I. Executive Summary

Policy makers, public health officials, and parents are concerned about the implications of the increasing rate of childhood obesity in the U.S. Behavioral, social, and environmental risk factors contribute to childhood obesity. Research demonstrates that if the trend is not reversed, childhood obesity will suffer from a number of health complications and society will deal with rising healthcare costs. This paper uses an ecological framework to develop seven strategies that address these risk factors on five nested levels: individual, interpersonal, community, systems, and societal. Communities that have already implemented the comprehensive approach promoted by the ecological framework have seen a reduction in childhood obesity rates. Our policy strategies are efficient, politically feasible, and cost effective and provide a sustainable and long-term solution for communities.

II. Problem Identification

The 2008 National Health and Nutritional Examination Survey found that 16.9% of children and adolescents are obese [1]. The study also noted that the incidence of childhood obesity has tripled since the 1980s [1]. According to the Robert Wood Johnson Foundation, childhood obesity accounts for $14.1 billion in direct health care costs [2]. Three categories of factors affect childhood obesity: behavioral, social, and environmental (see Figure 1).

![Figure 1: Concept Map for Factors Affecting Obesity](image)

This figure shows the factors that contribute to the rising trend of childhood obesity. The behavioral factors include lifestyle factors, healthy food availability, and exercise. The social factors include society and households. The environmental factors include industries, schools, and the build environment.

A. Behavioral

Childhood obesity is defined as an excessively high amount of body fat or adipose tissue in relation to lean body mass, which is categorized by being at or above the 95th percentile of the sex specific Centers for Disease Control and Prevention Body Mass Index (BMI) growth charts [3]. Excess weight occurs when an individual consumes more calories than he or she expends [4–7]. When the body’s natural equilibrium of energy intake and expenditure is disrupted, the body struggles to account for the energy imbalance [4]. While genetic factors may make some individuals more susceptible to increased weight gain, behavioral habits regarding food consumption and physical activity are the underlying factors that affect energy accumulation in the body [6], [8]. Over time small increases in food intake can lead to long term weight control problems [6]. Obesity treatment and prevention options may seek to compensate for the energy imbalance by decreasing food consumption or increasing physical activity [4]. Though it is
unclear which driver dominates the energy balance equation, evidence demonstrates that social and environmental factors influence eating and activity behaviors [4], [6–8].

B. Social

Social factors influence children’s risk of becoming obese. Social factors include race, ethnicity, gender, class, and relationships with parents, siblings, and peers. Research shows that family structure influences the risk for obesity. For example, children without siblings and children from single-mother households are at an increased risk for obesity compared to children who live with both parents and siblings [9], [10]. Research shows that households with working parents may not be able to prepare healthy meals because of time and scheduling constraints [11], [12]. Food availability in the household dictates children’s food choices, and increased availability of unhealthy food leads to increased consumption of junk food [13].

Class and race also play a role in childhood obesity. Health disparities exist among African Americans, Hispanics, American Indians, and other minority groups. Children in these racial minority groups experience higher rates of obesity than white children [14], [15]. Researchers found that after adjusting for socioeconomic status and behavioral factors, African American children and Hispanic children are 27% more likely to become obese than white children [1]. Research suggests that the prevalence of childhood obesity is closely linked to social inequalities [16]. Children living in poverty are 69% more likely to be obese [16], [17].

C. Environmental

Environmental factors influence both food intake and physical activity and include school-related factors, advancements in technology, and food industry advertising practices [18].

School-related factors include available food choices, health education, and physical activity in schools. Children attend school for 6 or more hours a day, making schools responsible for feeding many students breakfast, lunch, and snacks, but students who eat school meals are more likely to be obese [19]. Even when schools try to offer healthier meal options, students are often tempted by unhealthy food options available in vending machines [19]. Physical education requirements influence childhood obesity rates as well. However, because of budgetary constraints and pressure to improve standardized test scores, physical activity in schools has been less than the recommended 30 minutes per day [19], [20].

Advancements in technologies also contribute to childhood obesity. Food choices from mass production and food preservation present children with unhealthy food options [21]. Mass production has also kept unhealthy food prices low, while the price of fruits and vegetable has remained high [11], [21]. A study concluded a price drop of 10% would significantly increase fruit and vegetable consumption by lower income Americans [22].

