Research to Advance Models of Care for Medicaid-Eligible Populations
Full Proposal Narrative

Identifying Information
Project Title: Impact of a New Street Crisis Response Team on Service Use Among San Francisco's Homeless Population with Mental and Substance Use Disorders
Proposal I.D.: 98662
Applicant Name: Matthew L. Goldman, MD, MS
Legal Name of Applicant Organization: San Francisco Department of Public Health

Background

Mental illness and substance use are highly prevalent among homeless adults in San Francisco. Of the 17,695 people identified as homeless in FY18-19, 12,735 (67.5%) had a mental health or substance use diagnosis. Of those, 7,830 (65.5%) had a medical comorbidity and 3,930 (30.9%) were extremely high risk, with a psychotic disorder as well as a documented diagnosis related to alcohol, methamphetamine, cocaine, or opioids. One of the most troubling findings about this group is the inequity of the burden of these diagnoses: thirty-five percent of the population identifies as Black/African American, compared to five percent of the overall population of San Francisco. **Unfortunately, San Francisco is no exception.** People with serious mental illness comprise approximately one quarter of all people who experience homelessness, and up to one third has a substance use disorder.[1] People of color are dramatically over-represented in these populations,[2] and the burden of disease is severe: A 30-year-old man experiencing homelessness has a life expectancy that is 11 years shorter than the general population, and a 30-year-old woman's life expectancy is 16 years shorter.[3]

Yet access to appropriate services is limited. Only 44 percent of this high-risk population had accessed both health and housing services through city programs and just 10.5 percent had an intensive case manager (ICM). There are multiple obstacles to engaging this high-risk population in mental health and substance use care, as well as in social services. People with lived experience of homelessness face marginalization, dehumanization, and structural violence, which interfere with trust and engagement in health care and social services.[4] These barriers to care are multiplied by intersectional experiences of structural racism, stigma about mental illness and addiction, and criminalization of all of these factors.[5–7]

Behavioral health leaders in San Francisco have engaged with community stakeholders to create a Street Crisis Response Team (SCRT) to improve access and linkage to mental health and substance use services for people experiencing homelessness who are in crisis. We propose a rigorous evaluation of the SCRT to determine how this innovative model impacts linkage to care and reduction of acute service reutilization in this vulnerable population. This proposal is structured to address the key components of this model of care for Medicaid-eligible populations as defined in the Health Systems Transformation Research Coordinating Center (HSTRC) Research Agenda developed by the Robert Wood Johnson Foundation (RWJF) and Avalere Health.

Health System Contextual Factors: SFDPH Behavioral Health Services

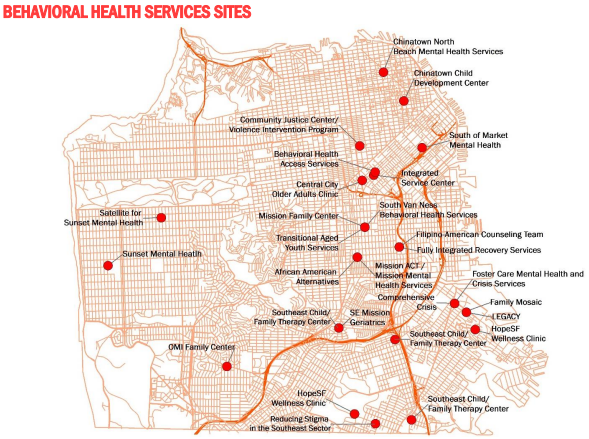
The San Francisco Department of Public Health (SFDPH) is comprised of the San Francisco Health Network (SFHN), which provides a range of medical, mental health, and substance use services, and the Population Health Division, which researches and implements evidence-based policies in the City & County of San Francisco. The Behavioral Health Services (BHS) division of SFHN provides direct treatment services for mental health and substance use disorders to more than 30,000 unique San Franciscans each year, at an annual cost of $393 million (17% of total SFDPH FY18-19 budget).[8] BHS provides services under the San Francisco

Mental Health Plan, which was created to meet the mental health needs of San Francisco residents who are Medi-Cal beneficiaries, uninsured, and/or indigent.[9]

Services offered by BHS are primarily for individuals with moderate to severe mental health and substance use disorders. Mental health services include hospitalization or inpatient services; long-term care in locked and unlocked facilities; crisis services; residential treatment; outpatient or planned services; prevention and early intervention services; and supportive housing. Substance use disorder services include residential treatment; residential detox services; opioid treatment; outpatient or planned services; intensive outpatient services; and prevention and early intervention services.[9] The majority of BHS mental health and substance use disorder clients are between the ages of 18 and 59.

