

## Chapter 2

### Fat Facts

For morbidly obese patients, the Brookhaven Obesity Clinic is the last ray of hope in an endgame of weight gain. The clinic, which has only eighty beds, seeks to rehabilitate not just obese people, but most often the massively and morbidly obese, those whose thighs, with multiple rolls of fat hanging over one another, can be larger than the torsos of some merely overweight people. Even when they are not in the clinic, Brookhaven patients are largely unseen because so many of them cannot even get out in public and, if they could, often choose to remain reclusive, for good reason: They would no doubt feel the constant stares and disapproval of passersby. These patients' personal goals, described in the Discovery Health Channel's two-part documentary, *Inside the Brookhaven Obesity Clinic*, are nothing like those of formerly overweight women featured in Jenny Craig ads, who dreamed of squeezing into their favorite bikinis. On the contrary, Brookhaven patients aim to get down to "only" 350 pounds or to be able to climb a flight of stairs or return to work.

The picture painted in *Brookhaven* is far from pretty. No, it is downright disturbing. The economic costs to society of people's tremendous excess weight are likely . . . well, tremendous, not to mention the personal costs and pain that the obese person suffers in testing the limits of how much weight the human body can endure.

The filmmakers followed several patients, who initially weighed from 400 pounds to close to half a ton, from their attempts to be admitted to Brookhaven through their stays at the clinic, which lasted months. All of the patients recounted lifelong struggles to *contain* their weights, not just to return to some semblance of normal size. And all readily confessed the source of their weight problems: They ate way too much, especially in calorie-rich foods (lots of hamburgers and pizzas, for example).

Several of the patients were bound to wheelchairs when out of bed. One patient, weighing over 700 pounds, had been bedridden for several years. Nevertheless, in the weeks before the filming, the bedridden patient had insisted on double and triple portions for meals at the nursing home where he lived. Another patient, desperately seeking admission to Brookhaven, confessed to eating 15,000 calories a day! That's

nearly seven times the recommended maximum calories for an adult male and the equivalent of maybe a dozen of the thickest, greasiest, and sauce-dripping hamburgers that Carl's Jr.<sup>®</sup> (or any other) hamburger chain can dish out.

Unlike the image of overweight people that Hollywood movies may sometimes portray, there's nothing amusing or jolly about the patients at Brookhaven. In this film, most of them exuded some sadness, loneliness, and desperation, and all recalled profound depression. The 700-pounder lamented the missed opportunities to be with his teenage son at school functions and sporting events to offer support, if only he could have gotten out of bed and his room. Still, he continued to eat more than enough to pack on additional pounds, as he remained bedbound.

Not all the extremely obese applicants to Brookhaven are lucky enough to be accepted. The clinic staff has learned from experience that some patients will not, or just cannot, follow the clinic's required regimen of exercise and diet (sometimes no more than 1,500 calories a day). Also, too many applicants are "recidivists" or "repeat offenders," who lose hundreds of pounds while in the clinic only to return home still obese where they resume their routines of overeating and inactivity, regaining the weight lost, and then some.

One such repeat offender was a former gang member who, weighing close to 600 pounds at the time of the filming, worried whether Brookhaven would give him another chance to lose weight—and to save his life. Brookhaven's director agonized over the young man's readmission, because accepting him would mean one less bed for someone else. The man was admitted, but only after he assured everyone that this time he was serious and committed.

While in the clinic, the patients' home refrigerators and pantries are no longer accessible, which is one reason prospective patients want so desperately to be admitted. They need a physical obstacle between themselves and food as well as some protection from themselves. However, one patient made orders for Chinese takeout through his cell phone for delivery to the clinic late at night, only to gain weight while there and, finally, to be expelled for the last time. The clinic's administrator justifies such expulsions on the grounds that offending patients are "taking a spot away from someone else," which "isn't fair." Brookhaven's resources are scarce, and the clinic has far more applicants than it can accommodate.

I can't help it, but the economist comes out in me: If the clinic faces a shortage of beds, why doesn't it raise its price? You say that is unfair? Suppose at a higher price it could increase the number of patients it serves as it causes applicants to self-select. A higher price can send the message, "Only the *truly* serious applicants need apply." The clinic could waste fewer resources with those who are playing weight games. At the moment, with constrained prices the clinic is simply encouraging repeat offenders. But that's another story.

## It's in My Genes

The *Brookhaven* documentary is a powerful visual statement—and reality check—about modern American society and the personal problems very heavy people confront. *Brookhaven* puts a human face on the mountains of mind-numbing statistics that swirl around discussions of the country's growing weight and weight-related medical problems.

Granted, the documentary, taken by itself, paints a greatly distorted picture of the country's (and world's) weight problems; it focuses on the massively and morbidly obese, perhaps largely for cinematic effect, rather than being an even-handed assessment of the weight gain phenomenon. Nevertheless, the film reminds us of the many personal tragedies that lie underneath some weight statistics—and of the economic ramifications—even when the statistics themselves offer, at times, a distorted picture. Despite being unemployed and unemployable, the Brookhaven patients had somehow literally eaten their way to death's doorstep. They had faced in real time all the costs of weight gain, yet they continued to eat and increase the costs they incurred. Lots of Americans are right now, as you read, eating their way to the same doorstep.

What forces were at work that prevented the patients, before entering the clinic, from making the careful cost-benefit calculations economists assume people make? Surely they had enablers (family members, friends, or government). There is no way that people can get that obese relying on their own resources, which are bound to dwindle as they become ever less mobile. And can the Brookhaven patients' problems—and those of all overweight and obese people—really be chalked up, totally or almost totally, to “genetics” or “addiction” (with addictions having likely ties to genetics), as so many observers are inclined to claim or intimate? Genes surely frame our physiological abilities and maybe psychological inclinations, and there are good evolutionary reasons for thinking that people have a propensity or predisposition, in varying degrees, to eat and overeat fattening foods (as we will see in the next chapter), as well as to gain weight from however much they eat. Clearly, as evident with the behavior of smokers, drug addicts, and alcoholics, addiction (again, in varying degrees) is a part of the human condition, if not checked by deliberate decisions to override compulsion (see Chap. 6).

But clearly not all people cede to the temptation to pack in the food and drink and pack on the pounds, at least not nearly to the extent that the Brookhaven patients have done. People vary on all bodily and physiological dimensions—hair and eye color, skin tone, height, and intelligence. There is every reason to believe that people also vary in their genetic *predisposition* or *proclivity* to eat and tendency to add pounds, given the amount eaten, either because of their genes or some derivative inclination toward addiction. Perhaps the patients at Brookhaven reflect the subsample of people who, according to research, have genetic abnormalities that leave them uncontrollably addicted to food.<sup>1</sup> For them, “my genes made me do it” or “I suffer from a food addiction” could be a plausible and reasonable claim that completes their stories—maybe.

Genes clearly play a role in how heavy people are. One study found that twins raised apart are closer in weight than siblings raised together.<sup>2</sup> Other studies have found a higher correlation in the body mass indexes (or just BMIs) of identical twins than fraternal twins,<sup>3</sup> and a “strong relationship” between the weight of adoptees and their biological parents.<sup>4</sup> Finally, other researchers are confident that genes are responsible for as much as two-thirds, if not three-quarters (depending on researchers’ assessments) of the weight variation across adults.<sup>5</sup>

But can genetics and addiction be the whole story, even for those admitted to Brookhaven (and similar obesity clinics)? Not likely by a long shot, in all studies of twins, even “identical” twins, the correlation in the twins’ weights is not perfect, which is to say there are twins with significantly different weights, partially because “identical” twins are never perfectly identical at the genetic level (they are bound to receive different numbers and forms of their parents’ genes) and they always face some (at times, albeit minor) differences in their local environments. Moreover, research does show that people have some self-control over food consumption, although they obviously vary in the extent of their self-control and are more likely to choose “tasty” over “healthy” foods as their decisions become more immediate.<sup>6</sup> And, really, self-control can be developed through the acquisition of skills that enhance self-control; people can influence their destinies on their weights or anything else by working hard at developing self-control skills and then working hard on activating whatever skills they have developed.

Finally, genes can’t be the whole story for people’s obesity simply because virtually all serious health problems can be traced to multiple causes. And if we would combine all of the various genetic explanations for excess weight with all the various environmental explanations, the total effect of all the causes identified by various researchers could be 200 and 300 percent of the observed variation across people and groups.

Genetics alone certainly can’t explain why the obesity rates vary substantially across countries and cultures and why there are so many more extremely obese people today than a century ago, or even two decades ago. The spread of extreme obesity, or just obesity, among the masses at all income levels is a distinctly modern problem. Genes change, but only very slowly over hundreds of years, if not millennia, not over a decade or two, or even five decades. The modern rise in the count of grossly obese people has surely grown too fast to justify slow-moving genetic changes as a plausible explanation for a modern phenomenon.<sup>7</sup> Moreover, there is a good chance that some of the similarities in weights of twins and siblings and parents and their children attributable to genes reflect the common economic and cultural forces the subjects have faced, even when reared apart, as we shall see from other studies in this chapter.

