Doctor of Public Health
in Leadership Program

Sustainability of Policy, Systems. and Environmental (PSE) Strategies to Advance Change and Public Health Outcomes: A Mixed Methods Multiple Case Study of *We Choose Health* in Illinois

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DISSERTATION

Submitted as partial fulfillment of the requirements for the degree of Doctor of Public Health in Leadership in the School of Public Health at the University of Illinois Chicago

Chicago, Illinois, USA

July 2021

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Dedication

To my Dad and Mom:

Thank you to my parents, who gifted me the roots of inner values and strength to ground myself and the wings to learn, grow, test, journey, and trust. I will be forever grateful for your gifts, guidance, reassurance, and love. I only hope I can do as you did in paying it forward in society and in my children.

To my husband and children:

The greatest honor is to serve as an example for my family. Little eyes watching me provided me with fuel, drive, and focus. This journey's end accomplishment is one account, but *our* teamwork, grit, service, support, and encouragement produced a rich, fulfilling story and practice that will forever be our home foundation. I hope this is a way to build those same gifts granted to me. Thank you, Jared, Jemma, Jindy, and Jhett, for your love, encouragement, patience, and understanding. And a special extended shout out to my husband, Jared, for supporting me in reaching a lifelong goal and going beyond my wildest dreams to keep all the hustle grinding no matter what.

Acknowledgements

I owe many thanks to Dr. Eve Pinsker for her guidance, wisdom, advice, patience, and support. She gave me the right push and space to cross this finish line and always amazed me with answers and recommendations, no matter the question or gap in my research. I cannot understate her expertise and skill. In her, I have also gained a colleague and friend, and for that, I feel even more grateful.

Thank you to the members of my dissertation committee for their time, effort, and desire to shape my dissertation research for future learning and application. Evidence was able to further work once championed by Mrs. Reyes-Nash and Dr. Peters.

Acceptance into and completion of the DrPH program is a great honor and privilege in my life. I have built relationships, gained friendships and colleagues, and learned more than I could ever imagine. Thank you to Cohort 2015, a very special thanks to Rita Espinoza, who has been a supporter and colleague through this entire process and a true friend and colleague as we worked together to finish our dissertations, and to my learning community with Rita and Smita Ghosh. I am a better leader, professional, and person now than when I started this program. It took me a long time to understand that what I enjoy the most are the challenge and journey. I am humbled and proud to carry the UIC DrPH with me.

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Disclaimer

The goal of this study was to impact and influence policymakers and Illinois public health system members, specifically for the planning and action to promote sustainability of policy, systems, and environmental (PSE) strategies to achieve public health outcomes and advance continued change in communities across Illinois. The design and focus of this research were those of the author and do not represent the official position of the Illinois Department of Public Health or local health departments.

Keywords/Abbreviations

ACA	Affordable Care Act
CDC	Centers for Disease Control and Prevention
CHNA	Community Health Needs Assessment
CHIP	Community Health Improvement Plan
CTG	Community Transformation Grant
EBDM	Evidence-based Decision Making
EPIS	Exploration Preparation Implementation Sustainment
EPIS	Exploration Preparation Implementation Sustainment
IDPH	Illinois Department of Public Health
IDPH	Illinois Department of Public Health
IPLAN	Illinois Project for Local Assessment of Needs
LHD	Local Health Department
LHPG	Local Health Protection Grant
LHPG	Local Health Protection Grant
NACCHO	National City and County Health Officials
PHEP	Public Health Emergency Preparedness
PHEP	Public Health Emergency Preparedness
PSE	Policy, Systems, and Environmental
WCH	We Choose Health
WIC	Women, Infants and Children

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Summary

The public health system remains strained due to challenges, emerging issues, underfunding, and short staffing. Sustainability is not a component often considered during program development, capacity-building, and program implementation. A systemic, interdisciplinary approach to sustainability has not always been a practice in communities. Thus, public health strategies lack sustainability.

Public health programming and strategies are vulnerable when funded externally. Policymakers, leaders, and members of the public desire to continue strategies and strategies at their full potential, even after funding ends. Reaching public health outcomes to improve trends in chronic diseases requires long-term support.

This research was a mixed methods multiple case study of the We Choose Health (WCH) grant program in Illinois to understand the extent of the sustainability of the policy, systems, and environmental (PSE) strategies, the factors and processes with an impact on sustainability, and how and why sustainability resulted after the funding cut in 2014. There were quantitative and qualitative data conducted in three phases that included a document review and survey and semistructured interviews. Triangulation between the data in the phases showed the importance of the qualitative data in Phase II, which focused on information-rich cases.

Because this research occurred during a pandemic, there were additional limitations, especially as Phase I and Phase II occurred during the critical heightened response periods. The survey completion was a typical rate of 39%; however, there was a higher completion rate expected. Likewise, there was a lack of response to the member checks in Phase III. Even with limitations, the most significant ones caused by the pandemic, this study produced information-

rich evidence, opportunities, and emergent data and showed the methodological successes of virtual tools for semi structured interviews.

The research findings provided validation of facilitating sustainability factors, such as capacity, leadership, and coalition. The facilitating factors enabled the key processes and practices of adaptability, leveraging and building capacity, data use for shared and evidence-based decision-making, sustainability planning, and partnership engagement. The coalition was central to interconnecting the processes and enabling the facilitators to support sustainability. Opportunities, such as policies, new partnerships, and new grant funding, arose when the factors and processes were such to promote the sustainability of PSE strategies.

Leadership had a significant impact on the sustainability of PSE strategies. The study's findings showed the effects of community leaders who take action. Leaders should continue to work across the socioecological system, orchestrating an interdisciplinary coalition to conduct evidence-based and shared decision-making, leverage resources, build capacity, and adapt PSE strategies to meet community needs and improve the overall health of the community.

Research on sustainability as an outcome and process produced evidence of a consolidated, synergistic framework, a recommendation for change to require sustainability, and a suggestion for future action research of the best PSE strategy practices across Illinois. Evidence related to COVID-19 and the adaptive capacity of the sustainability of PSE strategies emerged in this study and supported the contextual background of this research. The study produced future research opportunities for central collaborative coalitions, their interdisciplinary networks, and interactions.

I. Background and Problem Statement

A. Introduction

Emerging and reemerging issues that influence the discipline and state of public health present challenges to the Illinois public health system. Simultaneously, budget constraints and limited capacity impact the functions, priorities, and operations of public health. From travel to technological advances, public health leaders must address global disease spread (e.g., Ebola and the Zika virus), societal and social desires and rights (e.g., health care coverage, antivaccination movement, health equity), changes in clients and services due to Affordable Care Act implementation (Fox, 2016), and growing scopes of services and expectations. Public health must address such challenges with limited capacity by way of "less funding, less staff, and less influence" (Statewide Leadership Discussion, 2016, p. 2). The challenges have resulted in a changed public health landscape, one that public health officials have not entirely recognized and struggle to prioritize and sustain. Sustainable approaches with a lasting impact are often goals beyond the control of any single entity that require broad societal change. All community and organization leaders must manage reaching outcomes in a changing landscape with competing demands and tight resources.

Emerging issues and the focused policy efforts of those emerging issues often receive funding. At the same time, the emerging issues require additional public health strategies in addition to core and routine strategies. Funders and policymakers identify public health priorities based on myriad factors to discern funding opportunities (Freedman et al., 2013). Key population health issues can present complex challenges due to budgetary shortfalls and deficits, especially when based on evidence of success and ability to succeed. Likewise, funders and policymakers expect a lasting impact and work sustainability after the funding ends or a funding cut. In a

funding application, the community and organizational leaders pursuing opportunities to address public health problems based on data-driven reasons must often identify strategy outcomes. However, requests for processes are infrequent to continue or sustain the strategies. More importantly, leaders need to prepare for funding cuts in the middle of a funding term. Leaders must plan for the sustainability of public health strategies, either as first implemented or adapted as necessary, to achieve the intended or adapted outcomes of the funded public health strategy. Programs not sustained do not produce the intended outcomes, resulting in severe costs for the invested organization (O'Loughlin et al., 1998). Public complaints, morbidity rates, extra costs and disparities, and a lack of access to care are consequences of public health strategies not sustained or insufficiently sustained. Thus, organizational leaders tend to spend a significant amount of time convincing others of the need to support the program instead of conducting, planning, and evaluating the impact of the public health program and process for continuation. Sustaining the change expected and anticipated from the funded initiative requires long-term systems and policy strategies and an environment that enables continuation.

The sustainability of evidence-based strategies requires more than just funding. Many factors affect sustainability, the approach to sustainability, and the extent to which sustainability occurs; however, there is a lack of research or understanding about these factors. Chambers et al. (2013) discussed the value in evaluating how programs have "drifted" and understanding the underlying contextual factors in the program drift. Understanding the reasons for the drift enables implementation in a changed environment for improved sustainability. Leveraging community resources, identifying intangible assets, institutionalizing process policies, and building collaborative networks for problem-solving require leadership and championship to achieve sustainable strategies. Policy strategies are an essential component in achieving long-term, lasting impact. Leaders should care about how planning, collaborating, and decision-

making across a community can result in sustainable public health outcomes. Leaders should learn the factors necessary for the effective use of local needs and community resources before, during, and after external funding.

Furthermore, policy, systems and environmental (PSE) strategies linked to chronic disease require long-term sustainability to achieve public health outcomes. PSE strategies can have the broadest population impact and change the context for decision-making and facilitating long-lasting measures for chronic disease (Townsend et al., 2018). Using PSE strategies to reduce disease burden is a common practice; as such, some studies have addressed PSE strategy demonstration. However, there is limited research on the sustainability of PSE strategies.

The purpose of this mixed methods multiple case study of the *We Choose Health* (WCH) grant program was to understand the extent of the sustainability of the PSE strategies; identify factors and processes affecting sustainability, and to explore how and why sustainability resulted after the 2014 funding cut., through investigating cases where some previously grant-supported activities or organizational changes persisted even after grant funding was terminated. This study's findings could contribute to future planning for sustainability. The study also suggests change for improved approaches, interdisciplinary collaboration, coordination, and, ultimately, health outcomes.

B. Context

i. History of PSE in Illinois

For this research, there was a need to understand the sustainability of PSE strategies in Illinois for chronic disease, why this research occurred in Illinois, and the demographics across Illinois concerning capacity, a key factor of sustainability. Based on key indicators such as socioeconomic status, health equity, and disease burden, the state's needs remain. According to the State Health Assessment (2016), of the 511 raised by local health departments (LHDs) and

hospitals, about 30% related to chronic disease. The LHD Illinois Project Local Assessment of Needs showed about half of the LHDs' top 10 priorities related to chronic disease. The two leading causes of death in Illinois are heart disease and cancer. Illinois has a state population of just under 13 million, with the largest percentage in the Northeast (U.S. Census Bureau, 2019). Most rural areas of Illinois are in the Central and Southern regions of the state. According to the 2016 National City and County Health Officials profile report (2017)[1], most Illinois LHDs provide services for a population of less than 50,000. The Rural Health Research Center[2] provided further categorization of Illinois, separating large and small rural areas and identifying certain areas as isolated. Illinois has a diverse population, with 15% non-Hispanic Black, 17% Hispanic, and about 14% foreign-born residents (State Health Assessment, 2016). According to the State Health Improvement Plan (2016), 14% of the residents lived below the federal poverty level in 2014. The State Health Assessment (2016) provided a clear roadmap for the Illinois public health system to focus on priorities, such as chronic disease, for improved overall health status and equity.

The decentralized Illinois governmental public health system consists of 97 certified LHDs. LHD certification occurs every 5 years through the completion of the Illinois Project for Local Assessment of Needs (IPLAN). Certification enables LHDs to have access to funding opportunities from the Illinois Department of Public Health, including the Local Health Protection Grant, Public Health Emergency Preparedness Grant, and other specific categorical funding. Although specific categorical funding could focus on chronic disease, there is no general comprehensive chronic disease funding appropriation in Illinois other than the Local Health Protection Grant and Public Health Emergency Preparedness Grant. The IPLAN has the key components of an organizational capacity assessment, community health needs assessment

[1] https://www.naccho.org/uploads/downloadable-resources/ProfileReport_Aug2017_final.pdf
[2] http://depts.washington.edu/uwruca/map_4_divisions.php

(CHNA), and community health improvement plan (CHIP). Remaining a certified LHD also requires maintained community partnerships, organizational and community capacity, and evidence-based and shared decision-making.

As a result of funding made available in 2009 through the Affordable Care Act, the Centers for Disease Control and Prevention (CDC) presented the Community Transformation Grant (CTG) in 2011 to contribute to the design and implementation of strategies for addressing chronic disease and reducing disease burden in local communities. CDC provided "$103 million to 61 state and local governments, tribes, territories, and nonprofit organizations in 36 states" (National Center for Chronic Disease Prevention and Health Promotion, 2017). According to the CDC, 120 million Americans benefited from this effort; however, it is unknown how many still do. Answering such a question requires evidence of the sustainability of PSE strategies.

ii. WCH Program

WCH[3], the Illinois program provided to 18 grantees and 60 communities connected to the CTG[4], ran from 2011 to 2014. IDPH provided direct funds to 18 grantees in Year 1 and 19 grantees in Year 2 across Illinois. With these funds, grantees could choose specific public health strategies and promotion for long-lasting health impacts in their communities with the PSE framework. The grantees could choose from eight strategies (school health, baby-friendly hospitals, worksite wellness, smoke-free multi-unit housing, smoke-free outdoor spaces, complete streets, joint use agreements, and safe routes to school) in the grant application, and only jurisdictions with a population less than 500,000 could apply. Through design, IDPH required the funded grantees to conduct minimal planning. The grantees also had to describe the long-lasting impact of their activities and how they proposed to sustain the work after the funding ended. Each grantee applied to pursue specific PSE strategies. After the cut of

[3] http://www.idph.state.il.us/wechoosehealth/
[4] https://www.cdc.gov/nccdphp/dch/programs/communitytransformation/index.htm

direct WCH funding in 2014 (Year 2 of a 3-year funding term), University of Illinois Chicago professionals conducted a sustainability status assessment. The final report, *We Choose Health: Transforming Communities Across Illinois*, indicated that the initiative had a long-lasting impact on communities across Illinois after the termination of funding. Also shown was that grantees had implemented "meaningful, effective, and low-cost health improvement [strategies] that can be pursued by any collaborative community coalition" (IDPH, IRP and MAPHP, 2014). WCH provided the opportunity to study the complex phenomena of sustainability after external funding cuts.

C. Research Aim, Objectives and Scope

This study focused on the sustainability of the Illinois WCH initiative (2011–2014). Phased descriptive and exploratory research entailed collecting and analyzing data on PSE strategy sustainability after a funding cut, a complex phenomenon. The data collection was a means to explore the how and why of WCH sustainability and whether WCH sustainability remained to understand the opportunities that emerged to maintain PSE strategies and change.

An objective of this research was to inform the public health system, primarily LHDs, state health departments, various community-based stakeholders, policymakers, and federal partners such as the CDC, on sustaining long-term PSE change. Other objectives of the study were to (a) inform future funders or grantors, policymakers, public health leaders, public health organization leaders, and community leaders of the factors of, barriers to, and opportunities for successful PSE strategy sustainability; (b) provide evidence-based recommendations of the necessary factors and criteria in determining a grantee coalition's potential or capacity for sustainability after the end of external funding; and (c) answer the question of whether increased capacity (or commitment to capacity) for the sustainability of PSE strategies in the near term

could result in measurable, cost-effective ways of addressing chronic disease outcomes and long-term PSE change.

Sustainability requires more than funding. The WCH initiative was an opportunity to focus on an Illinois-specific program to study sustainability after the cut of external funding, a little-researched topic. WCH was a nuanced situation, as the funding cut occurred in the second year of the 3-year grant period. Furthermore, the WCH's competitive application required two key elements: community collaboration and sustainability planning. WCH was a grant built on a PSE framework. There is research on the sustainability of other frameworks, such as the exploration preparation implementation sustainment framework (Moullin et al., 2019) and the comprehensive community initiatives sustainability framework (Quinn et al., 2018). However, there is limited research on sustainability and PSE.

IDPH officials established an interdisciplinary leadership team to identify statewide goals based on CDC-approved strategies and formulate an Illinois CTG project for community collaborations across the state in the WCH competitive grant process. IDPH officials granted funds to 21 LHDs, reaching 60 communities (Year 2 only included 19 LHDs). LHD grantees had to partner with community collaborative coalitions to complete the efforts of the WCH. In 2014, CDC indicated the ending of the funding 2 years early, and IDPH officials terminated and closed the project in September 2014. Although WHC was an Illinois-centric grant focused on IDPH and LHD partnerships with the community, this study's findings could contribute to the greater public health system and public health organizations outside of Illinois, filling gaps in the research on sustainability from an interdisciplinary perspective.

D. Problem Statement and Research Questions

Public health organization leaders seek funding to address the public health issues and population health needs indicated in the Community Health Assessment (CHA) or Community

Health Improvement Plan (CHIP). Statewide executive public health leaders and stakeholders shape those needs (and others) into a statewide prioritization of effort and funding. Investing in public health initiatives indicates the importance of a lasting, long-term impact. Pursuant to programmatic and direct service implementation is the desire and need to sustain both service delivery and outcomes after funding termination. However, information on the sustainability of programmatic and direct service strategies and their outcomes is not often required in applications or measured after the funding cuts. Little to no research has focused on sustainability under or linked to a PSE framework. A gap in knowledge exists on how to perceive and define sustainability, what is sustained and how, the factors that contribute to sustainability (or not), how interdisciplinary coalitions contribute to enhanced sustainability, and the opportunities that have resulted. WCH was an Illinois public health "initiative to encourage and support implementation of public health programs" (IDPH, 2011). The WCH was a unique situation, as it had the elements of a prioritized-funded program, a funding cut, and the PSE framework. Study of the WCH could produce findings to improve future system changes in sustaining public health PSE strategies and outcomes.

The study's overarching research question was, Using a PSE framework, to what extent and how do communities successfully achieve the sustainability of public health PSE strategies after external funding ends?

1. To what extent have the WCH PSE strategies been sustained? (outcome)
    - What rate were the strategies specified in WCH sustained between 2014 and the present date?
    - Of the strategies sustained, how many were adapted?
2. What factors (facilitators and barriers) and processes affected the sustainability of the WCH strategies? (process and outcome)

- What organizational and community in-kind capacity existed?
- What affected the current state of sustainability and why?

3. How have the community coalitions influenced the sustainability of the WCH strategies? (process)
    - Which stakeholders of the community coalition remain involved?
    - What sustainability planning occurred and continued?
    - What approach have the community coalitions implemented to sustain PSE strategies?
    - How has community capacity been used more effectively or prioritized?
    - What is the relationship between community and organizational levels?
4. What opportunities emerged that led to the sustainability of the WCH PSE strategies? (outcome)
    - What new innovative methods have been implemented to result in sustained change?
    - How did policy change to support sustainability?
    - What emergent strategies evolved?

E. Sustainability and Public Health Leadership Implications

This study focused on sustainability strategies of PSE change for public health and the influential factors and the practices and processes that enabled the continuance and adaptability of PSE strategies for public health outcomes. Actionable recommendations for leaders could be means of influencing, encouraging, and inspiring change. As public health system change agents, public health leaders can transform the thinking of the public health system capacity, the factors and practices that impact sustainability, and community-wide practices to support PSE strategies. Although sustainability requires more than funding, public health leaders and policymakers

could use the evidence from this research to support the greater investment and requirements of the sustainability of PSE strategies. Both policymakers and public health leaders could use this study's results when allocating scarce capacity (funding, skills, and resources) across the public health system. This study could contribute to intentional strategic planning and implementation of PSE strategies to sustain PSE change.

Closing a gap in the research provided evidence useful for leaders and policymakers to invest in the public health system to create a long-lasting impact on public health. This study showed that leadership is a critical component and connective element between the factors and processes of sustainability and PSE change. This Illinois-centric, multiple case study showed evidence and actionable recommendations for allocating and utilizing capacity to sustain PSE strategies and change more effectively from LHDs of varying capacity and demographics. The findings are applicable and transferrable to public health leaders and policymakers striving to sustain PSE strategies beyond Illinois. Table 1 shows the stakeholder groups' relevance to the research, the short-term impacts of the stakeholder groups, and the actions anticipated from stakeholders and leaders (leadership implications).

Table 1. Leadership Implications and Stakeholder Group Leadership

Stakeholder group	Relevance to research	Short-term impact	Leadership implications
Local public health	Seeks out data from divergent local jurisdictions on factors impacting sustainability	Increases knowledge and begins action learning toward future program sustainability efforts	Uses data to create capacity necessary to start and sustains program and support chief health strategist in sustaining programs
State public health	Continues sustainability assessment that began December 2014 to assist in future changes for requirements in grantee–grantor relationships, along with varying needs across the state	Shares findings to shape change in future investments and capacity for public health programs	Applies findings to build foundational requirements and create a framework for successful sustainability into the future

Stakeholder group	Relevance to research	Short-term impact	Leadership implications
Federal public health	Connects with CTG and support capacity requirements for sustainability, translating to extend beyond federal strategies	Provides findings to encourage sustainability measurement after external funding ends	Assesses investment, encourages action learning and change for supporting sustainability as a required specification for program award
Policymaker	Addresses value in public health investment at all levels, necessity for organizational and community capacity to support sustainability, and evidence for requirements of public health funding	Increases acknowledgment of status of public health PSE strategies in relation to investment and use of findings to work toward change in funding requirements and ongoing evaluation (even postfunding)	Applies learning for policy change to support program adaptability and actionable change in regulation intent to support sustainability of PSE strategies
Community coalition	Identifies data on coalition—both capacity and processes—that influence sustainability	Improves action learning locally and encourages enhanced relationships and leadership to promote sustainability of programs	Builds stronger relationships with local public health and in connection with the chief strategist approach in sustaining vital public health PSE strategies to address chronic disease outcomes

Leadership across the entire public health system suggests the need for data and evidence-based decision-making. This differs at different levels of public health, especially the decentralized public health system in Illinois. State public health officials could use this study's findings and model to apply for future funding and programming to support sustainability beyond anticipated grant terms. Similarly, federal public health officials could feel encouraged by this study to make sustainability a requirement for program awards.

The study's results could indicate the value of public health to policymakers, causing them to invest in public health and sustainability beyond a certain period to achieve desired health outcomes. This research shows the need for advocacy sustainability policies and ongoing PSE strategy evaluations, as well as the need for appropriate capacity (e.g., funding, resources, and skill) to sustain PSE change. Community coalition members could continue to use data and evidence to support shared decision-making and advocacy of sustainability, flexible funding, and long-term partnership engagement and relationships. This research suggests the need to

strengthen the alliance, approach, and connectivity among partners to sustain PSE strategies in the long term.

II. Conceptual and Analytical Framework

"Communities need to ensure that they maintain the capacity to work in partnership to identify and address public health challenges, and that their resulting health initiatives can have lasting—that is, *sustainable*—impact" (CDC, 2011).

A. Literature Review

i. Literature Review Approach

The purpose of this literature review is to integrate theory and practice-based knowledge into a conceptual framework of the interacting constructs that enable (or do not enable) the sustainability of PSE strategies. A systematic search with Web of Science, Google Scholar, and credible websites commenced for peer-reviewed articles and gray literature relevant to the study's research questions and conceptual framework and the sustainability of PSE strategies. The referenced sources in the literature underwent review, when relevant. Zotero facilitated the organization and summarization via notes with a systematic reflective process. Analysis of the interrelationships between the literature entailed creating a Microsoft Excel table.

The literature organization was in accordance with the research questions and conceptual framework. First, the literature review presents a definition and summary of sustainability and how it continues. There is a discussion of the socioecological model and PSE framework used and adapted to understand the factors that impact strategies to advance and sustain PSE change. Last, to understand how intersectoral stakeholder coalitions contribute to the sustainability of *WCH* strategies, the chapter presents the literature on systems processes (e.g., capacity building, decision-making, strategy, adaptability, and partnership and engagement) and the logic of collective action for emergent PSE strategies. The literature review includes a comparison and synthesis of sustainability (its definition and how to achieve it) focused on the key sustainability frameworks of the factors and actions that contribute to the sustainability of PSE strategies.

There is also a discussion of the importance of PSE strategy sustainability and the study's conceptual framework and key constructs.

ii. Gaps in Sustainability Literature to Support Research

This literature review addresses the gaps in the literature to present the reasoning and rationale for this study's purpose, concentration, and emphasis on constructs. There is a need to address sustainability with multi-level systems research (Shelton et al., 2018). Measuring sustainability presents challenges, as there is disagreement on the definition of sustainability and a lack of a definition of sustainability for research (Wiltsey Stirman et al., 2012). The definition of sustainability is a topic later addressed in Section iii. Moreover, research indicates the conceptual and methodological limitations in measuring sustainability. The changing landscape in public health requires recognizing the dynamic nature of sustainability to adapt strategies to reach public health outcomes.

The purpose of this mixed methods multiple case study of the WCH grant program was to understand the extent of the sustainability of the PSE strategies, the factors and processes with an impact on sustainability, and how and why sustainability resulted after the 2014 funding cut. The factors and processes that indicate sustainability are capacity, evidence, policy, and other contextual factors. Shelton et al. (2018) noted that there is little research on sustainability processes, the impact of those processes on sustainability, and the influence of factors on sustainability. Furthermore, a goal of this study was to support and recognize the adaptability of evidence-based strategies (as a process) to achieve sustainability. Despite research on the adoption and implementation of evidence-based public health interventions, there is a dearth of scholarship on the sustainability of interventions (Shelton et al., 2018).

Not only will this study be an exploration of all the contextual factors and processes interrelate for adaptability and enhanced capacity, but also a way to learn how and why

interrelationships and synergies enable PSE strategies' sustainability. Public health officials continue to implement PSE interventions to enhance healthy behavior outcomes. Community-wide PSE interventions could be a sustainable approach to chronic disease prevention (Kegler et al., 2015). Garney et al. (2018) stated that funding initiatives must include consideration of the presence and time needed to cultivate relationships; therefore, individuals leading the funding initiatives should consider relationships in the planning and implementation processes. However, there is a need for research beyond evaluation after implementation. This reasons effort here placed on the sustainability of PSE strategies, compared to implementation or adoption thereof. The Illinois Prevention Center provided an action learning series (five-part briefing[5]) for organizational leaders adopting PSE change (Welter et al., 2019). The action learning series presents the factors, a cycle, and the PSE change that impact sustainability, as well as technical assistance modalities and action learning. This study occurred in Cook County, Illinois, as a means of connecting action research and knowledge for improved sustainability (a future action of this research presented in Chapter III).

Threats to funding and insufficient funding remain concerns for public health and leadership due to competing priorities and emerging public health problems. Freedman et al. (2013) discussed the effect of funding on public health sustainability. This study included an analysis of the responses of the grantees who lost funding, presenting the consequences of lost funding to show the value of investing in public health and evidence-based interventions. Furthermore, a comparison of the responses of the grantees successful at sustaining the results of the initial funding showed when there is a need for continued investment to support more effective sustainability planning. Scheirer and Dearing (2011) researched sustainability and public health funders' and investors' desire to understand if their investments result in long-term

[5] https://illinoisprc.org/publications/

outcomes. Furthermore, Scheirer and Dearing emphasized that sustainability research lacks cohesiveness, absent a holistic set of research questions, paradigm, operational definitions, and the collision of outcomes and processes. This study included several conceptual frameworks of sustainability, factors, and processes to address the lack of literature on what occurs after a funding cut. The findings produced evidence of a framework testable for action research and recommendations for future action. PSE strategies and sustainability are complex concepts not yet well-evaluated in the literature; thus, one of this study's aims was to address those concepts.

iii. Overview of Sustainability

The sustainability of evidence-based public health strategies is a complex public health problem. The entities asked to provide the strategies (or parts thereof or adapted strategies) find difficulty in providing them after the termination of funding. LaPelle et al. (2006) argued that the sustainability of public health programs, interventions, and strategies after the termination of initial grant funding is a significant public health challenge. Public grant funding provides support for public health programs at the community level; however, there is often a failure to sustain the services and strategies after the termination of funding. This study provided a snapshot of the requirements of sustainability in grant applications, as was the case with WCH. In this study, the grant applications from the Office of Health Promotion at the IDPH underwent review for sustainability, or similar tasks or constructs supporting sustainability. There was a review of all the 2019–2020 grant applications from the Office of Health Promotion at IDPH Grants website[6]. The review showed that only four of the 18 asked "how" the applicants would sustain future project activities after the termination of funding. Even so, there was no clear definition of sustainability and the applications did not require cost-sharing or matching. As was the case for the WCH in 2014, the abrupt termination of funding complicates and constrains the

[6] https://idphgrants.com/user/categoryprograms.aspx

ability to sustain the programs. Such challenges typically result in the discontinuance of the once-funded programs, interventions, or strategies.

What is Sustainability in Relation to PSE?

The literature suggests that a problem with researching sustainability is the absence of a clear or working definition of sustainability. Wiltsey Stirman et al. (2012) cited the high proportion of studies without a working definition of sustainability as an important research limitation. A premise of this study was that sustaining WCH PSE strategies in the community required more than funding. A go-to, practice-based response to enable sustainability and maintain capacity from those directly involved in a program generally links directly to funding. Evaluating the sustainability of the WCH PSE strategies from the 2014 funding cut to the time of this study required understanding the grantees' definitions of sustainability.

The WCH required applicants to submit sustainability plans to "describe the lasting impact of the activities you propose beyond the completion of this grant and how you propose to sustain the work beyond the funding period" (IDPH WCH Application Form Appendix B, 2012, p. 23). One objective of the WCH was sustainability—more specifically, "ensur[ing] the work done during the funded period can be sustained after the funding is concluded" (p. 23). The public health definition of sustainability is "the capacity to maintain program services at a level that will provide ongoing prevention and treatment for a health problem after termination of major financial, managerial and technical assistance from an external donor" (LaPelle et al., 2006, p. 1363). Therefore, in this study, sustainability consisted of an active process or the actions of advancing PSE change.

According to the CDC's *A Sustainability Planning Guide for Healthy Communities* (2011), sustainability is the "community's ongoing capacity and resolve to work together to establish, advance, and maintain effective strategies that continuously improve health and quality

of life for all" (p. 8). The WCH application did not define sustainability. However, during the WCH project, a WCH Illinois sustainability workshop presented the CDC definition of sustainability. Further, WCH grantee training in September 2014 facilitated by the Public Health Foundation reinforced this working definition:

- Sustainability "is not just about funding."
- Sustainability "is about creating and building momentum to maintain community-wide change by organizing and maximizing community assets and resources."
- Sustainability "means institutionalizing policies and practices within communities and organizations."
- Sustainability "also means involving a multiplicity of stakeholders who can develop long-term buy-in and support throughout the community for coalition efforts."

Additionally, practice-based and theoretical support for measuring sustainability is a continuation of the initial strategy, as well as an adaptation of the initial strategy due to innovative thinking and the discovery of better or more effective practices (Wiltsey Stirman et al., 2012). Contextual factors and new ideas, improved or different resource use, changed capacity, and the integration of new practices could enable sustaining the initial strategy in the same, partial, or an altogether different way.

Why Sustain WCH PSE?

Policymakers and stakeholders are increasingly concerned about devoting resources to public health programs and interventions without the commitment, planning, and strategy needed to sustain them after the termination of funding. According to Shediac-Rizkallah and Bone (1998), there are considerable resources used to develop and implement community-based public health, but that discontinuance occurs after funding termination. Stretched resources and the prioritization of annual budgets, even with many community-based programs initiated as demonstration projects, require long-term sustainability and strategies. There is a need to identify and plan long-term sustainability and strategies in advance and at the time of grantee application.

As was the case for the WCH, the termination of funding before strategies achieve their potential and before the program leaders can evaluate, measure, and reach PSE change remains a common concern. There is a need to match significant resources and startup costs for capacity with diversified and prioritized resources and fund community-wide plans to sustain strategies and achieve the intended goals and outcomes (Shediac-Rizkallah & Bone, 1998).

Funding is not the only factor in the inefficiency and ineffectiveness of sustaining public health strategies. A program established to address a public health problem should continue as long as the public health problem remains. For example, if an infectious or chronic disease is ongoing, the program for addressing it with interventions and strategies must also remain in effect. However, strategies no longer effective for advancing change, making an impact, or requiring adaption to reach intended outcomes should have leeway to support emergence (Mintzberg & Waters, 1984).

The sustainability of strategies requires community engagement, partnership, support, and trust in public health programs and their leadership (Shediac-Rizkallah & Bone, 1998). Sustainability requires "creating and building momentum to maintain community-wide change by organizing and maximizing community assets and resources" (National Center on Health, Physical Activity and Disability, 2011, p.16). When programs abruptly end, public health practitioners are concerned about implementing the next public health program. Community stakeholders should not tolerate diverting valuable resources and capacity toward a new program when history shows the unsustainability of previous programs or initiatives. Furthermore, abruptly ended programs could cause strained community and system partnerships, leading to a lack of community support for public health leaders undertaking new programs with the same community outcomes. Suddenly ending programs present significant barriers to addressing public health problems in the community.

iv. Frameworks of Sustainability

This study focused on sustainability as an outcome of the processes defined as "relationships, actions, policies, practices, and activities of an organization and community" (Britt & Wilson-Grau, 2012, p. 1) in a systemic and ecological approach. Sustainability consists of inclusive processes and practices within communities and organizations (Schell et al., 2013). Interorganizational and organizational contextual factors impact routine processes and practices that enable or obstruct sustainability (Durlak & DuPre, 2008; Schell et al., 2013; Wiltsey Stirman et al., 2012). This study addressed the interrelation and impact of practices, contexts, and factors on sustainability with two frameworks: the socioecological model and the PSE change framework.

Designing strategies to address complex public health problems and to sustain these strategies in the long term to achieve the desired outcomes requires a multidisciplinary approach and interconnectedness between organizational and community levels. Chu (1994) cited Kickbusch's statement that "public health is ecological in perspective, multi-sectoral in scope, and collaborative in strategy" (p. 1). The socioecological model (see Figure 1) shows how strategies must have multiple levels to address systemic PSE change (CDC, 2011).

Figure 1: Socioecological Model (CDC, 2011)

Factors, interactions, and integration across multiple levels affect strategies' sustainability and PSE change advancement. The organizational level has structures, rules, and regulations that enable objective completion and influence the organization's social and physical environments (Hanson et al., 2005). Hanson et al. (2005) defined community in both "structural and functional terms". "Geographical and political boundaries" shape a community physically while "demographic, cultural, religious and social characteristics" define a community's make-up. A community generally has shared vision, values and norms among its members that give them a "sense of identity and belonging" in their community. The outer societal system, often referred to as the public policy boundary, "possesses the means to distribute resources and control the lives and development of their constituent communities" (Hanson et al., 2005, p. 7).

The sustainability of an externally funded public health strategy requires multilevel resources and capacity across the levels and planning for external funding termination. Such planning at the beginning of the program could impact the success of sustaining the strategies in

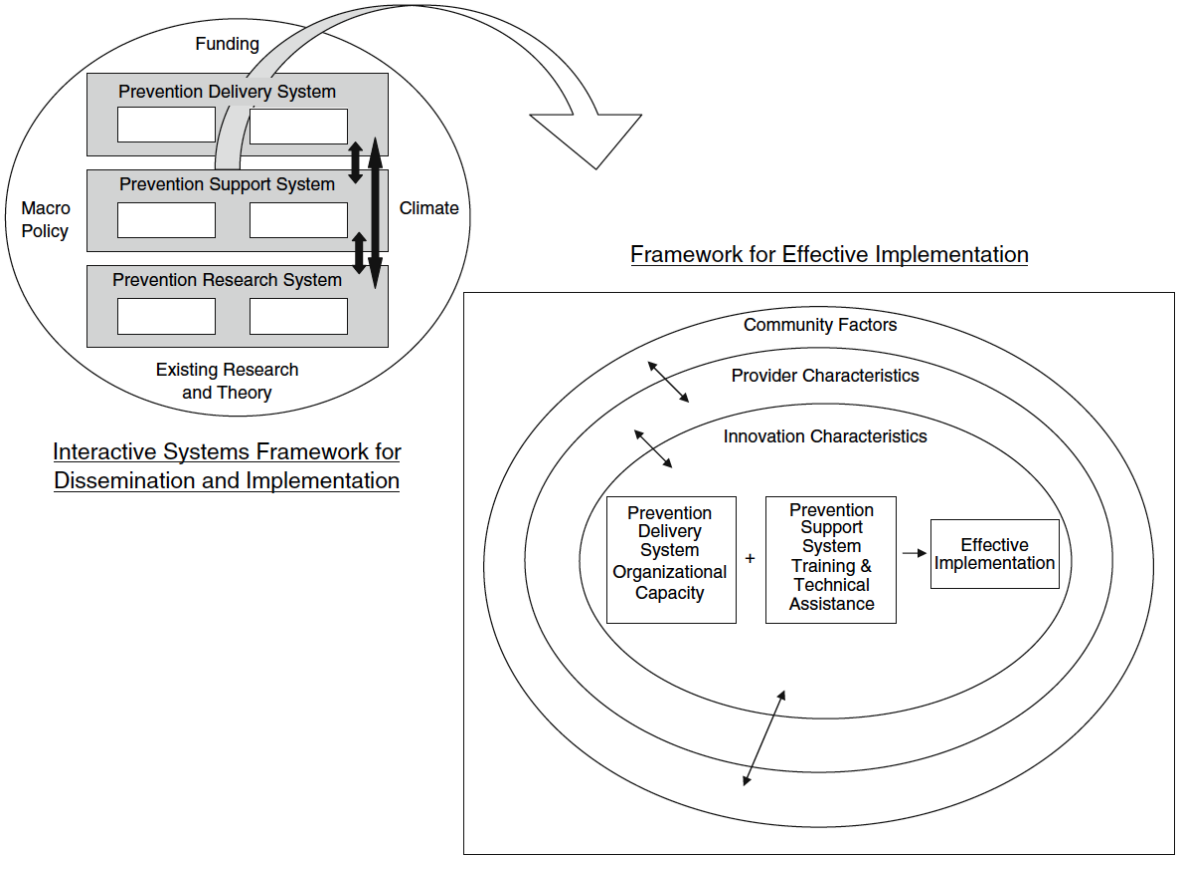
the long term (Hanson et al., 2005). Shared decision-making with stakeholders across the multidisciplinary levels is a way to maximize resources and funding. A guiding principle of IDPH is "partnership and collaboration to achieve coordinated response to community health issues[7]." Collaboration, if led well, is a way to cross all socioeconomic levels and drive policy change for the long-term sustainability of strategies. Sustaining public health PSE strategies requires leaders to work toward sustained change by sharing visions and values across the levels of the public health system. Shared visions and values provide the opportunity to connect and show the relationship between effective, sustained operations (PSE-sustained strategies) and their lasting impact.

Durlak and DuPre (2008) explained that the mere development of an evidence-based public health intervention is insufficient to achieve the resultant benefits. Effectively transferring and maintaining the public health intervention into practice in the real world is a complex, long-term process with several phases, including maintaining the program over time (sustainability). Whereas Durlak and DuPre concentrated on the diffusion stage of implementation, like sustainability, capacity is central to successful implementation, or diffusion of which sustainability is the last step. Furthermore, they argued that organizational structure is a necessary component of implementation. The organizational structure can be a community-level structure (e.g., community coalition) or community organization. This builds on the CDC's socioecological model, indicating how strategies must be inclusive at multiple levels and the impact of the interrelationships between factors and practices on the strategies' sustainability. Figure 2 shows that training and technical assistance are the central components of successful implementation. The integration of organizational factors and practices must occur across multiple levels.

[7] http://www.dph.illinois.gov/about-idph

Adaptability and compatibility are the core characteristics of innovation; they indicate the presence of factors and the extent to which the intervention fits within the organizational structure or requires modification (structure and practices) and community needs and practices. The elements necessary for diffusion, including sustainability, cross multi-levels by structure and process. Whelan et al. (2014) acknowledged that public health prevention practice and evidence require multicomponent initiatives (multilevel, multisector, and multistrategy). This study focused on the factors and processes at the organizational, community, and public policy levels.

Figure 2: Ecological Framework for Understanding Effective Implementation (Durlak & DuPre, 2008)

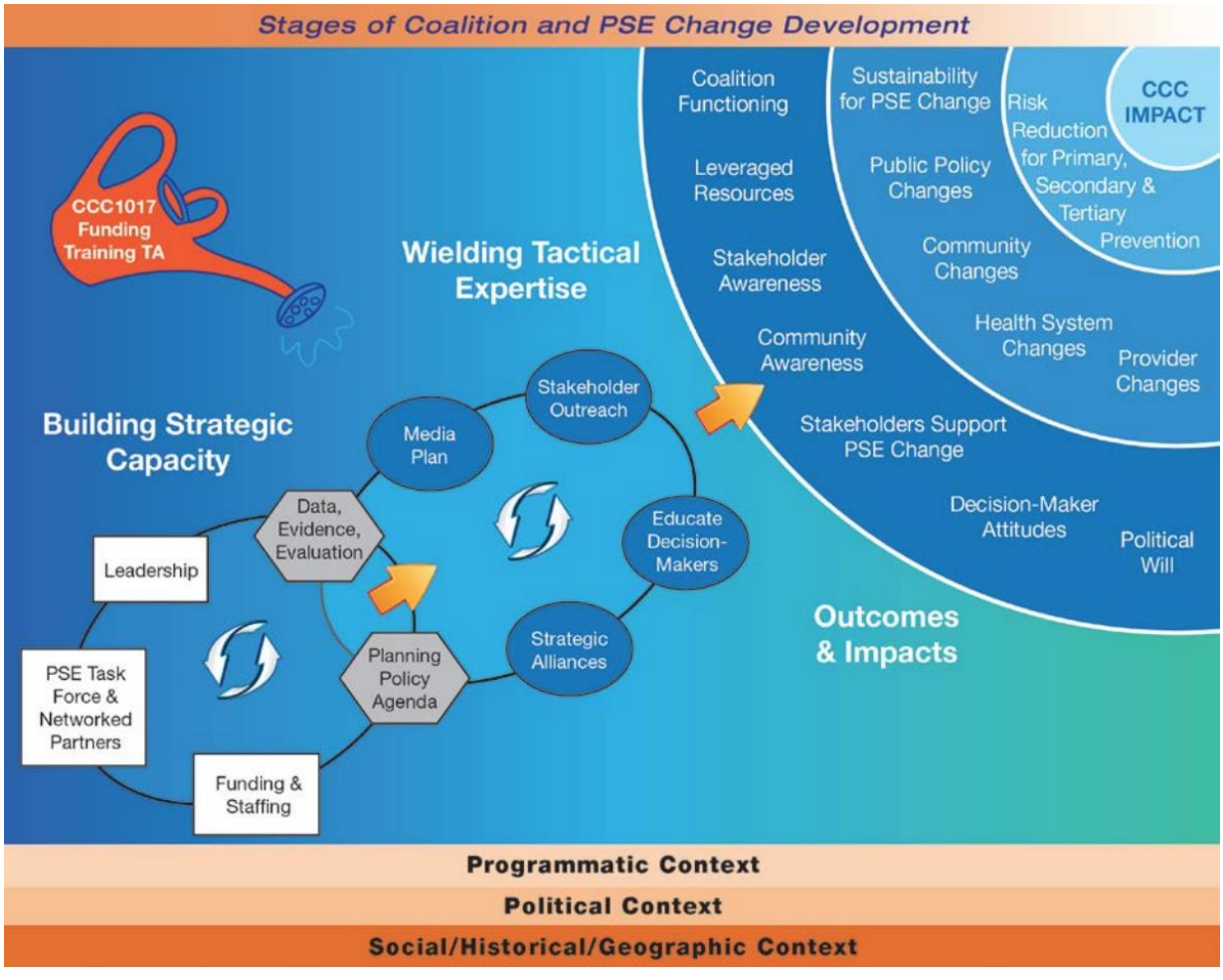


WCH required the applicants to indicate the implementation and sustainability of their PSE strategies. Both short- and long-term policies are central concepts for community stakeholders to rally behind and around (NCHPAD, 2011). Policy strategies for continued change enable sustainability and the expected or intended outcomes. With respect to the

socioecological framework, creating systematic, community-wide change requires a process beyond individual change to include multilevel PSE strategies. Policies institutionalized in an organization but these need to reach multi-level to impact the larger population and enable increased sustainability.

Developing PSE policy is a long-term process (NCHPAD, 2011). Leadership is a necessary component in gaining commitment from communities, stakeholders, and organizations to drive sustainability and the lasting impacts of sustainable PSE strategies. Having a program champion is key in program longevity (O'Loughlin et al., 1998). Figure 3, an evidenced-based model of PSE interventions for reducing the cancer burden (Comprehensive Cancer Control [CCC], 2011), shows how a coalition and its leadership are the drivers of PSE change development. The model is specific to the role of partnerships in the CCC program, indicating the elements of the political, social, historical, programmatic, and geographical contexts. The model focuses on resources and capacity, particularly the capacity for infrastructure to develop PSE interventions and change, implement strategies, and measure and evaluate necessary adaptations.

Figure 3: Stages of Coalition and PSE Change Development (CCC, 2011)



The sustainability of PSE strategies was the outcome studied in this research. The WCH included the implementation of PSE change strategies. Understanding the sustainability of PSE change required defining PSE change for this research (CCC, 2011). PSE strategies shift from program (organizational) to systematic (community level). The goal of PSE extends beyond the individual level to focus on multilevels and contexts in those levels for change (Garney et al., 2018). Policy changes are the laws, regulations, rules, protocols, and procedures designed to influence behavior and provide documentation of organizational decisions or courses of action (CDC, 2011). The purpose of policies is to mandate environmental changes and enhance the sustainability of the changes. Systems change impacts on all elements of an organization, interorganizational coalition, or system. Environment change is the physical, observable change

in the built, economic, or social environment. Lyn et al. (2013) indicated the need to advance PSE knowledge and skills at the state and local levels to influence key stakeholders, including public policy officials. A coordinated, systematic, and collaborative approach is the necessary means of sustaining PSE strategies in communities and statewide. Sustained outcomes and impact require strong leaders who understand policies and systems, the environment, and organizational capacity (Moreland-Russell et al., 2018).

v. Factors Influencing Sustainability

Myriad factors affecting long-term health promotion and population health outcomes indicate the sustainability of PSE strategies. Therefore, there is a need to understand those influences and the how and why of their impact on sustainability. Typically, public health benefits receive recognition and value when a public health program is sustained in the long term and results in change. Moreover, as is the case of management, Moore (1995) described this to be the skilled deployment of capacity to reach concrete outcomes. Furthermore, planning strategic actions has as much importance as exploiting opportunities. Sustaining a public health program over time requires the presence of capacity and action. According to Wiltsey Stirman et al. (2012), the influences on sustainability relate to "context (outer, e.g., policies and legislation; inner, e.g., structure and culture), innovation (e.g., fit, adaptability, and effectiveness), and processes (e.g., monitoring and evaluation and capacity, such as funding, resources, workforce characteristics and stability, and interpersonal processes)." Schell et al. (2013) created a conceptual framework of the evidence-based sustainability core constructs that enable the long-term sustainability of strategies. Figure 4 presents a summary of the literature review of 85 relevant studies on the sustainability of community-level change.

Figure 4: Program Capacity for Sustainability Framework (Schell et al., 2013)

Schell et al. (2013) conceptualized the strategic planning factors, or the centered process of sustainability, that interrelate across the multilevel socioecological framework. Strategic planning factors include funding stability, political support, partnerships, organizational capacity, program adaptation, program evaluation, communications, and public health impacts. As in Figure 4 and according to Schell et al., there is a focus on the public health program's capacity for sustainability. A program with the necessary human, financial, and informational resources is more likely to result in the achievement of the program goals and have long-term effectiveness.

Coalitions

Related to the WCH, partnerships are the key factors in maximizing resources across multiple levels. Partnerships, through pre-existing community coalitions of stakeholders including partners outside of the LHD, were a WCH requirement. A coalition is a diverse group of individuals and organizational members working together to achieve specific goals (NCHPAD,

n.d.). Strong coalitions (intersectoral partnerships) provide a "platform and process for promoting buy-in and support from the participating communities, organizations, and leaders."

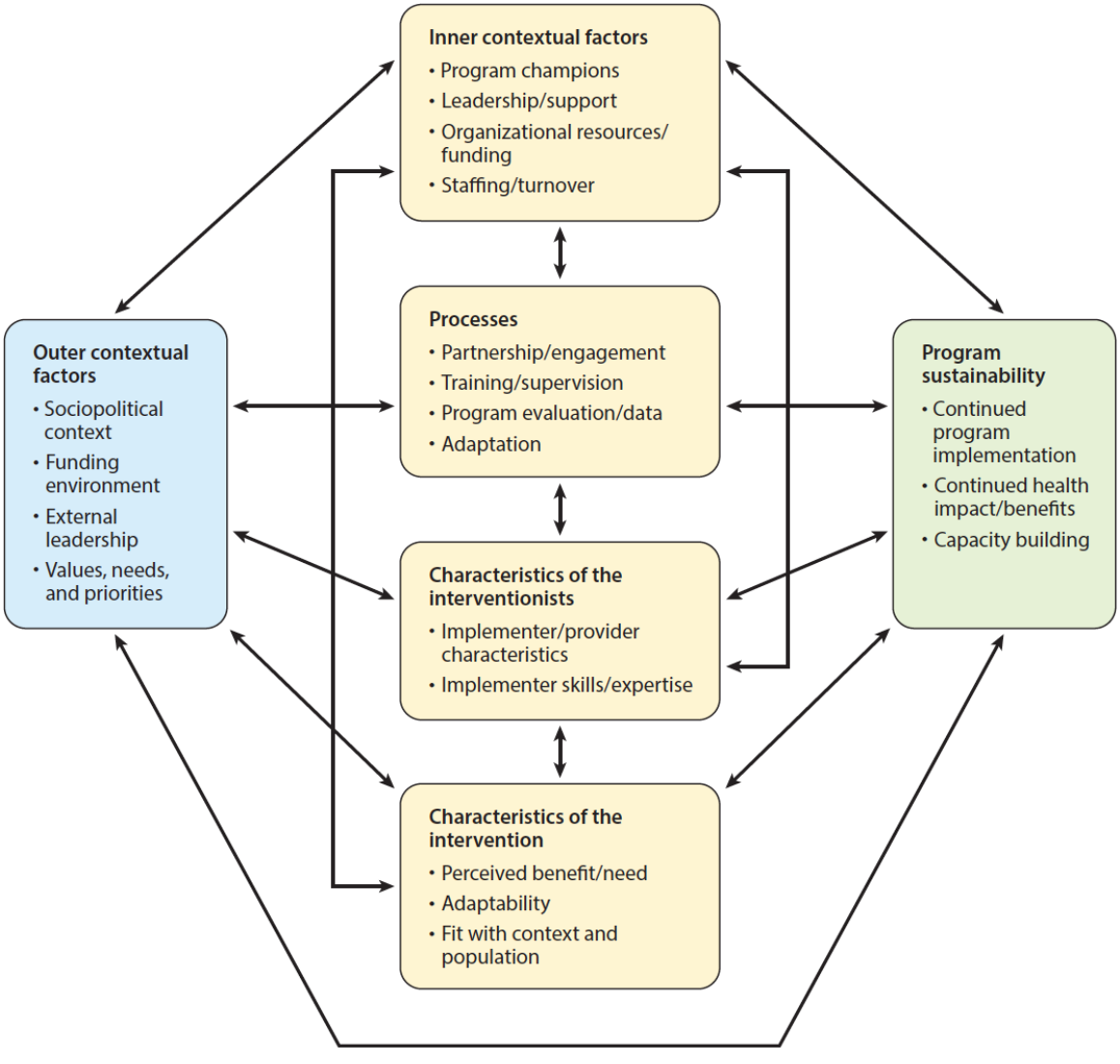
Schell et al. (2013) hypothesized that the identified characteristics and conditions are necessary aspects of capacity and the successful, long-term sustainability of programs. Schell et al. defined sustainability as the "existence of structure and processes that allow a program to leverage resources to effectively implement and maintain evidence-based policies and activities" (p. 2). This research focused on the factors and processes influencing the sustainability of PSE strategies including coalition functioning, strategic planning for PSE change, and adaptability (process). The conceptual work of Schell et al. suggests the need to interrelate and integrate organizational structure and process into the community and public policy levels. Policymakers should do this via tangible resources, capacity, and integrated processes with coalition leadership for strategies for long-term PSE change.

