

# Salt, High Blood Pressure, and Performance-based Regulation

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## Introduction

The scientific record seems clear: high blood pressure contributes to a significant amount of cardiovascular disease and early death (Dickinson & Havas 2007; Scientific Advisory Committee on Nutrition 2003).<sup>1</sup> Although there are some forceful doubters (Taubes 1998; Moore 1990), it is an article of faith among mainstream public health and medical communities that substantial population-based reductions in salt consumption (and thereby sodium reduction) in developed economies would sufficiently lower the blood pressure of a large number of people to yield very substantial public health benefits (Havas *et al.* 2007; He & MacGregor 2002; Cutler *et al.* 1997; Elliot *et al.* 1996; Stamler *et al.* 1989; Intersalt Cooperative Research Group 1988).<sup>2</sup> Indeed, the American Medical Association (AMA) has called for a 50% reduction in salt intake in the United States in hopes of saving up to 150,000 lives annually (Dickinson & Havas 2007),<sup>3</sup> and in the UK the government is trying to get people to reduce their salt consumption to about a teaspoon a day (Food Standards Agency Salt 2008).

For most people, salt enhances the flavor of many foods, and consumption of at least a small amount of salt is thought to be good for them, to say nothing of the fact that most people today assure themselves of the iodine they need for health reasons through the consumption of iodized salt (Food and Nutrition Board 2004). Yet, it seems clear that people can enjoy nutritious, well-flavored, and adequately-iodized food through a diet that contains far less salt than the average person in most higher-income nations currently consumes.

Assuming it would be good for many people in higher-income countries to consume less salt, how might this be achieved? At present, adding salt from the shaker, either in the course of home cooking or at the table, is not a significant source of salt for most people. Experts say that about 80 percent of the salt consumed by Americans is already contained in restaurant foods and processed foods at the time they are served or purchased (Havas *et al.* 2007).<sup>4</sup> The overwhelming share of that salt is added in the preparation and processing of food, although a small amount naturally occurs in some foods. As a practical matter then, for most people to reduce their salt intake, 1) they have to consume a different balance of food items, and/or 2) food-makers must add less salt to their products. How do we bring those changes about?

I propose that we consider embracing a new strategy called performance-based regulation as a way to reduce the public health problems that experts say are caused by excessive salt consumption (Sugarman 2008, Sugarman & Sandman 2007).<sup>5</sup> As I will explain, performance-based regulation employs financial sticks (or carrots) to entice private actors to decrease harms for which they are fairly thought to be responsible. Typically, these are harms their products cause.

But before turning to performance-based regulation, I will focus briefly on some alternative approaches.

## **Traditional Approaches**

### *A. Disclosure/Education*

Some people would consume less salt if they were more aware of the general health risk that the sodium in salt brings with it. After all, many people already deliberately try to avoid salty foods because they believe too much salt is dangerous. However, even those motivated to avoid salty foods may find it difficult to do so because they are unaware of the amount of salt added to processed and restaurant foods.

A typical public health strategy with respect to salt, then, would be to better inform people, not just of the general dangers of high sodium intake, but also of the amount of salt contained in the specific foods they are eating.

Indeed, regulatory initiatives like that have already been carried out to some extent. In the United States, for example, government-required labels on packaged foods sold in stores currently indicate the contribution that a specific food item makes to the recommended daily allowance of sodium (Nutrition Labeling and Education Act of 1990, 21 U.S.C. § 343-1 (1990); 21 C.F.R. § 101.61 (2008)). Alas, these labels are often not very easy for consumers to understand (partly because the disclosures are often based on counter-intuitive portion sizes and partly because they are anchored in percentage terms that are probably confusing to many buyers). Moreover, no such labeling requirements currently apply to restaurant food or to fresh meat, poultry, fish and most prepared food sold in stores (21 C.F.R. § 101.100 (2008); U.S. Department of Health and Human Services 1999).

To help consumers more intelligently avoid high-sodium products, some advocates suggest requiring food-makers and/or retailers to put new sorts of salt labels on packaged food, prepared food, and restaurant menus (including fast food menu boards) (Dickinson & Havas 2007). For example, some have in mind a “traffic light” system, such as has already been voluntarily implemented by some food sellers in the United Kingdom. Under this system, each food item would carry a red, green or yellow label, letting people know whether its sodium content is high, or low, or in-between (Dickinson & Havas 2007; Food Standards Agency Traffic Light Labelling 2008).

Besides improving on the current system of informing consumers, supporters of this approach believe that the traffic light warning strategy would prod many food makers to reduce the salt in the products they produce in order to win more favorable labels and to avoid being labeled “high salt.” It is unlikely that food sellers would try to game the system by claiming preposterously small serving sizes in order to gain green or yellow designations instead of red ones, because the Food and Drug Administration stipulates what is a sensible portion size (21 C.F.R. § 101.9 (2008)).<sup>6</sup> Other attempts to game the

system could be combated by allowing private lawsuits against providers whose conduct amounted to misleading representations or fraud.

