

This document is provided as a sample research strategy. Some text has been redacted.

## 1. Project Science Areas: 1 BSS; 3 CTR

## 2. Project Description

**2.a. Scientific Challenge.** One person dies by suicide every 10 minutes and one person is hospitalized for a suicide attempt every 54 seconds.<sup>1</sup> Where other leading causes of death in the US (e.g., heart disease, cancer) include biomedical diagnosis and substantial medical treatments to prolong life, suicide is frequently viewed as an unexpected tragedy – a “bolt from the blue” – stemming from unpredictable behavior solely driven by mental health. Despite the US suicide rate increasing over the last 15 years, culminating in over 48,000 deaths in 2018 and incurring over \$70 billion in medical costs and lost productivity,<sup>1</sup> a common lamentation in the wake of this death of despair is, “If we had only known how bad things were.”

Decades of research have elucidated factors strongly associated with suicide; the majority of which are psychopathological, such as depression, anxiety, schizophrenia, and bipolar disorder.<sup>2</sup> Mental health research and treatment are clearly important for understanding and preventing suicide. However, of the tens of millions of Americans with mental disorders, extremely few will even think about killing themselves.<sup>3</sup> For example, the leading cause of death among people with depression is not suicide; it is heart disease.<sup>4</sup> Among people who die by suicide, only 45% had a mental health diagnosis in the 12 months prior to their death.<sup>5</sup> In this context, I contend that in suicide prevention, mental health has been emphasized to a point that research is penned into psychopathology and sequestered into the fields of psychology and psychiatry. This sequestration casts suicide as a disorder of the brain because, as the colloquialism goes, “Who in their right mind would think of killing themselves?” A major consequence of defaulting to psychopathology is leaving unexplored the important social determinants, specifically life disruptions, often associated with imminent risk for suicide.<sup>6</sup> Job loss, financial strain, relationship failures, legal problems, housing instability – these life disruptions can be semaphores of dire experiences that are misinterpreted as coincidental rather than causal. I maintain that a crucial scientific gap in suicide prevention stems from the majority of suicide research relying on an individual’s psychopathology (i.e., the person’s brain) rather than searching for meaningful constellations of risk (i.e., the person in a broader context of social environment) that could open new doors to prevention. **I propose a paradigm shift in suicide research by prioritizing social determinants to develop public health research and prevention through broad, but strategic, partnerships with industries outside of mental health and health care, including the specific industries of family law, mortgage foreclosure, and unemployment services.** This proposal will address these guiding questions:

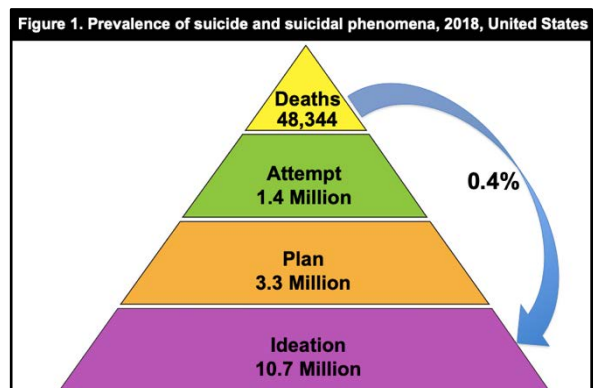
1. What are the life disruptions that precipitate suicide deaths and what services did decedents access in relation to those life disruptions?
2. In industries of family law, mortgage foreclosure, and unemployment services, what are the experiences (both explicit and intuitive) of employees who encounter clients who are suicidal, including employees’ breadth of training around suicide prevention?
3. How can these industries develop and implement systemic changes contributing to suicide prevention?

This proposal takes an innovative upstream approach to suicide research and prevention by (1) understanding individuals’ experiences dealing with major life disruptions and (2) diving deeply into how the touchstones of non-mental health industries serving these individuals could become bridges for suicide prevention. The proposed project challenges the status quo to extend beyond detecting and preventing suicide risk within current boundaries of clinical, individual-level models and treatments that are nearly always implemented in medical or medically-proximal settings.