Similarly, Shelton et al. (2018) highlighted the key multilevel factors that enable sustainability across multiple contexts and settings (see Figure 5). Shelton et al. reported that the empirical literature suggests the existence of dynamically related factors with an influence on sustainability across settings:

> Outer contextual factors (e.g., sociopolitical context, funding environment), inner contextual or organizational factors (e.g., financial resources, leadership, program champions, organizational support, staff stability, policy alignment), processes (e.g., training, strategic planning, stakeholder engagement, partnerships), intervention characteristics (e.g., adaptability, fit with context and population, benefits/effectiveness), and implementer characteristics (e.g., skills, attitude and motivations). (Shelton et al., p. 66)

WCH required collaboration. Shelton et al. expressed the need to explore the collaboration, planning, and ability required to respond to changes in funding, policy, populations, and personnel.

Figure 5: Integrated Sustainability Framework (Shelton et al., 2018)



vi. Practices and Processes

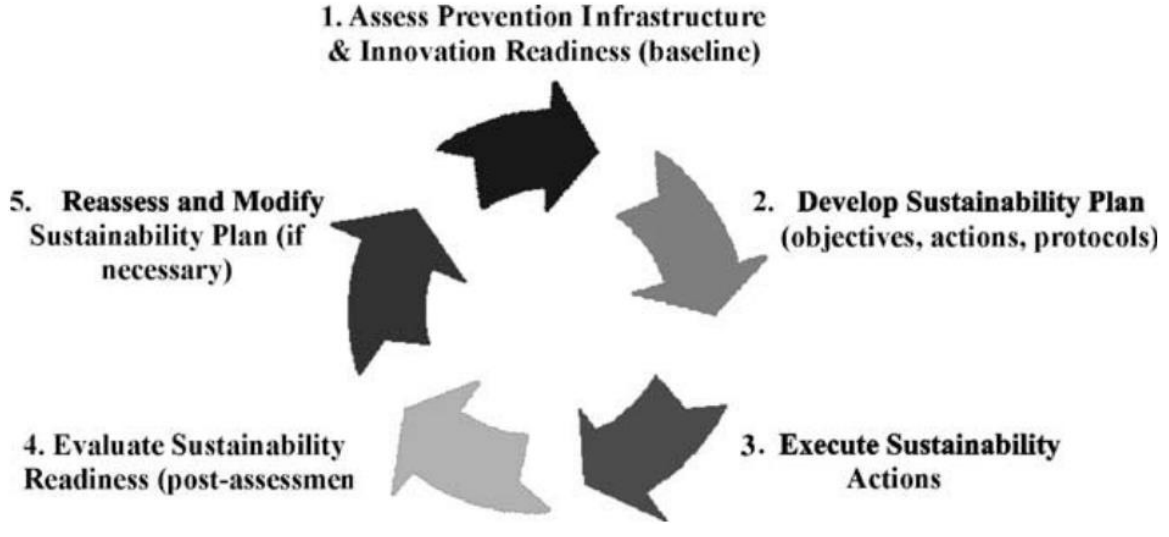
Sustainability as a process consists of numerous practices and processes, including sustainability planning, strategy, evidence-based and shared decision-making, adaptability, capacity-building, and collaboration (i.e., partnership and engagement). WCH required coalition or community

stakeholder collaborative involvement. Sustainability requires planning and long-term policy strategies to improve the health and well-being of a community (NCHPAD, n.d.).

Sustainability Planning

If not planned, sustainability does not occur. Johnson et al. (2004) provided a conceptual framework of sustainability planning with five stages: assess, plan, implement, evaluate, and reassess/modify. The five-stage process produces sustainability readiness as a measurable outcome or an adequate infrastructure and innovation confirmed as sustainable. The iterative sustainability actions of the planning framework are means of integrating factors in an actionable process to foster readiness and capacity to ensure the sustainability of a prevention system (see Figure 6).

Figure 6: Sustainability Cyclical Process (Johnson et al., 2004)

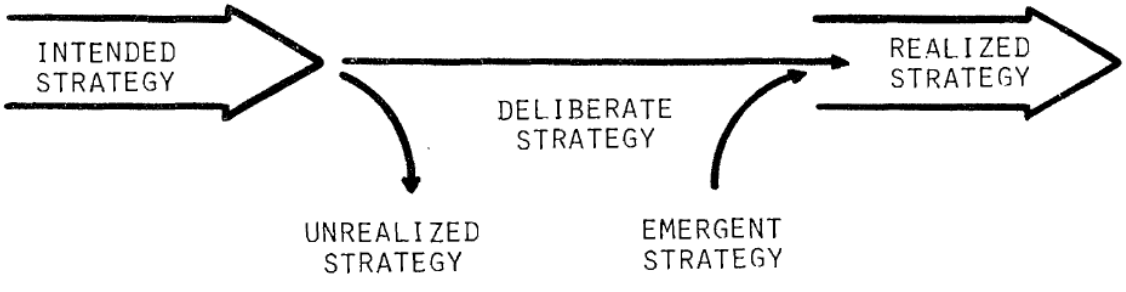


Strategy – Realized, Unrealized, and Emergent

Sustainability planning consists of executing developed actions (strategies) to achieve sustainability. WCH included PSE strategies assessed as sustaining or adapting. Mintzberg and Waters (1985) operationalized the definition of strategy, shifting from a plan made by leaders to action and implementation. They studied intended and realized strategy against emergent strategy (i.e., strategies realized despite the absence of intentions). There is a need to distinguish

strategy as a process for sustainability. Figure 7 shows an intended strategy realized through deliberate actions, as conceptualized iteratively in Figure 6. Pairing Mintzberg and Waters with Durlak and DuPre (2008), the present study was a means to understand how emergent strategy development contributes to the adaptability of the sustainability of PSE strategies. Figure 6 also showed the importance of evaluating, reassessing, and modifying the sustainability plan. Figure 7 presents the three conditions of meeting an intended strategy: (a) precise intentions in the organization, with concrete details widely known before action; (b) collective actions must exist among all needed organizational and community players for a shared vision and collaboration and zero doubt about what the strategy entails and its implementation; and (c) implementation as intended, exactly as planned, without the interference of external forces (Mintzberg & Waters, 1985).

Figure 7: Realized, Unrealized, and Emergent Strategy Interplay (Mintzberg & Waters, 1985)



So, what must occur to adapt and create emergent strategy for sustainability? Emergent strategy still requires consistency via consistent action over time (Mintzberg & Waters, 1985). This indicates the ability of PSE strategy to evolve and adapt for the sustainability of change. The PSE and socioecological frameworks present a complex environment with numerous factors and multiple levels that impact sustainability and the extent of sustaining PSE strategies. Effective leadership and program championship are factors needed for sustainability (Durlak & DePre, 2008; Schell et al., 2013). Even with boundaries, leaders create an environment where key organizational and community stakeholders can respond to changing times in a complex

environment. Mintzberg and Waters (1985) discussed such development as "deliberately emergent," the idea that leaders generate the conditions that enable emergent strategy. In this sense, adaptation emerges alongside strategy, enabling the modification of the intentional strategy for sustainability. Furthermore, leaders who alter the vision in response to complex environments and emergent strategies facilitate strategic learning, improved adaptation, and sustainability.

Whereas Mintzberg and Waters (1985) described the development and evolution or emergence of strategy, Scudder et al. (2017) presented the strategies needed for sustainability. Several of these strategies, when applied generally to public health programming, include interrelating factors that do or do not contribute to sustaining change. WCH required the sustainability of strategies. Therefore, understanding the strategies and adaptations to sustain change is essential for those receiving funding to demonstrate public health strategy implementation and sustainability. A sustainability strategy is responsive to the community and its needs; furthermore, strategy evolution and adaptation occur as evidence emerges (Whelan et al., 2014).

This research focused on the sustainability of PSE strategies with the LHD. Strategy development and execution and the interpretation of emergent strategy are the responsibilities of the chief strategist (Montgomery, 2008), in this case, the LHD. WCH, partly due to its funding eligibility, anchored PSE strategy implementation with the LHD. Public Health 3.0 suggests that public health leaders "embrace the role as the Chief Health Strategist for their communities" (U.S. Department of Health and Human Services, 2016, p. 5). The chief health strategist must be able to bring strategic partners to the table, sustain their engagement, and inspire change and collective action. Additionally, the chief health strategist must think in multiple levels and systems to leverage and build capacity, using data to inform and conduct evidence-based

decision-making (EBDM). The chief health strategist, identified conceptually for this research as the individual connecting organizations to community and public policies, keeps population health as a central concept for all community development to support the PSE strategy sustainability.

Evaluation, Data, and Decision-Making

Organizational and interorganizational (community) coalition and system leaders must use and understand data. Leaders should actively participate in shared decision-making (SDM) and EBDM to implement the intended strategies, parts of the strategies, or adapted strategies for long-term impact. State and local public health leaders play key roles in decreasing disease burden and ensuring the long-lasting impact of public health strategies and interventions to sustain outcomes. Making decisions on the sustainability of strategies, or the parts or adaptations thereof, must include the use of evidence (Jacob et al., 2018). EBDM is the ability "to identify and use the best available evidence for making informed public health practice decisions" (Jacob et al., 2018, p. 2). EBDM is a critical process for justifying capacity (e.g., funding, skills, resources) and appropriately prioritizing against a competing public health agenda. Resource allocation directly correlates to strategic sustainability. C. Harris et al. (2017) assessed Sustainability in Health Care by Allocating Resources Effectively and the supporting staff in EBDM. In a survey, 70% of the staff members reported making decisions always or often using evidence (C. Harris et al., 2017). However, although C. Harris et al. found that staff members retrieved evidence comfortably, they had less confidence in using or applying evidence to make decisions. N. Harris and Sandor (2013) identified EBDM as one of four features of sustainable practice. According to N. Harris and Sandor, EBDM requires practice "contributing to and being underpinned by evidence ranging in sources including literature" (p. 57).

Measuring the success of public health PSE strategies occurs through indicators such as morbidity, access to care, disparities, costs, outcomes, or the expected, long-lasting impacts of the strategies. Amid funding cuts, leaders must create accountability, use resources appropriately, and systematically identify the resources for lower-prioritized purposes (Kihembo et al., 2018). Evaluating sustainability requires leaders to prioritize and assess community capacity and effectively use resources while adapting as necessary to achieve the desired outcomes with data-driven decisions. More specifically, prioritizing implementation, measurement, and evaluation with clear EBDM can directly impact what is sustained and how. EBDM is a process through which the best available data affect programming and policies, balanced with consideration of local needs and resources (Tabak et al., 2016).

Evidence and research alone are not the drivers of sustainability decisions organizationally, interorganizationally, or systematically. The interrelation of political priorities, policy briefs, public values, social norms, funds, advocacy groups, and the opinions of selected experts or managers impact public health decision-making and PSE strategies' sustainability (Hu et al., 2019). Thus, SDM is a productive, useful approach for the sustainability of PSE strategies. SDM is the practice of collaborating with key stakeholders and partners to conduct EBDM (Weiss et al., 2019). N. Harris and Sandor (2013) also identified effective relationships and partners as features of sustainable practices. Building and maintaining relationships, along with those being mutually effective, including leadership, contribute to collaboration and the degree of success. Community data provide evidence, and partnerships enable effective exchange, engaged analysis, and shared EBDM.

Capacity-Building

System and organizational capacity consists of key factors that impact the successful continuation of a strategy; however, capacity does not remain balanced and at a level necessary

to reach sustainability without assessing, building, and evaluating capacity. Whelan et al. (2014) identified capacity-building as one of 10 elements of public health intervention sustainability. The literature presents capacity-building as necessary for sustainability. Capacity-building consists of building leadership and identifying and maximizing resources, organizational structures and relationships, skills, and knowledge. Capacity-building factors enable organizational leaders and members to sustain the strategy, parts of a strategy, or an adapted strategy. Hawe et al. (1997) suggested that a successful program requires capacity-building for sustainable health promotion, building up the infrastructure to deliver the strategy. As a process, capacity-building can also produce new indirect strategies and outcomes with links to strategy and adaptability. Liberato et al. (2011) identified five domains of assessing community capacity: sustainability, participatory decision-making, learning opportunity and skills development, leadership, and partnership.

Adaptability

In practice, long-term sustainability in a changing landscape with complex public health problems and factors impacting public health outcomes requires an iterative process and a desire for emergent or adapted strategy. Shelton et al. (2018) identified the tension between long-term sustainability and adaptation as an essential issue to address; future researchers must recognize adaptation as central to studying sustainability. Some have defined sustainability as a construct with dynamic processes that requires adaptation and capacity-building as new evidence, policies, and other influences emerge. Chambers et al. (2013) introduced the dynamic sustainability framework to emphasize sustainability as an ongoing process. The dynamic sustainability framework focuses on learning, evaluation, problem-solving, and adaptation to address sustainability in the context of change. The framework also indicates the need for adaptation to improve the fit and impact of a strategy. Hanson et al. (2005) supported the modification of

programs and argued that modification is a key factor in sustaining outcomes due to constantly changing internal and external contextual environments. During modification, a sustainability planning cycle must undergo evaluation and reassessment iteratively (see Johnson et al., 2004). This requires sustainability planning and strategy creation based on the socioecological system and resources needed to adapt and sustain change. Capacity-building, decision-making, partnership, and adaptability are means of formulating emergent strategies. Unfortunately, short-term funding opportunities without requirements for strategy sustainability might produce only short-term outcomes. Inclination and time are absent to conduct the strategic planning necessary for change deeply rooted in the socioecological system (Hanson et al., 2005); sustainability is an afterthought.

Partnership Engagement

As mentioned previously, coalitions were a requirement of WCH. Like other practices and processes described, partnership engagement serves as a key aspect of sustainability (Shelton et al., 2018). Partnerships (coalitions) connect program to community (Schell, et al., 2013) and therefore, strategically influence sustainability. Coalitions are a means to stakeholders being engaged, mobilizing resources and adapting strategies to emerging needs (Shelton, et al., 2018). Partnership engagement is how partnerships collectively take action and implement practices and processes toward sustainability. "Sustainability is based on collaboration" (CDC, 2011, p. 52).

vii. Summary of Support for Proposed Key Constructs in the Literature

The definition of sustainability, whether a shared definition or its lack in the research, was a gap in the literature. A goal of this study was to measure sustainability; however, measuring a topic requires defining it. Table 2 shows several definitions of sustainability in the literature and the constructs that emerged as key factors in those definitions. The definition of the sustainability of PSE strategies applied in this research was a synthesis of the literature. For this

study, the definition of sustainability was more than funding and included "creating and building momentum to maintain community-wide change by organizing and maximizing community assets and resources" (NCHPAD, n.d., p. 16), "institutionalizing policies and practices within communities and organizations" (NCHPAD, n.d., p. 16), and "involving a multiplicity of stakeholders who can develop long-term buy-in and support throughout the community for coalition efforts" (NCHPAD, n.d., p. 16).

Table 2: Sustainability Definitions

Author	Sustainability definition	Commonality (factors)
CDC, 2011	"Community's ongoing capacity and resolve to work together to establish, advance, and maintain effective strategies that continuously improve health and quality of life for all" (p. 8).	Capacity
LaPelle et al., 2006	"The capacity to maintain program services at a level that will provide ongoing prevention and treatment for a health problem after termination of major financial, managerial and technical assistance from an external donor" (p. 1363)	Capacity
Schell et al., 2013	Supports sustainability as "existence of structure and processes that allows a program to leverage resources to effectively implement and maintain evidence-based policies and activities" (p. 2).	Capacity
Shediac-Rizkallah, 1998	Sustainability of strategies involves community engagement, partnership, support, and trust of public health programs and their leadership.	Capacity Leadership

The sustainability of PSE strategies and change a requires systems approach. This study included the use of several models to incorporate organizational, interorganizational (community), and public policy. The CDC's socioeconomic model and PSE framework both have a systems approach and multiple socio-ecological levels of factors that impact the sustainability of PSE strategies. This study focused on three levels: organizational (LHD), community (community and environment), and public (policy).

Collectively and cooperatively, the literature presented the factors and processes that affect the sustainability of strategies, public health programs, or interventions. As discussed, there is a gap in the literature on the relevant factors and processes, with several frameworks to choose from in creating a systematic approach to studying sustainability of PSE change

initiatives (e.g., Durlak and Dupre 2008, Mintzber and Waters 1985, Schell et al. 2013, Shelton et al. 2018). This study entailed collecting data and evidence to support the development of a comprehensive, synergistic, and pragmatically useful framework. Therefore, the theoretical frameworks in the literature review were synthesized through (see B. Conceptual Framework) grouping their key constructs as they applied to this problem, sustainability of WCH PSE change initiative. Capacity and leadership at the organizational and community levels were the primary constructs investigated as factors in this study. Investigation of several key constructs referring to processes (capacity-building, decision-making, adaptability, sustainability, strategic planning and partnership, and engagement) occurred to understand their impact on PSE strategies' sustainability. Sustainability can consist of one or several processes. Although "systems factors" was an overarching construct, including capacity and leadership at the organizational and community levels, it could be measured through relationships among codes such as community capacity (outer contextual factors), organizational capacity (inner contextual factors), realized and emergent PSE strategy, leadership, sustainability planning and sustainability of PSE change (see Fig 8 and codebook). Table 3 presents the key constructs reviewed in this chapter, and their sources in the literature, in relation to the processes and practices relevant to public health PSE change. These were the constructs integrated into a systemic framework to explore sustainability, as provided below in the conceptual framework and its description. Synthesis of these terms contributed to the constructs' definitions for this research, as shown in Appendix A.

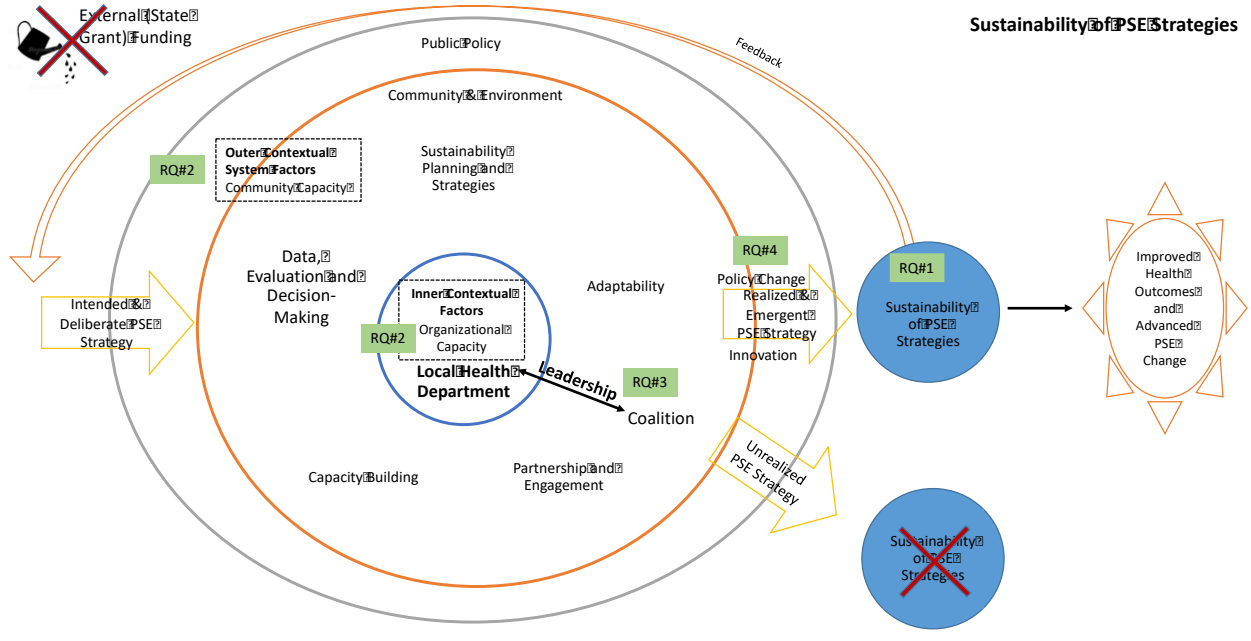
Table 3: Key Process Constructs: Supporting References

Researchers	Adaptability	Decision-making	Sustainability and strategic planning	Partnership and engagement	Capacity-building
Chambers et al., 2013	X	X		X	X
Durlak & DuPre, 2008					X
Freedman et al., 2013					X
Garney et al., 2018		X	X	X	
Hanson et al., 2005	X		X		
N. Harris & Sandor, 2013		X			
Hawe et al., 1997	X		X		X
Jacob et al., 2018	X	X			
Johnson et al., 2004	X		X		X
Kihembo et al., 2018	X	X	X	X	X
Mintzberg & Waters, 1985	X		X		
Liberato et al., 2011		X	X	X	X
Schell et al., 2013	X	X	X	X	X
Shelton et al., 2018		X	X	X	X
Shediac-Rizkallah & Bone, 1998				X	
Tabak et al., 2016	X	X	X		X
Whelan et al., 2014				X	X
Wiltsey Stirman et al., 2012	X				X

B. Conceptual Framework

This study's conceptual framework consisted of "the system of concepts, assumptions, expectations, beliefs, and theories" (Maxwell, 2013, p.39) of the research. The conceptual framework was based on academic literature, gray literature, data gleaned from environmental scans, and insights from systematic reflection and action learning. The framework evolved over time to visualize the interaction of sustainability factors with organizational and coalition-led sustainability processes. This initial conceptual framework contained the published frameworks and the process elements of strategy, data, and decision-making and the main factors, concepts, and relationships among them. The literature used to inform this research, socioecological model, PSE framework, sustainability factors, and integrated sustainability framework provided structure, boundaries, and interrelationship modeling for the development and basis of this study's conceptual framework (see Figure 8).

Figure 8: Sustainability of PSE in Illinois Conceptual Framework



The CDC's (2011) socioecological model and the ecological systems framework for implementation (Durlak & DuPre, 2008) are representative of a systems perspective across the organization, community, and public levels and the contextual factors specific to each level. Further, Durlak and DuPre (2008) illustrated the interactions and interrelationships among the system factors in the implementation processes and practices. Sustainability was the topic of interest in this study; however, the implementation science literature provided a foundation for sustainability and the interaction of practices and processes for outcomes and long-term continuation (i.e., sustainability). WCH included PSE; thus, there was a need to integrate the CDC's PSE framework, which presents coalition as central to the impact of factors on processes and the interaction of the processes for the sustainability of PSE change. The framework shows how the termination of external funding is an opportunity to challenge the system to achieve sustainability without and beyond the initial funding.

The integrated sustainability framework (Shelton et al., 2018) indicates the contextual factors (inner and outer), processes, intervention characteristics, and sustainability outcomes.

Schell et al. (2013) shared similar contextual factors with an impact on sustainability and the capacity for it. The purpose of this mixed methods multiple case study of the WCH grant program was to understand the extent of the sustainability of the PSE strategies, the factors and processes with an impact on sustainability, and how and why sustainability resulted after the 2014 funding cut.

Sustainability planning has an iterative cycle (Johnson et al., 2004). More importantly, this study contained the hypothesis that additional processes are necessary components of sustainability, including developed actions and strategy (Mintzberg & Waters, 1985) and EBDM and SDM (Jacob et al., 2018; Weiss et al., 2019). The conceptual framework also shows the interaction between these concepts and their significance to adaptability and sustainability.

Based on the literature and gray literature of sustainability frameworks, the overarching constructs, divided by factors and processes, appear in Appendix A, with explanations in Chapter III. The overarching constructs align with the outer and inner factors and processes described in the conceptual framework. These identified constructs and their interworking in the conceptual framework show how and why sustainability emerges and how well (or to what extent) it results in improved health outcomes and PSE change. Furthermore, partnership in a coalition was a requirement of the WCH; thus, the coalition is a component necessary for sustaining PSE strategies. A goal of this research was to understand the factors and processes in the phenomenon of sustainability and produce evidence for a framework with the key factors and processes identified in existing frameworks.

III. Study Design, Data, and Methods

A. Analytical Approach and Design

The sustainability of PSE strategies is a complex public health phenomenon. This study focused on the factors and processes with an impact on sustainability and how and why those factors and processes enable sustained, intended PSE strategies or adaptation of the intended PSE strategies to achieve public health outcomes. Another goal of this study was to learn and understand the phenomenon of sustainability to support change in the approach and expectations of sustainability. The complexity of sustainability required a research approach that enabled greater depth in learning and triangulation among data to synthesize, integrate, and evolve the findings.

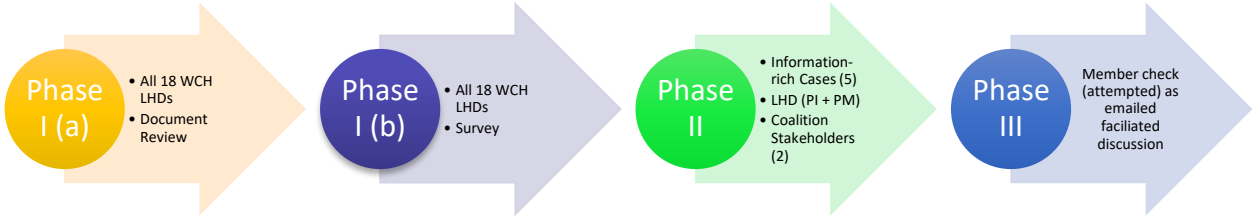
A sequential phased mixed methods multiple case study was the design used to achieve the goals of this study and analyze the best sustainability methods in relation to the research questions. The case study design enables in-depth investigation of a phenomenon within a real-world context (Yin, 2014). This case study comprised quantitative and qualitative data, with analyses for corroboration of the data, elaboration from one method to the other, and expansion of the depth and breadth of the study (Wisdom et al., 2012). In a case study design, in both the applied quantitative and qualitative methods, the cases are not sampling units or adequate representations of the larger population. Therefore, this study did not have generalizable statistical findings. However, it provided empirical evidence of theoretical and practice-based concepts and analytical generalizations beyond this research (the context and cases). The analytical generalizations included the corroboration and advancement of theories and new concepts of adaptability for PSE strategies' sustainability.

i. Mixed Methods Case Study Design

Investing in evidence-based public health strategies requires long-term sustainability to observe and experience intended health outcomes. Hanson et al. (2005) described project sustainability as "a mandatory piece of political rhetoric" (p. 5). However, sustainability frequently does not occur after the abrupt termination of funding. As indicated in Chapter I, this study focused on WCH, an IDPH grant-funded program from 2011 to 2014 that had a funding cut in the second year of its 3-year period. WCH was a modeled grant program, in which 18 local communities received federal funding to implement PSE strategies with a vision of postfunding sustainability. WCH was the ideal context and case to study the complex phenomena of sustainability, the factors that impact sustainability, the cyclical processes needed to achieve it, and the extent of the sustainability achieved. In this study, there were data collected on sustainability as an outcome, defined as a change in the policies, actions, activities, practices, or relationships of an organization or community (Britt & Wilson-Grau, 2012).

This was a rigorous mixed methods study with a sequential (phased) approach and a case study design. As indicated previously, WCH provided funds to 18 local communities led by the LHD grantees. Each LHD was different, with unique organizational and systems contextual factors. Furthermore, in a competitive grant application process, WCH allowed applicants to choose the PSE strategies to pursue in their communities. Appendix E provides a matrix of the grantees, their chosen strategies, and their stakeholders. Every LHD chosen was a case considered in this study. As each LHD case had a different context, this study had a multiple-case design with a mixed methods phased research approach (see Figure 9).

Figure 9: Multiple Case Study Phased Approach



Building on the environmental scan conducted for this research, Phase I of this study included all 18 LHDs. Phase I (a) was a document review while Phase I (b) involved a survey. A review of various documents—including each case's community health assessment, community improvement plan, and strategic plan or annual report —led to the creation of a unique survey for each LHD. Inputting survey data to complete a lot of work for the respondent to increase response rate and participation and accurately measure sustainability status for each PSE strategy and milestone. The survey provided updated information for the retrospective analysis to corroborate the data from the document review. A survey was useful for developmental evaluations through outcome harvesting for evidence-based data of the contributions made to achieve sustainability (see Patton, 2015). The timeframe was December 2014 to the research date; therefore, the survey was a necessary tool for harvesting the up-to-date evaluation data on sustainability as an outcome and discerning to what extent the cases resulted in sustainability. The survey included all research questions used to select cases for the mixed methods nested arrangement (see Yin, 2014). The multiple-case study incorporated survey data to select the cases requiring informed interviews to better understand and acquire enhanced qualitative data for the research questions. The sequential procedures consisted of a quantitative test of concepts and the collection of demographic and factor data, followed by an exploration of the selected cases (see Creswell, 2003).

In this study, Phase 1 consisted of collecting research data on all the LHDs. Limited, informed interviews with grantees who met the criteria occurred in Phase 2. Essentially, the case study was appropriate to investigate the conditions (factors and processes) for those surveyed. The case study design enabled addressing the broad, complicated research questions through appropriate and adequate data collection.

ii. Sample and Case Selection

At the end of WCH funding in 2014, a sustainability survey was useful to understand the contribution of the coalitions (partnerships) to strategy sustainability (University of Illinois at Chicago [UIC], 2014). The study sample included the coalitions (n = 22) and grantees sustained or adapted in December 2014 (see Table 4). As of December 2014, 86% of the grantees reported sustaining PSE strategies at some level. There was a limitation in accessing the raw data from the 2014 report, as some grantees reported not sustaining past December 2014; however, Phase I included all 18 grantees. Phase I (b) consisted of collecting demographic data, measuring the sustainability of each strategy, and rating the factors and processes with an impact on strategy and adaptability in relation to sustainability. Table 4 provided the data retrieved from the survey respondents. Further investigation of the factors and processes that resulted in emergent or realized strategy and sustainability occurred in Phase 2.

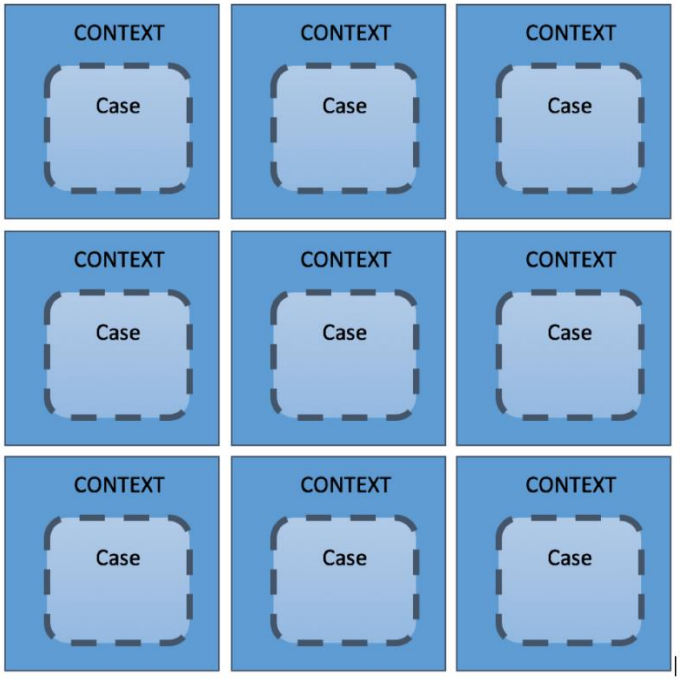
Table 4: Pool of Cases for Selection

Case	Administrator (PI named on grant)	# counties served	Coalition	Sustained as Phase I (b) research survey
Case A	New	2	Yes	Yes
Case B	Same	1	Yes	Unknown
Case C	Same	14	Yes	Unknown
Case D	New	1	Yes	Unknown
Case E	New	6	Yes	Yes
Case F	New	2	Yes	Unknown
Case G	New	10	Yes	Unknown
Case H	Same	1	Yes	Yes
Case I	New	4	Yes	Unknown
Case J	New	1	Yes	Yes
Case K	New	1	Yes	Unknown
Case L	New	1	Yes	Yes
Case M	New	1	Yes	Unknown
Case N	Same	1	Yes	Unknown
Case O	New	1	Yes	Unknown
Case P	New	1	Yes	Unknown
Case Q	Same	5	Yes	Unknown
Case R	New	2	Yes	Unknown

Note. Unknown = no survey data

In choosing the specific grantees with different contexts, this case study had a multi-case design. Figure 10 shows the multicase design with each case of an LHD in a different context.

Figure 10: Multicase Design



LHDs have similar barriers to and facilitators for their operational and capacity demands. While this study addressed the factors that impacted the sustainability of PSE strategies, barriers and facilitators differed in size, scope, need, and context. At the close of Phase 1, predetermined selection criteria (see Table 5) were the means used to determine the number of cases (LHDs) for Phase 2. Phase 2 included five information-rich cases. In Figure 11, the decision tree shows how the criteria resulted in the five information-rich cases. Instead of exemplar cases, information-rich cases were appropriate based on Phase I data analysis because they had a greater opportunity to provide data. Most importantly, the eligibility required that each selected case show a route to the sustainability of PSE strategies and change and could generate learning and understanding of sustainability (see Patton, 2015).

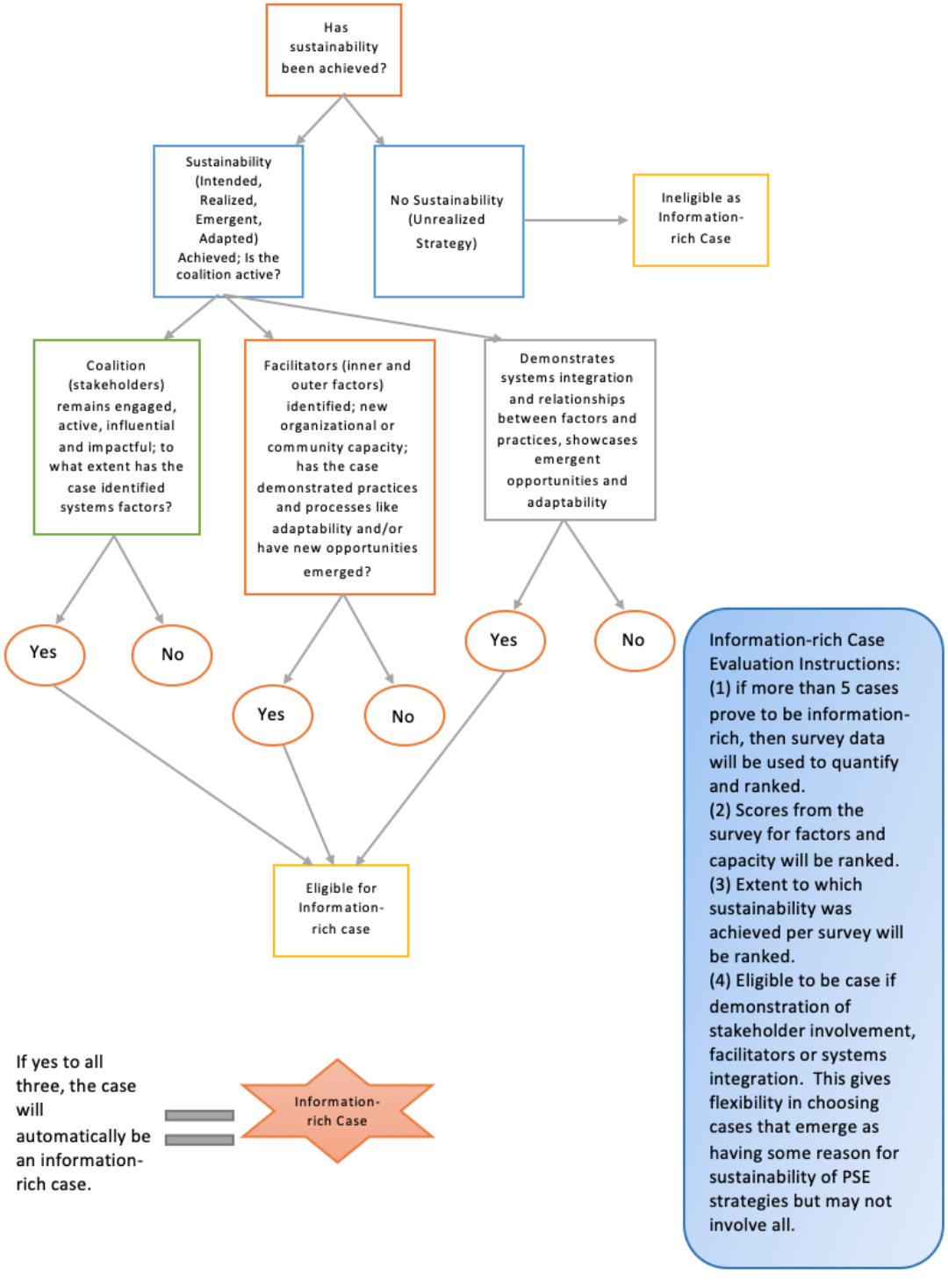
All LHD lead agency grantees (n = 18) were invited to complete the survey. Only seven completed, or 39%. Of those that completed, one completed over email and phone, one completed via paper submission, and the remainder of the grantees completed per the electronic survey in Qualtrics. Two of the seven had experienced turnover of Administrators within the last

year. Those same two reported less sustainability, no continued stakeholder involvement, no identified stakeholders, no activity of the strategies and no recommended community interviewees compared to the other five cases. Therefore, little useful information could be gleaned from these two cases, i.e. they were information-poor. Case A reported the least sustainability of the five information-rich cases and was somewhat comparable to the two cases not included. However, since Case A reported stakeholders remaining engaged and recommended a community organization for Phase II interviews, Case A remained as an information-rich case.

Table 5: Information-Rich Case Selection Criteria

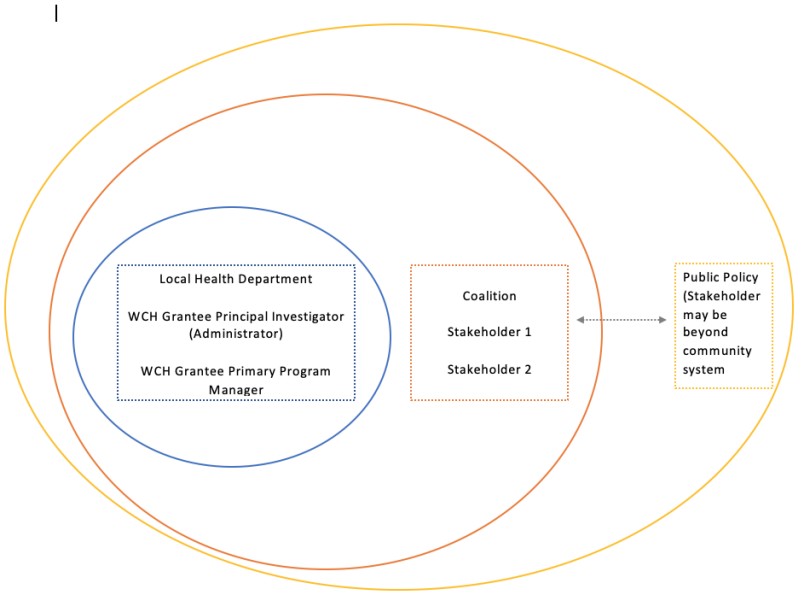
Information-rich selection criteria	Definition	Evaluation	Rank
Status: Sustained	Case has reached sustainability and show differing routes	Response level quantified from status of objectives	Rank based on highest rate
Status: Coalition	Coalition (stakeholders) still organized, meeting and engaged	Frequency of meetings and involvement in strategies and number of stakeholder involvement (plus identification of new)	Yes/no
How and why: Facilitators	Facilitators (inner and external contextual system factors)	Variety of facilitators identified that assisted in reaching or exceeding sustainability of strategies	Yes/no
How: Adaptability	Case has identified that an emergent strategy and adaptability that enabled sustainability	Intended strategy adapted or emergent strategy existed	Yes/no
How and Why: Capacity and capacity-building	Case identified sustained capacity (organizational and community)	New funding Increased funding New skills and resources (organizational or community)	Yes/no
Why: Opportunities	Case identified innovation, policy, or other opportunity after funding ended	Policy shift or change occurred, innovation emerged	Yes/no

Figure 11: Case Selection Decision Tree



Purposeful sampling commenced in Phases I and II to select the individuals who would give information (see Maxwell, 2013; see Figure 12). The principal investigator and primary program manager completed the survey and participated in interviews in Phase II. Analysis of the grantee principal investigators showed that about half remained employed at their respective LHDs (IDPH CEMP, 2019). The principal investigators reported in the grant applications were the LHD administrators. In Phase II, there were two informed interviews per grantee and one interview with the principal investigator, primary program manager, and two stakeholders in the identified coalition or on the grantees' WCH applications. Phase I included survey administration to request LHDs for interviews with potential community coalition stakeholders. The interviews occurred over Zoom unless, with all interviews recorded and transcribed.

Figure 12: Purposeful Sampling



B. Data Sources, Data Collection, and Data Management

i. Data Sources Overview

This research consisted of mixed methods sequential procedures and data collection from several sources. Recognizing the information needed to answer the research questions guided the

selection of data sources. Table 3 shows the connection between the research question to the data sources and the reason for selection (see Maxwell, 2013). Evaluating the type of data also required identifying the method and analysis. Table 7 provides an outline of the data collection plan of this study.

Table 6: Data Sources and Reasons

Research question: What does the researcher (and others) want to know?	Why does the researcher need to know this?	What kind of data will answer these questions?	Where is the location of these data?	Are these primary or secondary data?
To what extent have the WCH PSE strategies been sustained?	The understanding of the current status of sustainability of PSE strategies and quantitatively to what extent is important to frame the findings and relate factors and processes in later research questions. Collection of LHD demographic data, current strategies, etc.	• Survey • Document review	• Designed survey for this research • IDPH (retrieved) • LHD websites	• Primary • Secondary
What factors (facilitators and barriers) and processes affected sustainability of the WCH strategies?	What either supported or not PSE strategy sustainability from each LHD's perspective is significant in later understanding how those factors impacted processes and practices (Durlak & DuPre, 2008).	• Survey • In-depth semistructured Interviews	• Designed survey for this research • Designed interview guide and questions for this research	• Primary • Primary
How have the community coalitions influenced sustainability of the WCH strategies?	The significance of this question is to learn how and why the LHD utilizes the identified stakeholders or coalition to sustained PSE strategies	• Survey • In-depth semistructured interviews	• Designed survey for this research • Designed interview guide and questions for this research	• Primary • Primary

Research question: What does the researcher (and others) want to know?	Why does the researcher need to know this?	What kind of data will answer these questions?	Where is the location of these data?	Are these primary or secondary data?
What opportunities emerged that led to the sustainability of the We Choose Health PSE strategies?	This data shed empirical light on innovation, adaptation and policy that has shifted or changed to sustain PSE strategies. This knowledge will support the importance, or not, of key practices and processes tested in this research and later support adaptability for sustainability of evidence-based practices and strategies.	• Survey • In-depth, semistructured interviews	• Designed survey for this research • Designed interview guide and questions for this research	• Primary • Primary

Table 7: Data Collection Plan (highlight indicates phase of research)

Research question	Construct	Method	Data source and sampling	Analysis
To what extent have the WCH PSE strategies been sustained?	• Leadership • Organizational and community capacity • Strategy - realized - unrealized - emergent • Sustainability planning • Capacity building • Evidence-based and shared decision-making	• Survey (b) • Document review (a)	Secondary data: • Sustainability survey results (December 2014) Primary data: • Survey • Currently dated strategic planning documents of each grantee	QN: • Descriptive (*n*) per strategy per time period (end of WCH to current date) • Inferential (Fisher) analysis QL: • Transcription, memoing, thematic coding analysis (categorization and connecting strategies – MAXQDA)

Research question	Construct	Method	Data source and sampling	Analysis
	• Adaptability • Partnership and engagement • PSE • Systems - organizational - community - public policy	• Survey (b) • Two-person semi-structured interviews	Primary data: • Survey • Information-rich cases	QN: • Descriptive (*n*) per strategy per time period (end of WCH to current date) • Inferential (Fisher) analysis QL: • Transcription, memoing, thematic coding analysis (categorization and connecting strategies – MAXQDA)
How have the community coalitions influenced sustainability of the WCH strategies? (Phase II)		• Two-person semi-structured interviews	• Information-rich cases	QN: • Descriptive (*n*) per strategy per time period (end of WCH to current date) • Inferential (Fisher) analysis QL: • Transcription, memoing, thematic coding analysis (categorization and connecting strategies – MAXQDA)
What opportunities emerged that led to the sustainability of the WCH PSE strategies? (Phase II and Phase III)	• Innovation • Adaptability • Strategy - realized - unrealized - emergent • Sustainability planning • PSE - public policy • Leadership	• Two-person semi-structured interviews • Member check (attempted) as facilitated discussion	• Information-rich cases	QN: • Descriptive (*n*) per strategy per time period (end of WCH to current date) • Inferential (Fisher) analysis QL: • Transcription, memoing, thematic coding analysis (categorization and connecting strategies – MAXQDA)

Key: Phase I (a and b), Phase II, and Phase III

ii. Phase I (a) Document Review Data Collection and Management

The document review included several documents to find data to inform the survey. The purpose of the document review was to gain as much explicit data as possible to build unique surveys and decrease the time and effort needed by the respondents to complete the survey (e.g., ask the respondent to verify population instead of retrieving and inputting data and the goals and objectives to measure sustainability). Table 8 provides a listing of data and their links with the research. Appendix B contains the document review matrix used to collect and analyze the data (Miles et al., 2014).

Table 8: Document Review Listing and Data

Document	Description	Source	Data	Management/ analysis
LHD strategic plan	Provides the organizational management activity use to set goals and priorities	• LHD websites	• LHD budget • LHD staff size • LHD priorities	• Data organized in box per case • Content analysis via an event matrix • Summarize document relation to construct • Excel spreadsheet for summary to compare to survey data • Also use to populate survey • By case, by document, and by construct
LHD annual report	Reports the LHD annual performance and budget	• LHD websites	• LHD financial report • LHD services	
LHD Community Health Needs Assessment and Community Health Improvement Plan (IPLANs)	Identified strategies to address the community's needs	• LHD website • IDPH (retrieved)	• Stakeholders • Capacity (organizational and system) • Leadership • strategies	
WHC applications	Grantee applications used to apply for WCH	• IDPH (retrieved)	• PSE strategies • Proposed activities • Proposed outcomes • Collaboration plan • Coalition • Evaluation plan • Sustainability	
WCH grantee breakdown	Links grantee to PSE strategy identified	• IDPH (retrieved)	• Strategy per lead agency • Regional coverage of strategies	

iii. Phase I (b) Survey Data Collection and Management

The survey facilitated the collection of both quantitative and qualitative data. Collection (or verification as collected in document review) occurred of descriptive demographics statistics for each LHD. The descriptive demographics enabled a better understanding of the LHD context for Phase II and each case selected for an in-depth semistructured interview. In addition to descriptive statistics for demographics, there were data collected to evaluate the extent to which the PSE strategies had been sustained, dropped, or adapted. The collection of such quantitative data commenced based on a numerical evaluation system or a response scale (see Rhoades et al., 2012). The response scale used was 0 = *not at all*, 1–3 = *moderate*, 4–6 = *same*, and 7–10 = *a great deal*. The range of 0 (not at all) to 10 (a great deal) served to measure the sustainability of each milestone of each strategy. Table 9 presents the definitions of the response scale.

Figure 13: Response Scale Survey Example

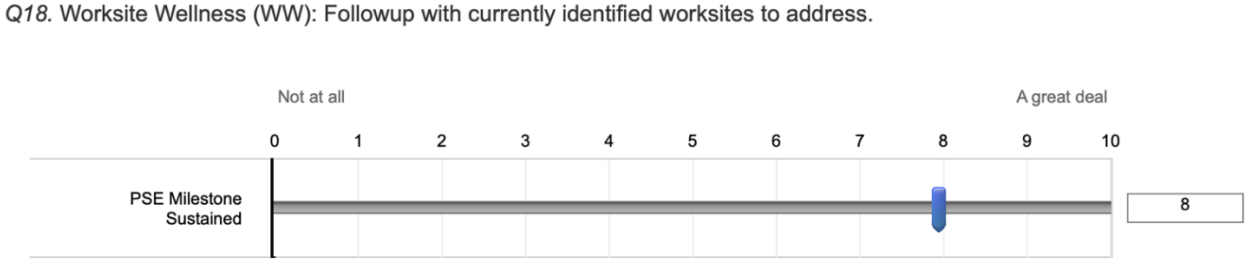


Table 9: Response Scale Definitions

Numerical response scale	Qualitative response scale	Definition
0	Not at all	No sustainability existed
1-3	Moderate	Sustainability became less than during WCH time period
4-6	Same	Sustainability remained about the same as the activity level during WCH time period
7-10	A great deal	Sustainability was achieved and activity level was enhanced compared to during the WCH time period

Each research question underwent assessment for factors and the extent to which they contributed to or obstructed sustainability, the level of sustainability achieved, and the degree to

which the opportunities and processes utilized impacted sustainability (see Scudder et al., 2017). Development and administration of the survey consisted of using Qualtrics to collect the data, manage the data per question, and analyze the data. Qualtrics is a secure, UIC-supported survey system software application. Survey administration occurred via e-mail to the LHDs for completion and submission. Appendix C contains the survey e-mail and instrument.

iv. Phase II In-depth Semistructured Interviews Data Collection and Management

An interview guide enabled the interviews to occur with a standardized but conversational (or relational dialogue) approach. The interview guide included questions and probes for the identified principal investigator, primary project manager, and coalition member specific to the research questions. The semistructured interviews focused on the multiple case study and provided insightful explanations and evidence for this research (Yin, 2014). The survey in Phase I contributed to the development of the semistructured interview guide. The interview guide was an appropriate means of interviewing all identified persons at once, in a panel format. All the interviews occurred via the Zoom platform due to the COVID-19 pandemic, with each interview recorded. Although Zoom included a transcription function, TEMI transcription services had greater accuracy and less need for editing.