Still, even the most ambitious disclosure strategy would probably not suffice to bring about reductions in salt consumption to the degree that advocates believe is desirable from a public health perspective. A rough analogy might be made to tobacco products. A general awareness of the seriousness of the dangers of smoking has indeed caused many people to either quit or not take up smoking in the first place. But today's sharply lowered smoking rates in the developed countries, as compared with higher rates in the 1960s before the widespread revelation of the dangers of cigarettes, are also importantly the result of a range of deliberate public health policies beyond education and disclosure, such as increased tobacco taxation (Chaloupka & Wakefield 2001; Chaloupka & Warner 2000; Pierce *et al.* 2005; U.S. Department of Health and Human Services 2000, Reducing Tobacco Use).<sup>7</sup>

Some would argue that experience from tobacco control shows that government must go beyond adopting a mere disclosure scheme and additionally launch a well-structured and well-funded "social marketing" campaign designed to convince more and more people to reduce their salt intake (Social Marketing Institute 2008; Weinreich Communications 2008).

At a minimum it is probably fair to say that we do not yet know the degree to which a well-conceived informational crusade about the dangers of excessive salt consumption would actually cause those who most need to change their eating behavior to shift meaningfully away from high-salt products. Experiments with approaches in various countries may soon provide some answers (Dickinson & Havas 2007; BBC News 2008).<sup>8</sup>

#### *B. Excise Taxes on Imposed on the Sale of Salt*

A different regulatory approach would be to tax the salt contained in food (Wilson 2004). This strategy might well be implemented at the food-maker level. For example, firms like Kraft and Frito-Lay, who add salt to the food they manufacture, might be taxed on the sale of their products to retailers (or wholesale distributors). Restaurants like McDonald's would be taxed on the food they make and serve. Alternatively, it might be more practicable to impose the salt tax even further back up the food chain—on sales by salt companies, such as Morton Salt and Cargill, to their food-maker customers (Salt Institute) – or further down the chain on retailers when they sell products with salt in them to consumers.

Regardless of where the tax is imposed, notice that, under the excise tax approach, food-makers would have two main choices. They could keep the salt content of their products as it is and see the price of what they make go up, or they could reduce (or even eliminate) salt from their products as a way to reduce (or eliminate) the tax burden. For products where salt reductions are reasonably easy to make without causing significant changes in taste, food-makers would likely be forced by competition to reduce the salt they currently add (perhaps substituting other flavor enhancers). For other products,

food-makers might well feel the need to keep salt levels as they are now, and those products would become more costly to consumers. Market responses to higher prices would cause at least some drop in consumption of saltier products, thereby also contributing to a reduction in salt in consumers' diets.

## **A New Idea**

Before further discussing the excise tax strategy, I want to introduce the idea of a different sort of regulation that I call performance-based regulation, and which might also be called outcomes-based regulation.<sup>9</sup>

Put simply, performance-based regulation in this context would require but a few basic steps. A relevant public body first decides what sorts of companies are to be regulated and sets a public health goal for each regulated company. Then, the government measures whether or not each company has met its target. If so, the company is appropriately applauded. If not, substantial fees are imposed on the enterprise—financial charges that, in an important sense, internalize into the enterprise negative social costs that flow from the products it puts into the market.

Some advocates such as the AMA seem to favor an across-the-board reduction in the amount of salt contained in all restaurant and processed food (Dickinson & Havas 2007). So far these calls for action appear primarily to be admonishments to industry backed up with vague threats of potential regulation of an undisclosed sort if the goal is not met. But it is easy to envision turning such calls into a formal legal requirement using performance-based regulation.

### *A. Performance-based Regulation of Food-Makers*

Like the excise tax strategy, one can envision aiming performance-based regulation at food-makers—companies that either produce the food sold in retail markets or prepare the food served in restaurants. Food-makers could be given outcome targets cast in terms of reduced salt levels, say, a 5% reduction every year for a decade until the 50% target is reached. If companies failed to reach their targets, substantial fees (or call them fines or penalties or taxes if you like) would be imposed on them.

Notice how this approach differs from the excise tax scheme. Under the latter, the tax is applied from the get-go. Under performance-based regulation, the fee is imposed only if a firm fails to meet its target. This might be thought of as an exemption from tax up to the amount of the allowable salt level.

Further reflection, however, suggests that the right regulatory strategy is probably not to try to force a uniform reduction in the salt content of every product. After all, some products are already reduced-salt items for which further reductions are not practicable. Also, the same proportion of salt reduction will yield very different taste changes in different products.

