Regulating Environments to Reduce Obesity

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OVERVIEW

HE obesity epidemic is real and immediate, and the causes are multifaceted. The marked increase in the prevalence of obesity appears to be attributable to environmental conditions that implicitly discourage physical activity while explicitly encouraging the consumption of greater quantities of energy-dense, low-nutrient foods. In the US “food environment,” consumers are bombarded with advertising for unhealthy food, and receive inadequate nutritional information, especially at restaurants. In the US school environment children have access to sugary sodas and unhealthy *à la carte* foods in their cafeterias, at the same time getting inadequate physical activity and nutrition education. In the built environment, urban sprawl has reduced active living.

Increasingly environments encourage sedentary lifestyles and unhealthy dietary practices, thus determining the prevalence of obesity in the United States and abroad. We explore the potential to use regulatory measures to affect diet, activity, and thus obesity. A clear economic rationale exists: correction of market failures caused by *externalities*. Externalities are said to occur when some of the costs of consumption are not borne by the consumer. When large portions of the population become obese, there are human capital costs borne by the entire community—productivity losses, direct healthcare costs, infrastructure modifications, etc. Regulation, and by association regulatory authority, can be an effective legal tool to control obesity, reducing these costs borne by society.

Regulation in the United States occurs at the national, state and local level. Regulatory opportunities exist to mandate action and to allocate funds for promising health-promoting strategies. Regulatory approaches, much like litigation, can transform the entire environment in one moment (1). Even incomplete enforcement of rules sends a public message about what is acceptable behavior for corporations and individuals.

US regulatory actions promise to have a beneficial impact not only domestically but also globally. Trade rules will keep regulation focused on encouraging and protecting the health and safety of consumers. Convergence and harmonization of regulations globally—the product of multilateral and bilateral trade agreements and the GATT/WTO framework—will help keep the focus in other countries on the same public health goals. Although trade agreements may constrain direct legislative and regulatory action, they may also work to limit the dimensions of regulatory action short of explicit rule-making.

Existing regulatory authority presents many opportunities to affect underlying causes of the obesity epidemic, but will nevertheless require bold public policy initiatives. We do not call for the immediate adoption of any specific policy. Instead, we suggest a few regulatory levers worthy of consideration. Some policies can be implemented now under existing regulatory authorities, without the need of additional legislation.

THE FOOD ENVIRONMENT

Human food consumption and dietary behaviors seem to invalidate conventional economic theory that assumes we each make rational, calculated decisions based on an analysis of the information presented to us. Were we all rational, economic creatures, it would follow, for example, that we eat ice cream sundaes and candy bars only after assessing the utility (including pleasure) that we may gain from that food against the future health consequences. Food consumption, however, is also governed by cravings, emotions, and environmental conditions that create irrational and often unhealthy dietary behaviors. We certainly develop dislikes for foods that cause nausea and sickness, but we also respond to advertisements that encourage us to consume unhealthy and “empty calorie” foods (2).

Persuasive promotions reach every American everyday—incentives to eat more. Temptations: “Would you like to super-size that meal,” or

“If you buy one pie, you can get the second for only ten cents.” Perhaps genetically encoded algorithms within the human body create ‘emotions’ and ‘urges’ that influence consumers’ decisions on whether or not to purchase that candy bar (3). Facing this food environment, it is no longer reasonable to act as if every consumer has given careful consideration to the long-term health consequences of her or his diet.

If this conclusion is correct, regulatory interventions can help create a food environment more conducive to healthy dietary practices. Regulatory interventions may come in many forms. In order to illustrate two potential regulatory fulcra for legal levers, we will focus here on product labeling and advertising restrictions, and two federal agencies.

The Food and Drug Administration (FDA) could use its authority to play a vital national role in decreasing the prevalence of obesity. Regulation of food labeling could inform consumers, increasing the likelihood that they make healthy food choices. The Federal Communications Commission could also promulgate regulations for radio and television advertisements that would discourage advertising foods of little nutritional value to children and encourage presentation of balanced information regarding healthy dietary choices.

Federal Regulation Opportunities

The FDA, which already regulates food labels, took its first step by establishing the Obesity Working Group in August 2003. It examined the FDA’s role and responsibilities in addressing the health consequences of obesity. For products whose packaging encourages single-serving consumption, they recommended *encouraging* rather than *requiring* manufacturers to list the nutritional value in the whole package. Currently, many single-serving packages list the fat and sugar for a much smaller amount—the standard “serving.”