## 2.b. Scientific Context

### 2.b.1. Suicide is notoriously challenging to predict.

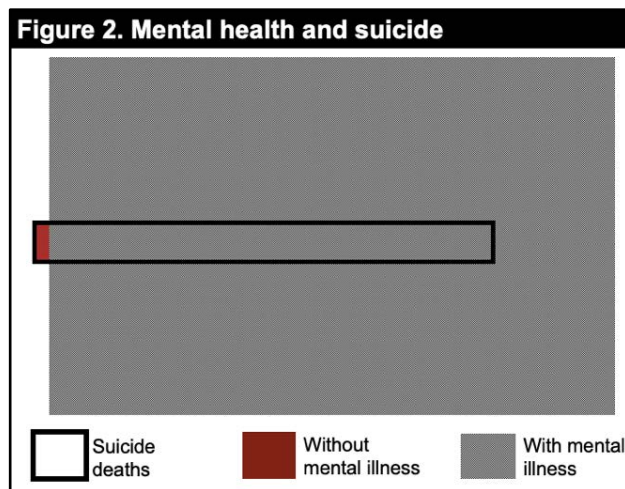
Understanding this challenge requires revisiting a common “linearity” myth about suicide in the face of what is already known about suicide ideation, planning, and attempts. The linearity myth posits that a person first thinks about suicide, then plans their suicide, then attempts suicide, ultimately to die by suicide. Although this linear path may be plausible for people who die by suicide, suicidal phenomena (e.g., ideation, planning, attempts) suggest less of a linear narrative and more of a pyramidal narrative (Figure 1). For



instance, among US adults in 2018, 10.7 million reported thinking about suicide, 3.3 million reported planning suicide, 1.4 attempted suicide, and just over 48,000 died by suicide that year.<sup>1</sup> If suicide was a linear phenomenon, the shape in Figure 1 would be more rectangular, with 200-fold greater deaths. The reality is, despite being the 10<sup>th</sup> leading cause of death in the US, total suicide deaths represent just 0.4% of people who report thinking about suicide. Thus, the enduring challenge of suicide prevention is aptly summarized by the idiom of trying to find a needle in a haystack.

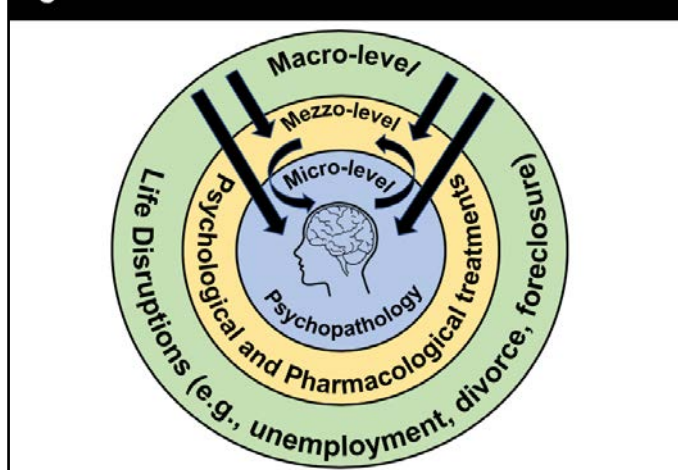
**2.b.2. Decades of research have elucidated salient factors strongly associated with suicide, and most of these factors reside in psychopathology.**<sup>2</sup> Depression is by far the most oft-cited correlate and risk factor of attempted suicide and death by suicide; not far behind it are bipolar disorder, schizophrenia, anxiety, posttraumatic stress disorder, obsessive compulsive disorder, eating disorders, and alcohol and drug use disorders.<sup>2</sup> **Although mental health treatment is a vital component for reducing suicide risk, mental health is not sufficient for predicting suicide.** Retrospective studies using deep dives into a decedent's life prior to death suggest that the majority of people who die by suicide had a mental health diagnosis regardless of whether it was clinically diagnosed (and most were not diagnosed).<sup>5</sup> However, these findings must be reckoned with substantial research indicating that the majority of people with mental health diagnoses do not ever think about or attempt to kill themselves (Figure 2).<sup>3</sup>

For instance, results from the Collaborative Psychiatric Epidemiology Surveys (n= 11,716 adults from probability-based samples) found that among people with psychotic episodes, less than 10% reported suicidal ideation in the previous 12 months.<sup>3</sup> **Thus, even though mental illnesses get us closer to a “who” is at risk, the field remains stymied by the “when” risk activates to imminent suicide attempt or death.**<sup>7</sup>



**The predominant focus on mental health eclipses important social underpinnings of suicide, steering intervention to individual-level treatments that ultimately have not reduced suicide over the past two decades.**<sup>8</sup> Again, individual-level mental health treatment for suicide risk is, of course, necessary in our current toolbox of intervention. There are hundreds of articles extolling how psychologists, psychiatrists, and social workers have improved the lives of individuals who engaged in suicidal thoughts and behaviors. However, I maintain that the current gestalt of suicide research needs to better incorporate social determinants, like life disruptions, as a new way forward to actualizing a “no wrong door” approach to detection, intervention, and ultimately prevention. The limitations of the status quo of suicide risk research can be conceptualized in levels of micro-, mezzo-, and macro-level determinants (Figure 3). The micro-level consists of strictly individual-level determinants, such as psychopathology, biomarkers for mental illness, or traumatic brain injury. The individual-

