Report 0101. Policy Options for Combatting Adolescent Obesity

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Executive Summary. The State of New Jersey has initiated a goal-oriented program to fight against adolescent obesity, and results have been mixed. While soda consumption rates are down and physical activity rates are up, the obesity rate has shown no clear trend, and consumption of fruits and vegetables has fallen substantially. With an eye toward improving these results, this paper examines six other states' approaches to the same problem, qualitatively assessing the effectiveness of each element of each program. The approaches examined in this analysis are based on a literature review that asserts that certain methods – soda bans, school meal regulation, nutrition education implementation, physical education standards and farm-to-school programs – affect eating habits and obesity rates. The findings show school meal regulation has a strong relationship to both intake of fruits and vegetables and to the adolescent obesity rate, while soda bans consistently had little effect. Given New Jersey's goals and the findings reported here, the legislature should consider standardization of school meals.

Background

Over the past 15 years, the United States high school obesity rate has increased 3.1 percentage points to 13.7% (States of Obesity Project 2015). In response, states have taken on a diversity of initiatives, each with a different focus. At the federal level, First Lady Michelle Obama has led an initiative aimed at improving the dietary and fitness habits of high school students. Although the State of New Jersey ranks among states with the lowest adolescent obesity rates in the country, the state has not maintained consistent decreases in the rate in recent years. New Jersey is not alone. States have implemented everything from direct legislation to farm-to-school programs to state task forces - yet results have ranged from inconclusive to extremely discouraging. Texas, which initiated a sweeping school nutrition program, has actually seen its obesity rates increase.

With the goal of producing a more effective policy, this paper will analyze the efforts over the past five years of seven states - Arkansas, Colorado, Florida, Louisiana, New Jersey, North Carolina and Texas - to address youth obesity. The National Conference of State Legislatures (NCSL) categorizes relevant state legislative activity in terms of four factors: 1) school meal legislation; 2) health education programs; 3) soda bans or limitations; and 4) statewide physical education (PE) requirements, and we draw on specific policies in these issue areas across the selected states. We have chosen these states because they have reported consistent data on adolescent obesity rates, food intake, policy changes and general meal/fitness standards. While eating habits and obesity rates differed substantially among these states, the literature makes clear that initial differences have a limited impact on the effectiveness of measures designed to combat adolescent obesity. Because New Iersev specifically wishes to improve adolescents' access to healthy eating and rates of physical activity, the principal focus will be on how policies have addressed those two variables. The effectiveness of such goals in relation to youth obesity will be determined, and the ways in which various other states have (or have not) been able to achieve those goals will be explicated.

Literature Review

The literature on adolescent obesity prevention efforts is both varied and extensive. It

includes examinations of adolescent fruit and vegetable (FV) intake, school nutrition programs, and physical education requirements. Granner and Evans (2011) show that the effectiveness of programs designed to increase adolescent's FV intake does not vary by race, sex or BMI group; this is helpful, considering, as an example, the profound differences in the Latino adolescent population between Texas and New Jersey. Moreover, the availability of FVs – a core focus of New Jersey's program – was proven to be the strongest correlate to intake.

Howerton et al. (2007) and Taber et al. (2013) find that government programs can improve FV intake of adolecents. Howerton et al. (2007) studied seven statewide health education programs over the period 1990-2002 and concluded that they lead to moderate increases in FV consumption among adolescents. An important caveat to mention here: these programs were exclusively nutrition-based, specifically designed to improve FV intake, which is not necessarily the intent of such education programs discussed in this paper.

Similarly, Taber et al. (2013) studied how legislation on school meals affects changes in adolescent consumption of FV. Again, many states in this study have employed such methods recently, to varying degrees of success. Taber et al. found that legislating and regulating school meals has a positive impact on in-school FV intake especially for students that lack available options out of school. They argue, "A productive approach [to obesity prevention] may be to include interactions between policies and the broader environment in which students live" (Taber et al. 2013, 370). By contrast, the State of New Jersey is "Encouraging merely committed to the consumption of fresh fruits and vegetables" (New Jersey Dept. of Agriculture).

