

# Evaluation of Mayor's Wellness Councils: Recommendations for Website Content Informed by Community Coalition Action Theory

Wendell C Taylor<sup>1\*</sup>, Richard R Suminski<sup>2</sup>, Bhibha M Das<sup>3</sup>, Raheem J Paxton<sup>4</sup> and Rachel I Blair<sup>2</sup>

<sup>1</sup>Department of Health Promotion and Behavior Sciences, University of Texas Health Science Center at Houston School of Public Health, USA

<sup>2</sup>Department of Behavioral Health and Nutrition, University of Delaware, USA

<sup>3</sup>Department of Kinesiology, East Carolina University, USA

<sup>4</sup>Department of Community Medicine and Population Health, University of Alabama, USA

## Article Information

Received date: Sep 17, 2017

Accepted date: Oct 10, 2017

Published date: Oct 16, 2017

### \*Corresponding author

Wendell C Taylor, Department of Health Promotion and Behavioral Sciences, University of Texas Health Science Center at Houston, School of Public Health, Texas, USA, Tel: 713-500-9635; Fax: 713-500-9602; Email: Wendell.C.Taylor@uth.tmc.edu

**Distributed under** Creative Commons CC-BY 4.0

**Keywords** Mayor's Wellness Councils; Website content; Community Coalition Action Theory; Public Health; Internet

**Article DOI** 10.36876/smpmph.1005

## Abstract

**Background:** Mayor's Wellness Councils are community-based coalitions designed to improve the health and wellbeing of communities. Although they reach millions of people, little is known about whether council websites are informative. The aim of this study was to recommend an approach for the website content of Mayor's Wellness Councils based on Community Coalition Action Theory.

**Method:** Internet searches were conducted to identify Mayor's Wellness Councils for the 50 most populated United States Metropolitan Statistical Areas. We evaluated all 24 of existing councils with websites.

**Results:** The mission statement was the most frequently described construct followed by outcomes and implementation. After these three constructs, convener group, and coalition membership were presented most frequently. The least frequently described construct was assessment and planning. Twenty-five percent of the websites had no information related to the six Community Coalition Action Theory constructs, essential information for consumers.

**Discussion:** This study provides guidance on how the content of Mayor's Wellness Council websites can be presented to maximally inform consumers about their activities and impact. We recommend incorporating all six Community Coalition Action Theory constructs with a particular emphasis on assessment and planning to best convey the functioning and effectiveness of Mayor's Wellness Councils. Improving Mayor's Wellness Councils for consumers can have direct and indirect positive effects for public health and community wellbeing.

## Introduction

Community coalitions are formal, multipurpose alliances that work locally or regionally to address community issues or problems. Community coalitions build consensus and actively engage diverse organizations and constituencies [1]. One such approach is often referred to as "Mayor's Wellness Councils" which, as the name suggests, are town- or citywide-health initiatives spearheaded by the mayor. They are designed to be community coalitions because their purpose is to engage diverse organizations and constituencies by including stakeholders who represent all segments of the city in contrast to self-serving interest groups dictating policy and activities.

Public health practitioners often recommend fostering substantial community engagement and collaboration across multiple sectors to address public health challenges including physical inactivity and obesity [2,3]. These population-based approaches are typically designed to shift the entire population toward better health outcomes [4].

## Background

Mayor's Wellness Councils provide programs to encourage participation by the local community in healthy lifestyles and health promotion activities (i.e., boots on the ground); therefore, these initiatives have the potential to substantially impact public health and well-being. Council websites report outcomes that have positive influences on health. However, we found no study that systematically evaluated websites from a theoretical perspective. Doshi and colleagues [5] evaluated the content of physical activity websites for their use of behavior change theories. They offered important insights on how to improve the websites based on their finding that few websites included theory-informed information. A similar evaluation of Mayor's Wellness Councils has not been conducted, even though such a study has important public health relevance and implications.

**OPEN ACCESS**

**ISSN: 2576-4004**

Local residents interested in wellness and health promoting activities in their city frequently check their Mayor’s Wellness Council websites for a description of activities, the success of the activities, and the effectiveness of the council in improving the city’s health and wellbeing. In addition, transparency is an advantage for any Mayor’s Wellness Council. Therefore, conveying information about who is convening the group, who their members are, and what they are trying to accomplish demonstrates accountability to city residents and efficient use of resources. Moreover, information on the website can promote Mayor Wellness Councils and lay claim to its small and large wins. Furthermore, individuals in cities considering developing a Mayor’s Wellness Council may review the activities and structure of other councils via their websites. The format and structure of other websites can be informative in a positive way or can be a counter example that should not be emulated.

