American Journal of Orthopsychiatry

2021, Vol. 91, No. 3, 322–331
https://doi.org/10.1037/ort0000526

The Community Transformation Map: A Maturity Tool for Planning Change in Community Health Improvement for Equity and Well-Being

Ariel M. Domlyn[1, 7], Jonathan Scaccia[2], Niñon Lewis[3], Shemekka Ebony Coleman[4, 5, 6], Gareth Parry[8], Somava Saha[6], Abraham Wandersman[1, 7], and Rohit Ramaswamy[9]

[1] Department of Psychology, University of South Carolina
[2] The Dawn Chorus Group, Reading, Pennsylvania, United States
[3] Institute for Healthcare Improvement, Boston, Massachusetts, United States
[4] People with Lived Experience Institute, Lugoff, South Carolina, United States
[5] I Am Brilliant, Raleigh, North Carolina, United States
[6] Well-being and Equity (WE) in the World, Lexington, Massachusetts, United States
[7] Wandersman Center, Columbia, South Carolina, United States
[8] Department of Plastic and Oral Surgery, Boston Children's Hospital, Boston, Massachusetts, United States
[9] Gillings School of Public Health, University of North Carolina at Chapel Hill, United States

Transforming communities to be healthier and more equitable prosents a systemic challenge best addressed by those with native knowledge of the system. Community coalitions are a promising structure for tackling local health inequities, if they approach the change process with multiple local stakeholders and with systemic change in mind. Maturity models offer a framework for system assessment by defining sequential stages toward ideal development. Providing coalitions with a structure for self-assessing community change, the Community Transformation Map (CTM) is a maturity model that operationalizes concepts hypothesized to foster systemic change. This 40-item tool encourages self-assessment, dialogue, and reconciliation of community transformation priorities via an appreciative inquiry process. The CTM was created and applied with 18 community coalitions participating in the 100 Million Healthier Lives initiative. It was iteratively drafted with representatives from across the initiative. These coalitions self-administered the CTM four times over 24 months. Coalitions used the CTM to reconcile perspectives, identify priorities, and create transformation action plans. After the fourth administration, ten semistructured interviews were conducted with coalition members. Thematic analysis revealed good contextual validity. Coalitions saw value in the CTM's productive dialogue and the shared understanding it created, but reported perceived burden in conducting repeated administration. The CTM's value is in structuring community members' reflection on complex, systemic problems. The CTM is rooted in international improvement and change principles and continues to be adapted for other change initiatives.

Ariel M. Domlyn https://orcid.org/0000-0003-3695-0836
Jonathan Scaccia https://orcid.org/0000-0001-6800-1286
Shemekka Ebony Coleman https://orcid.org/0000-0002-3938-6532
Somava Saha https://orcid.org/0000-0001-8121-1448
Rohit Ramaswamy https://orcid.org/0000-0003-3410-4441

Special issue on importance of community in behavioral health and social justice.

This article was funded by Robert Wood Johnson Foundation.

Correspondence concerning this article should be addressed to Ariel M. Domlyn, Department of Psychology, University of South Carolina, Columbia, SC, United States. Email: adomlyn@email.sc.edu

Public Policy Relevance Statement
New millennium public health requires extensive collaboration and new ways of thinking about problems that affect entire systems. Community-based health coalitions understand different parts of their local system and should be leveraged for assessing local concerns and deciding what actions are needed. The CTM's feasibility and perceived value as a user-led tool of community transformation suggests funders and policymakers should incentivize the time and resources needed for communities to create shared understanding of local systemic problems and potential ways forward.

Supplemental materials: https://doi.org/10.1037/ort0000526.supp

As the COVID-19 pandemic, climate change, and structural racism have amply demonstrated: complex public health problems exacerbate health inequities (Bailey et al., 2017; Cloos & Ridde, 2018; van Dorn et al., 2020). Domestically and internationally, health inequities are an issue of social justice requiring robust systemic changes and policy overhaul (Ottersen et al., 2014). Strong community coalitions are promising structures to enact local-level solutions (Lardier et al., 2019; McLeroy et al., 1994). Community coalitions are often composed of stakeholders serving multiple aspects of well-being (e.g., physical, mental, social) within a defined population, generally convened for tackling a local social or health issue (Butterfoss, 2007). The future of public health recommends community-level multisector collaboration to improve social determinants of health (DeSalvo et al., 2017). Enacting this recommendation would extend problem-focused coalitions into nimble, mature, ongoing collaborations continuously working toward local improvements and long-term transformation. Developing coalition capacity to support community health—particularly those most affected by inequities—requires skills for planning, implementing, and evaluating community aims. This calls for self-administered tools where communities can measure their capabilities, determine priorities, set goals, and assess progress. This article describes the development, application, and evaluation of the Community Transformation Map (CTM), a collaborative maturity model tool designed for community coalition planning and improvement, in a national community transformation initiative called 100 Million Healthier Lives (100MHL).

Maturity models have been extensively used in manufacturing and engineering but less frequently in community health. Used for either external evaluation or internal planning, these models assess current functioning across multiple domains in a complex system and chart a trajectory for improvement (Lannon et al., 2020). Maturity models describe sequential stages to show "the characteristics of effective processes at different stages of development. They also suggest points of demarcation between stages and methods of transitioning from one stage to another" (Pullen, 2007; Lannon et al., 2020). One critique of maturity models and similar tools (e.g., innovation-configuration maps) is that they lack indicators of reliability and internal validity (Hord et al., 2006; Goncalves Filho & Waterson, 2018; Lacerda & von Wangenheim, 2018; Wendler, 2012) with some limited exceptions (e.g., Mahoney, 2010; Schumacher et al., 2016). This is largely because they are developed and applied for specific contexts where internal validity is less prioritized. Maturity models display high contextual validity, or the confidence that results from the model can be applied for a unique setting that is most relevant for their use (Skinner, 2013).

The objective of the CTM was for community coalitions taking part in 100MHL to chart a path of growth across multiple domains of community capacity. The domains of the CTM are based on a strengths-based model of community transformation called the Community of Solutions (CoS; Stout, 2017), developed for the 100MHL initiative. The roots of this model are derived from research on coalition effectiveness (Yang et al., 2012; Zakocs & Edwards, 2006), community capacity (Flaspohler et al., 2008), and internationally recognized principles for tackling health inequities (Howard et al., 2020); the CoS model itself was created by combining these theories with practical experience from prior community transformation efforts. The model proposes three interacting components required to bring about change: relationships among coalition members; knowledge and skills about how to improve; and foundational capacity among people with lived experience of inequities through shared stewardship, resource-sharing, governance, and leadership growth (Stout, 2017). The CoS framework is driven by the expectation that community transformation occurs via reflective practice ("leading from within"), collaboration ("leading together"), design thinking and improvement science ("leading for outcomes"), equity ("leading for equity"), and generative sustainability ("leading for sustainability"). Details on CoS components are described elsewhere (Howard et al., 2020; Stout, 2017).

