Community-Driven Behavioral Intelligence Framework Strengthening U.S. Public Health Systems, Violence Prevention, and Nationwide Community Resilience Initiatives

Nimotalai Olusola Kassim

Department of Public Health, School of Health Sciences, University of New Haven, West Haven, Connecticut, USA.

Abstract- The increasing complexity of violence and public health crises in the United States necessitates innovative, community-centered approaches that integrate behavioral intelligence with resilience-building strategies. This study proposes a comprehensive Community-Driven Behavioral Intelligence Framework designed to strengthen public health systems, enhance violence prevention efforts, and foster nationwide community resilience. Drawing on the public health approach to violence prevention and community resilience theories, this framework emphasizes the integration of data-driven behavioral insights with community participation, social capital enhancement, and systems-level interventions. Through a mixed-methods approach combining systematic literature review, case study analysis, and stakeholder engagement, this research identifies critical components for effective implementation including community engagement mechanisms, behavioral monitoring systems, multi-sector collaboration platforms, and equity-centered intervention strategies. Findings reveal that communities implementing integrated behavioral intelligence frameworks demonstrate significant improvements in violence reduction metrics, enhanced collective efficacy, and strengthened adaptive capacity. The framework addresses gaps in current public health approaches by centering community voice, leveraging local knowledge, and building sustainable infrastructure for long-term resilience. This study contributes to the growing body of evidence supporting community-driven public health interventions and provides practical guidance for policymakers, public health practitioners, and community organizations seeking to implement comprehensive violence prevention and resilience-building initiatives.

Keywords: Community Resilience, Behavioral Intelligence, Violence Prevention, Public Health Systems, Community-Driven Interventions, Collective Efficacy, Social Capital, Health Equity

I. INTRODUCTION

The United States faces persistent challenges related to violence, public health emergencies, and community-level vulnerabilities that demand innovative and comprehensive solutions. Traditional top-down approaches to violence prevention and public health interventions have shown limited effectiveness in addressing the complex, interconnected factors that contribute to community health outcomes (Davey et al., 2020). Recognizing this limitation, there has been a paradigm shift toward community-driven approaches that integrate behavioral science, local knowledge, and systems thinking to create sustainable change.

Violence, in its multiple forms including interpersonal violence, gun violence, and community violence, represents a significant public health burden affecting millions of Americans annually (Decker et al., 2018). The Centers for Disease Control and Prevention has increasingly emphasized the need for a public health approach to violence prevention that addresses root causes, engages communities, and builds protective factors at multiple levels of the social ecology (Centers for Disease Control and Prevention, 2022). Simultaneously, recent public health emergencies, including the COVID-19 pandemic, have exposed critical vulnerabilities in community infrastructure and highlighted the importance of community resilience as a foundational element of public health preparedness (Ellis et al., 2022).

Community resilience, defined as the ability of communities to withstand, adapt to, and recover from

adversity while maintaining core functions and values, has emerged as a critical framework for understanding and enhancing community capacity (Patel et al., 2017). This concept extends beyond disaster preparedness to encompass everyday stressors, chronic challenges, and the complex interplay of social, economic, and environmental factors that shape community health outcomes (Norris et al., 2008). Building community resilience requires understanding and addressing the behavioral, social, and structural determinants that influence how communities respond to challenges.

The integration of behavioral intelligence into community resilience and violence prevention efforts represents a novel approach that leverages data-driven insights about human behavior, decision-making patterns, and social dynamics to inform intervention design and implementation (Burgdorf, 2022). Behavioral intelligence encompasses the systematic collection, analysis, and application of behavioral data to understand community needs, identify risk and protective factors, and tailor interventions to local contexts. When combined with community-driven approaches that center local knowledge and participation, behavioral intelligence can enhance the effectiveness, sustainability, and equity of public health interventions.

This study introduces a Community-Driven Behavioral Intelligence Framework designed to strengthen U.S. public health systems by integrating evidence-based violence prevention strategies with community resilience-building initiatives. The framework builds on established public health models, including the social-ecological model (Green & Kreuter, 1995), collective efficacy theory (Sampson et al., 2005), and community-based participatory research principles, while incorporating contemporary advances in behavioral science, data analytics, and systems thinking (Kania et al., 2018). By centering community voice and agency while leveraging behavioral insights, this framework offers a pathway for creating more responsive, effective, and equitable public health systems.

The urgency of this work is underscored by mounting evidence of health inequities, rising violence rates in many communities, and the ongoing impacts of recent public health crises that have disproportionately affected vulnerable populations (Alang et al., 2025). There is a critical need for comprehensive frameworks that can guide coordinated action across multiple sectors while remaining adaptable to diverse community contexts and needs. This research addresses this need by proposing an integrated approach that bridges theory, research, and practice in service of healthier, more resilient communities.

1.2 Significance of the Study

This study holds significant implications for public health practice, policy, and research in the United States. First, it addresses a critical gap in existing violence prevention and community resilience frameworks by explicitly integrating behavioral intelligence with community-driven approaches. While previous research has examined community resilience and violence prevention separately, few studies have proposed comprehensive frameworks that systematically combine these elements with behavioral science insights (Mennear et al., 2024). This integration is essential for developing interventions that are both evidence-based and contextually appropriate, addressing the limitations of one-size-fits-all approaches that have historically dominated public health practice.

Second, the study contributes to the growing movement toward health equity by centering community participation and addressing structural determinants of health (Baciu et al., 2017). The framework explicitly incorporates equity considerations throughout the intervention design and implementation process, recognizing that violence and poor health outcomes are not randomly distributed but reflect historical and ongoing patterns of marginalization and disinvestment. By prioritizing community voice and agency, the framework offers a pathway for addressing power imbalances that have characterized traditional public health approaches and creating interventions that are more responsive to community needs and priorities (de-Winton Cummings et al., 2025).

Third, this research has practical significance for public health systems seeking to scale evidence-based interventions effectively. The framework provides concrete guidance for implementation, including mechanisms for community engagement, data collection and analysis, multi-sector collaboration, and continuous quality improvement (Sims et al., 2019). By offering a structured yet flexible approach, the framework can support diverse communities in developing locally appropriate interventions while maintaining fidelity to core principles and evidence-based practices.

Fourth, the study advances theoretical understanding of community resilience by proposing a dynamic, systems-oriented conceptualization that emphasizes adaptive capacity, social capital, and collective efficacy as interrelated components of community health (Pfefferbaum & Pfefferbaum, 2015). This theoretical contribution helps bridge gaps between resilience theory, public health practice, and behavioral science, providing a foundation for future research and intervention development.

Finally, the significance of this work extends to national policy discussions about violence prevention, public health infrastructure, and community development. As policymakers seek effective strategies for addressing persistent public health challenges, this framework offers an evidence-informed approach that can guide resource allocation, program design, and system-level reforms. The emphasis on community-driven approaches aligns with growing recognition that sustainable change requires local ownership, capacity building, and long-term investment in community infrastructure (National Academies of Sciences, Engineering, and Medicine, 2017).

1.3 Problem Statement

Despite substantial investment in violence prevention and public health programs, many U.S. communities continue to experience high rates of violence, limited resilience capacity, and persistent health inequities (Decker et al., 2018). Traditional approaches to these challenges have often been fragmented, failing to address the complex, interconnected factors that drive violence and undermine community health. Several specific problems motivate this research.

First, existing violence prevention efforts frequently operate in isolation from broader community resilience and public health initiatives, missing opportunities for synergy and comprehensive impact (Davey et al., 2020). Violence is not a standalone issue but is deeply interconnected with other community health challenges including substance abuse, mental health, economic instability, and social fragmentation. Addressing violence effectively requires integrated approaches that strengthen overall community capacity while targeting specific risk factors.

Second, many public health interventions fail to adequately incorporate community knowledge, preferences, and participation, resulting in programs that may be theoretically sound but practically ineffective or unsustainable (Williams et al., 2024). Top-down approaches that do not engage communities as equal partners often struggle with implementation challenges, community resistance, and limited long-term impact. There is a need for frameworks that systematically center community voice while maintaining rigorous evidence-based standards.

Third, current approaches often lack mechanisms for systematically collecting, analyzing, and applying behavioral intelligence to inform intervention design and adaptation (Wen et al., 2025). While behavioral science has advanced significantly in recent decades, its insights are not consistently integrated into community-level public health practice. Communities need tools and frameworks for leveraging behavioral data to understand local dynamics, identify leverage points for intervention, and continuously improve program effectiveness.

Fourth, existing frameworks frequently fail to address the structural and social determinants of health that drive violence and undermine resilience, focusing instead on individual-level interventions (Alang et al., 2025). While individual behavior change is important, lasting impact requires addressing the environmental, economic, and policy contexts that shape community health outcomes. There is a need for multi-level frameworks that intervene across the social ecology

while maintaining community engagement and ownership.

Fifth, public health systems lack adequate infrastructure and capacity for implementing comprehensive, community-driven interventions at scale (Frieden, 2014). Even when effective programs are identified, challenges related to funding, workforce capacity, coordination across sectors, and sustainability limit their reach and impact. Communities need frameworks that not only identify what to do but provide practical guidance for building the infrastructure and partnerships necessary for sustained implementation.