Policymakers have also examined the effectiveness of limiting the availability of sugarsweetened beverages. However, Whatley Blum et al. (2008) suggests that limiting the availability of sugar-sweetened beverages and diet soda has no effect on adolescents' overall consumption patterns. As Whatley Blum et al. argue in their article, "Intervention boys and girls did not decrease their overall consumption of sugar-sweetened beverages (SSB) as compared to control boys and girls" (Whatley Blum et al. 2008, 345). New Jersey currently has a limiting policy in place and has described reducing adolescent consumption of sodas to be a central goal. States such as Texas have instituted more holistic bans, to what appears to be poor effect.

Farm-to-school (FTS) programs appear to be more effective than these programs that limit access to SSBs (Berlin et al. 2013; Nicholson et al. 2014). Nicholson et al. (2014) show that FTS programs improve access to fruits and vegetables while Berlin et al. (2013) show that the programs improve students' dietary habits.

Finally, a pair of studies assess on physical education (PE) policy. Kim (2012) tested whether PE requirement policies had substantial impacts on the physical activity and obesity levels of adolescents. The results were mixed. On the subject of impact on activity, results indicated that PE requirements substantially improved physical activity rates for girls only: "The more noticeable influence of school PE requirements on girls' PA [physical activity] may suggest the benefit of school PE for subgroups that are less likely to engage in PA outside school PE" (Kim 2012, 274). That said, the relationship between PE policies and weight was statistically insignificant across the board. In explaining these results, Kim notes that states have less ability to alter the physical activity of youth than their nutrition decisions.

Interestingly, the work of Taber et al. (2013) on this subject yielded identical results –gender imbalance and all – though they do notably add: "Most states have opted for weaker laws with nonspecific requirements. Such laws do not suffice and this underscores the need for stronger PE laws" (Taber et al. 2013, 632). The implication of these two studies is that no evidence demonstrates that PE laws have a significant effect on weight, and that for PE policies to impact physical activity, they must be substantial and consistent.

Exploring Policy Options

The prior literature evaluates four potential policies – school meal legislation, nutrition education standards, regulation of soda availability, and PE standards. Below, I will outline each state's general maneuvers from 2008 to 2011 and discuss key policy initiatives.

Arkansas:

In 2009, Arkansas' adolescent obesity rate was a relatively high 14.4 percent. SSB consumption was quite high while the percentage of students with sufficient FV consumption was low. The state's responses to these problems have been consistently focused on after-school efforts. In

2009, the State legislature passed AR SB 374 and SB 274; the legislation appropriated \$1.5 million for "nutrition and physical activity components" at after-school and summer-school programs (NCSL 2008). Despite this effort, youth obesity climbed 0.8 percentage points in 2011, and the percentage of sufficient FV consumption decreased slightly. By 2013, the state's adolescent obesity rate had risen further; it now sits at 18%. Notably, the state has neither a task force in place nor a FTS program.

Colorado:

Colorado's vouth obesity rate has hovered around 7% from 2009-2013, by far the lowest of the states discussed here. Despite having a less ostensible "problem," the State has been extremely active as of late legislatively. In 2008, the State passed SB 129, which requires schools to establish nutritional guidelines before the schools sell certain types of beverages. Importantly, the law focuses less on prohibition than awareness, a reflection of the study conducted by Whatley Blum et al. described above. HB 1224 was passed into law that same year; it funds education programs, specifically "increasing health education and nutrition services, as well as physical education and mental health counseling" (NCSL 2008). HB 1224 also expands the availability of PE courses available for students and mandates licensing for all PE teachers. Interestingly, Colorado was, at the time, the only state that did not require any PE for students. Nevertheless, in 2009, Colorado allocated nearly \$4 million to the Child Nutrition School Lunch Protection Program. For the next two years, the state ramped up the health standards of food distributors and of their FTS program; though the state has no official task force program, they are the most active legislatively.

