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LEGAL AND POLICY MEASURES TO PROMOTE HEALTHY BEHAVIOUR: USING INCENTIVES AND DISINCENTIVES TO CONTROL OBESITY

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This article examines incentives as a health policy option to encourage healthier behaviours and considers the emerging body of literature that evaluates the effectiveness and impact of incentives as public health policy tools. Incentives–including rewards and penalties–vary widely in their force, from indirect (or mild) to direct (or strong) incentives. At one end of the incentive spectrum are strategies that invite healthier behaviour, such as urban planning measures to encourage walking and cycling. In the middle of the incentive spectrum are measures such as tax credits for those who participate in sports and fitness programs or "fat taxes" on high-calorie, low-nutrition foods. These strategies target individuals' pocketbooks and thus may have a stronger influence on behaviour change. The most direct incentives are governmental or private sector schemes that use monetary payments or penalties to induce behaviour change. While this article focuses on incentives targeted at individuals, it briefly discusses several examples of incentives aimed at businesses, particularly food retailers.

The use of incentives as a health policy tool has

Cet article examine les mesures incitatives qui peuvent encourager des comportements sains comme composantes de politiques sur la santé. Il considère également la littérature émergente qui évalue l'efficacité et l'impact de mesures incitatives à titre d'outils en matière de santé publique. Les mesures – qui incluent des pénalités et des primes – agissent avec des forces différentes à travers un spectre de mesures indirectes (ou légères) à directes (ou fortes). D'un côté se trouvent les stratégies qui invitent à adopter des comportements sains comme les mesures de planification urbaine encourageant la marche et le cyclisme. Au centre, on constate la présence de mesures comme des crédits d'impôt pour ceux qui prennent part à des programmes de sports et de conditionnement physique ou encore, des taxes spéciales sur les aliments à haute densité calorique sans grande valeur nutritive. Ces dernières stratégies visent les portefeuilles des particuliers et peuvent donc avoir une plus grande influence sur la modification des comportements. Les mesures incitatives les plus directes consistent en des projets gouvernementaux ou privés qui utilisent des paiements ou des pénalités pour

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several key legal dimensions. First, governments rely on legal powers, such as taxation laws and zoning regulations, to implement certain kinds of incentives. Second, in their operation and impact, incentives may infringe on legally protected rights. In particular, the use of "sticks" rather than "carrots" may be criticized on the grounds that they are coercive, discriminate unfairly, and promote individual blame. Third, public health law is concerned with the use of legal and policy measures to create conditions in which people may be healthy. It is important, therefore, to evaluate incentive programs to determine their effectiveness in ameliorating obesogenic environments and creating conditions for improved dietary and physical activity behaviours.

L'utilisation de mesures incitatives à titre d'outils de politique sur la santé comporte plusieurs aspects légaux clés. D'abord, les gouvernements se fondent sur des pouvoirs légaux, comme la taxation et le zonage, pour implanter certains types de mesures. Ensuite, l'application de telles mesures, ou encore leur impact, risque de brimer certains droits protégés par la loi. En particulier, la stratégie du « bâton » plutôt que celle de la « carotte » peut être critiquée comme étant coercitive, injustement discriminatoire et susceptible d'encourager le blâme individuel. Finalement, le droit de la santé publique est encore soucieux à l'égard de l'utilisation de mesures politiques et légales pour créer des conditions favorables à la bonne santé de la population. Il est donc important d'évaluer les programmes incitatifs pour déterminer l'efficacité avec laquelle ils peuvent améliorer les environnements obésogènes et créer des circonstances qui encouragent de meilleurs comportements alimentaires ainsi que l'exercice physique.

Introduction

One of every three adults in the world is overweight and one in nine is obese.[1] No state in the US has an obesity rate of less than 20%[2] and if current trends persist, half of the American and British populations could be obese by 2030. The burden of chronic diseases associated with being overweight or obese–diabetes, hypertension, cardiovascular disease, and some cancers–is a matter of global public health concern. Rising obesity rates also bring higher health care costs. People who are obese have medical costs that are 30% higher than those of healthy weight, and treatment of obesity-related health problems is "estimated to account for between 0.7% and 2.8% of a country's total healthcare expenditures."[3] The morbidity and mortality costs of overweight and obesity in the US and Canada are reportedly as high as $300 billion annually,[4] and, if the US and UK predictions hold true, this means an "additional 6-8.5 million people with diabetes, 5.7–7.3 million with heart disease and stroke, and 492 000–669 000 with cancer. The projected costs to treat these additional preventable diseases are an increase of $48–66 billion per year in the USA and £1.9–2 billion per year in the UK."[5] A recent analysis demonstrates that "even a modest 1% reduction in body-mass index (BMI) would substantially reduce the number of obesity related diseases and their costs."[6] For example, over 2 million new cases of diabetes could be avoided in the US by 2020.[7]

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[1] Jacqui Wise, "'Tsunami of Obesity' Threatens All Regions of World, Data Show" (2011) 342:7793 Brit Med J 354. See generally Mariel M Finucane et al, "National, Regional, and Global Trends in Body-Mass Index Since 1980: Systematic Analysis of Health Examination Surveys and Epidemiological Studies with 960 Country-Years and 9.1 Million Participants" (2011) 377:9765 Lancet 557.

[2] Centers for Disease Control and Prevention, "U.S. Obesity Trends", online: CDCP <www.cdc.gov/obesity/data/trends.html>.

[3] D Withrow & DA Alter, "The Economic Burden of Obesity Worldwide: A Systematic Review of the Direct Costs of Obesity" (2011) 12:2 Obes Rev 131 at 131.

[4] Donald F Behan et al, "Obesity and its Relation to Mortality and Morbidity Costs", online: Society of Actuaries <www.soa.org/files/pdf/research-2011-obesity-relation-mortality.pdf>.

[5] Editorial, "Urgently Needed: A Framework Convention for Obesity Control" (2011) 378:9793 Lancet 741 at 741.

[6] William H Dietz, "Reversing the Tide of Obesity" (2011) 378:9793 Lancet 744 at 744.

[7] David King, "The Future Challenge of Obesity" (2011) 378:9793 Lancet 743 at 744.

Modern environments are aptly described as "obesogenic," with multiple intricate factors promoting excessive energy intake and limiting energy expenditure.[8] These prevalent environmental cues[9] for overeating and sedentariness, combined with inherent biological susceptibilities and preferences,[10] often test best intentions to eat a nutritious diet, exercise regularly, and maintain a healthy body weight. Some observers argue that the "increasing fatness [in populations around the world] is the result of a normal response, by normal people, to an abnormal situation."[11] A desire to be fit and healthy is motivation enough for some to resist these abnormal, obesogenic circumstances, but for many the possibility of avoiding high blood pressure or heart disease, or adding additional months to one's aged life sometime in the distant future, is not enough to provoke behaviour change in the present.

It is difficult to make healthier choices in a modern environment in which numerous forces encourage unhealthy behaviour. A British government report illustrates the problem with an apt example:

> [D]iet is an area where short-term emotional responses tend to overpower longer-term, more "rational" thinking … In a study, where workers were offered a prize next week of fruit or chocolate, 74 per cent chose fruit. But when the delivery van arrived

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[8] Boyd Swinburn, Garry Egger & Fezeela Raza, "Dissecting Obesogenic Environments: The Development and Application of a Framework for Identifying and Prioritizing Environmental Interventions for Obesity" (1999) 29:6 Prev Med 563. See generally Frederick J Zimmerman, "Using Marketing Muscle to Sell Fat: The Rise of Obesity in the Modern Economy" (2011) 32 Annu Rev Public Health 285.

[9] "Most of us don't overeat because we're hungry. We overeat because of family and friends, packages and plates, names and numbers, labels and lights, colors and candles, shapes and smells, distractions and distances, cupboards and containers" (Brian Wansink, "FAQ About the Book", online: Mindless Eating <www.mindlesseating.org/faq.php>). The book in question is Brian Wansink, *Mindless Eating*, *Why We Eat More Than We Think* (New York: Bantam Books, 2006).

[10] A growing body of literature examines neurobiological responses to particular foods, especially sweet, fatty and salty foods. For a recent review, see Edmund T Rolls, "Taste, Olfactory and Food Texture Reward Processing in the Brain and Obesity" (2011) 35:4 Int J Obes 550 at 556. Parallels between overeating and drug addiction are also under investigation. See e.g. Karen M von Deneen & Yijun Liu, "Obesity as an Addiction: Why do the Obese Eat More?" (2011) 68:4 Maturitas 342; Valerie H Taylor, Claire M Curtis & Caroline Davis, "The Obesity Epidemic: The Role of Addiction" (2010) 182:4 CMAJ 327.

[11] Harry Rutter, "Where Next for Obesity?" (2011) 378:9793 Lancet 746 at 746.

> on the day and said they had "lost" the form and again asked what the person wanted, around 70 per cent claimed to have chosen chocolate.[12]

Governments and health promotion organizations are experimenting with various tools to encourage healthier behaviour. The aim is to control obesity rates, to reduce the incidence of obesity-related diseases, and, for public and private health insurance programs, to save health care costs. While individual behaviour concerning nutrition and physical activity may be viewed narrowly as a personal matter, the adverse medical, economic, and social impacts of obesity-related illnesses make the issue one of public concern. An emerging body of literature examining the cost-effectiveness of obesity prevention and control measures shows that "many population-based prevention policies are cost-effective, largely paying for themselves through future health gains and resulting reductions in health expenditures."[13]

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[12] Cabinet Office Behavioural Insights Team, "Applying Behavioural Insight to Health", online: UK Government Cabinet Office <www.cabinetoffice.gov.uk/resource-library/applying-behavioural-insight-health>, citing Daniel Read & Barbara van Leeuwen, "Predicting Hunger: The Effects of Appetite and Delay on Choice" (1998) 76:2 Organ Behav Hum Decis Process 189.

[13] Y Claire Wang et al, "Health and Economic Burden of the Projected Obesity trends in the USA and the UK" (2011) 378:9793 Lancet 815 at 824. Wang cites, in particular, Michele Cecchini et al, "Tackling of Unhealthy Diets, Physical Inactivity, and Obesity: Health Effects and Cost-Effectiveness" (2010) 376:9754 Lancet 1775. The authors conclude:

> Compared with the alternative strategy of treating only individuals who develop cardiovascular disease or cancer, our findings suggest that several population-based prevention policies can be expected to generate much needed health gains while entirely or very largely paying for themselves through their reduction of future healthcare costs. These policies include health information and communication strategies that improve population awareness and behaviour about the benefits of healthy eating and physical activity; fiscal measures that increase the price of unhealthy food content (fat) or reduce the price of healthy foods rich in fibre (fruits and vegetables); and regulatory measures that improve nutritional information content or restrict the marketing of unhealthy food products (at 1781).

For further discussion of cost-effectiveness and obesity control, see R Carter et al, "Assessing Cost-Effectiveness in Obesity (ACE-Obesity): An Overview of the ACE Approach, Economic Methods and Cost Results" (2009) 9 November BMC Public Health 419.

Provision of information about healthy nutrition and physical activity is a common public health intervention.[14] Examples include Canada's Food Guide for Healthy Eating, nutrition labels on packaged foods[15] and, in 2010, new legislation passed by the US federal government requiring chain restaurants with over 20 locations to disclose calorie information on menu boards.[16]

Yet information alone has been shown to be a weak motivator of diet and exercise behaviour change.[17] An evaluation of calorie labelling in fast food outlets in New York City concluded:

> Eating behavior is notoriously resistant to change. A large body of research has shown that weight-loss interventions designed to educate people about healthful food choices are generally ineffective. Thus, simply displaying information about the caloric value of various food options may fail to translate into attitudinal, motivational, or—most importantly—behavioural changes in line with choosing healthier food options.[18]

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[14] For general discussion of social marketing as a public health tool, see Ross Gordon et al, "The Effectiveness of Social Marketing Interventions for Health Improvement: What's the Evidence?" (2006) 120:12 Public Health 1133.

