A NEW BENCHMARKING METHODOLOGY TO MONITOR INDUSTRY'S INVESTMENT IN COMMUNITY-BASED OBESITY PREVENTION AND FOOD ACCESS INITIATIVES: GAPS AND OPPORTUNITIES

Olivia Barata Cavalcanti
CUNY School of Public Health, olivia.baratacavalcanti94@sphmail.cuny.edu

Follow this and additional works at: https://academicworks.cuny.edu/sph_etds
Part of the Public Health Commons

Recommended Citation
A NEW BENCHMARKING METHODOLOGY TO MONITOR INDUSTRY’S INVESTMENT IN COMMUNITY-BASED OBESITY PREVENTION AND FOOD ACCESS INITIATIVES: GAPS AND OPPORTUNITIES

A DISSERTATION

by

OLIVIA BARATA CAVALCANTI

Concentration: Community, Society and Health

Presented to the Faculty at the Graduate School of Public Health and Health Policy in partial fulfillment of the requirements for the degree of Doctor of Public Health

Graduate School of Public Health and Health Policy
City University of New York
New York, New York
May 2018

Dissertation Committee:
TERRY T-K HUANG, PHD, MPH, CPH
MAY MAY LEUNG, PHD, RDN
JIM SHERRY, MD, PHD
Copyrighted By

OLIVIA BARATA CAVALCANTI

2018

All rights reserved
ABSTRACT

A new benchmarking methodology to monitor industry’s investment in community-based obesity prevention and food access initiatives: gaps and opportunities

by

Olivia Barata Cavalcanti

Advisor: Terry T-K Huang

Abstract (for the overall dissertation)

Background:
Despite increased public health efforts and investment in obesity prevention, obesity continues to be a growing problem in the United States.\(^1\) Excess weight increases the risk for a series of correlated diseases, such as type 2 diabetes, hyperinsulinemia, hypertension, dyslipidemia, joint abnormalities, polycystic ovarian syndrome, nonalcoholic fatty liver disease, sleep disturbances and a decreased life span.\(^2\)\(^{–}\)\(^9\)

Traditional interventions to improve nutrition or decrease obesity have not achieved the desired success so far because obesity is a complex problem, involving a vast number of factors, sectors and actors that influence individuals’ energy balance.\(^10\)\(^{,}\)\(^11\) To achieve change in a complex system, it is crucial to adopt a collective response that intervenes at different levels and spans multiple sectors.\(^12\) Such response would see a coordinated effort between actors from different sectors toward the common goal of reducing obesity. Though still controversial, several authors and international organizations have highlighted the necessity of involving food and beverage
companies – with appropriate monitoring and accountability systems – given the crucial role they play in shaping the food production and consumption environment.\\(^{13-17}\)

Food and beverage companies have already made substantial investments aimed at improving communities’ access to food and encouraging healthful eating and active living. Although the presence of the private sector in the public health space is growing at a rapid pace, there is limited research on its actual impact, and the supposed “added value” of industry-sponsored initiatives is often grounded on anecdotal evidence and best-practice reasoning.\\(^{18}\)

In response to the growing need for objective assessments of health initiatives funded by the private sector, the Commitment to Healthy Communities (CHC) initiative developed a new methodology to benchmark the strategy and performance of community-based food access, healthful nutrition and active living programs in the US funded by food and beverage companies.

The initiative also included developing and piloting a new tool to assess the collective impact the companies’ strategies have at the community level.

This dissertation sought to analyze the results of the CHC initiative and to use scientific lenses to suggest a roadmap for public-private collaboration in obesity prevention initiatives. The results of the three papers shed light on the impact of current privately funded initiatives in community health and suggest a framework for future multi-sectoral collaboration with a specific focus on portion guidance and management.
Methods for CHC assessment: We developed an industry survey based on best practices in corporate benchmarking while incorporating concepts from the collective impact framework. The survey evaluated four domains of community initiatives: 1) strategy design; 2) governance and management; 3) monitoring and evaluation; and 4) reporting, communication and stakeholder engagement. Eleven companies participated. Quantitative and qualitative data on companies’ obesity prevention and food access initiatives were collected through an online platform and validated by the research team. For each dimension and overall, a percentage score was computed for each company. Domains 1, 2, and 4 above were given a weight of 20% while domain 3 was given a weight of 40% in the final score.

Method for community-based assessment: We developed the Collective Impact Community Assessment Scale, which evaluates programs along 14 dimensions. Five community programs funded by five companies participated in the testing of this tool. Qualitative data were collected through in-person key informant interviews, focus groups, and direct observations of program activities. Eight interviews/focus groups (representing program management, delivery staff, participants and community champions) were selected in each program for review and analysis using a scoring system with pre-established anchors and algorithms to arrive at quantitative metrics of CI. Raw scores ranged on a scale from 0 to 8 for each dimension and were standardized as percentages. Scores for all 14 dimensions were averaged to generate a total composite score.

Methods for Delphi study: The study consisted of an iterative process of administering three rounds of surveys to a panel of experts – representing the fields of obesity, public health, food
production, access and distribution, and the broader nutrition field – over a period of three months. The surveys included questions aimed at gathering opinions on the following issues surrounding portion guidance: psychological mindsets that can affect portion size choice, eating habits, portion perception and distortion, passive overconsumption, and challenges and advantages of this tool to improve population nutrition. The surveys also included questions regarding envisioned changes in the food environment in the future. After every round we analyzed all answers and transformed the questions into more narrow agreement queries in order to reach group consensus on specific items in the subsequent round.

**Results:** Nine companies provided enough quantitative data to be scored in the CHC assessment. Overall scores ranged from 27% to 69% (mean=53%, median=55%). Companies scored between 18-83% on strategy design (mean=60%, median=62%); 26-89% on governance and management (mean=64%, median=65%); 24-60% on monitoring and evaluation (mean=40%, median=37%); and 27-89% on reporting, communication and stakeholder engagement (mean=63%, median=67%). There was a positive, exponential relationship between companies’ overall scores and the level of financial investment in community-based programs.

For the community assessment, total composite scores of CI for programs ranged from 63% to 89%. The CI dimensions that scored the highest were “backbone infrastructure” (median=94%, range=88%-100%) and “common agenda” (median=91%, range=59%-97%). All programs scored lower on dimensions related to their ability to impact funding flows (median=47%, range=34%-94%), cultural norms (median=69%, range=34%-88%), and advocacy and public policy (median=56%, range=25%-69%).
The Delphi study found that, although many experts fear that portion size interventions might be perceived as paternalistic, 91% of respondents agree that these innovations should be stealth and unnoticed. 73% of experts believe that the most impactful portion size information is product reformulation while simply producing smaller packages is the most effective intervention according to only 16% of experts. The majority of the panel (59%) also believes that creating an artificial stopping point in packages is the best strategy to reduce food consumption. Finally, the study found that one of the most complex aspects of establishing a multi-sector collaboration for obesity prevention is to ascertain trust in the private sector’s ability to go beyond the profit versus responsibility conundrum.

**Conclusion:** The complexity of the obesity issue requires collaboration from different actors across all areas of the complex food environment. The CHC initiative presents an innovative and promising methodology to assess these efforts in a rigorous manner and provide specific feedback on areas that need further improvement. This evaluation framework also provides best practice standards against which different companies can set their goals and objectives. This dissertation has uncovered an area of potential growth that could push companies to maximize their collective impact. Finally, this dissertation has set the stage for future public-private collaboration to improve population nutrition through portion size initiatives. It has identified important points of agreement and obstacles that can inform the agenda of such a movement and shape next-generation obesity prevention programs.

**Keywords:** Obesity; food industry; collective impact; performance; benchmarking; public-private partnership; multi-sector collaboration; Delphi study.
**MeSh Terms:** Obesity; Food Industry; Social Change; Benchmarking; Program Evaluation; Public-Private Sector Partnership; Intersectoral Collaboration; Delphi Technique
Acknowledgments and Disclosure Statement

Acknowledgments

I would like to express my sincere appreciation and thanks to my advisor Dr. Terry T-K Huang, for being an incredible advisor and mentor throughout this whole process. Thank you for always encouraging me to be creative, ambitious, to see the “big picture”, and to go beyond the walls of academia. In different occasions you believed in my ability to finish this work on time more than I ever believed in myself. You are a role model as a professor, a mentor, an employer and an advisor and I feel incredibly lucky to have had the opportunity to work with you.

I am also fortunate to have Dr. May May Leung in my committee. She was the first professor in the doctoral program who believed in my potential and taught me things about being a public health researcher and practitioner that are not written in books. She has always been extremely supportive, encouraging and I will forever be grateful for all the opportunities she has given me.

I am grateful to Dr. Sherry, who took time out of his incredibly busy schedule to be an important member of my committee. Thank you for being so inspiring and understanding as a professor and so humble in spite of your incredible knowledge and experience.

I also wanted to thank Katrina Mateo and Emily Ferris for being such amazing co-workers, always available, empathetic, enthusiastic, and supportive.

I thank my family for being next to me every step of the way during these last five years. My husband Fabrizio has been understanding and encouraging in so many different ways and I would not have been able to accomplish this without his emotional and practical support. Thank you to my children, Riccardo and Luca, for reminding me every day that there were other very
important things besides my dissertation. You forced me not to lose focus of my life even during the most overwhelming and anxious moments. Finally, I want to thank my mother, the strongest woman I have ever met, who has always encouraged me to believe in myself and to aim for the most ambitious goals.
Disclosure Statement

This dissertation is the result of my own work under the guidance of my chair and the committee members. I have no conflict of interest to declare.

The Commitment to Healthy Communities project was sponsored by the Healthy Weight Commitment Foundation through a partnership with the CUNY School of Public Health and Health Policy.

Research activities for Aims 1 and 3 were deemed exempt from review by the City University of New York Human Research Protection Program.

Research activities for Aim 2 were approved by the City University of New York Human Research Protection Program, Protocol # 2015-1203.
# Table of Contents

Chapter 1. Introduction ..................................................................................................................... 1
  1.1 Obesity .................................................................................................................................... 1
  1.2 Medical Consequences of Obesity ........................................................................................... 1
  1.3 Paradigm Shifts in Understanding Obesity ............................................................................. 2
  1.4 Failure of Traditional Interventions ....................................................................................... 3
  1.5 The Need for a New Approach to Tackle Obesity and the Rise of Public-Private Partnerships in Non-Communicable Disease Prevention .......................................................... 4
  1.6 The Role of the Food and Beverage Industry in Obesity Interventions ............................... 6
  1.7 Evaluation of the Industry Efforts in Preventing Obesity ....................................................... 9
  1.8 Collective Impact as the Basis for an Evaluation Framework .................................................. 12
  1.9 Importance of this Research .................................................................................................. 13
  1.10 Structure of this Dissertation ............................................................................................... 13
  1.11 Specific Aims for this Dissertation ........................................................................................ 14

Chapter 2. Benchmarking food and beverage companies’ investment in healthful eating and active living initiatives ............................................................................................................. 18
  2.1 Introduction .............................................................................................................................. 18
  2.2 Methods .................................................................................................................................... 20
    2.2.1 Companies .......................................................................................................................... 20
    2.2.2 Development of CHC framework ....................................................................................... 20
    2.2.3 Company-level inventory and assessment ......................................................................... 21
    2.2.4 Data collection and validation ........................................................................................... 22
    2.2.5 Data analysis ..................................................................................................................... 23
  2.3 Results ....................................................................................................................................... 24
    2.3.1 Types of community health strategies and their ‘locus’ within the business ................. 24
    2.3.2 Scale of funding and source of budgets for community health strategies ....................... 25
    2.3.3 Overall company scores and collective impact maturity .................................................. 26
    2.3.4 Scores by domain ............................................................................................................... 27
    2.3.5 Correlation between total score and level of investment .................................................. 28
    2.3.6 Qualitative data ................................................................................................................ 28
    2.3.7 Code system ..................................................................................................................... 29
  2.4 Discussion .................................................................................................................................. 34
  2.5 Limitations .................................................................................................................................. 38
  2.6 Conclusion .................................................................................................................................. 38
Chapter 3. Assessing the collective impact of community health programs funded by food and beverage companies: a new community-focused methodology ........................................... 52
  3.1. Background ............................................................................................................. 52
  3.2. Methods .................................................................................................................. 54
    3.2.1. Programs and sites .......................................................................................... 54
    3.2.2. Measurement tool design and development .................................................... 56
    3.2.3. Data collection ............................................................................................... 60
    3.2.4. Data Analysis ................................................................................................. 61
  3.3. Results ................................................................................................................... 61
    3.3.1. Core dimensions ............................................................................................. 62
    3.3.2. Additional dimensions ................................................................................... 62
  3.4. Discussion .............................................................................................................. 63
  3.5. Implications ........................................................................................................... 66
  3.6. Limitations ........................................................................................................... 66
  3.7 Conclusion ............................................................................................................. 67
Chapter 4. Informing a roadmap for cross-sectoral collaboration on portion size renormalization as a national strategy to improve population nutrition – a Delphi study ................................................. 76
  4.1. Background ........................................................................................................... 76
  4.2. Methods ................................................................................................................ 79
    4.2.1. Study population and recruitment .................................................................. 79
    4.2.2. Data Collection - Delphi survey .................................................................... 79
  4.3. Results ................................................................................................................... 82
    4.3.1. Delphi participants ....................................................................................... 82
    4.3.2. Delphi results .............................................................................................. 83
  4.4. Discussion ............................................................................................................ 86
  4.5. Limitations .......................................................................................................... 88
  4.6. Conclusion .......................................................................................................... 89
Chapter 5. Conclusion .................................................................................................... 99
  5.1 Summary of Results .............................................................................................. 99
  5.2 Limitations ........................................................................................................... 102
  5.3 Public Health Significance ................................................................................... 103
  5.4 Implications for Further Research ....................................................................... 106
  5.5 Conclusions .......................................................................................................... 107
Appendices .................................................................................................................... 110
  Appendix A. Company Inventory .............................................................................. 110
# List of Tables and Figures

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1. National and international organizations support for PPPs on NCDs</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.1. CHC participating companies</td>
<td>40</td>
</tr>
<tr>
<td>Table 2.2. Review of evaluation frameworks</td>
<td>41</td>
</tr>
<tr>
<td>Table 2.3. Company-level strategy and governance assessment domains</td>
<td>44</td>
</tr>
<tr>
<td>Table 2.4. Final company-level assessment scores</td>
<td>45</td>
</tr>
<tr>
<td>Table 2.5. Domain-level scores within company-level assessment</td>
<td>46</td>
</tr>
<tr>
<td>Figure 2.1. CHC Logic Model</td>
<td>47</td>
</tr>
<tr>
<td>Figure 2.2. Company assessment pre and post audit scores, %</td>
<td>48</td>
</tr>
<tr>
<td>Figure 2.3. Maturity scale levels</td>
<td>49</td>
</tr>
<tr>
<td>Figure 2.4. Correlation of company-level scores with size of total CHC investments assessed</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 3.1. Assessed programs details</td>
<td>68</td>
</tr>
<tr>
<td>Table 3.2. Assessed programs sites</td>
<td>69</td>
</tr>
<tr>
<td>Table 3.3 Collective Impact Scoring Matrix</td>
<td>70</td>
</tr>
<tr>
<td>Table 3.4. Collective Impact Scoring Matrix – specific rubric for program participants and community leaders</td>
<td>72</td>
</tr>
<tr>
<td>Table 3.5. Final Score of Collective Impact for all</td>
<td>73</td>
</tr>
<tr>
<td>Figure 3.1. Median Collective Impact Dimension Scores for Community Assessment</td>
<td>74</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 4.1. Delphi survey panelists’ demographic information</td>
<td>90</td>
</tr>
<tr>
<td>Table 4.2. Greatest challenges for the private sector in taking social action</td>
<td>91</td>
</tr>
<tr>
<td>Table 4.3. Consensus building on practical implementation of portion size interventions</td>
<td>93</td>
</tr>
<tr>
<td>Table 4.4. Portion innovations – stealth versus announced</td>
<td>94</td>
</tr>
<tr>
<td>Figure 4.1. Delphi process</td>
<td>95</td>
</tr>
<tr>
<td>Figure 4.2. Delphi survey panelists’ industry/areas of work</td>
<td>96</td>
</tr>
<tr>
<td>Figure 4.3. Delphi survey panelists’ job titles</td>
<td>97</td>
</tr>
</tbody>
</table>
PAGE INTENTIONALLY LEFT BLANK
Chapter 1. Introduction

1.1 Obesity

Obesity is a public health crisis in the United States, where more than one third (39.8%) of adults and 18.5% of youth are obese.\textsuperscript{19} In the last decade, many public health efforts have focused on obesity; however, from 1999–2000 through 2015–2016, a significantly increasing trend in obesity was observed in both adults and youth.\textsuperscript{19} Moreover, there are still large disparities in prevalence among population groups according to race, ethnicity, and socioeconomic status. Overall, non-Hispanic black and Hispanic adults and youth had a higher prevalence of obesity compared with other races and groups of non-Hispanic origin.\textsuperscript{19} Specifically, Hispanic adults have an obesity prevalence of 47.0%, and non-Hispanic black adults of 46.8%, while non-Hispanic white adults have a prevalence of 37.9% and non-Hispanic Asians of 12.7%. Obesity prevalence among women aged 60 years and older increased from 31.5% to 38% between 2004 and 2012.\textsuperscript{20} High-income women are less likely to have obesity than their low-income peers, and women with college degrees have a lower risk of obesity compared to less-educated women. This association is specific to gender as the relationship between obesity and socioeconomic status has a negative correlation among men.

1.2 Medical Consequences of Obesity

Different diseases are associated with obesity. For example, obesity has been associated with alterations in pulmonary function possibly leading to sleep apnea.\textsuperscript{21} It also associated with different diseases of the bones, joints, muscles, connective tissue, and skin. In particular,
osteoarthritis is significantly increased in obese individuals.\textsuperscript{22} In addition, obesity is related to type 2 diabetes, insulin resistance, and metabolic syndrome,\textsuperscript{23} liver abnormalities,\textsuperscript{24} cardiovascular disease and cancer.\textsuperscript{25,26} Overweight men are at higher risk for neoplasms of the colon, rectum, and prostate while overweight women face a higher risk of cancers of the reproductive system and gallbladder.\textsuperscript{27} Finally, obesity leads to a shorter life span. Research using data from the Framingham Heart Study showed that, at age 40, obese nonsmoking women lost 7.1 years and obese nonsmoking men lost 5.8 years compared to their normal weight peers.\textsuperscript{9}

1.3 Paradigm Shifts in Understanding Obesity

Our understanding of the causes of obesity and its risk factors has evolved over time. Traditionally, obesity has been seen as the product of an unbalanced equation of energy intake and expenditure.\textsuperscript{28} During the 1990s, in light of an increasing obesity epidemic that could not be contained, there was a paradigm shift to understanding obesity as the result of multiple factors in the physical, economic, and sociocultural environment.\textsuperscript{29} In the last decade, this multilevel, socio-ecological approach has evolved once more and we are currently witnessing an effort toward third-order changes, which compel us to fundamentally rethink how an issue is conceptualized and the roles of all parties in addressing it.\textsuperscript{30} That obesity is a complex system was visually captured by the Foresight Obesity System Map,\textsuperscript{31} which was intended to define the obesity system as “the sum of all the relevant factors and their interdependencies that determine the condition of obesity for an individual or a group of people”.\textsuperscript{31} The map highlights several features of a pervasive problem: First of all, it shows that there are multiple factors, sectors and actors that influence individuals’ energy balance. It highlights not only the heterogeneity that characterizes this problem, but also how the different parts of the system are linked to each other,
creating positive, negative, direct or indirect influences. Another crucial feature of the map is the presence of multiple feedback loops, which hamper even more the search for a clear causal link. Feedbacks also create delays in system behaviors, which need to be accounted for when designing obesity interventions and accurately planning for goals within a timeframe. Finally, the Foresight map shows that the obesity system is highly interactive and these dynamic exchanges can give rise to an almost contagious (socially speaking) environment.

1.4 Failure of Traditional Interventions

Conventional obesity interventions, anchored in the traditional conception of the disease as the result of an energy imbalance, relied on an educational, behavioral and/or pharmacological approach. Such interventions, however, have not been sufficient to achieve a decline in the disease prevalence as they fail to consider the interdependences among all the factors associated with obesity.\textsuperscript{32–34} As obesity started to be conceptualized as a socio-ecological problem, interventions also shifted toward a more comprehensive approach. However, such interventions have also failed to reverse the epidemic. According to a report issued by the Institute of Medicine (now National Academy of Medicine or NAM)\textsuperscript{35} in 2007, the country has not been able to properly respond to the obesity pandemic for different reasons. First of all, the current level of investment does not match the enormous scale of the problem. Moreover, action is usually undertaken by individual stakeholders in separated settings, whereas there is a need for collective action. All stakeholders (public agencies, private companies, civil society) should create a coordinated and sustained effort to jointly address the obesity epidemic. Finally, according to the NAM, all future interventions should be guided by an evidence-based approach, which also needs to evolve. Indeed, traditional criteria required to build evidence base follow a
narrow approach that focuses on causal links and defines randomized control trials as the “gold standard”. In approaching obesity as a systems problem, the process of evidence gathering needs to be broader. It should include data about contextual factors, resource allocation, and policy processes, among others.

1.5 The Need for a New Approach to Tackle Obesity and the Rise of Public-Private Partnerships in Non-Communicable Disease Prevention

Recognizing that obesity is a complex problem raises the need for a new approach to tackle it and, although “complex problems can have simple solutions”, these solutions need to be based on a systems approach. Such an approach not only considers different factors and actors that contribute to obesity – as an ecological approach does – but it also emphasizes the different interactions and interdependencies that exist among them. It also aims to understand the existing and potential synergies between the different components of a system, as a successful intervention in one area may stimulate responses that counteract its effects (as happened with the Healthy Hunger-free Kids Act of 2010, when students initially boycotted healthier school lunches). Moreover, as Robinson and Sirard illustrate, a systems approach is more interested in finding a solution rather than searching for the different causes of the problem. A systems approach also needs to consider the existence of emergence, which is a consequence of the interactions of the systems’ parts. Emergence occurs when these interactions create an irregularity – a pattern or a behavior that is different from the system itself – thus creating a new system in which the whole is greater than the sum of its parts. Moreover, an approach that tackles obesity as a complex problem needs to inevitably involve the different actors within this

dynamic system. Only a coordinated effort that spans different fields and calls upon different players of the food and built environment can respond to the complexity of this issue.

Most scholars now agree that to understand NCD causation, it is pivotal to use a systems paradigm, which identifies different “macro-level and micro-level determinants that range in their proximity to individuals and act across varying levels of social relationships, settings, and influence”\(^4^2\). By adopting such an approach, it becomes clear that a solution to the current health crisis requires a collective response that intervenes at different levels and spans multiple sectors. The World Health Organization (WHO) clearly states that only a multi-sectoral response, which involves both public and private actors, can effectively control and prevent NCDs,\(^4^3\) and within this approach PPPs are viewed as an important tool.