A pilot of the final guide occurred before administering the interview guide as a part of this research, with minor changes made as a result. The goal of piloting was to ensure the clarity of the questions and instructions, necessity of the probes, flow, and enhancements to collect appropriate, sufficient, and essential data. The interview guide underwent adaptation after the pilot before use in this research. The had the sole purpose of improving the guide. Appendix D contains the interview guide.

v. Phase III Facilitated Discussion (Member Check) Data Collection and Management

Phase III of this study consisted of an attempted member check as a facilitated discussion to validate the findings (see Appendix E). An attempted LHD member check occurred via a Zoom recorded presentation of findings sent to all LHD information rich case participants over email. The researcher also scheduled a Zoom meeting as a space for LHD information rich case interviewees to attend and interact. The purpose of Phase III was to validate this study's results with the information-rich case LHD interviewees using the following questions:

1. Do the findings match your experiences?
2. Do you want to change anything? If yes, what and why?
3. Do you want to add anything?

As further addressed in Chapter V, no LHD participants responded to the member check for a 0% response rate of the five information-rich cases.

Although one intended purpose was to corroborate the findings of this research, the facilitated discussion was the researcher's first attempt at action research on sustainability with LHDs, beginning with the process of utilizing the research reported here to build an action agenda with LHDs and stakeholders partnered in PSE change. The facilitated discussion presented the research findings via a Zoom-recorded presentation directly to the LHD participants.

Development of an actionable postdissertation agenda is planned to test this study's findings and framework and design a sustainability infrastructure and practices framework (see Stringer, 2007). Action research is not only a way to reach the intent of this facilitated discussion to corroborate research results but also to build a positive working relationship and productive communicative style (Stinger, 2007) with LHDs. The postdissertation agenda is further discussed in Chapter V Discussion, Next Steps.

C. Analysis Plan

This study was a means to determine the sustainability of PSE strategies and understand how and why sustainability resulted (or did not result) after the funding cut. The mixed methods approach enabled details and data to emerge for each case in this multiple case study approach. Furthermore, memoing and systematic reflection occurred in the form of in-document memos and ORID (see template in Appendix E).

i. Phase I (a) Document Review

Content analysis with a matrix commenced for the document review to collect, manage, synthesize, and use the data to build the survey and interview guide. Adapted from Miles et al. (2014), the matrix was the instrument used to describe, order, and collect case-specific LHD demographic data and the constructs of the research study. The first round of data collection occurred, and then memo and systematic reflection followed by coding and insertion in the appropriate matrix to display, report, and draw on the data to build the survey and interview.

ii. Phase I (b) Survey

Administered to each LHD, the survey completion occurred with knowledge from the principal investigator and primary project manager to result in one submission per LHD. Purposeful selection of those sampled resulted in the LHDs' selection as cases in the multiple case study. The survey was the primary instrument used to capture the quantitative data; however, it also contained some qualitative open-ended questions. Qualtrics was the survey software used to collect the data, with the program appropriate to tabulate the descriptive statistics for the demographic and overarching research data, along with the questions answered with the response scale. The small, purposeful sample was a limitation of this quantitative analysis with respect to application of quantitative analyses.

iii. Phase II In-depth Semi-structured Interviews

In-depth, semistructured interviews occurred to answer the how and why of the sustainability of the PSE strategies. Essentially, interviews contribute to the survey data by presenting the stories behind the quantitative data (Patton, 2015). The survey provided the data used to inform the interview guide and narrow the number of cases for interviewing. Case selection in Phase II occurred based on case definition as sustained or adapted from December 2014 to the time of the study (see Figure 11). A second goal of the in-depth, semistructured interviews was to find evidence of the impact of the factors on sustainability, why and how the LHD processes occurred to sustain the PSE strategies in the LHDs, and why those processes contributed to sustainability in their jurisdictions. There was a need to understand why and how that factor or process did or did not impact sustainability, even for the cases with low response rates on the response scale.

All interviews were recorded, transcribed, de-identified and uploaded into MAXQDA for qualitative data analysis. After completing the case interviews using ORID and in-document memos, memo completion commenced to capture (a) contextual elements not apparent in the transcripts; (b) tones, expressions, and interactions of the interviewees during the interviews; (c) occurrences in practice or timing in relation to current situations that could have had an impact on the data collected; (d) major themes and "aha" moments from the interviewees; (e) interrelationships between constructs; (f) boundaries; and (g) differences in discussions between the roles of those interviewed connected to the data. The memos enabled the capture of analytical thinking and stimulating insights and conclusions (see Maxwell, 2013). Maintenance of the memos occurred in MAXQDA.

Application of the codes and definitions commenced with the developed code system in MAXQDA to analyze the transcripts, similarities, and differences between the cases. Coding

occurred following the preestablished code book (see Appendix A). A categorical code matrix provided understanding of the themes, similarities, and differences. Maxwell (2013) emphasized connecting strategies as an approach to understanding the data in context, an approach extremely important for this multicase research.

iv. Phase III Facilitated Discussion (Member Check)

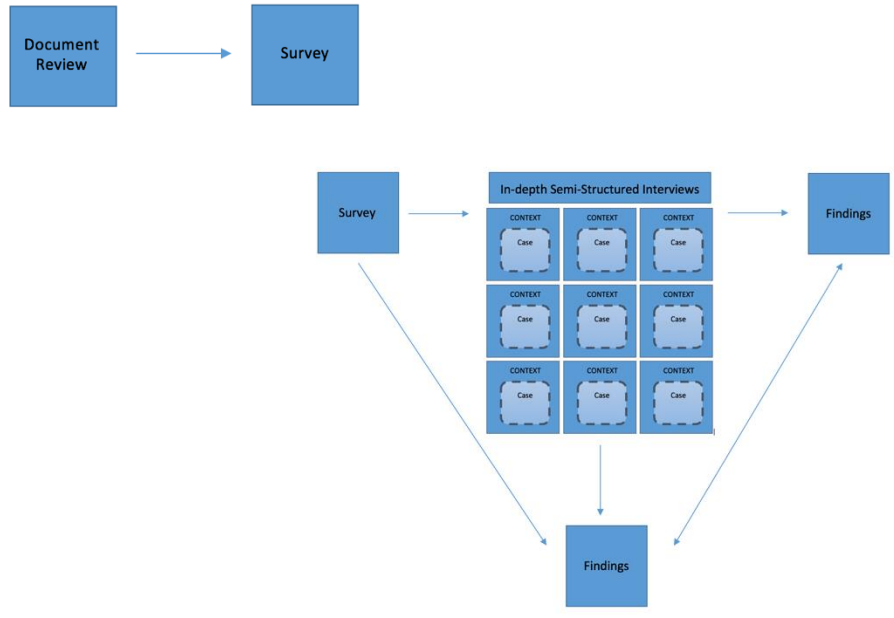
As previously discussed, a member check was planned and attempted. All LHD information rich case interviewees included in the study received the findings via e-mail. The participants had the opportunity to provide feedback or clarify interpretations. Due to the COVID-19 pandemic, the member check as a facilitated discussion occurred by e-mailing a recorded Zoom webinar to the information-rich case LHDs. Phase III yielded no responses from the LHDs, and therefore, no data was produced for analysis and triangulation.

v. Triangulation

The design of this multicase study consisted of phases, sequential procedures to overcome method limitations. The combined use of methods enabled stronger research (Patton, 2015). A mixed methods multiple case study was the design chosen to provide an integrated picture of the complex phenomenon of sustainability. Using more than one approach to collect data on the same topic enabled triangulation. Triangulation is the collection and analysis of different dimensions and perspectives of the same topic. For some cases, the quantitative data produced different results and interpretations than the qualitative data. Using triangulation to address those differences provided additional insight into the methodological approach and sustainability. Corroboration contributes to the validity of the research findings (Robson & McCartan, 2016). Between the survey and interviews, triangulation of the relationships among the factors and practices occurred to denote patterns and themes between the cases and uncover the system's interrelationships.

Figure 14 presents the method and data triangulation and shows how the sequential methodology's findings underwent triangulation with those analyzed in separation. Although the document review and survey occurred in Phase I, the document review was a critical foundation of data collection. The document review included several types of documents with the factors, stakeholders, processes, and opportunities that aligned with the research questions. Specifically, the document review's purpose was to collect data on capacity (before, during, and after) and stakeholders. The WCH applications were imperative to building unique surveys per case focused on the sustainability of PSE postfunding and verification of the capacity and stakeholder data collected from the document review. Phase I provided data for case selection and quantitative data; Phase II consisted of collecting data to answer the how and why of PSE sustainability. Phase I provided the data used to adapt the interview guide, as necessary. Triangulation between the document review and surveys helped to eliminate redundancies and close gaps. Conclusions followed the analysis of Phase I and Phase II. Collecting data with different methods facilitated cross-checking the results, enabling discussion for a single conclusion or providing support for the same conclusion.

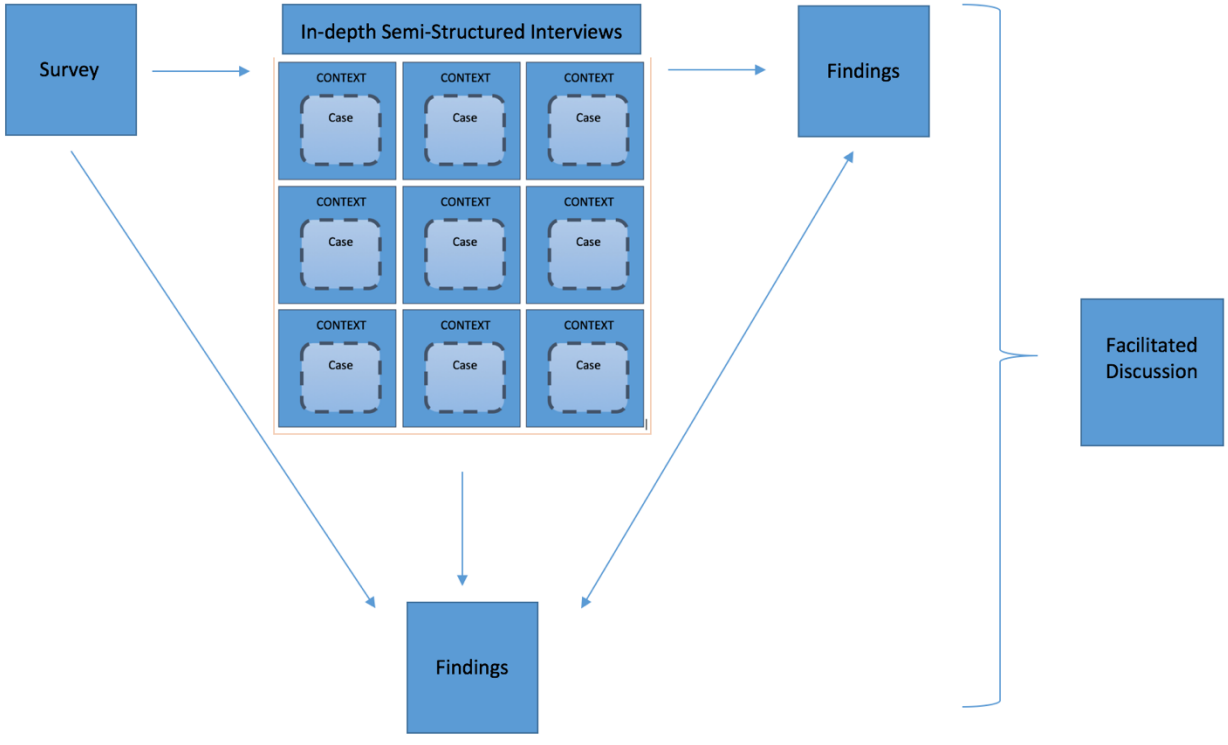
Figure 14: Method and Data Triangulation



Employing different methods sequentially was a way to understand the complex problem of sustainability from divergent perspectives. In Phase II, the participating LHDs that were information-rich cases had different demographics and capacities and, therefore, potentially different results for the sustainability of their PSE strategies.

Figure 15 presents the facilitated discussion (Phase III) of this research and postresearch action. The purpose of the facilitated discussion was to member check the cases and findings for accuracy. Phase I and II data were the information used for Phase III. The COVID-19 pandemic also presented difficulties in conducting research. Analysis between Phase I and Phase II produced the conclusions, with Phase III used to verify the conclusions. However, the member check as a facilitated discussion produced no responses and no data. Triangulation helped to increase the knowledge of each research question and strengthen the research findings with different methodologies and phases, except for with Phase III.

Figure 15: Triangulation with Facilitated Discussion (Member Check)



D. Validity

There was a need to test the methods and findings of this research to ensure the findings were representative of the measurements instituted in studying sustainability. The following tests were means to address the limitations and threats to validity.

i. Construct Validity

The purpose and importance of construct validity is to ensure that the data analysis reflects the constructs under study (Yin, 2014). This study had multiple data sources, and triangulation resulted in improved insight and corroboration of the constructs. The literature provided the constructs in the conceptual framework used for this research. Evidence chaining between the sequenced phases of the research reduced, if not eliminated, researcher bias.

ii. Internal Validity

Several tests commenced to overcome any threats to internal validity. First, there was a consistent approach to data collection used in Phase I for the document review and survey and

Phase II for the interviews. The criteria selection and decision tree for information-rich cases enabled an objective approach and the removal of bias in case selection for Phase II. All documents and interview transcripts underwent review at least twice. Using the predeveloped codebook to conduct thematic analysis helped ensure that the data measured directly related to the constructs. Explicit instructions in the codebook resulted in consistency in coding.

Additionally, a second coder corroborated the codebook's application and the research's consistency throughout the study. The second coder coded one LHD interview and one community interview, or 20% of the interviews. After the secondary coding and memoing, key adaptations occurred to improve the codebook and its application:

1. When using "PartEngage," also apply "Coal" when referring to partnerships. If only the action of engagement, "PartEngage" may be coded solely.
2. Move "PSE" under "Strat" and apply "Strat" when referring to the original WCH strategies. All are "PSE" but "PSE" can be applied when referring solely to strategies outside of WCH that meet the PSE definition.
3. When referring to policy, one can apply "Opp" and "Strat" and "PSE" depending on context
4. "Fac" and "Opp" can be utilized to demonstrate an opportunity of facilitating change.

Coding occurred in three rounds to ensure consistency and improve accuracy. Comparative analysis between the primary and secondary coder resulted in over 85%.

The mixed sources and types of data enabled the integration and corroboration of interpretation. Triangulating the data from multiple sources helped to remove assumptions or potential inferences and compare data from case to case for convergence and divergence.

iii. External Validity

The researcher conducted a planned and attempted member check as a facilitated discussion in Phase III to validate the findings. The five LHD participants received a recorded presentation of the results via e-mail and a request to answer an open-ended survey with three questions:

1. Do the findings match your experiences?
2. Do you want to change anything? If yes, what and why?
3. Do you want to add anything?

Although the researcher created a virtual meeting space (a scheduled Zoom meeting), no participants attended. Additionally, the participants did not respond to the open-ended survey, even after a few reminders. This study's goals were to create future change for the required sustainability of PSE in grantor–grantee relationships, support external and internal factors that contribute to PSE strategy sustainability, and share findings to apply to other LHDs. Therefore, a future facilitated discussion with LHD participants and peers would provide the opportunity to educate, promote, and transfer knowledge with the participants and beyond the LHDs in this study. Such a discussion will occur in postpandemic forums and is discussed further in Chapter V.

The small sample size could have resulted in limited generalizability of the results. However, the findings, perhaps dependent on LHD demographics and state-to-local infrastructure, have potential application beyond Illinois and to other types of grantees, such as nonprofit 501(c)3 entities.

E. Reliability

The use of a case study protocol during all three phases of this study was a means to minimize bias and enable replication of the research design and approach. Memos and systematic reflection following data collection (survey and interviews) occurred to document details, nuances, and any other procedural aspects necessary for data analysis. Both the memos and systematic reflection in the form of ORID contributed to explaining the data synthesis and results presented in Chapter IV. The ORID template was the tool utilized to document the factors and processes that contributed to sustainability, the impact of the factors and processed on sustainability, how the stakeholders influenced sustainability, and what, how, and why

opportunities and strategies emerged. In-document memos enabled the capture of key takeaways, "aha" points, and answers to the "so what" and "now what" questions. Any bias during the interviews due to the researcher's connection to the Illinois public health system became memos included in Chapter V. Systematic reflection occurred after the interviews to further address bias.

Another strategy for enhancing reliability was the creation of a case study database. The case study database provides an opportunity for the readers, other researchers, and parties of interest to inspect the raw data that resulted in the conclusions of this research (Yin, 2014). Box was the means of storing all the raw data files. MAXQDA was a repository of data that contained the coded interview transcripts and systematic reflection memos for retrieval and review in a retrievable, organized form. The database included all survey data, interview transcriptions, memos, and systematic reflection journal entries.

IV. Results

A. General Overview

The organization of Chapter IV is by the phases of this study. The data collected in this study provided answers to four research questions and 21 constructs. The first research question focused on the extent of the sustainability of the PSE strategies, particularly after the 2014 funding cut. The second research question focused on the factors (facilitators and barriers) and processes that affected PSE strategies' sustainability. The third question addressed the influence of community coalitions on sustainability. Finally, the fourth research question focused on the opportunities that emerged that resulted in sustainability. Chapter IV includes tables to provide summaries of the data.

B. Phase I

Phase I of this research consisted of a document review (Phase I (a)) and a survey (Phase I (b)) to answer Research Question 1 and select information-rich cases for Phase II. The primary documents were the LHD grantees' strategic plans, annual reports, CHIPs, and IPLANS. Comparison between these documents and the WCH application provided data on sustainability and enabled triangulation with the survey results. All 18 cases indicated coalition or stakeholder involvement. Per the certified local health department code[8], certified LHDs must indicate the community stakeholders or partners engaged in the community health needs assessment process. Table 10 shows the data from these primary documents that link to the sustainability of PSE strategies, including the stakeholders, health priorities, and sustainability plans. The latest IPLAN on record, retrieved from IDPH, indicated the priorities.

[8] Certified Local Health Department Code [77 Illinois Administrative Code 600]

Table 10: LHD Priorities and Sustainability Indicators

Case	Health priorities	Coalition or stakeholder involvement in IPLAN	WCH PSE strategies identified
Case A	• Improved access to services • Improved health through relationships – focusing on youth and seniors • Improved access to healthy foods and nutrition information	Yes	Yes
Case B	• Access to care • Behavioral health • Obesity • Violence	Yes	Unknown
Case C	• Affordability/insurance coverage • Overweight and obesity • Health and nutrition • Cancer • Addictive behaviors	Yes	Yes
Case D	• Adolescent health • Behavioral health • Maternal child health	Yes	Unknown
Case E	• Chronic disease: heart disease, respiratory disease, diabetes and cancer focus • Behavioral health: substance abuse focus • Obesity	Yes	Yes
Case F	• Mental health • Poor health behaviors • Drug/alcohol/tobacco use	Yes	Yes
Case G	• Decrease cardiovascular disease • Improve access to behavioral health services • Reduce cancer deaths	Yes	Yes
Case H	• Increasing community population opportunities for access to oral health care • Decreasing community population potential exposure to Lyme disease. • Connecting seniors to assets that reduce socioeconomic duress and support mental health.	Yes	No
Case I	• Obesity • Mental health • Access to care	Yes	Yes
Cases J	• Smoking in pregnant women • Drug and alcohol use in teens • Obesity (adult and child)	Yes	Yes
Cases K	• Obesity (physical activity/nutrition) • Unmanaged chronic health conditions • Sexually transmitted infections (STIs)	Yes	Yes
Case L	• Health priorities (diabetes, cardiovascular disease, obesity, cancer) • Community priorities (transportation, lack of awareness about community services, affordable housing) • Mental health priorities (mental health and substance abuse service availability, alcohol, drugs and misuse of prescription medications, depression and anxiety, and suicide)	Yes	Yes

Case	Health priorities	Coalition or stakeholder involvement in IPLAN	WCH PSE strategies identified
Case M	• Behavioral health • Access to appropriate health care for underserved and areas of high socioeconomic needs • Obesity	Yes	Yes
Case N	• Oral health • Mental health (depression/suicide) • Nutrition/physical activity/obesity • Access to care • Mental health	Yes	Yes
Case O	• Access to mental health services for adults and children • Address obesity in youth and adults • Promote healthy living • Access to medical providers for uninsured or Medicaid populations	Yes	Yes
Case P	• Community safety (infant and child mortality, crime prevention, and strengthening social ties) • Mental health/substance abuse (suicide prevention, substance abuse treatment, and prevention) • Education (educational achievement/vocational readiness, prevention-based health education/promotion across the lifespan)	Yes	Yes
Case Q	• Depression and anxiety • Cancer • Obesity	Yes	Yes
Cases R	• Access to care • Mental health • Violence • Maternal child health	Yes	No

The LHD grantees (N = 18) received the survey, which had a 39% response rate. The WCH applications had the data used to build a unique survey for each of the 18 LHDs for measurements specific to each strategy and milestone. Table 4 in Chapter III presented the pool of cases for research selection. The desired survey respondent was the WCH principal investigator or LHD administrator, and there was the opportunity to involve the primary program manager. In all information-rich cases, the LHD administrator and primary program manager or staff member completed the survey (see Table 11).

Table 11: LHD Survey Participant

Case	LHD Participant
Case A	Administrator
	Director of Nursing
Case E	Administrator
	Director of Health Services
Case J	Administrator
	Director of Nursing/Assistant Administrator
Case L	Administrator
	Program Manager
Case O	Administrator
	Program Manager

The survey results showed that all seven case respondents indicated active coalitions (see Table 12). Specifically, the participants indicated which coalitions or stakeholders remained engaged in the PSE strategies listed on their WCH applications. Additionally, the participants indicated the frequency of engagement with attending meetings, participating in activities, sharing in decision-making, and assisting in prioritization. The response scale options were never, sometimes, about half the time, most of the time, and always. In some cases, the answers to these two questions in relation to active coalition and frequency of stakeholder engagement were not complimentary toward their self-rating sustainability but showed how a stakeholder could engage in a PSE strategy but not a collaborative process. This may have been the case for the survey results for Case A, Case C, and Case H. Case A, Case C, and Case H indicated community participation as part of their IPLAN documents but with different engagement frequencies than their survey responses (see Table 10).

Table 12: Sustainability and Coalition Activity Per Phase I Research Survey

Case	Administrator (PI named on grant)	Counties served (#)	Coalition	Coalition or stakeholders active as of research survey date	Stakeholders engagement frequency
Case A	New	2	Yes	Yes	Never
Case C	Same	14	Yes	Yes	Never
Case E	New	6	Yes	Yes	Sometimes
Case H	Same	1	Yes	Yes	Never
Cases J	New	1	Yes	Yes	Often
Case L	New	1	Yes	Yes	Sometimes
Case O	New	1	Yes	Yes	Often

Via the survey, the organizations with responses provided self-rating sustainability measurements of their WCH PSE strategies, shown in median in Table 13. While the intent of the survey was for respondents to provide a measurement per each milestone of their WCH PSE strategies, only one respondent did (see further discussion in Chapter V limitations). The response scale was 0 = *not at all*, 1–3 = *moderate*, 4–6 = *same*, and 7–10 = *a great deal* (see Table 9 and Figure 13 in Chapter III). The participants self-evaluated the sustainability that occurred postfunding in 2014 to the date of the research. Of the 18 cases, the sustainability results were 61% unknown (no survey response), 17% moderate (sustainability less than during WCH), 17% a great deal (sustainability achieved and increased activity level compared to the WCH), and 5% same (sustainability remained the same as the activity level during the WCH). Of the respondents, five reported different levels of sustainability per strategy, while only two reported the same numerical measures for all strategies (or within one number). The measurement of sustainability per strategy responses provided evidence that sustainability may occur more easily with some PSE strategies than others, as indicated in Table 13. All of the survey respondents reported engaging in more than one strategy.

Table 13 visualized into a bar graph, Figure 16 presents the median self-rating sustainability for each PSE strategy for the seven case respondents. Cases E, L, and O had

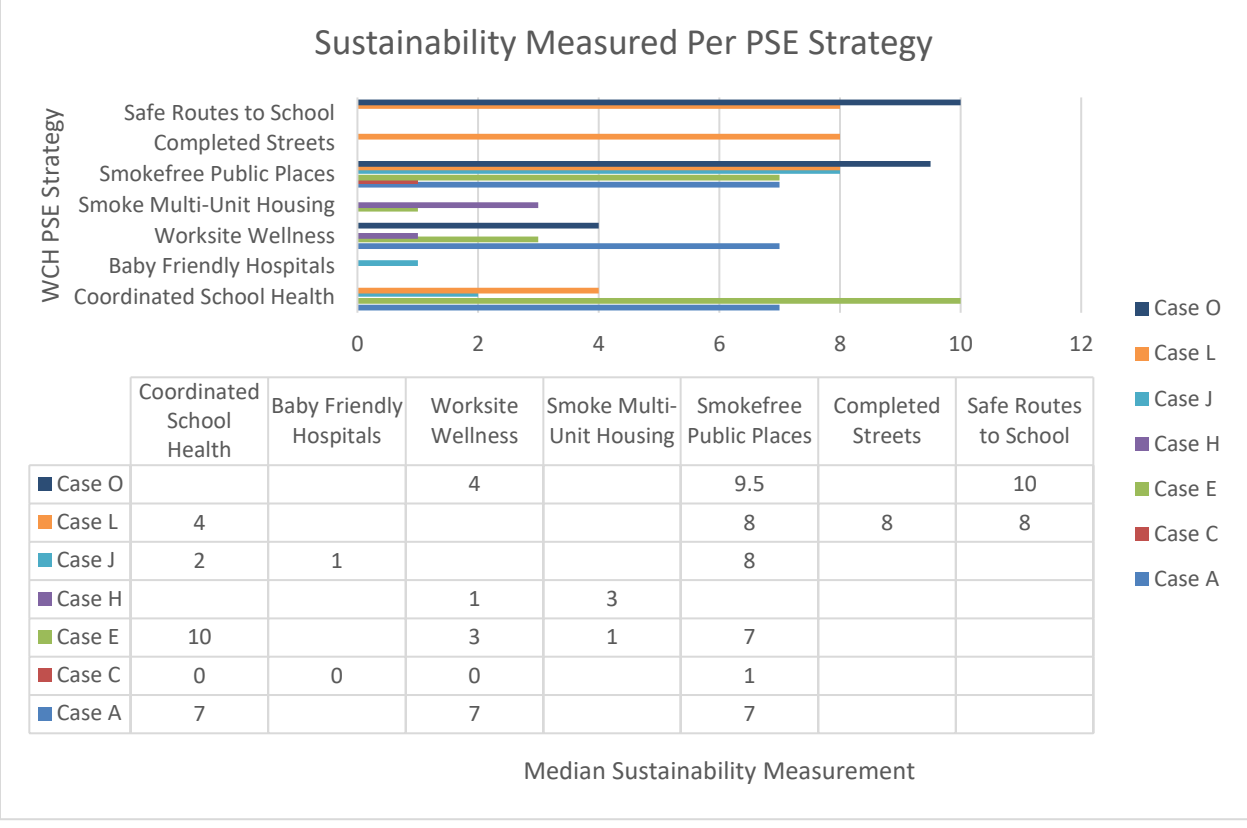
greater sustainability in safe routes to school, coordinated school health, and smoke-free public places. These results, presented further in Phase II, are based on the facilitating factors of capacity, practices institutionalized community-wide, and coalition influences. Between the strategies, differences existed among partnerships, capacity, policies, and innovation; these differences likely contributed to some PSE strategies having more sustainability than others.

Table 13: Sustainability Measured (self-rating scale: 0 not at all - 10 a great deal) per Phase I Research Survey

Case	Sustained as of research survey date	Coordinated school health	Baby friendly-hospitals	Worksite wellness	Smoke-free multi-unit housing	Smoke-free outdoor spaces	Complete streets	Safe routes to school	Evaluated sustainability based on case self-rating across all strategies
Case A	Yes	7	N/A	7	N/A	7	N/A	N/A	Same
Case C	Yes	0	0	0	N/A	1	N/A	N/A	Moderate
Case E	Yes	10	N/A	3	1	7	N/A	N/A	Same
Case H	Yes	N/A	N/A	1	3	N/A	N/A	N/A	Moderate
Case J	Yes	2	1	N/A	N/A	8	N/A	N/A	Moderate
Case L	Yes	4	N/A	N/A	N/A	8	8	8	A Great Deal
Case O	Yes	4	N/A	N/A	N/A	9.5	N/A	10	A Great Deal

Note. N/A = not a selected WCH PSE strategy

Figure 16: Sustainability Measured per PSE Strategy (Median per strategy per case))

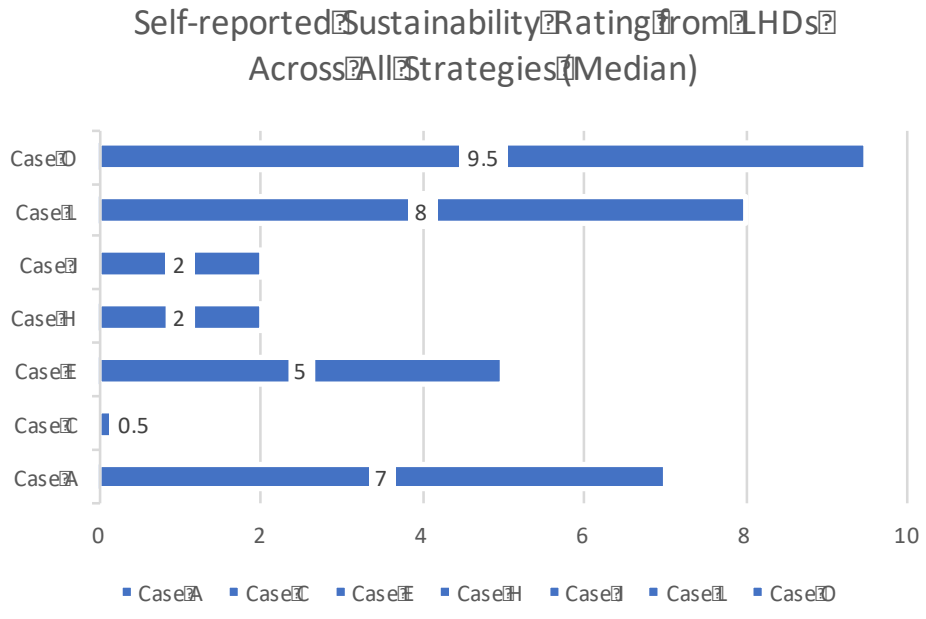


	Coordinated School Health	Baby Friendly Hospitals	Worksite Wellness	Smoke Multi-Unit Housing	Smokefree Public Places	Completed Streets	Safe Routes to School
Case O			4		9.5		10
Case L	4				8	8	8
Case J	2	1			8		
Case H			1	3			
Case E	10		3	1	7		
Case C	0	0	0		1		
Case A	7		7		7		

Figure 17 is a comparison of the sustainability responses from the Phase I survey that presents a median sustainability numerical value across strategies. Phase II further provides the support for Case L and Case O having "a great deal" of sustainability and evidence for evaluating Case E as "a great deal," as well. A key factor in the measurement for Phase I was the self-rating of sustainability in the survey by only the LHDs. Phase I also integrated data from a document review. The WCH assisted the research with context, in learning more about each case's WCH strategy selection and milestones, their coalition and stakeholders and their sustainability plan. This information was imperative to building the unique survey per case. The data from the IPLANs on coalition and partnership engagement, health priorities and identification of WCH strategies in documents helped with making more sense of survey data and with information-rich case selection. Phase II included evidence from interviews with the LHD and community coalition partners. Table 17 presents the rankings and overall case

respondent sustainability self-rating (median across cases) with all Phase I data. The case selection used the document review and survey data to identify information-rich cases, which were then ranked using the respondent sustainability self-rating (median across all cases).

Figure 17: Self-Rated Sustainability per Case (Median) Across Strategies



The survey also produced preliminary data of any changes to the strategies from their initial, realized implementations and the factors (preliminary) with an impact on sustainability. All the survey respondents demonstrated at least one strategy that was implemented as a realized strategy from what was initially proposed, but with some adaptation. A case was identified as showing "adaptability" when a strategy was modified to fit within the organizational or community structures, practices, needs, and capacity. A prevalence of adaptability of strategies emerged over unmodified strategies. Phase II contains further discussion of adaptability and strategies with the semistructured interview data. Table 14 presents the key findings of strategy adaptation across the cases and strategies as reported on the survey.

Table 14: Strategy Adaptation per Phase I Research Survey

Case	Coordinated school health	Baby friendly-hospitals	Worksite wellness	Smoke-free multi-unit housing	Smoke-free outdoor spaces	Complete streets	Safe routes to school
Case A	Adapted	N/A	Adapted	N/A	Adapted	N/A	N/A
Case C	Adapted	Adapted	Adapted	N/A	Adapted	N/A	N/A
Case E	Adapted	N/A	Adapted	Adapted	Adapted	N/A	N/A
Case H	N/A	N/A	Intended, realized	Adapted	N/A	N/A	N/A
Case J	Intended, realized	Intended, realized	N/A	N/A	Adapted	N/A	N/A
Case L	Adapted	N/A	N/A	N/A	Adapted	Adapted	Adapted
Case O	Adapted	N/A	N/A	N/A	Adapted	N/A	Adapted

Note. N/A = not a selected WCH PSE strategy

Phase I included an inquiry into the factors that impact sustainability in an open-ended question to case respondents (see Table 15). Table 15 presents the participants' responses to the survey question in their own words (see Appendix C, Survey Question 17a). The purpose of the question (What had an effect on the current state of sustainability and why?) was to find data to support or amend the draft interview guide including probing questions on the preliminary factors associated with Research Question 2. Research Question 2 was, What factors (facilitators and barriers) and processes affected sustainability of the We Choose Health strategies? Additionally, triangulation of data between the survey and cases selected for interviews occurred after Phase II. Notably, Phase II showed funding, capacity limitations, and policies as key factors in sustainability. For example, Case L indicated importance of the policies that enabled sustainability through legal means to advance the smoke-free and complete streets efforts in the local community. The Phase II data followed up on the WCH policies the cases chose to address.

The case survey respondents indicated the opportunities that emerged after the 2014 funding cut that showed innovation, policy, or other activity (see Table 16). This was a limitation, however, in Phase I of the study. Although the opportunities provided insight, the

results indicated the need for additional data in Phase II. More data on opportunities emerged during the semistructured interviews in Phase II.

Table 15: Preliminary Factors Impacting Sustainability per Phase I Research Survey

Case	Coordinated school health	baby-friendly hospitals	Worksite wellness	Smoke-free multi-unit housing	Smoke-free outdoor spaces	Complete streets	Safe routes to school
Case A	Funding cut	N/A	Increased mandated; decreased funding	N/A	Funding cut; local leaders against big government	N/A	N/A
Case C	No resources to sustain after funding cut	Lack of funding	Lack of funding	N/A	Lack of funding	N/A	N/A
Case E		N/A	Funding			N/A	N/A
Case H	N/A	N/A	Lack of funding; loss of dedicated staff	Lack of staff	N/A	N/A	N/A
Case J	Resource limitations	Resource limitations	N/A	N/A	Resources; funding	N/A	N/A
Case L	Funding ending	N/A	N/A	N/A	Policies still in place	Policies still in place	Maintained most
Case O	Lack of funding; decrease in staff; resistance to healthy options at work	N/A	N/A	N/A	Funding cuts, state laws, and the public embraced going smoke-free	N/A	SRTS plans continue for two schools per year without funding

Note. N/A = not a selected WCH PSE strategy

Table 16: Opportunities Reported in Phase I Research Survey

Case	Opportunity
Case A	"There hasn't been any which we were able to apply for."
Case C	"None"
Case E	[incomplete]
Case H	"Nothing that I am aware of."
Case J	"We are working more with our local hospital foundation and the Community Health Coalition to assist in the community meeting its Community Health Improvement Plan initiatives."
Case L	"Training and support for programs/policies and some additional funding."
Case O	"Coalition continues with Safe Routes to Schools, and the coalition is still a strong partner and facilitator and continues to organize partners with every community health assessment."

Criteria for selecting cases for interviewing in Phase II was applied to data integrated from the document review and survey data analysis in Phase I. The data collected for coalition and partnership engagement in relation to the strategies in the IPLANS and surveys showed that all the cases had coalitions (partnerships) and illustrated partnership engagement actions. IDPH requires IPLANs for LHDs to remain certified. The IPLANS require community engagement and assessment of community relations. The data helped qualify beyond the mere fact of the existence of coalitions (e.g., in planning documents) through respondents reporting on the frequency of engagement and provided validation of coalition activity and meaningful partnership engagement in each information-rich case. The survey results showed the respondents' evaluations of adaptability, facilitators, and opportunities. The extent of sustainability was ranked based on the median self-rated sustainability across all the strategies that the cases reported.

Only the case respondents who completed the survey and provided their self-rated sustainability for each PSE strategy were eligible for case selection; that was seven (39%) of the cases surveyed. Figure 11 shows the means to conduct the final case selection, of the cases deemed to be the most information-rich, individually and as a group (permitting useful comparison/contrast) as shown in Table 17. Since all the cases sustained, the selection criteria

included analysis of the reported coalition involvement, facilitators, adaptability, and identified opportunities from the survey data. Furthermore, all these cases responded to the survey question about the identification of opportunities for sustaining PSE change, whether negatively or positively. However, assessing opportunities (Research Question 4) was not possible solely from the survey data questions pertaining to opportunities (see Appendix C survey question 20). Only four respondents provided information on specific identified opportunities, including one respondent (Case A) apparently interpreting the question as solely referring to funding opportunities (and specifically said there weren't any). Sustainability was not a significant factor in all strategies but overall these cases represented cases that did show some sustainability versus those that did not, a bias further addressed in Chapter V's limitations. Finally, the selection of the top five cases used the sustainability self-rating (median across all strategies), but they represented a range from greater to lesser sustainability, permitting some contrasts between the cases (e.g. they were not all "exemplary" or information-rich to the same degree).

Table 17 presents the results per each selection criterion. The cases selected for data collection via semistructured interviews in Phase II were Case A, Case E, Case J, Case L, and Case O. Case C and Case H rated their strategies as low sustainability and also said there were no opportunities. Therefore, Cases C and H proved to be information-poor with little to explore. As a result, it was judged that the cases selected (Cases A, E, J, L and O) could provide richer data for exploration in interview.

Table 17: Information-Rich Case Selection Summary (highlighted cases were selected for Phase II interviews)

Case	Sustained	Sustainability ranking 1=high, 7=low based on self-rating	Coalition or stakeholder involvement	Facilitators	Adaptability	Identified Opportunities for Sustainability	Information-rich Case
Case A	Yes	4	Yes	Yes	Yes	No	Yes
Case C	Yes	7	Yes	Yes	Yes	No	No
Case E	Yes	3	Yes	Yes	Yes	No	Yes
Case H	Yes	6	Yes	Yes	Yes	No	No
Case J	Yes	5	Yes	Yes	Yes	Yes	Yes
Case L	Yes	2	Yes	Yes	Yes	Yes	Yes
Case O	Yes	1	Yes	Yes	Yes	Yes	Yes

C. Phase II

Based on the evaluated sustainability (see Table 11), Phase II explored the factors and processes with an effect on sustainability, including the influence of coalitions on sustainability and the opportunities that resulted in sustainability for the five information-rich cases. Ten semistructured interviews occurred between August 28, 2020, and September 30, 2020, each lasting an average of 45 minutes. Two interviews occurred per each case: one with the LHD and one with community organizations. All but two interviews included a two-person panel. The community participants for the community interview were individuals provided by the LHDs in the survey response. Table 19 shows the composition of the participants for the semistructured interviews. There are general titles used to maintain confidentiality.

Table 18: Semistructured Interview Participants

Case	LHD participants	Community participants
Case A	Administrator Director of Nursing	Director of Coalition
Case E	Administrator Director of Health Services	Director of Center (Lead Member of Coalition) Assistant Director of Health care Center (Lead Member of Coalition)
Case J	Administrator Director of Nursing/Assistant Administrator	Director of Community Health Collaborative (Coalition)
Case L	Administrator Program Manager	Director of School Health Assistant Director of Department of Transportation
Case O	Administrator Program Manager	Director of Coalition Director of Coalition

The remaining part of this section presents the factors of patterns and relationships in aggregate form to answer Research Questions 2, 3, and 4. The presentation of findings includes both within case and across case comparisons. Code frequencies showed the codes present in all 10 semistructured interviews. A code matrix was a means to analyze the frequency of assigned codes. Co-occurrence queries in MAXQDA facilitated understanding, eliciting patterns in the data and relationships between codes.

A code matrix was produced in MAXQDA to determine the quantity of each code in each respective interview document. The nodes indicated the frequency of code assignment. Appendix G includes both the node and numerical visual displays of the code matrix. The matrix also enabled comparison of the codes between the LHD and community interviews of each case and across the cases. In sum, there were 1,268 codes assigned across the 10 interviews. The most frequent codes (in order) were: partner engagement ("PartEngag"), 120; sustainability ("Sustn"), 94; coalition ("Coal"), 94; and facilitator ("Fac"), 88. The Case E community interview had the highest frequency of assigned codes, followed by the Case O community interview and Case L LHD interview, respectively. The frequency of codes indicates the greater impact of a particular code (factor or process) on sustainability of PSE strategies. The number of constructs and resulting codes assigned also demonstrates the complexity sustaining PSE strategies, later discussed in Chapter V.

Research Question 1: To What Extent Have the WCH PSE strategies been sustained?

Phase II focused on Research Questions 2, 3, and 4 and included sustainability ("Sustn") as a construct for measurement. The identification of sustainability in Phase II provided support for the sustainability measurements in Phase I. Sustainability was a component applied when identifying the continuation as initiated or adaptation of PSE strategies (see Appendix F). As a result, sustainability was coded 94 times across the 10 interviews and in all cases. PSE, strategy and emergent strategy were also constructs for measurements and were coded in an effort to identify examples of activities being sustained. Discussing the findings of what was being sustained helped further triangulate with Phase I in measuring the extent of sustainability for each case and strengthened the sustainability measurement survey data from case respondents in Phase I.

Findings of PSE Activities Sustained: All cases provided evidence and examples of what activities were being sustained, which enabled Phase II to support Phase I sustainability evaluation.

Case A's measured sustainability was "a great deal" (median measurement of 7) for their PSE strategies of school coordinated school health, worksite wellness, and smokefree outdoor places in Phase I and reported each strategy as currently operating in an adapted state. Case A interviewees described the continued sustainability of PSE vision, promotion and cultured health across their community. Specifically, in partnership with the Tri-County Opportunity Council Food Pantry, farmers' markets became and remain a primary vehicle in continuing healthy eating and nutrition activities and in connecting clients in other program areas, like with the Women, Infants and Children (WIC) program. The interview data demonstrate adapted practices, continued promotion and education, and a shift to community-level change to sustain strategies for improved nutrition. Two of the three PSE strategies – coordinated school health and worksite wellness – connected to examples provided during the interviews. The interviewees commented on what was currently being sustained:

> The continuing part [of WCH that] we continue to promote [is] the farmer's markets that we're starting within the grants and different locations. We also ended up by sending things or people or clients down to a farmer's market. The[y] were coming through what, as far as new that part of it too more and more healthy eating with fresh fruits and mushrooms. (Case A_LHD)

> Just dive in. Yeah. I, you know, [we] oversee the WIC program, so that's they got vouchers through a farmer's market grant part of the web, but we did direct them to that, you know, through our local farmer's market. (Case A_LHD)

> …so I can't really think of a specific example for you other than how we work together, to be able to share the information within the community. Within, you know, I'm thinking through my work within the Bureau County food pantry, how we were able to provide the information to a broader audience….(A_Comm)

Case E's evaluated sustainability was "same" (median measurement of 5) for their PSE strategies of coordinated school health, worksite wellness, smokefree multi-unit housing and

smokefree public places in Phase I. Case E sustained activities of PSE strategies to promote health within communities. Some examples included policy changes for smoke-free sites, additional baby friendly workplaces with new grant funding, dissemination of smokefree signage with tobacco free communities, maintenance of lists on websites for walking paths and opportunities for free physical activity, development of toolkits and connection with food pantries and farmers' markets for healthier eating and choices, worksite wellness materials in working with a local company, and healthier vending choices at schools. Case E did not directly receive WCH funding for baby friendly hospitals but showcased adoption of activities in adopting the baby friendly PSE strategy. The interviewees stated several examples of the described activities being sustained:

> …your coordinated school health continued because we were trained in coordinated school health then we received grant funding for that project. And then we also received the tobacco grant that sort of coincided with your smoke free public places with some of those initiatives. (Case E_LHD)

> …So with the walking paths [redacted] has continued to help keep the lists up to date. And that is available on the [redacted] website of the walking paths or places for free physical activity in [redacted] Illinois that is still available. And, and we periodically update that through the school health efforts for vending was an issue. So our current role is we have created vending materials…that is used in the catch school health efforts. (Case E_Comm)

> …smoke-free public places. So we continue to also have the signage available that was used during we choose health and updates, you know, distribute that as needed to sites that need it have worked with some of the health departments with our Illinois tobacco free communities funds to help as they're identifying places we help with signage…(Case E_Comm)

> So I think one is the snap double value [with farmers' markets] that wasn't something that had really occurred much until after we choose health ended…Another PSE change, I think, is the work with our food pantry. So we previously, you know, we knew we had all these food pantries, but we didn't have a good concerted effort that we, as different agencies and coalitions were all working with them. So we've since had [redacted] someone from university of Illinois extension join on board. And she is really leading that and trying to do what we can to help the food pantries as a region. So I would think that is kind of one thing that we're, we haven't really created in policy change, but we've created some systems change where they're supporting each other more agencies are supporting them more, we've got some tool kits, so they can more easily fundraise, just some other things like that. (Case E_Comm)

Case J's measured sustainability was "moderate" (median measurement of 2) for their PSE strategies of coordinated school health, baby friendly hospitals, and smokefree outdoor spaces in Phase I. Outreach and educational programming were integrated and helped to sustain PSE strategies in Case J. WCH laid a foundation for enhanced school health conducting research, bringing more resources to schools, purchasing curriculum and equipment, etc. Expanding efforts to the greater community was demonstrated through an outdoor movie event in community parks with healthier concession stand options (e.g., grapes, apples, and cheese sticks). The school health index grew to include school staff for worksite wellness, a strategy not initially part of their efforts, and involved activities like free workouts weekly and a health fair. Wellness policies were changed which improved health in schools and expanded projects with the cafeteria provided healthier choices. Signage dissemination continued to address smokefree public places, educated the public and helped with enforcement. Case J championed activities and created a culture of community health in sustaining the activities to support PSE strategies. Several key statements from interviewees supported sustainability of PSE strategies in Case J:

> …one of the strategies was smoke-free public places…I remember we had a couple of parks that became designated smoke-free and then since then we were able to probably around 2015 or 2016 get the County to approve an ordinance to make one of our, two of our parks. Smoke-Free yes… (Case J_LHD)

> …after the funding was over for, we choose health, we, as the foundation took on the catch program, the coordinated approach to child health. So that was one of the initiatives of we choose health [that] started…had worked with a couple of schools. I can tell you at this point, we have every school in [redacted] County, that's a catch school. So there is one caveat which is [redacted] elementary school, the rest of it, including even the parochial schools and including daycare centers and which includes headstart Christian childcare, we've taken the catch program to all of those schools now. So found it because of the we choose health program and that we wanted him to address obesity in [redacted] County. And it was when the we choose health program, provided the funding for the first two schools that we decided to continue that on within the County. (Case J_Comm)

> …2016, we were able to be a resource for those schools to get their wellness policies updated, and then be part of those wellness policy teams on the schools and have good conversation around what are some policies we can update and change to, you know, have health in the policy, no matter what moving forward. And so there that have made

> changes to their policies regarding allowing students to have access to water bottles all day, which was something that, you know, teachers can't stand kids playing with water bottles at their desk all day. And so they just say no, but if it's in the policy, they have the right to have water bottle there all day long. And to promote that and recognize that one of the things that we've been able to do again, leveraging our resources as we've purchased some of those water fountain, water bottle, filler stations in the schools, so that it encourages kids to fill their bottles up throughout the day. (Case J_Comm)

Case L's measured sustainability was "a great deal" (median measurement of 8) for coordinated school health, smokefree public spaces, complete streets and safe routes to school in Phase I. Case L expanded coordinated school health adopting curriculum, capacity-building with teachers in schools, and creating a wellness portion with a new grant. Smokefree outdoor public spaces were supported and enforced through policies and action. Safe routes to school and complete streets gained new funding, policies, focus and promotion following WCH. Identified sustainability of PSE strategies was supported in several interviewees' statements:

> So a lot of our smoke-free outdoor space policies are still in place. But we, you know, once they put those policies in place, we kind of just left that for them to deal with the schools…And then we did implement the catch program, which I know some of the schools are doing still, but a lot of them dropped it once the funding went away. So that's where we stand though with the other strategies that we implemented that was, they weren't as successful as coordinated school health and smoke-free so I don't think a lot of those were sustained…Well, some of the, so priority-wise the ones that had implemented actual policies. Those were self-sufficient pretty much, we didn't have to provide as much support to those, but the schools are pretty heavy. Like they needed more support after the funding ended. So we put those at the top of the list. (Case L_LHD)

> So in the school communities, one school in particular, one of my eight has sustained the entire program that was set forth during the, which was our grant in the capacity of the catch program. And so they use those elements of that program. The longest team meets monthly [and] teachers are teaching components of the curriculum from our catch [program]. So one school, for sure, all the schools may be in a smaller capacity through the teachers doing movement breaks. And so the educational piece that was provided to them during that time, some of that is I seen it as being sustained brain breaks movement nutrition, and, and I will also say the school lunch program at that time, they set up little kiosks of fresh vegetables and fruits. And that program aside from the pandemic has continued. So they brought those as part of the grant. They did buy those little salad bars, things, and kids are offered fresh fruits and vegetables. So those both movement and nutrition really was positively impacted. Now that I think about it. (Case L_Comm)

> Subsequently as well [the] health department worked with cities to incorporate or to pass complete streets resolutions in their individual cities…We have a grant program that we administer here where we allocate about $18 million in federal transportation dollars for

> projects at the local level. And we actually, as part of that grant gave applicants additional points if they have a complete streets policy in place today. And so a lot of the effort that was done back with the, we choose health grant actually led to communities getting federal money for projects that include complete streets components. So that's sort of, you know, it's nice to look back eight years and say, you know, this came from that effort. (Case L_Comm)

Case O's measured sustainability was "a great deal" (median measurement of 9.5) for coordinated school health, smokefree outdoor spaces and safe routes to school in Phase I. Interviews explained both sustainability and advancement of PSE strategies in their community and beyond. Case O promoted healthy lifestyles through continued support of built environment strategies, new grant funding, research around topics like food deserts, enhanced connection to the public via social media, and policy implementation. Several comments throughout the interviews provided support for the actual activities being sustained and extent of sustainability:

> I just thought of something. So [redacted] health initiative, you know, being this umbrella organization, they did get a CDC grant a couple of years ago, which is called the pitch grant and that had a lot of funding associated with it for three years. So they did find a substantial grant that helped do a lot more activities that paid for a lot of those safe routes to school plans. It pays for a lot of healthy lifestyle eating advertisement. They had a whole campaign around healthy eating in the school. So they did leverage that whole grant out of the initial work. (Case O_LHD)

> So what I think we had to do as is look at the elements that were conducted with that funding and those that were institutionalized that are already part of one of the partner organizations…and one of those partner organizations by state made it possible to sustain certain elements of it. And, and, and because bi state role in the community is regional planning, especially related to transportation. And we do a lot of recreation planning with assistance, but there [was] never government to assist them with certain activities, although they can do that on their own. We're very well aware of it help the communication continue to flow between the participants that because of that role of my state, that's been our role since we did this in like 1966, it really was easy to continue communication and, and certainly report on kinds of activities that reporting ease of pedestrian movement, ease of trail movement continue a chance to get funding for maintaining or canceling improving trails…A special project with that money and then having them be able to maintain it. So for instance, trail information on a website can be maintained mapped trail data that is already part of our role our member. (Case O_Comm)

Sustainability ("Sust" code) occurred most frequently with Case J, Case E, and Case O. Triangulation with the survey results for sustainability showed that the interview-based evidence

from Phase II provided support for the survey findings. Cases A, E, L, and O indicated sustainability measurement as "a great deal" and rated sustainability higher than the in Case J.