**Figure 3. Multi-level determinants of suicide risk**

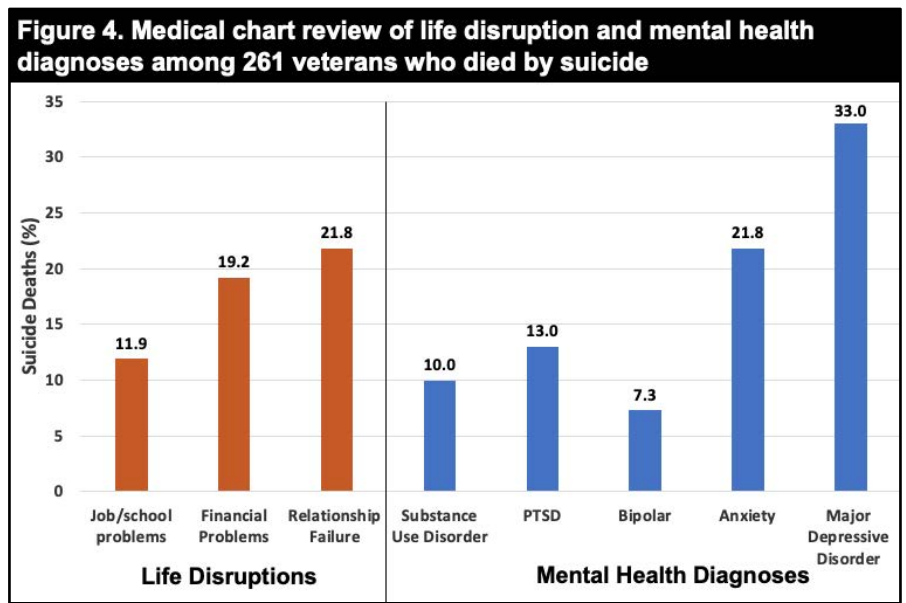


level determinants of suicide risk are impacted at the mezzo-level by inter-personal factors, which in the suicide literature has mostly been explored via access to and receipt of mental health treatment. Moreover, the majority of research has focused on determinants at the micro- and mezzo-levels,<sup>9</sup> creating a micro-mezzo eddy that overlooks the person in context. The contextual factors at the macro-level include life disruptions, such as unemployment, divorce, and mortgage foreclosure; all of which can directly affect how and if individuals access care (mezzo-level) and create incredible direct stress on the individual (micro-level). Macro-level determinants could improve early warning and intervention before individuals reach a period of suicidal distress. Getting closer to the question of “when” someone could be suicidal may lie in the macro-level sphere of determinants. Compared to the controlled, curated

environment of a clinical mental health visit, mapping the dynamic nature of macro-mezzo-micro level determinants of risk can be difficult, especially in crisis situations. However, **to provide the most effective ways of detection and prevention of suicide, we need to strategize around the person *in context*.** For instance, studies suggest that, in the 12 months prior to their death, less than half of suicide decedents had a mental illness or mental disorder diagnosis,<sup>5</sup> which is the typical go-to signal of suicide risk. But there are signals in the macro-level, and evidence of these life disruption signals have come from a methodology known as psychological autopsy.

**2.b.3. A psychological autopsy (“psych autopsy”) strives to piece together the story of a suicide decedent.** Originally utilized to discern whether a death of ambiguous cause was a suicide,<sup>10</sup> the psych autopsy methodology has evolved to explore the phenomenon of suicide. The methods encompass close review of evidentiary material (e.g., medical records, suicide notes, death investigation reports) and primary data collection through intensive interviews with key informants who closely knew the decedent.<sup>11,12</sup> Psych autopsy studies that strive for the greatest veracity typically employ a control sample of either living individuals or individuals who died of causes other than suicide. The hallmarks of psych autopsy methodology (like the name suggests) are deep dives into mental health characteristics of decedents: Did they have a history of mental health diagnoses? Were they in mental health treatment? When did they last receive psychotherapy, pharmacotherapeutics, or both? Perhaps most controversially, if the decedent did not have a mental illness or disorder diagnosis, do key informants who were close to the decedent describe symptomology or behaviors of the decedent that indicate a likely diagnosable condition? Although the psych autopsy methodology has been criticized for attempting postmortem mental health diagnoses for the decedent,<sup>13,14</sup> reports of more objective events, such as life disruptions, have surfaced in psych autopsy studies. Several psych autopsy studies have identified, specifically, that relationship failures, job loss, and financial problems were more common among individuals who died by suicide compared to controls who did not die by suicide.<sup>15-17</sup>

In addition to psych autopsy studies built around key informant interviews, psych autopsy studies based on medical chart reviews suggest similar evidence of life disruptions. **For example, in a chart review study of 261 veterans who were receiving care from the Veterans Health Administration (VHA) and who died by suicide, life disruptions documented in clinical notes from the 6 months preceding the death were just as prevalent, if not more prevalent, than mental health diagnoses (Figure 4).**<sup>18</sup> This study of veterans exemplifies several key points. First, these suicide decedents were all connected to health care, and the VHA has arguably one of the most comprehensive mental health and suicide prevention infrastructures of any health care system in the US.<sup>19</sup> And despite these systemwide efforts, only 33% of suicide decedents had a diagnosis of major depression in the 6 months prior to their deaths. Second, even though medical systems struggle with handling non-medical life disruptions, evidence of life disruptions was *still* detected in clinical progress notes. Third, those medical documentations of life disruptions occurred with greater frequency than clinical mental health diagnoses.



