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Reducing the childhood obesity rate: What lessons can Georgia
learn from successful states and localities?

by

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MASTER OF PUBLIC HEALTH

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I. Introduction

The problem of childhood obesity

Childhood obesity has become a serious epidemic and is now one of the greatest public health problems across the United States. The Centers for Disease Control and Prevention (CDC) defines childhood obesity as a Body Mass Index (BMI) at or above the 95th percentile in comparison to children of the same age and sex in their growth charts. Since 1980, obesity prevalence among children and adolescents has almost tripled. According to the CDC's National Health and Nutrition Examination Survey (NHANES), 17% of children under 20 were obese in the U.S. (about 12.5 million) as of 2010 (CDC, 2012). Obese children are more likely to have high blood pressure and high cholesterol, which are risk factors for cardiovascular disease; increased risk of insulin resistance and type 2 diabetes; breathing problems, such as sleep apnea, and asthma; and a greater risk of social and psychological problems, such as discrimination and poor self-esteem. There are major long-term effects, too; as they move into adulthood, obese adolescents are up to 80% more likely to become obese adults and suffer from associated chronic diseases (CDC, 2012). Some experts believe the current generation of children will be the first to live sicker and die younger than their parent's generation.

Childhood obesity is not only about health issues- there is also a significant economic impact. The national cost of childhood obesity is estimated at approximately \$11 billion for children with private insurance and \$3 billion for those with Medicaid annually (Thomson MedStat Research Brief, 2006). In 2008, Georgians spent \$2.4 billion on the direct medical costs of obesity and lost productivity from disease, disability and death (Nydham, 2013, p. 2). If current trends continue, the total health-care costs attributable to obesity/overweight in the U.S. would double every decade to \$860.7–956.9 billion by 2030, accounting for 16–18% of total US health-care costs (Wang et al., 2003, p. 2323).

The federal government did not officially acknowledge the connection between diet and the risk of chronic disease until 1969, when a White House conference on food, nutrition, and health was held. Since that time, most federal action has been related to collecting information, publishing findings, and undertaking further research with very little action (Kersh and Marone, p. 149). A slight shift in focus on epidemiological research to that of proposed solutions only began as states and the federal government became more aware of the alarming increases in the rates of childhood obesity. For example, the percentage of children aged 6–11 years in the United States who were obese increased from 7% in 1980 to nearly 18% in 2010. The percentage of adolescents aged 12–19 years who were obese increased from 5% to 18% over the same period (Ogden et al., 2012, p. 483).

The CDC began offering guidelines for schools and communities in the mid-1990's. The *Guidelines for School Health Programs to Promote Lifelong Healthy Eating* was published in 1996 and the *Guidelines for School and Community Programs to Promote Lifelong Physical Activity Among Young People* was subsequently published in 1997 (CDC School Health Guidelines, 2011, p. 2). The CDC began and continues to conduct surveillance on obesity rate changes largely through the Behavioral Risk Factor Surveillance System (BRFSS), National Health and Nutrition Examination Survey (NHANES), Youth Risk Behavior Surveillance system (YRBS) and surveys of schools and mothers about their breastfeeding habits.

In 2001, the U.S. Department of Health and Human Services (HHS) published “The Surgeon General’s Call to Action to Prevent and Decrease Overweight and Obesity”. In this report, suggestions were made to increase the amount and quality of physical education in all school grades; build physical activity into regular routines and playtime for children and their families, with an aim of at least 60 minutes on most days for children; and ensuring schools provide healthy foods and

beverages on campus and at school events (Surgeon General, 2001). The Institute of Medicine (IOM) conducted a 2003 review of the nation's public health system and called for a new generation of intersectoral partnerships that span the many different sectors of organizational activity that affect population health and that coordinate activities across these sectors. The underlying recommendation was to integrate medical care and public health approaches (Mays and Scutchfield, 2010, p. 1).

The socio-ecological model of health provides a framework that helps to understand health problems and plan interventions. The purpose of the model, originally developed by McLeroy and colleagues in 1988, is to “focus attention on the environmental causes of behavior and to identify environmental interventions” (p. 366). This model divides the determinants of health into five hierarchical levels of influence. They are: *intrapersonal* (factors innate to each individual, such as personality); *interpersonal* (influences of home, family, and peers); *organizational* (influences in work and school settings); *community* (effects of ethnicity and culture, the built environment); and *society* (national attitudes, infrastructure, economics, education, and public policy). Determining on which level to intervene will depend on resources, mission and goals.

The socio-ecological model is one of the lead approaches to addressing many public health problems, including childhood obesity. Many consider the “society” level to hold the most promise because changes on this level have the greatest impact on population health. Policy approaches are critical to operationalizing the “society” level in the socio-economic model. The goal of public policy intervention strategies is to provide the chances, prompts, and support to help people make the healthier choice. State childhood obesity policy changes may also influence social

norms and provide further opportunities for better nutrition and increased physical activity among children and the general population (Eyler et al., 2012).

Scope of project

Childhood obesity is a serious public health problem across the United States, and health policy changes at the state and local level seem to hold much promise in addressing this epidemic. This paper will assess the role of social policy in advancing childhood obesity prevention, including its utility in operationalizing theoretical frameworks such as the socio-ecological model. Evidence-based recommendations will be presented as well as factors affecting the likelihood of state legislatures implementing such strategies. The capstone will compare and contrast the themes identified in the literature with policy actions taken by three states and two large cities that have seen progress in reducing their rates of childhood obesity, including California, Mississippi, Arkansas, New York City, and Philadelphia.

A policy brief with recommendations for Georgia's health policy and legislative leaders will be developed as a product of this capstone. The brief will be based on the environmental scan of Georgia's current policies surrounding childhood obesity and the lessons learned from the five successful states and localities. The intention of the policy brief is to provide a blueprint for Georgia's leaders to build support, organize resources, and achieve effective policy implementation to address childhood obesity.

II. Literature Review

The socio-ecological model and policy changes

In public health, most theories and models for change focus on three areas—health behavior, culture, and the social environment. Multiple theories and models are often used when approaching a health problem, which is also known as a “multi-

level model". Choosing a theory when designing a study/program/policy depends on goals, available resources, and simply preference. The socio-ecological model has been selected for this project.

The socio-ecological model of health provides a framework that helps to understand health problems and plan interventions. A number of formulations have been developed, but the most commonly used for health promotion is that of Dr. Kenneth McLeroy and public health colleagues in the University of North Carolina system (1988). McLeroy et al. developed their model in an effort to incorporate the leading theories on individual behaviors and lifestyle choices with the social and organizational context of such decisions. The socio-ecological model organizes the influences, or "determinants", of health into five hierarchical levels of influence- intrapersonal, interpersonal, organizational, community, and society. *Intrapersonal* or *individual* factors are those that are innate to each individual, such as personality and attitudes. Interventions on this level would include educational programs, peer counseling, support groups, etc. *Interpersonal* factors are the influences of home, family, and peers. Social relationships are critical parts of one's identity and can provide emotional support, information, and assistance. *Organizational* or *institutional* factors are influences in work and school settings. Organizations provide key economic and social resources and are a reference point for social norms and values. Interventions focus on creating healthier environments. *Community* is defined as "the relationships among organizations and groups within a defined area" (p. 363). Community factors relate to aspects of ethnicity and culture and the built environment. *Society* or *public policy* factors include national attitudes, infrastructure, economics, and education. Determining on which level to intervene will depend on resources, mission and goals.

The Institute of Medicine (IOM) modified McLeroy's socio-ecological model in their 2003 report "The Future of the Public's Health in the 21st Century" and again in their 2005 report "Preventing Childhood Obesity: Health in the Balance". The 2005 version centered on the "energy balance equation" necessary for weight maintenance, which consists of energy intake (eating) and energy expenditure (physical activity). The layers of ecologic influences in this model focus on energy imbalance, when energy intake exceeds energy expenditure. The two innermost layers depict factors operating within the individual (including genetics, personality, and personal health) and those operating within the physical and social locations and situations that are key to daily behavior, such as home and school. Behavioral settings are affected by the next layer "either directly or indirectly by a variety of other factors that potentially constitute primary and secondary leverage points for effecting changes" (p. 85). These "leverage points" include the major sectors that affect the food system (i.e. agriculture), opportunities for physical activity or sedentary behavior (i.e. leisure and recreation), and nutritional and physical activity information (i.e. education, health care settings). The outermost layer on the framework describes norms and values- the "social fabric that cuts across all the layers and processes below [it]" (p. 85). Social norms and values both determine and respond to social and institutional policies (formal and informal) within the context of U.S. culture. As described below, this framework, which focuses on guided the development of IOM recommendations for childhood obesity. Figure 1 depicts the model published in the IOM's 2005 report "Preventing Childhood Obesity: Health in the Balance".

Figure 1

Preventing Childhood Obesity: Health in the Balance (2005)

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DEVELOPING AN ACTION PLAN

85

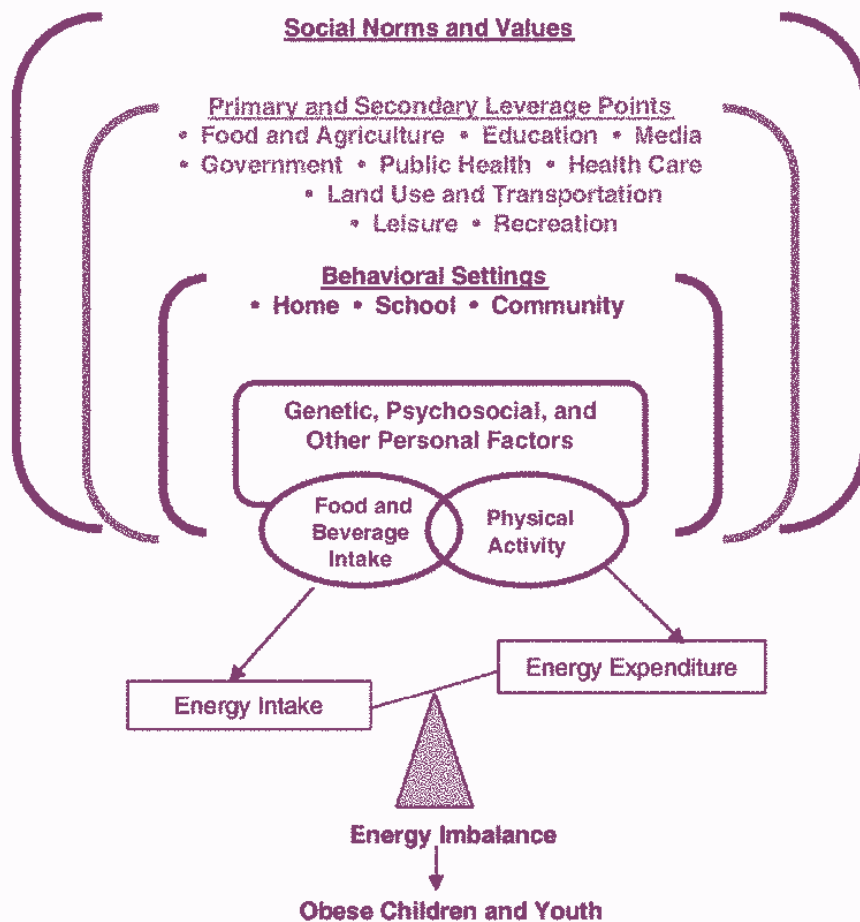


FIGURE 3-2 Framework for understanding obesity in children and youth.

NOTE: In this diagram energy intake is depicted as excessive when compared to energy expenditure, leading to a positive energy balance (or energy imbalance) resulting in obesity.

text of the larger U.S. culture. This framework, which emphasizes the need for obesity prevention efforts to leverage the interests and actions of a number of stakeholders working within and across multiple settings and sectors, guided the review of evidence and the development of recommendations in this report.

The *public policy/social norms and values* sphere of the socio-ecological model is the chosen level of focus for this paper. The goal of society-level policy changes to physical and social environments is to encourage (or mandate) the “healthy” choice as the “default” choice. *Policy* level changes are often more effective than an individual approach because entire groups of people exposed to a certain environment as opposed to a focus on the *individual* level of changing one person’s behavior at a time. Additionally, broad policy changes frequently have more longevity than those on an individual level and can be low cost, high reach, and may be the starting point for further targeted interventions (p. 360).

As the IOM report noted, interventions within the society level have the greatest impact on population health. In fact, each of the 10 great public health achievements of the 20th century was influenced by policy change. Examples include seat belt laws and other motor-vehicle safety policies, immunizations, fluoridation of drinking water, and tobacco control. Tobacco control is perhaps the best model of successful policy change. In 1966, Congress mandated that “one side” of cigarette packs include a health label. The “Fairness Doctrine” of 1970 included the ordered broadcasters to donate airtime to antismoking messages to counteract the heavy influence of tobacco companies advertisements; the next year, tobacco companies quit advertising on the radio altogether. Smoking has been banned from airplanes. The majority of states have smoking restrictions in public places, including parks, restaurants and bars, and some work and education environments. Cigarette advertising no longer appears on television or billboards. Many states have adopted policies raising the taxes on cigarettes, creating a disincentive to buy the product, particularly amongst youth. There are similarities between the antismoking campaign and efforts to control obesity; primarily, both are driven by “both biology and behavior, the product of an environment that seduces and induces

abuse” (Warner, 2006, p. 108). Like tobacco control, education and an emphasis on individual responsibility cannot create the large-scale public health changes needed; public policy interventions are necessary.