[15] For information about nutrition labelling requirements in Canada, see Health Canada, "Food and Nutrition: Nutrition Labelling", online: HC <www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/index-eng.php>.

[16] See generally US Food and Drug Administration, Press Release, "FDA Releases Guidance on Federal Menu Labeling Requirements" (24 August 2010), online: FDA <www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm223880.htm> (the labelling requirements apply to chain restaurants with 20 or more locations that trade under the same name and whose menu items are substantially the same).

[17] See generally Helen L Walls et al, "Why Education and Choice Won't Solve the Obesity Problem" (2009) 99:4 Am J Public Health 590.

[18] Brian Elbel et al, "Calorie Labeling and Food Choices: A First Look at the Effects on Low-Income People in New York City" (2009) 28:6 Health Aff w1110 at w1119. Other studies have found that calorie counts on menus have limited or no statistically significant impact on customers' food choices. See e.g. Maya K Vadiveloo, L Beth Dixon & Brian Elbel, "Consumer Purchasing Patterns in Response to Calorie Labeling Legislation in New York City" (2011) 8:1 Int J Behav Nutr Phys Act 51; Eric A Finkelstein et al, "Mandatory Menu Labeling in One Fast-Food Chain in King County, Washington" (2011) 40:2 Am J Prev Med 122; B Elbel, J Gyamfi & R Kersh, "Child and Adolescent Fast-Food Choice and

Indeed, public health officials and experts have promoted a consistent basic message about healthy eating and physical activity: "[F]or nearly half a century almost every authoritative government or professional committee that has reviewed research on diet and chronic disease ultimately has arrived at the same basic dietary advice: eat less; move more; eat more fruits, vegetables, and whole grains; and avoid junk food."[19] Rising rates of overweight and obesity suggest that, for many people, information alone is not enough to counter the obesogenic hazards of modern environments. As Philipson and Posner observe, "If the majority of people understand how to lose weight, simply by eating less or exercising more, public education programs will have small effects. Indeed, given that obesity has increased during an era in which people know more about the effects of being overweight, lack of knowledge is an unlikely explanation for that increase."[20]

Governments may adopt more coercive legal measures in the interests of public health, such as restrictions or prohibitions on products or activities linked with unhealthy weight gain. Schools may prohibit the sale of sugar-sweetened beverages and high calorie, low-nutrition snack foods from vending machines and cafeterias.[21] Such bans may even prevent students from celebrating birthdays with cake or selling baked goods and confectionary items for school fundraisers.[22] Numerous analysts have advocated for prohibitions on food advertising aimed at children.[23] Québec, Sweden, and Nor-

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the Influence of Calorie Labeling: A Natural Experiment" (2011) 35:4 Int J Obes 493.

[19] Steven H Woolf & Marion Nestle, "Do Dietary Guidelines Explain the Obesity Epidemic?" (2008) 34:3 Am J Prev Med 263 at 263.

[20] Tomas A Philipson & Richard J Posner, "The Long Run Growth in Obesity as a Function of Technological Change" (2003) 46:3 Perspect Biol Med 87 at 97.

[21] See Mary Story, Marilyn S Nanney & Marlene B Schwartz, "Schools and Obesity Prevention: Creating School Environments and Policies to Promote Healthy Eating and Physical Activity" (2009) 87:1 Milbank Q 71.

[22] See e.g. "Schoolgirl's Birthday Cake Banned Under Healthy Eating Rules", *The Telegraph* (16 October 2009) online: The Telegraph <www.telegraph.co.uk/news/uknews/6345012/Schoolgirls-birthday-cake-banned-under-healthy-eating-rules.html>; Jennifer Medina, "A Crackdown on Bake Sales in City Schools", *The New York Times* (2 October 2009) online: The New York Times <www.nytimes.com/2009/10/03/nyregion/03bakesale.html>.

[23] See e.g. Bridget Kelly et al, "Television Food Advertising to Children: A Global Perspective" (2010) 100:9 Am J Public Health 1730; Kaye Mehta, "Statutory Restrictions on Unhealthy Food Marketing to Children: the Debate Continues" (2010) 13:7 Public Health Nutr 1001.

way have laws prohibiting advertising directed at children younger than age 13 and, in 2006, the media regulator in the UK began phasing-in restrictions on junk food advertisements during children's television programs. In 2008, the Los Angeles city council enacted a ban on new fast food restaurants in South LA, the area that reportedly has the highest concentration of fast food outlets in the city and an obesity rate that is almost 20% higher than other LA neighbourhoods.[24] As another example of governmental intervention to control unhealthy behaviour, the mayor of New York City requested federal approval to prohibit low-income residents from using food stamps to buy sugar-sweetened sodas.[25] These types of restrictive legal measures attract criticism on the basis that they are excessively paternalistic, impose compliance costs, and pre-empt voluntary measures.[26]

As a middle ground between information provision strategies and restrictions or bans, governments may choose to implement incentive strategies to influence people to engage in healthier behaviours. In theory, well-designed incentives may help individuals resist temptations to engage in near-term behaviours, such as overeating or skipping a workout at the gym, that can have cumulative effects in causing unhealthy weight gain. Incentives may take the form of rewards or punishments and other areas of public health provide examples of the use of incentives or disincentives. "Sin products" like tobacco and alcohol are heavily taxed in many countries and, as discussed below, some advocate for taxes on high calorie, low-nutrition foods and drinks, especially sugar-sweetened beverages. More directly, health insurers or employers may implement penalty programs that charge higher premiums or reduce pay for persons who are obese. Use of "sticks" rather than "carrots" may be criticized for many reasons: they are coercive, they

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[24] Molly Hennessy-Fiske & David Zahniser, "Council Bans New Fast-Food Outlets in South LA", *Los Angeles Times* (30 July 2008) online: Los Angeles Times <articles.latimes.com/2008/jul/30/local/me-fastfood30>.

[25] See generally Robert Pear, "Soft Drink Industry Fights Proposed Food Stamp Ban", *New York Times* (30 April 2011) A11. The federal government rejected the request in August 2011, reportedly "because of the logistical difficulty of sorting out which beverages could or could not be purchased with food stamps and because it would be hard to gauge how effective the step was in reducing obesity" (Patrick McGeehan, "U.S. Rejects Mayor's Plan to Ban Use of Food Stamps to Buy Soda", *New York Times* (20 August 2011) A15).

[26] M Gregg Bloche, "Obesity and the Struggle Within Ourselves" (2005) 93:4 Geo LJ 1335 at 1337-38.

discriminate unfairly and they promote individual blame.[27] Rewards, then, might be a preferable tool. Governments could give tax breaks to individuals who enrol in a fitness program, or, instead of developing complicated taxation schemes, governments or employers could offer the most direct of incentives: financial payments for those who lose weight or achieve other health-related goals, such as reduced cholesterol and blood pressure. Incentives could also be offered to businesses, such as grants to convenience stores in low-income neighbourhoods to supply more fresh fruits and vegetables at a reasonable price.

This article discusses several types of incentives that aim to encourage healthier individual behaviour and considers the emerging body of literature that evaluates the effectiveness and impact of incentives as tools for public health policy. Incentives vary widely in intensity, from indirect (or mild) to direct (or strong) incentives. At one end of the incentive spectrum are strategies that simply invite healthier behaviour. For example, a local government may designate road lanes for bicycles and preserve park spaces in urban areas. Applying "build it and they will come" logic by providing physical environments that invite activity may encourage urban residents to cycle to work or play in the park with their children. In the middle of the incentive spectrum are measures like tax credits for those who participate in sports and fitness programs or "fat taxes" on high calorie, low-nutrition foods. These strategies target individuals' pocketbooks and thus may have a stronger influence on behaviour. The most direct incentives are governmental or private sector schemes that use monetary payments or penalties to induce behavioural change. While this article focuses on incentives targeted at individuals, it also briefly discusses several examples of incentives aimed at businesses, particularly food retailers.

The use of incentives as a health policy tool has three key legal dimensions. First, governments rely on legal powers to implement certain types of incentives, such as the use of zoning authority by local governments and taxation statutes to create incentive programs by federal or provincial governments.[28] Second, in their operation and impact, incentives may infringe on legally protected rights. Both public and private sector organizations must comply with human rights and employment standards legislation in the de-

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[27] For discussion of ethical problems in a range of obesity policy interventions, including incentives, see M ten Have et al, "Ethics and Prevention of Overweight and Obesity: An Inventory" (2011) 12 Obes Rev 669.

[28] For further discussion of legal jurisdiction issues in the Canadian context, see Nola M Ries & Barbara von Tigerstrom, "Legal Interventions to Address Obesity: Assessing the State of the Law in Canada" (2011) 43:2 UBC L Rev 361.

sign and implementation of incentives. Disincentives in the form of penalties may be particularly vulnerable to legal challenge. Third, public health law is concerned with the use of legal and policy measures to create conditions in which people may be healthy.[29] It is important, therefore, to evaluate incentive programs to determine their effectiveness in ameliorating obesogenic environments and creating conditions for improved dietary and physical activity behaviours.

I. Creating Space for Physical Activity

The built environment in which we live, work, and play influences both our diet and physical activity. This environment encompasses urban design, land use, transportation systems, access to amenities for fitness and leisure activities, green space, socio-economic characteristics, sense of safety, and impressions of neighbourhood attractiveness. People who live in walkable neighbourhoods are less likely to be obese; indeed, a man living in a highly walkable neighbourhood can weigh up to ten pounds less than a peer in a very unwalkable neighbourhood.[30]

In contrast, people who live in urban neighbourhoods that have no sidewalks (or even a sidewalk on just one side of the road) and are distant from fitness facilities and shops are more likely to be overweight.[31] Adults and

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[29] For comprehensive discussion of the scope and aims of public health law, see Lawrence O Gostin, *Public Health Law: Power, Duty, Restraint,* 2d ed (Berkeley, New York; University of California Press, Milbank Memorial Fund, 2008). Gostin states:

> Public health law is the study of the legal powers and duties of the state, in collaboration with its partners (e.g., health care, business, the community, the media, and academy), to assure the conditions for people to be healthy (to identify, prevent, and ameliorate risks to health in the population) and the limitations on the power of the state to constrain the autonomy, privacy, liberty, proprietary, or other legally protected interests of individuals for the common good. The prime objective of public health law is to pursue the highest possible level of physical and mental health in the population, consistent with the values of social justice (at xxii).

[30] Ken R Smith et al, "Walkability and Body Mass Index: Density, Design, and New Diversity Measures" (2008) 35:3 Am J Prev Med 237 ("[w]alkable neighborhoods are those designed to include the 3Ds: population density, pedestrian-friendly design, and a diversity of destinations" at 241).