Table 20 presents a summary of the findings. Each case, especially from the community interviews, provided evidence of the sustainability of PSE strategies. The evaluated sustainability from the survey compared to coded sustainability resulted in the same conclusion for Case E, Case L, and Case O. Case J had stronger evaluated sustainability from Phase II based on the interview data. Stronger evaluated sustainability likely occurred due to the hospital (as opposed to the LHD, whose representative filled out the survey) having responsibility for the PSE strategies and funding after the 2014 funding cut. However, Case A resulted in less evaluated sustainability from Phase II based on interview data. The contrast of Case A and inclusion in this study was important to understand how a moderately evaluated case sustained differently than cases evaluated with greater sustainability. This likely occurred due to prioritization, integration into programming and focused effort on healthy eating and nutrition. No mention of smokefree public places existed in either interview, except in mentioning smoking as an indicator in their community health needs assessment. **Therefore, Case J, as well as Case E, Case L, and Case O, had "a great deal" of sustainability, and Case A had "moderate" sustainability**. The interview findings from Phase II provided more and richer evidence than the LHD-only survey.

Table 19: Triangulation of Phase I and Phase II Sustainability Data for Cases

Case	Coordi-nated school health	Baby friendly hospitals	Worksite wellness	Smoke-free multi-unit housing	Smoke-free outdoor spaces	Complete streets	Safe routes to school	Evaluated "Sustn" after Phase I (b)	"Sustn" coded (94)	Evaluated "Sustn" after Phase II (interviews)
Case A	7	N/A	7	N/A	7	N/A	N/A	A Great Deal	9% (9)	Moderate
Case E	10	N/A	3	1	7	N/A	N/A	Same	22% (21)	A Great Deal
Case J	2	1	N/A	N/A	8	N/A	N/A	Moderate	30% (28)	A Great Deal
Case L	4	N/A	N/A	N/A	8	8	8	A Great Deal	18% (17)	A Great Deal
Case O	4	N/A	N/A	N/A	9.5	N/A	10	A Great Deal	20% (19)	A Great Deal

Note. N/A = not selected as strategy; denominator = 94 in % calculations; 94 sustainability ("Sustn") coded segments

Research Question 2: What factors (facilitators and barriers) and processes affected the sustainability of We Choose Health strategies?

This section will discuss factors affecting sustainability and explain commonalities among all the cases. Then, identified with sub-sections, the factors and findings will be categorized as facilitators, barriers or processes per case and across the cases and will further describe how they affected sustainability of WCH strategies.

Factors in Sustainability: the co-occurrence codes most frequently coded with sustainability were partnership engagement, coalition and strategy ("Strat"), and community capacity ("CommCap"). These codes and their frequency interfacing with sustainability represents the factors that mostly impact and contributed to sustainability. Appendix H contains a summary of the other factors. While Research Question 1 was primarily answered through the measurement of sustainability and identification of activities sustained, the following provides a summary of factors (coded for and identified in the literature review, see Chapter 2) affecting sustainability for each case. The quotes that follow discuss factors affecting sustainability in

each case and show the quality of the data collected in the community-based, semistructured interviews. The quotes also show evidence of the interrelation of coalition, partnership engagement, strategy, and community capacity for sustainability, which shape the definitional components of sustainability and are further explored below.

Case A sustained the vision of WCH by integrating programming with separately funded programs, such as Women, Infants, and Children (WIC). Furthermore, the community needs assessment and improvement planning process enabled connectivity to partnerships and community initiatives, such as farmers' markets, which provided additional resources for sustainability. Case A described LHD and community collaboration to leverage strained resources to sustain PSE strategies:

> So, last year for the farmers, [market], [there was] a huge bulletin board display, and that was initiated [funded] by WIC, but it still is, definitely, [a] visual reminder for everyone [who] walks in about healthy eating, and we put recipes up on hard-to-find certain foods. Did [other] people talk about piggybacking, like the importance of WIC in it? (Case A_LHD)

Case E emerged as case due to a practice-based model for sustaining PSE programming. In the WCH planning, the PSE strategies were means to meet the mission of the coalition. Case E demonstrated an alignment of decision-making, adaptability, resource leveraging, and partnership engagement. Case E sustained PSE strategies in the mission; adapted; improved the coalition structure, system, and community infrastructure; and remained evidence-based in shared decision-making.

> For a lot of us, I think [that] the work fits our mission. I mean, it was helping us fulfill our mission. I mean, certainly for the med school, that's the service to others and what we want to do to engage our communities. And so, all the work fit within our mission. Building on some practices and some programming, maybe you'd already established frameworks of what you work in. (Case E_Comm)

Case J exemplified community cooperation in shifting lead ownership in correlation with funding while maintaining a collaborative coalition and community network. The coalition members continued to immerse PSE strategies into community

culture. Case J described how the efforts expanded further than the activities planned and executed in WCH:

> Luckily, because we were able to pick up the ball from a funding perspective, it's only gotten better every year, honestly for us, which isn't probably typical, but it's because the baton was passed. So, we were able to really create this culture within the county that required, [well], not required, but certainly encouraged people [and] schools to continue their efforts and expand on them. We've come a long way since the funding stopped. Great. Like I said, just the fact that we were able to do that cafeteria project last year. All those things never would have happened if we hadn't started with the relationship with the schools through the catch program because up until then, it was a constant struggle. And I wasn't around that long, but from 2012 to probably 2014, it was just all about trying to create those relationships and partnerships with the school. And then [redacted] past catch and expands pass anything. We choose health. It turns into substance use initiatives and resources for mental health for kids. Like, it just has exploded to so many other things. (Case J_Comm)

Case L sustained and expanded on WCH strategies, identifying new opportunities with new, different community partners. WCH resulted in a changed culture of health across the community and within the organizations of the coalition. Sustaining relationships, cultures, and practices with the coalition across the community consisted of leveraging resources, using evidence for shared decision-making, adapting, and planning for pursuing PSE far into the future.

> For us, you know, again, we're concerned with walking and biking primarily, and at the same time that [the WCH] grant was going on, we were doing our 20, 40, long-range transportation plan for the entire county. And we worked closely with the health department to build into the plan document strategies [and] goals related to walking and biking. And so, I think it was nice that that effort was going on at the same time [that] our effort was going on. We could leverage the Health Department's skills and expertise and build that into our long-range plan. Subsequently, as well, the Health Department worked with cities to incorporate or to pass complete streets resolutions in their individual cities. And we actually ended up [with] a grant. We have a grant program that we administer here, where we allocate about $18 million in federal transportation dollars for projects at the local level. And actually, as part of that grant, [we] give applicants additional points if they have a complete streets policy in place today. And so, a lot of the effort that was done back with the [WCH] grant actually led to communities getting federal money for projects that include complete streets components. So that's sort of nice to look back 8 years and say [that] this came from that effort. (Case L_Comm)

Case O showed the importance of strategic alignment in the community when assuming new grant programming and funding. The sustainability of PSE strategies was not a question for Case O. Case O, like Case E, showed adaptability in the framework, structure, and practice of supporting PSE strategies. Integrating priorities of IPLAN and community needs contributed to the sustainability of the strategies beyond the funding cut.

> Because I think the way things got implemented was that again, it was part of the work already or part [of] additional activities that were funded through grants, that there was still some work that [was] part of it [was] the work that they normally would do. And it allowed for it, the team implemented [it] after the funding was gone. (Case O_Comm)

In all cases, evidence of sustainability existed, and the findings supported the self-reported sustainability in Phase I (research question 1). Furthermore, coalition, partnership engagement and community capacity emerged as key, common factors. Their interrelatedness with strategy resulted in actions (later discussed under research question 2 processes) that together positively impacted and enabled sustainability of PSE change efforts post-WCH funding in all five cases.

Facilitators, Barriers and Processes Affecting Sustainability of WCH strategies: Phase I provided preliminary insight of the factors with an effect on sustainability. (See Table 13 for summaries per case in relation to each PSE strategy.). Research question 2 further explored factors that facilitated sustainability, promoted action toward sustainability (practices and processes) and inhibited sustainability (barriers). This section summarizes the overall findings and themes of Research Question 2 (see Table 21 through case summaries of facilitators, barriers, and processes impacting sustainability). Then this section also presents further explanation of constructs categorized as facilitators, including emergent constructs (inductively arrived at from the data) relating to facilitators, barriers and processes (see Tables 22-25). The code relations matrix in Appendix H shows the co-occurrence of these factors and their frequencies.

Table 21 presents a case comparison summary of facilitators, barriers, existing programming and processes. The findings (row 2) represent how the codes' definitions emerged in the data. This display in Table 21 shows patterns across the cases, and this section gives further explanation on the emerged themes across the cases, or the findings that were common among all the cases.

Table 20: Research Question 2 Case Comparison Summary of Facilitators, Practices and Process and Barriers

Codes	Leadership	Partnership Engagement	Coalition		Organizational Capacity	Community Capacity	Capacity building	Programming	Sustainability Planning	Data and Evidence	Opportunity	Adaptability
Findings	Championship, advocacy, collaboration, buying-in, strategist in facilitating and interconnecting	Collaboration within coalition	Relationships with new and existing partners, structure	Structure, framework, ownership	Funding, skills and resources	Leveraged resources across community and within coalition member organizations, new funding opportunities	Building leadership, training skills, identifying resources	Linkage to and integration of existing programming	Strategic planning and community health improvement planning (IPLAN)	Community health needs assessment	Policy change to support PSE strategies, innovation (e.g., sub-awards, models)	Changes to strategies to meet the needs of the community
Case A	XX	XXX	XX		XX	XX	X	XX	XXX	XX	X	XX
Case E	X	XX	XXX	XXX	XX	XXX	XX	XXX	XXX	X	XX	XXX
Case J	XXX	XX	XXX	X	XXX	XXX		XX	XXXX	XXX	X	XX
Case L	X	XX	XX	XX	XX	XXXX	XXX	XX	XXX	XX	XXX	XX
Case O	XX	XXX	XXX	XX	XX	XXXX		XX	XXX	XXX	XX	XX

Note. X = existing programming (Table 22), X = facilitators (Table 23), X = barriers (Table 24), X = practices and processes (Table 25)
Note. Sustainability Planning in Table 21is a different code than Sustainability discussed under Barriers across all cases.

FACILITATORS: In Phase II, facilitator was the code used to identify the factors that contributed to sustainability and appeared 88 times across all interviews. The frequency yielded support for knowledge that facilitators existed that enabled the extent of sustainability measured in Research Question 1. Facilitator co-occurrence with other codes happened 338 times. Co-occurrence of the codes most frequently coded with facilitator were partnership engagement, coalition ("Coal"), sustainability, community capacity ("CommCap"), and leadership ("Lead"). The co-occurrence of factors and their frequencies helped the research draw on patterns and themes found across all the cases.

Leadership: The researcher's codebook defined leadership as the ability to guide and direct strategy, apply systems thinking and collaborate across levels and within the community and to serve as a chief strategist in the organization and inter-organizationally in the community. The case respondents indicated the importance of leadership in the programs, grants, and coalitions as a sustainability facilitator. Of the case respondents, 60% referred directly to the term leadership; however, all the case respondents referenced leadership indirectly. The main theme that emerged for leadership was found as championship, advocacy and promotion of PSE strategies in the community at different levels in partnering organizations in all five cases. For example, the LHD in Case L commented on health educators as champions for building relationships, making connections and implementing the strategies and elected officials as champions for their support of the programs in the community:

> Championship on the program? I think the fact that some of this was an easy sell for people because like, for example, the schools were looking for that kind of support and to pull that together. So a lot of my health educators were already working in the schools doing like injury prevention and stuff. So they would [have] those existing relationships with them was really helpful for us to get the strategies moving pretty quickly. The tough part was the municipalities because we hadn't worked so close with them, but then sometimes having a champion within those municipalities, like a mayor who was really supportive, would go to his other council of mayors and then talk about these programs and support them. So that was helpful. (Case L_LHD)

Another example is in Case O where leadership was seen at different levels of the staff and team in different organizations:

> one of the other things that naturally happens through our community collaborative is that organizations involve other members of their staff in the work. You know, so at the, at the board level, we have an agreement say that we'll work on nutrition and physical activity together. And then we'll start to create a team like the be [redacted] coalition represents, and organizations will ask their staff members to participate and to help to, to further that work. So the project teams create an opportunity for other members of the organizations that we work with to also be involved in helping to lead community work and play and important role in, in doing collaborative work together. And then that also kind of helps to strengthen connections at multiple levels across organizations, because people who are in charge of certain programs or projects will get to know each other and have that opportunity to work across sectors as well. So I'm, you know, when you, when you say leadership, I think there's positional leadership and, you know, in terms of the, the titles and organizations that people represent, which is absolutely critical to, to have buy-in and support from, but then there's also this sense of being able to, you know, kind of create leadership across the community for furthering work, by having engagement from multiple levels of staff. (Case O_Comm)

Case A commented on how championship promoted PSE approach and helped shape an integrated health approach in the community:

> Championship? I want to say more of her trying to promote all, everything aspires for the community and that, that was not only through, you know, to help even in what they do with this program, but also through substance abuse tobacco, it was done with a mental health plan to promote all those things because they all kind of tie together. Yeah, no, you don't eat need right. You do not have mental health episodes of that is what it is. It didn't have mental health issues you may not eat. Right. So they all kind of tie together as far as a, as a healthy environment for anyone. (Case A_LHD)

Sustaining PSE strategies across communities necessitated champions as commented on by Case J interviewee:

> Because it's so hard for my brain not to go when I think sustainability immediately try to think about like, how are you going to keep paying this? So people keep doing it. And that's really not what it's about at the end of the day. It's about the people and did you motivate the people to keep this up? Did you someone to champion this moving forward, even if the funding goes away? I think that we've done that as a matter of fact, this year, because of COVID we had actually started last year giving our catch champions a stipend through the school, felt like they were doing work above and beyond just like a sponsor of the speech team or, you know, whatever it is. And so we thought we need them and we need them to be bought in, and we need them to be committed to completing the school health index and creating an action plan. (Case J_Comm)

To support and champion PSE strategies, another theme was the importance of leadership in valuing collaboration and buying into PSE strategies. This proved significant in culturing the importance and long-term commitment of PSE strategies in the community.

> And I would add that the leadership, it definitely needs the leaders of the organizations to buy-in, if you will and recognize the value of that collaboration. And so, as I mentioned what cities officials and other organizations have had to recognize that by quite a long time, because we had to work together because of the way were physically set up….But leaders recognize that value, even though they're new, they have the ball rolling in the right direction. Because we…sat down with the new CEO of one of the health systems and explained what the possible health initiative was and what you do, and you support it because they, the health system support it financially…Reorganization of health system, very well aware that continues. And it also means in the community to see that value, it's all about leadership. I said that time on many projects that we were not that our long-term, you can't have someone new elected to come in and say, okay, I don't like that bye. And you've been spending working on it. We've got the time and you have to carry it forward. (Case O_Comm)

Another primary theme was that health and public health strategists in the cases guided the community in sustaining PSE strategies, especially in facilitating processes interconnecting factors discussed later in this section like sustainability planning and community health needs assessment. Case E and J shared that:

> So if it's important to have that leadership to make sure that you're going on the correct path, if you will to make sure that the program is flowing smoothly in an organized manner and to make sure that you have that one person that fully understands that program and what is going on. (Case E_LHD)

> Well, I mean, from a leadership perspective, I guess if I just kind of name some of the players, obviously you've got me in there with the with the healthy community partnership or the collaborative, you also have the CEO of the hospital, the [redacted] board of directors, the [redacted] foundation, board of directors. They all had to approve the community health improvement plan. And that's a requirement of not-for-profit hospitals, which is us. So I'm sure you're familiar with the health needs assessment and the community health improvement. So that was approved by all of those people. All those folks were part of that. That co-led between you and the health department, then. It is now it wasn't at the time it is now. So yeah, so the past and it our second or third community health needs assessment that's being done in collaboration with the health department. So yes, that has happened, which is really great. And then I'm thinking of, you know, the other leadership at the schools, of course, the superintendent of the principals have [had] to get involved in promoting and you know, buying into that. (Case J_Comm)

Key leadership characteristics were identified in health strategists, like being passionate, mission-oriented, dedicated. Culturing health and inspiring change occurred in part due to their planning but also because of their ability to move a community forward and shape thinking from the individual to the general public. These statements from Case O relate to the need for not only leaders who can guide and strategize but also ones that encourage the community:

> Well, at the time we have this grant, our administrator, I think she actually was our director of health promotion…She very strongly believed in the mission of we choose health. She started some of these coalition groups on her own and with some of these very early partners like [redacted] County health department, and she herself is a huge advocate for our health and wellness. So that really, really helped. And then you know, we, everybody, since that time has been dedicated to public health and attaining, you know, a healthy population and encouraging people to be physically active and not smoke and all those sorts of things. (Case O_LHD)

Partnership engagement and Coalition: Partnership engagement emerged as a facilitator and as a process of sustainability in all five cases and in all the interviews. Likewise, coalition was a facilitator and process in all five cases, except in Case A. Partnership engagement was the term applied when there were stakeholders collectively identified as working toward shared strategies with actions of involvement and connection between the community and program, discussed later in this section. The researcher identified coalition as partnerships, or a diverse, organized group of stakeholders working toward shared goals and connecting to the community. The actions will be further explored under process, but as facilitators, what emerged were key stakeholder characteristics, such as dedication, willingness, and interest, contribution to organizational partnership, ownership, commitment, and a culture of health. This means that it was not only about having partners identified and at the table, but also about involving partners that have the necessary skills, abilities and traits necessary to build relationships, develop partnerships and sustain PSE strategies and change. These findings aligned with sustainability, or "involving a multiplicity of stakeholders who can develop long-term buy-in and support throughout the community for coalition efforts." The co-occurrence of coalition, partnership

engagement and leadership also indicates the individuals representing these partnerships both have the characteristics and would be perceived as leaders. These following statements support the findings:

> Well, I would say the [redacted] is a unique area because we do have the partners and the engagement and the dedication of people on both the [redacted] [neighboring state] and the Illinois side of the river. And everyone that I talked to at the meetings, I go to all the various different coalition meetings. Everyone is committed and engaged, and I think they would do this work. Even if those coalition groups didn't exist to be quite honest, but we're grateful that they do exist and that they they're our partners in all of this… (Case O_LHD)

Another theme was having new and existing partners and relationships that brought diverse perspectives, thinking and ideas. Their collaboration and connectivity also contributed to sustaining a systems approach.

> I think it was the part like the school partners. So you need like that collaborative input. And I think having the wellness meetings in the school, so pulling all the staff together plus the administration is really important to fixing those barriers. So we would do that and we'd work with them and we'd listen to everyone's ideas and then we would adapt as we needed to, or create new, innovative ideas based on input from all the different stakeholders. (Case L_LHD)

> the way I see it is the relationships that were built back then have continued to today. And a good example of that is the health department with the DOT and the planning and development department here at the County. The relationships back into the we choose health grant program led to the creation of what we call our active communities work group. And it's a group that before COVID met regularly, usually once a month or every other month to talk about making our communities more active and healthy. And we had representatives from the private sector, from the public sector coming together and focusing on that one issue. And I think if nothing else, it, everybody coming together and building those relationships, I think, and, and carrying the information that they learn back to their individual agencies was really what I saw as sort of the, the biggest benefit of the program. (Case L_Comm)

> And what can you name the stakeholders involved in that process? Well, those are all our MAPP stakeholders. It's a laundry list. But it's basically all our health systems and a lot of our community-based organizations and our nonprofits. (Case L_LHD)

> And one, one thing that I would just emphasize is the relationships…using [redacted] as an example, I mean, she knows everyone, everyone knows [redacted]. So it is the longevity. It is the time that we have. I think sometimes you realize something becomes realized because you've taken the time to build relationships. You may think that you're not doing really anything for six months, but if you're taking those six months and you're really

> building relationships within the community, that program is going to be successful and that program is going to sustain. (Case E_Comm)

The structure of the coalition and systems reach emerged as a theme in supporting and sustaining PSE strategies. Structure emerged as formalizing the partnership relationships, creating an action team framework, articulating engagement like meeting frequency, involving a steering committee, putting forward bylaws and planning for sustainability, assessment of needs and adaptability. The systems reach was mainly seen in diversity and volume of partnerships across the community, reaching the public and extending beyond jurisdictional boundaries. The organized, systemic approach orchestrated and facilitated sustainability. This finding was largely seen in Cases E and O and supported by the following comments;

> I would think too, the way we've set up the [redacted] idea where [redacted] as a partner and the local health departments are leads and U of I extension, I think it, it naturally makes that leadership continue. Cause there's always going to be a health department administrator. There's always going to be an administrator at these other sites. And there's always going to be the health education or those community outreach people at the department and as, and [redacted] as well. And we're committed to that community health coordinator that can help facilitate and get the, you know, do a lot of that logistical part or the coalition or the [redacted] in. So I think by making sure that when we set up, we choose health it all fell in that same method and all the work was happening under those coalitions. We knew that when it went away, we could still sustain some of it. So I think that all really played a big role in making sure that it was all still happening under the [redacted]. (Case E_Comm)

> I would just know it's something you haven't mentioned is that after that, during the CDC, so somewhere during that time period we did have some CEO changes that the health systems and they recognize the value and strength of having the [redacted] health initiative. And they too did a retrospective [review] and kind of a, made a decision to restructure the board quad city health initiative to make it stronger and more and be very, even more deliberate about its cost sector participation. So that, I think that helped that, that goes back to the collaborate and cooperate. (Case O_Comm)

The influence of coalition and partnership engagement on sustainability is a topic addressed in association with Research Question 3.

Community Capacity: Another facet of sustainability is "creating and building momentum to maintain community-wide change by organizing and maximizing community assets and resources." As indicated previously, community capacity intersected with facilitator.

For this study, the definition of community capacity was funding, skills and resources across the community applied when leveraging interorganizational resources, funding, or skills across the community (Schell et al., 2013, Shelton et al., 2018). The leveraged resources involved human, financial, and information resources and consideration of the infrastructure. The leveraging of resources emerged, primarily in terms of skills (training and expertise), funding, and staff. With a coalition, stakeholder and partnership engagement produced increased resources and understanding of community resources and different thinking on using the resources and innovating to open up future funding opportunities. Leveraged, increased and new capacity was found in all five cases, supported by the following statements:

> If you're going to need additional funding to what you started, you have to be able to try different things, be willing to reach out to other partners bring in those resources, financial, or otherwise that you need to continue that grant. (Case A_Comm)

> Oh, again, we kind of lean on each other as far as resources. So there are several different organizations within the [redacted]. We do our research and when we apply for grants there's technical assistance with these grants. So the, the technical assistance person will then funnel resources down to us. For example, the smokefree multiunit housing has several different resources on how to promote this program. So they would send the team making a toolkit. So each health department that was on the we choose health grant received a toolkit on each of the different strategies. So that way we knew how to promote the program within our own community. (Case E_CHD)

> …the resources and the ability to continue was I think, through just partnerships and utilizing the resources of our partnerships that plays a huge role because I think with our key health collaborative, we must have at least eight or 10 partners sitting at the table on that…So I think a lot of it, yeah, we have to rely on partnerships. (Case J_LHD)

> …But looking at thinking more broadly about transportation and maybe stretching the definition of what that could be health department, we know they have no money to start new programs. They, their, their funding has kept its property tax levies or it's grants one of the two. And oftentimes where we can get involved and help fund the health department initiatives, we try to, but we're constrained with, with kind of funneling money that way. Just due to the state you know, the state amendment that was passed a few years ago, so it's a difficult issue, but, you know, I'm, we're open to different ideas. (Case L_Comm)

> Well, I guess, I guess for me, I'd go back to the fact that many of the, the strategies much of the work under we choose health was connected somehow to a community group, to a community coalition and or an organization that had, that had work and experience in that area. You know, so, you know, for example the safe routes to school work as [redacted]

> described earlier, that was something that, that [redacted] had expertise in, you know, and so as the grant ended, it was natural to continue to think about how safe routes to school planning might still be able to continue using the planning expertise, advice, state in combination with you know, other sources of funding or, or other partners in the community. (Case O_Comm)

Sustainability Planning and Data and Evidence: The researcher defined sustainability planning as a sustainability cycle (assess, plan, implement, evaluate, re-assess) with stakeholders convening and conducting the process to facilitate sustainability. The act of sustainability planning was found in this research mainly as local strategic planning and IPLAN process (CHNA and CHIP) in all five cases. This required partners to collaborate to prioritize and align the best goals for leveraging community capacity based on data and community needs. The identified needs could then emerge, causing partners to problem-solve on new capacity. Having a CHNA and CHIP proved significant in sustainability of PSE strategies in all five cases. The following statements from the community interview in Case O demonstrate this finding:

> …So, yeah, so, you know, the, that process of, of having worked together on the community health assessments, and then also in the last several cycles you know, developing health improvement plans together, I think is, is absolutely key. We've continued to see this topic of nutrition, physical activity and weight rise to the top and probably all our health assessment cycles, you know? So so certainly the fact that we were continuing to gather data, continuing to talk to community stakeholders, continuing to see that there was interest and, and also a willingness to continue to work on this topic together made it possible for us to continue conversations about what we wanted to do next. And, you know, certainly then using information about what had worked well in other communities, you know, trying to look at research from, from other established sources about, you know, best practices and, and interventions, and then having conversations about, you know, what we had already attempted to do locally, and then wanted to think about doing next. (Case O_Comm)

Additionally, there was evidence that the WCH was not only a means of building on existing programming but contributed to advancing and growing WCH strategies. For example, Case E provided an example of the alignment of IPLAN and WCH to prioritize strategies and chronic disease. The integration of programming occurred between WCH and other LHD areas in the IPLAN to focus on chronic disease as a health priority.

> Well, a lot of the [WCH] strategies focused [on] the IPLAN. So, the IPLAN focused [on] the smoke-free act chronic disease, so it kind of aligned with each other. So when you look at IPLAN for that year, it was very easy to focus the [WCH on] that IPLAN because the IPLAN focused on chronic disease, which [was] what the majority of the [WCH] grant [focused on]. (Case E_CHD)

The IPLAN process (inclusive of data, evidence and planning) was action-oriented. Figure 8 presents these relationships and interactions and their synergistic interactions that enable strategy implementation, whether as initiated or adapted. The following quote indicates the interrelationship between coalition, sustainability planning, and community capacity:

> Once the funding ended, we continued to work on some of our goals and objectives with our coalition. So the [coalition], as a whole, helped us support some of our initiatives and keep them more sustainable. (Case L_Comm)

Sustainability planning and data and evidence are discussed further under processes in this section, and integration into existing programming is further discussed later in this section.

A theme that emerged as part of sustainability planning being a factor facilitating sustainability was a changed culture and mindset around health in the community. From stakeholders in the community to the general public, this supported sustainability of PSE strategies in general but definitely contributed to continual adaptation of strategies to meet the needs of the community. The diversity of stakeholders partnering together, as explained previously, built a shared vision and commitment around health and instilled a health in all actions, policies and planning approach. These interviewees' statements indicate shifted thinking, mindset and culture:

> When I think about the cafeteria project, you know, it was done with an understanding that they would keep it up and it was training of staff in a new way of doing things. And the expectations are now the parent and student expectations now of what they are served as different, the expectations of the community of what the schools can do, that's changed. And so the sustainability is just because of the shift in culture to a culture of health, I would say. (J_Comm)

> Yeah, the last thing I'll just mention real quick, oftentimes people overlook the importance of being able to speak different languages. And I'm not talking like different languages literally, but like engineering is its own language, right. And like health, health language is, is different than anybody here the DOT understands. But I think because of those relationship relationships that we did, we build you know, I can, I can go over to the health department and they can understand what I'm saying and they can, we can understand what they're saying. And I think that's often overlooked. And it's important piece of, of what happened with this program. (L_Comm)

Adaptability: The researcher defined the term adaptability as the modification to a strategy to fit the needs of the community. Adaptability of strategies was found in all five cases and emerged as small-to-large changes in order to incorporate flexibility, innovate and embrace emergent challenges faced by stakeholders in the community. These statements indicate the presence of adaptability:

> I mean, I think kind of, like she said, like since that new mental health coalition was formed, I can also say that coalitions have to adapt and kind of shift their priorities over time, even though you're still working towards that common, healthy wellbeing. Let's say the tobacco-free [redacted] coalition for years, and this is about being and working for smoke-free policies. And they even worked on the smoke-free restaurants way back when, before that was not allowed. And so now we kind of have to shift and see where we're at as a community. And that actually has kind of shifted to the whole vaping and e-cigarettes epidemic is what they're calling it. So you kind of have to just like shift things over time and adapt and still work towards that goal again, wellbeing, but might have to adjust when needed, you know, we do have, this is recent too, and I know we keep bringing up COVID, but we do have a quad city COVID coalition now, too. And it's again, partners from Iowa and Illinois quad cities. And we are working together to try to do a mask campaign in the quad cities, and we've done videos and YouTube videos and put them on social media. So I know that it's COVID related, but I mean, like she was talking about shifting with what the need is. That's definitely what we're doing right now, for sure. (Case O_LHD)

Programming: An emergent code of existing programming, building on capacity and integrating with activities, appeared in this research 38 times across all the cases. Building on capacity consisted of identifying the resources and aligning the activities of programming and mission to enable sustainability. The findings identified integration organizationally in the LHD in partner organizations, and in stakeholders beyond the coalition partner members. For example, in one case, the WIC program provided support for the activities of the PSE strategies with nutritional activities.

> So I don't know that it necessarily changed. I think that through so our nurses are, do WIC and WIC as a nutrition program. And so we've had a lot of training in nutrition and I think we just promote that naturally. So I don't know that it was ever not being done. I don't know that we thought of time yet through that program, but I think naturally a health department, ours at least does that. (Case A_LHD)

Integrating into existing programming also occurred across the partnerships' organizations. For example, Case O describes how PSE strategies were institutionalized in the following statements:

> So what I think we had to do as is look at the elements that were [being] conducted with that funding and those that were institutionalized that are already part of one of the partner organizations…and one of those partner organizations by state made it possible to sustain certain elements of it. And, and, and because bi state role in the community is regional planning, especially related to transportation. And we do a lot of recreation planning with assistance, but there never government or assist them with certain activities, although they can do that on their own. We're very well aware of it help the communication continue to flow between the participants that because of that role of my state, that's been our role since we did this in like 1966, it really was easy to continue communication and, and certainly report on kinds of activities that reporting ease of pedestrian movement, ease of trail movement continues a chance to get funding for maintaining or canceling improving trails. (Case O_Comm)

Extending beyond the coalition, stakeholders involved in PSE strategies continued to incorporate activities into their routine and roles, such as described by Case E here:

> So the capacity, I think a large loan that was leveraged the whole time through we choose health was really the coalitions and the HSDIN and the various community coalitions, as well as the Illinois catch onto health consortium group, because that work is still continuing, even though we don't call it, we choose health. For example, in [redacted] County, they still have a healthy living action team. So that action team is always on their agenda, are things like the walking paths, farmer's markets, how do we increase access? Just those types of things. Then each coalition, you know, has a cancer group and they're always talking about tobacco cessation or in the healthy living is talking about that. And so I think in that way, those coalitions have strength and in some health departments and here as [redacted] some of the, the roles from we choose health [have] just been absorbed into a person's job roles.

Table 22 presents the key points of the LHD administrator, program manager, and each community partner, with a synthesis of the WHC and existing programming sustainability for each case.

Table 21: Summary of Existing Programming as Emergent Construct per Case Interview

Case	Existing programming
Case A Synthesis	Case A demonstrates organizational integration of programming in an attempt to sustain activities and reach outcomes aligning with project and programs with similar goals and targeted clients. Reach out to the community occurred through linking events, like farmer's markets, to WCH and WIC for improved nutrition. Building on an institutionalized program like WIC and growing WCH with new ideas in the community helped sustain WCH in Case A.
Case A_LHD	• Intermingled and integrated programming and promote like other programming, especially identified where tied together (e.g., WIC and proper sleep and nutrition, WIC and farmer's markets) • Piggybacked on programming for resources and trained staff • Cultured vision even with grant and funding ended
Case A_Comm	[no coded segments]
Case E Synthesis	Case E showed how you adopt new programming best through strategic planning and alignment of current programming through the IPLAN and then rely on forming community teams aligned with ongoing organization partner's work to integrate and carry forward the new activities. This also reinforces Case E's ability to prioritize and eliminate activities and waste that do not align with the needs of the community.
Case E_LHD	• Focused WCH strategies in and around IPLAN and alignment existed between WCH and IPLAN (e.g., IPLAN with WCH due to chronic disease) • Molded action teams and community around WCH
Case E_Comm	• Adopted new program (CATCH) only through building on coordinated school health activities and programming • Incorporated duties into other persons' positions, integrated programming where interrelationships and same targeted goals, aligned mission and audience existed • Worked with pre-existing programming at onset to incorporate strategies (e.g., baby friendly hospitals) • Supported coalition in work and mission and tied strategies to coalition, giving community responsibility and ownership
Case J Synthesis	Case J had turnover in staff and transfer of lead agency working with partners. This demonstrated leveraging resources and pre-existing programming to sustain and grow WCH across the community. Alignment of goals and activities and support of partnerships through existing relationships spurred enhanced WCH post-funding.
Case J_LHD	• Absorbed strategies into other programming and positions (e.g., health education and emergency preparedness) • Combined strategies into programming where strategies prioritized in strategic plan and targeted health priority remained • Kept strategies on the table through enhanced partnership with hospital and infusion of programming into operations

Case	Existing programming
Case J_Comm	• Identified and used many activities already in place for WCH strategies (e.g., baby friendly hospitals) • Used pre-existing relationships having been in the schools and aligned with goals to create healthy school environment and promote physical activity and eating well • Built on relationships to secure champions within organizations to advance WCH strategies, especially with school leadership • Prompted existing funding to be redirected to grow WCH, especially with coordinated school health and then linking to CATCH • Supplied part-time position to focus on school health and invested in needs of schools with existing programming to work toward advancing initiative • Spurred same spoken language of WCH strategies with partners to align same activities and integrate across the community • Supported health priority before identified in community health needs assessment (i.e., obesity emerged as health priority in 2014) • Worked with partners to understand investment and incentive needs going forward, along with minimal resources to continue to grow and expand • Created a culture of health that made required like strongly encouraged
Case L Synthesis	Case L utilized existing programming in staff and alike activities to adopt WCH and sustain WCH post-funding ending. Case L achieved this through focusing on health priorities and objectives also supported in WCH and helped partnerships and community see the importance of WCH strategies in reaching improved health outcomes. This occurred through inter- and intra-organizational planning and decisions on programming and positions where programming was integrated.
Case L_LHD	• Utilized health educators already working in schools on other initiatives for WCH • Relied and aligned MAPP workgroups and goals for WCH • Focused on same health priorities in community as for WCH and worked with partners and community to help all see everyone working on same objectives
Case L_Comm	• Used programming to help carry and build programming in schools (e.g., add in movement breaks and salad bar) • Enabled launch into new areas and branches from existing programming
Case O Synthesis	Case O demonstrated a long-standing community infrastructure working on similar programming of WCH prior to WCH where WCH strategies could be infused and evolved. The components of existing programming were seen through networks, connections, skill, expertise, same goals and activities and organized management. The commitment and synergy from the community coalition partnerships as a part of existing programming advanced and sustained WCH.
Case O_LHD	[no coded segments]
Case O_Comm	• Relied on community infrastructure to support WCH, along with skill, expertise, advice and continued committed partners • Utilized existing cultured community networking, connections and planning to advance WCH • Built on community health needs assessment projects to integrate and focus WCH (e.g., nutrition and physical activity) • Identified institutionalized activities and promoted and aligned WCH (e.g., regional planning and trails) • Took a hold of existing partners and ideas to expand funding and WCH strategies (ongoing partners and snowball effect) • Asked and gained partnership support for sustainability of WCH and orchestrated synergy to keep and grow interest

Note. If blank, then no coded data segments resulted.

Table 23 presents a case synthesis and summary of the facilitating factors found in the 10 case interviews and key points from the LHD administrator, program manager, and each community partner and a synthesis of the sustainability facilitators for each case. The codes listed in the case syntheses list the constructs coded per case as a facilitator and are the same as presented in Table 21.

Table 22: Summary of Factors Identified as Facilitators per Case Interview

Case	Facilitator
Case A Synthesis	Case A sustainability resulted from existing resources and programming organizationally and community-wide. Leadership through championing and promoting of WCH facilitated continued practice of WCH in the community and evolution with partners and adaptability. Codes: Leadership, Partnership Engagement, Community Capacity, Programming, Sustainability Planning and Adaptability
Case A_LHD	• Integrating with current programming, like WIC, and leveraging resources • Championship and promotion in the community
Case A_Comm	• Capacity of community partners, specifically leveraging knowledge and expertise to do more • Modification of approaches and practices after evaluating approach or method did not work • Thinking beyond the grant and reaching to partners
Case E Synthesis	Case E emerged as having a strong coalition network, system, and structure to support collaboration, adaptability, and relationships. This synergy backed continual capacity-building (training) for translation of knowledge. Prioritization and quality improvement were cultured in process to promote growth, change, and new opportunities while aligning with strategic planning and community needs. Additionally, the strength of Case E reached beyond one county, and their coalition network regionally promoted better leveraging of capacity and shared best practices. Codes: Leadership, Partnership Engagement, Coalition, Community Capacity, Capacity Building, Programming, Sustainability Planning and Adaptability
Case E_LHD	• Collaboration efforts with the coalition • Capitalize on training available to all staff for programming • Championship per strategy • Alignment between IPLAN and WCH strategies and prioritization of chronic disease for both • Adapted coalitions into action teams • Building new partnerships and relationships within the community
Case E_Comm	• Capacity leveraged with coalitions • Training for all staff • Structure of coalition and action teams, promoting the IPLAN process and collaborating to team-up and build relationships • Incorporating functions of the strategies into existing positions

Case	Facilitator
Case J Synthesis	Case J relied heavily on preexisting partnerships to sustain WCH following the funding cut—in particular, the LHD's relationship with the hospital foundation whereby the hospital foundation adopted WCH in programming and capacity. Aligned priorities and preexisting programming at the foundation and across the formed coalition supported WCH. The partnerships created stronger relationships and provided opportunities for evolution and growth in the community, specifically with and in schools. The coalition working together for strategic planning to address the needs of the community created ownership, responsibility, and support for WCH. Codes: Leadership, Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Programming, Sustainability Planning, Data and Evidence, and Adaptability
Case J_LHD	• WCH strategies momentum with future programs, like tobacco • Coalition and strong partnership in hospital for programming, funding, use of resources, relationships and working together (collaboration with known person in position at hospital) • Data and community needs to prioritize
Case J_Comm	• Coalition in the community health collaborative and collaboration in coalition • Relationships with partners, like schools • Providing resources and incentives • Leveraging partnership funding to continue and expand • Adopting CATCH program linked to coordinated school health • Identifying and aligning priorities through community health needs assessment • Educating and "speaking the same language" by all members of the community and coalition • Strategic planning for long-term sustainability • Cultured strategies and a culture of health in the community • Using a hospital foundation to support financially • Championship
Case L Synthesis	Case L was a story of embracing an innovative initiative at that time and giving it full potential. Assessed capacity across the community gave them opportunity to create formal funding agreements in the coalition and network to generate momentum, commitment, and results for WCH. This was also a practice of effective processing and good government at the LHD. Leveraged capacity and partnerships proved successful in Case L and connected new partnerships to align for WCH. Changed thinking and mindset cultured health in Case L differently than before, championing the strategies across the network and for the public. Policies gave legal support for administrative enforcement and public buy-in to change behavior and embrace strategies of WCH. Codes: Leadership, Partnership Engagement, Coalition, Community Capacity, Capacity Building, Programming, Sustainability Planning, Data and Evidence, Opportunity, and Adaptability
Case L_LHD	• Subgrants to provide flexibility, ownership and formal relationships • Championship of the programming • Shared goals and objectives with coalition • New partnerships and collaborative input • Adaptability using innovative ideas to meet community needs

Case	Facilitator
Case L_Comm	• Aligning long-range transportation plan with community needs and WCH strategies, for example, walking and biking • Leveraging partnership skills, expertise and resources against needs (e.g., CATCH program for coordinated school health) • Resolutions and policies in municipalities to support strategies, like complete streets • Relationships of WCH grew stronger and yielded a new active community workgroup, greater interdisciplinary understanding and other funding opportunities • Training of staff and meeting staff needs, in turn, meeting community needs • Connections and networking between partners to leverage resources, build strength in programming and funding opportunities, and align priorities • Support and commitment, especially of leaders, elected officials, stakeholders, and other agencies • WCH cultured a new mindset and culture of health with partner agencies and commitment of the LHD
Case O Synthesis	Case O showcased an extensive history of coalition and partnership engagement, along with adaptability and evolution fitting to the needs of the community. Leveraged resources and prioritization of programming and capacity aligned with existing processes, like strategic planning and community needs assessment. Strong leadership in the coalition and of the organizations involved in the coalition championed WCH, recognized and valued collaboration, and created continued interest and ownership of stakeholders. System, structure, and interrelationships of coalition supported sustainability and helped align goals and quality improvement. A focus on addressing social determinants of health as they relate to health outcomes remained a value and priority for action. Codes: Leadership, Partnership Engagement, Coalition, Community Capacity, Sustainability Planning, Data and Evidence, and Adaptability
Case O_LHD	• Leveraging resources from the coalition, hospital foundation and hospital system • Integrating with stakeholders committed to prioritizing, planning and aligning strategic goals toward health improvement measures • Coalition formulation, continuation and continued partnership engagement, commitment and dedication • Championship and advocacy • Addressing social determinants of health and aligning with the community health needs assessment priorities • Leveraged other funding opportunities from WCH, for example, PITCH grant • Organization and structure in coalition and expansion of coalition stakeholders
Case O_Comm	• Skills and capacity in community to conduct joint planning and joint community health needs assessment and improvement planning process as a coalition • Structure of the coalition and community partnership with leadership across health system • Leadership recognizing the value of collaboration and connections among partners and stakeholders • Leveraging other resources and funding based on needs • Willingness, interest, and ownership of stakeholders

Facilitator factors across the cases: **The facilitator factors identified in all the cases and commonly described were leadership, partnership engagement, coalition, community**

capacity, programming, sustainability planning and adaptability. Leadership was seen as championship of the strategies in all the cases, and leadership strengthened coalition and partnership engagement. Leadership of the coalition partnerships provided coordination, collaboration and connection that lead to greater engagement among the partnerships (existing and new) and their network. All cases' sustainability planning emerged within CHNA, CHIP and IPLAN processes and contributed to enhanced integration of existing programming and leveraging of community capacity (funding, expertise, knowledge, skills, resources). All cases demonstrated the ability to adapt strategies, embrace emergent ideas and think systemically and differently, leading to greater sustainability of WCH strategies.

BARRIERS: Barrier ("Bar") occurred 38 times across all the interviews. A barrier was any factor that limited or prevented sustainability. The lower frequency compared to frequencies of facilitator means the cases identified fewer barriers than facilitators affecting sustainability. The co-occurrent codes most frequently coded with barrier were organizational capacity ("OrgCap"), sustainability, and community capacity. This meant that organizational capacity and community capacity inhibited sustainability more than other factors. A factor identified as a barrier may have also been identified as a facilitator, as was the community capacity.

Organizational Capacity: In this study, organizational capacity consisted of the identified funding, skills, or other resources (human, informational, infrastructure) used for PSE strategies within the organization. The abrupt funding cut impacted the LHDs' ability to fund staff positions, specifically health educators. The funding cut also correlated with a significant reduction of time and effort for the health educator responsibilities of the PSE strategies. Additionally, the LHD funding portfolio consists of numerous grants with funding restrictive, prescriptive, and inflexible for LHDs; therefore, there is a need to adapt and prioritize efforts based on community needs. One case respondent in the community interview described how an

abundance of funding but a lack of flexibility resulted in partners struggling to use the funding for PSE strategies:

> I think, to the extent that funders can be very flexible with the money and less prescribed in what is absolutely required, I believe that helps locals do what they need to [do] once they have the training and the technical expertise. Instead of being so specific on what you have to report out on, [flexibility] allows the community to go, "Okay, thank you. I got this, and we can keep it going when it's so restrictive." It just, it puts everybody in a box, I think. And [for] those innovations, you don't have as much flexibility or adaptability to make those changes that are needed, that you go, "Hey, if we could only do this, but it's not allowed in this particular funding piece. So, I realize that's probably outside of [our abilities]." (Case L_LHD)

This study showed that staff and the appropriate succession of staff in training and transition had an impact on sustainability. What also emerged was the evidence of how tasked LHD staff are. The following quotes present human capital (effort and time):

> We're such a small health department, but everyone is tasked out. (Case A_LHD)

> I think it's important to keep these things on the forefront. It's hard because although a lot of these things were sustained, a lot of them weren't sustained. Because when funding drops off, a lot of things drop off and not everything [is possible], which is why, you know, you're trying to make things [as] sustainable as possible, but that is a big piece because if you don't have the staff to support it or [who] can support [what] these partners might need, then things just end up falling apart because it takes people to get the work done. (Case L_LHD)

Community Capacity: Previously discussed as a facilitator, community capacity also was identified as a barrier in all five cases. Constraints and limitations in staffing, funding, and resources within the partner member organizations in coalitions and then across the community were found. Generally, as Case E commented, capacity for PSE strategies and focused initiatives around chronic disease fall short:

> Well, like the basics, more money, more staff, more. Yeah. I would agree there [is] a resource side. (Case E_Comm)

> You know, I mean, it often does come down to, to funding. There, there's no doubt about that. (Case O_Comm)

Sustainability: The purpose of this research was to understand sustainability in relation to a funding cut scenario. Although sustainability had been founded, barriers and sustainability

resulted in frequent co-occurrence and is important to discuss here although not a represented code in Table 21. Sustainability was found in all five cases in Phase II of this study, and the results show how an abrupt funding cut can impact organizational and community capacity (and therefore sustainability). The results indicate that the short notice resulted in the reduced ability to strategize for sustainability appropriately. Additionally, the WCH grant had a shorter timeframe than other grant programs. The first year consisted of capacity-building, policy initiatives, and other long-term activities that did not have the time and focus needed for maintenance and sustainability. The study showed that the facilitating factors of coalition, partnership engagement, community capacity, and leadership enabled sustainability in the cases, along with other contributing factors in Appendix G. The following quotes provide evidence of these findings:

> Well, funding ended kind of abruptly. The [WCH] wasn't your typical grant [because] it wasn't from fiscal year to fiscal year like [other grants]. [The WCH] ended abruptly, kind of almost without notice, so to speak. So, when this funding ended, a lot of the activities ended as well, which for some of these strategies was okay, like [the] smoke-free multiunit housing, we [couldn't] get a lot of work done already, for instance, when [we're in] smoke-free public places. But again, [the] coordinated school health continued because we were trained in coordinated school health, [and] then we received grant funding for that project. And then we also received the tobacco grant that sort of coincided with [the] smoke-free public places with some of those initiatives. (Case E_LHD)

> Obviously, with sustainability, there was no funding for that. So, I guess someone down the line up top has made a decision, [and] they stated that the [WCH] wasn't a good enough program to continue for their residents or the citizens or the state in general. (Case A_LHD)

Table 24 presents the key points from the LHD administrator, program manager, and each community partner, with a synthesis of the barriers to sustainability for each case. The codes listed in the case syntheses list the constructs coded per case as a barrier and are the same as presented in Table 21. Appendix H contains the co-occurrence of codes and frequencies.