Proper utilization of maturity models with community health coalitions meets the challenge for 21st century public health to provide timely, actionable methods to guide community-level public health decisions (DeSalvo et al., 2017). The process of both creating and applying the CTM must be collaborative to ensure the product not only captures the change process but also makes sense to communities. Doing so ensures the tool is one of equitable power sharing. The tool must also both measure current capabilities and illustrate what those capabilities will look like when enhanced. The aim of this article is to describe the development and use of the CTM with a view of advancing the application of maturity models for community health improvement. The challenge for 21st century public health leaders is to equip the workforce to address complex and emergent problems; it is impossible to do that without building community capacity to find innovative local solutions (DeSalvo et al., 2017). Maturity models such as the CTM are valuable tools for communities to plan and evaluate their progress to achieve these capabilities.

Methods

Setting

The CTM was developed for the 100 Million Healthier Lives (100MHL) initiative. With support from the Robert Wood Johnson Foundation, the Institute for Healthcare Improvement convened this initiative with 35 partner organizations (100 Million Healthier Lives [100MHL], 2016). This movement seeks to "fundamentally transform the way the world thinks and acts to improve health, well-being, and equity" by building the capacity of local communities to improve, and to realize the Robert Wood Johnson Foundation's aim to achieve a Culture of Health where all individuals live the healthiest life possible (cultureofhealth.org). One project in this initiative was Spreading Community Accelerators through Learning and Evaluation (SCALE). SCALE selected 18 multistakeholder coalitions of organizations targeting issues of health, well-being, and equity salient for their local population (e.g., housing instability, food access, youth substance abuse) to codevelop the CoS framework and train communities to foster the a strengths-based mindset through adaptation, empowerment, and connection (Stout, 2017). The CTM was developed as part of SCALE.

CTM Creation

Creating a maturity model requires an iterative design process targeting the specific purpose of the model (Becker et al., 2009). Here the purpose is to enable community coalitions to realize their potential for transformative change toward more equitable health outcomes. The intent of the CTM is to provide a systematic approach where community coalitions take stock of their current assets and plan a trajectory for improvement. SCALE leaders, evaluators, coaches, and coalition members collaboratively created the tool and tested and refined it through multiple iterations. The workgroup was composed of the SCALE lead, one implementation team member, two evaluation team members, and two coalition members (one of whom identified as a leader with lived experience of inequity within their community). Over 11 months, in teams of two the workgroup iteratively drafted CoS-related items for the CTM and exchanged sections weekly to revise. The workgroup also performed a literature scan and review of other assessments and tools to support community transformation, equity, quality improvement, and sustainability (see Supplement 1). CTM Items were cross-referenced against these resources to ensure alignment with capacities generally recognized as important for coalition performance, and to ensure CTM language was consistent with existing concepts. Three rounds of feedback were conducted beyond the workgroup: first the CTM was shared with a broader team of measurement and evaluation specialists, then revised and shared with the SCALE implementation team and coalition members, and revised again. Among the revisions, all text was assessed for readability (Bond, 2016) and drafted so that no item required more than a high school education to complete. The final revision occurred after piloting the CTM with three coalition members. After its creation, the CTM was applied with all 18 SCALE coalitions.

CTM Description. Maturity models can be described using three dimensions: structure, assessment, and support (Proença & Borbinha, 2016). Structure refers to the number of levels, types and number of attributes, definition of maturity, and practicality of recommendations (i.e., specific improvement activities or general recommendations). Assessment determines how the model is applied. Support is the training, consultation, or technical assistance offered for aiding maturity model use.

CTM Structure. The CTM includes five levels of maturity (Figure 1), each with a label and a colloquial description: Not yet started; Starting ("We're in the early stages and are still figuring things out"); Gaining skill ("We're getting the hang of this"); Sustaining ("This is who we are and how we do our work"); Spreading and scaling ("We are spreading and scaling change across our region"). A twelve-point scale is distributed across the levels to provide gradation within each maturity category. Here, maturity is defined as the achievement of an ideal region-wide status across each CoS dimension.

The CTM contains 40 items divided into three sections according to primary CoS components (improvement, relationships, equity). These sections were divided into attributes. For example, the Improvement section has five attributes: vision, co-design, applying improvement methods, willingness to adopt change, and sustainability and systems change. The Relationship section includes four attributes: community organizations, communication and conflict resolution, shared stewardship, and collaboration. The Equity section includes three attributes: growing the leadership of those most affected by inequity, distributing power and leadership, and taking effective action to improve equity. Each attribute includes two to six discrete items, totaling 40 unique items. The entire CTM structure is shown in Supplement 2.

Each section and attribute includes a detailed description. Many individual items contain definitions and hyperlinks to resources. For example, the item "Our collaboration values measurement. We have developed a set of measures related to what we believe needs to change to create improvement" includes a definition for measures ("Measures include types of data and the ways to collect that data") and a hyperlink to a webpage describing successful measurement for improvement (Figure 2).

CTM Assessment. The CTM is intended to foster a holistic view of community coalition functioning from the perspective of system leaders, community facilitators, and community residents with lived experiences of inequities. Therefore, respondents should include community members across hierarchical structures and leaders with lived experience of inequities. During assessment, each member of the coalition first considers each CTM item from a personal perspective and assigns a score (from 1 to 12) for both the current capability level ("Now") and for where the member would like to see the community be in six months ("Goal"). Individual ratings are then compared by participants in a collaborative discussion session and discrepancies of score differences (of five or more points) are reconciled. In translating the CTM from assessment to action, individual items are reflected upon by visually inspecting high/low scores and gaps a between "Now" and "Goal" scores. Priorities re determined by the coalition members. The assessment process is analogous to appreciative inquiry (Boyd, 2015), where facilitated discussion brings out community priorities and strengths. Coalitions are expected to self-administer the CTM every six months and revise improvement plans accordingly.