The Obesity Working Group has not fully explored opportunities to curtail the obesity epidemic through labeling of food eaten at restaurants—an increasing element of the US diet. The Obesity Working Group’s only recommendation about promoting better dietary decision-making in consuming foods away from home was to encourage the restaurant industry to launch “voluntary” nation-wide efforts (4). We have no doubt that more direct and proactive measures are worthy of consideration.

Restaurant Food Labeling

The Food and Drug Administration has authority to regulate nutritional labeling of processed foods in the United States (5). The Federal Food, Drug, and Cosmetic Act, however, exempts restaurants. They are not required to disclose nutrition information. This exemption seems out-of-date, as Americans now spend about half of their food budget purchasing meals and drinks outside of the home. Exempting the restaurant and fast-food industry from disclosing the content and nutritional value makes it difficult for consumers to estimate the energy content of the food they consume away from home (6). And food eaten outside of the home is generally higher in fat and lower in other nutrients than food prepared at home (7). Many popular table-service restaurants serve 1000–2000 calories per meal, or 35% to 100% of a full day's energy required for most adults (8). Consider one regulatory intervention. Mandating point-of-sale nutritional information for customers could combat increased portion sizes and decreased nutritional value of fast-food and restaurant meals as eating out becomes a larger part of US food consumption. This information might enable consumers to make informed dietary decisions. It could also encourage restaurants to modify their ingredients and menus to provide greater healthy and nutritious food and beverage options to their customers.

Advertising

Food manufacturers' and restaurant chains' advertising encourages consumers to purchase unhealthy foods and make poor dietary decisions. Children are a particularly attractive marketing target. Their increasing buying power and influence on goods purchased for the wider household (9) have encouraged the food industry to target children. In many countries, advertising for energy-dense food targeting children has increased relative to other age group targets (10). Considerable effort goes into planting the seeds of brand loyalty with this vulnerable group.

High exposure of children to advertisements for foods high in fat and sugar is believed to be a major contributor to obesity. "Eight in ten adults agree that business marketing and advertising exploit children by convincing them to buy things that are bad for them or that they don't need" (11). The study found these concerns highest in relation to food and nutrition issues. Most foods advertised to children—fast food,

sweets, ice creams, and carbonated drinks—are highly processed, high in fat and/or sugar and low in nutrients; providing ‘empty calories’ (12). Food marketing has not only undermined parents’ dietary preferences, but these highly marketed foods in children’s diets contributes to early increasing weight and associated health problems (13). Eighty percent of obese adolescents remain obese as adults (14), primarily because dietary habits developed when young persist for a lifetime. That advertising of these products is a direct cause of children’s weight and health problems appears to be widely accepted by critics and by some policy makers (15). Advertising must be effective or why else would the food industry spend so much on it?

In the United States alone, the US food industry spends about \$11 billion annually on advertising in addition to another \$22 billion on other consumer promotions (16). Such expenditures dwarf the National Cancer Institute’s \$1 million annual investment in its educational “5-A-Day” campaign to increase fruit and vegetable consumption or the \$1.5 million budget of the National Heart, Lung, and Blood Institute’s National Cholesterol Education Campaign (17). Food advertising helps to create the global obesity epidemic; a costly externality!

Governments both here and elsewhere might intervene with regulatory actions restricting food marketing practices to overcome this market failure. No one has suggested that governments are likely to spend enough on informational efforts to overcome current industry advertising practices. Provided with balanced information and no longer bombarded pervasively by advertisements for high-calorie, high-fat, and high-sugar products, perhaps consumers will have the ability to make healthier food purchasing decisions.

Unlike the FDA, which would need legislative changes before regulating restaurants, the Federal Communications Commission already regulates radio and television broadcasting. Might it consider requiring broadcasters to provide equal time for messages promoting healthy eating and physical activity? Perhaps a greater opportunity comes from restricting advertising of high-calorie, low-nutrient foods on television programming commonly watched by children. If the FCC prohibited “junk food” advertisers from targeting children under a specific age, would children be less likely to purchase, or ask their parents to purchase, unhealthy foods?