Advertising influences children’s choices. The Kaiser Family Foundation’s study on television habits of children found that children watch approximately 4 ½ hours of television per day making them more susceptible to unhealthy food advertising [23], [24]. In 1997, McDonalds spent more than $571 billion in advertising, while the National Institutes of Health spent only $1 million on the "Five-A-Day" advertisements [25]. Between 1994 and 2004, 1,643 new types of candies were introduced and marketed toward children compared to 52 fruit and vegetable products that were introduced [25].

III. Consequences without Policy Interventions

If policy fails to reduce childhood obesity, American society will face serious consequences over the next 20 years. In the short term, these consequences include increased child obesity diagnosis rates, increased risk for obesity-related illness, and diminished academic performance. Hospitals report that the number of childhood obesity diagnoses will continue to
increase, having gone from 21,000 in 1999 to over 42,000 in 2005 [26]. Children will also suffer increased risk for at least one additional illness such as cardiovascular disease, elevated total cholesterol, triglycerides, insulin, or blood pressure [27], [28]. Obese children often perform poorly academically due to compromised physical and cognitive functioning [19], [29].

While the short-term effects of obesity are seen in the school systems, long-term implications exist because obese children are more likely to become obese adults. Adult obesity increases costs for health care systems and creates an unhealthy labor force [30]. Hospital costs have already risen from $125.9 million to $237.6 million between 2001 and 2005, and will likely continue to increase obesity diagnosis rates [26]. Public insurance programs such as Medicare and Medicaid will be expected to cover most of these costs [31]. The economic implications for obese adults in the workforce are increased absenteeism and loss of productivity [32], [33].

IV. Ecological Framework

Justification for policy interventions comes from a market failure. Childhood obesity contributes to a market failure in two ways: information asymmetry and negative externalities. First, information asymmetry exists because parents often do not have the information to make healthy food choices for their children and children’s choices are often dependent on those around them[3], [34–36]. Food industries have also withheld information about nutritional content from the public. The negative externalities that exist include the costs that society pays because of the unhealthy behaviors individuals choose. This includes rising health costs for public insurance programs and loss of economic productivity [3]. Therefore policy interventions should address this market failure by affecting the factors that contribute to childhood obesity.

To address these factors, it is important to understand the social and physical structures in society. Americans live in a “obesogenic environment,” meaning their current surroundings provoke unhealthy physiological and psychological reactions [37], [38]. The existing approach to childhood obesity has led to policies aimed at changing individual behaviors [30], [37], [38]. An ecological model is proposed in order to assess multiple levels of factors that influence behavior across levels and stakeholders (see Figure 2) [39], [40]. The inherent value of this model is that it takes a holistic approach through the individual’s dynamic and complex environment by considering that individuals influence the physical and social environment and vice versa [37], [41]. Therefore, using this model to combat childhood obesity will require reshaping dietary, social, and physical structures at multiple levels in order to create a healthy environment [37]. While the ecological model acknowledges that some of the current policy approaches are valuable to combating childhood obesity, it also provides a basis for considering a set of new policies that engage multiple levels using multiple actors.

A. Individual Level of Health Behavior

The values of the American culture are individualistic: each individual has the freedom and the power to shape his or her own destiny [38]. Food is viewed as a personal decision, and the food one eats can express a personal identity [37]. Therefore, many policies to combat obesity are aimed at the individual. Examples of these policies include educating, informing, and advocating better nutrition and physical activity. The psychological model underlying individualistic anti-obesity policies is the Health Belief Model [42]. The foundation of this model is that individuals have beliefs about susceptibility, risk, benefits, and self-efficacy. If an individual perceives the threat of susceptibility, he or she will be more likely to take the precautions to prevent the disease [42]. This model assumes that the individual understands the risks of contraction, the benefits of prevention, and can produce certain outcomes.
The problem with only using the Health Belief Model is that it assumes that people are rational actors. According to the rational actor model, each individual acts rationally by taking the necessary precautions to prevent the illness or by changing his/her behavior once the illness is identified if they have perfect information [38], [43]. However, individuals living and interacting in this “obesogenic environment” may change their behavior because they may not view obesity as a threat. Even if they do, the “obesogenic environment” may threaten the perceived self-efficacy of an individual to change his/her behavior [38], [42]. The individual model also presupposes that each rational actor has access to the resources necessary to make those changes. This assumption is also flawed because certain socioeconomic and racial groups do not have access to the resources necessary to implement healthy behaviors[38].