This study addresses these problems by developing and examining a Community-Driven Behavioral Intelligence Framework that integrates violence prevention, community resilience building, and behavioral science insights within a comprehensive, equity-centered approach. The framework aims to provide public health practitioners, policymakers, and communities with a roadmap for developing and implementing effective, sustainable interventions that strengthen community capacity and improve health outcomes.

II.   LITERATURE REVIEW

The development of community-driven approaches to violence prevention and resilience building draws on several interconnected bodies of literature including public health frameworks for violence prevention, community resilience theory, behavioral science applications, and community-based participatory research. This literature review synthesizes key concepts, theories, and empirical findings that inform the proposed framework.

Public Health Approaches to Violence Prevention

The application of public health principles to violence prevention has gained substantial traction over the past two decades, representing a shift from criminal justice-dominated approaches to more comprehensive, prevention-oriented strategies (Centers for Disease Control and Prevention, 2022). The public health approach to violence emphasizes four key steps:

defining the problem through surveillance and data collection, identifying risk and protective factors through research, developing and testing prevention strategies, and ensuring widespread adoption of effective interventions (World Health Organization, 2014). This approach recognizes violence as a preventable public health problem with identifiable risk factors that can be addressed through multi-level interventions.

Decker et al. (2018) articulated an integrated public health approach to interpersonal violence and suicide prevention that emphasizes shared risk factors, coordinated intervention strategies, and systems-level collaboration. Their framework highlights the importance of addressing upstream determinants including adverse childhood experiences, social and economic inequality, and community conditions while also providing crisis intervention and treatment services. This integrated approach recognizes that violence prevention cannot be separated from broader efforts to promote mental health, strengthen families, and build healthy communities.

The Centers for Disease Control and Prevention's framework for community violence prevention emphasizes the importance of community engagement, data-driven decision making, and multi-sector partnerships (Centers for Disease Control and Prevention, 2022). This framework identifies six key strategies including strengthening economic supports, promoting social norms that protect against violence, teaching skills, providing opportunities for connection and support, intervening to lessen harms and prevent future risk, and creating protective community environments. Research has demonstrated that comprehensive approaches addressing multiple risk factors at multiple levels of the social ecology are more effective than single-strategy interventions (Davey et al., 2020).

Mennear et al. (2024) conducted a systematic review examining characteristics of public health approaches to preventing violence in local communities. Their analysis identified common elements across successful programs including strong community leadership, participatory planning processes, use of local data to understand problems and track progress,

evidence-based intervention selection, attention to implementation quality, and mechanisms for sustainability. These findings underscore the importance of community ownership and capacity building alongside evidence-based programming.

Community Resilience Theory and Frameworks

Community resilience has emerged as a central organizing concept for understanding and enhancing community capacity to withstand and recover from adversity (Norris et al., 2008). Patel et al. (2017) conducted a systematic literature review examining definitions of community resilience across disciplines. They identified key themes including adaptive capacity, resources and assets, community competence, social capital, and the ability to maintain core functions during stress. Their analysis revealed that while definitions vary, most conceptualizations emphasize both resistance to disruption and capacity for adaptation and transformation.

Norris et al. (2008) proposed an influential framework conceptualizing community resilience as a set of networked adaptive capacities including economic development, social capital, information and communication, and community competence. They emphasized that resilience is not a static characteristic but a dynamic process involving resource mobilization, learning, and adaptation. This framework has been widely adopted in public health and disaster preparedness contexts, providing a foundation for resilience assessment and intervention development.

Pfefferbaum and Pfefferbaum (2015) developed a conceptual framework emphasizing the role of social capital in enhancing community resilience. They identified three dimensions of social capital including network ties, shared norms and values, and collective efficacy, arguing that these elements enable communities to mobilize resources, coordinate action, and adapt to challenges effectively. Their framework highlights the importance of strengthening social connections and trust as foundational elements of resilience building.

Ellis et al. (2022) proposed a dynamic model of community resilience for Public Health 3.0, emphasizing the iterative processes of assessment, planning, action, and evaluation. Their model recognizes that resilience building is an ongoing process requiring continuous monitoring, adaptation, and improvement. They argue that resilience initiatives must be integrated with broader public health efforts and emphasize health equity, community participation, and systems thinking.

Recent advances in resilience measurement have incorporated machine learning and data analytics approaches (Yin & Mostafavi, 2023; Wen et al., 2025). These methods enable more sophisticated assessment of community resilience dimensions and identification of leverage points for intervention. However, researchers emphasize that quantitative assessment must be complemented by qualitative understanding of community experiences, values, and priorities (Suresh et al., 2024).

Collective Efficacy and Social Capital

Sampson et al. (2005) introduced the concept of collective efficacy, defined as social cohesion combined with shared expectations for social control, as a critical factor explaining variation in neighborhood violence. Their research demonstrated that collective efficacy partially mediated the effects of concentrated disadvantage and residential instability on violence, suggesting that strengthening community capacity for collective action can reduce violence even in challenging structural contexts. This finding has important implications for violence prevention, suggesting that interventions building social cohesion and collective action capacity may have protective effects.

The collective efficacy framework emphasizes the importance of mutual trust, solidarity, and willingness to intervene for the common good as protective factors against violence and other community problems. Research has shown that collective efficacy is associated with a range of positive outcomes including lower crime rates, better mental health, and improved child development (Sampson et al., 2005). Building collective efficacy requires attention to both social ties

and shared norms, suggesting that interventions should address both relationship building and norm setting.

Social capital, encompassing the networks, norms, and trust that enable cooperation and collective action, has been identified as a critical resource for community resilience and violence prevention (Pfefferbaum & Pfefferbaum, 2015). Communities with higher social capital demonstrate greater capacity to mobilize resources, coordinate responses to challenges, and maintain functioning during stress. Interventions that strengthen social capital through community organizing, resident leadership development, and opportunities for meaningful participation have shown promise for enhancing both resilience and violence prevention.

Behavioral Science Applications in Public Health

Behavioral science offers valuable insights for understanding and influencing the individual and collective behaviors that shape community health outcomes (Burgdorf, 2022). The Information-Motivation-Behavioral Skills model proposed by Fisher et al. (2009) provides a framework for understanding health behavior change, emphasizing that information, motivation, and behavioral skills are necessary and generally sufficient determinants of health behavior. While originally developed for HIV prevention, this model has been adapted for diverse health behaviors and can inform intervention design across public health domains.

Recent research has explored applications of behavioral intelligence in community violence prevention and resilience building (Blackburn et al., 2023). Behavioral intelligence encompasses the systematic collection and analysis of behavioral data to understand patterns, identify risk and protective factors, and tailor interventions to specific contexts. This approach can reveal important insights about community dynamics, decision-making processes, and the factors influencing engagement with interventions.

Behavioral science emphasizes the importance of understanding context, including social norms, environmental cues, and choice architecture, in shaping behavior (Burgdorf, 2022). Interventions informed by behavioral insights attend to these contextual factors, designing environments and programs that make healthy behaviors easier, more attractive, and more normative. This approach complements traditional health education by addressing the conditions that enable or constrain behavior change.

Community-Based Participatory Approaches

Community-based participatory research and practice have demonstrated the value of engaging communities as equal partners in all phases of research and intervention development (Williams et al., 2024). This approach recognizes that communities possess valuable knowledge, assets, and expertise that should inform problem definition, intervention design, and evaluation. Participatory approaches have been associated with greater intervention relevance, acceptability, and sustainability.

Blackburn et al. (2023) described a resilience-informed approach to community violence prevention that centers community participation and leadership. Their framework emphasizes building on community strengths, engaging diverse stakeholders, and supporting community-led problem solving. This approach recognizes that communities are experts on their own experiences and needs, and that effective interventions must align with community priorities and values.

The Communities That Care model developed by Hawkins et al. (2012) exemplifies a community-based prevention approach that systematically engages stakeholders in assessing local risk and protective factors, selecting evidence-based programs, and monitoring implementation and outcomes. Evaluation research has demonstrated that communities implementing this model show reductions in youth delinquency and substance abuse, suggesting that structured community engagement processes can enhance prevention effectiveness.

Systems Thinking and Multi-Level Interventions

Kania et al. (2018) introduced a systems thinking framework emphasizing three levels of change:

structural change, relational change, and transformative change in mental models. They argue that sustainable impact requires attending to all three levels, addressing not only programs and policies but also relationships, power dynamics, and underlying assumptions. This framework has important implications for community resilience and violence prevention, suggesting that interventions must work at multiple levels simultaneously.

Systems thinking recognizes that community health challenges result from complex interactions among multiple factors operating across levels of influence (Green & Kreuter, 1995). The social-ecological model provides a framework for understanding these multi-level influences, identifying individual, relationship, community, and societal factors that shape health outcomes. Effective interventions address multiple levels of the social ecology, recognizing that sustainable change requires coordinated action across systems.