Rather, a 50% reduction in salt consumption nationwide would surely more desirably be achieved by 1) reducing the amount of salt in certain foods (indeed by more than 50% in some cases), and 2) at the same time, keeping the amount of salt in other foods at or near what it currently is but reducing consumption of those foods. In other words, eating reduced-salt versions of foods you currently eat (e.g. less salty salami and less salty Big-Macs) is not the only way to reduce salt consumption. You could also eat less of the salty food you now eat, without changing the amount of salt in any portion. Presumably this would be accompanied by a shift in your consumption, so that you also would be eating more food that contains no salt or less salt. Most likely, you would do both—that is, you would shift both to a higher share of un-salty food and to reduced-salt versions of some food you currently eat.

A regulatory regime could try to deal with this difference among foods by sorting products into categories, and assigning different salt reduction targets to each category (Havas *et al.* 2007).<sup>10</sup> But such a scheme would be complex and contentious and perhaps difficult to oversee.

### *B. Performance-based Regulation of Retailers*

This line of thinking suggests to me that, with respect to salt, rather than apply performance-based regulation to food makers it might be wiser to apply it to retailers, including stores and restaurants. In effect, in the American context, Wal-Mart, Kroger, Costco, Safeway, 7-11 and all the other retail food chains would be required to cut the total amount of salt contained in the total basket of all the food they sell. Fast food retailers like Burger King and sit-down restaurant chains like Applebee's would have a similar target.

The first thing to note about this approach is that targeting large retailers (both stores and restaurants) would probably sweep in a large majority of the processed and restaurant food now sold (Martinez 2007).<sup>11</sup> Hence, the regulatory regime would have to monitor relatively few enterprises. By also including in the scheme the large wholesalers and distributors who provide a significant share of the food sold via small restaurants and markets, the regime would probably sweep in a large share of what is left, and still keep the number of regulated firms to a modest number. This would help contain the administrative costs of the scheme.

Second, and more importantly, imposing the regulation on retailers allows them to balance a variety of complementary salt-reducing strategies in the most efficient manner. Hence, when McDonald's is told to reduce the amount of salt in its foods, we do not care whether the reduction comes, for example, from cutting in half the amount of salt added to its French fries or from shifting half of its French fries sales to sales of less salty foods like unsalted baked potatoes, fresh salads with salt-free dressing, or even to sodium-free drinks. Or, instead of reducing the amount of salt in its French fries, we would be just as happy (salt-wise) if McDonald's cut its French fries portions in half in a way that cuts their consumption in half (i.e. people did not consume double-orders).

This is, in a nutshell, how performance-based regulation might be structured. To be sure, various complex administrative details would have to be worked out. For example, simply telling Wal-Mart that over the course of 10 years it has to cut in half the amount of salt in the total volume of food it sells is probably not quite the right way to set its target. For example, if during that period Wal-Mart increases its market share of the food sold in the relevant market, then that should be taken into account.

Even if it does not increase its market share, Wal-Mart may increase its sales simply because of population growth. So, too, Wal-Mart might sell more food because of a relative increase in the share of food people buy in markets as compared with restaurants (or growing their own). Finally, it is possible that the average person would eat significantly less or more food at the end of the period as compared with the start. Changes of these sorts also should be taken into account in the way the performance-based target is set.

One fairly simple solution that should be rather easy to administer, though it may not be exact, is first to randomly identify, say, \$100,000 in Wal-Mart food sales at the start of the regime and determine that those sales contain  $x$ -grams of salt. Then Wal-Mart's regulatory target might be to cut that amount of salt in half by the end of the period. Because of inflation, however, we would probably want to measure the end-of-the-period food basket in terms of 2008 dollars.

Moreover, if it turns out that some food retailers—say Whole Foods—already sell a significantly less salty food basket than average, the regulatory regime would probably want to take this into account as well. In other words, a nationwide salt-level target might be set for ten years out that would require a smaller salt-reduction by Whole Foods than by other retailers—say 7-11—that sell a saltier food basket today.

For such a scheme, I have so far arbitrarily set a 50% reduction as the overall national target because that was proposed by the American Medical Association. However, it is by no means clear that this is the right target. Nor is it clear at what pace the 50% target ought to be achieved. Should it be a tenth of the way (5%) towards the 50% reduction goal for each of the 10 years? Should the rate of reduction start out faster or slower? Should there be some period of time at the start for the regulated companies to have no required reductions at all while they decide on and implement their strategies? For example, maybe by the end of the third year they should have achieved an 8% reduction, with a 6% further reduction required in each of the next seven years. I leave aside for now these and other details that those administering an actual performance-based regulatory scheme would have to resolve.<sup>12</sup>

The crucial point to emphasize is that, given this sort of performance-based goal, Wal-Mart and its fellow regulated retailers could respond in a variety of ways. They could press some of their product providers to reduce the salt in their products. They could press for smaller portion or package size for some salty products. In order to prompt higher sales of products with less salt, they could stock fewer high-salt products and instead feature more salt-free (or low-salt) products on the shelves and/or change where

in the store saltier products are displayed. They could engage in customer education to the extent they thought it effective. For example, they could develop their own red light/yellow light/green light system for package labeling. They could also use price strategies to shift buying practices in ways that most efficiently allowed Wal-Mart to meet its goal. Some combination of these approaches would likely be tried. The upshot would likely include shifting the American diet somewhat away from processed foods and towards natural foods that are healthier overall. Yet, I concede that it is possible that a single-minded focus on lowered salt could possibly shift consumption to foods that are high in sugar and fat and hence unhealthy in other ways. This suggests that any scheme designed to reduce salt consumption must consider whether a companion feature should aim at containing, or better yet, reducing fat and sugar consumption as well, something I put aside for the present.