Figure 1
CTM Levels

Stage of transformation	Not yet started	Starting – "We're in the early stages and are still figuring things out"	Gaining skill - "We're getting the hang of this!"	Sustaining - "This is who we are and how we do our work"	Spreading and Scaling -"We are spreading and scaling change across our region"
Definition of stages	We haven't started making this change yet.	We understand the meaning and importance of this. We are beginning to work on it.	We are working on it. We are starting to see the benefits.	It's a regular part of how we do our work. We apply this in all our work.	We are sharing what we've learned with others. We have been building a system to scale this to other communities.
Example: Our collaboration has partnerships across sectors in our region to improve community wellbeing.	We usually work alone.	We have formed partnerships, largely within one sector.	About half of the relevant sectors are engaged to address the priorities at hand.	Most (>75%) relevant sectors are working together to create systems and policies to support lasting change.	We develop partnerships across the majority (>50%) of relevant sectors in our region to support what we are trying to accomplish.
	0	1 2 3	4 5 6	7 8 9	10 11 12

In the SCALE application, dedicated coaches and members of the SCALE implementation and evaluation teams provided onboarding support for the CTM. Throughout the initial administration of the CTM, coaches and the model developers assisted coalition members as they resolved differences in their scoring based on dialogue and set goals for taking action. These support personnel were then available for subsequent administrations upon request. CTM support provided technical assistance providers with clear instructions to not supplant coalition autonomy and sense of efficacy. A user manual does not currently exist but is an option for future administrations of the CTM.

CTM Application in SCALE

Initial Administration. The first administration of the CTM was at a training session involving the 18 SCALE community

Figure 2
Sample CTM Items

	Not yet started	Starting – "We're in the early stages and are still figuring things out"	Gaining skill - "We're getting the hang of this!"	Sustaining - "This is who we are and how we do our work"	Spreading and Scaling -- "We are actively scaling change across our region"	Now	Goal
7. Our collaboration values measurement. We have developed a set of measures related to what we believe needs to change to create improvement. *Measures include types of data and the ways to collect that data.*	Our collaboration has not yet made measurement a priority.	We have prioritized measurement and have some measures. However, our measures do not align well with the things we believe will need to change to create improvement.	We have chosen measures, with community input, that relate to the things we are trying to improve in some (≤50%) of our initiatives.	We have an overall strategy for measurement that aligns measures with what we need to improve in most (>50%) of our initiatives. We regularly assess and change measures based on what we are learning as a community.	Communities across our entire region value measurement. They have identified measures together that relate to what we believe will drive regional change. We regularly adjust measures based on what we are learning as a region.		
	0	1 2 3	4 5 6	7 8 9	10 11 12		
8. We collect the data we need to know whether we are reaching our goals. *Data can come from numbers and stories.*	We do not regularly collect data. OR We largely collect data to report to others outside our collaboration for evaluation or required reporting.	We are working to find a way to collect data in the community. This could be either from public data sources or from local collection efforts from community organizations.	We have identified a way to collect data in the community. We are working to implement this.	We have a space where we collect, pool and store data from the community for our community to access.	Communities across our region prioritize data collection to understand progress of our region over time.		
	0	1 2 3	4 5 6	7 8 9	10 11 12		

Note. See the online article for the color version of this figure.

coalitions in September 2017. Each coalition brought three to twelve representatives to the event; this included at least one leader per community with lived experiences of the health inequities deemed salient by their coalition. Attendees were formally oriented to the CTM, though many had already previewed and revised it during creation. Attendees completed the CTM individually and then grouped with fellow community members to discuss. Over two days, each coalition devoted a minimum of six hours to dialogue, reconciliation, prioritization, and planning. SCALE coaches and the model developers floated throughout the event, assisting coalition members to resolve scoring differences and set goals for taking action. After scoring, the CTM was used to determine coalition priorities and create an improvement plan. To assist in identifying priorities, a series of thought exercises was devised from a framework of organizational readiness ($R = MC^2$; Scaccia et al., 2015). Although readiness is often conceptualized as a readiness to begin, the $R = MC^2$ framework assumes dimensions of readiness are applicable across different stages of implementation, an assumption that has demonstrated some qualitative support in SCALE (Domlyn & Wandersman, 2019). Using the readiness thinking exercises, coalitions were encouraged to select one CTM item from each section as a priority area for action planning.

Subsequent Administrations. The 18 coalitions completed the CTM at three other time points: March 2018, September 2018, and March 2019. The number of participants per administration ranged from three to nine per community and coalitions were encouraged to include community members representing multiple backgrounds and experience types during the scoring and prioritization process. For ongoing support, regional coaches worked with coalitions to aid priority identification and ensure selected areas aligned with their community's health improvement aims. These plans were contained within an action planning dashboard so they could be routinely revisited and updated. Each quarter SCALE leaders held one-hour phone calls with each coalition to review their action plan, provide feedback, and ensure it connected to their community's theory of change.

CTM Contextual Validity

Contextual validity is defined as an innovation's pragmatic characteristics (e.g., times, resources) for implementation, integration with the setting's existing activities, sustainability, and positive and negative side effects, each influenced by contextual elements (e.g., policies, populations; Skinner, 2013). In summary, contextual validity assesses whether an innovation is useful and how the innovation is used when deployed. To evaluate the contextual validity of the CTM, semistructured interviews were conducted with users one year after the last CTM administration. Interviews aimed to understand CTM application in practice and inform future use of maturity models with community coalitions. Specific validity questions included (a) Was the CTM perceived as valuable? (b) How was the CTM used? (c) What is needed to support ongoing use of the CTM? Ten interviews were conducted by three evaluators. Interviewees included representatives from communities in Arizona, California, Illinois, Massachusetts, New York, North Carolina, and Ohio. All interviews were recorded and transcribed. Transcripts were coded using a thematic scheme combining deductive and inductive techniques (Miles et al., 2020). In first cycle coding two reviewers classified transcript text by the validity questions listed above. In second cycle coding, content within those categories was inductively reviewed to determine themes within each research question.

