

# **The Low-Carb Craze: Back to the Future?**

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## **Abstract**

This paper addresses the implications for the agri-food industry of the low-carb craze by examining trends in food consumption over the past 30 years and recent industry performance. The low-carb craze arose at a time when obesity rates and per capita consumption of carbohydrate-rich foods were at all-time highs. Agri-food supply chain participants who position themselves to take advantage of shifts in food consumption patterns find opportunities while more rigid players struggle. The challenge facing the agri-food industry is a choice between adopting a “wait-and-see” attitude about food consumption trends and adopting a proactive stance that gives consumers what they want without making risky value judgments about the validity or expected longevity of their attitudes. The solution to the problem of ever-changing consumer attitudes toward food choices is to find innovative ways to remain at the forefront of emerging trends.

## **Introduction**

Obesity in the United States has become a national epidemic to such an extent that the Department of Health and Human Services has classified it as a Medicare-supported problem. Obesity has been estimated as costing the US economy about \$117 billion per year and responsible for more than 300,000 deaths per year, second only to smoking.<sup>1</sup>

With the increased awareness about the potential health effects of obesity and the causal relationship between diet and obesity emerged the apparent solution to the obesity epidemic: Low-carbohydrate diets. These diets are high in protein and have little or no carbohydrates, with the promise to consumers that they will lose weight and address the consequent health challenges associated with obesity.

That these low carbohydrate diets have direct implications for the long-term profitability of grain-based industries is almost taken for granted. Indeed, a number of businesses have blamed the low-carb craze for their financial challenges in the past year. Doughnut industry darling, Krispy Kreme, this year posted lower earnings which it chalked up to the low-carb craze and saw its stock lose more than half its value. Bakeries and pasta companies have closed several plants.

Rather than blame changing consumer tastes for its woes, the agri-food industry needs to put the recent craze about low-carbs into the context of previous food and diet crazes to develop effective strategies to respond to them profitably. This paper’s principal objective is to offer strategies that embrace consumer attitudes while remaining ready to change when consumer patterns shift. First, we examine food and caloric intake data and America’s growing weight problem. Next, we observe how agri-food companies have responded and performed. Finally, we present past and current diet trends with an eye toward possible emerging opportunities and corresponding strategies.

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## **What is a Carb?**

There are three macronutrients in the human diet: Fat, protein and carbohydrate. Fat is stored as reserve fuel for the body and helps it process certain vitamins and minerals. Protein builds muscle. Carbohydrate is used for immediate energy needs.

Carbohydrate may be in the form of sugar, starch or fiber. Sugar is found in the natural sugars occurring in fruits, and in processed foods that contain large amounts of high fructose corn syrup. Foods made from potatoes and wheat are high in starch, which is converted by the body into sugar. This sugar may be used, or it may be stored and converted into fat. Fiber passes through the body, largely undigested. Whole grain foods and vegetables are high in fiber, which is thought to have cholesterol-reducing and cancer-fighting properties.

Two trends emerged in the three decades preceding the low-carb craze. First, Americans voraciously consumed the offering of processed, enriched flour and the introduction of high fructose corn syrup, which previously had not shown up on the radar. Second, the caloric intake of Americans increased substantially.

## **Obesity and Caloric Intake Trends**

The National Health and Nutrition Examination Surveys (NHANES) conducted over more than three decades show that after holding steady for years, overweight and obesity began to climb sharply in the 1980s.<sup>2</sup> NHANES defines overweight as a Body Mass Index (BMI=weight (kg)/height (m)<sup>2</sup>) of more than 25.0, and obesity as a BMI of more than 30.0. The number of obese adults has soared over the past 20 years, reaching nearly 59 million people, or about a third of all American adults. Studies released this year showed that being obese at age 20 can take 20 years off a person's life; being obese at age 40 can reduce life expectancy by seven years.<sup>3</sup>

From the 1980s to 2000, extremely obese adults—more than 100 pounds overweight—quadrupled, to about 4 million, or about 1 in 50 adults. Medical care for the obese averaged \$732 per year more per person than for people of normal weight. One study found that nationwide, the cost may have equaled \$92.6 billion more in 2002, with half the cost picked up by government-funded Medicare and Medicaid programs.<sup>4</sup>

Although the caloric requirements of people vary by age, sex, activities and body type, it is estimated that in 2000 the average American male and female consumed 2,618 and 1,877 calories per day respectively.<sup>5</sup> During the past 30 years, total caloric intake in the United States increased dramatically, as did consumption of calories from carbohydrates. From 1974 to 2000, the average American increased total caloric consumption from 1,987 calories to 2,240, an increase of 253 calories, or nearly 13 percent. This level—an average for the total adult population—is more than the latest USDA estimated requirements of 1,600 calories for women; more than the estimated requirement of 2,200 calories for active women and most men, and less than the estimated requirement of 2,800 calories for active men.<sup>6</sup>

Over the same period, calories from carbohydrates increased from 43.5 percent of the diet to 50 percent of the diet, accounting for more than the total increase in caloric intake.