Conveying essential information on a website is consistent with the constructs of Community Coalition Action Theory (CCAT) and the development of effective coalitions which is the typical organizational structure of Mayor’s Wellness Councils [6]. Because websites are ubiquitous and consistency in website content can maximally inform consumers and website developers, we selected relevant constructs of CCAT to evaluate Mayor’s Wellness Council websites. We analyzed Mayor’s Wellness Council websites in the United States.

Therefore, the objectives of this study were to:

1. Evaluate current website content of Mayor’s Wellness Councils.
2. Recommend changes to website content based on Community Coalition Action Theory.
3. Promote consistency in website content to maximally inform stakeholders and consumers and thus contribute to achieving public health objectives.

## Methods and Procedures

### Theoretical framework

The Community Coalition Theory (CCAT) is a theoretical, research-based framework for understanding inter-organizational collaborations in a community health promotion context [6]. The theory has 15 constructs that are important for effective coalitions. These constructs can be classified into four major categories: stages of coalition development, coalition functioning, development of coalition synergy, and creation of community changes. Mayor’s

Wellness Councils are coalitions that promote health and should exemplify the goals of CCAT. Therefore, examining Mayor’s Wellness Councils concordance with CCAT, a theory that links organizational quality with outcomes, could provide valuable scientific and practical insights.

Constructs of the Community Coalition Action Theory (CCAT).

The 15 constructs of the Community Coalition Action Theory are:

1. Stages of development
2. Community context
3. Lead agency or convening group
4. Coalition membership
5. Processes
6. Leadership and staffing
7. Structures
8. Pooled member and external resources
9. Member engagement
10. Collaborative synergy
11. Assessment and planning
12. Implementation of strategies
13. Community change outcomes
14. Health/social outcome
15. Community capacity

We selected the most relevant CCAT constructs for Mayor’s Wellness Councils to maximally inform residents and consumers about membership, accountability, and effectiveness (efficient use of resources). The five constructs were: 1) lead agency/convenor group; 2) coalition membership; 3) assessment and planning; 4) implementation of strategies; and 5) health/social outcomes [6]. Fundamental to any coalition functioning and effectiveness is a “mission statement” which is consistent with several constructs of CCAT. Therefore, we evaluated the websites based on six constructs including mission statement (Table 1).

The definitions of the five selected constructs of CCAT are presented in table 1 [6]. A mission statement is defined as “A written

**Table 1:** Definitions of five selected constructs from Community Coalition Action Theory.

Construct	Definition
<b>Lead agency or convening group</b>	The organization that responds to an opportunity, threat, or mandate by agreeing to convene the coalition; provide technical assistance, financial or material support; lend its credibility and reputation to the coalition; provide valuable networks/contacts.
<b>Coalition membership</b>	The core group of people who represent diverse interest groups, agencies, organizations, and institutions and are committed to resolving a health or social issue by becoming coalition members.
<b>Assessment and planning</b>	The comprehensive assessment and planning activities that make successful implementation of effective strategies more likely.
<b>Implementation of strategies</b>	The strategic actions that a coalition implements across multiple ecological levels that make changes in community policies, practices, and environments more likely.
<b>Health/social outcomes</b>	The measurable changes in health status and social conditions of a community that are the ultimate indicators of coalition effectiveness.

declaration of an organization’s core purpose and focus that normally remains unchanged over time. Properly crafted mission statements (1) serve as filters to separate what is important from what is not, (2) clearly state which markets will be served and how and (3) communicate a sense of intended direction to the entire organization” [7].

**Evaluators’ educational backgrounds and evaluation procedures**

The evaluators’ were four professors with educational backgrounds in kinesiology, public health, social psychology, health education and health promotion, cancer prevention, and exercise science. Raters evaluated each construct on a scale of “1” to “5”. The directions for evaluating the constructs were: 1) Construct not mentioned - no evidence; 2) Construct mentioned not described; 3) Minimal description of construct - limited evidence; 4) Partial description of construct - some evidence; 5) Full description of construct - complete and clear evidence (see table 2 for evaluation template) (Table 2).