The United States could make substantial contributions to the international obesity epidemic, were it to step up efforts to regulate

the industry and the food environment to promote healthier and more informed consumer choice. Regulatory actions are already gaining acceptance abroad. The United Kingdom is considering regulatory changes to reduce the level of childhood obesity. The Food Standards Agency of the UK, an independent food safety watchdog set up by an Act of Parliament in 2000 to protect the public's health and consumer interests in relation to food, promotes:

- The banning of all food advertisements aimed at pre-school children.
- Setting strict regulations on how much advertising of “less healthy” foods is allowed.
- Banning the use of children's television personalities and cartoon characters in food advertising.
- Establishing a tax on all food advertising to children, with the funds benchmarked for nutritional education. (18)

The nutritional labeling of foods consumed away from home and health-conscious advertising limitations are two areas that are worthy of regulatory consideration. As discussed above, children have become targets for aggressive advertising of unhealthy foods. Advertising, however, is only one factor fuelling the overweight epidemic; certain aspects of the school environment also encourage weight gain and inactivity among children. The school environment offers some promising opportunities for regulators.

THE SCHOOL ENVIRONMENT

Schools offer an opportunity to address the increasing incidence and prevalence of overweight among children and adolescents. Because children spend a high percentage of their formative years at school, a healthy school environment could influence a child's eating and fitness habits for years to come. This section presents regulatory recommendations at the federal, state, and local levels that may be capable of improving the school environment (19).

The National School Lunch Program

The National School Lunch Program (NSLP), administered by the United States Department of Agriculture (USDA), serves lunch to approximately 25 million American children each school day. Schools choosing to participate receive donated commodities and cash subsi-

dies. They are obliged to provide free or reduced-price lunches to eligible low-income children. All lunches and snacks served under the NSLP must meet federal nutritional guidelines: no more than 30% of calories may be from total fat and no more than 10% from saturated fat; and the lunch must contain one-third of Recommended Daily Allowances for calories, protein, iron, calcium, and vitamins A and C (20).

Many school cafeterias also offer foods not currently regulated by the USDA. Products sold à la carte or in vending machines, in competition with the NSLP (21), generally lack comparable nutritional value. Researchers studying 20 Minnesota secondary schools found that high-fat foods such as chips, crackers, and ice cream constituted 21.5% of the available à la carte items; while a mere 4.5% of the à la carte items were fruits and vegetables. Two-thirds of the schools examined had soft drink contracts for vending machines. Adolescents have increased their consumption of high-sugar soft drinks by 100% in the last twenty years. Not surprisingly, this energy intake has been linked to weight gain (22).

Improvements to the NSLP could help combat the obesity epidemic. Expanding NSLP authority to regulate à la carte items and vending may be an avenue to control the types of foods offered to students. With greater authority, it would be possible to replace high-fat and high-sugar food with more nutritious choices.

Physical and Nutrition Education

One key regulatory opportunity at the state level lies in improvements to physical and nutrition education programs. A recent survey shows that state physical education mandates are usually general and include only minimum recommendations leaving interpretation up to local school districts. Resulting physical education programs often fail to meet the recommendations of the Surgeon General and CDC for daily physical education (23). A report published by the National Center for Education Statistics shows similar deficits in nutrition education: in grades kindergarten to eight only 50% of schools were required by state or district mandates to provide nutrition education. This figure drops to 40% for grades nine and ten and to 20% for grades eleven and twelve (24). Failure to fund nutrition and physical education ultimately results in increased state and federal healthcare spending. State mandates to require daily physical education and quality nutri-

tion education in all primary and secondary schools might reduce obesity, but could prove costly to school districts.

Vending Contracts

Local schools have the power to make the greatest and most immediate impact to combat overweight children and adolescents by eliminating soft drink vending machines. Soft drink vending machines have become a ubiquitous fixture in schools in the United States. In Minnesota, 98% of secondary schools and 44% of elementary schools in Kentucky have vending machines (25). Researchers have found that each daily serving of a sugar-sweetened beverage increases the odds of becoming obese by 1.6 (26).

If vending machine contracts can be modified or eliminated so that machines are either removed or promote healthy beverages, students would have less access to sugary beverages and consumption would decline. This is not unprecedented: The Los Angeles Board of Education has taken action to eliminate the availability of soft drinks in all elementary, middle, and high schools and Texas has recently started controlling soft drinks as well (27).