Table 23: Summary of Factors Identified as Barriers per Case Interview

Case	Barrier
Case A Synthesis	Case A was a community that emerged more as highlighting differences in smaller LHD and communities in relation to capacity and responsibility. Case A reported being strapped for resources organizationally and across the community. Case A also highlighted less collaboration postfunding of WCH, along with organizational changes that made sustainability more difficult after 2014. Codes: Leadership, Partnership Engagement, Organizational Capacity, Community Capacity, Capacity-building, Sustainability Planning, Data and Evidence, Opportunity
Case A_LHD	• LHD resource for everything in community • Lack of sufficient staff • Restricted by Administrative Code with no specific funding directly for sustainability as an objective • Capacity-building for community constrained LHD • Generation of revenue and sources of revenue minimal (e.g., vaccine administration, blood draws) • Rural LHD versus urban LHD in relation to capacity, services, and funding
Case A_Comm	• Increased need to share additional data • Less collaboration after grant ended which resulted in less conversations, less opportunity for innovation, and less emergent strategies • No understanding how sustainability aligned with planning process • Coalition and partner engagement occurring but lack of understanding of how related to sustainability • LHD organizational changes
Case E Synthesis	Case E noted the short time frame of the grant disallowed maturity and momentum for some of the strategies and milestones. Furthermore, Case E highlighted restrictive funding as part of their portfolio that did not readily allow application for WCH strategies. Generally, Case E cited the basics— more time, staff, and funding—as necessary components for sustainability. Codes: Organizational Capacity, Community Capacity, Opportunity
Case E_LHD	• Restrictive funding • Short grant time frame with abrupt funding cut
Case E_Comm	• The "basics": more staff, more time, more money • Obstacles with sustaining strategies that involved legal
Case J Synthesis	Case J identified a high turnover in staff as a hardship for continued capacity and sustainability of WCH. Additionally, not only was inflexibility grant and grant funding identified but also the idea that no direct funding for chronic disease and mental health exist. Case L did cite misunderstandings and miscommunication of the strategies at application stage that were later reconciled, but this left an interpretation on how planning at the onset is important to programming and prioritization for implementation and sustainability. Codes: Organizational Capacity, Community Capacity, Opportunity
Case J_LHD	• Funding and flexibility of grants with no direct funding for health priorities (e.g., chronic disease)
Case J_Comm	• Misunderstanding and miscommunication on strategy at start in application, although 95% programming implemented, and misalignment on philosophy (i.e., Baby Friendly Hospital and inability to give any formula) • High turnover rate of health educators at LHD

Case	Barrier
Case L Synthesis	Case L recognized a loss of staff organizationally dedicated to WCH strategies following the funding cut and an absence of policies that negated support for implementation and enforcement of WCH strategies, along with no public value. Case L identified inflexible, categorical funding limiting to innovation and sustainability following 2014. Codes: Organizational Capacity, Community Capacity, Opportunity
Case L_LHD	• Categorical, prescriptive, and inflexible funding (e.g., "lockbox" on funding) • Lack of policy or new funding (e.g., CATCH) resulted in less sustainability existed • Loss of staff directly funding cut
Case L_Comm	• Absence of the staff directly focused on strategies
Case O Synthesis	Case O recognized a reduction of dedicated staff to WCH and a general statement of programming and sustainability in relation to funding and resources. Codes: Organizational Capacity, Community Capacity, Opportunity
Case O_LHD	• Reduced staff from three full-time health educators to one part-time health educator
Case O_Comm	• Funding and resource needs

Barrier factors across the cases: **Organizational capacity and community capacity were common factors identified as creating obstacles to sustainability in all cases. Insufficient funding and staffing to meet ongoing priorities, demands and sustainability of strategies emerged across the cases. Specifically, categorical, inflexible and prescriptive funding, grants and administrative law or requirements were described as aspects where insufficient organizational and system level capacity was a barrier. While community capacity was also identified as a facilitating factor, community partners acknowledged the lack of LHD staff fully committed to WCH strategies as impacting the level of sustainability.**

PROCESSES: Processes ("Prac") occurred 79 times across all 10 interviews. Processes included practices and processes with the definition of actions routinely taken organizationally or systematically. Processes underwent coding for the actions or steps that were institutionalized organizationally or in the community. The findings of this research support processes to be actions that were established and demonstrated organizationally and in the community. The co-occurrence codes most frequently appearing with processes were partnership engagement, coalition, sustainability planning, sustainability, leadership, and shared decision-making. The co-

occurrence of codes show interrelationship and a connection between factors (facilitators and barriers) with identified processes (or actions). This finding supports a change in Figure 8 discussed in Chapter V and supported in Figure 18. Appendix J contains the additional co-occurrence of factors and their frequency counts. Table 24 is a summary of the action-orientated steps and actions reported for each case.

Leadership: Leadership was a factor identified through the championship of the program. Championship of the program at organizational or interorganizational levels with stakeholders is the ability to guide and direct strategy, collaborate, and be a chief strategist (Montgomery, 2008; Schell et al., 2013; Shelton et al., 2018). In this study as previously discussed, leadership was a facilitator of sustainability mentioned directly in 60% of the case interviews specific to championship. The actions of leadership were reported in all case interviews and cases. Leaders were champions and conducted championing of PSE strategies. Through the local community health improvement planning process, leadership was a factor found in LHD, health systems, and structured coalitions, especially in Cases E and O. This finding meant that leaders served as primary facilitators across the system of processes and connectors of partners. Leadership was a facilitator (factor) and a process (action).

Partnership Engagement and Coalition: The importance of partnership engagement and coalition emerged in each case as for the sustainability of PSE strategies. Stakeholder engagement and collaboration were significant factors for sustainability, evolution, and growth. The key activities in support of partnership engagement and coalition were bringing together partners across sectors consistently and routinely, building relationships, connecting partners and leadership, and sharing in a vision for the community.

> I guess I see [that] there [is] a lot of consistent participation on the MAPP work groups. There's, I think from my perspective, those relationships and that trust, [that] you leverage into new and innovative things all the time and having conversations about how do we collectively. You just keep having that collective impact if you [have a]

> conversation about how do we do this work better together. We each have a different perspective, but we also have data that we can contribute. We don't all have the whole picture. So, if we work together and we identify those priorities right, and continue to select evidence-based strategies, I think we're more likely to see better outcomes in our community, and then [we can] prioritize where we need to put our energy, our resources, our time. (Case L_LHD)

Sustainability Planning: Sustainability planning consists of actions developed and executed to facilitate the sustainability of strategies and pull stakeholders to the table to conduct the sustainability cycle (Johnson et al., 2004). In this study, the actions included: assess, plan, implement, evaluate, and reassess/modify. Sustainability planning emerged as part of the community health needs assessment and community health improvement plan (Illinois Project for Local Assessment of Needs or IPLAN) process in all the cases. Phase I document review included annual reports for 80% of the information-rich cases (4 out of 5) but no separate designated strategic plans, unlike Cases B and H (unselected cases). All of the 5 cases selected, however, submitted IPLANs during the period studied (2014 -present). The IPLAN process is itself a strategic planning process (see Table 10) and incorporates sustainability planning, as discussed by respondents in the interviews:

> To me, sustainability is at the very beginning. I mean, it's just engrained in the [IPLAN] process. I mean, that's kind of where we're at, at least in my mind, I'm always thinking about, as we're creating something, how is this gonna have a long-lasting impact on our communities or groups or for us [and] our kids, that they have the skills. Like, they have the skills to make healthy choices for a lifetime. To me, that sustainability part, or at least thinking about it, is there from the beginning. I would say that, I think that's part of it, is thinking of it in that way, and then really having the commitment or buy-in from the group that they are going to continue. Like, no matter what happens, we're all kind of in this together, and we're going to keep working on this because we believe in the mission or the reason for it. (Case E_LHD)

> They do go hand in hand. I mean, provided that the two initiatives are still on the table, if something that you developed through [WCH] is still a health priority, and you've identified it in your strategic plan, then you've got to merge the two together and you have to combine whatever resources you possibly can to keep those programs sustained. So, I think strategic plans [are] a huge factor in that. (Case J_LHD)

> Well, and our resources, I think definitely the [redacted] is still doing the safe routes to school. They continue to do that even without funding because they are the planning arm in the quad cities, and they are still able to do two schools per year to

> work on safe routes to school appointments for two schools per year, even without the continued funding on that. (Case O_LHD)

Shared Decision-making: SDM was another factor that emerged from the interviews; the case respondents described pulling together the stakeholders to make shared, evidence-based decisions through collaboration at the LHDs. Completing the community health needs assessment and improvement plan jointly shows the ability to collaborate with partners for SDM based on evidence; this was a process described in all the cases.

> Well, it was just a matter of do[ing] our community health needs assessment. We had identified obesity as an issue. And so, that was just kind of decided on as an initiative to continue that support through the foundation. (Case J_Comm)

Opportunity: This research defined opportunity as a set of circumstances that made sustainability possible. Processes intersected with opportunity in nearly all of the cases. This meant that having actions related to policy change and innovative methods emerged to support sustainability. Research Question 4 focuses on the opportunities that emerged in this research.

Adaptability: Adaptability was a noteworthy construct of conceptualizing sustainability, though not a leading factor interrelating with practices and processes. Adaptability ("Adapt") was a factor coded 46 times in all the cases. Adaptability is the modification of a strategy to fit within organizational or community structures, practices, needs, and capacity (Whelan et al., 2014). Adaptability and processes co-occurred, and adaptability was also a criterion for the cases (see Table 12). The findings revealed ongoing modification to meet the needs of the community and to enable sustainability of the PSE strategies. Cases E, L, and O specifically discussed adaptability as a practice or process with an impact on sustainability:

> We had to adapt just because some of our strategies weren't working, [and] we had to readjust what we were doing a couple of times during [WCH]. And I think that definitely had an impact on the sustainability of those specific strategies because I think in some communities, things really work well. And then in our community, we thought [it] would work, and then it didn't. So, we had to continually adjust doing that. And, I think the ones that we didn't have to adjust so much seemed to be more sustainable, at least here. [Can you provide an example of each one that you didn't have to address and one that you did?] Sure. So our coordinated school health program was pretty smooth. We didn't have

> to make too many adjustments to that, but our first year, which is health, we did joint use agreements, which was very successful in some of the way [it's] helped communities, but not here. So, we had to figure out how we were going to readjust that whole thing. (Case L_LHD)

> It was significant because just like one [believed] using evidence-based strategies [was] really important, but not one-size-fits-all. So, we needed to adapt as we went because every community is different. Every school is different, every municipality is different. And so, we had to adjust those evidence-based strategies based on the needs of that specific population or area or whatever we were working with. (Case L_LHD)

> [We] also [thought] about what else might we be able to do locally? That would be helpful. So, we're not currently [doing] the workplace wellness work, for example, the same way that we did several years ago, but we are still trying to share information about workplace wellness resources, and we're trying to connect people to other entities doing that type of work. And we're trying to highlight local educational information related to that work. So it's an adaptation, I think, over time in terms of what your partners locally are looking for and needing and also just keeping an eye on what other types of information and resources might be available from other sources. (Case O_Comm)

> Adaptability is our life in public health. I feel that, and things are always changing and evolving, and we in public health just have to evolve along with our community. And like I said, look at the trends and look at what are the needs in the community and really work on goals and objectives to try to address those needs within both of our counties. (Case O_LHD)

Table 25 presents key points from the LHD administrator, program manager, and each community partner, with a synthesis of the effect of the **practices and processes** on sustainability in each case. The codes listed in the case syntheses list the constructs coded per case as a facilitator and are the same as presented in Table 21.

Table 24: Practices and Processes Affecting Sustainability

Case	Practices and Processes
Case A Synthesis	Case A evidenced the relationship between planning, data, partnership engagement, and determining priorities, which connect back to Figure 8 of this research. These interrelationships facilitated sustainability of WCH strategies. Additionally, Case A cited the bringing partners together routinely was important to promote the processes and practices. Codes: Partnership Engagement, Coalition, Sustainability Planning, Data and Evidence
Case A_LHD	• Conducting community health needs assessment and improvement plan for completion of IPLAN with partners and their input into the priorities, goals, and plan • Bringing in partners routinely for meetings to address strategies
Case A_Comm	• Conducting the community health needs assessment with partners to gain diverse perspectives and input • Facilitating conversations among partners through small group meetings • Evaluating data, reviewing feedback and determining priorities through small group meetings • Bringing partners together continually for sustainability as part of the planning process
Case E Synthesis	Case E demonstrated the significance of not only having partners, relationships, and coalition but also the practices and processes between them. Case E created spaces for action teams to collaborate, analyze data, make decisions, prioritize needs, leverage resources, build capacity, create model policies and innovate together. Sustainability was planned at the beginning and was a mindset of the WCH work in Case E. Case E also reached the public, engaged the public, and built interest and value of WCH with the public. Case E resembles Figure 8 in its components and inter-workings of the coalition and across the community. Codes: Partnership Engagement, Coalition, Community Capacity, Capacity-building, Programming, Sustainability Planning, Data and Evidence, Opportunity, Adaptability
Case E_LHD	• Convening partners and meeting as coalition routinely to collaborate and make decisions • Surveying partners at meetings to ensure needs being met • Collaborating differently depending on strategy: focus of meeting, programs occurring in strategy • Building capacity within organizations to carry out the strategy and adapt to fit needs of those being served (e.g., different school, different needs under coordinated school health)

Case	Practices and Processes
Case E_Comm	• Forming action teams based on community need under health coalition structure and setting up the coalition administration with the health system and LHD leadership • Conducting community health needs assessment and uncovering discoveries through IPLAN process, including partners taking responsibility • Seeing that WCH PSE strategies fit organizational missions, building on some practices and programming, and working within an established framework • Forming coalition and planning with all partners working together and leveraging resources to absorb activities across coalition resources • Creating model policies for adoption community-wide, helping with tight resources • Outreaching, promoting the strategies, and being present directly in the community using coalition and model policy • Onboarding and training all LHD staff to know, do, and lead the work • Engaging partners and building relationships to shift culture, become one voice to shape strategies and fit the community needs and prioritize sustainability • Thinking about sustainability at the beginning as a part of the process to have a lasting impact and build skills for healthy choices for a lifetime • Utilizing the school index and completing through school wellness committees, resulting in an action plan, changed culture, and policy change • Communicating success stories to add value to programming
Case J Synthesis	Case J relied heavily on the community needs assessment and improvement plan process in the community to plan, prioritize, resource, and sustain WCH. The championship with key public health leaders in the community resulted in leadership and connection to expand WCH. Case J provided structure in its collaborative coalition assisting to advance and sustain WCH, enabling key identified practices of Figure 8 to exist. Codes: Leadership, Partnership Engagement, Coalition, Sustainability Planning, Data and Evidence, Opportunity
Case J_LHD	• Identifying WCH PSE strategies in strategic plan and continuing to prioritize and use resources to achieve sustainability relying on the community health needs assessment and improvement plan (IPLAN) • Convening advisory committee with all partners gathering input through coming together at the table, discussing issues and needs of the community, and making decisions
Case J_Comm	• Creating models and sharing with like organizations in the community for such strategies as coordinated school health • Bringing together leadership of organizations (e.g., principals and superintendents of school districts) and having champions coordinate, promote and facilitate, providing incentives (monetary support) • Using structure of WCH and requirements set forth, like school health index, along with policies • Evaluating routine progress and needs
Case L Synthesis	Case L built on MAPP partners for coalition and institutionalized processes in the community. Innovation with formal agreements and funding between networked partners emerged as a result of WCH, along with policies to advance some strategies. Case L's practices demonstrated how thinking differently with different partners resulted in new opportunities and enhanced sustainability far into the future. System-level processes of convening partners, having conversations, making decisions on resources and health priorities, and creating realistic, achievable plans for the community happened in Case L and resembled the conceptualization of Figure 8, noting the coalition at the center of the practices. Codes: Partnership Engagement, Coalition, Community Capacity, Capacity-building, Sustainability Planning, Data and Evidence, Opportunity, Adaptability

Case	Practices and Processes
Case L_LHD	• Developing and implementing the process for subgrants, including process for review of the results and determination of funding, which included partners • Pulling different partners together and leveraging partners as an oversight group for the initiatives • Managing large grant funding amount as capacity building for staff • Utilization of IPLAN process and MAPP workgroup, pulling partners similar to the WCH, and aligning goals and objectives which ultimately created a strategic and sustainability planning process • Assessing needs of community, evaluating data, shifting priorities and aligning needs with WCH strategies to result in sustainability • Adapting strategies based on what was working and what was not in different parts of the community • Pulling partners together (and stakeholders at different levels in community partner organizations involving health systems, community-based organizations and non-profits) to work with them, listen to ideas, adapt as necessary, or innovate based on input from different stakeholders • Working on policy change to support built environmental strategies • Leveraging other grants with partnerships and innovating for other PSE change by sharing data and building on relationships, coming from different angles • Maintaining consistent participation in MAPP meetings— relationships, trust, collective conversations, data—to achieve systems and whole picture for collective impact, selection of health priorities, selection of evidence-based strategies, and prioritization of effort, energy, and resources
Case L_Comm	• Capitalizing on MAPP workgroups and integration of organizational plans into county plans, along with health strategies, to build awareness and sustainability • Conducting community health needs assessment to assess needs of community and sustain • Having LHD coordinate partnership meetings, sharing data with community partnerships, and gaining support for grant applications, plans, and policies • Ensuring system-level inclusion of public to influence key stakeholders • Gathering of interdisciplinary teams (e.g., wellness teams at schools), building relationships and leadership between key stakeholders (e.g., school nurses and elected officials), and prioritizing not to lose sight of small opportunities to achieve WCH programming, like grant applications to connect sidewalks
Case O Synthesis	Case O valued sustainability and planning for sustainability of WCH a priority. Case O coalition's structure and system created the ongoing space for partners to have synergy and momentum in evaluating data, prioritizing community needs, leveraging resources, adapting strategies, and being responsive to the community and public. Strong leadership in the public health and health care system in the coalition worked systematically in the community to pull in partners and leverage capacity to move WCH forward and improve health outcomes. Thinking together allowed for health to be in all policies and PSE strategies to be supported and enforced through new policies. The cyclical and iterative processes are seen in Case O's work. Codes: Leadership, Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Programming, Sustainability Planning, Data and Evidence, Opportunity, Adaptability

Case	Practices and Processes
Case O_LHD	• Making sustainability of strategies a priority of the LHD through continual coalition engagement, coalition steering group, using staff, operating programming, promoting all aspects of the strategies • Sharing out all data and progress through public meetings and press releases • Adapting continuously strategies per trend analysis and community needs (e.g., smoke-free to include vaping) • Recharging and refocusing as necessary, along with ensuring right partners and smaller working groups activated for health priorities
Case O_Comm	• Conducting community health needs assessment in a collaborative approach that is bringing together the LHD process and the health system process to be worked among partners together leading to shared visioning and agreement on priorities and integrating WCH • Creating an improvement planning cycle following community health needs assessment and plan to review data, evaluate, determine best practices, adapt, and share • Organizing other funding and grant opportunities through the coalition • Long-standing community interest and response with keeping intact the community and public recognition along with interdisciplinary and cross-sector collaboration • Creating a forum for key community leaders and organizational leaders to share information, meet routinely, communicate plan, and work together to be prepared for when opportunities arise • Maintaining connections with partners with interest in overall health of community long-term and for built environmental strategies with transportation • Allowing structure and process to adapt over time to fit needs of community • Thinking jointly about policy development and understanding linkage between built environment policies and health impact • Regionalizing and including all key geographical areas in process • Involving leadership of organizations to create community leadership and furthering the work by having multiple levels of staff engagement

Processes as factors across the cases: **Factors commonly identified as key processes across the cases were partnership engagement, coalition, sustainability planning, data and evidence, and adaptability. Specific opportunities for supporting continuing PSE change was identified in all cases except Case A. Actions relating to partnership engagement and building and sustaining coalitions were primarily found to be: relationship building (with new and existing partners); establishing coalition structure and an operational model; incorporating leadership from non-LHD partners; bringing together interdisciplinary, multi-sector partners; and, in general, working together to advance change. The coalition and its partnership became the space for sustainability planning and built on strong**

foundation of CHNA (through data and evidence), CHIP, and IPLAN processes. Essentially, sustainability planning for PSE changes emerged as part of the CHIP and IPLAN planning processes in all the cases. Given WCH provided a new, different and innovative approach using PSE, this set the stage for adaptability. All cases demonstrated their ability to adapt strategies, embrace new ideas, use evaluation to make improvements and allow emergent strategies to advance. Identified opportunities primarily seen in action-oriented (process) policy development and implementation or innovations such as LHD grants to partners, supported sustainability of change strategies in all of the cases except Case A.

Interrelationships of Factors and Processes: The intersection of codes in segments of the interviews showed the interrelation of the factors, or how the constructs (factors and processes) intersected and worked together to impact sustainability. Figure 18 is an illustration of the clustering of codes across all cases and their intersections in the interviews, as well as their relations to each other via the connector lines. Font and node size indicate code frequency. The co-occurrence of codes provides evidence for the interrelationship and the impact of the factors on each other and sustainability and the more common actions of some of the factors. For example, the coalition and partnership engagement intersect based on the definition of partnership and engagement among the partners. Many segments provide evidence of the significance of not only having coalitions but also engaging partners as factors together to affect sustainability. Both leadership and intended, realized strategy had stronger connections to all three clusters. Leadership was a connector and glue for the sustainability of the initial WCH PSE intended, realized, adapted, or initiated strategies.

The results of the clustering were:

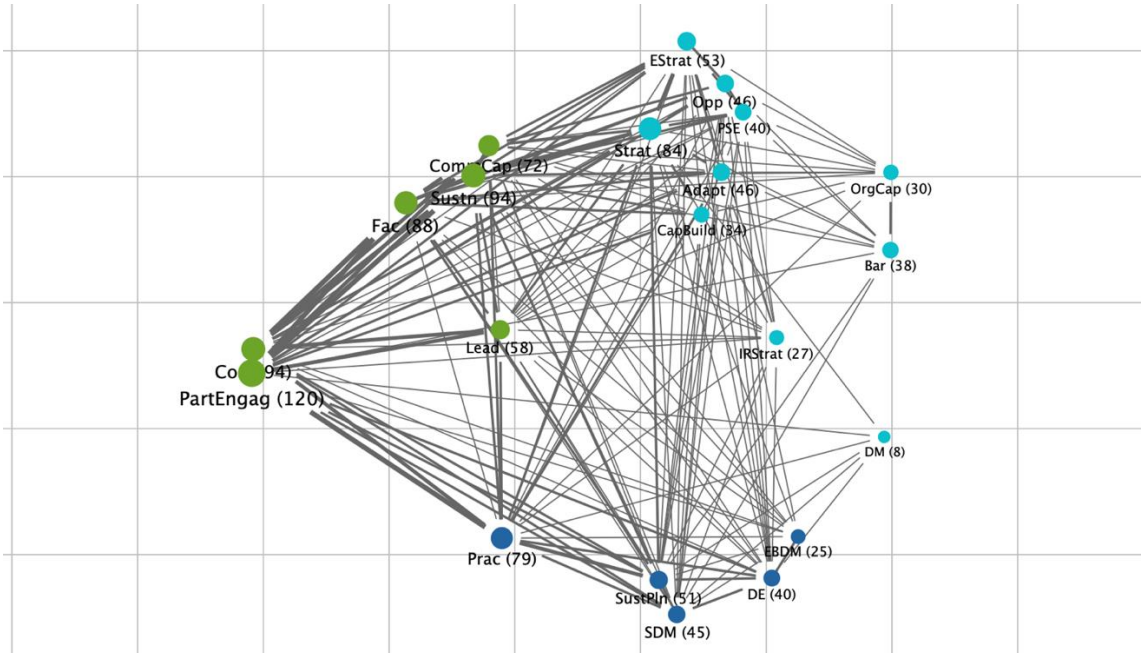
1. Coalition and partnership engagement with close lines to facilitator, community capacity, and sustainability and close lines to leadership

2. Emergent strategy, opportunity, PSE, strategy, adaptability, and capacity-building had close lines to organizational capacity, barrier, intended realized strategy, and decision-making

3. Processes and practices, sustainability planning, shared decision-making, data and evidence, and evidence-based decision-making

The clustering in Figure 19 shows the processes and practices of the coalition and the key facilitating factors of sustainability. More importantly, the web shows the interrelationships associated with the facilitators' processes and practices, such as community and organizational capacity. Different factors and processes had more significant links to different strategies. For example, emergent strategy, adaptability, opportunity, PSE, capacity-building, and strategy closely interconnected. Case L indicated the adaptation and emergence of new strategies, partnerships, and funding from WCH PSE strategies as opportunities and capacity-building initiatives. The cluster map and supporting evidence per case provide practices ad models with interrelationships and factors for use in communities going forward. MAXQDA facilitated a word cloud (see Appendix R) of the factors that emerged from the data by the words that appeared more than twice in the data and eliminating irrelevant words (e.g., the, a, any). Where Figure 18 presents a visualization of the analytically determined factors and processes, the word cloud in Appendix R provides at a glance a lexical picture suggesting what contributed to the extent of sustainability.

Figure 18: Cluster Code Map



Research Question 3: How have the community coalitions influenced the sustainability of the WCH strategies?

Under Research Question 2, coalition functioning emerged as a top factor of sustainability. Research Question 3 addressed the effects of the community coalitions on sustainability after the funding cut. WCH required a coalition of stakeholders or stakeholders separate of a coalition in the grant application. There was also a need to understand what enabled the coalitions' sustainability. All the cases reported sustained coalitions, a criterion for selecting the information-rich cases. Collaboration, building partnerships and relationships, and capitalizing on existing infrastructure for CHNA and CHIP locally resulted in sustained coalitions and PSE strategies. The findings show evidence of the relationship between effective coalition functioning and PSE sustainability, as seen in these quotes:

> Well, if you work with a good group of people and they are willing to collaborate with you, it makes for a good way to sustain a project. If you don't have that good collaboration effort, you're not going to be able to sustain any type of projects, but you have to have a team that is willing to have that motivation to keep that project going. (Case E_LHD)

> Always have the opportunities of building new partnerships [and] building relationships within the community when you're able to just sustain the programs that you're able to sustain without the funding. When you do collaborate with your partners, you [can] try to sustain whatever programs you can. But then, when you can keep these programs, it is beneficial to the community. (Case E_LHD)

> I guess I see [that] there [is] a lot of consistent participation on the MAPP work groups. There's, I think from my perspective, those relationships and that trust [that] you leverage into new and innovative things all the time. And having conversations about how do we collectively [to] just keep having that collective impact, conversations about how do we do this work better together. We each have a different perspective, but we also each have data that we can contribute. We don't all have the whole picture. So, if we work together and we identify those priorities right, and continue to select evidence-based strategies, I think we're more likely to see better outcomes in our community, and then [we can] prioritize where we need to put our energy, our resources, our time. (Case L_LHD)

> I mean, again, as I sort of think about framing all of this, I think it goes back to back to understanding health status in the community. Having that collaborative assessment approach, having a collaborative [conversation] that facilitates prioritization and planning, thinking cross-sector, thinking about trying to involve and engage partners from multiple sectors for the long-term, and trying to build relationships across sectors over time. Those are all, I think, really, really important to sustainability for this work. And, in general, for healthy community's work. (Case O_Comm)

Coalition intersected most notably with partnership engagement, followed by community capacity, sustainability, shared decision-making, and strategy. Appendix L shows the co-occurrence between coalition, partnership engagement, and other key actionable constructs. Leadership, partnership engagement, community capacity, organizational capacity and adaptability were common across all cases and are the focus of this section. Table 26 displays a case comparison summary of how community coalition influenced sustainability. The findings (row 2) explain how the codes were revealed in the data. Later in this section, Table 28 presents a summary of all the coalition-coded segments analyzed.

Table 25: Research Question 3 Case Comparison Summary of Coalition Influences on Sustainability

Codes	Leadership	Partnership Engagement	Coalition		Organizational and Community Capacity		Capacity building	Programming	Sustainability Planning	Data and Evidence	Decision-making	Opportunity	Adaptability
Findings	Connecting to partners, Championship	Collaboration within coalition, meetings, communication	Relationships with new/existing partners, partnership development	Structure, bylaws, agreements, meeting framework	Coalition members' funding, skills and other resources	Leveraged resource among coalition members, new funding opportunities	Building leadership, training skills, identifying resources	Linkage to existing programming, building on strategies	Strategic planning and community health improvement planning (IPLAN), shared culture change of mental models to culture of health mindset and commitment	Community health needs assessment	Shared decision-making	Policy change to support PSE strategies, innovation (e.g., mini-grants, workforce pipeline)	Changes to the strategies, successful modification to meet the needs of the community
Case A	X	X	X		X	X			X	X			
Case E	X	X	X	X	X	X	X				X	X	X
Case J	X	X	X			X	X	X		X			X
Case L	X	X	X	X	X	X			X	X	X	X	X
Case O	X	X	X	X	X	X	X		X		X		X

Leadership: As previously discussed as a facilitator, or factor enabling sustainability, in Research Question 2, leadership emerged as a primary influencer on coalitions in sustainability of PSE strategies and of coalitions. Re-emphasizing here that the presence of leadership and leaders cultivated organizational buy-in, value and momentum.

> And I would add that the leadership, it definitely needs the leaders of the organizations to buy-in, if you will and recognize the value of that collaboration. (Case O_Comm)

Leadership influenced the make-up of coalitions. Specifically, leaders in organizations relied on existing relationships to engage and sustain PSE strategies, as

> …think because we have those exist, our leadership had those existing relationships in the community, too, that they were able to help us pull in some of those community partners to meet some of those, those strategies that we were working on. So that was helpful. (Case L_LHD)

Research Question 2 also explained some key characteristics of leaders had that enabled sustainability of PSE strategies and of the coalition. (see Research Question 2, Leadership). Building on that finding, leaders inspired and encouraged the coalition and its member organizations to not only sustain PSE strategies but also do more. This enabled greater innovation to sustain PSE strategies and in working collaboratively and collectively for a greater impact.

> And from the counties end you know, we are leaders meaning our department heads, our County board, elected officials…But they've also even after we choose health, health expired, they've pushed us to do more in, in the same spirit as the, we choose [health] grant even after it was done. And so I think from our elected officials I think they saw the benefit of the program and they want us to continue doing more stuff, even if it's not called we choose health yourself. I think they learned a lot from that process as well. (Case L_Comm)

Another finding in how leadership of coalitions influenced sustainability was establishment and operationalization of a steering committee or advisory committee. This finding connects to coalition structure discussed later in this section. Having leadership involved structurally and systematically strengthened the coalition for long-term sustainability.

> We, we convene the, the, what am I on the advisory committee? I guess you call it we [redacted] reports back to, what's been discussed at the, at the meetings and then she reports the advisory committee and then she gets all of our input as community leaders. You know, we've got people from the County, we got people representing the schools, people representing healthcare police, you name it. And we all sit down, we, we all talk about those issues and we decide you know, what, what does our community really need? And Angie just kind of lays everything out there for us. (Case J_LHD)

As an extending point, the cases indicate specific leadership involvement for greater sustainability of PSE strategies, specifically naming the leadership of public health and healthcare system organizations.

> I would think too, the way we've set up the [redacted] idea where [redacted] [medical university partner] as a partner and the local health departments are leads and U of I extension, I think it, it naturally makes that leadership continue. Cause there's always going to be a health department administrator. There's always going to be an administrator at these other sites. And there's always going to be the health education or those community outreach people at the department and as, and [redacted] as well. And we're committed to that community health coordinator that can help facilitate and get the, you know, do a lot of that logistical part or the coalition or the [redacted] in. So I think by making sure that when we set up, we choose health it all fell in that same method and all the work was happening under those coalitions. We knew that when it went away, we could still sustain some of it. So I think that all really played a big role in making sure that it was all still happening under the [redacted]. (Case E_Comm)

Partnership Engagement: Partnership engagement and coalition intersected and were the most closely aligned factors of the constructs (see Figure 15). Although this was a finding in all of the case interviews, it most notably occurred in the community cases interviews (see Appendix K), particularly Case E and Case O. Partnership engagement, defined as working together to achieve goals, conduct decision-making, sustainability plan, strategize, and capacity-build, accounts for actions of partnerships, or the coalition. The actions of the coalition, defined mainly through partnership engagement, interrelated and intersected to advance sustainability.

The basic principles of partnership meetings and bringing partners around the same table emerged in all the cases. In part, this finding suggests the importance of remaining present with partners to build relationships, evoke engagement, and cultivate accountability. The following

statements support meetings, bringing partners together and creating the space for collaboration and conversations in sustaining PSE strategies:

> I guess my recollection would be that that probably happened largely through our regular standing meetings…So, you know, we have regular be healthy [redacted] coalition meetings, and we use this an opportunity to share progress on the work that we're doing whether it be grant funded or, or not. And, and that provides kind of a, a regular connection point for the partners to ask questions. So I think that the coalition meetings themselves and that kind of regular scheduled meeting is definitely key. (Case O_Comm)

Beyond routine meetings, other methods to keep partners engaged and advancing PSE strategies emerged. Communication with partners, including to the public, was critical in engaging partners. Different methods work for different audiences, which was demonstrated in the following statements:

> …we also have developed written reports or, or community reports highlighting the work that's been done…using a lot of online to share information and educational resources…So through the [redacted] health initiative office, we have Facebook pages that we use for information and educational sharing. We actually keep one of those for the [redacted] health initiative overall. And then we have one that's just dedicated to physical activity work related to QC trails. It's actually a Facebook page just for the QC trails effort. And then obviously the website that we created and the last several years, QC trails.org is its own source of information. And then we also have a QC AHI webpage that we use for information distribution, and then related to all of that is, you know, regular communication with the partners and the community stakeholders via email. So, you know, I think I think that it's been a combination of communication tools. But in, in most recent years that in-person meeting and then the regular email connection points and then digital tools like websites and, and social media have been the key way for us to share information. (Case O_Comm)

Coalition structure and relationships: A key emerging theme was the importance of the coalition structure, system, and infrastructure in supporting sustainability. In this study, structure meant that the coalition members formalized the partners and partnerships into a framework, defined how to accomplish and operationalize the work, and employed a systems approach with partnerships. The case respondents with greater sustainability described a structure in their coalitions and frameworks for operating systemically. Two of the five case respondents developed and implemented bylaws for the coalition; created action teams for championing, capacity-building, and networking; and furthered PSE strategies with partners across the system

(socioecological model) to leverage infrastructure and capacity. These case respondents reported continued adaptability in their structures after funding to best serve the community needs, having both structure and inclusion of systems interrelated in evidence to combine into one construct. Both structure and inclusion of systems were factors present in the cases where the construct emerged. Structure was a factor coded 29 times across all cases but not in every case interview. Case E and Case O emphasized structure in coded segments. Structure indicates the presences of the coalition formation needed to organize actions and results.

> Well, I mean, from a leadership perspective, I guess if I just kind of name some of the players, obviously you've got me in there with the with the healthy community partnership or the collaborative, you also have the CEO of the hospital, the AMLH board of directors, the AMLH foundation, board of directors. They all had to approve the community health improvement plan. And that's a requirement of not-for-profit hospitals, which is us. So I'm sure you're familiar with the health needs assessment and the community health improvement. So that was approved by all of those people. All those folks were part of that. That co-led between you and the health department, then. It is now it wasn't at the time it is now. So yeah, so the past and it our second or third community health needs assessment that's being done in collaboration with the health department. So yes, that has happened, which is really great. And then I'm thinking of, you know, the other leadership at the schools, of course, the superintendent of the principals have to get involved in promoting and you know, buying into that. And that's a, that's a lot in Logan County because we're really weird and that we just don't have one superintendent. You've got all this craziness going on with 17,000 school districts. (Case J_Comm)

> I would just know it's something you haven't mentioned is that after that, during the CDC, so somewhere during that time period we did have some CEO changes that the health systems and they recognize the value and strength of having the [redacted] health initiative. And they too did a retrospective kind of a, made a decision to re to restructure the board [redacted] health initiative to make it stronger and more and be very, even more deliberate about its [cross] sector participation. So that, I think that helped that, that goes back to the collaborate and cooperate…(Case O_Comm)

This research defined coalition as active stakeholders, a diverse group of individuals and organizations working together to achieve specific goals and having a connection between program and community. The findings of this research revealed that the support of the community and organizations influenced sustainability of coalitions and PSE strategies. In

particular, stakeholders' willingness to sustain membership and be active was a measure of success for the cases.

> Basically just the support of the organizations in the community. Like we looked at that how many partners that we had that were supportive and willing to be working on this. And then we would look at the overall success of each, are we meeting all the measures of each strategy and if we weren't, then we would obviously base our success on that…Well, those are all our MAPP stakeholders. It's a laundry list, but it's basically all our health systems and a lot of our community-based organizations and our nonprofits. (Case L_LHD)

> Well, I think all the partners that we work with on a general base, our general regular basis, which is Scott County health department, rock Island County health department, both hospital systems are community health care. That's our federally qualified health center and quality health initiative. Everyone understands the value and everyone is invested and engaged and seeing this work continue in our community. (Case O_LHD)

> Well, I was just going to comment on, you know, kind of since, since the, we choose health grant and thinking about sustainability of the work, I think again, you know, going back to the coalition membership and asking which partners have the, have the capacity at a given time to be able to continue the work is, is important. You know, the, the policy systems and environmental change work, you're, you're hoping that if you're able to make changes in policy, that that will mean that the organizations are organically sustaining the work, even after the grant funding period is complete, but then other initiatives that might have more you know, kind of more project components to them might in fact or more opportunities for expansion might in fact require additional funding and or additional expertise to push forward. So, you know, I, I think, again, back to the, the safe routes to schoolwork, cause I know that was part of the, the, we choose health grant, but then also something that we continued and expanded, and we were able to expand the work in part, because we were able to find an additional funding source, but also because we had additional schools who were interested and, and willing to, you know, take on the responsibility of, of their piece of that work. (Case O_Comm)

Furthermore, partnership development emerged as key to sustaining the coalition. Existing relationships with partners AND new partnerships provided more diversity and systems approach in sustaining PSE strategies. Where coalition and partnership engagement intersect is having the partnerships intact to empower engagement and other key processes to sustain PSE strategies. Cases J and L both emphasize the breadth of partnerships and partnership development toward better partnerships as critical to sustaining the coalition.

> …the way I see it is the relationships that were built back then have continued to today. And a good example of that is the health department with the DOT and the planning and development department here at the county. The relationships back into the we choose

> health grant program led to the creation of what we call our active communities work group…And we had representatives from the private sector, from the public sector coming together and focusing on that one issue. And I think if nothing else, it, everybody coming together and building those relationships, I think, and, and carrying the information that they learn back to their individual agencies…(Case L_LHD)

> I'll tell you about the only thing that comes to my mind is that because now we have less funding, we have to rely more on our partners. So partnership development has, I think, has gotten better over the last several years. And I think that's really what's come out of it, Sharing of resources and better partnerships. I think we're all in the same boat here. We realized, you know, as a single entity, we're, we have less potential, but if we all work together that we could do more, so. (Case J_LHD)

> Oh, well, I mean, honestly, I think we were pretty much forced into having to develop partners. I mean, we realized without funding that, you know, how are we going to develop the partnerships? And we were pretty much put, you know, your backs are kind of up to the walls. Like, what are you going to do? And we have no other option, but we've got to you know, try to be better partners of the community and offer more services out there, work more with our schools, work more with the hospital. You know, so I, you know, and as far as we choose health, I mean that helped probably solidify a base partnership on a lot of these programs were we realized we're going to have to build it up even more. (Case O_Comm)

Sustainability of coalitions depends on sustainability of partnerships. A finding emerged around the commitment of individuals of coalition membership organizations (partnerships). The commitment, institutional knowledge and experience, and passion for the health of their communities contributed to the sustainability of PSE strategies and coalition.

> I can't really think of too many instances where there was ego or turf going on. And one thing I think that [is good], at least for the rural areas, is the longevity. It's the commitment. There's a lot of us around the table that have been around the table for 20 years. Maybe our organization [changed], maybe we've switched organizations or roles, but we're still there, and we're still committed, and we all work. I say this all time, that we're here to work with our each other and with our communities and not do something, too. I think we just all have that philosophy. (Case E_Comm)

> Yeah. I, I think, you know, overall it's about sustaining connections with partners, you know, and so not, not necessarily thinking about it being just for the sake of one particular project, but overall trying to maintain connections with partners, interested in the overall community health objective, right? Because, you know, if you have a group of partners who are interested in nutrition and physical activity, you might be working on one project for a couple of years together, but that interest in and that desire to improve nutrition, physical activity is still going to be there when that particular project ends. And so hopefully then you can, you can roll that enthusiasm and engagement with your partners into the next project that you want to do together. And so, so it's, I think it's

> about thinking long-term about those connections with community organizations and trying to maintain participation and engagement over time. (Case O_Comm)

Furthermore, the commitment of the coalition and coalition members created synergy and momentum, especially when positive PSE change was observed.

> Yeah. And I would say that and just, it continues our momentum. So I think the coalitions and the coalition members, when everyone can see that we're having some positive change, I think we continue to get more buy-in and more participation. But when, when they don't see that is when it kind of, you know, falls back there to the wayside. So I think that is another way. That's easy. I mean, without that commitment that's, that happens easily. Doesn't that all of a sudden, you know, we were there, we just all walked away. (Case E_Comm)

> Well, I would say the quad cities is a unique area because we do have the partners and the engagement and the dedication of people on both the Iowa and the Illinois side of the river. And everyone that I talked to at the meetings, I go to all the various different coalition meetings. Everyone is committed and engaged, and I think they would do this work. Even if those coalition groups didn't exist to be quite honest, but we're grateful that they do exist and that they they're our partners in all of this. And, and, you know, there will be impacts on, on this from COVID on all of these different issues within our community. And it'll be very interesting to what the next assessment holds. I think, I think we'll see, you know, impacts for probably several cycles of our assessment to go yet. And I'm going to turn the camera on the Mariah, just so you can see her too. If I can, if I'm not bad. (Case O_LHD)

Coalitions provided the space for collaboration and interaction, interrelated factors and processes, and facilitate sustainability of PSE strategies and partnerships. There was significance given to the importance coalitions gave to a systems approach. This meant that diverse and numerous partners came together to work toward shared goals using their capacity to better reach intended health outcomes.

> So once the funding ended, we continue to work on some of our goals and objectives with our coalition. So they, as a whole helped us support some of our initiatives and keep them more sustainable. (Case L_LHD)

Organizational and Community Capacity: Reliance on coalition partners for capacity was a factor in all of the cases. Coalition, organizational capacity, and community capacity occurred 196 times across all the interviews, with the most frequent occurrences in the community interviews of Case E and Case O (see Appendix M). Leveraging resources of the coalition

partners emerged in all cases. The following statements present an example of leveraging resources:

> I guess we'd have to take it back to the [redacted] foundation board, the board of directors, because there's some [things] that we do [that are] collaborative that are truly a collaboration, but there's just some things we do kind of in the name of the collaborative funded completely by all the hospital foundation. So, I would say that in terms of leveraging things, I will also say that the YMCA years before this had already a, I think, maybe a Y USA kind of initiative [that] they had taken on after the afterschool version of catch kids club. And when we started talking about catch at the collaborative level or [WCH] partnership at the time, "They were like, wait a second. I think we have that." And sure enough, they had all that equipment kind of still packaged up and not used. (Case J_Comm)

> So I, when I think about capacity, I think about all the partners that were brought to the table. So each of us with our own area of expertise and knowledge could come together and by having multiple partners, then, you know, we're able to do more is how I would frame it. (Case A_Comm)

Sustainability Planning and Shared Decision-making: The case respondents reported that sustainability planning and shared decision-making occurred the most in the community needs assessment and planning process and the integration of PSE strategies for sustainability. The processes were also explored in Research Question 2 (see Research Question 2, Processes). Table 28 also presents the planning process and shared decision-making of the collaborative, collective efforts and the collaboration of coalitions to sustain the PSE strategies. As previously discussed, the coalition facilitated the collective interworking among partners, connected factors to sustain PSE strategies and maximized constrained capacity in an ongoing, iterative way. The following statements continue to support the complex interactions that occurred and promoted sustainability:

> And we work together as health departments on the qualitative piece of the community health assessment. And that has really benefited both [redacted] and [redacted] County to be able to do this work together and not be in our silos and working, you know, because a lot of our agencies and organizations in the quad cities are by state. So if we were doing these separately, the same people would have to go to double the meetings and, and double the community health assessment and all of that. So that's been one of the biggest advantages. (Case O_LHD)

> And so I think we continuously work on those health improvement measures every time we go to a meeting and then each coalition itself has its own strategic goals too. So it all kind of relate and keeps that sustainability going. And I was, I went to say, you know, she talked about communicable disease, but I really do think that is going to be part of it from now on everything has been effected by COVID, you know, as well. And, and especially those lower socioeconomic, you know, parts of the population, they have definitely been hit harder in our community by COVID-19 and, you know, just like everywhere in the statement and in the country. (Case O_LHD)

> Yeah. So with the grant, I think a lot of these coalitions actually were formed when that grant was here and that work was all started. And it has just continued on since 2011, I think, with the grant period. So as, as much as we can, of course, we know that all of the goals and we choose health, our public health priorities in one shape or another. And so wherever we could, we continue that work, be it coalition meetings or meeting with other partners and being able to host events, go to health fairs, promote the, the different objectives from tobacco free QC and be healthy QC and the other coalition groups, the quad city trails, all those sorts of things. (Case O_LHD)

Adaptability: The ability of the coalition and its members to adapt to new and ongoing challenges, emerging health issues, changes in capacity and lessons promoted greater sustainability of PSE strategies and of coalitions working together to complete strategic activities. The following quotes are examples of continued modification:

> I think it was the part like the school partners. So you need like that collaborative input. And I think having the wellness meetings in the school, so pulling all the staff together plus us plus the administration is really important to fixing those barriers. So we would do that and we'd work with them and we'd listen to everyone's ideas and then we would adapt as we needed to, or create new, innovative ideas based on input from all the different stakeholders. (Case L_LHD)

> I know [that] for a couple of coalitions, we establish more organization and structure, both the tobacco-free quad city coalition and the underage substance elimination coalition established bylaws in the last year just to have a structure [for] our strategic goals. And both of those coalitions established an executive board also. So, [we're] kind of trying to keeping that sustainability going but also working on community recruitment. [We're] trying to recruit some actual community members [and] volunteers that are interested in some of these topics, too, outside of just the health care professionals that are actually getting paid to work, but we actually wanted some volunteers that were interested in the subject matter to help us with things. So, just like more [of a] structured executive board on a couple coalitions, just kind of making it more official and easier to go forward, and we have a structure there and they branded, they have [a] handbook. There were some products developed out of that handbook, like a vaping toolkit. (Case O_LHD)

The findings show how coalition structure and systems are significant factors for the adaptability and leveraging capacity of the sustainability of PSE strategies. Partners and

stakeholders in the coalition under structure defined in action teams reached out to the community, championed the PSE strategies for buy-in and adoption, and translated training to carry forward the strategies. The stakeholders helped evaluate their capacity and those beyond the coalition to pull in more resources to accomplish strategies and support those implementing the activities. The formality of the coalition and success of the coalition framework provided the clarity the partners needed to gauge and gain resources beyond the coalition.

> I mean, again, as I, as I sort of think about framing all of this, I think, you know, it goes back to back to understanding health status in the community. Having that collaborative assessment approach, having a collaborative that facilitates prioritization and planning, thinking cross sector, thinking about trying to involve and engage partners from multiple sectors for the longterm and trying to build relationships across sectors over time. Those are, those are all, I think really, really important to sustainability for this work. And, and in general for healthy communities work…(Case O_Comm)

Triangulated with Phase I, the information-rich cases varied in their active status of stakeholder involvement (see Table 12) based on the survey completion of each case LHD. Phase II analysis showed that stakeholder involvement and meeting frequency either remained the same or increased based on how the coalition members influenced sustainability. The semistructured interview data validated the survey data, providing descriptive information of coalition activity and meeting frequency. As a result, there were modifications to assess involvement, activity, engagement, and frequency of meetings (interactions) after Phase II. Coalition involvement in the community health needs assessment and improvement plan provided support of Phase I's findings for the active status of each case coalition. Additionally, findings of this research demonstrated routine engagement activities, like regular meetings and communications such as emails, supporting the same or greater stakeholder involvement in all five cases than reported in Phase I. The following statements account for how engagement of stakeholders, or sustainability of coalition member organizations:

> [So for those that continue to be engaged, how are you measuring that?] They're continued to be engaged, they're attending meetings. Yeah. They're still participating in

meetings, responding to emails. Still have some kind of level of, part of participation. (Case L_LHD)

Table 27 presents a summary of the findings updated from Table 12.

Table 26: Coalition Status Based on Stakeholder Involvement

Case	Phase I active status	Phase II active status	Phase I stakeholder meeting frequency	Phase II stakeholder meeting frequency
Case A	Yes	Yes	Never	Sometimes
Case E	Yes	Yes	Sometimes	Often
Case J	Yes	Yes	Same	Same
Case L	Yes	Yes	Sometimes	Same
Case O	Yes	Yes	Often	Often

Table 28 presents key points from the LHD administrator, program manager, and each community partner with a synthesis of the influence of coalitions on sustainability in each case. The codes listed in the case syntheses list the constructs coded per case as a facilitator and are the same as presented in Table 26.