Wal-Mart might initially go about trying to reach its salt-reduction target in ways that differed sharply from those tried by other retailers like Kroger, Costco, Safeway, and 7-11. Over time, one would expect that competition among these giant sellers might reveal the best current strategy for both meeting the enterprise's reduced salt target and remaining most profitable. To be sure, some companies are likely to be followers who just jump on what appears to be the most successful bandwagon invented by others. Still, industry leaders are likely to adopt innovative approaches that give them at least a short term financial edge.

Any such regime needs teeth to have real bite, and so it is critical to specify what happens if the regulated firms do not meet their goals. The general approach of performance-based regulation is to make the regulated enterprises pay fees that reflect the social costs that occur from salt intake beyond the target. In this setting it would be highly contentious as to what those social costs are. The underlying idea, however, is to give the regulated companies a strong financial incentive to engage in salt reduction activities. Setting the penalty level exactly right is not easy to do. Given that uncertainty, other things being equal, it is probably better to err on the high side as a technology-forcing strategy. In any event, if a sensibly-staffed regulatory agency were put in charge of the regime, I am confident that it could hold hearings and settle upon a reasonably workable solution.

Some might worry that food retailers would decide to focus their attention on reducing salt consumption in only certain of their stores or customers, for example, getting wealthier people or stores in wealthier neighborhoods to cut back sharply while leaving poor people who shop at inner city stores no better off. This is equivalent to "hot spot" concerns raised about the use of performance-based regulation to deal with pollution, for example. The worry there is that public utilities will meet their overall targets by lowering emissions in plants located in higher income areas, leaving high pollution levels in urban poor communities. Whether, as an empirical matter, this ought to be a real concern with respect to salt reduction is not clear. It might turn out, to the contrary, that Wal-Mart would find it easier either to focus its efforts on low income communities where the prospects for the biggest reductions in salt use lie or to adopt a uniform policy across all of its stores. But if there turns out to be a "hot spot" problem with salt

reduction, this could be countered by complicating the regulatory scheme somewhat and imposing the performance-based targets at the store level (or, more likely, at the level of classes of stores).

### *C. Performance-based Regulation of Retailers vs. Other Regulatory Schemes*

Compare performance-based regulation to a “cap and trade” scheme. Instead of assigning companies regulatory targets, the government might require them to have government-issued “permits” for the salt contained in their food. The total quantity of permits in the society could be reduced each year until they amount to 50% of the current level. Companies might have to buy the permits from government, or government might award permits to existing retailers, say based on the total volume of food they sell, and then allow the companies to buy and sell permits to and from each other. This “cap and trade” permit scheme is very much like performance-based regulation (with a trade feature that, for example, would allow Costco to sell its excess compliance when it reduces the salt in its food even more than its performance-based target requires). The analogy is even closer if the penalties under the “cap and trade” plan (for selling without a permit) were set equal to the fees imposed for non-compliance under the performance-based regulation plan. If it were a crime to sell salt in food without a permit, that would be like making it a crime not to meet your salt target under the performance-based regulation plan.

We can now better compare performance-based regulation with a system of imposing excise taxes on salt. Perhaps the main thing to emphasize is their similarity, but there are differences to note. Notice first that, an excise tax scheme, unlike performance-based regulation, has no overall salt-reduction target as part of the plan. The legislature (or regulatory agency) adopting the salt tax could manipulate the level of the tax over time to try to achieve the sort of salt reduction target demanded by performance-based regulation. The difference is that performance-based regulation embraces a specified public health goal up front.

Second, the excise tax scheme would generate revenues for the government since clearly not all products would become salt-free. This would provide government with income that would have to be used for some political purpose (note here the analogy to the generation of revenue that would occur under a “cap and trade” scheme if the government sells salt permits). Under performance-based regulation, if all companies meet their goals, there would be no revenues paid into the government (analogous to a “cap and trade” plan in which salt permits are handed out). In an era of resistance to new taxes, this could be a very strong political plus.

Third, notice how the tax approach relies for its public health gains on a combination of actions by food-makers and consumers that occur in response to the tax. Performance-based regulation as proposed here, by contrast, counts more directly on retailers to drive behavioral changes as a way to avoid penalties. Yet, those changes would also come from both actions by food-makers and consumers.