McLeroy et al. suggest several different public policy approaches. These include policies that restrict behaviors (i.e. prohibitions); policies with behavioral incentives (like “sin taxes” on alcohol and cigarettes); policies which indirectly affect behavior; and policies that allocate resources, such as grants and the establishment of health promotion offices (p. 365). Regardless of the policy tactic used, the authors emphasize the importance of choosing the correct target population and encouraging their active involvement in the problem definition. In other words, the focus is on “consensus building”. The public policy level of influence is closely intertwined with the community level, and McLeroy et al. suggest crafting public policy in such a way that strengthen these voluntary networks that may serve as “mediating structures” (p. 366).

The process of developing and implementing policy has many challenges. Policy changes require modifications on a large-scale, societal level that can be the most difficult changes to make (Frieden et al., 2010, p. 1). Attitudes regarding the role the government should play in an individual’s health vary and are hard to change. Some believe any government intervention is intrusion upon an individual’s right to make their own decisions and be responsible for their own health. In the case of schools, many think of local control only and that it is inappropriate for the state and federal government to intervene.

There are other, more technical barriers as well. First, a sufficient evidence base must exist. In contrast, there may be an overabundance of evidence that is difficult to assess and use as the basis for the development of policy. Second, there

may be fragmented authority within the federal or a state government and/or insufficient coordination amongst departments and agencies. Third, policies are often set by politicians who have little to no experience in the subject area. Such decisions are then communicated to subordinate levels that are responsible for the technical, managerial, and administrative tasks of putting policy into practice. The political process may not be mindful of the possibility of inadequate infrastructure, time, and resources in place for implementing such policies. Fourth, a valid theory of cause and effect may not exist, or there are multiple variables that may intervene in such a cause and effect relationship. There may be breakdowns in communication amongst decision makers, including shared goals and objectives (Health Policies for the 21st Century, 2001). Fifth, the majority of states must balance their budget, and any policy requiring financial resources will likely require a shift in financial priorities or an “offset” from an agency or department. Sixth, policy decision-makers have a number of issues at any given time, and elevating the importance of an agenda item depends on a multitude of factors, many of which may be out of the control of an interest group or others lobbying for policy change. This final element will be further explored in this paper.

Although the federal government regulates much of what we eat and drink, the majority of obesity policy changes have taken place within state legislatures and local governments rather than in Congress (Boehmer et al., 2007, p. 2). Because the bulk of responsibility for policy change has fallen on states and localities, their efforts will be the focus of this capstone project.

The role of states in public policy

In the U.S., much of the authority for public health policy lies at the state level. There are four types of authority in state policy- legislative; regulatory; state constitution; and local government (Boehmer et al., 2008, p. 333). There are other

types of actions states may take outside of these four categories, such as an education campaign or incentive program. However, these may be deemed “soft” or politically weak policy proposals while laws and regulations may be considered “hard” instruments (Sacks et al., 2008, p. 78).

States’ approaches to childhood obesity have traditionally been somewhat “patchwork” with multiple state agencies and departments involved and often not coordinated, even though their target audience is often the same. Payment for programs is another fragmented issue; states are estimated to have as many as 80 separate federal, state, local, and private funding methods to pay for comprehensive programs and services. All of this may result in “inefficiencies and gaps in services for children and families” (NGA, 2011).

Naturally, some government departments have greater power than others to create change and may also differ in power over keeping the status quo. There are some departments that do not deal with health directly, such as a department of transportation, but may have the ability to influence a population’s health. However, many such departments are not concerned unless it affects their bottom line. Some may also be resistant to change because they view health problems as individual issues rather than societal (Alvaro et al., 2010, p. 95).

The role of a “Multiple Streams Framework”

Given the key role policy can play in obesity prevention, it is important to evaluate strategies that can help ensure success in developing and implementing such a course of action. John Kingdon’s “Agendas, Alternatives, and Public Policies” (1995) seeks to answer the question, “How are governmental agendas set?” Kingdon conducted case studies of federal policy making in the areas of transportation and health and held 247 interviews with policy makers over a 4-year period. His results suggest that an agenda is set when there is a convergence of

three separate “streams” (problem, policy, and political) and the opening of a “policy window”.

The *problem* stream explains the ways in which an agenda item must be identified and prioritized at the level of governmental officials. Kingdon proposes three possible ways an issue may be placed on a policy agenda. One conceivable way is by an “indicator”, which essentially is some sort of number (i.e. childhood obesity rate) that conveys the seriousness of the problem. Two, a focusing event, such as a disaster or personal experience, may raise awareness of such a problem. Three, a critical amount of feedback may have been gathered, such as multiple office visits, campaigns, or complaints.

The *political* stream is representative of the political context. Examples include national (or state or local) mood, election results, and interest groups participation. The need for an item to be placed on an agenda is largely developed through bargaining rather than persuading in the political stream. In the *policy* stream, a proposal’s selection for agenda prominence is related to criteria such as logistics, whether it is line with community ideals, potential future problems (including budget constraints), and the interest level of politicians.

Although the “streams” largely flow separately from one another, at some point, all three may converge. Kingdon defines this as an “open policy window”, or, “an opportunity for advocates to push their pet solutions or to push attention to their special problems” (p. 154). There are *problem windows*, which create the chance to insert a solution, and *political windows*, which may bring the opportunity to persuade a new administration to move an agenda item further up in the priority list. Sometimes the windows are predictable, such as expiring legislation, and sometimes they are not, such as a crisis. Regardless, open windows are “small, scarce, and do not stay open long” (p. 155). If resources are too limited or not

properly utilized, a problem or proposal may be moved further down an agenda because of the numerous others it is competing with. Kingdon concludes by noting that not every agenda item will follow his suggested framework and some element of unpredictability will always exist.

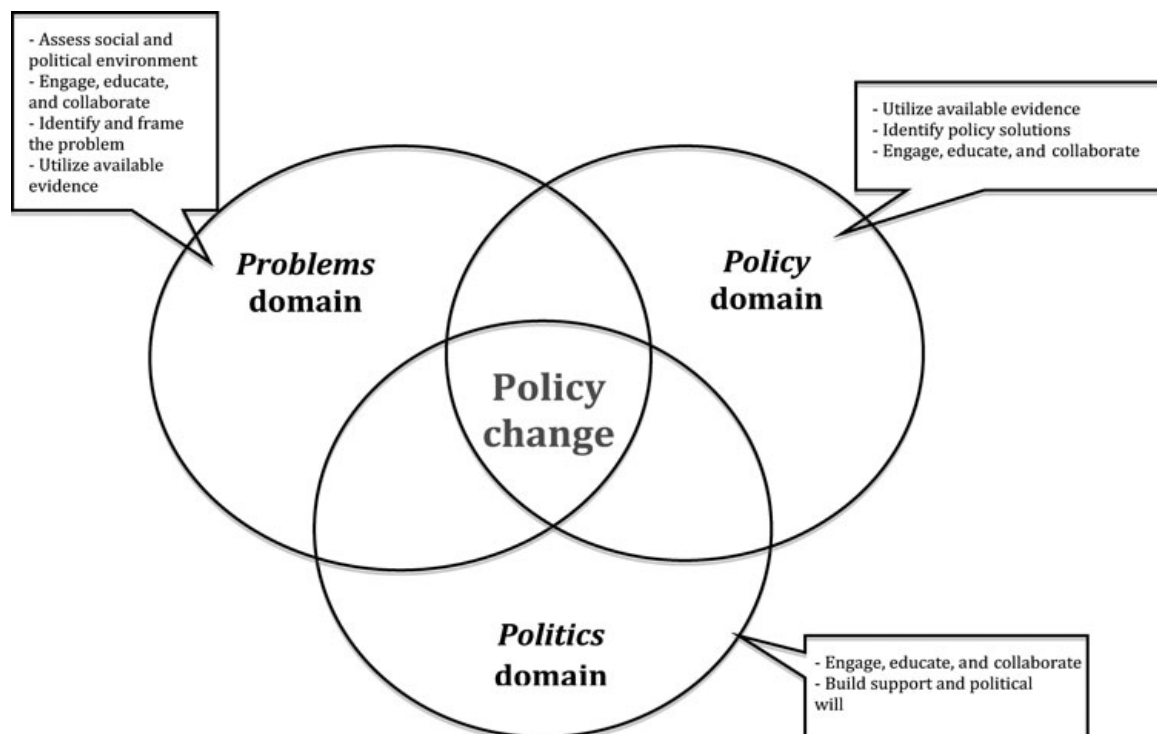
“Multiple Streams Framework” in the literature

The need for Kingdon’s “open policy window” in order to make effective policy changes is consistent within the literature. Lyn et al. (2013) further expound upon the “Multiple Streams Framework” in their article “Policy, Systems, and Environmental Change for Obesity Prevention: A Framework to Inform Local and State Action. This study explores the role of the problem, policy, and politics aspects of policy change.

Their review suggests six key activities for policy change outcomes once the policy window is “open”. The first three steps are necessary in the “*problem*” process. The initial activity is to assess the social and political environment with the intention of helping to determine how the policy window can be opened. Knowledge of oversight responsibility, key policy makers, political and ideological backgrounds, and connections are important. The second step is to engage, educate, and collaborate with a variety of stakeholders. More formal interest groups may arise from these collaborations. Such a group may then be utilized by policy makers when they are determining whether the *problem* exists and if the potential solution is logistically possible (*policy*) and in keeping with the political climate. This step is critical to achieving placement on a policy agenda, and efforts should be focused on those relevant to governmental decision-making. Next, the problem must be identified and framed. The information must be structured in a way that can garner enough attention to be placed on the policy agenda and must also provide a convincing narrative.

The fourth step moves into the “*policy*” process. Utilizing available evidence is needed as a guide for policy development. Lyn et al. advise that these suggestions should be policy-relevant and well-tested strategies (although innovative suggestions are adequate if they are identified as such). Examples include the CDC’s “Guide to Community Services”, Center of Excellence for Training and Research Translation and web-based resources that keep track of federal, state, and local policies. The likelihood of the policy being adopted must also be taken into consideration, and there should be a way to evaluate the policy once it is implemented. Naturally, policy solutions must be developed in the “*policy*” domain and should be realistic- logistically, financially, and politically. A prediction of the policy solutions’ quantitative and qualitative impact (negative and positive) should be included. Policy-makers tend to gravitate towards options so they should be provided with more than one solution, if possible. Finally, it is essential to have support and political will behind a policy in order for change to occur. This can be accomplished through participation from engaged stakeholders, from individuals to local officials, private and public entities. Lyn et al. conclude with the caveat that the policy process is not linear and it may be that many of the steps occur at the same time. Figure 2 provides an illustration of the framework.

Figure 2- “Framework for Advancing Policy, System, and Environmental Change Approaches for Obesity Prevention”



Kersh and Morone (2002) also recognize the importance of a policy window, or “window of opportunity” as they characterize it, in successful policy change. They believe that in every example of state intervention, change has only been possible when this window was open. Kersh and Morone conducted an historical analysis of health policy changes and concluded there are seven “triggers” that help spur public officials to regulate personal behavior. They are- social disapproval; medical science; “self-help” (i.e. Overeaters Anonymous); demon user (i.e. second-hand smoke); demon industry (i.e. the documentary “Fast Food Nation”); mass movement; and interest-group action (i.e. cultural images like “just say no”, Center for Science in the Public Interest, and lawsuits). The authors note that it’s conceivable for policy efforts to fail even with the seven triggers in place. It’s possible that circumstances can quickly change, or that luck and/or timing are not in place.

In the opinion of Kersh and Morone, governmental activity of food policy within the past century has focused on purity and nutrition. They divide governmental activity into four categories. The first is purity, i.e. food inspection, false diet claims, and the increasing authority of the Federal Trade Commission (FTC). The second category is advertising fat's dangers, such as publicizing nutrition warnings and the food pyramid. The third and fourth governmental interventions are regulation (such as that of the National School Lunch Program) and "aiding and abetting" such as through agriculture policies supporting high-fat foods.

Alvaro and colleagues (2010) believe a policy window is derived when systems reach a critical point when there is a sense of disorder. For example, the realization of outstanding economic costs mean the system may be ready for change. This is also true when modifications in infrastructure must be made in the public sectors outside of health, such as creating bigger seats in classrooms. They add that "adjacent possibles" may also trigger policy change. "Adjacent possibles" are essentially examples in other arenas (the authors use other countries as an example) that prove change is possible and may provide a framework for such modifications (p. 95). In the U.S., an "adjacent possible" may be policy interventions in neighboring states or localities with similar demographics and political climate.

The passage of *Arkansas Act 1220* is an example of the importance of utilizing "open policy windows" to effectively create policy change. Craig et al. (2010) examined the influences on the 2003 legislation that was developed to address the crisis of childhood obesity in the state. Provisions of the bill included- a 15-member statewide Child Health Advisory Committee (CHAC), who would ultimately make physical activity and nutrition recommendations to the State Board of Education; eliminating access to vending machines in elementary schools; creating school district-level nutrition and physical activity advisory committees to heighten

awareness of the new rules and possibly create new local policies (Ryan et al., 2006, p. 994). The legislation also mandated annual body mass index (BMI) testing for all public school students and parental notification of the results via report card.