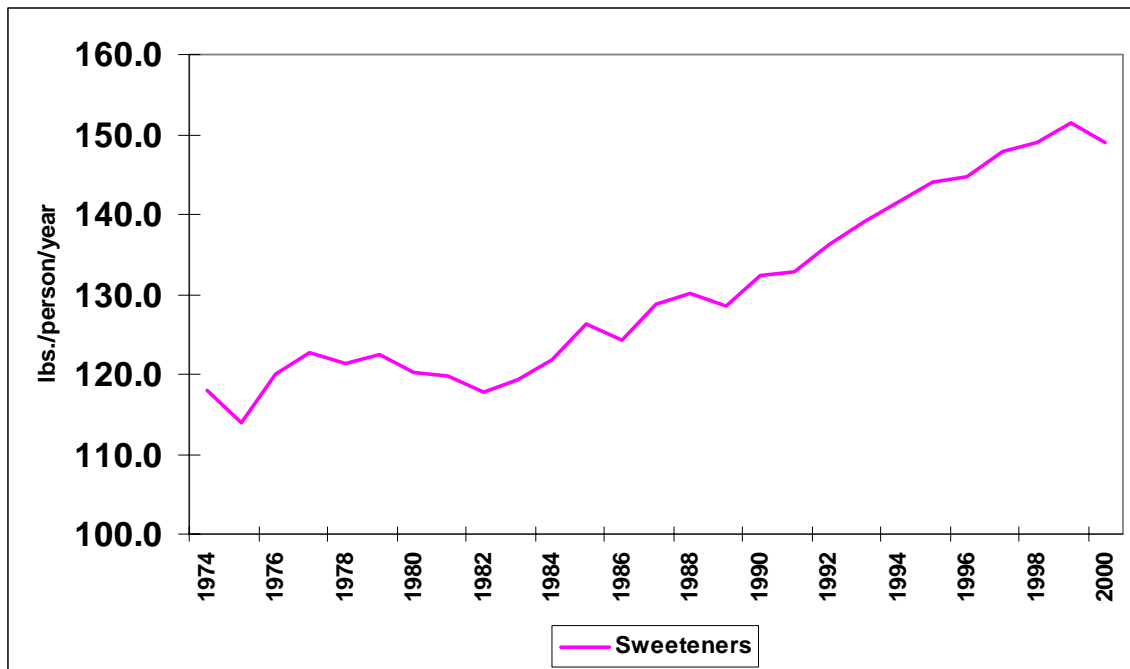
### Increase in Caloric Intake and Carbohydrate Consumption

Year	Daily Caloric Intake	Calories from Carbohydrates	% Calories from Carbohydrates
2000	2,240	1,123	50.1
1974	1,987	866	43.5
Increase	253 calories	257 calories	6.6%

