

obesity:

mapping the lifecycle of response



INSTITUTE FOR THE FUTURE

Health Horizons Program

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The Health Horizons Program draws from a deep understanding of health care delivery, consumer behavior, health technologies, and societal forces to identify the important emerging trends and discontinuities in the broad health industry landscape. Then, through strategic forecasting, we help make sense of what these mean for health-related companies over the next three to ten years.

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***O*bese** is a problematic word in American English. While it has a technical, medical meaning, it is fraught with social connotations—judgmental and derisive ones at that. For we live in a culture that has lauded plumpness only in times of want—after the Great Depression and world wars.¹

Many take issue with the terms *obese* or *obesity* because they fear this focus marks not so much a war on a health problem, but on the people who evince it. They fear discrimination, and well they might. Discrimination against overweight and obese people has been well documented.² In the work world, discrimination against the obese is evident in hiring, promotion, and compensation. Obese women have been found to earn as much as 12 percent less than their non-obese counterparts and obese men are under-represented and paid less than non-obese men in management and professional positions.³ Even television comedies like Showtime's *Fat Actress* parody the problems of the obese and overweight.

Others fear that focusing on obesity directs us to one solution—weight loss—at any cost. They are concerned that at a time when obesity and anorexia coexist, and get-thin-quick programs abound, the campaign against overweight and obesity may be dangerous to the health of those most in need of help. Certainly, the push for weight loss is omnipresent. NBC's reality show *The Biggest Loser*, which pits individuals and families against one another in a televised weight-loss competition, is a notable example of weight loss as both entertainment and a life transformation.

Others take issue with use of the term *obesity* because it focuses society on treatment rather than prevention. And treatment is so often meted out on the individual through restrictive diets, rigorous exercise prescriptions, pills, and surgery. Yet all these treatments do nothing to prevent obesity in the first place, and they fail to address the wide range of social and political factors of an environment in which it is often far easier for individuals to weigh too much than it is for them to maintain a healthy weight.

These criticisms of the term *obesity* are compelling, and so are the statistics that turn on the technical definition of obesity: Body Mass Index (BMI) of 30kg/m² or greater (itself a measure upon which some cast a critical eye). The correlation of elevated BMI with hypertension, diabetes, heart disease, osteoarthritis, and other conditions that are costly to us in both dollars and quality of life, makes obesity, in its technical definition, critical to consider.

Although it may be limited at best and offensive at worst, we will use the term *obesity* throughout this report with its sister term overweight. For we believe that it is obesity in its technical meaning and cultural connotation that is sparking the complex and intense social response we seek to map.

We need only to pick up a magazine or turn on the news to see that there is a furor about obesity. From the halls of public health and corporate boardrooms to tabloid newspapers and women's magazines people are talking about obesity. A social response is shaping up that is poised to move private behavior into the public domain and broaden the target of intervention from the individual to both the individual and the social, physical, and food environments. Over the next decade, this response to obesity will influence the environments in which we do business and pursue health. In the business world, the response has the potential to disrupt existing markets and to create new ones as consumer preferences and regulations change. So where is all this headed? How might we assess the pace of change? We seek to offer you a way to see the lifecycle of the obesity response. We hope it will help you plot a clear course over the next three to five years that will allow your enterprise to anticipate and prepare for challenges and seize emerging opportunities.

Four trends are driving the social response to obesity:

- Overweight and obesity are on the rise among adults and children
- The burden of obesity-related health conditions is growing
- The costs of obesity and its attendant health conditions are mounting
- The media are putting overweight and obesity on the public agenda

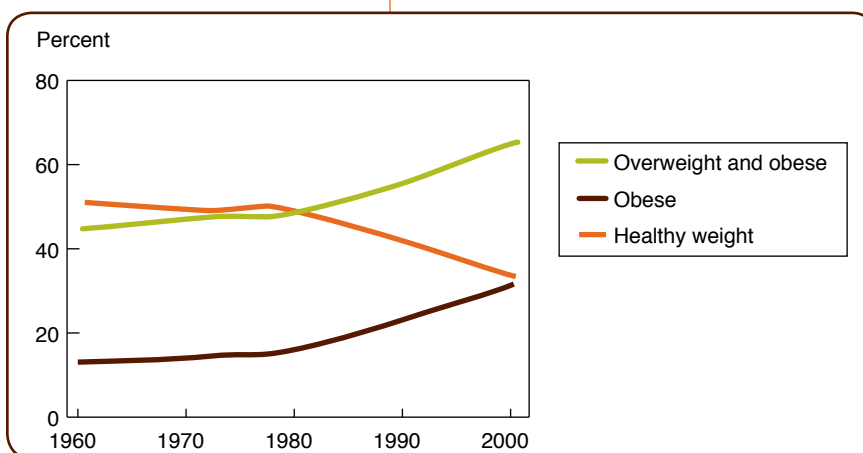
OBESITY AND OVERWEIGHT ARE ON THE RISE

Epidemiology and health care costs are driving a response to overweight and obesity. As the numbers rise, public health officials and health care payers—plans and employer purchasers—are sounding the alarm.

Some of the alarm comes from what appears as a sudden acceleration in obesity growth (see Figure 1.1). The National Health and Nutrition Examination Survey (NHANES), conducted by National Center for Health Statistics of the Centers for Disease Control and Prevention (CDC), is a critical source in the documentation of this increase. Between the NHANES cycles completed in 1976–1980 (NHANES II)

and 1988–1994 (NHANES III), there was a 19 percent increase in the percentage of U.S. adults deemed overweight. This was followed by a 16 percent increase between NHANES findings ending in 1994 and 2002. While not a perfect study, the NHANES offers perhaps the best and most influential trend data that we have on Americans' weight. NHANES is an in-person interview conducted in the home and in a private mobile examination center. The physical exam and medical tests are done by trained interviewers who measure

Figure 1.1
Obesity's Rapid Rise



Source: National Center for Health Statistics. *Health, United States, 2004 With Chartbook on Trends in the Health of Americans*. Hyattsville, Maryland, 2004.

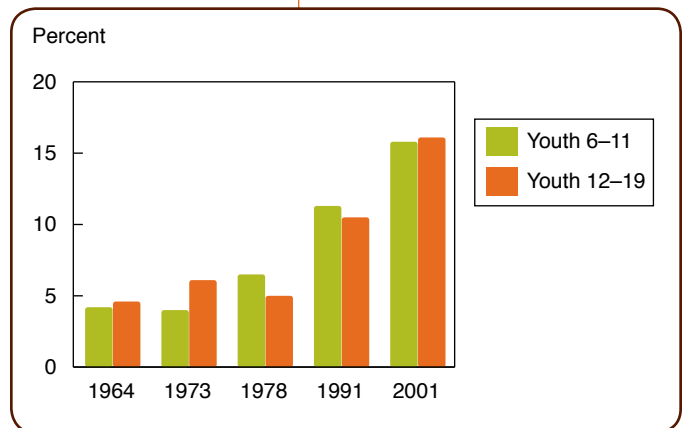


people's weight and height. BMI is determined from these measures. Unlike many other studies, weight and height are not gathered by self-report, so NHANES has become the standard by which we assess obesity and overweight. The fastest rate of increase between NHANES II and the latest cycle is among the obese with 15 percent of the population estimated to be obese in 1980 versus 31 percent in 2002. With obesity comes a raft of chronic conditions that are costly and sometimes debilitating.

The picture is no better among youth. Approximately 16 percent of children ages 6–11 and 12–19 were overweight as of 2001 (see Figure 1.2). What is alarming about these numbers is the precipitous rise in the prevalence of overweight children, with inflection points for both age groups in the 1970s. The prevalence of overweight among children tripled for the older group between 1978 and 2001 and more than doubled for the younger group. Overweight is associated with early appearance of cardiovascular disease risk factors among children between the ages of 5 and 10 and with increasing incidence of type 2 diabetes in children.⁴ For example, one study reported a 10-fold increase in type 2 diabetes among children between 1982 and 1994.⁵ Children are readily seen as the innocent victims of environments that ill serve them and whose food and physical activity are subject to parental and institution control. These factors make childhood obesity a potent driver of response—one that has spurred at least 48 states to sponsor and enact legislation to address childhood obesity.⁶

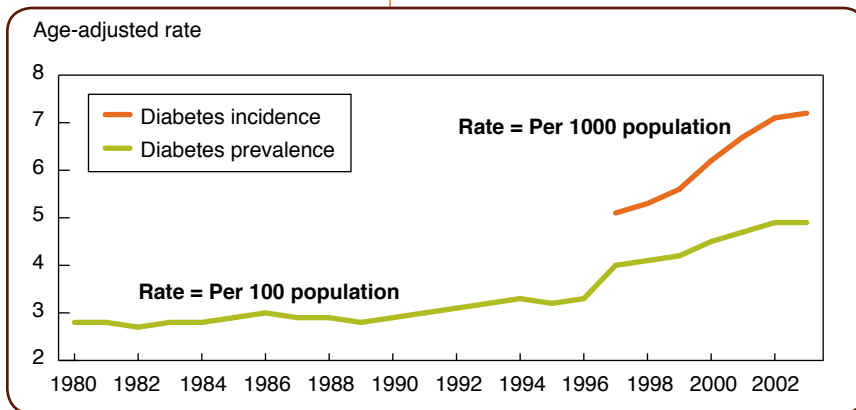
Obesity is not only a problem in the United States; it is a global issue. In 2000, the World Health Organization (WHO) took on obesity as a problem, citing it as an epidemic and a contributor to the development of diabetes and cardiovascular disease. The WHO and the International Obesity Taskforce of the International Federation for the Study of Obesity estimate that over 300 million people worldwide are obese. Surprisingly, this estimate includes more than 115 million people in *developing* countries, where undernourishment is still a major public health problem. Due to the burden of disease that they confer, obesity and two other diet-related conditions—high blood pressure and high cholesterol—made it onto the WHO's list of the top ten global and regional health risks in *The World Health Report 2002*. The global context heightens the concern about obesity, which has the potential to increase the magnitude of response in the United States.