**Evaluation template for mayor’s wellness councils**

The evaluation template (Table 2) is comparable to the one developed by Doshi and colleagues [5] and includes the following constructs: Mission statement, Convener group, Coalition membership, Assessment/planning, Implementation and Outcomes. To standardize the process and ensure consistency, a flow diagram

(Figure 1) was created to guide the evaluation of the websites. The flow diagram (Figure 1) encompasses ten steps beginning with identifying the appropriate websites and ending with calculating the final score. The procedures from the first step to the final step include how to review the website, where to find constructs, focus on each construct separately, etc. The diagram was developed and refined based on preliminary tests (Figure 1).

**Research Design**

In this cross-sectional study, a descriptive and comparative assessment of Mayor’s Wellness Councils website content conformity to CCAT was conducted. In order to maximize the generalizability of the study’s outcomes, internet searches were conducted using the Google search engine to identify Mayor’s Wellness Councils in the 50 main cities associated with the 50 most populated Metropolitan Statistical Areas (MSA) in the United States. An MSA is defined as a large population nucleus, together with adjacent communities, having a high degree of social and economic integration with that core or main city [8]. The key search terms entered were Mayor’s Wellness Council, Mayor’s Health Challenge, Mayor’s Health Initiative, Mayor’s Health Council, and Major’s Fitness Council. Mayor’s Wellness Councils having websites were found in 24 of the cities. The website content was then evaluated by two independent raters using an iterative process and author-developed evaluation template (Table 2) based on five CCAT constructs and the mission statement.