Craig et al.'s conclusions about the policy process of *Arkansas Act 1220* were in keeping with the "multiple streams framework". Again, the authors suggest that when three streams- the problem, policy, and political- are combined, a "policy window" is opened. The research team used key informant interviews of those knowledgeable of the *Act* to determine how the "policy" was prioritized. The main issues mentioned were the increased awareness of the problem of childhood obesity around the nation and the tradition of schools providing health services, including some who measured height and weight. In the "political" arena, advocacy efforts played a large role. The Arkansas Department of Health's Obesity Task force findings and recommendation had been presented to the legislature during the year 2000 session. In 2002, many legislative leaders and other policy makers attended an NCSL/NGA/ASTHO conference where different approaches to health problems, including childhood obesity, were discussed. During the early 2000's, The University of Arkansas and the Arkansas Department of Public Health continued to provide annual updates to legislators about the problem of obesity. These statistics, combined with the personal health problems of the speaker of the house and Governor, played a large role in contributing to the "problem" stream. The three streams aligned and a policy window was open.

Craig et al. note that passing *Act 1220* was not a linear process or one that was easily rushed through, which is consistent with the ideas of Kingdon and Lyn et al. Some of the more controversial elements, such as BMI reporting and vending restrictions, were added, removed, modified, and added again. Policy windows are short and unpredictable and should be utilized as quickly and effectively as possible.

There are numerous additional policy change frameworks that are not detailed here. Some include analysis grids established by Sacks, Swinburn, and Lawrence (2008); a systems-oriented, multilevel modeled by Huang et al. (2009); and the “Obesity Policy Action” model developed by Sacks et al. (2008). In Sacks, Winburn, and Lawrence’s framework, analysis grids divide areas for potential policy intervention into each level of governance; each sector of the food system (i.e. production, processing, marketing, etc.); and each sector that influences physical activity environments, such as infrastructure and transport. The intent of the grids is to avoid major policy gaps and identify ripe opportunities. Huang et al.’s system-oriented framework suggests a multilevel research agenda across several disciplines and approaching the problem by viewing the “whole picture”. This more holistic view will allow for the possibility of “multiple leverage points in the system” (p. 7). Sacks et al.’s “Obesity Policy Action” model suggests integrating policy activities across upstream, midstream, and downstream sectors and settings, and amongst different levels of governance. Sociological factors can be considered “upstream”; behavioral factors as “midstream”; and health services factors as “downstream”. Sacks et al. suggest a focus on the “midstream” approaches, forming policy proposals aimed at directly influencing behavior. Some examples include education and campaign-based programs that promote healthy behaviors.

Policy recommendations from government entities

Leading government organizations whose focus is on health have put forth specific obesity prevention policy suggestions. These include the CDC, IOM, National Association of County and City Health Officials (NACCHO), National Governor’s Association (NGA), and CDC’s “Community Guide”. Policy leaders often turn to governmental sources as a reference point for evidence-based practices. While no single template exists in regards to addressing childhood obesity, common themes

abound amongst policy recommendations from governmental and academic bodies. Each suggests providing healthier foods in schools (though they vary in approach); further nutritional education; and more physical activity opportunities for children within the school setting.

The CDC has developed multiple nutrition and physical activity recommendations for addressing childhood obesity and much of it is available to the public on their website. In one set of guidelines, the CDC suggests numerous “strategies and solutions” for states and communities to utilize when addressing the childhood obesity epidemic. First, direction is provided for assessing retail food environments and determining the access to healthy foods. Subsequently, the CDC recommends providing incentives to existing supermarkets and farmers’ markets to establish their businesses in such areas. Similarly, expanding programs that bring local fruits and vegetables to school and adding salad bars to schools is suggested. Increasing access to free drinking water and decreasing access of sugar-sweetened beverages in schools can be accomplished through establishing school wellness and nutrition policies. A focus on providing optimal nutrition, breastfeeding, and physical activity standards and practices in early care and education facilities is included (CDC Strategies and Solutions for Childhood Obesity, 2013).

On the physical activity front, CDC references the importance of “Safe Routes to School” that will help create and maintain safe neighborhoods, which will lend itself to physical activity. Schools should support quality daily physical education in schools and daily physical activity in child-care activities. The CDC also provides comprehensive guides to increase the consumption of fruits and vegetables, community strategies and measurements to prevent obesity, school healthy guidelines, and school-based obesity prevention strategies for state policymakers (CDC Obesity and Overweight for Professionals, 2013).

The CDC's "School-Based Obesity Prevention Strategies for State Policy Makers" guidance document includes nine strategies. In brief, they are: (1) coordinate and integrate school health-related programs across state agencies and with nongovernmental organizations; (2) use state and local data to guide decision-making and policy formulation; (3) support the development of school health councils and rigorous school health planning processes; (4) establish strong wellness policies; (5) improve the capacity of school staff through certification and professional development; (6) establish requirements for how much time students must spend in physical education (suggested 150 minutes/week); (7) set nutrition standards for foods and beverages offered in schools; (8) promote high quality health education and physical education; (9) support student participation in high quality school meal programs; and (10) support opportunities for students to engage in physical activity and consume healthier foods (CDC School-based Obesity Prevention, 2012).

The U.S. Institute of Medicine (IOM) published a comprehensive report in 2012 based on the recommendations of the group's "Committee on Accelerating Progress on Obesity Prevention". The committee met and synthesized over 800 previously published recommendations, strategies, and actions. They narrowed their suggestions to those with the broadest reach and greatest potential to make an impact on obesity. Five environments for change were identified: (1) physical activity; (2) food and beverage; (3) message; (4) health care and work; (5) school. The group suggested a "systems approach" whereby each environment is intertwined and has potential for combined impacts (p. 7). The strategies for goal (1) were to enhance the physical and built environment and provide support for programs to increase physical activity. Strategies for goal (2) include implementing policies to reduce overconsumption of sugar-sweetened beverages, increase the

availability of healthier food and beverage options in restaurants, modify retailing and distribution policies, and utilize strong nutrition standards for government provided foods and beverages, including school lunches. Goal (3) suggested common standards and consistency in foods and beverages and the utilization of marketing physical activity programs. Goal (4)- a work environment- has little relevance here. The strategies for goal (5) again reference strong nutrition standards, and the requirement of physical education in schools and to increase food literacy (Institute of Medicine [IOM], 2012).

The National Association of County and City Health Officials (NACCHO) are on the front line of the public health issues facing localities. NACCHO represents nearly every one of the 2,800 local health departments across the country. In March 2011, NACCHO published recommendations made by the group's task force on childhood obesity in their publication "Reversing the Trend in Childhood Obesity: Policies to Promote Healthy Kids and Communities". The report suggested: empowering parents with information and tools to make good choices; providing healthier food in schools; ensuring access to healthy, affordable food; and increasing physical activity in schools and communities.

The NGA Center for Best Practices collaborated with the Robert Wood Johnson Foundation (RWJF) to develop and fund a *Healthy Kids, Healthy America* program. In 2010, a comprehensive evaluation was conducted of the efforts undertaken by the 15 states that participated in the program receiving funding from RWJF. Two states chose child care settings as their intervention sites; four chose policy planning and prioritization; and nine focused on school-based efforts. Regardless of the setting, all states found it useful to "conduct a comprehensive scan to better align existing obesity prevention efforts" (p. 1). The states that chose policy-planning changes also mostly relied on leadership from the governor or the

state health commissioner to “facilitate interagency collaborations and multi-sector involvement in the policy development process” (p. 1).

The NGA analysis of the *Healthy Kids, Healthy America* program acknowledged the fact that a school setting can pose challenges to a state government since many deem education a local matter. In addition, federal funding for schools is largely determined by mandated academic testing from the federal “No Child Left Behind” law and therefore there is little incentive to go beyond mandated academic content. Nevertheless, there were school based efforts in states funded by the program and they focused on school wellness policies, fitness testing, and creating an award and/or recognition program to incentivize progress and to encourage new and innovative ideas within the school setting.

The goal of the CDC’s “Guide to Preventive Services” is to produce a portal for the collection of findings and systematic reviews conducted by the Community Preventive Services Task Force. The Task Force seeks to understand what interventions have and have not worked, differences in outcomes between population settings, return on investment of an intervention, and what interventions might need more research. The task force studied “school-based programs” with the goals of improving nutrition and/or increasing physical activity in school and at home. The group characterized the evidence of the nine studies among children and one among adolescents that qualified for review as “insufficient” largely because interventions varied and reported outcomes were not comparable. While the studies examined showed positive effects on weight status, the changes were nominal and measures were varied (CDC Community Guide, 2003). However, it should be noted that this review was undertaken in 2003 and has not been updated since. It’s highly possible that the group’s conclusions might be different if the review was more recent.

National trends in childhood obesity rates

Since 1980, obesity prevalence among children and adolescents has almost tripled. According to the CDC's National Health and Nutrition Examination Survey (NHANES), 17% of children under 20 were obese in the U.S. as of 2010 (CDC, 2012). Ogden et al. (2012) conducted a cross-sectional analyses of a representative sample (4,111 individuals) of the US child and adolescent population to investigate specific trends in obesity prevalence and BMI among children and adolescents between 1999-2000 and 2009-2010. Ogden et al. utilized data from the CDC's National Health and Nutrition Examination Survey (NHANES) in years 2009-2010 with measured heights and weights. The main outcome measure was the prevalence of high weight-for-recumbent length at or above the 95th percentile on the CDC's 2000 growth charts measure for those aged birth to 2 years old and was chosen because there is no universal definition for this age group. For those age 2-19 years, obesity prevalence rates- as defined as BMI greater than or equal to 95th percentile of the BMI-for-age-growth charts- was used. There were six NHANES survey periods over 12 years (from 1999-2010) and analyses of trends during this time was conducted.

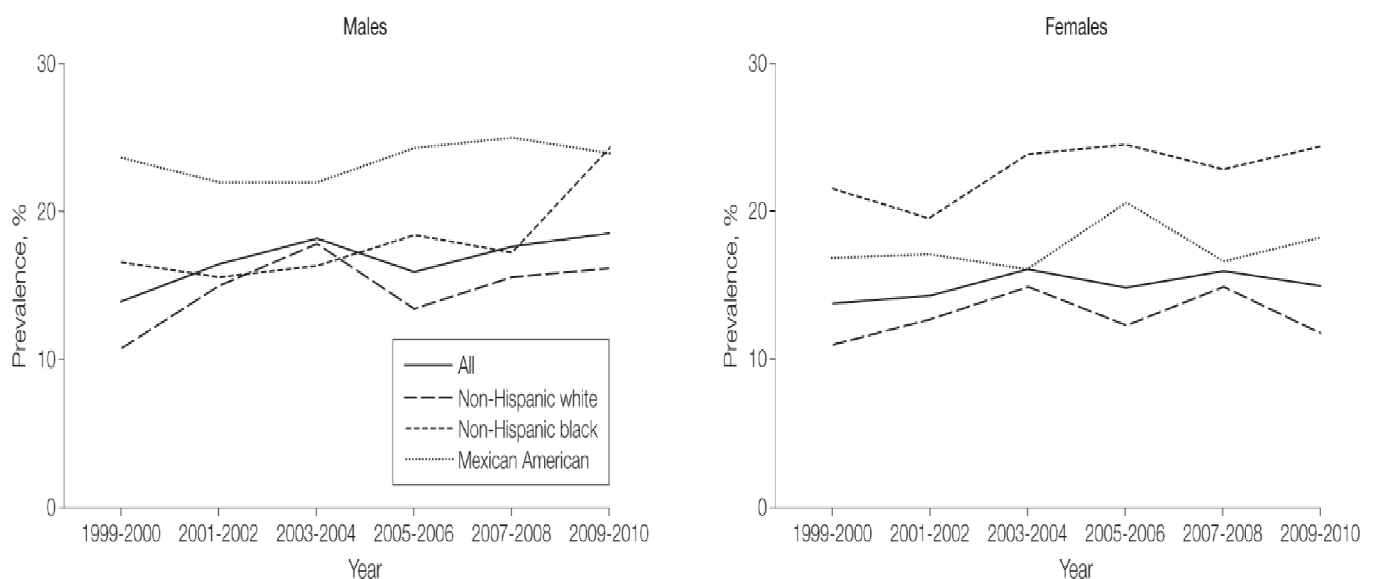
In 2009-2010, the prevalence of obesity in children and adolescents (2-19 years old) was 16.9%; this was not changed compared with 2007-2008. There was no difference in obesity prevalence among males or females in this age group between 2007-2008 and 2009-2010. However, longer trend analyses indicate a significant increase in obesity prevalence between 1999-2000 and 2009-2010 in males aged 2 through 19 years but not in females during that time period. There was a significant increase in BMI among adolescent males aged 12 through 19 years but not among any other age group or females.

The prevalence of high weight-for-recumbent length among infants and

toddlers was 9.7% during the 2009-2010 time period. Mexican Americans were significantly more likely to have high weight-for-recumbent length than non-Hispanic whites. During the past 12 years, the odds of being obese were significantly higher for non-Hispanic black males and females and Mexican American males and females compared with both non-Hispanic white males and females. Children aged 2-5 years old had lower odds of obesity compared with adolescents 12-19 years old, in the aggregate.