In effect, the performance-based regulation I have proposed is itself a subtle tax scheme in which there are no taxes imposed on the allowable level of salt; rather, “taxes” are only imposed if companies fail to meet their regulatory targets. As a result, companies like Wal-Mart would take charge of the problem, instead of simply passing on to customers the taxes that have been imposed on their suppliers (which is what would likely happen under an excise tax scheme).

Whether it would be better for large retailers to be directly on the hook (as I have proposed) may, in the end, depend on the real world of food marketing. If large retailers like Wal-Mart have real market power (which is probably the case), then it might well be desirable to put them at the center of the regulatory scheme. Otherwise it might be that the choice between performance-based regulation, an excise tax, and a “cap and trade” scheme turns most importantly on which framing is politically most attractive.

Note, further, that a still different way to deploy performance-based regulation would be to aim it at salt producing companies, requiring them to sell sharply reduced amounts of their product over time – an approach that surely would be attractive from the administrative perspective since so few firms now account for most of the salt sold in the U.S. Putting aside concerns about smuggling, this approach would presumably cause a rise in the price of salt with consequences similar to an excise tax. Notice again the contrast with performance-based regulation aimed at retailers. Restricting the amount of salt that Morton and Cargill can sell leaves it up to the market top play out how that translates into a changed pattern of food consumption. My proposal aimed at retailers counts on the creativity and initiative of Wal-Mart and the like to manage the best way to meet consumer preferences constrained by an ever-reduced quantity of salt consumption.

Finally, a brief comparison between performance-based regulation and tort liability may be helpful. Traditionally, tort liability is based on fault (proof of negligence). This is also true, as a practical matter, for claims about the design and labeling of products under “product liability” law (Restatement (Third) of Torts, Product Liability § 2 (1998)). That makes tort law most analogous to “command and control” regulation, except that it is the judicial system (including juries in the United States), rather than administrative agencies or legislatures, that decide what specific safety precautions product-sellers should take (or should have taken).

But were there truly “strict liability” in torts (no proof of negligence necessary), such a regime would be much more like performance-based regulation, because in both schemes the covered firms are left to decide how to improve outcomes and are held responsible if they do not. However, notice that strict liability in this respect is more like an excise tax that is imposed by and paid to victims than it is like performance-based regulation. This is because, as with the excise tax, the firm would bear the costs of all negative outcomes. By contrast, under performance-based regulation (and “cap and trade” schemes), firms would be held to a standard that required them to substantially reduce, but not eliminate, the harms their products cause, and they would not face penalties if they met their targets.

## **Even Bolder Ideas**

A. *Performance-Based Regulation Using Reduced Blood Pressure as a Target*

Imagine that my proposed scheme of using performance-based regulation to enlist the efforts of retailers to reduce people's salt consumption were put into effect and was successful. That is, assume that by the end of 10 years, food sold by American retailers would, in the aggregate, contain half the salt that it now contains (subject to adjustments of the sort already noted). Assume further that this translates into the American people reducing their salt consumption by 50%, meeting the AMA goal.

But a question remains: who individually would have reduced their salt intake? Presumably it would not be uniform. To the extent that those who already have relatively low blood pressure reduced their salt intake, there is reason to be skeptical about whether they would enjoy important health benefits (Taubes 1998; Moore 1990). Indeed, a small group of people might even have negative effects from extremely low blood pressure brought about through salt reduction, although these are unlikely to be frequent or large.

At the other end of the population, for those who now have very high blood pressure, a large overall reduction in salt intake nationwide would probably lead to substantial salt reduction and in turn blood pressure reduction. This should translate into substantial public health gains for that group.

Yet, people with very high blood pressure account for only a portion of the American public—less than 30%.<sup>13</sup> What about everyone else? Here we are thrust into a contentious issue. Some think that those in this large in-between group would benefit little from salt reduction in terms of reducing their blood pressure (Taubes 1998; Midgley *et al.* 1996; Moore 1990). Even assuming they did, some think that little or no health benefit would come from any such blood pressure reduction (Moore 1990). Others, by contrast, think a huge number of lives would be lengthened significantly by achieving even a modest lowering of national average blood pressure readings (Havas *et al.* 2007; He & MacGregor 2002; Intersalt Cooperative Research Group (1988); Cutler *et al.* 1997; Elliot *et al.* 1996; Stamler *et al.* 1989).

A separate point is that many people who would otherwise have done things like take medication, exercise more or lose weight in order to reduce their blood pressure might not do those things if they lowered their blood pressure through salt reduction. In other words, these people might have reduced their blood pressure by roughly the same amount whether or not they reduced the salt in their diets. In terms of blood pressure alone, these people might be no better off. Still, many would probably agree that, it would be better to reduce blood pressure by reducing salt intake than by taking medication.

The general point here is that using a measure like reduced national salt consumption as a performance-based target imposed on retailers may not necessarily be the best public health target, and adopting a more fine-tuned target might conceivably be more effective.