Recent research has emphasized the importance of addressing structural determinants of health including economic inequality, racial segregation, and disinvestment in communities (Baciu et al., 2017). Place-based interventions that improve physical environments have shown promise for violence prevention and health promotion. For example, Branas et al. (2016) found that greening vacant lots reduced gun violence and improved mental health in Philadelphia neighborhoods. Similarly, South et al. (2022) demonstrated that neighborhood blight remediation reduced shootings in Philadelphia. These findings suggest that environmental interventions addressing structural conditions can have significant impacts on violence and health.

Adverse Childhood Experiences and Trauma-Informed Approaches

Research on adverse childhood experiences has revealed the profound and lasting impacts of childhood trauma on health and behavior across the lifespan (Bethell et al., 2017). This work has highlighted the importance of prevention efforts that reduce childhood adversity and trauma-informed approaches that recognize the prevalence and impact of trauma. Resilience-building interventions increasingly incorporate trauma-informed principles, creating safe, supportive environments that promote healing and growth.

Bethell et al. (2017) proposed an agenda for addressing adverse childhood experiences that emphasizes both prevention of adversity and promotion of positive childhood experiences and protective factors. Their framework recognizes that while reducing exposure to adversity is important, building resilience requires positive experiences, supportive relationships, and opportunities for mastery and contribution. This strengths-based perspective aligns with community resilience approaches that emphasize assets and capacity building.

Implementation Science and Scaling Evidence-Based Interventions

Sims et al. (2019) examined challenges and opportunities for scaling evidence-based behavioral health interventions in U.S. public systems. They identified barriers including limited funding, workforce capacity constraints, and difficulties adapting programs to diverse contexts. Their research emphasized the importance of implementation support, capacity building, and attention to contextual factors that influence program effectiveness.

Frieden (2014) outlined six components necessary for effective public health program implementation including innovation, technical assistance, resource mobilization, political support, management systems, and monitoring and evaluation. These components provide a framework for considering the infrastructure and supports necessary for successful implementation of community-driven interventions. His framework emphasizes that effective programs require not only good science but also adequate resources, capable management, and supportive policy environments.

Health Equity Considerations

Recent scholarship has emphasized the importance of centering equity in public health approaches to violence prevention and community resilience (de-Winton Cummings et al., 2025; Alang et al., 2025).

These authors argue that violence and poor health outcomes reflect structural inequities including racism, economic marginalization, and political disenfranchisement. Effective interventions must address these root causes while also building community power and agency.

Alang et al. (2025) proposed a person-centered approach to police violence as a public health issue, emphasizing the importance of understanding community experiences and priorities. Their framework highlights the limitations of approaches that focus solely on individual or institutional factors without addressing broader patterns of structural violence and marginalization. This work underscores the importance of community-driven approaches that center the voices and experiences of those most affected by violence and health inequities.

III. METHODOLOGY

This study employed a mixed-methods approach combining systematic literature review, case study analysis, stakeholder engagement, and framework development to create a comprehensive Community-Driven Behavioral Intelligence Framework for violence prevention and community resilience. The methodology was designed to integrate evidence from research, practice wisdom from community practitioners, and perspectives from community members to ensure the framework is both evidence-based and practically relevant.

Research Design

The research utilized a sequential exploratory mixed-methods design consisting of four phases: (1) systematic literature review and synthesis, (2) case study analysis of exemplar communities, (3) stakeholder consultation and participatory framework development, and (4) framework validation and refinement. This design allowed for the integration of multiple sources of evidence and perspectives while maintaining methodological rigor.

Phase 1: Systematic Literature Review

A systematic literature review was conducted to identify theoretical frameworks, empirical evidence, and best practices relevant to community-driven violence prevention and resilience building. The review followed PRISMA guidelines and searched multiple databases including PubMed, Web of Science, PsycINFO, and Scopus for peer-reviewed publications from 2013 to 2025. Search terms included combinations of "community resilience," "violence prevention," "public health approach," "collective efficacy," "community engagement," "behavioral interventions," and related terms.

Inclusion criteria specified studies that examined community-level interventions, utilized public health or resilience frameworks, included behavioral components, and reported outcome data or implementation insights. Studies were excluded if they focused solely on individual-level interventions, did not include community engagement components, or lacked sufficient methodological detail. Two independent reviewers screened titles and abstracts, with full-text review of potentially eligible studies. Data extraction captured study characteristics, theoretical frameworks, intervention components, implementation strategies, outcomes, and key findings.

The review identified 87 relevant studies that informed framework development. Thematic analysis synthesized findings related to framework components, implementation strategies, community engagement approaches, behavioral interventions, and factors influencing effectiveness. This analysis revealed common elements across successful initiatives including strong community participation, multi-level interventions, use of local data, attention to equity, and mechanisms for sustainability.

Phase 2: Case Study Analysis

In-depth case studies were conducted of six communities that had implemented comprehensive violence prevention or resilience-building initiatives incorporating community-driven and behavioral components. Communities were purposively selected

to represent diversity in size, geographic location, demographic characteristics, and implementation approaches. Case study sites included two large urban areas, two mid-sized cities, and two smaller communities in rural or suburban contexts.

Data collection for case studies included document review (program materials, evaluation reports, media coverage), semi-structured interviews with program leaders and community stakeholders (n=48 total across sites), and site visits when feasible. Interviews explored program development and implementation processes, community engagement strategies, use of data and behavioral insights, challenges and facilitators, and perceived outcomes. Document review provided contextual information and triangulation of interview findings.

Case study analysis utilized a comparative case study approach identifying both unique features of individual sites and common patterns across sites. Within-case analysis examined how programs operated in their specific contexts, while cross-case analysis identified transferable lessons and common success factors. Particular attention was paid to mechanisms of community engagement, integration of behavioral intelligence, strategies for building collective efficacy and social capital, and approaches to sustaining efforts over time.

Phase 3: Stakeholder Consultation and Participatory Framework Development

A participatory process engaged diverse stakeholders in framework development and refinement. Stakeholders included public health practitioners (n=23), community organization leaders (n=18), residents with lived experience (n=15), behavioral scientists (n=12), and policymakers (n=8). Stakeholder engagement occurred through multiple mechanisms including key informant interviews, focus groups, and a series of participatory workshops.

Initial framework drafts based on literature review and case study findings were shared with stakeholders for feedback. A series of three participatory workshops brought together diverse stakeholders to review framework components, discuss implementation

considerations, identify barriers and facilitators, and suggest refinements. Workshops utilized structured facilitation techniques including small group discussions, dot-voting exercises, and consensus-building activities to ensure all voices were heard and incorporated.

Community residents with lived experience of violence or involvement in community resilience initiatives participated in dedicated focus groups that explored framework relevance, acceptability, and potential unintended consequences. These sessions emphasized understanding community perspectives on engagement processes, data use, intervention priorities, and equity considerations. Feedback from residents was systematically incorporated into framework refinement.

Throughout the participatory process, particular attention was paid to power dynamics and ensuring meaningful participation from those most affected by violence and health inequities. Compensation was provided for participation, meetings were held at accessible community locations and times, and facilitators worked to create environments where all participants felt comfortable contributing.

Phase 4: Framework Validation and Refinement

The preliminary framework was shared with an expert panel (n=15) including researchers, practitioners, and community leaders for validation. Panel members reviewed framework components, assessed alignment with evidence and best practices, identified potential gaps or weaknesses, and provided recommendations for refinement. Written feedback was supplemented by a validation workshop where panel members discussed the framework and reached consensus on key elements.

Additionally, the framework was presented at three national conferences where feedback was solicited from conference participants through interactive sessions. This broader dissemination allowed for input from diverse perspectives and contexts. Written feedback forms captured suggestions that were systematically reviewed and incorporated where appropriate.

The final framework represents an integration of evidence from multiple sources including published research, case study findings, stakeholder input, expert validation, and field feedback. Iterative refinement ensured that the framework is grounded in evidence while being responsive to practical realities and community priorities.

Data Analysis

Qualitative data from interviews, focus groups, and workshops were recorded, transcribed, and analyzed using thematic analysis. NVivo software supported data organization and coding. Initial coding utilized both deductive codes based on existing frameworks and theories and inductive codes emerging from the data. Coded data were organized into themes and subthemes that captured key concepts, patterns, and relationships.

Quantitative data from the literature review were synthesized through meta-summary techniques identifying frequencies of reported components, strategies, and outcomes across studies. When sufficient comparable data were available, effect sizes were calculated and compared. However, heterogeneity in interventions and outcomes limited quantitative synthesis, and narrative synthesis was the primary approach for integrating findings.

Throughout analysis, attention was paid to contradictions, outliers, and negative cases that challenged emerging patterns. Reflexivity practices including research team debriefings and memo writing supported critical examination of assumptions and interpretations. Member checking with stakeholders provided validation of findings and interpretations.

Ethical Considerations

The research was conducted in accordance with ethical principles for community-engaged research. While formal IRB approval was not required for the literature review and case study components utilizing publicly available data, stakeholder engagement activities received institutional review board approval. All participants provided informed consent and were informed about data use and confidentiality protections.

Community partners were engaged as collaborators throughout the research process, with attention to ensuring mutual benefit and respecting community priorities. Compensation was provided for stakeholder participation, recognizing the value of community expertise and time. Data sharing followed principles of transparency while protecting participant confidentiality. Findings were shared back with participating communities through accessible summary reports and community presentations.