**2.b.4. If social determinants orbit suicide risk so prominently, why do they seem deprioritized over mental health diagnoses in suicide prevention research?** NIMH introduced their Research Domain Criteria (RDoC) as an attempt to catalogue the ever-growing science around mental health research for the primary goal of “precision medicine for psychiatry.”<sup>20</sup> Nested within that tall order was suicide prevention. The framework has proven useful for taking stock of suicide prevention research, if only to highlight ongoing major deficits. For instance, one of the five RDoC domains is Social Processes, and when Glenn and colleagues applied the RDoC framework to a recent meta-analysis of suicide research, they concluded, “...constructs within those parent [RDoC] domains have never been examined as potential risk factors for suicidal

behavior...Social Processes domains are especially under-explored.”<sup>6</sup> **But upon further dissection of the RDoC Social Processes domain, the definitions still seem honed at the individual level – loneliness, self-esteem, and personality characteristics.**<sup>6</sup> In 2015, the National Action Alliance for Suicide Prevention assessed suicide prevention research efforts from 2008–2013 funded by both federal and private sources. Among studies that examined why people engaged in suicidal thoughts and behaviors, 62 focused on biomarkers, 51 focused on cognitive dysfunction, and only 18 focused on multiple risk models that included life events.<sup>9</sup> This lack of prominence of social determinants in suicide research seems all the more stymying when one considers that

- o Emile Durkheim, who is credited for originating suicide research, was a sociologist;
- o one of the National Strategy for Suicide Prevention goals is to “provide training to community and clinical service providers on the prevention of suicide and related behaviors,” which includes “bank, mortgage, and financial service providers... divorce, family law... [and] social service and human service providers”;<sup>21</sup> and
- o the Centers for Disease Control and Prevention’s (CDC) one-word strategic direction for suicide prevention was “connectedness”<sup>22</sup> – not “psychotherapy” or “prescriptions.”

True integration of social determinants into suicide prevention research will require a fundamental paradigm shift – from suicide as a *clinical* mental health problem requiring clinical solutions, to suicide as a problem at a *social and clinical nexus*, thus necessitating **both** social and clinical solutions.

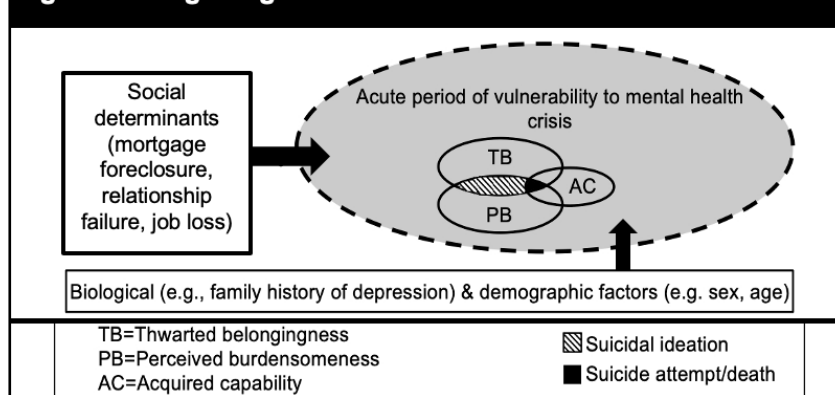
**2.b.5. First, for all the burgeoning efforts for patient-centered care, health care does not adequately address social factors,<sup>23</sup> which includes life disruptions associated with suicide.** Relying on medical settings as a first line of detecting suicide risk – either by screens for suicide risk or through predictive modeling with electronic health record (EHR) data – still misses important social factors; not to mention, it requires that individuals are currently engaged in health care. In primary care, time demands of the clinical encounter strain the ability to create rapport with patients who may be experiencing suicidal crisis or life disruptions associated with distress.<sup>24</sup> Furthermore, medical residents received variable (if any) training in social determinants of health.<sup>25</sup> The mantra of “diagnose and prescribe” in a clinical environment does little for life disruptions (e.g., foreclosure, relationship failure, job loss) that defy biomedical diagnosis and solutions.

**2.b.6. Second, most theories of suicide risk do not explicitly integrate social factors like life disruptions.** Most theoretical frameworks place suicide risk as an individual mental health problem to guide individual-level treatment.<sup>26</sup> Less attention has focused on conceptualizing suicide as a public health problem requiring the integration of social determinants into prevention.<sup>27</sup> Recent work combining 2 leading theoretical frameworks of suicidal behavior—the Interpersonal Theory of Suicide<sup>28</sup> and Fluid Vulnerability Theory<sup>29</sup>—suggest how social determinants, such as life disruptions, may influence individual suicidal behavior.