[31] Billie Giles-Corti et al, "Environmental and Lifestyle Factors Associated With Overweight and Obesity in Perth, Australia" (2003) 18:1 Am J Health Promot 93. Regarding access to fitness facilities, the authors write that "those who had poor

children who live in sprawling suburban areas walk less and weigh more, likely due to the fact that they spend more time in automobiles.[32] Heavy automobile traffic also poses hazards to pedestrians and cyclists, especially children, and pollutes the air, creating even more impediments to active commuting and outdoor activity. Perceptions of neighbourhood safety are also critically important, especially for parents and women. Children who walk or cycle to school have significantly higher rates of physical activity, and healthier body composition and cardiorespiratory fitness than do children who travel to school in automobiles.[33] Long commute distances and concerns about children's safety are examples of barriers to active commuting for schoolchildren.[34]

The use of legal tools to change the built environment has been advocated as a means to facilitate healthier behaviour and reduce obesity rates.[35] Options include using municipal planning and zoning powers along with public spending allocations; mandating mixed use, higher-density urban developments; designating pedestrian-only areas; creating cycling lanes; and protecting parks and other spaces for physical activity.[36] Local governments may al-

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access to four or more recreational facilities were 68% more likely to be obese compared with others" (at 97).

[32] Reid Ewing et al, "Relationship Between Urban Sprawl and Physical Activity, Obesity, and Morbidity" (2003) 18:1 Am J Health Promot 47.

[33] See Kirsten K Davison et al, "Children's Active Commuting to School: Current Knowledge and Future Directions" (2008) 5:3 Prev Chronic Dis A100; David R Lubans et al, "The Relationship Between Active Travel to School and Health-Related Fitness in Children and Adolescents: A Systematic Review" (2011) 8:1 Int J Behav Nutr Phys Act 5. After reviewing 27 relevant articles, Lubans et al conclude that some evidence indicates that physically active travel to school is associated with a healthier body composition and cardiorespiratory fitness. They state: "Strategies to increase ATS [active travel to school] are warranted and should be included in whole-of-school approaches to the promotion of physical activity" (at 5).

[34] See Jenna R Panter et al, "Attitudes, Social Support and Environmental Perceptions as Predictors of Active Commuting Behaviour in School Children" (2010) 64:1 J Epidemiol Community Health 41.

[35] See e.g. Mark J Eisenberg et al, "Legislative Approaches to Tackling the Obesity Epidemic" (2011) 183:13 CMAJ 1496; Susan E Chen & Raymond JGM Florax, "Zoning for Health: The Obesity Epidemic and Opportunities for Local Policy Intervention" (2010) 140:6 J Nutr 1181; Lawrence O Gostin, "Law as a Tool to Facilitate Healthier Lifestyles and Prevent Obesity" (2007) 297:1 JAMA 87.

[36] See e.g. Graham M Catlin, "A More Palatable Solution? Comparing the Viability of Smart Growth Statutes to Other Legislative Methods of Controlling the Obesity

so authorize the use of land for community gardens or farmers' markets as a means to enhance accessibility to fresh fruits and vegetables.[37] As will be further discussed below, business licensing powers may also be used to create incentives for food retailers to offer healthy food options as well as to establish themselves in under-served communities.[38]

Green spaces and pedestrian- and cyclist-friendly urban planning have the objective of motivating residents to be more physically active. A reduction in automobile use and related environmental impacts may be a corollary benefit. It is unclear, however, whether mere proximity to green spaces and recreational amenities promotes physical activity and, in turn, helps maintain a healthier body weight. A 2011 systematic review considered 60 studies that examined the relationship between green space and obesity and concluded that "[t]here is some evidence for an association between green space and obesity-related health indicators, but findings were inconsistent and mixed

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Epidemic" (2007) 5 Wis L Rev 1091; Lynn Parker, Annina Catherine Burns & Eduardo Sanchez, eds, *Local Government Actions to Prevent Childhood Obesity*, (Washington, DC: The National Academies Press, 2009).

[37] For a review of relevant literature, see Lacey Arneson McCormack et al, "Review of the Nutritional Implications of Farmers' Markets and Community Gardens: A Call for Evaluation and Research Efforts" (2010) 110:3 J Am Diet Assoc 399.

[38] For more detail on legal powers available to manage urban design under municipal and planning statutes, see Ontario, Ministry of Municipal Affairs and Housing, "Planning by Design: A Healthy Communities Handbook" (2009), online: MMAH <www.mah.gov.on.ca/Page6737.aspx>. This document discusses provisions in the *Planning Act*, RSO 1990, c P 13 relevant to official community plans; community improvement plans; minimum and maximum building height, density and lot size; site plan controls; parkland dedication; subdivision review and approval; and developer permits. It also describes 21 case studies providing best practice suggestions. The Public Health Agency of Canada provides information on healthy urban design initiatives by federal, provincial, and territorial departments and agencies, as well as non-governmental organizations. See Public Health Agency of Canada, "Healthy Living E-Bulletin, The Built Environment" (May 2011), online: PHAC <www.phac-aspc.gc.ca/hp-ps/hl-mvs/ipchls-spimmvs/bulletin/2011/may-mai/e-bulletin-eng.php>. The Healthy Canada by Design initiative (www.uphn.ca/CLASP), launched in 2009, aims "to examine the impact of and to improve neighborhood design and community planning with respect to health and chronic disease, working with planners, public health officials, developers, policy-makers and the public through partnerships in British Columbia, Ontario, and Quebec. (Healthy Canada by Design, "Healthy Canada by Design CLASP Initiative: Health Authorities' Project Summaries" (2011), online: NCCHPP <www.ncchpp.ca/docs/HCBD_ProjectSummaries2011.pdf>).

across the studies."[39] For example, a UK analysis found that urban residents who lived closest to parks were more likely to achieve recommended levels of physical activity, but after adjustment for a variety of environmental and respondent characteristics, this did not necessarily translate to lower rates of overweight and obesity.[40] Paradoxically, a 2008 study of nearly five thousand Dutch people found that those living near green spaces, such as parks, walked and cycled *less* often.[41] One explanation is that green spaces may separate homes from shops, so people are more likely to use a car to run errands. A British study found "no evidence of clear relationships between recreational physical activity and access to green spaces,"[42] at least for the 4,732 middle-aged to elderly people included in this analysis.[43]

Some studies suggest that proximity to green space makes people *feel* healthier,[44] and may provoke higher self-rated scores of health and well-being.[45] Living near green space has been correlated to lower rates of some health problems, particularly depression and anxiety disorders.[46]

Other researchers point out that most existing studies do not take account of selection bias; that is, people of healthy weight who enjoy physical activi-

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[39] K Lachowycz & AP Jones, "Greenspace and Obesity: A Systematic Review of the Evidence" (2011) 12:5 Obes Rev e183 at e187.

[40] Emma Coombes, Andrew P Jones & Melvyn Hillsdon, "The Relationship of Physical Activity and Overweight to Objectively Measured Green Space Accessibility and Use" (2010) 70:6 Soc Sci Med 816.

[41] Jolanda Maas et al, "Physical Activity As a Possible Mechanism Behind the Relationship Between Green Space and Health: A Multilevel Analysis" (2008) 8 BMC Public Health 206.

[42] M Hillsdon et al, "The Relationship Between Access and Quality of Urban Green Space with Population Physical Activity" (2006) 120:12 Public Health 1127 at 1130.

[43] *Ibid.* A recent New Zealand study also did not find a connection between proximity to green space and cardiovascular disease mortality (Elizabeth Richardson et al, "The Association Between Green Space and Cause-Specific Mortality in Urban New Zealand: An Ecological Analysis of Green Space Utility" (2010) 10 BMC Public Health 240, online: <www.biomedcentral.com/content/pdf/1471-2458-10-240.pdf>).

[44] Jolanda Maas et al, "Green Space, Urbanity, and Health: How Strong is the Relation?" (2006) 60:7 J Epidemiol Community Health 587.

[45] Peter P Groenewegen et al**, "**Vitamin G: Effects of Green Space on Health, Well-Being, and Social Safety" (2006) 6:1 BMC Public Health 149.

[46] J Maas et al, "Morbidity is Related to a Green Living Environment" (2009) 63:12 J Epidemiol Community Health 967.

ty may be more likely to choose to live in highly walkable communities with many recreational amenities, while obese or overweight people may be more likely to choose neighbourhoods suited to automobile use because they prefer driving.[47] Eid et al dispute studies claiming that urban sprawl *causes* obesity, arguing that self-selection is the explanation for the association. They contend "that recent calls to redesign cities in order to combat the rise in obesity are misguided. Our results do not provide a basis for thinking that such redesigns will have the desired effect, and therefore suggest that resources devoted to this cause will be wasted. The public health battle against obesity is better fought on other fronts."[48] A 2011 systematic review of studies evaluating the impact of community-wide interventions to promote physical activity, including environmental changes such as investments in walking paths and better signage and lighting to improve safety, concluded that the evidence reviewed "does not support the hypothesis that multicomponent community wide interventions effectively increase population levels of physical activity."[49]

Urban planning initiatives focused on encouraging physical activity may be commendable for improving environmental sustainability in cities by reducing automobile use, but their impact on obesity rates appears to be relatively weak. Building walking and cycling paths and protecting green space may simply not be enough incentive to motivate non-exercisers into regular physical activity. If the "build it and they will exercise" approach does not have its desired benefits, stronger incentives may be warranted.

II. Tax Credits for Physical Activity

Financial incentives for taking up exercise, losing weight, or meeting other health-related targets are another policy option to promote improved health status. Such incentives may be direct, such as cash payments for reaching medically supervised weight-loss goals, or indirect, such as tax credits for money spent on fitness and recreation programs. These measures counter prevailing economic incentive structures in which calories are relatively inexpensive and high-wage rates reward sedentary occupations.[50]

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[47] Jean Eid et al, "Fat City: Questioning the Relationship between Urban Sprawl and Obesity" (2008) 63:2 Journal of Urban Economics 385 at 385-86.

[48] *Ibid* at 399.

[49] PRA Baker et al, "Community Wide Interventions for Increasing Physical Activity" (2011) 4 The Cochrane Library 1 at 2, online: <onlinelibrary.wiley.com/doi/10.1002/14651858.CD008366.pub2/pdf>.

[50] Tomas J Philipson & Richard A Posner, "The Long-Run Growth in Obesity as a Function of Technological Change" (2003) 46:3 Perspect Biol Med S87.

Philipson points out that "historically, work was strenuous; in effect, individuals got paid to exercise. Now work is more sedentary: individuals have to pay (in terms of foregone earnings and gym memberships) to exercise."[51]

Some jurisdictions are experimenting with tax laws to create incentives for physical activity. In Canada, the federal government launched a children's physical activity tax credit for the 2007 taxation year that allows claims of up to $500 for eligible activities.[52] To qualify for the tax credit, a physical activity program must meet a minimum time requirement (eight consecutive weeks or, in the case of a children's camp, five consecutive days) and include "a significant amount of physical activity that contributes to cardiorespiratory endurance, plus one or more of: muscular strength, muscular endurance, flexibility, and/or balance."[53] Several Canadian provinces and the US have also adopted similar "healthy living" tax credits, with some offering credits for both adult and children's fitness activities.[54]

These tax credits are intended to encourage physical activity by offsetting the cost of sports and fitness programs. But the limitations of these tax measures hinder their capacity to have any significant impact on improving physical activity levels among the majority of Canadian adults and children. In turn, the impact on obesity rates is likely to be negligible. First, the federal program allows claims of *up to* $500, but the actual amount a parent is eligi-

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[51] Tomas J Philipson, "The World-wide Growth in Obesity: an Economic Research Agenda" (2001) 10:1 Health Economics 1-7.

[52] *Income Tax Act*, RSC 1985, c 1 (5th Supp), s 118.03; *Income Tax Regulations*, CRC, c 945, s 9400(1)-9400(2).

[53] See Canada Revenue Agency, "Line 365 - Children's Fitness Amount", online: CRA <www.cra-arc.gc.ca/fitness>.