“Food addiction” may explain weight gain for some—even many—people, but it, too, is surely only a partial explanation. After all, people do retain at least some residual control over what and how much they put in their mouths, and we don’t need scientific studies to prove it. All we need to do is walk along the row of treadmills at gyms that dot the country or consider all the talk about the relative value of different diets that people adopt with more or less dedication. And through

exercising that residual control, people can slow or stop their trek toward Brookhaven's doorstep. For that matter, if people didn't have some residual control over how much they weigh, Brookhaven and many other weight clinics and diet schemes would serve no purpose. For that matter, all weight research would be largely for naught, a waste of resources.

Modern genetic research has begun to support this view, that our residual control over our lives is real, although the control obviously varies across people. British geneticists studied 20,430 men and women to assess people's genetic predisposition toward weight gain, as determined by the number of combinations (or "variants") of identified genes they had inherited and that are associated with obesity.<sup>8</sup> The greater the number of obesity-related variants that a person has, the higher is his risk of becoming obese. The researchers also found, however, that exercise could significantly counter the subjects' predisposition toward obesity. Indeed, one hour of daily exercise can reduce people's risk of becoming obese by an amazing 60 percent, or so the study found.<sup>9</sup>

In reaction to the British study's findings, one obesity researcher made a point that can easily be overlooked in findings of how gene variants affect obesity risk: Our DNA doesn't determine our destiny, at least not fully, a conclusion that might seem imminently plausible from self-inspection. The geneticist added, "The message from this [study] is, if you have a genetic predisposition for some things, you can change your lifestyle and contribute to better health," which, simply put, means that, no matter the strength of our predispositions, most of us have some choice in how heavy we become. Many, many people can say what I can say: I am not as obese as close relatives have been because I chose to avoid their fate by working hard at keeping my weight down. Indeed, their weight fate has motivated me over the years. Real personal *choices* (those which are not determined by externally measurable conditions) are not something science can deal with well, if at all, given that they are subjective and emerge from people imposing their will on their life outcomes.

Instead of always leaning on the refrain, "my genes (or the Devil) made me do it," might there not be powerful unrecognized economic and social forces at work that have reinforced people's genetic tendency to eat excessively and that modify their ability to choose outcomes? Also, might not widespread acceptance of the genetic explanation for weight gain contribute marginally to more of the same, because the social costs of weight gain would then be moderated? We will return to these questions in Chap. 3.

## Conspicuous Consumption

The Brookhaven's patients are, figuratively and literally, the tip of a very large weight-growth iceberg. To see in real time the dimensions of people's weight problems, or to imagine where the Brookhaven patients might have been on their paths several years before they went on-camera, take a seat near any shopping mall food court. Watch the shoppers who belly up to the fast-food counters. You don't

have to be a demographer, statistician, nutritionist, or economist to get the picture. Any casual count of passersby practically anywhere in the country will surely include people with underarms flapping and butts stretching the limits of spandex.

Even around my home in unusually weight-conscious Southern California (where, because of the year-round temperate climate, excess weight can't be easily hidden under heavy clothes and coats), seriously overweight and obese people are everywhere, some who could be shadows of the Brookhaven patients. In my informal count, at least one out of every eight people who passed my bench in a local mall was clearly obese, not just substantially overweight (as I casually and subjectively define "obese" and "overweight"). The people I counted as obese had stomachs that stretched out like bloated beach balls, if they did not hang like aprons of fat to their thighs under their clothes.

In a mall in Winston-Salem, North Carolina, my percentage estimate of obese shoppers was double that observed in Southern California—and the obese shoppers in Winston-Salem were, as a group, more obese than those I counted in Southern California. If national statistics on the distribution of obese people across the states are to be believed (with, I warn, a measure of skepticism, for reasons to be given), my obesity percentages would have been even higher in malls in Dallas, St. Louis, Indianapolis, not to mention Jackson, Mississippi, the official epicenter of the country's obesity problems. I didn't try to count the merely overweight in Southern California and North Carolina; there were too many of them and much excess weight can be obscured under clothing. The count of normal weight and thin people would have been even lower than any combined count of overweight and obese people (as the data series to be reviewed show).

Amazingly enough, Americans' extreme girth and obesity clinics such as Brookhaven could not have been imagined a century ago, and surely not two centuries ago. Few people in those long bygone eras would have needed Brookhaven-type services, or could have afforded them. Indeed, if weight-related clinics had existed, the likelihood is that they would have been for the malnourished and the outright starving. Back then, the "middle class" (if not the lower portion of the "upper income" class) would have met the modern income standard for the "poverty class." Weight problems were largely the province of the top rungs of the upper-income class who sometimes flaunted their wealth through their added girths, which made excess weight a form of "conspicuous consumption," literally.<sup>10</sup> Lower income classes were trim, for the most part, because they could not afford the luxury of added fatty foods, and they countered any weight gain through the hard physical work required to make a living or even keep house.

## **A Dated Meaning for a "Human Wonder"**

Today, the distribution of the country's weight problems across income classes has reversed, as excess weight problems are disproportionately concentrated among the poor. I saw that point clearly when I took a seat on a ledge outside a Goodwill store

to count obese people. Granted, not all people who shop at Goodwill are poor; many are simply frugal people of all income levels who have the time to troll everywhere for good deals. Nevertheless, nearly four in ten shoppers who came out of the Goodwill store were demonstrably obese, even more obese, as a rule, than the obese shoppers in the Winston-Salem mall.

Evolutionary biologists Michael Power and Jay Schulkin suggest that obese people might not have been unknown tens of thousands of years ago (maybe even before *Homo sapiens* had totally forgone their hunter-gatherer ways and settled down to farm), as possibly evident in the four-and-a-half-inch sculpture of the very grossly obese Venus of Willendorf that has been dated to 20,000–25,000 BCE.<sup>11</sup> (For various pictures of the Venus of Willendorf sculpture, go to Google Images and search for her name.) With her grossly protruding stomach all around, humongous breasts falling over her stomach, and extra thick thighs, Venus of Willendorf's body shape rivals those of the Brookhaven patients. Then again, Venus might have been simply the sculptor's fantasy of an idealized female body, as thinness could not then have been uncommon, at least according to scholarly speculation.<sup>12</sup>

Power and Schulkin report that, because of their considerable rarity, obese people in Europe in the seventeenth and eighteenth centuries often earned their livelihoods exhibiting themselves in sideshows along with other human oddities, including the “human skeleton” man (who in one sideshow was supposedly married to the sideshow's fat woman, all for publicity).<sup>13</sup> At the turn of the nineteenth century, Daniel Lambert, who was five feet eleven, was widely recognized for being the “the fattest man in England,” which indeed he may have been. At his death in 1809, he weighed 739 pounds (with a waist of 112 inches). But Lambert was not spurned as extremely obese people often are today. He was heralded and, supposedly, widely admired as a “human wonder” and “prodigy in nature” for his unusually massive size, and perhaps because he was able to conduct business in spite of his size. To this day, many pubs throughout England remain named in his honor, according to historians of fat.<sup>14</sup> (For portraits of Daniel Lambert, search Google Images.)

## The Malthusian Weight Trap of Old

At the turn of the nineteenth century, those who believed the Reverend Thomas Robert Malthus' *Essay on the Principles of Population* would not have anticipated our modern-day distribution of weight problems across the income classes.<sup>15</sup> The reverend's population theory, grounded in the economic thinking of his day, predicted that workers would be mired in subsistence living that would check population growth (the “Malthusian Trap”). Granted, there were circumstances (war, disease, starvation) that, at times, limited population and decreased the labor supply. The drop in available labor would cause worker wages to rise and,

in turn, cause a spurt in a country's population for two reasons: First, people's passion for sex was more or less immutable (except, perhaps, through delaying marriage; Malthus did not marry until 36). Second, higher wages could support larger families. However, a labor supply increase would naturally follow the population growth, and competitive market forces would drive wages back down to approximately subsistence level for the working class. The implication of the Malthusian Trap for our purposes is clear: The same economic forces that held the population numbers in check would also control workers' weights.

"Portly" once meant stately and was taken as a compliment, a sign of social and economic standing. Now, it's an insult, even though it describes a sizable segment of the population.

True, members of the landed gentry, the nobility, and the merchant classes might lower their workers' wages to gain some economic advantage during population growth spurts, which means the higher-income classes could gain weight because of their sedentary lifestyles and the time and incomes they had to buy food produced by cheap labor. Power and Schulkin point out that "portly" today usually implies a negative characterization, as in "stout," "heavy," or "rotund," but such was not always the case. As late as the late nineteenth century, portly meant "stately" or "imposing":

"A portly gentleman was a prosperous gentleman, a person who had succeeded in life. 'Portly' was a compliment when obesity was not common. It's not very likely to be taken as a compliment today."<sup>16</sup> No doubt more like fighting words today.