Source: National Health and Nutrition Examination Surveys

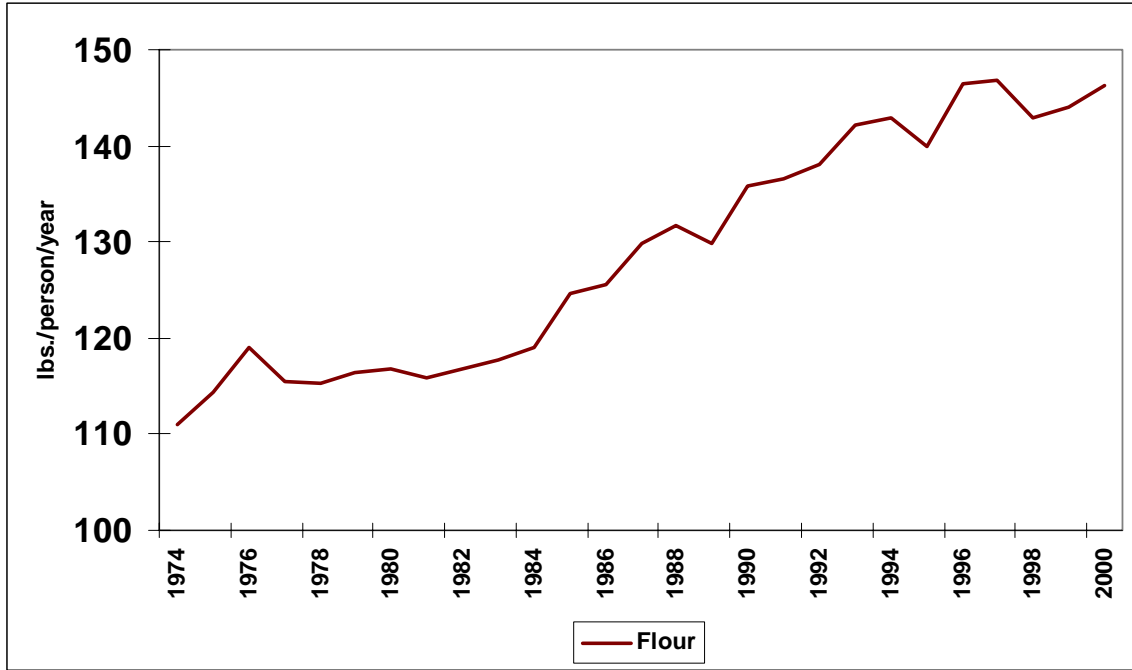
Beginning in the 1940s, food products started to contain fewer fiber-rich whole grains, more refined ingredients, and were enriched with vitamins and minerals. The US government mandated vitamin enrichment in order to improve the health of men entering military service in World War II. Over the years, foods also contained more caloric sweeteners. According to USDA, deliveries of high fructose corn syrup—a substantial portion of total caloric sweetener use—registered at 2.8 pounds per person in 1974 and ballooned to nearly 50 pounds per person by 1990.

### US Per Capita Deliveries of Caloric Sweeteners 1974-2000



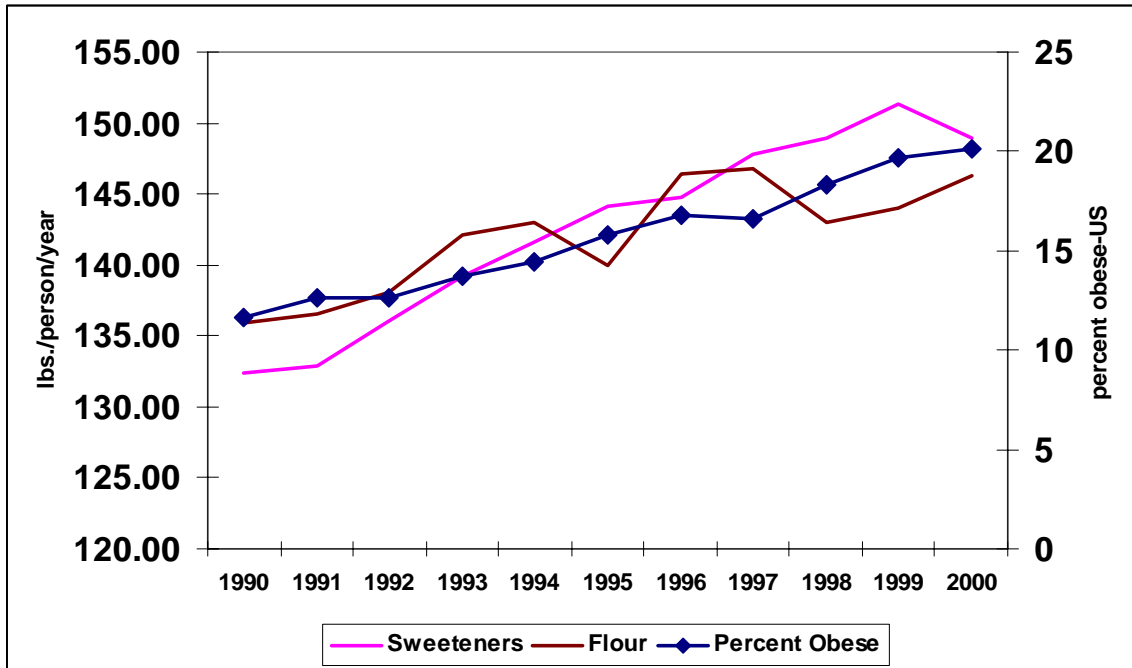
Source: USDA Economic Research Service

### US Per Capita Consumption of Wheat Flour 1974-2000



Source: USDA Economic Research Service

### US Per Capita Use of Caloric Sweeteners and Wheat Flour and Obesity Prevalence 1974-2000



Source: USDA Economic Research Service, Centers for Disease Control Behavioral Risk Factor Surveillance System