Figure 1.2
More and More Overweight U.S. Children
(Prevalence of Overweight Among Children)



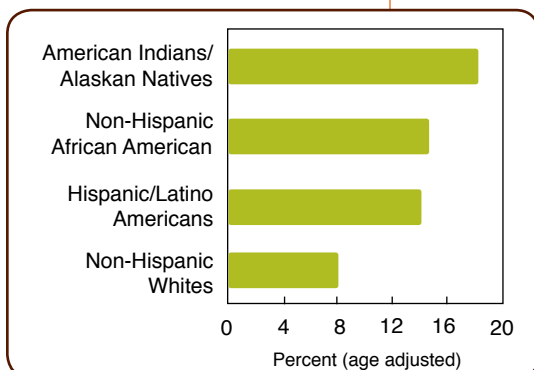
Source: National Center for Health Statistics. *Health, United States, 2004 With Chartbook on Trends in the Health of Americans*. Hyattsville, Maryland: 2004.

Figure 1.3
Prevalence and Incidence of
Diagnosed Diabetes Among
Adults in the United States



Source: Centers for Disease Control and Prevention, National Diabetes Surveillance System, www.cdc.gov/diabetes/statistics/index.htm

Figure 1.4
Prevalence of Diabetes in People
age 20+ by Race/Ethnicity in the
United States (cited below)



Source: National Institute of Diabetes and Digestive and Kidney Diseases. *National Diabetes Statistics fact sheet: general information and national estimates on diabetes in the United States, 2005*. Bethesda, MD: U.S. Department of Health and Human Services, National Institute of Health, 2005.

THE BURDEN OF WEIGHT-RELATED DISEASE IS MOUNTING

Disease burden follows BMI growth. Obesity is correlated with type 2 diabetes mellitus, high blood pressure, insulin resistance, heart disease, stroke, some forms of cancer (endometrial, colon, kidney, gallbladder, postmenopausal breast cancer),

and conditions such as osteoarthritis, sleep apnea, asthma, hirsutism, and more. The medical and public health sectors have strong evidence to support the assertion that overweight and obesity threaten well-being, even as epidemiologists argue about the impact of overweight and obesity on mortality.

Type 2 diabetes mellitus is a cautionary tale. While many view diabetes as a manageable part of aging, it is a disease that exacts a heavy toll. In 2002, diabetes

was the the sixth leading reported cause of death. It increases the risk of heart disease and stroke by two to four times, and the majority of people with diabetes have high blood pressure and nervous system diseases. If that were not enough, diabetes causes blindness, kidney disease, amputations, and complications during pregnancy, and it is correlated with dental disease. As the incidence and prevalence of type 2 diabetes rise, so too will the prevalence of these adverse outcomes (see Figure 1.3). Unfortunately, clinical evidence suggests that the incidence of both insulin resistance and type 2 diabetes is rising among children, setting the stage for a generation that presents with diabetes in its 20s rather than in its 40s.⁷ This burden is disproportionately borne by nonwhite populations in the United States, groups that often lack adequate access to health care or the social capital to manage disease (see Figure 1.4). The implications for quality of life and health care costs are grave.



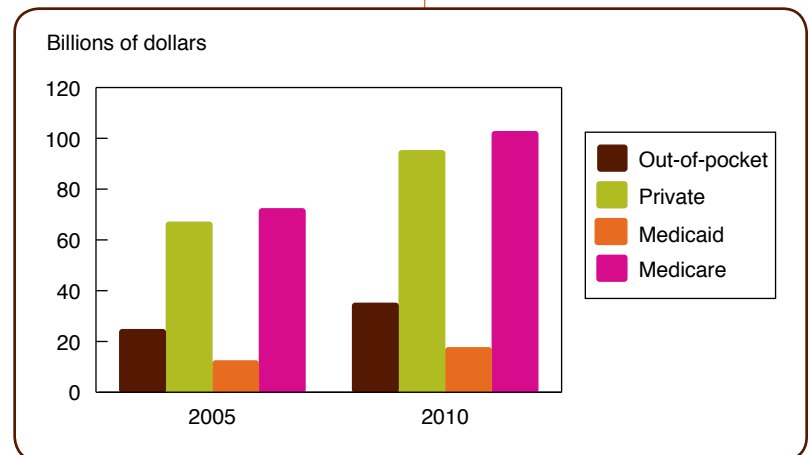
OBESITY-RELATED COSTS ARE ON THE RISE

Type 2 diabetes is just one weight-related condition for which we will pay. It is estimated that costs attributable to obesity and overweight were between \$52 and \$79 billion, 9 percent of total annual U.S. medical expenditures in 1998. The cost is paid in large part by public financing in the United States, with Medicare and Medicaid financing about half of these expenditures.⁸ Individuals pay nearly 14 percent out-of-pocket through co-pays, deductibles, and payments for uncovered services. Private insurance supported by employers finances over 38 percent of the cost attributed to overweight and obesity. In the United States, private insurance costs for conditions related to overweight and obesity have grown from an estimated \$3.6 billion in 1987 to \$36.5 billion in 2002, driven by growing prevalence of these conditions and of treatment.⁹ And these numbers are at odds with estimates of the direct and indirect costs of diabetes alone, which suggest that the total cost could be much higher (see Figure 1.5).

THE MASS MEDIA KEEP OBESITY ON THE PUBLIC AGENDA

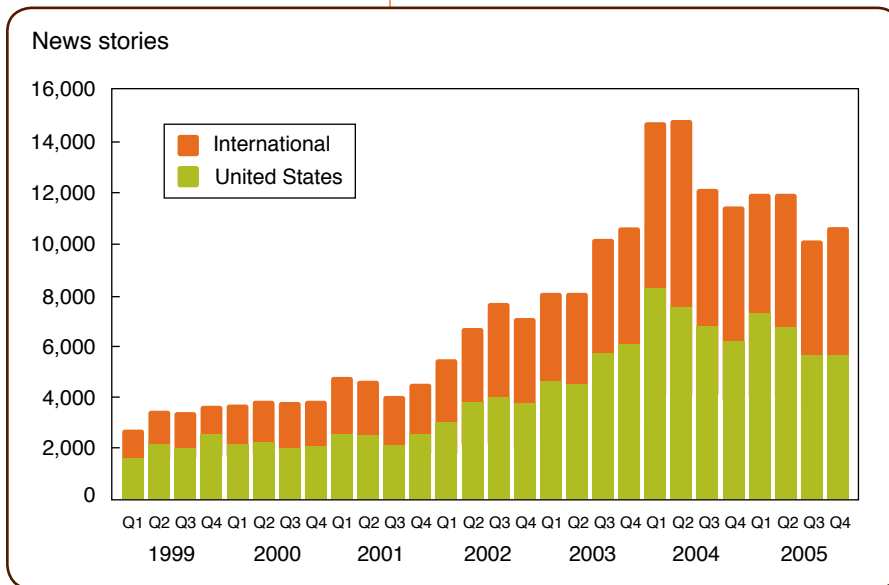
Communications and political science researchers have long studied the power of the mass media to influence the public agenda—that is, what the public thinks about. Study after study shows a strong correlation between what the media covers and what the public thinks is important, supporting Bernard Cohen’s statement, “The press may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think *about*.”¹⁰ The mounting coverage of obesity and related issues, coupled with personal experience, has put obesity on the public’s agenda. Its position on that agenda and the evolution of public thinking about the causes of obesity have helped prepare the way for actions—like regulating vending machines in elementary and middle schools—that signal obesity’s arrival in the public realm.

Figure 1.5
Obesity National Expenditures
by Payer in the United States



Source: IFTF from CMS Office of the Actuary and Finkelstein et al., Health Affairs, 2003.

Figure 1.6
Global Trends in Obesity-Related
Media Coverage



Source: International Food
Information Council Foundation
ific.nisgroup.com/research/obesitytrends.cfm.

Table 1.1
The Public Believes Obesity is a
Shared Responsibility

Questions	Responses
Responsibility: Who should be responsible for correcting the obesity epidemic?	47% Public agencies 48% Personal choice/responsibility 75% Healthcare professionals 65% Schools
Who should play a major role in overseeing the obesity problem?	35% Government 23% Employers

Source: Bell et al., Harvard Business
School, 2003, adapted from *Bariatrician*,
Summer 2003.

The public is awash in media coverage of obesity (see Figure 1.6). Bookstores are full of titles like Eric Schlosser's *Fast Food Nation*, Greg Crister's *Fat Land*, Marion Nestle's *Food Politics*, and Kelly Brownell's *Food Fight*. Magazines from *Time* and *Newsweek* to *National Geographic* and *Fortune* have carried cover stories on obesity, its causes, and attendant diseases. Newspapers have followed scientific discoveries and tracked the 2005 release of the new *Dietary Guidelines for Americans*. And there are, of course, the diet books, most of which are conforming to the current low glycemic index trend. While news reports may focus on single agents like leptin, macronutrients like protein or carbohydrates, science-wonk stuff like glycemic load, or ingredients like high fructose corn syrup—messages about school

lunches, PE, and physical inactivity are coming through. Polls suggest that these divergent messages are registering on the public agenda as the public synthesizes them and formulates a broader view of the causes of and solutions to obesity.

Given the media attention, it is not surprising that a poll sponsored by Harvard Forums on Health suggests that the public views obesity as a true risk and a shared responsibility. Researchers found that the public views obesity as a risk for adults (79 percent) and children (74 percent). They see obesity as a matter of personal

choice and responsibility; they also believe that public health agencies, health care providers, and schools bear responsibility for correcting the obesity epidemic, with health professionals and schools leading the pack (Table 1.1). A significant minority believe that government (35 percent) and employers (23 percent) should play a major role in addressing the problem.



The 2004 Time/ABC News poll on obesity supports this earlier study.¹¹ The poll found that the public has a nuanced view of who is responsible for obesity. While respondents overwhelmingly believed that individual Americans were responsible (87 percent), what didn't make the headlines was that over 60 percent believed fast food restaurants, schools serving high-calorie snacks and sweets, and manufacturers and marketers of high-calorie and processed foods were responsible as well.

Time/ABC data also reveal that the public sees multiple causes of obesity. While eating and lack of exercise were endorsed as primary causes of obesity (84 percent and 86 percent, respectively), marketing of sweets to children (65 percent), watching too much TV (59 percent), and issues like the high cost of buying healthy food (46 percent) and large restaurant portions were also implicated (44 percent).

Polls also show that the public endorses public action in some domains.