Of the 20,382 clients served by BHS Mental Health Services in FY18-19, 10,810 were seen by SFDPH providers, and 12,604 were seen by contracted community-based organizations (CBOs) (unduplicated client count; clients can be seen in both SFDPH and contract programs in the course of a year). Client insurance coverage in mental health settings included 61% Medi-Cal, 19% Medicare, 20% uninsured/other, and 1% privately insured.

BHS contracts with providers to provide substance use services; in FY18-19, 5,975 clients were seen by CBOs, including 74% insured by Medi-Cal, 26% uninsured/other, and 0% privately insured.



Health System Model of Care: Street Crisis Response Team

While San Francisco has an extensive infrastructure for mental health and substance use disorder services, one important gap remains: real-time response for people in behavioral health crisis in the streets. There is currently a mobile crisis team called Comprehensive Crisis Services (where Project Director Dr. Matthew Goldman is Associate Medical Director), but this team is not equipped to respond rapidly enough to serve most homeless clients in crisis. These calls therefore get referred to 9-1-1, which often dispatches San Francisco Police Department (SFPD) officers rather than behavioral health clinicians. San Francisco's 9-1-1 call data from 2019 demonstrated that the most common types of calls law enforcement receive are for welfare checks (55%) and public assistance for a mentally disturbed person (31%); they receive approximately 50,000 such calls annually.

To help fill this gap, San Francisco is creating a new Street Crisis Response Team (SCRT). Through a co-responder model in which a behavioral health clinician is paired with a paramedic from the San Francisco Fire Department (SFFD) and a peer specialist, the SCRT will provide trauma-informed assistance for clients who have symptoms of acute mental illness or substance use. By dispatching the SCRT from 9-1-1 operators, calls that would typically go to SFPD will instead be diverted to clinicians so that individuals in behavioral health crisis avoid unnecessary contact with law enforcement, which is particularly important to protect the health and safety of people of color who are in crisis. Linkage to outpatient mental health and housing services will be a key focus of the SCRT, with a goal of reducing reutilization of acute services.

The SCRT will build on prominent national models for crisis services. Many states and counties throughout the U.S. have turned to crisis services as a cost-effective solution to constraints in behavioral health service capacity. A 2020 report issued by the Substance Abuse and Mental Health Services Administration, titled "National Guidelines for Crisis Care – A Best Practice Toolkit," lays out essential services for a crisis continuum of care: call centers, mobile teams, and stabilization centers.[10] These three levels of care will all be reinforced by the

implementation of the SCRT by allowing for 9-1-1 to dispatch appropriate calls to specialized behavioral health clinicians who can triage and link clients to an appropriate level of care.

The evidence base for mobile crisis teams like the SCRT is robust. First developed in the 1970s,[11,12] mobile crisis has been prioritized by policymakers[13] as a way of addressing Emergency Department (ED) boarding of psychiatric patients[14–16] and inadequate psychiatric inpatient bed capacity.[17,18] Mobile crisis teams have previously been studied for their impact on post-crisis service utilization, including increased community engagement,[19–21] decreased ED utilization[22] and decreased psychiatric admissions.[23] Mobile crisis has a unique ability to respond rapidly in a less restrictive environment[24] and to coordinate with community partners such as law enforcement and EDs to divert people from those settings.[25] As of August 2019, there were mobile crisis services in 48 states in the U.S.[26] The SCRT co-responder team composition is based on the CAHOOTS model in Eugene, Oregon.

The SCRT model is designed to address all three arms of the equity-oriented health care (EOHC) paradigm: Trauma- and Violence-Informed Care, by ensuring that a specialized behavioral health team is capable of responding real-time to those in need of urgent crisis support; Culturally Safe Care (CSC), by reducing the role of law enforcement in behavioral health crisis response; and Contextually Tailored Care, by addressing contextual factors like linkage to appropriate behavioral health and housing services.

SCRT Intervention

The SCRT will be piloted in San Francisco's highest demand neighborhoods starting in December 2020, and then expanded citywide later in 2021. There are four core clinical functions of the SCRT program: Dispatch, Assess, Treat, and Triage. Dispatch will be coordinated from 9-1-1 operators and non-emergency response system (3-1-1). Any reports of a crime in progress, violence, or a life-threatening emergency may result in a co-response by SCRT and SFPD.