Florida:

Florida, by contrast, has devoted little effort to legislation to combat adolescent obesity or increase healthy eating. The only changes to legislation in this area occurred in 2011 when the State's FTS policy went into effect and the legislature passed a low-key "encouragement" law designed to promote healthy eating. Not surprisingly, the Florida's adolescent obesity rate has increased over the past five years. However, FV intake increased more sharply in 2009-2011 than any other state by a dramatic margin, likely because of the FTS implementation. Also, the rate

State	Soda	Health	Meal	Farm to	Task	Obesity	FV Intake
	Ban	Education	Standard	School	Force	Change	Change
AK	No	No ³	No	No	No	+	-
CO	Yes ¹	Yes	Yes	Yes	No	-	N/A ⁵
FL	No	No	No	Yes	No	+	+
LA	Yes	Yes	Yes	No	Yes	-	+
NC	No	No	Yes	Yes	Yes	-	+
NJ	Yes ²	No	No	Yes	Yes	-	-
ТХ	Yes	No ⁴	No	Yes	Yes	+	-

Table 1: State-by-State Policy Summary is generalized, and does not take into account the many differences between programs. The variables refer to data in the years 2009-2013; they are evaluated as to whether or not listed policy options were implemented/updated in that time range. Changes in the high school obesity rate and rate of adequate FV intake compare 2009 and 2013 data.

1. Colorado's legislation did not ban sodas, but required that a student is informed of its nutritional information before the product is sold to them.

2. New Jersey has a partial ban on sodas, limiting the amount that can be sold.

3. Arkansas' health education and meal standard programs are exclusive to after-school programs.

4. Texas' health education and meal standard programs are exclusive to elementary school students.

5. Data for FV intake in Colorado in 2013 was unavailable.

of increase in adolescent obesity fell substantially from 2009-2011.

improvements, its rate of adequate FV intake is lower than other states in this study.

Louisiana:

Louisiana addressed an increase in its obesity rate in early 2009 with a slew of legislative actions. As stipulated in HB 1, strict nutrition guidelines (and requirements of FV) were set for meals; highcaloric beverages were banned via HB 767; United States Department of Agriculture (USDA) nutrition programs were implemented including a major education expansion; and PE standards were raised (slightly) through HB 400. Despite all this, results were varied: the youth obesity rate reached a new high in 2011, even though FV intake improved substantially. The ban on highcalorie beverages was not effective, echoing the findings of Whatley Blum et al. In fact, of all of the states examined here, Louisiana high school students consume the most soda by far. By 2011, all programs passed in 2009 remained in-tact and the state established a formal task force. In 2013. the adolescent obesity rate fell to its lowest rate in a decade. The state does not have an FTS program, which may account for the fact that despite

North Carolina:

North Carolina is the only state in this study to successfully decrease their youth obesity rate each year. Perhaps not-so-coincidentally, the State has also been extremely active in pushing such reductions. In 2007, the State enacted statewide nutrition standards for school meals via HB 1473. In 2009, the State established a statewide task force to combat childhood obesity. In 2009 and again in 2010, the State expanded their FTS program. The State also made incremental changes in fitness standards and increased funding for fitness/nutrition programs throughout the five-year period. Along with the steadilyfalling obesity rate, FV intake for adolescents improved substantially over the five years. The state does not have a formal FTS program but has been more active in actual farm-to-school relations than most any state in the country recently; thus, for this paper's purposes, we consider them to have a formal program.

Texas:

Over the five-year period studied in this paper, Texas' adolescent obesity rate has increased the most. This increase has occurred despite the fact that Texas implemented a task force, has a FTS program, and has adopted nutrition education reform. The state has also passed relatively consistent legislation that encourages greater PE access and participation. SB 395 and HB 4629 together created the Early Childhood Health and Nutrition Interagency Council in 2009. The laws mandate strict nutrition standards for children under six. Texas' efforts are focused on the longterm, which may explain the troubling results over this five-year period. However, the state did initiate a sweeping ban on sodas and other sweetened beverages, an act contrary to the research's suggestions, and it was evidently unsuccessful.

Findings

From 2009-2013, the adolescent obesity rate consistently fell only for North Carolina; Louisiana, Colorado and New Jersey showed no trend; and Florida, Texas and Arkansas showed consistent increases despite various attempts to decrease the obesity rate. From 2009-2011, highschool students in Louisiana, Florida and North Carolina improved their FV intake, while the opposite was true for New Jersey, Arkansas and Texas. As New Jersey has already implemented an FTS program and a state task force, we explore the remaining options below.