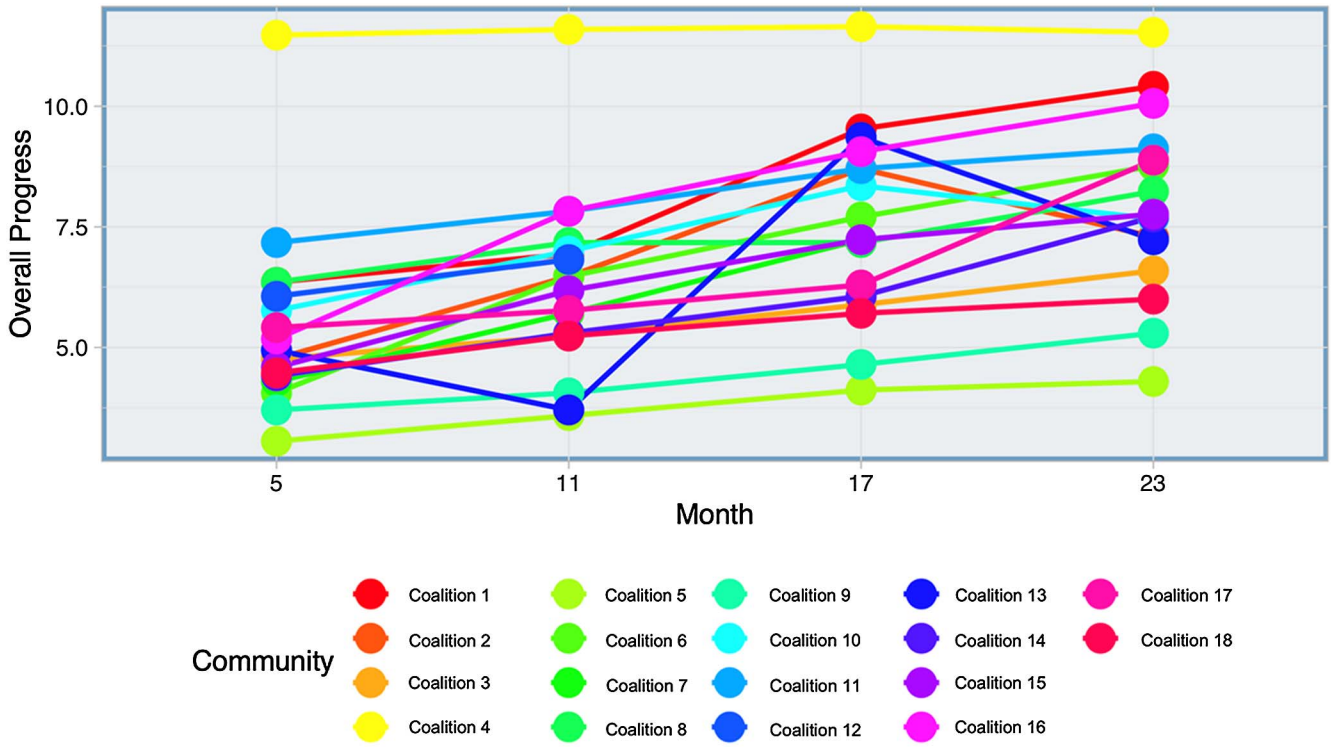
Results

Average CTM Scores by Community

In general, comparing scores across coalitions is not how CTM is intended to be used because each setting has its own needs and unique trajectory. Local priorities and community theories of change are not directly comparable. If comparison across communities is required, average scores by component can be computed. Figures 3–5 show the average ratings by each CoS category for each administration by community. These were calculated by averaging the "Now" ratings across all items within each section. Several trends are noteworthy. With the exception of one outlier (Coalition 4), coalitions did not consistently rate themselves high nor low across the three dimensions, providing a degree of confidence that the scoring was a thoughtful and fair process. This is further reinforced by the observation that while scores in general increased across administrations (as would be expected because the SCALE activities were designed to build maturity), there were some instances of declining scores. In the Improvement and Relationships categories, four coalitions declined in scores between administrations. In Equity, five coalitions declined between administrations.

To examine the use of the CTM in more detail, we use Coalition 3 as an example. After the first administration they selected "shared stewardship" (a Relationship construct) as a priority area. This included three items: "There is a shared commitment to health, well-being, and equity across the community" (baseline "Now" rating = 7); "People see themselves as stewards of the community's well-being" (baseline "Now" rating = 4); "Stewards in our community are committed to change for the long term" (baseline "Now" rating = 3). They set their goals to increase each item by two points, to the next maturity level. In their action plan, strategies to address this included inviting new community-based organizations across the region to learning academies held by the coalition. These academies brought together community leaders to discuss salient regional health concerns, learn improvement methods, and create new collaborations. This coalition asked all health educators to co-lead sessions at this event, and encouraged rural health networks from surrounding counties to attend the event. One method for doing so was developing memorandums of understanding with expectations for rural representatives to be active in the event, incentivized by tying involvement to their community health improvement plans. To assess their success, they sent post-event surveys to attendees and received favorable feedback on the respondents' comfort and confidence in working with their local health education. As these activities took time to bear results, the coalition did not score themselves significantly higher during the second administration of the CTM. However, by the third and fourth administration, they reported adding the largest county in their area to their collaboration, and perceived health educators as more involved and committed to local change. As a result, Coalition 3 rated the three CTM "shared stewardship" items roughly the same at the first two administrations, but felt confident enough to rate themselves higher by the third (8, 5, 5, respectively) and fourth (8, 6, 6, respectively) administration. At

Figure 3
Average "Improvement" Score Over Time



Note. See the online article for the color version of this figure.

the same time, they also noted ongoing challenges of defining health educators' roles in each county, engaging people with lived experience of inequities, and described that some counties were more advanced than others in collaboration and measurement, indicating further areas where work was needed. Used as intended, the CTM helped Coalition 3 to identify areas where they felt improvement was needed, to set goals toward these improvements, and to assess progress over time.

CTM Contextual Validity

Validity Question 1: Was the CTM Viewed Favorably?. Overall, participants perceived the CTM favorably. The CTM was viewed as an agent for facilitating conversations. Respondents noted that conversation was an inherent part of CTM completion and this necessitated bringing together people with disparate perspectives. As one interviewee noted:

> Having the multiple points of view was particularly helpful [because] if we want to serve the community it can't just be the staff or experts talking about it.