Time/ABC found support for warning labels on foods (74 percent), requiring restaurants to list calorie and fat content on menus (61 percent), and a ban on advertising to kids (56 percent). Even taxing high-fat and high-sugar foods was endorsed by 41 percent; however, limiting portion size was *not*—only 23 percent endorsed this tactic. While 44 percent thought fast food restaurants use misleading advertising, fewer than 50 percent agreed that people should be able to sue fast food restaurants (42 percent). As in tobacco, the public believes that eating too much of the wrong thing is a result of personal choice *and* of options of the marketplace—options they are loath to give up.

As the agenda-setting literature would suggest, media coverage of obesity correlates with public thinking on the topic. Obesity is salient to the public, and their views of its causes and possible solutions acknowledge both public and individual action and responsibility. Media coverage reveals what the public thinks about overweight and obesity, and it is a key element in setting the public opinion context in which intervention may occur.

DRIVING PRIVATE PROBLEM INTO THE PUBLIC DOMAIN

While the pace of change in response to obesity and overweight will be moderated by many things, the direction of change is this: the problem of obesity, which begins with the private behaviors of eating and physical activity, is being pushed into the public domain. Public funding for efforts to address childhood obesity, legislation to regulate food and physical activity in schools, and successful consumer protection litigation against fast food producers all signal an era of public intervention in overweight and obesity.

With that shift comes a host of new stakeholders and methods of intervening. That migration from the private to the public domain occurs in a series of overlapping phases, giving rise to a lifecycle of response that, in the case of health problems, can be mapped to reveal a terrain of potential responses and opportunities. Next we turn to a review of the lifecycle of response.

In the United States and abroad, history is cluttered with private behaviors that have been regulated in the public domain. From alcohol consumption to sexuality, from drugs to smoking, Americans have been willing to trade privacy and personal freedom for regulation in the public arena at critical junctures in social history.¹² Prohibition is a case in point. Once a private behavior is publicly regulated, new stakeholders seek to exert influence and the target of intervention expands beyond the individual.

Here is our proposition: the migration of private behavior to the public domain emanates from a set of events that may play out over decades or generations; events that unfold in iterative phases and are at once sequential and interactive. These phases may repeat many times before society transforms, or they may stall and die, failing to affect social change. We believe that the societal reaction to health problems unfolds in such phases, forming a lifecycle of response. Obesity is no exception.

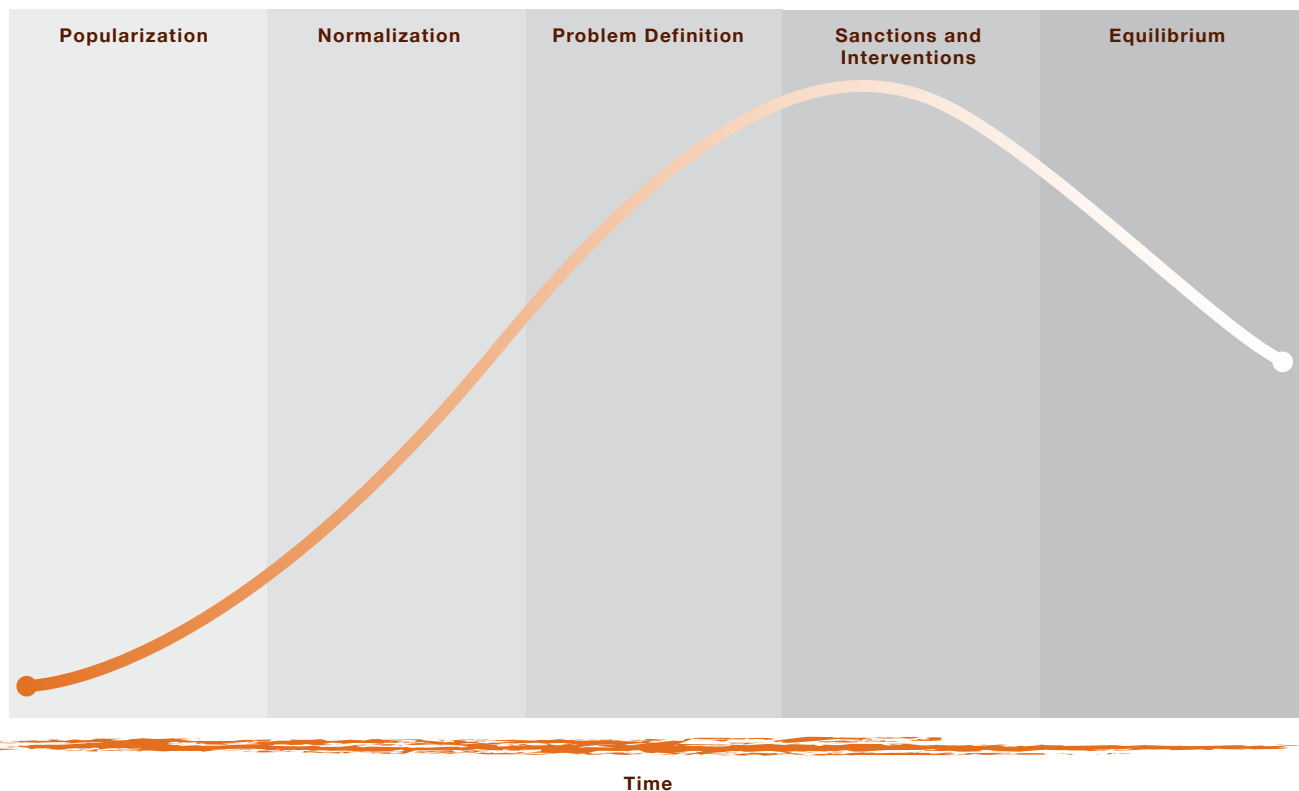
Let's take a look at the form a lifecycle of response might take.

PART I: THE FRAMEWORK OF SOCIAL RESPONSE TO A HEALTH PROBLEM

Our proposed lifecycle develops in five phases: *popularization*, *normalization*, *problem definition*, *sanctions and interventions*, and *equilibrium*. Over the course of the first three phases, the prevalence of problem-associated behavior grows. Depending on the robustness of *problem definition* and resultant *sanctions and interventions*, the behavior will peak and may even decline (see Figure 2.1). What are these phases?

Popularization sees the introduction and initial diffusion of a behavior.^{13–15} While the prevalence of the behavior may be low, the rate of growth is rapid. A behavior may be introduced and promoted in an organized way, as when a new commercial product is introduced into the market, or it may simply be an innovation, launched

Figure 2.1
The Lifecycle of Response



Source: Institute for the Future



by hip or influential people. *Normalization* brings widespread acceptance of the behavior. While prevalence is higher than in the *popularization* phase, not everyone needs to engage in the behavior for it to be considered normal. It only takes a critical mass of a relevant group of people to make it normative. Think of baggy “gangsta” jeans worn low, or bottled water, carried everywhere, or think of recent preferences away from high-carbohydrate foods.

For those practices associated with undesirable health outcomes, a period of *problem definition* ensues. It appears first in anecdotal evidence—scattered reports of observed problems associated with a behavior like coughing among smokers. The reports and observations spark systematic inquiry. This could happen within the bounds of science or in the legal arena. *Problem definition* is multifaceted. It may focus on the prevalence of the undesired outcome or on the causal relationship between a behavior and specific health outcomes. It is intimately related to the next phase, the rise of *sanctions and interventions*, because as knowledge is gained, sanctions are crafted, revised and/or abandoned in response. Because discovery is ongoing, causal relationships can be imputed or proven. History has shown that either will do as a basis for developing *sanctions and interventions*. The prevalence of the behavior may begin to waver or may still be rising in this phase.

The Private Goes Public

The *problem definition* phase of the lifecycle marks a key transition: the move of private health behaviors into the public domain. With this move comes the possibility of regulating not only individual behavior, but also of controlling the environment in which the behavior takes place. Private becomes public and the target of intervention expands from the individual to include the social, political, market, and physical environment. And with this shift comes a cadre of stakeholders to intervene.

The next phase is characterized by the rise of *sanctions* in the form of laws or taxes and in the development of *interventions* to halt the undesired behavior. While *sanctions* arise from policy—legal and regulatory action—*interventions* emerge from multiple realms. Among these are public health, health care, employment, community and nongovernmental organizations. Grassroots efforts come into play. If *sanctions and interventions* are potent enough, they will exert a downward pressure on the problem behavior. They may even succeed in making significant reductions in the rate of growth of the behavior. Or they may fail.

At any point in the lifecycle, the response could flounder or reverse course. Think of prohibition. (Yet, even though the ban on alcohol was repealed, alcohol use is publicly regulated to this day.) Too, the *problem definition* and *sanctions* phases may interact to such a degree that it looks as though the response is stuck in a feedback loop. And it may, indeed, be a long time before society enters the next phase of the lifecycle.

If *sanctions* slow or halt the diffusion of the problem health behavior, the social response is likely to reach *equilibrium*. Institutions established to prevent or reduce the problem health behavior become entrenched. Discovery of effective *interventions* may slow or cease. Society's focus may wane. And ultimately, a background rate of the behavior persists either because of the complexity of the problem and the inadequacy of *intervention* or because the cost of its persistence is deemed insignificant to society. In this case, the social response has reached *equilibrium*.

Can *equilibrium* be disturbed? Yes. It may be dislodged by scientific discovery or an influx of new money directed at solving the problem. It could conceivably be dislodged by potent regulation like the establishment of Social Security or Medicare. In short, *equilibrium* can be disrupted by actions in the *problem definition* and *sanctions/intervention* phases.

Thus this framework for a lifecycle of social response should be viewed not as a static, linear path to social transformation, but rather as a dynamic current of change, responsive to wind and tide and tectonic movement.