## 1. *Performance-based Regulation of Health Care Providers*

This line of analysis prompts me to think about the problem in a very different way. Instead of imposing performance-based regulation on food retailers, suppose we were to impose it on doctors, or more plausibly, on health care plans (typically insurers). The idea here is that we would not try to impact blood pressure indirectly by insisting on salt reduction as the outcome target. Instead, we would focus directly on a lowered blood pressure target.

Imagine that large health care plans—such as Blue Cross, Kaiser Permanente and Health Net—are told to reduce the blood pressure of members of their health plan. We would not use an across-the-board reduction in blood pressure as the overall target. Rather, we would more likely want much of the reduction to come from those with high (or at least higher) blood pressure. Hence, the target might be phrased as reducing the number of patients with high blood pressure by 5% each year or reducing the blood pressure of those in the above average blood pressure group by 5% each year. Or perhaps different targets could be set for those at very high versus moderately elevated blood pressure levels. Also, analogous to the point made earlier about Whole Foods, health care plans that have already engaged in effective disease prevention efforts might be given appropriate credit for this in setting their targets.

Obviously, it would be wrong to expect the doctors or insurers to reduce the blood pressure of everyone in their group to a healthy level. But, as with my proposal of applying performance-based regulation to food retailers, the targets could only aim for a partial reduction (at least over the initial regulatory period of, say, 10 years). The main point is that by regulating health care groups, we could focus more directly on the actually worrisome health indicator—high blood pressure.

Under performance-based regulation, the health care plan could employ a variety of behavior-changing strategies to try to get its patients to reduce their blood pressure. Some of these might well be aimed at salt consumption. For example, health care professionals could advise patients to eat fewer products that are high in salt and/or to eat smaller portions of such products, to eat reduced-salt products, to shop generally at stores selling healthier products, and so on. While many health care professionals might claim that they cannot control their patients' shopping and eating behavior, this is only partly true. After all, in general, they are fairly good at controlling the drug-taking behavior of their patients. The point is that if health care plans had a financial stake in reducing salt consumption by their patients, I am confident that they would develop effective measures towards achieving that goal.

But of course if the health care plans' regulatory target was reduced blood pressure in their patients, then encouraging reduced salt consumption is not the only approach those plans might try. They might instead focus on having patients exercise more, lose weight, reduce stress, or take blood pressure-lowering medication. The latter approach, of course, raises the question of whether health care groups would adopt a strategy that may be cheapest and most effective for them but which has riskier side effects for their

patients, such as prescribing medication to those who could readily lower their blood pressure via behavioral changes. Yet, this risk should not be exaggerated. One check against this perverse response is that if health care plans push their patients to do things that are ultimately bad for their health, this could turn around and hurt the health care group down the line.

A separate problem is that if health care plans are the target of a performance-based regulation plan, they might not be eager to accept into the plan patients with high blood pressure, or perhaps more precisely, those who are unlikely to lower their blood pressure despite efforts by the health care plan. This could cause some health care plans to try to screen out some patients at the front end or drive them out along the way. To discourage that practice, there would have to be some regulatory controls or statistical adjustments that made this sort of gaming strategy largely ineffective.

It should also be noted that a performance-based regulation scheme aimed at health care plans need not necessarily be based on imposing fees for failure to achieve their outcome goals. That sort of financial incentive was assumed in the context of the application of performance-based regulation to food retailers like the Wal-Marts of the world on the grounds that, since those companies profit from the sale of salt, it is only fair that they take responsibility for reducing the negative social consequences of salt consumption. Yet, for either approach, one could instead envision a system of rewards. For example, imagine a regime in which health care plans could earn extra cash payments from the government if they achieved lowered blood pressure in their patients. This public expenditure could be justified, for example, by the reduced burden these now-healthier patients would later impose on the Medicare and Medicaid systems. (Or one could imagine a more complex scheme in which both carrots and sticks are employed. For example, regulated firms that do the worst job in meeting their targets could be fined and the money use to reward those who do the best job.)

Assuming a system of financial rewards, participating health care plans might in turn pass most of those rewards on to the doctors in their networks based on physicians' individual success with their patients. One concern about any such reward scheme is that doctors might just ignore the rewards and thereby make the whole program meaningless. However, this could be combated by making the rewards sufficiently large to make a meaningful difference.

Finally, there is clearly a risk that some health care plans or individual doctors would cheat and some of those would get away with it. For example, in order to obtain the reward, some might over report the patient's blood pressure at the start and/or under report it later. This implies that the agency running the regulatory scheme would have to employ auditing strategies designed to discourage such fraud.

It is conceivable that health plans and doctors might choose to pass some of their financial rewards on to their patients as a way of winning their cooperation in changing their behavior, believing that improving their longer run personal health is not a sufficient motivator. This strategy would be arguably analogous to plans that have been tried out

that pay regular financial bonuses to at-risk teenage girls so long as they do not get pregnant.