Table 27: How Coalitions Influenced Sustainability per Case

Case	Ways of influencing
Case A Synthesis	Case A demonstrated how having a coalition intact created a space and structure for partnership engagement, capacity building, and sharing and increased understanding of community needs. The coalition positively influenced and strongly influenced sustainability of PSE strategies and change. Codes: Leadership, Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Sustainability Planning, Data and Evidence
Case A_LHD Case A_Comm	• Funding impacted level of engagement among partners in coalition • Attendance at meetings and having all partners around the same table spurred engagement • Invitations in writing to partners seeking direct involvement in needs assessment and community planning • Partners bringing skill and expertise to be leveraged • Leadership intact to bring guidance and direction when partners convened
Case E Synthesis	Case E's interwoven network in its coalition gave great strength to sustainability of PSE strategies. Having a regionalization to the coalition enabled action teams and champions per strategy, maximizing capacity and conducting capacity building. Adaptability became a mindset across partners to ensure sustainability of PSE strategies without undercutting the evidence-based practice. Case E showcased intangibles of relationship-building, teamwork, and collaboration as significant toward sustainability of PSE strategies. Codes: Leadership, Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Capacity building, Decision-making, Opportunity, Adaptability

Case	Ways of influencing
Case E_LHD	• Adaption of coalition as strategies needed to adapt (e.g., action teams) • Joint meetings regularly to exchange ideas and decision-make around what is best for the community (16-county area) and keep intact PSE strategies on the agenda • Receiving of mini-grants from coalition and partnership agreement to tackle new initiatives, like Medicaid reimbursement connected to these strategies
Case E_Comm	• Partners around one table to team up for resources and completion of tasks (leverage of resources) • Utilization of the health career exploration pipeline of one partner to interconnect on PSE strategies and change • Structure of coalition and action teams focused on a key strategy with strategy leads and champions • Cultured teamwork among partners in coalition and long-term commitment toward work demonstrated through partner tenure and ongoing relationship building • Support of partners and positive momentum for systems change • Creation of strong leadership with key partners for coalition (LHD, hospital systems, university) • Capacity building and lifting up the LHDs in the coalition region • Mindset of partners and involved staff to adapt and adjust • Absorption of key activities into key staff roles as part of partnership under coalition for certain strategies • Giving of materials and resources for continued implementation of strategies
Case J Synthesis	Case J adapted its coalition after 2014, shifting a lead role to the hospital and hospital foundation. This change, however, demonstrated the influence coalition and engagement meant toward PSE strategies being sustained. Working together across the community helped the coalition meet the needs of the community and prioritize strategies to improve health outcomes using a data-driven approach. Codes: Leadership, Partnership Engagement, Coalition, Community Capacity, Capacity building, Programming, Data and Evidence, Adaptability
Case J_LHD	• Utilization of community health collaborative as central to data and research • Key leadership with key partners of coalition (e.g., hospital) • Reliance on partners for resources giving greater emphasis on partnership development • Convening meetings keeps partners at and topics on the table
Case J_Comm	• Adapted coalition to the healthy communities collaborated supported through hospital funding • Collaboration with partners to identify and leverage resources • Leadership of coalition and requirement of community health needs assessment driving purpose • Ability to give materials to stakeholders to participate in strategy (e.g., reaching from coalition partners to schools) • Collaborative perspective and systems leadership working on initiatives together • Cultured importance of healthy initiatives with involved stakeholders and groups • Utilization of strategies to go further and build on for other strategies

Case	Ways of influencing
Case L Synthesis	Case L highlighted how built coalitions can be a foundation for PSE strategies and inclusion of practices, like community needs assessment and improvement planning, lends well to sustainability of PSE strategies. The coalition and partners served as a central focus for interdisciplinary relationships and a movement of PSE change in the community. Codes: Leadership, Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Sustainability Planning, Data and Evidence, Decision-making, Opportunity, Adaptability
Case L_LHD	• Relationships existed with leadership to work together on strategies • Utilization of system-wide partners (many involved in the MAPP process) to convene, discuss strategies, and evaluate progress • Coalition helped once funding ended, working on goals and objectives • Pulling together different partners and oversight groups for the strategies • Changed make-up of coalition once funding ended based on need and strategies • New partnerships built in WCH lead to other programmatic implementation (e.g., municipality) • Listening to partner staff for ideas and needs to innovate and adapt • Collective impact for direction and actions community-wide
Case L_Comm	• Built relationships of WCH grew to active community's workgroup with multisectoral representation that meets regularly, works toward healthier communities, learn and then take information back to individual organization • Leadership in elected officials supported PSE strategies after funding ended, seeing the value in the programming for the community • MAPP partners core and critical to coalition • Chronic disease and health continue to be a priority—whether funding or not—reasoning partnership and collective action to continue • Enhanced understanding among partners to embrace perspective and get to a shared space in understanding each other • System-level change and value of including the impacted population in the process, if nothing else to share stories for bettering strategy • Utilization of coalition capacity for new initiatives • LHD create policy and lead application processes with coalition support • Effort expanded possibilities and provided for innovative thinking
Case O Synthesis	Case O's coalition served as a central force toward PSE strategies being implemented and sustained. Strong championship in partner leadership created synergy and connectedness among partners for enhanced collaboration and coordination. The coalition then resulted in shared vision, best-leveraged capacity across the entire coalition to best serve the needs of the community, and adaptability to sustain change. Case O describes a coalition and its practices together positively influencing sustainability. Codes: Leadership, Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Capacity building, Sustainability Planning, Decision-making, Adaptability

Case	Ways of influencing
Case O_LHD	• Utilization of coalition resources and planning (e.g., safe routes to schools) with partnerships to give resources (e.g., hospital system do community health assessment as a group) • Coalition meetings and partner meetings • Shared goal of healthy well-being and shift concentrated areas of focus based on emerging need (e.g., smoke from cigarettes to inclusion of vaping) • Structured with a steering committee, designated groups, bylaws, focus areas, etc. • Individual commitment in each partner of the coalition and partner advocacy of strategies • Base group of coalition (hospital systems and health departments cross border) with heightened level of commitment and responsibility
Case O_Comm	• Partners convene and remain active • Inclination to collaborate across sectors in community with partnership engagement and long-term relationships across sectors • Long-standing response and interest in healthy community • Structure of the coalition and leadership across sectors and framework for meetings • Capacity building and capacity evaluation across partners and sectors to leverage resources • Connection between organizations in their planning and funding processes to build in PSE strategies and identify funding for application • Continued synergy founded in coalition for WCH • Breadth of skill, knowledge, and abilities needed for PSE brings brought support to continued partner collaboration beyond only a local health department delivered program • Goal of working, learning, and reinvesting in community together

Coalition influencers across the cases: **The factors identified as interrelating with "coalition" (as a construct) to influence sustainability across the cases were leadership, partnership engagement, and capacity. Leadership emerged as key to facilitating partnerships, creating shared vision around sustainability of PSE strategies and culture of health, prioritizing and leveraging capacity, providing guidance and direction and generating a team approach within the coalition and its network. The key component of coalition functioning common across the cases was the building and maintaining of relationships – both new and existing. Partnership engagement and connection was variously described through activities showing coordination, collaboration, and networking (cf the categories described in Himmelman 2002 and those who have built on that work), demonstrated through actions such as routine meetings, regular communication, planning, etc. With strong relationships and engagement, leveraging capacity (resources, funding, skill, expertise) community-wide defined a key pathway for how coalitions were effective in influenced sustainability in the cases.**

Research Question 4: What opportunities emerged that led to the sustainability of the WCH PSE strategies?

Opportunity ("Opp") appeared 46 times across all the cases and provided evidence that cases identified and embraced circumstances and chances to sustain PSE strategies. Opportunity was a factor applied to the innovative methods, emergent strategies, adapted strategies, policy changes, or circumstances that contributed to strategy sustainability or enabled sustainability. Table 29 presents a case comparison summary of opportunities identified, or factors that the cases recognized leading to sustainability and future sustainability of PSE strategies. The findings (row) explain how the codes emerged in the data.

Table 28: Research Question 4 Case Comparison Summary of Opportunities

Code	Partnership engagement	Coalition	Organizational and community capacity			Opportunity	Opportunity	Sustainability Planning	Opportunity	Emergent strategy
Finding	Collaboration, relationship building, learning	Partnerships, structure, new and different partners	Cross-jurisdictional sharing of resources	Exploration of new funding (e.g. managed care organizations and chronic disease) and flexibility of funding	Integration with existing programming	Communication (e.g., sharing stories, press releases)	Innovation (e.g., subawards)	Incorporate sustainability of PSE in planning, evaluating and assessing needs, equity in communities, culture of health and mindset change	Policy development, implementation, change	Emergent strategy, adaptation to emerging issue
Case A	X	X	X	X	X			X		X
Case E	X	X	X	X		X	X	X	X	X
Case J	X	X		X	X			X	X	X
Case L	X	X		X			X	X	X	X
Case O	X	X	X	X	X	X		X	X	X

The co-occurrence of codes most frequently occurring with opportunity were emergent strategy, sustainability, strategy, and partnership engagement. Appendix K presents the other factors interrelating with opportunity and co-occurrence count. Triangulated with Phase I, partnership and policy were factors (see Table 14) consistent with the emergent strategy and partnership engagement codes intersecting with opportunity. Furthermore, partnership engagement, coalition, organizational capacity, community capacity, programming, and adaptability were previously discussed as factors (facilitators) and processes (actions) affecting sustainability and have also been identified as opportunities to advance PSE sustainability and change. These patterns are discussed further in this section. Additionally, given opportunities provide chances and potential, other opportunistic factors not identified in all cases are noteworthy and explained.

Partnership Engagement and Coalition: Partnership engagement and coalition have been identified and previously emphasized as critical to sustainability of PSE strategies. Partnership engagement as the action of partnering emerged as opportunities in all five cases. More specifically, new and different partners at the table was viewed as chance to sustain, grow and evolve. Case L commented on the positive contributions of new partnerships to sustainability:

> We [have] developed new partnerships. So, we didn't have [the] distant relationships with some of these partnerships that we have now. I think that that was definitely a positive impact on that and has continued to allow us to do other things with them, too, to kind of maybe not [have] the exact same strategy but other things that are similar. (Case L_LHD)

As a characteristic discussed in Research Question 2, a healthy mindset and culture shift were undercurrent to adaptability, or seen as necessary to adapt, and resulted in part due to sustainability planning. A finding was having a new partner at the table with a shifted mindset opened a door and widened the prospect for long-term sustainability and improved outcomes. Case L provided a valuable story in the following statements:

> And for us, our agency was criticized back in the day for not doing a lot when it came to walking and biking. We were sort of pigeon-holed as the agency that was only concerned

> with moving cars quickly through neighborhoods. And we often would tell communities that we don't build sidewalks, we build roads, and we would often prevent communities from installing sidewalks along our road or crosswalks or anything that would help people get around on foot [or] bike. I came aboard in 2012, and things were already starting to change at that point, but the [WCH], it wasn't the only reason we changed as an agency, but it was a big part of why we changed our mindset from how we used to do business to where we are today, which is now we think of ourselves as really an agency that cares about every mode of transportation, regardless of what that is. And we often design for all modes [of transportation], not just the automobiles. From our local agency perspective, I think [WCH] pushed us toward that direction a little faster than we already were going in that direction. After the grant expired in 2014, I feel like because walking and biking is becoming a bigger part of our transportation network, and people are expecting more stuff from a walking and biking perspective. The grant opportunities elsewhere for infrastructure have only grown since 2014. I think of [the WCH] as sort of getting us to a point where we [were] able [to] as a county [and] as a community apply for these federal and state grants that do come up. I mean, there's a grant right now from the State of Illinois called ITEP, which is the Illinois Transportation Enhancements Program. And there's $100 million available at the state level for walking and biking projects [and] transportation projects. And in the past, we would never apply for this grant because there is a local match involved [that is] usually 20%. But we're going to apply for four projects this year. And this is something [that] we've never done, I think, before 2014. So again, I think a lot of the benefits of the [WCH] grant were intangible. You can't really put your finger on what we, as a transportation agency, got out of it, but a lot of it is just kind of the mindset shift on how to think. (Case L_Comm)

Case L also highlighted the advantage of learning from partners; engaging partners in sharing and understanding cross-sectoral, interdisciplinary languages; and achieving a shared understanding with partners.

> Oftentimes, people overlook the importance of being able to speak different languages. And I'm not talking like different languages, literally, but like engineering is its own language, right? And like health language is different than anybody [at] the [Department of Transportation] understands. But I think because of those relationships that we built, I can go over to the Health Department, and they can understand what I'm saying, and we can understand what they're saying. And I think that's often overlooked. And it's [an] important piece of what happened with this program. (Case L_Comm)

Involving and reaching the public and extending engagement beyond partnership was identified as an opportunity to further sustain PSE change in the community. This finding supports the socio-ecological inclusion in Figure 8.

> …I still think we need to reach our families more in terms of school communities, educating families, not just students, not just teachers, but some more community engagement or family engagement with education and resources. And that's some of what we do on the, on our map, obesity and nutrition group, you know, operating vouchers,

> profound farmer's markets and promoting garden activities, but overall to make any real change, I think it has to, for us, it has to have a little bit more family and community involvement, including addressing the diverse needs of the, of the various of our population. You know, we have a large Hispanic population. We have a significant low income scenario for a lot of our residents in our city. So for me, it's, it's to focus more on community. (Case L_Comm)

Organizational and Community Capacity:

Cross-jurisdictional Sharing of Resources. Two of the five cases (Cases E and O) engaged more counties (and another state for Case O) than solely their jurisdiction in WCH and to current date more predominantly, structured under their coalition and its operations. However, Case A discussed the opportunity to extend beyond their jurisdiction to better leverage and share resources as a measure to sustain PSE strategies, as with the following comment:

> We trimmed staff just for education and promotion of the healthy eating. Obviously the smaller health department is too. One of the reasons why we ended up doing services for Marshall County was to be able to go in and spread our resources a lot better to be able to go ahead and sustain financially. Because as far as, as the grants, as you know, that of not sustainable, they're, they're always cutting certain things. And from my understanding or what I know is it over the past year is nothing has gone down. Almost everything has gone off to improve staff salaries and supplies and everything else that's associated with any kind of program. (Case A_LHD)

With 102 counties in Illinois and 97 certified LHDs, many jurisdictions are rural, have constrained capacity and are asked (and expected either from public or per formal agreements) to perform the same programs and deliverables. Coordinating and collaborating across boundaries, sharing programs, and leveraging capacity demonstrate a modern approach to provide services and improve health outcomes, especially in rural jurisdictions with smaller populations.

> So when they want us to continue program in your small health department and you don't have any strings of revenue besides, you know, we do lab draws or, you know, flu vaccines, and we try to keep it very low cost. So our revenue sources are very minimal. We cannot carry on program for people on our back that is just not possible. You know, there are bigger health departments, you know, that have providers and no, we do not. And there are many throughout the state of Illinois that have to be rural like us. (Case A_LHD)

Exploration of New and Flexible Funding. Capacity, mostly in terms of funding, was identified as a barrier explained as a part of Research Question 2. Several ideas for changes to funding and initiatives to explore and gain new funding surfaced. A main theme in the findings was about eliminating prescriptiveness in grants and categorical funding. Case respondents explained that if grant and appropriated funding supported LHDs and community to adapt to changes and align priorities locally, sustainability would be more readily advanced. This was demonstrated in the following interviewee statements:

> To me, the top thing would be funding and flexibility of grants. I mean, we're too locked in on things which, you know it would be nice rather than, you know, if the state says here's a grant and you can only use it for this. Well, what if that's not our top priority in the community? And now here, we got other programs out there that we really need help on, but there's no funding for it. It's like, you know, mental health. I mean, we don't, you know, there's no mental health funding and that's one of our top priorities. No, that's, that's like at the top of the list, strategic plan. And it's not only one of our top priorities in our strategic plan is funding development. (Case J_LHD)

> Yeah, you know there's still, there's all kinds of different health outcomes still need addressed. You know, in our area, you can look at the data you know, it's just, besides we choose health you know, you're still smokefree multiunit housing with smoke-free. You could still always work on the work site wellness in any capacity to make sure the workplace is aware of their own health for a variety of different reasons. You know coordinated school health still continues. But there's still, you know, chronic disease is always going to be a big factor diabetes and of course with the smoking is still have the issue of lung cancer and people that continue to smoke. So it's, you know, you always have a number of contributing factors in this area that you could always work on it also be nice to have the funding it's not so restricted what we can use it on. I was waiting for when that would be stated okay. That so funding not restricted for community to use how best fits or best aligns with assessment needs. (Case E_LHD)

Exploring new types of funding to sustain PSE strategies, improve chronic disease health outcomes and support aligned goals with local IPLAN and health priorities emerged as an opportunity. The case interviewees demonstrated how working together, thinking together and wanting better for their communities fueled exploration and a desire to do what is necessary to sustain PSE strategies, as indicated in the following statements:

> Well, I think we're lucky to still get the, what I consider mini grants that allow enables us to still do these strategies working through our, through that Delta coalition, SHI helps us

> out a lot through that they're receiving grants that they pass through to the locals. And we are starting to see some of that Medicaid MCO and that been support us in funding to do that. Yeah. And MCO's, yeah, they're starting to partner more with this to help the community. (Case O_Comm)

> Well, I think the fact that these groups wanted to continue to meet and work on objectives, even though there wasn't necessarily funding. And it also helps us look for other potential funding sources, you know, are there other grants we could write because we still are meeting and collecting data and working on objectives and activities that, you know, we look for grants that might fit in with the goals and objectives we've already kind of made for these programs. (Case O_LHD)

Communication: An opportunity exists to utilize stories to support the sustainability of PSE strategies and ensure that evaluation does not only present quantitative metrics.

> Sometimes, it's how [you] do on the qualitative side of things. When you have a parent [who] comes up to you after a mental health first aid class or a week or two later and says, "You know what, I used those skills, and I saved the child's life." When I was still at giant city school, when we started implementing signs of suicide, I [taught] the lessons 'cause I thought [that] I could speak to them better. I went back to try and sit in, and I taught the lessons, and I know we saved the life of a child because he came up to me afterward. I'm like, "Okay, buddy, I'm so glad you reached out, but you know what, I'm not gonna leave you alone now." Or the bicycle that we gave away at a health fair. And I'm thinking of a giant city person. I took that bike to a child who really needed a bike. His mom didn't have a car, so I transported the bike to his house. And I know that kid's going to move more. I know he's going to be more physically active because he won that bike. So, I mean, some of the times, it's how do we tell that story in a meaningful way? (Case E_Comm)

Likewise, increasing and enhancing the release of data, interpretation of the data and evaluation of the CHIP is important to sustain PSE change and value among stakeholders and the general public. Connecting with the general public and extended stakeholders, as previously discussed, begins with educating about what is known, what is the status, what is the plan, and what are the next steps. There is an intersection between IPLAN, sustainability, partnership engagement and communication, as demonstrated in the following statements:

> Well, for all of our assessments, we have the steering group, which includes a lot of the coalition members and then we also make, make it public at the end of the cycle. We have a press conference and invite all our health partners from both sides of the river. Then we also publish it and send out press releases. It's always a link to our website and we'll put a social media out about it too, every cycle. (Case O_LHD)

Innovation: In this research, innovation emerged as new, different methods, modern approaches, improved processes, or new tried ways of operating. In several cases, respondents indicated WCH was an innovation in itself. This meant that the LHDs and their communities had not ever developed, adopted, or implemented an alike grant or PSE strategies. WCH required components in the grant that resulted in factors contributing to sustainability and had a long-lasting impact, like new, different partners, different thinking, shifted culture, among other examples. The following statements describe WCH as innovative and what spurred continued pioneering work:

> I mean, one thing about we choose health is it was very innovative at the time. So that was really good for our community. I think in our community [the population and areas] is pretty diverse. Like we're not all rural or not all urban. We [are] just kind of are a mix. And so I think we choose health really helped us build some relationships that we didn't previously have. And that's been really successful for us moving forward and helping us to achieve a lot of different things. So, I mean, we're really grateful to have had that grant and cause I don't think that we would have a lot of things in place that we have now, if we didn't have that. (Case L_LHD)

Formalizing partnerships through sub-agreements emerged as an innovative approach, a way to enhance partnerships, and grow ownership of health in the community and within partner organizations.

> …I think [that is one of the] beneficial things we had with giving out least sub grants, because we didn't want to just go into each school or each misspelled and say, this is what you have to do because they're all different. And so we just gave them, you have this much funding, you need to meet the, you know, do this, but they were all creative in their own sense to do what they needed to do. And so providing them that little bit of flexibility and ownership to the program and to what they need was I think, beneficial to some of the success stories. (Case L_LHD)

> Well, I think we're lucky to still get the, what I consider mini grants that allow enables us to still do these strategies working through our, through that [redacted] coalition, [redacted] [health system] helps us out a lot through that they're receiving grants that they pass through to the locals. (Case E_LHD)

This concept of providing funding to organizations for implementation of PSE strategies continued past WCH when possible, as commented by Case J. It is noteworthy that investment also came in the form of purchased resources, not only funding, under sub-grantee arrangements.

> Well, I think what we knew from the beginning was that it was going to be a minimal investment once you purchase that equipment and that curriculum, that was the big investment into each of those schools. And probably why for we choose health, it was so attractive to, you know, you, you could buy that and make that initial investment. And then it was in a perfect world. The school would take it on, on their own, and then they would just keep it. Now, it just becomes, you know, a matter of doing business as a catch school. And once you have that information, you have it. So for us, I think right off the bat, we knew it was a, that's why we were interested in making the investment as the foundation and continuing that we knew that anything we, we wanted to be kind of present to make sure it didn't go away, but it would just be a matter of reminders. And, you know, it could come down to helping them make copies or buying them some posters every once in a while, or just teacher in something that they want to do that is a catch friendly school. And then also promoting that and making them proud of it and keeping it top of mind. Those are very easy things to do, even if we didn't have the funding to put $5,000 into a school every single year. (J_Comm)

Sustainability Planning: As previously discussed in Research Question 2, CHNA, CHIP and IPLAN emerged as the planning for sustainability in this research. This was also seen as an opportunity for sustainability of PSE strategies. Bringing diverse partners together and collectively analyzing data, understanding its meaning, prioritizing health issues and leveraging resources was determined to advance PSE sustainability and change. The following statements support these efforts toward sustainability:

> Yeah. I mean, I guess I see there are a lot of consistent participation on the MAPP work groups, you know, there's, I think from my perspective, those relationships and that trust, you know, you, you leverage that into new and innovative, you know, things all the time and having conversations about how do we collectively, you know, you just keep having that collective impact, if you will conversation about how do we do this work better together. We each have a different perspective, but we also each have data that we can contribute. You know, we don't all have the whole picture. So if we work together and we identify those priorities right, and make, continue to select evidence-based strategies, I think we're more likely to see better outcomes in our community and then prioritize like where do we need to put our energy, our resources, our time. (Case L_LHD)

Furthermore, there was a conclusion that collectively planning for sustainability also yielded potential for greater funding or new funding opportunities.

> Well, I think the fact that these groups wanted to continue to meet and work on objectives, even though there wasn't necessarily funding. And it also helps us look for other potential funding sources, you know, are there other grants we could write because we still are meeting and collecting data and working on objectives and activities that, you know, we look for grants that might fit in with the goals and objectives we've already kind of made for these programs. (Case O_LHD)

The majority of the findings support PSE strategies merging into sustainability planning (i.e., CHNA, CHIP, and IPLAN). However, there was a strong finding that showed the significance of WCH in the communities in first identifying health priorities needing included and having already taken action through PSE strategies. For example, Case L explained obesity was not considered a health priority until 2015, but WCH allowed Case L to have implemented PSE strategies that were already addressed obesity in their community:

> …actually obesity had it obesity wasn't in our actual community health needs assessment until 2015, it wasn't even identified need. And so technically I started working on this with her before we even had it in our needs assessment plan or improvement plan. (Case L_LHD)

Furthermore, equity and social determinants of health emerged as foundational data to inform sustainability planning of PSE strategies. Specifically, there was acknowledge of using the social determinants of health in jurisdictional CHNAs. PSE strategies encompass equity and social determinants of health to drive PSE change and improved health outcomes. In fact, WCH was grounded in having grantees evaluate social determinants in relation to health and allowed opportunity for grantees to state health equity focus (e.g., population by age, rural/urban, race/ethnicity, income, sexual orientation, disability or other). This approach also enabled multi-sectors and interdisciplinary stakeholders to better understand the data and how to use it to advance PSE strategies across. The following comments demonstrate the cases' use of social determinant data in sustainability planning:

> Well, a lot of these goals and objectives of course, are the social determinants of health. So they are always included in our community health assessment. So it was a really easy alignment in my, my mind is it's almost like you didn't need to do it. It's just, it's one in the same, really. Do you have any ideas on that? I mean, I think in regard to sustainability and the community health assessment just reiterating which areas need to be around and

> focused on long term since it pretty much, you know, hits everything like communicable or not communicable, but like heart disease smoking prevention, physical activity, healthy eating, kind of just showing us and reiterating where we're at as the population, which kind of shows us, which coalitions needs to remain around and stay long-term. The ones that have been here for a long time are still going strong. (O_CHD)

An opportunity to improve planning beyond the Cases' jurisdictions emerged to strengthen PSE sustainability. There was an emphasis on incorporating sustainability of PSE strategies at the federal, state and local levels and allowing communities to prioritize and take necessary actions dependent on data, evidence and shared goals.

> And two, I would say support from the state like from the department of public health and these other entities statewide entities or organizations when they have things like this written into their plans, then, you know, maybe it could be into a grant to the CDC, or maybe it's in the, I, you know, in the health department is putting these kinds of things in their IPLANs that can prove the need and hospital systems like ours that are doing their community health needs assessment. If we write it in as strategies and then maybe having it written into like the state health improvement plan, these things that we know if they're going, they, they can create longer term behavior change. I mean, I always go back to like the smoke-free Illinois act. I mean, if we, if we didn't have that in place now, I mean, all the things that would be going backwards like are there other big things like that that needed to be done at the state or regional level or even accountants with their IPLANs that can help sustain. And for a lot of people to see a lot of organizations to see how it does, how does this work, help us fulfill our mission and tying it to that, or, you know, allowing a community to see a need and take ownership in the solution or the partnerships that are created…(Case E_Comm)

Policy: Policy was included as an opportunity, or set of circumstances that promoted and enabled sustainability in this research. Policy emerged as critical to sustaining PSE strategies, putting forward legal parameters for the public to follow that support healthier behaviors and improved health outcomes. The policy also enabled enforcement of the PSE strategies intended change. For example, giving citations for the public not following the local smokefree ordinance. Furthermore, there was a verification that policy continued to prioritize the PSE strategies and promoted their sustainability:

> Well, of course, you know, we hope that everyone that we first initiated with the policy changes that these would keep on a path, you know, when we would lose funding. And of course, a lot of, a lot of places that did the policy changes still remain smoke-free campuses even without a legislative law passing. So it was really proud on our end that

> these workplaces, college level campuses, sports complexes still chose to remain smoke-free even after the funding ended. (Case E_LHD)

> And then tobacco-free QC, I think that's the other strongest coalition group that is still working together, even though the funding under we choose health has ended, they still continue to work on all those efforts of that smoke-free outdoor places and smoke free, you know, multiplex housing and all of those sorts of things. (Case O_LHD)

However, this research also showed that policy development, implementation, enforcement and evaluation takes time. With WCH ending abruptly in year 2, many policy aspects of the PSE strategies were put forward and now sustained following the end of WCH. The Cases explored (and still are) policy to support improved health outcomes and see how policy balanced with other interventions such as health education can promote and sustain PSE change. The following statements describe this analysis:

> And then we also actually through that grant looked specifically at nutrition policies in schools. So there was an opportunity to think more about policy development and policy work in the school setting after the, the we choose health period as well. And I guess in terms of most, most recent opportunities, we also are continuing to talk about that question regarding policies, community policies that support health and are in our space. And so that topic, if you will, of policy development, both organizational policy, but also community level policies is something that we're still exploring. (Case O_LHD)

The approach described for policy showed how the Cases carried forward PSE strategies post-WCH. For example, Case L stated their county adopted an ordinance in 2015:

> There are some tobacco, so one of the strategies was smoke-free public places. Yeah. Yeah. Cause I remember we had a couple of parks that became designated smoke-free and then since then we were able to probably around 2015 or 2016 get the County to approve an ordinance to make one of our, two of our parks. Smoke-Free yes…I want to say it was 2015. It was 2015. (Case L_LHD)

It is also important to recognize that sustainability of PSE strategies revolved around policy does not end with implementation of the policy but also enforcement, evaluation, education and modernization (updating) to the policies when necessary. Understanding what needs sustained following a PSE policy adoption emerged as a finding in this research. This meant also supported the concept that PSE strategies – even if a policy or built environment like a bike path – had components necessary for sustainability.

> Oh, smoke-free public places. So we continue to also have the signage available that was used during we choose health and updates, you know, distribute that as needed to sites that need it have worked with some of the health departments with our Illinois tobacco free communities' funds to help as they're identifying places we help with signage. I think those are kind of those main thing there. (E_Comm)

This finding is discussed further under organizational polices.

Organizational policies also emerged as supporting sustainability of PSE strategies. In particular, wellness policies either associated with coordinated school health or worksite wellness, required school health index completion and action plans. Updating the policies provided an opportunity to evaluate the strategies, identify gaps, incorporate new approaches and implement to make improvements. The following statements discuss how organizational level policies connect to greater community outcomes and sustainability of PSE strategies:

> The school district superintendents and the principals were involved in that, and then they do, they keep it going because that's part of their, you know, it's part of their school. So they're the ones on the daily, they're still promoting it. And we use the, the structure of the, we choose health grant also, which is important to require them to do that school health index. So we inspire that as a matter of fact, we go, the way we do it now is we have a champion at every school, which is how catch is set up, but we have a champion at every school and we every year, well,…one year they would do the school health index, identify a need, like an action plan for we choose health set up. And then the next year we would have them work, the action plan every other year, we were hoping that they would be doing a school health index to recognize areas of potential improvement. And in another piece of sustainability for you, when you talk about policy, is that part of that was the wellness policy in these schools. And so we really used this as a motivator to review the wellness policies at the schools, which are so often sitting on a shelf dusty…And I think it was 2016, so 2016, we were able to be a resource for those schools to get their wellness policies updated, and then be part of those wellness policy teams on the schools and have good conversation around what are some policies we can update and change to, you know, have health in the policy, no matter what moving forward. And so there [schools] that have made changes to their policies regarding allowing students to have access to water bottles all day, which was something that, you know, teachers can't stand kids playing with water bottles at their desk all day. And so they just say no, but if it's in the policy, they have the right to have water bottle there all day long. And to promote that and recognize that one of the things that we've been able to do again, leveraging our resources as we've purchased some of those water fountain, water bottle, filler stations in the schools, so that it encourages kids to fill their bottles up throughout the day. (Case J_Comm)

> Well, I don't know. I feel like I probably already mentioned most of them. So obviously deeper dives into the wellness policies. Yep. The utilizing the school health index, we expanded support to the school staff. So for example, we have workouts free workouts

> every Wednesday for school staff that we encourage them to attend. So we've tried to also support their health as school staff. And because of the partnership with the hospital, we've come and done, like for lack of a better word, a health fair at their back to school. Their back to school, like just for staff where we're taking sure and doing those things. So it gave us an opportunity to get into the school, to get people, to know their numbers at the personal level for staff. (Case J_Comm)

Relating to partnership engagement, coalition and sustainability planning, policies may serve to promote health across sectors and in educating the public. Or in the other words, policy development was seen as a way to culture health in the community, link the importance of the PSE strategy to the desired health outcomes and sustain PSE change and momentum. Case O described policy and education as opportunities for sustainability of PSE in the following statements:

> Yeah. You know, I mean, it often does come down to, to funding. There, there's no doubt about that. You know, I mean, I guess, I guess one of, one of the other things that I just think about from a, from a policy perspective and something that I think that we converse about pretty well in the [redacted], but, but maybe it doesn't happen everywhere is that there is this understanding or recognition that policies in various sectors affect health, you know, like in our community in part, because of, of, by States' openness to this, there's been a really early recognition and understanding of the relationship between say built environment policies and health impact, right. And, and we've seen we've seen other examples of that, you know, across sectors as well. And so this idea that we need to be thinking jointly about policy development, that, you know, we, we shouldn't just think about health policy when we're talking with people who work in health, but that we should be thinking about, you know, what are all the other ways in which our, our policies in our community are impacting our health is I, is I think an opportunity for education. (Case O_Comm)

Emergent Strategy: Emergent strategy applied when the case respondents identified adapting or changing the intended strategy to enable PSE strategy sustainability and change. Emergent strategy occurred with consistent actions over time to adapt the initial strategy and enable evolution. The strategy was the intended WCH strategy and sustainability actions responsive to the community and organization. All of the case respondents described opportunities consistent with actions that contributed to sustainability over time. Key examples were policy development, leverage of resources, identification of new grants, and innovative solutions to the initial PSE strategies. The following quotes show examples of emergent strategy:

> Well, of course, we hoped that every[thing] that we first initiated with the policy changes would keep on a path when we lost funding. And, of course, a lot of places that did the policy changes still remain smoke-free campuses even without a legislative law passing. [We felt] really proud on our end that these workplaces, college-level campuses, [and] sports complexes still chose to remain smoke-free, even after the funding ended. (Case E_LHD)

> Schools [might] not have a super updated or utilized wellness policy. I think in 2016, we were able to be a resource for those schools to get their wellness policies updated, and then [we were] part of those wellness policy teams on the schools and [had] good conversations around some policies [that] we [could] update and change to have health in the policy no matter what moving forward. And so, [the schools] have made changes to their policies [for] allowing students to have access to water bottles all day, which was something that, you know, teachers can't stand kids playing with water bottles at their desk all day. The [teachers] just say no, but if it's in the policy, the [students] have the right to have water bottles [with them] all day long. And to promote that and recognize that [as] one of the things that we've been able to do again, leveraging our resources as we've purchased some of those water fountain water bottle filler stations in the schools so that it encourages kids to fill their bottles up throughout the day. Great. (Case J_Comm)

> Well, I think it's natural [that] once you implement a policy, it's really easy to have that sustainability [that] becomes part of their process. So, I feel like environmental changes, like this was all PSE. The environmental changes [are] not as sustainable as when you actually make a policy change. (Case L_LHD)

Table 30 presents the key points from the LHD administrator, program manager, and each community partner with a synthesis of the opportunities that enable greater sustainability for each case. Opportunities included innovative methods, adapted strategy, emergent strategy, policy, or other ways that contributed to sustainability. The codes listed in the case syntheses list the constructs coded per case as a facilitator and are the same as presented in Table 29.

Table 29: Opportunities per Case

Case	Opportunities
Case A Synthesis	Case A found an opportunity in integrating with current programming and services. This was found as an opportunity to model, especially in smaller jurisdictions. Cross-coordination between public health jurisdictions was an opportunity to better use resources and prioritize health issues where borders do not matter toward improved outcomes. Adaptability was a key process in thinking differently and embracing opportunities to advance PSE strategies. Codes: Partnership engagement, Coalition, Organizational Capacity, Community Capacity, Integration with existing programming, Sustainability Planning, Emergent Strategy

Case	Opportunities
Case A_LHD	• Integration with well-established programs, like WIC, and connect to farmers' markets to meet strategy objectives • Adaption to emerging situations, like COVID, and ensuring integration with PSE strategies • Coordination with adjacent county to provide services and sustain financially • Focused staff on prioritized strategies to leverage resources
Case A_Comm	• Partners involved from initial WCH continually need to be brought back together
Case E Synthesis	Case E's innovative approach with mini-grants and policy implementation laid a foundation for future, emergent ideas. Identified opportunities from successes was a key tool used in Case E, like future exploration of Medicaid reimbursement for PSE strategies and chronic disease outcomes and need for greater statewide alignment for support of PSE strategies in the State Health Improvement Plan (SHIP). Additionally, evaluation of PSE strategies and sustainability of the strategies has been identified as a significant opportunity toward enhanced public value and PSE change. Codes: Partnership engagement, Coalition, Organizational Capacity, Community Capacity, Sustainability Planning, Opportunity (Policy, Innovation), Emergency Strategy, Communication
Case E_LHD	• Coalition administration of mini-grants to entities and LHDs • Exploration with Medicaid Managed Care Organizations (MCOs) for coverage of PSE strategies connecting to chronic disease outcomes • Policy shifts and changes to support strategies (e.g., smoke-free campus, sporting complex) which allowed sustainability after funding ended
Case E_Comm	• Utilization of community health workers has helped bridge gaps, identify resources, and connect people to resources. • Creation of systems change where agencies are supporting more to sustain PSE change (e.g., food pantry and farmers' markets partnership with new partners like UofI Extension) • Support from state public health and statewide associations with PSE strategies written into formal plans for long-term behavioral change • Policy implementation to support sustainability of PSE strategies and change (e.g., smoke-free act) • Evaluation of sustained PSE strategies needs to be revisited (e.g., output metrics on use of walking trails) • Utilization of coalition websites for school health strategy to assist with sustainability • Personal success stories used and told to support the strategies • Coalition assists in leveraging resources, meeting community need, and keeping momentum, which results in more buy-in and more participation
Case J Synthesis	Policy development, implementation, and evaluation lent opportunities for continued sustainability of PSE strategies in Case J. Coalition and partnerships created a network for outreach and support for PSE with entities and the public, allowing continued investment and new emergent funding opportunities. An opportunity to institutionalize PSE strategies and to culture health systematically resulted in an expectation of sustainability among partners, community, and public. Codes: Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Integration with existing programming, Sustainability Planning, Opportunity (Policy), Emergency Strategy

Case	Opportunities
Case J_LHD	• Emerged policy development and implementation following WCH to sustain PSE strategies (e.g., ordinance for smoke-free parks) • Funding and flexibility of grants would be advantageous to support priorities and PSE strategies
Case J_Comm	• Utilization of coordinated school health to bring the national CATCH program, supporting the schools with funding, research, and resources, along with exchanging ideas and implementing innovative activities and methods to gain greater buy-in and sustainability • WCH provided structure for ongoing school strategy, and school leadership at the table supported sustainability and innovation • Used sustained coordinated school health as opportunity to motivate worksite wellness and re-address policies • Making investment as foundation allowed for ongoing sustainability (e.g., CATCH equipment and curriculum) and then helping them toward being CATCH friendly schools • Identification of events like back-to-school to have a presence, network with leadership, teachers, and staff, and be involved in the event (i.e., add a health fair) • Set and support the goal for individual school sustainability • Evaluation of policies and steps to assist improved adherence with respect to enforcement like signage and promotion • Keep with relationships as a key to sustainability in the schools and having succession plan and depth to deal with turnover across all partners • Adding health priority of WCH into community health needs assessment and improvement plan (e.g., obesity) • Develop and implement project with expectation of sustainability (e.g., cafeteria project), including training of staff, which set a culture shift in health across community
Case L Synthesis	Case L's innovative approach to formalize relationships between partners and give capacity to help them advance PSE change continued as an opportunity for the community and internal to the LHD in relation to processes. New partnerships and greater understanding of all partners among themselves contributed to a shifted culture of health and synergy for greater opportunity and sustainability following 2014. Policies implemented and enforced created sustainable requirements for entities participating in PSE strategies. Case L showed how the collaboration and coordination between coalition partners created opportunities to problem-solve, adapt and overcome barriers. Codes: Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Integration with existing programming, Opportunity (Policy, Innovation), Emergent Strategy
Case L_LHD	• WCH grant innovative at time period, building new relationships to tackle diverse population and geographical region of county (rural versus urban) and leading to many accomplishments • Giving out sub-grants to provide flexibility and ownership to the program, resulting in success stories • Listening to innovative ideas to make change and adapt the program to overcome barriers, identifying needs, and moving forward, proved to be more successful

Case	Opportunities
Case L_Comm	• Seek out more community and family engagement through school health strategies with education and resources, including addressing the diverse needs of the population (e.g., obesity and nutrition group's operating vouchers, farmers' markets, and gardening promotional activities • Leveraging health department skill and expertise for transportation long-range planning across jurisdiction, resulting in complete streets policy, additional funding, and long-term relationships for continued sustainability • Being creative (innovate) when asking partners to do more with less, giving them incentives (e.g., t-shirts for teachers) • WCH springboarded a culture shift and a mindset shift in agencies enabling sustainability of PSE strategies (e.g., Department of Transportation incorporating more than cars and roads and now thinking about biking and walking as a part of their mission) • Requirement for schools to develop and implement school wellness policies • Relationship building also brought systems thinking and interdisciplinary understanding of each other's "language"
Case O Synthesis	Case O demonstrated how WCH led to new opportunities, like new partnerships, significance to ensure equity and justice, new grant opportunities, renewed support even after funding ended, policy development, and expansion of strategies. The facilitating factors and adaptability enabled Case O to lean forward, innovate and seek out methods to sustain and enhance PSE strategies. Codes: Partnership Engagement, Coalition, Organizational Capacity, Community Capacity, Sustainability Planning, Opportunity (Policy, Innovation), Emergent Strategy, Communication
Case O_LHD	• Coalition desire to meet after funding cut to review objectives and activities and evaluate other potential funding opportunities illustrated • Presentation to the public of the community health needs assessment and plan via press conference, press release, social media, and website • Leveraging new grant (PITCH) with WCH built capacity • Establish more structure and organization with coalition to help with strategic goals • Continued community recruitment for coalition • Work in communities of color and lower-income communities to ensure equality and justice in access to resources, health, education, transportation, healthy food, and more
Case O_Comm	• Expansion of safe routes to school with additional funding and enhanced work around built environment and resources • Policy development and implementation organizationally and community, jointly and with health being present in cross-sector policies

Opportunities across the cases: **Partnership engagement, building and maintaining coalitions, sustainability planning, and emergent strategies were commonly identified as opportunities across the cases. Learning, growing and innovating together created opportunities for partners within coalitions to continue to sustain PSE strategies and lean forward. Coalition as an opportunity meant extending beyond traditional partners to new**

and different partners– even beyond jurisdictional boundaries. Coalition engagement led to sustainability planning that identified new capacity, innovative ideas and emergent strategies. Emergent strategies were seen across the cases in part through what happened as they scaled out change: their ability to adapt and change strategies for improved community-wide implementation and sustainability.

Impact of COVID-19 as Emerging

This study occurred during the COVID-19 pandemic; therefore, the findings were associated with the challenges of sustainability in the public health system when confronted with an emerging public health emergency and response. All the case respondents discussed the impact of COVID-19 (which emerged 29 times across all cases). The co-occurrence of codes most frequently associated with COVID-19 were partnership engagement, leadership, sustainability, coalition, adaptability, and PSE. The co-occurrence indicated COVID-19 and these factors intersected and likely had an impact on each other and overall sustainability. For example, adaptability increased due to COVID-19 to sustain nutritional activities (see Case A in Table 31). Appendix N presents the other factors interrelating with COVID-19 and the distribution of co-occurrence. COVID-19 has presented overwhelming challenges to the public health and health care system; the sustainability of WCH PSE strategies and coalition positively contributed to the COVID-19 response:

> We need to move past [the COVID-19] pandemic. You know, if we're being perfectly [honest], get back to some of these things. We were on such a roll. Yeah, we really were. We had so much energy behind some of these things, and they've just had to take a huge sidestep, and hopefully we can get that back. I think it'll be there. But I think everybody is just in survival mode in a lot of ways. [Have you found that the work you did here with [WCH] and building on the partnerships and the relationships helped you in the community during the pandemic or during COVID right now?] Absolutely.

These findings also indicate the factors that potentially impact the sustainability of the PSE strategies with an effect on community response to any emerging challenge, incident, or emergency.

Table 31 presents the key points from the LHD administrator, program manager, and each community partner with a synthesis of the impact of COVID-19 on sustainability for each case.

Table 30: COVID-19 Impact on Sustainability

Case	COVID-19 impact
Case A Synthesis	Case A described adaptability in their practices due to COVID-19 (e.g., no in-person interaction with the public, or reduced interaction). Case A indicated opportunities to support and highlight PSE strategies but did mention how in general non-direct COVID programming had been curtailed in varying degrees. Specifically, Case A revealed nutrition and COVID-19, linking to nutrition.
Case A_LHD	• Personal interface between public and partners (staff) decreased due to COVID-19 making some programming hard • Programming curtailed due to COVID-19 • Adapting due to COVID-19 but opportunities to highlight PSE strategies (e.g., nutrition)
Case A_Comm	[no coded segments]
Case E Synthesis	Give Case E's regional approach and strong, systematic coalition, while COVID-19 was identified as having an impact on focus, prioritization, and resources, Case E only noted a halt on formal joint use agreements. As a note, joint use agreements as a strategy were not included in this research.
Case E_LHD	[no coded segments]
Case E_Comm	• Joint use agreements not happening during COVID-19
Case J Synthesis	Case J, as a moderate-sized community, reported how COVID-19 had impacted its operations and programming not directly tied to the pandemic response. Opportunity has emerged to showcase how PSE strategies help COVID-19 recovery efforts and re-prioritize IPLAN health priorities in the community, along with adapting to the needs of the community.
Case J_LHD	[no coded segments]
Case J_Comm	• Pre-COVID different than during COVID for coordinated school health • "COVID-19 ruined our dreams and hopes." • A stop to coordinated school health efforts and new teachers wanting to take on, along with parental involvement • Before COVID-19, stipend to CATCH champions • Strapped staff at the LHD due to COVID-19
Case L Synthesis	Case L reported that while the community and coalition shifted from how it normally conducted practices (i.e., virtual versus in-person meetings), the relationships, system, structure, and interpractices assisted with the COVID-19 response and will help continued support, prioritization, and importance of a culture of health.

Case	COVID-19 impact
Case L_LHD	• Shifted energy to COVID-19 away from PSE strategies • Partnerships and relationships assisted with COVID-19 response
Case L_Comm	• Shifted focus from wellness to COVID-19 for interfacing with LHD • COVID and impacts part of a new culture
Case O Synthesis	Case O discussed the long-range impacts of COVID-19 on the community and how the structure, system, and practices for sustaining PSE strategies will enable adaptability and responsiveness to the community. Case O also highlighted the inherent priorities and disparate populations that COVID-19 has brought to the forefront for the entire community and public, allowing leadership to rejuvenate focus and evidence for supporting initiatives going forward.
Case O_LHD	• Impacts of COVID-19 on issues in community and will see for many future cycles of community health needs assessment • In-person events stopped and reverted to more use of social media for health promotional campaigns (e.g., tobacco, lead prevention) • Severe impact on lower socioeconomic population in community • Built a COVID-19 coalition from the WCH coalition to work together cross border, shifting needs and promoting practices (e.g., mask campaign) • Utilized COVID-19 to rejuvenate mental health coalition
Case O_Comm	[no coded segments]

Note. If blank, then no coded data segments resulted.

COVID-19 across the cases: **COVID-19 was identified as impacting sustainability of PSE strategies in all cases. Coalition (partnerships) and partnership engagement was found to have assisted the local, community-wide COVID-19 response. The strengthened partnerships and interactions sustained due to WCH contributed to creating a shared space where partners could effectively act together to address COVID-19 challenges, existing relationships, shared knowledge of capacity, pre-existing planning, adaptability and leveraging of capacity. Understandably however, cases reported that existing organizational and community capacity did not always adequately or equally meet the demands of COVID-19 response and PSE sustainability and a shifted focus and prioritization occurred, especially during heightened need of response during COVID-19.**

V. Discussion

This study addressed the sustainability of PSE strategies among WCH grantees with a multicase approach. Unlike extant literature, the goal of this study was to understand sustainability after a funding cut, the extent of the sustainability, the factors and practices with an effect on sustainability, the influence of community coalitions on sustainability, and the opportunities that emerged that contributed to sustainability. This research provided validation of the thinking around sustainability, evidence supporting sustainability in the future, and the best practices for application in communities. The case respondents reported various rates of sustained PSE strategies due to the commonly identified factors and practices in the public health system in each community.

Sustainability emerged in the cases and was a criterion for information-rich case selection. The leading factors and practices affecting sustainability were coalitions, partnership engagement, data and planning, leadership, leveraged resources, policy, innovation, and adaptability. Chapter V focuses on the data reviewed in relation to the conceptual framework examined in Chapter II and aligned with the research questions and results of Chapter III.

A. General Overview

i. Research Question 1

In measuring sustainability, the purpose of this research was also to define sustainability as "not just about funding" when a funding cut occurs. The definition of sustainability for this research was: "creating and building momentum to maintain community-wide change by organizing and maximizing community assets and resources" (NCHPAD, n.d., p. 16), "institutionalizing policies and practices within communities and organizations" (NCHPAD, n.d., p. 16), and "involving a multiplicity of stakeholders who can develop long-term buy-in and support throughout the community for coalition efforts" (NCHPAD, n.d., p. 16). Additionally,

the definition used for this research included components from other definitions analyzed (see Table 2). Broadly, this definition allowed exploration of key factors and processes impacting and influencing sustainability. The findings in this research supported the research definition for sustainability. Specific to sustainability of PSE strategies, the findings continued to support a systems approach. However, the findings in this research also encourage additional components for the working definition for sustainability of PSE strategies (denoted in red beyond the NCHPAD, n.d., see p. 18):

- "Just not about funding"
- "Creating and building momentum to maintain community-wide change by organizing, leveraging, and maximizing community capacity (assets and resources)" after termination of external funding
- "Institutionalizing policies and evidence-based practices within communities and organizations," evaluating progress and adapting to meet the needs of the communities
- "Involving multiplicity of stakeholders, organizations and leadership who can develop long-term buy-in, trust and support a culture of health throughout the community as a structured coalition for system-wide efforts"
- "Integrating sustainability planning into CHNA and CHIP and existing programming where applicable and appropriate"

Research Question 1 focused on the extent of the sustainability of PSE strategies in the 18 WCH grantees from the funding cut to the time of the study. Although the document review produced evidence of sustainability, there was no way to draw conclusions with just the documents. Therefore, a survey commenced to determine the sustainability of each case. The survey produced data from 39% of the cases and relied on LHD evaluation of sustainability. Nevertheless, sustainability, as one case interviewee stated well, must be a factor considered at the beginning of a program or the grant planning. Each case respondent planned how sustainability would occur postgrant in their WCH grant applications yet produced no requirement of evaluation or instrument of measure. The learning loss in both cases with and

without sustainability should not be underestimated. Systems-level change requires the sustainability of strategies to improve chronic disease outcomes, which are the majority of cases as health priorities (see Table 9). There is a need to collect, analyze, tackle, and adopt best practices and factors of sustainability in a standardized manner. Such data could contribute to planning and improvement across the public health system and provide tangible actions for leaders promoting PSE strategies.