However, this requirement also came at a cost. Respondents described challenges convening people with different perspectives in the same room at the same time to reconcile differences in scoring. Beyond logistical challenges, some noted including multiple stakeholders in the process was cumbersome and time-consuming, particularly due to the number of items. An interviewee in Illinois described the tension between its challenges and value in this way:

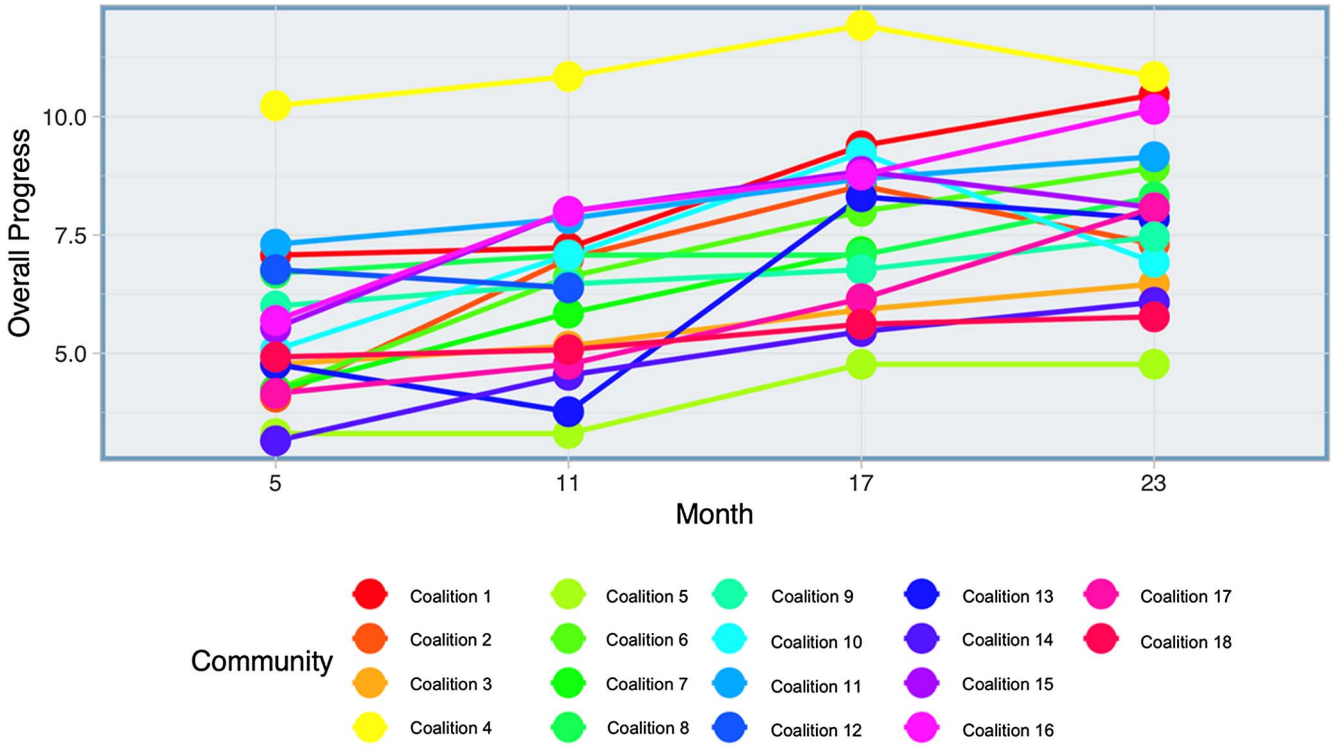
> The length was useful and not useful. If we weren't always up against due dates . . . we could have used it more . . . I think community members need to get to action quicker . . . like COVID is a national crisis, but our community lives in this kind of crisis every day. Access to food, health care, unemployment, unstable housing, poor quality schooling: that's our everyday crisis. The need for our community residents to not spend a ton of time planning—but [instead] getting to action—is a limitation. And then the usefulness of it was gaining a shared understanding and making sure all voices came out as a part of our collective response and having a structure for that. Because, even with the best facilitator, conversations can get off track.

The CTM was also viewed as a useful method of visioning priorities and next steps. The multiple dimensions and levels broke down a complex initiative into digestible pieces. Respondents mentioned setting ratings for both "Now" and "Goal" was valuable to realistically envision their community's future in six-month increments. One participant noted that the CTM:

> actually gave a structure to the discipline we needed to keep going and saying: 'Are we where we want to be? Are we doing what we want to be doing? Are we making a difference?'

Overall, most respondents said they would like to continue using the CTM, albeit in modified form. Most saw the CTM's value as a one-time assessment where only initial priority areas were revisited

Figure 4
Average "Relationships" Score Over Time



Note. See the online article for the color version of this figure.

every six months, instead of needing to complete the entire maturity model every six months.

Validity Question 2: How Was the CTM Used?. Interviewees overall reported adherence to instructions. This meant completing the CTM individually, then collaboratively, including team members representing different community stakeholders (particularly as it related to systemic racism), and creating plans. Many participants created strategies for action. One community used the CTM to gain a shared understanding of their priorities, then set annual goals—revisited semiannually—and incorporated these plans into their existing measurement and evaluation processes. Several coalitions mentioned using CTM results to create multi-year plans or apply for grants to assist their community health improvement work. Discussing the full process of using the CTM to create action plans, one interviewee described:

> How do you transition from, 'Okay, you have your scores' to 'What are we going to do about it?' . . . 'How do we prioritize which one we want to focus on? And then how do we build a meaningful action plan to try to work on that?' The way the CTM is written, it supports that somewhat. I think being able to pick a priority area is still just kind of, well, what feels like a priority. We can't focus on everything. . . . We convened [subject matter expert] groups for each one of the three [priorities] that rose to the top and said, 'Okay, let's dive back into the data.' We looked at some data and facilitated qualitative discussion among those [subject matter experts] and worked with them to develop a five-year goal, which was then reviewed and approved by our group steering committee. . . . Two of our priority areas combined [to create the] same goal: 'access to care' and 'early childhood development' combined into a goal looking at screening and referral systems. . . . Our steering committee reviewed that and they chose to go with the areas where there was already work happening, as opposed to the areas where there wasn't, and identified [indices of their goal], one for each priority level . . . [then we looked] at the data and developed a five-year SMART aim.