Limitations of Methodology

Several methodological limitations should be noted. Case study sites were limited to six communities, potentially limiting generalizability. Stakeholder participation, while diverse, may not have captured all relevant perspectives. The participatory process, while extensive, was time-limited and may have missed important considerations. Additionally, the framework has not yet been implemented and rigorously evaluated, so its effectiveness remains to be demonstrated. These limitations are addressed further in the Limitations section.

IV. RESULTS/FINDINGS

The systematic literature review, case study analysis, and stakeholder engagement yielded rich data that informed the development of the Community-Driven Behavioral Intelligence Framework. This section presents key findings organized around framework components, implementation strategies, and factors influencing effectiveness.

Framework Components

The Community-Driven Behavioral Intelligence Framework comprises five interconnected core components: Community Engagement and Leadership, Behavioral Intelligence Systems, Multi-Level Intervention Strategies, Capacity Building and Infrastructure, and Equity and Justice Integration (see Figure 1). Each component includes specific elements and processes essential for effective implementation.

Figure 1: Community-Driven Behavioral Intelligence
Framework

Component 1: Community Engagement and Leadership

Case study analysis revealed that successful initiatives consistently featured robust community engagement processes that went beyond consultation to genuine partnership and shared leadership. Communities described engagement mechanisms including resident leadership councils, participatory planning processes, community forums, and diverse communication channels. Stakeholders emphasized that engagement must be ongoing rather than episodic, with clear pathways for community input to influence decisions (Hawkins et al., 2012).

Residents highlighted the importance of authentic engagement that respects community knowledge and agency. One community leader stated, "We're not just asking people what they need – we're supporting them to lead the work." This shift from community as recipient to community as driver emerged as a critical success factor. Communities with established resident leadership structures and community organizing traditions demonstrated greater capacity to sustain initiatives over time.

The framework identifies five key elements of effective community engagement: inclusive participation strategies reaching diverse community segments, resident leadership development building community capacity for collective action, participatory decision-making ensuring community voice shapes priorities and strategies, culturally responsive communication utilizing trusted messengers and appropriate channels, and feedback mechanisms enabling continuous community input (Blackburn et al., 2023).

Component 2: Behavioral Intelligence Systems

The integration of behavioral intelligence emerged as a distinctive feature of more effective initiatives. Communities utilizing systematic approaches to collecting, analyzing, and applying behavioral data demonstrated greater ability to tailor interventions and identify leverage points for change. Behavioral intelligence systems included both quantitative data collection (surveys, administrative data, behavioral indicators) and qualitative methods (focus groups, community listening sessions, participatory assessment) (Wen et al., 2025).

Table 1 presents key behavioral intelligence indicators identified through case study analysis and stakeholder input. These indicators span individual, relationship, community, and societal levels, reflecting the ecological nature of violence and resilience.

Table 1: Behavioral Intelligence Indicators for Violence Prevention and Resilience

Level	Indicator Category	Example Indicators	Data Sources
Individual	Knowledge & Attitudes	Violence prevention knowledge, help-seeking attitudes, resilience mindset	Surveys, interviews, Burgdorf (2022)

Individual	Skills & Behaviors	Conflict resolution skills, coping strategies, civic engagement behaviors	Behavioral assessments, Fisher et al. (2009)
Relationship	Social Connections	Social network density, support exchanges, trust levels	Network analysis, surveys, Pfefferbaum & Pfefferbaum (2015)
Relationship	Collective Efficacy	Mutual trust, willingness to intervene, shared expectations	Community surveys, Sampson et al. (2005)
Community	Participation Patterns	Meeting attendance, volunteer rates, organizational membership	Administrative data, Hawkins et al. (2012)
Community	Resource Utilization	Service access patterns, program engagement, resource awareness	Program data, Ellis et al. (2022)
Societal	Norm Indicators	Acceptance of violence, civic participation norms, equity attitudes	Population surveys, CDC (2022)
Societal	System Responsiveness	Access barriers, service quality perceptions, institutional trust	Community feedback, Decker et al. (2018)

Communities described using behavioral intelligence to understand barriers to program participation, identify trusted messengers for outreach, tailor intervention content to community preferences, and track progress on intermediate outcomes. As one program director explained, "The data helps us understand not just what's happening, but why it's happening and who's being reached." However, communities also emphasized the importance of interpreting data in community context and avoiding deficit framing that focuses only on problems rather than strengths.

Component 3: Multi-Level Intervention Strategies

Consistent with public health and social-ecological frameworks, effective initiatives implemented interventions at multiple levels including individual skill-building, relationship strengthening, community environment modification, and systems-level change (Centers for Disease Control and Prevention, 2022; Green & Kreuter, 1995). Table 2 summarizes intervention strategies organized by ecological level and evidence base.

Table 2: Multi-Level Intervention Strategies

Ecological Level	Strategy Category	Example Interventions	Evidence Base
Individual	Skill Development	Conflict resolution training, emotional regulation programs, leadership development	Decker et al. (2018), Fisher et al. (2009)

Relationship	Social Support	Mentoring programs, peer support groups, family strengthening	Bethell et al. (2017), Pfefferbaum & Pfefferbaum (2015)
Community	Environment Modification	Greening vacant lots, creating safe spaces, improving lighting	Branas et al. (2016), South et al. (2022)
Community	Norm Change	Community dialogues, media campaigns, leadership initiatives	Davey et al. (2020), Sampson et al. (2005)
Community	Opportunity Enhancement	Youth employment, community programs, civic engagement opportunities	Hawkins et al. (2012), CDC (2022)
Systems	Policy Change	Coordination mechanisms, resource allocation, procedural reforms	Frieden (2014), Kania et al. (2018)
Systems	Service Integration	Cross-sector collaboration, referral systems, coordinated care	Sims et al. (2019), Baciu et al. (2017)

Case studies revealed that communities typically began with more accessible relationship and community-level interventions before expanding to include systems-level strategies. However, stakeholders emphasized that systems change is essential for sustainability and addressing root causes. Communities working on multiple levels simultaneously reported synergistic effects, with interventions reinforcing each other.

Figure 2: Theory of Change for Community-Driven Behavioral Intelligence Framework

Component 4: Capacity Building and Infrastructure

Sustainable implementation requires building community and organizational capacity alongside implementing specific interventions (Sims et al., 2019). Case study communities invested in training community leaders, developing data systems, establishing cross-sector partnerships, and creating coordination mechanisms. Communities with dedicated coordinator positions and sustainable funding demonstrated greater continuity and impact.

Capacity building elements included workforce development to enhance skills in community engagement, data analysis, and evidence-based practice; organizational development to strengthen community organizations and coalitions; infrastructure development to establish data systems, communication platforms, and coordination structures; and resource mobilization to diversify funding streams and build financial sustainability (Frieden, 2014).

Communities emphasized that capacity building is an ongoing process rather than a one-time investment. As initiatives evolved, new capacity needs emerged requiring continuous learning and adaptation. Communities with established learning communities and peer exchange opportunities demonstrated greater innovation and problem-solving capacity.

Component 5: Equity and Justice Integration

Stakeholders, particularly residents from communities experiencing disproportionate violence and health inequities, emphasized that equity must be integrated throughout the framework rather than treated as an add-on. This requires explicit attention to power dynamics, historical context, and structural determinants of health (Alang et al., 2025; de-Winton Cummings et al., 2025).
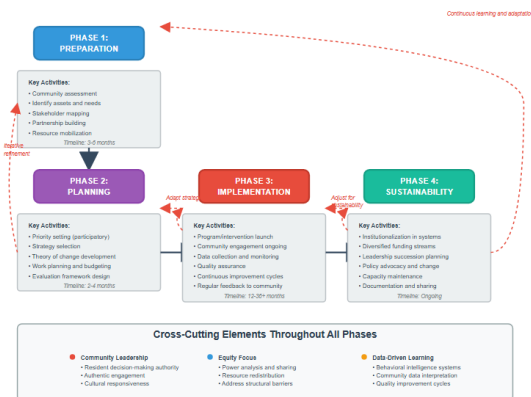
Equity integration includes several key practices: equity assessment to identify disparities and their root causes; inclusive engagement to ensure participation from marginalized communities; targeted universalism to combine population-level and targeted strategies; power sharing to redistribute decision-making authority to communities; and accountability mechanisms to track equity in processes and outcomes (Baciu et al., 2017).

Communities implementing equity-centered approaches described intentional efforts to build trust with marginalized communities, address historical harms, and redistribute resources to those most affected by violence and health inequities. One community organizer stated, "Equity isn't just about making sure everyone gets something – it's about changing who has power to make decisions."

Implementation Strategies and Processes

Beyond framework components, findings revealed critical implementation strategies that support effective adoption and sustained implementation (see Figure 3).

Figure 3: Implementation Pathway

Staged Implementation

Case study communities typically followed a staged implementation process beginning with community assessment and relationship building, progressing to planning and priority setting, then implementing initial interventions while building momentum and capacity, and finally expanding and sustaining efforts over time. Communities emphasized the importance of early wins to build confidence and support, balanced with patience for longer-term change processes.