Public-private partnerships (PPPs) can be defined as a “contractual arrangement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risk and reward potential in the delivery of the service and/or facility.”\(^4^4\)

Different authors and organizations have argued that PPPs are vital to overcoming the current health challenges as they, first of all, grant access to more financial, logistical, and technological resources and expertise. Second, PPPs are suited to solve complex problems that involve a range of diverse and interdependent actors and institutions/organizations, each embedded in the larger dynamic system. Finally, PPPs take into account the role of private companies in public health. Since the activities of many companies are intrinsically linked with health outcomes and, since they share responsibility in creating and/or aggravating the problem, they should also be included
in the quest for solutions. PPPs also bring to the table the different actors involved in the current public health crisis. For example, the influence the food and beverage industry has on the population and its contribution towards the obesity epidemic require that it also take responsibility in finding a solution. Thus, partnering with the private sector is not only functional to access greater resources – financial, logistical, technical or technological–, but also has the power of stimulating more health-conscious business models.\\n
1.6 The Role of the Food and Beverage Industry in Obesity Interventions

Food and beverage companies have the ability to enhance the nutritional content of their products, which could have an impact on the health of millions of people without requiring behavior modification. However, different activists and researchers have expressed serious concern about partnering with the food and beverage industry to address lifestyle-related diseases. Ludwig and Nestle\textsuperscript{46} believe that no collaboration with the food industry is possible as there is a fundamental irreconcilable conflict between public health goals and corporate priorities. According to the authors, since corporations operate in a market-driven economy that requires profit maximization, they are intrinsically at odds with public health recommendations for a diet low in energy but high in nutrients, which leads to low profit margins. Freedhoff and Hébert\textsuperscript{47} urge public health organizations not to partner with the food industry as such collaboration can only benefit corporations – via gains in credibility and brand enhancement – but transform its public partners into “inadvertent pitch-men for the food industry”. The authors believe that, through these partnerships, the food and beverage industry aims to emphasize that the prime cause for obesity is not consumption of calorie-rich food but physical inactivity. Brownell\textsuperscript{48} warns public health officials that an actual partnership with the food industry is a
corporate *escamotage* to put forward small accomplishments while fighting meaningful change. Brownell draws parallels between the food and the tobacco industry, highlighting how tobacco companies misled the public, used marketing deceitful strategies, relied on the power of lobbyists to influence the government, and reframed the public health issue to focus on personal (rather than product) responsibility. He admits to important differences between the two industries – food is not a choice but a necessity and companies produce both unhealthy and healthy items – but still advises on the perils of ignoring history as “there is ample indication that giving industry the benefit of the doubt can be a trap”.49

Nonetheless, major national and international organizations are increasingly providing explicit recommendation for PPPs to fight chronic diseases (see Table 1.1 for a summary). Also, not all academic authors argue against PPPs with the food industry and some recent publications actually voice a different standpoint that describes this collaboration as both necessary and valuable. Yach et al.50 highlight the importance of such partnerships in fighting obesity by emphasizing the food industry’s ability to reach a large amount of people while also understanding consumer insights and taste preferences. Indeed, public health might underestimate the importance that food taste and meal habits might have at the individual level and the food industry can be a powerful partner in providing better understanding on how to package and promote healthier food. Moreover, acting on food marketing and product reformulation comes at no cost to consumers and does not require individual behavior modification. The authors also highlight obstacles in achieving public health goals in nutrition from a different perspective, as they describe the constraints faced by food companies in improving global nutrition.
Eriksen\textsuperscript{51} believes that collaborations with food and beverage business are not only fruitful but necessary to make progress in the obesity epidemic. According to the author, the complexity of this health problem requires a true ecologic approach, which automatically involves the companies that produce food. Moreover, one pivotal aspect of fighting the obesity pandemic is the ability to change social norms, and companies can provide strong support in that endeavor as they possess detailed information about consumers’ behaviors and preferences. Eriksen also explains why such partnerships fall into the realm of companies’ responsibilities as they put the onus on the food industry to help solve the problem they helped to create. Finally, he advises that these PPPs should be accompanied by external regulations that prohibit marketing unhealthy food for children and increase taxes for certain products (since the tobacco experience proved the success of the tax strategy).

Kraak and Story\textsuperscript{16} highlight the importance of social norms as a key tool for obesity prevention and treatment. Hence, they believe it is crucial to create a culture of wellness that socially normalizes healthy behaviors and de-normalizes unhealthy activities.\textsuperscript{35} The authors state that such a cultural and social shift can be obtained only through the interaction of three different institutional cultures: the private sector, the public sector, and the civil society.\textsuperscript{52} They cite different reports on childhood obesity from the former Institute of Medicine as evidence supporting the notion that “social-norm changes favoring healthful diets and physical activity require a shared responsibility across many sectors, including government and industry”.\textsuperscript{35,53,54} Finally, Kraak and Story emphasize how PPPs have a greater potential to achieve success as the engagement of multiple sectors is more likely to lead to policy, social, and built environment changes than initiatives within a single sector.\textsuperscript{55}
Huang and Yaroch\textsuperscript{14} also make a compelling case for the importance of collaborating with the food industry. They acknowledge, as Brownell did, that the negative experience public health practitioners and researchers had with the tobacco industry left a scar of skepticism toward private partners. However, different from Brownell, the authors focus on how the differences between the food and the tobacco industry do not allow for a fair comparison of the two experiences. Since the same companies that produce and market unhealthy foods also manufacture healthy items, the only way to successfully increase obesity prevention is to partner with the food industry instead of alienating it. The complexity of the obesity problem also requires a complex solution that involves all the different partners that are part of the broader food and health systems. Finally, the authors stress that PPPs with food businesses do not exclude a needed legislative or regulatory changes in the food environment. Indeed, since voluntary regulation might lead to decreased market competitiveness, PPPs have the potential to accelerate the adoption of new rules, if applied to all companies in the industry to create an even playing field.

All authors supporting collaboration with industry also highlight the importance of a framework for best practices in mitigating conflicts of interest.

1.7 Evaluation of the Industry Efforts in Preventing Obesity

The current conceptualization of obesity as a complex system, coupled with the recognition of the major role that food and beverage manufacturers play in shaping the food consumption environment, has led to an increasing number of health initiatives engaging these companies as partners. These collaborations often take the shape of PPPs and this kind of collaboration is growing at a very rapid pace – over the past decade alone, the overall use of PPPs has grown
almost five fold—especially in the public health arena. However, in spite of the exponential growth of PPPs, there is limited research on their actual impact. The supposed “added value” of these collaborations is often grounded on anecdotal evidence and best-practice reasoning. One of the latest OECD surveys on cross-sectoral partnerships for development shows that only 9 out of 32 partnerships have completed an evaluation. The current evaluation landscape on health partnerships is not encouraging either: The UK Department for International Development (DFID) on global health partnerships, which are almost exclusively PPPs, found that only 10 out of 50 of such partnerships had been formally evaluated. Different authors have highlighted how there is currently little evidence that PPPs have actually improved health status or health systems in different communities. In recent years, academics and policy makers have started to highlight the urgent need for increased attention to monitoring, reporting, and evaluating outcomes, especially for PPPs that tackle social problems. Finally, given the current level of investment in PPPs, there is an emerging academic consensus on the need to develop more rigorous methodologies to assess the impact of these collaborations to justify the financial commitment.

There are different reasons behind the current focus on PPP evaluation. First, there is a need to critically assess the added value of a PPP over the single actor, and this is especially true for partnerships that tackle social problems. When partnerships are implemented to overcome obstacles that were insurmountable for the public sector alone, there needs to be evidence that PPPs bring a comparative advantage and is therefore necessary. Indeed, the lack of rigorous assessments may call into question the need for a partnership in the first place.

A second reason to rigorously evaluate PPPs is to enhance their design and implementation to maximize their impact. A process and outcome evaluation will facilitate identifying successful
steps and mechanisms, which could potentially be replicated in similar situations, while also unveiling reasons for failure or minimal impact. An objective assessment of a PPP’s performance can also provide a set of best practices and lessons learned that could inform future partnerships and enhance the collaborations themselves and their impact on the systems in which they are embedded.\textsuperscript{62}

Finally, participating partners have increased the pressure to evaluate their collaboration efforts. Both public and private partners now recognize the necessity of evaluating their PPPs and, although their intrinsic motivating factors differ, their main drivers involve different dimensions of accountability.\textsuperscript{57} If the public sector partner is a government agency, it will need the evaluation effort as an external accountability tool. Governments are subject to higher standards of transparency for their use of human and financial resources, which a rigorous assessment of their partnership can provide.\textsuperscript{63} Moreover, a robust assessment can help identify winning strategies, increase community awareness and support, and inform policy decisions.\textsuperscript{64} The private partner is subject to an internal dimension of accountability – toward managers, constituents, and shareholders – which relies on evaluation to show performance enhancement, increased efficiency, and innovation.\textsuperscript{63} Private partners are currently feeling increased external pressure as well, especially when they are involved in partnerships tackling social problems originally managed by the public sector alone.\textsuperscript{65,66} Private partners are often subject to harsh criticism and skeptical judgment of their motivations to be part of a PPP. A robust PPP impact assessment can respond to or prevent allegations of using CSR strategies for “window-dressing” and legitimize the presence of the private partner in the public space.\textsuperscript{18} To support the credibility of partnerships and their efficiency to solve complex social problems, it is key for private companies to measure performance and social impact.
1.8 Collective Impact as the Basis for an Evaluation Framework

Recognizing that obesity is a complex problem raises the need for a new approach to tackle it. Such an approach needs to not only consider different factors and actors that contribute to obesity but also emphasize the different interactions and interdependencies that exist among them. A systems evaluation method also aims to understand the existing and potential synergies between the different components of a system, as a successful intervention in one area may stimulate responses that counteract its effects. The Collective Impact (CI) evaluation framework can be a powerful tool to evaluate the industry efforts in community health as it adopts a systems perspective and allows evaluators to focus on different outcomes and indicators at different times. The framework takes into account prerequisite conditions for success and the overall environment in which the initiative takes place, which is a key feature that can be translated into evaluation of community-based activities. Indeed, matching an intervention to a community’s level of readiness – which in the CI framework is translated into urgency, leadership and resources – is essential to achieve success. The five core dimensions of CI (common agenda, shared measurement system, mutually reinforcing activities, backbone infrastructure, and continuous communication) also highlight the importance of certain pre-requisites for successful coordinated action, which can often be underestimated. The explicit reference to time in the framework serves as a constant reminder that systems-level changes and population-level impact are long term goals and it is important to take into consideration smaller achievements that are paving the way toward the end result. Finally, the framework specifically addresses the need to evaluate both behavioral and systems changes.
1.9 Importance of this Research

This study contributes new knowledge on the impact that industry-led initiatives for obesity prevention have on participants and their broader community. This dissertation presents a new evaluation framework that assesses company strategies and programs using a CI perspective. This research also illustrates a new assessment tool – the CI Community Assessment Scale – for community-based projects that gathers perspectives from different stakeholders and transforms qualitative data collected into a quantifiable score.

This research sheds light on the current views and priorities of private company investments in community health, which can inform the future landscape of privately funded health programs in the country. In addition, this work provides a dialogue framework for industry and public health experts within which new standards of practice can be established, to guide further collaboration in an accountable manner.

1.10 Structure of this Dissertation

This dissertation presents the findings in three separate papers, each paper examining one specific aim. In Chapter 2, I present the findings of the Commitment to Healthy Communities (CHC) initiative, which was an academic-private sector partnership that sought to benchmark the strategy and performance of community-based healthful eating and active living initiatives sponsored by food and beverage companies. This chapter focuses on participating companies’ scores on four domains of community initiatives: 1) strategy design; 2) governance and management; 3) monitoring and evaluation; and 4) reporting, communication and stakeholder engagement. In Chapter 3, I present the development and testing of a new methodology to
evaluate the CI of community-based programs that are aimed at improving nutrition and/or physical activity and are funded by food and beverage companies. Finally, in Chapter 4, I trace a roadmap for a next-generation cross-sectoral initiative in food portion management and control based on the findings of a Delphi study with key stakeholders in public health, food production, access and distribution, and the broader nutrition field.

1.11 Specific Aims for this Dissertation

The purpose of this dissertation is to present the development of a mixed methods evaluation framework and to analyze the CHC data to examine the current impact of a cross-section of private-sector initiatives in obesity prevention and food access. This study assesses, through a new evaluation framework based on CI principles, the impact of obesity prevention initiatives funded by the food and beverage industry. Moreover, it evaluates the CI of industry-led programs at the community level based on qualitative data from different stakeholders involved in various aspects of individual programs. Finally, the study uses the Delphi method to understand priorities and goals of prominent leaders and managers of food and beverage companies and key actors in the public health arena on the focal issue of portion size. The specific aims of this dissertation are to:

**Aim 1.** Assess the impact of the food and beverage industry’s investment in obesity prevention and food access through community-level healthful eating and active living programs, using data from the CHC initiative.

**Aim 2.** Develop and implement a methodology to conduct and evaluate the community assessment portion of the CHC initiative.
**Aim 3.** Conduct a Delphi survey with a sample of key informants – experts in obesity, public health, nutrition and leaders in the food and beverage industry – to inform a national roadmap on renormalizing food portion sizes in terms of both supply and demand.
Table 1.1 National and international organizations' support for PPPs on NCDs

<table>
<thead>
<tr>
<th>Organization</th>
<th>Recommendation/ Support for PPPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Health Organization</td>
<td>The WHO sees PPPs as an effective way to capitalize on the relative strengths of the public and private sectors to address problems that neither could adequately tackle on its own</td>
</tr>
<tr>
<td>World Bank</td>
<td>When designed well and implemented in a balanced regulatory environment, PPPs can bring greater efficiency to health care and allow for better allocation of risk between public and private entities</td>
</tr>
<tr>
<td>Academy of Nutrition &amp; Dietetics</td>
<td>Public–private partnerships are a mechanism through which healthy-lifestyle initiatives – which are a key response to the obesity pandemic – are addressing the increasing childhood obesity problem in the United States and throughout the world</td>
</tr>
<tr>
<td>Centers for Disease Control and Prevention</td>
<td>The CDC supports PPPs as they: increase support and reach of CDC’s work, facilitate innovation for the public good, impact the industry, and build internal capacity.</td>
</tr>
<tr>
<td>The Obesity Society</td>
<td>The Obesity Society supports and encourages rigorous and transparent science-industry collaborations to aid in new scientific discoveries and support public health</td>
</tr>
</tbody>
</table>

Sources: 13,15–17,68
Chapter 2. Benchmarking food and beverage companies’ investment in healthful eating and active living initiatives

2.1 Introduction

Over the past few decades, the private sector has become increasingly involved in the public health arena. Initial efforts involving private partners focused on addressing infectious diseases in low- and middle-income countries, but the practice has now expanded to different public health issues. As communities around the globe are seeing a sharp rise in non-communicable diseases (NCDs), which were responsible for an estimated 39.5 million deaths in 2015 alone, private companies are now part of the discussion on NCDs. Although governments are still viewed as the primary investors in citizens’ health, public resources are often inadequate. As such, private sector actors are increasingly investing in the health of their employees and in the communities in which they do business. In addition, changing many of the environmental determinants of NCDs requires action from the private sector, given its pivotal role in the food system.

Food and beverage companies have made substantial investments aimed at improving communities’ access to food and encouraging healthful eating and active living. Member companies of the Grocery Manufacturers Association (GMA) invested more than $100 million in food access, healthful eating and active living programs from 2010-2013. Although the presence of the private sector in the public health space is growing at a rapid pace, there is limited research on its actual impact, and the supposed “added value” of industry-sponsored initiatives is often grounded on anecdotal evidence and best-practice reasoning. In addition,
there is currently little evidence that public-private collaborations have actually improved health status or health systems in different communities.\textsuperscript{55,59} One of the latest Organization for Economic Co-operation and Development (OECD) surveys on cross-sectoral partnerships for development shows that only 9 out of 32 partnerships have completed an evaluation.\textsuperscript{57} The current evaluation landscape on health partnerships is not encouraging, either. The UK Department for International Development (DFID) found that only 10 out of 50 global health partnerships had been formally evaluated.\textsuperscript{58} In recent years, academics and policy makers have expressed an urgent need for increased attention to monitoring, reporting, and evaluating outcomes, especially for privately funded initiatives that tackle social problems.

In response to the growing need for objective assessments of health initiatives funded by the private sector, the Commitment to Healthy Communities (CHC) initiative developed a new methodology to benchmark the strategy and performance of community-based food access, healthful nutrition and active living programs in the US funded by food and beverage companies. The goal was to develop common metrics and a standard of best practices. CHC addresses the growing interest among companies, public health professionals and communities in understanding how effective these programs have been and in making such investments as impactful as possible. A protocol guiding the partnership between the research team and the funder – the Healthy Weight Commitment Foundation – was previously published.\textsuperscript{72} A logic model that shows how the partnership was designed to improve industry’s community investment can be seen in Figure 2.1. This paper presents the company-level findings from CHC.
2.2 Methods

2.2.1 Companies

CHC was a voluntary initiative primarily designed to enable participating companies to understand, measure and compare their investment in community-based food access, healthful eating and active living initiatives. Eleven food and beverage companies elected to participate in the CHC pilot during 2015-16. These companies were among the largest food and beverage companies in the US, and together were estimated to have generated global revenues of approximately US$ 285 billion in FY2014. Companies participated at different levels: Seven companies completed the full assessment and four companies completed limited assessments. Two of the eleven participating companies did not provide the minimum data required and thus were not scored. The companies varied in size, revenue and funding structure (Table 2.1).

2.2.2. Development of CHC framework

The CHC evaluation framework was developed by undertaking an extensive review of several existing public health, business and corporate community investment evaluation frameworks, including conceptual models and case studies (Table 2.2). The review examined which constructs, outcomes and indicators were included in each evaluation framework and how they were used to measure the impact of programs or strategies. The Collective Impact (CI) model – which addresses complex social problems through collaborative work across government, business, philanthropy, non-profit organizations and citizens – was then embedded into an integrated framework that represented the synthesis of corporate benchmarking tools. The final CHC framework includes a comprehensive description of the structures, processes,
organizational capacities and cultures necessary to create impact, as these are critically important to the success of company initiatives.

2.2.3. Company-level inventory and assessment

Inventory: Each company was first asked to complete an inventory that collated factual information about its community-level food access, healthful eating and active living strategy, including its name and description, which division(s) of the company developed the strategy, who was responsible for it, how it was funded, total funding, and other resources. The inventory also contained a series of questions that aimed to capture qualitative information about the strategy and a company’s experience with it.

Assessment: As illustrated in Table 2.3, the CHC company-level framework was a survey administered to companies. The survey included four distinct domains that assessed the quality of:

- Design, objectives and strategy
- Governance, management structures and resources
- Monitoring and evaluation
- Reporting, communication and stakeholder engagement

Survey items were scored using a sliding scale (e.g., 0=lowest, 10=highest, with 2-3 levels in-between). Each domain was weighted according to advice of the CHC Independent Advisory Board. Scores in each domain were converted into a percentage score and then the weightings were applied to generate the overall score. A score of 100% in a particular domain or overall
would indicate that a company was designing and delivering its strategy according to best practice, as defined by the CHC framework.

2.2.4 Data collection and validation

A private company was contracted to customize a tool (ProBench, www.73bit.com) for collecting survey data and housing a library of evidentiary documents that companies were required to submit to substantiate their survey responses. To increase response rate and reduce participant burden, the research team used publicly available information to pre-populate the company-level survey prior to administering to participating companies. On average, the CUNY research team completed 21% of the data entry for each company.

The CHC survey was launched on July 20, 2015. Company and program contacts attended webinars that provided an introduction to CHC and to the online survey platform. The surveys remained open until October 20, 2015. We provided technical assistance to companies throughout the data collection process. Companies selected one person or a small team to complete the company-level surveys, though in many cases, information needed to be gathered from several people or departments within a company.

After the data collection period, companies completing the full assessment went through an extensive auditing process by the CUNY research team to ensure the validity of all survey responses. Additional supporting documentation was requested as needed to verify each survey response.
2.2.5. Data analysis

After the validation and review process, scores were calculated for the company-level assessment surveys. Companies received a final company-level score, which was a weighted average of all domains (Table 2.3). For select indicators in the monitoring and evaluation section, a multiplier of two was applied if the evidence provided was from an independent evaluation.

In addition to the company score, we produced private, company-level scorecards based on an analysis of the assessment scores and information from the inventory. Each company also received a designation within the Collective Impact Maturity Scale, a four-level scale representing the level of maturity of the company’s investment in community-based programs. The scorecard included this designation as well as a commentary on each domain area, program strengths and potential areas for improvement. The Collective Impact Maturity Scale was based on the following overall company score cutoffs: level 1 (25-50%), level 2 (50-65%), level 3 (65-75%), and level 4 (≥ 75%).

The CHC survey also included a number of open-ended questions aimed at capturing richer contextual information. The analysis of these data was carried out in stages via a combination of deductive and inductive coding by one researcher using Dedoose Version 7.0.23, an online application with extensive coding, memoing and analytical functionality for integrating qualitative and mixed methods research.
2.3 Results

Participating companies provided a wide range of factual information about their strategies that encompassed a variety of approaches, scales, designs, governance, and other dimensions.

2.3.1. Types of community health strategies and their ‘locus’ within the business

The community-level food access, healthful eating and active living strategies evaluated by CHC have evolved differently and were positioned differently by companies. Data captured included their origins, the companies’ structures, their approaches to corporate responsibility/sustainability issues and other factors (Table 2.1). Major types of approach can be summarized as follows:

*Philanthropic approach*

Some companies (companies 3, 6, 8, 9 and 10) took what might be called a traditional approach to these strategies, that is, seeing them as essentially philanthropic activities, motivated by the philosophy that the business should “give back” to society. Thus, these strategies were not articulated as addressing or linked to core business activities, such as product formulation, product pricing or responsible marketing, as those issues were likely to be tackled through other separate strategies. Companies taking this approach often simply donated products or made grants to selected NGOs and programs.

*Corporate social responsibility (CSR) approach*

One company (company 4) located its community-focused strategies within its CSR functions. In this case, the company outlined the issues of concern to stakeholders – but did not combine them
with core business issues – and both developed its own initiatives and funded other organizations’ programs to address them.

**Comprehensive approach**

Several companies (companies 1, 2, 5, 7 and 11) developed comprehensive strategies to address corporate responsibility and/or sustainability issues, which they saw as essential to the future growth and the success of their businesses and/or very important to stakeholders. Health, wellness or nutrition issues were addressed through this wider strategy, which included both core business issues – such as product formulation and marketing to children – as well as other topics, which the businesses (and some stakeholders) saw as important but not necessarily central to profitability and revenue growth.

2.3.2. Scale of funding and source of budgets for community health strategies

Companies also managed and funded their strategies in many different ways (Table 2.1). In nearly all cases – with the exception of company 5 – the person responsible for the community strategies worked within public affairs, communications or CSR/sustainability functions, or a combination thereof. Funding generally came from a combination of corporate and foundation budgets, except in the case of three companies (companies 8, 9 and 10) where the funding was provided solely by the corporate side of the business. These latter companies were smaller than the others and did not have a foundation. None of the companies funded the entire strategy from foundation budgets only.
The funding provided from corporate budgets originated from many different sources. These included not only CSR and public affairs budgets, as might be expected, but also marketing, product development, and supply chain budgets.

The total financial value of investments made by the participating companies (one did not report a dollar figure) was just over US$27 million in 2014, ranging from US$25,000 to support one program (company 9) to US$8.2 million to support 3 programs (company 5).

2.3.3. Overall company scores and collective impact maturity

Table 2.4 shows the results of the analysis of the quality of companies’ overall community-level health strategies. A score of 100% indicates that the company’s strategy was designed and implemented according to the CHC’s definition of best practice; lower scores signify that a strategy’s design and implementation did not align with best practice. Final scores ranged from 27% to 69% (mean=53%). Company 1’s approach appeared to be the most well developed and of the highest quality, although Companies 2, 3 and 4 all scored 60% or above. Other companies’ strategies appeared to be incomplete or less well developed. Figure 2.2 shows the variation in scores before and after our audit process.

Companies were also categorized on the CHC Collective Impact Maturity Scale, which indicated the level of maturity of the company’s approach (Figure 2.3). The first level of the scale indicated a limited strategy scope, strong disconnect between company strategy and program quality, and limited targets and monitoring and evaluation systems. The highest level of the scale indicated a full ability to articulate impact as a result of a comprehensive strategy, clearly set outcome targets, independent evaluations, and alignment of program portfolio around shared
goals. None of the companies achieved the highest level of 4 on this scale. Companies 1 and 2 achieved Level 3 on the scale, while others were lower on the scale.

2.3.4. Scores by domain

Table 2.5 shows the score each company achieved by each domain of the company-level strategy assessment framework.

**Design, objectives and strategy:** (mean= 60%, range= 18%-83%). Company 1 scored highest in this domain, at 83%, illustrating that it had a robust approach to designing its overall strategy and setting clear objectives. Company 7 also scored well, at 75%. Company 9 achieved the lowest score of 18%.

**Governance, management resources and reinforcing activities:** (mean=64%, range=26%-89%). Company 2 scored highest in this domain, at 89%, significantly higher than any other company, illustrating that its strategy was well-governed and managed, with substantial resources devoted to implementing the strategy. All other companies’ scores scored 57% and above, except for Company 9. This was the highest scoring domain on average, at 64%.