[54] See Manitoba's Children's Fitness Tax Credit, *Income Tax Act*, CCSM, c 110, ss 4.6(10.2-10.4); Nova Scotia's Healthy Living Tax Credit*, Income Tax Act*, RS 1989, c 217, s 12A; Saskatchewan's *Active Families Benefit Act*, SS 2008, c A-4.01; and Ontario's Children's Activity Tax Credit*, Taxation Act, 2007,* SO 2007, c 11, Schedule A, s 103.1. United States tax law permits individuals to claim tax credits for the cost of membership in weight loss programs, provided they enrol in such a program under medical supervision to address a diagnosed condition which, according to the Internal Revenue Service, includes obesity, hypertension and heart disease. Fees for gym memberships or speciality diet food products are not eligible expenses. See Internal Revenue Service, "What Are Medical Expenses?", online: IRS <www.irs.gov/publications/p502/ar02.html#en_US_publink1000179034>.

ble to receive may be much lower.[55] The amount of the credit is determined by multiplying the cost of the eligible program by the lowest marginal tax rate (15%). If a parent spends $1,000 for their child to play hockey for a winter season, they are eligible for a $150 tax credit ($1,000 x 15%). If a parent spends $150 for a session of swimming lessons, they qualify for a mere $22.50 ($150 x 15%). Second, tax credit schemes involve a degree of administrative burden on claimants, who must keep receipts to prove their expenses and remember to file for the credit on their tax return. Third, the tax credit does not immediately help to offset the cost of sports and recreational programs. A parent must be able to pay the cost at the time of enrolment, so the tax credit offers no assistance to families who cannot initially afford to pay the fees for fitness activities.

A 2009 survey of Canadians provided evidence of these shortcomings of the federal fitness tax credit, as parents in the lowest-income quartiles did not apply for these tax credits.[56] Of respondents with children aged 2 to 18, about half (54%) said their child was enrolled in organized physical activity and nearly the same proportion (55%) said they were aware of the Children's Fitness Tax Credit. However, the survey revealed a wide gap between respondents in the lowest and highest income brackets. Only 40% of those in the lowest income quartile had children in an organized physical activity program, compared to almost 70% (67.7%) in the highest income quartile. Just 28% of low-income earners claimed the fitness tax credit, while 55% of high-income earners took advantage of the credit. Indeed, over 60% of Canadian children who live in poverty do not participate in organized sports and recreation, so these families will not benefit from the tax credit.[57] A recent analysis of economic interventions to address obesity described the Children's Fitness Tax Credit as an example of "potentially inefficient economic measures to encourage increases in physical activity" and recommended that public funds be allocated "to economic measures that show

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[55] During the 2011 federal election campaign, Conservative leader Stephen Harper promised to increase the child's tax credit to $1000 and expand the program to include a similar tax credit for adults. Such measures would have to await a balanced federal budget, possibly by 2015. See CBC News, "Harper would extend fitness tax credit" (3 April 2011), online: CBC News <www.cbc.ca/news/politics/canadavotes2011/story/2011/04/03/cv-election-harper-ottawa.html>.

[56] John C Spence et al, "Uptake and Effectiveness of the Children's Fitness Tax Credit in Canada: The Rich Get Richer" (2010) 10 BMC Public Health 356 at 358-360, online: <www.ncbi.nlm.nih.gov/pmc/articles/PMC2908091>.

[57] Sheila Block, "Children's Fitness Tax Credit: Less than Meets the Eye" (2007), online: Canadian Women's Health Network <www.cwhn.ca/en/node/39436>.

more promise (e.g. subsidized participation for targeted populations)."[58] Such programs could help to reduce identified barriers by, for example, directing funds to support participation of children from low-income families in sports and recreation programs. Just as with the Children's Fitness Tax Credit, the effectiveness of targeted programs requires evaluation of uptake and impact: "The promise of such economic measures should be tested … to determine the actual effects of such measures on increasing physical activity participation and reducing obesity."[59]

Taxes and subsidies may also be applied to food products to attempt to improve dietary choices and to promote healthier body weight. As with tax credits, however, some analysts contend that relatively small price adjustments will not provoke widespread changes in eating patterns. Moreover, while "carrot" approaches such as physical activity tax credits attract support from the sports and fitness sector, which stands to see greater enrolment and revenues, "'fat taxes" generate food industry opposition and the criticism that potentially regressive taxation amounts to a government revenue grab rather than effective public health policy.

III. Taxes on Energy Dense, Low-Nutrition Foods and Beverages

Governments have a long history of taxing the production and sale of "sin products," such as tobacco and alcohol, and these taxes have been shown to be effective in reducing consumption.[60] Smoking rates in the United States have dropped from over 40% in 1965 to less than 20% by 2007, a decrease attributed to heavy taxation and greater public awareness of the health hazards associated with tobacco use. High taxes on cigarettes also dissuade young people from taking up the habit.[61] Increasing the price of alcoholic beverages through taxation also reduces consumption, especially

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[58] Guy Faulkner et al, "Economic Policy, Obesity and Health: A Scoping Review" (Final Report submitted to the Heart and Stroke Foundation of Canada, July 2010) at 30, online: <www.hsf.ca/research/sites/default/files/hsfc_epoh_finalrpt_july 2010.pdf>.

[59] *Ibid* at 30.

[60] See Frank J Chaloupka, Kurt Straif & Maria E Leon, "Effectiveness of Tax and Price Policies in Tobacco Control" (2011) 20:3 Tob Control 235.

[61] For a discussion of the use of taxation to reduce demand for tobacco products, see Frank J Chaloupka, Melanie Wakefield & Christina Czart, "Taxing Tobacco: The Impact of Tobacco Taxes on Cigarette Smoking and Other Tobacco Use" in Robert L Rabin & Stephen D Sugarman, eds, *Regulating Tobacco* (New York: Oxford University Press, 2001) 39.

among younger drinkers.[62] Taxes are linked with lower rates of drinking and driving, and fewer alcohol-related car crashes.[63] Higher alcohol prices also help reduce adverse health consequences of excessive drinking, such as liver disease and certain cancers associated with alcohol consumption. One study even found that higher liquor and beer taxes reduced rates of syphilis and gonorrhea, an outcome the researchers attributed to less "sex under the influence."[64]

While "sin products" are often heavily taxed–and regulated in other ways, such as imposing age limits for the legal purchase of alcohol and tobacco–"fat taxes" on high calorie, low-nutrition products are not yet standard public policy. Advocates of such taxes argue that price increases would be beneficial in reducing consumption of less healthy foods and beverages and generate government revenue that could be allocated to fund health services or other programs to address obesity. Tax revenue collected on alcohol and tobacco products is already directed to some degree at legislative enforcement and health programs. In 2007, the Government of Québec adopted legislation to create a special fund to promote healthy lifestyles, and partial funding ($20 million annually) is obtained from tobacco tax revenues.[65] The fund, co-supported by a private charitable foundation, finances public information campaigns and school-based interventions to promote healthy living. In announcing the fund, the provincial health minister identified obesity, inadequate physical activity, and smoking as leading lifestyle factors linked with premature death.[66]

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[62] For a review of relevant studies, see AC Wagenaar, MJ Salois & KA Komro, "Effects of Beverage Alcohol Price and Tax Levels on Drinking: A Meta-Analysis of 1003 Estimates from 112 Studies" (2009) 104:2 Addiction 179.

[63] See Frank J Chaloupka, Michael Grossman & Henry Saffer, "The Effects of Price on Alcohol Consumption and Alcohol-Related Problems" (2002) 26:1 Alcohol Res Health 22 at 29; Frank J Chaloupka, Henry Saffer & Michael Grossman, "Alcohol-Control Policies and Motor-Vehicle Fatalities" (1993) 22:1 J Legal Stud 161 at 181-82.

[64] H Chesson et al, "Sex Under the Influence: The Effect of Alcohol Policy on Sexually Transmitted Disease Rates in the United States" (2000) 43:1 JL & Econ 215.

[65] *An Act to Establish the Fund for the Promotion of a Healthy Lifestyle*, RSQ c F-4.0021.

[66] See Canadian Broadcasting Corporation, "Quebec, Private Foundation to Spend Millions on Healthy Living", 23 October 2006, online: CBC <www.cbc.ca/canada/montreal/story/2006/10/23/healthylivingprogram.html>.

Some countries impose differential tax levels on foods based on whether they are considered part of a basic diet, as opposed to a snack or treat, though existing taxes were generally implemented with a view to revenue generation rather than as a specific measure to control obesity rates.[67] In Canada, the federal government imposes a 5% sales tax on goods and services. Basic groceries are zero-rated, however, and these include "fresh, frozen, canned, and vacuum sealed fruits and vegetables, breakfast cereals, most milk products, fresh meat, poultry and fish, eggs, and coffee beans."[68] Numerous snack food products are not considered basic groceries and are taxed at the 5% rate. These include carbonated sodas, chocolate bars and other candies, ice cream bars, "chips, crisps, puffs, curls or sticks (such as potato chips, corn chips, cheese puffs, potato sticks, bacon crisps, and cheese curls),"[69] salted nuts, and ice cream bars. Over 30 US states tax sugar-sweetened beverages.[70] Research indicates that states without snack taxes, and those that repealed such taxes, have experienced a greater increase in obesity prevalence than states with snack taxes, though the taxes are not high enough to explain the changes in obesity rates.[71] In France, candy, chocolate, and margarine are taxed at

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[67] See Tatiana Andreyeva, Frank J Chaloupka & Kelly D Brownell, "Estimating the Potential of Taxes on Sugar-Sweetened Beverages to Reduce Consumption and Generate Revenue" (2011) 52:6 Prev Med 413.

[68] Canada Revenue Agency, "GST/HST Memoranda Series: 4.3 Basic Groceries", (January 2007), online: CRA <www.cra-arc.gc.ca/E/pub/gm/4-3/4-3-e.pdf> at 3.

[69] *Ibid* at 9.

[70] See Trust for America's Health, "F as in Fat: How Obesity Threatens America's Future 2010", online: TFAH <www.healthyamericans.org/reports/obesity2010/Obesity2010Report.pdf> at 7, 42. For information on tax rates, see Jamie F Chriqui et al, "State Sales Tax Rates for Soft Drinks and Snacks Sold Through Grocery Stores and Vending Machines, 2007" (2008) 29:2 J Public Health Policy 226. The authors note that tax rates "vary by state, intended retail location (grocery store vs. vending machine), and product" (at 226). Items in vending machines and pop are generally taxed at a higher rate than snack products purchased in grocery stores.

[71] Daniel Kim & Ichiri Kawachi, "Food Taxation and Pricing Strategies to 'Thin Out' the Obesity Epidemic" (2006) 30:5 Am J Prev Med 430. After pointing out that the taxes are not high enough to explain lower obesity rates in some states, Kim & Kawachi suggest that residents in states with snack taxes might have "social norms, beliefs, and/or values regarding obesogenic behaviors" that make them more likely to have healthier lifestyles (at 433). They may also be more inclined to vote into office public officials who will enact snack taxes.

around 20%, much higher than the 5.5% tax that applies to other foods.[72] In the UK, sugary beverages and candies are taxed at 15% or higher. In early 2010, the Romanian government announced a controversial junk food tax, described as "one of the most far-reaching of its kind in the world,"[73] though implementation was delayed as government officials "struggle[d] to identify upwards of 40,000 products"[74] to be taxed and the legislation was ultimately withdrawn "amid fierce opposition."[75]

Energy dense, low-nutrition foods are typically inexpensive and convenient to eat, and consumption of sugary drinks and salty snack foods has increased dramatically over the past three decades.[76] Intake of sugar, especially from sweetened drinks, is on the rise. These caloric beverages, including soft drinks, energy drinks, iced tea, and coffee drinks, are fingered as a major culprit in increased obesity rates. In the late 1970s, people in the United States consumed, on average, about 70 calories per day from sugar-sweetened beverages; by 2000, this intake increased to approximately 190

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[72] One analysis of French food prices and population BMI did not find that higher prices necessarily produced desirable body weight outcomes. See Christine Boizot-Szantaï & Fabrice Etilé, "The Food Prices/Body Mass Index Relationship: Theory and Evidence from a Sample of French Adults" (paper delivered at the 11th Congress of the European Association of Agricultural Economists, 2005), online: AgEcon <ageconsearch.umn.edu/bitstream/24734/1/cp05bo07.pdf>. The authors conclude that taxes on specific foods "will not curb the epidemic of obesity in the short-term," but their analysis did not allow predictions about longer-term impacts (at 13). For example, the authors could not infer from their analysis whether higher prices on certain low-nutrition foods would reduce the lifetime risk of obesity for the current generation of French children (*ibid*).