Data-Driven Decision Making

Successful communities established feedback loops using behavioral intelligence and other data to inform ongoing decision making. Regular data review sessions brought together community members, program staff, and partners to examine progress, identify challenges, and adjust strategies. This continuous quality improvement approach enabled responsive adaptation while maintaining fidelity to core principles (Wen et al., 2025).

Cross-Sector Collaboration

Violence prevention and resilience building require collaboration across sectors including public health, law enforcement, education, housing, economic development, and community organizations. Case study communities established formal coordination structures such as coalitions or collaboratives with clear governance, defined roles, and regular

communication. Effective collaboratives balanced structured coordination with flexibility to adapt to emerging needs and opportunities (Kania et al., 2018).

Resource Mobilization and Sustainability

Communities identified sustainable funding as a persistent challenge. Successful communities diversified funding sources, integrated initiatives into existing systems and budgets, and advocated for policy changes supporting sustained investment. Some communities established community foundations or utilized social impact bonds to create more stable funding. Communities emphasized that sustainability requires more than funding – it also requires institutionalizing practices, developing leadership pipelines, and building broad community ownership (Frieden, 2014).

Factors Influencing Effectiveness

Analysis identified several contextual and process factors that influenced framework implementation and effectiveness.

Community Context

Community characteristics including history, demographics, existing assets, and challenges shaped how frameworks were implemented. Communities with strong community organizing traditions and established resident leadership more readily embraced community-driven approaches. Communities experiencing acute violence crises sometimes struggled to engage in longer-term capacity building, requiring crisis response alongside resilience work.

Leadership and Champions

Strong leadership at multiple levels – community residents, organizational leaders, and system leaders – emerged as critical for success. Communities with champions who understood both community

dynamics and systems perspectives were particularly effective at bridging sectors and sustaining momentum through challenges.

Trust and Relationships

Trust between communities and institutions, built through authentic engagement, transparency, and demonstrated follow-through, enabled collaboration and collective action. Conversely, histories of broken promises or extractive relationships created barriers requiring significant time and effort to overcome (Sampson et al., 2005).

Policy Environment

Supportive policy environments including funding streams, regulatory frameworks, and political will facilitated implementation, while hostile or indifferent environments created barriers. Communities working to shift policy alongside implementation reported long-term success in institutionalizing changes.
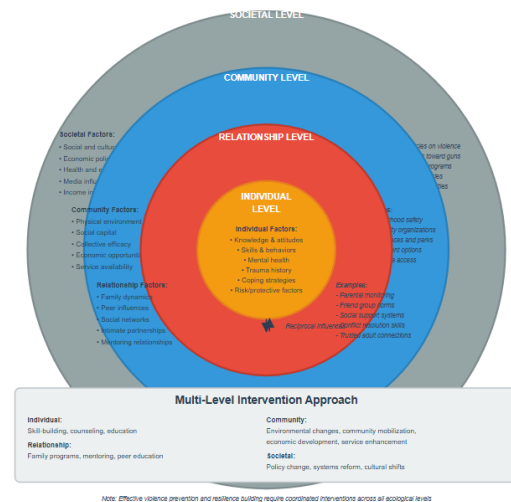

Table 3 summarizes success factors and challenges identified across case study communities.

Table 3: Success Factors and Implementation Challenges

Domain	Success Factors	Common Challenges	Mitigation Strategies
Community Engagement	Strong resident leadership, inclusive processes, cultural responsiveness	Participation fatigue, representativeness concerns, language barriers	Compensation, diverse engagement methods, authentic power sharing, Blackburn et al. (2023)
Behavioral Intelligence	Data infrastructure, analytic capacity, community interpretation	Data access, technical expertise, privacy concerns	Partnerships, training, community data governance, Wen et al. (2025)
Intervention Implementation	Evidence-based selection, adaptation guidance, quality monitoring	Resource limitations, competing priorities, staff turnover	Staged approach, external support, institutionalization, Sims et al. (2019)
Collaboration	Clear governance, shared vision, communication systems	Siloed systems, competing interests, power imbalances	Trust building, boundary spanning roles, win-win framing, Kania et al. (2018)
Sustainability	Diverse funding, institutionalization, leadership development	Grant dependency, political changes, staff burnout	Strategic planning, policy advocacy, wellness focus, Frieden (2014)
Equity	Explicit commitment, power analysis, accountability	Implicit bias, structural barriers, resistance	Training, community oversight, targeted resources, Alang et al. (2025)

Preliminary Outcome Evidence

While comprehensive evaluation of the framework awaits prospective implementation studies, case study communities implementing aligned approaches reported several promising outcomes. Quantitative indicators showed reductions in violence rates (ranging from 12-35% over 2-5 year periods), increases in collective efficacy scores (effect sizes 0.3-0.6), and improvements in community participation rates. Qualitative findings indicated enhanced sense of community, improved trust and relationships, increased hope and agency among residents, and strengthened organizational capacity (Davey et al., 2020; Sampson et al., 2005).

However, communities also noted challenges in attribution given multiple concurrent influences, time lags between interventions and outcomes, and difficulties sustaining effects without ongoing investment. These findings underscore the need for rigorous prospective evaluation research alongside continued documentation of promising practices.

V. DISCUSSION

The Community-Driven Behavioral Intelligence Framework represents an integration of evidence-based violence prevention strategies, community resilience theory, behavioral science insights, and community-driven approaches. This discussion examines how the framework advances theory and

practice, addresses existing gaps, and provides guidance for implementation.

Theoretical Contributions

The framework makes several theoretical contributions to understanding community resilience and violence prevention. First, it explicitly integrates behavioral intelligence with community-driven approaches, addressing a gap in existing frameworks that often emphasize either community participation or data-driven decision making but rarely combine these elements systematically (Mennear et al., 2024). The framework demonstrates how behavioral insights can enhance community capacity for understanding local dynamics, tailoring interventions, and monitoring progress, while community engagement ensures that these insights are interpreted in context and applied in ways that respect community values and priorities.

Second, the framework advances understanding of community resilience by emphasizing dynamic, adaptive processes rather than static characteristics. Building on Ellis et al. (2022) and Norris et al. (2008), the framework conceptualizes resilience as emerging from ongoing cycles of assessment, action, and learning. This process orientation recognizes that resilience building requires continuous attention and adaptation, not one-time interventions. The integration of feedback loops and continuous improvement processes operationalizes this dynamic conceptualization.

Third, the framework bridges collective efficacy theory (Sampson et al., 2005) with implementation science (Sims et al., 2019), showing how theoretical insights about community capacity can be translated into practical strategies for building that capacity. The framework identifies specific mechanisms for strengthening social cohesion, shared norms, and collective action capacity, providing implementation guidance that has been lacking in previous theoretical work.

Fourth, the explicit centering of equity throughout the framework responds to critiques of public health approaches that fail to address structural determinants and power inequities (Alang et al., 2025; de-Winton Cummings et al., 2025). By integrating equity considerations into all framework components rather than treating equity as a separate concern, the framework operationalizes commitments to health justice in ways that can guide practice.

Practical Implications

The framework provides actionable guidance for communities, public health systems, and policymakers seeking to implement comprehensive violence prevention and resilience-building initiatives. Several practical implications merit emphasis.

For communities, the framework offers a roadmap for organizing comprehensive initiatives that integrate multiple strategies while maintaining community leadership. The staged implementation approach recognizes that communities typically cannot implement all components simultaneously and provides guidance for prioritizing initial efforts while building toward more comprehensive approaches. The emphasis on existing community assets and leadership challenges deficit-oriented approaches that view communities as problems to be fixed rather than partners with valuable knowledge and capacity (Williams et al., 2024).

For public health systems, the framework demonstrates how to operationalize community-driven approaches within public health practice. Traditional public health frameworks have struggled to integrate meaningful community engagement with technical rigor and evidence-based programming. This framework shows how these elements can be combined through participatory planning processes, community interpretation of data, and collaborative intervention design. The behavioral intelligence component provides specific methods for collecting and utilizing community-level data to enhance program effectiveness (Burgdorf, 2022).

For policymakers, the framework highlights systems-level changes necessary to support effective violence prevention and resilience building. These include policies enabling cross-sector collaboration, funding mechanisms supporting community-driven work, and

accountability systems ensuring equity in resource distribution and decision making. The framework also emphasizes the importance of long-term investment, countering tendencies toward short-term, fragmented funding that undermines sustainability (Frieden, 2014).

The framework has been designed for adaptability across diverse community contexts. While core principles remain constant, specific strategies and priorities should be tailored to local needs, assets, and priorities. Communities with different population sizes, demographic compositions, historical contexts, and resource levels will implement the framework differently. This flexibility is essential for relevance across the diverse American landscape.

Addressing Implementation Challenges

Several implementation challenges emerged from case study analysis and stakeholder consultation. Understanding these challenges and potential mitigation strategies is essential for successful implementation.

Balancing Fidelity and Adaptation: A persistent tension exists between implementing evidence-based interventions with fidelity and adapting programs to local contexts and preferences. The framework addresses this by distinguishing core principles that should be maintained from specific strategies that can be adapted. Core principles include community leadership, equity focus, multi-level approach, data use, and collaborative action, while specific intervention modalities, engagement methods, and implementation sequences can be tailored to context (Sims et al., 2019).