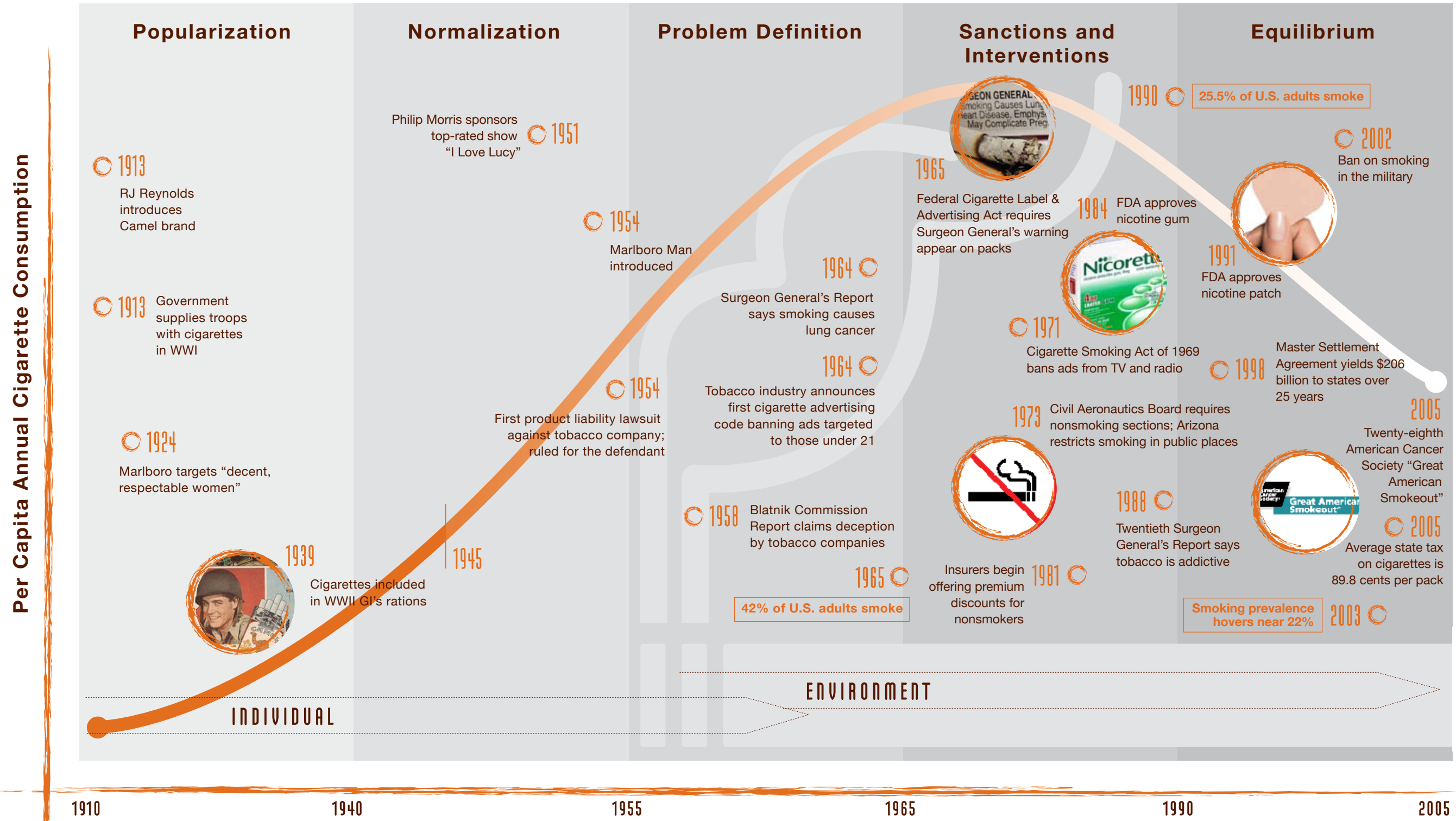
How does this framework look in the familiar realm of smoking?

PART II: THE LIFECYCLE OF RESPONSE TO SMOKING

While veterans of the tobacco wars worked very hard to frame their effort as an anti-tobacco movement, the war against cigarette smoking—not earlier campaigns against chewing tobacco and pipes—brought about the social response that made bars in many places in the United States smoke free, yet impossible to walk into a building without passing through cigarette smoke. Below, we have plotted the lifecycle of the response to smoking as a means of testing our framework (see Figure 2.2).



Figure 2.2
The Lifecycle of Response to Smoking



Source: Institute for the Future; US Department of Agriculture Tobacco Situation Outlook Report, Tobacco.org.



Our story begins at the dawn of the 20th century and ends in the first decade of the 21st century. On the x-axis we have plotted annual per capita cigarette consumption; on the y-axis, time. The map is populated by indicators of response, or “landmarks.”

In the first half of the 20th century, the *popularization* phase was kicked off with the advent of mass-produced rolled cigarettes. R. J. Reynolds’ Camel brand, introduced in 1913, was the first preblended packaged cigarette to hit the market. This technological innovation made it possible to popularize a behavior. Consumption grew from 94 cigarettes per person per year in 1910 to 419 cigarettes per person per year by 1920.¹⁶ The U.S. government supplied GI’s with cigarettes. In fact, by 1914, virtually an entire generation returned from WWI addicted to cigarettes. General John Pershing was quoted as saying, “You ask me what we need to win this war. I answer tobacco as much as bullets. . . Tobacco is as indispensable as the daily ration; we must have thousands of tons without delay.” And in 1924, Philip Morris’ Marlboro brand was introduced targeting “decent, respectable” women.

By the 1950s, smoking was normalized among the fashionable set. It was so normal that the icons of one of the most popular television shows of the day, Lucy and Desi Arnaz, were seen smoking on their Philip Morris-sponsored, *I Love Lucy* show. Lucy—a housewife and mother—smoked with the best of them (Figure 2.3). By 1951, annual consumption of cigarettes had risen to 3,744 per capita.

The first scientific study linking smoking to lung cancer was published in the teens, yet the *problem definition* phase linked to the rise of sanctions didn’t truly take off until midcentury. In 1950, a triad of scientific reports linked lung cancer to smoking, among them two articles in the *Journal of the American Medical Association* and one in the *British Medical Journal*.^{17–19} The first product liability lawsuit was filed against Philip Morris in 1954. Philip Morris won the case in 1962, but this public effort to hold a tobacco company liable for illness (a lost larynx) was a harbinger of things to come.

Private behavior moved inexorably into the public in the late 50s with the Blatnik Commission Report to Congress. The 1958 Blatnik Report asserted that, “The cigarette manufacturers have deceived the American public through their advertising of filter-tip cigarettes... The Federal Trade Commission

Figure 2.3
Early Smoking Advertising



Source: Philip Morris

has failed in its statutory duty to ‘prevent deceptive acts of practices’ in filter-cigarette advertising.” This was a new tactic—not product liability, but consumer protection and again, an early harbinger of legal strategies to come. This early phase of *problem definition* culminated in the 1964 Surgeon General’s Report, which asserted that smoking caused lung cancer. Annual per capita cigarette consumption peaked in 1963, and the percentage of the population that smoked peaked in 1966 at 42.6 percent.

Sanctions followed. The tobacco industry restricted itself from advertising to minors in 1964, but that did not forestall public sanction. A series of regulations were enacted: 1965 Federal Cigarette Labeling and Advertising Act legislated the Surgeon General’s warning; The Smoking Act of 1969 took effect in 1971, banning cigarette advertising from television; and Arizona restricted smoking in public places in 1973. The marketplace responded with insurance discounts for nonsmokers and treatments like nicotine gum and the patch. The ante was upped in the 1980s with successful consumer protection suits, and in 1998, the attorneys general of 46 states and 5 territories signed the Master Settlement Agreement with the five largest tobacco manufacturers, yielding \$206 billion to the states over 25 years. The average tax on cigarettes runs \$0.89 per pack and is increasing.

By 1994, annual cigarette consumption fell to 2,514 per capita from a 1966 high of 4,287; prevalence of smoking had fallen to 25.5 percent of the population from 42.6 percent and continued to inch downward, reaching 22.4 percent in 2003. It can be said that we are in a state of *equilibrium*—a system of sanctions restricting who can legally smoke and where. Biomedical and behavioral interventions target individuals, and social marketing efforts target communities. Taxes and zoning codes intervene on the physical environment. A private behavior becomes unflinchingly regulated in the public domain.



Is Obesity the Next Tobacco?

Is obesity the next tobacco? Yes and no. There are some important similarities that we believe are apparent in the emerging lifecycle of response to obesity, and there are some equally important differences that are likely to affect the pace of change and the force of sanctions imposed.¹⁸

The similarities in the pattern of response become obvious when you compare the smoking lifecycle map in this chapter to the obesity lifecycle map in Chapter III. The prevalence and incidence of overweight and obesity are subject to a flurry of scientific inquiry. The dual problem behaviors of over-consumption and inactivity are also under the microscope. The search is on for the cause of rising overweight and obesity just as the cause of lung cancer was under investigation. There are also weak signals of emergent legal approaches to obesity—beginning with failed product liability litigation in the mid 1950s and moving toward consumer protection suits in the 21st century. In 2005, on the eve of a Federal Trade Commission (FTC) summit on food advertising to children, food and beverage companies, like tobacco companies in the 1960s, proposed limiting advertising to minors.

Food, however, is not tobacco. Eating is not optional; everyone eats. There is no one product or food component yet identified that produces obesity in a preponderance of its consumers. There is no one industry that produces the demon product. And the populace is conflicted about the role of personal responsibility and public action. These factors make it important to learn from smoking, but not to expect that the social response and strategies for intervention honed in the war on tobacco will be directly applicable to obesity control and prevention.

And still, we believe the response to obesity does fit into our lifecycle framework. It evinces the migration of private behavior into the public domain. Too, it reflects the effort to address an overwhelming public health problem by expanding the targets of intervention: the war against obesity is moving beyond person-by-person combat to community level and environmental intervention. The focus solely on private or individual behavior is widely accepted as inadequate.

Next, we look at how the lifecycle of response to obesity is unfolding.

A public response to obesity is taking shape. It is rising from the bastions of governmental and nongovernmental bodies, from the halls of academe, from the media. It is evident in grocery stores and bookstores and gyms. A response is emerging in corporate boardrooms and cafeterias, at city council and parent-teacher association meetings. It is gathering form and direction, and picking up pace.