B. Interpersonal Level of Health Behavior

The foundation of the interpersonal model is observational learning. Individuals learn and understand behavior through their observations of others [44]. Theories of social networks and social support for health outcomes promote policies that empower expert groups or risk groups [45]. Evidence shows that an individual’s health depends on social linkages [34]. For example, social networks have been used to predict mortality and mobility in the social strata [39], [46]. Qualitative and quantitative evidence shows that social networks reinforce eating habits and physical activity [34], [35]. Using social networks for public health goals create positive cumulative health effects making them cost-effective [47]. Policymakers can use existing linkages or create new ones in order to promote good health behavior. Examples of linkages include relationships between the individual at risk and peers, parents, teachers, and role models.

C. Community Level of Health Behavior

The community level refers to the built environment where individuals live and work and includes land use, zoning, community design, modes of transportation, and available physical activity options [48]. The built environment can act as a barrier for healthy lifestyles by limiting physical activity, recreation, social interaction, and access to nutritional foods [20], [38], [49–51]. For example, communities with high connectivity between neighborhoods are more likely to have a positive impact on health behaviors [48]. Evidence has shown that individuals who live closer to highways have a higher BMI [52], [53]. Additionally, children who have access to parks generally have higher rates of physical activity and lower BMIs [50]. In contrast, communities with a high density of fast-food restaurants, unsafe parks, lack of sidewalks and fewer supermarkets are more likely to hinder healthy behaviors [38], [48]. Mitigating community level factors at the urban and suburban levels requires different approaches. Suburban neighborhoods face sprawl and automobile-focused development that hinders pedestrian activity, while urban neighborhoods face blight and disinvestment in low-income neighborhoods [49].

D. System Level of Health Behavior

A systems and requires interconnectedness among sectors. The public health system is “intersectoral” with the government providing the bulk of its infrastructure [54]. While political rhetoric may suggest that the public and private sectors oppose one another, a systems approach acknowledges that these sectors must be interconnected for successful policy intervention. This approach addresses the structural dimensions facing the childhood obesity problem

In public health, especially with obesity, the public, private, and non-profit sectors are essential for scalable and sustainable interventions [55]. The public sector includes major policy actors such as local, state, and federal levels of government as well as public schools and public universities [55]. Private sector actors include the business community and industries. The role of the public sector is to create top-down mandates and provide funding for research and
intervention [55]. In contrast, the role of the private sector is to influence advertising, supply prices, and health-care practices [55]. The non-profit sector has the potential to mobilize and conduct large-scale programs. For successful policy interventions, cooperation between the public, private, and non-profit sectors is essential for political feasibility. The public sector can set the agenda and provide funding, the non-profit sector is able to plan and develop large-scale programs while private sector buy-in can promote long-term sustainable interventions [55].

E. Societal Level of Health Behavior

The existing “obesogenic environment” reflects American values. American government has not regulated industries, which has led to a reactive response to obesity. Instead of preventing obesity, policy interventions have focused on treating obese individuals [37]. While societal level approaches take much longer to implement and may be politically contentious, they are essential to counteract the powerful forces in the environment [38], [56–58]. Crucial decisions about inequality, regulation of harmful activities, access to education, and a prevention-centered healthcare system are necessary given the dynamic and nested nature of the framework.

Figure 2: Ecological Framework Model

This figure shows the five levels of the ecological framework and the characteristics of each level [39], [40], [59].

F. New York City as the Model

An example of how the ecological model has been used to combat obesity is New York City’s childhood obesity initiative. The New York City Department of Health improved city conditions and implemented regulation for food preparation in chain restaurants and stores. One policy restricted the use of artificial trans-fats by restaurants and vendors to increase access to healthy foods and to decrease the risk of heart disease and obesity [60], [61]. This ban did not impose financial losses on the food industry [60]. Menu labeling legislation required restaurant to post calorie counts and 84% of individuals reported using this information [60]. Furthermore, 9% of teenagers purchased items with fewer calories when menus were labeled [62]. The city also improved the environment by rebuilding parks, paths, and sidewalks. Recently, the New York City Department of Health limited the size of sodas to 16 ounces based on evidence that soda consumption leads to weight gain [63].

New York City is the only city to implement a comprehensive approach in addressing childhood obesity. Preliminary evidence shows obesity rates in New York dropping by 5.5% between 2006 and 2011 [20], [64]. Further, it is worth noting that childhood obesity among 5 to 6 year olds dropped by 10% [65]. The life expectancy of a New Yorker has increased by 3 years since 2000 [66]. While, other states and cities, including California, Washington, Mississippi,
and Philadelphia have implemented similar policies, these approaches have not been as comprehensive or effective[67].