Population-growth and weight-gain records indicate that Malthus proved to be a good historian, but a poor economic forecaster (although he saw some slight hope for economic improvement over time through the development of institutions, namely property rights and free markets<sup>17</sup>). In the late 1600s, ordinary people enjoyed precious little economic progress and real worker wages remained more or less flat (with only rare and temporary increases in the standard of living). Indeed, until the advent of the Industrial Revolution, poverty was a wrenching, debilitating, widespread, and abiding condition on both sides of the Atlantic and practically everywhere else. Borderline starvation was, in short, the norm for the masses.<sup>18</sup>

But once the Industrial Revolution cranked up to full speed in the mid-nineteenth century, the world's population began to mount, totally shredding Malthus' population predictions, as well as much of the underlying economics driving his population theory (although Karl Marx and Charles Darwin looked to Malthus for inspiration for their own theories). In 1800, the world's population was under one billion, maybe only 800 million. By 1850, it had reached one billion, and by 1900, it had doubled to two billion. All told, per capita income increased close to six-fold during the nineteenth century (as best income can be measured) and increased another eight-fold during the twentieth.<sup>19</sup>

The U.S. population has grown more dramatically than the world's population, attributable in no small way to immigration as well as to decreased infant mortality and increased longevity overall. In 1790, the first census set the country's



population at just under four million in the thirteen original states, for a population density of 4.5 persons per square mile. By 1900, the land area of the country had increased three times over, but the population had grown twenty-five times, for a total count of 76 million. In 2000, the U.S. population had nearly quadrupled to 281 million, and a decade later (mid-2010), it was estimated at 310 million (with maybe ten to twelve million more in uncounted illegal aliens) for a population density of eighty-one per square mile. An estimated one person is added to the U.S. population every eleven seconds, net of births and deaths.<sup>20</sup> So much for starvation, pestilence, and wars (and the twentieth century recorded some of the deadliest wars in history) serving to curb population growth.

Contrary to the pessimists of all generations of the last two centuries concerned about the impact of population growth, progress has been substantial in virtually all areas, not the least of which have been health care, transportation, communications, household amenities (plumbing), food, working conditions, consumer goods (and the list could go on at some length, all of which other authors and I have documented extensively elsewhere<sup>21</sup>). Perhaps the best growing evidence of the substantial, accumulative economic, social, and medical progress that humanity has realized can be found in the country’s (and world’s) weight gain, to the point of serious obesity issues with which this book is concerned. Put another way, had we not experienced the progress we have, this book, and all the obesity research, would not likely have been undertaken.

## The Rise of “Full-Figured” Women

As people’s incomes rose in the 1800s, workers in America and the industrialized world gained some weight and height, but not as much as might be imagined, considering the six-fold (or more) growth in real per capita income. Weight gain during the 1800s was checked for a very good reason: Worker productivity and incomes increased not only because of the much heralded application of technology to agriculture and manufacturing, but also because people were working longer hours and more days per year as most of the expanding factory work did not have to follow the rhythm of the weather (as did farming). No doubt, longer work days helped to keep workers’ weights under some control.

In the late 1700s, before the advent of the Industrial Revolution, Gregory Clark estimates that the average unskilled worker in England probably worked no longer than did hunter-gatherers of 10,000 years before. By 1800, the workday (in London and elsewhere) had risen to ten to eleven hours a day for 300 days a year, for a total of at least 3,000 hours (at least 50 percent greater than the average number of hours an American works today). Evidence also points to work in 1800 being less diverse and more intense than that of earlier epochs. Throughout the 1800s, work in factories and on the farm remained arduous. Workers got more income to buy more food, but many (not all) of them also expended a lot of calories at work.<sup>22</sup>

Surprisingly, solid, carefully collected statistics on Americans' body weights go back only fifty years, no doubt partially because weight was not a prominent, widespread debilitating and life-threatening problem in bygone eras. The evidence on weight gain prior to 1960 is spotty at best, often limited to specific groups of people (school cohorts and military recruits, for example).

In the last half of the nineteenth century, Americans up and down the income ladder may have gained some weight as their incomes rose, but, again, the evidence is not hard data developed from carefully administered surveys of large segments of the American population. The best (but still not very good) evidence of people's weight gains in general comes from historical commentaries and the photographs and sketches of people in clothing advertisements. In the late 1800s, advertisements depicted women who were decidedly plumper (perhaps with dress sizes of 12 or 14) than they are in today's advertisements (often with dress sizes of 4 or lower). Consider photographs of a famous actresses from the late 1800s (any number of which can be found through Google Images) versus photographs of women in contemporary ads in women's magazines.

But of course, images in advertisements are typically the society's ideal rather than the reality. Historians and evolutionary biologists suggest that images of "full-figured" women were prevalent in advertisements a century or more ago because they reflected a different view of female beauty than that today. The extra weight, especially in the hips, may have indicated fertility and the capacity for a woman to handle the rigors of multiple childbirths at a time when birthing was life threatening for both mother and baby and when couples had "excess" children because of the likelihood that several of their babies would die before reaching adulthood, or even childhood.<sup>23</sup> That would also suggest that twentieth century advancements in medical (especially birthing) knowledge and technology might have contributed to the slimming of women in contemporary advertisements (if not in real life). That is, women with slimmer builds might be better able to deal with the demands of pregnancy today than in past centuries.

According to historian Peter Stearns, author of *Fat History*, people's added pounds grew in prominence in the 1890s, leading to increased public discussions of the health problems (for example, heart disease) associated with excess weight and poor diets.<sup>24</sup> Again, solid nationwide data are unavailable, but Stearns points to evidence among military cadets. In the 1870s, West Point Military Academy cadets who were five feet seven inches tall had an average weight of 127 pounds, less than women of equal height today. The average weight among fifteen- to twenty-year-olds attending the Citadel Military Academy was fairly constant before the 1890s (perhaps because of admissions standards), then moved down somewhat in the 1890s, only to return to its previous high level after 1900. By the 1920s, the Citadel's average weight was 10 percent above its level of 1900.<sup>25</sup>

Stearns concludes, mainly from insurance company records, that the average weight gain of Americans of given heights between 1920 and 1940 was about two pounds for the two decades combined. Then, Americans doubled the pace of weight gain with an increase in the average weight of Americans by

two pounds a decade between 1940 and 1980. Between 1985 and 1995, Americans, on average, gained more weight than they did in the six decades between 1920 and 1980.<sup>26</sup>

## The Growth in Turkeys

The National Center for Health Statistics (a division of the Centers for Disease Control and Prevention, or just CDC, operating under the U.S. Department of Health and Human and Services) got serious about computing a variety of weight statistics for individual states and the country as a whole in 1960, in response to two factors:

- First, there had been a modest acceleration in Americans’ weight gain over recent decades.
- Second, a growing number of medical studies connected excess weight to an expanding array of health problems that had been piling up since the turn of the century.<sup>27</sup>

Little did the researchers at the NCHS realize back then that they would document an explosion in Americans’ weights over the next five decades. For those readers who like numbers, the details of average weights of men and women twenty to seventy-four years of age, as well as their weights combined, are included in the endnotes and on a Web site for the book in a “Weight Resource Center,” which includes a library of charts and tables for all budding “number-philes.”

Basically, American men ages twenty to seventy-four had an average weight of just over 166 pounds in the very early 1960s, and then gained seven pounds or so over the next decade, held more or less constant in the 1970s, and then began a relentless rise through the 1980s, 1990s, and 2000s, gaining on average over twenty-eight pounds between 1960 and 2006 (the latest available year for weight data at this writing).<sup>28</sup> American women followed the men’s weight-gain pattern very closely, but gained about four pounds less, or between twenty-four and twenty-five pounds on average.

During the forty-six year period, the average weight of American men and women increased

The human body has evolved a highly efficient system for storing energy in “adipose tissues” in the form we call fat. The storage system is so efficient that losing fat can be hard and long work. For example, if a 154-pound, thirty-year-old woman eats a standard-size blueberry muffin (which typically has only 360 calories), the woman would have to spend the following minutes at various activities to burn off the calories in the muffin:

o Lawn mowing	66
o Gardening	66
o Weight lifting	115
o Bicycling (easy pace)	77
o Jogging (5 mph)	33
o Folding Laundry	230

As reported by Cloud (2009, pp. 44–45)

just over 17 percent. In the early 1960s, men weighed an average twenty-six pounds more than women. By 2003–2006, men outweighed women by an average of thirty pounds. The average weight gain for adult Americans of both sexes during the 1960–2006 period was more than twenty-six pounds, equal to about the largest ready-to-cook Thanksgiving turkey you can buy, which they carry around with them spread in varying manners on their butts, in their jowls, and around their waistlines (although some of the weight gain was due to a minor increase in the average height of both sexes).

## The BMI Calculator

American's added poundage during the past half-century can be misleading in appraising how much fatter people have become, and it is the fat, not so much the pounds, that is the central health concern. Part of the weight gain can be attributed to the fact that Americans have become on average about an inch taller since 1960.