Here are some signs of this acceleration in response. In 2003, the National Business Group on Health launched its Institute on the Cost and Health Effects of Obesity to identify and disseminate evidence-based interventions to help address obesity and reduce associated costs to employers. In 2004, the Berkeley Unified School District, the Center for Ecoliteracy, Chez Panisse Foundation, and Children's Hospital Oakland Research Institute joined forces to launch The School Lunch Initiative. The initiative's goal is to make school lunch an integral part of an academic curriculum that teaches healthy eating, sustainable agriculture, and cooking to public school students. By July of 2005, 40 states had introduced 200 bills that provide nutritional guidance for schools, 32 states had introduced legislation-setting guidelines for physical education, and 18 states introduced BMI reporting legislation.²⁰

One could argue that we are in the early days of what is sure to be a long social response to obesity. Yet it is not too early to map its lifecycle. By beginning to plot the course of social response, we may be able to anticipate its trajectory thereby seizing the opportunities and avoiding the threats that market, regulatory, and legal responses to obesity pose for public and private sector enterprises.

MAPPING THE LIFECYCLE OF RESPONSE

To begin to take the measure of response to obesity, we've plotted events by phase lifecycle over one obesity-linked indicator: average per capita daily caloric consumption for American women, as measured through NHANES findings beginning in 1971. Time is indicated on the y-axis. The estimated rise in caloric consumption is a faint signal of a distinctly American way of eating—one that emerged out of the 1950s and found its ultimate expression in the 1990s: food is abundant, portions are large, caloric density is high even when nutrient-poor. It is a diet rich in fat and refined carbohydrates, and it is consumed on the go and away from home.

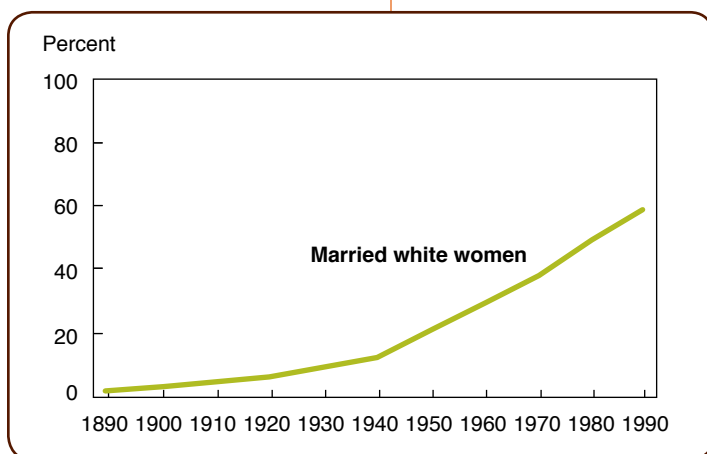
Popularization: A Distinct American Way of Eating Emerges

In the 1950s and 1960s a new way of eating was popularized in the United States: quick, fun, convenient, and away from home. During this period, the first fast food chains, Carl's Jr. and McDonald's were introduced in California. Women's increasing participation in the workforce drove demand for convenience foods for home preparation. Twelve and a half percent of married white women worked in 1940. By 1950, 20.7 percent of this group worked, and that percentage has increased by

about 10 percent every decade (see Figure 3.2). Overall, 33.9 percent of women worked in 1950; that number jumped to 43.4 percent by 1970.²¹

Mechanization spurred the rising efficiency in home economics of the 1950s. Clarence Birdseye perfected a quick-freeze method of preserving food in the late 1940s and paved the way for frozen foods. In 1954, Swanson responded by introducing the "TV dinner," and in one product, captured the troublesome intersection between convenience food and inactivity that dogs us today.

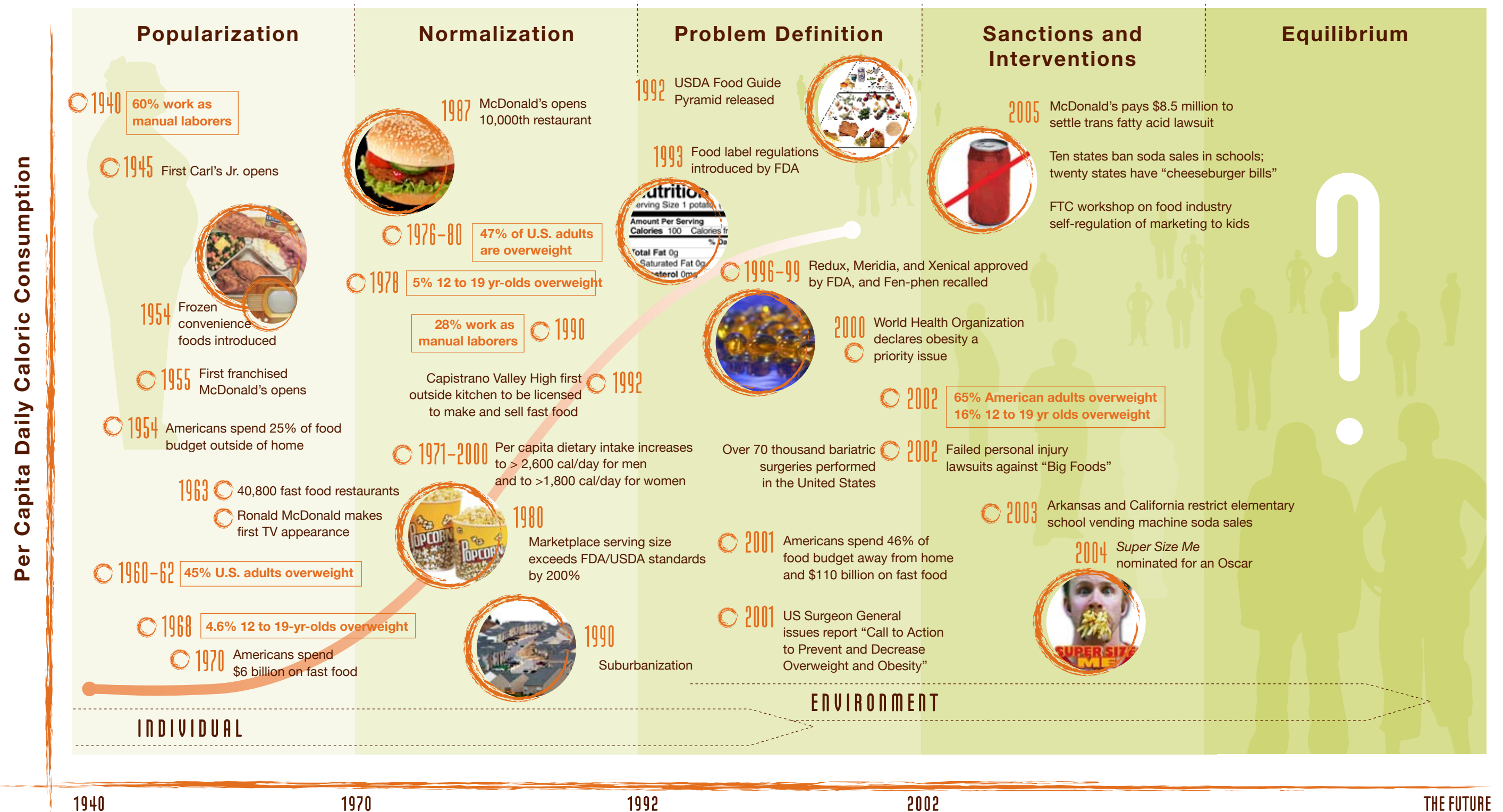
Figure 3.1
Married White Women's
Increasing Workforce
Participation



Source: C. Goldwin. *Understanding the Gender Gap: An Economic History of American Women*, Table 2.1., 1990.



Figure 3.2
The Lifecycle of Response to Obesity



Source: Institute for the Future and NHANES 1971-2000.



Caloric Consumption: Proximal Cause or Flawed Measure?

Some might say that per capita, daily caloric consumption is a problematic variable. And it is. NHANES uses 24-hour recall—a self-report provided without access to accurate information about portion size or food content. Caloric consumption is not only an imprecise measure of true intake, but also it addresses only the intake side of the energy balance equation.

Yet a variety of data sources suggest that the other side, energy expenditure, is at best static, at worst declining, and is no more accurately measured. The CDC reports that more than 50 percent of adults fail to get the recommended amount of physical activity and 26 percent get no physical activity in their leisure time at all.²² Fewer than 50 percent of youth (ages 12–21) get the recommended amount of vigorous activity.

Much in and about the built environment, the social structure, and the way we work also promote inactivity. Between

1960 and 1990, the number of Americans driving to work grew from approximately 41 million to 99 million. The percent of the workforce involved in manual labor, which might have been a source of physical activity, declined from 60 percent in 1940 to 28 percent in 1990. Leisure time is filled with sedentary activities, with television viewing rising from 4.75 hours per household per day in 1950 to 8 hours per household per day in 2003.²³ The result: more calories in, fewer calories out. For women, between NHANES II and the 1999–2000 analysis, there was a self-reported increase of 355 calories per day or enough to gain 37 pounds in a year. A 144-pound woman would have to walk at a pace of about 3.5 miles per hour for one hour each day to avoid tipping the energy balance equation.

And so we believe that increasing caloric consumption, which is likely to be underreported, is a useful signal metric of an American way of eating that promotes obesity.

Normalization:

Calorie Dense Food, Big, and Away-From-Home Becomes the Norm

Between the 1970s and the 1990s it became normal to eat out, normal to have portions that exceed FDA standards, normal to get an increasing proportion of daily calories from calorie-dense snacks, and normal to be inactive.^{24–27} In fact, NYU researcher Lisa Young, PhD, RD, found that many of the foods we buy today are sold and consumed in portions that are as much as five times larger than when they were originally introduced. And whereas Americans spent about 34 percent of their food budget on food outside of the home in the 1970s, by the 1990s that percentage had risen to 47 percent. This a key part of the obesity story because the USDA reports that food served outside of the home is not only bigger, but also more calorie dense.

Perhaps not so surprising is the fact that through it all, U.S. popular culture was obsessed with fitness, with Jane Fonda and Richard Simmons leading the workout circuit in the 1980s. Yet the 1992 Behavioral Risk Factor Surveillance System (BRFSS) survey conducted by CDC found that more than 60 percent of U.S. adults didn't get the recommended physical activity. By 1992, California had staked its claim at the vanguard of American fast food culture, when it became home to the

first high school licensed to prepare and sell a major fast food brand on campus. At Capistrano High, Taco Bell *was* school lunch.²⁸

As reported caloric consumption rose, so did the prevalence of overweight. Between NHANES II (1980) and NHANES III (1994), the prevalence of overweight rose from an estimated 47 percent to 56 percent. By 1999, that number was closer to two-thirds of the U.S. population. That progression, particularly the doubling of the proportion of U.S. adults that were obese, set off alarms for the public health establishment.