## America’s Love Affair with Diets

The current low-carb craze is nothing new. In fact, Dr. Atkins’ now-famous low-carb diet was first released in the early 1970s. Weight Watchers, founded in the early 1960s, promises devotees can “eat the foods you love and still lose weight.” The program helps members control portions through a point-system with which dieters tally their intake at each meal and measure their results at periodic weigh-ins—a type of calorie accounting. The Jenny Craig company was founded in 1983. With more than 600 weight loss centers worldwide, the program offers members “simple and satisfying” menu items that are low in fat and cholesterol, high in fiber and take five minutes to prepare.

In 1990, Dr. Dean Ornish introduced a low-fat diet based on the results of his cardiovascular disease research and work with overweight Americans. By reducing dietary fat consumption through eating whole grains, fruits and vegetables, some dairy products and very little meat, it was hoped that dieters could reduce the amount of fat on their bodies and reduce their risk of heart disease.

Consumers also have tried to control their weight by taking appetite suppressant medications containing caffeine or other stimulants. Today, similar programs use herbal ingredients to help consumers achieve appetite-curbing results.

One program after another has cropped up over the past 40 years, each promising results, usually with a caveat about maintaining a balanced diet, reasonable portion sizes and a physician-approved exercise program. By the mid-1990s, some researchers concluded that carbohydrates, not fat were to blame for the fattening of America. Meanwhile, average caloric intake, carbohydrate consumption and obesity rates have kept on climbing, in what the World Health Organization terms the “American Paradox” of decreasing fat consumption and increasing overweight prevalence.

In recent years, the focus has shifted from reducing fat in the diet to curbing carbohydrate consumption as the way to reduce weight. This led to the rise of the Atkins Diet, the South Beach Diet, Sugar Busters and others. The predominance of these three recurrent and new diet plans has created a lot of the stir. While each may be considered a low-carb diet, each has its own, slightly different interpretation of what that means.

	<b>Atkins</b>	<b>South Beach</b>	<b>Sugar Busters</b>
<b>Focus</b>	Very Low-Carb Fat is O.K.	“Good” Carbs Lean Protein	Low Glycemic Index <sup>2</sup>
<b>Initial Regimen</b>	Strict induction phase Re-introduce “good” carbs	No Carbs for two weeks Re-introduce “good” carbs	Avoid foods high in starch and refined sugar
<b>Maintenance</b>	Stay within range or go back to induction phase	Normal foods Sensible portions	Eat the “right” foods

Source: *The New Sugar Busters*, Ballantine, 2003; *The South Beach Diet* website; *Atkins* website

<sup>2</sup> High-glycemic-index foods contain carbohydrates that are burned quickly and stored as fat. Foods with a low glycemic index have carbohydrates that are burned slowly and used as energy

Opinion Dynamics Corporation recently reported that so-called low-carb lifestyle consumers represented 21 percent of the adult population.<sup>7</sup> Depending on whose survey or estimate you choose to believe, between 35 and 60 million people are on a low-carb diet right now. Which diet they are on is anybody's guess, but the low-carb craze has spawned a burgeoning industry and has been blamed for the poor performance of many carbohydrate-centric companies.

### **Business Effects**

The nation's largest dry pasta seller, New World Pasta, filed for Chapter 11 bankruptcy in May 2004. North America's largest pasta company, American Italian Pasta Company (NYSE:PLB) closed one of its five factories. Interstate Bakeries Corporation (NYSE:IBC) suspended its stock dividend and closed two of its 57 bakeries, and expects to close a dozen more over the next three years.

Company management cites the low-carb craze as the source of their woes, explicitly blaming consumers for their problems. But what the consumer trend of reduced carbohydrate consumption really did was expose these companies' inability or unwillingness to stay ahead of the consumer—a lack of flexibility which caused their response to be late and thus, more costly.

Scott Livengood, the CEO of Krispy Kreme (NYSE:KKD), claimed that low-carb diets were to blame for his company's sub-par performance when he announced lower-than-expected earnings on May 7, 2004. Following that announcement, the company's stock price fell from \$31.80 per share on May 7 to \$13.57 August 13.