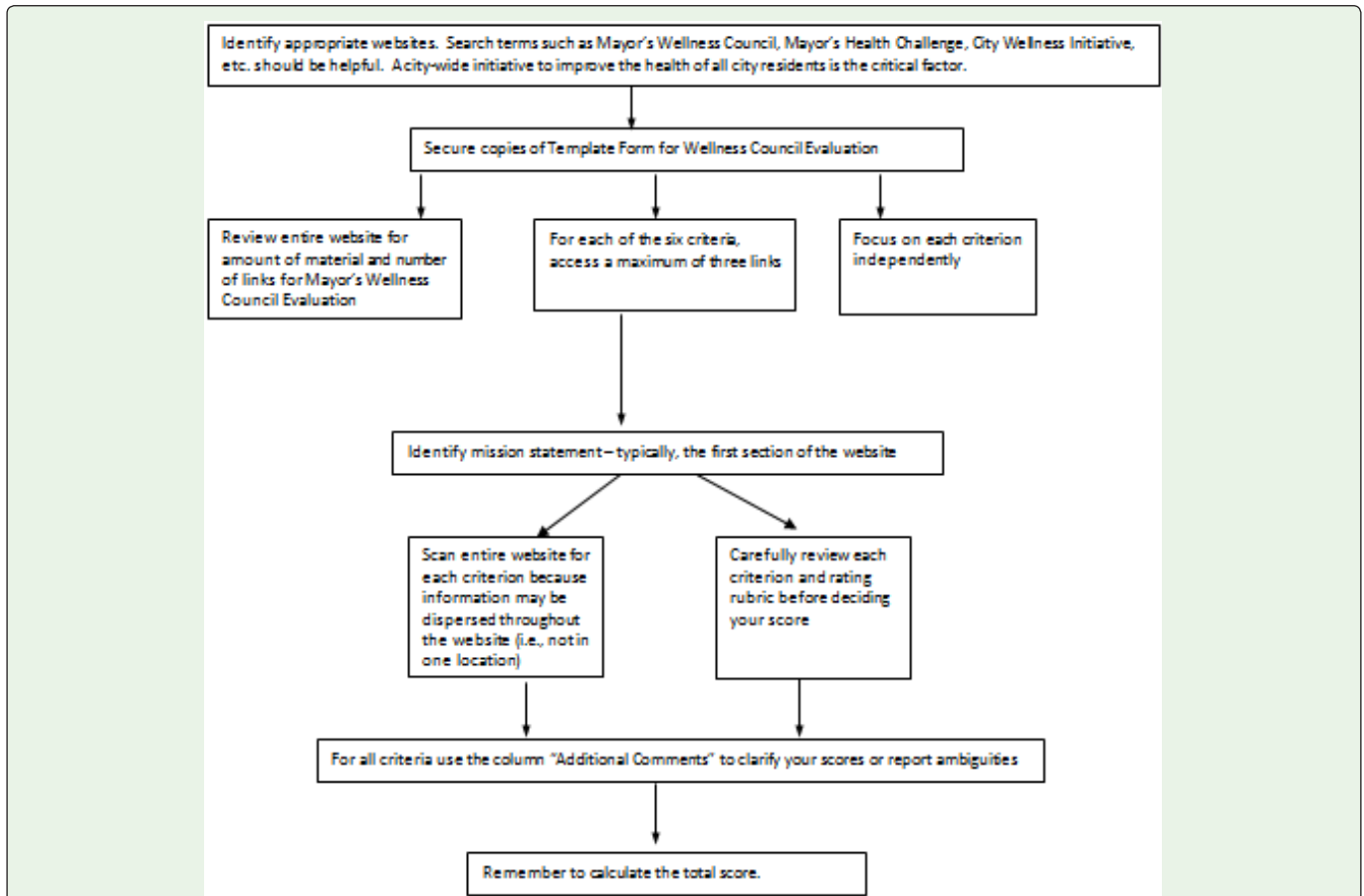


Figure 1: Mayors wellness councils Template to Evaluate Websites.

**Table 2:** Evaluation template for Mayor’s Wellness Council websites.

Construct	Rating category/question	Rating choices to inform scores of 1 to 5
<b>Mission statement</b>	Does the wellness council have a clear mission statement?	a) Mission statement is not mentioned. b) Mission statement is mentioned but not described. c) Mission statement is mentioned and described with one brief sentence. d) Mission statement is mentioned and described in a long sentence or two brief sentences. e) Mission statement is mentioned and fully described in one or more paragraphs; for example, there is a description on what kind of evidence or accomplishments will fulfill the objectives of the mission statement.
<b>Convener group</b>	Does the website describe a lead agency or convener group for the wellness council?	a) Lead agency or convener group is not identified. b) Lead agency or convener group is identified with no other information. c) Lead agency or convener group is identified and other participating groups are identified. d) Lead agency or convener group is identified, other participating groups are identified, and corresponding responsibilities and authority of the lead agency are described. e) Lead agency or convener group is identified, other participating groups are identified, corresponding responsibilities and authority of the lead agency are described, and the responsibilities of other participating groups are described.
<b>Coalition membership</b>	Is there evidence of different coalitions representing a broad constituency and various community gatekeepers to capitalize on pooled resources and partnership synergy?	a) No mention of a coalition. b) Coalition is identified but the coalition membership is not described. c) Coalition is identified and the coalition membership is described. d) Coalition is identified, coalition membership is described, and the diverse nature of the coalition is presented. e) Coalition is identified, coalition membership is described, and the diverse nature of the coalition is presented. In addition, there is a description or confirmation that the broad constituency and various community gatekeepers strengthen the partnership synergy.
<b>Assessment and planning</b>	Is there evidence of a comprehensive needs assessment or planning process prior to an implementation phase? Is there evidence of any assessments of community readiness for interventions and/or programs? Or did the coalition adopt a priori best practices or evidence-based interventions?	a) Assessment or planning is not mentioned. b) Assessment or planning is identified but not described. c) Assessment or planning is identified and described with one sentence. d) Assessment or planning is identified and described with two or three sentences, a brief description. e) Assessment or planning is identified and fully described with one or more paragraphs; for example, there is a description of a planning phase, implementation phase, community readiness, and evidence-based practices.
<b>Implementation of strategies</b>	Is there evidence of interventions and strategies directed at multiple levels to create change in community policies, practices, and environments? Or is creating awareness the primary focus of the program?	a) Programs or interventions are not mentioned. b) Programs or interventions are identified but not described. c) Programs or interventions are identified and described with one sentence. d) Programs or interventions are identified and described with two or three sentences, brief description. e) Programs or interventions are identified and presented with one or more paragraphs; for example, strategies and multiple levels of change are described.
<b>Health and social outcomes</b>	Have measurable health and social outcomes been identified and evaluated (e.g., reduce risk factors or increase protective factors)? Is there evidence that changes in community policies, practices, and environment resulted in increased capacity and improved health and social outcomes?	a) Health and social outcomes are not mentioned. b) Health and social outcomes are identified but not described. c) Health and social outcomes are identified and described with one sentence. d) Health and social outcomes are identified and described with two or three sentences, brief description. e) Health and social outcomes are identified and presented with one or more paragraphs; for example, multiple outcomes related to health, social factors, and evaluation strategies are described.