However, the translation of scores to plans was not always easy. One challenge was the time required for the completion of the CTM. One respondent who facilitated the CTM meetings said:

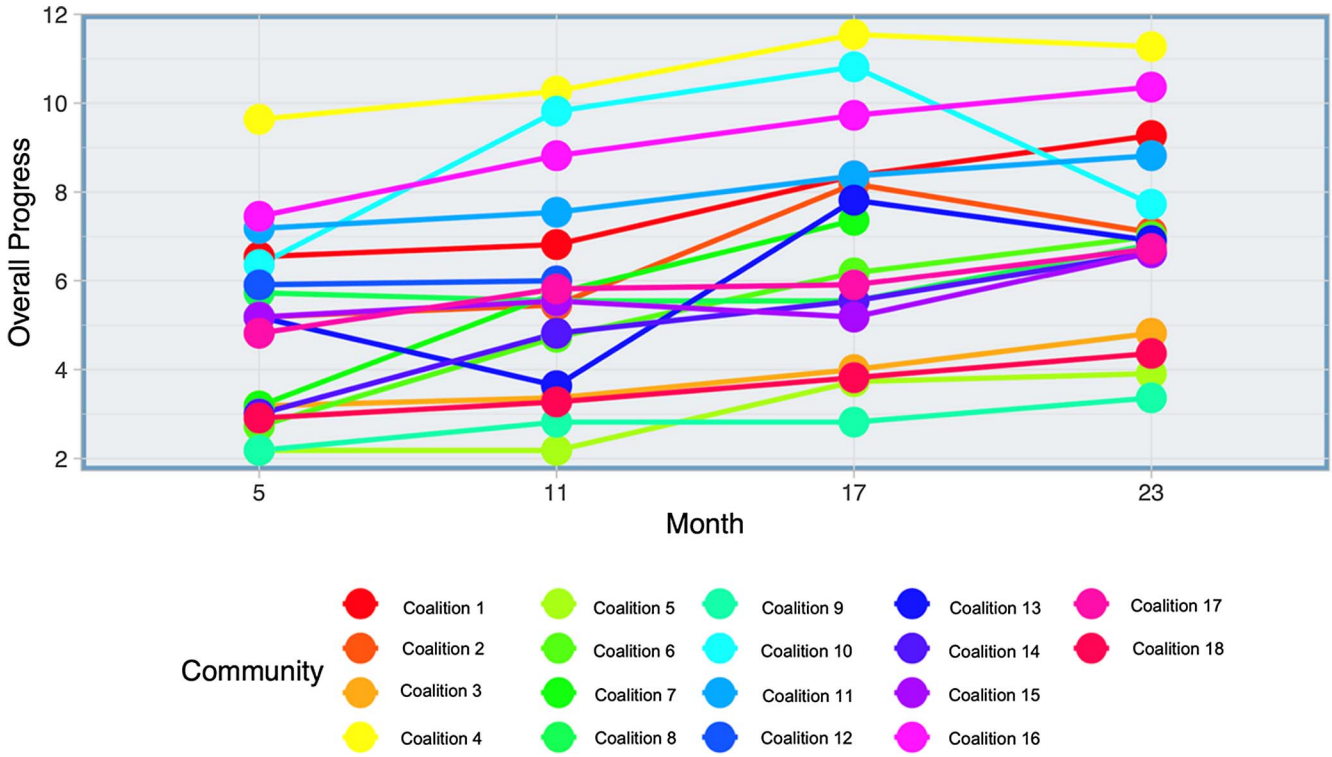
> I gave everyone a paper copy of the tool . . . they preferred to do it as a group and not on their own. We split it up over time, tackling certain sections. We sat down as a group, read the questions to themselves or I read them out loud, asked if there was any clarifying questions. Then when it came to answering the questions we use post-it notes. I took the sections and printed them out large and posted them on the wall so that we can then put post-it notes in each section . . . they would put their score on the post-it note as well as their initials. I would go back afterwards and tally. I averaged the scores and reported back to the group . . . we didn't come up with any strategies to address whatever our score was, especially if it was a low score. And I think the reason for that part of it was, just was time. It was hard getting the group together to even do that. They found it to be cumbersome.

Another challenge was the lack of experience with maturity models. One interviewee noted:

> Theoretically if you're in 'this' box, you just look at the next box over and talk about what it would take to get us there. . . . That should

Figure 5

Average "Equity" Score Over Time (Note One Coalition Did Not Complete This Section at Last Administration)



Note. See the online article for the color version of this figure.

> become our action plan. I think that the tool is designed that way. But in practice people aren't used to using something like that and thinking that way . . . . sometimes the group still gets distracted with their own ideas that may or may not relate to that thing, you know? . . . We thought as more of like a global assessment of where we were.

Validity Question 3: What Support is Needed for CTM Use?

One theme that emerged was the desire for stories, examples, or case studies illustrating the process of CTM assessment, prioritization, strategy selection, and outcomes. While most coalitions reported administering the CTM without the help of dedicated 100MHL coaches, suggestions for support included peer groups from communities across the country working in similar issues, a stipend for completion, a tipsheet for use, and a facilitator to assist in prioritization and strategy selection. One coalition member noted it was necessary to have

> somebody to help walk through that messy process of 'Hey, how do we interpret these scores and pick a priority? And then how do we actually use the tool as designed to help us craft our next steps?'

Discussion

Overall, the CTM appears to have been useful to a diverse group of community stakeholders in multiple settings to self-assess, dialogue, and determine the priorities and trajectory for their communities. Most communities were able to use the CTM as intended by incorporating multiple community voices in ratings, reflection and discussion, and action planning; but some found the process cumbersome for multiple CTM administrations. The most valuable use of the CTM may be as an initial needs assessment and prioritization tool; first administration would conduct the whole CTM process, then subsequent administrations would focus on just on the few items selected as priority areas.

Although the CTM belongs to the overall category of maturity models, its purpose is different from that of similar models. Typically, these models are used by independent external evaluators to assess the maturity of an organization relative to industry norms (Proença & Borbinha, 2016), to provide information to customers or accrediting agencies, or to conduct an environmental scan of an industry. This kind of application is not relevant in community contexts because community coalitions are decentralized, involve multiple stakeholders, have patchwork funding, and frequently pivot to meet evolving policies. Community-led, context-appropriate processes are important for enacting change in these complex systems.

The field of systems thinking differentiates between "hard" and "soft" systems methods (Checkland, 2000). The former involves problems with clear goals and objectives; and the methods focus on problem-solving techniques to achieve the goal in the most efficient manner. The fields of systems engineering, operations research, and mathematical modeling fit within this category. By contrast, human systems lend themselves well to soft systems approaches where there are multiple stakeholders with diverse viewpoints and

heterogeneous goals. In such systems, the methods focus on systematic approaches to appreciate the viewpoints of different actors in that system and to initiate structured conversation about change. Unlike other maturity models that have been used as hard evaluation tools, the CTM is appropriate for a soft systems approach.