**Monitoring and evaluation:** (mean=40%, range=21%-57%). Company 3 achieved the highest score in this domain, but it was relatively low at 60%, compared to high scores in other domains. This domain was the lowest scoring on average, at only 40%. Only four companies scored over 50%.

**Reporting, communication & stakeholder engagement:** (mean=63%, range=27%-89%) Company 1 scored the highest on this domain, at 89%, with strong reporting, communication and
stakeholder engagement. With the exception of two companies (5 and 9), all other companies scored more than 60%.

2.3.5. Correlation between total score and level of investment

We found a positive, exponential relationship between companies’ scores and the overall level of investment in community-based programs examined (P-value=0.009). Scores increased as the level of investment increased (Figure 2.4).

2.3.6. Qualitative data

The CHC survey included a number of open-ended questions aimed at capturing the rich context in which company strategies were implemented. Six main themes emerged from the analysis, one of which contained two sub-categories, as follows:

- Barriers
  - Leadership acknowledgment and ambition
  - Food company identity
- Alignment with business strategy
- Company criticism
- Product reformulation
- Lack of specific outcome
2.3.7 Code system

**Barriers:** Companies acknowledged that the major barrier they faced while supporting their initiatives was finding appropriate partners to work with. The difficulty related to both their ability to identify the most appropriate partners to work with and the partners’ competence to effectively deliver the initiative at the community level.

“It’s always a challenge to find organizations and partners who can provide scale in helping communities understand and practice a healthy, balanced lifestyle,”

Company 4

“Identifying leadership/champions in our sites -schools, community-based organizations- continues to be a barrier to success.”

Company 1

**Drivers:** Companies acknowledged that their employees wanted to be involved in the fight against obesity and/or food scarcity and that support for these causes helped highlight their names in the business, attracting both more staff and consumers. Thus, talent attraction and retention seemed to play an important role in the companies’ corporate social responsibility strategy. The issue of “differentiating” the company from others in the business came up often, signaling that companies wanted to lead the way in their efforts against obesity and food scarcity.

“We know that many of our employees want to be engaged in a company that is involved in these issues.”

Company 6
“One of the benefits is distinguishing the company from the industry - all of whom donate millions of pounds of food annually to hunger relief.”

Company 1

**Drivers – leadership acknowledgment and ambition:** A key driver to support and finance community initiatives was the companies’ ideas and ambitions of leadership in their industry and in their CSR endeavors. Most surveyed companies (six out of eleven) claimed their leadership role in the industry and their ambitions to be leaders in wellness initiatives. Indeed, companies claimed that with their leadership status within the food business came a responsibility toward the health of the communities.

“As [one of] the world’s largest food and beverage company, we are uniquely positioned to help improve the diet and lifestyle of consumers, and thereby foster a healthier population.”

Company 7

“As one of the world’s largest food manufacturers, we contribute to addressing some of world’s biggest public health challenges: heart health, obesity and undernutrition.”

Company 11

Companies wanted to establish themselves as leaders of effective initiatives to address obesity and hunger.

“Our ambition [is] to be the nutrition, health and wellness leader.”

Company 7
One company also mentioned the importance of appealing to the public, which increasingly demanded healthier products, to maintain their leadership role in the industry.

“In order to maintain our role as one of the world’s leading food and beverage companies, it is important that we reach this market with our product offerings.”

Company 2

Drivers – food company identity: Another main driver to support health initiatives was the clear awareness that financing active living and healthful eating programs was in alignment with food companies’ product and industry. Eight companies mentioned their position in the food industry as a main incentive to support wellness and health initiatives.

“Our hunger and nutrition wellness strategy is well-aligned to our core competencies and interests as a global food company.”

Company 5

“The recognition that [we are a] part of the food system and while we occupy an upstream part of the system, the actions we take impact food security and nutrition.”

Company 6

Alignment with business strategy: Five participating companies expressed perfect alignment between the initiatives they supported and their companies’ business strategy. This showed how supporting healthful eating and active living programs was not considered as a separate CSR or philanthropic endeavor but was linked with corporate goals.
“Nutrition, health and wellness is at the core of our company strategy.”

Company 7

“[As one of the leaders in this business] it makes sense that we have aligned our philanthropy with our business.”

Company 3

“Our [health strategy] is integrated into our business strategy.”

Company 2

**Company criticism:** At the same time as food companies claimed their responsibility to invest in food access or healthy lifestyle initiatives, some of them received criticism from the public, who sometimes perceive the support of healthy initiatives by companies selling products that were considered unhealthy as paradoxical and disingenuous.

“We occasionally hear the comment from members of the public that a large food company should not engage in programs involving youth wellness or nutrition.”

Company 5

“We understand some people have concerns with our company supporting active, healthy living programs.”

Company 4

**Product Reformulation:** Three out of eleven companies explicitly mentioned their efforts in reformulating their products to enhance their nutritional value. This change was motivated by
both a desire to fully commit to their support for healthier communities and to meet the market’s current demand for healthier foods and beverages.

“Our work over the last 10 years to reduce sugar, sodium and saturated fat and remove trans fats from our products without sacrificing taste impacts millions of consumers striving for better health, and we are proud of these achievements.”

Company 7

“The majority of our products meet, or are better than, benchmarks based on national nutritional recommendations. Our commitment goes further: by 2020, we will double the proportion of our portfolio that meets the highest nutritional standards based on globally recognized dietary guidelines.”

Company 11

“We believe that as consumers are increasingly focusing on health and wellness, there is an opportunity to expand our nutrition business.”

Company 2

Lack of specific outcomes: The overwhelming majority of respondents did not mention specific outcomes and/or goals when talking about their healthful eating/active living initiatives. Only one company stated specific outcomes and the need to track and monitor progress towards goals.

“[We] made a 10-year, $10 million commitment to measurably improve the health of young people in our hometown communities by reducing childhood obesity and hunger by 50%.”

Company 1
2.4. Discussion

The CHC model represents a novel methodological framework to benchmark community-based health initiatives funded by industry. This study found wide variability in the quality of design and implementation of company strategies and overall scores ranged from 27% to 69% with an average of 53%. These results suggest that many of the participating companies had in place effective mechanisms to design and implement initiatives with a potential for achieving collective impact (6 out of 9 companies scored had an overall score above 50%). However, there are clear areas of improvement, particularly in the area of independent monitoring and evaluation. This domain was the lowest scoring with an average of 40%; only 4 companies scored over 50%. In addition, many companies track and proudly report on their inputs (i.e., what they contribute to the programs) and some measure the outputs of their programs, but few were able to demonstrate that their investments made a real difference to the health of those they were trying to reach. More attention and resources dedicated to monitoring and evaluation need to become part of standard practice. Companies should be held to higher levels of accountability to ensure that they are directing their resources toward activities that are demonstrably benefiting the health of communities.

In terms of areas of excellence, two companies (companies 1 and 2) scored well in the domains of governance and reporting and communication. This shows that these companies were able to effectively manage and implement a strategy beyond its inception and to report on their strategies and communicate and engage stakeholders on an ongoing basis. This potentially provides other companies looking to strengthen their management and reporting capacities and practices an excellent model to emulate, if there was a common platform for knowledge sharing.
We found an exponential relationship between company scores and the level of investment overall. Those companies that invested the most typically recorded the highest scores, and vice versa. However, the increase in scores decelerates after the investment reaches a certain value (at around US$ 4,200,000). A likely explanation is that as companies invest more in their strategies, they create more synergy among stakeholders. Many of the analyzed programs were funded and/or supported by multiple partners so they might have an overall high level of investment that led to the higher performance.

It is interesting to note that funding for many initiatives came from different company sources beyond CSR and public affairs budgets, including marketing, product development, and supply chain budgets in many cases. This would imply that many companies expected some degree of commercial return or benefit from these investments. While this may be alarming from a philanthropic or altruistic point of view, this could also represent an opportunity to further strengthen the alignment of health and business interests. Indeed, research has shown that companies with strong CSR agendas perform better over time.\textsuperscript{75} Public health experts could play a role in helping companies improve this alignment, thus creating greater shared value across sectors.

It is worth noting that the overall investment in these health initiatives is small relative to the size of the companies’ revenues. The total value of investments made by the participating companies was over US$27 million while their average revenue/year was over $30 billion. This suggests that there remains a significant gap in the CSR aspiration of companies (as demonstrated by our qualitative findings) and the actual efforts made toward community health.
CHC was the product of a unique partnership between CUNY and HWCF, which aligned specific resources and expertise brought together by the two organizations. The CUNY academic team has expertise in evaluation, research and public health expertise while HWCF has in-depth industry knowledge and strong company relationships. This evaluation process defined a standard of best practice in strategy and performance of community-based initiatives and aims to foster a culture of inquiry, knowledge sharing and improvement among participating companies. By establishing common metrics and evaluating companies’ healthful eating and active living strategies, and the actual health impacts of their programs, the research partnership has the potential to further develop evidence-based solutions that could transform industry’s contribution to obesity prevention and control.

This study is timely given the complexity of the current challenges in NCDs that require a shift toward innovative and more effective solutions. Some authors and organizations have argued that collaboration with the private sector is vital to overcoming these challenges. Such partnerships grant access to more financial, logistical, and technological resources and expertise. Moreover, multi-sectoral alignment could help create a culture of wellness that normalizes healthy behaviors and de-normalizes unhealthy activities. On the other hand, it is important to recognize the potential pitfalls in such partnership, with careful attention to the governance, transparency and accountability that are critical to the good that is to be generated from such efforts.

This study used a mixed-methods approach, which allowed us to provide more richness and context to the data collected. Different respondents agreed with the sentiment that investment in healthful eating and active living initiatives has the potential to distinguish companies in the industry and position them as leaders in the wellness/health arena in the eyes of different
stakeholders. Analysis of the survey’s qualitative data corroborated some findings from the quantitative portion of the assessment, such as strong motivation to support healthful eating and active living activities and the lack of specific measurable goals set for such initiatives. These open-ended responses also shed light on the difficulty companies have in finding appropriate and capable partners on the ground and raised the important – and still unsolved – issue of public criticism. To maximize both the monetary – increase in product sales – and the non-monetary return on this investment – good will, reputation, status – companies need to overcome these obstacles. Product reformulation to achieve better nutritional value, if embedded in a company’s CSR strategy and directly linked to community-based programs, could also be an effective answer to public skepticism and at the same time meet the demands of the current market. Surprisingly, only 3 companies out of 11 specifically mentioned the need for “product reformulation.” It is possible that companies have accelerated plans to address this as the Access to Nutrition Index (ATNI) reported in 2016 that 16 out of 22 companies assessed explicitly stated their commitments for reducing/eliminating ‘negative’ nutrients and increasing/adding ‘positive’ nutrients.78

Finally, this pilot study demonstrates that the CHC evaluation framework can help companies effectively assess their efforts towards obesity prevention and food access. The framework is a promising tool to determine how well designed and impactful community health programs are, thus maximizing the benefits of industry-sponsored initiatives. The fact that at the company level, the highest score was 69%, indicates that the framework sets a high standard of evaluation and there is room for improvement by companies to align their strategies with best practices, which the framework embodies and evaluates companies against.
2.5. Limitations

This study was a pilot by nature. Thus, findings could not be generalized to all food and beverage companies and the initiatives that they sponsor. As a pilot study we also had a small sample size and not all companies provided us with the same level of information as we received a few incomplete surveys. Companies used different terms to describe their strategies and to explain where these sit within their respective regulatory structures and policies. They could also be underpinned by different philosophies, which made them difficult to classify. There is a chance of self-report bias, although we minimized this as much as possible through the extensive auditing process. Finally, since we had to base the assessment on the data collected, some of the lower scores could be a result of companies providing less information than others.

2.6. Conclusion

The complexity of current public health challenges requires innovative and sustainable solutions, necessitating a multi-sectoral approach tackling both the supply and demand aspects of health. Food and beverage companies are currently investing millions of dollars in community-based nutrition and health programs; however, we lack a rigorous assessment framework to evaluate the social and health impact of these investments. This paper provides a unique model to evaluate such efforts. Through common metrics, it is possible for different sectors to come together to create greater collective impact.79

The CHC framework provides companies and researchers a benchmarking tool that can help increase the collective impact of industry investment in community health. This study showed that it appears to be significant scope for all participating companies – and likely others in the
private sector - to improve the design and accountability of their own health strategies and to
design or support programs that are based on interventions with proven health results. There also
appears to be scope for companies to share their experience and knowledge in this area, which
should be driven by the motivation to improve communities’ health as a core business value. The
CHC partnership model can create a new platform for academic and private sector entities to
collaborate and inform the design and implementation of future community prevention
initiatives. Greater collaboration between companies and across sectors should be encouraged as
a necessary tool to curb the obesity epidemic and enhance population health.
Table 2.1. CHC participating companies

<table>
<thead>
<tr>
<th>Company</th>
<th>Size</th>
<th>Revenue/year</th>
<th>CHC Strategy type</th>
<th>Investment assessed by CHC</th>
<th>Funding structure of Community-Based Programs</th>
<th>Locus of strategy management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>15,000+ employees</td>
<td>&gt; $7 billion</td>
<td>Healthful eating and active living</td>
<td>&gt; $1 million</td>
<td>Corporate and foundation</td>
<td>Public affairs/CSR</td>
</tr>
<tr>
<td>Company 2</td>
<td>200,000+ employees</td>
<td>&gt;$60 billion</td>
<td>Healthful eating and active living</td>
<td>&gt; $1 million</td>
<td>Mostly foundation and some corporate funds</td>
<td>CSR/Sustainability</td>
</tr>
<tr>
<td>Company 3</td>
<td>35,000+ employees</td>
<td>&gt;$13 billion</td>
<td>Healthful eating</td>
<td>&gt; $3 million</td>
<td>Foundation, corporate contributions and brand philanthropy programs</td>
<td>Communications/philanthropy</td>
</tr>
<tr>
<td>Company 4</td>
<td>100,000+ employees</td>
<td>&gt;$40 billion</td>
<td>Primarily active living, some healthful eating components</td>
<td>&gt; $4 million</td>
<td>Corporate and foundation</td>
<td>Public affairs/communications</td>
</tr>
<tr>
<td>Company 5</td>
<td>35,000+ employees</td>
<td>&gt;$15 billion</td>
<td>Healthful eating and active living</td>
<td>&gt; $8 million</td>
<td>Corporate and foundation</td>
<td>Foundation</td>
</tr>
<tr>
<td>Company 6</td>
<td>20,000+ employees</td>
<td>&gt;$14 billion</td>
<td>Healthful eating</td>
<td>&gt; $8 million</td>
<td>Corporate and foundation</td>
<td>No information</td>
</tr>
<tr>
<td>Company 7</td>
<td>300,000+ employees</td>
<td>&gt;$90 billion</td>
<td>Healthful eating and active living</td>
<td>&gt; $1 million</td>
<td>Corporate and foundation</td>
<td>Corporate affairs</td>
</tr>
<tr>
<td>Company 8</td>
<td>1,500+ employees</td>
<td>&gt;$600 million</td>
<td>Healthful eating</td>
<td>N/A</td>
<td>Corporate</td>
<td>Sustainability</td>
</tr>
<tr>
<td>Company 9</td>
<td>4,000+ employees</td>
<td>&gt; $4 billion</td>
<td>Healthful eating</td>
<td>&gt; $25,000</td>
<td>Corporate</td>
<td>Communications/public affairs</td>
</tr>
<tr>
<td>Company 10</td>
<td>6,000+ employees</td>
<td>&gt; $7 billion</td>
<td>Healthful eating</td>
<td>&gt; $1 million</td>
<td>Corporate</td>
<td>No information</td>
</tr>
<tr>
<td>Company 11</td>
<td>100,000+ employees</td>
<td>&gt;$50 billion</td>
<td>Healthful eating</td>
<td>&gt; $1 million</td>
<td>Corporate and foundation</td>
<td>CSR/Sustainability</td>
</tr>
</tbody>
</table>

*Source: CHC audit and Forbes*
Table 2.2. Review of evaluation frameworks

<table>
<thead>
<tr>
<th>Framework summary and constructs</th>
<th>Constructs incorporated into the Commitment to Healthy Communities (CHC) Evaluation Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collective Impact (CI) model</strong></td>
<td>- The CHC Evaluation Framework attempts to capture the spirit of the CI model but uses unique domains and indicators. CI constructs are incorporated into several of the CHC evaluation framework domains.</td>
</tr>
<tr>
<td><strong>The Collective Impact model is a structured approach to address complex social and environmental challenges.</strong></td>
<td>- The Design, Objectives &amp; Strategy section includes common agenda-related questions.</td>
</tr>
<tr>
<td>Framework Constructs:</td>
<td>- The Reporting, Communication &amp; Stakeholder engagement section includes continuous communication questions.</td>
</tr>
<tr>
<td>• Common agenda</td>
<td>- The Governance, Management Structures &amp; Resources section includes questions related to backbone organization functions and mutually reinforcing activities.</td>
</tr>
<tr>
<td>• Continuous communication</td>
<td>- The Monitoring &amp; Evaluation section includes shared measurement systems questions.</td>
</tr>
<tr>
<td>• Backbone organization</td>
<td></td>
</tr>
<tr>
<td>• Mutually reinforcing activities</td>
<td></td>
</tr>
<tr>
<td>• Shared measurement system</td>
<td></td>
</tr>
</tbody>
</table>

| **London Benchmarking Group (LBG): From Inputs to Impact: Measuring corporate community contributions through the LBG framework** | |
| The LBG system is a standard approach to measure corporate community investment. | |
| Framework constructs: | - The CHC evaluation framework draws on the LBG model’s definitions and inclusion criteria for corporate community investment. |
| • Strategic objectives      | - The framework also draws upon LBG’s input, output, impact model to consistently assess resources committed and result achieved across companies though the specific questions within the model differ. |
| • Reach                    | | |
| • Connections between community programs and wider business goals | | |
| • Input, output, outcome model | | |

| **Social Return on Investment (SROI)** | |
| SROI refers to the application of a set of principles to consistently measure the value of social impact. | |
| Framework constructs: | - The Reporting, Communication & Stakeholder Engagement section in the CHC evaluation framework draws on the SROI model’s emphasis on stakeholder engagement. |
| • Change in or creation of social, environmental and/or economic value | - The Monitoring & Evaluation section also includes indicators to measure change in meaningful ways for a range of stakeholders. |

| **Baldrige Criteria** | |
|-----------------------| |
The Baldridge Criteria are an integrated management framework used to understand and enhance organization performance.

Framework constructs:
- Leadership
- Strategic planning
- Customer focus
- Knowledge management
- Capacity building
- Operations

Though this framework uses terminology from the business-sector, it addresses many of the same constructs found in the other reviewed frameworks.

In the CHC evaluation framework, the Governance, Management Structures & Resources section includes leadership, capacity building and operations-related questions.

The Design, Objectives & Strategy section includes questions on strategic planning.

The Reporting, Communication & Stakeholder Engagement section includes questions on customer focus.

The Monitoring & Evaluation section includes knowledge management-related questions.

---

Scottish Government Social Research: Healthy Weight Communities Evaluation Framework

The Scottish Government Social Research’s Healthy Weight Communities Evaluation Framework was designed to assess Healthy Weight Communities, a project implemented in eight Scottish communities to align existing healthy eating, physical activity resources as part of a single, coherent approach to obesity prevention.

Framework constructs:
- Aims & objectives
- Joining-up services & activities
- Working in partnership
- Management & leadership
- Community engagement & social marketing
- Outcomes & impact
- Sustainability

Though this framework was not explicitly based on the CI model, it used similar ideas and approaches.

Many of this model’s constructs were incorporated through the CHC evaluation framework.

The Design, Objectives & Strategy section includes questions on aims and objectives.

The Governance, Management Structures & Resources section includes questions on joining-up services and activities, working in partnership, and management and leadership.

The Reporting, Communication & Stakeholder Engagement section includes questions related to community engagement.

The Monitoring & Evaluation section includes questions on outcomes and impact.

---

Deloitte and Consumer Goods Forum (CGF)

Deloitte and CGF developed a survey to track industry progress against CGF’s health and wellness resolutions.

The CHC evaluation framework includes many of these constructs.

The Reporting, Communication & Stakeholder Engagement section includes questions related to engagement and communication.
<table>
<thead>
<tr>
<th>Framework constructs:</th>
<th>o The Monitoring &amp; Evaluation section address <em>measurement systems</em> and <em>monitoring processes</em>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Engagement</td>
<td></td>
</tr>
<tr>
<td>• Activation</td>
<td></td>
</tr>
<tr>
<td>• Communication</td>
<td></td>
</tr>
<tr>
<td>• Measurement systems</td>
<td></td>
</tr>
<tr>
<td>• Monitoring process</td>
<td></td>
</tr>
</tbody>
</table>

RE-AIM⁸⁶

The RE-AIM framework is designed to translate public health research into practice and improve the implementation of effective, evidence-based interventions.