[73] Ed Holt, "Romania Mulls Over Junk Food Tax" (2010) 375:9720 Lancet 1070 at 1070. The tax would apply to a wide range of foods, including "hamburgers, chips, fizzy drinks, and other fast foods with high sugar and fat levels," but "kebabs—one of Romania's favourite foods—and pizza will be exempt" (at 1070).

[74] Jeremy Laurance, "How to Solve the Junk Food Problem: Tax" *The Independent* (3 April 2010), online: The Independent <www.independent.co.uk/life-style/health-and-families/health-news/how-to-solve-the-junk-food-problem-tax1934716.html>.

[75] Ed Holt, "Hungary to Introduce a Broad Range of Fat Taxes" (2011) 378:9793 Lancet 755 at 755.

[76] For a review of US data, see Kim & Kawachi, *supra* note 71.

calories per day. Some individuals, especially children and teens, consume 10–15% of their daily calorie intake in beverages.[77]

In light of this evidence about high calorie liquid consumption, some public health advocates champion a specific tax on sugar-sweetened beverages. An expert panel convened by the Canadian Heart and Stroke Foundation recommended a tax on caloric sweetened beverages based on research indicating that "adult weight is modestly responsive to soft-drink taxes."[78] In the United States, Brownell and Frieden argue for a penny-per-ounce excise tax on beverages made with caloric sweeteners like sugar and corn syrup.[79] They estimate this tax would reduce consumption by at least two drinks per week, adding up to eight thousand fewer calories and two lost pounds over the course of a year. Nationally, a penny-per-ounce tax is also estimated to bring in USD$14.9 billion in revenue that could be directed to obesity-prevention programs and the health care costs associated with obesity.[80] In the United States, medical costs associated with overweight and obesity are estimated at $147 billion. Half these costs are covered through the federally-financed Medicare and Medicaid programs.[81]

Taxes on sugar-sweetened beverages may become an increasingly attractive public policy measure as a means to raise revenue to pay for escalating health care costs or targeted anti-obesity programs. For example, in 2009, the US Senate Finance Committee proposed an excise tax on sugary beverages as a means to generate funds for health care reform.[82] In 2010, the District of Columbia City Council gave preliminary approval for a six percent tax on soft drink sales to generate funds for healthy nutrition programs in schools. The proposed tax would have increased the price of a two-litre bottle of soda

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[77] See Kelly D Brownell & Thomas R Frieden, "Ounces of Prevention – The Public Policy Case for Taxes on Sugared Beverages" (2009) 360:18 N Engl J Med 1805 at 1805.

[78] Faulkner et al, *supra* note 58 at 20 (the authors acknowledge that a soda tax may have a minimal impact on the weight of children and adolescents).

[79] Brownell & Frieden, *supra* note 77.

[80] See Kelly D Brownell et al, "The Public Health and Economic Benefits of Taxing Sugar-Sweetened Beverages" (2009) 361:16 N Engl J Med 1599 at 1602.

[81] Eric A Finkelstein et al, **"**Annual Medical Spending Attributable To Obesity: Payer-And Service-Specific Estimates" (2009) 28:5 Health Affairs w822 at w828.

[82] US Senate Finance Committee, "Financing Comprehensive Health Care Reform: Proposed Health System Savings and Revenue Options" (20 May 2009), online: APA Practice Central <www.apapracticecentral.org/advocacy/reform/finance-may20.pdf>.

by 10 to 12 cents and would have generated net revenue of around $10 million annually.[83] This proposal was ultimately rejected.[84]

Economists debate the price elasticity of goods, which refers to the degree to which consumer demand fluctuates with the price of a product, and predict that small price increases will have minimal impact on caloric consumption and body weight. If the retail price of sugary beverages or high-fat snacks rises, some consumers will simply pay the higher price and not change their consumption. One US study explored the impact of a hypothetical 20% tax on potato chips and salty snacks and found that individual consumption would drop only by about four to six ounces over the course of a year,[85] which translates to fewer than one thousand calories. The long-term impact of taxes on health outcomes is difficult to predict, but these calculations suggest the benefits will be slight. Two UK economists recently estimated the potential dietary and health impacts of a tax on saturated fat, coupled with a subsidy on fruits and vegetables. While they concluded that these fiscal measures would likely improve nutritional intake for some people, a large portion of the British population would still consume an unhealthy diet and "[o]nce the changes in diet are converted into changes in the risks of disease, the impacts of the policy are negligible."[86] In 2011, the Danish government implemented a saturated fat tax on meat and dairy products, oils, and processed foods, despite strong opposition by dairy, meat, and other food producers. The Danish Commission on Disease Prevention estimated that a drop in heart disease attributable to lower fat consumption would extend individual life expectancy by 3 to 11 days.[87]

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[83] Tim Craig, "DC Council Launching Campaign Against Childhood Obesity" *The Washington Post* (2 May 2010), online: Washington Post <www.washingtonpost.com/wpdyn/content/article/2010/05/01/AR2010050103193.html>.

[84] Alan Suderman, "DC Soda Tax Fizzles" *The Washington Examiner* (21 May 2010), online: Washington Examiner <washingtonexaminer.com/local/dc-soda-tax-fizzles> (council members who opposed the tax expressed concern that "the tax applies too broadly, hurts lower-income families, and hadn't followed the typical procedural process").

[85] Fred Kuchler et al, "Taxing Snack Foods: Manipulating Diet Quality or Financing Information Programs?" (2005) 27:1 Review of Agricultural Economics 4.

[86] R Tiffin & M Arnoult, "The Public Health Impacts of a Fat Tax" (2011) 65 Eur J Clin Nutr 427 at 427.

[87] Forebyggelses kommissionen [Prevention Commission], *Vi kan leve laengere og sundere* [We can live longer and healthier], *Forebyggelses kommissionens anbefalinger til en styrket forebyggende indsats* [Prevention Commission's

Interestingly, a recent Canadian study found that a government-mandated label declaring that a product is taxed would be more effective at reducing consumption than an actual tax. The researchers tested a label stating: "This product is high in fat. It has been taxed due to its less healthy nutritional content." They concluded:

> A warning label that points out that the less healthy food is taxed and why would be an effective way to discourage the consumption of these products. Overall, it appears that it is more important to tell people that the product is taxed because it is less healthy than to actually tax it. An increase in price appears not to be necessary; a label stating that the food is taxed because it is less healthy may be enough to significantly reduce purchases of that product.[88]

This finding implies that less healthy foods ought to be stigmatized, similar to the ways in which smoking has been de-normalized "as a dirty and disgusting habit."[89] Zimmerman explicitly advocates for the use of taxes as a means to promote negative attitudes towards foods and beverages that have low nutritional value: "a tax that was widely perceived as a sin tax on particular food types could send a powerful social signal about shifting norms of appropriate consumption and could have an effect much larger than the monetary value of the tax."[90] This position is not supported by those who point out that almost all foods and drinks, even "junk" foods, can be consumed occasionally without adverse health impacts. As a British Columbia government report on childhood obesity stated, "[t]o demonize eating is not an op-

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recommendations for strengthening prevention efforts] (April 2009), online: Forebyggelses kommissionen <www.forebyggelseskommissionen.dk/Materialer.aspx> (the Commission states at 150 that the tax will increase life expectancy by 0.031 years (11.3 days) on an optimistic calculation of impact, and only by 0.008 years (2.9 days) on a conservative estimate).

[88] Ryan D Lacanilao, Sean B Cash & Wiktor L Adamowicz, "Heterogeneous Consumer Responses to Snack Food Taxes and Warning Labels" (2011) 45:1 Journal of Consumer Affairs 108 at 121 (such a false claim–that a food is taxed when it is not–may, however, contravene advertising standards laws).

[89] James Colgrove, Ronald Bayer & Kathleen E Bachynski, "Nowhere Left to Hide? The Banishment of Smoking from Public Spaces" (2011) 364:25 N Engl J Med 2375 at 2376.

[90] Zimmerman, *supra* note 8 at 299.

tion,"[91] or at least not in the view of legislators and policy-makers who wish to avoid nanny-state criticisms.

Indeed, governments must tread a fine line in any taxation policy that targets an "unhealthy" product: a tax must be high enough that it will cause some reduction in consumption, and therefore be more likely to have positive health impacts, but cannot be so high that it will decimate consumption and generate fierce backlash from industry players who are hurt by plummeting profits. Consumers may also argue that high taxes restrict their freedom of choice. Existing taxes on soft drinks and snack foods are generally considered to be too small to bring about a discernable reduction in consumption and, in turn, on rates of overweight and obesity. In the United States, for example, the average state tax on soda pop amounts to 0.0425 cents on a one-dollar bottle of pop,[92] and analysts suggest that prices would need to increase by at least 10% to reduce consumption by an estimated 8-10%.[93] Another model suggests that an even higher 20% tax on sugar-sweetened beverages could bring about an average annual per capita weight loss of only 1.5 to 2.5 pounds.[94] It has been demonstrated that higher taxes on sugary beverages may lead to substitution behaviour among consumers, where they increase intake of other beverages and foods, meaning that overall calorie consumption is not reduced.[95]

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[91] British Columbia, Select Standing Committee on Health, A Strategy for Combatting Childhood Obesity and Physical Inactivity in British Columbia (Legislative Assembly of British Columbia, 2006) at 1, online: <www.leg.bc.ca/CMT/38thparl/session-2/health/reports/Rpt-Health-38-2-29Nov 2006.pdf>.

[92] Lisa M Powell, Jamie Chriqui & Frank J Chaloupka, "Associations between State-Level Soda Taxes and Adolescent Body Mass Index" (2009) 3545:3 J Adolesc Health S57 at S62.

[93] T Andreyeva et al, "The Impact of Food Prices on Consumption: A Systematic Review of Research on Price Elasticity of Demand for Food" (2010) 100:2 Am J Public Health 216.

[94] Senarath Dharmasena & Oral Capps Jr, "Intended and Unintended Consequences of a Proposed National Tax on Sugar-Sweetened Beverages to Combat the U.S. Obesity Problem" (2011) Health Econ.