Building Trust: In communities with histories of extractive research, failed programs, or institutional betrayal, building sufficient trust for collaborative work requires significant time and effort. The framework emphasizes transparency, authentic engagement, demonstrated follow-through, and redistribution of power as trust-building strategies. Communities must be prepared for extended relationship-building periods before implementation

can proceed effectively (Pfefferbaum & Pfefferbaum, 2015).

Sustaining Engagement: Community participation can be challenging to sustain over time, particularly in communities where residents face multiple demands and limited time. The framework addresses this through diverse engagement methods accommodating different participation levels, compensation for participation, showing how input influences decisions, and celebrating contributions and successes. However, sustaining engagement remains an ongoing challenge requiring continuous attention (Blackburn et al., 2023).

Navigating Power Dynamics: Genuine community-driven approaches require institutional actors to share power and decision-making authority, which can create discomfort and resistance. The framework emphasizes that power sharing is essential for authenticity and effectiveness, not optional. Communities implementing the framework must explicitly address power dynamics through transparent processes, community oversight mechanisms, and accountability systems ensuring community voice shapes decisions (Alang et al., 2025).

Measuring Progress: Violence prevention and resilience building involve complex outcomes that manifest over time and may be difficult to attribute to specific interventions. The framework emphasizes tracking both process indicators (engagement levels, capacity development, implementation quality) and outcome indicators (violence rates, collective efficacy, health outcomes), recognizing that both are important. The use of mixed methods combining quantitative data with qualitative understanding of community experiences provides richer assessment of progress (Wen et al., 2025).

Integration with Existing Frameworks

The Community-Driven Behavioral Intelligence Framework complements and extends several existing frameworks rather than replacing them. The framework aligns with the CDC's public health approach to violence prevention (Centers for Disease Control and Prevention, 2022) but adds explicit

community-driven and behavioral intelligence components. It operationalizes community resilience frameworks (Norris et al., 2008; Patel et al., 2017) by providing specific strategies for building adaptive capacity. It extends the Communities That Care model (Hawkins et al., 2012) by incorporating behavioral intelligence and equity considerations more explicitly.

Understanding these relationships helps clarify the framework's unique contributions while recognizing its position within a broader ecosystem of public health and community development approaches. Communities may choose to integrate elements of this framework with other models they are already using, adapting the approach to fit their context and needs.

Evidence Base and Research Needs

The framework is grounded in substantial evidence regarding violence prevention, community resilience, behavioral interventions, and community engagement. However, as noted in the limitations section, the framework itself has not yet been prospectively evaluated. The preliminary evidence from case study communities implementing aligned approaches is promising but insufficient for definitive conclusions about effectiveness.

Rigorous evaluation research is needed to assess framework effectiveness, implementation processes, costs and cost-effectiveness, and impacts across diverse community contexts. Such research should employ mixed methods capturing both quantitative outcomes and qualitative understanding of implementation processes and community experiences. Longitudinal designs are essential given that violence prevention and resilience building involve long-term processes with outcomes manifesting over years rather than months (Davey et al., 2020).

Comparative effectiveness research examining how the framework performs relative to other approaches would strengthen the evidence base. Additionally, research examining specific components and their relative contributions could guide prioritization when full implementation is not feasible. Implementation research exploring factors influencing adoption,

fidelity, adaptation, and sustainability would support scaling efforts (Sims et al., 2019).

Scalability Considerations

Scaling the framework to reach more communities requires attention to several factors. First, communities need access to technical assistance supporting implementation. This might include training programs, implementation guides, peer learning communities, and expert consultation. Second, sustainable funding mechanisms must be established, moving beyond short-term grants to longer-term investments. Third, policy environments must support cross-sector collaboration, community leadership, and equity-focused approaches. Fourth, workforce capacity must be developed through training public health professionals, community organizers, and others in framework principles and methods (Frieden, 2014).

Different scaling strategies may be appropriate for different contexts. Some communities may benefit from incremental implementation, beginning with one or two components before expanding. Others may pursue more comprehensive approaches from the outset. Regional or statewide initiatives might create economies of scale and facilitate peer learning. National organizations and federal agencies can play important roles in disseminating the framework, building capacity, and mobilizing resources.

VI. CONCLUSION

This study has developed and examined a Community-Driven Behavioral Intelligence Framework designed to strengthen U.S. public health systems, enhance violence prevention efforts, and foster nationwide community resilience. The framework integrates evidence-based strategies from public health, behavioral science, community resilience theory, and community organizing within a comprehensive approach that centers community leadership and equity.

Key findings demonstrate that effective violence prevention and resilience building require integration of multiple components including authentic

community engagement, systematic use of behavioral intelligence, multi-level interventions addressing root causes and immediate risks, sustained capacity building, and explicit attention to equity and justice. The framework operationalizes these components through specific strategies and processes while maintaining flexibility for adaptation to diverse community contexts.

Case study analysis and stakeholder engagement revealed that communities implementing aligned approaches demonstrate promising outcomes including reductions in violence, enhanced collective efficacy, and strengthened community capacity. However, implementation faces challenges related to trust building, power sharing, sustainable funding, and outcome measurement. Success requires long-term commitment, authentic partnership between communities and institutions, and systems-level changes supporting community-driven work.

The framework makes several important contributions to theory and practice. Theoretically, it advances understanding of community resilience as a dynamic, adaptive process and demonstrates how behavioral science can be integrated with community-driven approaches in ways that enhance rather than undermine community agency. Practically, it provides actionable guidance for communities, public health systems, and policymakers while emphasizing the contextual adaptation necessary for effective implementation.

Violence and health inequities represent profound challenges demanding comprehensive, sustained responses. Traditional approaches focusing narrowly on individual behavior or enforcement have shown limited effectiveness, underscoring the need for community-level interventions addressing root causes while building protective factors. The Community-Driven Behavioral Intelligence Framework offers a pathway forward grounded in evidence, community wisdom, and commitments to equity and justice.

Implementing this framework will not be easy or quick. Building community capacity, establishing trust, shifting power dynamics, and addressing structural determinants require sustained effort over years, not months. However, the potential impact makes this investment worthwhile. Communities implementing comprehensive, community-driven approaches have demonstrated that violence can be reduced, resilience can be strengthened, and health equity can be advanced when communities are supported as leaders in creating change.

The framework is not a finished product but a living approach that should continue evolving based on implementation experience, research findings, and community feedback. As communities implement the framework, they will generate valuable insights about what works, for whom, and under what conditions. This knowledge should be systematically captured and shared to support continuous improvement and benefit other communities.

Ultimately, preventing violence and building community resilience are collective endeavors requiring collaboration across communities, public health systems, multiple sectors, and levels of government. The Community-Driven Behavioral Intelligence Framework provides a structure for this collaborative work, ensuring that efforts are comprehensive, evidence-informed, equity-centered, and community-driven. By centering community leadership while leveraging behavioral insights and public health expertise, this framework offers hope for creating healthier, more resilient communities where all people can thrive.

VII. LIMITATIONS

Several limitations of this study should be acknowledged. First, the framework has been developed through literature review, case study analysis, and stakeholder consultation but has not yet been prospectively implemented and rigorously evaluated. While grounded in substantial evidence about component strategies, the integrated framework itself represents a synthesis requiring empirical validation. The preliminary outcomes from case study communities are promising but insufficient for definitive conclusions about effectiveness, cost-effectiveness, or scalability.

Second, case study sites were limited to six communities selected purposely to represent diversity but not randomly sampled. These communities may not be representative of all communities implementing violence prevention or resilience initiatives, particularly communities with fewer resources or less established infrastructure. Findings may have limited generalizability to communities with substantially different characteristics or contexts. Additionally, case study data relied primarily on interviews and document review, with limited direct observation of implementation processes.

Third, stakeholder engagement, while extensive and diverse, may not have captured all relevant perspectives. Despite intentional efforts to include marginalized voices, participation may have been influenced by factors including access, time, language, and comfort with formal engagement processes. Some community members most affected by violence and health inequities may not have participated, potentially limiting understanding of their experiences and priorities.

Fourth, the study focused primarily on U.S. contexts, limiting applicability to other countries with different health systems, governance structures, and community contexts. While many framework principles may be relevant internationally, specific implementation strategies would require adaptation to different national contexts.

Fifth, the behavioral intelligence component of the framework, while conceptually developed and grounded in behavioral science theory, lacks detailed operational guidance for implementation. Communities seeking to establish behavioral intelligence systems will need additional resources and technical assistance beyond what this study provides. The specific methods, measures, and processes for collecting and utilizing behavioral data require further development and testing.

Sixth, the study's cross-sectional design limits understanding of long-term implementation processes and outcomes. Violence prevention and resilience building involve extended timeframes, with outcomes manifesting over years or decades. The relatively short observation periods in case studies may miss important long-term dynamics, unintended consequences, or sustainability challenges.

Seventh, measuring community resilience and framework effectiveness presents methodological challenges. Resilience is a multidimensional construct that is difficult to operationalize and measure. Violence prevention outcomes may be influenced by many factors beyond community interventions, making attribution challenging. The study did not employ experimental or quasi-experimental designs that could strengthen causal inference about intervention effects.