V. Policy Recommendations

Using the ecological framework, we recommend an initiative with seven strategies as a policy solution to combat childhood obesity. These strategies work at five levels within the ecological framework and can be employed by urban, suburban, and rural communities.

1. Encourage more early childcare counseling and education by providing individuals with specialized health care providers and training community leaders.

This strategy is aimed at the individual and interpersonal levels of the ecological framework. It employs public health information campaigns aimed at changing individual behaviors by providing children and their caretakers with information about nutrition, physical activity, and health [3]. These interventions, undertaken by state or federal governments as well as community organizations, seek to raise public awareness about the behavioral factors that contribute to obesity[3]. Childcare providers are encouraged to exercise and eat meals with their children and discouraged from using food as a reward or punishment [68]. To assist with information campaigns, nutritionists should be available in schools and pediatric offices for family consultations. For example, in Orlando, Florida, nutritionists shape the nutrition health curriculum in schools and teach children how to eat healthy[3]. To implement this intervention, schools should work with community health and nutrition experts to educate individuals [69].

2. Support technology-driven counseling to motivate children and their providers to track their health and supply a blueprint for a health-driven lifestyle.

Technology-driven counseling can be used to strengthen existing linkages, create new linkages between children and their role models, parents, and healthcare providers, and promote healthy behaviors [3], [45], [68], [70]. This policy recommendation is aimed at the individual and interpersonal level of the framework by addressing the social factors that contribute to obesity. Example applications of this strategy include the use of telemedicine technologies to improve access to primary health care to children in rural areas, and the development of teaching technologies for use in medical consultation [71].

3. Provide grants to organizations in communities to rebuild the built environment.

This strategy seeks to address environmental factors such as the economic and lifestyle factors that contribute to obesity and affects the community and systems levels. Current policies that support the improvement of the built environment through initiatives include: Complete Streets, Active Living by Design, Transit-Oriented Development and Safe Routes. These should be utilized and properly funded at a national scale [20], [70]. The Complete the Streets Initiative, which provides grants to localities to rebuild sidewalks, has gained popularity around the nation with over 350 localities adopting these policies [72]. The Surface Transportation Act provides incentives to build/rebuild sidewalks, bike lanes and establish school safe routes [20]. Community transformation grants at the federal level are used to implement and evaluate evidence-based community health initiatives that include policy, program, and structural changes [20]. These approaches to changing the built environment are vital to addressing obesity by encouraging children to be more active[73]. Communities can adapt this policy to address their community needs; for example, a rural community may choose to rebuild a park, while an urban community may improve the sidewalks in neighborhoods. Communities must work with actors
at all levels of government, elected officials, private firms, city and community planners, engineers, school authorities, health practitioners, and the general public [74].

4. **Fund and promote anti-obesity collaboration among public and private sectors.**

This strategy addresses the social and environmental factors influencing childhood obesity through the community and systems level interventions. It should involve several major actors, including local, state, and federal governments, private and non-profit firms, the general public, elected officials, and community leaders. One example of this type of collaboration is the Farm to Schools program. Twenty-three states and some local governments have adopted Farm to School policies to increase vegetable and fruit consumption, give better nutrition to students, encourage students to make healthier community choices, and increase sales for farmers [68]. Farm to School is still a small-scale program which will need more funding from the public and private sector to incentivize greater participation in the private sectors [70]. An example of city and farmer collaboration involves Chicago’s city-run farmers’ markets which are increasing the availability of fresh produce across the city on different days of the week [75]. The USDA is offering grants to increase use of SNAP participation at these farmers’ markets, seeking to increase access to healthy foods to low-income groups [76]. Joint Use Agreements have also been promoted by local governments, such as San Francisco and Seattle, to encourage collaboration between the school and community groups so that school facilities can be improved to be used by all members of the community [70]. Community organizations, such as the YMCA, the Boys and Girls Clubs of America, and Oasis, and schools can also partner to provide communities with physical activity programs for both children and parents as a means of preventing obesity [77], [78]. These organizations have the potential to reach up to 32 million children across a wide array of socioeconomic and ethnic backgrounds [79]. These types of collaborations increase community involvement across the public and private sector. To foster these collaborations, public sector funding of evidence-based research coupled with private sector implementation support is necessary. Several companies, such as GE Healthcare and Cerner Corporation, have partnered with the Let’s Move Campaign to improve children’s access to healthy foods and increase physical activity [80].