Health and obesity experts have sought to correct for height differences among people and height changes over time with the Body Mass Index (BMI), a surprisingly old formula developed by Belgium statistician Adolphe Quetelet, who lived between 1796 and 1874. The official calculation might be daunting for non-mathematicians (which is why I have tucked the formula in an endnote<sup>29</sup>), but don't worry: There are many BMI calculators on the Internet into which you can plug your weight and height and compute your BMI with the click of a mouse. Consider using the BMI calculator provided by the CDC (see the link in the endnote or just Google "BMI calculator").<sup>30</sup> I recommend you calculate your own BMI so that you will understand points we make on the BMI's usefulness and limitations in this chapter and the rest of the book.

Almost all weight researchers in universities and health organizations use the BMI to assess the growth in people's excess weight primarily for a good old-fashioned economic reason: It is an inexpensive survey method (compared with all other direct measures of body fat) and statistic to compute. Besides, many health researchers feel confident that the BMI for large populations under study (not at the individual level) correlates tolerably well (but not perfectly, of course) with direct measures of body fat.<sup>31</sup> The World Health Organization has agreed on these BMI classifications, which practically everyone in the weight field employs. If your BMI is below 18.5, you are underweight. If your BMI is between 18.5 and 24.9, you have normal weight; between 25 and 29.9, you are overweight. If your BMI is 30 or above, you are obese; 40 and above, morbidly obese.<sup>32</sup> Some obesity researchers and practitioners add a higher category, "super obese," for those with a BMI of 50 and above (in which practically all Brookhaven patients would fit). (See the nearby box for additional combinations of height and weight that can make you "overweight" and "obese.")

To illustrate how the BMI calculator and classification system works, at five feet nine (the average height of an American male in the early 2000s) and 160 pounds, a person’s BMI would be 22.9, or the “normal” (or healthy) “weight” classification. At 169 pounds, the person’s BMI would be 25, classified as minimally “overweight.” At 203 pounds and a BMI of 30, the same person would be minimally “obese.” At 271 pounds, the person would have a BMI of 40 and would be “morbidly obese,” suggesting his or her weight could lead to a variety of diseases and could be life threatening. One of the Brookhaven patients, who weighed 730 pounds and stood five feet eleven inches, would have a BMI of 101.8! And, no doubt, he was a high-probability walking heart attack in slow motion.

Judging whether you are “overweight” (BMI > 24.9) or “obese” (BMI > 29.9):

If your height is ...	You are “overweight” if you weigh more than ... (pounds)	You are “obese” if you weigh more than ... (pounds)
5’2”	136	163
5’6”	154	185
5’10”	174	208
6’2”	194	233
6’6”	215	259

As determined by the CDC’s BMI calculator.

**The Obesity “Epidemic”**

BMI data prior to 1960 are necessarily limited. Nevertheless, the available data series, as rough as it is, charts a growth in American weight that tends to validate the proposition that as a population, we have gotten fatter, and so much so to warrant many health-care experts to talk about an “obesity epidemic.”

*American Weight Before the Twentieth Century*

Health economist Lorens Helmchen has found a means of measuring some Americans’ average BMIs before 1900.<sup>33</sup> He drew a random sample of 15,000 or so former white Union soldiers who served during the Civil War (1961–1965) from government records. As it happened, to obtain veterans benefits, the former Civil War soldiers were weighed and their heights were measured during their examinations. They also gave other personal data, such as place of birth, birth date, age, disabilities, occupations, etc. on their applications. In other words, the examinations gave Helmchen the data he needed to determine the BMIs of former soldiers at different ages during the late 1800s. He found that the percentage of former soldiers who would have been classified as obese (BMI of 30 or above) for the period 1890–1894 ranged from a meager 3.7 percent for soldiers age forty to forty-nine to 2.9 percent for those age sixty to sixty-nine.<sup>34</sup>

Obese former Civil War veterans by age group averaged 3 percent. That's a small percentage, and is remarkably small, when compared with the average percentage for the same age groups of American white men with BMIs 30 and over in a 1988–1994 national survey (the last years of data available when Helmchen completed his study). The average percentage of white males with BMIs 30 and over was 23.2—*nearly 8 times the average in 1880–1890*. Helmchen also found steady growth in the obesity rate from under 2 percent in 1880–1884 to slightly over 5 percent in 1905–1909. Moreover, he found that the soldiers between fifty and fifty-nine had an average obesity rate in 1905–1909 that was three times the age group's average obesity rate twenty-five years earlier, which means that they had an average annual rate of increase in their obesity rate of 4.5 percent during those 25 years.

The average obesity rate for white men between 1976–1980 and 1988–1994 was several-fold higher than for the former Civil War soldiers. However, the annual rate of increase in the obesity rate between 1976–1980 and 1988–1994 rose at an annual rate of only 4 percent, a growth rate 12 percent lower than for the former Civil War soldiers.<sup>35</sup> This finding led Helmchen to conclude, “[I]n *relative* terms, then, obesity was spreading at least as fast at the beginning of the twentieth century as at the end of the twentieth century.”<sup>36</sup> The finding also suggests that economic and other forces behind the modern so-called obesity “epidemic” were set in motion long ago. Those forces may have grown stronger in our recent past, but they have their origins in something other than “modern times” and “fast food,” two often-cited culprits of the modern obesity epidemic.

Indeed, in a follow-up study, covering the growth of obesity from the late-1800s to the late-1990s, Helmchen and Max Henderson confirmed Helmchen's earlier finding that the annual rate of increase in the obesity rate (as assessed by the BMI) among men sped up in the late 1800s and early-1900s, only to drop by half from the early-1900s through the mid-1970s. Then, from the mid-1970s, the annual rate of increase in the obesity rate rebounded to its growth rate of the late-1800s. In the 1990s, the annual rate of growth of the obesity rate accelerated, nearly doubling.<sup>37</sup>

### ***American Weight Gain Since 1960***

The roots of Americans' weight problems are deep, and the problem accelerated twenty to thirty years ago, evidence indicates. In fact, the country entered the 1960s with a weight problem that has only worsened, according to casual observation and basic obesity data, in percentages of the population, gathered at intervals by the CDC (see the endnote for the data details<sup>38</sup>). In 1960, 45 percent of the population was overweight, a proportion that increased to two-thirds by the time the last survey was undertaken in 2003–2006, and the proportion of the population who were obese increased from 13 percent to one third. More men than women were overweight in all survey periods. However, women have had higher obesity rates than men, although men have been catching up with women over the decades. At the start of the 1960s, the obesity rate for women was 16 percent, substantially higher than

that of men at 11 percent. But by the last survey undertaken in the early 2000s, men's obesity rate was 33 percent and women's 35 percent.

Between the surveys in 1960–1962 and 2003–2006, the percentage of overweight Americans rose nearly 50 percent, and the percentage of obese Americans grew far more rapidly, by two and a half times. Most of this astonishing increase occurred after 1980. The growth rate in overweight Americans decelerated in the late 1990s and 2000s.<sup>39</sup> However, the increase in the obesity rates was slight in surveys done between 2003–2004 and 2005–2006.<sup>40</sup> The annual growth rate was much higher for the obese category than the overweight category, but both categories followed the same pattern.<sup>41</sup> That is, during the 1960–2006 period, the whole of the distribution of overweight and obese Americans along the BMI spectrum shifted substantially rightward, meaning Americans became heavier with the heavier categories growing relatively.<sup>42</sup>

## Packing on the Pounds

Casual observation and the available data are stark and undisputed: Americans, taken as a whole, have been packing on the pounds. Also, the weight gains cut across ethnic groups and income classes. Most notably, African-American women had in the 2003–2006 survey an astounding obesity rate of more than 54 percent, more than the obesity rate of African American men (36 percent), Mexican females (43 percent), and white females (33 percent). Maybe more bothersome is that only 18 percent of African-American females in the 2003–2006 survey had healthy weights, half the percentage in the 1976–1980 survey.

Among the twenty-one states reporting obesity rates in 1985, thirteen states had rates of less than 10 percent. The remaining reporting states had obesity rates between 10 and 20 percent. (Twenty-nine states did not participate in the survey in 1985.) None of the reporting states had an obesity rate of more than 20 percent in 1985.

By 1995, all states reported obesity rates of between 10 and 20 percent, but the spread of obesity continued apace. By 2009, only one state had an obesity rate of less than 20 percent (Colorado). Fifteen states had obesity rates between 20 and 24.9 percent, twenty-five had rates between 25 and 29.9 percent, while nine had rates greater than 30 percent (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Missouri, Oklahoma, Tennessee, and West Virginia). The CDC uses a map of the United States (available at the CDC Web site in the form of a slide show) to show in vivid color the spread of obesity through the states from 1990 (when most of the country is some shade of blue, meaning less than 15 percent of the state population is obese) until 2008 (when most of the country is some shade of red, meaning 25 percent or more of the state population is obese).<sup>43</sup>

In 2009, most of the states with high obesity rates were in the Midwest and South, and states with the lowest rates were in the West. Mississippi was the fattest state in the country with an obesity rate of close to 35 percent; the thinnest state was

Colorado with 19 percent of its population obese. Then, in the most recent survey, nine states had obesity rates of more than 30 percent. Clearly, the South and Midwest are leading the nation in the growth in obesity, but the increase seems to be spreading in all directions.<sup>44</sup>

Children and teenagers have also packed on the pounds over the decades, although the obesity rates for children and teenagers are lower than for adults, understandably (since weight gain is age-path dependent, or weight grows with age).<sup>45</sup> Obesity also has spread considerably among children, although children and teens surveyed had lower obesity rates than adults.<sup>46</sup> In recent years the increase in obesity among children and teens has increased two to three-fold, a somewhat faster pace than for adults.<sup>47</sup> The growth in childhood obesity is troublesome for two major reasons.