Ogden et al. note that BMI is an “imperfect measure of body fat”, particularly because non-Hispanic black children have lower levels of body fat than Mexican-American or white children at the same BMI level. The study concludes, “the rapid increases in obesity prevalence seen in the 1980s and 1990s have not continued in this decade and may be leveling off” but that “more research is needed to understand why these changes may be occurring (p. 487). Figure 3 depicts obesity prevalence trends from 1999-2010.

Figure 3



Some states have chosen to implement mandates to help improve the health of their children while others have considered voluntary and/or pilot programs. The NGA’s 2009 report “Shaping a healthier generation: Successful state strategies

to prevent childhood obesity” details state policy trends. The report divides policy settings into four main categories- child-care facilities; schools; communities; and health-care settings.

States control licensing procedures and processes for child-care facilities and wield more authority in this arena than they do schools. States are increasingly pursuing quality initiatives known as Quality Rating Systems (QRS) to create a systematic approach for assessing early childhood programs. Schools have undertaken a variety of efforts. Some states have required their cafeterias to modify their meal standards, such as taking out fryers and serving 1% instead of whole milk. More of this will likely be seen as schools are required to comply with recently revised National School Lunch Program standards. Farm-to-School programs are progressively being adopted and there have been more nutrition education programs instituted.

One of the more popular programs to increase physical activity is the “Safe Routes to School” initiative. In 2005, Congress passed a massive transportation bill (SAFETEA-LU) which authorized \$612 million to states over a period of five federal fiscal years for the Safe Routes to School (SRTS) program. Under the SRTS program, schools can fund projects such as repainting crosswalks, adding pedestrian countdown signals and repairing sidewalks, and adding screens that make drivers more aware of their speed. Many states are taking advantage of these funds in an effort to increase the amount of children walking to school. In 2007, 25 states adopted policies for PE or physical activity legislation, and some of these states have adopted measures that mandate the number of minutes allocated to physical activity.

Community efforts have been based on transit-oriented development

(encouraging developing communities to locate near a transportation hub); complete streets (building streets to accommodate cyclists and sidewalks);² grocery store access (addressing “food deserts”); local food procurement; Women, Infants, and Children (WIC) Fruit and Vegetable Voucher Program and Farmers’ Market Nutrition Program; calorie and menu labeling; soda tax; and public-private partnerships.² Healthcare settings have largely been limited to BMI screening; physician counseling; health reimbursement for prevention screenings; and school-based health centers.

The National Conference of State Legislatures (NCSL) is a bipartisan group whose goal is to serve the legislators and staffs of all states and territories. NCSL’s state legislative tracking database includes pending, failed and enacted bills and resolutions in state legislatures and is one of the most utilized among the literature. According to this database, in 2012, school nutrition legislation was the most frequently enacted. Eleven states—Alabama, California, Colorado, Connecticut, Delaware, Ohio, Maine, New Mexico, Pennsylvania, Tennessee and Virginia—authorized some type of school nutrition legislation or adopted school nutrition resolutions. These ranged from large appropriations like the one-time funding allocation of \$4.8 million to support statewide training of school food authorities regarding changes to meal standards due to the federal Healthy, Hunger-Free Kids Act of 2010 (California), to resolutions honoring U.S. Healthier Schools Award winners (Connecticut) and declaring School Nutrition Day (New Mexico). Virginia, Ohio, and Colorado all passed laws regulating the sale of “competitive foods” and the contents of vending machines.

Three resolutions and four bills related to physical education or physical activity were enacted in 2012. CA AB 1464 provides funds for physical education instructional support and to support the hiring of more credentialed physical

education teachers through a state incentive. Illinois passed two laws; one establishes a multidisciplinary "Enhance Physical Education Task Force" to promote and recommend enhanced physical education programs that can be integrated within a broader wellness strategy while the other mandates Illinois school report cards to include, among other information, reporting on physical education average number of days per week per student and school wellness initiatives at individual schools.

Only one state (Ohio) enacted legislation related to BMI testing. Connecticut, Louisiana and Mississippi enacted legislation to pilot coordinated school-based health and wellness programs and Massachusetts provided funding for school-based health centers in both public and non-public schools that incorporate obesity prevention programs. Finally, six states created state task forces, commissions, studies, grants and other special programs to address childhood obesity in the state (NCSL Childhood Obesity, 2013).

Many states have pursued policy changes to address childhood obesity, but few have seen successful in achieving changes in weight and/or BMI outcomes. The exceptions are California, Mississippi, Arkansas, New York City, and Philadelphia, all whom have seen progress in their respective rates of overweight and obesity. There are potential lessons that can be learned from these states and localities and their approaches are worth examining closer.

III. APPROACH

Capstone Purpose statement

The capstone will compare and contrast the common themes found in the literature review with policy actions taken by three states and two cities that have seen progress in reducing their childhood obesity rate- California, Mississippi, Arkansas, New York City, and Philadelphia.

A policy brief with recommendations for Georgia's health policy and legislative leaders will be developed as a product of this capstone. The brief will be based on the environmental scan of Georgia's current policies surrounding childhood obesity and the lessons learned from the five successful states and localities. The intention of the policy brief is to provide a blueprint for Georgia's leaders to build support, organize resources, and achieve effective policy implementation to address childhood obesity.

Procedures

For the purposes of this paper, a "successful" state or locality will be defined as one that has seen a decline in its childhood obesity rate (or a freeze in the case of Arkansas). Four of the states and communities discussed were chosen based on a Robert Wood Johnson Foundation (RWJF) 2012 report "Declining childhood obesity rates- where are we seeing the most progress?" Arkansas was chosen because it was one of the first states to pass sweeping policy changes and the childhood obesity rate has since frozen at 38% *combined* overweight and obesity, while the majority of the remainder of states have seen increases (Arkansas Center for Health Improvement, 2012). This capstone sought to review published accounts of the progress made in these communities relative to policy frameworks and expert recommendations to try to extract lessons that might support efforts in Georgia.

Table 1 that is contained within the RWJF report details childhood obesity rates. *Note: California's rates were calculated from the 2005 and 2010 California Physical Fitness Test. California and Mississippi's numbers are combined rates of overweight and obesity.*

Table 1- RWJF Childhood obesity rates

Place	Ages	Time 1	Obesity Rate at Time 1	Time 2	Obesity Rate at Time 2	Percent Decline
Philadelphia	K-12	2006-07 school year	21.5%	2009-10 school year	20.5%	-4.7%
New York City	K-8	2006-07 school year	21.9%	2010-11 school year	20.7%	-5.5%
Mississippi	K-5	Spring 2005	43%†	Spring 2011	37.3%†	-13.3%
California	Grades 5, 7, 9	2005‡	38.44%†	2010‡	38%†	-1.1%

IV. Findings and Implications

Actions taken by successful states and communities

Table 1 details the rates of obesity change. It is also useful to compare the demographics of the cities and states being discussed to each other and to Georgia and the U.S. nationwide. The U.S. Census Bureau “Quick Facts” derived from 2010 data was used for Table 2. The biggest differences between the “successful cases” being studied were their population sizes and the much larger percentage of those with Hispanic heritage in California. The percentage living under the national poverty level was higher in Philadelphia. Comparing the demographics among the successful states implies successful interventions can happen in very large (NYC, CA) and much smaller cities and states (Philadelphia, AR, MS). In addition, a large percentage of Hispanics does not necessarily mean less positive outcomes of policy changes. *Note: Some ethnicities may add up to over 100% because the category “persons of Hispanic or Latino origin” includes Hispanics of any race, so this group is also included in applicable race categories.*

Table 2- Demographic profiles

Location	Pop.	% under 18	% under poverty level	% high school graduate	% white	% black	% Hispanic
CA	38,041,430	24.6	14.4	80.8	74	6.6	38.1
AR	2,949,131	24.2	18.4	82.7	80.1	15.6	6.6
MS	2,984,926	25.2	21.6	80.3	60	37.3	2.9
GA	9,919,945	25.4	16.5	84	63.2	30.1	9.1
Philly	1,536,471	22.5	25.6	80	41	43.4	12.3
NYC	8,244,910	21.6	19.4	79.3	44	25.5	28.6
US	313,914,040	23.7	14.3	85.4	78.1	13.1	16.7

Philadelphia

Philadelphia has its share of challenges as a metropolitan area. For example, it has the highest proportion of residents living in poverty amongst the nation's 10 largest cities. Almost one-half of its citizens fall into the overweight or obese category (Robbins et al., 2012). The principal public health agency in the area is the Health Promotion Council of Southeastern Pennsylvania, Inc. The city, with the Council as the lead, has undertaken systematic and progressive efforts to address the nutrition environment in schools in recent years. Sugary drinks were eliminated from vending machines in 2004. Snack guidelines, such as reducing serving sizes because of calorie and fat limits imposed, were established in 2005. The fryers were gone from cafeterias and whole milk replaced by 1% and skim in 2009 (Tavernise, 2012).

Children are only in school for a portion of their day, and Philadelphia officials realized that children need physical activity outside of the school environment. The city's "Out of School Time" program receives funding from the CDC's *Healthy Kids, Healthy Communities* platform for parochial, charter, and some public schools, community organizations, churches, recreation centers, and libraries for nutritious eating and active play. In 2009, there were 22,000 after-school slots at

329 locations plus programs at 54 libraries serving 80,000 youth. Partners of the program include- Public Health Management Corporation; National Nursing Centers Consortium; University of Pennsylvania; The Food Trust; Philadelphia Health Department's Office of Health and Opportunity (Philadelphia OST Project, 2010).

Philadelphia relied heavily on the efforts of the Food Trust Group to address the so-called "food deserts" within the city. "Food deserts" are large geographic areas with no or distant grocery stores. The Food Trust Group is a non-profit whose goal is to "ensure access to affordable, nutritious food". They focused their efforts on bringing more healthy foods to Philadelphia beginning in the year 2001. The group began by detailing the lack of supermarket access for Philadelphia's citizens and the link between "food deserts" and poor health. Their work spurred multiple Philadelphia City Council hearings and the formation of the Food Marketing Task Force. These efforts were the basis for Pennsylvania's Fresh Food Financing Initiative, which is now a \$120 million private-public partnership.

The outcomes of such interventions have been dramatic; obesity among 120,000 public school students measured between 2006-2010 declined by 8% among black boys and by 7% among Hispanic girls, compared with .8% decline for white girls and 6.8% for white boys (Robbins et al., 2012, p. 4). These results are particularly astounding because the larger declines occurred in minority populations. In contrast, New York City saw more dramatic decreases in white children and California still has multiple counties whose rates have not changed. New data for more than 20,000 schoolchildren in 1st-6th grades show a further 2.55% decline from 2011-2012 (Robbins et al., 2012, p. 4). Philadelphia is successfully moving the needle.

New York City

New York City (NYC) has one of the largest and most diverse populations of any metropolitan area. In 2006, the first year in which standardized BMI testing results became available, the average rate of childhood obesity was 21.9%. NYC began conducting FITNESSGRAM® assessments in 2005. FITNESSGRAM® is a physical fitness test that assesses aerobic capacity, muscle strength, endurance, flexibility, and body composition for schoolchildren. Each score is evaluated against the Healthy Fitness Zone® (HFZ) standards. According to the FITNESSGRAM® website, “using the Healthy Fitness Zone standards helps to minimize comparisons between children and emphasize personal fitness for health rather than goals based solely on performance. Since only modest amounts of exercise are needed for obtaining health benefits, most students who participate in physical activity almost every day will be able to achieve a score that will place them in the Healthy Fitness Zone” (Fitnessgram, 2013).

In NYC, the results of the test are sent home to parents and recommendations for family physical fitness and nutrition tips for maintaining a healthy weight are included. The goal of FITNESSGRAM® testing is to provide a baseline of the health of a school’s students, measure potential improvement, and educate parents and schools on ways their children can be more physically active and improve their level of fitness to help them reach the Healthy Fitness Zone standards for each test measure.

The “Move-to-Improve” program was initiated by the city’s Departments of Education and Health in 2009 and is intended to help elementary schools reach 120 minutes per week of physical education and assist teachers on integrating physical activity throughout the school day. The city’s schools have also removed fryers from their cafeterias and now serve low fat and skim milk instead of whole. In 2011,

vending practices in schools changed, and beverages are now limited to 10 calories per 8 ounces in elementary schools while snacks have a limit of 200 calories and less than 7 grams of fat per item. The Mayor's NYC School Salad Bar Initiative has funded more than 800 salad bars in the city schools with the goal of installing them in every school. Lastly, the city has also focused on child-care settings (5-6 year olds) and enforced screen time limits, serving low-fat milk to those 2 and older, making water available all day, and offering 60 minutes of physical activity per day (NYC Obesity Task Force, 2012).

New York City has seen a 5.5% decline in the number of obese schoolchildren from 2007-2011. This decline has been seen among all races, ages, and family income level. However, when NYC measured K-8th grade from 2007-2011, the number of white children who were obese dropped by 12.5% while number of obese black children dropped by 1.9% (Tavernise, 2012).

It is important to note that NYC has undertaken efforts outside of the school environment to reduce obesity. These include the requirement of restaurants to post caloric information (the "Calorie Counts" initiative), issuing over 1000 permits for "green carts" that may sell raw fruits and vegetables in stands throughout the city, and an attempt to limit the size of a sugar-sweetened beverage a consumer may buy (NYC.gov, 2011). The latter move was struck down by a State Supreme Court judge as "arbitrary and capricious" in March 2013.