[95] One study of the impact of beverage prices on children and adolescent body weight concluded that any reduction in consumption of higher-prices caloric-sweetened soft drinks was offset by increased consumption of other beverages, such as milk. While milk provides nutrition and soft drinks do not, overall calorie intake was not reduced. See Jason M Fletcher, David E Frisvold & Nathan Tefft, "The Effects of

Food and beverage taxes are also considered regressive taxes in that they have a disproportionate impact on low-income earners. A person who spends $1,000 a month on food can absorb higher product prices more easily than a person who has a monthly food budget of only $250. Some argue that the regressive nature of junk food taxes is justified as rates of overweight and obesity are highest among lower-income groups, and the health of this population may be improved if sugar-sweetened drinks or other high calorie, low-nutrition foods became more affordable. A Canadian expert review panel states: "[a]nother rationale for government intervention is to improve the welfare of low income households. Those with limited means often economize by purchasing calorie-dense, processed foods and drinks. The reason is that, although these items are not particularly nutritious, they may provide the most calories per dollar."[96] Others criticize this paternalistic approach and argue that a "policy of taxing foods that are commonly preferred by low-income households would exacerbate inequality in income, which might be expected to increase inequality in health outcomes, with negative effects on health for society as a whole."[97]

It is also argued that "fat taxes" on low-nutrition foods and beverages should be accompanied by "thin" subsidies on healthier foods to make the latter more affordable. It is even suggested that the price of artificially sweetened beverages should be reduced by subsidies to encourage people who consume caloric drinks to substitute zero or low-calorie options.[98] Economic models suggest that reducing the price of healthier foods like vegetable and fruits through subsidies could be a cost-effective way to increase consumption and reduce morbidity and mortality associated with poor nutritional in-

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Soft Drink Taxes on Child and Adolescent Consumption and Weight Outcomes" (2010) 94:11-12 Journal of Public Economics 967.

[96] Faulkner et al, *supra* note 58 at 10.

[97] Grace Lordan & John Quiggin, "Should We Put a Thin Subsidy on the Policy Table in the Fight Against Obesity?" (2011) 14:2 Forum for Health Economics & Policy, citing Richard G Wilkinson & K Pickett, *The Spirit Level: Why More Equal Societies Almost Always Do Better* (London: Allen Lane, 2009).

[98] *Ibid*.

take.[99] Paradoxically, however, other economic models suggest that subsidies could increase weight gain in some individuals.[100]

To date, studies indicate that taxes on high-energy, low-nutrition foods and beverages must be relatively high to decrease consumption of the targeted products; likewise, subsidies would need to "significantly lower prices [to] result in a substantial increase in the consumption of healthful foods."[101] A 2009 systematic review concluded that: "the limited existing evidence suggests that small taxes or subsidies are not likely to produce significant changes in BMI or obesity prevalence."[102] At best, taxes will generate revenue that may be directed to other, more effective, interventions to promote healthy lifestyles. Social marketing campaigns that publicize that certain foods and beverages are taxed because of their poor nutritional content may also help shift public attitudes and, in effect, "demonize" consumption of those products, though industry players can be expected to counter such messages.

IV. Cash for Weight Loss ... or Penalties for Being Obese

While governments may use taxation policy to create incentives or disincentives for specific behaviours, another option is more direct: pay people to lose weight or achieve other health-related targets. As discussed below, em-

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[99] Sean B Cash, David L Sunding & David Zilberman, "Fat Taxes and Thin Subsidies: Prices, Diet, and Health Outcomes" (2005) 3:4 Acta Agriculturae Scand Section C 167 at 168-69, 171-72 (this study focused on the impact of fruit and vegetable consumption on rates of coronary heart disease and ischemic stroke).

[100] Gideon Yaniv et al, "Junk Food, Home Cooking, Physical Activity and Obesity: The Effect of the Fat Tax and the Thin Subsidy" (2009) 93:5-6 Journal of Public Economics 823. The authors explain:

> The results show that for a non weight conscious individual a fat tax will unambiguously reduce obesity, whereas a thin subsidy may increase obesity. The reason for the latter result is that while the substitution effect of the subsidy acts to increase the purchase of cooking ingredients (at the expense of junk-food), the income effect acts to increase leisure … reducing the time left for cooking. However, for a weight conscious individual, particularly one who is physically active, even a fat tax may increase obesity! This is so because a fat tax will generate substitution away from junk-food meals towards cooking more at home, leaving less time for physical activity. Although calorie intake will fall, calorie burning may fall by more (at 824).

[101] Lordan & Quiggin, *supra* note 97.

[102] Lisa M Powell & Frank J Chaloupka, "Food Prices and Obesity: Evidence and Policy Implications for Taxes and Subsidies" (2009) 87:1 Milbank Quarterly 229 at 229.

ployers may also implement incentive schemes to promote healthier workforces, thinking it is better to spend money on paying employees to lose weight than to pay for more sick days and health insurance claims.

Some individuals who wish to shed pounds pay to join a commercial weight loss program (like Weight Watchers or Jenny Craig), or a community or online support group. A 2005 review of these types of programs reached the tepid conclusion that: "the evidence to support the use of the major commercial and self-help weight loss programs is suboptimal."[103] Other research suggests that structured weight loss programs can work if people comply with them, but dropout rates are typically high.[104] Financial incentives are an option for promoting adherence to healthy lifestyle programs. Tangible, near-term monetary rewards may be more effective in motivating behavioural change than exhortations that a healthy body weight and regular physical activity will produce health benefits over the long term. As one study shows, giving non-exercisers a pamphlet about the benefits of exercise does not incite them to go to the gym, but paying them $25 to go to the gym once a week does. Offer them an extra $100 to go eight more times over a month, and they do.[105]

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[103] Adam Gilden Tsai & Thomas A Wadden, "Systematic Review: An Evaluation of Major Commercial Weight Loss Programs in the United States" (2005) 142:1 Ann Intern Med 56 at 56. A 2011 study found, however, that overweight or obese patients referred to Weight Watchers by their primary care provider lost twice as much weight as their peers who did not participate in this commercial program (5.06 kg weight loss at 12 months compared to 2.25 kg). The completion rate of the Weight Watchers program was 61% (Susan A Jebb et al, "Primary Care Referral to a Commercial Provider for Weight Loss Treatment Versus Standard Care: A Randomised Controlled Trial" (2011) 378:9801 Lancet 1485). A commentary on this study pointed out that the participants were predominantly mildly obese women in their 40s without major health problems, thus the study simply shows that "if you randomise a group of otherwise healthy low-risk marginally overweight/obese women to a (albeit, admittedly great) commercial weight loss program, they do better at losing weight than when told to do so by their doctors" (Arya Sharma, "Should We Outsource Obesity Treatment to Weight Watchers?" (9 September 2011), online: Arya M Sharma, MD <www.drsharma.ca/should-we-outsource-obesity-treatment-to-weight-watchers.html>).

[104] Cheryl L Graffagnino et al, "Effect of a Community-Based Weight Management Program on Weight Loss and Cardiovascular Disease Risk Factors" (2006) 14:2 Obesity 280.

[105] Gary Charness & Uri Gneezy, "Incentives to Exercise" (2009) 77:3 Econometrica 909.

Some governments are experimenting with offering monetary rewards to citizens who would benefit from weight loss. In 2007, the mayor of an Italian town announced an incentive scheme to promote weight loss among overweight residents: residents who lost three kilograms in a month were eligible to receive €50, and they could receive another €100 five months later if they had maintained the weight loss.[106] Participants in the program required a medical note confirming that they were overweight or obese by body mass index standards. The Italian national health ministry suggested that this incentive could be adopted elsewhere in the country.

In England, a regional health authority is offering a financial incentive program to promote weight loss. Called Pounds for Pounds, residents can sign up for a plan that specifies weight loss targets over a period of time.[107] Participants who achieve their targets and maintain weight loss are eligible for financial rewards of up to £400. Participants must have a physician's permission to participate in the program, and must have monthly weigh-ins signed off by a health professional. The average weight loss goal is about 33 pounds over a ten-month period.

The Pounds for Pounds program was created by a private company, Weight Wins, which describes its service as "air miles for dieters."[108] Interestingly, in its pilot run of the weight loss incentive scheme, the company offered participants no diet or exercise advice.[109] Participants reported that they achieved weight loss by modifying their diet (97%) and by getting more exercise (86%). Sixty percent made changes on their own, while 40% took additional steps such as joining a gym, participating in a weight loss group, or buying special weight loss meals. The finding that the majority of participants lost weight on their own by changing their diet and exercise patterns suggests that a lack of information is not a major impediment to individual action. If people already have general knowledge about moderating calorie consumption and increasing physical activity, appropriate incentives may be a useful tool to motivate behaviour change.

Some governments have a longer history with incentive schemes to encourage healthy behaviours among citizens. In 1989, Germany introduced

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[106] Tom Kington, "Mayor Offers Too-Fat Italians Money to Diet" *The Guardian* (14 August 2007), online: The Guardian <www.guardian.co.uk/world/2007/aug/14/italy.international>.

[107] See Weight Wins, "Weight Wins and Public Health", online: <www.weightwins.co.uk/Public_Health.aspx>.

[108] *Ibid*.

[109] *Ibid*.

incentives into its national health insurance system to reduce the co-payments for those who engaged in preventative health screening. Today, German health insurers offer creative schemes where individuals can accumulate points for engaging in healthy behaviour, such as annual health screening (200 points), nutrition classes (150 points), licensed fitness programs (100-150 points per program), or tests of endurance, strength and co-ordination (100-150 points). The fitness test regime is called "Germany Moves" and results are used to develop a personal fitness training regimen. Individuals can redeem points for rewards like sports watches and bicycle helmets (500 points each), put points toward "partial funding of a short wellness holiday,"[110] or pool points within a family to redeem for higher-value items such as a Nintendo Wii Fit. Most recently, cash rebates have been offered for individuals who meet targets for body mass index, blood pressure, blood sugar and cholesterol.

A major health insurer in South Africa, Discovery Health,[111] offers a similar incentive program that provides members with reduced-fee gym memberships and the opportunity to earn points for fitness activities. Members receive discounts at participating businesses, and the discounts increase as individual members accumulate more healthy-lifestyle points.

In Canada, a private company has recently launched Best Life Rewarded®, a points-based health incentive program.[112] Registration in the program is free; members earn points for engaging in healthy behaviours, such as physical activity, cholesterol, and blood pressure check-ups, and compliance with medication regimes to control existing conditions. Points can be redeemed for rewards, such as fitness gadgets, healthy lifestyle books and magazines, and consultations with professionals, including registered dieticians, and kinesiologists. The company receives funding from sources such as pharmaceutical and food companies, and has partnered with such not-for-profit organizations as the Dieticians of Canada and the Canadian Obesity Network.

Some employers are also adopting incentive programs–of both carrot and stick varieties–to help reduce insurance costs and health claims for workers with obesity-related health problems. According to a US survey of 505 pri-

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[110] See Harald Schmidt, Andreas Gerber & Stephanie Stock, "What Can We Learn from German Health Incentive Schemes" (2009) 339 Brit Med J 725 at 726.

[111] Vitality HealthStyle (Pty) Ltd, *Discovery Vitality*, online: Discovery <www.discovery.co.za/portal/loggedout-individual/vitality>.

[112] BestLifeRewarded, "Learn more about BestLifeRewarded", online: BestLifeRewarded <www.bestliferewarded.com/faq.aspx>.

vate and public sector organizations with at least 50 employees, 67% expressed concern about higher numbers of obese workers driving up medical expense claims.[113] They have reason to be concerned:

> The impact of unhealthy behaviour and its attendant outcomes is significant: health care costs for 'moderately' obese workers [BMI 30-35] are about 21 percent higher than they are for workers of normal weight, costing employers an additional $670 per employee each year. Similarly, health care costs are 75 percent higher for 'severely' obese workers [BMI 35-40] (an additional $2,441 annually per employee).[114]

Another US survey found almost universal agreement (91%) among employers that health care costs would be reduced if employees could be persuaded to adopt healthier behaviours.[115]

Consequently, some companies are implementing programs to improve awareness of healthy living and to inculcate personal accountability for behaviour through incentives or penalties. A large health care company in the United States, Clarian Health (now known as Indiana University Health), attracted much criticism for a proposed penalty scheme, which was to take effect in 2008-2009.[116] Employees would have been required to undergo a health risk assessment and targets for blood pressure, blood sugar and cholesterol would be established. Employees who failed to achieve their target would have been docked five dollars per paycheque. Those with a BMI over 30 (in the obese range) would have been docked ten dollars per paycheque. After employee outcry and negative media attention, the company opted for a reward system instead. Employees who meet specified health targets may qualify for up to $30 bonus for each pay period.