**Note:** Scale scores for all constructs

- 1      2      3      4      5
- 1) Construct not mentioned – no evidence
  - 2) Construct mentioned not described
  - 3) Minimal description of construct – limited evidence
  - 4) Partial description of construct – some evidence
  - 5) Full description of construct – complete and clear evidence.

**Table 3:** Inter-rater reliability using the evaluation template for Mayor’s Wellness Council websites (n=6, 24% of the total).

CCAT Item #	Kendall’s tau-c	P value	% Agreement
1 - Mission	0.92	0.001	100%
2 - Convener group	0.92	0.001	83.3%
3 - Coalition members	0.96	0.001	100%
4 - Assessment/planning	0.97	0.009	100%
5 - Implementation	0.92	0.001	100%
6 - Outcomes	0.96	0.001	100%

for each construct are presented in table 4. The mission statement had the greatest overall mean (4.08 ± 1.28); 54.2% of the websites had a complete and clear message for a mission statement. The next highest means were for outcomes (3.58 ± 1.56) and implementation (3.54 ± 1.44); 45.8% of the websites had complete and clear evidence for outcomes and 37.5% had complete and clear evidence on implementation. Means of 3.13 ± 1.45 and 3.04 ± 1.63 were observed for convener group and coalition members, respectively; 25.0% of the websites had complete and unambiguous evidence about a convener group and coalition members. The lowest overall mean was for assessment and planning (2.92 ± 1.74); 29.2% of the websites had

**Table 4:** Percent and descriptive statistics of Mayor’s Wellness Council websites (n=24) -Ratings for each CCAT construct and mission statement.

CCAT Construct	Rating by percent					Mean (SD) <sup>a</sup>	Median
	1 - not present	2	3	4	5 - full expression		
1 - Mission statement	8.3	4.2	12.5	20.8	54.2	4.08 (1.28)	5
2 - Convener group	16.7	20.8	20.8	16.7	25	3.13 (1.45)	3
3 - Coalition membership	29.2	12.5	8.3	25	25	3.04 (1.63)	3.5
4 - Assessment and planning	37.5	8.3	8.3	16.7	29.2	2.92 (1.74)	3
5 - Implementation of strategies	8.3	25	8.3	20.8	37.5	3.54 (1.44)	4
6 - Health and social outcomes	12.5	20.8	8.3	12.5	45.9	3.58 (1.56)	4
Grand Total <sup>b</sup>						20.34 (7.32)	22.5

<sup>a</sup>Likert scale “1” = no evidence to “5” = complete and clear evidence.

<sup>b</sup>Grand total scores ranged from “9” to “30”.

**Statistical Analysis for Reliability**

We analyzed 24 websites from 50 major cities. To assess reliability (inter-rater reliability), a subset of the 24 websites was selected based on their representation of the six geographical regions commonly described for the 48 contiguous United States. These websites were simultaneously and independently evaluated by two raters. Both raters strictly adhered to the evaluation instructions presented in the flow diagram (Figure 1). Inter-rater reliabilities for each of the six CCAT constructs were assessed using Kendall’s tau-c. The Kendall’s tau-c is a non-parametric test appropriate for use with an ordinal independent variable (construct ratings 1-5) and a dependent variable that can be interpreted as dichotomous (raters A and B) in a non-square table. Interclass Correlation Coefficients (ICC) using a two-way random effects model, where both evaluator and measures effects were considered random, was used to examine the consistency of the total evaluation score for each of the six Mayor’s Wellness Council websites.

**Results**

Inter-rater reliability exceeded recommended thresholds supporting agreement between raters. Levels of agreement ranged from 83.3% (i.e., one construct-convener group) to 100% (5 of 6 constructs) (Table 3). Kendall’s tau-c values exceeded 0.92 for the five CCAT constructs and mission statement and all were significant. For the 36 total construct evaluations made (6 websites x 6 criteria per website), evaluators disagreed only once and their total scores averaged 16.0 (5.1) and 16.3 (5.8) resulting in an average ICC across measures > 0.99 (F=176.2; P < 0.001) (Tables 3).