Mississippi

In 2006, Mississippi's State Board of Education set nutritional standards for foods and beverages sold in school vending machines. The *Healthy Students Act of 2007* passed in April of that year and an advisory committee was formed to assist the State Board of Education in developing the regulations of the legislation. In October of 2007, the official recommendations were made and the BOE

subsequently adopted the suggestions. The provisions require the state's public schools to- provide more physical activity time and hire a physical activity director at the Mississippi Department of Education; make local school health councils mandatory; mandate each school board to develop a wellness policy; require schools to offer healthier foods and beverages, and develop health education programs. Schools also have incentive to meet updated regulations and improve the health of their children through several grant programs supported by local and federal funding. These include the Five Star Food grant, which encourages the increase of fruits and vegetables in schools; the Nutrition Integrity grant, which was designed to remove fryers from school kitchens; the Committed to Move grant, which assists school districts with the development of curriculum, training, and the purchase of physical education equipment; and the Health in Action initiative, which provides teachers with a free database of 1,300 health education and physical education lesson plans (Mississippi Department of Education Office of Healthy Schools [MS DOE], 2009).

In October 2008, the RWJF awarded the Center for Mississippi Health Policy a five-year, \$2 million grant to determine the impact of the Mississippi *Healthy Students Act of 2007* on childhood obesity. The Center has been collaborating with University partners and utilizing supplemental funding from the Bower Foundation. The Center conducted evaluations of FITNESSGRAM© pilot testing, school wellness policies, surveys of parents and state level policy makers about their knowledge of the Act and onsite appraisals of a schools' needs.

The Center's Year 3 report published in 2012 summarizes the results of several evaluations of the impact of the *Act*. The project also includes a parent survey to examine changes occurring in the home and family. Data from the 2011 Child and Youth Prevalence of Obesity Study (CAYPOS) demonstrate a statistically

significant decline in the combined prevalence of overweight and obesity in elementary students, a major shift in direction after decades of steady increases. The percentage of children in all grades classified as either overweight or obese has also declined since 2005, but not to a statistically significant extent as it has for elementary age students. However, similar to New York City and California, there are racial disparities; the 2011 CAYPOS reveals a statistically significant drop in the combined prevalence of overweight and obesity for white students, but not for black students. The study notes that there are multiple factors that can account for these decreases. The percentage of schools with at least 75 percent of students receiving health education doubled between 2006 and 2008. The report concludes that school nutrition has improved and adds that their assessment has been confirmed by data from surveys conducted by the Centers for Disease Control and Prevention. In fact, in 2009, the CDC recognized Mississippi as making some of the greatest strides among all surveyed states in removing unhealthy foods from its schools (MS DOE, 2009). The report surmised that while there are continued improvements in schools, there are only stagnant improvements among the home environment based upon results from surveys of the parents of public school students. While 75% of those surveyed believed they were making efforts to change consumption patterns, when asked specifics, results showed the amount of vegetables consumed declined while soda consumption increased, both to a statistically significant degree. The group's survey about parental perception is consistent with the literature; parents do not appear to recognize obesity in their children. For example, although CAYPOS documented that 41 percent of public school children in Mississippi are either overweight or obese, only 15 percent of parents labeled their child overweight or obese (NGA Healthy Kids, Healthy America, 2012).

Although there has been progress in implementing the provisions of the

advisory committee's 2007 recommendations, there have been areas that are lagging. Since the 2007-2008 school year, only 16 percent of school district superintendents reported that their district had fully implemented all components of the law. The report proposes this is due to scarce resources, particularly in the areas of family and community involvement and school health councils. This suggests the possible need for appropriations and a more robust enforcement mechanism (NGA Healthy Kids, Healthy America, 2012).

The conservative nature of the state has been exhibited as recently as March 2013, when the Mississippi legislature passed and the Governor signed the "anti-Bloomberg" law. This legislation prevents counties, districts, and towns from passing laws or regulations that limit portion sizes, requiring nutritional information on meals, and banning toys in meals aimed at children. The law garnered its nickname because of NYC Mayor Michael Bloomberg's attempt to ban the sale of large, sugary drinks in the city. This development is symbolic because the state is using its power to usurp any potential policy changes on the local level.

Upon signing the law, Governor Phil Bryant released a statement saying, "It simply is not the role of the government to micro-regulate citizens' dietary decisions. The responsibility for one's personal health depends on individual choices about a proper diet and appropriate exercise" (Yan, 2013). However, history has shown that politicians who are traditionally anti-government intervention sometimes see schools differently because ultimately the state is responsible for the education and (to some extent) safety and health of the children in its care during the school day. The Governor may view school-based modifications differently, but that is yet to be determined.

California

California has conducted physical fitness testing in schools since its authorization in 1976 and reestablishment in 1995 as part of the “California Assessment of Academic Achievement Act”. In February 1996, the State Board of Education (SBE) designated *FITNESSGRAM*® as the required physical fitness test that school district shall administer to California students in grade five, seven and nine. In California, all public schools are required to report results of physical fitness testing annually in their school accountability report cards. Schools are also required to provide students with their individual results. Although students receive the information, notifying parents of BMI screening (a part of the *FITNESSGRAM*© test) remains optional for each school system.

The *FITNESSGRAM*© is an important part of childhood obesity efforts but is not the whole picture. Like many other states around the country, California saw its childhood obesity rates continuing to slowly climb despite the testing. As a result, California’s State Superintendent of Public Instruction Jack O’Connell established a task force on childhood obesity, type-2 diabetes, and cardiovascular disease in 2004. The group consisted of a variety of members, including representatives from government, non-profits, associations, schools, medical specialties, and academia. Members of the task force met monthly and heard from experts in the field in addition to discussion. The group recommended: increasing the quality and quantity of PE instruction and provide more physical activity in schools (including the recommendation of *FITNESSGRAM*© for statewide monitoring and surveillance); increasing the quality and quantity of health education to promote healthful eating and physical activity; and ensuring the availability and quality of healthy foods and beverages served and sold at and by schools (California

Department of Education, 2004).

Following the 2004 task force recommendations, California began implementing a series of state laws aimed at the group's goals. In 2007, California set strong nutrition standards for school snacks, and in 2009 it prohibited sugar-sweetened beverages in high schools. A study published in 2012 found that students in California were consuming 158 fewer calories per day than students in states with weaker standards (RWJF, 2012). In addition, a study published in the March 2013 edition of the *American Journal of Preventive Medicine* found that teens in states that required schools to offer fruits and vegetables in school meals consumed .45 more cups of fruit and .61 more cups of vegetables on average per day.

Because parental notification of BMI results is optional in California, Madsen (2011) was interested in assessing the impact of BMI screening with parental notification in California in an effort to determine whether notification results in a reduction of obesity at the population level. She found that rates of parental notification had increased from 35% to 52% over the seven-year time frame. Between 2003 and 2008, the rate of overall obesity among California children in grades 5, 7, and 9 grew by .33%. This may seem insignificant, but it is a far slower rate of growth than has prevailed in recent decades, when obesity among children was growing by between .8% and 1.7% per year (Aryana et al., 2011, p. 304).

In 2010, the FITNESSGRAM© was given to approximately 1.32 million students in grades 5, 7, and 9. The latest physical fitness tests show that only one student in three posts a healthy score. The results represent a -0.5 percentage point decrease in grade five students' scores, a 0.4 percentage point increase in grade seven students' scores, and a 0.6 percentage point gain in grade nine scores compared to last year's results. The Superintendent of Public Instruction has

announced plans for a statewide campaign that will “link schools with community leaders and athletes to foster new partnerships and put a spotlight on local efforts to encourage students to get more exercise – both at school and at home” (California Department of Education, 2011).

In terms of community efforts, in 2008, the California Department of Public Health released an obesity-prevention plan and the state passed two laws, one requiring localities to support walking and bicycling in their transportation plans and another requiring large chain restaurants to post nutrition information. These efforts, along with other local and statewide policies addressing the availability, marketing and promotion of unhealthy foods and increased emphasis on healthier food and expanding opportunities for physical activity, may have contributed to a reduction of 1.1% in the childhood obesity rate in California. It is worth noting that despite a statewide decline in California’s rates of overweight and obesity, 31 of its 58 counties reported increases and 38% of the state’s children are still overweight or obese based on data collected from 2005-2010 (California Center for Public Health Advocacy, 2011).

Arkansas

According to the CDC’s Behavioral Risk Factor Surveillance System (BRFSS), in Arkansas, 15.7% of adolescents in grades 9-12 were overweight and 14.4% were obese in 2009. Among Arkansas’s children aged 2 years to less than 5 years, 16.2% were overweight and 14.1% were obese in 2010 (CDC, 2012).

Arkansas passed *Act 1220* in the year 2003 to address the crisis of childhood obesity in its state. Provisions included- a 15-member statewide Child Health Advisory Committee (CHAC), who would ultimately make recommendations to the State Board of Education; employing a community health specialist in the department of education; eliminating access to vending machines in elementary

schools; creating school district-level nutrition and physical activity advisory committees to heighten awareness of the new rules and possibly create new local policies (Ryan et al., 2006, p. 994). The legislation also mandated annual body mass index (BMI) testing for all public school students and parental notification of the results via report card. Although California had been conducting FITNESSGRAM® testing years before Arkansas, this was the first statewide BMI screening and surveillance for all elementary and high school students (not just 5th, 7th, and 9th grade, as in California).

Although the state has not seen a decrease in child obesity rates, it has seen a halt in progression after implementing Act 1220 in 2003; the rate has remained 20%. However, it is difficult to determine whether this is due to BMI screening or because of the broader changes in schools mandated by the legislation. These include modifications in cafeteria food offerings, increased physical activity requirements, and healthier vending machine options. It is also unclear whether obesity rate has leveled out because of improved awareness or follow-up visits.

In its five-year follow-up and evaluation of Act 1220, the Robert Wood Johnson Foundation (RWJF) found parents' reactions to the legislation generally favorable. Parents have reported helping their children make physical activity a priority and more are allowing their children to play outside. Vending machine purchases are down. Most promisingly, the percentage of parents who accurately classified their child as overweight or at risk of becoming overweight increased from 40%-53% after the first year of screening (RWJF, 2009). Unfortunately, parents have not reported a reduction of meals away from home or making healthier meals, and students have not reported major changes in their overall dietary habits. RWJF believes this may be due to lack of referral services and resources, and lack of access of care both on the provider and insurance side (Dietz et al., 2009, S100).

Interestingly, the screening frequency has been reduced from every year to every other year, in part because some schools couldn't afford postage to send results home (Vogel, E788, 2011).

The previous discussion maintains a caveat; while declines in childhood obesity rate are being used to define "success" in this paper, there are drawbacks to this measure. Declines may be only visible in cities that routinely measure height and weight of schoolchildren. In addition, the decreasing rates are occurring in cities/states that have had obesity reduction policies in place a number of years. Finally, it should be noted that the methodology behind RWJF's choices of cities and states was not detailed in the report.

Table 3 is a matrix detailing school interventions.

Table 3- School interventions

City/State	BMI	Cafeteria modifications	Vending	Increased physical education
Philly		X	X	Optional through local school councils
NYC	X	X	X	Yes-voluntary "Move to Improve" program
MS	X	X	X	Yes- 150 min/week
CA	Grades 5,7,9	X	X	Yes-additional 100 min. over 10 days
AR	X	X	X	X
GA	X	Voluntary with incentives	Voluntary with incentives	Voluntary with incentives

Factors affecting enactment of state legislation

Since the turn of this century, state legislatures have increasingly passed laws affecting school nutrition, physical activity, physical education, community infrastructure, etc. The National Conference of State Legislatures (NCSL) is a bipartisan group whose goal is to serve the legislators and staffs of all states and territories. NCSL's state legislative tracking database includes pending, failed and enacted bills and resolutions in state legislatures and is one of the most utilized among the literature. According to the most updated version, 41 states (over 80%) passed laws regarding healthy eating and/or active living legislation during the 2010-2011 sessions. States enacted more laws in 2010 than in 2011 (31 vs. 29) but fewer bills passed (60 vs. 77) (NCSL, 2013).

Most healthy living legislation falls into two categories; physical activity/physical education and school nutrition/nutrition education. Many of the states that passed laws from 2010-2011 are located in the Southeast and Southwest, which have the highest levels of childhood obesity. NCSL suggests three reasons the amount of legislation has been leveling off. First, it is difficult to sustain momentum on the same issues when there are competing health agenda items. Second, the majority of legislation passed from 2007-2011 is currently being implemented and evaluations may be needed before new proposals. Third, budget shortfalls mean any new programs with up-front cost are going to be more difficult to pass (NCSL, 2013).

Although NCSL keeps track of pending, failed, and enacted legislation, the organization does little in the area of analyzing factors relating to a state having more or less legislation in a year. Only recently have researchers begun trying to determine correlates of state legislative action. Cawley and Liu (2008) utilized Thomson West's Health Policy Tracking Service to examine the collection of annual data (from 2003-2006) on the introduction of bills and the enactment of laws to address childhood obesity. The authors categorized the legislation in four

categories- physical education, school nutrition, health education, and BMI reporting by schools. This data was the dependent variable. The independent variables in this study were state health, as determined by the obesity rate calculated by the BRFSS; the political characteristics of the state, i.e. whether legislation had been passed before the time period of the study; party control of legislature and governor; socioeconomic characteristics, as defined by the state per capita income taken from the Bureau of Economic Analysis; and those that are rural and/or mostly agricultural (p. 163).