This line of thinking might suggest to some that rather than involving health care providers at all, an even simpler performance-based regulatory scheme would have the government directly providing financial rewards to individuals who bring their blood pressure down from high to healthy levels. Yet, one has to be skeptical about how successful people will be in achieving this health improvement on their own. Indeed, the fundamental understanding behind public health policy is that simply relying on citizen-level behavioral changes will not suffice. Otherwise, as a way of preventing dental caries, it would seemingly be enough to offer fluoride toothpaste in the marketplace and not bother with putting fluoride in the water supply. Indeed, to make the analogy clearer, it is surely better for overall dental health to put fluoride in drinking water than it is to pay people to use fluoride tooth paste.

### *B. Performance-based Regulation Using Healthy People as a Target*

Once we start using our imagination we see that merely reducing salt consumption or reducing blood pressure, even in patients with high blood pressure, is not really the health outcome that matters most. Ultimately, what we want is for people to have longer and healthier lives, especially when that can be achieved at a reasonable cost and without unreasonable risk. Hence, one could imagine taking performance-based regulation one step further and base penalties or rewards on those end-point outcomes.

For example, we could tell retailers that they are going to be judged, not on how much they reduce the salt in their products but on whether a group of people assigned to them lives longer and healthier. Maybe Wal-Mart would have to take responsibility for everyone in Texas and Arkansas. Costco might get those in Washington and Oregon, while 7-11 might get those in Colorado, and so on. Or maybe, instead of retailers, food-makers like PepsiCo and Kraft are the ones who should be given these obligations.

Of course, it seems more straightforward to demand that PepsiCo reduce the salt in the potato chips they make, rather than to demand that PepsiCo improve the health of the people of the state of New York. Nonetheless, the beauty of performance-based regulation is that there need not be a tight fit between altering the regulated party's product and achieving its regulatory target. Put differently, it is not necessarily a defense that the regulated enterprise might be unable to solve the problem by acting alone. Companies would simply have to figure out who could join with them to make a difference and then enlist the others in the cause. For example, PepsiCo might engage the doctors, teachers, and television stations in the geographic area for which it is responsible.

It is crucial, of course, to convince the public (and legislators) that the products that PepsiCo makes are sufficiently harmful to health that imposing the obligation on PepsiCo to improve public health outcomes is only fair. I concede that it is politically more likely that we would be successful in requiring Wal-Mart or PepsiCo to reduce the salt in food

they sell than requiring them to achieve general health gains in an identified population. Still, the point is that there is nothing in the nature of performance-based regulation that precludes adopting more sweeping targets that are further along the road to the ultimate social objective.

And if we think about this in the context of financially rewarding health plans and/or doctors for getting their patients to lower their blood pressure, we can readily see that this approach could be widened out to pay for improving patient health more generally. From the governmental perspective of health care cost-containment, such payments could well be justified on cost/benefit grounds – at least if the cost of paying for improved patient health now is less than the present value of saved medical costs down the line. Notice that this sort of payment for performance is very different from actual ongoing experiments in the medical services delivery world in which pay for performance has to do with paying health care workers for providing specified medical interventions – like giving aspirin to patients who arrive at emergency rooms complaining of chest pain. Those are rewards for inputs, not outcomes (Centers for Medicare and Medicaid Services 2005).

## **Conclusion**

To sum up, performance-based regulation is a mechanism designed to entice non-governmental actors to take responsibility for achieving socially desirable outcomes. Like most public health interventions, it is motivated by a degree of paternalism rooted in the belief that all too many people are just unable on their own to take steps that are needed to serve their own best interests. Yet, with performance-based regulation, the public health goal is sought to be achieved through mechanisms that otherwise maximize consumer preference.

As illustrated here, there are many options as to how far down the road the regulatory target should be set, and there are many parties on whom the performance-based regime might be imposed. There are inevitably a number of trade-offs involved in deciding what specific performance-based regulatory regime to pursue, including political acceptability, administrative ease, assured public health outcomes and so on. To be sure, it remains to be determined whether performance-based regulation of even the most modest sort—e.g., forcing retailers to reduce the amount of salt they sell—is politically practicable. At the least, this represents a new way of thinking about public health regulation that, I believe, deserves further analysis and evaluation.<sup>14</sup>

Whether we should have confidence that private actors faced with new financial incentives will indeed effectively act in ways that promote the public health is sure to be controversial. Yet having a government agency decide how much salt should be in every product will surely be more so. And simply relying on providing better information and voluntary action by the business community will, I fear, leave our society far short of our public health goals (Sugarman versus Prammings 2008).

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## Notes

<sup>1</sup> The risks of developing cardiovascular disease (CVD) increase progressively the higher blood pressure levels rise over 115/75 mm Hg. About half of deaths related to CVD are attributed to hypertension (defined as systolic blood pressure  $\geq$  140 mm Hg and /or diastolic blood pressure  $\geq$  90 mm Hg or taking antihypertensive medication).

