023 we were informed that the DUA had not been executed. As a workaround, we attempted to touch base with a contact point at the New Mexico Department of Health (DOH) to secure emergency department data for MCT clients. Unfortunately, we only found out about this connection in October 2023 and were unable to secure an independent DUA with the NM DOH to retrieve access to emergency department utilization data by the end of the evaluation time-frame.

Discussion and Conclusion

Between February 2018 and October 2023, MCTs were dispatched to over 12,250 CFS in Bernalillo County, and clinicians assessed individuals on 44% of those calls. Most CFS were related to suicide or behavioral health issues, suggesting appropriate deployment of MCT units to relevant callcodes. Analysis of the geospatial distribution of MCT CFS suggests that the MCT program has effectively served a broad target population of individuals within Bernalillo County. Relative to other studies which identify arrest rates of 1-5% for individuals in crisis, clinician data from March 2021 through August 2023 suggests on-scene MCT arrest rates of < 1% for on-scene criminal behavior (i.e., excluding cases where individuals were arrested on prior warrants), though we do not have a localized reference point for more direct comparison. Multivariate analysis of the factors which predicted call code dispositions suggest that immediate detention was significantly more likely to occur in cases where participants presented with aggressive and threatening behaviors and substance use. Analyses of changes in arrest rates suggest that a majority of MCT participants do not have any criminal justice system involvement either prior to or following evaluation by an MCT clinician. The arrest-reducing effects of the MCT program were not apparent in Bernalillo County, in part, due to the relatively lower base-rates of criminal justice system involvement of MCT clients on average.

However, many of the data recommendations we provided in our 2021 process evaluation have not been adopted by the MCT program and limit the scope and generalizability of our outcome evaluation's conclusions. Specifically, nearly half of clinician records were missing information on shortterm call code dispositions, and over 50% did not include data on community referrals or participants' connection to case management services. Per SAMHSA recommendations and recommendations from the New Mexico Human Services Department, a best-practice-informed MCT program should be designed to provide peer support, coordination with medical and behavioral health services, and crisis planning and follow-up post-disposition and should be operative 24/7, but the program typically was limited to operating during standard work-hours (i.e., 9 AM – 6 PM) and post-disposition attributes of the program have not been consistently tracked by the MCT program. When they have been recorded, they signal on balance that the program does not make these specific connections (e.g., when we exclude missing data, a majority of MCT contacts do not receive community referrals and majorities do not have safety plans created on scene) and for these reasons, we could not evaluate whether the MCT program improves outcomes – such as arrest rates – *through* these fundamental intervention mechanisms, instead having to rely on a weaker predictor, clinician contact. Similarly, we encountered difficulties securing access to health information exchange data due to delays in the execution of a DUA between Syncronys and UNMH. For these reasons, we were unable to evaluate the effect of clinician evaluation and follow-up on outcomes such as frequency of emergency department utilization.

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