The Interpersonal Theory of Suicide maintains that individuals who experience thwarted belongingness and perceived burdensomeness become prone to thoughts of or desire for suicide. The acquired capability component of the Interpersonal Theory refers to individuals habituating to pain and losing fear of death, which begins to override the innate will to live. Individuals at the highest risk of lethal suicide attempts are at the nexus of these 3 factors.<sup>28</sup> Fluid Vulnerability Theory refers to the notion of a *suicidal mode*, in which an

individual’s suicidal thoughts become an active suicide attempt, potentially leading to death. Some factors are trait-based (i.e., biological, demographic), but **other more dynamic factors (i.e., life disruptions) may present “system shocks” that create periods during which suicidal crisis is highest.** Wolfe-Clark and Bryan posit that the key constructs of the Interpersonal Theory of Suicide—thwarted belongingness and perceived burdensomeness—that facilitate suicidal ideation and attempt (i.e., the characteristics of *who* may die by suicide) may be particularly enhanced during acute periods of distress representing high vulnerability to

**Figure 5. Integrating social determinants into theories of suicide**





suicide (i.e., the characteristics of *when* suicide risk is greatest; Fluid Vulnerability).<sup>30</sup> Specific social determinants (e.g., mortgage foreclosure, relationship failure, job loss), may create these acute periods of vulnerability, amplifying the elements of the Interpersonal Theory of Suicide that suggest who will develop suicidal thoughts and behaviors (Figure 5).

**2.c. Approach. To comply with the Funding Opportunity Announcement instructions, a detailed experimental plan and extensive preliminary data are not provided.**

**2.c.1. Turn psych autopsy on its head...or rather, away from the head.** Psych autopsy methodology is a home-grown approach within the field of suicide prevention, but its gravitation to mental illness has narrowed its vision. Mental illnesses as actionable predictors of suicide has reached a saturation point in the literature that leaders in the field recommended "...researchers studying suicide to move beyond simple studies that test the role of mental disorders."<sup>7</sup>

To shift the paradigm, I believe we can co-opt the methodology of a psychological autopsy to construct a *social* autopsy. A high-risk component of this proposal is to use a method like psych autopsy but *not* use the interview time with key informants to discern decedent mental health symptomology, which has often been gauged by employing proxy Structured Clinical Interview for DSM Disorders (SCID). Instead, the point of our inquiry is to pursue the leads around life disruption, i.e., potential social service systems the decedent may have been involved with or received services from because of the life disruption.

Although the perspective of using the key informant interviews to deeply explore life disruption instead of mental health is nontraditional, we plan to use the same comparative methods established to work in traditional psych autopsy methodology, namely a case-control design with data extracted from key informant interviews.<sup>12</sup> Some studies have used living controls while other studies have employed decedents of non-suicide deaths.<sup>13</sup> To conduct a psych autopsy study, typically researchers partner with coroner and medical examiner offices to recruit next-of-kin and close contacts of the suicide decedent for participation in the study. Briefly, in a typical psych autopsy study, the coroner or medical examiner offices mail information about the study to next-of-kin contacts for decedents of suicide deaths. If the next-of-kin contact does not reach out, the research team follows up with the next-of-kin contact to ascertain interest in participating in the study. Response rates for US studies have ranged from 28% to 66%,<sup>16,31-33</sup> and our review of 18 psych autopsy studies suggest an average sample size of 130 suicides gathered over an average study period of 2.5 years.

**My previous work in training medicolegal death investigators<sup>34</sup> provides me with entrée to several coroner and medical examiner offices across the US to approach for partnerships for recruitment.** By employing recruitment and study designs known to be successful in psych autopsy studies, we are confident about the feasibility of *how* we implement the study; the uncharted territory is in *what* we ask key informants. We will craft a semi-structured guide to implement during audio-recorded interviews, which will contain elements typically used for psych autopsies (e.g., demographics, interview characteristics; Table 1). Notably, although we will include questions about whether the decedent had mental health conditions or diagnoses, we will not administer the SCID or dive deeply into mental health symptomology. The focus will be on life disruptions informed by the List of Threatening Experiences (LTE),<sup>35</sup> which has been used in previous psych autopsies,<sup>11</sup> and demonstrates moderate to high interrater-reliability (Cohen's kappas 0.7-0.9) when comparing an individual's self-report against proxy report from a close relative of the individual.<sup>35</sup> Other scales, such as the Social Readjustment Rating Scale, implement a greater list of life events but include ambiguous events (e.g., "change in eating habits").<sup>36</sup> The LTE scale will facilitate introduction to specific avenues of inquiry designed to dive deeply into the milieu of the life disruptions that may be endorsed, including whether the decedent sought assistance for the life disruption (Table 1). To the extent possible, we will pursue supporting