<sup>2</sup> According to a report for the American Medical Association: “Substantial public health benefits accrue from small reductions in the population blood pressure distribution, achievable with long-term modest reduction in sodium intake. A 1265-mg/d lower lifetime intake translates into an approximately 5-mm Hg smaller rise in SBP as individuals age from 25 to 55 years. This corresponds to a 20% lower prevalence of hypertension and a reduction in mortality rates of 9% for CHD, 14% for stroke, and 7% for death from all causes and would save 150,000 lives annually.”

<sup>3</sup> The U.S. Department of Health and Human Services has also set a goal for sodium reduction in its Healthy People 2010 report. It established objectives to reduce the major causal factors associated with elevated blood pressure levels, including excess sodium intake. One objective is that at least 65% of the population should consume less than 2400 mg/d of sodium (U.S. Department of Health and Human Services 2000, Healthy People 2010).

<sup>4</sup> According to one study, in the U.S. diet, 77% of sodium comes from processed and restaurant foods, 12% occurs naturally in foods, 6% is added at the table, and 5% is added during cooking.

<sup>5</sup> Performance-based regulation has been proposed as a strategy to deal with a variety of public health problems, including tobacco use, gun deaths and obesity.

<sup>6</sup> Federal regulations on food labeling, with exceptions, require all nutrient and food component quantities to be declared in relation to a “serving” as defined by FDA-established lists of “Reference Amounts Customarily Consumed Per Eating Occasion,” contained in the regulations. These list the amounts of food customarily consumed per eating occasion (based primarily on national food consumption surveys) for 139 FDA-regulated food product categories.

<sup>7</sup> Comprehensive programs—which may include increased tobacco taxation, stronger tobacco control policies, and media anti-smoking campaigns—are widely thought to be the most effective approach to reducing tobacco use. A report by the Surgeon General stated that comprehensive approaches have the largest span of impact on reducing tobacco use (U.S. Department of Health and Human Services 2000, Reducing Tobacco Use). For example, California’s comprehensive tobacco control program—which included elements such as a mass media anti-smoking campaign, restrictions on areas where people could smoke, and legislation making it more difficult for adolescents to purchase cigarettes—resulted in a decline in smoking rates of 70% in 12–13 year olds, 53% in 14–15 year olds, and 34% in 16–17 year olds (Pierce *et al.* 2005).

<sup>8</sup> Foreign governments and advocates are far ahead of the United States in implementing such measures. The United Kingdom initiated a major campaign in 2003 to encourage food manufacturers to reduce added sodium. The government has set sodium reduction targets for a wide range of foods and is working with retailers to establish a traffic light labeling system. In Finland, the government requires foods that exceed specified limits to be labeled as “high salt.” In New Zealand and Australia, the National Heart Foundations have worked with food-makers to reformulate products and have created a labeling program, which identifies foods that meet strict standards for sodium.

<sup>9</sup> Performance-based regulation, or variations of it, have been applied in other contexts, such as education and reducing air pollution. For example, No Child Left Behind sets performance goals for academic achievement but leaves it up to the educators to determine how to achieve their goals (Pub. L. No.107-110,

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115 Stat. 1425 (2002) (codified as amended in scattered sections of 20 U.S.C. (2000)). To improve air quality, governments have used market incentive programs, such as tradable permits, to incentivize companies to reduce harmful emissions (Drury *et al.* 1999; Stewart 1988). In other contexts, firms that perform well (in terms of public health outcomes) obtain regulatory relief from command and control schemes -- such as OSHA plans aimed at firms with better than average workplace safety records (Lobel 2005)

<sup>10</sup> For example, in the United Kingdom, the Food Standards Agency has divided processed foods into about 70 categories (e.g. breads, canned vegetables, soups). For each category, it has calculated the percentage of dietary sodium derived from each, and set voluntary reduction targets.

<sup>11</sup> In the United States, the leading grocery retailers include Walmart, Kroger, Costco, Albertsons and Safeway, and the leading foodservice companies include McDonald's Corp., Yum! Brands, Wendy's, and Burger King (Martinez 2007).

<sup>12</sup> For a far more detailed performance-based regulation scheme as applied to childhood obesity, see Sugarman and Sandman (2007).

<sup>13</sup> About 27 % of U.S. adults have hypertension (Dickinson & Havas 2007). But one critic argues that a far smaller number of people—about 16 million people—actually have high blood pressure that is moderate (damage likely) to severe (damage imminent), and in these cases, drug treatment is unquestionably effective (Moore 1990).

<sup>14</sup> Indeed, performance-based regulation has recently been considered as a tobacco control mechanism in the U.S. Senate. In 2007, U.S. Senator Michael Enzi of Wyoming proposed a bill which would incentivize tobacco companies to reduce the number of tobacco users (S. 1834, 110th Cong. (2007)). Senator Enzi's plan included a "cap and trade" feature that would permit tobacco companies to buy and sell their ever-decreasing quota of legal customers. However, the bill has not yet won legislative approval.

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