In Pennsylvania, Lincoln University encountered opposition from students and some staff members regarding its requirement that obese undergraduates complete a course, Fitness for Life, in order to obtain their degree. Those with a BMI under 30 were exempt from the three-hour-a-week class,

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[113] Jon R Gabel et al, "Obesity and the Workplace: Current Program and Attitudes among Employers and Employees" (2009) 28:1 Health Affairs 46 at 49.

[114] Steven D Pearson & Sarah R Lieber, "Financial Penalties for the Unhealthy? Ethical Guidelines for Holding Employees Responsible for Their Health" (2009) 28:3 Health Affairs 845 at 846.

[115] *Strategic Health Perspectives Data Sheet Questionnaires 2007,* (New York: Harris Interactive, 2007).

[116] See Clarian Health case study appended to Pearson & Lieber, *supra* note 114 at 852.

which included physical activity and education about nutrition and healthy living. In the fall of 2009, university administrators realized that approximately 80 senior students among the predominantly African-American student body had neither taken a BMI test nor completed the course, placing some in jeopardy of not meeting graduation requirements. Minutes from a faculty meeting posted on the university website acknowledged that the course requirement places "an extra burden on some students because of their weight."[117] While it was recommended that "the university attorney [should] look at this requirement to determine if it is legal,"[118] the Chair of the Department of Health, Physical Education and Recreation took the view that the university has "an obligation to notify students that their health might hinder them in their performance as student."[119] By the end of 2009, however, the university had decided to eliminate the requirement.[120]

Many incentive schemes that offer financial rewards or penalties for behaviours relevant to obesity are relatively new; longitudinal evaluation is needed to determine their effectiveness, and whether they have unintended adverse consequences. Studies of incentives in other areas of health behaviour reveal some successes, particularly to encourage short-term uptake of services such as immunisation, disease screening, and compliance with medication regimes.[121] Longer-term maintenance of changed lifestyles or a reduced body weight is a pressing challenge, and the effectiveness of incentives in promoting long term behaviour change is not yet clear.

In tobacco cessation programs, financial incentives have been shown to encourage smokers to enrol, but once the incentive is gone, many return to tobacco use. One study showed, however, that smokers who received finan-

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[117] Lincoln University Department of Academic Affairs, "Faculty Meeting: Minutes Tuesday November 3, 2009", online: Lincoln University <www.lincoln.edu/academicaffairs/minutes2009-10/minutes110309.html>.

[118] *Ibid*.

[119] *Ibid*.

[120] See "Lincoln Ends BMI Requirement" *US News* (7 December 2009), online: US News <www.usnews.com/education/blogs/paper-trail/2009/12/07/lincoln-ends-bmi-requirement>.

[121] See e.g. Adam Oliver, "Can Financial Incentives Improve Health Equity?" (2009) 339 Brit Med J 705; Theresa M Marteau, Richard E Ashcroft & Adam Oliver, "Using Financial Incentives to Achieve Healthy Behaviour" (2009) 338 Brit Med J 983.

cial incentives were more likely to be non-smoking at an 18-month follow-up than smokers who did not receive the incentive.[122]

In weight loss, several studies have found that financial incentives are effective in motivating body weight reduction, but many people eventually regain weight after the incentive intervention ends.[123] An evaluation of the UK Pounds for Pounds program found that nearly half (44.8%) of participants lost a clinically significant amount of weight, with mean weight loss being 6.4 kilograms (14 lbs).[124] Participants who adhered to a 12-month program, including monthly weigh-ins, had significantly greater weight loss (mean weight loss of 11.5 kg) than those who did not follow through with their intended program.[125] Plan completion rates in Pounds for Pounds were lower than completion rates reported for other weight loss programs, such as Weight Watchers, and longer-term follow-up is necessary to assess whether weight loss is sustained over time.[126] An analysis of five years of data from the South African Discovery Health program reached the positive conclusion that participation in the rewards program helped sustain exercise adherence over time.[127] Moreover, health plan members who had higher levels of physical activity had fewer medical care claims, and were less likely than their inactive peers to require treatment for illnesses like cardiovascular disease and some cancers.[128]

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[122] See Kevin G Volpp, "Paying People to Lose Weight and Stop Smoking", online: (2009) 14:3 LDI Issue Brief <ldihealtheconomist.com/media/paying-people-to-lose-weight-and-stop-smoking.original.pdf>.

[123] See e.g. Kevin G. Volpp et al, "Financial Incentive-Based Approaches for Weight Loss: A Randomized Trial" (2008) 300:22 JAMA 2631; Leslie K John et al, "Financial Incentives for Extended Weight Loss: A Randomized, Controlled Trial" (2011) 26:6 J Gen Intern Med 621.

[124] Clare Relton et al, "The 'Pounds for Pounds' Weight Loss Financial Incentive Scheme: An Evaluation of a Pilot in the NHS Eastern and Coastal Kent" (2011) 33:4 J Public Health (Oxf) 536 at 536 (clinically significant weight loss is defined as loss of $\geq 5\%$ of starting body weight).

[125] *Ibid* at 539.

[126] *Ibid* at 540.

[127] Deepak N Patel et al, "The Association Between Medical Costs and Participation in the Vitality Health Promotion Program Among 948,974 Members of a South African Health Insurance Company" (2010) 24:3 Am J Health Promot 199.

[128] Deepak Patel et al, "Participation in Fitness-Related Activities of an Incentive-Based Health Promotion Program and Hospital Costs: A Retrospective Longitudinal Study" (2011) 25:5 Am J Health Promot 341.

Incentive programs have been criticized on ethical grounds as being paternalistic, coercive bribes that interfere with autonomous decision-making, though some scholars have offered cogent defences against these charges. For example, Ashcroft argues that incentive programs are respectful of individual autonomy in that personal agency over health decisions is preserved; incentives influence behaviour, but do not eliminate choice, nor are they necessarily coercive.[129]

It has also been suggested that incentives may worsen social and health inequalities if they are based on the false assumption that all persons have the same resources available to engage in healthy behaviours. Pearson and Lieber point out that "[p]eople do not voluntarily choose their health outcomes—poor personal health is not a simple product of informed voluntary choices. Biological, environmental, and socioeconomic factors greatly affect health, regardless of how a person behaves."[130] Incentive programs may also make some people worse off if "previously available services are made conditional upon individuals meeting certain requirements."[131] Voigt cites the example of a US company that increased employee health insurance deductibles by $2000 (from $200 to $2200), then made employees eligible to revert to the lower deductible if they met targets for body mass index, cholesterol and blood pressure.[132]

Another important question is whether incentives motivate the intended target population (i.e. those with unhealthy behaviours) or whether they principally attract people who already engage in healthy activities. Socioeconomic status has been shown to affect participation in incentive schemes. In Germany, people in the highest socioeconomic quintile are almost twice as

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[129] Richard E Ashcroft, "Personal Financial Incentives in Health Promotion: Where Do They Fit in an Ethic of Autonomy?" (2011) 14:2 Health Expectations 191. Ashcroft explains that:

> The idea behind actively shaping the environmental influences on choice is that while the individual patient or citizen retains ultimate decision-making and deliberative authority over their own conduct, contextual and situational factors can be modified so as to facilitate making choices which are coherent and acting consistently with those choices. The moral concept of the authority of the patient in making decisions in line with his preferences and values, without undue influence, domination or coercion, is usually termed autonomy (at 192).

[130] Pearson & Lieber, *supra* note 114 at 848.

[131] Kristin Voigt, "Incentives, Health Promotion and Equality" (2010) Health Econ Policy Law 1 at 5.

[132] *Ibid*.

likely to take advantage of incentive programs as those in the lowest quintile.[133] Designing financial incentive programs for specific risk groups most likely to benefit can help address these issues.

Some incentive programs that reward (or penalize) a person's compliance (or non-compliance) with recommended prevention, screening or treatment regimes may require a health care professional to track a patient's behaviour, and report to health insurers whether the person is following through with behaviour modification. It has been speculated that this "policing" function may adversely affect the professional-patient relationship.[134] Further empirical research is required to investigate this issue.

Some commentators argue that incentive programs should reward behaviour change alone (e.g. regular participation in a walking group) and not penalize failure to achieve specific physical outcomes (e.g. weight loss of 20 pounds). Pearson and Lieber suggest that employers should not penalize workers who do not lose weight or lower their blood pressure; rather, penalties, if used at all, should only apply to those who opt not to enrol in a weight-loss or health monitoring program offered to them.[135] The latter activities are within the employee's control, but even with regular attendance at a weight loss program, other factors outside the employee's control may thwart their efforts to shed pounds. For instance, the employer may not permit a flexible work schedule to allow the employee sufficient time to participate in fitness activities.

Legally, penalty programs that impose differential treatment against persons who are overweight or obese because of that status may be subject to challenge for violating provincial human rights codes. Human rights legislation across Canada prohibits discrimination in employment and in services available to the public on the basis of a physical disability.[136] Obesity may be recognised as a disability on a case-by-case basis, particularly where medical causes or consequences can be established.[137]

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[133] Harald Schmidt, Andreas Gerber & Stephanie Stock, "What Can We Learn from German Health Incentive Schemes" (2009) 339 BMJ 725 at 727.

[134] Harald Schmidt, Kristin Voigt & Daniel Wikler, "Carrots, Sticks, and Health Care Reform – Problems with Wellness Incentives" (2010) 362:2 N Engl J Med e3(1).

[135] Pearson & Lieber, *supra* note 114 at 848.

[136] See e.g. *Human Rights Code*, RSBC 1996, c 210; *Alberta Human Rights Act*, RSA 2000, c A-25.5; *Human Rights Code*, RSO 1990, c H-19.

[137] For a discussion of obesity as a disability in the human rights context, see e.g. *McKay-Panos v Air Canada*, 2006 FCA 8, [2006] 4 FCR 3; *Rogal v Dalgliesh,*

An organization that denies employment or a service to an obese person because of their weight, or treats that person differently because of their weight, may violate rights protected under human rights statutes unless the organization has a bona fide justification for its conduct. Situations have been reported where physicians have refused to treat obese patients[138] (which may violate professional ethics rules as well as human rights legislation) and airlines have charged extra fees for obese passengers.[139] In 2008, the state of Mississippi proposed a law that would have required restaurants to refuse to serve obese customers, similar to legal prohibitions against serving alcohol to inebriated patrons. This bill provided that state-licensed food establishments "shall not be allowed to serve food to any person who is obese, based on criteria prescribed by the State Department of Health after consultation with the Mississippi Council on Obesity Prevention and Management … "[140] The bill was voted down in the state legislature; the member who introduced it stated that his intention was to draw attention to the serious obesity problem in Mississippi, but that he never expected the bill to become law.[141] This type of proposed legislation provides an extreme example of a penalty–namely, a legally mandated denial of service to obese persons–that, if attempted in Canada, would be subject to challenge under provincial human rights statutes and the *Canadian Charter of Rights and Freedoms.*

An individual who participates in an incentive (or penalty) program that is premised on the grounds of reducing obesity-related health risks and costs

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2000 BCHRT 22, [2000] BCHRTD No 22 (QL); *Saskatchewan (Human Rights Commission) v St Paul Lutheran Home of Melville et al* (1993), 108 DLR (4th) 671, [1994] 2 WWR 270 (SK CA).