Table 1. Example data domains and collection instruments for social autopsy study	
Data Domain	Sample Items or Instruments
Demographics (decedent and key informant)	Age; race; sex; educational attainment
Interview characteristics	Location and duration of interview; informant's relationship to decedent; years known decedent
Decedent mental health history	Ever knew the decedent had a mental health diagnosis? If so, for what problems?
Life events	List of Threatening Experiences
Industry utilization related to life events	Decedent sought or received services from an industry (e.g., if decedent was in the midst of a divorce, did they have a lawyer?)
Quality of interaction with industry	How did decedent describe their interactions with service providers in these industries?
Interaction with industry	How often did decedent use service provider/s?
Resolution of problem	Did decedent report that service provider helped them with the life event/s? If so, how? If not, what barriers came up?

documents (e.g., letters or correspondence about services or public records of mortgage foreclosure) and interviews with non-mental health service providers who may have worked with the decedent around the life disruption.

Analyses of data from psych autopsy studies include a hybridized approach of summarizing discrete quantitative data (e.g., decedent and informant demographics, prevalence of life disruptions) and qualitative summary of how key informants explain life disruptions (e.g., how much strain or stress to do you think the life disruption placed on the decedent?). Qualitative data are key to exploring life disruptions and summarizing themes of service use and experiences with those services. Transcripts of all audio-recorded interviews will be analyzed using template analysis, a qualitative data analytic method that combines content analysis and grounded theory.<sup>37</sup> The semi-structured nature of the qualitative data makes template analysis an appropriate and efficient way to explore the data and allows inductive reasoning (i.e., allowing themes to emerge from the textual data) and deductive reasoning (i.e., approaching the textual data with pre-formed potential themes informed by the *a priori* interview questions and probes).

The rich data collected from a social autopsy provides heretofore unknown insights surrounding life disruptions that commonly precede a suicide death, namely information about the help that a decedent may have sought. This is not to imply that any single thing – including a life disruption – *caused* a suicide. **This is not about cause. This is about connection.** The direct lines to a mental health or medical provider are paths well-tread by previous research.<sup>9</sup> We plan to go off-road and apply psych autopsy methodology to other key contacts and systems with which a decedent may have connected in the time preceding their death: the lawyer, the social worker, the food bank manager, the mortgage loan officer, the unemployment specialist.

**2.c.2. “We see good people at their worst.”** Maurice Kutner aptly summarized experiences of family lawyers: “A criminal defense lawyer sees bad people at their best. [Family lawyers] see good people at their worst.”<sup>38</sup> In addition to family law, “we see good people at their worst” likely resonates with individuals who work in industries around mortgage foreclosure and on the frontlines of unemployment claims. Employees in these industries were specifically included in the National Strategy for Suicide Prevention recommendations for training: “...professionals whose work brings them into contact with persons with suicide risk should be trained on how to address suicidal thoughts and behaviors.”<sup>21</sup> Despite awareness of these non-mental health industries having a high likelihood of interfacing with people experiencing suicidal risk, there is scarce research about these industries in relation to suicide risk detection and prevention. **Perhaps it is time we ask them.**

**By creating the first large-scale national survey to administer to individuals who work in these industries, we can explore suicide risk with an upstream perspective on life disruptions.** Deriving sampling frames of employees in these industries is possible; it just has not been done before. We have explored several examples. For *family law*, the American Bar Association (ABA), currently maintains a purchasable mailing list of nearly 1.7 million legal professionals, among whom 6,013 belong specifically to the family law section of the ABA and 60,503 self-report family law as an area of interest. Using this sampling frame of lawyers and legal professionals in family law, we can develop a probability-based sample to recruit for a mail-based self-administered survey both via paper (physically mailed and with a returned stamped envelope) and internet-based (a mailer with a link to complete the survey online). For the *mortgage industry*, there are several partners for sampling and recruitment. For instance, the Nationwide Multistate Licensing System reported that in 2018 there were 594,041 licensed mortgage loan originators. Along with the licensure system, there are several professional associations for mortgage loan originators, including the National Association of Mortgage Bankers (approximately 27,000 members) and the Mortgage Bankers Association (approximately 2,200 members). For *unemployment*, the American Job Center Network is funded by the US Department of Labor Employment and Training Administration and has locations throughout the US. The American Job Center website lists 2,080 centers that specifically assist in dealing with the loss of a job. Thus, there are several sources from which to develop frames in which to employ probability-based sampling designs for recruitment across the three industries, such as simple random or stratified random sampling for individuals from professional groups or, in the case of job centers, cluster-based random sampling.