Statewide school meal standards:

Taber et al. (2013) argue that strong regulation of school meals, with an emphasis on the greater availability of FV, will improve intake and thereby reduce adolescent obesity. Our research supports this assertion. In 2007, North Carolina introduced meal standards and in subsequent years was providing additional funding for school lunches their adolescent obesity rate dropped by 1.4 percentage points over the five years, and FV intake improved substantially. Similarly, Louisiana implemented a strict guideline for school meals in 2009 with an added emphasis on FV availability. The state's adolescent population consumes sodas at an inordinately high rate, and the state's initial failure to reduce soda consumption seems to have offset the effect of meal standards on the obesity rate. However, FV intake increased substantially from 2009-2011 and, by 2013, the adolescent obesity rate had fallen to its lowest level in over five years. Colorado's adolescent obesity rates stayed remarkably low throughout the five-year period, but lawmakers remained extremely active in funding and regulating school meals accordingly. While a FTS program helped Florida increase FV intake considerably, it's telling that Florida – along with Texas and Arkansas – witnessed sharp increases in the adolescent obesity rate.

Health education:

Results on the effect of nutritional and physical education measures are weakly positive. FV intake increased in Louisiana and Colorado, where the legislatures passed sweeping legislation updating nutritional guidelines and increasing funding for health education. By contrast, Arkansas and Florida failed to update healthy eating initiatives and their adolescent obesity rates rose. However, North Carolina arguably fared the best, and yet its focus was exclusively on fitness standards and school meal regulation. Texas did pass education legislation as well, but because it was focused on younger students, policymakers rightly did not expect to witness any immediate effect. The results, in sum, are inconclusive but promising.

Soda/high-caloric bans and restrictions:

The results for this element of obesity prevention efforts are strongly in line with Whatley Blum et al. That is, this type of policy is ineffective. In Louisiana, a sweeping ban of high-caloric beverages failed to address the high rate of soda consumption among adolescents. Worse vet, high soda consumption remains a leading cause of adolescent obesity despite improved FV intake and education measures. Similarly, Texas' removal of sodas from public schools was ineffective. While re-introducing sodas and other sweetened beverages to schools is ill advised, Colorado's flexible approach of simply providing nutritional information does not appear to have adversely affected their consumption rates. Similarly, New Jersey's limitation program (only 40% of beverages can be non-fruit/vegetable) has not caused any obvious problems, as the already relatively low rate of adolescent soda consumption has been steadily decreasing.

PE legislation:

Of the states, only Colorado implemented stringent PE guidelines and policy. Given that Colorado is very active in areas ranging from FTS to education to meal regulation, it's perhaps best to look at this as a piece of its extremelysuccessful program. Texas and Louisiana both passed laws that weakly regulate/reform PE standards, though it's worth recalling that Kim explicitly argued that such policies will most always be ineffective. Given Louisiana's slow start and Texas' poor results, the impact of these PE bills are inconclusive at best. Again, overall, New Jersey is excelling in this area and is making good progress; there is no evidence that states have substantially been able to increase physical activity and thereby impact the adolescent obesity rate using PE programs.

Recommendations

In many ways, New Jersey's "2020" program has been extremely successful; physical activity rates are up, and soda consumption rates are falling. However, there remain challenges: the obesity rate shows no downward trend, and FV intake among adolescents has actually fallen. The data indicates a strongly negative relationship between FV consumption and the obesity rate; as such, it is important for New Jersey to improve in these areas.

Our analysis indicates that the standardization and regulation of school meals, with an emphasis on FV intake, is crucial to the overall fight against adolescent obesity. Differences between the states that have and have not passed such legislation – including New Jersey

- are apparent. Such passage will require legislative action, funding and appropriate implementation - but the results are clear in states as diverse as Louisiana and North Carolina. As such, New Jersey should enact a politicallyviable, stringent-enough program that standardizes and regulates school meals, with an emphasis on FV intake. Current policy in New Iersev does not effectively advocate for consumption of FVs. While the research here does not indicate an updated nutrition education program is necessary, the fact that New Jersey is without such measures indicates a lack of attention toward this problem.

If the research broadly indicates anything, it is that states more active on this issue – North Carolina, Colorado and Louisiana all produced around a half-dozen relevant bills – have seen better, and more consistent results. According to the NCSL, New Jersey is the only state among these seven that did not pass any meaningful legislation related to nutrition education or legislation in 2009-2013. Considering the inroads the state has made without legislative action – through an appropriate soda-regulation policy and excellent progress in physical fitness – New Jersey will be well on its way to achieving its "2020" goals when it makes that decisive step.

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