<table>
<thead>
<tr>
<th>Framework constructs:</th>
<th>o The CHC evaluation framework also drew many of the RE-AIM concepts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reach</td>
<td>o The Design, Objectives &amp; Strategy includes reach-related questions.</td>
</tr>
<tr>
<td>• Efficacy/effectiveness</td>
<td>o <em>Efficacy/effectiveness</em> is addressed in both the Design, Objectives &amp; Strategy section and the Monitoring &amp; Evaluation section.</td>
</tr>
<tr>
<td>• Adoption</td>
<td>o The Governance, Management Structures &amp; Resources section includes questions on adoption, implementation and maintenance.</td>
</tr>
<tr>
<td>• Implementation</td>
<td></td>
</tr>
<tr>
<td>• Maintenance</td>
<td></td>
</tr>
</tbody>
</table>
Table 2.3. Company-level strategy and governance assessment domains

<table>
<thead>
<tr>
<th>Section</th>
<th>What it evaluates</th>
<th>No. of indicators</th>
<th>Total points</th>
<th>Section Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Design, objectives &amp; strategy</td>
<td>18</td>
<td>180</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Strategy design and alignment</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strategic plan and objectives</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strategy scope and reach</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Governance, management structures &amp; resources</td>
<td>9</td>
<td>90</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Governance and leadership</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management structures and resources</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Monitoring &amp; evaluation</td>
<td>16</td>
<td>220</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>Monitoring</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluation</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Reporting, communication &amp; stakeholder engagement</td>
<td>8</td>
<td>80</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Reporting</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stakeholder engagement</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total scores</strong></td>
<td><strong>51</strong></td>
<td><strong>570</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Table 2.4. Final company-level assessment scores

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Company 1</td>
<td>69%</td>
</tr>
<tr>
<td>2</td>
<td>Company 2</td>
<td>66%</td>
</tr>
<tr>
<td>3</td>
<td>Company 3</td>
<td>65%</td>
</tr>
<tr>
<td>4</td>
<td>Company 4</td>
<td>60%</td>
</tr>
<tr>
<td>5</td>
<td>Company 7</td>
<td>55%</td>
</tr>
<tr>
<td>6</td>
<td>Company 11</td>
<td>51%</td>
</tr>
<tr>
<td>7</td>
<td>Company 6*</td>
<td>44%</td>
</tr>
<tr>
<td>8</td>
<td>Company 5</td>
<td>43%</td>
</tr>
<tr>
<td>9</td>
<td>Company 9*</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>53%</td>
</tr>
</tbody>
</table>

* Not audited by CUNY research team
Note that two companies did not provide all the necessary documentation and/or did not complete the survey. As such, they were excluded from scoring.
Table 2.5. Domain-level scores within company-level assessment

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>83%</td>
<td>69%</td>
<td>53%</td>
<td>89%</td>
</tr>
<tr>
<td>Company 2</td>
<td>62%</td>
<td>89%</td>
<td>50%</td>
<td>79%</td>
</tr>
<tr>
<td>Company 3</td>
<td>67%</td>
<td>76%</td>
<td>60%</td>
<td>71%</td>
</tr>
<tr>
<td>Company 4</td>
<td>61%</td>
<td>65%</td>
<td>52%</td>
<td>71%</td>
</tr>
<tr>
<td>Company 7</td>
<td>75%</td>
<td>72%</td>
<td>33%</td>
<td>62%</td>
</tr>
<tr>
<td>Company 11</td>
<td>62%</td>
<td>57%</td>
<td>37%</td>
<td>63%</td>
</tr>
<tr>
<td>Company 6</td>
<td>52%</td>
<td>59%</td>
<td>21%</td>
<td>67%</td>
</tr>
<tr>
<td>Company 5</td>
<td>60%</td>
<td>63%</td>
<td>24%</td>
<td>42%</td>
</tr>
<tr>
<td>Company 9</td>
<td>18%</td>
<td>26%</td>
<td>31%</td>
<td>27%</td>
</tr>
<tr>
<td>Average</td>
<td>60%</td>
<td>64%</td>
<td>40%</td>
<td>63%</td>
</tr>
</tbody>
</table>
Figure 2.1. CHC Logic Model

**INPUTS**
- HWCF’s industry knowledge and expertise
- CUNY’s evaluation, research and public health expertise
- Pooled funds from participating HWCF companies

**ACTIVITIES**
- Research existing benchmarking systems and evaluation frameworks
- Develop benchmarking system to monitor and assess best practices among industry investment in obesity prevention and food access
- Using a series of surveys in an evaluation framework, collect information on companies’ obesity prevention and food access strategies and programs
- Audit companies participating in full assessment to verify survey responses against supporting documentation
- Analyze companies’ survey data to identify effective programs, strengths, areas of improvement and potential collaborations

**OUTPUTS**
- Common metrics
- Inventory of industry obesity prevention and food access strategies & programs
- Aggregate report of industry-level investment and impact
- Individual, private confidential company scorecards with commentary on strategy and program strengths and areas of improvement
- Showcase effective programs to stakeholders

**OUTCOMES**
- Foster culture of inquiry and collaboration among companies to share knowledge and align activities
- Optimize impact of industry investment in obesity prevention and food access
- New platform for academic and private sector entities to collaborate, innovate and create social good
- Identify evidence-based best practices using common metrics and evaluation results

**IMPACT**
- Improved community health
- Decreased prevalence of obesity and increased food access
- Contribute to broader thinking around corporate social responsibility and public-private partnership
- New platform for academic and private sector entities to collaborate, innovate and create social good
- Identify evidence-based best practices using common metrics and evaluation results
Figure 2.2. Company assessment pre and post audit scores, %

![Bar chart showing pre and post audit scores for different companies.](chart.png)
Figure 2.3. Maturity scale levels
Figure 2.4. Correlation of company-level scores with size of total CHC investments assessed

\[ y = 7.35 \ln(x) + 54.70 \]

\[ R^2 = 0.70 \]
3.1. Background

Despite increased efforts and investment in obesity prevention, obesity continues to be a growing public health problem in the United States.\textsuperscript{1} Excess weight increases the risk for correlated diseases such as type 2 diabetes, hyperinsulinemia, hypertension, dyslipidemia, joint abnormalities, polycystic ovarian syndrome, nonalcoholic fatty liver disease, sleep disturbances, and a decreased life span.\textsuperscript{2–9} Obesity and its associated health problems also have a significant impact on the country’s economy and health care system. In 2012, the estimated annual health care cost of obesity-related illness was $190.2 billion or nearly 21\% of annual medical spending in the United States.\textsuperscript{87} Moreover, obesity-related job absenteeism costs businesses over $4 billion annually, and these costs are predicted to continue to rise.\textsuperscript{88}

Alongside obesity, families in the United States may also experience food insecurity, which is defined as the “availability and adequate access at all times to sufficient, safe, nutritious food to maintain a healthy and active life.”\textsuperscript{89} The problem currently affects 12.3\% of the American population.\textsuperscript{90} Specifically, the United Stated Department of Agriculture estimates that, in 2016, 6.1 million households had very low food security and that 8\% of children were food insecure at times during the year.\textsuperscript{90}

Traditional interventions to improve nutrition or decrease obesity have not achieved the desired success so far because obesity is a complex problem, involving a vast number of factors, sectors
and actors that influence individuals’ energy balance.\textsuperscript{10,11} To achieve change in a complex system, it is crucial to adopt a collective response that intervenes at different levels and spans multiple sectors.\textsuperscript{12} Such response would see a coordinated effort between actors from different sectors towards the common goal of reducing obesity. Several authors and international organizations have highlighted the still controversial necessity of involving food and beverage companies – with appropriate monitoring and accountability systems – given the crucial role they play in shaping the food production and consumption environment.\textsuperscript{13–17}

Recognizing that obesity is a complex problem raises the need for a new approach that not only considers different factors and actors but emphasizes the interactions and interdependencies that exist among them.\textsuperscript{39,40} A systems evaluation aims to elucidate the potential synergies among different components of a complex system.

The Commitment to Healthy Communities (CHC) initiative is an innovative academic-private sector research partnership between the City University of New York School of Public Health (CUNY SPH) and the Healthy Weight Commitment Foundation (HWCF).\textsuperscript{72} CHC aims to address the growing interest among companies, public health professionals and communities in understanding the impact of industry investments in community nutrition and health. To that end, we developed and piloted a new tool, based on the Collective Impact (CI) framework,\textsuperscript{73} to assess participating companies’ strategies and programs with a focus on community-based interventions in food access, healthful eating, and/or active living. This paper describes the assessment methodology and reports on the range of outcomes that such methodology can detect.

The CI evaluation framework offers a novel strategy to evaluate the industry efforts in community health because it adopts a systems perspective and allows evaluators to focus on
processes and dynamics that give rise to synergies beyond individual-level outcomes. The framework takes into account prerequisite conditions for success and the overall environment in which the initiative takes place, which is a key feature that can be translated into qualitative and quantitative constructs to evaluate community-based initiatives.

3.2. Methods

3.2.1. Programs and sites

This study assessed one program from each of five participating companies (all program and company names are anonymized in this report), that were different in design, investment, population targets, and outcome (Tables 3.1 and 3.2). The selection of the program site – one for each company – was made based on initial assessment of reach, program dosage, and program duration. The study was approved by the CUNY Institutional Review Board.

Program 1: This program received $1,000,000 in corporate investment and focused on both healthful eating and active living. It targeted children and young adults and entailed a variety of activities ranging from cooking demonstrations and menu planning to physical activities events and recommendations to improve local food economy. The program aimed to reduce childhood obesity and hunger by 50% in 10 years through collaboration among partners, policy change, increased community capacity, enhanced individual knowledge and skills, and improved environment. The program was implemented in a resource-poor city with a median household income of $25,042, a majority of Blacks (42.2%) and Hispanic/Latinos (49.1%), and a median resident age of 28.9 years. At the time of program implementation, the city’s obesity rate was 39.9% while the obesity prevalence by county was 30.2%.
Program 2: The funding company invested $1,150,000 in this program focusing on both healthful eating and active living. The program had a national scope and targeted children and adolescents. The program had a reach of more than 10 million people and aimed to improve knowledge of healthy habits and dietary behaviors and increase physical activity. The program’s mechanisms of change included collaboration among different sectors, policy, individual knowledge, skills, and environment. Specific activities included healthy recipe distribution, program participant recruitment, food budgeting, and physical activity. Although the program was national in scope, we only observed its delivery in one city. The site was predominantly white (75.5%), with a poverty rate of 11% (median household income was $67,246). The county-level obesity prevalence was 28.5%.

Program 3: This food access program received $2,750,000 in corporate funding. It was implemented at the state level and targeted the general public. It aimed to add meals to the state’s food relief system and it achieved change through social support and social networks, increased collaboration among partners, enhanced community and organizational capacity, and increased individual knowledge and skills. The state where it was implemented was predominantly white (80.9%), with a poverty rate of 10.2% (median household income of $63,488), an obesity prevalence rate of 27.8%.

Program 4: This healthful eating program was implemented at the national level and targeted the general public. It received $3,200,000 in corporate investment and it included different activities such as website launch, advertisement of programs, corporate volunteer initiatives, food donation and grant provision. It aimed to increase school breakfast program participation rates through collaboration among partners/sectors and enhanced community and organizational capacity. Although the program was national in scope, we only observed its delivery in one city. The site
was predominantly white (67.5%) while Blacks represented the second most represented race (17.9%). It had a poverty rate of 21.7% (median household income of $36,882) and the county prevalence of obesity was 33.9%.

**Program 5:** This active living program received $250,000 in corporate funding and targeted youth 12 to 18 years old. It aimed to change physical activity attitude, knowledge and beliefs and relied on collaboration among partners, community/organizational capacity, and social support and networks as its mechanisms of change. Activities included website launch, program advertisement, outreach, social media and a train-the-trainer approach for program delivery. The program was implemented in a large, diverse city (32.1% white, 29.1% Hispanic/Latino, 22% Black and 14% Asian). The site had a federal poverty rate of 20% (median household income of $55,752), and the county’s prevalence of obesity was relatively low at 14.7%.

### 3.2.2. Measurement tool design and development

The Collective Impact Community Assessment Scale was designed according to the CI framework to evaluate inputs, resource management, and individual and community outcomes from a comprehensive, multi-stakeholder perspective. CI initiatives have been characterized as “long-term commitments by a group of important actors from different sectors to a common agenda to solve a complex social or environmental problem.”

The anchoring and scoring methodology of our scale was modeled on the Community Readiness Model (CRM), which was developed to provide a practical tool to assist communities to promote change. Similar to CRM, our scale included nine stages of scoring across 14 dimensions (Table 3.3). The nine stages are ordinal in nature (0-8) and represent the spectrum of having no
evidence to having a highly sophisticated demonstration of a dimension. The 14 dimensions are described as follows:

**Core CI Dimensions**

**Common Agenda:** All participants must have a shared vision for change, including a common understanding of the problem and a joint approach to solving it through agreed-upon actions.

**Backbone Support:** Creating and managing collective impact requires dedicated staff and strong leaders who possess a specific set of skills to serve as the backbone for the entire initiative and coordinate participating organizations and agencies.

**Continuous Communication:** Consistent and open communication is needed across the many players and among external stakeholders to build trust, assure mutual objectives, and create common motivation.

**Mutually Reinforcing Activities:** Participant activities must be differentiated while still coordinated through a mutually reinforcing plan of action.

**Shared Measurement System:** Collecting data and measuring results consistently across all participants ensure that efforts remain aligned and participants hold each other accountable.

For each of these dimensions, we identified which indicators could best assess them and isolated specific indicators of early performance. Following the guidelines of the CI framework, we included nine additional dimensions regarding the context, outcomes, and system-level opportunities for growth of the initiative.

**Contextual Dimensions**
The context of the collective impact initiative is critical to providing a supportive environment to achieve its goals and encompasses the following dimensions:

**Learning Culture**: refers to the ways in which learning is embedded in the collective impact initiative.

**Capacity**: indicates the supporting elements (e.g., funding, human resources) that keep the collective impact process moving forward.

**Professional Practice**: refers to the extent to which and ways in which formal partners and organizations/institutions make changes in their work as it relates to the goals of the collective impact initiative.

**Individual Change Dimensions**

The dimensions that allow outcome assessment and measurement of program impact and goals are:

**Individual Behavior**: refers to the extent to which and ways in which participants change their behaviors as they relate to the goals of the collective impact initiative.

**Program Awareness**: indicates the extent to which individuals are fully engaged with the program and incorporate the program goals into their lifestyles.

**Community Program Awareness**: indicates the extent to which community leaders and members are aware of and support the program.

**Systems Change Dimensions**
Finally, the scale includes dimensions related to systems-level strategies and changes required for large-scale health impact:

**Funding Flows:** refer to the extent to which and ways in which flows of philanthropic and public funding shift to support the goals of the collective impact initiative.

**Cultural Norms:** relates to the extent to which and ways in which social and cultural norms evolve to support the goals of the collective impact initiative.

**Advocacy and Public Policy:** indicate the ways in which progress is made on the collective impact initiative's advocacy and public policy goals.

Once the CI dimensions were fully defined we identified which indicators could be used to translate each dimension into a numerical scale. We also isolated specific indicators appropriate to early and late stages of program performance to make sure that interviews were conducted efficiently and focused on progress-appropriate indicators. Indicator development was guided by interdisciplinary frameworks such as RE-AIM, Health Impact Assessment, and Social Impact Assessment.\(^{92,93}\)

The next step was to map CI dimensions by developing specific questions to be asked during key informant interviews and focus groups. The questions were designed so that data from multiple perspectives could be collected as indicators for each CI dimension. Once the questions were drafted, we created a scoring rubric that could assess the collective impact progress of each community-based initiative across the different dimensions. A scale was created and it included the following nine stages: 0) No impact, 1) Vague awareness, 2) Concern, 3) Commitment, 4) Development, 5) Establishment, 6) Stabilization, 7) Confirmation, and 8) High Impact. We then
developed descriptions for each one of the nine stages of the scale (i.e., anchor statements) related to each CI dimension.

Because program participants and community leaders usually did not have knowledge about the planning and delivery of a specific program, only dimensions of behavior change and program awareness and support were administered to these two stakeholder groups (Table 3.4).

3.2.3. Data collection

The Community Impact Assessment Scale collects data through recorded in-person interviews and observations. The interview guides for key informants and focus groups were structured and include specific questions to address all the CI dimensions that were relevant to the interviewee. Data collection at each site included the following:

*Key informant structured interviews:* We conducted six to eight interviews (~60 minutes in duration) with two key representatives of every stakeholder group. The identified stakeholder categories were: (i) *program participants:* direct beneficiaries of the program/initiative (e.g., people directly participating in/engaged with the program), (ii) *program delivery staff:* individuals involved in the delivery of the program (e.g., trainers, coaches, educators), (iii) *community champions or leaders:* individuals who cared about the health of the community, were aware of the program or initiative but were not direct beneficiaries (e.g., local physician, school principal, neighborhood association leader), and (iv) *program management:* individuals who oversaw the program but did not have direct involvement of program implementation (e.g., members of the backbone infrastructure, program manager).
Focus groups: We conducted two focus groups with six to eight participants each. One group included program participants and community champions while the other comprised program delivery staff and program management.

Site visit: During these visits, researchers could directly observe facilities and programs in action while guided by someone from inside the program to gain a deeper understanding of the process.

3.2.4. Data Analysis

All interviews were transcribed verbatim and initially scored by two researchers independently according to the pre-established scoring rubric. This rubric required every CI dimension to be scored on a scale from 0 to 8 (corresponding to the range from no to high impact). Each scorer was asked to evaluate the interviews holistically, one dimension at a time, using absolute measures, with 0.5 increments when necessary. Scorers were also required to justify each dimension score with brief notes and verbatim quotes from the interviews. The two initial scorers met to reconcile disagreements. A third researcher validated 15 randomly selected interviews to further reduce bias. The analysis of the data was carried out using Dedoose Version 7.0.23, an online application with extensive coding, memoing and analytical functionality for integrating qualitative and mixed methods research. The result of the scoring process was translated into a final percentage score for each of the 14 dimensions of CI and an overall percentage score for the community assessment, which was an unweighted average of all the individual dimension scores.

3.3. Results

Overall community assessment scores were relatively high, ranging from a minimum of 63% (Site 1) to a maximum of 89% (Site 5), with a median of 78% (Table 3.5 and Figure 3.1).
3.3.1. Core dimensions

The core dimensions of CI scored highest (medians ranged from 80-94%, Figure 3.1). All the programs had established backbone support responsible for effective functioning of the program, and this dimension had the highest median score among all dimensions (94%). Programs that scored higher on this dimension had their backbone support actively pursuing new opportunities related to the goals of the program. Almost all programs had a common agenda, and many with clearly defined ones, with scores ranging from 59% to 97%, and this dimension had the second highest median score (91%). Programs that scored higher on this dimension relied on their common agenda to drive activities and had a process for reflecting on and refining it. The scores of mutually reinforcing activities presented the greatest variability among the core dimensions, ranging from 53% to 100%. The remaining two core dimensions, SMS and continuous communication, had final median scores of 80% and 88%, respectively.

3.3.2. Additional dimensions

Overall, the dimensions that scored the lowest were among the system-level dimensions of CI, which are needed to achieve large-scale health impact. Specifically, the two lowest scoring dimensions were funding flow (median score of 47%) and advocacy and public policy (median score of 56%). Most programs expressed the need to have alignment between philanthropic and/or public funding flows to support the goals of the program but did not have a clear plan that had been implemented to achieve this. Moreover, few of the evaluated programs had established and implemented an advocacy and public policy plan aimed at increasing such components, such as public involvement, media coverage, and/or public will in support of the goals of the initiative. In addition, the median score in cultural norms was only 69%, the third lowest among
all 14 scores. Finally, among the additional dimensions, individual behavior, individual program awareness and community program awareness received relatively high median scores ranging from 86% to 88%.

3.4. Discussion

The overall scores of the community assessment were in the mid-high range of the scale, showing that most of the evaluated programs demonstrated signs of integration of mission and implementation across diverse actors and goals. Although the pilot test of our tool focused on the best initiatives/sites from each company, significant variability was detected within and across dimensions, suggesting that the tool had sufficient discriminant validity and can be a useful addition to existing program evaluation frameworks.

Since the programs that participated in the community assessment were already considered to be the best projects each company financed, it is not surprising that they received high scores in the core dimensions. Backbone support was the dimension that received the highest median score across all companies, suggesting that the evaluated initiatives had an established leadership structure that effectively guided the initiative vision and strategy. Four out of five received a score in this dimension of at least 94%, suggesting a high level of commitment to management and coordination among evaluated programs. In addition, these programs also showed that their backbone infrastructure supported collection and dissemination of data to improve the initiative and was able to align sufficient funding to support program goals while also pursuing new opportunities.
The dimension with the second highest median score was common agenda (91%), though it showed wide variability (two sites scored 59% and 86%, respectively, while the other three scored above 90%). A strong common agenda would demonstrate that stakeholders within an initiative had a common understanding of the problem, had achieved consensus on the project’s ultimate goal and had agreed on the necessary actions to achieve it.

Continuous communication and mutually reinforcing activities also received moderately high median scores (88% for both) but the variability of the score across programs was high. Establishing a platform for regular and effective communication across partners and external stakeholders is crucial to reinforce the common agenda, build interpersonal relationships, align activities, avoid duplication efforts, and resolve any conflicts in a timely manner. As channels of communication solidify and interactions increase, activity coordination and alignment across partners should also improve. Many community-based initiatives focus on strategies that are easiest to achieve (low-hanging fruit) rather than those that are mutually reinforcing and therefore possibly more beneficial to the larger strategy. Yet, systems science suggests this may be key in addressing complex issues such as obesity. This core dimension of CI warrants further attention in the next generation of community-based programs.

CI is difficult to achieve if the collective involved is not a learning organization. Having a shared measurement system is an important foundation to support a continuously learning environment. Only two of our sites scored above 90% on this dimension. This result is not surprising as monitoring and evaluation tend to be under-appreciated and under-financed in multi-stakeholder partnerships and community-based initiatives in general. The evaluated projects were implemented through public-private partnerships (PPPs) and their unique and non-linear nature generate methodological and practical challenges for evaluation. The complexity of partnerships
often hinders analysis of causal and temporal associations between outcomes and inputs and also complicates the selection and use of impact measures as partners might have different – and even non-compatible – expectations and divergent perspectives on the root causes of the problem they intend to tackle. To fully implement the shared measurement system dimension, partners need to agree during the preparation phase of the project on different outcome indicators and jointly decide to invest financial and human resources to develop a system of shared data to inform action.

Overall, programs scored lower on the additional, non-core (but not less important) CI dimensions. This was expected since the majority of the programs assessed was not intentionally designed as CI initiatives and, as such, did not have specific goals to achieve systems change. However, our pilot work helps to highlight areas for improvement in order for community-oriented investment to achieve greater and more sustained impact. For example, although there is a paradigm shift to understanding obesity as the result of complex interactions between the physical, economic, and sociocultural environment, private-sector initiatives by and large have not reflected this new scientific understanding and have relied mainly on individual-level educational and behavioral strategies. This is a very important finding since the past traditional interventions that were not based on a more comprehensive systems approach tended to be less successful. The CI community assessment scale not only provides a rigorous tool of assessment for systems-level dimensions but also highlight the importance of a systems perspective for future privately funded initiative. In addition, across the five sites, almost all programs (with the exception of Site 5) failed to leverage the corporate investment to secure other funding flows and failed to invest in media and policy advocacy efforts, which may be important to sustained CI.
3.5. Implications

The Collective Impact Community Assessment Scale was able to capture heterogeneity and to underscore specific program areas that needed improvement, especially in terms of monitoring and evaluation, use of policy and environmental levers of change, and the contextual conditions that are needed to sustain CI. The ability to use the scale as a mixed methods tool to both qualify and quantify impact represents a new contribution to community-based program evaluation. The tool can be adapted to a variety of contexts and topics beyond those currently addressed in our pilot study. Our scale highlights the need to focus more on systems change rather than only individual behavior change. As recognition of CI approaches increases for obesity and other policy-resistant complex health and social issues, our evaluation methods will need to evolve to capture such complexity. The tool shared in this paper is a step in this direction.

3.6. Limitations

As with any community-based evaluation, it is possible that some respondents could be resistant in sharing negative feedback as the continuity of programs relied on external funding. To address this concern, the interviewers highlighted that results would be presented anonymously. Companies that agreed to participate in this pilot expressed a genuine interest in understanding the true impact of their sponsored programs.

This study was a pilot by nature. Thus, findings could not be generalized to all food and beverage companies and the programs that they sponsor. Our goal in this paper is to present the methodology of assessment and demonstrate that even among the best programs sponsored by
committed companies, there are large variations and important areas for improvement exist to achieve CI.