While American Italian Pasta Company and IBC were scrambling to respond after the low-carb trend took hold, forward-thinking companies like Coca-Cola seem to recognize the fluidity of consumer eating habits, and are taking steps to reduce the sweetener content of sugared products by introducing low-carb alternatives such as C2 cola.

Unilever (NYSE:UL) has retooled many of its sugary condiments brands, such as Hellman's mayonnaise, Wishbone salad dressing and Ragu sauces under the CarbOptions label. Hershey Foods (NYSE:HSY) has a low-carb chocolate bar called 1g that doesn't claim to be low-carb, but rather, low-carb from sugar.

### **What's Next?**

Given consumption data from the past 30 years, it may seem unclear what consumers want. That is, they are eating more and becoming more overweight, but they say they want to be slim—a line of thinking that seems to be contradicted by their actions. As we showed earlier, the amount of calories consumed has increased as rapidly as carbohydrate consumption.

While carbohydrate consumption is the current whipping boy for the obesity problem and reducing it is the fashionable solution, this simplistic blame-game completely ignores the fact that consumers are eating more than they did in the 1970s. Picking on carbohydrates

also ignores lack of physical activity and other contributors to obesity. What consumers seem to want is to be slim with little effort and disruption, and companies that provide a solution stand to win.

As Lynn Dornblaser from the Chicago office of London-based Mintel International said recently, “We’ve seen low-carb to be an entirely US phenomenon. In the US, rightly or wrongly, we like to have a magic pill.”<sup>8</sup>

Just as consumers have responded to the problem of weight gain by investing in the latest quick-fix, savior diet, some agri-food companies have tended to either wait out the craze or accept what might be temporary aberrations as permanent fixtures in the marketplace.

A shift in focus on so-called “good” carbs and “bad” carbs indicates consumers have become more sophisticated in their selection of food products. Consumers may be acting on the release of research into the glycemic index of foods. Foods with a high glycemic index contain high levels of carbohydrates that are burned quickly and then stored as fat. Foods with a low glycemic index have carbohydrates that are burned slowly and used as energy. In 2002, Australia adopted a glycemic index labeling program.

There is talk that USDA may revise its food pyramid to reflect a renewed focus on whole grains and away from refined, enriched flour. The numbers being thrown around are a 40- to 50-percent reduction in enriched grains.<sup>9</sup> Already, some are calling for grain-based companies and farmers to begin shaking in their boots because it takes 2.4 bushels of wheat to make 100 pounds of white flour and only 1.8 for 100 pounds of whole wheat flour.<sup>10</sup> Indeed, per capita consumption of wheat flour has fallen from 146 pounds in 2000 to 136 pounds in 2003. But what is cause for alarm for some may spell opportunity for others.

Other trends are emerging, including the trend toward foods with specific health benefits, which has created an industry growing at 20 to 30 percent in Scandinavia. The Swedish Center of Excellence and Innovation in Functional Foods defines functional foods as those “with a scientifically documented added value in the form of a positive effect on health and well-being.”

These products include yogurts that lower blood sugar and a cheese product that reduces cholesterol. The company at the leading edge of this industry is Skåne Dairy, a cooperative of 1,000 dairy producers working with leading research scientists to stay ahead of an increasingly health-conscious and ingredient-savvy consumer.

Will these trends cross over to the United States? Will they persist? The right answer to these questions is: We don’t know, but we want to stay in front of them if they do and be ready to change if they don’t.

### **Positioning for Success**

The strategies employed by some agri-food companies may be more to blame for their predicaments than the whims of the American consumer. It seems defeatist to blame the

source of revenues—consumers—for lower profits. For example, Krispy Kreme may have overextended itself with the rapid expansion in the number of stores to locations as remote and thinly-populated as Montana and forays into other baked goods offerings. The company also may have compromised its value proposition of special, hot, fresh treats available only in Krispy Kreme stores and select retail locations by offering room-temperature doughnuts next to \$1.59 powdered doughnuts at the corner grocery store. The company’s investors—themselves consumers—seem to agree. Several class action lawsuits have been filed against the company by its shareholders, and the Securities and Exchange Commission is investigating its practices.

### **Innovation and Coordination**

We can learn from the companies suffering the low-carb hangover that doing the same thing over and over, waiting for consumers to return to their senses and begin buying our products again is not a formula for success. Nor should strategies stray too far from the core competencies through which they add value.