Fat women tend to beget fat newborns who tend to become fat children, teenagers, and adults. Fat people tend to add to their excess weights when they flock with fat friends. Weight appears to be “socially contagious,” and because of that attribute has been construed as a “disease” in search of a policy remedy.

First, obese children tend to turn into even more obese adults. According to one study of nearly 9,000 participants who were twelve to twenty-one years old at the start of the weight study and who were followed for thirteen years, those who were obese in their youth at the start of the study were seven times more likely to be “severely obese” (or have a BMI of 40 or above, which means they were carrying 8 to 100 pounds of excess weight) in their late twenties and early thirties than were their normal-weight and overweight counterparts in the study. Fifty-one percent of obese young females and 37 percent of obese young males were severely obese thirteen years later.<sup>48</sup>

Second, obese children have a higher probability of encountering in childhood and adulthood major health problems, not the least of which is high risk factors (cholesterol levels, high blood pressure, and abnormal glucose tolerance) for cardiovascular disease. In a survey of children and teenagers five to seventeen years old, 70 percent had at least one of the risk factors and 39 percent had two. The children and teens also had an elevated risk of developing asthma, fatty degeneration of the liver, sleep apnea, type 2 diabetes, and kidney failure.<sup>49</sup>

Among adolescents, some differences can be seen across various ethnic groups. Obesity rates for whites, blacks, and Mexican-Americans have grown significantly during the past two decades, but more so for girls than boys, and more for black and Mexican-American girls than white girls. Fewer than 15 percent of white girls were obese in 2003–2006, while the obesity rates for black and Mexican-American girls were 20 percent and 28 percent, respectively.<sup>50</sup>

For readers who relish fat statistics, an array of additional facts on fat, or “fatoids,” is included in the “Perspective” section at the end of this chapter.



## Health Economics of Fat

Anyone who has “people watched” in the malls and on the main streets of the country’s cities and towns—as I have done—has to conclude that many Americans are literally eating themselves to death on the installment plan, one oversized meal after another, and with little offsetting movement. Even casual observation reveals the serious side effects of excess weight. Many overweight people have obvious difficulty walking and tire readily, which limits their daily exercise and compounds the negative health effects of overeating. Numerous research studies support the casual evidence, with a variety of researchers making the following claims about weight gains and its effects:

- Excess weight and obesity has been associated with (if not causally linked to) as many as thirty-five diseases, including hypertension; heart disease; cancers of the breast, colon, and prostate; type-2 diabetes; osteoarthritis; gallbladder disease and incontinence, according to the National Heart, Lung, and Blood Institute.<sup>51</sup>
- People with BMIs of 25 or higher experience an increased incidence of heart disease, including heart attacks, congestive heart failure, and angina.<sup>52</sup>
- Obese people are twice as likely as healthy-weight people to have high blood pressure.<sup>53</sup>
- The gain of eleven to eighteen pounds can double a person’s chance of developing type-2 diabetes, with four-fifths of type-2 diabetics being overweight.<sup>54</sup>
- A gain of two pounds above the normal weight increases the chance of a person developing arthritis by 7–13 percent.<sup>55</sup>
- Obesity is associated with a higher incidence of asthma and sleep apnea.<sup>56</sup>
- Obese people’s heart problems can be caused not just by the fat they carry but also more directly by their high sugar diets, which gives rise to added fat. Researchers at Emory University found in a study of more than 6,000 American adults published in 2010 that those subjects who got a quarter of their daily calories from sugar added to their meals and drinks were more than three times more likely to have low levels of “good cholesterol” in their blood tests than those subjects who got less than 5 percent of their calories by added sugars. At the time of the study, the researchers found that adults studied got about 16 percent of their daily calories through added sugars, up from 11 percent in the late 1970s. In effect, excess sugar is debilitating to the heart independent of the fat that so much sugar becomes.<sup>57</sup>
- Obesity also can lead to complications from surgery and can increase birth defects, as well as the threat of death to pregnant mothers and their babies. In addition, high blood pressure among obese mothers contributes to mothers’ pregnancy problems and leads to an elevated rate of Cesarean deliveries.<sup>58</sup>
- Not surprisingly, obese people have a greater incidence of low self-esteem and clinical depression.<sup>59</sup> This is understandable because, according to research, overweight and obese children face “negative attitudes” from their schoolmates and playmates (who view obese cohorts as “mean,” “stupid,” and “lazy”) and

have fewer friends. Obese adults face more difficulty in getting jobs, possibly because of the health insurance costs obese people impose on employers, but also possibly because of the low self-perceptions that obese people developed from childhood.<sup>60</sup>

- In a study of more than 61,000 men and women ages fifty to seventy-one, researchers found that those subjects who were overweight (had BMIs between 25 and 29.9) had a 20–40 percent greater chance of dying within the follow-up decade than normal weight subjects. Those who were obese (had BMIs higher than 30) were three times more likely to die within the decade than all subjects who had BMIs lower than 30.<sup>61</sup>
- A study from the late 1990s found that, overall, obese people have a 10–50 percent greater chance of dying during any given age category from all causes than healthy-weight people, according to research.<sup>62</sup> Indeed, excess weight and obesity together account for more than 400,000 American deaths each year, second only to smoking. Obesity alone has been linked to 112,000 American deaths a year.<sup>63</sup> Moreover, overweight and obese people can reduce their chances of death from heart disease and diabetes by reducing their weight by a few percentage points.<sup>64</sup>
- A large team of medical researchers reported in late 2010 in the *New England Journal of Medicine* on the findings of a study in which 570,000 white men and women, ages nineteen to eighty-four who had never smoked, were followed for an average of ten years. They found that for every five BMI points, the subjects' chance of dying increased an average of 31 percent. More to the point,
  - Women who had BMIs in the overweight range, 25–29.9, had a 13 percent greater risk of dying than women in the normal-weight range, 18.5–24.9.
  - Women with BMIs between 30 and 34.9 had a 44 percent greater risk of dying.
  - Women with BMIs between 35 and 39.9 had an 88 percent greater chance of dying.
  - Women with BMIs above 40 were two-and-a-half times more likely to die than women in the normal-weight range.
  - Men's risks of dying rose in parallel with those of women as their BMIs increased.<sup>65</sup>
- The total medical costs of treating diseases related to obesity (not overweight) and other afflictions, as estimated by one set of researchers, in 2008 was \$149 billion (in 2010 dollars), under 10 percent of all medical spending. That year the real (inflation-adjusted) health-care expenditures for obesity, half of which was covered by Medicaid and Medicare, were 50 percent greater than the real health-care expenditures for the obese in 1998. However, when another set of researchers more carefully evaluated the health-care costs directly affected by obesity, they came up with a significantly higher total annual cost figure, computed for 2005 at \$188 billion (in 2010 dollars), which was nearly 17 percent of all health-care expenditures in the country in 2005.<sup>66</sup>

- The growth in health-care expenditures between 1998 and 2008 on obesity-related health problems was attributable more to a growth in health-care expenditures per obese person rather than to the growth in the number of obese people. The count of obese Americans rose 37 percent between 1998 and 2006. On average, in 2006, obese people spent 42 percent more on health care a year than normal-weight people (up from 37 percent more in 1998).<sup>67</sup>

What is maddening about covering the scholarly literature and public commentaries on excess weight and obesity is that the evidence on the effects of excess weight is sometimes conflicting, or appears to be so. The dominant themes in the weight literature are almost all negative: Extra pounds of fat are bad for you. They add to people's health problems and shorten their lives. But another line of recent research suggests that while a lot of extra weight is harmful, people with a few—maybe 8 or 15—extra pounds might not be at any greater risk of dying than normal-weight people, and the few extra pounds could have beneficial effects for some, if not most, people.