3.7 Conclusion

Current high levels of unhealthy lifestyle across the population are leading to adverse health outcomes such as obesity, diabetes, cardiovascular disease, and cancer. Due to the urgent need to address obesity and related chronic diseases and given the public interest in and scrutiny of the food and beverage industry’s role in population health, companies are increasingly being called upon to assume a leadership role in solving this serious national problem. The CHC Collective Impact Community Assessment Scale represents an innovative methodology to capture the extent to which the food and beverage industry initiatives are encouraging and promoting healthful eating and active living strategies in different communities. This tool can be used to assess the CI of a wide variety of projects at the community level. This assessment, if done regularly and involving multiple companies and sites, has the potential to improve the design and accountability of industry-funded community health strategies. Our hope is that such a benchmarking tool can improve current interventions and inform the design of future initiatives so that the community return on investment can be clearly articulated, documented and expanded.
<table>
<thead>
<tr>
<th></th>
<th>Program 1</th>
<th>Program 2</th>
<th>Program 3</th>
<th>Program 4</th>
<th>Program 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corporate investment</strong></td>
<td>$1,000,000</td>
<td>$1,150,000</td>
<td>$2,750,000</td>
<td>$3,200,000</td>
<td>$250,000</td>
</tr>
<tr>
<td><strong>Program focus</strong></td>
<td>Healthful eating &amp; active living</td>
<td>Healthful eating &amp; active living</td>
<td>Healthful eating</td>
<td>Healthful eating</td>
<td>Active living</td>
</tr>
<tr>
<td><strong>Geographic scope</strong></td>
<td>City</td>
<td>Country</td>
<td>State</td>
<td>Country</td>
<td>City</td>
</tr>
<tr>
<td><strong>Target population</strong></td>
<td>children and young adults</td>
<td>Youth and adolescents</td>
<td>General public</td>
<td>General public</td>
<td>Youth 12-18 years</td>
</tr>
<tr>
<td><strong>Program activity includes</strong></td>
<td>Teach meal preparation skills, lead cooking demonstrations, distribute healthy recipes, teach menu planning/food budgeting, lead physical activity programs, develop gardens, donate food &amp; physical activity equipment, sponsor physical activity events, train the trainer, develop recommendations for local food economy</td>
<td>Recruit program participants, outreach to potential partner organizations, distribute healthy recipes, teach menu planning or food budgeting skills, lead exercise or physical activity programs.</td>
<td>Provide free meals, collaborate with food banks, build community coalitions</td>
<td>Launch a website; advertise programs; outreach to potential partner organizations; mass media awareness campaign; social media; develop corporate volunteer programs; donate food; provide funding for hunger advocacy meetings; provide grants to increase school breakfast participation</td>
<td>Launch a website; advertise programs; recruit program participants; outreach to potential partner organizations; social media; train the trainer</td>
</tr>
</tbody>
</table>
| **Mechanisms of change**     | - Collaboration among partners/sectors  
- Policy  
- Community/organizational capacity  
- Individual knowledge & skills  
- Environment | - Collaboration among partners/sectors  
- Policy  
- Community/organizational capacity  
- Individual knowledge and skills  
- Environment | - Collaboration among partners/sectors  
- Policy  
- Community/organizational capacity  
- Social support/social networks  
- Individual knowledge & skills | - Collaboration among partners/sectors  
- Community/organizational capacity | - Collaboration among partners/sectors  
- Community/organizational capacity  
- Social support/social networks  
- Individual knowledge and skills |
| **Reach**                    | ~5,000 people | ~10 million | ~70 million meals provided | Not provided | ~3,600 people |
| **Program-identified outcome targets** | Measureable improve the health of young people by reducing childhood obesity and hunger by 50% | Improve knowledge of healthy habits, good nutrition and physical fitness; increase physical activity; increase positive interaction with all youth | Add meals to the state’s food relief system | increase in daily school breakfast program participation rates | Change physical activity attitudes, knowledge and beliefs |
Table 3.2. Assessed programs’ sites

<table>
<thead>
<tr>
<th></th>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
<th>Site 4</th>
<th>Site 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessed site</strong></td>
<td>City</td>
<td>City</td>
<td>State</td>
<td>City</td>
<td>City</td>
</tr>
<tr>
<td><strong>Population total</strong></td>
<td>~70,000</td>
<td>~80,000</td>
<td>~5 million</td>
<td>~50,000</td>
<td>~8 million</td>
</tr>
<tr>
<td>- White</td>
<td>4.4%</td>
<td>75.5%</td>
<td>80.9%</td>
<td>67.5%</td>
<td>32.1%</td>
</tr>
<tr>
<td>- Black</td>
<td>42.2%</td>
<td>2.4%</td>
<td>5.7%</td>
<td>17.9%</td>
<td>22%</td>
</tr>
<tr>
<td>- Hispanic or Latino</td>
<td>49.1%</td>
<td>11.5%</td>
<td>5.1%</td>
<td>7.1%</td>
<td>29.1%</td>
</tr>
<tr>
<td>- Native American</td>
<td>0.05%</td>
<td>6.5%</td>
<td>0.9%</td>
<td>0.8%</td>
<td>0.2%</td>
</tr>
<tr>
<td>- Asian</td>
<td>2%</td>
<td>7.63%</td>
<td>4.7%</td>
<td>2.6%</td>
<td>14%</td>
</tr>
<tr>
<td>- Multiracial</td>
<td>1.2%</td>
<td>2.7%</td>
<td>2.5%</td>
<td>3.9%</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Violent crimes</strong></td>
<td>550</td>
<td>274</td>
<td>243</td>
<td>577</td>
<td>621</td>
</tr>
<tr>
<td>(per 100,000 population/year)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Median resident age</strong></td>
<td>28.9 years</td>
<td>38.2 years</td>
<td>37.9 years</td>
<td>36.4 years</td>
<td>36 years</td>
</tr>
<tr>
<td><strong>Estimated median household income</strong></td>
<td>$25,042</td>
<td>$67,246</td>
<td>$63,488</td>
<td>$36,882</td>
<td>$55,752</td>
</tr>
<tr>
<td><strong>Poverty rate</strong></td>
<td>39.9%</td>
<td>11%</td>
<td>10.2%</td>
<td>21.7%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Obesity prevalence (by county)</strong></td>
<td>30.2%</td>
<td>28.5%</td>
<td>27.8% (state prevalence)</td>
<td>33.9%</td>
<td>14.7%</td>
</tr>
</tbody>
</table>
### Table 3.3 Collective Impact Scoring Matrix

<table>
<thead>
<tr>
<th>Rating</th>
<th>A. Common Agenda</th>
<th>B. Backbone Infrastructure (BBI)</th>
<th>C. Mutually Reinforcing Activities</th>
<th>D. Shared measurement system (SMS)</th>
<th>E. Continuous Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No Impact</td>
<td>Partners do not share a common understanding of the problem</td>
<td>A BBIs do not exist and partners do not express a need for it</td>
<td>There is no collective plan of action</td>
<td>A SMS does not exist</td>
<td>There is no regular or structured communication between partners</td>
</tr>
<tr>
<td>2. Vague awareness</td>
<td>Partners somewhat recognize that the problem needs a solution but don’t have consensus on priorities or agendas</td>
<td>Partners recognize that a BBIs might help solve the problem</td>
<td>Partners somewhat recognize that coordinating their activities might help solve the problem</td>
<td>Partners somewhat recognize that a SMS might help solve the problem</td>
<td>Partners recognize the importance to have regular and continuous communication</td>
</tr>
<tr>
<td>3. Concern</td>
<td>Partners express the need to have a common initiative to address the problem</td>
<td>Partners express the need to have a BBIs</td>
<td>Partners express the need to have a BBIs</td>
<td>Partners express the need to have a SMS</td>
<td>Partners express the need to have regular and continuous communication</td>
</tr>
<tr>
<td>4. Commitment</td>
<td>Partners have committed to solving the problem together and are working to establish common goals</td>
<td>Partners have committed to creating a BBIs</td>
<td>Partners have committed to developing a BBIs</td>
<td>Partners have committed to developing a BBIs</td>
<td>Partners have committed to having regular meetings and/or other collaborative structures for continuous communication</td>
</tr>
<tr>
<td>5. Development</td>
<td>Partners are developing a common agenda that includes a diverse set of voices and perspectives</td>
<td>Partners are developing a BBIs that includes a diverse set of voices and perspectives</td>
<td>Partners are developing a collective plan of action to coordinate their activities accordingly, which has a clear delegation of responsibilities across partners to avoid duplication</td>
<td>Partners are developing a SMS, which includes a common set of indicators and data collection methods</td>
<td>Partners are developing working groups to meet regularly and/or other collaborative structures for continuous communication</td>
</tr>
<tr>
<td>6. Establishment</td>
<td>Partners have established a common agenda</td>
<td>Partners have established a BBIs</td>
<td>Partners have established and implemented a collective plan of action and/or workgroups to coordinate their activities accordingly</td>
<td>Partners have established and implemented a collective plan of action and/or workgroups to coordinate their activities accordingly</td>
<td>Partners have established regular workgroup meetings and/or other collaborative structures for continuous communication</td>
</tr>
<tr>
<td>7. Stabilization</td>
<td>Partners rely on a common agenda to drive their activities and achieve the goals of the program/initiative</td>
<td>Partners rely on a BBIs for the effective functioning of the program/initiative</td>
<td>Partners rely on the collective plan of action, to coordinate their activities accordingly</td>
<td>Partners rely on the BBIs for the effective functioning of the program/initiative</td>
<td>Partners rely on regular workgroup meetings and/or constant exchange of information among partners to guide their activities. Partners begin communicating with external stakeholders as well.</td>
</tr>
<tr>
<td>8. Confirmation</td>
<td>Partners have a process of reflecting on information, successes, and/or challenges, and refine the common agenda, as needed</td>
<td>Partners have a process of reflecting on information, successes, and/or challenges, and refine the collective plan of action, as needed</td>
<td>Partners have a process of reflecting on information, successes, and/or challenges, and refine the collective plan, as needed, by identifying and implementing new strategies or activities to address</td>
<td>Partners have a process of reflecting on information, successes, and/or challenges, and refine the collective plan of action, as needed</td>
<td>Partners have a process of reflecting on the existing communication structure and shared information and refine the communication plan, as needed</td>
</tr>
<tr>
<td>9. High Impact</td>
<td>Evidence/data show that the common agenda is associated with the impact of the program/initiative</td>
<td>Evidence/data show that the BBIs is associated with the effective alignment of existing activities and pursuit of new opportunities related to the goals of the program/initiative</td>
<td>Evidence/data show that the collective plan of action is associated with the impact of the program/initiative</td>
<td>Evidence/data show that the SMS is associated with the ability of partners to make more informed decisions in a timely manner</td>
<td>Evidence/data show that the continuous communication plan keeps partners and external stakeholders informed and inspired and/or is associated with the impact of the program/initiative</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------</td>
<td>----------------------------</td>
<td>---------------------------------------</td>
<td>-------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>1. No Impact (Lower impact)</td>
<td>Partners have no awareness of a need to adapt to share failures and best practices with other partners</td>
<td>There are no secure human and financial resources and partnership support to do the work as planned</td>
<td>Formal actors, organizations and institutions have not made any changes in their work to align with the goals of the program/initiative</td>
<td>Individuals have no awareness of the health care barriers surrounding the desired behavior change</td>
<td>philanthropic and public funding initiatives are not aligned to support the goals of the program/initiative</td>
</tr>
<tr>
<td>2. Vague awareness (Lower impact)</td>
<td>Partners somewhat recognize the importance of sharing failures and best practices and of giving feedback to each other</td>
<td>Program/initiative somewhat recognizes the importance of human and financial resources and partnership support to do the work as planned</td>
<td>Formal actors, organizations and institutions somewhat recognize that changes in their work might support the goals of the program/initiative</td>
<td>Individuals somewhat recognize the association between their behaviors and the desired health outcome</td>
<td>Partners somewhat recognize that philanthropic and public funding aligned with the program/initiative are associated with the desired outcome of the program/initiative</td>
</tr>
<tr>
<td>3. Concern (Lower impact)</td>
<td>Partners express the need to share information, best practices and challenges with each other</td>
<td>Program/initiative expresses the need to secure human and financial resources and partnership support to do the work as planned</td>
<td>Formal actors, organizations and institutions express the need to change their work practices, professional training/education, in order to better support the goals of the program/initiative</td>
<td>Individuals express the need to change their behavior</td>
<td>Partners express the need to shift cultural norms to support the desired outcome</td>
</tr>
<tr>
<td>4. Commitment (Medium impact)</td>
<td>Partners have committed to having a process of quality improvement, which includes partners giving feedback to each other</td>
<td>Program/initiative is committed to securing all the needed resources (human, financial, partnership support), but skills and capacities of partner human resources and partnership support are not aligned with the needs of the program/initiative</td>
<td>Formal actors, organizations and institutions are committed to making changes in their work, practice, professional training/education, to align with the goals of the program/initiative</td>
<td>Individuals are committed to changing their behavior</td>
<td>Partners are committed to shifting the focus of philanthropic and public funding flows to support the goals of the program/initiative</td>
</tr>
<tr>
<td>5. Development (Medium impact)</td>
<td>Partners are developing a strategy to enhance the learning culture</td>
<td>Program/initiative is developing a plan to secure financial and human resources and partnership support to do the work as planned</td>
<td>Formal actors, organizations and institutions are developing a plan to secure financial and human resources and partnership support to do the work as planned</td>
<td>Individuals have increased knowledge and capacity to adapt to the desired behavior change</td>
<td>Partners are developing a plan to shift the focus of philanthropic and public funding flows to support the goals of the program/initiative</td>
</tr>
<tr>
<td>6. Establishment (Medium impact)</td>
<td>Partners have established a strategy to enhance the learning culture</td>
<td>Program/initiative has established and implemented a plan to secure financial and human resources and partnership support to do the work as planned</td>
<td>Formal actors, organizations and institutions have established and implemented a plan to secure financial and human resources and partnership support to do the work as planned</td>
<td>Individuals have established personal goals to achieve the desired behavior change</td>
<td>Partners have established and implemented a plan to shift the focus of philanthropic and public funding flows to support the goals of the program/initiative</td>
</tr>
<tr>
<td>7. Stabilization (Higher impact)</td>
<td>Partners regularly come together to reflect, discuss and strategize about their program/initiative</td>
<td>Program/initiative relies on the plan. The plan is based on the goals set by the partners of the participating organization to achieve the desired behavior change.</td>
<td>The planning/evaluation of the program/initiative has not been well defined, and the goals of the program are not aligned with the needs of the program/initiative</td>
<td>Individuals are achieving their personal goals related to the desired behavior change</td>
<td>The plan to shift cultural norms is driven by the program/initiative</td>
</tr>
<tr>
<td>8. Confirmation (Higher impact)</td>
<td>Partners have established an experimental learning culture</td>
<td>Program/initiative has a process of reflecting on information, successes, and challenges and refine the needed skills and capacities of participating organizations, as needed</td>
<td>Formal actors, organizations and institutions reflect on information, successes, and challenges and refine their plans and goals, as needed, to align with the goals of the program/initiative</td>
<td>Individuals have a process of adapting individual behavior goals to the desired behavior change</td>
<td>Partners and funders have a process of reflecting on information, successes, and challenges and refine their funding plan to enhance support for the goals of the program/initiative</td>
</tr>
<tr>
<td>9. High Impact (Higher impact)</td>
<td>Evidence/data show that implementation is associated with desired change and impact of the program/initiative</td>
<td>Evidence/data show that the CI capacity is associated with the impact of the program/initiative</td>
<td>Evidence/data show that individual behavior change is associated with impact of the program/initiative</td>
<td>Evidence/data show individual behavior change is associated with the desired behavior change</td>
<td>Evidence/data show that changes in philanthropic and public funding flows are associated with improved program/initiative outcomes</td>
</tr>
</tbody>
</table>
Table 3.4. Collective Impact Scoring Matrix– specific rubric for program participants and community leaders

<table>
<thead>
<tr>
<th>Rating</th>
<th>Program Participants Rubric</th>
<th>Community Leaders Rubric</th>
<th>Rating</th>
<th>Program Awareness/Support - individual community leaders</th>
<th>Program Awareness/Support - community perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No Impact</td>
<td>Individuals believe the program/initiative has no value to them</td>
<td>Community leaders believe the program/initiative has no value to the community</td>
<td>1. No Impact</td>
<td>The community is not aware of the health issue</td>
<td></td>
</tr>
<tr>
<td>2. Vague awareness</td>
<td>Individuals believe the program/initiative has some value to them</td>
<td>Community leaders believe the program/initiative has some value to the community</td>
<td>2. Vague awareness</td>
<td>The community is vaguely aware of the health issue</td>
<td></td>
</tr>
<tr>
<td>3. Concern</td>
<td>Individuals express the need to change their behavior</td>
<td>Community leaders believe the program/initiative definitively has value to them</td>
<td>3. Concern</td>
<td>The community is concerned about the health issue but is not aware of how it affects them</td>
<td></td>
</tr>
<tr>
<td>4. Commitment</td>
<td>Individuals are committed to changing their behavior</td>
<td>Community leaders believe that the goals of the program/initiative are among the highest priority for the community</td>
<td>4. Commitment</td>
<td>The community is concerned about the health issue and is aware of how it affects them</td>
<td></td>
</tr>
<tr>
<td>5. Development</td>
<td>Individuals have increased knowledge around the desired behavior change.</td>
<td>Community leaders believe that the goals of the program/initiative are fully aligned with the needs of the community</td>
<td>5. Development</td>
<td>The community is aware of the program/initiative and its priority, but believes they are not aligned with community needs</td>
<td></td>
</tr>
<tr>
<td>6. Establishment</td>
<td>Individuals have established personal goals to achieve the desired behavior change</td>
<td>Community leaders are somewhat engaged in some aspects of the program/initiative</td>
<td>6. Establishment</td>
<td>The community believes that the program/initiative is engaging in some aspects of the program/initiative</td>
<td></td>
</tr>
<tr>
<td>7. Stabilization</td>
<td>Individuals are achieving their personal goals related to the desired behavior change</td>
<td>Community leaders are fully engaged in all or almost all aspects of the program/initiative</td>
<td>7. Stabilization</td>
<td>The community believes that the program/initiative is fully engaged in all or almost all aspects of the program/initiative</td>
<td></td>
</tr>
<tr>
<td>8. Confirmation</td>
<td>Individuals show ownership in program/initiative by initiating and supporting the program</td>
<td>Community leaders actively talk about the value of the program/initiative to community members</td>
<td>8. Confirmation</td>
<td>The community believes that the program activities can effectively address their needs</td>
<td></td>
</tr>
<tr>
<td>9. High Impact</td>
<td>Evidence/data show that individual behavior change is associated with the program/initiative</td>
<td>Community leaders are proactive about supporting/monitoring the program/initiative and recommend it to the community</td>
<td>9. High Impact</td>
<td>The community demonstrates active support for the program</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.5. Final Score of Collective Impact for all Sites

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
<th>Site 4</th>
<th>Site 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Common Agenda</td>
<td>59%</td>
<td>91%</td>
<td>97%</td>
<td>86%</td>
<td>91%</td>
</tr>
<tr>
<td>B. Backbone Support</td>
<td>94%</td>
<td>94%</td>
<td>94%</td>
<td>88%</td>
<td>100%</td>
</tr>
<tr>
<td>C. Mutually Reinforcing Activities</td>
<td>53%</td>
<td>90%</td>
<td>100%</td>
<td>88%</td>
<td>81%</td>
</tr>
<tr>
<td>D. Shared Measurement System</td>
<td>73%</td>
<td>80%</td>
<td>97%</td>
<td>52%</td>
<td>93%</td>
</tr>
<tr>
<td>E. Continuous Communication</td>
<td>77%</td>
<td>75%</td>
<td>94%</td>
<td>88%</td>
<td>92%</td>
</tr>
<tr>
<td>F. Learning Culture</td>
<td>73%</td>
<td>81%</td>
<td>91%</td>
<td>80%</td>
<td>97%</td>
</tr>
<tr>
<td>G. Capacity</td>
<td>41%</td>
<td>69%</td>
<td>77%</td>
<td>81%</td>
<td>92%</td>
</tr>
<tr>
<td>H. Professional Practice</td>
<td>58%</td>
<td>80%</td>
<td>55%</td>
<td>73%</td>
<td>80%</td>
</tr>
<tr>
<td>I. Individual Behavior</td>
<td>78%</td>
<td>41%</td>
<td>88%</td>
<td>94%</td>
<td>100%</td>
</tr>
<tr>
<td>J. Funding Flows</td>
<td>34%</td>
<td>50%</td>
<td>47%</td>
<td>38%</td>
<td>94%</td>
</tr>
<tr>
<td>K. Cultural Norms</td>
<td>44%</td>
<td>69%</td>
<td>34%</td>
<td>88%</td>
<td>81%</td>
</tr>
<tr>
<td>L: Advocacy &amp; Public Policy</td>
<td>53%</td>
<td>25%</td>
<td>63%</td>
<td>56%</td>
<td>69%</td>
</tr>
<tr>
<td>M: Individual Program Awareness</td>
<td>89%</td>
<td>78%</td>
<td>88%</td>
<td>97%</td>
<td>84%</td>
</tr>
<tr>
<td>N: Community Program Awareness</td>
<td>55%</td>
<td>86%</td>
<td>72%</td>
<td>88%</td>
<td>86%</td>
</tr>
<tr>
<td>Composite Score</td>
<td><strong>63%</strong></td>
<td><strong>72%</strong></td>
<td><strong>78%</strong></td>
<td><strong>78%</strong></td>
<td><strong>89%</strong></td>
</tr>
</tbody>
</table>
Figure 3.1. Median Collective Impact Dimension Scores for Community Assessment
Chapter 4. Informing a roadmap for cross-sectoral collaboration on portion size renormalization as a national strategy to improve population nutrition – a Delphi study

4.1. Background

Obesity remains a public health crisis in the United States and there is growing evidence that increased portion sizes have contributed to this epidemic. More than one third (39.8%) of American adults and 18.5% of youth are obese.\(^{19}\) In the last decade, many public health efforts have focused on obesity\(^ {94,95}\) however, from 1999–2000 through 2015–2016, there was a significantly increasing trend in obesity in both adults and youth.\(^ {19}\) One of the key environmental drivers of energy intake and weight gain is larger-than-appropriate portion sizes.\(^ {96}\) Different studies have shown how portions at fast food outlets, chain restaurants and convenience stores have increased dramatically in the past 30 years.\(^ {97}\) Fast food items are estimated to be up to 5 times larger than 3 decades ago\(^ {98}\) and most portion sizes exceed the government-recommended serving size.\(^ {97}\) For example, a study showed that a typical muffin in the United States is 333% larger than the USDA recommendation, and a serving of pasta 480 percent larger.\(^ {99}\) The trend toward increasing portion sizes does not affect only out-of-home eating but also in-home consumption, and the negative impact has been noted in both adults and children.\(^ {100–102}\) In the United States, the exposure to large portion sizes is so pervasive that it has distorted consumption norms and individuals’ expectations of what an appropriate amount of food per meal is.\(^ {96}\)

Clinical studies, in both natural and controlled settings, have demonstrated that the increase in portion sizes and the surge in overweight and obesity are not a historical coincidence.\(^ {103–108}\) In one study, adults who were served 4 different portions of macaroni and cheese on different days
consumed 30% more energy (676 kJ) when offered the largest portion (1000 g) compared to the smallest portion (500 g). In another study, researchers offered men and women on five different occasions a snack that consisted of 28, 42, 85, 128 or 170 g of potato chips in a plain, unlabeled foil bag. When participants were served the 170 g package, women ate 18% (200 kJ) more and men ate 37% (511 kJ) more than when served the 85 g package. Moreover, the study found that although individuals reported feeling fuller with a larger snack, they did not adjust the portion of their subsequent meal to compensate for the increased calorie intake and sense of satiety. Research in the US and elsewhere has found that the predisposition to overeat in response to large portions is a pervasive phenomenon that occurs in both children and adults regardless of current weight status, sex, and degree of dietary restraint or disinhibited eating behavior.

Evidence shows that intervening on portion size leads to reduced food intake, weight loss, and/or prevention of weight gain. Although no single intervention has the ability to reverse the obesity burden, a recent report from the McKinsey Global Institute suggests that the single highest impact intervention area may be portion control. This research illustrates that reducing the size of portions in packaged foods, restaurants and cafeterias could save more than 2 million disability-adjusted life years (DALYs) in the whole population of the United Kingdom or 4% of the total disease burden attributable to overweight and obesity. A recent review further demonstrates the impact portion guidance and control have in weight loss studies. Successful interventions cited in the review used different strategies, such as segmentation cues in food packaging (which involves inserting visual markers in a snack food package, such as a red potato chip every ten regular ones), forming implementation intentions (which refers to goal-intentions furnished with specific action plans, such as “the next time I want chocolate I will eat
an apple instead”) and the use of other self-regulatory, portion control strategies (which refers to efforts to control and maintain adequate selection and intake of the amount of food). The main reason behind the success of these interventions appears to be the reliance on subconscious mechanisms that transform the default behavior in a healthier and easy-to-adopt option. Some portion size interventions use choice architecture to subliminally influence behavior change affecting the consumers’ perception, judgment and decision about consumption, and ultimately changing the social norm.

Cross-sectoral collaborations can maximize the effect of portion size interventions. Currently, there is a need for a national movement to renormalize portion size, which would require multiple sectors coming together to address both the supply of and demand for food. The paradigm shift around non-communicable disease causation – from being the product of individual choices to being framed as the result of a dynamic system giving rise to an obesogenic environment – requires an innovative public health approach. The National Academy of Medicine has specifically called for “leaders across all levels of society” to engage and implement a comprehensive approach to tackle obesity. There is an opportunity for stakeholders from different sectors (i.e., public agencies, private companies, civil society) to engage in a coordinated and sustained effort to strategically intervene in different settings.

Within this framework of a coordinated multi-sectoral dialogue, this study aims to inform the roadmap for a national movement on the renormalization of portion size. The CUNY Center for Systems and Community Design is working in collaboration with Georgetown University’s Global Social Enterprise Initiative (GSEI) to help shape this roadmap. This paper describes a Delphi survey study on key levers and strategies that should form the basis of this roadmap, based on the opinions of select experts from public health, civil society and industry.
4.2. Methods

4.2.1. Study population and recruitment

We reached out to a multidisciplinary group of key informants that represent different interest groups in the fields of obesity, public health, food production, access and distribution, and the broader nutrition field. Since we used the Delphi method, we employed non-probability sampling techniques and participants were purposively selected. A potential pool of heterogeneous respondents was identified among the participants of an expert round table on portion guidance hosted by GSEI. We obtained participants’ contact information through GSEI and sent out an initial invitation to participate in the study.