The team of three (clinician, paramedic, and peer) will respond real-time and immediately assess the situation. Each team member will play a key role in providing care, including immediate stabilization in case of urgent medical need (paramedic), de-escalation in the case of psychological crisis (behavioral health clinician), and providing patient-centered peer support (peer specialist). The SCRT will utilize trauma-informed care principles and engaging clients in the least restrictive setting rather than resorting to involuntary psychiatric holds for all individuals in crisis. Finally, the team will triage to the appropriate level of care, be it resolution of the crisis in the field, linkage to outpatient mental health and substance use services, or transportation to an acute treatment setting. Linkage to housing services will also be offered.

To assist with these clinical functions, the SCRT will use mobile laptop computers to access Avatar electronic health records, the Coordinated Care Management System (CCMS) for the client's housing status, and a real-time tracking system for residential bed availability. Metrics will be monitored closely in partnership with SFDPH providers, SFPD, SFFD, 9-1-1 dispatch, and others. The SCRT and 9-1-1 operators will receive specialized training to ensure that adequate clinical decision-support is available to treat and triage these complex cases.

Target Population

The population of primary interest for the SCRT includes adults in San Francisco who have been diagnosed with a mental health and/or substance use disorders and are experiencing homelessness. Sub-groups of interest include people who self-identify as Black/African-American, who are overrepresented in the population described above. Additional sub-populations of interest include those who have a history of criminal justice involvement. All of these populations are at risk of not having reliable access to long-term treatment or social services, which often results in their becoming frequent utilizers of acute services. As described above, nearly all of this population are either enrolled in or eligible for Medi-Cal.

Types of Needs Addressed

Access and Linkage to Long-Term Mental Health and Substance Use Treatment

As described above, nearly 4,000 adults in San Francisco in 2019 were found to be experiencing homelessness as well as co-occurring serious mental illness and substance use disorders, though less than half had accessed both SFDPH and housing services. Furthermore, according to the 2015 San Francisco County Drug Medi-Cal Organized Delivery System Implementation Plan, 24,293 Medi-Cal beneficiaries would meet the criteria for substance use treatment, but SFDPH estimated that only half of eligible clients accessed treatment services.[9]

These trends highlight the reality that large segments of the target population are unable to reliably access long-term services and instead rely on acute services that are ill-equipped to connect them to the care they need. For example, of the 4666 visits to Psychiatric Emergency Services (PES) by homeless patients in FY16-17, 38% of visits resulted in discharge without an outpatient referral or service linkage.[9] This pattern leads to a revolving door: of the 44,809 adults who accessed San Francisco's urgent and emergency services in FY16-17, five percent (or 2,239 adults) accounted for 52 percent of service use; 90 percent of these adults were found to have behavioral health diagnoses, and many are homeless.[9]

San Francisco does offer services that would be more appropriate for this population than the ED or PES, including BHS outpatient services, intensive case management (primarily through Citywide, a CBO affiliated with UCSF), a behavioral health urgent care clinic (Westside Crisis), a crisis stabilization unit (DORE, a CBO), a sobering center, and both detox and residential settings for substance use recovery services. The SCRT will be able to link people in crisis to the most appropriate setting using standardized triage protocols, rather than SFPD bringing only a subset of people meeting criteria for involuntary holds to PES.

Housing Services

A key priority for the SCRT is to improve outcomes for the target population by securing placement in long-term housing. San Francisco has a range of residential options including supportive housing settings that follow the "Housing First" model.[27] The SCRT will support clients to engage with San Francisco's Coordinated Entry process that is required to access long-term placement, including participation in housing case management services.

Resources to Support the Intervention

The implementation of the SCRT is part of a wide-reaching process that has engaged multiple key stakeholders in San Francisco governance as well as community representatives.

Office of Mental Health Reform

In 2019, the Mayor of San Francisco created an Office of Mental Health Reform charged with developing system interventions to improve the quality of life for adults experiencing homelessness with co-occurring mental health and substance use disorders. The Mental Health Reform team convened engagement sessions with leaders from SFDPH BHS, contracted CBOs, and the Department of Homelessness and Supportive Housing (HSH). Top priorities that resulted from this process included providing tailored, innovative services for Black/African-American communities to address inequities and disparities in health, as well as centralizing behavioral health intake processes to improve client experience, system flow, and data analysis. The Office of Mental Health Reform is deeply involved in the planning process for the SCRT and its director and staff are committed to the evaluation described in this proposal.