As with the social autopsy, we will employ questions typically incorporated in survey research (e.g., socio-demographics) with added unique questions to assess industry-specific characteristics (e.g., number of years worked in industry). We will develop questions to quantify the breadth and experiences of employees encountering clients engaging in suicidal thoughts and behaviors in these industries (e.g., number of clients that they thought were suicidal, clients who ever threatened or talked about suicide with them, ever had a client die by suicide, ever received training about suicide prevention, the types and extent of suicide prevention

training). These experiences would include overt situations (e.g., a client threatened/talked about suicide) as well as exploring their intuition about clients in distress; **signs, signals, or conventional wisdom that comes from working in an industry so steeped in “seeing good people at their worst.”** Additionally, we will include brief measures to gauge the extent to which individuals hold commonly believed myths about suicide, (e.g., “Once someone makes up their mind about suicide, no one can stop them”).<sup>39</sup> We will include an optional open-ended section in which respondents can write in any thoughts, narratives, or experiences they would like to disclose. Lastly, we will ask respondents to share their contact information if they would like to participate in a follow-up semi-structured interview about the issues of suicide prevention in their industries. The semi-structured interview will include questions to explore what kinds of signals of distress respondents have seen in clients and what respondents had done (or wished they had done) when they observed these signs of anguish or distress; what sort of training in suicide prevention they had received (if any); have they ever used what they learned in that prevention training with a client who was suicidal and what was that experience like; and what strategies might help bridge assistance to clients who might be suicidal.

We will employ bivariate and multivariable analysis for all quantitative data according to the specific outcome of interest. For example, we will use descriptive analyses to summarize the prevalence of variables quantifying the breadth and experience of employees encountering clients who disclose suicidal thoughts and behaviors in these industries, and we will compare differences across industries in multivariable regression models that can accommodate controlling for socio-demographic characteristics and industry-specific characteristics. All text data offered through the open-ended question on the survey and data from the follow-up interview data will be analyzed using template analysis due to semi-structured nature of the qualitative data collection.

#### **2.d. Addressing Potential Limitations.**

Recruitment time for the social autopsy study could be lengthy because suicide is a low base-rate phenomenon and because most studies suggest beginning recruitment at 2-6 months after a loss to suicide.<sup>12,13</sup> To meet this challenge, we will seek partnerships with multiple coroner and medical examiner offices across the country, beginning with current relationships I have with the Los Angeles County Medical Examiner Office and the State Medical Examiner Office for Utah. Response rates for the industry surveys may be low. If probability-based sampling proves a low response rate, we will engage in more targeted recruitment strategies, such as attending professional meetings for these industries to recruit respondents for both the quantitative survey and qualitative interviews. Because some of the proposed research is qualitative, it relies on the principle of achieving saturation of themes (i.e., the point at which no new themes emerge from the data). If we do not achieve saturation of themes in the qualitative data, we will recruit additional participants for interviews. We will survey three specific industries (i.e., family law, mortgage foreclosure, and unemployment processing), but there may be other non-mental health industries that could contribute information about life disruptions associated with suicide risk, (e.g., criminal law, probation officers, child or adult protective services, repossession industries, debt collection agencies). We selected family law, mortgage foreclosure, and unemployment processing because of their salience to suicide risk and because the construction of a sampling frame of individuals in these industries was clearer than other industries. However, if the survey is successful with the three proposed industries, future studies could develop sampling of other related industries.

#### **2.e. Overall Impact.**

The notion of suicide stemming from social problems has been obscured beneath the preponderance of research from the conventional approach of suicide as a mental health problem needing solely clinical solutions.<sup>9</sup> Exploring the social context – particularly the utilization of services around life disruption – among decedents of suicide will reveal novel inflection points around which to build detection and prevention strategies that may start before a person reaches a clinical setting, that is, even assuming that a person has access to mental health care at all.<sup>40</sup> Surveying and engaging people who work in industries dealing with life disruption creates a new perspective of uncommon collaborations with industry partners for suicide prevention. Seeking unconventional upstream strategies to identify and reach people at risk for suicide is all the more important under the fallout of the COVID-19 pandemic, which created historic job loss, relationship strain, financial problems, and increased potential of mortgage foreclosures. If successful, this research would demonstrate that, rather than waiting for people in suicidal crises to walk into a clinic or a physician’s office to potentially be screened for suicide, we could build and activate networks within non-medical industries to meet people in suicidal crises right where and when they are accessing services for a major life disruption. Thus, a targeted social determinants framing can move suicide prevention closer to **faster identification of acute distress, reaching people before they land in a clinical system for suicidal ideation or attempt.**



### 3. Innovation

NIMH's RDoC framework<sup>6</sup> and its commitment to focus on clinic-based screening for suicide in health care settings<sup>41</sup> reifies that the status quo for suicide prevention is on individual-level treatment for mental health problems. This proposal takes an unusual perspective by going against the current of traditional suicide prevention research and forging upstream to pursue new avenues of suicide risk detection, prevention training, and most importantly partnerships with non-clinical industries. Mental health treatment can be life-saving for people in distress, but so can finding a new job, working through a divorce, or not losing a home to foreclosure. What if an effective "treatment" for suicidal distress is alleviating the actual stressful situation? Dialectical Behavior Therapy (DBT) and Cognitive Behavioral Therapy (CBT) are evidence-based suicide prevention, but **the field has never before examined if successfully guiding someone through life disruptions – alleviating the context of distress rather than the cognition of distress – might be effective too.** This proposal paves a way to concretize and expand partnerships with non-mental health industries in suicide prevention (e.g., workforce training interventions) and develop strategies testing and evaluating the roles of social services and social work – the experts of social determinants – in suicide prevention.