The means, standard deviations, and medians of the five constructs and mission statement are presented in table 4. In addition, the percent of Mayor’s Wellness Councils (n=24) receiving a given rating

complete and unambiguous evidence for assessment and planning while 37.5% demonstrated no evidence (Table 4).

The total score (i.e., grand total) for the theoretical range for CCAT construct ratings is 6 (no evidence of any constructs) to 30 (complete and unambiguous evidence for all six constructs) whereas the observed range was 9 to 30 (20.3 ± 7.3) (means) and 22 (medians). Four Mayor’s Wellness Councils received total scores of 30 indicating they provided complete and unambiguous evidence for all six constructs, while six (25%) councils received total scores of 13 or less, which suggests they provided “no descriptions of” or “no evidence of” the constructs.

**Discussion**

In this study, we developed an evaluation template based on Community Coalition Action Theory (CCAT) to evaluate the website content of Mayor’s Wellness Councils. The majority of websites provided full descriptions of mission statements, but lacked evidence of assessment and planning, which are critical stages relevant for intervening effectively and providing a rationale for maintaining a program long-term. Overall, websites presented some information related to CCAT constructs. Four websites (16.6%) actually gave complete and unambiguous evidence for all six constructs. Six (25%) of the 24 websites had no information related to the five CCAT constructs and mission statement. For most of the websites, CCAT constructs related to mission statement, implementation, and outcomes were covered to an acceptable degree; whereas coalition members and assessment/planning were either absent from website content or mentioned, but not sufficiently elaborated upon to inform the consumer. Whether information conveyed through a website about a council’s alignment with CCAT constructs translates to community-level changes has not been examined; however, significant positive associations have been found between constructs

and coalition functioning [9,10]. Given the synergistic nature of the CCAT constructs, all six constructs described should be sufficiently expressed in the website content. Possibly, this approach can catalyze other changes, such as enlistment of new coalition members, which has been shown to stimulate increases in the amount of funds acquired for initiatives and program activities [11].

We acknowledge that websites can be updated and modified frequently; a snapshot of a website at one moment in time does not capture the dynamic nature of the internet. Our evaluations are based on one moment in time. Additional research is needed to support or refute this limitation because, at present, no information is available on variations over time in the quantity or quality of Mayor's Wellness Council website content. In addition, coalitions must fulfill certain basic functions such as decisions, communicating, and managing conflict (constructs 8 through 10 of CCAT). In this study, we were unable to evaluate the internal processes and operations of the coalitions; therefore, the quality of the interactions among members was beyond the scope of the current study and perhaps inappropriate for website content [6].

There are many strengths of this study. To the best of our knowledge, this analysis is the first systematic approach to examine and improve Mayor's Wellness Council websites using a theoretical framework. The results are novel in that they are derived from an evaluation of active, community-wide coalitions engaged in initiatives to promote health throughout a metropolitan area. A previous study examining health-behavior websites informed by behavioral sciences theoretical constructs, framed their inquiry from the individual consumer's perspective [5]. In other words, the authors related website content to theoretical constructs associated with individual-level behavior change, whereas we investigated website content for theoretical constructs that explain system-level (coalition) capacity to promote individual-level behavior changes as well as build community-level capacity. A combination of both approaches would be most effective in promoting positive health behaviors from the perspective of ecological models of health behavior [12,13].

A second strength is the benefit to the website development community by providing an additional "tool" or systematic procedure to increase the probability of including and conveying important material regarding coalition effectiveness. In addition, key decision-making Mayor's Wellness Council personnel can use our procedure to guide development of the council from conceptualization to maintenance phases. According to CCAT, such practice would enhance the capacity and effectiveness of the council and better inform constituencies and the public. Quality, particularly as it relates to organizational efficiency, is of high interest because it is the foundation upon which effectiveness emanates. A poorly organized Mayor's Wellness Council could fail to capitalize on community partnerships, maximize funding potential, and most importantly, have no effect on the health of the communities they serve and thus public health impact is not fully realized.

Finally, this study produced a reliable evaluation template with specific instructions for assessing the websites of Mayor's Wellness Councils. This tool represents a "foundational" scientific investigation that can be built upon to more efficiently develop similar approaches in evaluating other health-related websites and adherence to CCAT principles.