Whole Person Care

SFDPH is committed to advancing innovative models, using data to inform continuous quality improvement, and striving for equity throughout the system. One example is the creation of Whole Person Care (WPC), a pilot program within Medi-Cal 2020, California's Section 1115

Medicaid Waiver. The WPC program developed a multi-agency universal assessment tool for high-risk, high-utilizing patients that was aimed at coordinating the delivery of physical health, behavioral health, housing support, and other critical community services. The data collected by WPC is managed in the Coordinated Care Management System (CCMS), which will be a data source for the SCRT evaluation ***(see section on Data Infrastructure)***.

Leveraged Assets of SFDPH and SFFD

The roll out of the SCRT will benefit from the SFDPH Office of Communications, which has already partnered with the Mayor's Office on an August 11 press release, titled, "Mayor London Breed Announces Plan to Create Behavioral Health Street Crisis Response Team."[28] The funding for the SCRT will be supported by Medi-Cal reimbursements and augmented by the City and County of San Francisco general funds, which will cover the costs of clinician salaries and benefits, vehicles, trainings, and other direct service expenses without costs to the client ***(see section on Mechanism)***. SFDPH and SFFD will be responsible for hiring and training the SCRT members, including peer specialists already active in the SFDPH system.

Community Participation

Critical to the successful implementation of a new program is ensuring adequate input and buy-in from community stakeholders. The San Francisco Coalition on Homelessness and Human Rights Commission were involved in the design and planning for the SCRT and will continue to provide oversight. The research methods described in this proposal will also be presented to the BHS Client Council[29] and the San Francisco Behavioral Health Commission,[30] to ensure that the chosen metrics are valid and important to the target population.

Mechanism: Mental Health SF

The San Francisco Board of Supervisors collaborated with the Office of Mental Health Reform and SFDPH, with input from community stakeholders and care providers, to develop legislation called Mental Health SF, which was signed into law by Mayor London Breed in December 2019. Mental Health SF provides for improved delivery of behavioral health services, with a focus on adults experiencing homelessness. In addition to the SCRT, Mental Health SF includes provisions for a 24-hour Mental Health Service Center to expand urgent mental health treatment capacity and a new Office of Care Coordination to track system-wide demand and offer case management services, both of which are pending funding. Potential funding sources, including a bond and a reformed business tax, have been identified. Treatment providers under Mental Health SF will be licensed through existing mechanisms overseen by SFDPH.

Defining Success

The Office of Mental Health Reform defined a set of metrics for the Mental Health SF initiative, of which the SCRT is a core component. These internal metrics, which focus on the high-risk population of 3,930 adults with a psychotic and substance use disorder, include:

Metric	FY1819 Baseline	Target 7/1/21	Target 7/1/22
1. Increase the percentage of the target population assessed for housing.	36%	75%	90%
2. Increase the percentage of the target population retained in planned, routine behavioral health care.	54%	62%	71%
3. Reduce the percentage of target population who use urgent and emergent services and the frequency of use per person.	80%	68%	58%
4. Increase the number of people who are placed in permanent supportive housing or other long-term placements (cumulative).	9%	25%	50%

Metrics 1-3 are closely aligned with the main outcomes for this project ***(see Research Methods)***; metric 4 is beyond this grant's timeline. Additional measures of success, which will be collected using internal SFDPH evaluation funds, will include descriptive metrics such as SCRT response time (target average 15 minutes), number of clients evaluated by SCRT (target 150 encounters per team per month), and calls diverted from SFPD (target 50% reduction following citywide expansion; 9-1-1 dispatch data not available for this analysis). Time to these targets will be tracked closely, as well as equity of these outcomes across sub-populations.

Data Infrastructure

The implementation of the SCRT will rely on robust data systems for real-time clinical use as well as for program evaluation. The two main components are the Avatar EHR, which is used system-wide by BHS providers, and the Coordinated Care Management System (CCMS), an integrated data platform used both clinically and administratively to facilitate data exchange.