5. **Regulate unhealthy foods by labeling menus and restricting saturated and restricting trans fats, and sodium at restaurants and public institutions.**

Regulating unhealthy foods by instituting policies such as menu labeling and restrictions of artificial trans fats is an approach that addresses the societal level of the ecological framework. These types of policies address environmental factors relating to industry, schools, and households by changing the overall consumer environment. Regulatory tools can be used to restrict consumption of unhealthy foods. One way to do this is by restricting trans fats in restaurants and school meals to provide healthier meals to children. Another example is to limit access to competitive foods, such as soda, juices, candy, salty snacks, and high fat snacks in vending machines, a la carte lunch lines, and bake sales [68]. Other measures that states have taken to improve school nutrition include restricted access to sodium content and improved access to clean water [20]. These strategies, which have been implemented by some states, should be expanded across the country [68]. Menu labeling is another regulation that will be used to provide the information to consumers and has also been implemented in five states and several major cities to inform consumers of the number of calories and nutritional value of foods [20]. The Affordable Care Act also mandated menu labeling for any restaurant with more than 20 locations [20]. Menu labeling should be expanded to permanent food items at restaurants to increase consistency in available information for consumers at all restaurants.
6. Incentivize access to healthy foods through subsidies for fresh produce and/or supermarkets in food deserts.

By incentivizing access to healthy foods and supermarkets, this initiative seeks to have a societal level impact while influencing the system level of the ecological framework, as well. Increasing the possibility for healthy food access improves in the consumers’ overall food choices. The Federal government would be a necessary actor to collect and allocate funds that will be distributed to grocery stores and farmers for this strategy. Program examples on a federal level include the National School Lunch Program, School Breakfast Program, Summer Food Services Program, and Child and Adult Care Food Program. They seek to provide further nutritional standards for school meals [20]. Additionally, several local and state governments have incentivized grocery stores to relocate to low-income neighborhood in order to increase availability of grocery stores, [68]. While the Healthy Hunger Free Kids Act incentivizes healthier food options through the National School Lunch Program, there are still unhealthy options available. Therefore, future legislation to incentivize healthier food options and eliminating unhealthy food options is necessary.

7. Monitor health data of the population for policy evaluations through technology.

In order to monitor and evaluate the effectiveness of these policies at all levels, technology should be used to evaluate the changes in health behaviors and collect population-wide BMI and weight data [20], [30], [70], [81]. We are encouraging a community-based participatory evaluation approach to monitor and evaluate interventions. Using this evaluation and monitoring approach allows us to employ the principles that are grounded in the ecological framework by allowing community members to recognize that health is influenced by behavioral, social, and environmental factors, and then evaluating the interventions [82], [83]. This approach promotes sustainable programs by increasing the community’s ability to monitor health outcomes thereby giving them a voice in the outcomes of the interventions. Using a community-based participatory evaluation also involves funders such as non-profit and governmental agencies as well as state and local community organizations that implement the programs. Funders can provide general guidelines to communities for localized interventions, but all communities should show the major health impacts such as reduced prevalence and incidence of childhood obesity. States currently use some community-based methods by sending children’s BMI screenings to parents [68]. However, other community-based evaluation models can be adopted from health programs such as those funded by the CDC [84].

VI. Discussion

To combat childhood obesity, we recommend an initiative that is composed of the seven policy strategies that can be adapted to provide context-specific community-based solutions. Communities are encouraged to create innovative programs to combat the environmental and societal factors that drive childhood obesity. This comprehensive policy approach addresses the market failures that are inherent in the problem of childhood obesity. To address the information asymmetry, this initiative provides more information to the parents and children about health, nutrition, and physical activity to promote healthy behaviors. This initiative also provides the means to change individual behavior by giving access to healthier foods and safe places to exercise. It addresses the negative externalities, such as rising health costs, associated with obesity. We predict that this initiative will have the necessary short term and long term health impacts and will be efficient, politically feasible, and cost effective.
A. Health Impact

The population’s health will improve because the initiative focuses on interventions that affect the environmental and social factors that contribute to childhood obesity. While current policies focus on treating people who are already obese, our policies focus on preventing the average individual from becoming obese. The solid line in Figure 3 represents the normal distribution of the population’s BMI in which the average individual is already overweight and the distribution skewed towards a higher BMI [38]. A policy that focuses on shifting the BMI of the average individual will result in a decrease in BMI for the entire population [38]. In the short term, a decrease in obesity incidence is expected; in the long term, a decrease in obesity prevalence and obesity-related risk factors is expected.