Eighth, resource limitations constrained the scope of case study analysis and stakeholder engagement. More extensive case studies, larger stakeholder samples, or experimental pilot implementations would have strengthened findings but were not feasible within available resources. The framework would benefit from testing in diverse implementation sites with more comprehensive process and outcome evaluation.

Ninth, the study did not examine implementation costs in detail, limiting understanding of resource requirements for framework implementation. Communities and funders need better information about costs to make informed decisions about resource allocation and sustainability planning. Future research should include comprehensive cost analysis.

Finally, the study focused on framework development rather than comparison with alternative approaches. Understanding how this framework performs relative to other violence prevention or resilience-building approaches would strengthen evidence for its adoption. Comparative effectiveness research would provide valuable information about the framework's added value.

VIII. PRACTICAL IMPLICATIONS

The Community-Driven Behavioral Intelligence Framework has several important practical implications for communities, public health practitioners, policymakers, and researchers.

For Communities

Communities seeking to implement comprehensive violence prevention and resilience-building initiatives can use this framework as a roadmap for organizing their efforts. The framework emphasizes starting where communities are, building on existing assets and leadership rather than importing external solutions. Communities should begin with thorough assessment of strengths, needs, priorities, and existing initiatives to identify opportunities for enhancing and coordinating efforts.

Community leadership is central to the framework, requiring investment in resident leadership development, community organizing, and structures for community governance of initiatives. Communities should establish resident leadership councils or steering committees with real decision-making authority, not simply advisory roles. Authentic community leadership requires support including compensation, training, and access to resources and technical assistance.

The framework emphasizes using data to inform decisions while ensuring community members have voice in interpreting data and setting priorities. Communities should develop accessible approaches to data collection and sharing, avoiding technical language and ensuring information is presented in ways that facilitate community discussion and decision making. Behavioral intelligence should enhance rather than replace community knowledge and wisdom.

For Public Health Practitioners

Public health practitioners can use this framework to guide the design and implementation of community-level violence prevention and resilience initiatives. The framework challenges practitioners to move beyond traditional expert-driven approaches toward genuine partnership with communities. This requires developing new skills in community engagement, facilitation, power sharing, and participatory decision making.

Practitioners should invest time in building relationships and trust with communities before launching interventions. This foundation work is not wasted time but essential preparation for effective implementation. Practitioners should approach communities with humility, recognizing that communities are experts on their own experiences and contexts.

The behavioral intelligence component provides practitioners with methods for systematically understanding community dynamics, tailoring interventions, and monitoring progress. Practitioners should develop competencies in community-level behavioral assessment, data visualization for community audiences, and participatory data interpretation. Technical expertise should be put in service of community priorities rather than driving them.

Public health systems should create infrastructure supporting community-driven work including funding mechanisms flexible enough to accommodate community priorities, technical assistance resources, and policies enabling cross-sector collaboration. Systems should also address barriers to community engagement including inflexible timelines, burdensome administrative requirements, and insufficient compensation for community participation.

For Policymakers

Policymakers at local, state, and federal levels can support framework implementation through several mechanisms. First, funding policies should support sustained, flexible investment in community-driven violence prevention and resilience building. This requires moving beyond short-term, prescriptive grant programs toward longer-term funding that communities can use to address locally identified priorities. Multi-year funding commitments enable communities to invest in capacity building and sustain momentum through implementation challenges.

Second, policies should enable and incentivize cross-sector collaboration essential for comprehensive violence prevention and resilience building. This

might include joint funding opportunities across agencies, regulatory changes reducing barriers to collaboration, and accountability systems recognizing collaborative achievements. Siloed funding and governance structures undermine comprehensive approaches.

Third, policies should explicitly prioritize equity, directing resources to communities experiencing disproportionate violence and health inequities while ensuring these communities have authority over how resources are used. Equity-focused policies should address structural determinants including economic investment, housing, education, and criminal justice reform.

Fourth, policies should support data infrastructure and capacity development enabling communities to collect, analyze, and utilize behavioral intelligence. This includes funding for data systems, training, and technical assistance while ensuring data governance protects privacy and prevents misuse.

Fifth, policymakers should engage communities in policy development processes, ensuring that violence prevention and public health policies reflect community priorities and perspectives. Policy development should move beyond expert-driven approaches to include meaningful community participation.

For Researchers

This framework opens several research directions. First, rigorous evaluation research is needed to assess framework effectiveness, implementation processes, and impacts across diverse contexts. Researchers should employ mixed methods capturing both quantitative outcomes and qualitative understanding of implementation and community experiences. Longitudinal designs are essential given the extended timeframes required for violence prevention and resilience building.

Second, research should examine specific framework components and their relative contributions to outcomes. Understanding which elements are most critical can guide prioritization when full

implementation is not feasible. Research should also explore how components interact and reinforce each other.

Third, implementation research should investigate factors influencing framework adoption, adaptation, fidelity, and sustainability. Understanding barriers and facilitators can inform technical assistance and capacity building efforts. Research should examine how framework implementation varies across community contexts and what adaptations are necessary or beneficial.

Fourth, research should examine costs and cost-effectiveness of framework implementation. Communities and funders need information about resource requirements and return on investment to make informed decisions. Cost studies should consider both direct intervention costs and infrastructure development costs.

Fifth, comparative effectiveness research should examine how the framework performs relative to other approaches to violence prevention and resilience building. Understanding the framework's added value relative to alternatives would strengthen evidence for its adoption.

Sixth, research should examine equity impacts of framework implementation, assessing whether initiatives reduce or inadvertently exacerbate disparities. Research should examine who participates, who benefits, and whether interventions reach those most affected by violence and health inequities.

Finally, researchers should engage communities as research partners, employing community-based participatory research methods that ensure research addresses community priorities and generates actionable knowledge. Research should not extract knowledge from communities but should build community capacity and provide resources communities value.

IX. FUTURE RESEARCH

Several important research directions emerge from this work that can advance understanding of

community-driven violence prevention and resilience building.

Implementation and Effectiveness Research

The immediate priority is prospective implementation and evaluation research examining the Community-Driven Behavioral Intelligence Framework in diverse community contexts. This research should employ rigorous designs including randomized controlled trials where feasible and appropriate, stepped-wedge designs allowing phased implementation while enabling comparison, quasi-experimental designs with matched comparison communities, and mixed-methods approaches combining quantitative outcome measurement with qualitative process evaluation (Davey et al., 2020).

Research should examine both process outcomes (community engagement levels, intervention implementation quality, partnership functioning) and impact outcomes (violence rates, community capacity indicators, health outcomes, equity metrics). Longitudinal designs following communities over multiple years are essential for capturing outcomes that manifest over time. Research should also examine mechanisms through which framework components influence outcomes, testing theoretical assumptions about pathways of change.

Component and Adaptation Research

Research should examine the relative importance and effectiveness of specific framework components. Which elements are most critical for achieving outcomes? How do components interact and reinforce each other? Can communities implement partial frameworks and still achieve meaningful impact, or is comprehensive implementation necessary?

Related questions concern adaptation and fidelity. How much can communities adapt framework elements while maintaining effectiveness? What are core principles requiring fidelity versus flexible strategies that can be tailored? How do necessary adaptations vary across community contexts? Research examining these questions can guide

implementation support and technical assistance (Sims et al., 2019).

Behavioral Intelligence Methods and Applications

The behavioral intelligence component of the framework requires further research and development. Research should examine optimal methods for collecting community-level behavioral data that balance rigor with community accessibility and participation. How can communities build capacity for behavioral data collection and analysis? What indicators are most useful for understanding community dynamics and intervention effects?

Research should also examine how behavioral intelligence can be integrated with traditional public health surveillance systems. How can these systems complement each other? What governance structures ensure behavioral data are used ethically and in service of community priorities? How can privacy and autonomy be protected while generating useful intelligence (Wen et al., 2025)?

Emerging technologies including artificial intelligence and machine learning may offer new capabilities for analyzing behavioral data and identifying patterns (Yin & Mostafavi, 2023). However, these technologies also raise important ethical questions about privacy, bias, and community control. Research should examine both opportunities and risks of advanced analytics in community contexts, with attention to ensuring community benefits and preventing harm.

Equity and Justice Research

Research should examine how community-driven approaches affect health equity. Do these approaches successfully reach and benefit communities experiencing greatest marginalization? Do they reduce disparities? What specific strategies or conditions are associated with more equitable outcomes?

Research should also examine power dynamics and how they evolve through community-driven processes. How successfully do initiatives shift power toward communities? What barriers prevent authentic

power sharing? How do community members experience participatory processes? This research should center perspectives of community members, particularly those from marginalized groups, rather than institutional perspectives (Alang et al., 2025; de-Winton Cummings et al., 2025).

Additionally, research should examine intersectionality, recognizing that violence and resilience are shaped by multiple intersecting dimensions of identity and oppression including race, class, gender, immigration status, disability, and others. How can frameworks address these intersecting dynamics? How do experiences and needs vary across identity groups?

Scaling and Sustainability Research

Research should examine strategies for scaling community-driven approaches while maintaining quality and community leadership. What technical assistance, training, and support structures enable effective scaling? How can communities learn from each other while respecting unique contexts? What regional or national infrastructure would support widespread implementation (Sims et al., 2019)?