- Researchers at the CDC found in a survey of 5,000 people that overweight subject had lower rates of death than expected, or did not have “excess mortality,” while obese and underweight subjects did.<sup>68</sup>
- In a survey of 9,000 people, Australian researchers drew much the same conclusion, that those subjects who were overweight were less likely to die in their seventies than normal-weight people.<sup>69</sup>
- Another study found a U-shaped curve in medical-care costs across the full BMI range, with underweight adults having medical-care costs as high as severely obese people. That is, medical-care costs fall precipitously for adults as their BMIs approach 20, then level out until a BMI of about 37, after which medical-care costs rise dramatically.<sup>70</sup>
- Medical researchers readily admit to an “obesity paradox” that is hard for them to explain: Obese people tend to die more than normal-weight and overweight people from heart failure. But among patients who have experienced heart failure, those who are obese are more likely to survive their heart failures, with the mortality rate for heart patients falling by 10 percent for every five-point increase in their BMIs. Go figure. The explanation could be that obese patients' extra fat gives them an energy reserve that the body can draw down when the heart has been weakened and/or because the BMI is a poor measure of body fat (with many people who are normal having more body fat than overweight and even obese people)—or some other yet-to-be determined reason.<sup>71</sup>
- And a few extra pounds can, apparently, increase bone density and make people look younger (which can have beneficial labor-market effects that enhance income, as we will see in Chap. 7).<sup>72</sup>

What's going on here? Well, it could simply be that studies involving different groups of people in different time periods and circumstances yield different results. The science of obesity is not exact, to say the least. Another possibility is that the differences in study conclusions is a consequence of an important fact not widely

The Body Mass Index (BMI) may be one of the worst statistics ever conceived, but it is widely used in weight research for a good, old-fashioned economic reason: It is readily available at little cost and everyone uses it, which gives the index research legitimacy. Weight research should be considered with a healthy dose of skepticism. Some of it is misleading and can be designed to further policy agendas.

appreciated: the health effects of fat depend on whether the fat is “subcutaneous,” which is fat stored on the buttocks and under the upper arms, or “visceral,” which is fat stored around and attached to vital internal organs, which causes “beer bellies.” Visceral fat is believed to be the serious killer, for obvious reason: It can impede the functioning of vital bodily processes, heartbeats, for example.<sup>73</sup> Still, might the conundrum be a product of the fact that “fat” can have bad health effects, while being “overweight” can be good for people, because striving to achieve some ideal weight can impose a lot of stress that can be as much or more damaging to health than the fat itself? We will revisit this conundrum and line of argument in the next several chapters when we get serious about the *economics* of weight problems.

## Concluding Comments

The late Pat Paulson, a comedian who pretended in the late 1960s to be running for president on the highly rated but somewhat controversial television variety show “The Smothers Brothers Comedy Hour” would hold a mock news conference each week. On one memorable show, a “reporter” asked the comedian to comment on one of the livelier political issues of the day: “Mr. Paulson, so what do you think about the ‘population bomb’?”

After pausing, Paulson answered with his customary deadpan drawl: “Look everyone here has two parents, right? Those parents have four parents, with all those parents having eight parents. Backward through time, the parents escalate . . . 16, 32, 64, 128, 256, 512, 1,024 and so forth. The best I can figure is that the population has been in rapid decline for some time! I don’t see a problem.”

Paulson’s wry sense of humor, built around twisted thinking, is ageless. His comedic analysis is obviously wrongheaded because it denies the Darwinian theme of all species, not just *Homo sapiens*, having a common ancestry. Moreover, the growth in the *volume* of the parents in Paulson’s humorous retrogression is not nearly as great as Paulson’s *count* of parents.

Over the eons, people have grown (with ups and downs) in height from three feet when the first hominids walked upright to an average height today for American males of about five feet nine inches and for American females of about five feet four inches. People have also gained weight, partially because of the growth in height

and partially because of increasing longevity. Long ago, people didn't live long enough to retire, become sedentary, and gain weight. But, people's increase in weight obviously has other causes.

Still, since Malthus' era, the world's population measured by mass has grown faster than the count of people. Malthus could not have dreamed that in barely 200 years hordes of people—especially those with higher incomes—would be obsessed with losing weight while enjoying little success at doing so, in contrast to his dismal prediction that common folk would continue to live at subsistent standards. How could Malthus have imagined that people around the world would be captivated with the reality television show, “The Biggest Loser” on which the contestants start the show as big as . . . well, cows, and the winner takes home a trophy and prize money for losing literally hundreds of pounds—and still leaves the show often times overweight, if not obese? How wrong could a preacher-economist be? In predictive accuracy, he was bad even by the dismal standards of today's economic forecasters.

Readers are wise to be cautious in accepting experts' predictions on the country's weight problems. Malthus, after all, was as wrong as can be. The late population doomsayer Paul Ehrlich was worse in that he dared to predict in the late 1960s in his best seller, *Population Bomb*, that the world would be experiencing mass starvation by the 1980s (a thesis that economist Julian Simon rightly challenged later in the 1960s).<sup>74</sup> True, there are starving people in the world, but starvation is hardly as widespread as Ehrlich dared to predict would be the case (and today's starving populations are usually victims of natural disasters and genocidal campaigns by warring tribes and governments). Most modern experts working more than a half century ago didn't predict the upsurge in obesity in the 1980s and 1990s, or the deceleration in the obesity growth rate in the 2000s (possibly abetted by the advent of the Great Recession). Predicting the future of complex social processes, with weight gain being one, is hazardous.

Exercise caution as well in interpreting “fat” statistics that pervade the media almost daily, some of which are included in this chapter. Be mindful that while the sizable food industry has a host of private incentives to encourage people to eat, and overeat time and again, there is now a sizable antifat industry—including firms and people who conduct weight research, advocate one diet plan or another, or seek government research grants and programs to promote controlled eating and “wellness”—that also has strong incentives to magnify the country's weight problems. The bigger the weight problem as perceived by the public and controlling public officials, both now and in the near-term future, the more opportunities there are for any number of groups to make money through added research grants, diet plans, and surgeries. And do take notice of how so many nutrition and obesity researchers do what they consider to be science, only to use their findings to promote (even in elite scientific journals) one antifat agenda of reforms or another, most notably various “fat taxes” and restrictions on what, when, and where people—not just children, but also consenting adults—can eat. Remember that the fat statistics recited here and so many other places represent very limited information on the particular circumstances under which hundreds of millions of people live, and they say nothing of the life interests of all of those people, which

can so often stand in stark contrast with the interests of health experts who make their policy pronouncements.

As I have read a large number of recent reports on the growth in the weight problem, I have been struck by what appears to be disappointment among some weight experts that the trend may have flattened out or, at least, taken a lower growth rate, dashing hopes of keeping the drumbeat of a “coming health-care crisis from obesity” rolling along. When new data was released showing that the rate of childhood obesity in the country might have leveled off after 2004, one obesity researcher reacted, “What I worry about is that people will read these numbers and think we’ve got the problem solved.” He went on to insist that this is “no time for complacency.”<sup>75</sup>

Maybe not, but such new findings might suggest caution in adopting an array of radical reform agendas that are grounded in an ever increasing fattening of the country. Moreover, ordinary people can be forgiven for thinking that the media’s tendency to pay more attention to “bad” news than “good” news can distort perceptions of the problem.<sup>76</sup> Readers also need to consider the official statistics on people’s weights with some caution. Many overweight and obesity data series involve self-reported weights, which can be distorted as people guess their weights or deliberately misreport them.

Studies based on the Body Mass Index should be viewed with at least a healthy dose of skepticism. The index is determined with precision, a mathematical formula no less. Anyone with a BMI equal to or greater than 25 is “overweight,” anyone with a BMI of 30 or above is “obese,” and anyone with a BMI of 40 or above is “morbidly obese.” But why were the BMI cutoffs for overweight and obese set at what they are? Amazingly, many researchers who use the BMI data do so without reporting answers to that simple question, as if the cutoff points are inconsequential, yet they could be very consequential. The cutoff points for the various weight categories are not points at which people’s medical, social, and economic problems from their weight suddenly jump upward. Also, the mathematical precision of the BMI belies its accuracy. Here are the problems with the BMI:

- First and foremost, again, like the average weight data, BMI statistics are sometimes based on *self-reported* weights and heights that can be distorted for reasons already noted, not the least of which is that people don’t accurately assess their weight and height and then are prone to distort the truth, especially when it comes to their own weight. Evidence indicates that as people get heavier, they tend to underreport the amount they eat and their weight.<sup>77</sup> Moreover, short people inflate their heights, reducing their calculated BMIs. Researchers have found that thin people report only 80 percent of what they eat, but obese people are much worse, reporting only half of what they eat.<sup>78</sup> Data, in other words, do not always emerge from researchers’ actually weighing the people in their samples (and “sample populations” need not always be representative of all people in the country).
- Second, the BMI does not measure fat, at least not directly. Muscular, lean people can have BMIs that put them into the “overweight,” if not “obese,”

category. My son is a serious weight lifter who can bench press 410 pounds. At five feet seven inches and weighing 192, he has a measured body fat that is trivial (hardly life-threatening). Nevertheless, his BMI is 30.1, which would classify him as “obese,” because he is 0.2 point above 29.9. That makes for statistical nonsense. By the same token, I have a good friend who is five feet nine and weighs 156 pounds, giving him a BMI of 23, well within the “normal” weight range. However, in a recent physical, he was told by his examining doctor that he was “obese” based on the “pinch” method of measuring body fat.