But special consideration must be given to school budget constraints and dependence on revenues from vending machines and other food marketing. When Texas took a first step to regulate food choices in the Texas Public School System by issuing new nutrition policies and restricting the availability of soft drinks and high-fat foods (28), it tried to offset any disruption to school fundraising with a program from the Texas Department of Agriculture to help school districts learn to raise funds without using food (29).

Limitations of Regulations in the School Environment

Students spend about seven hours a day for 180 days a year in the school environment and most consume at least one of three meals per day in school. From 35% to 40% of adolescents' total energy intake is being consumed in secondary school (30). Schools influence a child's eating, drinking, and fitness behavior. At home, many children live (and consume most of their calories) in the company of family members who eat poorly. Schools can temper this problem by involving parents in the school's nutrition initiatives (31). Intense academic requirements and limited budgets often leave little time for physical and nutrition education. Children must be healthy and ready to learn,

thus curriculum reform to improve academic results might well be approached holistically, taking into account not only intellectual growth but physical health and fitness.

We have presented opportunities to use regulation to alter the food environment, changing marketing, advertising, and available food products. One location, the school environment, holds the potential for great change. Now we address regulation of the “built environment.”

THE BUILT ENVIRONMENT

The “built environment” encompasses, *inter alia*, street layout, zoning, recreation facilities, transportation options, parks, stairs, and public spaces (32). Empirical evidence now suggests an association between these design elements and physical activity, which is related to overweight and obesity (33).

Many cities and neighborhoods discourage physical activity. Urban “sprawl,” where zoning laws mandate distances between stores, schools, and homes; and where real estate developers build on large tracts of open land, encourages (and often requires) driving instead of walking or bicycling (34). Ironically, this spread-out development (and its related zoning laws) began as a way to avoid health problems arising from crowded, disease-ridden cities, and exhaust-choked factories (35). Many communities so lack safe sidewalks and bike routes (36) that those who wish to travel on foot or bicycle do so at risk of traffic injury. These risks are real: one study noted that pedestrians account for over 12% of traffic fatalities (37). Many neighborhoods, especially poor communities, lack safe and clean outdoor play spaces (38) and accessible parks. Fear of crime also causes residents to avoid walking (39).

Changes to the existing built environment, even with political support, are not easy to implement and will only happen over time. Buildings, roads, and neighborhoods, once in place, cannot be easily altered. Regulation may offer guidance and alter incentives for future development, but it remains unclear which design features will prove the most successful in promoting physical activity. Although some empirical evidence links the built environment and overweight, there is currently little support for the efficacy of any given intervention (40).

In response to these challenges, a new “active living” public health movement is emerging. Led by groups such as Active Living by Design (41), this movement seeks to re-design the built environment and monitor new development so that physical activity once again becomes

part of the everyday routine. The government can encourage this movement through several regulatory opportunities.

Mixed-use zoning

Through zoning, municipalities determine the way land is used. Many local zoning laws segregate businesses, schools, and homes, making walking and bicycling between these destinations impractical (42). Other land-use requirements, such as minimum parking requirements and setbacks, encourage automobile use and further increase the distances between locations (43). By co-locating commercial and residential activities, municipalities can foster an environment where residents may reasonably walk or bicycle to school, work, shopping, and entertainment. The National Association of County and City Public Health Officials endorses this strategy by including mixed-use zoning on its model checklist for local officials who are considering applications for community development (44).

Improved Bicycling and Walking Opportunities

If transportation policy is crafted to include feasible alternatives to driving, especially active modes of transportation such as walking and biking, residents will be encouraged to be more physically active on a regular basis. The availability of walking trails, for example, is likely to encourage leisure physical activity (45).

Safety is a key element in this strategy. In areas with high rates of pedestrian accidents, residents may be reluctant to walk or bicycle. “Traffic calming” measures such as speed bumps have been shown to reduce the risk of pedestrian injury (46). Crosswalks, sidewalks, bike paths, and sufficient light and shade may also encourage physical activity (47). School programs, such as “Safe Routes to Schools,” that identify and create bicycle routes to schools and provide safety education for students, have been shown to increase activity. The Marin County Safe Routes to Schools program, for example, has reported a 64% increase in school trips made by walking and an impressive 114% increase in school trips made on bicycle (48). Because neighborhood crime, or the perceived risk thereof, may discourage trips on bike and foot (49), efforts to reduce crime might be considered.