This does not imply that the CTM can't be used mechanically. Lacking a formula for its use places greater responsibility on coalitions to use the tool carefully and with intent to collaborate for change. This necessitates assuring that the CTM process includes all relevant stakeholders and especially assures the participation of community members disproportionately affected by racism, injustice, or inequity. In the CTM's SCALE application, support was available from peers and implementation coaches; and even then, the coalitions found it cumbersome to convene participants multiple times over the course of two years. To make the CTM attractive and broadly useful, it will be necessary to develop feasible and effective strategies for implementation. Further study is required to explore implementation frameworks such as those for spreading and scaling interventions (e.g., Barker et al., 2015) or systems of innovation support (Wandersman et al., 2012) in which it may be suitable to include the CTM as a planning and prioritization tool.

The CTM was developed for use within a specific initiative and therefore the items are based on one community change model. The CTM's underlying model (Community of Solutions; CoS) is compatible with improvement and social change principles such as Collaborating for Equity and Justice (Reid et al., 2019; Wolff et al., 2017) and is therefore likely to be broadly applicable to many community transformation efforts. An example of such adaptation is the incorporation of CTM items by the Georgia Health Policy Center and County Health Rankings & Roadmaps into the Assessment for Advancing Community Transformation, a self-assessment for communities to understand improvements in health and equity. Contextual validity of this adaptation was accomplished using a three-step process: an expert review of the items, a community field test, and a review of completed assessments (Butts & Howard, n.d.).

However, there may be initiatives with their own theory that might need to adapt the CTM for context-specific use. As mentioned previously, contextual validity is a benchmark for evaluating the CTM. The tension between fidelity and fit has been documented extensively in implementation science (Carvalho et al., 2013; Castro et al., 2004; Chambers & Norton, 2016) and further research is needed to determine the contextual validity of the current version of the CTM across multiple contexts. Therefore, other applications may require a systematic CTM adaptation approach followed by an evaluation of its fit for context. Regardless, it is important to reiterate that any CTM-like tool is most effective if both its construction and use are grounded in principles of collaborative engagement, appreciative inquiry, and community-based participatory principles. These include recognition of community identity, employing community strengths and resources, facilitating collaboration, integrating knowledge and action to be mutually beneficial, approaching health from an ecological perspective, ensuring iterative cycles of inquiry and improvement, and disseminating results to all stakeholders (Israel et al., 2018).

Conclusion

Implementing localized changes for systemic issues is a difficult endeavor. Yet—as we confront a pandemic, climate change, aging populations, widening inequity, and a host of other complex threats to health and well-being—building community capacity for change has never been more urgently needed. This article detailed the development and application of the CTM, a maturity model–based collaboration tool that can help community coalitions plan and prioritize a pathway for change. Rooted in recognized principles of collaboration and equity, the CTM—if effectively used—can be a valuable asset for communities. It is our hope that presenting both the CTM and its development process will empower other community initiatives to utilize the CTM or adapt their own maturity model to enact meaningful local change.

Keywords: community, equity, complexity, maturity models, community coalitions

References

100 Million Healthier Lives. (2016). *Program brief: Approach to equity*. Institute for Healthcare Improvement. https://www.100mlives.org

Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: Evidence and interventions. *Lancet*, *389*(10077), 1453–1463. https://doi.org/10.1016/S0140-6736(17)30569-X

Barker, P. M., Reid, A., & Schall, M. W. (2015). A framework for scaling up health interventions: Lessons from large-scale improvement initiatives in Africa. *Implementation Science*, *11*(1), Article 12. https://doi.org/10.1186/s13012-016-0374-x

Becker, J., Knackstedt, R., & Pöppelbuß, J. (2009). Developing maturity models for IT management. *Business & Information Systems Engineering*, *1*(3), 213–222. https://doi.org/10.1007/s12599-009-0044-5

Bond, S. (2016). *Gunning fog index* [online]. http://gunning-fog-index.com/-13.11

Boyd, N. M. (2015). Appreciative inquiry. In L. A. Jason & D. S. Glenwick (Eds.), *Handbook of methodological approaches to community-based research: qualitative, quantitative, and mixed methods* (pp. 53–60). Oxford University Press.

Butterfoss, F. D. (2007). *Coalitions and partnerships in community health*. Wiley.

Butts, J., & Howard, P. (n.d.). *Assessing readiness for community transformation towards a Culture of Health*. Presentation with 100MHL, Georgia Health Policy Center, County Health Rankings & Roadmaps. Accessed August 30, 2019: https://www.hrsa.gov/sites/default/files/hrsa/ruralhealth/rural-partnership/day-3/AssessingReadiness.pdf

Carvalho, M. L., Honeycutt, S., Escoffery, C., Glanz, K., Sabbs, D., & Kegler, M. C. (2013). Balancing fidelity and adaptation: Implementing evidence-based chronic disease prevention programs. *Journal of Public Health Management and Practice*, *19*(4), 348–356. https://doi.org/10.1097/PHH.0b013e31826d80eb

Castro, F. G., Barrera, M., Jr., & Martinez, C. R., Jr. (2004). The cultural adaptation of prevention interventions: Resolving tensions between fidelity and fit. *Prevention Science*, *5*(1), 41–45. https://doi.org/10.1023/B:PREV.0000013980.12412.cd

Chambers, D. A., & Norton, W. E. (2016). The adaptome: Advancing the science of intervention adaptation. *American Journal of Preventive Medicine*, *51*(4), S124–S131. https://doi.org/10.1016/j.amepre.2016.05.011

Checkland, P. (2000). Soft systems methodology: A thirty year retrospective. *Systems Research and Behavioral Science*, *17*(S1), S11–S58. https://doi.org/10.1002/1099-1743(200011)17:1+<:AID-SRES374>3.0.CO;2-O

Cloos, P., & Ridde, V. (2018). Research on climate change, health inequities, and migration in the Caribbean. *The Lancet. Planetary Health*, *2*(1), e4–e5. https://doi.org/10.1016/S2542-5196(17)30176-6

DeSalvo, K. B., Wang, Y. C., Harris, A., Auerbach, J., Koo, D., & O'Carroll, P. (2017). Public health 3.0: A call to action for public health to meet the

challenges of the 21st century. *Preventing Chronic Disease*, *14*(170017), 10–5888.