- Third, as adults age, they tend to lose muscle and gain fat, about 10 percent a decade after age forty-five, even when they remain the same weight and hold to the same BMI.<sup>79</sup> Does that mean that their healthiness goes down because of the greater proportion of body fat or does their healthiness remain the same when their BMI remains constant?
- Fourth, as people age, they also become shorter (up to an inch), as the cartilage between their vertebrae becomes compacted (not to mention the shortening effects of osteoporosis), which means that if done accurately, people’s BMI can rise with their age even when they really have not gained weight or even become fatter (as their average life expectancy has risen over time).
- Fifth, women tend to carry and need more fat than men, especially when breast-feeding. Men and women of the same height and weight will have the same BMIs, even though the women carry more fat, and may need to do so. It is not at all clear that men and women with the same BMIs are equally “healthy” or can anticipate the same longevity, after adjusting for other lifestyle and health issues.
- Sixth, the BMI cutoffs for the “overweight” and “obese” categories were originally set with an eye toward people’s achieving “healthy” weights, as BMIs lower than 25 lead to longer life expectancies (or so many people decades ago thought). However, as noted earlier, several studies show that people with BMIs that put them in the overweight category actually are healthier and live longer lives than people with BMIs that put them in the normal weight category.<sup>80</sup>
- Seventh, the accumulation of fat affects various ethnic groups differently. Most notably, Asians tend to have more body fat for any given BMI and greater health problems from accumulated fat than whites, blacks, and Hispanics, which suggests that lower BMI cutoffs for “overweight” and “obese” should be used to classify Asians’ weight categories.<sup>81</sup>

No wonder the BMI is not a good predictor of death rates across individuals. BMI is a very rough measure of excess weight and obesity at best, and may give no better indication of the exact extent of the country’s overweight and obesity problems than can be obtained from casual observations of people at shopping malls and on downtown streets. But yet, an army of researchers use the BMI statistic in their studies for a simple reason: It is conveniently available at little cost (in Internet-based databases that include literally thousands of subjects and millions of data points that can be downloaded with a few clicks of a mouse) for inclusion in sophisticated statistical analyses (regression equations) that can be repeated with various combinations of variables at lightning speed and sometimes

with little thought (other than to get the data to “confess,” or confirm hypotheses that can be based on nothing more than conjectures with little theoretical grounding). Besides, everyone else is using it (while figuratively holding their noses over its imperfections and not talking about the imperfections).

Consider the prospect that “weight” just might not be the killer in so many ways that it has been made out to be, simply because many overweight and obese people might have developed diabetes and heart problems had they remained trim all their lives. The count of deaths from weight might be as high as it is because at death a person’s weight might be said to be the cause of the heart attack (or whatever), not that it actually *caused* the death in any direct way. Some of what is reported as scientific *causation* may be nothing more than *association* (or *correlation*), which is what makes up so much “junk science.” Eric Oliver, a University of Chicago political scientist and severe critic of the practice of obesity science, points out that CDC researchers have not obtained their count of over 400,000 deaths attributed to weight by checking to see if weight was *the* direct causative factor in that many deaths: “Rather, they estimated a figure by comparing the death rates of thin and heavy people using data that were nearly thirty years old.”<sup>82</sup> When another team of CDC researchers reexamined the real causes of the people’s deaths, they found that weight was a causative factor in only 26,000, 24 percent lower than the counts of deaths attributable to being underweight, as reported by Oliver.<sup>83</sup>

We all need to take to heart Oliver’s skepticism over the claimed ties between people’s weight and various identified diseases that cause deaths. The point of these words of caution is not that people should gain weight with medical impunity. I’ve got to believe that beyond some point, weight gain is bound to affect health (perhaps beyond a BMI of 40), which is altogether intuitively plausible (and a point that Oliver acknowledges<sup>84</sup>). We just need to retain some skepticism about the health consequences of weight when people press negative health claims for weight gain at the same time they are pressing a public policy agenda.

Finally, despite all the fuss over excessive weight, people are, on balance, healthier today than forty or fifty years ago. The life expectancy of children born in 2010 is projected to be more than seventy-eight years compared with that of less than sixty-six in 1944 and less than seventy in 1960. The life expectancy today for men and women who have reached the age of sixty-five is 50 percent higher than a century ago (five additional years for men and seven additional years for women).<sup>85</sup>

The increased life expectancy can be attributed in part to reductions in the prevalence of high blood pressure, high cholesterol, and smoking, as well as to lower death rates from cancer and heart disease with the greatest improvements in heavier people—thanks, of course, to advances in modern medicine.<sup>86</sup> And do remember that credible research shows that people who are classified as overweight live longer than people of normal weight,<sup>87</sup> a finding that led one prominent CDC researcher to muse in a *New York Times* interview, “Yes, obesity is to blame for all the evils of modern life, except somehow, weirdly, it is not killing people enough. In fact that’s why there are all these fat people around. They just won’t die.”<sup>88</sup>

Indeed, advances in modern medicine probably have spurred some of Americans’ weight gain. The added years of life from, say, blood pressure



medications and anticholesterol drugs could have caused people to think, “I know added pounds can elevate my cholesterol score, but I can use Lipitor to offset the added weight. Those pounds might also elevate my blood pressure, but I can curb both my elevated blood pressure and cholesterol with one drug, Caduet.” Modern drugs and other therapies, then, might harbor the *potential* for extending life an average of, say, four years but might actually extend life an average of only three years because people essentially use those added years to “buy” more enjoyment from increasing their eating and drinking—and expanding their girths in the process. In fact, research has uncovered exactly this kind of outcome.<sup>89</sup>

None of these cautions overturns a central, undeniable point: Americans as a group have gotten fatter over the last century, especially in the late-twentieth century, with all kinds of economic and social causes and effects. The fattening of America needs explaining. A good place to start is with human beings’ evolutionary grounded predisposition to pack on the pounds. That predisposition, coupled with market forces that have raised Americans’ real incomes and lowered the relative prices and availability of foods (especially those that we are evolutionarily bound to crave), can be, to a significant extent, potential culprits that explain the fattening of the country.

## Perspective

### Ever-Growing Fat Facts, or “Fatoids”

The growth in the literature on the country’s (and world’s) growing weight problems during the past several decades has clearly exceeded the growth in the weight problems themselves. Scholarly and policy studies on the topic are now countless, so large they all couldn’t possibly be covered in a single volume like this one without boring readers to death (and many of the journal articles and policy reports are deadly dull). However, for those readers who love data-based observations, a few “fat factoids,” or maybe better, “fatoids,” can add perspective on the problem (with many of the numbing numbers relegated to endnotes, for readers who insist on knowing the statistical support for generalizations). If your brain has begun to go numb from number-based observations, you can skip this section. For those who are “numberholic” read on through an ever-growing list of findings that help complete the picture of the country’s obesity.

- More than a third of American adults, or 71 million, were classified as obese (with a BMI of 30 or above) in 2003–2006. Americans between ages forty and fifty-nine had the highest obesity rate, with Americans sixty and older having the second highest rate and Americans ages twenty to thirty-nine, the lowest.<sup>90</sup>
- Fewer than one in twenty obese people can attribute their weight problems to hormonal, physiological, or genetic *abnormalities*, which is to say that the vast majority of obese people gained their weight from eating too much, attributable to a genetic predisposition of all people to eat as much as their external constraints (income and food prices, for example) permit.<sup>91</sup>

- But then, the physiological effects can affect people's weight in unexpected ways. For instance, stress from personal and work problems can cause the release of the hormones cortisol and adrenaline, which increase the desire for foods that are high in sugar and fat, with the weight gain from stress giving rise to more stress and more hunger-inducing hormones.<sup>92</sup>
- And "nature" does appear to have an impact on people's proclivity to gain weight (which is hardly a surprise). Danish researchers have studied the weights of adoptees, the adoptees' biological parents, and their adoptive parents. The researchers found no correlation between the BMIs of the adoptees and their adoptive parents, but a high and highly significant correlation between the BMIs of the adoptees and their biological parents.<sup>93</sup>
- Paradoxically, many obese people suffer from malnourishment because so many modern calorie-rich foods (sodas and French fries, for example) that contribute to obesity are low in other essential nutrients (for example, calcium and iron).<sup>94</sup>
- Perception of being overweight varies by gender, income, and education:
  - Women are more likely to see themselves as being overweight than men. Whites are more likely to perceive themselves as overweight than blacks, who are more likely to see themselves as overweight than Hispanics.<sup>95</sup>
  - People in higher-income households are more likely to perceive themselves as overweight than people in lower-income households.<sup>96</sup>
  - People with high-school diplomas or more education are more likely to see themselves as being overweight than people who did not complete high school.<sup>97</sup>
  - Parents often delude themselves into thinking their children are less overweight than their children are, with parents' delusions a possible source of children's weight problems. Compared with parents of young children, parents with teenagers had more accurate assessments of their teenagers' weight problems, but many still underrated their children's weight problems.<sup>98</sup>
- American obesity statistics that have been cited could, in one regard, understate the obesity problem for any number of people because they are founded on Americans' BMIs, not their fat to muscle ratios. Thirty million Americans who have "normal" BMIs (between 18.5 and 25), and "normal" weights could be, medically speaking, obese, given that their body fat to total weight ratios make them unhealthy. They are subject to many of the medical problems that officially obese people suffer, according to a study from the Mayo Clinic, which followed more than 6,000 Americans for nine years.<sup>99</sup>
- Even though black women are more prone to excessive weight and obesity than white women, black women are less concerned about their weight.<sup>100</sup> And overweight and obese black women are more likely to see themselves as being of normal weight than white women in the same weight categories. The difference in weight assessment can help explain why a higher proportion of black women with excessive weights are more likely to see themselves as attractive than white women in the same weight groups. This could be the case perhaps

because black women report feeling less social pressure to lose weight. By the same token, normal-weight black women are less likely to perceive themselves as being overweight than white women. The differences in self-perceptions between black and white women can, of course, partially explain black women's larger sizes.<sup>101</sup>