The sustainability assessment conducted in December 2014 by UIC reported WCH as having a long-lasting impact in Illinois communities after the funding cut through continued implementation of PSE strategies. Similarly, in Phase II of the research reported on here, the cases indicated the lasting impact of the WCH and provided evidence in support of the Phase I findings. One case respondent reported that the innovation of WCH was an open door to much more in the community. Another respondent expressed the value of interdisciplinary stakeholders teaming up across the community, leveraging resources, connecting for conversations, and planning and thinking differently with stakeholders beyond typical local strategies and activities. WCH was the first systems change initiative for many local jurisdictions. This study showed the many factors, intangible experiences, and actions that are often undervalued, underrepresented, and underappreciated when considering sustainability. The findings suggest that requiring sustainability and evaluation of sustainability post-funding would be a way to increase the sustainability of initiatives involving PSE strategies.

ii. Research Question 2

Research Question 2 focused on the facilitators, barriers, and practices with an effect on sustainability. This study included the use of several frameworks to conceptualize factors and practices and their interrelationships. As included in Chapter II, Kickbusch's statement that "public health is ecological in perspective, multi-sectoral in scope and collaborative in strategy"

(p. 1) aligns with the findings of this study. PSE strategies and change require systems thinking, systems levels, systems partnerships, and systems capacity, considering relationships among the multi-sectoral stakeholders involved in supporting community health. One case respondent reported that WCH provided more support for partnerships with different stakeholders than previous programming. More partnerships enabled further support for a widespread culture of health across the system, identifying new funding opportunities, and including more varied expertise to strengthen the interdisciplinary coalition. The construct of organizational and community capacity showed the coalition and lead agencies presented as active in both the organizational and community levels of the socioecological model. The structure and policy in an organization impact its relationship with coalition partners and the community at large. Initially, the LHD was the lead agency hypothesized as responsible for sustainability. The findings supported the coalition's relevance at the organizational level: shared coalition leadership supported evaluating structure and capacity within each organization. Furthermore, coalition leadership supported the capacity for leveraging support cross coalition partners to create sustainability for PSE strategies at the community level, where shared demographics and vision existed. Reaching the outer societal system to involve the public emerged in connection with policy initiatives and community health needs assessment (CHNA) for PSE strategies. Moreover, sustainability planning developing out of the WCH initiatives merged with the strategic planning activities of the LHD partners involved in CHNA, CHIP (Community Health Improvement Plan) and IPLAN (IDPH mandated plan). Outreach effort sharing program successes through press releases, community forums, press conferences, and social media demonstrated the public value of PSE to support sustainability into the future, as indicated in the framework by Shell et al. (2013).

This research showed facilitating factors and processes interrelating and contributing to each other systematically for synergistic sustainability in the five information-rich cases. Table 2 presented capacity and leadership as the common factors of sustainability definitions. This study indicated that capacity and leadership were common factors, as well as coalition (partnership), data, and sustainability planning. Table 3 presented the key process constructs in this research's conceptual framework: adaptability, decision-making, sustainability and strategic planning, partnership and engagement, capacity-building, and systems. The presence of a facilitating factor is not sufficient means of achieving sustainability; rather, sustainability results when facilitating factors connect with processes or actions. Figure 19 is a visualization of the interrelatedness between the factors and processes. Each factor is a facilitator when actively engaged in a process. A coalition is central to the synergy of processes and practices. Factors such as capacity and leadership contribute to processes and practices and the sustainability of PSE strategies. As indicated in Chapter II, sustainability requires the presence of capacity and action. However, capacity (funding, skills, and resources) alone is insufficient; there must also be a coalition and leadership to build processes and practices for full community potential by leveraging all facilitators. Table 32 presents the factors, processes and intended outcomes according to the findings of this research.

Table 31: Factors and Processes From Data Analysis

Factor	Process	Outcomes toward sustainability
Capacity	• Assessing capacity (funding, skill, resources, and infrastructure) • Building capacity • Leveraging capacity • Using existing programming	• Increased funding • New funding • Increased staffing • Increased interdisciplinary skill and expertise
Leadership	• Championing • Connecting • Collaborating • Engaging • Communicating	• Buy-in • Momentum • Support • Relationships • Political support
Coalition (partnerships)	• Partnership engagement • Sustainability planning and strategic planning • Evaluating data together • Decision-making (shared decision-making and evidence-based decision-making) • Adaptability interrelating to other processes and emerging needs • Collaborating • Networking • Connecting • Coordinating	• New partnerships • Strengthened relationships • Space for involving • Structure and system • Shared path, culture of health • Adaptive capacity
Data	• Assessing through CHNA • Analyzing and evaluating through CHNA • Prioritizing through CHNA • Planning through CHIP • Adapting strategies to meet CHNA • Communicating and sharing	• Improved health outcomes based on health priorities • Inclusion of PSE strategies • Emergent adapted strategies
Strategy (PSE, Emergent, Intended)	• Sustainability planning • Strategic planning • Systems thinking (complex adaptive systems) • Evaluating change and impact • Partnership engagement	• Trust • Enhanced understanding • Commitment • Momentum • Shared vision • Culture of health in community and coalition member organizations • Sustained PSE change

The cases in this study had the characteristics indicated by Shelton et al. (2018) As previously discussed in Chapter 2 (Figure 5), these were: "outer contextual factors (funding environment, external leadership, values, needs and priorities) inner contextual factors (champions, leaders/support, organizational resources, staffing), processes (partnership engagement, training, evaluation, adaptation), interventionists (implementer skills/expertise, implementer characteristics) and interventions (adaptability, perceived benefit/need, fit within population)". The contextual factors and implementer characteristics could have been the result of the varied degrees of sustainability in the information-rich cases in direct relationship with coalition, partnership engagement, and leadership.

iii. Research Question 3

As found in answer to Research Question 2, sustainability cannot occur until factors have processes that result in action. Similarly, a coalition with partners alone cannot result in the sustainability of PSE strategies. Shelton et al. (2018) recognized that understanding sustainability requires exploring the collaboration, planning, and ability needed to respond to changes in funds, policies, populations, and personnel. Research Question 3 addressed the influence of community coalitions on sustainability.

This study found that where coalitions were functioning, sustainability resulted. Moreover, the more effective coalitions functioned, the greater sustainability found in the cases. Effective functioning was when coalitions had built and sustained relationships, defined structure and operating model and implemented with observed routinized meetings, communication and planning, partnership engagement and interaction among multi-sectoral partners, capacity-building and leveraged resources. High functioning coalitions did not occur where only a lead agency sustained components of effective functioning. This research indicates the importance of multiple stakeholders in an interdisciplinary team. In this study, the network of partners creating

the coalitions differed in each case based on the strategies adopted, adapted, and sustained. The more diverse the partners at the table, the greater the capacity (funding, skill, infrastructure, and resources), idea generation, and momentum.

The case interviewees indicated coalition and partnership engagement as significant for sustainability. In this study, coalitions were stakeholders, diverse groups of individuals, and members of organizations collaborating to reach specific goals and connections between the programs and community. Partnership engagement consisted of working together to achieve goals, conduct decision-making, sustainability plan, strategize, and capacity-build. Momentum occurs via engagement, collaboration, and working together collectively. The research found other actions valuable to coalition and partnership engagement, such as networking, connecting, and coordinating.

Processes of partnership engagement, or strategies for working in coalitions, emerged in this research. Strategies result in success through "time, trust and turf" (Himmelman, 2011, p. 277). One case interviewee described relationship-building, coordinating, and collaborating without worrying about turf. Another case respondent referenced new, different partners at the table and networking. All the case respondents described coordinating in relation to data, evidence, decision-making, and sustainability planning with the community health needs assessment and the improvement planning process. The respondents expressed the goal of working, learning, and reinvesting in the community together. The theoretical frameworks utilized for this study focused on partnership engagement as an umbrella term for collaboration and coalition action. Evidence emerged in support of a deeper understanding of the strategies adopted by coalition members to conduct the processes toward sustainability. Conceptually, a coalition is a diverse group of stakeholders interconnected through networking, collaborating, and coordinating, visualized like a web woven together for a common purpose.

Structure and system in relation to coalitions and sustainability was an emergent construct of this study. Some case respondents reported creating and implementing bylaws and structures across the system and coalitions with flexibility in adapting over time to address emerging issues; these respondents had greater frequencies of coalitions, partnership engagement, and sustainability constructs. Such a finding provides a greater understanding of how coalition members operate, not only what they do, to positively influence sustainability.

iv. Research Question 4

This study also focused on opportunities, defined as the circumstances that enable sustainability and supported in the findings. Adaptability, identified in all cases as a process, is a criterion of sustainability. The findings showed that adapting PSE strategies from the initial, realized strategy to maintain evidence-based practices had improved results and progress. Openness to adaptability requires culturing innovation. Several case respondents described adjusting strategies and incorporating staff ideas into the strategies and projects. For example, Case L used the ideas of teachers for coordinated school health with a backpack project. The findings suggest that the coalition members adapted from the time of the WCH to the time of the study to support principles and facilitating factors as foundational for sustainability. Case respondents with more strategy sustainability reported keeping strategies evidence-based while changing activities to support sustainability. Adaptive capacity to respond to emerging needs was a reported way of prioritizing strategies and creating emergent strategies. This research aligns with Durlak and DePre (2008), in that the mere development of an evidence-based public health intervention is insufficient; instead, adapting across levels using phases and factors is a more effective way to achieve sustainability. The COVID-19 emergent code shows the adaption, prioritization, routinization, and planning needed from LHDs and communities for program

adaptations and sustainability. This study suggests the need to explicitly include crisis disruption in the original framework of this research.

This study found that policy development, adoption, implementation, and evaluation resulted in sustainability, long-term impact, and change beyond the individual level. The case respondents who reported adopting smoke-free PSE strategies, policy adoption, and implementation described environmental and systems changes. The respondents had adopted the Illinois Smoke Free Act through ordinances and implemented programming for enforcement, such as signage and identification of public places (e.g., parks). The reduced public smoking was a direct output of the smoke-free public places PSE strategy and the long-term outcome of reduced public smoking. This study showed that leadership and coordination across the system with a collaborative approach enabled policies' success. Based on the interview responses, championing strategies and collaborating with elected officials to support policy shifts are key to sustainability. Noted in the research were areas where existing policy could support the sustainability of PSE strategies; however, building relationships, engaging partners, building the coalition, developing programmatic components, and capacity-building were the focus at the beginning of WCH and the abrupt funding cut resulted in delayed policy. As an example, Case J adopted and implemented a smoke free policy for community parks in 2016. One case respondent described pairing innovative thinking with policy development to explore Medicaid reimbursement and support chronic disease health priorities. Community support for the sustainability of WCH PSE strategies and policy can result in sustainability and long-term impacts. Moreover, continued support of evaluating and requiring sustainability post-funding exists. Policy and resulting behavior change and improved health outcomes take significant time, sometimes years, to fully accomplish and understand.

Coalitions enabled partners to collaborate, network, connect, engage, and innovate. The partners across the system leveraged resources, identified new grant funding, and implemented new mini-grants to stakeholders: thus, they built capacity for sustained PSE change. Additionally, the partners evaluated current programming and integrated PSE strategies to maximize capacity moving forward. Community and organizational capacity and capacity-building are elements in the sustainability of public health interventions (Whelan et al., 2014). Building capacity includes identifying existing capacity, organizational structures, and relationships, skills, and knowledge and building leadership. Capacity-building produced what each partner had to give to the PSE strategies across the system.

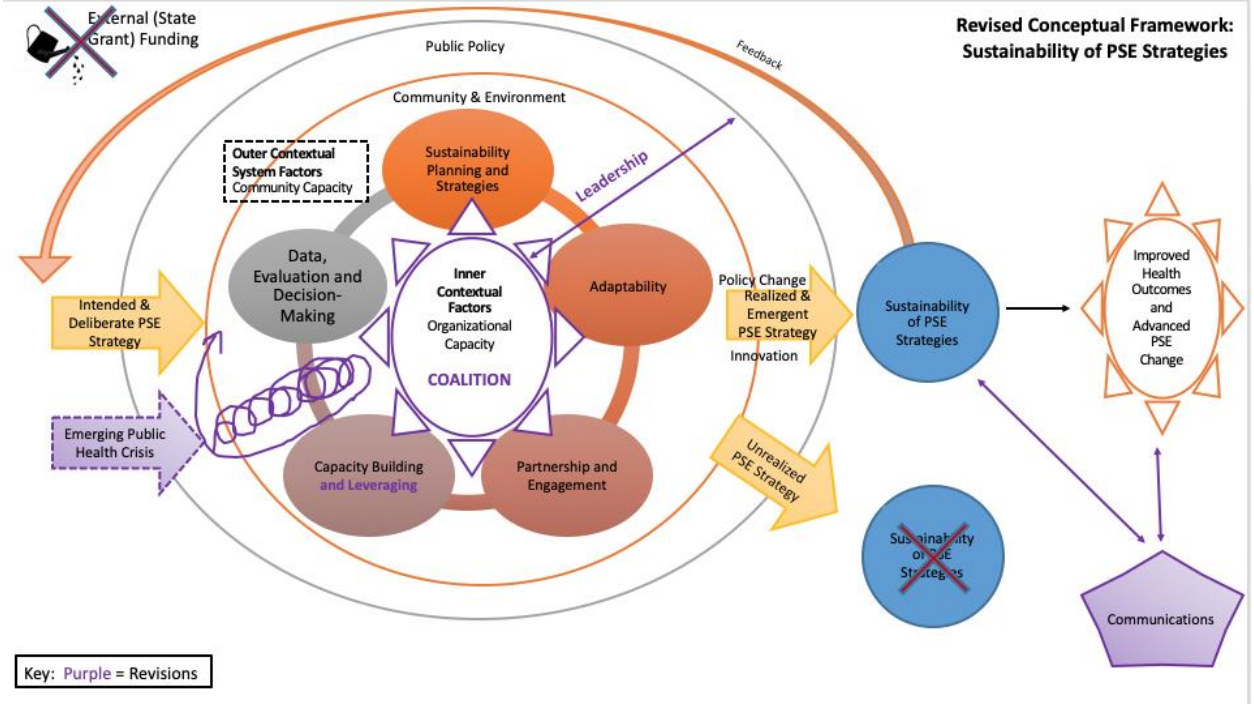
Maximizing resources by leveraging them across all partners and sectors was a practice reported in all cases of this research. Therefore, maximizing resources is a valuable practice for finding new grant funding, using expertise, and sharing resources. The findings indicate that connection with partners at the table and a space to innovate and think with an interdisciplinary team are ways to find new grant opportunities and push for new approaches and use for the same funding with partners having an abundance of funding. Leveraging was a necessary practice added to the revised conceptual framework (see Figure 16).

Structure and system as emergent constructs provided support for the innovative mini-grant process in two cases. Formal agreements consist of the distributed capacity (funding) of stakeholders and a structural reporting, networking, and coordinating process in the jurisdiction. In another case, stipends were an incentive that resulted in commitment, especially in coordinated school health strategies with teachers already trying to cope with “do more with less.” This study found that new partnerships and different partners enabled by the WCH contributed to the impact of structure and systems on sustainability.

v. Revised Conceptual Framework

The original conceptual framework, presented in Chapter II (see Figure 8), aligned with many of this study's results; however, the framework required revision to better present the data analysis findings. The revised conceptual framework (see Figure 19) shows the coalition as the center of sustainability, with key lead agencies, networks of partners, and leadership across the socioecological framework to reach the public, crisis interruption, and strategic communication to the public.

Figure 19: Revised Conceptual Framework



Research Question 3 produced evidence that coalitions and partnerships are central to the process of sustaining LHD-led PSE strategies. The original conceptual framework presented LHDs as organizations central to the factors and processes that impact and facilitate sustainability. The LHDs were the primary agents of the WCH grant with the expertise and skills needed to lead and promote PSE strategies. However, analyzing the five cases showed that the coalitions—not the LHDs—were responsible for developing and implementing sustainability

strategies. The coalitions enabled extended reach, engagement with new and different partners, organizational culture changes, and more broad leveraging of resources. **The findings do not align with the idea of the LHD as the lead agent.** Increased sustainability occurred in cases with active and engaged coalitions. All cases had coalitions or identified partners at WCH initiation; however, the varied effectiveness of the coalitions and the relationship between highly functioning coalitions and sustainability (as seen in Cases E and O) suggest that effective coalitions have a significant impact on sustainability.

Leadership, as a primary construct of this research, was initially conceptualized from the LHD to community and built environment but not through the public rung of the framework. Strong leadership from the coalition public health and health care leads and other multi-sectoral partnership leads in the five information-rich cases correlated more with sustained PSE strategies than the presence of leadership solely from the LHD lead. Facilitated actions from coalition partner leaders promoted heightened connectivity and interaction among coalition partners and fostered processes and practices to sustain PSE strategies. The findings supported leadership moving away from only LHD lead to multi-sectoral partner leads of the coalition. Moreover, policy change and new opportunities emerged as leaders connected partners and garnered the public value of PSE strategies.

Figures 3 and 4 presented the factors of communications and media. Several information-rich case respondents described packaging advancements, outcomes, and improvements to the public to sustain PSE strategies and the health priorities of the PSE strategies. Schell et al. (2013) noted “strategic dissemination of program outcomes to stakeholders and decision-makers” (p. 7) as a significant factor of sustainability. Adding strategic dissemination to the conceptual framework after the sustainability of PSE strategies and evaluation of health outcomes indicates

the importance of communications for partners, community members, and members of the public to sustain PSE change.

Capacity-building was a measured construct in this research. The act of leveraging resources was connected to community capacity and organizational capacity across the coalition partners in each information-rich case. The information-rich cases indicated that although capacity-building must endure for sustainability, adaptability and emergent strategies result after leveraging resources. Partnership engagement, data-driven decision-making, and sustainability planning contributed to leveraging resources and the best use of the resources and public value in supporting the sustainability of the PSE strategies with the leveraged resources.

All the cases presented adaptability, defined as a modification of a strategy to fit within organizational or community structures, needs, practices, or capacity. For the case respondents, adaptability did not consist of completely changing the PSE strategy, and they focused on ensuring that the PSE strategies remained evidence-based. Also, adaptability did not result in entirely new emergent strategies. Rather, success occurred when using adaptability to build on and modify initial, realized PSE strategies based on needs, structures, practices, or capacity.

> Yes, things changed within whatever dynamic within the health department. I think [that] they had to be able to modify approaches that were being taken during that grant. Wow. And as with any grant, as you try things and they don't work, then you come back, and you're going to be trying other approaches to see if a different method or approach will work. (Case A_LHD)

In this study, leadership, measured as championship and guiding and directing the strategies, had a significant impact on adaptability and the emergent strategies for sustainability. As shown in the revised conceptual framework (see Figure 20), the leaders in all the information-rich cases worked across the community to understand needs, evaluate practices, assess capacity, and problem-solve to continue the strategies based on the data and partnerships. Multi-sector partnerships and leadership successfully promoted changes in a mental model around health in

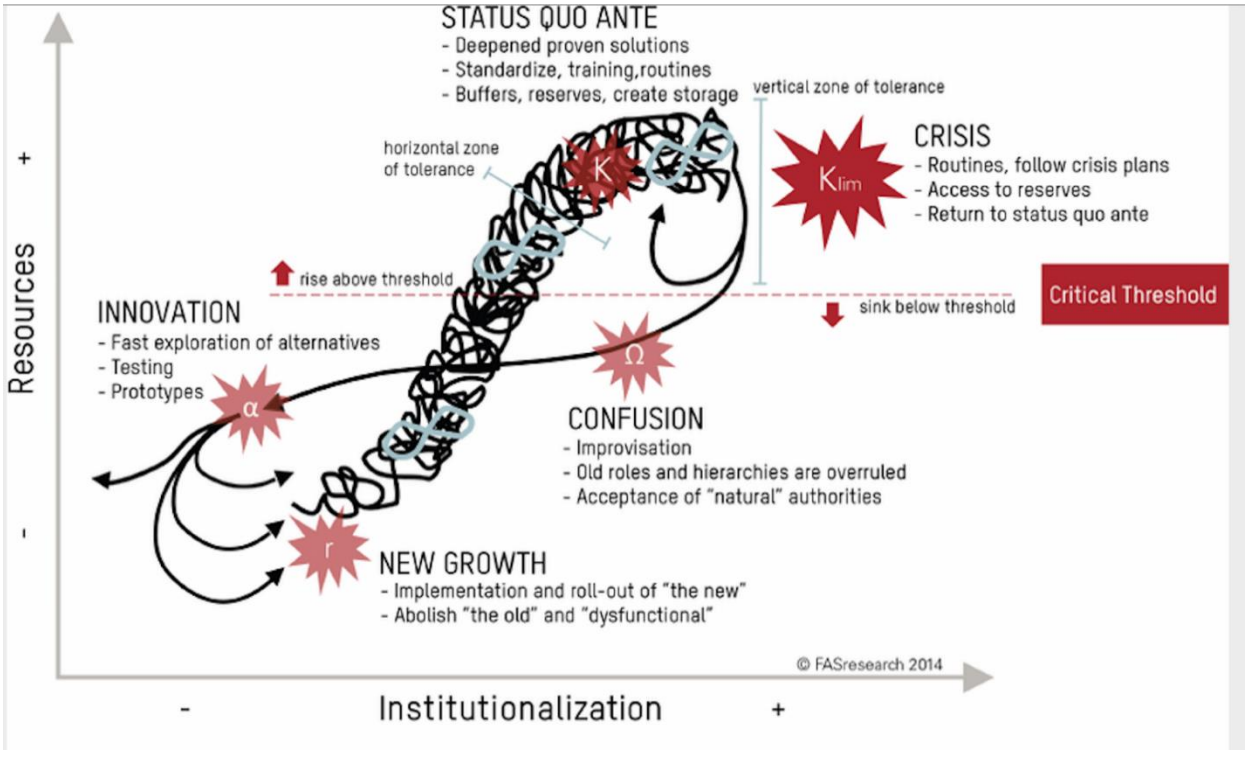
all five cases. Leaders in the coalition convened partners, coordinated actions, fostered systematic thinking, communicated a broader vision of health, and involved multi-sectoral partners beyond healthcare and public health. Furthermore, sustainability planning was found to be primarily performed as a part of the CHNA and CHIP community-wide. Incorporating sustainability planning of PSE strategies built on and deepened the support and culture of health resulting from CHNA and CHIP processes.

The linkage between leadership and a change toward a culture of health was seen in varied degrees in the five cases. Case L in particular described a big change towards a community wide culture of health change due to WCH and PSE strategies. Case L used strategies focused on built environment and brought together more different partners than in previous projects. Such changes resulted in a changed mindset for some partners, such as those from the Department of Transportation, who moved from cars to bikes and walking and brought health system partners to collaborative funding opportunities. Another example occurred when Case J successfully implemented and sustained coordinated school health across every school district and in every school except one in the county. School administrative leadership built buy-in with staff and parents and helped set forth an expectation of healthier choices, curriculum, learning and physical activity in all the schools. To a lesser degree, Case A sustained PSE strategies through existing programming and community programs, like farmers' markets. Case A demonstrated building a culture of health in the community facilitated between the LHD and one primary non-public health or health care partner lead.

Contextually, this study addressed the challenges of sustaining core services in the public health system; however, all strategies adopted led to improved health outcomes. The framework by Fath et al. (2015; see Figure 20) presents how a crisis disrupts normal routines and the actions of returning to normal (or institutionalizing adaptability). The COVID-19 emergent construct

measured in this research suggests the need to include crises in the sustainability of the PSE strategies framework. The information-rich case respondents described COVID-19 interruption and how the strategies for COVID-19 overlapped, underwent adaptation, or emerged to sustain and advance change to attain improved health outcomes.

Figure 20: Crisis Interruption Framework (Fath et al., 2015)



B. Recommendations for Change

The sustainability of PSE strategies must occur for improved health outcomes and long-lasting impact. This study's conceptual framework is a potential means of solving complex public health issues and sustaining PSE change across the public health and health care systems. Recommendations for change and maintaining sustainability emerged from the information-rich cases and data analysis.

i. Require Sustainability and Researched Framework

Sustainability, like evaluation, requires planning at the beginning, including evaluation, analysis, and the improvement of PSE strategies. Chapter II provided definitions and the common factors of sustainability. After data analysis, those definitions and common factors remained relevant. The sustainability of PSE programming enables long-term impact and improved health outcomes, as PSE strategies require time for full implementation and evaluation. Furthermore, investing in PSE strategies cannot produce results if not sustained. It is thus recommended to adopt the sustainable PSE strategies conceptualized and supported by this research.

Implementing grant program requirements presents difficulties after the program has ended; therefore, a recommendation is to improve the linkage of PSE strategy sustainability to codified programming in Illinois administrative code or state agency rules to implement statutory law. An example is to include sustainability in the IPLAN process and incorporate the requirement in Part 600 Certified Local Health Department Code of the IDPH Administrative Code.

PSE strategy funding and grant opportunities should include a requirement for sustainability planning and a plan for incorporating into the local CHNA and CHIP for continued data and evidence evaluation and SDM. Local CHNA and CHIP have created health priorities and a culture of health across a community. Sustainability of PSE strategies and using the CHNA and CHIP for sustainability planning deepened a priority of health, strengthened the culture of health, shaped a new mindset for new and different leaders, and broadened the traditional CHNA and CHIP practices to incorporate PSE strategies. As indicated in Chapter I, the WCH required a sustainability plan; however, few grants require sustainability. Chronic disease outcomes must be measured in the long-term. Policy and resulting behavioral change can take years to accomplish.

A standardized mechanism for evaluating and measuring sustainability after the termination of grant funding could be helpful in making sustainability plans.

ii. Capacity, Funding, and Adaptability

This research purpose was a means to fill a gap in the literature on sustainability after a funding cut. The study focused on sustainability as consisting of more than funding. However, the contextual remarks remained true: "less funding, less staff, and less influence" with a need for "more staff and more funding" (Statewide Leadership Discussion, 2016, p. 2). Achieving sustainability with more staff and funding is an easy answer and one commonly reported by the case respondents. However, a better recommendation is to provide LHD and community members the flexibility to use funding to address assessed and shared health priorities. Flexible funding is a way to support adaptability through crises for innovation and growth.

Chapter I presented the operations of a decentralized public health system in Illinois. The Illinois public health system portfolio includes federal, state, and local funds and other sought external funding. Due to missing data, actual funding capacity was difficult to analyze in this study. An analysis of noncompetitive funding and gaps or shortfalls in the funding of health priorities should occur. Chronic disease a priority in nearly every community, but Illinois does not directly provide appropriate funding to chronic disease. PSE strategies can have long-lasting, sustainable impacts with the factors and practices found in this research. A suggestion is to empower LHDs to use the money to align and support their IPLANs and codifying core services to be certified LHDs in Illinois with accountability, evaluation, and reporting kept intact. Essentially, the recommendation is to eliminate categorical funding.

> What needs to be addressed? To me, the top thing would be funding and [the] flexibility of grants. I mean, we're too locked in on things. It would be nice [if] rather than the state saying, "Here's a grant, and you can only use it for this." Well, what if that's not our top priority in the community? And now here, we got other programs out there that we really need help on, but there's no funding for [them], like mental health. I mean, there's no mental health funding, and that's one of our top priorities. [Mental health], that's like at

> the top of the list, strategic plan. And it's not only one of our top priorities in our strategic plan. [Another] is funding development. What's your own marketing. That's the other one, too. We're going to try to hit marketing. (Case J_LHD)

Another element for inclusion in grants is how the new initiative, or PSE strategy, aligns with current programs, activities, priorities, and missions. Current programming emerged in this study as a construct of sustainability; therefore, asking the applicants to supply current strategic planning elements to connect to the project initiative provides data for evaluating sustainability and capacity for review and award.

Fath et al. (2015) indicated the need for adaptability, something evidenced in this study and revised in the conceptual framework. Adaptability further contributes to flexibility of funding. However, adaptability also enables a culture of adaptability, innovation, and adaptive capacity during challenges to the public health system to sustain PSE strategies and change. This is not only for evidence-based programming and strategies but also for the facilitating factors of sustainability, such as coalition, structure and system, and partnership engagement. The emergent COVID-19 construct in this research presents real-time data; however, depending on the size of a local jurisdiction, crisis disruption can occur with a minimal incidence and does not require a pandemic to support adaptability as a skill, competence, mindset, or action.

iii. Storytelling

Communications emerged as a necessary component to reach members of the public and stakeholders to build public value and commitment. This study presented the strategic sharing of strategy outcomes and activities, mostly connected to the CHNA and CHIP. However, several of the case respondents gave personal accounts of WCH PSE strategies' success and the need to share more broadly. What is done with data and progress known is many times not dictated. Given capacity constraints, sharing does not occur in such a way as to grab attention, gain interest, and generate increased participation and desire for the strategies. Also, leaders might not

conduct systematic reflection to connect to goals and use the feedback to spur sustainability. Culturing this practice and reaching the members of the public and their hearts could result in increased and enhanced sustainability and calls for change.

C. Leadership Implications

Chapter I presented sustainability and its expected implications for leaders in the public health system. Before data collection and analysis, public health leaders were the assumed change agents responsible for transforming thinking on public health system capacity and the other factors of sustainability. A goal of this study was to give both policymakers and public health leaders the evidence for more informed decision-making of scare capacity and deliberation of sustainability planning, implementing, and evaluating.

Leadership ("Lead") was a construct of this research study with 58 coded segments, suggesting leadership was significant in sustaining PSE strategies. The data suggest that public health system leaders champion programs, build and sustain relationships, leverage resources, and prioritize with partners for the sustainability of PSE strategies. This research presented the practices and coalitions that intersectoral leaders engage in to conduct SDM with data and evidence. The findings suggest that public health system leaders who understand the factors influence, guide, and make change for long-term program sustainability even while managing a challenging landscape with the public health emergency of this lifetime. The findings also indicate the importance of coalition and organizational public health and health care agency leaders for sustainability, as shown in the revised conceptual framework (see Figure 20). In the cases in this research where strength was a component revealed in synergy and championship, especially after the funding cut, further focus on coalition collaboration and cooperation (see Himmelman, 2001) is a way to support leadership across the stakeholder groups in relation to implications for leaders across the public health system ecosystem.

More importantly, this research suggests that leaders must take action. WCH was an innovative grant (Cases L_LHD) that resulted in (a) new, different partners and partnerships across the system; (b) formal, system-wide agreements on funding; (c) capacity, leveraged resources, and opportunities for future funding; (d) shared language among interdisciplinary coalitions; (e) utilization of the community health needs assessment and improvement planning practices, (f) adaptability in the strategies, processes, and coalitions; and (g) emergent policy to support long-term programming and improved health outcomes. Public health system leaders should adopt such practices to support, evaluate, and sustain PSE strategies. There is a need for policy initiatives to address the implications for leadership found in this research and incorporate them into a statewide agenda for the public health system.

Initially presented in Chapter I and now updated, Table 33 provides an overview and comparison of the expected implementation and the best practices for leaders as shown in this research.

Table 32: Leadership Implications and Sustainability

Stakeholder group	Relevance to research	Short-term impact	Expected leadership implications in this research	Recommended leadership implications evidenced in this research
Local public health	Seeks out data from divergent local jurisdictions on factors impacting sustainability	Increases knowledge and begins action learning toward future program sustainability efforts	Uses data to create capacity necessary to start and sustains program and support chief health strategist in sustaining programs	Lead with hospital system or foundation using data and evidence through the community health needs assessment and improvement planning process infrastructure, relying on key partnerships, continuing to build relationships, and leveraging resources and successful implemented programming to integrate PSE strategies
State public health	Continues sustainability assessment that began December 2014 to assist in future changes for requirements in grantee-grantor relationships, along with varying needs across the state	Shares findings to shape change in future investments and capacity for public health programs	Applies findings to build foundational requirements and create framework for successful sustainability into the future	Re-assess IPLAN requirements and ensure support sustainability, link programming to the certification process for LHD, and evaluate categorical funding for enhanced adaptability to priorities and emergent strategies and needs

Stakeholder group	Relevance to research	Short-term impact	Expected leadership implications in this research	Recommended leadership implications evidenced in this research
Federal public health	Connects with CTG and support capacity requirements for sustainability, translating to extend beyond federal strategies	Provides findings to encourage sustainability measurement after external funding ends	Assesses investment, encourages action learning and change for supporting sustainability as a required specification for program award	Assess investment in PSE strategies and chronic disease and develop evaluation of sustainability as requirement at application, during and beyond any funding initiative
Policymaker	Addresses value in public health investment at all levels, necessity for organizational and community capacity to support sustainability, and evidence for requirements of public health funding	Increases acknowledgement of status of public health PSE strategies in relation to investment and use of findings to work toward change in funding requirements and ongoing evaluation (even post-funding)	Applies learning for policy change to support program adaptability and actionable change in regulation intent to support sustainability of PSE strategies	Utilize the evidence to understand when policy development, change, and implementation are necessary for sustained change and outcomes, allowing opportunity for flexibility based on emergent PSE strategies and required adaptability for emerging issues, like a pandemic

Stakeholder group	Relevance to research	Short-term impact	Expected leadership implications in this research	Recommended leadership implications evidenced in this research
Community -	Identifies data on coalition—both capacity and processes—that influence sustainability	Improves action learning locally and encourages enhanced relationships and leadership to promote sustainability of programs	Builds stronger relationships with local public health and in connection with the chief strategist approach in sustaining vital public health PSE strategies to address chronic disease outcomes	Identify interdisciplinary coalition and nontraditional partners with structure to allow innovation for sustainability of PSE strategies with strong public health and hospital leadership driving relational dialogue and relying on the infrastructure of the community health needs assessment and improvement planning process and chief strategist approach

D. Generalizability

This research was a case study of the Illinois communities that were the lead agents of the WCH grant. The cases and information-rich cases differed in size, scope, and geography and showed the variation across Illinois. Although the study was specific to the LHD and lead community organizations, the findings are relevant to all Illinois communities. The results could be transferable outside of Illinois, as they present the standard requirements for federal pass-through funding from the CDC for PSE strategies between 2011 and 2015. Furthermore, all community stakeholders prioritizing PSE strategies could learn from the findings of this research; however, they must weigh the constraints and requirements of Illinois jurisdictions. With chronic disease health priorities in all communities across the country, adopting PSE

strategies will remain important for improved health outcomes. Additionally, sustainability factors could be applied to other public health programming areas, as suggested through the emergent "COVID-19" construct. The findings of this research remain actionable, and public health system leaders should consider and apply the results going forward.

E. Strengths and Limitations

i. Sources

This research design consisted of multiple methods and phases to generate complementary data enabling triangulation and integration across methods and sources (document review, survey, and interviews) to strengthen the validity of the findings. For example, the interviews and document review provided a cross-check on the self-reported sustainability rankings. However, only the 5 information-rich cases selected for interviews had data across all of the sources (documents, survey, and interviews). The document review focused on the WCH grant applications, LHD annual reports, LHD strategic plans, and IPLANs across all 18 cases. There were WCH grant applications and IPLANS retrieved for 100% of the 18 grantees; however, annual reports and strategic plans were limited (see Appendix G). Although the survey had a 39% response rate, the document review suggests that some nonrespondents could have provided additional insights and additional instances of moderate to high sustainability (see discussion under v. COVID 19 pandemic, below). Alternatively, the selection for information-rich cases in Phase II (interviews) meant that there was a bias towards exemplary cases – cases where sustained initiative-relevant activities, including engagement in ongoing and still active cross-organizational coalitions, meant that the researcher could find people with relevant information who were available and willing to be interviewed. This research strategy was pursued from the outset, and chosen for its likelihood of providing insight into the factors facilitating sustainability of these PSE initiatives and positive outcomes from them, as

well as its feasibility. However, it was hoped that the inclusion of one case with a lower self-reported sustainability rating, Case J, which had a median self-reported sustainability rating of 2 in comparison to the rage for the other selected cases of 5 to 9.5 (on a 10 point scale), would support a more balanced view, promoting greater insight into barriers as well as facilitators of sustainability, as well as confirmation of the importance of facilitators which may not have been present in this case (see Figure 17 and Table 17 in Chapter IV). This case did have people willing to be interviewed as well as survey and document review results and was deemed "information-rich" but not exemplary. The other four, more exemplary, cases did also provide information on barriers as well as facilitating factors on sustainability, however, the overall results may still reflect a bias towards more information on what went well.

Each grantee completed a unique survey. However, most of the respondents provided a rate per strategy instead of an individual milestone, resulting in the finding reported as an average rate per case. Their responses were based on their evaluation of sustainability per strategy in accordance with the survey scale. Additionally, missing data in both the document review and survey impacted the ability to triangulate between the document reviews and surveys for factors such as the funding and staff specific to WCH. The two-member interviews, one for the LHD and one for two different community organizations, provided rich data for the semistructured interviews. That WCH ended in 2014 enhanced recall of the grant period and connected to data of the sustainability of WHC.

Most of the cases included counties beyond the lead agent county in receipt of the WCH grant. Including counties reached by the WCH could have strengthened the study. Future researchers should consider extending the reach of the study when developing the representative sample. Also, implications for leadership extend beyond the LHD and community coalition organizations. Including state and federal public health and policymakers could have produced

different insights into what influences sustainability locally for greater systems change going forward.

ii. Recall Bias

At the onset of this study, about one half of the principal investigators had left their positions as administrators at the LHDs. Staff turnover resulted in situations where the administrators or program managers involved as participants in this study were not the administrators during the WCH time period. Also, despite PSE sustainability, the study occurred several years after the termination of the funding in 2014. The 5-year period enabled a greater understanding of long-term sustainability; however, these factors could have contributed to collecting accurate and full data. Even so, with the approach of this research, the interviewees contributed data and evidence and seemed to recall more information during the phases and process of the research.

Moreover, the WCH applications asked for the LHDs to describe how chronic disease factors and social determinants of health impacted the targeted population and to identify the intervention population focus for each selected PSE strategy. The choices were: (1) general/jurisdiction wide or (2) health disparity focus (see Appendix F). Case O indicated a focus on health equity as an opportunity that enabled sustainability of PSE strategies.

> We were actually just talking the other day about, you know, how well do people, not in the health sector, understand the social determinants of health. You know, that's a term that in health and public health, we use a lot, but you know, what, what does it mean to people in, in other parts of the community? And I'm not sure, I, I'm not sure I have a good answer to that question, but I think it's, it's an important question in terms of thinking about what next, right? Because if you want to try to connect those dots and, and develop cross sector solutions to improving health status, then you need to find a way to help inform people about how all these sectors really do interrelate. (O_Comm)

Essentially though, all cases through sustainability of PSE strategies advanced change toward health equity. All cases incorporated sustainability planning of PSE strategies in their CHNA and

CHIP. Health equity deserves intentional, and perhaps even required, focus going forward in relation to PSE strategies.

iii. Case Selection Bias

Phase I and Phase II of this research study employed a research design to select information rich cases to learn more about how local jurisdictions and communities sustain PSE change after an abrupt funding cut. Criteria to be an eligible information rich case involved demonstrating sustainability of PSE strategies. Cases that did not show sustainability were not eligible (see Figure 11). This meant that this study produced a limitation in learning about barriers of sustainability. Ineligible cases and information poor cases may have provided data to enrich learning about the factors and barriers of sustainability beyond what was identified in this research study. This explains the reason for lesser codes co-occurring with barriers in this study (see Chapter IV Barriers under Research Question 2).

iv. Data Analysis

Missing survey data was a barrier to further quantitative analysis. Utilization of MAXQDA for qualitative coding and analysis was a strength of the study, as it provided numerous tools for analysis and visualization. Having a second coder resulted in increased validity of the study and findings; however, three rounds of coding with memoing showed some subjectivity and the importance of evidence chaining and memoing for qualitative analysis. A priori codes and a codebook provided rigor to the qualitative methods and enabled capturing emergent codes (e.g., “COVID-19,” “Struct,” and “Prog”). Additionally, Chapter IV included direct quotes as examples of the findings.

v. COVID-19 pandemic

While the survey had a good response rate of 39%, not receiving participation from some LHDs, especially those showing potential sustainability per their document review, was a disappointment.

> I apologize. I just do not think I am going to be able to participate. We are so incredibly busy with COVID, the usual suspects, the college opening, and we are also lead on Census for our region. (Case B)

Unfortunately, this study took place in the middle of the pandemic, with data collection occurring from June to July 2020 and interviews from August to September 2020. However, those who participated provided extremely rich and valuable data and likely demonstrated a finding of this research: leadership. Similar to Phase II, Phase III occurred during the height of the COVID-19 vaccine rollout. Phase III underwent adaptation to simplify and ease responses for validation and the action research with the LHD participants of the information-rich cases. However, the participants did not provide any responses, which was a limitation of this research.

Virtual interviews were necessary due to the inability to conduct in-person interviews; this was the preferred method during the COVID-19 pandemic. Fortunately, applications with enhanced modalities are available to conduct interviews. Zoom and its recording function was the platform used to conduct the virtual interviews, with its free transcription feature engaged after the first interview. However, a comparison of TEMI versus Zoom for accuracy showed TEMI the appropriate choice to transcribe the voice recordings. The use of such new tools presented the initial concern of capability in relation to Internet stability, technology access, and management of participant involvement. Given several months had passed and people had adapted to and acquired enhanced skills with technology, accessibility and Internet stability were not issues. The only technology lacking in some of the interviews was a camera. Even so, it was still possible to assess the participants' demeanors, address concerns, and build rapport virtually.

Last, the participants had confidence in the researcher's plan for the confidentiality of the data collected and the synthesis reported.

Conducting successful research during a pandemic was a strength of this research. The emergent code of COVID-19 shows the ability of public health to adapt and sustain during a public health emergency with tight resources and beyond-capacity surges. In an overview of the questions researchers should ask during the pandemic, Quintanilha (2020) stated, "I believe qualitative health research is about brining humanity back to health research and, in order to fully do that at this point, we must allow humanity to acknowledge, talk, and grieve the 2020 pandemic" (p. 3). While this study did not include research at the personal level, disruption occurs more often than realized. The COVID-19 emergence gave way to more application and evolution of adaptability conceptually in the research findings. This research remains relevant during this pandemic.

F. Next Steps

The goal of Phase III was to conduct action research to promote change around sustainability. Due to this study's timing, the more robust facilitated discussion with LHD participants and non-participants will occur in the future according to the IRB-approved protocol. After the COVID-19 response, presenting the findings at a general membership meeting of the Illinois Association of Public Health Administrators (IAPHA) will allow for discussion and acknowledgment of inaccuracies or bias. The facilitated discussion will explore how and why the findings changed the initial framework and idea-generating to advance change for the improved sustainability of PSE strategies, ultimately improving and achieving public health outcomes.

As approved in this study's IRB protocol, applying inferential statistical analysis provided a greater understanding of the association between factors and sustainability. The

inferential statistics of nonparametric data included multivariant analysis to associate factors (facilitators and barriers) to sustainability (Scudder et al., 2017). A Fisher test analysis commenced to understand the relationships between the constructs (both factors and processes) for sustainability of the PSE strategies. The analysis provided the opportunity to quantitatively associate factors to sustainability and the relationships among the multiple constructs (variables). Ahead of potential publication, there will be a white paper written and submitted to the IDPH with an overview the research and findings to spur change toward the key factors needed for the sustainability of programming as requirements to grantees, partners, and stakeholders.

Because of the importance of sustainability (see Chapter I), community stakeholders similar to those in this research might benefit from the findings. Therefore, the research and its findings will be submitted for publication to journals not yet decided. Other opportunities to share the research, such as conferences and association webinars, will receive consideration, and with abstracts submitted for review to participate.

Some research opportunities emerged for further exploration. A future research opportunity is a deeper study of coalitions and the strategies used to work together for more understanding of the emergent construct of structure and system for coalitions and sustainability. This opportunity could occur in future action research with IRB approval for a revision.

G. Final Conclusion

After receiving IRB approval as exempt research, the data collection and analysis in this study followed a mixed methods and a multiple case study approach. Using a phased design, data collected in Phase I enabled the information-rich case selection and subsequent qualitative data collection via interviews in Phase II. The multiple of data sources and methods mixed-method data triangulation and integration, and a second provided credence and validation to the findings. Phase II included coding for 21 constructs with three emergent constructs after coding across the

10 semistructured interviews. The information-rich cases provided critical data for understanding the factors and processes that impact sustainability, coalition influences, and opportunities. This study showed the interrelationship between facilitating factors and processes and practices in the naturalistic, complex context of practice-based work communities. As supported in the literature (Schell et al., 2013; Shelton et al., 2018), the facilitating factors with the most significance were partnership engagement, coalition, community capacity, and leadership. Processes and practices, such as capacity-building, sustainability planning, EBDM and SDM, and adaptability enabled the facilitating factors for sustainability. Like Mintzberg and Waters (1985), leadership and adaptability resulted in emergent strategy and evidence of a changed culture toward health and sustainability. This research shows coalitions as central to interrelationships and opportunities. Leadership was a link between the coalition and across the entire socioecological public health system. The findings of this research fill a gap in the literature, showing the factors and practices needed for sustainability after a funding cut.

This research suggests requiring sustainability and a sustainability framework, such as this researched framework, for funding in support of PSE strategies in communities, building public value of PSE strategies, and eliminating categorical funding to support adaptability in local communities. The leadership implications identified specific to public health and health care system in local communities spur recommendations for change. Because the information-rich cases were representatives of small, moderate, and large jurisdictions, this research presents learned lessons, valuable knowledge, and a revised conceptual framework transferable to communities across Illinois and beyond. This study indicated how to better achieve the sustainability of PSE strategies and demonstrated the benefits of sustaining PSE strategies for all five of the cases studied through in-depth interviews as well as the survey.

H. Institutional Review Board (IRB)

This study received approval by the UIC IRB (Protocol # 2020-0271) and IDPH IRB. Approval letters available upon request.

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VII. Appendices

Appendix A: Constructs Discussed in Cited References

Construct	Code	Definition	Instructions	Literature	A priori or emergent
Facilitator	Fac	A person or thing that makes an action or process easier.	Use to identify a factor that assists in allowing sustainability to emerge	These are broad categories in relation to the research questions to assist with thematic and content analysis.	A priori
Barrier	Bar	An obstacle that prevents completion.	Use to identify a factor that prohibits or limits sustainability to occur		A priori
Practices and processes	Prac	Actions taken organizationally or systemically routinely.	Use for actions or steps that institutionalized organizationally or in the community		A priori
Opportunity	Opp	A set of circumstances that makes sustainability possible	Use for innovative methods, emergent strategy, adapted strategy or policy that changes or cause strategy to sustain		A priori
Organizational (innercontextual) factors					
Leadership	Lead	Demonstrated ability to guide and direct strategy and apply systems thinking and collaborate across levels and within the community; chief strategist in the organization and inter-organizationally in the community	Use for identified champion at program, organization, or inter-organizational levels with stakeholders	Montgomery, 2008; Schell et al., 2013; Shelton et al., 2018	A priori
Organiza-tional capacity	Org Cap	Funding, skills, and resources Resources (human, financial and informational) Infrastructure Before, during, and after WCH	Use for identified funding, skills, or other resources utilized for PSE strategies within the organization	Schell et al., 2013; Shelton et al., 2018	A priori
Data and evidence	DE	Public health data (quantitative or qualitative) that assists in evaluation of PSE strategies to produce evidence for decision-making	Use when data is present, generated, collected, and evaluated, and when applied in practices and processes institutionalized organizationally or across with stakeholders	C. Harris et al., 2017; Jacob et al., 2018	A priori

Construct	Code	Definition	Instructions	Literature	A priori or emergent
System (outercontextual) factors					
Coalition (partnerships)	Coal	Community coalition of stakeholders; diverse group of individuals and organizations working together to achieve specific goals; connection between program and community	Use when stakeholders are identified in organized actions or in leveraging capacity	NCHPAD, 2011; Schell et al., 2013	A priori
Community capacity	Comm Cap	Funding, skills, and resources across the community Resources (human, financial and informational) Infrastructure Before, during and after WCH	Use when inter-organizational resources, funding, or skills are leveraged	Schell et al., 2013; Shelton et al., 2018	A priori
Policy systems and environment	PSE	PSE strategies are those that shift from organizational level to community level and promote change; policy includes laws, rules, regulations, protocols, and procedures and document a course of action; systems impacts all elements of the organization and inter-organizational coalition or system; environment is infrastructure and change in the economic, social or built environment	Use for identified change as it relates to policy, systems, or environment per definition	CCC, 2011; CDC, 2011; Garney et al., 2018; Lyn et al., 2018	A priori
Processes/practices					
Decision-making	DM	General process in which decisions are being made to keep strategies moving forward	Use when demonstration of a decision is being made in relation to the strategy, then sub-code based on EBDM or SDM	N.Harris and Sandor, 2013	A priori

Construct	Code	Definition	Instructions	Literature	A priori or emergent
SC: Evidence-based decision-making	EBMD	Identify and use data to make informed public health practice decisions; process of translating the best available data about effective programming and policies while considering local needs and resources	Use when identified data is evaluated and analyzed to inform decisions and decision-makers.	C. Harris et al., 2017; Jacob et al., 2018	A priori
SC: Shared decision-making	SDM	Collaborate with partners to make evidence-based decisions	Use when LHD pulls together stakeholders to make shared decision based on evidence.	Hu et al., 2019; Weiss et al., 2019	A priori
Adaptability	Adapt	Modification to strategy to fit within organizational or community structure, practices, needs, and capacity	Use when strategy has a recongnized change or modification from the initial application	Whelan et al., 2014	A priori
Partnership engagement	PartEngag	Community coalition of stakeholders working together to achieve goals, conduct decision-making, sustainability plan, strategize and capacity-build	Use when stakeholders are collectively identified work toward shared strategies with actions demontrating involvement and connection between community and program	Schell et al., 2013; Shelton et al., 2018	A priori
Strategy	Strat	Developed actions excuted to reach sustainability; responsive to the organization and community and evolves and adapts as evidence emerges	Use to identify WCH PSE strategy as intended upon WCH application	Mintzberg & Waters, 1985	A priori
SC: Emergent strategy	EStrat	Consistent actions over time that adapt intended, realized strategy to allow evolution and adapation	Use when intended strategy has been adapted or has changed to allow PSE strategy sustainability and change	Mintzberg & Waters, 1985	A priori
SC: Intended, realized strategy	IRStrat	Precise intended actions where collective action occurs with all needed organizational and community players for implementation as planned without any extneral influences or forces to interfere	Use when the identified strategy sustained is the one intially identified in the WCH application	Mintzberg & Waters, 1985	A priori

Construct	Code	Definition	Instructions	Literature	A priori or emergent
Capacity building	CapBuild	Building leadership, identifying and maximizing resources, organizational structures and relationships, skills and knowledge; building up the infrastructure to deliver the strategy	Use for process actions that increase or enhance resources, funding or skills.	Hawe et al., 1997; Whelan et al., 2014	A priori
Sustainability	Sustn	More than funding, "is about creating and building momentum to maintain community-wide change by organizing and maximizing community assets and resources"; "means institutionalizing policies and practices within communities and organizations"; "also means involving a multiplicity of stakeholders who can develop long-term buy-in and support throughout the community for coalition efforts."	Use when identifying whether or not a PSE strategy has reached sustainability or continuation as initiated or adapted	Britt, 2019; CDC, 2011; LaPelle et al., 2006; NCHPAD, 2011	A priori
Sustainability planning	Sust Pln	Developed actions that are executed: assess, plan, implement, evaluation and re-assess/modify	Use for actions that facilitate sustainability of strategies, pulling stakeholders to the table to conduct the sustainability cycle	Johnson et al., 2004	A priori

Appendix B: Phase I Document Review Matrix

The document review tool is a multisheet Excel file. Appendix B provides snapshots of the tool.