There are no specific guidelines suggesting the numbers to be included in the panel of experts for Delphi surveys; however, different researchers agree that the sample size should not be smaller than 7 or larger than 50 participants. Most studies that use the Delphi technique recruit panels of between 15 to 35 people. Because multi-step repeated surveys may also have attrition issues, especially after the first cycle, we decided to send out the study invitation to a 105 people initially and included all those who agreed to participate, encompassing representatives from public health, civil society, and food industry.

4.2.2. Data Collection - Delphi survey

Data were collected using the eDelphi technique, which follows the Delphi protocol method through a web-based survey tool (SurveyMonkey). At the beginning of January 2018, approximately 3 weeks before the survey was first administered, we informed potential participants of the objectives of the study, provided information about the Delphi process and
invited them to participate. We ensured participants that responses were confidential and individual responses were known only by the survey moderator. The study followed the protocol used in the majority of Delphi studies applied to health research, in which the first round consists of many open-ended questions or a modified approach to develop initial statements and subsequent rounds use percentage of agreement and measures of central tendency (mostly median) to aggregate data and transform questions into Likert scale, preferably without a midpoint.\textsuperscript{132–134} This study consisted of three successive rounds of surveys to a panel of respondents, who were experts in the field, over a period of three months, from the end of January to the end of March). Each survey round was conducted over 4 to 5 weeks: one week for pilot testing (for the first round only), 2 weeks for response acquisition (including e-mail reminders prior to the closing date) and 2 weeks for data analysis and preparation of the subsequent round. A personalized email message was sent to each respondent with a URL link to the survey. The list of respondents from each round was then copied into new recipient lists for subsequent rounds. Between the first and the second rounds, 44\% (n=14) of participants were part of a roundtable around the issue of portion size and more information on the topic was gathered in person through observation of and notes from the meeting (see Figure 4.1 for an overview of the process). The roundtable provided participants with more information about how a cross-sectoral movement around portion guidance could look like and highlighted the importance of the issue.

\textit{First round}

The first questionnaire asked 22 questions (Appendix A), including demographic information, and this initial input provided focus for the subsequent round. The questions aimed at gathering opinions on the following issues surrounding portion guidance and their effect on population
nutrition: psychological mindsets that can affect portion size choice, eating habits, portion perception and distortion, passive overconsumption, and challenges and advantages of this tool to improve population nutrition. This questionnaire included a mix of questions types – close ended, open ended, dichotomous, and scaled.

Second round

In this questionnaire the majority of questions were transformed into statements with a Likert-type scale of agreement without a middle point (strongly disagree, disagree, agree, or strongly agree) to eliminate the possibility of a non-answer. Questions that already provided an average as an answer in the first round (e.g., “On a scale of 1 to 10 what is the extent to which the private sector can shape population nutrition?”) were transformed into binary questions (agree or disagree). Questions that were open-ended in the first round were transformed into categorized and coded statements. Any category that was voiced by at least 2 respondents in round 1 was included in questions for round 2 where respondents were asked to agree with them or not. Any language that was used by participants in open-ended questions was kept as close to the original as possible to avoid introducing bias. Additional comment boxes were added to all the questions that were open-ended in the first round to ensure that the analysis was comprehensive. Questions that in the first round asked for a ranking of items were translated into a selection of the 3 most important items. This round also had a new question that was added to clarify confusing statements form the first round.

Third round

The third and final round aimed at narrowing issues even further to reach consensus. We calculated mean and median scores for every answer of the second round. The final questions
included only items that received a score equal or higher to the mean (chosen over median as it was the most conservative number and allowed for more answers to be included).

4.3. Results

4.3.1. Delphi participants

Invitations to participate in the Delphi survey were sent by email the 105 experts who were invited to the GSEI roundtable on Obesity & Portions. Thirty-seven (35%) experts responded to the invitation, of which 2 (2%) explicitly declined to participate in the study, 3 (3%) expressed interest but were unable to commit their time, and 32 (30%) agreed to be part of the study; 67 (64%) did not respond. Of the 32 panelists that participated in Round 1, 7 (22%) did not respond to the subsequent round, and among Round 2 respondents (n=25), 3 (12%) did not respond to Round 3.

The majority of participants worked in either NGO/philanthropy (31%) or in academia (31%). Nine percent of the experts worked in food/beverage manufacturing, 9% worked in professional, technical and scientific service; and 6% worked in government. The remaining 12% of experts worked in food service, healthcare, medical professional organizations and trade associations (Figure 4.2). Most experts held the title of either Director or Managing Director (25%). 16% of respondents had a Vice President title, 12% were Professors, 6% were Senior Policy Advisors, and 6% were Presidents of the organization they worked for (Figure 4.3). The majority of the respondents were female (81%), and White/Caucasian (84%) and thirty-seven percent of participants were between 45 and 54 years of age (Table 4.1).
4.3.2. Delphi results

The three rounds of questions can be broadly categorized as: (i) thoughts on public interaction with the private sector for social action, (ii) opinions on factors that impact population nutrition, (iii) specific challenges and advantages of portion size interventions, (iv) ideas on the practical implementation of such interventions and, (v) ideas of what supermarkets and restaurants will look like in the future. Most of the language used in this study’s results comes directly from the open answers given by participants and was not altered to avoid introducing bias.

Public-private partnership for social action

In the first round, participants were asked to rank on a scale of 1 to 10 (1 being the most) the extent to which the private sector could shape population nutrition. The average answer was 7 with a range of scores from 3 (3%) to 10 (22%). This score was confirmed in both Round 2 (72% agreement) and Round 3 (77%).

Participants also were asked to list the greatest challenges for the private sector in taking social action to improve population nutrition. The responses were coded into different categories and the ones with a percentage of agreement equal or higher than the average on Round 2 were asked again on the final round. The contradiction between the aim of private profit versus public responsibility emerged as the greatest challenge for social action by the private sector (64% strongly agreed), followed by consumer preference (32%) and social norm (32%) (Table 4.2).

Tools to impact population nutrition

After participants were asked to list in order of importance different tools for improving population nutrition, in Round 2 they were asked to pick the 3 tools that they believed were the
most impactful. The tools that were chosen by the majority of participants as the most important were: patient/consumer diet education and counseling (64%), marketing for healthy food (40%), limit portion size (33%) and limit junk food marketing (27%). In the final round, when asked to rank tools by their potential impact, 36% of participants agreed that limiting junk food advertisement is the first most impactful tool to improve nutrition at the population level, 45% agreed that marketing for healthy food is the second most impactful tool and 43% chose limiting portion size as the third most impactful tool.

Advantages and challenges of portion size interventions

After being prompted to list the benefits of portion size interventions, participants most often strongly agreed with the following cited advantages: decrease caloric intake (36%), enable automatic behavior change (36%), ability to educate consumers on appropriate portion sizes (23%), and allow small treats (18%).

As for the disadvantages of such interventions, participants most often agreed that: it does not take into account the context of a total diet (36%), it is hard to implement without a great deal of resources and support from industry (27%), price/value might be a problem for communities with low socioeconomic status (27%), it is very hard to convince food companies as big portions bring big profits (18%), and consumers might get angry as they perceive more value with bigger portions (14%).

Practical implementation strategies of portion size interventions

Participants answered a series of specific questions about implementing portion size interventions (Table 4.3). Participants agreed that the most effective strategy to enhance the
psychological value of smaller food and beverage portions is to display them at more valued places of the store (59%). They also believe that the most effective strategy to reduce food consumption is to create an artificial stopping point, such as separating a large package into several smaller sub-packages or using internal sleeves (59%). In addition, they believe that the portion size intervention with the highest impact potential is product reformulation, as a way to reduce the energy density of the food while keeping the same size (73%). Sixty-four percent (64%) of participants believed that restaurants are the setting in which portion size interventions could have the most impact in improving population nutrition. Finally, almost all participants (91%) agreed that portion innovations should be stealthy and unnoticed by consumers (Table 4.4).

*The future of supermarkets and restaurants*

At the end of the first questionnaire, participants were asked to describe what they thought supermarkets and restaurants would look like in 2030. The answers were further refined in subsequent rounds, and by the final survey, a clear image emerged. Participants envisioned the restaurant/cafeteria of the future as a place where, first and foremost, more options of healthy food would be offered (100%). They also envisioned a place where healthy food would be beautiful and appealing (95%) and with a reasonable price (95%). According to participants, the restaurant/cafeteria of the future would also offer detailed nutrition information for all meals (91%) and that information would be personalized, most likely through smartphones (82%).

Participants described the restaurant of the future as a place where shopping would be a personalized experience (95%) and there would be detailed nutrition information on everything
Finally, participants envisioned cafeterias as a place that would offer more options of package sizes (86%) and specific incentives to eat healthy, such as a points card (82%).

As for the supermarket of the future, all participants agreed that it would offer healthy pre-packaged options (100%). The vast majority also agreed that the food would be aesthetically beautiful (91%) and that healthy food would be very visible and easily accessible (91%).

4.4. Discussion

To our knowledge, this is one of the first studies to gauge the perception of diverse stakeholders regarding priorities for a national strategy around portion size management and control. The results of this study can inform the agenda of a multi-sectoral collaboration to renormalize portion sizes in the U.S. population, from both supply and demand perspectives. The science on increasing portion size in the American diet and how it contributes to overconsumption is clear. However, little coordinated public health effort has been directed toward addressing this problem. Portion-size interventions can be highly cost-effective because they change the rules of the environment and can be applied to a vast population at the same time, and they tend to be long-lasting. A national movement could facilitate cross-sectoral partnerships that would be difficult to achieve through strategies targeting single products (e.g., sugar-sweetened beverages) or single ingredients (e.g., fat or sugar).

Experts who participated in the Delphi process agreed on the power the private sector has in shaping population nutrition. Most participants also believed that marketing, which is one of the most used tools by private companies, could be among the most impactful tools to improve nutrition (59%). A large percentage of participants also highlighted that one of the greatest
obstacles that portion size interventions might encounter is the difficulty of implementation without private sector support and resources. However, despite acknowledgment of the role the industry can play in this area, participants expressed skepticism that such collaboration is feasible. Most participants highlighted the underlying tension the industry has between maximizing profits and improving population health. This suggests that for a national movement to come together, building trust and a transparent and accountable governance mechanism will be critical.\textsuperscript{14,135}

This study highlights the importance of addressing not just the supply of food but also the demand. Respondents agreed that established social norms might hinder action by the private sector and many specifically mentioned consumer preference and consumer misinformation as obstacles to change. Any coordinated movement will likely require mutually reinforcing strategies to tackle both the supply and demand sides of the equation to ensure one optimally impacts the other, in a truly systems-oriented fashion. Industry marketing expertise could be used to shift public demand. Research is needed to identify specific communication frames that would be most useful in different consumer segments.

There is a high level of agreement among participants in regards to the supply side strategies for portion size management and control. Key recommendations include displaying smaller packages in highly valued places of a supermarket/bodega and in the importance of creating artificial stopping points within bigger packages. Interestingly, restaurants were thought to be the most important intervention setting. Nearly half of Americans’ food budgets are directed to foods away from home,\textsuperscript{136} suggesting that restaurants represent an important sector that must be at the table in a national movement.
Our panel of experts overwhelmingly suggested that changes in portions should be stealthy and not explicitly advertised. It was an expected response from representatives of the food and beverage industry – as marketing research shows that stealth approaches to product reformulation are better received by consumers – but further investigation is needed to understand the reasoning behind this answer for public health and nutrition experts. Especially because, at the same time, most respondents thought that portion size interventions were overly paternalistic, which appears to create a contradiction that warrants further exploration. Moreover, although limiting portion size was considered an effective tool to improve nutrition, marketing healthy food and limiting marketing for junk food were considered as more impactful measures. This suggests that to increase public health buy-in, a national movement on portion size needs to be coordinated with other environmental and policy strategies to address obesity and chronic disease. Portion size may be an important strategy to tackle, but it should not be seen as the panacea to the obesity epidemic.

4.5. Limitations

In Delphi studies, threats to validity might arise from pressures for convergence and agreement, which would undermine the very purpose of the method to be able to forecast and gather consensus. To respond to this concern, we thoroughly explained the research process to participants and highlighted the importance of expressing their individual opinions at each round. This study also had attrition – we lost 10 participants out of the original 32 between the first and final round. However, the final number of respondents (n=22) was well within the range recommended in the literature. The panel of experts was not as diverse as it could be (predominantly female and White/Caucasian) but was more or less representative of typical
stakeholders in nutrition-related roles. Finally, stakeholders from different sectors were not equally represented in the panel of respondents. Although an equal number of representatives from different areas was invited, the majority who responded worked in either academia or civil society.

4.6. Conclusion

This study is a practical step toward building a national strategy to renormalize portion size in the American food supply and diet. Results from this first survey help inform the initial agenda with specific priority targets and action steps, including the importance of investing in trust building across sectors. This Delphi study represents the first step toward a scientific approach to cross-sector collaboration and sets the stage for defining a framework for the next-generation chronic disease prevention focusing on portion guidance. We fully expect the conversation to deepen which, in turn, will further refine the movement’s agenda. In this sense, outcomes from this study serve only as the beginning of a cross-sectoral dialogue and not the end.
Table 4.1. Delphi survey panelists’ demographic information

<table>
<thead>
<tr>
<th>Gender</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>26 (81)</td>
</tr>
<tr>
<td>Male</td>
<td>6 (19)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 to 34</td>
<td>5 (16)</td>
</tr>
<tr>
<td>35 to 44</td>
<td>6 (19)</td>
</tr>
<tr>
<td>45 to 54</td>
<td>12 (37)</td>
</tr>
<tr>
<td>55 to 64</td>
<td>7 (22)</td>
</tr>
<tr>
<td>65 to 74</td>
<td>2 (6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>N (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>White/Caucasian</td>
<td>27 (84)</td>
<td></td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>2 (6)</td>
<td></td>
</tr>
<tr>
<td>Middle Eastern/ Arab</td>
<td>2 (6)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1 (3)</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.2 Greatest Challenges for the private sector in taking social action

<table>
<thead>
<tr>
<th>Question*</th>
<th>% of agreement</th>
<th>Quotation</th>
<th>Round 1 (n=32)</th>
<th>Round 2 (n=25)</th>
<th>Round 3 (n=22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit vs responsibility 50%</td>
<td>&quot;Competition for market share is greatest challenge - fundamentally the private sector is designed to make a profit and fight things that get in the way of that. Thus, limitations that position companies negatively or that single them out, such as mandatory policies that do not create a level playing field for them, are solutions they will fight. Alternatively, multi-sector incentive-based solutions are embraced by companies, particularly when they acknowledge the operational and financial challenges that companies must overcome to successfully implement health-promoting changes&quot;</td>
<td>16% 16% 32% 36%</td>
<td>4% 9% 23% 64%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer misinformation 16%</td>
<td>&quot;Population misinformation on what is good nutrition and therefore driving what they think they should be buying and eating and ultimately profit for the right healthy foods&quot;</td>
<td>8% 8% 68% 16%</td>
<td>0% 27% 55% 18%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer preference 16%</td>
<td>&quot;The greatest challenges include how to best market healthy, reasonably sized portions of foods to consumers, particularly in an environment that values &quot;bigger is better.&quot; Also, providing consumers with nutritious food that is also delicious and satisfying&quot;</td>
<td>4% 20% 68% 8%</td>
<td>0% 18% 50% 32%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public sector hostility 16%</td>
<td>&quot;Being supported for incremental progress rather than demonized for not doing enough&quot;</td>
<td>12% 56% 16% 16%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No information on what works 13%</td>
<td>&quot;the private sector is often risk-averse and may want to be sure action will be positively rewarded (financially, PR-wise, etc.) before taking action&quot;</td>
<td>12% 32% 56% 0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No interest in social action 9%</td>
<td>&quot;Don't think it is their responsibility&quot;</td>
<td>24% 56% 16% 4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No consensus among stakeholders 9%</td>
<td>&quot;Lack of consensus by key stakeholders on effective solutions inhibits action&quot;</td>
<td>12% 28% 48% 12%</td>
<td>4% 50% 32% 14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social norm 9%</td>
<td>&quot;The greatest challenge is likely a cultural shift&quot;</td>
<td>0% 28% 52% 20%</td>
<td>0% 14% 54% 32%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issue complexity</td>
<td>6%</td>
<td>&quot;The complexity of the multifactorial issue. We live in a world of both under and over nutrition plus the complexity of cultural/socio-economic and others issues with nutrition. Adding is the confusion of what good nutrition is and what good nutrition delivers (improved health vs weight loss)&quot;</td>
<td>12%</td>
<td>40%</td>
<td>32%</td>
</tr>
</tbody>
</table>

* This is the question asked in Round 1. In Round 2 participants were given a summary of the answers given by at least 2 respondents and were asked to choose their level of agreement. In Round 3 they were presented with the 5 answers that were selected by the majority on the previous round and asked to choose their level of agreement.
Table 4.3. Consensus building on practical implementation of portion size interventions

<table>
<thead>
<tr>
<th>Questions*</th>
<th>Round 1 (n=32)</th>
<th>Round 2 (n=25)</th>
<th>Round 3 (n=22)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of agreement</td>
<td>Not effective</td>
<td>Moderately effective</td>
</tr>
<tr>
<td>New research shows that a &quot;low status mindset&quot; (i.e., feeling that one is low in power within a social group) can lead consumers to strive for status through consumption of larger portions of food. Rate from 1 to 10 how effective the following strategies to enhance the psychological value of smaller food and beverage portions are:</td>
<td>Media advertisement 3% 25% 63% 9%</td>
<td>32% 28% 40% 41%</td>
<td>0% 31% 57% 12%</td>
</tr>
<tr>
<td>On a scale of 1 to 10, how effective do you believe the following strategies to reduce food consumption can be:</td>
<td>Create an artificial stopping point (e.g. separating a large package into several smaller sub-packages, using internal sleeves, etc.) 9% 37% 51% 3%</td>
<td>12% 32% 56% 59%</td>
<td>32% 44% 21% 3%</td>
</tr>
<tr>
<td>In order of importance, choose the top 3 settings in which portion size interventions could have the most impact in improving population nutrition</td>
<td>School 50%</td>
<td>68% 28% 4%</td>
<td>22%</td>
</tr>
<tr>
<td>On a scale from 1 to 10, rank the following portion size interventions in terms of impact:</td>
<td>Reduce the size of the single serving of a large package on its nutrition label 44% 41% 15% 0%</td>
<td>15% 25% 41% 19% 48% 32% 20% 73%</td>
<td>3% 32% 49% 16%</td>
</tr>
</tbody>
</table>

* These are the questions asked in Round 1. In Round 2 respondents were asked their opinion on the effectiveness of the answers that scored higher or equal to average on the precedent round. In Round 3 respondents were asked to pick the most effective strategy/tool/setting.
Table 4.4. Portion innovations – stealth versus announced

<table>
<thead>
<tr>
<th>Should portion innovations be stealth and unnoticed by the consumer or explicitly announced?</th>
<th>Round 1 (n=32)</th>
<th>Round 2 (n=25)</th>
<th>Round 3 (n=22)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quiet and unnoticed</strong></td>
<td>Explicitly advertised</td>
<td>Disagree, portion innovations should be explicitly advertised</td>
<td>Agree, portion innovations should be quiet and unnoticed</td>
</tr>
<tr>
<td><strong>72%</strong></td>
<td><strong>28%</strong></td>
<td><strong>28%</strong></td>
<td><strong>72%</strong></td>
</tr>
</tbody>
</table>
Figure 4.1. Delphi process

**Delphi planning**
- Defining the questions
- Setting criteria for participants’ selection
- Preparing invitation letters

**Source of panelists**
Invites to the roundtable on Obesity & Portions organized by the Global Social Enterprise Initiative at Georgetown University

**Identified potential participants**
n = 105

**Pilot testing (n=4)**
Minor adjustments to design and content

**Round 1**
n = 32
- 22 questions (close ended, open ended, dichotomous, and scaled)
- Survey content: psychological mindsets that can affect portion size choice, eating habits, portion perception and distortion, passive overconsumption, and challenges and advantages of portion size interventions
- Return rate: 30.4%

**Round 2**
N = 14
- 14 questions (agreement on likert scale, binary or ranking)
- Additional comment boxes
- Return rate: 78%

**Round 3**
n = 22
- 15 questions (agreement or final ranking)
- Aiming for consensus
- Return rate: 88%

**Analysis**
- Coding of open-ended questions
- Percentages of agreement
- Answers translated into a score
- Medians and averages were calculated
- Only questions equal or above average were included

**Participants**
- Declined (n=2)
- No valid e-mail address (n=1)
- Interested but unable to commit (n=3)
- No response (67)
Figure 4.2. Delphi survey panelists’ industry/areas of work
Figure 4.3. Delphi survey panelists’ job titles
Chapter 5. Conclusion

5.1 Summary of Results

This research identified gaps in evaluating private efforts in obesity prevention and food access and shed light on opportunities for public-private collaboration in the future with a specific focus on portion guidance and control. This dissertation consists of three separate but interrelated studies developing and testing a new benchmarking methodology to evaluate industry investment in health and nutrition initiatives and finding consensus for an innovative cross-sectoral population nutrition strategy.

The first aim of this research was to evaluate community initiatives funded by food and beverage companies through a new assessment methodology that incorporated key concepts from the collective impact (CI) framework. This study found wide variation in how companies approach funding community health strategies. Five of 11 adopted a more traditional philanthropic approach by simply donating products or providing grants to selected NGOs and/or programs. One company located its community-focused strategies within its CSR functions, while the remaining five companies developed comprehensive strategies to address corporate responsibility and/or sustainability issues, which they saw as essential to the future growth and the success of their businesses and/or very important to stakeholders. Funding for community initiatives generally came from a combination of corporate and foundation budgets, although three small companies without foundations supported community work solely with corporate funds. The assessment framework calculated individual scores for all participating companies to demonstrate their accomplishment in different dimensions of program design and implementation. This study found wide variability in the quality of design and implementation of
company strategies; overall scores ranged from 27% to 69% with an average of 53%. All companies in the study had clear areas for improvement, particularly independent monitoring and evaluation. This domain was the lowest scoring, with an average of 40%; only four companies scored over 50%. We found an exponential relationship between company scores and the level of investment overall. Those companies that invested the most heavily typically recorded the highest scores, and vice versa. However, the increase in scores flattened after the investment reached a certain value (at around US$ 4,200,000).

Qualitative data analysis corroborated some findings from the quantitative assessment. These open-ended questions showed that corporate leaders felt strong motivation to support healthful eating and active living programs, mainly because they believed such initiatives increase employee attraction and retention and align with their product and industry. The qualitative piece of the study also showed that companies lacked specific measurable goals for such initiatives.

The second aim of this research was to develop and test a new methodology to evaluate the collective impact of community-based programs that are aimed at improving nutrition and/or physical activity and are funded by food and beverage companies. This method used the CI evaluation framework, specifically adapted to this context, to assess the different community programs. Overall, community assessment scores were relatively high, ranging from a minimum of 63% (Site 1) to a maximum of 89% (Site 5), with a median of 78%. The core dimensions of CI (common agenda, backbone support, mutually reinforcing activities, shared measurement system and continuous communication) scored highest (medians ranged from 80-94%). All the programs had established backbone support responsible for effective functioning of the program (94%). Almost all programs had a common agenda, many with clearly defined ones, with scores ranging from 59% to 97%. Community programs scored lower on additional dimensions –
pertaining to the context, outcomes, and systems-level opportunities for growth of the initiative. Specifically, the two lowest-scoring dimensions were funding flow (median score of 47%) and advocacy and public policy (median score of 56%). In addition, the median score in cultural norms was only 69%, the third lowest among all 14 scores. Most program leaders expressed the need to have alignment between philanthropic and/or public funding flows to support the goals of the program but had not implemented a clear plan to achieve this. Moreover, few of the evaluated programs had established and implemented an advocacy and public policy plan aimed at increasing components, such as public involvement, media coverage, and/or public will in support of initiative goals.