Problem Definition: A Problem Comes into Focus

At the end of the last century, prompted by mounting evidence of high prevalence of overweight and rapidly rising obesity, public health researchers were consumed with defining the domestic weight problem and its implications. A 1999 meta-analysis by Allison et al. resulted in the alarming conclusion that obesity may account for as many as 280–325 thousand deaths annually of U.S. adults. And while subsequent studies quibbled about the effect on mortality, no one questioned the effect of obesity on morbidity, including rising rates of type 2 diabetes, hypertension, heart disease, and a host of other chronic conditions.^{29–32} The advent of the 21st century found the WHO, the European Union, and the U.S. Surgeon General targeting overweight and obesity. The U.S. Surgeon General issued a call to action in 2001 that articulated the problem and sought to inspire action in the public arena.

At the same time, the government was investing money in research and demonstration projects investigating adult and child overweight and obesity. Congress commissioned the Institute of Medicine of the National Academy of Sciences to conduct a study of childhood obesity and overweight. The National Institutes of Health funded biomedical and behavioral science research on obesity. Pharmaceutical companies invested in basic research to understand the physiological determinants of overweight and obesity and identify potential pathways for intervention. The CDC launched research, programs, and campaigns through its Division of Nutrition and Physical Activity.

Foundations followed suit. In 2002, the Robert Wood Johnson Foundation launched its \$12.5 million, four-year Active for Life funding initiative to foster research on the interaction of physical environment with physical activity.

In this *problem definition* phase of the lifecycle, over-consumption and inactivity have moved into the public sphere. The subject of inquiry includes the individual



and individual behavior, but is also clearly expanding to encompass the effect of the built environment, the policy environment, and the food and media environments on the outcomes of interest: overweight and obesity.

Sanctions and Interventions

As the problem is defined—and it continues to be defined—*sanctions and interventions* are emerging. Already 10 states have banned soda sales in elementary schools. Legislation signed in California in 2005 signaled fledgling steps to expand the focus from regulating elementary schools to controlling high schools. In the summer of 2005, the FTC held a workshop to assess the impact of food and beverage advertising to children. In November of the same year, the Institute of Medicine issued its report on food marketing to children. The USDA, through its 5 A Day fruits and vegetables social marketing campaign, and through planned restructuring of Women, Infants, and Children (WIC) and Food Stamps programs, seeks to intervene at the community and market level to change food consumption.

Weak signals are emanating from the legal arena, too. In 2005, McDonald's paid \$8.5 million to settle a consumer protection suit that alleged that the company failed to communicate clearly with consumers when it fell behind schedule after announcing it would remove trans fats from its fries. Where product liability lawsuits have failed against fast food companies, this settlement presages a new approach and an attendant push for transparency from restaurants and packaged goods manufacturers.

Corporations are also responding in their capacity as corporate citizens, employers, and product manufacturers. Corporate social responsibility programs by companies like McDonald's are emphasizing physical activity. It doesn't stop there. The trade association Grocery Manufacturers of America reports heavy investments in R&D to discover ingredients that will replace fat, sugar, salt, and highly refined carbohydrates without compromising the taste of prepared foods. Multinational food companies are auditing their brands and systematically working to improve their nutrition profiles. In 2003, the National Business Group on Health established its Institute on the Cost and Health Effects of Obesity, using their clout as major employers and health care purchasers to encourage healthy eating and physical activity among their employees.

Problem definition and the development of *sanctions and interventions* occur in iterative cycles. New knowledge about the causes of a problem drives sanctions and interventions. We are in the early stages of this interactive period between *problem*

definition and the rise of *sanctions and interventions*. While rising caloric consumption seems to have slowed for men, the prevalence of overweight remains high at 65 percent of the population, and physical activity remains flat. And although some argue that the increase in adult overweight may have reached a plateau, there is no end in sight for children.

Will Equilibrium Ever Arrive?

We are nowhere near *equilibrium* and we do not presume to predict when we will reach it—when the rise in overweight and obesity ceases for adults and children and reaches a steady state. We can offer a forecast, that is, what we think is probable. Our forecast focuses on the *problem definition* and *sanctions/intervention* phases of the lifecycle and the likely products of the interaction between them. This interaction will dominate the social response to obesity for at least the next decade. It will be this interaction that establishes the private problem of obesity/overweight in the public realm and fosters increasingly sophisticated efforts by the public and private sectors to intervene upon *both* individuals and the environment.

Two shifts characterize the social response to a public health problem: moving private behavior into the public domain and broadening the target of intervention from the individual to the individual *and* the environment. The history of public health replays this evolution again and again—in tobacco and alcohol control, in pregnancy, and in HIV prevention. At critical points in our history, the public has been either willing or convinced to trade some personal freedom to address a social problem. Our lifecycle map suggests that the move toward public regulation of private behavior begins with *problem definition* in the public arena, and that the rise of *sanctions and interventions* establishes public intervention as a part of every-day life.

For the next ten years, the response to obesity will take place in the iterative phases of *problem definition* and *sanctions/interventions*. As the multiple facets of cause and effect are unpacked through scientific research, public opinion will change. As a result of new knowledge and public support for change, *sanctions and interventions* will be attempted in policy, law, employment practices, medicine, and public health. It will become the norm not only for public health and health care providers to claim a role in addressing obesity and overweight, but also for employers, the food industry, nongovernmental organizations, government entities outside of public health, and the legal system to actively participate.

New participants will facilitate expansion of intervention targets to include the environment, and with that broader scope will come the promise of prevention as well as treatment. Just as in the fight against HIV, social marketing interventions, public and private policy initiatives, and changes to the physical environment are tools for social change. The goal is to change behaviors by altering the effective and physical domains in which activities that put people at risk for disease are practiced.³³ The next ten years will see advances in environmental interventions designed to prevent obesity. Evolution in public opinion will play an important part.

Figure 4.1
The Next 10 Years: Problem
Definition and Intervention



Source: IFTF

MAPPING THE RESPONSE

A broad focus on both individual behavior and its environmental context will give rise to responses that fall into four domains that do and will coexist as *problem definition* and development of *sanctions and interventions* evolve. These four domains can be mapped across a range of intervention targets—from individual to environment—and a range of intervention goals—from treatment to prevention (see Figure 4.1).

We are well acquainted with the domain of the lower left-hand cell of Figure 4.1. Its hallmark is treatment targeting individuals. While the ultimate goal of these interventions may be biomedical or behavioral, the underlying belief is that acting on the individual alone will bring about a desired change in health status. A range of approaches within this cell, for example, drugs, diet, and exercise programs, integrate group support and household management. All arrive at their desired outcome through individual change—adherence to a regimen or undergoing a surgical procedure.

The lower right-hand cell is the bastion of public health interventions and, to a very limited extent, of clinical interventions. The goal here is to prevent illness in the first place: primary prevention. The target is the individual. An example is just about any first-wave health education effort designed to prevent “risk behaviors”—unsafe sex, smoking, drinking, or riding a bike without a helmet. The underlying assumption is that if you educate individuals about health risks and help them learn protective behaviors, you will bring about a desired result. What public health experts and consumer goods marketers know is that education and skills are essential, but they are not nearly enough to bring about sustainable change in complex behaviors.

This awareness gives rise to efforts in the upper right-hand cell, those targeting the environment for the purpose of prevention. This is the realm of social marketing efforts that strive to change social norms regarding specific practices. Such efforts are built on a marketer’s understanding of consumer needs, aspirations, and practices, and they incorporate product, placement, promotion, and pricing to drive normative change and through it, behavioral change. An example in this country would be Population Services International’s (PSI) condom promotion campaign for youth in the mid-1990s. Though not social marketing, another intervention in this realm would be zoning ordinances prohibiting smoking in public places. The goal of such regulatory sanctions is to create safe physical environments for nonsmokers to prevent the risk associated with second-hand smoke.



The upper left-hand cell is, perhaps, the most forward-looking when it comes to obesity. The target of intervention here is the environment, and the object is treatment. An example of an historic intervention that falls into this cell is the introduction of iodized salt, designed to treat iodine deficiency and to prevent the associated condition, goiter. Vitamin A rice, one of the first attempts to deliver a nutrient that treats nutrition-related disease by modifying a staple crop in a low-resource area, has failed. The target was the food environment and the goal was treating blindness. Yet its goal fits into this cell, and similar but better thought-out strategies are likely to be pursued.

Over the next ten years, as the dance between *problem definition* and *intervention* development continues, we will see new interventions emerge in each of these four cells. While there will be continued and even accelerated activity in interventions targeting individuals, substantial experimentation will take place in the upper right-hand cell as environmental interventions take shape in policy, urban planning and zoning, workplace practices, and government-sponsored food security programs. The effect will be to firmly establish intervention in the public domain not only in food consumption but also in physical activity.

Let's turn to specific interventions that will populate these cells over the next ten years.

TREATING THE INDIVIDUAL

Both the prevalence of and overall spending on medical obesity treatments are projected to increase over the next decade. This growth is driven by the increase in coverage for medical intervention for obesity and its related conditions, the availability of treatments, more sensitive diagnosis, and epidemiological trends.³⁴ When language stipulating that obesity was not a disease was removed from the Medicare Coverage Issues Manual in 2004, the doors opened for coverage of obesity treatments where convincing scientific evidence of health benefits exists. Bariatric treatments and good old-fashioned diet and exercise will dominate this first domain of activity: individual treatment.

Bariatric Treatments Expected to Grow

Bariatric surgery reduces caloric absorption among those with a BMI of 40 or higher by making the stomach smaller and in some cases, bypassing part of the intestines. Growing arrays of techniques are used for these procedures. The number of bariatric surgeries quadrupled between 1998 and 2002, growing from 13 thousand to 72 thousand and was projected to have reached over 100 thousand surgeries



in 2003.³⁵ As the number and variety of approaches to bariatric surgery grow, prices are still rising. Given that only 0.6 percent of clinically eligible adults used bariatric surgery in 2002, the potential for volume growth is substantial.