Because producers rely on downstream companies for information about what to produce, any miscommunication relayed from them back to the producer can have a profound impact on the profitability of the producer enterprise. There are ways through or around this problem.

One way is innovation, which is changing the way you do business or producing a new product or service, thereby adding value. This moves the producer downstream, closer to the consumer. A dairy cooperative working with researchers to develop and market foods that will improve your health while you eat is an innovative company. A wheat producer who grows a variety with specific health benefits is an innovative producer. So while some might say “the sky is falling” if consumers shift to flour ground from fewer bushels of wheat, there might be opportunities to capitalize on higher-value products with strategies that are value- rather than volume-focused.

Finding ways to make whole grains more palatable for consumers conditioned to enhanced, sweetened, high-impact tastes in food could help producers capitalize on the next phase of the Great American Diet by adding value at the farm gate.

An innovation strategy also indicates being attuned to markets that are not concerned about carbohydrate consumption. As mentioned earlier, the low-carb craze appears to be a US phenomenon, leaving open opportunities in other countries for convenience foods.

A second way is coordination, in which the producer communicates more closely with supply chain partners, thereby reducing the risk of under-communication or miscommunication about consumers’ desires. If it is not appropriate for whatever reason for you to move closer to the consumer yourself, then this is another way to add value.

The onset of functional foods as a rapidly-growing market brings the possibility for foods to be engineered for health benefits that are added at the farm gate level, as well as in factories. These may include foods with portion-control and obesity- or blood-sugar-

reducing properties, and the foods may be engineered, or derived from animals that are fed special rations.

Even if producers decide not to market the end products that result from research and development efforts, they can still hold the intellectual property and license the marketing to channel partners with superior distribution skills. So rather than trying to increase demand for a commodity while downstream companies benefit from adding value, the producer can work with those downstream companies and benefit directly from increasing demand for the value-added product.

### Opportunity Slate for Food Categories

	<b>Innovation</b>	<b>Coordination</b>
<b>Grains</b>	<ul style="list-style-type: none"> <li>• Tasty Whole Grains</li> <li>• Functional Foods</li> </ul>	<ul style="list-style-type: none"> <li>• Nutrient-Specific Feeds</li> <li>• Identity Preservation</li> </ul>
<b>Dairy</b>	<ul style="list-style-type: none"> <li>• Functional Foods</li> </ul>	<ul style="list-style-type: none"> <li>• Nutrient-Specific Ingredients</li> </ul>

In the agri-food supply chain, products and services move from producer to consumer, and information and money flow back from consumer to producer. Innovation—moving closer to the consumer, and coordination—facilitating efficient communication with supply chain partners, enable producers to improve their position in the chain to one which will help them process and act on information more quickly. Whichever strategy you choose, it is vital to remain flexible and responsive to changes in the market.

While today the trend is low-carb, it may be shifting to low-sugar and whole grains. Other trends, such as so-called all-natural or functional foods may or may not be here to stay. We are not trying to predict the future.

The only certainty, to paraphrase Bill Gates, is that we know whatever we are doing today is likely to be the wrong thing in the very near future. Being willing to be wrong and then to yield to change is the only way to avoid being steamrolled by the next trend.

<sup>1</sup> Partnership for Prevention. "Priorities in Prevention: Obesity-A Supplemental Update, August 2002

<sup>2</sup> National Health and Nutrition Examination Surveys, 1971-1974, 1976-1980, 1988-1994, 1999-2000

<sup>3</sup> The Associated Press, "Latest Data Show Rapid Rise in Obesity," December 22, 2003

<sup>4</sup> Ibid.

<sup>5</sup> Centers for Diseases Control, "Trends in Intake of Energy and Macronutrients - United States, 1971-2000" Morbidity and Mortality Weekly Report, February 6, 2004

<sup>6</sup> United States Department of Agriculture, "Nutrition and Your Health: Dietary Guidelines for Americans," 2000

<sup>7</sup> FoodProductionDaily.com, "Low-Carb Growth Slows" August 11, 2004

<sup>8</sup> The Associated Press, "Europeans Shun Low-Carb Craze-More Bread and Pasta, Please," August 8, 2004

<sup>9</sup> The Kansas City Star, "Whole Grains Gaining Favor as Government Ponders a Pyramid Change," July 19, 2004

<sup>10</sup> Ibid.