Congress is currently considering a \$275 billion, six-year transportation bill to reauthorize the Transportation Equity Act for the 21st Cen-

tury (TEA-21) (50) enacted in 1997. Under TEA-21, most spending decisions were left to the discretion of state and local governments. Although this discretionary system generally worked well, more express mandates for funding of the biking and walking improvements could improve exercise opportunities (51).

Funding for Innovative Projects

Research agencies such as the National Institute of Environmental Health Sciences fund and evaluate innovative projects linking obesity and the built environment (52). Funding might, for example, target improvements in building design, encouraging sedentary workers to be more physically active during the workday. Stairwell improvements, such as lighting, art, and music have increased stair use (53). Research may show how incentives can be used. Even with abundant access to parks, trails, and other fitness opportunities, residents may still not become active without personal incentives (54). Incentives might include prizes or raffles for miles logged on foot or bicycle (55), bonuses to workers who elect not to drive to work, or bike racks, showers and lockers at work (56).

CONCLUSIONS

Agencies seeking to implement regulations to abate obesity face daunting challenges. First, legal and constitutional hurdles may restrict application of these regulations. Although courts do not afford commercial speech a high level of constitutional protection, limits on advertising are likely to encounter First Amendment challenges (57). Regulators seeking to change the built environment may need to grapple with existing statutes and constitutional issues. Contractual issues may also arise, especially for schools that wish to end vending contracts (which tend to contain industry-friendly provisions such as liquidated damages clauses). International law and treaties, and trade agreements may be used to challenge rules that restrict international commerce.

Second, all of these strategies assume that voters (and other stakeholders) will accept some serious changes to the food, school, and built environments. In reality, regulators can expect to face fierce political opposition with respect to most (if not all) of the strategies we have described. Selection of nutritional parameters for the National School Lunch Program, for example, has historically been influenced by food industry groups. They have lobbied vehemently, and often success-

fully, to have their products included in the program. The dairy industry has always argued, and successfully so, for *whole* milk to be offered in schools despite its high fat content, unhealthy beyond early childhood (58).

Finally, regulators can expect to face budgetary barriers. Schools, especially in low socioeconomic status communities, already have to make hard budget choices. Unless governments provide needed dollars to schools, removing vending contracts (which provide additional income to schools) and mandating physical and nutrition education (which could require new staff and facilities) may only worsen budget shortfalls. Allocating limited transportation funds to bike paths and sidewalks may prove difficult if roads and public transportation systems need improvement.

Without a doubt, these barriers are formidable. Regulators can certainly improve chances of success. When implementing any of these strategies, regulators might keep in mind that a diverse group of players, public and private, influence the food, school and built environments, including parents, corporations, nonprofits and even churches (59). Involving as many stakeholders as possible has the potential to increase the acceptance, longevity, and impact of any regulation. Further, if the regulatory projects are carefully designed with the assistance of epidemiologists and statisticians, they stand to generate useful data for future initiatives, allowing planners to understand better which interventions work and providing regulators with important empirical support for their actions.

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SUMMARY

The marked increase in the prevalence of obesity appears to be attributable to environmental conditions that implicitly discourage physical activity while explicitly encouraging the consumption of greater quantities of energy-dense, low-nutrient foods. In the United States food environment, consumers are bombarded with advertising for unhealthy food, and receive inadequate nutritional information, especially at restaurants. In the US school environment children have access to sugary sodas and unhealthy à la carte foods in their cafeterias, at the same time getting inadequate physical activity and nutrition education. In the built environment, sprawl has reduced active living. We describe these environments and explore the potential effects of regulatory measures on these environments. In the United States, regulatory opportunities exist at the national, state and local levels to mandate action and to allocate funds for promising health-promoting strategies. Regulatory approaches, much like litigation, can transform the entire environment in which corporations operate. Even with incomplete enforcement of rules, they send a public message about what is acceptable behavior for corporations and individuals. Additionally, because the United States is party to many multilateral and bilateral trade agreements and is an active participant in the GATT/WTO framework, US regulatory actions promise to have a beneficial impact both domestically and globally.