Avatar Electronic Health Record

The primary data source for this analysis will be the Avatar EHR, which is the shared documentation and billing system for San Francisco's behavioral health providers (both direct SFDPH clinics and CBOs) and will be the clinical record used by the SCRT. Patients are assigned a unique ID and episodes are labeled with a code corresponding to a specific mental health or substance use program. The Avatar EHR captures demographic information (age, gender, race, ethnicity, primary language, sexual orientation), diagnosis, medications, and clinical notes, address, insurance coverage, and billable episodes. Episodes can be analyzed sequentially to determine, for example, whether an outpatient episode occurred within a specified timeframe relative to a crisis episode. The BHS Office of Quality Management and the Office of Research and Evaluation have extensive experience analyzing Avatar EHR data and will assist with data extraction for this evaluation.

Coordinated Care Management System

CCMS compiles information from 15 data sources providing a "whole person" profile comprising 20 years of medical, mental, and substance use health histories and social information on vulnerable populations served by SFDPH. CCMS data systems include:

Data Source	Description
Avatar EHR	As described above; linked by unique patient identification number
Epic EHR	Used by SFDPH medical clinics, EDs and hospitals, as well as the sobering center, PES, and inpatient psychiatry
Homeless Management Information System (HMIS)	Records on initiation of coordinated entry, assessment by a case manager, initiation and termination of placement in permanent housing
Jail Information Management System (JIMS)	Used by Jail Health clinicians that assess every person who enters the San Francisco County Jail, including admission date and duration of stay
County Adult Assistance Program and Medi-Cal eligibility criteria	Can be used as proxies for socioeconomic status as well as criteria for inclusion in the Medi-Cal eligible population

These data, including Avatar EHR records, are already linked at the unique individual level and updated regularly to inform clinical dashboards about housing status, criminal justice involvement, and high-utilizer status. Furthermore, the WPC team has developed sophisticated approaches to define metrics and patient attributes; for example, CCMS defines someone as experiencing homelessness if they 1) utilize a service that indicates housing instability (e.g., a shelter) or 2) self-report homelessness while accessing health care services.

Research Methods

To determine the efficacy of the SCRT, we will analyze the following outcome measures among Medicaid-eligible homeless adults in behavioral health crisis:

1. *Post-crisis episode linkage to outpatient mental health or substance use treatment*
2. *Post-crisis episode acute service reutilization (return to ED, PES, or other crisis service)*
3. *Post-crisis episode assessment for supportive housing or other long-term placement*

For the purpose of this analysis, crisis episodes will be defined as instances in which an individual accessed crisis services (e.g., PES, sobering center, and DORE urgent care) that accept patients of similar acuity as the SCRT, are frequently utilized as drop off points by SFPD, and lack significant case management capabilities. The SCRT intervention is reasonably expected to improve the above outcomes across these components of the behavioral health crisis system. All outcomes will be measured at both 7- and 30-days post-crisis episode.

Aim 1: Determine the impact of a new Street Crisis Response Team on service outcomes for Medicaid-eligible homeless adults in the behavioral health crisis system.

Research Design: Interrupted Time Series (ITS) design is a quasi-experimental methodology that allows for non-randomized evaluation of a discrete intervention.[31] ITS studies measure the effect of an intervention by comparing the trend line of a regularly measured outcome before and after an intervention, which thus accounts for secular trends in data not due to the intervention itself. The analysis will include three time segments:

1. Pre-SCRT baseline (March 2020 to November 2020)
2. SCRT pilot in two neighborhoods (December 2020 to June 2021)
3. SCRT citywide expansion (June 2021 to November 2021)

Study Sample: Using ITS with the data systems we have available for the project will allow for a multiple cross-sectional analysis, moving from a pre-intervention period, to one with follow-up periods of time. The target population—defined as Medicaid-eligible homeless adults in behavioral health crisis—will be identified based on receipt of a crisis service episode as described above, meeting criteria for homelessness in the 12 months prior to the crisis episode, and being eligible for or insured by Medi-Cal at the time of the episode.