Domlyn, A. M., & Wandersman, A. (2019). Community coalition readiness for implementing something new: Using a Delphi methodology. *Journal of Community Psychology*, *47*(4), 882–897. https://doi.org/10.1002/jcop.22161

Flaspohler, P., Duffy, J., Wandersman, A., Stillman, L., & Maras, M. A. (2008). Unpacking prevention capacity: An intersection of research-to-practice models and community-centered models. *American Journal of Community Psychology*, *41*(3–4), 182–196. https://doi.org/10.1007/s10464-008-9162-3

Goncalves Filho, A. P., & Waterson, P. (2018). Maturity models and safety culture: A critical review. *Safety Science*, *105*, 192–211. https://doi.org/10.1016/j.ssci.2018.02.017

Hord, S. M., Stiegelbauer, S. M., Hall, G. E., & George, A. A. (2006). *Measuring implementation in schools: Innovation configurations*. SEDL; www.sedl.org/cbam

Howard, P., Lewis, N., McPherson, M., Reid, A., & Torres, T. (2020). Deep dive: Basic needs: Health care. In B. Milstein, M. Roulier, C. Kelleher, E. Hartig, & S. Wegley (Eds.), *Thriving together: A springboard for equitable recovery and resilience in communities across America*. CDC Foundation and Well Being Trust, https://thriving.us/?p=205

Israel, B., Schulz, A. J., Parker, E. A., Becker, A. B., Allen, A. J., & Guzman, J. R. (2018). Critical issues in developing and following CBPR principles. In N. Wallerstein, B. Duran, J. Oetzel, & M. Minkler (Eds.), *Community-based participatory research for health: Advancing social and health equity* (pp. 47–66). Jossey-Bass.

Lacerda, T. C., & von Wangenheim, C. G. (2018). Systematic literature review of usability capability/maturity models. *Computer Standards & Interfaces*, *55*, 95–105. https://doi.org/10.1016/j.csi.2017.06.001

Lannon, C., Schuler, C. L., Seid, M., Provost, L. P., Fuller, S., Purcell, D., Forrest, C. B., & Margolis, P. A. (2020). A maturity grid assessment tool for learning networks. *Learning. Health Systems*, 10232.

Lardier, D. T., Jr., Bergeson, C., Bermea, A. M., Herr, K. G., Forenza, B., Garcia-Reid, P., & Reid, R. J. (2019). Community coalitions as spaces for collective voice, action, and the sharing of resources. *Journal of Community Psychology*, *47*(1), 21–33. https://doi.org/10.1002/jcop.22096

Mahoney, M. P. (2010). Students' attitudes toward STEM: Development of an instrument for high school STEM-based programs. *The Journal of Technology Studies*, *36*(1), 24–34. https://doi.org/10.21061/jots.v36i1.a.4

McLeroy, K., Kegler, M., Steckler, A., Burdine, J., & Wisotzky, M. (1994). Community coalitions for health promotion: Summary and further reflections. *Health Education Research*, *9*(1), 1–11. https://doi.org/10.1093/her/9.1.1

Miles, M. B., Huberman, A. M., & Saldaña, J. (2020). *Qualitative data analysis: A methods sourcebook* (4th ed.). Sage Publications

Ottersen, O. P., Dasgupta, J., Blouin, C., Buss, P., Chongsuvivatwong, V., Frenk, J., Fukuda-Parr, S., Gawanas, B. P., Giacaman, R., Gyapong, J., Leaning, J., Marmot, M., McNeill, D., Mongella, G. I., Moyo, N., Møgedal, S., Ntsaluba, A., Ooms, G., Bjertness, E., … Scheel, I. B. (2014). The political origins of health inequity: Prospects for change. *Lancet*, *383*(9917), 630–667. https://doi.org/10.1016/S0140-6736(13)62407-1

Proença, D., & Borbinha, J. (2016). Maturity models for information systems-a state of the art. *Procedia Computer Science*, *100*, 1042–1049. https://doi.org/10.1016/j.procs.2016.09.279

Pullen, W. (2007). A public sector HPT maturity model. *Performance Improvement*, *46*(4), 9–15. https://doi.org/10.1002/pfi.119

Reid, A., Abraczinskas, M., Scott, V., Stanzler, M., Parry, G., Scaccia, J., Wandersman, A., & Ramaswamy, R. (2019). Using collaborative coalition processes to advance community health, well-being, and equity: A multiple-case study analysis from a national community transformation initiative. *Health Education & Behavior*, *46*(1_suppl), 100S–109S.

Scaccia, J. P., Cook, B. S., Lamont, A., Wandersman, A., Castellow, J., Katz, J., & Beidas, R. S. (2015). A practical implementation science heuristic for organizational readiness: $R = MC^2$. *Journal of Community Psychology*, *43*(4), 484–501. https://doi.org/10.1002/jcop.21698

Schumacher, A., Erol, S., & Sihn, W. (2016). A maturity model for assessing Industry 4.0 readiness and maturity of manufacturing enterprises. *Procedia CIRP*, *52*(1), 161–166. https://doi.org/10.1016/j.procir.2016.07.040

Skinner, C. H. (2013). Contextual validity: Knowing what works is necessary, but not sufficient. *School Psychologist*, 61, 14–21.

Stout, S. (2017). *Overview of SCALE and a community of solutions. SCALE 1.0 synthesis report*. Institute for Healthcare Improvement.

van Dorn, A., Cooney, R. E., & Sabin, M. L. (2020). COVID-19 exacerbating inequalities in the US. *Lancet*, *395*(10232), 1243–1244. https://doi.org/10.1016/S0140-6736(20)30893-X

Wandersman, A., Chien, V. H., & Katz, J. (2012). Toward an evidence-based system for innovation support for implementing innovations with quality: Tools, training, technical assistance, and quality assurance/quality improvement. *American Journal of Community Psychology*, *50*, 445–459. https://doi.org/10.1007/s10464-012-9509-7

Wendler, R. (2012). The maturity of maturity model research: A systematic mapping study. *Information and Software Technology*, *54*(12), 1317–1339. https://doi.org/10.1016/j.infsof.2012.07.007

Wolff, T., Minkler, M., Wolfe, S. M., Berkowitz, B., Bowen, L., Butterfoss, F. D., & Lee, K. S. (2017). Collaborating for equity and justice: Moving beyond collective impact. *The Nonprofit Quarterly*, *9*, 42–53.

Yang, E., Foster-Fishman, P., Collins, C., & Ahn, S. (2012). Testing a comprehensive community problem-solving framework for community coalitions. *Journal of Community Psychology*, *40*(6), 681–698. https://doi.org/10.1002/jcop.20526

Zakocs, R. C., & Edwards, E. M. (2006). What explains community coalition effectiveness?: A review of the literature. *American Journal of Preventive Medicine*, *30*(4), 351–361. https://doi.org/10.1016/j.amepre.2005.12.004