While liability concerns are causing public and private payers to create more barriers to getting bariatric surgery, and Medicare currently covers the procedure only in the presence of coexisting conditions (like diabetes), sheer growth in the number of people eligible for surgery and two emerging trends will drive growth in this intervention method: treatment coverage for obesity under Medicare and the use of bariatric surgery on adolescents and on those with lower BMIs who are willing to pay.

The fastest growing segment of the bariatric surgery market is 55–64 years-olds who are aging into the Medicare population. It is estimated that by 2010, as many as 475 thousand elders could be eligible for bariatric surgery on the basis of BMI alone.³⁶ However, co-morbidities are common among those with BMIs of 40 and above. Should Medicare relax coverage guidelines, the demand and resultant number of surgeries could grow exponentially—as could spending.

Bariatric surgery also has two new potential patient groups: adolescents and those with BMIs lower than 40 but with serious co-morbidities, particularly those who are willing and able to pay out-of-pocket. The trade-off between risks and benefits are still to be assessed for these two populations and their risk profiles may moderate growth in bariatric surgery. Still, our experts project that the increasing prevalence of obesity among adolescents, growth in early-onset type 2 diabetes, and the potential for bariatric surgery to reverse diabetes and produce an initial weight loss of 60–70 pounds will drive demand.

Bariatric Drugs Eagerly Awaited

Prescription drugs currently on the market are used to suppress appetite or restrict fat absorption; drugs are being designed to regulate satiety. Meta-analyses of their effects suggest that bariatric drugs can yield a 5–10 percent weight loss. These results are often best achieved when drug therapy is used with changes in diet and exercise.^{37,38} Today, Hoffman-LaRoche's Xenical (orlistat), which restricts fat absorption, and Abbott Laboratories' Meridia (sibutramine), which reduces appetite, are the only drugs approved for long-term use. Sanofi-Aventis's Acomplia (rimonabant), one of a generation of satiety regulators and due out in 2006, is the



subject of rapt attention. A recent Google search on Acomplia + Sanofi-Aventis generated 33,100 results from sites as divergent as mybigfatblog.com, acompliareport.com, drugdevelopment-technology.com, and rxsolutions.com. In fact, only one site of the first 20 was Sanofi-Aventis. These prescription drugs will thrive or die based on patients' real-world experience with side effects and results.

The News in Bariatric Interventions

In both bariatric surgery and bariatric drugs, however, the limits of biomedical intervention are now and will be increasingly evident. Our experts tell us that a year or more after surgery, patients are showing up on the doorsteps of comprehensive weight-loss programs seeking help. This is particularly true as less extensive surgical procedures are used (banding and gastroplasty rather than *Roux-en-Y*, for example). Once bariatric drugs are stopped, the modest success in weight loss often disappears. Thus, without support for a substantial lifestyle change, bariatric patients begin gaining the weight back.

The news here is that as a result of these limitations, programs that support behavior change will become standard adjuncts to biomedical treatment either through partnerships between biomedical and behavioral programs or through program expansion.

Diets, Exercise, and Disease Management

This realm of individual treatment is also the bastion of diet, exercise, and disease management or wellness programs. There will be a new diet every year. But established programs like WeightWatchers will integrate new scientific knowledge into program revisions, update their programs, and evaluate their efficacy among large numbers of participants. Increasing emphasis by large employers on exercise will yield experiments in management of both obesity and related conditions as part of disease-management programs that strive to manage health care costs. Employer incentives to adhere, and disincentives in the form of larger co-pays and contributions to premiums will be seen near the end of the decade.

The News in Diets, Exercise, and Disease Management

Employers will play a more aggressive role in this treatment domain. While they will attempt to straddle the privacy line and build more forceful incentives for good health practices, employers will also be pressing health plans and disease management companies for outcomes. If they don't get them in the near term, they will lose interest in actually influencing behavior and focus solely on managing cost. The most enlightened may take a longer view and a broader one—attempting to formulate new metrics that allow them to account for productivity and risks to human capital, as well as the direct costs of health care. Companies that can help employers develop and articulate these new metrics will have an edge.

PREVENTING INDIVIDUALS FROM BECOMING OVERWEIGHT

In this lower-left hand cell, we target the individual with the goal of prevention. Public agencies, from health departments to schools and health care organizations, will continue to play here, using more sensitive screening tools and endeavoring to deliver more sophisticated and pervasive health education programs among those at risk for overweight, obesity, and related diseases. Because of childhood obesity and early onset metabolic syndrome and diabetes, the targets of intervention will be younger and the focus will move beyond the individual to small groups like families or social groups.



The News: The Private Sector Plays a Role

Driven by the need to demonstrate corporate responsibility, companies in the food, beverage, and restaurant businesses will continue to create health and wellness programs to position themselves on the right side of the obesity issue. And the best may actually see some limited success. The most obvious example is the McDonald's strategy to promote physical activity, which positions Ronald McDonald as a champion of exercise. More forceful moves will be driven by the attempt to control costs. Here incentives to participate in ongoing health risk assessment, physical activity, and wellness programs will get more aggressive as employers learn how to avoid the pitfalls of monitoring behavior and demonstrate tangible benefit to the employees themselves. However, it will be touchy and it will proceed in fits and starts. Differential health benefits costs to employees will be leveraged for behavior change. While these are much the same techniques employers are using to promote treatment of obesity and related conditions, offering an equitable suite of wellness programs to non-obese employees has the potential to promote prevention and wellness, and to mitigate the threat of being perceived as discriminating against overweight or obese employees.



The bottom line, however, is still the bottom line. Programs like HealthMedia (www.healthmedia.com), which boast an impressive client list, will need to demonstrate meaningful benefits to employer/purchasers in order to sustain their interest in wellness. Look for advances in the metrics used to demonstrate success. They will go far beyond lower prescription drug costs to incorporate productivity and vitality and will look for clear links to improved employee contributions to their employer.

TARGETING THE ENVIRONMENT FOR PREVENTION

The biggest area of experimentation in social response to obesity over the next ten years must be in targeting the environment(s) for prevention. Health policy and public health agencies from the European Union to the State Departments of Health and Human Services have determined that the problem of overweight and obesity is bigger than the individual. In fact, the International Obesity Task Force asserts that changes in obesity rates across Europe are environmentally based and says, “It is no longer acceptable to blame the individual for their obesity: the causes are clearly social.”³⁹ It is in this domain (the environment) that we see efforts to deal with obesity as a social problem—a problem of the food, physical, political, and normative environments.

In the public health realm, we will see the emergence of true social marketing interventions that attempt to change normative behaviors. We will also see availability and affordability of health foods, and access to physical activity through a wide range of efforts. These include food distribution and pricing, modification of food subsidy programs, zoning for fast food restaurants and parks, and contracting for institutional food service. Over the next ten years we will see experiments in these areas and examples of community change in the most progressive locales.

What are the early signs of this? Activists in local communities are banding together across the food issue landscape to address the poor nutrition and inactivity that are giving rise to obesity. In California, the Strategic Alliance—a coalition of nutrition and physical activity activists drawn from food security, sustainable agriculture, nutrition, obesity research, public health, public policy, and even urban planning—is attempting to drive substantive change.⁴⁰ Groups like this are beginning to train local activists to use the tools of law, public policy, and advocacy to change the food and physical activity environments in schools, cities, counties, and even states.

Legal Approaches will be Varied

Sophisticated legal approaches will emerge. When one says law, people think litigation. However, the legal strategies under development at the local level are affecting the terms of vendor contracts with school districts for lunches and breakfast. The idea is for local activists to be at the table during a request for proposal (RFP) development, not to sue vendors downstream. Assessing businesses that sell high caloric density/low nutrient foods with additional licensing fees is an emergent idea in the legal and regulatory realm. Expect scattered attempts to impose such fees.

Of course, litigation is included in the legal realm. We will see further experimentation with consumer protection challenges like the one that resulted in McDonald's \$8.5 million settlement of the trans fat suit. The claim was that McDonald's® misled customers by announcing it would remove trans fats from its french fries and then failed to accomplish the task by the publicized date. Claimants filed a consumer protection suit—not a product liability suit—in which they would have had to prove that what they ate caused harm. Success of consumer protection litigation will push food and restaurant companies toward more transparency about the content of their foods. While it may enable consumers to make better choices, it may also limit food purveyors' liability if they provide that transparency.

Building Environments that Promote Healthy Eating and Physical Activity

In the “built environment,” National Institutes of Health, Robert Wood Johnson Foundation, and CDC funding programs are the leaders in fueling research and demonstration projects. But out in the real world, uptake will be slow, with the most progress seen in areas of new urban and suburban development. This is likely to mean that those who would most benefit from changes in the physical environment, the urban poor, for example, will realize the least benefit as safe, open spaces grow in more affluent communities.

Schools are at the Forefront of Change

Of course, the leading edge of environmental change will be schools. Not only will the efforts to regulate the food environment of schools pick up, but also concerted efforts will be made in the most cutting-edge communities to change norms about food, eating, and physical activity. Efforts like the School Lunch Initiative in Berkeley, California, are attempts to alter the food and education environment by developing a curriculum that engages children in agriculture, environmentalism,



social responsibility, cooking, and eating. The goal is to acculturate children in a healthy, socially responsible culinary culture in an effort akin to the early days of the President's Physical Fitness Challenge. This collaborative effort of the Chez Panisse Foundation, the Center for Ecoliteracy, Berkeley Unified School District, the University of California, Berkeley Center for Weight and Health, and Oakland Children's Hospital and Research Center will not only proliferate use of locally grown foods, but also endeavors to build dining halls, not noisy cafeterias.⁴¹

However, the truth of school-based interventions is this: the battle to ensure healthy school environments will be fought state-by-state, district-by-district, and in many cases, school-by-school. There will not be a pervasive change across the nation by 2015, but substantial change will take form in pockets of innovation.

Efforts in this realm to formulate and test environmental interventions will be a hot spot for the next ten years.

TREATING THE ENVIRONMENT

Multiple mini-environments affect the environment in which obesity either emerges or is thwarted. They are the food, physical, policy, cultural, and legal environments, at least. Obesity arises from consuming more energy than one expends, emanating from the interaction of private, individual acts—eating more and moving less. But it is also true that obesity is growing out of the convergence of environmental factors—cheap, abundant, and tasty high-calorie foods coupled with the absence of opportunity for convenient, low-cost, and enjoyable physical activity.