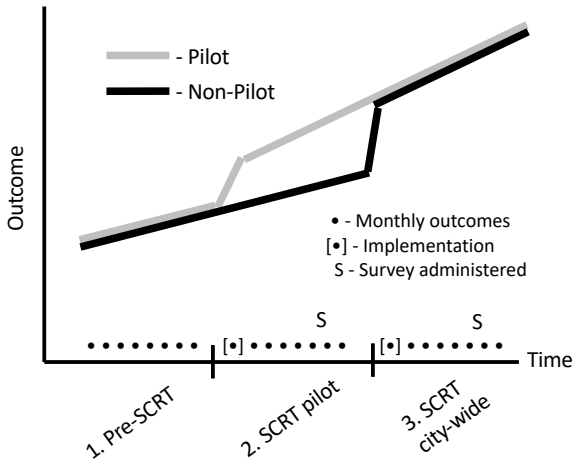
Data Collection: Each of the outcome measures will be computed as a monthly rate, with the numerator equaling the individuals meeting criteria for each measure and the denominator equaling the total target population in a given month. We will plan for monthly data extraction, which would yield approximately six data points per time series segment (although the frequency of measurement may vary depending on the trade-offs between length of observation, level of aggregation, noise, and statistical power). We will conduct a sensitivity analysis of data collected during implementation months (pilot in December 2020 and citywide expansion in June 2021), since this data may need to be adjusted during the time the programs are incompletely implemented.

Power Analysis: Though it is difficult to anticipate the statistical power required for an ITS design since the signal-to-noise ratio will only become apparent upon completing the analysis, we anticipate that the power will be adequate for this analysis based on the number of clients previously identified in the target population (n=12,735 in FY18-19).

Statistical Modeling: Segmented linear regression will be used to analyze the trends in outcomes before and after the implementation of the SCRT. Models will be adjusted by age, gender, race/ethnicity, zip code (based on last location documented prior to the crisis episode), medical comorbidity (using the Elixhauser Comorbidity Index,[32] which is already computed in CCMS), homelessness status at the time of the crisis episode, receipt of public assistance as a proxy for socioeconomic status, and history of criminal justice involvement.

This analysis will use several statistical techniques to account for potential threats to internal validity. First, the study design using two nonequivalent groups with staggered SCRT implementation (initial pilot followed by citywide implementation) will allow for a between-site

comparison of the pilot catchment area relative to the non-pilot areas (see figure below). Additional sub-analyses will examine within-site differences for the pilot neighborhoods across the three time periods, and, separately, within-site differences for the non-pilot neighborhoods. Second, a non-equivalent non-treatment control group (non-homeless adults accessing crisis services) will be compared to the target population (homeless adults accessing crisis services) using a difference of differences approach to account for secular variations in mental health and substance use service utilization. Third, a series of non-equivalent dependent outcome variables that are not expected to be impacted by the implementation of the SCRT (e.g., non-crisis initiation of outpatient mental health services) will be evaluated across the same time periods with a similar goal of accounting for secular variations in mental health service utilization. Fourth, given the uncertainty about the future COVID context of SCRT implementation, we will conduct sensitivity analyses using an additional pre-COVID time segment compared to post-COVID baseline segments for comparison to the SCRT implementation phases. We will also model the main findings using a covariate of either monthly COVID case rate or San Francisco's economic opening status. Finally, we will identify individual clients with episodes in each segment and examine their outcomes across segments using generalized estimating equations.[33] Additional issues such as autocorrelation of repeated measures will be corrected for in the final analyses.



Aim 2: Evaluate the effect of an innovative Street Crisis Response Team on equity of access to mental health, substance use, and housing resources among Medicaid-eligible homeless adults in behavioral health crisis.

We will conduct an additional ITS analysis that stratifies the population by race and ethnicity, as determined by patient self-report in EHR demographic records. By stratifying the total population into sub-categories of interest and comparing the outcomes of the ITS analyses, we will be able to describe if the potential influence of the SCRT intervention was equitably distributed across racial groups. Furthermore, we will be able to identify if potential baseline disparities are perpetuated or reduced by the implementation of the SCRT.

Aim 3: Describe the facilitators and barriers to achieving positive outcomes following utilization of a new Street Crisis Response Team among Medicaid-eligible homeless adults in behavioral health crisis.

Research Design: We will conduct semi-structured interviews to assist with interpretation of the ITS analysis.

Sampling: We will use Sequential Mixed Methods Sampling (QUANT→QUAL), a sequential sampling strategy beginning with quantitative data and followed by targeted qualitative data collection for primary purposes of confirmation, assessment of variation (such as for priority sub-groups) and hypothesis testing.[34,35] Based on preliminary findings for the 7-day outpatient linkage and acute service reutilization outcomes, we will recruit from the pilot (n=40) and citywide expansion (n=40) cohorts according to this frame.