Figure 3: Shifting the Curve  This figure shows how the policy intervention incorporates the ecological framework to shift the average populations BMI and create a healthier society.

B. Efficiency

Efficiency is defined as getting the most output given a set of inputs [85]. By using this definition of efficiency, the initiative can be considered as efficient. First, it acts on all levels of the ecological framework. Second, it seeks to involve multiple actors in the public and private sector to collaborate. Third, it combines a top-down and bottom-up policy implementation approach to encourage communities and their leaders to develop innovative programs.

C. Political Feasibility

Political feasibility can be defined as the likelihood for policy change by gaining support of the public, policy actors, and stakeholders [25], [86]. In order to assess if a policy is feasible, it is first important to demonstrate the problem is correctly identified by the stakeholders [86]. First, Americans agree that childhood obesity is a problem that should be addressed by the government. Approximately 72% of Americans view childhood obesity as a serious problem [3]. The policy strategies such as improving the built environment and increasing access to resources are widely favored by the American public [3]. More than half of Americans agree that helping children eat right and stay physically active is the way to treat childhood obesity [3]. Second, Americans agree that the proper policy actions are ones that relate to nutrition, physical activity, and education opportunities for good health in schools and provide access to information that helps people make healthy choices [3].

Though it might be difficult to assess which policy actors and stakeholders may oppose obesity-related legislation, there are some characteristics that describe successful state
legislation. Successful state legislation has been supported by national media and multiple stakeholders and has seen a bipartisan effort to address walking and biking routes, safe routes to schools, school policies, and initiatives for further studies and taskforces [58], [87]. These programs have focused on the individual, interpersonal, and community levels of the ecological framework. Product and menu labeling efforts and high-cost programs are likely to be more contentious [57], [87]. These policies are focused on the systems and societal levels and will be more difficult to pass. If communities can implement less contentious policies, then they can advocate for further reform at the system and societal level. This will be a long-term evolution of policies and will require the coordination of a top-down and bottom-up approach.

Finally, these policies are politically feasible because they redistribute the costs and benefits from current policies. Current policies focus on treating obesity; they have diffuse costs which are shared by society and concentrated benefits that are shared by a small group of who are already obese [38]. By focusing on changing the behavior of the average individual, this policy initiative spreads the benefits over a larger group of people [38]. Furthermore, not all policies require legislative action; some policies can be enacted through regulatory rule-making.

D. Cost-Effectiveness

The cost of an ecological approach to childhood obesity may seem large, but it advocates large-scale, sustainable programs that have a shared cost across multiple stakeholders at different levels. Since the ecological approach advocates for the scaling up of existing effective policies, there is evidence to show there will be program benefits. It is clear that the isolated policy approaches of the past have been ineffective. A combination of public health campaigns with other programs targeting the environment, improve public health and reduce the cost burden of obesity. If the policy initiatives can decrease the population’s BMI by just 5%, then public health insurance programs can save up to $100 million dollars in direct obesity-related health costs [3]. The proposed funding mechanism is a collaboration network between non-profits and the public sector. States can provide funds through collaboration with health and child welfare non-profits and community-focused non-profits, such as the YMCA and Boys and Girls Club. In return, the federal government can match the states’ funds which states will distribute to localities.

While up-front costs of these aligning programs may seem high, the long-term social benefits will outweigh the costs. Therefore, it is more effective to implement the ecological approach. A savings of $7.44 in health costs can be expected for every dollar spent on improving the built environment, health education programs, and nutrition and physical activity programs [88]. Additionally, investing $10 per person on community health programs can save more than $16 billion dollars nationally, giving a return of $5.60 per dollar of investment [89].

VII. Conclusion

The rising trend of childhood obesity can be attributed to behavioral, social, and environmental factors, and to reverse this trend, a policy initiative has been developed using the ecological framework to give communities a set of strategies to combat childhood obesity intervening at all five levels. This strategy addresses the market failures, specifically information asymmetry and negative externalities, associated with childhood obesity. Failure to implement policy could have devastating health impacts and contribute to exponentially increasing health costs. Therefore, it is essential that policy makers act now to prevent those consequences. This initiative allows communities to develop innovate and context specific solutions that give the individuals the information and resources necessary to succeed in combating childhood obesity. Implementing these policies would have a positive health impact on American society. Furthermore, these policies would be efficient, cost effective, and politically feasible.
References


15


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