The environment matters in obesity. Efforts will attempt to treat obesity by changing it. This upper left-hand cell is perhaps the furthest out in the shift of focus from individual to environment (see figure 4.1, page 30). It is the hardest to envision and achieve. It targets the environment with the goal of treatment. While we will see little change in the food environment in the next ten years, furious R&D efforts are going on that will accelerate as food companies attempt to find magic ingredients—formulations that deliver the taste, convenience, and desirable nutrients we all want, at a price we can afford.

The first phase of this effort will be to discover replacements for salt, sugar, and fat, treating the obese and overweight population by altering the nutritive content of food without changing individual behavior. Already, a study of 43 companies, representing \$250 billion in annual U.S. food sales found that nearly all were reformulating products to enhance nutritional choices. Between 2002 and 2005 these efforts resulted in 1,260 new products and the reformulating of 3,240 existing food

products.⁴² The change is to the food environment. Reformulation seeks to remove or reduce trans fats and saturated fats as well as sugars, carbohydrates, calories, and sodium. There are also continued efforts to fortify foods. It is an incremental move toward “better-for-you” foods.

The second phase will be to deliver beneficial micronutrients, or even drugs, through foods. This is the bastion of nutritional genomics. Progress in this area faces stiff challenges in understanding the interactions among genotype, nutrients, and phenotype. We are early in the science of nutritional genomics. The next ten years will see increasing experimentation. In the context of our framework, the action will be in *problem definition*, in identifying cause and effect.

PUSH-BACK: BARRIERS TO PUBLIC INTERVENTION

While the drivers are pushing obesity into the public domain, and the targets of intervention and sanction will increasingly be both the individual and the environment, change will not advance unimpeded. Substantial barriers exist that will thwart attempts to address obesity and overweight publicly through environmental interventions: complexity, the food environment, how we live, the meaning of food, and good old American individualism all stand in the way.

Structural Impediments Thwart Action in the Public Domain

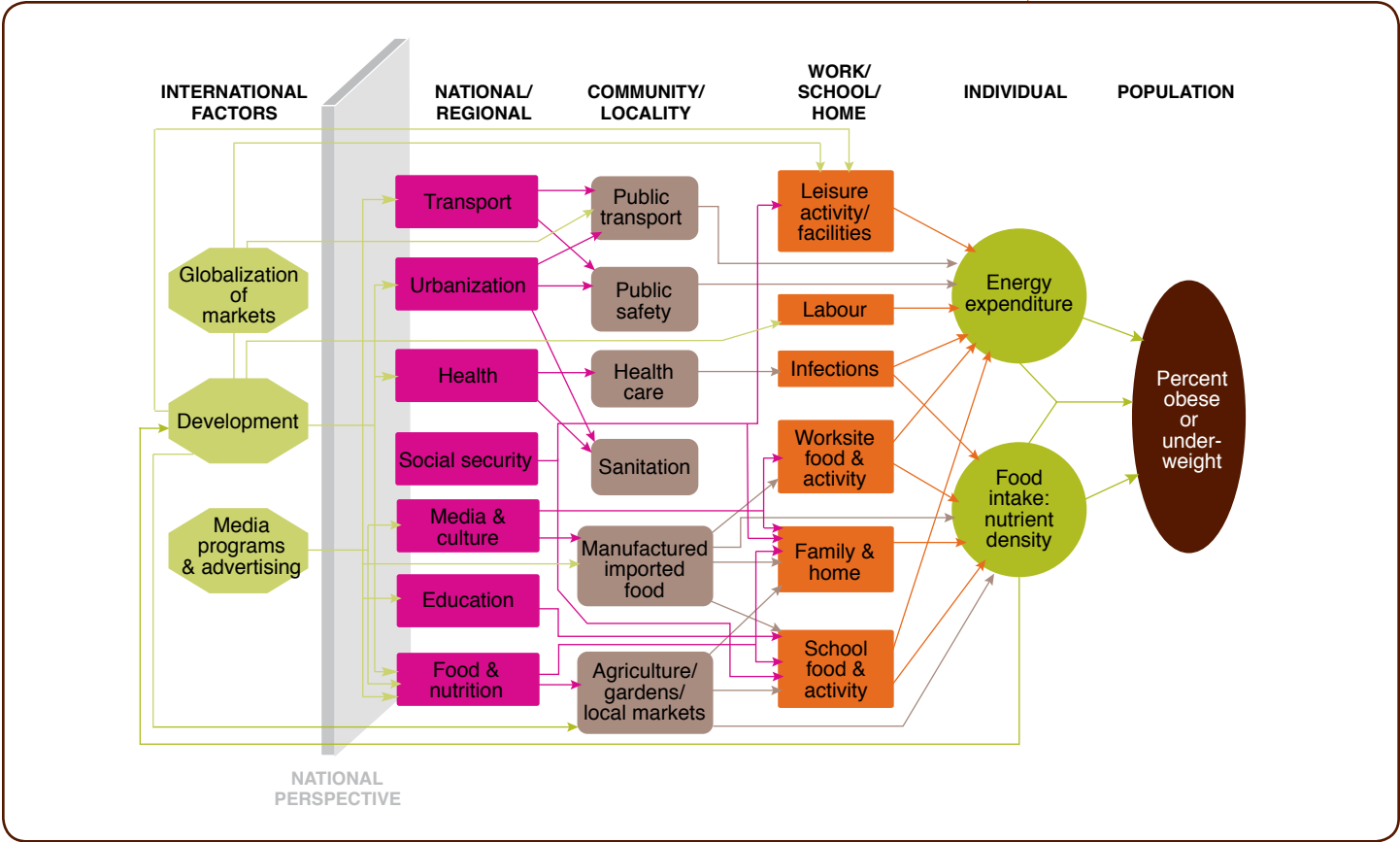
Obesity is Complex

We tend to focus only on energy expenditure and food intake when we discuss overweight, but a phalanx of environmental factors contributes to the energy balance (see Figure 4.3). They stem from local, community, national, regional, and international factors. The job of intervening in these multiple domains is big. Exerting force on even one domain is daunting. However, as the European Union and the U.S. Department of Health and Human Services have surmised, it is time to grapple with complexity because deconstructing a complex system has not and will not work.



The complexity of the obesity problem confounds scientists, as well. Even they have revealed conflicting interpretations of the impact of obesity and overweight. In 2005, Centers for Disease Control and Prevention researcher Katherine Flegal contradicted findings by her CDC colleagues when she estimated that obesity was responsible for only 11,909 excess deaths, rather than the 400 thousand deaths that her colleagues, Mokdad et al. attributed to poor diet and physical inactivity in 2004. Not only did Flegal estimate a much lower death toll than her predecessors, but she also reported that it was healthier to be overweight than to be underweight, estimating that underweight was responsible for 33,746 excess deaths. However, Dr. Flegal and her colleagues did not dispute the association of obesity with ill health.⁴³

Figure 4.3
Causal Pathways to Obesity
are Complex



Source: International Obesity Task Force, adapted from Ritenbaugh C, Kumanyika S, Morabia A, Jeffery R, Antipatis V. 1999.

The Way We Eat is Entrenched

Our lifecycle map represents the rise of an American way of eating: anything we want, as much as we want, anytime we want it, anyplace we want it. It is characterized by ready-to-eat food in restaurants and vending machines. It is also cheap and big. While the good news is that the United States emerged from the depression and deprivation of two World Wars and made it possible to get meat on everyone's tables or into everyone's hands, the bad news is that the United States overdelivered. That overabundance contributes to a population in which 65 percent of adults are overweight.

The Way We Live Thwarts Environmental Change

The way we live poses a tremendous barrier to changing the environment. The built environment keeps us in our cars and in our seats. The physical environments that we've built are resistant to change: highways, strip malls away from residential areas, insufficient and expensive public transit, and, by world standards, cheap gasoline. They all interact with the structure of our workdays, which are getting longer and occur farther away from home. Change to transportation systems, the location and nature of housing and work takes a long, long time. Thus it thwarts the intervention upon the built environment in a way that allows more walking, more dining at home, more cooking.

Cultural Impediments are Most Potent

Complexity, the food environment, and the way we live are all structural impediments, but perhaps the two most potent barriers are, in fact, affective. Food is identity. It is a social lubricant that facilitates and often defines relationships. It is a cultural medium without which we would be the poorer. We are unwilling to give it up. We should not give it up. The private act of eating is, after all, also a fundamental social act.

A cartoon on the Center for Consumer Freedom website (www.consumerfreedom.com) captures our discomfort with environmental or top-down intrusions in our personal lives. It shows uncle Sam pointing at the reader with the caption "Are You Fat? See what the government thinks. . ." The Center is fighting the war on obesity with its slogan "Promoting Personal Responsibility and Protecting Consumer Choice." In fact, this slogan articulates American values that resonate with most



people, liberal or conservative. The move to dealing with obesity in the public domain and to targeting not just the individual, but also the environment, will continue to be hampered by this individualism. It is an individualism that constantly weighs the tradeoffs between the good of the larger group—the commons—and infringement on personal freedoms. While Kersh showed that the American public has repeatedly made such tradeoffs, they often do so when it inconveniences them least.⁴⁴

Even scientists reflect the high value placed on personal freedom. In his book *Big Fat Liars*, Dr. Morris Chafetz, founder of the National Institute of Alcohol Abuse and Alcoholism, decries the misuse of science by politicians, corporations, and the media. He devotes a whole chapter to debunking the obesity epidemic. His greatest concern appears to be government interference in the private domain. He asserts that, “Unfortunately, by seizing more and more of the burden of responsibility for the health of the nation, the government has more and more taken, too, the “right” of telling you how you may and may not live.” The right and the responsibility of being fat, Chafetz argues, belongs to the individual.⁴⁵

A FUTURE OF ADVANCING AND RETREATING

Even in the face of potent barriers, we forecast that the social response to obesity will toil in the domains of *problem definition* and *sanction/interventions* for the next decade and beyond, and that inroads will be made in the public intervention. There will be active experimentation with public programs, regulation, legal action, and changes to the physical environment as well as advances in individual-level biomedical interventions. At times, intervention will advance into the public domain, only to retreat. The challenge is to envision a spectrum of responses that brings success to the many stakeholders involved, either public or private. These successes will come from understanding the interplay of the public and the private and the cultural and the structural in promoting, treating, and preventing obesity.

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