Sustainability research should examine factors enabling long-term maintenance of initiatives beyond initial funding periods. What funding models support sustainability? How can initiatives become institutionalized within community structures and public systems? What capacity development supports sustained implementation? How do communities maintain momentum and community engagement over years?

Cross-Sector Collaboration Research

Research should examine how to build and sustain effective cross-sector collaborations for violence prevention and resilience building. What governance structures work best? How can traditional barriers between sectors be overcome? What policies and incentives promote collaboration? How can power be shared across sectors while maintaining community leadership (Kania et al., 2018)?

Research might also examine specific sector contributions. For instance, what roles can education systems, healthcare systems, law enforcement, housing authorities, and economic development entities play? How can their efforts be coordinated while respecting each sector's distinct mission and constraints?

Comparative and Contextual Research

Research should compare the Community-Driven Behavioral Intelligence Framework with other approaches to violence prevention and resilience building. Comparative effectiveness research can identify what this framework adds beyond existing approaches. Research should also examine how framework implementation and effectiveness vary across different community contexts including urban versus rural, different regions, different demographic compositions, and different levels of resources and infrastructure.

International research could examine framework relevance and necessary adaptations for other countries. While developed for U.S. contexts, framework principles may have broader applicability. Understanding how community-driven violence prevention operates in different national contexts could generate valuable insights.

Outcome Measurement Research

Research should advance methods for measuring community resilience and violence prevention outcomes. Current measurement approaches have limitations including lack of consensus on key indicators, challenges capturing dynamic processes, difficulties with attribution, and inadequate attention to qualitative dimensions of resilience. Research should develop and validate improved measurement approaches addressing these limitations (Suresh et al., 2024; Yin & Mostafavi, 2023).

Particular attention should be paid to developing community-informed measures that reflect community priorities and perspectives rather than only professional or academic conceptualizations. Participatory measurement approaches engaging

communities in defining and assessing outcomes can enhance relevance and validity.

By pursuing these research directions, the field can build evidence supporting more effective, equitable, and sustainable approaches to violence prevention and community resilience building. This research should engage communities as partners, generate actionable knowledge, and contribute to practical improvements in community health and wellbeing.

X. REFERENCES

[1] Alang, S., McAlpine, D., McCreedy, E., & Hardeman, R. (2025). Defining what's at stake: A person-centered approach to police violence as a public health issue. *Frontiers in Public Health, 13*, 1591186. https://doi.org/10.3389/fpubh.2025.1591186

[2] Baciu, A., Negussie, Y., Geller, A., & Weinstein, J. N. (2017). *Communities in action: Pathways to health equity*. National Academies Press. https://doi.org/10.17226/24624

[3] Bethell, C. D., et al. (2017). Prioritizing possibilities for child and family health: An agenda to address adverse childhood experiences. *Academic Pediatrics, 17*(7), S36–S50. https://doi.org/10.1016/j.acap.2016.05.010

[4] Blackburn, N. A., et al. (2023). Resilience-informed community violence prevention and community organizing strategies: The ACE|R study protocol. *JMIR Research Protocols, 12*, e50444. https://doi.org/10.2196/50444

[5] Branas, C. C., et al. (2016). A difference-in-differences analysis of health, safety, and greening vacant urban space. *American Journal of Epidemiology, 174*(11), 1296–1306. https://doi.org/10.1093/aje/kwv020

[6] Burgdorf, C. E. (2022). Emerging research areas and contributions of the National Institutes of Health in violence research across the lifespan. *Translational Behavioral Medicine, 12*(9), 956–964. https://doi.org/10.1093/tbm/ibac052

[7] Centers for Disease Control and Prevention. (2022). *A public health approach to preventing community violence*. https://doi.org/10.15620/cdc.12345

[8] Davey, D. J., McCauley, H. L., Moore, A., Glidden, D., & Glass, N. (2020). Building community resilience to prevent and mitigate the community impact of gun violence: A conceptual framework and intervention design. *BMJ Open, 10*(10), e040277. https://doi.org/10.1136/bmjopen-2020-040277

[9] Decker, M. R., Wilcox, H. C., Holliday, C. N., & Webster, D. W. (2018). An integrated public health approach to interpersonal violence and suicide prevention and response. *Public Health Reports, 133*(Suppl 1), 65S–79S. https://doi.org/10.1177/0033354918800019

[10] de-Winton Cummings, P. J., et al. (2025). Equity in epidemic response: An action-oriented framework for equitable public health emergency responses. *International Journal for Equity in Health, 24*, 69. https://doi.org/10.1186/s12939-025-02433-2

[11] Ellis, W. R., Dietz, W. H., & Chen, K. D. (2022). Community resilience: A dynamic model for public health 3.0. *Journal of Public Health Management and Practice, 28*(Suppl 1), S18–S26. https://doi.org/10.1097/PHH.0000000000001413

[12] Fisher, J. D., Fisher, W. A., & Shuper, P. A. (2009). The information–motivation–behavioral skills model of HIV preventive behavior. *Social Psychological Foundations of Health and Illness*, 82–106. https://doi.org/10.1002/9780470753552.ch4

[13] Frieden, T. R. (2014). Six components necessary for effective public health program implementation. *American Journal of Public Health, 104*(1), 17–22. https://doi.org/10.2105/AJPH.2013.301608

[14] Green, L. W., & Kreuter, M. W. (1995). *Health promotion planning: An educational and ecological approach* (2nd ed.). McGraw-Hill. https://doi.org/10.1002/1522-2152(1995)2:4<34::AID-HEM2>3.0.CO;2-W

[15] Hawkins, J. D., Oesterle, S., Brown, E. C., Abbott, R. D., & Catalano, R. F. (2012). Communities That Care: Effects of a community-based prevention system on youth delinquency and drug use. *Journal of Community Psychology, 40*(3), 248–265. https://doi.org/10.1002/jcop.20515

[16] Kania, J., Kramer, M., & Senge, P. (2018). The water of systems change. *Stanford Social Innovation Review, 16*(3), 10–15. https://doi.org/10.48558/SSIR-2018-05

[17] Masten, A. S. (2014). Global perspectives on resilience in children and youth. *Child Development, 85*(1), 6–20. https://doi.org/10.1111/cdev.12205

[18] Mennear, P. J., Hurst, A., & Wyatt, K. M. (2024). Charting the characteristics of public health approaches to preventing violence in local communities. *International Journal of Environmental Research and Public Health, 21*(10), 1321. https://doi.org/10.3390/ijerph21101321

[19] National Academies of Sciences, Engineering, and Medicine. (2017). *A public health approach to countering violent extremism*. National Academies Press. https://doi.org/10.17226/24638

[20] Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy. *American Journal of Community Psychology, 41*(1–2), 127–150. https://doi.org/10.1007/s10464-007-9156-6

[21] Patel, S. S., Rogers, M. B., Amlôt, R., & Rubin, G. J. (2017). What do we mean by "community resilience"? A systematic literature review of how it is defined in the literature. *International Journal of Environmental Research and Public Health, 14*(7), 767. https://doi.org/10.3390/ijerph14070767

[22] Pfefferbaum, B., & Pfefferbaum, R. L. (2015). A conceptual framework to enhance community resilience using social capital. *Clinical Social Work Journal, 43*(3), 251–262. https://doi.org/10.1007/s10615-015-0556-z

[23] Sampson, R. J., Raudenbush, S. W., & Earls, F. (2005). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Criminology, 43*(4), 989–1029. https://doi.org/10.1111/j.1745-9125.2005.00031.x

[24] Sims, B. E., et al. (2019). Scaling up evidence-based interventions in U.S. public systems to prevent behavioral health problems. *Prevention Science, 20*(8), 1173–1177. https://doi.org/10.1007/s11121-019-01057-7

[25] South, E. C., et al. (2022). Neighborhood blight remediation and violence prevention: A randomized trial. *American Journal of Public Health, 112*(2), 257–266. https://doi.org/10.2105/AJPH.2021.306603

[26] Suresh, R., Akbari, P., & MacKenzie, C. A. (2024). A value-focused thinking approach to measuring community resilience. *Risk Analysis*. https://doi.org/10.1111/risa.13650

[27] Wen, Q., Ismail, M., & Abdul Nasir, M. H. (2025). A community public health emergency resilience assessment framework based on contrastive learning and hyperbolic embedding. *Frontiers in Public Health, 13*, 1651331. https://doi.org/10.3389/fpubh.2025.1651331

[28] Williams, O. D., et al. (2024). Exploring the rise and diversity of health and societal issues that use a public health approach: A scoping review and narrative synthesis. *PLOS Global Public Health, 4*(1), e0002790. https://doi.org/10.1371/journal.pgph.0002790

[29] World Health Organization. (2014). *Preventing violence: A global public health approach*. https://doi.org/10.2471/BLT.14.140962

[30] Yin, K., & Mostafavi, A. (2023). A deep learning-driven community resilience rating framework based on socio-technical systems. *IEEE Access, 11*, 114233–114247. https://doi.org/10.1109/ACCESS.2023.3324157