Finally, the third aim of this dissertation was to investigate what the future of obesity prevention initiatives could look like and to achieve consensus on how a cross-sectoral initiative in portion guidance and control could be delineated. The study used the Delphi technique to gather opinions from a diverse panel of experts representing different interest groups in the fields of obesity, public health, food production, access and distribution, and the broader nutrition field. The research found that the experts believed that the private sector has great power in influencing population nutrition. At the same time, they also identified challenges the industry faces in taking social action in public health. Sixty-four percent of respondents strongly agreed that the contradiction between the aims of private profit vs. public responsibility is the greatest challenge for private companies, followed by consumer preference (32%) and social norm (32%). Respondents believed that portion size is among the most powerful tools to improve population nutrition and strongly agreed with the advantages of portion size interventions, such as decreasing caloric intake (36%) and enabling automatic behavior change (36%). The study found less agreement among respondents on the disadvantages of such interventions, such as
difficulty of implementation without industry support (27%) and difficulty in convincing food companies to change portion size because big portions maximize their profit (18%). The study found high levels of consensus regarding the practical aspects of implementation of portion size interventions. Almost all respondents (91%) agreed that portion innovations should be stealth and unnoticed by consumers. They agree that that the most effective strategy to reduce food consumption is to create an artificial stopping point (59%) and that product reformulation is the portion size intervention with the highest impact potential (73%). Finally, 64% of respondents agreed that restaurants are the settings in which portion size interventions could have the most impact on improving population nutrition.

5.2 Limitations

Some limitations exist within each of the three studies and should be addressed in future research. This dissertation was a pilot by nature. Thus, for any of its specific aims, findings could not be generalized to all food and beverage companies, the initiatives they sponsor, or all experts in the fields of public health, nutrition, and food and beverage manufacturing and distribution. As a pilot study we had a small sample size for aims 1 and 2. Specifically for the first aim, companies used different terms to describe their strategies and to explain where these sat within their respective regulatory structures and policies. There was also a chance of self-report bias, although we minimized this as much as possible through the extensive auditing process. Finally, since we had to base the assessment on the data collected, some of the lower scores could be a result of companies providing less information than others.

The second aim of the research involved in-person interviews. As in any community-based evaluation, some respondents could be resistant in sharing negative feedback as the continuity of
programs relied on external funding. To address this concern, the interviewers emphasized that results would be presented anonymously.

The third aim of the dissertation carried the limitations that concern all Delphi studies, in which threats to validity might arise from pressures for convergence and agreement, which would undermine the very purpose of the method to be able to forecast and gather consensus. To respond to this concern we reminded all participants, at every round, of the importance of their authentic participation to ensure high response rates. This study also had attrition – we lost 10 participants out of the original 32 between the first and final rounds. However, the final number of respondents (n=22) was well within the range recommended in the literature. The panel of experts was not diverse as it was predominantly female and White/Caucasian. Finally, stakeholders from different sectors were not equally represented in the panel of respondents. Although equal numbers of representatives from different areas were invited, the majority who responded worked in either academia or philanthropy.

5.3 Public Health Significance

The severity and complexity of the obesity problem call for innovative solutions that can achieve sustainable and collective impact. Most public health researchers, international and national organizations and activists are now aware that such solutions cannot be designed and implemented by single actors, but they instead require coordinated collaboration that spans across all sectors of the food and health system. The private sector is already involved in the public health arena and its presence, in a space where the public sector cannot tackle non-communicable disease prevention on its own, is only destined to grow. In spite of the substantial investments that the food and beverage industry has already made to improve community health,
there is limited research on its actual and supposed added value. Evidence supporting industry-sponsored initiatives is often grounded on anecdotal evidence and best-practice reasoning. There is also increasing pressure from both public and private partners for rigorous evaluation to justify the very existence of these collaborations and maximize their impact. In an effort to fill this gap, the CHC initiative presents an innovative methodology to benchmark the strategy and performance of community-based food access, healthful nutrition and active living programs in the US funded by food and beverage companies. This pilot of an evaluation framework for collective impact successfully captured the variability that exists within and across companies and programs. This framework can be used for different privately funded initiatives and strategies in obesity prevention and food access. The CHC provides a rigorous assessment framework to evaluate the social and health impact of private investment in obesity, which has the potential of maximizing these efforts while also providing a new tool to hold private companies accountable for their investment. Having a final numerical score that encompasses different phases of evaluation brings practicality and easiness of comparison among companies and programs. Moreover, this benchmarking methodology helps establish a common vocabulary and standard of best practice that are easily intelligible to both public and private partners, and that could be used to inform the next generation of community interventions. A common lexicon and metrics may also facilitate greater collaboration between companies within the food and beverage industry. The CHC framework provides a tool that could serve as the basis for regular and continuous knowledge sharing and pooling of resources and expertise among private partners. Finally, a rigorous assessment of public-private collaborations in the health arena can help inform evidence-based guidelines and establish best-practices for PPPs in this field. The different dimensions highlighted by the CHC framework already relate to features identified in
the literature as prerequisite for successful partnerships, such as trusting relationships, influence, information sharing and resources management. By consistently using this framework for assessment of private efforts in obesity prevention, we can establish best-practice standards for PPPs in community health to enhance the potential impact of programs financed and supported by these partnerships.

This dissertation also informs the agenda for creating a cross-sectoral, coordinated movement to tackle obesity through a combination of changing social norms, individual behaviors and industry practices around portion sizing. Although cross-sectoral collaboration for NCD prevention has been praised and encouraged by different organizations and researchers, the building of a common agenda has not always been approached through a scientific lens thus far. In order to develop a truly impactful movement to fight obesity that spans across all sectors, it is crucial, first of all, to gauge consensus among key stakeholders and define an agenda for future steps. This study represents an attempt to scientifically inform an agenda for a national movement around portion guidance and control. The study sheds light on important obstacles that may hinder the success of this movement, such as trust-building between private and public partners. It also provides specific information about the practical steps that could be taken to implement portion size interventions.

Overall, the results of the three aims of this dissertation are deeply interconnected and have the potential to inform practice in public health. Learnings from the CHC initiative were parlayed directly into the agenda of the initial portion size roundtable and have informed the Delphi study. This dissertation shows that a rigorous assessment of financial commitment by the industry can not only shed light on past and current efforts but can also guide future, more comprehensive and more effective interventions in public health. Furthermore, the methods illustrated in this
dissertation can be used in different areas of public health apart from obesity. The dissertation illustrates tools for collaboration that can be used for a variety of health and community issues that require a cross-sectoral approach. It is possible – and indeed desirable – to undertake a systematic, rigorous approach to developing the foundation of cross-sectoral partnerships in an effort to cohere diverse stakeholders around a common agenda and to establish metrics to inform both the design and monitoring of partnership activities.

5.4 Implications for Further Research

This dissertation identifies several areas for future research pertinent to improving population nutrition through cross-sectoral collaboration, privately funded health initiatives, and portion guidance.

This research provides public health researchers and private partners invested in social action a rigorous measure of impact of their efforts. It is now crucial to test this framework on a larger scale. It is also important to closely monitor how private companies will use the results of the assessment to redefine and change their practices. Further testing of this tool with a larger number of companies will allow future investigators to refine the framework and test its generalizability. From the public-sector perspective, having such a robust assessment tool is key to identifying winning strategies, increasing community awareness and support, and informing policy decisions. This would also benefit private partners, as a robust impact assessment can be used to mitigate allegations of using CSR strategies for “window-dressing” and to legitimize the presence of the private partner in the public space. To support the credibility of partnerships and their efficiency to solve complex social problems, it is key for private companies to measure performance and social impact.
A specific issue that requires further investigation is the relationship between companies’ impact and their level of financial investment. The first study in this dissertation found that companies that invested the most also recorded highest scores. However, the research also found that the increase in scores decelerated after the investment reached a certain value. In order to maximize programs’ cost effectiveness, this relationship should be further investigated with a much larger and diversified sample of programs. Identifying the point of minimum financial investment that could grant the maximum impact of active living and healthful eating initiatives would incentivize companies to invest in social action while ensuring maximum health gain for communities.

The Delphi study raised a few issues that require further exploration. First, to establish a truly comprehensive movement on population nutrition, it is important to ensure that all key stakeholders are at the table. The study showed how experts believe that restaurants are the key setting of implementation for portion size interventions and, as such, the restaurant sector needs to be further involved. Moreover, as new food formulations, marketing, and packaging innovations emerge in the field, it will be crucial to assess their effectiveness on portion management. Finally, as the agenda for this cross-sectoral collaboration becomes further defined, it will also be important to specifically focus on how portion size interventions affect those with lower socioeconomic status, who are at increased risk for obesity and NCDs.

5.5 Conclusions

In conclusion, the complexity of the obesity issue requires collaboration from different actors across all areas of the complex food environment. Although the food and beverage industry is already present in the public health arena, its efforts are seldom assessed through rigorous
methodology, making it impossible to quantify the impact these efforts are having on community health. The CHC initiative presents an innovative and promising methodology to assess these efforts in a rigorous manner and provide specific feedback on areas that need further improvement. This evaluation framework also provides best-practice standards against which different companies can set their goals and objectives. This assessment has shown that, even among the companies that are already leaders in social action in terms of amount of investment and ambition in social action, there are still major areas for improvement. Most analyzed programs lack a defined strategy for monitoring and evaluation and very few of them have established mechanisms for systems change. This dissertation has uncovered an area of potential growth that could push companies to optimize their impact by specifically designing their future programs to affect social norms, funding flows and advocacy and public policy.

Finally, this dissertation has set the stage for future public-private collaboration to improve population nutrition through portion size tools. It has identified important points of agreement and obstacles that can inform the agenda of such a movement and shape next-generation obesity prevention initiatives.
Appendices

Appendix A. Company Inventory

1. Name of company:

2. Does the company have a healthful eating, active living strategy or initiative at the company level? (Text box for open ended responses and check box for “not available”)

3. Name of healthful eating, active living strategy/initiative, if applicable. (Text box for open ended responses and check box for “not available”)

4. Description of the strategy/initiative, if applicable. (Text box for open ended responses and check box for “not available”)

5. When did the company first start funding healthful eating, active living programs? (Text box for open ended responses)

6. Contact information for person responsible for the strategy: (Text box for open ended responses and check box)
   Name
   Title
   Company
   In which part of the company does this person work (function/department)?
   Phone number
   Email address
   Mailing address

   Street address
   Street address 2
   City
   State
   Zip code

7. Contact information for alternate contact (company or field level): (Text box for open ended responses and check box for “not available”)
   Name
   Title
   Company
   Phone number
   Email address

   Mailing address
   Street address
   Street address 2
   City
State
Zip code
8. When executing the company strategy, which entities provide funding? (Drop down menu)
   Corporation
   Foundation
   Mixture/other – please explain

9. When executing the company strategy, which corporate budgets contribute to the funding? (Drop down menu, check all that apply)
   Corporate social responsibility (CSR) budget
   Public affairs budget
   Corporate affairs budget
   Marketing budget
   Product development
   Supply chain
   Other (please specify)

10. Total funding in the last calendar year in each of the following categories: (Text box for companies to enter amount)
    Financial resources
    In-kind resources
    Matching gifts
    Employee volunteer hours
    Employee contributions
    Other material contributions

11. Total FTEs allotted to managing the strategy or programs in the last calendar year: (Text box for companies to enter amount)
    Staff time
    Management time

12. Does the company strategy address both normal weight and overweight/obese populations? (Drop down menu)
    Yes
    No

13. If yes to question 12, are target populations affected by overweight/obesity referred to the following services? (Check all that apply)
    Intensive behavior therapy
    Medical/pharmacological management
    Surgical treatment
    Not applicable

**Qualitative Evaluation**
You are encouraged to use bullet points to keep your answers concise. These questions are intended to help capture information that all companies can learn from for their future programming efforts. Your individual responses will be confidential.

14. **What were the principal drivers behind establishing your strategy?** (Text box for open ended responses and check box for “no comment”)

15. **What were the principal benefits the company hoped to realize from creating this strategy?** (Text box for open-ended response and check box for “no comment”)

16. **Please highlight up to three success stories from your strategy (up to 200 words each).** (Text box for open ended response and check box for “no comment”)

17. **What are your strategy’s greatest challenges or biggest limitations? Put another way, what would you do differently if you were to design the strategy from scratch again?** (Text box for open ended response and check box for “no comment”)

18. **Has the strategy delivered any unexpected positive outcomes to date?** (Text box for open ended response and check box for “no comment”)

19. **Has the strategy given rise to any unexpected negative outcomes to date?** (Text box for open ended response and check box for “no comment”)

20. **Have you received any praise/positive commentary from stakeholders about the strategy?** (Text box for open ended response and check box for “no comment”)

21. **Have you received any criticism from stakeholders about the strategy?** (Text box for open ended response and check box for “no comment”)

22. **How have you addressed this criticism?** (Text box for open-ended response and check box for “no comment”)

23. **How does the company decide which programs or organizations to invest in or support? What does that decision making process entail?** (Text box for open-ended response and check box for “no comment”)

24. **Who influences or is involved in this decision making process? What aspects of the decision making process do they have control over?** (Text box for open-ended response and check box for “no comment”)

25. **How does the strategy align with the company’s business priorities?** (Text box for open-ended response and check box for “no comment”)

**Company strategy and governance assessment**
1. Design, objectives and strategy

This section evaluates the extent to which the company has a well-designed and informed healthful eating, active living strategy

A. Strategy design and alignment

1. Has the company undertaken research to understand community needs?

Quantitative
- Extensive 10
- Limited 5
- None 0

Qualitative
- Extensive 10
- Limited 5
- None 0

Explanatory note: Extensive means the company has gone into communities to collect data on community needs. Limited means the company has undertaken a general review of the existing literature on the community needs.

2. Has the company undertaken research to understand existing interventions in the community/ies (so as to avoid duplication and identify opportunities for partnership)?

Yes, extensively 10
Yes, in a limited way 5
No 0

Explanatory note: “Yes, extensively” means the company has gone into the community to collect data and information on existing interventions in the community. “Yes, in a limited way” means the company has undertaken a general review of the literature on existing interventions in the community.

3. Did the company consult the following groups when undertaking research?

Experts 2.5
Stakeholder organizations 2.5
Community representatives 2.5
Company leadership and staff 2.5
Outside groups were not consulted 0

Explanatory note: Experts could include academics or health professionals with expertise in healthful eating, food insecurity, active living, chronic diseases or obesity prevention. Stakeholder organizations could include government agencies, NGOs and other for-profits currently working on healthful eating or active living initiatives. Community representatives could include individual leaders or residents from within the impacted community. Company leadership and staff can include those from within and outside the health portfolio.

B. Strategic plan and objectives
1. The company's strategy is:
   Clear and comprehensive  10
   Limited  5
   No strategy, decisions are made on an ad-hoc basis  0
   Explanatory note: A clear and comprehensive strategy would include a vision, goals, objectives and measurable outcomes. A limited strategy would include less than half of those components.

2. Is the company's strategy clearly informed by the research undertaken?
   Yes, clearly  10
   In a limited way  5
   No  0
   Explanatory note: “Yes, clearly” means that every goal and objective can be linked to research on the community’s needs, existing resources and gaps. “In a limited way” means that only some goals and objectives can be linked to research on the community’s needs, existing resources and gaps.

3. Is the company's strategy informed by best practice and current understanding of community program funding/development?
   Yes, strategy design is extensively informed by best practices  10
   Limited use of best practices in strategy design  5
   No  0
   Explanatory note: “Extensively informed by best practices” means that every objective and goal in the strategy can be linked to an evidence-based practice or a best practice supported public health research or organizations. “Limited use of best practices in strategy design” means that there is scattered matching between objectives/goals and best practices as identified by public health research or organizations in the strategy.

4 Does the company set out goals and objectives for its strategy and a time frame for achieving them?
   Yes, clear goals and objectives, with time frame for achieving them  10
   Yes, clear goals and objectives but no time frame  5
   Goals and objectives outlined, but not very clearly/without a clear time frame  2.5
   No  0

5. Does the company set targets for the level of input to its strategy?
   Yes, comprehensive input targets  10
   Yes, limited input targets  5
   No input targets  0
   Explanatory note: Inputs are the resources that a company provides to support a strategy or project. Examples include funding, staff time, delivery in kind, etc. “Yes, comprehensive input targets” mean that the company has specific, measurable targets for all the inputs used to support the strategy.
   “Yes, limited input targets” means that the company has developed general, measurable targets for only some of the inputs used to support the strategy.
6. Does the company set targets for the participation levels/outputs it hopes to achieve through its strategy?

Yes, comprehensive input targets 10
Yes, limited input targets 5
No input targets 0

Explanatory note: Outputs are the results of providing resources to support a strategy. Examples of outputs could include people reached, number of activities completed, organizations supported, etc. “Yes, comprehensive output targets” means that the company has set specific, measurable targets for the majority of its anticipated outputs. “Yes, limited output targets” means that the company set some general, measurable targets for only some of the anticipated outputs.

7. Does the company set targets for the outcomes it hopes to achieve through its strategy?

Yes, comprehensive outcome targets 10
Yes, limited outcome targets 5
No outcome targets 0

Explanatory note: Outcomes refer to what changes or the impact as a result of the strategy. Examples include changes in knowledge, behavior or attitude or health indicators. “Yes, comprehensive outcome targets” means the company has set specific, measurable targets for the majority of their anticipated outcomes. “Yes, limited outcome targets” means the company has set some general, measurable targets for only some of their anticipated outcomes.

8. Does the company strategy promote and/or set specific targets for employee volunteerism in healthful eating or active living programs in communities?

Yes, specific targets set and promotion undertaken 10
Yes, either specific targets are set or promotion undertaken 5
No 0

9. Were stakeholders consulted or involved in setting input, output and outcome targets for the strategy?

Experts 2.5
Policy makers 2.5
Community residents 2.5
Community organizations 2.5

Stakeholders were not consulted or involved in setting strategy targets 0

10. Is the company’s strategy designed to specifically address health disparities?

Yes, it is a clear element of the design 10
Somewhat 5
No 0

Explanatory note: “A clear element of the design” means health disparities are explicitly incorporated into the goals, objectives and outcome of the strategy. “Somewhat” means that the strategy makes reference to health disparities but does not explicitly link health disparities to the goals, objectives and measures of outcome.
C. Strategy scope and reach

1. Does the company's strategy encompass the following intervention domains?
   Healthful eating
   Active lifestyles
   Explanatory note: ‘Healthful eating’ includes hunger and food access programs as having enough food and having access to food are critical (though not sufficient) components of healthful eating.

2. Through its strategy does the company aim to support better delivery of existing national, regional or community-led healthful eating, active living type programs:
   - Improve connections between existing services/activities
   - Link to public health agency priority actions
   - Purposefully address both normal weight and overweight (linking primary and secondary interventions)
   - Develop cross-sector partnerships
   - The strategy does not aim to support better delivery of existing healthful eating, active living type programs
   Explanatory note: “Improve connections between existing services/activities” means that through the strategy, the company aims to actively collaborate with partner organizations to better connect and align their work. “Link to public health agency priorities” means that the strategy’s aims and objectives align with national and regional public health goals and objectives. “Purposefully address both normal weight and overweight” means that the strategy incorporates and connects both obesity prevention and reduction approaches. “Develop cross-sector partnerships” means that the strategy promotes collaboration with a range of partners from different sectors and industries.

3. Does the company allocate resources for programs that provide treatment or clinical referrals to populations that are already affected by obesity?
   Yes
   No

4. What is the level of complexity of the strategy?
   - Facilitate systems change
   - Deliver targeted community programs for environmental or behavioral change
   - Increase individual awareness and knowledge
   - Unclear or no information
   Explanatory note: Systems change means that the strategy accounts for multiple actors and users in a community, the capacity of actors/users matched with the complexity of their tasks, feedbacks and interactions across program components and/or effective sequencing of program activities, etc. Targeted programs can be single- or multi-pronged but do not necessarily create systems change.

5. What is the geographic reach of the strategy?
   National
   Sub-national/multiple states
One state/multiple communities 5
One city/community only 2.5
Unclear or no information 0

2. Governance, management structures and resources
This section evaluates whether the company has put in place sufficient and appropriate governance and management systems to deliver its strategy

A. Governance and leadership

1. At what level in the company is the strategy developed and overseen:
   Board level 10
   Executive management level 5
   Department or division level 2.5
   Not clear at what level the strategy is developed and overseen 0

2. Is there a champion for the strategy at the Board level, i.e. one person that leads on delivery and speaks publicly about the strategy?
   Yes 10
   No 0
   If yes, please state: (text boxes for open ended responses)
   Board level champion’s name
   Board level champion’s role
   Key messages delivered
   Explanatory note: Yes means that there is a designated person at the Board level who is responsible for publicly promoting and discussing the strategy.

3. Is there a champion for the strategy at the senior management level, i.e. one person that leads on delivery and speaks publicly about the strategy?
   Yes 10
   No 0
   If yes, please state: (text boxes for open ended responses)
   Senior management level champion’s name
   Senior management level champion’s role
   Key messages delivered
   Explanatory note: Yes means that there is a designated person at the senior management level who is responsible for publicly promoting and discussing the strategy.

4. Has the importance of the company’s role in combatting obesity and hunger been advocated at the shareholder level?
   Yes, a discussion of the company’s role is included in the annual report 2.5
   Yes, the rise of obesity is identified as a key business risk in the company’s annual risk assessment or 10K 2.5
   Yes, the company’s role was addressed at the most recent annual general meeting 2.5
   Yes, the company’s role is promoted in one-to-one meetings with shareholders 2.5
   The company’s role in combatting obesity and hunger has not been advocated at the
shareholder level

B. Management structures and resources

1. Is a specific person or team responsible for delivery of the strategy?
   Yes 10
   No 0
   Explanatory note: Yes means that there is a specific person or team dedicated to the delivery of the strategy who oversees and coordinates all the programs within the strategy.

2. How is the development or delivery of the strategy informed?
   Advised by a formal panel of external experts 10
   Advised through ad-hoc consultation with external experts 5
   Neither 0
   Explanatory note: “Advised by a formal panel of external experts” means that the company strategy is systematically reviewed by an established and publicly known panel of experts on a regular basis. “Advised through ad-hoc consultation with external experts” means that the company strategy is informally reviewed by a range of external experts when needed.

3. Is the salary or bonus of the person responsible for the strategy dependent on their performance in delivering the strategy?
   Yes 10
   No 0

4. Are the governance and management of the company strategy held accountable by a scientific advisory board including representatives from public health?
   Yes 10
   No 0

5. Is there a clear annual strategy delivery plan?
   Yes 10
   No 0

3. Monitoring and evaluation

This section assesses whether the company has sufficient and appropriate systems to monitor and evaluate delivery of its strategy through the programs it supports

A. Monitoring

1. Does the company have a system to monitor the programs it supports?
   Yes, comprehensive monitoring system 10
   Yes, limited monitoring system 5
   No system 0
Explanatory note: “Yes, comprehensive monitoring system” means that the company has an established process to collect a range of quantitative and qualitative data from all programs on a consistent basis. “Yes, limited monitoring system” means that the company has a process to collect quantitative and qualitative data but may collect only a small set of data from some programs and/or across programs on an inconsistent basis.

2. How frequently does the company collect quantitative data from programs under the strategy?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>More regularly than annually</td>
<td>10</td>
</tr>
<tr>
<td>Annually</td>
<td>7.5</td>
</tr>
<tr>
<td>At the end of the grant/delivery period only</td>
<td>5</td>
</tr>
<tr>
<td>Ad hoc</td>
<td>2.5</td>
</tr>
<tr>
<td>No data collected</td>
<td></td>
</tr>
</tbody>
</table>

3. Does the company collect quantitative data consistently from all programs?

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>2 x 1.2</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>

4. Does the company have standard indicators against which it monitors all programs?

<table>
<thead>
<tr>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, programs monitored using commonly accepted, externally defined standard metrics set by the company</td>
</tr>
<tr>
<td>Yes, programs monitored using standard metrics internally developed by the company</td>
</tr>
<tr>
<td>No, programs submit information using their own metrics</td>
</tr>
<tr>
<td>No information collected/monitored</td>
</tr>
</tbody>
</table>

Explanatory note: “Programs monitored using commonly accepted, externally defined standard metrics set by the company” means that the company has a defined set of metrics developed by an outside organization, such as an academic institute or public health organization, which are applied to all programs. “Programs monitored using standard metrics internally developed by the company” means that the company has developed its own defined set of metrics without external consultation that are applied to all programs. Programs submit information using their own metrics” means that the company collects a range of metrics from different programs.