The study concluded that state legislative action was influenced by socioeconomic, political, and state health characteristics. A higher percentage of college-educated adults and a higher percentage of African-American residents were both linked to higher likelihood of state legislative action. In terms of political makeup, states with a Democratic Governor are 20% more likely to enact some type of anti-obesity law and 11.5% more likely to enact a school nutrition law in particular. A Republican-controlled state legislature is associated with a 19.4% *lower* probability that a school nutrition bill is enacted. Awareness of actual versus desired weight also influences the likelihood of introduction of legislation. According to Cawley and Liu, a greater deviation from a desired weight among adult residents is associated with a higher probability of bills being introduced in the state legislature to address childhood obesity (p. 166).

Boehmer et al. (2007) used a legislative database created by Netscan's Health Policy Tracking Service to identify state legislation related to nutrition, physical activity, and other obesity prevention introduced in all 50 states between 2003 and 2005. After researchers filtered out those with a negative health impact and ensured the bills examined were related to childhood obesity, they reviewed 717 bills and 134 resolutions. During the three-year study period, 123/717 bills were

adopted (17%) and 71/134 resolutions were adopted (53%). While more legislation was introduced from 2003 to 2005, the proportion adopted held steady. The topics of the most frequently introduced bills and resolutions were school nutrition standards and vending machines; physical education and physical activity; and studies, councils or task forces. Community-related topics had the greatest proportion of bills adopted and school nutrition and vending machines had the lowest proportion adopted. The median number of bills introduced was 11 and the median number of bills adopted was 2. The study concluded that topic areas do indeed affect whether a bill is introduced because the authors are aware of the likelihood of their adoption. Because bill adoption varied across states, they also suggested state-level factors that might influence legislative activity, such as political and economic factors. This is consistent with Cawley and Liu's work.

Boehmer et al.'s previous research focused on characteristics of introduction of legislation, but in 2008, she and her colleagues studied what circumstances lead to the legislation being enacted. A legislative scan of bills introduced during 2003-2005 using NetScan's Health Policy Tracking service was performed and the characteristics of the 717 bills related to childhood obesity prevention were determined using multilevel logistic regression modeling. Overall, 123/717 (17%) of childhood obesity prevention legislation was enacted in 38 states over the time period studies.

The authors found several bill-level factors that were linked to enactment and were actually more influential than state-level factors. Bill-level factors included having more than one sponsor; bipartisan sponsorship; introduction in the state senate instead of the state house; and a focus on task forces and studies as well as safe routes to school and model school policies. Those states with 2-year legislative sessions and Democratic control of both chambers also increased the

likelihood of enactment. Because every state must pass a budget, those that were budget bills were naturally more likely to be enacted. Lastly, states with lower socioeconomic status and less spending on public health initiatives tend to provide an environment friendlier to childhood obesity legislation.

Ryan et al.'s (2006) analysis of the passage of *Arkansas Act 1220* suggests a framework of four components. These are: initial assessment; population interventions; individual interventions; and ongoing assessments. This examination also concludes that the success in passing the legislation was due largely because of the straightforward nature and the independent mechanism to plan and develop further action. The lessons that can be taken away are: policy development and implementation can occur quickly (such as a two-year legislative cycle) if the correct stakeholders are assembled and resources are available; legislation should be succinct and clear but not overly prescriptive; each stakeholder's primary interest must be recognized to garner long-term support. Ryan and his colleagues conclude a two-stage strategy, i.e. noncontroversial mandates and device for further policy changes. This method allows flexibility in the expansion of efforts (pp. 1000-1001).

The "State Childhood Obesity Policy Evaluation" project conducted by Eyler et al. (2012) analyzed both qualitative and quantitative bill content. The NetScan legislative database was used to identify 26 legislative topic areas during the legislative sessions of 2006-2009. The outcome of interest was enactment and was compared to several variables including socioeconomic status, health variables such as obesity rates, governmental infrastructure (e.g., type of legislature, term limits, and political power), and others of interest such as CDC funding. General bill level variables like sponsor information and bill topics were also considered.

475 of the 1761 introduced bills (27%) in the sample were enacted. The number of introduced bills ranged from 176 in New York to 2 in South Dakota, with

an average of 35 per state. The range of state enactment was 76% in Arkansas to 0% in Kansas with an average of 34%. Interestingly, more bills were introduced with Democratic sponsorship yet enactment was higher for bills introduced with Republican sponsorship. A greater percentage of bills with bipartisan sponsors (30.6%) and bipartisan cosponsors (34.4%) were enacted compared with those with single party sponsorship, which is consistent with the findings of Boehmer et al. The most prevalent content topics were physical education and school food policy. Before- and after-school physical activity was the least represented topic.

The enactment rate (27%) was considerably higher during this period than was the enactment rate during Boehmer et al.'s (2008) study of legislation between 2003-2005, which determined a 17% enactment rate. Other results were consistent with Boehmer et al., including- the lack of correlation with state-level variables such as high school dropout rate and percentage non-White population; the positive association of bill-level factors such as the type of bill sponsor, bipartisan and committee sponsorship; and the higher likelihood of bill content related to "Safe Routes to School" and health and nutrition education. Product and menu labeling and snack and soda tax were 2 highly regulatory bill topics that were barriers to enactment; there was an increase of 10 introduced bills from 2006-2009 from the 2003-2005 time period.

Eyler et al. discuss the "systemic consequences of term limits" which they conclude means more legislators who are less knowledgeable about both legislative process and policy matters and who have less power within the legislature. This is consistent with Lyn et al.'s work about the importance of engaging, educating, and collaborating to bring awareness to the *problem* as well as the necessity of having support and political will behind a policy in order for policy change to occur. It is

certainly more difficult to achieve both of these goals when legislators are changing every two years.

Hersey et al. (2010) sought to determine whether there was a correlation between CDC funding and the amount of obesity legislation enacted in a state. The two CDC funding streams chosen were the Nutrition and Physical Activity Program to Prevent Obesity (NPAO) and the Coordinated School Health (CSH) program. Several databases were utilized to identify a total of 135 bills enacted in 2005 related to obesity, nutrition, and physical activity. The databases referenced were NCSL's; CDC's State Nutrition and Physical Activity Program; the La Leche League International; and the CDC's Progress Monitoring Reporting System (PMR). During the year of the study, a total of 28 states had received NPAO funding and 23 states had received CSH program funding since the two programs' inception.

The authors' analysis determined the 34 states categorized as "funded" enacted 112 bills while the 17 states that were "not yet funded" enacted 23 bills. On average, funded states passed twice as many bills as those who were not. However, the *amount* of state funding did not correlate with a higher level of enacted legislation. The authors propose the actual existence of an obesity prevention program as a stronger determinant of enactment of legislation than the funding level given to the program itself (p. 52). Interestingly, there were no significant differences in population characteristics (i.e. poverty, race, party affiliation) between those that were and were not funded.

The authors suggest that funding these programs may serve to "provide information and guidance to [CDC]'s partners" which could in turn be used to influence policy initiatives (p. 53). The authors pointed to Kentucky as a good case study of such education and advocacy. The state's "Partnership for a Fit Kentucky" board played an important role in the passage of legislation addressing nutrition

guidelines for a la carte cafeteria items and vending machines and also structured 30 minutes of physical activity in daily class time in elementary schools. This same legislation had failed in 4 previous attempts and the role of the task force and statewide forums they conducted seemed to be instrumental in its passage. Hersey et al. note that a significant limitation in their research is that only CDC funding initiatives were considered; no analysis of the USDA contributions was conducted (p. 53).

In conclusion, the majority of states have passed laws addressing physical activity/physical education, school nutrition/nutrition education, and BMI testing and reporting since the turn of the century. The range of the number of bills introduced and enacted varies widely from state to state. Bill introduction and movement in a state legislature is influenced by socioeconomic, political, and state health characteristics. A state with a Democratic Governor and/or the majority in the legislature is more likely to enactment childhood obesity legislation. Bill-level factors, such as multiple, bipartisan sponsors and a focus in the bill content on task forces and studies, were positively associated with bill enactment. Receiving funding from the CDC, such as through the NPAO and CSH programs, has been positively correlated with enactment of legislation. However, the amount of funding is not related.

V. Analysis

Philadelphia's policy changes are consistent with the recommendations made by the leading government bodies, particularly in the areas of community interventions. Removing sugary drinks from vending machines and cafeteria/school lunch modifications were some of the earliest changes made. Philadelphia utilized public-private partnerships through their "Out of School Time" (OST) program and the Food Marketing Task Force, which ultimately developed the Fresh Food

Financing Initiative (FFFI), The FFFI helped ensure access to fresh foods, a key component of several of the recommendations. One area in which Philadelphia seems to be lacking is increased physical activity within schools.

McLeroy suggests several policy approaches in his socio-ecological model, including policies that restrict behaviors (i.e. prohibitions); policies with behavioral incentives (like “sin taxes” on alcohol and cigarettes); policies which indirectly affect behavior; and policies that allocate resources, such as grants and the establishment of health promotion offices (p. 365). Philadelphia enacted policies that- *restrict behaviors* through vending machine modifications; *indirectly affect behavior*, such as the OST; and *allocated resources* through the Fresh Food Financing Initiative. The city created few behavioral incentives. McLeroy et al. also noted that changes made in the society level of the socio-ecological model are closely tied to those on the community level. The partnerships formed through OST and the FFFI are perfect examples of that type of overlap.

Philadelphia’s experience overall does not fit the traditional “policy window” models discussed, and Kingdon acknowledged that not every agenda item will follow his suggested framework. In Philadelphia, this may, in part, be due to the interventions occurring in a city and not a state, and because of the city’s demographic and political climate. However, the FFFI can be seen as a real-life example of utilizing an open policy window and the “Grocery Gap” study (Karpyn et al., 2010) can provide several lessons in how to successfully create policy change at the city level. They are- adapt to local circumstances; maintain focus; engage diverse sectors; include industry; nurture local efforts; and conduct more research (p. 479).

NYC is similar to Philadelphia in the way that it approached policy change. School modifications were made incrementally and additional physical activity in schools was encouraged, but not mandated. While multiple government

departments have worked together on these initiatives, it appears that stakeholder groups have played a lesser role than in Philadelphia. In fact, Mayor Bloomberg's Obesity Task Force only consisted of those in government positions (New York City Obesity Task Force, 2012). NYC's interventions were consistent with government recommendations.

NYC fits the "policy window" model more closely than Philadelphia. Mayor Bloomberg has brought increased attention to the *problem* since he came into office. When a leader like Mayor Bloomberg focus on an issue, it is much easier to place on the policy agenda and take action. In addition, the *political* environment in NYC is largely accepting of government action around the promotion of healthy behaviors. For example, the city was one of the first in the U.S. to ban smoking in bars and restaurants.

NYC *restricted behaviors* through vending machine modifications and enforcing strict standards for child-care settings; *indirectly affected behavior* by providing salad bars in schools; requiring restaurants to post nutritional information; and permitting "green carts"; and *allocated resources* through the "Move-to-Improve" program. NYC attempted to *restrict behavior* with Mayor Bloomberg's ban on sugar-sweetened beverages of a certain size, but the court struck this initiative down. NYC also enacted few changes affecting behavioral incentives. The cities choices to provide "green carts" and menu labeling regulations are both *policy* and *community level* changes, which Kingdon notes may often occur.

Mississippi's policy changes are consistent with government recommendations. The state *restricted behaviors* through- setting nutritional standards for foods and beverages sold in school vending machines; mandating each school board to develop a wellness policy; mandating schools to provide more physical activity time; and by requiring schools to offer healthier foods and

beverages and develop health education programs. Interestingly, the state chose NOT to *restrict behaviors* by passing a law banning a locality from limiting the sale of sugar-sweetened beverages outside of school. Mississippi *allocated resources* through several grant programs supported by local and federal funding. There is little incentive for *individual behavior change*, but schools are encouraged to make changes through the multitude of funding opportunities. Unlike NYC and Philadelphia, Mississippi has made few changes on the *community level*.

Mississippi utilized a policy window that was opened by the State Board of Education's (BOE) setting of nutritional standards for foods and beverages sold in vending machines, a decision which was made in 2006. The very next year, the *Healthy Students Act of 2007* was enacted. The changes made by the state BOE brought more attention to the *problem* and made the *political* domain easier to overcome. By delegating many of the policy decisions to an advisory board full of multi-disciplinary stakeholders, legislators were able to avoid prescriptive *policy* mandates. Attributing major *policy* decisions to non-elected leaders may be a more successful strategy because it can provide legislators "political cover".

California's policy changes also relied heavily on recommendations made by a task force. In this state, the task force was not established by the legislature, but rather by the state school superintendent in 2004. California had been conducting FITNESSGRAM® testing as early as 1976 and began full implementation and reporting in 1996. As test results and national obesity rate data were published, more attention was brought to the *problem*, which led to the establishment of the task force. A policy window was opened after the task force's recommendations were published, and California began implementing a series of state laws aimed at

the group's goals. Again, such a task force provided *policy* recommendations and made the *political* environment more accepting of change.

California *restricted behaviors* by setting strong nutrition standards for school snacks; prohibiting sugar-sweetened beverages in schools; and requiring an additional 100 minutes of physical education in schools over 10 days. The state's requirement of school's to offer fresh fruit and vegetables; requiring localities to support walking and bicycling in their transportation plans; requiring large chain restaurants to post nutrition information; and statewide policies addressing the availability, marketing and promotion of unhealthy foods and increased emphasis on healthier food and expanding opportunities for physical activity all *indirectly affected behavior*. Unlike NYC and Philadelphia, Mississippi has made few changes on the *community level*.