- Higher-income black women reported self-perceptions of their own weight which were on par with the reported self-perceptions of white women in the same income category, although the black women were still heavier than the white women covered in the study.<sup>102</sup>
- Men are less likely than women to be concerned or dissatisfied with their weights and, accordingly, to feel a need to lose weight.<sup>103</sup> And black men report being less concerned about their weight than white men.<sup>104</sup>
- In the nineteenth century and into the twentieth century, malnourishment was a far greater nutritional issue than excess weight and obesity around the world. Now, the number of overweight and obese people worldwide may be double the number of malnourished people.<sup>105</sup>
- Americans are, on average, significantly heavier than people in many other countries.<sup>106</sup> However, according to the European Associations for the Study of Obesity, a higher percentage of men in Cyprus, the Czech Republic, Finland, Germany, Greece, Malta, and Slovakia are overweight or obese than in the United States.<sup>107</sup>
- Spain, Portugal, and Italy, as well as the Mediterranean islands of Malta, Sicily, Gibraltar, and Crete report obesity rates of greater than 30 percent among children ages seven to eleven. For this age group, England, Ireland, Cyprus, Sweden, and Greece have obesity rates greater than 20 percent, while France, Switzerland, Poland, the Czech Republic, Hungary, Germany, Denmark, Netherlands, and Bulgaria have obesity rates of 10–20 percent. In Europe, the obesity rate among children is accelerating.<sup>108</sup>
- The obesity rate among children ages five to eleven is higher in the United States than in Europe, but countries in Europe, most notably the United Kingdom and Poland, are rapidly catching up.<sup>109</sup>
- Obesity appears to be “socially contagious”; the chances of people becoming obese increase with their having obese friends, family, and even neighbors. Thinness is also socially contagious.<sup>110</sup>
- Sex matters in calories consumed. When college women were observed eating with men at the table in campus cafeterias, the women ate fewer calories than when only women were at the table.<sup>111</sup>
- The heaviness of Americans relative to other parts of the world can possibly be explained by the fact that the average American eats close to a third more prepackaged foods (which tend to be higher in fats, sugars, and salts than home-prepared meals) than people in almost all other countries around the world.<sup>112</sup>
- The problem of losing weight by exercise is not that calories aren't expended in exercise. They are, but with a lot of work, time, and sweat. More importantly, according to academic research, the problem is that people who exercise tend to

- offset the calorie expenditure from exercise by eating more than they otherwise would and by being more sedate than otherwise when they are not exercising. Unfortunately, exercise can lead to hunger with the stomach literally taking chemical control of the brain, with the chemical pressure to eat growing with exercise.<sup>113</sup>
- In 2010, only 26 percent of American adults ate three or more servings of vegetables a day, about the same as in 2000, according to the CDC.<sup>114</sup>
  - Louisiana State University nutritionist Timothy Church and his research team followed 464 overweight women for six months, dividing them into a control group (with the members asked to maintain their normal daily routines) and three exercise groups, with members of each group asked to increase their weekly exercise to different levels, 72, 136, and 194 minutes a week. The researchers found, surprisingly, that the greater exercise did not lead to greater average weight loss when compared to the control group. Indeed, some of the exercising women gained weight, as much as ten pounds.<sup>115</sup>
  - One futuristic sounding dieting regiment holds some promise for people losing weight by, get this, getting cold. The body has two types of fat cells, “brown fat” and “white fat” cells, with the latter containing mainly fat deposits and the former containing some fat deposits but many mitochondria, the so-called “engines” of cells that produce energy. White fat stores energy and insulates the body, while brown fat does that and regulates the body’s temperature. Brown fat can respond to a drop in temperature fairly quickly, turning its stored energy into heat (which explains why newborns have an abundance of brown fat to protect them against cold until other bodily organs involved in body temperature control develop). Researchers are now looking for genetic ways of turning white fat into brown fat with the hope that the conversion will enable people to lose weight through cold treatments.<sup>116</sup>
  - No one should conclude that exercise should be excluded from a weight-reduction plan. Even “The Biggest Loser” program makes exercise a strategic component in its weight-reduction contests, but notice how the exercise on the program is combined with tight constraints on what the contestants eat. The program producers and the trainers work hard to make sure that the exercise regimens don’t give rise to uncorked eating at meals. The real moral of the research is that dieters should be aware that with increased exercise regiments, they need to work harder at suppressing the controlling influence of heightened hunger pangs.

Average daily steps taken in ten occupations:	
Secretaries	4,327
Teachers	4,726
Lawyers	5,062
Police Officers	5,336
Nurses	8,648
Construction Workers	9,646
Factory Workers	9,892
Restaurant Servers	10,087
Custodians	12,991
Mail Carriers	18,904
As reported by Wells (2010), citing the work of John P. Porcari in <i>Medicine &amp; Science in Sports and Exercise</i> (2007).	

- A likely source of weight gain (and difficulty in losing extra pounds) can be traced to how little many people move while at work. Weight and nutrition experts recommend adults walking at least 10,000 steps a day, but few jobs require workers to take more than half the recommended count. See the “box” insert in which one study tracked the average daily count of steps taken in ten occupations. Interestingly, when fifty-three workers were able to wear jeans (or other casual clothes) to work, they walked an average of 491 more steps than they did when they dressed more formally for business.<sup>117</sup>
- Cooks interested in controlling their own weight and the weights of their family members and dinner guests need to understand that widely used cookbooks can be an unrecognized source of weight gain, all surreptitiously. For example, along with the growth in obesity, has been a growth in the long and widely used *The Joy of Cooking*, literally—that is, growth in terms of the recommended portion sizes for the ever-changing recipes and growth in terms of the calories embedded in the portions recommended.<sup>118</sup> Word to the wise dieters: Beware of the menus you follow.
- But growth in portion size is, apparently, nothing new, and could have been going on for a millennium or more. Food researchers Brian Wansink, a Cornell University nutritionist, and his brother Craig Wansink, a theologian at Virginia Wesleyan College, evaluated the portion sizes and plate sizes in fifty-two of the most important renditions of Jesus Christ’s Last Supper that were painted between 1000 and 2000 AD.<sup>119</sup> Over the course of that millennium, the Wansinks found that the plate sizes on the dinner table in the paintings grew by 66 percent and the portion size of the entrée (which varied in the paintings from fish to lamb to pork) put before Jesus and his disciples grew by 70 percent while the bread portion grew by 23 percent. Much has been made about the increase in meal portion sizes over the last half century or so, which is a source of contemporary weight gain, but as the Wansinks conclude, “[T]he contemporary discovery of increasing portion sizes and food availability may be little more than a 1000-year-old wine in a new bottle.”<sup>120</sup>
- A fun study, but the Wansink findings need to be taken with at least some caution. The technology of producing dinnerware over the millennium studied no doubt improved greatly, very likely leading to larger plates because they were cheaper to make. The artists might have painted larger plates because they had no idea what the plates sizes were at the time of the Last Supper (just as most people don’t know today). The artists could have been increasing portion sizes for artistic reasons, to make the portions proportional to the larger plates they knew and painted. However, recent research has found that people with larger plates eat more calories than people with smaller plates, and the growth in people’s weights in modern times has been attributed to the growth in the sizes of dinner plates.<sup>121</sup>
- But then we really should not be surprised if meal portion sizes began growing as early as 10,000 BC, when humans turned from being hunter-gatherers to farmers. Otherwise, we must wonder why humans made the drastic switch in lifestyles way back then. The prospect of larger portions at meals, as well as

greater predictability of meals, must have been a prime reason humans gave up their wandering ways and out-competed those who continued as hunter-gatherers.

- According to the Agency for Healthcare Research and Quality, the number of bariatric surgeries rose in the United States from 13,386 in 1998 to 121,055 in 2004—an increase of 804 percent! The count of such surgeries was estimated in 2010 by the president of the American Society for Metabolic and Bariatric Surgery to be between 200,000 and 250,000 a year, with the direct surgical costs (not including often needed follow-up cosmetic surgeries) to be between \$15,000 and \$30,000 per surgery.<sup>122</sup>

HEAVY!

The Surprising Reasons America Is the Land of the  
Free—And the Home of the Fat

McKenzie, R.B.

2012, XVI, 325 p., Softcover

ISBN: 978-3-642-20134-9