[138] David W Freeman, "Fat-Phobic Doctors Refuse to Treat Obese Patients: Is that Fair?" *CBS News* (17 May 2011) online: CBS News <www.cbsnews.com/8301-504763_162-20063541-10391704.html>.

[139] In 2008, the Canadian Transportation Agency issued a "one passenger, one fare" rule that prohibits Canadian airlines from charging an obese passenger an extra fee if they require two seats to be accommodated comfortably on the flight. For Air Canada's policy response, see Air Canada, News Release, "Extra Seating for Passengers with Special Needs" (8 January 2009) online: Air Canada <www.aircanada.com/en/news/090108.html>.

[140] US, HB 282, *An Act to Prohibit Certain Food Establishments from Serving Food to any Person who is Obese*, Reg Sess, Miss, 2008, s 1, online: <billstatus.ls.state.ms.us/documents/2008/html/HB/0200-0299/HB0282IN.htm>.

[141] "Mississippi Considers Restaurant Ban for Obese", *CBS News & Associated Press* (11 February 2009) online: CBS News <www.cbsnews.com/stories/2008/02/05/national/main3790418.shtml>.

can likely advance a stronger claim that the status of being obese constitutes a physical disability or, at least, that it is perceived as such by the employer or public service provider that offers (or requires compliance with) the program. To avoid potential legal challenges on grounds of discrimination, incentive programs ought to provide positive rewards for healthier behaviours, and not deny benefits or impose disadvantages.[142]

V. Another Type of Incentive to Consider: Incentives for Businesses

Before concluding, it is worth noting that individuals are not the only targets for incentive programs. Food retailers have been identified as another potential target for incentives to encourage retailers to provide healthier food options in neighbourhoods that currently have poor access to nutritious foods.[143] Access to markets to purchase healthy foods can vary dramatically across neighbourhoods and regions.[144] Higher income communities typically have ready access to supermarkets that sell a wide range of healthy foods and beverages at reasonable prices and access to supermarkets is associated with more nutritious diets.[145] In contrast, convenience stores and fast food outlets

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[142] For an overview of US law and incentive programs, see Michelle Mello & M Rosenthal, "Wellness Programs and Lifestyle Discrimination – The Legal Limits" (2008) 359:2 N Engl J Med 192.

[143] For a summary of a recent symposium on the topic of policy options to improve geographic access to food, see Donald Rose, "Access to Healthy Food: A Key Focus for Research on Domestic Food Insecurity" (2010) 140:6 J Nutr 1167.

[144] For data concerning American communities, see e.g. Nicole I Larson et al, "Neighborhood Environments: Disparities in Access to Healthy Foods in the U.S." (2009) 36:1 Am J Prev Med 74; Lisa M Powell et al, "Food Store Availability and Neighborhood Characteristics in the United States" (2007) 44:3 Prev Med 189. For the Canadian context, see e.g. Jim Latham & Tina Moffat, "Determinants of Variation in Food Cost and Availability in Two Socioeconomically Contrasting Neighbourhoods of Hamilton, Ontario, Canada" (2007) 13:1 Health Place 273; Kristian Larsen & Jason Gilliland, "Mapping the Evolution of 'Food Deserts' in a Canadian City: Supermarket Accessibility in London, Ontario, 1961–2005", online: (2008) 7:16 Int J Health Geogr 16 <www.ij-healthgeographics.com>; Karen E Smoyer-Tomic, John C Spence & Carl Amrhein, "Food Deserts in the Prairies? Supermarket Accessibility and Neighborhood Need in Edmonton, Canada" (2006) 58:3 Prof Geogr 307. Compare Philippe Apparicio, Marie-Soleil Cloutier & Richard Shearmur, "The Case of Montréal's Missing Food Deserts: Evaluation of Accessibility to Food Supermarkets", online: (2007) 6:4 Int J Health Geogr 4 <www.ij-health geographics.com>.

[145] Mary Story et al, "Creating Healthy Food and Eating Environments: Policy and Environmental Approaches" (2008) 29 Annu Rev Public Health 253; Barbara

tend be more concentrated in lower income areas. With a commercial imperative to maximize the sale of the most profitable items, shops may offer little in the range of fresh fruits and vegetables and some business owners express concern that they will "suffer a major profit loss if they stopped selling snack foods and sodas."[146]

To improve availability of healthy foods, governments could offer incentives to full-service grocery stores to locate in under-served neighbourhoods and to existing convenience stores or food vendors to provide a wider range of affordable healthy foods.[147] Options for financial incentives include tax benefits and discounts, loans, loan guarantees, and grants to cover start-up and investment costs (e.g., improving refrigeration and warehouse capacity). Non-financial incentives include supportive zoning, and increasing the capacity of small businesses through technical assistance in starting up and maintaining sales of healthier foods and beverages."[148]

Some governments are already acting on these ideas. The State of Michigan passed legislation in 2008 offering a property tax exemption for up to ten years for food retailers that open, expand or improve in underserved areas.[149]

Alaraia et al, "Proximity of Supermarkets is Positively Associated with Diet Quality Index for Pregnancy" (2004) 39:5 Prev Med 869; Kimberly Morland, Steve Wing & Ana Diez Roux, "The Contextual Effect of the Local Food Environment on Residents' Diets: The Atherosclerosis Risk in Communities Study" (2002) 92:11 Am J Public Health 1761.

[146] J Nicholas Bodor, "The Rationale Behind Small Food Store Interventions in Low-Income Urban Neighbourhoods: Insights from New Orleans" (2010) 140 J Nutr 1185 at 1187.

[147] The City of Los Angeles took a more forceful approach in 2008, using its zoning authority to prohibit new fast food restaurants from opening in South LA. South LA reportedly has the highest concentration of fast food outlets in the city and an obesity rate that is almost 20% higher than other LA neighbourhoods. See Hennessy-Fiske & Zahniser, *supra* note 24.

[148] Laura Kettel Khan et al, "Recommended Community Strategies and Measurements to Prevent Obesity in the United States" (2009) 58:RR-7 MMWR Recomm Rep 1 at 9. For an analysis of the legal jurisdiction of local governments to enact such measures in the US, see Paul A Diller & Samantha Graff, "Regulating Food Retail for Obesity Prevention: How Far Can Cities Go?" (2011) 39:S1 J Law Med Ethics 89.

[149] Healthy Kids, Healthy Michigan, "Increasing Access to Healthy Foods: Michigan's New Property Tax Incentive for Retail Food Establishments (Public Act 231 of 2008)", online: Government of Michigan, <www.michigan.gov/documents/mda/FINALPA231FactSheet_290187_7.pdf>.

In New York State, the Healthy Food & Healthy Communities Initiative was announced in May 2009 to create a ten million dollar loan program to finance new food markets in underserved communities in low-income and rural areas throughout the state. New York City launched the FRESH (Food Retail Expansion to Support Health) Program to provide zoning and financial incentives to increase the number of healthy food markets. For example, zoning changes will allow residential buildings to be larger if a grocery store is operated out of the ground floor. Parking requirements will be reduced in pedestrian-oriented areas to lower costs for developers. Financial incentives include property tax reductions and exemptions on sales taxes that apply to building and renovation materials.

Increasing the number and quality of food markets in communities that currently have limited choices is another version of the "build it and they will come" theory that underpins the development of green spaces and recreation amenities. Improved access to a healthier range of foods in deprived communities may help promote more nutritious diets and, in turn, be a tool to improve body weight.[150] Spin-off benefits, such as new employment opportunities,[151] could also improve income security and influence improvements in health status.

Local or provincial governments interested in the use of business incentives to influence neighbourhood food options may trial pilot programs to allow data collection and evaluation about the impacts of such initiatives. It is also recommended that governments and businesses seek community input about residents' preferences for healthier food options. For example, they "should discuss with the community what they would like as a replacement for fast-food … [t]his information would allow for incentive zoning to negotiate for things that the community really wants and needs, instead of only what officials think they should have."[152] As with other policy interventions, evaluation will be necessary to assess the impacts over time of incentives made available to businesses.

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[150] See e.g. Chen & Florax, *supra* note 35 (this paper uses a simulation model to demonstrate that increasing the availability of healthy food options in low-income neighbourhoods would reduce average BMI).

[151] The FRESH program in New York City is anticipated to create 1,100 jobs in new and expanded markets.

[152] Christina A Lydon, Sophia C Yi & Mark A Mattaini, "How Far do you have to go to get a Cheeseburger around here? The Realities of an Environmental Design Approach to Curbing the Consumption of Fast-Food" (2011) 20 Behavior and Social Issues 6 at 18.

Conclusion

Incentive measures are one category of policy options that may be used to help counter obesogenic aspects of modern environments. But to have any impact on public health, incentives must effectively compete against the many other factors and forces that allow for and encourage excessive caloric intake and minimal energy expenditure. Incentives vary in their force and the benefit of milder incentives–that they are less intrusive in the lives of individuals–is also their main weakness as a public health policy tool. Unless individuals are aware of and respond in desirable (i.e. health-promoting) ways to incentives, these measures will fail to live up to their conjectured benefits.

As discussed in this article, some incentives on their own may not be sufficiently compelling to have any measurable effect on obesity rates. It is possible, however, that combinations of incentives could have additive, beneficial effects. If governments invest in building green spaces and recreational facilities, residents could be encouraged to use these amenities through tax credits that offset the costs of fitness activities or through participation in government or employer-sponsored programs that offer financial rewards for achieving regular exercise, weight loss or other goals. Given the complex range of factors implicated in obesity, it has been stated that "a 'portfolio of policies' is needed to combat chronic diseases stemming from unhealthy modern environments [and that] a comprehensive approach must be built piece by piece … "[153]

The burgeoning attention to the use of direct financial incentives, including cash payments and reward programs, underscores the significance of the health burdens and costs associated with obesity-related conditions.[154] It is

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[153] Nola M Ries & Barbara von Tigerstrom, "Roadblocks to Laws for Healthy Eating and Activity" (2010) 182:7 CMAJ 687 at 690. A UK government report echoes this view, concluding that incentives "may be most effective as *one element* of a multi-component programme that addresses the complexity of individual, social and economic factors that influence people's lifestyle choices" (Tammy Boyce, Ruth Roberson & Anna Dixon, *Commissioning and Behaviour Change: Kicking Bad Habits Final Report* (London: The King's Fund, 2008) at 14).

[154] Two leading academic research centres are presently dedicated to studying the impact of incentives and other policy measures on eliciting and sustaining healthy behaviour changes: in the UK, the Centre for the Study of Incentives in Health in London (<www.kcl.ac.uk/schools/biohealth/research/csincentiveshealth>), and in the US, as part of a broader behavioural economics research mandate, the Center for Health Incentives at the University of Pennsylvania (<www.med.upenn.edu/ldichi>). Research findings from these groups, and others, will contribute to the evidence base for assessing whether and how incentives

telling that some governments and employers reckon it is more cost-effective to pay individuals to become healthier than it is to bear the costs of medical care, disability claims, and sick leave. Further economic modeling and analysis would help quantify costs and benefits of various incentive options to show where there is greatest value in paying particular groups to achieve and, most importantly, sustain a healthier body weight. Ongoing empirical study will also help assess the effectiveness of both carrot and stick incentives in instigating and sustaining long-term behaviour change. To avoid legal challenges–and negative publicity, in general–direct penalties ought to be avoided as they impose disadvantages on individuals because of their physical status of being overweight or obese.

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might be used to promote nutritious diets, sufficient physical activity and healthier body weights over the long term.