Public health practitioners should work with community organizations (e.g., Mayor's Offices, Parks and Recreation, local schools) to develop a coalition to: 1) assess the health needs of their community; 2) develop resources (e.g., programs) to address the health needs of the community; 3) publicize these initiatives on a dynamic website; and 4) evaluate the effect of these resources and programs on the community's health levels. Furthermore, community coalitions should use other forms of technology (e.g., text messages, social media) to disseminate evidence-based health information, including local health resources. Given that 84% of American adults use the internet, Mayor's Wellness Council websites have the potential to reach a large segment of the U.S. population [14]. As such, it is important that these websites use an evidence-based approach to disseminate quality information to its consumers.

## Conclusion

In conclusion, Mayor's Wellness Councils can involve the use of a substantial amount of resources, and thus, should be a major focus of research to ensure efficiencies in function and optimal implementation. The current study provides a basis from which such a line of investigation can begin. Overall, most of the council's websites provided some evidence of conforming to CCAT constructs; however, there were roughly one fourth that essentially did not describe any CCAT principles. This absence could translate into a large, positive untapped public health resource given that Mayor's Wellness Councils were active in 24 of the 50 most populated areas we examined. According to the latest census estimates, there are approximately 83 million people living in these areas [15]. Thus, the potential to positively impact healthy lifestyles and ultimately, disease prevention is substantial. Therefore, we recommend that websites created for Mayor's Wellness Councils describe their initiatives, assessment and planning to provide a clear rationale and justification for community programs and report their outcomes. Furthermore, we recommend using our evaluation template based on CCAT to organize council's website material to maximally inform stakeholders and consumers about the initiatives and activities of Mayor's Wellness Councils throughout the United States.

## References

1. Butterfoss FD, Goodman RM, Wandersman A. Community coalitions for prevention and health promotion. *Health Education Research: Theory and Practice*. 1993; 8: 315-330.
2. Huang TTK, Cawley JH, Ashe M, Costa SA, Frerichs LM, Zwicker L. Mobilisation of policy support for policy actions to prevent obesity. *Lancet*. 2015; 385: 2422-2431.
3. Kumanyika S, Brownson R, Cheadle A. The LEAD Framework: using tools from evidence-based public health to address evidence needs for obesity prevention. *Preventing Chronic Disease*. 2012; 9: 120-157.
4. Orleans CT, Gruman J, Ulmer C, Emont SL, Hollendonner, JK. Rating our progress in population health promotion: report card on six behaviors. *American Journal of Health Promotion*. 1999; 14: 75-82.
5. Doshi A, Patrick K, Sallis JF, Calfas K. Evaluation of physical activity website for use of behavior change theories. *Annals of Behavioral Medicine*. 2003; 25: 105-111.
6. Butterfoss FD, Kegler, MC. The Community Coalition Action Theory. In DiClemente RJ, Crosby RA, Kegler MC, editors. *Emerging theories in health promotion practice and research*. San Francisco, CA: Jossey-Bass. 2009; 237-276.
7. Business Dictionary's online. Mission statement. 2017.

8. Office of Management and Budget. Revised delineations of metropolitan statistical areas, micropolitan statistical areas, and combined statistical areas, and guidance on uses of the delineations of these areas.
9. Kegler MC, Swan DW. An initial attempt at operationalizing and testing the Community Coalition Action Theory. *Health Education and Behavior*. 2011; 38: 261-270.
10. Weiss E, Anderson R, Lasker R. Making the most of collaboration: exploring the relationship between partnership synergy and partnership functioning. *Health Education and Behavior*. 2002; 29: 683-698.
11. Kegler MC, Swan DW. Advancing coalition theory: the effect of coalition factors on community capacity mediated by member engagement. *Health Education Research*. 2012; 27: 572-584.
12. Sallis JF, Cervero RB, Ascher W, Henderson KA, Kraft MK, Kerr J. An ecological approach to creating active living communities. *Annual Review of Public Health*. 2006; 27: 297-322.
13. Sallis J, Owen N. Ecological models of health behavior. In: Glanz K, Rimer BK, Viswanath K, editors. *Health behavior: Theory, research and practice*. San Francisco, CA: Jossey-Bass. 2015; 43-64.
14. International Telecommunication Union. 2015
15. US. American fact finder. 2016.