### 4. Investigator Qualifications

My research is rooted in the social production of health inequities, exemplified by my focus of how social determinants (e.g., early life adversity, discrimination, violence) underlie health disparities among sexual and gender minority individuals, specifically disparities in mental health, suicidal ideation, and suicide attempt. Arising time after time in research were the disparagement and stigma that disrupted the lives of sexual and gender minority people. Perhaps the high rate of depression in sexual and gender minority people is not written into their DNA or the gyri or sulci of their brains, but rather the fear or trauma of their families disowning them, slurs and threats, the inability to legally marry (about five years ago), the loss of their jobs because of their sexual orientation and gender identity (literally...months ago), and banishment from military service (still unfolding for transgender individuals). Perhaps *anyone* treated that way would feel depressed, worthless, and inconsequential. Prevention tools are so intently focused on the *individual* who tried to kill themselves and not on the milieu of suicide; I began to believe that suicide research had lost the forest for the trees.

I spent the majority of my early career **working as a researcher in the VA, which provided a unique depth of experience with suicide prevention research in the nation's single largest integrated health care system.** For example, as the VA pursued predictive analytics on its electronic health record data and focused on physical and mental health diagnoses as typical risk factors for suicide, I interrogated the utility and availability of novel data in electronic health records to make different strides in suicide prevention. I pioneered efforts to search the VA electronic health records for indicators of social determinants and demonstrated that, even after accounting for mental health diagnoses, these social determinant indicators stood out as highly salient for modeling suicidal ideation and attempt.<sup>42</sup>

As a public health-trained researcher, survey methodology and analysis are second nature. Over 60% (n=57) of my publications focus on research questions and hypotheses explored through national or state-based survey data sources. I was a Co-Investigator on a VA national survey project, which gathered data from over 15,000 veterans and over 4,600 civilians.<sup>43</sup> I have also been Principal Investigator of NIMH (RF1MH122852) and NIAA (R21AA025973) research awards. Moreover, my recent transition from the VA to join the faculty in the School of Social Work at the University of Southern California provides the ideal environment to bring my suicide prevention expertise into the field of social work. My long-time collaborator, Dr. Susan De Luca, is a social work-trained suicide prevention researcher focused on help-seeking during times of distress. Together, we have the capacity to lead a team across fields, industries, and disciplines to bring new perspectives and unconventional ideas for better, richer, novel data to reduce suicide.

### 5. Suitability of the New Innovator Award Program

The planned research is uniquely suited to the New Innovator Award Program because I propose ideas that expand considerably from the current priorities in NIMH, which is arguably the "home" of suicide prevention research at NIH. The mission of NIMH is "to transform the understanding and treatment of mental illnesses through basic and clinical research, paving the way for prevention, recovery, and cure." The emphasis on basic and clinical research demonstrates the status quo of suicide research, and bringing social determinants into prevention, recovery, and cure is arguably an unconventional direction. Moreover, a recent position statement highlights the Institute's "emphasizing risk detection, screening, and intervention in health care settings."<sup>41</sup> Ideas like the ones in this proposal innovate beyond the scope of traditional funding mechanisms because they

challenge the boundaries between what we typically consider to be “health” vs. “non-health”-related suicide prevention research and intervention. Engaging family lawyers in suicide prevention? Surveying mortgage loan officers about recognizing people in distress when dealing with forbearances or delivering foreclosures? Asking unemployment claims personnel about how to develop tools and processes about suicide prevention? I wager these three industries have rarely, if ever, been included in a suicide prevention research application to NIH. However, the potential return-on-investment is that we might actually move the needle on our nation’s suicide epidemic through **a timelier way of detecting acute risk** that may arise during life disruption. To be clear, clinical initiatives are life-saving tools, but **I am hypothesizing that, with suicide increasing over the last 20 years in the US, and likely showing no signs of plateau or decline, a new path to detecting risk, connecting people to care, and preventing suicide does not start with the clinic.** Maybe a crucial overlooked path begins in the uncharted macro-level factors and in industries that often “see good people at their worst.” Maybe the unconventional, high-risk pitch of this application is this: rather than wait until disruption finds its way to a clinical setting, we go find disruption.

## 6. Statement of Research Effort Commitment

If selected for a New Innovator Award, I will commit a minimum of 30% of research effort to the project.

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