Arkansas is perhaps the best illustration of the policy window framework, as explained in Craig et al.'s conclusions about the policy process of *Arkansas Act 1220*. The research team used key informant interviews of those knowledgeable of *Act 1220* to determine how the "policy" was prioritized. The main issues mentioned were the increased awareness of the problem of childhood obesity around the nation and the tradition of schools providing health services, including some who measured height and weight. In the "political" arena, advocacy efforts played a large role. The Arkansas Department of Health's Obesity Task force findings and recommendation had been presented to the legislature during the year 2000 session. In 2002, many legislative leaders and other policy makers attended an NCSL/NGA/ASTHO conference where different approaches to health problems, including childhood obesity, were discussed. During the early 2000's, The University of Arkansas and the Arkansas Department of Public Health continued to provide annual updates to legislators about the problem of obesity.

Perhaps more than any other state or locality, the health issues of two of Arkansas' top leaders greatly elevated the *problem*, which increased its likelihood of being put on the *agenda*. The Democratic speaker of the state House suffered a heart attack and then-Governor Mike Huckabee was diagnosed with Type 2 diabetes in 2002. These conditions are associated with being overweight and inadequate physical activity and served as "focusing events" that brought increased attention to the issue (Craig et al., p. 2050). After his diagnosis, Governor Huckabee went on to lose 100 pounds and became an advocate of healthy lifestyles. As the leader of the state, he may have inspired positive individual behavior change, but this is difficult to quantify (Ryan et al., p. 996).

Craig et al. note that passing *Act 1220* was not a linear process or one that was easily rushed through, which is consistent with the ideas of Kingdon and Lyn et al. Some of the more controversial elements, such as BMI reporting and vending restrictions, were added, removed, modified, and added again. Policy windows are short and unpredictable and should be utilized as quickly and effectively as possible.

California and Arkansas both passed legislation in line with the most frequently introduced topics as determined by Boehmer et al. (2008). They are school nutrition standards and vending machines; physical education and physical activity; and studies, councils, or task forces. It is difficult to analyze legislative characteristics of *Mississippi Healthy Students Act of 2007* because so many of the health policy decisions were authorized and delegated to an independent task force. Interestingly, Arkansas, Mississippi and California all had Republican Governors at the time of enactment of comprehensive obesity prevention legislation; this is in contrast to Cawley and Liu's findings that a state with a Democratic Governor are 20% more likely to enact some type of anti-obesity law. In addition, each successful state adopted vending machine modifications, a legislative topic that Boehmer et al.

determined had the lowest proportion of bills adopted during 2003-2005. Finally, each of the states studied has received funding from the CDC's NPAO and CSH programs, which is consistent with the findings of Hersey et al. (2010).

The actions of "successful" states and localities have been discussed and the role of policy frameworks and the policy window in their development and enactment have been assessed. Are there lessons that can be learned from the successful states and localities that can be utilized by states that have not yet initiated major policy changes? How can Georgia benefit from the results seen in other states? The next section seeks to answer these questions.

VI. Discussion and recommendations

Environmental scan of childhood obesity policy in Georgia

While states share similarities, different contextual factors will affect the likelihood of policy change within each of them. It is important to analyze current obesity trends and recent policy efforts in Georgia before suggesting lessons learned from the successful states and localities to this state's policy leaders.

Nearly 40% of Georgia's children were overweight or obese, which is the second highest rate in the nation, according to CDC data published in 2010. This public health problem has been escalating for years and recent efforts have been undertaken to address the issue. The Georgia Student Health and Physical Education Initiative (SHAPE) passed in the 2009 Georgia legislative session. Beginning in the 2011-2012 school year, the law requires each local school district to conduct an annual fitness assessment program for all students in grades 1-12 enrolled in physical education classes taught by certified physical education teachers. Like many other states, Georgia is using the FITNESSGRAM® measure to conduct physical fitness tests, and calculation of a BMI score is included in this program.

According to the SHAPE Pilot Executive Summary Report submitted by Children's Healthcare of Atlanta (CHOA) in September 2011, children and parents will benefit from the program in several ways:

Parents will receive reports detailing their child's fitness level along with recommendations for improvement. These results will encourage conversation about physical health and fitness, and endorse a long-term view of health that promotes lifelong habits of physical activity. Longer term, consistent data will provide a baseline, allow for tracking and monitoring trends, and encourage development of strategies to improve the health of Georgia's youth (p. 3).

An initial letter from the Georgia Department of Education explaining that the FITNESSGRAM© test was going to be performed was sent home to parents prior to the assessment taking place. Once the FITNESSGRAM© tests are complete, the results are sent to all parents (not just those of the obese and overweight) via U.S. mail. This method helps alleviate privacy concerns, since the information will not be on the Internet and children will not be sent home with the results in their backpacks or on their report card. Although there is no uniform "cover letter" that is sent home to parents that will accompany the outcome sheet, many individual schools have chosen to do so. Schools have the discretion to determine what goes in that content, although they have been encouraged to keep the tone positive and encouraging.

The results from year one (2011-2012) indicate full participation of Georgia's schools. Out of the state's 2,231 schools, 97% completed fitness assessments, and fitness scores were reported for 998,774 physical education students from 2,156 schools, representing 67% of the total population of students in grades 1-12. However, the results of the FITNESSGRAM© are dismal. Only 16% of Georgia

students passed all five fitness tests, and 20% were unable to pass any of the tests. 37% of student in grades 4-12 did not attain the “healthy fitness zone” (HFZ) for aerobic capacity and 43% of all students assessed in grades 1-12 did not attain the HFZ for body composition as measured by BMI (GA Department of Education, 2012).

Schools are incentivized to make strides in administering fitness testing (including participation rates, data reporting, and assessment) and making their school environment healthier. Pilot participation was rewarded with grant-funded equipment for each system. In 2013, grants through SHAPE and the USDA were announced. According to the SHAPE website:

Schools applying for planning grants (up to \$3,000) are required to form or re-activate a health team or council (e.g., school wellness council); conduct an assessment using one of the two assessment tools [described on the website]; develop a physical activity and/or nutrition improvement plan that includes priorities based on the results of the assessment; participate in training and technical assistance sessions provided by this grant program; develop a strategy for implementing programs/activities that address the top three priorities identified in the plan; and conduct an evaluation of the planning process.

Implementation grants (up to \$5,000) essentially detail the same requirements, but additionally ask for documentation and an evaluation component. Schools were invited to submit an application to be recognized by the Governor’s office as SHAPE Honor Roll Schools. Schools are awarded through a three-tiered award system of Bronze, Silver, and Gold. To qualify, schools must submit an application and related documentation to the Governor’s Office (GA Department of Education, 2012).

Parents generally express a desire for healthy eating and physical activity resources to be easily accessible. The Georgia SHAPE website, which went live in May 2012, is as a communications and resource hub for families, day cares and schools, businesses, community based organizations, foundations, and the medical community. There is an explanation of the FITNESSGRAM© components, healthy recipes, and suggestions of physical activities for children and families of all ages. There is also a tab explaining the BMI measure, which is intended to help parents comprehend just exactly what those scores mean. One of the more innovative aspects of the site is the “fitness at your fingertips” application. This is a geo-locator whereby one can type in their zip code and find parks, gyms, boys and girls clubs, YMCA’s, and various other physical activity outlets near them. Nutrition is also included on the geo-locator, helping families find dieticians, farmer’s markets, and nutrition education programs. The website is a one-stop-shop for teachers, parents, and students to become healthier and more active.

A coalition formed by DPH and deemed the “Executive SHAPE setters” began meeting in December 2012 and met once more in February 2013. DPH’s intent for the Executive SHAPE setters is for them to be a lead stakeholder group. Meetings are set to continue and expand as the partnership is further developed.

On April 16th, 2013, Georgia’s Supermarket Access Task Force, a public-private partnership, released a report identifying 12 ways the state can address “food deserts”. Recommendations include governments aggressively marketing economic development programs; public incentives to the grocery industry for supermarket and other healthy food retail projects in underserved areas; state grants and loans to support the development of supermarkets and other healthy food outlets; fast-tracking land permits; reducing barriers to healthy food vendor participation in the federal Women, Infants, and Children program (WIC); improving

security at food outlets and facilitating transportation for customers; and continued support for access to locally grown food (Miller, 2013). The efforts of this task force are an excellent example of the kind of useful information that can come out of a multi-disciplinary, varied stakeholder, public-private partnership.

Georgia recorded a 5% drop in its childhood obesity rate in 2011. This reduction now moves Georgia from the 2nd to 17th most obese child population in the country. However, Georgia remains 3rd in prevalence for overweight children and 10th nationally when both figures are combined (CDC, 2013). Although this is promising news, DPH Commissioner Brenda Fitzgerald indicated the state still has progress to make, citing the outcomes of the 2013 FITNESSGRAM© assessments (Miller, 2013).

While Georgia is making progress, its implementation of SHAPE may be deficient in a few areas of concern. Nurses do not receive additional training in ways to follow-up with children and parents who want to discuss the FITNESSGRAM©. This is in part because the results and subsequent materials have more of an education than medical design. Focus groups of parents were not conducted prior to the SHAPE. implementation. But, qualitative interviews with key teacher stakeholders during the pilot allowed for modifications in training materials and process prior to the statewide rollout. Lastly, cultural context was largely not considered. In reality, this would be a very difficult task with the multitude of ethnicities and races in the state, and may result in a more divisive view of the test.

In the author's opinion, although the Executive SHAPE setters group is significant, there is not a highly visible task force/coalition that is seen by the public as the lead in the states' fight against childhood obesity. While "best practices" are disseminated through the SHAPE website, efforts are still largely patchwork across the state. The SHAPE initiative is an effective way to disseminate funding to local

schools and school districts, but further education and awareness of such opportunities are needed. SHAPE's media efforts have mostly been in the Atlanta area, since the Department of Public Health is based in the capital. Knowledge of SHAPE could be further entrenched within local communities, as non-profits, churches/synagogues, after-school programs, etc. may not currently be appropriately utilized to increase awareness of the program.

Lessons learned- possible implications for Georgia's health policy leaders

The literature review and environmental scan of Georgia provide evidence for nine lessons learned that can be useful for Georgia's health policy and legislative leaders. First, there must be a coordinated effort across all levels of government and the involvement of parents, non-profits, and community-based organizations for any policy change to occur. A broad approach and framework including public health, health care, and educational components to help families will enhance success (Ryan et al., p. 1003). Multiple stakeholders should be involved, but the concerns of each must also be recognized in order to obtain long-term buy-in. The result of such collaboration may be an efficient set of state and local level programs and policies that best utilize limited financial resources.

Second, schools should be the primary site for policy change because they a natural setting for intervention. The state is constitutionally responsible for the education of its students and has the authority and responsibility to ensure a safe and healthy environment for its students (Ryan et al., p. 995). In addition, multiple studies have linked successful academics to students who are in good health. However, there are hurdles to get around, namely those identified by the NGA. Most schools are primarily focused on achieving academic standards necessary as set forth by "No Child Left Behind", and this must be a consideration when determining how to incorporate more physical fitness time during the school day. Should

changes be made, local governments may need some time, latitude, and resources during implementation.

Third, if a new law is to be passed, legislators must be convinced there is a problem. Karpyn et al.'s (2010) study on the Food Trust's approach to addressing the "grocery gap" in Philadelphia suggests the use of maps in helping communicate problems to policy makers and demonstrate need for action. When policy recommendations are made, it is useful to distribute them as widely as possible to the media and public. This can be done by holding news conferences, testifying at hearings, and holding study groups (p. 479). Similarly, Stamatakis (2010) suggest improving communications by developing local-level data for policy materials; creating a basic structure for creating and disseminating policy briefs; creating a "story bank" of best practices; and using partnerships to conduct more policy research and advocacy (p. S104).

Fourth, Georgia must create a lead stakeholder group. Currently, Georgia has many state coalitions, but there is not one that is seen as a leader (Lyn et al., 2013). There are multiple efforts across the state, but little coordination and collaboration has occurred amongst them. It would be useful for the state to develop its own primary, diverse group of stakeholders from across the state. Such a partnership could be considered a "stepping stone to future action" (Hersey et al., P. 53) and could also serve to promote synchronicities of efforts. This type of alliance may possibly reduce duplications of groups who may otherwise be working independently (Mays and Scrutchfield, 2010, p. 2). The success of such a group can be found in Georgia's Supermarket Access Task Force, an assembly of over 40 varied stakeholders who produced recommendations on addressing the lack of fresh and healthy food in food deserts in April 2013. It would be useful for this alliance to use external funding if at all possible so that opportunity costs are decreased. One way

to do this may be through a community development financial institution that matches state funding and determines grants and loans.

Fifth, the task force should be used to open a policy window and be utilized legislatively. Such a group may either provide recommendations that are the basis for legislation, or a bill may authorize the task force to make binding recommendations to Georgia's Department of Education. If the first option is taken, these suggestions should attempt to fit the parameters set forth by Lyn et al. of being concise and simple. The success of *Arkansas Act 1220* and Mississippi's *Healthy Students Act of 2006* was in part due to restricted immediate action while simultaneously putting processes in place for short and longer-term changes.