Sampling Frame		Linkage to Outpatient	
		Yes	No
Acute Service Reutilization	Yes	10	10
	No	10	10

Interview Guide: The 20-30-minute semi-structured interview will include specific questions related to each of the four clinical functions of the SCRT program: Dispatch (did the right team respond to your needs?), Assess (did the team understand your needs?), Treat (did

the team provide treatment that was well suited to your needs?), and Triage (did the team connect you to a setting that was appropriate to your needs?). It will also include validated scales on self-efficacy (e.g., PROMIS adult mental health scale for Self-Efficacy[36]), general satisfaction (e.g., ED Patient Experience of Care Survey[37]), and experience of discrimination (e.g., Everyday Discrimination Scale[38]).

Data Collection: The research coordinator hired with grant funds will partner with our homeless outreach clinicians to engage with individuals who had experienced a crisis episode 7 to 30 days prior, so as to provide time for the resolution of the crisis in question. Respondents will have the option of responding by interview or by using a touchscreen computer. Patient consent will be obtained prior to participation in the study. An incentive ($60 gift card) will be provided to all participants; receipt of this payment should not affect Medi-Cal eligibility.

Mixed-Methods Analysis: In combination with the ITS analysis (for example, taking into account results from the stratified analysis), the interview findings will be quantified descriptively and coded for salient themes using well-established qualitative methods.[39] These findings will directly inform further iterations and improvements in the SCRT.

Limitations

There are several limitations to the research methods described above. While ITS designs can measure the impact of a non-randomized intervention, this quasi-experimental approach may not yield definitive results. Though data from 9-1-1 dispatch might help identify which cases are being diverted from SFPD to the SCRT, these data will not be available in time for this evaluation, so related crisis episodes will function as a proxy. It is not possible to anticipate potential future impacts of COVID on data collection. Incomplete data on the location of homeless individuals may impede the neighborhood-specific analysis; in this case, only the pre-pilot and citywide expansion segments would be included. In the structured interviews, those with negative experiences may be disinclined to participate, thus exposing the results to bias. Furthermore, it is possible that if only a small number of clients can be located or agree to participate, this will limit the available perspectives. As acknowledged in the research agenda, the duration of RWJF HSTRC grants will likely not allow for a complete evaluation of long-term outcomes, though SFDPH will seek additional funding to complete a long-term evaluation.

Applicant Background and Experience

Matthew L. Goldman, MD, MS, (Project Director) is the Associate Medical Director for Comprehensive Crisis Services in SFDPH, and he is a Volunteer Clinical Assistant Professor in the UCSF Department of Psychiatry and Behavioral Sciences. Dr. Goldman is currently funded by the American Foundation for Suicide Prevention to study triage decision-making by crisis call center and mobile crisis clinicians using a large clinical dataset. Dr. Goldman is a member of the Board of the American Association of Community Psychiatry, a member of the American Psychiatric Association's Council on Advocacy and Government Relations, and the National Council for Behavioral Health's Medical Director's Institute.

Phillip Coffin, MD, MIA, (Project Co-Director) is the Director of Substance Use Research in the Center for Public Health Research at SFDPH. He is a board-certified internal medicine and infectious diseases clinician; specific foci of Dr. Coffin's training include HIV management, buprenorphine maintenance, addiction management, toxicology, and viral hepatitis care. As Center Director, Dr. Coffin oversees several pharmacologic and behavioral trials that aim to reduce substance use and related HIV risk behaviors. Since the early 1990s, Dr. Coffin has been involved in developing and studying services for drug users, including syringe exchange, agonist maintenance therapy, and overdose prevention programs.

Margaret Handley, PhD, MPH, (Scientific Advisor) is a Professor of Epidemiology and Biostatistics and Medicine at UCSF and core faculty in the Center for Vulnerable Populations. She co-directs the UCSF Training Program in Implementation Science, she is the implementation science lead for the UCSF Benioff Housing and Homelessness Initiative, and

she co-directs the new UCSF PRISE Center (Program in Research for Implementation Science for Equity), which focuses on achieving health equity through applied implementation science research. The PRISE Center is intended to strengthen partnerships with SFDPH programs to help tailor interventions and evaluate their impact on health and programmatic outcomes.

Ann A. Lazar, PhD, (Senior Biostatistician) is an Associate Professor in the UCSF Division of Oral Epidemiology and Division of Biostatistics, and she is a member of the Clinical and Translational Science Institute (CTSI), Helen Diller Family Comprehensive Cancer Institute (Biostatistics Core), Center to Address Oral Health Disparities, and Bakar Computational Health Sciences Institute. She has extensive experience developing protocols for intervention studies and serving as a statistical consultant, including on ITS designs. She works closely with ***Alan Bostrom, PhD,*** a UCSF-based statistical analyst who will also assist on this project.