	CHD
County population	
LHD size (staff)	
LHD total budget	
LHD vision	
LHD mission	
LHD priorities identified in CHA, CHIP, and strategic plan	
WCH PSE strategies identified (Y/N)	
WCH budget	
Current LHD budget with identified WCH-like PSE strategies	
WCH identified stakeholders	
LHD identified stakeholders in other documemts	

Identified sustainability	Case
WCH app	
WCH final report	
LHD annual report	
LHD strategic plan	

WCH school health milestones (limit 10)	Case
Milestone 1	
Milestone 2	
Milestone 3	
Milestone 4	
Milestone 5	
Milestone 6	
Milestone 7	
Milestone 8	
Milestone 9	
Milestone 10	

Appendix C: Phase I Survey

Survey for LHD WCH Principal Investigator (or current Administrator)

Survey Purpose

Coupled with the document review for Phase I of this research, the survey is uniquely built per LHD grantee. The primary purpose of the survey is to verify data post-WCH to measure sustainability, the extent to which PSE strategies were sustained, dropped, or adapted. The survey is also the means of inquiring about the factors with an influence on sustainability, which will enable analysis relationships between factors and the rate of impact.

Survey Instructions

1. Offer a webinar or conference call with all LHDs involved to give an overview of the research and provide expectations.
2. E-mail the LHD WCH principle investigator to request completion of survey and provide the survey link and deadline.

Survey E-mail

Hi [interviewee(s)], my name is Molly Jo Lamb, and I am a student in the University of Illinois Chicago's Doctorate of Public Health (DrPH) in Leadership program. Currently, I serve as the Deputy Director of the Office of Health Protection at the Illinois Department of Public Health.

For my dissertation research, I have the opportunity to work on a complex problem of the sustainability of policy, systems, and environment (PSE) strategies. PSE strategies have a systems approach and enable change through policy (e.g., rules, procedure, statute), organizational and community stakeholder involvement, and capacity and infrastructure in a social, economic. and built environment. The overarching objectives of this research will be to inform the public health system, primarily local health departments, state health departments, community-based stakeholders, policymakers, and federal partners, like the CDC, in sustaining long-term PSE change. The objectives of this research are to (1) inform future funders or grantors, policymakers, public health leadership, public health organizations, and communities of the factors, barriers, and opportunities for the successful sustainability of PSE strategies; (2) provide recommendations based on evidence of necessary factors as criteria in determining a grantee coalition's potential or capacity for sustainability after external funding ends; and (3) answer the question of whether increased capacity (or commitment of capacity) for sustainability of PSE strategies in the near term can result in measurable, cost-effective future results to reach chronic disease outcomes and long-term PSE change.

My research is a mixed methods (quantitative and qualitative data collection) multiple case study of the *We Choose Health* initiative (2011–2014) with the goal of learning the extent to which sustainability has occurred, how and why sustainability was achieved (or not), and the opportunities that emerged. As the principle investigator of the WCH grant (or the current LHD administrator), I have identified you as an integral participant of my research. In Phase I, I ask you to complete this survey to verify post-WCH data and measure the sustainability of the PSE strategies in your community.

No wrong or right answers exist. I appreciate your honesty and openness, and please know that I will de-identify your survey submission and keep it confidential. I have pre-populated the survey to assist you and reduce your time in completion. There are approximately 30 questions in total, and it will take about 45 minutes. Based on these results, you may be selected as an information-rich case study for Phase II of this research.

Survey Questions

PI Information

1. Name
2. Current Title
3. Years at LHD
4. Years in current title
5. Position during WCH 2011-2014 time period
6. Did someone assist you in completing this survey? If so, please name with title.

LHD and Community Capacity Assessment

7. In-kind funding during WCH
8. Other in-kind organizational capacity during WCH
9. Current total budget
10. Current budget for WCH strategies (total amount and type of funding)
11. Current staffing
12. Current staffing for WCH strategies
13. In-kind community funding during WCH
14. Other in-kind community capacity during WCH
15. Community budget for WCH strategies
16. Community staff for WCH strategies

{RQ#2}

Measure of Sustainability per Strategy

17. PSE Strategy X, Milestone 1

    Response scale[9]:

    1. Not at all: Dropped (ended after funding cut)
    2. Somewhat: Operating at reduced level but exactly as initially implemented or operating at reduced level but adapted
    3. Same: Operating at same level as during WCH
    4. A great deal: Operating at enhanced level compared to during WCH

       The questions will have scale responses of 1–10, with 0 = not at all, 1–3 = somewhat, 4–6 = same, 7–10 a great deal to quantify sustainability directly related to RQ1.

    17(a). What affected the current state of sustainability and why? {insert this question when respondents choose any response}

[9] Adapted response scale from Rhoades et al. (2012).

17(b). Describe the strategy as operating as initially designed or operating in an adapted state.

{repeat #17, #17a, and #17b for each strategy and each milestone}

{RQ#1, 2, 3, and 4}

Processes, Factors, and Coalition

18. What community coalition stakeholders remain engaged (e.g., attend meetings, participate in activities, share-in decision-making, assist in prioritization) today? Check all that apply.

    {insert stakeholders from WCH applications per LHD}

    {RQ#3}

19. How frequently are the remaining community coalition members currently engaged (e.g., attend meetings, participate in activities, share in decision-making, assist in prioritization)?

    a. Never
    b. Rarely
    c. Sometimes
    d. Often
    e. Always

    {RQ#3}

20. What opportunities have emerged since the funding cut in 2014 that contributed to sustainability?

    {open-ended question}

    {RQ#4}

21. If your LHD is selected as an information-rich case study, please recommend two individuals representing two different community stakeholders or organizations involved in the community coalition who have remained engaged in the PSE strategies.

Appendix D: Phase II Semistructured Interview Guide

Interview Guide for Local Health Department

(Information-rich Case Study with Focus on How and Why)

{*draft and possible adaptation following analysis of survey data*}

Interview Procedures

1. Contact the identified interviewees via e-mail to seek interest and willingness to participate.
    a. Interviewee 1 = Principal Investigator
    b. Interviewee 2 = Primary Program Manager
2. Schedule the interview (to occur via telephone unless in-person works logistically and with schedules).
3. Conduct the interview.
    a. Record the interview.
    b. Memo insights, nuances, and other intel outside of transcription, along with systematic reflection using ORID following the interview.
    c. Transcribe the interview.
    d. Code the transcription.
4. Thank the interviewees with personal notes.
5. Offer opportunity to check accuracy of findings (member check) through e-mail or facilitated discussion.

Interview E-mail to Seek Participation

Hi [interviewee(s)],

As you are aware of my dissertation research from your participation in Phase I, I am excited to inform you that I have chosen your LHD and community for Phase II of this research study as an information-rich case. To that end, you will participate in a semistructured interview. There will be two interview sessions: (1) LHD PI (or current administrator) and (2) two community coalition stakeholders.

Please complete the Doodle Poll to provide your availability.

Interview Introduction

Hi [interviewee(s)],

In the semistructured interview, I will ask you specific questions about your involvement as a WCH grantee in relation to the current sustainability of PSE strategies. The data collection in this interview is a means of building on the data collected during Phase I with the document review and survey.

May I record your interview to complement my notetaking and ensure that I capture your viewpoints accurately? I will transcribe the recording, and I will offer you the opportunity to review the findings to double-check for accuracy.

No wrong or right answers exist. I appreciate your honesty and openness, and please know that I will de-identify your interview and keep it confidential. The interview consists of 15 questions and will last about 45 minutes.

Interview Questions (with Probes)

Background Questions

1. What has been your contribution to WCH activities since funding ended in 2014? {RQ#2}

Factors

2. What specific capacity was leveraged organizationally?
    a. Probe: What funding, skills, and resources?
3. How was capacity (funding, skills, and resources) leveraged in your organization?
4. What capacity was leveraged in the community?
    a. Probe: What funding, skills, and resources?
5. How was capacity leveraged in your community?
6. How did leadership contribute to sustainability?
    a. Probe: How did championship of the program have an impact?
    b. Probe: How did public health strategist or leadership impact sustainability?

    {RQ#2}

Processes

7. How did local strategic planning align with sustainability planning?
    a. Probe: How did you incorporate sustainability of PSE strategies into your community health assessment (CHA) or community health improvement plan (CHIP)?
    b. Probe: How did your intended PSE strategies align with your IPLAN priorities?
8. How did the prioritization of activities in relation to WCH occur after funding ended?
    a. Probe: How did this change from 2011 to present?
    b. Probe: How were the activities chosen?
9. How did you use evidence and data in decision-making?
    a. Probe: How were data used to make decisions on strategies to sustain or adapt?
    b. Probe: How were data shared with community coalition members?
10. How did adaptability occur, and how did it impact sustainability?
    a. Probe: What was adapted?
    b. Probe: What evidence was utilized?
    c. Probe: What stakeholders were involved?

    {RQ#2}

Community Coalition

11. How did the coalition have an influence on sustainability?
12. How did engagement change after external funding ended?
    a. Probe: How did the stakeholders change involvement after external funding ended?
    b. Probe: How were the stakeholders involved in decision-making?

    {RQ#3}

Opportunities

13. What opportunities emerged that contributed positively to sustainability?
    a. Probe: How did the strategies change following the funding cut in 2014?
    b. Probe: What exactly was adapted?
    c. Probe: What emergent strategies resulted?

    d. Probe: Why were adapted and emergent strategies significant to sustainability?
    e. Probe: What innovation (new method, new idea, changed process, new product) emerged?
    f. Probe: How did the innovation emerge, or what contributed to the innovation?
    g. Probe: How did policy change support sustainability?
14. Why was adaptability significant to emergent strategy, innovation, or policy change?
15. What still needs to be addressed to achieve public health outcomes and why? {RQ#4}

Interview Guide for Coalition Members

Interview Procedures

1. Contact the identified interviewees via e-mail to seek interest and willingness to participate.
2. Schedule the interview (to be conducted via phone unless in person works logistically and with schedules).
3. Conduct the interview.
    a. Record the interview.
    b. Memo insights, nuances, and other intel outside of transcription, along with systematic reflection using ORID following the interview.
    c. Transcribe the interview.
    d. Code the transcription.
4. Thank the interviewees in personal thank you notes.
5. Offer opportunity to check accuracy of findings (member check) through e-mail or facilitated discussion.

Interview Introduction (with Probes)

Hi [interviewee(s)], my name is Molly Jo Lamb, and I am a student in the University of Illinois Chicago's Doctorate of Public Health (DrPH) in Leadership program. Currently, I serve as the Deputy Director of the Office of Health Protection at the Illinois Department of Public Health.

For my dissertation research, I have the opportunity to work on a problem statement around sustainability of policy, systems, and environment (PSE) strategies. My research is a mixed methods multiple case study of the *We Choose Health* initiative from 2011–2014 to learn the extent to which sustainability has occurred, how and why sustainability was achieved, and the opportunities that emerged. I have identified you for an interview as a result of your involvement in *WCH*. The study will be an effort to guide leaders, policymakers, and funders in public health investments, bring significance to sustainability to reach health outcomes, and support chronic disease and bright insights to different challenges faced in different jurisdictions. Another ending goal will be continued learning of sustainability in future action research cycles.

May I record your interview to complement my notetaking and ensure that I capture your viewpoints accurately? I will transcribe the recording, and I will offer you the opportunity to review the findings to double check accuracy.

No wrong or right answers exist. I appreciate your honesty and openness, and please know that I will de-identify your interview and keep it confidential. The interview consists of about 20 questions and will take about 45 minutes.

Interview Questions (with Probes)

Background Questions

1. Please describe your current position.
    a. What is your current working title?
    b. How long have you been in your position?
    c. How long have you worked with (or collaborated with) the LHD?
    d. What was your position during the 2011–2014 timeframe?
2. What is your primary, current contribution to WCH activities?

Factors

3. What capacity was leveraged in the community?
    a. Probe: What funding, skills, and resources?
4. How was capacity leveraged in your community?
5. How did leadership contribute to sustainability?
    a. Probe: What was the impact of championship of the program?
    b. Probe: How did public health strategist or leadership impact sustainability?

Processes

6. How did your intended strategies become realized?
7. How did local strategic planning align with sustainability planning?
    a. Probe: How did you incorporate sustainability of PSE strategies into your community health assessment (CHA) or community health improvement plan (CHIP)?
    b. Probe: How did your intended PSE strategies align with your IPLAN priorities?
8. How was prioritization of activities in relation to WCH conducted?
9. How did you use evidence and data in decision-making?
10. How did adaptability occur, and how did it impact sustainability?

Community Coalition

11. How did the coalition influence sustainability?
12. How was evaluation data shared with coalition stakeholders?
13. How did engagement change after external funding ended?
14. How did the stakeholders change involvement after external funding ended?

Opportunities

15. What emergent strategies resulted following the funding cut in 2014?
    a. Probe: What types of policy resulted?
    b. Probe: What innovation emerged?
    c. Probe: What social, economic, and built environment changes transpired?
16. How did the emergent strategies occur, and how did they support sustainability?
17. Why were the emergent strategies significant to sustainability?
18. Why was adaptability significant to emergent strategy, innovation, or policy change?
19. What still needs to be addressed to sustain PSE strategies and why?

Appendix E: Phase III Facilitated Discussion Guide

{*draft and possible adaptation following analysis of Phase I and Phase II data*}

Target: Illinois Association of Public Health Administrators (IAPHA)

Forum and Data: IAPHA General Membership Meeting August 2020

Phase III serves two purposes: (1) member check to increase and enhance validity and accuracy of findings and (2) spur future efforts and an action learning cycle.

Researcher will request attendance and presentation at the August 2020 IAPHA General Membership Meeting from the IAPHA President. The current President's LHD is a participant of this research.

Presentation:

- Research presentation with findings and
- Interactive session to engage all LHDs in future action learning and recommendations for Chapter V

Questions for the interactive session will not be developed until after Phase II data analysis.

Appendix F: LHD PSE Strategy Selection

Case	Administrator (PI for Grant)	# counties served	Coalition	1 - School Health	2 - Baby Friendly Hospitals	3 - Worksite Wellness	4 - Smokefree Multi-unit Housing	5 - Smokefree Outdoor Spaces	6 - Complete Streets	7 - Joint Use Agreements	8 - Safe Routes to School
A	New	2	Named stakeholders	X		X		X			
B	Same	1	Named stakeholders	X		X	X	X			
C	Same	14	Coalition	X	X	X		X			
D	New	1	Coalition	X			X				
E	New	6	Coalition	X		X	X	X		X	
F	New	2	Named stakeholders	X			X				
G	New	10	Coalition	X		X	X	X		X	
H	Same	1	Named stakeholders		X		X				
I	New	4	Coalition			X		X	X	X	
J	New	1	Named stakeholders	X	X			X			
K	New	1	Coalition	X		X		X			
L	New	1	Coalition	X				X	X	X	X
M	New	1	Coalition and Named stakeholders	X		X	X	X			
N	Same	3	Coalition	X				X			
O	New	1	Coalition and Named stakeholders	X				X			X
P	New	1	Named stakeholders	X			X		X		X
Q	Same	5	Coalition		X	X		X			
R	New	2	Coalition and named stakeholders	X		X	X	X	X		X

Note. X = health disparity focus; X = general/jurisdiction wide

Appendix G: Retrievable Documents per Case

IPLAN documents were retrieved directly from IDPH as the latest submitted on record. Annual reports and strategic plans were retrieved from LHD websites if available.

Case	IPLAN	Annual report	Strategic plan
A	X	X	
B	X	X	X
C	X	X	
D	X	X	
E	X		
F	X		
G	X		
H	X	X	X
I	X	X	
J	X	X	
K	X		
L	X	X	
M	X	X	
N	X		
O	X	X	
P	X	X	
Q	X	X	
R	X	X	

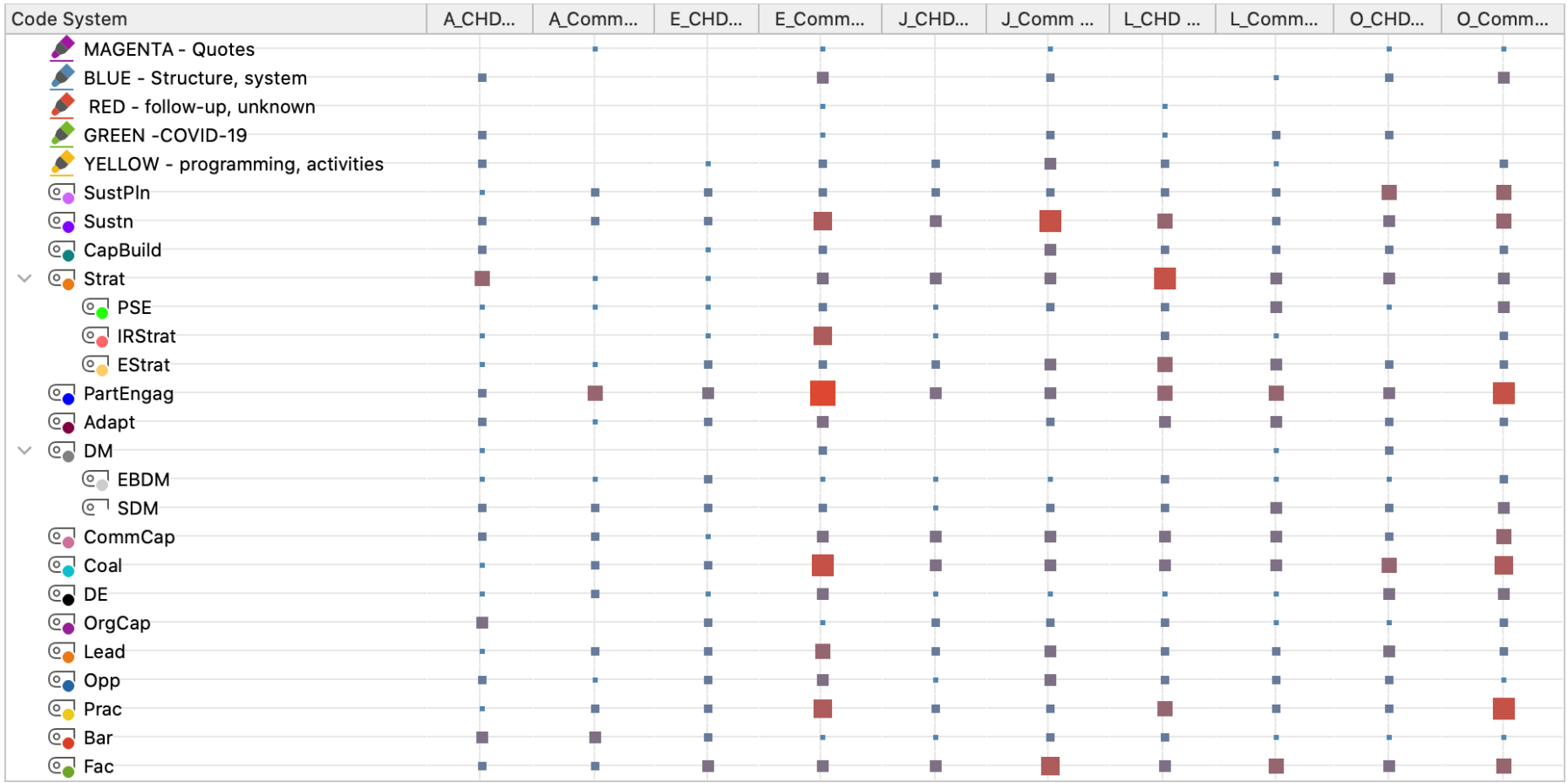
Note. X = retrieved

Appendix H: Code Matrix Browser – “Sustn” Only

Code System	A_CHD ...	A_Comm ...	E_CHD ...	E_Comm...	J_CHD...	J_Comm ...	L_CHD ...	L_Comm...	O_CHD...	O_Comm...	SUM
Sustn											94
SUM	6	3	5	16	7	21	11	6	8	11	94

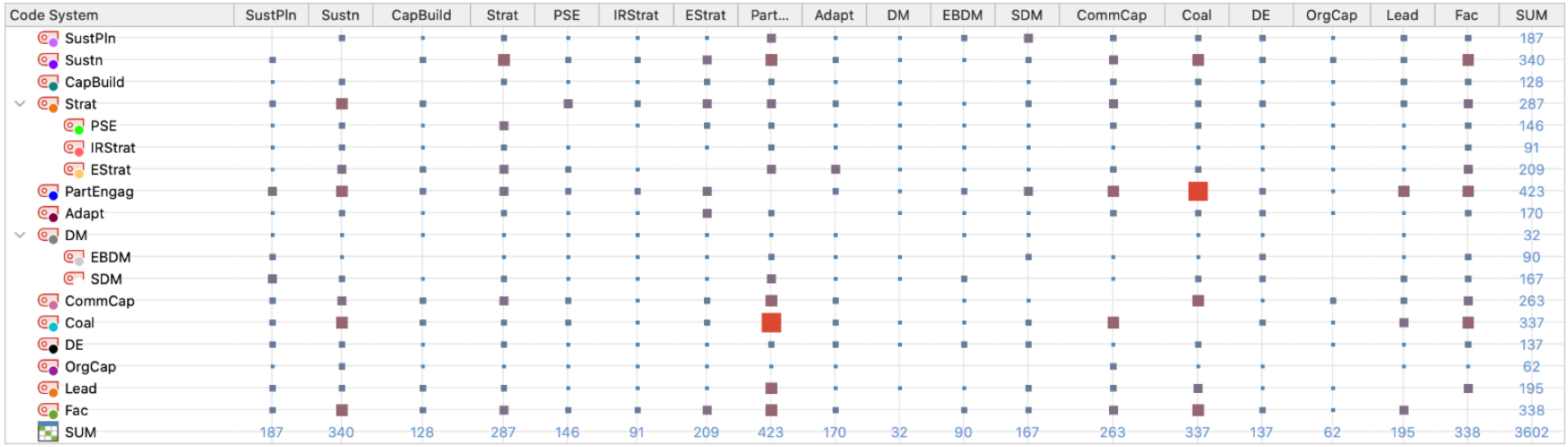
Code System	A_CHD ...	A_Comm ...	E_CHD ...	E_Comm...	J_CHD...	J_Comm ...	L_CHD ...	L_Comm...	O_CHD...	O_Comm...	SUM
Sustn	6	3	5	16	7	21	11	6	8	11	94
SUM	6	3	5	16	7	21	11	6	8	11	94

Appendix I: Code Matrix Browser



Code System	A_CHD...	A_Comm...	E_CHD...	E_Comm...	J_CHD...	J_Comm ...	L_CHD ...	L_Comm...	O_CHD...	O_Comm...	SUM
MAGENTA - Quotes		1		2		1			1	2	7
BLUE - Structure, system	4			9		3		2	3	8	29
RED - follow-up, unknown				1			1				2
GREEN -COVID-19	3			1		5	1	5	5		20
YELLOW - programming, activities	6		2	5	3	10	4	2		6	38
SustPln	1	3	4	6	3	3	3	5	11	12	51
Sustn	6	3	5	16	7	21	11	6	8	11	94
CapBuild	3		2	6		7	4	5	4	3	34
Strat	11	2	2	10	7	8	19	8	10	7	84
PSE	1	2	2	5	1	6	5	9	2	7	40
IRStrat	1		2	15	1		4	1		3	27
EStrat	2	2	5	4	3	9	11	9	3	5	53
PartEngag	6	13	7	24	8	9	13	12	8	20	120
Adapt	5	2	4	8		5	8	7	4	3	46
DM	1			3				1	3		8
EBDM	1	1	3	1	2	2	6	2	2	5	25
SDM	3	3	4	4	2	4	3	10	5	7	45
CommCap	5	3	2	10	8	10	7	9	6	12	72
Coal	2	5	4	20	8	8	10	9	12	16	94
DE	2	3	2	8	2	1	2	2	9	9	40
OrgCap	7		3	2	3	3	5	2	2	3	30
Lead	2	3	4	13	3	8	6	6	7	6	58
Opp	5	1	3	7	2	10	5	6	5	2	46
Prac	2	6	3	16	4	3	14	6	6	19	79
Bar	9	9	3	2	2	3	4	2	2	2	38
Fac	5	4	8	7	8	15	9	12	9	11	88
SUM	93	66	74	205	77	154	155	138	127	179	1268

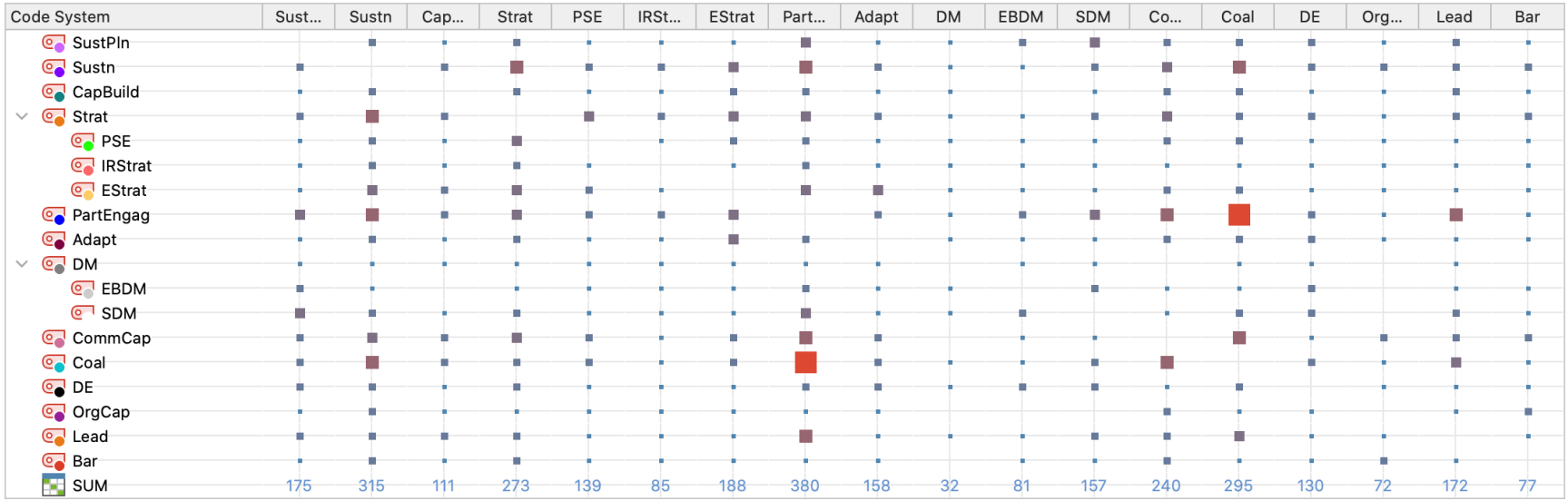
Appendix J: Co-occurence Code Matrix Browser - Facilitator



Code System	SustPln	Sustn	CapBuild	Strat	PSE	IRStrat	EStrat	Part...	Adapt	DM	EBDM	SDM	CommCap	Coal	DE	OrgCap	Lead	Fac	SUM
SustPln																			187
Sustn																			340
CapBuild																			128
Strat																			287
PSE																			146
IRStrat																			91
EStrat																			209
PartEngag																			423
Adapt																			170
DM																			32
EBDM																			90
SDM																			167
CommCap																			263
Coal																			337
DE																			137
OrgCap																			62
Lead																			195
Fac																			338
SUM	187	340	128	287	146	91	209	423	170	32	90	167	263	337	137	62	195	338	3602

Code System	SustPln	Sustn	CapBuild	Strat	PSE	IRStrat	EStrat	Part...	Adapt	DM	EBDM	SDM	CommCap	Coal	DE	OrgCap	Lead	Fac	SUM
SustPln		17	6	15	4	6	5	22	6	3	11	23	11	16	17	1	8	16	187
Sustn	17		13	35	19	11	21	46	14	2	6	11	33	37	11	11	16	37	340
CapBuild	6	13		14	1	2	9	14	7	1		5	12	10	3	4	9	18	128
Strat	15	35	14		25	12	29	26	20	3	7	10	23	15	8	6	17	22	287
PSE	4	19	1	25		5	19	13	7	1	1	4	12	10	3	5	6	11	146
IRStrat	6	11	2	12	5		4	11	4	2	1	5	5	6	3	2	4	8	91
EStrat	5	21	9	29	19	4		21	26	1	2	5	15	13	5	5	6	23	209
PartEngag	22	46	14	26	13	11	21		17	3	8	26	37	80	15	2	35	47	423
Adapt	6	14	7	20	7	4	26	17		1	5	4	13	11	8	4	7	16	170
DM	3	2	1	3	1	2	1	3	1		1	5		1	6		2		32
EBDM	11	6		7	1	1	2	8	5	1		11	4	5	14		4	10	90
SDM	23	11	5	10	4	5	5	26	4	5	11		5	15	17		8	13	167
CommCap	11	33	12	23	12	5	15	37	13		4	5		34	4	10	12	33	263
Coal	16	37	10	15	10	6	13	80	11	1	5	15	34		10	1	29	44	337
DE	17	11	3	8	3	3	5	15	8	6	14	17	4	10		1	3	9	137
OrgCap	1	11	4	6	5	2	5	2	4				10	1	1		4	6	62
Lead	8	16	9	17	6	4	6	35	7	2	4	8	12	29	3	4		25	195
Fac	16	37	18	22	11	8	23	47	16		10	13	33	44	9	6	25		338
SUM	187	340	128	287	146	91	209	423	170	32	90	167	263	337	137	62	195	338	3602

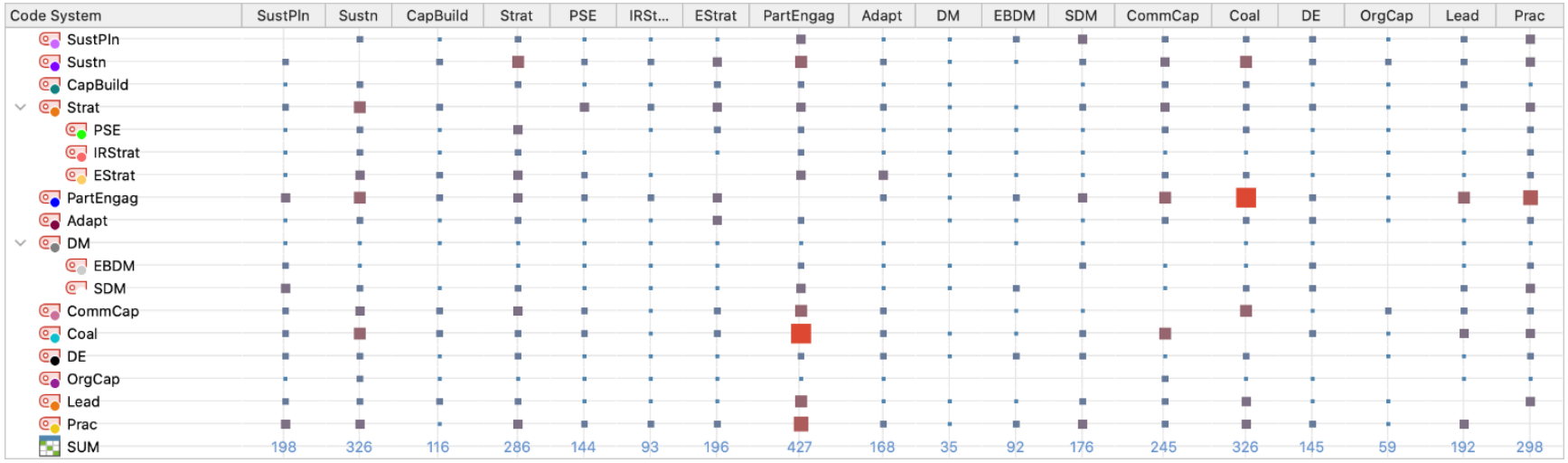
Appendix K: Co-occurence Code Matrix Browser – Barrier



Code System	Sust...	Sustn	Cap...	Strat	PSE	IRSt...	EStrat	Part...	Adapt	DM	EBDM	SDM	Co...	Coal	DE	Org...	Lead	Bar
SustPln																		
Sustn																		
CapBuild																		
Strat																		
PSE																		
IRStrat																		
EStrat																		
PartEngag																		
Adapt																		
DM																		
EBDM																		
SDM																		
CommCap																		
Coal																		
DE																		
OrgCap																		
Lead																		
Bar																		
SUM	175	315	111	273	139	85	188	380	158	32	81	157	240	295	130	72	172	77

Code System	Sust...	Sustn	Cap...	Strat	PSE	IRSt...	EStrat	Part...	Adapt	DM	EBDM	SDM	Co...	Coal	DE	Org...	Lead	Bar
SustPln		17	6	15	4	6	5	22	6	3	11	23	11	16	17	1	8	4
Sustn	17		13	35	19	11	21	46	14	2	6	11	33	37	11	11	16	12
CapBuild	6	13		14	1	2	9	14	7	1		5	12	10	3	4	9	1
Strat	15	35	14		25	12	29	26	20	3	7	10	23	15	8	6	17	8
PSE	4	19	1	25		5	19	13	7	1	1	4	12	10	3	5	6	4
IRStrat	6	11	2	12	5		4	11	4	2	1	5	5	6	3	2	4	2
EStrat	5	21	9	29	19	4		21	26	1	2	5	15	13	5	5	6	2
PartEngag	22	46	14	26	13	11	21		17	3	8	26	37	80	15	2	35	4
Adapt	6	14	7	20	7	4	26	17		1	5	4	13	11	8	4	7	4
DM	3	2	1	3	1	2	1	3	1		1	5		1	6		2	
EBDM	11	6		7	1	1	2	8	5	1		11	4	5	14		4	1
SDM	23	11	5	10	4	5	5	26	4	5	11		5	15	17		8	3
CommCap	11	33	12	23	12	5	15	37	13		4	5		34	4	10	12	10
Coal	16	37	10	15	10	6	13	80	11	1	5	15	34		10	1	29	2
DE	17	11	3	8	3	3	5	15	8	6	14	17	4	10		1	3	2
OrgCap	1	11	4	6	5	2	5	2	4				10	1	1		4	16
Lead	8	16	9	17	6	4	6	35	7	2	4	8	12	29	3	4		2
Bar	4	12	1	8	4	2	2	4	4		1	3	10	2	2	16	2	
SUM	175	315	111	273	139	85	188	380	158	32	81	157	240	295	130	72	172	77

Appendix L: Co-occurence Code Matrix Browser – Practices and Processes



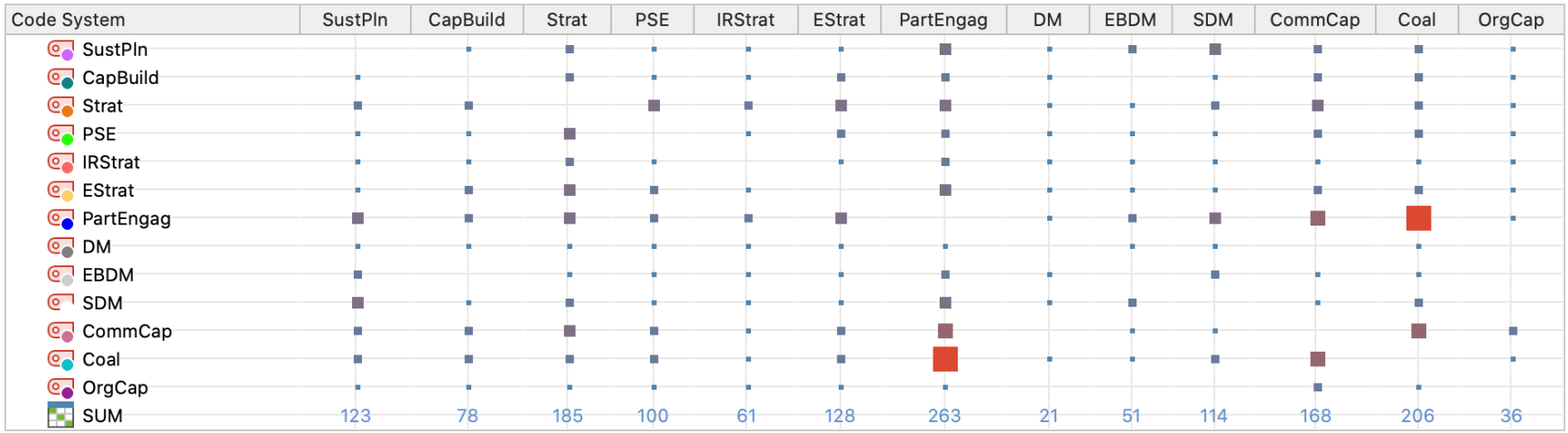
Code System	SustPln	Sustn	CapBuild	Strat	PSE	IRSt...	EStrat	PartEngag	Adapt	DM	EBDM	SDM	CommCap	Coal	DE	OrgCap	Lead	Prac
SustPln		17	6	15	4	6	5	22	6	3	11	23	11	16	17	1	8	27
Sustn	17		13	35	19	11	21	46	14	2	6	11	33	37	11	11	16	23
CapBuild	6	13		14	1	2	9	14	7	1		5	12	10	3	4	9	6
Strat	15	35	14		25	12	29	26	20	3	7	10	23	15	8	6	17	21
PSE	4	19	1	25		5	19	13	7	1	1	4	12	10	3	5	6	9
IRStrat	6	11	2	12	5		4	11	4	2	1	5	5	6	3	2	4	10
EStrat	5	21	9	29	19	4		21	26	1	2	5	15	13	5	5	6	10
PartEngag	22	46	14	26	13	11	21		17	3	8	26	37	80	15	2	35	51
Adapt	6	14	7	20	7	4	26	17		1	5	4	13	11	8	4	7	14
DM	3	2	1	3	1	2	1	3	1		1	5		1	6		2	3
EBDM	11	6		7	1	1	2	8	5	1		11	4	5	14		4	12
SDM	23	11	5	10	4	5	5	26	4	5	11		5	15	17		8	22
CommCap	11	33	12	23	12	5	15	37	13		4	5		34	4	10	12	15
Coal	16	37	10	15	10	6	13	80	11	1	5	15	34		10	1	29	33
DE	17	11	3	8	3	3	5	15	8	6	14	17	4	10		1	3	17
OrgCap	1	11	4	6	5	2	5	2	4				10	1	1		4	3
Lead	8	16	9	17	6	4	6	35	7	2	4	8	12	29	3	4		22
Prac	27	23	6	21	9	10	10	51	14	3	12	22	15	33	17	3	22	
SUM	198	326	116	286	144	93	196	427	168	35	92	176	245	326	145	59	192	298

Appendix M: Co-occurence Code Matrix Browser – Coalition

Code System	A_CHD ...	A_Comm ...	E_CHD ...	E_Comm ...	J_CHD ...	J_Comm ...	L_CHD...	L_Comm...	O_CHD...	O_Comm...	SUM
PartEngag											120
Coal											94
SUM	8	18	11	44	16	17	23	21	20	36	214

Code System	A_CHD ...	A_Comm ...	E_CHD ...	E_Comm ...	J_CHD ...	J_Comm ...	L_CHD...	L_Comm...	O_CHD...	O_Comm...	SUM
PartEngag	6	13	7	24	8	9	13	12	8	20	120
Coal	2	5	4	20	8	8	10	9	12	16	94
SUM	8	18	11	44	16	17	23	21	20	36	214

Appendix N: Co-occurrence Code Matrix Browser – Coalition and Actions



Code System	SustPln	CapBuild	Strat	PSE	IRStrat	EStrat	PartEngag	DM	EBDM	SDM	CommCap	Coal	OrgCap
SustPln													
CapBuild													
Strat													
PSE													
IRStrat													
EStrat													
PartEngag													
DM													
EBDM													
SDM													
CommCap													
Coal													
OrgCap													
SUM	123	78	185	100	61	128	263	21	51	114	168	206	36

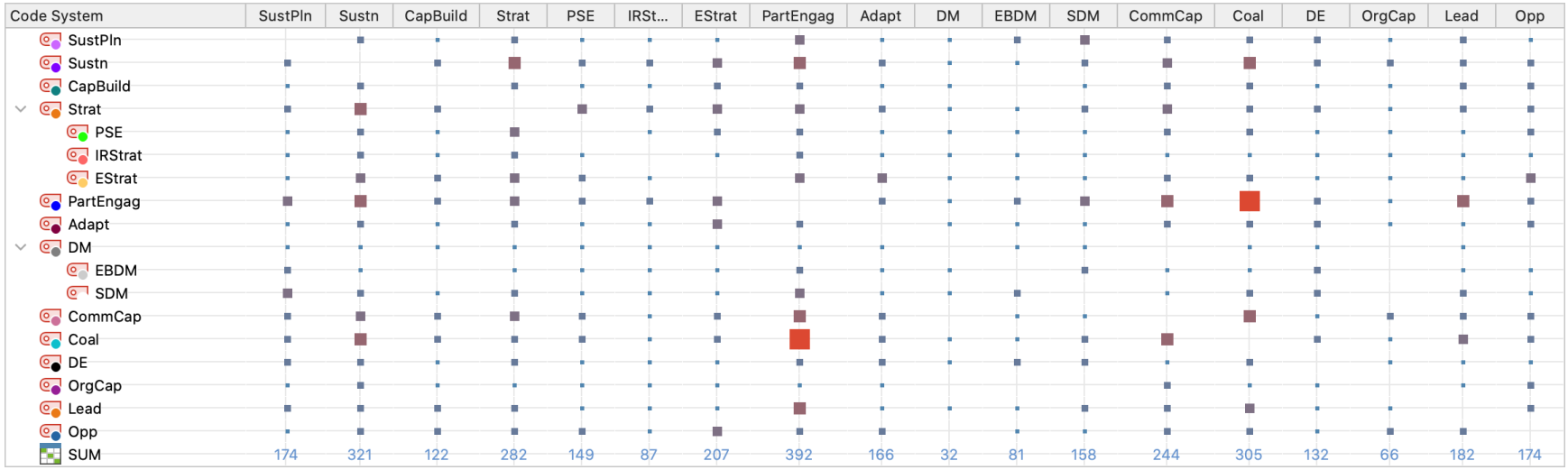
Code System	SustPln	CapBuild	Strat	PSE	IRStrat	EStrat	PartEngag	DM	EBDM	SDM	CommCap	Coal	OrgCap
SustPln		6	15	4	6	5	22	3	11	23	11	16	1
CapBuild	6		14	1	2	9	14	1		5	12	10	4
Strat	15	14		25	12	29	26	3	7	10	23	15	6
PSE	4	1	25		5	19	13	1	1	4	12	10	5
IRStrat	6	2	12	5		4	11	2	1	5	5	6	2
EStrat	5	9	29	19	4		21	1	2	5	15	13	5
PartEngag	22	14	26	13	11	21		3	8	26	37	80	2
DM	3	1	3	1	2	1	3		1	5		1	
EBDM	11		7	1	1	2	8	1		11	4	5	
SDM	23	5	10	4	5	5	26	5	11		5	15	
CommCap	11	12	23	12	5	15	37		4	5		34	10
Coal	16	10	15	10	6	13	80	1	5	15	34		1
OrgCap	1	4	6	5	2	5	2				10	1	
SUM	123	78	185	100	61	128	263	21	51	114	168	206	36

Appendix O: Co-occurrence Code Matrix Browser – Coalition and Capacity

Code System	A_CHD...	A_Comm...	E_CHD...	E_Comm...	J_CHD...	J_Comm...	L_CHD...	L_Comm...	O_CHD ...	O_Comm ...	SUM
CommCap											72
Coal											94
OrgCap											30
SUM	14	8	9	32	19	21	22	20	20	31	196

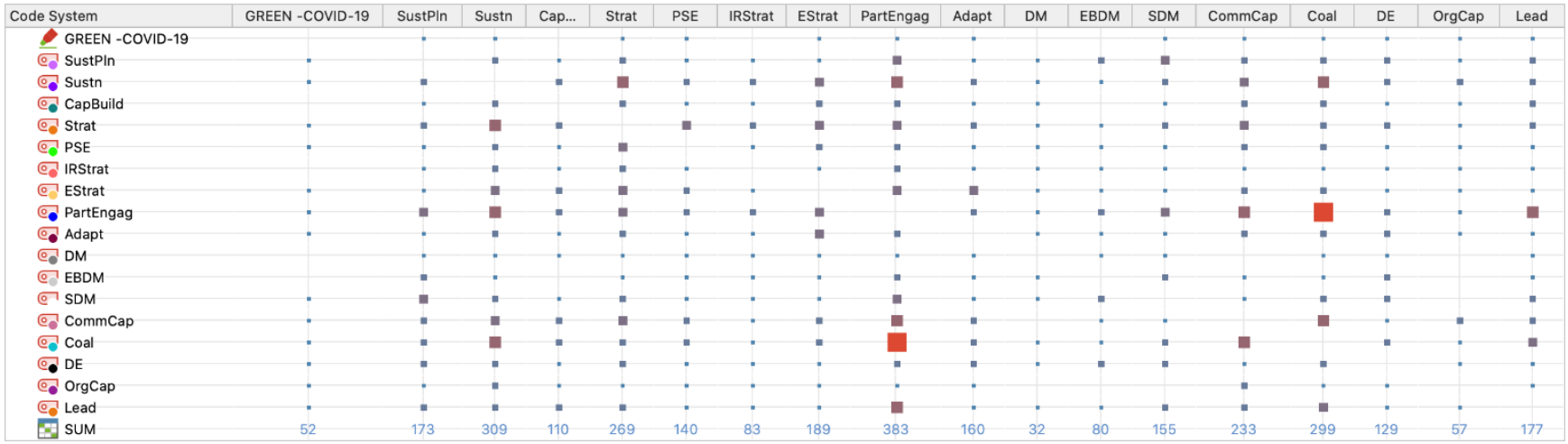
Code System	A_CHD...	A_Comm...	E_CHD...	E_Comm...	J_CHD...	J_Comm...	L_CHD...	L_Comm...	O_CHD ...	O_Comm ...	SUM
CommCap	5	3	2	10	8	10	7	9	6	12	72
Coal	2	5	4	20	8	8	10	9	12	16	94
OrgCap	7		3	2	3	3	5	2	2	3	30
SUM	14	8	9	32	19	21	22	20	20	31	196

Appendix P: Co-occurrence Code Matrix Browser – Opportunities



Code System	SustPln	Sustn	CapBuild	Strat	PSE	IRSt...	EStrat	PartEngag	Adapt	DM	EBDM	SDM	CommCap	Coal	DE	OrgCap	Lead	Opp
SustPln		17	6	15	4	6	5	22	6	3	11	23	11	16	17	1	8	3
Sustn	17		13	35	19	11	21	46	14	2	6	11	33	37	11	11	16	18
CapBuild	6	13		14	1	2	9	14	7	1		5	12	10	3	4	9	12
Strat	15	35	14		25	12	29	26	20	3	7	10	23	15	8	6	17	17
PSE	4	19	1	25		5	19	13	7	1	1	4	12	10	3	5	6	14
IRStrat	6	11	2	12	5		4	11	4	2	1	5	5	6	3	2	4	4
EStrat	5	21	9	29	19	4		21	26	1	2	5	15	13	5	5	6	21
PartEngag	22	46	14	26	13	11	21		17	3	8	26	37	80	15	2	35	16
Adapt	6	14	7	20	7	4	26	17		1	5	4	13	11	8	4	7	12
DM	3	2	1	3	1	2	1	3	1		1	5		1	6		2	
EBDM	11	6		7	1	1	2	8	5	1		11	4	5	14		4	1
SDM	23	11	5	10	4	5	5	26	4	5	11		5	15	17		8	4
CommCap	11	33	12	23	12	5	15	37	13		4	5		34	4	10	12	14
Coal	16	37	10	15	10	6	13	80	11	1	5	15	34		10	1	29	12
DE	17	11	3	8	3	3	5	15	8	6	14	17	4	10		1	3	4
OrgCap	1	11	4	6	5	2	5	2	4				10	1	1		4	10
Lead	8	16	9	17	6	4	6	35	7	2	4	8	12	29	3	4		12
Opp	3	18	12	17	14	4	21	16	12		1	4	14	12	4	10	12	
SUM	174	321	122	282	149	87	207	392	166	32	81	158	244	305	132	66	182	174

Appendix Q: Co-occurrence Code Matrix Browser – COVID-19



Code System	GREEN -COVID-19	SustPln	Sustn	Cap...	Strat	PSE	IRStrat	EStrat	PartEngag	Adapt	DM	EBDM	SDM	CommCap	Coal	DE	OrgCap	Lead
GREEN -COVID-19																		
SustPln																		
Sustn																		
CapBuild																		
Strat																		
PSE																		
IRStrat																		
EStrat																		
PartEngag																		
Adapt																		
DM																		
EBDM																		
SDM																		
CommCap																		
Coal																		
DE																		
OrgCap																		
Lead																		
SUM	52	173	309	110	269	140	83	189	383	160	32	80	155	233	299	129	57	177

Code System	GREEN -COVID-19	SustPln	Sustn	Cap...	Strat	PSE	IRStrat	EStrat	PartEngag	Adapt	DM	EBDM	SDM	CommCap	Coal	DE	OrgCap	Lead
GREEN -COVID-19		2	6		4	5		3	7	6			1	3	6	1	1	7
SustPln	2		17	6	15	4	6	5	22	6	3	11	23	11	16	17	1	8
Sustn	6	17		13	35	19	11	21	46	14	2	6	11	33	37	11	11	16
CapBuild		6	13		14	1	2	9	14	7	1		5	12	10	3	4	9
Strat	4	15	35	14		25	12	29	26	20	3	7	10	23	15	8	6	17
PSE	5	4	19	1	25		5	19	13	7	1	1	4	12	10	3	5	6
IRStrat		6	11	2	12	5		4	11	4	2	1	5	5	6	3	2	4
EStrat	3	5	21	9	29	19	4		21	26	1	2	5	15	13	5	5	6
PartEngag	7	22	46	14	26	13	11	21		17	3	8	26	37	80	15	2	35
Adapt	6	6	14	7	20	7	4	26	17		1	5	4	13	11	8	4	7
DM		3	2	1	3	1	2	1	3	1		1	5		1	6		2
EBDM		11	6		7	1	1	2	8	5	1		11	4	5	14		4
SDM	1	23	11	5	10	4	5	5	26	4	5	11		5	15	17		8
CommCap	3	11	33	12	23	12	5	15	37	13		4	5		34	4	10	12
Coal	6	16	37	10	15	10	6	13	80	11	1	5	15	34		10	1	29
DE	1	17	11	3	8	3	3	5	15	8	6	14	17	4	10		1	3
OrgCap	1	1	11	4	6	5	2	5	2	4				10	1	1		4
Lead	7	8	16	9	17	6	4	6	35	7	2	4	8	12	29	3	4	
SUM	52	173	309	110	269	140	83	189	383	160	32	80	155	233	299	129	57	177

Appendix R: Research Word Cloud