Legislation may also authorize such a group to make binding recommendations on school efforts to a states' Department of Education who will then be responsible for implementation, surveillance, and evaluation. This allows legislators to avoid detailed prescriptions and can help reduce potential resistance. If this approach is taken, it is important to require local school districts to follow directives; the lure of financial incentives (such as school payments from soft drink companies) may be too irresistible if they are given a choice (Ryan et al., p. 999). In either approach, if there are negative, unintended consequences of such suggestions, legislators may blame this task force instead of taking responsibility themselves, providing a sense of "political cover" for their vote.

Sixth, Georgia must continue to successfully implement the SHAPE initiative. In the short amount of time the FITNESSGRAM© has been conducted across the nation, it has proven to be a reliable measure of the aggregate health of a states children. By providing a baseline, policy makers and state health leaders will have a better idea of where targeted interventions could occur. Georgia must continue to address privacy concerns with both the testing itself and the "report cards" sent to

parents. Incentives for meeting the state's different levels of achievement should be strengthened. Reward and recognition tools, such as banners in schools, acknowledgment at an Atlanta Braves or Atlanta Falcons game, meeting the Governor, etc. can motivate schools to strive towards the "healthy school" goals and the bronze, silver, and gold status established by the state. Further education and awareness of such opportunities are needed; knowledge of SHAPE should be further entrenched within local communities, as non-profits, churches/synagogues, after-school programs, etc. may not currently be appropriately utilized to "get the word out".

With the increased awareness of childhood obesity, Georgia must continue to provide resources to schools, parents, and students. The state is certainly making strides to do so through the Department of Public Health's (DPH) SHAPE website. For example, on April 12th 2013, DPH Commissioner Brenda Fitzgerald and State School Superintendent John Barge sent a letter to Georgia school superintendents encouraging them to adopt a daily 30-minute period of physical activity (in addition to physical education classes) for elementary school students. The "Power Up for 30" program will be voluntary and the state DOE and DPH will offer ideas on how to implement the program. The target startup is fall 2013 (Miller, 2013).

Seventh, there are several lessons that can be derived from the literature on increasing likelihood of passing legislation affecting the childhood obesity rate. "Bill-level factors"- such as having multiple, bi-partisan sponsors, introduction in the state senate instead of the state house (because the body is smaller), and a focus on task forces and studies as well as safe routes to school and model school policies- all positively influence passage (Boehmer et al., 2008). Ryan et al.'s 2006 analysis of *Arkansas Act 1220* derived multiple legislative lessons. They are: policy development and implementation can occur quickly (such as a two-year legislative

cycle) if the correct stakeholders are assembled and resources are available; legislation should be succinct and clear but not overly prescriptive; and each stakeholder's primary interest must be recognized to garner long-term support.

Eight, and perhaps most importantly, the political process must be dealt with delicately. Georgia is a conservative state and the political climate should be considered in any policy proposals. But, policy leaders should always be aware of any potential policy window. There may need to be "positive exploitation of opportunities", as was the case in Arkansas with the health of Governor Huckabee and Speaker Cleveland (Ryan et al., p. 1003).

Lastly, incremental policy changes are the norm (Craig et al., p. 2047). Comprehensive and innovative legislation such as *Arkansas Act 1220* are less likely to pass than the changes seen in Philadelphia or New York City. This is in part due to lack of education, but also because legislators have limited amounts of time and are focusing on any number of other, different priorities, especially during the short 40-day session in Georgia. Policymakers should not be discouraged if their efforts are piece-meal and take time. A summary of these recommendations can be found below.

General limitations

There are multiple limitations within this paper and policy brief. Perhaps most glaringly, association does not imply causation. In other words, there may be factors at hand that have contributed to the decline/freeze of childhood obesity rates besides the policies explored. In a similar way, there are many characteristics of a state that influence the enactment of legislation including obesity prevalence, poverty rates, socioeconomic status, state obesity costs, party of the legislature and party of the Governor, balanced budget requirement/economic status of state, etc. Many of the interventions undertaken by the successful states and localities are still

in their infancy. In the future, longitudinal studies will provide more accuracy in assessing the effects of a policy.

It's possible the legislative databases used in the literature and for the purposes of this paper do not capture every enacted bill across the U.S. In addition, some legislation may be enacted but never funded; in some cases, this makes the effect null. The strength of the provisions of the legislation and the actual implementation are not measured in these databases (Hersey et al., 2010, p. 55). For example, there can be variation within the categories of physical activity, nutrition, and community improvements (Cawley et al., 2008). Finally, although this paper discusses the role of policy windows and the influences surrounding legislative passage, sometimes passing a bill or resolution is just luck and/or good timing.

Lastly, there are other health measures that assess a child's health besides BMI. Promoting a BMI within the CDC's "healthy range" may be less important than focusing on promoting healthy behaviors such as increasing the amount of physical activity minutes per day/week or a greater consumption of fruits and vegetables, particularly because BMI is an imperfect measure. In fact, as recently as January 2013, an analysis of over nearly 100 studies conducted on approximately 3 million people concluded while higher levels of *obesity* were associated with an increased risk of death, being *overweight* was associated with a lower risk of death (Flegal et al., 2013).

Although regular physical activity contributes to the reduction of body fat, there are many beneficial health effects from physical activity are independent from its effect on adiposity. Works published by Leitzman et al. (2007), Manini et al. (2006), and Paffenbarger et al. (1993) all conclude lower mortality rates among subjects with increased physical activity regardless of BMI. Moreover, a number of

studies suggest that physical activity may counterbalance the hazardous health effects of increased adiposity. It's possible that an increase in physical activity in an obese individual might improve his or her health perspective even if they do not lose weight (Hainer et al., 2009). There is evidence that an increase of fruits and vegetables reduce the risk of major chronic diseases, particularly cardiovascular disease (Hung et al., 2004).

Recommendations for future study

This paper used the reduction of the childhood obesity rate to define whether a state or locality had been successful in policy change. However, this is but one measurement and the limitations of using such an outcome are described in the previous section. It would be worthwhile for policy experts to consider developing a uniform set of measurements (besides the reduction of the childhood obesity rate) to determine the impact of policy proposals. Sacks et al. propose the formation of "obesity impact assessments" on new policy proposals. These assessments could assist policy makers in prioritizing policy areas (p. 85). Further, once policies are in place, there doesn't appear to be a way to outline stages of progress. Developing benchmarks would help in evaluation of the success or failure of such recommendations. It is also important to track any potential unintended or negative consequences of modifying school environments. One possible way to incorporate these measures would be through policy surveillance as a component of a state plan to prevent obesity.

This paper discussed policy windows and the importance of policy triggers. Most of the literature analyzes a state's level of readiness for policy change by discussing the methodology and path to change after the fact. It would be interesting to create matrices or a checklist that can help policy leaders determine whether a state legislature is prepared to adopt childhood obesity policy changes.

Although there are few databases that collect and categorize state legislation, it is clear that methods of identification and cataloging differ. In the future, standardizing these methods amongst the groups would help create a more consistent evaluation. (Boehmer et al., 2007, p. 6).

Lastly, as discussed in the paper, policy brief, and limitations, the introduction and passing of legislation is not a strictly linear process. Nonetheless, lessons can be learned from the successes of Philadelphia, New York City, California, Mississippi, and Arkansas. Georgia has taken great strides since the development of the SHAPE initiative but can learn from the instructive success cases and information derived from other states' policy processes to take the state's efforts even further.

**Policy Brief- Lessons learned from states and cities that have
reduced their childhood obesity rates**
Possible Implications for Georgia's health policy leaders

The problem of childhood obesity

Childhood obesity has become a serious epidemic and is now one of the greatest public health problems across the United States. The Centers for Disease Control and Prevention (CDC) defines childhood obesity as a Body Mass Index (BMI) at or above the 95th percentile in comparison to children of the same age and sex in their growth charts. Since 1980, obesity prevalence among children and adolescents has almost tripled. According to the CDC's National Health and Nutrition Examination Survey (NHANES), 17% of children under 20 were obese in the U.S. (about 12.5 million) as of 2010 (CDC, 2012). Obese children are more likely to have multiple health issues such as type-2 diabetes. There are major long-term effects, too; as they move into adulthood, obese adolescents are up to 80% more likely to become obese adults and suffer from associated chronic diseases (CDC, 2012). Some experts believe the current generation of children will be the first to live sicker and die younger than their parent's generation.

An evaluation of Georgia

In 2010, according to CDC data, nearly 40% of Georgia's children were overweight or obese, which was the second highest rate in the nation. Georgia recorded a 5% drop in its childhood obesity rate in 2011, which moved the state from the 2nd to 17th most obese child population in the country. However, Georgia remains 3rd in prevalence for overweight children and 10th nationally when both figures are combined (CDC, 2013).

The Georgia Student Health and Physical Education Initiative (SHAPE) passed in the 2009 Georgia legislative session. Beginning in the 2011-2012 school year, the law requires each local school district to conduct an annual fitness assessment

program for all students in grades 1-12 enrolled in physical education classes taught by certified physical education teachers. Like many other states, Georgia is using the FITNESSGRAM® measure to conduct physical fitness tests, and calculation of a BMI score is included in this program.

Georgia has taken great strides since the SHAPE legislation mandated the use of FITNESSGRAM®. The Department of Public Health’s SHAPE initiative provides a multitude of health, nutrition, and physical activity information to parents, schools, and children. Schools have been incentivized to create healthier environments for their students through grants and reward and recognition tools. But Georgia can learn from the instructive success cases and information derived from other states’ policy processes to take the state’s efforts even further.

Lessons learned

The following table of interventions is based on an analysis of policy actions taken by California, Mississippi, Arkansas, New York City, and Philadelphia, each of whom have made progress in addressing their respective childhood obesity rates.

City/State	BMI	Cafeteria modifications	Vending	Increased physical education
Philly		X	X	Optional through local school councils
NYC	X	X	X	Yes-voluntary “Move to Improve” program
MS	X	X	X	Yes- 150 min/week
CA	Grades 5,7,9	X	X	Yes-additional 100 min. over 10 days
AR	X	X	X	X

Solutions to the childhood obesity problem have been elusive, but there are “success stories” around the U.S. such as the states and localities listed above that Georgia may derive lessons from. The following recommendations are based on the experiences of California, Mississippi, Arkansas, New York City, and Philadelphia, as well as conclusions found in literature examining correlates to successful enactment of state legislation.

Development and utilization of a lead stakeholder group

It would be helpful for Georgia to undertake a coordinated childhood obesity effort to include multiple and varied stakeholders, including representation from all levels of government, non-profits, parents, schools, and industry. Such a group will help coordinate efforts, reducing duplication and lessening a traditional patchwork approach. This collection of multi-disciplinary individuals may develop “best practices” and serve as a clearinghouse for any potential grant programs.

Arkansas, Mississippi, and California all had task forces that played a role in passing childhood obesity legislation. In Mississippi, the *Healthy Students Act of 2007* authorized an advisory committee to assist the State Board of Education in developing the recommendations to states. Similarly, Arkansas’ *Act 1220* delegated many recommendations to the 15-member statewide Child Health Advisory Committee. In California, the State Superintendent of Public Instruction established a task force on childhood obesity, type-2 diabetes, and cardiovascular disease and the group’s recommendations were largely adopted through multiple pieces of legislation. If a lead stakeholder group is developed, their recommendations may either be used as the basis of legislation, such as in California, or legislation could be passed that would assign many of the recommendations to the task force. Examples of such legislation and recommendations include cafeteria modifications, changes in vending machine practices, and increase physical education.

SHAPE initiative and FITNESSGRAM®

FITNESSGRAM® testing is a proven and reliable method of assessing the multiple health measures of a state's children. California, Mississippi, Arkansas, and New York City all conduct FITNESSGRAM® tests. Georgia is mandated by law to continue FITNESSGRAM® testing, but it would be beneficial to strengthen the monitoring process and publication of results. It may also be valuable to continue providing incentives for schools that meet the state's different levels of achievement (bronze, silver, and gold medal status). With the increased awareness of actual weight and the affiliated health problems of childhood obesity, additional resources for physical activity and nutrition should be provided. The SHAPE initiative can be used as a platform for voluntary nutrition and physical activity programs in schools such as the recently created Georgia program "Power Up for 30".

Development of legislation

It is necessary for legislators to be educated and convinced of the magnitude of the childhood obesity problem in Georgia in order for legislation to be successfully introduced and passed. The use of maps detailing county and local level data, oversight hearings, and study committees are all examples of informative actions. Factors influencing the passage of legislation once it is introduced include multiple, bi-partisan sponsors; introduction in the state senate instead of the state house; and a focus on task forces, model school policies, and community infrastructure, such as "safe routes to school". Legislative text that is succinct, clear, and not overly prescriptive, with recognition of stakeholders' interests, is more likely to be passed and implemented.

Political process

The political process must be dealt with delicately, with recognition of the conservative climate of the state. Georgia is conservative, like Mississippi and

Arkansas, and it would be difficult to pass a law(s) authorizing large-sweeping government intervention, such as banning soft-drinks of a certain size. If a “policy window” is to open, health policy leaders shall not hesitate to be more aggressive in their efforts and take advantage of such an opportunity. Incremental policy changes are the norm and Georgia’s health policy and legislative leaders must not be discouraged if their proposals are implemented one or a few at a time.

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