Relationships with Partners

The University of California, San Francisco (UCSF) is a national leader in academic health sciences and has a long history of close collaboration with SFDPH. Drs. Goldman and Coffin are volunteer clinical faculty at UCSF and thus have access to a range of resources, including the UCSF Library and Center for Knowledge Management, UCSF IT services such as Zoom meetings, and access to high value research methods consultation through the CTSI, which will be sub-contracted for statistical services (Dr. Ann Lazar) and mixed methods input (Dr. Margaret Handley) for this grant. Furthermore, SFDPH holds a contract with the UCSF Institutional Review Board to conduct reviews of projects based at SFDPH.

Heluna Health (formerly Public Health Foundation Enterprises) is a licensed non-profit that will provide fiscal, human resources, and administrative support for this proposal, as it has done for research conducted in several divisions of SFDPH for over 40 years. Heluna Health currently serves over 250 programs with combined budgets totaling more than $120 million dollars and serves in this same capacity on Dr. Goldman's and Dr. Coffin's research grants.

The Substance Use Research Unit (SURU)**,** directed by Dr. Coffin, is part of the Community Health Equity & Promotion Branch (CHEP) in the Population Health Division of SFDPH. The SURU and other researchers in the Center for Public Health Research work on a variety of projects with the goal of improving health in San Francisco. The research infrastructure and expertise that are well established in SURU and the Population Health Division frequently collaborate with other divisions of SFDPH, including BHS.

SFDPH Research Environment

Information Storage and Security: All data are collected and saved in highly secure password-protected network drives that are automatically backed up twice daily. Staff use state of the art programs for statistical analysis (e.g., SAS) and reference management (e.g., Zotero).

Offices: Drs. Goldman and Coffin already have offices, and research staff will be given office spaces in SFDPH buildings. The office suite will have workstations equipped with phones, computers, printers, and internet access, as well as 24-hour in-house security.

Milestones, Deliverables and Dissemination

The SCRT is an innovative model with extensive support across San Francisco's public and community stakeholders, and a robust evaluation of a real-world implementation of this type of team will offer a significant contribution to the literature on crisis services. Ensuring adequate advancement and dissemination of results is essential. Milestones for the proposed research are described in the project timeline. The findings of the proposed research will be summarized in a summative report provided to RWJF and Avalere Health and circulated extensively within SFDPH and among its partners. The findings will also be disseminated via 2-3 peer-reviewed publications and presentations at national meetings. The results of this project will inform future implementation of model crisis system components and best practices, particularly for homeless and otherwise vulnerable populations.

Research to Advance Models of Care for Medicaid-Eligible Populations

Identifying Information
Project Title: Impact of a New Street Crisis Response Team on Service Use Among San Francisco's Homeless Population with Mental and Substance Use Disorders
Proposal I.D.: 98662
Applicant Name: Matthew L. Goldman, MD, MS
Legal Name of Applicant Organization: San Francisco Department of Public Health

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Project Timeline Template

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Timeline Chart(s)

Year One Timeline (dates)	**D**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**
Interrupted Time Series Segment	PILOT						CITYWIDE					
Objective A – Measure impact and equity of implementation of SCRT on key outcomes												
Tactic/task: Develop & revise outcome measures	X	X			X							
Tactic/task: Extract data from Avatar EHR & CCMS			X		X		X			X		
Objective B – Interview client perspectives on facilitators/barriers to service use												
Tactic/task: IRB application submission		X										
Tactic/task: Interview guide development	X	X										
Tactic/task: Recruitment & data collection					X	X					X	X

Year Two Timeline (dates)	**D**	**J**	**F**	**M**	**A**	**M**
Interrupted Time Series Segment	ANALYSIS					
Objective A – Measure impact and equity of implementation of SCRT on key outcomes						
Tactic/task: Interrupted Time Series analysis	X	X	X	X		
Objective B – Interview client perspectives on facilitators/barriers to service use						
Tactic/task: Mixed-methods analysis	X	X	X	X		
Objective C – Dissemination of Findings						
Tactic/task: Final report						X
Tactic/task: 2-3 academic publications				X	X	X

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