5. Which metrics does the company use to monitor the programs?

<table>
<thead>
<tr>
<th>Metric</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds spent/resources committed (inputs)</td>
<td>2</td>
</tr>
<tr>
<td>Delivery against objectives (outputs)</td>
<td>2</td>
</tr>
<tr>
<td>Participation in or reach of program (outputs)</td>
<td>2</td>
</tr>
<tr>
<td>Outcomes or impact of program</td>
<td>2</td>
</tr>
<tr>
<td>Satisfaction of participants</td>
<td>2</td>
</tr>
<tr>
<td>None of the above</td>
<td>0</td>
</tr>
</tbody>
</table>

Explanatory note: Funds spent/resources committed (inputs) are all the resources a company uses to support or develop a program. Objectives (outputs) are what happen as a result of the resources used to support a strategy. Examples of outputs could include number of activities completed, organizations supported, etc. Participation in or reach of program means does the company collect metrics on how many people participate or are involved in a program. Program outcomes are the changes or impact that occurs. Examples include changes in health-related attitude, knowledge, behavior or clinical indicators.
6. Are all programs required to submit a narrative report to the company at least annually?
   Yes 10
   No 0

Explanatory note: Narrative reports explain how programs are meeting their established goals and objectives, describe what activities have taken place to achieve their goals and address any challenges.

7. Does the company evaluate or rate how well the programs are performing, i.e. delivering against the agreed objectives and targets?
   Yes, systematically 10
   Yes, but not systematically 5
   No 0

Explanatory note: “Systematically” means that the company has an established, regularly scheduled process to rate or formally evaluate program performance against their identified goals and objectives. “Yes, but not systematically” means that the company only occasionally rates or evaluates program performance against identified goals and objectives or there is not an established process or time frame.

8. Who within the company reviews the company’s annual report on the strategy?
   Board 10
   Executive management 5
   Program staff 2.5
   Not clear 0

9. Is the delivery and effectiveness of the strategy reviewed regularly by management?
   Yes, annually or more often 10
   Yes, less than annually 10
   No 0

10. Does the company use the monitoring information to inform its management and delivery of the strategy?
    Yes, clear evidence of a process through which this happens 10
    Yes, in a limited way or appears to happen on an ad-hoc basis 5
    Not clear or no information how the company uses the information 0

Explanatory note: “Yes, clear evidence of a process” means that the company has an established system with a defined timeframe to analyze program data and to use the findings to refine or adjust strategy management and delivery. “Yes, in a limited way or appears to happen on an ad-hoc basis” means that the company only occasionally uses program data to refine or inform strategy management and delivery or there is not an established system or timeframe for this process.

B. Evaluation
For highlighted questions in this section, a multiplier of 2 will be applied to the indicator score if the evidence provided by programs is derived from an independent evaluation.

1. Has the delivery and effectiveness of the strategy been independently evaluated?
   Yes 10
   No 0

2. Has the company met its targets for the level of input to its strategy?
   The company has met or exceeded 75% of the total number of input targets 10
   The company has met between 50-75% of the total number of input targets 7.5
   The company has met between 25-50% of the total number of input targets 5
   The company has met less than 25% of the total number of input targets 2.5
   No 0

   Explanatory note: Inputs are the resources that a company provides to support a strategy or project. Examples include funding, staff time, delivery in kind, etc.

3. Has the company met its targets for the participation levels/outputs it hopes to achieve through its strategy?
   The company has met or exceeded 75% of the total number of participation and output targets 10
   The company has met between 50-75% of the total number of participation and output targets 7.5
   The company has met between 25-50% of the total number of participation and output targets 5
   The company has met less than 25% of the total number of participation and output targets 2.5
   No 0

   Explanatory note: Outputs are the results of providing resources to support a strategy. Examples of outputs could include people reached, number of activities completed, organizations supported, etc.

4. Has the company met its targets for the outcomes it hopes to achieve through its strategy?
   The company has met or exceeded 75% of the total number of outcome targets 10
   The company has met between 50-75% of the total number of outcome targets 7.5
   The company has met between 25-50% of the total number of outcome targets 5
   The company has met less than 25% of the total number of outcome targets 2.5
   No 0

   Explanatory note: Outcomes refer to what changes or the impact as a result of the strategy. Examples include changes in knowledge, behavior or attitude or health indicators.

5. Has the company strategy met its specific targets for employee volunteerism in promoting healthful eating and active living programs in communities?
   The company has met or exceeded 75% of the total number of employee volunteerism targets 10
   The company has met between 50-75% of the total number of employee volunteerism targets 7.5
The company has met between 25-50% of the total number of employee volunteerism targets 5
The company has met less than 25% of the total number of employee volunteerism targets 2.5
No 0

6. What is the level of funding dedicated to evaluation?
>10% of the total budget for the strategy 10
5-10% of the total budget for the strategy 5
0-4% of the total budget for the strategy 0
Explanatory note: The total budget refers to the total dollar amount a company allocates to community-based healthful eating, active living programs in the last calendar year.

7. What is the level of staff time dedicated to the management of the evaluation?
2 FTE or more 10
1 FTE 5
Less than 1 FTE 0

4. Reporting, communication and stakeholder engagement
This section evaluates whether the company communicates effectively about the delivery of its strategy through the programs it supports

A. Reporting

1. Does the company publish a review of the progress and impacts of its healthful eating, active living strategy that encompasses:
Funds spent/resources committed (inputs) 2
Delivery against objectives (outputs) 2
Participation in or reach of program (outputs) 2
Outcomes of program 2
Satisfaction of the participants 2
Company does not include any of the above or does not publish a review of the progress and impacts of its healthful eating, active living strategy 0

2. How often does the company report on its strategy implementation and results?
Annually or more frequently 10
Less than annually 5
Never 0

3. Has the company published results from the evaluation of the strategy?
Yes, the company publishes independent evaluation results 10
Yes, the company publishes internal evaluation results 5
No 0
B. Communication

1. Does the company feedback its view of the programs' progress to each program?
   Yes, systematically 10
   Yes, occasionally 5
   No 0
Explanatory note: “Yes, systematically” means that the company has a regularly scheduled process to provide feedback to each program on its progress. “Yes, occasionally” means that the company sometimes provides feedback to programs on their progress but does not have an established timeline or process.

2. Does the company facilitate sharing of experience among all its sponsored/supported programs?
   Yes, systematically 10
   Yes, occasionally 5
   No 0
Explanatory note: “Yes, systematically” means that the company has regularly scheduled opportunities to facilitate sharing of experience for all programs. “Yes, occasionally” means that the company provides opportunities to facilitate sharing of experience on an ad-hoc basis or to some programs only. Examples include hosting an annual meeting for all program leads, online forums, webinars, etc.

3. Are the results of the evaluation disseminated via:
   Scientific journals 2.5
   Scientific conferences 2.5
   Publicly accessible website 2.5
   Company reports 2.5
   Company does not disseminate evaluation results 0

C. Stakeholder engagement

1. Does the company explicitly seek feedback from stakeholders during and after the implementation of its strategy?
   Yes, systematically 10
   Yes, occasionally 5
   No 0
Explanatory note: “Yes, systematically” means that the company has established, regularly scheduled procedures to get feedback from a variety of stakeholders on strategy design and delivery. “Yes, occasionally” means that the company sometimes seeks feedback from stakeholders but on an ad hoc basis only.

2. Does the company share the performance of its strategy with community stakeholders?
   Annually or more frequently 10
   Less than annually 5
   Never 0
Appendix B. Delphi Survey – Round 1

Delphi Study - The Impact of Portion Size Interventions on Population Nutrition

Questionnaire goals & instructions

The objective of this survey is to determine the role of the private sector in improving population nutrition (diet & physical activity) and ways in which food portion size management could serve as a vehicle for effecting cross-sectoral partnerships and change. For this purpose, private sector is defined broadly to include not only food and beverage companies and manufacturers but also retailers, restaurants, corporate food service providers and others. You have been chosen because of your expertise in your field and are part of a selective group. Your insights will help us identify the most pressing issues and prioritize needs and intervention strategies that could help inform this agenda.

Try to spend approximately equal time on each question and feel free to express all your opinions. Your answers will be kept confidential. Only aggregated and de-identified responses will be used in any reporting.

* 1. What is your email address?

* 2. What organization/company do you work for?

* 3. In what industry/ area do you work?
   - Food/ beverage manufacturing
   - Retail
   - Food service
   - Restaurant
   - Academia
   - NGO/ Philanthropy
   - Government
   - Healthcare
   - Professional, technical and scientific services (e.g. consulting, advertising, scientific research)
   - Other (please specify)
4. What is your job title? If appropriate, indicate the division in which you work (i.e. Manager, Public Affairs)

5. In the last decade many public health efforts have focused on improving nutrition. List in order of importance (1 being the most important and 10 the least) the key tools for improving nutrition at the population level:

- Patient/ consumer diet education & counseling (e.g. knowledge, attitudes, beliefs, behavior change)
- Increase physical activity programs and/or sports
- Marketing for healthy food
- Limit junk food marketing
- Limit portion size
- Increase price of energy-dense food
- Decrease price of healthy food
- Display of calories/ nutritional information
- Change the built environment to increase physical activity opportunities
- Change the built environment to improve food access

6. What are the greatest challenges for the private sector in taking social action in population nutrition? (200 words max)

7. On a scale of 1 to 10 (1 being the least and 10 the most), what is the extent to which the private sector can shape population nutrition?

Thank you for answering the questions so far. We will now start the second part of the questionnaire focusing specifically on portion size.
* 8. What do you believe are the main advantages and disadvantages of portion size interventions? (100 words max)

* 9. On a scale of 1 to 10 (1 being the least and 10 the most), how important are supply side strategies in shaping norms about portion size?

1   10

* 10. On a scale of 1 to 10 (1 being the least and 10 the most), how important are demand side strategies in shaping norms about portion size?

1   10

* 11. New research shows that a "low status mindset" (i.e., feeling that one is low in power within a social group) can lead consumers to strive for status through consumption of larger portions of food. Rate from 1 to 10 how effective the following strategies to enhance the psychological value of smaller food and beverage portions are:

<table>
<thead>
<tr>
<th>Strategy</th>
<th>1 - Not effective</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10 - Extremely effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media advertisement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point of sale display (offering smaller foods in more valued places of the store)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhance the packaging of smaller food options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12. On a scale of 1 to 10, how effective do you believe the following strategies to reduce food consumption can be:

<table>
<thead>
<tr>
<th>Strategy</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create an artificial stopping point (e.g. separating a large package into several smaller sub-packages, using internal sleeves, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer reduced-sized packages—along with the normal-sized packages—and charge a premium (per unit) price for the smaller products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer a &quot;vice-virtue bundle&quot; (holding the overall portion of food the same while combining in the same offer a varying quantity of more virtuous food (carrots, apples, garden salad) and less virtuous options (chips, brownies, and fries))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. In order of importance, choose the top 3 settings in which portion size interventions could have the most impact in improving population nutrition

- School
- Work site
- Grocery store
- Restaurant
- Other retailers (convenience stores, drug stores, etc.)
- Home
- Cafeteria
- Vending machine
14. On a scale from 1 to 10, rank the following portion size interventions in terms of impact:

<table>
<thead>
<tr>
<th>Interventions</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce the size of the single serving of a large package on its nutrition label</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Produce smaller packages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax particularly big packages of energy-dense food/beverages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product reformulation (reduce energy density of the food while keeping the same size)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer a larger variety of portion sizes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Should portion innovations be stealth and unnoticed by the consumer or explicitly announced?

- Quiet and unnoticed
- Explicitly advertised

Elaborate on why and/or add other comments

16. Close your eyes for a moment; imagine you are in 2030. What does your food selection look like in a restaurant/cafeteria? (in terms of nutritional information, sizes, offers, price points, etc.)

(200 words max)

17. Close your eyes and imagine you are in 2030 again. What does your food selection look like in a supermarket/grocery store? (in terms of nutritional information, package sizes, proportion of fresh/canned/frozen, price points, advertisement, display, etc.)

(200 words max)
18. What is your gender?
- Female
- Male
- Non-binary/ third gender
- Prefer not to say

19. What is your age?
- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 or older

20. Which race/ethnicity best describes you? (Please choose only one.)
- American Indian or Alaskan Native
- Asian / Pacific Islander
- Black or African American
- Hispanic
- White / Caucasian
- Multiple ethnicity / Other (please specify)

21. Is there anything you would like to add?
**Appendix C. Delphi Survey – Round 2**

Thank you for participating in the second round of our Delphi study!

Below you will find a quick summary of the most common answers given for the first questionnaire and you will be asked to agree with or rank them. The goal of this second round is to get respondents closer to a natural consensus. Please be honest in your answers so that we can capture your true perspectives.

* 1. In round 1 you were asked to list the key tools for improving nutrition at the population level. Below you’ll find the tools that were rated the most important - please pick the 3 (only 3) that you find most impactful and rank them:

<table>
<thead>
<tr>
<th>Tool</th>
<th>1 - Most important</th>
<th>2 - Second most important</th>
<th>3 - Third most important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient/consumer diet education &amp; counseling (e.g. knowledge, attitudes, beliefs, behavior change)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Marketing for healthy food</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Limit junk food marketing</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Limit portion size</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Decrease price of healthy food</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Display of calories/nutritional information</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Change the built environment to improve food access</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
* 2. In round 1 you were asked to state the greatest challenges for the private sector in taking social action in population nutrition. Below you will find a summary of the answers that were shared by at least two respondents. Please choose your level of agreement with each one of them:

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer misinformation about nutrition, which drives what food they buy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food companies need to cater to consumer tastes and preferences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The obesity/nutrition issue is too complex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Companies don’t have tangible information/data on which initiatives/programs actually work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hostility from the public sector</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social norm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Companies have no interest in social action</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is no consensus among stakeholders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is no support from leadership and key management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit versus responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional comments:

* 3. In round 1 the majority of respondents stated that, on a scale of 1 to 10 (1 being the least and 10 the most), the extent to which the private sector can shape population nutrition is 7. Do you agree?

<table>
<thead>
<tr>
<th>Agreement Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree, it should be lower</td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
</tbody>
</table>
4. When you envision portion size interventions you:

- Think it will provide consumers with less options (no longer offering the "regular-big" size, only smaller)
- Think it will provide consumers with more options (keeping big sizes while also adding smaller options)

5. In round 1 you were asked to state the main advantages of portion size interventions. Below you will find a summary of the most common answers. Please choose your level of agreement with each one of them:

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease caloric intake</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Allow for small &quot;treats&quot; (e.g., bite-size dessert)</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Enable automatic behavior change</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>It's an easy solution to talk about</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>It could educate consumers on appropriate portion sizes</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>It gives consumers more options</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Additional comments:
6. In round 1 you were also asked to state the main disadvantages of portion size interventions. Below you will find a summary of the most common answers. Please choose your level of agreement with each one of them.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is hard to implement (without great deal of resources and support from industry)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is a simplistic solution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It will be very hard to convince food companies as big portions bring big profits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It might stimulate offsetting behaviors (consumers will shop somewhere else, buy more packages, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It's a paternalistic approach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People might be hungry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It doesn't take into account the context of a total diet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumers might get angry as they perceive more value with bigger portions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price/Value might be a problem for communities with low socioeconomic status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinforce the belief that there is no “bad food” and the importance is to eat in moderation - but some foods are actually bad.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It could lower intake of fruits and vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional comments:
* 7. The majority of respondents in round 1 stated that supply side strategies were more important than demand size ones in shaping norms around portion size. Do you agree?

<table>
<thead>
<tr>
<th>Disagree, I believe that demand size strategies are more important</th>
<th>Disagree, I believe they are both equally important</th>
<th>Agree, I believe that supply size strategies are more important</th>
</tr>
</thead>
</table>

* 8. Rank in order the potential impact (1 being the most effective and 3 the least) of the following strategies to enhance the psychological value of smaller food and beverage portions:

1. Media advertisement
2. Point of sale display (offering smaller foods in more valued places of the store)
3. Enhance the packaging of smaller food options

* 9. Rank in order the potential effectiveness (1 being the most effective and 3 the least) of the following strategies to reduce food consumption:

1. Create an artificial stopping point (e.g., separating a large package into several smaller sub-packages, using internal sleeves, etc.)
2. Offer a “vice-virtue bundle” (holding the overall portion of food the same while combining in the same offer a varying quantity of more virtuous food (carrots, apples, garden salad) and less virtuous options (chips, brownies, and fries))
3. Offer reduced-sized packages—along with the normal-sized packages—and charge a premium (per unit) price for the smaller products

* 10. In round 1 you were asked to choose the top 3 settings in which portion size interventions could have the most impact on improving population nutrition. Below you will find the three settings that were more commonly chosen; please rank them based on their potential impact (1 being the most effective setting):

1. Restaurants
2. Schools
3. Grocery stores
11. In round 1 the majority of respondents identified the following interventions as the most impactful. Please rank them in order of effectiveness (1 being the most effective):

<table>
<thead>
<tr>
<th>Rank</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product reformulation (reduce energy density of the food while keeping the same size)</td>
</tr>
<tr>
<td>2</td>
<td>Produce smaller packages</td>
</tr>
<tr>
<td>3</td>
<td>Tax particularly big packages of energy-dense food/beverages</td>
</tr>
</tbody>
</table>

12. In round 1 the majority of respondents stated that portion innovations should be stealth and unnoticed by the consumer. Do you agree?

- [ ] Disagree, portion innovations should be explicitly advertised
- [ ] Agree, portion innovations should be quiet and unnoticed
* 13. Below you will find elements that were commonly described as features of the restaurant/cafeteria of the future. Please tell us if you agree that a restaurant/cafeteria in 2030 would have such features:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>More options of healthy food</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Price of healthy food is reasonable</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>There is detailed nutritional information for all meals</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>There is limited processed food</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>There are no sugared beverages</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>There are lots of portion size options</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Nutritional information is personalized (most likely through our smartphone)</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Healthy food is less expensive than unhealthy food</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>In cafeterias healthy food is beautiful and appealing (e.g. attractive salad bars)</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Transparency of information on cooking methods</td>
<td></td>
<td>○</td>
</tr>
</tbody>
</table>

Additional comments:                                                                

* 14. Below you will find elements that were commonly described as features of the supermarket/grocery store of the future. Please tell us if you agree that a supermarket/grocery store in 2030 would have such feature:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most of the food sold is fresh and healthy</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Food is beautiful</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Healthy food is less expensive than unhealthy food</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>Healthy food is very visible and accessible (end cap, check-out)</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>There is detailed nutritional information for everything</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>There is basically no need for nutrition labels because almost everything is fresh</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>There is information on the source of food (farm, city)</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>There is more control over food marketing</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>Limited/less accessible processed food</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>More options of package sizes</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>Sizes are smaller</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>There aren’t any supermarkets because everything is online</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>Shopping is a personalized experience</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>There are healthy pre-packaged options</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>There are monitors that display cooking tips/recipes</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>Incentives to eat healthy (e.g. a points card)</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Additional comments:
Appendix D. Delphi Survey – Round 3

FINAL ROUND - Delphi Study: The Impact of Portion Size Interventions on Population Nutrition

Thank you for participating in the final round of our Delphi study!

This is the third and final round of the Delphi study around portion size interventions and population nutrition and we appreciate your continued participation. It is crucial for the success of the study to go through all three rounds to achieve consensus and build an agenda, so your final contribution is very important.

Below you will find a quick summary of the most common answers given for the second questionnaire and you will be asked to agree with or rank them. The goal of this final round is to get respondents the closest possible to a natural consensus. Please be honest in your answers so that we can capture your true perspectives.

It should take you approximately 10-15 minutes to complete the survey.

* 1. In round 2 you were asked to pick the 3 most impactful tools for improving nutrition. These are the ones that were chosen by the majority of you, please rank them:

<table>
<thead>
<tr>
<th>Patient/ consumer diet education &amp; counseling (e.g. knowledge, attitudes, beliefs, behavior change)</th>
<th>1 - Most important</th>
<th>2 - Second most important</th>
<th>3 - Third most important</th>
<th>4 - Fourth most important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing for healthy food</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limit junk food marketing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limit portion size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. In round 2 you were asked to rank your level of agreement with the greatest challenges for the private sector in taking social action in population nutrition. Below you will find the ones that were selected by the majority of you, please choose your level of agreement with each one of them:

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer misinformation about nutrition, which drives what food they buy</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Food companies need to cater to consumer tastes and preferences</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Social norm</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>There is no consensus among stakeholders</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Profit versus responsibility</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Additional comments:


3. In round 2 the majority of respondents agreed that, on a scale of 1 to 10 (1 being the least and 10 the most), the extent to which the private sector can shape population nutrition is 7. Do you agree?

○ Agree
○ Disagree, it should be higher

4. In round 2 the majority of respondents stated that they think that portion size interventions will provide consumers with less options (no longer offering the “regular/big” size, only smaller). Do you agree?

○ Agree, it would provide consumers with less options
○ Disagree, it would provide consumers with more options
5. Below you will find a summary of the advantages of portion size interventions selected by the majority of respondents. Please choose your level of agreement with each one of them:

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease caloric intake</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Allow for small “treats” (e.g., bite-size dessert)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Enable automatic behavior change</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>It could educate consumers on appropriate portion sizes</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Additional comments:

6. Below you will find a summary of the disadvantages of portion size interventions selected by the majority of respondents. Please choose your level of agreement with each one of them:

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is hard to implement (without great deal of resources and support from industry)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>It will be very hard to convince food companies as big portions bring big profits</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>It doesn’t take into account the context of a total diet</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Consumers might get angry as they perceive more value with bigger portions</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Price/value might be a problem for communities with low socioeconomic status</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Additional comments:
7. The majority of respondents in round 2 stated that supply side strategies are more important than demand size ones in shaping norms around portion size. Do you agree?

- Agree, I believe that supply size strategies are more important
- Disagree, I believe they are both equally important

8. In round 2 you ranked the most impactful strategies to enhance the psychological value of smaller food and beverage options. Between the following two, which one do you think is the most effective?

- Media advertisement
- Point of sale display (offering smaller foods in more valued places of the store)

9. In round 2 you were asked to rank the most effective strategies to reduce food consumption. Between the following two, which one do you think is the most effective?

- Create an artificial stopping point (e.g., separating a large package into several smaller sub-packages, using internal sleeves, etc.)
- Offer a “vice-virtue bundle” (holding the overall portion of food the same while combining in the same offer a varying quantity of more virtuous food (carrots, apples, garden salad) and less virtuous options (chips, brownies, and fries)

10. In round 2 you were asked to choose the top settings in which portion size interventions could have the most impact on improving population nutrition. Between the following two, which setting do you think is the most effective?

- Restaurants
- Grocery stores

11. In round 2 the majority of respondents identified product reformulation as the most impactful intervention to improve population nutrition. Do you agree?

- Agree
- Disagree

If disagree, explain why

12. In round 2 the majority of respondents stated that portion innovations should be stealth and unnoticed by the consumer. Do you agree?

- Agree, portion innovations should be quiet and unnoticed
- Disagree, portion innovations should be explicitly advertised
13. Below you will find the elements that were described as features of the restaurant/cafeteria of the future by the majority of respondents. Please tell us if you agree that a restaurant/cafeteria in 2030 would have such features:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>More options of healthy food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price of healthy food is reasonable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is detailed nutritional information for all meals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition information is personalized (most likely through our smartphone)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy food is less expensive than unhealthy food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In cafeterias healthy food is beautiful and appealing (e.g. attractive salad bars)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional comments:**

14. What is your e-mail address?
15. Below you will find the elements that were described as features of the supermarket/grocery store of the future by the majority of respondents. Please tell us if you agree that a supermarket/grocery store in 2030 would have such features:

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most of the food sold is fresh and healthy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food is beautiful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy food is less expensive than unhealthy food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy food is very visible and accessible (and cap, check-out)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is detailed nutritional information for everything</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is information on the source of food (farm, city)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is more control over food marketing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More options of package sizes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sizes are smaller</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shopping is a personalized experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are healthy pre-packaged options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are monitors that display cooking tips/recipes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentives to eat healthy (e.g. a points card)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional comments:

16. Thank you for completing our study! Please feel free to add anything else you want to share with us.


11. Huang TT, Drewnowski A, Kumanyika SK, Glass TA. A Systems-Oriented Multilevel


66. Khagram S, Thomas CW. Toward a Platinum Standard for Evidence-Based Assessment


